COMPONENTS REFURBISHMENT AND CHEMICAL ANALYSIS FACILITY, HOT SPOT 1
SWMU 041
YEAR 4 ANNUAL PERFORMANCE MONITORING REPORT
KENNEDY SPACE CENTER, FLORIDA

Prepared for:

National Aeronautics and Space Administration
Kennedy Space Center, Florida

May 2024
Revision 0

Prepared by:

Tetra Tech, Inc.
661 Andersen Drive
Pittsburgh, PA 15220
(412) 921-7090

YEAR 4 ANNUAL PERFORMANCE MONITORING REPORT
FOR
COMPONENTS REFURBISHMENT AND CHEMICAL ANALYSIS FACILITY
HOT SPOT 1, SWMU 041
KENNEDY SPACE CENTER, FLORIDA

Revision 0

Prepared for:
Environmental Assurance Branch
National Aeronautics and Space Administration
John F. Kennedy Space Center
Kennedy Space Center, Florida 32899

Prepared by:
Tetra Tech, Inc.
661 Andersen Drive
Pittsburgh, PA 15220

Prepared by:
Susan A. Rogers, P.G.
Tetra Tech, Inc.

Approved by: Mark P Speranza
Mark P. Speranza, P.E.
Tetra Tech, Inc.

May 2024

PROFESSIONAL ENGINEER CERTIFICATION

This Year 4 Annual Performance Monitoring Report for the Components Refurbishment and Chemical Analysis (CRCA) Facility, Solid Waste Management Unit 041, at Kennedy Space Center, Florida, dated May 2024, has been prepared by or under the responsible supervision, direction, or control of the Florida-licensed Professional Engineer whose signature and seal appear below. This document and the work described herein complies with standard professional practices and requirements of Chapter 62-780, Florida Administrative Code (F.A.C.) and other rules of the Florida Department of Environmental Protection according to Rule 62-780.400(1), F.A.C.

Mark P. Speranza
Florida P.E. License No. 50304
Engineering Business License Number 2429

TABLE OF CONTENTS

Section **Title** **Page**

PROFESSIONAL ENGINEER CERTIFICATION iii

TABLE OF CONTENTS v

ABBREVIATIONS AND ACRONYMS ix

EXECUTIVE SUMMARY ES-1

SECTION I INTRODUCTION 1-1

1.1 BACKGROUND AND SITE SETTING 1-2
1.2 CLIMATE 1-3
1.3 SITE GEOLOGY 1-3
1.4 SITE TOPOGRAPHY AND HYDROLOGY 1-5
1.5 SITE CHARACTERIZATION AND PREVIOUS REMEDIATION 1-6
1.5.1 HS1 Site Characterization ADP. 1-6
1.5.2 HS1 RAE ADP. 1-7
1.5.3 HS1 IMWP 1-7
1.5.4 HS1 IWP. 1-7
1.5.5 HS1 IM 1-8
1.5.6 HS1 PMR Mid-Year Update ADP. 1-9
1.5.7 HS1 Annual PMR ADP. 1-9
1.5.8 HS1 Year 2 Annual PMR ADP. 1-10
1.5.9 HS1 Year 3 Annual PMR ADP. 1-10
1.5.10 HS1 LTM – Proposed Downgradient Monitoring Wells ADP. 1-11
1.5.11 HS1 Year 4 Annual PMR ADP. 1-12
1.6 GROUNDWATER PLUME CLASSIFICATION 1-13
1.7 GROUNDWATER REMEDIAL APPROACH AND TIMELINE 1-14
1.8 YEAR 4 GROUNDWATER INTERIM MEASURES ASSESSMENT 1-14
1.9 REPORT ORGANIZATION 1-15

SECTION II HYDRAULIC CONTAINMENT SYSTEM PROCESS DESCRIPTION ... 2-1

SECTION III SYSTEM OPERATION, MAINTENANCE, AND MONITORING 3-1

3.1 OPERATIONAL SUMMARY 3-1
3.2 MAINTENANCE ACTIVITIES 3-2
3.2.1 System General Maintenance Activities. 3-2
3.2.2 System Repairs and Modifications. 3-3
3.3 MAJOR TREATMENT COMPONENTS EVALUATION 3-3
3.4 SYSTEM INFLUENT AND EFFLUENT SAMPLING RESULTS 3-4

TABLE OF CONTENTS (CONTINUED)

Section	Title	Page
SECTION IV	**YEAR 4 PERFORMANCE MONITORING**	**4-1**
4.1	GROUNDWATER SAMPLING ACTIVITIES	4-1
4.2	GROUNDWATER ANALYTICAL RESULTS	4-2
4.2.1	January 2023 (Year 4, Sampling Event 1).	4-3
4.2.2	July 2023 (Year 4, Sampling Event 2).	4-3
4.3	GROUNDWATER FIELD MEASUREMENTS	4-4
4.4	GROUNDWATER LEVEL MEASUREMENTS	4-5
4.4.1	Potentiometric Surface of the Shallow Interval.	4-6
4.4.2	Potentiometric Surface of the Intermediate Interval.	4-7
4.4.3	Potentiometric Surface of the Deep Interval.	4-8
4.5	AIR MONITORING ACTIVITIES AND RESULTS	4-9
4.5.1	Sub-Slab Soil Gas Sampling.	4-9
4.5.2	Ambient Air Sampling.	4-10
4.6	HOT SPOT 1 AND PLUME-WIDE CONDITIONS SUMMARY	4-11
4.6.1	Performance Monitoring tDCE Analysis.	4-12
4.6.2	Performance Monitoring VC Analysis.	4-12
SECTION V	**2022-2023 SUPPLEMENTAL DPT STUDY**	**5-1**
5.1	DPT SAMPLING PLAN	5-1
5.2	DPT SAMPLING RESULTS	5-2
5.3	DISCUSSION AND IMPACTS OF LCP EXPANSION	5-3
5.4	SUPPLEMENTAL WELL PLACEMENT STRATEGY AND INSTALLATION	5-5
SECTION V	**CONCLUSIONS AND RECOMMENDATIONS**	**6-1**
6.1	CONCLUSIONS	6-1
6.2	RECOMMENDATIONS	6-2
SECTION VII	**REFERENCES**	**7-1**

TABLE OF CONTENTS (CONTINUED)

LIST OF TABLES

Table	Title	Page
3-1	Hydraulic Containment System Year 4 Operational Details……..	3-7
3-2	CRCA Year 4 Hydraulic Containment System Runtime	3-9
3-3	CRCA Year 4 Hydraulic Containment System Maintenance Events	3-10
3-4	Influent and Effluent Analytical Results	3-11
4-1	Year 4 Monitoring Network	4-17
4-2	Contaminants of Concern Performance Monitoring Analytical Results	4-18
4-3	Year 4 Field Measurements	4-21
4-4	Year 4 HCS Operation Groundwater Elevations	4-22
4-5	Sub-Slab Soil Gas Analytical Results	4-23
4-6	Ambient Air Analytical Results	4-31
4-7	Vinyl Chloride Concentration Reduction	4-35
5-1	Contaminants of Concern 2022-2023 DPT Analytical Results	5-7
5-2	Monitoring Well Construction Details	5-11
6-1	Year 5 Recommended Sampling Program	6-4

LIST OF FIGURES

Figure	Title	Page
1-1	Location of Kennedy Space Center and CRCA	1-17
1-2	CRCA Regional Map	1-19
1-3	CRCA Site Layout	1-21
1-4	CRCA Soil Boring Transect Map	1-23
1-5	CRCA A-A' Geologic Cross-Section	1-25
1-6	CRCA B-B' Geologic Cross-Section	1-27
1-7	CRCA 2018 Hot Spot 1 Groundwater Plume and Hydraulic Containment System Layout	1-29
4-1	Year 4 Performance Monitoring Well Location Plan	4-37
4-2	MW0019 Relocation Schematic	4-39
4-3	Year 4 Contaminants of Concern Intermediate Plume: 20-40 Feet bls	4-41
4-4	Year 4 Contaminants of Concern Deep Plume: 53-63 Feet bls	4-43
4-5	Year 4 Vinyl Chloride Combined Intermediate and Deep Plumes	4-45
4-6	Shallow Potentiometric Surface Map- January 2023	4-47
4-7	Shallow Potentiometric Surface Map - July 2023	4-49
4-8	Intermediate Potentiometric Surface Map - January 2023	4-51
4-9	Intermediate Potentiometric Surface Map - July 2023	4-53
4-10	Deep Potentiometric Surface Map - January 2023	4-55

TABLE OF CONTENTS (CONTINUED)

LIST OF FIGURES (CONTINUED)

Figure	Title	Page
4-11	Deep Potentiometric Surface Map - July 2023	4-57
4-12	Ambient Air and Sub-Slab Vapor Monitoring Sample Locations	4-59
4-13	Sub-Slab Soil Gas and Ambient Air Sampling Results	4-61
4-14	Groundwater Model Projections vs. Actual Year 4 Plume – Intermediate (20-40 feet bls)	4-63
4-15	Groundwater Model Projections vs. Actual Year 4 Plume – Deep (53-63 feet bls)	4-65
5-1	DPT Groundwater Analytical Results – March 2022, December 2022, and May 2023	5-13
5-2	DPT Results, Detections Only, and Proposed LTM Well Location Map	5-15
5-3	LCP Comparisons – Shallow, Intermediate, and Deep Intervals	5-17
5-4	Typical Flush-Grade Monitoring Well Construction Details	5-19
5-5	Typical Above-Grade Monitoring Well Construction Details	5-21
6-1	Year 5 Performance Monitoring Well Location Plan	6-5

LIST OF APPENDICES

APPENDIX A	**OCTOBER 2023 AND NOVEMBER/DECEMBER 2023 ADVANCE DATA PACKAGES AND KSCRT MEETING MINUTES**
APPENDIX B	**LABORATORY ANALYTICAL REPORTS**
APPENDIX C	**MONTHLY OM&M BALANCING FORMS**
APPENDIX D	**SAMPLING FIELD NOTES AND LOG SHEETS**
APPENDIX E	**MONITORING WELL INSTALLATION DOCUMENTATION**

ABBREVIATIONS AND ACRONYMS

˚C	Degrees Celsius
˚F	Degrees Fahrenheit
ACGIH	American Conference of Governmental Industrial Hygienists
ADP	Advance Data Package
AS	Air Sparging
BART	Biological Activity Reaction Test
bls	below land surface
COC	Contaminant of Concern
CPA	Chemical Process Area
CRCA	Components Refurbishment and Chemical Analysis
CVOC	Chlorinated Volatile Organic Compound
DFP	2H,3H-decafluoropentane
Dhc	*Dehalococcoides*
DoD	U.S. Department of Defense
DPT	Direct Push Technology
EPA	U. S. Environmental Protection Agency
EQ Tank	Equalization Tank
EW	Extraction Well
F.A.C.	Florida Administrative Code
FDEP	Florida Department of Environmental Protection
GCTL	Groundwater Cleanup Target Level
gpm	gallon per minute
HCP	High Concentration Plume
HCS	Hydraulic Containment System
HDPE	High-Density Polyethylene
hp	Horsepower
HS	Hot Spot
HS1	Hot Spot 1
IDW	Investigation Derived Waste

ABBREVIATIONS AND ACRONYMS (CONTINUED)

IM	Interim Measure
IMWP	Interim Measure Work Plan
ISCO	In-Situ Chemical Oxidation
IW	Injection Well
IWP	Implementation Work Plan
KSC	Kennedy Space Center
KSCRT	KSC Remediation Team
LC/MS/MS	Liquid Chromatography Tandem Mass Spectrometry
LCP	Low Concentration plume
LTM	Long Term Monitoring
MEE	Methane, Ethane, and Ethene
mg/L	milligrams per liter
mV	millivolt
NADC	Natural Attenuation Default Concentration
NASA	National Aeronautics and Space Administration
NTU	Nephelometric Turbidity Unit
O&M	Operation and Maintenance
OM&M	Operation, Maintenance, and Monitoring
ORP	Oxidation-Reduction Potential
OSHA	Occupational Safety and Health Administration
PEL	Permissible Exposure Limit
PFAS	Per- and Polyfluoroalkyl Substances
PMR	Performance Monitoring Report
PVC	Polyvinyl Chloride
QED	QED Environmental Systems
RAE	Remedial Alternatives Evaluation
RCRA	Resource Conservation and Recovery Act
RFI	RCRA Facility Investigation
ROI	Radius of Influence

ABBREVIATIONS AND ACRONYMS (Continued)

SA	SWMU Assessment
SGS	SGS North America, Inc.
SOP	Standard Operating Procedure
SSHASP	Site-Specific Health and Safety Plan
S.U.	Standard Units
SVE	Soil Vapor Extraction
SWMU	Solid Waste Management Unit
TCE	Trichloroethene
tDCE	trans-1,2-Dichloroethene
TLV	Threshold Limit Value
µg/L	microgram per liter
$\mu g/m^3$	microgram per cubic meter
µS/cm	microSiemens per centimeter
V	Volt
VC	Vinyl Chloride
VISL	Vapor Intrusion Screening Level
VMP	Vapor Monitoring Pin
VOC	Volatile Organic Compound

EXECUTIVE SUMMARY

This Year 4 Annual Performance Monitoring Report (PMR) presents operation, maintenance, and monitoring (OM&M) activities and performance monitoring results for the Hydraulic Containment System (HCS) Interim Measure (IM) at the Components Refurbishment and Chemical Analysis (CRCA) facility located at Kennedy Space Center (KSC), Florida. CRCA has been designated Solid Waste Management Unit (SWMU) 041 under the KSC Resource Conservation and Recovery Act Corrective Action Program. The timeframe for HCS, OM&M, and performance monitoring activities included in this report extends from November 2022 through September 2023. The report also includes DPT sampling conducted between March 2022 and May 2023, and monitoring well installation in January 2024.

Full-scale startup of the HCS IM was completed in August 2019. The system includes three extraction wells installed to 63 feet below land surface (bls), seven injection wells, and conveyance piping to a modular structure containing a control panel and air stripper. Contaminants of concern (COCs) in groundwater at CRCA are trans-1,2-dichloroethene and vinyl chloride (VC), with remedial focus on VC due to higher concentrations and larger footprint. The primary objective of the HCS is to attain hydraulic control of the dissolved-phase chlorinated volatile organic compound (CVOC) plume, with the secondary objective to reduce concentrations of CVOCs in Hot Spot 1 and the surrounding high-concentration plume (HCP) to support transition to long term monitoring (LTM).

This Year 4 PMR includes the following information:

- OM&M activities for the HCS for operational period of November 2022 to September 2023, including ambient air sampling to assess breathing zone conditions during system operation and sub-slab soil gas sampling to evaluate the potential for CVOC vapors to migrate into the occupied building.

- Groundwater performance monitoring events in January and July 2023 at six monitoring wells (two intermediate and four deep) for volatile organic compound (VOC) analysis to assess progress of the HCS IM and overall plume conditions.

- Direct push technology (DPT) sampling in March 2022, December 2022, and May 2023 to further delineate groundwater plume boundaries and determine optimal placement for additional monitoring wells. Nine of the 14 proposed monitoring wells were installed in January 2024, with the remaining five to be installed when site conditions allow.

Operational runtime for the HCS during Year 4 was approximately 94%, with the majority of downtime attributed to system maintenance and system shutdown in anticipation of Hurricane Nicole. Approximately five million gallons of groundwater were treated during Year 4 of HCS operations, with over 32 million gallons treated since operations began in 2019. Year 4 HCS influent and effluent sampling results showed that the system is operating as designed and is reducing concentrations of COCs to below laboratory detection limits. All sub-slab soil gas and ambient air sampling conducted during the Year 4 operational period showed results below the United States Environmental Protection Agency Commercial Vapor Intrusion Screening Levels, Occupational Safety and Health Administration Permissible Exposure Limits, and American Conference of Governmental Industrial Hygienists Threshold Limit Values.

Groundwater monitoring results showed plume centerline concentrations of VC in the intermediate and deep intervals have decreased by 73.37% and 99.66%, respectively, since system startup in 2019. Based on Year 4 sampling data, VC continues to exceed the GCTL with a maximum concentration of 22.3 micrograms per liter (µg/L) in January 2023. All tDCE results were non-detect during the Year 4 sampling events. Predictions from the Year 1 groundwater model and Year 2 groundwater model updates correlate well with actual Year 4 performance monitoring plume conditions. Therefore, it is expected that COC reductions projected for performance monitoring wells will remain valid for the scheduled transition to LTM, following an additional year of continuous HCS operation (through Year 5).

The supplemental DPT study conducted in 2022 and 2023 indicated that low-concentration plume (LCP) conditions, where concentrations exceed State of Florida Groundwater Cleanup Target Levels, expanded westward to Kennedy Parkway North and northward to the vicinity of the railroad tracks. Based on these results, recommendations were made to install 14 wells to monitor the downgradient and boundary conditions of the expanded LCP. Note, sampling for per-and polyfluoroalkyl substances (PFAS) was conducted during these DPT events as part of a

PFAS Site Assessment; those results will be submitted under separate cover. The option to modify the HCS for PFAS treatment will be addressed following assessment of Year 5 analytical results.

The contents of this Year 4 PMR were presented during the October 2023 and November/December 2023 KSC Remediation Team meetings, where Team consensus was reached on several items including continued OM&M of the HCS and continued monitoring of groundwater, ambient air, and sub-slab soil gas, but reducing sampling frequency to semi-annual for the performance monitoring wells and to annual for the ambient air and sub-slab soil gas sampling locations. Consensus was also reached for installation and annual sampling of 14 groundwater monitoring wells and three existing wells. Replacement plans for MW0019 and vapor monitoring pin VMP04 will continue to be revisited along with the recommendation for proper abandonment of the original well and associated vapor monitoring pin. It is understood that the Florida Department of Environmental Protection may have questions or additional recommendations based on their review of this report.

SECTION I
INTRODUCTION

This Performance Monitoring Report (PMR) describes the Year 4 operation and maintenance (O&M) and performance monitoring results for the Hydraulic Containment System (HCS) Interim Measure (IM) at the Components Refurbishment and Chemical Analysis (CRCA) facility, located at Kennedy Space Center (KSC), Florida (Figure 1-1). The CRCA facility has been designated Solid Waste Management Unit (SWMU) 041 under KSC's Resource Conservation and Recovery Act (RCRA) Corrective Action Program. This document was prepared by Tetra Tech for the National Aeronautics and Space Administration (NASA) under Indefinite Delivery Indefinite Quantity Contract 80KSC019D0011-80KSC019F0066.

The HCS IM has been operational since August 2019. The primary objective is to obtain hydraulic control of the dissolved-phase chlorinated volatile organic compound (CVOC) groundwater plume, and the secondary objective is to reduce concentrations of CVOCs in Hot Spot 1 (HS1) and the surrounding high-concentration plume (HCP) with the goal to transition to long term monitoring (LTM).

The timeframe for activities covered under this report extends from March 2022 to January 2024, with the Year 4 HCS operational period occurring between November 2022 and September 2023. The following activities were completed during the reporting period covered in this report:

- Full-scale operation, maintenance, and monitoring (OM&M) of the HCS IM from November 2022 to September 2023.
- Groundwater performance monitoring events in January 2023 and July 2023 at six monitoring well locations (two intermediate and four deep) for volatile organic compound (VOC) analysis. Note, a sampling event also occurred in April 2023 with groundwater analyzed for per- and polyfluoroalkyl substances (PFAS) as part of an on-going PFAS assessment at CRCA; this data will be presented in a separate report.
- Sub-slab soil gas sampling at four vapor monitoring pin (VMP) locations in January 2023 and July 2023 for VOC analysis.

- Ambient air sampling at two locations in January 2023 and July 2023 for VOC analysis.

- Direct push technology (DPT) sampling in March 2022, December 2022, and May 2023 to further delineate groundwater plume boundaries and determine optimal placement for additional monitoring wells. Nine of the proposed 14 monitoring wells were installed in January 2024, with the remaining five wells to be installed when site conditions allow.

The contents of this report were presented during the October 2023 and November/December 2023 KSC Remediation Team (KSCRT) meetings. The Advance Data Packages (ADPs) and Meeting Minutes from those meetings are included in Appendix A.

1.1 BACKGROUND AND SITE SETTING

KSC is located in the northern region of Merritt Island, a barrier island situated between the Indian River and Banana River, both part of the Indian River Lagoon estuarine system within Brevard County, Florida. CRCA is located approximately 3.5 miles north of the KSC Industrial Area and 3.5 miles southwest of Launch Complexes 39A and 39B (Figure 1-1). The Vehicle Assembly Building is approximately 0.75 miles to the north of CRCA and the Launch and Landing Facility (formerly known as the Shuttle Landing Facility) is about 2.3 miles to the northwest. The CRCA facility is located east of Contractors Road, approximately 1,500 feet south of the intersection of Contractors Road and Saturn Causeway (Figure 1-2).

The CRCA property is an approximately three-acre, mostly paved, rectangular shaped parcel which houses numerous support structures and buildings. These CRCA buildings and structures were constructed in 1998 in support of the NASA space program. Operations performed at CRCA include the cleaning and refurbishment of mechanical and operation parts in the primary building (Building K6-1696), the storage of hydrogen gas cylinders (Building K6-1697A), decontamination of parts contaminated with fuel or oxidizers (Building K6-1747), solvent reclamation (Building K6-1696B), a satellite accumulation area for hazardous waste (Building K6-1748A), and storage of miscellaneous goods, pallets, and spent chemical totes (Building K6-1748D). The solvent used for cleaning at CRCA is Vertrel MCA, a mixture of trans-1,2-dichloroethene (tDCE) and 2H,3H-decafluoropentane (DFP), and is stored in Building K6-1696A. Figure 1-3 presents the site layout.

Detailed descriptions of the site background, area setting, site history, RCRA Facility Investigation (RFI) findings, and other pre-IM data are presented in the March 2015 CRCA RFI Progress Report (NASA, 2015) and the November 2018 CRCA RFI Progress Report, Revision 1 (NASA, 2018d). The November 2018 Progress Report also includes site information from the SWMU Assessment (SA) in October 2004.

1.2 CLIMATE

The climate at KSC is typically warm and humid, with average temperatures ranging from 61.7 degrees Fahrenheit (˚F) in January to 82.0˚F in August based on the average temperature records (1991-2020) collected from the National Weather Service Melbourne, Florida radar site. Within the same recording period, the annual mean precipitation along the east coast of Central Florida in Brevard County was 50.79 inches, based upon precipitation records from the referenced radar site. There is seasonal variation in precipitation, with a wet season between May and October and the rest of the year being relatively dry. In 2023, an average of 58.65 inches of rainfall was recorded from January to December, which is above the annual average precipitation for this area (National Oceanic and Atmospheric Administration, National Weather Service Forecast Office, Melbourne, Florida).

1.3 SITE GEOLOGY

Soil boring data collected during subsurface investigations from June 2006 and March 2019 at 21 locations advanced to a maximum depth of 80 feet below land surface (bls) were applied to identify the stratigraphic layers found beneath the study area. Figure 1-4 presents a transect map of the soil boring locations. Figures 1-5 and 1-6 show the geologic cross sections drawn from the field data. This information was applied to differentiate and collate the soil layers encountered to achieve a better understanding of site stratigraphy and hydrogeologic trends at CRCA.

As part of a barrier island complex, CRCA is located on a depositional environment of undulating dunes and swales, oriented north to south along the extent of Merritt Island. Soils from these Holocene to Pliocene shallow deposits comprise the upper limits of the surficial aquifer system, the focus of groundwater remediation at the site. As shown on the cross-sections, clayey and silty sands were encountered near the surface in the vicinity of the primary building

(Building K6-1696) to a depth of approximately five feet bls. Below this depth, the site stratigraphy consists of fine to very fine sand with trace of silt grading into medium to very fine sand and the introduction of shell fragments at about 10 feet bls. Fine to very fine sand with varying amounts of shell fragments and silt are found to about 25 feet bls. Shell fragments exist in greater abundance to about 60 feet bls, interspersed with layers predominated by fine to very fine and coarse to very fine sands. Generally, the occurrence of shell fragments increases to the west of the study area. The soils become more clayey at approximately 60 feet bls, where fine to very fine sand with trace to some shell, clay and trace to little shell were found. A homogeneous clay with trace to some silt, very fine sand, and shell was consistently encountered from approximately 70 to 80 feet bls, the vertical extent of soil borings conducted at CRCA. A more detailed discussion of the site-specific stratigraphy and hydrogeologic layers assigned for the purpose of completing a conceptual site model is presented in the CRCA Year 2 Groundwater Flow and Solute Transport Model Construction and Calibration Report presented as Appendix A of the Year 2 Annual PMR (NASA, 2022).

In the vicinity of CRCA, the surficial aquifer system is typically underlain by undifferentiated upper Miocene and Pliocene silts, sands, and clays. Numerous sea level transgressions and regressions occurred during this time; therefore, the deposits are discontinuous and undulating. This stratigraphic Late Miocene to Pliocene sequence has been identified as an equivalent to the Caloosahatchee Marl Formation. Based on data collected from other KSC sites and the numerous borings conducted in the 1960s in support of the Manned Lunar Landing Program, the clay layer found beneath the CRCA study area at approximately 70 feet bls is expected to persist to approximately 110 feet bls. This clayey layer is considered confining to semi-confining. At KSC, these undifferentiated sediments lie conformably above lower and middle Miocene silts and clays known as the Hawthorn Formation which acts as the major confining unit to the Floridan aquifer system. The Hawthorn Formation consists of calcareous clays and silts sandy phosphatic limestone, and phosphatic clays of marine origin. Beneath CRCA, the Hawthorn Formation rests unconformably on the Ocala Limestone at about 165 feet bls. This unconformity is due to shallow marine depositional environment of the Ocala limestone, its subsequent surface exposure possible faulting and erosion. The Ocala Limestone comprises the upper limestone of the Ocala Group, marking the top of the Floridan aquifer at KSC (NASA, 1994).

1.4 SITE TOPOGRAPHY AND HYDROLOGY

The CRCA facility is almost entirely paved with relatively flat topography. Surface elevations, which vary less than 10 feet of total relief across the site, decrease to the west toward a densely wooded area.

In June 2019, baseline groundwater flow conditions (prior to HCS startup) were generally from east to west within the shallow, intermediate, and deep intervals, with a depressional area of radial flow observed within the shallow interval west of the Chemical Process Area (CPA) at MW0003, probably due to surface stormwater drainage features. Within the shallow interval, slight mounding to the southwest beneath the building was observed converging toward MW0008 and resolving in western and northwestern flow with a more relaxed gradient toward Contractors Road. Within the intermediate interval, groundwater flow occurred to the northwest from the CPA and to the northeast from Contractors Road, converging toward the northern parking area. Baseline flow within the deep interval was predominately to the northwest, with a more westerly bend toward Contractors Road and across the railroad tracks (NASA, 2021a).

As expected under natural conditions, the hydraulic gradient generally slopes to the west within the shallow, intermediate, and deep intervals of the surficial aquifer system, mimicking site topography and likely discharging to surface water features such as drainage ditches, wetlands, and ultimately the Indian River. Fluctuations in flow direction are primarily observed in the vicinity of the primary building in the shallow interval, becoming more radial as extraction well pumping continues. Within the intermediate interval, the hydraulic gradient has become more uniform following commencement of HCS operations, with a predominantly westward flow pattern. Deep interval groundwater flow is generally to the west, similar to the shallow interval, but is influenced by HCS pumping and injection schedules resulting in steeper hydraulic gradients and undulating flow.

A more detailed discussion of the potentiometric surface in the shallow, intermediate, and deep intervals within the surficial aquifer system at CRCA during HCS operation is presented in Section IV of this report.

1.5 SITE CHARACTERIZATION AND PREVIOUS REMEDIATION

This section presents historical investigations and remedial activities conducted at CRCA leading up to identification of contaminants of concern (COCs), namely tDCE and vinyl chloride (VC), remedial approach discussions, HCS design, and system OM&M. A detailed report of the remedial activities at CRCA prior to HCS implementation is included in the RFI Progress Report (NASA, 2018d).

1.5.1 HS1 Site Characterization ADP. The Site Characterization ADP for CRCA HS1 was presented at the March 2018 KSCRT Meeting. This ADP summarized field investigations that began with the initial SA in June 2004 and discussed the results of HS1, HCP, and low-concentration plume (LCP) delineation via DPT data collected from September 2016 through February 2018. Based on these data, HS1 was defined as the area of the groundwater plume with COC concentrations greater than 10 times Florida Department of Environmental Protection (FDEP) Natural Attenuation Default Concentrations (NADCs). The HCP and LCP were also characterized, defined as areas of groundwater with concentrations of COCs greater than FDEP NADCs and State of Florida Groundwater Cleanup Target Levels (GCTLs), respectively. Groundwater sample and lithologic cores collected and analyzed during the DPT studies, along with monitoring well sampling results, were presented as part of the Site Characterization. A total of 512 DPT groundwater samples and eight monitoring well samples were collected between September 2016 and February 2018. Team consensus was reached for the delineation of CRCA HS1 and the HCP and LCP (Meeting Minute 1803-M05, Decision 1803-D23).

The Site Characterization for CRCA HS1 also proposed the screening of technologies for the HS and HCP. Team consensus was reached for the following technologies to be evaluated in the Remedial Alternatives Evaluation (RAE) (Meeting Minutes 1803-M05, Decision 1803-D24):

- Air sparging (AS) curtain for the HCP, including soil vapor extraction (SVE) to mitigate potential vapor issues, and in-situ chemical oxidation (ISCO) for the Hot Spot (HS);
- AS for the HCP, including SVE to mitigate potential vapor issues, and biostimulation for HS1;

- Hydraulic control for the HCP, including air stripping and ISCO for HS1; and
- Hydraulic control for the HCP, including air stripping and biostimulation for the HS.

1.5.2 HS1 RAE ADP. The CRCA HS1 RAE was presented at the May 2018 KSCRT Meeting (NASA, 2018b). The IM objectives identified in the RAE included reducing concentrations within the HS and HCP via an IM to support transition to LTM, mitigating plume migration and minimizing risk to workers in Building K6-1696 by preventing vapor intrusion. Team consensus was reached to proceed to an Interim Measure Work Plan (IMWP) for HS1 via hydraulic containment. Consensus included the need for additional data collection via aquifer tests, total organic carbon analysis, and further lithologic characterization in the target treatment zone (Meeting Minute 1805-M08, Decision 1805-D22). The additional data collected was to be used to evaluate the potential application of additional amendments to enhance treatment of the HS.

1.5.3 HS1 IMWP. The CRCA HS1 IMWP was presented at the June 2018 KSCRT Meeting, providing details of the proposed hydraulic containment IM. An overview of the design of the HCS and supporting construction details and calculations were included in the IMWP. Additionally, the IM objective was modified from the RAE to the following:

- Primary IM objective: obtain hydraulic control of the dissolved-phase CVOC plume.
- Secondary objective: reduce concentrations of CVOCs in HS1 and the HCP via an IM to support the transition to LTM.
- Deferred: the portion of the objective involving the need to minimize risk to workers in Building K6-1696 by preventing vapor intrusion and will be evaluated based on Air Sampling Plan results (addressed in Section IV of this PMR).

Team consensus was reached for the design of the HCS (Meeting Minute 1806-M02, Decision 1806-D02). An IMWP (NASA, 2018c) was approved by FDEP on October 30, 2018.

1.5.4 HS1 IWP. The CRCA HS1 Implementation Work Plan (IWP) (NASA, 2019a) was prepared based on the IMWP, which outlined the design and implementation of an HCS. To support the IWP, air sampling activities were presented at the April 2019 KSCRT Meeting to

determine if the IM objective may need to be modified to include minimizing risk to workers in Building K6-1696 by preventing vapor intrusion. This meeting presented information summarizing the Phase I (January 2018) and Phase II (August 2018) air monitoring events. Based on the Phase II sub-slab soil gas sampling results, it was determined that ambient air sampling was not necessary as the CVOC groundwater plume beneath Building K6-1696 is not presenting a vapor intrusion risk to the workers present. In addition to CVOCs, in August 2018 groundwater was analyzed for DFP, with results significantly below the 1,800 micrograms per liter (µg/L) GCTL. Vapor samples were subsequently collected in February 2019 from four sub-slab locations and analyzed for DFP. Results showed DFP was detected in two of the sub-slab samples at concentrations below the calculated United States Environmental Protection Agency (EPA) Commercial Vapor Intrusion Screen Level (VISL). Based on these findings, DFP was not carried forward as a standard analyte for the IM project (NASA, 2019b).

Team consensus was reached at the April 2019 KSCRT Meeting that the air monitoring evaluation was complete and further ambient air samples within Building K6-1696 were not needed at that time (Meeting Minute 1904-M16, Decision 1904-D40). As a result, an Air Monitoring Report was prepared for FDEP documenting the Phase I and Phase II studies and outlining the quarterly soil gas sampling planned as part of the performance monitoring program (NASA, 2019c). This plan was approved by FDEP in April 2020.

1.5.5 HS1 IM. The CRCA HS1 IM Construction Activities ADP was presented at the June 2019 KSCRT Meeting. This meeting discussed IM field activities including the installation of 12 monitoring wells (MW0021 to MW0032), three extraction wells (EWs) (EW0001 to EW0003), seven injection wells (IWs) (IW0001 to IW0007), and associated infrastructure including the treatment system, hydraulic profiling tool data collection, slug testing, a step pump test at EW0002, constant rate tests, and IW testing. Based on injection test results, anticipated capacities for IW0001, IW0002, and IW0007 were discussed. The HCS was deemed complete and system commissioning, startup, and baseline sampling were proposed (Meeting Minute 1906-M09). Construction of the HCS was documented in an IM Implementation Report (NASA, 2019b).

1.5.6 HS1 PMR Mid-Year Update ADP. The HS1 PMR Mid-Year Update was presented at the June 2020 KSCRT Meeting, which summarized the groundwater IM, HCS startup, and O&M activities (NASA, 2020a). This meeting documented initial startup activities completed July 22 to 26, 2019, including an overview of the HCS testing, IW flow rates, and HCS maintenance. Troubleshooting activities involving scaling issues with the system effluent bag filters, anti-scaling measures including biological activity reaction test (BART), and Redux 390 injection pilot tests were presented. Since tDCE was below its GCTL from June 2019 to April 2020, VC became the targeted analyte for groundwater plume remediation. The KSCRT agreed that the path forward for the HCS was to:

- Continue O&M to maintain hydraulic control of the groundwater plume and further reduce VC concentrations.
- Continue quarterly sampling of four monitoring wells and the semi-annual sampling of 16 monitoring wells.
- Prepare and submit a groundwater model in conjunction with the Year 1 PMR (Meeting Minute 2006-M02, Decision 2006-D1).

1.5.7 HS1 Annual PMR ADP. The Year 1 Annual PMR was presented at the October 2020 KSCRT Meeting and included a description of activities completed from June 2019 through August 2020. The purpose of this briefing was to present the progress of the HCS after one year of operation. During this meeting, the agreed upon path forward for performance monitoring included (Meeting Minute 2010-M02, Decisions 2010-D02 to D04):

- Remove eight monitoring wells (MW0003 and MW0020 through MW0026) from the performance sampling program.
- Transition three wells from semi-annual to quarterly sampling (MW0027, MW0029, and MW0032) and one well (MW0028) to semi-annual sampling.
- Discontinue sampling and analyses for sulfate, sulfide, nitrate, nitrite, carbon dioxide, iron, dissolved iron, and RCRA metals.

- Update the groundwater model and transport evaluation after completion of the Year 2 operational period.

The contents of this ADP were documented in the Year 1 PMR (NASA, 2021a).

1.5.8 HS1 Year 2 Annual PMR ADP. The Year 2 Annual PMR was presented at the November 2021 KSCRT Meeting and included discussions on activities completed from September 2020 through August 2021. The purpose of this meeting was to present the progress of the HCS after two years of operation. Consensus was reached for Year 3 to:

- Continue operation of the HCS.
- Remove five monitoring wells from the sampling plan due to non-detect results (MW0012, MW0015, MW0028, MW0029, and MW0030).
- Continue quarterly performance monitoring at four wells and add three wells on a semi-annual basis.
- Add a background ambient air sampling location (AMB02) and continue ambient air and vapor monitoring (Meeting Minute 2111-M04, Decisions 2111-D12 to D14).

The contents of this ADP were included in the Year 2 Annual PMR (NASA, 2022). Previous *Dehalococcoides* (Dhc) and VC reductase data along with the updated groundwater model indicated that no additional amendments were needed to supplement HCS performance at that time.

1.5.9 HS1 Year 3 Annual PMR ADP. The Year 3 Annual PMR ADP was presented at the February 2023 KSCRT Meeting and included discussions regarding activities completed from September 2021 to October 2022. The purpose of this meeting was to present progress of the HCS after three years of operation. Consensus was reached to:

- Continue operation and evaluation of the HCS.

- Continue quarterly sampling of four deep wells (MW0018, MW0019, MW0031, and MW0032) and the semi-annual sampling of two intermediate wells (MW0002 and MW0013).

- Discontinue sampling of MW0027 due to CVOCs not being detected during the Year 3 reporting period.

- Continue ambient air and vapor monitoring sampling (Meeting Minute 2302-M08, Decisions 2302-D13 to D15).

The contents of the Year 3 Annual PMR ADP were included in the Year 3 Annual PMR (NASA, 2023a).

Of note, during the Year 2 Annual performance monitoring reporting period, groundwater samples collected from the performance monitoring wells were analyzed for *Dhc*, VC reductase, and methane, ethane, and ethene (MEE). The results suggested that passive detoxification was possible, but only to a minimal extent. Since significant CVOC concentration reduction was observed after two years of HCS operation, it was determined that the option to implement additional HCS treatment amendments was not necessary for Year 3 (NASA, 2022). However, these additional parameters were inadvertently kept on the sampling schedule during Year 3, showing minimal potential for passive detoxification. The analytes *Dhc*, VC reductase, and MEE were not included on the Year 4 analyte list.

1.5.10 HS1 LTM – Proposed Downgradient Monitoring Wells ADP. The LTM – Proposed Downgradient Monitoring Wells ADP was presented at the KSCRT Meeting in October 2023 to present the results from the 2022-2023 DPT investigation (NASA 2023b). The LCP was found to extend farther downgradient and to the north than previously identified. The Team reached consensus to:

- Install 14 wells, consisting of five well groups, to monitor offsite plume migration including three well clusters downgradient from existing plume conditions, one well cluster north of the LCP, and one well cluster along the LCP centerline.

- Sample the newly installed wells (MW0033 through MW0046) upon completion and annually thereafter for VOCs via EPA Method 8260D.

- Incorporate existing wells MW0026, MW0027, and MW00028 into the LTM annual sampling program to monitor the southeastern edge of the LCP (Meeting Minute 2310-M06, Decision 2310-D17).

The data presented in the LTM-Proposed Downgradient Monitoring Wells ADP is further discussed in Section V of this report.

1.5.11 HS1 Year 4 Annual PMR ADP. The Year 4 Annual PMR ADP was presented at the November/December 2023 KSCRT Meeting and included OM&M and performance monitoring data compiled from November 2022 to September 2023 (NASA, 2023c). In addition, the results of the 2022-2023 DPT study were presented and compared with the performance monitoring plume. Based on information presented, Team consensus was reached to:

- Proceed with Year 5 of HCS operation, including monthly influent and effluent sampling.

- Transition the two ambient air and four sub-slab soil gas sampling locations from quarterly to annual.

- Continue semi-annual sampling of performance monitoring wells MW0002 and MW0013.

- Prepare the Year 4 Performance Monitoring Report and submit to FDEP/NASA.

- Incorporate the following additional monitoring wells (14 new and 3 existing) into the sampling program to monitor plume-wide conditions:

    - Four nested locations (30-40 feet bls, 40-50 feet bls, and 50 to 60 feet bls) to monitor plume boundaries.

    - One proposed nested location (40-50 feet bls and 50-60 feet bls) to monitor the downgradient plume centerline conditions.

- Three existing nested wells (MW0026, MW0027, and MW0028) to monitor the southeastern plume boundary (Meeting Minute 2311-M10, Decisions 2311-D21 to D26).

The data presented in the Year 4 Annual PMR ADP is documented in this report.

1.6 GROUNDWATER PLUME CLASSIFICATION

This section summarizes plume characterization at CRCA with a follow-up on LCP supplemental data derived from the 2022-2023 DPT study.

The plume components were identified in 2018 as presented in the HS1 Site Characterization ADP (NASA, 2018a) and discussed in Section 1.5.1 of this report. In summary, the classification of these plume components were as follows:

- HS1 – defined as the area where CVOC concentrations exceed 10-times FDEP NADC (1,000 µg/L for VC).
- HCP – defined by CVOC concentrations exceeding the FDEP NADC (100 µg/L for VC).
- LCP – defined by CVOC concentrations exceeding the GCTL (100 µg/L for tDCE and 1 µg/L for VC).

The footprints of the CRCA HS1, HCP, and LCP as identified in the 2018 Site Characterization, along with an overlay of the HCS network layout, are presented on Figure 1-7. HS and HCP concentrations have not been detected in monitoring wells since HCS startup in 2019.

Based on the 2022-2023 DPT study (see Section V of this report), the LCP was further delineated westward to Kennedy Parkway North and northward in the vicinity of the railroad tracks, west of Contractors Road, and included two isolated pockets of LCP south of the HCS treatment area. COC exceedances detected during these DPT events were VC, with the highest concentration detected at 47 µg/L, located approximately 180 feet downgradient of the western extent of the performance monitoring network. Of note, trichloroethene (TCE), which is not identified as a site COC, was detected above the GCTL at 6.0 µg/L during the December 2022

DPT event, and is further discussed in Section V. GCTL exceedances of VC were found at various depth intervals ranging from 16 to 55 feet bls. The area of this expanded LCP overlaps the western flank of Year 4 performance monitoring LCP boundaries.

1.7 GROUNDWATER REMEDIAL APPROACH AND TIMELINE

The treatment timeframe to reduce VC concentrations appropriate for transition to levels for monitoring only was initially estimated to be 35 years, which was based on preliminary pumping calculations, as stated in the April 2019 CRCA HS1 IWP (NASA, 2019a). However, data collection through aquifer testing, soil borings, geochemical data, and Year 1 performance of the HCS were applied to re-evaluate the treatment timeline of the HS and HCP. These data were used to calibrate the site-specific 3-dimensional groundwater model. Using Year 1 plume conditions as the baseline, this model predicted that COC concentration reduction to below GCTLs was viable after 12 years (NASA, 2021a). This treatment timeframe was re-visited following Year 2 of HCS operations using the initial model calibrations coupled with the actual Year 2 performance monitoring plume conditions to predict future plume behavior. These Year 2 groundwater model projections are presented in the groundwater modeling section of the Year 2 Annual PMR. Both non-pumping and pumping scenarios were evaluated, with continued HCS operation projected to reach GCTLs in 11 years (NASA, 2022). The Year 1 modeling projections were compared to plume conditions with general agreement after Year 4 of HCS operation, as further discussed in Section IV of this report.

1.8 YEAR 4 GROUNDWATER INTERIM MEASURES ASSESSMENT

As stated previously, the primary IM objective for CRCA HCS is to obtain and maintain hydraulic control of the dissolved-phase CVOC plume. The secondary objective is to reduce concentrations of CVOCs in HS1 and the HCP to support transition to an LTM program. These objectives were developed to provide a flexible treatment train approach where certain metrics such as remedial performance, plume dynamics, and natural attenuation characteristics can be evaluated to determine whether the remediation objectives have been met and ultimately reach an endpoint to the IM. Therefore, HCS operations may be modified, as appropriate, to achieve

IM objectives. Based on the latest performance monitoring data and results from the 2022-2023 supplemental DPT study, the next step will be to explore an LTM plan.

1.9 REPORT ORGANIZATION

The remainder of the PMR is organized as follows:

Section II: Hydraulic Containment System Process Description – presents a general summary of the components of the treatment train of the HCS.

Section III: System Operation, Maintenance, and Monitoring – details the O&M plan, which was implemented for system operation, discusses maintenance activities conducted, and evaluates the overall HCS performance.

Section IV: Year 4 Performance Monitoring – presents the strategy for and summarizes the results of groundwater sampling, groundwater level surveys, field measurements, sub-slab soil vapor monitoring analysis, and ambient air monitoring.

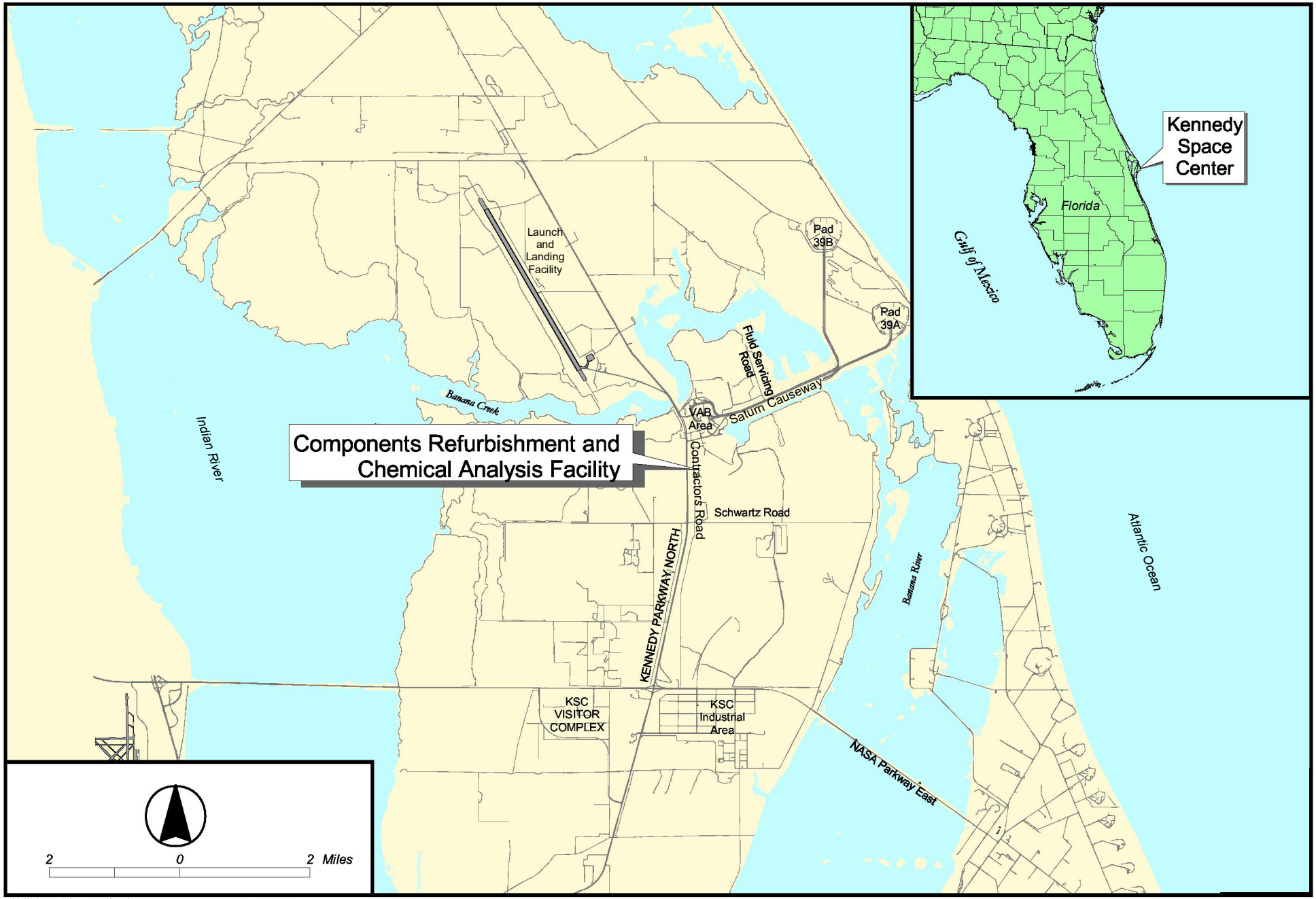
Section V: 2022-2023 Supplemental DPT Study – presents the strategy for and summarizes the results of the supplemental 2022-2023 DPT groundwater sampling events.

Section VI: Conclusions and Recommendations – summarizes the findings of this PMR and discusses recommendations based on this information.

Section VII: References – provides a list of references cited in this report.

FIGURE 1-1 LOCATION OF KENNEDY SPACE CENTER AND CRCA

SWMU 41, KENNEDY SPACE CENTER, FLORIDA



P:\GIS\KSC_NASA\MAPDOCS\APR\SWMU041_20090222.apr MJJ 02Nov09 Figure01

FIGURE 1-2 CRCA REGIONAL MAP

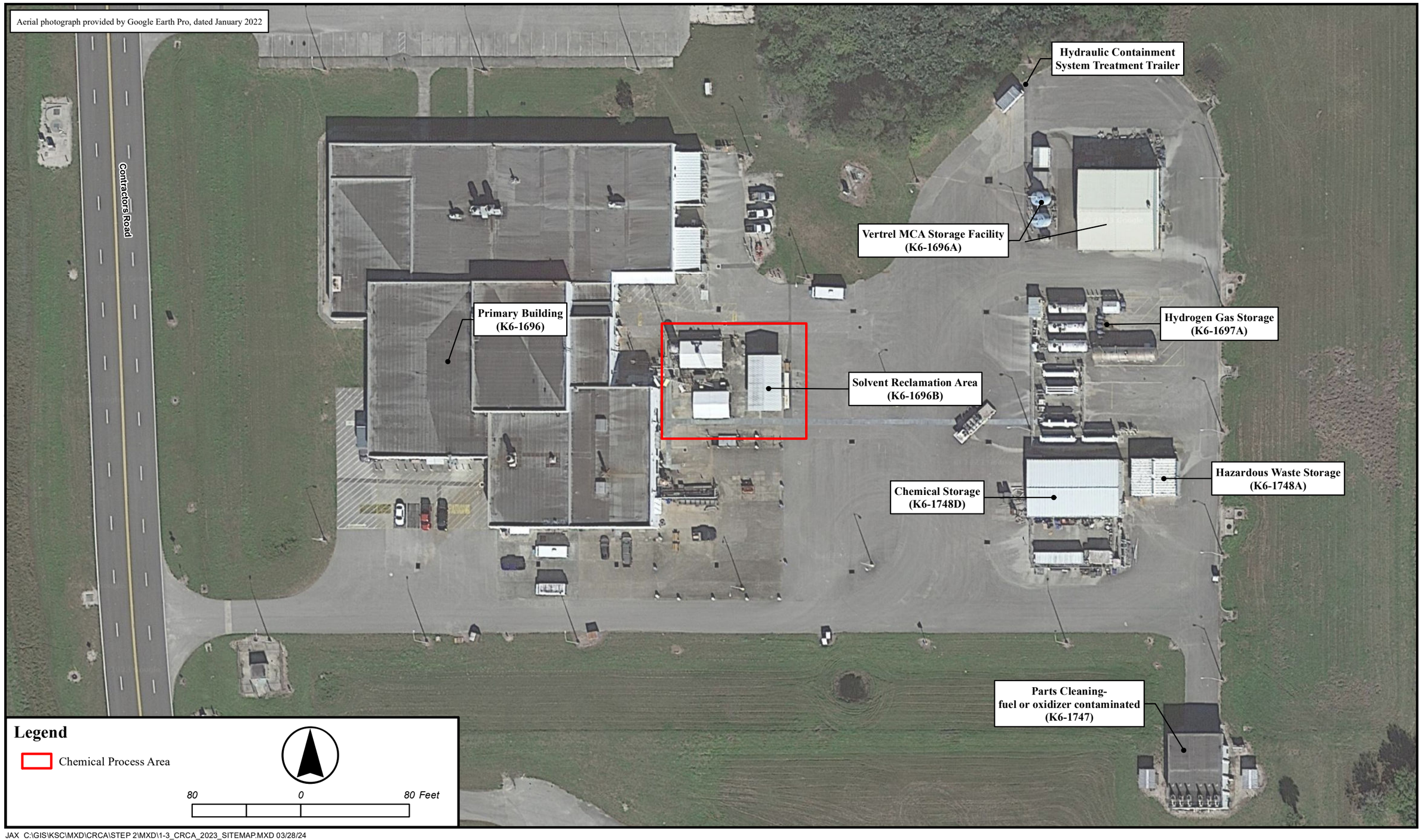
SWMU 041, KENNEDY SPACE CENTER, FLORIDA

JAX C:\GIS\KSC\MXD\CRCA\STEP 2\MXD\1-2_CRCA_SITEREGIONAL.MXD 01/17/24

FIGURE 1-3 CRCA SITE LAYOUT

SWMU 041, KENNEDY SPACE CENTER, FLORIDA

CRCA PMR4
Revision 0
May 2024

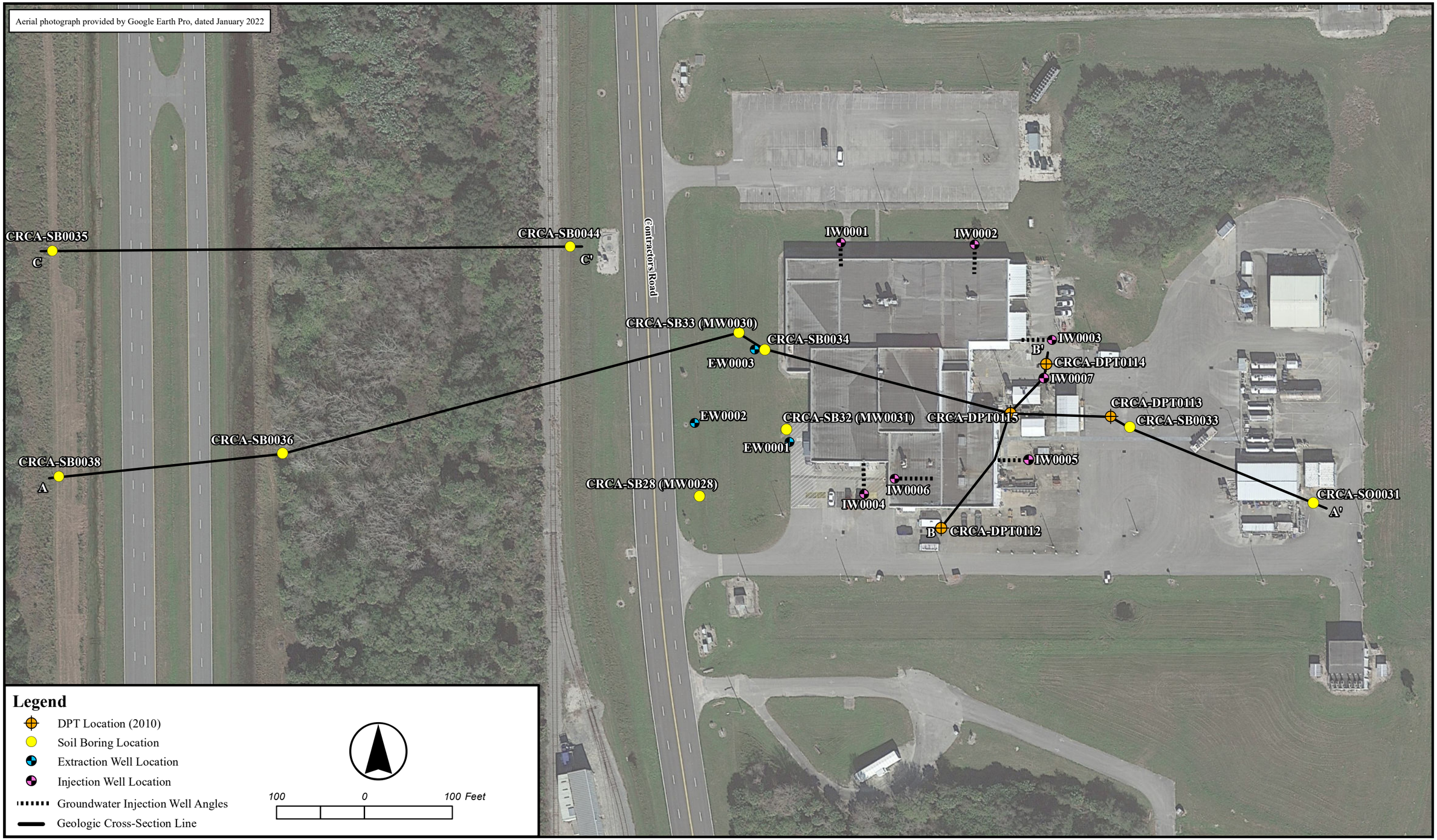


JAX C:\GIS\KSC\MXD\CRCA\STEP 2\MXD\1-3_CRCA_2023_SITEMAP.MXD 03/28/24

FIGURE 1-4 CRCA SOIL BORING TRANSECT MAP

SWMU 041, KENNEDY SPACE CENTER, FLORIDA

CRCA PMR4
Revision 0
May 2024

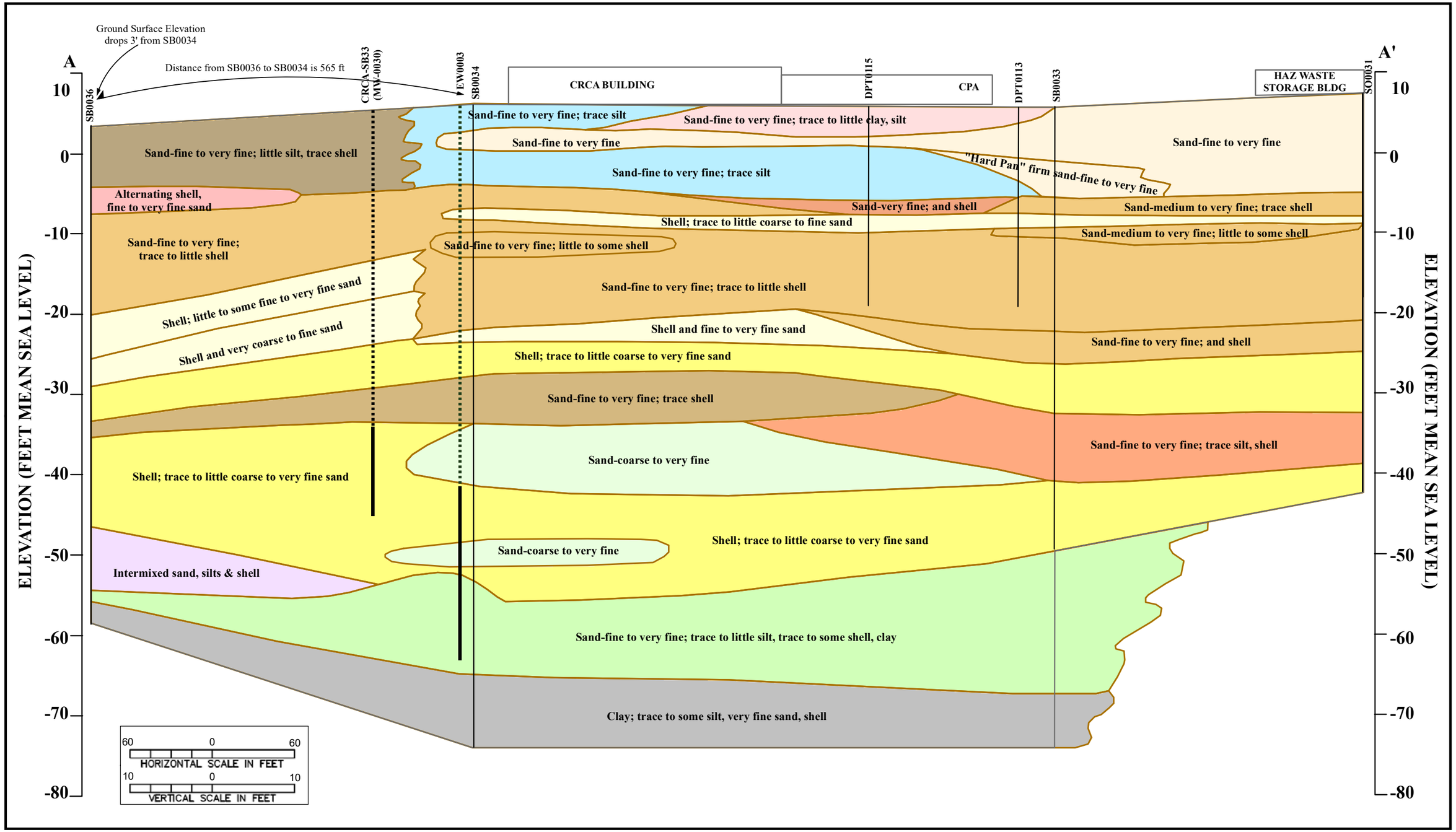


JAX C:\GIS\KSC\MXD\CRCA\STEP 2\MXD\1-4_CRCA_GEOLOGIC_CROSSX_090120.MXD 03/28/24

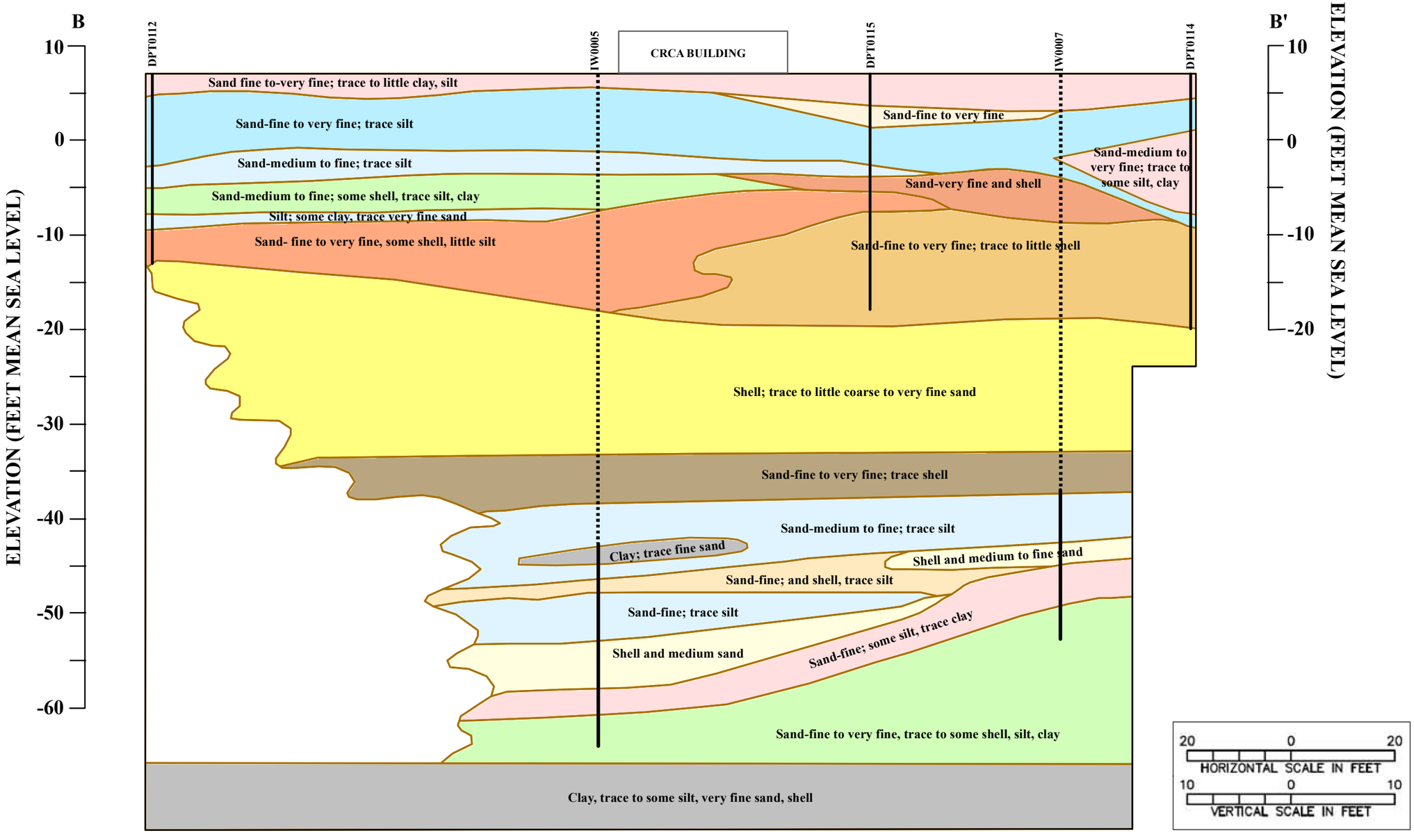
FIGURE 1-5 CRCA A-A' GEOLOGIC CROSS-SECTION

SWMU 041, KENNEDY SPACE CENTER, FLORIDA

CRCA PMR4
Revision 0
May 2024



JAX C:\GIS\KSC\MXD\CRCA\STEP 2\MXD\1-5_CRCA_AA_CROSSX_090820_LINES.MXD 02/19/24 KM

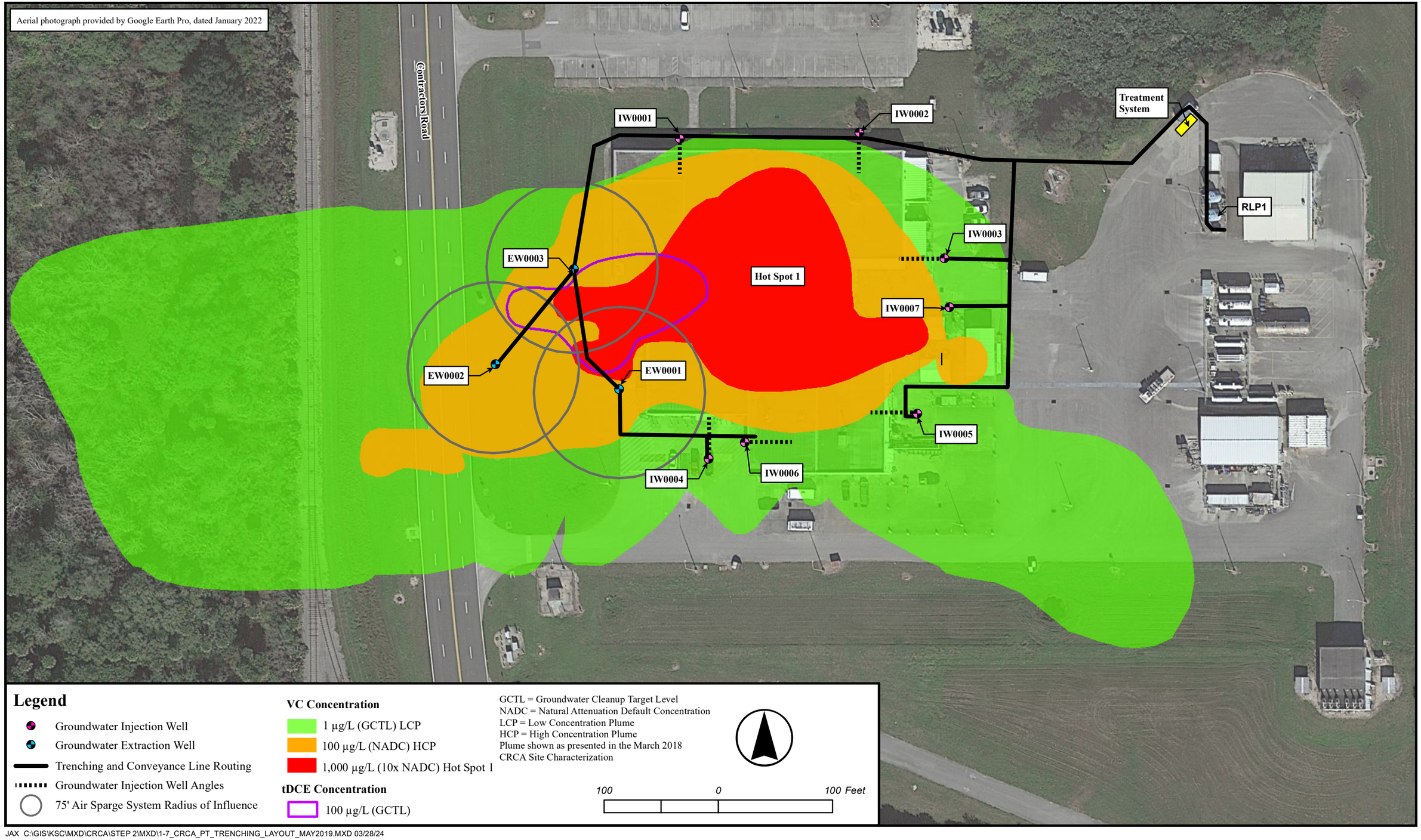


JAX C:\GIS\KSC\MXD\CRCA\STEP 2\MXD\1-6_CRCA_BB_CROSSX_090820_LINES.MXD 01/17/24 KM

FIGURE 1-7 CRCA 2018 HOT SPOT 1 GROUNDWATER PLUME AND HYDRAULIC CONTAINMENT SYSTEM LAYOUT

SWMU 041, KENNEDY SPACE CENTER, FLORIDA

CRCA PMR4
Revision 0
May 2024



JAX C:\GIS\KSC\MXD\CRCA\STEP 2\MXD\1-7_CRCA_PT_TRENCHING_LAYOUT_MAY2019.MXD 03/28/24

SECTION II
HYDRAULIC CONTAINMENT SYSTEM PROCESS DESCRIPTION

The HCS was installed between November 2018 and May 2019 in accordance with the October 2018 HS1 IMWP (NASA, 2018c) and the April 2019 HS1 IWP (NASA, 2019a). Components of the HCS include three EWs, seven IWs, a network of conveyance piping, and a treatment trailer. Additionally, 12 monitoring wells (MW0021 through MW0032), as detailed in the IMWP, were installed during HCS implementation and sampled at the prescribed frequency during Year 1 (NASA, 2020b), Year 2 (NASA, 2021a), Year 3 (NASA, 2022), and Year 4 (presented in Section IV of this report) to monitor performance of the HCS. Two of the installed wells continue to be sampled as part of the performance monitoring plan (MW0031 and MW0032), which is further discussed in Section IV. HCS installation activities were documented in the IM Implementation Report (NASA, 2019b).

Three EWs (EW0001, EW0002, and EW0003) were installed to depths of 63-feet bls in strategic locations downgradient from HS1 with overlapping radius of influence (ROI) (see Figure 1-7). Groundwater is extracted from the three deep interval EWs using dedicated 230-volt (V), two-horsepower (hp), single-phase, electric Grundfos 10E5 submersible pumps with a pump range of zero to 15 gallons per minute (gpm). These EWs draw contaminated groundwater with a design flow rate of 7.0 gpm. Extracted water is conveyed through dedicated one-inch high-density polyethylene (HDPE) piping installed approximately 24-inches bls. Flow rates of extracted fluids from individual EWs are individually totalized. Two 25-micron bag filters, plumbed in parallel arrangement, remove sediment from the water prior to entry into a 500-gallon polyurethane equalization tank (EQ tank). A 3-hp, 460-V pump transfers groundwater from the EQ tank into a QED Environmental System (QED) E-Z Tray Model 4.4 stainless steel air stripper with a three-phase, 460-V 3-hp blower. The treated water from the air stripper sump is pumped by a 3-hp 460-V transfer pump through two 50-micron bag filters plumbed in parallel.

Treated water is conveyed away from the HCS to dedicated one-inch HDPE piping installed 24-inches bls to the IWs. Seven IWs (IW0001 through IW0007) were installed at strategic locations upgradient of HS1 so that the injected treated water would hydraulically push the contaminated

groundwater toward the EWs. The IWs were designed to accept treated groundwater at a flow rate of 3.0 gpm.

SECTION III
SYSTEM OPERATION, MAINTENANCE, AND MONITORING

This section identifies the activities conducted and results obtained during full-scale Year 4 HCS OM&M activities at CRCA from November 2022 to September 2023.

3.1 OPERATIONAL SUMMARY

O&M activities conducted for the HCS during the Year 4 operating period included routine data collection (operational and analytical) and maintenance of system components. Data was obtained remotely by reviewing telemetry daily reports and conducting monthly site visits.

Full-scale O&M of the system was initiated on August 16, 2019. The prove-out O&M phase initially involved weekly sampling and daily system monitoring. System sampling frequency transitioned to monthly after September 2019, which has been maintained throughout the four-year operational period.

The cumulative runtime for the HCS was approximately 94% from November 2022 to September 2023. Based on totalizers from EW0001, EW0002, and EW0003, a total of 4,918,034 gallons of groundwater were treated during Year 4 of HCS operation. This reflects a lower average flow rate and operating pressure as compared to the previous year, likely attributed to the age of the pump. Analytical data from system influent and effluent show the system is effectively treating site tDCE and VC in extracted groundwater, with over 32 million gallons of groundwater treated since initial startup in 2019.

Operational data (flow rates, pressures, recovery volumes) for the reporting period are included in Table 3-1. Flow rates in each EW were monitored. Average flow rates ranged from 7.04 to 7.07 gpm during operation, which was slightly greater than or generally consistent with the design criteria of 7.0 gpm per EW pump. Flow rates in each IW were also monitored. Average flow rates ranged from 5.00 to 7.20 gpm per IW during operation, which exceeded the minimum design criteria of 3.0 gpm for IW pumps as presented in the IMWP (NASA, 2018c).

Runtime data for Year 4 operation of the HCS is presented in Table 3-2. Operational issues and corrective actions associated with Year 4 operations are summarized in Table 3-3. The system was shut down (partially or completely) for a total of 20 days from November 1, 2022, through September 30, 2023. The shutdowns were associated with groundwater sampling events, maintenance events, and facility shut down due to Hurricane Nicole in November 2022.

Laboratory analytical results for system influent and effluent samples are summarized in Table 3-4 (further discussed in Section 3.4). Laboratory analytical reports for the air stripper influent and effluent are included in Appendix B. The O&M field notes are included in Appendix C.

Additional details about O&M activities are presented below.

3.2 MAINTENANCE ACTIVITIES

Routine maintenance and inspection activities were conducted while the system was operating in a manner that minimized emergencies or unscheduled shutdowns. These activities were performed in accordance with the 2019 CRCA IWP (NASA, 2019a) and following guidance from the Site-Specific Health and Safety Plan (SSHASP) (NASA, 2021b).

3.2.1 System General Maintenance Activities. In general, routine O&M consists of observing and adjusting process conditions and checking the system for abnormal conditions (e.g., noise, leaks, temperature, vibration). During each site visit, the following routine activities were performed:

- Inspection of the HCS for leakage and excessive vibration noise, or temperature;
- Inspection of lubrication, as applicable;
- Assessment of differential pressure and flow rates across bag filter units and process equipment;
- Recording of system operation data and comparing data to design conditions and previous operating data;
- Observation and documentation of solids build-up in the EQ tank and air stripper; and

- Cleaning of air stripper trays, replacement of bag filters (if necessary), and replacement of pump seals (if necessary).

All equipment was depressurized and drained prior to maintenance activities.

3.2.2 System Repairs and Modifications. No major system repairs or modifications were required during Year 4 HCS operation.

3.3 MAJOR TREATMENT COMPONENTS EVALUATION

Components were evaluated to confirm achievement of the IM objective, proper functioning of system process components, and verification of treatment system performance. The following provides an overview of the Year 4 operational status of major system process components:

Extraction Wells – EWs performed at the designed groundwater extraction rates.

Groundwater Extraction Pumps – The Grundfos RediFlo 10E5 submersible pumps have operated effectively since initial startup. No evidence of sediment, mineral, or biological pump head fouling has been observed. As previously mentioned, the EW pumps experienced a decrease in efficiency during Year 4, leading to slightly lower average flow rates and operating pressure as compared to Year 3. This is likely due to the age of the pumps and wear from operating in an environment with contaminated groundwater.

Bag Filters – Two influent bag filters are located upstream of the EQ tank and two bag filters are located downstream of the air stripper. All bag filters have been replaced approximately monthly since the scaling reduction amendment, Redux 390, was introduced in late 2019. Prior to that, bag filters were replaced weekly or bi-weekly.

Equalization Tank – The double-walled, 500-gallon, EQ tank has operated reliably since initial startup, with the exception of the original level-sensor installation issue and the resulting overflow event, as documented in the Year 1 Annual PMR (NASA, 2021a), and when the breaker was tripped as stated in the Year 3 Annual PMR (NASA, 2023a). Otherwise, the pump controls within the tank have operated without issue. Typical maintenance of the EQ tank includes cleaning and replacement of floats and the totalizer. Future removal of settled solids

from the tank may be required if sediments accumulate to a level that interferes with process operations.

Air Stripper – The QED air stripper has operated as designed since installation. Factors influencing treatment efficiency, such as biofouling, are being controlled to the extent possible to maintain removal efficiencies. The trays are cleaned monthly to remove solids. The air stripper blower motor that was replaced during Year 3 continued to run smoothly through Year 4.

Transfer Pumps – The transfer pumps from the EQ tank and air stripper are in acceptable condition and operated without modification. On-going maintenance of the pumps will include replacement of pump and stator seals, as required for normal operations.

Injection Wells – IWs functioned adequately during the Year 4 reporting period. Discharges to the IWs are adjusted to maintain a flow rate of 2 to 3 gpm per well. However, based on site conditions, higher flow rates have been achieved since system startup. The potential for groundwater mounding around IWs is regularly monitored to confirm that the increased flow rates do not cause over-saturation. Slight increases in injection pressures were recorded from the 2019 startup through the first year of HCS operation and continued to increase during the second year. During Years 3 and 4, the injection pressures were maintained at a constant rate generally lower than the previous year. No further adjustments are anticipated at this time.

3.4 SYSTEM INFLUENT AND EFFLUENT SAMPLING RESULTS

Combined influent and combined effluent samples of extracted groundwater were collected prior to and after being treated by the air stripper, respectively, to analyze system efficacy. During Year 4 of HCS operation, influent and effluent samples were collected monthly, with the exception of December 2022, which was inadvertently missed.

All influent and effluent samples were analyzed for VOCs via EPA Method 8260D by Pace Analytical Services, LLC in West Columbia, South Carolina (November 2022 sampling event) or SGS North America, Inc. in Orlando, Florida (SGS) (January to September 2023 sampling events). Samples were also analyzed for PFAS via Liquid Chromatography Tandem Mass Spectrometry (LC/MS/MS) compliant with Table B-15 of the U.S. Department of Defense

(DoD) Quality Systems Manual Version 5.3. This PFAS data is being evaluated as part of an independent PFAS Site Assessment Report at CRCA, to be submitted under separate cover. Influent and effluent data for site COCs (tDCE and VC) from baseline through the fourth year of HCS operation are presented in Table 3-4.

The following summarizes VOC results from the influent and effluent samples collected during the Year 4 operating period:

- Influent concentrations continued to show an overall reduction of VC, with relatively stable and minor fluctuations during the fourth year of HCS operation.
- Since system startup, the influent VC concentrations have gone from 130 µg/L in July 2019, increased to the highest result of 260 µg/L in August 2019 as contaminants were drawn toward the EWs, and steadily decreased to 2.1 µg/L in September 2023.
- All tDCE influent concentrations continue to be below method detection limits (non-detect) and GCTLs during Year 4, as they have been since baseline, with all values non-detect since October 2021.
- All effluent concentrations of tDCE and VC were non-detect during Year 4 of HCS operation.

Table 3-1. Hydraulic Containment System Year 4 Operational Details

Date	PID Air Stripper outlet	Blower Pressure	After Damper Pressure	Air Stripper Differential Pressure	Equalization Tank Pump			Air Stripper Pump		
					Totalizer	Pressure	Flow Rate	Totalizer	Pressure	Flow Rate
	ppmv	in wc	in wc	in wc	gal	psi	gpm	gal	psi	gpm
11/21/22	0	20.0	20.0	20.0	21,987,082	26.0	30.00	14,794,187	30.0	37.50
12/18/22	0	20.0	20.0	20.0	23,006,519	22.0	30.00	14,812,693	25.0	37.50
01/31/23	0	20.0	20.0	20.0	24,686,742	22.0	30.00	14,943,153	25.0	37.50
02/21/23	0	20.0	20.0	20.0	25,262,653	22.0	30.00	15,497,452	25.0	37.50
03/20/23	0	20.0	20.0	20.0	25,838,564	22.0	30.00	16,051,751	25.0	37.50
04/18/23	0	20.0	20.0	20.0	26,414,476	22.0	30.00	16,606,050	25.0	37.50
05/22/23	0	20.0	20.0	20.0	26,990,387	22.0	30.00	17,160,349	25.0	37.50
06/20/23	0	20.0	20.0	20.0	27,566,298	22.0	30.00	17,714,648	25.0	37.50
07/18/23	0	20.0	20.0	20.0	28,142,209	22.0	30.00	18,268,947	25.0	37.50
08/21/23	0	20.0	20.0	20.0	28,718,120	22.0	30.00	18,823,246	25.0	37.50
09/30/23	0	20.0	20.0	20.0	29,238,430	22.0	30.00	19,360,971	25.0	37.50

Date	Injection wells (IW)													
	IW0001		IW0002		IW0003		IW0004		IW0005		IW0006		IW0007	
	Pressure	Flow Rate	Pressure	Flow Rate	Pressure	Flow Rate	Pressure	Flow Rate	Pressure	Flow Rate	Pressure	Flow Rate	Pressure	Flow Rate
	psi	gpm	psi	gpm	psi	gpm	psi	gpm	psi	gpm	psi	gpm	psi	gpm
11/21/22	16.0	7.50	12.0	7.50	18.0	6.00	18.0	6.00	18.0	5.00	14.0	4.29	15.0	5.00
12/18/22	16.0	7.50	12.0	7.50	18.0	6.00	18.0	6.00	18.0	5.00	14.0	4.29	15.0	5.00
01/31/23	12.0	7.50	12.0	7.50	18.0	6.00	18.0	6.00	18.0	5.00	15.0	6.00	15.0	5.00
02/21/23	12.0	7.50	12.0	7.50	18.0	6.00	18.0	6.00	18.0	5.00	15.0	6.00	15.0	5.00
03/20/23	12.0	7.50	12.0	7.50	18.0	6.00	18.0	6.00	18.0	5.00	15.0	6.00	15.0	5.00
04/18/23	12.0	7.50	12.0	7.50	18.0	6.00	18.0	6.00	18.0	5.00	15.0	6.00	15.0	5.00
05/22/23	12.0	7.50	12.0	7.50	18.0	6.00	18.0	6.00	18.0	5.00	15.0	6.00	15.0	5.00
06/20/23	15.0	6.67	12.0	6.00	18.0	6.00	18.0	6.00	18.0	5.00	15.0	6.00	15.0	5.00
07/18/23	15.0	6.67	12.0	6.00	18.0	6.00	18.0	6.00	18.0	5.00	15.0	6.00	15.0	5.00
08/21/23	15.0	6.67	12.0	6.00	18.0	6.00	18.0	6.00	18.0	5.00	15.0	6.00	15.0	5.00
09/30/23	15.0	6.67	12.0	6.00	18.0	6.00	18.0	6.00	18.0	5.00	15.0	6.00	15.0	5.00
Average	13.8	7.20	12.0	6.95	18.0	6.00	18.0	6.00	18.0	5.00	14.8	5.69	15.0	5.00

Date	Extraction Wells (EW)					
	EW0001		EW0002		EW0003	
	Pressure	Flow Rate	Pressure	Flow Rate	Pressure	Flow Rate
	psi	gpm	psi	gpm	psi	gpm
11/21/22	24.0	6.90	30.0	7.14	26.0	7.06
12/18/22	24.0	7.06	20.0	7.06	22.0	7.06
01/31/23	18.0	7.06	20.0	7.06	22.0	7.06
02/21/23	18.0	7.06	20.0	7.06	22.0	7.06
03/20/23	18.0	7.06	20.0	7.06	22.0	7.06
04/18/23	18.0	7.06	20.0	7.06	22.0	7.06
05/22/23	18.0	7.06	20.0	7.06	22.0	7.06
06/20/23	18.0	7.06	20.0	7.06	22.0	7.06
07/18/23	18.0	7.06	20.0	7.06	22.0	7.06
08/21/23	18.0	7.06	20.0	7.06	22.0	7.06
09/30/23	18.0	7.06	20.0	7.06	22.0	7.06
Average	19.1	7.04	20.9	7.07	22.4	7.06

Notes:

PID = Photoionization detector.

gpm = gallons per minute.

psi = pounds per square inch.

gal = gallon.

in wc = inches of water column.

ppmv = parts per million by volume.

The differences in recorded flow between the influent, equalization tanks, air stripper meters, and the calculated readings from other meters may be attributed to water quality sensitivity, meters failing, pausing, and plugging up from time to time between maintenance events. During maintenance, these issues are assessed to see if cleaning or replacement is needed.

Table 3-2. CRCA Year 4 Hydraulic Containment System Runtime

Month	Days in the Month	Hours in the Month	Hours System Down	Days System Down	Operational Run Time	Downtime Contributing Factor
Nov-22	30	720	96	4	87%	Monthly O&M and air stripper cleaning; powered down for Hurricane Nicole.
Dec-22	31	744	24	1	97%	Monthly O&M and air stripper cleaning.
Jan-23	31	744	24	1	97%	Monthly O&M and air stripper cleaning.
Feb-23	28	672	24	1	96%	Monthly O&M and air stripper cleaning.
Mar-23	31	744	24	1	97%	Monthly O&M and air stripper cleaning.
Apr-23	30	720	72	3	90%	Monthly O&M and air stripper cleaning; PLC froze, system on but did not operate.
May-23	31	744	24	1	97%	Monthly O&M and air stripper cleaning.
Jun-23	30	720	48	2	93%	Monthly O&M and air stripper cleaning; PLC froze, system on but did not operate.
Jul-23	31	744	24	1	97%	Monthly O&M and air stripper cleaning.
Aug-23	31	744	48	2	94%	Monthly O&M and air stripper cleaning; PLC froze, system on but did not operate.
Sep-23	30	720	72	3	90%	Monthly O&M and air stripper cleaning; PLC froze, system on but did not operate.
Total	334	8,016	480	20	94%	

Notes:

PLC = Programable Logic Controller.

O&M = Operation and Maintenance.

Table 3-3. CRCA Year 4 Hydraulic Containment System Maintenance Events

System Component	Issue	Issue Date	Resolution	Resolution Date
Entire System	Hurricane Nicole	11/9/2022	Powered down for Hurricane Nicole; continued as normal after shut down.	11/12/2022
PLC	Froze, system on but did not operate	4/27/2023	Replaced USB storing system data and reset	4/28/2023
PLC	Froze, system on but did not operate	6/25/2023	Replaced USB storing system data and reset	6/25/2023
PLC	Froze, system on but did not operate	8/15/2023	Replaced USB storing system data and reset	8/15/2023
PLC	Froze, system on but did not operate	9/14/2023	Replaced USB storing system data and reset	9/15/2023

Notes:

PLC = Programable Logic Controller.

USB = Universal Serial Bus.

Table 3-4. Influent and Effluent Analytical Results

Date	tDCE		VC	
	Influent	Effluent	Influent	Effluent
7/23/2019	**2.3**	0.73 U	**130**	0.71 U
7/24/2019	**4.1**	0.73 U	**160**	0.71 U
7/25/2019	0.73 U	0.73 U	**160**	0.71 U
7/29/2019	**3.2**	0.73 U	**150**	0.71 U
7/30/2019	**4.3**	0.73 U	**160**	0.71 U
8/12/2019	**3.9**	0.73 U	**260**	0.71 U
8/13/2019	**6.8**	0.73 U	**220**	0.71 U
8/20/2019	**7.6**	0.73 U	**230**	0.71 U
8/26/2019	**9.2**	0.73 U	**220**	0.71 U
9/11/2019	**6.3**	0.73 U	**200**	0.71 U
10/02/2019	**7.4**	0.73 U	**170**	0.71 U
11/05/2019	**4.5**	0.73 U	**110**	0.71 U
12/10/2019	**3.5**	0.73 U	**97**	0.71 U
1/14/2020	**3.3**	0.73 U	**79**	0.71 U
2/13/2020	**4.6**	0.73 U	**87**	0.71 U
3/12/2020	**3.2**	0.73 U	**54**	0.71 U
4/9/2020	**2.8**	0.73 U	**48**	0.71 U
5/14/2020	**3.1**	0.73 U	**70**	0.71 U
6/8/2020	**1.7 I**	0.73 U	**42**	0.71 U
7/14/2020	**2.1**	0.73 U	**50**	0.71 U
8/13/2020	**1.1 I**	0.73 U	**26**	0.71 U
9/16/2020	**1.2 I**	0.73 U	**18**	0.71 U
10/27/2020	1	0.73 U	**20**	0.71 U
11/11/2020	**1.2 I**	0.73 U	**23**	0.71 U
12/21/2020	**1.3 I**	0.73 U	**16**	0.71 U
1/19/2021	0.73 U	0.73 U	**13**	0.71 U
2/17/2021	0.73 U	0.73 U	**19**	0.71 U
3/18/2021	0.73 U	0.73 U	**13**	0.71 U
4/22/2021	**0.81 I**	0.73 U	**19**	0.71 U
5/20/2021	**0.76 I**	0.73 U	**13**	0.71 U
6/17/2021	0.73 U	0.73 U	**12**	0.71 U
7/23/2021	0.73 U	0.73 U	**12**	0.71 U
8/24/2021	0.73 U	**2.9**	**9.8**	0.71 U
10/7/2021	0.73 U	0.73 U	**11**	0.71 U
11/10/2021	0.73 U	0.73 U	**3.0**	0.71 U
12/14/2021	0.73 U	0.73 U	**3.3**	0.71 U
2/14/2022	0.73 U	0.73 U	**2.8**	0.71 U
3/22/2022	0.73 U	0.73 U	**2.9**	0.71 U
4/18/2022	0.80 U	0.80 U	**2.6***	0.80* U
5/24/2022	0.80 U	0.80 U	**3.0**	0.80 U
6/29/2022	0.80 U	0.80 U	**2.9***	0.80* U

Table 3-4. Influent and Effluent Analytical Results (continued)

Date	tDCE		VC	
	Influent	Effluent	Influent	Effluent
7/21/2022	0.80 U	0.80 U	**3.2**	0.80 U
8/15/2022	0.80 U	0.80 U	**2.9**	0.80 U
9/8/2022	0.80 U	0.80 U	**3.8**	0.80 U
10/27/2022	0.80 U	0.80 U	**2.0**	0.80 U
11/30/2022	0.80 U	0.80 U	**3.0**	0.80 U
1/25/2023	0.22 U	0.22 U	**2.4**	0.41 U
2/28/2023	0.22 U	0.22 U	**1.9**	0.41 U
3/27/2023	0.22 U	0.22 U	**1.7**	0.41 U
4/28/2023	0.22 U	0.22 U	0.41 U	0.41 U
5/9/2023	0.22 U	0.22 U	**1.9**	0.41 U
6/23/2023	0.22 U	0.22 U	**2.6**	0.41 U
7/21/2023	0.22 U	0.22 U	**2.7**	0.41 U
8/28/2023	0.22 U	0.22 U	**2.3**	0.41 U
9/26/2023	0.22 U	0.22 U	**2.1**	0.41 U

Notes:

Concentrations in µg/L.

Shading indicates State of Florida Groundwater Cleanup Target Level exceedance, tDCE = 100 µg/L, VC = 1 µg/L.

Bolding indicates a concentration is greater than the method detection limit (MDL).

tDCE result for the August 2021 influent was below MDL, but inexplicably slightly elevated in the effluent.

No influent/effluent samples were collected in September 2021 due to system shutdown for blower repair.

No influent/effluent sampling conducted in January and December 2022 due to an oversight.

* Indicates that the influent and effluent sample locations were likely switched, so results on table reversed from lab reports.

The analytical reports presenting these data also include per-and polyfluoroalkyl substances (PFAS) results which will be presented in a separate report.

tDCE = trans-1,2-dichloroethene.

VC = vinyl chloride.

I = Value was reported above the laboratory method detection limit, but below the practical quantitation limit.

U= Value was reported as below the method detection limit, therefore the detection limit is show

SECTION IV
YEAR 4 PERFORMANCE MONITORING

This section includes the performance monitoring activities and results from the Year 4 HCS operating period, conducted between November 2022 and September 2023. These activities included groundwater level gauging and sampling, and sub-slab soil gas and ambient air sampling. Tables 4-1 to 4-7 and Figures 4-1 to 4-15 include Year 4 sampling activities and results.

Groundwater monitoring was implemented at CRCA to ensure that hydraulic containment of the groundwater plume is maintained during HCS operation. The monitoring program also evaluates the overall extent of the plume and changes over time. Reduction in CVOC concentrations is evaluated to support transition to LTM once IM objectives are achieved. Figure 4-1 illustrates the Year 4 sampling plan, including the locations of monitoring well, IW, EW, sub-slab soil gas sampling, and ambient air sampling locations. The projected MW0019 relocation, as described in the Year 3 PMR (NASA, 2023a) remains pending (see Figure 4-2).

Year 4 performance monitoring activities and results were presented to the KSCRT during the November/December 2023 meeting (Meeting Minute 2311-M10, Decisions 2311-D21 to D26).

4.1 GROUNDWATER SAMPLING ACTIVITIES

Groundwater sampling during Year 4 of HCS operation consisted of sampling events conducted in January 2023 and July 2023. Each event consisted of sampling six monitoring wells (two intermediate wells and four deep wells). Of note, the four deep wells were scheduled for quarterly sampling during Year 4; however; VOC analysis was inadvertently omitted from the analyte list when these wells were sampled in April 2023 during a concurrent PFAS study. Therefore, a total of 12 groundwater samples were collected during the two performance monitoring events from six monitoring wells (MW0002, MW0013, MW0018, MW0019, MW0031, and MW0032), as summarized in the table below.

Year 4 Groundwater Monitoring Events

Date of Groundwater Sampling	Number of Monitoring Wells Sampled
January 24-26, 2023	6
July 20, 2023	6

The Year 4 performance monitoring wells and sampling rationales are presented in Table 4-1.

Groundwater samples were collected using low-flow sampling techniques at each sample location (Figure 4-1). Monitoring well purging and sampling activities were conducted in accordance with the Sampling and Analysis Plan (SAP) for the RCRA Corrective Action Program at KSC (NASA, 2017) and FDEP Standard Operating Procedures (SOPs). Both preserved and unpreserved samples were collected for samples from monitoring wells MW0002, MW0013, MW0018, and MW0019, due to the potential for excess effervescing in the preserved samples as noted in previous sampling events. Although unpreserved vials were used, all samples were analyzed within appropriate specified hold times. Laboratory analytical reports are provided in Appendix B. Field forms and the associated notes for each sampling event are provided in Appendix D, including groundwater sampling log sheets and chain-of-custody forms. Purge water collected during groundwater sampling was managed as investigation derived waste (IDW) in accordance with KSC IDW management protocols, then discharged into the treatment system for processing. Purge logs are included in Appendix D.

All groundwater samples collected during the Year 4 sampling events were analyzed by SGS for VOCs via EPA Method 8260D.

4.2 GROUNDWATER ANALYTICAL RESULTS

VOC results for the Year 4 sampling events are discussed below. A summary of results for baseline and all performance monitoring events to date for the site's groundwater COCs (tDCE and VC) are presented in Table 4-2, and shown on Figures 4-3 and 4-4 for the intermediate and deep intervals, respectively. Figure 4-5 illustrates the combined intermediate and deep plumes based on data from the last sampling event in Year 4 (July 2023). An evaluation of overall plume conditions and HCS performance is provided in Section 4.6.

4.2.1 January 2023 (Year 4, Sampling Event 1). This sampling event was conducted from January 24-26, 2023. Six monitoring wells (MW0002, MW0013, MW0018, MW0019, MW0031, and MW0032) were sampled and analyzed for VOCs during this event. Two of the wells are screened within the intermediate interval (MW0002 at 30 to 35 feet bls and at MW0013 at 25 to 30 feet bls). The remaining four are screened in the deep interval (MW0018, MW0019, MW0031, and MW0032), from 53 to 63 feet bls.

Intermediate Interval: Intermediate well MW0013 had a VC GCTL exceedance of 2.9 µg/L, and at MW0002, the VC result was non-detect. This marked the first VC result below the GCTL at MW0002. tDCE results remained non-detect at both intermediate wells during the January 2023 performance monitoring event.

Deep Interval: Within the deep interval, three of the four deep wells showed VC concentrations exceeding the GCTL at 22.3 µg/L (MW0018), 8.6 µg/L (MW0031), and 9.5 µg/L (MW0032). At MW0019, the VC result was non-detect. In January 2023, all tDCE concentrations were non-detect at the four locations sampled.

4.2.2 July 2023 (Year 4, Sampling Event 2). This event was conducted on July 20, 2023. The same six monitoring wells sampled in January 2023 were also sampled during this event.

Intermediate Interval: Intermediate interval wells MW0002 and MW0013 both had VC detections in July 2023. At MW0013, this well continued to represent the northern extent of the LCP within the intermediate interval, with VC concentrations decreasing from 2.9 µg/L in January 2023 to 1.5 µg/L in July 2023. The VC result at MW0002 was below the GCTL. tDCE concentrations were non-detect (MW0013) or below the GCTL (MW0002) during this sampling event.

Deep Interval: All four deep interval wells continued to exhibit non-detect tDCE results during the July 2023 sampling event. GCTL exceedances of VC were noted at two of the four deep interval performance monitoring wells. Monitoring well MW0032, downgradient from the HCS, and MW0018 adjacent to the eastern side of the primary building, had concentrations exceeding the GCTL at 8.4 µg/L and 22.1 µg/L, respectively. These concentrations indicated slight reductions since January 2023. VC results at the remaining two deep interval wells (MW0031

and MW0019) were non-detect. At MW0031, VC concentrations went from greater than the GCTL (8.6 µg/L) in January 2023 to non-detect six months later. At MW0019 concentrations remained non-detect during the two consecutive sampling events of Year 4.

4.3 GROUNDWATER FIELD MEASUREMENTS

Temperature, pH, specific conductance, dissolved oxygen, turbidity, and oxidation reduction potential (ORP) were measured and recorded in the field during groundwater sampling. These field parameters were measured to document that groundwater conditions were stabilized in accordance with the FDEP SOP for Groundwater Sampling (FS 2200) (FDEP, 2017) to ensure that samples were representative of surficial aquifer conditions. Sample log sheets prepared in the field are included in Appendix D. All purge and decontamination water generated through sampling was containerized and transferred to the HCS for treatment. The field parameter data are summarized in Table 4-3, and further discussed below.

During the January 2023 groundwater sampling event (Year 4, Sampling Event 1) groundwater temperature, pH, specific conductance, dissolved oxygen, turbidity, and ORP readings stabilized via purging to within acceptable ranges in the six wells sampled.

During the July 2023 groundwater sampling event (Year 4, Sampling Event 2) groundwater temperature, pH, specific conductance, dissolved oxygen, and ORP readings stabilized to within acceptable ranges in the six wells sampled. MW0032 had a relatively high level of turbidity (30.00 NTU), exceeding the stabilization limit of less than 20 NTUs. Per the FDEP SOP (FDEP, 2017), attempts were made to decrease turbidity after four turbidity readings were taken during continuous pumping, two minutes apart. During the January 2023 sampling event, turbidity at MW0032 stabilized at 0.77 NTU, therefore, the more turbid conditions six months later may have resulted from external environmental factors. All other parameters were stable and sampled per FDEP SOP (FDEP, 2017), so purging was discontinued.

At MW0032, high turbidity levels have historically been observed since being installed in December 2018, prior to HCS startup. The well completion log indicates the water was cloudy at the start of development and clear at the end after 0.5 hours of purging. Review of historical turbidity readings show a very high reading at baseline (799 NTU in June 2019, with non-detect

tDCE and VC results). Following HCS startup, stabilized turbidity readings at the time of sampling ranged from 5.65 to 15.80 NTU (Year 1), 5.74 to 36.40 NTU (Year 2), and 13.20 to 28.20 NTU (Year 3), with VC being detected throughout this timeframe up to 17 µg/L (with tDCE results all non-detect). High turbidity and "cloudy" water have also been recorded during initial purge readings before stabilization (for example, in July 2022, the first purge reading was 221.83 NTU and cloudy before the water became clear with final turbidity reading of 15.72 NTU). The cause of high turbidity readings in this well is unknown, although it could be due to fine sediments embedded in the filter pack or a compromised screen. Re-development of this well will be conducted during the Year 5 operational period and will be continually monitored.

4.4 GROUNDWATER LEVEL MEASUREMENTS

During each sampling event, water levels were measured at all six performance monitoring wells and other on-site monitoring wells to provide groundwater elevation data to develop groundwater flow contours. Prior to water level gauging, the monitoring wells were uncapped to allow hydrostatic and atmospheric pressures to equilibrate so that a representative groundwater level could be measured. The Year 4 depth to groundwater measurements and corresponding elevations are presented in Table 4-4.

Groundwater contour maps were prepared for the Year 4 sampling events in January 2023 and July 2023. These maps, presented as Figures 4-6 through 4-11, illustrate interpreted groundwater flow in different depth intervals (shallow interval, intermediate interval, and deep interval) to better understand plume dynamics and influence of HCS operations on groundwater flow direction.

In general, the Year 4 groundwater elevation data showed that groundwater flow continued to vary by depth within the surficial aquifer system, based on well location and time lapsed relative to system operation. For comparison, hydrogeologic conditions previously observed at the site during baseline and the first two years of HCS operation are presented and discussed in the groundwater modeling report section of the Year 2 Annual PMR (NASA, 2022) and in the Year 3 Annual PMR (NASA 2023a). The results of the Year 4 synoptic groundwater level measurement events are discussed below.

4.4.1 Potentiometric Surface of the Shallow Interval. Water levels in the shallow interval were measured in 14 wells during the January 25, 2023, and July 28, 2023, synoptic water level measurement events. The corresponding interpreted groundwater level contour maps are shown on Figures 4-6 and 4-7, respectively.

During the June 2019 baseline performance monitoring event, groundwater contours within the shallow interval showed a depressional area beneath the eastern edge of the primary building surrounded by slight mounding to the west, resolving to western flow toward Contractors Road. Once pumping from the EWs and the reintroduction of treated groundwater via the IWs began, flow within the shallow interval became more variable, with mounding common beneath the northeastern section of the building in the vicinity of MW0011. Similarly, from HCS implementation to Year 4, groundwater lows were typically noted within the CPA to the east at MW0005. West of the primary building, flow was typically to the west and southwest from HCS implementation to Year 4.

Data from the January 2023 event showed a groundwater high at MW0011, likely induced by IWs to the north and east, with flow away from that well generally toward the southeast and southwest at a hydraulic gradient of approximately 0.002 feet per foot (Figure 4-6). Groundwater flow was observed to the south at a hydraulic gradient of approximately 0.008 feet per foot, toward an isolated groundwater depression at MW0003, located adjacent to the eastern side of the primary building. Convergent flow was seen at MW0008 toward the depressional area at MW0003 and continued to the southwest, past MW0014 and toward Contractors Road at a hydraulic gradient of approximately 0.003 feet per foot.

In July 2023 (Figure 4-7), southwestern flow within the shallow interval was consistent with flow observed during the January 2023 synoptic event. A hydraulic high remained within the shallow interval at MW0011, with flow to the southwest, south, and southeast at a hydraulic gradient of approximately 0.002 feet per foot. To the east of the primary building, groundwater flowed downgradient across the CPA, toward MW0007 at a hydraulic gradient of approximately 0.001 feet per foot. Convergent flow shifted southward to include MW0009, marking the eastern edge of the primary building from which eastern and western flow was observed. From the

center of the primary building, groundwater flow became more westward as compared to January 2023, continuing this westward trend toward Contractors Road.

At the conclusion of Year 4, groundwater within the shallow interval continued to show influence from the IWs to the north, with mounding in the vicinity of MW0011 and depressional areas in the vicinity of the CPA. EWs to the west likely induced more westward flow toward Contractors Road, coupled with flow trending toward the lower-lying areas to the west.

4.4.2 Potentiometric Surface of the Intermediate Interval. Water levels were measured at nine intermediate interval wells during the January 25, 2023, and July 28, 2023, synoptic water level measurement events. The resulting groundwater contour maps are shown on Figures 4-8 and 4-9, respectively.

During the June 2019 baseline performance monitoring event, groundwater contours within the intermediate interval showed flow toward the northern wall of the primary building with areas of high groundwater elevation observed along the eastern wall. As system operation commenced, flow became more westward, toward the three EWs. This westward flow trend continued over time, with generally uniform flow direction observed. Some variations occurred, such as the depressional area within the area of the CPA at MW0002 which developed during the October 2021 synoptic event, probably due to groundwater injection at the IWs to the north and south of the CPA. Westward groundwater flow generally continued within the intermediate interval through Year 4 of HCS operation as described below.

During the January 2023 event, the intermediate interval groundwater contour map (Figure 4-8) showed that groundwater flow was observed at a uniform hydraulic gradient to the west toward Contractors Road at a hydraulic gradient of approximately 0.001 feet per foot. Slight southwestern flow was observed from the area of the CPA, becoming more westward toward the western wall of the primary building.

In July 2023, groundwater continued a general flow to the west. A hydraulic high was observed in the CPA near MW0002, with flow to the northwest, west and southwest, resolving to westward flow at a hydraulic gradient of approximately 0.002 feet per foot (Figure 4-9). From

the center of the primary building, flow became more undulating in the vicinity of MW0013, but continued its westward trend toward Contractors Road.

In summary, groundwater within the intermediate interval during Year 4 continued to show a general westward trend toward the three EWs, generally consistent with flow from previous years of operation. Influence from the IWs to the north and south of the CPA may have induced the northwestern and southwestern flow element observed during July 2023. Similarly, IWs to the north and south of the primary building may have caused the undulating groundwater contours noted in the vicinity of MW0013.

4.4.3 Potentiometric Surface of the Deep Interval. Water levels were measured in 10 deep interval wells during the January 25, 2023, and July 28, 2023, synoptic water level measurement events. The resulting groundwater contour maps are shown on Figures 4-10 and 4-11, respectively.

During the June 2019 baseline performance monitoring event, groundwater within the deep interval showed a general flow from the southwest and southeast toward the northern wall of the primary building. After HCS implementation, flow maintained a southwestern component, but became more westward, probably due to the pumping of the three EWs located between the primary building and Contractors Road. This general westward flow trend continued through Year 4 of HCS operation, with the exception of the October 24, 2022 event (Year 3) when a depressional area near MW0019, located inside the western section of the primary CRCA building, was observed. This depressional area may be attributed to the timing of treated groundwater reintroduction at the IWs to the north and south of the primary building, creating localized mounding, thereby inducing downgradient flow toward MW0019. Within the deep interval, the areas of the highest groundwater elevations were consistently found from Year 1 to Year 4 of HCS operation in the vicinity of the CPA.

For the January 2023 event, the deep interval groundwater contour map (Figure 4-10) showed a generalized westward flow within this interval. A groundwater high was noted at MW0018, east of the eastern edge of the primary building, with a western flow at a hydraulic gradient of approximately 0.003 feet per foot, and southwest, bending to the northwest in the vicinity of

MW0025, flowing toward MW0031 at a hydraulic gradient of approximately 0.0009 feet per foot. Flow converged toward the center of the building at MW0019, then undulated southwest to northwest before resolving to the west toward Contractors Road. Groundwater flow generally continued to the west at a decreased hydraulic gradient of approximately 0.0006 feet per foot across the railroad tracks toward the low-lying area of MW0032.

In July 2023, groundwater flow within the deep interval continued a westward trend, with reduced northwestern and southwestern variation (Figure 4-11). From the groundwater high at MW0018, western flow was observed at a hydraulic gradient of approximately 0.003 feet per foot. Here, flow occurred toward the northwest at a decreased hydraulic gradient of approximately 0.001 feet per foot and southwest and maintained a general west to southwestern trend toward MW0032 at a slightly increased hydraulic gradient of approximately 0.002 feet per foot. These flow patterns are generally consistent with those of previous years of HCS operation.

In summary, groundwater flow within the deep interval became more westward with the implementation of HCS operation with generally consistent hydraulic gradients. This westward flow was likely influenced by the pumping of EWs to the west, with undulating contours a possible result of nearby IWs. Generally, this westward flow trend continued through Year 4 of HCS operation.

4.5 AIR MONITORING ACTIVITIES AND RESULTS

This section presents the sub-slab soil gas and ambient air sampling activities and results from the Year 4 HCS operating period, conducted between November 2022 to September 2023. These sampling activities were conducted to assess and assure the health and safety of site workers with respect to subsurface contaminants and HCS operation. The location of the sub-slab soil gas and ambient air sampling points are shown on Figure 4-12. The results of the sub-slab soil gas and ambient air sampling from baseline through Year 4 are presented in Tables 4-5 and 4-6, respectively. The baseline and Year 4 results are summarized on Figure 4-13 and discussed below.

4.5.1 Sub-slab Soil Gas Sampling. Sub-slab soil gas samples were collected to evaluate the potential for VOC vapors to migrate into the occupied building due to operation of the HCS.

Sub-slab soil gas samples were collected from four pre-installed VMPs (VMP01, VMP02, VMP03, and VMP04) located beneath or near the foundation of the primary building (Building K6-1696), as shown on Figure 4-12. Samples were collected on January 26, 2023 (with VMP03 resampled on February 8, 2023) and July 31, 2023. The sampling frequency was intended to be quarterly; however, the April 2023 sampling event was inadvertently missed.

Baseline samples were collected in February 2019 in accordance with the CRCA IWP (NASA, 2019a), with samples collected on a routine basis since HCS operation was initiated. SUMMA canisters, with one-hour time-weighted average regulators, were used to collect the samples during the January 2023 and July 2023 events. Location VMP03 had to be resampled in February 2023 due to a SUMMA canister valve malfunction. All canisters were sent to SGS in Dayton, New Jersey where soil gas samples were analyzed for VOCs via EPA Method TO-15. The analytical laboratory reports are provided in Appendix B.

Results of the Year 4 sub-slab soil gas monitoring showed tDCE detected at low levels in two of the four VMP locations (VMP02 and VMP03). The highest concentration detected was 20 micrograms per cubic meter ($\mu g/m^3$) in July 2023 at VMP02. VC remained below detection limits at all four sub-slab vapor monitoring locations during Year 4 of HCS operation.

Analytical results were compared to EPA Commercial VISLs, which showed that the low levels of tDCE detected during Year 4 were significantly below the screening levels. VC, the primary COC in the groundwater plume beneath Building K6-1696, was detected during the October 2019 baseline event at a concentration of 0.24 $\mu g/m^3$ (below EPA Commercial VISLs) at sub-slab soil gas monitoring location VMP03. VC has not been detected since. CVOC analytical results for the sub-slab soil gas sampling from baseline to July 2023 are presented in Table 4-5, with tDCE and VC results from the Year 4 sampling events shown on Figure 4-13.

4.5.2 Ambient Air Sampling. Ambient air samples were collected at two designated sample locations. One location (AMB01) was approximately 50 feet from the outlet of the HCS treatment trailer and used to evaluate the potential for VOC vapors to impact field engineers and technicians during maintenance activities due to HCS operations. The other location (AMB02)

was at the paved driveway east of the CPA and used to assist in distinguishing potential contributions from routine facility operations. Both sample locations are shown on Figure 4-12.

The ambient air samples were passively collected using SUMMA canisters over an 8-hour period and analyzed by SGS for VOCs via EPA Method TO-15. The samples were collected in concert with the sub-slab soil gas sampling events on January 26, 2023, and July 31, 2023. As with sub-slab soil gas sampling, the sampling frequency was intended to be quarterly; however, the April 2023 sampling was inadvertently missed.

Analytical results were compared to available Occupational Safety and Health Administration (OSHA) Permissible Exposure Limits (PELs) and Threshold Limit Values (TLVs) established by the American Conference of Governmental Industrial Hygienists (ACGIH). Analytical results showed tDCE detected at low levels in January 2023 at AMB02 (1.6 µg/m^3), and at both locations in July 2023 (1.3 µg/m^3 at AMB01 and 0.83 µg/m^3 at AMB02). VC was not detected in ambient air collected during the two sampling events. Analytical laboratory reports are provided in Appendix B with results included in Table 4-6. A summary of tDCE and VC results for ambient air is provided on Figure 4-13.

4.6 HOT SPOT 1 AND PLUME-WIDE CONDITIONS SUMMARY

This section evaluates results from performance monitoring groundwater sampling conducted during Year 4 of HCS operation at CRCA and provides a discussion of the areal extent of the intermediate interval and deep interval CVOC plumes within the surficial aquifer system since the June 2019 baseline sampling. Note, the discussion in this section only focuses on monitoring well data. Supplemental DPT data that was collected to better understand the extent of the LCP is discussed in Section V.

A complete summary of COC results from wells sampled at CRCA since baseline sampling is provided in Table 4-2. Results for wells sampled during Year 4 are illustrated on maps for the intermediate interval (Figure 4-3), deep interval (Figure 4-4), and combined intermediate/deep intervals (Figure 4-5).

A discussion of the CVOC detections and trends within the intermediate interval and deep interval from baseline (June 2019) through the last sampling event in the Year 4 reporting period (July 2023) is provided below.

4.6.1 Performance Monitoring tDCE Analysis. From baseline to Year 4 performance monitoring, tDCE has been detected at only one well within the intermediate interval and at three wells within the deep interval, but all below the GCTL. Specifically, tDCE was detected at low-level concentrations ranging from 0.30 to 1.1 µg/L at intermediate interval well, MW0002, located within the CPA east of the primary building during the July 2021 (Year 2), January 2022 (Year 3), and July 2023 (Year 4) sampling events. Within the deep interval, tDCE was detected at low-level concentrations ranging from 1.9 to 4.4 µg/L during baseline at monitoring wells MW0019, MW0030, and MW0031, but has been non-detect in all deep wells thereafter. These values, although below regulatory limits, serve as data points providing information on plume tracking and site characterization.

4.6.2 Performance Monitoring VC Analysis. Like the Year 2 and Year 3 performance monitoring well data, the intermediate interval VC plume at the conclusion of Year 4 HCS operations remained at LCP levels, with concentrations in exceedance of the GCTL, but significantly below the NADC. Based on Year 4 results, a reduction in the footprint of the intermediate interval VC plume was observed as VC concentrations were less than the GCTL at MW0002 (screened from 30 to 35 feet bls) located east of the primary building. Specifically, at MW0002, a VC concentration of 6.6 µg/L was detected in January 2022, decreasing to 2.0 µg/L in July 2022 (Year 3), and for the first time since baseline reduced to non-detect in January 2023. Six months later, VC rebounded slightly at MW0002 but remained below the GCTL at a concentration of 0.47 µg/L. During baseline, this well had the highest VC level detected (28 µg/L) within the intermediate interval. At MW0013, VC concentrations were below the GCTL in January 2022, but increased to 2.0 µg/L in July 2022, and to 2.9 µg/L in January 2023. In July 2023, VC at MW0013 just exceeded the GCTL at a concentration of 1.5 µg/L.

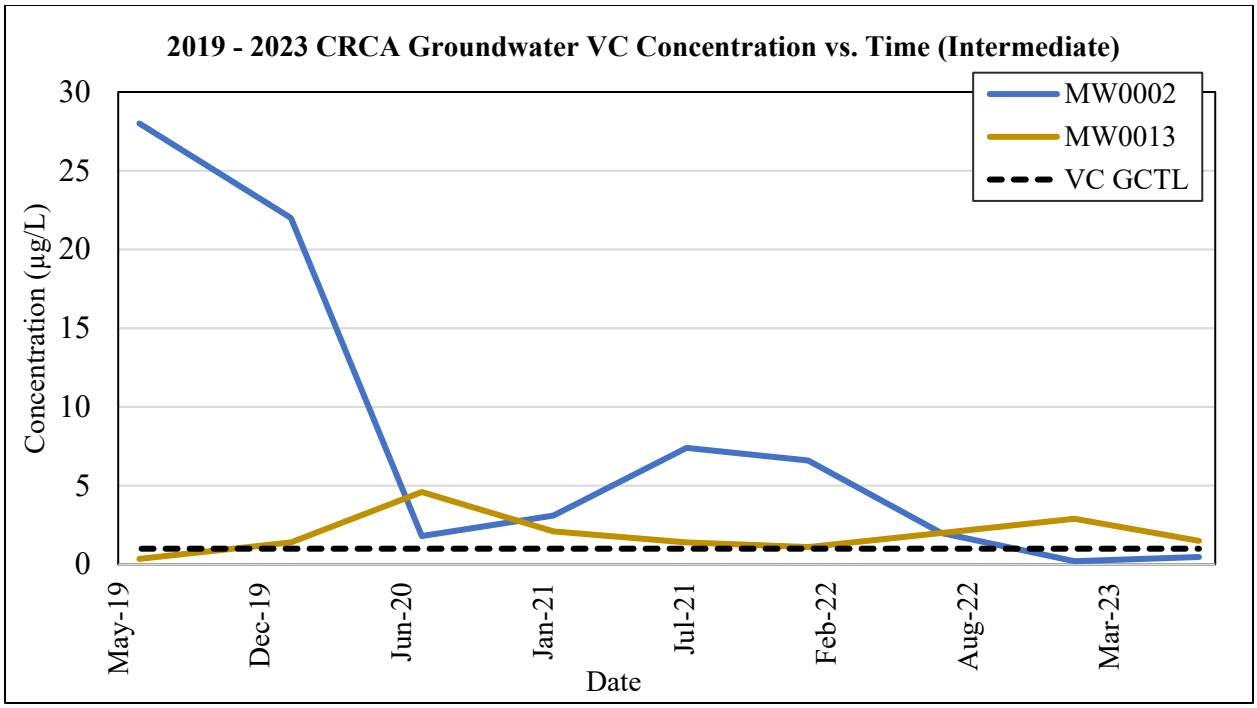
The fluctuations in VC concentrations within the intermediate interval indicates that EW and IW operations have likely influenced plume behavior by altering groundwater flow patterns. Groundwater depressions within the surficial aquifer system at CRCA are created by EWs and

conversely, IWs inducing groundwater mounding. At the end of Year 4, the intermediate interval LCP continued to extend beneath the building at MW0013 but no longer included the eastern component at MW0002. The resulting northwest-to-southeast orientation of the intermediate interval VC plume was interpreted by the slight GCTL exceedance to the northwest at MW0013 breaking away from MW0002, where VC decreased to less than the GCTL in Year 4.

The elongated shape and slight GCTL exceedances of the Year 4 intermediate interval VC plume are in general agreement with the simulated plume predicted after Year 1 under pumping conditions (and projected to Year 4). Figure 4-14 shows a comparison of groundwater model predictions (Years 2, 4, and 6), previously presented in the Year 1 Annual PMR (NASA, 2021a), to the actual Year 4 intermediate plume. Of note, the original groundwater model was re-calibrated as part of the Year 2 Annual PMR (NASA, 2022); however, results were similar and therefore the original model was used for comparison purposes.

The Year 4 projected intermediate interval plume shows the LCP separating from the vicinity of MW0002 and extending westward, remaining beneath the primary building, with a reduction in northern and southern areal extent as was observed in the field during Year 4. A noted difference is the northwestern trend toward MW0013 observed with the actual plume versus the westward trend predicted via the groundwater model.

VC reduction along the centerline of the intermediate plume is summarized in Table 4-7. Concentration versus time graphs for VC in the intermediate wells sampled during Year 4 are shown below.



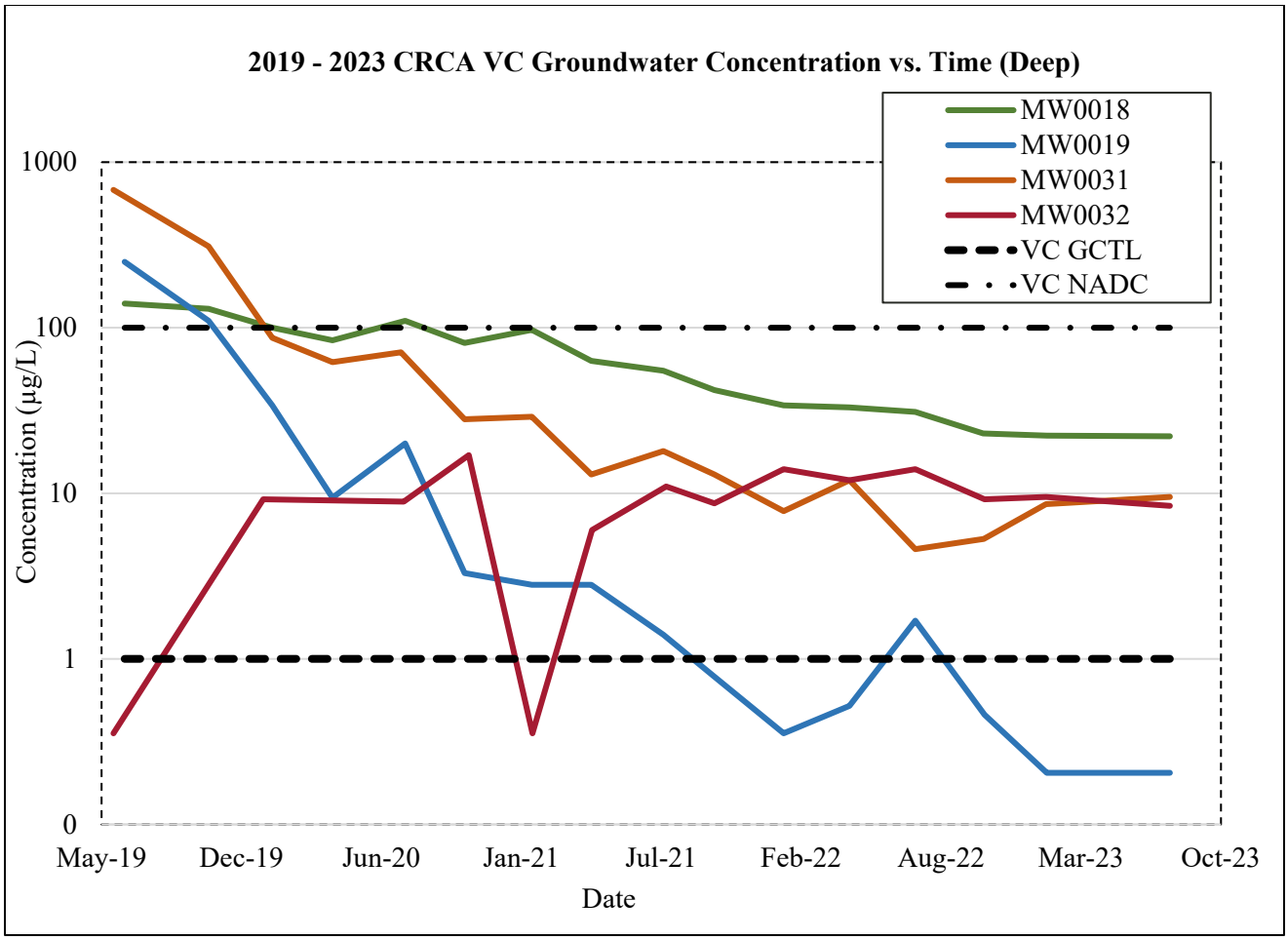
Overall, the plume centerline concentrations of VC within the intermediate interval have decreased by approximately 73.37% (with the geomean going from 3.15 µg/L in June 2019 to 0.84 µg/L in July 2023).

Since baseline conditions, the deep interval VC plume has generally decreased in concentration at MW0018 between the CPA and the primary building, but has maintained consistent VC concentrations to the west past Contractors Road at MW0032. The relatively consistent VC concentrations at downgradient well MW0032 may be attributed to the general westward groundwater flow direction from the CRCA property and its position outside the ROI of the three EWs to the east. At the conclusion of Year 4 HCS operations, an isolated section of the LCP remained at MW0018 to the east, while the western component of the VC LCP continued to decrease as seen by the marked VC decrease at MW0031 from 8.6 µg/L in January 2023 to non-detect in July 2023. Of the four deep performance monitoring wells, MW0032 to the west and MW0018 to the east represent the deep interval LCP at the conclusion of Year 4 (Figure 4-4).

The resulting shape and separation of the deep interval VC plume resembles the three-year projection (after one year of HCS operation) of the groundwater model under pumping conditions, as depicted in the modeling report included in the Year 1 Annual PMR (NASA,

2021a). Figure 4-15 shows a comparison of groundwater model predictions (Years 2, 4, and 6), previously presented in the Year 1 Annual PMR (NASA, 2021a) to the actual Year 4 deep interval plume. This reflects the predictions made during the initial model calibration of Year 1, without integrating the original calibration with actual plume updates as was part of the scope of the Year 2 PMR (NASA, 2022). A noted difference between the projected plume and the actual plume after four years of HCS operation is the elimination of the central component of the LCP observed in the field. Otherwise, separation is indicated in both the projected and actual plumes, with westward migration shown toward MW0032. The projected VC concentrations are in general agreement for both the projected and actual scenarios. Further, as predicted in the groundwater modeling section of the Year 2 Annual PMR (NASA, 2022), the transition to LTM, now within one year, remains valid for this performance monitoring area.

VC reduction along the centerline of the deep interval plume is summarized in Table 4-7. Concentration versus time graphs for VC in the deep interval wells sampled during Year 4 are shown below.



Overall, VC plume centerline concentrations have decreased by 99.66% (with the geomean going from 287.65 µg/L in June 2019 to 0.98 µg/L in July 2023).

Table 4-1. Year 4 Monitoring Network

Monitoring Well	Screened Interval	Monitoring Rationale	January 2023	April 2023	July 2023
(CRCA-)	(feet bls)		Sample for VOCs via EPA Method 8260D		
MW0002	[30-35]	Monitor eastern region of the LCP	X	NS	X
MW0013	[25-30]	Monitor beneath building footprint and northern edge of LCP	X	NS	X
MW0018	[53-63]	Monitor treatment performance in HS and LCP	X	XX	X
MW0019	[53-63]	Monitor treatment performance in HS and LCP	X	XX	X
MW0031	[53-63]	Central location to extraction wells for performance monitoring	X	XX	X
MW0032	[53-63]	Monitor western region of the LCP	X	XX	X

Notes:

MW0027 was removed from the Year 3 Monitoring Plan for Year 4.

The four deep wells were slated for quarterly sampling in April 2023 in conjunction with per-and polyfluoroalkyl substances sampling (to be presented in a separate report), but VOCs were inadvertently excluded from the analyte list.

The two intermediate wells were on a semi-annual sampling schedule, therefore the April sampling event was marked as "NS".

CRCA = Components Refurbishment and Chemical Analysis.

bls = below land surface.

VOCs = Volatile Organic Compounds.

EPA = United States Environmental Protection Agency.

LCP = Low Concentration Plume.

HS = Hot Spot.

X = Sampling took place.

NS = No sampling planned.

XX = Sampling was planned, but did not occur.

Table 4-2. Contaminants of Concern Performance Monitoring Analytical Results

Sample Location (CRCA-)	Screened Interval (feet bls)	Interval	Sample Date	tDCE	VC
MW0002	30-35	Intermediate	6/14/2019	0.73 U	**28**
			1/14/2020	0.73 U	**22**
			7/17/2020	0.73 U	**1.8 I**
			1/19/2021	0.73 U	**3.1**
			7/26/2021	**0.73 I**	**7.4**
			1/14/2022	**1.1 I**	**6.6**
			7/21/2022	0.80 U	**2.0**
			1/25/2023	0.22 U	0.41 U
			7/20/2023	**0.30 I**	**0.47 I**
MW0003	5-15	Shallow	6/14/2019	0.73 U	0.71 U
			1/13/2020	0.73 U	0.71 U
			7/17/2020	0.73 U	0.71 U
MW0012	25-30	Intermediate	6/14/2019	0.73 U	**2.6**
			1/13/2020	0.73 U	**1.4 I**
			7/17/2020	0.73 U	**1.7 I**
			1/19/2021	0.73 U	0.71 U
			7/26/2021	0.73 U	0.71 U
MW0013	25-30	Intermediate	6/14/2019	0.73 U	0.71 U
			1/14/2020	0.73 U	**1.4 I**
			7/20/2020	0.73 U	**4.6**
			1/19/2021	0.73 U	**2.1 I**
			7/26/2021	0.73 U	**1.4 I**
			1/14/2022	0.73 U	**1.1 I**
			7/21/2022	0.80 U	**2.0**
			1/26/2023	0.22 U	**2.9**
			7/20/2023	0.22 U	**1.5**
MW0015	25-30	Intermediate	6/14/2019	0.73 U	0.71 U
			1/13/2020	0.73 U	**0.77 I**
			7/17/2020	0.73 U	0.71 U
			1/19/2021	0.73 U	0.71 U
			7/26/2021	0.73 U	0.71 U
MW0018	53-63	Deep	6/17/2019	0.73 U	**140**
			10/15/2019	1.5 U	**130**
			1/14/2020	0.73 U	**100**
			4/9/2020	0.73 U	**84**
			7/22/2020	0.73 U	**110**
			10/15/2020	0.73 U	**81**
			1/19/2021	0.73 U	**97**
			4/14/2021	0.73 U	**63**
			7/26/2021	0.73 U	**55**
			10/7/2021	0.73 U	**42**
			1/14/2022	0.73 U	**34**
			4/18/2022	0.80 U	**33**
			7/21/2022	0.80 U	**31**
			10/26/2022	0.80 U	**26 M-03**
			10/26/2022	0.80 UH	**23 H**
			1/25/2023	0.22 U	**22.3**
			7/20/2023	0.22 U	**22.1**

Table 4-2. Contaminants of Concern Performance Monitoring Analytical Results (Continued)

Sample Location (CRCA-)	Screened Interval (feet bls)	Interval	Sample Date	tDCE	VC
MW0019	53-63	Deep	6/17/2019	**1.9 I**	**250**
			10/15/2019	1.5 U	**110**
			1/14/2020	0.73 U	**34**
			4/9/2020	0.73 U	**9.4**
			7/22/2020	0.73 U	**20**
			10/15/2020	0.73 U	**3.3**
			1/19/2021	0.73 U	**2.8**
			4/14/2021	0.73 U	**2.8**
			7/26/2021	0.73 U	**1.4 I**
			10/7/2021	0.73 U	**0.78 I**
			1/14/2022	0.73 U	0.71 U
			4/18/2022	0.80 U	**0.52 I**
			7/21/2022	0.80 U	**1.7**
			10/28/2022	0.80 U	**0.46 J**
			1/25/2023	0.22 U	0.41 U
			7/20/2023	0.22 U	0.41 U
MW0020	53-63	Deep	6/14/2019	0.73 U	0.71 U
			1/24/2020	0.73 U	0.71 U
			7/16/2020	0.73 U	0.71 U
MW0021	30-40	Intermediate	6/14/2019	0.73 U	0.71 U
			1/13/2020	0.73 U	0.71 U
			7/16/2020	0.73 U	0.71 U
MW0022	30-40	Intermediate	6/14/2019	0.73 U	0.71 U
			1/12/2020	0.73 U	0.71 U
			7/15/2020	0.73 U	0.71 U
MW0023	53-63	Deep	6/14/2019	0.73 U	0.71 U
			1/13/2020	0.73 U	0.71 U
			7/15/2020	0.73 U	0.71 U
MW0024	53-63	Deep	6/14/2019	0.73 U	0.71 U
			1/13/2020	0.73 U	0.71 U
			7/15/2020	0.73 U	0.71 U
MW0025	53-63	Deep	6/14/2019	0.73 U	0.71 U
			1/13/2020	0.73 U	0.71 U
			7/16/2020	0.73 U	0.71 U
MW0026	5-15	Shallow	6/13/2019	0.73 U	0.71 U
			1/13/2020	0.73 U	0.71 U
			7/16/2020	0.73 U	0.71 U
MW0027	30-40	Intermediate	6/13/2019	0.73 U	0.71 U
			1/13/2020	0.73 U	0.71 U
			7/16/2020	0.73 U	0.71 U
			1/19/2021	0.73 U	**7**
			7/26/2021	0.73 U	0.71 U
			1/14/2022	0.73 U	0.71 U
			7/21/2022	0.80 U	0.80 U
MW0028	53-63	Deep	6/17/2019	0.73 U	**23**
			10/15/2019	0.73 U	**16**
			1/14/2020	0.73 U	**1.5 I**
			4/9/2020	0.73 U	**0.9 I**
			7/22/2020	0.73 U	**1.2 I**
			1/19/2021	0.73 U	0.71 U
			7/26/2021	0.73 U	0.71 U

Table 4-2. Contaminants of Concern Performance Monitoring Analytical Results (Continued)

Sample Location (CRCA-)	Screened Interval (feet bls)	Interval	Sample Date	tDCE	VC
MW0029	30-40	Intermediate	6/13/2019	0.73 U	0.71 U
			1/13/2020	0.73 U	0.71 U
			7/15/2020	0.73 U	0.71 U
			1/19/2021	0.73 U	0.71 U
			7/26/2021	0.73 U	0.71 U
MW0030	53-63	Deep	6/13/2019	**0.97 I**	**90**
			1/13/2020	0.73 U	**0.87 I**
			7/15/2020	0.73 U	0.71 U
			1/19/2021	0.73 U	0.71 U
			7/26/2021	0.73 U	0.71 U
MW0031	53-63	Deep	6/17/2019	**4.4 I**	**680**
			10/15/2019	3.6 U	**310**
			1/14/2020	0.73 U	**87**
			4/9/2020	0.73 U	**62**
			7/16/2020	0.73 U	**71**
			10/15/2020	0.73 U	**28**
			1/19/2021	0.73 U	**29**
			4/14/2021	0.73 U	**13**
			7/26/2021	0.73 U	**18**
			10/7/2021	0.73 U	**13**
			1/14/2022	0.73 U	**7.8**
			4/18/2022	0.80 U	**12**
			7/21/2022	0.80 U	**4.6**
			10/27/2022	0.80 U	**5.3**
			1/24/2023	0.22 U	**8.6**
			7/20/2023	0.22 U	0.41 U
MW0032	53-63	Deep	6/13/2019	0.73 U	0.71 U
			1/14/2020	0.73 U	**9.2**
			7/20/2020	0.73 U	**8.9**
			10/15/2020	0.73 U	**17**
			1/20/2021	0.73 U	0.71 U
			4/15/2021	0.73 U	**6.0**
			7/30/2021	0.73 U	**11**
			10/7/2021	0.73 U	**8.7**
			1/14/2022	0.73 U	**14**
			4/18/2022	0.80 U	**12**
			7/21/2022	0.80 U	**14**
			10/28/2022	0.80 U	**9.2**
			1/24/2023	0.22 U	**9.5**
			7/20/2023	0.22 U	**8.4**

Notes:

Bolding indicates a concentration is greater than the respective method detection limit.

Black shading indicates State of Florida Groundwater Cleanup Target Level exceedance, tDCE = 100 µg/L, VC = 1 µg/L.

The analytical reports presenting these data also include per-and polyfluoroalkyl substances (PFAS) results, to be presented in a separate report.

Quarterly sampling results for April 2023 not available - see text for details.

CRCA = Components Refurbishment and Chemical Analysis.

tDCE = trans-1,2-dichloroethene.

VC = vinyl chloride.

H = Out of holding time; extra vials with analytical method 8260D were prepared and sent to the lab with initial vials.

I = Value is between method detection limit and practical quantitation limit.

J = Estimated value.

U = Value was reported as below the method detection limit, therefore the detection limit is shown.

M-03 = Incorrect auto integration.

Table 4-3. Year 4 Field Measurements

Well ID (CRCA-)	Sample Date	pH (S.U.)	Temp. (°C)	SC (µS/cm)	DO (mg/L)	Turbidity (NTU)	ORP (mV)
MW0002	1/25/2023	6.51	26.0	835	0.05	1.83	-111.0
	7/20/2023	6.55	27.8	919	0.11	8.61	-93.2
MW0013	1/26/2023	6.31	23.1	952	0.12	1.55	-95.6
	7/20/2023	6.18	23.1	970	0.15	5.79	-65.6
MW0018	1/25/2023	6.78	25.7	1,000	0.06	1.12	-108.5
	7/20/2023	6.65	28.2	1,170	0.15	10.70	-125.2
MW0019	1/25/2023	6.58	22.9	800	0.11	16.00	-112.5
	7/20/2023	6.63	23.2	857	0.13	13.70	-103.5
MW0031	1/24/2023	6.65	25.0	822	0.90	0.00	-49.5
	7/20/2023	6.92	26.6	485	0.36	16.00	-103.9
MW0032	1/24/2023	6.47	22.3	1,350	0.14	0.77	-44.5
	7/20/2023	6.41	25.7	1,482	0.21	30.00	-77.3

Notes:

Field measurements displayed are final stabilized measurements collected before sampling.

Values shown are representative of instrument accuracy.

In July 2023 the turbidity at MW0032 exceeded the stabilization limit of less than 20 NTU. Per the Florida Department of Environmental Protection Standard Operation Procedure (FS 2200), the sample was collected after three consecutive measurements were within the stated limits.

CRCA = Components Refurbishment and Chemical Analysis.

Temp. = Temperature in degrees Celsius (°C).

S.U. = Standard Units.

SC = Specific conductance in microSiemens per centimeter (µS/cm).

DO = Dissolved oxygen in milligrams per liter (mg/L).

NTU = Nephelometric turbidity unit.

ORP = Oxidation/reduction potential in millivolts (mV).

Table 4-4. Year 4 HCS Operation Groundwater Elevations

Well ID (CRCA-)	TOC Elevation	Screened Interval (feet bls)	January 2023		July 2023	
			DTW (feet bls)	GW Elevation	DTW (feet bls)	GW Elevation
MW0001	6.11	5-15	3.89	2.22	1.66	4.45
MW0002	6.14	30-35	3.99	2.15	1.66	4.48
MW0003	6.99	5-15	4.82	2.17	2.67	4.32
MW0004	6.30	5-15	4.05	2.25	1.84	4.46
MW0005	6.69	5-15	4.60	2.09	2.37	4.32
*MW0005A	6.55	5-10	4.36	2.19	0.15	6.40
MW0005B	6.69	12-17	4.55	2.14	2.34	4.35
MW0005C	6.85	2-7	4.61	2.24	2.12	4.73
MW0006	6.58	5-15	4.35	2.23	2.16	4.42
MW0007	6.54	5-15	4.37	2.17	2.16	4.38
MW0008	7.36	5-15	5.02	2.34	3.02	4.34
MW0009	6.84	5-15	4.56	2.28	2.30	4.54
MW0010	6.66	5-15	4.49	2.17	2.28	4.38
MW0011	7.40	5-10	4.87	2.53	2.79	4.61
MW0012	7.07	25-30	4.93	2.14	2.75	4.32
MW0013	7.46	25-30	5.43	2.03	3.38	4.08
MW0014	6.86	5-10	4.78	2.08	2.58	4.28
MW0015	6.82	25-30	4.79	2.03	2.66	4.16
MW0016	6.18	5-10	4.05	2.13	1.80	4.38
MW0017	6.16	25-30	4.07	2.09	1.79	4.37
MW0018	7.05	53-63	4.84	2.21	2.68	4.37
MW0019	7.13	53-63	5.35	1.78	3.18	3.95
MW0020	7.27	53-63	5.34	1.93	3.26	4.01
MW0021	7.54	30-40	5.54	2.00	3.46	4.08
MW0022	6.44	30-40	4.23	2.21	2.08	4.36
MW0023	6.50	53-63	4.27	2.23	2.17	4.33
MW0024	6.22	53-63	4.08	2.14	1.84	4.38
MW0025	6.91	53-63	4.92	1.99	2.84	4.07
MW0026	4.45	5-15	2.53	1.92	0.44	4.01
MW0027	4.33	30-40	2.58	1.75	0.52	3.81
MW0028	4.34	53-63	2.55	1.79	0.60	3.74
MW0029	4.79	30-40	3.03	1.76	0.98	3.81
MW0030	4.77	53-63	3.12	1.65	1.09	3.68
MW0031	6.92	53-63	5.09	1.83	3.02	3.90
MW0032	4.70	53-63	3.11	1.59	1.42	3.28

Notes:

Monitoring wells MW0005, MW0005A, MW0005B, and MW0005C are aligned along a shared transect north to south. Representative wells from this group are typically selected for contouring purposes (measurements deferred to MW0005).

All elevations are in feet above mean sea level.

HCS = Hydraulic Containment System.

bls = below land surface.

CRCA = Components Refurbishment and Chemical Analysis.

GW = Groundwater.

TOC = Top of casing.

DTW = Depth to water in feet below TOC.

* In July 2023, MW0005A had water at the top of the well, reporting a reading of 0.15 feet below TOC.

Table 4-5. Sub-Slab Soil Gas Analytical Results

Analyte[1]	USEPA VISL (Commercial) in µg/m³	Sampling Location (CRCA-)															
		VMP01															
		2/1/2019	10/2/2019	1/15/2020	4/9/2020	7/17/2020	10/15/2020	1/20/2021	4/14/2021	7/26/2021	10/21/2021	1/14/2022	4/25/2022	7/22/2022	10/27/2022	1/26/2023	7/31/2023
1,2,4-Trichlorobenzene	290	2.6 U	1.5 U	12 U	NA	NA	NA	NA	NA	NA	NA	NA	2.29 U	2.29 U	2.29 U	3.6 U	3.6 U
1,2,4-Trimethylbenzene	8,800	0.64 U	**9.8**	1.4 U	NA	NA	NA	NA	NA	NA	NA	NA	0.982 U	0.982 U	0.982 U	1.7 U	1.7 U
1,3,5-Trimethylbenzene	8,800	0.64 U	**2.6**	1.1 U	NA	NA	NA	NA	NA	NA	NA	NA	0.982 U	0.982 U	0.982 U	1.6 U	1.6 U
1,3-Dichlorobenzene	37.2	0.52 U	**0.66 I**	3.8 U	4.2 U	5.5 U	0.38 U	0.38 U	0.36 U	0.41 U	2.4 U	2.3 U	2.40 U	**1.99 J**	**7.76**	0.96 U	0.96 U
1,4-Dichlorobenzene	NC	0.42 U	**0.23 I**	0.5 U	1.7 U	6.0 U	0.42 U	0.42 U	0.42 U	0.46 U	2.6 U	2.6 U	0.782 U	0.782 U	0.782 U	4.6 U	1.9 U
2-Butanone	730,000	**27**	**47**	22 U	NA	NA	NA	NA	NA	NA	NA	NA	0.560 U	**1.32 J**	0.734 U	1.3 U	**2.9**
2-Propanol	29,200	0.64 U	1.0 U	**18 I**	NA	NA	NA	NA	NA	NA	NA	NA	1.54 U	1.54 U	**51.6**	**106**	**9.8**
4-Ethyltoluene	NC	0.59 U	**8.8**	1.7 U	NA	NA	NA	NA	NA	NA	NA	NA	0.982 U	0.982 U	0.982 U	1.9 U	1.9 U
Acetone	4,510,000	**105**	**150**	42 U	46 U	**25**	**8.4**	**5.9**	**11**	**7.8**	**11**	**7.9 I**	2.85 U	**8.55**	**8.44**	**8.6**	**19**
2H,3H-Decafluoropentane	131,400	**76,200**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzene	52	0.15 U	**8.5**	**2.8 I**	NA	NA	NA	NA	NA	NA	NA	NA	**0.648 J**	**0.431 J**	0.479 U	0.80 U	**1.9 J**
Carbon disulfide	10,200	0.29 U	**0.97 I**	3.5 U	NA	NA	NA	NA	NA	NA	NA	NA	0.778 U	**0.430 J**	0.778 U	0.56 U	0.56 U
Chloroform	18	0.39 U	**1.8**	**1.7 I**	1.9 U	6.0 U	0.51 U	0.51 U	0.49 U	0.56 U	2.6 U	2.5 U	**1.82**	0.730 U	**2.78**	0.73 U	**2.0 J**
Chloromethane	1,310	0.13 U	0.16 U	1.3 U	1.4 U	3.2 U	0.64 U	0.64 U	0.62 U	0.71 U	1.4 U	1.4 U	0.516 U	0.516 U	0.516 U	0.74 U	0.74 U
Dichlorodifluoromethane	14,600	0.33 U	0.30 U	**3.0 I**	2.4 U	8.8 U	0.74 U	0.74 U	0.72 U	0.81 U	3.8 U	3.7 U	1.48 U	1.48 U	1.28 U	0.64 U	2.1 U
Ethanol	NC	1.6 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.19 U	**4.03 B**	**29.4**	**5.8**	**7.3**
Ethylbenzene	54,400,000	**1.8 I**	**49**	**6.5**	NA	NA	NA	NA	NA	NA	NA	NA	0.867 U	0.867 U	0.867 U	1.0 U	1.0 U
Freon 113	730,000	**24**	**26**	**14**	**54**	**64**	**6.7**	**3.9**	**3.6**	**4.7**	**60**	**31**	1.53 U	**22.8**	**15.0**	**9.2**	**29**
N-Heptane	58,400	**9.4**	**4.5**	**12**	NA	NA	NA	NA	NA	NA	NA	NA	1.02 U	**1.48 J**	1.02 U	1.6 U	0.74 U
Hexachlorobutadiene	18.6	1.9 U	**0.93 I**	5.6 U	6.2 U	13 U	0.5 U	0.5 U	0.48 U	0.55 U	5.5 U	5.4 U	2.67 U	2.67 U	2.67 U	2.7 U	2.7 U
Hexane	102,000	**2.0 I**	1.7 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.76 U	1.76 U	1.76 U	1.6 U	0.74 U
Methylene chloride	40,900	0.20 U	1.6 U	12 U	13 U	**2.4 I**	**1.2 I**	**0.75 I**	0.26 U	0.3 U	**1.1 I**	**1.0 I**	0.694 U	0.694 U	0.642 U	0.76 U	0.76 U
Propene	48,300	0.11 U	**2.2**	**3.4 I**	**4.1 I**	3.1 U	0.74 U	0.74 U	0.72 U	0.81 U	1.3 U	1.3 U	1.08 U	1.08 U	1.08 U	0.98 U	**1.4 J**
Styrene	14,600	0.32 U	**0.53**	1.6 U	NA	NA	NA	NA	NA	NA	NA	NA	0.851 U	0.851 U	0.851 U	2.0 U	0.89 U
Tertiary butyl alcohol	102,000	**1.9 I**	**2.2**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.1 U	1.1 U
Tetrachloroethylene	584	0.81 U	0.38 U	2.9 U	3.2 U	6.8 U	0.42 U	0.42 U	0.4 U	0.46 U	2.9 U	2.9 U	**1.24 J**	1.36 U	1.36 U	0.38 U	0.38 U
Tetrahydrofuran	292,000	**139**	**160**	**4.9**	NA	NA	NA	NA	NA	NA	NA	NA	0.442 U	0.442 U	0.442 U	1.1 U	1.1 U
Toluene	730,000	0.22 U	**31**	1.6 U	NA	NA	NA	NA	NA	NA	NA	NA	**0.335 J**	0.942 U	**0.746 J**	0.87 U	0.87 U
TLPH	NC	NA	**1,800**	11000 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
trans-1,2-Dichloroethene	102,000	**95.2**	**1.1**	**2.6 I**	1.1 U	**5.5 I**	**4.2**	0.43 U	**0.69 I**	**0.5 U**	**6.0 I**	1.7 U	0.594 U	**0.951 J**	**1.07 J**	1.1 U	0.44 U
Trichloroethene	100	**0.86**	**55**	1.7 U	1.8 U	6.1 U	0.47 U	0.47 U	0.46 U	0.52 U	2.6 U	2.6 U	0.804 U	**17.1**	0.804 U	0.41 U	0.41 U
Trichlorofluoromethane	NC	0.62 U	0.27 U	2.1 U	2.3 U	6.2 U	0.46 U	0.46 U	0.44 U	0.5 U	2.7 U	2.6 U	0.983 U	**2.25**	**2.71**	0.79 U	3.5 U
Total Xylenes	14,600	**9.6**	**260**	4.8 U	NA	NA	NA	NA	NA	NA	NA	NA	**0.975 J**	**1.443 J**	**0.585 J**	1.3 U	1.3 U
Vinyl acetate	29,200	0.49 U	0.14 U	1.0 U	NA	NA	NA	NA	NA	NA	NA	NA	0.880 U	0.880 U	0.880 U	1.6 U	1.6 U
Vinyl chloride	93	0.23 U	0.18 U	1.4 U	1.5 U	4.6 U	0.75 U	0.75 U	0.73 U	0.83 U	2.0 U	2.0 U	0.511 U	0.511 U	0.511 U	0.72 U	0.72 U

Table 4-5. Sub-Slab Soil Gas Analytical Results (Continued)

Analyte[1]	USEPA VISL (Commercial) in µg/m³	Sampling Location (CRCA-)															
		VMP02															
		2/1/2019	10/2/2019	1/15/2020	4/9/2020	7/17/2020	10/15/2020	1/20/2021	4/14/2021	7/26/2021	10/21/2021	1/14/2022	4/25/2022	7/22/2022	10/27/2022	1/26/2023	7/31/2023
1,2,4-Trichlorobenzene	290	2.6 U	3.6 U	2.9 U	NA	NA	NA	NA	NA	NA	NA	NA	2.29 U	2.29 U	2.29 U	3.6 U	3.6 U
1,2,4-Trimethylbenzene	8,800	0.64 U	**7.1**	**0.79 I**	NA	NA	NA	NA	NA	NA	NA	NA	0.982 U	0.982 U	0.982 U	1.7 U	1.7 U
1,3,5-Trimethylbenzene	8,800	0.64 U	**2.1**	**0.32 I**	NA	NA	NA	NA	NA	NA	NA	NA	0.982 U	0.982 U	0.982 U	1.6 U	1.6 U
1,3-Dichlorobenzene	37.2	0.52 U	1.2 U	0.93 U	4.6 U	18 U	3.2 U	0.76 U	0.38 U	0.4 U	2.3 U	2.4 U	2.40 U	2.40 U	**4.60 J**	0.96 U	0.96 U
1,4-Dichlorobenzene	NC	0.42 U	0.46 U	0.37 U	1.8 U	20 U	3.5 U	0.84 U	0.42 U	0.45 U	2.6 U	2.6 U	0.782 U	0.782 U	**2.78**	4.6 U	1.9 U
2-Butanone	730,000	**18**	**62**	**7.4 I**	NA	NA	NA	NA	NA	NA	NA	NA	**1.68 J**	**0.888 J**	**1.85 J**	1.3 U	1.3 U
2-Propanol	29,200	**136**	2.4 U	160	NA	NA	NA	NA	NA	NA	NA	NA	1.54 U	1.54 U	**73.3**	**24**	**53.3**
4-Ethyltoluene	NC	0.59 U	**6.9**	**0.59 I**	NA	NA	NA	NA	NA	NA	NA	NA	0.982 U	0.982 U	0.982 U	1.9 U	1.9 U
Acetone	4,510,000	**80.3**	**210**	**13 I**	51 U	**11 I**	**7 I**	**3.5 I**	**4**	**4.3**	**6.6 I**	**3.6 I**	2.85 U	**6.18**	**11.4**	**5.2**	**14**
2H,3H-Decafluoropentane	131,400	**450**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzene	52	0.15 U	**3.3**	**1.6**	NA	NA	NA	NA	NA	NA	NA	NA	0.479 U	**0.326 J**	0.479 U	0.80 U	1.9 U
Carbon disulfide	10,200	0.29 U	1.1 U	**1.8 I**	NA	NA	NA	NA	NA	NA	NA	NA	0.778 U	0.778 U	0.778 U	0.56 U	0.56 U
Chloroform	18	0.39 U	**1.5 I**	**0.93**	1.7 U	20 U	4.3 U	1 U	0.51 U	0.55 U	2.5 U	2.6 U	**0.808 J**	0.730 U	**0.823 J**	0.73 U	0.73 U
Chloromethane	1,310	0.13 U	0.38 U	**0.31 I**	1.5 U	10 U	5.5 U	1.3 U	0.65 U	0.69 U	1.4 U	1.4 U	0.516 U	0.516 U	0.516 U	**1.9**	0.74 U
Dichlorodifluoromethane	14,600	**3.0**	0.71 U	0.57 U	2.8 U	29 U	6.3 U	1.5 U	0.74 U	0.79 U	3.7 U	3.8 U	**1.43 J**	1.48 U	1.28 U	**2.1 J**	2.1 U
Ethanol	NC	**8.1**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.19 U	**2.07 BJ**	1.19 U	3.0 U	**35.6**
Ethylbenzene	54,400,000	**6.5**	**52**	0.39 U	NA	NA	NA	NA	NA	NA	NA	NA	0.867 U	0.867 U	0.867 U	1.0 U	1.0 U
Freon 113	730,000	**14**	**6.8**	**78**	**67**	**690**	**440**	**120**	**72**	**44**	**240**	**120**	**78.2**	**43.9**	**27.7**	**30**	**18**
N-Heptane	58,400	**12**	**5.7**	0.49 U	NA	NA	NA	NA	NA	NA	NA	NA	1.02 U	**1.60 J**	1.02 U	1.5 U	0.74 U
Hexachlorobutadiene	18.6	1.9 U	**1.9 I**	1.4 U	6.8 U	**42**	4.2 U	1 U	0.5 U	0.53 U	5.4 U	5.5 U	2.67 U	2.67 U	2.67 U	2.7 U	2.7 U
Hexane	102,000	**1.3**	**4.5 I**	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.76 U	1.76 U	1.76 U	1.6 U	**2.3 J**
Methylene chloride	40,900	0.20 U	3.6 U	2.9 U	14 U	**7.6 I**	**2.7 1**	**0.97 I**	**0.76 I**	0.29 U	**1.1 I**	**1.0 I**	0.694 U	0.694 U	**0.670** J	0.76 U	**3.5**
Propene	48,300	0.11 U	0.35 U	**1.1 I**	**1.9**	**10**	6.3 U	1.5 U	0.74 U	0.79 U	1.3 U	1.3 U	1.08 U	1.08 U	1.08 U	0.98 U	0.98 U
Styrene	14,600	0.32 U	0.47 U	**0.92 I**	NA	NA	NA	NA	NA	NA	NA	NA	0.851 U	0.851 U	0.851 U	2.0 U	0.89 U
Tertiary butyl alcohol	102,000	0.17 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.1 U	1.1 U
Tetrachloroethylene	584	**2.7**	0.90 U	0.72 U	3.6 U	**22**	3.5 U	0.84 U	0.42 U	0.45 U	2.9 U	2.9 U	1.36 U	1.36 U	**1.81 J**	0.38 U	0.38 U
Tetrahydrofuran	292,000	**91.4**	**230**	**4.7**	NA	NA	NA	NA	NA	NA	NA	NA	0.442 U	0.442 U	0.442 U	1.1 U	1.1 U
Toluene	730,000	**1.5 I**	**38**	**1.0 I**	NA	NA	NA	NA	NA	NA	NA	NA	0.942 U	0.942 U	**0.881 J**	0.87 U	0.87 U
TLPH	NC	NA	3200 U	2600 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
trans-1,2-Dichloroethene	102,000	0.11 U	**3.9**	**24**	**3.2 I**	**15**	**8.8 I**	**5.5 I**	**1.8 I**	**6.2**	**11 I**	**3.3 I**	**3.54**	**7.09**	**7.25**	**3.7**	**20**
Trichloroethene	100	0.41 U	**76**	0.41 U	2.0 U	**20**	4 U	0.94 U	0.47 U	0.5 U	2.6 U	2.6 U	0.804 U	**19.4**	0.804 U	0.41 U	0.41 U
Trichlorofluoromethane	NC	0.62 U	**0.93 I**	**0.95 I**	2.5 U	**20**	3.9 U	0.92 U	0.46 U	0.49 U	2.6 U	2.7 U	**0.938 J**	**0.776 J**	**0.747 J**	0.79 U	3.5 U
Total Xylenes	14,600	**41**	**270**	**1.9**	NA	NA	NA	NA	NA	NA	NA	NA	**0.889 J**	**1.475 J**	**0.637 J**	1.3 U	1.3 U
Vinyl acetate	29,200	0.49 U	0.32 U	0.26 U	NA	NA	NA	NA	NA	NA	NA	NA	0.880 U	0.880 U	0.88 U	1.6 U	1.6 U
Vinyl chloride	93	0.23 U	0.43 U	0.34 U	1.7 U	**15**	6.4 U	**1.5** U	0.76 U	0.81 U	2.0 U	2.0 U	0.511 U	0.511 U	0.511 U	0.72 U	0.72 U

Table 4-5. Sub-Slab Soil Gas Analytical Results (Continued)

Analyte[1]	USEPA VISL (Commercial) in µg/m³	Sampling Location (CRCA-)															
		VMP03															
		2/1/2019	10/2/2019	1/15/2020	4/9/2020	7/17/2020	10/15/2020	1/20/2021	4/14/2021	7/26/2021	10/21/2021	1/14/2022	4/25/2022	7/22/2022	10/27/2022	2/8/2023*	7/31/2023
1,2,4-Trichlorobenzene	290	2.6 U	**11**	14 U	NA	NA	NA	NA	NA	NA	NA	NA	2.29 U	2.29 U	2.29 U	3.6 U	3.6 U
1,2,4-Trimethylbenzene	8,800	0.64 U	**6.9**	**2.0 U**	NA	NA	NA	NA	NA	NA	NA	NA	0.982 U	0.982 U	0.982 U	1.7 U	1.7 U
1,3,5-Trimethylbenzene	8,800	0.64 U	**1.9**	1.4 U	NA	NA	NA	NA	NA	NA	NA	NA	0.982 U	0.982 U	0.982 U	1.6 U	1.6 U
1,3-Dichlorobenzene	37.2	0.52 U	0.50 U	4.6 U	5.2 U	8.8 U	9.7 U	0.45 U	0.36 U	0.41 U	2.1 U	2.5 U	2.40 U	2.40 U	**2.09 J**	0.96 U	0.96 U
1,4-Dichlorobenzene	NC	0.42 U	0.20 U	1.8 U	2.1 U	9.8 U	11 U	0.49 U	0.4 U	0.45 U	2.4 U	2.7 U	0.782 U	**0.542 J**	0.782 U	4.6 U	1.9 U
2-Butanone	730,000	**22**	**45**	27 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	**1.89 J**	0.982 U	**2.5**	1.3 U
2-Propanol	29,200	**39.6**	**22**	**1,200**	NA	NA	NA	NA	NA	NA	NA	NA	2.85 U	**622**	**460**	**130**	**41.8**
4-Ethyltoluene	NC	0.59 U	**6.4**	2.0 U	NA	NA	NA	NA	NA	NA	NA	NA	0.982 U	0.982 U	0.982 U	1.9 U	1.9 U
Acetone	4,510,000	**46.3**	**150**	51 U	58 U	**7.2 I**	**12 I**	**4.1**	**8.3**	**5.4**	**13**	**18**	0.479 U	2.85 U	**13.4**	**32.5**	**9.7**
2H,3H-Decafluoropentane	131,400	8.2 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzene	52	15 U	1.1	2.3 I	NA	NA	NA	NA	NA	NA	NA	NA	0.228 U	0.479 U	**0.232** J	0.80 U	1.9 U
Carbon disulfide	10,200	0.29 U	**0.61 U**	4.2 U	NA	NA	NA	NA	NA	NA	NA	NA	0.778 U	0.778 U	0.778 U	0.56 U	0.56 U
Chloroform	18	0.39 U	**9.7**	**4.6 I**	6.0	9.7 U	11 U	**1.9 I**	**2.4 I**	**2.5 I**	**5.4 I**	**5.5 I**	**18.2**	**18.1**	**8.52**	**15**	**15**
Chloromethane	1,310	0.13 U	0.16 U	1.5 U	1.7 U	5.2 U	5.7 U	0.76 U	0.62 U	0.7 U	1.3 U	1.5 U	0.516 U	0.516 U	0.516 U	0.74 U	0.74 U
Dichlorodifluoromethane	14,600	0.33 U	0.30 U	2.6 U	3.2 U	14 U	16 U	0.87 U	0.72 U	0.8 U	3.5 U	4.0 U	1.48 U	**1.51 J**	**2.40 J**	**2.4** J	2.1 U
Ethanol	NC	1.6 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.19 U	**12.7**	1.19 U	**37.7**	**15**
Ethylbenzene	54,400,000	**2.1 I**	**43**	1.9 U	NA	NA	NA	NA	NA	NA	NA	NA	0.867 U	0.867 U	0.867 U	1.0 U	1.0 U
Freon 113	730,000	**71**	**94**	**87**	**18**	**1,100**	**270**	**8.1**	**2.7 I**	**5**	**27**	**45**	1.53 U	**11.0**	**18.9**	**15**	**18**
N-Heptane	58,400	**7.8**	**5.0**	2.4 U	NA	NA	NA	NA	NA	NA	NA	NA	1.02 U	**1.42 J**	1.02 U	1.5 U	0.74 U
Hexachlorobutadiene	18.6	1.9 U	**0.89 I**	6.8 U	7.8 U	21 U	23 U	0.59 U	0.48 U	0.54 U	5.0 U	5.8 U	2.67 U	2.67 U	2.67 U	2.7 U	2.7 U
Hexane	102,000	0.15 U	**1.7 I**	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.76 U	**0.924 J**	1.76 U	1.6 U	0.74 U
Methylene chloride	40,900	0.20 U	1.6 U	14 U	17 U	**3.7 I**	**4.3 I**	**1.1 I**	0.26 U	0.29 U	**2.8 I**	1.0 U	0.694 U	0.694 U	**0.608 J**	0.76 U	0.76 U
Propene	48,300	0.11 U	0.15 U	**3.3 I**	**3.3 I**	5.0 U	5.5 U	0.87 U	0.72 U	0.8 U	1.2 U	1.4 U	1.08 U	1.08 U	1.08 U	0.98 U	0.98 U
Styrene	14,600	0.32 U	**0.42 I**	1.9 U	NA	NA	NA	NA	NA	NA	NA	NA	0.581 U	0.851 U	0.851 U	2.0 U	0.89 U
Tertiary butyl alcohol	102,000	0.17 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.1 U	1.1 U
Tetrachloroethylene	584	0.81 U	0.39 U	3.6 U	4.1 U	**11**	12 U	0.49 U	0.4 U	0.45 U	2.7 U	3.1 U	1.36 U	1.36 U	1.36 U	0.38 U	0.38 U
Tetrahydrofuran	292,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.216 U	0.885 U	0.442 U	1.1 U	1.1 U
Toluene	730,000	0.22 U	**30**	**8.5**	NA	NA	NA	NA	NA	NA	NA	NA	0.942 U	0.942 U	**0.727 J**	**5.3**	0.87 U
TLPH	NC	NA	**1,700**	13000 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
trans-1,2-Dichloroethene	102,000	0.11 U	0.38 I	**4.3 I**	**3.1 I**	6.6 U	7.3 U	0.51 U	**0.52 I**	0.47 U	**18**	1.9 U	**3.37**	**2.01**	**2.66**	**1.7** J	0.44 U
Trichloroethene	100	0.41 U	**56**	2.0 U	2.3 U	9.8 U	11 U	0.56 U	0.46 U	0.51 U	2.4 U	2.8 U	0.804 U	**13.7**	0.804 U	0.41 U	0.41 U
Trichlorofluoromethane	NC	0.62 U	**1.3**	2.5 U	2.8 U	10 U	12 U	0.54 U	0.44 U	0.5 U	2.4 U	2.8 U	0.983 U	**1.17 J**	**1.23 J**	0.79 U	3.5 U
Total Xylenes	14,600	**11**	**220**	5.8 U	NA	NA	NA	NA	NA	NA	NA	NA	**0.819 J**	**1.34 J**	1.30 U	**4.8**	1.3 U
Vinyl acetate	29,200	0.49 U	0.14 U	1.3 U	NA	NA	NA	NA	NA	NA	NA	NA	0.880 U	0.880 U	0.880 U	1.6 U	1.6 U
Vinyl chloride	93	0.23 U	**0.24 I**	1.7 U	1.9 U	7.5 U	8.2 U	0.89 U	0.73 U	0.82 U	1.8 U	2.1 U	0.511 U	0.511 U	0.511 U	0.72 U	0.72 U

Table 4-5. Sub-Slab Soil Gas Analytical Results (Continued)

Analyte[1]	USEPA VISL (Commercial) in µg/m³	Sampling Location (CRCA-)															
		VMP04															
		2/1/2019	10/2/2019	1/15/2020	4/9/2020	7/17/2020	10/15/2020	1/20/2021	4/14/2021	7/26/2021	10/21/2021	1/14/2022	4/25/2022	7/22/2022	10/27/2022	1/26/2023	7/31/2023
1,2,4-Trichlorobenzene	290	2.6 U	3.8 U	6.8 U	NA	NA	NA	NA	NA	NA	NA	NA	2.29 U	2.29 U	2.29 U	3.6 U	3.6 U
1,2,4-Trimethylbenzene	8,800	0.64 U	**3.3**	**0.97 I**	NA	NA	NA	NA	NA	NA	NA	NA	0.982 U	0.982 U	0.982 U	1.7 U	1.7 U
1,3,5-Trimethylbenzene	8,800	0.64 U	**1.0 I**	0.64 U	NA	NA	NA	NA	NA	NA	NA	NA	0.982 U	0.982 U	0.982 U	1.6 U	1.6 U
1,3-Dichlorobenzene	37.2	0.52 U	1.2 U	2.2 U	3.8 U	19 U	1.6 U	0.78 U	0.36 U	0.41 U	2.4 U	2.5 U	2.40 U	2.40 U	**1.21 J**	0.96 U	0.96 U
1,4-Dichlorobenzene	NC	0.42 U	0.49 U	0.87 U	1. 5U	21 U	1.8 U	0.87 U	0.4 U	0.46 U	2.7 U	2.8 U	0.782 U	0.782 U	0.782 U	4.6 U	1.9 U
2-Butanone	730,000	**24**	**45**	13 U	NA	NA	NA	NA	NA	NA	NA	NA	**1.80 J**	**1.75 J**	**2.80 J**	**2.2 J**	1.3 U
2-Propanol	29,200	**40.8**	**960**	**14 I**	NA	NA	NA	NA	NA	NA	NA	NA	1.54 U	**347**	**388**	37.4	**3.9**
4-Ethyltoluene	NC	0.59 U	**2.9**	0.97 U	NA	NA	NA	NA	NA	NA	NA	NA	0.982 U	0.982 U	0.982 U	1.9 U	1.9 U
Acetone	4,510,000	**31.4**	**190**	24 U	42 U	**42 I**	**15**	**31**	**18**	**42**	**13**	**8.8**	2.85 U	2.85 U	**16.3**	**14**	**3.3**
2H,3H-Decafluoropentane	131,400	**2.0**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzene	52	**2.0 I**	**2.4**	**1.9 I**	NA	NA	NA	NA	NA	NA	NA	NA	**0.840 J**	**0.247 J**	0.479 U	0.80 U	1.9 U
Carbon disulfide	10,200	0.29 U	1.1 U	2.0 U	NA	NA	NA	NA	NA	NA	NA	NA	0.778 U	0.778 U	0.778 U	0.56 U	0.56 U
Chloroform	18	**12**	**6.3**	**17**	16	21 U	2.2 U	1.1 U	**1.4 I**	0.56 U	**13 I**	**6.5 I**	**9.44**	**11.6**	**13.3**	**12**	**7.8**
Chloromethane	1,310	0.13 U	0.4 U	0.72 U	1.2 U	11 U	2.8 U	1.3 U	0.62 U	0.71 U	1.4 U	1.5 U	0.516 U	0.516 U	0.516 U	0.74 U	0.74 U
Dichlorodifluoromethane	14,600	0.33 U	0.75 U	1.2 U	2.3 U	30 U	3.2	1.5 U	0.71 U	0.81 U	3.9 U	4.0 U	**1.64 J**	**1.18 J**	**1.81** J	**2.2 J**	2.1 U
Ethanol	NC	**11**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.19 U	**33.0**	1.19 U	3.0 U	**4.0**
Freon 113	730,000	**78.2**	**56**	**63**	**54**	**980**	**130**	**34**	**21**	**350**	**350**	**130**	**117**	**41.0**	**210**	**105**	**63**
N-Heptane	58,400	**20**	**4.8**	1.2 U	NA	NA	NA	NA	NA	NA	NA	NA	**0.442 J**	**1.10 J**	**0.691 J**	1.5 U	0.74 U
Ethylbenzene	54,400,000	**13**	**22**	0.91 U	NA	NA	NA	NA	NA	NA	NA	NA	0.867 U	0.867 U	0.867 U	1.0 U	1.0 U
Hexachlorobutadiene	18.6	1.9 U	**1.8 I**	3.2 U	5.6 U	44 U	2.2 U	1 U	0.48 U	0.54 U	5.6 U	5.8 U	2.67 U	2.67 U	2.67 U	2.7 U	2.7 U
Hexane	102,000	**4.9**	**4.6 I**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.76 U	NA	1.6 U	0.74 U
Methylene chloride	40,900	**2.9**	3.9 U	6.9 U	12 U	7.7 U	**1.8 I**	**1.1 I**	0.26 U	**1.3 I**	**2.5 I**	**2.1 I**	0.694 U	0.694 U	**0.688 J**	0.76 U	0.76 U
Propene	48,300	0.11 U	**3.7**	**4.6**	**4.7 I**	11 U	3.2 U	1.5 U	0.71 U	0.81 U	1.4 U	1.4 U	1.08 U	1.08 U	1.08 U	0.98 U	**1.9 J**
Styrene	14,600	0.32 U	0.50 U	0.89 U	NA	NA	NA	NA	NA	NA	NA	NA	0.851 U	0.581 U	0.851 U	2.0 U	0.89 U
Tertiary butyl alcohol	102,000	0.17 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NS	NA	1.1 U	1.1 U
Tetrachloroethylene	584	0.81 U	0.95 U	1.7 U	2.9 U	23 U	1.8 U	0.87 U	0.4 U	0.46 U	3.0 U	3.1 U	1.36 U	1.36 U	1.36 U	0.38 U	0.38 U
Tetrahydrofuran	292,000	**104**	**150**	**4.4**	NA	NA	NA	NA	NA	NA	NA	NA	**1.06**	0.442 U	0.442 U	1.1 U	1.1 U
Toluene	730,000	**2.7 I**	**22**	**1.5 I**	NA	NA	NA	NA	NA	NA	NA	NA	0.942 U	0.942 U	**1.22 J**	0.87 U	0.87 U
TLPH	NC	**2.7**	3400 U	6100 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
trans-1,2-Dichloroethene	102,000	0.11 U	**3.9**	**2.4 I**	0.99 U	14 U	**4.5 I**	0.9 U	**1 I**	**0.56 I**	**14**	1.9 U	**4.16**	**1.30**	**2.27**	1.1 U	0.44 U
Trichloroethene	100	0.41 U	**47**	0.95 U	1.6 U	21 U	2.1 U	0.98 U	0.45 U	0.51 U	2.7 U	2.8 U	0.804 U	**12.8**	**0.474** J	0.41 U	0.41 U
Trichlorofluoromethane	NC	0.62 U	**1.1 I**	1.2 U	2.0 U	21 U	2 U	0.95 U	0.44 U	0.5 U	2.7 U	2.8 U	**0.983 J**	**0.877 J**	**1.03 J**	0.79 U	3.5 U
Total Xylenes	14,600	**33**	**110**	2.7 U	NA	NA	NA	NA	NA	NA	NA	NA	**0.902 J**	**0.611 J**	1.30 U	1.3 U	1.3 U
Vinyl acetate	29,200	**2.3 I**	0.34 U	0.6 U	NA	NA	NA	NA	NA	NA	NA	NA	0.880 U	0.880 U	0.880 U	1.6 U	1.6 U
Vinyl chloride	93	0.23 U	0.45 U	0.8 U	1.4 U	16 U	3.3 U	1.6 U	0.72 U	0.82 U	2.0 U	2.1 U	0.511 U	0.511 U	0.511 U	0.72 U	0.72 U

Notes:

1 - Analyte list presented is based on initial sub-slab soil gas sampling events. Additional analytes and results from subsequent sampling events can be found in supporting laboratory reports.

USEPA VISL = United States Environmental Protection Agency Vapor Intrusion Screening Level, May 2018 Region Screening Levels, 10^{-6} carcinogen risk, commercial.

Detections are bolded.

* VMP03 resampled in February 2023 due to equipment malfunction.

Quarterly sampling results for April 2023 not available - see text for details.

µg/m³ = micrograms per cubic meter.

CRCA = Components Refurbishment and Chemical Analysis.

I = Analyte detected at a value greater than the laboratory method detection limit, but less than the practical quantitation limit.

J = Estimated value.

U = Analyte not detected at associated detection limit.

B = Same analyte found in the associated blank.

NA = Not analyzed.

NC = No screening criteria has been established or was calculated.

Table 4-6. Ambient Air Analytical Results

Analyte[1]	Permissible Exposure Limit (µg/m³)	Threshold Limit Value (µg/m³)	SAMPLE ID																
			SYS AIR AMB01																
			6/18/2019	8/12/2019	10/2/2019	1/15/2020	4/9/2020	7/16/2020	10/15/2020	1/20/2021	4/14/2021	7/26/2021	10/21/2021	1/14/2022	4/25/2022	7/22/2022	10/27/2022	1/26/2023	7/31/2023
Site Specific Compounds																			
trans-1,2-Dichloroethene	793,000	200,000	**5.8**	**20**	**0.43 I**	**22**	**0.44 I**	**49**	**210**	**0.96 I**	**7.2**	**3.6**	**36**	1.7 U	**26.8**	**101**	**9.39**	0.27 U	**1.3**
Vinyl chloride	NA	1,000	0.19 U	**4**	**1.3**	0.18 U	0.14 U	2.7 U	1.8 U	0.74 U	0.76 U	0.80 U	2.0 U	1.9 U	0.511 U	0.511 U	0.511 U	0.18 U	0.18 U
Other Compounds																			
1,2,4-Trichlorobenzene	NC	NC	**11**	1.6 U	1.7 U	1.5 U	NR	NR	NR	NR	NR	NR	NR	NR	2.29 U	2.29 U	2.29 U	0.89 U	0.89 U
1,2,4-Trimethylbenzene	NC	NC	**0.71 I**	**0.33 I**	**0.39 I**	**0.31 I**	NR	NR	NR	NR	NR	NR	NR	NR	0.982 U	**0.409 J**	0.982 U	0.43 U	0.43 U
1,3,5-Trimethylbenzene	NC	NC	**0.46 I**	0.15 U	0.16 U	0.15 U	NR	NR	NR	NR	NR	NR	NR	NR	0.982 U	0.982 U	0.982 U	0.39 U	0.39 U
1,4-Dichlorobenzene	75,000	10,000	**0.34 I**	0.20 U	0.22 U	0.20 U	0.15 U	3.5 U	2.4 U	0.41 U	0.42 U	0.44 U	2.6 U	2.5 U	0.782 U	0.782 U	0.782 U	1.1 U	0.47 U
2-Butanone	200,000	200,000	**5.2 I**	2.9 U	3.2 U	2.9 U	NR	NR	NR	NR	NR	NR	NR	NR	**0.923 J**	**0.767 J**	**1.03 J**	**0.68**	**1.1**
2-Propanol	NC	NC	**33**	**2.2 I**	**22**	**16**	NR	NR	NR	NR	NR	NR	NR	NR	**1.99 J**	**2.56 J**	**4.33**	**3.7**	**9.6**
4-Ethyltoluene	NC	NC	**0.88 I**	**0.28 I**	**0.24**	**0.29 I**	NR	NR	NR	NR	NR	NR	NR	NR	0.982 U	0.982 U	0.982 U	0.47 U	0.47 U
Acetone	2,400,000	250,000	**18**	**15**	11 U	**7.5 I**	**7.9**	**13**	**11**	**2.6 I**	**5.3 V**	**3.9**	**5.6 I**	**3.9 I**	**6.06**	**4.92 J**	**6.91**	**5.5**	**11**
Benzene	10,000	500	0.21 U	**0.24 I**	0.23 U	**0.26 I**	NR	NR	NR	NR	NR	NR	NR	NR	**0.235 J**	0.610 U	**0.706 J**	**0.35 J**	0.48 U
Carbon disulfide	20,000	1,000	**0.51 I**	**2.4**	0.50 U	**0.65 I**	NR	NR	NR	NR	NR	NR	NR	NR	0.778 U	**2.52**	0.778 U	0.14 U	0.14 U
Carbon Tetrachloride	10,000	1,000	**0.49 I**	**0.48 I**	**0.38 I**	**0.60 I**	**0.53 I**	3.2 U	2.2 U	0.36 U	0.36 U	0.38 U	2.3 U	2.3 U	0.945 U	0.945 U	0.945 U	0.25 U	0.25 U
Chloromethane	NC	NC	**1.4**	**1.7**	**1.0**	**1.0**	**1.3**	1.9 U	**1.3 I**	0.66 U	0.66 U	0.80 U	1.4 U	1.3 U	**1.61**	0.516 U	**1.25**	**1.5**	**1.0**
Dichlorodifluoromethane	1,000,000	1,000,000	**2.2**	**2.2**	**1.9**	**1.7**	**1.6**	5.3 U	3.5 U	0.73 U	0.74 U	0.78 U	3.8 U	3.7 U	**2.44 J**	**1.46 J**	**2.16 J**	**1.6**	**1.6**
Ethyl acetate	400,000	400,000	0.15 U	0.15 U	**0.29 I**	0.14 U	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	**1.5**	**5.8**
Freon 113	1,000,000	1,000,000	**2.5**	**0.75 I**	**0.51 I**	**4.0**	**2.2**	4.7 U	3.1 U	0.42 U	0.43 U	0.45 U	3.4 U	3.3 U	1.53 U	1.53 U	1.53 U	0.24 U	**0.72 J**
Hexachlorobutadiene	NC	NC	**0.96**	0.74 U	**0.96 I**	0.73 U	0.56 U	7.5 U	5.0 U	0.49 U	0.50 U	0.53 U	5.4 U	5.3 U	2.67 U	2.67 U	2.67 U	0.66 U	0.66 U
Methylene chloride	100,000	50,000	1.6 U	1.6 U	1.7 U	1.6 U	**1.9 I**	**1.9 I**	**2.1 IV**	**0.99 IV**	0.27 U	**0.68 I**	**1.4 I**	**2.4 I**	**1.09 J**	0.694 U	**0.694 J**	0.19 U	**27**
n-Hexane	500,000	50,000	1.7 U	**5.2 I**	**1.9 I**	1.7 U	NR	NR	NR	NR	NR	NR	NR	NR	1.76 U	1.76 U	1.76 U	0.39 U	**14**
Propene	1,800,000	500,000	**0.34 I**	0.15 U	**0.34 I**	**0.38 I**	**0.60**	1.8 U	1.2 U	0.73 U	0.74 U	0.78 U	1.3 U	1.3 U	1.08 U	**0.222 J**	**0.837 BJ**	0.24 U	**0.38 J**
Tetrachloroethene	100,000	25,000	0.39 U	**0.69 I**	**0.60 I**	0.38 U	0.29 U	4 U	2.7 U	0.41 U	0.42 U	0.44 U	2.9 U	2.8 U	1.36 U	1.36 U	1.36 U	0.095 U	0.095 U
Tetrahydrofuran	200,000	50,000	**0.53 I**	0.18 U	0.19 U	0.18 U	NR	NR	NR	NR	NR	NR	NR	NR	0.442 U	0.442 U	0.442 U	0.27 U	0.27 U
Toluene	200,000	20,000	**0.60 I**	**0.61 I**	**0.51 I**	**0.62 I**	NR	NR	NR	NR	NR	NR	NR	NR	**0.976 J**	0.942 U	**1.33 J**	0.21 U	**0.60 J**
Trichlorofluoromethane	NC	NC	**1.3**	**1.2**	**1.2**	**1.2**	**1.1**	3.6 U	2.4 U	0.45 U	0.46 U	0.48 U	2.6 U	2.6 U	**1.20 J**	**1.18 J**	**1.13 J**	**0.96 J**	**2.2**
Xylenes (Total)	100,000	100,000	**1.2**	**2.1**	**1.0**	**0.62**	NR	NR	NR	NR	NR	NR	NR	NR	1.30 U	1.30 U	1.30 U	0.33 U	0.33 U

Table 4-6. Ambient Air Analytical Results (Continued)

Analyte	Permissible Exposure Limit (µg/m³)	Threshold Limit Value (µg/m³)	SAMPLE ID																
			SYS AIR AMB02																
			6/18/2019	8/12/2019	10/2/2019	1/15/2020	4/9/2020	7/16/2020	10/15/2020	1/20/2021	4/14/2021	7/26/2021	10/21/2021	1/14/2022	4/25/2022	7/22/2022	*11/01/2022	1/26/2023	7/31/2023
Site Specific Compounds																			
trans-1,2-Dichloroethene	793,000	200,000	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	1.8 U	**2.1 I**	0.594 U	**0.277 J**	**1.61**	**1.6**	**0.83**
Vinyl chloride	NA	1,000	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	2.0 U	1.9 U	0.511 U	0.511 U	0.511 U	0.18 U	0.18 U
Other Compounds																			
1,2,4-Trichlorobenzene	NC	NC	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NR	NR	2.29 U	2.29 U	2.29 U	0.89 U	0.89 U
1,2,4-Trimethylbenzene	NC	NC	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NR	NR	0.982 U	0.982 U	0.982 U	0.43 U	0.43 U
1,3,5-Trimethylbenzene	NC	NC	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NR	NR	0.982 U	0.982 U	0.982 U	0.39 U	0.39 U
1,4-Dichlorobenzene	75,000	10,000	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	2.6 U	2.5 U	0.782 U	0.782 U	0.782 U	1.1 U	0.47 U
2-Butanone	200,000	200,000	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NR	NR	**0.902 J**	**0.525 J**	**0.389 J**	**0.80**	**1.5**
2-Propanol	NC	NC	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NR	NR	1.54 U	**1.54 J**	**440**	**68.1**	**9.3**
4-Ethyltoluene	NC	NC	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NR	NR	0.982 U	0.982 U	0.982 U	0.47 U	0.47 U
Acetone	2,400,000	250,000	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	**6.7 I**	**11**	**6.15**	**4.87 J**	**6.46**	**6.2**	**11**
Benzene	10,000	500	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NR	NR	0.479 U	0.479 U	0.479 U	**0.38**	0.48 U
Carbon disulfide	20,000	1,000	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NR	NR	0.778 U	0.778 U	0.778 U	0.14 U	0.14 U
Carbon Tetrachloride	10,000	1,000	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	2.4 U	2.3 U	**0.506 J**	0.945 U	**0.649 J**	0.25 U	0.25 U
Chloromethane	NC	NC	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	1.4 U	1.3 U	**1.32**	**1.12**	**2.29**	**1.5**	**1.1**
Dichlorodifluoromethane	1,000,000	1,000,000	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	3.8 U	3.7 U	**2.35 J**	**1.55 J**	**2.15 J**	**1.6**	**1.8**
Ethyl acetate	400,000	400,000	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NR	NR	NR	NR	NR	**6.1**	**17**
Freon 113	1,000,000	1,000,000	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	3.4 U	**5.8 I**	1.53 U	1.53 U	**1.07 J**	0.24 U	**1.0 J**
Hexachlorobutadiene	NC	NC	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	5.5 U	5.4 U	2.67 U	2.67 U	2.67 U	0.66 U	0.66 U
Methylene chloride	100,000	50,000	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	**1.6 I**	**2.9 I**	0.694 U	0.694 U	**0.347 J**	**1.0**	**18**
n-Hexane	500,000	50,000	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NR	NR	1.76 U	1.76 U	1.76 U	0.39 U	**7.4**
Propene	1,800,000	500,000	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	1.3 U	1.3 U	1.08 U	**0.210 J**	**0.424 BJ**	0.24 U	**0.36 J**
Tetrachloroethene	100,000	25,000	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	2.9 U	2.9 U	**1.05 J**	1.36 U	**10.5**	0.095 U	**0.24 J**
Tetrahydrofuran	200,000	50,000	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NR	NR	0.442 U	0.442 U	0.442 U	0.27 U	0.27 U
Toluene	200,000	20,000	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NR	NR	**0.441 J**	0.942 U	**0.368 J**	**0.45 J**	**0.94**
Trichlorofluoromethane	NC	NC	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	2.7 U	2.6 U	**1.17 J**	**1.10 J**	**1.13 J**	**0.96 J**	**2.0 J**
Xylenes (Total)	100,000	100,000	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NR	NR	1.30 U	1.30 U	1.30 U	0.33 U	0.33 U

Notes:

Values are presented as 8-hour time weighted average.

Concentrations in micrograms per cubic meter.

Shaded analytes indicate constituents previously detected in the groundwater during performance monitoring sampling.

Detections are bolded.

* AMB02 was sampled on October 27, 2022, however, pressure was lost after four hours due to a valve malfunction. Therefore, AMB02 was resampled on November 1, 2022 and referenced in the lab report as AMB03 (Analytical Package L1553021).

Quarterly sampling for April 2023 not available - see text for details.

CRCA = Components Refurbishment and Chemical Analysis.

1 - Analyte list presented is based on initial ambient air sampling events. Additional analytes and results from subsequent sampling events can be found in supporting laboratory reports.

U = Value was reported as below the method detection limit, therefore the detection limit is shown.

I = Value is between method detection limit and practical quantitation limit.

V = Analyte was detected in both the sample and the associated method blank.

B = Same analyte found in the associated blank.

J = Estimated result between the limit of quantitation and the detection limit.

NS = Not sampled.

NR= Not recorded.

PEL = Permissible exposure limit.

TLV = Threshold limit value.

Table 4-7. Vinyl Chloride Concentration Reduction

Monitoring Well (CRCA-)	Baseline	Year 4			
	June-19	January-23		July-23	
	VC (µg/L)	VC (µg/L)	VC Reduction	VC (µg/L)	VC Reduction
Intermediate Interval Wells (20 - 40 feet bls)					
MW0002	**28**	0.41 U	99.27%	**0.47 I**	98.32%
MW0013	0.71 U	**2.9**	-717%	**1.5**	-322.54%
Plume Centerline Well Geometric Mean	**3.15**	**0.77**	75.54%	**0.84**	73.37%
Deep Interval Wells (53 - 63 feet bls)					
MW0018	**140**	**22.3**	84.07%	**22.1**	84.21%
MW0019	**250**	0.41 U	99.92%	0.41 U	99.92%
MW0031	**680**	**8.6**	98.74%	0.41 U	99.97%
MW0032	0.71 U	**9.5**	-2,576%	**8.4**	-2,266%
Plume Centerline Well Geometric Mean	**287.65**	**3.40**	98.82%	**0.98**	99.66%

Notes:

For results that were below the laboratory method detection limit, 1/2 the detection limit was used for calculations.
Bolding indicates a concentration is greater than the method detection limit.
MW0032 is downgradient of the HCS capture zone, and is not included in plume centerline well geometric mean.
Shading indicates the State of Florida Groundwater Cleanup Target Level (GCTL) exceedance, VC = 1 µg/L.
CRCA = Components Refurbishment and Chemical Analysis.
bls = below land surface.
lbs = pounds.
µg/L = micrograms per liter.
U = Value was reported as below the method detection limit, therefore the detection limit is shown.
VC = vinyl chloride.

FIGURE 4-1 YEAR 4 PERFORMANCE MONITORING WELL LOCATION PLAN

SWMU 041, KENNEDY SPACE CENTER, FLORIDA

CRCA PMR4
Revision 0
May 2024

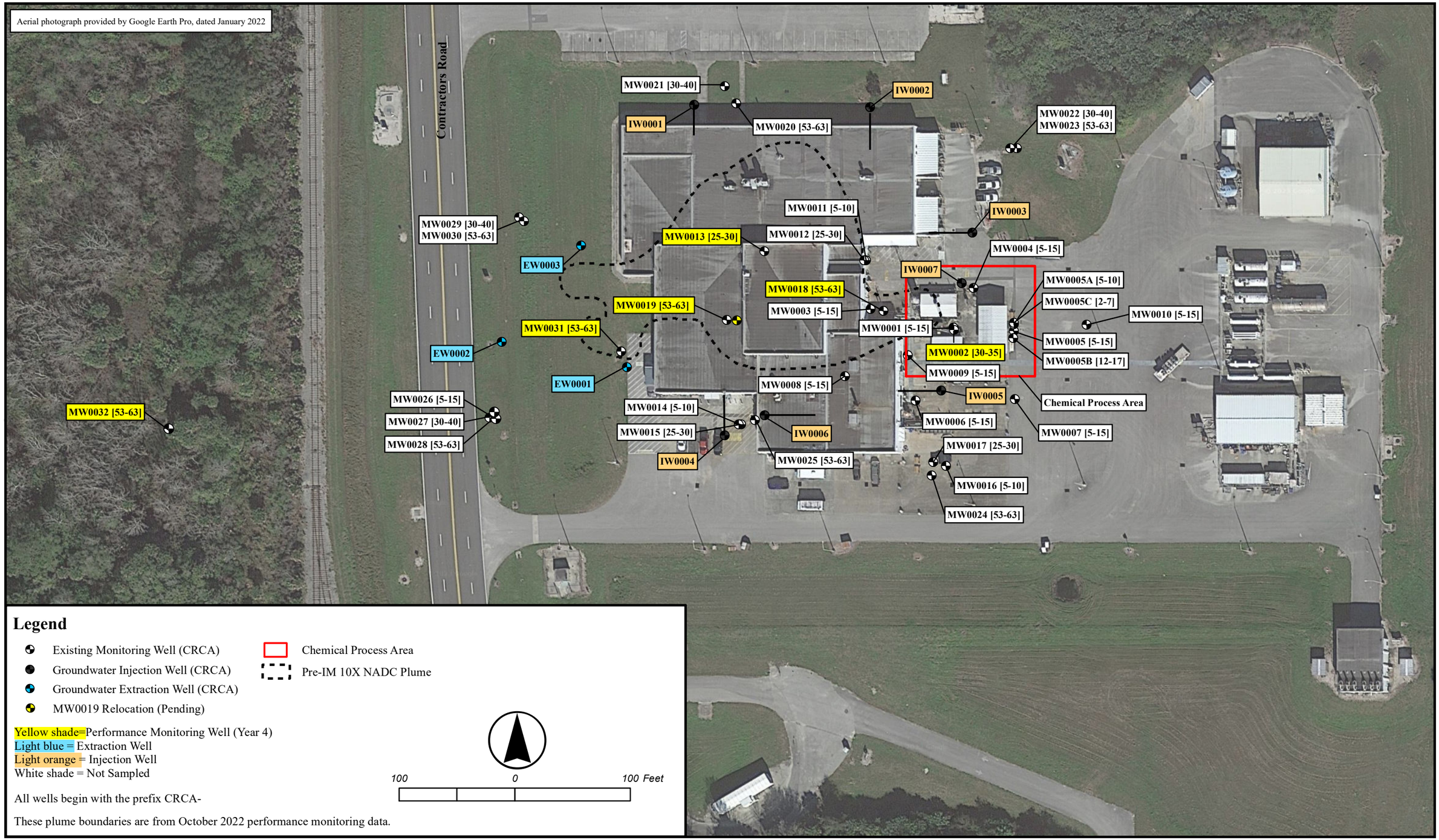
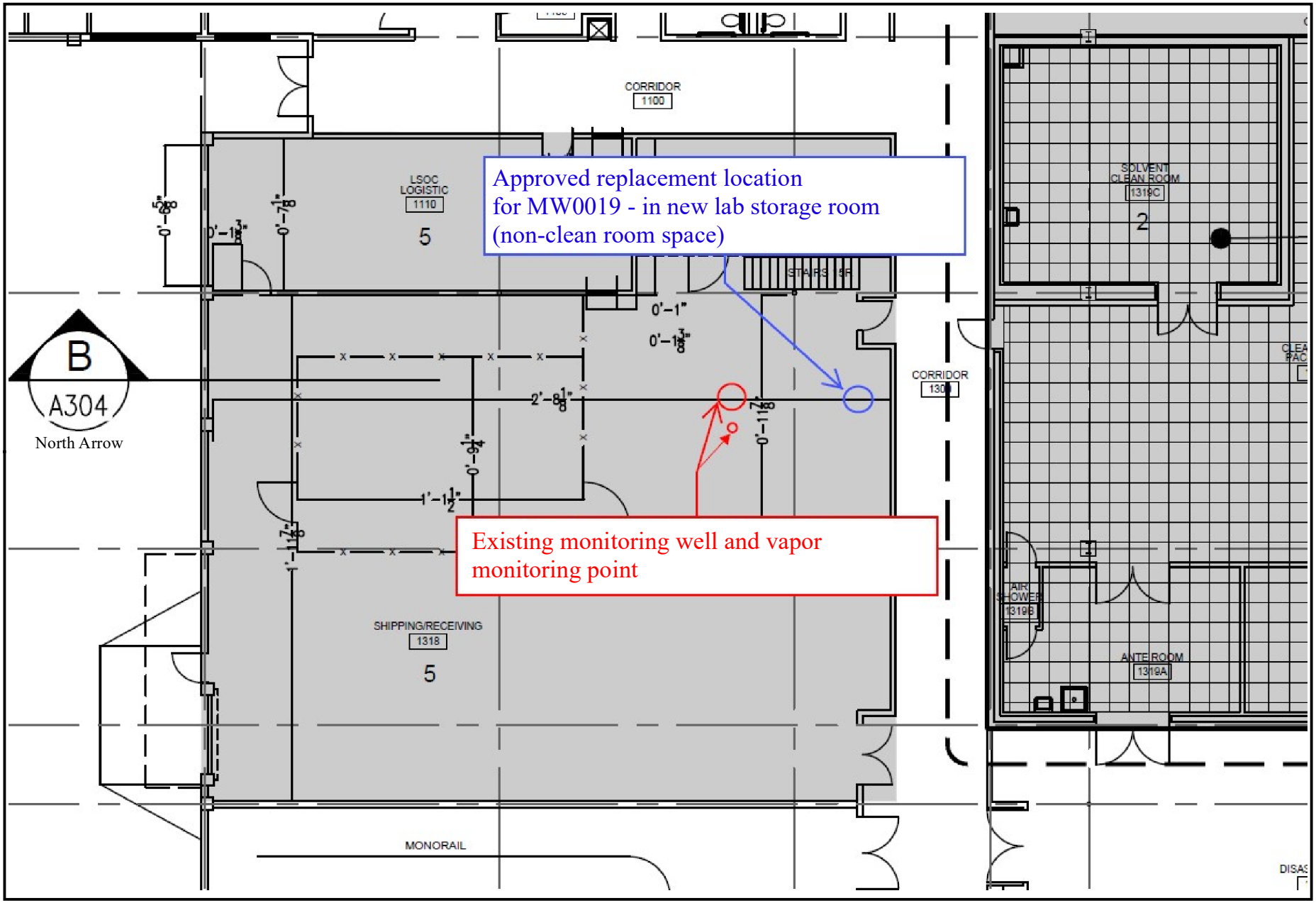


FIGURE 4-2 MW0019 RELOCATION SCHEMATIC

SWMU 041, KENNEDY SPACE CENTER, FLORIDA

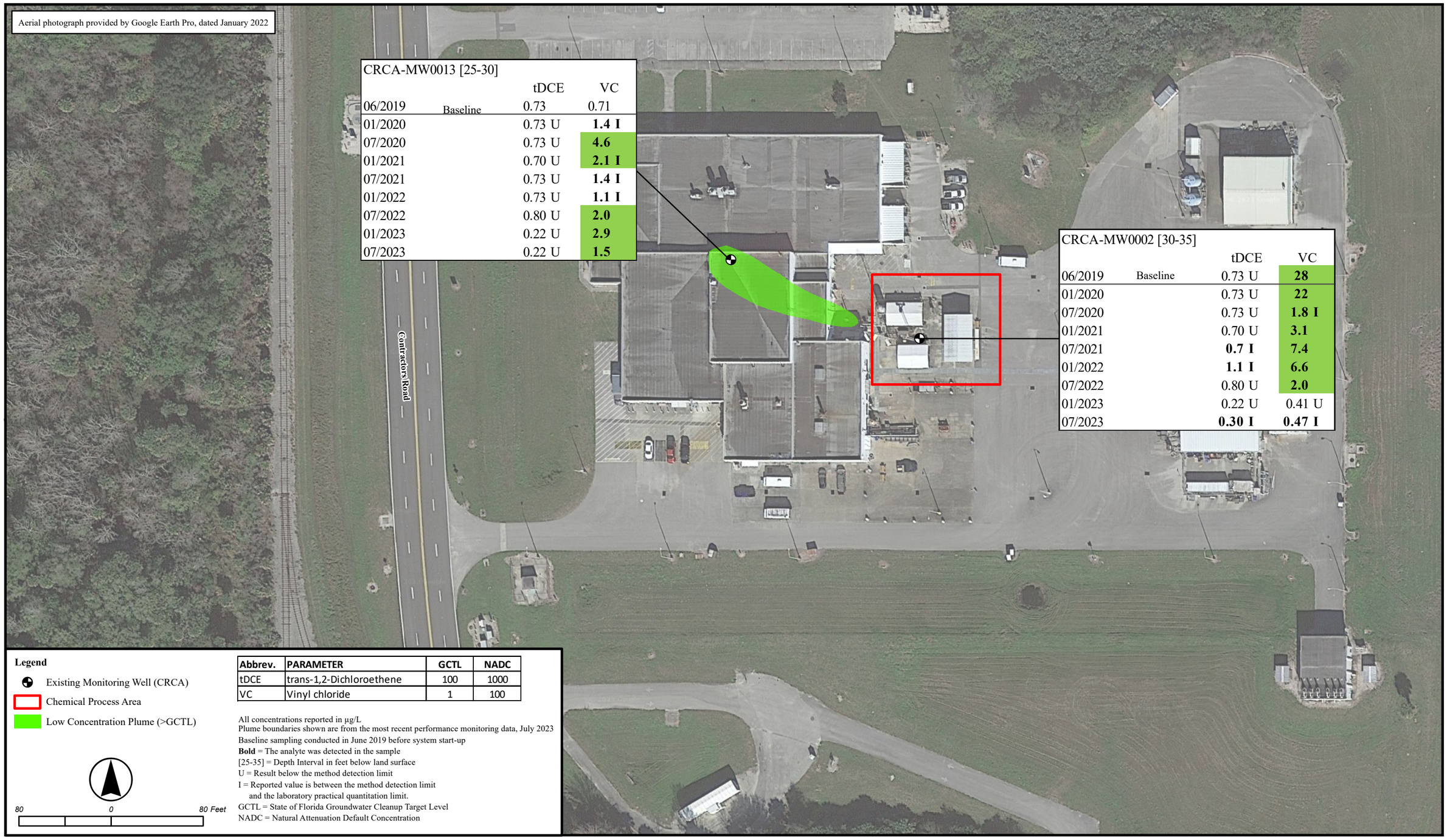
CRCA PMR4
Revision 0
May 2024



JAX:C:\GIS\KSC\MXD\CRCA\STEP 2\MXD\4-2_CRCA_MW19_RELO.MXD 2/1/2024 JM

FIGURE 4-3 YEAR 4 CONTAMINANTS OF CONCERN INTERMEDIATE PLUME: 24-40 FEET BLS

SWMU 041, KENNEDY SPACE CENTER, FLORIDA



CRCA-MW0013 [25-30]

		tDCE	VC
06/2019	Baseline	0.73	0.71
01/2020		0.73 U	**1.4 I**
07/2020		0.73 U	**4.6**
01/2021		0.70 U	**2.1 I**
07/2021		0.73 U	**1.4 I**
01/2022		0.73 U	**1.1 I**
07/2022		0.80 U	**2.0**
01/2023		0.22 U	**2.9**
07/2023		0.22 U	**1.5**

CRCA-MW0002 [30-35]

		tDCE	VC
06/2019	Baseline	0.73 U	**28**
01/2020		0.73 U	**22**
07/2020		0.73 U	**1.8 I**
01/2021		0.70 U	**3.1**
07/2021		**0.7 I**	**7.4**
01/2022		**1.1 I**	**6.6**
07/2022		0.80 U	**2.0**
01/2023		0.22 U	0.41 U
07/2023		**0.30 I**	**0.47 I**

Legend

- Existing Monitoring Well (CRCA)
- Chemical Process Area
- Low Concentration Plume (>GCTL)

80 0 80 Feet

Abbrev.	PARAMETER	GCTL	NADC
tDCE	trans-1,2-Dichloroethene	100	1000
VC	Vinyl chloride	1	100

All concentrations reported in µg/L
Plume boundaries shown are from the most recent performance monitoring data, July 2023
Baseline sampling conducted in June 2019 before system start-up
Bold = The analyte was detected in the sample
[25-35] = Depth Interval in feet below land surface
U = Result below the method detection limit
I = Reported value is between the method detection limit and the laboratory practical quantitation limit.
GCTL = State of Florida Groundwater Cleanup Target Level
NADC = Natural Attenuation Default Concentration

FIGURE 4-4 YEAR 4 CONTAMINANTS OF CONCERN DEEP PLUME: 53-63 FEET BLS

SWMU 041, KENNEDY SPACE CENTER, FLORIDA

Aerial photograph provided by Google Earth Pro, dated January 2022

CRCA-MW0032 [53-63]

		tDCE	VC
06/2019	Baseline	0.73 U	0.71 U
01/2020		0.73 U	**9.2**
07/2020		0.73 U	**8.9**
10/2020		0.73 U	**17**
01/2021		0.73 U	0.71 U
04/2021		0.73 U	**6.0**
07/2021		0.73 U	**11**
10/2021		0.73 U	**8.7**
01/2022		0.73 U	**14**
04/2022		0.80 U	**12**
07/2022		0.80 U	**14**
10/2022		0.80 U	**9.2**
01/2023		0.22 U	**9.5**
07/2023		0.22 U	**8.4**

CRCA-MW0019 [53-63]

		tDCE	VC
06/2019	Baseline	**1.9 I**	**250**
10/2019		1.5 U	**110**
01/2020		0.73 U	**34**
04/2020		0.73 U	**9.4**
07/2020		0.73 U	**20**
10/2020		0.73 U	**3.3**
01/2021		0.73 U	**2.8**
04/2021		0.73 U	**2.8**
07/2021		0.73 U	**1.4 I**
10/2021		0.73 U	**0.78 I**
01/2022		0.73 U	0.71 U
04/2022		0.80 U	**0.52 I**
07/2022		0.80 U	**1.7**
10/2022		0.80 U	**0.46 J**
01/2023		0.22 U	0.41 U
07/2023		0.22 U	0.41 U

CRCA-MW0018 [53-63]

		tDCE	VC
06/2019	Baseline	0.73 U	**140**
10/2019		1.5 U	**130**
01/2020		0.73 U	**100**
04/2020		0.73 U	**84**
07/2020		0.73 U	**110**
10/2020		0.73 U	**81**
01/2021		0.73 U	**97**
04/2021		0.73 U	**63**
07/2021		0.73 U	**55**
10/2021		0.73 U	**42**
01/2022		0.80 U	**34**
04/2022		0.80 U	**33**
07/2022		0.80 U	**31**
10/2022		0.80 UH	**23 H**
01/2023		0.22 U	**22.3**
07/2023		0.22 U	**22.1**

CRCA-MW0031 [53-63]

		tDCE	VC
06/2019	Baseline	**4.4 I**	**680**
10/2019		3.6 U	**310**
01/2020		0.73 U	**87**
04/2020		0.73 U	**62**
07/2020		0.73 U	**71**
10/2020		0.73 U	**28**
01/2021		0.73 U	**29**
04/2021		0.73 U	**13**
07/2021		0.73 U	**18**
10/2021		0.73 U	**13**
01/2022		0.73 U	**7.8**
04/2022		0.80 U	**12**
07/2022		0.80 U	**4.6**
10/2022		0.80 U	**5.3**
01/2023		0.22 U	**8.6**
07/2023		0.22 U	0.41 U

Contractors Road

Legend

- Exisiting Monitoring Well (CRCA)
- Chemical Process Area
- Low Concentration Plume (>GCTL)
- High Concentration Plume (>NADC)

80 0 80 Feet

Abbrev.	PARAMETER	GCTL	NADC
tDCE	trans-1,2-Dichloroethene	100	1000
VC	Vinyl chloride	1	100

All concentrations reported in µg/L
Plume boundaries shown are from the most recent performance monitoring data, July 2023
Baseline sampling conducted in June 2019 before system start-up
Bold = The analyte was detected in the sample
[53-63] = Depth Interval in feet below land surface
U = Result below the method detection limit
I = Reported value is between the method detection limit and the laboratory practical quantitation limit.
J = Estimated value
H = Method holding time exceeded
GCTL = State of Florida Groundwater Cleanup Target Level
NADC = Natural Attenuation Default Concentration

JAX C:\GIS\KSC\MXD\CRCA\SEPT 2023\4-5 CRCA_YEAR4_DEEP_PLUMES_RESULTS.MXD 04/18/24 JM

FIGURE 4-5 YEAR 4 VINYL CHLORIDE COMBINED INTERMEDIATE AND DEEP PLUMES

SWMU 041, KENNEDY SPACE CENTER, FLORIDA

Aerial photograph provided by Google Earth Pro, dated January 2022

CRCA-MW0032 [53-63]

		tDCE	VC
06/2019	Baseline	0.73 U	0.71 U
01/2020		0.73 U	**9.2**
07/2020		0.73 U	**8.9**
10/2020		0.73 U	**17**
01/2021		0.73 U	0.71 U
04/2021		0.73 U	**6.0**
07/2021		0.73 U	**11**
10/2021		0.73 U	**8.7**
01/2022		0.73 U	**14**
04/2022		0.80 U	**12**
07/2022		0.80 U	**14**
10/2022		0.80 U	**9.2**
01/2023		0.22 U	**9.5**
07/2023		0.22 U	**8.4**

CRCA-MW0019 [53-63]

		tDCE	VC
06/2019	Baseline	**1.9 I**	**250**
10/2019		1.5 U	**110**
01/2020		0.73 U	**34**
04/2020		0.73 U	**9.4**
07/2020		0.73 U	**20**
10/2020		0.73 U	**3.3**
01/2021		0.73 U	**2.8**
04/2021		0.73 U	**2.8**
07/2021		0.73 U	**1.4 I**
10/2021		0.73 U	**0.78 I**
01/2022		0.73 U	0.71 U
04/2022		0.80 U	**0.52 I**
07/2022		0.80 U	**1.7**
10/2022		0.80 U	**0.46 J**
01/2023		0.22 U	0.41 U
07/2023		0.22 U	0.41 U

CRCA-MW0013 [25-30]

		tDCE	VC
06/2019	Baseline	0.73	0.71
01/2020		0.73 U	**1.4 I**
07/2020		0.73 U	**4.6**
01/2021		0.70 U	**2.1 I**
07/2021		0.73 U	**1.4 I**
01/2022		0.73 U	**1.1 I**
07/2022		0.80 U	**2.0**
01/2023		0.22 U	**2.9**
07/2023		0.22 U	**1.5**

CRCA-MW0018 [53-63]

		tDCE	VC
06/2019	Baseline	0.73 U	**140**
10/2019		1.5 U	**130**
01/2020		0.73 U	**100**
04/2020		0.73 U	**84**
07/2020		0.73 U	**110**
10/2020		0.73 U	**81**
01/2021		0.73 U	**97**
04/2021		0.73 U	**63**
07/2021		0.73 U	**55**
10/2021		0.73 U	**42**
01/2022		0.80 U	**34**
04/2022		0.80 U	**33**
07/2022		0.80 U	**31**
10/2022		0.80 UH	**23 H**
01/2023		0.22 U	**22.3**
07/2023		0.22 U	**22.1**

CRCA-MW0031 [53-63]

		tDCE	VC
06/2019	Baseline	**4.4 I**	**680**
10/2019		3.6 U	**310**
01/2020		0.73 U	**87**
04/2020		0.73 U	**62**
07/2020		0.73 U	**71**
10/2020		0.73 U	**28**
01/2021		0.73 U	**29**
04/2021		0.73 U	**13**
07/2021		0.73 U	**18**
10/2021		0.73 U	**13**
01/2022		0.73 U	**7.8**
04/2022		0.80 U	**12**
07/2022		0.80 U	**4.6**
10/2022		0.80 U	**5.3**
01/2023		0.22 U	**8.6**
07/2023		0.22 U	0.41 U

CRCA-MW0002 [30-35]

		tDCE	VC
06/2019	Baseline	0.73 U	**28**
01/2020		0.73 U	**22**
07/2020		0.73 U	**1.8 I**
01/2021		0.70 U	**3.1**
07/2021		**0.7 I**	**7.4**
01/2022		**1.1 I**	**6.6**
07/2022		0.80 U	**2.0**
01/2023		0.22 U	0.41 U
07/2023		**0.30 I**	**0.47 I**

Contractors Road

Legend

- Exisiting Monitoring Well (CRCA)
- Chemical Process Area
- Low Concentration Plume (>GCTL)
- High Concentration Plume (>NADC)

Abbrev.	PARAMETER	GCTL	NADC
tDCE	trans-1,2-Dichloroethene	100	1000
VC	Vinyl chloride	1	100

All concentrations reported in µg/L
Plume boundaries shown are from the most recent performance monitoring data, July 2023
Baseline sampling conducted in June 2019 before system start-up
Bold = The analyte was detected in the sample
[53-63] = Depth Interval in feet below land surface
U = Result below the method detection limit
I = Reported value is between the method detection limit and the laboratory practical quantitation limit.
J = Estimated value
H = Method holding time exceeded
GCTL = State of Florida Groundwater Cleanup Target Level
NADC = Natural Attenuation Default Concentration

80 0 80 Feet

JAX C:\GIS\KSC\MXD\CRCA\APRX\PMR4\4-5 CRCA_COMBINED_TAGS_YEAR4B.MXD 05/13/24 JM

FIGURE 4-6 SHALLOW POTENTIOMETRIC SURFACE MAP - JANUARY 2023

SWMU 041, KENNEDY SPACE CENTER, FLORIDA

CRCA PMR4
Revision 0
May 2024

Aerial photograph provided by Google Earth Pro, dated January 2022

Contractors Road

MW0011 [5-10] (2.53)
MW0001 [5-15] (2.22)
MW0004 [5-15] (2.25)
MW0005A [5-10] (2.19)
MW0010 [5-15] (2.17)
MW0003 [5-15] (2.17)
MW0009 [5-15] (2.28)
MW0005 [5-15] (2.09)*
MW0026 [5-15] (1.92)
MW0014 [5-10] (2.08)
MW0006 [5-15] (2.23)
MW0007 [5-15] (2.17)
MW0008 [5-15] (2.34)
MW0016 [5-10] (2.13)

2.50
2.40
2.30
2.20
2.10
2.00

Legend

- Monitoring Well
- Chemical Process Area
- [25-30] Screened Interval in feet below land surface
- Groundwater Flow Direction
- Groundwater Elevation Contour
- Inferred Groundwater Elevation Contour
- (1.38) Groundwater Elevation in feet above mean sea level

Contour Interval = 0.10 feet

* Well not used for contouring, deferred to adjacent location

All location IDs begin with "CRCA-."

50 0 50 Feet

JAX C:\GIS\KSC\MXD\CRCA\STEP 2\MXD\4-7_CRCA_GWELEV_JAN2023_SHALLOW.MXD 03/28/24

FIGURE 4-7 SHALLOW POTENTIOMETRIC SURFACE MAP - JULY 2023

SWMU 041, KENNEDY SPACE CENTER, FLORIDA

CRCA PMR4
Revision 0
May 2024

Aerial photograph provided by Google Earth Pro, dated January 2022

Contractors Road

4.60
4.20
4.30
4.40
4.50
4.10

MW0011 [5-10] (4.61)
MW0001 [5-15] (4.45)
MW0004 [5-15] (4.46)
MW0003 [5-15] (4.32)
MW0010 [5-15] (4.38)
MW0005A [5-10] (6.40)*
MW0009 [5-15] (4.54)
MW0008 [5-15] (4.34)
MW0005 [5-15] (4.32)
MW0014 [5-10] (4.28)
MW0026 [5-15] (4.01)
MW0006 [5-15] (4.42)
MW0007 [5-15] (4.38)
MW0016 [5-10] (4.38)

Legend

- Monitoring Well
- Chemical Process Area
- [25-30] Screened Interval in feet below land surface
- Groundwater Flow Direction
- Groundwater Elevation Contour
- Inferred Groundwater Elevation Contour
- (1.38) Groundwater Elevation in feet above mean sea level

Contour Interval = 0.10 feet

* Measurement not used

All location IDs begin with "CRCA-."

50 0 50 Feet

JAX C:\GIS\KSC\MXD\CRCA\STEP 2\MXD\4-8_CRCA_GWELEV_JULY2023_SHALLOW.MXD 03/28/24

Aerial photograph provided by Google Earth Pro, dated January 2022

Contractors Road

MW0021 [30-40] (2.00)
MW0022 [30-40] (2.21)
MW0029 [30-40] (1.76)
MW0013 [25-30] (2.03)
MW0012 [25-30] (2.14)
MW0002 [30-35] (2.15)
MW0027 [30-40] (1.75)
MW0015 [25-30] (2.03)
MW0017 [25-30] (2.09)

1.80
1.90
2.00
2.10
2.20

Legend

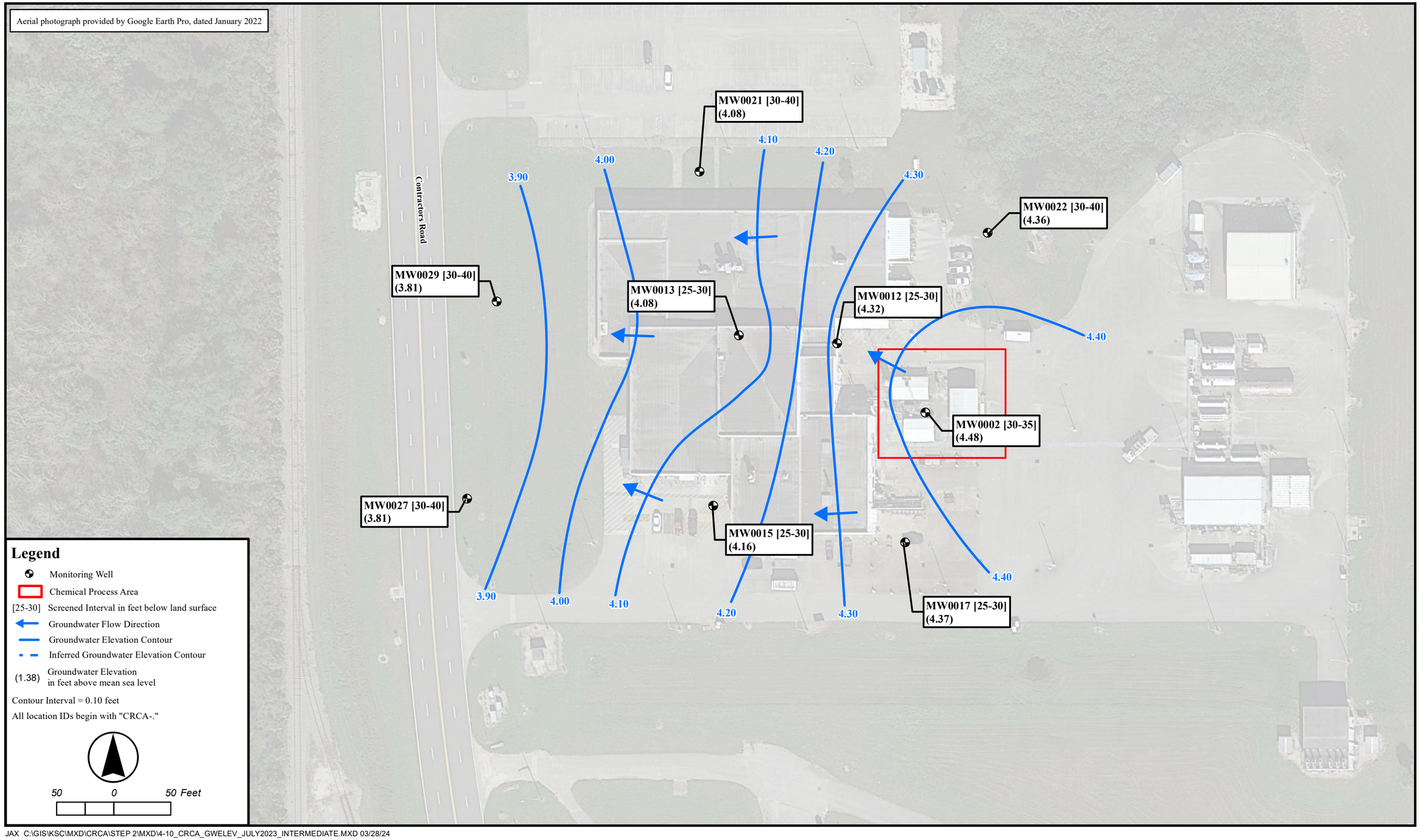
- Monitoring Well
- Chemical Process Area
- [25-30] Screened Interval in feet below land surface
- Groundwater Flow Direction
- Groundwater Elevation Contour
- Inferred Groundwater Elevation Contour
- (1.38) Groundwater Elevation in feet above mean sea level

Contour Interval = 0.10 feet

All location IDs begin with "CRCA-."

50 0 50 Feet

JAX C:\GIS\KSC\MXD\CRCA\STEP 2\MXD\4-9_CRCA_GWELEV_JAN2023_INTERMEDIATE.MXD 03/28/24

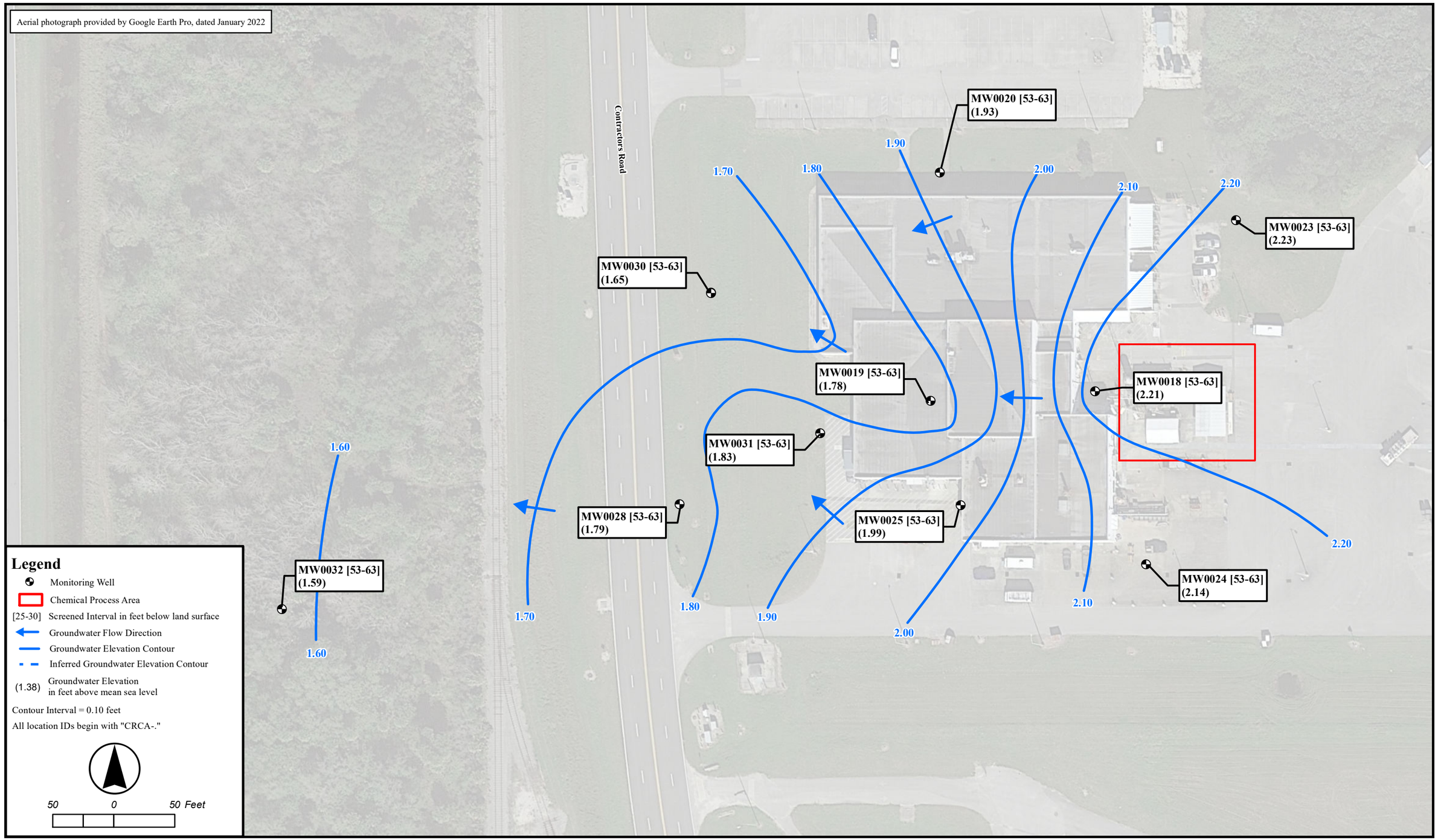


JAX C:\GIS\KSC\MXD\CRCA\STEP 2\MXD\4-10_CRCA_GWELEV_JULY2023_INTERMEDIATE.MXD 03/28/24

FIGURE 4-10 DEEP POTENTIOMETRIC SURFACE MAP - JANUARY 2023

SWMU 041, KENNEDY SPACE CENTER, FLORIDA

CRCA PMR4
Revision 0
May 2024

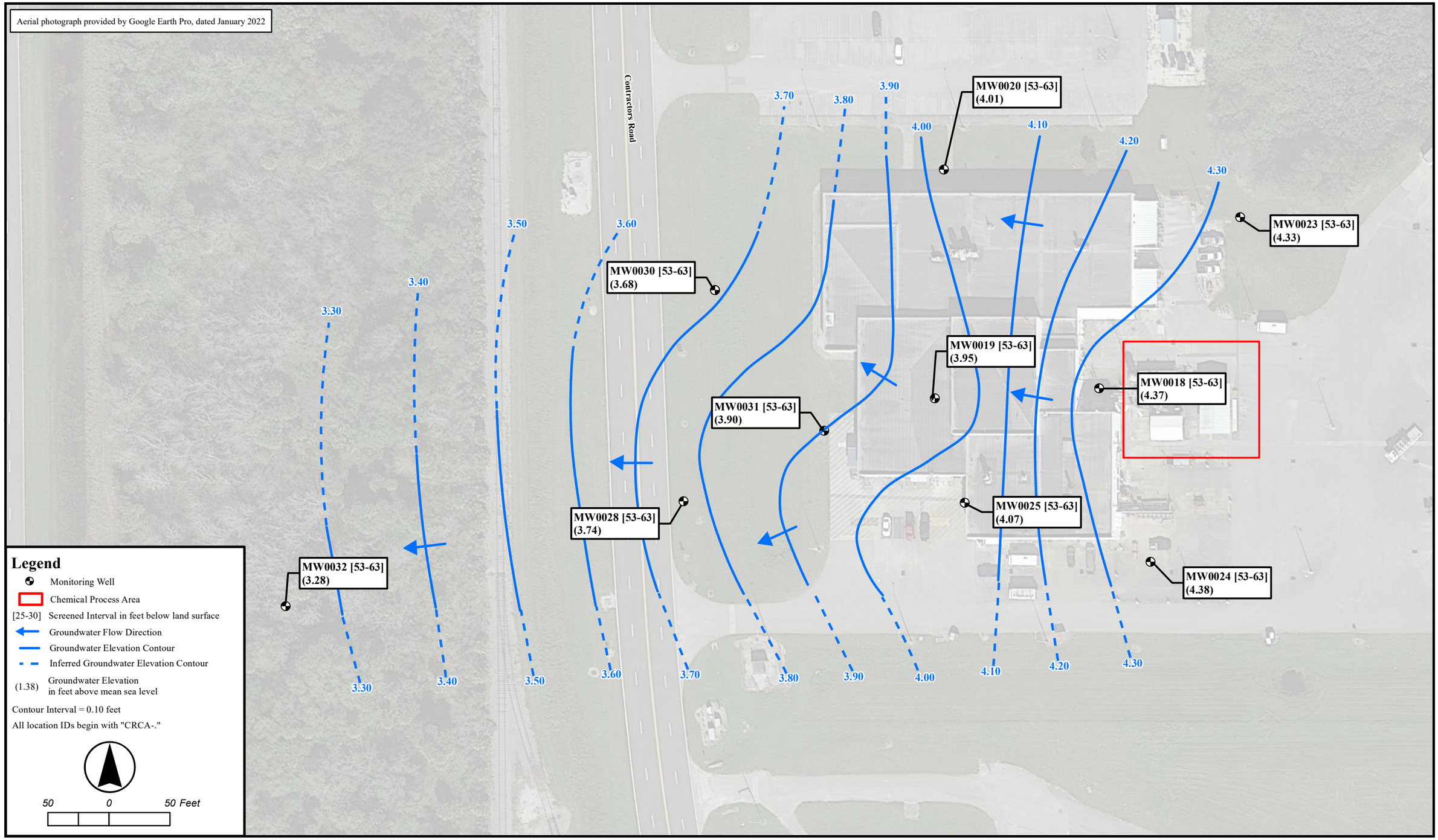


JAX C:\GIS\KSC\MXD\CRCA\STEP 2\MXD\4-11_CRCA_GWELEV_JAN2023_DEEP.MXD 03/28/24

FIGURE 4-11 DEEP POTENTIOMETRIC SURFACE MAP - JULY 2023

SWMU 041, KENNEDY SPACE CENTER, FLORIDA

CRCA PMR4
Revision 0
May 2024

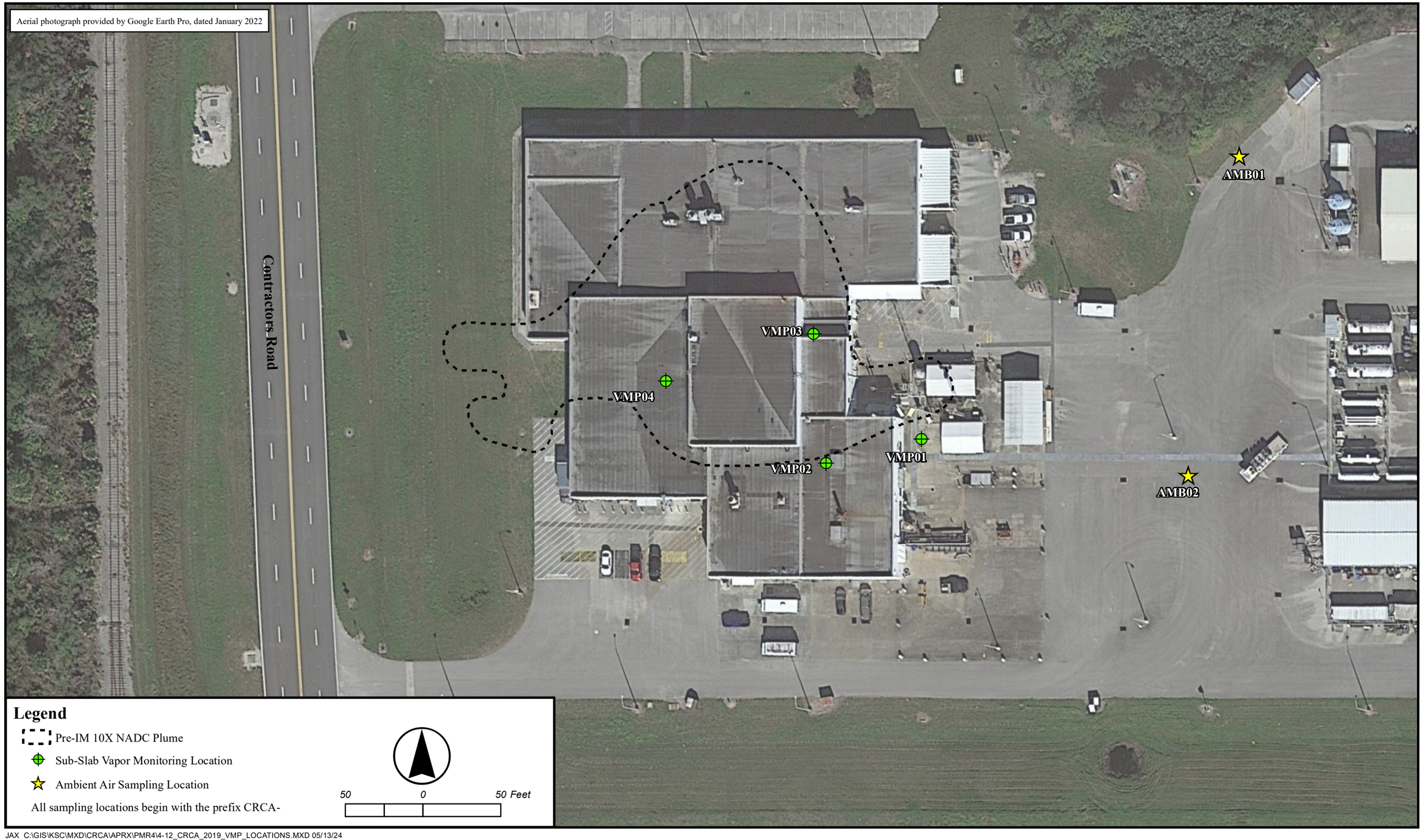


JAX C:\GIS\KSC\MXD\CRCA\STEP 2\MXD\4-12_CRCA_GWELEV_JULY2023_DEEP.MXD 03/28/24

FIGURE 4-12 AMBIENT AIR AND SUB-SLAB VAPOR MONITORING SAMPLE LOCATIONS

SWMU 041, KENNEDY SPACE CENTER, FLORIDA

CRCA PMR4
Revision 0
May 2024



JAX C:\GIS\KSC\MXD\CRCA\APRX\PMR4\4-12_CRCA_2019_VMP_LOCATIONS.MXD 05/13/24

FIGURE 4-13 SUB-SLAB SOIL GAS AND AMBIENT AIR SAMPLING RESULTS

SWMU 041, KENNEDY SPACE CENTER, FLORIDA

CRCA PMR4
Revision 0
May 2024

Aerial photograph provided by Google Earth Pro, dated January 2022

Contractors Road

HCS Treatment System Trailer

VMP03		tDCE	VC
02/2019	Baseline	0.11 U	0.23 U
02/2023		**1.7 J**	0.72 U
07/2023		0.44 U	0.72 U

VMP04		tDCE	VC
02/2019	Baseline	0.11 U	0.23 U
01/2023		1.1 U	0.72 U
07/2023		0.44 U	0.72 U

AMB01		tDCE	VC
06/2019	Baseline	**5.8**	0.19 U
01/2023		0.27 U	0.18 U
07/2023		**1.3**	0.18 U

AMB02		tDCE	VC
06/2019	Baseline	NS	NS
01/2023		**1.6**	0.18 U
07/2023		**0.83**	0.18 U

VMP02		tDCE	VC
02/2019	Baseline	0.11 U	0.23 U
01/2023		**3.7**	0.72 U
07/2023		**20**	0.72 U

VMP01		tDCE	VC
02/2019	Baseline	**95.2**	0.23 U
01/2023		1.1 U	0.72 U
07/2023		0.44 U	0.72 U

Legend

- Ambient Air Sampling Location
- Vapor Monitoring Location
- Low Concentration Plume (>GCTL)
- Pre-IM 10X NADC Plume

Bold = Analyte was detected in the sample
U = Reported value less than the laboratory Method Detection Limit (MDL)
All values in µg/m³ = micrograms per cubic meter
J = Estimated Value
NS = Not sampled, location incorporated into the sampling plan after the February 2019 baseline sampling event. Pre-IM 10X NADC Plume shown as presented in the March 2018 CRCA Site Characterization.
VMP = Vapor Monitoring Point
Plume delineation based on July 2023 monitoring well analytical data

Abbrev.	Parameter	Commericial VISL Concentration	Permissible Exposure Limits	Threshold Limit Value
tDCE	trans-1,2-Dichloroethene	102,000	793,000	200,000
VC	Vinyl chloride	93	NA	1,000

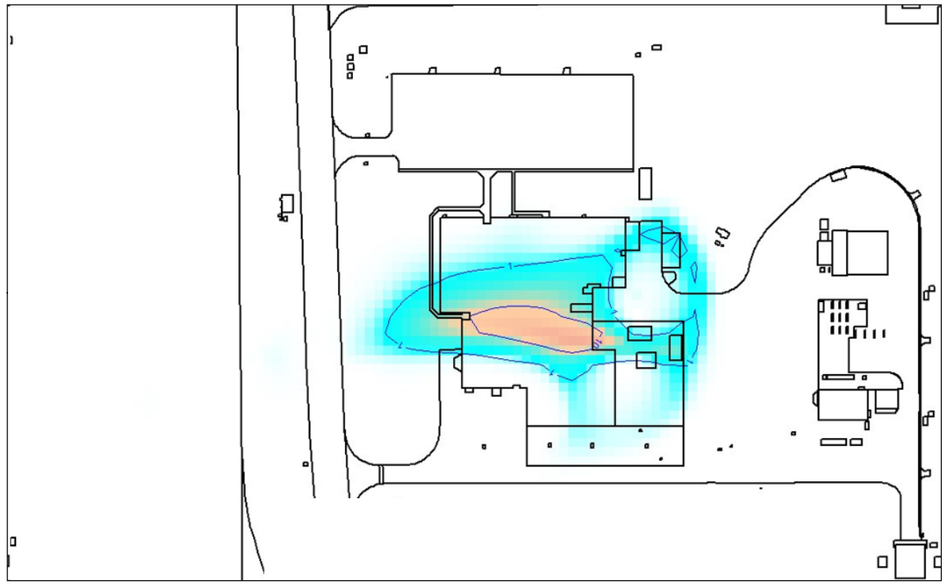
80 0 80 Feet

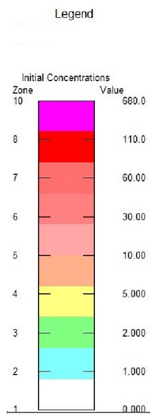
JAX C:\GIS\KSC\MXD\CRCA\APRX\PMR4\4-13_CRCA_VMP_RESULTS_JULY2023.MXD 06/13/24

FIGURE 4-14 GROUNDWATER MODEL PROJECTIONS VS. ACTUAL YEAR 4 PLUME – INTERMEDIATE (20-40 FEET BLS)

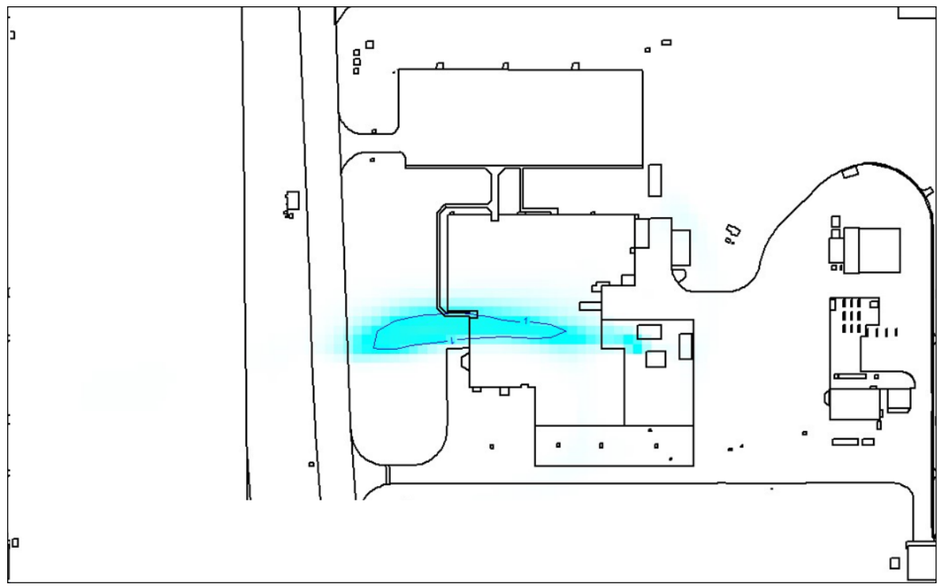
SWMU 041, KENNEDY SPACE CENTER, FLORIDA

1 Year Future (Year 2)

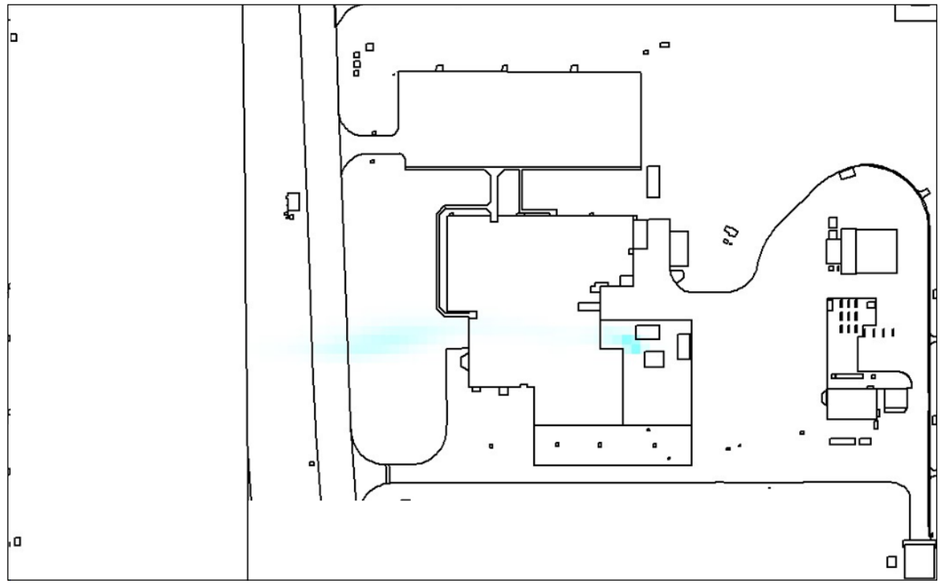




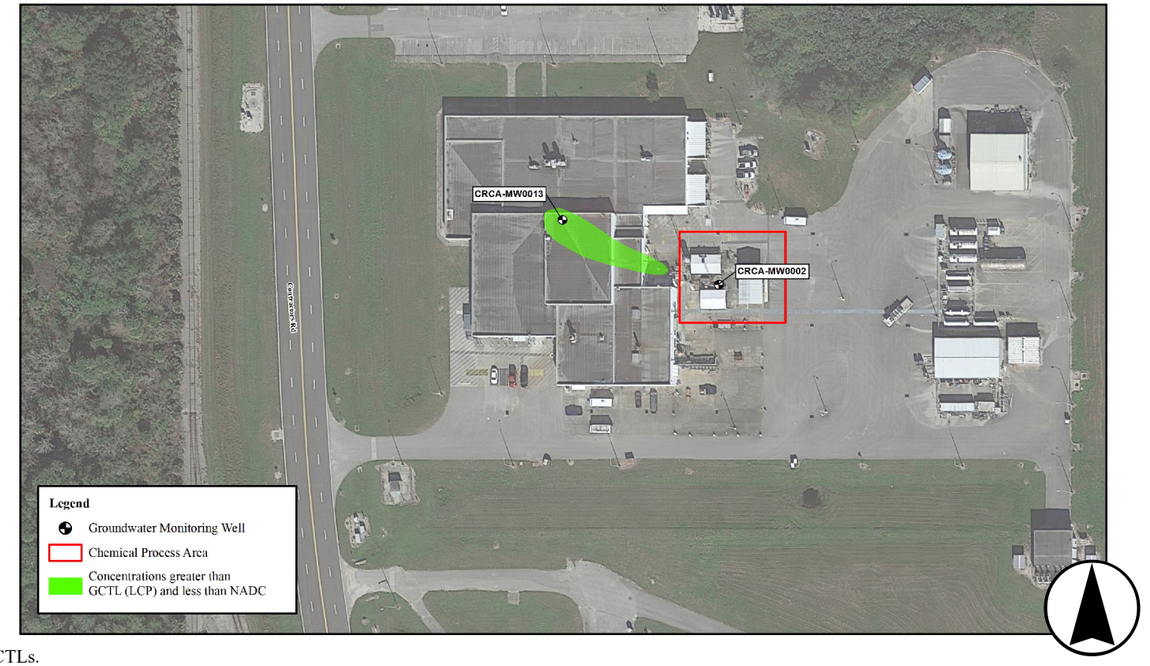
3 Year Future (Year 4)



5 Year Future (Year 6)



Year 4 Intermediate Plume (Actual, following July 2023 sampling event)

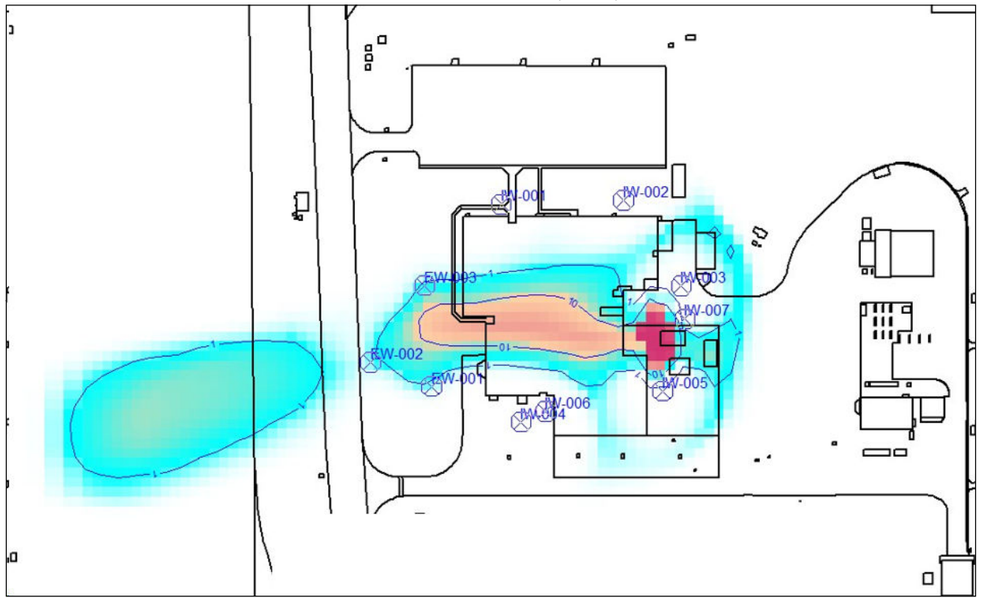


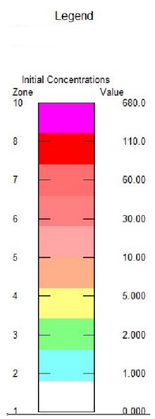
All concentrations in ug/L

Note:
1) 1 Year, 3 Year, and 5 Year Future projections are based on the pumping scenario, as provided in February 2021 Year 1 Performance Monitoring Report.
2) Groundwater model projections and Year 4 plume based on vinyl chloride, which is the only remaining contaminant of concern above State of Florida GCTLs.
3) HCS startup completed in August 2019.
4) HCS = Hydrualic containment system; GCTL = State of Florida Groundwater Cleanup Target Level; LCP = Low concentration plume; NADC = Natural attenuation default concentration.

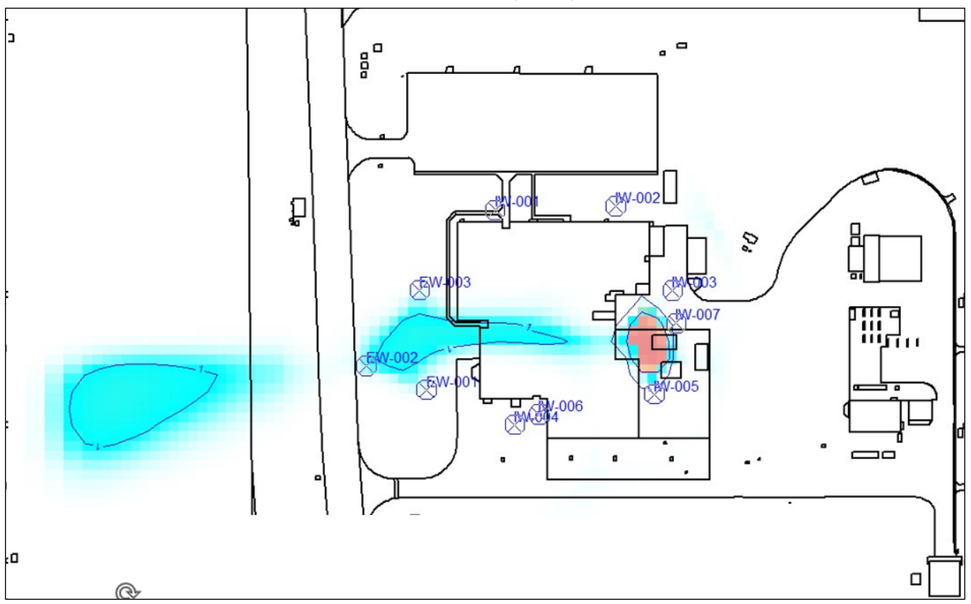
JAX C:\GIS\KSC\MXD\CRCA\STEP 2\MXD\4-14_ONETHREEFIVE_2023_INTERMEDIATE.MXD 04/18/24

1 Year Future (Year 2)

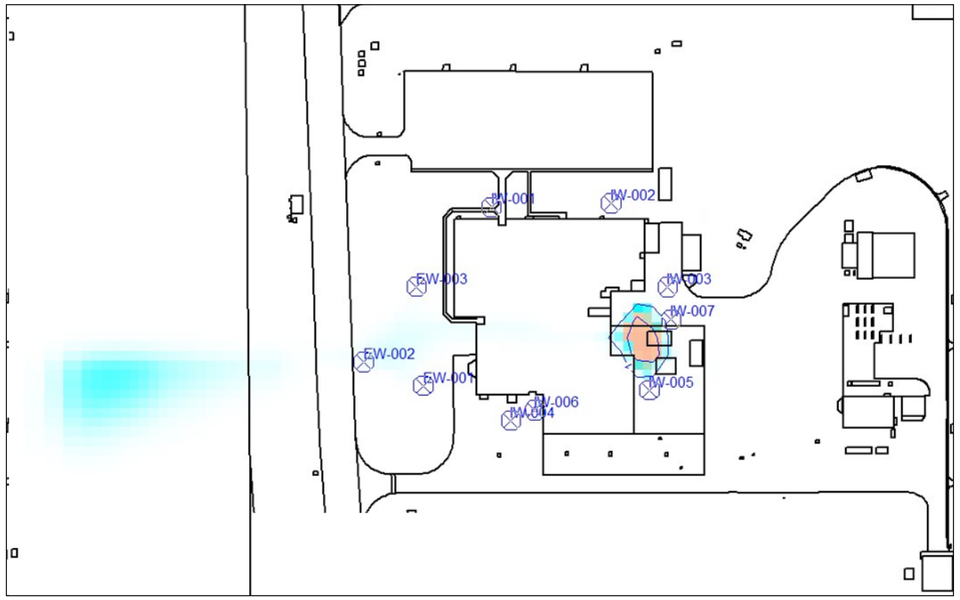




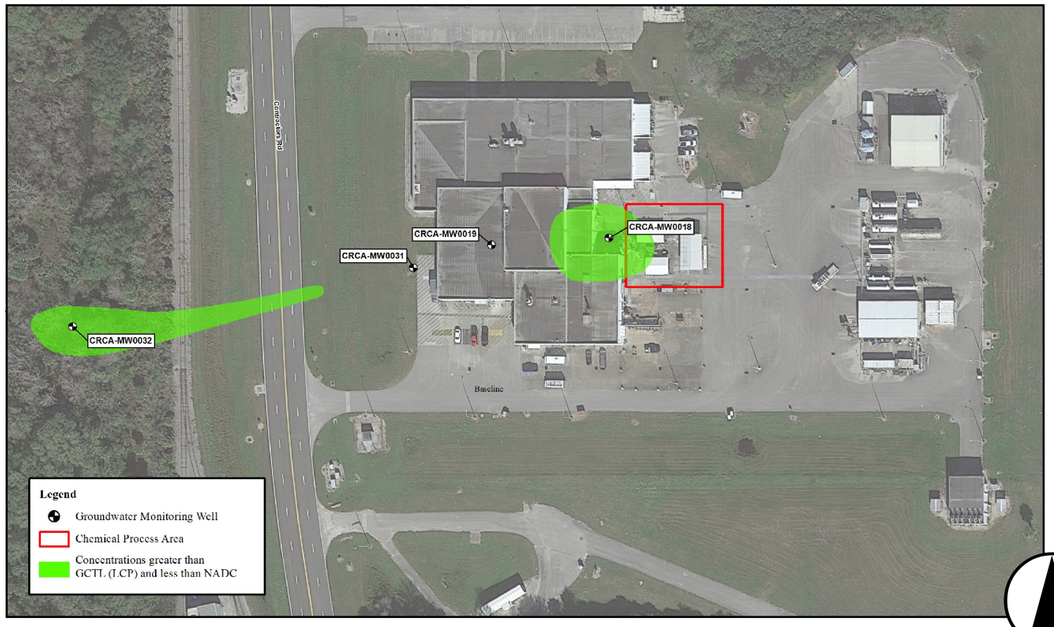
3 Year Future (Year 4)



5 Year Future (Year 6)



Year 4 Deep Plume (Actual, following July 2023 sampling event)



Note:
1) 1 Year, 3 Year, and 5 Year Future projections are based on the pumping scenario, as provided in February 2021 Year 1 Performance Monitoring Report.
2) Groundwater model projections and Year 4 plume based on vinyl chloride, which is the only remaining contaminant of concern above State of Florida GCTLs.
3) HCS startup completed in August 2019.
4) HCS = Hydrualic containment system; GCTL = State of Florida Groundwater Cleanup Target Level; LCP = Low concentration plume; NADC = Natural attenuation default concentration.

All concentrations in ug/L

JAX C:\GIS\KSC\MXD\CRCA\STEP 2\MXD\4-15_ONETHREEFIVE_2023_DEEP.MXD 04/18/24

SECTION V
2022-2023 SUPPLEMENTAL DPT STUDY

This section presents the 2022-2023 supplemental DPT sampling study conducted upgradient, downgradient, and side gradient to the HCS for HS1. DPT groundwater sampling was implemented in March 2022, with follow-up sampling conducted in December 2022 and May 2023. The purpose of these sampling events was to further delineate the vertical and areal extent of VC in groundwater at CRCA. The DPT data was also used to determine optimal placement for installation of additional monitoring wells to incorporate into the site's sampling plan for plume-wide monitoring. DPT results and proposed monitoring well locations were presented at the October 2023 KSCRT meeting (Meeting Minute 2310-M06). The ADP and meeting minutes are provided in Appendix A.

5.1 DPT SAMPLING PLAN

The 2022-2023 DPT study, conducted to further delineate and understand the extent of the LCP, consisted of collecting 127 groundwater samples at 21 locations at the site. The samples were collected via DPT by Drill Pro, LLC, a Florida-licensed driller. Samples were collected between 6 and 64 feet bls and analyzed for VOCs via EPA Method 8260D by a mobile laboratory (Analytical Laboratories of Florida, Inc.) for the 70 samples collected in March 2022, and at a fixed-base laboratory (SGS) for the 36 samples collected in December 2022 and the 21 samples collected in May 2023.

The following DPT locations were collected for VOC analysis during each sampling event:

- DPT0261 through DPT0274 from March 21-25, 2022;
- DPT0275 through DPT0278 from December 19-20, 2022; and
- DPT0280, DPT0285, and DPT0286 from May 2-3, 2023.

In addition to the VOC analysis, PFAS was also analyzed at select locations, and at other separate DPT locations, as part of a KSC-wide study. These PFAS results will be presented under separate cover. As shown on Figure 5-1, DPT locations for VOC analysis were

strategically located outside of the LCP to investigate the following general hydrologic orientations to the HCS treatment areas:

- Upgradient at three locations (DPT0261, DPT0262, and DPT0285);
- Side gradient at three locations (DPT0263, DPT0280, and DPT0286); and
- Downgradient at the remaining 15 locations.

Various depths were investigated as part of this study, depending on the DPT location (Figure 5-1), with samples collected from 13 depth intervals: 6-10 feet bls; 11-15 feet bls; 16-20 feet bls; 21-25 feet bls; 26-30 feet bls; 31-35 feet bls; 36-40 feet bls; 41-45 feet bls; 46-50 feet bls; 51-55 feet bls; 55-59 feet bls; 56-60 feet bls; and 60-64 feet bls. As shown on Figure 5-1, not all intervals were collected at each DPT location, as sample depths were modified at each location based on real-time data and/or known site stratigraphy. None of the DPT locations encompassed a full vertical sampling profile; sample interval frequency ranged from one to 11 intervals per DPT location.

5.2 DPT SAMPLING RESULTS

DPT sampling results for tDCE and VC are summarized in Table 5-1 and shown on Figures 5-1 and 5-2, with detections only on Figure 5-2.

Compared to Year 4 performance monitoring results, data from the 2022-2023 DPT study showed the extent of the LCP farther downgradient and to the northwest, past Kennedy Parkway North (DPT0269) with a broader LCP representation to the north along Contractors Road. The highest VC concentrations were detected along the eastern shoulder of Kennedy Parkway North with a VC concentration exceeding the GCTL at 47 µg/L from 41-45 feet bls (DPT0267), within the deep interval. The LCP was found to extend southward in this area to DPT0264 and DPT0265 where slight VC GCTL exceedances ranged from 2 to 4 µg/L at depths of 36-45 feet bls, representing both the intermediate and deep intervals. Downgradient from DPT0267, VC decreased to 9 µg/L at DPT0269 (46-50 feet bls), marking the northwestern extent of LCP conditions.

South of the HCS, isolated low-level VC concentrations were detected from 41 to 50 feet bls at DPT0280, where VC concentrations at that location exceeded the GCTL at 2.9 µg/L and 2.7 µg/L (41-45 feet bls and 46-50 feet bls, respectively). Side gradient locations to the north did not show any detections of VC. To the southeast was another isolated VC GCTL exceedance of 2 µg/L (DPT0263 at 16-20 feet bls), hydraulically downgradient to side gradient from the HCS and representing the shallow interval. The three remaining DPT locations east of the primary building (DPT0261, DPT0262, and DPT0285) and the one location north of the primary building (DPT0286) showed no VC detections.

The results for tDCE were below detection limits at all 2022-2023 DPT locations at the depths sampled.

Of note, during the December 2022 DPT sampling event, TCE was detected at DPT0276 in the 36-40 feet bls interval at a concentration of 6.0 µg/L, exceeding the GCTL of 3 µg/L. While TCE is not a COC at CRCA, it will be monitored at the newly installed adjacent monitoring wells MW0042, MW0043, and MW0044 to determine if this exceedance is an anomaly or related to the CRCA groundwater plume. VC was also detected at DPT0276 in the 46-50 feet bls (2.4 µg/L) and 51-55 feet bls (6.8 µg/L) intervals, and is therefore already included in the LCP boundary.

5.3 DISCUSSION AND IMPACTS OF LCP EXPANSION

In summary, the 2022-2023 DPT investigation revealed an expanded LCP, especially to the west and northwest of the CRCA primary building within the intermediate and deep intervals, with isolated VC exceedances within the shallow and deep intervals to the south and southeast of the hydraulic containment area. A comparison of the DPT results in the shallow, intermediate, and deep intervals, including an overlay of the Year 4 performance monitoring results, is presented on Figure 5-3.

As mentioned in Section 5.2, only one DPT groundwater sampling location (DPT0263) within the shallow interval resulted in a COC exceedance. This slight VC exceedance occurred within the 16-20 feet bls DPT sampling interval during the March 2022 sampling event, and was an isolated occurrence.

Within the intermediate interval, the LCP was represented by three DPT locations (DPT0267, DPT0264, and DPT0265) sampled in March 2022, oriented along the eastern shoulder of Kennedy Parkway North, approximately 700 feet downgradient from intermediate interval performance monitoring well MW0013, located within the footprint of the CRCA primary building. VC concentrations at MW0013 in 2022 and 2023 were consistent with the March 2022 intermediate interval DPT results. An isolated detection of VC within the intermediate interval at DPT0280 was detected below the GCTL during the May 2023 DPT sampling, located approximately 325 feet south of the primary CRCA building, increasing to slightly above the GCTL within the deep interval at this location.

Within the deep interval, the March 2022 DPT sampling extended the areal extent of the LCP an estimated 450 feet to the northwest, and downgradient from performance monitoring well MW0032. Additional DPT sampling in December 2022 extended the areal extent of the LCP an estimated 200 feet to the north, and upgradient from performance monitoring well MW0032. Of note, monitoring well MW0032 represents groundwater from 53 to 63 feet bls, whereas the DPT exceedances within the deep interval in this area were from 41 to 55 feet bls. From depths of 56 feet bls to 64 feet bls, no VC exceedances were detected during the 2022-2023 DPT events. During the May 2023 DPT sampling event, low-level exceedances of VC were identified at DPT0280 in the deep interval near the south end of the site. These appear to be isolated detections; however, additional data points would be necessary to determine the areal extent of GCTL exceedances in this area. Based on non-detect results to the east, northeast, and north of the CRCA primary building, the LCP was determined to be absent from these upgradient and side gradient locations within the intervals sampled.

Based on results from the 2022-2023 DPT study, the monitoring well network for CRCA was proposed to be expanded. Well placement strategy and installation details are presented below in Section 5.4. These wells will be incorporated into the recommended monitoring plan for Year 5, as presented in Section VI of this report.

5.4 SUPPLEMENTAL WELL PLACEMENT STRATEGY AND INSTALLATION

Based on the findings of an expanded LCP, a supplemental sampling plan was presented, modified, and approved at the October 2023 KSCRT meeting (Meeting Minutes 2310-M06, Decision 2310-D17). The plan proposed installation of 14 supplemental monitoring wells, as shown on Table 5-2, to include four well clusters representing the outer limits of the LCP (three well clusters downgradient and one well cluster to the north of the LCP) with screened intervals of 30-40 feet bls, 40-50 feet bls, and 50-60 feet bls, and one well cluster along the LCP centerline representing the area of highest VC concentrations with screened intervals of 40-50 feet bls and 50-60 feet bls. The proposed well locations and screened intervals are depicted on Figure 5-2.

Nine of the 14 proposed wells (MW0033, MW0034, MW0035, MW0036, MW0037, MW0038, MW0042, MW0043, and MW0044) were installed from January 8-11, 2024. The remaining five wells (MW0039, MW0040, MW0041, MW0045, and MW0046) were not installed due to inaccessible conditions caused by heavy rains. Surface finish of the nine new wells installed are flush-mount, and the five proposed wells still to be installed will be above-grade. Typical well installation details are illustrated on Figures 5-4 and 5-5.

The nine wells were advanced using a Rotosonic rig by Drill Pro, LLC, a Florida-licensed well driller. Each well was constructed with one-inch diameter pre-packed 0.010-slotted polyvinyl chloride (PVC) screen, 10 feet in length, threaded to solid PVC riser. A 20/30 silica sand pack was placed within the well annulus from the bottom of the borehole to one foot above the well screen and 30/65 silica sand was placed an additional two feet above the 20/30 silica sand pack. The well annulus was sealed from that depth up to the land surface with a Portland cement and bentonite slurry. All nine monitoring wells were completed with a two-foot by two-foot concrete well pad, flush-mounted with an 8-inch diameter aluminum bolt-down cover. Well top-of-casing and ground surface elevations by a Florida-licensed surveyor are pending installation of the five remaining monitoring wells MW0039, MW0040, MW0041, MW0045, and MW0046.

All new wells were developed once installation was complete. IDW generated during well installation was containerized into totes and processed through the onsite air stripper. Soil cores

collected to evaluate site lithology were returned to respective boring locations. Field documentation associated with well installation activities is included in Appendix E.

The nine new wells will be incorporated into the site's performance monitoring schedule, as further discussed in Section VI of this report. The five remaining wells (MW0039, MW0040, MW0041, MW0045, and MW0046) will be installed when conditions allow and incorporated into the site's sampling program.

Table 5-1. Contaminants of Concern 2022-2023 DPT Analytical Results

Sample Location (CRCA-)	Sampling Interval (feet bls)	Sampling Date	tDCE	VC
DPT0261	16-20	3/21/2022	1 U	1 U
	21-25	3/21/2022	1 U	1 U
	26-30	3/21/2022	1 U	1 U
	31-35	3/21/2022	1 U	1 U
	36-40	3/21/2022	1 U	1 U
	41-45	3/21/2022	1 U	1 U
DPT0262	16-20	3/21/2022	1 U	1 U
	21-25	3/21/2022	1 U	1 U
	26-30	3/21/2022	1 U	1 U
	31-35	3/21/2022	1 U	1 U
	36-40	3/21/2022	1 U	1 U
	41-45	3/21/2022	1 U	1 U
DPT0263	16-20	3/21/2022	1 U	**2**
	21-25	3/21/2022	1 U	1 U
	26-30	3/21/2022	1 U	1 U
	31-35	3/21/2022	1 U	1 U
	36-40	3/21/2022	1 U	1 U
	41-45	3/21/2022	1 U	1 U
	46-50	3/21/2022	1 U	1 U
DPT0264	36-40	3/22/2022	1 U	**3**
	41-45	3/22/2022	1 U	**4**
	46-50	3/22/2022	1 U	**1**
	50-54	3/22/2022	1 U	1 U
	55-59	3/22/2022	1 U	1 U
	60-64	3/22/2022	1 U	1 U
DPT0265	36-40	3/22/2022	1 U	**2**
	41-45	3/22/2022	1 U	**2**
	46-50	3/22/2022	1 U	1 U
	50-54	3/22/2022	1 U	1 U
	55-59	3/22/2022	1 U	1 U
	60-64	3/22/2022	1 U	1 U
DPT0266	36-40	3/23/2022	1 U	1 U
	41-45	3/23/2022	1 U	1 U
	46-50	3/23/2022	1 U	1 U
	50-54	3/23/2022	1 U	1 U
	55-59	3/23/2022	1 U	1 U

Table 5-1. Contaminants of Concern 2022-2023 DPT Analytical Results (Continued)

Sample Location (CRCA-)	Sampling Interval (feet bls)	Sampling Date	tDCE	VC
DPT0267	36-40	3/23/2022	1 U	**2**
	41-45	3/23/2022	1 U	**47**
	46-50	3/23/2022	1 U	1 U
	50-54	3/23/2022	1 U	1 U
	55-59	3/23/2022	1 U	1 U
DPT0268	36-40	3/23/2022	1 U	1 U
	41-45	3/23/2022	1 U	1 U
	46-50	3/23/2022	1 U	1 U
	50-54	3/23/2022	1 U	1 U
	55-59	3/23/2022	1 U	1 U
DPT0269	36-40	3/23/2022	1 U	1 U
	41-45	3/23/2022	1 U	1 U
	46-50	3/23/2022	1 U	**9**
	50-54	3/23/2022	1 U	1 U
	55-59	3/23/2022	1 U	1 U
DPT0270	36-40	3/23/2022	1 U	1 U
	41-45	3/23/2022	1 U	1 U
	46-50	3/23/2022	1 U	1 U
	50-54	3/23/2022	1 U	1 U
	55-59	3/23/2022	1 U	1 U
DPT0271	36-40	3/24/2022	1 U	1 U
DPT0272	41-45	3/24/2022	1 U	1 U
	46-50	3/24/2022	1 U	1 U
	50-54	3/25/2022	1 U	1 U
	55-59	3/25/2022	1 U	1 U
DPT0273	41-45	3/25/2022	1 U	1 U
	46-50	3/25/2022	1 U	1 U
	50-54	3/25/2022	1 U	1 U
	55-59	3/25/2022	1 U	1 U
DPT0274	36-40	3/25/2022	1 U	1 U
	41-45	3/25/2022	1 U	**1**
	46-50	3/25/2022	1 U	1 U
	50-54	3/25/2022	1 U	1 U
	55-59	3/25/2022	1 U	1 U

Table 5-1. Contaminants of Concern 2022-2023 DPT Analytical Results (Continued)

Sample Location (CRCA-)	Sampling Interval (feet bls)	Sampling Date	tDCE	VC
DPT0275	16-20	12/19/2022	0.22 U	0.41 U
	21-25	12/19/2022	0.22 U	0.41 U
	26-30	12/19/2022	0.22 U	0.41 U
	31-35	12/19/2022	0.22 U	0.41 U
	36-40	12/19/2022	0.22 U	0.41 U
	41-45	12/19/2022	0.22 U	0.41 U
	46-50	12/19/2022	0.22 U	0.41 U
	51-55	12/19/2022	0.22 U	0.41 U
	56-60	12/19/2022	0.22 U	0.41 U
DPT0276	16-20	12/19/2022	0.22 U	0.41 U
	21-25	12/19/2022	0.22 U	0.41 U
	26-30	12/19/2022	0.22 U	0.41 U
	31-35	12/19/2022	0.22 U	0.41 U
	36-40	12/19/2022	0.22 U	0.41 U
	41-45	12/19/2022	0.22 U	0.41 U
	46-50	12/19/2022	0.22 U	**2.4**
	51-55	12/19/2022	0.22 U	**6.8**
	56-60	12/19/2022	0.22 U	0.41 U
DPT0277	16-20	12/20/2022	0.22 U	0.41 U
	21-25	12/20/2022	0.22 U	0.41 U
	26-30	12/20/2022	0.22 U	0.41 U
	31-35	12/20/2022	0.22 U	0.41 U
	36-40	12/20/2022	0.22 U	0.41 U
	41-45	12/20/2022	0.22 U	0.41 U
	46-50	12/20/2022	0.22 U	0.41 U
	51-55	12/20/2022	0.22 U	0.41 U
	56-60	12/20/2022	0.22 U	0.41 U
DPT0278	16-20	12/20/2022	0.22 U	0.41 U
	21-25	12/20/2022	0.22 U	0.41 U
	26-30	12/20/2022	0.22 U	0.41 U
	31-35	12/20/2022	0.22 U	0.41 U
	36-40	12/20/2022	0.22 U	0.41 U
	41-45	12/20/2022	0.22 U	0.41 U
	46-50	12/20/2022	0.22 U	0.41 U
	51-55	12/20/2022	0.22 U	0.41 U
	56-60	12/20/2022	0.22 U	0.41 U

Table 5-1. Contaminants of Concern 2022-2023 DPT Analytical Results (Continued)

Sample Location (CRCA-)	Sampling Interval (feet bls)	Sampling Date	tDCE	VC
DPT0280	6-10	5/1/2023	0.22 U	0.41 U
	11-15	5/1/2023	0.22 U	0.41 U
	16-20	5/1/2023	0.22 U	0.41 U
	21-25	5/1/2023	0.22 U	0.41 U
	26-30	5/1/2023	0.22 U	0.41 U
	31-35	5/1/2023	0.22 U	0.41 U
	36-40	5/1/2023	0.22 U	**0.54 I**
	41-45	5/1/2023	0.22 U	**2.9**
	46-50	5/1/2023	0.22 U	**2.7**
	51-55	5/1/2023	0.22 U	0.41 U
	55-59	5/1/2023	0.22 U	0.41 U
DPT0285	6-10	5/2/2023	0.22 U	0.41 U
	11-15	5/2/2023	0.22 U	0.41 U
	16-20	5/2/2023	0.22 U	0.41 U
	21-25	5/2/2023	0.22 U	0.41 U
	26-30	5/2/2023	0.22 U	0.41 U
DPT0286	6-10	5/4/2023	0.22 U	0.41 U
	11-15	5/4/2023	0.22 U	0.41 U
	16-20	5/4/2023	0.22 U	0.41 U
	21-25	5/4/2023	0.22 U	0.41 U
	26-30	5/4/2023	0.22 U	0.41 U

Notes:

Concentrations shown in micrograms per liter (µg/L).

Bolding indicates a concentration is greater than the method detection limit.

Shading indicates State of Florida Groundwater Cleanup Target Level (GCTL) exceedance, tDCE = 100 µg/L, VC = 1 µg/L.

Groundwater sample collected at midpoint of screened interval during vertical profiling.

CRCA = Components Refurbishment and Chemical Analysis.

bls = below land surface.

DPT = Direct Push Technology.

tDCE = trans-1,2-dichloroethene.

VC = vinyl chloride.

J = Estimated value.

U = Value was reported as below the method detection limit, therefore the detection limit is shown.

DPT data shown in this table includes locations analyzed for volatile organic compounds. Locations and samples analyzed for per- and polyfluoroalkyl substances are not included in this table, and will be reported under separate cover.

Table 5-2. Monitoring Well Construction Details

Monitoring Well Name (CRCA-)	Installation Date	Boring Depth (feet bls)	Screen Bottom (feet bls)	Well Diameter	Screened Interval (feet bls)	Screen Type	Coordinates Northing (meters)	Coordinates Easting (meters)	Monitoring Rationale
MW0033	1/8/2024	40	40	1-inch	30-40	0.010-inch slot	469,970.2608	233,656.0756	Northwestern edge of LCP.
MW0034	1/8/2024	50	50	1-inch	40-50	0.010-inch slot	469,972.7129	233,656.0756	Northwestern edge of LCP.
MW0035	1/8/2024	60	60	1-inch	50-60	0.010-inch slot	469,975.1650	233,656.0756	Northwestern edge of LCP.
MW0036	1/9/2024	40	40	1-inch	30-40	0.010-inch slot	469,891.9542	233,658.2986	Southwestern edge of LCP.
MW0037	1/9/2024	50	50	1-inch	40-50	0.010-inch slot	469,894.4063	233,658.2986	Southwestern edge of LCP.
MW0038	1/9/2024	60	60	1-inch	50-60	0.010-inch slot	469,896.8585	233,658.2986	Southwestern edge of LCP.
MW0039	Pending	40	40	1-inch	30-40	0.010-inch slot	469,856.3658	233,726.1985	Southern edge of LCP.
MW0040	Pending	50	50	1-inch	40-50	0.010-inch slot	469,853.9137	233,726.1985	Southern edge of LCP.
MW0041	Pending	60	60	1-inch	50-60	0.010-inch slot	469,851.4616	233,726.1985	Southern edge of LCP.
MW0042	1/10/2024	40	40	1-inch	30-40	0.010-inch slot	469,974.2278	233,835.5933	Northern edge of LCP.
MW0043	1/10/2024	50	50	1-inch	40-50	0.010-inch slot	469,971.7757	233,835.5933	Northern edge of LCP.
MW0044	1/10/2024	60	60	1-inch	50-60	0.010-inch slot	469,976.6799	233,835.5933	Northern edge of LCP.
MW0045	Pending	50	50	1-inch	40-50	0.010-inch slot	469,927.1039	233,729.1648	Plume Centerline.
MW0046	Pending	60	60	1-inch	50-60	0.010-inch slot	469,924.5617	233,729.3060	Plume Centerline.

Notes:

Well diameter based on inner diameter of casing.

Coordinates taken from Google Earth; formal land survey pending.

CRCA = Components Refurbishment and Chemical Analysis.

bls = below land surface.

LCP = Low Concentration Plume (above State of Florida Groundwater Cleanup Target Levels, but below Natural Attenuation Default Concentrations).

All monitoring wells installed installed in January 2024 are flush-mount. Pending five monitoring wells will be stick-up completion.

FIGURE 5-1 DPT GROUNDWATER ANALYTICAL RESULTS - MARCH 2022, DECEMBER 2022, AND MAY 2023

SWMU 041, KENNEDY SPACE CENTER, FLORIDA

CRCA PMR4
Revision 0
May 2024

Aerial photograph provided by Google Earth Pro, dated January 2022

DPT0274	tDCE	VC	
[36-40]	1 U	1 U	03/2022
[41-45]	1 U	**1**	03/2022
[46-50]	1 U	1 U	03/2022
[50-54]	1 U	1 U	03/2022
[55-59]	1 U	1 U	03/2022

DPT0269	tDCE	VC	
[36-40]	1 U	1 U	03/2022
[41-45]	1 U	1 U	03/2022
[46-50]	1 U	**9**	03/2022
[50-54]	1 U	1 U	03/2022
[55-59]	1 U	1 U	03/2022

DPT0272	tDCE	VC	
[41-45]	1 U	1 U	03/2022
[46-50]	1 U	1 U	03/2022
[50-54]	1 U	1 U	03/2022
[55-59]	1 U	1 U	03/2022

DPT0267	tDCE	VC	
[36-40]	1 U	**2**	03/2022
[41-45]	1 U	**47**	03/2022
[46-50]	1 U	1 U	03/2022
[50-54]	1 U	1 U	03/2022
[55-59]	1 U	1 U	03/2022

DPT0270	tDCE	VC	
[36-40]	1 U	1 U	03/2022
[41-45]	1 U	1 U	03/2022
[46-50]	1 U	1 U	03/2022
[50-54]	1 U	1 U	03/2022
[55-59]	1 U	1 U	03/2022

DPT0271	tDCE	VC	
[36-40]	1 U	1 U	03/2022

DPT0273	tDCE	VC	
[41-45]	1 U	1 U	03/2022
[46-50]	1 U	1 U	03/2022
[50-54]	1 U	1 U	03/2022
[55-59]	1 U	1 U	03/2022

DPT0268	tDCE	VC	
[36-40]	1 U	1 U	03/2022
[41-45]	1 U	1 U	03/2022
[46-50]	1 U	1 U	03/2022
[50-54]	1 U	1 U	03/2022
[55-59]	1 U	1 U	03/2022

DPT0275	tDCE	VC	
[16-20]	0.22 U	0.41 U	12/2022
[21-25]	0.22 U	0.41 U	12/2022
[26-30]	0.22 U	0.41 U	12/2022
[31-35]	0.22 U	0.41 U	12/2022
[36-40]	0.22 U	0.41 U	12/2022
[41-45]	0.22 U	0.41 U	12/2022
[46-50]	0.22 U	0.41 U	12/2022
[51-55]	0.22 U	0.41 U	12/2022
[56-60]	0.22 U	0.41 U	12/2022

DPT0264	tDCE	VC	
[36-40]	1 U	**3**	03/2022
[41-45]	1 U	**4**	03/2022
[46-50]	1 U	**1**	03/2022
[50-54]	1 U	1 U	03/2022
[55-59]	1 U	1 U	03/2022
[60-64]	1 U	1 U	03/2022

DPT0265	tDCE	VC	
[36-40]	1 U	**2**	03/2022
[41-45]	1 U	**2**	03/2022
[46-50]	1 U	1 U	03/2022
[50-54]	1 U	1 U	03/2022
[55-59]	1 U	1 U	03/2022
[60-64]	1 U	1 U	03/2022

DPT0266	tDCE	VC	
[36-40]	1 U	1 U	03/2022
[41-45]	1 U	1 U	03/2022
[46-50]	1 U	1 U	03/2022
[50-54]	1 U	1 U	03/2022
[55-59]	1 U	1 U	03/2022

DPT0276	tDCE	VC	
[16-20]	0.22 U	0.41 U	12/2022
[21-25]	0.22 U	0.41 U	12/2022
[26-30]	0.22 U	0.41 U	12/2022
[31-35]	0.22 U	0.41 U	12/2022
[36-40]	0.22 U	0.41 U	12/2022
[41-45]	0.22 U	0.41 U	12/2022
[46-50]	0.22 U	**2.4**	12/2022
[51-55]	0.22 U	**6.8**	12/2022
[56-60]	0.22 U	0.41 U	12/2022

DPT0277	tDCE	VC	
[16-20]	0.22 U	0.41 U	12/2022
[21-25]	0.22 U	0.41 U	12/2022
[26-30]	0.22 U	0.41 U	12/2022
[31-35]	0.22 U	0.41 U	12/2022
[36-40]	0.22 U	0.41 U	12/2022
[41-45]	0.22 U	0.41 U	12/2022
[46-50]	0.22 U	0.41 U	12/2022
[51-55]	0.22 U	0.41 U	12/2022
[56-60]	0.22 U	0.41 U	12/2022

DPT0278	tDCE	VC	
[16-20]	0.22 U	0.41 U	12/2022
[21-25]	0.22 U	0.41 U	12/2022
[26-30]	0.22 U	0.41 U	12/2022
[31-35]	0.22 U	0.41 U	12/2022
[36-40]	0.22 U	0.41 U	12/2022
[41-45]	0.22 U	0.41 U	12/2022
[46-50]	0.22 U	0.41 U	12/2022
[51-55]	0.22 U	0.41 U	12/2022
[56-60]	0.22 U	0.41 U	12/2022

DPT0286	tDCE	VC	
[6-10]	0.22 U	0.41 U	05/2023
[11-15]	0.22 U	0.41 U	05/2023
[16-20]	0.22 U	0.41 U	05/2023
[21-25]	0.22 U	0.41 U	05/2023
[26-30]	0.22 U	0.41 U	05/2023

DPT0285	tDCE	VC	
[6-10]	0.22 U	0.41 U	05/2023
[11-15]	0.22 U	0.41 U	05/2023
[16-20]	0.22 U	0.41 U	05/2023
[21-25]	0.22 U	0.41 U	05/2023
[26-30]	0.22 U	0.41 U	05/2023

DPT0280	tDCE	VC	
[6-10]	0.22 U	0.41 U	05/2023
[11-15]	0.22 U	0.41 U	05/2023
[16-20]	0.22 U	0.41 U	05/2023
[21-25]	0.22 U	0.41 U	05/2023
[26-30]	0.22 U	0.41 U	05/2023
[31-35]	0.22 U	0.41 U	05/2023
[36-40]	0.22 U	**0.54 I**	05/2023
[41-45]	0.22 U	**2.9**	05/2023
[46-50]	0.22 U	**2.7**	05/2023
[51-55]	0.22 U	0.41 U	05/2023
[55-59]	0.22 U	0.41 U	05/2023

DPT0262	tDCE	VC	
[16-20]	1 U	1 U	03/2022
[21-25]	1 U	1 U	03/2022
[26-30]	1 U	1 U	03/2022
[31-35]	1 U	1 U	03/2022
[36-40]	1 U	1 U	03/2022
[41-45]	1 U	1 U	03/2022

DPT0261	tDCE	VC	
[16-20]	1 U	1 U	03/2022
[21-25]	1 U	1 U	03/2022
[26-30]	1 U	1 U	03/2022
[31-35]	1 U	1 U	03/2022
[36-40]	1 U	1 U	03/2022
[41-45]	1 U	1 U	03/2022

DPT0263	tDCE	VC	
[16-20]	1 U	**2**	03/2022
[21-25]	1 U	1 U	03/2022
[26-30]	1 U	1 U	03/2022
[31-35]	1 U	1 U	03/2022
[36-40]	1 U	1 U	03/2022
[41-45]	1 U	1 U	03/2022
[46-50]	1 U	1 U	03/2022

Kennedy Parkway North

Contractors Road

CRCA-MW0021
CRCA-MW0020
CRCA-MW0025
CRCA-MW0022
CRCA-MW0029
CRCA-MW0030
CRCA-MW0013
CRCA-MW0012
CRCA-MW0011
CRCA-MW0004
CRCA-MW0001
CRCA-MW0019
CRCA-MW0018
CRCA-MW0005
CRCA-MW0031
CRCA-MW0003
CRCA-MW0010
CRCA-MW0002
CRCA-MW0008
CRCA-MW0009
CRCA-MW0007
CRCA-MW0006
CRCA-MW0032
CRCA-MW0026
CRCA-MW0027
CRCA-MW0028
CRCA-MW0015
CRCA-MW0014
CRCA-MW0025
CRCA-MW0016
CRCA-MW0024
CRCA-MW0017

Legend

- Monitoring Well
- DPT Location
- Low Concentration Plume - Monitoring Well Data (July 2023)
- Low Concentration Plume - DPT Data (2022-2023)
- Chemical Process Area

Parameter	Abbrev.	GCTL	NADC
trans-1,2-Dichloroethene	tDCE	100	1,000
Vinyl chloride	VC	1	100

Detected Concentrations **bolded** (µg/L)
J = Estimated value
U = Not detected at or above MDL (associated value)
MDL = Method Detection Limit
[53-63] = Depth Interval in feet below land surface
LCP = Low Concentration Plume (equal to or greater than GCTLs and less than NADCs)
GCTL = State of Florida Groundwater Cleanup Target Level
NADC = Natural Attenuation Default Concentration
DPT = Direct Push Technology
Green highlights signify concentrations above GCTL

60 0 60 Feet

JAX C:\GIS\KSC\MXD\CRCA\SEPT 2023\5-1_CRCA_CONTAMINANTS_CONCERN_PLUMES_DPT_V4.MXD 02/28/24

FIGURE 5-2 DPT RESULTS, DETECTIONS ONLY AND PROPOSED LTM WELL LOCATION MAP

SWMU 041, KENNEDY SPACE CENTER, FLORIDA

Aerial photograph provided by Google Earth Pro, dated January 2022

Kennedy Parkway North

Contractors Road

DPT0268 No detections above the MDL

DPT0275 No detections above the MDL

DPT0274	tDCE	VC	
[41-45]	1 U	**1**	03/2022

DPT0276	tDCE	VC	
[46-50]	0.22 U	**2.4**	12/2022
[51-55]	0.22 U	**6.8**	12/2022

DPT0286 No detections above the MDL

DPT0269	tDCE	VC	
[46-50]	1 U	**9**	03/2022

DPT0264	tDCE	VC	
[36-40]	1 U	**3**	03/2022
[41-45]	1 U	**4**	03/2022
[46-50]	1 U	**1**	03/2022

CRCA-MW0044 [50-60]
CRCA-MW0043 [40-50]
CRCA-MW0042 [30-40]

CRCA-MW0035 [50-60]
CRCA-MW0034 [40-50]
CRCA-MW0033 [30-40]

CRCA-MW0021
CRCA-MW0020
CRCA-MW0025
CRCA-MW0022
CRCA-MW0012
CRCA-MW0011

DPT0285 No detections above the MDL

DPT0272 No detections above the MDL

CRCA-MW0029
CRCA-MW0030
CRCA-MW0013
CRCA-MW0004
CRCA-MW0001
CRCA-MW0005
CRCA-MW0010
CRCA-MW0019
CRCA-MW0018
CRCA-MW0031
CRCA-MW0003
CRCA-MW0002
CRCA-MW0008
CRCA-MW0009

DPT0267	tDCE	VC	
[36-40]	1 U	**2**	03/2022
[41-45]	1 U	**47**	03/2022

CRCA-MW0045 [40-50]
CRCA-MW0046 [50-60]

DPT0262 No detections above the MDL

CRCA-MW0007
CRCA-MW0006
CRCA-MW0016
CRCA-MW0024
CRCA-MW0017

DPT0270 No detections above the MDL

CRCA-MW0038 [50-60]
CRCA-MW0037 [40-50]
CRCA-MW0036 [30-40]

CRCA-MW0032

CRCA-MW0026
CRCA-MW0027
CRCA-MW0028

CRCA-MW0015
CRCA-MW0014
CRCA-MW0025

DPT0271 No detections above the MDL

DPT0277 No detections above the MDL

DPT0261 No detections above the MDL

CRCA-MW0039 [30-40]
CRCA-MW0040 [40-50]
CRCA-MW0041 [50-60]

DPT0273 No detections above the MDL

DPT0265	tDCE	VC	
[36-40]	1 U	**2**	03/2022
[41-45]	1 U	**2**	03/2022

DPT0266 No detections above the MDL

DPT0278 No detections above the MDL

DPT0263	tDCE	VC	
[16-20]	1 U	**2**	03/2022

DPT0280	tDCE	VC	
[36-40]	0.22 U	**0.54 I**	05/2023
[41-45]	0.22 U	**2.9**	05/2023
[46-50]	0.22 U	**2.7**	05/2023

Legend

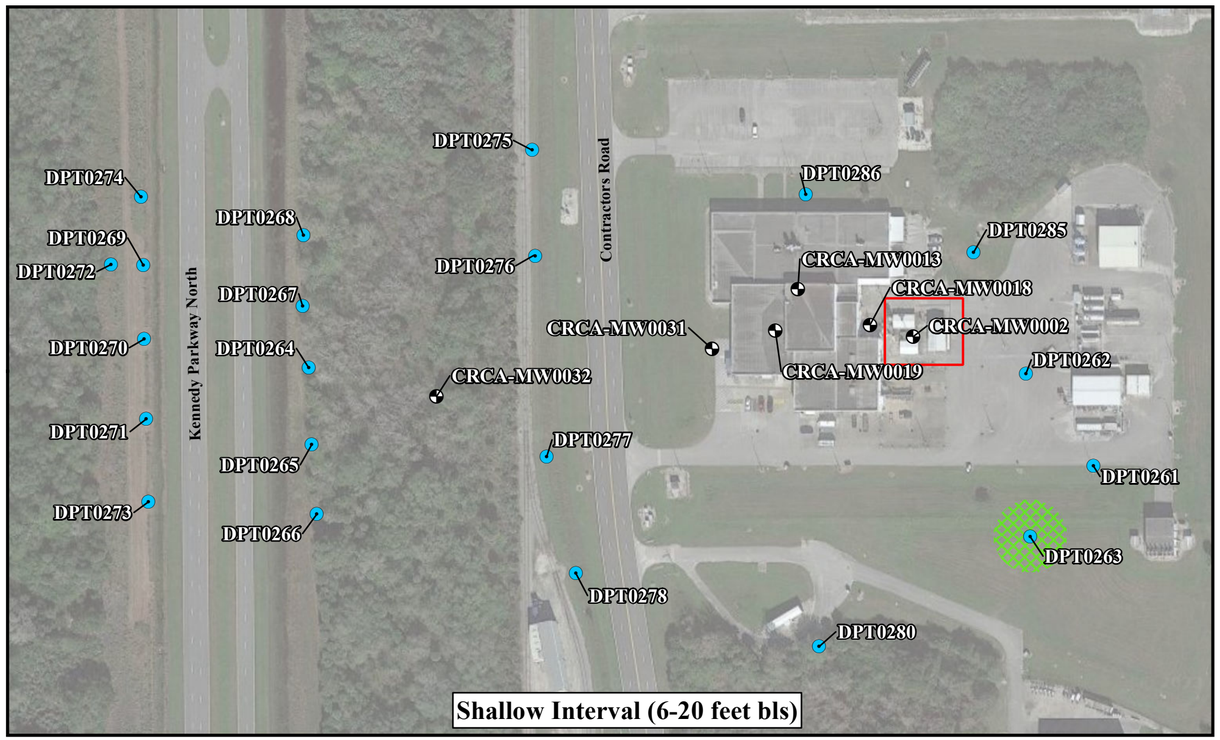
- Proposed Monitoring Well
- Monitoring Well
- DPT Location
- Low Concentration Plume - Monitoring Well Data (July 2023)
- Low Concentration Plume - DPT Data (2022-2023)
- Chemical Process Area

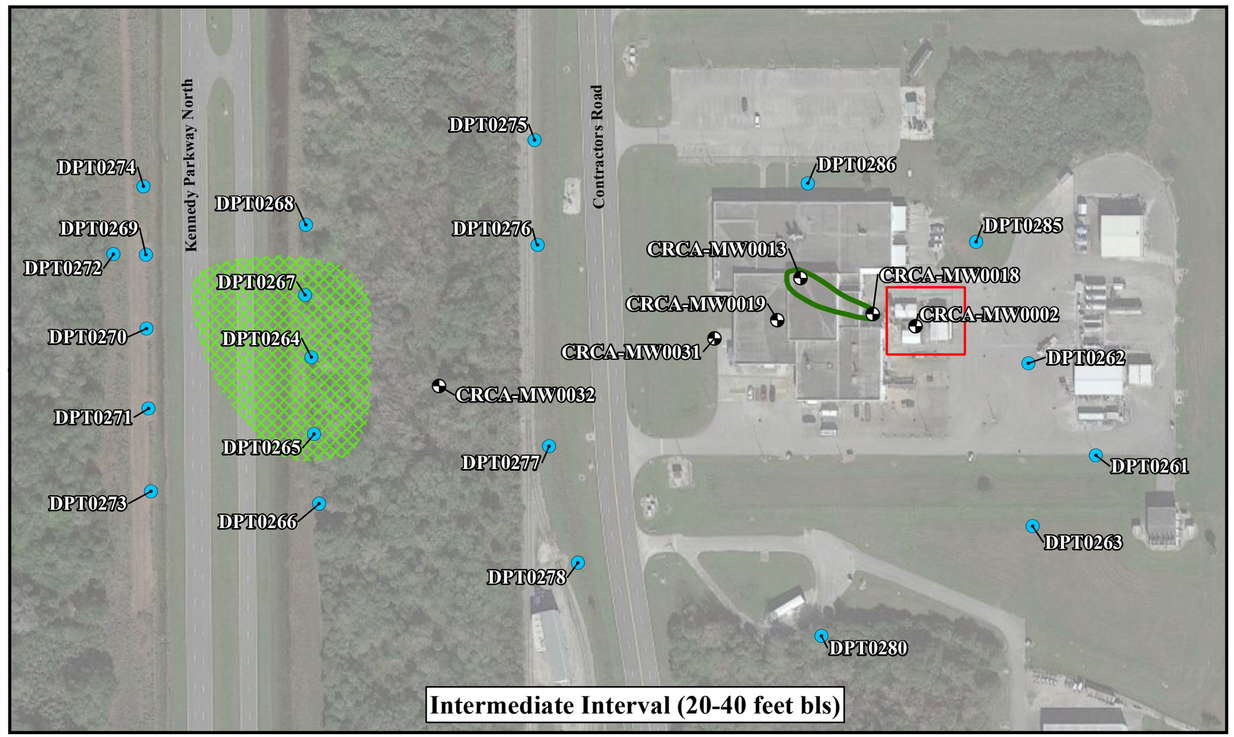
Parameter	Abbrev.	GCTL	NADC
trans-1,2-Dichloroethene	tDCE	100	1,000
Vinyl Chloride	VC	1	100

Detected Concentrations **bolded** (µg/L)
J = Estimated value
U = Not detected at or above MDL (associated value)
MDL = Method Detection Limit
[53-63] = Depth Interval in feet below land surface
LCP = Low Concentration Plume (equal to or greater than GCTLs and less than NADCs)
GCTL = State of Florida Groundwater Cleanup Target Level
NADC = Natural Attenuation Default Concentration
DPT = Direct Push Technology
Green highlights signify concentrations above GCTL
MW0033 to MW0038 and MW0042 to MW0044 were installed in January 2024.
The installation of MW0039, MW0040, MW0041, MW0045, and MW0046 is pending drier, more accessible conditions.

60 0 60 Feet

JAX C:\GIS\KSC\MXD\CRCA\SEPT 2023\5-2_CRCA_CONTAMINANTS_CONCERN_PLUMES_DPT_ONLYEXCEED.MXD 04/18/24





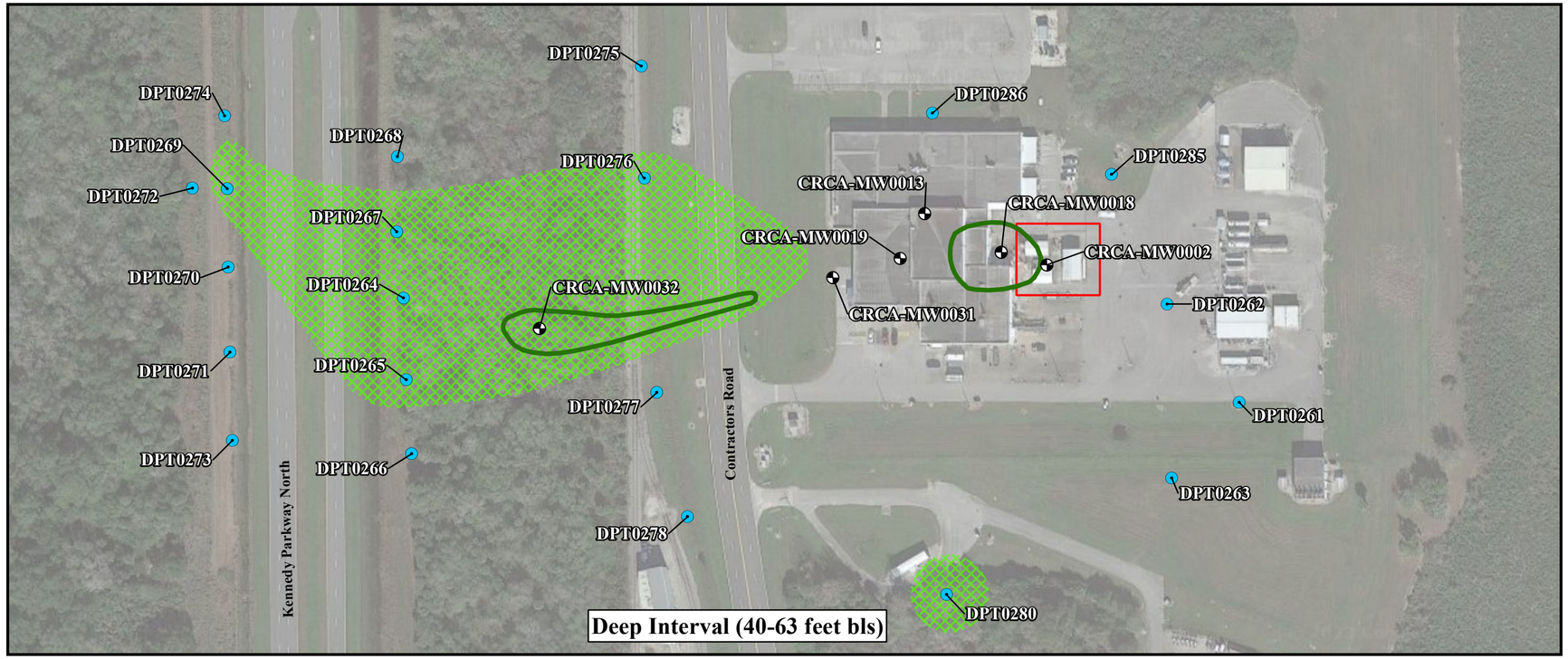
Legend

- Year 4 Performance Monitoring Well
- DPT Location
- Low Concentration Plume - Monitoring Well Data (July 2023)
- Low Concentration Plume - DPT Data (2022-2023)
- Chemical Process Area

LCP = Low Concentration Plume (equal to or greater than GCTLs and less than NADCs)
GCTL = State of Florida Groundwater Cleanup Target Level
NADC = Natural Attenuation Default Concentration
DPT = Direct Push Technology
bls = below land surface

Parameter	Abbrev.	GCTL	NADC
trans-1,2-Dichloroethene	tDCE	100	1,000
Vinyl Chloride	VC	1	100

200 0 200 Feet

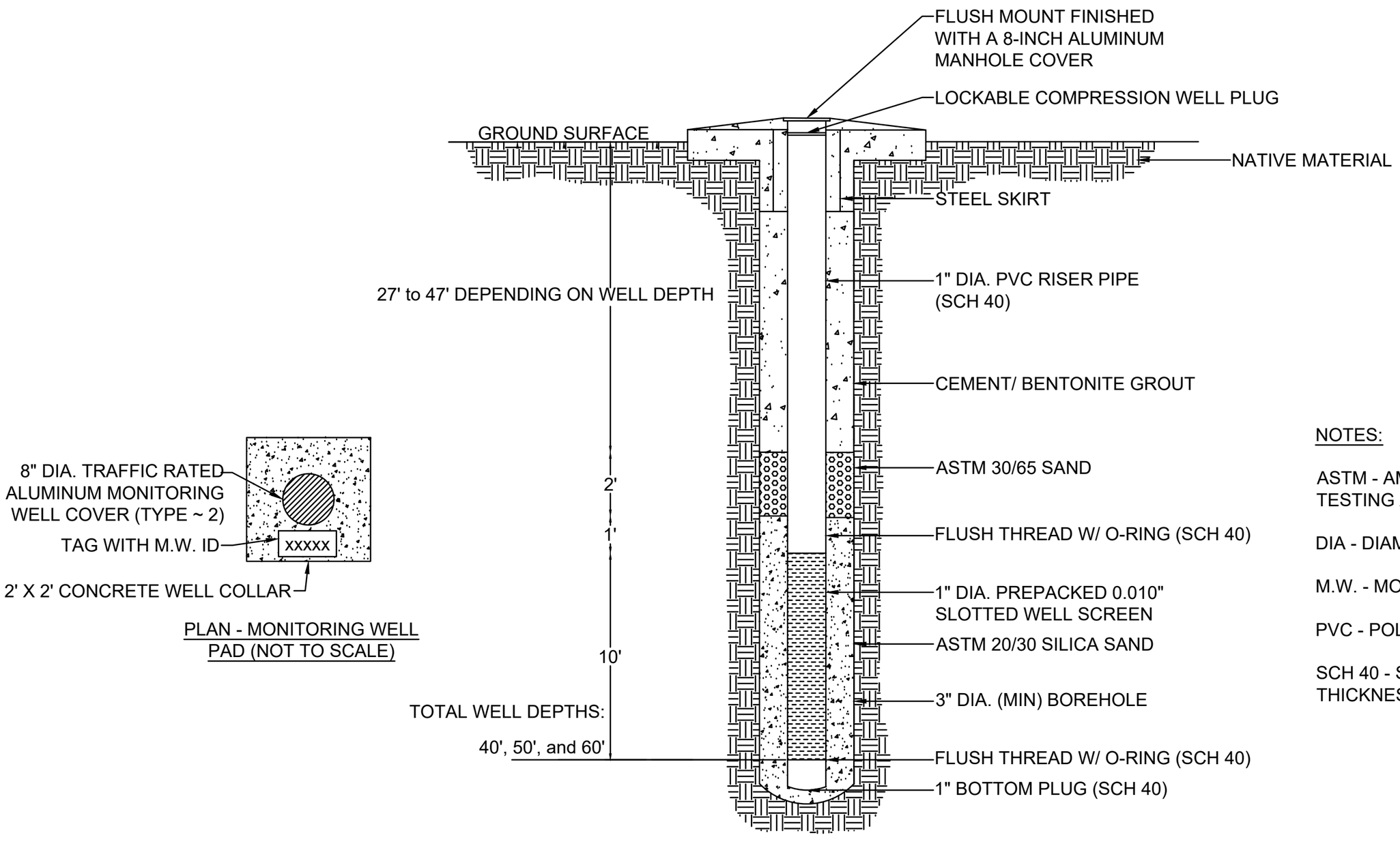


JAX C:\GIS\KSC\MXD\CRCA\SEPT 2023\5-3_CRCA_PLUME_COMPARISON.MXD 04/17/24

FIGURE 5-4 TYPICAL FLUSH-GRADE MONITORING WELL CONSTRUCTION DETAILS

SWMU 041, KENNEDY SPACE CENTER, FLORIDA

CRCA PMR4
Revision 0
May 2024



NOTES:

ASTM - AMERICAN SOCIETY FOR TESTING AND MATERIALS

DIA - DIAMETER

M.W. - MONITORING WELL

PVC - POLYVINYL CHLORIDE

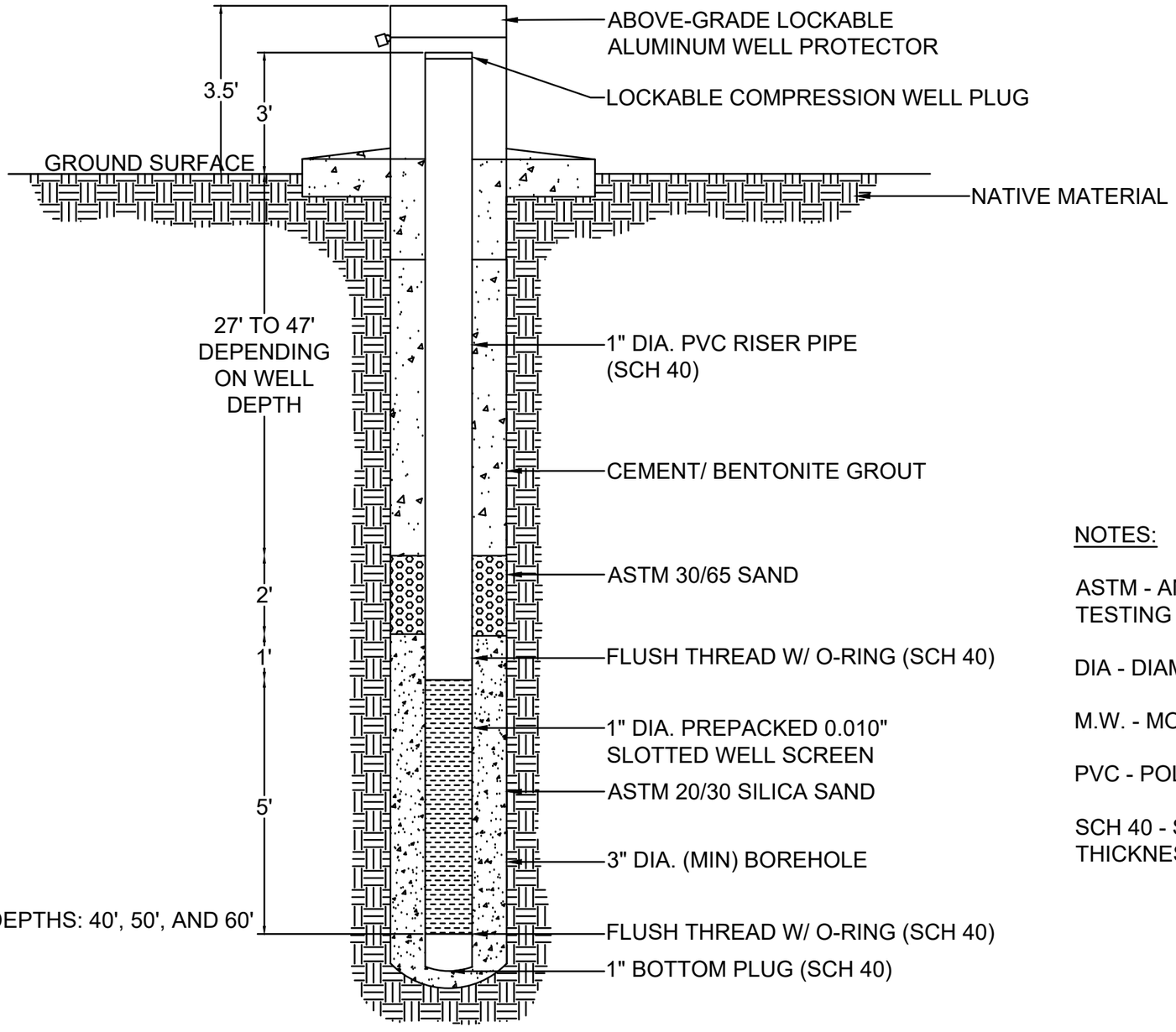
SCH 40 - SCHEDULE 40 (4MM THICKNESS)

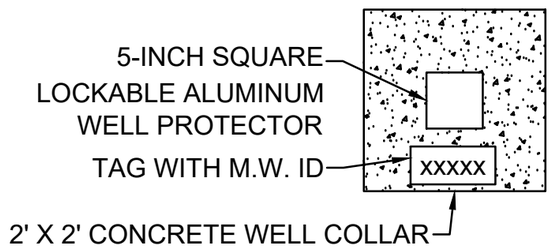
E:\CAD\Projects\Monitoring Well Detail\Monitoring Well Detail.dwg, Plotted By: JORDAN.SHAFFER, Plotted: Aug 01, 2023 - 9:39am

FIGURE 5-5 TYPICAL ABOVE-GRADE MONITORING WELL CONSTRUCTION DETAILS

SWMU 041, KENNEDY SPACE CENTER, FLORIDA

CRCA PMR4
Revision 0
May 2024





PLAN - MONITORING WELL PAD (NOT TO SCALE)

NOTES:

ASTM - AMERICAN SOCIETY FOR TESTING AND MATERIALS

DIA - DIAMETER

M.W. - MONITORING WELL

PVC - POLYVINYL CHLORIDE

SCH 40 - SCHEDULE 40 (4MM THICKNESS)

E:\CAD\Projects\Monitoring Well Detail\Monitoring Well Detail.dwg, Plotted By: JORDAN.SHAFFER, Plotted: Aug 14, 2023 - 4:20pm

SECTION VI
CONCLUSIONS AND RECOMMENDATIONS

6.1 CONCLUSIONS

After four years of operation, the HCS is performing as designed to hydraulically control the CVOC plume and reduce concentrations of CVOCs to support transition to an LTM program. Current plume conditions suggest that the predicted course for transitioning to LTM at the conclusion of Year 5 HCS operation, based on previous groundwater modeling predictions, remains valid. The HCS has treated over 32 million gallons of groundwater since startup, reduced concentrations of tDCE to below detection limits sitewide, and reduced plume centerline concentrations of VC by 73.37% and 99.66% in the intermediate and deep intervals, respectively, since system startup.

No system repairs were required during Year 4 HCS operation. There were only brief interruptions to HCS operations due to routine maintenance, Hurricane Nicole, and PLC issues. The operational runtime of the HCS during Year 4 was approximately 94%.

Performance monitoring results continue to indicate VC concentrations above the GCTL at MW0018, located within the CPA, at MW0013, located within the primary building footprint, and in the most downgradient monitoring well (MW0032) from the HCS. VC concentrations at MW0032 have stabilized during Year 4, remaining below 10 µg/L in this area outside of the EW ROI and thereby most likely influenced by natural conditions.

The 2022-2023 DPT sampling results indicated expanded LCP boundaries to the northwest and to the west across Kennedy Parkway North where VC concentrations exceeded the GCTL. LCP conditions were encountered at depths ranging from 36 to 55 feet bls. Of note, one DPT location with VC exceedances also detected TCE above the GCTL at 6.0 µg/L; groundwater conditions in this area will continue to be monitored as part of the site's sampling program. In addition, two isolated LCP areas were discovered south of the HCS at depths of 16 to 20 feet bls and 41 to 50 feet bls. Updated LCP boundaries were used to optimize the sampling program, including installation of additional monitoring wells. Of the 14 proposed wells, nine have been installed with the other five to be installed when site conditions allow.

Ambient air sampling results for the treatment trailer area and the paved driveway east of the CPA continue to be significantly below OSHA PELs and ACGIH TLVs, indicating no impacts from HCS operations to breathing air for on-site personnel. In addition, sub-slab soil gas sampling results after four years of HCS operation show no exceedances of EPA Commercial VISLs, indicating no adverse effects from HCS operation in the primary CRCA building workspace.

6.2 RECOMMENDATIONS

The contents of this report were presented to the KSCRT at the October 2023 meeting (Meeting Minute 2310-M06, Decision 2310-D17) and the November/December 2023 meeting (Meeting Minute 2311-M10, Decisions 2311-D21 to D26). Team consensus was reached on the recommended path forward for Year 5 of HCS operations, to include continued operation and evaluation of the HCS to maintain hydraulic control of the groundwater plume and further reduce VC concentrations, continued monthly influent and effluent sampling (extracted and treated groundwater), continued sub-slab soil gas and ambient air monitoring, and continued performance monitoring with the following changes:

- Transition the sub-slab soil gas and ambient air sampling from quarterly to annual.
- Transition the groundwater sampling schedule for the four deep interval performance monitoring wells (MW0018, MW0019, MW0031, and MW0032) from quarterly to semi-annual (keeping the two intermediate interval performance monitoring wells [MW0002 and MW0013] on the same semi-annual schedule).
- Add existing wells MW0026, MW0027, and MW0028 to the Year 5 performance monitoring sampling plan on a semi-annual sampling schedule for VOC analysis to monitor the southeastern edge of the LCP.
- Installation of 14 wells (MW0033 to MW0046), comprising five well clusters (four well clusters with nested wells at 30-40 feet bls, 40-50 feet bls, and 50-60 feet bls and one well cluster with nested wells at 40-50 feet bls and 50-60 feet bls). Well placement was based on DPT sampling results and located to monitor any potential plume migration,

with three well clusters located downgradient of the plume, one well cluster located north of the LCP, and one well cluster located along the LCP centerline. As discussed in Section 5.4, nine of these wells were installed in January 2024, with five remaining to be installed when site conditions allow (MW0039, MW0040, MW0041, MW0045, and MW0046). All 14 wells will be sampled for VOCs upon installation and then transitioned to an annual sampling schedule thereafter.

The proposed Year 5 Sampling Plan, which includes sampling events scheduled in 2024, is presented in Table 6-1 and shown on Figure 6-1. As a carry-over from Year 3, this includes the replacement of monitoring well MW0019 and accompanying sub-slab soil gas sampling point VMP04, as shown on the Relocation Schematic (Figure 4-2). The new location will be in a lab storage room located east of the current location. As stated in the Year 3 PMR (NASA, 2023a), the proposed relocation is needed as MW0019 and VMP04 are currently located in a room scheduled for conversion from a storage room to a "clean room". The existing locations of MW0019 and VMP04 are recommended for proper abandonment as part of the relocation process.

In addition, select existing monitoring wells at CRCA will be analyzed for PFAS as a continuation of the ongoing Center-wide PFAS investigation. These results will be presented in a separate PFAS Site Assessment and associated Pilot Study Work Plan for CRCA. Of note, the Pilot Study Work Plan may include design modifications to the HCS to remediate PFAS constituents in addition to the treatment of VOCs. Future HCS modifications and operation will be evaluated following review of Year 5 sampling results.

Table 6-1. Year 5 Recommended Sampling Program

Monitoring Well Name (CRCA-)	Existing or Proposed	Screened Interval (feet bls)	Jan-24	Jul-24	Monitoring Rationale	Sampling Frequency	Analytes
MW0002	Existing	30-35	X	X	Performance Monitoring	Semi-annually	VOCs via EPA Method 8260
MW0013	Existing	25-30	X	X	Performance Monitoring	Semi-annually	
MW0018	Existing	53-63	X	X	Performance Monitoring	Semi-annually	
MW0019	Existing	53-63	X	X	Performance Monitoring	Semi-annually	
MW0026	Existing	5-15	X	X	Southeastern edge of DPT LCP	Semi-annually	
MW0027	Existing	30-40	X	X	Southeastern edge of DPT LCP	Semi-annually	
MW0028	Existing	53-63	X	X	Southeastern edge of DPT LCP	Semi-annually	
MW0031	Existing	53-63	X	X	Performance Monitoring	Semi-annually	
MW0032	Existing	53-63	X	X	Performance Monitoring, western extent of LCP as defined by monitoring well data	Semi-annually	
MW0033	Existing	30-40	X	X	Northwestern edge of DPT LCP	Annually	
MW0034	Existing	40-50	X	X	Northwestern edge of DPT LCP	Annually	
MW0035	Existing	50-60	X	X	Northwestern edge of DPT LCP	Annually	
MW0036	Existing	30-40	X	X	Southwestern edge of DPT LCP	Annually	
MW0037	Existing	40-50	X	X	Southwestern edge of DPT LCP	Annually	
MW0038	Existing	50-60	X	X	Southwestern edge of DPT LCP	Annually	
MW0039	Proposed	30-40	*	*	Southern edge of DPT LCP	Annually	
MW0040	Proposed	40-50	*	*	Southern edge of DPT LCP	Annually	
MW0041	Proposed	50-60	*	*	Southern edge of DPT LCP	Annually	
MW0042	Existing	30-40	X	X	Northern edge of DPT LCP	Annually	
MW0043	Existing	40-50	X	X	Northern edge of DPT LCP	Annually	
MW0044	Existing	50-60	X	X	Northern edge of DPT LCP	Annually	
MW0045	Proposed	40-50	*	*	DPT LCP Centerline	Annually	
MW0046	Proposed	50-60	*	*	DPT LCP Centerline	Annually	

Notes:

Monitoring wells MW0033 to MW0038 and MW0042 to MW0044 were installed January 8 to 11, 2024. These wells were sampled in January after installation and will be sampled during the July 2024 annual sampling event.

* Proposed wells MW0039 to MW0041, MW0045 and MW0046 sampling dates will be determined upon installation availability; to be sampled upon installation completion and annually thereafter.

CRCA = Components Refurbishment and Chemical Analysis.

bls = below land surface.

X = Sampling will occur.

DPT = Direct Push Technology.

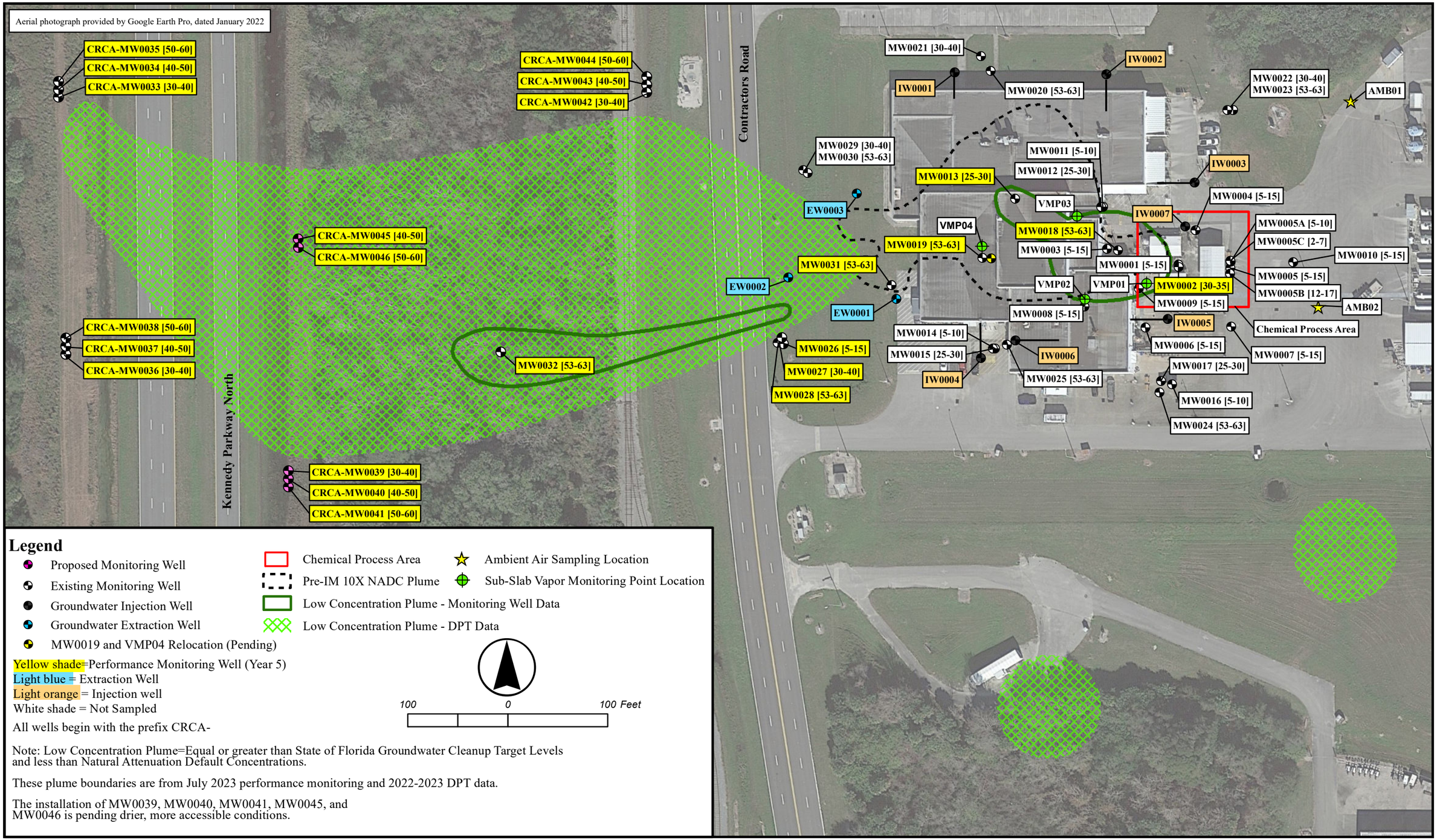
LCP = Low Concentration Plume (above State of Florida Groundwater Cleanup Target Levels, but below Natural Attenuation Default Concentrations).

VOCs = Volatile Organic Compounds.

FIGURE 6-1 YEAR 5 PERFORMANCE MONITORING WELL LOCATION PLAN

SWMU 041, KENNEDY SPACE CENTER, FLORIDA

CRCA PMR4
Revision 0
May 2024



Legend

- Proposed Monitoring Well
- Existing Monitoring Well
- Groundwater Injection Well
- Groundwater Extraction Well
- MW0019 and VMP04 Relocation (Pending)
- Chemical Process Area
- Pre-IM 10X NADC Plume
- Low Concentration Plume - Monitoring Well Data
- Low Concentration Plume - DPT Data
- Ambient Air Sampling Location
- Sub-Slab Vapor Monitoring Point Location

Yellow shade=Performance Monitoring Well (Year 5)
Light blue = Extraction Well
Light orange = Injection well
White shade = Not Sampled

All wells begin with the prefix CRCA-

100 0 100 Feet

Note: Low Concentration Plume=Equal or greater than State of Florida Groundwater Cleanup Target Levels and less than Natural Attenuation Default Concentrations.

These plume boundaries are from July 2023 performance monitoring and 2022-2023 DPT data.

The installation of MW0039, MW0040, MW0041, MW0045, and MW0046 is pending drier, more accessible conditions.

JAX C:\GIS\KSC\MXD\CRCA\APRX\PMR4\6-1_CRCA_MW_PERFORMANCE_SAMPLING_YEAR5.MXD 05/13/24

SECTION VII
REFERENCES

FDEP (Florida Department of Environmental Protection), 2017. FDEP Standard Operating Procedure FS 2200.

NASA (National Aeronautics and Space Administration), 1994. Environmental Resources Document Revision B, prepared by Edgerton, Germeshausen, and Grier Florida, Inc. (EG&G Florida, Inc.), revised from Edwards E. Clark Engineers- Scientists, Inc. for Engineering Development Directorate, Kennedy Space Center, Florida.

NASA, 2015. Components Refurbishment and Chemical Analysis Facility, SWMU 041, RCRA Facility Investigation Progress Report, John F. Kennedy Space Center, Florida. Revision 0. March.

NASA, 2017. Sampling and Analysis Plan for the RCRA Corrective Action Program at the John F. Kennedy Space Center, Florida. Revision 5. August.

NASA, 2018a. Components Refurbishment and Chemical Analysis Facility, SWMU 041, Site Characterization Advance Data Package (ADP), John F. Kennedy Space Center, Florida. March.

NASA, 2018b. Components Refurbishment and Chemical Analysis Facility, SWMU 041, Remedial Alternatives Evaluation ADP, John F. Kennedy Space Center, Florida. May.

NASA, 2018c. Components Refurbishment and Chemical Analysis Facility, SWMU 041, Hot Spot 1, Interim Measure Work Plan, John F. Kennedy Space Center, Florida. Revision 1. October.

NASA, 2018d. Components Refurbishment and Chemical Analysis Facility, SWMU 041, RCRA Facility Investigation Progress Report, John F. Kennedy Space Center, Florida. Revision 1. November.

NASA, 2019a. Components Refurbishment and Chemical Analysis Facility, SWMU 041, Implementation Work Plan, John F. Kennedy Space Center, Florida. Revision 0. April.

NASA, 2019b. Components Refurbishment and Chemical Analysis Facility, SWMU 041, Interim Measure Implementation Report, John F. Kennedy Space Center, Florida. Revision 0. August.

NASA, 2019c. Components Refurbishment and Chemical Analysis Facility, SWMU 041 Air Monitoring Plan, John F. Kennedy Space Center, Florida. Revision 0. December.

NASA, 2020a. Components Refurbishment and Chemical Analysis Facility, SWMU 041, Performance Monitoring Mid-Year Update ADP, John F. Kennedy Space Center, Florida. Revision 0. June 2020.

NASA, 2020b. Components Refurbishment and Chemical Analysis Facility, SWMU 041, Hydraulic Containment System for Hot Spot 1 (HS1) Annual Performance Monitoring Report ADP, John F. Kennedy Space Center, Florida. October.

NASA, 2021a. Components Refurbishment and Chemical Analysis Facility, Hot Spot 1, SWMU 041, Year One Annual Performance Monitoring Report, Kennedy Space Center, Florida. February.

NASA, 2021b. Site-Specific Health and Safety Plan (SSHASP), Components Refurbishment and Chemical Analysis Facility Hot Spot 1, SWMU 041, Groundwater Treatment System Operations and Maintenance, Kennedy Space Center, Florida. Revision 1. November.

NASA, 2022. Components Refurbishment and Chemical Analysis Facility, Hot Spot 1, SWMU 041,Year 2 Annual Performance Monitoring Report, Kennedy Space Center, Florida. January.

NASA, 2023a. Components Refurbishment and Chemical Analysis Facility, Hot Spot 1, SWMU 041, Year 3 Annual Performance Monitoring Report, Kennedy Space Center, Florida. June.

NASA, 2023b. Components Refurbishment and Chemical Analysis Facility, SWMU 041, Long Term Monitoring Proposed Downgradient Monitoring Wells Advanced Data Package, John F. Kennedy Space Center, Florida. October.

NASA, 2023c. Components Refurbishment and Chemical Analysis Facility, SWMU 041, Hydraulic Containment System for Hot Spot 1 (HS1) Year 4 Annual Performance Monitoring Advanced Data Package, John F. Kennedy Space Center, Florida. December.

APPENDIX A

OCTOBER 2023 AND NOVEMBER/DECEMBER 2023
ADVANCE DATA PACKAGES AND KSCRT MEETING MINUTES

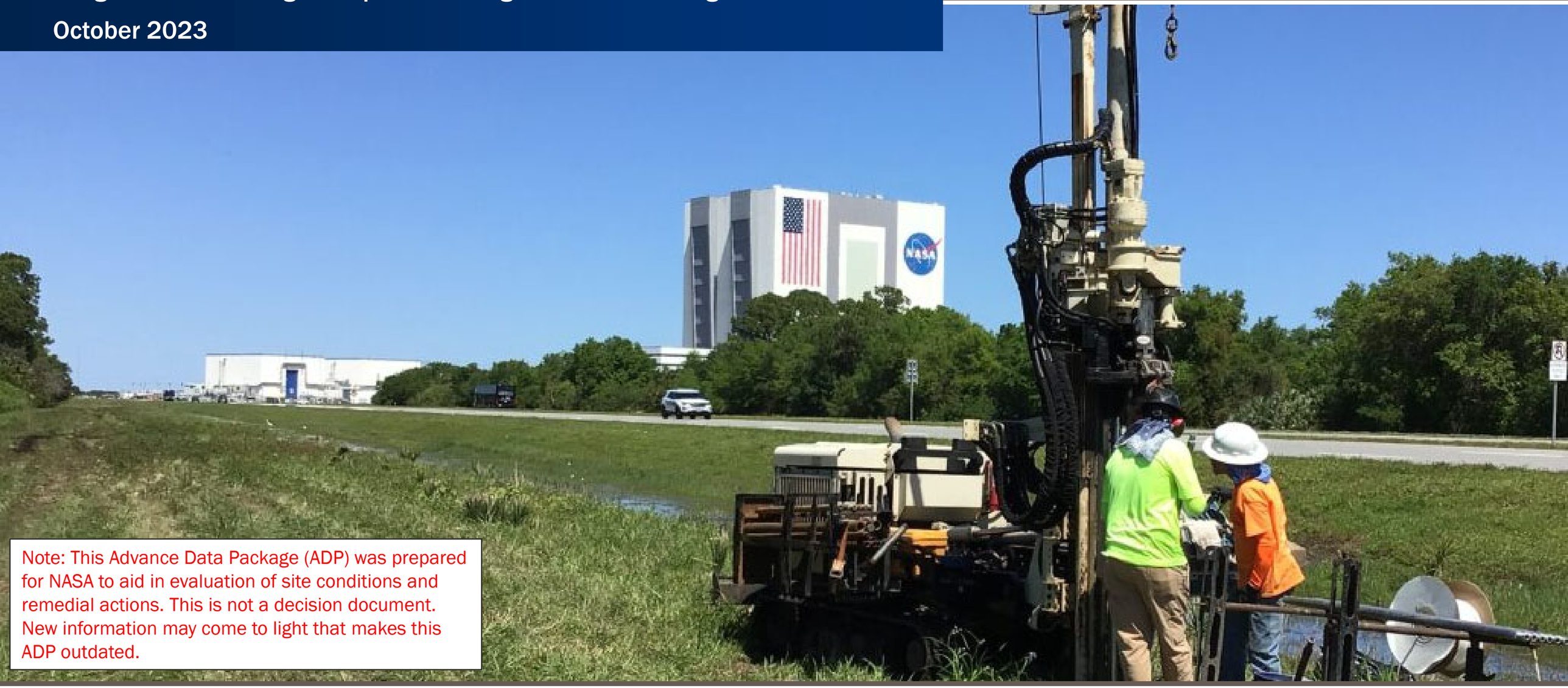
Components Refurbishment and Chemical Analysis Facility (CRCA)

SWMU 041

Long Term Monitoring – Proposed Downgradient Monitoring Wells

October 2023

TETRA TECH

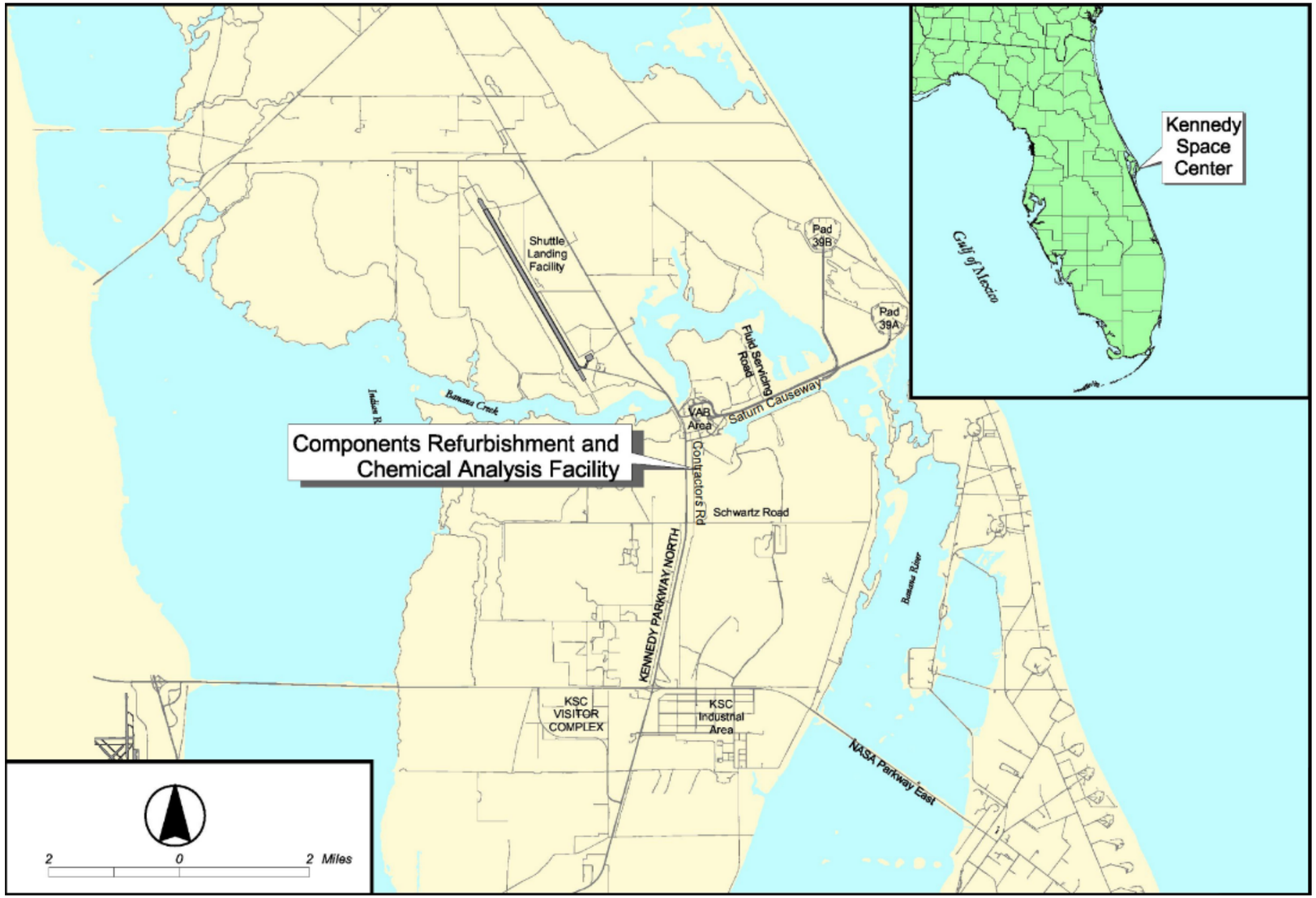


Note: This Advance Data Package (ADP) was prepared for NASA to aid in evaluation of site conditions and remedial actions. This is not a decision document. New information may come to light that makes this ADP outdated.

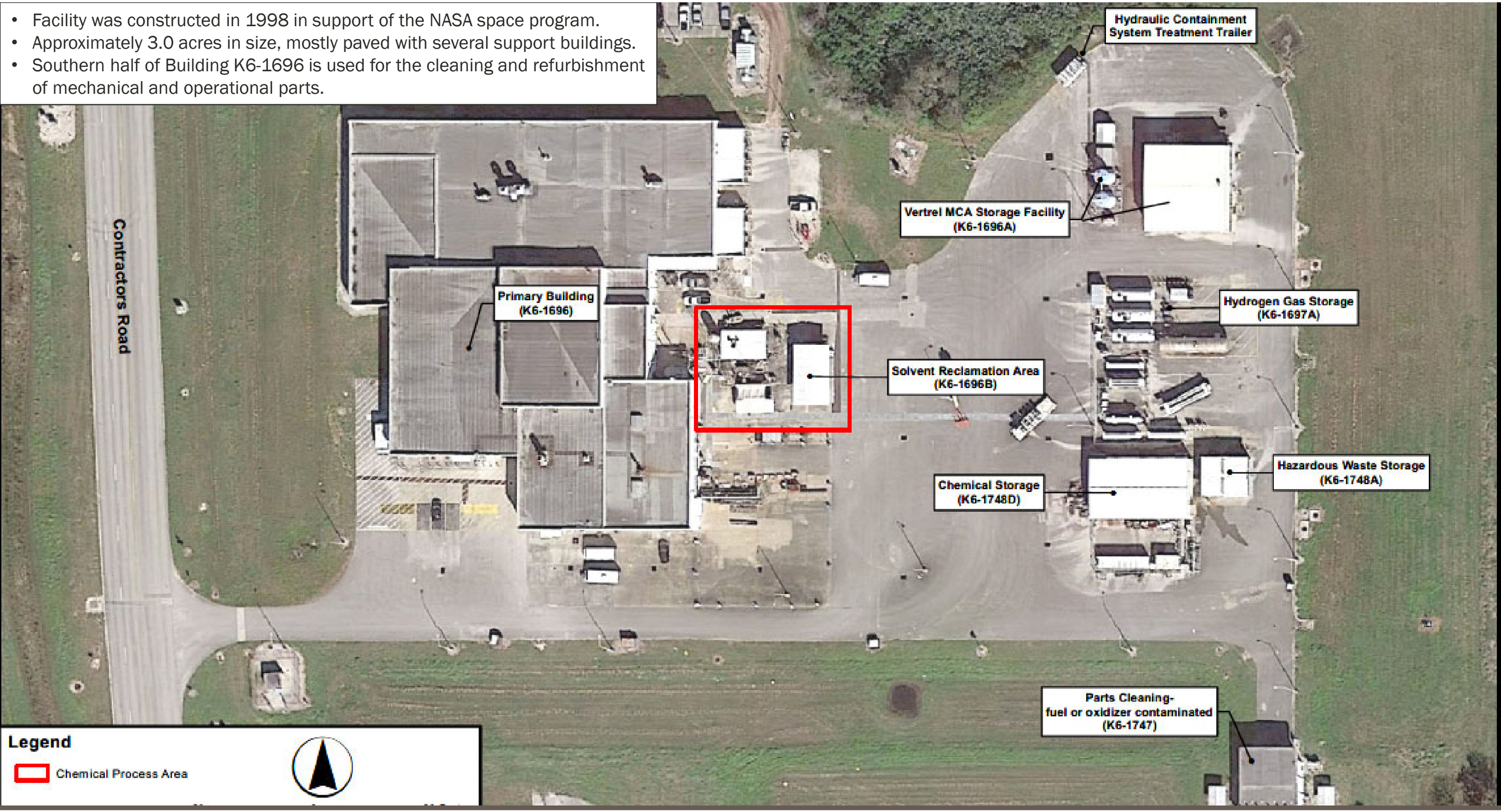
Presentation Objectives

- Provide an Overview of Investigation and Site History
- Review Current Site Status and Conditions
- Provide Contaminants of Concern (COC) Groundwater Analytical Results (trans-1,2-dichloroethene and vinyl chloride)
- Present Proposed Monitoring Well Locations and Screened Intervals

CRCA Site Location Map



- Facility was constructed in 1998 in support of the NASA space program.
- Approximately 3.0 acres in size, mostly paved with several support buildings.
- Southern half of Building K6-1696 is used for the cleaning and refurbishment of mechanical and operational parts.



Facility Layout

Facility Use and Structures

Primary Building (K6-1696) for cleaning and refurbishment of parts.

K6-1696A Vertrel MCA Storage Facility.

K6-1696B Solvent Reclamation.

K6-1697A Hydrogen Gas Storage.

K6-1747 Cleaning of fuel or oxidizer-contaminated parts.

K6-1748A Hazardous Waste Storage.

K6-1748D Chemical Storage.

Investigation and Site History

Historical Investigations: 2005 -2006
- Maximum tDCE, cDCE, and VC in groundwater were 45,000, 4,900, and 17,000 µg/L.
- GCTL exceedances isolated above aquitard (hard pan) 10 feet ft bls.

Phase I IM: Feb-Aug 2008
- 18 temporary IWs
- 13 permanent EWs
- 10 gal. ethyl lactate in 2,000 gal. of water injected and 2 gal. ethyl lactate in 32,300 gal. water recirculated
- SVE began continuous operations in the CPA in Aug-08

Phase II IM: Dec 2008 to Jan 2009
- 12 permanent IW/EW installed
- 10.5 gal. ethyl lactate in 2,100 gal. water injected
- 2.5 gal. ethyl lactate in 34,300 gal. recirculated

DPT Investigation: Mar to Apr 2010
- Additional HS identified below the hardpan and extending below inaccessible areas of Building K6-1696
- Max concentrations above aquitard tDCE 810 and VC 460 µg/L
- Max concentrations below aquitard tDCE 65,000 and VC 62,000 µg/L

DPT Investigation: Apr to Sep 2012
- VC HS and tDCE HCP in CPA extended to >50 ft bls
- VC HCP confirmed under western portion of Building K6-1696

Site Characterization: May to Nov 2014
- May to Jun-14 DPT investigation concluded tDCE and cDCE are <GCTLs
- Team consensus that horizontal and vertical delineation complete for VC and tDCE, also agreed to no active remediation and to conduct LTM

LTM: Nov 2014 to Feb 2017
- MW samples of MEE indicated reductive dechlorination
- tDCE >GCTL in 30-55 ft bls zone and VC west of Building K6-1696 at >10x NADC
- Western migration of plume, but concentrations decreasing

May 2017
- VOC plumes migrating west of Building K6-1696, LCP delineation incomplete
- LTM program deemed unsuitable and discontinued due to plume migration
- Continued DPT delineation of HS

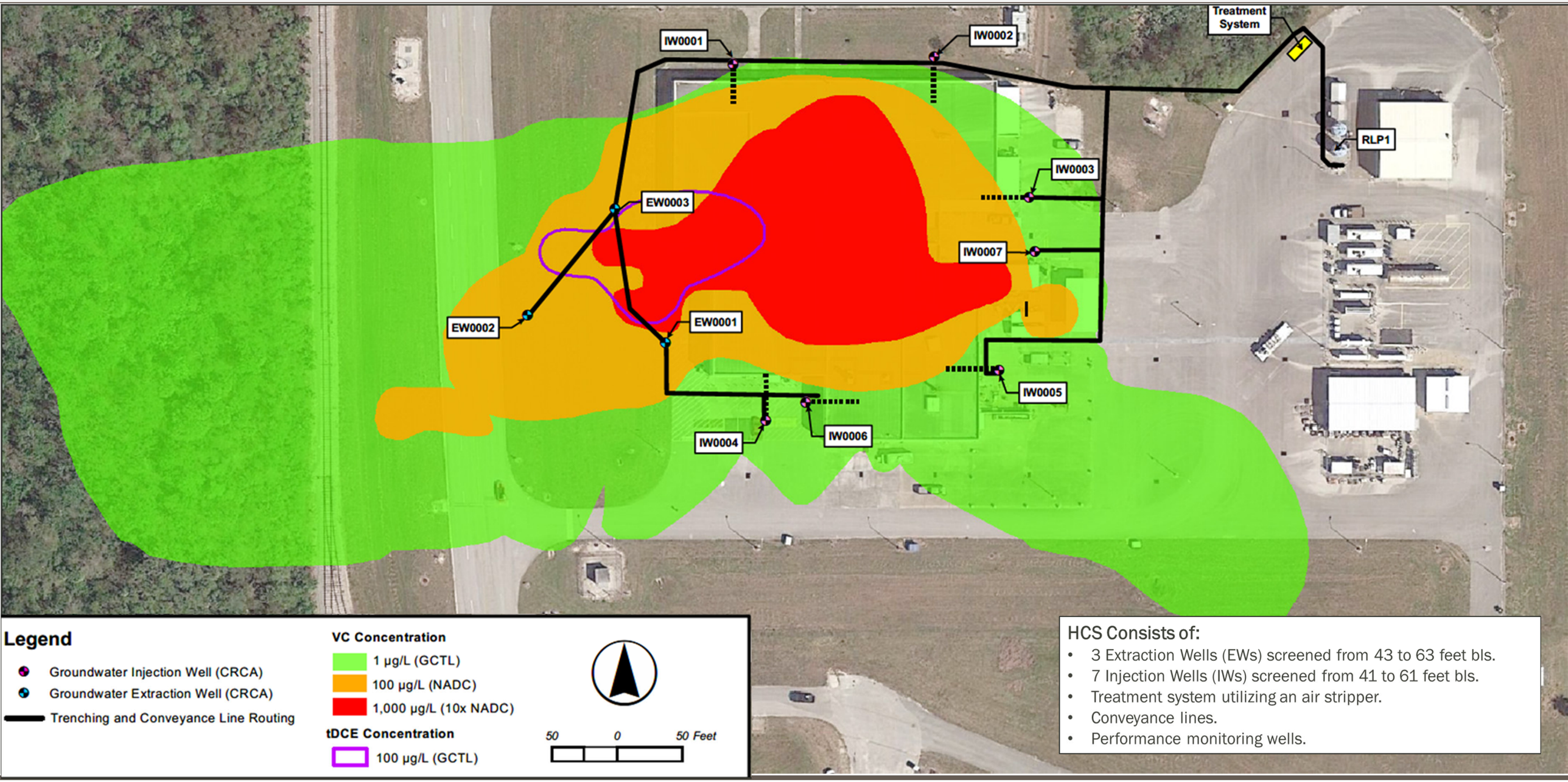
Engineering Evaluation: Mar to Jun 2018
- Site characterization and consensus on HS, HCP, and LCP horizontal and vertical delineation
- Remedial Alternatives Evaluation consensus on HCS design

Hydraulic Containment System (HCS) Implementation: Oct 2018 to May 2019
- Oct to Nov-18: Permitting Complete
- Dec-18: 12 MWs Installed
- Feb to Mar-19: 3 EWs and 7 IWs installed
- Apr to May-19: HCS treatment system installed

Baseline GW Sampling and HCS Startup: Jun-Aug 2019
- Jun-19: 20 MWs sampled during baseline
- Jul-19: Startup (Pre-commissioning check and functional performance tests)
- Aug-19: Prove-Out (EW and IW balance)

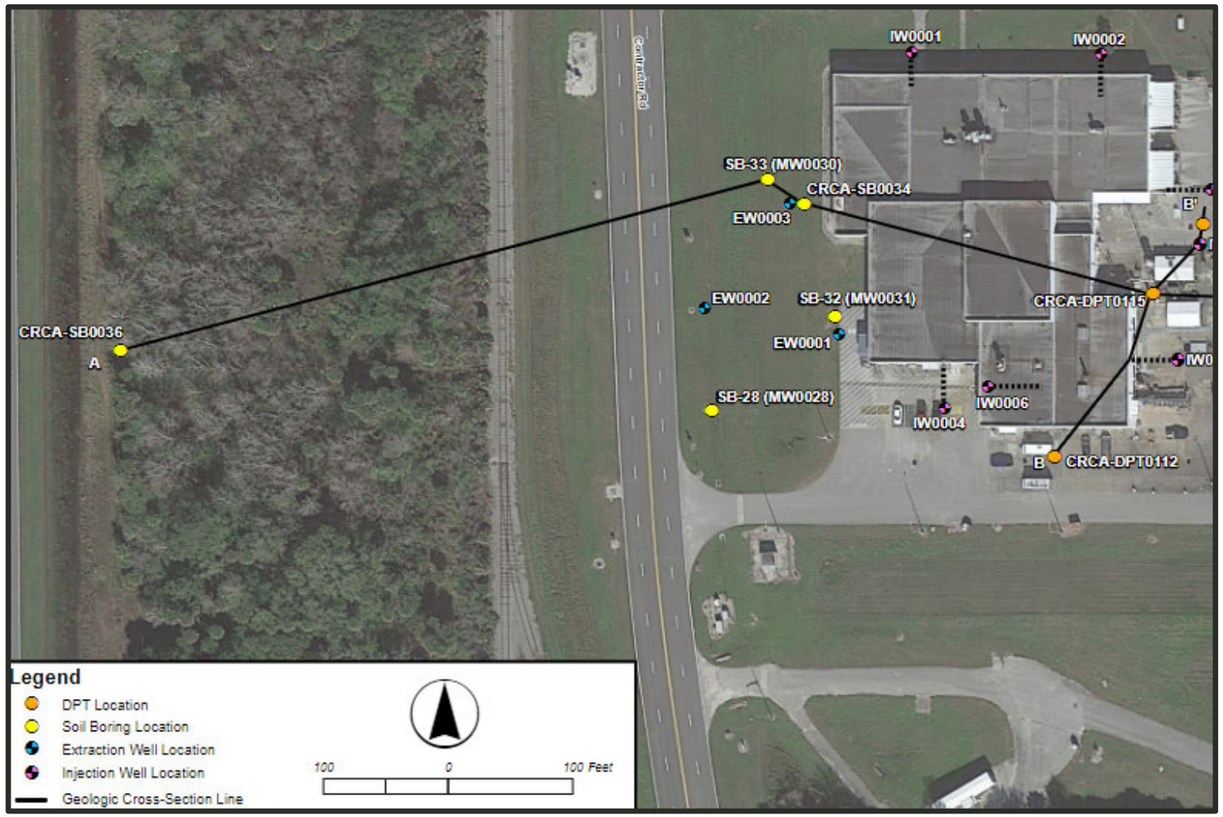
Continued HCS Operation: Sep 2019 to Present
- Monthly O&M of HCS system
- Quarterly air, sub-slab vapor, and groundwater sampling

HCS Layout and 2018 Site Characterization Plume

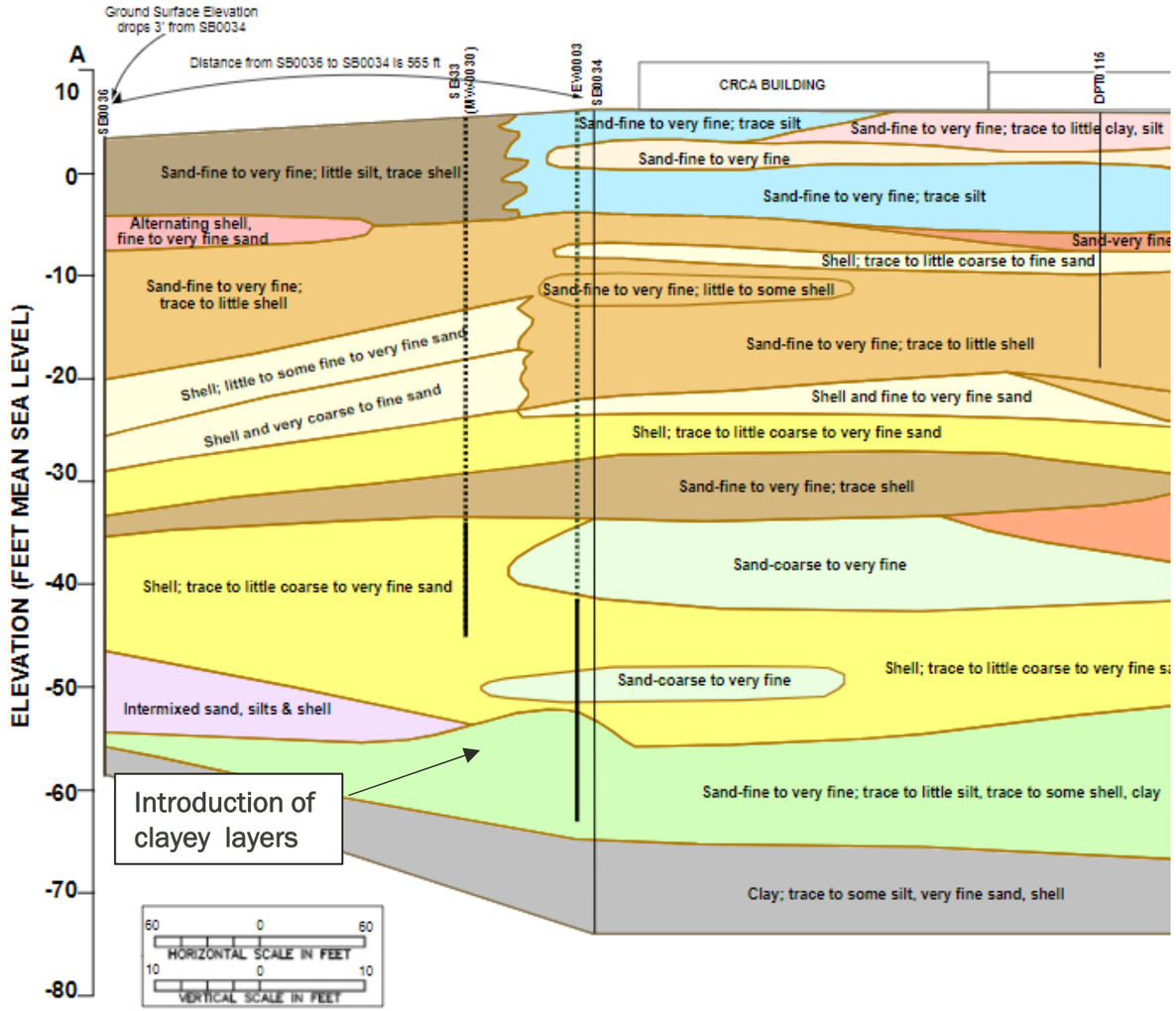


Geologic Cross Section Downgradient of CRCA Facility

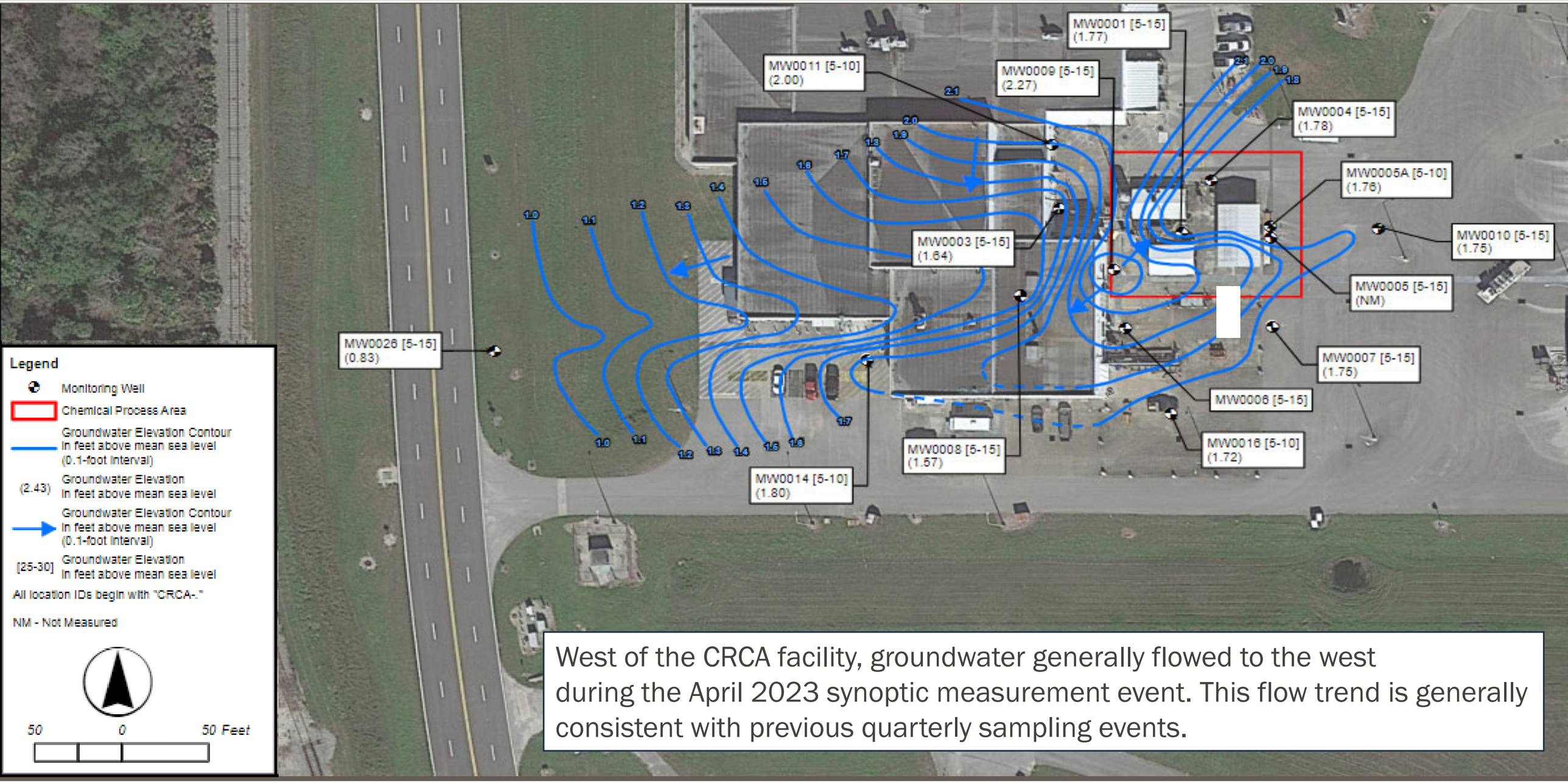
Western Extent of Cross Section Transect



Site Lithology

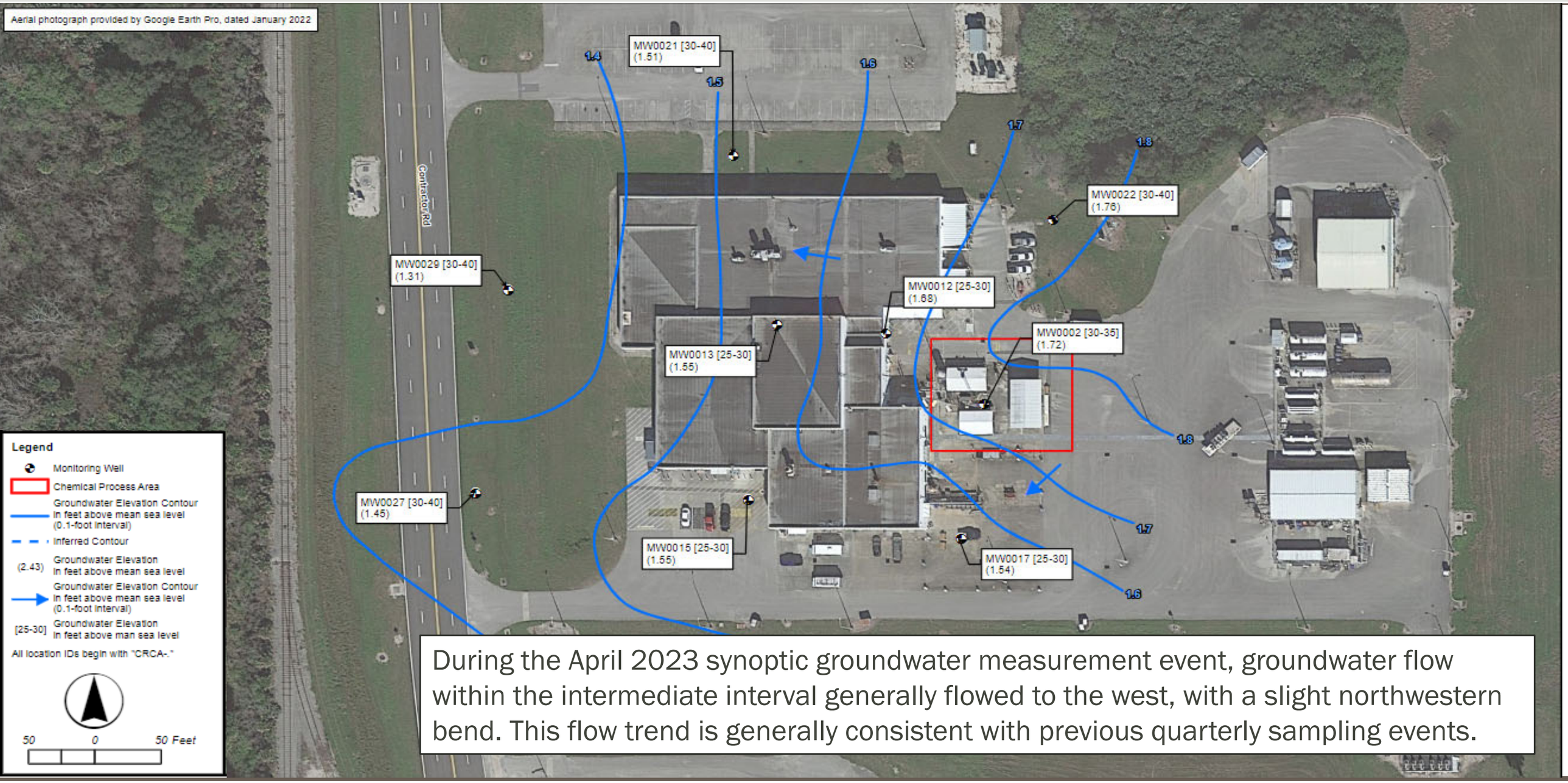


Shallow Groundwater Flow (April 2023)



West of the CRCA facility, groundwater generally flowed to the west during the April 2023 synoptic measurement event. This flow trend is generally consistent with previous quarterly sampling events.

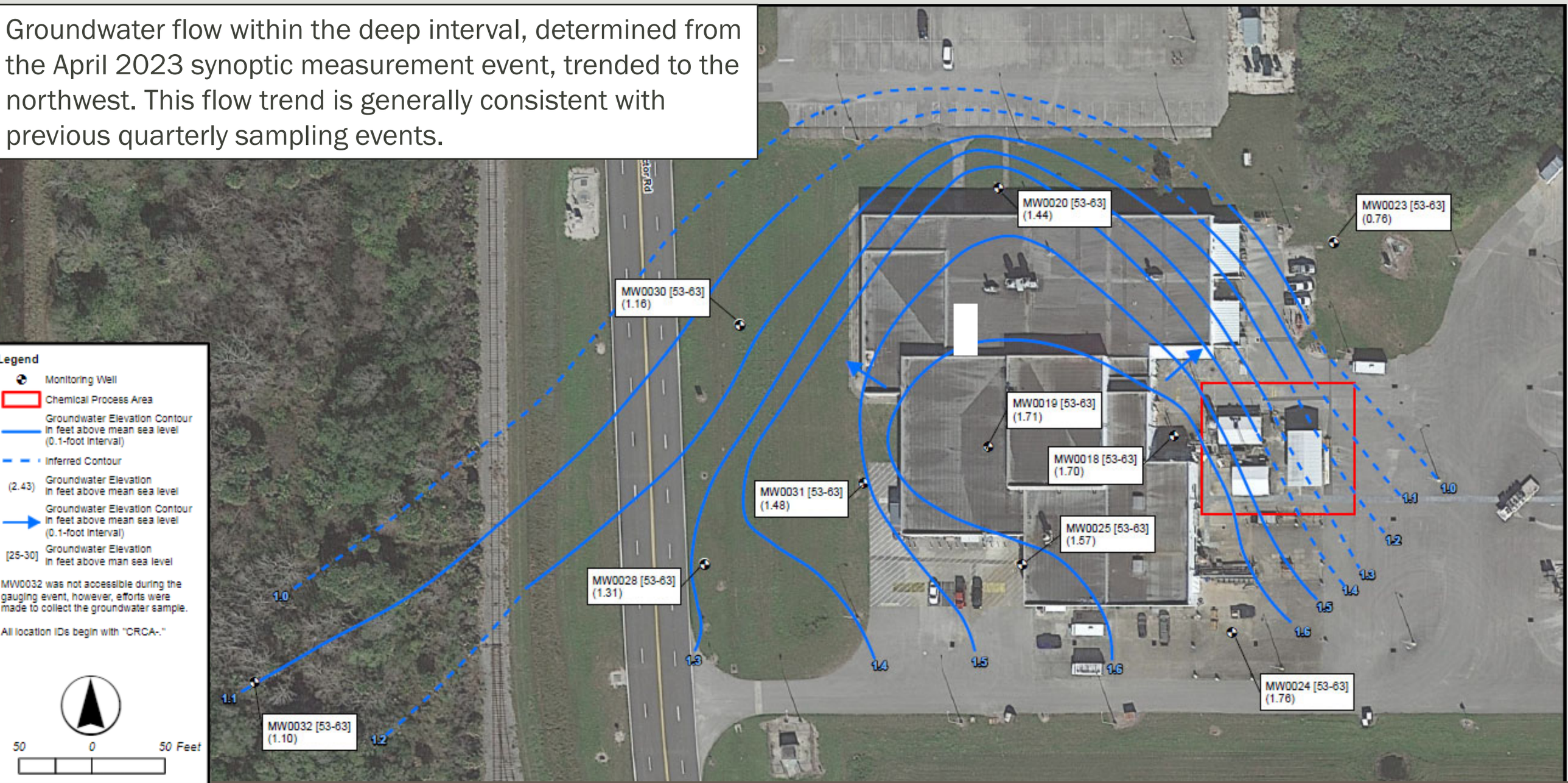
Intermediate Groundwater Flow (April 2023)



During the April 2023 synoptic groundwater measurement event, groundwater flow within the intermediate interval generally flowed to the west, with a slight northwestern bend. This flow trend is generally consistent with previous quarterly sampling events.

Deep Groundwater Flow (April 2023)

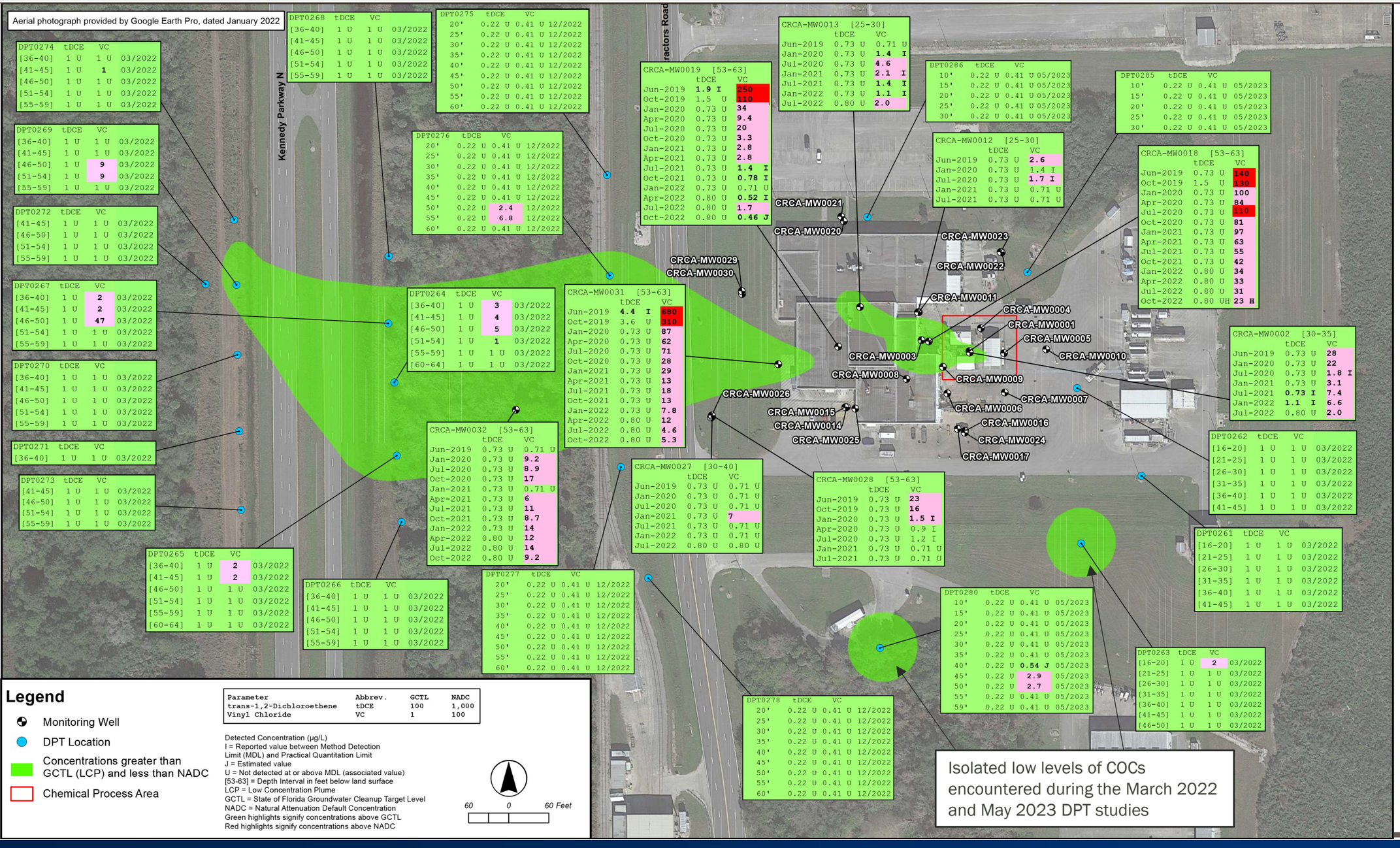
Groundwater flow within the deep interval, determined from the April 2023 synoptic measurement event, trended to the northwest. This flow trend is generally consistent with previous quarterly sampling events.



CRCA Trends Over Time

- Three CVOC plumes were identified in 2018 ranging from: 10X FDEP Natural Attenuation Default Concentration (NADC; Hot Spot 1 or HS1), exceeding NADC (High Concentration Plume or HCP), and above State of Florida Groundwater Cleanup Target Levels (GCTLs; Low Concentration Plume or LCP).
- HCS installation occurred from February to May 2019, followed by system start-up in July 2019 for HS1 remediation.
- The HCS system included the installation of three extraction wells, seven injection wells and an air stripper treatment trailer system.
- Baseline (June 2019) through Year 1 (October 2019 to July 2020): NADC exceedances of VC were detected within the deep zone from baseline to the end of Year 1 HCS operation.
- Year 2 (October 2020 to July 2021): After two years of HCS operation, no tDCE was detected and reductions of VC to within GCTL levels were seen in the intermediate and deep zones.
- Year 3 (October 2021 to July 2022 and October 2022): After three years of system operation, a maximum of 2 µg/L VC within the intermediate interval and 23 µg/L were found within the deep interval.
- Supplemental DPT studies in March 2022, December 2022, and May 2023 further delineated the vertical and areal extent of VC, with the LCP footprint extending in all directions. Two isolated GCTL exceedances were found southeast of the CRCA facility with VC concentrations less than 3 µg/L within the shallow and deep intervals. No tDCE was detected.

Intermediate and Deep COC Exceedances - Combined

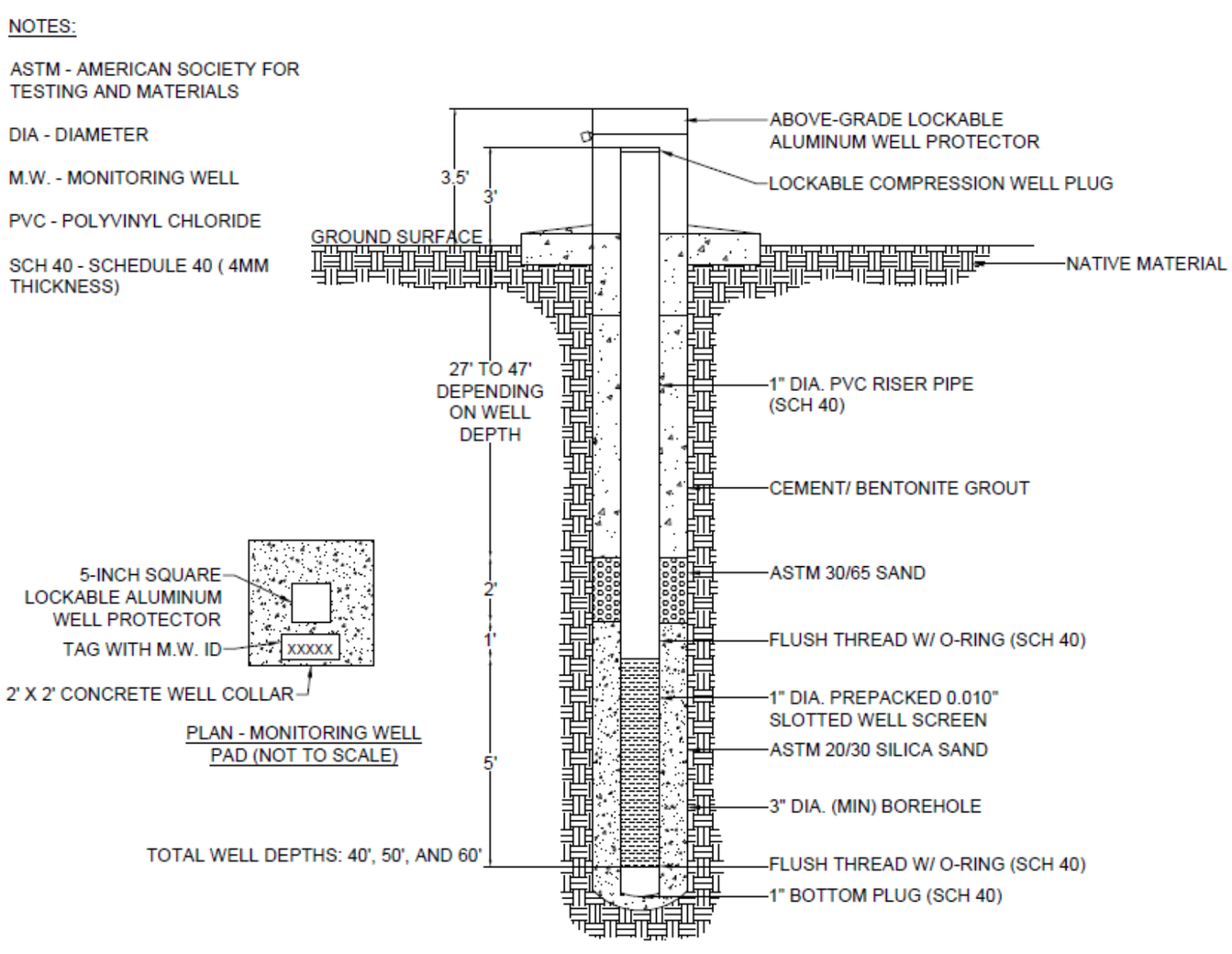


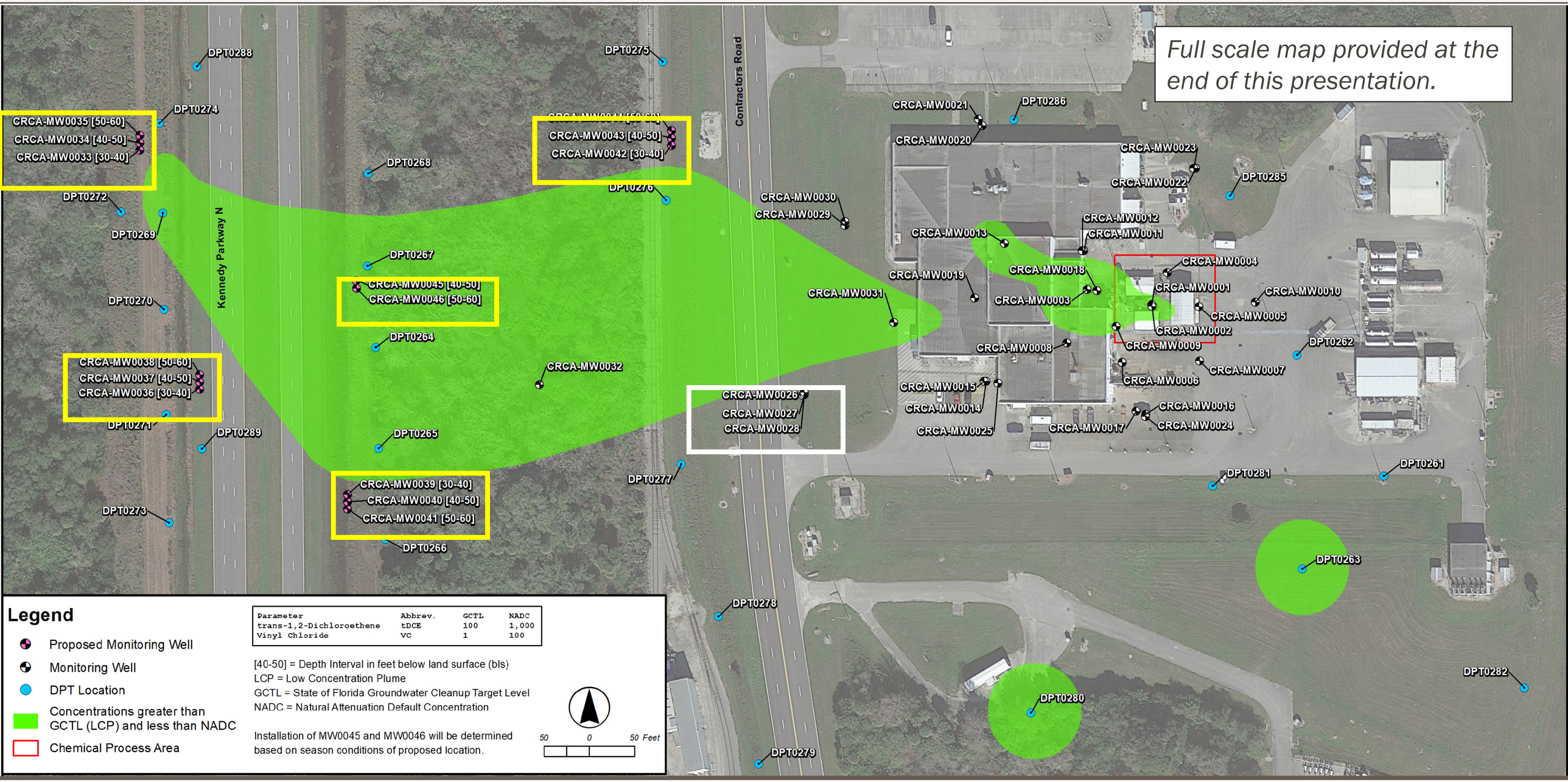
- March 2022, December 2022, and May 2023 DPT and PMR Year 3 monitoring well sampling results shown.
- LCP migration westward across Kennedy Parkway North indicated.
- Groundwater modeling predictions of westward plume migration supported.
- Additional DPT data points delineated northern, southern, and western extent of LCP.

Full scale map provided at the end of this presentation.

Proposed Monitoring Well Construction Details

Proposed Monitoring Well Name	Well Depth (in feet bls)	Screened Interval (in feet bls)	LTM Monitoring Objective
CRCA-MW0033	40	30-40	Northwestern edge of LCP
CRCA-MW0034	50	40-50	Northwestern edge of LCP
CRCA-MW0035	60	50-60	Northwestern edge of LCP
CRCA-MW0036	40	30-40	Southwestern edge of LCP
CRCA-MW0037	50	40-50	Southwestern edge of LCP
CRCA-MW0038	60	50-60	Southwestern edge of LCP
CRCA-MW0039	40	30-40	Southern edge of LCP
CRCA-MW0040	50	40-50	Southern edge of LCP
CRCA-MW0041	60	50-60	Southern edge of LCP
CRCA-MW0042	40	30-40	Northern edge of LCP
CRCA-MW0043	50	40-50	Northern edge of LCP
CRCA-MW0044	60	50-60	Northern edge of LCP
CRCA-MW0045	50	40-50	Plume centerline
CRCA-MW0046	60	50-60	Plume centerline





Legend

- Proposed Monitoring Well
- Monitoring Well
- DPT Location
- Concentrations greater than GCTL (LCP) and less than NADC
- Chemical Process Area

Parameter	Abbrev.	GCTL	NADC
trans-1,2-Dichloroethene	tDCE	100	1,000
Vinyl Chloride	VC	1	100

[40-50] = Depth Interval in feet below land surface (bls)
LCP = Low Concentration Plume
GCTL = State of Florida Groundwater Cleanup Target Level
NADC = Natural Attenuation Default Concentration

Installation of MW0045 and MW0046 will be determined based on season conditions of proposed location.

50 0 50 Feet

Proposed Monitoring Well Locations

Recommendations

- The installation of five well groups to monitor offsite plume migration: 3 well clusters downgradient from existing plume conditions, one well cluster north of the LCP, and one well cluster along the LCP centerline.
- Newly installed monitoring wells MW0033 through MW0046 to be sampled upon completion of installation and then annually thereafter.
- Incorporating the existing well clusters including CRCA-MW0026 (screened 5’-15’), CRCA-MW0027 (screened 30’-40’), and CRCA-MW0028 (screened 53’-63’) as part of the LTM program to monitor the southeastern edge of the LCP.
- Each monitoring well to be sampled annually for VOCs via USEPA 8260D.

Path Forward Sampling Program

TETRA TECH

Existing Wells (as presented in the Annual Performance Monitoring Report)

Monitoring Well Name	Well Depth (in feet bls)	Screened Interval (in feet bls)	Sampling Frequency	Analytes
CRCA-MW0002	35	30-35	Semi-annual	VOCs via USEPA 8260D
CRCA-MW0013	30	25-30		
CRCA-MW0018	63	53-63		
CRCA-MW0019	63	53-63		
CRCA-MW0026	15	5-15		
CRCA-MW0027	40	30-40		
CRCA-MW0028	63	53-63		
CRCA-MW0031	63	53-63		
CRCA-MW0032	63	53-63		

Proposed Wells (to be added)

Proposed Monitoring Well Name	Well Depth (in feet bls)	Screened Interval (in feet bls)	Sampling Frequency	Analytes
CRCA-MW0033	40	30-40	Sample upon installation completion and annually thereafter	VOCs via USEPA 8260D
CRCA-MW0034	50	40-50		
CRCA-MW0035	60	50-60		
CRCA-MW0036	40	30-40		
CRCA-MW0037	50	40-50		
CRCA-MW0038	60	50-60		
CRCA-MW0039	40	30-40		
CRCA-MW0040	50	40-50		
CRCA-MW0041	60	50-60		
CRCA-MW0042	40	30-40		
CRCA-MW0043	50	40-50		
CRCA-MW0044	60	50-60		
CRCA-MW0045	50	40-50		
CRCA-MW0046	60	50-60		

Any Questions?

FIGURE 1-1 CONTAMINANTS OF CONCERN PLUME MAP

SWMU 041, KENNEDY SPACE CENTER, FLORIDA

CRCA MW Plan
Revision 0
August 2023

Aerial photograph provided by Google Earth Pro, dated January 2022

Kennedy Parkway N

Contractors Road

DPT0274	tDCE	VC	
[36-40]	1 U	1 U	03/2022
[41-45]	1 U	1	03/2022
[46-50]	1 U	1 U	03/2022
[51-54]	1 U	1 U	03/2022
[55-59]	1 U	1 U	03/2022

DPT0269	tDCE	VC	
[36-40]	1 U	1 U	03/2022
[41-45]	1 U	1 U	03/2022
[46-50]	1 U	9	03/2022
[51-54]	1 U	9	03/2022
[55-59]	1 U	1 U	03/2022

DPT0272	tDCE	VC	
[41-45]	1 U	1 U	03/2022
[46-50]	1 U	1 U	03/2022
[51-54]	1 U	1 U	03/2022
[55-59]	1 U	1 U	03/2022

DPT0267	tDCE	VC	
[36-40]	1 U	2	03/2022
[41-45]	1 U	2	03/2022
[46-50]	1 U	47	03/2022
[51-54]	1 U	1 U	03/2022
[55-59]	1 U	1 U	03/2022

DPT0270	tDCE	VC	
[36-40]	1 U	1 U	03/2022
[41-45]	1 U	1 U	03/2022
[46-50]	1 U	1 U	03/2022
[51-54]	1 U	1 U	03/2022
[55-59]	1 U	1 U	03/2022

DPT0271	tDCE	VC	
[36-40]	1 U	1 U	03/2022

DPT0273	tDCE	VC	
[41-45]	1 U	1 U	03/2022
[46-50]	1 U	1 U	03/2022
[51-54]	1 U	1 U	03/2022
[55-59]	1 U	1 U	03/2022

DPT0268	tDCE	VC	
[36-40]	1 U	1 U	03/2022
[41-45]	1 U	1 U	03/2022
[46-50]	1 U	1 U	03/2022
[51-54]	1 U	1 U	03/2022
[55-59]	1 U	1 U	03/2022

DPT0275	tDCE	VC	
20'	0.22 U	0.41 U	12/2022
25'	0.22 U	0.41 U	12/2022
30'	0.22 U	0.41 U	12/2022
35'	0.22 U	0.41 U	12/2022
40'	0.22 U	0.41 U	12/2022
45'	0.22 U	0.41 U	12/2022
50'	0.22 U	0.41 U	12/2022
55'	0.22 U	0.41 U	12/2022
60'	0.22 U	0.41 U	12/2022

DPT0276	tDCE	VC	
20'	0.22 U	0.41 U	12/2022
25'	0.22 U	0.41 U	12/2022
30'	0.22 U	0.41 U	12/2022
35'	0.22 U	0.41 U	12/2022
40'	0.22 U	0.41 U	12/2022
45'	0.22 U	0.41 U	12/2022
50'	0.22 U	2.4	12/2022
55'	0.22 U	6.8	12/2022
60'	0.22 U	0.41 U	12/2022

CRCA-MW0019 [53-63]	tDCE	VC
Jun-2019	1.9 I	250
Oct-2019	1.5 U	110
Jan-2020	0.73 U	34
Apr-2020	0.73 U	9.4
Jul-2020	0.73 U	20
Oct-2020	0.73 U	3.3
Jan-2021	0.73 U	2.8
Apr-2021	0.73 U	2.8
Jul-2021	0.73 U	1.4 I
Oct-2021	0.73 U	0.78 I
Jan-2022	0.73 U	0.71 U
Apr-2022	0.80 U	0.52 I
Jul-2022	0.80 U	1.7
Oct-2022	0.80 U	0.46 J

CRCA-MW0013 [25-30]	tDCE	VC
Jun-2019	0.73 U	0.71 U
Jan-2020	0.73 U	1.4 I
Jul-2020	0.73 U	4.6
Jan-2021	0.73 U	2.1 I
Jul-2021	0.73 U	1.4 I
Jan-2022	0.73 U	1.1 I
Jul-2022	0.80 U	2.0

DPT0286	tDCE	VC	
10'	0.22 U	0.41 U	05/2023
15'	0.22 U	0.41 U	05/2023
20'	0.22 U	0.41 U	05/2023
25'	0.22 U	0.41 U	05/2023
30'	0.22 U	0.41 U	05/2023

DPT0285	tDCE	VC	
10'	0.22 U	0.41 U	05/2023
15'	0.22 U	0.41 U	05/2023
20'	0.22 U	0.41 U	05/2023
25'	0.22 U	0.41 U	05/2023
30'	0.22 U	0.41 U	05/2023

CRCA-MW0012 [25-30]	tDCE	VC
Jun-2019	0.73 U	2.6
Jan-2020	0.73 U	1.4 I
Jul-2020	0.73 U	1.7 I
Jan-2021	0.73 U	0.71 U
Jul-2021	0.73 U	0.71 U

CRCA-MW0018 [53-63]	tDCE	VC
Jun-2019	0.73 U	140
Oct-2019	1.5 U	130
Jan-2020	0.73 U	100
Apr-2020	0.73 U	84
Jul-2020	0.73 U	110
Oct-2020	0.73 U	81
Jan-2021	0.73 U	97
Apr-2021	0.73 U	63
Jul-2021	0.73 U	55
Oct-2021	0.73 U	42
Jan-2022	0.80 U	34
Apr-2022	0.80 U	33
Jul-2022	0.80 U	31
Oct-2022	0.80 UH	23 H

DPT0264	tDCE	VC	
[36-40]	1 U	3	03/2022
[41-45]	1 U	4	03/2022
[46-50]	1 U	5	03/2022
[51-54]	1 U	1	03/2022
[55-59]	1 U	1 U	03/2022
[60-64]	1 U	1 U	03/2022

CRCA-MW0031 [53-63]	tDCE	VC
Jun-2019	4.4 I	680
Oct-2019	3.6 U	310
Jan-2020	0.73 U	87
Apr-2020	0.73 U	62
Jul-2020	0.73 U	71
Oct-2020	0.73 U	28
Jan-2021	0.73 U	29
Apr-2021	0.73 U	13
Jul-2021	0.73 U	18
Oct-2021	0.73 U	13
Jan-2022	0.73 U	7.8
Apr-2022	0.80 U	12
Jul-2022	0.80 U	4.6
Oct-2022	0.80 U	5.3

CRCA-MW0002 [30-35]	tDCE	VC
Jun-2019	0.73 U	28
Jan-2020	0.73 U	22
Jul-2020	0.73 U	1.8 I
Jan-2021	0.73 U	3.1
Jul-2021	0.73 I	7.4
Jan-2022	1.1 I	6.6
Jul-2022	0.80 U	2.0

CRCA-MW0032 [53-63]	tDCE	VC
Jun-2019	0.73 U	0.71 U
Jan-2020	0.73 U	9.2
Jul-2020	0.73 U	8.9
Oct-2020	0.73 U	17
Jan-2021	0.73 U	0.71 U
Apr-2021	0.73 U	6
Jul-2021	0.73 U	11
Oct-2021	0.73 U	8.7
Jan-2022	0.73 U	14
Apr-2022	0.80 U	12
Jul-2022	0.80 U	14
Oct-2022	0.80 U	9.2

CRCA-MW0027 [30-40]	tDCE	VC
Jun-2019	0.73 U	0.71 U
Jan-2020	0.73 U	0.71 U
Jul-2020	0.73 U	0.71 U
Jan-2021	0.73 U	7
Jul-2021	0.73 U	0.71 U
Jan-2022	0.73 U	0.71 U
Jul-2022	0.80 U	0.80 U

CRCA-MW0028 [53-63]	tDCE	VC
Jun-2019	0.73 U	23
Oct-2019	0.73 U	16
Jan-2020	0.73 U	1.5 I
Apr-2020	0.73 U	0.9 I
Jul-2020	0.73 U	1.2 I
Jan-2021	0.73 U	0.71 U
Jul-2021	0.73 U	0.71 U

DPT0265	tDCE	VC	
[36-40]	1 U	2	03/2022
[41-45]	1 U	2	03/2022
[46-50]	1 U	1 U	03/2022
[51-54]	1 U	1 U	03/2022
[55-59]	1 U	1 U	03/2022
[60-64]	1 U	1 U	03/2022

DPT0266	tDCE	VC	
[36-40]	1 U	1 U	03/2022
[41-45]	1 U	1 U	03/2022
[46-50]	1 U	1 U	03/2022
[51-54]	1 U	1 U	03/2022
[55-59]	1 U	1 U	03/2022

DPT0277	tDCE	VC	
20'	0.22 U	0.41 U	12/2022
25'	0.22 U	0.41 U	12/2022
30'	0.22 U	0.41 U	12/2022
35'	0.22 U	0.41 U	12/2022
40'	0.22 U	0.41 U	12/2022
45'	0.22 U	0.41 U	12/2022
50'	0.22 U	0.41 U	12/2022
55'	0.22 U	0.41 U	12/2022
60'	0.22 U	0.41 U	12/2022

DPT0278	tDCE	VC	
20'	0.22 U	0.41 U	12/2022
25'	0.22 U	0.41 U	12/2022
30'	0.22 U	0.41 U	12/2022
35'	0.22 U	0.41 U	12/2022
40'	0.22 U	0.41 U	12/2022
45'	0.22 U	0.41 U	12/2022
50'	0.22 U	0.41 U	12/2022
55'	0.22 U	0.41 U	12/2022
60'	0.22 U	0.41 U	12/2022

DPT0280	tDCE	VC	
10'	0.22 U	0.41 U	05/2023
15'	0.22 U	0.41 U	05/2023
20'	0.22 U	0.41 U	05/2023
25'	0.22 U	0.41 U	05/2023
30'	0.22 U	0.41 U	05/2023
35'	0.22 U	0.41 U	05/2023
40'	0.22 U	0.54 J	05/2023
45'	0.22 U	2.9	05/2023
50'	0.22 U	2.7	05/2023
55'	0.22 U	0.41 U	05/2023
59'	0.22 U	0.41 U	05/2023

DPT0262	tDCE	VC	
[16-20]	1 U	1 U	03/2022
[21-25]	1 U	1 U	03/2022
[26-30]	1 U	1 U	03/2022
[31-35]	1 U	1 U	03/2022
[36-40]	1 U	1 U	03/2022
[41-45]	1 U	1 U	03/2022

DPT0261	tDCE	VC	
[16-20]	1 U	1 U	03/2022
[21-25]	1 U	1 U	03/2022
[26-30]	1 U	1 U	03/2022
[31-35]	1 U	1 U	03/2022
[36-40]	1 U	1 U	03/2022
[41-45]	1 U	1 U	03/2022

DPT0263	tDCE	VC	
[16-20]	1 U	2	03/2022
[21-25]	1 U	1 U	03/2022
[26-30]	1 U	1 U	03/2022
[31-35]	1 U	1 U	03/2022
[36-40]	1 U	1 U	03/2022
[41-45]	1 U	1 U	03/2022
[46-50]	1 U	1 U	03/2022

CRCA-MW0021
CRCA-MW0020
CRCA-MW0023
CRCA-MW0022
CRCA-MW0029
CRCA-MW0030
CRCA-MW0011
CRCA-MW0004
CRCA-MW0001
CRCA-MW0005
CRCA-MW0010
CRCA-MW0003
CRCA-MW0008
CRCA-MW0009
CRCA-MW0007
CRCA-MW0026
CRCA-MW0006
CRCA-MW0015
CRCA-MW0016
CRCA-MW0014
CRCA-MW0024
CRCA-MW0025
CRCA-MW0017

Legend

- Monitoring Well
- DPT Location
- Concentrations greater than GCTL (LCP) and less than NADC
- Chemical Process Area

Parameter	Abbrev.	GCTL	NADC
trans-1,2-Dichloroethene	tDCE	100	1,000
Vinyl Chloride	VC	1	100

Detected Concentration (µg/L)
I = Reported value between Method Detection Limit (MDL) and Practical Quantitation Limit
J = Estimated value
U = Not detected at or above MDL (associated value)
[53-63] = Depth Interval in feet below land surface
LCP = Low Concentration Plume
GCTL = State of Florida Groundwater Cleanup Target Level
NADC = Natural Attenuation Default Concentration
Green highlights signify concentrations above GCTL
Red highlights signify concentrations above NADC

60 0 60 Feet

JAX C:\GIS\KSC\MXD\CRCA\1-1_CRCA_CONTAMINANTS_CONCERN_PLUMES_V2.MXD 08/25/23

FIGURE 1-2 PROPOSED MONITORING WELL PLAN AND COMBINED PLUME MAP

SWMU 041, KENNEDY SPACE CENTER, FLORIDA

CRCA MW Plan
Revision 0
August 2023

Aerial photograph provided by Google Earth Pro, dated January 2022

Kennedy Parkway N

Contractors Road

DPT0287
DPT0284
DPT0288
DPT0275
DPT0274
CRCA-MW0035 [50-60]
CRCA-MW0034 [40-50]
CRCA-MW0033 [30-40]
CRCA-MW0044 [50-60]
CRCA-MW0043 [40-50]
CRCA-MW0042 [30-40]
CRCA-MW0021
DPT0286
CRCA-MW0020
CRCA-MW0023
CRCA-MW0022
DPT0285
DPT0268
DPT0276
DPT0272
DPT0269
CRCA-MW0030
CRCA-MW0029
CRCA-MW0012
CRCA-MW0011
CRCA-MW0013
DPT0267
CRCA-MW0045 [40-50]
CRCA-MW0046 [50-60]
CRCA-MW0004
CRCA-MW0018
CRCA-MW0019
CRCA-MW0001
CRCA-MW0010
CRCA-MW0031
CRCA-MW0003
CRCA-MW0005
DPT0270
DPT0264
CRCA-MW0002
CRCA-MW0009
DPT0262
CRCA-MW0008
CRCA-MW0038 [50-60]
CRCA-MW0037 [40-50]
CRCA-MW0036 [30-40]
CRCA-MW0032
CRCA-MW0007
CRCA-MW0006
CRCA-MW0015
CRCA-MW0026
CRCA-MW0027
CRCA-MW0028
CRCA-MW0014
CRCA-MW0016
CRCA-MW0024
CRCA-MW0025
CRCA-MW0017
DPT0271
DPT0289
DPT0265
DPT0277
DPT0281
DPT0261
CRCA-MW0039 [30-40]
CRCA-MW0040 [40-50]
CRCA-MW0041 [50-60]
DPT0273
DPT0266
DPT0263
DPT0278
DPT0282
DPT0280
DPT0279

Legend

- Proposed Monitoring Well
- Monitoring Well
- DPT Location
- Concentrations greater than GCTL (LCP) and less than NADC
- Chemical Process Area

Parameter	Abbrev.	GCTL	NADC
trans-1,2-Dichloroethene	tDCE	100	1,000
Vinyl Chloride	VC	1	100

[40-50] = Depth Interval in feet below land surface (bls)
LCP = Low Concentration Plume
GCTL = State of Florida Groundwater Cleanup Target Level
NADC = Natural Attenuation Default Concentration

Installation of MW0045 and MW0046 will be determined based on season conditions of proposed location.

50 0 50 Feet

JAX C:\GIS\KSC\MXD\CRCA\1-2_CRCA_PROP_MW_PLUMES.MXD 08/25/23

SWMU 041 Components Refurbishment and Chemical Analysis (CRCA) Facility

Hydraulic Containment System for Hot Spot 1 (HS1)

Year 4 Performance Monitoring Advance Data Package

December 2023

TETRA TECH

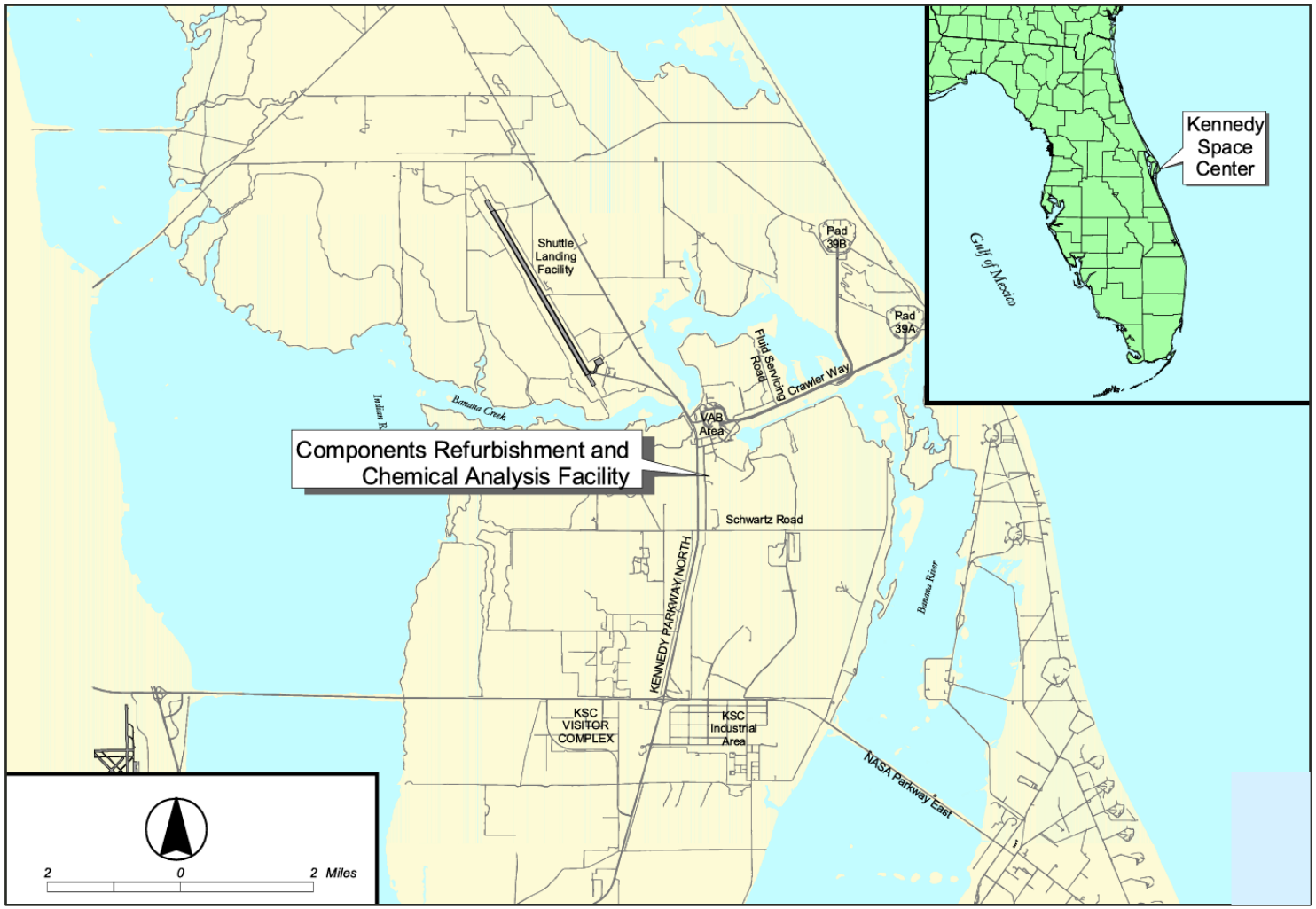
complex world | CLEAR SOLUTIONS™

This Advance Data Package (ADP) was prepared for NASA to aid in evaluation of site conditions and remedial actions. This is not a decision document. New information may come to light that makes this ADP outdated.

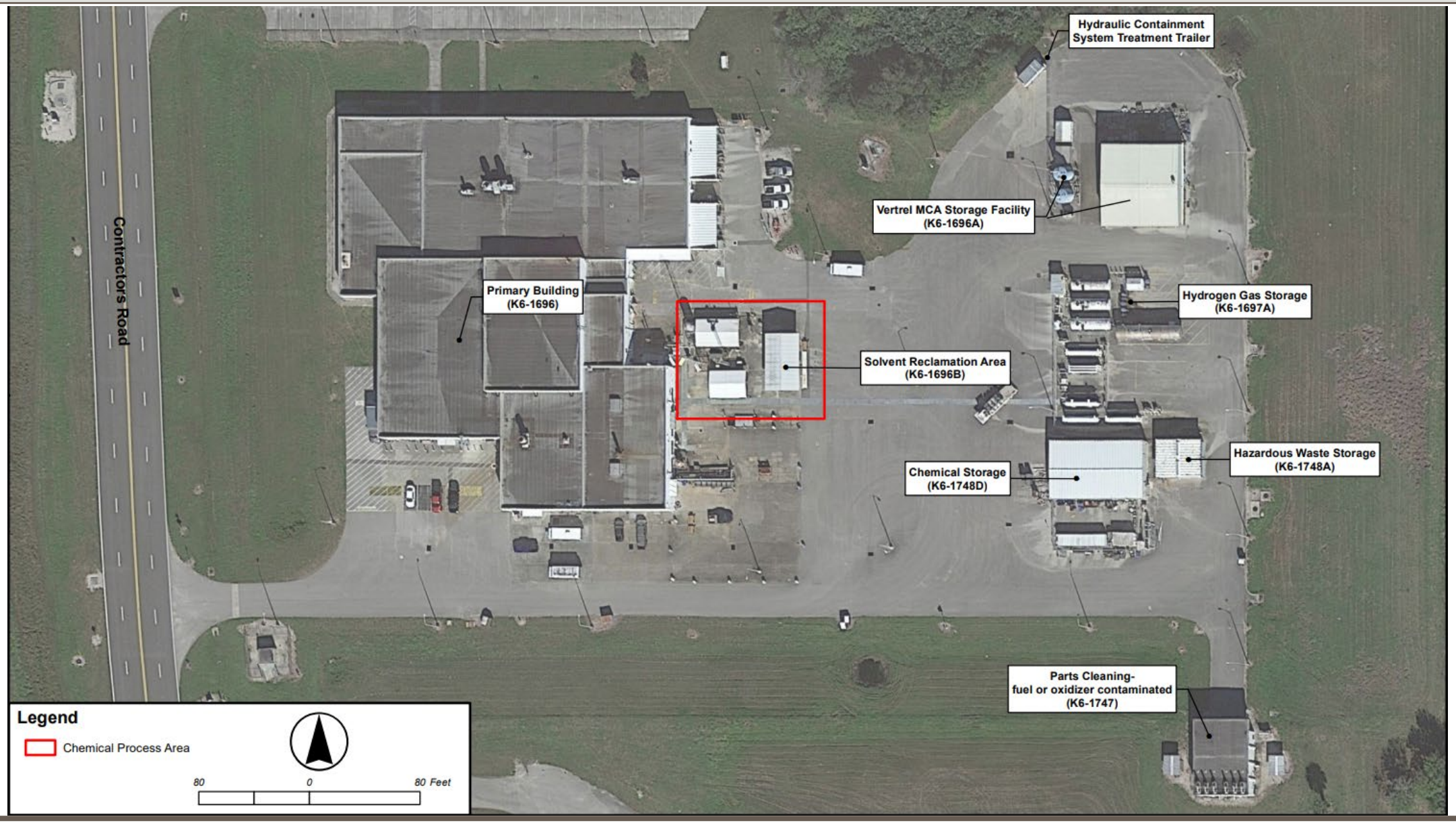
Presentation Overview

- Introduction and Background
- Performance Metrics
- Year 4 System Operation and Maintenance (O&M)
  - November 2022– September 2023
- Performance groundwater sampling, sub-slab soil gas monitoring, and ambient air results to date
- Conclusions
- Recommendations for Team consensus

CRCA Site Location Map



Facility Layout



Facility Use and Structures

Primary Building (K6-1696) for cleaning and refurbishment of parts.

K6-1696A Vertrel MCA Storage Facility.

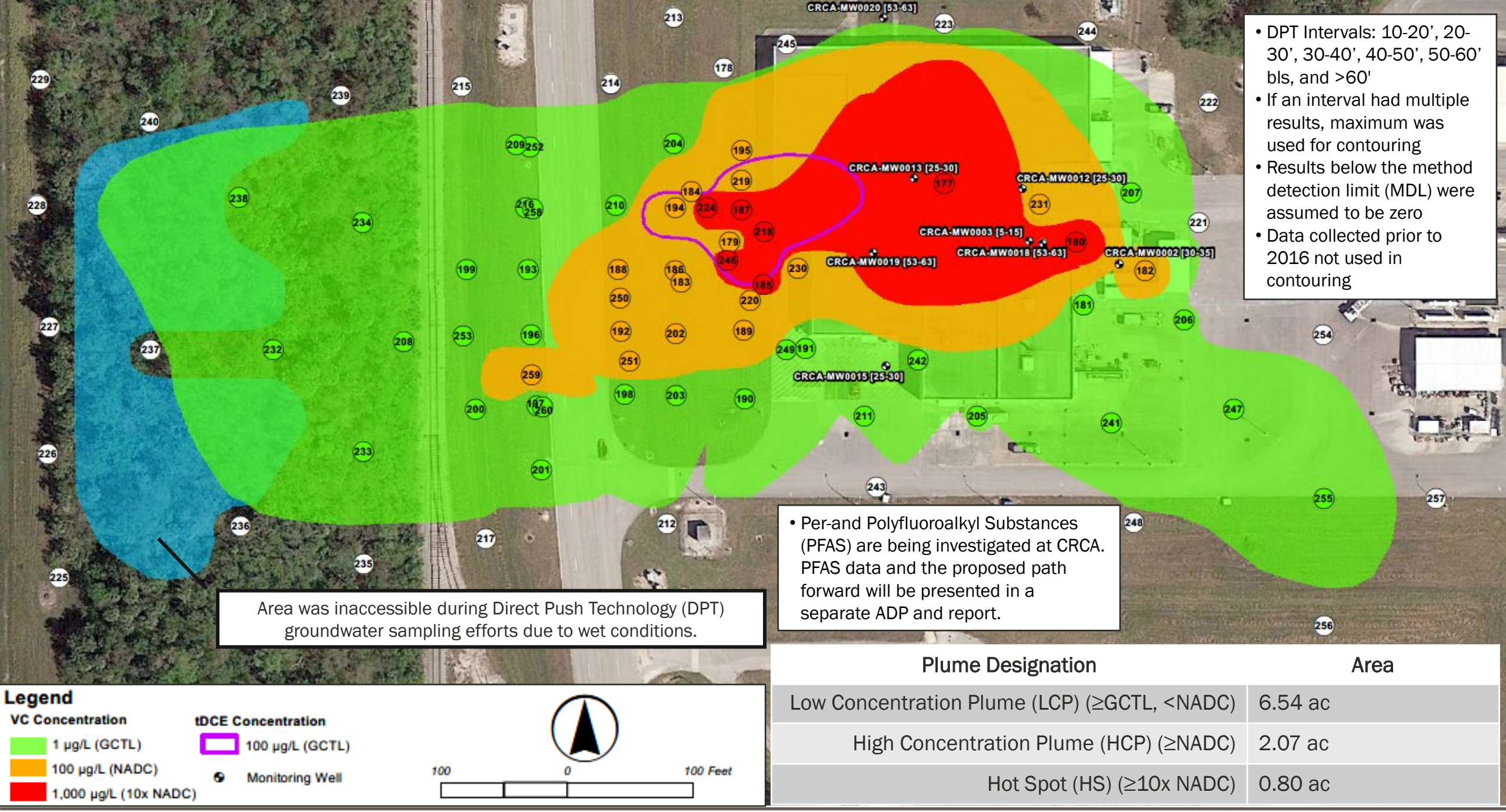
K6-1696B Solvent Reclamation.

K6-1697A Hydrogen Gas Storage.

K6-1747 Cleaning of fuel or oxidizer-contaminated parts.

K6-1748A Hazardous Waste Storage.

K6-1748D Chemical Storage.



Plume Designation	Area
Low Concentration Plume (LCP) (≥GCTL, <NADC)	6.54 ac
High Concentration Plume (HCP) (≥NADC)	2.07 ac
Hot Spot (HS) (≥10x NADC)	0.80 ac

2018 Site Characterization CVOC Groundwater Plume

Investigation and Site History

Historical Investigations: 2005 -2006
- Maximum tDCE, cDCE, and VC in groundwater at 45,000, 4,900, and 17,000 µg/L
- GCTL exceedances isolated above aquitard (hard pan) 10 feet bls

Phase I IM: Feb-Aug 2008
- 18 temporary injection wells (IWs)
- 13 permanent extraction wells (EWs)
- 10 gal. ethyl lactate in 2,000 gal. of water injected and 2 gal. ethyl lactate in 32,300 gal. water recirculated
- SVE began continuous operations in the Chemical Process Area (CPA) in Aug-08

Phase II IM: Dec 2008 to Jan 2009
- 12 permanent IW/EW installed
- 10.5 gal. ethyl lactate in 2,100 gal. water injected
- 2.5 gal. ethyl lactate in 34,300 gal. recirculated

DPT Investigation: Mar to Apr 2010
- Additional HS identified below the hardpan and extending below inaccessible areas of Building K6-1696
- Max concentrations above aquitard tDCE 810 and VC 460 µg/L
- Max concentrations below aquitard tDCE 65,000 and VC 62,000 µg/L

DPT Investigation: Apr to Sep 2012
- VC HS and tDCE HCP in CPA extended to >50 ft bls
- VC HCP confirmed under western portion of Building K6-1696

Site Characterization: May to Nov 2014
- May to Jun-14 DPT investigation concluded tDCE and cDCE are <GCTLs
- Team consensus that horizontal and vertical delineation complete for VC and tDCE, also agreed to no active remediation and to conduct LTM

LTM: Nov 2014 to May 2017
- MW samples of MEE indicated reductive dechlorination was occurring
- tDCE >GCTL in 30-55 ft bls zone and VC west of Building K6-1696 at >10x NADC
- In May-17 CVOC plume migrating west of K6-1696, LCP delineation incomplete, LTM discontinued, DPT continued (HS)

Engineering Evaluation: Mar to Jun 2018
- Site characterization and consensus on HS, HCP, and LCP horizontal and vertical delineation
- Remedial Alternatives Evaluation consensus on hydraulic containment system (HCS) design

HCS Implementation: Oct 2018 to May 2019
- Oct to Nov-18: Permitting Complete
- Dec-18: 12 MWs Installed
- Feb to Mar-19: 3 EWs and 7 IWs installed
- Apr to May-19: HCS system installed

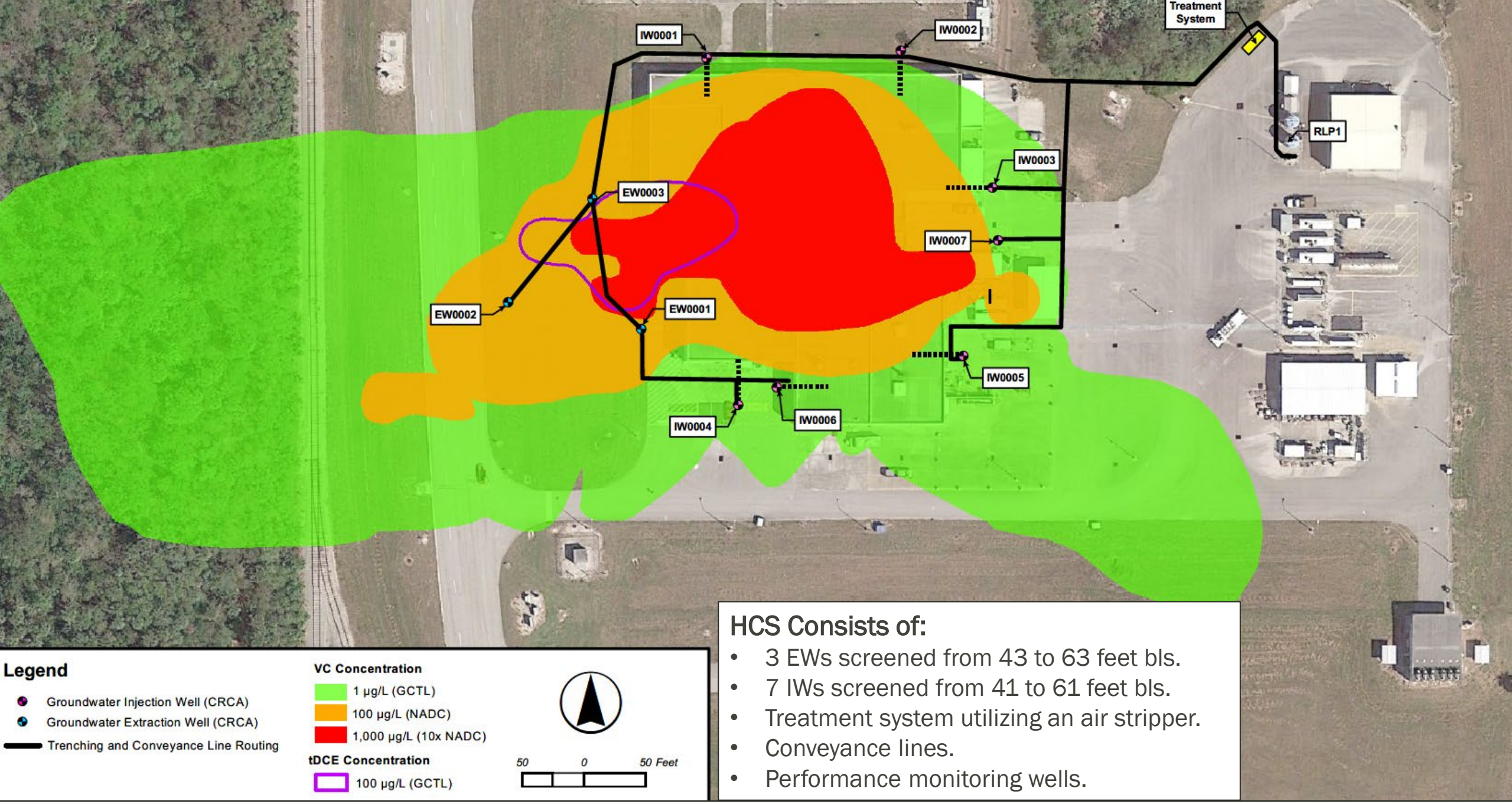
Baseline GW Sampling and HCS Commissioning/Startup: Jun to Aug 2019
- Jun-19: Baseline sampling 20 MWs
- Jul-19: Startup (Pre-commissioning check, functional performance tests)
- Aug-19: Prove-Out (EW, IW balance)

Continued HCS Operation: Sept 2019 to Present
- Monthly O&M of HCS system
- Quarterly air, sub-slab vapor, and groundwater performance monitoring sampling Oct -19 to Jan-23, semi-annually from Jan-23 to present

DPT Investigation: Mar-22, Dec-22, and May-23
- PFAS study with limited CVOC analyses (findings presented in a separate ADP)
- Downgradient LCP delineated west of railroad tracks (based on DPT data)
- LTM wells proposed to monitor downgradient LCP

IM Overview

- Interim Measure (IM) Objective:
  - **Primary:** Attain hydraulic control of dissolved-phase chlorinated volatile organic compounds (CVOCs) plume
  - **Secondary:** Reduce concentrations of CVOCs in HS1 and the HCP via an IM to support transition to long term monitoring (LTM)
- Media of Concern: Groundwater
- COCs: Vinyl Chloride (VC) and trans-1,2-Dichloroethene (tDCE)
- Initial Plume Conditions:
  - LCP (≥groundwater cleanup target levels [GCTLs]) – 6.54 acres
  - HCP (≥NADCs) – 2.07 acres
  - HS (≥10x NADCs) – 0.8 acre
  - HCS includes the HCP, HS, and the central LCP
  - Approximately 88% of 2018 CVOC plume mass is in HS and HCP, and approximately 99% of CVOC plume mass consists of VC



HCS Consists of:

- 3 EWs screened from 43 to 63 feet bls.
- 7 IWs screened from 41 to 61 feet bls.
- Treatment system utilizing an air stripper.
- Conveyance lines.
- Performance monitoring wells.

HCS O&M

Weekly Site Visits O&M Activities:

- Inspection of flow meters and HCS components for leakage and excessive vibration, noise
- Inspection of differential pressure across the bag filters
- Inspection of scale inhibitor level
- Ensure system components are operating as designed
- Repair and clean equipment as needed
- General housekeeping performed

Monthly O&M Activities:

- Recording of system operational data, including flow rates, pressure, and comparing data to design conditions and previous operational data
- Routine monthly cleaning of the air stripper
- Visually Inspect float sensors for scale buildup and clean as needed
- Replace bag filters as needed

HCS Operation Overview

Extraction Well	Average Flow Rate (gpm)	Average Monthly Pressure (psi)	Total Gallons During Operating Period	Total Gallons Since Startup
EW0001	7.0	19.2	1,167,529	10,368,516
EW0002	7.1	21.0	2,171,490	11,428,104
EW0003	7.1	22.0	1,579,015	10,766,137
Injection Well	**Average Flow Rate (gpm)**	**Average Monthly Pressure (psi)**	**Total Gallons During Operating Period**	**Total Gallons Since Startup**
IW0001	7.5	13.7	1,190,017	6,694,928
IW0002	7.1	12.0	779,396	5,409,351
IW0003	6.0	18.0	977,056	6,073,746
IW0004	6.0	18.0	1,105,482	6,090,092
IW0005	5.0	18.0	935,496	5,251,777
IW0006	5.7	14.8	773,773	5,239,508
IW0007	5.0	15.0	436,467	3,121,848

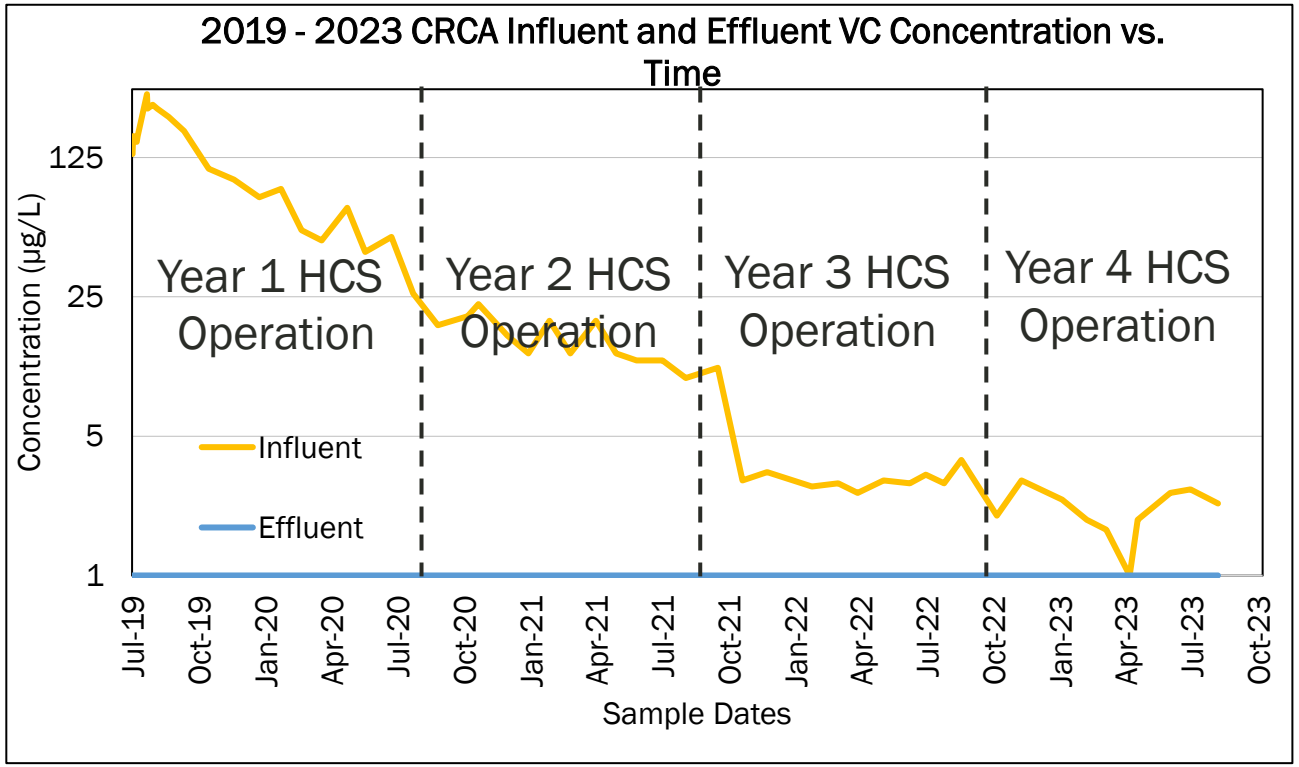
During Year 4, the HCS treated 4,918,033 gallons of water, with 32,562,756 gallons treated since startup.

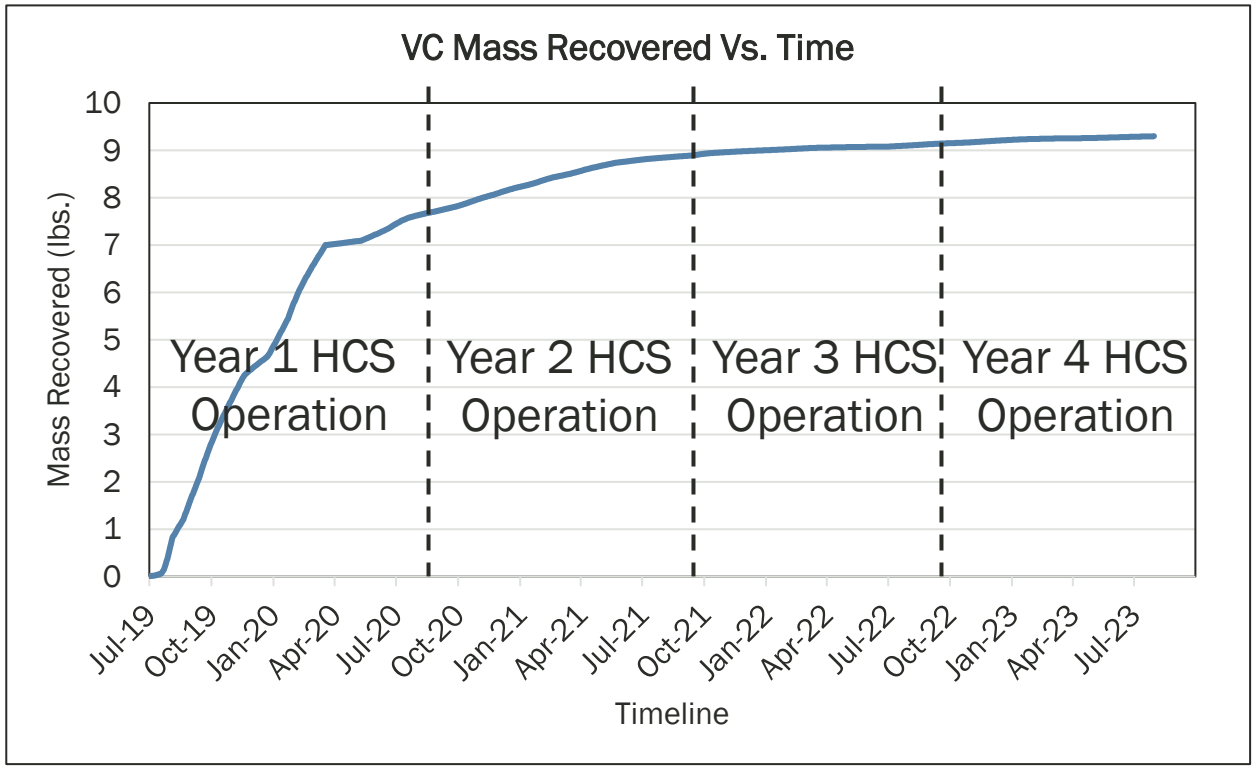
Note:
- Injection rates and volume vary based on the capacity of subsurface soils to accept flow.
- During Year 4, the extraction well pumps experienced decrease in efficiency which led slightly lower average flow rate and operating pressure compared to the previous year. The decrease in efficiency is likely due to the environment they are operating in and the age of the pumps.
- Total gallons treated are calculated based on the sum of the individual extraction well flow meter readings.

HCS Runtime Overview, November 2022 to September 2023

Available Time				Operational Data				Downtime Contributing Factor
Year 4 Operating Period	Month	Days in Month	Hours in Month	Downtime (day)	Downtime (hours)	Runtime Hours	Monthly Runtime	
2022	November	30	720	4	96	624	87%	Powered down due to Hurricane Nicole; Monthly O&M and air strippers cleaned
	December	31	744	1	24	720	97%	Monthly O&M and air strippers cleaned
2023	January	31	744	1	24	720	97%	Monthly O&M and air strippers cleaned
	February	28	672	1	24	648	96%	Monthly O&M and air strippers cleaned
	March	31	744	1	24	720	97%	Monthly O&M and air strippers cleaned
	April	30	720	3	72	648	90%	Monthly O&M and air strippers cleaned; PLC froze, system on but did not operate
	May	31	744	1	24	720	97%	Monthly O&M and air strippers cleaned
	June	30	720	2	48	672	93%	Monthly O&M and air strippers cleaned; PLC froze, system on but did not operate
	July	31	744	1	24	720	97%	Monthly O&M and air strippers cleaned
	August	31	744	2	48	696	94%	Monthly O&M and air strippers cleaned; PLC froze, system on but did not operate
	September	30	720	3	72	648	90%	Monthly O&M and air strippers cleaned; PLC froze, system on but did not operate
Total		395	9,480	26	624	8,856	94%	Total Runtime

VC Concentration VS Time of Influent/Effluent and Mass Recovery





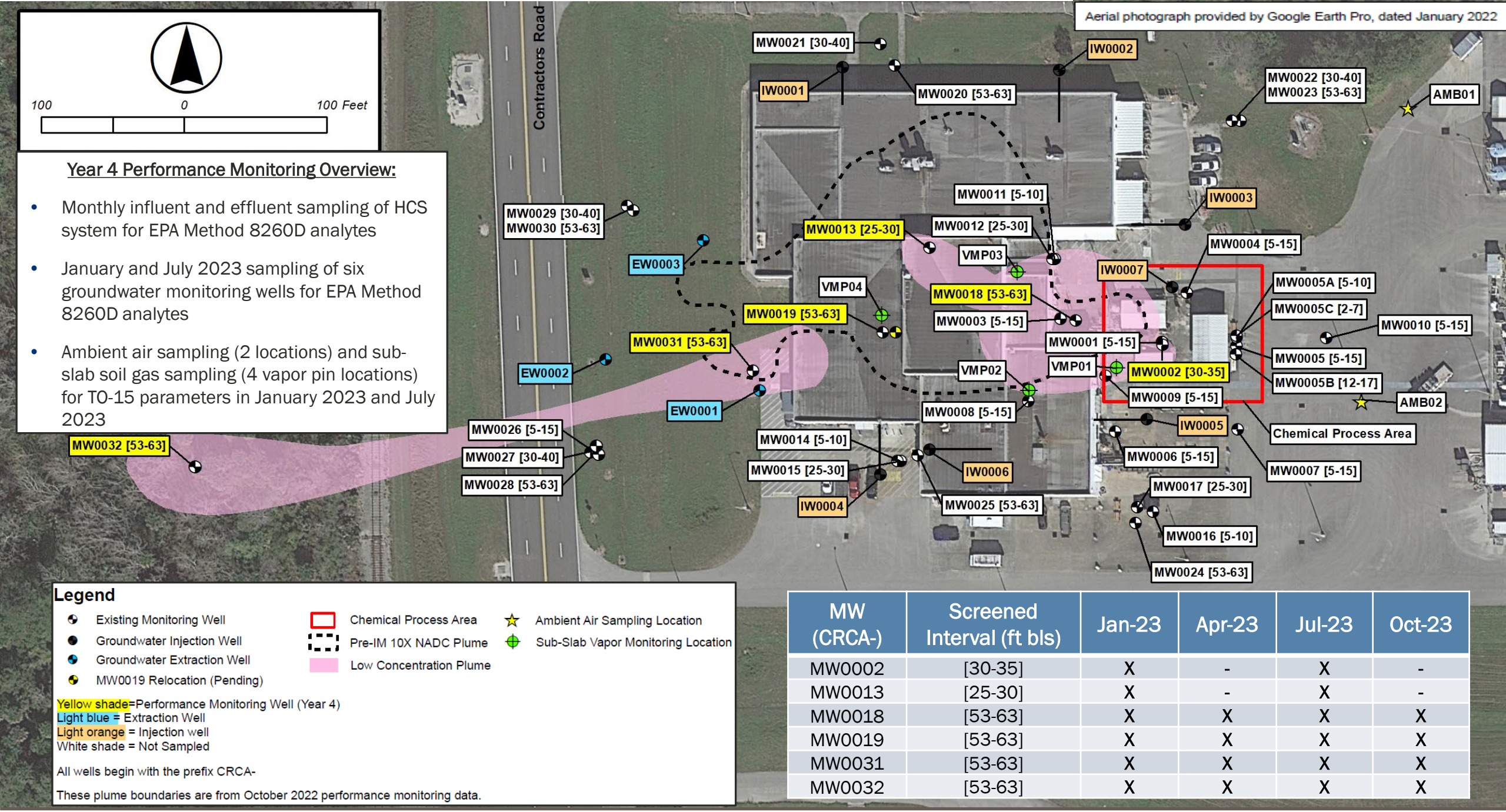
Note: Log scale used. Results that were less than 1, which only included values below the method detection limit were changed to 1 to be seen on graph

Yearly % Influent Concentration Difference of VC From HCS Startup

Year 1 – 61.5%
Year 2 – 90.8%
Year 3 – 97.5%
Year 4 (Current) – 97.9%

9.3 lbs. of VC Recovered Since Startup

- Estimated mass from 2019 IWP in HS and HCP, 35.36 lbs and 12.58 lbs, respectively
- September influent and effluent results were not received before submittal due date therefore data is not shown on the Influent and Effluent VC concentration vs. Time or mass recovery graphs



Year 4 Performance Monitoring Overview:

- Monthly influent and effluent sampling of HCS system for EPA Method 8260D analytes
- January and July 2023 sampling of six groundwater monitoring wells for EPA Method 8260D analytes
- Ambient air sampling (2 locations) and sub-slab soil gas sampling (4 vapor pin locations) for TO-15 parameters in January 2023 and July 2023

Legend

- Existing Monitoring Well
- Groundwater Injection Well
- Groundwater Extraction Well
- MW0019 Relocation (Pending)
- Chemical Process Area
- Pre-IM 10X NADC Plume
- Low Concentration Plume
- Ambient Air Sampling Location
- Sub-Slab Vapor Monitoring Location

Yellow shade=Performance Monitoring Well (Year 4)
Light blue = Extraction Well
Light orange = Injection well
White shade = Not Sampled

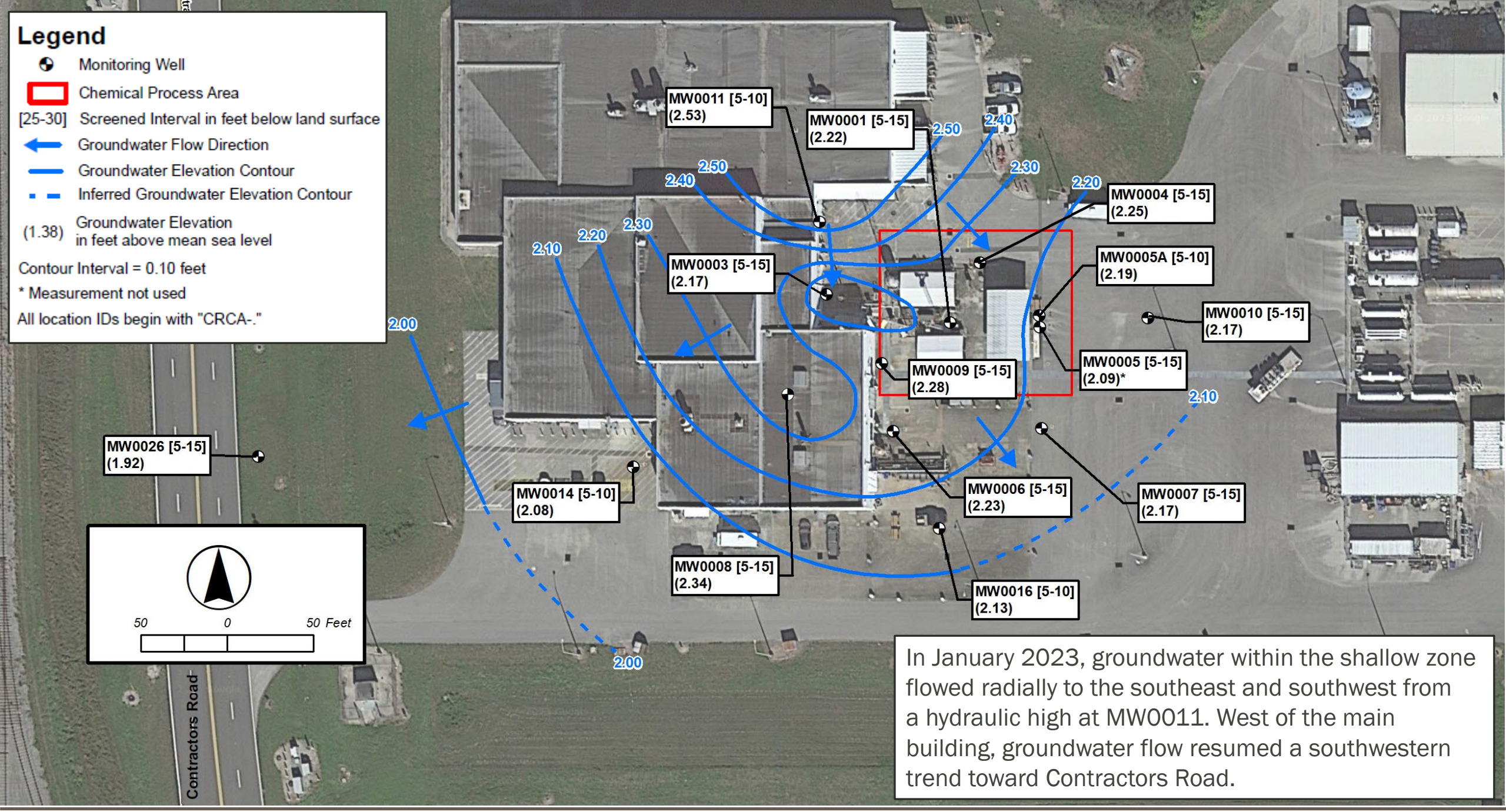
All wells begin with the prefix CRCA-

These plume boundaries are from October 2022 performance monitoring data.

MW (CRCA-)	Screened Interval (ft bls)	Jan-23	Apr-23	Jul-23	Oct-23
MW0002	[30-35]	X	-	X	-
MW0013	[25-30]	X	-	X	-
MW0018	[53-63]	X	X	X	X
MW0019	[53-63]	X	X	X	X
MW0031	[53-63]	X	X	X	X
MW0032	[53-63]	X	X	X	X

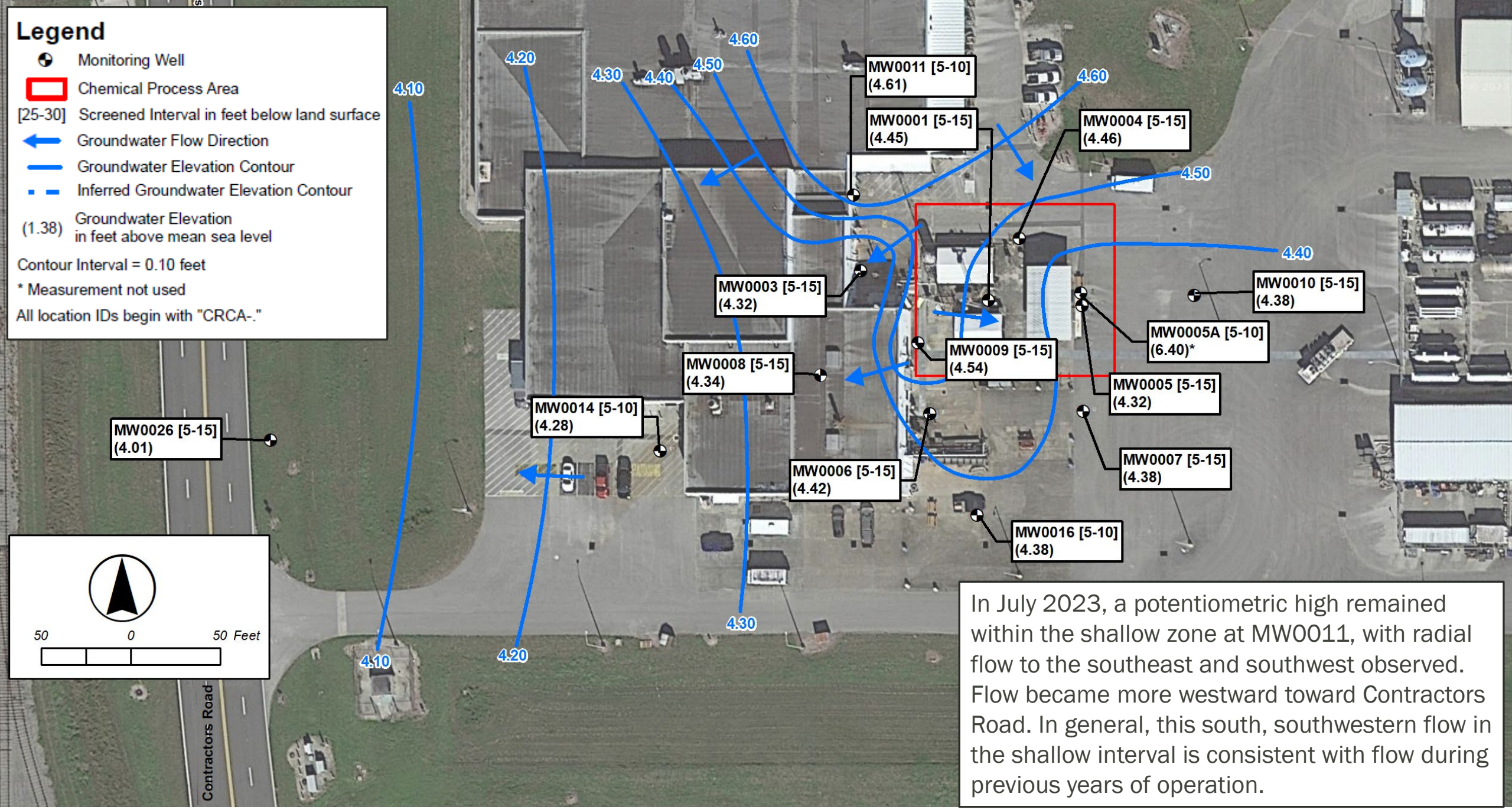
Well Location Map and Year 4 Monitoring Plan

Potentiometric Surface Maps
Shallow Interval: 5 to 20 feet bls



In January 2023, groundwater within the shallow zone flowed radially to the southeast and southwest from a hydraulic high at MW0011. West of the main building, groundwater flow resumed a southwestern trend toward Contractors Road.

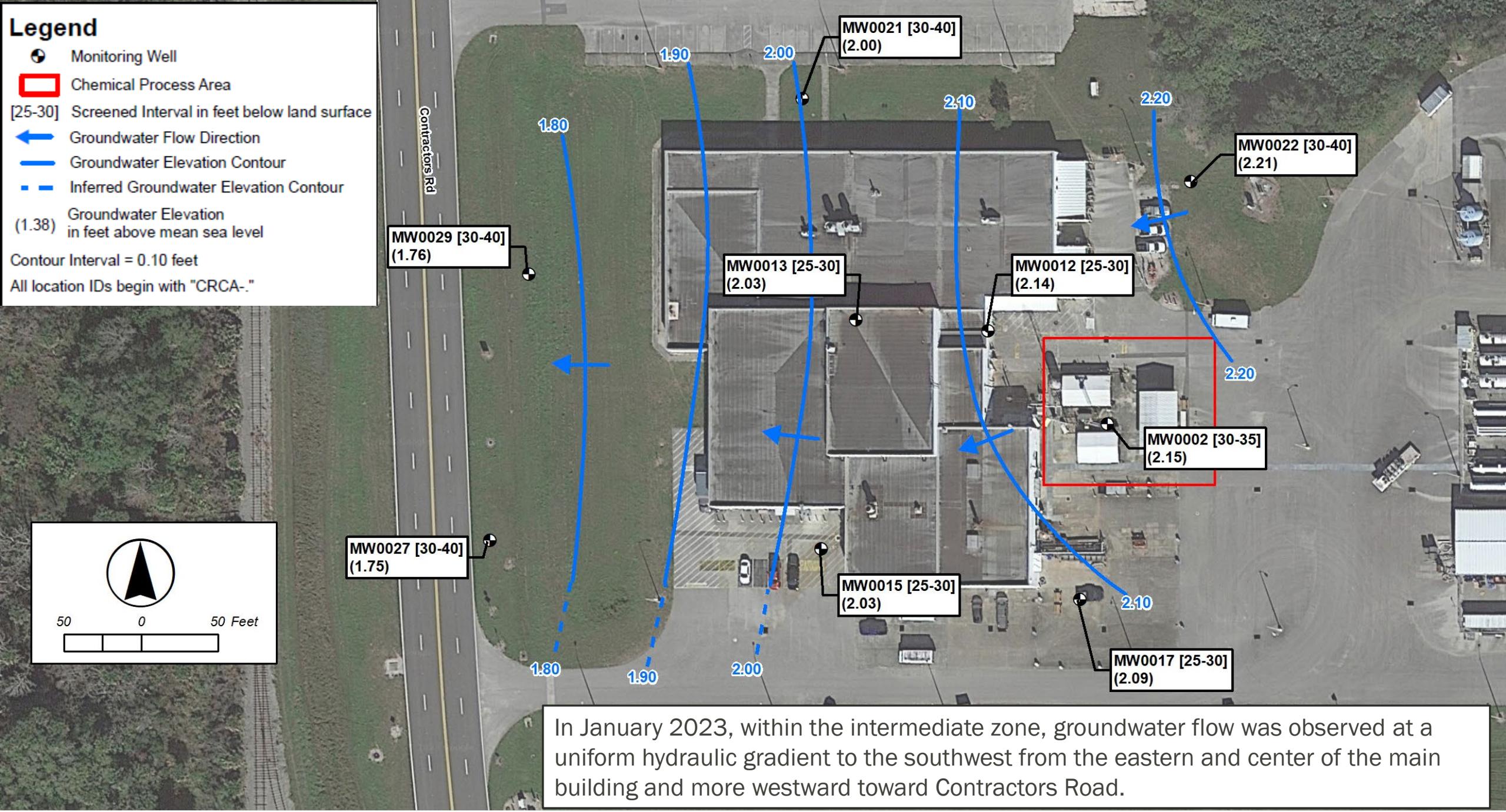
January 2023 Potentiometric Surface Map - Shallow



In July 2023, a potentiometric high remained within the shallow zone at MW0011, with radial flow to the southeast and southwest observed. Flow became more westward toward Contractors Road. In general, this south, southwestern flow in the shallow interval is consistent with flow during previous years of operation.

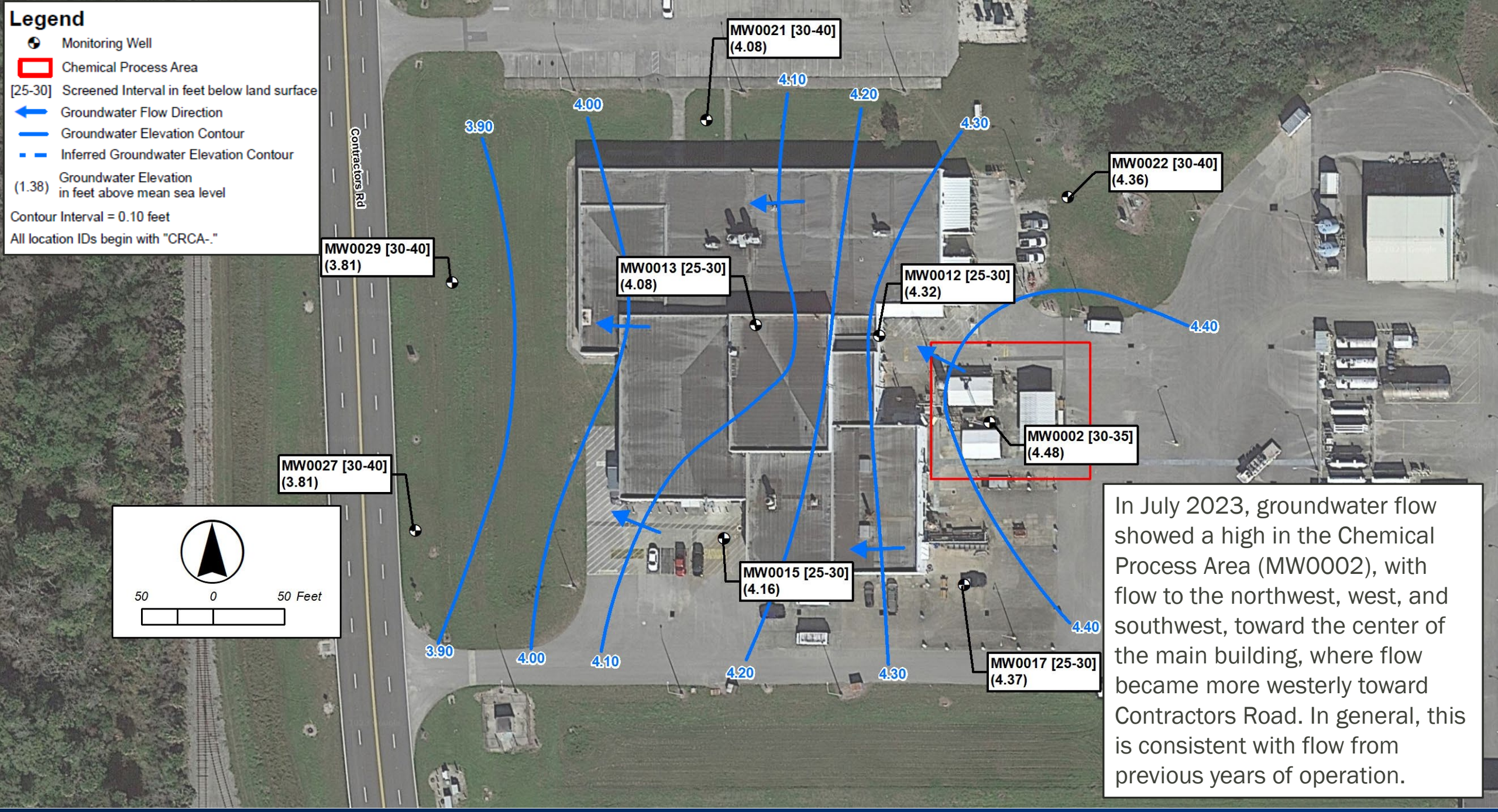
July 2023 Potentiometric Surface Map - Shallow

Potentiometric Surface Maps
Intermediate Interval: 20 to 40 feet bls



In January 2023, within the intermediate zone, groundwater flow was observed at a uniform hydraulic gradient to the southwest from the eastern and center of the main building and more westward toward Contractors Road.

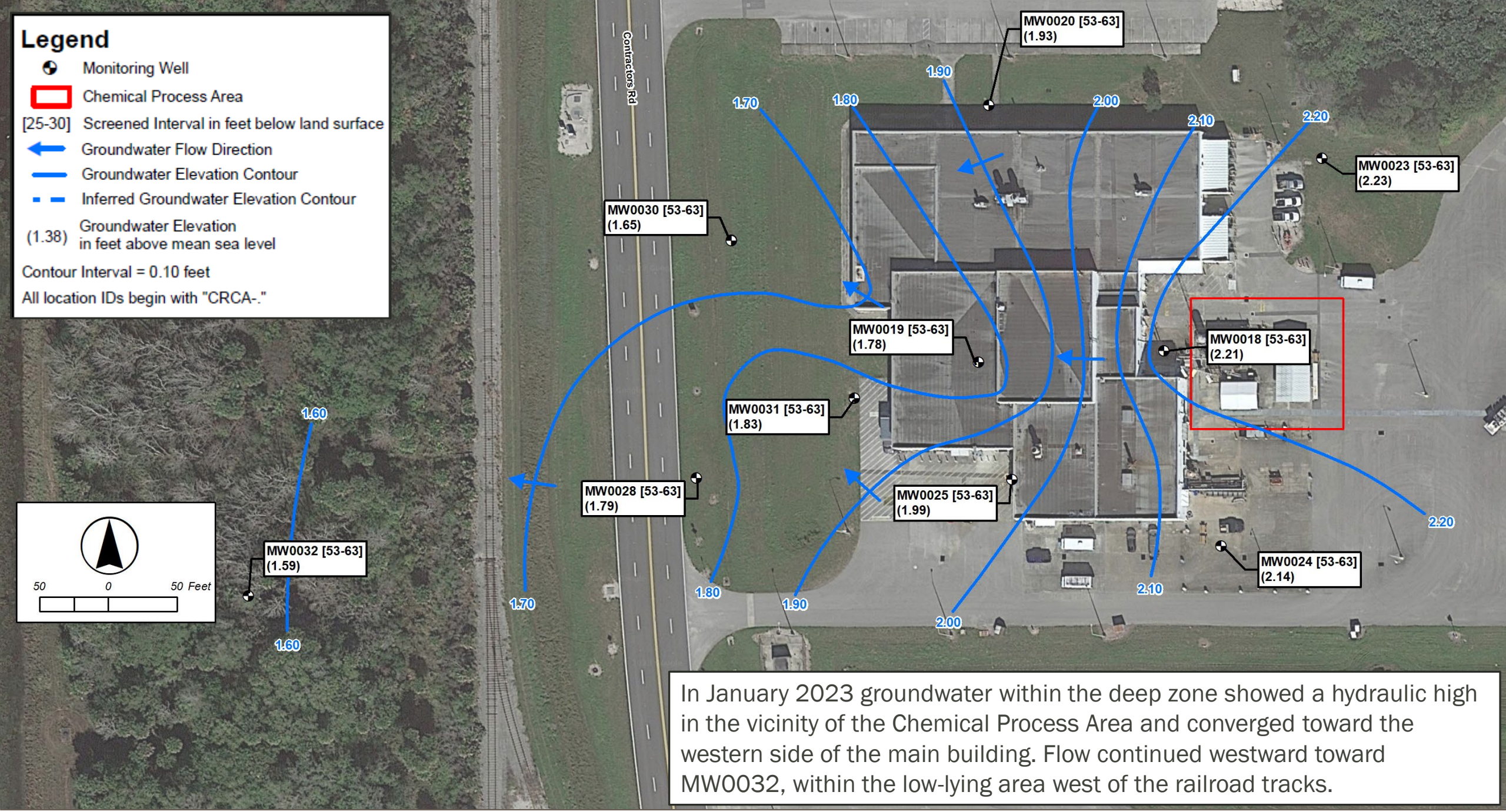
January 2023 Potentiometric Surface Map - Intermediate



In July 2023, groundwater flow showed a high in the Chemical Process Area (MW0002), with flow to the northwest, west, and southwest, toward the center of the main building, where flow became more westerly toward Contractors Road. In general, this is consistent with flow from previous years of operation.

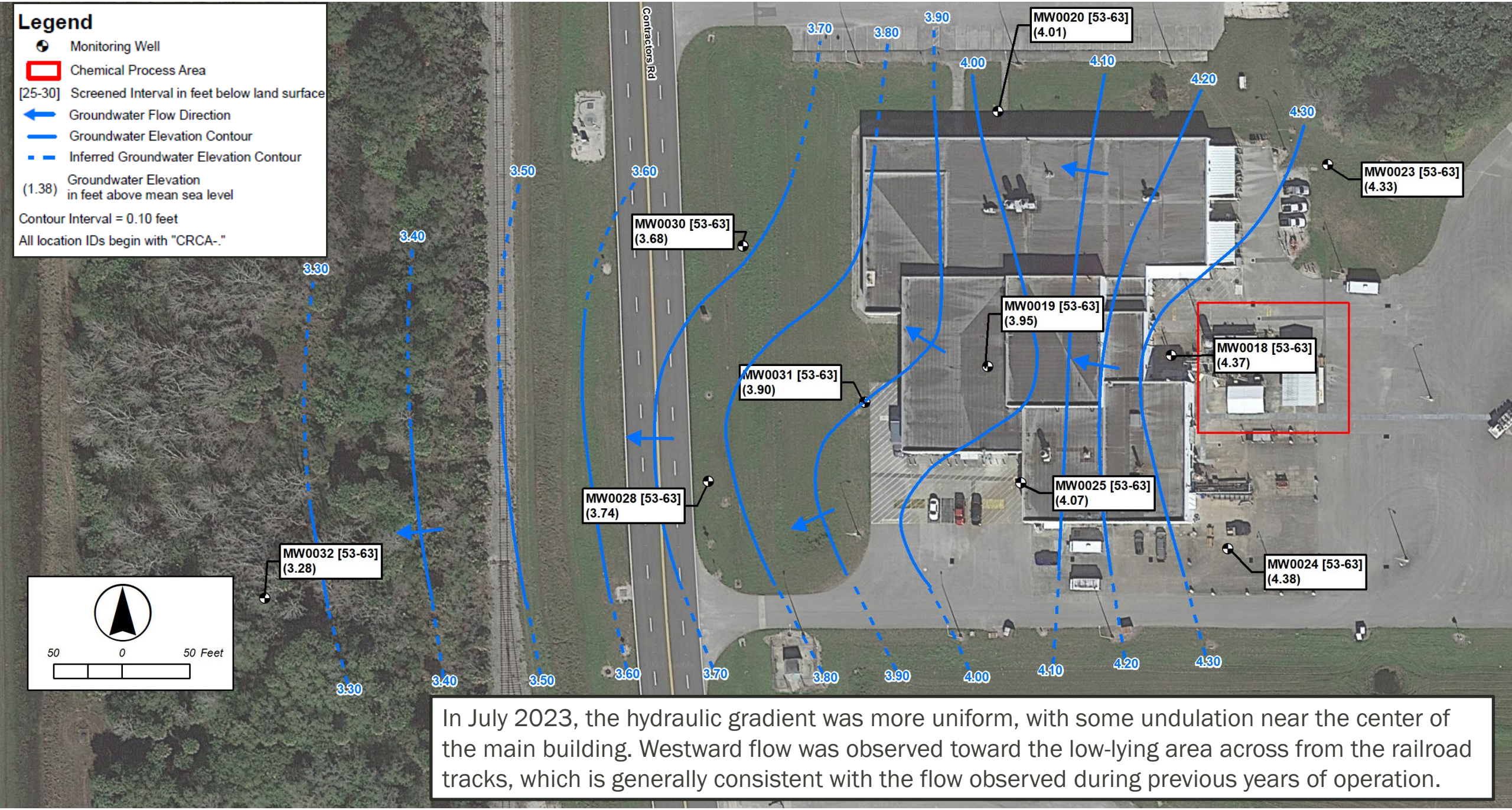
July 2023 Potentiometric Surface Map - Intermediate

Potentiometric Surface Maps
Deep Interval: 40-63 feet bls



In January 2023 groundwater within the deep zone showed a hydraulic high in the vicinity of the Chemical Process Area and converged toward the western side of the main building. Flow continued westward toward MW0032, within the low-lying area west of the railroad tracks.

January 2023 Potentiometric Surface Map - Deep



In July 2023, the hydraulic gradient was more uniform, with some undulation near the center of the main building. Westward flow was observed toward the low-lying area across from the railroad tracks, which is generally consistent with the flow observed during previous years of operation.

July 2023 Potentiometric Surface Map - Deep

Year 4 Performance Groundwater Sampling tDCE and VC Results

Monitoring Well (CRCA-)	Screened Interval (feet bls)	tDCE (µg/L)			VC (µg/L)		
		Baseline Jun-19	Jan-23	Jul-23	Baseline Jun-19	Jan-23	Jul-23
MW0002	[30-35]	0.73 U	0.22 U	0.30 I	28	0.41 U	0.47 I
MW0013	[25-30]	0.73 U	0.22 U	0.22 U	0.71 U	2.9	1.5
MW0018	[53-63]	0.73 U	0.22 U	0.22 U	140	22.3	22.1
MW0019	[53-63]	1.9 I	0.22 U	0.22 U	250	0.41 U	0.41 U
MW0031	[53-63]	4.4 I	0.22 U	0.22 U	680	8.6	0.41 U
MW0032	[53-63]	0.73 U	0.22 U	0.22 U	0.71 U	9.5	8.4

Notes:

U - Analyte was analyzed for but below the MDL

I – Value is between method detection limit and practical quantitation limit

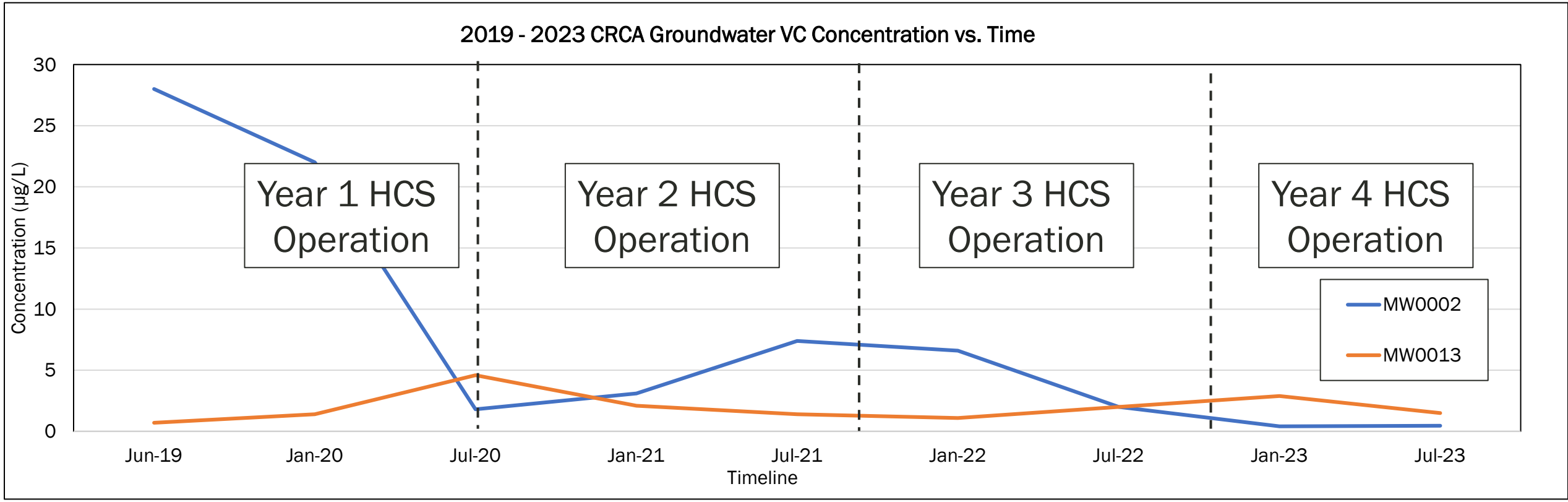
Analyte was detected

Concentration exceeds the State of Florida GCTL

Concentration exceeds FDEP NADC

- Semi-annual sampling of two intermediate wells in Jan-23 and Jul-23
- Quarterly sampling of four deep wells in Jan-23, Jul-23 and Oct-23
  - April 2023 quarterly sampling event only included PFAS analysis from the four deep wells (VOCs inadvertently omitted from the analytical list)
  - Results from quarterly sampling event conducted in October 2023 are pending; these results will be included in next reporting cycle ADP
- tDCE Results:
  - At MW0002 (intermediate) tDCE increased from below the MDL in Jan-23 to 0.30 µg/L in Jul-23
  - The remaining five wells had tDCE results below the MDL during the Year 4 reporting period
- VC Results;
  - >GCTL in 3 wells at the end of this reporting period
  - <NADC in all wells during this reporting period
  - MW0002 reduced, from above GCTL in Year 3 to 0.47 µg/L VC detected in Jul- 23
  - MW0013 (intermediate interval, within the building), VC reduced to 1.5 µg/L (above GCTL) in Jul-23
  - MW0018 (east of the main building) showed steady concentrations >GCTL throughout reporting period
  - MW0019 VC reduced from >NADC at baseline to non-detect in Year 4
  - Downgradient MW0032 continued with fluctuating VC results >GCTL

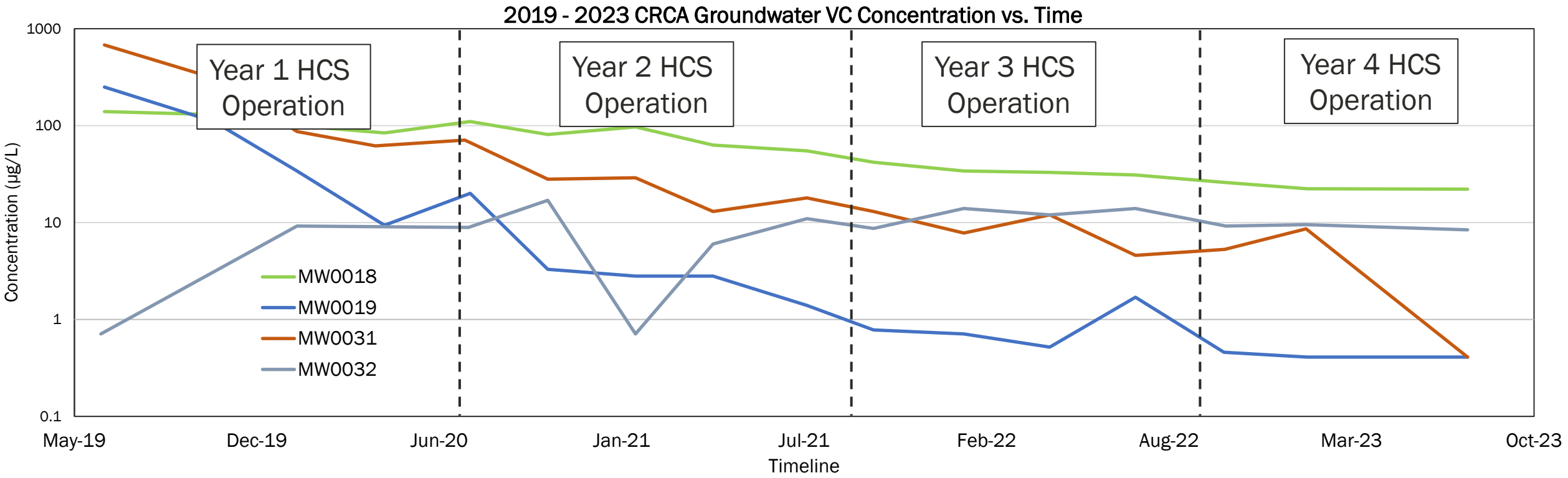
VC Concentration Vs Time: Intermediate Performance Monitoring Wells



Year 4 % Reduction of VC from Baseline					
Well ID	Baseline	Jan-23	% Reduction	Jul-23	% Reduction
MW0002	28	0.41 U	99.3 %	0.47 I	98.3 %
MW0013	0.71 U	2.9	-717 %	1.5	-322 %

U - Analyte was analyzed for but below the MDL
I - The reported value is between the MDL and laboratory method reporting limit
Concentration exceeds the State of Florida GCTL
Analyte was detected

VC Concentration Vs Time: Deep Performance Monitoring Wells



Year 4% Reduction of VC from Baseline					
Well ID	Baseline	Jan-23	% Reduction	Jul-23	% Reduction
MW0018	140	22.3	84.1 %	22.1	84.2 %
MW0019	250	0.41 U	99.9 %	0.41 U	99.9 %
MW0031	680	8.6	98.7 %	0.41 U	99.9 %
MW0032	0.71 U	9.5	-2576 %	8.4	-2266 %

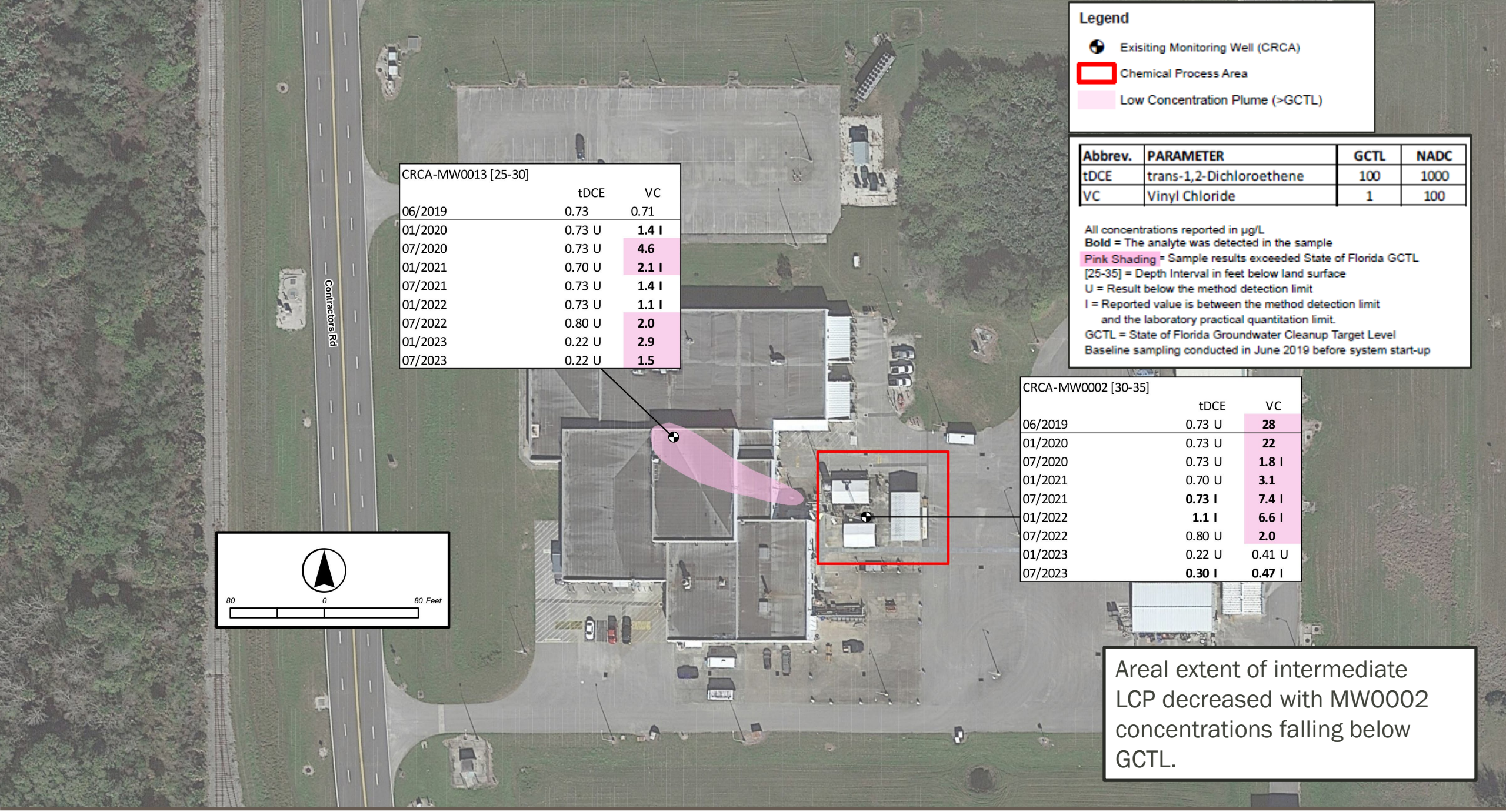
Note: MW0032 was not sampled in October 2019 or April 2020

U - Analyte was analyzed for but below the MDL

Concentration exceeds the State of Florida GCTL

Concentration exceeds FDEP NADC

Analyte was detected



CRCA-MW0013 [25-30]

	tDCE	VC
06/2019	0.73	0.71
01/2020	0.73 U	**1.4 I**
07/2020	0.73 U	**4.6**
01/2021	0.70 U	**2.1 I**
07/2021	0.73 U	**1.4 I**
01/2022	0.73 U	**1.1 I**
07/2022	0.80 U	**2.0**
01/2023	0.22 U	**2.9**
07/2023	0.22 U	**1.5**

Abbrev.	PARAMETER	GCTL	NADC
tDCE	trans-1,2-Dichloroethene	100	1000
VC	Vinyl Chloride	1	100

All concentrations reported in µg/L
Bold = The analyte was detected in the sample
Pink Shading = Sample results exceeded State of Florida GCTL
[25-35] = Depth Interval in feet below land surface
U = Result below the method detection limit
I = Reported value is between the method detection limit and the laboratory practical quantitation limit.
GCTL = State of Florida Groundwater Cleanup Target Level
Baseline sampling conducted in June 2019 before system start-up

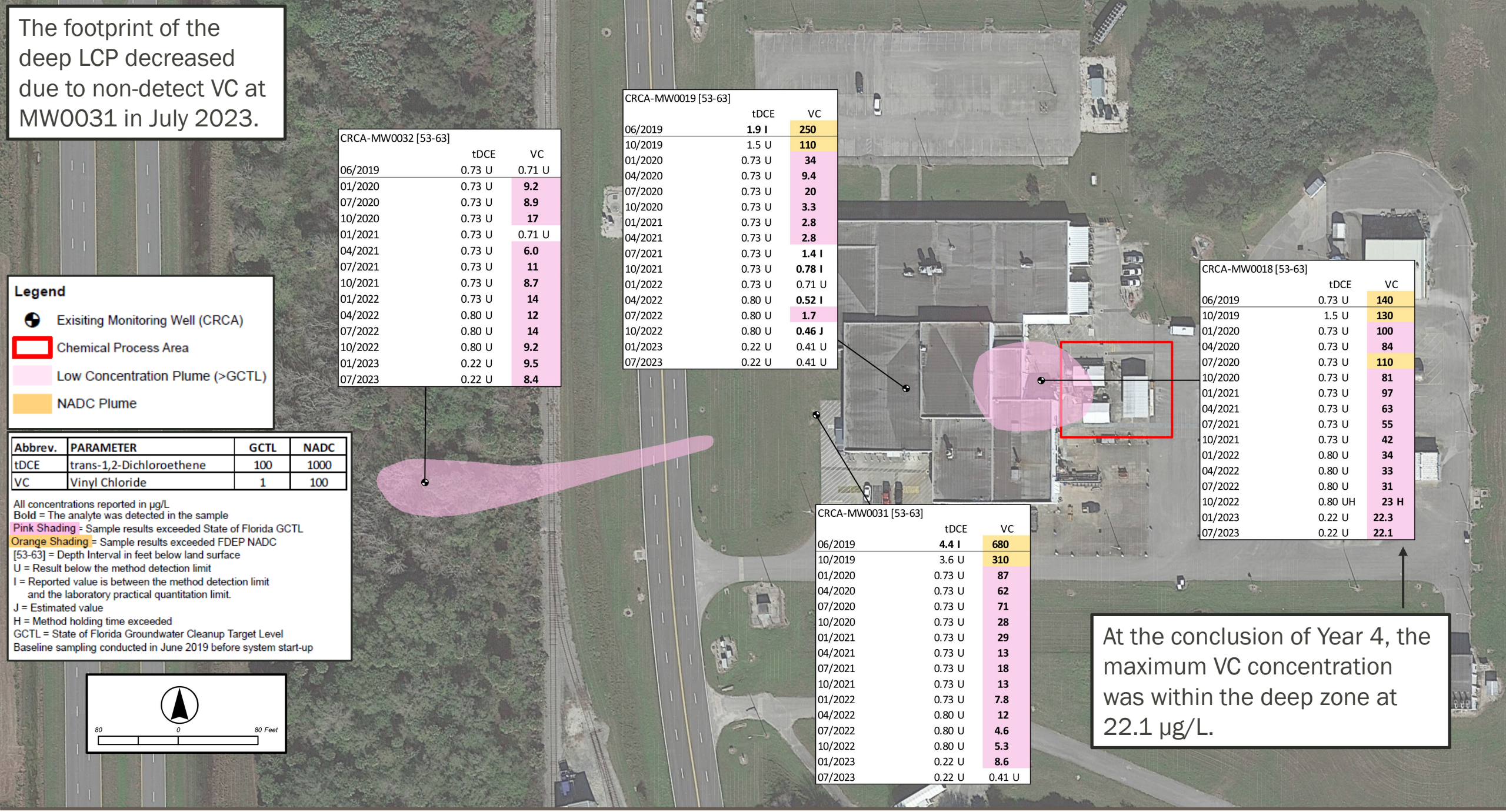
CRCA-MW0002 [30-35]

	tDCE	VC
06/2019	0.73 U	**28**
01/2020	0.73 U	**22**
07/2020	0.73 U	**1.8 I**
01/2021	0.70 U	**3.1**
07/2021	**0.73 I**	**7.4 I**
01/2022	**1.1 I**	**6.6 I**
07/2022	0.80 U	**2.0**
01/2023	0.22 U	0.41 U
07/2023	**0.30 I**	**0.47 I**

Areal extent of intermediate LCP decreased with MW0002 concentrations falling below GCTL.

Year 4 (2023) COC Intermediate Plume Map: 20 – 40 feet bls

The footprint of the deep LCP decreased due to non-detect VC at MW0031 in July 2023.



CRCA-MW0032 [53-63]

	tDCE	VC
06/2019	0.73 U	0.71 U
01/2020	0.73 U	**9.2**
07/2020	0.73 U	**8.9**
10/2020	0.73 U	**17**
01/2021	0.73 U	0.71 U
04/2021	0.73 U	**6.0**
07/2021	0.73 U	**11**
10/2021	0.73 U	**8.7**
01/2022	0.73 U	**14**
04/2022	0.80 U	**12**
07/2022	0.80 U	**14**
10/2022	0.80 U	**9.2**
01/2023	0.22 U	**9.5**
07/2023	0.22 U	**8.4**

CRCA-MW0019 [53-63]

	tDCE	VC
06/2019	**1.9 I**	**250**
10/2019	1.5 U	**110**
01/2020	0.73 U	**34**
04/2020	0.73 U	**9.4**
07/2020	0.73 U	**20**
10/2020	0.73 U	**3.3**
01/2021	0.73 U	**2.8**
04/2021	0.73 U	**2.8**
07/2021	0.73 U	**1.4 I**
10/2021	0.73 U	**0.78 I**
01/2022	0.73 U	0.71 U
04/2022	0.80 U	**0.52 I**
07/2022	0.80 U	**1.7**
10/2022	0.80 U	**0.46 J**
01/2023	0.22 U	0.41 U
07/2023	0.22 U	0.41 U

CRCA-MW0018 [53-63]

	tDCE	VC
06/2019	0.73 U	**140**
10/2019	1.5 U	**130**
01/2020	0.73 U	**100**
04/2020	0.73 U	**84**
07/2020	0.73 U	**110**
10/2020	0.73 U	**81**
01/2021	0.73 U	**97**
04/2021	0.73 U	**63**
07/2021	0.73 U	**55**
10/2021	0.73 U	**42**
01/2022	0.80 U	**34**
04/2022	0.80 U	**33**
07/2022	0.80 U	**31**
10/2022	0.80 UH	**23 H**
01/2023	0.22 U	**22.3**
07/2023	0.22 U	**22.1**

CRCA-MW0031 [53-63]

	tDCE	VC
06/2019	**4.4 I**	**680**
10/2019	3.6 U	**310**
01/2020	0.73 U	**87**
04/2020	0.73 U	**62**
07/2020	0.73 U	**71**
10/2020	0.73 U	**28**
01/2021	0.73 U	**29**
04/2021	0.73 U	**13**
07/2021	0.73 U	**18**
10/2021	0.73 U	**13**
01/2022	0.73 U	**7.8**
04/2022	0.80 U	**12**
07/2022	0.80 U	**4.6**
10/2022	0.80 U	**5.3**
01/2023	0.22 U	**8.6**
07/2023	0.22 U	0.41 U

Legend

- Exisiting Monitoring Well (CRCA)
- Chemical Process Area
- Low Concentration Plume (>GCTL)
- NADC Plume

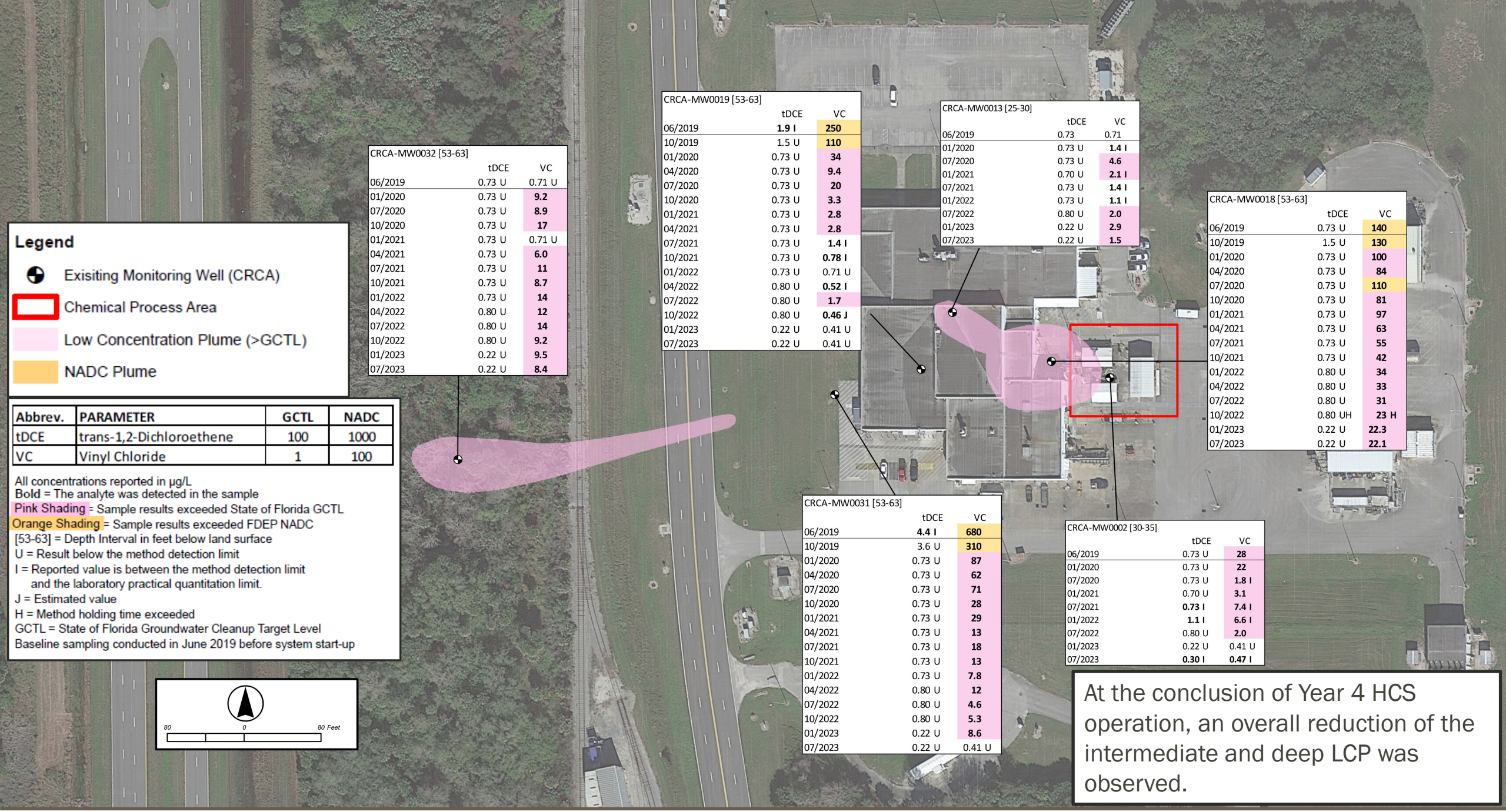
Abbrev.	PARAMETER	GCTL	NADC
tDCE	trans-1,2-Dichloroethene	100	1000
VC	Vinyl Chloride	1	100

All concentrations reported in µg/L
Bold = The analyte was detected in the sample
Pink Shading = Sample results exceeded State of Florida GCTL
Orange Shading = Sample results exceeded FDEP NADC
[53-63] = Depth Interval in feet below land surface
U = Result below the method detection limit
I = Reported value is between the method detection limit and the laboratory practical quantitation limit.
J = Estimated value
H = Method holding time exceeded
GCTL = State of Florida Groundwater Cleanup Target Level
Baseline sampling conducted in June 2019 before system start-up

80 0 80 Feet

At the conclusion of Year 4, the maximum VC concentration was within the deep zone at 22.1 µg/L.

Year 4 (2023) COC Deep Plume Map: 40 – 63 feet bls



Legend

- Exisiting Monitoring Well (CRCA)
- Chemical Process Area
- Low Concentration Plume (>GCTL)
- NADC Plume

Abbrev.	PARAMETER	GCTL	NADC
tDCE	trans-1,2-Dichloroethene	100	1000
VC	Vinyl Chloride	1	100

All concentrations reported in µg/L
Bold = The analyte was detected in the sample
Pink Shading = Sample results exceeded State of Florida GCTL
Orange Shading = Sample results exceeded FDEP NADC
[53-63] = Depth Interval in feet below land surface
U = Result below the method detection limit
I = Reported value is between the method detection limit and the laboratory practical quantitation limit.
J = Estimated value
H = Method holding time exceeded
GCTL = State of Florida Groundwater Cleanup Target Level
Baseline sampling conducted in June 2019 before system start-up

80 0 80 Feet

CRCA-MW0032 [53-63]

	tDCE	VC
06/2019	0.73 U	0.71 U
01/2020	0.73 U	**9.2**
07/2020	0.73 U	**8.9**
10/2020	0.73 U	**17**
01/2021	0.73 U	0.71 U
04/2021	0.73 U	**6.0**
07/2021	0.73 U	**11**
10/2021	0.73 U	**8.7**
01/2022	0.73 U	**14**
04/2022	0.80 U	**12**
07/2022	0.80 U	**14**
10/2022	0.80 U	**9.2**
01/2023	0.22 U	**9.5**
07/2023	0.22 U	**8.4**

CRCA-MW0019 [53-63]

	tDCE	VC
06/2019	**1.9 I**	**250**
10/2019	1.5 U	**110**
01/2020	0.73 U	**34**
04/2020	0.73 U	**9.4**
07/2020	0.73 U	**20**
10/2020	0.73 U	**3.3**
01/2021	0.73 U	**2.8**
04/2021	0.73 U	**2.8**
07/2021	0.73 U	**1.4 I**
10/2021	0.73 U	**0.78 I**
01/2022	0.73 U	0.71 U
04/2022	0.80 U	**0.52 I**
07/2022	0.80 U	**1.7**
10/2022	0.80 U	**0.46 J**
01/2023	0.22 U	0.41 U
07/2023	0.22 U	0.41 U

CRCA-MW0013 [25-30]

	tDCE	VC
06/2019	0.73	0.71
01/2020	0.73 U	**1.4 I**
07/2020	0.73 U	**4.6**
01/2021	0.70 U	**2.1 I**
07/2021	0.73 U	**1.4 I**
01/2022	0.73 U	**1.1 I**
07/2022	0.80 U	**2.0**
01/2023	0.22 U	**2.9**
07/2023	0.22 U	**1.5**

CRCA-MW0018 [53-63]

	tDCE	VC
06/2019	0.73 U	**140**
10/2019	1.5 U	**130**
01/2020	0.73 U	**100**
04/2020	0.73 U	**84**
07/2020	0.73 U	**110**
10/2020	0.73 U	**81**
01/2021	0.73 U	**97**
04/2021	0.73 U	**63**
07/2021	0.73 U	**55**
10/2021	0.73 U	**42**
01/2022	0.80 U	**34**
04/2022	0.80 U	**33**
07/2022	0.80 U	**31**
10/2022	0.80 UH	**23 H**
01/2023	0.22 U	**22.3**
07/2023	0.22 U	**22.1**

CRCA-MW0031 [53-63]

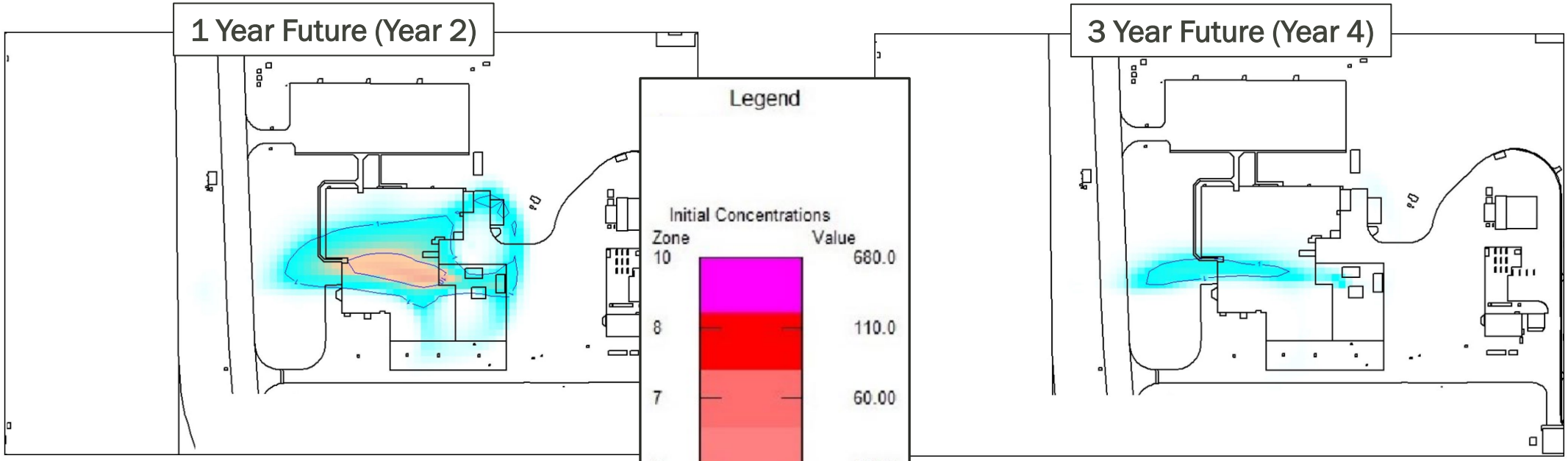
	tDCE	VC
06/2019	**4.4 I**	**680**
10/2019	3.6 U	**310**
01/2020	0.73 U	**87**
04/2020	0.73 U	**62**
07/2020	0.73 U	**71**
10/2020	0.73 U	**28**
01/2021	0.73 U	**29**
04/2021	0.73 U	**13**
07/2021	0.73 U	**18**
10/2021	0.73 U	**13**
01/2022	0.73 U	**7.8**
04/2022	0.80 U	**12**
07/2022	0.80 U	**4.6**
10/2022	0.80 U	**5.3**
01/2023	0.22 U	**8.6**
07/2023	0.22 U	0.41 U

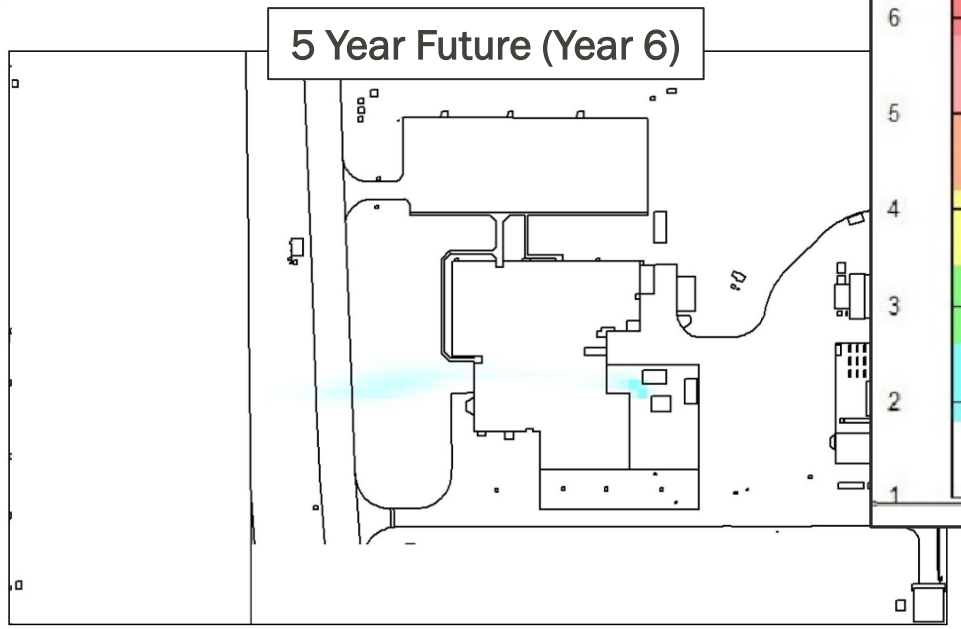
CRCA-MW0002 [30-35]

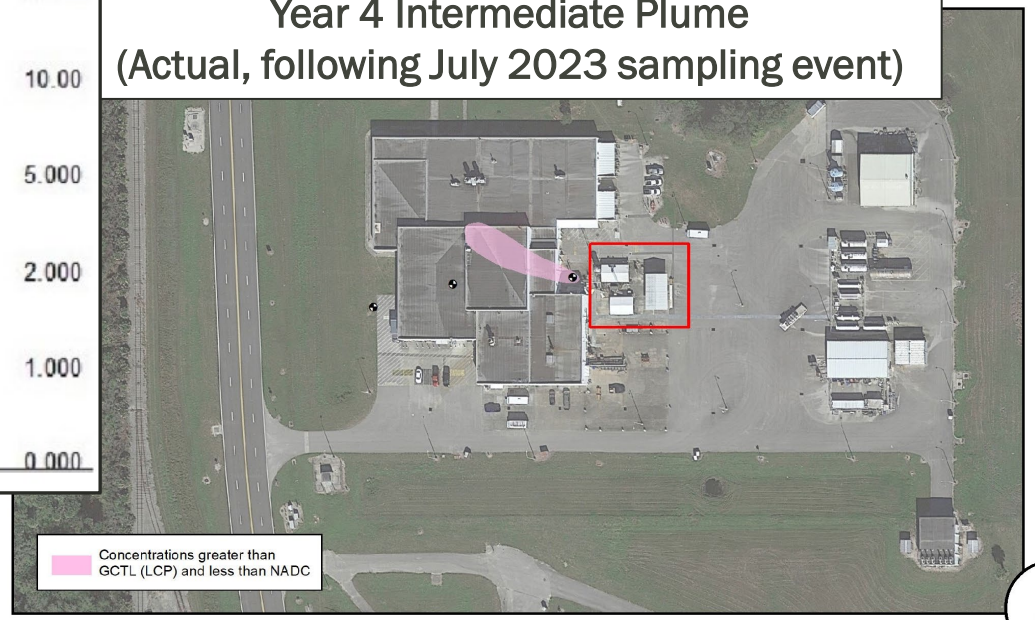
	tDCE	VC
06/2019	0.73 U	**28**
01/2020	0.73 U	**22**
07/2020	0.73 U	**1.8 I**
01/2021	0.70 U	**3.1**
07/2021	**0.73 I**	**7.4 I**
01/2022	**1.1 I**	**6.6 I**
07/2022	0.80 U	**2.0**
01/2023	0.22 U	0.41 U
07/2023	**0.30 I**	**0.47 I**

At the conclusion of Year 4 HCS operation, an overall reduction of the intermediate and deep LCP was observed.

Year 4 (2023) COC Combined Plume Map



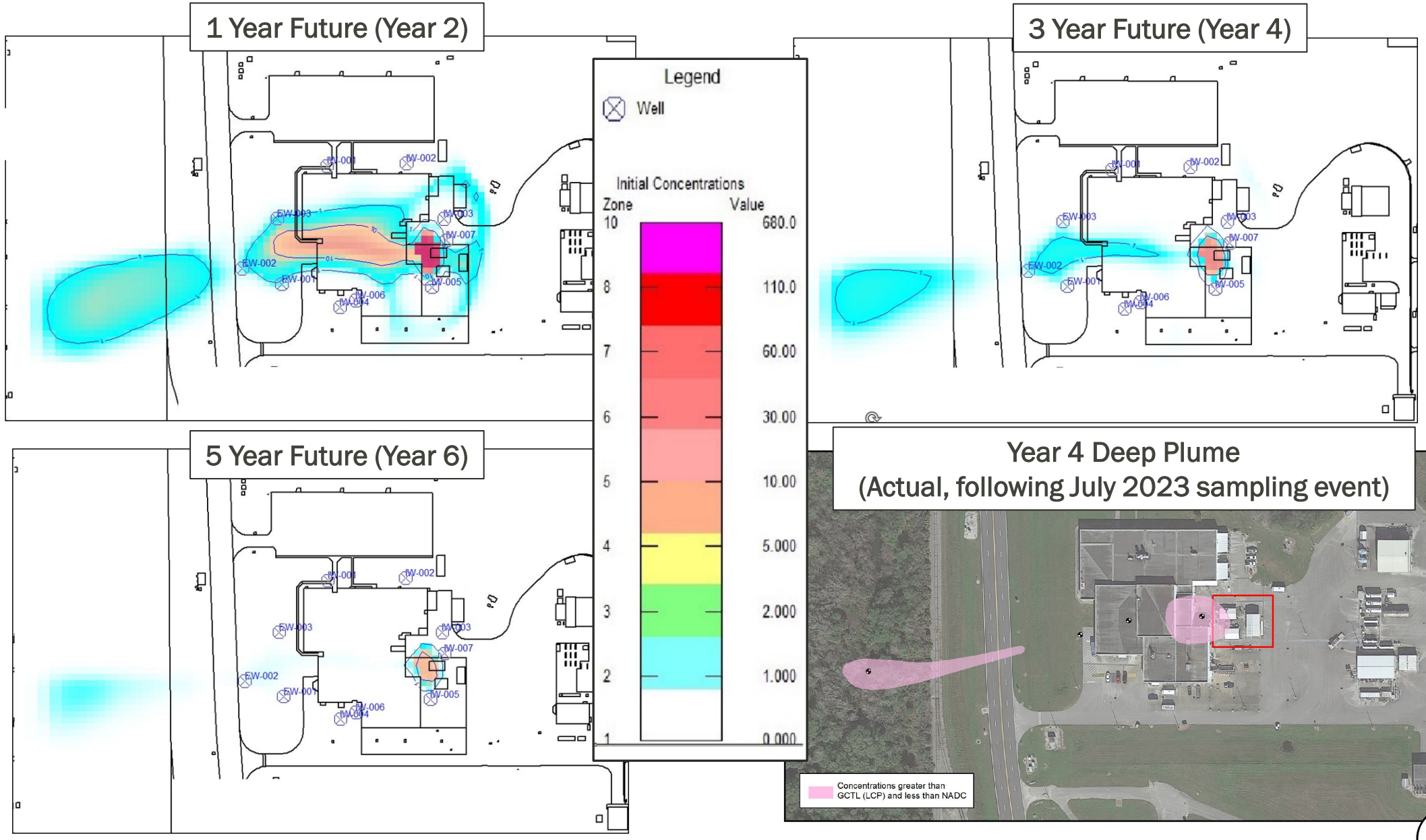




Note:
1) 1 Year, 3 Year, and 5 Year Future projections are based on the pumping scenario, as provided in February 2021 Year 1 Performance Monitoring Report.
2) Groundwater model projections and Year 4 plume based on vinyl chloride, which is the only remaining contaminant of concern above State of Florida GCTLs.
3) HCS startup completed in August 2019.

All concentrations in ug/L

Year 4 Intermediate Plume vs. Groundwater Model Predictions



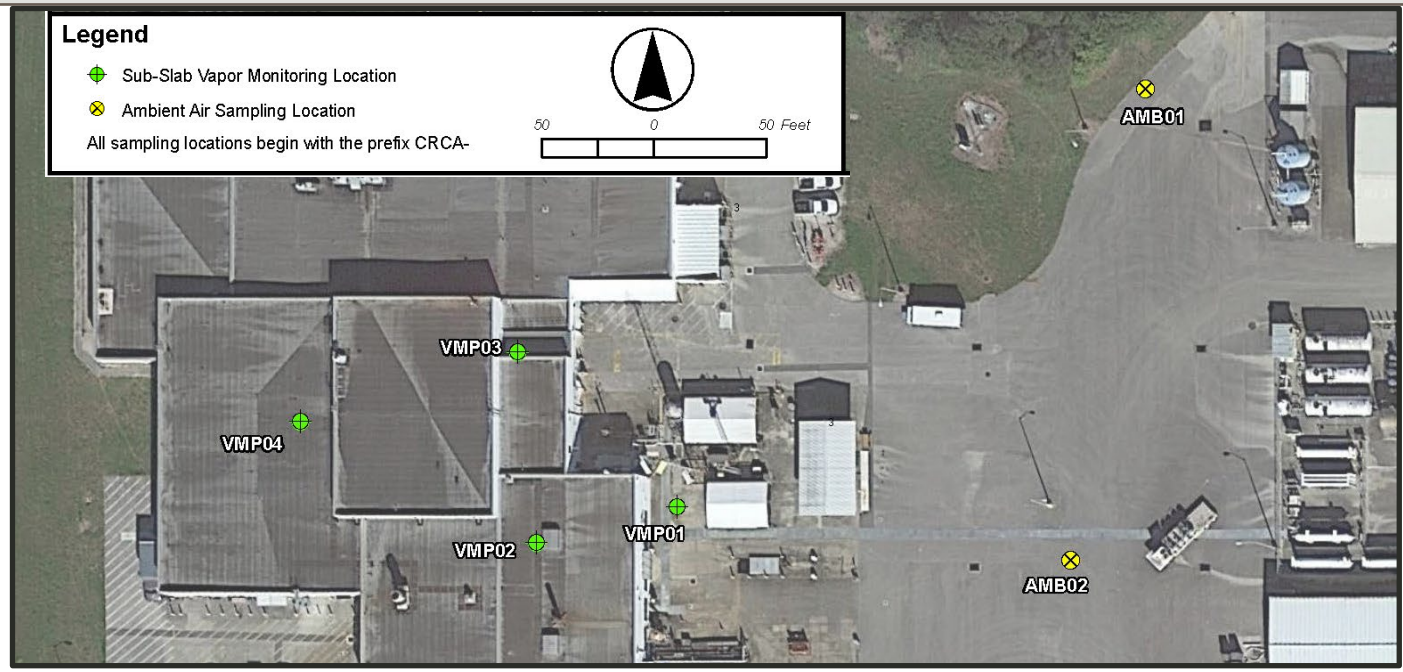
Note:
1) 1 Year, 3 Year, and 5 Year Future projections are based on the pumping scenario, as provided in February 2021 Year 1 Performance Monitoring Report.
2) Groundwater model projections and Year 4 plume based on vinyl chloride, which is the only remaining contaminant of concern above State of Florida GCTLs.
3) HCS startup completed in August 2019.

All concentrations in ug/L

Year 4 Deep Plume vs. Groundwater Model Predictions

Sub-Slab Soil Gas and Ambient Air Sampling Results

- Sub-slab soil gas and ambient air sampling was conducted in January, July, and October 2023
  - April 2023 sub-slab soil gas and ambient air sampling were inadvertently not sampled
  - Results from quarterly sampling event conducted in October 2023 are pending; these results will be included in next reporting cycle ADP
- Sub-slab gas samples collected via Summa canisters over a 1-hour interval at VMP01 through VMP04 (installed in 2018 beneath the foundation of Building K6-1696)
- No CVOCs detected above their respective Commercial Vapor Intrusion Screening Levels (VISLs), indicating HCS operations are not impacting workers within Building K6-1696
- Ambient air samples collected from AMB01 and AMB02 via Summa canisters over an 8-hour interval.; results showed tDCE detections significantly below OSHA Permissible Exposure Limits (PELs)



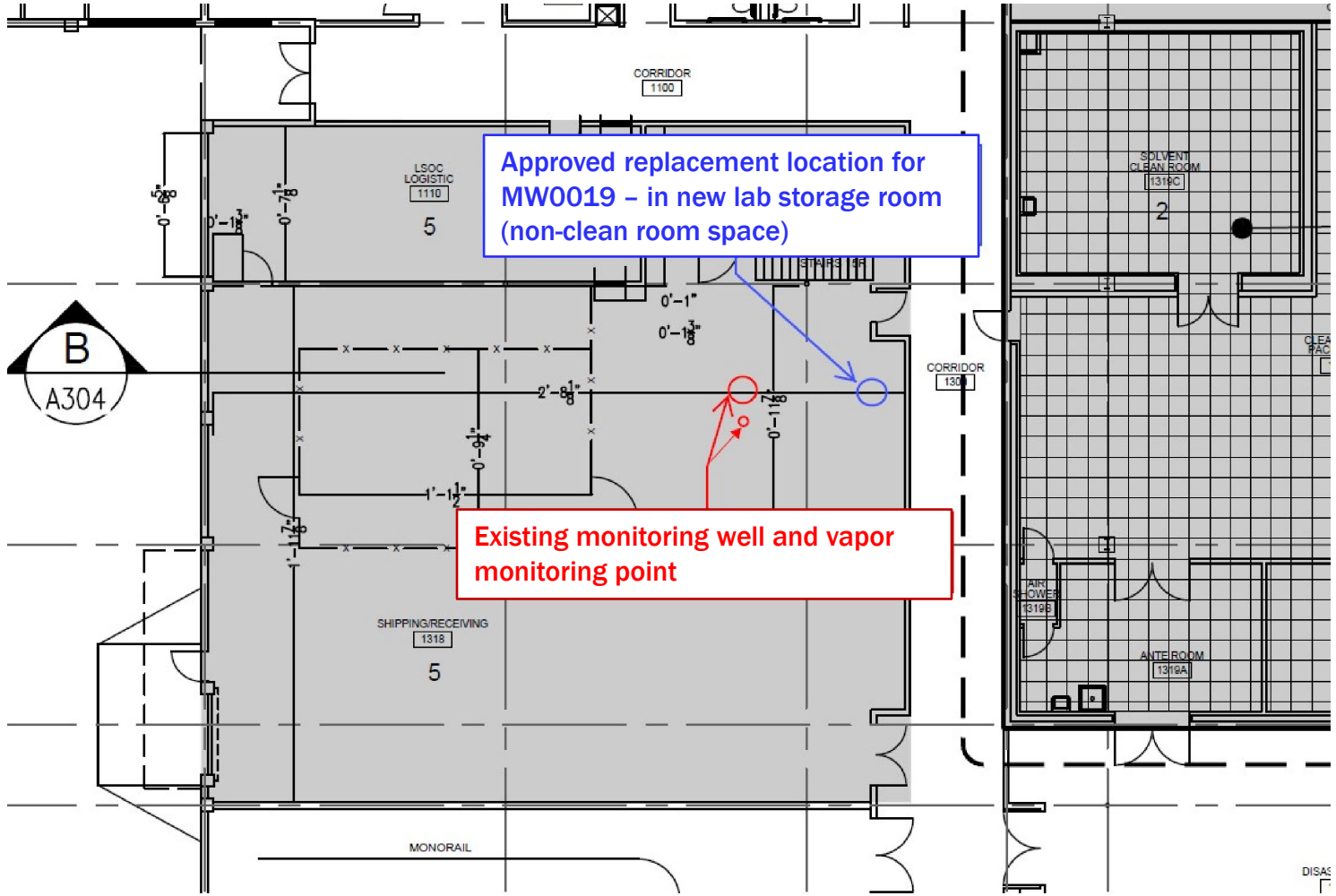
CVOCs (µg/m³)	Commercial VISL (µg/m³)	CRCA-VMP01		CRCA-VMP02		CRCA-VMP03		CRCA-VMP04	
		Jan-23	Jul-23	Jan-23	Jul-23	Feb-23*	Jul-23	Jan-23	Jul-23
cDCE	NA	1.2 U	0.48 U	1.2 U	0.48 U	1.2 U	0.48 U	1.2 U	0.48 U
tDCE	102,000	1.1 U	0.44 U	**3.7**	**20**	**1.7 J**	0.44 U	1.1 U	0.44 U
VC	93	0.72 U	0.72 U	0.72 U	0.72 U	0.72 U	0.72 U	0.72 U	0.72 U

CVOCs (µg/m³)	OSHA PEL (µg/m³)	CRCA-AMB01		CRCA-AMB02	
		Jan-23	Jul-23	Jan-23	Jul-23
cDCE	790,000	0.31 U	0.12 U	0.31 U	0.12 U
tDCE	NV	0.27 U	**1.3**	**1.6**	**0.83**
VC	NV	0.18 U	0.18 U	0.18 U	0.18 U

Notes:
Bolded value – Analyte was detected
J – Reported value between the method detection limit and laboratory method reporting limit
U – No detection of analyte
* Resampled due to equipment malfunction

MW0019 Relocation and Clean Room Conversion

- MW0019 is currently located in a room that will undergo construction from a storage room to a “clean room”
- FDEP concurrence regarding the new location was sought and received at the conclusion of Year 3 HCS activities
- Potential MW0019 and adjacent VMP04 relocation, abandonment of existing MW0019 and VMP04, and clean room conversion activities remain pending

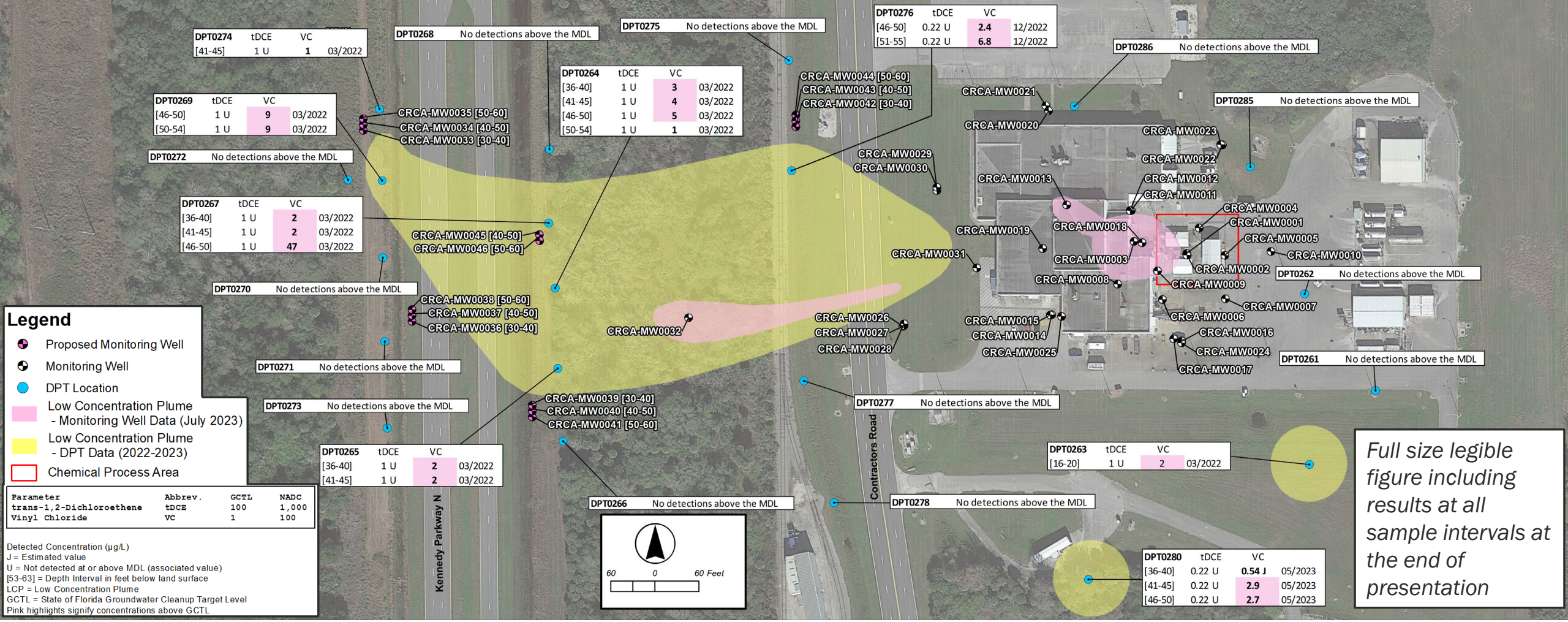


Performance Monitoring Data Evaluation Summary

- **Intermediate interval:**
  - Year 4 intermediate interval represented by two wells: MW0002 and MW0013
  - Eastern flank of LCP reduced due to decreasing VC concentrations at MW0002 from 2.0 µg/L in July 2022 (Year 3) to 0.47 µg/L (below GCTL) at end of Year 4
  - At MW0013 (1.5 µg/L) VC detection was >GCTL at end of Year 4 HCS operation, a decrease from 2.9 µg/L in January 2023
  - One tDCE detection (0.30 I µg/L) at MW0002, between the MDL and reporting limit, significantly below the 100 µg/L GCTL
- **Deep interval:**
  - Year 4 deep interval represented by four wells: MW0018, MW0019, MW0031, and MW0032
  - Plume separation maintained (as predicted by Year 1 and 2 groundwater modeling), eastern and western LCP components represented. Decreased footprint of western LCP at MW0031, due to a reduction from 8.6 µg/L VC in January 2023 to non-detect in July 2023
  - Eastern LCP, represented by MW0018, remained consistent, with highest Year 4 VC concentrations (peaking at 22.3 µg/L in January 2023, decreasing slightly to 22.1 µg/L in July 2023)
  - VC concentrations in MW0019, 250 µg/L at baseline (>NADC of 100 µg/L), fell below MDLs for both sampling events in Year 4
  - No tDCE concentrations were detected within the deep interval during Year 4 HCS operations
  - VC was detected in both January and July 2023 at MW0032 (located downgradient and outside of HCS capture zone) with concentrations of 9.5 µg/L and 8.4 µg/L, respectively
- **The Year 4 data showed continued VC reduction indicating the HCS is operating as designed.**

Year 4 HCS Operation and Performance Monitoring Conclusions

- Over 32 million gallons of groundwater successfully treated at CRCA from startup in July 2019 through September 2023
- Hydraulic capture is performing as designed and mitigating downgradient migration of VC
- Though VC concentrations remain above the GCTL of 1 µg/L in select monitoring wells, they are decreasing over time as was projected in the Year 1 and Year 2 groundwater modeling
- Reported influent VC concentrations have decreased 98% since startup
- Decreased VC LCP footprint west of source area within the intermediate and deep intervals
- tDCE concentrations remained undetected at five of six wells during the Year 4 HCS operational period, with one detection of 0.30 I µg/L (MW0002) in July 2023
- System operating as designed with only brief interruptions due to routine maintenance and the PLC freezing (2 days in April, 1 day in June, 1 day in August, 2 days in September)
- Ambient air sampling results continue to be significantly below OSHA PEL levels; similarly, sub-slab sampling results continue to show levels below commercial EPA VISLs, with no impact to workers expected inside Building K6-1696



- Supplemental DPT studies performed in March 2022, December 2022, and May 2023 to delineate the vertical and areal extent of VC.
- Results from the event showed the LCP footprint extending in all directions. Two isolated GCTL exceedances were found southeast of the CRCA facility with VC concentrations less than 3 µg/L within the shallow and deep intervals. No tDCE was detected.
- An LTM Well Install Plan ADP was presented during the October 2023 KSCRT meeting and included recommending the installation of 14 new wells. Two of the proposed wells were located to monitor VC concentrations within the LCP and nine of the proposed wells were located to monitor downgradient and sidegradient off site migration, if any. Team consensus was reached for the 14 new monitoring wells at their proposed locations.

Path Forward/Recommendations Summary

- **Proceed with Year 5 HCS operation including monthly influent and effluent sampling**
  - Note: a PFAS Site Assessment and associated Treatability Study Work Plan are currently in development. This Work Plan may include design modifications to the HCS to address PFAS constituents that will be presented in the Site Assessment ADP and reporting. If the current HCS is determined to not be utilized for the PFAS efforts, then shutdown of the system will be evaluated following review of Year 5 sampling results
- **Transition the two ambient air and four sub-slab soil gas sampling locations from quarterly to annual**
- **Continue semi-annual sampling of the two intermediate performance monitoring wells (MW0002, MW0013)**
- **Transition the four deep performance monitoring wells from quarterly to semi-annual sampling (MW0018, MW0019, MW0031, MW0032)**
- **Prepare the Year 4 Performance Monitoring Report and submit to FDEP/NASA**
- **Incorporate the following additional wells (14 new and three existing) into the sampling program to monitor plume-wide conditions, based on results of the 2022-2023 DPT investigation*:**
  - 4 proposed nested locations (at 30-40, 40-50, and 50-60 feet bls) to monitor the plume boundaries
  - 2 proposed nested locations (at 40-50 and 50-60 feet bls) to monitor the downgradient plume centerline conditions
  - Three existing nested wells (MW0026, MW0027, and MW0028), screened at 5-15, 30-40, and 53-63 feet bls to monitor the southeastern plume boundary

*The 2022-2023 DPT activities are detailed in the 2023 CRCA Long Term Monitoring - Proposed Downgradient Monitoring Wells ADP that were presented at the October 2023 KSCRT meeting

Year 5 Performance Monitoring Well Sampling Plan

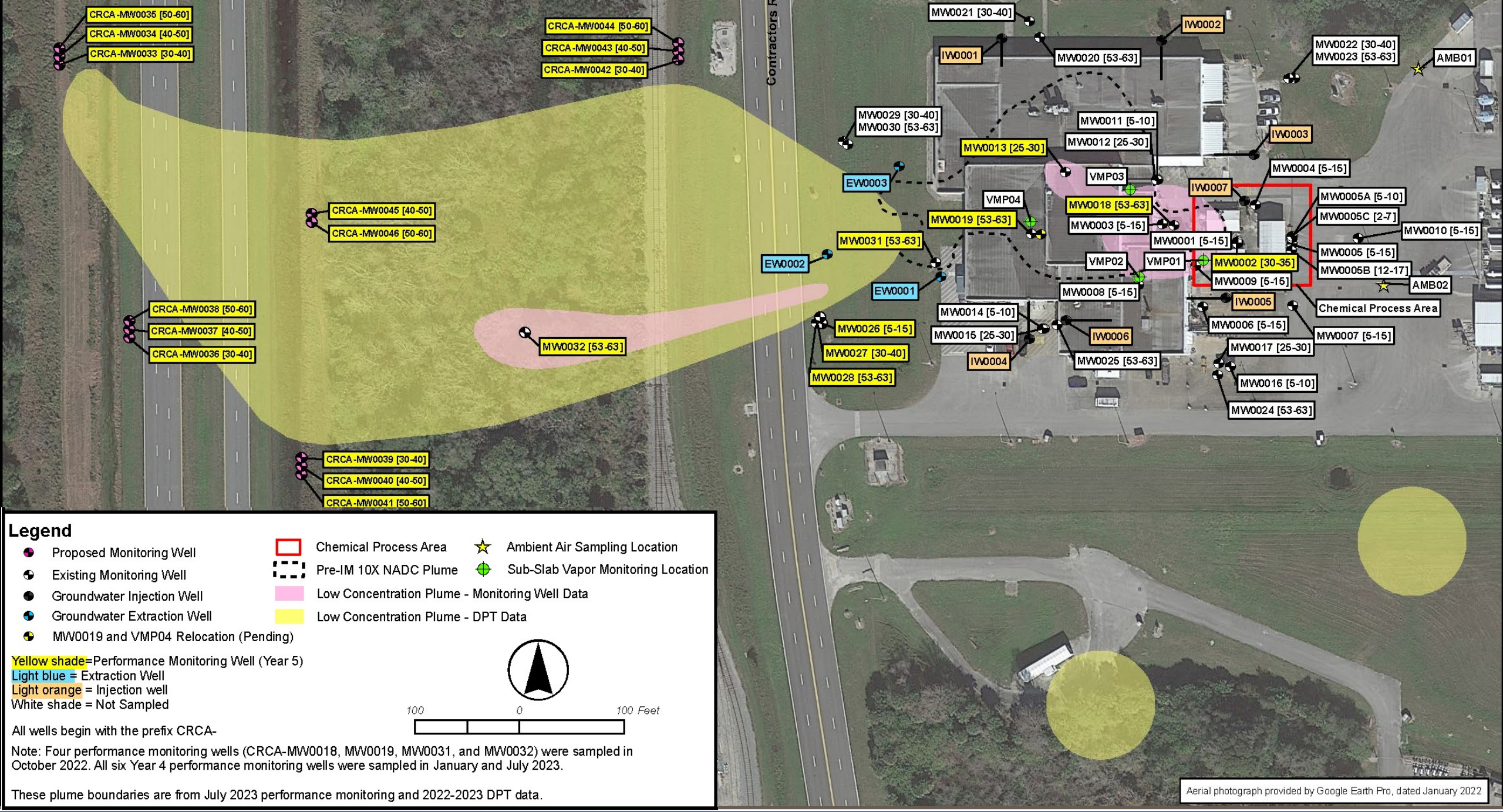
Existing Wells

Monitoring Well (CRCA-)	Well Depth (feet bls)	Screened Interval (feet bls)	Sampling Rationale	Sampling Frequency	Analytes
CRCA-MW0002	35	30-35	Chemical Processing Area	Semi-annual	VOCs via USEPA 8260D
CRCA-MW0013	30	25-30	LCP, beneath main building		
CRCA-MW0018	63	53-63	LCP, beneath main building		
CRCA-MW0019	63	53-63	Beneath main building		
CRCA-MW0026	15	5-15	Added for Year 5, downgradient, east of Contractors Rd.		
CRCA-MW0027	40	30-40	Added for Year 5, downgradient, east of Contractors Rd.		
CRCA-MW0028	63	53-63	Added for Year 5, downgradient, east of Contractors Rd.		
CRCA-MW0031	63	53-63	Western edge of main building		
CRCA-MW0032	63	53-63	LCP, downgradient, west of railroad tracks		

Proposed Wells

Proposed Monitoring Well (CRCA-)	Well Depth (feet bls)	Screened Interval (feet bls)	Sampling Rationale	Sampling Frequency	Analytes
CRCA-MW0033	40	30-40	NW edge of LCP	Sample upon installation and annually thereafter	VOCs via USEPA 8260D
CRCA-MW0034	50	40-50	NW edge of LCP		
CRCA-MW0035	60	50-60	NW edge of LCP		
CRCA-MW0036	40	30-40	SW edge of LCP		
CRCA-MW0037	50	40-50	SW edge of LCP		
CRCA-MW0038	60	50-60	SW edge of LCP		
CRCA-MW0039	40	30-40	Southern edge of LCP		
CRCA-MW0040	50	40-50	Southern edge of LCP		
CRCA-MW0041	60	50-60	Southern edge of LCP		
CRCA-MW0042	40	30-40	Northern edge of LCP		
CRCA-MW0043	50	40-50	Northern edge of LCP		
CRCA-MW0044	60	50-60	Northern edge of LCP		
CRCA-MW0045	50	40-50	Plume centerline		
CRCA-MW0046	60	50-60	Plume centerline		

Bolded – Monitoring well sampled during Year 4



Well Location Map and Year 5 Monitoring Plan

Any Questions?

LCP SUPPLEMENTAL DPT INVESTIGATION RESULTS WITH PROPOSED LTM MONITORING WELLS

SWMU 041, KENNEDY SPACE CENTER, FLORIDA

CRCA PMR4
Revision 0
February 2024

Aerial photograph provided by Google Earth Pro, dated January 2022

DPT0274	tDCE	VC	
[36-40]	1 U	1 U	03/2022
[41-45]	1 U	**1**	03/2022
[46-50]	1 U	1 U	03/2022
[50-54]	1 U	1 U	03/2022
[55-59]	1 U	1 U	03/2022

DPT0269	tDCE	VC	
[36-40]	1 U	1 U	03/2022
[41-45]	1 U	1 U	03/2022
[46-50]	1 U	**9**	03/2022
[50-54]	1 U	**9**	03/2022
[55-59]	1 U	1 U	03/2022

DPT0272	tDCE	VC	
[41-45]	1 U	1 U	03/2022
[46-50]	1 U	1 U	03/2022
[50-54]	1 U	1 U	03/2022
[55-59]	1 U	1 U	03/2022

DPT0267	tDCE	VC	
[36-40]	1 U	**2**	03/2022
[41-45]	1 U	**2**	03/2022
[46-50]	1 U	**47**	03/2022
[50-54]	1 U	1 U	03/2022
[55-59]	1 U	1 U	03/2022

DPT0270	tDCE	VC	
[36-40]	1 U	1 U	03/2022
[41-45]	1 U	1 U	03/2022
[46-50]	1 U	1 U	03/2022
[50-54]	1 U	1 U	03/2022
[55-59]	1 U	1 U	03/2022

DPT0271	tDCE	VC	
[36-40]	1 U	1 U	03/2022

DPT0273	tDCE	VC	
[41-45]	1 U	1 U	03/2022
[46-50]	1 U	1 U	03/2022
[50-54]	1 U	1 U	03/2022
[55-59]	1 U	1 U	03/2022

DPT0268	tDCE	VC	
[36-40]	1 U	1 U	03/2022
[41-45]	1 U	1 U	03/2022
[46-50]	1 U	1 U	03/2022
[50-54]	1 U	1 U	03/2022
[55-59]	1 U	1 U	03/2022

DPT0275	tDCE	VC	
[16-20]	0.22 U	0.41 U	12/2022
[21-25]	0.22 U	0.41 U	12/2022
[26-30]	0.22 U	0.41 U	12/2022
[31-35]	0.22 U	0.41 U	12/2022
[36-40]	0.22 U	0.41 U	12/2022
[41-45]	0.22 U	0.41 U	12/2022
[46-50]	0.22 U	0.41 U	12/2022
[51-55]	0.22 U	0.41 U	12/2022
[56-60]	0.22 U	0.41 U	12/2022

DPT0264	tDCE	VC	
[36-40]	1 U	**3**	03/2022
[41-45]	1 U	**4**	03/2022
[46-50]	1 U	**5**	03/2022
[50-54]	1 U	**1**	03/2022
[55-59]	1 U	1 U	03/2022
[60-64]	1 U	1 U	03/2022

DPT0276	tDCE	VC	
[16-20]	0.22 U	0.41 U	12/2022
[21-25]	0.22 U	0.41 U	12/2022
[26-30]	0.22 U	0.41 U	12/2022
[31-35]	0.22 U	0.41 U	12/2022
[36-40]	0.22 U	0.41 U	12/2022
[41-45]	0.22 U	0.41 U	12/2022
[46-50]	0.22 U	**2.4**	12/2022
[51-55]	0.22 U	**6.8**	12/2022
[56-60]	0.22 U	0.41 U	12/2022

DPT0286	tDCE	VC	
[6-10]	0.22 U	0.41 U	05/2023
[11-15]	0.22 U	0.41 U	05/2023
[16-20]	0.22 U	0.41 U	05/2023
[21-25]	0.22 U	0.41 U	05/2023
[26-30]	0.22 U	0.41 U	05/2023

DPT0285	tDCE	VC	
[6-10]	0.22 U	0.41 U	05/2023
[11-15]	0.22 U	0.41 U	05/2023
[16-20]	0.22 U	0.41 U	05/2023
[21-25]	0.22 U	0.41 U	05/2023
[26-30]	0.22 U	0.41 U	05/2023

DPT0262	tDCE	VC	
[16-20]	1 U	1 U	03/2022
[21-25]	1 U	1 U	03/2022
[26-30]	1 U	1 U	03/2022
[31-35]	1 U	1 U	03/2022
[36-40]	1 U	1 U	03/2022
[41-45]	1 U	1 U	03/2022

DPT0261	tDCE	VC	
[16-20]	1 U	1 U	03/2022
[21-25]	1 U	1 U	03/2022
[26-30]	1 U	1 U	03/2022
[31-35]	1 U	1 U	03/2022
[36-40]	1 U	1 U	03/2022
[41-45]	1 U	1 U	03/2022

DPT0277	tDCE	VC	
[16-20]	0.22 U	0.41 U	12/2022
[21-25]	0.22 U	0.41 U	12/2022
[26-30]	0.22 U	0.41 U	12/2022
[31-35]	0.22 U	0.41 U	12/2022
[36-40]	0.22 U	0.41 U	12/2022
[41-45]	0.22 U	0.41 U	12/2022
[46-50]	0.22 U	0.41 U	12/2022
[51-55]	0.22 U	0.41 U	12/2022
[56-60]	0.22 U	0.41 U	12/2022

DPT0265	tDCE	VC	
[36-40]	1 U	**2**	03/2022
[41-45]	1 U	**2**	03/2022
[46-50]	1 U	1 U	03/2022
[50-54]	1 U	1 U	03/2022
[55-59]	1 U	1 U	03/2022
[60-64]	1 U	1 U	03/2022

DPT0266	tDCE	VC	
[36-40]	1 U	1 U	03/2022
[41-45]	1 U	1 U	03/2022
[46-50]	1 U	1 U	03/2022
[50-54]	1 U	1 U	03/2022
[55-59]	1 U	1 U	03/2022

DPT0278	tDCE	VC	
[16-20]	0.22 U	0.41 U	12/2022
[21-25]	0.22 U	0.41 U	12/2022
[26-30]	0.22 U	0.41 U	12/2022
[31-35]	0.22 U	0.41 U	12/2022
[36-40]	0.22 U	0.41 U	12/2022
[41-45]	0.22 U	0.41 U	12/2022
[46-50]	0.22 U	0.41 U	12/2022
[51-55]	0.22 U	0.41 U	12/2022
[56-60]	0.22 U	0.41 U	12/2022

DPT0280	tDCE	VC	
[6-10]	0.22 U	0.41 U	05/2023
[11-15]	0.22 U	0.41 U	05/2023
[16-20]	0.22 U	0.41 U	05/2023
[21-25]	0.22 U	0.41 U	05/2023
[26-30]	0.22 U	0.41 U	05/2023
[31-35]	0.22 U	0.41 U	05/2023
[36-40]	0.22 U	**0.54 J**	05/2023
[41-45]	0.22 U	**2.9**	05/2023
[46-50]	0.22 U	**2.7**	05/2023
[51-55]	0.22 U	0.41 U	05/2023
[55-59]	0.22 U	0.41 U	05/2023

DPT0263	tDCE	VC	
[16-20]	1 U	2	03/2022
[21-25]	1 U	1 U	03/2022
[26-30]	1 U	1 U	03/2022
[31-35]	1 U	1 U	03/2022
[36-40]	1 U	1 U	03/2022
[41-45]	1 U	1 U	03/2022
[46-50]	1 U	1 U	03/2022

Kennedy Parkway N

Contractors Road

CRCA-MW0035 [50-60]
CRCA-MW0034 [40-50]
CRCA-MW0033 [30-40]
CRCA-MW0045 [40-50]
CRCA-MW0046 [50-60]
CRCA-MW0038 [50-60]
CRCA-MW0037 [40-50]
CRCA-MW0036 [30-40]
CRCA-MW0032
CRCA-MW0039 [30-40]
CRCA-MW0040 [40-50]
CRCA-MW0041 [50-60]
CRCA-MW0044 [50-60]
CRCA-MW0043 [40-50]
CRCA-MW0042 [30-40]
CRCA-MW0029
CRCA-MW0030
CRCA-MW0026
CRCA-MW0027
CRCA-MW0028
CRCA-MW0031
CRCA-MW0021
CRCA-MW0020
CRCA-MW0023
CRCA-MW0022
CRCA-MW0013
CRCA-MW0012
CRCA-MW0011
CRCA-MW0004
CRCA-MW0001
CRCA-MW0019
CRCA-MW0018
CRCA-MW0005
CRCA-MW0003
CRCA-MW0010
CRCA-MW0008
CRCA-MW0002
CRCA-MW0009
CRCA-MW0007
CRCA-MW0015
CRCA-MW0014
CRCA-MW0025
CRCA-MW0006
CRCA-MW0016
CRCA-MW0024
CRCA-MW0017

Legend

- Proposed Monitoring Well
- Monitoring Well
- DPT Location
- Low Concentration Plume - Monitoring Well Data (July 2023)
- Low Concentration Plume - DPT Data (2022-2023)
- Chemical Process Area

Parameter	Abbrev.	GCTL	NADC
trans-1,2-Dichloroethene	tDCE	100	1,000
Vinyl Chloride	VC	1	100

Detected Concentrations **bolded** (µg/L)
J = Estimated value
U = Not detected at or above MDL (associated value)
MDL = Method Detection Limit
[53-63] = Depth Interval in feet below land surface
LCP = Low Concentration Plume (equal to or greater than GCTLs and less than NADCs)
GCTL = State of Florida Groundwater Cleanup Target Level
NADC = Natural Attenuation Default Concentration
Pink highlights signify concentrations above GCTL

60 0 60 Feet

JAX C:\GIS\KSC\MXD\CRCA\1-1_CRCA_CONTAMINANTS_CONCERN_PLUMES_DPT_V3.MXD 11/07/23

Revision 2 Meeting Minutes for October 3rd & 4th, 2023

Attendees:

1. Jason French/FDEP
2. TJ Touran/FDEP
3. Ryan O'Meara/NASA
4. Deda Johansen/NASA
5. Anne Chrest/NASA
6. Chris Adkison/NASA
7. Michelle Moore/NEMCON
8. Mark Jonnet/Tetra Tech
9. Mark Speranza/Tetra Tech
10. Andrew Walters/Tetra Tech
11. Chris Pike/Tetra Tech
12. Alex Murphy/Tetra Tech
13. Debbie Wilson/Tetra Tech
14. Jennifer Buel/Tetra Tech
15. Jennifer Gootee/AECOM
16. Linnea King Clark/AECOM
17. Randy Sillan/AECOM
18. Richard Smith/HGL
19. Jason Bublitz/HGL
20. Ryan Sullivan/HGL
21. Chad Lee/AECOM
22. Sarah Damphousse/Tetra Tech

2310-M06 Alex Murphy/Tetra Tech

Components Refurbishment and Chemical Analysis (CRCA) (SWMU 041) Long-Term Monitoring Proposed Monitor Well

Objective: The objective of the advance data package (ADP) is to review the current site status and conditions, provide the contaminants of concern (COCs) groundwater analytical results, and present proposed monitoring well locations and screened intervals.

Discussion:

A chlorinated volatile organic compound (CVOC) plume was identified in 2018, with concentrations ranging from: ten times (10X) the Florida Department of Environmental Protection (FDEP) Natural Attenuation Default Concentration (NADC), Hot Spot 1 or HS1); exceeding NADC (High Concentration Plume or HCP); and above State of Florida Groundwater Cleanup Target Levels (GCTLs), Low Concentration Plume or LCP.

Hydraulic containment system (HCS) installation occurred from February to May 2019, followed by system start-up in July 2019 to capture the plume and for HS1 remediation. The HCS system included the installation of three extraction wells, seven injection wells and an air stripper treatment trailer system. NADC exceedances of vinyl chloride (VC) were detected within the deep zone from the baseline sampling event (June 2019) to the end of Year 1 HCS operation (July 2020).

Year 2 (October 2020 to July 2021): After two years of air sparging, no trans-1,2-dichloroethene (tDCE) was detected and reductions of VC to within GCTL levels were seen in the intermediate and deep zones. Year 3 (October 2021 to July 2022 and October 2022): After three years of system operation, a maximum of 2 µg/L VC within the intermediate zone and 26 µg/L were found within the intermediate and deep zones, respectively.

Supplemental direct push technology (DPT) groundwater studies in March 2022, December 2022, and May 2023 further delineated the vertical and areal extent of VC, with the LCP footprint extending in all directions. Two isolated GCTL exceedances were found southeast of the CRCA facility, with VC concentrations less than 3 µg/L within the shallow and deep intervals. No tDCE was detected.

The Team reached consensus on the following recommendations **(2310-D17):**

- Recommend the installation of five well groups to monitor offsite plume migration: 3 well clusters downgradient from existing plume conditions, one well cluster north of the LCP, and one well cluster along the LCP centerline.
- Recommend newly installed monitoring wells MW0033 through MW0046 to be sampled upon completion of installation and then annually thereafter.
- Recommend incorporating the existing well clusters including CRCA-MW0026 (screened 5'-15'), CRCA-MW0027 (screened 30'-40'), and CRCA-MW0028 (screened 53'-63') as part of the LTM program to monitor the southeastern edge of the LCP.
- Recommend each monitoring well to be sampled annually for VOCs via USEPA 8260D.

FDEP inquired if NASA is taking a more proactive approach to address the movement of VC to the west beyond the influence of the extraction wells? Tetra Tech responded that sampling was conducted for *Dehalococcoides*, biological activity indicators and aquifer characteristics. Dehalococcoides was present and the aquifer had natural reductive conditions. The VC is at pretty low concentration in the west and should be reduced through natural reductive dechlorination.

Is MW0031 in the capture zone? Tetra Tech responded that it is. Tetra Tech noted that the LCP outside the capture zone has VC results well below 100 ug/L. The area where the majority of the LCP beyond the capture zone is a real challenging due to wetlands along with railroad constraints.

Result: Decision Item 2310-D17

October 2023 Decision Items Rev 2		Decision
Decision No.	Minutes Reference	
2310-D17	2310-M06	**Components Refurbishment and Chemical Analysis (CRCA) (SWMU 041) Long-Term Monitoring Proposed Monitor Well:** The Team reached consensus on the following recommendations: •Recommend the installation of five well groups to monitor offsite plume migration: 3 well clusters downgradient from existing plume conditions, one well cluster north of the LCP, and one well cluster along the LCP centerline. •Recommend newly installed monitoring wells MW0033 through MW0046 to be sampled upon completion of installation and then annually thereafter. •Recommend incorporating the existing well clusters including CRCA-MW0026 (screened 5'-15'), CRCA-MW0027 (screened 30'-40'), and CRCA-MW0028 (screened 53'-63') as part of the LTM program to monitor the southeastern edge of the LCP. •Recommend each monitoring well to be sampled annually for VOCs via USEPA 8260D.

Revision 1 Meeting Minutes for November 30, 2023

Attendees:

1. TJ Touran/FDEP
2. Bob Kline/NASA
3. Ryan O'Meara/NASA
4. Deda Johansen/NASA
5. Anne Chrest/NASA
6. Chris Adkison/NASA
7. Michelle Moore/NEMCON
8. Mark Jonnet/Tetra Tech
9. Mark Speranza/Tetra Tech
10. Laura Barrett/Tetra Tech
11. Theresa Thompson/Tetra Tech
12. Jennifer Gootee/AECOM
13. Linnea King Clark/AECOM
14. Matt Zenker/AECOM
15. Richard Smith/HGL
16. Jason Bublitz/HGL
17. Robert Lynch/HGL
18. James Montague/HGL
19. Robert Lynch/HGL
20. Michael Morris/HGL
21. Jennifer Byrd/HGL
22. Megan Matteazzi/HGL

2311-M01 Michelle Moore/NEMCON

Meeting Minutes and Miscellaneous Items

Objective:

Test Team consensus on the meeting minutes from the October 2023 Kennedy Space Center (KSC) Remediation Team (KSCRT) meeting and reviewed open action items for possible closure.

Discussion:

Team consensus was reached that Revision 1 of the meeting minutes and action/decision items for the October 2023 KSCRT meeting will become final. Team members acknowledged and did not object to the fact that these meeting minutes may become public as part of a final report at a later date **(2311-D01).**

The following open action items were reviewed and closed out:

Industrial Area Long-Term Monitoring (LTM), February 2021 (Orsino Storage Yard [ORSY] SWMU #096 Site): The Florida Department of Environmental Protection **(**FDEP) inquired about past results for monitoring well ORSY-DRM-MW0001I. The National Aeronautics and Space Administration (NASA) stated they will

Consensus was reached to transition the following sample frequency to:

- Quarterly: MW0001I, MW0024, MW0025, MW0033, MW0034, MW0064 through MW0070
- Semi-Annual: MW0042, MW0046, MW0049, MW0050, MW0051, MW0053, MW0054, MW0056 through MW0061
- Annual: MW0002, MW0007, MW0008, MW0030, MW0048, MW0052, MW0055, MW0062, and MW0063 **(2311-D18).**

Consensus was reached to continue with operation and maintenance of the air sparging interim measure **(2311-D19).**

Prepare Year 3 Performance Monitoring Report and submit to NASA for review and subsequent submittal to FDEP.

Consensus was reached to develop a DPT groundwater sampling plan to investigate the low-concentration plume boundaries for the deep and intermediate intervals and conduct confirmation sampling to determine if PCE and TCE are still present in concentrations greater than GCTL **(2311-D20).**

Results: Decision Items (2311-D18 through D20)

2311-M10 Alex Murphy /Tetra Tech

Components Refurbishment and Chemical Analysis (SWMU 041) Year 4 Performance Monitoring

Goal: The goal of this presentation is to review the Year 4 operation and maintenance (O&M) of the hydraulic containment system (HCS); review results for performance monitoring groundwater sampling, sub-slab soil gas sampling, and ambient air sampling to date; present conclusions; and make recommendations for Team consensus.

Discussion: The Components Refurbishment and Chemical Analysis (CRCA) facility is located along Contractors Road, just south of the Vehicle Assembly Building area. The facility was constructed in 1998 in support of the NASA space program, is approximately 3.0 acres in size, and is used primarily used for cleaning and refurbishment of mechanical and operational parts. A brief history of

the investigations was provided. In April/May 2019, the HCS was installed. It includes 3 extraction wells with dedicated pumps capable of 7 gpm, 7 injection wells, conveyance piping, and a treatment trailer housing an air stripper. Startup of the HCS system occurred in July/August 2019. It has continually operated since, with monthly O&M, quarterly air sampling, sub-slab vapor monitoring, and groundwater sampling.

The Interim Measure (IM) objective is (1) primarily to attain hydraulic control of dissolved phase chlorinated volatile organic compounds (CVOCs) plume and (2) secondarily to reduce concentrations of CVOCs in Hot Spot 1 (HS1) and the high concentration plume (HCP) via the IM to support transition to long term monitoring (LTM). The medium of concern is groundwater, and the contaminants of concern are vinyl chloride (VC) and trans-1,2-dichloroethene (tDCE). Initial plume conditions included a 6.5-acre low concentration plume (LCP), 2.1-acre HCP, and 0.8-acre HS. Approximately 99 percent of the CVOC plume mass is VC.

HCS O&M consists of weekly site visits for inspection of flow meters, differential pressures, scale inhibitors, and repair and cleanout of equipment as needed. Monthly O&M consists of recording system operation data, routine cleaning of the air stripper, inspection for scale buildup and cleaning as needed, and replacement of bag filters as needed. During Year 4 of operation, extraction wells operated at 7.0 to 7.1 gallons per minute (gpm) at an average pressure of 19.2 to 22.0 pounds per square inch (psi). Injection wells operated at 5.0 to 7.5 gpm and an average pressure of 13.7 to 18.0 psi. A total of 4.9 million gallon of water was treated during Year 4, and over 32.5 million gallons of water have been treated since startup. The HCS system operated at an average monthly runtime of 93 percent during Year 4. Year 4 system influent concentration difference of VC from startup is 97.9 percent.

Six monitoring wells were sampled during Year 4 for performance monitoring. In the intermediate interval: MW0002 (30-35 feet bls) and MW0013 (25-30 feet bls). In the deep interval: MW0018 (53-63 feet bls), MW0019 (53-63 feet bls), MW0031 (53-63 feet bls), and MW0032 (53-63 feet bls). Ambient air sampling was conducted in January and July 2023 at 2 locations and sub-slab vapor monitoring at 4 locations for VOCs via Method TO-15.

Potentiometric flows in the shallow interval in January and July 2023 flowed radially at the center of the site and to the southwest toward Contractors Road. In the intermediate and deep intervals, potentiometric flows were generally due west in January and July 2023.

Analytical results during this reporting period showed:

- tDCE was below the laboratory method detection limit in all wells sampled, except for MW0002 in January 2023 had a slight detection at 0.30 µg/L
- VC results showed:
  - Greater than the Florida Groundwater Cleanup Target Level (GCTL) in 3 monitoring wells
  - Less than its natural attenuation default concentration (NADC) in all monitoring wells
  - Peak concentration of VC was reported in January 2023 in MW0018 at a concentration of 22.3 µg/L
  - Downgradient monitoring well MW0032 continued to show fluctuating VC concentrations greater than GCTL

FDEP inquired about the downgradient (west) plume extent. Is the ditch on the west side of Kennedy Parkway acting as a physical barrier? Is the plan just to monitor this location? Tetra Tech responded yes; the VC is very low (9 µg/L) on the east side of the ditch and a well nest was installed to monitor the intervals where the direct push results were above the VC GCTL. Tetra Tech also noted that wells around CRCA are sampled for methane, ethane, ethene and the microbe Dehaloccocoides as indicators of natural biodegradation of CVOCs. There is some level of treatment which may be occurring naturally in this area. It was noted that the site south of CRCA, Contractors Road Heavy Equipment Area, has a similar downgradient CVOC plume that dissipates on the west side of Kennedy Parkway. We will see what happens with both downgradient plumes over time.

Sub-slab soil gas and ambient air analytical results showed no CVOCs above their respective EPA Commercial Vapor Intrusion Screening Levels (VISLs) and no CVOCs above Occupational Safety and Health Administration Permissible Exposure Limits (PELs).

Overall, hydraulic capture is performing as designed and mitigating downgradient migration of VC. VC concentrations are decreasing over time, as was projected in the Year 1 and Year 2 groundwater models. Concentrations in the treatment system influent have decreased 98 percent since startup.

Recommendations for Team Consensus:

The Team reached consensus to proceed with Year 5 of Hydraulic Containment System operation, including monthly influent and effluent sampling **(2311-D21).**

The Team reached consensus to transition the two ambient air and four sub-slab soil gas sampling locations from quarterly to annual **(2311-D22).**

The Team reached consensus to continue semi-annual sampling of performance monitoring wells MW0002 and MW0013 **(2311-D23).**

The Team reached consensus to transition four monitoring wells MW0018, MW0019, MW0031, and MW0032 from quarterly to semi-annual sampling **(2311-D24).**

The Team reached consensus to prepare the Year 4 Performance Monitoring Report and submit to FDEP/NASA **(2311-D25).**

The Team reached consensus to incorporate the following additional monitoring wells (14 new and 3 existing) into the sampling program to monitor plume-wide conditions:

- 4 proposed nested locations (30-40, 40-50, and 50-60 feet bls) to monitor plume boundaries,
- 1 proposed nested location (40-50 and 50-60 feet bls) to monitor the downgradient plume centerline conditions,
- 3 existing nested wells (MW0026, MW0027, and MW0028) to monitor the southeastern plume boundary **(2311-D26).**

Results: Decision Items 2311-D21 through D26

APPENDIX B

LABORATORY ANALYTICAL REPORTS

National Aeronautics and Space Administration

PERMISSION TO PUBLISH

Analytical Labs of Florida, Inc. grants NASA and the U.S. Government permission to reproduce, publish, and distribute the CCB, CCF, AOSB, LC-34, POL and any other sites for Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI) Progress Report(s), submitted in 2018 or beyond to NASA, hereinafter referred to as "the Work," in any form, language, or manner, now or hereafter known or developed, throughout the world, and to authorize others to do so on its behalf.

Analytical Labs of Florida, Inc. certifies that the Work does not infringe any existing copyright, proprietary right, or other right of a third party; and all clearance permissions, if necessary, to use materials of third parties have been obtained.

Dale A Schamp
Signature

Date 10/31/18

Company Name: Analytical Labs of Florida, Inc.
Company Representative Name: Dale Schamp
Company Representative Title: Lab Director
Company Address: 2265 Leaside Court, Merritt Island, Fl.
Company Representative Phone: 321-258-1355
Company Representative E-Mail: mobilealf@cs.com

National Aeronautics and
Space Administration

PERMISSION TO PUBLISH

Pace Analytical grants NASA and the U.S. Government permission to reproduce, publish, and distribute Resource Conservation and Recovery Act (RCRA) Program Documents, submitted in 2022 or beyond, hereinafter referred to as "the Work," in any form, language, or manner, now or hereafter known or developed, throughout the world, and to authorize others to do so on its behalf.

Pace Analytical certifies that the Work does not infringe any existing copyright, proprietary right, or other right of a third party; and all clearance permissions, if necessary, to use materials of third parties have been obtained.

Felicia Grogan

Signature

5/13/2022

Date

Company Name: Pace Analytical Services
Company Representative Name: Felicia Grogan
Company Representative Title: Director Laboratory Operations
Company Address: 106 Vantage Point Dr. Cayce SC 29172
Company Representative Phone: 704-572-1652
Company Representative E-Mail: felicia.grogan@pacelab.com

National Aeronautics and
Space Administration

PERMISSION TO PUBLISH

SGS North America Inc, grants NASA and the U.S. Government permission to reproduce, publish, and distribute Resource Conservation and Recovery Act (RCRA) Program Documents submitted in 2022 or beyond, hereinafter referred to as “the Work,” in any form, language, or manner, now or hereafter known or developed, throughout the world, and to authorize others to do so on its behalf.

SGS North America Inc, certifies that the Work does not infringe any existing copyright, proprietary right, or other right of a third party; and all clearance permissions, if necessary, to use materials of third parties have been obtained.

Michael Eger- General Manager

Digitally signed by Michael Eger- General Manager
DN: cn=Michael Eger- General Manager, o=SGS North America, INC, ou=SGS-Orlando, email=Michael.eger@sgs.com, c=US
Date: 2024.04.24 11:47:07 -04'00'

Signature Date

Company Name: SGS North America Inc.
Company Representative Name: Michael Eger
Company Representative Title: General Manager
Company Address: 4450 Vineland Rd, Suite C-15, Orlando, FL
Company Representative Phone: (407) 473-6177
Company Representative E-Mail: Michael.eger@sgs.com

Report of Analysis

Tetra Tech
Foster Plaza 7
661 Anderson Drive
Pittsburgh, PA 15220
Attention: Alex Murphy

Project Name: CRCA

Project Number: 112G08970

Lot Number:**XL02019**

Date Completed:12/19/2022

12/20/2022 3:55 PM
Approved and released by:
Project Manager II: **Kathy E. Smith**

The electronic signature above is the equivalent of a handwritten signature.
This report shall not be reproduced, except in its entirety, without the written approval of Pace Analytical Services, LLC.

Case Narrative
Tetra Tech
Lot Number: XL02019

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

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

Sample receipt, sample analysis, and data review have been performed in accordance with the Pace Quality Assurance Management Plan (QAMP), applicable Shealy standard operating procedures (SOPs), the 2003 NELAC standard, and Shealy policies. Additionally, the DoD QSM version 5.3 has been followed for these samples, and specifically Table B-15 was followed for all PFAS samples. Any exceptions to the QAMP, SOPs, NELAC standards, the DoD QSM, or policies are qualified on the results page or discussed below.

All QC associated with these samples were compliant with DOD QSM 5.3 table B-15 and our PFAS SOP.

Correction factors (CF) are used to calculate the original sample concentration. The CF is the inverse of the concentration factor (sample volume / extract final volume) times the dilution factor (DF). The CF is calculated as follows:

CF = DF * FV / Vo

FV is volume of extract (mL)
Vo is initial sample volume (mL)
DF is dilution factor. For undiluted analysis, DF = 1.

Sample concentration for aqueous samples:
Concentration (ng/L) = Cs*CF,

$$C_s = \frac{\left(\frac{(A_s x C_{is})}{A_{is}}\right) - B}{M1}$$

Where

C_s is on column concentration of target analyte in the sample (ng/L)
C_{is} is concentration of internal standard in the sample (ng/L)
A_s is peak response of target analyte in the sample
A_{is} is peak response of internal standard in the sample
M1 is the average RF from ICAL or the slope from linear regression ICAL
B is the y-intercept from the ICAL

Pace is a DoD/DOE accredited laboratory; however, the following analyses are currently not listed on our DoD/DOE scope of accreditation: Drinking Water: pH EPA 150.1, Turbidity EPA 18.01, Metals EPA 200.7 & 200.8, Mercury EPA 245.1, Anions EPA 300.0, Cyanide EPA 335.4, Nitrates EPA 353.2, Orthophosphate & Phosphorus EPA 365.1, EDB/DBCP EPA 504.1, HPC SIMPLATE, Color SM 2120 B-2011, Alkalinity SM 2320 B-2011, Specific Conductance SM 2510 B-2011, Residue-filterable (TDS) SM 2540 C, Calcium Hardness (CaCO2) SM 3500-Ca B-2011, TRC SM 4500 Cl G-2011, pH SM 4500 H=B-2011, E.Coli, Total Coliform; Non-Potable Water: Metals EPA 200.7, Strontium EPA 200.8, Chlorate EPA 300.0, Cyanide EPA 335.4, Phenolics EPA 420.4, 2-Methyl-4,6-Dinitrophenol EPA 625.1, Propane RSK-175, Specific Conductance SM 2510 B-2011, Salinity SM250 B, Residue- total SM 2540 B, Sulfite SM 4500 SO32- B-2011, Amenable Cyanide SM 4500-CN- G-2011, BOD & CBOD SM 5210 B, MBAS SM 5540 C-2011; Solid and Chemical Materials: Boron & Titanium SW-846 6010D, Boron, Molybdenum, & Titanium SW-846 6020B, Alcohols & Glycols SW-846 8015C, Pentachlorophenol SW-846 8151A, Ethyl Acetate, Hexane, & n-Hexane SW-846 8260D, SVOC 1,4-Dioxane, 3&4-Methylphenols, 4-Dimethyl aminoazobenzene, 1,4-Naphthoquinone, 3,5-Dinitroaniline, PETN SW-846 8270E, Amenable Cyanide SW-846 9012B; Boron & Titanium SW-846 6010D, Molybdenum SW-846 6020B, Ethylene Glycol SW-846 8015B, Pentachlorophenol SW-846 8151A, Chloroprene SW-846 8260B, SVOC 1,3,5-Trinitrobenzene, 1,4-Dioxane, 1,4-Naphthoquinone, 1,4-Phenylenediamine, 2,5-Dinitrotoluene, 2,6-Dinitrotoluene, 3-Methylcholanthrene, 4- Aminobiphenyl, 4-Dimethyl aminoazobenzene, 4-Nitroquinoline-1-oxide, 7,12- Dimethylbenzo(a)anthracene, Chlorobenzilate, Diallate, Ethyl methanesulfonate, Isodrin, Isosafrole, Methyl methanesulfonate, n-Nitrosomethylethylamine, n-Nitrosomorpholine, n-Nitrosopiperidine, Piperonyl butoxide, Pronamide, Safrole, 3,5-Dinitroaniline, PETN SW-846 8270E, Oil & Grease SW-846 9071B.

Pace is a TNI accredited laboratory; however, the following analyses are currently not listed on our TNI scope of accreditation: Drinking Water: VOC (excluding BTEX, MTBE, Naphthalene, & 1,2-dichloroethane) EPA 524.2, E. coli and Total coliforms SM 9223 B-2004, Solid Chemical Material: TOC Walkley-Black, Biological Tissue: All, Non-Potable Water: SGT-HEM EPA 1664B, Silica EPA 200.7, Boron, Calcium, Silicon, Strontium EPA 200.8, Bicarbonate, Carbonate, and Hydroxide Alkalinity SM 2320 B-2011, SM 9221 C E-2006 & SM 9222D-2006, Strontium SW-846 6010D, VOC SM 6200 B-2011, Fecal Coliform Colilert-18.

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

Volatiles
The laboratory control sample (LCS) and / or laboratory control sample duplicate (LCSD) for analytical batch 61763 exceeded acceptance criteria for the following analyte: Acetone. This analyte was biased high and were not detected in the samples affected: XL02019-001, XL02019-002.

PFAS
The method blank associated with batch 62514 had 6:2 FTS detected at a concentration that was above the MDL but below ½ the PQL. All samples associated with this method blank that have detections for 6:2 FTS have been flagged with a "B".

Manual Integration Summary

Tetra Tech

Lot Number: XL02019

Project Name: CRCA

Project Number: 112G08970

Where applicable, analytes for which manual integration occurred have been flagged with the following:

Qualifier	Technical Justification	Qualifier	Technical Justification	Qualifier	Technical Justification
M-01	Split peak	M-07	Low fit	M-13	Error
M-02	Peak tailing	M-08	Peak not found	M-14	Baseline
M-03	Incorrect auto integration	M-09	Analyte not Identified by the Data System	M-15	Other
M-04	Poor chromatography	M-10	Analyte misidentified by the Data System	M-16	Retention time shift
M-05	Manually assigned peak	M-11	Invalid integration	M-17	Shouldering
M-06	Wrong isomer	M-12	Wrong peak		

A summary of instances where manual integration occurred is included below:

Method	Sample	Run Number	Parameter	Qualifier
8260D	XQ61763-002	1	Acetone	M-03
8260D	XQ61763-002	1	cis-1,2-Dichloroethene	M-03
8260D	XQ61763-002	1	Methyl acetate	M-03
8260D	XQ61763-003	1	Methyl acetate	M-03
PFAS by ID SOP	XQ62514-002	1	Perfluoro-1-heptanesulfonic acid	M-03
PFAS by ID SOP	XQ62514-002	1	Perfluorooctanesulfonic acid (PFOS)	M-03
PFAS by ID SOP	XQ62514-002	1	d5-EtFOSAA	M-03

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

Sample Summary

Tetra Tech

Lot Number: XL02019

Project Name: CRCA

Project Number: 112G08970

Sample Number	Sample ID	Matrix	Date Sampled	Date Received
001	CRCA-ASEFFLUENT-20221130	Aqueous	11/30/2022 1400	12/02/2022
002	CRCA-ASINFLUENT-20221130	Aqueous	11/30/2022 1415	12/02/2022

(2 samples)

Detection Summary

Tetra Tech

Lot Number: XL02019

Project Name: CRCA

Project Number: 112G08970

Sample	Sample ID	Matrix	Parameter	Method	Result	Q	Units	Page
001	CRCA-ASEFFLUENT-20221130	Aqueous	PFBA	PFAS by ID	35000	D	ng/L	9
002	CRCA-ASINFLUENT-20221130	Aqueous	Vinyl chloride	8260D	3.0		ug/L	12
002	CRCA-ASINFLUENT-20221130	Aqueous	PFBA	PFAS by ID	37000	D	ng/L	13

(3 detections)

Volatile Organic Compounds by GC/MS

Client: Tetra Tech | Laboratory ID: XL02019-001

Description: CRCA-ASEFFLUENT-20221130 | Matrix: Aqueous

Date Sampled: 11/30/2022 1400 | Project Name: CRCA

Date Received: 12/02/2022 | Project Number: 112G08970

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260D	1	12/05/2022 1831	CDA		61763

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	LOD	DL	Units	Run
Acetone	67-64-1	8260D	10	UL	20	10	5.0	ug/L	1
Benzene	71-43-2	8260D	0.80	U	1.0	0.80	0.40	ug/L	1
Bromodichloromethane	75-27-4	8260D	0.80	U	1.0	0.80	0.40	ug/L	1
Bromoform	75-25-2	8260D	0.80	U	1.0	0.80	0.40	ug/L	1
Bromomethane (Methyl bromide)	74-83-9	8260D	0.80	U	2.0	0.80	0.40	ug/L	1
2-Butanone (MEK)	78-93-3	8260D	4.0	U	10	4.0	2.0	ug/L	1
Carbon disulfide	75-15-0	8260D	0.80	U	1.0	0.80	0.40	ug/L	1
Carbon tetrachloride	56-23-5	8260D	0.80	U	1.0	0.80	0.40	ug/L	1
Chlorobenzene	108-90-7	8260D	0.80	U	1.0	0.80	0.40	ug/L	1
Chloroethane	75-00-3	8260D	0.80	U	2.0	0.80	0.40	ug/L	1
Chloroform	67-66-3	8260D	0.80	U	1.0	0.80	0.40	ug/L	1
Chloromethane (Methyl chloride)	74-87-3	8260D	1.0	U	2.0	1.0	0.50	ug/L	1
Cyclohexane	110-82-7	8260D	0.80	U	1.0	0.80	0.40	ug/L	1
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260D	0.80	U	1.0	0.80	0.40	ug/L	1
Dibromochloromethane	124-48-1	8260D	0.80	U	1.0	0.80	0.40	ug/L	1
1,2-Dibromoethane (EDB)	106-93-4	8260D	0.80	U	1.0	0.80	0.40	ug/L	1
1,2-Dichlorobenzene	95-50-1	8260D	0.80	U	1.0	0.80	0.40	ug/L	1
1,3-Dichlorobenzene	541-73-1	8260D	0.80	U	1.0	0.80	0.40	ug/L	1
1,4-Dichlorobenzene	106-46-7	8260D	0.80	U	1.0	0.80	0.40	ug/L	1
Dichlorodifluoromethane	75-71-8	8260D	1.2	U	2.0	1.2	0.60	ug/L	1
1,1-Dichloroethane	75-34-3	8260D	0.80	U	1.0	0.80	0.40	ug/L	1
1,2-Dichloroethane	107-06-2	8260D	0.80	U	1.0	0.80	0.40	ug/L	1
1,1-Dichloroethene	75-35-4	8260D	0.80	U	1.0	0.80	0.40	ug/L	1
cis-1,2-Dichloroethene	156-59-2	8260D	0.80	U	1.0	0.80	0.40	ug/L	1
trans-1,2-Dichloroethene	156-60-5	8260D	0.80	U	1.0	0.80	0.40	ug/L	1
1,2-Dichloropropane	78-87-5	8260D	0.80	U	1.0	0.80	0.40	ug/L	1
cis-1,3-Dichloropropene	10061-01-5	8260D	0.80	U	1.0	0.80	0.40	ug/L	1
trans-1,3-Dichloropropene	10061-02-6	8260D	0.80	U	1.0	0.80	0.40	ug/L	1
Ethylbenzene	100-41-4	8260D	0.80	U	1.0	0.80	0.40	ug/L	1
2-Hexanone	591-78-6	8260D	4.0	U	10	4.0	2.0	ug/L	1
Isopropylbenzene	98-82-8	8260D	0.80	U	1.0	0.80	0.40	ug/L	1
Methyl acetate	79-20-9	8260D	0.80	U	1.0	0.80	0.40	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260D	0.80	U	1.0	0.80	0.40	ug/L	1
4-Methyl-2-pentanone	108-10-1	8260D	4.0	U	10	4.0	2.0	ug/L	1
Methylcyclohexane	108-87-2	8260D	0.80	U	5.0	0.80	0.40	ug/L	1
Methylene chloride	75-09-2	8260D	0.80	U	1.0	0.80	0.40	ug/L	1
Styrene	100-42-5	8260D	0.82	U	1.0	0.82	0.41	ug/L	1
1,1,2,2-Tetrachloroethane	79-34-5	8260D	0.80	U	1.0	0.80	0.40	ug/L	1
Tetrachloroethene	127-18-4	8260D	0.80	U	1.0	0.80	0.40	ug/L	1
Toluene	108-88-3	8260D	0.80	U	1.0	0.80	0.40	ug/L	1
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260D	0.84	U	1.0	0.84	0.42	ug/L	1
1,2,4-Trichlorobenzene	120-82-1	8260D	0.80	U	1.0	0.80	0.40	ug/L	1
1,1,1-Trichloroethane	71-55-6	8260D	0.80	U	1.0	0.80	0.40	ug/L	1
1,1,2-Trichloroethane	79-00-5	8260D	0.80	U	1.0	0.80	0.40	ug/L	1

LOQ = Limit of Quantitation | V = Detected in the method blank | E = Quantitation of compound exceeded the calibration range | DL = Detection Limit | Q = Surrogate failure

U = Not detected at or above the LOD | N = Recovery is out of criteria | P = The RPD between two GC columns exceeds 40% | I = Estimated result < LOQ and ≥ DL | L = LCS/LCSD failure

Q = Out of holding time | W = Reported on wet weight basis | LOD = Limit of Detection | D = Dilution > 1 | S = MS/MSD failure

Pace Analytical Services, LLC *(formerly Shealy Environmental Services, Inc.)*
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.pacelabs.com

Volatile Organic Compounds by GC/MS

Client: Tetra Tech | Laboratory ID: XL02019-001

Description: CRCA-ASEFFLUENT-20221130 | Matrix: Aqueous

Date Sampled: 11/30/2022 1400 | Project Name: CRCA

Date Received: 12/02/2022 | Project Number: 112G08970

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260D	1	12/05/2022 1831	CDA		61763

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	LOD	DL	Units	Run
Trichloroethene	79-01-6	8260D	0.80	U	1.0	0.80	0.40	ug/L	1
Trichlorofluoromethane	75-69-4	8260D	0.80	U	1.0	0.80	0.40	ug/L	1
Vinyl chloride	75-01-4	8260D	0.80	U	1.0	0.80	0.40	ug/L	1
Xylenes (total)	1330-20-7	8260D	0.80	U	1.0	0.80	0.40	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		92	81-118
Bromofluorobenzene		97	85-114
Toluene-d8		100	89-112
Dibromofluoromethane		106	80-119

LOQ = Limit of Quantitation	V = Detected in the method blank	E = Quantitation of compound exceeded the calibration range	DL = Detection Limit	Q = Surrogate failure
U = Not detected at or above the LOD	N = Recovery is out of criteria	P = The RPD between two GC columns exceeds 40%	I = Estimated result < LOQ and ≥ DL	L = LCS/LCSD failure
Q = Out of holding time	W = Reported on wet weight basis	LOD = Limit of Detection	D = Dilution > 1	S = MS/MSD failure

Pace Analytical Services, LLC *(formerly Shealy Environmental Services, Inc.)*
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.pacelabs.com

PFAS by LC/MS/MS

Client: Tetra Tech | Laboratory ID: XL02019-001
Description: CRCA-ASEFFLUENT-20221130 | Matrix: Aqueous
Date Sampled: 11/30/2022 1400 | Project Name: CRCA
Date Received: 12/02/2022 | Project Number: 112G08970

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP QSM B-15	200	12/16/2022 1431	ARC2	12/13/2022 1134	62514

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	LOD	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	800	U	1600	800	410	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	800	U	1600	800	410	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	800	U	1600	800	410	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	800	U	1600	800	410	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	800	U	1600	800	410	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	800	U	1600	800	410	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	800	U	1600	800	410	ng/L	1
N-ethylperfluoro-1-octanesulfonamide (EtFOSA)	4151-50-2	PFAS by ID SOP	800	U	1600	800	410	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	800	U	1600	800	410	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	800	U	1600	800	410	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	375-73-5	PFAS by ID SOP	410	U	810	410	200	ng/L	1
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	410	U	810	410	200	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	410	U	810	410	200	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	410	U	810	410	200	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	410	U	810	410	200	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	410	U	810	410	200	ng/L	1
Perfluoro-n-butanoic acid (PFBA)	375-22-4	PFAS by ID SOP	35000	D	810	410	200	ng/L	1
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	410	U	810	410	200	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	410	U	810	410	200	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	PFAS by ID SOP	410	U	810	410	200	ng/L	1
Perfluoro-n-hexanoic acid (PFHxA)	307-24-4	PFAS by ID SOP	410	U	810	410	200	ng/L	1
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	410	U	810	410	200	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	335-67-1	PFAS by ID SOP	410	U	810	410	200	ng/L	1
Perfluoro-n-pentanoic acid (PFPeA)	2706-90-3	PFAS by ID SOP	410	U	810	410	200	ng/L	1
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	410	U	810	410	200	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	410	U	810	410	200	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	410	U	810	410	200	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	410	U	810	410	200	ng/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS		104	50-150
13C2_6:2FTS		108	50-150
13C2_8:2FTS		112	50-150
13C2_PFDoA		116	50-150
13C2_PFTeDA		120	50-150
13C3_PFBS		109	50-150
13C3_PFHxS		108	50-150
13C3-HFPO-DA		134	50-150
13C4_PFBA		102	50-150
13C4_PFHpA		107	50-150
13C5_PFHxA		100	50-150
13C5_PFPeA		104	50-150
13C6_PFDA		118	50-150
13C7_PFUdA		116	50-150

LOQ = Limit of Quantitation
U = Not detected at or above the LOD
Q = Out of holding time
V = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
LOD = Limit of Detection
DL = Detection Limit
I = Estimated result < LOQ and ≥ DL
D = Dilution > 1
Q = Surrogate failure
L = LCS/LCSD failure
S = MS/MSD failure

Pace Analytical Services, LLC *(formerly Shealy Environmental Services, Inc.)*
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.pacelabs.com

PFAS by LC/MS/MS

Client: Tetra Tech			Laboratory ID: XL02019-001
Description: CRCA-ASEFFLUENT-20221130			Matrix: Aqueous
Date Sampled: 11/30/2022 1400		Project Name: CRCA	
Date Received: 12/02/2022		Project Number: 112G08970	

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		106	50-150
13C8_PFOS		113	50-150
13C9_PFNA		101	50-150
d-EtFOSA		121	50-150
d5-EtFOSAA		107	50-150
d3-MeFOSAA		113	50-150

LOQ = Limit of Quantitation	V = Detected in the method blank	E = Quantitation of compound exceeded the calibration range	DL = Detection Limit	Q = Surrogate failure
U = Not detected at or above the LOD	N = Recovery is out of criteria	P = The RPD between two GC columns exceeds 40%	I = Estimated result < LOQ and ≥ DL	L = LCS/LCSD failure
Q = Out of holding time	W = Reported on wet weight basis	LOD = Limit of Detection	D = Dilution > 1	S = MS/MSD failure

Pace Analytical Services, LLC *(formerly Shealy Environmental Services, Inc.)*
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.pacelabs.com

Volatile Organic Compounds by GC/MS

Client: Tetra Tech | Laboratory ID: XL02019-002

Description: CRCA-ASINFLUENT-20221130 | Matrix: Aqueous

Date Sampled: 11/30/2022 1415 | Project Name: CRCA

Date Received: 12/02/2022 | Project Number: 112G08970

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260D	1	12/05/2022 1854	CDA		61763

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	LOD	DL	Units	Run
Acetone	67-64-1	8260D	10	UL	20	10	5.0	ug/L	1
Benzene	71-43-2	8260D	0.80	U	1.0	0.80	0.40	ug/L	1
Bromodichloromethane	75-27-4	8260D	0.80	U	1.0	0.80	0.40	ug/L	1
Bromoform	75-25-2	8260D	0.80	U	1.0	0.80	0.40	ug/L	1
Bromomethane (Methyl bromide)	74-83-9	8260D	0.80	U	2.0	0.80	0.40	ug/L	1
2-Butanone (MEK)	78-93-3	8260D	4.0	U	10	4.0	2.0	ug/L	1
Carbon disulfide	75-15-0	8260D	0.80	U	1.0	0.80	0.40	ug/L	1
Carbon tetrachloride	56-23-5	8260D	0.80	U	1.0	0.80	0.40	ug/L	1
Chlorobenzene	108-90-7	8260D	0.80	U	1.0	0.80	0.40	ug/L	1
Chloroethane	75-00-3	8260D	0.80	U	2.0	0.80	0.40	ug/L	1
Chloroform	67-66-3	8260D	0.80	U	1.0	0.80	0.40	ug/L	1
Chloromethane (Methyl chloride)	74-87-3	8260D	1.0	U	2.0	1.0	0.50	ug/L	1
Cyclohexane	110-82-7	8260D	0.80	U	1.0	0.80	0.40	ug/L	1
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260D	0.80	U	1.0	0.80	0.40	ug/L	1
Dibromochloromethane	124-48-1	8260D	0.80	U	1.0	0.80	0.40	ug/L	1
1,2-Dibromoethane (EDB)	106-93-4	8260D	0.80	U	1.0	0.80	0.40	ug/L	1
1,2-Dichlorobenzene	95-50-1	8260D	0.80	U	1.0	0.80	0.40	ug/L	1
1,3-Dichlorobenzene	541-73-1	8260D	0.80	U	1.0	0.80	0.40	ug/L	1
1,4-Dichlorobenzene	106-46-7	8260D	0.80	U	1.0	0.80	0.40	ug/L	1
Dichlorodifluoromethane	75-71-8	8260D	1.2	U	2.0	1.2	0.60	ug/L	1
1,1-Dichloroethane	75-34-3	8260D	0.80	U	1.0	0.80	0.40	ug/L	1
1,2-Dichloroethane	107-06-2	8260D	0.80	U	1.0	0.80	0.40	ug/L	1
1,1-Dichloroethene	75-35-4	8260D	0.80	U	1.0	0.80	0.40	ug/L	1
cis-1,2-Dichloroethene	156-59-2	8260D	0.80	U	1.0	0.80	0.40	ug/L	1
trans-1,2-Dichloroethene	156-60-5	8260D	0.80	U	1.0	0.80	0.40	ug/L	1
1,2-Dichloropropane	78-87-5	8260D	0.80	U	1.0	0.80	0.40	ug/L	1
cis-1,3-Dichloropropene	10061-01-5	8260D	0.80	U	1.0	0.80	0.40	ug/L	1
trans-1,3-Dichloropropene	10061-02-6	8260D	0.80	U	1.0	0.80	0.40	ug/L	1
Ethylbenzene	100-41-4	8260D	0.80	U	1.0	0.80	0.40	ug/L	1
2-Hexanone	591-78-6	8260D	4.0	U	10	4.0	2.0	ug/L	1
Isopropylbenzene	98-82-8	8260D	0.80	U	1.0	0.80	0.40	ug/L	1
Methyl acetate	79-20-9	8260D	0.80	U	1.0	0.80	0.40	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260D	0.80	U	1.0	0.80	0.40	ug/L	1
4-Methyl-2-pentanone	108-10-1	8260D	4.0	U	10	4.0	2.0	ug/L	1
Methylcyclohexane	108-87-2	8260D	0.80	U	5.0	0.80	0.40	ug/L	1
Methylene chloride	75-09-2	8260D	0.80	U	1.0	0.80	0.40	ug/L	1
Styrene	100-42-5	8260D	0.82	U	1.0	0.82	0.41	ug/L	1
1,1,2,2-Tetrachloroethane	79-34-5	8260D	0.80	U	1.0	0.80	0.40	ug/L	1
Tetrachloroethene	127-18-4	8260D	0.80	U	1.0	0.80	0.40	ug/L	1
Toluene	108-88-3	8260D	0.80	U	1.0	0.80	0.40	ug/L	1
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260D	0.84	U	1.0	0.84	0.42	ug/L	1
1,2,4-Trichlorobenzene	120-82-1	8260D	0.80	U	1.0	0.80	0.40	ug/L	1
1,1,1-Trichloroethane	71-55-6	8260D	0.80	U	1.0	0.80	0.40	ug/L	1
1,1,2-Trichloroethane	79-00-5	8260D	0.80	U	1.0	0.80	0.40	ug/L	1

LOQ = Limit of Quantitation | V = Detected in the method blank | E = Quantitation of compound exceeded the calibration range | DL = Detection Limit | Q = Surrogate failure

U = Not detected at or above the LOD | N = Recovery is out of criteria | P = The RPD between two GC columns exceeds 40% | I = Estimated result < LOQ and ≥ DL | L = LCS/LCSD failure

Q = Out of holding time | W = Reported on wet weight basis | LOD = Limit of Detection | D = Dilution > 1 | S = MS/MSD failure

Volatile Organic Compounds by GC/MS

Client: Tetra Tech | Laboratory ID: XL02019-002

Description: CRCA-ASINFLUENT-20221130 | Matrix: Aqueous

Date Sampled: 11/30/2022 1415 | Project Name: CRCA

Date Received: 12/02/2022 | Project Number: 112G08970

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260D	1	12/05/2022 1854	CDA		61763

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	LOD	DL	Units	Run
Trichloroethene	79-01-6	8260D	0.80	U	1.0	0.80	0.40	ug/L	1
Trichlorofluoromethane	75-69-4	8260D	0.80	U	1.0	0.80	0.40	ug/L	1
Vinyl chloride	75-01-4	8260D	3.0		1.0	0.80	0.40	ug/L	1
Xylenes (total)	1330-20-7	8260D	0.80	U	1.0	0.80	0.40	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		87	81-118
Bromofluorobenzene		97	85-114
Toluene-d8		99	89-112
Dibromofluoromethane		98	80-119

LOQ = Limit of Quantitation	V = Detected in the method blank	E = Quantitation of compound exceeded the calibration range	DL = Detection Limit	Q = Surrogate failure
U = Not detected at or above the LOD	N = Recovery is out of criteria	P = The RPD between two GC columns exceeds 40%	I = Estimated result < LOQ and ≥ DL	L = LCS/LCSD failure
Q = Out of holding time	W = Reported on wet weight basis	LOD = Limit of Detection	D = Dilution > 1	S = MS/MSD failure

Pace Analytical Services, LLC *(formerly Shealy Environmental Services, Inc.)*
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.pacelabs.com

PFAS by LC/MS/MS

Client: Tetra Tech | Laboratory ID: XL02019-002
Description: CRCA-ASINFLUENT-20221130 | Matrix: Aqueous
Date Sampled: 11/30/2022 1415 | Project Name: CRCA
Date Received: 12/02/2022 | Project Number: 112G08970

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP QSM B-15	200	12/16/2022 1442	ARC2	12/13/2022 1134	62514

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	LOD	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	750	U	1500	750	370	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	750	U	1500	750	370	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	750	U	1500	750	370	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	750	U	1500	750	370	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	750	U	1500	750	370	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	750	U	1500	750	370	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	750	U	1500	750	370	ng/L	1
N-ethylperfluoro-1-octanesulfonamide (EtFOSA)	4151-50-2	PFAS by ID SOP	750	U	1500	750	370	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	750	U	1500	750	370	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	750	U	1500	750	370	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	375-73-5	PFAS by ID SOP	370	U	740	370	180	ng/L	1
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	370	U	740	370	180	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	370	U	740	370	180	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	370	U	740	370	180	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	370	U	740	370	180	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	370	U	740	370	180	ng/L	1
Perfluoro-n-butanoic acid (PFBA)	375-22-4	PFAS by ID SOP	37000	D	740	370	180	ng/L	1
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	370	U	740	370	180	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	370	U	740	370	180	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	PFAS by ID SOP	370	U	740	370	180	ng/L	1
Perfluoro-n-hexanoic acid (PFHxA)	307-24-4	PFAS by ID SOP	370	U	740	370	180	ng/L	1
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	370	U	740	370	180	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	335-67-1	PFAS by ID SOP	370	U	740	370	180	ng/L	1
Perfluoro-n-pentanoic acid (PFPeA)	2706-90-3	PFAS by ID SOP	370	U	740	370	180	ng/L	1
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	370	U	740	370	180	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	370	U	740	370	180	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	370	U	740	370	180	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	370	U	740	370	180	ng/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS		87	50-150
13C2_6:2FTS		107	50-150
13C2_8:2FTS		96	50-150
13C2_PFDoA		117	50-150
13C2_PFTeDA		115	50-150
13C3_PFBS		97	50-150
13C3_PFHxS		95	50-150
13C3-HFPO-DA		118	50-150
13C4_PFBA		94	50-150
13C4_PFHpA		101	50-150
13C5_PFHxA		100	50-150
13C5_PFPeA		90	50-150
13C6_PFDA		106	50-150
13C7_PFUdA		110	50-150

LOQ = Limit of Quantitation
U = Not detected at or above the LOD
Q = Out of holding time
V = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
LOD = Limit of Detection
DL = Detection Limit
I = Estimated result < LOQ and ≥ DL
D = Dilution > 1
Q = Surrogate failure
L = LCS/LCSD failure
S = MS/MSD failure

Pace Analytical Services, LLC *(formerly Shealy Environmental Services, Inc.)*
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.pacelabs.com

PFAS by LC/MS/MS

Client: Tetra Tech			Laboratory ID: XL02019-002
Description: CRCA-ASINFLUENT-20221130			Matrix: Aqueous
Date Sampled: 11/30/2022 1415		Project Name: CRCA	
Date Received: 12/02/2022		Project Number: 112G08970	

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		104	50-150
13C8_PFOS		108	50-150
13C9_PFNA		91	50-150
d-EtFOSA		109	50-150
d5-EtFOSAA		97	50-150
d3-MeFOSAA		99	50-150

LOQ = Limit of Quantitation	V = Detected in the method blank	E = Quantitation of compound exceeded the calibration range	DL = Detection Limit	Q = Surrogate failure
U = Not detected at or above the LOD	N = Recovery is out of criteria	P = The RPD between two GC columns exceeds 40%	I = Estimated result < LOQ and ≥ DL	L = LCS/LCSD failure
Q = Out of holding time	W = Reported on wet weight basis	LOD = Limit of Detection	D = Dilution > 1	S = MS/MSD failure

Pace Analytical Services, LLC *(formerly Shealy Environmental Services, Inc.)*
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.pacelabs.com

QC Summary

Volatile Organic Compounds by GC/MS - MB

Sample ID: XQ61763-001
Batch: 61763
Analytical Method: 8260D

Matrix: Aqueous
Prep Method: 5030B

Parameter	Result	Q	Dil	LOQ	LOD	DL	Units	Analysis Date
Acetone	10	U	1	20	10	5.0	ug/L	12/05/2022 1326
Benzene	0.80	U	1	1.0	0.80	0.40	ug/L	12/05/2022 1326
Bromodichloromethane	0.80	U	1	1.0	0.80	0.40	ug/L	12/05/2022 1326
Bromoform	0.80	U	1	1.0	0.80	0.40	ug/L	12/05/2022 1326
Bromomethane (Methyl bromide)	0.80	U	1	2.0	0.80	0.40	ug/L	12/05/2022 1326
2-Butanone (MEK)	4.0	U	1	10	4.0	2.0	ug/L	12/05/2022 1326
Carbon disulfide	0.80	U	1	1.0	0.80	0.40	ug/L	12/05/2022 1326
Carbon tetrachloride	0.80	U	1	1.0	0.80	0.40	ug/L	12/05/2022 1326
Chlorobenzene	0.80	U	1	1.0	0.80	0.40	ug/L	12/05/2022 1326
Chloroethane	0.80	U	1	2.0	0.80	0.40	ug/L	12/05/2022 1326
Chloroform	0.80	U	1	1.0	0.80	0.40	ug/L	12/05/2022 1326
Chloromethane (Methyl chloride)	1.0	U	1	2.0	1.0	0.50	ug/L	12/05/2022 1326
Cyclohexane	0.80	U	1	1.0	0.80	0.40	ug/L	12/05/2022 1326
1,2-Dibromo-3-chloropropane (DBCP)	0.80	U	1	1.0	0.80	0.40	ug/L	12/05/2022 1326
Dibromochloromethane	0.80	U	1	1.0	0.80	0.40	ug/L	12/05/2022 1326
1,2-Dibromoethane (EDB)	0.80	U	1	1.0	0.80	0.40	ug/L	12/05/2022 1326
1,2-Dichlorobenzene	0.80	U	1	1.0	0.80	0.40	ug/L	12/05/2022 1326
1,3-Dichlorobenzene	0.80	U	1	1.0	0.80	0.40	ug/L	12/05/2022 1326
1,4-Dichlorobenzene	0.80	U	1	1.0	0.80	0.40	ug/L	12/05/2022 1326
Dichlorodifluoromethane	1.2	U	1	2.0	1.2	0.60	ug/L	12/05/2022 1326
1,1-Dichloroethane	0.80	U	1	1.0	0.80	0.40	ug/L	12/05/2022 1326
1,2-Dichloroethane	0.80	U	1	1.0	0.80	0.40	ug/L	12/05/2022 1326
1,1-Dichloroethene	0.80	U	1	1.0	0.80	0.40	ug/L	12/05/2022 1326
cis-1,2-Dichloroethene	0.80	U	1	1.0	0.80	0.40	ug/L	12/05/2022 1326
trans-1,2-Dichloroethene	0.80	U	1	1.0	0.80	0.40	ug/L	12/05/2022 1326
1,2-Dichloropropane	0.80	U	1	1.0	0.80	0.40	ug/L	12/05/2022 1326
cis-1,3-Dichloropropene	0.80	U	1	1.0	0.80	0.40	ug/L	12/05/2022 1326
trans-1,3-Dichloropropene	0.80	U	1	1.0	0.80	0.40	ug/L	12/05/2022 1326
Ethylbenzene	0.80	U	1	1.0	0.80	0.40	ug/L	12/05/2022 1326
2-Hexanone	4.0	U	1	10	4.0	2.0	ug/L	12/05/2022 1326
Isopropylbenzene	0.80	U	1	1.0	0.80	0.40	ug/L	12/05/2022 1326
Methyl acetate	0.80	U	1	1.0	0.80	0.40	ug/L	12/05/2022 1326
Methyl tertiary butyl ether (MTBE)	0.80	U	1	1.0	0.80	0.40	ug/L	12/05/2022 1326
4-Methyl-2-pentanone	4.0	U	1	10	4.0	2.0	ug/L	12/05/2022 1326
Methylcyclohexane	0.80	U	1	5.0	0.80	0.40	ug/L	12/05/2022 1326
Methylene chloride	0.80	U	1	1.0	0.80	0.40	ug/L	12/05/2022 1326
Styrene	0.82	U	1	1.0	0.82	0.41	ug/L	12/05/2022 1326
1,1,2,2-Tetrachloroethane	0.80	U	1	1.0	0.80	0.40	ug/L	12/05/2022 1326
Tetrachloroethene	0.80	U	1	1.0	0.80	0.40	ug/L	12/05/2022 1326
Toluene	0.80	U	1	1.0	0.80	0.40	ug/L	12/05/2022 1326
1,1,2-Trichloro-1,2,2-Trifluoroethane	0.84	U	1	1.0	0.84	0.42	ug/L	12/05/2022 1326
1,2,4-Trichlorobenzene	0.80	U	1	1.0	0.80	0.40	ug/L	12/05/2022 1326
1,1,1-Trichloroethane	0.80	U	1	1.0	0.80	0.40	ug/L	12/05/2022 1326
1,1,2-Trichloroethane	0.80	U	1	1.0	0.80	0.40	ug/L	12/05/2022 1326

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection

U = Not detected at or above the LOD
I = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria

N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

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

Volatile Organic Compounds by GC/MS - MB

Sample ID: XQ61763-001
Batch: 61763
Analytical Method: 8260D

Matrix: Aqueous
Prep Method: 5030B

Parameter	Result	Q	Dil	LOQ	LOD	DL	Units	Analysis Date
Trichloroethene	0.80	U	1	1.0	0.80	0.40	ug/L	12/05/2022 1326
Trichlorofluoromethane	0.80	U	1	1.0	0.80	0.40	ug/L	12/05/2022 1326
Vinyl chloride	0.80	U	1	1.0	0.80	0.40	ug/L	12/05/2022 1326
Xylenes (total)	0.80	U	1	1.0	0.80	0.40	ug/L	12/05/2022 1326

Surrogate	Q	% Rec	Acceptance Limit
1,2-Dichloroethane-d4		98	81-118
Bromofluorobenzene		96	85-114
Toluene-d8		100	89-112
Dibromofluoromethane		105	80-119

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection

U = Not detected at or above the LOD
I = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria

N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

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

Volatile Organic Compounds by GC/MS - LCS

Sample ID: XQ61763-002
Batch: 61763
Analytical Method: 8260D

Matrix: Aqueous
Prep Method: 5030B

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
Acetone	100	170	NM-03	1	173	39-160	12/05/2022 1006
Benzene	50	46		1	93	79-120	12/05/2022 1006
Bromodichloromethane	50	49		1	98	79-125	12/05/2022 1006
Bromoform	50	52		1	103	66-130	12/05/2022 1006
Bromomethane (Methyl bromide)	50	50		1	99	53-141	12/05/2022 1006
2-Butanone (MEK)	100	120		1	119	56-143	12/05/2022 1006
Carbon disulfide	50	44		1	88	64-133	12/05/2022 1006
Carbon tetrachloride	50	50		1	99	72-136	12/05/2022 1006
Chlorobenzene	50	47		1	93	82-118	12/05/2022 1006
Chloroethane	50	46		1	91	60-138	12/05/2022 1006
Chloroform	50	47		1	94	79-124	12/05/2022 1006
Chloromethane (Methyl chloride)	50	48		1	97	50-139	12/05/2022 1006
Cyclohexane	50	41		1	83	71-130	12/05/2022 1006
1,2-Dibromo-3-chloropropane (DBCP)	50	61		1	122	62-128	12/05/2022 1006
Dibromochloromethane	50	51		1	102	74-126	12/05/2022 1006
1,2-Dibromoethane (EDB)	50	51		1	101	77-121	12/05/2022 1006
1,2-Dichlorobenzene	50	50		1	99	80-119	12/05/2022 1006
1,3-Dichlorobenzene	50	48		1	96	80-119	12/05/2022 1006
1,4-Dichlorobenzene	50	48		1	95	79-118	12/05/2022 1006
Dichlorodifluoromethane	50	42		1	83	32-152	12/05/2022 1006
1,1-Dichloroethane	50	47		1	95	77-125	12/05/2022 1006
1,2-Dichloroethane	50	49		1	98	73-128	12/05/2022 1006
1,1-Dichloroethene	50	45		1	90	71-131	12/05/2022 1006
cis-1,2-Dichloroethene	50	49	M-03	1	98	78-123	12/05/2022 1006
trans-1,2-Dichloroethene	50	48		1	96	75-124	12/05/2022 1006
1,2-Dichloropropane	50	45		1	91	78-122	12/05/2022 1006
cis-1,3-Dichloropropene	50	48		1	96	75-124	12/05/2022 1006
trans-1,3-Dichloropropene	50	50		1	99	73-127	12/05/2022 1006
Ethylbenzene	50	47		1	94	79-121	12/05/2022 1006
2-Hexanone	100	98		1	98	57-139	12/05/2022 1006
Isopropylbenzene	50	48		1	97	72-131	12/05/2022 1006
Methyl acetate	50	50	M-03	1	99	56-136	12/05/2022 1006
Methyl tertiary butyl ether (MTBE)	50	51		1	102	71-124	12/05/2022 1006
4-Methyl-2-pentanone	100	98		1	98	67-130	12/05/2022 1006
Methylcyclohexane	50	46		1	92	72-132	12/05/2022 1006
Methylene chloride	50	46		1	92	74-124	12/05/2022 1006
Styrene	50	48		1	97	78-123	12/05/2022 1006
1,1,2,2-Tetrachloroethane	50	55		1	111	71-121	12/05/2022 1006
Tetrachloroethene	50	46		1	91	74-129	12/05/2022 1006
Toluene	50	47		1	94	80-121	12/05/2022 1006
1,1,2-Trichloro-1,2,2-Trifluoroethane	50	46		1	91	70-136	12/05/2022 1006
1,2,4-Trichlorobenzene	50	51		1	102	69-130	12/05/2022 1006
1,1,1-Trichloroethane	50	47		1	93	74-131	12/05/2022 1006
1,1,2-Trichloroethane	50	48		1	96	80-119	12/05/2022 1006

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection

U = Not detected at or above the LOD
I = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria

N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

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

Volatile Organic Compounds by GC/MS - LCS

Sample ID: XQ61763-002
Batch: 61763
Analytical Method: 8260D

Matrix: Aqueous
Prep Method: 5030B

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
Trichloroethene	50	47		1	94	79-123	12/05/2022 1006
Trichlorofluoromethane	50	46		1	92	65-141	12/05/2022 1006
Vinyl chloride	50	51		1	102	58-137	12/05/2022 1006
Xylenes (total)	100	97		1	97	79-121	12/05/2022 1006

Surrogate	Q	% Rec	Acceptance Limit
1,2-Dichloroethane-d4		98	81-118
Bromofluorobenzene		94	85-114
Toluene-d8		93	89-112
Dibromofluoromethane		102	80-119

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection

U = Not detected at or above the LOD
I = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria

N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

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

Volatile Organic Compounds by GC/MS - LCSD

Sample ID: XQ61763-003
Batch: 61763
Analytical Method: 8260D

Matrix: Aqueous
Prep Method: 5030B

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% RPD	%Rec Limit	% RPD Limit	Analysis Date
Acetone	100	200	N	1	202	16	39-160	20	12/05/2022 1131
Benzene	50	47		1	94	1.6	79-120	20	12/05/2022 1131
Bromodichloromethane	50	50		1	100	1.8	79-125	20	12/05/2022 1131
Bromoform	50	53		1	105	1.7	66-130	20	12/05/2022 1131
Bromomethane (Methyl bromide)	50	60		1	120	19	53-141	20	12/05/2022 1131
2-Butanone (MEK)	100	130		1	128	7.5	56-143	20	12/05/2022 1131
Carbon disulfide	50	45		1	90	1.5	64-133	20	12/05/2022 1131
Carbon tetrachloride	50	50		1	101	1.4	72-136	20	12/05/2022 1131
Chlorobenzene	50	48		1	96	2.4	82-118	20	12/05/2022 1131
Chloroethane	50	46		1	91	0.13	60-138	20	12/05/2022 1131
Chloroform	50	47		1	94	0.14	79-124	20	12/05/2022 1131
Chloromethane (Methyl chloride)	50	45		1	90	6.6	50-139	20	12/05/2022 1131
Cyclohexane	50	43		1	85	2.9	71-130	20	12/05/2022 1131
1,2-Dibromo-3-chloropropane (DBCP)	50	61		1	122	0.10	62-128	20	12/05/2022 1131
Dibromochloromethane	50	51		1	102	0.24	74-126	20	12/05/2022 1131
1,2-Dibromoethane (EDB)	50	51		1	102	1.4	77-121	20	12/05/2022 1131
1,2-Dichlorobenzene	50	51		1	102	2.4	80-119	20	12/05/2022 1131
1,3-Dichlorobenzene	50	49		1	99	2.7	80-119	20	12/05/2022 1131
1,4-Dichlorobenzene	50	49		1	98	3.1	79-118	20	12/05/2022 1131
Dichlorodifluoromethane	50	44		1	87	4.4	32-152	20	12/05/2022 1131
1,1-Dichloroethane	50	47		1	93	1.4	77-125	20	12/05/2022 1131
1,2-Dichloroethane	50	48		1	95	2.3	73-128	20	12/05/2022 1131
1,1-Dichloroethene	50	46		1	92	1.5	71-131	20	12/05/2022 1131
cis-1,2-Dichloroethene	50	49		1	98	0.086	78-123	20	12/05/2022 1131
trans-1,2-Dichloroethene	50	50		1	99	3.5	75-124	20	12/05/2022 1131
1,2-Dichloropropane	50	46		1	92	1.8	78-122	20	12/05/2022 1131
cis-1,3-Dichloropropene	50	49		1	99	2.9	75-124	20	12/05/2022 1131
trans-1,3-Dichloropropene	50	49		1	99	0.20	73-127	20	12/05/2022 1131
Ethylbenzene	50	48		1	96	1.5	79-121	20	12/05/2022 1131
2-Hexanone	100	100		1	100	1.8	57-139	20	12/05/2022 1131
Isopropylbenzene	50	49		1	98	1.7	72-131	20	12/05/2022 1131
Methyl acetate	50	49	M-03	1	99	0.61	56-136	20	12/05/2022 1131
Methyl tertiary butyl ether (MTBE)	50	52		1	103	1.6	71-124	20	12/05/2022 1131
4-Methyl-2-pentanone	100	100		1	100	2.0	67-130	20	12/05/2022 1131
Methylcyclohexane	50	47		1	93	0.92	72-132	20	12/05/2022 1131
Methylene chloride	50	47		1	93	1.7	74-124	20	12/05/2022 1131
Styrene	50	50		1	100	3.3	78-123	20	12/05/2022 1131
1,1,2,2-Tetrachloroethane	50	56		1	112	1.1	71-121	20	12/05/2022 1131
Tetrachloroethene	50	46		1	92	0.85	74-129	20	12/05/2022 1131
Toluene	50	47		1	95	1.5	80-121	20	12/05/2022 1131
1,1,2-Trichloro-1,2,2-Trifluoroethane	50	47		1	93	2.1	70-136	20	12/05/2022 1131
1,2,4-Trichlorobenzene	50	54		1	109	6.2	69-130	20	12/05/2022 1131
1,1,1-Trichloroethane	50	47		1	94	1.4	74-131	20	12/05/2022 1131
1,1,2-Trichloroethane	50	49		1	99	3.0	80-119	20	12/05/2022 1131

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection

U = Not detected at or above the LOD
I = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria

N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

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

Volatile Organic Compounds by GC/MS - LCSD

Sample ID: XQ61763-003
Batch: 61763
Analytical Method: 8260D

Matrix: Aqueous
Prep Method: 5030B

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% RPD	%Rec Limit	% RPD Limit	Analysis Date
Trichloroethene	50	48		1	97	2.7	79-123	20	12/05/2022 1131
Trichlorofluoromethane	50	47		1	93	2.1	65-141	20	12/05/2022 1131
Vinyl chloride	50	50		1	100	2.4	58-137	20	12/05/2022 1131
Xylenes (total)	100	98		1	98	1.6	79-121	20	12/05/2022 1131

Surrogate	Q	% Rec	Acceptance Limit
1,2-Dichloroethane-d4		98	81-118
Bromofluorobenzene		96	85-114
Toluene-d8		94	89-112
Dibromofluoromethane		102	80-119

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection

U = Not detected at or above the LOD
I = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria

N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

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

PFAS by LC/MS/MS - MB

Sample ID: XQ62514-001
Batch: 62514
Analytical Method: PFAS by ID SOP QSM B-15

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 12/13/2022 1134

Parameter	Result	Q	Dil	LOQ	LOD	DL	Units	Analysis Date
9Cl-PF3ONS	4.0	U	1	8.0	4.0	2.0	ng/L	12/14/2022 1241
11Cl-PF3OUdS	4.0	U	1	8.0	4.0	2.0	ng/L	12/14/2022 1241
8:2 FTS	4.0	U	1	8.0	4.0	2.0	ng/L	12/14/2022 1241
6:2 FTS	3.1	I	1	8.0	4.0	2.0	ng/L	12/14/2022 1241
4:2 FTS	4.0	U	1	8.0	4.0	2.0	ng/L	12/14/2022 1241
GenX	4.0	U	1	8.0	4.0	2.0	ng/L	12/14/2022 1241
ADONA	4.0	U	1	8.0	4.0	2.0	ng/L	12/14/2022 1241
EtFOSA	4.0	U	1	8.0	4.0	2.0	ng/L	12/14/2022 1241
EtFOSAA	4.0	U	1	8.0	4.0	2.0	ng/L	12/14/2022 1241
MeFOSAA	4.0	U	1	8.0	4.0	2.0	ng/L	12/14/2022 1241
PFBS	2.0	U	1	4.0	2.0	1.0	ng/L	12/14/2022 1241
PFDS	2.0	U	1	4.0	2.0	1.0	ng/L	12/14/2022 1241
PFHpS	2.0	U	1	4.0	2.0	1.0	ng/L	12/14/2022 1241
PFNS	2.0	U	1	4.0	2.0	1.0	ng/L	12/14/2022 1241
PFPeS	2.0	U	1	4.0	2.0	1.0	ng/L	12/14/2022 1241
PFHxS	2.0	U	1	4.0	2.0	1.0	ng/L	12/14/2022 1241
PFBA	2.0	U	1	4.0	2.0	1.0	ng/L	12/14/2022 1241
PFDA	2.0	U	1	4.0	2.0	1.0	ng/L	12/14/2022 1241
PFDoA	2.0	U	1	4.0	2.0	1.0	ng/L	12/14/2022 1241
PFHpA	2.0	U	1	4.0	2.0	1.0	ng/L	12/14/2022 1241
PFHxA	2.0	U	1	4.0	2.0	1.0	ng/L	12/14/2022 1241
PFNA	2.0	U	1	4.0	2.0	1.0	ng/L	12/14/2022 1241
PFOA	2.0	U	1	4.0	2.0	1.0	ng/L	12/14/2022 1241
PFPeA	2.0	U	1	4.0	2.0	1.0	ng/L	12/14/2022 1241
PFTeDA	2.0	U	1	4.0	2.0	1.0	ng/L	12/14/2022 1241
PFTrDA	2.0	U	1	4.0	2.0	1.0	ng/L	12/14/2022 1241
PFUdA	2.0	U	1	4.0	2.0	1.0	ng/L	12/14/2022 1241
PFOS	2.0	U	1	4.0	2.0	1.0	ng/L	12/14/2022 1241

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS		116	50-150
13C2_6:2FTS		125	50-150
13C2_8:2FTS		121	50-150
13C2_PFDoA		104	50-150
13C2_PFTeDA		104	50-150
13C3_PFBS		104	50-150
13C3_PFHxS		109	50-150
13C3-HFPO-DA		95	50-150
13C4_PFBA		117	50-150
13C4_PFHpA		106	50-150
13C5_PFHxA		95	50-150
13C5_PFPeA		104	50-150

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection

U = Not detected at or above the LOD
I = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria

N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

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

PFAS by LC/MS/MS - MB

Sample ID: XQ62514-001
Batch: 62514
Analytical Method: PFAS by ID SOP QSM B-15

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 12/13/2022 1134

Surrogate	Q	% Rec	Acceptance Limit
13C6_PFDA		104	50-150
13C7_PFUdA		108	50-150
13C8_PFOA		99	50-150
13C8_PFOS		106	50-150
13C9_PFNA		100	50-150
d-EtFOSA		78	50-150
d5-EtFOSAA		103	50-150
d3-MeFOSAA		102	50-150

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection

U = Not detected at or above the LOD
I = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria

N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

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

PFAS by LC/MS/MS - LCS

Sample ID: XQ62514-002
Batch: 62514
Analytical Method: PFAS by ID SOP QSM B-15

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 12/13/2022 1134

Parameter	Spike Amount (ng/L)	Result (ng/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
9Cl-PF3ONS	15	15		1	104	50-150	12/14/2022 1252
11Cl-PF3OUdS	15	14		1	92	50-150	12/14/2022 1252
8:2 FTS	15	15		1	96	67-138	12/14/2022 1252
6:2 FTS	15	16		1	107	64-140	12/14/2022 1252
4:2 FTS	15	19		1	129	63-143	12/14/2022 1252
GenX	32	30		1	93	50-150	12/14/2022 1252
ADONA	15	14		1	94	50-150	12/14/2022 1252
EtFOSA	16	16		1	97	50-150	12/14/2022 1252
EtFOSAA	16	15		1	96	61-135	12/14/2022 1252
MeFOSAA	16	14		1	91	65-136	12/14/2022 1252
PFBS	14	15		1	109	72-130	12/14/2022 1252
PFDS	15	14		1	88	53-142	12/14/2022 1252
PFHpS	15	14	M-03	1	93	69-134	12/14/2022 1252
PFNS	15	15		1	96	69-127	12/14/2022 1252
PFPeS	15	14		1	95	71-127	12/14/2022 1252
PFHxS	15	14		1	98	68-131	12/14/2022 1252
PFBA	16	15		1	93	73-129	12/14/2022 1252
PFDA	16	15		1	97	71-129	12/14/2022 1252
PFDoA	16	14		1	89	72-134	12/14/2022 1252
PFHpA	16	16		1	98	72-130	12/14/2022 1252
PFHxA	16	18		1	114	72-129	12/14/2022 1252
PFNA	16	16		1	102	69-130	12/14/2022 1252
PFOA	16	18		1	112	71-133	12/14/2022 1252
PFPeA	16	15		1	93	72-129	12/14/2022 1252
PFTeDA	16	15		1	91	71-132	12/14/2022 1252
PFTrDA	16	13		1	84	65-144	12/14/2022 1252
PFUdA	16	16		1	99	69-133	12/14/2022 1252
PFOS	15	14	M-03	1	95	65-140	12/14/2022 1252

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS		96	50-150
13C2_6:2FTS		104	50-150
13C2_8:2FTS		113	50-150
13C2_PFDoA		99	50-150
13C2_PFTeDA		80	50-150
13C3_PFBS		95	50-150
13C3_PFHxS		105	50-150
13C3-HFPO-DA		94	50-150
13C4_PFBA		111	50-150
13C4_PFHpA		101	50-150
13C5_PFHxA		89	50-150
13C5_PFPeA		110	50-150

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection

U = Not detected at or above the LOD
I = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria

N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

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

PFAS by LC/MS/MS - LCS

Sample ID: XQ62514-002
Batch: 62514
Analytical Method: PFAS by ID SOP QSM B-15

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 12/13/2022 1134

Surrogate	Q	% Rec	Acceptance Limit
13C6_PFDA		105	50-150
13C7_PFUdA		96	50-150
13C8_PFOA		89	50-150
13C8_PFOS		104	50-150
13C9_PFNA		94	50-150
d-EtFOSA		77	50-150
d5-EtFOSAA	M-03	90	50-150
d3-MeFOSAA		102	50-150

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection

U = Not detected at or above the LOD
I = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria

N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

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

Pace Analytical Services, LLC *(formerly Shealy Environmental Services, Inc.)*
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.pacelabs.com

Chain of Custody

and

Miscellaneous Documents

Pace Analytical Services, LLC *(formerly Shealy Environmental Services, Inc.)*
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.pacelabs.com

Tetra Tech, Inc.

CHAIN OF CUSTODY | **NUMBER** No. 2750 | **PAGE** 1 OF 1

PROJECT NO: 112G08970	FACILITY: CICA	PROJECT MANAGER: ALEX MURPHY	PHONE NUMBER: 321-637-8630	LABORATORY NAME AND CONTACT: PACE
SAMPLERS (SIGNATURE)		FIELD OPERATIONS LEADER: IAN FOLSTER	PHONE NUMBER: 864-780-1426	ADDRESS: 106 VANTAGE PT DR.
		CARRIER/WAYBILL NUMBER: FEDEX		CITY, STATE: WEST COLUMBIA, SC 29172

STANDARD TAT ☒
RUSH TAT ☐
☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

CONTAINER TYPE PLASTIC (P) or GLASS (G): G P
PRESERVATIVE USED: HCL NA

XL02019
KRS2

DATE YEAR	TIME	SAMPLE ID	LOCATION ID	TOP DEPTH (FT)	BOTTOM DEPTH (FT)	MATRIX (GW, SO, SW, SD, QC, ETC.)	COLLECTION METHOD GRAB (G) COMP (C)	No. OF CONTAINERS	TYPE OF ANALYSIS: VOCs	TYPE OF ANALYSIS: PFAS	COMMENTS
30 NOV 2022	1400	CICA-AS-EFFLUENT-20221130	CICA	/	/	GW	G	5	X	X	
30 NOV 2022	1415	CICA-AS-INFLUENT-20221130	CICA	/	/	GW	G	5	X	X	

1. RELINQUISHED BY		DATE 1 DEC 22	TIME 1600	1. RECEIVED BY FEDEX	DATE 1 DEC 22	TIME 1600
2. RELINQUISHED BY FEDEX		DATE	TIME	2. RECEIVED BY	DATE	TIME
3. RELINQUISHED BY fedex		DATE 12-2-22	TIME 945	3. RECEIVED BY	DATE 12-2-22	TIME 945
COMMENTS				T=3.8°C		

DISTRIBUTION: WHITE (ACCOMPANIES SAMPLE) YELLOW (FIELD COPY) PINK (FILE COPY)

4/02R
FORM NO. TINUS-001

PACE ANALYTICAL SERVICES, LLC

DC#_Title: ENV-FRM-WCOL-0286 v02_Samples Receipt Checklist (SRC)
Effective Date: 8/2/2022

Sample Receipt Checklist (SRC)

Client: Tetra Tech Cooler Inspected by/date: KDRW / 12/02/2022 Lot #: XL02019

Means of receipt: ☐ Pace ☐ Client ☐ UPS ☑ FedEx ☐ Other: ____

☐ Yes	☑ No		1. Were custody seals present on the cooler?
☐ Yes	☐ No	☑ NA	2. If custody seals were present, were they intact and unbroken?

pH Strip ID: NA Chlorine Strip ID: NA Tested by: NA

Original temperature upon receipt / Derived (Corrected) temperature upon receipt %Solid Snap-Cup ID: NA

3.2 / 3.2 °C NA / NA °C NA / NA °C NA / NA °C

Method: ☑ Temperature Blank ☐ Against Bottles IR Gun ID: 8 IR Gun Correction Factor: 0 °C

Method of coolant: ☑ Wet Ice ☐ Ice Packs ☐ Dry Ice ☐ None

☑ Yes	☐ No	☐ NA	3. Were all coolers received at or below 6.0°C? If no, was Project Manager notified? PM was Notified by: phone / email / face-to-face (circle one).
☑ Yes	☐ No	☐ NA	4. Is the commercial courier's packing slip attached to this form?
☑ Yes	☐ No		5. Were proper custody procedures (relinquished/received) followed?
☑ Yes	☐ No		6. Were sample IDs listed on the COC and all sample containers?
☑ Yes	☐ No		7. Was collection date & time listed on the COC and all sample containers?
☑ Yes	☐ No		8. Did all container label information (ID, date, time) agree with the COC?
☑ Yes	☐ No		9. Were tests to be performed listed on the COC?
☑ Yes	☐ No		10. Did all samples arrive in the proper containers for each test and/or in good condition (unbroken, lids on, etc.)? ____
☑ Yes	☐ No		11. Was adequate sample volume available?
☑ Yes	☐ No		12. Were all samples received within ½ the holding time or 48 hours, whichever comes first?
☑ Yes	☐ No		13. Were all samples containers accounted for? (No missing/excess)
☑ Yes	☐ No	☐ NA	14. Were VOA, 8015C and RSK-175 samples free of bubbles >"pea-size" (¼" or 6mm in diameter) in any of the VOA vials?
☐ Yes	☐ No	☑ NA	15. Were all DRO/metals/nutrient samples received at a pH of < 2?
☐ Yes	☐ No	☑ NA	16. Were all cyanide samples received at a pH > 12 and sulfide samples received at a pH > 9?
☐ Yes	☐ No	☑ NA	17. Were all applicable NH_3/TKN/cyanide/phenol/625.1/608.3 (< 0.5mg/L) samples free of residual chlorine?
☑ Yes	☐ No	☐ NA	18. Was the quote number listed on the container label? If yes, Quote # 34792

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

Sample(s) NA ____ were received incorrectly preserved and were adjusted accordingly in sample receiving with NA ____ mL of circle one: H2SO4, HNO3, HCl, NaOH using SR # NA ____. ☐
Time of preservation NA ____. If more than one preservative is needed, please note in the comments below.

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

Samples(s) NA ____ were received with TRC > 0.5 mg/L. (If #19 is ***no***) and were adjusted accordingly in sample receiving with sodium thiosulfate ($Na_2S_2O_3$) with Unique ID: NA ____.

Comments:

Qualtrax ID: 56360 Pace® Analytical Services, LLC Page 1 of 1

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

e-Hardcopy 2.0
Automated Report

Technical Report for

Tetra Tech NUS

KSC-CRCA

112G8970

SGS Job Number: FC1494

Sampling Dates: 12/19/22 - 12/20/22

Report to:

Tetra-Tech,Inc.
661 Andersen Drive Foster Plaza 7
Pittsburgh, PA 15220
amy.thomson@tetratech.com; carrie.stock@tetratech.com;
alex.murphy@tetratech.com
ATTN: Amy Thomson

Total number of pages in report: **163**

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

Norm Farmer
Technical Director

Client Service contact: Andrea Colby 407-425-6700

Certifications: FL(E83510), LA(03051), KS(E-10327), NC(573), NJ(FL002), NY(12022), SC(96038001) DoD ELAP(ANAB L2229), AZ(AZ0806), CA(2937), TX(T104704404), PA(68-03573), VA(460177), AL, AK, AR, CT, IA, KY, MA, MI. MS, ND, NH, NV, OK, OR, IL, UT, VT, WA, WI, WV

This report shall not be reproduced, except in its entirety, without the written approval of SGS.
Test results relate only to samples analyzed.

SGS is the sole authority for authorizing edits or modifications to this document.
Unauthorized modification of this report is strictly prohibited.
Review standard terms at: http://www.sgs.com/en/terms-and-conditions

Please share your ideas about how we can serve you better at:
EHS.US.CustomerCare@sgs.com

Table of Contents

Section 1: Sample Summary 4
Section 2: Case Narrative/Conformance Summary 7
Section 3: Summary of Hits 10
Section 4: Sample Results 16
4.1: FC1494-1: CRCA-DPT0275-008.0-20221219 17
4.2: FC1494-2: CRCA-DPT0275-018.0-20221219 19
4.3: FC1494-3: CRCA-DPT0275-023.0-20221219 21
4.4: FC1494-4: CRCA-DPT0275-028.0-20221219 25
4.5: FC1494-5: CRCA-DPT0275-033.0-20221219 27
4.6: FC1494-6: CRCA-DPT0275-038.0-20221219 31
4.7: FC1494-7: CRCA-DPT0275-043.0-20221219 33
4.8: FC1494-8: CRCA-DPT0275-048.0-20221219 37
4.9: FC1494-9: CRCA-DPT0275-053.0-20221219 39
4.10: FC1494-10: CRCA-DPT0275-058.0-20221219 41
4.11: FC1494-11: CRCA-DPT0276-008.0-20221219 45
4.12: FC1494-12: CRCA-DPT0276-018.0-20221219 47
4.13: FC1494-13: CRCA-DPT0276-023.0-20221219 49
4.14: FC1494-14: CRCA-DPT0276-028.0-20221219 53
4.15: FC1494-15: CRCA-DPT0276-033.0-20221219 55
4.16: FC1494-16: CRCA-DPT0276-038.0-20221219 59
4.17: FC1494-17: CRCA-DPT0276-043.0-20221219 61
4.18: FC1494-18: CRCA-DPT0276-048.0-20221219 65
4.19: FC1494-19: CRCA-DPT0276-053.0-20221220 67
4.20: FC1494-20: CRCA-DPT0276-058.0-20221220 69
4.21: FC1494-21: CRCA-DPT0277-008.0-20221220 73
4.22: FC1494-22: CRCA-DPT0277-018.0-20221220 75
4.23: FC1494-23: CRCA-DPT0277-023.0-20221220 77
4.24: FC1494-24: CRCA-DPT0277-028.0-20221220 81
4.25: FC1494-25: CRCA-DPT0277-033.0-20221220 83
4.26: FC1494-26: CRCA-DPT0277-038.0-20221220 87
4.27: FC1494-27: CRCA-DPT0277-043.0-20221220 89
4.28: FC1494-28: CRCA-DPT0277-048.0-20221220 93
4.29: FC1494-29: CRCA-DPT0277-053.0-20221220 95
4.30: FC1494-30: CRCA-DPT0277-058.0-20221220 97
4.31: FC1494-31: CRCA-DPT0278-008.0-20221220 101
4.32: FC1494-32: CRCA-DPT0278-018.0-20221220 103
4.33: FC1494-33: CRCA-DPT0278-023.0-20221220 105
4.34: FC1494-34: CRCA-DPT0278-028.0-20221220 109
Section 5: Misc. Forms 111
5.1: Chain of Custody 112
Section 6: MS Volatiles - QC Data Summaries 116
6.1: Method Blank Summary 117

Sections: 1 2 3 4 5 6 7

Table of Contents

6.2: Blank Spike Summary 123
6.3: Matrix Spike/Matrix Spike Duplicate Summary 129
Section 7: MS Semi-volatiles - QC Data Summaries 135
7.1: Method Blank Summary 136
7.2: Blank Spike Summary 152
7.3: Matrix Spike Summary 160
7.4: Duplicate Summary 162

SGS North America Inc.

Sample Summary

Tetra Tech NUS

Job No: FC1494

KSC-CRCA
Project No: 112G8970

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
FC1494-1	12/19/22	11:20	CO	12/20/22	AQ	Ground Water	CRCA-DPT0275-008.0-20221219
FC1494-2	12/19/22	11:30	CO	12/20/22	AQ	Ground Water	CRCA-DPT0275-018.0-20221219
FC1494-3	12/19/22	11:45	CO	12/20/22	AQ	Ground Water	CRCA-DPT0275-023.0-20221219
FC1494-4	12/19/22	12:05	CO	12/20/22	AQ	Ground Water	CRCA-DPT0275-028.0-20221219
FC1494-5	12/19/22	12:20	CO	12/20/22	AQ	Ground Water	CRCA-DPT0275-033.0-20221219
FC1494-6	12/19/22	12:40	CO	12/20/22	AQ	Ground Water	CRCA-DPT0275-038.0-20221219
FC1494-7	12/19/22	13:00	CO	12/20/22	AQ	Ground Water	CRCA-DPT0275-043.0-20221219
FC1494-8	12/19/22	13:20	CO	12/20/22	AQ	Ground Water	CRCA-DPT0275-048.0-20221219
FC1494-9	12/19/22	13:40	CO	12/20/22	AQ	Ground Water	CRCA-DPT0275-053.0-20221219
FC1494-10	12/19/22	14:30	CO	12/20/22	AQ	Ground Water	CRCA-DPT0275-058.0-20221219
FC1494-11	12/19/22	15:20	CO	12/20/22	AQ	Ground Water	CRCA-DPT0276-008.0-20221219
FC1494-12	12/19/22	15:33	CO	12/20/22	AQ	Ground Water	CRCA-DPT0276-018.0-20221219
FC1494-13	12/19/22	15:45	CO	12/20/22	AQ	Ground Water	CRCA-DPT0276-023.0-20221219

Sample Summary
(continued)

Tetra Tech NUS

Job No: FC1494

KSC-CRCA
Project No: 112G8970

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
FC1494-14	12/19/22	16:00	CO	12/20/22	AQ	Ground Water	CRCA-DPT0276-028.0-20221219
FC1494-15	12/19/22	16:20	CO	12/20/22	AQ	Ground Water	CRCA-DPT0276-033.0-20221219
FC1494-16	12/19/22	16:55	CO	12/20/22	AQ	Ground Water	CRCA-DPT0276-038.0-20221219
FC1494-17	12/19/22	17:15	CO	12/20/22	AQ	Ground Water	CRCA-DPT0276-043.0-20221219
FC1494-18	12/19/22	17:40	CO	12/20/22	AQ	Ground Water	CRCA-DPT0276-048.0-20221219
FC1494-19	12/20/22	07:50	CO	12/20/22	AQ	Ground Water	CRCA-DPT0276-053.0-20221220
FC1494-20	12/20/22	08:10	CO	12/20/22	AQ	Ground Water	CRCA-DPT0276-058.0-20221220
FC1494-21	12/20/22	09:25	CO	12/20/22	AQ	Ground Water	CRCA-DPT0277-008.0-20221220
FC1494-22	12/20/22	09:35	CO	12/20/22	AQ	Ground Water	CRCA-DPT0277-018.0-20221220
FC1494-23	12/20/22	09:55	CO	12/20/22	AQ	Ground Water	CRCA-DPT0277-023.0-20221220
FC1494-24	12/20/22	10:15	CO	12/20/22	AQ	Ground Water	CRCA-DPT0277-028.0-20221220
FC1494-25	12/20/22	10:50	CO	12/20/22	AQ	Ground Water	CRCA-DPT0277-033.0-20221220
FC1494-26	12/20/22	11:20	CO	12/20/22	AQ	Ground Water	CRCA-DPT0277-038.0-20221220

Sample Summary
(continued)

Tetra Tech NUS

Job No: FC1494

KSC-CRCA
Project No: 112G8970

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
FC1494-27	12/20/22	11:40	CO	12/20/22	AQ	Ground Water	CRCA-DPT0277-043.0-20221220
FC1494-28	12/20/22	12:05	CO	12/20/22	AQ	Ground Water	CRCA-DPT0277-048.0-20221220
FC1494-29	12/20/22	12:45	CO	12/20/22	AQ	Ground Water	CRCA-DPT0277-053.0-20221220
FC1494-30	12/20/22	13:10	CO	12/20/22	AQ	Ground Water	CRCA-DPT0277-058.0-20221220
FC1494-31	12/20/22	14:25	CO	12/20/22	AQ	Ground Water	CRCA-DPT0278-008.0-20221220
FC1494-32	12/20/22	14:35	CO	12/20/22	AQ	Ground Water	CRCA-DPT0278-018.0-20221220
FC1494-33	12/20/22	14:50	CO	12/20/22	AQ	Ground Water	CRCA-DPT0278-023.0-20221220
FC1494-34	12/20/22	15:10	CO	12/20/22	AQ	Ground Water	CRCA-DPT0278-028.0-20221220

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: Tetra Tech NUS **Job No:** FC1494

Site: KSC-CRCA **Report Date:** 1/13/2023 12:23:11 PM

On 12/20/2022, 34 Sample(s), 0 Trip Blank(s) and 0 Field Blank(s) were received at SGS North America Inc - Orlando. at a maximum corrected temperature of 2.8 C. Samples were intact and chemically preserved, unless noted below. A SGS North America Inc. - Orlando Job Number of FC1494 was assigned to the project.

Laboratory sample ID, client sample ID and dates of sample collection are detailed in the report's Results Summary Section. Specified quality control criteria were achieved for this job except as noted below. For more information, please refer to the analytical results and QC summary pages.

MS Volatiles By Method SW846 8260D

Matrix: AQ **Batch ID:** V1A1705

Sample(s) FC1512-1MS, FC1512-1MSD were used as the QC samples indicated.

Matrix Spike Recovery(s) for Dibromochloromethane are outside control limits. Probable cause is due to matrix interference.

FC1494-19: Sample vial(s) contained significant headspace.

Matrix: AQ **Batch ID:** V5E1629

Sample(s) FC1423-22MS, FC1423-22MSD were used as the QC samples indicated.

Matrix Spike Recovery(s) for Methyl Bromide are outside control limits. Probable cause is due to matrix interference.

RPD(s) for MSD for Methyl Bromide are outside control limits for sample FC1423-22MSD. Probable cause is due to sample non-homogeneity.

FC1494-4: Sample was not preserved to a pH < 2.

FC1494-5: Sample was not preserved to a pH < 2.

FC1494-6: Sample was not preserved to a pH < 2. Sample vial(s) contained bubbles greater than 6mm.

FC1494-7: Sample was not preserved to a pH < 2. Sample vial(s) contained bubbles greater than 6mm.

FC1494-8: Sample was not preserved to a pH < 2. Sample vial(s) contained bubbles greater than 6mm.

FC1494-9: Sample was not preserved to a pH < 2.

FC1494-10: Sample was not preserved to a pH < 2.

FC1494-12: Sample was not preserved to a pH < 2.

FC1494-13: Sample vial(s) contained bubbles greater than 6mm.

FC1494-14: Sample was not preserved to a pH < 2.

FC1494-15: Sample was not preserved to a pH < 2.

FC1494-16: Sample was not preserved to a pH < 2. Sample vial(s) contained bubbles greater than 6mm.

FC1494-17: Sample was not preserved to a pH < 2. Sample vial(s) contained bubbles greater than 6mm.

FC1494-18: Sample was not preserved to a pH < 2.

FC1494-34: Sample was not preserved to a pH < 2.

Matrix: AQ **Batch ID:** VI2795

Sample(s) FC1460-2MS, FC1460-2MSD were used as the QC samples indicated.

Matrix Spike Recovery(s) for Chloroethane are outside control limits. Probable cause is due to matrix interference.

Matrix Spike Duplicate Recovery(s) for Chloroethane are outside control limits. Probable cause is due to matrix interference.

FC1494-22 for Chloroethane: Associated CCV outside control limits low.

FC1494-22 for Methyl Bromide: Associated CCV outside control limits high, sample is ND.

FC1494-22: Sample was not preserved to a pH < 2.

FC1494-23 for Chloroethane: Associated CCV outside control limits low.

FC1494-23 for Methyl Bromide: Associated CCV outside control limits high, sample is ND.

FC1494-23: Sample was not preserved to a pH < 2.

FC1494-24 for Chloroethane: Associated CCV outside control limits low.

FC1494-24 for Methyl Bromide: Associated CCV outside control limits high, sample is ND.

FC1494-24: Sample was not preserved to a pH < 2.

FC1494-25 for Chloroethane: Associated CCV outside control limits low.

FC1494-25 for Methyl Bromide: Associated CCV outside control limits high, sample is ND.

FC1494-25: Sample was not preserved to a pH < 2.

FC1494-26 for Chloroethane: Associated CCV outside control limits low.

FC1494-26 for Methyl Bromide: Associated CCV outside control limits high, sample is ND.

MS Volatiles By Method SW846 8260D

Matrix: AQ **Batch ID:** VI2795

FC1494-26: Sample was not preserved to a pH < 2.

FC1494-27 for Chloroethane: Associated CCV outside control limits low.

FC1494-27 for Methyl Bromide: Associated CCV outside control limits high, sample is ND.

FC1494-27: Sample was not preserved to a pH < 2.

FC1494-28 for Chloroethane: Associated CCV outside control limits low.

FC1494-28 for Methyl Bromide: Associated CCV outside control limits high, sample is ND.

FC1494-28: Sample was not preserved to a pH < 2.

FC1494-29 for Chloroethane: Associated CCV outside control limits low.

FC1494-29 for Methyl Bromide: Associated CCV outside control limits high, sample is ND.

FC1494-29: Sample was not preserved to a pH < 2.

FC1494-30 for Chloroethane: Associated CCV outside control limits low.

FC1494-30 for Methyl Bromide: Associated CCV outside control limits high, sample is ND.

FC1494-30: Sample was not preserved to a pH < 2.

FC1494-32 for Chloroethane: Associated CCV outside control limits low.

FC1494-32 for Methyl Bromide: Associated CCV outside control limits high, sample is ND.

FC1494-33 for Chloroethane: Associated CCV outside control limits low.

FC1494-33 for Methyl Bromide: Associated CCV outside control limits high, sample is ND.

FC1494-33: Sample was not preserved to a pH < 2.

MS Semi-volatiles By Method EPA 537M QSM5.3 B-15

Matrix: AQ **Batch ID:** OP94730

Sample(s) FC1494-1MS, FC1494-3DUP, FC1494-1MS were used as the QC samples indicated.

Sample(s) FC1494-1 have compound(s) reported with a “B” qualifier, indicating analyte is found in the associated method blank.

RPD(s) for Duplicate for Perfluorobutanesulfonic acid, Perfluorooctanoic acid, Perfluoropentanesulfonic acid are outside control limits for sample OP94730-DUP. Probable cause is due to sample non-homogeneity.

Sample(s) FC1494-1, FC1494-17, FC1494-27 have surrogates outside control limits.

OP94730-MB: Associated samples were re-extracted.

FC1494-1 for 13C2-4:2FTS: Associated ID Standard outside control limits, Confirmed by re-analysis. Insufficient sample to re-extract.

FC1494-1 for Perfluorobutanoic acid: Associated ID Standard outside control limits.

FC1494-1: Confirmation run.

FC1494-1: Insufficient sample for re-extraction.

FC1494-3: Insufficient sample for re-extraction.

FC1494-17: Confirmation run.

FC1494-27: Confirmation run.

Matrix: AQ **Batch ID:** OP94826

Sample(s) FC1494-5, FC1494-7 have surrogates outside control limits.

FC1494-7: Confirmation run.

FC1494-7: Insufficient sample for re-extraction.

FC1494-7 for Perfluorobutanesulfonic acid: Associated ID Standard outside control limits.

FC1494-5 for 13C2-4:2FTS: Outside control limits.

FC1494-5 for 13C2-PFTeDA: Outside control limits.

FC1494-5 for 13C8-FOSA: Outside control limits.

FC1494-5 for 13C5-PFPeA: Outside control limits.

FC1494-5 for 13C4-PFBA: Outside control limits.

FC1494-5 for 13C2-PFTeDA: Outside control limits.

FC1494-5 for 13C8-FOSA: Outside control limits.

FC1494-5 for 13C3-HFPO-DA: Outside control limits.

FC1494-5 for Perfluorotetradecanoic acid: Associated ID Standard outside control limits.

FC1494-5 for PFOSA: Associated ID Standard outside control limits.

FC1494-5 for 13C2-8:2FTS: Outside control limits.

Matrix: AQ **Batch ID:** OP94827

Sample(s) FC1494-11, FC1494-13, FC1494-17, FC1494-21, FC1494-27, FC1494-31 have surrogates outside control limits.

MS Semi-volatiles By Method EPA 537M QSM5.3 B-15

Matrix: AQ **Batch ID:** OP94827

FC1494-11 for 13C2-PFTeDA: Outside control limits.
FC1494-11 for 13C4-PFBA: Outside control limits.
FC1494-11 for 13C8-FOSA: Outside control limits.
FC1494-11 for 13C8-FOSA: Outside control limits.
FC1494-11 for PFOSA: Associated ID Standard outside control limits.
FC1494-13 for 13C8-FOSA: Outside control limits.
FC1494-17 for 13C8-FOSA: Outside control limits.
FC1494-17 for PFOSA: Associated ID Standard outside control limits.
FC1494-21 for 13C2-PFTeDA: Outside control limits.
FC1494-21 for 13C2-PFTeDA: Outside control limits.
FC1494-21 for Perfluorotetradecanoic acid: Associated ID Standard outside control limits.
FC1494-27 for 13C2-PFTeDA: Outside control limits.
FC1494-27 for 13C4-PFBA: Outside control limits.
FC1494-27 for Perfluorobutanoic acid: Associated ID Standard outside control limits. Confirmed by re-extraction and reanalysis.
FC1494-31 for 13C8-FOSA: Outside control limits.
FC1494-31 for PFOSA: Associated ID Standard outside control limits.
FC1494-31: Confirmation run.

SGS North America Inc. - Orlando certifies that data reported for samples received, listed on the associated custody chain or analytical task order, were produced to specifications meeting the Quality System precision, accuracy and completeness objectives except as noted. Estimated non-standard method measurement uncertainty data is available on request, based on quality control bias and implicit for standard methods. Acceptable uncertainty requires tested parameter quality control data to meet method criteria. SGS North America Inc.- Orlando is not responsible for data quality assumptions if partial reports are used and recommends that this report be used in its entirety.

Narrative prepared by:

_____

Kim Benham, Client Services *(Signature on File)*

Summary of Hits

Job Number: FC1494
Account: Tetra Tech NUS
Project: KSC-CRCA
Collected: 12/19/22 thru 12/20/22

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	PQL	MDL	Units	Method
FC1494-1	**CRCA-DPT0275-008.0-20221219**					
Perfluorobutanoic acid [a]		0.300 B	0.016	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid [b]		0.0031 IB	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid [b]		0.0036 IB	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid [b]		0.0040 IB	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid [b]		0.0067 IB	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorononanoic acid [b]		0.0022 IB	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorodecanoic acid [b]		0.0023 IB	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluoroundecanoic acid [b]		0.0020 IB	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorododecanoic acid [b]		0.0023 IB	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorotridecanoic acid [b]		0.0023 IB	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorotetradecanoic acid [b]		0.0023 IB	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid [b]		0.0030 IB	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanesulfonic acid [b]		0.0026 IB	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid [b]		0.0071 IB	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanesulfonic acid [b]		0.0022 IB	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid [b]		0.0114 B	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorononanesulfonic acid [b]		0.0021 IB	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
HFPO-DA (GenX) [b]		0.0079 IB	0.016	0.0040	ug/l	EPA 537M QSM5.3 B-15
FC1494-2	**CRCA-DPT0275-018.0-20221219**					
No hits reported in this sample.						
FC1494-3	**CRCA-DPT0275-023.0-20221219**					
Trichloroethylene		0.48 I	1.0	0.35	ug/l	SW846 8260D
Perfluorobutanoic acid		1.03	0.080	0.020	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid [b]		0.0170	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid [b]		0.0148	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid [b]		0.0108	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid [b]		0.0056 I	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid [b]		0.0023 I	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanesulfonic acid [b]		0.0024 I	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid [b]		0.0172	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
FC1494-4	**CRCA-DPT0275-028.0-20221219**					
No hits reported in this sample.						
FC1494-5	**CRCA-DPT0275-033.0-20221219**					
Perfluorobutanoic acid		0.639	0.080	0.020	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid		0.0133 I	0.040	0.010	ug/l	EPA 537M QSM5.3 B-15

Summary of Hits

Job Number: FC1494
Account: Tetra Tech NUS
Project: KSC-CRCA
Collected: 12/19/22 thru 12/20/22

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	PQL	MDL	Units	Method
Perfluorohexanoic acid		0.0107	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.0077 I	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0034 I	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0151	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
FC1494-6	**CRCA-DPT0275-038.0-20221219**					
No hits reported in this sample.						
FC1494-7	**CRCA-DPT0275-043.0-20221219**					
Perfluorobutanoic acid [a]		0.0111 I	0.016	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid [a]		0.0044 I	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid [b]		0.0022 I	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid [b]		0.0027 I	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
FC1494-8	**CRCA-DPT0275-048.0-20221219**					
Benzene [c]		0.46 I	1.0	0.31	ug/l	SW846 8260D
Carbon Disulfide [c]		0.61 I	2.0	0.53	ug/l	SW846 8260D
Toluene [c]		0.40 I	1.0	0.30	ug/l	SW846 8260D
Trichloroethylene [c]		1.8	1.0	0.35	ug/l	SW846 8260D
FC1494-9	**CRCA-DPT0275-053.0-20221219**					
No hits reported in this sample.						
FC1494-10	**CRCA-DPT0275-058.0-20221219**					
No hits reported in this sample.						
FC1494-11	**CRCA-DPT0276-008.0-20221219**					
Perfluorobutanoic acid		0.791	0.080	0.020	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0032 I	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.0031 I	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0030 I	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0021 I	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0269	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
FC1494-12	**CRCA-DPT0276-018.0-20221219**					
No hits reported in this sample.						

Summary of Hits

Job Number: FC1494
Account: Tetra Tech NUS
Project: KSC-CRCA
Collected: 12/19/22 thru 12/20/22

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	PQL	MDL	Units	Method
FC1494-13	**CRCA-DPT0276-023.0-20221219**					
Perfluorobutanoic acid		1.15	0.080	0.020	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid		0.0029 I	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0028 I	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0029 I	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0043 I	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
FC1494-14	**CRCA-DPT0276-028.0-20221219**					
Trichloroethylene [d]		0.59 I	1.0	0.35	ug/l	SW846 8260D
FC1494-15	**CRCA-DPT0276-033.0-20221219**					
Perfluorobutanoic acid		1.21	0.080	0.020	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0026 I	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0045 I	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0217	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
FC1494-16	**CRCA-DPT0276-038.0-20221219**					
Acetone [c]		21.3 I	25	10	ug/l	SW846 8260D
Benzene [c]		0.56 I	1.0	0.31	ug/l	SW846 8260D
2-Butanone (MEK) [c]		3.2 I	5.0	2.0	ug/l	SW846 8260D
Toluene [c]		0.45 I	1.0	0.30	ug/l	SW846 8260D
Trichloroethylene [c]		6.0	1.0	0.35	ug/l	SW846 8260D
FC1494-17	**CRCA-DPT0276-043.0-20221219**					
Benzene [c]		0.36 I	1.0	0.31	ug/l	SW846 8260D
Trichloroethylene [c]		0.79 I	1.0	0.35	ug/l	SW846 8260D
Perfluorobutanoic acid		0.351	0.016	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid		0.0039 I	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0029 I	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0022 I	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0045 I	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
FC1494-18	**CRCA-DPT0276-048.0-20221219**					
Vinyl Chloride [d]		2.4	1.0	0.41	ug/l	SW846 8260D
FC1494-19	**CRCA-DPT0276-053.0-20221220**					
Acetone [e]		13.1 I	25	10	ug/l	SW846 8260D
Benzene [e]		0.34 I	1.0	0.31	ug/l	SW846 8260D

Summary of Hits

Job Number: FC1494
Account: Tetra Tech NUS
Project: KSC-CRCA
Collected: 12/19/22 thru 12/20/22

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	PQL	MDL	Units	Method
2-Butanone (MEK) [e]		2.6 I	5.0	2.0	ug/l	SW846 8260D
Vinyl Chloride [e]		6.8	1.0	0.41	ug/l	SW846 8260D
FC1494-20	**CRCA-DPT0276-058.0-20221220**					
4-Methyl-2-pentanone (MIBK)		3.7 I	5.0	1.0	ug/l	SW846 8260D
Trichloroethylene		0.38 I	1.0	0.35	ug/l	SW846 8260D
FC1494-21	**CRCA-DPT0277-008.0-20221220**					
Perfluorobutanoic acid		1.48	0.080	0.020	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid		0.0197	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0195	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.0204	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0122	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorononanoic acid		0.0030 I	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid		0.0045 I	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanesulfonic acid		0.0052 I	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0481	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanesulfonic acid		0.0023 I	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.137	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
FC1494-22	**CRCA-DPT0277-018.0-20221220**					
No hits reported in this sample.						
FC1494-23	**CRCA-DPT0277-023.0-20221220**					
Perfluorobutanoic acid		0.782	0.016	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid		0.0136	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0129	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.0113	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0146	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorononanoic acid		0.0024 I	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanesulfonic acid		0.0026 I	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0281	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0301	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
FC1494-24	**CRCA-DPT0277-028.0-20221220**					
No hits reported in this sample.						
FC1494-25	**CRCA-DPT0277-033.0-20221220**					
Trichloroethylene [d]		1.5	1.0	0.35	ug/l	SW846 8260D

Summary of Hits

Job Number: FC1494
Account: Tetra Tech NUS
Project: KSC-CRCA
Collected: 12/19/22 thru 12/20/22

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	PQL	MDL	Units	Method
Perfluorobutanoic acid		0.792	0.016	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid		0.0148	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0125	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.0092	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0120	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid		0.0042 I	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanesulfonic acid		0.0022 I	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0239	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0259	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
FC1494-26	**CRCA-DPT0277-038.0-20221220**					
No hits reported in this sample.						
FC1494-27	**CRCA-DPT0277-043.0-20221220**					
Perfluorobutanoic acid [f]		0.836	0.080	0.020	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid		0.0043 I	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0054 I	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.0036 I	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0116	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0029 I	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0086	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
FC1494-28	**CRCA-DPT0277-048.0-20221220**					
No hits reported in this sample.						
FC1494-29	**CRCA-DPT0277-053.0-20221220**					
No hits reported in this sample.						
FC1494-30	**CRCA-DPT0277-058.0-20221220**					
No hits reported in this sample.						
FC1494-31	**CRCA-DPT0278-008.0-20221220**					
Perfluorobutanoic acid		0.430	0.016	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid		0.0030 I	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0035 I	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.0027 I	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0046 I	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorodecanoic acid		0.0030 I	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0038 I	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15

Summary of Hits

Job Number: FC1494
Account: Tetra Tech NUS
Project: KSC-CRCA
Collected: 12/19/22 thru 12/20/22

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	PQL	MDL	Units	Method
Perfluorooctanesulfonic acid		0.0083	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
FC1494-32	**CRCA-DPT0278-018.0-20221220**					
No hits reported in this sample.						
FC1494-33	**CRCA-DPT0278-023.0-20221220**					
Perfluorobutanoic acid		0.735	0.016	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid		0.0036 I	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0052 I	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.0028 I	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0091	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0025 I	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0026 I	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
FC1494-34	**CRCA-DPT0278-028.0-20221220**					
No hits reported in this sample.						

(a) Insufficient sample for re-extraction. Associated ID Standard outside control limits.
(b) Insufficient sample for re-extraction.
(c) Sample was not preserved to a pH < 2. Sample vial(s) contained bubbles greater than 6mm.
(d) Sample was not preserved to a pH < 2.
(e) Sample vial(s) contained significant headspace.
(f) Associated ID Standard outside control limits. Confirmed by re-extraction and reanalysis.

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID: CRCA-DPT0275-008.0-20221219
Lab Sample ID: FC1494-1
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: KSC-CRCA

Date Sampled: 12/19/22
Date Received: 12/20/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	Q98666.D	1	12/31/22 19:34	AL	12/28/22 09:05	OP94730	SQ2107
Run #2 [b]	4Q38562.D	1	01/03/23 13:47	AL	12/28/22 09:05	OP94730	S4Q555

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2	125 ml	1.0 ml

CAS No.	Compound	Result	PQL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid [c]	0.300	0.016	0.0040	ug/l	B
2706-90-3	Perfluoropentanoic acid	0.0031	0.0080	0.0020	ug/l	IB
307-24-4	Perfluorohexanoic acid	0.0036	0.0080	0.0020	ug/l	IB
375-85-9	Perfluoroheptanoic acid	0.0040	0.0080	0.0020	ug/l	IB
335-67-1	Perfluorooctanoic acid	0.0067	0.0080	0.0020	ug/l	IB
375-95-1	Perfluorononanoic acid	0.0022	0.0080	0.0020	ug/l	IB
335-76-2	Perfluorodecanoic acid	0.0023	0.0080	0.0020	ug/l	IB
2058-94-8	Perfluoroundecanoic acid	0.0020	0.0080	0.0020	ug/l	IB
307-55-1	Perfluorododecanoic acid	0.0023	0.0080	0.0020	ug/l	IB
72629-94-8	Perfluorotridecanoic acid	0.0023	0.0080	0.0020	ug/l	IB
376-06-7	Perfluorotetradecanoic acid	0.0023	0.0080	0.0020	ug/l	IB
PERFLUOROALKYLSULFONIC ACIDS						
375-73-5	Perfluorobutanesulfonic acid	0.0030	0.0080	0.0020	ug/l	IB
2706-91-4	Perfluoropentanesulfonic acid	0.0026	0.0080	0.0020	ug/l	IB
355-46-4	Perfluorohexanesulfonic acid	0.0071	0.0080	0.0020	ug/l	IB
375-92-8	Perfluoroheptanesulfonic acid	0.0022	0.0080	0.0020	ug/l	IB
1763-23-1	Perfluorooctanesulfonic acid	0.0114	0.0080	0.0020	ug/l	B
68259-12-1	Perfluorononanesulfonic acid	0.0021	0.0080	0.0020	ug/l	IB
335-77-3	Perfluorodecanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA	0.0020 U	0.0080	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	0.0040 U	0.016	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0040 U	0.016	0.0040	ug/l	
FLUOROTELOMER SULFONATES						
757124-72-4	4:2 Fluorotelomer sulfonate	0.0040 U	0.016	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0040 U	0.016	0.0040	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: CRCA-DPT0275-008.0-20221219
Lab Sample ID: FC1494-1
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: KSC-CRCA

Date Sampled: 12/19/22
Date Received: 12/20/22
Percent Solids: n/a

CAS No.	Compound	Result	PQL	MDL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0040 U	0.016	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES						
13252-13-6	HFPO-DA (GenX)	0.0079	0.016	0.0040	ug/l	IB
919005-14-4	ADONA	0.0040 U	0.016	0.0040	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0040 U	0.016	0.0040	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0040 U	0.016	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	41% e	35% d	50-150%
	13C5-PFPeA	42% e	31% d	50-150%
	13C5-PFHxA	45% e	37% d	50-150%
	13C4-PFHpA	51%	40% d	50-150%
	13C8-PFOA	55%	47% d	50-150%
	13C9-PFNA	56%	46% d	50-150%
	13C6-PFDA	56%	46% d	50-150%
	13C7-PFUnDA	56%	49% d	50-150%
	13C2-PFDoDA	48% e	45% d	50-150%
	13C2-PFTeDA	46% e	45% d	50-150%
	13C3-PFBS	44% e	36% d	50-150%
	13C3-PFHxS	51%	47% d	50-150%
	13C8-PFOS	58%	54%	50-150%
	13C8-FOSA	51%	47% d	50-150%
	d3-MeFOSAA	60%	56%	50-150%
	d5-EtFOSAA	60%	54%	50-150%
	13C2-4:2FTS	48% e	40% d	50-150%
	13C2-6:2FTS	63%	49% d	50-150%
	13C2-8:2FTS	59%	45% d	50-150%
	13C3-HFPO-DA	45% e	41% d	50-150%

(a) Insufficient sample for re-extraction.
(b) Confirmation run.
(c) Associated ID Standard outside control limits.
(d) Associated ID Standard outside control limits, Confirmed by re-analysis. Insufficient sample to re-extract.
(e) Outside control limits.

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0275-018.0-20221219		
Lab Sample ID:	FC1494-2	**Date Sampled:**	12/19/22
Matrix:	AQ - Ground Water	**Date Received:**	12/20/22
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	KSC-CRCA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5E36253.D	1	12/22/22 11:47	CF	n/a	n/a	V5E1629
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL 4.2 List

CAS No.	Compound	Result	PQL	MDL	Units	Q
67-64-1	Acetone	10 U	25	10	ug/l	
71-43-2	Benzene	0.31 U	1.0	0.31	ug/l	
75-27-4	Bromodichloromethane	0.24 U	1.0	0.24	ug/l	
75-25-2	Bromoform	0.41 U	1.0	0.41	ug/l	
78-93-3	2-Butanone (MEK)	2.0 U	5.0	2.0	ug/l	
75-15-0	Carbon Disulfide	0.53 U	2.0	0.53	ug/l	
56-23-5	Carbon Tetrachloride	0.36 U	1.0	0.36	ug/l	
108-90-7	Chlorobenzene	0.20 U	1.0	0.20	ug/l	
75-00-3	Chloroethane	0.67 U	2.0	0.67	ug/l	
67-66-3	Chloroform	0.30 U	1.0	0.30	ug/l	
110-82-7	Cyclohexane	0.39 U	1.0	0.39	ug/l	
124-48-1	Dibromochloromethane	0.28 U	1.0	0.28	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	1.0 U	5.0	1.0	ug/l	
106-93-4	1,2-Dibromoethane	0.28 U	2.0	0.28	ug/l	
75-71-8	Dichlorodifluoromethane	0.50 U	2.0	0.50	ug/l	
95-50-1	1,2-Dichlorobenzene	0.32 U	1.0	0.32	ug/l	
541-73-1	1,3-Dichlorobenzene	0.22 U	1.0	0.22	ug/l	
106-46-7	1,4-Dichlorobenzene	0.26 U	1.0	0.26	ug/l	
75-34-3	1,1-Dichloroethane	0.34 U	1.0	0.34	ug/l	
107-06-2	1,2-Dichloroethane	0.31 U	1.0	0.31	ug/l	
75-35-4	1,1-Dichloroethylene	0.32 U	1.0	0.32	ug/l	
156-59-2	cis-1,2-Dichloroethylene	0.28 U	1.0	0.28	ug/l	
156-60-5	trans-1,2-Dichloroethylene	0.22 U	1.0	0.22	ug/l	
78-87-5	1,2-Dichloropropane	0.43 U	1.0	0.43	ug/l	
10061-01-5	cis-1,3-Dichloropropene	0.29 U	1.0	0.29	ug/l	
10061-02-6	trans-1,3-Dichloropropene	0.21 U	1.0	0.21	ug/l	
100-41-4	Ethylbenzene	0.36 U	1.0	0.36	ug/l	
76-13-1	Freon 113	0.48 U	1.0	0.48	ug/l	
591-78-6	2-Hexanone	2.0 U	10	2.0	ug/l	
98-82-8	Isopropylbenzene	0.22 U	1.0	0.22	ug/l	
79-20-9	Methyl Acetate	5.0 U	20	5.0	ug/l	
74-83-9	Methyl Bromide	2.0 U	5.0	2.0	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0275-018.0-20221219		
Lab Sample ID:	FC1494-2	**Date Sampled:**	12/19/22
Matrix:	AQ - Ground Water	**Date Received:**	12/20/22
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	KSC-CRCA		

VOA TCL 4.2 List

CAS No.	Compound	Result	PQL	MDL	Units	Q
74-87-3	Methyl Chloride	0.50 U	2.0	0.50	ug/l	
108-87-2	Methylcyclohexane	0.44 U	1.0	0.44	ug/l	
75-09-2	Methylene Chloride	2.0 U	5.0	2.0	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	1.0 U	5.0	1.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	0.23 U	1.0	0.23	ug/l	
100-42-5	Styrene	0.22 U	1.0	0.22	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	0.30 U	1.0	0.30	ug/l	
127-18-4	Tetrachloroethylene	0.22 U	1.0	0.22	ug/l	
108-88-3	Toluene	0.30 U	1.0	0.30	ug/l	
120-82-1	1,2,4-Trichlorobenzene	0.50 U	2.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	0.25 U	1.0	0.25	ug/l	
79-00-5	1,1,2-Trichloroethane	0.47 U	1.0	0.47	ug/l	
79-01-6	Trichloroethylene	0.35 U	1.0	0.35	ug/l	
75-69-4	Trichlorofluoromethane	0.50 U	2.0	0.50	ug/l	
75-01-4	Vinyl Chloride	0.41 U	1.0	0.41	ug/l	
1330-20-7	Xylene (total)	0.72 U	3.0	0.72	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	103%		83-118%
17060-07-0	1,2-Dichloroethane-D4	101%		79-125%
2037-26-5	Toluene-D8	97%		85-112%
460-00-4	4-Bromofluorobenzene	100%		83-118%

U = Not detected MDL = Method Detection Limit
PQL = Practical Quantitation Limit
L = Indicates value exceeds calibration range
I = Result > = MDL but < PQL J = Estimated value
V = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0275-023.0-20221219		
Lab Sample ID:	FC1494-3	**Date Sampled:**	12/19/22
Matrix:	AQ - Ground Water	**Date Received:**	12/20/22
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	KSC-CRCA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5E36254.D	1	12/22/22 12:10	CF	n/a	n/a	V5E1629
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL 4.2 List

CAS No.	Compound	Result	PQL	MDL	Units	Q
67-64-1	Acetone	10 U	25	10	ug/l	
71-43-2	Benzene	0.31 U	1.0	0.31	ug/l	
75-27-4	Bromodichloromethane	0.24 U	1.0	0.24	ug/l	
75-25-2	Bromoform	0.41 U	1.0	0.41	ug/l	
78-93-3	2-Butanone (MEK)	2.0 U	5.0	2.0	ug/l	
75-15-0	Carbon Disulfide	0.53 U	2.0	0.53	ug/l	
56-23-5	Carbon Tetrachloride	0.36 U	1.0	0.36	ug/l	
108-90-7	Chlorobenzene	0.20 U	1.0	0.20	ug/l	
75-00-3	Chloroethane	0.67 U	2.0	0.67	ug/l	
67-66-3	Chloroform	0.30 U	1.0	0.30	ug/l	
110-82-7	Cyclohexane	0.39 U	1.0	0.39	ug/l	
124-48-1	Dibromochloromethane	0.28 U	1.0	0.28	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	1.0 U	5.0	1.0	ug/l	
106-93-4	1,2-Dibromoethane	0.28 U	2.0	0.28	ug/l	
75-71-8	Dichlorodifluoromethane	0.50 U	2.0	0.50	ug/l	
95-50-1	1,2-Dichlorobenzene	0.32 U	1.0	0.32	ug/l	
541-73-1	1,3-Dichlorobenzene	0.22 U	1.0	0.22	ug/l	
106-46-7	1,4-Dichlorobenzene	0.26 U	1.0	0.26	ug/l	
75-34-3	1,1-Dichloroethane	0.34 U	1.0	0.34	ug/l	
107-06-2	1,2-Dichloroethane	0.31 U	1.0	0.31	ug/l	
75-35-4	1,1-Dichloroethylene	0.32 U	1.0	0.32	ug/l	
156-59-2	cis-1,2-Dichloroethylene	0.28 U	1.0	0.28	ug/l	
156-60-5	trans-1,2-Dichloroethylene	0.22 U	1.0	0.22	ug/l	
78-87-5	1,2-Dichloropropane	0.43 U	1.0	0.43	ug/l	
10061-01-5	cis-1,3-Dichloropropene	0.29 U	1.0	0.29	ug/l	
10061-02-6	trans-1,3-Dichloropropene	0.21 U	1.0	0.21	ug/l	
100-41-4	Ethylbenzene	0.36 U	1.0	0.36	ug/l	
76-13-1	Freon 113	0.48 U	1.0	0.48	ug/l	
591-78-6	2-Hexanone	2.0 U	10	2.0	ug/l	
98-82-8	Isopropylbenzene	0.22 U	1.0	0.22	ug/l	
79-20-9	Methyl Acetate	5.0 U	20	5.0	ug/l	
74-83-9	Methyl Bromide	2.0 U	5.0	2.0	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0275-023.0-20221219		
Lab Sample ID:	FC1494-3	**Date Sampled:**	12/19/22
Matrix:	AQ - Ground Water	**Date Received:**	12/20/22
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	KSC-CRCA		

VOA TCL 4.2 List

CAS No.	Compound	Result	PQL	MDL	Units	Q
74-87-3	Methyl Chloride	0.50 U	2.0	0.50	ug/l	
108-87-2	Methylcyclohexane	0.44 U	1.0	0.44	ug/l	
75-09-2	Methylene Chloride	2.0 U	5.0	2.0	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	1.0 U	5.0	1.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	0.23 U	1.0	0.23	ug/l	
100-42-5	Styrene	0.22 U	1.0	0.22	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	0.30 U	1.0	0.30	ug/l	
127-18-4	Tetrachloroethylene	0.22 U	1.0	0.22	ug/l	
108-88-3	Toluene	0.30 U	1.0	0.30	ug/l	
120-82-1	1,2,4-Trichlorobenzene	0.50 U	2.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	0.25 U	1.0	0.25	ug/l	
79-00-5	1,1,2-Trichloroethane	0.47 U	1.0	0.47	ug/l	
79-01-6	Trichloroethylene	0.48	1.0	0.35	ug/l	I
75-69-4	Trichlorofluoromethane	0.50 U	2.0	0.50	ug/l	
75-01-4	Vinyl Chloride	0.41 U	1.0	0.41	ug/l	
1330-20-7	Xylene (total)	0.72 U	3.0	0.72	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	100%		83-118%
17060-07-0	1,2-Dichloroethane-D4	100%		79-125%
2037-26-5	Toluene-D8	96%		85-112%
460-00-4	4-Bromofluorobenzene	101%		83-118%

U = Not detected MDL = Method Detection Limit
PQL = Practical Quantitation Limit
L = Indicates value exceeds calibration range
I = Result > = MDL but < PQL J = Estimated value
V = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: CRCA-DPT0275-023.0-20221219
Lab Sample ID: FC1494-3
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: KSC-CRCA

Date Sampled: 12/19/22
Date Received: 12/20/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	Q98668.D	1	12/31/22 20:04	AL	12/28/22 09:05	OP94730	SQ2107
Run #2	4Q38612.D	5	01/04/23 03:10	AL	12/28/22 09:05	OP94730	S4Q555

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2	125 ml	1.0 ml

CAS No.	Compound	Result	PQL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	1.03 [b]	0.080	0.020	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0170	0.0080	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	0.0148	0.0080	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0108	0.0080	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	0.0056	0.0080	0.0020	ug/l	I
375-95-1	Perfluorononanoic acid	0.0020 U	0.0080	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS						
375-73-5	Perfluorobutanesulfonic acid	0.0023	0.0080	0.0020	ug/l	I
2706-91-4	Perfluoropentanesulfonic acid	0.0024	0.0080	0.0020	ug/l	I
355-46-4	Perfluorohexanesulfonic acid	0.0172	0.0080	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA	0.0020 U	0.0080	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	0.0040 U	0.016	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0040 U	0.016	0.0040	ug/l	
FLUOROTELOMER SULFONATES						
757124-72-4	4:2 Fluorotelomer sulfonate	0.0040 U	0.016	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0040 U	0.016	0.0040	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: CRCA-DPT0275-023.0-20221219
Lab Sample ID: FC1494-3
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: KSC-CRCA

Date Sampled: 12/19/22
Date Received: 12/20/22
Percent Solids: n/a

CAS No.	Compound	Result	PQL	MDL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0040 U	0.016	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES						
13252-13-6	HFPO-DA (GenX)	0.0040 U	0.016	0.0040	ug/l	
919005-14-4	ADONA	0.0040 U	0.016	0.0040	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0040 U	0.016	0.0040	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0040 U	0.016	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	54%	51%	50-150%
	13C5-PFPeA	52%	52%	50-150%
	13C5-PFHxA	57%	62%	50-150%
	13C4-PFHpA	65%	62%	50-150%
	13C8-PFOA	75%	71%	50-150%
	13C9-PFNA	74%	70%	50-150%
	13C6-PFDA	74%	69%	50-150%
	13C7-PFUnDA	72%	75%	50-150%
	13C2-PFDoDA	63%	64%	50-150%
	13C2-PFTeDA	56%	66%	50-150%
	13C3-PFBS	56%	60%	50-150%
	13C3-PFHxS	65%	69%	50-150%
	13C8-PFOS	71%	79%	50-150%
	13C8-FOSA	65%	90%	50-150%
	d3-MeFOSAA	77%	94%	50-150%
	d5-EtFOSAA	74%	86%	50-150%
	13C2-4:2FTS	60%	65%	50-150%
	13C2-6:2FTS	79%	63%	50-150%
	13C2-8:2FTS	71%	66%	50-150%
	13C3-HFPO-DA	57%	62%	50-150%

(a) Insufficient sample for re-extraction.
(b) Result is from Run# 2

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0275-028.0-20221219		
Lab Sample ID:	FC1494-4	**Date Sampled:**	12/19/22
Matrix:	AQ - Ground Water	**Date Received:**	12/20/22
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	KSC-CRCA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	5E36255.D	1	12/22/22 12:33	CF	n/a	n/a	V5E1629
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL 4.2 List

CAS No.	Compound	Result	PQL	MDL	Units	Q
67-64-1	Acetone	10 U	25	10	ug/l	
71-43-2	Benzene	0.31 U	1.0	0.31	ug/l	
75-27-4	Bromodichloromethane	0.24 U	1.0	0.24	ug/l	
75-25-2	Bromoform	0.41 U	1.0	0.41	ug/l	
78-93-3	2-Butanone (MEK)	2.0 U	5.0	2.0	ug/l	
75-15-0	Carbon Disulfide	0.53 U	2.0	0.53	ug/l	
56-23-5	Carbon Tetrachloride	0.36 U	1.0	0.36	ug/l	
108-90-7	Chlorobenzene	0.20 U	1.0	0.20	ug/l	
75-00-3	Chloroethane	0.67 U	2.0	0.67	ug/l	
67-66-3	Chloroform	0.30 U	1.0	0.30	ug/l	
110-82-7	Cyclohexane	0.39 U	1.0	0.39	ug/l	
124-48-1	Dibromochloromethane	0.28 U	1.0	0.28	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	1.0 U	5.0	1.0	ug/l	
106-93-4	1,2-Dibromoethane	0.28 U	2.0	0.28	ug/l	
75-71-8	Dichlorodifluoromethane	0.50 U	2.0	0.50	ug/l	
95-50-1	1,2-Dichlorobenzene	0.32 U	1.0	0.32	ug/l	
541-73-1	1,3-Dichlorobenzene	0.22 U	1.0	0.22	ug/l	
106-46-7	1,4-Dichlorobenzene	0.26 U	1.0	0.26	ug/l	
75-34-3	1,1-Dichloroethane	0.34 U	1.0	0.34	ug/l	
107-06-2	1,2-Dichloroethane	0.31 U	1.0	0.31	ug/l	
75-35-4	1,1-Dichloroethylene	0.32 U	1.0	0.32	ug/l	
156-59-2	cis-1,2-Dichloroethylene	0.28 U	1.0	0.28	ug/l	
156-60-5	trans-1,2-Dichloroethylene	0.22 U	1.0	0.22	ug/l	
78-87-5	1,2-Dichloropropane	0.43 U	1.0	0.43	ug/l	
10061-01-5	cis-1,3-Dichloropropene	0.29 U	1.0	0.29	ug/l	
10061-02-6	trans-1,3-Dichloropropene	0.21 U	1.0	0.21	ug/l	
100-41-4	Ethylbenzene	0.36 U	1.0	0.36	ug/l	
76-13-1	Freon 113	0.48 U	1.0	0.48	ug/l	
591-78-6	2-Hexanone	2.0 U	10	2.0	ug/l	
98-82-8	Isopropylbenzene	0.22 U	1.0	0.22	ug/l	
79-20-9	Methyl Acetate	5.0 U	20	5.0	ug/l	
74-83-9	Methyl Bromide	2.0 U	5.0	2.0	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0275-028.0-20221219		
Lab Sample ID:	FC1494-4	**Date Sampled:**	12/19/22
Matrix:	AQ - Ground Water	**Date Received:**	12/20/22
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	KSC-CRCA		

VOA TCL 4.2 List

CAS No.	Compound	Result	PQL	MDL	Units	Q
74-87-3	Methyl Chloride	0.50 U	2.0	0.50	ug/l	
108-87-2	Methylcyclohexane	0.44 U	1.0	0.44	ug/l	
75-09-2	Methylene Chloride	2.0 U	5.0	2.0	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	1.0 U	5.0	1.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	0.23 U	1.0	0.23	ug/l	
100-42-5	Styrene	0.22 U	1.0	0.22	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	0.30 U	1.0	0.30	ug/l	
127-18-4	Tetrachloroethylene	0.22 U	1.0	0.22	ug/l	
108-88-3	Toluene	0.30 U	1.0	0.30	ug/l	
120-82-1	1,2,4-Trichlorobenzene	0.50 U	2.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	0.25 U	1.0	0.25	ug/l	
79-00-5	1,1,2-Trichloroethane	0.47 U	1.0	0.47	ug/l	
79-01-6	Trichloroethylene	0.35 U	1.0	0.35	ug/l	
75-69-4	Trichlorofluoromethane	0.50 U	2.0	0.50	ug/l	
75-01-4	Vinyl Chloride	0.41 U	1.0	0.41	ug/l	
1330-20-7	Xylene (total)	0.72 U	3.0	0.72	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	103%		83-118%
17060-07-0	1,2-Dichloroethane-D4	101%		79-125%
2037-26-5	Toluene-D8	96%		85-112%
460-00-4	4-Bromofluorobenzene	100%		83-118%

(a) Sample was not preserved to a pH < 2.

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0275-033.0-20221219		
Lab Sample ID:	FC1494-5	**Date Sampled:**	12/19/22
Matrix:	AQ - Ground Water	**Date Received:**	12/20/22
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	KSC-CRCA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	5E36256.D	1	12/22/22 12:56	CF	n/a	n/a	V5E1629
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL 4.2 List

CAS No.	Compound	Result	PQL	MDL	Units	Q
67-64-1	Acetone	10 U	25	10	ug/l	
71-43-2	Benzene	0.31 U	1.0	0.31	ug/l	
75-27-4	Bromodichloromethane	0.24 U	1.0	0.24	ug/l	
75-25-2	Bromoform	0.41 U	1.0	0.41	ug/l	
78-93-3	2-Butanone (MEK)	2.0 U	5.0	2.0	ug/l	
75-15-0	Carbon Disulfide	0.53 U	2.0	0.53	ug/l	
56-23-5	Carbon Tetrachloride	0.36 U	1.0	0.36	ug/l	
108-90-7	Chlorobenzene	0.20 U	1.0	0.20	ug/l	
75-00-3	Chloroethane	0.67 U	2.0	0.67	ug/l	
67-66-3	Chloroform	0.30 U	1.0	0.30	ug/l	
110-82-7	Cyclohexane	0.39 U	1.0	0.39	ug/l	
124-48-1	Dibromochloromethane	0.28 U	1.0	0.28	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	1.0 U	5.0	1.0	ug/l	
106-93-4	1,2-Dibromoethane	0.28 U	2.0	0.28	ug/l	
75-71-8	Dichlorodifluoromethane	0.50 U	2.0	0.50	ug/l	
95-50-1	1,2-Dichlorobenzene	0.32 U	1.0	0.32	ug/l	
541-73-1	1,3-Dichlorobenzene	0.22 U	1.0	0.22	ug/l	
106-46-7	1,4-Dichlorobenzene	0.26 U	1.0	0.26	ug/l	
75-34-3	1,1-Dichloroethane	0.34 U	1.0	0.34	ug/l	
107-06-2	1,2-Dichloroethane	0.31 U	1.0	0.31	ug/l	
75-35-4	1,1-Dichloroethylene	0.32 U	1.0	0.32	ug/l	
156-59-2	cis-1,2-Dichloroethylene	0.28 U	1.0	0.28	ug/l	
156-60-5	trans-1,2-Dichloroethylene	0.22 U	1.0	0.22	ug/l	
78-87-5	1,2-Dichloropropane	0.43 U	1.0	0.43	ug/l	
10061-01-5	cis-1,3-Dichloropropene	0.29 U	1.0	0.29	ug/l	
10061-02-6	trans-1,3-Dichloropropene	0.21 U	1.0	0.21	ug/l	
100-41-4	Ethylbenzene	0.36 U	1.0	0.36	ug/l	
76-13-1	Freon 113	0.48 U	1.0	0.48	ug/l	
591-78-6	2-Hexanone	2.0 U	10	2.0	ug/l	
98-82-8	Isopropylbenzene	0.22 U	1.0	0.22	ug/l	
79-20-9	Methyl Acetate	5.0 U	20	5.0	ug/l	
74-83-9	Methyl Bromide	2.0 U	5.0	2.0	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0275-033.0-20221219		
Lab Sample ID:	FC1494-5	**Date Sampled:**	12/19/22
Matrix:	AQ - Ground Water	**Date Received:**	12/20/22
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	KSC-CRCA		

VOA TCL 4.2 List

CAS No.	Compound	Result	PQL	MDL	Units	Q
74-87-3	Methyl Chloride	0.50 U	2.0	0.50	ug/l	
108-87-2	Methylcyclohexane	0.44 U	1.0	0.44	ug/l	
75-09-2	Methylene Chloride	2.0 U	5.0	2.0	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	1.0 U	5.0	1.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	0.23 U	1.0	0.23	ug/l	
100-42-5	Styrene	0.22 U	1.0	0.22	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	0.30 U	1.0	0.30	ug/l	
127-18-4	Tetrachloroethylene	0.22 U	1.0	0.22	ug/l	
108-88-3	Toluene	0.30 U	1.0	0.30	ug/l	
120-82-1	1,2,4-Trichlorobenzene	0.50 U	2.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	0.25 U	1.0	0.25	ug/l	
79-00-5	1,1,2-Trichloroethane	0.47 U	1.0	0.47	ug/l	
79-01-6	Trichloroethylene	0.35 U	1.0	0.35	ug/l	
75-69-4	Trichlorofluoromethane	0.50 U	2.0	0.50	ug/l	
75-01-4	Vinyl Chloride	0.41 U	1.0	0.41	ug/l	
1330-20-7	Xylene (total)	0.72 U	3.0	0.72	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	102%		83-118%
17060-07-0	1,2-Dichloroethane-D4	104%		79-125%
2037-26-5	Toluene-D8	96%		85-112%
460-00-4	4-Bromofluorobenzene	103%		83-118%

(a) Sample was not preserved to a pH < 2.

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: CRCA-DPT0275-033.0-20221219
Lab Sample ID: FC1494-5
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: KSC-CRCA

Date Sampled: 12/19/22
Date Received: 12/20/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q105076.D	1	01/06/23 01:22	WH	01/04/23 08:15	OP94826	S2Q1459
Run #2	2Q105124.D	5	01/06/23 16:06	WH	01/04/23 08:15	OP94826	S2Q1460

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2	125 ml	1.0 ml

CAS No.	Compound	Result	PQL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	0.639 [a]	0.080	0.020	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0133 [a]	0.040	0.010	ug/l	I
307-24-4	Perfluorohexanoic acid	0.0107	0.0080	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0077	0.0080	0.0020	ug/l	I
335-67-1	Perfluorooctanoic acid	0.0034	0.0080	0.0020	ug/l	I
375-95-1	Perfluorononanoic acid	0.0020 U	0.0080	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid [b]	0.0020 U	0.0080	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS						
375-73-5	Perfluorobutanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0151	0.0080	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA [b]	0.0020 U	0.0080	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	0.0040 U	0.016	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0040 U	0.016	0.0040	ug/l	
FLUOROTELOMER SULFONATES						
757124-72-4	4:2 Fluorotelomer sulfonate	0.020 U [a]	0.080	0.020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0040 U	0.016	0.0040	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: CRCA-DPT0275-033.0-20221219
Lab Sample ID: FC1494-5
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: KSC-CRCA

Date Sampled: 12/19/22
Date Received: 12/20/22
Percent Solids: n/a

CAS No.	Compound	Result	PQL	MDL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0040 U	0.016	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES						
13252-13-6	HFPO-DA (GenX)	0.020 U [a]	0.080	0.020	ug/l	
919005-14-4	ADONA	0.0040 U	0.016	0.0040	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0040 U	0.016	0.0040	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0040 U	0.016	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	44% [c]	53%	50-150%
	13C5-PFPeA	47% [c]	54%	50-150%
	13C5-PFHxA	52%	56%	50-150%
	13C4-PFHpA	53%	55%	50-150%
	13C8-PFOA	55%	55%	50-150%
	13C9-PFNA	57%	54%	50-150%
	13C6-PFDA	57%	55%	50-150%
	13C7-PFUnDA	54%	51%	50-150%
	13C2-PFDoDA	54%	50%	50-150%
	13C2-PFTeDA	48% [c]	45% [c]	50-150%
	13C3-PFBS	50%	56%	50-150%
	13C3-PFHxS	51%	57%	50-150%
	13C8-PFOS	53%	54%	50-150%
	13C8-FOSA	49% [c]	49% [c]	50-150%
	d3-MeFOSAA	54%	52%	50-150%
	d5-EtFOSAA	56%	54%	50-150%
	13C2-4:2FTS	48% [c]	51%	50-150%
	13C2-6:2FTS	57%	52%	50-150%
	13C2-8:2FTS	54%	49% [c]	50-150%
	13C3-HFPO-DA	48% [c]	56%	50-150%

(a) Result is from Run# 2
(b) Associated ID Standard outside control limits.
(c) Outside control limits.

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0275-038.0-20221219		
Lab Sample ID:	FC1494-6	**Date Sampled:**	12/19/22
Matrix:	AQ - Ground Water	**Date Received:**	12/20/22
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	KSC-CRCA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	5E36257.D	1	12/22/22 13:19	CF	n/a	n/a	V5E1629
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL 4.2 List

CAS No.	Compound	Result	PQL	MDL	Units	Q
67-64-1	Acetone	10 U	25	10	ug/l	
71-43-2	Benzene	0.31 U	1.0	0.31	ug/l	
75-27-4	Bromodichloromethane	0.24 U	1.0	0.24	ug/l	
75-25-2	Bromoform	0.41 U	1.0	0.41	ug/l	
78-93-3	2-Butanone (MEK)	2.0 U	5.0	2.0	ug/l	
75-15-0	Carbon Disulfide	0.53 U	2.0	0.53	ug/l	
56-23-5	Carbon Tetrachloride	0.36 U	1.0	0.36	ug/l	
108-90-7	Chlorobenzene	0.20 U	1.0	0.20	ug/l	
75-00-3	Chloroethane	0.67 U	2.0	0.67	ug/l	
67-66-3	Chloroform	0.30 U	1.0	0.30	ug/l	
110-82-7	Cyclohexane	0.39 U	1.0	0.39	ug/l	
124-48-1	Dibromochloromethane	0.28 U	1.0	0.28	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	1.0 U	5.0	1.0	ug/l	
106-93-4	1,2-Dibromoethane	0.28 U	2.0	0.28	ug/l	
75-71-8	Dichlorodifluoromethane	0.50 U	2.0	0.50	ug/l	
95-50-1	1,2-Dichlorobenzene	0.32 U	1.0	0.32	ug/l	
541-73-1	1,3-Dichlorobenzene	0.22 U	1.0	0.22	ug/l	
106-46-7	1,4-Dichlorobenzene	0.26 U	1.0	0.26	ug/l	
75-34-3	1,1-Dichloroethane	0.34 U	1.0	0.34	ug/l	
107-06-2	1,2-Dichloroethane	0.31 U	1.0	0.31	ug/l	
75-35-4	1,1-Dichloroethylene	0.32 U	1.0	0.32	ug/l	
156-59-2	cis-1,2-Dichloroethylene	0.28 U	1.0	0.28	ug/l	
156-60-5	trans-1,2-Dichloroethylene	0.22 U	1.0	0.22	ug/l	
78-87-5	1,2-Dichloropropane	0.43 U	1.0	0.43	ug/l	
10061-01-5	cis-1,3-Dichloropropene	0.29 U	1.0	0.29	ug/l	
10061-02-6	trans-1,3-Dichloropropene	0.21 U	1.0	0.21	ug/l	
100-41-4	Ethylbenzene	0.36 U	1.0	0.36	ug/l	
76-13-1	Freon 113	0.48 U	1.0	0.48	ug/l	
591-78-6	2-Hexanone	2.0 U	10	2.0	ug/l	
98-82-8	Isopropylbenzene	0.22 U	1.0	0.22	ug/l	
79-20-9	Methyl Acetate	5.0 U	20	5.0	ug/l	
74-83-9	Methyl Bromide	2.0 U	5.0	2.0	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0275-038.0-20221219		
Lab Sample ID:	FC1494-6	**Date Sampled:**	12/19/22
Matrix:	AQ - Ground Water	**Date Received:**	12/20/22
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	KSC-CRCA		

VOA TCL 4.2 List

CAS No.	Compound	Result	PQL	MDL	Units	Q
74-87-3	Methyl Chloride	0.50 U	2.0	0.50	ug/l	
108-87-2	Methylcyclohexane	0.44 U	1.0	0.44	ug/l	
75-09-2	Methylene Chloride	2.0 U	5.0	2.0	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	1.0 U	5.0	1.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	0.23 U	1.0	0.23	ug/l	
100-42-5	Styrene	0.22 U	1.0	0.22	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	0.30 U	1.0	0.30	ug/l	
127-18-4	Tetrachloroethylene	0.22 U	1.0	0.22	ug/l	
108-88-3	Toluene	0.30 U	1.0	0.30	ug/l	
120-82-1	1,2,4-Trichlorobenzene	0.50 U	2.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	0.25 U	1.0	0.25	ug/l	
79-00-5	1,1,2-Trichloroethane	0.47 U	1.0	0.47	ug/l	
79-01-6	Trichloroethylene	0.35 U	1.0	0.35	ug/l	
75-69-4	Trichlorofluoromethane	0.50 U	2.0	0.50	ug/l	
75-01-4	Vinyl Chloride	0.41 U	1.0	0.41	ug/l	
1330-20-7	Xylene (total)	0.72 U	3.0	0.72	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	101%		83-118%
17060-07-0	1,2-Dichloroethane-D4	101%		79-125%
2037-26-5	Toluene-D8	98%		85-112%
460-00-4	4-Bromofluorobenzene	99%		83-118%

(a) Sample was not preserved to a pH < 2. Sample vial(s) contained bubbles greater than 6mm.

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0275-043.0-20221219		
Lab Sample ID:	FC1494-7	**Date Sampled:**	12/19/22
Matrix:	AQ - Ground Water	**Date Received:**	12/20/22
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	KSC-CRCA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	5E36258.D	1	12/22/22 13:42	CF	n/a	n/a	V5E1629
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL 4.2 List

CAS No.	Compound	Result	PQL	MDL	Units	Q
67-64-1	Acetone	10 U	25	10	ug/l	
71-43-2	Benzene	0.31 U	1.0	0.31	ug/l	
75-27-4	Bromodichloromethane	0.24 U	1.0	0.24	ug/l	
75-25-2	Bromoform	0.41 U	1.0	0.41	ug/l	
78-93-3	2-Butanone (MEK)	2.0 U	5.0	2.0	ug/l	
75-15-0	Carbon Disulfide	0.53 U	2.0	0.53	ug/l	
56-23-5	Carbon Tetrachloride	0.36 U	1.0	0.36	ug/l	
108-90-7	Chlorobenzene	0.20 U	1.0	0.20	ug/l	
75-00-3	Chloroethane	0.67 U	2.0	0.67	ug/l	
67-66-3	Chloroform	0.30 U	1.0	0.30	ug/l	
110-82-7	Cyclohexane	0.39 U	1.0	0.39	ug/l	
124-48-1	Dibromochloromethane	0.28 U	1.0	0.28	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	1.0 U	5.0	1.0	ug/l	
106-93-4	1,2-Dibromoethane	0.28 U	2.0	0.28	ug/l	
75-71-8	Dichlorodifluoromethane	0.50 U	2.0	0.50	ug/l	
95-50-1	1,2-Dichlorobenzene	0.32 U	1.0	0.32	ug/l	
541-73-1	1,3-Dichlorobenzene	0.22 U	1.0	0.22	ug/l	
106-46-7	1,4-Dichlorobenzene	0.26 U	1.0	0.26	ug/l	
75-34-3	1,1-Dichloroethane	0.34 U	1.0	0.34	ug/l	
107-06-2	1,2-Dichloroethane	0.31 U	1.0	0.31	ug/l	
75-35-4	1,1-Dichloroethylene	0.32 U	1.0	0.32	ug/l	
156-59-2	cis-1,2-Dichloroethylene	0.28 U	1.0	0.28	ug/l	
156-60-5	trans-1,2-Dichloroethylene	0.22 U	1.0	0.22	ug/l	
78-87-5	1,2-Dichloropropane	0.43 U	1.0	0.43	ug/l	
10061-01-5	cis-1,3-Dichloropropene	0.29 U	1.0	0.29	ug/l	
10061-02-6	trans-1,3-Dichloropropene	0.21 U	1.0	0.21	ug/l	
100-41-4	Ethylbenzene	0.36 U	1.0	0.36	ug/l	
76-13-1	Freon 113	0.48 U	1.0	0.48	ug/l	
591-78-6	2-Hexanone	2.0 U	10	2.0	ug/l	
98-82-8	Isopropylbenzene	0.22 U	1.0	0.22	ug/l	
79-20-9	Methyl Acetate	5.0 U	20	5.0	ug/l	
74-83-9	Methyl Bromide	2.0 U	5.0	2.0	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0275-043.0-20221219		
Lab Sample ID:	FC1494-7	**Date Sampled:**	12/19/22
Matrix:	AQ - Ground Water	**Date Received:**	12/20/22
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	KSC-CRCA		

VOA TCL 4.2 List

CAS No.	Compound	Result	PQL	MDL	Units	Q
74-87-3	Methyl Chloride	0.50 U	2.0	0.50	ug/l	
108-87-2	Methylcyclohexane	0.44 U	1.0	0.44	ug/l	
75-09-2	Methylene Chloride	2.0 U	5.0	2.0	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	1.0 U	5.0	1.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	0.23 U	1.0	0.23	ug/l	
100-42-5	Styrene	0.22 U	1.0	0.22	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	0.30 U	1.0	0.30	ug/l	
127-18-4	Tetrachloroethylene	0.22 U	1.0	0.22	ug/l	
108-88-3	Toluene	0.30 U	1.0	0.30	ug/l	
120-82-1	1,2,4-Trichlorobenzene	0.50 U	2.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	0.25 U	1.0	0.25	ug/l	
79-00-5	1,1,2-Trichloroethane	0.47 U	1.0	0.47	ug/l	
79-01-6	Trichloroethylene	0.35 U	1.0	0.35	ug/l	
75-69-4	Trichlorofluoromethane	0.50 U	2.0	0.50	ug/l	
75-01-4	Vinyl Chloride	0.41 U	1.0	0.41	ug/l	
1330-20-7	Xylene (total)	0.72 U	3.0	0.72	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	103%		83-118%
17060-07-0	1,2-Dichloroethane-D4	101%		79-125%
2037-26-5	Toluene-D8	96%		85-112%
460-00-4	4-Bromofluorobenzene	101%		83-118%

(a) Sample was not preserved to a pH < 2. Sample vial(s) contained bubbles greater than 6mm.

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0275-043.0-20221219		
Lab Sample ID:	FC1494-7	**Date Sampled:**	12/19/22
Matrix:	AQ - Ground Water	**Date Received:**	12/20/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	KSC-CRCA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	3Q70838.D	1	01/10/23 07:26	JL	01/04/23 08:15	OP94826	S3Q970
Run #2 [b]	3Q70839.D	5	01/10/23 07:44	JL	01/04/23 08:15	OP94826	S3Q970

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2	125 ml	1.0 ml

CAS No.	Compound	Result	PQL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid [c]	0.0111	0.016	0.0040	ug/l	I
2706-90-3	Perfluoropentanoic acid [c]	0.0044	0.0080	0.0020	ug/l	I
307-24-4	Perfluorohexanoic acid	0.0022	0.0080	0.0020	ug/l	I
375-85-9	Perfluoroheptanoic acid	0.0020 U	0.0080	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	0.0020 U	0.0080	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0020 U	0.0080	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid [c]	0.0020 U	0.0080	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS						
375-73-5	Perfluorobutanesulfonic acid [c]	0.0020 U	0.0080	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid [c]	0.0020 U	0.0080	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0027	0.0080	0.0020	ug/l	I
375-92-8	Perfluoroheptanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA [c]	0.0020 U	0.0080	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	0.0040 U	0.016	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0040 U	0.016	0.0040	ug/l	
FLUOROTELOMER SULFONATES						
757124-72-4	4:2 Fluorotelomer sulfonate	0.0040 U	0.016	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0040 U	0.016	0.0040	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: CRCA-DPT0275-043.0-20221219
Lab Sample ID: FC1494-7
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: KSC-CRCA

Date Sampled: 12/19/22
Date Received: 12/20/22
Percent Solids: n/a

CAS No.	Compound	Result	PQL	MDL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0040 U	0.016	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES						
13252-13-6	HFPO-DA (GenX)	0.0040 U	0.016	0.0040	ug/l	
919005-14-4	ADONA	0.0040 U	0.016	0.0040	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0040 U	0.016	0.0040	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0040 U	0.016	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	32% [d]	37% [d]	50-150%
	13C5-PFPeA	42% [d]	39% [d]	50-150%
	13C5-PFHxA	51%	45% [d]	50-150%
	13C4-PFHpA	57%	46% [d]	50-150%
	13C8-PFOA	58%	44% [d]	50-150%
	13C9-PFNA	55%	40% [d]	50-150%
	13C6-PFDA	55%	38% [d]	50-150%
	13C7-PFUnDA	52%	37% [d]	50-150%
	13C2-PFDoDA	50%	35% [d]	50-150%
	13C2-PFTeDA	42% [d]	31% [d]	50-150%
	13C3-PFBS	49% [d]	43% [d]	50-150%
	13C3-PFHxS	54%	44% [d]	50-150%
	13C8-PFOS	53%	43% [d]	50-150%
	13C8-FOSA	48% [d]	39% [d]	50-150%
	d3-MeFOSAA	56%	40% [d]	50-150%
	d5-EtFOSAA	57%	43% [d]	50-150%
	13C2-4:2FTS	51%	42% [d]	50-150%
	13C2-6:2FTS	58%	42% [d]	50-150%
	13C2-8:2FTS	52%	34% [d]	50-150%
	13C3-HFPO-DA	52%	44% [d]	50-150%

(a) Insufficient sample for re-extraction.
(b) Confirmation run.
(c) Associated ID Standard outside control limits.
(d) Outside control limits.

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0275-048.0-20221219		
Lab Sample ID:	FC1494-8	**Date Sampled:**	12/19/22
Matrix:	AQ - Ground Water	**Date Received:**	12/20/22
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	KSC-CRCA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	5E36259.D	1	12/22/22 14:05	CF	n/a	n/a	V5E1629
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL 4.2 List

CAS No.	Compound	Result	PQL	MDL	Units	Q
67-64-1	Acetone	10 U	25	10	ug/l	
71-43-2	Benzene	0.46	1.0	0.31	ug/l	I
75-27-4	Bromodichloromethane	0.24 U	1.0	0.24	ug/l	
75-25-2	Bromoform	0.41 U	1.0	0.41	ug/l	
78-93-3	2-Butanone (MEK)	2.0 U	5.0	2.0	ug/l	
75-15-0	Carbon Disulfide	0.61	2.0	0.53	ug/l	I
56-23-5	Carbon Tetrachloride	0.36 U	1.0	0.36	ug/l	
108-90-7	Chlorobenzene	0.20 U	1.0	0.20	ug/l	
75-00-3	Chloroethane	0.67 U	2.0	0.67	ug/l	
67-66-3	Chloroform	0.30 U	1.0	0.30	ug/l	
110-82-7	Cyclohexane	0.39 U	1.0	0.39	ug/l	
124-48-1	Dibromochloromethane	0.28 U	1.0	0.28	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	1.0 U	5.0	1.0	ug/l	
106-93-4	1,2-Dibromoethane	0.28 U	2.0	0.28	ug/l	
75-71-8	Dichlorodifluoromethane	0.50 U	2.0	0.50	ug/l	
95-50-1	1,2-Dichlorobenzene	0.32 U	1.0	0.32	ug/l	
541-73-1	1,3-Dichlorobenzene	0.22 U	1.0	0.22	ug/l	
106-46-7	1,4-Dichlorobenzene	0.26 U	1.0	0.26	ug/l	
75-34-3	1,1-Dichloroethane	0.34 U	1.0	0.34	ug/l	
107-06-2	1,2-Dichloroethane	0.31 U	1.0	0.31	ug/l	
75-35-4	1,1-Dichloroethylene	0.32 U	1.0	0.32	ug/l	
156-59-2	cis-1,2-Dichloroethylene	0.28 U	1.0	0.28	ug/l	
156-60-5	trans-1,2-Dichloroethylene	0.22 U	1.0	0.22	ug/l	
78-87-5	1,2-Dichloropropane	0.43 U	1.0	0.43	ug/l	
10061-01-5	cis-1,3-Dichloropropene	0.29 U	1.0	0.29	ug/l	
10061-02-6	trans-1,3-Dichloropropene	0.21 U	1.0	0.21	ug/l	
100-41-4	Ethylbenzene	0.36 U	1.0	0.36	ug/l	
76-13-1	Freon 113	0.48 U	1.0	0.48	ug/l	
591-78-6	2-Hexanone	2.0 U	10	2.0	ug/l	
98-82-8	Isopropylbenzene	0.22 U	1.0	0.22	ug/l	
79-20-9	Methyl Acetate	5.0 U	20	5.0	ug/l	
74-83-9	Methyl Bromide	2.0 U	5.0	2.0	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0275-048.0-20221219		
Lab Sample ID:	FC1494-8	**Date Sampled:**	12/19/22
Matrix:	AQ - Ground Water	**Date Received:**	12/20/22
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	KSC-CRCA		

VOA TCL 4.2 List

CAS No.	Compound	Result	PQL	MDL	Units	Q
74-87-3	Methyl Chloride	0.50 U	2.0	0.50	ug/l	
108-87-2	Methylcyclohexane	0.44 U	1.0	0.44	ug/l	
75-09-2	Methylene Chloride	2.0 U	5.0	2.0	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	1.0 U	5.0	1.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	0.23 U	1.0	0.23	ug/l	
100-42-5	Styrene	0.22 U	1.0	0.22	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	0.30 U	1.0	0.30	ug/l	
127-18-4	Tetrachloroethylene	0.22 U	1.0	0.22	ug/l	
108-88-3	Toluene	0.40	1.0	0.30	ug/l	I
120-82-1	1,2,4-Trichlorobenzene	0.50 U	2.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	0.25 U	1.0	0.25	ug/l	
79-00-5	1,1,2-Trichloroethane	0.47 U	1.0	0.47	ug/l	
79-01-6	Trichloroethylene	1.8	1.0	0.35	ug/l	
75-69-4	Trichlorofluoromethane	0.50 U	2.0	0.50	ug/l	
75-01-4	Vinyl Chloride	0.41 U	1.0	0.41	ug/l	
1330-20-7	Xylene (total)	0.72 U	3.0	0.72	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	101%		83-118%
17060-07-0	1,2-Dichloroethane-D4	101%		79-125%
2037-26-5	Toluene-D8	97%		85-112%
460-00-4	4-Bromofluorobenzene	102%		83-118%

(a) Sample was not preserved to a pH < 2. Sample vial(s) contained bubbles greater than 6mm.

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0275-053.0-20221219		
Lab Sample ID:	FC1494-9	**Date Sampled:**	12/19/22
Matrix:	AQ - Ground Water	**Date Received:**	12/20/22
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	KSC-CRCA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	5E36260.D	1	12/22/22 14:28	CF	n/a	n/a	V5E1629
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL 4.2 List

CAS No.	Compound	Result	PQL	MDL	Units	Q
67-64-1	Acetone	10 U	25	10	ug/l	
71-43-2	Benzene	0.31 U	1.0	0.31	ug/l	
75-27-4	Bromodichloromethane	0.24 U	1.0	0.24	ug/l	
75-25-2	Bromoform	0.41 U	1.0	0.41	ug/l	
78-93-3	2-Butanone (MEK)	2.0 U	5.0	2.0	ug/l	
75-15-0	Carbon Disulfide	0.53 U	2.0	0.53	ug/l	
56-23-5	Carbon Tetrachloride	0.36 U	1.0	0.36	ug/l	
108-90-7	Chlorobenzene	0.20 U	1.0	0.20	ug/l	
75-00-3	Chloroethane	0.67 U	2.0	0.67	ug/l	
67-66-3	Chloroform	0.30 U	1.0	0.30	ug/l	
110-82-7	Cyclohexane	0.39 U	1.0	0.39	ug/l	
124-48-1	Dibromochloromethane	0.28 U	1.0	0.28	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	1.0 U	5.0	1.0	ug/l	
106-93-4	1,2-Dibromoethane	0.28 U	2.0	0.28	ug/l	
75-71-8	Dichlorodifluoromethane	0.50 U	2.0	0.50	ug/l	
95-50-1	1,2-Dichlorobenzene	0.32 U	1.0	0.32	ug/l	
541-73-1	1,3-Dichlorobenzene	0.22 U	1.0	0.22	ug/l	
106-46-7	1,4-Dichlorobenzene	0.26 U	1.0	0.26	ug/l	
75-34-3	1,1-Dichloroethane	0.34 U	1.0	0.34	ug/l	
107-06-2	1,2-Dichloroethane	0.31 U	1.0	0.31	ug/l	
75-35-4	1,1-Dichloroethylene	0.32 U	1.0	0.32	ug/l	
156-59-2	cis-1,2-Dichloroethylene	0.28 U	1.0	0.28	ug/l	
156-60-5	trans-1,2-Dichloroethylene	0.22 U	1.0	0.22	ug/l	
78-87-5	1,2-Dichloropropane	0.43 U	1.0	0.43	ug/l	
10061-01-5	cis-1,3-Dichloropropene	0.29 U	1.0	0.29	ug/l	
10061-02-6	trans-1,3-Dichloropropene	0.21 U	1.0	0.21	ug/l	
100-41-4	Ethylbenzene	0.36 U	1.0	0.36	ug/l	
76-13-1	Freon 113	0.48 U	1.0	0.48	ug/l	
591-78-6	2-Hexanone	2.0 U	10	2.0	ug/l	
98-82-8	Isopropylbenzene	0.22 U	1.0	0.22	ug/l	
79-20-9	Methyl Acetate	5.0 U	20	5.0	ug/l	
74-83-9	Methyl Bromide	2.0 U	5.0	2.0	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0275-053.0-20221219		
Lab Sample ID:	FC1494-9	**Date Sampled:**	12/19/22
Matrix:	AQ - Ground Water	**Date Received:**	12/20/22
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	KSC-CRCA		

VOA TCL 4.2 List

CAS No.	Compound	Result	PQL	MDL	Units	Q
74-87-3	Methyl Chloride	0.50 U	2.0	0.50	ug/l	
108-87-2	Methylcyclohexane	0.44 U	1.0	0.44	ug/l	
75-09-2	Methylene Chloride	2.0 U	5.0	2.0	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	1.0 U	5.0	1.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	0.23 U	1.0	0.23	ug/l	
100-42-5	Styrene	0.22 U	1.0	0.22	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	0.30 U	1.0	0.30	ug/l	
127-18-4	Tetrachloroethylene	0.22 U	1.0	0.22	ug/l	
108-88-3	Toluene	0.30 U	1.0	0.30	ug/l	
120-82-1	1,2,4-Trichlorobenzene	0.50 U	2.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	0.25 U	1.0	0.25	ug/l	
79-00-5	1,1,2-Trichloroethane	0.47 U	1.0	0.47	ug/l	
79-01-6	Trichloroethylene	0.35 U	1.0	0.35	ug/l	
75-69-4	Trichlorofluoromethane	0.50 U	2.0	0.50	ug/l	
75-01-4	Vinyl Chloride	0.41 U	1.0	0.41	ug/l	
1330-20-7	Xylene (total)	0.72 U	3.0	0.72	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	104%		83-118%
17060-07-0	1,2-Dichloroethane-D4	102%		79-125%
2037-26-5	Toluene-D8	97%		85-112%
460-00-4	4-Bromofluorobenzene	98%		83-118%

(a) Sample was not preserved to a pH < 2.

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0275-058.0-20221219		
Lab Sample ID:	FC1494-10	**Date Sampled:**	12/19/22
Matrix:	AQ - Ground Water	**Date Received:**	12/20/22
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	KSC-CRCA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	5E36261.D	1	12/22/22 14:51	CF	n/a	n/a	V5E1629
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL 4.2 List

CAS No.	Compound	Result	PQL	MDL	Units	Q
67-64-1	Acetone	10 U	25	10	ug/l	
71-43-2	Benzene	0.31 U	1.0	0.31	ug/l	
75-27-4	Bromodichloromethane	0.24 U	1.0	0.24	ug/l	
75-25-2	Bromoform	0.41 U	1.0	0.41	ug/l	
78-93-3	2-Butanone (MEK)	2.0 U	5.0	2.0	ug/l	
75-15-0	Carbon Disulfide	0.53 U	2.0	0.53	ug/l	
56-23-5	Carbon Tetrachloride	0.36 U	1.0	0.36	ug/l	
108-90-7	Chlorobenzene	0.20 U	1.0	0.20	ug/l	
75-00-3	Chloroethane	0.67 U	2.0	0.67	ug/l	
67-66-3	Chloroform	0.30 U	1.0	0.30	ug/l	
110-82-7	Cyclohexane	0.39 U	1.0	0.39	ug/l	
124-48-1	Dibromochloromethane	0.28 U	1.0	0.28	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	1.0 U	5.0	1.0	ug/l	
106-93-4	1,2-Dibromoethane	0.28 U	2.0	0.28	ug/l	
75-71-8	Dichlorodifluoromethane	0.50 U	2.0	0.50	ug/l	
95-50-1	1,2-Dichlorobenzene	0.32 U	1.0	0.32	ug/l	
541-73-1	1,3-Dichlorobenzene	0.22 U	1.0	0.22	ug/l	
106-46-7	1,4-Dichlorobenzene	0.26 U	1.0	0.26	ug/l	
75-34-3	1,1-Dichloroethane	0.34 U	1.0	0.34	ug/l	
107-06-2	1,2-Dichloroethane	0.31 U	1.0	0.31	ug/l	
75-35-4	1,1-Dichloroethylene	0.32 U	1.0	0.32	ug/l	
156-59-2	cis-1,2-Dichloroethylene	0.28 U	1.0	0.28	ug/l	
156-60-5	trans-1,2-Dichloroethylene	0.22 U	1.0	0.22	ug/l	
78-87-5	1,2-Dichloropropane	0.43 U	1.0	0.43	ug/l	
10061-01-5	cis-1,3-Dichloropropene	0.29 U	1.0	0.29	ug/l	
10061-02-6	trans-1,3-Dichloropropene	0.21 U	1.0	0.21	ug/l	
100-41-4	Ethylbenzene	0.36 U	1.0	0.36	ug/l	
76-13-1	Freon 113	0.48 U	1.0	0.48	ug/l	
591-78-6	2-Hexanone	2.0 U	10	2.0	ug/l	
98-82-8	Isopropylbenzene	0.22 U	1.0	0.22	ug/l	
79-20-9	Methyl Acetate	5.0 U	20	5.0	ug/l	
74-83-9	Methyl Bromide	2.0 U	5.0	2.0	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0275-058.0-20221219		
Lab Sample ID:	FC1494-10	**Date Sampled:**	12/19/22
Matrix:	AQ - Ground Water	**Date Received:**	12/20/22
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	KSC-CRCA		

VOA TCL 4.2 List

CAS No.	Compound	Result	PQL	MDL	Units	Q
74-87-3	Methyl Chloride	0.50 U	2.0	0.50	ug/l	
108-87-2	Methylcyclohexane	0.44 U	1.0	0.44	ug/l	
75-09-2	Methylene Chloride	2.0 U	5.0	2.0	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	1.0 U	5.0	1.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	0.23 U	1.0	0.23	ug/l	
100-42-5	Styrene	0.22 U	1.0	0.22	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	0.30 U	1.0	0.30	ug/l	
127-18-4	Tetrachloroethylene	0.22 U	1.0	0.22	ug/l	
108-88-3	Toluene	0.30 U	1.0	0.30	ug/l	
120-82-1	1,2,4-Trichlorobenzene	0.50 U	2.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	0.25 U	1.0	0.25	ug/l	
79-00-5	1,1,2-Trichloroethane	0.47 U	1.0	0.47	ug/l	
79-01-6	Trichloroethylene	0.35 U	1.0	0.35	ug/l	
75-69-4	Trichlorofluoromethane	0.50 U	2.0	0.50	ug/l	
75-01-4	Vinyl Chloride	0.41 U	1.0	0.41	ug/l	
1330-20-7	Xylene (total)	0.72 U	3.0	0.72	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	103%		83-118%
17060-07-0	1,2-Dichloroethane-D4	101%		79-125%
2037-26-5	Toluene-D8	95%		85-112%
460-00-4	4-Bromofluorobenzene	102%		83-118%

(a) Sample was not preserved to a pH < 2.

U = Not detected MDL = Method Detection Limit
PQL = Practical Quantitation Limit
L = Indicates value exceeds calibration range
I = Result > = MDL but < PQL J = Estimated value
V = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0275-058.0-20221219		
Lab Sample ID:	FC1494-10	**Date Sampled:**	12/19/22
Matrix:	AQ - Ground Water	**Date Received:**	12/20/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	KSC-CRCA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q105080.D	1	01/06/23 02:28	WH	01/04/23 08:15	OP94826	S2Q1459
Run #2							

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	PQL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	0.0040 U	0.016	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0020 U	0.0080	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	0.0020 U	0.0080	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0020 U	0.0080	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	0.0020 U	0.0080	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0020 U	0.0080	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS						
375-73-5	Perfluorobutanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA	0.0020 U	0.0080	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	0.0040 U	0.016	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0040 U	0.016	0.0040	ug/l	
FLUOROTELOMER SULFONATES						
757124-72-4	4:2 Fluorotelomer sulfonate	0.0040 U	0.016	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0040 U	0.016	0.0040	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: CRCA-DPT0275-058.0-20221219
Lab Sample ID: FC1494-10
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: KSC-CRCA

Date Sampled: 12/19/22
Date Received: 12/20/22
Percent Solids: n/a

CAS No.	Compound	Result	PQL	MDL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0040 U	0.016	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES						
13252-13-6	HFPO-DA (GenX)	0.0040 U	0.016	0.0040	ug/l	
919005-14-4	ADONA	0.0040 U	0.016	0.0040	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0040 U	0.016	0.0040	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0040 U	0.016	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	58%		50-150%
	13C5-PFPeA	60%		50-150%
	13C5-PFHxA	63%		50-150%
	13C4-PFHpA	62%		50-150%
	13C8-PFOA	63%		50-150%
	13C9-PFNA	63%		50-150%
	13C6-PFDA	63%		50-150%
	13C7-PFUnDA	58%		50-150%
	13C2-PFDoDA	59%		50-150%
	13C2-PFTeDA	52%		50-150%
	13C3-PFBS	61%		50-150%
	13C3-PFHxS	58%		50-150%
	13C8-PFOS	61%		50-150%
	13C8-FOSA	53%		50-150%
	d3-MeFOSAA	57%		50-150%
	d5-EtFOSAA	60%		50-150%
	13C2-4:2FTS	59%		50-150%
	13C2-6:2FTS	61%		50-150%
	13C2-8:2FTS	60%		50-150%
	13C3-HFPO-DA	57%		50-150%

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0276-008.0-20221219		
Lab Sample ID:	FC1494-11	**Date Sampled:**	12/19/22
Matrix:	AQ - Ground Water	**Date Received:**	12/20/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	KSC-CRCA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q105086.D	1	01/06/23 04:08	WH	01/04/23 08:30	OP94827	S2Q1459
Run #2	2Q105126.D	5	01/06/23 16:39	WH	01/04/23 08:30	OP94827	S2Q1460

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2	125 ml	1.0 ml

CAS No.	Compound	Result	PQL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	0.791 [a]	0.080	0.020	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0020 U	0.0080	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	0.0032	0.0080	0.0020	ug/l	I
375-85-9	Perfluoroheptanoic acid	0.0031	0.0080	0.0020	ug/l	I
335-67-1	Perfluorooctanoic acid	0.0030	0.0080	0.0020	ug/l	I
375-95-1	Perfluorononanoic acid	0.0020 U	0.0080	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS						
375-73-5	Perfluorobutanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0021	0.0080	0.0020	ug/l	I
375-92-8	Perfluoroheptanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0269	0.0080	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA [b]	0.0020 U	0.0080	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	0.0040 U	0.016	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0040 U	0.016	0.0040	ug/l	
FLUOROTELOMER SULFONATES						
757124-72-4	4:2 Fluorotelomer sulfonate	0.0040 U	0.016	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0040 U	0.016	0.0040	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: CRCA-DPT0276-008.0-20221219
Lab Sample ID: FC1494-11
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: KSC-CRCA

Date Sampled: 12/19/22
Date Received: 12/20/22
Percent Solids: n/a

CAS No.	Compound	Result	PQL	MDL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0040 U	0.016	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES						
13252-13-6	HFPO-DA (GenX)	0.0040 U	0.016	0.0040	ug/l	
919005-14-4	ADONA	0.0040 U	0.016	0.0040	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0040 U	0.016	0.0040	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0040 U	0.016	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	49% [c]	57%	50-150%
	13C5-PFPeA	52%	59%	50-150%
	13C5-PFHxA	56%	60%	50-150%
	13C4-PFHpA	55%	60%	50-150%
	13C8-PFOA	57%	58%	50-150%
	13C9-PFNA	59%	59%	50-150%
	13C6-PFDA	62%	61%	50-150%
	13C7-PFUnDA	58%	56%	50-150%
	13C2-PFDoDA	59%	54%	50-150%
	13C2-PFTeDA	50%	46% [c]	50-150%
	13C3-PFBS	55%	59%	50-150%
	13C3-PFHxS	54%	61%	50-150%
	13C8-PFOS	61%	61%	50-150%
	13C8-FOSA	38% [c]	39% [c]	50-150%
	d3-MeFOSAA	60%	56%	50-150%
	d5-EtFOSAA	60%	57%	50-150%
	13C2-4:2FTS	53%	56%	50-150%
	13C2-6:2FTS	60%	59%	50-150%
	13C2-8:2FTS	64%	56%	50-150%
	13C3-HFPO-DA	53%	59%	50-150%

(a) Result is from Run# 2
(b) Associated ID Standard outside control limits.
(c) Outside control limits.

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0276-018.0-20221219		
Lab Sample ID:	FC1494-12	**Date Sampled:**	12/19/22
Matrix:	AQ - Ground Water	**Date Received:**	12/20/22
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	KSC-CRCA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	5E36262.D	1	12/22/22 15:14	CF	n/a	n/a	V5E1629
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL 4.2 List

CAS No.	Compound	Result	PQL	MDL	Units	Q
67-64-1	Acetone	10 U	25	10	ug/l	
71-43-2	Benzene	0.31 U	1.0	0.31	ug/l	
75-27-4	Bromodichloromethane	0.24 U	1.0	0.24	ug/l	
75-25-2	Bromoform	0.41 U	1.0	0.41	ug/l	
78-93-3	2-Butanone (MEK)	2.0 U	5.0	2.0	ug/l	
75-15-0	Carbon Disulfide	0.53 U	2.0	0.53	ug/l	
56-23-5	Carbon Tetrachloride	0.36 U	1.0	0.36	ug/l	
108-90-7	Chlorobenzene	0.20 U	1.0	0.20	ug/l	
75-00-3	Chloroethane	0.67 U	2.0	0.67	ug/l	
67-66-3	Chloroform	0.30 U	1.0	0.30	ug/l	
110-82-7	Cyclohexane	0.39 U	1.0	0.39	ug/l	
124-48-1	Dibromochloromethane	0.28 U	1.0	0.28	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	1.0 U	5.0	1.0	ug/l	
106-93-4	1,2-Dibromoethane	0.28 U	2.0	0.28	ug/l	
75-71-8	Dichlorodifluoromethane	0.50 U	2.0	0.50	ug/l	
95-50-1	1,2-Dichlorobenzene	0.32 U	1.0	0.32	ug/l	
541-73-1	1,3-Dichlorobenzene	0.22 U	1.0	0.22	ug/l	
106-46-7	1,4-Dichlorobenzene	0.26 U	1.0	0.26	ug/l	
75-34-3	1,1-Dichloroethane	0.34 U	1.0	0.34	ug/l	
107-06-2	1,2-Dichloroethane	0.31 U	1.0	0.31	ug/l	
75-35-4	1,1-Dichloroethylene	0.32 U	1.0	0.32	ug/l	
156-59-2	cis-1,2-Dichloroethylene	0.28 U	1.0	0.28	ug/l	
156-60-5	trans-1,2-Dichloroethylene	0.22 U	1.0	0.22	ug/l	
78-87-5	1,2-Dichloropropane	0.43 U	1.0	0.43	ug/l	
10061-01-5	cis-1,3-Dichloropropene	0.29 U	1.0	0.29	ug/l	
10061-02-6	trans-1,3-Dichloropropene	0.21 U	1.0	0.21	ug/l	
100-41-4	Ethylbenzene	0.36 U	1.0	0.36	ug/l	
76-13-1	Freon 113	0.48 U	1.0	0.48	ug/l	
591-78-6	2-Hexanone	2.0 U	10	2.0	ug/l	
98-82-8	Isopropylbenzene	0.22 U	1.0	0.22	ug/l	
79-20-9	Methyl Acetate	5.0 U	20	5.0	ug/l	
74-83-9	Methyl Bromide	2.0 U	5.0	2.0	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0276-018.0-20221219		
Lab Sample ID:	FC1494-12	**Date Sampled:**	12/19/22
Matrix:	AQ - Ground Water	**Date Received:**	12/20/22
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	KSC-CRCA		

VOA TCL 4.2 List

CAS No.	Compound	Result	PQL	MDL	Units	Q
74-87-3	Methyl Chloride	0.50 U	2.0	0.50	ug/l	
108-87-2	Methylcyclohexane	0.44 U	1.0	0.44	ug/l	
75-09-2	Methylene Chloride	2.0 U	5.0	2.0	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	1.0 U	5.0	1.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	0.23 U	1.0	0.23	ug/l	
100-42-5	Styrene	0.22 U	1.0	0.22	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	0.30 U	1.0	0.30	ug/l	
127-18-4	Tetrachloroethylene	0.22 U	1.0	0.22	ug/l	
108-88-3	Toluene	0.30 U	1.0	0.30	ug/l	
120-82-1	1,2,4-Trichlorobenzene	0.50 U	2.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	0.25 U	1.0	0.25	ug/l	
79-00-5	1,1,2-Trichloroethane	0.47 U	1.0	0.47	ug/l	
79-01-6	Trichloroethylene	0.35 U	1.0	0.35	ug/l	
75-69-4	Trichlorofluoromethane	0.50 U	2.0	0.50	ug/l	
75-01-4	Vinyl Chloride	0.41 U	1.0	0.41	ug/l	
1330-20-7	Xylene (total)	0.72 U	3.0	0.72	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	101%		83-118%
17060-07-0	1,2-Dichloroethane-D4	102%		79-125%
2037-26-5	Toluene-D8	97%		85-112%
460-00-4	4-Bromofluorobenzene	101%		83-118%

(a) Sample was not preserved to a pH < 2.

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0276-023.0-20221219		
Lab Sample ID:	FC1494-13	**Date Sampled:**	12/19/22
Matrix:	AQ - Ground Water	**Date Received:**	12/20/22
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	KSC-CRCA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	5E36263.D	1	12/22/22 15:38	CF	n/a	n/a	V5E1629
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL 4.2 List

CAS No.	Compound	Result	PQL	MDL	Units	Q
67-64-1	Acetone	10 U	25	10	ug/l	
71-43-2	Benzene	0.31 U	1.0	0.31	ug/l	
75-27-4	Bromodichloromethane	0.24 U	1.0	0.24	ug/l	
75-25-2	Bromoform	0.41 U	1.0	0.41	ug/l	
78-93-3	2-Butanone (MEK)	2.0 U	5.0	2.0	ug/l	
75-15-0	Carbon Disulfide	0.53 U	2.0	0.53	ug/l	
56-23-5	Carbon Tetrachloride	0.36 U	1.0	0.36	ug/l	
108-90-7	Chlorobenzene	0.20 U	1.0	0.20	ug/l	
75-00-3	Chloroethane	0.67 U	2.0	0.67	ug/l	
67-66-3	Chloroform	0.30 U	1.0	0.30	ug/l	
110-82-7	Cyclohexane	0.39 U	1.0	0.39	ug/l	
124-48-1	Dibromochloromethane	0.28 U	1.0	0.28	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	1.0 U	5.0	1.0	ug/l	
106-93-4	1,2-Dibromoethane	0.28 U	2.0	0.28	ug/l	
75-71-8	Dichlorodifluoromethane	0.50 U	2.0	0.50	ug/l	
95-50-1	1,2-Dichlorobenzene	0.32 U	1.0	0.32	ug/l	
541-73-1	1,3-Dichlorobenzene	0.22 U	1.0	0.22	ug/l	
106-46-7	1,4-Dichlorobenzene	0.26 U	1.0	0.26	ug/l	
75-34-3	1,1-Dichloroethane	0.34 U	1.0	0.34	ug/l	
107-06-2	1,2-Dichloroethane	0.31 U	1.0	0.31	ug/l	
75-35-4	1,1-Dichloroethylene	0.32 U	1.0	0.32	ug/l	
156-59-2	cis-1,2-Dichloroethylene	0.28 U	1.0	0.28	ug/l	
156-60-5	trans-1,2-Dichloroethylene	0.22 U	1.0	0.22	ug/l	
78-87-5	1,2-Dichloropropane	0.43 U	1.0	0.43	ug/l	
10061-01-5	cis-1,3-Dichloropropene	0.29 U	1.0	0.29	ug/l	
10061-02-6	trans-1,3-Dichloropropene	0.21 U	1.0	0.21	ug/l	
100-41-4	Ethylbenzene	0.36 U	1.0	0.36	ug/l	
76-13-1	Freon 113	0.48 U	1.0	0.48	ug/l	
591-78-6	2-Hexanone	2.0 U	10	2.0	ug/l	
98-82-8	Isopropylbenzene	0.22 U	1.0	0.22	ug/l	
79-20-9	Methyl Acetate	5.0 U	20	5.0	ug/l	
74-83-9	Methyl Bromide	2.0 U	5.0	2.0	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0276-023.0-20221219		
Lab Sample ID:	FC1494-13	**Date Sampled:**	12/19/22
Matrix:	AQ - Ground Water	**Date Received:**	12/20/22
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	KSC-CRCA		

VOA TCL 4.2 List

CAS No.	Compound	Result	PQL	MDL	Units	Q
74-87-3	Methyl Chloride	0.50 U	2.0	0.50	ug/l	
108-87-2	Methylcyclohexane	0.44 U	1.0	0.44	ug/l	
75-09-2	Methylene Chloride	2.0 U	5.0	2.0	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	1.0 U	5.0	1.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	0.23 U	1.0	0.23	ug/l	
100-42-5	Styrene	0.22 U	1.0	0.22	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	0.30 U	1.0	0.30	ug/l	
127-18-4	Tetrachloroethylene	0.22 U	1.0	0.22	ug/l	
108-88-3	Toluene	0.30 U	1.0	0.30	ug/l	
120-82-1	1,2,4-Trichlorobenzene	0.50 U	2.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	0.25 U	1.0	0.25	ug/l	
79-00-5	1,1,2-Trichloroethane	0.47 U	1.0	0.47	ug/l	
79-01-6	Trichloroethylene	0.35 U	1.0	0.35	ug/l	
75-69-4	Trichlorofluoromethane	0.50 U	2.0	0.50	ug/l	
75-01-4	Vinyl Chloride	0.41 U	1.0	0.41	ug/l	
1330-20-7	Xylene (total)	0.72 U	3.0	0.72	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	102%		83-118%
17060-07-0	1,2-Dichloroethane-D4	103%		79-125%
2037-26-5	Toluene-D8	94%		85-112%
460-00-4	4-Bromofluorobenzene	98%		83-118%

(a) Sample vial(s) contained bubbles greater than 6mm.

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0276-023.0-20221219		
Lab Sample ID:	FC1494-13	**Date Sampled:**	12/19/22
Matrix:	AQ - Ground Water	**Date Received:**	12/20/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	KSC-CRCA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q105087.D	1	01/06/23 04:24	WH	01/04/23 09:05	OP94827	S2Q1459
Run #2	2Q105127.D	5	01/06/23 16:56	WH	01/04/23 09:05	OP94827	S2Q1460

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2	125 ml	1.0 ml

CAS No.	Compound	Result	PQL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	1.15 [a]	0.080	0.020	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0029	0.0080	0.0020	ug/l	I
307-24-4	Perfluorohexanoic acid	0.0028	0.0080	0.0020	ug/l	I
375-85-9	Perfluoroheptanoic acid	0.0020 U	0.0080	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	0.0029	0.0080	0.0020	ug/l	I
375-95-1	Perfluorononanoic acid	0.0020 U	0.0080	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS						
375-73-5	Perfluorobutanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0043	0.0080	0.0020	ug/l	I
375-92-8	Perfluoroheptanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA	0.010 U [a]	0.040	0.010	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	0.0040 U	0.016	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0040 U	0.016	0.0040	ug/l	
FLUOROTELOMER SULFONATES						
757124-72-4	4:2 Fluorotelomer sulfonate	0.0040 U	0.016	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0040 U	0.016	0.0040	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0276-023.0-20221219		
Lab Sample ID:	FC1494-13	**Date Sampled:**	12/19/22
Matrix:	AQ - Ground Water	**Date Received:**	12/20/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	KSC-CRCA		

CAS No.	Compound	Result	PQL	MDL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0040 U	0.016	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES						
13252-13-6	HFPO-DA (GenX)	0.0040 U	0.016	0.0040	ug/l	
919005-14-4	ADONA	0.0040 U	0.016	0.0040	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0040 U	0.016	0.0040	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0040 U	0.016	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	54%	62%	50-150%
	13C5-PFPeA	57%	65%	50-150%
	13C5-PFHxA	61%	67%	50-150%
	13C4-PFHpA	60%	64%	50-150%
	13C8-PFOA	62%	65%	50-150%
	13C9-PFNA	63%	65%	50-150%
	13C6-PFDA	68%	64%	50-150%
	13C7-PFUnDA	62%	61%	50-150%
	13C2-PFDoDA	64%	59%	50-150%
	13C2-PFTeDA	57%	51%	50-150%
	13C3-PFBS	59%	66%	50-150%
	13C3-PFHxS	59%	66%	50-150%
	13C8-PFOS	66%	63%	50-150%
	13C8-FOSA	47% [b]	51%	50-150%
	d3-MeFOSAA	65%	61%	50-150%
	d5-EtFOSAA	65%	62%	50-150%
	13C2-4:2FTS	57%	61%	50-150%
	13C2-6:2FTS	64%	64%	50-150%
	13C2-8:2FTS	69%	62%	50-150%
	13C3-HFPO-DA	55%	65%	50-150%

(a) Result is from Run# 2
(b) Outside control limits.

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0276-028.0-20221219		
Lab Sample ID:	FC1494-14	**Date Sampled:**	12/19/22
Matrix:	AQ - Ground Water	**Date Received:**	12/20/22
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	KSC-CRCA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	5E36264.D	1	12/22/22 16:01	CF	n/a	n/a	V5E1629
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL 4.2 List

CAS No.	Compound	Result	PQL	MDL	Units	Q
67-64-1	Acetone	10 U	25	10	ug/l	
71-43-2	Benzene	0.31 U	1.0	0.31	ug/l	
75-27-4	Bromodichloromethane	0.24 U	1.0	0.24	ug/l	
75-25-2	Bromoform	0.41 U	1.0	0.41	ug/l	
78-93-3	2-Butanone (MEK)	2.0 U	5.0	2.0	ug/l	
75-15-0	Carbon Disulfide	0.53 U	2.0	0.53	ug/l	
56-23-5	Carbon Tetrachloride	0.36 U	1.0	0.36	ug/l	
108-90-7	Chlorobenzene	0.20 U	1.0	0.20	ug/l	
75-00-3	Chloroethane	0.67 U	2.0	0.67	ug/l	
67-66-3	Chloroform	0.30 U	1.0	0.30	ug/l	
110-82-7	Cyclohexane	0.39 U	1.0	0.39	ug/l	
124-48-1	Dibromochloromethane	0.28 U	1.0	0.28	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	1.0 U	5.0	1.0	ug/l	
106-93-4	1,2-Dibromoethane	0.28 U	2.0	0.28	ug/l	
75-71-8	Dichlorodifluoromethane	0.50 U	2.0	0.50	ug/l	
95-50-1	1,2-Dichlorobenzene	0.32 U	1.0	0.32	ug/l	
541-73-1	1,3-Dichlorobenzene	0.22 U	1.0	0.22	ug/l	
106-46-7	1,4-Dichlorobenzene	0.26 U	1.0	0.26	ug/l	
75-34-3	1,1-Dichloroethane	0.34 U	1.0	0.34	ug/l	
107-06-2	1,2-Dichloroethane	0.31 U	1.0	0.31	ug/l	
75-35-4	1,1-Dichloroethylene	0.32 U	1.0	0.32	ug/l	
156-59-2	cis-1,2-Dichloroethylene	0.28 U	1.0	0.28	ug/l	
156-60-5	trans-1,2-Dichloroethylene	0.22 U	1.0	0.22	ug/l	
78-87-5	1,2-Dichloropropane	0.43 U	1.0	0.43	ug/l	
10061-01-5	cis-1,3-Dichloropropene	0.29 U	1.0	0.29	ug/l	
10061-02-6	trans-1,3-Dichloropropene	0.21 U	1.0	0.21	ug/l	
100-41-4	Ethylbenzene	0.36 U	1.0	0.36	ug/l	
76-13-1	Freon 113	0.48 U	1.0	0.48	ug/l	
591-78-6	2-Hexanone	2.0 U	10	2.0	ug/l	
98-82-8	Isopropylbenzene	0.22 U	1.0	0.22	ug/l	
79-20-9	Methyl Acetate	5.0 U	20	5.0	ug/l	
74-83-9	Methyl Bromide	2.0 U	5.0	2.0	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0276-028.0-20221219		
Lab Sample ID:	FC1494-14	**Date Sampled:**	12/19/22
Matrix:	AQ - Ground Water	**Date Received:**	12/20/22
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	KSC-CRCA		

VOA TCL 4.2 List

CAS No.	Compound	Result	PQL	MDL	Units	Q
74-87-3	Methyl Chloride	0.50 U	2.0	0.50	ug/l	
108-87-2	Methylcyclohexane	0.44 U	1.0	0.44	ug/l	
75-09-2	Methylene Chloride	2.0 U	5.0	2.0	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	1.0 U	5.0	1.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	0.23 U	1.0	0.23	ug/l	
100-42-5	Styrene	0.22 U	1.0	0.22	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	0.30 U	1.0	0.30	ug/l	
127-18-4	Tetrachloroethylene	0.22 U	1.0	0.22	ug/l	
108-88-3	Toluene	0.30 U	1.0	0.30	ug/l	
120-82-1	1,2,4-Trichlorobenzene	0.50 U	2.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	0.25 U	1.0	0.25	ug/l	
79-00-5	1,1,2-Trichloroethane	0.47 U	1.0	0.47	ug/l	
79-01-6	Trichloroethylene	0.59	1.0	0.35	ug/l	I
75-69-4	Trichlorofluoromethane	0.50 U	2.0	0.50	ug/l	
75-01-4	Vinyl Chloride	0.41 U	1.0	0.41	ug/l	
1330-20-7	Xylene (total)	0.72 U	3.0	0.72	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	102%		83-118%
17060-07-0	1,2-Dichloroethane-D4	101%		79-125%
2037-26-5	Toluene-D8	95%		85-112%
460-00-4	4-Bromofluorobenzene	99%		83-118%

(a) Sample was not preserved to a pH < 2.

U = Not detected MDL = Method Detection Limit
PQL = Practical Quantitation Limit
L = Indicates value exceeds calibration range
I = Result > = MDL but < PQL J = Estimated value
V = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0276-033.0-20221219		
Lab Sample ID:	FC1494-15	**Date Sampled:**	12/19/22
Matrix:	AQ - Ground Water	**Date Received:**	12/20/22
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	KSC-CRCA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	5E36265.D	1	12/22/22 16:24	CF	n/a	n/a	V5E1629
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL 4.2 List

CAS No.	Compound	Result	PQL	MDL	Units	Q
67-64-1	Acetone	10 U	25	10	ug/l	
71-43-2	Benzene	0.31 U	1.0	0.31	ug/l	
75-27-4	Bromodichloromethane	0.24 U	1.0	0.24	ug/l	
75-25-2	Bromoform	0.41 U	1.0	0.41	ug/l	
78-93-3	2-Butanone (MEK)	2.0 U	5.0	2.0	ug/l	
75-15-0	Carbon Disulfide	0.53 U	2.0	0.53	ug/l	
56-23-5	Carbon Tetrachloride	0.36 U	1.0	0.36	ug/l	
108-90-7	Chlorobenzene	0.20 U	1.0	0.20	ug/l	
75-00-3	Chloroethane	0.67 U	2.0	0.67	ug/l	
67-66-3	Chloroform	0.30 U	1.0	0.30	ug/l	
110-82-7	Cyclohexane	0.39 U	1.0	0.39	ug/l	
124-48-1	Dibromochloromethane	0.28 U	1.0	0.28	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	1.0 U	5.0	1.0	ug/l	
106-93-4	1,2-Dibromoethane	0.28 U	2.0	0.28	ug/l	
75-71-8	Dichlorodifluoromethane	0.50 U	2.0	0.50	ug/l	
95-50-1	1,2-Dichlorobenzene	0.32 U	1.0	0.32	ug/l	
541-73-1	1,3-Dichlorobenzene	0.22 U	1.0	0.22	ug/l	
106-46-7	1,4-Dichlorobenzene	0.26 U	1.0	0.26	ug/l	
75-34-3	1,1-Dichloroethane	0.34 U	1.0	0.34	ug/l	
107-06-2	1,2-Dichloroethane	0.31 U	1.0	0.31	ug/l	
75-35-4	1,1-Dichloroethylene	0.32 U	1.0	0.32	ug/l	
156-59-2	cis-1,2-Dichloroethylene	0.28 U	1.0	0.28	ug/l	
156-60-5	trans-1,2-Dichloroethylene	0.22 U	1.0	0.22	ug/l	
78-87-5	1,2-Dichloropropane	0.43 U	1.0	0.43	ug/l	
10061-01-5	cis-1,3-Dichloropropene	0.29 U	1.0	0.29	ug/l	
10061-02-6	trans-1,3-Dichloropropene	0.21 U	1.0	0.21	ug/l	
100-41-4	Ethylbenzene	0.36 U	1.0	0.36	ug/l	
76-13-1	Freon 113	0.48 U	1.0	0.48	ug/l	
591-78-6	2-Hexanone	2.0 U	10	2.0	ug/l	
98-82-8	Isopropylbenzene	0.22 U	1.0	0.22	ug/l	
79-20-9	Methyl Acetate	5.0 U	20	5.0	ug/l	
74-83-9	Methyl Bromide	2.0 U	5.0	2.0	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0276-033.0-20221219		
Lab Sample ID:	FC1494-15	**Date Sampled:**	12/19/22
Matrix:	AQ - Ground Water	**Date Received:**	12/20/22
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	KSC-CRCA		

VOA TCL 4.2 List

CAS No.	Compound	Result	PQL	MDL	Units	Q
74-87-3	Methyl Chloride	0.50 U	2.0	0.50	ug/l	
108-87-2	Methylcyclohexane	0.44 U	1.0	0.44	ug/l	
75-09-2	Methylene Chloride	2.0 U	5.0	2.0	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	1.0 U	5.0	1.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	0.23 U	1.0	0.23	ug/l	
100-42-5	Styrene	0.22 U	1.0	0.22	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	0.30 U	1.0	0.30	ug/l	
127-18-4	Tetrachloroethylene	0.22 U	1.0	0.22	ug/l	
108-88-3	Toluene	0.30 U	1.0	0.30	ug/l	
120-82-1	1,2,4-Trichlorobenzene	0.50 U	2.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	0.25 U	1.0	0.25	ug/l	
79-00-5	1,1,2-Trichloroethane	0.47 U	1.0	0.47	ug/l	
79-01-6	Trichloroethylene	0.35 U	1.0	0.35	ug/l	
75-69-4	Trichlorofluoromethane	0.50 U	2.0	0.50	ug/l	
75-01-4	Vinyl Chloride	0.41 U	1.0	0.41	ug/l	
1330-20-7	Xylene (total)	0.72 U	3.0	0.72	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	104%		83-118%
17060-07-0	1,2-Dichloroethane-D4	101%		79-125%
2037-26-5	Toluene-D8	96%		85-112%
460-00-4	4-Bromofluorobenzene	101%		83-118%

(a) Sample was not preserved to a pH < 2.

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0276-033.0-20221219		
Lab Sample ID:	FC1494-15	**Date Sampled:**	12/19/22
Matrix:	AQ - Ground Water	**Date Received:**	12/20/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	KSC-CRCA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q105088.D	1	01/06/23 04:41	WH	01/04/23 08:30	OP94827	S2Q1459
Run #2	2Q105128.D	5	01/06/23 17:13	WH	01/04/23 08:30	OP94827	S2Q1460

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2	125 ml	1.0 ml

CAS No.	Compound	Result	PQL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	1.21 [a]	0.080	0.020	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0020 U	0.0080	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	0.0020 U	0.0080	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0020 U	0.0080	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	0.0026	0.0080	0.0020	ug/l	I
375-95-1	Perfluorononanoic acid	0.0020 U	0.0080	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS						
375-73-5	Perfluorobutanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0045	0.0080	0.0020	ug/l	I
375-92-8	Perfluoroheptanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0217	0.0080	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA	0.0020 U	0.0080	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	0.0040 U	0.016	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0040 U	0.016	0.0040	ug/l	
FLUOROTELOMER SULFONATES						
757124-72-4	4:2 Fluorotelomer sulfonate	0.0040 U	0.016	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0040 U	0.016	0.0040	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: CRCA-DPT0276-033.0-20221219
Lab Sample ID: FC1494-15
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: KSC-CRCA

Date Sampled: 12/19/22
Date Received: 12/20/22
Percent Solids: n/a

CAS No.	Compound	Result	PQL	MDL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0040 U	0.016	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES						
13252-13-6	HFPO-DA (GenX)	0.0040 U	0.016	0.0040	ug/l	
919005-14-4	ADONA	0.0040 U	0.016	0.0040	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0040 U	0.016	0.0040	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0040 U	0.016	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	52%	58%	50-150%
	13C5-PFPeA	55%	61%	50-150%
	13C5-PFHxA	59%	63%	50-150%
	13C4-PFHpA	58%	64%	50-150%
	13C8-PFOA	60%	63%	50-150%
	13C9-PFNA	62%	63%	50-150%
	13C6-PFDA	65%	65%	50-150%
	13C7-PFUnDA	60%	61%	50-150%
	13C2-PFDoDA	62%	60%	50-150%
	13C2-PFTeDA	57%	54%	50-150%
	13C3-PFBS	57%	62%	50-150%
	13C3-PFHxS	55%	60%	50-150%
	13C8-PFOS	61%	65%	50-150%
	13C8-FOSA	53%	59%	50-150%
	d3-MeFOSAA	68%	61%	50-150%
	d5-EtFOSAA	69%	65%	50-150%
	13C2-4:2FTS	53%	58%	50-150%
	13C2-6:2FTS	61%	62%	50-150%
	13C2-8:2FTS	64%	59%	50-150%
	13C3-HFPO-DA	54%	63%	50-150%

(a) Result is from Run# 2

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0276-038.0-20221219		
Lab Sample ID:	FC1494-16	**Date Sampled:**	12/19/22
Matrix:	AQ - Ground Water	**Date Received:**	12/20/22
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	KSC-CRCA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	5E36266.D	1	12/22/22 16:47	CF	n/a	n/a	V5E1629
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL 4.2 List

CAS No.	Compound	Result	PQL	MDL	Units	Q
67-64-1	Acetone	21.3	25	10	ug/l	I
71-43-2	Benzene	0.56	1.0	0.31	ug/l	I
75-27-4	Bromodichloromethane	0.24 U	1.0	0.24	ug/l	
75-25-2	Bromoform	0.41 U	1.0	0.41	ug/l	
78-93-3	2-Butanone (MEK)	3.2	5.0	2.0	ug/l	I
75-15-0	Carbon Disulfide	0.53 U	2.0	0.53	ug/l	
56-23-5	Carbon Tetrachloride	0.36 U	1.0	0.36	ug/l	
108-90-7	Chlorobenzene	0.20 U	1.0	0.20	ug/l	
75-00-3	Chloroethane	0.67 U	2.0	0.67	ug/l	
67-66-3	Chloroform	0.30 U	1.0	0.30	ug/l	
110-82-7	Cyclohexane	0.39 U	1.0	0.39	ug/l	
124-48-1	Dibromochloromethane	0.28 U	1.0	0.28	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	1.0 U	5.0	1.0	ug/l	
106-93-4	1,2-Dibromoethane	0.28 U	2.0	0.28	ug/l	
75-71-8	Dichlorodifluoromethane	0.50 U	2.0	0.50	ug/l	
95-50-1	1,2-Dichlorobenzene	0.32 U	1.0	0.32	ug/l	
541-73-1	1,3-Dichlorobenzene	0.22 U	1.0	0.22	ug/l	
106-46-7	1,4-Dichlorobenzene	0.26 U	1.0	0.26	ug/l	
75-34-3	1,1-Dichloroethane	0.34 U	1.0	0.34	ug/l	
107-06-2	1,2-Dichloroethane	0.31 U	1.0	0.31	ug/l	
75-35-4	1,1-Dichloroethylene	0.32 U	1.0	0.32	ug/l	
156-59-2	cis-1,2-Dichloroethylene	0.28 U	1.0	0.28	ug/l	
156-60-5	trans-1,2-Dichloroethylene	0.22 U	1.0	0.22	ug/l	
78-87-5	1,2-Dichloropropane	0.43 U	1.0	0.43	ug/l	
10061-01-5	cis-1,3-Dichloropropene	0.29 U	1.0	0.29	ug/l	
10061-02-6	trans-1,3-Dichloropropene	0.21 U	1.0	0.21	ug/l	
100-41-4	Ethylbenzene	0.36 U	1.0	0.36	ug/l	
76-13-1	Freon 113	0.48 U	1.0	0.48	ug/l	
591-78-6	2-Hexanone	2.0 U	10	2.0	ug/l	
98-82-8	Isopropylbenzene	0.22 U	1.0	0.22	ug/l	
79-20-9	Methyl Acetate	5.0 U	20	5.0	ug/l	
74-83-9	Methyl Bromide	2.0 U	5.0	2.0	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0276-038.0-20221219		
Lab Sample ID:	FC1494-16	**Date Sampled:**	12/19/22
Matrix:	AQ - Ground Water	**Date Received:**	12/20/22
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	KSC-CRCA		

VOA TCL 4.2 List

CAS No.	Compound	Result	PQL	MDL	Units	Q
74-87-3	Methyl Chloride	0.50 U	2.0	0.50	ug/l	
108-87-2	Methylcyclohexane	0.44 U	1.0	0.44	ug/l	
75-09-2	Methylene Chloride	2.0 U	5.0	2.0	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	1.0 U	5.0	1.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	0.23 U	1.0	0.23	ug/l	
100-42-5	Styrene	0.22 U	1.0	0.22	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	0.30 U	1.0	0.30	ug/l	
127-18-4	Tetrachloroethylene	0.22 U	1.0	0.22	ug/l	
108-88-3	Toluene	0.45	1.0	0.30	ug/l	I
120-82-1	1,2,4-Trichlorobenzene	0.50 U	2.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	0.25 U	1.0	0.25	ug/l	
79-00-5	1,1,2-Trichloroethane	0.47 U	1.0	0.47	ug/l	
79-01-6	Trichloroethylene	6.0	1.0	0.35	ug/l	
75-69-4	Trichlorofluoromethane	0.50 U	2.0	0.50	ug/l	
75-01-4	Vinyl Chloride	0.41 U	1.0	0.41	ug/l	
1330-20-7	Xylene (total)	0.72 U	3.0	0.72	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	101%		83-118%
17060-07-0	1,2-Dichloroethane-D4	99%		79-125%
2037-26-5	Toluene-D8	96%		85-112%
460-00-4	4-Bromofluorobenzene	100%		83-118%

(a) Sample was not preserved to a pH < 2. Sample vial(s) contained bubbles greater than 6mm.

U = Not detected MDL = Method Detection Limit
PQL = Practical Quantitation Limit
L = Indicates value exceeds calibration range
I = Result > = MDL but < PQL J = Estimated value
V = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0276-043.0-20221219		
Lab Sample ID:	FC1494-17	**Date Sampled:**	12/19/22
Matrix:	AQ - Ground Water	**Date Received:**	12/20/22
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	KSC-CRCA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	5E36267.D	1	12/22/22 17:10	CF	n/a	n/a	V5E1629
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL 4.2 List

CAS No.	Compound	Result	PQL	MDL	Units	Q
67-64-1	Acetone	10 U	25	10	ug/l	
71-43-2	Benzene	0.36	1.0	0.31	ug/l	I
75-27-4	Bromodichloromethane	0.24 U	1.0	0.24	ug/l	
75-25-2	Bromoform	0.41 U	1.0	0.41	ug/l	
78-93-3	2-Butanone (MEK)	2.0 U	5.0	2.0	ug/l	
75-15-0	Carbon Disulfide	0.53 U	2.0	0.53	ug/l	
56-23-5	Carbon Tetrachloride	0.36 U	1.0	0.36	ug/l	
108-90-7	Chlorobenzene	0.20 U	1.0	0.20	ug/l	
75-00-3	Chloroethane	0.67 U	2.0	0.67	ug/l	
67-66-3	Chloroform	0.30 U	1.0	0.30	ug/l	
110-82-7	Cyclohexane	0.39 U	1.0	0.39	ug/l	
124-48-1	Dibromochloromethane	0.28 U	1.0	0.28	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	1.0 U	5.0	1.0	ug/l	
106-93-4	1,2-Dibromoethane	0.28 U	2.0	0.28	ug/l	
75-71-8	Dichlorodifluoromethane	0.50 U	2.0	0.50	ug/l	
95-50-1	1,2-Dichlorobenzene	0.32 U	1.0	0.32	ug/l	
541-73-1	1,3-Dichlorobenzene	0.22 U	1.0	0.22	ug/l	
106-46-7	1,4-Dichlorobenzene	0.26 U	1.0	0.26	ug/l	
75-34-3	1,1-Dichloroethane	0.34 U	1.0	0.34	ug/l	
107-06-2	1,2-Dichloroethane	0.31 U	1.0	0.31	ug/l	
75-35-4	1,1-Dichloroethylene	0.32 U	1.0	0.32	ug/l	
156-59-2	cis-1,2-Dichloroethylene	0.28 U	1.0	0.28	ug/l	
156-60-5	trans-1,2-Dichloroethylene	0.22 U	1.0	0.22	ug/l	
78-87-5	1,2-Dichloropropane	0.43 U	1.0	0.43	ug/l	
10061-01-5	cis-1,3-Dichloropropene	0.29 U	1.0	0.29	ug/l	
10061-02-6	trans-1,3-Dichloropropene	0.21 U	1.0	0.21	ug/l	
100-41-4	Ethylbenzene	0.36 U	1.0	0.36	ug/l	
76-13-1	Freon 113	0.48 U	1.0	0.48	ug/l	
591-78-6	2-Hexanone	2.0 U	10	2.0	ug/l	
98-82-8	Isopropylbenzene	0.22 U	1.0	0.22	ug/l	
79-20-9	Methyl Acetate	5.0 U	20	5.0	ug/l	
74-83-9	Methyl Bromide	2.0 U	5.0	2.0	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0276-043.0-20221219		
Lab Sample ID:	FC1494-17	**Date Sampled:**	12/19/22
Matrix:	AQ - Ground Water	**Date Received:**	12/20/22
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	KSC-CRCA		

VOA TCL 4.2 List

CAS No.	Compound	Result	PQL	MDL	Units	Q
74-87-3	Methyl Chloride	0.50 U	2.0	0.50	ug/l	
108-87-2	Methylcyclohexane	0.44 U	1.0	0.44	ug/l	
75-09-2	Methylene Chloride	2.0 U	5.0	2.0	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	1.0 U	5.0	1.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	0.23 U	1.0	0.23	ug/l	
100-42-5	Styrene	0.22 U	1.0	0.22	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	0.30 U	1.0	0.30	ug/l	
127-18-4	Tetrachloroethylene	0.22 U	1.0	0.22	ug/l	
108-88-3	Toluene	0.30 U	1.0	0.30	ug/l	
120-82-1	1,2,4-Trichlorobenzene	0.50 U	2.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	0.25 U	1.0	0.25	ug/l	
79-00-5	1,1,2-Trichloroethane	0.47 U	1.0	0.47	ug/l	
79-01-6	Trichloroethylene	0.79	1.0	0.35	ug/l	I
75-69-4	Trichlorofluoromethane	0.50 U	2.0	0.50	ug/l	
75-01-4	Vinyl Chloride	0.41 U	1.0	0.41	ug/l	
1330-20-7	Xylene (total)	0.72 U	3.0	0.72	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	102%		83-118%
17060-07-0	1,2-Dichloroethane-D4	102%		79-125%
2037-26-5	Toluene-D8	96%		85-112%
460-00-4	4-Bromofluorobenzene	102%		83-118%

(a) Sample was not preserved to a pH < 2. Sample vial(s) contained bubbles greater than 6mm.

U = Not detected MDL = Method Detection Limit
PQL = Practical Quantitation Limit
L = Indicates value exceeds calibration range
I = Result > = MDL but < PQL J = Estimated value
V = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: CRCA-DPT0276-043.0-20221219
Lab Sample ID: FC1494-17
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: KSC-CRCA

Date Sampled: 12/19/22
Date Received: 12/20/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q105089.D	1	01/06/23 04:57	WH	01/04/23 08:30	OP94827	S2Q1459
Run #2 [a]	Q98678.D	1	12/31/22 22:33	AL	12/28/22 09:05	OP94730	SQ2107

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2	125 ml	1.0 ml

CAS No.	Compound	Result	PQL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	0.351	0.016	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0039	0.0080	0.0020	ug/l	I
307-24-4	Perfluorohexanoic acid	0.0029	0.0080	0.0020	ug/l	I
375-85-9	Perfluoroheptanoic acid	0.0020 U	0.0080	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	0.0022	0.0080	0.0020	ug/l	I
375-95-1	Perfluorononanoic acid	0.0020 U	0.0080	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS						
375-73-5	Perfluorobutanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0045	0.0080	0.0020	ug/l	I
375-92-8	Perfluoroheptanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA [b]	0.0020 U	0.0080	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	0.0040 U	0.016	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0040 U	0.016	0.0040	ug/l	
FLUOROTELOMER SULFONATES						
757124-72-4	4:2 Fluorotelomer sulfonate	0.0040 U	0.016	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0040 U	0.016	0.0040	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0276-043.0-20221219		
Lab Sample ID:	FC1494-17	**Date Sampled:**	12/19/22
Matrix:	AQ - Ground Water	**Date Received:**	12/20/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	KSC-CRCA		

CAS No.	Compound	Result	PQL	MDL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0040 U	0.016	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES						
13252-13-6	HFPO-DA (GenX)	0.0040 U	0.016	0.0040	ug/l	
919005-14-4	ADONA	0.0040 U	0.016	0.0040	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0040 U	0.016	0.0040	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0040 U	0.016	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	60%	74%	50-150%
	13C5-PFPeA	64%	70%	50-150%
	13C5-PFHxA	70%	19% [c]	50-150%
	13C4-PFHpA	71%	2% [c]	50-150%
	13C8-PFOA	73%	0% [c]	50-150%
	13C9-PFNA	75%	0% [c]	50-150%
	13C6-PFDA	76%	0% [c]	50-150%
	13C7-PFUnDA	69%	70%	50-150%
	13C2-PFDoDA	69%	58%	50-150%
	13C2-PFTeDA	60%	47% [c]	50-150%
	13C3-PFBS	66%	41% [c]	50-150%
	13C3-PFHxS	67%	0% [c]	50-150%
	13C8-PFOS	72%	67%	50-150%
	13C8-FOSA	48% [c]	37% [c]	50-150%
	d3-MeFOSAA	82%	44% [c]	50-150%
	d5-EtFOSAA	80%	74%	50-150%
	13C2-4:2FTS	64%	27% [c]	50-150%
	13C2-6:2FTS	75%	0% [c]	50-150%
	13C2-8:2FTS	74%	0% [c]	50-150%
	13C3-HFPO-DA	66%	13% [c]	50-150%

(a) Confirmation run.
(b) Associated ID Standard outside control limits.
(c) Outside control limits.

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0276-048.0-20221219		
Lab Sample ID:	FC1494-18	**Date Sampled:**	12/19/22
Matrix:	AQ - Ground Water	**Date Received:**	12/20/22
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	KSC-CRCA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	5E36268.D	1	12/22/22 17:33	CF	n/a	n/a	V5E1629
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL 4.2 List

CAS No.	Compound	Result	PQL	MDL	Units	Q
67-64-1	Acetone	10 U	25	10	ug/l	
71-43-2	Benzene	0.31 U	1.0	0.31	ug/l	
75-27-4	Bromodichloromethane	0.24 U	1.0	0.24	ug/l	
75-25-2	Bromoform	0.41 U	1.0	0.41	ug/l	
78-93-3	2-Butanone (MEK)	2.0 U	5.0	2.0	ug/l	
75-15-0	Carbon Disulfide	0.53 U	2.0	0.53	ug/l	
56-23-5	Carbon Tetrachloride	0.36 U	1.0	0.36	ug/l	
108-90-7	Chlorobenzene	0.20 U	1.0	0.20	ug/l	
75-00-3	Chloroethane	0.67 U	2.0	0.67	ug/l	
67-66-3	Chloroform	0.30 U	1.0	0.30	ug/l	
110-82-7	Cyclohexane	0.39 U	1.0	0.39	ug/l	
124-48-1	Dibromochloromethane	0.28 U	1.0	0.28	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	1.0 U	5.0	1.0	ug/l	
106-93-4	1,2-Dibromoethane	0.28 U	2.0	0.28	ug/l	
75-71-8	Dichlorodifluoromethane	0.50 U	2.0	0.50	ug/l	
95-50-1	1,2-Dichlorobenzene	0.32 U	1.0	0.32	ug/l	
541-73-1	1,3-Dichlorobenzene	0.22 U	1.0	0.22	ug/l	
106-46-7	1,4-Dichlorobenzene	0.26 U	1.0	0.26	ug/l	
75-34-3	1,1-Dichloroethane	0.34 U	1.0	0.34	ug/l	
107-06-2	1,2-Dichloroethane	0.31 U	1.0	0.31	ug/l	
75-35-4	1,1-Dichloroethylene	0.32 U	1.0	0.32	ug/l	
156-59-2	cis-1,2-Dichloroethylene	0.28 U	1.0	0.28	ug/l	
156-60-5	trans-1,2-Dichloroethylene	0.22 U	1.0	0.22	ug/l	
78-87-5	1,2-Dichloropropane	0.43 U	1.0	0.43	ug/l	
10061-01-5	cis-1,3-Dichloropropene	0.29 U	1.0	0.29	ug/l	
10061-02-6	trans-1,3-Dichloropropene	0.21 U	1.0	0.21	ug/l	
100-41-4	Ethylbenzene	0.36 U	1.0	0.36	ug/l	
76-13-1	Freon 113	0.48 U	1.0	0.48	ug/l	
591-78-6	2-Hexanone	2.0 U	10	2.0	ug/l	
98-82-8	Isopropylbenzene	0.22 U	1.0	0.22	ug/l	
79-20-9	Methyl Acetate	5.0 U	20	5.0	ug/l	
74-83-9	Methyl Bromide	2.0 U	5.0	2.0	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0276-048.0-20221219		
Lab Sample ID:	FC1494-18	**Date Sampled:**	12/19/22
Matrix:	AQ - Ground Water	**Date Received:**	12/20/22
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	KSC-CRCA		

VOA TCL 4.2 List

CAS No.	Compound	Result	PQL	MDL	Units	Q
74-87-3	Methyl Chloride	0.50 U	2.0	0.50	ug/l	
108-87-2	Methylcyclohexane	0.44 U	1.0	0.44	ug/l	
75-09-2	Methylene Chloride	2.0 U	5.0	2.0	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	1.0 U	5.0	1.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	0.23 U	1.0	0.23	ug/l	
100-42-5	Styrene	0.22 U	1.0	0.22	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	0.30 U	1.0	0.30	ug/l	
127-18-4	Tetrachloroethylene	0.22 U	1.0	0.22	ug/l	
108-88-3	Toluene	0.30 U	1.0	0.30	ug/l	
120-82-1	1,2,4-Trichlorobenzene	0.50 U	2.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	0.25 U	1.0	0.25	ug/l	
79-00-5	1,1,2-Trichloroethane	0.47 U	1.0	0.47	ug/l	
79-01-6	Trichloroethylene	0.35 U	1.0	0.35	ug/l	
75-69-4	Trichlorofluoromethane	0.50 U	2.0	0.50	ug/l	
75-01-4	Vinyl Chloride	2.4	1.0	0.41	ug/l	
1330-20-7	Xylene (total)	0.72 U	3.0	0.72	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	105%		83-118%
17060-07-0	1,2-Dichloroethane-D4	103%		79-125%
2037-26-5	Toluene-D8	96%		85-112%
460-00-4	4-Bromofluorobenzene	101%		83-118%

(a) Sample was not preserved to a pH < 2.

U = Not detected MDL = Method Detection Limit
PQL = Practical Quantitation Limit
L = Indicates value exceeds calibration range
I = Result > = MDL but < PQL J = Estimated value
V = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0276-053.0-20221220		
Lab Sample ID:	FC1494-19	**Date Sampled:**	12/20/22
Matrix:	AQ - Ground Water	**Date Received:**	12/20/22
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	KSC-CRCA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	1A42331.D	1	12/22/22 14:00	AL	n/a	n/a	V1A1705
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL 4.2 List

CAS No.	Compound	Result	PQL	MDL	Units	Q
67-64-1	Acetone	13.1	25	10	ug/l	I
71-43-2	Benzene	0.34	1.0	0.31	ug/l	I
75-27-4	Bromodichloromethane	0.24 U	1.0	0.24	ug/l	
75-25-2	Bromoform	0.41 U	1.0	0.41	ug/l	
78-93-3	2-Butanone (MEK)	2.6	5.0	2.0	ug/l	I
75-15-0	Carbon Disulfide	0.53 U	2.0	0.53	ug/l	
56-23-5	Carbon Tetrachloride	0.36 U	1.0	0.36	ug/l	
108-90-7	Chlorobenzene	0.20 U	1.0	0.20	ug/l	
75-00-3	Chloroethane	0.67 U	2.0	0.67	ug/l	
67-66-3	Chloroform	0.30 U	1.0	0.30	ug/l	
110-82-7	Cyclohexane	0.39 U	1.0	0.39	ug/l	
124-48-1	Dibromochloromethane	0.28 U	1.0	0.28	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	1.0 U	5.0	1.0	ug/l	
106-93-4	1,2-Dibromoethane	0.28 U	2.0	0.28	ug/l	
75-71-8	Dichlorodifluoromethane	0.50 U	2.0	0.50	ug/l	
95-50-1	1,2-Dichlorobenzene	0.32 U	1.0	0.32	ug/l	
541-73-1	1,3-Dichlorobenzene	0.22 U	1.0	0.22	ug/l	
106-46-7	1,4-Dichlorobenzene	0.26 U	1.0	0.26	ug/l	
75-34-3	1,1-Dichloroethane	0.34 U	1.0	0.34	ug/l	
107-06-2	1,2-Dichloroethane	0.31 U	1.0	0.31	ug/l	
75-35-4	1,1-Dichloroethylene	0.32 U	1.0	0.32	ug/l	
156-59-2	cis-1,2-Dichloroethylene	0.28 U	1.0	0.28	ug/l	
156-60-5	trans-1,2-Dichloroethylene	0.22 U	1.0	0.22	ug/l	
78-87-5	1,2-Dichloropropane	0.43 U	1.0	0.43	ug/l	
10061-01-5	cis-1,3-Dichloropropene	0.29 U	1.0	0.29	ug/l	
10061-02-6	trans-1,3-Dichloropropene	0.21 U	1.0	0.21	ug/l	
100-41-4	Ethylbenzene	0.36 U	1.0	0.36	ug/l	
76-13-1	Freon 113	0.48 U	1.0	0.48	ug/l	
591-78-6	2-Hexanone	2.0 U	10	2.0	ug/l	
98-82-8	Isopropylbenzene	0.22 U	1.0	0.22	ug/l	
79-20-9	Methyl Acetate	5.0 U	20	5.0	ug/l	
74-83-9	Methyl Bromide	2.0 U	5.0	2.0	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0276-053.0-20221220		
Lab Sample ID:	FC1494-19	**Date Sampled:**	12/20/22
Matrix:	AQ - Ground Water	**Date Received:**	12/20/22
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	KSC-CRCA		

VOA TCL 4.2 List

CAS No.	Compound	Result	PQL	MDL	Units	Q
74-87-3	Methyl Chloride	0.50 U	2.0	0.50	ug/l	
108-87-2	Methylcyclohexane	0.44 U	1.0	0.44	ug/l	
75-09-2	Methylene Chloride	2.0 U	5.0	2.0	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	1.0 U	5.0	1.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	0.23 U	1.0	0.23	ug/l	
100-42-5	Styrene	0.22 U	1.0	0.22	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	0.30 U	1.0	0.30	ug/l	
127-18-4	Tetrachloroethylene	0.22 U	1.0	0.22	ug/l	
108-88-3	Toluene	0.30 U	1.0	0.30	ug/l	
120-82-1	1,2,4-Trichlorobenzene	0.50 U	2.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	0.25 U	1.0	0.25	ug/l	
79-00-5	1,1,2-Trichloroethane	0.47 U	1.0	0.47	ug/l	
79-01-6	Trichloroethylene	0.35 U	1.0	0.35	ug/l	
75-69-4	Trichlorofluoromethane	0.50 U	2.0	0.50	ug/l	
75-01-4	Vinyl Chloride	6.8	1.0	0.41	ug/l	
1330-20-7	Xylene (total)	0.72 U	3.0	0.72	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	98%		83-118%
17060-07-0	1,2-Dichloroethane-D4	95%		79-125%
2037-26-5	Toluene-D8	99%		85-112%
460-00-4	4-Bromofluorobenzene	98%		83-118%

(a) Sample vial(s) contained significant headspace.

U = Not detected MDL = Method Detection Limit
PQL = Practical Quantitation Limit
L = Indicates value exceeds calibration range
I = Result > = MDL but < PQL J = Estimated value
V = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0276-058.0-20221220		
Lab Sample ID:	FC1494-20	**Date Sampled:**	12/20/22
Matrix:	AQ - Ground Water	**Date Received:**	12/20/22
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	KSC-CRCA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	1A42332.D	1	12/22/22 14:24	AL	n/a	n/a	V1A1705
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL 4.2 List

CAS No.	Compound	Result	PQL	MDL	Units	Q
67-64-1	Acetone	10 U	25	10	ug/l	
71-43-2	Benzene	0.31 U	1.0	0.31	ug/l	
75-27-4	Bromodichloromethane	0.24 U	1.0	0.24	ug/l	
75-25-2	Bromoform	0.41 U	1.0	0.41	ug/l	
78-93-3	2-Butanone (MEK)	2.0 U	5.0	2.0	ug/l	
75-15-0	Carbon Disulfide	0.53 U	2.0	0.53	ug/l	
56-23-5	Carbon Tetrachloride	0.36 U	1.0	0.36	ug/l	
108-90-7	Chlorobenzene	0.20 U	1.0	0.20	ug/l	
75-00-3	Chloroethane	0.67 U	2.0	0.67	ug/l	
67-66-3	Chloroform	0.30 U	1.0	0.30	ug/l	
110-82-7	Cyclohexane	0.39 U	1.0	0.39	ug/l	
124-48-1	Dibromochloromethane	0.28 U	1.0	0.28	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	1.0 U	5.0	1.0	ug/l	
106-93-4	1,2-Dibromoethane	0.28 U	2.0	0.28	ug/l	
75-71-8	Dichlorodifluoromethane	0.50 U	2.0	0.50	ug/l	
95-50-1	1,2-Dichlorobenzene	0.32 U	1.0	0.32	ug/l	
541-73-1	1,3-Dichlorobenzene	0.22 U	1.0	0.22	ug/l	
106-46-7	1,4-Dichlorobenzene	0.26 U	1.0	0.26	ug/l	
75-34-3	1,1-Dichloroethane	0.34 U	1.0	0.34	ug/l	
107-06-2	1,2-Dichloroethane	0.31 U	1.0	0.31	ug/l	
75-35-4	1,1-Dichloroethylene	0.32 U	1.0	0.32	ug/l	
156-59-2	cis-1,2-Dichloroethylene	0.28 U	1.0	0.28	ug/l	
156-60-5	trans-1,2-Dichloroethylene	0.22 U	1.0	0.22	ug/l	
78-87-5	1,2-Dichloropropane	0.43 U	1.0	0.43	ug/l	
10061-01-5	cis-1,3-Dichloropropene	0.29 U	1.0	0.29	ug/l	
10061-02-6	trans-1,3-Dichloropropene	0.21 U	1.0	0.21	ug/l	
100-41-4	Ethylbenzene	0.36 U	1.0	0.36	ug/l	
76-13-1	Freon 113	0.48 U	1.0	0.48	ug/l	
591-78-6	2-Hexanone	2.0 U	10	2.0	ug/l	
98-82-8	Isopropylbenzene	0.22 U	1.0	0.22	ug/l	
79-20-9	Methyl Acetate	5.0 U	20	5.0	ug/l	
74-83-9	Methyl Bromide	2.0 U	5.0	2.0	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0276-058.0-20221220		
Lab Sample ID:	FC1494-20	**Date Sampled:**	12/20/22
Matrix:	AQ - Ground Water	**Date Received:**	12/20/22
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	KSC-CRCA		

VOA TCL 4.2 List

CAS No.	Compound	Result	PQL	MDL	Units	Q
74-87-3	Methyl Chloride	0.50 U	2.0	0.50	ug/l	
108-87-2	Methylcyclohexane	0.44 U	1.0	0.44	ug/l	
75-09-2	Methylene Chloride	2.0 U	5.0	2.0	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	3.7	5.0	1.0	ug/l	I
1634-04-4	Methyl Tert Butyl Ether	0.23 U	1.0	0.23	ug/l	
100-42-5	Styrene	0.22 U	1.0	0.22	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	0.30 U	1.0	0.30	ug/l	
127-18-4	Tetrachloroethylene	0.22 U	1.0	0.22	ug/l	
108-88-3	Toluene	0.30 U	1.0	0.30	ug/l	
120-82-1	1,2,4-Trichlorobenzene	0.50 U	2.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	0.25 U	1.0	0.25	ug/l	
79-00-5	1,1,2-Trichloroethane	0.47 U	1.0	0.47	ug/l	
79-01-6	Trichloroethylene	0.38	1.0	0.35	ug/l	I
75-69-4	Trichlorofluoromethane	0.50 U	2.0	0.50	ug/l	
75-01-4	Vinyl Chloride	0.41 U	1.0	0.41	ug/l	
1330-20-7	Xylene (total)	0.72 U	3.0	0.72	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	98%		83-118%
17060-07-0	1,2-Dichloroethane-D4	95%		79-125%
2037-26-5	Toluene-D8	99%		85-112%
460-00-4	4-Bromofluorobenzene	96%		83-118%

U = Not detected MDL = Method Detection Limit
PQL = Practical Quantitation Limit
L = Indicates value exceeds calibration range
I = Result > = MDL but < PQL J = Estimated value
V = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0276-058.0-20221220		
Lab Sample ID:	FC1494-20	**Date Sampled:**	12/20/22
Matrix:	AQ - Ground Water	**Date Received:**	12/20/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	KSC-CRCA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q105090.D	1	01/06/23 05:14	WH	01/04/23 08:30	OP94827	S2Q1459
Run #2							

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	PQL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	0.0040 U	0.016	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0020 U	0.0080	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	0.0020 U	0.0080	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0020 U	0.0080	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	0.0020 U	0.0080	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0020 U	0.0080	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS						
375-73-5	Perfluorobutanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA	0.0020 U	0.0080	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	0.0040 U	0.016	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0040 U	0.016	0.0040	ug/l	
FLUOROTELOMER SULFONATES						
757124-72-4	4:2 Fluorotelomer sulfonate	0.0040 U	0.016	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0040 U	0.016	0.0040	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0276-058.0-20221220		
Lab Sample ID:	FC1494-20	**Date Sampled:**	12/20/22
Matrix:	AQ - Ground Water	**Date Received:**	12/20/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	KSC-CRCA		

CAS No.	Compound	Result	PQL	MDL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0040 U	0.016	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES						
13252-13-6	HFPO-DA (GenX)	0.0040 U	0.016	0.0040	ug/l	
919005-14-4	ADONA	0.0040 U	0.016	0.0040	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0040 U	0.016	0.0040	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0040 U	0.016	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	51%		50-150%
	13C5-PFPeA	55%		50-150%
	13C5-PFHxA	58%		50-150%
	13C4-PFHpA	58%		50-150%
	13C8-PFOA	58%		50-150%
	13C9-PFNA	59%		50-150%
	13C6-PFDA	63%		50-150%
	13C7-PFUnDA	59%		50-150%
	13C2-PFDoDA	61%		50-150%
	13C2-PFTeDA	50%		50-150%
	13C3-PFBS	55%		50-150%
	13C3-PFHxS	54%		50-150%
	13C8-PFOS	59%		50-150%
	13C8-FOSA	51%		50-150%
	d3-MeFOSAA	59%		50-150%
	d5-EtFOSAA	62%		50-150%
	13C2-4:2FTS	53%		50-150%
	13C2-6:2FTS	59%		50-150%
	13C2-8:2FTS	61%		50-150%
	13C3-HFPO-DA	52%		50-150%

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: CRCA-DPT0277-008.0-20221220
Lab Sample ID: FC1494-21
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: KSC-CRCA

Date Sampled: 12/20/22
Date Received: 12/20/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q105091.D	1	01/06/23 05:31	WH	01/04/23 09:05	OP94827	S2Q1459
Run #2	2Q105129.D	5	01/06/23 17:34	WH	01/04/23 09:05	OP94827	S2Q1460

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2	125 ml	1.0 ml

CAS No.	Compound	Result	PQL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	1.48 [a]	0.080	0.020	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0197	0.0080	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	0.0195	0.0080	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0204	0.0080	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	0.0122	0.0080	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0030	0.0080	0.0020	ug/l	I
335-76-2	Perfluorodecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid [b]	0.0020 U	0.0080	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS						
375-73-5	Perfluorobutanesulfonic acid	0.0045	0.0080	0.0020	ug/l	I
2706-91-4	Perfluoropentanesulfonic acid	0.0052	0.0080	0.0020	ug/l	I
355-46-4	Perfluorohexanesulfonic acid	0.0481	0.0080	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0023	0.0080	0.0020	ug/l	I
1763-23-1	Perfluorooctanesulfonic acid	0.137	0.0080	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA	0.0020 U	0.0080	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	0.0040 U	0.016	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0040 U	0.016	0.0040	ug/l	
FLUOROTELOMER SULFONATES						
757124-72-4	4:2 Fluorotelomer sulfonate	0.0040 U	0.016	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0040 U	0.016	0.0040	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: CRCA-DPT0277-008.0-20221220
Lab Sample ID: FC1494-21
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: KSC-CRCA

Date Sampled: 12/20/22
Date Received: 12/20/22
Percent Solids: n/a

CAS No.	Compound	Result	PQL	MDL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0040 U	0.016	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES						
13252-13-6	HFPO-DA (GenX)	0.0040 U	0.016	0.0040	ug/l	
919005-14-4	ADONA	0.0040 U	0.016	0.0040	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0040 U	0.016	0.0040	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0040 U	0.016	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	54%	64%	50-150%
	13C5-PFPeA	58%	67%	50-150%
	13C5-PFHxA	65%	69%	50-150%
	13C4-PFHpA	65%	69%	50-150%
	13C8-PFOA	68%	68%	50-150%
	13C9-PFNA	72%	69%	50-150%
	13C6-PFDA	76%	70%	50-150%
	13C7-PFUnDA	70%	65%	50-150%
	13C2-PFDoDA	68%	61%	50-150%
	13C2-PFTeDA	49% [c]	46% [c]	50-150%
	13C3-PFBS	62%	68%	50-150%
	13C3-PFHxS	63%	65%	50-150%
	13C8-PFOS	72%	68%	50-150%
	13C8-FOSA	50%	55%	50-150%
	d3-MeFOSAA	73%	67%	50-150%
	d5-EtFOSAA	73%	64%	50-150%
	13C2-4:2FTS	59%	64%	50-150%
	13C2-6:2FTS	71%	69%	50-150%
	13C2-8:2FTS	74%	67%	50-150%
	13C3-HFPO-DA	59%	65%	50-150%

(a) Result is from Run# 2
(b) Associated ID Standard outside control limits.
(c) Outside control limits.

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0277-018.0-20221220		
Lab Sample ID:	FC1494-22	**Date Sampled:**	12/20/22
Matrix:	AQ - Ground Water	**Date Received:**	12/20/22
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	KSC-CRCA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	I753823.D	1	12/22/22 14:03	KG	n/a	n/a	VI2795
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL 4.2 List

CAS No.	Compound	Result	PQL	MDL	Units	Q
67-64-1	Acetone	10 U	25	10	ug/l	
71-43-2	Benzene	0.31 U	1.0	0.31	ug/l	
75-27-4	Bromodichloromethane	0.24 U	1.0	0.24	ug/l	
75-25-2	Bromoform	0.41 U	1.0	0.41	ug/l	
78-93-3	2-Butanone (MEK)	2.0 U	5.0	2.0	ug/l	
75-15-0	Carbon Disulfide	0.53 U	2.0	0.53	ug/l	
56-23-5	Carbon Tetrachloride	0.36 U	1.0	0.36	ug/l	
108-90-7	Chlorobenzene	0.20 U	1.0	0.20	ug/l	
75-00-3	Chloroethane [b]	0.67 U	2.0	0.67	ug/l	
67-66-3	Chloroform	0.30 U	1.0	0.30	ug/l	
110-82-7	Cyclohexane	0.39 U	1.0	0.39	ug/l	
124-48-1	Dibromochloromethane	0.28 U	1.0	0.28	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	1.0 U	5.0	1.0	ug/l	
106-93-4	1,2-Dibromoethane	0.28 U	2.0	0.28	ug/l	
75-71-8	Dichlorodifluoromethane	0.50 U	2.0	0.50	ug/l	
95-50-1	1,2-Dichlorobenzene	0.32 U	1.0	0.32	ug/l	
541-73-1	1,3-Dichlorobenzene	0.22 U	1.0	0.22	ug/l	
106-46-7	1,4-Dichlorobenzene	0.26 U	1.0	0.26	ug/l	
75-34-3	1,1-Dichloroethane	0.34 U	1.0	0.34	ug/l	
107-06-2	1,2-Dichloroethane	0.31 U	1.0	0.31	ug/l	
75-35-4	1,1-Dichloroethylene	0.32 U	1.0	0.32	ug/l	
156-59-2	cis-1,2-Dichloroethylene	0.28 U	1.0	0.28	ug/l	
156-60-5	trans-1,2-Dichloroethylene	0.22 U	1.0	0.22	ug/l	
78-87-5	1,2-Dichloropropane	0.43 U	1.0	0.43	ug/l	
10061-01-5	cis-1,3-Dichloropropene	0.29 U	1.0	0.29	ug/l	
10061-02-6	trans-1,3-Dichloropropene	0.21 U	1.0	0.21	ug/l	
100-41-4	Ethylbenzene	0.36 U	1.0	0.36	ug/l	
76-13-1	Freon 113	0.48 U	1.0	0.48	ug/l	
591-78-6	2-Hexanone	2.0 U	10	2.0	ug/l	
98-82-8	Isopropylbenzene	0.22 U	1.0	0.22	ug/l	
79-20-9	Methyl Acetate	5.0 U	20	5.0	ug/l	
74-83-9	Methyl Bromide [c]	2.0 U	5.0	2.0	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0277-018.0-20221220		
Lab Sample ID:	FC1494-22	**Date Sampled:**	12/20/22
Matrix:	AQ - Ground Water	**Date Received:**	12/20/22
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	KSC-CRCA		

VOA TCL 4.2 List

CAS No.	Compound	Result	PQL	MDL	Units	Q
74-87-3	Methyl Chloride	0.50 U	2.0	0.50	ug/l	
108-87-2	Methylcyclohexane	0.44 U	1.0	0.44	ug/l	
75-09-2	Methylene Chloride	2.0 U	5.0	2.0	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	1.0 U	5.0	1.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	0.23 U	1.0	0.23	ug/l	
100-42-5	Styrene	0.22 U	1.0	0.22	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	0.30 U	1.0	0.30	ug/l	
127-18-4	Tetrachloroethylene	0.22 U	1.0	0.22	ug/l	
108-88-3	Toluene	0.30 U	1.0	0.30	ug/l	
120-82-1	1,2,4-Trichlorobenzene	0.50 U	2.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	0.25 U	1.0	0.25	ug/l	
79-00-5	1,1,2-Trichloroethane	0.47 U	1.0	0.47	ug/l	
79-01-6	Trichloroethylene	0.35 U	1.0	0.35	ug/l	
75-69-4	Trichlorofluoromethane	0.50 U	2.0	0.50	ug/l	
75-01-4	Vinyl Chloride	0.41 U	1.0	0.41	ug/l	
1330-20-7	Xylene (total)	0.72 U	3.0	0.72	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	104%		83-118%
17060-07-0	1,2-Dichloroethane-D4	102%		79-125%
2037-26-5	Toluene-D8	97%		85-112%
460-00-4	4-Bromofluorobenzene	101%		83-118%

(a) Sample was not preserved to a pH < 2.
(b) Associated CCV outside control limits low.
(c) Associated CCV outside control limits high, sample is ND.

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0277-023.0-20221220		
Lab Sample ID:	FC1494-23	**Date Sampled:**	12/20/22
Matrix:	AQ - Ground Water	**Date Received:**	12/20/22
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	KSC-CRCA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	I753824.D	1	12/22/22 14:27	KG	n/a	n/a	VI2795
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL 4.2 List

CAS No.	Compound	Result	PQL	MDL	Units	Q
67-64-1	Acetone	10 U	25	10	ug/l	
71-43-2	Benzene	0.31 U	1.0	0.31	ug/l	
75-27-4	Bromodichloromethane	0.24 U	1.0	0.24	ug/l	
75-25-2	Bromoform	0.41 U	1.0	0.41	ug/l	
78-93-3	2-Butanone (MEK)	2.0 U	5.0	2.0	ug/l	
75-15-0	Carbon Disulfide	0.53 U	2.0	0.53	ug/l	
56-23-5	Carbon Tetrachloride	0.36 U	1.0	0.36	ug/l	
108-90-7	Chlorobenzene	0.20 U	1.0	0.20	ug/l	
75-00-3	Chloroethane [b]	0.67 U	2.0	0.67	ug/l	
67-66-3	Chloroform	0.30 U	1.0	0.30	ug/l	
110-82-7	Cyclohexane	0.39 U	1.0	0.39	ug/l	
124-48-1	Dibromochloromethane	0.28 U	1.0	0.28	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	1.0 U	5.0	1.0	ug/l	
106-93-4	1,2-Dibromoethane	0.28 U	2.0	0.28	ug/l	
75-71-8	Dichlorodifluoromethane	0.50 U	2.0	0.50	ug/l	
95-50-1	1,2-Dichlorobenzene	0.32 U	1.0	0.32	ug/l	
541-73-1	1,3-Dichlorobenzene	0.22 U	1.0	0.22	ug/l	
106-46-7	1,4-Dichlorobenzene	0.26 U	1.0	0.26	ug/l	
75-34-3	1,1-Dichloroethane	0.34 U	1.0	0.34	ug/l	
107-06-2	1,2-Dichloroethane	0.31 U	1.0	0.31	ug/l	
75-35-4	1,1-Dichloroethylene	0.32 U	1.0	0.32	ug/l	
156-59-2	cis-1,2-Dichloroethylene	0.28 U	1.0	0.28	ug/l	
156-60-5	trans-1,2-Dichloroethylene	0.22 U	1.0	0.22	ug/l	
78-87-5	1,2-Dichloropropane	0.43 U	1.0	0.43	ug/l	
10061-01-5	cis-1,3-Dichloropropene	0.29 U	1.0	0.29	ug/l	
10061-02-6	trans-1,3-Dichloropropene	0.21 U	1.0	0.21	ug/l	
100-41-4	Ethylbenzene	0.36 U	1.0	0.36	ug/l	
76-13-1	Freon 113	0.48 U	1.0	0.48	ug/l	
591-78-6	2-Hexanone	2.0 U	10	2.0	ug/l	
98-82-8	Isopropylbenzene	0.22 U	1.0	0.22	ug/l	
79-20-9	Methyl Acetate	5.0 U	20	5.0	ug/l	
74-83-9	Methyl Bromide [c]	2.0 U	5.0	2.0	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0277-023.0-20221220		
Lab Sample ID:	FC1494-23	**Date Sampled:**	12/20/22
Matrix:	AQ - Ground Water	**Date Received:**	12/20/22
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	KSC-CRCA		

VOA TCL 4.2 List

CAS No.	Compound	Result	PQL	MDL	Units	Q
74-87-3	Methyl Chloride	0.50 U	2.0	0.50	ug/l	
108-87-2	Methylcyclohexane	0.44 U	1.0	0.44	ug/l	
75-09-2	Methylene Chloride	2.0 U	5.0	2.0	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	1.0 U	5.0	1.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	0.23 U	1.0	0.23	ug/l	
100-42-5	Styrene	0.22 U	1.0	0.22	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	0.30 U	1.0	0.30	ug/l	
127-18-4	Tetrachloroethylene	0.22 U	1.0	0.22	ug/l	
108-88-3	Toluene	0.30 U	1.0	0.30	ug/l	
120-82-1	1,2,4-Trichlorobenzene	0.50 U	2.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	0.25 U	1.0	0.25	ug/l	
79-00-5	1,1,2-Trichloroethane	0.47 U	1.0	0.47	ug/l	
79-01-6	Trichloroethylene	0.35 U	1.0	0.35	ug/l	
75-69-4	Trichlorofluoromethane	0.50 U	2.0	0.50	ug/l	
75-01-4	Vinyl Chloride	0.41 U	1.0	0.41	ug/l	
1330-20-7	Xylene (total)	0.72 U	3.0	0.72	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	105%		83-118%
17060-07-0	1,2-Dichloroethane-D4	104%		79-125%
2037-26-5	Toluene-D8	97%		85-112%
460-00-4	4-Bromofluorobenzene	99%		83-118%

(a) Sample was not preserved to a pH < 2.
(b) Associated CCV outside control limits low.
(c) Associated CCV outside control limits high, sample is ND.

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0277-023.0-20221220		
Lab Sample ID:	FC1494-23	**Date Sampled:**	12/20/22
Matrix:	AQ - Ground Water	**Date Received:**	12/20/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	KSC-CRCA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q105092.D	1	01/06/23 05:47	WH	01/04/23 08:30	OP94827	S2Q1459
Run #2							

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	PQL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	0.782	0.016	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0136	0.0080	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	0.0129	0.0080	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0113	0.0080	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	0.0146	0.0080	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0024	0.0080	0.0020	ug/l	I
335-76-2	Perfluorodecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS						
375-73-5	Perfluorobutanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0026	0.0080	0.0020	ug/l	I
355-46-4	Perfluorohexanesulfonic acid	0.0281	0.0080	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0301	0.0080	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA	0.0020 U	0.0080	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	0.0040 U	0.016	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0040 U	0.016	0.0040	ug/l	
FLUOROTELOMER SULFONATES						
757124-72-4	4:2 Fluorotelomer sulfonate	0.0040 U	0.016	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0040 U	0.016	0.0040	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0277-023.0-20221220		
Lab Sample ID:	FC1494-23	**Date Sampled:**	12/20/22
Matrix:	AQ - Ground Water	**Date Received:**	12/20/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	KSC-CRCA		

CAS No.	Compound	Result	PQL	MDL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0040 U	0.016	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES						
13252-13-6	HFPO-DA (GenX)	0.0040 U	0.016	0.0040	ug/l	
919005-14-4	ADONA	0.0040 U	0.016	0.0040	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0040 U	0.016	0.0040	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0040 U	0.016	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	51%		50-150%
	13C5-PFPeA	54%		50-150%
	13C5-PFHxA	58%		50-150%
	13C4-PFHpA	58%		50-150%
	13C8-PFOA	61%		50-150%
	13C9-PFNA	62%		50-150%
	13C6-PFDA	65%		50-150%
	13C7-PFUnDA	59%		50-150%
	13C2-PFDoDA	60%		50-150%
	13C2-PFTeDA	54%		50-150%
	13C3-PFBS	57%		50-150%
	13C3-PFHxS	55%		50-150%
	13C8-PFOS	62%		50-150%
	13C8-FOSA	51%		50-150%
	d3-MeFOSAA	63%		50-150%
	d5-EtFOSAA	63%		50-150%
	13C2-4:2FTS	54%		50-150%
	13C2-6:2FTS	61%		50-150%
	13C2-8:2FTS	68%		50-150%
	13C3-HFPO-DA	54%		50-150%

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0277-028.0-20221220		
Lab Sample ID:	FC1494-24	**Date Sampled:**	12/20/22
Matrix:	AQ - Ground Water	**Date Received:**	12/20/22
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	KSC-CRCA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	I753825.D	1	12/22/22 14:50	KG	n/a	n/a	VI2795
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL 4.2 List

CAS No.	Compound	Result	PQL	MDL	Units	Q
67-64-1	Acetone	10 U	25	10	ug/l	
71-43-2	Benzene	0.31 U	1.0	0.31	ug/l	
75-27-4	Bromodichloromethane	0.24 U	1.0	0.24	ug/l	
75-25-2	Bromoform	0.41 U	1.0	0.41	ug/l	
78-93-3	2-Butanone (MEK)	2.0 U	5.0	2.0	ug/l	
75-15-0	Carbon Disulfide	0.53 U	2.0	0.53	ug/l	
56-23-5	Carbon Tetrachloride	0.36 U	1.0	0.36	ug/l	
108-90-7	Chlorobenzene	0.20 U	1.0	0.20	ug/l	
75-00-3	Chloroethane [b]	0.67 U	2.0	0.67	ug/l	
67-66-3	Chloroform	0.30 U	1.0	0.30	ug/l	
110-82-7	Cyclohexane	0.39 U	1.0	0.39	ug/l	
124-48-1	Dibromochloromethane	0.28 U	1.0	0.28	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	1.0 U	5.0	1.0	ug/l	
106-93-4	1,2-Dibromoethane	0.28 U	2.0	0.28	ug/l	
75-71-8	Dichlorodifluoromethane	0.50 U	2.0	0.50	ug/l	
95-50-1	1,2-Dichlorobenzene	0.32 U	1.0	0.32	ug/l	
541-73-1	1,3-Dichlorobenzene	0.22 U	1.0	0.22	ug/l	
106-46-7	1,4-Dichlorobenzene	0.26 U	1.0	0.26	ug/l	
75-34-3	1,1-Dichloroethane	0.34 U	1.0	0.34	ug/l	
107-06-2	1,2-Dichloroethane	0.31 U	1.0	0.31	ug/l	
75-35-4	1,1-Dichloroethylene	0.32 U	1.0	0.32	ug/l	
156-59-2	cis-1,2-Dichloroethylene	0.28 U	1.0	0.28	ug/l	
156-60-5	trans-1,2-Dichloroethylene	0.22 U	1.0	0.22	ug/l	
78-87-5	1,2-Dichloropropane	0.43 U	1.0	0.43	ug/l	
10061-01-5	cis-1,3-Dichloropropene	0.29 U	1.0	0.29	ug/l	
10061-02-6	trans-1,3-Dichloropropene	0.21 U	1.0	0.21	ug/l	
100-41-4	Ethylbenzene	0.36 U	1.0	0.36	ug/l	
76-13-1	Freon 113	0.48 U	1.0	0.48	ug/l	
591-78-6	2-Hexanone	2.0 U	10	2.0	ug/l	
98-82-8	Isopropylbenzene	0.22 U	1.0	0.22	ug/l	
79-20-9	Methyl Acetate	5.0 U	20	5.0	ug/l	
74-83-9	Methyl Bromide [c]	2.0 U	5.0	2.0	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0277-028.0-20221220		
Lab Sample ID:	FC1494-24	**Date Sampled:**	12/20/22
Matrix:	AQ - Ground Water	**Date Received:**	12/20/22
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	KSC-CRCA		

VOA TCL 4.2 List

CAS No.	Compound	Result	PQL	MDL	Units	Q
74-87-3	Methyl Chloride	0.50 U	2.0	0.50	ug/l	
108-87-2	Methylcyclohexane	0.44 U	1.0	0.44	ug/l	
75-09-2	Methylene Chloride	2.0 U	5.0	2.0	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	1.0 U	5.0	1.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	0.23 U	1.0	0.23	ug/l	
100-42-5	Styrene	0.22 U	1.0	0.22	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	0.30 U	1.0	0.30	ug/l	
127-18-4	Tetrachloroethylene	0.22 U	1.0	0.22	ug/l	
108-88-3	Toluene	0.30 U	1.0	0.30	ug/l	
120-82-1	1,2,4-Trichlorobenzene	0.50 U	2.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	0.25 U	1.0	0.25	ug/l	
79-00-5	1,1,2-Trichloroethane	0.47 U	1.0	0.47	ug/l	
79-01-6	Trichloroethylene	0.35 U	1.0	0.35	ug/l	
75-69-4	Trichlorofluoromethane	0.50 U	2.0	0.50	ug/l	
75-01-4	Vinyl Chloride	0.41 U	1.0	0.41	ug/l	
1330-20-7	Xylene (total)	0.72 U	3.0	0.72	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	104%		83-118%
17060-07-0	1,2-Dichloroethane-D4	102%		79-125%
2037-26-5	Toluene-D8	97%		85-112%
460-00-4	4-Bromofluorobenzene	100%		83-118%

(a) Sample was not preserved to a pH < 2.
(b) Associated CCV outside control limits low.
(c) Associated CCV outside control limits high, sample is ND.

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0277-033.0-20221220		
Lab Sample ID:	FC1494-25	**Date Sampled:**	12/20/22
Matrix:	AQ - Ground Water	**Date Received:**	12/20/22
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	KSC-CRCA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	I753826.D	1	12/22/22 15:14	KG	n/a	n/a	VI2795
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL 4.2 List

CAS No.	Compound	Result	PQL	MDL	Units	Q
67-64-1	Acetone	10 U	25	10	ug/l	
71-43-2	Benzene	0.31 U	1.0	0.31	ug/l	
75-27-4	Bromodichloromethane	0.24 U	1.0	0.24	ug/l	
75-25-2	Bromoform	0.41 U	1.0	0.41	ug/l	
78-93-3	2-Butanone (MEK)	2.0 U	5.0	2.0	ug/l	
75-15-0	Carbon Disulfide	0.53 U	2.0	0.53	ug/l	
56-23-5	Carbon Tetrachloride	0.36 U	1.0	0.36	ug/l	
108-90-7	Chlorobenzene	0.20 U	1.0	0.20	ug/l	
75-00-3	Chloroethane [b]	0.67 U	2.0	0.67	ug/l	
67-66-3	Chloroform	0.30 U	1.0	0.30	ug/l	
110-82-7	Cyclohexane	0.39 U	1.0	0.39	ug/l	
124-48-1	Dibromochloromethane	0.28 U	1.0	0.28	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	1.0 U	5.0	1.0	ug/l	
106-93-4	1,2-Dibromoethane	0.28 U	2.0	0.28	ug/l	
75-71-8	Dichlorodifluoromethane	0.50 U	2.0	0.50	ug/l	
95-50-1	1,2-Dichlorobenzene	0.32 U	1.0	0.32	ug/l	
541-73-1	1,3-Dichlorobenzene	0.22 U	1.0	0.22	ug/l	
106-46-7	1,4-Dichlorobenzene	0.26 U	1.0	0.26	ug/l	
75-34-3	1,1-Dichloroethane	0.34 U	1.0	0.34	ug/l	
107-06-2	1,2-Dichloroethane	0.31 U	1.0	0.31	ug/l	
75-35-4	1,1-Dichloroethylene	0.32 U	1.0	0.32	ug/l	
156-59-2	cis-1,2-Dichloroethylene	0.28 U	1.0	0.28	ug/l	
156-60-5	trans-1,2-Dichloroethylene	0.22 U	1.0	0.22	ug/l	
78-87-5	1,2-Dichloropropane	0.43 U	1.0	0.43	ug/l	
10061-01-5	cis-1,3-Dichloropropene	0.29 U	1.0	0.29	ug/l	
10061-02-6	trans-1,3-Dichloropropene	0.21 U	1.0	0.21	ug/l	
100-41-4	Ethylbenzene	0.36 U	1.0	0.36	ug/l	
76-13-1	Freon 113	0.48 U	1.0	0.48	ug/l	
591-78-6	2-Hexanone	2.0 U	10	2.0	ug/l	
98-82-8	Isopropylbenzene	0.22 U	1.0	0.22	ug/l	
79-20-9	Methyl Acetate	5.0 U	20	5.0	ug/l	
74-83-9	Methyl Bromide [c]	2.0 U	5.0	2.0	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0277-033.0-20221220		
Lab Sample ID:	FC1494-25	**Date Sampled:**	12/20/22
Matrix:	AQ - Ground Water	**Date Received:**	12/20/22
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	KSC-CRCA		

VOA TCL 4.2 List

CAS No.	Compound	Result	PQL	MDL	Units	Q
74-87-3	Methyl Chloride	0.50 U	2.0	0.50	ug/l	
108-87-2	Methylcyclohexane	0.44 U	1.0	0.44	ug/l	
75-09-2	Methylene Chloride	2.0 U	5.0	2.0	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	1.0 U	5.0	1.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	0.23 U	1.0	0.23	ug/l	
100-42-5	Styrene	0.22 U	1.0	0.22	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	0.30 U	1.0	0.30	ug/l	
127-18-4	Tetrachloroethylene	0.22 U	1.0	0.22	ug/l	
108-88-3	Toluene	0.30 U	1.0	0.30	ug/l	
120-82-1	1,2,4-Trichlorobenzene	0.50 U	2.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	0.25 U	1.0	0.25	ug/l	
79-00-5	1,1,2-Trichloroethane	0.47 U	1.0	0.47	ug/l	
79-01-6	Trichloroethylene	1.5	1.0	0.35	ug/l	
75-69-4	Trichlorofluoromethane	0.50 U	2.0	0.50	ug/l	
75-01-4	Vinyl Chloride	0.41 U	1.0	0.41	ug/l	
1330-20-7	Xylene (total)	0.72 U	3.0	0.72	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	104%		83-118%
17060-07-0	1,2-Dichloroethane-D4	100%		79-125%
2037-26-5	Toluene-D8	97%		85-112%
460-00-4	4-Bromofluorobenzene	101%		83-118%

(a) Sample was not preserved to a pH < 2.
(b) Associated CCV outside control limits low.
(c) Associated CCV outside control limits high, sample is ND.

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0277-033.0-20221220		
Lab Sample ID:	FC1494-25	**Date Sampled:**	12/20/22
Matrix:	AQ - Ground Water	**Date Received:**	12/20/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	KSC-CRCA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q105093.D	1	01/06/23 06:04	WH	01/04/23 08:30	OP94827	S2Q1459
Run #2							

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	PQL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	0.792	0.016	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0148	0.0080	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	0.0125	0.0080	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0092	0.0080	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	0.0120	0.0080	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0020 U	0.0080	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS						
375-73-5	Perfluorobutanesulfonic acid	0.0042	0.0080	0.0020	ug/l	I
2706-91-4	Perfluoropentanesulfonic acid	0.0022	0.0080	0.0020	ug/l	I
355-46-4	Perfluorohexanesulfonic acid	0.0239	0.0080	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0259	0.0080	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA	0.0020 U	0.0080	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	0.0040 U	0.016	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0040 U	0.016	0.0040	ug/l	
FLUOROTELOMER SULFONATES						
757124-72-4	4:2 Fluorotelomer sulfonate	0.0040 U	0.016	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0040 U	0.016	0.0040	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0277-033.0-20221220		
Lab Sample ID:	FC1494-25	**Date Sampled:**	12/20/22
Matrix:	AQ - Ground Water	**Date Received:**	12/20/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	KSC-CRCA		

CAS No.	Compound	Result	PQL	MDL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0040 U	0.016	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES						
13252-13-6	HFPO-DA (GenX)	0.0040 U	0.016	0.0040	ug/l	
919005-14-4	ADONA	0.0040 U	0.016	0.0040	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0040 U	0.016	0.0040	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0040 U	0.016	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	52%		50-150%
	13C5-PFPeA	56%		50-150%
	13C5-PFHxA	59%		50-150%
	13C4-PFHpA	58%		50-150%
	13C8-PFOA	59%		50-150%
	13C9-PFNA	61%		50-150%
	13C6-PFDA	62%		50-150%
	13C7-PFUnDA	59%		50-150%
	13C2-PFDoDA	59%		50-150%
	13C2-PFTeDA	55%		50-150%
	13C3-PFBS	55%		50-150%
	13C3-PFHxS	56%		50-150%
	13C8-PFOS	58%		50-150%
	13C8-FOSA	53%		50-150%
	d3-MeFOSAA	61%		50-150%
	d5-EtFOSAA	63%		50-150%
	13C2-4:2FTS	55%		50-150%
	13C2-6:2FTS	61%		50-150%
	13C2-8:2FTS	59%		50-150%
	13C3-HFPO-DA	54%		50-150%

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0277-038.0-20221220		
Lab Sample ID:	FC1494-26	**Date Sampled:**	12/20/22
Matrix:	AQ - Ground Water	**Date Received:**	12/20/22
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	KSC-CRCA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	I753827.D	1	12/22/22 15:38	KG	n/a	n/a	VI2795
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL 4.2 List

CAS No.	Compound	Result	PQL	MDL	Units	Q
67-64-1	Acetone	10 U	25	10	ug/l	
71-43-2	Benzene	0.31 U	1.0	0.31	ug/l	
75-27-4	Bromodichloromethane	0.24 U	1.0	0.24	ug/l	
75-25-2	Bromoform	0.41 U	1.0	0.41	ug/l	
78-93-3	2-Butanone (MEK)	2.0 U	5.0	2.0	ug/l	
75-15-0	Carbon Disulfide	0.53 U	2.0	0.53	ug/l	
56-23-5	Carbon Tetrachloride	0.36 U	1.0	0.36	ug/l	
108-90-7	Chlorobenzene	0.20 U	1.0	0.20	ug/l	
75-00-3	Chloroethane [b]	0.67 U	2.0	0.67	ug/l	
67-66-3	Chloroform	0.30 U	1.0	0.30	ug/l	
110-82-7	Cyclohexane	0.39 U	1.0	0.39	ug/l	
124-48-1	Dibromochloromethane	0.28 U	1.0	0.28	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	1.0 U	5.0	1.0	ug/l	
106-93-4	1,2-Dibromoethane	0.28 U	2.0	0.28	ug/l	
75-71-8	Dichlorodifluoromethane	0.50 U	2.0	0.50	ug/l	
95-50-1	1,2-Dichlorobenzene	0.32 U	1.0	0.32	ug/l	
541-73-1	1,3-Dichlorobenzene	0.22 U	1.0	0.22	ug/l	
106-46-7	1,4-Dichlorobenzene	0.26 U	1.0	0.26	ug/l	
75-34-3	1,1-Dichloroethane	0.34 U	1.0	0.34	ug/l	
107-06-2	1,2-Dichloroethane	0.31 U	1.0	0.31	ug/l	
75-35-4	1,1-Dichloroethylene	0.32 U	1.0	0.32	ug/l	
156-59-2	cis-1,2-Dichloroethylene	0.28 U	1.0	0.28	ug/l	
156-60-5	trans-1,2-Dichloroethylene	0.22 U	1.0	0.22	ug/l	
78-87-5	1,2-Dichloropropane	0.43 U	1.0	0.43	ug/l	
10061-01-5	cis-1,3-Dichloropropene	0.29 U	1.0	0.29	ug/l	
10061-02-6	trans-1,3-Dichloropropene	0.21 U	1.0	0.21	ug/l	
100-41-4	Ethylbenzene	0.36 U	1.0	0.36	ug/l	
76-13-1	Freon 113	0.48 U	1.0	0.48	ug/l	
591-78-6	2-Hexanone	2.0 U	10	2.0	ug/l	
98-82-8	Isopropylbenzene	0.22 U	1.0	0.22	ug/l	
79-20-9	Methyl Acetate	5.0 U	20	5.0	ug/l	
74-83-9	Methyl Bromide [c]	2.0 U	5.0	2.0	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0277-038.0-20221220		
Lab Sample ID:	FC1494-26	**Date Sampled:**	12/20/22
Matrix:	AQ - Ground Water	**Date Received:**	12/20/22
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	KSC-CRCA		

VOA TCL 4.2 List

CAS No.	Compound	Result	PQL	MDL	Units	Q
74-87-3	Methyl Chloride	0.50 U	2.0	0.50	ug/l	
108-87-2	Methylcyclohexane	0.44 U	1.0	0.44	ug/l	
75-09-2	Methylene Chloride	2.0 U	5.0	2.0	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	1.0 U	5.0	1.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	0.23 U	1.0	0.23	ug/l	
100-42-5	Styrene	0.22 U	1.0	0.22	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	0.30 U	1.0	0.30	ug/l	
127-18-4	Tetrachloroethylene	0.22 U	1.0	0.22	ug/l	
108-88-3	Toluene	0.30 U	1.0	0.30	ug/l	
120-82-1	1,2,4-Trichlorobenzene	0.50 U	2.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	0.25 U	1.0	0.25	ug/l	
79-00-5	1,1,2-Trichloroethane	0.47 U	1.0	0.47	ug/l	
79-01-6	Trichloroethylene	0.35 U	1.0	0.35	ug/l	
75-69-4	Trichlorofluoromethane	0.50 U	2.0	0.50	ug/l	
75-01-4	Vinyl Chloride	0.41 U	1.0	0.41	ug/l	
1330-20-7	Xylene (total)	0.72 U	3.0	0.72	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	105%		83-118%
17060-07-0	1,2-Dichloroethane-D4	99%		79-125%
2037-26-5	Toluene-D8	96%		85-112%
460-00-4	4-Bromofluorobenzene	99%		83-118%

(a) Sample was not preserved to a pH < 2.
(b) Associated CCV outside control limits low.
(c) Associated CCV outside control limits high, sample is ND.

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0277-043.0-20221220		
Lab Sample ID:	FC1494-27	**Date Sampled:**	12/20/22
Matrix:	AQ - Ground Water	**Date Received:**	12/20/22
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	KSC-CRCA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	I753828.D	1	12/22/22 16:01	KG	n/a	n/a	VI2795
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL 4.2 List

CAS No.	Compound	Result	PQL	MDL	Units	Q
67-64-1	Acetone	10 U	25	10	ug/l	
71-43-2	Benzene	0.31 U	1.0	0.31	ug/l	
75-27-4	Bromodichloromethane	0.24 U	1.0	0.24	ug/l	
75-25-2	Bromoform	0.41 U	1.0	0.41	ug/l	
78-93-3	2-Butanone (MEK)	2.0 U	5.0	2.0	ug/l	
75-15-0	Carbon Disulfide	0.53 U	2.0	0.53	ug/l	
56-23-5	Carbon Tetrachloride	0.36 U	1.0	0.36	ug/l	
108-90-7	Chlorobenzene	0.20 U	1.0	0.20	ug/l	
75-00-3	Chloroethane [b]	0.67 U	2.0	0.67	ug/l	
67-66-3	Chloroform	0.30 U	1.0	0.30	ug/l	
110-82-7	Cyclohexane	0.39 U	1.0	0.39	ug/l	
124-48-1	Dibromochloromethane	0.28 U	1.0	0.28	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	1.0 U	5.0	1.0	ug/l	
106-93-4	1,2-Dibromoethane	0.28 U	2.0	0.28	ug/l	
75-71-8	Dichlorodifluoromethane	0.50 U	2.0	0.50	ug/l	
95-50-1	1,2-Dichlorobenzene	0.32 U	1.0	0.32	ug/l	
541-73-1	1,3-Dichlorobenzene	0.22 U	1.0	0.22	ug/l	
106-46-7	1,4-Dichlorobenzene	0.26 U	1.0	0.26	ug/l	
75-34-3	1,1-Dichloroethane	0.34 U	1.0	0.34	ug/l	
107-06-2	1,2-Dichloroethane	0.31 U	1.0	0.31	ug/l	
75-35-4	1,1-Dichloroethylene	0.32 U	1.0	0.32	ug/l	
156-59-2	cis-1,2-Dichloroethylene	0.28 U	1.0	0.28	ug/l	
156-60-5	trans-1,2-Dichloroethylene	0.22 U	1.0	0.22	ug/l	
78-87-5	1,2-Dichloropropane	0.43 U	1.0	0.43	ug/l	
10061-01-5	cis-1,3-Dichloropropene	0.29 U	1.0	0.29	ug/l	
10061-02-6	trans-1,3-Dichloropropene	0.21 U	1.0	0.21	ug/l	
100-41-4	Ethylbenzene	0.36 U	1.0	0.36	ug/l	
76-13-1	Freon 113	0.48 U	1.0	0.48	ug/l	
591-78-6	2-Hexanone	2.0 U	10	2.0	ug/l	
98-82-8	Isopropylbenzene	0.22 U	1.0	0.22	ug/l	
79-20-9	Methyl Acetate	5.0 U	20	5.0	ug/l	
74-83-9	Methyl Bromide [c]	2.0 U	5.0	2.0	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0277-043.0-20221220		
Lab Sample ID:	FC1494-27	**Date Sampled:**	12/20/22
Matrix:	AQ - Ground Water	**Date Received:**	12/20/22
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	KSC-CRCA		

VOA TCL 4.2 List

CAS No.	Compound	Result	PQL	MDL	Units	Q
74-87-3	Methyl Chloride	0.50 U	2.0	0.50	ug/l	
108-87-2	Methylcyclohexane	0.44 U	1.0	0.44	ug/l	
75-09-2	Methylene Chloride	2.0 U	5.0	2.0	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	1.0 U	5.0	1.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	0.23 U	1.0	0.23	ug/l	
100-42-5	Styrene	0.22 U	1.0	0.22	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	0.30 U	1.0	0.30	ug/l	
127-18-4	Tetrachloroethylene	0.22 U	1.0	0.22	ug/l	
108-88-3	Toluene	0.30 U	1.0	0.30	ug/l	
120-82-1	1,2,4-Trichlorobenzene	0.50 U	2.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	0.25 U	1.0	0.25	ug/l	
79-00-5	1,1,2-Trichloroethane	0.47 U	1.0	0.47	ug/l	
79-01-6	Trichloroethylene	0.35 U	1.0	0.35	ug/l	
75-69-4	Trichlorofluoromethane	0.50 U	2.0	0.50	ug/l	
75-01-4	Vinyl Chloride	0.41 U	1.0	0.41	ug/l	
1330-20-7	Xylene (total)	0.72 U	3.0	0.72	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	100%		83-118%
17060-07-0	1,2-Dichloroethane-D4	102%		79-125%
2037-26-5	Toluene-D8	97%		85-112%
460-00-4	4-Bromofluorobenzene	99%		83-118%

(a) Sample was not preserved to a pH < 2.
(b) Associated CCV outside control limits low.
(c) Associated CCV outside control limits high, sample is ND.

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0277-043.0-20221220		
Lab Sample ID:	FC1494-27	**Date Sampled:**	12/20/22
Matrix:	AQ - Ground Water	**Date Received:**	12/20/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	KSC-CRCA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q105096.D	1	01/06/23 06:53	WH	01/04/23 08:30	OP94827	S2Q1459
Run #2 [a]	Q98685.D	1	01/01/23 00:17	AL	12/28/22 09:05	OP94730	SQ2107
Run #3	2Q105130.D	5	01/06/23 17:50	WH	01/04/23 08:30	OP94827	S2Q1460

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2	120 ml	1.0 ml
Run #3	125 ml	1.0 ml

CAS No.	Compound	Result	PQL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid [b]	0.836 [c]	0.080	0.020	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0043	0.0080	0.0020	ug/l	I
307-24-4	Perfluorohexanoic acid	0.0054	0.0080	0.0020	ug/l	I
375-85-9	Perfluoroheptanoic acid	0.0036	0.0080	0.0020	ug/l	I
335-67-1	Perfluorooctanoic acid	0.0116	0.0080	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0020 U	0.0080	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS						
375-73-5	Perfluorobutanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0029	0.0080	0.0020	ug/l	I
375-92-8	Perfluoroheptanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0086	0.0080	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA	0.0020 U	0.0080	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	0.0040 U	0.016	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0040 U	0.016	0.0040	ug/l	
FLUOROTELOMER SULFONATES						

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0277-043.0-20221220		
Lab Sample ID:	FC1494-27	**Date Sampled:**	12/20/22
Matrix:	AQ - Ground Water	**Date Received:**	12/20/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	KSC-CRCA		

CAS No.	Compound	Result	PQL	MDL	Units	Q
757124-72-4	4:2 Fluorotelomer sulfonate	0.0040 U	0.016	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0040 U	0.016	0.0040	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0040 U	0.016	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES						
13252-13-6	HFPO-DA (GenX)	0.0040 U	0.016	0.0040	ug/l	
919005-14-4	ADONA	0.0040 U	0.016	0.0040	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0040 U	0.016	0.0040	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0040 U	0.016	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Run# 3	Limits
	13C4-PFBA	19%	11%	19% [d]	50-150%
	13C5-PFPeA	61%	62%	62%	50-150%
	13C5-PFHxA	64%	63%	64%	50-150%
	13C4-PFHpA	63%	64%	63%	50-150%
	13C8-PFOA	63%	65%	62%	50-150%
	13C9-PFNA	64%	64%	63%	50-150%
	13C6-PFDA	66%	61%	63%	50-150%
	13C7-PFUnDA	61%	57%	59%	50-150%
	13C2-PFDoDA	62%	48%	57%	50-150%
	13C2-PFTeDA	51%	46%	48% [d]	50-150%
	13C3-PFBS	61%	62%	62%	50-150%
	13C3-PFHxS	60%	62%	62%	50-150%
	13C8-PFOS	63%	62%	64%	50-150%
	13C8-FOSA	64%	68%	64%	50-150%
	d3-MeFOSAA	67%	66%	62%	50-150%
	d5-EtFOSAA	72%	64%	61%	50-150%
	13C2-4:2FTS	58%	64%	59%	50-150%
	13C2-6:2FTS	64%	60%	62%	50-150%
	13C2-8:2FTS	66%	60%	59%	50-150%
	13C3-HFPO-DA	57%	64%	62%	50-150%

(a) Confirmation run.
(b) Associated ID Standard outside control limits. Confirmed by re-extraction and reanalysis.
(c) Result is from Run# 3
(d) Outside control limits.

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0277-048.0-20221220		
Lab Sample ID:	FC1494-28	**Date Sampled:**	12/20/22
Matrix:	AQ - Ground Water	**Date Received:**	12/20/22
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	KSC-CRCA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	I753829.D	1	12/22/22 16:25	KG	n/a	n/a	VI2795
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL 4.2 List

CAS No.	Compound	Result	PQL	MDL	Units	Q
67-64-1	Acetone	10 U	25	10	ug/l	
71-43-2	Benzene	0.31 U	1.0	0.31	ug/l	
75-27-4	Bromodichloromethane	0.24 U	1.0	0.24	ug/l	
75-25-2	Bromoform	0.41 U	1.0	0.41	ug/l	
78-93-3	2-Butanone (MEK)	2.0 U	5.0	2.0	ug/l	
75-15-0	Carbon Disulfide	0.53 U	2.0	0.53	ug/l	
56-23-5	Carbon Tetrachloride	0.36 U	1.0	0.36	ug/l	
108-90-7	Chlorobenzene	0.20 U	1.0	0.20	ug/l	
75-00-3	Chloroethane [b]	0.67 U	2.0	0.67	ug/l	
67-66-3	Chloroform	0.30 U	1.0	0.30	ug/l	
110-82-7	Cyclohexane	0.39 U	1.0	0.39	ug/l	
124-48-1	Dibromochloromethane	0.28 U	1.0	0.28	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	1.0 U	5.0	1.0	ug/l	
106-93-4	1,2-Dibromoethane	0.28 U	2.0	0.28	ug/l	
75-71-8	Dichlorodifluoromethane	0.50 U	2.0	0.50	ug/l	
95-50-1	1,2-Dichlorobenzene	0.32 U	1.0	0.32	ug/l	
541-73-1	1,3-Dichlorobenzene	0.22 U	1.0	0.22	ug/l	
106-46-7	1,4-Dichlorobenzene	0.26 U	1.0	0.26	ug/l	
75-34-3	1,1-Dichloroethane	0.34 U	1.0	0.34	ug/l	
107-06-2	1,2-Dichloroethane	0.31 U	1.0	0.31	ug/l	
75-35-4	1,1-Dichloroethylene	0.32 U	1.0	0.32	ug/l	
156-59-2	cis-1,2-Dichloroethylene	0.28 U	1.0	0.28	ug/l	
156-60-5	trans-1,2-Dichloroethylene	0.22 U	1.0	0.22	ug/l	
78-87-5	1,2-Dichloropropane	0.43 U	1.0	0.43	ug/l	
10061-01-5	cis-1,3-Dichloropropene	0.29 U	1.0	0.29	ug/l	
10061-02-6	trans-1,3-Dichloropropene	0.21 U	1.0	0.21	ug/l	
100-41-4	Ethylbenzene	0.36 U	1.0	0.36	ug/l	
76-13-1	Freon 113	0.48 U	1.0	0.48	ug/l	
591-78-6	2-Hexanone	2.0 U	10	2.0	ug/l	
98-82-8	Isopropylbenzene	0.22 U	1.0	0.22	ug/l	
79-20-9	Methyl Acetate	5.0 U	20	5.0	ug/l	
74-83-9	Methyl Bromide [c]	2.0 U	5.0	2.0	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0277-048.0-20221220		
Lab Sample ID:	FC1494-28	**Date Sampled:**	12/20/22
Matrix:	AQ - Ground Water	**Date Received:**	12/20/22
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	KSC-CRCA		

VOA TCL 4.2 List

CAS No.	Compound	Result	PQL	MDL	Units	Q
74-87-3	Methyl Chloride	0.50 U	2.0	0.50	ug/l	
108-87-2	Methylcyclohexane	0.44 U	1.0	0.44	ug/l	
75-09-2	Methylene Chloride	2.0 U	5.0	2.0	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	1.0 U	5.0	1.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	0.23 U	1.0	0.23	ug/l	
100-42-5	Styrene	0.22 U	1.0	0.22	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	0.30 U	1.0	0.30	ug/l	
127-18-4	Tetrachloroethylene	0.22 U	1.0	0.22	ug/l	
108-88-3	Toluene	0.30 U	1.0	0.30	ug/l	
120-82-1	1,2,4-Trichlorobenzene	0.50 U	2.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	0.25 U	1.0	0.25	ug/l	
79-00-5	1,1,2-Trichloroethane	0.47 U	1.0	0.47	ug/l	
79-01-6	Trichloroethylene	0.35 U	1.0	0.35	ug/l	
75-69-4	Trichlorofluoromethane	0.50 U	2.0	0.50	ug/l	
75-01-4	Vinyl Chloride	0.41 U	1.0	0.41	ug/l	
1330-20-7	Xylene (total)	0.72 U	3.0	0.72	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	105%		83-118%
17060-07-0	1,2-Dichloroethane-D4	101%		79-125%
2037-26-5	Toluene-D8	97%		85-112%
460-00-4	4-Bromofluorobenzene	99%		83-118%

(a) Sample was not preserved to a pH < 2.
(b) Associated CCV outside control limits low.
(c) Associated CCV outside control limits high, sample is ND.

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0277-053.0-20221220		
Lab Sample ID:	FC1494-29	**Date Sampled:**	12/20/22
Matrix:	AQ - Ground Water	**Date Received:**	12/20/22
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	KSC-CRCA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	I753830.D	1	12/22/22 16:49	KG	n/a	n/a	VI2795
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL 4.2 List

CAS No.	Compound	Result	PQL	MDL	Units	Q
67-64-1	Acetone	10 U	25	10	ug/l	
71-43-2	Benzene	0.31 U	1.0	0.31	ug/l	
75-27-4	Bromodichloromethane	0.24 U	1.0	0.24	ug/l	
75-25-2	Bromoform	0.41 U	1.0	0.41	ug/l	
78-93-3	2-Butanone (MEK)	2.0 U	5.0	2.0	ug/l	
75-15-0	Carbon Disulfide	0.53 U	2.0	0.53	ug/l	
56-23-5	Carbon Tetrachloride	0.36 U	1.0	0.36	ug/l	
108-90-7	Chlorobenzene	0.20 U	1.0	0.20	ug/l	
75-00-3	Chloroethane [b]	0.67 U	2.0	0.67	ug/l	
67-66-3	Chloroform	0.30 U	1.0	0.30	ug/l	
110-82-7	Cyclohexane	0.39 U	1.0	0.39	ug/l	
124-48-1	Dibromochloromethane	0.28 U	1.0	0.28	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	1.0 U	5.0	1.0	ug/l	
106-93-4	1,2-Dibromoethane	0.28 U	2.0	0.28	ug/l	
75-71-8	Dichlorodifluoromethane	0.50 U	2.0	0.50	ug/l	
95-50-1	1,2-Dichlorobenzene	0.32 U	1.0	0.32	ug/l	
541-73-1	1,3-Dichlorobenzene	0.22 U	1.0	0.22	ug/l	
106-46-7	1,4-Dichlorobenzene	0.26 U	1.0	0.26	ug/l	
75-34-3	1,1-Dichloroethane	0.34 U	1.0	0.34	ug/l	
107-06-2	1,2-Dichloroethane	0.31 U	1.0	0.31	ug/l	
75-35-4	1,1-Dichloroethylene	0.32 U	1.0	0.32	ug/l	
156-59-2	cis-1,2-Dichloroethylene	0.28 U	1.0	0.28	ug/l	
156-60-5	trans-1,2-Dichloroethylene	0.22 U	1.0	0.22	ug/l	
78-87-5	1,2-Dichloropropane	0.43 U	1.0	0.43	ug/l	
10061-01-5	cis-1,3-Dichloropropene	0.29 U	1.0	0.29	ug/l	
10061-02-6	trans-1,3-Dichloropropene	0.21 U	1.0	0.21	ug/l	
100-41-4	Ethylbenzene	0.36 U	1.0	0.36	ug/l	
76-13-1	Freon 113	0.48 U	1.0	0.48	ug/l	
591-78-6	2-Hexanone	2.0 U	10	2.0	ug/l	
98-82-8	Isopropylbenzene	0.22 U	1.0	0.22	ug/l	
79-20-9	Methyl Acetate	5.0 U	20	5.0	ug/l	
74-83-9	Methyl Bromide [c]	2.0 U	5.0	2.0	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0277-053.0-20221220		
Lab Sample ID:	FC1494-29	**Date Sampled:**	12/20/22
Matrix:	AQ - Ground Water	**Date Received:**	12/20/22
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	KSC-CRCA		

VOA TCL 4.2 List

CAS No.	Compound	Result	PQL	MDL	Units	Q
74-87-3	Methyl Chloride	0.50 U	2.0	0.50	ug/l	
108-87-2	Methylcyclohexane	0.44 U	1.0	0.44	ug/l	
75-09-2	Methylene Chloride	2.0 U	5.0	2.0	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	1.0 U	5.0	1.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	0.23 U	1.0	0.23	ug/l	
100-42-5	Styrene	0.22 U	1.0	0.22	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	0.30 U	1.0	0.30	ug/l	
127-18-4	Tetrachloroethylene	0.22 U	1.0	0.22	ug/l	
108-88-3	Toluene	0.30 U	1.0	0.30	ug/l	
120-82-1	1,2,4-Trichlorobenzene	0.50 U	2.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	0.25 U	1.0	0.25	ug/l	
79-00-5	1,1,2-Trichloroethane	0.47 U	1.0	0.47	ug/l	
79-01-6	Trichloroethylene	0.35 U	1.0	0.35	ug/l	
75-69-4	Trichlorofluoromethane	0.50 U	2.0	0.50	ug/l	
75-01-4	Vinyl Chloride	0.41 U	1.0	0.41	ug/l	
1330-20-7	Xylene (total)	0.72 U	3.0	0.72	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	106%		83-118%
17060-07-0	1,2-Dichloroethane-D4	101%		79-125%
2037-26-5	Toluene-D8	96%		85-112%
460-00-4	4-Bromofluorobenzene	99%		83-118%

(a) Sample was not preserved to a pH < 2.
(b) Associated CCV outside control limits low.
(c) Associated CCV outside control limits high, sample is ND.

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0277-058.0-20221220		
Lab Sample ID:	FC1494-30	**Date Sampled:**	12/20/22
Matrix:	AQ - Ground Water	**Date Received:**	12/20/22
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	KSC-CRCA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	I753831.D	1	12/22/22 17:12	KG	n/a	n/a	VI2795
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL 4.2 List

CAS No.	Compound	Result	PQL	MDL	Units	Q
67-64-1	Acetone	10 U	25	10	ug/l	
71-43-2	Benzene	0.31 U	1.0	0.31	ug/l	
75-27-4	Bromodichloromethane	0.24 U	1.0	0.24	ug/l	
75-25-2	Bromoform	0.41 U	1.0	0.41	ug/l	
78-93-3	2-Butanone (MEK)	2.0 U	5.0	2.0	ug/l	
75-15-0	Carbon Disulfide	0.53 U	2.0	0.53	ug/l	
56-23-5	Carbon Tetrachloride	0.36 U	1.0	0.36	ug/l	
108-90-7	Chlorobenzene	0.20 U	1.0	0.20	ug/l	
75-00-3	Chloroethane [b]	0.67 U	2.0	0.67	ug/l	
67-66-3	Chloroform	0.30 U	1.0	0.30	ug/l	
110-82-7	Cyclohexane	0.39 U	1.0	0.39	ug/l	
124-48-1	Dibromochloromethane	0.28 U	1.0	0.28	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	1.0 U	5.0	1.0	ug/l	
106-93-4	1,2-Dibromoethane	0.28 U	2.0	0.28	ug/l	
75-71-8	Dichlorodifluoromethane	0.50 U	2.0	0.50	ug/l	
95-50-1	1,2-Dichlorobenzene	0.32 U	1.0	0.32	ug/l	
541-73-1	1,3-Dichlorobenzene	0.22 U	1.0	0.22	ug/l	
106-46-7	1,4-Dichlorobenzene	0.26 U	1.0	0.26	ug/l	
75-34-3	1,1-Dichloroethane	0.34 U	1.0	0.34	ug/l	
107-06-2	1,2-Dichloroethane	0.31 U	1.0	0.31	ug/l	
75-35-4	1,1-Dichloroethylene	0.32 U	1.0	0.32	ug/l	
156-59-2	cis-1,2-Dichloroethylene	0.28 U	1.0	0.28	ug/l	
156-60-5	trans-1,2-Dichloroethylene	0.22 U	1.0	0.22	ug/l	
78-87-5	1,2-Dichloropropane	0.43 U	1.0	0.43	ug/l	
10061-01-5	cis-1,3-Dichloropropene	0.29 U	1.0	0.29	ug/l	
10061-02-6	trans-1,3-Dichloropropene	0.21 U	1.0	0.21	ug/l	
100-41-4	Ethylbenzene	0.36 U	1.0	0.36	ug/l	
76-13-1	Freon 113	0.48 U	1.0	0.48	ug/l	
591-78-6	2-Hexanone	2.0 U	10	2.0	ug/l	
98-82-8	Isopropylbenzene	0.22 U	1.0	0.22	ug/l	
79-20-9	Methyl Acetate	5.0 U	20	5.0	ug/l	
74-83-9	Methyl Bromide [c]	2.0 U	5.0	2.0	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0277-058.0-20221220		
Lab Sample ID:	FC1494-30	**Date Sampled:**	12/20/22
Matrix:	AQ - Ground Water	**Date Received:**	12/20/22
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	KSC-CRCA		

VOA TCL 4.2 List

CAS No.	Compound	Result	PQL	MDL	Units	Q
74-87-3	Methyl Chloride	0.50 U	2.0	0.50	ug/l	
108-87-2	Methylcyclohexane	0.44 U	1.0	0.44	ug/l	
75-09-2	Methylene Chloride	2.0 U	5.0	2.0	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	1.0 U	5.0	1.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	0.23 U	1.0	0.23	ug/l	
100-42-5	Styrene	0.22 U	1.0	0.22	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	0.30 U	1.0	0.30	ug/l	
127-18-4	Tetrachloroethylene	0.22 U	1.0	0.22	ug/l	
108-88-3	Toluene	0.30 U	1.0	0.30	ug/l	
120-82-1	1,2,4-Trichlorobenzene	0.50 U	2.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	0.25 U	1.0	0.25	ug/l	
79-00-5	1,1,2-Trichloroethane	0.47 U	1.0	0.47	ug/l	
79-01-6	Trichloroethylene	0.35 U	1.0	0.35	ug/l	
75-69-4	Trichlorofluoromethane	0.50 U	2.0	0.50	ug/l	
75-01-4	Vinyl Chloride	0.41 U	1.0	0.41	ug/l	
1330-20-7	Xylene (total)	0.72 U	3.0	0.72	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	107%		83-118%
17060-07-0	1,2-Dichloroethane-D4	102%		79-125%
2037-26-5	Toluene-D8	97%		85-112%
460-00-4	4-Bromofluorobenzene	99%		83-118%

(a) Sample was not preserved to a pH < 2.
(b) Associated CCV outside control limits low.
(c) Associated CCV outside control limits high, sample is ND.

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0277-058.0-20221220		
Lab Sample ID:	FC1494-30	**Date Sampled:**	12/20/22
Matrix:	AQ - Ground Water	**Date Received:**	12/20/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	KSC-CRCA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q105097.D	1	01/06/23 07:10	WH	01/04/23 08:30	OP94827	S2Q1459
Run #2							

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	PQL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	0.0040 U	0.016	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0020 U	0.0080	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	0.0020 U	0.0080	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0020 U	0.0080	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	0.0020 U	0.0080	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0020 U	0.0080	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS						
375-73-5	Perfluorobutanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA	0.0020 U	0.0080	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	0.0040 U	0.016	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0040 U	0.016	0.0040	ug/l	
FLUOROTELOMER SULFONATES						
757124-72-4	4:2 Fluorotelomer sulfonate	0.0040 U	0.016	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0040 U	0.016	0.0040	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0277-058.0-20221220		
Lab Sample ID:	FC1494-30	**Date Sampled:**	12/20/22
Matrix:	AQ - Ground Water	**Date Received:**	12/20/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	KSC-CRCA		

CAS No.	Compound	Result	PQL	MDL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0040 U	0.016	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES						
13252-13-6	HFPO-DA (GenX)	0.0040 U	0.016	0.0040	ug/l	
919005-14-4	ADONA	0.0040 U	0.016	0.0040	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0040 U	0.016	0.0040	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0040 U	0.016	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	70%		50-150%
	13C5-PFPeA	73%		50-150%
	13C5-PFHxA	76%		50-150%
	13C4-PFHpA	76%		50-150%
	13C8-PFOA	76%		50-150%
	13C9-PFNA	78%		50-150%
	13C6-PFDA	81%		50-150%
	13C7-PFUnDA	75%		50-150%
	13C2-PFDoDA	75%		50-150%
	13C2-PFTeDA	65%		50-150%
	13C3-PFBS	74%		50-150%
	13C3-PFHxS	71%		50-150%
	13C8-PFOS	74%		50-150%
	13C8-FOSA	65%		50-150%
	d3-MeFOSAA	76%		50-150%
	d5-EtFOSAA	80%		50-150%
	13C2-4:2FTS	70%		50-150%
	13C2-6:2FTS	77%		50-150%
	13C2-8:2FTS	77%		50-150%
	13C3-HFPO-DA	68%		50-150%

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0278-008.0-20221220		
Lab Sample ID:	FC1494-31	**Date Sampled:**	12/20/22
Matrix:	AQ - Ground Water	**Date Received:**	12/20/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	KSC-CRCA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q105098.D	1	01/06/23 07:27	WH	01/04/23 08:30	OP94827	S2Q1459
Run #2 [a]	2Q105131.D	5	01/06/23 18:07	WH	01/04/23 08:30	OP94827	S2Q1460

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2	125 ml	1.0 ml

CAS No.	Compound	Result	PQL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	0.430	0.016	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0030	0.0080	0.0020	ug/l	I
307-24-4	Perfluorohexanoic acid	0.0035	0.0080	0.0020	ug/l	I
375-85-9	Perfluoroheptanoic acid	0.0027	0.0080	0.0020	ug/l	I
335-67-1	Perfluorooctanoic acid	0.0046	0.0080	0.0020	ug/l	I
375-95-1	Perfluorononanoic acid	0.0020 U	0.0080	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0030	0.0080	0.0020	ug/l	I
2058-94-8	Perfluoroundecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS						
375-73-5	Perfluorobutanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0038	0.0080	0.0020	ug/l	I
375-92-8	Perfluoroheptanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0083	0.0080	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA [b]	0.0020 U	0.0080	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	0.0040 U	0.016	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0040 U	0.016	0.0040	ug/l	
FLUOROTELOMER SULFONATES						
757124-72-4	4:2 Fluorotelomer sulfonate	0.0040 U	0.016	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0040 U	0.016	0.0040	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0278-008.0-20221220		
Lab Sample ID:	FC1494-31	**Date Sampled:**	12/20/22
Matrix:	AQ - Ground Water	**Date Received:**	12/20/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	KSC-CRCA		

CAS No.	Compound	Result	PQL	MDL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0040 U	0.016	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES						
13252-13-6	HFPO-DA (GenX)	0.0040 U	0.016	0.0040	ug/l	
919005-14-4	ADONA	0.0040 U	0.016	0.0040	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0040 U	0.016	0.0040	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0040 U	0.016	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	56%	57%	50-150%
	13C5-PFPeA	58%	59%	50-150%
	13C5-PFHxA	60%	59%	50-150%
	13C4-PFHpA	59%	58%	50-150%
	13C8-PFOA	57%	56%	50-150%
	13C9-PFNA	54%	55%	50-150%
	13C6-PFDA	58%	54%	50-150%
	13C7-PFUnDA	55%	55%	50-150%
	13C2-PFDoDA	58%	55%	50-150%
	13C2-PFTeDA	54%	49% [c]	50-150%
	13C3-PFBS	58%	59%	50-150%
	13C3-PFHxS	54%	56%	50-150%
	13C8-PFOS	55%	57%	50-150%
	13C8-FOSA	48% [c]	47% [c]	50-150%
	d3-MeFOSAA	52%	55%	50-150%
	d5-EtFOSAA	59%	57%	50-150%
	13C2-4:2FTS	56%	55%	50-150%
	13C2-6:2FTS	57%	54%	50-150%
	13C2-8:2FTS	55%	49% [c]	50-150%
	13C3-HFPO-DA	53%	58%	50-150%

(a) Confirmation run.
(b) Associated ID Standard outside control limits.
(c) Outside control limits.

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0278-018.0-20221220		
Lab Sample ID:	FC1494-32	**Date Sampled:**	12/20/22
Matrix:	AQ - Ground Water	**Date Received:**	12/20/22
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	KSC-CRCA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	I753832.D	1	12/22/22 17:36	KG	n/a	n/a	VI2795
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL 4.2 List

CAS No.	Compound	Result	PQL	MDL	Units	Q
67-64-1	Acetone	10 U	25	10	ug/l	
71-43-2	Benzene	0.31 U	1.0	0.31	ug/l	
75-27-4	Bromodichloromethane	0.24 U	1.0	0.24	ug/l	
75-25-2	Bromoform	0.41 U	1.0	0.41	ug/l	
78-93-3	2-Butanone (MEK)	2.0 U	5.0	2.0	ug/l	
75-15-0	Carbon Disulfide	0.53 U	2.0	0.53	ug/l	
56-23-5	Carbon Tetrachloride	0.36 U	1.0	0.36	ug/l	
108-90-7	Chlorobenzene	0.20 U	1.0	0.20	ug/l	
75-00-3	Chloroethane [a]	0.67 U	2.0	0.67	ug/l	
67-66-3	Chloroform	0.30 U	1.0	0.30	ug/l	
110-82-7	Cyclohexane	0.39 U	1.0	0.39	ug/l	
124-48-1	Dibromochloromethane	0.28 U	1.0	0.28	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	1.0 U	5.0	1.0	ug/l	
106-93-4	1,2-Dibromoethane	0.28 U	2.0	0.28	ug/l	
75-71-8	Dichlorodifluoromethane	0.50 U	2.0	0.50	ug/l	
95-50-1	1,2-Dichlorobenzene	0.32 U	1.0	0.32	ug/l	
541-73-1	1,3-Dichlorobenzene	0.22 U	1.0	0.22	ug/l	
106-46-7	1,4-Dichlorobenzene	0.26 U	1.0	0.26	ug/l	
75-34-3	1,1-Dichloroethane	0.34 U	1.0	0.34	ug/l	
107-06-2	1,2-Dichloroethane	0.31 U	1.0	0.31	ug/l	
75-35-4	1,1-Dichloroethylene	0.32 U	1.0	0.32	ug/l	
156-59-2	cis-1,2-Dichloroethylene	0.28 U	1.0	0.28	ug/l	
156-60-5	trans-1,2-Dichloroethylene	0.22 U	1.0	0.22	ug/l	
78-87-5	1,2-Dichloropropane	0.43 U	1.0	0.43	ug/l	
10061-01-5	cis-1,3-Dichloropropene	0.29 U	1.0	0.29	ug/l	
10061-02-6	trans-1,3-Dichloropropene	0.21 U	1.0	0.21	ug/l	
100-41-4	Ethylbenzene	0.36 U	1.0	0.36	ug/l	
76-13-1	Freon 113	0.48 U	1.0	0.48	ug/l	
591-78-6	2-Hexanone	2.0 U	10	2.0	ug/l	
98-82-8	Isopropylbenzene	0.22 U	1.0	0.22	ug/l	
79-20-9	Methyl Acetate	5.0 U	20	5.0	ug/l	
74-83-9	Methyl Bromide [b]	2.0 U	5.0	2.0	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0278-018.0-20221220		
Lab Sample ID:	FC1494-32	**Date Sampled:**	12/20/22
Matrix:	AQ - Ground Water	**Date Received:**	12/20/22
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	KSC-CRCA		

VOA TCL 4.2 List

CAS No.	Compound	Result	PQL	MDL	Units	Q
74-87-3	Methyl Chloride	0.50 U	2.0	0.50	ug/l	
108-87-2	Methylcyclohexane	0.44 U	1.0	0.44	ug/l	
75-09-2	Methylene Chloride	2.0 U	5.0	2.0	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	1.0 U	5.0	1.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	0.23 U	1.0	0.23	ug/l	
100-42-5	Styrene	0.22 U	1.0	0.22	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	0.30 U	1.0	0.30	ug/l	
127-18-4	Tetrachloroethylene	0.22 U	1.0	0.22	ug/l	
108-88-3	Toluene	0.30 U	1.0	0.30	ug/l	
120-82-1	1,2,4-Trichlorobenzene	0.50 U	2.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	0.25 U	1.0	0.25	ug/l	
79-00-5	1,1,2-Trichloroethane	0.47 U	1.0	0.47	ug/l	
79-01-6	Trichloroethylene	0.35 U	1.0	0.35	ug/l	
75-69-4	Trichlorofluoromethane	0.50 U	2.0	0.50	ug/l	
75-01-4	Vinyl Chloride	0.41 U	1.0	0.41	ug/l	
1330-20-7	Xylene (total)	0.72 U	3.0	0.72	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	104%		83-118%
17060-07-0	1,2-Dichloroethane-D4	100%		79-125%
2037-26-5	Toluene-D8	99%		85-112%
460-00-4	4-Bromofluorobenzene	101%		83-118%

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

U = Not detected MDL = Method Detection Limit
PQL = Practical Quantitation Limit
L = Indicates value exceeds calibration range
I = Result > = MDL but < PQL J = Estimated value
V = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0278-023.0-20221220		
Lab Sample ID:	FC1494-33	**Date Sampled:**	12/20/22
Matrix:	AQ - Ground Water	**Date Received:**	12/20/22
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	KSC-CRCA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	I753833.D	1	12/22/22 18:00	KG	n/a	n/a	VI2795
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL 4.2 List

CAS No.	Compound	Result	PQL	MDL	Units	Q
67-64-1	Acetone	10 U	25	10	ug/l	
71-43-2	Benzene	0.31 U	1.0	0.31	ug/l	
75-27-4	Bromodichloromethane	0.24 U	1.0	0.24	ug/l	
75-25-2	Bromoform	0.41 U	1.0	0.41	ug/l	
78-93-3	2-Butanone (MEK)	2.0 U	5.0	2.0	ug/l	
75-15-0	Carbon Disulfide	0.53 U	2.0	0.53	ug/l	
56-23-5	Carbon Tetrachloride	0.36 U	1.0	0.36	ug/l	
108-90-7	Chlorobenzene	0.20 U	1.0	0.20	ug/l	
75-00-3	Chloroethane [b]	0.67 U	2.0	0.67	ug/l	
67-66-3	Chloroform	0.30 U	1.0	0.30	ug/l	
110-82-7	Cyclohexane	0.39 U	1.0	0.39	ug/l	
124-48-1	Dibromochloromethane	0.28 U	1.0	0.28	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	1.0 U	5.0	1.0	ug/l	
106-93-4	1,2-Dibromoethane	0.28 U	2.0	0.28	ug/l	
75-71-8	Dichlorodifluoromethane	0.50 U	2.0	0.50	ug/l	
95-50-1	1,2-Dichlorobenzene	0.32 U	1.0	0.32	ug/l	
541-73-1	1,3-Dichlorobenzene	0.22 U	1.0	0.22	ug/l	
106-46-7	1,4-Dichlorobenzene	0.26 U	1.0	0.26	ug/l	
75-34-3	1,1-Dichloroethane	0.34 U	1.0	0.34	ug/l	
107-06-2	1,2-Dichloroethane	0.31 U	1.0	0.31	ug/l	
75-35-4	1,1-Dichloroethylene	0.32 U	1.0	0.32	ug/l	
156-59-2	cis-1,2-Dichloroethylene	0.28 U	1.0	0.28	ug/l	
156-60-5	trans-1,2-Dichloroethylene	0.22 U	1.0	0.22	ug/l	
78-87-5	1,2-Dichloropropane	0.43 U	1.0	0.43	ug/l	
10061-01-5	cis-1,3-Dichloropropene	0.29 U	1.0	0.29	ug/l	
10061-02-6	trans-1,3-Dichloropropene	0.21 U	1.0	0.21	ug/l	
100-41-4	Ethylbenzene	0.36 U	1.0	0.36	ug/l	
76-13-1	Freon 113	0.48 U	1.0	0.48	ug/l	
591-78-6	2-Hexanone	2.0 U	10	2.0	ug/l	
98-82-8	Isopropylbenzene	0.22 U	1.0	0.22	ug/l	
79-20-9	Methyl Acetate	5.0 U	20	5.0	ug/l	
74-83-9	Methyl Bromide [c]	2.0 U	5.0	2.0	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0278-023.0-20221220		
Lab Sample ID:	FC1494-33	**Date Sampled:**	12/20/22
Matrix:	AQ - Ground Water	**Date Received:**	12/20/22
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	KSC-CRCA		

VOA TCL 4.2 List

CAS No.	Compound	Result	PQL	MDL	Units	Q
74-87-3	Methyl Chloride	0.50 U	2.0	0.50	ug/l	
108-87-2	Methylcyclohexane	0.44 U	1.0	0.44	ug/l	
75-09-2	Methylene Chloride	2.0 U	5.0	2.0	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	1.0 U	5.0	1.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	0.23 U	1.0	0.23	ug/l	
100-42-5	Styrene	0.22 U	1.0	0.22	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	0.30 U	1.0	0.30	ug/l	
127-18-4	Tetrachloroethylene	0.22 U	1.0	0.22	ug/l	
108-88-3	Toluene	0.30 U	1.0	0.30	ug/l	
120-82-1	1,2,4-Trichlorobenzene	0.50 U	2.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	0.25 U	1.0	0.25	ug/l	
79-00-5	1,1,2-Trichloroethane	0.47 U	1.0	0.47	ug/l	
79-01-6	Trichloroethylene	0.35 U	1.0	0.35	ug/l	
75-69-4	Trichlorofluoromethane	0.50 U	2.0	0.50	ug/l	
75-01-4	Vinyl Chloride	0.41 U	1.0	0.41	ug/l	
1330-20-7	Xylene (total)	0.72 U	3.0	0.72	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	104%		83-118%
17060-07-0	1,2-Dichloroethane-D4	100%		79-125%
2037-26-5	Toluene-D8	98%		85-112%
460-00-4	4-Bromofluorobenzene	99%		83-118%

(a) Sample was not preserved to a pH < 2.
(b) Associated CCV outside control limits low.
(c) Associated CCV outside control limits high, sample is ND.

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: CRCA-DPT0278-023.0-20221220
Lab Sample ID: FC1494-33
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: KSC-CRCA

Date Sampled: 12/20/22
Date Received: 12/20/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q105099.D	1	01/06/23 07:43	WH	01/04/23 08:30	OP94827	S2Q1459
Run #2							

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	PQL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	0.735	0.016	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0036	0.0080	0.0020	ug/l	I
307-24-4	Perfluorohexanoic acid	0.0052	0.0080	0.0020	ug/l	I
375-85-9	Perfluoroheptanoic acid	0.0028	0.0080	0.0020	ug/l	I
335-67-1	Perfluorooctanoic acid	0.0091	0.0080	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0020 U	0.0080	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS						
375-73-5	Perfluorobutanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0025	0.0080	0.0020	ug/l	I
375-92-8	Perfluoroheptanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0026	0.0080	0.0020	ug/l	I
68259-12-1	Perfluorononanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA	0.0020 U	0.0080	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	0.0040 U	0.016	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0040 U	0.016	0.0040	ug/l	
FLUOROTELOMER SULFONATES						
757124-72-4	4:2 Fluorotelomer sulfonate	0.0040 U	0.016	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0040 U	0.016	0.0040	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0278-023.0-20221220		
Lab Sample ID:	FC1494-33	**Date Sampled:**	12/20/22
Matrix:	AQ - Ground Water	**Date Received:**	12/20/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	KSC-CRCA		

CAS No.	Compound	Result	PQL	MDL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0040 U	0.016	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES						
13252-13-6	HFPO-DA (GenX)	0.0040 U	0.016	0.0040	ug/l	
919005-14-4	ADONA	0.0040 U	0.016	0.0040	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0040 U	0.016	0.0040	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0040 U	0.016	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	56%		50-150%
	13C5-PFPeA	60%		50-150%
	13C5-PFHxA	63%		50-150%
	13C4-PFHpA	62%		50-150%
	13C8-PFOA	61%		50-150%
	13C9-PFNA	65%		50-150%
	13C6-PFDA	68%		50-150%
	13C7-PFUnDA	64%		50-150%
	13C2-PFDoDA	65%		50-150%
	13C2-PFTeDA	54%		50-150%
	13C3-PFBS	59%		50-150%
	13C3-PFHxS	58%		50-150%
	13C8-PFOS	63%		50-150%
	13C8-FOSA	52%		50-150%
	d3-MeFOSAA	66%		50-150%
	d5-EtFOSAA	70%		50-150%
	13C2-4:2FTS	58%		50-150%
	13C2-6:2FTS	63%		50-150%
	13C2-8:2FTS	65%		50-150%
	13C3-HFPO-DA	56%		50-150%

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0278-028.0-20221220		
Lab Sample ID:	FC1494-34	**Date Sampled:**	12/20/22
Matrix:	AQ - Ground Water	**Date Received:**	12/20/22
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	KSC-CRCA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	5E36269.D	1	12/22/22 17:56	CF	n/a	n/a	V5E1629
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL 4.2 List

CAS No.	Compound	Result	PQL	MDL	Units	Q
67-64-1	Acetone	10 U	25	10	ug/l	
71-43-2	Benzene	0.31 U	1.0	0.31	ug/l	
75-27-4	Bromodichloromethane	0.24 U	1.0	0.24	ug/l	
75-25-2	Bromoform	0.41 U	1.0	0.41	ug/l	
78-93-3	2-Butanone (MEK)	2.0 U	5.0	2.0	ug/l	
75-15-0	Carbon Disulfide	0.53 U	2.0	0.53	ug/l	
56-23-5	Carbon Tetrachloride	0.36 U	1.0	0.36	ug/l	
108-90-7	Chlorobenzene	0.20 U	1.0	0.20	ug/l	
75-00-3	Chloroethane	0.67 U	2.0	0.67	ug/l	
67-66-3	Chloroform	0.30 U	1.0	0.30	ug/l	
110-82-7	Cyclohexane	0.39 U	1.0	0.39	ug/l	
124-48-1	Dibromochloromethane	0.28 U	1.0	0.28	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	1.0 U	5.0	1.0	ug/l	
106-93-4	1,2-Dibromoethane	0.28 U	2.0	0.28	ug/l	
75-71-8	Dichlorodifluoromethane	0.50 U	2.0	0.50	ug/l	
95-50-1	1,2-Dichlorobenzene	0.32 U	1.0	0.32	ug/l	
541-73-1	1,3-Dichlorobenzene	0.22 U	1.0	0.22	ug/l	
106-46-7	1,4-Dichlorobenzene	0.26 U	1.0	0.26	ug/l	
75-34-3	1,1-Dichloroethane	0.34 U	1.0	0.34	ug/l	
107-06-2	1,2-Dichloroethane	0.31 U	1.0	0.31	ug/l	
75-35-4	1,1-Dichloroethylene	0.32 U	1.0	0.32	ug/l	
156-59-2	cis-1,2-Dichloroethylene	0.28 U	1.0	0.28	ug/l	
156-60-5	trans-1,2-Dichloroethylene	0.22 U	1.0	0.22	ug/l	
78-87-5	1,2-Dichloropropane	0.43 U	1.0	0.43	ug/l	
10061-01-5	cis-1,3-Dichloropropene	0.29 U	1.0	0.29	ug/l	
10061-02-6	trans-1,3-Dichloropropene	0.21 U	1.0	0.21	ug/l	
100-41-4	Ethylbenzene	0.36 U	1.0	0.36	ug/l	
76-13-1	Freon 113	0.48 U	1.0	0.48	ug/l	
591-78-6	2-Hexanone	2.0 U	10	2.0	ug/l	
98-82-8	Isopropylbenzene	0.22 U	1.0	0.22	ug/l	
79-20-9	Methyl Acetate	5.0 U	20	5.0	ug/l	
74-83-9	Methyl Bromide	2.0 U	5.0	2.0	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0278-028.0-20221220		
Lab Sample ID:	FC1494-34	**Date Sampled:**	12/20/22
Matrix:	AQ - Ground Water	**Date Received:**	12/20/22
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	KSC-CRCA		

VOA TCL 4.2 List

CAS No.	Compound	Result	PQL	MDL	Units	Q
74-87-3	Methyl Chloride	0.50 U	2.0	0.50	ug/l	
108-87-2	Methylcyclohexane	0.44 U	1.0	0.44	ug/l	
75-09-2	Methylene Chloride	2.0 U	5.0	2.0	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	1.0 U	5.0	1.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	0.23 U	1.0	0.23	ug/l	
100-42-5	Styrene	0.22 U	1.0	0.22	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	0.30 U	1.0	0.30	ug/l	
127-18-4	Tetrachloroethylene	0.22 U	1.0	0.22	ug/l	
108-88-3	Toluene	0.30 U	1.0	0.30	ug/l	
120-82-1	1,2,4-Trichlorobenzene	0.50 U	2.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	0.25 U	1.0	0.25	ug/l	
79-00-5	1,1,2-Trichloroethane	0.47 U	1.0	0.47	ug/l	
79-01-6	Trichloroethylene	0.35 U	1.0	0.35	ug/l	
75-69-4	Trichlorofluoromethane	0.50 U	2.0	0.50	ug/l	
75-01-4	Vinyl Chloride	0.41 U	1.0	0.41	ug/l	
1330-20-7	Xylene (total)	0.72 U	3.0	0.72	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	103%		83-118%
17060-07-0	1,2-Dichloroethane-D4	103%		79-125%
2037-26-5	Toluene-D8	98%		85-112%
460-00-4	4-Bromofluorobenzene	100%		83-118%

(a) Sample was not preserved to a pH < 2.

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody

Tetra Tech, Inc.

CHAIN OF CUSTODY | NUMBER No. 1700 FC1494 | PAGE 1 OF 3

PROJECT NO: 112G0897.0	FACILITY: KSC/CRCA	PROJECT MANAGER: Alex Murphy	PHONE NUMBER: 321-292-2042	LABORATORY NAME AND CONTACT: SGS Kelly Blanchard
SAMPLERS (SIGNATURE)		FIELD OPERATIONS LEADER: Cory O'Brien	PHONE NUMBER: 832-814-2213	ADDRESS: 4405 Vineland Road
		CARRIER/WAYBILL NUMBER: –		CITY, STATE: Orlando, FL

STANDARD TAT ☑
RUSH TAT ☐ ☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

CONTAINER TYPE PLASTIC (P) or GLASS (G): G P
PRESERVATIVE USED: HCl Cool

TYPE OF ANALYSIS: VOA60 TCL 42; Leads537 m125 (PFAS)

	DATE YEAR 2022	TIME	SAMPLE ID	LOCATION ID	TOP DEPTH (FT)	BOTTOM DEPTH (FT)	MATRIX (GW, SO, SW, SD, QC, ETC.)	COLLECTION METHOD GRAB (G) COMP (C)	No. OF CONTAINERS			COMMENTS
1	12/19	1120	CRCA-Dpt0275-008.0-20221219	D	6	10	GW	G	2	-	X	
2	12/19	1130	CRCA-Dpt0275-018.0-20221219	D	16	20	GW	G	3	X	-	
3*	12/19	1145	CRCA-Dpt0275-023.0-20221219	D	21	25	GW	G	5	X	X	
4	12/19	1205	CRCA-Dpt0275-028.0-20221219	D	26	30	GW	G	3	X	-	
5*	12/19	1220	CRCA-Dpt0275-033.0-20221219	D	31	35	GW	G	5	X	X	
6*	12/19	1240	CRCA-Dpt0275-038.0-20221219	D	36	40	GW	G	3	X	-	
7	12/19	1300	CRCA-Dpt0275-043.0-20221219	D	41	45	GW	G	5	X	X	SPM
8*	12/19	1320	CRCA-Dpt0275-048.0-20221219	D	46	50	GW	G	3	X	-	
9*	12/19	1340	CRCA-Dpt0275-053.0-20221219	D	51	55	GW	G	3	X	-	
10	12/19	1430	CRCA-Dpt0275-058.0-20221219	D	56	60	GW	G	5	X	X	
11	12/19	1520	CRCA-Dpt0276-008.0-20221219	E	6	10	GW	G	2	-	X	
12	12/19	1533	CRCA-Dpt0276-018.0-20221219	E	16	20	GW	G	3	X	-	
13*	12/19	1545	CRCA-Dpt0276-023.0-20221219	E	21	25	GW	G	5	X	X	

INITIAL ASSESSMENT
LABEL VERIFICATION

2 VOA 1 OC
IKI

1. RELINQUISHED BY	DATE 12/20/2022	TIME 1515	1. RECEIVED BY	DATE 12-20-22	TIME 1515
2. RELINQUISHED BY	DATE 12-20-2022	TIME 1530	2. RECEIVED BY	DATE 12-20-22	TIME 1515
3. RELINQUISHED BY	DATE 12-20-2022	TIME 1640	3. RECEIVED BY	DATE 12/20/22	TIME 1640

COMMENTS

DISTRIBUTION: WHITE (ACCOMPANIES SAMPLE) YELLOW (FIELD COPY) PINK (FILE COPY)

4/02R
FORM NO. TINUS-001

FC1494: Chain of Custody
Page 1 of 4

Tetra Tech, Inc.

CHAIN OF CUSTODY | NUMBER No. 1701 FC1494 | PAGE 2 OF 3

PROJECT NO:	FACILITY:	PROJECT MANAGER	PHONE NUMBER	LABORATORY NAME AND CONTACT:
112603870	KSC / CRCA	Alex Murphy	321-292-0542	SGS Kelly Blanchard
SAMPLERS (SIGNATURE)		**FIELD OPERATIONS LEADER**	**PHONE NUMBER**	**ADDRESS**
		Cory O'Brien	832-816-2213	4405 Vineland Road
		CARRIER/WAYBILL NUMBER		**CITY, STATE**
				Orlando, FL

STANDARD TAT ☑ RUSH TAT ☐ ☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

CONTAINER TYPE PLASTIC (P) or GLASS (G): G P G

PRESERVATIVE USED: HCL | Gol | COL

	DATE (YEAR 2022)	TIME	SAMPLE ID	LOCATION ID	TOP DEPTH (FT)	BOTTOM DEPTH (FT)	MATRIX (GW, SO, SW, SD, QC, ETC.)	COLLECTION METHOD GRAB (G) COMP (C)	No. OF CONTAINERS	TYPE OF ANALYSIS: VOA 60 TCL 42	6020m 537 MRLs (ITHS)	VOA 60 TCL 42	COMMENTS
14	12/19	1600	CRCA-DPT0276-028.0-20221219	E	26	30	GW	G	3	X	-	-	
15	12/19	1620	CRCA-DPT0276-033.0-20221219	E	31	35	GW	G	5	X	X	-	
16	12/19	1655	CRCA-DPT0276-038.0-20221219	E	36	40	GW	G	3	X	-	-	
17	12/19	1715	CRCA-DPT0276-043.0-20221219	E	41	45	GW	G	5	X	X	-	
18	12/19	1740	CRCA-DPT0276-048.0-20221219	E	46	50	GW	G	3	X	-	-	
19	12/20	0750	CRCA-DPT0276-053.0-20221220	E	51	55	GW	G	3	X	-	-	
20	12/20	0810	CRCA-DPT0276-058.0-20221220	E	56	60	GW	G	5	X	X	-	
21	12/20	0825	CRCA-DPT0277-005.0-20221220	F	6	10	GW	G	2	-	X	-	
22	12/20	0835	CRCA-DPT0277-014.0-20221220	E,F	16	20	GW	G	5	X	-	X	* Corrected Location ID
23	12/20	0855	CRCA-DPT0277-023.0-20221220	F	21	25	GW	G	7	X	X	X	
24	12/20	1015	CRCA-DPT0277-028.0-20221220	F	26	30	GW	G	5	X	-	X	
25	12/20	1050	CRCA-DPT0277-033.0-20221220	F	31	35	GW	G	7	X	X	X	
26	12/20	1120	CRCA-DPT0277-038.0-20221220	F	36	40	GW	G	5	X	-	X	

	DATE	TIME		DATE	TIME
1. RELINQUISHED BY	12/20/2022	1515	1. RECEIVED BY	12-20-22	1515
2. RELINQUISHED BY	12-20/2022	1530	2. RECEIVED BY	12.2022	15:15
3. RELINQUISHED BY	12-20/2022	1640	3. RECEIVED BY	12/20/22	1640

COMMENTS

DISTRIBUTION: WHITE (ACCOMPANIES SAMPLE) YELLOW (FIELD COPY) PINK (FILE COPY)

4/02R FORM NO. TtNUS-001

FC1494: Chain of Custody
Page 2 of 4

FC1494

Tetra Tech, Inc. CHAIN OF CUSTODY NUMBER No. 1704 PAGE 3 OF 3

PROJECT NO: 112608970	FACILITY: KSC/CRCA	PROJECT MANAGER: Alex Murphy	PHONE NUMBER: 321-292-0842
SAMPLERS (SIGNATURE)		FIELD OPERATIONS LEADER: Cory O'Brien	PHONE NUMBER: (832) 816-7213
		CARRIER/WAYBILL NUMBER	

LABORATORY NAME AND CONTACT: SGS Kelly Blanchard
ADDRESS: 4405 Vineland Road
CITY, STATE: Orlando, FL

STANDARD TAT ☑
RUSH TAT ☐
☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

	DATE YEAR 2022	TIME	SAMPLE ID	LOCATION ID	TOP DEPTH (FT)	BOTTOM DEPTH (FT)	MATRIX (GW, SO, SW, SD, QC, ETC.)	COLLECTION METHOD GRAB (G) COMP (C)	No. OF CONTAINERS	CONTAINER TYPE PLASTIC (P) or GLASS (G)										COMMENTS
										PRESERVATIVE USED			HCL							
										TYPE OF ANALYSIS			V8260 TCL 1/2	V625m537 mod PFAS	V8260TCL 1/2					
27	12/20	1140	CRCA-DPT0277-043.0-20221220	F	41	45	GW	G	7		X	X	X							
28	12/20	1205	CRCA-DPT0277-048.0-20221220	F	46	50	GW	G	5		X	-	X							
29	12/20	1245	CRCA-DPT0277-053.0-20221220	F	51	55	GW	G	5		X	-	X							
30	12/20	1310	CRCA-DPT0277-058.0-20221220	F	56	60	GW	G	7		X	X	X							
31	12/20	1425	CRCA-DPT0278-008.0-20221220	G	6	10	GW	G	2		-	X	-							
32	12/20	1435	CRCA-DPT0278-018.0-20221220	G	16	20	GW	G	5		X	-	X							
33	12/20	1450	CRCA-DPT0278-023.0-20221220	G	21	25	GW	G	7		X	X	X							
34	12/20	1510	CRCA-DPT0278-028.0-20221220	G	26	30	GW	G	5		X	-	X							

	DATE	TIME		DATE	TIME
1. RELINQUISHED BY	12/20/2022	1535	1. RECEIVED BY	12-20-22	1515
2. RELINQUISHED BY	12-20-2022	1530	2. RECEIVED BY	12-20-22	1515
3. RELINQUISHED BY	12-20-2022	1640	3. RECEIVED BY	12/20/22	1640

COMMENTS

DISTRIBUTION: WHITE (ACCOMPANIES SAMPLE) YELLOW (FIELD COPY) PINK (FILE COPY) 4/02R
FORM NO. TtNUS-001

FC1494: Chain of Custody
Page 3 of 4

SGS Sample Receipt Summary

Job Number: FC1494 **Client:** TETRA TECH **Project:** PROJECT# 112G08970

Date / Time Received: 12/20/2022 4:40:00 PM **Delivery Method:** COURIER **Airbill #'s:**

Therm ID: IR 1; **Therm CF:** 0.2; **# of Coolers:** 2

Cooler Temps (Raw Measured) °C: Cooler 1: (2.6); Cooler 2: (1.0);

Cooler Temps (Corrected) °C: Cooler 1: (2.8); Cooler 2: (1.2);

Cooler Information	Y	or	N
1. Custody Seals Present	☑		☐
2. Custody Seals Intact	☑		☐
3. Temp criteria achieved	☑		☐
4. Cooler temp verification	IR Gun		
5. Cooler media	Ice (Bag)		

Trip Blank Information	Y	or	N	N/A
1. Trip Blank present / cooler	☐		☐	☑
2. Trip Blank listed on COC	☐		☐	☑

	W	or	S	N/A
3. Type Of TB Received	☐		☐	☑

Sample Information	Y	or	N	N/A
1. Sample labels present on bottles	☑		☐	
2. Samples preserved properly	☑		☐	
3. Sufficient volume/containers recvd for analysis:	☑		☐	
4. Condition of sample	Intact			
5. Sample recvd within HT	☑		☐	
6. Dates/Times/IDs on COC match Sample Label	☑		☐	
7. VOCs have headspace	☑		☐	☐
8. Bottles received for unspecified tests	☐		☑	
9. Compositing instructions clear	☐		☐	☑
10. Voa Soil Kits/Jars received past 48hrs?	☐		☐	☑
11. % Solids Jar received?	☐		☐	☑
12. Residual Chlorine Present?	☐		☐	☑

Misc. Information

Number of Encores: 25-Gram _____ 5-Gram _____ Number of 5035 Field Kits: _____ Number of Lab Filtered Metals: _____

Test Strip Lot #s: pH 0-3 230315 pH 10-12 219813A Other: (Specify) _____ _____

Residual Chlorine Test Strip Lot #: _____

Comments
FOR SAMPLE -6, TWO VIALS RECEIVED WITH HEADSPACE.
FOR SAMPLE -7, TWO VIALS RECEIVED WITH HEADSPACE.
FOR SAMPLE -8, ALL THREE VIALS RECEIVED WITH HEADSPACE.
FOR SAMPLE -15, ONE VIAL RECEIVED WITH HEADSPACE.
FOR SAMPLE -16, ALL THREE VIALS RECEIVED WITH HEADSPACE.
FOR SAMPLE -17, ALL THREE VIALS RECEIVED WITH HEADSPACE.
FOR SAMPLE -19, ALL THREE VIALS RECEIVED WITH HEADSPACE

SM001
Rev. Date 05/24/17

Technician: SAMUELM Date: 12/20/2022 4:40:00 P Reviewer: _____ Date: _____

MS Volatiles

6

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Job Number: FC1494
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VI2795-MB	I753812.D	1	12/22/22	KG	n/a	n/a	VI2795

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

FC1494-22, FC1494-23, FC1494-24, FC1494-25, FC1494-26, FC1494-27, FC1494-28, FC1494-29, FC1494-30, FC1494-32, FC1494-33

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	25	10	ug/l	
71-43-2	Benzene	ND	1.0	0.31	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.24	ug/l	
75-25-2	Bromoform	ND	1.0	0.41	ug/l	
78-93-3	2-Butanone (MEK)	ND	5.0	2.0	ug/l	
75-15-0	Carbon Disulfide	ND	2.0	0.53	ug/l	
56-23-5	Carbon Tetrachloride	ND	1.0	0.36	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.20	ug/l	
75-00-3	Chloroethane	ND	2.0	0.67	ug/l	
67-66-3	Chloroform	ND	1.0	0.30	ug/l	
110-82-7	Cyclohexane	ND	1.0	0.39	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.28	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	5.0	1.0	ug/l	
106-93-4	1,2-Dibromoethane	ND	2.0	0.28	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	0.50	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	0.32	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	0.22	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	0.26	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.34	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.31	ug/l	
75-35-4	1,1-Dichloroethylene	ND	1.0	0.32	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	0.28	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	0.22	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.43	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.29	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.21	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.36	ug/l	
76-13-1	Freon 113	ND	1.0	0.48	ug/l	
591-78-6	2-Hexanone	ND	10	2.0	ug/l	
98-82-8	Isopropylbenzene	ND	1.0	0.22	ug/l	
79-20-9	Methyl Acetate	ND	20	5.0	ug/l	
74-83-9	Methyl Bromide	ND	5.0	2.0	ug/l	
74-87-3	Methyl Chloride	ND	2.0	0.50	ug/l	
108-87-2	Methylcyclohexane	ND	1.0	0.44	ug/l	
75-09-2	Methylene Chloride	ND	5.0	2.0	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	5.0	1.0	ug/l	

Method Blank Summary

Job Number: FC1494
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VI2795-MB	I753812.D	1	12/22/22	KG	n/a	n/a	VI2795

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

FC1494-22, FC1494-23, FC1494-24, FC1494-25, FC1494-26, FC1494-27, FC1494-28, FC1494-29, FC1494-30, FC1494-32, FC1494-33

CAS No.	Compound	Result	RL	MDL	Units	Q
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.23	ug/l	
100-42-5	Styrene	ND	1.0	0.22	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.30	ug/l	
127-18-4	Tetrachloroethylene	ND	1.0	0.22	ug/l	
108-88-3	Toluene	ND	1.0	0.30	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	2.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.25	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.47	ug/l	
79-01-6	Trichloroethylene	ND	1.0	0.35	ug/l	
75-69-4	Trichlorofluoromethane	ND	2.0	0.50	ug/l	
75-01-4	Vinyl Chloride	ND	1.0	0.41	ug/l	
1330-20-7	Xylene (total)	ND	3.0	0.72	ug/l	

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	103%	83-118%
17060-07-0	1,2-Dichloroethane-D4	103%	79-125%
2037-26-5	Toluene-D8	97%	85-112%
460-00-4	4-Bromofluorobenzene	98%	83-118%

Method Blank Summary

Job Number: FC1494
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V5E1629-MB	5E36249.D	1	12/22/22	CF	n/a	n/a	V5E1629

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

FC1494-2, FC1494-3, FC1494-4, FC1494-5, FC1494-6, FC1494-7, FC1494-8, FC1494-9, FC1494-10, FC1494-12, FC1494-13, FC1494-14, FC1494-15, FC1494-16, FC1494-17, FC1494-18, FC1494-34

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	25	10	ug/l	
71-43-2	Benzene	ND	1.0	0.31	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.24	ug/l	
75-25-2	Bromoform	ND	1.0	0.41	ug/l	
78-93-3	2-Butanone (MEK)	ND	5.0	2.0	ug/l	
75-15-0	Carbon Disulfide	ND	2.0	0.53	ug/l	
56-23-5	Carbon Tetrachloride	ND	1.0	0.36	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.20	ug/l	
75-00-3	Chloroethane	ND	2.0	0.67	ug/l	
67-66-3	Chloroform	ND	1.0	0.30	ug/l	
110-82-7	Cyclohexane	ND	1.0	0.39	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.28	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	5.0	1.0	ug/l	
106-93-4	1,2-Dibromoethane	ND	2.0	0.28	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	0.50	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	0.32	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	0.22	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	0.26	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.34	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.31	ug/l	
75-35-4	1,1-Dichloroethylene	ND	1.0	0.32	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	0.28	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	0.22	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.43	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.29	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.21	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.36	ug/l	
76-13-1	Freon 113	ND	1.0	0.48	ug/l	
591-78-6	2-Hexanone	ND	10	2.0	ug/l	
98-82-8	Isopropylbenzene	ND	1.0	0.22	ug/l	
79-20-9	Methyl Acetate	ND	20	5.0	ug/l	
74-83-9	Methyl Bromide	ND	5.0	2.0	ug/l	
74-87-3	Methyl Chloride	ND	2.0	0.50	ug/l	
108-87-2	Methylcyclohexane	ND	1.0	0.44	ug/l	
75-09-2	Methylene Chloride	ND	5.0	2.0	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	5.0	1.0	ug/l	

Method Blank Summary

Job Number: FC1494
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V5E1629-MB	5E36249.D	1	12/22/22	CF	n/a	n/a	V5E1629

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

FC1494-2, FC1494-3, FC1494-4, FC1494-5, FC1494-6, FC1494-7, FC1494-8, FC1494-9, FC1494-10, FC1494-12, FC1494-13, FC1494-14, FC1494-15, FC1494-16, FC1494-17, FC1494-18, FC1494-34

CAS No.	Compound	Result	RL	MDL	Units	Q
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.23	ug/l	
100-42-5	Styrene	ND	1.0	0.22	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.30	ug/l	
127-18-4	Tetrachloroethylene	ND	1.0	0.22	ug/l	
108-88-3	Toluene	ND	1.0	0.30	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	2.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.25	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.47	ug/l	
79-01-6	Trichloroethylene	ND	1.0	0.35	ug/l	
75-69-4	Trichlorofluoromethane	ND	2.0	0.50	ug/l	
75-01-4	Vinyl Chloride	ND	1.0	0.41	ug/l	
1330-20-7	Xylene (total)	ND	3.0	0.72	ug/l	

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	103%	83-118%
17060-07-0	1,2-Dichloroethane-D4	101%	79-125%
2037-26-5	Toluene-D8	97%	85-112%
460-00-4	4-Bromofluorobenzene	102%	83-118%

Method Blank Summary

Job Number: FC1494
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V1A1705-MB	1A42322.D	1	12/22/22	AL	n/a	n/a	V1A1705

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

FC1494-19, FC1494-20

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	25	10	ug/l	
71-43-2	Benzene	ND	1.0	0.31	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.24	ug/l	
75-25-2	Bromoform	ND	1.0	0.41	ug/l	
78-93-3	2-Butanone (MEK)	ND	5.0	2.0	ug/l	
75-15-0	Carbon Disulfide	ND	2.0	0.53	ug/l	
56-23-5	Carbon Tetrachloride	ND	1.0	0.36	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.20	ug/l	
75-00-3	Chloroethane	ND	2.0	0.67	ug/l	
67-66-3	Chloroform	ND	1.0	0.30	ug/l	
110-82-7	Cyclohexane	ND	1.0	0.39	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.28	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	5.0	1.0	ug/l	
106-93-4	1,2-Dibromoethane	ND	2.0	0.28	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	0.50	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	0.32	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	0.22	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	0.26	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.34	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.31	ug/l	
75-35-4	1,1-Dichloroethylene	ND	1.0	0.32	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	0.28	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	0.22	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.43	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.29	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.21	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.36	ug/l	
76-13-1	Freon 113	ND	1.0	0.48	ug/l	
591-78-6	2-Hexanone	ND	10	2.0	ug/l	
98-82-8	Isopropylbenzene	ND	1.0	0.22	ug/l	
79-20-9	Methyl Acetate	ND	20	5.0	ug/l	
74-83-9	Methyl Bromide	ND	5.0	2.0	ug/l	
74-87-3	Methyl Chloride	ND	2.0	0.50	ug/l	
108-87-2	Methylcyclohexane	ND	1.0	0.44	ug/l	
75-09-2	Methylene Chloride	ND	5.0	2.0	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	5.0	1.0	ug/l	

Method Blank Summary

Job Number: FC1494
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V1A1705-MB	1A42322.D	1	12/22/22	AL	n/a	n/a	V1A1705

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

FC1494-19, FC1494-20

CAS No.	Compound	Result	RL	MDL	Units	Q
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.23	ug/l	
100-42-5	Styrene	ND	1.0	0.22	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.30	ug/l	
127-18-4	Tetrachloroethylene	ND	1.0	0.22	ug/l	
108-88-3	Toluene	ND	1.0	0.30	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	2.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.25	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.47	ug/l	
79-01-6	Trichloroethylene	ND	1.0	0.35	ug/l	
75-69-4	Trichlorofluoromethane	ND	2.0	0.50	ug/l	
75-01-4	Vinyl Chloride	ND	1.0	0.41	ug/l	
1330-20-7	Xylene (total)	ND	3.0	0.72	ug/l	

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	97%	83-118%
17060-07-0	1,2-Dichloroethane-D4	95%	79-125%
2037-26-5	Toluene-D8	101%	85-112%
460-00-4	4-Bromofluorobenzene	98%	83-118%

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

Blank Spike Summary

Job Number: FC1494
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VI2795-BS	I753810.D	1	12/22/22	KG	n/a	n/a	VI2795

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

FC1494-22, FC1494-23, FC1494-24, FC1494-25, FC1494-26, FC1494-27, FC1494-28, FC1494-29, FC1494-30, FC1494-32, FC1494-33

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
67-64-1	Acetone	125	100	80	50-147
71-43-2	Benzene	25	23.7	95	81-122
75-27-4	Bromodichloromethane	25	24.5	98	79-123
75-25-2	Bromoform	25	25.4	102	66-123
78-93-3	2-Butanone (MEK)	125	101	81	56-143
75-15-0	Carbon Disulfide	25	26.5	106	66-148
56-23-5	Carbon Tetrachloride	25	25.3	101	76-136
108-90-7	Chlorobenzene	25	24.3	97	82-124
75-00-3	Chloroethane	25	17.2	69	62-144
67-66-3	Chloroform	25	22.9	92	80-124
110-82-7	Cyclohexane	25	31.4	126	73-138
124-48-1	Dibromochloromethane	25	24.6	98	78-122
96-12-8	1,2-Dibromo-3-chloropropane	25	20.8	83	64-123
106-93-4	1,2-Dibromoethane	25	23.2	93	75-120
75-71-8	Dichlorodifluoromethane	25	27.1	108	42-167
95-50-1	1,2-Dichlorobenzene	25	24.8	99	82-124
541-73-1	1,3-Dichlorobenzene	25	25.0	100	84-125
106-46-7	1,4-Dichlorobenzene	25	23.8	95	78-120
75-34-3	1,1-Dichloroethane	25	25.3	101	81-122
107-06-2	1,2-Dichloroethane	25	22.6	90	75-125
75-35-4	1,1-Dichloroethylene	25	25.7	103	78-137
156-59-2	cis-1,2-Dichloroethylene	25	24.5	98	78-120
156-60-5	trans-1,2-Dichloroethylene	25	24.5	98	76-127
78-87-5	1,2-Dichloropropane	25	22.9	92	76-124
10061-01-5	cis-1,3-Dichloropropene	25	23.9	96	75-118
10061-02-6	trans-1,3-Dichloropropene	25	26.1	104	80-120
100-41-4	Ethylbenzene	25	23.6	94	81-121
76-13-1	Freon 113	25	29.2	117	72-134
591-78-6	2-Hexanone	125	101	81	61-129
98-82-8	Isopropylbenzene	25	24.9	100	83-132
79-20-9	Methyl Acetate	125	106	85	65-126
74-83-9	Methyl Bromide	25	32.7	131	59-143
74-87-3	Methyl Chloride	25	26.5	106	50-159
108-87-2	Methylcyclohexane	25	31.1	124	76-129
75-09-2	Methylene Chloride	25	23.9	96	69-135
108-10-1	4-Methyl-2-pentanone (MIBK)	125	112	90	66-122

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FC1494
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VI2795-BS	I753810.D	1	12/22/22	KG	n/a	n/a	VI2795

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

FC1494-22, FC1494-23, FC1494-24, FC1494-25, FC1494-26, FC1494-27, FC1494-28, FC1494-29, FC1494-30, FC1494-32, FC1494-33

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
1634-04-4	Methyl Tert Butyl Ether	25	22.7	91	72-117
100-42-5	Styrene	25	22.9	92	78-119
79-34-5	1,1,2,2-Tetrachloroethane	25	23.7	95	72-120
127-18-4	Tetrachloroethylene	25	26.2	105	76-135
108-88-3	Toluene	25	23.6	94	80-120
120-82-1	1,2,4-Trichlorobenzene	25	25.2	101	73-129
71-55-6	1,1,1-Trichloroethane	25	24.3	97	75-130
79-00-5	1,1,2-Trichloroethane	25	24.4	98	76-119
79-01-6	Trichloroethylene	25	23.7	95	81-126
75-69-4	Trichlorofluoromethane	25	23.9	96	71-156
75-01-4	Vinyl Chloride	25	26.2	105	69-159
1330-20-7	Xylene (total)	75	72.6	97	80-126

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	102%	83-118%
17060-07-0	1,2-Dichloroethane-D4	101%	79-125%
2037-26-5	Toluene-D8	99%	85-112%
460-00-4	4-Bromofluorobenzene	100%	83-118%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FC1494
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V5E1629-BS	5E36246.D	1	12/22/22	CF	n/a	n/a	V5E1629

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

FC1494-2, FC1494-3, FC1494-4, FC1494-5, FC1494-6, FC1494-7, FC1494-8, FC1494-9, FC1494-10, FC1494-12, FC1494-13, FC1494-14, FC1494-15, FC1494-16, FC1494-17, FC1494-18, FC1494-34

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
67-64-1	Acetone	125	130	104	50-147
71-43-2	Benzene	25	24.4	98	81-122
75-27-4	Bromodichloromethane	25	25.9	104	79-123
75-25-2	Bromoform	25	22.5	90	66-123
78-93-3	2-Butanone (MEK)	125	134	107	56-143
75-15-0	Carbon Disulfide	25	25.8	103	66-148
56-23-5	Carbon Tetrachloride	25	26.8	107	76-136
108-90-7	Chlorobenzene	25	23.0	92	82-124
75-00-3	Chloroethane	25	26.8	107	62-144
67-66-3	Chloroform	25	24.7	99	80-124
110-82-7	Cyclohexane	25	29.7	119	73-138
124-48-1	Dibromochloromethane	25	23.9	96	78-122
96-12-8	1,2-Dibromo-3-chloropropane	25	20.8	83	64-123
106-93-4	1,2-Dibromoethane	25	24.0	96	75-120
75-71-8	Dichlorodifluoromethane	25	25.1	100	42-167
95-50-1	1,2-Dichlorobenzene	25	22.7	91	82-124
541-73-1	1,3-Dichlorobenzene	25	23.5	94	84-125
106-46-7	1,4-Dichlorobenzene	25	22.5	90	78-120
75-34-3	1,1-Dichloroethane	25	25.9	104	81-122
107-06-2	1,2-Dichloroethane	25	25.3	101	75-125
75-35-4	1,1-Dichloroethylene	25	25.3	101	78-137
156-59-2	cis-1,2-Dichloroethylene	25	26.1	104	78-120
156-60-5	trans-1,2-Dichloroethylene	25	24.3	97	76-127
78-87-5	1,2-Dichloropropane	25	23.4	94	76-124
10061-01-5	cis-1,3-Dichloropropene	25	25.1	100	75-118
10061-02-6	trans-1,3-Dichloropropene	25	25.2	101	80-120
100-41-4	Ethylbenzene	25	23.3	93	81-121
76-13-1	Freon 113	25	27.0	108	72-134
591-78-6	2-Hexanone	125	123	98	61-129
98-82-8	Isopropylbenzene	25	24.6	98	83-132
79-20-9	Methyl Acetate	125	133	106	65-126
74-83-9	Methyl Bromide	25	16.3	65	59-143
74-87-3	Methyl Chloride	25	24.7	99	50-159
108-87-2	Methylcyclohexane	25	30.0	120	76-129
75-09-2	Methylene Chloride	25	23.5	94	69-135
108-10-1	4-Methyl-2-pentanone (MIBK)	125	119	95	66-122

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FC1494
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V5E1629-BS	5E36246.D	1	12/22/22	CF	n/a	n/a	V5E1629

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

FC1494-2, FC1494-3, FC1494-4, FC1494-5, FC1494-6, FC1494-7, FC1494-8, FC1494-9, FC1494-10, FC1494-12, FC1494-13, FC1494-14, FC1494-15, FC1494-16, FC1494-17, FC1494-18, FC1494-34

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
1634-04-4	Methyl Tert Butyl Ether	25	24.6	98	72-117
100-42-5	Styrene	25	23.4	94	78-119
79-34-5	1,1,2,2-Tetrachloroethane	25	22.8	91	72-120
127-18-4	Tetrachloroethylene	25	25.0	100	76-135
108-88-3	Toluene	25	23.1	92	80-120
120-82-1	1,2,4-Trichlorobenzene	25	24.3	97	73-129
71-55-6	1,1,1-Trichloroethane	25	26.0	104	75-130
79-00-5	1,1,2-Trichloroethane	25	23.9	96	76-119
79-01-6	Trichloroethylene	25	25.8	103	81-126
75-69-4	Trichlorofluoromethane	25	30.8	123	71-156
75-01-4	Vinyl Chloride	25	26.8	107	69-159
1330-20-7	Xylene (total)	75	70.8	94	80-126

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	104%	83-118%
17060-07-0	1,2-Dichloroethane-D4	102%	79-125%
2037-26-5	Toluene-D8	96%	85-112%
460-00-4	4-Bromofluorobenzene	97%	83-118%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FC1494
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V1A1705-BS	1A42320.D	1	12/22/22	AL	n/a	n/a	V1A1705

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

FC1494-19, FC1494-20

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
67-64-1	Acetone	125	99.0	79	50-147
71-43-2	Benzene	25	22.0	88	81-122
75-27-4	Bromodichloromethane	25	21.8	87	79-123
75-25-2	Bromoform	25	22.0	88	66-123
78-93-3	2-Butanone (MEK)	125	94.7	76	56-143
75-15-0	Carbon Disulfide	25	24.5	98	66-148
56-23-5	Carbon Tetrachloride	25	22.6	90	76-136
108-90-7	Chlorobenzene	25	22.1	88	82-124
75-00-3	Chloroethane	25	26.3	105	62-144
67-66-3	Chloroform	25	21.8	87	80-124
110-82-7	Cyclohexane	25	24.4	98	73-138
124-48-1	Dibromochloromethane	25	20.8	83	78-122
96-12-8	1,2-Dibromo-3-chloropropane	25	19.6	78	64-123
106-93-4	1,2-Dibromoethane	25	21.3	85	75-120
75-71-8	Dichlorodifluoromethane	25	20.4	82	42-167
95-50-1	1,2-Dichlorobenzene	25	21.7	87	82-124
541-73-1	1,3-Dichlorobenzene	25	22.3	89	84-125
106-46-7	1,4-Dichlorobenzene	25	21.6	86	78-120
75-34-3	1,1-Dichloroethane	25	22.6	90	81-122
107-06-2	1,2-Dichloroethane	25	21.2	85	75-125
75-35-4	1,1-Dichloroethylene	25	22.8	91	78-137
156-59-2	cis-1,2-Dichloroethylene	25	22.2	89	78-120
156-60-5	trans-1,2-Dichloroethylene	25	21.9	88	76-127
78-87-5	1,2-Dichloropropane	25	20.9	84	76-124
10061-01-5	cis-1,3-Dichloropropene	25	21.2	85	75-118
10061-02-6	trans-1,3-Dichloropropene	25	22.3	89	80-120
100-41-4	Ethylbenzene	25	22.0	88	81-121
76-13-1	Freon 113	25	24.5	98	72-134
591-78-6	2-Hexanone	125	96.9	78	61-129
98-82-8	Isopropylbenzene	25	22.2	89	83-132
79-20-9	Methyl Acetate	125	108	86	65-126
74-83-9	Methyl Bromide	25	19.9	80	59-143
74-87-3	Methyl Chloride	25	19.4	78	50-159
108-87-2	Methylcyclohexane	25	24.9	100	76-129
75-09-2	Methylene Chloride	25	19.2	77	69-135
108-10-1	4-Methyl-2-pentanone (MIBK)	125	94.8	76	66-122

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FC1494
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V1A1705-BS	1A42320.D	1	12/22/22	AL	n/a	n/a	V1A1705

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

FC1494-19, FC1494-20

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
1634-04-4	Methyl Tert Butyl Ether	25	20.7	83	72-117
100-42-5	Styrene	25	21.9	88	78-119
79-34-5	1,1,2,2-Tetrachloroethane	25	21.5	86	72-120
127-18-4	Tetrachloroethylene	25	23.1	92	76-135
108-88-3	Toluene	25	22.1	88	80-120
120-82-1	1,2,4-Trichlorobenzene	25	20.8	83	73-129
71-55-6	1,1,1-Trichloroethane	25	22.5	90	75-130
79-00-5	1,1,2-Trichloroethane	25	21.6	86	76-119
79-01-6	Trichloroethylene	25	22.6	90	81-126
75-69-4	Trichlorofluoromethane	25	27.9	112	71-156
75-01-4	Vinyl Chloride	25	22.6	90	69-159
1330-20-7	Xylene (total)	75	65.2	87	80-126

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	100%	83-118%
17060-07-0	1,2-Dichloroethane-D4	98%	79-125%
2037-26-5	Toluene-D8	99%	85-112%
460-00-4	4-Bromofluorobenzene	100%	83-118%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FC1494
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
FC1423-22MS	5E36270.D	5	12/22/22	CF	n/a	n/a	V5E1629
FC1423-22MSD	5E36271.D	5	12/22/22	CF	n/a	n/a	V5E1629
FC1423-22	5E36250.D	1	12/22/22	CF	n/a	n/a	V5E1629

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

FC1494-2, FC1494-3, FC1494-4, FC1494-5, FC1494-6, FC1494-7, FC1494-8, FC1494-9, FC1494-10, FC1494-12, FC1494-13, FC1494-14, FC1494-15, FC1494-16, FC1494-17, FC1494-18, FC1494-34

CAS No.	Compound	FC1423-22 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
67-64-1	Acetone	25	U	625	551	88	625	580	93	5	50-147/21
71-43-2	Benzene	1.0	U	125	126	101	125	124	99	2	81-122/14
75-27-4	Bromodichloromethane	1.0	U	125	131	105	125	128	102	2	79-123/19
75-25-2	Bromoform	1.0	U	125	113	90	125	109	87	4	66-123/21
78-93-3	2-Butanone (MEK)	5.0	U	625	590	94	625	636	102	8	56-143/18
75-15-0	Carbon Disulfide	2.0	U	125	127	102	125	123	98	3	66-148/23
56-23-5	Carbon Tetrachloride	1.0	U	125	141	113	125	133	106	6	76-136/23
108-90-7	Chlorobenzene	1.0	U	125	118	94	125	115	92	3	82-124/14
75-00-3	Chloroethane	2.0	U	125	144	115	125	136	109	6	62-144/20
67-66-3	Chloroform	1.0	U	125	127	102	125	125	100	2	80-124/15
110-82-7	Cyclohexane	1.0	U	125	148	118	125	148	118	0	73-138/18
124-48-1	Dibromochloromethane	1.0	U	125	121	97	125	113	90	7	78-122/19
96-12-8	1,2-Dibromo-3-chloropropane	5.0	U	125	105	84	125	98.2	79	7	64-123/18
106-93-4	1,2-Dibromoethane	2.0	U	125	120	96	125	116	93	3	75-120/13
75-71-8	Dichlorodifluoromethane	2.0	U	125	134	107	125	127	102	5	42-167/19
95-50-1	1,2-Dichlorobenzene	1.0	U	125	116	93	125	115	92	1	82-124/14
541-73-1	1,3-Dichlorobenzene	1.0	U	125	121	97	125	117	94	3	84-125/14
106-46-7	1,4-Dichlorobenzene	1.0	U	125	116	93	125	114	91	2	78-120/15
75-34-3	1,1-Dichloroethane	1.0	U	125	132	106	125	129	103	2	81-122/15
107-06-2	1,2-Dichloroethane	1.0	U	125	128	102	125	127	102	1	75-125/14
75-35-4	1,1-Dichloroethylene	1.0	U	125	127	102	125	126	101	1	78-137/18
156-59-2	cis-1,2-Dichloroethylene	1.0	U	125	128	102	125	128	102	0	78-120/15
156-60-5	trans-1,2-Dichloroethylene	1.0	U	125	129	103	125	126	101	2	76-127/17
78-87-5	1,2-Dichloropropane	1.0	U	125	122	98	125	117	94	4	76-124/14
10061-01-5	cis-1,3-Dichloropropene	1.0	U	125	121	97	125	117	94	3	75-118/23
10061-02-6	trans-1,3-Dichloropropene	1.0	U	125	121	97	125	119	95	2	80-120/22
100-41-4	Ethylbenzene	1.0	U	125	117	94	125	114	91	3	81-121/14
76-13-1	Freon 113	1.0	U	125	135	108	125	134	107	1	72-134/20
591-78-6	2-Hexanone	10	U	625	552	88	625	568	91	3	61-129/18
98-82-8	Isopropylbenzene	1.0	U	125	123	98	125	120	96	2	83-132/15
79-20-9	Methyl Acetate	20	U	625	683	109	625	656	105	4	65-126/18
74-83-9	Methyl Bromide	5.0	U	125	61.9	50*	125	76.8	61	21*	59-143/19
74-87-3	Methyl Chloride	2.0	U	125	130	104	125	124	99	5	50-159/19
108-87-2	Methylcyclohexane	1.0	U	125	155	124	125	152	122	2	76-129/17
75-09-2	Methylene Chloride	5.0	U	125	120	96	125	116	93	3	69-135/16
108-10-1	4-Methyl-2-pentanone (MIBK)	5.0	U	625	542	87	625	577	92	6	66-122/16

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FC1494
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
FC1423-22MS	5E36270.D	5	12/22/22	CF	n/a	n/a	V5E1629
FC1423-22MSD	5E36271.D	5	12/22/22	CF	n/a	n/a	V5E1629
FC1423-22	5E36250.D	1	12/22/22	CF	n/a	n/a	V5E1629

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

FC1494-2, FC1494-3, FC1494-4, FC1494-5, FC1494-6, FC1494-7, FC1494-8, FC1494-9, FC1494-10, FC1494-12, FC1494-13, FC1494-14, FC1494-15, FC1494-16, FC1494-17, FC1494-18, FC1494-34

CAS No.	Compound	FC1423-22 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
1634-04-4	Methyl Tert Butyl Ether	1.0 U		125	122	98	125	121	97	1	72-117/14
100-42-5	Styrene	1.0 U		125	118	94	125	115	92	3	78-119/23
79-34-5	1,1,2,2-Tetrachloroethane	1.0 U		125	116	93	125	112	90	4	72-120/14
127-18-4	Tetrachloroethylene	1.0 U		125	128	102	125	118	94	8	76-135/16
108-88-3	Toluene	1.0 U		125	116	93	125	114	91	2	80-120/14
120-82-1	1,2,4-Trichlorobenzene	2.0 U		125	119	95	125	118	94	1	73-129/20
71-55-6	1,1,1-Trichloroethane	1.0 U		125	135	108	125	133	106	1	75-130/16
79-00-5	1,1,2-Trichloroethane	1.0 U		125	119	95	125	114	91	4	76-119/14
79-01-6	Trichloroethylene	1.0 U		125	131	105	125	129	103	2	81-126/15
75-69-4	Trichlorofluoromethane	2.0 U		125	169	135	125	159	127	6	71-156/21
75-01-4	Vinyl Chloride	1.0 U		125	150	120	125	138	110	8	69-159/18
1330-20-7	Xylene (total)	3.0 U		375	359	96	375	348	93	3	80-126/15

CAS No.	Surrogate Recoveries	MS	MSD	FC1423-22	Limits
1868-53-7	Dibromofluoromethane	102%	102%	104%	83-118%
17060-07-0	1,2-Dichloroethane-D4	104%	107%	103%	79-125%
2037-26-5	Toluene-D8	95%	94%	96%	85-112%
460-00-4	4-Bromofluorobenzene	99%	97%	101%	83-118%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FC1494
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
FC1460-2MS	I753834.D	5	12/22/22	KG	n/a	n/a	VI2795
FC1460-2MSD	I753835.D	5	12/22/22	KG	n/a	n/a	VI2795
FC1460-2	I753814.D	1	12/22/22	KG	n/a	n/a	VI2795

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

FC1494-22, FC1494-23, FC1494-24, FC1494-25, FC1494-26, FC1494-27, FC1494-28, FC1494-29, FC1494-30, FC1494-32, FC1494-33

CAS No.	Compound	FC1460-2 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
67-64-1	Acetone	25	U	625	485	78	625	473	76	3	50-147/21
71-43-2	Benzene	1.0	U	125	118	94	125	116	93	2	81-122/14
75-27-4	Bromodichloromethane	1.0	U	125	122	98	125	118	94	3	79-123/19
75-25-2	Bromoform	1.0	U	125	122	98	125	122	98	0	66-123/21
78-93-3	2-Butanone (MEK)	5.0	U	625	520	83	625	507	81	3	56-143/18
75-15-0	Carbon Disulfide	2.0	U	125	129	103	125	129	103	0	66-148/23
56-23-5	Carbon Tetrachloride	1.0	U	125	124	99	125	124	99	0	76-136/23
108-90-7	Chlorobenzene	1.0	U	125	119	95	125	116	93	3	82-124/14
75-00-3	Chloroethane	2.0	U	125	73.6	59*	125	65.8	53*	11	62-144/20
67-66-3	Chloroform	1.0	U	125	115	92	125	111	89	4	80-124/15
110-82-7	Cyclohexane	1.0	U	125	150	120	125	147	118	2	73-138/18
124-48-1	Dibromochloromethane	1.0	U	125	117	94	125	118	94	1	78-122/19
96-12-8	1,2-Dibromo-3-chloropropane	5.0	U	125	94.9	76	125	94.7	76	0	64-123/18
106-93-4	1,2-Dibromoethane	2.0	U	125	113	90	125	114	91	1	75-120/13
75-71-8	Dichlorodifluoromethane	2.0	U	125	131	105	125	124	99	5	42-167/19
95-50-1	1,2-Dichlorobenzene	1.0	U	125	116	93	125	118	94	2	82-124/14
541-73-1	1,3-Dichlorobenzene	1.0	U	125	116	93	125	119	95	3	84-125/14
106-46-7	1,4-Dichlorobenzene	1.0	U	125	114	91	125	113	90	1	78-120/15
75-34-3	1,1-Dichloroethane	1.0	U	125	124	99	125	123	98	1	81-122/15
107-06-2	1,2-Dichloroethane	1.0	U	125	113	90	125	109	87	4	75-125/14
75-35-4	1,1-Dichloroethylene	1.0	U	125	127	102	125	125	100	2	78-137/18
156-59-2	cis-1,2-Dichloroethylene	1.0	U	125	124	99	125	124	99	0	78-120/15
156-60-5	trans-1,2-Dichloroethylene	1.0	U	125	119	95	125	120	96	1	76-127/17
78-87-5	1,2-Dichloropropane	1.0	U	125	114	91	125	113	90	1	76-124/14
10061-01-5	cis-1,3-Dichloropropene	1.0	U	125	104	83	125	106	85	2	75-118/23
10061-02-6	trans-1,3-Dichloropropene	1.0	U	125	119	95	125	119	95	0	80-120/22
100-41-4	Ethylbenzene	1.0	U	125	115	92	125	114	91	1	81-121/14
76-13-1	Freon 113	1.0	U	125	145	116	125	146	117	1	72-134/20
591-78-6	2-Hexanone	10	U	625	510	82	625	501	80	2	61-129/18
98-82-8	Isopropylbenzene	1.0	U	125	116	93	125	116	93	0	83-132/15
79-20-9	Methyl Acetate	20	U	625	526	84	625	525	84	0	65-126/18
74-83-9	Methyl Bromide	5.0	U	125	108	86	125	125	100	15	59-143/19
74-87-3	Methyl Chloride	2.0	U	125	131	105	125	128	102	2	50-159/19
108-87-2	Methylcyclohexane	1.0	U	125	146	117	125	146	117	0	76-129/17
75-09-2	Methylene Chloride	5.0	U	125	119	95	125	119	95	0	69-135/16
108-10-1	4-Methyl-2-pentanone (MIBK)	5.0	U	625	552	88	625	545	87	1	66-122/16

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FC1494
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
FC1460-2MS	I753834.D	5	12/22/22	KG	n/a	n/a	VI2795
FC1460-2MSD	I753835.D	5	12/22/22	KG	n/a	n/a	VI2795
FC1460-2	I753814.D	1	12/22/22	KG	n/a	n/a	VI2795

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

FC1494-22, FC1494-23, FC1494-24, FC1494-25, FC1494-26, FC1494-27, FC1494-28, FC1494-29, FC1494-30, FC1494-32, FC1494-33

CAS No.	Compound	FC1460-2 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
1634-04-4	Methyl Tert Butyl Ether	1.0 U		125	111	89	125	108	86	3	72-117/14
100-42-5	Styrene	1.0 U		125	109	87	125	110	88	1	78-119/23
79-34-5	1,1,2,2-Tetrachloroethane	1.0 U		125	116	93	125	119	95	3	72-120/14
127-18-4	Tetrachloroethylene	1.0 U		125	120	96	125	118	94	2	76-135/16
108-88-3	Toluene	1.0 U		125	113	90	125	114	91	1	80-120/14
120-82-1	1,2,4-Trichlorobenzene	2.0 U		125	111	89	125	115	92	4	73-129/20
71-55-6	1,1,1-Trichloroethane	1.0 U		125	118	94	125	117	94	1	75-130/16
79-00-5	1,1,2-Trichloroethane	1.0 U		125	118	94	125	120	96	2	76-119/14
79-01-6	Trichloroethylene	1.0 U		125	115	92	125	113	90	2	81-126/15
75-69-4	Trichlorofluoromethane	2.0 U		125	122	98	125	114	91	7	71-156/21
75-01-4	Vinyl Chloride	1.0 U		125	125	100	125	123	98	2	69-159/18
1330-20-7	Xylene (total)	3.0 U		375	343	91	375	343	91	0	80-126/15

CAS No.	Surrogate Recoveries	MS	MSD	FC1460-2	Limits
1868-53-7	Dibromofluoromethane	103%	103%	104%	83-118%
17060-07-0	1,2-Dichloroethane-D4	103%	100%	99%	79-125%
2037-26-5	Toluene-D8	96%	96%	98%	85-112%
460-00-4	4-Bromofluorobenzene	98%	98%	101%	83-118%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FC1494
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
FC1512-1MS	1A42342.D	10	12/22/22	AL	n/a	n/a	V1A1705
FC1512-1MSD	1A42343.D	10	12/22/22	AL	n/a	n/a	V1A1705
FC1512-1	1A42328.D	1	12/22/22	AL	n/a	n/a	V1A1705

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

FC1494-19, FC1494-20

CAS No.	Compound	FC1512-1 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
67-64-1	Acetone	25 U		1250	907	73	1250	882	71	3	50-147/21
71-43-2	Benzene	2.5		250	215	85	250	219	87	2	81-122/14
75-27-4	Bromodichloromethane	1.0 U		250	210	84	250	213	85	1	79-123/19
75-25-2	Bromoform	1.0 U		250	196	78	250	199	80	2	66-123/21
78-93-3	2-Butanone (MEK)	5.0 U		1250	921	74	1250	894	72	3	56-143/18
75-15-0	Carbon Disulfide	2.0 U		250	235	94	250	241	96	3	66-148/23
56-23-5	Carbon Tetrachloride	1.0 U		250	212	85	250	221	88	4	76-136/23
108-90-7	Chlorobenzene	1.0 U		250	218	87	250	217	87	0	82-124/14
75-00-3	Chloroethane	2.0 U		250	343	137	250	344	138	0	62-144/20
67-66-3	Chloroform	1.0 U		250	209	84	250	213	85	2	80-124/15
110-82-7	Cyclohexane	1.7		250	228	91	250	236	94	3	73-138/18
124-48-1	Dibromochloromethane	1.0 U		250	193	77*	250	197	79	2	78-122/19
96-12-8	1,2-Dibromo-3-chloropropane	5.0 U		250	180	72	250	181	72	1	64-123/18
106-93-4	1,2-Dibromoethane	2.0 U		250	206	82	250	208	83	1	75-120/13
75-71-8	Dichlorodifluoromethane	2.0 U		250	221	88	250	229	92	4	42-167/19
95-50-1	1,2-Dichlorobenzene	1.0 U		250	214	86	250	219	88	2	82-124/14
541-73-1	1,3-Dichlorobenzene	1.0 U		250	219	88	250	222	89	1	84-125/14
106-46-7	1,4-Dichlorobenzene	1.0 U		250	210	84	250	215	86	2	78-120/15
75-34-3	1,1-Dichloroethane	1.0 U		250	217	87	250	221	88	2	81-122/15
107-06-2	1,2-Dichloroethane	1.0 U		250	205	82	250	208	83	1	75-125/14
75-35-4	1,1-Dichloroethylene	1.0 U		250	214	86	250	218	87	2	78-137/18
156-59-2	cis-1,2-Dichloroethylene	1.0 U		250	215	86	250	218	87	1	78-120/15
156-60-5	trans-1,2-Dichloroethylene	1.0 U		250	203	81	250	208	83	2	76-127/17
78-87-5	1,2-Dichloropropane	1.0 U		250	202	81	250	204	82	1	76-124/14
10061-01-5	cis-1,3-Dichloropropene	1.0 U		250	196	78	250	199	80	2	75-118/23
10061-02-6	trans-1,3-Dichloropropene	1.0 U		250	206	82	250	210	84	2	80-120/22
100-41-4	Ethylbenzene	2.8		250	213	84	250	218	86	2	81-121/14
76-13-1	Freon 113	1.0 U		250	232	93	250	231	92	0	72-134/20
591-78-6	2-Hexanone	10 U		1250	965	77	1250	909	73	6	61-129/18
98-82-8	Isopropylbenzene	2.1		250	219	87	250	223	88	2	83-132/15
79-20-9	Methyl Acetate	20 U		1250	1010	81	1250	984	79	3	65-126/18
74-83-9	Methyl Bromide	5.0 U		250	156	62	250	163	65	4	59-143/19
74-87-3	Methyl Chloride	2.0 U		250	218	87	250	214	86	2	50-159/19
108-87-2	Methylcyclohexane	0.93	I	250	241	96	250	246	98	2	76-129/17
75-09-2	Methylene Chloride	5.0 U		250	194	78	250	198	79	2	69-135/16
108-10-1	4-Methyl-2-pentanone (MIBK)	5.0 U		1250	991	79	1250	951	76	4	66-122/16

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FC1494
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
FC1512-1MS	1A42342.D	10	12/22/22	AL	n/a	n/a	V1A1705
FC1512-1MSD	1A42343.D	10	12/22/22	AL	n/a	n/a	V1A1705
FC1512-1	1A42328.D	1	12/22/22	AL	n/a	n/a	V1A1705

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

FC1494-19, FC1494-20

CAS No.	Compound	FC1512-1 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
1634-04-4	Methyl Tert Butyl Ether	1.0 U		250	198	79	250	203	81	2	72-117/14
100-42-5	Styrene	1.0 U		250	213	85	250	215	86	1	78-119/23
79-34-5	1,1,2,2-Tetrachloroethane	1.0 U		250	205	82	250	207	83	1	72-120/14
127-18-4	Tetrachloroethylene	1.0 U		250	217	87	250	223	89	3	76-135/16
108-88-3	Toluene	1.0 U		250	213	85	250	216	86	1	80-120/14
120-82-1	1,2,4-Trichlorobenzene	2.0 U		250	202	81	250	208	83	3	73-129/20
71-55-6	1,1,1-Trichloroethane	1.0 U		250	215	86	250	219	88	2	75-130/16
79-00-5	1,1,2-Trichloroethane	1.0 U		250	210	84	250	211	84	0	76-119/14
79-01-6	Trichloroethylene	1.0 U		250	216	86	250	218	87	1	81-126/15
75-69-4	Trichlorofluoromethane	2.0 U		250	301	120	250	302	121	0	71-156/21
75-01-4	Vinyl Chloride	1.0 U		250	242	97	250	248	99	2	69-159/18
1330-20-7	Xylene (total)	3.0 U		750	632	84	750	642	86	2	80-126/15

CAS No.	Surrogate Recoveries	MS	MSD	FC1512-1	Limits
1868-53-7	Dibromofluoromethane	98%	99%	98%	83-118%
17060-07-0	1,2-Dichloroethane-D4	98%	98%	95%	79-125%
2037-26-5	Toluene-D8	98%	98%	100%	85-112%
460-00-4	4-Bromofluorobenzene	98%	98%	98%	83-118%

* = Outside of Control Limits.

MS Semi-volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Instrument Blank

Job Number: FC1494
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
SQ2107-IBLK	Q98660.D	1	12/31/22	AL	n/a	n/a	SQ2107

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC1494-1, FC1494-3

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	
2355-31-9	MeFOSAA	ND	0.0080	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0080	0.0020	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	
919005-14-4	ADONA	ND	0.0080	0.0020	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.0080	0.0020	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.0080	0.0020	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	99%	50-150%
	13C5-PFPeA	99%	50-150%
	13C5-PFHxA	100%	50-150%
	13C4-PFHpA	103%	50-150%

Instrument Blank

Job Number: FC1494
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
SQ2107-IBLK	Q98660.D	1	12/31/22	AL	n/a	n/a	SQ2107

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC1494-1, FC1494-3

CAS No.	ID Standard Recoveries		Limits
	13C8-PFOA	102%	50-150%
	13C9-PFNA	101%	50-150%
	13C6-PFDA	97%	50-150%
	13C7-PFUnDA	97%	50-150%
	13C2-PFDoDA	99%	50-150%
	13C2-PFTeDA	97%	50-150%
	13C3-PFBS	99%	50-150%
	13C3-PFHxS	100%	50-150%
	13C8-PFOS	101%	50-150%
	13C8-FOSA	109%	50-150%
	d3-MeFOSA	103%	50-150%
	d3-MeFOSAA	98%	50-150%
	d5-EtFOSAA	97%	50-150%
	13C2-4:2FTS	94%	50-150%
	13C2-6:2FTS	97%	50-150%
	13C2-8:2FTS	92%	50-150%
	13C3-HFPO-DA	97%	50-150%

Instrument Blank

Job Number: FC1494
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S4Q555-IBLK	4Q38556.D	1	01/03/23	AL	n/a	n/a	S4Q555

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC1494-3

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	98%	50-150%
	13C5-PFPeA	97%	50-150%
	13C5-PFHxA	100%	50-150%
	13C4-PFHpA	95%	50-150%
	13C8-PFOA	100%	50-150%
	13C9-PFNA	92%	50-150%
	13C6-PFDA	91%	50-150%
	13C7-PFUnDA	102%	50-150%
	13C2-PFDoDA	96%	50-150%
	13C2-PFTeDA	105%	50-150%
	13C3-PFBS	102%	50-150%
	13C3-PFHxS	102%	50-150%
	13C8-PFOS	104%	50-150%
	13C8-FOSA	108%	50-150%
	d3-MeFOSA	101%	50-150%
	d3-MeFOSAA	103%	50-150%
	d5-EtFOSAA	100%	50-150%
	13C2-4:2FTS	98%	50-150%
	13C2-6:2FTS	87%	50-150%
	13C2-8:2FTS	81%	50-150%
	13C3-HFPO-DA	110%	50-150%

Instrument Blank

Job Number: FC1494
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S2Q1459-IBLK	2Q105027.D	1	01/05/23	WH	n/a	n/a	S2Q1459

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC1494-5, FC1494-10, FC1494-11, FC1494-13, FC1494-15, FC1494-17, FC1494-20, FC1494-21, FC1494-23, FC1494-25, FC1494-27, FC1494-30, FC1494-31, FC1494-33

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	
2355-31-9	MeFOSAA	ND	0.0080	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0080	0.0020	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	
919005-14-4	ADONA	ND	0.0080	0.0020	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.0080	0.0020	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.0080	0.0020	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	93%	50-150%
	13C5-PFPeA	94%	50-150%
	13C5-PFHxA	94%	50-150%
	13C4-PFHpA	94%	50-150%

Instrument Blank

Job Number: FC1494
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S2Q1459-IBLK	2Q105027.D	1	01/05/23	WH	n/a	n/a	S2Q1459

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC1494-5, FC1494-10, FC1494-11, FC1494-13, FC1494-15, FC1494-17, FC1494-20, FC1494-21, FC1494-23, FC1494-25, FC1494-27, FC1494-30, FC1494-31, FC1494-33

CAS No.	ID Standard Recoveries		Limits
	13C8-PFOA	94%	50-150%
	13C9-PFNA	94%	50-150%
	13C6-PFDA	94%	50-150%
	13C7-PFUnDA	93%	50-150%
	13C2-PFDoDA	94%	50-150%
	13C2-PFTeDA	93%	50-150%
	13C3-PFBS	92%	50-150%
	13C3-PFHxS	92%	50-150%
	13C8-PFOS	93%	50-150%
	13C8-FOSA	96%	50-150%
	d3-MeFOSA	95%	50-150%
	d3-MeFOSAA	92%	50-150%
	d5-EtFOSAA	98%	50-150%
	13C2-4:2FTS	87%	50-150%
	13C2-6:2FTS	90%	50-150%
	13C2-8:2FTS	87%	50-150%
	13C3-HFPO-DA	99%	50-150%

Instrument Blank

Job Number: FC1494
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S2Q1460-IBLK	2Q105108.D	1	01/06/23	WH	n/a	n/a	S2Q1460

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC1494-5, FC1494-11, FC1494-13, FC1494-15, FC1494-21, FC1494-27

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	105%	50-150%
	13C5-PFPeA	107%	50-150%
	13C5-PFHxA	107%	50-150%
	13C4-PFHpA	105%	50-150%
	13C8-PFOA	105%	50-150%
	13C9-PFNA	105%	50-150%
	13C6-PFDA	104%	50-150%
	13C7-PFUnDA	103%	50-150%
	13C2-PFDoDA	106%	50-150%
	13C2-PFTeDA	102%	50-150%
	13C3-PFBS	103%	50-150%
	13C3-PFHxS	103%	50-150%
	13C8-PFOS	104%	50-150%
	13C8-FOSA	104%	50-150%
	d3-MeFOSA	104%	50-150%
	d3-MeFOSAA	103%	50-150%
	d5-EtFOSAA	108%	50-150%
	13C2-4:2FTS	94%	50-150%
	13C2-6:2FTS	100%	50-150%
	13C2-8:2FTS	97%	50-150%
	13C3-HFPO-DA	117%	50-150%

Instrument Blank

Job Number: FC1494
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S3Q970-IBLK	3Q70795.D	1	01/09/23	JL	n/a	n/a	S3Q970

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC1494-7

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	
2355-31-9	MeFOSAA	ND	0.0080	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0080	0.0020	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	
919005-14-4	ADONA	ND	0.0080	0.0020	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.0080	0.0020	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.0080	0.0020	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	76%	50-150%
	13C5-PFPeA	74%	50-150%
	13C5-PFHxA	76%	50-150%
	13C4-PFHpA	78%	50-150%

Instrument Blank

Job Number: FC1494
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S3Q970-IBLK	3Q70795.D	1	01/09/23	JL	n/a	n/a	S3Q970

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC1494-7

CAS No.	ID Standard Recoveries		Limits
	13C8-PFOA	79%	50-150%
	13C9-PFNA	78%	50-150%
	13C6-PFDA	79%	50-150%
	13C7-PFUnDA	79%	50-150%
	13C2-PFDoDA	79%	50-150%
	13C2-PFTeDA	79%	50-150%
	13C3-PFBS	75%	50-150%
	13C3-PFHxS	78%	50-150%
	13C8-PFOS	77%	50-150%
	13C8-FOSA	81%	50-150%
	d3-MeFOSA	85%	50-150%
	d3-MeFOSAA	79%	50-150%
	d5-EtFOSAA	83%	50-150%
	13C2-4:2FTS	70%	50-150%
	13C2-6:2FTS	77%	50-150%
	13C2-8:2FTS	76%	50-150%
	13C3-HFPO-DA	74%	50-150%

Method Blank Summary

Job Number: FC1494
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP94730-MB [a]	Q98665.D	1	12/31/22	AL	12/28/22	OP94730	SQ2107

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC1494-1, FC1494-3

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.016	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0022	0.0080	0.0020	ug/l	J
307-24-4	Perfluorohexanoic acid	0.0023	0.0080	0.0020	ug/l	J
375-85-9	Perfluoroheptanoic acid	0.0020	0.0080	0.0020	ug/l	J
335-67-1	Perfluorooctanoic acid	0.0021	0.0080	0.0020	ug/l	J
375-95-1	Perfluorononanoic acid	ND	0.0080	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0020	0.0080	0.0020	ug/l	J
2058-94-8	Perfluoroundecanoic acid	0.0021	0.0080	0.0020	ug/l	J
307-55-1	Perfluorododecanoic acid	0.0023	0.0080	0.0020	ug/l	J
72629-94-8	Perfluorotridecanoic acid	0.0021	0.0080	0.0020	ug/l	J
376-06-7	Perfluorotetradecanoic acid	0.0024	0.0080	0.0020	ug/l	J
375-73-5	Perfluorobutanesulfonic acid	0.0022	0.0080	0.0020	ug/l	J
2706-91-4	Perfluoropentanesulfonic acid	0.0021	0.0080	0.0020	ug/l	J
355-46-4	Perfluorohexanesulfonic acid	0.0022	0.0080	0.0020	ug/l	J
375-92-8	Perfluoroheptanesulfonic acid	0.0022	0.0080	0.0020	ug/l	J
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0080	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0023	0.0080	0.0020	ug/l	J
335-77-3	Perfluorodecanesulfonic acid	0.0022	0.0080	0.0020	ug/l	J
754-91-6	PFOSA	0.0021	0.0080	0.0020	ug/l	J
2355-31-9	MeFOSAA	ND	0.016	0.0040	ug/l	
2991-50-6	EtFOSAA	ND	0.016	0.0040	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.016	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.016	0.0040	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.016	0.0040	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.016	0.0040	ug/l	
919005-14-4	ADONA	ND	0.016	0.0040	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.016	0.0040	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.016	0.0040	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	98%	50-150%
	13C5-PFPeA	99%	50-150%
	13C5-PFHxA	100%	50-150%
	13C4-PFHpA	103%	50-150%

Method Blank Summary

Job Number: FC1494
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP94730-MB [a]	Q98665.D	1	12/31/22	AL	12/28/22	OP94730	SQ2107

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC1494-1, FC1494-3

CAS No.	ID Standard Recoveries		Limits
	13C8-PFOA	102%	50-150%
	13C9-PFNA	101%	50-150%
	13C6-PFDA	97%	50-150%
	13C7-PFUnDA	94%	50-150%
	13C2-PFDoDA	90%	50-150%
	13C2-PFTeDA	86%	50-150%
	13C3-PFBS	99%	50-150%
	13C3-PFHxS	97%	50-150%
	13C8-PFOS	100%	50-150%
	13C8-FOSA	97%	50-150%
	d3-MeFOSAA	98%	50-150%
	d5-EtFOSAA	93%	50-150%
	13C2-4:2FTS	95%	50-150%
	13C2-6:2FTS	97%	50-150%
	13C2-8:2FTS	92%	50-150%
	13C3-HFPO-DA	100%	50-150%

(a) Associated samples were re-extracted.

Method Blank Summary

Job Number: FC1494
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP94730-MB [a]	4Q38561.D	1	01/03/23	AL	12/28/22	OP94730	S4Q555

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC1494-1, FC1494-3

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.016	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0021	0.0080	0.0020	ug/l	J
307-24-4	Perfluorohexanoic acid	0.0024	0.0080	0.0020	ug/l	J
375-85-9	Perfluoroheptanoic acid	0.0024	0.0080	0.0020	ug/l	J
335-67-1	Perfluorooctanoic acid	0.0022	0.0080	0.0020	ug/l	J
375-95-1	Perfluorononanoic acid	0.0022	0.0080	0.0020	ug/l	J
335-76-2	Perfluorodecanoic acid	0.0021	0.0080	0.0020	ug/l	J
2058-94-8	Perfluoroundecanoic acid	ND	0.0080	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0023	0.0080	0.0020	ug/l	J
72629-94-8	Perfluorotridecanoic acid	ND	0.0080	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0021	0.0080	0.0020	ug/l	J
375-73-5	Perfluorobutanesulfonic acid	0.0022	0.0080	0.0020	ug/l	J
2706-91-4	Perfluoropentanesulfonic acid	0.0020	0.0080	0.0020	ug/l	J
355-46-4	Perfluorohexanesulfonic acid	0.0022	0.0080	0.0020	ug/l	J
375-92-8	Perfluoroheptanesulfonic acid	0.0022	0.0080	0.0020	ug/l	J
1763-23-1	Perfluorooctanesulfonic acid	0.0027	0.0080	0.0020	ug/l	J
68259-12-1	Perfluorononanesulfonic acid	0.0024	0.0080	0.0020	ug/l	J
335-77-3	Perfluorodecanesulfonic acid	0.0029	0.0080	0.0020	ug/l	J
754-91-6	PFOSA	ND	0.0080	0.0020	ug/l	
2355-31-9	MeFOSAA	ND	0.016	0.0040	ug/l	
2991-50-6	EtFOSAA	ND	0.016	0.0040	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.016	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.016	0.0040	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.016	0.0040	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.016	0.0040	ug/l	
919005-14-4	ADONA	ND	0.016	0.0040	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.016	0.0040	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.016	0.0040	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	89%	50-150%
	13C5-PFPeA	87%	50-150%
	13C5-PFHxA	90%	50-150%
	13C4-PFHpA	84%	50-150%

Method Blank Summary

Job Number: FC1494
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP94730-MB [a]	4Q38561.D	1	01/03/23	AL	12/28/22	OP94730	S4Q555

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC1494-1, FC1494-3

CAS No.	ID Standard Recoveries		Limits
	13C8-PFOA	92%	50-150%
	13C9-PFNA	86%	50-150%
	13C6-PFDA	88%	50-150%
	13C7-PFUnDA	95%	50-150%
	13C2-PFDoDA	84%	50-150%
	13C2-PFTeDA	89%	50-150%
	13C3-PFBS	92%	50-150%
	13C3-PFHxS	96%	50-150%
	13C8-PFOS	95%	50-150%
	13C8-FOSA	92%	50-150%
	d3-MeFOSAA	97%	50-150%
	d5-EtFOSAA	95%	50-150%
	13C2-4:2FTS	89%	50-150%
	13C2-6:2FTS	80%	50-150%
	13C2-8:2FTS	79%	50-150%
	13C3-HFPO-DA	97%	50-150%

(a) Associated samples were re-extracted.

Method Blank Summary

Job Number: FC1494
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP94826-MB	2Q105056.D	1	01/05/23	WH	01/04/23	OP94826	S2Q1459

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC1494-5, FC1494-7, FC1494-10

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.016	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0080	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0080	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0080	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0080	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0080	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0080	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0080	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0080	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0080	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0080	0.0020	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0080	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0080	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0080	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0080	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0080	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0080	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0080	0.0020	ug/l	
754-91-6	PFOSA	ND	0.0080	0.0020	ug/l	
2355-31-9	MeFOSAA	ND	0.016	0.0040	ug/l	
2991-50-6	EtFOSAA	ND	0.016	0.0040	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.016	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.016	0.0040	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.016	0.0040	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.016	0.0040	ug/l	
919005-14-4	ADONA	ND	0.016	0.0040	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.016	0.0040	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.016	0.0040	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	81%	50-150%
	13C5-PFPeA	82%	50-150%
	13C5-PFHxA	84%	50-150%
	13C4-PFHpA	83%	50-150%

Method Blank Summary

Job Number: FC1494
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP94826-MB	2Q105056.D	1	01/05/23	WH	01/04/23	OP94826	S2Q1459

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC1494-5, FC1494-7, FC1494-10

CAS No.	ID Standard Recoveries		Limits
	13C8-PFOA	80%	50-150%
	13C9-PFNA	82%	50-150%
	13C6-PFDA	84%	50-150%
	13C7-PFUnDA	78%	50-150%
	13C2-PFDoDA	78%	50-150%
	13C2-PFTeDA	74%	50-150%
	13C3-PFBS	80%	50-150%
	13C3-PFHxS	82%	50-150%
	13C8-PFOS	81%	50-150%
	13C8-FOSA	71%	50-150%
	d3-MeFOSAA	74%	50-150%
	d5-EtFOSAA	76%	50-150%
	13C2-4:2FTS	76%	50-150%
	13C2-6:2FTS	79%	50-150%
	13C2-8:2FTS	80%	50-150%
	13C3-HFPO-DA	76%	50-150%

Method Blank Summary

Job Number: FC1494
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP94827-MB	2Q105085.D	1	01/06/23	WH	01/04/23	OP94827	S2Q1459

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC1494-11, FC1494-13, FC1494-15, FC1494-17, FC1494-20, FC1494-21, FC1494-23, FC1494-25, FC1494-27, FC1494-30, FC1494-31, FC1494-33

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.016	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0080	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0080	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0080	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0080	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0080	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0080	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0080	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0080	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0080	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0080	0.0020	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0080	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0080	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0080	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0080	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0080	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0080	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0080	0.0020	ug/l	
754-91-6	PFOSA	ND	0.0080	0.0020	ug/l	
2355-31-9	MeFOSAA	ND	0.016	0.0040	ug/l	
2991-50-6	EtFOSAA	ND	0.016	0.0040	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.016	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.016	0.0040	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.016	0.0040	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.016	0.0040	ug/l	
919005-14-4	ADONA	ND	0.016	0.0040	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.016	0.0040	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.016	0.0040	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	91%	50-150%
	13C5-PFPeA	91%	50-150%
	13C5-PFHxA	91%	50-150%
	13C4-PFHpA	92%	50-150%

Method Blank Summary

Job Number: FC1494
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP94827-MB	2Q105085.D	1	01/06/23	WH	01/04/23	OP94827	S2Q1459

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC1494-11, FC1494-13, FC1494-15, FC1494-17, FC1494-20, FC1494-21, FC1494-23, FC1494-25, FC1494-27, FC1494-30, FC1494-31, FC1494-33

CAS No.	ID Standard Recoveries		Limits
	13C8-PFOA	90%	50-150%
	13C9-PFNA	90%	50-150%
	13C6-PFDA	93%	50-150%
	13C7-PFUnDA	87%	50-150%
	13C2-PFDoDA	87%	50-150%
	13C2-PFTeDA	79%	50-150%
	13C3-PFBS	88%	50-150%
	13C3-PFHxS	89%	50-150%
	13C8-PFOS	90%	50-150%
	13C8-FOSA	69%	50-150%
	d3-MeFOSAA	85%	50-150%
	d5-EtFOSAA	86%	50-150%
	13C2-4:2FTS	85%	50-150%
	13C2-6:2FTS	87%	50-150%
	13C2-8:2FTS	91%	50-150%
	13C3-HFPO-DA	82%	50-150%

Blank Spike Summary

Job Number: FC1494
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP94730-BS	Q98664.D	1	12/31/22	AL	12/28/22	OP94730	SQ2107

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC1494-1, FC1494-3

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
375-22-4	Perfluorobutanoic acid	0.16	0.151	94	73-129
2706-90-3	Perfluoropentanoic acid	0.16	0.136	85	72-129
307-24-4	Perfluorohexanoic acid	0.16	0.147	92	72-129
375-85-9	Perfluoroheptanoic acid	0.16	0.143	89	72-130
335-67-1	Perfluorooctanoic acid	0.16	0.144	90	71-133
375-95-1	Perfluorononanoic acid	0.16	0.145	91	69-130
335-76-2	Perfluorodecanoic acid	0.16	0.148	93	71-129
2058-94-8	Perfluoroundecanoic acid	0.16	0.141	88	69-133
307-55-1	Perfluorododecanoic acid	0.16	0.152	95	72-134
72629-94-8	Perfluorotridecanoic acid	0.16	0.162	101	65-144
376-06-7	Perfluorotetradecanoic acid	0.16	0.143	89	71-132
375-73-5	Perfluorobutanesulfonic acid	0.16	0.142	89	72-130
2706-91-4	Perfluoropentanesulfonic acid	0.16	0.142	89	71-127
355-46-4	Perfluorohexanesulfonic acid	0.16	0.152	95	68-131
375-92-8	Perfluoroheptanesulfonic acid	0.16	0.157	98	69-134
1763-23-1	Perfluorooctanesulfonic acid	0.16	0.156	98	65-140
68259-12-1	Perfluorononanesulfonic acid	0.16	0.143	89	69-127
335-77-3	Perfluorodecanesulfonic acid	0.16	0.140	88	53-142
754-91-6	PFOSA	0.16	0.146	91	67-137
2355-31-9	MeFOSAA	0.16	0.140	88	65-136
2991-50-6	EtFOSAA	0.16	0.141	88	61-135
757124-72-4	4:2 Fluorotelomer sulfonate	0.16	0.153	96	63-143
27619-97-2	6:2 Fluorotelomer sulfonate	0.16	0.158	99	64-140
39108-34-4	8:2 Fluorotelomer sulfonate	0.16	0.158	99	67-138
13252-13-6	HFPO-DA (GenX)	0.16	0.158	99	60-140
919005-14-4	ADONA	0.16	0.139	87	60-140
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.16	0.140	88	60-140
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.16	0.130	81	60-140

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFBA	102%	50-150%
	13C5-PFPeA	102%	50-150%
	13C5-PFHxA	101%	50-150%
	13C4-PFHpA	105%	50-150%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FC1494
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP94730-BS	Q98664.D	1	12/31/22	AL	12/28/22	OP94730	SQ2107

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC1494-1, FC1494-3

CAS No.	ID Standard Recoveries	BSP	Limits
	13C8-PFOA	102%	50-150%
	13C9-PFNA	99%	50-150%
	13C6-PFDA	100%	50-150%
	13C7-PFUnDA	98%	50-150%
	13C2-PFDoDA	81%	50-150%
	13C2-PFTeDA	89%	50-150%
	13C3-PFBS	104%	50-150%
	13C3-PFHxS	100%	50-150%
	13C8-PFOS	99%	50-150%
	13C8-FOSA	90%	50-150%
	d3-MeFOSAA	101%	50-150%
	d5-EtFOSAA	94%	50-150%
	13C2-4:2FTS	104%	50-150%
	13C2-6:2FTS	103%	50-150%
	13C2-8:2FTS	99%	50-150%
	13C3-HFPO-DA	95%	50-150%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FC1494
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP94730-BS	4Q38560.D	1	01/03/23	AL	12/28/22	OP94730	S4Q555

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC1494-1, FC1494-3

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
375-22-4	Perfluorobutanoic acid	0.16	0.158	99	73-129
2706-90-3	Perfluoropentanoic acid	0.16	0.133	83	72-129
307-24-4	Perfluorohexanoic acid	0.16	0.151	94	72-129
375-85-9	Perfluoroheptanoic acid	0.16	0.162	101	72-130
335-67-1	Perfluorooctanoic acid	0.16	0.145	91	71-133
375-95-1	Perfluorononanoic acid	0.16	0.145	91	69-130
335-76-2	Perfluorodecanoic acid	0.16	0.151	94	71-129
2058-94-8	Perfluoroundecanoic acid	0.16	0.137	86	69-133
307-55-1	Perfluorododecanoic acid	0.16	0.156	98	72-134
72629-94-8	Perfluorotridecanoic acid	0.16	0.145	91	65-144
376-06-7	Perfluorotetradecanoic acid	0.16	0.134	84	71-132
375-73-5	Perfluorobutanesulfonic acid	0.16	0.156	98	72-130
2706-91-4	Perfluoropentanesulfonic acid	0.16	0.145	91	71-127
355-46-4	Perfluorohexanesulfonic acid	0.16	0.154	96	68-131
375-92-8	Perfluoroheptanesulfonic acid	0.16	0.149	93	69-134
1763-23-1	Perfluorooctanesulfonic acid	0.16	0.164	103	65-140
68259-12-1	Perfluorononanesulfonic acid	0.16	0.152	95	69-127
335-77-3	Perfluorodecanesulfonic acid	0.16	0.183	114	53-142
754-91-6	PFOSA	0.16	0.147	92	67-137
2355-31-9	MeFOSAA	0.16	0.141	88	65-136
2991-50-6	EtFOSAA	0.16	0.141	88	61-135
757124-72-4	4:2 Fluorotelomer sulfonate	0.16	0.151	94	63-143
27619-97-2	6:2 Fluorotelomer sulfonate	0.16	0.158	99	64-140
39108-34-4	8:2 Fluorotelomer sulfonate	0.16	0.153	96	67-138
13252-13-6	HFPO-DA (GenX)	0.16	0.155	97	60-140
919005-14-4	ADONA	0.16	0.139	87	60-140
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.16	0.179	112	60-140
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.16	0.161	101	60-140

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFBA	91%	50-150%
	13C5-PFPeA	90%	50-150%
	13C5-PFHxA	93%	50-150%
	13C4-PFHpA	88%	50-150%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FC1494
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP94730-BS	4Q38560.D	1	01/03/23	AL	12/28/22	OP94730	S4Q555

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC1494-1, FC1494-3

CAS No.	ID Standard Recoveries	BSP	Limits
	13C8-PFOA	93%	50-150%
	13C9-PFNA	86%	50-150%
	13C6-PFDA	81%	50-150%
	13C7-PFUnDA	84%	50-150%
	13C2-PFDoDA	75%	50-150%
	13C2-PFTeDA	90%	50-150%
	13C3-PFBS	92%	50-150%
	13C3-PFHxS	98%	50-150%
	13C8-PFOS	96%	50-150%
	13C8-FOSA	86%	50-150%
	d3-MeFOSAA	86%	50-150%
	d5-EtFOSAA	86%	50-150%
	13C2-4:2FTS	98%	50-150%
	13C2-6:2FTS	85%	50-150%
	13C2-8:2FTS	77%	50-150%
	13C3-HFPO-DA	99%	50-150%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FC1494
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP94826-BS	2Q105055.D	1	01/05/23	WH	01/04/23	OP94826	S2Q1459

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC1494-5, FC1494-7, FC1494-10

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
375-22-4	Perfluorobutanoic acid	0.16	0.152	95	73-129
2706-90-3	Perfluoropentanoic acid	0.16	0.146	91	72-129
307-24-4	Perfluorohexanoic acid	0.16	0.150	94	72-129
375-85-9	Perfluoroheptanoic acid	0.16	0.151	94	72-130
335-67-1	Perfluorooctanoic acid	0.16	0.150	94	71-133
375-95-1	Perfluorononanoic acid	0.16	0.145	91	69-130
335-76-2	Perfluorodecanoic acid	0.16	0.146	91	71-129
2058-94-8	Perfluoroundecanoic acid	0.16	0.146	91	69-133
307-55-1	Perfluorododecanoic acid	0.16	0.152	95	72-134
72629-94-8	Perfluorotridecanoic acid	0.16	0.147	92	65-144
376-06-7	Perfluorotetradecanoic acid	0.16	0.151	94	71-132
375-73-5	Perfluorobutanesulfonic acid	0.16	0.150	94	72-130
2706-91-4	Perfluoropentanesulfonic acid	0.16	0.151	94	71-127
355-46-4	Perfluorohexanesulfonic acid	0.16	0.150	94	68-131
375-92-8	Perfluoroheptanesulfonic acid	0.16	0.151	94	69-134
1763-23-1	Perfluorooctanesulfonic acid	0.16	0.152	95	65-140
68259-12-1	Perfluorononanesulfonic acid	0.16	0.140	88	69-127
335-77-3	Perfluorodecanesulfonic acid	0.16	0.151	94	53-142
754-91-6	PFOSA	0.16	0.153	96	67-137
2355-31-9	MeFOSAA	0.16	0.154	96	65-136
2991-50-6	EtFOSAA	0.16	0.145	91	61-135
757124-72-4	4:2 Fluorotelomer sulfonate	0.16	0.151	94	63-143
27619-97-2	6:2 Fluorotelomer sulfonate	0.16	0.151	94	64-140
39108-34-4	8:2 Fluorotelomer sulfonate	0.16	0.153	96	67-138
13252-13-6	HFPO-DA (GenX)	0.16	0.151	94	60-140
919005-14-4	ADONA	0.16	0.144	90	60-140
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.16	0.147	92	60-140
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.16	0.155	97	60-140

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFBA	92%	50-150%
	13C5-PFPeA	93%	50-150%
	13C5-PFHxA	93%	50-150%
	13C4-PFHpA	93%	50-150%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FC1494
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP94826-BS	2Q105055.D	1	01/05/23	WH	01/04/23	OP94826	S2Q1459

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC1494-5, FC1494-7, FC1494-10

CAS No.	ID Standard Recoveries	BSP	Limits
	13C8-PFOA	91%	50-150%
	13C9-PFNA	94%	50-150%
	13C6-PFDA	94%	50-150%
	13C7-PFUnDA	86%	50-150%
	13C2-PFDoDA	84%	50-150%
	13C2-PFTeDA	79%	50-150%
	13C3-PFBS	90%	50-150%
	13C3-PFHxS	91%	50-150%
	13C8-PFOS	93%	50-150%
	13C8-FOSA	75%	50-150%
	d3-MeFOSAA	79%	50-150%
	d5-EtFOSAA	80%	50-150%
	13C2-4:2FTS	91%	50-150%
	13C2-6:2FTS	93%	50-150%
	13C2-8:2FTS	97%	50-150%
	13C3-HFPO-DA	87%	50-150%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FC1494
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP94827-BS	2Q105084.D	1	01/06/23	WH	01/04/23	OP94827	S2Q1459

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC1494-11, FC1494-13, FC1494-15, FC1494-17, FC1494-20, FC1494-21, FC1494-23, FC1494-25, FC1494-27, FC1494-30, FC1494-31, FC1494-33

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
375-22-4	Perfluorobutanoic acid	0.16	0.165	103	73-129
2706-90-3	Perfluoropentanoic acid	0.16	0.160	100	72-129
307-24-4	Perfluorohexanoic acid	0.16	0.162	101	72-129
375-85-9	Perfluoroheptanoic acid	0.16	0.164	103	72-130
335-67-1	Perfluorooctanoic acid	0.16	0.164	103	71-133
375-95-1	Perfluorononanoic acid	0.16	0.162	101	69-130
335-76-2	Perfluorodecanoic acid	0.16	0.162	101	71-129
2058-94-8	Perfluoroundecanoic acid	0.16	0.160	100	69-133
307-55-1	Perfluorododecanoic acid	0.16	0.163	102	72-134
72629-94-8	Perfluorotridecanoic acid	0.16	0.155	97	65-144
376-06-7	Perfluorotetradecanoic acid	0.16	0.163	102	71-132
375-73-5	Perfluorobutanesulfonic acid	0.16	0.167	104	72-130
2706-91-4	Perfluoropentanesulfonic acid	0.16	0.169	106	71-127
355-46-4	Perfluorohexanesulfonic acid	0.16	0.166	104	68-131
375-92-8	Perfluoroheptanesulfonic acid	0.16	0.169	106	69-134
1763-23-1	Perfluorooctanesulfonic acid	0.16	0.168	105	65-140
68259-12-1	Perfluorononanesulfonic acid	0.16	0.155	97	69-127
335-77-3	Perfluorodecanesulfonic acid	0.16	0.160	100	53-142
754-91-6	PFOSA	0.16	0.164	103	67-137
2355-31-9	MeFOSAA	0.16	0.166	104	65-136
2991-50-6	EtFOSAA	0.16	0.162	101	61-135
757124-72-4	4:2 Fluorotelomer sulfonate	0.16	0.165	103	63-143
27619-97-2	6:2 Fluorotelomer sulfonate	0.16	0.169	106	64-140
39108-34-4	8:2 Fluorotelomer sulfonate	0.16	0.166	104	67-138
13252-13-6	HFPO-DA (GenX)	0.16	0.169	106	60-140
919005-14-4	ADONA	0.16	0.161	101	60-140
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.16	0.156	98	60-140
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.16	0.163	102	60-140

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFBA	104%	50-150%
	13C5-PFPeA	105%	50-150%
	13C5-PFHxA	105%	50-150%
	13C4-PFHpA	105%	50-150%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FC1494
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP94827-BS	2Q105084.D	1	01/06/23	WH	01/04/23	OP94827	S2Q1459

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC1494-11, FC1494-13, FC1494-15, FC1494-17, FC1494-20, FC1494-21, FC1494-23, FC1494-25, FC1494-27, FC1494-30, FC1494-31, FC1494-33

CAS No.	ID Standard Recoveries	BSP	Limits
	13C8-PFOA	101%	50-150%
	13C9-PFNA	104%	50-150%
	13C6-PFDA	105%	50-150%
	13C7-PFUnDA	99%	50-150%
	13C2-PFDoDA	97%	50-150%
	13C2-PFTeDA	87%	50-150%
	13C3-PFBS	100%	50-150%
	13C3-PFHxS	100%	50-150%
	13C8-PFOS	101%	50-150%
	13C8-FOSA	79%	50-150%
	d3-MeFOSAA	99%	50-150%
	d5-EtFOSAA	98%	50-150%
	13C2-4:2FTS	103%	50-150%
	13C2-6:2FTS	101%	50-150%
	13C2-8:2FTS	110%	50-150%
	13C3-HFPO-DA	95%	50-150%

* = Outside of Control Limits.

Matrix Spike Summary

Job Number: FC1494
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP94730-MS	Q98667.D	1	12/31/22	AL	12/28/22	OP94730	SQ2107
FC1494-1 [a]	Q98666.D	1	12/31/22	AL	12/28/22	OP94730	SQ2107
FC1494-1 [b]	4Q38562.D	1	01/03/23	AL	12/28/22	OP94730	S4Q555

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC1494-1, FC1494-3

CAS No.	Compound	FC1494-1 ug/l	Q	Spike ug/l	MS ug/l	MS %	Limits
375-22-4	Perfluorobutanoic acid	0.300	B	0.167	0.461	97	73-129
2706-90-3	Perfluoropentanoic acid	0.0031	IB	0.167	0.146	86	72-129
307-24-4	Perfluorohexanoic acid	0.0036	IB	0.167	0.158	93	72-129
375-85-9	Perfluoroheptanoic acid	0.0040	IB	0.167	0.157	92	72-130
335-67-1	Perfluorooctanoic acid	0.0067	IB	0.167	0.162	93	71-133
375-95-1	Perfluorononanoic acid	0.0022	IB	0.167	0.153	90	69-130
335-76-2	Perfluorodecanoic acid	0.0023	IB	0.167	0.162	96	71-129
2058-94-8	Perfluoroundecanoic acid	0.0020	IB	0.167	0.154	91	69-133
307-55-1	Perfluorododecanoic acid	0.0023	IB	0.167	0.165	98	72-134
72629-94-8	Perfluorotridecanoic acid	0.0023	IB	0.167	0.160	95	65-144
376-06-7	Perfluorotetradecanoic acid	0.0023	IB	0.167	0.147	87	71-132
375-73-5	Perfluorobutanesulfonic acid	0.0030	IB	0.167	0.154	91	72-130
2706-91-4	Perfluoropentanesulfonic acid	0.0026	IB	0.167	0.159	94	71-127
355-46-4	Perfluorohexanesulfonic acid	0.0071	IB	0.167	0.163	94	68-131
375-92-8	Perfluoroheptanesulfonic acid	0.0022	IB	0.167	0.174	103	69-134
1763-23-1	Perfluorooctanesulfonic acid	0.0114	B	0.167	0.177	99	65-140
68259-12-1	Perfluorononanesulfonic acid	0.0021	IB	0.167	0.149	88	69-127
335-77-3	Perfluorodecanesulfonic acid	0.0080 U		0.167	0.151	91	53-142
754-91-6	PFOSA	0.0080 U		0.167	0.166	100	67-137
2355-31-9	MeFOSAA	0.016 U		0.167	0.155	93	65-136
2991-50-6	EtFOSAA	0.016 U		0.167	0.147	88	61-135
757124-72-4	4:2 Fluorotelomer sulfonate	0.016 U		0.167	0.162	97	63-143
27619-97-2	6:2 Fluorotelomer sulfonate	0.016 U		0.167	0.167	100	64-140
39108-34-4	8:2 Fluorotelomer sulfonate	0.016 U		0.167	0.169	101	67-138
13252-13-6	HFPO-DA (GenX)	0.0079	IB	0.167	0.165	94	60-140
919005-14-4	ADONA	0.016 U		0.167	0.152	91	60-140
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.016 U		0.167	0.142	85	60-140
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.016 U		0.167	0.143	86	60-140

CAS No.	ID Standard Recoveries	MS	FC1494-1	FC1494-1	Limits
	13C4-PFBA	59%	41%* [d]	35%* [c]	50-150%
	13C5-PFPeA	60%	42%* [d]	31%* [c]	50-150%
	13C5-PFHxA	64%	45%* [d]	37%* [c]	50-150%
	13C4-PFHpA	73%	51%	40%* [c]	50-150%

* = Outside of Control Limits.

Matrix Spike Summary

Job Number: FC1494
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP94730-MS	Q98667.D	1	12/31/22	AL	12/28/22	OP94730	SQ2107
FC1494-1 [a]	Q98666.D	1	12/31/22	AL	12/28/22	OP94730	SQ2107
FC1494-1 [b]	4Q38562.D	1	01/03/23	AL	12/28/22	OP94730	S4Q555

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC1494-1, FC1494-3

CAS No.	ID Standard Recoveries	MS	FC1494-1	FC1494-1	Limits
	13C8-PFOA	79%	55%	47%* [c]	50-150%
	13C9-PFNA	81%	56%	46%* [c]	50-150%
	13C6-PFDA	78%	56%	46%* [c]	50-150%
	13C7-PFUnDA	77%	56%	49%* [c]	50-150%
	13C2-PFDoDA	65%	48%* [d]	45%* [c]	50-150%
	13C2-PFTeDA	63%	46%* [d]	45%* [c]	50-150%
	13C3-PFBS	65%	44%* [d]	36%* [c]	50-150%
	13C3-PFHxS	75%	51%	47%* [c]	50-150%
	13C8-PFOS	79%	58%	54%	50-150%
	13C8-FOSA	42%* [d]	51%	47%* [c]	50-150%
	d3-MeFOSAA	84%	60%	56%	50-150%
	d5-EtFOSAA	82%	60%	54%	50-150%
	13C2-4:2FTS	74%	48%* [d]	40%* [c]	50-150%
	13C2-6:2FTS	96%	63%	49%* [c]	50-150%
	13C2-8:2FTS	89%	59%	45%* [c]	50-150%
	13C3-HFPO-DA	65%	45%* [d]	41%* [c]	50-150%

(a) Insufficient sample for re-extraction.
(b) Confirmation run.
(c) Associated ID Standard outside control limits, Confirmed by re-analysis. Insufficient sample to re-extract.
(d) Outside control limits.

* = Outside of Control Limits.

Duplicate Summary

Job Number: FC1494
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP94730-DUP	4Q38611.D	5	01/04/23	AL	12/28/22	OP94730	S4Q555
FC1494-3 [a]	Q98668.D	1	12/31/22	AL	12/28/22	OP94730	SQ2107
FC1494-3	4Q38612.D	5	01/04/23	AL	12/28/22	OP94730	S4Q555

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC1494-1, FC1494-3

CAS No.	Compound	FC1494-3 ug/l	Q	DUP ug/l	Q	RPD	Limits
375-22-4	Perfluorobutanoic acid	1.03 [b]		1.10		7	30
2706-90-3	Perfluoropentanoic acid	0.0170		0.0199	J	16	30
307-24-4	Perfluorohexanoic acid	0.0148		0.0173	J	16	30
375-85-9	Perfluoroheptanoic acid	0.0108		0.0116	J	7	30
335-67-1	Perfluorooctanoic acid	0.0056	I	ND		200*	30
375-95-1	Perfluorononanoic acid	0.0080	U	ND		nc	30
335-76-2	Perfluorodecanoic acid	0.0080	U	ND		nc	30
2058-94-8	Perfluoroundecanoic acid	0.0080	U	ND		nc	30
307-55-1	Perfluorododecanoic acid	0.0080	U	ND		nc	30
72629-94-8	Perfluorotridecanoic acid	0.0080	U	ND		nc	30
376-06-7	Perfluorotetradecanoic acid	0.0080	U	ND		nc	30
375-73-5	Perfluorobutanesulfonic acid	0.0023	I	ND		200*	30
2706-91-4	Perfluoropentanesulfonic acid	0.0024	I	ND		200*	30
355-46-4	Perfluorohexanesulfonic acid	0.0172		0.0185	J	7	30
375-92-8	Perfluoroheptanesulfonic acid	0.0080	U	ND		nc	30
1763-23-1	Perfluorooctanesulfonic acid	0.0080	U	ND		nc	30
68259-12-1	Perfluorononanesulfonic acid	0.0080	U	ND		nc	30
335-77-3	Perfluorodecanesulfonic acid	0.0080	U	ND		nc	30
754-91-6	PFOSA	0.0080	U	ND		nc	30
2355-31-9	MeFOSAA	0.016	U	ND		nc	30
2991-50-6	EtFOSAA	0.016	U	ND		nc	30
757124-72-4	4:2 Fluorotelomer sulfonate	0.016	U	ND		nc	30
27619-97-2	6:2 Fluorotelomer sulfonate	0.016	U	ND		nc	30
39108-34-4	8:2 Fluorotelomer sulfonate	0.016	U	ND		nc	30
13252-13-6	HFPO-DA (GenX)	0.016	U	ND		nc	30
919005-14-4	ADONA	0.016	U	ND		nc	30
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.016	U	ND		nc	30
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.016	U	ND		nc	30

CAS No.	ID Standard Recoveries	DUP	FC1494-3	FC1494-3	Limits
	13C4-PFBA	48%* [c]	54%	51%	50-150%
	13C5-PFPeA	48%* [c]	52%	52%	50-150%
	13C5-PFHxA	57%	57%	62%	50-150%
	13C4-PFHpA	58%	65%	62%	50-150%

* = Outside of Control Limits.

Duplicate Summary

Job Number: FC1494
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP94730-DUP	4Q38611.D	5	01/04/23	AL	12/28/22	OP94730	S4Q555
FC1494-3 [a]	Q98668.D	1	12/31/22	AL	12/28/22	OP94730	SQ2107
FC1494-3	4Q38612.D	5	01/04/23	AL	12/28/22	OP94730	S4Q555

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC1494-1, FC1494-3

CAS No.	ID Standard Recoveries	DUP	FC1494-3	FC1494-3	Limits
	13C8-PFOA	64%	75%	71%	50-150%
	13C9-PFNA	64%	74%	70%	50-150%
	13C6-PFDA	66%	74%	69%	50-150%
	13C7-PFUnDA	71%	72%	75%	50-150%
	13C2-PFDoDA	59%	63%	64%	50-150%
	13C2-PFTeDA	55%	56%	66%	50-150%
	13C3-PFBS	55%	56%	60%	50-150%
	13C3-PFHxS	67%	65%	69%	50-150%
	13C8-PFOS	68%	71%	79%	50-150%
	13C8-FOSA	76%	65%	90%	50-150%
	d3-MeFOSAA	83%	77%	94%	50-150%
	d5-EtFOSAA	78%	74%	86%	50-150%
	13C2-4:2FTS	62%	60%	65%	50-150%
	13C2-6:2FTS	59%	79%	63%	50-150%
	13C2-8:2FTS	65%	71%	66%	50-150%
	13C3-HFPO-DA	59%	57%	62%	50-150%

(a) Insufficient sample for re-extraction.
(b) Result is from Run #2.
(c) Outside control limits.

* = Outside of Control Limits.

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

e-Hardcopy 2.0
Automated Report

Technical Report for

Tetra Tech NUS

KSC-CRCA

112G8970

SGS Job Number: FC1532

Sampling Date: 12/20/22

Report to:

Tetra-Tech, Inc.
661 Andersen Drive Foster Plaza 7
Pittsburgh, PA 15220
amy.thomson@tetratech.com; carrie.stock@tetratech.com;
alex.murphy@tetratech.com
ATTN: Amy Thomson

Total number of pages in report: 53

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

Norm Farmer
Technical Director

Client Service contact: Andrea Colby 407-425-6700

Certifications: FL(E83510), LA(03051), KS(E-10327), NC(573), NJ(FL002), NY(12022), SC(96038001) DoD ELAP(ANAB L2229), AZ(AZ0806), CA(2937), TX(T104704404), PA(68-03573), VA(460177), AL, AK, AR, CT, IA, KY, MA, MI. MS, ND, NH, NV, OK, OR, IL, UT, VT, WA, WI, WV

This report shall not be reproduced, except in its entirety, without the written approval of SGS.
Test results relate only to samples analyzed.

SGS is the sole authority for authorizing edits or modifications to this document.
Unauthorized modification of this report is strictly prohibited.
Review standard terms at: http://www.sgs.com/en/terms-and-conditions

Please share your ideas about how we can serve you better at:
EHS.US.CustomerCare@sgs.com

Sections: 1 2 3 4 5 6 7

Table of Contents

Section 1: Sample Summary **3**
Section 2: Case Narrative/Conformance Summary **4**
Section 3: Summary of Hits **6**
Section 4: Sample Results **7**
4.1: FC1532-1: CRCA-DPT0278-033.0-20221220 8
4.2: FC1532-2: CRCA-DPT0278-038.0-20221220 12
4.3: FC1532-3: CRCA-DPT0278-043.0-20221220 14
4.4: FC1532-4: CRCA-DPT0278-048.0-20221220 18
4.5: FC1532-5: CRCA-DPT0278-053.0-20221220 20
4.6: FC1532-6: CRCA-DPT0278-058.0-20221220 22
4.7: FC1532-7: CRCA-FB-20221220 26
4.8: FC1532-8: CRCA-EB-20221220 28
Section 5: Misc. Forms **30**
5.1: Chain of Custody 31
Section 6: MS Volatiles - QC Data Summaries **33**
6.1: Method Blank Summary 34
6.2: Blank Spike Summary 36
6.3: Matrix Spike/Matrix Spike Duplicate Summary 38
Section 7: MS Semi-volatiles - QC Data Summaries **40**
7.1: Method Blank Summary 41
7.2: Blank Spike Summary 47
7.3: Matrix Spike Summary 50
7.4: Duplicate Summary 52

SGS North America Inc.

Sample Summary

Tetra Tech NUS

Job No: FC1532

KSC-CRCA
Project No: 112G8970

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
FC1532-1	12/20/22	15:30	CR	12/21/22	AQ	Ground Water	CRCA-DPT0278-033.0-20221220
FC1532-2	12/20/22	15:50	CR	12/21/22	AQ	Ground Water	CRCA-DPT0278-038.0-20221220
FC1532-3	12/20/22	16:15	CR	12/21/22	AQ	Ground Water	CRCA-DPT0278-043.0-20221220
FC1532-4	12/20/22	16:35	CR	12/21/22	AQ	Ground Water	CRCA-DPT0278-048.0-20221220
FC1532-5	12/20/22	17:00	CR	12/21/22	AQ	Ground Water	CRCA-DPT0278-053.0-20221220
FC1532-6	12/20/22	17:30	CR	12/21/22	AQ	Ground Water	CRCA-DPT0278-058.0-20221220
FC1532-7	12/20/22	16:00	CR	12/21/22	AQ	Field Blank Water	CRCA-FB-20221220
FC1532-8	12/20/22	16:15	CR	12/21/22	AQ	Equipment Blank	CRCA-EB-20221220

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: Tetra Tech NUS **Job No:** FC1532

Site: KSC-CRCA **Report Date:** 1/16/2023 2:54:20 PM

On 12/21/2022, 7 Sample(s), 0 Trip Blank(s) and 1 Field Blank(s) were received at SGS North America Inc - Orlando. at a maximum corrected temperature of 2.6 C. Samples were intact and chemically preserved, unless noted below. A SGS North America Inc. - Orlando Job Number of FC1532 was assigned to the project.

Laboratory sample ID, client sample ID and dates of sample collection are detailed in the report's Results Summary Section. Specified quality control criteria were achieved for this job except as noted below. For more information, please refer to the analytical results and QC summary pages.

MS Volatiles By Method SW846 8260D

Matrix: AQ **Batch ID:** VY2776

Sample(s) FC1552-1MS, FC1552-1MSD were used as the QC samples indicated.

Matrix Spike Recovery(s) for Benzene are outside control limits. Outside control limits due to high level in sample relative to spike amount.

Matrix Spike Recovery(s) for Ethylbenzene, Methyl Bromide are outside control limits. Probable cause is due to matrix interference.

Matrix Spike Duplicate Recovery(s) for Ethylbenzene, Methyl Bromide are outside control limits. Probable cause is due to matrix interference.

RPD(s) for MSD for Methyl Bromide are outside control limits for sample FC1552-1MSD. Probable cause is due to sample non-homogeneity.

FC1532-1 for Chloroethane: Associated CCV outside control limits high, sample is ND.

FC1532-1 for Methyl Bromide: Associated CCV outside control limits low.

FC1532-1: Sample was not preserved to a pH < 2.

FC1532-2 for Chloroethane: Associated CCV outside control limits high, sample is ND.

FC1532-2 for Methyl Bromide: Associated CCV outside control limits low.

FC1532-2: Sample was not preserved to a pH < 2.

FC1532-3 for Chloroethane: Associated CCV outside control limits high, sample is ND.

FC1532-3 for Methyl Bromide: Associated CCV outside control limits low.

FC1532-3: Sample was not preserved to a pH < 2.

FC1532-4 for Chloroethane: Associated CCV outside control limits high, sample is ND.

FC1532-4 for Methyl Bromide: Associated CCV outside control limits low.

FC1532-4: Sample was not preserved to a pH < 2.

FC1532-5 for Chloroethane: Associated CCV outside control limits high, sample is ND.

FC1532-5 for Methyl Bromide: Associated CCV outside control limits low.

FC1532-5: Sample was not preserved to a pH < 2.

FC1532-6 for Chloroethane: Associated CCV outside control limits high, sample is ND.

FC1532-6 for Methyl Bromide: Associated CCV outside control limits low.

FC1532-6: Sample was not preserved to a pH < 2.

MS Semi-volatiles By Method EPA 537M QSM5.3 B-15

Matrix: AQ **Batch ID:** OP94731

Sample(s) FC1532-1MS, FC1532-3DUP were used as the QC samples indicated.

RPD(s) for Duplicate for Perfluoroheptanoic acid are outside control limits for sample OP94731-DUP. Probable cause is due to sample non-homogeneity.

Sample(s) FC1532-8 have surrogates outside control limits.

FC1532-8 for 13C5-PFPeA: Outside control limits.

FC1532-8 for 13C4-PFBA: Outside control limits.

Matrix: AQ **Batch ID:** OP94827

Sample(s) FC1532-8 have surrogates outside control limits.

FC1532-8 for 13C2-PFTeDA: Outside control limits.

SGS North America Inc. - Orlando certifies that data reported for samples received, listed on the associated custody chain or analytical task order, were produced to specifications meeting the Quality System precision, accuracy and completeness objectives except as noted. Estimated non-standard method measurement uncertainty data is available on request, based on quality control bias and implicit for standard methods. Acceptable uncertainty requires tested parameter quality control data to meet method criteria. SGS North America Inc.- Orlando is not responsible for data quality assumptions if partial reports are used and recommends that this report be used in its entirety.

Narrative prepared by:

_____

Kim Benham, Client Services *(Signature on File)*

Summary of Hits

Job Number: FC1532
Account: Tetra Tech NUS
Project: KSC-CRCA
Collected: 12/20/22

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	PQL	MDL	Units	Method
FC1532-1	**CRCA-DPT0278-033.0-20221220**					
Perfluorobutanoic acid		0.680	0.017	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid		0.0040 I	0.0083	0.0021	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0041 I	0.0083	0.0021	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.0024 I	0.0083	0.0021	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0085	0.0083	0.0021	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0036 I	0.0083	0.0021	ug/l	EPA 537M QSM5.3 B-15
FC1532-2	**CRCA-DPT0278-038.0-20221220**					
Benzene [a]		0.62 I	1.0	0.31	ug/l	SW846 8260D
Toluene [a]		0.33 I	1.0	0.30	ug/l	SW846 8260D
FC1532-3	**CRCA-DPT0278-043.0-20221220**					
Perfluorobutanoic acid		0.590	0.017	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid		0.0034 I	0.0083	0.0021	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0046 I	0.0083	0.0021	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.0041 I	0.0083	0.0021	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0091	0.0083	0.0021	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0041 I	0.0083	0.0021	ug/l	EPA 537M QSM5.3 B-15
FC1532-4	**CRCA-DPT0278-048.0-20221220**					
No hits reported in this sample.						
FC1532-5	**CRCA-DPT0278-053.0-20221220**					
No hits reported in this sample.						
FC1532-6	**CRCA-DPT0278-058.0-20221220**					
Perfluorobutanoic acid		0.0290	0.017	0.0042	ug/l	EPA 537M QSM5.3 B-15
FC1532-7	**CRCA-FB-20221220**					
No hits reported in this sample.						
FC1532-8	**CRCA-EB-20221220**					
No hits reported in this sample.						

(a) Sample was not preserved to a pH < 2.

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID:	CRCA-DPT0278-033.0-20221220		
Lab Sample ID:	FC1532-1	**Date Sampled:**	12/20/22
Matrix:	AQ - Ground Water	**Date Received:**	12/21/22
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	KSC-CRCA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	Y66871.D	1	12/23/22 16:16	JL	n/a	n/a	VY2776
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL 4.2 List

CAS No.	Compound	Result	PQL	MDL	Units	Q
67-64-1	Acetone	10 U	25	10	ug/l	
71-43-2	Benzene	0.31 U	1.0	0.31	ug/l	
75-27-4	Bromodichloromethane	0.24 U	1.0	0.24	ug/l	
75-25-2	Bromoform	0.41 U	1.0	0.41	ug/l	
78-93-3	2-Butanone (MEK)	2.0 U	5.0	2.0	ug/l	
75-15-0	Carbon Disulfide	0.53 U	2.0	0.53	ug/l	
56-23-5	Carbon Tetrachloride	0.36 U	1.0	0.36	ug/l	
108-90-7	Chlorobenzene	0.20 U	1.0	0.20	ug/l	
75-00-3	Chloroethane [b]	0.67 U	2.0	0.67	ug/l	
67-66-3	Chloroform	0.30 U	1.0	0.30	ug/l	
110-82-7	Cyclohexane	0.39 U	1.0	0.39	ug/l	
124-48-1	Dibromochloromethane	0.28 U	1.0	0.28	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	1.0 U	5.0	1.0	ug/l	
106-93-4	1,2-Dibromoethane	0.28 U	2.0	0.28	ug/l	
75-71-8	Dichlorodifluoromethane	0.50 U	2.0	0.50	ug/l	
95-50-1	1,2-Dichlorobenzene	0.32 U	1.0	0.32	ug/l	
541-73-1	1,3-Dichlorobenzene	0.22 U	1.0	0.22	ug/l	
106-46-7	1,4-Dichlorobenzene	0.26 U	1.0	0.26	ug/l	
75-34-3	1,1-Dichloroethane	0.34 U	1.0	0.34	ug/l	
107-06-2	1,2-Dichloroethane	0.31 U	1.0	0.31	ug/l	
75-35-4	1,1-Dichloroethylene	0.32 U	1.0	0.32	ug/l	
156-59-2	cis-1,2-Dichloroethylene	0.28 U	1.0	0.28	ug/l	
156-60-5	trans-1,2-Dichloroethylene	0.22 U	1.0	0.22	ug/l	
78-87-5	1,2-Dichloropropane	0.43 U	1.0	0.43	ug/l	
10061-01-5	cis-1,3-Dichloropropene	0.29 U	1.0	0.29	ug/l	
10061-02-6	trans-1,3-Dichloropropene	0.21 U	1.0	0.21	ug/l	
100-41-4	Ethylbenzene	0.36 U	1.0	0.36	ug/l	
76-13-1	Freon 113	0.48 U	1.0	0.48	ug/l	
591-78-6	2-Hexanone	2.0 U	10	2.0	ug/l	
98-82-8	Isopropylbenzene	0.22 U	1.0	0.22	ug/l	
79-20-9	Methyl Acetate	5.0 U	20	5.0	ug/l	
74-83-9	Methyl Bromide [c]	2.0 U	5.0	2.0	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0278-033.0-20221220		
Lab Sample ID:	FC1532-1	**Date Sampled:**	12/20/22
Matrix:	AQ - Ground Water	**Date Received:**	12/21/22
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	KSC-CRCA		

VOA TCL 4.2 List

CAS No.	Compound	Result	PQL	MDL	Units	Q
74-87-3	Methyl Chloride	0.50 U	2.0	0.50	ug/l	
108-87-2	Methylcyclohexane	0.44 U	1.0	0.44	ug/l	
75-09-2	Methylene Chloride	2.0 U	5.0	2.0	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	1.0 U	5.0	1.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	0.23 U	1.0	0.23	ug/l	
100-42-5	Styrene	0.22 U	1.0	0.22	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	0.30 U	1.0	0.30	ug/l	
127-18-4	Tetrachloroethylene	0.22 U	1.0	0.22	ug/l	
108-88-3	Toluene	0.30 U	1.0	0.30	ug/l	
120-82-1	1,2,4-Trichlorobenzene	0.50 U	2.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	0.25 U	1.0	0.25	ug/l	
79-00-5	1,1,2-Trichloroethane	0.47 U	1.0	0.47	ug/l	
79-01-6	Trichloroethylene	0.35 U	1.0	0.35	ug/l	
75-69-4	Trichlorofluoromethane	0.50 U	2.0	0.50	ug/l	
75-01-4	Vinyl Chloride [b]	0.41 U	1.0	0.41	ug/l	
1330-20-7	Xylene (total)	0.72 U	3.0	0.72	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	101%		83-118%
17060-07-0	1,2-Dichloroethane-D4	102%		79-125%
2037-26-5	Toluene-D8	99%		85-112%
460-00-4	4-Bromofluorobenzene	99%		83-118%

(a) Sample was not preserved to a pH < 2.
(b) Associated CCV outside control limits high, sample is ND.
(c) Associated CCV outside control limits low.

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: CRCA-DPT0278-033.0-20221220
Lab Sample ID: FC1532-1
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: KSC-CRCA

Date Sampled: 12/20/22
Date Received: 12/21/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Q98694.D	1	01/01/23 02:31	AL	12/28/22 09:10	OP94731	SQ2107
Run #2							

	Initial Volume	Final Volume
Run #1	120 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	PQL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	0.680	0.017	0.0042	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0040	0.0083	0.0021	ug/l	I
307-24-4	Perfluorohexanoic acid	0.0041	0.0083	0.0021	ug/l	I
375-85-9	Perfluoroheptanoic acid	0.0024	0.0083	0.0021	ug/l	I
335-67-1	Perfluorooctanoic acid	0.0085	0.0083	0.0021	ug/l	
375-95-1	Perfluorononanoic acid	0.0021 U	0.0083	0.0021	ug/l	
335-76-2	Perfluorodecanoic acid	0.0021 U	0.0083	0.0021	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0021 U	0.0083	0.0021	ug/l	
307-55-1	Perfluorododecanoic acid	0.0021 U	0.0083	0.0021	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0021 U	0.0083	0.0021	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0021 U	0.0083	0.0021	ug/l	
PERFLUOROALKYLSULFONIC ACIDS						
375-73-5	Perfluorobutanesulfonic acid	0.0021 U	0.0083	0.0021	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0021 U	0.0083	0.0021	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0021 U	0.0083	0.0021	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0021 U	0.0083	0.0021	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0036	0.0083	0.0021	ug/l	I
68259-12-1	Perfluorononanesulfonic acid	0.0021 U	0.0083	0.0021	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0021 U	0.0083	0.0021	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA	0.0021 U	0.0083	0.0021	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	0.0042 U	0.017	0.0042	ug/l	
2991-50-6	EtFOSAA	0.0042 U	0.017	0.0042	ug/l	
FLUOROTELOMER SULFONATES						
757124-72-4	4:2 Fluorotelomer sulfonate	0.0042 U	0.017	0.0042	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0042 U	0.017	0.0042	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: CRCA-DPT0278-033.0-20221220
Lab Sample ID: FC1532-1
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: KSC-CRCA

Date Sampled: 12/20/22
Date Received: 12/21/22
Percent Solids: n/a

CAS No.	Compound	Result	PQL	MDL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0042 U	0.017	0.0042	ug/l	
NEXT GENERATION PFAS ANALYTES						
13252-13-6	HFPO-DA (GenX)	0.0042 U	0.017	0.0042	ug/l	
919005-14-4	ADONA	0.0042 U	0.017	0.0042	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0042 U	0.017	0.0042	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0042 U	0.017	0.0042	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	60%		50-150%
	13C5-PFPeA	63%		50-150%
	13C5-PFHxA	66%		50-150%
	13C4-PFHpA	68%		50-150%
	13C8-PFOA	70%		50-150%
	13C9-PFNA	68%		50-150%
	13C6-PFDA	66%		50-150%
	13C7-PFUnDA	64%		50-150%
	13C2-PFDoDA	57%		50-150%
	13C2-PFTeDA	59%		50-150%
	13C3-PFBS	66%		50-150%
	13C3-PFHxS	64%		50-150%
	13C8-PFOS	69%		50-150%
	13C8-FOSA	67%		50-150%
	d3-MeFOSAA	71%		50-150%
	d5-EtFOSAA	67%		50-150%
	13C2-4:2FTS	66%		50-150%
	13C2-6:2FTS	68%		50-150%
	13C2-8:2FTS	64%		50-150%
	13C3-HFPO-DA	61%		50-150%

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0278-038.0-20221220		
Lab Sample ID:	FC1532-2	**Date Sampled:**	12/20/22
Matrix:	AQ - Ground Water	**Date Received:**	12/21/22
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	KSC-CRCA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	Y66872.D	1	12/23/22 16:40	JL	n/a	n/a	VY2776
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL 4.2 List

CAS No.	Compound	Result	PQL	MDL	Units	Q
67-64-1	Acetone	10 U	25	10	ug/l	
71-43-2	Benzene	0.62	1.0	0.31	ug/l	I
75-27-4	Bromodichloromethane	0.24 U	1.0	0.24	ug/l	
75-25-2	Bromoform	0.41 U	1.0	0.41	ug/l	
78-93-3	2-Butanone (MEK)	2.0 U	5.0	2.0	ug/l	
75-15-0	Carbon Disulfide	0.53 U	2.0	0.53	ug/l	
56-23-5	Carbon Tetrachloride	0.36 U	1.0	0.36	ug/l	
108-90-7	Chlorobenzene	0.20 U	1.0	0.20	ug/l	
75-00-3	Chloroethane [b]	0.67 U	2.0	0.67	ug/l	
67-66-3	Chloroform	0.30 U	1.0	0.30	ug/l	
110-82-7	Cyclohexane	0.39 U	1.0	0.39	ug/l	
124-48-1	Dibromochloromethane	0.28 U	1.0	0.28	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	1.0 U	5.0	1.0	ug/l	
106-93-4	1,2-Dibromoethane	0.28 U	2.0	0.28	ug/l	
75-71-8	Dichlorodifluoromethane	0.50 U	2.0	0.50	ug/l	
95-50-1	1,2-Dichlorobenzene	0.32 U	1.0	0.32	ug/l	
541-73-1	1,3-Dichlorobenzene	0.22 U	1.0	0.22	ug/l	
106-46-7	1,4-Dichlorobenzene	0.26 U	1.0	0.26	ug/l	
75-34-3	1,1-Dichloroethane	0.34 U	1.0	0.34	ug/l	
107-06-2	1,2-Dichloroethane	0.31 U	1.0	0.31	ug/l	
75-35-4	1,1-Dichloroethylene	0.32 U	1.0	0.32	ug/l	
156-59-2	cis-1,2-Dichloroethylene	0.28 U	1.0	0.28	ug/l	
156-60-5	trans-1,2-Dichloroethylene	0.22 U	1.0	0.22	ug/l	
78-87-5	1,2-Dichloropropane	0.43 U	1.0	0.43	ug/l	
10061-01-5	cis-1,3-Dichloropropene	0.29 U	1.0	0.29	ug/l	
10061-02-6	trans-1,3-Dichloropropene	0.21 U	1.0	0.21	ug/l	
100-41-4	Ethylbenzene	0.36 U	1.0	0.36	ug/l	
76-13-1	Freon 113	0.48 U	1.0	0.48	ug/l	
591-78-6	2-Hexanone	2.0 U	10	2.0	ug/l	
98-82-8	Isopropylbenzene	0.22 U	1.0	0.22	ug/l	
79-20-9	Methyl Acetate	5.0 U	20	5.0	ug/l	
74-83-9	Methyl Bromide [c]	2.0 U	5.0	2.0	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0278-038.0-20221220		
Lab Sample ID:	FC1532-2	**Date Sampled:**	12/20/22
Matrix:	AQ - Ground Water	**Date Received:**	12/21/22
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	KSC-CRCA		

VOA TCL 4.2 List

CAS No.	Compound	Result	PQL	MDL	Units	Q
74-87-3	Methyl Chloride	0.50 U	2.0	0.50	ug/l	
108-87-2	Methylcyclohexane	0.44 U	1.0	0.44	ug/l	
75-09-2	Methylene Chloride	2.0 U	5.0	2.0	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	1.0 U	5.0	1.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	0.23 U	1.0	0.23	ug/l	
100-42-5	Styrene	0.22 U	1.0	0.22	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	0.30 U	1.0	0.30	ug/l	
127-18-4	Tetrachloroethylene	0.22 U	1.0	0.22	ug/l	
108-88-3	Toluene	0.33	1.0	0.30	ug/l	I
120-82-1	1,2,4-Trichlorobenzene	0.50 U	2.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	0.25 U	1.0	0.25	ug/l	
79-00-5	1,1,2-Trichloroethane	0.47 U	1.0	0.47	ug/l	
79-01-6	Trichloroethylene	0.35 U	1.0	0.35	ug/l	
75-69-4	Trichlorofluoromethane	0.50 U	2.0	0.50	ug/l	
75-01-4	Vinyl Chloride [b]	0.41 U	1.0	0.41	ug/l	
1330-20-7	Xylene (total)	0.72 U	3.0	0.72	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	103%		83-118%
17060-07-0	1,2-Dichloroethane-D4	101%		79-125%
2037-26-5	Toluene-D8	98%		85-112%
460-00-4	4-Bromofluorobenzene	103%		83-118%

(a) Sample was not preserved to a pH < 2.
(b) Associated CCV outside control limits high, sample is ND.
(c) Associated CCV outside control limits low.

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: CRCA-DPT0278-043.0-20221220
Lab Sample ID: FC1532-3
Matrix: AQ - Ground Water
Method: SW846 8260D
Project: KSC-CRCA

Date Sampled: 12/20/22
Date Received: 12/21/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	Y66873.D	1	12/23/22 17:04	JL	n/a	n/a	VY2776
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL 4.2 List

CAS No.	Compound	Result	PQL	MDL	Units	Q
67-64-1	Acetone	10 U	25	10	ug/l	
71-43-2	Benzene	0.31 U	1.0	0.31	ug/l	
75-27-4	Bromodichloromethane	0.24 U	1.0	0.24	ug/l	
75-25-2	Bromoform	0.41 U	1.0	0.41	ug/l	
78-93-3	2-Butanone (MEK)	2.0 U	5.0	2.0	ug/l	
75-15-0	Carbon Disulfide	0.53 U	2.0	0.53	ug/l	
56-23-5	Carbon Tetrachloride	0.36 U	1.0	0.36	ug/l	
108-90-7	Chlorobenzene	0.20 U	1.0	0.20	ug/l	
75-00-3	Chloroethane [b]	0.67 U	2.0	0.67	ug/l	
67-66-3	Chloroform	0.30 U	1.0	0.30	ug/l	
110-82-7	Cyclohexane	0.39 U	1.0	0.39	ug/l	
124-48-1	Dibromochloromethane	0.28 U	1.0	0.28	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	1.0 U	5.0	1.0	ug/l	
106-93-4	1,2-Dibromoethane	0.28 U	2.0	0.28	ug/l	
75-71-8	Dichlorodifluoromethane	0.50 U	2.0	0.50	ug/l	
95-50-1	1,2-Dichlorobenzene	0.32 U	1.0	0.32	ug/l	
541-73-1	1,3-Dichlorobenzene	0.22 U	1.0	0.22	ug/l	
106-46-7	1,4-Dichlorobenzene	0.26 U	1.0	0.26	ug/l	
75-34-3	1,1-Dichloroethane	0.34 U	1.0	0.34	ug/l	
107-06-2	1,2-Dichloroethane	0.31 U	1.0	0.31	ug/l	
75-35-4	1,1-Dichloroethylene	0.32 U	1.0	0.32	ug/l	
156-59-2	cis-1,2-Dichloroethylene	0.28 U	1.0	0.28	ug/l	
156-60-5	trans-1,2-Dichloroethylene	0.22 U	1.0	0.22	ug/l	
78-87-5	1,2-Dichloropropane	0.43 U	1.0	0.43	ug/l	
10061-01-5	cis-1,3-Dichloropropene	0.29 U	1.0	0.29	ug/l	
10061-02-6	trans-1,3-Dichloropropene	0.21 U	1.0	0.21	ug/l	
100-41-4	Ethylbenzene	0.36 U	1.0	0.36	ug/l	
76-13-1	Freon 113	0.48 U	1.0	0.48	ug/l	
591-78-6	2-Hexanone	2.0 U	10	2.0	ug/l	
98-82-8	Isopropylbenzene	0.22 U	1.0	0.22	ug/l	
79-20-9	Methyl Acetate	5.0 U	20	5.0	ug/l	
74-83-9	Methyl Bromide [c]	2.0 U	5.0	2.0	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0278-043.0-20221220		
Lab Sample ID:	FC1532-3	**Date Sampled:**	12/20/22
Matrix:	AQ - Ground Water	**Date Received:**	12/21/22
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	KSC-CRCA		

VOA TCL 4.2 List

CAS No.	Compound	Result	PQL	MDL	Units	Q
74-87-3	Methyl Chloride	0.50 U	2.0	0.50	ug/l	
108-87-2	Methylcyclohexane	0.44 U	1.0	0.44	ug/l	
75-09-2	Methylene Chloride	2.0 U	5.0	2.0	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	1.0 U	5.0	1.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	0.23 U	1.0	0.23	ug/l	
100-42-5	Styrene	0.22 U	1.0	0.22	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	0.30 U	1.0	0.30	ug/l	
127-18-4	Tetrachloroethylene	0.22 U	1.0	0.22	ug/l	
108-88-3	Toluene	0.30 U	1.0	0.30	ug/l	
120-82-1	1,2,4-Trichlorobenzene	0.50 U	2.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	0.25 U	1.0	0.25	ug/l	
79-00-5	1,1,2-Trichloroethane	0.47 U	1.0	0.47	ug/l	
79-01-6	Trichloroethylene	0.35 U	1.0	0.35	ug/l	
75-69-4	Trichlorofluoromethane	0.50 U	2.0	0.50	ug/l	
75-01-4	Vinyl Chloride [b]	0.41 U	1.0	0.41	ug/l	
1330-20-7	Xylene (total)	0.72 U	3.0	0.72	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	106%		83-118%
17060-07-0	1,2-Dichloroethane-D4	104%		79-125%
2037-26-5	Toluene-D8	97%		85-112%
460-00-4	4-Bromofluorobenzene	102%		83-118%

(a) Sample was not preserved to a pH < 2.
(b) Associated CCV outside control limits high, sample is ND.
(c) Associated CCV outside control limits low.

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0278-043.0-20221220		
Lab Sample ID:	FC1532-3	**Date Sampled:**	12/20/22
Matrix:	AQ - Ground Water	**Date Received:**	12/21/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	KSC-CRCA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Q98696.D	1	01/01/23 03:00	AL	12/28/22 09:10	OP94731	SQ2107
Run #2							

	Initial Volume	Final Volume
Run #1	120 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	PQL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	0.590	0.017	0.0042	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0034	0.0083	0.0021	ug/l	I
307-24-4	Perfluorohexanoic acid	0.0046	0.0083	0.0021	ug/l	I
375-85-9	Perfluoroheptanoic acid	0.0041	0.0083	0.0021	ug/l	I
335-67-1	Perfluorooctanoic acid	0.0091	0.0083	0.0021	ug/l	
375-95-1	Perfluorononanoic acid	0.0021 U	0.0083	0.0021	ug/l	
335-76-2	Perfluorodecanoic acid	0.0021 U	0.0083	0.0021	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0021 U	0.0083	0.0021	ug/l	
307-55-1	Perfluorododecanoic acid	0.0021 U	0.0083	0.0021	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0021 U	0.0083	0.0021	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0021 U	0.0083	0.0021	ug/l	
PERFLUOROALKYLSULFONIC ACIDS						
375-73-5	Perfluorobutanesulfonic acid	0.0021 U	0.0083	0.0021	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0021 U	0.0083	0.0021	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0021 U	0.0083	0.0021	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0021 U	0.0083	0.0021	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0041	0.0083	0.0021	ug/l	I
68259-12-1	Perfluorononanesulfonic acid	0.0021 U	0.0083	0.0021	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0021 U	0.0083	0.0021	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA	0.0021 U	0.0083	0.0021	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	0.0042 U	0.017	0.0042	ug/l	
2991-50-6	EtFOSAA	0.0042 U	0.017	0.0042	ug/l	
FLUOROTELOMER SULFONATES						
757124-72-4	4:2 Fluorotelomer sulfonate	0.0042 U	0.017	0.0042	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0042 U	0.017	0.0042	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0278-043.0-20221220		
Lab Sample ID:	FC1532-3	**Date Sampled:**	12/20/22
Matrix:	AQ - Ground Water	**Date Received:**	12/21/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	KSC-CRCA		

CAS No.	Compound	Result	PQL	MDL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0042 U	0.017	0.0042	ug/l	
NEXT GENERATION PFAS ANALYTES						
13252-13-6	HFPO-DA (GenX)	0.0042 U	0.017	0.0042	ug/l	
919005-14-4	ADONA	0.0042 U	0.017	0.0042	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0042 U	0.017	0.0042	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0042 U	0.017	0.0042	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	64%		50-150%
	13C5-PFPeA	62%		50-150%
	13C5-PFHxA	64%		50-150%
	13C4-PFHpA	66%		50-150%
	13C8-PFOA	67%		50-150%
	13C9-PFNA	67%		50-150%
	13C6-PFDA	66%		50-150%
	13C7-PFUnDA	66%		50-150%
	13C2-PFDoDA	58%		50-150%
	13C2-PFTeDA	60%		50-150%
	13C3-PFBS	63%		50-150%
	13C3-PFHxS	62%		50-150%
	13C8-PFOS	65%		50-150%
	13C8-FOSA	64%		50-150%
	d3-MeFOSAA	75%		50-150%
	d5-EtFOSAA	73%		50-150%
	13C2-4:2FTS	66%		50-150%
	13C2-6:2FTS	69%		50-150%
	13C2-8:2FTS	66%		50-150%
	13C3-HFPO-DA	62%		50-150%

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0278-048.0-20221220		
Lab Sample ID:	FC1532-4	**Date Sampled:**	12/20/22
Matrix:	AQ - Ground Water	**Date Received:**	12/21/22
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	KSC-CRCA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	Y66874.D	1	12/23/22 17:28	JL	n/a	n/a	VY2776
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL 4.2 List

CAS No.	Compound	Result	PQL	MDL	Units	Q
67-64-1	Acetone	10 U	25	10	ug/l	
71-43-2	Benzene	0.31 U	1.0	0.31	ug/l	
75-27-4	Bromodichloromethane	0.24 U	1.0	0.24	ug/l	
75-25-2	Bromoform	0.41 U	1.0	0.41	ug/l	
78-93-3	2-Butanone (MEK)	2.0 U	5.0	2.0	ug/l	
75-15-0	Carbon Disulfide	0.53 U	2.0	0.53	ug/l	
56-23-5	Carbon Tetrachloride	0.36 U	1.0	0.36	ug/l	
108-90-7	Chlorobenzene	0.20 U	1.0	0.20	ug/l	
75-00-3	Chloroethane [b]	0.67 U	2.0	0.67	ug/l	
67-66-3	Chloroform	0.30 U	1.0	0.30	ug/l	
110-82-7	Cyclohexane	0.39 U	1.0	0.39	ug/l	
124-48-1	Dibromochloromethane	0.28 U	1.0	0.28	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	1.0 U	5.0	1.0	ug/l	
106-93-4	1,2-Dibromoethane	0.28 U	2.0	0.28	ug/l	
75-71-8	Dichlorodifluoromethane	0.50 U	2.0	0.50	ug/l	
95-50-1	1,2-Dichlorobenzene	0.32 U	1.0	0.32	ug/l	
541-73-1	1,3-Dichlorobenzene	0.22 U	1.0	0.22	ug/l	
106-46-7	1,4-Dichlorobenzene	0.26 U	1.0	0.26	ug/l	
75-34-3	1,1-Dichloroethane	0.34 U	1.0	0.34	ug/l	
107-06-2	1,2-Dichloroethane	0.31 U	1.0	0.31	ug/l	
75-35-4	1,1-Dichloroethylene	0.32 U	1.0	0.32	ug/l	
156-59-2	cis-1,2-Dichloroethylene	0.28 U	1.0	0.28	ug/l	
156-60-5	trans-1,2-Dichloroethylene	0.22 U	1.0	0.22	ug/l	
78-87-5	1,2-Dichloropropane	0.43 U	1.0	0.43	ug/l	
10061-01-5	cis-1,3-Dichloropropene	0.29 U	1.0	0.29	ug/l	
10061-02-6	trans-1,3-Dichloropropene	0.21 U	1.0	0.21	ug/l	
100-41-4	Ethylbenzene	0.36 U	1.0	0.36	ug/l	
76-13-1	Freon 113	0.48 U	1.0	0.48	ug/l	
591-78-6	2-Hexanone	2.0 U	10	2.0	ug/l	
98-82-8	Isopropylbenzene	0.22 U	1.0	0.22	ug/l	
79-20-9	Methyl Acetate	5.0 U	20	5.0	ug/l	
74-83-9	Methyl Bromide [c]	2.0 U	5.0	2.0	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0278-048.0-20221220		
Lab Sample ID:	FC1532-4	**Date Sampled:**	12/20/22
Matrix:	AQ - Ground Water	**Date Received:**	12/21/22
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	KSC-CRCA		

VOA TCL 4.2 List

CAS No.	Compound	Result	PQL	MDL	Units	Q
74-87-3	Methyl Chloride	0.50 U	2.0	0.50	ug/l	
108-87-2	Methylcyclohexane	0.44 U	1.0	0.44	ug/l	
75-09-2	Methylene Chloride	2.0 U	5.0	2.0	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	1.0 U	5.0	1.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	0.23 U	1.0	0.23	ug/l	
100-42-5	Styrene	0.22 U	1.0	0.22	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	0.30 U	1.0	0.30	ug/l	
127-18-4	Tetrachloroethylene	0.22 U	1.0	0.22	ug/l	
108-88-3	Toluene	0.30 U	1.0	0.30	ug/l	
120-82-1	1,2,4-Trichlorobenzene	0.50 U	2.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	0.25 U	1.0	0.25	ug/l	
79-00-5	1,1,2-Trichloroethane	0.47 U	1.0	0.47	ug/l	
79-01-6	Trichloroethylene	0.35 U	1.0	0.35	ug/l	
75-69-4	Trichlorofluoromethane	0.50 U	2.0	0.50	ug/l	
75-01-4	Vinyl Chloride [b]	0.41 U	1.0	0.41	ug/l	
1330-20-7	Xylene (total)	0.72 U	3.0	0.72	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	101%		83-118%
17060-07-0	1,2-Dichloroethane-D4	107%		79-125%
2037-26-5	Toluene-D8	98%		85-112%
460-00-4	4-Bromofluorobenzene	101%		83-118%

(a) Sample was not preserved to a pH < 2.
(b) Associated CCV outside control limits high, sample is ND.
(c) Associated CCV outside control limits low.

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0278-053.0-20221220		
Lab Sample ID:	FC1532-5	**Date Sampled:**	12/20/22
Matrix:	AQ - Ground Water	**Date Received:**	12/21/22
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	KSC-CRCA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	Y66875.D	1	12/23/22 17:52	JL	n/a	n/a	VY2776
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL 4.2 List

CAS No.	Compound	Result	PQL	MDL	Units	Q
67-64-1	Acetone	10 U	25	10	ug/l	
71-43-2	Benzene	0.31 U	1.0	0.31	ug/l	
75-27-4	Bromodichloromethane	0.24 U	1.0	0.24	ug/l	
75-25-2	Bromoform	0.41 U	1.0	0.41	ug/l	
78-93-3	2-Butanone (MEK)	2.0 U	5.0	2.0	ug/l	
75-15-0	Carbon Disulfide	0.53 U	2.0	0.53	ug/l	
56-23-5	Carbon Tetrachloride	0.36 U	1.0	0.36	ug/l	
108-90-7	Chlorobenzene	0.20 U	1.0	0.20	ug/l	
75-00-3	Chloroethane [b]	0.67 U	2.0	0.67	ug/l	
67-66-3	Chloroform	0.30 U	1.0	0.30	ug/l	
110-82-7	Cyclohexane	0.39 U	1.0	0.39	ug/l	
124-48-1	Dibromochloromethane	0.28 U	1.0	0.28	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	1.0 U	5.0	1.0	ug/l	
106-93-4	1,2-Dibromoethane	0.28 U	2.0	0.28	ug/l	
75-71-8	Dichlorodifluoromethane	0.50 U	2.0	0.50	ug/l	
95-50-1	1,2-Dichlorobenzene	0.32 U	1.0	0.32	ug/l	
541-73-1	1,3-Dichlorobenzene	0.22 U	1.0	0.22	ug/l	
106-46-7	1,4-Dichlorobenzene	0.26 U	1.0	0.26	ug/l	
75-34-3	1,1-Dichloroethane	0.34 U	1.0	0.34	ug/l	
107-06-2	1,2-Dichloroethane	0.31 U	1.0	0.31	ug/l	
75-35-4	1,1-Dichloroethylene	0.32 U	1.0	0.32	ug/l	
156-59-2	cis-1,2-Dichloroethylene	0.28 U	1.0	0.28	ug/l	
156-60-5	trans-1,2-Dichloroethylene	0.22 U	1.0	0.22	ug/l	
78-87-5	1,2-Dichloropropane	0.43 U	1.0	0.43	ug/l	
10061-01-5	cis-1,3-Dichloropropene	0.29 U	1.0	0.29	ug/l	
10061-02-6	trans-1,3-Dichloropropene	0.21 U	1.0	0.21	ug/l	
100-41-4	Ethylbenzene	0.36 U	1.0	0.36	ug/l	
76-13-1	Freon 113	0.48 U	1.0	0.48	ug/l	
591-78-6	2-Hexanone	2.0 U	10	2.0	ug/l	
98-82-8	Isopropylbenzene	0.22 U	1.0	0.22	ug/l	
79-20-9	Methyl Acetate	5.0 U	20	5.0	ug/l	
74-83-9	Methyl Bromide [c]	2.0 U	5.0	2.0	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0278-053.0-20221220		
Lab Sample ID:	FC1532-5	**Date Sampled:**	12/20/22
Matrix:	AQ - Ground Water	**Date Received:**	12/21/22
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	KSC-CRCA		

VOA TCL 4.2 List

CAS No.	Compound	Result	PQL	MDL	Units	Q
74-87-3	Methyl Chloride	0.50 U	2.0	0.50	ug/l	
108-87-2	Methylcyclohexane	0.44 U	1.0	0.44	ug/l	
75-09-2	Methylene Chloride	2.0 U	5.0	2.0	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	1.0 U	5.0	1.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	0.23 U	1.0	0.23	ug/l	
100-42-5	Styrene	0.22 U	1.0	0.22	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	0.30 U	1.0	0.30	ug/l	
127-18-4	Tetrachloroethylene	0.22 U	1.0	0.22	ug/l	
108-88-3	Toluene	0.30 U	1.0	0.30	ug/l	
120-82-1	1,2,4-Trichlorobenzene	0.50 U	2.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	0.25 U	1.0	0.25	ug/l	
79-00-5	1,1,2-Trichloroethane	0.47 U	1.0	0.47	ug/l	
79-01-6	Trichloroethylene	0.35 U	1.0	0.35	ug/l	
75-69-4	Trichlorofluoromethane	0.50 U	2.0	0.50	ug/l	
75-01-4	Vinyl Chloride [b]	0.41 U	1.0	0.41	ug/l	
1330-20-7	Xylene (total)	0.72 U	3.0	0.72	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	101%		83-118%
17060-07-0	1,2-Dichloroethane-D4	105%		79-125%
2037-26-5	Toluene-D8	100%		85-112%
460-00-4	4-Bromofluorobenzene	98%		83-118%

(a) Sample was not preserved to a pH < 2.
(b) Associated CCV outside control limits high, sample is ND.
(c) Associated CCV outside control limits low.

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0278-058.0-20221220		
Lab Sample ID:	FC1532-6	**Date Sampled:**	12/20/22
Matrix:	AQ - Ground Water	**Date Received:**	12/21/22
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	KSC-CRCA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	Y66876.D	1	12/23/22 18:16	JL	n/a	n/a	VY2776
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL 4.2 List

CAS No.	Compound	Result	PQL	MDL	Units	Q
67-64-1	Acetone	10 U	25	10	ug/l	
71-43-2	Benzene	0.31 U	1.0	0.31	ug/l	
75-27-4	Bromodichloromethane	0.24 U	1.0	0.24	ug/l	
75-25-2	Bromoform	0.41 U	1.0	0.41	ug/l	
78-93-3	2-Butanone (MEK)	2.0 U	5.0	2.0	ug/l	
75-15-0	Carbon Disulfide	0.53 U	2.0	0.53	ug/l	
56-23-5	Carbon Tetrachloride	0.36 U	1.0	0.36	ug/l	
108-90-7	Chlorobenzene	0.20 U	1.0	0.20	ug/l	
75-00-3	Chloroethane [b]	0.67 U	2.0	0.67	ug/l	
67-66-3	Chloroform	0.30 U	1.0	0.30	ug/l	
110-82-7	Cyclohexane	0.39 U	1.0	0.39	ug/l	
124-48-1	Dibromochloromethane	0.28 U	1.0	0.28	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	1.0 U	5.0	1.0	ug/l	
106-93-4	1,2-Dibromoethane	0.28 U	2.0	0.28	ug/l	
75-71-8	Dichlorodifluoromethane	0.50 U	2.0	0.50	ug/l	
95-50-1	1,2-Dichlorobenzene	0.32 U	1.0	0.32	ug/l	
541-73-1	1,3-Dichlorobenzene	0.22 U	1.0	0.22	ug/l	
106-46-7	1,4-Dichlorobenzene	0.26 U	1.0	0.26	ug/l	
75-34-3	1,1-Dichloroethane	0.34 U	1.0	0.34	ug/l	
107-06-2	1,2-Dichloroethane	0.31 U	1.0	0.31	ug/l	
75-35-4	1,1-Dichloroethylene	0.32 U	1.0	0.32	ug/l	
156-59-2	cis-1,2-Dichloroethylene	0.28 U	1.0	0.28	ug/l	
156-60-5	trans-1,2-Dichloroethylene	0.22 U	1.0	0.22	ug/l	
78-87-5	1,2-Dichloropropane	0.43 U	1.0	0.43	ug/l	
10061-01-5	cis-1,3-Dichloropropene	0.29 U	1.0	0.29	ug/l	
10061-02-6	trans-1,3-Dichloropropene	0.21 U	1.0	0.21	ug/l	
100-41-4	Ethylbenzene	0.36 U	1.0	0.36	ug/l	
76-13-1	Freon 113	0.48 U	1.0	0.48	ug/l	
591-78-6	2-Hexanone	2.0 U	10	2.0	ug/l	
98-82-8	Isopropylbenzene	0.22 U	1.0	0.22	ug/l	
79-20-9	Methyl Acetate	5.0 U	20	5.0	ug/l	
74-83-9	Methyl Bromide [c]	2.0 U	5.0	2.0	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0278-058.0-20221220		
Lab Sample ID:	FC1532-6	**Date Sampled:**	12/20/22
Matrix:	AQ - Ground Water	**Date Received:**	12/21/22
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	KSC-CRCA		

VOA TCL 4.2 List

CAS No.	Compound	Result	PQL	MDL	Units	Q
74-87-3	Methyl Chloride	0.50 U	2.0	0.50	ug/l	
108-87-2	Methylcyclohexane	0.44 U	1.0	0.44	ug/l	
75-09-2	Methylene Chloride	2.0 U	5.0	2.0	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	1.0 U	5.0	1.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	0.23 U	1.0	0.23	ug/l	
100-42-5	Styrene	0.22 U	1.0	0.22	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	0.30 U	1.0	0.30	ug/l	
127-18-4	Tetrachloroethylene	0.22 U	1.0	0.22	ug/l	
108-88-3	Toluene	0.30 U	1.0	0.30	ug/l	
120-82-1	1,2,4-Trichlorobenzene	0.50 U	2.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	0.25 U	1.0	0.25	ug/l	
79-00-5	1,1,2-Trichloroethane	0.47 U	1.0	0.47	ug/l	
79-01-6	Trichloroethylene	0.35 U	1.0	0.35	ug/l	
75-69-4	Trichlorofluoromethane	0.50 U	2.0	0.50	ug/l	
75-01-4	Vinyl Chloride [b]	0.41 U	1.0	0.41	ug/l	
1330-20-7	Xylene (total)	0.72 U	3.0	0.72	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	107%		83-118%
17060-07-0	1,2-Dichloroethane-D4	105%		79-125%
2037-26-5	Toluene-D8	96%		85-112%
460-00-4	4-Bromofluorobenzene	102%		83-118%

(a) Sample was not preserved to a pH < 2.
(b) Associated CCV outside control limits high, sample is ND.
(c) Associated CCV outside control limits low.

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0278-058.0-20221220		
Lab Sample ID:	FC1532-6	**Date Sampled:**	12/20/22
Matrix:	AQ - Ground Water	**Date Received:**	12/21/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	KSC-CRCA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Q98698.D	1	01/01/23 03:30	AL	12/28/22 09:10	OP94731	SQ2107
Run #2							

	Initial Volume	Final Volume
Run #1	120 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	PQL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	0.0290	0.017	0.0042	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0021 U	0.0083	0.0021	ug/l	
307-24-4	Perfluorohexanoic acid	0.0021 U	0.0083	0.0021	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0021 U	0.0083	0.0021	ug/l	
335-67-1	Perfluorooctanoic acid	0.0021 U	0.0083	0.0021	ug/l	
375-95-1	Perfluorononanoic acid	0.0021 U	0.0083	0.0021	ug/l	
335-76-2	Perfluorodecanoic acid	0.0021 U	0.0083	0.0021	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0021 U	0.0083	0.0021	ug/l	
307-55-1	Perfluorododecanoic acid	0.0021 U	0.0083	0.0021	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0021 U	0.0083	0.0021	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0021 U	0.0083	0.0021	ug/l	
PERFLUOROALKYLSULFONIC ACIDS						
375-73-5	Perfluorobutanesulfonic acid	0.0021 U	0.0083	0.0021	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0021 U	0.0083	0.0021	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0021 U	0.0083	0.0021	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0021 U	0.0083	0.0021	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0021 U	0.0083	0.0021	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0021 U	0.0083	0.0021	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0021 U	0.0083	0.0021	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA	0.0021 U	0.0083	0.0021	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	0.0042 U	0.017	0.0042	ug/l	
2991-50-6	EtFOSAA	0.0042 U	0.017	0.0042	ug/l	
FLUOROTELOMER SULFONATES						
757124-72-4	4:2 Fluorotelomer sulfonate	0.0042 U	0.017	0.0042	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0042 U	0.017	0.0042	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: CRCA-DPT0278-058.0-20221220
Lab Sample ID: FC1532-6
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: KSC-CRCA

Date Sampled: 12/20/22
Date Received: 12/21/22
Percent Solids: n/a

CAS No.	Compound	Result	PQL	MDL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0042 U	0.017	0.0042	ug/l	
NEXT GENERATION PFAS ANALYTES						
13252-13-6	HFPO-DA (GenX)	0.0042 U	0.017	0.0042	ug/l	
919005-14-4	ADONA	0.0042 U	0.017	0.0042	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0042 U	0.017	0.0042	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0042 U	0.017	0.0042	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	75%		50-150%
	13C5-PFPeA	77%		50-150%
	13C5-PFHxA	78%		50-150%
	13C4-PFHpA	78%		50-150%
	13C8-PFOA	77%		50-150%
	13C9-PFNA	77%		50-150%
	13C6-PFDA	74%		50-150%
	13C7-PFUnDA	70%		50-150%
	13C2-PFDoDA	65%		50-150%
	13C2-PFTeDA	67%		50-150%
	13C3-PFBS	80%		50-150%
	13C3-PFHxS	76%		50-150%
	13C8-PFOS	76%		50-150%
	13C8-FOSA	73%		50-150%
	d3-MeFOSAA	88%		50-150%
	d5-EtFOSAA	86%		50-150%
	13C2-4:2FTS	80%		50-150%
	13C2-6:2FTS	79%		50-150%
	13C2-8:2FTS	78%		50-150%
	13C3-HFPO-DA	71%		50-150%

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-FB-20221220		
Lab Sample ID:	FC1532-7	**Date Sampled:**	12/20/22
Matrix:	AQ - Field Blank Water	**Date Received:**	12/21/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	KSC-CRCA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Q98699.D	1	01/01/23 03:45	AL	12/28/22 09:10	OP94731	SQ2107
Run #2							

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	PQL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	0.0040 U	0.016	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0020 U	0.0080	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	0.0020 U	0.0080	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0020 U	0.0080	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	0.0020 U	0.0080	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0020 U	0.0080	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS						
375-73-5	Perfluorobutanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA	0.0020 U	0.0080	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	0.0040 U	0.016	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0040 U	0.016	0.0040	ug/l	
FLUOROTELOMER SULFONATES						
757124-72-4	4:2 Fluorotelomer sulfonate	0.0040 U	0.016	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0040 U	0.016	0.0040	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: CRCA-FB-20221220
Lab Sample ID: FC1532-7
Matrix: AQ - Field Blank Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: KSC-CRCA

Date Sampled: 12/20/22
Date Received: 12/21/22
Percent Solids: n/a

CAS No.	Compound	Result	PQL	MDL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0040 U	0.016	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES						
13252-13-6	HFPO-DA (GenX)	0.0040 U	0.016	0.0040	ug/l	
919005-14-4	ADONA	0.0040 U	0.016	0.0040	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0040 U	0.016	0.0040	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0040 U	0.016	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	76%		50-150%
	13C5-PFPeA	76%		50-150%
	13C5-PFHxA	78%		50-150%
	13C4-PFHpA	78%		50-150%
	13C8-PFOA	74%		50-150%
	13C9-PFNA	72%		50-150%
	13C6-PFDA	69%		50-150%
	13C7-PFUnDA	67%		50-150%
	13C2-PFDoDA	54%		50-150%
	13C2-PFTeDA	55%		50-150%
	13C3-PFBS	80%		50-150%
	13C3-PFHxS	74%		50-150%
	13C8-PFOS	66%		50-150%
	13C8-FOSA	74%		50-150%
	d3-MeFOSAA	69%		50-150%
	d5-EtFOSAA	67%		50-150%
	13C2-4:2FTS	72%		50-150%
	13C2-6:2FTS	62%		50-150%
	13C2-8:2FTS	66%		50-150%
	13C3-HFPO-DA	82%		50-150%

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-EB-20221220		
Lab Sample ID:	FC1532-8	**Date Sampled:**	12/20/22
Matrix:	AQ - Equipment Blank	**Date Received:**	12/21/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	KSC-CRCA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Q98700.D	1	01/01/23 04:00	AL	12/28/22 09:10	OP94731	SQ2107
Run #2	2Q105104.D	1	01/06/23 09:06	WH	01/04/23 08:30	OP94827	S2Q1459

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2	125 ml	1.0 ml

CAS No.	Compound	Result	PQL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	0.0040 U [a]	0.016	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0020 U [a]	0.0080	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	0.0020 U	0.0080	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0020 U	0.0080	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	0.0020 U	0.0080	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0020 U	0.0080	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS						
375-73-5	Perfluorobutanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA	0.0020 U	0.0080	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	0.0040 U	0.016	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0040 U	0.016	0.0040	ug/l	
FLUOROTELOMER SULFONATES						
757124-72-4	4:2 Fluorotelomer sulfonate	0.0040 U	0.016	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0040 U	0.016	0.0040	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: CRCA-EB-20221220
Lab Sample ID: FC1532-8
Matrix: AQ - Equipment Blank
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: KSC-CRCA

Date Sampled: 12/20/22
Date Received: 12/21/22
Percent Solids: n/a

CAS No.	Compound	Result	PQL	MDL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0040 U	0.016	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES						
13252-13-6	HFPO-DA (GenX)	0.0040 U	0.016	0.0040	ug/l	
919005-14-4	ADONA	0.0040 U	0.016	0.0040	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0040 U	0.016	0.0040	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0040 U	0.016	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	7% [b]	66%	50-150%
	13C5-PFPeA	22% [b]	67%	50-150%
	13C5-PFHxA	73%	68%	50-150%
	13C4-PFHpA	76%	69%	50-150%
	13C8-PFOA	75%	66%	50-150%
	13C9-PFNA	73%	63%	50-150%
	13C6-PFDA	70%	63%	50-150%
	13C7-PFUnDA	64%	57%	50-150%
	13C2-PFDoDA	63%	55%	50-150%
	13C2-PFTeDA	64%	43% [b]	50-150%
	13C3-PFBS	77%	66%	50-150%
	13C3-PFHxS	77%	67%	50-150%
	13C8-PFOS	77%	63%	50-150%
	13C8-FOSA	80%	58%	50-150%
	d3-MeFOSAA	77%	62%	50-150%
	d5-EtFOSAA	74%	65%	50-150%
	13C2-4:2FTS	69%	65%	50-150%
	13C2-6:2FTS	67%	67%	50-150%
	13C2-8:2FTS	72%	62%	50-150%
	13C3-HFPO-DA	76%	65%	50-150%

(a) Result is from Run# 2
(b) Outside control limits.

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody

Tetra Tech, Inc. CHAIN OF CUSTODY | NUMBER No. 1702 | PAGE 1 OF 1

PROJECT NO: 112G-05970	FACILITY: KSC/CCA
PROJECT MANAGER: Alex Murphy	PHONE NUMBER: 321-292-9842
LABORATORY NAME AND CONTACT: SGS Kelly Blanchard	
SAMPLERS (SIGNATURE)	FIELD OPERATIONS LEADER: Cory O'Brien
PHONE NUMBER: (832) 816-2213	ADDRESS: 4405 Vineland Road
CARRIER/WAYBILL NUMBER	CITY, STATE: Orlando, FL

STANDARD TAT ☑
RUSH TAT ☐ ☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

CONTAINER TYPE PLASTIC (P) or GLASS (G): G P G
PRESERVATIVE USED: HCL Cool Cool

	DATE YEAR 2022	TIME	SAMPLE ID	LOCATION ID	TOP DEPTH (FT)	BOTTOM DEPTH (FT)	MATRIX (GW, SO, SW, SD, QC, ETC.)	COLLECTION METHOD GRAB (G) COMP (C)	No. OF CONTAINERS	TYPE OF ANALYSIS: VB260TCL 42	LOSM537 MOD PFAS	VB260TCL 42	COMMENTS
1	12/20	1530	CRCA-DPT0278-033.0-20221220	G	31	35	GW	G	7	X	X	X	
2	12/20	1550	CRCA-DPT0278-038.0-20221220	G	36	40	GW	G	5	X	-	X	
3	12/20	1615	CRCA-DPT0278-043.0-20221220	G	41	45	GW	G	7	X	X	X	
4	12/20	1635	CRCA-DPT0278-048.0-20221220	G	46	50	GW	G	5	X	-	X	
5	12/20	1700	CRCA-DPT 0278-053.0-20221220	G	51	55	GW	G	5	X	-	X	
6	12/20	1730	CRCA-DPT0278-058.0-20221220	G	56	60	GW	G	7	X	X	X	
7	12/20	1600	CRCA-FB-20221220	G	-	-	QC	G	2	-	X	-	Field Blank
8	12/20	1615	CRCA-EB-20221220	G	-	-	QC	G	2	-	X	-	Equipment Blanks

INITIAL ASSESSMENT
LABEL VERIFICATION
2 4 CAN

	DATE	TIME		DATE	TIME
1. RELINQUISHED BY	12/20/2022	1800	1. RECEIVED BY	12-20-22	1800
2. RELINQUISHED BY	12-21-2022	1115	2. RECEIVED BY	12/21/22	10:15
3. RELINQUISHED BY	12/21/22	14:50	3. RECEIVED BY	12/21/22	1450

COMMENTS

DISTRIBUTION: WHITE (ACCOMPANIES SAMPLE) YELLOW (FIELD COPY) PINK (FILE COPY) 4/02R FORM NO. TINUS-001

FC1532: Chain of Custody
Page 1 of 2

SGS Sample Receipt Summary

Job Number: FC1532 **Client:** TETRA TECH **Project:** PROJECT# 112G08970

Date / Time Received: 12/21/2022 2:50:00 PM **Delivery Method:** COURIER **Airbill #'s:**

Therm ID: IR 1; **Therm CF:** 0.2; **# of Coolers:** 1

Cooler Temps (Raw Measured) °C: Cooler 1: (2.4);

Cooler Temps (Corrected) °C: Cooler 1: (2.6);

Cooler Information	Y	N
1. Custody Seals Present	☑	☐
2. Custody Seals Intact	☑	☐
3. Temp criteria achieved	☑	☐
4. Cooler temp verification	IR Gun	
5. Cooler media	Ice (Bag)	

Trip Blank Information	Y	N	N/A
1. Trip Blank present / cooler	☐	☐	☑
2. Trip Blank listed on COC	☐	☐	☑

	W	S	N/A
3. Type Of TB Received	☐	☐	☑

Sample Information	Y	N	N/A
1. Sample labels present on bottles	☑	☐	
2. Samples preserved properly	☑	☐	
3. Sufficient volume/containers recvd for analysis:	☑	☐	
4. Condition of sample	Intact		
5. Sample recvd within HT	☑	☐	
6. Dates/Times/IDs on COC match Sample Label	☑	☐	
7. VOCs have headspace	☐	☑	☐
8. Bottles received for unspecified tests	☐	☑	
9. Compositing instructions clear	☐	☐	☑
10. Voa Soil Kits/Jars received past 48hrs?	☐	☐	☑
11. % Solids Jar received?	☐	☐	☑
12. Residual Chlorine Present?	☐	☐	☑

Misc. Information

Number of Encores: 25-Gram _____ 5-Gram _____ Number of 5035 Field Kits: _____ Number of Lab Filtered Metals: _____

Test Strip Lot #s: pH 0-3 230315 pH 10-12 219813A Other: (Specify) _____ _____

Residual Chlorine Test Strip Lot #: _____

Comments

SM001
Rev. Date 05/24/17

Technician: SAMUELM Date: 12/21/2022 2:50:00 P Reviewer: _____ Date: _____

MS Volatiles

6

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Job Number: FC1532
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VY2776-MB	Y66856.D	1	12/23/22	JL	n/a	n/a	VY2776

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

FC1532-1, FC1532-2, FC1532-3, FC1532-4, FC1532-5, FC1532-6

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	25	10	ug/l	
71-43-2	Benzene	ND	1.0	0.31	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.24	ug/l	
75-25-2	Bromoform	ND	1.0	0.41	ug/l	
78-93-3	2-Butanone (MEK)	ND	5.0	2.0	ug/l	
75-15-0	Carbon Disulfide	ND	2.0	0.53	ug/l	
56-23-5	Carbon Tetrachloride	ND	1.0	0.36	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.20	ug/l	
75-00-3	Chloroethane	ND	2.0	0.67	ug/l	
67-66-3	Chloroform	ND	1.0	0.30	ug/l	
110-82-7	Cyclohexane	ND	1.0	0.39	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.28	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	5.0	1.0	ug/l	
106-93-4	1,2-Dibromoethane	ND	2.0	0.28	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	0.50	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	0.32	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	0.22	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	0.26	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.34	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.31	ug/l	
75-35-4	1,1-Dichloroethylene	ND	1.0	0.32	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	0.28	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	0.22	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.43	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.29	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.21	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.36	ug/l	
76-13-1	Freon 113	ND	1.0	0.48	ug/l	
591-78-6	2-Hexanone	ND	10	2.0	ug/l	
98-82-8	Isopropylbenzene	ND	1.0	0.22	ug/l	
79-20-9	Methyl Acetate	ND	20	5.0	ug/l	
74-83-9	Methyl Bromide	ND	5.0	2.0	ug/l	
74-87-3	Methyl Chloride	ND	2.0	0.50	ug/l	
108-87-2	Methylcyclohexane	ND	1.0	0.44	ug/l	
75-09-2	Methylene Chloride	ND	5.0	2.0	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	5.0	1.0	ug/l	

Method Blank Summary

Job Number: FC1532
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VY2776-MB	Y66856.D	1	12/23/22	JL	n/a	n/a	VY2776

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

FC1532-1, FC1532-2, FC1532-3, FC1532-4, FC1532-5, FC1532-6

CAS No.	Compound	Result	RL	MDL	Units	Q
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.23	ug/l	
100-42-5	Styrene	ND	1.0	0.22	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.30	ug/l	
127-18-4	Tetrachloroethylene	ND	1.0	0.22	ug/l	
108-88-3	Toluene	ND	1.0	0.30	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	2.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.25	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.47	ug/l	
79-01-6	Trichloroethylene	ND	1.0	0.35	ug/l	
75-69-4	Trichlorofluoromethane	ND	2.0	0.50	ug/l	
75-01-4	Vinyl Chloride	ND	1.0	0.41	ug/l	
1330-20-7	Xylene (total)	ND	3.0	0.72	ug/l	

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	101%	83-118%
17060-07-0	1,2-Dichloroethane-D4	102%	79-125%
2037-26-5	Toluene-D8	101%	85-112%
460-00-4	4-Bromofluorobenzene	105%	83-118%

Blank Spike Summary

Job Number: FC1532
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VY2776-BS	Y66853.D	1	12/23/22	JL	n/a	n/a	VY2776

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

FC1532-1, FC1532-2, FC1532-3, FC1532-4, FC1532-5, FC1532-6

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
67-64-1	Acetone	125	126	101	50-147
71-43-2	Benzene	25	26.1	104	81-122
75-27-4	Bromodichloromethane	25	26.1	104	79-123
75-25-2	Bromoform	25	24.1	96	66-123
78-93-3	2-Butanone (MEK)	125	119	95	56-143
75-15-0	Carbon Disulfide	25	27.7	111	66-148
56-23-5	Carbon Tetrachloride	25	27.9	112	76-136
108-90-7	Chlorobenzene	25	25.2	101	82-124
75-00-3	Chloroethane	25	30.0	120	62-144
67-66-3	Chloroform	25	26.6	106	80-124
110-82-7	Cyclohexane	25	31.4	126	73-138
124-48-1	Dibromochloromethane	25	24.6	98	78-122
96-12-8	1,2-Dibromo-3-chloropropane	25	21.7	87	64-123
106-93-4	1,2-Dibromoethane	25	24.9	100	75-120
75-71-8	Dichlorodifluoromethane	25	28.5	114	42-167
95-50-1	1,2-Dichlorobenzene	25	23.1	92	82-124
541-73-1	1,3-Dichlorobenzene	25	24.9	100	84-125
106-46-7	1,4-Dichlorobenzene	25	23.6	94	78-120
75-34-3	1,1-Dichloroethane	25	29.5	118	81-122
107-06-2	1,2-Dichloroethane	25	24.3	97	75-125
75-35-4	1,1-Dichloroethylene	25	30.3	121	78-137
156-59-2	cis-1,2-Dichloroethylene	25	26.9	108	78-120
156-60-5	trans-1,2-Dichloroethylene	25	28.2	113	76-127
78-87-5	1,2-Dichloropropane	25	25.7	103	76-124
10061-01-5	cis-1,3-Dichloropropene	25	26.1	104	75-118
10061-02-6	trans-1,3-Dichloropropene	25	28.3	113	80-120
100-41-4	Ethylbenzene	25	25.4	102	81-121
76-13-1	Freon 113	25	29.4	118	72-134
591-78-6	2-Hexanone	125	113	90	61-129
98-82-8	Isopropylbenzene	25	25.9	104	83-132
79-20-9	Methyl Acetate	125	131	105	65-126
74-83-9	Methyl Bromide	25	19.2	77	59-143
74-87-3	Methyl Chloride	25	26.3	105	50-159
108-87-2	Methylcyclohexane	25	31.4	126	76-129
75-09-2	Methylene Chloride	25	24.6	98	69-135
108-10-1	4-Methyl-2-pentanone (MIBK)	125	118	94	66-122

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FC1532
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VY2776-BS	Y66853.D	1	12/23/22	JL	n/a	n/a	VY2776

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

FC1532-1, FC1532-2, FC1532-3, FC1532-4, FC1532-5, FC1532-6

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
1634-04-4	Methyl Tert Butyl Ether	25	25.3	101	72-117
100-42-5	Styrene	25	24.9	100	78-119
79-34-5	1,1,2,2-Tetrachloroethane	25	23.9	96	72-120
127-18-4	Tetrachloroethylene	25	26.7	107	76-135
108-88-3	Toluene	25	25.6	102	80-120
120-82-1	1,2,4-Trichlorobenzene	25	23.2	93	73-129
71-55-6	1,1,1-Trichloroethane	25	28.4	114	75-130
79-00-5	1,1,2-Trichloroethane	25	24.8	99	76-119
79-01-6	Trichloroethylene	25	25.8	103	81-126
75-69-4	Trichlorofluoromethane	25	32.5	130	71-156
75-01-4	Vinyl Chloride	25	29.7	119	69-159
1330-20-7	Xylene (total)	75	75.4	101	80-126

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	101%	83-118%
17060-07-0	1,2-Dichloroethane-D4	98%	79-125%
2037-26-5	Toluene-D8	99%	85-112%
460-00-4	4-Bromofluorobenzene	101%	83-118%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FC1532
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
FC1552-1MS	Y66877.D	10	12/23/22	JL	n/a	n/a	VY2776
FC1552-1MSD	Y66878.D	10	12/23/22	JL	n/a	n/a	VY2776
FC1552-1	Y66866.D	10	12/23/22	JL	n/a	n/a	VY2776

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

FC1532-1, FC1532-2, FC1532-3, FC1532-4, FC1532-5, FC1532-6

CAS No.	Compound	FC1552-1 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
67-64-1	Acetone	ND		1250	1060	85	1250	1090	87	3	50-147/21
71-43-2	Benzene	892		250	1220	131* [a]	250	1140	99	7	81-122/14
75-27-4	Bromodichloromethane	ND		250	246	98	250	239	96	3	79-123/19
75-25-2	Bromoform	ND		250	199	80	250	195	78	2	66-123/21
78-93-3	2-Butanone (MEK)	ND		1250	1130	90	1250	1170	94	3	56-143/18
75-15-0	Carbon Disulfide	ND		250	260	104	250	248	99	5	66-148/23
56-23-5	Carbon Tetrachloride	ND		250	247	99	250	236	94	5	76-136/23
108-90-7	Chlorobenzene	873		250	1160	115	250	1110	95	4	82-124/14
75-00-3	Chloroethane	ND		250	326	130	250	332	133	2	62-144/20
67-66-3	Chloroform	ND		250	246	98	250	235	94	5	80-124/15
110-82-7	Cyclohexane	ND		250	292	117	250	286	114	2	73-138/18
124-48-1	Dibromochloromethane	ND		250	207	83	250	203	81	2	78-122/19
96-12-8	1,2-Dibromo-3-chloropropane	ND		250	194	78	250	191	76	2	64-123/18
106-93-4	1,2-Dibromoethane	ND		250	223	89	250	220	88	1	75-120/13
75-71-8	Dichlorodifluoromethane	ND		250	254	102	250	278	111	9	42-167/19
95-50-1	1,2-Dichlorobenzene	ND		250	226	90	250	209	84	8	82-124/14
541-73-1	1,3-Dichlorobenzene	ND		250	245	98	250	232	93	5	84-125/14
106-46-7	1,4-Dichlorobenzene	ND		250	241	96	250	226	90	6	78-120/15
75-34-3	1,1-Dichloroethane	ND		250	264	106	250	250	100	5	81-122/15
107-06-2	1,2-Dichloroethane	ND		250	232	93	250	224	90	4	75-125/14
75-35-4	1,1-Dichloroethylene	ND		250	256	102	250	236	94	8	78-137/18
156-59-2	cis-1,2-Dichloroethylene	ND		250	253	101	250	235	94	7	78-120/15
156-60-5	trans-1,2-Dichloroethylene	ND		250	245	98	250	232	93	5	76-127/17
78-87-5	1,2-Dichloropropane	ND		250	242	97	250	234	94	3	76-124/14
10061-01-5	cis-1,3-Dichloropropene	ND		250	236	94	250	226	90	4	75-118/23
10061-02-6	trans-1,3-Dichloropropene	ND		250	250	100	250	238	95	5	80-120/22
100-41-4	Ethylbenzene	ND		250	59.3	24*	250	56.6	23*	5	81-121/14
76-13-1	Freon 113	ND		250	283	113	250	271	108	4	72-134/20
591-78-6	2-Hexanone	ND		1250	1070	86	1250	1130	90	5	61-129/18
98-82-8	Isopropylbenzene	ND		250	232	93	250	225	90	3	83-132/15
79-20-9	Methyl Acetate	ND		1250	1300	104	1250	1250	100	4	65-126/18
74-83-9	Methyl Bromide	ND		250	115	46*	250	145	58*	23*	59-143/19
74-87-3	Methyl Chloride	ND		250	250	100	250	275	110	10	50-159/19
108-87-2	Methylcyclohexane	ND		250	295	118	250	282	113	5	76-129/17
75-09-2	Methylene Chloride	ND		250	219	88	250	219	88	0	69-135/16
108-10-1	4-Methyl-2-pentanone (MIBK)	ND		1250	1100	88	1250	1180	94	7	66-122/16

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FC1532
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
FC1552-1MS	Y66877.D	10	12/23/22	JL	n/a	n/a	VY2776
FC1552-1MSD	Y66878.D	10	12/23/22	JL	n/a	n/a	VY2776
FC1552-1	Y66866.D	10	12/23/22	JL	n/a	n/a	VY2776

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

FC1532-1, FC1532-2, FC1532-3, FC1532-4, FC1532-5, FC1532-6

CAS No.	Compound	FC1552-1 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
1634-04-4	Methyl Tert Butyl Ether	ND		250	228	91	250	225	90	1	72-117/14
100-42-5	Styrene	ND		250	226	90	250	225	90	0	78-119/23
79-34-5	1,1,2,2-Tetrachloroethane	ND		250	239	96	250	228	91	5	72-120/14
127-18-4	Tetrachloroethylene	ND		250	229	92	250	223	89	3	76-135/16
108-88-3	Toluene	ND		250	229	92	250	225	90	2	80-120/14
120-82-1	1,2,4-Trichlorobenzene	ND		250	213	85	250	201	80	6	73-129/20
71-55-6	1,1,1-Trichloroethane	ND		250	256	102	250	245	98	4	75-130/16
79-00-5	1,1,2-Trichloroethane	ND		250	230	92	250	232	93	1	76-119/14
79-01-6	Trichloroethylene	ND		250	239	96	250	230	92	4	81-126/15
75-69-4	Trichlorofluoromethane	ND		250	320	128	250	336	134	5	71-156/21
75-01-4	Vinyl Chloride	ND		250	273	109	250	299	120	9	69-159/18
1330-20-7	Xylene (total)	ND		750	668	89	750	656	87	2	80-126/15

CAS No.	Surrogate Recoveries	MS	MSD	FC1552-1	Limits
1868-53-7	Dibromofluoromethane	105%	101%	100%	83-118%
17060-07-0	1,2-Dichloroethane-D4	99%	99%	107%	79-125%
2037-26-5	Toluene-D8	96%	97%	98%	85-112%
460-00-4	4-Bromofluorobenzene	101%	99%	105%	83-118%

(a) Outside control limits due to high level in sample relative to spike amount.

* = Outside of Control Limits.

MS Semi-volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Instrument Blank

Job Number: FC1532
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
SQ2107-IBLK	Q98660.D	1	12/31/22	AL	n/a	n/a	SQ2107

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC1532-1, FC1532-3, FC1532-6, FC1532-7, FC1532-8

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	
2355-31-9	MeFOSAA	ND	0.0080	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0080	0.0020	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	
919005-14-4	ADONA	ND	0.0080	0.0020	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.0080	0.0020	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.0080	0.0020	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	99%	50-150%
	13C5-PFPeA	99%	50-150%
	13C5-PFHxA	100%	50-150%
	13C4-PFHpA	103%	50-150%

Instrument Blank

Job Number: FC1532
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
SQ2107-IBLK	Q98660.D	1	12/31/22	AL	n/a	n/a	SQ2107

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC1532-1, FC1532-3, FC1532-6, FC1532-7, FC1532-8

CAS No.	ID Standard Recoveries		Limits
	13C8-PFOA	102%	50-150%
	13C9-PFNA	101%	50-150%
	13C6-PFDA	97%	50-150%
	13C7-PFUnDA	97%	50-150%
	13C2-PFDoDA	99%	50-150%
	13C2-PFTeDA	97%	50-150%
	13C3-PFBS	99%	50-150%
	13C3-PFHxS	100%	50-150%
	13C8-PFOS	101%	50-150%
	13C8-FOSA	109%	50-150%
	d3-MeFOSA	103%	50-150%
	d3-MeFOSAA	98%	50-150%
	d5-EtFOSAA	97%	50-150%
	13C2-4:2FTS	94%	50-150%
	13C2-6:2FTS	97%	50-150%
	13C2-8:2FTS	92%	50-150%
	13C3-HFPO-DA	97%	50-150%

Instrument Blank

Job Number: FC1532
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S2Q1459-IBLK	2Q105027.D	1	01/05/23	WH	n/a	n/a	S2Q1459

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC1532-8

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	93%	50-150%
	13C5-PFPeA	94%	50-150%
	13C5-PFHxA	94%	50-150%
	13C4-PFHpA	94%	50-150%
	13C8-PFOA	94%	50-150%
	13C9-PFNA	94%	50-150%
	13C6-PFDA	94%	50-150%
	13C7-PFUnDA	93%	50-150%
	13C2-PFDoDA	94%	50-150%
	13C2-PFTeDA	93%	50-150%
	13C3-PFBS	92%	50-150%
	13C3-PFHxS	92%	50-150%
	13C8-PFOS	93%	50-150%
	13C8-FOSA	96%	50-150%
	d3-MeFOSA	95%	50-150%
	d3-MeFOSAA	92%	50-150%
	d5-EtFOSAA	98%	50-150%
	13C2-4:2FTS	87%	50-150%
	13C2-6:2FTS	90%	50-150%
	13C2-8:2FTS	87%	50-150%
	13C3-HFPO-DA	99%	50-150%

Method Blank Summary

Job Number: FC1532
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP94731-MB	Q98693.D	1	01/01/23	AL	12/28/22	OP94731	SQ2107

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC1532-1, FC1532-3, FC1532-6, FC1532-7, FC1532-8

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	
2355-31-9	MeFOSAA	ND	0.0080	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0080	0.0020	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	
919005-14-4	ADONA	ND	0.0080	0.0020	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.0080	0.0020	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.0080	0.0020	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	121%	50-150%
	13C5-PFPeA	117%	50-150%
	13C5-PFHxA	117%	50-150%
	13C4-PFHpA	115%	50-150%

Method Blank Summary

Job Number: FC1532
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP94731-MB	Q98693.D	1	01/01/23	AL	12/28/22	OP94731	SQ2107

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC1532-1, FC1532-3, FC1532-6, FC1532-7, FC1532-8

CAS No.	ID Standard Recoveries		Limits
	13C8-PFOA	110%	50-150%
	13C9-PFNA	106%	50-150%
	13C6-PFDA	105%	50-150%
	13C7-PFUnDA	104%	50-150%
	13C2-PFDoDA	82%	50-150%
	13C2-PFTeDA	88%	50-150%
	13C3-PFBS	116%	50-150%
	13C3-PFHxS	109%	50-150%
	13C8-PFOS	105%	50-150%
	13C8-FOSA	110%	50-150%
	d3-MeFOSA	59%	50-150%
	d3-MeFOSAA	105%	50-150%
	d5-EtFOSAA	101%	50-150%
	13C2-4:2FTS	112%	50-150%
	13C2-6:2FTS	106%	50-150%
	13C2-8:2FTS	100%	50-150%
	13C3-HFPO-DA	113%	50-150%

Method Blank Summary

Job Number: FC1532
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP94827-MB	2Q105085.D	1	01/06/23	WH	01/04/23	OP94827	S2Q1459

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC1532-8

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.016	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0080	0.0020	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	91%	50-150%
	13C5-PFPeA	91%	50-150%
	13C5-PFHxA	91%	50-150%
	13C4-PFHpA	92%	50-150%
	13C8-PFOA	90%	50-150%
	13C9-PFNA	90%	50-150%
	13C6-PFDA	93%	50-150%
	13C7-PFUnDA	87%	50-150%
	13C2-PFDoDA	87%	50-150%
	13C2-PFTeDA	79%	50-150%
	13C3-PFBS	88%	50-150%
	13C3-PFHxS	89%	50-150%
	13C8-PFOS	90%	50-150%
	13C8-FOSA	69%	50-150%
	d3-MeFOSAA	85%	50-150%
	d5-EtFOSAA	86%	50-150%
	13C2-4:2FTS	85%	50-150%
	13C2-6:2FTS	87%	50-150%
	13C2-8:2FTS	91%	50-150%
	13C3-HFPO-DA	82%	50-150%

Blank Spike Summary

Job Number: FC1532
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP94731-BS	Q98692.D	1	01/01/23	AL	12/28/22	OP94731	SQ2107

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC1532-1, FC1532-3, FC1532-6, FC1532-7, FC1532-8

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
375-22-4	Perfluorobutanoic acid	0.08	0.0772	97	73-129
2706-90-3	Perfluoropentanoic acid	0.08	0.0708	89	72-129
307-24-4	Perfluorohexanoic acid	0.08	0.0756	95	72-129
375-85-9	Perfluoroheptanoic acid	0.08	0.0739	92	72-130
335-67-1	Perfluorooctanoic acid	0.08	0.0742	93	71-133
375-95-1	Perfluorononanoic acid	0.08	0.0760	95	69-130
335-76-2	Perfluorodecanoic acid	0.08	0.0792	99	71-129
2058-94-8	Perfluoroundecanoic acid	0.08	0.0752	94	69-133
307-55-1	Perfluorododecanoic acid	0.08	0.0781	98	72-134
72629-94-8	Perfluorotridecanoic acid	0.08	0.0784	98	65-144
376-06-7	Perfluorotetradecanoic acid	0.08	0.0714	89	71-132
375-73-5	Perfluorobutanesulfonic acid	0.08	0.0759	95	72-130
2706-91-4	Perfluoropentanesulfonic acid	0.08	0.0703	88	71-127
355-46-4	Perfluorohexanesulfonic acid	0.08	0.0773	97	68-131
375-92-8	Perfluoroheptanesulfonic acid	0.08	0.0765	96	69-134
1763-23-1	Perfluorooctanesulfonic acid	0.08	0.0781	98	65-140
68259-12-1	Perfluorononanesulfonic acid	0.08	0.0685	86	69-127
335-77-3	Perfluorodecanesulfonic acid	0.08	0.0675	84	53-142
754-91-6	PFOSA	0.08	0.0743	93	67-137
2355-31-9	MeFOSAA	0.08	0.0771	96	65-136
2991-50-6	EtFOSAA	0.08	0.0713	89	61-135
757124-72-4	4:2 Fluorotelomer sulfonate	0.08	0.0780	98	63-143
27619-97-2	6:2 Fluorotelomer sulfonate	0.08	0.0807	101	64-140
39108-34-4	8:2 Fluorotelomer sulfonate	0.08	0.0778	97	67-138
13252-13-6	HFPO-DA (GenX)	0.08	0.0825	103	60-140
919005-14-4	ADONA	0.08	0.0724	91	60-140
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.08	0.0687	86	60-140
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.08	0.0671	84	60-140

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFBA	130%	50-150%
	13C5-PFPeA	125%	50-150%
	13C5-PFHxA	123%	50-150%
	13C4-PFHpA	122%	50-150%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FC1532
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP94731-BS	Q98692.D	1	01/01/23	AL	12/28/22	OP94731	SQ2107

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC1532-1, FC1532-3, FC1532-6, FC1532-7, FC1532-8

CAS No.	ID Standard Recoveries	BSP	Limits
	13C8-PFOA	115%	50-150%
	13C9-PFNA	110%	50-150%
	13C6-PFDA	107%	50-150%
	13C7-PFUnDA	106%	50-150%
	13C2-PFDoDA	88%	50-150%
	13C2-PFTeDA	90%	50-150%
	13C3-PFBS	125%	50-150%
	13C3-PFHxS	117%	50-150%
	13C8-PFOS	112%	50-150%
	13C8-FOSA	104%	50-150%
	d3-MeFOSA	51%	50-150%
	d3-MeFOSAA	110%	50-150%
	d5-EtFOSAA	107%	50-150%
	13C2-4:2FTS	126%	50-150%
	13C2-6:2FTS	116%	50-150%
	13C2-8:2FTS	113%	50-150%
	13C3-HFPO-DA	121%	50-150%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FC1532
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP94827-BS	2Q105084.D	1	01/06/23	WH	01/04/23	OP94827	S2Q1459

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC1532-8

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
375-22-4	Perfluorobutanoic acid	0.16	0.165	103	73-129
2706-90-3	Perfluoropentanoic acid	0.16	0.160	100	72-129

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFBA	104%	50-150%
	13C5-PFPeA	105%	50-150%
	13C5-PFHxA	105%	50-150%
	13C4-PFHpA	105%	50-150%
	13C8-PFOA	101%	50-150%
	13C9-PFNA	104%	50-150%
	13C6-PFDA	105%	50-150%
	13C7-PFUnDA	99%	50-150%
	13C2-PFDoDA	97%	50-150%
	13C2-PFTeDA	87%	50-150%
	13C3-PFBS	100%	50-150%
	13C3-PFHxS	100%	50-150%
	13C8-PFOS	101%	50-150%
	13C8-FOSA	79%	50-150%
	d3-MeFOSAA	99%	50-150%
	d5-EtFOSAA	98%	50-150%
	13C2-4:2FTS	103%	50-150%
	13C2-6:2FTS	101%	50-150%
	13C2-8:2FTS	110%	50-150%
	13C3-HFPO-DA	95%	50-150%

* = Outside of Control Limits.

Matrix Spike Summary

Job Number: FC1532
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP94731-MS	Q98695.D	1	01/01/23	AL	12/28/22	OP94731	SQ2107
FC1532-1	Q98694.D	1	01/01/23	AL	12/28/22	OP94731	SQ2107

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC1532-1, FC1532-3, FC1532-6, FC1532-7, FC1532-8

CAS No.	Compound	FC1532-1 ug/l	Q	Spike ug/l	MS ug/l	MS %	Limits
375-22-4	Perfluorobutanoic acid	0.680		0.16	0.878	124	73-129
2706-90-3	Perfluoropentanoic acid	0.0040	I	0.16	0.147	89	72-129
307-24-4	Perfluorohexanoic acid	0.0041	I	0.16	0.156	95	72-129
375-85-9	Perfluoroheptanoic acid	0.0024	I	0.16	0.153	94	72-130
335-67-1	Perfluorooctanoic acid	0.0085		0.16	0.163	97	71-133
375-95-1	Perfluorononanoic acid	0.0083	U	0.16	0.149	93	69-130
335-76-2	Perfluorodecanoic acid	0.0083	U	0.16	0.162	101	71-129
2058-94-8	Perfluoroundecanoic acid	0.0083	U	0.16	0.155	97	69-133
307-55-1	Perfluorododecanoic acid	0.0083	U	0.16	0.161	101	72-134
72629-94-8	Perfluorotridecanoic acid	0.0083	U	0.16	0.166	104	65-144
376-06-7	Perfluorotetradecanoic acid	0.0083	U	0.16	0.150	94	71-132
375-73-5	Perfluorobutanesulfonic acid	0.0083	U	0.16	0.153	96	72-130
2706-91-4	Perfluoropentanesulfonic acid	0.0083	U	0.16	0.145	91	71-127
355-46-4	Perfluorohexanesulfonic acid	0.0083	U	0.16	0.159	99	68-131
375-92-8	Perfluoroheptanesulfonic acid	0.0083	U	0.16	0.167	104	69-134
1763-23-1	Perfluorooctanesulfonic acid	0.0036	I	0.16	0.171	105	65-140
68259-12-1	Perfluorononanesulfonic acid	0.0083	U	0.16	0.150	94	69-127
335-77-3	Perfluorodecanesulfonic acid	0.0083	U	0.16	0.151	94	53-142
754-91-6	PFOSA	0.0083	U	0.16	0.151	94	67-137
2355-31-9	MeFOSAA	0.017	U	0.16	0.153	96	65-136
2991-50-6	EtFOSAA	0.017	U	0.16	0.156	98	61-135
757124-72-4	4:2 Fluorotelomer sulfonate	0.017	U	0.16	0.161	101	63-143
27619-97-2	6:2 Fluorotelomer sulfonate	0.017	U	0.16	0.166	104	64-140
39108-34-4	8:2 Fluorotelomer sulfonate	0.017	U	0.16	0.168	105	67-138
13252-13-6	HFPO-DA (GenX)	0.017	U	0.16	0.156	98	60-140
919005-14-4	ADONA	0.017	U	0.16	0.147	92	60-140
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.017	U	0.16	0.138	86	60-140
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.017	U	0.16	0.136	85	60-140

CAS No.	ID Standard Recoveries	MS	FC1532-1	Limits
	13C4-PFBA	84%	60%	50-150%
	13C5-PFPeA	82%	63%	50-150%
	13C5-PFHxA	84%	66%	50-150%
	13C4-PFHpA	86%	68%	50-150%

* = Outside of Control Limits.

Matrix Spike Summary

Job Number: FC1532
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP94731-MS	Q98695.D	1	01/01/23	AL	12/28/22	OP94731	SQ2107
FC1532-1	Q98694.D	1	01/01/23	AL	12/28/22	OP94731	SQ2107

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC1532-1, FC1532-3, FC1532-6, FC1532-7, FC1532-8

CAS No.	ID Standard Recoveries	MS	FC1532-1	Limits
	13C8-PFOA	87%	70%	50-150%
	13C9-PFNA	85%	68%	50-150%
	13C6-PFDA	78%	66%	50-150%
	13C7-PFUnDA	77%	64%	50-150%
	13C2-PFDoDA	67%	57%	50-150%
	13C2-PFTeDA	69%	59%	50-150%
	13C3-PFBS	87%	66%	50-150%
	13C3-PFHxS	84%	64%	50-150%
	13C8-PFOS	79%	69%	50-150%
	13C8-FOSA	68%	67%	50-150%
	d3-MeFOSAA	87%	71%	50-150%
	d5-EtFOSAA	82%	67%	50-150%
	13C2-4:2FTS	95%	66%	50-150%
	13C2-6:2FTS	92%	68%	50-150%
	13C2-8:2FTS	89%	64%	50-150%
	13C3-HFPO-DA	89%	61%	50-150%

* = Outside of Control Limits.

Duplicate Summary

Job Number: FC1532
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP94731-DUP	Q98697.D	1	01/01/23	AL	12/28/22	OP94731	SQ2107
FC1532-3	Q98696.D	1	01/01/23	AL	12/28/22	OP94731	SQ2107

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC1532-1, FC1532-3, FC1532-6, FC1532-7, FC1532-8

CAS No.	Compound	FC1532-3 ug/l	Q	DUP ug/l	Q	RPD	Limits
375-22-4	Perfluorobutanoic acid	0.590		0.570		3	30
2706-90-3	Perfluoropentanoic acid	0.0034	I	0.0035	J	3	30
307-24-4	Perfluorohexanoic acid	0.0046	I	0.0043	J	7	30
375-85-9	Perfluoroheptanoic acid	0.0041	I	0.0022	J	60*	30
335-67-1	Perfluorooctanoic acid	0.0091		0.0092		1	30
375-95-1	Perfluorononanoic acid	0.0083	U	ND		nc	30
335-76-2	Perfluorodecanoic acid	0.0083	U	ND		nc	30
2058-94-8	Perfluoroundecanoic acid	0.0083	U	ND		nc	30
307-55-1	Perfluorododecanoic acid	0.0083	U	ND		nc	30
72629-94-8	Perfluorotridecanoic acid	0.0083	U	ND		nc	30
376-06-7	Perfluorotetradecanoic acid	0.0083	U	ND		nc	30
375-73-5	Perfluorobutanesulfonic acid	0.0083	U	ND		nc	30
2706-91-4	Perfluoropentanesulfonic acid	0.0083	U	ND		nc	30
355-46-4	Perfluorohexanesulfonic acid	0.0083	U	ND		nc	30
375-92-8	Perfluoroheptanesulfonic acid	0.0083	U	ND		nc	30
1763-23-1	Perfluorooctanesulfonic acid	0.0041	I	0.0042	J	2	30
68259-12-1	Perfluorononanesulfonic acid	0.0083	U	ND		nc	30
335-77-3	Perfluorodecanesulfonic acid	0.0083	U	ND		nc	30
754-91-6	PFOSA	0.0083	U	ND		nc	30
2355-31-9	MeFOSAA	0.017	U	ND		nc	30
2991-50-6	EtFOSAA	0.017	U	ND		nc	30
757124-72-4	4:2 Fluorotelomer sulfonate	0.017	U	ND		nc	30
27619-97-2	6:2 Fluorotelomer sulfonate	0.017	U	ND		nc	30
39108-34-4	8:2 Fluorotelomer sulfonate	0.017	U	ND		nc	30
13252-13-6	HFPO-DA (GenX)	0.017	U	ND		nc	30
919005-14-4	ADONA	0.017	U	ND		nc	30
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.017	U	ND		nc	30
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.017	U	ND		nc	30

CAS No.	ID Standard Recoveries	DUP	FC1532-3	Limits
	13C4-PFBA	61%	64%	50-150%
	13C5-PFPeA	60%	62%	50-150%
	13C5-PFHxA	61%	64%	50-150%
	13C4-PFHpA	63%	66%	50-150%

* = Outside of Control Limits.

Duplicate Summary

Job Number: FC1532
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP94731-DUP	Q98697.D	1	01/01/23	AL	12/28/22	OP94731	SQ2107
FC1532-3	Q98696.D	1	01/01/23	AL	12/28/22	OP94731	SQ2107

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC1532-1, FC1532-3, FC1532-6, FC1532-7, FC1532-8

CAS No.	ID Standard Recoveries	DUP	FC1532-3	Limits
	13C8-PFOA	64%	67%	50-150%
	13C9-PFNA	63%	67%	50-150%
	13C6-PFDA	63%	66%	50-150%
	13C7-PFUnDA	63%	66%	50-150%
	13C2-PFDoDA	58%	58%	50-150%
	13C2-PFTeDA	63%	60%	50-150%
	13C3-PFBS	61%	63%	50-150%
	13C3-PFHxS	61%	62%	50-150%
	13C8-PFOS	64%	65%	50-150%
	13C8-FOSA	66%	64%	50-150%
	d3-MeFOSA	38%* [a]		50-150%
	d3-MeFOSAA	72%	75%	50-150%
	d5-EtFOSAA	70%	73%	50-150%
	13C2-4:2FTS	63%	66%	50-150%
	13C2-6:2FTS	63%	69%	50-150%
	13C2-8:2FTS	63%	66%	50-150%
	13C3-HFPO-DA	61%	62%	50-150%

(a) Outside control limits.

* = Outside of Control Limits.

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

e-Hardcopy 2.0
Automated Report

Technical Report for

Tetra Tech NUS

KSC-CRCA

112G08970

SGS Job Number: FC2214

Sampling Dates: 01/24/23 - 01/26/23

Report to:

Tetra-Tech, Inc.
661 Andersen Drive Foster Plaza 7
Pittsburgh, PA 15220
amy.thomson@tetratech.com; carrie.stock@tetratech.com;
alex.murphy@tetratech.com
ATTN: Amy Thomson

Total number of pages in report: **34**

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

Norm Farmer
Technical Director

Client Service contact: Andrea Colby 407-425-6700

Certifications: FL(E83510), LA(03051), KS(E-10327), NC(573), NJ(FL002), NY(12022), SC(96038001) DoD ELAP(ANAB L2229), AZ(AZ0806), CA(2937), TX(T104704404), PA(68-03573), VA(460177), AL, AK, AR, CT, IA, KY, MA, MI. MS, ND, NH, NV, OK, OR, IL, UT, VT, WA, WI, WV

This report shall not be reproduced, except in its entirety, without the written approval of SGS.
Test results relate only to samples analyzed.

SGS is the sole authority for authorizing edits or modifications to this document.
Unauthorized modification of this report is strictly prohibited.
Review standard terms at: http://www.sgs.com/en/terms-and-conditions

Please share your ideas about how we can serve you better at:
EHS.US.CustomerCare@sgs.com

Sections: 1 2 3 4 5 6

Table of Contents

Section 1: Sample Summary **3**
Section 2: Case Narrative/Conformance Summary **4**
Section 3: Summary of Hits **5**
Section 4: Sample Results **6**
4.1: FC2214-1: CRCA-MW0031-058.0-20230124 7
4.2: FC2214-2: CRCA-MW0032-058.0-20230124 9
4.3: FC2214-3: CRCA-MW0019-058.0-20230125 11
4.4: FC2214-4: CRCA-MW0018-058.0-20230125 13
4.5: FC2214-5: CRCA-MW0002-032.5-20230125 15
4.6: FC2214-6: CRCA-MW0013-027.5-20230126 17
Section 5: Misc. Forms **19**
5.1: Chain of Custody 20
Section 6: MS Volatiles - QC Data Summaries **22**
6.1: Method Blank Summary 23
6.2: Blank Spike Summary 27
6.3: Matrix Spike/Matrix Spike Duplicate Summary 31

SGS North America Inc.

Sample Summary

Tetra Tech NUS

Job No: FC2214

KSC-CRCA
Project No: 112G08970

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
FC2214-1	01/24/23	14:50	RS	01/26/23	AQ	Ground Water	CRCA-MW0031-058.0-20230124
FC2214-2	01/24/23	16:15	RS	01/26/23	AQ	Ground Water	CRCA-MW0032-058.0-20230124
FC2214-3	01/25/23	13:10	RS	01/26/23	AQ	Ground Water	CRCA-MW0019-058.0-20230125
FC2214-4	01/25/23	15:10	RS	01/26/23	AQ	Ground Water	CRCA-MW0018-058.0-20230125
FC2214-5	01/25/23	16:05	RS	01/26/23	AQ	Ground Water	CRCA-MW0002-032.5-20230125
FC2214-6	01/26/23	10:25	RS	01/26/23	AQ	Ground Water	CRCA-MW0013-027.5-20230126

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: Tetra Tech NUS **Job No:** FC2214

Site: KSC-CRCA **Report Date:** 2/6/2023 11:59:10 AM

On 01/26/2023, 6 Sample(s), 0 Trip Blank(s) and 0 Field Blank(s) were received at SGS North America Inc - Orlando. at a maximum corrected temperature of 3 C. Samples were intact and chemically preserved, unless noted below. A SGS North America Inc. - Orlando Job Number of FC2214 was assigned to the project.

Laboratory sample ID, client sample ID and dates of sample collection are detailed in the report's Results Summary Section. Specified quality control criteria were achieved for this job except as noted below. For more information, please refer to the analytical results and QC summary pages.

MS Volatiles By Method SW846 8260D

Matrix: AQ **Batch ID:** V2A1699

Sample(s) FC2150-6MS, FC2150-6MSD were used as the QC samples indicated.

V2A1699-MB: Sample was treated with an anti-foaming agent.

FC2214-1: Sample was treated with an anti-foaming agent.

FC2214-2 for Methyl Bromide: Associated CCV outside control limits low.

FC2214-2: Sample was treated with an anti-foaming agent.

FC2214-5 for Methyl Bromide: Associated CCV outside control limits low.

FC2214-5: Sample was not preserved to a pH < 2. Sample was treated with an anti-foaming agent.

FC2214-6 for Methyl Bromide: Associated CCV outside control limits low.

FC2214-6: Sample was not preserved to a pH < 2. Sample was treated with an anti-foaming agent.

Matrix: AQ **Batch ID:** V2A1701

Sample(s) FC2214-3MS, FC2214-3MSD were used as the QC samples indicated.

Matrix Spike Duplicate Recovery(s) for Dibromochloromethane are outside control limits. Probable cause is due to matrix interference.

V2A1701-MB: Sample was treated with an anti-foaming agent.

FC2214-3 for Dichlorodifluoromethane: Associated CCV outside control limits low.

FC2214-4 for Dichlorodifluoromethane: Associated CCV outside control limits low.

FC2214-4: Sample was not preserved to a pH < 2.

SGS North America Inc. - Orlando certifies that data reported for samples received, listed on the associated custody chain or analytical task order, were produced to specifications meeting the Quality System precision, accuracy and completeness objectives except as noted. Estimated non-standard method measurement uncertainty data is available on request, based on quality control bias and implicit for standard methods. Acceptable uncertainty requires tested parameter quality control data to meet method criteria. SGS North America Inc.- Orlando is not responsible for data quality assumptions if partial reports are used and recommends that this report be used in its entirety.

Narrative prepared by:

_____

Kim Benham, Client Services *(Signature on File)*

Summary of Hits

Job Number: FC2214
Account: Tetra Tech NUS
Project: KSC-CRCA
Collected: 01/24/23 thru 01/26/23

Lab Sample ID Analyte	Client Sample ID	Result/ Qual	PQL	MDL	Units	Method
FC2214-1	**CRCA-MW0031-058.0-20230124**					
Vinyl Chloride [a]		8.6	1.0	0.41	ug/l	SW846 8260D
FC2214-2	**CRCA-MW0032-058.0-20230124**					
Vinyl Chloride [a]		9.5	1.0	0.41	ug/l	SW846 8260D
FC2214-3	**CRCA-MW0019-058.0-20230125**					
No hits reported in this sample.						
FC2214-4	**CRCA-MW0018-058.0-20230125**					
Vinyl Chloride [b]		22.3	1.0	0.41	ug/l	SW846 8260D
FC2214-5	**CRCA-MW0002-032.5-20230125**					
No hits reported in this sample.						
FC2214-6	**CRCA-MW0013-027.5-20230126**					
Vinyl Chloride [c]		2.9	1.0	0.41	ug/l	SW846 8260D

(a) Sample was treated with an anti-foaming agent.
(b) Sample was not preserved to a pH < 2.
(c) Sample was not preserved to a pH < 2. Sample was treated with an anti-foaming agent.

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID:	CRCA-MW0031-058.0-20230124		
Lab Sample ID:	FC2214-1	**Date Sampled:**	01/24/23
Matrix:	AQ - Ground Water	**Date Received:**	01/26/23
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	KSC-CRCA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	2A43158.D	1	01/27/23 16:49	KG	n/a	n/a	V2A1699
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL 4.2 List

CAS No.	Compound	Result	PQL	MDL	Units	Q
67-64-1	Acetone	10 U	25	10	ug/l	
71-43-2	Benzene	0.31 U	1.0	0.31	ug/l	
75-27-4	Bromodichloromethane	0.24 U	1.0	0.24	ug/l	
75-25-2	Bromoform	0.41 U	1.0	0.41	ug/l	
78-93-3	2-Butanone (MEK)	2.0 U	5.0	2.0	ug/l	
75-15-0	Carbon Disulfide	0.53 U	2.0	0.53	ug/l	
56-23-5	Carbon Tetrachloride	0.36 U	1.0	0.36	ug/l	
108-90-7	Chlorobenzene	0.20 U	1.0	0.20	ug/l	
75-00-3	Chloroethane	0.67 U	2.0	0.67	ug/l	
67-66-3	Chloroform	0.30 U	1.0	0.30	ug/l	
110-82-7	Cyclohexane	0.39 U	1.0	0.39	ug/l	
124-48-1	Dibromochloromethane	0.28 U	1.0	0.28	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	1.0 U	5.0	1.0	ug/l	
106-93-4	1,2-Dibromoethane	0.28 U	2.0	0.28	ug/l	
75-71-8	Dichlorodifluoromethane	0.50 U	2.0	0.50	ug/l	
95-50-1	1,2-Dichlorobenzene	0.32 U	1.0	0.32	ug/l	
541-73-1	1,3-Dichlorobenzene	0.22 U	1.0	0.22	ug/l	
106-46-7	1,4-Dichlorobenzene	0.26 U	1.0	0.26	ug/l	
75-34-3	1,1-Dichloroethane	0.34 U	1.0	0.34	ug/l	
107-06-2	1,2-Dichloroethane	0.31 U	1.0	0.31	ug/l	
75-35-4	1,1-Dichloroethylene	0.32 U	1.0	0.32	ug/l	
156-59-2	cis-1,2-Dichloroethylene	0.28 U	1.0	0.28	ug/l	
156-60-5	trans-1,2-Dichloroethylene	0.22 U	1.0	0.22	ug/l	
78-87-5	1,2-Dichloropropane	0.43 U	1.0	0.43	ug/l	
10061-01-5	cis-1,3-Dichloropropene	0.29 U	1.0	0.29	ug/l	
10061-02-6	trans-1,3-Dichloropropene	0.21 U	1.0	0.21	ug/l	
100-41-4	Ethylbenzene	0.36 U	1.0	0.36	ug/l	
76-13-1	Freon 113	0.48 U	1.0	0.48	ug/l	
591-78-6	2-Hexanone	2.0 U	10	2.0	ug/l	
98-82-8	Isopropylbenzene	0.22 U	1.0	0.22	ug/l	
79-20-9	Methyl Acetate	5.0 U	20	5.0	ug/l	
74-83-9	Methyl Bromide	2.0 U	5.0	2.0	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-MW0031-058.0-20230124		
Lab Sample ID:	FC2214-1	**Date Sampled:**	01/24/23
Matrix:	AQ - Ground Water	**Date Received:**	01/26/23
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	KSC-CRCA		

VOA TCL 4.2 List

CAS No.	Compound	Result	PQL	MDL	Units	Q
74-87-3	Methyl Chloride	0.50 U	2.0	0.50	ug/l	
108-87-2	Methylcyclohexane	0.44 U	1.0	0.44	ug/l	
75-09-2	Methylene Chloride	2.0 U	5.0	2.0	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	1.0 U	5.0	1.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	0.23 U	1.0	0.23	ug/l	
100-42-5	Styrene	0.22 U	1.0	0.22	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	0.30 U	1.0	0.30	ug/l	
127-18-4	Tetrachloroethylene	0.22 U	1.0	0.22	ug/l	
108-88-3	Toluene	0.30 U	1.0	0.30	ug/l	
120-82-1	1,2,4-Trichlorobenzene	0.50 U	2.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	0.25 U	1.0	0.25	ug/l	
79-00-5	1,1,2-Trichloroethane	0.47 U	1.0	0.47	ug/l	
79-01-6	Trichloroethylene	0.35 U	1.0	0.35	ug/l	
75-69-4	Trichlorofluoromethane	0.50 U	2.0	0.50	ug/l	
75-01-4	Vinyl Chloride	8.6	1.0	0.41	ug/l	
1330-20-7	Xylene (total)	0.72 U	3.0	0.72	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	101%		83-118%
17060-07-0	1,2-Dichloroethane-D4	103%		79-125%
2037-26-5	Toluene-D8	104%		85-112%
460-00-4	4-Bromofluorobenzene	96%		83-118%

(a) Sample was treated with an anti-foaming agent.

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-MW0032-058.0-20230124		
Lab Sample ID:	FC2214-2	**Date Sampled:**	01/24/23
Matrix:	AQ - Ground Water	**Date Received:**	01/26/23
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	KSC-CRCA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	2A43160.D	1	01/27/23 17:22	KG	n/a	n/a	V2A1699
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL 4.2 List

CAS No.	Compound	Result	PQL	MDL	Units	Q
67-64-1	Acetone	10 U	25	10	ug/l	
71-43-2	Benzene	0.31 U	1.0	0.31	ug/l	
75-27-4	Bromodichloromethane	0.24 U	1.0	0.24	ug/l	
75-25-2	Bromoform	0.41 U	1.0	0.41	ug/l	
78-93-3	2-Butanone (MEK)	2.0 U	5.0	2.0	ug/l	
75-15-0	Carbon Disulfide	0.53 U	2.0	0.53	ug/l	
56-23-5	Carbon Tetrachloride	0.36 U	1.0	0.36	ug/l	
108-90-7	Chlorobenzene	0.20 U	1.0	0.20	ug/l	
75-00-3	Chloroethane	0.67 U	2.0	0.67	ug/l	
67-66-3	Chloroform	0.30 U	1.0	0.30	ug/l	
110-82-7	Cyclohexane	0.39 U	1.0	0.39	ug/l	
124-48-1	Dibromochloromethane	0.28 U	1.0	0.28	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	1.0 U	5.0	1.0	ug/l	
106-93-4	1,2-Dibromoethane	0.28 U	2.0	0.28	ug/l	
75-71-8	Dichlorodifluoromethane	0.50 U	2.0	0.50	ug/l	
95-50-1	1,2-Dichlorobenzene	0.32 U	1.0	0.32	ug/l	
541-73-1	1,3-Dichlorobenzene	0.22 U	1.0	0.22	ug/l	
106-46-7	1,4-Dichlorobenzene	0.26 U	1.0	0.26	ug/l	
75-34-3	1,1-Dichloroethane	0.34 U	1.0	0.34	ug/l	
107-06-2	1,2-Dichloroethane	0.31 U	1.0	0.31	ug/l	
75-35-4	1,1-Dichloroethylene	0.32 U	1.0	0.32	ug/l	
156-59-2	cis-1,2-Dichloroethylene	0.28 U	1.0	0.28	ug/l	
156-60-5	trans-1,2-Dichloroethylene	0.22 U	1.0	0.22	ug/l	
78-87-5	1,2-Dichloropropane	0.43 U	1.0	0.43	ug/l	
10061-01-5	cis-1,3-Dichloropropene	0.29 U	1.0	0.29	ug/l	
10061-02-6	trans-1,3-Dichloropropene	0.21 U	1.0	0.21	ug/l	
100-41-4	Ethylbenzene	0.36 U	1.0	0.36	ug/l	
76-13-1	Freon 113	0.48 U	1.0	0.48	ug/l	
591-78-6	2-Hexanone	2.0 U	10	2.0	ug/l	
98-82-8	Isopropylbenzene	0.22 U	1.0	0.22	ug/l	
79-20-9	Methyl Acetate	5.0 U	20	5.0	ug/l	
74-83-9	Methyl Bromide [b]	2.0 U	5.0	2.0	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-MW0032-058.0-20230124		
Lab Sample ID:	FC2214-2	**Date Sampled:**	01/24/23
Matrix:	AQ - Ground Water	**Date Received:**	01/26/23
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	KSC-CRCA		

VOA TCL 4.2 List

CAS No.	Compound	Result	PQL	MDL	Units	Q
74-87-3	Methyl Chloride	0.50 U	2.0	0.50	ug/l	
108-87-2	Methylcyclohexane	0.44 U	1.0	0.44	ug/l	
75-09-2	Methylene Chloride	2.0 U	5.0	2.0	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	1.0 U	5.0	1.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	0.23 U	1.0	0.23	ug/l	
100-42-5	Styrene	0.22 U	1.0	0.22	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	0.30 U	1.0	0.30	ug/l	
127-18-4	Tetrachloroethylene	0.22 U	1.0	0.22	ug/l	
108-88-3	Toluene	0.30 U	1.0	0.30	ug/l	
120-82-1	1,2,4-Trichlorobenzene	0.50 U	2.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	0.25 U	1.0	0.25	ug/l	
79-00-5	1,1,2-Trichloroethane	0.47 U	1.0	0.47	ug/l	
79-01-6	Trichloroethylene	0.35 U	1.0	0.35	ug/l	
75-69-4	Trichlorofluoromethane	0.50 U	2.0	0.50	ug/l	
75-01-4	Vinyl Chloride	9.5	1.0	0.41	ug/l	
1330-20-7	Xylene (total)	0.72 U	3.0	0.72	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	102%		83-118%
17060-07-0	1,2-Dichloroethane-D4	104%		79-125%
2037-26-5	Toluene-D8	104%		85-112%
460-00-4	4-Bromofluorobenzene	97%		83-118%

(a) Sample was treated with an anti-foaming agent.
(b) Associated CCV outside control limits low.

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-MW0019-058.0-20230125		
Lab Sample ID:	FC2214-3	**Date Sampled:**	01/25/23
Matrix:	AQ - Ground Water	**Date Received:**	01/26/23
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	KSC-CRCA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2A43225.D	1	01/31/23 11:11	KG	n/a	n/a	V2A1701
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL 4.2 List

CAS No.	Compound	Result	PQL	MDL	Units	Q
67-64-1	Acetone	10 U	25	10	ug/l	
71-43-2	Benzene	0.31 U	1.0	0.31	ug/l	
75-27-4	Bromodichloromethane	0.24 U	1.0	0.24	ug/l	
75-25-2	Bromoform	0.41 U	1.0	0.41	ug/l	
78-93-3	2-Butanone (MEK)	2.0 U	5.0	2.0	ug/l	
75-15-0	Carbon Disulfide	0.53 U	2.0	0.53	ug/l	
56-23-5	Carbon Tetrachloride	0.36 U	1.0	0.36	ug/l	
108-90-7	Chlorobenzene	0.20 U	1.0	0.20	ug/l	
75-00-3	Chloroethane	0.67 U	2.0	0.67	ug/l	
67-66-3	Chloroform	0.30 U	1.0	0.30	ug/l	
110-82-7	Cyclohexane	0.39 U	1.0	0.39	ug/l	
124-48-1	Dibromochloromethane	0.28 U	1.0	0.28	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	1.0 U	5.0	1.0	ug/l	
106-93-4	1,2-Dibromoethane	0.28 U	2.0	0.28	ug/l	
75-71-8	Dichlorodifluoromethane [a]	0.50 U	2.0	0.50	ug/l	
95-50-1	1,2-Dichlorobenzene	0.32 U	1.0	0.32	ug/l	
541-73-1	1,3-Dichlorobenzene	0.22 U	1.0	0.22	ug/l	
106-46-7	1,4-Dichlorobenzene	0.26 U	1.0	0.26	ug/l	
75-34-3	1,1-Dichloroethane	0.34 U	1.0	0.34	ug/l	
107-06-2	1,2-Dichloroethane	0.31 U	1.0	0.31	ug/l	
75-35-4	1,1-Dichloroethylene	0.32 U	1.0	0.32	ug/l	
156-59-2	cis-1,2-Dichloroethylene	0.28 U	1.0	0.28	ug/l	
156-60-5	trans-1,2-Dichloroethylene	0.22 U	1.0	0.22	ug/l	
78-87-5	1,2-Dichloropropane	0.43 U	1.0	0.43	ug/l	
10061-01-5	cis-1,3-Dichloropropene	0.29 U	1.0	0.29	ug/l	
10061-02-6	trans-1,3-Dichloropropene	0.21 U	1.0	0.21	ug/l	
100-41-4	Ethylbenzene	0.36 U	1.0	0.36	ug/l	
76-13-1	Freon 113	0.48 U	1.0	0.48	ug/l	
591-78-6	2-Hexanone	2.0 U	10	2.0	ug/l	
98-82-8	Isopropylbenzene	0.22 U	1.0	0.22	ug/l	
79-20-9	Methyl Acetate	5.0 U	20	5.0	ug/l	
74-83-9	Methyl Bromide	2.0 U	5.0	2.0	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-MW0019-058.0-20230125		
Lab Sample ID:	FC2214-3	**Date Sampled:**	01/25/23
Matrix:	AQ - Ground Water	**Date Received:**	01/26/23
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	KSC-CRCA		

VOA TCL 4.2 List

CAS No.	Compound	Result	PQL	MDL	Units	Q
74-87-3	Methyl Chloride	0.50 U	2.0	0.50	ug/l	
108-87-2	Methylcyclohexane	0.44 U	1.0	0.44	ug/l	
75-09-2	Methylene Chloride	2.0 U	5.0	2.0	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	1.0 U	5.0	1.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	0.23 U	1.0	0.23	ug/l	
100-42-5	Styrene	0.22 U	1.0	0.22	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	0.30 U	1.0	0.30	ug/l	
127-18-4	Tetrachloroethylene	0.22 U	1.0	0.22	ug/l	
108-88-3	Toluene	0.30 U	1.0	0.30	ug/l	
120-82-1	1,2,4-Trichlorobenzene	0.50 U	2.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	0.25 U	1.0	0.25	ug/l	
79-00-5	1,1,2-Trichloroethane	0.47 U	1.0	0.47	ug/l	
79-01-6	Trichloroethylene	0.35 U	1.0	0.35	ug/l	
75-69-4	Trichlorofluoromethane	0.50 U	2.0	0.50	ug/l	
75-01-4	Vinyl Chloride	0.41 U	1.0	0.41	ug/l	
1330-20-7	Xylene (total)	0.72 U	3.0	0.72	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	99%		83-118%
17060-07-0	1,2-Dichloroethane-D4	104%		79-125%
2037-26-5	Toluene-D8	105%		85-112%
460-00-4	4-Bromofluorobenzene	100%		83-118%

(a) Associated CCV outside control limits low.

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-MW0018-058.0-20230125		
Lab Sample ID:	FC2214-4	**Date Sampled:**	01/25/23
Matrix:	AQ - Ground Water	**Date Received:**	01/26/23
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	KSC-CRCA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	2A43227.D	1	01/31/23 11:45	KG	n/a	n/a	V2A1701
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL 4.2 List

CAS No.	Compound	Result	PQL	MDL	Units	Q
67-64-1	Acetone	10 U	25	10	ug/l	
71-43-2	Benzene	0.31 U	1.0	0.31	ug/l	
75-27-4	Bromodichloromethane	0.24 U	1.0	0.24	ug/l	
75-25-2	Bromoform	0.41 U	1.0	0.41	ug/l	
78-93-3	2-Butanone (MEK)	2.0 U	5.0	2.0	ug/l	
75-15-0	Carbon Disulfide	0.53 U	2.0	0.53	ug/l	
56-23-5	Carbon Tetrachloride	0.36 U	1.0	0.36	ug/l	
108-90-7	Chlorobenzene	0.20 U	1.0	0.20	ug/l	
75-00-3	Chloroethane	0.67 U	2.0	0.67	ug/l	
67-66-3	Chloroform	0.30 U	1.0	0.30	ug/l	
110-82-7	Cyclohexane	0.39 U	1.0	0.39	ug/l	
124-48-1	Dibromochloromethane	0.28 U	1.0	0.28	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	1.0 U	5.0	1.0	ug/l	
106-93-4	1,2-Dibromoethane	0.28 U	2.0	0.28	ug/l	
75-71-8	Dichlorodifluoromethane [b]	0.50 U	2.0	0.50	ug/l	
95-50-1	1,2-Dichlorobenzene	0.32 U	1.0	0.32	ug/l	
541-73-1	1,3-Dichlorobenzene	0.22 U	1.0	0.22	ug/l	
106-46-7	1,4-Dichlorobenzene	0.26 U	1.0	0.26	ug/l	
75-34-3	1,1-Dichloroethane	0.34 U	1.0	0.34	ug/l	
107-06-2	1,2-Dichloroethane	0.31 U	1.0	0.31	ug/l	
75-35-4	1,1-Dichloroethylene	0.32 U	1.0	0.32	ug/l	
156-59-2	cis-1,2-Dichloroethylene	0.28 U	1.0	0.28	ug/l	
156-60-5	trans-1,2-Dichloroethylene	0.22 U	1.0	0.22	ug/l	
78-87-5	1,2-Dichloropropane	0.43 U	1.0	0.43	ug/l	
10061-01-5	cis-1,3-Dichloropropene	0.29 U	1.0	0.29	ug/l	
10061-02-6	trans-1,3-Dichloropropene	0.21 U	1.0	0.21	ug/l	
100-41-4	Ethylbenzene	0.36 U	1.0	0.36	ug/l	
76-13-1	Freon 113	0.48 U	1.0	0.48	ug/l	
591-78-6	2-Hexanone	2.0 U	10	2.0	ug/l	
98-82-8	Isopropylbenzene	0.22 U	1.0	0.22	ug/l	
79-20-9	Methyl Acetate	5.0 U	20	5.0	ug/l	
74-83-9	Methyl Bromide	2.0 U	5.0	2.0	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-MW0018-058.0-20230125		
Lab Sample ID:	FC2214-4	**Date Sampled:**	01/25/23
Matrix:	AQ - Ground Water	**Date Received:**	01/26/23
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	KSC-CRCA		

VOA TCL 4.2 List

CAS No.	Compound	Result	PQL	MDL	Units	Q
74-87-3	Methyl Chloride	0.50 U	2.0	0.50	ug/l	
108-87-2	Methylcyclohexane	0.44 U	1.0	0.44	ug/l	
75-09-2	Methylene Chloride	2.0 U	5.0	2.0	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	1.0 U	5.0	1.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	0.23 U	1.0	0.23	ug/l	
100-42-5	Styrene	0.22 U	1.0	0.22	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	0.30 U	1.0	0.30	ug/l	
127-18-4	Tetrachloroethylene	0.22 U	1.0	0.22	ug/l	
108-88-3	Toluene	0.30 U	1.0	0.30	ug/l	
120-82-1	1,2,4-Trichlorobenzene	0.50 U	2.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	0.25 U	1.0	0.25	ug/l	
79-00-5	1,1,2-Trichloroethane	0.47 U	1.0	0.47	ug/l	
79-01-6	Trichloroethylene	0.35 U	1.0	0.35	ug/l	
75-69-4	Trichlorofluoromethane	0.50 U	2.0	0.50	ug/l	
75-01-4	Vinyl Chloride	22.3	1.0	0.41	ug/l	
1330-20-7	Xylene (total)	0.72 U	3.0	0.72	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	99%		83-118%
17060-07-0	1,2-Dichloroethane-D4	104%		79-125%
2037-26-5	Toluene-D8	105%		85-112%
460-00-4	4-Bromofluorobenzene	98%		83-118%

(a) Sample was not preserved to a pH < 2.
(b) Associated CCV outside control limits low.

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-MW0002-032.5-20230125		
Lab Sample ID:	FC2214-5	**Date Sampled:**	01/25/23
Matrix:	AQ - Ground Water	**Date Received:**	01/26/23
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	KSC-CRCA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	2A43150.D	1	01/27/23 14:32	KG	n/a	n/a	V2A1699
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL 4.2 List

CAS No.	Compound	Result	PQL	MDL	Units	Q
67-64-1	Acetone	10 U	25	10	ug/l	
71-43-2	Benzene	0.31 U	1.0	0.31	ug/l	
75-27-4	Bromodichloromethane	0.24 U	1.0	0.24	ug/l	
75-25-2	Bromoform	0.41 U	1.0	0.41	ug/l	
78-93-3	2-Butanone (MEK)	2.0 U	5.0	2.0	ug/l	
75-15-0	Carbon Disulfide	0.53 U	2.0	0.53	ug/l	
56-23-5	Carbon Tetrachloride	0.36 U	1.0	0.36	ug/l	
108-90-7	Chlorobenzene	0.20 U	1.0	0.20	ug/l	
75-00-3	Chloroethane	0.67 U	2.0	0.67	ug/l	
67-66-3	Chloroform	0.30 U	1.0	0.30	ug/l	
110-82-7	Cyclohexane	0.39 U	1.0	0.39	ug/l	
124-48-1	Dibromochloromethane	0.28 U	1.0	0.28	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	1.0 U	5.0	1.0	ug/l	
106-93-4	1,2-Dibromoethane	0.28 U	2.0	0.28	ug/l	
75-71-8	Dichlorodifluoromethane	0.50 U	2.0	0.50	ug/l	
95-50-1	1,2-Dichlorobenzene	0.32 U	1.0	0.32	ug/l	
541-73-1	1,3-Dichlorobenzene	0.22 U	1.0	0.22	ug/l	
106-46-7	1,4-Dichlorobenzene	0.26 U	1.0	0.26	ug/l	
75-34-3	1,1-Dichloroethane	0.34 U	1.0	0.34	ug/l	
107-06-2	1,2-Dichloroethane	0.31 U	1.0	0.31	ug/l	
75-35-4	1,1-Dichloroethylene	0.32 U	1.0	0.32	ug/l	
156-59-2	cis-1,2-Dichloroethylene	0.28 U	1.0	0.28	ug/l	
156-60-5	trans-1,2-Dichloroethylene	0.22 U	1.0	0.22	ug/l	
78-87-5	1,2-Dichloropropane	0.43 U	1.0	0.43	ug/l	
10061-01-5	cis-1,3-Dichloropropene	0.29 U	1.0	0.29	ug/l	
10061-02-6	trans-1,3-Dichloropropene	0.21 U	1.0	0.21	ug/l	
100-41-4	Ethylbenzene	0.36 U	1.0	0.36	ug/l	
76-13-1	Freon 113	0.48 U	1.0	0.48	ug/l	
591-78-6	2-Hexanone	2.0 U	10	2.0	ug/l	
98-82-8	Isopropylbenzene	0.22 U	1.0	0.22	ug/l	
79-20-9	Methyl Acetate	5.0 U	20	5.0	ug/l	
74-83-9	Methyl Bromide [b]	2.0 U	5.0	2.0	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-MW0002-032.5-20230125		
Lab Sample ID:	FC2214-5	**Date Sampled:**	01/25/23
Matrix:	AQ - Ground Water	**Date Received:**	01/26/23
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	KSC-CRCA		

VOA TCL 4.2 List

CAS No.	Compound	Result	PQL	MDL	Units	Q
74-87-3	Methyl Chloride	0.50 U	2.0	0.50	ug/l	
108-87-2	Methylcyclohexane	0.44 U	1.0	0.44	ug/l	
75-09-2	Methylene Chloride	2.0 U	5.0	2.0	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	1.0 U	5.0	1.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	0.23 U	1.0	0.23	ug/l	
100-42-5	Styrene	0.22 U	1.0	0.22	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	0.30 U	1.0	0.30	ug/l	
127-18-4	Tetrachloroethylene	0.22 U	1.0	0.22	ug/l	
108-88-3	Toluene	0.30 U	1.0	0.30	ug/l	
120-82-1	1,2,4-Trichlorobenzene	0.50 U	2.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	0.25 U	1.0	0.25	ug/l	
79-00-5	1,1,2-Trichloroethane	0.47 U	1.0	0.47	ug/l	
79-01-6	Trichloroethylene	0.35 U	1.0	0.35	ug/l	
75-69-4	Trichlorofluoromethane	0.50 U	2.0	0.50	ug/l	
75-01-4	Vinyl Chloride	0.41 U	1.0	0.41	ug/l	
1330-20-7	Xylene (total)	0.72 U	3.0	0.72	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	102%		83-118%
17060-07-0	1,2-Dichloroethane-D4	106%		79-125%
2037-26-5	Toluene-D8	105%		85-112%
460-00-4	4-Bromofluorobenzene	94%		83-118%

(a) Sample was not preserved to a pH < 2. Sample was treated with an anti-foaming agent.
(b) Associated CCV outside control limits low.

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-MW0013-027.5-20230126		
Lab Sample ID:	FC2214-6	**Date Sampled:**	01/26/23
Matrix:	AQ - Ground Water	**Date Received:**	01/26/23
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	KSC-CRCA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	2A43152.D	1	01/27/23 15:07	KG	n/a	n/a	V2A1699
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL 4.2 List

CAS No.	Compound	Result	PQL	MDL	Units	Q
67-64-1	Acetone	10 U	25	10	ug/l	
71-43-2	Benzene	0.31 U	1.0	0.31	ug/l	
75-27-4	Bromodichloromethane	0.24 U	1.0	0.24	ug/l	
75-25-2	Bromoform	0.41 U	1.0	0.41	ug/l	
78-93-3	2-Butanone (MEK)	2.0 U	5.0	2.0	ug/l	
75-15-0	Carbon Disulfide	0.53 U	2.0	0.53	ug/l	
56-23-5	Carbon Tetrachloride	0.36 U	1.0	0.36	ug/l	
108-90-7	Chlorobenzene	0.20 U	1.0	0.20	ug/l	
75-00-3	Chloroethane	0.67 U	2.0	0.67	ug/l	
67-66-3	Chloroform	0.30 U	1.0	0.30	ug/l	
110-82-7	Cyclohexane	0.39 U	1.0	0.39	ug/l	
124-48-1	Dibromochloromethane	0.28 U	1.0	0.28	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	1.0 U	5.0	1.0	ug/l	
106-93-4	1,2-Dibromoethane	0.28 U	2.0	0.28	ug/l	
75-71-8	Dichlorodifluoromethane	0.50 U	2.0	0.50	ug/l	
95-50-1	1,2-Dichlorobenzene	0.32 U	1.0	0.32	ug/l	
541-73-1	1,3-Dichlorobenzene	0.22 U	1.0	0.22	ug/l	
106-46-7	1,4-Dichlorobenzene	0.26 U	1.0	0.26	ug/l	
75-34-3	1,1-Dichloroethane	0.34 U	1.0	0.34	ug/l	
107-06-2	1,2-Dichloroethane	0.31 U	1.0	0.31	ug/l	
75-35-4	1,1-Dichloroethylene	0.32 U	1.0	0.32	ug/l	
156-59-2	cis-1,2-Dichloroethylene	0.28 U	1.0	0.28	ug/l	
156-60-5	trans-1,2-Dichloroethylene	0.22 U	1.0	0.22	ug/l	
78-87-5	1,2-Dichloropropane	0.43 U	1.0	0.43	ug/l	
10061-01-5	cis-1,3-Dichloropropene	0.29 U	1.0	0.29	ug/l	
10061-02-6	trans-1,3-Dichloropropene	0.21 U	1.0	0.21	ug/l	
100-41-4	Ethylbenzene	0.36 U	1.0	0.36	ug/l	
76-13-1	Freon 113	0.48 U	1.0	0.48	ug/l	
591-78-6	2-Hexanone	2.0 U	10	2.0	ug/l	
98-82-8	Isopropylbenzene	0.22 U	1.0	0.22	ug/l	
79-20-9	Methyl Acetate	5.0 U	20	5.0	ug/l	
74-83-9	Methyl Bromide [b]	2.0 U	5.0	2.0	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-MW0013-027.5-20230126		
Lab Sample ID:	FC2214-6	**Date Sampled:**	01/26/23
Matrix:	AQ - Ground Water	**Date Received:**	01/26/23
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	KSC-CRCA		

VOA TCL 4.2 List

CAS No.	Compound	Result	PQL	MDL	Units	Q
74-87-3	Methyl Chloride	0.50 U	2.0	0.50	ug/l	
108-87-2	Methylcyclohexane	0.44 U	1.0	0.44	ug/l	
75-09-2	Methylene Chloride	2.0 U	5.0	2.0	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	1.0 U	5.0	1.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	0.23 U	1.0	0.23	ug/l	
100-42-5	Styrene	0.22 U	1.0	0.22	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	0.30 U	1.0	0.30	ug/l	
127-18-4	Tetrachloroethylene	0.22 U	1.0	0.22	ug/l	
108-88-3	Toluene	0.30 U	1.0	0.30	ug/l	
120-82-1	1,2,4-Trichlorobenzene	0.50 U	2.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	0.25 U	1.0	0.25	ug/l	
79-00-5	1,1,2-Trichloroethane	0.47 U	1.0	0.47	ug/l	
79-01-6	Trichloroethylene	0.35 U	1.0	0.35	ug/l	
75-69-4	Trichlorofluoromethane	0.50 U	2.0	0.50	ug/l	
75-01-4	Vinyl Chloride	2.9	1.0	0.41	ug/l	
1330-20-7	Xylene (total)	0.72 U	3.0	0.72	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	102%		83-118%
17060-07-0	1,2-Dichloroethane-D4	106%		79-125%
2037-26-5	Toluene-D8	105%		85-112%
460-00-4	4-Bromofluorobenzene	93%		83-118%

(a) Sample was not preserved to a pH < 2. Sample was treated with an anti-foaming agent.
(b) Associated CCV outside control limits low.

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody

FC2214

Tetra Tech, Inc. CHAIN OF CUSTODY | NUMBER No. 1717 | PAGE 1 OF 1

PROJECT NO: 112G08970	FACILITY: KSC NASA CRCA	PROJECT MANAGER: Alex Murphy	PHONE NUMBER: 321 292 0842	LABORATORY NAME AND CONTACT: SGS N America Andrea Colby
SAMPLERS (SIGNATURE): Robert Siegel TT		FIELD OPERATIONS LEADER: Chuck Scarden	PHONE NUMBER: 321 591 7580	ADDRESS: 4405 Vineland Rd Suite C-16
		~~CARRIER/WAYBILL NUMBER~~		CITY, STATE: Orlando FL 32811

STANDARD TAT ☒ RUSH TAT ☐ ☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

DATE YEAR 2023	TIME	SAMPLE ID	LOCATION ID	TOP DEPTH (FT)	BOTTOM DEPTH (FT)	MATRIX (GW, SO, SW, SD, QC, ETC.)	COLLECTION METHOD GRAB (G) COMP (C)	No. OF CONTAINERS	CONTAINER TYPE PLASTIC (P) or GLASS (G)		PRESERVATIVE USED		TYPE OF ANALYSIS								COMMENTS
									V	V	HCl	Ice	V8260 TCL VZ	V8260 TCL VZ							
1 01/24	1150	CRCA-MW0031-058.0 20230124	31	53.0	63.0	GW	G	3					X								
2 01/24	1615	CRCA-MW0032-058.0 20230124	32	53.0	63.0	GW	G	3					X								
3 01/25	1310	CRCA-MW009A-058.0 20230125	19	53.0	63.0	GW	G	6					X	X							
4 01/25	1510	CRCA-MW0018-058.0 20230125	18	53.0	63.0	GW	G	6					X	X							
5 01/25	1605	CRCA-MW0002-032.5 20230125	2	30.0	35.0	GW	G	6					X	X							
6 01/26	1025	CRCA-MW0013-027.5 20230126	13	25.0	30.0	GW	G	6					X	X							

INITIAL ASSESSMENT

LABEL VERIFICATION

	DATE	TIME		DATE	TIME
1. RELINQUISHED BY: RSiegel TT	1/26/23	1105	1. RECEIVED BY:	1/26/23	1105
2. RELINQUISHED BY:	1/26/23	1330	2. RECEIVED BY:	1/26/23	0930
3. RELINQUISHED BY:	DATE	TIME	3. RECEIVED BY	DATE	TIME

COMMENTS: 2,8-TA

DISTRIBUTION: WHITE (ACCOMPANIES SAMPLE) YELLOW (FIELD COPY) PINK (FILE COPY)

4/02R FORM NO. TtNUS-001

FC2214: Chain of Custody
Page 1 of 2

SGS Sample Receipt Summary

Job Number: FC2214 **Client:** TETRA TECH, INC. **Project:** 112 G0 8970

Date / Time Received: 1/26/2023 9:30:00 AM **Delivery Method:** FEDEX **Airbill #'s:**

Therm ID: IR 1; **Therm CF:** 0.2; **# of Coolers:** 1

Cooler Temps (Raw Measured) °C: Cooler 1: (2.8);

Cooler Temps (Corrected) °C: Cooler 1: (3.0);

Cooler Information	Y	N
1. Custody Seals Present	☑	☐
2. Custody Seals Intact	☑	☐
3. Temp criteria achieved	☑	☐
4. Cooler temp verification	IR Gun	
5. Cooler media	Ice (Bag)	

Trip Blank Information	Y	N	N/A
1. Trip Blank present / cooler	☐	☐	☑
2. Trip Blank listed on COC	☐	☐	☑

	W	S	N/A
3. Type Of TB Received	☐	☐	☑

Sample Information	Y	N	N/A
1. Sample labels present on bottles	☑	☐	
2. Samples preserved properly	☑	☐	
3. Sufficient volume/containers recvd for analysis:	☑	☐	
4. Condition of sample	Intact		
5. Sample recvd within HT	☑	☐	
6. Dates/Times/IDs on COC match Sample Label	☑	☐	
7. VOCs have headspace	☐	☑	☐
8. Bottles received for unspecified tests	☐	☑	
9. Compositing instructions clear	☐	☐	☑
10. Voa Soil Kits/Jars received past 48hrs?	☐	☐	☑
11. % Solids Jar received?	☐	☐	☑
12. Residual Chlorine Present?	☐	☐	☑

Misc. Information

Number of Encores: 25-Gram _____ 5-Gram _____ Number of 5035 Field Kits: _____ Number of Lab Filtered Metals: _____

Test Strip Lot #s: pH 0-3 230315 pH 10-12 219813A Other: (Specify) _____ _____

Residual Chlorine Test Strip Lot #: _____

Comments

SM001
Rev. Date 05/24/17

Technician: CARLOSD Date: 1/26/2023 9:30:00 AM Reviewer: _____ Date: _____

MS Volatiles

6

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Job Number: FC2214
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V2A1699-MB [a]	2A43134.D	1	01/27/23	KG	n/a	n/a	V2A1699

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

FC2214-1, FC2214-2, FC2214-5, FC2214-6

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	25	10	ug/l	
71-43-2	Benzene	ND	1.0	0.31	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.24	ug/l	
75-25-2	Bromoform	ND	1.0	0.41	ug/l	
78-93-3	2-Butanone (MEK)	ND	5.0	2.0	ug/l	
75-15-0	Carbon Disulfide	ND	2.0	0.53	ug/l	
56-23-5	Carbon Tetrachloride	ND	1.0	0.36	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.20	ug/l	
75-00-3	Chloroethane	ND	2.0	0.67	ug/l	
67-66-3	Chloroform	ND	1.0	0.30	ug/l	
110-82-7	Cyclohexane	ND	1.0	0.39	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.28	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	5.0	1.0	ug/l	
106-93-4	1,2-Dibromoethane	ND	2.0	0.28	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	0.50	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	0.32	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	0.22	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	0.26	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.34	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.31	ug/l	
75-35-4	1,1-Dichloroethylene	ND	1.0	0.32	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	0.28	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	0.22	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.43	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.29	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.21	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.36	ug/l	
76-13-1	Freon 113	ND	1.0	0.48	ug/l	
591-78-6	2-Hexanone	ND	10	2.0	ug/l	
98-82-8	Isopropylbenzene	ND	1.0	0.22	ug/l	
79-20-9	Methyl Acetate	ND	20	5.0	ug/l	
74-83-9	Methyl Bromide	ND	5.0	2.0	ug/l	
74-87-3	Methyl Chloride	ND	2.0	0.50	ug/l	
108-87-2	Methylcyclohexane	ND	1.0	0.44	ug/l	
75-09-2	Methylene Chloride	ND	5.0	2.0	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	5.0	1.0	ug/l	

Method Blank Summary

Job Number: FC2214
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V2A1699-MB [a]	2A43134.D	1	01/27/23	KG	n/a	n/a	V2A1699

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

FC2214-1, FC2214-2, FC2214-5, FC2214-6

CAS No.	Compound	Result	RL	MDL	Units	Q
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.23	ug/l	
100-42-5	Styrene	ND	1.0	0.22	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.30	ug/l	
127-18-4	Tetrachloroethylene	ND	1.0	0.22	ug/l	
108-88-3	Toluene	ND	1.0	0.30	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	2.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.25	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.47	ug/l	
79-01-6	Trichloroethylene	ND	1.0	0.35	ug/l	
75-69-4	Trichlorofluoromethane	ND	2.0	0.50	ug/l	
75-01-4	Vinyl Chloride	ND	1.0	0.41	ug/l	
1330-20-7	Xylene (total)	ND	3.0	0.72	ug/l	

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	102%	83-118%
17060-07-0	1,2-Dichloroethane-D4	106%	79-125%
2037-26-5	Toluene-D8	105%	85-112%
460-00-4	4-Bromofluorobenzene	93%	83-118%

(a) Sample was treated with an anti-foaming agent.

Method Blank Summary

Job Number: FC2214
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V2A1701-MB [a]	2A43223.D	1	01/31/23	KG	n/a	n/a	V2A1701

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

FC2214-3, FC2214-4

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	25	10	ug/l	
71-43-2	Benzene	ND	1.0	0.31	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.24	ug/l	
75-25-2	Bromoform	ND	1.0	0.41	ug/l	
78-93-3	2-Butanone (MEK)	ND	5.0	2.0	ug/l	
75-15-0	Carbon Disulfide	ND	2.0	0.53	ug/l	
56-23-5	Carbon Tetrachloride	ND	1.0	0.36	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.20	ug/l	
75-00-3	Chloroethane	ND	2.0	0.67	ug/l	
67-66-3	Chloroform	ND	1.0	0.30	ug/l	
110-82-7	Cyclohexane	ND	1.0	0.39	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.28	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	5.0	1.0	ug/l	
106-93-4	1,2-Dibromoethane	ND	2.0	0.28	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	0.50	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	0.32	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	0.22	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	0.26	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.34	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.31	ug/l	
75-35-4	1,1-Dichloroethylene	ND	1.0	0.32	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	0.28	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	0.22	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.43	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.29	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.21	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.36	ug/l	
76-13-1	Freon 113	ND	1.0	0.48	ug/l	
591-78-6	2-Hexanone	ND	10	2.0	ug/l	
98-82-8	Isopropylbenzene	ND	1.0	0.22	ug/l	
79-20-9	Methyl Acetate	ND	20	5.0	ug/l	
74-83-9	Methyl Bromide	ND	5.0	2.0	ug/l	
74-87-3	Methyl Chloride	ND	2.0	0.50	ug/l	
108-87-2	Methylcyclohexane	ND	1.0	0.44	ug/l	
75-09-2	Methylene Chloride	ND	5.0	2.0	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	5.0	1.0	ug/l	

Method Blank Summary

Job Number: FC2214
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V2A1701-MB [a]	2A43223.D	1	01/31/23	KG	n/a	n/a	V2A1701

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

FC2214-3, FC2214-4

CAS No.	Compound	Result	RL	MDL	Units	Q
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.23	ug/l	
100-42-5	Styrene	ND	1.0	0.22	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.30	ug/l	
127-18-4	Tetrachloroethylene	ND	1.0	0.22	ug/l	
108-88-3	Toluene	ND	1.0	0.30	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	2.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.25	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.47	ug/l	
79-01-6	Trichloroethylene	ND	1.0	0.35	ug/l	
75-69-4	Trichlorofluoromethane	ND	2.0	0.50	ug/l	
75-01-4	Vinyl Chloride	ND	1.0	0.41	ug/l	
1330-20-7	Xylene (total)	ND	3.0	0.72	ug/l	

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	99%	83-118%
17060-07-0	1,2-Dichloroethane-D4	104%	79-125%
2037-26-5	Toluene-D8	105%	85-112%
460-00-4	4-Bromofluorobenzene	97%	83-118%

(a) Sample was treated with an anti-foaming agent.

Blank Spike Summary

Job Number: FC2214
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V2A1699-BS	2A43130.D	1	01/27/23	KG	n/a	n/a	V2A1699

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

FC2214-1, FC2214-2, FC2214-5, FC2214-6

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
67-64-1	Acetone	125	123	98	50-147
71-43-2	Benzene	25	21.6	86	81-122
75-27-4	Bromodichloromethane	25	21.3	85	79-123
75-25-2	Bromoform	25	18.7	75	66-123
78-93-3	2-Butanone (MEK)	125	119	95	56-143
75-15-0	Carbon Disulfide	25	22.5	90	66-148
56-23-5	Carbon Tetrachloride	25	21.0	84	76-136
108-90-7	Chlorobenzene	25	21.9	88	82-124
75-00-3	Chloroethane	25	21.5	86	62-144
67-66-3	Chloroform	25	21.3	85	80-124
110-82-7	Cyclohexane	25	22.9	92	73-138
124-48-1	Dibromochloromethane	25	19.4	78	78-122
96-12-8	1,2-Dibromo-3-chloropropane	25	20.6	82	64-123
106-93-4	1,2-Dibromoethane	25	21.1	84	75-120
75-71-8	Dichlorodifluoromethane	25	17.8	71	42-167
95-50-1	1,2-Dichlorobenzene	25	21.8	87	82-124
541-73-1	1,3-Dichlorobenzene	25	22.0	88	84-125
106-46-7	1,4-Dichlorobenzene	25	21.4	86	78-120
75-34-3	1,1-Dichloroethane	25	22.5	90	81-122
107-06-2	1,2-Dichloroethane	25	21.4	86	75-125
75-35-4	1,1-Dichloroethylene	25	23.8	95	78-137
156-59-2	cis-1,2-Dichloroethylene	25	22.3	89	78-120
156-60-5	trans-1,2-Dichloroethylene	25	22.5	90	76-127
78-87-5	1,2-Dichloropropane	25	20.4	82	76-124
10061-01-5	cis-1,3-Dichloropropene	25	20.5	82	75-118
10061-02-6	trans-1,3-Dichloropropene	25	22.2	89	80-120
100-41-4	Ethylbenzene	25	21.7	87	81-121
76-13-1	Freon 113	25	21.3	85	72-134
591-78-6	2-Hexanone	125	113	90	61-129
98-82-8	Isopropylbenzene	25	22.6	90	83-132
79-20-9	Methyl Acetate	125	113	90	65-126
74-83-9	Methyl Bromide	25	20.1	80	59-143
74-87-3	Methyl Chloride	25	20.8	83	50-159
108-87-2	Methylcyclohexane	25	22.8	91	76-129
75-09-2	Methylene Chloride	25	22.2	89	69-135
108-10-1	4-Methyl-2-pentanone (MIBK)	125	117	94	66-122

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FC2214
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V2A1699-BS	2A43130.D	1	01/27/23	KG	n/a	n/a	V2A1699

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

FC2214-1, FC2214-2, FC2214-5, FC2214-6

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
1634-04-4	Methyl Tert Butyl Ether	25	20.6	82	72-117
100-42-5	Styrene	25	21.5	86	78-119
79-34-5	1,1,2,2-Tetrachloroethane	25	22.2	89	72-120
127-18-4	Tetrachloroethylene	25	20.8	83	76-135
108-88-3	Toluene	25	22.3	89	80-120
120-82-1	1,2,4-Trichlorobenzene	25	20.1	80	73-129
71-55-6	1,1,1-Trichloroethane	25	21.4	86	75-130
79-00-5	1,1,2-Trichloroethane	25	21.8	87	76-119
79-01-6	Trichloroethylene	25	21.8	87	81-126
75-69-4	Trichlorofluoromethane	25	24.9	100	71-156
75-01-4	Vinyl Chloride	25	22.8	91	69-159
1330-20-7	Xylene (total)	75	65.8	88	80-126

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	97%	83-118%
17060-07-0	1,2-Dichloroethane-D4	102%	79-125%
2037-26-5	Toluene-D8	103%	85-112%
460-00-4	4-Bromofluorobenzene	96%	83-118%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FC2214
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V2A1701-BS	2A43219.D	1	01/31/23	KG	n/a	n/a	V2A1701

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

FC2214-3, FC2214-4

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
67-64-1	Acetone	125	121	97	50-147
71-43-2	Benzene	25	22.5	90	81-122
75-27-4	Bromodichloromethane	25	22.4	90	79-123
75-25-2	Bromoform	25	18.8	75	66-123
78-93-3	2-Butanone (MEK)	125	118	94	56-143
75-15-0	Carbon Disulfide	25	23.7	95	66-148
56-23-5	Carbon Tetrachloride	25	21.6	86	76-136
108-90-7	Chlorobenzene	25	22.4	90	82-124
75-00-3	Chloroethane	25	21.9	88	62-144
67-66-3	Chloroform	25	22.8	91	80-124
110-82-7	Cyclohexane	25	24.1	96	73-138
124-48-1	Dibromochloromethane	25	20.0	80	78-122
96-12-8	1,2-Dibromo-3-chloropropane	25	21.4	86	64-123
106-93-4	1,2-Dibromoethane	25	21.2	85	75-120
75-71-8	Dichlorodifluoromethane	25	16.8	67	42-167
95-50-1	1,2-Dichlorobenzene	25	22.3	89	82-124
541-73-1	1,3-Dichlorobenzene	25	22.8	91	84-125
106-46-7	1,4-Dichlorobenzene	25	22.3	89	78-120
75-34-3	1,1-Dichloroethane	25	23.7	95	81-122
107-06-2	1,2-Dichloroethane	25	22.9	92	75-125
75-35-4	1,1-Dichloroethylene	25	24.9	100	78-137
156-59-2	cis-1,2-Dichloroethylene	25	23.6	94	78-120
156-60-5	trans-1,2-Dichloroethylene	25	23.6	94	76-127
78-87-5	1,2-Dichloropropane	25	22.6	90	76-124
10061-01-5	cis-1,3-Dichloropropene	25	21.7	87	75-118
10061-02-6	trans-1,3-Dichloropropene	25	22.7	91	80-120
100-41-4	Ethylbenzene	25	22.5	90	81-121
76-13-1	Freon 113	25	22.1	88	72-134
591-78-6	2-Hexanone	125	110	88	61-129
98-82-8	Isopropylbenzene	25	23.0	92	83-132
79-20-9	Methyl Acetate	125	118	94	65-126
74-83-9	Methyl Bromide	25	21.6	86	59-143
74-87-3	Methyl Chloride	25	21.2	85	50-159
108-87-2	Methylcyclohexane	25	23.4	94	76-129
75-09-2	Methylene Chloride	25	23.7	95	69-135
108-10-1	4-Methyl-2-pentanone (MIBK)	125	114	91	66-122

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FC2214
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V2A1701-BS	2A43219.D	1	01/31/23	KG	n/a	n/a	V2A1701

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

FC2214-3, FC2214-4

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
1634-04-4	Methyl Tert Butyl Ether	25	22.1	88	72-117
100-42-5	Styrene	25	22.0	88	78-119
79-34-5	1,1,2,2-Tetrachloroethane	25	22.6	90	72-120
127-18-4	Tetrachloroethylene	25	21.0	84	76-135
108-88-3	Toluene	25	22.8	91	80-120
120-82-1	1,2,4-Trichlorobenzene	25	20.3	81	73-129
71-55-6	1,1,1-Trichloroethane	25	22.3	89	75-130
79-00-5	1,1,2-Trichloroethane	25	22.3	89	76-119
79-01-6	Trichloroethylene	25	22.6	90	81-126
75-69-4	Trichlorofluoromethane	25	23.5	94	71-156
75-01-4	Vinyl Chloride	25	22.3	89	69-159
1330-20-7	Xylene (total)	75	68.3	91	80-126

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	100%	83-118%
17060-07-0	1,2-Dichloroethane-D4	102%	79-125%
2037-26-5	Toluene-D8	101%	85-112%
460-00-4	4-Bromofluorobenzene	96%	83-118%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FC2214
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
FC2150-6MS	2A43162.D	10	01/27/23	KG	n/a	n/a	V2A1699
FC2150-6MSD	2A43164.D	10	01/27/23	KG	n/a	n/a	V2A1699
FC2150-6	2A43138.D	1	01/27/23	KG	n/a	n/a	V2A1699

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

FC2214-1, FC2214-2, FC2214-5, FC2214-6

CAS No.	Compound	FC2150-6 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
67-64-1	Acetone	25 U		1250	1280	102	1250	1210	97	6	50-147/21
71-43-2	Benzene	1.0 U		250	238	95	250	221	88	7	81-122/14
75-27-4	Bromodichloromethane	1.0 U		250	227	91	250	218	87	4	79-123/19
75-25-2	Bromoform	1.0 U		250	186	74	250	182	73	2	66-123/21
78-93-3	2-Butanone (MEK)	5.0 U		1250	1250	100	1250	1190	95	5	56-143/18
75-15-0	Carbon Disulfide	2.0 U		250	244	98	250	231	92	5	66-148/23
56-23-5	Carbon Tetrachloride	1.0 U		250	217	87	250	208	83	4	76-136/23
108-90-7	Chlorobenzene	1.0 U		250	239	96	250	228	91	5	82-124/14
75-00-3	Chloroethane	2.0 U		250	236	94	250	238	95	1	62-144/20
67-66-3	Chloroform	1.0 U		250	237	95	250	226	90	5	80-124/15
110-82-7	Cyclohexane	1.0 U		250	244	98	250	227	91	7	73-138/18
124-48-1	Dibromochloromethane	1.0 U		250	198	79	250	194	78	2	78-122/19
96-12-8	1,2-Dibromo-3-chloropropane	5.0 U		250	224	90	250	215	86	4	64-123/18
106-93-4	1,2-Dibromoethane	2.0 U		250	232	93	250	220	88	5	75-120/13
75-71-8	Dichlorodifluoromethane	2.0 U		250	180	72	250	186	74	3	42-167/19
95-50-1	1,2-Dichlorobenzene	1.0 U		250	237	95	250	229	92	3	82-124/14
541-73-1	1,3-Dichlorobenzene	1.0 U		250	240	96	250	230	92	4	84-125/14
106-46-7	1,4-Dichlorobenzene	1.0 U		250	237	95	250	224	90	6	78-120/15
75-34-3	1,1-Dichloroethane	1.0 U		250	251	100	250	238	95	5	81-122/15
107-06-2	1,2-Dichloroethane	1.0 U		250	236	94	250	228	91	3	75-125/14
75-35-4	1,1-Dichloroethylene	1.0 U		250	255	102	250	246	98	4	78-137/18
156-59-2	cis-1,2-Dichloroethylene	11.8		250	254	97	250	243	92	4	78-120/15
156-60-5	trans-1,2-Dichloroethylene	0.89	I	250	248	99	250	234	93	6	76-127/17
78-87-5	1,2-Dichloropropane	1.0 U		250	232	93	250	223	89	4	76-124/14
10061-01-5	cis-1,3-Dichloropropene	1.0 U		250	215	86	250	209	84	3	75-118/23
10061-02-6	trans-1,3-Dichloropropene	1.0 U		250	234	94	250	225	90	4	80-120/22
100-41-4	Ethylbenzene	1.0 U		250	241	96	250	226	90	6	81-121/14
76-13-1	Freon 113	1.0 U		250	223	89	250	209	84	6	72-134/20
591-78-6	2-Hexanone	10 U		1250	1170	94	1250	1140	91	3	61-129/18
98-82-8	Isopropylbenzene	1.0 U		250	246	98	250	230	92	7	83-132/15
79-20-9	Methyl Acetate	20 U		1250	1280	102	1250	1210	97	6	65-126/18
74-83-9	Methyl Bromide	5.0 U		250	148	59	250	167	67	12	59-143/19
74-87-3	Methyl Chloride	2.0 U		250	217	87	250	223	89	3	50-159/19
108-87-2	Methylcyclohexane	1.0 U		250	241	96	250	224	90	7	76-129/17
75-09-2	Methylene Chloride	5.0 U		250	252	101	250	236	94	7	69-135/16
108-10-1	4-Methyl-2-pentanone (MIBK)	5.0 U		1250	1200	96	1250	1150	92	4	66-122/16

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FC2214
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
FC2150-6MS	2A43162.D	10	01/27/23	KG	n/a	n/a	V2A1699
FC2150-6MSD	2A43164.D	10	01/27/23	KG	n/a	n/a	V2A1699
FC2150-6	2A43138.D	1	01/27/23	KG	n/a	n/a	V2A1699

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

FC2214-1, FC2214-2, FC2214-5, FC2214-6

CAS No.	Compound	FC2150-6 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
1634-04-4	Methyl Tert Butyl Ether	0.34	I	250	232	93	250	221	88	5	72-117/14
100-42-5	Styrene	1.0 U		250	234	94	250	223	89	5	78-119/23
79-34-5	1,1,2,2-Tetrachloroethane	1.0 U		250	240	96	250	230	92	4	72-120/14
127-18-4	Tetrachloroethylene	1.0 U		250	216	86	250	207	83	4	76-135/16
108-88-3	Toluene	1.0 U		250	240	96	250	229	92	5	80-120/14
120-82-1	1,2,4-Trichlorobenzene	2.0 U		250	214	86	250	203	81	5	73-129/20
71-55-6	1,1,1-Trichloroethane	1.0 U		250	233	93	250	221	88	5	75-130/16
79-00-5	1,1,2-Trichloroethane	1.0 U		250	243	97	250	228	91	6	76-119/14
79-01-6	Trichloroethylene	1.0 U		250	237	95	250	219	88	8	81-126/15
75-69-4	Trichlorofluoromethane	2.0 U		250	251	100	250	253	101	1	71-156/21
75-01-4	Vinyl Chloride	104	L	250	289	74	250	299	78	3	69-159/18
1330-20-7	Xylene (total)	3.0 U		750	720	96	750	680	91	6	80-126/15

CAS No.	Surrogate Recoveries	MS	MSD	FC2150-6	Limits
1868-53-7	Dibromofluoromethane	98%	98%	101%	83-118%
17060-07-0	1,2-Dichloroethane-D4	102%	102%	103%	79-125%
2037-26-5	Toluene-D8	101%	102%	106%	85-112%
460-00-4	4-Bromofluorobenzene	96%	97%	97%	83-118%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FC2214
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
FC2214-3MS	2A43255.D	10	01/31/23	KG	n/a	n/a	V2A1701
FC2214-3MSD	2A43257.D	10	01/31/23	KG	n/a	n/a	V2A1701
FC2214-3	2A43225.D	1	01/31/23	KG	n/a	n/a	V2A1701

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

FC2214-3, FC2214-4

CAS No.	Compound	FC2214-3 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
67-64-1	Acetone	25	U	1250	1250	100	1250	1160	93	7	50-147/21
71-43-2	Benzene	1.0	U	250	233	93	250	211	84	10	81-122/14
75-27-4	Bromodichloromethane	1.0	U	250	226	90	250	210	84	7	79-123/19
75-25-2	Bromoform	1.0	U	250	187	75	250	183	73	2	66-123/21
78-93-3	2-Butanone (MEK)	5.0	U	1250	1260	101	1250	1150	92	9	56-143/18
75-15-0	Carbon Disulfide	2.0	U	250	235	94	250	213	85	10	66-148/23
56-23-5	Carbon Tetrachloride	1.0	U	250	221	88	250	201	80	9	76-136/23
108-90-7	Chlorobenzene	1.0	U	250	232	93	250	215	86	8	82-124/14
75-00-3	Chloroethane	2.0	U	250	247	99	250	219	88	12	62-144/20
67-66-3	Chloroform	1.0	U	250	228	91	250	214	86	6	80-124/15
110-82-7	Cyclohexane	1.0	U	250	245	98	250	229	92	7	73-138/18
124-48-1	Dibromochloromethane	1.0	U	250	199	80	250	189	76*	5	78-122/19
96-12-8	1,2-Dibromo-3-chloropropane	5.0	U	250	213	85	250	207	83	3	64-123/18
106-93-4	1,2-Dibromoethane	2.0	U	250	226	90	250	213	85	6	75-120/13
75-71-8	Dichlorodifluoromethane	2.0	U	250	177	71	250	161	64	9	42-167/19
95-50-1	1,2-Dichlorobenzene	1.0	U	250	232	93	250	220	88	5	82-124/14
541-73-1	1,3-Dichlorobenzene	1.0	U	250	234	94	250	221	88	6	84-125/14
106-46-7	1,4-Dichlorobenzene	1.0	U	250	233	93	250	218	87	7	78-120/15
75-34-3	1,1-Dichloroethane	1.0	U	250	246	98	250	222	89	10	81-122/15
107-06-2	1,2-Dichloroethane	1.0	U	250	233	93	250	219	88	6	75-125/14
75-35-4	1,1-Dichloroethylene	1.0	U	250	252	101	250	232	93	8	78-137/18
156-59-2	cis-1,2-Dichloroethylene	1.0	U	250	235	94	250	216	86	8	78-120/15
156-60-5	trans-1,2-Dichloroethylene	1.0	U	250	238	95	250	219	88	8	76-127/17
78-87-5	1,2-Dichloropropane	1.0	U	250	224	90	250	209	84	7	76-124/14
10061-01-5	cis-1,3-Dichloropropene	1.0	U	250	208	83	250	196	78	6	75-118/23
10061-02-6	trans-1,3-Dichloropropene	1.0	U	250	231	92	250	218	87	6	80-120/22
100-41-4	Ethylbenzene	1.0	U	250	233	93	250	215	86	8	81-121/14
76-13-1	Freon 113	1.0	U	250	224	90	250	204	82	9	72-134/20
591-78-6	2-Hexanone	10	U	1250	1190	95	1250	1110	89	7	61-129/18
98-82-8	Isopropylbenzene	1.0	U	250	236	94	250	220	88	7	83-132/15
79-20-9	Methyl Acetate	20	U	1250	1220	98	1250	1150	92	6	65-126/18
74-83-9	Methyl Bromide	5.0	U	250	171	68	250	158	63	8	59-143/19
74-87-3	Methyl Chloride	2.0	U	250	211	84	250	192	77	9	50-159/19
108-87-2	Methylcyclohexane	1.0	U	250	244	98	250	225	90	8	76-129/17
75-09-2	Methylene Chloride	5.0	U	250	233	93	250	218	87	7	69-135/16
108-10-1	4-Methyl-2-pentanone (MIBK)	5.0	U	1250	1230	98	1250	1140	91	8	66-122/16

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FC2214
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
FC2214-3MS	2A43255.D	10	01/31/23	KG	n/a	n/a	V2A1701
FC2214-3MSD	2A43257.D	10	01/31/23	KG	n/a	n/a	V2A1701
FC2214-3	2A43225.D	1	01/31/23	KG	n/a	n/a	V2A1701

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

FC2214-3, FC2214-4

CAS No.	Compound	FC2214-3 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
1634-04-4	Methyl Tert Butyl Ether	1.0	U	250	222	89	250	211	84	5	72-117/14
100-42-5	Styrene	1.0	U	250	227	91	250	213	85	6	78-119/23
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U	250	244	98	250	229	92	6	72-120/14
127-18-4	Tetrachloroethylene	1.0	U	250	215	86	250	195	78	10	76-135/16
108-88-3	Toluene	1.0	U	250	235	94	250	219	88	7	80-120/14
120-82-1	1,2,4-Trichlorobenzene	2.0	U	250	210	84	250	194	78	8	73-129/20
71-55-6	1,1,1-Trichloroethane	1.0	U	250	227	91	250	209	84	8	75-130/16
79-00-5	1,1,2-Trichloroethane	1.0	U	250	234	94	250	225	90	4	76-119/14
79-01-6	Trichloroethylene	1.0	U	250	228	91	250	213	85	7	81-126/15
75-69-4	Trichlorofluoromethane	2.0	U	250	253	101	250	230	92	10	71-156/21
75-01-4	Vinyl Chloride	1.0	U	250	232	93	250	210	84	10	69-159/18
1330-20-7	Xylene (total)	3.0	U	750	701	93	750	643	86	9	80-126/15

CAS No.	Surrogate Recoveries	MS	MSD	FC2214-3	Limits
1868-53-7	Dibromofluoromethane	96%	96%	99%	83-118%
17060-07-0	1,2-Dichloroethane-D4	102%	102%	104%	79-125%
2037-26-5	Toluene-D8	102%	100%	105%	85-112%
460-00-4	4-Bromofluorobenzene	95%	97%	100%	83-118%

* = Outside of Control Limits.

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

e-Hardcopy 2.0
Automated Report

Technical Report for

Tetra Tech NUS

KSC-CRCA

112G8970

SGS Job Number: FC2215

Sampling Date: 01/25/23

Report to:

Tetra-Tech, Inc.
661 Andersen Drive Foster Plaza 7
Pittsburgh, PA 15220
amy.thomson@tetratech.com; carrie.stock@tetratech.com;
alex.murphy@tetratech.com
ATTN: Amy Thomson

Total number of pages in report: 37

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

Norm Farmer
Technical Director

Client Service contact: Andrea Colby 407-425-6700

Certifications: FL(E83510), LA(03051), KS(E-10327), NC(573), NJ(FL002), NY(12022), SC(96038001) DoD ELAP(ANAB L2229), AZ(AZ0806), CA(2937), TX(T104704404), PA(68-03573), VA(460177), AL, AK, AR, CT, IA, KY, MA, MI. MS, ND, NH, NV, OK, OR, IL, UT, VT, WA, WI, WV

This report shall not be reproduced, except in its entirety, without the written approval of SGS.
Test results relate only to samples analyzed.

SGS is the sole authority for authorizing edits or modifications to this document.
Unauthorized modification of this report is strictly prohibited.
Review standard terms at: http://www.sgs.com/en/terms-and-conditions

Please share your ideas about how we can serve you better at:
EHS.US.CustomerCare@sgs.com

Sections: 1 2 3 4 5 6 7

Table of Contents

Section 1: Sample Summary **3**
Section 2: Case Narrative/Conformance Summary **4**
Section 3: Summary of Hits **6**
Section 4: Sample Results **7**
4.1: FC2215-1: CRCA-ASEFF20230125 8
4.2: FC2215-2: CRCA-ASINF20230125 12
Section 5: Misc. Forms **16**
5.1: Chain of Custody 17
Section 6: MS Volatiles - QC Data Summaries **19**
6.1: Method Blank Summary 20
6.2: Blank Spike Summary 22
6.3: Matrix Spike/Matrix Spike Duplicate Summary 24
Section 7: MS Semi-volatiles - QC Data Summaries **26**
7.1: Method Blank Summary 27
7.2: Blank Spike Summary 32
7.3: Matrix Spike Summary 34
7.4: Duplicate Summary 36

SGS North America Inc.

Sample Summary

Tetra Tech NUS

Job No: FC2215

KSC-CRCA
Project No: 112G8970

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
FC2215-1	01/25/23	09:15	DR	01/26/23	AQ	Ground Water	CRCA-ASEFF20230125
FC2215-2	01/25/23	09:30	DR	01/26/23	AQ	Ground Water	CRCA-ASINF20230125

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: Tetra Tech NUS **Job No:** FC2215

Site: KSC-CRCA **Report Date:** 2/8/2023 11:47:04 AM

On 01/26/2023, 2 Sample(s), 0 Trip Blank(s) and 0 Field Blank(s) were received at SGS North America Inc - Orlando. at a maximum corrected temperature of 3 C. Samples were intact and chemically preserved, unless noted below. A SGS North America Inc. - Orlando Job Number of FC2215 was assigned to the project.

Laboratory sample ID, client sample ID and dates of sample collection are detailed in the report's Results Summary Section. Specified quality control criteria were achieved for this job except as noted below. For more information, please refer to the analytical results and QC summary pages.

MS Volatiles By Method SW846 8260D

Matrix: AQ **Batch ID:** V1P3675

Sample(s) FC2259-3MS, FC2259-3MSD were used as the QC samples indicated.

Blank Spike Recovery(s) for 1,2-Dibromo-3-chloropropane, Methyl Bromide, Methyl Tert Butyl Ether are outside control limits.

FC2215-1 for 1,2-Dibromo-3-chloropropane: Associated BS recovery outside control limits high, sample is ND.

FC2215-1 for Methyl Bromide: Associated CCV and BS outside control limits high, sample is ND.

FC2215-1 for Methyl Tert Butyl Ether: Associated BS recovery outside control limits high, sample is ND.

FC2215-2 for 1,2-Dibromo-3-chloropropane: Associated BS recovery outside control limits high, sample is ND.

FC2215-2 for Methyl Bromide: Associated CCV and BS outside control limits high, sample is ND.

FC2215-2 for Methyl Tert Butyl Ether: Associated BS recovery outside control limits high, sample is ND.

MS Semi-volatiles By Method EPA 537M QSM5.3 B-15

Matrix: AQ **Batch ID:** OP95219

Sample(s) FC2135-48MS, FC2135-49DUP were used as the QC samples indicated.

Matrix Spike Recovery(s) for Perfluoroheptanesulfonic acid, Perfluorononanesulfonic acid, 6:2 Fluorotelomer sulfonate, 8:2 Fluorotelomer sulfonate, Perfluorobutanoic acid, Perfluoroheptanoic acid, Perfluorohexanoic acid, Perfluorooctanesulfonic acid, Perfluorooctanoic acid, Perfluoropentanoic acid are outside control limits. Outside control limits due to high level in sample relative to spike amount.

RPD(s) for Duplicate for 8:2 Fluorotelomer sulfonate, Perfluorobutanoic acid, Perfluoroheptanesulfonic acid, Perfluorononanoic acid are outside control limits for sample OP95219-DUP. Probable cause is due to sample non-homogeneity.

Sample(s) FC2215-1, FC2215-2 have surrogates outside control limits.

OP95219-MS for 13C2-8:2FTS: Outside control limits.

FC2215-1 for 13C2-4:2FTS: Outside control limits.

FC2215-1 for 13C2-PFTeDA: Outside control limits.

FC2215-1 for 13C2-PFTeDA: Outside control limits.

FC2215-1 for 13C3-HFPO-DA: Outside control limits.

FC2215-1 for 13C3-PFBS: Outside control limits.

FC2215-1 for 13C4-PFBA: Outside control limits.

FC2215-1 for 13C4-PFBA: Outside control limits.

FC2215-1 for 13C4-PFHpA: Outside control limits.

FC2215-1 for 13C5-PFHxA: Outside control limits.

FC2215-1 for 13C5-PFPeA: Outside control limits.

FC2215-1 for 13C8-FOSA: Outside control limits.

FC2215-1 for 13C8-FOSA: Outside control limits.

FC2215-1 for Perfluorotetradecanoic acid: Associated ID Standard outside control limits.

FC2215-1 for PFOSA: Associated ID Standard outside control limits.

FC2215-2 for 13C2-4:2FTS: Outside control limits.

FC2215-2 for 13C2-8:2FTS: Outside control limits.

FC2215-2 for 13C2-PFTeDA: Outside control limits.

FC2215-2 for 13C3-HFPO-DA: Outside control limits.

FC2215-2 for 13C3-HFPO-DA: Outside control limits.

FC2215-2 for 13C3-PFBS: Outside control limits.

FC2215-2 for 13C3-PFHxS: Outside control limits.

MS Semi-volatiles By Method EPA 537M QSM5.3 B-15

Matrix: AQ **Batch ID:** OP95219

FC2215-2 for 13C4-PFBA: Outside control limits.

FC2215-2 for 13C4-PFBA: Outside control limits.

FC2215-2 for 13C4-PFHpA: Outside control limits.

FC2215-2 for 13C5-PFHxA: Outside control limits.

FC2215-2 for 13C5-PFPeA: Outside control limits.

FC2215-2 for 13C8-FOSA: Outside control limits.

FC2215-2 for 13C8-FOSA: Outside control limits.

FC2215-2 for HFPO-DA (GenX): Associated ID Standard outside control limits.

FC2215-2 for PFOSA: Associated ID Standard outside control limits.

SGS North America Inc. - Orlando certifies that data reported for samples received, listed on the associated custody chain or analytical task order, were produced to specifications meeting the Quality System precision, accuracy and completeness objectives except as noted. Estimated non-standard method measurement uncertainty data is available on request, based on quality control bias and implicit for standard methods. Acceptable uncertainty requires tested parameter quality control data to meet method criteria. SGS North America Inc.- Orlando is not responsible for data quality assumptions if partial reports are used and recommends that this report be used in its entirety.

Narrative prepared by:

_____

Kim Benham, Client Services *(Signature on File)*

Summary of Hits

Job Number: FC2215
Account: Tetra Tech NUS
Project: KSC-CRCA
Collected: 01/25/23

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	PQL	MDL	Units	Method
FC2215-1	**CRCA-ASEFF20230125**					
Perfluorobutanoic acid		7.72	1.9	0.46	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid		0.0207	0.019	0.0046	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0181 I	0.019	0.0046	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.0080 I	0.019	0.0046	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0208	0.0037	0.00093	ug/l	EPA 537M QSM5.3 B-15
Perfluorononanoic acid		0.0017 I	0.0037	0.00093	ug/l	EPA 537M QSM5.3 B-15
Perfluorodecanoic acid		0.0010 I	0.0037	0.00093	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0053	0.0037	0.00093	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0140	0.0037	0.00093	ug/l	EPA 537M QSM5.3 B-15
FC2215-2	**CRCA-ASINF20230125**					
Vinyl Chloride		2.4	1.0	0.41	ug/l	SW846 8260D
Perfluorobutanoic acid		15.3	1.9	0.46	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid		0.0214	0.019	0.0046	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0178 I	0.019	0.0046	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.0070 I	0.019	0.0046	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0146	0.0037	0.00093	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0067	0.0037	0.00093	ug/l	EPA 537M QSM5.3 B-15

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID:	CRCA-ASEFF20230125		
Lab Sample ID:	FC2215-1	**Date Sampled:**	01/25/23
Matrix:	AQ - Ground Water	**Date Received:**	01/26/23
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	KSC-CRCA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	1P97610.D	1	01/31/23 19:42	JL	n/a	n/a	V1P3675
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL 4.2 List

CAS No.	Compound	Result	PQL	MDL	Units	Q
67-64-1	Acetone	10 U	25	10	ug/l	
71-43-2	Benzene	0.31 U	1.0	0.31	ug/l	
75-27-4	Bromodichloromethane	0.24 U	1.0	0.24	ug/l	
75-25-2	Bromoform	0.41 U	1.0	0.41	ug/l	
78-93-3	2-Butanone (MEK)	2.0 U	5.0	2.0	ug/l	
75-15-0	Carbon Disulfide	0.53 U	2.0	0.53	ug/l	
56-23-5	Carbon Tetrachloride	0.36 U	1.0	0.36	ug/l	
108-90-7	Chlorobenzene	0.20 U	1.0	0.20	ug/l	
75-00-3	Chloroethane	0.67 U	2.0	0.67	ug/l	
67-66-3	Chloroform	0.30 U	1.0	0.30	ug/l	
110-82-7	Cyclohexane	0.39 U	1.0	0.39	ug/l	
124-48-1	Dibromochloromethane	0.28 U	1.0	0.28	ug/l	
96-12-8	1,2-Dibromo-3-chloropropan [a]	1.0 U	5.0	1.0	ug/l	
106-93-4	1,2-Dibromoethane	0.28 U	2.0	0.28	ug/l	
75-71-8	Dichlorodifluoromethane	0.50 U	2.0	0.50	ug/l	
95-50-1	1,2-Dichlorobenzene	0.32 U	1.0	0.32	ug/l	
541-73-1	1,3-Dichlorobenzene	0.22 U	1.0	0.22	ug/l	
106-46-7	1,4-Dichlorobenzene	0.26 U	1.0	0.26	ug/l	
75-34-3	1,1-Dichloroethane	0.34 U	1.0	0.34	ug/l	
107-06-2	1,2-Dichloroethane	0.31 U	1.0	0.31	ug/l	
75-35-4	1,1-Dichloroethylene	0.32 U	1.0	0.32	ug/l	
156-59-2	cis-1,2-Dichloroethylene	0.28 U	1.0	0.28	ug/l	
156-60-5	trans-1,2-Dichloroethylene	0.22 U	1.0	0.22	ug/l	
78-87-5	1,2-Dichloropropane	0.43 U	1.0	0.43	ug/l	
10061-01-5	cis-1,3-Dichloropropene	0.29 U	1.0	0.29	ug/l	
10061-02-6	trans-1,3-Dichloropropene	0.21 U	1.0	0.21	ug/l	
100-41-4	Ethylbenzene	0.36 U	1.0	0.36	ug/l	
76-13-1	Freon 113	0.48 U	1.0	0.48	ug/l	
591-78-6	2-Hexanone	2.0 U	10	2.0	ug/l	
98-82-8	Isopropylbenzene	0.22 U	1.0	0.22	ug/l	
79-20-9	Methyl Acetate	5.0 U	20	5.0	ug/l	
74-83-9	Methyl Bromide [b]	2.0 U	5.0	2.0	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-ASEFF20230125		
Lab Sample ID:	FC2215-1	**Date Sampled:**	01/25/23
Matrix:	AQ - Ground Water	**Date Received:**	01/26/23
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	KSC-CRCA		

VOA TCL 4.2 List

CAS No.	Compound	Result	PQL	MDL	Units	Q
74-87-3	Methyl Chloride	0.50 U	2.0	0.50	ug/l	
108-87-2	Methylcyclohexane	0.44 U	1.0	0.44	ug/l	
75-09-2	Methylene Chloride	2.0 U	5.0	2.0	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	1.0 U	5.0	1.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether [a]	0.23 U	1.0	0.23	ug/l	
100-42-5	Styrene	0.22 U	1.0	0.22	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	0.30 U	1.0	0.30	ug/l	
127-18-4	Tetrachloroethylene	0.22 U	1.0	0.22	ug/l	
108-88-3	Toluene	0.30 U	1.0	0.30	ug/l	
120-82-1	1,2,4-Trichlorobenzene	0.50 U	2.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	0.25 U	1.0	0.25	ug/l	
79-00-5	1,1,2-Trichloroethane	0.47 U	1.0	0.47	ug/l	
79-01-6	Trichloroethylene	0.35 U	1.0	0.35	ug/l	
75-69-4	Trichlorofluoromethane	0.50 U	2.0	0.50	ug/l	
75-01-4	Vinyl Chloride	0.41 U	1.0	0.41	ug/l	
1330-20-7	Xylene (total)	0.72 U	3.0	0.72	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	101%		83-118%
17060-07-0	1,2-Dichloroethane-D4	104%		79-125%
2037-26-5	Toluene-D8	107%		85-112%
460-00-4	4-Bromofluorobenzene	104%		83-118%

(a) Associated BS recovery outside control limits high, sample is ND.
(b) Associated CCV and BS outside control limits high, sample is ND.

U = Not detected MDL = Method Detection Limit
PQL = Practical Quantitation Limit
L = Indicates value exceeds calibration range
I = Result > = MDL but < PQL J = Estimated value
V = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-ASEFF20230125		
Lab Sample ID:	FC2215-1	**Date Sampled:**	01/25/23
Matrix:	AQ - Ground Water	**Date Received:**	01/26/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	KSC-CRCA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3Q72238.D	1	02/04/23 19:24	JL	01/31/23 09:45	OP95219	S3Q989
Run #2	3Q72305.D	5	02/07/23 06:45	JL	01/31/23 09:45	OP95219	S3Q990
Run #3	3Q72306.D	250	02/07/23 07:03	JL	01/31/23 09:45	OP95219	S3Q990

	Initial Volume	Final Volume
Run #1	270 ml	1.0 ml
Run #2	270 ml	1.0 ml
Run #3	270 ml	1.0 ml

CAS No.	Compound	Result	PQL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	7.72 [a]	1.9	0.46	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0207 [b]	0.019	0.0046	ug/l	
307-24-4	Perfluorohexanoic acid	0.0181 [b]	0.019	0.0046	ug/l	I
375-85-9	Perfluoroheptanoic acid	0.0080 [b]	0.019	0.0046	ug/l	I
335-67-1	Perfluorooctanoic acid	0.0208	0.0037	0.00093	ug/l	
375-95-1	Perfluorononanoic acid	0.0017	0.0037	0.00093	ug/l	I
335-76-2	Perfluorodecanoic acid	0.0010	0.0037	0.00093	ug/l	I
2058-94-8	Perfluoroundecanoic acid	0.00093 U	0.0037	0.00093	ug/l	
307-55-1	Perfluorododecanoic acid	0.00093 U	0.0037	0.00093	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.00093 U	0.0037	0.00093	ug/l	
376-06-7	Perfluorotetradecanoic acid [c]	0.0046 U [b]	0.019	0.0046	ug/l	
PERFLUOROALKYLSULFONIC ACIDS						
375-73-5	Perfluorobutanesulfonic acid	0.0046 U [b]	0.019	0.0046	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0046 U [b]	0.019	0.0046	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0053	0.0037	0.00093	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.00093 U	0.0037	0.00093	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0140	0.0037	0.00093	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.00093 U	0.0037	0.00093	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.00093 U	0.0037	0.00093	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA [c]	0.0046 U [b]	0.019	0.0046	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	0.0019 U	0.0074	0.0019	ug/l	
2991-50-6	EtFOSAA	0.0019 U	0.0074	0.0019	ug/l	
FLUOROTELOMER SULFONATES						

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: CRCA-ASEFF20230125
Lab Sample ID: FC2215-1
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: KSC-CRCA

Date Sampled: 01/25/23
Date Received: 01/26/23
Percent Solids: n/a

CAS No.	Compound	Result	PQL	MDL	Units	Q
757124-72-4	4:2 Fluorotelomer sulfonate	0.0093 U [b]	0.037	0.0093	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0019 U	0.0074	0.0019	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0019 U	0.0074	0.0019	ug/l	
NEXT GENERATION PFAS ANALYTES						
13252-13-6	HFPO-DA (GenX)	0.0093 U [b]	0.037	0.0093	ug/l	
919005-14-4	ADONA	0.0019 U	0.0074	0.0019	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0019 U	0.0074	0.0019	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0019 U	0.0074	0.0019	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Run# 3	Limits
	13C4-PFBA	9% [d]	17% [d]	113%	50-150%
	13C5-PFPeA	36% [d]	59%	114%	50-150%
	13C5-PFHxA	39% [d]	59%	115%	50-150%
	13C4-PFHpA	48% [d]	63%	116%	50-150%
	13C8-PFOA	61%	69%	117%	50-150%
	13C9-PFNA	68%	73%	116%	50-150%
	13C6-PFDA	68%	75%	123%	50-150%
	13C7-PFUnDA	62%	65%	113%	50-150%
	13C2-PFDoDA	54%	63%	114%	50-150%
	13C2-PFTeDA	29% [d]	45% [d]	112%	50-150%
	13C3-PFBS	39% [d]	60%	113%	50-150%
	13C3-PFHxS	52%	62%	113%	50-150%
	13C8-PFOS	65%	70%	113%	50-150%
	13C8-FOSA	17% [d]	23% [d]	124%	50-150%
	d3-MeFOSAA	71%	83%	133%	50-150%
	d5-EtFOSAA	69%	83%	143%	50-150%
	13C2-4:2FTS	41% [d]	66%	109%	50-150%
	13C2-6:2FTS	68%	70%	111%	50-150%
	13C2-8:2FTS	53%	59%	94%	50-150%
	13C3-HFPO-DA	40% [d]	56%	111%	50-150%

(a) Result is from Run# 3
(b) Result is from Run# 2
(c) Associated ID Standard outside control limits.
(d) Outside control limits.

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-ASINF20230125		
Lab Sample ID:	FC2215-2	**Date Sampled:**	01/25/23
Matrix:	AQ - Ground Water	**Date Received:**	01/26/23
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	KSC-CRCA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	1P97611.D	1	01/31/23 20:08	JL	n/a	n/a	V1P3675
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL 4.2 List

CAS No.	Compound	Result	PQL	MDL	Units	Q
67-64-1	Acetone	10 U	25	10	ug/l	
71-43-2	Benzene	0.31 U	1.0	0.31	ug/l	
75-27-4	Bromodichloromethane	0.24 U	1.0	0.24	ug/l	
75-25-2	Bromoform	0.41 U	1.0	0.41	ug/l	
78-93-3	2-Butanone (MEK)	2.0 U	5.0	2.0	ug/l	
75-15-0	Carbon Disulfide	0.53 U	2.0	0.53	ug/l	
56-23-5	Carbon Tetrachloride	0.36 U	1.0	0.36	ug/l	
108-90-7	Chlorobenzene	0.20 U	1.0	0.20	ug/l	
75-00-3	Chloroethane	0.67 U	2.0	0.67	ug/l	
67-66-3	Chloroform	0.30 U	1.0	0.30	ug/l	
110-82-7	Cyclohexane	0.39 U	1.0	0.39	ug/l	
124-48-1	Dibromochloromethane	0.28 U	1.0	0.28	ug/l	
96-12-8	1,2-Dibromo-3-chloropropan [a]	1.0 U	5.0	1.0	ug/l	
106-93-4	1,2-Dibromoethane	0.28 U	2.0	0.28	ug/l	
75-71-8	Dichlorodifluoromethane	0.50 U	2.0	0.50	ug/l	
95-50-1	1,2-Dichlorobenzene	0.32 U	1.0	0.32	ug/l	
541-73-1	1,3-Dichlorobenzene	0.22 U	1.0	0.22	ug/l	
106-46-7	1,4-Dichlorobenzene	0.26 U	1.0	0.26	ug/l	
75-34-3	1,1-Dichloroethane	0.34 U	1.0	0.34	ug/l	
107-06-2	1,2-Dichloroethane	0.31 U	1.0	0.31	ug/l	
75-35-4	1,1-Dichloroethylene	0.32 U	1.0	0.32	ug/l	
156-59-2	cis-1,2-Dichloroethylene	0.28 U	1.0	0.28	ug/l	
156-60-5	trans-1,2-Dichloroethylene	0.22 U	1.0	0.22	ug/l	
78-87-5	1,2-Dichloropropane	0.43 U	1.0	0.43	ug/l	
10061-01-5	cis-1,3-Dichloropropene	0.29 U	1.0	0.29	ug/l	
10061-02-6	trans-1,3-Dichloropropene	0.21 U	1.0	0.21	ug/l	
100-41-4	Ethylbenzene	0.36 U	1.0	0.36	ug/l	
76-13-1	Freon 113	0.48 U	1.0	0.48	ug/l	
591-78-6	2-Hexanone	2.0 U	10	2.0	ug/l	
98-82-8	Isopropylbenzene	0.22 U	1.0	0.22	ug/l	
79-20-9	Methyl Acetate	5.0 U	20	5.0	ug/l	
74-83-9	Methyl Bromide [b]	2.0 U	5.0	2.0	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-ASINF20230125		
Lab Sample ID:	FC2215-2	**Date Sampled:**	01/25/23
Matrix:	AQ - Ground Water	**Date Received:**	01/26/23
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	KSC-CRCA		

VOA TCL 4.2 List

CAS No.	Compound	Result	PQL	MDL	Units	Q
74-87-3	Methyl Chloride	0.50 U	2.0	0.50	ug/l	
108-87-2	Methylcyclohexane	0.44 U	1.0	0.44	ug/l	
75-09-2	Methylene Chloride	2.0 U	5.0	2.0	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	1.0 U	5.0	1.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether [a]	0.23 U	1.0	0.23	ug/l	
100-42-5	Styrene	0.22 U	1.0	0.22	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	0.30 U	1.0	0.30	ug/l	
127-18-4	Tetrachloroethylene	0.22 U	1.0	0.22	ug/l	
108-88-3	Toluene	0.30 U	1.0	0.30	ug/l	
120-82-1	1,2,4-Trichlorobenzene	0.50 U	2.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	0.25 U	1.0	0.25	ug/l	
79-00-5	1,1,2-Trichloroethane	0.47 U	1.0	0.47	ug/l	
79-01-6	Trichloroethylene	0.35 U	1.0	0.35	ug/l	
75-69-4	Trichlorofluoromethane	0.50 U	2.0	0.50	ug/l	
75-01-4	Vinyl Chloride	2.4	1.0	0.41	ug/l	
1330-20-7	Xylene (total)	0.72 U	3.0	0.72	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	100%		83-118%
17060-07-0	1,2-Dichloroethane-D4	106%		79-125%
2037-26-5	Toluene-D8	106%		85-112%
460-00-4	4-Bromofluorobenzene	102%		83-118%

(a) Associated BS recovery outside control limits high, sample is ND.
(b) Associated CCV and BS outside control limits high, sample is ND.

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-ASINF20230125		
Lab Sample ID:	FC2215-2	**Date Sampled:**	01/25/23
Matrix:	AQ - Ground Water	**Date Received:**	01/26/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	KSC-CRCA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3Q72239.D	1	02/04/23 19:42	JL	01/31/23 09:45	OP95219	S3Q989
Run #2	3Q72307.D	5	02/07/23 07:21	JL	01/31/23 09:45	OP95219	S3Q990
Run #3	3Q72308.D	250	02/07/23 07:39	JL	01/31/23 09:45	OP95219	S3Q990

	Initial Volume	Final Volume
Run #1	270 ml	1.0 ml
Run #2	270 ml	1.0 ml
Run #3	270 ml	1.0 ml

CAS No.	Compound	Result	PQL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	15.3 [a]	1.9	0.46	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0214 [b]	0.019	0.0046	ug/l	
307-24-4	Perfluorohexanoic acid	0.0178 [b]	0.019	0.0046	ug/l	I
375-85-9	Perfluoroheptanoic acid	0.0070 [b]	0.019	0.0046	ug/l	I
335-67-1	Perfluorooctanoic acid	0.0146	0.0037	0.00093	ug/l	
375-95-1	Perfluorononanoic acid	0.00093 U	0.0037	0.00093	ug/l	
335-76-2	Perfluorodecanoic acid	0.00093 U	0.0037	0.00093	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.00093 U	0.0037	0.00093	ug/l	
307-55-1	Perfluorododecanoic acid	0.00093 U	0.0037	0.00093	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.00093 U	0.0037	0.00093	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0046 U [b]	0.019	0.0046	ug/l	
PERFLUOROALKYLSULFONIC ACIDS						
375-73-5	Perfluorobutanesulfonic acid	0.0046 U [b]	0.019	0.0046	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0046 U [b]	0.019	0.0046	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0046 U [b]	0.019	0.0046	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.00093 U	0.0037	0.00093	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0067	0.0037	0.00093	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.00093 U	0.0037	0.00093	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.00093 U	0.0037	0.00093	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA [c]	0.0046 U [b]	0.019	0.0046	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	0.0019 U	0.0074	0.0019	ug/l	
2991-50-6	EtFOSAA	0.0019 U	0.0074	0.0019	ug/l	
FLUOROTELOMER SULFONATES						

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-ASINF20230125		
Lab Sample ID:	FC2215-2	**Date Sampled:**	01/25/23
Matrix:	AQ - Ground Water	**Date Received:**	01/26/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	KSC-CRCA		

CAS No.	Compound	Result	PQL	MDL	Units	Q
757124-72-4	4:2 Fluorotelomer sulfonate	0.0093 U [b]	0.037	0.0093	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0019 U	0.0074	0.0019	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0019 U	0.0074	0.0019	ug/l	
NEXT GENERATION PFAS ANALYTES						
13252-13-6	HFPO-DA (GenX) [c]	0.0093 U [b]	0.037	0.0093	ug/l	
919005-14-4	ADONA	0.0019 U	0.0074	0.0019	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0019 U	0.0074	0.0019	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0019 U	0.0074	0.0019	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Run# 3	Limits
	13C4-PFBA	19% [d]	42% [d]	114%	50-150%
	13C5-PFPeA	30% [d]	50%	115%	50-150%
	13C5-PFHxA	35% [d]	51%	115%	50-150%
	13C4-PFHpA	43% [d]	56%	116%	50-150%
	13C8-PFOA	55%	61%	120%	50-150%
	13C9-PFNA	60%	64%	117%	50-150%
	13C6-PFDA	60%	63%	125%	50-150%
	13C7-PFUnDA	55%	55%	115%	50-150%
	13C2-PFDoDA	51%	53%	115%	50-150%
	13C2-PFTeDA	47% [d]	53%	115%	50-150%
	13C3-PFBS	33% [d]	51%	114%	50-150%
	13C3-PFHxS	45% [d]	62%	115%	50-150%
	13C8-PFOS	57%	60%	118%	50-150%
	13C8-FOSA	23% [d]	30% [d]	128%	50-150%
	d3-MeFOSAA	71%	70%	134%	50-150%
	d5-EtFOSAA	63%	70%	144%	50-150%
	13C2-4:2FTS	36% [d]	55%	110%	50-150%
	13C2-6:2FTS	60%	59%	113%	50-150%
	13C2-8:2FTS	52%	49% [d]	94%	50-150%
	13C3-HFPO-DA	35% [d]	49% [d]	113%	50-150%

(a) Result is from Run# 3
(b) Result is from Run# 2
(c) Associated ID Standard outside control limits.
(d) Outside control limits.

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody

FC2215

Tetra Tech, Inc.

CHAIN OF CUSTODY | NUMBER No. 2683 | PAGE 1 OF 1

PROJECT NO: 112908970	FACILITY: CRCA	PROJECT MANAGER: ALEX MURPHY	PHONE NUMBER: 321-637-8530	LABORATORY NAME AND CONTACT: SGS
SAMPLERS (SIGNATURE)		FIELD OPERATIONS LEADER: DAN FORESTER	PHONE NUMBER: 304-780-1426	ADDRESS
		CARRIER/WAYBILL NUMBER		CITY, STATE: ORLANDO, FL

STANDARD TAT ☑
RUSH TAT ☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

CONTAINER TYPE PLASTIC (P) or GLASS (G): G P
PRESERVATIVE USED: HCl NA

	DATE YEAR 2023	TIME	SAMPLE ID	LOCATION ID	TOP DEPTH (FT)	BOTTOM DEPTH (FT)	MATRIX (GW, SO, SW, SD, QC, ETC.)	COLLECTION METHOD GRAB (G) COMP (C)	No. OF CONTAINERS	TYPE OF ANALYSIS: VOCs	PFAS	COMMENTS
1	25JAN	0915	CRCA-ASEFF-20230125	CRCA			GW	G	5	3	2	
2	25JAN	0930	CRCA-ASINF-20230125	CRCA			GW	G	5	3	2	

INITIAL ASSESSMENT
LABEL VERIFICATION

	DATE	TIME		DATE	TIME
1. RELINQUISHED BY	25JAN23	0945	1. RECEIVED BY (nsingel TT)	25JAN23	0945
2. RELINQUISHED BY (nsingel)	1-26-23	1105	2. RECEIVED BY	1/26/23	11:05
3. RELINQUISHED BY	1-26-26	1330	3. RECEIVED BY	1/26/23	0930

COMMENTS: 2.9°C

DISTRIBUTION: WHITE (ACCOMPANIES SAMPLE) YELLOW (FIELD COPY) PINK (FILE COPY)

4/02R
FORM NO. TtNUS-001

FC2215: Chain of Custody
Page 1 of 2

SGS Sample Receipt Summary

Job Number: FC2215 **Client:** TETRA TECH, INC. **Project:** 112G08970

Date / Time Received: 1/26/2023 9:30:00 AM **Delivery Method:** FEDEX **Airbill #'s:**

Therm ID: IR 1; **Therm CF:** 0.2; **# of Coolers:** 1

Cooler Temps (Raw Measured) °C: Cooler 1: (2.8);

Cooler Temps (Corrected) °C: Cooler 1: (3.0);

Cooler Information	Y	or	N
1. Custody Seals Present	☑		☐
2. Custody Seals Intact	☑		☐
3. Temp criteria achieved	☑		☐
4. Cooler temp verification	IR Gun		
5. Cooler media	Ice (Bag)		

Trip Blank Information	Y	or	N	N/A
1. Trip Blank present / cooler	☐		☐	☑
2. Trip Blank listed on COC	☐		☐	☑

	W	or	S	N/A
3. Type Of TB Received	☐		☐	☑

Sample Information	Y	or	N	N/A
1. Sample labels present on bottles	☑		☐	
2. Samples preserved properly	☑		☐	
3. Sufficient volume/containers recvd for analysis:	☑		☐	
4. Condition of sample	Intact			
5. Sample recvd within HT	☑		☐	
6. Dates/Times/IDs on COC match Sample Label	☑		☐	
7. VOCs have headspace	☐		☑	☐
8. Bottles received for unspecified tests	☐		☑	
9. Compositing instructions clear	☐		☐	☑
10. Voa Soil Kits/Jars received past 48hrs?	☐		☐	☑
11. % Solids Jar received?	☐		☐	☑
12. Residual Chlorine Present?	☐		☐	☑

Misc. Information

Number of Encores: 25-Gram _____ 5-Gram _____ Number of 5035 Field Kits: _____ Number of Lab Filtered Metals: _____

Test Strip Lot #s: pH 0-3 230315 pH 10-12 219813A Other: (Specify) _____ _____

Residual Chlorine Test Strip Lot #: _____

Comments

SM001
Rev. Date 05/24/17

Technician: CARLOSD Date: 1/26/2023 9:30:00 AM Reviewer: _____ Date: _____

FC2215: Chain of Custody
Page 2 of 2

MS Volatiles

6

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Job Number: FC2215
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V1P3675-MB	1P97596.D	1	01/31/23	JL	n/a	n/a	V1P3675

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

FC2215-1, FC2215-2

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	25	10	ug/l	
71-43-2	Benzene	ND	1.0	0.31	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.24	ug/l	
75-25-2	Bromoform	ND	1.0	0.41	ug/l	
78-93-3	2-Butanone (MEK)	ND	5.0	2.0	ug/l	
75-15-0	Carbon Disulfide	ND	2.0	0.53	ug/l	
56-23-5	Carbon Tetrachloride	ND	1.0	0.36	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.20	ug/l	
75-00-3	Chloroethane	ND	2.0	0.67	ug/l	
67-66-3	Chloroform	ND	1.0	0.30	ug/l	
110-82-7	Cyclohexane	ND	1.0	0.39	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.28	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	5.0	1.0	ug/l	
106-93-4	1,2-Dibromoethane	ND	2.0	0.28	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	0.50	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	0.32	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	0.22	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	0.26	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.34	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.31	ug/l	
75-35-4	1,1-Dichloroethylene	ND	1.0	0.32	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	0.28	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	0.22	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.43	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.29	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.21	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.36	ug/l	
76-13-1	Freon 113	ND	1.0	0.48	ug/l	
591-78-6	2-Hexanone	ND	10	2.0	ug/l	
98-82-8	Isopropylbenzene	ND	1.0	0.22	ug/l	
79-20-9	Methyl Acetate	ND	20	5.0	ug/l	
74-83-9	Methyl Bromide	ND	5.0	2.0	ug/l	
74-87-3	Methyl Chloride	ND	2.0	0.50	ug/l	
108-87-2	Methylcyclohexane	ND	1.0	0.44	ug/l	
75-09-2	Methylene Chloride	ND	5.0	2.0	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	5.0	1.0	ug/l	

Method Blank Summary

Job Number: FC2215
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V1P3675-MB	1P97596.D	1	01/31/23	JL	n/a	n/a	V1P3675

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

FC2215-1, FC2215-2

CAS No.	Compound	Result	RL	MDL	Units	Q
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.23	ug/l	
100-42-5	Styrene	ND	1.0	0.22	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.30	ug/l	
127-18-4	Tetrachloroethylene	ND	1.0	0.22	ug/l	
108-88-3	Toluene	ND	1.0	0.30	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	2.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.25	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.47	ug/l	
79-01-6	Trichloroethylene	ND	1.0	0.35	ug/l	
75-69-4	Trichlorofluoromethane	ND	2.0	0.50	ug/l	
75-01-4	Vinyl Chloride	ND	1.0	0.41	ug/l	
1330-20-7	Xylene (total)	ND	3.0	0.72	ug/l	

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	98%	83-118%
17060-07-0	1,2-Dichloroethane-D4	99%	79-125%
2037-26-5	Toluene-D8	107%	85-112%
460-00-4	4-Bromofluorobenzene	104%	83-118%

Blank Spike Summary

Job Number: FC2215
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V1P3675-BS	1P97594.D	1	01/31/23	JL	n/a	n/a	V1P3675

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

FC2215-1, FC2215-2

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
67-64-1	Acetone	125	140	112	50-147
71-43-2	Benzene	25	27.2	109	81-122
75-27-4	Bromodichloromethane	25	27.4	110	79-123
75-25-2	Bromoform	25	30.3	121	66-123
78-93-3	2-Butanone (MEK)	125	142	114	56-143
75-15-0	Carbon Disulfide	25	27.7	111	66-148
56-23-5	Carbon Tetrachloride	25	30.7	123	76-136
108-90-7	Chlorobenzene	25	26.3	105	82-124
75-00-3	Chloroethane	25	25.2	101	62-144
67-66-3	Chloroform	25	27.1	108	80-124
110-82-7	Cyclohexane	25	27.9	112	73-138
124-48-1	Dibromochloromethane	25	30.5	122	78-122
96-12-8	1,2-Dibromo-3-chloropropane	25	31.8	127*	64-123
106-93-4	1,2-Dibromoethane	25	27.5	110	75-120
75-71-8	Dichlorodifluoromethane	25	29.5	118	42-167
95-50-1	1,2-Dichlorobenzene	25	26.6	106	82-124
541-73-1	1,3-Dichlorobenzene	25	25.9	104	84-125
106-46-7	1,4-Dichlorobenzene	25	25.7	103	78-120
75-34-3	1,1-Dichloroethane	25	25.5	102	81-122
107-06-2	1,2-Dichloroethane	25	26.6	106	75-125
75-35-4	1,1-Dichloroethylene	25	26.6	106	78-137
156-59-2	cis-1,2-Dichloroethylene	25	26.6	106	78-120
156-60-5	trans-1,2-Dichloroethylene	25	26.9	108	76-127
78-87-5	1,2-Dichloropropane	25	28.1	112	76-124
10061-01-5	cis-1,3-Dichloropropene	25	28.9	116	75-118
10061-02-6	trans-1,3-Dichloropropene	25	27.9	112	80-120
100-41-4	Ethylbenzene	25	28.6	114	81-121
76-13-1	Freon 113	25	28.5	114	72-134
591-78-6	2-Hexanone	125	153	122	61-129
98-82-8	Isopropylbenzene	25	27.8	111	83-132
79-20-9	Methyl Acetate	125	144	115	65-126
74-83-9	Methyl Bromide	25	36.8	147*	59-143
74-87-3	Methyl Chloride	25	25.1	100	50-159
108-87-2	Methylcyclohexane	25	27.2	109	76-129
75-09-2	Methylene Chloride	25	25.7	103	69-135
108-10-1	4-Methyl-2-pentanone (MIBK)	125	134	107	66-122

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FC2215
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V1P3675-BS	1P97594.D	1	01/31/23	JL	n/a	n/a	V1P3675

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

FC2215-1, FC2215-2

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
1634-04-4	Methyl Tert Butyl Ether	25	29.6	118*	72-117
100-42-5	Styrene	25	27.2	109	78-119
79-34-5	1,1,2,2-Tetrachloroethane	25	26.5	106	72-120
127-18-4	Tetrachloroethylene	25	26.5	106	76-135
108-88-3	Toluene	25	27.0	108	80-120
120-82-1	1,2,4-Trichlorobenzene	25	27.0	108	73-129
71-55-6	1,1,1-Trichloroethane	25	29.5	118	75-130
79-00-5	1,1,2-Trichloroethane	25	26.4	106	76-119
79-01-6	Trichloroethylene	25	27.5	110	81-126
75-69-4	Trichlorofluoromethane	25	25.9	104	71-156
75-01-4	Vinyl Chloride	25	23.5	94	69-159
1330-20-7	Xylene (total)	75	81.2	108	80-126

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	100%	83-118%
17060-07-0	1,2-Dichloroethane-D4	99%	79-125%
2037-26-5	Toluene-D8	102%	85-112%
460-00-4	4-Bromofluorobenzene	101%	83-118%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FC2215
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
FC2259-3MS	1P97617.D	1	01/31/23	JL	n/a	n/a	V1P3675
FC2259-3MSD	1P97618.D	1	01/31/23	JL	n/a	n/a	V1P3675
FC2259-3	1P97598.D	1	01/31/23	JL	n/a	n/a	V1P3675

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

FC2215-1, FC2215-2

CAS No.	Compound	FC2259-3 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
67-64-1	Acetone	10.9	J	125	114	82	125	108	78	5	50-147/21
71-43-2	Benzene	ND		25	28.8	115	25	28.6	114	1	81-122/14
75-27-4	Bromodichloromethane	ND		25	26.2	105	25	26.9	108	3	79-123/19
75-25-2	Bromoform	ND		25	26.0	104	25	25.7	103	1	66-123/21
78-93-3	2-Butanone (MEK)	ND		125	127	102	125	125	100	2	56-143/18
75-15-0	Carbon Disulfide	ND		25	30.2	121	25	30.6	122	1	66-148/23
56-23-5	Carbon Tetrachloride	ND		25	31.0	124	25	33.5	134	8	76-136/23
108-90-7	Chlorobenzene	ND		25	26.9	108	25	26.3	105	2	82-124/14
75-00-3	Chloroethane	ND		25	29.4	118	25	26.6	106	10	62-144/20
67-66-3	Chloroform	ND		25	27.7	111	25	27.5	110	1	80-124/15
110-82-7	Cyclohexane	ND		25	32.3	129	25	32.2	129	0	73-138/18
124-48-1	Dibromochloromethane	ND		25	27.4	110	25	27.6	110	1	78-122/19
96-12-8	1,2-Dibromo-3-chloropropane	ND		25	28.0	112	25	29.7	119	6	64-123/18
106-93-4	1,2-Dibromoethane	ND		25	25.9	104	25	25.9	104	0	75-120/13
75-71-8	Dichlorodifluoromethane	ND		25	34.1	136	25	33.7	135	1	42-167/19
95-50-1	1,2-Dichlorobenzene	ND		25	26.1	104	25	26.2	105	0	82-124/14
541-73-1	1,3-Dichlorobenzene	ND		25	25.9	104	25	25.7	103	1	84-125/14
106-46-7	1,4-Dichlorobenzene	ND		25	25.6	102	25	26.2	105	2	78-120/15
75-34-3	1,1-Dichloroethane	ND		25	26.3	105	25	27.3	109	4	81-122/15
107-06-2	1,2-Dichloroethane	ND		25	26.6	106	25	26.8	107	1	75-125/14
75-35-4	1,1-Dichloroethylene	ND		25	29.2	117	25	29.4	118	1	78-137/18
156-59-2	cis-1,2-Dichloroethylene	ND		25	27.4	110	25	27.6	110	1	78-120/15
156-60-5	trans-1,2-Dichloroethylene	ND		25	27.9	112	25	28.1	112	1	76-127/17
78-87-5	1,2-Dichloropropane	ND		25	29.0	116	25	29.0	116	0	76-124/14
10061-01-5	cis-1,3-Dichloropropene	ND		25	25.5	102	25	26.2	105	3	75-118/23
10061-02-6	trans-1,3-Dichloropropene	ND		25	25.1	100	25	25.3	101	1	80-120/22
100-41-4	Ethylbenzene	ND		25	29.6	118	25	29.1	116	2	81-121/14
76-13-1	Freon 113	ND		25	33.3	133	25	33.3	133	0	72-134/20
591-78-6	2-Hexanone	ND		125	142	114	125	141	113	1	61-129/18
98-82-8	Isopropylbenzene	ND		25	28.2	113	25	28.1	112	0	83-132/15
79-20-9	Methyl Acetate	ND		125	120	96	125	121	97	1	65-126/18
74-83-9	Methyl Bromide	ND		25	26.3	105	25	29.3	117	11	59-143/19
74-87-3	Methyl Chloride	ND		25	27.1	108	25	27.2	109	0	50-159/19
108-87-2	Methylcyclohexane	ND		25	30.5	122	25	30.7	123	1	76-129/17
75-09-2	Methylene Chloride	ND		25	25.8	103	25	25.9	104	0	69-135/16
108-10-1	4-Methyl-2-pentanone (MIBK)	ND		125	133	106	125	130	104	2	66-122/16

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FC2215
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
FC2259-3MS	1P97617.D	1	01/31/23	JL	n/a	n/a	V1P3675
FC2259-3MSD	1P97618.D	1	01/31/23	JL	n/a	n/a	V1P3675
FC2259-3	1P97598.D	1	01/31/23	JL	n/a	n/a	V1P3675

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

FC2215-1, FC2215-2

CAS No.	Compound	FC2259-3 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
1634-04-4	Methyl Tert Butyl Ether	ND		25	26.9	108	25	27.9	112	4	72-117/14
100-42-5	Styrene	ND		25	27.1	108	25	26.6	106	2	78-119/23
79-34-5	1,1,2,2-Tetrachloroethane	ND		25	26.8	107	25	27.3	109	2	72-120/14
127-18-4	Tetrachloroethylene	ND		25	27.0	108	25	26.4	106	2	76-135/16
108-88-3	Toluene	ND		25	27.7	111	25	28.1	112	1	80-120/14
120-82-1	1,2,4-Trichlorobenzene	ND		25	25.5	102	25	25.7	103	1	73-129/20
71-55-6	1,1,1-Trichloroethane	ND		25	30.4	122	25	31.5	126	4	75-130/16
79-00-5	1,1,2-Trichloroethane	ND		25	26.3	105	25	26.1	104	1	76-119/14
79-01-6	Trichloroethylene	ND		25	27.7	111	25	27.7	111	0	81-126/15
75-69-4	Trichlorofluoromethane	ND		25	30.7	123	25	28.6	114	7	71-156/21
75-01-4	Vinyl Chloride	ND		25	29.1	116	25	27.6	110	5	69-159/18
1330-20-7	Xylene (total)	ND		75	83.1	111	75	82.3	110	1	80-126/15

CAS No.	Surrogate Recoveries	MS	MSD	FC2259-3	Limits
1868-53-7	Dibromofluoromethane	98%	99%	100%	83-118%
17060-07-0	1,2-Dichloroethane-D4	103%	101%	101%	79-125%
2037-26-5	Toluene-D8	99%	99%	108%	85-112%
460-00-4	4-Bromofluorobenzene	97%	102%	107%	83-118%

* = Outside of Control Limits.

MS Semi-volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Instrument Blank

Job Number: FC2215
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S3Q989-IBLK	3Q72161.D	1	02/03/23	JL	n/a	n/a	S3Q989

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC2215-1, FC2215-2

CAS No.	Compound	Result	RL	MDL	Units	Q
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.0010	ug/l	
2355-31-9	MeFOSAA	ND	0.0080	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0080	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
919005-14-4	ADONA	ND	0.0080	0.0020	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.0080	0.0020	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.0080	0.0020	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	103%	50-150%
	13C5-PFPeA	103%	50-150%
	13C5-PFHxA	103%	50-150%
	13C4-PFHpA	104%	50-150%
	13C8-PFOA	106%	50-150%
	13C9-PFNA	105%	50-150%
	13C6-PFDA	106%	50-150%
	13C7-PFUnDA	104%	50-150%
	13C2-PFDoDA	104%	50-150%
	13C2-PFTeDA	102%	50-150%
	13C3-PFBS	102%	50-150%
	13C3-PFHxS	103%	50-150%
	13C8-PFOS	106%	50-150%
	13C8-FOSA	113%	50-150%

Instrument Blank

Job Number: FC2215
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S3Q989-IBLK	3Q72161.D	1	02/03/23	JL	n/a	n/a	S3Q989

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC2215-1, FC2215-2

CAS No.	ID Standard Recoveries		Limits
	d3-MeFOSA	108%	50-150%
	d3-MeFOSAA	104%	50-150%
	d5-EtFOSAA	107%	50-150%
	13C2-4:2FTS	96%	50-150%
	13C2-6:2FTS	98%	50-150%
	13C2-8:2FTS	97%	50-150%
	13C3-HFPO-DA	102%	50-150%

Instrument Blank

Job Number: FC2215
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S3Q990-IBLK	3Q72246.D	1	02/06/23	JL	n/a	n/a	S3Q990

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC2215-1, FC2215-2

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	103%	50-150%
	13C5-PFPeA	105%	50-150%
	13C5-PFHxA	104%	50-150%
	13C4-PFHpA	105%	50-150%
	13C8-PFOA	107%	50-150%
	13C9-PFNA	102%	50-150%
	13C6-PFDA	106%	50-150%
	13C7-PFUnDA	103%	50-150%
	13C2-PFDoDA	103%	50-150%
	13C2-PFTeDA	103%	50-150%
	13C3-PFBS	104%	50-150%
	13C3-PFHxS	104%	50-150%
	13C8-PFOS	103%	50-150%
	13C8-FOSA	101%	50-150%
	d3-MeFOSA	88%	50-150%
	d3-MeFOSAA	109%	50-150%
	d5-EtFOSAA	114%	50-150%
	13C2-4:2FTS	96%	50-150%
	13C2-6:2FTS	95%	50-150%
	13C2-8:2FTS	77%	50-150%
	13C3-HFPO-DA	109%	50-150%

Method Blank Summary

Job Number: FC2215
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP95219-MB	3Q72215.D	1	02/04/23	JL	01/31/23	OP95219	S3Q989

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC2215-1, FC2215-2

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	
2355-31-9	MeFOSAA	ND	0.0080	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0080	0.0020	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	
919005-14-4	ADONA	ND	0.0080	0.0020	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.0080	0.0020	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.0080	0.0020	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	106%	50-150%
	13C5-PFPeA	108%	50-150%
	13C5-PFHxA	107%	50-150%
	13C4-PFHpA	109%	50-150%

Method Blank Summary

Job Number: FC2215
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP95219-MB	3Q72215.D	1	02/04/23	JL	01/31/23	OP95219	S3Q989

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC2215-1, FC2215-2

CAS No.	ID Standard Recoveries		Limits
	13C8-PFOA	111%	50-150%
	13C9-PFNA	110%	50-150%
	13C6-PFDA	104%	50-150%
	13C7-PFUnDA	104%	50-150%
	13C2-PFDoDA	96%	50-150%
	13C2-PFTeDA	90%	50-150%
	13C3-PFBS	108%	50-150%
	13C3-PFHxS	104%	50-150%
	13C8-PFOS	107%	50-150%
	13C8-FOSA	102%	50-150%
	d3-MeFOSAA	110%	50-150%
	d5-EtFOSAA	112%	50-150%
	13C2-4:2FTS	103%	50-150%
	13C2-6:2FTS	109%	50-150%
	13C2-8:2FTS	99%	50-150%
	13C3-HFPO-DA	99%	50-150%

Blank Spike Summary

Job Number: FC2215
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP95219-BS	3Q72214.D	1	02/04/23	JL	01/31/23	OP95219	S3Q989

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC2215-1, FC2215-2

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
375-22-4	Perfluorobutanoic acid	0.08	0.0655	82	73-129
2706-90-3	Perfluoropentanoic acid	0.08	0.0661	83	72-129
307-24-4	Perfluorohexanoic acid	0.08	0.0652	82	72-129
375-85-9	Perfluoroheptanoic acid	0.08	0.0649	81	72-130
335-67-1	Perfluorooctanoic acid	0.08	0.0662	83	71-133
375-95-1	Perfluorononanoic acid	0.08	0.0666	83	69-130
335-76-2	Perfluorodecanoic acid	0.08	0.0666	83	71-129
2058-94-8	Perfluoroundecanoic acid	0.08	0.0671	84	69-133
307-55-1	Perfluorododecanoic acid	0.08	0.0701	88	72-134
72629-94-8	Perfluorotridecanoic acid	0.08	0.0673	84	65-144
376-06-7	Perfluorotetradecanoic acid	0.08	0.0721	90	71-132
375-73-5	Perfluorobutanesulfonic acid	0.08	0.0672	84	72-130
2706-91-4	Perfluoropentanesulfonic acid	0.08	0.0672	84	71-127
355-46-4	Perfluorohexanesulfonic acid	0.08	0.0676	85	68-131
375-92-8	Perfluoroheptanesulfonic acid	0.08	0.0698	87	69-134
1763-23-1	Perfluorooctanesulfonic acid	0.08	0.0669	84	65-140
68259-12-1	Perfluorononanesulfonic acid	0.08	0.0665	83	69-127
335-77-3	Perfluorodecanesulfonic acid	0.08	0.0661	83	53-142
754-91-6	PFOSA	0.08	0.0750	94	67-137
2355-31-9	MeFOSAA	0.08	0.0714	89	65-136
2991-50-6	EtFOSAA	0.08	0.0720	90	61-135
757124-72-4	4:2 Fluorotelomer sulfonate	0.08	0.0667	83	63-143
27619-97-2	6:2 Fluorotelomer sulfonate	0.08	0.0675	84	64-140
39108-34-4	8:2 Fluorotelomer sulfonate	0.08	0.0682	85	67-138
13252-13-6	HFPO-DA (GenX)	0.08	0.0713	89	60-140
919005-14-4	ADONA	0.08	0.0669	84	60-140
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.08	0.0688	86	60-140
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.08	0.0713	89	60-140

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFBA	97%	50-150%
	13C5-PFPeA	97%	50-150%
	13C5-PFHxA	98%	50-150%
	13C4-PFHpA	99%	50-150%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FC2215
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP95219-BS	3Q72214.D	1	02/04/23	JL	01/31/23	OP95219	S3Q989

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC2215-1, FC2215-2

CAS No.	ID Standard Recoveries	BSP	Limits
	13C8-PFOA	100%	50-150%
	13C9-PFNA	99%	50-150%
	13C6-PFDA	94%	50-150%
	13C7-PFUnDA	94%	50-150%
	13C2-PFDoDA	87%	50-150%
	13C2-PFTeDA	81%	50-150%
	13C3-PFBS	96%	50-150%
	13C3-PFHxS	96%	50-150%
	13C8-PFOS	100%	50-150%
	13C8-FOSA	82%	50-150%
	d3-MeFOSAA	99%	50-150%
	d5-EtFOSAA	98%	50-150%
	13C2-4:2FTS	104%	50-150%
	13C2-6:2FTS	103%	50-150%
	13C2-8:2FTS	98%	50-150%
	13C3-HFPO-DA	89%	50-150%

* = Outside of Control Limits.

Matrix Spike Summary

Job Number: FC2215
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP95219-MS	3Q72296.D	20	02/07/23	JL	01/31/23	OP95219	S3Q990
FC2135-48	3Q72231.D	1	02/04/23	JL	01/31/23	OP95219	S3Q989
FC2135-48	3Q72293.D	20	02/07/23	JL	01/31/23	OP95219	S3Q990

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC2215-1, FC2215-2

CAS No.	Compound	FC2135-48 ug/l	Q	Spike ug/l	MS ug/l	MS %	Limits
375-22-4	Perfluorobutanoic acid	0.353		0.16	0.462	68* [a]	73-129
2706-90-3	Perfluoropentanoic acid	0.881 [b]		0.16	0.972	57* [a]	72-129
307-24-4	Perfluorohexanoic acid	1.02 [b]		0.16	1.09	44* [a]	72-129
375-85-9	Perfluoroheptanoic acid	0.470		0.16	0.555	53* [a]	72-130
335-67-1	Perfluorooctanoic acid	0.895 [b]		0.16	0.935	25* [a]	71-133
375-95-1	Perfluorononanoic acid	0.208		0.16	0.336	80	69-130
335-76-2	Perfluorodecanoic acid	0.0249		0.16	0.160	84	71-129
2058-94-8	Perfluoroundecanoic acid	0.0083	U	0.16	0.134	84	69-133
307-55-1	Perfluorododecanoic acid	0.0083	U	0.16	0.137	86	72-134
72629-94-8	Perfluorotridecanoic acid	0.0083	U	0.16	0.125	78	65-144
376-06-7	Perfluorotetradecanoic acid	0.0083	U	0.16	0.132	83	71-132
375-73-5	Perfluorobutanesulfonic acid	0.152		0.16	0.273	76	72-130
2706-91-4	Perfluoropentanesulfonic acid	0.183		0.16	0.304	76	71-127
355-46-4	Perfluorohexanesulfonic acid	1.94 [b]		0.16	2.12	113	68-131
375-92-8	Perfluoroheptanesulfonic acid	0.162		0.16	0.256	59*	69-134
1763-23-1	Perfluorooctanesulfonic acid	14.5 [b]		0.16	13.5	-625* [a]	65-140
68259-12-1	Perfluorononanesulfonic acid	0.0199		0.16	0.249	143*	69-127
335-77-3	Perfluorodecanesulfonic acid	0.0083	U	0.16	0.130	81	53-142
754-91-6	PFOSA	0.0976		0.16	0.209	70	67-137
2355-31-9	MeFOSAA	0.017	U	0.16	0.113	71	65-136
2991-50-6	EtFOSAA	0.33	U [b]	0.16	0.124	78	61-135
757124-72-4	4:2 Fluorotelomer sulfonate	0.0278		0.16	0.166	86	63-143
27619-97-2	6:2 Fluorotelomer sulfonate	1.01 [c]		0.16	0.702	-193* [a]	64-140
39108-34-4	8:2 Fluorotelomer sulfonate	2.17 [c]		0.16	0.936	-771* [a]	67-138
13252-13-6	HFPO-DA (GenX)	0.017	U	0.16	0.136	85	60-140
919005-14-4	ADONA	0.017	U	0.16	0.142	89	60-140
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.017	U	0.16	0.134	84	60-140
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.017	U	0.16	0.129	81	60-140

CAS No.	ID Standard Recoveries	MS	FC2135-48	FC2135-48	Limits
	13C4-PFBA	66%	74%	79%	50-150%
	13C5-PFPeA	65%	73%	81%	50-150%
	13C5-PFHxA	65%	72%	80%	50-150%
	13C4-PFHpA	69%	71%	84%	50-150%

* = Outside of Control Limits.

Matrix Spike Summary

Job Number: FC2215
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP95219-MS	3Q72296.D	20	02/07/23	JL	01/31/23	OP95219	S3Q990
FC2135-48	3Q72231.D	1	02/04/23	JL	01/31/23	OP95219	S3Q989
FC2135-48	3Q72293.D	20	02/07/23	JL	01/31/23	OP95219	S3Q990

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC2215-1, FC2215-2

CAS No.	ID Standard Recoveries	MS	FC2135-48	FC2135-48	Limits
	13C8-PFOA	67%	74%	81%	50-150%
	13C9-PFNA	65%	64%	81%	50-150%
	13C6-PFDA	66%	76%	83%	50-150%
	13C7-PFUnDA	60%	75%	80%	50-150%
	13C2-PFDoDA	59%	71%	77%	50-150%
	13C2-PFTeDA	52%	62%	69%	50-150%
	13C3-PFBS	68%	72%	84%	50-150%
	13C3-PFHxS	63%	71%	87%	50-150%
	13C8-PFOS	64%	50%	78%	50-150%
	13C8-FOSA	66%	74%	91%	50-150%
	d3-MeFOSAA	81%	78%	101%	50-150%
	d5-EtFOSAA	75%	42%* [d]	101%	50-150%
	13C2-4:2FTS	69%	72%	79%	50-150%
	13C2-6:2FTS	130%	134%	157%* [d]	50-150%
	13C2-8:2FTS	172%* [d]	193%* [d]	201%* [d]	50-150%
	13C3-HFPO-DA	71%			50-150%

(a) Outside control limits due to high level in sample relative to spike amount.
(b) Result is from Run #2.
(c) Result is from Run #3.
(d) Outside control limits.

* = Outside of Control Limits.

Duplicate Summary

Job Number: FC2215
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP95219-DUP	3Q72303.D	100	02/07/23	JL	01/31/23	OP95219	S3Q990
FC2135-49	3Q72233.D	1	02/04/23	JL	01/31/23	OP95219	S3Q989
FC2135-49	3Q72299.D	20	02/07/23	JL	01/31/23	OP95219	S3Q990

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC2215-1, FC2215-2

CAS No.	Compound	FC2135-49 ug/l	Q	DUP ug/l	Q	RPD	Limits
375-22-4	Perfluorobutanoic acid	0.986 [a]		0.721	J	31*	30
2706-90-3	Perfluoropentanoic acid	2.69 [a]		2.00		29	30
307-24-4	Perfluorohexanoic acid	13.1 [a]		10.0		27	30
375-85-9	Perfluoroheptanoic acid	1.45 [a]		1.10		27	30
335-67-1	Perfluorooctanoic acid	45.0 [b]		47.2		5	30
375-95-1	Perfluorononanoic acid	0.0581		ND		200*	30
335-76-2	Perfluorodecanoic acid	0.0080	U	ND		nc	30
2058-94-8	Perfluoroundecanoic acid	0.0080	U	ND		nc	30
307-55-1	Perfluorododecanoic acid	0.0080	U	ND		nc	30
72629-94-8	Perfluorotridecanoic acid	0.0080	U	ND		nc	30
376-06-7	Perfluorotetradecanoic acid	0.0080	U	ND		nc	30
375-73-5	Perfluorobutanesulfonic acid	2.68 [a]		2.11		24	30
2706-91-4	Perfluoropentanesulfonic acid	2.23 [a]		1.70		27	30
355-46-4	Perfluorohexanesulfonic acid	22.6 [b]		27.0		18	30
375-92-8	Perfluoroheptanesulfonic acid	0.177		ND		200*	30
1763-23-1	Perfluorooctanesulfonic acid	0.427		0.324	J	27	30
68259-12-1	Perfluorononanesulfonic acid	0.0080	U	ND		nc	30
335-77-3	Perfluorodecanesulfonic acid	0.0080	U	ND		nc	30
754-91-6	PFOSA	0.16	U [a]	ND		nc	30
2355-31-9	MeFOSAA	0.016	U	ND		nc	30
2991-50-6	EtFOSAA	0.016	U	ND		nc	30
757124-72-4	4:2 Fluorotelomer sulfonate	0.016	U	ND		nc	30
27619-97-2	6:2 Fluorotelomer sulfonate	0.80	U [b]	ND		nc	30
39108-34-4	8:2 Fluorotelomer sulfonate	0.0083	J	ND		200*	30
13252-13-6	HFPO-DA (GenX)	0.016	U	ND		nc	30
919005-14-4	ADONA	0.016	U	ND		nc	30
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.016	U	ND		nc	30
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.016	U	ND		nc	30

CAS No.	ID Standard Recoveries	DUP	FC2135-49	FC2135-49	Limits
	13C4-PFBA	116%	58%	50%	50-150%
	13C5-PFPeA	117%	55%	51%	50-150%
	13C5-PFHxA	116%	42%* [c]	51%	50-150%
	13C4-PFHpA	116%	28%* [c]	50%	50-150%

* = Outside of Control Limits.

Duplicate Summary

Job Number: FC2215
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP95219-DUP	3Q72303.D	100	02/07/23	JL	01/31/23	OP95219	S3Q990
FC2135-49	3Q72233.D	1	02/04/23	JL	01/31/23	OP95219	S3Q989
FC2135-49	3Q72299.D	20	02/07/23	JL	01/31/23	OP95219	S3Q990

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC2215-1, FC2215-2

CAS No.	ID Standard Recoveries	DUP	FC2135-49	FC2135-49	Limits
	13C8-PFOA	116%	23%* c	50%	50-150%
	13C9-PFNA	117%	66%	50%	50-150%
	13C6-PFDA	123%	62%	55%	50-150%
	13C7-PFUnDA	115%	61%	50%	50-150%
	13C2-PFDoDA	115%	60%	50%	50-150%
	13C2-PFTeDA	114%	59%	53%	50-150%
	13C3-PFBS	116%	54%	52%	50-150%
	13C3-PFHxS	115%	34%* c	48%* c	50-150%
	13C8-PFOS	117%	62%	54%	50-150%
	13C8-FOSA	126%	13%* c	49%* c	50-150%
	d3-MeFOSAA	136%	64%	64%	50-150%
	d5-EtFOSAA	145%	66%	71%	50-150%
	13C2-4:2FTS	110%	57%	51%	50-150%
	13C2-6:2FTS	108%	16%* c	49%* c	50-150%
	13C2-8:2FTS	94%	59%	43%* c	50-150%
	13C3-HFPO-DA	113%			50-150%

(a) Result is from Run #2.
(b) Result is from Run #3.
(c) Outside control limits.

* = Outside of Control Limits.

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

e-Hardcopy 2.0
Automated Report

Technical Report for

Tetra Tech NUS

KSC-CRCA, FL

112G08970

SGS Job Number: JD59460

Sampling Date: 01/26/23

Report to:

Tetra Tech NUS
661 Andersen Drive Foster Plaza 7
Pittsburgh, PA 15220
amy.thomson@tetratech.com; carrie.stck@tetratech.com;
alex.murphy@tetratech.com
ATTN: Amy Thomson

Total number of pages in report: **500**

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

David Chastain
General Manager

Client Service contact: Jadon Schiller 732-329-0200

Certifications: NJ(12129), NY(10983), CA, CT, FL, IL, IN, KS, KY, LA, MA, MD, ME, MN, NC, OH VAP (CL0056), AK (UST-103), AZ (AZ0786), PA(68-00408), RI, SC, TX, UT, VA, WV

This report shall not be reproduced, except in its entirety, without the written approval of SGS.
Test results relate only to samples analyzed.

SGS is the sole authority for authorizing edits or modifications to this document.
Unauthorized modification of this report is strictly prohibited.
Review standard terms at: http://www.sgs.com/en/terms-and-conditions

Please share your ideas about how we can serve you better at:
EHS.US.CustomerCare@sgs.com

Sections: 1 2 3 4 5 6 7

Table of Contents

Section 1: Sample Summary **3**
Section 2: Case Narrative/Conformance Summary **4**
Section 3: Summary of Hits **5**
Section 4: Sample Results **8**
4.1: JD59460-1: CRCA-AMB02.20230126 9
4.2: JD59460-2: CRCA-AMB01.20230126 12
4.3: JD59460-3: CRCA-VMP01.20230126 15
4.4: JD59460-5: CRCA-VMP04.20230126 18
4.5: JD59460-6: CRCA-VMP02.20230126 21
Section 5: Misc. Forms **24**
5.1: Chain of Custody 25
5.2: Summa Canister and Flow Controller Log 31
5.3: Sample Tracking Chronicle 32
5.4: Internal Chain of Custody 33
5.5: 2021 MDL Study - Method: TO-15 34
Section 6: MS Volatiles - QC Data Summaries **36**
6.1: Method Blank Summary 37
6.2: Blank Spike/Blank Spike Duplicate Summary 49
6.3: Duplicate Summary 61
6.4: Summa Cleaning Certification 64
6.5: Instrument Performance Checks (BFB) 76
6.6: Internal Standard Area Summaries 85
6.7: Initial Calibration RT/ISTD Area Summaries 91
6.8: Surrogate Recovery Summaries 143
6.9: Initial and Continuing Calibration Summaries 144
6.10: Run Sequence Reports 170
Section 7: MS Volatiles - Raw Data **176**
7.1: Samples 177
7.2: Method Blanks 223
7.3: Blank Spike/Blank Spike Duplicates 231
7.4: Duplicates 278
7.5: Summa Cleaning Certifications 285
7.6: Instrument Performance Checks (BFB) 293
7.7: Initial and Continuing Calibrations 305
7.8: Instrument Run Logs 492

SGS North America Inc.

Sample Summary

Tetra Tech NUS

Job No: JD59460

KSC-CRCA, FL
Project No: 112G08970

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
This report contains results reported as ND = Not detected. The following applies:							
Organics ND = Not detected above the MDL							
JD59460-1	01/26/23	16:20	RS	01/27/23	AIR	Ambient Air Comp.	CRCA-AMB02.20230126
JD59460-2	01/26/23	16:15	RS	01/27/23	AIR	Ambient Air Comp.	CRCA-AMB01.20230126
JD59460-3	01/26/23	14:20	RS	01/27/23	AIR	Soil Vapor Comp.	CRCA-VMP01.20230126
JD59460-4	01/26/23	15:35	RS	01/27/23	AIR	Soil Vapor Comp.	CRCA-VMP03.20230126
JD59460-5	01/26/23	16:00	RS	01/27/23	AIR	Soil Vapor Comp.	CRCA-VMP04.20230126
JD59460-6	01/26/23	17:25	RS	01/27/23	AIR	Soil Vapor Comp.	CRCA-VMP02.20230126

CASE NARRATIVE / CONFORMANCE SUMMARY

Client:	Tetra Tech NUS	**Job No:**	JD59460
Site:	KSC-CRCA, FL	**Report Date**	2/9/2023 9:32:16 AM

On 01/27/2023, 5 Sample(s), 0 Trip Blank(s) and 0 Field Blank(s) were received at SGS North America Inc. A SGS North America Inc. Job Number of JD59460 was assigned to the project. Laboratory sample ID, client sample ID and dates of sample collection are detailed in the report's Results Summary Section.

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

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

MS Volatiles By Method TO-15

Matrix: AIR **Batch ID:** V2W2809

- All samples were analyzed within the recommended method holding time.
- Sample(s) JD59460-5DUP were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.
- Blank Spike Recovery(s) for Propylene are outside control limits.
- V2W2809-BS for Propylene: High percent recovery and no associated positive reported in the QC batch.
- JD59460-1 for Propylene: Associated CCV outside of control limits high, sample was ND. This compound in blank spike is outside in house QC limits bias high.
- JD59460-1 for Benzyl Chloride: Associated CCV outside of control limits low.
- JD59460-2 for Propylene: Associated CCV outside of control limits high, sample was ND. This compound in blank spike is outside in house QC limits bias high.
- JD59460-2 for Benzyl Chloride: Associated CCV outside of control limits low.
- JD59460-3 for Propylene: Associated CCV outside of control limits high, sample was ND. This compound in blank spike is outside in house QC limits bias high.
- JD59460-3 for Benzyl Chloride: Associated CCV outside of control limits low.
- JD59460-5 for Propylene: Associated CCV outside of control limits high, sample was ND. This compound in blank spike is outside in house QC limits bias high.
- JD59460-5 for Benzyl Chloride: Associated CCV outside of control limits low.
- JD59460-6 for Propylene: Associated CCV outside of control limits high, sample was ND. This compound in blank spike is outside in house QC limits bias high.
- JD59460-6 for Benzyl Chloride: Associated CCV outside of control limits low.

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

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

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

Summary of Hits

Job Number: JD59460
Account: Tetra Tech NUS
Project: KSC-CRCA, FL
Collected: 01/26/23

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
JD59460-1	**CRCA-AMB02.20230126**					
Acetone (2-Propanone)		2.6	0.20	0.15	ppbv	TO-15
Benzene		0.12 J	0.20	0.062	ppbv	TO-15
Chloromethane		0.74	0.20	0.090	ppbv	TO-15
Dichlorodifluoromethane		0.32	0.20	0.032	ppbv	TO-15
trans-1,2-Dichloroethylene		0.40	0.20	0.069	ppbv	TO-15
Ethanol		1.7	0.50	0.39	ppbv	TO-15
Ethyl Acetate		1.7	0.20	0.10	ppbv	TO-15
Isopropyl Alcohol		27.7	0.20	0.14	ppbv	TO-15
Methylene chloride		0.30	0.20	0.056	ppbv	TO-15
Methyl ethyl ketone		0.27	0.20	0.11	ppbv	TO-15
Toluene		0.12 J	0.20	0.057	ppbv	TO-15
Trichlorofluoromethane		0.17 J	0.20	0.036	ppbv	TO-15
Acetone (2-Propanone)		6.2	0.48	0.36	ug/m3	TO-15
Benzene		0.38 J	0.64	0.20	ug/m3	TO-15
Chloromethane		1.5	0.41	0.19	ug/m3	TO-15
Dichlorodifluoromethane		1.6	0.99	0.16	ug/m3	TO-15
trans-1,2-Dichloroethylene		1.6	0.79	0.27	ug/m3	TO-15
Ethanol		3.2	0.94	0.73	ug/m3	TO-15
Ethyl Acetate		6.1	0.72	0.36	ug/m3	TO-15
Isopropyl Alcohol		68.1	0.49	0.34	ug/m3	TO-15
Methylene chloride		1.0	0.69	0.19	ug/m3	TO-15
Methyl ethyl ketone		0.80	0.59	0.32	ug/m3	TO-15
Toluene		0.45 J	0.75	0.21	ug/m3	TO-15
Trichlorofluoromethane		0.96 J	1.1	0.20	ug/m3	TO-15
JD59460-2	**CRCA-AMB01.20230126**					
Acetone (2-Propanone)		2.3	0.20	0.15	ppbv	TO-15
Benzene		0.11 J	0.20	0.062	ppbv	TO-15
Chloromethane		0.74	0.20	0.090	ppbv	TO-15
Dichlorodifluoromethane		0.32	0.20	0.032	ppbv	TO-15
Ethanol		1.2	0.50	0.39	ppbv	TO-15
Ethyl Acetate		0.42	0.20	0.10	ppbv	TO-15
Isopropyl Alcohol		1.5	0.20	0.14	ppbv	TO-15
Methyl ethyl ketone		0.23	0.20	0.11	ppbv	TO-15
Trichlorofluoromethane		0.17 J	0.20	0.036	ppbv	TO-15
Acetone (2-Propanone)		5.5	0.48	0.36	ug/m3	TO-15
Benzene		0.35 J	0.64	0.20	ug/m3	TO-15
Chloromethane		1.5	0.41	0.19	ug/m3	TO-15
Dichlorodifluoromethane		1.6	0.99	0.16	ug/m3	TO-15
Ethanol		2.3	0.94	0.73	ug/m3	TO-15
Ethyl Acetate		1.5	0.72	0.36	ug/m3	TO-15
Isopropyl Alcohol		3.7	0.49	0.34	ug/m3	TO-15

Summary of Hits

Job Number: JD59460
Account: Tetra Tech NUS
Project: KSC-CRCA, FL
Collected: 01/26/23

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
Methyl ethyl ketone		0.68	0.59	0.32	ug/m3	TO-15
Trichlorofluoromethane		0.96 J	1.1	0.20	ug/m3	TO-15
JD59460-3	**CRCA-VMP01.20230126**					
Acetone (2-Propanone)		3.6	0.80	0.58	ppbv	TO-15
Ethanol		3.1	2.0	1.6	ppbv	TO-15
Ethyl Acetate		0.99	0.80	0.42	ppbv	TO-15
Freon 113		1.2	0.80	0.12	ppbv	TO-15
Isopropyl Alcohol		43.3	0.80	0.56	ppbv	TO-15
Acetone (2-Propanone)		8.6	1.9	1.4	ug/m3	TO-15
Ethanol		5.8	3.8	3.0	ug/m3	TO-15
Ethyl Acetate		3.6	2.9	1.5	ug/m3	TO-15
Freon 113		9.2	6.1	0.92	ug/m3	TO-15
Isopropyl Alcohol		106	2.0	1.4	ug/m3	TO-15
JD59460-5	**CRCA-VMP04.20230126**					
Acetone (2-Propanone)		5.8	0.80	0.58	ppbv	TO-15
Chloroform		2.4	0.80	0.15	ppbv	TO-15
Dichlorodifluoromethane		0.44 J	0.80	0.13	ppbv	TO-15
Ethyl Acetate		1.3	0.80	0.42	ppbv	TO-15
Freon 113		13.7	0.80	0.12	ppbv	TO-15
Isopropyl Alcohol		15.2	0.80	0.56	ppbv	TO-15
Methyl ethyl ketone		0.74 J	0.80	0.44	ppbv	TO-15
Acetone (2-Propanone)		14	1.9	1.4	ug/m3	TO-15
Chloroform		12	3.9	0.73	ug/m3	TO-15
Dichlorodifluoromethane		2.2 J	4.0	0.64	ug/m3	TO-15
Ethyl Acetate		4.7	2.9	1.5	ug/m3	TO-15
Freon 113		105	6.1	0.92	ug/m3	TO-15
Isopropyl Alcohol		37.4	2.0	1.4	ug/m3	TO-15
Methyl ethyl ketone		2.2 J	2.4	1.3	ug/m3	TO-15
JD59460-6	**CRCA-VMP02.20230126**					
Acetone (2-Propanone)		2.2	0.80	0.58	ppbv	TO-15
Chloromethane		0.91	0.80	0.36	ppbv	TO-15
Dichlorodifluoromethane		0.42 J	0.80	0.13	ppbv	TO-15
trans-1,2-Dichloroethylene		0.94	0.80	0.28	ppbv	TO-15
Freon 113		3.9	0.80	0.12	ppbv	TO-15
Isopropyl Alcohol		9.7	0.80	0.56	ppbv	TO-15
Acetone (2-Propanone)		5.2	1.9	1.4	ug/m3	TO-15
Chloromethane		1.9	1.7	0.74	ug/m3	TO-15
Dichlorodifluoromethane		2.1 J	4.0	0.64	ug/m3	TO-15
trans-1,2-Dichloroethylene		3.7	3.2	1.1	ug/m3	TO-15

Summary of Hits

Job Number: JD59460
Account: Tetra Tech NUS
Project: KSC-CRCA, FL
Collected: 01/26/23

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
Freon 113		30	6.1	0.92	ug/m3	TO-15
Isopropyl Alcohol		24	2.0	1.4	ug/m3	TO-15

Sample Results

Report of Analysis

SGS North America Inc.

Report of Analysis

Client Sample ID:	CRCA-AMB02.20230126		
Lab Sample ID:	JD59460-1	**Date Sampled:**	01/26/23
Matrix:	AIR - Ambient Air Comp. Summa ID: A831	**Date Received:**	01/27/23
Method:	TO-15	**Percent Solids:**	n/a
Project:	KSC-CRCA, FL		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2W63190.D	1	02/01/23 15:35	WG	n/a	n/a	V2W2809
Run #2							

	Initial Volume
Run #1	400 ml
Run #2	

VOA TO15 List

CAS No.	MW	Compound	Result	RL	MDL	Units	Q	Result	RL	MDL	Units
67-64-1	58.08	Acetone (2-Propanone)	2.6	0.20	0.15	ppbv		6.2	0.48	0.36	ug/m3
106-99-0	54.09	1,3-Butadiene	ND	0.20	0.084	ppbv		ND	0.44	0.19	ug/m3
71-43-2	78.11	Benzene	0.12	0.20	0.062	ppbv	J	0.38	0.64	0.20	ug/m3
75-27-4	163.8	Bromodichloromethane	ND	0.20	0.030	ppbv		ND	1.3	0.20	ug/m3
75-25-2	252.8	Bromoform	ND	0.20	0.071	ppbv		ND	2.1	0.73	ug/m3
74-83-9	94.94	Bromomethane	ND	0.20	0.069	ppbv		ND	0.78	0.27	ug/m3
593-60-2	106.9	Bromoethene	ND	0.20	0.061	ppbv		ND	0.87	0.27	ug/m3
100-44-7	126	Benzyl Chloride [a]	ND	0.20	0.13	ppbv		ND	1.0	0.67	ug/m3
75-15-0	76.14	Carbon disulfide	ND	0.20	0.045	ppbv		ND	0.62	0.14	ug/m3
108-90-7	112.6	Chlorobenzene	ND	0.20	0.074	ppbv		ND	0.92	0.34	ug/m3
75-00-3	64.52	Chloroethane	ND	0.20	0.068	ppbv		ND	0.53	0.18	ug/m3
67-66-3	119.4	Chloroform	ND	0.20	0.037	ppbv		ND	0.98	0.18	ug/m3
74-87-3	50.49	Chloromethane	0.74	0.20	0.090	ppbv		1.5	0.41	0.19	ug/m3
107-05-1	76.53	3-Chloropropene	ND	0.20	0.083	ppbv		ND	0.63	0.26	ug/m3
95-49-8	126.6	2-Chlorotoluene	ND	0.20	0.072	ppbv		ND	1.0	0.37	ug/m3
56-23-5	153.8	Carbon tetrachloride	ND	0.20	0.040	ppbv		ND	1.3	0.25	ug/m3
110-82-7	84.16	Cyclohexane	ND	0.20	0.11	ppbv		ND	0.69	0.38	ug/m3
75-34-3	98.96	1,1-Dichloroethane	ND	0.20	0.057	ppbv		ND	0.81	0.23	ug/m3
75-35-4	96.94	1,1-Dichloroethylene	ND	0.20	0.059	ppbv		ND	0.79	0.23	ug/m3
106-93-4	187.9	1,2-Dibromoethane (EDB)	ND	0.20	0.097	ppbv		ND	1.5	0.75	ug/m3
107-06-2	98.96	1,2-Dichloroethane	ND	0.20	0.070	ppbv		ND	0.81	0.28	ug/m3
78-87-5	113	1,2-Dichloropropane	ND	0.20	0.062	ppbv		ND	0.92	0.29	ug/m3
123-91-1	88.12	1,4-Dioxane	ND	0.20	0.12	ppbv		ND	0.72	0.43	ug/m3
75-71-8	120.9	Dichlorodifluoromethane	0.32	0.20	0.032	ppbv		1.6	0.99	0.16	ug/m3
124-48-1	208.3	Dibromochloromethane	ND	0.20	0.052	ppbv		ND	1.7	0.44	ug/m3
156-60-5	96.94	trans-1,2-Dichloroethylene	0.40	0.20	0.069	ppbv		1.6	0.79	0.27	ug/m3
156-59-2	96.94	cis-1,2-Dichloroethylene	ND	0.20	0.077	ppbv		ND	0.79	0.31	ug/m3
10061-01-5	111	cis-1,3-Dichloropropene	ND	0.20	0.062	ppbv		ND	0.91	0.28	ug/m3
541-73-1	147	m-Dichlorobenzene	ND	0.20	0.040	ppbv		ND	1.2	0.24	ug/m3
95-50-1	147	o-Dichlorobenzene	ND	0.20	0.15	ppbv		ND	1.2	0.90	ug/m3
106-46-7	147	p-Dichlorobenzene	ND	0.20	0.19	ppbv		ND	1.2	1.1	ug/m3
10061-02-6	111	trans-1,3-Dichloropropene	ND	0.20	0.10	ppbv		ND	0.91	0.45	ug/m3

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

Report of Analysis

Client Sample ID: CRCA-AMB02.20230126
Lab Sample ID: JD59460-1
Matrix: AIR - Ambient Air Comp. Summa ID: A831
Method: TO-15
Project: KSC-CRCA, FL

Date Sampled: 01/26/23
Date Received: 01/27/23
Percent Solids: n/a

VOA TO15 List

CAS No.	MW	Compound	Result	RL	MDL	Units	Q	Result	RL	MDL	Units
64-17-5	46.07	Ethanol	1.7	0.50	0.39	ppbv		3.2	0.94	0.73	ug/m3
100-41-4	106.2	Ethylbenzene	ND	0.20	0.061	ppbv		ND	0.87	0.26	ug/m3
141-78-6	88	Ethyl Acetate	1.7	0.20	0.10	ppbv		6.1	0.72	0.36	ug/m3
622-96-8	120.19	4-Ethyltoluene	ND	0.20	0.095	ppbv		ND	0.98	0.47	ug/m3
76-13-1	187.4	Freon 113	ND	0.20	0.031	ppbv		ND	1.5	0.24	ug/m3
76-14-2	170.9	Freon 114	ND	0.20	0.050	ppbv		ND	1.4	0.35	ug/m3
142-82-5	100.2	Heptane	ND	0.20	0.092	ppbv		ND	0.82	0.38	ug/m3
87-68-3	260.8	Hexachlorobutadiene	ND	0.20	0.062	ppbv		ND	2.1	0.66	ug/m3
110-54-3	86.18	Hexane	ND	0.20	0.11	ppbv		ND	0.70	0.39	ug/m3
591-78-6	100	2-Hexanone	ND	0.20	0.15	ppbv		ND	0.82	0.61	ug/m3
67-63-0	60.1	Isopropyl Alcohol	27.7	0.20	0.14	ppbv		68.1	0.49	0.34	ug/m3
75-09-2	84.94	Methylene chloride	0.30	0.20	0.056	ppbv		1.0	0.69	0.19	ug/m3
78-93-3	72.11	Methyl ethyl ketone	0.27	0.20	0.11	ppbv		0.80	0.59	0.32	ug/m3
108-10-1	100.2	Methyl Isobutyl Ketone	ND	0.20	0.073	ppbv		ND	0.82	0.30	ug/m3
1634-04-4	88.15	Methyl Tert Butyl Ether	ND	0.20	0.080	ppbv		ND	0.72	0.29	ug/m3
80-62-6	100.12	Methylmethacrylate	ND	0.20	0.070	ppbv		ND	0.82	0.29	ug/m3
115-07-1	42	Propylene [b]	ND	0.50	0.14	ppbv		ND	0.86	0.24	ug/m3
100-42-5	104.1	Styrene	ND	0.20	0.12	ppbv		ND	0.85	0.51	ug/m3
71-55-6	133.4	1,1,1-Trichloroethane	ND	0.20	0.037	ppbv		ND	1.1	0.20	ug/m3
79-34-5	167.85	1,1,2,2-Tetrachloroethane	ND	0.20	0.048	ppbv		ND	1.4	0.33	ug/m3
79-00-5	133.4	1,1,2-Trichloroethane	ND	0.20	0.038	ppbv		ND	1.1	0.21	ug/m3
120-82-1	181.5	1,2,4-Trichlorobenzene	ND	0.20	0.12	ppbv		ND	1.5	0.89	ug/m3
95-63-6	120.19	1,2,4-Trimethylbenzene	ND	0.20	0.087	ppbv		ND	0.98	0.43	ug/m3
108-67-8	120.19	1,3,5-Trimethylbenzene	ND	0.20	0.080	ppbv		ND	0.98	0.39	ug/m3
540-84-1	114.2	2,2,4-Trimethylpentane	ND	0.20	0.095	ppbv		ND	0.93	0.44	ug/m3
75-65-0	74.12	Tertiary Butyl Alcohol	ND	0.20	0.093	ppbv		ND	0.61	0.28	ug/m3
127-18-4	165.8	Tetrachloroethylene	ND	0.040	0.014	ppbv		ND	0.27	0.095	ug/m3
109-99-9	72.11	Tetrahydrofuran	ND	0.20	0.090	ppbv		ND	0.59	0.27	ug/m3
108-88-3	92.14	Toluene	0.12	0.20	0.057	ppbv	J	0.45	0.75	0.21	ug/m3
79-01-6	131.4	Trichloroethylene	ND	0.040	0.019	ppbv		ND	0.21	0.10	ug/m3
75-69-4	137.4	Trichlorofluoromethane	0.17	0.20	0.036	ppbv	J	0.96	1.1	0.20	ug/m3
75-01-4	62.5	Vinyl chloride	ND	0.20	0.069	ppbv		ND	0.51	0.18	ug/m3
108-05-4	86	Vinyl Acetate	ND	0.20	0.11	ppbv		ND	0.70	0.39	ug/m3
	106.2	m,p-Xylene	ND	0.20	0.14	ppbv		ND	0.87	0.61	ug/m3
95-47-6	106.2	o-Xylene	ND	0.20	0.077	ppbv		ND	0.87	0.33	ug/m3
1330-20-7	106.2	Xylenes (total)	ND	0.20	0.077	ppbv		ND	0.87	0.33	ug/m3

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	4-Bromofluorobenzene	92%		65-128%

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

Report of Analysis

Client Sample ID:	CRCA-AMB02.20230126		
Lab Sample ID:	JD59460-1	**Date Sampled:**	01/26/23
Matrix:	AIR - Ambient Air Comp. Summa ID: A831	**Date Received:**	01/27/23
Method:	TO-15	**Percent Solids:**	n/a
Project:	KSC-CRCA, FL		

VOA TO15 List

CAS No.	MW	Compound	Result	RL	MDL	Units	Q	Result	RL	MDL	Units

(a) Associated CCV outside of control limits low.
(b) Associated CCV outside of control limits high, sample was ND. This compound in blank spike is outside in house QC limits bias high.

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

SGS North America Inc.

Report of Analysis

Client Sample ID: CRCA-AMB01.20230126
Lab Sample ID: JD59460-2
Matrix: AIR - Ambient Air Comp. Summa ID: A1844
Method: TO-15
Project: KSC-CRCA, FL

Date Sampled: 01/26/23
Date Received: 01/27/23
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2W63191.D	1	02/01/23 16:14	WG	n/a	n/a	V2W2809
Run #2							

	Initial Volume
Run #1	400 ml
Run #2	

VOA TO15 List

CAS No.	MW	Compound	Result	RL	MDL	Units	Q	Result	RL	MDL	Units
67-64-1	58.08	Acetone (2-Propanone)	2.3	0.20	0.15	ppbv		5.5	0.48	0.36	ug/m3
106-99-0	54.09	1,3-Butadiene	ND	0.20	0.084	ppbv		ND	0.44	0.19	ug/m3
71-43-2	78.11	Benzene	0.11	0.20	0.062	ppbv	J	0.35	0.64	0.20	ug/m3
75-27-4	163.8	Bromodichloromethane	ND	0.20	0.030	ppbv		ND	1.3	0.20	ug/m3
75-25-2	252.8	Bromoform	ND	0.20	0.071	ppbv		ND	2.1	0.73	ug/m3
74-83-9	94.94	Bromomethane	ND	0.20	0.069	ppbv		ND	0.78	0.27	ug/m3
593-60-2	106.9	Bromoethene	ND	0.20	0.061	ppbv		ND	0.87	0.27	ug/m3
100-44-7	126	Benzyl Chloride [a]	ND	0.20	0.13	ppbv		ND	1.0	0.67	ug/m3
75-15-0	76.14	Carbon disulfide	ND	0.20	0.045	ppbv		ND	0.62	0.14	ug/m3
108-90-7	112.6	Chlorobenzene	ND	0.20	0.074	ppbv		ND	0.92	0.34	ug/m3
75-00-3	64.52	Chloroethane	ND	0.20	0.068	ppbv		ND	0.53	0.18	ug/m3
67-66-3	119.4	Chloroform	ND	0.20	0.037	ppbv		ND	0.98	0.18	ug/m3
74-87-3	50.49	Chloromethane	0.74	0.20	0.090	ppbv		1.5	0.41	0.19	ug/m3
107-05-1	76.53	3-Chloropropene	ND	0.20	0.083	ppbv		ND	0.63	0.26	ug/m3
95-49-8	126.6	2-Chlorotoluene	ND	0.20	0.072	ppbv		ND	1.0	0.37	ug/m3
56-23-5	153.8	Carbon tetrachloride	ND	0.20	0.040	ppbv		ND	1.3	0.25	ug/m3
110-82-7	84.16	Cyclohexane	ND	0.20	0.11	ppbv		ND	0.69	0.38	ug/m3
75-34-3	98.96	1,1-Dichloroethane	ND	0.20	0.057	ppbv		ND	0.81	0.23	ug/m3
75-35-4	96.94	1,1-Dichloroethylene	ND	0.20	0.059	ppbv		ND	0.79	0.23	ug/m3
106-93-4	187.9	1,2-Dibromoethane (EDB)	ND	0.20	0.097	ppbv		ND	1.5	0.75	ug/m3
107-06-2	98.96	1,2-Dichloroethane	ND	0.20	0.070	ppbv		ND	0.81	0.28	ug/m3
78-87-5	113	1,2-Dichloropropane	ND	0.20	0.062	ppbv		ND	0.92	0.29	ug/m3
123-91-1	88.12	1,4-Dioxane	ND	0.20	0.12	ppbv		ND	0.72	0.43	ug/m3
75-71-8	120.9	Dichlorodifluoromethane	0.32	0.20	0.032	ppbv		1.6	0.99	0.16	ug/m3
124-48-1	208.3	Dibromochloromethane	ND	0.20	0.052	ppbv		ND	1.7	0.44	ug/m3
156-60-5	96.94	trans-1,2-Dichloroethylene	ND	0.20	0.069	ppbv		ND	0.79	0.27	ug/m3
156-59-2	96.94	cis-1,2-Dichloroethylene	ND	0.20	0.077	ppbv		ND	0.79	0.31	ug/m3
10061-01-5	111	cis-1,3-Dichloropropene	ND	0.20	0.062	ppbv		ND	0.91	0.28	ug/m3
541-73-1	147	m-Dichlorobenzene	ND	0.20	0.040	ppbv		ND	1.2	0.24	ug/m3
95-50-1	147	o-Dichlorobenzene	ND	0.20	0.15	ppbv		ND	1.2	0.90	ug/m3
106-46-7	147	p-Dichlorobenzene	ND	0.20	0.19	ppbv		ND	1.2	1.1	ug/m3
10061-02-6	111	trans-1,3-Dichloropropene	ND	0.20	0.10	ppbv		ND	0.91	0.45	ug/m3

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

Report of Analysis

Client Sample ID:	CRCA-AMB01.20230126		
Lab Sample ID:	JD59460-2	**Date Sampled:**	01/26/23
Matrix:	AIR - Ambient Air Comp. Summa ID: A1844	**Date Received:**	01/27/23
Method:	TO-15	**Percent Solids:**	n/a
Project:	KSC-CRCA, FL		

VOA TO15 List

CAS No.	MW	Compound	Result	RL	MDL	Units	Q	Result	RL	MDL	Units
64-17-5	46.07	Ethanol	1.2	0.50	0.39	ppbv		2.3	0.94	0.73	ug/m3
100-41-4	106.2	Ethylbenzene	ND	0.20	0.061	ppbv		ND	0.87	0.26	ug/m3
141-78-6	88	Ethyl Acetate	0.42	0.20	0.10	ppbv		1.5	0.72	0.36	ug/m3
622-96-8	120.19	4-Ethyltoluene	ND	0.20	0.095	ppbv		ND	0.98	0.47	ug/m3
76-13-1	187.4	Freon 113	ND	0.20	0.031	ppbv		ND	1.5	0.24	ug/m3
76-14-2	170.9	Freon 114	ND	0.20	0.050	ppbv		ND	1.4	0.35	ug/m3
142-82-5	100.2	Heptane	ND	0.20	0.092	ppbv		ND	0.82	0.38	ug/m3
87-68-3	260.8	Hexachlorobutadiene	ND	0.20	0.062	ppbv		ND	2.1	0.66	ug/m3
110-54-3	86.18	Hexane	ND	0.20	0.11	ppbv		ND	0.70	0.39	ug/m3
591-78-6	100	2-Hexanone	ND	0.20	0.15	ppbv		ND	0.82	0.61	ug/m3
67-63-0	60.1	Isopropyl Alcohol	1.5	0.20	0.14	ppbv		3.7	0.49	0.34	ug/m3
75-09-2	84.94	Methylene chloride	ND	0.20	0.056	ppbv		ND	0.69	0.19	ug/m3
78-93-3	72.11	Methyl ethyl ketone	0.23	0.20	0.11	ppbv		0.68	0.59	0.32	ug/m3
108-10-1	100.2	Methyl Isobutyl Ketone	ND	0.20	0.073	ppbv		ND	0.82	0.30	ug/m3
1634-04-4	88.15	Methyl Tert Butyl Ether	ND	0.20	0.080	ppbv		ND	0.72	0.29	ug/m3
80-62-6	100.12	Methylmethacrylate	ND	0.20	0.070	ppbv		ND	0.82	0.29	ug/m3
115-07-1	42	Propylene [b]	ND	0.50	0.14	ppbv		ND	0.86	0.24	ug/m3
100-42-5	104.1	Styrene	ND	0.20	0.12	ppbv		ND	0.85	0.51	ug/m3
71-55-6	133.4	1,1,1-Trichloroethane	ND	0.20	0.037	ppbv		ND	1.1	0.20	ug/m3
79-34-5	167.85	1,1,2,2-Tetrachloroethane	ND	0.20	0.048	ppbv		ND	1.4	0.33	ug/m3
79-00-5	133.4	1,1,2-Trichloroethane	ND	0.20	0.038	ppbv		ND	1.1	0.21	ug/m3
120-82-1	181.5	1,2,4-Trichlorobenzene	ND	0.20	0.12	ppbv		ND	1.5	0.89	ug/m3
95-63-6	120.19	1,2,4-Trimethylbenzene	ND	0.20	0.087	ppbv		ND	0.98	0.43	ug/m3
108-67-8	120.19	1,3,5-Trimethylbenzene	ND	0.20	0.080	ppbv		ND	0.98	0.39	ug/m3
540-84-1	114.2	2,2,4-Trimethylpentane	ND	0.20	0.095	ppbv		ND	0.93	0.44	ug/m3
75-65-0	74.12	Tertiary Butyl Alcohol	ND	0.20	0.093	ppbv		ND	0.61	0.28	ug/m3
127-18-4	165.8	Tetrachloroethylene	ND	0.040	0.014	ppbv		ND	0.27	0.095	ug/m3
109-99-9	72.11	Tetrahydrofuran	ND	0.20	0.090	ppbv		ND	0.59	0.27	ug/m3
108-88-3	92.14	Toluene	ND	0.20	0.057	ppbv		ND	0.75	0.21	ug/m3
79-01-6	131.4	Trichloroethylene	ND	0.040	0.019	ppbv		ND	0.21	0.10	ug/m3
75-69-4	137.4	Trichlorofluoromethane	0.17	0.20	0.036	ppbv	J	0.96	1.1	0.20	ug/m3
75-01-4	62.5	Vinyl chloride	ND	0.20	0.069	ppbv		ND	0.51	0.18	ug/m3
108-05-4	86	Vinyl Acetate	ND	0.20	0.11	ppbv		ND	0.70	0.39	ug/m3
	106.2	m,p-Xylene	ND	0.20	0.14	ppbv		ND	0.87	0.61	ug/m3
95-47-6	106.2	o-Xylene	ND	0.20	0.077	ppbv		ND	0.87	0.33	ug/m3
1330-20-7	106.2	Xylenes (total)	ND	0.20	0.077	ppbv		ND	0.87	0.33	ug/m3

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	4-Bromofluorobenzene	93%		65-128%

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

Report of Analysis

Client Sample ID:	CRCA-AMB01.20230126		
Lab Sample ID:	JD59460-2	**Date Sampled:**	01/26/23
Matrix:	AIR - Ambient Air Comp. Summa ID: A1844	**Date Received:**	01/27/23
Method:	TO-15	**Percent Solids:**	n/a
Project:	KSC-CRCA, FL		

VOA TO15 List

CAS No.	MW	Compound	Result	RL	MDL	Units	Q	Result	RL	MDL	Units

(a) Associated CCV outside of control limits low.
(b) Associated CCV outside of control limits high, sample was ND. This compound in blank spike is outside in house QC limits bias high.

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

SGS North America Inc.

Report of Analysis

Client Sample ID:	CRCA-VMP01.20230126		
Lab Sample ID:	JD59460-3	**Date Sampled:**	01/26/23
Matrix:	AIR - Soil Vapor Comp. Summa ID: A347	**Date Received:**	01/27/23
Method:	TO-15	**Percent Solids:**	n/a
Project:	KSC-CRCA, FL		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2W63192.D	1.65	02/01/23 16:49	WG	n/a	n/a	V2W2809
Run #2							

	Initial Volume
Run #1	165 ml
Run #2	

VOA TO15 List

CAS No.	MW	Compound	Result	RL	MDL	Units	Q	Result	RL	MDL	Units
67-64-1	58.08	Acetone (2-Propanone)	3.6	0.80	0.58	ppbv		8.6	1.9	1.4	ug/m3
106-99-0	54.09	1,3-Butadiene	ND	0.80	0.34	ppbv		ND	1.8	0.75	ug/m3
71-43-2	78.11	Benzene	ND	0.80	0.25	ppbv		ND	2.6	0.80	ug/m3
75-27-4	163.8	Bromodichloromethane	ND	0.80	0.12	ppbv		ND	5.4	0.80	ug/m3
75-25-2	252.8	Bromoform	ND	0.80	0.28	ppbv		ND	8.3	2.9	ug/m3
74-83-9	94.94	Bromomethane	ND	0.80	0.28	ppbv		ND	3.1	1.1	ug/m3
593-60-2	106.9	Bromoethene	ND	0.80	0.24	ppbv		ND	3.5	1.0	ug/m3
100-44-7	126	Benzyl Chloride [a]	ND	0.80	0.50	ppbv		ND	4.1	2.6	ug/m3
75-15-0	76.14	Carbon disulfide	ND	0.80	0.18	ppbv		ND	2.5	0.56	ug/m3
108-90-7	112.6	Chlorobenzene	ND	0.80	0.30	ppbv		ND	3.7	1.4	ug/m3
75-00-3	64.52	Chloroethane	ND	0.80	0.27	ppbv		ND	2.1	0.71	ug/m3
67-66-3	119.4	Chloroform	ND	0.80	0.15	ppbv		ND	3.9	0.73	ug/m3
74-87-3	50.49	Chloromethane	ND	0.80	0.36	ppbv		ND	1.7	0.74	ug/m3
107-05-1	76.53	3-Chloropropene	ND	0.80	0.33	ppbv		ND	2.5	1.0	ug/m3
95-49-8	126.6	2-Chlorotoluene	ND	0.80	0.29	ppbv		ND	4.1	1.5	ug/m3
56-23-5	153.8	Carbon tetrachloride	ND	0.80	0.16	ppbv		ND	5.0	1.0	ug/m3
110-82-7	84.16	Cyclohexane	ND	0.80	0.44	ppbv		ND	2.8	1.5	ug/m3
75-34-3	98.96	1,1-Dichloroethane	ND	0.80	0.23	ppbv		ND	3.2	0.93	ug/m3
75-35-4	96.94	1,1-Dichloroethylene	ND	0.80	0.24	ppbv		ND	3.2	0.95	ug/m3
106-93-4	187.9	1,2-Dibromoethane (EDB)	ND	0.80	0.39	ppbv		ND	6.1	3.0	ug/m3
107-06-2	98.96	1,2-Dichloroethane	ND	0.80	0.28	ppbv		ND	3.2	1.1	ug/m3
78-87-5	113	1,2-Dichloropropane	ND	0.80	0.25	ppbv		ND	3.7	1.2	ug/m3
123-91-1	88.12	1,4-Dioxane	ND	0.80	0.47	ppbv		ND	2.9	1.7	ug/m3
75-71-8	120.9	Dichlorodifluoromethane	ND	0.80	0.13	ppbv		ND	4.0	0.64	ug/m3
124-48-1	208.3	Dibromochloromethane	ND	0.80	0.21	ppbv		ND	6.8	1.8	ug/m3
156-60-5	96.94	trans-1,2-Dichloroethylene	ND	0.80	0.28	ppbv		ND	3.2	1.1	ug/m3
156-59-2	96.94	cis-1,2-Dichloroethylene	ND	0.80	0.31	ppbv		ND	3.2	1.2	ug/m3
10061-01-5	111	cis-1,3-Dichloropropene	ND	0.80	0.25	ppbv		ND	3.6	1.1	ug/m3
541-73-1	147	m-Dichlorobenzene	ND	0.80	0.16	ppbv		ND	4.8	0.96	ug/m3
95-50-1	147	o-Dichlorobenzene	ND	0.80	0.62	ppbv		ND	4.8	3.7	ug/m3
106-46-7	147	p-Dichlorobenzene	ND	0.80	0.76	ppbv		ND	4.8	4.6	ug/m3
10061-02-6	111	trans-1,3-Dichloropropene	ND	0.80	0.40	ppbv		ND	3.6	1.8	ug/m3

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

Report of Analysis

Client Sample ID: CRCA-VMP01.20230126
Lab Sample ID: JD59460-3
Matrix: AIR - Soil Vapor Comp. Summa ID: A347
Method: TO-15
Project: KSC-CRCA, FL

Date Sampled: 01/26/23
Date Received: 01/27/23
Percent Solids: n/a

VOA TO15 List

CAS No.	MW	Compound	Result	RL	MDL	Units	Q	Result	RL	MDL	Units
64-17-5	46.07	Ethanol	3.1	2.0	1.6	ppbv		5.8	3.8	3.0	ug/m3
100-41-4	106.2	Ethylbenzene	ND	0.80	0.24	ppbv		ND	3.5	1.0	ug/m3
141-78-6	88	Ethyl Acetate	0.99	0.80	0.42	ppbv		3.6	2.9	1.5	ug/m3
622-96-8	120.19	4-Ethyltoluene	ND	0.80	0.38	ppbv		ND	3.9	1.9	ug/m3
76-13-1	187.4	Freon 113	1.2	0.80	0.12	ppbv		9.2	6.1	0.92	ug/m3
76-14-2	170.9	Freon 114	ND	0.80	0.20	ppbv		ND	5.6	1.4	ug/m3
142-82-5	100.2	Heptane	ND	0.80	0.37	ppbv		ND	3.3	1.5	ug/m3
87-68-3	260.8	Hexachlorobutadiene	ND	0.80	0.25	ppbv		ND	8.5	2.7	ug/m3
110-54-3	86.18	Hexane	ND	0.80	0.45	ppbv		ND	2.8	1.6	ug/m3
591-78-6	100	2-Hexanone	ND	0.80	0.58	ppbv		ND	3.3	2.4	ug/m3
67-63-0	60.1	Isopropyl Alcohol	43.3	0.80	0.56	ppbv		106	2.0	1.4	ug/m3
75-09-2	84.94	Methylene chloride	ND	0.80	0.22	ppbv		ND	2.8	0.76	ug/m3
78-93-3	72.11	Methyl ethyl ketone	ND	0.80	0.44	ppbv		ND	2.4	1.3	ug/m3
108-10-1	100.2	Methyl Isobutyl Ketone	ND	0.80	0.29	ppbv		ND	3.3	1.2	ug/m3
1634-04-4	88.15	Methyl Tert Butyl Ether	ND	0.80	0.32	ppbv		ND	2.9	1.2	ug/m3
80-62-6	100.12	Methylmethacrylate	ND	0.80	0.28	ppbv		ND	3.3	1.1	ug/m3
115-07-1	42	Propylene [b]	ND	2.0	0.57	ppbv		ND	3.4	0.98	ug/m3
100-42-5	104.1	Styrene	ND	0.80	0.47	ppbv		ND	3.4	2.0	ug/m3
71-55-6	133.4	1,1,1-Trichloroethane	ND	0.80	0.15	ppbv		ND	4.4	0.82	ug/m3
79-34-5	167.85	1,1,2,2-Tetrachloroethane	ND	0.80	0.19	ppbv		ND	5.5	1.3	ug/m3
79-00-5	133.4	1,1,2-Trichloroethane	ND	0.80	0.15	ppbv		ND	4.4	0.82	ug/m3
120-82-1	181.5	1,2,4-Trichlorobenzene	ND	0.80	0.48	ppbv		ND	5.9	3.6	ug/m3
95-63-6	120.19	1,2,4-Trimethylbenzene	ND	0.80	0.35	ppbv		ND	3.9	1.7	ug/m3
108-67-8	120.19	1,3,5-Trimethylbenzene	ND	0.80	0.32	ppbv		ND	3.9	1.6	ug/m3
540-84-1	114.2	2,2,4-Trimethylpentane	ND	0.80	0.38	ppbv		ND	3.7	1.8	ug/m3
75-65-0	74.12	Tertiary Butyl Alcohol	ND	0.80	0.37	ppbv		ND	2.4	1.1	ug/m3
127-18-4	165.8	Tetrachloroethylene	ND	0.16	0.056	ppbv		ND	1.1	0.38	ug/m3
109-99-9	72.11	Tetrahydrofuran	ND	0.80	0.36	ppbv		ND	2.4	1.1	ug/m3
108-88-3	92.14	Toluene	ND	0.80	0.23	ppbv		ND	3.0	0.87	ug/m3
79-01-6	131.4	Trichloroethylene	ND	0.16	0.076	ppbv		ND	0.86	0.41	ug/m3
75-69-4	137.4	Trichlorofluoromethane	ND	0.80	0.14	ppbv		ND	4.5	0.79	ug/m3
75-01-4	62.5	Vinyl chloride	ND	0.80	0.28	ppbv		ND	2.0	0.72	ug/m3
108-05-4	86	Vinyl Acetate	ND	0.80	0.45	ppbv		ND	2.8	1.6	ug/m3
	106.2	m,p-Xylene	ND	0.80	0.56	ppbv		ND	3.5	2.4	ug/m3
95-47-6	106.2	o-Xylene	ND	0.80	0.31	ppbv		ND	3.5	1.3	ug/m3
1330-20-7	106.2	Xylenes (total)	ND	0.80	0.31	ppbv		ND	3.5	1.3	ug/m3

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	4-Bromofluorobenzene	93%		65-128%

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

Report of Analysis

Client Sample ID:	CRCA-VMP01.20230126		
Lab Sample ID:	JD59460-3	**Date Sampled:**	01/26/23
Matrix:	AIR - Soil Vapor Comp. Summa ID: A347	**Date Received:**	01/27/23
Method:	TO-15	**Percent Solids:**	n/a
Project:	KSC-CRCA, FL		

VOA TO15 List

CAS No.	MW	Compound	Result	RL	MDL	Units	Q	Result	RL	MDL	Units

(a) Associated CCV outside of control limits low.
(b) Associated CCV outside of control limits high, sample was ND. This compound in blank spike is outside in house QC limits bias high.

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

SGS North America Inc.

Report of Analysis

Client Sample ID:	CRCA-VMP04.20230126		
Lab Sample ID:	JD59460-5	**Date Sampled:**	01/26/23
Matrix:	AIR - Soil Vapor Comp. Summa ID: A279	**Date Received:**	01/27/23
Method:	TO-15	**Percent Solids:**	n/a
Project:	KSC-CRCA, FL		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2W63193.D	1.55	02/01/23 17:23	WG	n/a	n/a	V2W2809
Run #2							

	Initial Volume
Run #1	155 ml
Run #2	

VOA TO15 List

CAS No.	MW	Compound	Result	RL	MDL	Units	Q	Result	RL	MDL	Units
67-64-1	58.08	Acetone (2-Propanone)	5.8	0.80	0.58	ppbv		14	1.9	1.4	ug/m3
106-99-0	54.09	1,3-Butadiene	ND	0.80	0.34	ppbv		ND	1.8	0.75	ug/m3
71-43-2	78.11	Benzene	ND	0.80	0.25	ppbv		ND	2.6	0.80	ug/m3
75-27-4	163.8	Bromodichloromethane	ND	0.80	0.12	ppbv		ND	5.4	0.80	ug/m3
75-25-2	252.8	Bromoform	ND	0.80	0.28	ppbv		ND	8.3	2.9	ug/m3
74-83-9	94.94	Bromomethane	ND	0.80	0.28	ppbv		ND	3.1	1.1	ug/m3
593-60-2	106.9	Bromoethene	ND	0.80	0.24	ppbv		ND	3.5	1.0	ug/m3
100-44-7	126	Benzyl Chloride [a]	ND	0.80	0.50	ppbv		ND	4.1	2.6	ug/m3
75-15-0	76.14	Carbon disulfide	ND	0.80	0.18	ppbv		ND	2.5	0.56	ug/m3
108-90-7	112.6	Chlorobenzene	ND	0.80	0.30	ppbv		ND	3.7	1.4	ug/m3
75-00-3	64.52	Chloroethane	ND	0.80	0.27	ppbv		ND	2.1	0.71	ug/m3
67-66-3	119.4	Chloroform	2.4	0.80	0.15	ppbv		12	3.9	0.73	ug/m3
74-87-3	50.49	Chloromethane	ND	0.80	0.36	ppbv		ND	1.7	0.74	ug/m3
107-05-1	76.53	3-Chloropropene	ND	0.80	0.33	ppbv		ND	2.5	1.0	ug/m3
95-49-8	126.6	2-Chlorotoluene	ND	0.80	0.29	ppbv		ND	4.1	1.5	ug/m3
56-23-5	153.8	Carbon tetrachloride	ND	0.80	0.16	ppbv		ND	5.0	1.0	ug/m3
110-82-7	84.16	Cyclohexane	ND	0.80	0.44	ppbv		ND	2.8	1.5	ug/m3
75-34-3	98.96	1,1-Dichloroethane	ND	0.80	0.23	ppbv		ND	3.2	0.93	ug/m3
75-35-4	96.94	1,1-Dichloroethylene	ND	0.80	0.24	ppbv		ND	3.2	0.95	ug/m3
106-93-4	187.9	1,2-Dibromoethane (EDB)	ND	0.80	0.39	ppbv		ND	6.1	3.0	ug/m3
107-06-2	98.96	1,2-Dichloroethane	ND	0.80	0.28	ppbv		ND	3.2	1.1	ug/m3
78-87-5	113	1,2-Dichloropropane	ND	0.80	0.25	ppbv		ND	3.7	1.2	ug/m3
123-91-1	88.12	1,4-Dioxane	ND	0.80	0.47	ppbv		ND	2.9	1.7	ug/m3
75-71-8	120.9	Dichlorodifluoromethane	0.44	0.80	0.13	ppbv	J	2.2	4.0	0.64	ug/m3
124-48-1	208.3	Dibromochloromethane	ND	0.80	0.21	ppbv		ND	6.8	1.8	ug/m3
156-60-5	96.94	trans-1,2-Dichloroethylene	ND	0.80	0.28	ppbv		ND	3.2	1.1	ug/m3
156-59-2	96.94	cis-1,2-Dichloroethylene	ND	0.80	0.31	ppbv		ND	3.2	1.2	ug/m3
10061-01-5	111	cis-1,3-Dichloropropene	ND	0.80	0.25	ppbv		ND	3.6	1.1	ug/m3
541-73-1	147	m-Dichlorobenzene	ND	0.80	0.16	ppbv		ND	4.8	0.96	ug/m3
95-50-1	147	o-Dichlorobenzene	ND	0.80	0.62	ppbv		ND	4.8	3.7	ug/m3
106-46-7	147	p-Dichlorobenzene	ND	0.80	0.76	ppbv		ND	4.8	4.6	ug/m3
10061-02-6	111	trans-1,3-Dichloropropene	ND	0.80	0.40	ppbv		ND	3.6	1.8	ug/m3

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

Report of Analysis

Client Sample ID: CRCA-VMP04.20230126
Lab Sample ID: JD59460-5
Matrix: AIR - Soil Vapor Comp. Summa ID: A279
Method: TO-15
Project: KSC-CRCA, FL

Date Sampled: 01/26/23
Date Received: 01/27/23
Percent Solids: n/a

VOA TO15 List

CAS No.	MW	Compound	Result	RL	MDL	Units	Q	Result	RL	MDL	Units
64-17-5	46.07	Ethanol	ND	2.0	1.6	ppbv		ND	3.8	3.0	ug/m3
100-41-4	106.2	Ethylbenzene	ND	0.80	0.24	ppbv		ND	3.5	1.0	ug/m3
141-78-6	88	Ethyl Acetate	1.3	0.80	0.42	ppbv		4.7	2.9	1.5	ug/m3
622-96-8	120.19	4-Ethyltoluene	ND	0.80	0.38	ppbv		ND	3.9	1.9	ug/m3
76-13-1	187.4	Freon 113	13.7	0.80	0.12	ppbv		105	6.1	0.92	ug/m3
76-14-2	170.9	Freon 114	ND	0.80	0.20	ppbv		ND	5.6	1.4	ug/m3
142-82-5	100.2	Heptane	ND	0.80	0.37	ppbv		ND	3.3	1.5	ug/m3
87-68-3	260.8	Hexachlorobutadiene	ND	0.80	0.25	ppbv		ND	8.5	2.7	ug/m3
110-54-3	86.18	Hexane	ND	0.80	0.45	ppbv		ND	2.8	1.6	ug/m3
591-78-6	100	2-Hexanone	ND	0.80	0.58	ppbv		ND	3.3	2.4	ug/m3
67-63-0	60.1	Isopropyl Alcohol	15.2	0.80	0.56	ppbv		37.4	2.0	1.4	ug/m3
75-09-2	84.94	Methylene chloride	ND	0.80	0.22	ppbv		ND	2.8	0.76	ug/m3
78-93-3	72.11	Methyl ethyl ketone	0.74	0.80	0.44	ppbv	J	2.2	2.4	1.3	ug/m3
108-10-1	100.2	Methyl Isobutyl Ketone	ND	0.80	0.29	ppbv		ND	3.3	1.2	ug/m3
1634-04-4	88.15	Methyl Tert Butyl Ether	ND	0.80	0.32	ppbv		ND	2.9	1.2	ug/m3
80-62-6	100.12	Methylmethacrylate	ND	0.80	0.28	ppbv		ND	3.3	1.1	ug/m3
115-07-1	42	Propylene [b]	ND	2.0	0.57	ppbv		ND	3.4	0.98	ug/m3
100-42-5	104.1	Styrene	ND	0.80	0.47	ppbv		ND	3.4	2.0	ug/m3
71-55-6	133.4	1,1,1-Trichloroethane	ND	0.80	0.15	ppbv		ND	4.4	0.82	ug/m3
79-34-5	167.85	1,1,2,2-Tetrachloroethane	ND	0.80	0.19	ppbv		ND	5.5	1.3	ug/m3
79-00-5	133.4	1,1,2-Trichloroethane	ND	0.80	0.15	ppbv		ND	4.4	0.82	ug/m3
120-82-1	181.5	1,2,4-Trichlorobenzene	ND	0.80	0.48	ppbv		ND	5.9	3.6	ug/m3
95-63-6	120.19	1,2,4-Trimethylbenzene	ND	0.80	0.35	ppbv		ND	3.9	1.7	ug/m3
108-67-8	120.19	1,3,5-Trimethylbenzene	ND	0.80	0.32	ppbv		ND	3.9	1.6	ug/m3
540-84-1	114.2	2,2,4-Trimethylpentane	ND	0.80	0.38	ppbv		ND	3.7	1.8	ug/m3
75-65-0	74.12	Tertiary Butyl Alcohol	ND	0.80	0.37	ppbv		ND	2.4	1.1	ug/m3
127-18-4	165.8	Tetrachloroethylene	ND	0.16	0.056	ppbv		ND	1.1	0.38	ug/m3
109-99-9	72.11	Tetrahydrofuran	ND	0.80	0.36	ppbv		ND	2.4	1.1	ug/m3
108-88-3	92.14	Toluene	ND	0.80	0.23	ppbv		ND	3.0	0.87	ug/m3
79-01-6	131.4	Trichloroethylene	ND	0.16	0.076	ppbv		ND	0.86	0.41	ug/m3
75-69-4	137.4	Trichlorofluoromethane	ND	0.80	0.14	ppbv		ND	4.5	0.79	ug/m3
75-01-4	62.5	Vinyl chloride	ND	0.80	0.28	ppbv		ND	2.0	0.72	ug/m3
108-05-4	86	Vinyl Acetate	ND	0.80	0.45	ppbv		ND	2.8	1.6	ug/m3
	106.2	m,p-Xylene	ND	0.80	0.56	ppbv		ND	3.5	2.4	ug/m3
95-47-6	106.2	o-Xylene	ND	0.80	0.31	ppbv		ND	3.5	1.3	ug/m3
1330-20-7	106.2	Xylenes (total)	ND	0.80	0.31	ppbv		ND	3.5	1.3	ug/m3

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	4-Bromofluorobenzene	94%		65-128%

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

Report of Analysis

Client Sample ID:	CRCA-VMP04.20230126		
Lab Sample ID:	JD59460-5	**Date Sampled:**	01/26/23
Matrix:	AIR - Soil Vapor Comp. Summa ID: A279	**Date Received:**	01/27/23
Method:	TO-15	**Percent Solids:**	n/a
Project:	KSC-CRCA, FL		

VOA TO15 List

CAS No.	MW	Compound	Result	RL	MDL	Units	Q	Result	RL	MDL	Units

(a) Associated CCV outside of control limits low.
(b) Associated CCV outside of control limits high, sample was ND. This compound in blank spike is outside in house QC limits bias high.

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

SGS North America Inc.

Report of Analysis

Client Sample ID:	CRCA-VMP02.20230126		
Lab Sample ID:	JD59460-6	**Date Sampled:**	01/26/23
Matrix:	AIR - Soil Vapor Comp. Summa ID: A467	**Date Received:**	01/27/23
Method:	TO-15	**Percent Solids:**	n/a
Project:	KSC-CRCA, FL		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2W63195.D	1	02/01/23 18:31	WG	n/a	n/a	V2W2809
Run #2							

	Initial Volume
Run #1	100 ml
Run #2	

VOA TO15 List

CAS No.	MW	Compound	Result	RL	MDL	Units	Q	Result	RL	MDL	Units
67-64-1	58.08	Acetone (2-Propanone)	2.2	0.80	0.58	ppbv		5.2	1.9	1.4	ug/m3
106-99-0	54.09	1,3-Butadiene	ND	0.80	0.34	ppbv		ND	1.8	0.75	ug/m3
71-43-2	78.11	Benzene	ND	0.80	0.25	ppbv		ND	2.6	0.80	ug/m3
75-27-4	163.8	Bromodichloromethane	ND	0.80	0.12	ppbv		ND	5.4	0.80	ug/m3
75-25-2	252.8	Bromoform	ND	0.80	0.28	ppbv		ND	8.3	2.9	ug/m3
74-83-9	94.94	Bromomethane	ND	0.80	0.28	ppbv		ND	3.1	1.1	ug/m3
593-60-2	106.9	Bromoethene	ND	0.80	0.24	ppbv		ND	3.5	1.0	ug/m3
100-44-7	126	Benzyl Chloride [a]	ND	0.80	0.50	ppbv		ND	4.1	2.6	ug/m3
75-15-0	76.14	Carbon disulfide	ND	0.80	0.18	ppbv		ND	2.5	0.56	ug/m3
108-90-7	112.6	Chlorobenzene	ND	0.80	0.30	ppbv		ND	3.7	1.4	ug/m3
75-00-3	64.52	Chloroethane	ND	0.80	0.27	ppbv		ND	2.1	0.71	ug/m3
67-66-3	119.4	Chloroform	ND	0.80	0.15	ppbv		ND	3.9	0.73	ug/m3
74-87-3	50.49	Chloromethane	0.91	0.80	0.36	ppbv		1.9	1.7	0.74	ug/m3
107-05-1	76.53	3-Chloropropene	ND	0.80	0.33	ppbv		ND	2.5	1.0	ug/m3
95-49-8	126.6	2-Chlorotoluene	ND	0.80	0.29	ppbv		ND	4.1	1.5	ug/m3
56-23-5	153.8	Carbon tetrachloride	ND	0.80	0.16	ppbv		ND	5.0	1.0	ug/m3
110-82-7	84.16	Cyclohexane	ND	0.80	0.44	ppbv		ND	2.8	1.5	ug/m3
75-34-3	98.96	1,1-Dichloroethane	ND	0.80	0.23	ppbv		ND	3.2	0.93	ug/m3
75-35-4	96.94	1,1-Dichloroethylene	ND	0.80	0.24	ppbv		ND	3.2	0.95	ug/m3
106-93-4	187.9	1,2-Dibromoethane (EDB)	ND	0.80	0.39	ppbv		ND	6.1	3.0	ug/m3
107-06-2	98.96	1,2-Dichloroethane	ND	0.80	0.28	ppbv		ND	3.2	1.1	ug/m3
78-87-5	113	1,2-Dichloropropane	ND	0.80	0.25	ppbv		ND	3.7	1.2	ug/m3
123-91-1	88.12	1,4-Dioxane	ND	0.80	0.47	ppbv		ND	2.9	1.7	ug/m3
75-71-8	120.9	Dichlorodifluoromethane	0.42	0.80	0.13	ppbv	J	2.1	4.0	0.64	ug/m3
124-48-1	208.3	Dibromochloromethane	ND	0.80	0.21	ppbv		ND	6.8	1.8	ug/m3
156-60-5	96.94	trans-1,2-Dichloroethylene	0.94	0.80	0.28	ppbv		3.7	3.2	1.1	ug/m3
156-59-2	96.94	cis-1,2-Dichloroethylene	ND	0.80	0.31	ppbv		ND	3.2	1.2	ug/m3
10061-01-5	111	cis-1,3-Dichloropropene	ND	0.80	0.25	ppbv		ND	3.6	1.1	ug/m3
541-73-1	147	m-Dichlorobenzene	ND	0.80	0.16	ppbv		ND	4.8	0.96	ug/m3
95-50-1	147	o-Dichlorobenzene	ND	0.80	0.62	ppbv		ND	4.8	3.7	ug/m3
106-46-7	147	p-Dichlorobenzene	ND	0.80	0.76	ppbv		ND	4.8	4.6	ug/m3
10061-02-6	111	trans-1,3-Dichloropropene	ND	0.80	0.40	ppbv		ND	3.6	1.8	ug/m3

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

Report of Analysis

Client Sample ID: CRCA-VMP02.20230126
Lab Sample ID: JD59460-6
Matrix: AIR - Soil Vapor Comp. Summa ID: A467
Method: TO-15
Project: KSC-CRCA, FL

Date Sampled: 01/26/23
Date Received: 01/27/23
Percent Solids: n/a

VOA TO15 List

CAS No.	MW	Compound	Result	RL	MDL	Units	Q	Result	RL	MDL	Units
64-17-5	46.07	Ethanol	ND	2.0	1.6	ppbv		ND	3.8	3.0	ug/m3
100-41-4	106.2	Ethylbenzene	ND	0.80	0.24	ppbv		ND	3.5	1.0	ug/m3
141-78-6	88	Ethyl Acetate	ND	0.80	0.42	ppbv		ND	2.9	1.5	ug/m3
622-96-8	120.19	4-Ethyltoluene	ND	0.80	0.38	ppbv		ND	3.9	1.9	ug/m3
76-13-1	187.4	Freon 113	3.9	0.80	0.12	ppbv		30	6.1	0.92	ug/m3
76-14-2	170.9	Freon 114	ND	0.80	0.20	ppbv		ND	5.6	1.4	ug/m3
142-82-5	100.2	Heptane	ND	0.80	0.37	ppbv		ND	3.3	1.5	ug/m3
87-68-3	260.8	Hexachlorobutadiene	ND	0.80	0.25	ppbv		ND	8.5	2.7	ug/m3
110-54-3	86.18	Hexane	ND	0.80	0.45	ppbv		ND	2.8	1.6	ug/m3
591-78-6	100	2-Hexanone	ND	0.80	0.58	ppbv		ND	3.3	2.4	ug/m3
67-63-0	60.1	Isopropyl Alcohol	9.7	0.80	0.56	ppbv		24	2.0	1.4	ug/m3
75-09-2	84.94	Methylene chloride	ND	0.80	0.22	ppbv		ND	2.8	0.76	ug/m3
78-93-3	72.11	Methyl ethyl ketone	ND	0.80	0.44	ppbv		ND	2.4	1.3	ug/m3
108-10-1	100.2	Methyl Isobutyl Ketone	ND	0.80	0.29	ppbv		ND	3.3	1.2	ug/m3
1634-04-4	88.15	Methyl Tert Butyl Ether	ND	0.80	0.32	ppbv		ND	2.9	1.2	ug/m3
80-62-6	100.12	Methylmethacrylate	ND	0.80	0.28	ppbv		ND	3.3	1.1	ug/m3
115-07-1	42	Propylene [b]	ND	2.0	0.57	ppbv		ND	3.4	0.98	ug/m3
100-42-5	104.1	Styrene	ND	0.80	0.47	ppbv		ND	3.4	2.0	ug/m3
71-55-6	133.4	1,1,1-Trichloroethane	ND	0.80	0.15	ppbv		ND	4.4	0.82	ug/m3
79-34-5	167.85	1,1,2,2-Tetrachloroethane	ND	0.80	0.19	ppbv		ND	5.5	1.3	ug/m3
79-00-5	133.4	1,1,2-Trichloroethane	ND	0.80	0.15	ppbv		ND	4.4	0.82	ug/m3
120-82-1	181.5	1,2,4-Trichlorobenzene	ND	0.80	0.48	ppbv		ND	5.9	3.6	ug/m3
95-63-6	120.19	1,2,4-Trimethylbenzene	ND	0.80	0.35	ppbv		ND	3.9	1.7	ug/m3
108-67-8	120.19	1,3,5-Trimethylbenzene	ND	0.80	0.32	ppbv		ND	3.9	1.6	ug/m3
540-84-1	114.2	2,2,4-Trimethylpentane	ND	0.80	0.38	ppbv		ND	3.7	1.8	ug/m3
75-65-0	74.12	Tertiary Butyl Alcohol	ND	0.80	0.37	ppbv		ND	2.4	1.1	ug/m3
127-18-4	165.8	Tetrachloroethylene	ND	0.16	0.056	ppbv		ND	1.1	0.38	ug/m3
109-99-9	72.11	Tetrahydrofuran	ND	0.80	0.36	ppbv		ND	2.4	1.1	ug/m3
108-88-3	92.14	Toluene	ND	0.80	0.23	ppbv		ND	3.0	0.87	ug/m3
79-01-6	131.4	Trichloroethylene	ND	0.16	0.076	ppbv		ND	0.86	0.41	ug/m3
75-69-4	137.4	Trichlorofluoromethane	ND	0.80	0.14	ppbv		ND	4.5	0.79	ug/m3
75-01-4	62.5	Vinyl chloride	ND	0.80	0.28	ppbv		ND	2.0	0.72	ug/m3
108-05-4	86	Vinyl Acetate	ND	0.80	0.45	ppbv		ND	2.8	1.6	ug/m3
	106.2	m,p-Xylene	ND	0.80	0.56	ppbv		ND	3.5	2.4	ug/m3
95-47-6	106.2	o-Xylene	ND	0.80	0.31	ppbv		ND	3.5	1.3	ug/m3
1330-20-7	106.2	Xylenes (total)	ND	0.80	0.31	ppbv		ND	3.5	1.3	ug/m3

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	4-Bromofluorobenzene	93%		65-128%

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

Report of Analysis

Client Sample ID:	CRCA-VMP02.20230126		
Lab Sample ID:	JD59460-6	**Date Sampled:**	01/26/23
Matrix:	AIR - Soil Vapor Comp. Summa ID: A467	**Date Received:**	01/27/23
Method:	TO-15	**Percent Solids:**	n/a
Project:	KSC-CRCA, FL		

VOA TO15 List

CAS No.	MW	Compound	Result	RL	MDL	Units	Q	Result	RL	MDL	Units

(a) Associated CCV outside of control limits low.
(b) Associated CCV outside of control limits high, sample was ND. This compound in blank spike is outside in house QC limits bias high.

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

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody
- Summa Canister and Flow Controller Log
- Sample Tracking Chronicle
- Internal Chain of Custody
- 2021 MDL Study - Method: TO-15

CHAIN OF CUSTODY - AIR

PAGE 1 OF 2

AIR

SGS North America Inc. - Dayton
2235 Route 130, Dayton, NJ 08810
TEL. 732-329-0200 FAX 732-329-3499
www.sgs.com/ehsusa

FED-EX Tracking #: | Bottle Order Control #: JSD117623-184
SGS Quote #: | SGS Job #: JD 59460

Client / Reporting Information

Company Name: Tetra Tech
Address: 1353 N Courtenay Pkwy Suite 5
City: Merritt Island State: FL Zip: 32953
Project Contact: Alex Murphy E-mail:
Phone #: 321-637-8530
Sampler(s) Name(s): Robert Siegel

Project Information

Project Name: KSC-NASA-CRCA
Street:
City: State: FL
Project #: 112 60 8970
Client Purchase Order #:

Weather Parameters

Temperature (Fahrenheit)
Start: 0815 Maximum: 70.0
Stop: 1725 Minimum: 65.0
Atmoshpheric Pressure (inches of Hg)
Start: 0815 Maximum: 30.15
Stop: 1725 Minimum: 29.91
Other weather comment: Clear 0705-ph

Requested Analysis

Lab Sample #	Field ID / Point of Collection	Air Type: Ind (I) Soil Vap (SV) Amb (A)	Air Type: Res (R) Non-Res (NR)	Sampling Equipment Info: Canister Serial #	Sampling Equipment Info: Canister Size 6L or 1L	Sampling Equipment Info: Flow Controller Serial #	Start Sampling Information: Date	Start: Time (24hr clock)	Start: Canister Pressure ("Hg)	Start: Interior Temp (F)	Start: Sampler Init.	Stop Sampling Information: Date	Stop: Time (24hr clock)	Stop: Canister Pressure ("Hg)	Stop: Interior Temp (F)	Stop: Sampler Init.
1	CRCA-AMB02-20230126	A	NR	A831	6	FC1294	01.26.23	0825	-30.0	62.0	RS	012623	1620	-6.0	65.0	RS
2	CRCA-AMB01-20230126	A	NR	A844	6	FC1282	01.26.23	0815	-30.0	62.0	RS	012623	1615	-7.0	65.0	RS
3	CRCA-VMP01-20230126	SV	NR	A347	6	FC1250	01.26.23	1320	-30.0	65.0	RS	012623	1420	-11.0	65.0	RS
4	CRCA-VMP03-20230126	SV	NR	M048	6	FC1241	012623	1435	-30.0	70.0	RS	01.26.23	1535	-6.0	70.0	RS
5	CRCA-VMP04-20230126	SV	NR	A279	6	FC1248	01.26.23	1500	-30.0	70.0	RS	01.26.23	1600	-10.0	70.0	RS
6	CRCA-VMP02-20230126	SV	NR	A467	6	FC1236	012623	1625	-30.0	70.0	RS	01.26.23	1725	-7.0	70.0	RS

Turnaround Time (Business days)

- 15 Business Days
- 10 Business Days
- 5 Business Days
- 3 Business Days *
- 2 Business Days *
- 1 Business Day *
- Other

Approved By:
Date:
* Approval needed for 1-3 Business Day TAT

Data Deliverable Information

All NJDEP TO-15 is mandatory Full T1

- Comm A
- Comm B
- Reduced T2
- Full T1
- Other:
- DKQP reporting

Comments / Remarks

Sample inventory is verified upon receipt in the Laboratory

Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished by Laboratory: 1	Date / Time: 1/26/23 1640	Received By: 1	Relinquished By: 2	Date / Time: 1/27/23 0900	Received By: 2
Relinquished by: 3	Date / Time:	Received By: 3	Relinquished By: 4	Date / Time:	Received By: 4
Relinquished by: 5	Date / Time:	Received By: 5	Custody Seal #		

http://www.sgs.com/en/terms-and-conditions

Initial Assessment UB

Label Verification

EHSA-QAC-0022-01-FORM-Dayton-Air COC
Rev.date:1/15/2021

JD 59460

Tetra Tech, Inc. CHAIN OF CUSTODY | NUMBER No. 1719 | PAGE 2 OF 2

PROJECT NO: 112G08970	FACILITY: KSC NASA CRCA	PROJECT MANAGER Alex Murphy	PHONE NUMBER 321-637-8530	LABORATORY NAME AND CONTACT: SGS N America
SAMPLERS (SIGNATURE) Robert Siegel IT		FIELD OPERATIONS LEADER Chuck Sorden	PHONE NUMBER 321-591-7580	ADDRESS 2235 Route 130
		CARRIER/WAYBILL NUMBER Bottle Order # JJ.O11623.184		CITY, STATE Dayton NJ 08810

STANDARD TAT ☒ RUSH TAT ☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

	DATE YEAR 2023	TIME	SAMPLE ID	LOCATION ID	TOP DEPTH (FT) Start	BOTTOM DEPTH (FT) End	MATRIX (GW, SO, SW, SD, QC, ETC.) A=Air SV=Soil Vap	COLLECTION METHOD GRAB (G) COMP (C)	No. OF CONTAINERS	CONTAINER TYPE S=Steel PLASTIC (P) or GLASS (G)	PRESERVATIVE USED	TYPE OF ANALYSIS VTO 15 STD	Start Time	Start Press "Hg Vac	Start Temp	End Time	End Pressure "Hg Vac	End Temp	Size L/Hr Reg/C	COMMENTS
1	01/26	1620	CRCA-AMB0002-20230126	A2	0825	1620	A	C	1	S	None	X	0825	-30.0	62°	1620	-6.0	65.0	6/8	Reg # FC1294 Tank # AB31
2	01/26	1615	CRCA-AMB0001-20230126	A1	0815	1615	A	C	1	S	None	X	0815	-30.0	62°	1615	-7.0	65.0°	6/8	Reg # FC1282 Tank # A1844
3	01/26	1420	CRCA-VMP01-20230126	V1	1320	1420	SV	C	1	S	None	X	1320	-30.0	65°	1420	-11.0	65.0	6/1	Reg # FC1250 Tank # A347
4	01/26	1535	CRCA-VMP03-20230126	V3	1435	1535	SV	C	1	S	None	X	1435	-30.0	70°	1535	-6.0	70.0°	6/1	Reg # FC1241 Tank # M048
5	01/26	1600	CRCA-VMP04-20230126	V4	1500	1600	SV	C	1	S	None	X	1500	-30.0	70°	1600	-10.0	70.0	6/1	Reg # FC1248 Tank # A279
6	01/26	1725	CRCA-VMP02-20230126	V2	1625	1725	SV	C	1	S	None	X	1625	-30.0	65.0°	1725	-7.0	70.0	6/1	Reg # FC1236 Tank # A587

1. RELINQUISHED BY Robert Siegel	DATE 1.27.23	TIME 0900	1. RECEIVED BY JD	DATE	TIME
2. RELINQUISHED BY	DATE	TIME	2. RECEIVED BY	DATE	TIME
3. RELINQUISHED BY	DATE	TIME	3. RECEIVED BY	DATE	TIME

COMMENTS

DISTRIBUTION: WHITE (ACCOMPANIES SAMPLE) YELLOW (FIELD COPY) PINK (FILE COPY) 4/02R FORM NO. TtNUS-001

SGS Sample Receipt Summary

Job Number: JD59460 **Client:** TETRA TECH NUS **Project:** KSC-CRCA

Date / Time Received: 1/30/2023 9:00:00 AM **Delivery Method:** **Airbill #'s:**

Cooler Temps (Raw Measured) °C:

Cooler Temps (Corrected) °C:

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

Cooler Temperature	Y	or	N
1. Temp criteria achieved:	☐		☐
2. Cooler temp verification:	N/A		
3. Cooler media:	N/A		
4. No. Coolers:	N/A		

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

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

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

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

Test Strip Lot #s: pH 1-12: 231619 pH 12+: 203117A Other: (Specify)

Comments: 1.) No Analysis marked on COC Please confirm.

Responded to by: Michelle

Response Date: 1/31

Please run for VTO15STD per b/o link

Job Change Order: JD59460

Requested Date:	2/2/2023	**Received Date:**	1/27/2023
Account Name:	Tetra Tech NUS	**Due Date:**	2/2/2023
Project Description:	KSC-CRCA	**Deliverable:**	COMMB
C/O Initiated By:	JADONS **PM:** JBS	**TAT (Days):**	7

==========

Sample #: JD59460-4 **Dept:** AIR

Client ID: CRCA-VMP03.20230126 **TAT:** 7

Change: Please cancel VTO15STD due to valve following off canister in the lab when loading onto auto sampler.

Above Changes Per: Jadon Schiller **Date/Time:** 2/2/2023

To Client: This Change Order is confirmation of the revisions, previously discussed with the Client Service Representative.

Job Change Order: JD59460

Requested Date:	2/8/2023	**Received Date:**	1/27/2023
Account Name:	Tetra Tech NUS	**Due Date:**	2/8/2023
Project Description:	KSC-CRCA, FL	**Deliverable:**	COMMB
C/O Initiated By:	JADONS **PM:** JBS	**TAT (Days):**	1

==========

Sample #: JD59460-ALL **Dept:** RP

Client ID: **TAT:** 1

Change: Please upgrade deliverable to FULT1 and reissue the report.

Above Changes Per: Carrie Stock **Date/Time:** 2/8/2023

To Client: This Change Order is confirmation of the revisions, previously discussed with the Client Service Representative.

JD59460: Chain of Custody
Page 6 of 6

Summa Canister and Flow Controller Log

Job Number: JD59460
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL
Received: 01/27/23

SUMMA CANISTERS

Shipping							Receiving					
Summa ID	L	Vac " Hg	Date Out	By	SCC Batch	SCC FileID	Sample Number	Date In	By	Vac " Hg	Pres psig	Final psig	Dil Fact
A831	6	29.4	01/17/23	DG	CP11924	6W26997.D	JD59460-1	01/31/23	DG	5.5			1
A1844	6	29.4	01/17/23	DG	CP11963	6W27325.D	JD59460-2	01/31/23	DG	6			1
A347	6	29.4	01/17/23	DG	CP11961	6W27128.D	JD59460-3	01/31/23	DG	10.5		1	1.65
M048	6	29.4	01/17/23	DG	CP11961	6W27128.D	JD59460-4	01/31/23	DG	0			1
A279	6	29.4	01/17/23	DG	CP11914	6W26998.D	JD59460-5	01/31/23	DG	9		1.3	1.56
A467	6	29.4	01/17/23	DG	CP11914	6W26998.D	JD59460-6	01/31/23	DG	6.5			1

FLOW CONTROLLERS / OTHER

Shipping					Receiving				
Flow Crtl ID	Date Out	By	cc/ min	Time hrs.	Date In	By	cc/ min	Flow RPD	Equipment Type
FC1236	01/17/23	DG	83	1	01/31/23	ML	85	2.4	Flow Controller
FC1241	01/17/23	DG	83	1	01/31/23	ML	85	2.4	Flow Controller
FC1248	01/17/23	DG	83	1	01/31/23	ML	85	2.4	Flow Controller
FC1250	01/17/23	DG	84	1	01/31/23	ML	86	2.4	Flow Controller
FC1282	01/17/23	DG	10.4	8	01/31/23	ML	10.41	0.1	Flow Controller
FC1294	01/17/23	DG	10.3	8	01/31/23	ML	10.4	1	Flow Controller

SGS Bottle Order(s):
JS-011623-184

Prep Date	Room Temp(F)	Bar Pres "Hg
01/17/23	70	29.92

Internal Sample Tracking Chronicle

Tetra Tech NUS

Job No: JD59460

KSC-CRCA, FL
Project No: 112G08970

Sample Number	Method	Analyzed	By	Prepped	By	Test Codes
JD59460-1	Collected: 26-JAN-23 16:20 By: RS		Received: 27-JAN-23 By: JP			
CRCA-AMB02.20230126						
JD59460-1	TO-15	01-FEB-23 15:35	WG			VTO15STD
JD59460-2	Collected: 26-JAN-23 16:15 By: RS		Received: 27-JAN-23 By: JP			
CRCA-AMB01.20230126						
JD59460-2	TO-15	01-FEB-23 16:14	WG			VTO15STD
JD59460-3	Collected: 26-JAN-23 14:20 By: RS		Received: 27-JAN-23 By: JP			
CRCA-VMP01.20230126						
JD59460-3	TO-15	01-FEB-23 16:49	WG			VTO15STD
JD59460-5	Collected: 26-JAN-23 16:00 By: RS		Received: 27-JAN-23 By: JP			
CRCA-VMP04.20230126						
JD59460-5	TO-15	01-FEB-23 17:23	WG			VTO15STD
JD59460-6	Collected: 26-JAN-23 17:25 By: RS		Received: 27-JAN-23 By: JP			
CRCA-VMP02.20230126						
JD59460-6	TO-15	01-FEB-23 18:31	WG			VTO15STD

SGS Internal Chain of Custody

Job Number: JD59460
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL
Received: 01/27/23

Sample.Bottle Number	Transfer FROM	Transfer TO	Date/Time	Reason
JD59460-1.1	Joshua Reitan	Secured Storage	01/30/23 19:32	Return to Storage
JD59460-1.2	Joshua Reitan	Secured Storage	01/30/23 19:32	Return to Storage
JD59460-2.1	Joshua Reitan	Secured Storage	01/30/23 19:32	Return to Storage
JD59460-2.2	Joshua Reitan	Secured Storage	01/30/23 19:32	Return to Storage
JD59460-3.1	Joshua Reitan	Secured Storage	01/30/23 19:32	Return to Storage
JD59460-3.2	Joshua Reitan	Secured Storage	01/30/23 19:32	Return to Storage
JD59460-4.1	Joshua Reitan	Secured Storage	01/30/23 19:32	Return to Storage
JD59460-4.2	Joshua Reitan	Secured Storage	01/30/23 19:32	Return to Storage
JD59460-5.1	Joshua Reitan	Secured Storage	01/30/23 19:32	Return to Storage
JD59460-5.2	Joshua Reitan	Secured Storage	01/30/23 19:32	Return to Storage
JD59460-6.1	Joshua Reitan	Secured Storage	01/30/23 19:32	Return to Storage
JD59460-6.2	Joshua Reitan	Secured Storage	01/30/23 19:32	Return to Storage

SGS North America Inc.-Dayton laboratory
TO-15 FINAL MDL for 2020-2021

METHODRI	LOGINNUM	SPEC_MAT	SAMPLENUM	CLIENTID	MEASUREDATE	INSTRUME	PARM_STO	PARM_SYN	FINAL MDL	RDLVALUE	COMMENT	UNITS
TO-15	JD18443D	STYA	JD18443D-4D	MDLV : 0.04 PPBV 2W	12/30/21 4:00	GCMS2W	120-82-1	1,2,4-Trichlorobenzene	0.121	0.2	2W Q-4	! ppbv
TO-15	JD18443D	STYA	JD18443D-4D	MDLV : 0.04 PPBV 2W	12/30/21 4:00	GCMS2W	541-73-1	m-Dichlorobenzene	0.04	0.2	2W Q-4	! ppbv
TO-15	JD18443D	STYA	JD18443D-4D	MDLV : 0.04 PPBV 2W	12/30/21 4:00	GCMS2W	91-20-3	Naphthalene	0.127	0.2	2W Q-4	! ppbv
TO-15	JD18443D	STYA	JD18443D-4D	MDLV : 0.04 PPBV 2W	12/30/21 4:00	GCMS2W	127-18-4	Tetrachloroethylene	0.014	0.04	2W Q-4	! ppbv
TO-15	JD18443D	STYA	JD18443D-4D	MDLV : 0.04 PPBV 2W	12/30/21 4:00	GCMS2W	79-01-6	Trichloroethylene	0.019	0.04	2W Q-4	! ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2 PPBV 5W	12/30/21 5:36	GCMS5W	630-20-6	1,1,1,2-Tetrachloroethane	0.042	0.2	5W Q-4	! ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2 PPBV 5W	12/30/21 5:36	GCMS5W	71-55-6	1,1,1-Trichloroethane	0.037	0.2	5W Q-4	! ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2 PPBV 5W	12/30/21 5:36	GCMS5W	79-34-5	1,1,2,2-Tetrachloroethane	0.048	0.2	5W Q-4	! ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2 PPBV 5W	12/30/21 5:36	GCMS5W	79-00-5	1,1,2-Trichloroethane	0.038	0.2	5W Q-4	! ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2 PPBV 5W	12/30/21 5:36	GCMS5W	75-34-3	1,1-Dichloroethane	0.057	0.2	5W Q-4	! ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2 PPBV 5W	12/30/21 5:36	GCMS5W	75-35-4	1,1-Dichloroethylene	0.059	0.2	5W Q-4	! ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2 PPBV 5W	12/30/21 5:36	GCMS5W	96-18-4	1,2,3-Trichloropropane	0.05	0.2	5W Q-4	! ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2 PPBV 5W	12/30/21 5:36	GCMS5W	526-73-8	1,2,3-Trimethylbenzene	0.099	0.2	5W Q-4	! ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2 PPBV 5W	12/30/21 5:36	GCMS5W	95-63-6	1,2,4-Trimethylbenzene	0.087	0.2	5W Q-4	! ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2 PPBV 5W	12/30/21 5:36	GCMS5W	106-93-4	1,2-Dibromoethane (EDB)	0.097	0.2	5W Q-4	! ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2 PPBV 5W	12/30/21 5:36	GCMS5W	107-06-2	1,2-Dichloroethane	0.07	0.2	5W Q-4	! ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2 PPBV 5W	12/30/21 5:36	GCMS5W	78-87-5	1,2-Dichloropropane	0.062	0.2	5W Q-4	! ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2 PPBV 5W	12/30/21 5:36	GCMS5W	108-67-8	1,3,5-Trimethylbenzene	0.062	0.2	5W Q-4	! ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2 PPBV 5W	12/30/21 5:36	GCMS5W	106-99-0	1,3-Butadiene	0.084	0.2	5W Q-4	! ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2 PPBV 5W	12/30/21 5:36	GCMS5W	142-28-9	1,3-Dichloropropane	0.057	0.2	5W Q-4	! ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2 PPBV 5W	12/30/21 5:36	GCMS5W	123-91-1	1,4-Dioxane	0.117	0.2	5W Q-4	! ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2 PPBV 5W	12/30/21 5:36	GCMS5W	540-84-1	2,2,4-Trimethylpentane	0.095	0.2	5W Q-4	! ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2 PPBV 5W	12/30/21 5:36	GCMS5W	565-59-3	2,3-Dimethylpentane	0.089	0.2	5W Q-4	! ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2 PPBV 5W	12/30/21 5:36	GCMS5W	108-08-7	2,4-Dimethylpentane	0.104	0.2	5W Q-4	! ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2 PPBV 5W	12/30/21 5:36	GCMS5W	95-49-8	2-Chlorotoluene	0.072	0.2	5W Q-4	! ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2 PPBV 5W	12/30/21 5:36	GCMS5W	591-78-6	2-Hexanone	0.145	0.2	5W Q-4	! ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2 PPBV 5W	12/30/21 5:36	GCMS5W	107-05-1	3-Chloropropene	0.083	0.2	5W Q-4	! ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2 PPBV 5W	12/30/21 5:36	GCMS5W	622-96-8	4-Ethyltoluene	0.095	0.2	5W Q-4	! ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2 PPBV 5W	12/30/21 5:36	GCMS5W	67-64-1	Acetone (2-Propanone)	0.145	0.2	5W Q-4	! ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2 PPBV 5W	12/30/21 5:36	GCMS5W	75-05-8	Acetonitrile	0.171	0.2	5W Q-4	! ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2 PPBV 5W	12/30/21 5:36	GCMS5W	107-02-8	Acrolein	0.0883	0.2	5W Q-4	! ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2 PPBV 5W	12/30/21 5:36	GCMS5W	107-13-1	Acrylonitrile	0.091	0.2	5W Q-4	! ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2 PPBV 5W	12/30/21 5:36	GCMS5W	71-43-2	Benzene	0.062	0.2	5W Q-4	! ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2 PPBV 5W	12/30/21 5:36	GCMS5W	100-44-7	Benzyl Chloride	0.125	0.2	5W Q-4	! ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2 PPBV 5W	12/30/21 5:36	GCMS5W	108-86-1	Bromobenzene	0.154	0.2	5W Q-4	! ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2 PPBV 5W	12/30/21 5:36	GCMS5W	75-27-4	Bromodichloromethane	0.03	0.2	5W Q-4	! ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2 PPBV 5W	12/30/21 5:36	GCMS5W	593-60-2	Bromoethene	0.061	0.2	5W Q-4	! ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2 PPBV 5W	12/30/21 5:36	GCMS5W	75-25-2	Bromoform	0.071	0.2	5W Q-4	! ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2 PPBV 5W	12/30/21 5:36	GCMS5W	74-83-9	Bromomethane	0.069	0.2	5W Q-4	! ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2 PPBV 5W	12/30/21 5:36	GCMS5W	75-15-0	Carbon disulfide	0.045	0.2	5W Q-4	! ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2 PPBV 5W	12/30/21 5:36	GCMS5W	56-23-5	Carbon tetrachloride	0.04	0.2	5W Q-4	! ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2 PPBV 5W	12/30/21 5:36	GCMS5W	108-90-7	Chlorobenzene	0.074	0.2	5W Q-4	! ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2 PPBV 5W	12/30/21 5:36	GCMS5W	75-45-6	Chlorodifluoromethane	0.106	0.2	5W Q-4	! ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2 PPBV 5W	12/30/21 5:36	GCMS5W	75-00-3	Chloroethane	0.068	0.2	5W Q-4	! ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2 PPBV 5W	12/30/21 5:36	GCMS5W	67-66-3	Chloroform	0.037	0.2	5W Q-4	! ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2 PPBV 5W	12/30/21 5:36	GCMS5W	74-87-3	Chloromethane	0.09	0.2	5W Q-4	! ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2 PPBV 5W	12/30/21 5:36	GCMS5W	79-38-9	Chlorotrifluoroethene	0.024	0.2	5W Q-4	! ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2 PPBV 5W	12/30/21 5:36	GCMS5W	156-59-2	cis-1,2-Dichloroethylene	0.077	0.2	5W Q-4	! ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2 PPBV 5W	12/30/21 5:36	GCMS5W	10061-01-5	cis-1,3-Dichloropropene	0.062	0.2	5W Q-4	! ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2 PPBV 5W	12/30/21 5:36	GCMS5W	110-82-7	Cyclohexane	0.11	0.2	5W Q-4	! ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2 PPBV 5W	12/30/21 5:36	GCMS5W	124-48-1	Dibromochloromethane	0.052	0.2	5W Q-4	! ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2 PPBV 5W	12/30/21 5:36	GCMS5W	74-95-3	Dibromomethane	0.053	0.2	5W Q-4	! ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2 PPBV 5W	12/30/21 5:36	GCMS5W	75-71-8	Dichlorodifluoromethane	0.032	0.2	5W Q-4	! ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2 PPBV 5W	12/30/21 5:36	GCMS5W	75-43-4	Dichlorofluoromethane	0.066	0.2	5W Q-4	! ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2 PPBV 5W	12/30/21 5:36	GCMS5W	108-20-3	Di-Isopropyl ether	0.082	0.2	5W Q-4	! ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2 PPBV 5W	12/30/21 5:36	GCMS5W	64-17-5	Ethanol	0.394	0.5	5W Q-4	! ppbv

TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2	PPBV	5W	12/30/21	5:36	GCMS5W	141-78-6	Ethyl Acetate	0.104	0.2	5W	Q-4	l	ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2	PPBV	5W	12/30/21	5:36	GCMS5W	140-88-5	Ethyl Acrylate	0.105	0.2	5W	Q-4	l	ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2	PPBV	5W	12/30/21	5:36	GCMS5W	100-41-4	Ethylbenzene	0.061	0.2	5W	Q-4	l	ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2	PPBV	5W	12/30/21	5:36	GCMS5W	76-13-1	Freon 113	0.031	0.2	5W	Q-4	l	ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2	PPBV	5W	12/30/21	5:36	GCMS5W	76-14-2	Freon 114	0.05	0.2	5W	Q-4	l	ppbv
TO-15	JD18443B	STYA	JD18443B-1F	MDLV : 0.2	PPBV	3W	4/27/21	5:01	GCMS3W	76-15-3	Freon 115	0.0077	0.2	3W	Q-2	l	ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2	PPBV	5W	12/30/21	5:36	GCMS5W	306-83-2	Freon 123	0.083	0.2	5W	Q-4	l	ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2	PPBV	5W	12/30/21	5:36	GCMS5W	354-23-4	Freon 123A	0.068	0.2	5W	Q-4	l	ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2	PPBV	5W	12/30/21	5:36	GCMS5W	75-68-3	Freon 142B	0.07	0.2	5W	Q-4	l	ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2	PPBV	5W	12/30/21	5:36	GCMS5W	75-37-6	Freon 152A	0.06	0.2	5W	Q-4	l	ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2	PPBV	5W	12/30/21	5:36	GCMS5W	142-82-5	Heptane	0.092	0.2	5W	Q-4	l	ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2	PPBV	5W	12/30/21	5:36	GCMS5W	87-68-3	Hexachlorobutadiene	0.062	0.2	5W	Q-4	l	ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2	PPBV	5W	12/30/21	5:36	GCMS5W	67-72-1	Hexachloroethane	0.082	0.2	5W	Q-4	l	ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2	PPBV	5W	12/30/21	5:36	GCMS5W	110-54-3	Hexane	0.112	0.2	5W	Q-4	l	ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2	PPBV	5W	12/30/21	5:36	GCMS5W	74-88-4	Iodomethane	0.037	0.2	5W	Q-4	l	ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2	PPBV	5W	12/30/21	5:36	GCMS5W	67-63-0	Isopropyl Alcohol	0.187	0.2	5W	Q-4	l	ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2	PPBV	5W	12/30/21	5:36	GCMS5W	98-82-8	Isopropylbenzene	0.064	0.2	5W	Q-4	l	ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2	PPBV	5W	12/30/21	5:36	GCMS5W	M,P-XYLEN	m,p-Xylene	0.139	0.2	5W	Q-4	l	ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2	PPBV	5W	12/30/21	5:36	GCMS5W	78-93-3	Methyl ethyl ketone	0.11	0.2	5W	Q-4	l	ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2	PPBV	5W	12/30/21	5:36	GCMS5W	108-10-1	Methyl Isobutyl Ketone	0.073	0.2	5W	Q-4	l	ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2	PPBV	5W	12/30/21	5:36	GCMS5W	1634-04-4	Methyl Tert Butyl Ether	0.08	0.2	5W	Q-4	l	ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2	PPBV	5W	12/30/21	5:36	GCMS5W	75-09-2	Methylene chloride	0.056	0.2	5W	Q-4	l	ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2	PPBV	5W	12/30/21	5:36	GCMS5W	80-62-6	Methylmethacrylate	0.07	0.2	5W	Q-4	l	ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2	PPBV	5W	12/30/21	5:36	GCMS5W	106-97-8	n-Butane	0.106	0.2	5W	Q-4	l	ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2	PPBV	5W	12/30/21	5:36	GCMS5W	104-51-8	n-Butylbenzene	0.106	0.2	5W	Q-4	l	ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2	PPBV	5W	12/30/21	5:36	GCMS5W	111-84-2	Nonane	0.1	0.2	5W	Q-4	l	ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2	PPBV	5W	12/30/21	5:36	GCMS5W	103-65-1	n-Propylbenzene	0.091	0.2	5W	Q-4	l	ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2	PPBV	5W	12/30/21	5:36	GCMS5W	111-65-9	Octane	0.12	0.2	5W	Q-4	l	ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2	PPBV	5W	12/30/21	5:36	GCMS5W	95-50-1	o-Dichlorobenzene	0.154	0.2	5W	Q-4	l	ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2	PPBV	5W	12/30/21	5:36	GCMS5W	95-47-6	o-Xylene	0.077	0.2	5W	Q-4	l	ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2	PPBV	5W	12/30/21	5:36	GCMS5W	106-46-7	p-Dichlorobenzene	0.191	0.2	5W	Q-4	l	ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2	PPBV	5W	12/30/21	5:36	GCMS5W	109-66-0	Pentane	0.138	0.2	5W	Q-4	l	ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2	PPBV	5W	12/30/21	5:36	GCMS5W	99-87-6	p-Isopropyltoluene	0.08	0.2	5W	Q-4	l	ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2	PPBV	5W	12/30/21	5:36	GCMS5W	115-07-1	Propylene	0.142	0.5	5W	Q-4	l	ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2	PPBV	5W	12/30/21	5:36	GCMS5W	135-98-8	sec-Butylbenzene	0.081	0.2	5W	Q-4	l	ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2	PPBV	5W	12/30/21	5:36	GCMS5W	100-42-5	Styrene	0.118	0.2	5W	Q-4	l	ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2	PPBV	5W	12/30/21	5:36	GCMS5W	98-06-6	tert-Butylbenzene	0.083	0.2	5W	Q-4	l	ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2	PPBV	5W	12/30/21	5:36	GCMS5W	75-65-0	Tertiary Butyl Alcohol	0.093	0.2	5W	Q-4	l	ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2	PPBV	5W	12/30/21	5:36	GCMS5W	109-99-9	Tetrahydrofuran	0.09	0.2	5W	Q-4	l	ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2	PPBV	5W	12/30/21	5:36	GCMS5W	108-88-3	Toluene	0.057	0.2	5W	Q-4	l	ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2	PPBV	5W	12/30/21	5:36	GCMS5W	156-60-5	trans-1,2-Dichloroethylene	0.069	0.2	5W	Q-4	l	ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2	PPBV	5W	12/30/21	5:36	GCMS5W	10061-02-6	trans-1,3-Dichloropropene	0.101	0.2	5W	Q-4	l	ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2	PPBV	5W	12/30/21	5:36	GCMS5W	75-69-4	Trichlorofluoromethane	0.036	0.2	5W	Q-4	l	ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2	PPBV	5W	12/30/21	5:36	GCMS5W	TVHC AS EC	TVHC As Equiv Pentane	0.136	10	5W	Q-4	l	ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2	PPBV	5W	12/30/21	5:36	GCMS5W	108-05-4	Vinyl Acetate	0.112	0.2	5W	Q-4	l	ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2	PPBV	5W	12/30/21	5:36	GCMS5W	75-01-4	Vinyl chloride	0.069	0.2	5W	Q-4	l	ppbv
TO-15	JD18443D	STYA	JD18443D-4E	MDLV : 0.1	PPBV	2W	12/30/21	4:35	GCMS2W	67-63-0	Isopropyl Alcohol	0.141	0.2	2W	Q-4	l	ppbv

MS Volatiles

6

QC Data Summaries

Includes the following where applicable:

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

Method Blank Summary

Job Number: JD59460
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V2W2809-MB	2W63189.D	1	02/01/23	WG	n/a	n/a	V2W2809

The QC reported here applies to the following samples: **Method:** TO-15

JD59460-1, JD59460-2, JD59460-3, JD59460-5, JD59460-6

CAS No.	Compound	Result	RL	MDL	Units	Q	Result	RL	Units
67-64-1	Acetone (2-Propanone)	ND	0.20	0.15	ppbv		ND	0.48	ug/m3
106-99-0	1,3-Butadiene	ND	0.20	0.084	ppbv		ND	0.44	ug/m3
71-43-2	Benzene	ND	0.20	0.062	ppbv		ND	0.64	ug/m3
75-27-4	Bromodichloromethane	ND	0.20	0.030	ppbv		ND	1.3	ug/m3
75-25-2	Bromoform	ND	0.20	0.071	ppbv		ND	2.1	ug/m3
74-83-9	Bromomethane	ND	0.20	0.069	ppbv		ND	0.78	ug/m3
593-60-2	Bromoethene	ND	0.20	0.061	ppbv		ND	0.87	ug/m3
100-44-7	Benzyl Chloride	ND	0.20	0.13	ppbv		ND	1.0	ug/m3
75-15-0	Carbon disulfide	ND	0.20	0.045	ppbv		ND	0.62	ug/m3
108-90-7	Chlorobenzene	ND	0.20	0.074	ppbv		ND	0.92	ug/m3
75-00-3	Chloroethane	ND	0.20	0.068	ppbv		ND	0.53	ug/m3
67-66-3	Chloroform	ND	0.20	0.037	ppbv		ND	0.98	ug/m3
74-87-3	Chloromethane	ND	0.20	0.090	ppbv		ND	0.41	ug/m3
107-05-1	3-Chloropropene	ND	0.20	0.083	ppbv		ND	0.63	ug/m3
95-49-8	2-Chlorotoluene	ND	0.20	0.072	ppbv		ND	1.0	ug/m3
56-23-5	Carbon tetrachloride	ND	0.20	0.040	ppbv		ND	1.3	ug/m3
110-82-7	Cyclohexane	ND	0.20	0.11	ppbv		ND	0.69	ug/m3
75-34-3	1,1-Dichloroethane	ND	0.20	0.057	ppbv		ND	0.81	ug/m3
75-35-4	1,1-Dichloroethylene	ND	0.20	0.059	ppbv		ND	0.79	ug/m3
106-93-4	1,2-Dibromoethane (EDB)	ND	0.20	0.097	ppbv		ND	1.5	ug/m3
107-06-2	1,2-Dichloroethane	ND	0.20	0.070	ppbv		ND	0.81	ug/m3
78-87-5	1,2-Dichloropropane	ND	0.20	0.062	ppbv		ND	0.92	ug/m3
123-91-1	1,4-Dioxane	ND	0.20	0.12	ppbv		ND	0.72	ug/m3
75-71-8	Dichlorodifluoromethane	ND	0.20	0.032	ppbv		ND	0.99	ug/m3
124-48-1	Dibromochloromethane	ND	0.20	0.052	ppbv		ND	1.7	ug/m3
156-60-5	trans-1,2-Dichloroethylene	ND	0.20	0.069	ppbv		ND	0.79	ug/m3
156-59-2	cis-1,2-Dichloroethylene	ND	0.20	0.077	ppbv		ND	0.79	ug/m3
10061-01-5	cis-1,3-Dichloropropene	ND	0.20	0.062	ppbv		ND	0.91	ug/m3
541-73-1	m-Dichlorobenzene	ND	0.20	0.040	ppbv		ND	1.2	ug/m3
95-50-1	o-Dichlorobenzene	ND	0.20	0.15	ppbv		ND	1.2	ug/m3
106-46-7	p-Dichlorobenzene	ND	0.20	0.19	ppbv		ND	1.2	ug/m3
10061-02-6	trans-1,3-Dichloropropene	ND	0.20	0.10	ppbv		ND	0.91	ug/m3
64-17-5	Ethanol	ND	0.50	0.39	ppbv		ND	0.94	ug/m3
100-41-4	Ethylbenzene	ND	0.20	0.061	ppbv		ND	0.87	ug/m3
141-78-6	Ethyl Acetate	ND	0.20	0.10	ppbv		ND	0.72	ug/m3
622-96-8	4-Ethyltoluene	ND	0.20	0.095	ppbv		ND	0.98	ug/m3

Method Blank Summary

Job Number: JD59460
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V2W2809-MB	2W63189.D	1	02/01/23	WG	n/a	n/a	V2W2809

The QC reported here applies to the following samples: **Method:** TO-15

JD59460-1, JD59460-2, JD59460-3, JD59460-5, JD59460-6

CAS No.	Compound	Result	RL	MDL	Units	Q	Result	RL	Units
76-13-1	Freon 113	ND	0.20	0.031	ppbv		ND	1.5	ug/m3
76-14-2	Freon 114	ND	0.20	0.050	ppbv		ND	1.4	ug/m3
142-82-5	Heptane	ND	0.20	0.092	ppbv		ND	0.82	ug/m3
87-68-3	Hexachlorobutadiene	ND	0.20	0.062	ppbv		ND	2.1	ug/m3
110-54-3	Hexane	ND	0.20	0.11	ppbv		ND	0.70	ug/m3
591-78-6	2-Hexanone	ND	0.20	0.15	ppbv		ND	0.82	ug/m3
67-63-0	Isopropyl Alcohol	ND	0.20	0.14	ppbv		ND	0.49	ug/m3
75-09-2	Methylene chloride	ND	0.20	0.056	ppbv		ND	0.69	ug/m3
78-93-3	Methyl ethyl ketone	ND	0.20	0.11	ppbv		ND	0.59	ug/m3
108-10-1	Methyl Isobutyl Ketone	ND	0.20	0.073	ppbv		ND	0.82	ug/m3
1634-04-4	Methyl Tert Butyl Ether	ND	0.20	0.080	ppbv		ND	0.72	ug/m3
80-62-6	Methylmethacrylate	ND	0.20	0.070	ppbv		ND	0.82	ug/m3
115-07-1	Propylene	ND	0.50	0.14	ppbv		ND	0.86	ug/m3
100-42-5	Styrene	ND	0.20	0.12	ppbv		ND	0.85	ug/m3
71-55-6	1,1,1-Trichloroethane	ND	0.20	0.037	ppbv		ND	1.1	ug/m3
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.20	0.048	ppbv		ND	1.4	ug/m3
79-00-5	1,1,2-Trichloroethane	ND	0.20	0.038	ppbv		ND	1.1	ug/m3
120-82-1	1,2,4-Trichlorobenzene	ND	0.20	0.12	ppbv		ND	1.5	ug/m3
95-63-6	1,2,4-Trimethylbenzene	ND	0.20	0.087	ppbv		ND	0.98	ug/m3
108-67-8	1,3,5-Trimethylbenzene	ND	0.20	0.080	ppbv		ND	0.98	ug/m3
540-84-1	2,2,4-Trimethylpentane	ND	0.20	0.095	ppbv		ND	0.93	ug/m3
75-65-0	Tertiary Butyl Alcohol	ND	0.20	0.093	ppbv		ND	0.61	ug/m3
127-18-4	Tetrachloroethylene	ND	0.040	0.014	ppbv		ND	0.27	ug/m3
109-99-9	Tetrahydrofuran	ND	0.20	0.090	ppbv		ND	0.59	ug/m3
108-88-3	Toluene	ND	0.20	0.057	ppbv		ND	0.75	ug/m3
79-01-6	Trichloroethylene	ND	0.040	0.019	ppbv		ND	0.21	ug/m3
75-69-4	Trichlorofluoromethane	ND	0.20	0.036	ppbv		ND	1.1	ug/m3
75-01-4	Vinyl chloride	ND	0.20	0.069	ppbv		ND	0.51	ug/m3
108-05-4	Vinyl Acetate	ND	0.20	0.11	ppbv		ND	0.70	ug/m3
	m,p-Xylene	ND	0.20	0.14	ppbv		ND	0.87	ug/m3
95-47-6	o-Xylene	ND	0.20	0.077	ppbv		ND	0.87	ug/m3
1330-20-7	Xylenes (total)	ND	0.20	0.077	ppbv		ND	0.87	ug/m3

Method Blank Summary

Job Number: JD59460
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V2W2809-MB	2W63189.D	1	02/01/23	WG	n/a	n/a	V2W2809

The QC reported here applies to the following samples: **Method:** TO-15

JD59460-1, JD59460-2, JD59460-3, JD59460-5, JD59460-6

CAS No.	Surrogate Recoveries		Limits
460-00-4	4-Bromofluorobenzene	93%	65-128%

Method Blank Summary

Job Number: JD59460
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V6W1142-MB	6W26995.D	1	11/08/22	TCH	n/a	n/a	V6W1142

The QC reported here applies to the following samples: **Method:** TO-15

V6W1142-SCC

CAS No.	Compound	Result	RL	MDL	Units	Q	Result	RL	Units
67-64-1	Acetone (2-Propanone)	ND	0.20	0.15	ppbv		ND	0.48	ug/m3
106-99-0	1,3-Butadiene	ND	0.20	0.084	ppbv		ND	0.44	ug/m3
71-43-2	Benzene	ND	0.20	0.062	ppbv		ND	0.64	ug/m3
75-27-4	Bromodichloromethane	ND	0.20	0.030	ppbv		ND	1.3	ug/m3
75-25-2	Bromoform	ND	0.20	0.071	ppbv		ND	2.1	ug/m3
74-83-9	Bromomethane	ND	0.20	0.069	ppbv		ND	0.78	ug/m3
593-60-2	Bromoethene	ND	0.20	0.061	ppbv		ND	0.87	ug/m3
100-44-7	Benzyl Chloride	ND	0.20	0.13	ppbv		ND	1.0	ug/m3
75-15-0	Carbon disulfide	ND	0.20	0.045	ppbv		ND	0.62	ug/m3
108-90-7	Chlorobenzene	ND	0.20	0.074	ppbv		ND	0.92	ug/m3
75-00-3	Chloroethane	ND	0.20	0.068	ppbv		ND	0.53	ug/m3
67-66-3	Chloroform	ND	0.20	0.037	ppbv		ND	0.98	ug/m3
74-87-3	Chloromethane	ND	0.20	0.090	ppbv		ND	0.41	ug/m3
107-05-1	3-Chloropropene	ND	0.20	0.083	ppbv		ND	0.63	ug/m3
95-49-8	2-Chlorotoluene	ND	0.20	0.072	ppbv		ND	1.0	ug/m3
56-23-5	Carbon tetrachloride	ND	0.20	0.040	ppbv		ND	1.3	ug/m3
110-82-7	Cyclohexane	ND	0.20	0.11	ppbv		ND	0.69	ug/m3
75-34-3	1,1-Dichloroethane	ND	0.20	0.057	ppbv		ND	0.81	ug/m3
75-35-4	1,1-Dichloroethylene	ND	0.20	0.059	ppbv		ND	0.79	ug/m3
106-93-4	1,2-Dibromoethane (EDB)	ND	0.20	0.097	ppbv		ND	1.5	ug/m3
107-06-2	1,2-Dichloroethane	ND	0.20	0.070	ppbv		ND	0.81	ug/m3
78-87-5	1,2-Dichloropropane	ND	0.20	0.062	ppbv		ND	0.92	ug/m3
123-91-1	1,4-Dioxane	ND	0.20	0.12	ppbv		ND	0.72	ug/m3
75-71-8	Dichlorodifluoromethane	ND	0.20	0.032	ppbv		ND	0.99	ug/m3
124-48-1	Dibromochloromethane	ND	0.20	0.052	ppbv		ND	1.7	ug/m3
156-60-5	trans-1,2-Dichloroethylene	ND	0.20	0.069	ppbv		ND	0.79	ug/m3
156-59-2	cis-1,2-Dichloroethylene	ND	0.20	0.077	ppbv		ND	0.79	ug/m3
10061-01-5	cis-1,3-Dichloropropene	ND	0.20	0.062	ppbv		ND	0.91	ug/m3
541-73-1	m-Dichlorobenzene	ND	0.20	0.040	ppbv		ND	1.2	ug/m3
95-50-1	o-Dichlorobenzene	ND	0.20	0.15	ppbv		ND	1.2	ug/m3
106-46-7	p-Dichlorobenzene	ND	0.20	0.19	ppbv		ND	1.2	ug/m3
10061-02-6	trans-1,3-Dichloropropene	ND	0.20	0.10	ppbv		ND	0.91	ug/m3
64-17-5	Ethanol	ND	0.50	0.39	ppbv		ND	0.94	ug/m3
100-41-4	Ethylbenzene	ND	0.20	0.061	ppbv		ND	0.87	ug/m3
141-78-6	Ethyl Acetate	ND	0.20	0.10	ppbv		ND	0.72	ug/m3
622-96-8	4-Ethyltoluene	ND	0.20	0.095	ppbv		ND	0.98	ug/m3

Method Blank Summary

Job Number: JD59460
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V6W1142-MB	6W26995.D	1	11/08/22	TCH	n/a	n/a	V6W1142

The QC reported here applies to the following samples: **Method:** TO-15

V6W1142-SCC

CAS No.	Compound	Result	RL	MDL	Units	Q	Result	RL	Units
76-13-1	Freon 113	ND	0.20	0.031	ppbv		ND	1.5	ug/m3
76-14-2	Freon 114	ND	0.20	0.050	ppbv		ND	1.4	ug/m3
142-82-5	Heptane	ND	0.20	0.092	ppbv		ND	0.82	ug/m3
87-68-3	Hexachlorobutadiene	ND	0.20	0.062	ppbv		ND	2.1	ug/m3
110-54-3	Hexane	ND	0.20	0.11	ppbv		ND	0.70	ug/m3
591-78-6	2-Hexanone	ND	0.20	0.15	ppbv		ND	0.82	ug/m3
67-63-0	Isopropyl Alcohol	ND	0.20	0.14	ppbv		ND	0.49	ug/m3
75-09-2	Methylene chloride	ND	0.20	0.056	ppbv		ND	0.69	ug/m3
78-93-3	Methyl ethyl ketone	ND	0.20	0.11	ppbv		ND	0.59	ug/m3
108-10-1	Methyl Isobutyl Ketone	ND	0.20	0.073	ppbv		ND	0.82	ug/m3
1634-04-4	Methyl Tert Butyl Ether	ND	0.20	0.080	ppbv		ND	0.72	ug/m3
80-62-6	Methylmethacrylate	ND	0.20	0.070	ppbv		ND	0.82	ug/m3
115-07-1	Propylene	ND	0.50	0.14	ppbv		ND	0.86	ug/m3
100-42-5	Styrene	ND	0.20	0.12	ppbv		ND	0.85	ug/m3
71-55-6	1,1,1-Trichloroethane	ND	0.20	0.037	ppbv		ND	1.1	ug/m3
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.20	0.048	ppbv		ND	1.4	ug/m3
79-00-5	1,1,2-Trichloroethane	ND	0.20	0.038	ppbv		ND	1.1	ug/m3
120-82-1	1,2,4-Trichlorobenzene	ND	0.20	0.12	ppbv		ND	1.5	ug/m3
95-63-6	1,2,4-Trimethylbenzene	ND	0.20	0.087	ppbv		ND	0.98	ug/m3
108-67-8	1,3,5-Trimethylbenzene	ND	0.20	0.080	ppbv		ND	0.98	ug/m3
540-84-1	2,2,4-Trimethylpentane	ND	0.20	0.095	ppbv		ND	0.93	ug/m3
75-65-0	Tertiary Butyl Alcohol	ND	0.20	0.093	ppbv		ND	0.61	ug/m3
127-18-4	Tetrachloroethylene	ND	0.040	0.014	ppbv		ND	0.27	ug/m3
109-99-9	Tetrahydrofuran	ND	0.20	0.090	ppbv		ND	0.59	ug/m3
108-88-3	Toluene	ND	0.20	0.057	ppbv		ND	0.75	ug/m3
79-01-6	Trichloroethylene	ND	0.040	0.019	ppbv		ND	0.21	ug/m3
75-69-4	Trichlorofluoromethane	ND	0.20	0.036	ppbv		ND	1.1	ug/m3
75-01-4	Vinyl chloride	ND	0.20	0.069	ppbv		ND	0.51	ug/m3
108-05-4	Vinyl Acetate	ND	0.20	0.11	ppbv		ND	0.70	ug/m3
	m,p-Xylene	ND	0.20	0.14	ppbv		ND	0.87	ug/m3
95-47-6	o-Xylene	ND	0.20	0.077	ppbv		ND	0.87	ug/m3
1330-20-7	Xylenes (total)	ND	0.20	0.077	ppbv		ND	0.87	ug/m3

Method Blank Summary

Job Number: JD59460
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V6W1142-MB	6W26995.D	1	11/08/22	TCH	n/a	n/a	V6W1142

The QC reported here applies to the following samples: **Method:** TO-15

V6W1142-SCC

CAS No.	Surrogate Recoveries		Limits
460-00-4	4-Bromofluorobenzene	106%	65-128%

Method Blank Summary

Job Number: JD59460
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V6W1146-MB	6W27097.D	1	11/22/22	TCH	n/a	n/a	V6W1146

The QC reported here applies to the following samples: **Method:** TO-15

V6W1146-SCC

CAS No.	Compound	Result	RL	MDL	Units	Q	Result	RL	Units
67-64-1	Acetone (2-Propanone)	ND	0.20	0.15	ppbv		ND	0.48	ug/m3
106-99-0	1,3-Butadiene	ND	0.20	0.084	ppbv		ND	0.44	ug/m3
71-43-2	Benzene	ND	0.20	0.062	ppbv		ND	0.64	ug/m3
75-27-4	Bromodichloromethane	ND	0.20	0.030	ppbv		ND	1.3	ug/m3
75-25-2	Bromoform	ND	0.20	0.071	ppbv		ND	2.1	ug/m3
74-83-9	Bromomethane	ND	0.20	0.069	ppbv		ND	0.78	ug/m3
593-60-2	Bromoethene	ND	0.20	0.061	ppbv		ND	0.87	ug/m3
100-44-7	Benzyl Chloride	ND	0.20	0.13	ppbv		ND	1.0	ug/m3
75-15-0	Carbon disulfide	ND	0.20	0.045	ppbv		ND	0.62	ug/m3
108-90-7	Chlorobenzene	ND	0.20	0.074	ppbv		ND	0.92	ug/m3
75-00-3	Chloroethane	ND	0.20	0.068	ppbv		ND	0.53	ug/m3
67-66-3	Chloroform	ND	0.20	0.037	ppbv		ND	0.98	ug/m3
74-87-3	Chloromethane	ND	0.20	0.090	ppbv		ND	0.41	ug/m3
107-05-1	3-Chloropropene	ND	0.20	0.083	ppbv		ND	0.63	ug/m3
95-49-8	2-Chlorotoluene	ND	0.20	0.072	ppbv		ND	1.0	ug/m3
56-23-5	Carbon tetrachloride	ND	0.20	0.040	ppbv		ND	1.3	ug/m3
110-82-7	Cyclohexane	ND	0.20	0.11	ppbv		ND	0.69	ug/m3
75-34-3	1,1-Dichloroethane	ND	0.20	0.057	ppbv		ND	0.81	ug/m3
75-35-4	1,1-Dichloroethylene	ND	0.20	0.059	ppbv		ND	0.79	ug/m3
106-93-4	1,2-Dibromoethane (EDB)	ND	0.20	0.097	ppbv		ND	1.5	ug/m3
107-06-2	1,2-Dichloroethane	ND	0.20	0.070	ppbv		ND	0.81	ug/m3
78-87-5	1,2-Dichloropropane	ND	0.20	0.062	ppbv		ND	0.92	ug/m3
123-91-1	1,4-Dioxane	ND	0.20	0.12	ppbv		ND	0.72	ug/m3
75-71-8	Dichlorodifluoromethane	ND	0.20	0.032	ppbv		ND	0.99	ug/m3
124-48-1	Dibromochloromethane	ND	0.20	0.052	ppbv		ND	1.7	ug/m3
156-60-5	trans-1,2-Dichloroethylene	ND	0.20	0.069	ppbv		ND	0.79	ug/m3
156-59-2	cis-1,2-Dichloroethylene	ND	0.20	0.077	ppbv		ND	0.79	ug/m3
10061-01-5	cis-1,3-Dichloropropene	ND	0.20	0.062	ppbv		ND	0.91	ug/m3
541-73-1	m-Dichlorobenzene	ND	0.20	0.040	ppbv		ND	1.2	ug/m3
95-50-1	o-Dichlorobenzene	ND	0.20	0.15	ppbv		ND	1.2	ug/m3
106-46-7	p-Dichlorobenzene	ND	0.20	0.19	ppbv		ND	1.2	ug/m3
10061-02-6	trans-1,3-Dichloropropene	ND	0.20	0.10	ppbv		ND	0.91	ug/m3
64-17-5	Ethanol	ND	0.50	0.39	ppbv		ND	0.94	ug/m3
100-41-4	Ethylbenzene	ND	0.20	0.061	ppbv		ND	0.87	ug/m3
141-78-6	Ethyl Acetate	ND	0.20	0.10	ppbv		ND	0.72	ug/m3
622-96-8	4-Ethyltoluene	ND	0.20	0.095	ppbv		ND	0.98	ug/m3

Method Blank Summary

Job Number: JD59460
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V6W1146-MB	6W27097.D	1	11/22/22	TCH	n/a	n/a	V6W1146

The QC reported here applies to the following samples: **Method:** TO-15

V6W1146-SCC

CAS No.	Compound	Result	RL	MDL	Units	Q	Result	RL	Units
76-13-1	Freon 113	ND	0.20	0.031	ppbv		ND	1.5	ug/m3
76-14-2	Freon 114	ND	0.20	0.050	ppbv		ND	1.4	ug/m3
142-82-5	Heptane	ND	0.20	0.092	ppbv		ND	0.82	ug/m3
87-68-3	Hexachlorobutadiene	ND	0.20	0.062	ppbv		ND	2.1	ug/m3
110-54-3	Hexane	ND	0.20	0.11	ppbv		ND	0.70	ug/m3
591-78-6	2-Hexanone	ND	0.20	0.15	ppbv		ND	0.82	ug/m3
67-63-0	Isopropyl Alcohol	ND	0.20	0.14	ppbv		ND	0.49	ug/m3
75-09-2	Methylene chloride	ND	0.20	0.056	ppbv		ND	0.69	ug/m3
78-93-3	Methyl ethyl ketone	ND	0.20	0.11	ppbv		ND	0.59	ug/m3
108-10-1	Methyl Isobutyl Ketone	ND	0.20	0.073	ppbv		ND	0.82	ug/m3
1634-04-4	Methyl Tert Butyl Ether	ND	0.20	0.080	ppbv		ND	0.72	ug/m3
80-62-6	Methylmethacrylate	ND	0.20	0.070	ppbv		ND	0.82	ug/m3
115-07-1	Propylene	ND	0.50	0.14	ppbv		ND	0.86	ug/m3
100-42-5	Styrene	ND	0.20	0.12	ppbv		ND	0.85	ug/m3
71-55-6	1,1,1-Trichloroethane	ND	0.20	0.037	ppbv		ND	1.1	ug/m3
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.20	0.048	ppbv		ND	1.4	ug/m3
79-00-5	1,1,2-Trichloroethane	ND	0.20	0.038	ppbv		ND	1.1	ug/m3
120-82-1	1,2,4-Trichlorobenzene	ND	0.20	0.12	ppbv		ND	1.5	ug/m3
95-63-6	1,2,4-Trimethylbenzene	ND	0.20	0.087	ppbv		ND	0.98	ug/m3
108-67-8	1,3,5-Trimethylbenzene	ND	0.20	0.080	ppbv		ND	0.98	ug/m3
540-84-1	2,2,4-Trimethylpentane	ND	0.20	0.095	ppbv		ND	0.93	ug/m3
75-65-0	Tertiary Butyl Alcohol	ND	0.20	0.093	ppbv		ND	0.61	ug/m3
127-18-4	Tetrachloroethylene	ND	0.040	0.014	ppbv		ND	0.27	ug/m3
109-99-9	Tetrahydrofuran	ND	0.20	0.090	ppbv		ND	0.59	ug/m3
108-88-3	Toluene	ND	0.20	0.057	ppbv		ND	0.75	ug/m3
79-01-6	Trichloroethylene	ND	0.040	0.019	ppbv		ND	0.21	ug/m3
75-69-4	Trichlorofluoromethane	ND	0.20	0.036	ppbv		ND	1.1	ug/m3
75-01-4	Vinyl chloride	ND	0.20	0.069	ppbv		ND	0.51	ug/m3
108-05-4	Vinyl Acetate	ND	0.20	0.11	ppbv		ND	0.70	ug/m3
	m,p-Xylene	ND	0.20	0.14	ppbv		ND	0.87	ug/m3
95-47-6	o-Xylene	ND	0.20	0.077	ppbv		ND	0.87	ug/m3
1330-20-7	Xylenes (total)	ND	0.20	0.077	ppbv		ND	0.87	ug/m3

Method Blank Summary

Job Number: JD59460
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V6W1146-MB	6W27097.D	1	11/22/22	TCH	n/a	n/a	V6W1146

The QC reported here applies to the following samples: **Method:** TO-15

V6W1146-SCC

CAS No.	Surrogate Recoveries		Limits
460-00-4	4-Bromofluorobenzene	99%	65-128%

CAS No.	Tentatively Identified Compounds	R.T.	Est. Conc.	Units	Q
124-38-9	Carbon dioxide	1.65	3.1	ppbv	JN
	Total TIC, Volatile		0	ppbv	

Method Blank Summary

Job Number: JD59460
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V6W1152-MB	6W27296.D	1	11/28/22	TCH	n/a	n/a	V6W1152

The QC reported here applies to the following samples: **Method:** TO-15

V6W1152-SCC

CAS No.	Compound	Result	RL	MDL	Units	Q	Result	RL	Units
67-64-1	Acetone (2-Propanone)	ND	0.20	0.15	ppbv		ND	0.48	ug/m3
106-99-0	1,3-Butadiene	ND	0.20	0.084	ppbv		ND	0.44	ug/m3
71-43-2	Benzene	ND	0.20	0.062	ppbv		ND	0.64	ug/m3
75-27-4	Bromodichloromethane	ND	0.20	0.030	ppbv		ND	1.3	ug/m3
75-25-2	Bromoform	ND	0.20	0.071	ppbv		ND	2.1	ug/m3
74-83-9	Bromomethane	ND	0.20	0.069	ppbv		ND	0.78	ug/m3
593-60-2	Bromoethene	ND	0.20	0.061	ppbv		ND	0.87	ug/m3
100-44-7	Benzyl Chloride	ND	0.20	0.13	ppbv		ND	1.0	ug/m3
75-15-0	Carbon disulfide	ND	0.20	0.045	ppbv		ND	0.62	ug/m3
108-90-7	Chlorobenzene	ND	0.20	0.074	ppbv		ND	0.92	ug/m3
75-00-3	Chloroethane	ND	0.20	0.068	ppbv		ND	0.53	ug/m3
67-66-3	Chloroform	ND	0.20	0.037	ppbv		ND	0.98	ug/m3
74-87-3	Chloromethane	ND	0.20	0.090	ppbv		ND	0.41	ug/m3
107-05-1	3-Chloropropene	ND	0.20	0.083	ppbv		ND	0.63	ug/m3
95-49-8	2-Chlorotoluene	ND	0.20	0.072	ppbv		ND	1.0	ug/m3
56-23-5	Carbon tetrachloride	ND	0.20	0.040	ppbv		ND	1.3	ug/m3
110-82-7	Cyclohexane	ND	0.20	0.11	ppbv		ND	0.69	ug/m3
75-34-3	1,1-Dichloroethane	ND	0.20	0.057	ppbv		ND	0.81	ug/m3
75-35-4	1,1-Dichloroethylene	ND	0.20	0.059	ppbv		ND	0.79	ug/m3
106-93-4	1,2-Dibromoethane (EDB)	ND	0.20	0.097	ppbv		ND	1.5	ug/m3
107-06-2	1,2-Dichloroethane	ND	0.20	0.070	ppbv		ND	0.81	ug/m3
78-87-5	1,2-Dichloropropane	ND	0.20	0.062	ppbv		ND	0.92	ug/m3
123-91-1	1,4-Dioxane	ND	0.20	0.12	ppbv		ND	0.72	ug/m3
75-71-8	Dichlorodifluoromethane	ND	0.20	0.032	ppbv		ND	0.99	ug/m3
124-48-1	Dibromochloromethane	ND	0.20	0.052	ppbv		ND	1.7	ug/m3
156-60-5	trans-1,2-Dichloroethylene	ND	0.20	0.069	ppbv		ND	0.79	ug/m3
156-59-2	cis-1,2-Dichloroethylene	ND	0.20	0.077	ppbv		ND	0.79	ug/m3
10061-01-5	cis-1,3-Dichloropropene	ND	0.20	0.062	ppbv		ND	0.91	ug/m3
541-73-1	m-Dichlorobenzene	ND	0.20	0.040	ppbv		ND	1.2	ug/m3
95-50-1	o-Dichlorobenzene	ND	0.20	0.15	ppbv		ND	1.2	ug/m3
106-46-7	p-Dichlorobenzene	ND	0.20	0.19	ppbv		ND	1.2	ug/m3
10061-02-6	trans-1,3-Dichloropropene	ND	0.20	0.10	ppbv		ND	0.91	ug/m3
64-17-5	Ethanol	ND	0.50	0.39	ppbv		ND	0.94	ug/m3
100-41-4	Ethylbenzene	ND	0.20	0.061	ppbv		ND	0.87	ug/m3
141-78-6	Ethyl Acetate	ND	0.20	0.10	ppbv		ND	0.72	ug/m3
622-96-8	4-Ethyltoluene	ND	0.20	0.095	ppbv		ND	0.98	ug/m3

Method Blank Summary

Job Number: JD59460
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V6W1152-MB	6W27296.D	1	11/28/22	TCH	n/a	n/a	V6W1152

The QC reported here applies to the following samples: **Method:** TO-15

V6W1152-SCC

CAS No.	Compound	Result	RL	MDL	Units	Q	Result	RL	Units
76-13-1	Freon 113	ND	0.20	0.031	ppbv		ND	1.5	ug/m3
76-14-2	Freon 114	ND	0.20	0.050	ppbv		ND	1.4	ug/m3
142-82-5	Heptane	ND	0.20	0.092	ppbv		ND	0.82	ug/m3
87-68-3	Hexachlorobutadiene	ND	0.20	0.062	ppbv		ND	2.1	ug/m3
110-54-3	Hexane	ND	0.20	0.11	ppbv		ND	0.70	ug/m3
591-78-6	2-Hexanone	ND	0.20	0.15	ppbv		ND	0.82	ug/m3
67-63-0	Isopropyl Alcohol	ND	0.20	0.14	ppbv		ND	0.49	ug/m3
75-09-2	Methylene chloride	ND	0.20	0.056	ppbv		ND	0.69	ug/m3
78-93-3	Methyl ethyl ketone	ND	0.20	0.11	ppbv		ND	0.59	ug/m3
108-10-1	Methyl Isobutyl Ketone	ND	0.20	0.073	ppbv		ND	0.82	ug/m3
1634-04-4	Methyl Tert Butyl Ether	ND	0.20	0.080	ppbv		ND	0.72	ug/m3
80-62-6	Methylmethacrylate	ND	0.20	0.070	ppbv		ND	0.82	ug/m3
115-07-1	Propylene	ND	0.50	0.14	ppbv		ND	0.86	ug/m3
100-42-5	Styrene	ND	0.20	0.12	ppbv		ND	0.85	ug/m3
71-55-6	1,1,1-Trichloroethane	ND	0.20	0.037	ppbv		ND	1.1	ug/m3
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.20	0.048	ppbv		ND	1.4	ug/m3
79-00-5	1,1,2-Trichloroethane	ND	0.20	0.038	ppbv		ND	1.1	ug/m3
120-82-1	1,2,4-Trichlorobenzene	ND	0.20	0.12	ppbv		ND	1.5	ug/m3
95-63-6	1,2,4-Trimethylbenzene	ND	0.20	0.087	ppbv		ND	0.98	ug/m3
108-67-8	1,3,5-Trimethylbenzene	ND	0.20	0.080	ppbv		ND	0.98	ug/m3
540-84-1	2,2,4-Trimethylpentane	ND	0.20	0.095	ppbv		ND	0.93	ug/m3
75-65-0	Tertiary Butyl Alcohol	ND	0.20	0.093	ppbv		ND	0.61	ug/m3
127-18-4	Tetrachloroethylene	ND	0.040	0.014	ppbv		ND	0.27	ug/m3
109-99-9	Tetrahydrofuran	ND	0.20	0.090	ppbv		ND	0.59	ug/m3
108-88-3	Toluene	ND	0.20	0.057	ppbv		ND	0.75	ug/m3
79-01-6	Trichloroethylene	ND	0.040	0.019	ppbv		ND	0.21	ug/m3
75-69-4	Trichlorofluoromethane	ND	0.20	0.036	ppbv		ND	1.1	ug/m3
75-01-4	Vinyl chloride	ND	0.20	0.069	ppbv		ND	0.51	ug/m3
108-05-4	Vinyl Acetate	ND	0.20	0.11	ppbv		ND	0.70	ug/m3
	m,p-Xylene	ND	0.20	0.14	ppbv		ND	0.87	ug/m3
95-47-6	o-Xylene	ND	0.20	0.077	ppbv		ND	0.87	ug/m3
1330-20-7	Xylenes (total)	ND	0.20	0.077	ppbv		ND	0.87	ug/m3

Method Blank Summary

Job Number: JD59460
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V6W1152-MB	6W27296.D	1	11/28/22	TCH	n/a	n/a	V6W1152

The QC reported here applies to the following samples: **Method:** TO-15

V6W1152-SCC

CAS No.	Surrogate Recoveries		Limits
460-00-4	4-Bromofluorobenzene	92%	65-128%

CAS No.	Tentatively Identified Compounds	R.T.	Est. Conc.	Units	Q
124-38-9	Carbon dioxide	1.65	4.3	ppbv	JN
	Total TIC, Volatile		0	ppbv	

Blank Spike/Blank Spike Duplicate Summary

Job Number: JD59460
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V2W2809-BS	2W63184.D	1	02/01/23	WG	n/a	n/a	V2W2809
V2W2809-BSD	2W63185.D	1	02/01/23	WG	n/a	n/a	V2W2809

The QC reported here applies to the following samples: **Method:** TO-15

JD59460-1, JD59460-2, JD59460-3, JD59460-5, JD59460-6

CAS No.	Compound	Spike ppbv	BSP ppbv	BSP %	BSD ppbv	BSD %	RPD	Limits Rec/RPD
67-64-1	Acetone (2-Propanone)	10	10.4	104	10.5	105	1	70-130/30
106-99-0	1,3-Butadiene	10	12.2	122	12.0	120	2	70-130/30
71-43-2	Benzene	10	10.1	101	10.2	102	1	70-130/30
75-27-4	Bromodichloromethane	10	10.7	107	10.7	107	0	70-130/30
75-25-2	Bromoform	10	10.8	108	10.8	108	0	70-130/30
74-83-9	Bromomethane	10	9.3	93	9.3	93	0	70-130/30
593-60-2	Bromoethene	10	9.7	97	9.8	98	1	70-130/30
100-44-7	Benzyl Chloride	10	7.2	72	7.3	73	1	70-130/30
75-15-0	Carbon disulfide	10	9.7	97	9.6	96	1	70-130/30
108-90-7	Chlorobenzene	10	10.6	106	10.5	105	1	70-130/30
75-00-3	Chloroethane	10	11.2	112	11.3	113	1	70-130/30
67-66-3	Chloroform	10	10.2	102	10.3	103	1	70-130/30
74-87-3	Chloromethane	10	11.8	118	12.0	120	2	70-130/30
107-05-1	3-Chloropropene	10	8.6	86	8.7	87	1	70-130/30
95-49-8	2-Chlorotoluene	10	10.4	104	10.3	103	1	70-130/30
56-23-5	Carbon tetrachloride	10	10.0	100	10.1	101	1	70-130/30
110-82-7	Cyclohexane	10	10.5	105	10.7	107	2	70-130/30
75-34-3	1,1-Dichloroethane	10	11.1	111	11.3	113	2	70-130/30
75-35-4	1,1-Dichloroethylene	10	8.5	85	8.5	85	0	70-130/30
106-93-4	1,2-Dibromoethane (EDB)	10	10.5	105	10.6	106	1	70-130/30
107-06-2	1,2-Dichloroethane	10	9.7	97	9.7	97	0	70-130/30
78-87-5	1,2-Dichloropropane	10	11.7	117	11.7	117	0	70-130/30
123-91-1	1,4-Dioxane	10	10.2	102	10.7	107	5	70-130/30
75-71-8	Dichlorodifluoromethane	10	9.1	91	9.2	92	1	70-130/30
124-48-1	Dibromochloromethane	10	11.0	110	11.1	111	1	70-130/30
156-60-5	trans-1,2-Dichloroethylene	10	10.5	105	10.7	107	2	70-130/30
156-59-2	cis-1,2-Dichloroethylene	10	10.5	105	10.7	107	2	70-130/30
10061-01-5	cis-1,3-Dichloropropene	10	10.2	102	10.3	103	1	70-130/30
541-73-1	m-Dichlorobenzene	10	11.2	112	11.1	111	1	70-130/30
95-50-1	o-Dichlorobenzene	10	11.0	110	10.9	109	1	70-130/30
106-46-7	p-Dichlorobenzene	10	11.1	111	11.0	110	1	70-130/30
10061-02-6	trans-1,3-Dichloropropene	10	9.6	96	9.7	97	1	70-130/30
64-17-5	Ethanol	10	10.8	108	10.7	107	1	70-130/30
100-41-4	Ethylbenzene	10	9.7	97	9.6	96	1	70-130/30
141-78-6	Ethyl Acetate	10	11.6	116	11.9	119	3	70-130/30
622-96-8	4-Ethyltoluene	10	11.3	113	11.1	111	2	70-130/30

* = Outside of Control Limits.

Blank Spike/Blank Spike Duplicate Summary

Job Number: JD59460
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V2W2809-BS	2W63184.D	1	02/01/23	WG	n/a	n/a	V2W2809
V2W2809-BSD	2W63185.D	1	02/01/23	WG	n/a	n/a	V2W2809

The QC reported here applies to the following samples: **Method:** TO-15

JD59460-1, JD59460-2, JD59460-3, JD59460-5, JD59460-6

CAS No.	Compound	Spike ppbv	BSP ppbv	BSP %	BSD ppbv	BSD %	RPD	Limits Rec/RPD
76-13-1	Freon 113	10	8.5	85	8.5	85	0	70-130/30
76-14-2	Freon 114	10	9.4	94	9.3	93	1	70-130/30
142-82-5	Heptane	10	12.2	122	12.2	122	0	70-130/30
87-68-3	Hexachlorobutadiene	10	8.8	88	8.8	88	0	70-130/30
110-54-3	Hexane	10	11.6	116	11.8	118	2	70-130/30
591-78-6	2-Hexanone	10	12.3	123	12.4	124	1	70-130/30
67-63-0	Isopropyl Alcohol	10	10.8	108	11.1	111	3	70-130/30
75-09-2	Methylene chloride	10	7.8	78	7.8	78	0	70-130/30
78-93-3	Methyl ethyl ketone	10	11.1	111	11.3	113	2	70-130/30
108-10-1	Methyl Isobutyl Ketone	10	12.2	122	12.2	122	0	70-130/30
1634-04-4	Methyl Tert Butyl Ether	10	9.7	97	9.9	99	2	70-130/30
80-62-6	Methylmethacrylate	10	11.2	112	11.4	114	2	70-130/30
115-07-1	Propylene	10	13.6	136* [a]	13.7	137* [a]	1	70-130/30
100-42-5	Styrene	10	11.1	111	11.0	110	1	70-130/30
71-55-6	1,1,1-Trichloroethane	10	9.4	94	9.6	96	2	70-130/30
79-34-5	1,1,2,2-Tetrachloroethane	10	10.9	109	10.9	109	0	70-130/30
79-00-5	1,1,2-Trichloroethane	10	10.6	106	10.7	107	1	70-130/30
120-82-1	1,2,4-Trichlorobenzene	10	9.7	97	9.5	95	2	70-130/30
95-63-6	1,2,4-Trimethylbenzene	10	10.7	107	11.1	111	4	70-130/30
108-67-8	1,3,5-Trimethylbenzene	10	11.5	115	10.8	108	6	70-130/30
540-84-1	2,2,4-Trimethylpentane	10	12.2	122	12.4	124	2	70-130/30
75-65-0	Tertiary Butyl Alcohol	10	8.4	84	8.5	85	1	70-130/30
127-18-4	Tetrachloroethylene	10	10.7	107	10.7	107	0	70-130/30
109-99-9	Tetrahydrofuran	10	11.4	114	11.6	116	2	70-130/30
108-88-3	Toluene	10	9.9	99	10	100	1	70-130/30
79-01-6	Trichloroethylene	10	10.1	101	10.2	102	1	70-130/30
75-69-4	Trichlorofluoromethane	10	8.6	86	8.7	87	1	70-130/30
75-01-4	Vinyl chloride	10	11.2	112	11.1	111	1	70-130/30
108-05-4	Vinyl Acetate	10	12.0	120	12.0	120	0	70-130/30
	m,p-Xylene	20	19.4	97	19.2	96	1	70-130/30
95-47-6	o-Xylene	10	9.4	94	9.4	94	0	70-130/30
1330-20-7	Xylenes (total)	30	28.9	96	28.7	96	1	70-130/30

* = Outside of Control Limits.

Blank Spike/Blank Spike Duplicate Summary

Job Number: JD59460
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V2W2809-BS	2W63184.D	1	02/01/23	WG	n/a	n/a	V2W2809
V2W2809-BSD	2W63185.D	1	02/01/23	WG	n/a	n/a	V2W2809

The QC reported here applies to the following samples: **Method:** TO-15

JD59460-1, JD59460-2, JD59460-3, JD59460-5, JD59460-6

CAS No.	Surrogate Recoveries	BSP	BSD	Limits
460-00-4	4-Bromofluorobenzene	95%	94%	65-128%

(a) High percent recovery and no associated positive reported in the QC batch.

* = Outside of Control Limits.

Blank Spike/Blank Spike Duplicate Summary

Job Number: JD59460
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V6W1142-BS	6W26991.D	1	11/08/22	TCH	n/a	n/a	V6W1142
V6W1142-BSD	6W26992.D	1	11/08/22	TCH	n/a	n/a	V6W1142

The QC reported here applies to the following samples: **Method:** TO-15

V6W1142-SCC

CAS No.	Compound	Spike ppbv	BSP ppbv	BSP %	BSD ppbv	BSD %	RPD	Limits Rec/RPD
67-64-1	Acetone (2-Propanone)	10	14.8	148* [a]	14.4	144* [a]	3	70-130/30
106-99-0	1,3-Butadiene	10	14.8	148* [a]	14.2	142* [a]	4	70-130/30
71-43-2	Benzene	10	11.7	117	11.2	112	4	70-130/30
75-27-4	Bromodichloromethane	10	11.7	117	11.4	114	3	70-130/30
75-25-2	Bromoform	10	11.3	113	10.9	109	4	70-130/30
74-83-9	Bromomethane	10	14.0	140* [a]	13.3	133* [a]	5	70-130/30
593-60-2	Bromoethene	10	12.8	128	12.1	121	6	70-130/30
100-44-7	Benzyl Chloride	10	13.5	135* [a]	13.2	132* [a]	2	70-130/30
75-15-0	Carbon disulfide	10	12.7	127	12.2	122	4	70-130/30
108-90-7	Chlorobenzene	10	11.1	111	10.8	108	3	70-130/30
75-00-3	Chloroethane	10	15.1	151* [a]	14.4	144* [a]	5	70-130/30
67-66-3	Chloroform	10	12.1	121	11.6	116	4	70-130/30
74-87-3	Chloromethane	10	14.4	144* [a]	13.8	138* [a]	4	70-130/30
107-05-1	3-Chloropropene	10	13.4	134* [a]	12.8	128	5	70-130/30
95-49-8	2-Chlorotoluene	10	12.7	127	12.4	124	2	70-130/30
56-23-5	Carbon tetrachloride	10	10.9	109	10.3	103	6	70-130/30
110-82-7	Cyclohexane	10	12.2	122	11.7	117	4	70-130/30
75-34-3	1,1-Dichloroethane	10	12.9	129	12.3	123	5	70-130/30
75-35-4	1,1-Dichloroethylene	10	12.5	125	11.8	118	6	70-130/30
106-93-4	1,2-Dibromoethane (EDB)	10	9.7	97	9.5	95	2	70-130/30
107-06-2	1,2-Dichloroethane	10	12.3	123	12.0	120	2	70-130/30
78-87-5	1,2-Dichloropropane	10	12.9	129	12.6	126	2	70-130/30
123-91-1	1,4-Dioxane	10	14.4	144* [a]	12.4	124	15	70-130/30
75-71-8	Dichlorodifluoromethane	10	13.1	131* [a]	11.8	118	10	70-130/30
124-48-1	Dibromochloromethane	10	9.3	93	9.1	91	2	70-130/30
156-60-5	trans-1,2-Dichloroethylene	10	11.8	118	11.4	114	3	70-130/30
156-59-2	cis-1,2-Dichloroethylene	10	11.7	117	11.2	112	4	70-130/30
10061-01-5	cis-1,3-Dichloropropene	10	10.4	104	10.2	102	2	70-130/30
541-73-1	m-Dichlorobenzene	10	12.3	123	11.9	119	3	70-130/30
95-50-1	o-Dichlorobenzene	10	12.3	123	11.9	119	3	70-130/30
106-46-7	p-Dichlorobenzene	10	12.2	122	12.0	120	2	70-130/30
10061-02-6	trans-1,3-Dichloropropene	10	10.4	104	10.4	104	0	70-130/30
64-17-5	Ethanol	10	14.5	145* [a]	14.1	141* [a]	3	70-130/30
100-41-4	Ethylbenzene	10	10.7	107	10.4	104	3	70-130/30
141-78-6	Ethyl Acetate	10	13.1	131* [a]	12.8	128	2	70-130/30
622-96-8	4-Ethyltoluene	10	13.0	130	12.6	126	3	70-130/30

* = Outside of Control Limits.

Blank Spike/Blank Spike Duplicate Summary

Job Number: JD59460
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V6W1142-BS	6W26991.D	1	11/08/22	TCH	n/a	n/a	V6W1142
V6W1142-BSD	6W26992.D	1	11/08/22	TCH	n/a	n/a	V6W1142

The QC reported here applies to the following samples: **Method:** TO-15

V6W1142-SCC

CAS No.	Compound	Spike ppbv	BSP ppbv	BSP %	BSD ppbv	BSD %	RPD	Limits Rec/RPD
76-13-1	Freon 113	10	11.2	112	10.8	108	4	70-130/30
76-14-2	Freon 114	10	13.2	132* [a]	12.6	126	5	70-130/30
142-82-5	Heptane	10	10.9	109	10.5	105	4	70-130/30
87-68-3	Hexachlorobutadiene	10	14.1	141* [a]	13.5	135* [a]	4	70-130/30
110-54-3	Hexane	10	13.0	130	12.4	124	5	70-130/30
591-78-6	2-Hexanone	10	14.1	141* [a]	13.7	137* [a]	3	70-130/30
67-63-0	Isopropyl Alcohol	10	14.1	141* [a]	13.7	137* [a]	3	70-130/30
75-09-2	Methylene chloride	10	12.1	121	11.6	116	4	70-130/30
78-93-3	Methyl ethyl ketone	10	13.0	130	12.5	125	4	70-130/30
108-10-1	Methyl Isobutyl Ketone	10	12.9	129	12.6	126	2	70-130/30
1634-04-4	Methyl Tert Butyl Ether	10	10.1	101	9.8	98	3	70-130/30
80-62-6	Methylmethacrylate	10	13.1	131* [a]	10.8	108	19	70-130/30
115-07-1	Propylene	10	11.0	110	10.7	107	3	70-130/30
100-42-5	Styrene	10	11.9	119	11.7	117	2	70-130/30
71-55-6	1,1,1-Trichloroethane	10	11.4	114	11.0	110	4	70-130/30
79-34-5	1,1,2,2-Tetrachloroethane	10	12.8	128	12.5	125	2	70-130/30
79-00-5	1,1,2-Trichloroethane	10	10.5	105	10.3	103	2	70-130/30
120-82-1	1,2,4-Trichlorobenzene	10	14.1	141* [a]	13.7	137* [a]	3	70-130/30
95-63-6	1,2,4-Trimethylbenzene	10	13.0	130	12.7	127	2	70-130/30
108-67-8	1,3,5-Trimethylbenzene	10	12.7	127	12.4	124	2	70-130/30
540-84-1	2,2,4-Trimethylpentane	10	13.4	134* [a]	10.4	104	25	70-130/30
75-65-0	Tertiary Butyl Alcohol	10	11.6	116	11.4	114	2	70-130/30
127-18-4	Tetrachloroethylene	10	10.1	101	10	100	1	70-130/30
109-99-9	Tetrahydrofuran	10	13.3	133* [a]	12.7	127	5	70-130/30
108-88-3	Toluene	10	9.4	94	9.2	92	2	70-130/30
79-01-6	Trichloroethylene	10	11.4	114	10.8	108	5	70-130/30
75-69-4	Trichlorofluoromethane	10	12.2	122	11.7	117	4	70-130/30
75-01-4	Vinyl chloride	10	14.5	145* [a]	13.9	139* [a]	4	70-130/30
108-05-4	Vinyl Acetate	10	13.1	131* [a]	12.6	126	4	70-130/30
	m,p-Xylene	20	22.1	111	21.5	108	3	70-130/30
95-47-6	o-Xylene	10	11.3	113	11.0	110	3	70-130/30
1330-20-7	Xylenes (total)	30	33.4	111	32.4	108	3	70-130/30

* = Outside of Control Limits.

Blank Spike/Blank Spike Duplicate Summary

Job Number: JD59460
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V6W1142-BS	6W26991.D	1	11/08/22	TCH	n/a	n/a	V6W1142
V6W1142-BSD	6W26992.D	1	11/08/22	TCH	n/a	n/a	V6W1142

The QC reported here applies to the following samples: **Method:** TO-15

V6W1142-SCC

CAS No.	Surrogate Recoveries	BSP	BSD	Limits
460-00-4	4-Bromofluorobenzene	110%	111%	65-128%

(a) High percent recovery and no associated positive reported in the QC batch.

* = Outside of Control Limits.

Blank Spike/Blank Spike Duplicate Summary

Job Number: JD59460
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V6W1146-BS	6W27094.D	1	11/22/22	TCH	n/a	n/a	V6W1146
V6W1146-BSD	6W27095.D	1	11/22/22	TCH	n/a	n/a	V6W1146

The QC reported here applies to the following samples: **Method:** TO-15

V6W1146-SCC

CAS No.	Compound	Spike ppbv	BSP ppbv	BSP %	BSD ppbv	BSD %	RPD	Limits Rec/RPD
67-64-1	Acetone (2-Propanone)	10	10.8	108	10.4	104	4	70-130/30
106-99-0	1,3-Butadiene	10	11.5	115	11.1	111	4	70-130/30
71-43-2	Benzene	10	9.8	98	9.4	94	4	70-130/30
75-27-4	Bromodichloromethane	10	9.7	97	9.4	94	3	70-130/30
75-25-2	Bromoform	10	11.0	110	10.6	106	4	70-130/30
74-83-9	Bromomethane	10	11.9	119	11.6	116	3	70-130/30
593-60-2	Bromoethene	10	11.7	117	11.0	110	6	70-130/30
100-44-7	Benzyl Chloride	10	12.0	120	11.8	118	2	70-130/30
75-15-0	Carbon disulfide	10	10.5	105	10.1	101	4	70-130/30
108-90-7	Chlorobenzene	10	10.3	103	9.9	99	4	70-130/30
75-00-3	Chloroethane	10	11.9	119	11.1	111	7	70-130/30
67-66-3	Chloroform	10	10.2	102	9.8	98	4	70-130/30
74-87-3	Chloromethane	10	10.6	106	10.1	101	5	70-130/30
107-05-1	3-Chloropropene	10	10.7	107	10.3	103	4	70-130/30
95-49-8	2-Chlorotoluene	10	11.2	112	10.8	108	4	70-130/30
56-23-5	Carbon tetrachloride	10	9.4	94	9.1	91	3	70-130/30
110-82-7	Cyclohexane	10	10.2	102	9.9	99	3	70-130/30
75-34-3	1,1-Dichloroethane	10	10.2	102	9.8	98	4	70-130/30
75-35-4	1,1-Dichloroethylene	10	11.0	110	10.5	105	5	70-130/30
106-93-4	1,2-Dibromoethane (EDB)	10	9.9	99	9.8	98	1	70-130/30
107-06-2	1,2-Dichloroethane	10	9.3	93	9.0	90	3	70-130/30
78-87-5	1,2-Dichloropropane	10	10.2	102	9.9	99	3	70-130/30
123-91-1	1,4-Dioxane	10	12.7	127	12.3	123	3	70-130/30
75-71-8	Dichlorodifluoromethane	10	12.7	127	12.1	121	5	70-130/30
124-48-1	Dibromochloromethane	10	9.5	95	9.5	95	0	70-130/30
156-60-5	trans-1,2-Dichloroethylene	10	10.6	106	10.3	103	3	70-130/30
156-59-2	cis-1,2-Dichloroethylene	10	10.4	104	10	100	4	70-130/30
10061-01-5	cis-1,3-Dichloropropene	10	9.4	94	9.3	93	1	70-130/30
541-73-1	m-Dichlorobenzene	10	11.5	115	11.2	112	3	70-130/30
95-50-1	o-Dichlorobenzene	10	11.5	115	11.1	111	4	70-130/30
106-46-7	p-Dichlorobenzene	10	11.7	117	11.4	114	3	70-130/30
10061-02-6	trans-1,3-Dichloropropene	10	9.4	94	9.4	94	0	70-130/30
64-17-5	Ethanol	10	11.0	110	10.6	106	4	70-130/30
100-41-4	Ethylbenzene	10	9.4	94	9.0	90	4	70-130/30
141-78-6	Ethyl Acetate	10	11.0	110	10.5	105	5	70-130/30
622-96-8	4-Ethyltoluene	10	11.8	118	11.4	114	3	70-130/30

* = Outside of Control Limits.

Blank Spike/Blank Spike Duplicate Summary

Job Number: JD59460
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V6W1146-BS	6W27094.D	1	11/22/22	TCH	n/a	n/a	V6W1146
V6W1146-BSD	6W27095.D	1	11/22/22	TCH	n/a	n/a	V6W1146

The QC reported here applies to the following samples: **Method:** TO-15

V6W1146-SCC

CAS No.	Compound	Spike ppbv	BSP ppbv	BSP %	BSD ppbv	BSD %	RPD	Limits Rec/RPD
76-13-1	Freon 113	10	10.5	105	10.2	102	3	70-130/30
76-14-2	Freon 114	10	10.7	107	10.1	101	6	70-130/30
142-82-5	Heptane	10	9.6	96	9.4	94	2	70-130/30
87-68-3	Hexachlorobutadiene	10	13.0	130	12.5	125	4	70-130/30
110-54-3	Hexane	10	10.3	103	9.9	99	4	70-130/30
591-78-6	2-Hexanone	10	13.7	137* [a]	13.6	136* [a]	1	70-130/30
67-63-0	Isopropyl Alcohol	10	10.6	106	10.2	102	4	70-130/30
75-09-2	Methylene chloride	10	10.2	102	9.9	99	3	70-130/30
78-93-3	Methyl ethyl ketone	10	10.9	109	10.4	104	5	70-130/30
108-10-1	Methyl Isobutyl Ketone	10	12.0	120	11.9	119	1	70-130/30
1634-04-4	Methyl Tert Butyl Ether	10	8.4	84	8.2	82	2	70-130/30
80-62-6	Methylmethacrylate	10	10.3	103	10.2	102	1	70-130/30
115-07-1	Propylene	10	9.5	95	9.2	92	3	70-130/30
100-42-5	Styrene	10	11.4	114	11.0	110	4	70-130/30
71-55-6	1,1,1-Trichloroethane	10	9.6	96	9.3	93	3	70-130/30
79-34-5	1,1,2,2-Tetrachloroethane	10	11.2	112	10.8	108	4	70-130/30
79-00-5	1,1,2-Trichloroethane	10	10	100	9.7	97	3	70-130/30
120-82-1	1,2,4-Trichlorobenzene	10	14.0	140* [b]	13.3	133* [b]	5	70-130/30
95-63-6	1,2,4-Trimethylbenzene	10	11.7	117	11.2	112	4	70-130/30
108-67-8	1,3,5-Trimethylbenzene	10	11.5	115	11.1	111	4	70-130/30
540-84-1	2,2,4-Trimethylpentane	10	10.4	104	9.7	97	7	70-130/30
75-65-0	Tertiary Butyl Alcohol	10	9.5	95	9.3	93	2	70-130/30
127-18-4	Tetrachloroethylene	10	10.0	100	10.0	100	0	70-130/30
109-99-9	Tetrahydrofuran	10	11.1	111	10.7	107	4	70-130/30
108-88-3	Toluene	10	9.0	90	8.9	89	1	70-130/30
79-01-6	Trichloroethylene	10	9.8	98	9.6	96	2	70-130/30
75-69-4	Trichlorofluoromethane	10	10.4	104	9.9	99	5	70-130/30
75-01-4	Vinyl chloride	10	10.9	109	10.4	104	5	70-130/30
108-05-4	Vinyl Acetate	10	11.2	112	10.9	109	3	70-130/30
	m,p-Xylene	20	19.2	96	18.6	93	3	70-130/30
95-47-6	o-Xylene	10	9.8	98	9.5	95	3	70-130/30
1330-20-7	Xylenes (total)	30	29.0	97	28.1	94	3	70-130/30

* = Outside of Control Limits.

Blank Spike/Blank Spike Duplicate Summary

Job Number: JD59460
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V6W1146-BS	6W27094.D	1	11/22/22	TCH	n/a	n/a	V6W1146
V6W1146-BSD	6W27095.D	1	11/22/22	TCH	n/a	n/a	V6W1146

The QC reported here applies to the following samples: **Method:** TO-15

V6W1146-SCC

CAS No.	Surrogate Recoveries	BSP	BSD	Limits
460-00-4	4-Bromofluorobenzene	104%	103%	65-128%

(a) Outside in house control limits.
(b) High percent recovery and no associated positive reported in the QC batch.

* = Outside of Control Limits.

Blank Spike/Blank Spike Duplicate Summary

Job Number: JD59460
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V6W1152-BS	6W27293.D	1	11/28/22	TCH	n/a	n/a	V6W1152
V6W1152-BSD	6W27294.D	1	11/28/22	TCH	n/a	n/a	V6W1152

The QC reported here applies to the following samples: **Method:** TO-15

V6W1152-SCC

CAS No.	Compound	Spike ppbv	BSP ppbv	BSP %	BSD ppbv	BSD %	RPD	Limits Rec/RPD
67-64-1	Acetone (2-Propanone)	10	9.2	92	9.2	92	0	70-130/30
106-99-0	1,3-Butadiene	10	9.3	93	9.4	94	1	70-130/30
71-43-2	Benzene	10	8.4	84	8.5	85	1	70-130/30
75-27-4	Bromodichloromethane	10	8.7	87	8.7	87	0	70-130/30
75-25-2	Bromoform	10	10.6	106	10.7	107	1	70-130/30
74-83-9	Bromomethane	10	10.7	107	10.8	108	1	70-130/30
593-60-2	Bromoethene	10	10.7	107	10.9	109	2	70-130/30
100-44-7	Benzyl Chloride	10	12.4	124	12.4	124	0	70-130/30
75-15-0	Carbon disulfide	10	9.1	91	9.2	92	1	70-130/30
108-90-7	Chlorobenzene	10	9.9	99	10.2	102	3	70-130/30
75-00-3	Chloroethane	10	10	100	10.1	101	1	70-130/30
67-66-3	Chloroform	10	8.8	88	8.9	89	1	70-130/30
74-87-3	Chloromethane	10	8.5	85	8.4	84	1	70-130/30
107-05-1	3-Chloropropene	10	9.3	93	9.5	95	2	70-130/30
95-49-8	2-Chlorotoluene	10	10.5	105	10.6	106	1	70-130/30
56-23-5	Carbon tetrachloride	10	8.6	86	8.8	88	2	70-130/30
110-82-7	Cyclohexane	10	9.1	91	9.1	91	0	70-130/30
75-34-3	1,1-Dichloroethane	10	8.7	87	8.8	88	1	70-130/30
75-35-4	1,1-Dichloroethylene	10	9.8	98	9.9	99	1	70-130/30
106-93-4	1,2-Dibromoethane (EDB)	10	10.2	102	10.4	104	2	70-130/30
107-06-2	1,2-Dichloroethane	10	7.9	79	8.0	80	1	70-130/30
78-87-5	1,2-Dichloropropane	10	8.8	88	8.8	88	0	70-130/30
123-91-1	1,4-Dioxane	10	11.1	111	11.8	118	6	70-130/30
75-71-8	Dichlorodifluoromethane	10	11.3	113	11.4	114	1	70-130/30
124-48-1	Dibromochloromethane	10	10.1	101	10.1	101	0	70-130/30
156-60-5	trans-1,2-Dichloroethylene	10	9.5	95	9.6	96	1	70-130/30
156-59-2	cis-1,2-Dichloroethylene	10	9.2	92	9.4	94	2	70-130/30
10061-01-5	cis-1,3-Dichloropropene	10	9.2	92	9.4	94	2	70-130/30
541-73-1	m-Dichlorobenzene	10	11.8	118	11.9	119	1	70-130/30
95-50-1	o-Dichlorobenzene	10	11.7	117	11.9	119	2	70-130/30
106-46-7	p-Dichlorobenzene	10	12.0	120	12.0	120	0	70-130/30
10061-02-6	trans-1,3-Dichloropropene	10	9.4	94	9.5	95	1	70-130/30
64-17-5	Ethanol	10	8.9	89	9.0	90	1	70-130/30
100-41-4	Ethylbenzene	10	8.7	87	8.8	88	1	70-130/30
141-78-6	Ethyl Acetate	10	9.1	91	9.1	91	0	70-130/30
622-96-8	4-Ethyltoluene	10	11.3	113	11.4	114	1	70-130/30

* = Outside of Control Limits.

Blank Spike/Blank Spike Duplicate Summary

Job Number: JD59460
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V6W1152-BS	6W27293.D	1	11/28/22	TCH	n/a	n/a	V6W1152
V6W1152-BSD	6W27294.D	1	11/28/22	TCH	n/a	n/a	V6W1152

The QC reported here applies to the following samples: **Method:** TO-15

V6W1152-SCC

CAS No.	Compound	Spike ppbv	BSP ppbv	BSP %	BSD ppbv	BSD %	RPD	Limits Rec/RPD
76-13-1	Freon 113	10	10.2	102	10.5	105	3	70-130/30
76-14-2	Freon 114	10	9.3	93	9.4	94	1	70-130/30
142-82-5	Heptane	10	9.1	91	9.2	92	1	70-130/30
87-68-3	Hexachlorobutadiene	10	13.5	135* [a]	13.7	137* [a]	1	70-130/30
110-54-3	Hexane	10	8.3	83	8.5	85	2	70-130/30
591-78-6	2-Hexanone	10	13.1	131* [a]	13.0	130	1	70-130/30
67-63-0	Isopropyl Alcohol	10	8.4	84	8.6	86	2	70-130/30
75-09-2	Methylene chloride	10	9.0	90	9.1	91	1	70-130/30
78-93-3	Methyl ethyl ketone	10	9.3	93	9.4	94	1	70-130/30
108-10-1	Methyl Isobutyl Ketone	10	11.5	115	11.6	116	1	70-130/30
1634-04-4	Methyl Tert Butyl Ether	10	7.1	71	7.3	73	3	70-130/30
80-62-6	Methylmethacrylate	10	10.0	100	10.2	102	2	70-130/30
115-07-1	Propylene	10	8.7	87	8.8	88	1	70-130/30
100-42-5	Styrene	10	10.7	107	10.8	108	1	70-130/30
71-55-6	1,1,1-Trichloroethane	10	8.7	87	8.8	88	1	70-130/30
79-34-5	1,1,2,2-Tetrachloroethane	10	10.6	106	10.7	107	1	70-130/30
79-00-5	1,1,2-Trichloroethane	10	10.1	101	10.3	103	2	70-130/30
120-82-1	1,2,4-Trichlorobenzene	10	14.3	143* [a]	14.3	143* [a]	0	70-130/30
95-63-6	1,2,4-Trimethylbenzene	10	11.4	114	11.4	114	0	70-130/30
108-67-8	1,3,5-Trimethylbenzene	10	11.1	111	11.2	112	1	70-130/30
540-84-1	2,2,4-Trimethylpentane	10	8.7	87	9.5	95	9	70-130/30
75-65-0	Tertiary Butyl Alcohol	10	7.9	79	8.1	81	2	70-130/30
127-18-4	Tetrachloroethylene	10	10.9	109	11.0	110	1	70-130/30
109-99-9	Tetrahydrofuran	10	9.2	92	9.4	94	2	70-130/30
108-88-3	Toluene	10	9.2	92	9.4	94	2	70-130/30
79-01-6	Trichloroethylene	10	9.0	90	9.1	91	1	70-130/30
75-69-4	Trichlorofluoromethane	10	9.5	95	9.6	96	1	70-130/30
75-01-4	Vinyl chloride	10	9.1	91	9.3	93	2	70-130/30
108-05-4	Vinyl Acetate	10	10.2	102	10.5	105	3	70-130/30
	m,p-Xylene	20	18.3	92	18.5	93	1	70-130/30
95-47-6	o-Xylene	10	9.2	92	9.4	94	2	70-130/30
1330-20-7	Xylenes (total)	30	27.5	92	27.9	93	1	70-130/30

* = Outside of Control Limits.

Blank Spike/Blank Spike Duplicate Summary

Job Number: JD59460
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V6W1152-BS	6W27293.D	1	11/28/22	TCH	n/a	n/a	V6W1152
V6W1152-BSD	6W27294.D	1	11/28/22	TCH	n/a	n/a	V6W1152

The QC reported here applies to the following samples: **Method:** TO-15

V6W1152-SCC

CAS No.	Surrogate Recoveries	BSP	BSD	Limits
460-00-4	4-Bromofluorobenzene	97%	97%	65-128%

(a) High percent recovery and no associated positive reported in the QC batch.

* = Outside of Control Limits.

Duplicate Summary

Job Number: JD59460
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
JD59460-5DUP	2W63194.D	1.55	02/01/23	WG	n/a	n/a	V2W2809
JD59460-5	2W63193.D	1.55	02/01/23	WG	n/a	n/a	V2W2809

The QC reported here applies to the following samples: **Method:** TO-15

JD59460-1, JD59460-2, JD59460-3, JD59460-5, JD59460-6

CAS No.	Compound	JD59460-5 ppbv	Q	DUP ppbv	Q	RPD	Limits
67-64-1	Acetone (2-Propanone)	5.8		6.4		10	25
106-99-0	1,3-Butadiene	ND		ND		nc	25
71-43-2	Benzene	ND		ND		nc	25
75-27-4	Bromodichloromethane	ND		ND		nc	25
75-25-2	Bromoform	ND		ND		nc	25
74-83-9	Bromomethane	ND		ND		nc	25
593-60-2	Bromoethene	ND		ND		nc	25
100-44-7	Benzyl Chloride	ND		ND		nc	25
75-15-0	Carbon disulfide	ND		ND		nc	25
108-90-7	Chlorobenzene	ND		ND		nc	25
75-00-3	Chloroethane	ND		ND		nc	25
67-66-3	Chloroform	2.4		2.4		0	25
74-87-3	Chloromethane	ND		ND		nc	25
107-05-1	3-Chloropropene	ND		ND		nc	25
95-49-8	2-Chlorotoluene	ND		ND		nc	25
56-23-5	Carbon tetrachloride	ND		ND		nc	25
110-82-7	Cyclohexane	ND		ND		nc	25
75-34-3	1,1-Dichloroethane	ND		ND		nc	25
75-35-4	1,1-Dichloroethylene	ND		ND		nc	25
106-93-4	1,2-Dibromoethane (EDB)	ND		ND		nc	25
107-06-2	1,2-Dichloroethane	ND		ND		nc	25
78-87-5	1,2-Dichloropropane	ND		ND		nc	25
123-91-1	1,4-Dioxane	ND		ND		nc	25
75-71-8	Dichlorodifluoromethane	0.44	J	0.44	J	0	25
124-48-1	Dibromochloromethane	ND		ND		nc	25
156-60-5	trans-1,2-Dichloroethylene	ND		ND		nc	25
156-59-2	cis-1,2-Dichloroethylene	ND		ND		nc	25
10061-01-5	cis-1,3-Dichloropropene	ND		ND		nc	25
541-73-1	m-Dichlorobenzene	ND		ND		nc	25
95-50-1	o-Dichlorobenzene	ND		ND		nc	25
106-46-7	p-Dichlorobenzene	ND		ND		nc	25
10061-02-6	trans-1,3-Dichloropropene	ND		ND		nc	25
64-17-5	Ethanol	ND		ND		nc	25
100-41-4	Ethylbenzene	ND		ND		nc	25
141-78-6	Ethyl Acetate	1.3		1.5		14	25
622-96-8	4-Ethyltoluene	ND		ND		nc	25

* = Outside of Control Limits.

Duplicate Summary

Job Number: JD59460
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
JD59460-5DUP	2W63194.D	1.55	02/01/23	WG	n/a	n/a	V2W2809
JD59460-5	2W63193.D	1.55	02/01/23	WG	n/a	n/a	V2W2809

The QC reported here applies to the following samples: **Method:** TO-15

JD59460-1, JD59460-2, JD59460-3, JD59460-5, JD59460-6

CAS No.	Compound	JD59460-5 ppbv	Q	DUP ppbv	Q	RPD	Limits
76-13-1	Freon 113	13.7		13.9		1	25
76-14-2	Freon 114	ND		ND		nc	25
142-82-5	Heptane	ND		ND		nc	25
87-68-3	Hexachlorobutadiene	ND		ND		nc	25
110-54-3	Hexane	ND		ND		nc	25
591-78-6	2-Hexanone	ND		ND		nc	25
67-63-0	Isopropyl Alcohol	15.2		15.5		2	25
75-09-2	Methylene chloride	ND		ND		nc	25
78-93-3	Methyl ethyl ketone	0.74	J	0.76	J	3	25
108-10-1	Methyl Isobutyl Ketone	ND		ND		nc	25
1634-04-4	Methyl Tert Butyl Ether	ND		ND		nc	25
80-62-6	Methylmethacrylate	ND		ND		nc	25
115-07-1	Propylene	ND		ND		nc	25
100-42-5	Styrene	ND		ND		nc	25
71-55-6	1,1,1-Trichloroethane	ND		ND		nc	25
79-34-5	1,1,2,2-Tetrachloroethane	ND		ND		nc	25
79-00-5	1,1,2-Trichloroethane	ND		ND		nc	25
120-82-1	1,2,4-Trichlorobenzene	ND		ND		nc	25
95-63-6	1,2,4-Trimethylbenzene	ND		ND		nc	25
108-67-8	1,3,5-Trimethylbenzene	ND		ND		nc	25
540-84-1	2,2,4-Trimethylpentane	ND		ND		nc	25
75-65-0	Tertiary Butyl Alcohol	ND		ND		nc	25
127-18-4	Tetrachloroethylene	ND		ND		nc	25
109-99-9	Tetrahydrofuran	ND		ND		nc	25
108-88-3	Toluene	ND		ND		nc	25
79-01-6	Trichloroethylene	ND		ND		nc	25
75-69-4	Trichlorofluoromethane	ND		ND		nc	25
75-01-4	Vinyl chloride	ND		ND		nc	25
108-05-4	Vinyl Acetate	ND		ND		nc	25
	m,p-Xylene	ND		ND		nc	25
95-47-6	o-Xylene	ND		ND		nc	25
1330-20-7	Xylenes (total)	ND		ND		nc	25

* = Outside of Control Limits.

Duplicate Summary

Job Number: JD59460
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
JD59460-5DUP	2W63194.D	1.55	02/01/23	WG	n/a	n/a	V2W2809
JD59460-5	2W63193.D	1.55	02/01/23	WG	n/a	n/a	V2W2809

The QC reported here applies to the following samples: **Method:** TO-15

JD59460-1, JD59460-2, JD59460-3, JD59460-5, JD59460-6

CAS No.	Surrogate Recoveries	DUP	JD59460-5	Limits
460-00-4	4-Bromofluorobenzene	92%	94%	65-128%

* = Outside of Control Limits.

Summa Cleaning Certification

Job Number: JD59460
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V6W1142-SCC	6W26997.D	1	11/08/22	TCH	n/a	n/a	V6W1142

The QC reported here (Summa A1807) applies to the following samples: **Method:** TO-15

Batch CP11924 cleaned 10/27/22: JD59460-1(A831)

CAS No.	Compound	Result	RL	MDL	Units	Q	Result	RL	Units
67-64-1	Acetone (2-Propanone)	ND	0.20	0.15	ppbv		ND	0.48	ug/m3
106-99-0	1,3-Butadiene	ND	0.20	0.084	ppbv		ND	0.44	ug/m3
71-43-2	Benzene	ND	0.20	0.062	ppbv		ND	0.64	ug/m3
75-27-4	Bromodichloromethane	ND	0.20	0.030	ppbv		ND	1.3	ug/m3
75-25-2	Bromoform	ND	0.20	0.071	ppbv		ND	2.1	ug/m3
74-83-9	Bromomethane	ND	0.20	0.069	ppbv		ND	0.78	ug/m3
593-60-2	Bromoethene	ND	0.20	0.061	ppbv		ND	0.87	ug/m3
100-44-7	Benzyl Chloride	ND	0.20	0.13	ppbv		ND	1.0	ug/m3
75-15-0	Carbon disulfide	ND	0.20	0.045	ppbv		ND	0.62	ug/m3
108-90-7	Chlorobenzene	ND	0.20	0.074	ppbv		ND	0.92	ug/m3
75-00-3	Chloroethane	ND	0.20	0.068	ppbv		ND	0.53	ug/m3
67-66-3	Chloroform	ND	0.20	0.037	ppbv		ND	0.98	ug/m3
74-87-3	Chloromethane	ND	0.20	0.090	ppbv		ND	0.41	ug/m3
107-05-1	3-Chloropropene	ND	0.20	0.083	ppbv		ND	0.63	ug/m3
95-49-8	2-Chlorotoluene	ND	0.20	0.072	ppbv		ND	1.0	ug/m3
56-23-5	Carbon tetrachloride	ND	0.20	0.040	ppbv		ND	1.3	ug/m3
110-82-7	Cyclohexane	ND	0.20	0.11	ppbv		ND	0.69	ug/m3
75-34-3	1,1-Dichloroethane	ND	0.20	0.057	ppbv		ND	0.81	ug/m3
75-35-4	1,1-Dichloroethylene	ND	0.20	0.059	ppbv		ND	0.79	ug/m3
106-93-4	1,2-Dibromoethane (EDB)	ND	0.20	0.097	ppbv		ND	1.5	ug/m3
107-06-2	1,2-Dichloroethane	ND	0.20	0.070	ppbv		ND	0.81	ug/m3
78-87-5	1,2-Dichloropropane	ND	0.20	0.062	ppbv		ND	0.92	ug/m3
123-91-1	1,4-Dioxane	ND	0.20	0.12	ppbv		ND	0.72	ug/m3
75-71-8	Dichlorodifluoromethane	ND	0.20	0.032	ppbv		ND	0.99	ug/m3
124-48-1	Dibromochloromethane	ND	0.20	0.052	ppbv		ND	1.7	ug/m3
156-60-5	trans-1,2-Dichloroethylene	ND	0.20	0.069	ppbv		ND	0.79	ug/m3
156-59-2	cis-1,2-Dichloroethylene	ND	0.20	0.077	ppbv		ND	0.79	ug/m3
10061-01-5	cis-1,3-Dichloropropene	ND	0.20	0.062	ppbv		ND	0.91	ug/m3
541-73-1	m-Dichlorobenzene	ND	0.20	0.040	ppbv		ND	1.2	ug/m3
95-50-1	o-Dichlorobenzene	ND	0.20	0.15	ppbv		ND	1.2	ug/m3
106-46-7	p-Dichlorobenzene	ND	0.20	0.19	ppbv		ND	1.2	ug/m3
10061-02-6	trans-1,3-Dichloropropene	ND	0.20	0.10	ppbv		ND	0.91	ug/m3
64-17-5	Ethanol	ND	0.50	0.39	ppbv		ND	0.94	ug/m3
100-41-4	Ethylbenzene	ND	0.20	0.061	ppbv		ND	0.87	ug/m3
141-78-6	Ethyl Acetate	ND	0.20	0.10	ppbv		ND	0.72	ug/m3
622-96-8	4-Ethyltoluene	ND	0.20	0.095	ppbv		ND	0.98	ug/m3

Summa Cleaning Certification

Job Number: JD59460
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V6W1142-SCC	6W26997.D	1	11/08/22	TCH	n/a	n/a	V6W1142

The QC reported here (Summa A1807) applies to the following samples: **Method:** TO-15

Batch CP11924 cleaned 10/27/22: JD59460-1(A831)

CAS No.	Compound	Result	RL	MDL	Units	Q	Result	RL	Units
76-13-1	Freon 113	ND	0.20	0.031	ppbv		ND	1.5	ug/m3
76-14-2	Freon 114	ND	0.20	0.050	ppbv		ND	1.4	ug/m3
142-82-5	Heptane	ND	0.20	0.092	ppbv		ND	0.82	ug/m3
87-68-3	Hexachlorobutadiene	ND	0.20	0.062	ppbv		ND	2.1	ug/m3
110-54-3	Hexane	ND	0.20	0.11	ppbv		ND	0.70	ug/m3
591-78-6	2-Hexanone	ND	0.20	0.15	ppbv		ND	0.82	ug/m3
67-63-0	Isopropyl Alcohol	ND	0.20	0.14	ppbv		ND	0.49	ug/m3
75-09-2	Methylene chloride	ND	0.20	0.056	ppbv		ND	0.69	ug/m3
78-93-3	Methyl ethyl ketone	ND	0.20	0.11	ppbv		ND	0.59	ug/m3
108-10-1	Methyl Isobutyl Ketone	ND	0.20	0.073	ppbv		ND	0.82	ug/m3
1634-04-4	Methyl Tert Butyl Ether	ND	0.20	0.080	ppbv		ND	0.72	ug/m3
80-62-6	Methylmethacrylate	ND	0.20	0.070	ppbv		ND	0.82	ug/m3
115-07-1	Propylene	ND	0.50	0.14	ppbv		ND	0.86	ug/m3
100-42-5	Styrene	ND	0.20	0.12	ppbv		ND	0.85	ug/m3
71-55-6	1,1,1-Trichloroethane	ND	0.20	0.037	ppbv		ND	1.1	ug/m3
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.20	0.048	ppbv		ND	1.4	ug/m3
79-00-5	1,1,2-Trichloroethane	ND	0.20	0.038	ppbv		ND	1.1	ug/m3
120-82-1	1,2,4-Trichlorobenzene	ND	0.20	0.12	ppbv		ND	1.5	ug/m3
95-63-6	1,2,4-Trimethylbenzene	ND	0.20	0.087	ppbv		ND	0.98	ug/m3
108-67-8	1,3,5-Trimethylbenzene	ND	0.20	0.080	ppbv		ND	0.98	ug/m3
540-84-1	2,2,4-Trimethylpentane	ND	0.20	0.095	ppbv		ND	0.93	ug/m3
75-65-0	Tertiary Butyl Alcohol	ND	0.20	0.093	ppbv		ND	0.61	ug/m3
127-18-4	Tetrachloroethylene	ND	0.040	0.014	ppbv		ND	0.27	ug/m3
109-99-9	Tetrahydrofuran	ND	0.20	0.090	ppbv		ND	0.59	ug/m3
108-88-3	Toluene	ND	0.20	0.057	ppbv		ND	0.75	ug/m3
79-01-6	Trichloroethylene	ND	0.040	0.019	ppbv		ND	0.21	ug/m3
75-69-4	Trichlorofluoromethane	ND	0.20	0.036	ppbv		ND	1.1	ug/m3
75-01-4	Vinyl chloride	ND	0.20	0.069	ppbv		ND	0.51	ug/m3
108-05-4	Vinyl Acetate	ND	0.20	0.11	ppbv		ND	0.70	ug/m3
	m,p-Xylene	ND	0.20	0.14	ppbv		ND	0.87	ug/m3
95-47-6	o-Xylene	ND	0.20	0.077	ppbv		ND	0.87	ug/m3
1330-20-7	Xylenes (total)	ND	0.20	0.077	ppbv		ND	0.87	ug/m3

Summa Cleaning Certification

Job Number: JD59460
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V6W1142-SCC	6W26997.D	1	11/08/22	TCH	n/a	n/a	V6W1142

The QC reported here (Summa A1807) applies to the following samples: **Method:** TO-15

Batch CP11924 cleaned 10/27/22: JD59460-1(A831)

CAS No.	Surrogate Recoveries		Limits
460-00-4	4-Bromofluorobenzene	105%	65-128%

Summa Cleaning Certification

Job Number: JD59460
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V6W1142-SCC	6W26998.D	1	11/08/22	TCH	n/a	n/a	V6W1142

The QC reported here (Summa A1186) applies to the following samples: **Method:** TO-15

Batch CP11914 cleaned 10/25/22: JD59460-5(A279), JD59460-6(A467)

CAS No.	Compound	Result	RL	MDL	Units	Q	Result	RL	Units
67-64-1	Acetone (2-Propanone)	ND	0.20	0.15	ppbv		ND	0.48	ug/m3
106-99-0	1,3-Butadiene	ND	0.20	0.084	ppbv		ND	0.44	ug/m3
71-43-2	Benzene	ND	0.20	0.062	ppbv		ND	0.64	ug/m3
75-27-4	Bromodichloromethane	ND	0.20	0.030	ppbv		ND	1.3	ug/m3
75-25-2	Bromoform	ND	0.20	0.071	ppbv		ND	2.1	ug/m3
74-83-9	Bromomethane	ND	0.20	0.069	ppbv		ND	0.78	ug/m3
593-60-2	Bromoethene	ND	0.20	0.061	ppbv		ND	0.87	ug/m3
100-44-7	Benzyl Chloride	ND	0.20	0.13	ppbv		ND	1.0	ug/m3
75-15-0	Carbon disulfide	ND	0.20	0.045	ppbv		ND	0.62	ug/m3
108-90-7	Chlorobenzene	ND	0.20	0.074	ppbv		ND	0.92	ug/m3
75-00-3	Chloroethane	ND	0.20	0.068	ppbv		ND	0.53	ug/m3
67-66-3	Chloroform	ND	0.20	0.037	ppbv		ND	0.98	ug/m3
74-87-3	Chloromethane	ND	0.20	0.090	ppbv		ND	0.41	ug/m3
107-05-1	3-Chloropropene	ND	0.20	0.083	ppbv		ND	0.63	ug/m3
95-49-8	2-Chlorotoluene	ND	0.20	0.072	ppbv		ND	1.0	ug/m3
56-23-5	Carbon tetrachloride	ND	0.20	0.040	ppbv		ND	1.3	ug/m3
110-82-7	Cyclohexane	ND	0.20	0.11	ppbv		ND	0.69	ug/m3
75-34-3	1,1-Dichloroethane	ND	0.20	0.057	ppbv		ND	0.81	ug/m3
75-35-4	1,1-Dichloroethylene	ND	0.20	0.059	ppbv		ND	0.79	ug/m3
106-93-4	1,2-Dibromoethane (EDB)	ND	0.20	0.097	ppbv		ND	1.5	ug/m3
107-06-2	1,2-Dichloroethane	ND	0.20	0.070	ppbv		ND	0.81	ug/m3
78-87-5	1,2-Dichloropropane	ND	0.20	0.062	ppbv		ND	0.92	ug/m3
123-91-1	1,4-Dioxane	ND	0.20	0.12	ppbv		ND	0.72	ug/m3
75-71-8	Dichlorodifluoromethane	ND	0.20	0.032	ppbv		ND	0.99	ug/m3
124-48-1	Dibromochloromethane	ND	0.20	0.052	ppbv		ND	1.7	ug/m3
156-60-5	trans-1,2-Dichloroethylene	ND	0.20	0.069	ppbv		ND	0.79	ug/m3
156-59-2	cis-1,2-Dichloroethylene	ND	0.20	0.077	ppbv		ND	0.79	ug/m3
10061-01-5	cis-1,3-Dichloropropene	ND	0.20	0.062	ppbv		ND	0.91	ug/m3
541-73-1	m-Dichlorobenzene	ND	0.20	0.040	ppbv		ND	1.2	ug/m3
95-50-1	o-Dichlorobenzene	ND	0.20	0.15	ppbv		ND	1.2	ug/m3
106-46-7	p-Dichlorobenzene	ND	0.20	0.19	ppbv		ND	1.2	ug/m3
10061-02-6	trans-1,3-Dichloropropene	ND	0.20	0.10	ppbv		ND	0.91	ug/m3
64-17-5	Ethanol	ND	0.50	0.39	ppbv		ND	0.94	ug/m3
100-41-4	Ethylbenzene	ND	0.20	0.061	ppbv		ND	0.87	ug/m3
141-78-6	Ethyl Acetate	ND	0.20	0.10	ppbv		ND	0.72	ug/m3
622-96-8	4-Ethyltoluene	ND	0.20	0.095	ppbv		ND	0.98	ug/m3

Summa Cleaning Certification

Job Number: JD59460
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V6W1142-SCC	6W26998.D	1	11/08/22	TCH	n/a	n/a	V6W1142

The QC reported here (Summa A1186) applies to the following samples: **Method:** TO-15

Batch CP11914 cleaned 10/25/22: JD59460-5(A279), JD59460-6(A467)

CAS No.	Compound	Result	RL	MDL	Units	Q	Result	RL	Units
76-13-1	Freon 113	ND	0.20	0.031	ppbv		ND	1.5	ug/m3
76-14-2	Freon 114	ND	0.20	0.050	ppbv		ND	1.4	ug/m3
142-82-5	Heptane	ND	0.20	0.092	ppbv		ND	0.82	ug/m3
87-68-3	Hexachlorobutadiene	ND	0.20	0.062	ppbv		ND	2.1	ug/m3
110-54-3	Hexane	ND	0.20	0.11	ppbv		ND	0.70	ug/m3
591-78-6	2-Hexanone	ND	0.20	0.15	ppbv		ND	0.82	ug/m3
67-63-0	Isopropyl Alcohol	ND	0.20	0.14	ppbv		ND	0.49	ug/m3
75-09-2	Methylene chloride	ND	0.20	0.056	ppbv		ND	0.69	ug/m3
78-93-3	Methyl ethyl ketone	ND	0.20	0.11	ppbv		ND	0.59	ug/m3
108-10-1	Methyl Isobutyl Ketone	ND	0.20	0.073	ppbv		ND	0.82	ug/m3
1634-04-4	Methyl Tert Butyl Ether	ND	0.20	0.080	ppbv		ND	0.72	ug/m3
80-62-6	Methylmethacrylate	ND	0.20	0.070	ppbv		ND	0.82	ug/m3
115-07-1	Propylene	ND	0.50	0.14	ppbv		ND	0.86	ug/m3
100-42-5	Styrene	ND	0.20	0.12	ppbv		ND	0.85	ug/m3
71-55-6	1,1,1-Trichloroethane	ND	0.20	0.037	ppbv		ND	1.1	ug/m3
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.20	0.048	ppbv		ND	1.4	ug/m3
79-00-5	1,1,2-Trichloroethane	ND	0.20	0.038	ppbv		ND	1.1	ug/m3
120-82-1	1,2,4-Trichlorobenzene	ND	0.20	0.12	ppbv		ND	1.5	ug/m3
95-63-6	1,2,4-Trimethylbenzene	ND	0.20	0.087	ppbv		ND	0.98	ug/m3
108-67-8	1,3,5-Trimethylbenzene	ND	0.20	0.080	ppbv		ND	0.98	ug/m3
540-84-1	2,2,4-Trimethylpentane	ND	0.20	0.095	ppbv		ND	0.93	ug/m3
75-65-0	Tertiary Butyl Alcohol	ND	0.20	0.093	ppbv		ND	0.61	ug/m3
127-18-4	Tetrachloroethylene	ND	0.040	0.014	ppbv		ND	0.27	ug/m3
109-99-9	Tetrahydrofuran	ND	0.20	0.090	ppbv		ND	0.59	ug/m3
108-88-3	Toluene	ND	0.20	0.057	ppbv		ND	0.75	ug/m3
79-01-6	Trichloroethylene	ND	0.040	0.019	ppbv		ND	0.21	ug/m3
75-69-4	Trichlorofluoromethane	ND	0.20	0.036	ppbv		ND	1.1	ug/m3
75-01-4	Vinyl chloride	ND	0.20	0.069	ppbv		ND	0.51	ug/m3
108-05-4	Vinyl Acetate	ND	0.20	0.11	ppbv		ND	0.70	ug/m3
	m,p-Xylene	ND	0.20	0.14	ppbv		ND	0.87	ug/m3
95-47-6	o-Xylene	ND	0.20	0.077	ppbv		ND	0.87	ug/m3
1330-20-7	Xylenes (total)	ND	0.20	0.077	ppbv		ND	0.87	ug/m3

Summa Cleaning Certification

Job Number: JD59460
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V6W1142-SCC	6W26998.D	1	11/08/22	TCH	n/a	n/a	V6W1142

The QC reported here (Summa A1186) applies to the following samples: **Method:** TO-15

Batch CP11914 cleaned 10/25/22: JD59460-5(A279), JD59460-6(A467)

CAS No.	Surrogate Recoveries		Limits
460-00-4	4-Bromofluorobenzene	104%	65-128%

Summa Cleaning Certification

Job Number: JD59460
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V6W1146-SCC	6W27128.D	1	11/23/22	TCH	n/a	n/a	V6W1146

The QC reported here (Summa A1065) applies to the following samples: **Method:** TO-15

Batch CP11961 cleaned 11/12/22: JD59460-3(A347)

CAS No.	Compound	Result	RL	MDL	Units	Q	Result	RL	Units
67-64-1	Acetone (2-Propanone)	ND	0.20	0.15	ppbv		ND	0.48	ug/m3
106-99-0	1,3-Butadiene	ND	0.20	0.084	ppbv		ND	0.44	ug/m3
71-43-2	Benzene	ND	0.20	0.062	ppbv		ND	0.64	ug/m3
75-27-4	Bromodichloromethane	ND	0.20	0.030	ppbv		ND	1.3	ug/m3
75-25-2	Bromoform	ND	0.20	0.071	ppbv		ND	2.1	ug/m3
74-83-9	Bromomethane	ND	0.20	0.069	ppbv		ND	0.78	ug/m3
593-60-2	Bromoethene	ND	0.20	0.061	ppbv		ND	0.87	ug/m3
100-44-7	Benzyl Chloride	ND	0.20	0.13	ppbv		ND	1.0	ug/m3
75-15-0	Carbon disulfide	ND	0.20	0.045	ppbv		ND	0.62	ug/m3
108-90-7	Chlorobenzene	ND	0.20	0.074	ppbv		ND	0.92	ug/m3
75-00-3	Chloroethane	ND	0.20	0.068	ppbv		ND	0.53	ug/m3
67-66-3	Chloroform	ND	0.20	0.037	ppbv		ND	0.98	ug/m3
74-87-3	Chloromethane	ND	0.20	0.090	ppbv		ND	0.41	ug/m3
107-05-1	3-Chloropropene	ND	0.20	0.083	ppbv		ND	0.63	ug/m3
95-49-8	2-Chlorotoluene	ND	0.20	0.072	ppbv		ND	1.0	ug/m3
56-23-5	Carbon tetrachloride	ND	0.20	0.040	ppbv		ND	1.3	ug/m3
110-82-7	Cyclohexane	ND	0.20	0.11	ppbv		ND	0.69	ug/m3
75-34-3	1,1-Dichloroethane	ND	0.20	0.057	ppbv		ND	0.81	ug/m3
75-35-4	1,1-Dichloroethylene	ND	0.20	0.059	ppbv		ND	0.79	ug/m3
106-93-4	1,2-Dibromoethane (EDB)	ND	0.20	0.097	ppbv		ND	1.5	ug/m3
107-06-2	1,2-Dichloroethane	ND	0.20	0.070	ppbv		ND	0.81	ug/m3
78-87-5	1,2-Dichloropropane	ND	0.20	0.062	ppbv		ND	0.92	ug/m3
123-91-1	1,4-Dioxane	ND	0.20	0.12	ppbv		ND	0.72	ug/m3
75-71-8	Dichlorodifluoromethane	ND	0.20	0.032	ppbv		ND	0.99	ug/m3
124-48-1	Dibromochloromethane	ND	0.20	0.052	ppbv		ND	1.7	ug/m3
156-60-5	trans-1,2-Dichloroethylene	ND	0.20	0.069	ppbv		ND	0.79	ug/m3
156-59-2	cis-1,2-Dichloroethylene	ND	0.20	0.077	ppbv		ND	0.79	ug/m3
10061-01-5	cis-1,3-Dichloropropene	ND	0.20	0.062	ppbv		ND	0.91	ug/m3
541-73-1	m-Dichlorobenzene	ND	0.20	0.040	ppbv		ND	1.2	ug/m3
95-50-1	o-Dichlorobenzene	ND	0.20	0.15	ppbv		ND	1.2	ug/m3
106-46-7	p-Dichlorobenzene	ND	0.20	0.19	ppbv		ND	1.2	ug/m3
10061-02-6	trans-1,3-Dichloropropene	ND	0.20	0.10	ppbv		ND	0.91	ug/m3
64-17-5	Ethanol	ND	0.50	0.39	ppbv		ND	0.94	ug/m3
100-41-4	Ethylbenzene	ND	0.20	0.061	ppbv		ND	0.87	ug/m3
141-78-6	Ethyl Acetate	ND	0.20	0.10	ppbv		ND	0.72	ug/m3
622-96-8	4-Ethyltoluene	ND	0.20	0.095	ppbv		ND	0.98	ug/m3

Summa Cleaning Certification

Job Number: JD59460
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V6W1146-SCC	6W27128.D	1	11/23/22	TCH	n/a	n/a	V6W1146

The QC reported here (Summa A1065) applies to the following samples: **Method:** TO-15

Batch CP11961 cleaned 11/12/22: JD59460-3(A347)

CAS No.	Compound	Result	RL	MDL	Units	Q	Result	RL	Units
76-13-1	Freon 113	ND	0.20	0.031	ppbv		ND	1.5	ug/m3
76-14-2	Freon 114	ND	0.20	0.050	ppbv		ND	1.4	ug/m3
142-82-5	Heptane	ND	0.20	0.092	ppbv		ND	0.82	ug/m3
87-68-3	Hexachlorobutadiene	ND	0.20	0.062	ppbv		ND	2.1	ug/m3
110-54-3	Hexane	ND	0.20	0.11	ppbv		ND	0.70	ug/m3
591-78-6	2-Hexanone	ND	0.20	0.15	ppbv		ND	0.82	ug/m3
67-63-0	Isopropyl Alcohol	ND	0.20	0.14	ppbv		ND	0.49	ug/m3
75-09-2	Methylene chloride	ND	0.20	0.056	ppbv		ND	0.69	ug/m3
78-93-3	Methyl ethyl ketone	ND	0.20	0.11	ppbv		ND	0.59	ug/m3
108-10-1	Methyl Isobutyl Ketone	ND	0.20	0.073	ppbv		ND	0.82	ug/m3
1634-04-4	Methyl Tert Butyl Ether	ND	0.20	0.080	ppbv		ND	0.72	ug/m3
80-62-6	Methylmethacrylate	ND	0.20	0.070	ppbv		ND	0.82	ug/m3
115-07-1	Propylene	ND	0.50	0.14	ppbv		ND	0.86	ug/m3
100-42-5	Styrene	ND	0.20	0.12	ppbv		ND	0.85	ug/m3
71-55-6	1,1,1-Trichloroethane	ND	0.20	0.037	ppbv		ND	1.1	ug/m3
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.20	0.048	ppbv		ND	1.4	ug/m3
79-00-5	1,1,2-Trichloroethane	ND	0.20	0.038	ppbv		ND	1.1	ug/m3
120-82-1	1,2,4-Trichlorobenzene	ND	0.20	0.12	ppbv		ND	1.5	ug/m3
95-63-6	1,2,4-Trimethylbenzene	ND	0.20	0.087	ppbv		ND	0.98	ug/m3
108-67-8	1,3,5-Trimethylbenzene	ND	0.20	0.080	ppbv		ND	0.98	ug/m3
540-84-1	2,2,4-Trimethylpentane	ND	0.20	0.095	ppbv		ND	0.93	ug/m3
75-65-0	Tertiary Butyl Alcohol	ND	0.20	0.093	ppbv		ND	0.61	ug/m3
127-18-4	Tetrachloroethylene	ND	0.040	0.014	ppbv		ND	0.27	ug/m3
109-99-9	Tetrahydrofuran	ND	0.20	0.090	ppbv		ND	0.59	ug/m3
108-88-3	Toluene	ND	0.20	0.057	ppbv		ND	0.75	ug/m3
79-01-6	Trichloroethylene	ND	0.040	0.019	ppbv		ND	0.21	ug/m3
75-69-4	Trichlorofluoromethane	ND	0.20	0.036	ppbv		ND	1.1	ug/m3
75-01-4	Vinyl chloride	ND	0.20	0.069	ppbv		ND	0.51	ug/m3
108-05-4	Vinyl Acetate	ND	0.20	0.11	ppbv		ND	0.70	ug/m3
	m,p-Xylene	ND	0.20	0.14	ppbv		ND	0.87	ug/m3
95-47-6	o-Xylene	ND	0.20	0.077	ppbv		ND	0.87	ug/m3
1330-20-7	Xylenes (total)	ND	0.20	0.077	ppbv		ND	0.87	ug/m3

Summa Cleaning Certification

Job Number: JD59460
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V6W1146-SCC	6W27128.D	1	11/23/22	TCH	n/a	n/a	V6W1146

The QC reported here (Summa A1065) applies to the following samples: **Method:** TO-15

Batch CP11961 cleaned 11/12/22: JD59460-3(A347)

CAS No.	Surrogate Recoveries		Limits
460-00-4	4-Bromofluorobenzene	97%	65-128%

Summa Cleaning Certification

Job Number: JD59460
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V6W1152-SCC	6W27325.D	1	11/29/22	TCH	n/a	n/a	V6W1152

The QC reported here (Summa A770) applies to the following samples: **Method:** TO-15

Batch CP11963 cleaned 11/14/22: JD59460-2(A1844)

CAS No.	Compound	Result	RL	MDL	Units	Q	Result	RL	Units
67-64-1	Acetone (2-Propanone)	ND	0.20	0.15	ppbv		ND	0.48	ug/m3
106-99-0	1,3-Butadiene	ND	0.20	0.084	ppbv		ND	0.44	ug/m3
71-43-2	Benzene	ND	0.20	0.062	ppbv		ND	0.64	ug/m3
75-27-4	Bromodichloromethane	ND	0.20	0.030	ppbv		ND	1.3	ug/m3
75-25-2	Bromoform	ND	0.20	0.071	ppbv		ND	2.1	ug/m3
74-83-9	Bromomethane	ND	0.20	0.069	ppbv		ND	0.78	ug/m3
593-60-2	Bromoethene	ND	0.20	0.061	ppbv		ND	0.87	ug/m3
100-44-7	Benzyl Chloride	ND	0.20	0.13	ppbv		ND	1.0	ug/m3
75-15-0	Carbon disulfide	ND	0.20	0.045	ppbv		ND	0.62	ug/m3
108-90-7	Chlorobenzene	ND	0.20	0.074	ppbv		ND	0.92	ug/m3
75-00-3	Chloroethane	ND	0.20	0.068	ppbv		ND	0.53	ug/m3
67-66-3	Chloroform	ND	0.20	0.037	ppbv		ND	0.98	ug/m3
74-87-3	Chloromethane	ND	0.20	0.090	ppbv		ND	0.41	ug/m3
107-05-1	3-Chloropropene	ND	0.20	0.083	ppbv		ND	0.63	ug/m3
95-49-8	2-Chlorotoluene	ND	0.20	0.072	ppbv		ND	1.0	ug/m3
56-23-5	Carbon tetrachloride	ND	0.20	0.040	ppbv		ND	1.3	ug/m3
110-82-7	Cyclohexane	ND	0.20	0.11	ppbv		ND	0.69	ug/m3
75-34-3	1,1-Dichloroethane	ND	0.20	0.057	ppbv		ND	0.81	ug/m3
75-35-4	1,1-Dichloroethylene	ND	0.20	0.059	ppbv		ND	0.79	ug/m3
106-93-4	1,2-Dibromoethane (EDB)	ND	0.20	0.097	ppbv		ND	1.5	ug/m3
107-06-2	1,2-Dichloroethane	ND	0.20	0.070	ppbv		ND	0.81	ug/m3
78-87-5	1,2-Dichloropropane	ND	0.20	0.062	ppbv		ND	0.92	ug/m3
123-91-1	1,4-Dioxane	ND	0.20	0.12	ppbv		ND	0.72	ug/m3
75-71-8	Dichlorodifluoromethane	ND	0.20	0.032	ppbv		ND	0.99	ug/m3
124-48-1	Dibromochloromethane	ND	0.20	0.052	ppbv		ND	1.7	ug/m3
156-60-5	trans-1,2-Dichloroethylene	ND	0.20	0.069	ppbv		ND	0.79	ug/m3
156-59-2	cis-1,2-Dichloroethylene	ND	0.20	0.077	ppbv		ND	0.79	ug/m3
10061-01-5	cis-1,3-Dichloropropene	ND	0.20	0.062	ppbv		ND	0.91	ug/m3
541-73-1	m-Dichlorobenzene	ND	0.20	0.040	ppbv		ND	1.2	ug/m3
95-50-1	o-Dichlorobenzene	ND	0.20	0.15	ppbv		ND	1.2	ug/m3
106-46-7	p-Dichlorobenzene	ND	0.20	0.19	ppbv		ND	1.2	ug/m3
10061-02-6	trans-1,3-Dichloropropene	ND	0.20	0.10	ppbv		ND	0.91	ug/m3
64-17-5	Ethanol	ND	0.50	0.39	ppbv		ND	0.94	ug/m3
100-41-4	Ethylbenzene	ND	0.20	0.061	ppbv		ND	0.87	ug/m3
141-78-6	Ethyl Acetate	ND	0.20	0.10	ppbv		ND	0.72	ug/m3
622-96-8	4-Ethyltoluene	ND	0.20	0.095	ppbv		ND	0.98	ug/m3

Summa Cleaning Certification

Job Number: JD59460
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V6W1152-SCC	6W27325.D	1	11/29/22	TCH	n/a	n/a	V6W1152

The QC reported here (Summa A770) applies to the following samples: **Method:** TO-15

Batch CP11963 cleaned 11/14/22: JD59460-2(A1844)

CAS No.	Compound	Result	RL	MDL	Units	Q	Result	RL	Units
76-13-1	Freon 113	ND	0.20	0.031	ppbv		ND	1.5	ug/m3
76-14-2	Freon 114	ND	0.20	0.050	ppbv		ND	1.4	ug/m3
142-82-5	Heptane	ND	0.20	0.092	ppbv		ND	0.82	ug/m3
87-68-3	Hexachlorobutadiene	ND	0.20	0.062	ppbv		ND	2.1	ug/m3
110-54-3	Hexane	ND	0.20	0.11	ppbv		ND	0.70	ug/m3
591-78-6	2-Hexanone	ND	0.20	0.15	ppbv		ND	0.82	ug/m3
67-63-0	Isopropyl Alcohol	ND	0.20	0.14	ppbv		ND	0.49	ug/m3
75-09-2	Methylene chloride	ND	0.20	0.056	ppbv		ND	0.69	ug/m3
78-93-3	Methyl ethyl ketone	ND	0.20	0.11	ppbv		ND	0.59	ug/m3
108-10-1	Methyl Isobutyl Ketone	ND	0.20	0.073	ppbv		ND	0.82	ug/m3
1634-04-4	Methyl Tert Butyl Ether	ND	0.20	0.080	ppbv		ND	0.72	ug/m3
80-62-6	Methylmethacrylate	ND	0.20	0.070	ppbv		ND	0.82	ug/m3
115-07-1	Propylene	ND	0.50	0.14	ppbv		ND	0.86	ug/m3
100-42-5	Styrene	ND	0.20	0.12	ppbv		ND	0.85	ug/m3
71-55-6	1,1,1-Trichloroethane	ND	0.20	0.037	ppbv		ND	1.1	ug/m3
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.20	0.048	ppbv		ND	1.4	ug/m3
79-00-5	1,1,2-Trichloroethane	ND	0.20	0.038	ppbv		ND	1.1	ug/m3
120-82-1	1,2,4-Trichlorobenzene	ND	0.20	0.12	ppbv		ND	1.5	ug/m3
95-63-6	1,2,4-Trimethylbenzene	ND	0.20	0.087	ppbv		ND	0.98	ug/m3
108-67-8	1,3,5-Trimethylbenzene	ND	0.20	0.080	ppbv		ND	0.98	ug/m3
540-84-1	2,2,4-Trimethylpentane	ND	0.20	0.095	ppbv		ND	0.93	ug/m3
75-65-0	Tertiary Butyl Alcohol	ND	0.20	0.093	ppbv		ND	0.61	ug/m3
127-18-4	Tetrachloroethylene	ND	0.040	0.014	ppbv		ND	0.27	ug/m3
109-99-9	Tetrahydrofuran	ND	0.20	0.090	ppbv		ND	0.59	ug/m3
108-88-3	Toluene	ND	0.20	0.057	ppbv		ND	0.75	ug/m3
79-01-6	Trichloroethylene	ND	0.040	0.019	ppbv		ND	0.21	ug/m3
75-69-4	Trichlorofluoromethane	ND	0.20	0.036	ppbv		ND	1.1	ug/m3
75-01-4	Vinyl chloride	ND	0.20	0.069	ppbv		ND	0.51	ug/m3
108-05-4	Vinyl Acetate	ND	0.20	0.11	ppbv		ND	0.70	ug/m3
	m,p-Xylene	ND	0.20	0.14	ppbv		ND	0.87	ug/m3
95-47-6	o-Xylene	ND	0.20	0.077	ppbv		ND	0.87	ug/m3
1330-20-7	Xylenes (total)	ND	0.20	0.077	ppbv		ND	0.87	ug/m3

Summa Cleaning Certification

Job Number: JD59460
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V6W1152-SCC	6W27325.D	1	11/29/22	TCH	n/a	n/a	V6W1152

The QC reported here (Summa A770) applies to the following samples: **Method:** TO-15

Batch CP11963 cleaned 11/14/22: JD59460-2(A1844)

CAS No.	Surrogate Recoveries		Limits
460-00-4	4-Bromofluorobenzene	92%	65-128%

Instrument Performance Check (BFB)

Job Number: JD59460
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample: V2W2776-BFB
Lab File ID: 2W62382.D
Instrument ID: GCMS2W
Injection Date: 12/14/22
Injection Time: 17:23

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
50	8.0 - 40.0% of mass 95	13015	22.8		Pass
75	30.0 - 66.0% of mass 95	30880	54.0		Pass
95	Base peak, 100% relative abundance	57157	100.0		Pass
96	5.0 - 9.0% of mass 95	3907	6.84		Pass
173	Less than 2.0% of mass 174	242	0.42	(0.57) [a]	Pass
174	50.0 - 120.0% of mass 95	42512	74.4		Pass
175	4.0 - 9.01% of mass 174	3043	5.32	(7.16) [a]	Pass
176	93.0 - 101.0% of mass 174	40504	70.9	(95.3) [a]	Pass
177	5.0 - 9.0% of mass 176	2767	4.84	(6.83) [b]	Pass

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

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

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
V2W2776-IC2776	2W62383.D	12/14/22	17:55	00:32	Initial cal 0.04
V2W2776-IC2776	2W62384.D	12/14/22	18:28	01:05	Initial cal 0.1
V2W2776-IC2776	2W62385.D	12/14/22	18:59	01:36	Initial cal 0.2
V2W2776-IC2776	2W62386.D	12/14/22	19:31	02:08	Initial cal 0.5
V2W2776-IC2776	2W62388.D	12/14/22	20:33	03:10	Initial cal 5
V2W2776-ICC2776	2W62389.D	12/14/22	21:05	03:42	Initial cal 10
V2W2776-IC2776	2W62390.D	12/14/22	21:37	04:14	Initial cal 20
V2W2776-IC2776	2W62391.D	12/14/22	22:12	04:49	Initial cal 40
V2W2776-IC2776	2W62392.D	12/14/22	22:47	05:24	Initial cal 50
V2W2776-ICV2776	2W62395.D	12/15/22	00:22	06:59	Initial cal verification 10

Instrument Performance Check (BFB)

Job Number: JD59460
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample: V2W2809-BFB
Lab File ID: 2W63182.D
Instrument ID: GCMS2W
Injection Date: 02/01/23
Injection Time: 08:45

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
50	8.0 - 40.0% of mass 95	14467	21.8		Pass
75	30.0 - 66.0% of mass 95	33928	51.1		Pass
95	Base peak, 100% relative abundance	66405	100.0		Pass
96	5.0 - 9.0% of mass 95	4114	6.20		Pass
173	Less than 2.0% of mass 174	246	0.37	(0.48) [a]	Pass
174	50.0 - 120.0% of mass 95	50931	76.7		Pass
175	4.0 - 9.01% of mass 174	3399	5.12	(6.67) [a]	Pass
176	93.0 - 101.0% of mass 174	49035	73.8	(96.3) [a]	Pass
177	5.0 - 9.0% of mass 176	3070	4.62	(6.26) [b]	Pass

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

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

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
V2W2809-CC2776	2W63183.D	02/01/23	09:18	00:33	Continuing cal 10
V2W2809-BS	2W63184.D	02/01/23	10:10	01:25	Blank Spike
V2W2809-BSD	2W63185.D	02/01/23	10:44	01:59	Blank Spike Duplicate
V2W2809-MB	2W63189.D	02/01/23	13:28	04:43	Method Blank
JD59460-1	2W63190.D	02/01/23	15:35	06:50	CRCA-AMB02.20230126
JD59460-2	2W63191.D	02/01/23	16:14	07:29	CRCA-AMB01.20230126
JD59460-3	2W63192.D	02/01/23	16:49	08:04	CRCA-VMP01.20230126
JD59460-5	2W63193.D	02/01/23	17:23	08:38	CRCA-VMP04.20230126
JD59460-5DUP	2W63194.D	02/01/23	17:58	09:13	Duplicate
JD59460-6	2W63195.D	02/01/23	18:31	09:46	CRCA-VMP02.20230126
ZZZZZZ	2W63196.D	02/01/23	19:04	10:19	(unrelated sample)
ZZZZZZ	2W63197.D	02/01/23	19:37	10:52	(unrelated sample)
ZZZZZZ	2W63198.D	02/01/23	20:10	11:25	(unrelated sample)
ZZZZZZ	2W63200.D	02/01/23	21:17	12:32	(unrelated sample)
ZZZZZZ	2W63201.D	02/01/23	21:57	13:12	(unrelated sample)
ZZZZZZ	2W63202.D	02/01/23	22:36	13:51	(unrelated sample)
ZZZZZZ	2W63203.D	02/01/23	23:15	14:30	(unrelated sample)
ZZZZZZ	2W63204.D	02/01/23	23:55	15:10	(unrelated sample)
ZZZZZZ	2W63205.D	02/02/23	00:34	15:49	(unrelated sample)
ZZZZZZ	2W63206.D	02/02/23	01:13	16:28	(unrelated sample)
ZZZZZZ	2W63207.D	02/02/23	01:52	17:07	(unrelated sample)
ZZZZZZ	2W63208.D	02/02/23	02:32	17:47	(unrelated sample)
ZZZZZZ	2W63209.D	02/02/23	03:12	18:27	(unrelated sample)
ZZZZZZ	2W63210.D	02/02/23	03:51	19:06	(unrelated sample)

Instrument Performance Check (BFB)

Job Number: JD59460
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample: V6W1125-BFB
Lab File ID: 6W26446.D
Instrument ID: GCMS6W
Injection Date: 10/19/22
Injection Time: 17:44

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
50	8.0 - 40.0% of mass 95	11894	25.6		Pass
75	30.0 - 66.0% of mass 95	23544	50.6		Pass
95	Base peak, 100% relative abundance	46541	100.0		Pass
96	5.0 - 9.0% of mass 95	3244	6.97		Pass
173	Less than 2.0% of mass 174	352	0.76	(0.98) [a]	Pass
174	50.0 - 120.0% of mass 95	35928	77.2		Pass
175	4.0 - 9.01% of mass 174	2432	5.23	(6.77) [a]	Pass
176	93.0 - 101.0% of mass 174	34165	73.4	(95.1) [a]	Pass
177	5.0 - 9.0% of mass 176	2442	5.25	(7.15) [b]	Pass

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

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

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
V6W1125-IC1125	6W26448.D	10/19/22	19:10	01:26	Initial cal 0.04
V6W1125-IC1125	6W26449.D	10/19/22	19:43	01:59	Initial cal 0.1
V6W1125-IC1125	6W26450.D	10/19/22	20:15	02:31	Initial cal 0.2
V6W1125-IC1125	6W26451.D	10/19/22	20:47	03:03	Initial cal 0.5
V6W1125-IC1125	6W26453.D	10/19/22	21:52	04:08	Initial cal 5
V6W1125-ICC1125	6W26454.D	10/19/22	22:25	04:41	Initial cal 10
V6W1125-IC1125	6W26455.D	10/19/22	22:57	05:13	Initial cal 20
V6W1125-IC1125	6W26456.D	10/19/22	23:29	05:45	Initial cal 40
V6W1125-IC1125	6W26457.D	10/20/22	00:03	06:19	Initial cal 50
V6W1125-ICV1125	6W26462.D	10/20/22	09:08	15:24	Initial cal verification 10

Instrument Performance Check (BFB)

Job Number: JD59460
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample: V6W1142-BFB
Lab File ID: 6W26988.D
Instrument ID: GCMS6W
Injection Date: 11/08/22
Injection Time: 11:50

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
50	8.0 - 40.0% of mass 95	10078	26.6		Pass
75	30.0 - 66.0% of mass 95	20464	54.0		Pass
95	Base peak, 100% relative abundance	37915	100.0		Pass
96	5.0 - 9.0% of mass 95	2397	6.32		Pass
173	Less than 2.0% of mass 174	238	0.63	(0.80) [a]	Pass
174	50.0 - 120.0% of mass 95	29728	78.4		Pass
175	4.0 - 9.01% of mass 174	2169	5.72	(7.30) [a]	Pass
176	93.0 - 101.0% of mass 174	29152	76.9	(98.1) [a]	Pass
177	5.0 - 9.0% of mass 176	1948	5.14	(6.68) [b]	Pass

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

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

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
V6W1142-CC1125	6W26990.D	11/08/22	13:46	01:56	Continuing cal 10
V6W1142-BS	6W26991.D	11/08/22	14:43	02:53	Blank Spike
V6W1142-BSD	6W26992.D	11/08/22	15:14	03:24	Blank Spike Duplicate
V6W1142-MB	6W26995.D	11/08/22	17:27	05:37	Method Blank
V6W1142-SCC	6W26997.D	11/08/22	19:33	07:43	Summa Cleaning Certification
V6W1142-SCC	6W26998.D	11/08/22	20:05	08:15	Summa Cleaning Certification
V6W1142-SCC	6W26999.D	11/08/22	20:37	08:47	Summa Cleaning Certification
V6W1142-SCC	6W27000.D	11/08/22	21:11	09:21	Summa Cleaning Certification
V6W1142-SCC	6W27001.D	11/08/22	21:44	09:54	Summa Cleaning Certification
V6W1142-SCC	6W27002.D	11/08/22	22:17	10:27	Summa Cleaning Certification
V6W1142-SCC	6W27003.D	11/08/22	22:50	11:00	Summa Cleaning Certification
V6W1142-SCC	6W27004.D	11/08/22	23:22	11:32	Summa Cleaning Certification
V6W1142-SCC	6W27005.D	11/08/22	23:55	12:05	Summa Cleaning Certification
V6W1142-SCC	6W27006.D	11/09/22	00:29	12:39	Summa Cleaning Certification
V6W1142-SCC	6W27008.D	11/09/22	01:34	13:44	Summa Cleaning Certification
V6W1142-SCC	6W27009.D	11/09/22	02:07	14:17	Summa Cleaning Certification
V6W1142-SCC	6W27010.D	11/09/22	02:40	14:50	Summa Cleaning Certification
V6W1142-SCC	6W27011.D	11/09/22	03:12	15:22	Summa Cleaning Certification
V6W1142-SCC	6W27013.D	11/09/22	04:20	16:30	Summa Cleaning Certification
V6W1142-SCC	6W27014.D	11/09/22	04:52	17:02	Summa Cleaning Certification
V6W1142-SCC	6W27015.D	11/09/22	05:25	17:35	Summa Cleaning Certification
V6W1142-SCC	6W27016.D	11/09/22	05:58	18:08	Summa Cleaning Certification
V6W1142-SCC	6W27017.D	11/09/22	06:31	18:41	Summa Cleaning Certification
V6W1142-SCC	6W27018.D	11/09/22	07:03	19:13	Summa Cleaning Certification

Instrument Performance Check (BFB)

Job Number: JD59460
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample:	V6W1142-BFB	**Injection Date:**	11/08/22
Lab File ID:	6W26988.D	**Injection Time:**	11:50
Instrument ID:	GCMS6W		

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
V6W1142-SCC	6W27021.D	11/09/22	08:43	20:53	Summa Cleaning Certification

Instrument Performance Check (BFB)

Job Number: JD59460
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample: V6W1146-BFB
Lab File ID: 6W27092.D
Instrument ID: GCMS6W
Injection Date: 11/22/22
Injection Time: 08:39

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
50	8.0 - 40.0% of mass 95	13793	24.6		Pass
75	30.0 - 66.0% of mass 95	27269	48.7		Pass
95	Base peak, 100% relative abundance	56024	100.0		Pass
96	5.0 - 9.0% of mass 95	3767	6.72		Pass
173	Less than 2.0% of mass 174	348	0.62	(0.75) [a]	Pass
174	50.0 - 120.0% of mass 95	46229	82.5		Pass
175	4.0 - 9.01% of mass 174	3274	5.84	(7.08) [a]	Pass
176	93.0 - 101.0% of mass 174	43128	77.0	(93.3) [a]	Pass
177	5.0 - 9.0% of mass 176	2590	4.62	(6.01) [b]	Pass

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

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

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
V6W1146-CC1125	6W27093.D	11/22/22	09:12	00:33	Continuing cal 10
V6W1146-BS	6W27094.D	11/22/22	10:08	01:29	Blank Spike
V6W1146-BSD	6W27095.D	11/22/22	10:40	02:01	Blank Spike Duplicate
V6W1146-MB	6W27097.D	11/22/22	12:29	03:50	Method Blank
ZZZZZZ	6W27098.D	11/22/22	13:32	04:53	(unrelated sample)
ZZZZZZ	6W27099.D	11/22/22	14:16	05:37	(unrelated sample)
JD55460-10	6W27100.D	11/22/22	14:49	06:10	(used for QC only; not part of job JD59460)
JD55460-10DUP	6W27101.D	11/22/22	15:23	06:44	Duplicate
ZZZZZZ	6W27102.D	11/22/22	15:55	07:16	(unrelated sample)
ZZZZZZ	6W27103.D	11/22/22	16:29	07:50	(unrelated sample)
ZZZZZZ	6W27104.D	11/22/22	17:03	08:24	(unrelated sample)
ZZZZZZ	6W27105.D	11/22/22	17:36	08:57	(unrelated sample)
ZZZZZZ	6W27106.D	11/22/22	18:09	09:30	(unrelated sample)
ZZZZZZ	6W27107.D	11/22/22	18:42	10:03	(unrelated sample)
ZZZZZZ	6W27108.D	11/22/22	19:15	10:36	(unrelated sample)
ZZZZZZ	6W27109.D	11/22/22	19:48	11:09	(unrelated sample)
ZZZZZZ	6W27110.D	11/22/22	20:22	11:43	(unrelated sample)
ZZZZZZ	6W27111.D	11/22/22	20:55	12:16	(unrelated sample)
ZZZZZZ	6W27112.D	11/22/22	21:30	12:51	(unrelated sample)
ZZZZZZ	6W27113.D	11/22/22	22:03	13:24	(unrelated sample)
ZZZZZZ	6W27114.D	11/22/22	22:38	13:59	(unrelated sample)
ZZZZZZ	6W27115.D	11/22/22	23:10	14:31	(unrelated sample)
ZZZZZZ	6W27116.D	11/22/22	23:43	15:04	(unrelated sample)
ZZZZZZ	6W27117.D	11/23/22	00:17	15:38	(unrelated sample)

Instrument Performance Check (BFB)

Job Number: JD59460
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample:	V6W1146-BFB	**Injection Date:**	11/22/22
Lab File ID:	6W27092.D	**Injection Time:**	08:39
Instrument ID:	GCMS6W		

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
ZZZZZZ	6W27118.D	11/23/22	00:50	16:11	(unrelated sample)
V6W1146-SCC	6W27121.D	11/23/22	02:30	17:51	Summa Cleaning Certification
V6W1146-SCC	6W27122.D	11/23/22	03:02	18:23	Summa Cleaning Certification
V6W1146-SCC	6W27123.D	11/23/22	03:36	18:57	Summa Cleaning Certification
V6W1146-SCC	6W27124.D	11/23/22	04:09	19:30	Summa Cleaning Certification
V6W1146-SCC	6W27125.D	11/23/22	04:42	20:03	Summa Cleaning Certification
V6W1146-SCC	6W27127.D	11/23/22	05:50	21:11	Summa Cleaning Certification
V6W1146-SCC	6W27128.D	11/23/22	06:23	21:44	Summa Cleaning Certification

Instrument Performance Check (BFB)

Job Number: JD59460
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample: V6W1152-BFB
Lab File ID: 6W27290.D
Instrument ID: GCMS6W
Injection Date: 11/28/22
Injection Time: 11:58

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
50	8.0 - 40.0% of mass 95	9522	22.4		Pass
75	30.0 - 66.0% of mass 95	20360	47.8		Pass
95	Base peak, 100% relative abundance	42576	100.0		Pass
96	5.0 - 9.0% of mass 95	2763	6.49		Pass
173	Less than 2.0% of mass 174	354	0.83	(0.96) [a]	Pass
174	50.0 - 120.0% of mass 95	36965	86.8		Pass
175	4.0 - 9.01% of mass 174	2745	6.45	(7.43) [a]	Pass
176	93.0 - 101.0% of mass 174	36280	85.2	(98.1) [a]	Pass
177	5.0 - 9.0% of mass 176	2339	5.49	(6.45) [b]	Pass

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

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

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
V6W1152-CC1125	6W27292.D	11/28/22	13:24	01:26	Continuing cal 10
V6W1152-BS	6W27293.D	11/28/22	14:03	02:05	Blank Spike
V6W1152-BSD	6W27294.D	11/28/22	14:36	02:38	Blank Spike Duplicate
V6W1152-MB	6W27296.D	11/28/22	15:57	03:59	Method Blank
ZZZZZZ	6W27297.D	11/28/22	16:38	04:40	(unrelated sample)
ZZZZZZ	6W27299.D	11/28/22	17:44	05:46	(unrelated sample)
ZZZZZZ	6W27300.D	11/28/22	18:18	06:20	(unrelated sample)
ZZZZZZ	6W27301.D	11/28/22	18:52	06:54	(unrelated sample)
ZZZZZZ	6W27302.D	11/28/22	19:25	07:27	(unrelated sample)
ZZZZZZ	6W27303.D	11/28/22	19:59	08:01	(unrelated sample)
JD56027-4	6W27304.D	11/28/22	20:33	08:35	(used for QC only; not part of job JD59460)
JD56027-4DUP	6W27305.D	11/28/22	21:06	09:08	Duplicate
ZZZZZZ	6W27307.D	11/28/22	22:14	10:16	(unrelated sample)
ZZZZZZ	6W27308.D	11/28/22	22:48	10:50	(unrelated sample)
ZZZZZZ	6W27309.D	11/28/22	23:22	11:24	(unrelated sample)
ZZZZZZ	6W27310.D	11/28/22	23:56	11:58	(unrelated sample)
ZZZZZZ	6W27311.D	11/29/22	00:29	12:31	(unrelated sample)
ZZZZZZ	6W27312.D	11/29/22	01:03	13:05	(unrelated sample)
ZZZZZZ	6W27313.D	11/29/22	01:36	13:38	(unrelated sample)
ZZZZZZ	6W27314.D	11/29/22	02:10	14:12	(unrelated sample)
ZZZZZZ	6W27315.D	11/29/22	02:43	14:45	(unrelated sample)
ZZZZZZ	6W27316.D	11/29/22	03:16	15:18	(unrelated sample)
V6W1152-SCC	6W27320.D	11/29/22	05:29	17:31	Summa Cleaning Certification
V6W1152-SCC	6W27321.D	11/29/22	06:01	18:03	Summa Cleaning Certification

Instrument Performance Check (BFB)

Job Number: JD59460
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample:	V6W1152-BFB	**Injection Date:**	11/28/22
Lab File ID:	6W27290.D	**Injection Time:**	11:58
Instrument ID:	GCMS6W		

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
V6W1152-SCC	6W27322.D	11/29/22	06:33	18:35	Summa Cleaning Certification
V6W1152-SCC	6W27323.D	11/29/22	07:07	19:09	Summa Cleaning Certification
V6W1152-SCC	6W27324.D	11/29/22	07:40	19:42	Summa Cleaning Certification
V6W1152-SCC	6W27325.D	11/29/22	08:13	20:15	Summa Cleaning Certification
V6W1152-SCC	6W27326.D	11/29/22	08:46	20:48	Summa Cleaning Certification
V6W1152-SCC	6W27327.D	11/29/22	09:19	21:21	Summa Cleaning Certification
V6W1152-SCC	6W27328.D	11/29/22	09:52	21:54	Summa Cleaning Certification
V6W1152-SCC	6W27329.D	11/29/22	10:26	22:28	Summa Cleaning Certification
V6W1152-SCC	6W27330.D	11/29/22	10:59	23:01	Summa Cleaning Certification

Internal Standard Area Summary

Job Number: JD59460
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Check Std:	V2W2809-CC2776	**Injection Date:**	02/01/23
Lab File ID:	2W63183.D	**Injection Time:**	09:18
Instrument ID:	GCMS2W	**Method:**	TO-15

	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT
Check Std	58370	3.44	299128	4.77	270811	10.45
Upper Limit [a]	81718	3.77	418779	5.10	379135	10.78
Lower Limit [b]	35022	3.11	179477	4.44	162487	10.12

Lab Sample ID	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT
V2W2809-BS	59237	3.44	303506	4.77	273258	10.45
V2W2809-BSD	58679	3.44	302004	4.77	276545	10.45
V2W2809-MB	55924	3.44	287782	4.77	261139	10.44
JD59460-1	61831	3.44	318569	4.77	286141	10.44
JD59460-2	60901	3.44	312236	4.77	283446	10.44
JD59460-3	63224	3.46	339424	4.78	307593	10.45
JD59460-5	68071	3.48	359480	4.80	323584	10.46
JD59460-5DUP	61999	3.46	323887	4.79	294765	10.45
JD59460-6	58014	3.45	299658	4.78	273660	10.45
ZZZZZZ	58829	3.45	306728	4.78	276543	10.45
ZZZZZZ	56450	3.45	283904	4.78	275494	10.45
ZZZZZZ	60531	3.45	314061	4.78	288541	10.45
ZZZZZZ	57516	3.45	296259	4.78	269441	10.45
ZZZZZZ	57195	3.44	293434	4.77	267301	10.44
ZZZZZZ	57454	3.45	292715	4.77	266538	10.44
ZZZZZZ	57123	3.44	296111	4.77	267238	10.44
ZZZZZZ	56380	3.44	294515	4.77	271363	10.45
ZZZZZZ	58431	3.45	304307	4.77	283539	10.45
ZZZZZZ	59128	3.44	307934	4.77	286374	10.44
ZZZZZZ	59542	3.45	309525	4.77	280762	10.44
ZZZZZZ	57527	3.45	300761	4.77	276280	10.44
ZZZZZZ	58010	3.45	301560	4.77	274389	10.45
ZZZZZZ	57570	3.44	298464	4.77	272303	10.45

IS 1 = Bromochloromethane
IS 2 = 1,4-Difluorobenzene
IS 3 = Chlorobenzene-D5

(a) Upper Limit = + 40% of check standard area; Retention time + 0.33 minutes.
(b) Lower Limit = -40% of check standard area; Retention time -0.33 minutes.

Internal Standard Area Summary

Job Number: JD59460
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Check Std: V6W1142-CC1125 **Injection Date:** 11/08/22
Lab File ID: 6W26990.D **Injection Time:** 13:46
Instrument ID: GCMS6W **Method:** TO-15

	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT
Check Std	42449	3.34	214251	4.73	161482	10.58
Upper Limit [a]	59429	3.67	299951	5.06	226075	10.91
Lower Limit [b]	25469	3.01	128551	4.40	96889	10.25

Lab Sample ID	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT
V6W1142-BS	42763	3.34	215690	4.73	162892	10.58
V6W1142-BSD	45121	3.34	225399	4.73	172398	10.59
V6W1142-MB	42962	3.34	188822	4.73	158207	10.58
V6W1142-SCC	42731	3.34	187943	4.73	159540	10.58
V6W1142-SCC	42961	3.34	189202	4.73	162059	10.59
V6W1142-SCC	40805	3.34	189643	4.73	160466	10.58
V6W1142-SCC	42475	3.34	216265	4.73	161249	10.58
V6W1142-SCC	41850	3.34	191150	4.73	160454	10.59
V6W1142-SCC	40175	3.34	192421	4.73	164222	10.58
V6W1142-SCC	39498	3.34	193634	4.74	164517	10.59
V6W1142-SCC	42607	3.34	219656	4.74	163382	10.59
V6W1142-SCC	42175	3.34	214235	4.74	158670	10.59
V6W1142-SCC	43256	3.34	215401	4.73	159383	10.58
V6W1142-SCC	43287	3.34	219160	4.73	160693	10.58
V6W1142-SCC	41930	3.34	216027	4.74	158731	10.59
V6W1142-SCC	42530	3.34	191126	4.74	160248	10.59
V6W1142-SCC	43355	3.34	193088	4.73	164292	10.58
V6W1142-SCC	44694	3.34	201645	4.74	170864	10.59
V6W1142-SCC	42048	3.34	195097	4.73	165386	10.59
V6W1142-SCC	41214	3.34	197596	4.74	165940	10.59
V6W1142-SCC	41794	3.34	197038	4.73	170407	10.58
V6W1142-SCC	41501	3.34	198464	4.74	168677	10.59
V6W1142-SCC	41414	3.34	197098	4.73	166339	10.59
V6W1142-SCC	43605	3.34	193857	4.74	166439	10.59

IS 1 = Bromochloromethane
IS 2 = 1,4-Difluorobenzene
IS 3 = Chlorobenzene-D5

(a) Upper Limit = + 40% of check standard area; Retention time + 0.33 minutes.
(b) Lower Limit = -40% of check standard area; Retention time -0.33 minutes.

Internal Standard Area Summary

Job Number: JD59460
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Check Std:	V6W1146-CC1125	**Injection Date:**	11/22/22
Lab File ID:	6W27093.D	**Injection Time:**	09:12
Instrument ID:	GCMS6W	**Method:**	TO-15

	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT
Check Std	56997	3.34	287203	4.73	241261	10.58
Upper Limit [a]	79796	3.67	402084	5.06	337765	10.91
Lower Limit [b]	34198	3.01	172322	4.40	144757	10.25

Lab Sample ID	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT
V6W1146-BS	54690	3.34	278664	4.73	230637	10.58
V6W1146-BSD	57755	3.34	289723	4.73	245651	10.59
V6W1146-MB	56935	3.34	281246	4.73	239631	10.59
ZZZZZZ	56292	3.34	285367	4.73	234987	10.58
ZZZZZZ	55869	3.34	282901	4.73	233320	10.58
JD55460-10	53225	3.34	271799	4.73	224595	10.58
JD55460-10DUP	54676	3.34	275566	4.73	229296	10.59
ZZZZZZ	54874	3.34	280332	4.73	229895	10.59
ZZZZZZ	53958	3.34	272417	4.73	223000	10.58
ZZZZZZ	53975	3.34	272915	4.73	227566	10.58
ZZZZZZ	57053	3.34	284597	4.73	241429	10.59
ZZZZZZ	55759	3.34	278594	4.73	236822	10.59
ZZZZZZ	57384	3.34	282290	4.74	243317	10.59
ZZZZZZ	56731	3.34	278909	4.73	238585	10.59
ZZZZZZ	54777	3.34	270826	4.74	231810	10.58
ZZZZZZ	54194	3.34	270245	4.73	227864	10.59
ZZZZZZ	52743	3.34	261551	4.73	222179	10.58
ZZZZZZ	55278	3.34	267606	4.74	241636	10.59
ZZZZZZ	58019	3.34	285199	4.73	238960	10.59
ZZZZZZ	54310	3.34	264853	4.73	225357	10.58
ZZZZZZ	53757	3.34	261457	4.74	224052	10.59
ZZZZZZ	57531	3.34	269442	4.74	230095	10.58
ZZZZZZ	56379	3.34	266014	4.74	226198	10.59
ZZZZZZ	53506	3.34	258216	4.74	220767	10.59
V6W1146-SCC	52004	3.34	245516	4.73	208614	10.58
V6W1146-SCC	51600	3.34	241446	4.74	207227	10.58
V6W1146-SCC	49930	3.34	233055	4.74	198976	10.59
V6W1146-SCC	51343	3.34	237224	4.74	201907	10.59
V6W1146-SCC	49992	3.34	233530	4.74	197637	10.59
V6W1146-SCC	51102	3.34	237450	4.74	202608	10.59
V6W1146-SCC	50404	3.34	232166	4.74	198073	10.59

IS 1 = Bromochloromethane
IS 2 = 1,4-Difluorobenzene
IS 3 = Chlorobenzene-D5

Internal Standard Area Summary

Job Number: JD59460
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Check Std:	V6W1146-CC1125	**Injection Date:**	11/22/22
Lab File ID:	6W27093.D	**Injection Time:**	09:12
Instrument ID:	GCMS6W	**Method:**	TO-15

Lab	IS 1		IS 2		IS 3	
Sample ID	**AREA**	**RT**	**AREA**	**RT**	**AREA**	**RT**

(a) Upper Limit = + 40% of check standard area; Retention time + 0.33 minutes.
(b) Lower Limit = -40% of check standard area; Retention time -0.33 minutes.

Internal Standard Area Summary

Job Number: JD59460
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Check Std: V6W1152-CC1125 **Injection Date:** 11/28/22
Lab File ID: 6W27292.D **Injection Time:** 13:24
Instrument ID: GCMS6W **Method:** TO-15

	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT
Check Std	47743	3.34	233190	4.73	207412	10.58
Upper Limit [a]	66840	3.67	326466	5.06	290377	10.91
Lower Limit [b]	28646	3.01	139914	4.40	124447	10.25

Lab Sample ID	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT
V6W1152-BS	48412	3.34	233056	4.73	208863	10.59
V6W1152-BSD	49041	3.34	239067	4.74	213877	10.59
V6W1152-MB	51542	3.34	241566	4.73	206667	10.59
ZZZZZZ	46730	3.34	236905	4.73	198570	10.58
ZZZZZZ	48169	3.34	229606	4.73	204809	10.59
ZZZZZZ	47911	3.34	231245	4.73	198938	10.59
ZZZZZZ	48229	3.34	233326	4.73	201266	10.58
ZZZZZZ	47432	3.34	228563	4.73	196834	10.59
ZZZZZZ	47747	3.34	231780	4.73	200085	10.59
JD56027-4	46322	3.34	224224	4.73	193140	10.59
JD56027-4DUP	47706	3.34	230922	4.73	198352	10.59
ZZZZZZ	48059	3.34	230693	4.73	197654	10.59
ZZZZZZ	47131	3.34	229267	4.73	204530	10.59
ZZZZZZ	48293	3.34	233279	4.73	200935	10.59
ZZZZZZ	48379	3.34	232085	4.73	200144	10.59
ZZZZZZ	47195	3.34	227950	4.73	195782	10.59
ZZZZZZ	47834	3.34	233562	4.73	199031	10.59
ZZZZZZ	47226	3.34	228221	4.73	195480	10.58
ZZZZZZ	48404	3.34	231882	4.73	199126	10.59
ZZZZZZ	47617	3.34	231772	4.73	199538	10.59
ZZZZZZ	48098	3.34	233675	4.73	204027	10.58
V6W1152-SCC	46828	3.34	235532	4.73	195419	10.59
V6W1152-SCC	47475	3.34	234412	4.74	194306	10.59
V6W1152-SCC	49526	3.34	226852	4.73	190109	10.59
V6W1152-SCC	50355	3.34	224017	4.73	190946	10.59
V6W1152-SCC	50428	3.34	228298	4.73	195944	10.59
V6W1152-SCC	50506	3.34	230115	4.73	195528	10.58
V6W1152-SCC	50774	3.34	231598	4.73	198470	10.59
V6W1152-SCC	50824	3.34	233374	4.74	199843	10.59
V6W1152-SCC	50031	3.34	230143	4.74	197073	10.59
V6W1152-SCC	49712	3.34	230672	4.74	196229	10.58
V6W1152-SCC	50639	3.34	231877	4.74	199699	10.59

IS 1 = Bromochloromethane
IS 2 = 1,4-Difluorobenzene

Internal Standard Area Summary

Job Number: JD59460
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Check Std:	V6W1152-CC1125	**Injection Date:**	11/28/22
Lab File ID:	6W27292.D	**Injection Time:**	13:24
Instrument ID:	GCMS6W	**Method:**	TO-15

Lab Sample ID	IS 1 AREA	IS 1 RT	IS 2 AREA	IS 2 RT	IS 3 AREA	IS 3 RT

IS 3 = Chlorobenzene-D5

(a) Upper Limit = + 40% of check standard area; Retention time + 0.33 minutes.
(b) Lower Limit = -40% of check standard area; Retention time -0.33 minutes.

Initial Calibration Retention Time/Internal Standard Area Summary

Job Number: JD59460
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample Number	Lab File ID	Injected	By	Level	Inst ID	Method	
V2W2776-IC2776	2W62383.D	12/14/22 17:55	TCH	0.04	GCMS2W	TO-15	Reporting this level
V2W2776-IC2776	2W62384.D	12/14/22 18:28	TCH	0.1	GCMS2W	TO-15	
V2W2776-IC2776	2W62385.D	12/14/22 18:59	TCH	0.2	GCMS2W	TO-15	
V2W2776-IC2776	2W62386.D	12/14/22 19:31	TCH	0.5	GCMS2W	TO-15	
V2W2776-IC2776	2W62388.D	12/14/22 20:33	TCH	5	GCMS2W	TO-15	
V2W2776-ICC2776	2W62389.D	12/14/22 21:05	TCH	10	GCMS2W	TO-15	
V2W2776-IC2776	2W62390.D	12/14/22 21:37	TCH	20	GCMS2W	TO-15	
V2W2776-IC2776	2W62391.D	12/14/22 22:12	TCH	40	GCMS2W	TO-15	
V2W2776-IC2776	2W62392.D	12/14/22 22:47	TCH	50	GCMS2W	TO-15	

Target Compound	RT (min.)	Istd RT (min.)	Rel RT		Mean Rel RT	Rel RT Range (+ /- .06)
Bromobenzene	14.18	10.45	1.357	ok	1.357	1.297-1.417
Bromodichloromethane	5.30	4.77	1.111	ok	1.112	1.052-1.172
Carbon disulfide	2.66	3.44	0.773	ok	0.774	0.714-0.834
Chlorobenzene	10.52	10.45	1.007	ok	1.007	0.947-1.067
Chloroform	3.51	3.44	1.020	ok	1.022	0.962-1.082
Carbon tetrachloride	4.54	3.44	1.320	ok	1.323	1.263-1.383
1,1-Dichloroethane	2.98	3.44	0.866	ok	0.866	0.806-0.926
1,3-Dichloropropane	7.60	4.77	1.593	ok	1.595	1.535-1.655
Dichlorodifluoromethane	1.79	3.44	0.520	ok	0.521	0.461-0.581
Dichlorofluoromethane	2.11	3.44	0.613	ok	0.613	0.553-0.673
m-Dichlorobenzene	16.78	10.45	1.606	ok	1.606	1.546-1.666
o-Dichlorobenzene	17.17	10.45	1.643	ok	1.642	1.582-1.702
p-Dichlorobenzene	16.86	10.45	1.613	ok	1.614	1.554-1.674
2,4-Dimethylpentane	4.03	3.44	1.172	ok	1.172	1.112-1.232
Ethyl Acrylate	5.26	4.77	1.103	ok	1.101	1.041-1.161
4-Ethyltoluene	16.07	10.45	1.538	ok	1.537	1.477-1.597
Freon 114	1.87	3.44	0.544	ok	0.544	0.484-0.604
Freon 123	2.24	3.44	0.651	ok	0.651	0.591-0.711
Freon 142B	1.83	3.44	0.532	ok	0.532	0.472-0.592
Heptane	5.78	4.77	1.212	ok	1.212	1.152-1.272
Hexachlorobutadiene	18.76	10.45	1.795	ok	1.795	1.735-1.855
2-Hexanone	8.20	4.77	1.719	ok	1.713	1.653-1.773
Iodomethane	2.50	3.44	0.727	ok	0.727	0.667-0.787
Methyl Tert Butyl Ether	3.03	3.44	0.881	ok	0.879	0.819-0.939
Nonane	13.89	10.45	1.329	ok	1.331	1.271-1.391
Octane	9.45	4.77	1.981	ok	1.982	1.922-2.042
Styrene	12.58	10.45	1.204	ok	1.203	1.143-1.263
1,1,1-Trichloroethane	4.11	3.44	1.195	ok	1.196	1.136-1.256
1,1,2,2-Tetrachloroethane	12.80	10.45	1.225	ok	1.225	1.165-1.285
1,2,3-Trichloropropane	13.09	10.45	1.253	ok	1.252	1.192-1.312
1,2,3-Trimethylbenzene	17.11	10.45	1.637	ok	1.638	1.578-1.698
1,2,4-Trimethylbenzene	16.72	10.45	1.600	ok	1.600	1.540-1.660
1,3,5-Trimethylbenzene	16.23	10.45	1.553	ok	1.554	1.494-1.614
2,2,4-Trimethylpentane	5.45	4.77	1.143	ok	1.144	1.084-1.204
Tetrachloroethylene	9.30	4.77	1.950	ok	1.952	1.892-2.012
Trichloroethylene	5.36	4.77	1.124	ok	1.124	1.064-1.184
Trichlorofluoromethane	2.33	3.44	0.677	ok	0.676	0.616-0.736

Initial Calibration Retention Time/Internal Standard Area Summary

Job Number: JD59460
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample Number	Lab File ID	Injected	By	Level	Inst ID	Method	
V2W2776-IC2776	2W62383.D	12/14/22 17:55	TCH	0.04	GCMS2W	TO-15	Reporting this level
V2W2776-IC2776	2W62384.D	12/14/22 18:28	TCH	0.1	GCMS2W	TO-15	
V2W2776-IC2776	2W62385.D	12/14/22 18:59	TCH	0.2	GCMS2W	TO-15	
V2W2776-IC2776	2W62386.D	12/14/22 19:31	TCH	0.5	GCMS2W	TO-15	
V2W2776-IC2776	2W62388.D	12/14/22 20:33	TCH	5	GCMS2W	TO-15	
V2W2776-ICC2776	2W62389.D	12/14/22 21:05	TCH	10	GCMS2W	TO-15	
V2W2776-IC2776	2W62390.D	12/14/22 21:37	TCH	20	GCMS2W	TO-15	
V2W2776-IC2776	2W62391.D	12/14/22 22:12	TCH	40	GCMS2W	TO-15	
V2W2776-IC2776	2W62392.D	12/14/22 22:47	TCH	50	GCMS2W	TO-15	

Internal Standard	RT (min.)		Mean RT(min.)	RT Range (+ /- 0.33)	Area		Mean Area	Area Range (+ /- 40 %)
Bromochloromethane	3.44	ok	3.44	3.11-3.77	51667	ok	52567	31540-73594
1,4-Difluorobenzene	4.77	ok	4.77	4.44-5.10	263205	ok	267062	160237-373887
Chlorobenzene-D5	10.45	ok	10.45	10.12-10.78	235091	ok	240629	144377-336881

Initial Calibration Retention Time/Internal Standard Area Summary

Job Number: JD59460
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample Number	Lab File ID	Injected	By	Level	Inst ID	Method	
V2W2776-IC2776	2W62383.D	12/14/22 17:55	TCH	0.04	GCMS2W	TO-15	
V2W2776-IC2776	2W62384.D	12/14/22 18:28	TCH	0.1	GCMS2W	TO-15	Reporting this level
V2W2776-IC2776	2W62385.D	12/14/22 18:59	TCH	0.2	GCMS2W	TO-15	
V2W2776-IC2776	2W62386.D	12/14/22 19:31	TCH	0.5	GCMS2W	TO-15	
V2W2776-IC2776	2W62388.D	12/14/22 20:33	TCH	5	GCMS2W	TO-15	
V2W2776-ICC2776	2W62389.D	12/14/22 21:05	TCH	10	GCMS2W	TO-15	
V2W2776-IC2776	2W62390.D	12/14/22 21:37	TCH	20	GCMS2W	TO-15	
V2W2776-IC2776	2W62391.D	12/14/22 22:12	TCH	40	GCMS2W	TO-15	
V2W2776-IC2776	2W62392.D	12/14/22 22:47	TCH	50	GCMS2W	TO-15	

Target Compound	RT (min.)	Istd RT (min.)	Rel RT		Mean Rel RT	Rel RT Range (+ /- .06)
Acrylonitrile	2.42	3.44	0.703	ok	0.702	0.642-0.762
Acetonitrile	2.18	3.44	0.634	ok	0.634	0.574-0.694
1,3-Butadiene	1.95	3.44	0.567	ok	0.567	0.507-0.627
Benzene	4.43	3.44	1.288	ok	1.289	1.229-1.349
Bromobenzene	14.17	10.45	1.356	ok	1.357	1.297-1.417
Bromodichloromethane	5.30	4.76	1.113	ok	1.112	1.052-1.172
Bromoform	11.65	10.45	1.115	ok	1.116	1.056-1.176
Bromomethane	2.03	3.44	0.590	ok	0.590	0.530-0.650
Bromoethene	2.19	3.44	0.637	ok	0.636	0.576-0.696
n-Butane	1.96	3.44	0.570	ok	0.570	0.510-0.630
n-Butylbenzene	17.53	10.45	1.678	ok	1.678	1.618-1.738
sec-Butylbenzene	17.00	10.45	1.627	ok	1.627	1.567-1.687
tert-Butylbenzene	16.71	10.45	1.599	ok	1.599	1.539-1.659
Carbon disulfide	2.66	3.44	0.773	ok	0.774	0.714-0.834
Chlorobenzene	10.53	10.45	1.008	ok	1.007	0.947-1.067
Chloroethane	2.08	3.44	0.605	ok	0.605	0.545-0.665
Chlorotrifluoroethene	1.78	3.44	0.517	ok	0.516	0.456-0.576
Chloroform	3.51	3.44	1.020	ok	1.022	0.962-1.082
Chloromethane	1.84	3.44	0.535	ok	0.535	0.475-0.595
3-Chloropropene	2.60	3.44	0.756	ok	0.757	0.697-0.817
2-Chlorotoluene	15.31	10.45	1.465	ok	1.466	1.406-1.526
Carbon tetrachloride	4.54	3.44	1.320	ok	1.323	1.263-1.383
Cyclohexane	4.65	4.76	0.977	ok	0.974	0.914-1.034
1,1-Dichloroethane	2.97	3.44	0.863	ok	0.866	0.806-0.926
1,1-Dichloroethylene	2.53	3.44	0.735	ok	0.735	0.675-0.795
1,2-Dibromoethane (EDB)	8.43	4.76	1.771	ok	1.770	1.710-1.830
1,2-Dichloroethane	3.94	3.44	1.145	ok	1.147	1.087-1.207
1,2-Dichloropropane	5.11	4.76	1.074	ok	1.073	1.013-1.133
1,3-Dichloropropane	7.61	4.76	1.599	ok	1.595	1.535-1.655
1,4-Dioxane	5.48	4.76	1.151	ok	1.135	1.075-1.195
Dichlorodifluoromethane	1.79	3.44	0.520	ok	0.521	0.461-0.581
Dichlorofluoromethane	2.11	3.44	0.613	ok	0.613	0.553-0.673
Dibromochloromethane	8.09	4.76	1.700	ok	1.697	1.637-1.757
Dibromomethane	5.07	4.76	1.065	ok	1.064	1.004-1.124
trans-1,2-Dichloroethylene	2.90	3.44	0.843	ok	0.844	0.784-0.904
cis-1,2-Dichloroethylene	3.36	3.44	0.977	ok	0.977	0.917-1.037
cis-1,3-Dichloropropene	6.31	4.76	1.326	ok	1.325	1.265-1.385
m-Dichlorobenzene	16.78	10.45	1.606	ok	1.606	1.546-1.666
o-Dichlorobenzene	17.16	10.45	1.642	ok	1.642	1.582-1.702

Initial Calibration Retention Time/Internal Standard Area Summary

Job Number: JD59460
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample Number	Lab File ID	Injected	By	Level	Inst ID	Method	
V2W2776-IC2776	2W62383.D	12/14/22 17:55	TCH	0.04	GCMS2W	TO-15	
V2W2776-IC2776	2W62384.D	12/14/22 18:28	TCH	0.1	GCMS2W	TO-15	Reporting this level
V2W2776-IC2776	2W62385.D	12/14/22 18:59	TCH	0.2	GCMS2W	TO-15	
V2W2776-IC2776	2W62386.D	12/14/22 19:31	TCH	0.5	GCMS2W	TO-15	
V2W2776-IC2776	2W62388.D	12/14/22 20:33	TCH	5	GCMS2W	TO-15	
V2W2776-ICC2776	2W62389.D	12/14/22 21:05	TCH	10	GCMS2W	TO-15	
V2W2776-IC2776	2W62390.D	12/14/22 21:37	TCH	20	GCMS2W	TO-15	
V2W2776-IC2776	2W62391.D	12/14/22 22:12	TCH	40	GCMS2W	TO-15	
V2W2776-IC2776	2W62392.D	12/14/22 22:47	TCH	50	GCMS2W	TO-15	

Target Compound	RT (min.)	Istd RT (min.)	Rel RT		Mean Rel RT	Rel RT Range (+ /- .06)
p-Dichlorobenzene	16.86	10.45	1.613	ok	1.614	1.554-1.674
trans-1,3-Dichloropropene	7.01	4.76	1.473	ok	1.470	1.410-1.530
2,4-Dimethylpentane	4.03	3.44	1.172	ok	1.172	1.112-1.232
Ethylbenzene	11.40	10.45	1.091	ok	1.092	1.032-1.152
Ethyl Acrylate	5.26	4.76	1.105	ok	1.101	1.041-1.161
4-Ethyltoluene	16.06	10.45	1.537	ok	1.537	1.477-1.597
Freon 113	2.66	3.44	0.773	ok	0.774	0.714-0.834
Freon 114	1.87	3.44	0.544	ok	0.544	0.484-0.604
Freon 123	2.23	3.44	0.648	ok	0.651	0.591-0.711
Freon 123A	2.25	3.44	0.654	ok	0.655	0.595-0.715
Freon 142B	1.83	3.44	0.532	ok	0.532	0.472-0.592
Heptane	5.78	4.76	1.214	ok	1.212	1.152-1.272
Hexachlorobutadiene	18.76	10.45	1.795	ok	1.795	1.735-1.855
Hexane	3.49	3.44	1.015	ok	1.016	0.956-1.076
2-Hexanone	8.19	4.76	1.721	ok	1.713	1.653-1.773
Iodomethane	2.50	3.44	0.727	ok	0.727	0.667-0.787
Isopropylbenzene	14.31	10.45	1.369	ok	1.370	1.310-1.430
p-Isopropyltoluene	17.18	10.45	1.644	ok	1.644	1.584-1.704
Methyl Isobutyl Ketone	6.48	4.76	1.361	ok	1.353	1.293-1.413
Methyl Tert Butyl Ether	3.03	3.44	0.881	ok	0.879	0.819-0.939
Methylmethacrylate	5.68	4.76	1.193	ok	1.191	1.131-1.251
Naphthalene	18.49	10.45	1.769	ok	1.770	1.710-1.830
Nonane	13.90	10.45	1.330	ok	1.331	1.271-1.391
Octane	9.46	4.76	1.987	ok	1.982	1.922-2.042
Pentane	2.44	3.44	0.709	ok	0.710	0.650-0.770
n-Propylbenzene	15.65	10.45	1.498	ok	1.498	1.438-1.558
Styrene	12.58	10.45	1.204	ok	1.203	1.143-1.263
1,1,1-Trichloroethane	4.11	3.44	1.195	ok	1.196	1.136-1.256
1,1,1,2-Tetrachloroethane	10.53	10.45	1.008	ok	1.008	0.948-1.068
1,1,2,2-Tetrachloroethane	12.80	10.45	1.225	ok	1.225	1.165-1.285
1,1,2-Trichloroethane	7.16	4.76	1.504	ok	1.504	1.444-1.564
1,2,4-Trichlorobenzene	18.44	10.45	1.765	ok	1.765	1.705-1.825
1,2,3-Trichloropropane	13.08	10.45	1.252	ok	1.252	1.192-1.312
1,2,3-Trimethylbenzene	17.11	10.45	1.637	ok	1.638	1.578-1.698
1,2,4-Trimethylbenzene	16.72	10.45	1.600	ok	1.600	1.540-1.660
1,3,5-Trimethylbenzene	16.23	10.45	1.553	ok	1.554	1.494-1.614
2,2,4-Trimethylpentane	5.46	4.76	1.147	ok	1.144	1.084-1.204
Tetrachloroethylene	9.31	4.76	1.956	ok	1.952	1.892-2.012
Toluene	7.55	4.76	1.586	ok	1.584	1.524-1.644

Initial Calibration Retention Time/Internal Standard Area Summary

Job Number: JD59460
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample Number	Lab File ID	Injected	By	Level	Inst ID	Method	
V2W2776-IC2776	2W62383.D	12/14/22 17:55	TCH	0.04	GCMS2W	TO-15	
V2W2776-IC2776	2W62384.D	12/14/22 18:28	TCH	0.1	GCMS2W	TO-15	Reporting this level
V2W2776-IC2776	2W62385.D	12/14/22 18:59	TCH	0.2	GCMS2W	TO-15	
V2W2776-IC2776	2W62386.D	12/14/22 19:31	TCH	0.5	GCMS2W	TO-15	
V2W2776-IC2776	2W62388.D	12/14/22 20:33	TCH	5	GCMS2W	TO-15	
V2W2776-ICC2776	2W62389.D	12/14/22 21:05	TCH	10	GCMS2W	TO-15	
V2W2776-IC2776	2W62390.D	12/14/22 21:37	TCH	20	GCMS2W	TO-15	
V2W2776-IC2776	2W62391.D	12/14/22 22:12	TCH	40	GCMS2W	TO-15	
V2W2776-IC2776	2W62392.D	12/14/22 22:47	TCH	50	GCMS2W	TO-15	

Target Compound	RT (min.)	Istd RT (min.)	Rel RT		Mean Rel RT	Rel RT Range (+ /- .06)
Trichloroethylene	5.36	4.76	1.126	ok	1.124	1.064-1.184
Trichlorofluoromethane	2.33	3.44	0.677	ok	0.676	0.616-0.736
Vinyl chloride	1.90	3.44	0.552	ok	0.553	0.493-0.613
m,p-Xylene	11.84	10.45	1.133	ok	1.134	1.074-1.194
o-Xylene	12.79	10.45	1.224	ok	1.224	1.164-1.284

Internal Standard	RT (min.)		Mean RT(min.)	RT Range (+ /- 0.33)	Area		Mean Area	Area Range (+ /- 40 %)
Bromochloromethane	3.44	ok	3.44	3.11-3.77	50203	ok	52567	31540-73594
1,4-Difluorobenzene	4.76	ok	4.77	4.44-5.10	258267	ok	267062	160237-373887
Chlorobenzene-D5	10.45	ok	10.45	10.12-10.78	230636	ok	240629	144377-336881

Initial Calibration Retention Time/Internal Standard Area Summary

Job Number: JD59460
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample Number	Lab File ID	Injected	By	Level	Inst ID	Method	
V2W2776-IC2776	2W62383.D	12/14/22 17:55	TCH	0.04	GCMS2W	TO-15	
V2W2776-IC2776	2W62384.D	12/14/22 18:28	TCH	0.1	GCMS2W	TO-15	
V2W2776-IC2776	2W62385.D	12/14/22 18:59	TCH	0.2	GCMS2W	TO-15	Reporting this level
V2W2776-IC2776	2W62386.D	12/14/22 19:31	TCH	0.5	GCMS2W	TO-15	
V2W2776-IC2776	2W62388.D	12/14/22 20:33	TCH	5	GCMS2W	TO-15	
V2W2776-ICC2776	2W62389.D	12/14/22 21:05	TCH	10	GCMS2W	TO-15	
V2W2776-IC2776	2W62390.D	12/14/22 21:37	TCH	20	GCMS2W	TO-15	
V2W2776-IC2776	2W62391.D	12/14/22 22:12	TCH	40	GCMS2W	TO-15	
V2W2776-IC2776	2W62392.D	12/14/22 22:47	TCH	50	GCMS2W	TO-15	

Target Compound	RT (min.)	Istd RT (min.)	Rel RT		Mean Rel RT	Rel RT Range (+ /- .06)
Acetone (2-Propanone)	2.27	3.43	0.662	ok	0.659	0.599-0.719
Acrolein	2.22	3.43	0.647	ok	0.647	0.587-0.707
Acrylonitrile	2.41	3.43	0.703	ok	0.702	0.642-0.762
Acetonitrile	2.18	3.43	0.636	ok	0.634	0.574-0.694
1,3-Butadiene	1.95	3.43	0.569	ok	0.567	0.507-0.627
Benzene	4.43	3.43	1.292	ok	1.289	1.229-1.349
Bromobenzene	14.18	10.45	1.357	ok	1.357	1.297-1.417
Bromodichloromethane	5.30	4.77	1.111	ok	1.112	1.052-1.172
Bromoform	11.66	10.45	1.116	ok	1.116	1.056-1.176
Bromomethane	2.02	3.43	0.589	ok	0.590	0.530-0.650
Bromoethene	2.18	3.43	0.636	ok	0.636	0.576-0.696
n-Butane	1.96	3.43	0.571	ok	0.570	0.510-0.630
n-Butylbenzene	17.53	10.45	1.678	ok	1.678	1.618-1.738
sec-Butylbenzene	17.00	10.45	1.627	ok	1.627	1.567-1.687
tert-Butylbenzene	16.71	10.45	1.599	ok	1.599	1.539-1.659
Carbon disulfide	2.66	3.43	0.776	ok	0.774	0.714-0.834
Chlorobenzene	10.52	10.45	1.007	ok	1.007	0.947-1.067
Chlorodifluoromethane	1.76	3.43	0.513	ok	0.512	0.452-0.572
Chloroethane	2.08	3.43	0.606	ok	0.605	0.545-0.665
Chlorotrifluoroethene	1.77	3.43	0.516	ok	0.516	0.456-0.576
Chloroform	3.51	3.43	1.023	ok	1.022	0.962-1.082
Chloromethane	1.84	3.43	0.536	ok	0.535	0.475-0.595
3-Chloropropene	2.60	3.43	0.758	ok	0.757	0.697-0.817
2-Chlorotoluene	15.31	10.45	1.465	ok	1.466	1.406-1.526
Carbon tetrachloride	4.54	3.43	1.324	ok	1.323	1.263-1.383
Cyclohexane	4.64	4.77	0.973	ok	0.974	0.914-1.034
1,1-Dichloroethane	2.97	3.43	0.866	ok	0.866	0.806-0.926
1,1-Dichloroethylene	2.52	3.43	0.735	ok	0.735	0.675-0.795
1,2-Dibromoethane (EDB)	8.44	4.77	1.769	ok	1.770	1.710-1.830
1,2-Dichloroethane	3.94	3.43	1.149	ok	1.147	1.087-1.207
1,2-Dichloropropane	5.11	4.77	1.071	ok	1.073	1.013-1.133
1,3-Dichloropropane	7.61	4.77	1.595	ok	1.595	1.535-1.655
1,4-Dioxane	5.46	4.77	1.145	ok	1.135	1.075-1.195
Dichlorodifluoromethane	1.79	3.43	0.522	ok	0.521	0.461-0.581
Dichlorofluoromethane	2.10	3.43	0.612	ok	0.613	0.553-0.673
Dibromochloromethane	8.09	4.77	1.696	ok	1.697	1.637-1.757
Dibromomethane	5.07	4.77	1.063	ok	1.064	1.004-1.124
trans-1,2-Dichloroethylene	2.90	3.43	0.845	ok	0.844	0.784-0.904
cis-1,2-Dichloroethylene	3.35	3.43	0.977	ok	0.977	0.917-1.037

Initial Calibration Retention Time/Internal Standard Area Summary

Job Number: JD59460
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample Number	Lab File ID	Injected	By	Level	Inst ID	Method	
V2W2776-IC2776	2W62383.D	12/14/22 17:55	TCH	0.04	GCMS2W	TO-15	
V2W2776-IC2776	2W62384.D	12/14/22 18:28	TCH	0.1	GCMS2W	TO-15	
V2W2776-IC2776	2W62385.D	12/14/22 18:59	TCH	0.2	GCMS2W	TO-15	Reporting this level
V2W2776-IC2776	2W62386.D	12/14/22 19:31	TCH	0.5	GCMS2W	TO-15	
V2W2776-IC2776	2W62388.D	12/14/22 20:33	TCH	5	GCMS2W	TO-15	
V2W2776-ICC2776	2W62389.D	12/14/22 21:05	TCH	10	GCMS2W	TO-15	
V2W2776-IC2776	2W62390.D	12/14/22 21:37	TCH	20	GCMS2W	TO-15	
V2W2776-IC2776	2W62391.D	12/14/22 22:12	TCH	40	GCMS2W	TO-15	
V2W2776-IC2776	2W62392.D	12/14/22 22:47	TCH	50	GCMS2W	TO-15	

Target Compound	RT (min.)	Istd RT (min.)	Rel RT		Mean Rel RT	Rel RT Range (+ /- .06)
cis-1,3-Dichloropropene	6.32	4.77	1.325	ok	1.325	1.265-1.385
m-Dichlorobenzene	16.78	10.45	1.606	ok	1.606	1.546-1.666
o-Dichlorobenzene	17.16	10.45	1.642	ok	1.642	1.582-1.702
p-Dichlorobenzene	16.86	10.45	1.613	ok	1.614	1.554-1.674
trans-1,3-Dichloropropene	7.00	4.77	1.468	ok	1.470	1.410-1.530
Di-Isopropyl ether	3.51	3.43	1.023	ok	1.020	0.960-1.080
2,3-Dimethylpentane	4.90	4.77	1.027	ok	1.029	0.969-1.089
2,4-Dimethylpentane	4.02	3.43	1.172	ok	1.172	1.112-1.232
Ethanol	2.12	3.43	0.618	ok	0.615	0.555-0.675
Ethylbenzene	11.41	10.45	1.092	ok	1.092	1.032-1.152
Ethyl Acetate	3.51	3.43	1.023	ok	1.020	0.960-1.080
Ethyl Acrylate	5.25	4.77	1.101	ok	1.101	1.041-1.161
4-Ethyltoluene	16.06	10.45	1.537	ok	1.537	1.477-1.597
Freon 113	2.66	3.43	0.776	ok	0.774	0.714-0.834
Freon 114	1.87	3.43	0.545	ok	0.544	0.484-0.604
Freon 123	2.23	3.43	0.650	ok	0.651	0.591-0.711
Freon 123A	2.25	3.43	0.656	ok	0.655	0.595-0.715
Freon 142B	1.83	3.43	0.534	ok	0.532	0.472-0.592
Freon 152A	1.75	3.43	0.510	ok	0.509	0.449-0.569
Heptane	5.78	4.77	1.212	ok	1.212	1.152-1.272
Hexachlorobutadiene	18.75	10.45	1.794	ok	1.795	1.735-1.855
Hexane	3.49	3.43	1.017	ok	1.016	0.956-1.076
2-Hexanone	8.19	4.77	1.717	ok	1.713	1.653-1.773
Iodomethane	2.50	3.43	0.729	ok	0.727	0.667-0.787
Isopropylbenzene	14.30	10.45	1.368	ok	1.370	1.310-1.430
Isopropyl Alcohol	2.36	3.43	0.688	ok	0.684	0.624-0.744
p-Isopropyltoluene	17.18	10.45	1.644	ok	1.644	1.584-1.704
Methylene chloride	2.56	3.43	0.746	ok	0.745	0.685-0.805
Methyl ethyl ketone	3.17	3.43	0.924	ok	0.919	0.859-0.979
Methyl Isobutyl Ketone	6.48	4.77	1.358	ok	1.353	1.293-1.413
Methyl Tert Butyl Ether	3.03	3.43	0.883	ok	0.879	0.819-0.939
Methylmethacrylate	5.68	4.77	1.191	ok	1.191	1.131-1.251
Naphthalene	18.49	10.45	1.769	ok	1.770	1.710-1.830
Nonane	13.91	10.45	1.331	ok	1.331	1.271-1.391
Octane	9.44	4.77	1.979	ok	1.982	1.922-2.042
Pentane	2.44	3.43	0.711	ok	0.710	0.650-0.770
n-Propylbenzene	15.66	10.45	1.499	ok	1.498	1.438-1.558
Propylene	1.77	3.43	0.516	ok	0.515	0.455-0.575
Styrene	12.58	10.45	1.204	ok	1.203	1.143-1.263

Initial Calibration Retention Time/Internal Standard Area Summary

Job Number: JD59460
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample Number	Lab File ID	Injected	By	Level	Inst ID	Method	
V2W2776-IC2776	2W62383.D	12/14/22 17:55	TCH	0.04	GCMS2W	TO-15	
V2W2776-IC2776	2W62384.D	12/14/22 18:28	TCH	0.1	GCMS2W	TO-15	
V2W2776-IC2776	2W62385.D	12/14/22 18:59	TCH	0.2	GCMS2W	TO-15	Reporting this level
V2W2776-IC2776	2W62386.D	12/14/22 19:31	TCH	0.5	GCMS2W	TO-15	
V2W2776-IC2776	2W62388.D	12/14/22 20:33	TCH	5	GCMS2W	TO-15	
V2W2776-ICC2776	2W62389.D	12/14/22 21:05	TCH	10	GCMS2W	TO-15	
V2W2776-IC2776	2W62390.D	12/14/22 21:37	TCH	20	GCMS2W	TO-15	
V2W2776-IC2776	2W62391.D	12/14/22 22:12	TCH	40	GCMS2W	TO-15	
V2W2776-IC2776	2W62392.D	12/14/22 22:47	TCH	50	GCMS2W	TO-15	

Target Compound	RT (min.)	Istd RT (min.)	Rel RT		Mean Rel RT	Rel RT Range (+ /- .06)
1,1,1-Trichloroethane	4.11	3.43	1.198	ok	1.196	1.136-1.256
1,1,1,2-Tetrachloroethane	10.54	10.45	1.009	ok	1.008	0.948-1.068
1,1,2,2-Tetrachloroethane	12.79	10.45	1.224	ok	1.225	1.165-1.285
1,1,2-Trichloroethane	7.16	4.77	1.501	ok	1.504	1.444-1.564
1,2,4-Trichlorobenzene	18.44	10.45	1.765	ok	1.765	1.705-1.825
1,2,3-Trichloropropane	13.08	10.45	1.252	ok	1.252	1.192-1.312
1,2,3-Trimethylbenzene	17.11	10.45	1.637	ok	1.638	1.578-1.698
1,2,4-Trimethylbenzene	16.72	10.45	1.600	ok	1.600	1.540-1.660
1,3,5-Trimethylbenzene	16.23	10.45	1.553	ok	1.554	1.494-1.614
2,2,4-Trimethylpentane	5.45	4.77	1.143	ok	1.144	1.084-1.204
Tertiary Butyl Alcohol	2.58	3.43	0.752	ok	0.744	0.684-0.804
Tetrachloroethylene	9.30	4.77	1.950	ok	1.952	1.892-2.012
Tetrahydrofuran	3.77	3.43	1.099	ok	1.090	1.030-1.150
Toluene	7.55	4.77	1.583	ok	1.584	1.524-1.644
Trichloroethylene	5.36	4.77	1.124	ok	1.124	1.064-1.184
Trichlorofluoromethane	2.32	3.43	0.676	ok	0.676	0.616-0.736
Vinyl chloride	1.90	3.43	0.554	ok	0.553	0.493-0.613
Vinyl Acetate	3.05	3.43	0.889	ok	0.888	0.828-0.948
m,p-Xylene	11.84	10.45	1.133	ok	1.134	1.074-1.194
o-Xylene	12.78	10.45	1.223	ok	1.224	1.164-1.284

Internal Standard	RT (min.)		Mean RT(min.)	RT Range (+ /- 0.33)	Area		Mean Area	Area Range (+ /- 40 %)
Bromochloromethane	3.43	ok	3.44	3.11-3.77	49634	ok	52567	31540-73594
1,4-Difluorobenzene	4.77	ok	4.77	4.44-5.10	255066	ok	267062	160237-373887
Chlorobenzene-D5	10.45	ok	10.45	10.12-10.78	228303	ok	240629	144377-336881

Initial Calibration Retention Time/Internal Standard Area Summary

Job Number: JD59460
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample Number	Lab File ID	Injected	By	Level	Inst ID	Method	
V2W2776-IC2776	2W62383.D	12/14/22 17:55	TCH	0.04	GCMS2W	TO-15	
V2W2776-IC2776	2W62384.D	12/14/22 18:28	TCH	0.1	GCMS2W	TO-15	
V2W2776-IC2776	2W62385.D	12/14/22 18:59	TCH	0.2	GCMS2W	TO-15	
V2W2776-IC2776	2W62386.D	12/14/22 19:31	TCH	0.5	GCMS2W	TO-15	Reporting this level
V2W2776-IC2776	2W62388.D	12/14/22 20:33	TCH	5	GCMS2W	TO-15	
V2W2776-ICC2776	2W62389.D	12/14/22 21:05	TCH	10	GCMS2W	TO-15	
V2W2776-IC2776	2W62390.D	12/14/22 21:37	TCH	20	GCMS2W	TO-15	
V2W2776-IC2776	2W62391.D	12/14/22 22:12	TCH	40	GCMS2W	TO-15	
V2W2776-IC2776	2W62392.D	12/14/22 22:47	TCH	50	GCMS2W	TO-15	

Target Compound	RT (min.)	Istd RT (min.)	Rel RT		Mean Rel RT	Rel RT Range (+ /- .06)
Acetone (2-Propanone)	2.27	3.44	0.660	ok	0.659	0.599-0.719
Acrolein	2.23	3.44	0.648	ok	0.647	0.587-0.707
Acrylonitrile	2.42	3.44	0.703	ok	0.702	0.642-0.762
Acetonitrile	2.18	3.44	0.634	ok	0.634	0.574-0.694
1,3-Butadiene	1.95	3.44	0.567	ok	0.567	0.507-0.627
Benzene	4.43	3.44	1.288	ok	1.289	1.229-1.349
Bromobenzene	14.18	10.45	1.357	ok	1.357	1.297-1.417
Bromodichloromethane	5.30	4.77	1.111	ok	1.112	1.052-1.172
Bromoform	11.65	10.45	1.115	ok	1.116	1.056-1.176
Bromomethane	2.03	3.44	0.590	ok	0.590	0.530-0.650
Bromoethene	2.19	3.44	0.637	ok	0.636	0.576-0.696
n-Butane	1.96	3.44	0.570	ok	0.570	0.510-0.630
n-Butylbenzene	17.53	10.45	1.678	ok	1.678	1.618-1.738
sec-Butylbenzene	17.00	10.45	1.627	ok	1.627	1.567-1.687
tert-Butylbenzene	16.71	10.45	1.599	ok	1.599	1.539-1.659
Carbon disulfide	2.66	3.44	0.773	ok	0.774	0.714-0.834
Chlorobenzene	10.52	10.45	1.007	ok	1.007	0.947-1.067
Chlorodifluoromethane	1.76	3.44	0.512	ok	0.512	0.452-0.572
Chloroethane	2.08	3.44	0.605	ok	0.605	0.545-0.665
Chlorotrifluoroethene	1.78	3.44	0.517	ok	0.516	0.456-0.576
Chloroform	3.51	3.44	1.020	ok	1.022	0.962-1.082
Chloromethane	1.84	3.44	0.535	ok	0.535	0.475-0.595
3-Chloropropene	2.60	3.44	0.756	ok	0.757	0.697-0.817
2-Chlorotoluene	15.31	10.45	1.465	ok	1.466	1.406-1.526
Carbon tetrachloride	4.55	3.44	1.323	ok	1.323	1.263-1.383
Cyclohexane	4.64	4.77	0.973	ok	0.974	0.914-1.034
1,1-Dichloroethane	2.98	3.44	0.866	ok	0.866	0.806-0.926
1,1-Dichloroethylene	2.53	3.44	0.735	ok	0.735	0.675-0.795
1,2-Dibromoethane (EDB)	8.44	4.77	1.769	ok	1.770	1.710-1.830
1,2-Dichloroethane	3.94	3.44	1.145	ok	1.147	1.087-1.207
1,2-Dichloropropane	5.12	4.77	1.073	ok	1.073	1.013-1.133
1,3-Dichloropropane	7.60	4.77	1.593	ok	1.595	1.535-1.655
1,4-Dioxane	5.44	4.77	1.140	ok	1.135	1.075-1.195
Dichlorodifluoromethane	1.79	3.44	0.520	ok	0.521	0.461-0.581
Dichlorofluoromethane	2.11	3.44	0.613	ok	0.613	0.553-0.673
Dibromochloromethane	8.09	4.77	1.696	ok	1.697	1.637-1.757
Dibromomethane	5.07	4.77	1.063	ok	1.064	1.004-1.124
trans-1,2-Dichloroethylene	2.90	3.44	0.843	ok	0.844	0.784-0.904
cis-1,2-Dichloroethylene	3.36	3.44	0.977	ok	0.977	0.917-1.037

Initial Calibration Retention Time/Internal Standard Area Summary

Job Number: JD59460
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample Number	Lab File ID	Injected	By	Level	Inst ID	Method	
V2W2776-IC2776	2W62383.D	12/14/22 17:55	TCH	0.04	GCMS2W	TO-15	
V2W2776-IC2776	2W62384.D	12/14/22 18:28	TCH	0.1	GCMS2W	TO-15	
V2W2776-IC2776	2W62385.D	12/14/22 18:59	TCH	0.2	GCMS2W	TO-15	
V2W2776-IC2776	2W62386.D	12/14/22 19:31	TCH	0.5	GCMS2W	TO-15	Reporting this level
V2W2776-IC2776	2W62388.D	12/14/22 20:33	TCH	5	GCMS2W	TO-15	
V2W2776-ICC2776	2W62389.D	12/14/22 21:05	TCH	10	GCMS2W	TO-15	
V2W2776-IC2776	2W62390.D	12/14/22 21:37	TCH	20	GCMS2W	TO-15	
V2W2776-IC2776	2W62391.D	12/14/22 22:12	TCH	40	GCMS2W	TO-15	
V2W2776-IC2776	2W62392.D	12/14/22 22:47	TCH	50	GCMS2W	TO-15	

Target Compound	RT (min.)	Istd RT (min.)	Rel RT		Mean Rel RT	Rel RT Range (+ /- .06)
cis-1,3-Dichloropropene	6.32	4.77	1.325	ok	1.325	1.265-1.385
m-Dichlorobenzene	16.78	10.45	1.606	ok	1.606	1.546-1.666
o-Dichlorobenzene	17.16	10.45	1.642	ok	1.642	1.582-1.702
p-Dichlorobenzene	16.86	10.45	1.613	ok	1.614	1.554-1.674
trans-1,3-Dichloropropene	7.01	4.77	1.470	ok	1.470	1.410-1.530
Di-Isopropyl ether	3.51	3.44	1.020	ok	1.020	0.960-1.080
2,3-Dimethylpentane	4.91	4.77	1.029	ok	1.029	0.969-1.089
2,4-Dimethylpentane	4.02	3.44	1.169	ok	1.172	1.112-1.232
Ethanol	2.12	3.44	0.616	ok	0.615	0.555-0.675
Ethylbenzene	11.42	10.45	1.093	ok	1.092	1.032-1.152
Ethyl Acetate	3.52	3.44	1.023	ok	1.020	0.960-1.080
Ethyl Acrylate	5.25	4.77	1.101	ok	1.101	1.041-1.161
4-Ethyltoluene	16.07	10.45	1.538	ok	1.537	1.477-1.597
Freon 113	2.66	3.44	0.773	ok	0.774	0.714-0.834
Freon 114	1.87	3.44	0.544	ok	0.544	0.484-0.604
Freon 123	2.24	3.44	0.651	ok	0.651	0.591-0.711
Freon 123A	2.26	3.44	0.657	ok	0.655	0.595-0.715
Freon 142B	1.83	3.44	0.532	ok	0.532	0.472-0.592
Freon 152A	1.75	3.44	0.509	ok	0.509	0.449-0.569
Heptane	5.78	4.77	1.212	ok	1.212	1.152-1.272
Hexachlorobutadiene	18.75	10.45	1.794	ok	1.795	1.735-1.855
Hexane	3.49	3.44	1.015	ok	1.016	0.956-1.076
2-Hexanone	8.18	4.77	1.715	ok	1.713	1.653-1.773
Iodomethane	2.50	3.44	0.727	ok	0.727	0.667-0.787
Isopropylbenzene	14.31	10.45	1.369	ok	1.370	1.310-1.430
Isopropyl Alcohol	2.36	3.44	0.686	ok	0.684	0.624-0.744
p-Isopropyltoluene	17.18	10.45	1.644	ok	1.644	1.584-1.704
Methylene chloride	2.56	3.44	0.744	ok	0.745	0.685-0.805
Methyl ethyl ketone	3.17	3.44	0.922	ok	0.919	0.859-0.979
Methyl Isobutyl Ketone	6.47	4.77	1.356	ok	1.353	1.293-1.413
Methyl Tert Butyl Ether	3.03	3.44	0.881	ok	0.879	0.819-0.939
Methylmethacrylate	5.68	4.77	1.191	ok	1.191	1.131-1.251
Naphthalene	18.49	10.45	1.769	ok	1.770	1.710-1.830
Nonane	13.91	10.45	1.331	ok	1.331	1.271-1.391
Octane	9.45	4.77	1.981	ok	1.982	1.922-2.042
Pentane	2.44	3.44	0.709	ok	0.710	0.650-0.770
n-Propylbenzene	15.66	10.45	1.499	ok	1.498	1.438-1.558
Propylene	1.77	3.44	0.515	ok	0.515	0.455-0.575
Styrene	12.56	10.45	1.202	ok	1.203	1.143-1.263

Initial Calibration Retention Time/Internal Standard Area Summary

Job Number: JD59460
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample Number	Lab File ID	Injected	By	Level	Inst ID	Method	
V2W2776-IC2776	2W62383.D	12/14/22 17:55	TCH	0.04	GCMS2W	TO-15	
V2W2776-IC2776	2W62384.D	12/14/22 18:28	TCH	0.1	GCMS2W	TO-15	
V2W2776-IC2776	2W62385.D	12/14/22 18:59	TCH	0.2	GCMS2W	TO-15	
V2W2776-IC2776	2W62386.D	12/14/22 19:31	TCH	0.5	GCMS2W	TO-15	Reporting this level
V2W2776-IC2776	2W62388.D	12/14/22 20:33	TCH	5	GCMS2W	TO-15	
V2W2776-ICC2776	2W62389.D	12/14/22 21:05	TCH	10	GCMS2W	TO-15	
V2W2776-IC2776	2W62390.D	12/14/22 21:37	TCH	20	GCMS2W	TO-15	
V2W2776-IC2776	2W62391.D	12/14/22 22:12	TCH	40	GCMS2W	TO-15	
V2W2776-IC2776	2W62392.D	12/14/22 22:47	TCH	50	GCMS2W	TO-15	

Target Compound	RT (min.)	Istd RT (min.)	Rel RT		Mean Rel RT	Rel RT Range (+ /- .06)
1,1,1-Trichloroethane	4.10	3.44	1.192	ok	1.196	1.136-1.256
1,1,1,2-Tetrachloroethane	10.53	10.45	1.008	ok	1.008	0.948-1.068
1,1,2,2-Tetrachloroethane	12.79	10.45	1.224	ok	1.225	1.165-1.285
1,1,2-Trichloroethane	7.17	4.77	1.503	ok	1.504	1.444-1.564
1,2,4-Trichlorobenzene	18.44	10.45	1.765	ok	1.765	1.705-1.825
1,2,3-Trichloropropane	13.08	10.45	1.252	ok	1.252	1.192-1.312
1,2,3-Trimethylbenzene	17.11	10.45	1.637	ok	1.638	1.578-1.698
1,2,4-Trimethylbenzene	16.72	10.45	1.600	ok	1.600	1.540-1.660
1,3,5-Trimethylbenzene	16.23	10.45	1.553	ok	1.554	1.494-1.614
2,2,4-Trimethylpentane	5.45	4.77	1.143	ok	1.144	1.084-1.204
Tertiary Butyl Alcohol	2.58	3.44	0.750	ok	0.744	0.684-0.804
Tetrachloroethylene	9.30	4.77	1.950	ok	1.952	1.892-2.012
Tetrahydrofuran	3.77	3.44	1.096	ok	1.090	1.030-1.150
Toluene	7.55	4.77	1.583	ok	1.584	1.524-1.644
Trichloroethylene	5.36	4.77	1.124	ok	1.124	1.064-1.184
Trichlorofluoromethane	2.33	3.44	0.677	ok	0.676	0.616-0.736
Vinyl chloride	1.90	3.44	0.552	ok	0.553	0.493-0.613
Vinyl Acetate	3.05	3.44	0.887	ok	0.888	0.828-0.948
m,p-Xylene	11.84	10.45	1.133	ok	1.134	1.074-1.194
o-Xylene	12.78	10.45	1.223	ok	1.224	1.164-1.284

Internal Standard	RT (min.)		Mean RT(min.)	RT Range (+ /- 0.33)	Area		Mean Area	Area Range (+ /- 40 %)
Bromochloromethane	3.44	ok	3.44	3.11-3.77	50548	ok	52567	31540-73594
1,4-Difluorobenzene	4.77	ok	4.77	4.44-5.10	260091	ok	267062	160237-373887
Chlorobenzene-D5	10.45	ok	10.45	10.12-10.78	233239	ok	240629	144377-336881

Initial Calibration Retention Time/Internal Standard Area Summary

Job Number: JD59460
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample Number	Lab File ID	Injected	By	Level	Inst ID	Method	
V2W2776-IC2776	2W62383.D	12/14/22 17:55	TCH	0.04	GCMS2W	TO-15	
V2W2776-IC2776	2W62384.D	12/14/22 18:28	TCH	0.1	GCMS2W	TO-15	
V2W2776-IC2776	2W62385.D	12/14/22 18:59	TCH	0.2	GCMS2W	TO-15	
V2W2776-IC2776	2W62386.D	12/14/22 19:31	TCH	0.5	GCMS2W	TO-15	
V2W2776-IC2776	2W62388.D	12/14/22 20:33	TCH	5	GCMS2W	TO-15	Reporting this level
V2W2776-ICC2776	2W62389.D	12/14/22 21:05	TCH	10	GCMS2W	TO-15	
V2W2776-IC2776	2W62390.D	12/14/22 21:37	TCH	20	GCMS2W	TO-15	
V2W2776-IC2776	2W62391.D	12/14/22 22:12	TCH	40	GCMS2W	TO-15	
V2W2776-IC2776	2W62392.D	12/14/22 22:47	TCH	50	GCMS2W	TO-15	

Target Compound	RT (min.)	Istd RT (min.)	Rel RT		Mean Rel RT	Rel RT Range (+ /- .06)
Acetone (2-Propanone)	2.26	3.44	0.657	ok	0.659	0.599-0.719
Acrolein	2.22	3.44	0.645	ok	0.647	0.587-0.707
Acrylonitrile	2.41	3.44	0.701	ok	0.702	0.642-0.762
Acetonitrile	2.18	3.44	0.634	ok	0.634	0.574-0.694
1,3-Butadiene	1.94	3.44	0.564	ok	0.567	0.507-0.627
Benzene	4.43	3.44	1.288	ok	1.289	1.229-1.349
Bromobenzene	14.18	10.45	1.357	ok	1.357	1.297-1.417
Bromodichloromethane	5.30	4.77	1.111	ok	1.112	1.052-1.172
Bromoform	11.65	10.45	1.115	ok	1.116	1.056-1.176
Bromomethane	2.02	3.44	0.587	ok	0.590	0.530-0.650
Bromoethene	2.18	3.44	0.634	ok	0.636	0.576-0.696
n-Butane	1.96	3.44	0.570	ok	0.570	0.510-0.630
n-Butylbenzene	17.53	10.45	1.678	ok	1.678	1.618-1.738
sec-Butylbenzene	17.00	10.45	1.627	ok	1.627	1.567-1.687
tert-Butylbenzene	16.71	10.45	1.599	ok	1.599	1.539-1.659
Carbon disulfide	2.66	3.44	0.773	ok	0.774	0.714-0.834
Chlorobenzene	10.52	10.45	1.007	ok	1.007	0.947-1.067
Chlorodifluoromethane	1.76	3.44	0.512	ok	0.512	0.452-0.572
Chloroethane	2.08	3.44	0.605	ok	0.605	0.545-0.665
Chlorotrifluoroethene	1.77	3.44	0.515	ok	0.516	0.456-0.576
Chloroform	3.51	3.44	1.020	ok	1.022	0.962-1.082
Chloromethane	1.84	3.44	0.535	ok	0.535	0.475-0.595
3-Chloropropene	2.60	3.44	0.756	ok	0.757	0.697-0.817
2-Chlorotoluene	15.31	10.45	1.465	ok	1.466	1.406-1.526
Carbon tetrachloride	4.55	3.44	1.323	ok	1.323	1.263-1.383
Cyclohexane	4.64	4.77	0.973	ok	0.974	0.914-1.034
1,1-Dichloroethane	2.98	3.44	0.866	ok	0.866	0.806-0.926
1,1-Dichloroethylene	2.52	3.44	0.733	ok	0.735	0.675-0.795
1,2-Dibromoethane (EDB)	8.43	4.77	1.767	ok	1.770	1.710-1.830
1,2-Dichloroethane	3.94	3.44	1.145	ok	1.147	1.087-1.207
1,2-Dichloropropane	5.12	4.77	1.073	ok	1.073	1.013-1.133
1,3-Dichloropropane	7.61	4.77	1.595	ok	1.595	1.535-1.655
1,4-Dioxane	5.40	4.77	1.132	ok	1.135	1.075-1.195
Dichlorodifluoromethane	1.79	3.44	0.520	ok	0.521	0.461-0.581
Dichlorofluoromethane	2.10	3.44	0.610	ok	0.613	0.553-0.673
Dibromochloromethane	8.09	4.77	1.696	ok	1.697	1.637-1.757
Dibromomethane	5.08	4.77	1.065	ok	1.064	1.004-1.124
trans-1,2-Dichloroethylene	2.90	3.44	0.843	ok	0.844	0.784-0.904
cis-1,2-Dichloroethylene	3.36	3.44	0.977	ok	0.977	0.917-1.037

Initial Calibration Retention Time/Internal Standard Area Summary

Job Number: JD59460
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample Number	Lab File ID	Injected	By	Level	Inst ID	Method	
V2W2776-IC2776	2W62383.D	12/14/22 17:55	TCH	0.04	GCMS2W	TO-15	
V2W2776-IC2776	2W62384.D	12/14/22 18:28	TCH	0.1	GCMS2W	TO-15	
V2W2776-IC2776	2W62385.D	12/14/22 18:59	TCH	0.2	GCMS2W	TO-15	
V2W2776-IC2776	2W62386.D	12/14/22 19:31	TCH	0.5	GCMS2W	TO-15	
V2W2776-IC2776	2W62388.D	12/14/22 20:33	TCH	5	GCMS2W	TO-15	Reporting this level
V2W2776-ICC2776	2W62389.D	12/14/22 21:05	TCH	10	GCMS2W	TO-15	
V2W2776-IC2776	2W62390.D	12/14/22 21:37	TCH	20	GCMS2W	TO-15	
V2W2776-IC2776	2W62391.D	12/14/22 22:12	TCH	40	GCMS2W	TO-15	
V2W2776-IC2776	2W62392.D	12/14/22 22:47	TCH	50	GCMS2W	TO-15	

Target Compound	RT (min.)	Istd RT (min.)	Rel RT		Mean Rel RT	Rel RT Range (+ /- .06)
cis-1,3-Dichloropropene	6.32	4.77	1.325	ok	1.325	1.265-1.385
m-Dichlorobenzene	16.78	10.45	1.606	ok	1.606	1.546-1.666
o-Dichlorobenzene	17.16	10.45	1.642	ok	1.642	1.582-1.702
p-Dichlorobenzene	16.86	10.45	1.613	ok	1.614	1.554-1.674
trans-1,3-Dichloropropene	7.01	4.77	1.470	ok	1.470	1.410-1.530
Di-Isopropyl ether	3.50	3.44	1.017	ok	1.020	0.960-1.080
2,3-Dimethylpentane	4.91	4.77	1.029	ok	1.029	0.969-1.089
2,4-Dimethylpentane	4.03	3.44	1.172	ok	1.172	1.112-1.232
Ethanol	2.11	3.44	0.613	ok	0.615	0.555-0.675
Ethylbenzene	11.41	10.45	1.092	ok	1.092	1.032-1.152
Ethyl Acetate	3.51	3.44	1.020	ok	1.020	0.960-1.080
Ethyl Acrylate	5.25	4.77	1.101	ok	1.101	1.041-1.161
4-Ethyltoluene	16.06	10.45	1.537	ok	1.537	1.477-1.597
Freon 113	2.66	3.44	0.773	ok	0.774	0.714-0.834
Freon 114	1.87	3.44	0.544	ok	0.544	0.484-0.604
Freon 123	2.23	3.44	0.648	ok	0.651	0.591-0.711
Freon 123A	2.25	3.44	0.654	ok	0.655	0.595-0.715
Freon 142B	1.83	3.44	0.532	ok	0.532	0.472-0.592
Freon 152A	1.75	3.44	0.509	ok	0.509	0.449-0.569
Heptane	5.78	4.77	1.212	ok	1.212	1.152-1.272
Hexachlorobutadiene	18.75	10.45	1.794	ok	1.795	1.735-1.855
Hexane	3.49	3.44	1.015	ok	1.016	0.956-1.076
2-Hexanone	8.16	4.77	1.711	ok	1.713	1.653-1.773
Iodomethane	2.50	3.44	0.727	ok	0.727	0.667-0.787
Isopropylbenzene	14.31	10.45	1.369	ok	1.370	1.310-1.430
Isopropyl Alcohol	2.35	3.44	0.683	ok	0.684	0.624-0.744
p-Isopropyltoluene	17.18	10.45	1.644	ok	1.644	1.584-1.704
Methylene chloride	2.56	3.44	0.744	ok	0.745	0.685-0.805
Methyl ethyl ketone	3.16	3.44	0.919	ok	0.919	0.859-0.979
Methyl Isobutyl Ketone	6.45	4.77	1.352	ok	1.353	1.293-1.413
Methyl Tert Butyl Ether	3.02	3.44	0.878	ok	0.879	0.819-0.939
Methylmethacrylate	5.68	4.77	1.191	ok	1.191	1.131-1.251
Naphthalene	18.49	10.45	1.769	ok	1.770	1.710-1.830
Nonane	13.91	10.45	1.331	ok	1.331	1.271-1.391
Octane	9.45	4.77	1.981	ok	1.982	1.922-2.042
Pentane	2.44	3.44	0.709	ok	0.710	0.650-0.770
n-Propylbenzene	15.65	10.45	1.498	ok	1.498	1.438-1.558
Propylene	1.77	3.44	0.515	ok	0.515	0.455-0.575
Styrene	12.57	10.45	1.203	ok	1.203	1.143-1.263

Initial Calibration Retention Time/Internal Standard Area Summary

Job Number: JD59460
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample Number	Lab File ID	Injected	By	Level	Inst ID	Method	
V2W2776-IC2776	2W62383.D	12/14/22 17:55	TCH	0.04	GCMS2W	TO-15	
V2W2776-IC2776	2W62384.D	12/14/22 18:28	TCH	0.1	GCMS2W	TO-15	
V2W2776-IC2776	2W62385.D	12/14/22 18:59	TCH	0.2	GCMS2W	TO-15	
V2W2776-IC2776	2W62386.D	12/14/22 19:31	TCH	0.5	GCMS2W	TO-15	
V2W2776-IC2776	2W62388.D	12/14/22 20:33	TCH	5	GCMS2W	TO-15	Reporting this level
V2W2776-ICC2776	2W62389.D	12/14/22 21:05	TCH	10	GCMS2W	TO-15	
V2W2776-IC2776	2W62390.D	12/14/22 21:37	TCH	20	GCMS2W	TO-15	
V2W2776-IC2776	2W62391.D	12/14/22 22:12	TCH	40	GCMS2W	TO-15	
V2W2776-IC2776	2W62392.D	12/14/22 22:47	TCH	50	GCMS2W	TO-15	

Target Compound	RT (min.)	Istd RT (min.)	Rel RT		Mean Rel RT	Rel RT Range (+ /- .06)
1,1,1-Trichloroethane	4.11	3.44	1.195	ok	1.196	1.136-1.256
1,1,1,2-Tetrachloroethane	10.53	10.45	1.008	ok	1.008	0.948-1.068
1,1,2,2-Tetrachloroethane	12.80	10.45	1.225	ok	1.225	1.165-1.285
1,1,2-Trichloroethane	7.17	4.77	1.503	ok	1.504	1.444-1.564
1,2,4-Trichlorobenzene	18.44	10.45	1.765	ok	1.765	1.705-1.825
1,2,3-Trichloropropane	13.08	10.45	1.252	ok	1.252	1.192-1.312
1,2,3-Trimethylbenzene	17.11	10.45	1.637	ok	1.638	1.578-1.698
1,2,4-Trimethylbenzene	16.72	10.45	1.600	ok	1.600	1.540-1.660
1,3,5-Trimethylbenzene	16.23	10.45	1.553	ok	1.554	1.494-1.614
2,2,4-Trimethylpentane	5.45	4.77	1.143	ok	1.144	1.084-1.204
Tertiary Butyl Alcohol	2.56	3.44	0.744	ok	0.744	0.684-0.804
Tetrachloroethylene	9.30	4.77	1.950	ok	1.952	1.892-2.012
Tetrahydrofuran	3.74	3.44	1.087	ok	1.090	1.030-1.150
Toluene	7.55	4.77	1.583	ok	1.584	1.524-1.644
Trichloroethylene	5.36	4.77	1.124	ok	1.124	1.064-1.184
Trichlorofluoromethane	2.32	3.44	0.674	ok	0.676	0.616-0.736
Vinyl chloride	1.90	3.44	0.552	ok	0.553	0.493-0.613
Vinyl Acetate	3.05	3.44	0.887	ok	0.888	0.828-0.948
m,p-Xylene	11.85	10.45	1.134	ok	1.134	1.074-1.194
o-Xylene	12.79	10.45	1.224	ok	1.224	1.164-1.284

Internal Standard	RT (min.)		Mean RT(min.)	RT Range (+ /- 0.33)	Area		Mean Area	Area Range (+ /- 40 %)
Bromochloromethane	3.44	ok	3.44	3.11-3.77	52118	ok	52567	31540-73594
1,4-Difluorobenzene	4.77	ok	4.77	4.44-5.10	261282	ok	267062	160237-373887
Chlorobenzene-D5	10.45	ok	10.45	10.12-10.78	234808	ok	240629	144377-336881

Initial Calibration Retention Time/Internal Standard Area Summary

Job Number: JD59460
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample Number	Lab File ID	Injected	By	Level	Inst ID	Method	
V2W2776-IC2776	2W62383.D	12/14/22 17:55	TCH	0.04	GCMS2W	TO-15	
V2W2776-IC2776	2W62384.D	12/14/22 18:28	TCH	0.1	GCMS2W	TO-15	
V2W2776-IC2776	2W62385.D	12/14/22 18:59	TCH	0.2	GCMS2W	TO-15	
V2W2776-IC2776	2W62386.D	12/14/22 19:31	TCH	0.5	GCMS2W	TO-15	
V2W2776-IC2776	2W62388.D	12/14/22 20:33	TCH	5	GCMS2W	TO-15	
V2W2776-ICC2776	2W62389.D	12/14/22 21:05	TCH	10	GCMS2W	TO-15	Reporting this level
V2W2776-IC2776	2W62390.D	12/14/22 21:37	TCH	20	GCMS2W	TO-15	
V2W2776-IC2776	2W62391.D	12/14/22 22:12	TCH	40	GCMS2W	TO-15	
V2W2776-IC2776	2W62392.D	12/14/22 22:47	TCH	50	GCMS2W	TO-15	

Target Compound	RT (min.)	Istd RT (min.)	Rel RT		Mean Rel RT	Rel RT Range (+ /- .06)
Acetone (2-Propanone)	2.26	3.43	0.659	ok	0.659	0.599-0.719
Acrolein	2.22	3.43	0.647	ok	0.647	0.587-0.707
Acrylonitrile	2.41	3.43	0.703	ok	0.702	0.642-0.762
Acetonitrile	2.18	3.43	0.636	ok	0.634	0.574-0.694
1,3-Butadiene	1.95	3.43	0.569	ok	0.567	0.507-0.627
Benzene	4.43	3.43	1.292	ok	1.289	1.229-1.349
Bromobenzene	14.18	10.45	1.357	ok	1.357	1.297-1.417
Bromodichloromethane	5.30	4.76	1.113	ok	1.112	1.052-1.172
Bromoform	11.65	10.45	1.115	ok	1.116	1.056-1.176
Bromomethane	2.03	3.43	0.592	ok	0.590	0.530-0.650
Bromoethene	2.19	3.43	0.638	ok	0.636	0.576-0.696
n-Butane	1.96	3.43	0.571	ok	0.570	0.510-0.630
n-Butylbenzene	17.53	10.45	1.678	ok	1.678	1.618-1.738
sec-Butylbenzene	17.00	10.45	1.627	ok	1.627	1.567-1.687
tert-Butylbenzene	16.71	10.45	1.599	ok	1.599	1.539-1.659
Carbon disulfide	2.66	3.43	0.776	ok	0.774	0.714-0.834
Chlorobenzene	10.52	10.45	1.007	ok	1.007	0.947-1.067
Chlorodifluoromethane	1.76	3.43	0.513	ok	0.512	0.452-0.572
Chloroethane	2.08	3.43	0.606	ok	0.605	0.545-0.665
Chlorotrifluoroethene	1.77	3.43	0.516	ok	0.516	0.456-0.576
Chloroform	3.51	3.43	1.023	ok	1.022	0.962-1.082
Chloromethane	1.84	3.43	0.536	ok	0.535	0.475-0.595
3-Chloropropene	2.60	3.43	0.758	ok	0.757	0.697-0.817
2-Chlorotoluene	15.32	10.45	1.466	ok	1.466	1.406-1.526
Carbon tetrachloride	4.54	3.43	1.324	ok	1.323	1.263-1.383
Cyclohexane	4.64	4.76	0.975	ok	0.974	0.914-1.034
1,1-Dichloroethane	2.97	3.43	0.866	ok	0.866	0.806-0.926
1,1-Dichloroethylene	2.52	3.43	0.735	ok	0.735	0.675-0.795
1,2-Dibromoethane (EDB)	8.44	4.76	1.773	ok	1.770	1.710-1.830
1,2-Dichloroethane	3.94	3.43	1.149	ok	1.147	1.087-1.207
1,2-Dichloropropane	5.12	4.76	1.076	ok	1.073	1.013-1.133
1,3-Dichloropropane	7.60	4.76	1.597	ok	1.595	1.535-1.655
1,4-Dioxane	5.38	4.76	1.130	ok	1.135	1.075-1.195
Dichlorodifluoromethane	1.79	3.43	0.522	ok	0.521	0.461-0.581
Dichlorofluoromethane	2.10	3.43	0.612	ok	0.613	0.553-0.673
Dibromochloromethane	8.09	4.76	1.700	ok	1.697	1.637-1.757
Dibromomethane	5.07	4.76	1.065	ok	1.064	1.004-1.124
trans-1,2-Dichloroethylene	2.90	3.43	0.845	ok	0.844	0.784-0.904
cis-1,2-Dichloroethylene	3.36	3.43	0.980	ok	0.977	0.917-1.037

Initial Calibration Retention Time/Internal Standard Area Summary

Job Number: JD59460
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample Number	Lab File ID	Injected	By	Level	Inst ID	Method	
V2W2776-IC2776	2W62383.D	12/14/22 17:55	TCH	0.04	GCMS2W	TO-15	
V2W2776-IC2776	2W62384.D	12/14/22 18:28	TCH	0.1	GCMS2W	TO-15	
V2W2776-IC2776	2W62385.D	12/14/22 18:59	TCH	0.2	GCMS2W	TO-15	
V2W2776-IC2776	2W62386.D	12/14/22 19:31	TCH	0.5	GCMS2W	TO-15	
V2W2776-IC2776	2W62388.D	12/14/22 20:33	TCH	5	GCMS2W	TO-15	
V2W2776-ICC2776	2W62389.D	12/14/22 21:05	TCH	10	GCMS2W	TO-15	Reporting this level
V2W2776-IC2776	2W62390.D	12/14/22 21:37	TCH	20	GCMS2W	TO-15	
V2W2776-IC2776	2W62391.D	12/14/22 22:12	TCH	40	GCMS2W	TO-15	
V2W2776-IC2776	2W62392.D	12/14/22 22:47	TCH	50	GCMS2W	TO-15	

Target Compound	RT (min.)	Istd RT (min.)	Rel RT		Mean Rel RT	Rel RT Range (+ /- .06)
cis-1,3-Dichloropropene	6.32	4.76	1.328	ok	1.325	1.265-1.385
m-Dichlorobenzene	16.78	10.45	1.606	ok	1.606	1.546-1.666
o-Dichlorobenzene	17.16	10.45	1.642	ok	1.642	1.582-1.702
p-Dichlorobenzene	16.86	10.45	1.613	ok	1.614	1.554-1.674
trans-1,3-Dichloropropene	7.01	4.76	1.473	ok	1.470	1.410-1.530
Di-Isopropyl ether	3.50	3.43	1.020	ok	1.020	0.960-1.080
2,3-Dimethylpentane	4.91	4.76	1.032	ok	1.029	0.969-1.089
2,4-Dimethylpentane	4.03	3.43	1.175	ok	1.172	1.112-1.232
Ethanol	2.11	3.43	0.615	ok	0.615	0.555-0.675
Ethylbenzene	11.41	10.45	1.092	ok	1.092	1.032-1.152
Ethyl Acetate	3.50	3.43	1.020	ok	1.020	0.960-1.080
Ethyl Acrylate	5.24	4.76	1.101	ok	1.101	1.041-1.161
4-Ethyltoluene	16.06	10.45	1.537	ok	1.537	1.477-1.597
Freon 113	2.66	3.43	0.776	ok	0.774	0.714-0.834
Freon 114	1.87	3.43	0.545	ok	0.544	0.484-0.604
Freon 123	2.24	3.43	0.653	ok	0.651	0.591-0.711
Freon 123A	2.25	3.43	0.656	ok	0.655	0.595-0.715
Freon 142B	1.83	3.43	0.534	ok	0.532	0.472-0.592
Freon 152A	1.75	3.43	0.510	ok	0.509	0.449-0.569
Heptane	5.78	4.76	1.214	ok	1.212	1.152-1.272
Hexachlorobutadiene	18.75	10.45	1.794	ok	1.795	1.735-1.855
Hexane	3.49	3.43	1.017	ok	1.016	0.956-1.076
2-Hexanone	8.15	4.76	1.712	ok	1.713	1.653-1.773
Iodomethane	2.50	3.43	0.729	ok	0.727	0.667-0.787
Isopropylbenzene	14.31	10.45	1.369	ok	1.370	1.310-1.430
Isopropyl Alcohol	2.35	3.43	0.685	ok	0.684	0.624-0.744
p-Isopropyltoluene	17.18	10.45	1.644	ok	1.644	1.584-1.704
Methylene chloride	2.56	3.43	0.746	ok	0.745	0.685-0.805
Methyl ethyl ketone	3.15	3.43	0.918	ok	0.919	0.859-0.979
Methyl Isobutyl Ketone	6.44	4.76	1.353	ok	1.353	1.293-1.413
Methyl Tert Butyl Ether	3.01	3.43	0.878	ok	0.879	0.819-0.939
Methylmethacrylate	5.67	4.76	1.191	ok	1.191	1.131-1.251
Naphthalene	18.49	10.45	1.769	ok	1.770	1.710-1.830
Nonane	13.91	10.45	1.331	ok	1.331	1.271-1.391
Octane	9.45	4.76	1.985	ok	1.982	1.922-2.042
Pentane	2.44	3.43	0.711	ok	0.710	0.650-0.770
n-Propylbenzene	15.65	10.45	1.498	ok	1.498	1.438-1.558
Propylene	1.77	3.43	0.516	ok	0.515	0.455-0.575
Styrene	12.57	10.45	1.203	ok	1.203	1.143-1.263

Initial Calibration Retention Time/Internal Standard Area Summary

Job Number: JD59460
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample Number	Lab File ID	Injected	By	Level	Inst ID	Method	
V2W2776-IC2776	2W62383.D	12/14/22 17:55	TCH	0.04	GCMS2W	TO-15	
V2W2776-IC2776	2W62384.D	12/14/22 18:28	TCH	0.1	GCMS2W	TO-15	
V2W2776-IC2776	2W62385.D	12/14/22 18:59	TCH	0.2	GCMS2W	TO-15	
V2W2776-IC2776	2W62386.D	12/14/22 19:31	TCH	0.5	GCMS2W	TO-15	
V2W2776-IC2776	2W62388.D	12/14/22 20:33	TCH	5	GCMS2W	TO-15	
V2W2776-ICC2776	2W62389.D	12/14/22 21:05	TCH	10	GCMS2W	TO-15	Reporting this level
V2W2776-IC2776	2W62390.D	12/14/22 21:37	TCH	20	GCMS2W	TO-15	
V2W2776-IC2776	2W62391.D	12/14/22 22:12	TCH	40	GCMS2W	TO-15	
V2W2776-IC2776	2W62392.D	12/14/22 22:47	TCH	50	GCMS2W	TO-15	

Target Compound	RT (min.)	Istd RT (min.)	Rel RT		Mean Rel RT	Rel RT Range (+ /- .06)
1,1,1-Trichloroethane	4.11	3.43	1.198	ok	1.196	1.136-1.256
1,1,1,2-Tetrachloroethane	10.53	10.45	1.008	ok	1.008	0.948-1.068
1,1,2,2-Tetrachloroethane	12.80	10.45	1.225	ok	1.225	1.165-1.285
1,1,2-Trichloroethane	7.17	4.76	1.506	ok	1.504	1.444-1.564
1,2,4-Trichlorobenzene	18.44	10.45	1.765	ok	1.765	1.705-1.825
1,2,3-Trichloropropane	13.08	10.45	1.252	ok	1.252	1.192-1.312
1,2,3-Trimethylbenzene	17.11	10.45	1.637	ok	1.638	1.578-1.698
1,2,4-Trimethylbenzene	16.72	10.45	1.600	ok	1.600	1.540-1.660
1,3,5-Trimethylbenzene	16.24	10.45	1.554	ok	1.554	1.494-1.614
2,2,4-Trimethylpentane	5.45	4.76	1.145	ok	1.144	1.084-1.204
Tertiary Butyl Alcohol	2.55	3.43	0.743	ok	0.744	0.684-0.804
Tetrachloroethylene	9.30	4.76	1.954	ok	1.952	1.892-2.012
Tetrahydrofuran	3.74	3.43	1.090	ok	1.090	1.030-1.150
Toluene	7.55	4.76	1.586	ok	1.584	1.524-1.644
Trichloroethylene	5.35	4.76	1.124	ok	1.124	1.064-1.184
Trichlorofluoromethane	2.32	3.43	0.676	ok	0.676	0.616-0.736
Vinyl chloride	1.90	3.43	0.554	ok	0.553	0.493-0.613
Vinyl Acetate	3.05	3.43	0.889	ok	0.888	0.828-0.948
m,p-Xylene	11.85	10.45	1.134	ok	1.134	1.074-1.194
o-Xylene	12.79	10.45	1.224	ok	1.224	1.164-1.284

Internal Standard	RT (min.)		Mean RT(min.)	RT Range (+ /- 0.33)	Area		Mean Area	Area Range (+ /- 40 %)
Bromochloromethane	3.43	ok	3.44	3.11-3.77	52169	ok	52567	31540-73594
1,4-Difluorobenzene	4.76	ok	4.77	4.44-5.10	265394	ok	267062	160237-373887
Chlorobenzene-D5	10.45	ok	10.45	10.12-10.78	237992	ok	240629	144377-336881

Initial Calibration Retention Time/Internal Standard Area Summary

Job Number: JD59460
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample Number	Lab File ID	Injected	By	Level	Inst ID	Method	
V2W2776-IC2776	2W62383.D	12/14/22 17:55	TCH	0.04	GCMS2W	TO-15	
V2W2776-IC2776	2W62384.D	12/14/22 18:28	TCH	0.1	GCMS2W	TO-15	
V2W2776-IC2776	2W62385.D	12/14/22 18:59	TCH	0.2	GCMS2W	TO-15	
V2W2776-IC2776	2W62386.D	12/14/22 19:31	TCH	0.5	GCMS2W	TO-15	
V2W2776-IC2776	2W62388.D	12/14/22 20:33	TCH	5	GCMS2W	TO-15	
V2W2776-ICC2776	2W62389.D	12/14/22 21:05	TCH	10	GCMS2W	TO-15	
V2W2776-IC2776	2W62390.D	12/14/22 21:37	TCH	20	GCMS2W	TO-15	Reporting this level
V2W2776-IC2776	2W62391.D	12/14/22 22:12	TCH	40	GCMS2W	TO-15	
V2W2776-IC2776	2W62392.D	12/14/22 22:47	TCH	50	GCMS2W	TO-15	

Target Compound	RT (min.)	Istd RT (min.)	Rel RT		Mean Rel RT	Rel RT Range (+ /- .06)
Acetone (2-Propanone)	2.26	3.44	0.657	ok	0.659	0.599-0.719
Acrolein	2.22	3.44	0.645	ok	0.647	0.587-0.707
Acrylonitrile	2.41	3.44	0.701	ok	0.702	0.642-0.762
Acetonitrile	2.18	3.44	0.634	ok	0.634	0.574-0.694
1,3-Butadiene	1.95	3.44	0.567	ok	0.567	0.507-0.627
Benzene	4.43	3.44	1.288	ok	1.289	1.229-1.349
Bromobenzene	14.18	10.45	1.357	ok	1.357	1.297-1.417
Bromodichloromethane	5.30	4.77	1.111	ok	1.112	1.052-1.172
Bromoform	11.66	10.45	1.116	ok	1.116	1.056-1.176
Bromomethane	2.03	3.44	0.590	ok	0.590	0.530-0.650
Bromoethene	2.19	3.44	0.637	ok	0.636	0.576-0.696
n-Butane	1.96	3.44	0.570	ok	0.570	0.510-0.630
n-Butylbenzene	17.53	10.45	1.678	ok	1.678	1.618-1.738
sec-Butylbenzene	17.00	10.45	1.627	ok	1.627	1.567-1.687
tert-Butylbenzene	16.72	10.45	1.600	ok	1.599	1.539-1.659
Carbon disulfide	2.66	3.44	0.773	ok	0.774	0.714-0.834
Chlorobenzene	10.53	10.45	1.008	ok	1.007	0.947-1.067
Chlorodifluoromethane	1.76	3.44	0.512	ok	0.512	0.452-0.572
Chloroethane	2.08	3.44	0.605	ok	0.605	0.545-0.665
Chlorotrifluoroethene	1.77	3.44	0.515	ok	0.516	0.456-0.576
Chloroform	3.51	3.44	1.020	ok	1.022	0.962-1.082
Chloromethane	1.84	3.44	0.535	ok	0.535	0.475-0.595
3-Chloropropene	2.60	3.44	0.756	ok	0.757	0.697-0.817
2-Chlorotoluene	15.32	10.45	1.466	ok	1.466	1.406-1.526
Carbon tetrachloride	4.55	3.44	1.323	ok	1.323	1.263-1.383
Cyclohexane	4.65	4.77	0.975	ok	0.974	0.914-1.034
1,1-Dichloroethane	2.98	3.44	0.866	ok	0.866	0.806-0.926
1,1-Dichloroethylene	2.53	3.44	0.735	ok	0.735	0.675-0.795
1,2-Dibromoethane (EDB)	8.44	4.77	1.769	ok	1.770	1.710-1.830
1,2-Dichloroethane	3.94	3.44	1.145	ok	1.147	1.087-1.207
1,2-Dichloropropane	5.12	4.77	1.073	ok	1.073	1.013-1.133
1,3-Dichloropropane	7.61	4.77	1.595	ok	1.595	1.535-1.655
1,4-Dioxane	5.37	4.77	1.126	ok	1.135	1.075-1.195
Dichlorodifluoromethane	1.79	3.44	0.520	ok	0.521	0.461-0.581
Dichlorofluoromethane	2.11	3.44	0.613	ok	0.613	0.553-0.673
Dibromochloromethane	8.10	4.77	1.698	ok	1.697	1.637-1.757
Dibromomethane	5.07	4.77	1.063	ok	1.064	1.004-1.124
trans-1,2-Dichloroethylene	2.90	3.44	0.843	ok	0.844	0.784-0.904
cis-1,2-Dichloroethylene	3.36	3.44	0.977	ok	0.977	0.917-1.037

Initial Calibration Retention Time/Internal Standard Area Summary

Job Number: JD59460
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample Number	Lab File ID	Injected	By	Level	Inst ID	Method	
V2W2776-IC2776	2W62383.D	12/14/22 17:55	TCH	0.04	GCMS2W	TO-15	
V2W2776-IC2776	2W62384.D	12/14/22 18:28	TCH	0.1	GCMS2W	TO-15	
V2W2776-IC2776	2W62385.D	12/14/22 18:59	TCH	0.2	GCMS2W	TO-15	
V2W2776-IC2776	2W62386.D	12/14/22 19:31	TCH	0.5	GCMS2W	TO-15	
V2W2776-IC2776	2W62388.D	12/14/22 20:33	TCH	5	GCMS2W	TO-15	
V2W2776-ICC2776	2W62389.D	12/14/22 21:05	TCH	10	GCMS2W	TO-15	
V2W2776-IC2776	2W62390.D	12/14/22 21:37	TCH	20	GCMS2W	TO-15	Reporting this level
V2W2776-IC2776	2W62391.D	12/14/22 22:12	TCH	40	GCMS2W	TO-15	
V2W2776-IC2776	2W62392.D	12/14/22 22:47	TCH	50	GCMS2W	TO-15	

Target Compound	RT (min.)	Istd RT (min.)	Rel RT		Mean Rel RT	Rel RT Range (+ /- .06)
cis-1,3-Dichloropropene	6.32	4.77	1.325	ok	1.325	1.265-1.385
m-Dichlorobenzene	16.78	10.45	1.606	ok	1.606	1.546-1.666
o-Dichlorobenzene	17.16	10.45	1.642	ok	1.642	1.582-1.702
p-Dichlorobenzene	16.87	10.45	1.614	ok	1.614	1.554-1.674
trans-1,3-Dichloropropene	7.01	4.77	1.470	ok	1.470	1.410-1.530
Di-Isopropyl ether	3.50	3.44	1.017	ok	1.020	0.960-1.080
2,3-Dimethylpentane	4.91	4.77	1.029	ok	1.029	0.969-1.089
2,4-Dimethylpentane	4.03	3.44	1.172	ok	1.172	1.112-1.232
Ethanol	2.11	3.44	0.613	ok	0.615	0.555-0.675
Ethylbenzene	11.42	10.45	1.093	ok	1.092	1.032-1.152
Ethyl Acetate	3.50	3.44	1.017	ok	1.020	0.960-1.080
Ethyl Acrylate	5.24	4.77	1.099	ok	1.101	1.041-1.161
4-Ethyltoluene	16.07	10.45	1.538	ok	1.537	1.477-1.597
Freon 113	2.66	3.44	0.773	ok	0.774	0.714-0.834
Freon 114	1.87	3.44	0.544	ok	0.544	0.484-0.604
Freon 123	2.24	3.44	0.651	ok	0.651	0.591-0.711
Freon 123A	2.25	3.44	0.654	ok	0.655	0.595-0.715
Freon 142B	1.83	3.44	0.532	ok	0.532	0.472-0.592
Freon 152A	1.75	3.44	0.509	ok	0.509	0.449-0.569
Heptane	5.78	4.77	1.212	ok	1.212	1.152-1.272
Hexachlorobutadiene	18.75	10.45	1.794	ok	1.795	1.735-1.855
Hexane	3.49	3.44	1.015	ok	1.016	0.956-1.076
2-Hexanone	8.14	4.77	1.706	ok	1.713	1.653-1.773
Iodomethane	2.50	3.44	0.727	ok	0.727	0.667-0.787
Isopropylbenzene	14.32	10.45	1.370	ok	1.370	1.310-1.430
Isopropyl Alcohol	2.34	3.44	0.680	ok	0.684	0.624-0.744
p-Isopropyltoluene	17.18	10.45	1.644	ok	1.644	1.584-1.704
Methylene chloride	2.56	3.44	0.744	ok	0.745	0.685-0.805
Methyl ethyl ketone	3.15	3.44	0.916	ok	0.919	0.859-0.979
Methyl Isobutyl Ketone	6.43	4.77	1.348	ok	1.353	1.293-1.413
Methyl Tert Butyl Ether	3.01	3.44	0.875	ok	0.879	0.819-0.939
Methylmethacrylate	5.67	4.77	1.189	ok	1.191	1.131-1.251
Naphthalene	18.49	10.45	1.769	ok	1.770	1.710-1.830
Nonane	13.91	10.45	1.331	ok	1.331	1.271-1.391
Octane	9.45	4.77	1.981	ok	1.982	1.922-2.042
Pentane	2.44	3.44	0.709	ok	0.710	0.650-0.770
n-Propylbenzene	15.66	10.45	1.499	ok	1.498	1.438-1.558
Propylene	1.77	3.44	0.515	ok	0.515	0.455-0.575
Styrene	12.58	10.45	1.204	ok	1.203	1.143-1.263

Initial Calibration Retention Time/Internal Standard Area Summary

Job Number: JD59460
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample Number	Lab File ID	Injected	By	Level	Inst ID	Method	
V2W2776-IC2776	2W62383.D	12/14/22 17:55	TCH	0.04	GCMS2W	TO-15	
V2W2776-IC2776	2W62384.D	12/14/22 18:28	TCH	0.1	GCMS2W	TO-15	
V2W2776-IC2776	2W62385.D	12/14/22 18:59	TCH	0.2	GCMS2W	TO-15	
V2W2776-IC2776	2W62386.D	12/14/22 19:31	TCH	0.5	GCMS2W	TO-15	
V2W2776-IC2776	2W62388.D	12/14/22 20:33	TCH	5	GCMS2W	TO-15	
V2W2776-ICC2776	2W62389.D	12/14/22 21:05	TCH	10	GCMS2W	TO-15	
V2W2776-IC2776	2W62390.D	12/14/22 21:37	TCH	20	GCMS2W	TO-15	Reporting this level
V2W2776-IC2776	2W62391.D	12/14/22 22:12	TCH	40	GCMS2W	TO-15	
V2W2776-IC2776	2W62392.D	12/14/22 22:47	TCH	50	GCMS2W	TO-15	

Target Compound	RT (min.)	Istd RT (min.)	Rel RT		Mean Rel RT	Rel RT Range (+ /- .06)
1,1,1-Trichloroethane	4.11	3.44	1.195	ok	1.196	1.136-1.256
1,1,1,2-Tetrachloroethane	10.54	10.45	1.009	ok	1.008	0.948-1.068
1,1,2,2-Tetrachloroethane	12.80	10.45	1.225	ok	1.225	1.165-1.285
1,1,2-Trichloroethane	7.17	4.77	1.503	ok	1.504	1.444-1.564
1,2,4-Trichlorobenzene	18.44	10.45	1.765	ok	1.765	1.705-1.825
1,2,3-Trichloropropane	13.09	10.45	1.253	ok	1.252	1.192-1.312
1,2,3-Trimethylbenzene	17.11	10.45	1.637	ok	1.638	1.578-1.698
1,2,4-Trimethylbenzene	16.73	10.45	1.601	ok	1.600	1.540-1.660
1,3,5-Trimethylbenzene	16.24	10.45	1.554	ok	1.554	1.494-1.614
2,2,4-Trimethylpentane	5.45	4.77	1.143	ok	1.144	1.084-1.204
Tertiary Butyl Alcohol	2.54	3.44	0.738	ok	0.744	0.684-0.804
Tetrachloroethylene	9.31	4.77	1.952	ok	1.952	1.892-2.012
Tetrahydrofuran	3.73	3.44	1.084	ok	1.090	1.030-1.150
Toluene	7.55	4.77	1.583	ok	1.584	1.524-1.644
Trichloroethylene	5.36	4.77	1.124	ok	1.124	1.064-1.184
Trichlorofluoromethane	2.32	3.44	0.674	ok	0.676	0.616-0.736
Vinyl chloride	1.90	3.44	0.552	ok	0.553	0.493-0.613
Vinyl Acetate	3.05	3.44	0.887	ok	0.888	0.828-0.948
m,p-Xylene	11.85	10.45	1.134	ok	1.134	1.074-1.194
o-Xylene	12.79	10.45	1.224	ok	1.224	1.164-1.284

Internal Standard	RT (min.)		Mean RT(min.)	RT Range (+ /- 0.33)	Area		Mean Area	Area Range (+ /- 40 %)
Bromochloromethane	3.44	ok	3.44	3.11-3.77	53995	ok	52567	31540-73594
1,4-Difluorobenzene	4.77	ok	4.77	4.44-5.10	274154	ok	267062	160237-373887
Chlorobenzene-D5	10.45	ok	10.45	10.12-10.78	248143	ok	240629	144377-336881

Initial Calibration Retention Time/Internal Standard Area Summary

Job Number: JD59460
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample Number	Lab File ID	Injected	By	Level	Inst ID	Method	
V2W2776-IC2776	2W62383.D	12/14/22 17:55	TCH	0.04	GCMS2W	TO-15	
V2W2776-IC2776	2W62384.D	12/14/22 18:28	TCH	0.1	GCMS2W	TO-15	
V2W2776-IC2776	2W62385.D	12/14/22 18:59	TCH	0.2	GCMS2W	TO-15	
V2W2776-IC2776	2W62386.D	12/14/22 19:31	TCH	0.5	GCMS2W	TO-15	
V2W2776-IC2776	2W62388.D	12/14/22 20:33	TCH	5	GCMS2W	TO-15	
V2W2776-ICC2776	2W62389.D	12/14/22 21:05	TCH	10	GCMS2W	TO-15	
V2W2776-IC2776	2W62390.D	12/14/22 21:37	TCH	20	GCMS2W	TO-15	
V2W2776-IC2776	2W62391.D	12/14/22 22:12	TCH	40	GCMS2W	TO-15	Reporting this level
V2W2776-IC2776	2W62392.D	12/14/22 22:47	TCH	50	GCMS2W	TO-15	

Target Compound	RT (min.)	Istd RT (min.)	Rel RT		Mean Rel RT	Rel RT Range (+ /- .06)
Acetone (2-Propanone)	2.26	3.43	0.659	ok	0.659	0.599-0.719
Acrolein	2.22	3.43	0.647	ok	0.647	0.587-0.707
Acrylonitrile	2.41	3.43	0.703	ok	0.702	0.642-0.762
Acetonitrile	2.17	3.43	0.633	ok	0.634	0.574-0.694
1,3-Butadiene	1.94	3.43	0.566	ok	0.567	0.507-0.627
Benzene	4.43	3.43	1.292	ok	1.289	1.229-1.349
Bromobenzene	14.19	10.45	1.358	ok	1.357	1.297-1.417
Bromodichloromethane	5.30	4.77	1.111	ok	1.112	1.052-1.172
Bromoform	11.67	10.45	1.117	ok	1.116	1.056-1.176
Bromomethane	2.02	3.43	0.589	ok	0.590	0.530-0.650
Bromoethene	2.18	3.43	0.636	ok	0.636	0.576-0.696
n-Butane	1.96	3.43	0.571	ok	0.570	0.510-0.630
n-Butylbenzene	17.53	10.45	1.678	ok	1.678	1.618-1.738
sec-Butylbenzene	17.00	10.45	1.627	ok	1.627	1.567-1.687
tert-Butylbenzene	16.72	10.45	1.600	ok	1.599	1.539-1.659
Carbon disulfide	2.66	3.43	0.776	ok	0.774	0.714-0.834
Chlorobenzene	10.53	10.45	1.008	ok	1.007	0.947-1.067
Chlorodifluoromethane	1.76	3.43	0.513	ok	0.512	0.452-0.572
Chloroethane	2.08	3.43	0.606	ok	0.605	0.545-0.665
Chlorotrifluoroethene	1.77	3.43	0.516	ok	0.516	0.456-0.576
Chloroform	3.51	3.43	1.023	ok	1.022	0.962-1.082
Chloromethane	1.84	3.43	0.536	ok	0.535	0.475-0.595
3-Chloropropene	2.60	3.43	0.758	ok	0.757	0.697-0.817
2-Chlorotoluene	15.32	10.45	1.466	ok	1.466	1.406-1.526
Carbon tetrachloride	4.55	3.43	1.327	ok	1.323	1.263-1.383
Cyclohexane	4.65	4.77	0.975	ok	0.974	0.914-1.034
1,1-Dichloroethane	2.98	3.43	0.869	ok	0.866	0.806-0.926
1,1-Dichloroethylene	2.52	3.43	0.735	ok	0.735	0.675-0.795
1,2-Dibromoethane (EDB)	8.45	4.77	1.771	ok	1.770	1.710-1.830
1,2-Dichloroethane	3.94	3.43	1.149	ok	1.147	1.087-1.207
1,2-Dichloropropane	5.12	4.77	1.073	ok	1.073	1.013-1.133
1,3-Dichloropropane	7.61	4.77	1.595	ok	1.595	1.535-1.655
1,4-Dioxane	5.37	4.77	1.126	ok	1.135	1.075-1.195
Dichlorodifluoromethane	1.79	3.43	0.522	ok	0.521	0.461-0.581
Dichlorofluoromethane	2.10	3.43	0.612	ok	0.613	0.553-0.673
Dibromochloromethane	8.09	4.77	1.696	ok	1.697	1.637-1.757
Dibromomethane	5.08	4.77	1.065	ok	1.064	1.004-1.124
trans-1,2-Dichloroethylene	2.90	3.43	0.845	ok	0.844	0.784-0.904
cis-1,2-Dichloroethylene	3.36	3.43	0.980	ok	0.977	0.917-1.037

Initial Calibration Retention Time/Internal Standard Area Summary

Job Number: JD59460
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample Number	Lab File ID	Injected	By	Level	Inst ID	Method	
V2W2776-IC2776	2W62383.D	12/14/22 17:55	TCH	0.04	GCMS2W	TO-15	
V2W2776-IC2776	2W62384.D	12/14/22 18:28	TCH	0.1	GCMS2W	TO-15	
V2W2776-IC2776	2W62385.D	12/14/22 18:59	TCH	0.2	GCMS2W	TO-15	
V2W2776-IC2776	2W62386.D	12/14/22 19:31	TCH	0.5	GCMS2W	TO-15	
V2W2776-IC2776	2W62388.D	12/14/22 20:33	TCH	5	GCMS2W	TO-15	
V2W2776-ICC2776	2W62389.D	12/14/22 21:05	TCH	10	GCMS2W	TO-15	
V2W2776-IC2776	2W62390.D	12/14/22 21:37	TCH	20	GCMS2W	TO-15	
V2W2776-IC2776	2W62391.D	12/14/22 22:12	TCH	40	GCMS2W	TO-15	Reporting this level
V2W2776-IC2776	2W62392.D	12/14/22 22:47	TCH	50	GCMS2W	TO-15	

Target Compound	RT (min.)	Istd RT (min.)	Rel RT		Mean Rel RT	Rel RT Range (+ /- .06)
cis-1,3-Dichloropropene	6.32	4.77	1.325	ok	1.325	1.265-1.385
m-Dichlorobenzene	16.79	10.45	1.607	ok	1.606	1.546-1.666
o-Dichlorobenzene	17.17	10.45	1.643	ok	1.642	1.582-1.702
p-Dichlorobenzene	16.87	10.45	1.614	ok	1.614	1.554-1.674
trans-1,3-Dichloropropene	7.01	4.77	1.470	ok	1.470	1.410-1.530
Di-Isopropyl ether	3.50	3.43	1.020	ok	1.020	0.960-1.080
2,3-Dimethylpentane	4.91	4.77	1.029	ok	1.029	0.969-1.089
2,4-Dimethylpentane	4.03	3.43	1.175	ok	1.172	1.112-1.232
Ethanol	2.11	3.43	0.615	ok	0.615	0.555-0.675
Ethylbenzene	11.42	10.45	1.093	ok	1.092	1.032-1.152
Ethyl Acetate	3.50	3.43	1.020	ok	1.020	0.960-1.080
Ethyl Acrylate	5.24	4.77	1.099	ok	1.101	1.041-1.161
4-Ethyltoluene	16.07	10.45	1.538	ok	1.537	1.477-1.597
Freon 113	2.66	3.43	0.776	ok	0.774	0.714-0.834
Freon 114	1.87	3.43	0.545	ok	0.544	0.484-0.604
Freon 123	2.23	3.43	0.650	ok	0.651	0.591-0.711
Freon 123A	2.25	3.43	0.656	ok	0.655	0.595-0.715
Freon 142B	1.83	3.43	0.534	ok	0.532	0.472-0.592
Freon 152A	1.75	3.43	0.510	ok	0.509	0.449-0.569
Heptane	5.78	4.77	1.212	ok	1.212	1.152-1.272
Hexachlorobutadiene	18.76	10.45	1.795	ok	1.795	1.735-1.855
Hexane	3.49	3.43	1.017	ok	1.016	0.956-1.076
2-Hexanone	8.14	4.77	1.706	ok	1.713	1.653-1.773
Iodomethane	2.50	3.43	0.729	ok	0.727	0.667-0.787
Isopropylbenzene	14.32	10.45	1.370	ok	1.370	1.310-1.430
Isopropyl Alcohol	2.34	3.43	0.682	ok	0.684	0.624-0.744
p-Isopropyltoluene	17.18	10.45	1.644	ok	1.644	1.584-1.704
Methylene chloride	2.56	3.43	0.746	ok	0.745	0.685-0.805
Methyl ethyl ketone	3.15	3.43	0.918	ok	0.919	0.859-0.979
Methyl Isobutyl Ketone	6.43	4.77	1.348	ok	1.353	1.293-1.413
Methyl Tert Butyl Ether	3.01	3.43	0.878	ok	0.879	0.819-0.939
Methylmethacrylate	5.67	4.77	1.189	ok	1.191	1.131-1.251
Naphthalene	18.50	10.45	1.770	ok	1.770	1.710-1.830
Nonane	13.92	10.45	1.332	ok	1.331	1.271-1.391
Octane	9.45	4.77	1.981	ok	1.982	1.922-2.042
Pentane	2.44	3.43	0.711	ok	0.710	0.650-0.770
n-Propylbenzene	15.66	10.45	1.499	ok	1.498	1.438-1.558
Propylene	1.77	3.43	0.516	ok	0.515	0.455-0.575
Styrene	12.58	10.45	1.204	ok	1.203	1.143-1.263

Initial Calibration Retention Time/Internal Standard Area Summary

Job Number: JD59460
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample Number	Lab File ID	Injected	By	Level	Inst ID	Method	
V2W2776-IC2776	2W62383.D	12/14/22 17:55	TCH	0.04	GCMS2W	TO-15	
V2W2776-IC2776	2W62384.D	12/14/22 18:28	TCH	0.1	GCMS2W	TO-15	
V2W2776-IC2776	2W62385.D	12/14/22 18:59	TCH	0.2	GCMS2W	TO-15	
V2W2776-IC2776	2W62386.D	12/14/22 19:31	TCH	0.5	GCMS2W	TO-15	
V2W2776-IC2776	2W62388.D	12/14/22 20:33	TCH	5	GCMS2W	TO-15	
V2W2776-ICC2776	2W62389.D	12/14/22 21:05	TCH	10	GCMS2W	TO-15	
V2W2776-IC2776	2W62390.D	12/14/22 21:37	TCH	20	GCMS2W	TO-15	
V2W2776-IC2776	2W62391.D	12/14/22 22:12	TCH	40	GCMS2W	TO-15	Reporting this level
V2W2776-IC2776	2W62392.D	12/14/22 22:47	TCH	50	GCMS2W	TO-15	

Target Compound	RT (min.)	Istd RT (min.)	Rel RT		Mean Rel RT	Rel RT Range (+ /- .06)
1,1,1-Trichloroethane	4.11	3.43	1.198	ok	1.196	1.136-1.256
1,1,1,2-Tetrachloroethane	10.54	10.45	1.009	ok	1.008	0.948-1.068
1,1,2,2-Tetrachloroethane	12.81	10.45	1.226	ok	1.225	1.165-1.285
1,1,2-Trichloroethane	7.18	4.77	1.505	ok	1.504	1.444-1.564
1,2,4-Trichlorobenzene	18.45	10.45	1.766	ok	1.765	1.705-1.825
1,2,3-Trichloropropane	13.09	10.45	1.253	ok	1.252	1.192-1.312
1,2,3-Trimethylbenzene	17.12	10.45	1.638	ok	1.638	1.578-1.698
1,2,4-Trimethylbenzene	16.73	10.45	1.601	ok	1.600	1.540-1.660
1,3,5-Trimethylbenzene	16.24	10.45	1.554	ok	1.554	1.494-1.614
2,2,4-Trimethylpentane	5.46	4.77	1.145	ok	1.144	1.084-1.204
Tertiary Butyl Alcohol	2.54	3.43	0.741	ok	0.744	0.684-0.804
Tetrachloroethylene	9.31	4.77	1.952	ok	1.952	1.892-2.012
Tetrahydrofuran	3.73	3.43	1.087	ok	1.090	1.030-1.150
Toluene	7.55	4.77	1.583	ok	1.584	1.524-1.644
Trichloroethylene	5.36	4.77	1.124	ok	1.124	1.064-1.184
Trichlorofluoromethane	2.32	3.43	0.676	ok	0.676	0.616-0.736
Vinyl chloride	1.90	3.43	0.554	ok	0.553	0.493-0.613
Vinyl Acetate	3.05	3.43	0.889	ok	0.888	0.828-0.948
m,p-Xylene	11.86	10.45	1.135	ok	1.134	1.074-1.194
o-Xylene	12.80	10.45	1.225	ok	1.224	1.164-1.284

Internal Standard	RT (min.)		Mean RT(min.)	RT Range (+ /- 0.33)	Area		Mean Area	Area Range (+ /- 40 %)
Bromochloromethane	3.43	ok	3.44	3.11-3.77	55525	ok	52567	31540-73594
1,4-Difluorobenzene	4.77	ok	4.77	4.44-5.10	278211	ok	267062	160237-373887
Chlorobenzene-D5	10.45	ok	10.45	10.12-10.78	250406	ok	240629	144377-336881

Initial Calibration Retention Time/Internal Standard Area Summary

Job Number: JD59460
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample Number	Lab File ID	Injected	By	Level	Inst ID	Method	
V2W2776-IC2776	2W62383.D	12/14/22 17:55	TCH	0.04	GCMS2W	TO-15	
V2W2776-IC2776	2W62384.D	12/14/22 18:28	TCH	0.1	GCMS2W	TO-15	
V2W2776-IC2776	2W62385.D	12/14/22 18:59	TCH	0.2	GCMS2W	TO-15	
V2W2776-IC2776	2W62386.D	12/14/22 19:31	TCH	0.5	GCMS2W	TO-15	
V2W2776-IC2776	2W62388.D	12/14/22 20:33	TCH	5	GCMS2W	TO-15	
V2W2776-ICC2776	2W62389.D	12/14/22 21:05	TCH	10	GCMS2W	TO-15	
V2W2776-IC2776	2W62390.D	12/14/22 21:37	TCH	20	GCMS2W	TO-15	
V2W2776-IC2776	2W62391.D	12/14/22 22:12	TCH	40	GCMS2W	TO-15	
V2W2776-IC2776	2W62392.D	12/14/22 22:47	TCH	50	GCMS2W	TO-15	Reporting this level

Target Compound	RT (min.)	Istd RT (min.)	Rel RT		Mean Rel RT	Rel RT Range (+ /- .06)
Acetone (2-Propanone)	2.26	3.44	0.657	ok	0.659	0.599-0.719
Acrolein	2.22	3.44	0.645	ok	0.647	0.587-0.707
Acrylonitrile	2.41	3.44	0.701	ok	0.702	0.642-0.762
Acetonitrile	2.18	3.44	0.634	ok	0.634	0.574-0.694
1,3-Butadiene	1.95	3.44	0.567	ok	0.567	0.507-0.627
Benzene	4.43	3.44	1.288	ok	1.289	1.229-1.349
Bromobenzene	14.20	10.45	1.359	ok	1.357	1.297-1.417
Bromodichloromethane	5.31	4.77	1.113	ok	1.112	1.052-1.172
Bromoform	11.67	10.45	1.117	ok	1.116	1.056-1.176
Bromomethane	2.03	3.44	0.590	ok	0.590	0.530-0.650
Bromoethene	2.19	3.44	0.637	ok	0.636	0.576-0.696
n-Butane	1.96	3.44	0.570	ok	0.570	0.510-0.630
n-Butylbenzene	17.54	10.45	1.678	ok	1.678	1.618-1.738
sec-Butylbenzene	17.01	10.45	1.628	ok	1.627	1.567-1.687
tert-Butylbenzene	16.72	10.45	1.600	ok	1.599	1.539-1.659
Carbon disulfide	2.66	3.44	0.773	ok	0.774	0.714-0.834
Chlorobenzene	10.54	10.45	1.009	ok	1.007	0.947-1.067
Chlorodifluoromethane	1.76	3.44	0.512	ok	0.512	0.452-0.572
Chloroethane	2.08	3.44	0.605	ok	0.605	0.545-0.665
Chlorotrifluoroethene	1.78	3.44	0.517	ok	0.516	0.456-0.576
Chloroform	3.52	3.44	1.023	ok	1.022	0.962-1.082
Chloromethane	1.84	3.44	0.535	ok	0.535	0.475-0.595
3-Chloropropene	2.60	3.44	0.756	ok	0.757	0.697-0.817
2-Chlorotoluene	15.33	10.45	1.467	ok	1.466	1.406-1.526
Carbon tetrachloride	4.55	3.44	1.323	ok	1.323	1.263-1.383
Cyclohexane	4.65	4.77	0.975	ok	0.974	0.914-1.034
1,1-Dichloroethane	2.98	3.44	0.866	ok	0.866	0.806-0.926
1,1-Dichloroethylene	2.53	3.44	0.735	ok	0.735	0.675-0.795
1,2-Dibromoethane (EDB)	8.45	4.77	1.771	ok	1.770	1.710-1.830
1,2-Dichloroethane	3.94	3.44	1.145	ok	1.147	1.087-1.207
1,2-Dichloropropane	5.12	4.77	1.073	ok	1.073	1.013-1.133
1,3-Dichloropropane	7.61	4.77	1.595	ok	1.595	1.535-1.655
1,4-Dioxane	5.37	4.77	1.126	ok	1.135	1.075-1.195
Dichlorodifluoromethane	1.79	3.44	0.520	ok	0.521	0.461-0.581
Dichlorofluoromethane	2.11	3.44	0.613	ok	0.613	0.553-0.673
Dibromochloromethane	8.10	4.77	1.698	ok	1.697	1.637-1.757
Dibromomethane	5.08	4.77	1.065	ok	1.064	1.004-1.124
trans-1,2-Dichloroethylene	2.90	3.44	0.843	ok	0.844	0.784-0.904
cis-1,2-Dichloroethylene	3.36	3.44	0.977	ok	0.977	0.917-1.037

Initial Calibration Retention Time/Internal Standard Area Summary

Job Number: JD59460
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample Number	Lab File ID	Injected	By	Level	Inst ID	Method	
V2W2776-IC2776	2W62383.D	12/14/22 17:55	TCH	0.04	GCMS2W	TO-15	
V2W2776-IC2776	2W62384.D	12/14/22 18:28	TCH	0.1	GCMS2W	TO-15	
V2W2776-IC2776	2W62385.D	12/14/22 18:59	TCH	0.2	GCMS2W	TO-15	
V2W2776-IC2776	2W62386.D	12/14/22 19:31	TCH	0.5	GCMS2W	TO-15	
V2W2776-IC2776	2W62388.D	12/14/22 20:33	TCH	5	GCMS2W	TO-15	
V2W2776-ICC2776	2W62389.D	12/14/22 21:05	TCH	10	GCMS2W	TO-15	
V2W2776-IC2776	2W62390.D	12/14/22 21:37	TCH	20	GCMS2W	TO-15	
V2W2776-IC2776	2W62391.D	12/14/22 22:12	TCH	40	GCMS2W	TO-15	
V2W2776-IC2776	2W62392.D	12/14/22 22:47	TCH	50	GCMS2W	TO-15	Reporting this level

Target Compound	RT (min.)	Istd RT (min.)	Rel RT		Mean Rel RT	Rel RT Range (+ /- .06)
cis-1,3-Dichloropropene	6.32	4.77	1.325	ok	1.325	1.265-1.385
m-Dichlorobenzene	16.79	10.45	1.607	ok	1.606	1.546-1.666
o-Dichlorobenzene	17.17	10.45	1.643	ok	1.642	1.582-1.702
p-Dichlorobenzene	16.87	10.45	1.614	ok	1.614	1.554-1.674
trans-1,3-Dichloropropene	7.01	4.77	1.470	ok	1.470	1.410-1.530
Di-Isopropyl ether	3.50	3.44	1.017	ok	1.020	0.960-1.080
2,3-Dimethylpentane	4.91	4.77	1.029	ok	1.029	0.969-1.089
2,4-Dimethylpentane	4.03	3.44	1.172	ok	1.172	1.112-1.232
Ethanol	2.11	3.44	0.613	ok	0.615	0.555-0.675
Ethylbenzene	11.42	10.45	1.093	ok	1.092	1.032-1.152
Ethyl Acetate	3.50	3.44	1.017	ok	1.020	0.960-1.080
Ethyl Acrylate	5.24	4.77	1.099	ok	1.101	1.041-1.161
4-Ethyltoluene	16.07	10.45	1.538	ok	1.537	1.477-1.597
Freon 113	2.66	3.44	0.773	ok	0.774	0.714-0.834
Freon 114	1.87	3.44	0.544	ok	0.544	0.484-0.604
Freon 123	2.24	3.44	0.651	ok	0.651	0.591-0.711
Freon 123A	2.25	3.44	0.654	ok	0.655	0.595-0.715
Freon 142B	1.83	3.44	0.532	ok	0.532	0.472-0.592
Freon 152A	1.75	3.44	0.509	ok	0.509	0.449-0.569
Heptane	5.78	4.77	1.212	ok	1.212	1.152-1.272
Hexachlorobutadiene	18.76	10.45	1.795	ok	1.795	1.735-1.855
Hexane	3.49	3.44	1.015	ok	1.016	0.956-1.076
2-Hexanone	8.14	4.77	1.706	ok	1.713	1.653-1.773
Iodomethane	2.50	3.44	0.727	ok	0.727	0.667-0.787
Isopropylbenzene	14.32	10.45	1.370	ok	1.370	1.310-1.430
Isopropyl Alcohol	2.34	3.44	0.680	ok	0.684	0.624-0.744
p-Isopropyltoluene	17.19	10.45	1.645	ok	1.644	1.584-1.704
Methylene chloride	2.56	3.44	0.744	ok	0.745	0.685-0.805
Methyl ethyl ketone	3.15	3.44	0.916	ok	0.919	0.859-0.979
Methyl Isobutyl Ketone	6.43	4.77	1.348	ok	1.353	1.293-1.413
Methyl Tert Butyl Ether	3.01	3.44	0.875	ok	0.879	0.819-0.939
Methylmethacrylate	5.68	4.77	1.191	ok	1.191	1.131-1.251
Naphthalene	18.50	10.45	1.770	ok	1.770	1.710-1.830
Nonane	13.92	10.45	1.332	ok	1.331	1.271-1.391
Octane	9.46	4.77	1.983	ok	1.982	1.922-2.042
Pentane	2.44	3.44	0.709	ok	0.710	0.650-0.770
n-Propylbenzene	15.67	10.45	1.500	ok	1.498	1.438-1.558
Propylene	1.77	3.44	0.515	ok	0.515	0.455-0.575
Styrene	12.58	10.45	1.204	ok	1.203	1.143-1.263

Initial Calibration Retention Time/Internal Standard Area Summary

Job Number: JD59460
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample Number	Lab File ID	Injected	By	Level	Inst ID	Method	
V2W2776-IC2776	2W62383.D	12/14/22 17:55	TCH	0.04	GCMS2W	TO-15	
V2W2776-IC2776	2W62384.D	12/14/22 18:28	TCH	0.1	GCMS2W	TO-15	
V2W2776-IC2776	2W62385.D	12/14/22 18:59	TCH	0.2	GCMS2W	TO-15	
V2W2776-IC2776	2W62386.D	12/14/22 19:31	TCH	0.5	GCMS2W	TO-15	
V2W2776-IC2776	2W62388.D	12/14/22 20:33	TCH	5	GCMS2W	TO-15	
V2W2776-ICC2776	2W62389.D	12/14/22 21:05	TCH	10	GCMS2W	TO-15	
V2W2776-IC2776	2W62390.D	12/14/22 21:37	TCH	20	GCMS2W	TO-15	
V2W2776-IC2776	2W62391.D	12/14/22 22:12	TCH	40	GCMS2W	TO-15	
V2W2776-IC2776	2W62392.D	12/14/22 22:47	TCH	50	GCMS2W	TO-15	Reporting this level

Target Compound	RT (min.)	Istd RT (min.)	Rel RT		Mean Rel RT	Rel RT Range (+ /- .06)
1,1,1-Trichloroethane	4.11	3.44	1.195	ok	1.196	1.136-1.256
1,1,1,2-Tetrachloroethane	10.55	10.45	1.010	ok	1.008	0.948-1.068
1,1,2,2-Tetrachloroethane	12.81	10.45	1.226	ok	1.225	1.165-1.285
1,1,2-Trichloroethane	7.18	4.77	1.505	ok	1.504	1.444-1.564
1,2,4-Trichlorobenzene	18.45	10.45	1.766	ok	1.765	1.705-1.825
1,2,3-Trichloropropane	13.10	10.45	1.254	ok	1.252	1.192-1.312
1,2,3-Trimethylbenzene	17.12	10.45	1.638	ok	1.638	1.578-1.698
1,2,4-Trimethylbenzene	16.73	10.45	1.601	ok	1.600	1.540-1.660
1,3,5-Trimethylbenzene	16.24	10.45	1.554	ok	1.554	1.494-1.614
2,2,4-Trimethylpentane	5.46	4.77	1.145	ok	1.144	1.084-1.204
Tertiary Butyl Alcohol	2.54	3.44	0.738	ok	0.744	0.684-0.804
Tetrachloroethylene	9.31	4.77	1.952	ok	1.952	1.892-2.012
Tetrahydrofuran	3.73	3.44	1.084	ok	1.090	1.030-1.150
Toluene	7.55	4.77	1.583	ok	1.584	1.524-1.644
Trichloroethylene	5.36	4.77	1.124	ok	1.124	1.064-1.184
Trichlorofluoromethane	2.32	3.44	0.674	ok	0.676	0.616-0.736
Vinyl chloride	1.90	3.44	0.552	ok	0.553	0.493-0.613
Vinyl Acetate	3.05	3.44	0.887	ok	0.888	0.828-0.948
m,p-Xylene	11.86	10.45	1.135	ok	1.134	1.074-1.194
o-Xylene	12.80	10.45	1.225	ok	1.224	1.164-1.284

Internal Standard	RT (min.)		Mean RT(min.)	RT Range (+ /- 0.33)	Area		Mean Area	Area Range (+ /- 40 %)
Bromochloromethane	3.44	ok	3.44	3.11-3.77	57243	ok	52567	31540-73594
1,4-Difluorobenzene	4.77	ok	4.77	4.44-5.10	287885	ok	267062	160237-373887
Chlorobenzene-D5	10.45	ok	10.45	10.12-10.78	267047	ok	240629	144377-336881

Initial Calibration Retention Time/Internal Standard Area Summary

Job Number: JD59460
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample Number	Lab File ID	Injected	By	Level	Inst ID	Method	
V6W1125-IC1125	6W26448.D	10/19/22 19:10	TCH	0.04	GCMS6W	TO-15	Reporting this level
V6W1125-IC1125	6W26449.D	10/19/22 19:43	TCH	0.1	GCMS6W	TO-15	
V6W1125-IC1125	6W26450.D	10/19/22 20:15	TCH	0.2	GCMS6W	TO-15	
V6W1125-IC1125	6W26451.D	10/19/22 20:47	TCH	0.5	GCMS6W	TO-15	
V6W1125-IC1125	6W26453.D	10/19/22 21:52	TCH	5	GCMS6W	TO-15	
V6W1125-ICC1125	6W26454.D	10/19/22 22:25	TCH	10	GCMS6W	TO-15	
V6W1125-IC1125	6W26455.D	10/19/22 22:57	TCH	20	GCMS6W	TO-15	
V6W1125-IC1125	6W26456.D	10/19/22 23:29	TCH	40	GCMS6W	TO-15	
V6W1125-IC1125	6W26457.D	10/20/22 00:03	TCH	50	GCMS6W	TO-15	

Target Compound	RT (min.)	Istd RT (min.)	Rel RT		Mean Rel RT	Rel RT Range (+ /- .06)
Benzene	4.39	3.34	1.314	ok	1.312	1.252-1.372
Bromobenzene	14.37	10.59	1.357	ok	1.358	1.298-1.418
Bromodichloromethane	5.29	4.73	1.118	ok	1.119	1.059-1.179
n-Butane	1.88	3.34	0.563	ok	0.563	0.503-0.623
n-Butylbenzene	17.59	10.59	1.661	ok	1.661	1.601-1.721
sec-Butylbenzene	17.07	10.59	1.612	ok	1.613	1.553-1.673
tert-Butylbenzene	16.80	10.59	1.586	ok	1.587	1.527-1.647
Carbon disulfide	2.52	3.34	0.754	ok	0.754	0.694-0.814
Chlorobenzene	10.67	10.59	1.008	ok	1.008	0.948-1.068
Chloroform	3.42	3.34	1.024	ok	1.024	0.964-1.084
Chloromethane	1.78	3.34	0.533	ok	0.531	0.471-0.591
2-Chlorotoluene	15.52	10.59	1.466	ok	1.466	1.406-1.526
Carbon tetrachloride	4.50	3.34	1.347	ok	1.348	1.288-1.408
1,1-Dichloroethane	2.86	3.34	0.856	ok	0.854	0.794-0.914
Dichlorodifluoromethane	1.73	3.34	0.518	ok	0.518	0.458-0.578
Dichlorofluoromethane	2.00	3.34	0.599	ok	0.599	0.539-0.659
Dibromochloromethane	8.18	4.73	1.729	ok	1.729	1.669-1.789
m-Dichlorobenzene	16.86	10.59	1.592	ok	1.593	1.533-1.653
o-Dichlorobenzene	17.24	10.59	1.628	ok	1.628	1.568-1.688
p-Dichlorobenzene	16.94	10.59	1.600	ok	1.601	1.541-1.661
2,4-Dimethylpentane	3.96	3.34	1.186	ok	1.186	1.126-1.246
Ethylbenzene	11.57	10.59	1.093	ok	1.093	1.033-1.153
4-Ethyltoluene	16.20	10.59	1.530	ok	1.531	1.471-1.591
Freon 114	1.80	3.34	0.539	ok	0.539	0.479-0.599
Freon 123	2.12	3.34	0.635	ok	0.634	0.574-0.694
Freon 142B	1.77	3.34	0.530	ok	0.530	0.470-0.590
Heptane	5.78	4.73	1.222	ok	1.222	1.162-1.282
Hexachloroethane	17.77	10.59	1.678	ok	1.678	1.618-1.738
Iodomethane	2.36	3.34	0.707	ok	0.706	0.646-0.766
Isopropylbenzene	14.50	10.59	1.369	ok	1.370	1.310-1.430
Isopropyl Alcohol	2.22	3.34	0.665	ok	0.662	0.602-0.722
p-Isopropyltoluene	17.25	10.59	1.629	ok	1.629	1.569-1.689
Nonane	14.08	10.59	1.330	ok	1.331	1.271-1.391
Octane	9.56	4.73	2.021	ok	2.020	1.960-2.080
n-Propylbenzene	15.85	10.59	1.497	ok	1.498	1.438-1.558
Styrene	12.74	10.59	1.203	ok	1.204	1.144-1.264
1,1,2,2-Tetrachloroethane	12.98	10.59	1.226	ok	1.227	1.167-1.287
1,2,3-Trimethylbenzene	17.18	10.59	1.622	ok	1.623	1.563-1.683
1,2,4-Trimethylbenzene	16.80	10.59	1.586	ok	1.587	1.527-1.647

Initial Calibration Retention Time/Internal Standard Area Summary

Job Number: JD59460
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample Number	Lab File ID	Injected	By	Level	Inst ID	Method	
V6W1125-IC1125	6W26448.D	10/19/22 19:10	TCH	0.04	GCMS6W	TO-15	Reporting this level
V6W1125-IC1125	6W26449.D	10/19/22 19:43	TCH	0.1	GCMS6W	TO-15	
V6W1125-IC1125	6W26450.D	10/19/22 20:15	TCH	0.2	GCMS6W	TO-15	
V6W1125-IC1125	6W26451.D	10/19/22 20:47	TCH	0.5	GCMS6W	TO-15	
V6W1125-IC1125	6W26453.D	10/19/22 21:52	TCH	5	GCMS6W	TO-15	
V6W1125-ICC1125	6W26454.D	10/19/22 22:25	TCH	10	GCMS6W	TO-15	
V6W1125-IC1125	6W26455.D	10/19/22 22:57	TCH	20	GCMS6W	TO-15	
V6W1125-IC1125	6W26456.D	10/19/22 23:29	TCH	40	GCMS6W	TO-15	
V6W1125-IC1125	6W26457.D	10/20/22 00:03	TCH	50	GCMS6W	TO-15	

Target Compound	RT (min.)	Istd RT (min.)	Rel RT		Mean Rel RT	Rel RT Range (+ /- .06)
1,3,5-Trimethylbenzene	16.35	10.59	1.544	ok	1.545	1.485-1.605
2,2,4-Trimethylpentane	5.45	4.73	1.152	ok	1.151	1.091-1.211
Tetrachloroethylene	9.42	4.73	1.992	ok	1.989	1.929-2.049
Toluene	7.61	4.73	1.609	ok	1.609	1.549-1.669
Trichloroethylene	5.34	4.73	1.129	ok	1.130	1.070-1.190
Trichlorofluoromethane	2.19	3.34	0.656	ok	0.656	0.596-0.716
Vinyl chloride	1.83	3.34	0.548	ok	0.548	0.488-0.608
m,p-Xylene	12.02	10.59	1.135	ok	1.135	1.075-1.195
o-Xylene	12.96	10.59	1.224	ok	1.224	1.164-1.284

Internal Standard	RT (min.)		Mean RT(min.)	RT Range (+ /- 0.33)	Area		Mean Area	Area Range (+ /- 40 %)
Bromochloromethane	3.34	ok	3.34	3.01-3.67	49562	ok	48058	28835-67281
1,4-Difluorobenzene	4.73	ok	4.73	4.40-5.06	238408	ok	240724	144434-337014
Chlorobenzene-D5	10.59	ok	10.59	10.26-10.92	206644	ok	213567	128140-298994

Initial Calibration Retention Time/Internal Standard Area Summary

Job Number: JD59460
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample Number	Lab File ID	Injected	By	Level	Inst ID	Method	
V6W1125-IC1125	6W26448.D	10/19/22 19:10	TCH	0.04	GCMS6W	TO-15	
V6W1125-IC1125	6W26449.D	10/19/22 19:43	TCH	0.1	GCMS6W	TO-15	Reporting this level
V6W1125-IC1125	6W26450.D	10/19/22 20:15	TCH	0.2	GCMS6W	TO-15	
V6W1125-IC1125	6W26451.D	10/19/22 20:47	TCH	0.5	GCMS6W	TO-15	
V6W1125-IC1125	6W26453.D	10/19/22 21:52	TCH	5	GCMS6W	TO-15	
V6W1125-ICC1125	6W26454.D	10/19/22 22:25	TCH	10	GCMS6W	TO-15	
V6W1125-IC1125	6W26455.D	10/19/22 22:57	TCH	20	GCMS6W	TO-15	
V6W1125-IC1125	6W26456.D	10/19/22 23:29	TCH	40	GCMS6W	TO-15	
V6W1125-IC1125	6W26457.D	10/20/22 00:03	TCH	50	GCMS6W	TO-15	

Target Compound	RT (min.)	Istd RT (min.)	Rel RT		Mean Rel RT	Rel RT Range (+ /- .06)
Acrylonitrile	2.27	3.34	0.680	ok	0.680	0.620-0.740
Acetonitrile	2.07	3.34	0.620	ok	0.618	0.558-0.678
1,3-Butadiene	1.87	3.34	0.560	ok	0.559	0.499-0.619
Benzene	4.38	3.34	1.311	ok	1.312	1.252-1.372
Bromobenzene	14.38	10.58	1.359	ok	1.358	1.298-1.418
Bromodichloromethane	5.29	4.73	1.118	ok	1.119	1.059-1.179
Bromoform	11.82	10.58	1.117	ok	1.117	1.057-1.177
Bromomethane	1.94	3.34	0.581	ok	0.579	0.519-0.639
Bromoethene	2.08	3.34	0.623	ok	0.620	0.560-0.680
n-Butane	1.88	3.34	0.563	ok	0.563	0.503-0.623
Benzyl Chloride	16.89	10.58	1.596	ok	1.595	1.535-1.655
n-Butylbenzene	17.58	10.58	1.662	ok	1.661	1.601-1.721
sec-Butylbenzene	17.07	10.58	1.613	ok	1.613	1.553-1.673
tert-Butylbenzene	16.79	10.58	1.587	ok	1.587	1.527-1.647
Carbon disulfide	2.52	3.34	0.754	ok	0.754	0.694-0.814
Chlorobenzene	10.66	10.58	1.008	ok	1.008	0.948-1.068
Chloroethane	1.98	3.34	0.593	ok	0.593	0.533-0.653
Chlorotrifluoroethene	1.72	3.34	0.515	ok	0.513	0.453-0.573
Chloroform	3.42	3.34	1.024	ok	1.024	0.964-1.084
Chloromethane	1.78	3.34	0.533	ok	0.531	0.471-0.591
2-Chlorotoluene	15.52	10.58	1.467	ok	1.466	1.406-1.526
Carbon tetrachloride	4.50	3.34	1.347	ok	1.348	1.288-1.408
Cyclohexane	4.61	4.73	0.975	ok	0.973	0.913-1.033
1,1-Dichloroethane	2.86	3.34	0.856	ok	0.854	0.794-0.914
1,1-Dichloroethylene	2.39	3.34	0.716	ok	0.713	0.653-0.773
1,2-Dibromoethane (EDB)	8.52	4.73	1.801	ok	1.803	1.743-1.863
1,2-Dichloroethane	3.87	3.34	1.159	ok	1.158	1.098-1.218
1,2-Dichloropropane	5.10	4.73	1.078	ok	1.078	1.018-1.138
1,3-Dichloropropane	7.68	4.73	1.624	ok	1.623	1.563-1.683
Dichlorodifluoromethane	1.73	3.34	0.518	ok	0.518	0.458-0.578
Dichlorofluoromethane	2.00	3.34	0.599	ok	0.599	0.539-0.659
Dibromochloromethane	8.19	4.73	1.732	ok	1.729	1.669-1.789
Dibromomethane	5.06	4.73	1.070	ok	1.068	1.008-1.128
trans-1,2-Dichloroethylene	2.77	3.34	0.829	ok	0.829	0.769-0.889
cis-1,2-Dichloroethylene	3.25	3.34	0.973	ok	0.973	0.913-1.033
cis-1,3-Dichloropropene	6.35	4.73	1.342	ok	1.341	1.281-1.401
m-Dichlorobenzene	16.86	10.58	1.594	ok	1.593	1.533-1.653
o-Dichlorobenzene	17.23	10.58	1.629	ok	1.628	1.568-1.688
p-Dichlorobenzene	16.95	10.58	1.602	ok	1.601	1.541-1.661

Initial Calibration Retention Time/Internal Standard Area Summary

Job Number: JD59460
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample Number	Lab File ID	Injected	By	Level	Inst ID	Method	
V6W1125-IC1125	6W26448.D	10/19/22 19:10	TCH	0.04	GCMS6W	TO-15	
V6W1125-IC1125	6W26449.D	10/19/22 19:43	TCH	0.1	GCMS6W	TO-15	Reporting this level
V6W1125-IC1125	6W26450.D	10/19/22 20:15	TCH	0.2	GCMS6W	TO-15	
V6W1125-IC1125	6W26451.D	10/19/22 20:47	TCH	0.5	GCMS6W	TO-15	
V6W1125-IC1125	6W26453.D	10/19/22 21:52	TCH	5	GCMS6W	TO-15	
V6W1125-ICC1125	6W26454.D	10/19/22 22:25	TCH	10	GCMS6W	TO-15	
V6W1125-IC1125	6W26455.D	10/19/22 22:57	TCH	20	GCMS6W	TO-15	
V6W1125-IC1125	6W26456.D	10/19/22 23:29	TCH	40	GCMS6W	TO-15	
V6W1125-IC1125	6W26457.D	10/20/22 00:03	TCH	50	GCMS6W	TO-15	

Target Compound	RT (min.)	Istd RT (min.)	Rel RT		Mean Rel RT	Rel RT Range (+ /- .06)
trans-1,3-Dichloropropene	7.06	4.73	1.493	ok	1.492	1.432-1.552
2,4-Dimethylpentane	3.96	3.34	1.186	ok	1.186	1.126-1.246
Ethylbenzene	11.56	10.58	1.093	ok	1.093	1.033-1.153
Ethyl Acrylate	5.24	4.73	1.108	ok	1.106	1.046-1.166
4-Ethyltoluene	16.20	10.58	1.531	ok	1.531	1.471-1.591
Freon 113	2.52	3.34	0.754	ok	0.754	0.694-0.814
Freon 114	1.80	3.34	0.539	ok	0.539	0.479-0.599
Freon 123	2.12	3.34	0.635	ok	0.634	0.574-0.694
Freon 123A	2.14	3.34	0.641	ok	0.638	0.578-0.698
Freon 142B	1.77	3.34	0.530	ok	0.530	0.470-0.590
Heptane	5.79	4.73	1.224	ok	1.222	1.162-1.282
Hexachlorobutadiene	18.79	10.58	1.776	ok	1.774	1.714-1.834
Hexachloroethane	17.76	10.58	1.679	ok	1.678	1.618-1.738
Hexane	3.40	3.34	1.018	ok	1.016	0.956-1.076
Iodomethane	2.36	3.34	0.707	ok	0.706	0.646-0.766
Isopropylbenzene	14.50	10.58	1.371	ok	1.370	1.310-1.430
Isopropyl Alcohol	2.22	3.34	0.665	ok	0.662	0.602-0.722
p-Isopropyltoluene	17.24	10.58	1.629	ok	1.629	1.569-1.689
Methyl Isobutyl Ketone	6.48	4.73	1.370	ok	1.367	1.307-1.427
Methyl Tert Butyl Ether	2.89	3.34	0.865	ok	0.865	0.805-0.925
Methylmethacrylate	5.69	4.73	1.203	ok	1.201	1.141-1.261
Nonane	14.08	10.58	1.331	ok	1.331	1.271-1.391
Octane	9.56	4.73	2.021	ok	2.020	1.960-2.080
Pentane	2.30	3.34	0.689	ok	0.689	0.629-0.749
n-Propylbenzene	15.86	10.58	1.499	ok	1.498	1.438-1.558
Propylene	1.71	3.34	0.512	ok	0.512	0.452-0.572
Styrene	12.75	10.58	1.205	ok	1.204	1.144-1.264
1,1,1-Trichloroethane	4.05	3.34	1.213	ok	1.212	1.152-1.272
1,1,1,2-Tetrachloroethane	10.68	10.58	1.009	ok	1.009	0.949-1.069
1,1,2,2-Tetrachloroethane	12.98	10.58	1.227	ok	1.227	1.167-1.287
1,1,2-Trichloroethane	7.23	4.73	1.529	ok	1.528	1.468-1.588
1,2,3-Trichloropropane	13.25	10.58	1.252	ok	1.253	1.193-1.313
1,2,3-Trimethylbenzene	17.18	10.58	1.624	ok	1.623	1.563-1.683
1,2,4-Trimethylbenzene	16.80	10.58	1.588	ok	1.587	1.527-1.647
1,3,5-Trimethylbenzene	16.35	10.58	1.545	ok	1.545	1.485-1.605
2,2,4-Trimethylpentane	5.45	4.73	1.152	ok	1.151	1.091-1.211
Tertiary Butyl Alcohol	2.41	3.34	0.722	ok	0.719	0.659-0.779
Tetrachloroethylene	9.41	4.73	1.989	ok	1.989	1.929-2.049
Toluene	7.62	4.73	1.611	ok	1.609	1.549-1.669

Initial Calibration Retention Time/Internal Standard Area Summary

Job Number: JD59460
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample Number	Lab File ID	Injected	By	Level	Inst ID	Method	
V6W1125-IC1125	6W26448.D	10/19/22 19:10	TCH	0.04	GCMS6W	TO-15	
V6W1125-IC1125	6W26449.D	10/19/22 19:43	TCH	0.1	GCMS6W	TO-15	Reporting this level
V6W1125-IC1125	6W26450.D	10/19/22 20:15	TCH	0.2	GCMS6W	TO-15	
V6W1125-IC1125	6W26451.D	10/19/22 20:47	TCH	0.5	GCMS6W	TO-15	
V6W1125-IC1125	6W26453.D	10/19/22 21:52	TCH	5	GCMS6W	TO-15	
V6W1125-ICC1125	6W26454.D	10/19/22 22:25	TCH	10	GCMS6W	TO-15	
V6W1125-IC1125	6W26455.D	10/19/22 22:57	TCH	20	GCMS6W	TO-15	
V6W1125-IC1125	6W26456.D	10/19/22 23:29	TCH	40	GCMS6W	TO-15	
V6W1125-IC1125	6W26457.D	10/20/22 00:03	TCH	50	GCMS6W	TO-15	

Target Compound	RT (min.)	Istd RT (min.)	Rel RT		Mean Rel RT	Rel RT Range (+ /- .06)
Trichloroethylene	5.35	4.73	1.131	ok	1.130	1.070-1.190
Trichlorofluoromethane	2.19	3.34	0.656	ok	0.656	0.596-0.716
Vinyl chloride	1.83	3.34	0.548	ok	0.548	0.488-0.608
m,p-Xylene	12.01	10.58	1.135	ok	1.135	1.075-1.195
o-Xylene	12.95	10.58	1.224	ok	1.224	1.164-1.284

Internal Standard	RT (min.)		Mean RT(min.)	RT Range (+ /- 0.33)	Area		Mean Area	Area Range (+ /- 40 %)
Bromochloromethane	3.34	ok	3.34	3.01-3.67	48898	ok	48058	28835-67281
1,4-Difluorobenzene	4.73	ok	4.73	4.40-5.06	236998	ok	240724	144434-337014
Chlorobenzene-D5	10.58	ok	10.59	10.26-10.92	208233	ok	213567	128140-298994

Initial Calibration Retention Time/Internal Standard Area Summary

Job Number: JD59460
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample Number	Lab File ID	Injected	By	Level	Inst ID	Method	
V6W1125-IC1125	6W26448.D	10/19/22 19:10	TCH	0.04	GCMS6W	TO-15	
V6W1125-IC1125	6W26449.D	10/19/22 19:43	TCH	0.1	GCMS6W	TO-15	
V6W1125-IC1125	6W26450.D	10/19/22 20:15	TCH	0.2	GCMS6W	TO-15	Reporting this level
V6W1125-IC1125	6W26451.D	10/19/22 20:47	TCH	0.5	GCMS6W	TO-15	
V6W1125-IC1125	6W26453.D	10/19/22 21:52	TCH	5	GCMS6W	TO-15	
V6W1125-ICC1125	6W26454.D	10/19/22 22:25	TCH	10	GCMS6W	TO-15	
V6W1125-IC1125	6W26455.D	10/19/22 22:57	TCH	20	GCMS6W	TO-15	
V6W1125-IC1125	6W26456.D	10/19/22 23:29	TCH	40	GCMS6W	TO-15	
V6W1125-IC1125	6W26457.D	10/20/22 00:03	TCH	50	GCMS6W	TO-15	

Target Compound	RT (min.)	Istd RT (min.)	Rel RT		Mean Rel RT	Rel RT Range (+ /- .06)
Acetone (2-Propanone)	2.14	3.34	0.641	ok	0.641	0.581-0.701
Acrolein	2.10	3.34	0.629	ok	0.629	0.569-0.689
Acrylonitrile	2.27	3.34	0.680	ok	0.680	0.620-0.740
Acetonitrile	2.07	3.34	0.620	ok	0.618	0.558-0.678
1,3-Butadiene	1.87	3.34	0.560	ok	0.559	0.499-0.619
Benzene	4.38	3.34	1.311	ok	1.312	1.252-1.372
Bromobenzene	14.37	10.58	1.358	ok	1.358	1.298-1.418
Bromodichloromethane	5.29	4.73	1.118	ok	1.119	1.059-1.179
Bromoform	11.83	10.58	1.118	ok	1.117	1.057-1.177
Bromomethane	1.93	3.34	0.578	ok	0.579	0.519-0.639
Bromoethene	2.07	3.34	0.620	ok	0.620	0.560-0.680
n-Butane	1.88	3.34	0.563	ok	0.563	0.503-0.623
Benzyl Chloride	16.88	10.58	1.595	ok	1.595	1.535-1.655
n-Butylbenzene	17.59	10.58	1.663	ok	1.661	1.601-1.721
sec-Butylbenzene	17.07	10.58	1.613	ok	1.613	1.553-1.673
tert-Butylbenzene	16.79	10.58	1.587	ok	1.587	1.527-1.647
Carbon disulfide	2.52	3.34	0.754	ok	0.754	0.694-0.814
Chlorobenzene	10.66	10.58	1.008	ok	1.008	0.948-1.068
Chlorodifluoromethane	1.71	3.34	0.512	ok	0.511	0.451-0.571
Chloroethane	1.98	3.34	0.593	ok	0.593	0.533-0.653
Chlorotrifluoroethene	1.72	3.34	0.515	ok	0.513	0.453-0.573
Chloroform	3.42	3.34	1.024	ok	1.024	0.964-1.084
Chloromethane	1.77	3.34	0.530	ok	0.531	0.471-0.591
3-Chloropropene	2.46	3.34	0.737	ok	0.737	0.677-0.797
2-Chlorotoluene	15.52	10.58	1.467	ok	1.466	1.406-1.526
Carbon tetrachloride	4.50	3.34	1.347	ok	1.348	1.288-1.408
Cyclohexane	4.60	4.73	0.973	ok	0.973	0.913-1.033
1,1-Dichloroethane	2.85	3.34	0.853	ok	0.854	0.794-0.914
1,1-Dichloroethylene	2.38	3.34	0.713	ok	0.713	0.653-0.773
1,2-Dibromoethane (EDB)	8.53	4.73	1.803	ok	1.803	1.743-1.863
1,2-Dichloroethane	3.87	3.34	1.159	ok	1.158	1.098-1.218
1,2-Dichloropropane	5.10	4.73	1.078	ok	1.078	1.018-1.138
1,3-Dichloropropane	7.67	4.73	1.622	ok	1.623	1.563-1.683
1,4-Dioxane	5.43	4.73	1.148	ok	1.136	1.076-1.196
Dichlorodifluoromethane	1.73	3.34	0.518	ok	0.518	0.458-0.578
Dichlorofluoromethane	2.00	3.34	0.599	ok	0.599	0.539-0.659
Dibromochloromethane	8.18	4.73	1.729	ok	1.729	1.669-1.789
Dibromomethane	5.05	4.73	1.068	ok	1.068	1.008-1.128
trans-1,2-Dichloroethylene	2.77	3.34	0.829	ok	0.829	0.769-0.889

Initial Calibration Retention Time/Internal Standard Area Summary

Job Number: JD59460
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample Number	Lab File ID	Injected	By	Level	Inst ID	Method	
V6W1125-IC1125	6W26448.D	10/19/22 19:10	TCH	0.04	GCMS6W	TO-15	
V6W1125-IC1125	6W26449.D	10/19/22 19:43	TCH	0.1	GCMS6W	TO-15	
V6W1125-IC1125	6W26450.D	10/19/22 20:15	TCH	0.2	GCMS6W	TO-15	Reporting this level
V6W1125-IC1125	6W26451.D	10/19/22 20:47	TCH	0.5	GCMS6W	TO-15	
V6W1125-IC1125	6W26453.D	10/19/22 21:52	TCH	5	GCMS6W	TO-15	
V6W1125-ICC1125	6W26454.D	10/19/22 22:25	TCH	10	GCMS6W	TO-15	
V6W1125-IC1125	6W26455.D	10/19/22 22:57	TCH	20	GCMS6W	TO-15	
V6W1125-IC1125	6W26456.D	10/19/22 23:29	TCH	40	GCMS6W	TO-15	
V6W1125-IC1125	6W26457.D	10/20/22 00:03	TCH	50	GCMS6W	TO-15	

Target Compound	RT (min.)	Istd RT (min.)	Rel RT		Mean Rel RT	Rel RT Range (+ /- .06)
cis-1,2-Dichloroethylene	3.25	3.34	0.973	ok	0.973	0.913-1.033
cis-1,3-Dichloropropene	6.35	4.73	1.342	ok	1.341	1.281-1.401
m-Dichlorobenzene	16.86	10.58	1.594	ok	1.593	1.533-1.653
o-Dichlorobenzene	17.23	10.58	1.629	ok	1.628	1.568-1.688
p-Dichlorobenzene	16.95	10.58	1.602	ok	1.601	1.541-1.661
trans-1,3-Dichloropropene	7.06	4.73	1.493	ok	1.492	1.432-1.552
Di-Isopropyl ether	3.40	3.34	1.018	ok	1.018	0.958-1.078
2,3-Dimethylpentane	4.88	4.73	1.032	ok	1.030	0.970-1.090
2,4-Dimethylpentane	3.96	3.34	1.186	ok	1.186	1.126-1.246
Ethanol	2.01	3.34	0.602	ok	0.601	0.541-0.661
Ethylbenzene	11.57	10.58	1.094	ok	1.093	1.033-1.153
Ethyl Acetate	3.42	3.34	1.024	ok	1.021	0.961-1.081
Ethyl Acrylate	5.24	4.73	1.108	ok	1.106	1.046-1.166
4-Ethyltoluene	16.20	10.58	1.531	ok	1.531	1.471-1.591
Freon 113	2.52	3.34	0.754	ok	0.754	0.694-0.814
Freon 114	1.80	3.34	0.539	ok	0.539	0.479-0.599
Freon 123	2.11	3.34	0.632	ok	0.634	0.574-0.694
Freon 123A	2.13	3.34	0.638	ok	0.638	0.578-0.698
Freon 142B	1.77	3.34	0.530	ok	0.530	0.470-0.590
Freon 152A	1.69	3.34	0.506	ok	0.506	0.446-0.566
Heptane	5.79	4.73	1.224	ok	1.222	1.162-1.282
Hexachlorobutadiene	18.78	10.58	1.775	ok	1.774	1.714-1.834
Hexachloroethane	17.77	10.58	1.680	ok	1.678	1.618-1.738
Hexane	3.39	3.34	1.015	ok	1.016	0.956-1.076
2-Hexanone	8.24	4.73	1.742	ok	1.737	1.677-1.797
Iodomethane	2.36	3.34	0.707	ok	0.706	0.646-0.766
Isopropylbenzene	14.50	10.58	1.371	ok	1.370	1.310-1.430
Isopropyl Alcohol	2.21	3.34	0.662	ok	0.662	0.602-0.722
p-Isopropyltoluene	17.24	10.58	1.629	ok	1.629	1.569-1.689
Methylene chloride	2.42	3.34	0.725	ok	0.725	0.665-0.785
Methyl ethyl ketone	3.05	3.34	0.913	ok	0.911	0.851-0.971
Methyl Isobutyl Ketone	6.48	4.73	1.370	ok	1.367	1.307-1.427
Methyl Tert Butyl Ether	2.89	3.34	0.865	ok	0.865	0.805-0.925
Methylmethacrylate	5.69	4.73	1.203	ok	1.201	1.141-1.261
Naphthalene	18.53	10.58	1.751	ok	1.750	1.690-1.810
Nonane	14.10	10.58	1.333	ok	1.331	1.271-1.391
Octane	9.56	4.73	2.021	ok	2.020	1.960-2.080
Pentane	2.30	3.34	0.689	ok	0.689	0.629-0.749
n-Propylbenzene	15.86	10.58	1.499	ok	1.498	1.438-1.558

Initial Calibration Retention Time/Internal Standard Area Summary

Job Number: JD59460
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample Number	Lab File ID	Injected	By	Level	Inst ID	Method	
V6W1125-IC1125	6W26448.D	10/19/22 19:10	TCH	0.04	GCMS6W	TO-15	
V6W1125-IC1125	6W26449.D	10/19/22 19:43	TCH	0.1	GCMS6W	TO-15	
V6W1125-IC1125	6W26450.D	10/19/22 20:15	TCH	0.2	GCMS6W	TO-15	Reporting this level
V6W1125-IC1125	6W26451.D	10/19/22 20:47	TCH	0.5	GCMS6W	TO-15	
V6W1125-IC1125	6W26453.D	10/19/22 21:52	TCH	5	GCMS6W	TO-15	
V6W1125-ICC1125	6W26454.D	10/19/22 22:25	TCH	10	GCMS6W	TO-15	
V6W1125-IC1125	6W26455.D	10/19/22 22:57	TCH	20	GCMS6W	TO-15	
V6W1125-IC1125	6W26456.D	10/19/22 23:29	TCH	40	GCMS6W	TO-15	
V6W1125-IC1125	6W26457.D	10/20/22 00:03	TCH	50	GCMS6W	TO-15	

Target Compound	RT (min.)	Istd RT (min.)	Rel RT		Mean Rel RT	Rel RT Range (+ /- .06)
Propylene	1.71	3.34	0.512	ok	0.512	0.452-0.572
Styrene	12.75	10.58	1.205	ok	1.204	1.144-1.264
1,1,1-Trichloroethane	4.05	3.34	1.213	ok	1.212	1.152-1.272
1,1,1,2-Tetrachloroethane	10.68	10.58	1.009	ok	1.009	0.949-1.069
1,1,2,2-Tetrachloroethane	12.99	10.58	1.228	ok	1.227	1.167-1.287
1,1,2-Trichloroethane	7.24	4.73	1.531	ok	1.528	1.468-1.588
1,2,4-Trichlorobenzene	18.49	10.58	1.748	ok	1.746	1.686-1.806
1,2,3-Trichloropropane	13.26	10.58	1.253	ok	1.253	1.193-1.313
1,2,3-Trimethylbenzene	17.18	10.58	1.624	ok	1.623	1.563-1.683
1,2,4-Trimethylbenzene	16.80	10.58	1.588	ok	1.587	1.527-1.647
1,3,5-Trimethylbenzene	16.35	10.58	1.545	ok	1.545	1.485-1.605
2,2,4-Trimethylpentane	5.45	4.73	1.152	ok	1.151	1.091-1.211
Tertiary Butyl Alcohol	2.41	3.34	0.722	ok	0.719	0.659-0.779
Tetrachloroethylene	9.41	4.73	1.989	ok	1.989	1.929-2.049
Tetrahydrofuran	3.67	3.34	1.099	ok	1.094	1.034-1.154
Toluene	7.62	4.73	1.611	ok	1.609	1.549-1.669
Trichloroethylene	5.35	4.73	1.131	ok	1.130	1.070-1.190
Trichlorofluoromethane	2.19	3.34	0.656	ok	0.656	0.596-0.716
Vinyl chloride	1.83	3.34	0.548	ok	0.548	0.488-0.608
Vinyl Acetate	2.93	3.34	0.877	ok	0.877	0.817-0.937
m,p-Xylene	12.01	10.58	1.135	ok	1.135	1.075-1.195
o-Xylene	12.96	10.58	1.225	ok	1.224	1.164-1.284

Internal Standard	RT (min.)		Mean RT(min.)	RT Range (+ /- 0.33)	Area		Mean Area	Area Range (+ /- 40 %)
Bromochloromethane	3.34	ok	3.34	3.01-3.67	46339	ok	48058	28835-67281
1,4-Difluorobenzene	4.73	ok	4.73	4.40-5.06	232045	ok	240724	144434-337014
Chlorobenzene-D5	10.58	ok	10.59	10.26-10.92	202916	ok	213567	128140-298994

Initial Calibration Retention Time/Internal Standard Area Summary

Job Number: JD59460
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample Number	Lab File ID	Injected	By	Level	Inst ID	Method	
V6W1125-IC1125	6W26448.D	10/19/22 19:10	TCH	0.04	GCMS6W	TO-15	
V6W1125-IC1125	6W26449.D	10/19/22 19:43	TCH	0.1	GCMS6W	TO-15	
V6W1125-IC1125	6W26450.D	10/19/22 20:15	TCH	0.2	GCMS6W	TO-15	
V6W1125-IC1125	6W26451.D	10/19/22 20:47	TCH	0.5	GCMS6W	TO-15	Reporting this level
V6W1125-IC1125	6W26453.D	10/19/22 21:52	TCH	5	GCMS6W	TO-15	
V6W1125-ICC1125	6W26454.D	10/19/22 22:25	TCH	10	GCMS6W	TO-15	
V6W1125-IC1125	6W26455.D	10/19/22 22:57	TCH	20	GCMS6W	TO-15	
V6W1125-IC1125	6W26456.D	10/19/22 23:29	TCH	40	GCMS6W	TO-15	
V6W1125-IC1125	6W26457.D	10/20/22 00:03	TCH	50	GCMS6W	TO-15	

Target Compound	RT (min.)	Istd RT (min.)	Rel RT		Mean Rel RT	Rel RT Range (+ /- .06)
Acetone (2-Propanone)	2.14	3.34	0.641	ok	0.641	0.581-0.701
Acrolein	2.10	3.34	0.629	ok	0.629	0.569-0.689
Acrylonitrile	2.27	3.34	0.680	ok	0.680	0.620-0.740
Acetonitrile	2.07	3.34	0.620	ok	0.618	0.558-0.678
1,3-Butadiene	1.86	3.34	0.557	ok	0.559	0.499-0.619
Benzene	4.38	3.34	1.311	ok	1.312	1.252-1.372
Bromobenzene	14.37	10.59	1.357	ok	1.358	1.298-1.418
Bromodichloromethane	5.30	4.73	1.121	ok	1.119	1.059-1.179
Bromoform	11.82	10.59	1.116	ok	1.117	1.057-1.177
Bromomethane	1.93	3.34	0.578	ok	0.579	0.519-0.639
Bromoethene	2.07	3.34	0.620	ok	0.620	0.560-0.680
n-Butane	1.88	3.34	0.563	ok	0.563	0.503-0.623
Benzyl Chloride	16.89	10.59	1.595	ok	1.595	1.535-1.655
n-Butylbenzene	17.59	10.59	1.661	ok	1.661	1.601-1.721
sec-Butylbenzene	17.07	10.59	1.612	ok	1.613	1.553-1.673
tert-Butylbenzene	16.80	10.59	1.586	ok	1.587	1.527-1.647
Carbon disulfide	2.52	3.34	0.754	ok	0.754	0.694-0.814
Chlorobenzene	10.66	10.59	1.007	ok	1.008	0.948-1.068
Chlorodifluoromethane	1.71	3.34	0.512	ok	0.511	0.451-0.571
Chloroethane	1.98	3.34	0.593	ok	0.593	0.533-0.653
Chlorotrifluoroethene	1.71	3.34	0.512	ok	0.513	0.453-0.573
Chloroform	3.42	3.34	1.024	ok	1.024	0.964-1.084
Chloromethane	1.77	3.34	0.530	ok	0.531	0.471-0.591
3-Chloropropene	2.46	3.34	0.737	ok	0.737	0.677-0.797
2-Chlorotoluene	15.52	10.59	1.466	ok	1.466	1.406-1.526
Carbon tetrachloride	4.50	3.34	1.347	ok	1.348	1.288-1.408
Cyclohexane	4.60	4.73	0.973	ok	0.973	0.913-1.033
1,1-Dichloroethane	2.85	3.34	0.853	ok	0.854	0.794-0.914
1,1-Dichloroethylene	2.38	3.34	0.713	ok	0.713	0.653-0.773
1,2-Dibromoethane (EDB)	8.54	4.73	1.805	ok	1.803	1.743-1.863
1,2-Dichloroethane	3.86	3.34	1.156	ok	1.158	1.098-1.218
1,2-Dichloropropane	5.10	4.73	1.078	ok	1.078	1.018-1.138
1,3-Dichloropropane	7.68	4.73	1.624	ok	1.623	1.563-1.683
1,4-Dioxane	5.40	4.73	1.142	ok	1.136	1.076-1.196
Dichlorodifluoromethane	1.73	3.34	0.518	ok	0.518	0.458-0.578
Dichlorofluoromethane	2.00	3.34	0.599	ok	0.599	0.539-0.659
Dibromochloromethane	8.19	4.73	1.732	ok	1.729	1.669-1.789
Dibromomethane	5.05	4.73	1.068	ok	1.068	1.008-1.128
trans-1,2-Dichloroethylene	2.77	3.34	0.829	ok	0.829	0.769-0.889

Initial Calibration Retention Time/Internal Standard Area Summary

Job Number: JD59460
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample Number	Lab File ID	Injected	By	Level	Inst ID	Method	
V6W1125-IC1125	6W26448.D	10/19/22 19:10	TCH	0.04	GCMS6W	TO-15	
V6W1125-IC1125	6W26449.D	10/19/22 19:43	TCH	0.1	GCMS6W	TO-15	
V6W1125-IC1125	6W26450.D	10/19/22 20:15	TCH	0.2	GCMS6W	TO-15	
V6W1125-IC1125	6W26451.D	10/19/22 20:47	TCH	0.5	GCMS6W	TO-15	Reporting this level
V6W1125-IC1125	6W26453.D	10/19/22 21:52	TCH	5	GCMS6W	TO-15	
V6W1125-ICC1125	6W26454.D	10/19/22 22:25	TCH	10	GCMS6W	TO-15	
V6W1125-IC1125	6W26455.D	10/19/22 22:57	TCH	20	GCMS6W	TO-15	
V6W1125-IC1125	6W26456.D	10/19/22 23:29	TCH	40	GCMS6W	TO-15	
V6W1125-IC1125	6W26457.D	10/20/22 00:03	TCH	50	GCMS6W	TO-15	

Target Compound	RT (min.)	Istd RT (min.)	Rel RT		Mean Rel RT	Rel RT Range (+ /- .06)
cis-1,2-Dichloroethylene	3.25	3.34	0.973	ok	0.973	0.913-1.033
cis-1,3-Dichloropropene	6.35	4.73	1.342	ok	1.341	1.281-1.401
m-Dichlorobenzene	16.86	10.59	1.592	ok	1.593	1.533-1.653
o-Dichlorobenzene	17.23	10.59	1.627	ok	1.628	1.568-1.688
p-Dichlorobenzene	16.94	10.59	1.600	ok	1.601	1.541-1.661
trans-1,3-Dichloropropene	7.06	4.73	1.493	ok	1.492	1.432-1.552
Di-Isopropyl ether	3.40	3.34	1.018	ok	1.018	0.958-1.078
2,3-Dimethylpentane	4.87	4.73	1.030	ok	1.030	0.970-1.090
2,4-Dimethylpentane	3.96	3.34	1.186	ok	1.186	1.126-1.246
Ethanol	2.01	3.34	0.602	ok	0.601	0.541-0.661
Ethylbenzene	11.56	10.59	1.092	ok	1.093	1.033-1.153
Ethyl Acetate	3.41	3.34	1.021	ok	1.021	0.961-1.081
Ethyl Acrylate	5.24	4.73	1.108	ok	1.106	1.046-1.166
4-Ethyltoluene	16.20	10.59	1.530	ok	1.531	1.471-1.591
Freon 113	2.52	3.34	0.754	ok	0.754	0.694-0.814
Freon 114	1.80	3.34	0.539	ok	0.539	0.479-0.599
Freon 123	2.12	3.34	0.635	ok	0.634	0.574-0.694
Freon 123A	2.13	3.34	0.638	ok	0.638	0.578-0.698
Freon 142B	1.77	3.34	0.530	ok	0.530	0.470-0.590
Freon 152A	1.69	3.34	0.506	ok	0.506	0.446-0.566
Heptane	5.78	4.73	1.222	ok	1.222	1.162-1.282
Hexachlorobutadiene	18.78	10.59	1.773	ok	1.774	1.714-1.834
Hexachloroethane	17.76	10.59	1.677	ok	1.678	1.618-1.738
Hexane	3.39	3.34	1.015	ok	1.016	0.956-1.076
2-Hexanone	8.24	4.73	1.742	ok	1.737	1.677-1.797
Iodomethane	2.35	3.34	0.704	ok	0.706	0.646-0.766
Isopropylbenzene	14.51	10.59	1.370	ok	1.370	1.310-1.430
Isopropyl Alcohol	2.21	3.34	0.662	ok	0.662	0.602-0.722
p-Isopropyltoluene	17.24	10.59	1.628	ok	1.629	1.569-1.689
Methylene chloride	2.42	3.34	0.725	ok	0.725	0.665-0.785
Methyl ethyl ketone	3.05	3.34	0.913	ok	0.911	0.851-0.971
Methyl Isobutyl Ketone	6.49	4.73	1.372	ok	1.367	1.307-1.427
Methyl Tert Butyl Ether	2.89	3.34	0.865	ok	0.865	0.805-0.925
Methylmethacrylate	5.69	4.73	1.203	ok	1.201	1.141-1.261
Naphthalene	18.53	10.59	1.750	ok	1.750	1.690-1.810
Nonane	14.09	10.59	1.331	ok	1.331	1.271-1.391
Octane	9.55	4.73	2.019	ok	2.020	1.960-2.080
Pentane	2.30	3.34	0.689	ok	0.689	0.629-0.749
n-Propylbenzene	15.86	10.59	1.498	ok	1.498	1.438-1.558

Initial Calibration Retention Time/Internal Standard Area Summary

Job Number: JD59460
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample Number	Lab File ID	Injected	By	Level	Inst ID	Method	
V6W1125-IC1125	6W26448.D	10/19/22 19:10	TCH	0.04	GCMS6W	TO-15	
V6W1125-IC1125	6W26449.D	10/19/22 19:43	TCH	0.1	GCMS6W	TO-15	
V6W1125-IC1125	6W26450.D	10/19/22 20:15	TCH	0.2	GCMS6W	TO-15	
V6W1125-IC1125	6W26451.D	10/19/22 20:47	TCH	0.5	GCMS6W	TO-15	Reporting this level
V6W1125-IC1125	6W26453.D	10/19/22 21:52	TCH	5	GCMS6W	TO-15	
V6W1125-ICC1125	6W26454.D	10/19/22 22:25	TCH	10	GCMS6W	TO-15	
V6W1125-IC1125	6W26455.D	10/19/22 22:57	TCH	20	GCMS6W	TO-15	
V6W1125-IC1125	6W26456.D	10/19/22 23:29	TCH	40	GCMS6W	TO-15	
V6W1125-IC1125	6W26457.D	10/20/22 00:03	TCH	50	GCMS6W	TO-15	

Target Compound	RT (min.)	Istd RT (min.)	Rel RT		Mean Rel RT	Rel RT Range (+ /- .06)
Propylene	1.71	3.34	0.512	ok	0.512	0.452-0.572
Styrene	12.74	10.59	1.203	ok	1.204	1.144-1.264
1,1,1-Trichloroethane	4.04	3.34	1.210	ok	1.212	1.152-1.272
1,1,1,2-Tetrachloroethane	10.68	10.59	1.008	ok	1.009	0.949-1.069
1,1,2,2-Tetrachloroethane	12.98	10.59	1.226	ok	1.227	1.167-1.287
1,1,2-Trichloroethane	7.24	4.73	1.531	ok	1.528	1.468-1.588
1,2,4-Trichlorobenzene	18.49	10.59	1.746	ok	1.746	1.686-1.806
1,2,3-Trichloropropane	13.27	10.59	1.253	ok	1.253	1.193-1.313
1,2,3-Trimethylbenzene	17.18	10.59	1.622	ok	1.623	1.563-1.683
1,2,4-Trimethylbenzene	16.80	10.59	1.586	ok	1.587	1.527-1.647
1,3,5-Trimethylbenzene	16.35	10.59	1.544	ok	1.545	1.485-1.605
2,2,4-Trimethylpentane	5.44	4.73	1.150	ok	1.151	1.091-1.211
Tertiary Butyl Alcohol	2.40	3.34	0.719	ok	0.719	0.659-0.779
Tetrachloroethylene	9.41	4.73	1.989	ok	1.989	1.929-2.049
Tetrahydrofuran	3.66	3.34	1.096	ok	1.094	1.034-1.154
Toluene	7.61	4.73	1.609	ok	1.609	1.549-1.669
Trichloroethylene	5.34	4.73	1.129	ok	1.130	1.070-1.190
Trichlorofluoromethane	2.19	3.34	0.656	ok	0.656	0.596-0.716
Vinyl chloride	1.83	3.34	0.548	ok	0.548	0.488-0.608
Vinyl Acetate	2.93	3.34	0.877	ok	0.877	0.817-0.937
m,p-Xylene	12.01	10.59	1.134	ok	1.135	1.075-1.195
o-Xylene	12.96	10.59	1.224	ok	1.224	1.164-1.284

Internal Standard	RT (min.)		Mean RT(min.)	RT Range (+ /- 0.33)	Area		Mean Area	Area Range (+ /- 40 %)
Bromochloromethane	3.34	ok	3.34	3.01-3.67	43611	ok	48058	28835-67281
1,4-Difluorobenzene	4.73	ok	4.73	4.40-5.06	212847	ok	240724	144434-337014
Chlorobenzene-D5	10.59	ok	10.59	10.26-10.92	201898	ok	213567	128140-298994

Initial Calibration Retention Time/Internal Standard Area Summary

Job Number: JD59460
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample Number	Lab File ID	Injected	By	Level	Inst ID	Method	
V6W1125-IC1125	6W26448.D	10/19/22 19:10	TCH	0.04	GCMS6W	TO-15	
V6W1125-IC1125	6W26449.D	10/19/22 19:43	TCH	0.1	GCMS6W	TO-15	
V6W1125-IC1125	6W26450.D	10/19/22 20:15	TCH	0.2	GCMS6W	TO-15	
V6W1125-IC1125	6W26451.D	10/19/22 20:47	TCH	0.5	GCMS6W	TO-15	
V6W1125-IC1125	6W26453.D	10/19/22 21:52	TCH	5	GCMS6W	TO-15	Reporting this level
V6W1125-ICC1125	6W26454.D	10/19/22 22:25	TCH	10	GCMS6W	TO-15	
V6W1125-IC1125	6W26455.D	10/19/22 22:57	TCH	20	GCMS6W	TO-15	
V6W1125-IC1125	6W26456.D	10/19/22 23:29	TCH	40	GCMS6W	TO-15	
V6W1125-IC1125	6W26457.D	10/20/22 00:03	TCH	50	GCMS6W	TO-15	

Target Compound	RT (min.)	Istd RT (min.)	Rel RT		Mean Rel RT	Rel RT Range (+ /- .06)
Acetone (2-Propanone)	2.14	3.34	0.641	ok	0.641	0.581-0.701
Acrolein	2.10	3.34	0.629	ok	0.629	0.569-0.689
Acrylonitrile	2.27	3.34	0.680	ok	0.680	0.620-0.740
Acetonitrile	2.06	3.34	0.617	ok	0.618	0.558-0.678
1,3-Butadiene	1.87	3.34	0.560	ok	0.559	0.499-0.619
Benzene	4.38	3.34	1.311	ok	1.312	1.252-1.372
Bromobenzene	14.37	10.58	1.358	ok	1.358	1.298-1.418
Bromodichloromethane	5.29	4.73	1.118	ok	1.119	1.059-1.179
Bromoform	11.82	10.58	1.117	ok	1.117	1.057-1.177
Bromomethane	1.93	3.34	0.578	ok	0.579	0.519-0.639
Bromoethene	2.07	3.34	0.620	ok	0.620	0.560-0.680
n-Butane	1.88	3.34	0.563	ok	0.563	0.503-0.623
Benzyl Chloride	16.89	10.58	1.596	ok	1.595	1.535-1.655
n-Butylbenzene	17.59	10.58	1.663	ok	1.661	1.601-1.721
sec-Butylbenzene	17.07	10.58	1.613	ok	1.613	1.553-1.673
tert-Butylbenzene	16.80	10.58	1.588	ok	1.587	1.527-1.647
Carbon disulfide	2.52	3.34	0.754	ok	0.754	0.694-0.814
Chlorobenzene	10.66	10.58	1.008	ok	1.008	0.948-1.068
Chlorodifluoromethane	1.70	3.34	0.509	ok	0.511	0.451-0.571
Chloroethane	1.98	3.34	0.593	ok	0.593	0.533-0.653
Chlorotrifluoroethene	1.71	3.34	0.512	ok	0.513	0.453-0.573
Chloroform	3.42	3.34	1.024	ok	1.024	0.964-1.084
Chloromethane	1.77	3.34	0.530	ok	0.531	0.471-0.591
3-Chloropropene	2.46	3.34	0.737	ok	0.737	0.677-0.797
2-Chlorotoluene	15.52	10.58	1.467	ok	1.466	1.406-1.526
Carbon tetrachloride	4.50	3.34	1.347	ok	1.348	1.288-1.408
Cyclohexane	4.60	4.73	0.973	ok	0.973	0.913-1.033
1,1-Dichloroethane	2.85	3.34	0.853	ok	0.854	0.794-0.914
1,1-Dichloroethylene	2.38	3.34	0.713	ok	0.713	0.653-0.773
1,2-Dibromoethane (EDB)	8.53	4.73	1.803	ok	1.803	1.743-1.863
1,2-Dichloroethane	3.87	3.34	1.159	ok	1.158	1.098-1.218
1,2-Dichloropropane	5.10	4.73	1.078	ok	1.078	1.018-1.138
1,3-Dichloropropane	7.68	4.73	1.624	ok	1.623	1.563-1.683
1,4-Dioxane	5.37	4.73	1.135	ok	1.136	1.076-1.196
Dichlorodifluoromethane	1.73	3.34	0.518	ok	0.518	0.458-0.578
Dichlorofluoromethane	2.00	3.34	0.599	ok	0.599	0.539-0.659
Dibromochloromethane	8.18	4.73	1.729	ok	1.729	1.669-1.789
Dibromomethane	5.06	4.73	1.070	ok	1.068	1.008-1.128
trans-1,2-Dichloroethylene	2.77	3.34	0.829	ok	0.829	0.769-0.889

Initial Calibration Retention Time/Internal Standard Area Summary

Job Number: JD59460
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample Number	Lab File ID	Injected	By	Level	Inst ID	Method	
V6W1125-IC1125	6W26448.D	10/19/22 19:10	TCH	0.04	GCMS6W	TO-15	
V6W1125-IC1125	6W26449.D	10/19/22 19:43	TCH	0.1	GCMS6W	TO-15	
V6W1125-IC1125	6W26450.D	10/19/22 20:15	TCH	0.2	GCMS6W	TO-15	
V6W1125-IC1125	6W26451.D	10/19/22 20:47	TCH	0.5	GCMS6W	TO-15	
V6W1125-IC1125	6W26453.D	10/19/22 21:52	TCH	5	GCMS6W	TO-15	Reporting this level
V6W1125-ICC1125	6W26454.D	10/19/22 22:25	TCH	10	GCMS6W	TO-15	
V6W1125-IC1125	6W26455.D	10/19/22 22:57	TCH	20	GCMS6W	TO-15	
V6W1125-IC1125	6W26456.D	10/19/22 23:29	TCH	40	GCMS6W	TO-15	
V6W1125-IC1125	6W26457.D	10/20/22 00:03	TCH	50	GCMS6W	TO-15	

Target Compound	RT (min.)	Istd RT (min.)	Rel RT		Mean Rel RT	Rel RT Range (+ /- .06)
cis-1,2-Dichloroethylene	3.25	3.34	0.973	ok	0.973	0.913-1.033
cis-1,3-Dichloropropene	6.35	4.73	1.342	ok	1.341	1.281-1.401
m-Dichlorobenzene	16.86	10.58	1.594	ok	1.593	1.533-1.653
o-Dichlorobenzene	17.23	10.58	1.629	ok	1.628	1.568-1.688
p-Dichlorobenzene	16.95	10.58	1.602	ok	1.601	1.541-1.661
trans-1,3-Dichloropropene	7.06	4.73	1.493	ok	1.492	1.432-1.552
Di-Isopropyl ether	3.40	3.34	1.018	ok	1.018	0.958-1.078
2,3-Dimethylpentane	4.88	4.73	1.032	ok	1.030	0.970-1.090
2,4-Dimethylpentane	3.96	3.34	1.186	ok	1.186	1.126-1.246
Ethanol	2.01	3.34	0.602	ok	0.601	0.541-0.661
Ethylbenzene	11.57	10.58	1.094	ok	1.093	1.033-1.153
Ethyl Acetate	3.40	3.34	1.018	ok	1.021	0.961-1.081
Ethyl Acrylate	5.23	4.73	1.106	ok	1.106	1.046-1.166
4-Ethyltoluene	16.20	10.58	1.531	ok	1.531	1.471-1.591
Freon 113	2.52	3.34	0.754	ok	0.754	0.694-0.814
Freon 114	1.80	3.34	0.539	ok	0.539	0.479-0.599
Freon 123	2.12	3.34	0.635	ok	0.634	0.574-0.694
Freon 123A	2.13	3.34	0.638	ok	0.638	0.578-0.698
Freon 142B	1.77	3.34	0.530	ok	0.530	0.470-0.590
Freon 152A	1.69	3.34	0.506	ok	0.506	0.446-0.566
Heptane	5.78	4.73	1.222	ok	1.222	1.162-1.282
Hexachlorobutadiene	18.78	10.58	1.775	ok	1.774	1.714-1.834
Hexachloroethane	17.76	10.58	1.679	ok	1.678	1.618-1.738
Hexane	3.40	3.34	1.018	ok	1.016	0.956-1.076
2-Hexanone	8.21	4.73	1.736	ok	1.737	1.677-1.797
Iodomethane	2.36	3.34	0.707	ok	0.706	0.646-0.766
Isopropylbenzene	14.50	10.58	1.371	ok	1.370	1.310-1.430
Isopropyl Alcohol	2.21	3.34	0.662	ok	0.662	0.602-0.722
p-Isopropyltoluene	17.25	10.58	1.630	ok	1.629	1.569-1.689
Methylene chloride	2.42	3.34	0.725	ok	0.725	0.665-0.785
Methyl ethyl ketone	3.04	3.34	0.910	ok	0.911	0.851-0.971
Methyl Isobutyl Ketone	6.46	4.73	1.366	ok	1.367	1.307-1.427
Methyl Tert Butyl Ether	2.89	3.34	0.865	ok	0.865	0.805-0.925
Methylmethacrylate	5.68	4.73	1.201	ok	1.201	1.141-1.261
Naphthalene	18.53	10.58	1.751	ok	1.750	1.690-1.810
Nonane	14.09	10.58	1.332	ok	1.331	1.271-1.391
Octane	9.57	4.73	2.023	ok	2.020	1.960-2.080
Pentane	2.30	3.34	0.689	ok	0.689	0.629-0.749
n-Propylbenzene	15.86	10.58	1.499	ok	1.498	1.438-1.558

Initial Calibration Retention Time/Internal Standard Area Summary

Job Number: JD59460
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample Number	Lab File ID	Injected	By	Level	Inst ID	Method	
V6W1125-IC1125	6W26448.D	10/19/22 19:10	TCH	0.04	GCMS6W	TO-15	
V6W1125-IC1125	6W26449.D	10/19/22 19:43	TCH	0.1	GCMS6W	TO-15	
V6W1125-IC1125	6W26450.D	10/19/22 20:15	TCH	0.2	GCMS6W	TO-15	
V6W1125-IC1125	6W26451.D	10/19/22 20:47	TCH	0.5	GCMS6W	TO-15	
V6W1125-IC1125	6W26453.D	10/19/22 21:52	TCH	5	GCMS6W	TO-15	Reporting this level
V6W1125-ICC1125	6W26454.D	10/19/22 22:25	TCH	10	GCMS6W	TO-15	
V6W1125-IC1125	6W26455.D	10/19/22 22:57	TCH	20	GCMS6W	TO-15	
V6W1125-IC1125	6W26456.D	10/19/22 23:29	TCH	40	GCMS6W	TO-15	
V6W1125-IC1125	6W26457.D	10/20/22 00:03	TCH	50	GCMS6W	TO-15	

Target Compound	RT (min.)	Istd RT (min.)	Rel RT		Mean Rel RT	Rel RT Range (+ /- .06)
Propylene	1.71	3.34	0.512	ok	0.512	0.452-0.572
Styrene	12.75	10.58	1.205	ok	1.204	1.144-1.264
1,1,1-Trichloroethane	4.05	3.34	1.213	ok	1.212	1.152-1.272
1,1,1,2-Tetrachloroethane	10.68	10.58	1.009	ok	1.009	0.949-1.069
1,1,2,2-Tetrachloroethane	12.98	10.58	1.227	ok	1.227	1.167-1.287
1,1,2-Trichloroethane	7.23	4.73	1.529	ok	1.528	1.468-1.588
1,2,4-Trichlorobenzene	18.49	10.58	1.748	ok	1.746	1.686-1.806
1,2,3-Trichloropropane	13.26	10.58	1.253	ok	1.253	1.193-1.313
1,2,3-Trimethylbenzene	17.18	10.58	1.624	ok	1.623	1.563-1.683
1,2,4-Trimethylbenzene	16.80	10.58	1.588	ok	1.587	1.527-1.647
1,3,5-Trimethylbenzene	16.35	10.58	1.545	ok	1.545	1.485-1.605
2,2,4-Trimethylpentane	5.45	4.73	1.152	ok	1.151	1.091-1.211
Tertiary Butyl Alcohol	2.40	3.34	0.719	ok	0.719	0.659-0.779
Tetrachloroethylene	9.42	4.73	1.992	ok	1.989	1.929-2.049
Tetrahydrofuran	3.65	3.34	1.093	ok	1.094	1.034-1.154
Toluene	7.62	4.73	1.611	ok	1.609	1.549-1.669
Trichloroethylene	5.35	4.73	1.131	ok	1.130	1.070-1.190
Trichlorofluoromethane	2.19	3.34	0.656	ok	0.656	0.596-0.716
Vinyl chloride	1.83	3.34	0.548	ok	0.548	0.488-0.608
Vinyl Acetate	2.93	3.34	0.877	ok	0.877	0.817-0.937
m,p-Xylene	12.01	10.58	1.135	ok	1.135	1.075-1.195
o-Xylene	12.96	10.58	1.225	ok	1.224	1.164-1.284

Internal Standard	RT (min.)		Mean RT(min.)	RT Range (+ /- 0.33)	Area		Mean Area	Area Range (+ /- 40 %)
Bromochloromethane	3.34	ok	3.34	3.01-3.67	48052	ok	48058	28835-67281
1,4-Difluorobenzene	4.73	ok	4.73	4.40-5.06	238668	ok	240724	144434-337014
Chlorobenzene-D5	10.58	ok	10.59	10.26-10.92	209355	ok	213567	128140-298994

Initial Calibration Retention Time/Internal Standard Area Summary

Job Number: JD59460
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample Number	Lab File ID	Injected	By	Level	Inst ID	Method	
V6W1125-IC1125	6W26448.D	10/19/22 19:10	TCH	0.04	GCMS6W	TO-15	
V6W1125-IC1125	6W26449.D	10/19/22 19:43	TCH	0.1	GCMS6W	TO-15	
V6W1125-IC1125	6W26450.D	10/19/22 20:15	TCH	0.2	GCMS6W	TO-15	
V6W1125-IC1125	6W26451.D	10/19/22 20:47	TCH	0.5	GCMS6W	TO-15	
V6W1125-IC1125	6W26453.D	10/19/22 21:52	TCH	5	GCMS6W	TO-15	
V6W1125-ICC1125	6W26454.D	10/19/22 22:25	TCH	10	GCMS6W	TO-15	Reporting this level
V6W1125-IC1125	6W26455.D	10/19/22 22:57	TCH	20	GCMS6W	TO-15	
V6W1125-IC1125	6W26456.D	10/19/22 23:29	TCH	40	GCMS6W	TO-15	
V6W1125-IC1125	6W26457.D	10/20/22 00:03	TCH	50	GCMS6W	TO-15	

Target Compound	RT (min.)	Istd RT (min.)	Rel RT		Mean Rel RT	Rel RT Range (+ /- .06)
Acetone (2-Propanone)	2.14	3.34	0.641	ok	0.641	0.581-0.701
Acrolein	2.10	3.34	0.629	ok	0.629	0.569-0.689
Acrylonitrile	2.27	3.34	0.680	ok	0.680	0.620-0.740
Acetonitrile	2.06	3.34	0.617	ok	0.618	0.558-0.678
1,3-Butadiene	1.87	3.34	0.560	ok	0.559	0.499-0.619
Benzene	4.38	3.34	1.311	ok	1.312	1.252-1.372
Bromobenzene	14.37	10.59	1.357	ok	1.358	1.298-1.418
Bromodichloromethane	5.29	4.73	1.118	ok	1.119	1.059-1.179
Bromoform	11.83	10.59	1.117	ok	1.117	1.057-1.177
Bromomethane	1.93	3.34	0.578	ok	0.579	0.519-0.639
Bromoethene	2.07	3.34	0.620	ok	0.620	0.560-0.680
n-Butane	1.88	3.34	0.563	ok	0.563	0.503-0.623
Benzyl Chloride	16.89	10.59	1.595	ok	1.595	1.535-1.655
n-Butylbenzene	17.58	10.59	1.660	ok	1.661	1.601-1.721
sec-Butylbenzene	17.07	10.59	1.612	ok	1.613	1.553-1.673
tert-Butylbenzene	16.80	10.59	1.586	ok	1.587	1.527-1.647
Carbon disulfide	2.52	3.34	0.754	ok	0.754	0.694-0.814
Chlorobenzene	10.67	10.59	1.008	ok	1.008	0.948-1.068
Chlorodifluoromethane	1.71	3.34	0.512	ok	0.511	0.451-0.571
Chloroethane	1.98	3.34	0.593	ok	0.593	0.533-0.653
Chlorotrifluoroethene	1.72	3.34	0.515	ok	0.513	0.453-0.573
Chloroform	3.42	3.34	1.024	ok	1.024	0.964-1.084
Chloromethane	1.77	3.34	0.530	ok	0.531	0.471-0.591
3-Chloropropene	2.46	3.34	0.737	ok	0.737	0.677-0.797
2-Chlorotoluene	15.52	10.59	1.466	ok	1.466	1.406-1.526
Carbon tetrachloride	4.51	3.34	1.350	ok	1.348	1.288-1.408
Cyclohexane	4.61	4.73	0.975	ok	0.973	0.913-1.033
1,1-Dichloroethane	2.85	3.34	0.853	ok	0.854	0.794-0.914
1,1-Dichloroethylene	2.38	3.34	0.713	ok	0.713	0.653-0.773
1,2-Dibromoethane (EDB)	8.53	4.73	1.803	ok	1.803	1.743-1.863
1,2-Dichloroethane	3.87	3.34	1.159	ok	1.158	1.098-1.218
1,2-Dichloropropane	5.10	4.73	1.078	ok	1.078	1.018-1.138
1,3-Dichloropropane	7.68	4.73	1.624	ok	1.623	1.563-1.683
1,4-Dioxane	5.36	4.73	1.133	ok	1.136	1.076-1.196
Dichlorodifluoromethane	1.73	3.34	0.518	ok	0.518	0.458-0.578
Dichlorofluoromethane	2.00	3.34	0.599	ok	0.599	0.539-0.659
Dibromochloromethane	8.18	4.73	1.729	ok	1.729	1.669-1.789
Dibromomethane	5.06	4.73	1.070	ok	1.068	1.008-1.128
trans-1,2-Dichloroethylene	2.77	3.34	0.829	ok	0.829	0.769-0.889

Initial Calibration Retention Time/Internal Standard Area Summary

Job Number: JD59460
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample Number	Lab File ID	Injected	By	Level	Inst ID	Method	
V6W1125-IC1125	6W26448.D	10/19/22 19:10	TCH	0.04	GCMS6W	TO-15	
V6W1125-IC1125	6W26449.D	10/19/22 19:43	TCH	0.1	GCMS6W	TO-15	
V6W1125-IC1125	6W26450.D	10/19/22 20:15	TCH	0.2	GCMS6W	TO-15	
V6W1125-IC1125	6W26451.D	10/19/22 20:47	TCH	0.5	GCMS6W	TO-15	
V6W1125-IC1125	6W26453.D	10/19/22 21:52	TCH	5	GCMS6W	TO-15	
V6W1125-ICC1125	6W26454.D	10/19/22 22:25	TCH	10	GCMS6W	TO-15	Reporting this level
V6W1125-IC1125	6W26455.D	10/19/22 22:57	TCH	20	GCMS6W	TO-15	
V6W1125-IC1125	6W26456.D	10/19/22 23:29	TCH	40	GCMS6W	TO-15	
V6W1125-IC1125	6W26457.D	10/20/22 00:03	TCH	50	GCMS6W	TO-15	

Target Compound	RT (min.)	Istd RT (min.)	Rel RT		Mean Rel RT	Rel RT Range (+ /- .06)
cis-1,2-Dichloroethylene	3.25	3.34	0.973	ok	0.973	0.913-1.033
cis-1,3-Dichloropropene	6.35	4.73	1.342	ok	1.341	1.281-1.401
m-Dichlorobenzene	16.86	10.59	1.592	ok	1.593	1.533-1.653
o-Dichlorobenzene	17.23	10.59	1.627	ok	1.628	1.568-1.688
p-Dichlorobenzene	16.95	10.59	1.601	ok	1.601	1.541-1.661
trans-1,3-Dichloropropene	7.06	4.73	1.493	ok	1.492	1.432-1.552
Di-Isopropyl ether	3.40	3.34	1.018	ok	1.018	0.958-1.078
2,3-Dimethylpentane	4.88	4.73	1.032	ok	1.030	0.970-1.090
2,4-Dimethylpentane	3.96	3.34	1.186	ok	1.186	1.126-1.246
Ethanol	2.01	3.34	0.602	ok	0.601	0.541-0.661
Ethylbenzene	11.57	10.59	1.093	ok	1.093	1.033-1.153
Ethyl Acetate	3.40	3.34	1.018	ok	1.021	0.961-1.081
Ethyl Acrylate	5.23	4.73	1.106	ok	1.106	1.046-1.166
4-Ethyltoluene	16.20	10.59	1.530	ok	1.531	1.471-1.591
Freon 113	2.52	3.34	0.754	ok	0.754	0.694-0.814
Freon 114	1.80	3.34	0.539	ok	0.539	0.479-0.599
Freon 123	2.12	3.34	0.635	ok	0.634	0.574-0.694
Freon 123A	2.13	3.34	0.638	ok	0.638	0.578-0.698
Freon 142B	1.77	3.34	0.530	ok	0.530	0.470-0.590
Freon 152A	1.69	3.34	0.506	ok	0.506	0.446-0.566
Heptane	5.79	4.73	1.224	ok	1.222	1.162-1.282
Hexachlorobutadiene	18.78	10.59	1.773	ok	1.774	1.714-1.834
Hexachloroethane	17.76	10.59	1.677	ok	1.678	1.618-1.738
Hexane	3.40	3.34	1.018	ok	1.016	0.956-1.076
2-Hexanone	8.21	4.73	1.736	ok	1.737	1.677-1.797
Iodomethane	2.36	3.34	0.707	ok	0.706	0.646-0.766
Isopropylbenzene	14.50	10.59	1.369	ok	1.370	1.310-1.430
Isopropyl Alcohol	2.21	3.34	0.662	ok	0.662	0.602-0.722
p-Isopropyltoluene	17.24	10.59	1.628	ok	1.629	1.569-1.689
Methylene chloride	2.42	3.34	0.725	ok	0.725	0.665-0.785
Methyl ethyl ketone	3.04	3.34	0.910	ok	0.911	0.851-0.971
Methyl Isobutyl Ketone	6.45	4.73	1.364	ok	1.367	1.307-1.427
Methyl Tert Butyl Ether	2.89	3.34	0.865	ok	0.865	0.805-0.925
Methylmethacrylate	5.68	4.73	1.201	ok	1.201	1.141-1.261
Naphthalene	18.53	10.59	1.750	ok	1.750	1.690-1.810
Nonane	14.09	10.59	1.331	ok	1.331	1.271-1.391
Octane	9.56	4.73	2.021	ok	2.020	1.960-2.080
Pentane	2.30	3.34	0.689	ok	0.689	0.629-0.749
n-Propylbenzene	15.86	10.59	1.498	ok	1.498	1.438-1.558

Initial Calibration Retention Time/Internal Standard Area Summary

Job Number: JD59460
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample Number	Lab File ID	Injected	By	Level	Inst ID	Method	
V6W1125-IC1125	6W26448.D	10/19/22 19:10	TCH	0.04	GCMS6W	TO-15	
V6W1125-IC1125	6W26449.D	10/19/22 19:43	TCH	0.1	GCMS6W	TO-15	
V6W1125-IC1125	6W26450.D	10/19/22 20:15	TCH	0.2	GCMS6W	TO-15	
V6W1125-IC1125	6W26451.D	10/19/22 20:47	TCH	0.5	GCMS6W	TO-15	
V6W1125-IC1125	6W26453.D	10/19/22 21:52	TCH	5	GCMS6W	TO-15	
V6W1125-ICC1125	6W26454.D	10/19/22 22:25	TCH	10	GCMS6W	TO-15	Reporting this level
V6W1125-IC1125	6W26455.D	10/19/22 22:57	TCH	20	GCMS6W	TO-15	
V6W1125-IC1125	6W26456.D	10/19/22 23:29	TCH	40	GCMS6W	TO-15	
V6W1125-IC1125	6W26457.D	10/20/22 00:03	TCH	50	GCMS6W	TO-15	

Target Compound	RT (min.)	Istd RT (min.)	Rel RT		Mean Rel RT	Rel RT Range (+ /- .06)
Propylene	1.71	3.34	0.512	ok	0.512	0.452-0.572
Styrene	12.75	10.59	1.204	ok	1.204	1.144-1.264
1,1,1-Trichloroethane	4.05	3.34	1.213	ok	1.212	1.152-1.272
1,1,1,2-Tetrachloroethane	10.68	10.59	1.008	ok	1.009	0.949-1.069
1,1,2,2-Tetrachloroethane	12.98	10.59	1.226	ok	1.227	1.167-1.287
1,1,2-Trichloroethane	7.23	4.73	1.529	ok	1.528	1.468-1.588
1,2,4-Trichlorobenzene	18.48	10.59	1.745	ok	1.746	1.686-1.806
1,2,3-Trichloropropane	13.27	10.59	1.253	ok	1.253	1.193-1.313
1,2,3-Trimethylbenzene	17.18	10.59	1.622	ok	1.623	1.563-1.683
1,2,4-Trimethylbenzene	16.80	10.59	1.586	ok	1.587	1.527-1.647
1,3,5-Trimethylbenzene	16.35	10.59	1.544	ok	1.545	1.485-1.605
2,2,4-Trimethylpentane	5.45	4.73	1.152	ok	1.151	1.091-1.211
Tertiary Butyl Alcohol	2.40	3.34	0.719	ok	0.719	0.659-0.779
Tetrachloroethylene	9.41	4.73	1.989	ok	1.989	1.929-2.049
Tetrahydrofuran	3.65	3.34	1.093	ok	1.094	1.034-1.154
Toluene	7.62	4.73	1.611	ok	1.609	1.549-1.669
Trichloroethylene	5.35	4.73	1.131	ok	1.130	1.070-1.190
Trichlorofluoromethane	2.19	3.34	0.656	ok	0.656	0.596-0.716
Vinyl chloride	1.83	3.34	0.548	ok	0.548	0.488-0.608
Vinyl Acetate	2.93	3.34	0.877	ok	0.877	0.817-0.937
m,p-Xylene	12.01	10.59	1.134	ok	1.135	1.075-1.195
o-Xylene	12.96	10.59	1.224	ok	1.224	1.164-1.284

Internal Standard	RT (min.)		Mean RT(min.)	RT Range (+ /- 0.33)	Area		Mean Area	Area Range (+ /- 40 %)
Bromochloromethane	3.34	ok	3.34	3.01-3.67	50236	ok	48058	28835-67281
1,4-Difluorobenzene	4.73	ok	4.73	4.40-5.06	248131	ok	240724	144434-337014
Chlorobenzene-D5	10.59	ok	10.59	10.26-10.92	216051	ok	213567	128140-298994

Initial Calibration Retention Time/Internal Standard Area Summary

Job Number: JD59460
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample Number	Lab File ID	Injected	By	Level	Inst ID	Method	
V6W1125-IC1125	6W26448.D	10/19/22 19:10	TCH	0.04	GCMS6W	TO-15	
V6W1125-IC1125	6W26449.D	10/19/22 19:43	TCH	0.1	GCMS6W	TO-15	
V6W1125-IC1125	6W26450.D	10/19/22 20:15	TCH	0.2	GCMS6W	TO-15	
V6W1125-IC1125	6W26451.D	10/19/22 20:47	TCH	0.5	GCMS6W	TO-15	
V6W1125-IC1125	6W26453.D	10/19/22 21:52	TCH	5	GCMS6W	TO-15	
V6W1125-ICC1125	6W26454.D	10/19/22 22:25	TCH	10	GCMS6W	TO-15	
V6W1125-IC1125	6W26455.D	10/19/22 22:57	TCH	20	GCMS6W	TO-15	Reporting this level
V6W1125-IC1125	6W26456.D	10/19/22 23:29	TCH	40	GCMS6W	TO-15	
V6W1125-IC1125	6W26457.D	10/20/22 00:03	TCH	50	GCMS6W	TO-15	

Target Compound	RT (min.)	Istd RT (min.)	Rel RT		Mean Rel RT	Rel RT Range (+ /- .06)
Acetone (2-Propanone)	2.14	3.34	0.641	ok	0.641	0.581-0.701
Acrolein	2.10	3.34	0.629	ok	0.629	0.569-0.689
Acrylonitrile	2.27	3.34	0.680	ok	0.680	0.620-0.740
Acetonitrile	2.07	3.34	0.620	ok	0.618	0.558-0.678
1,3-Butadiene	1.87	3.34	0.560	ok	0.559	0.499-0.619
Benzene	4.38	3.34	1.311	ok	1.312	1.252-1.372
Bromobenzene	14.38	10.59	1.358	ok	1.358	1.298-1.418
Bromodichloromethane	5.30	4.74	1.118	ok	1.119	1.059-1.179
Bromoform	11.83	10.59	1.117	ok	1.117	1.057-1.177
Bromomethane	1.94	3.34	0.581	ok	0.579	0.519-0.639
Bromoethene	2.07	3.34	0.620	ok	0.620	0.560-0.680
n-Butane	1.88	3.34	0.563	ok	0.563	0.503-0.623
Benzyl Chloride	16.89	10.59	1.595	ok	1.595	1.535-1.655
n-Butylbenzene	17.59	10.59	1.661	ok	1.661	1.601-1.721
sec-Butylbenzene	17.07	10.59	1.612	ok	1.613	1.553-1.673
tert-Butylbenzene	16.80	10.59	1.586	ok	1.587	1.527-1.647
Carbon disulfide	2.52	3.34	0.754	ok	0.754	0.694-0.814
Chlorobenzene	10.67	10.59	1.008	ok	1.008	0.948-1.068
Chlorodifluoromethane	1.71	3.34	0.512	ok	0.511	0.451-0.571
Chloroethane	1.98	3.34	0.593	ok	0.593	0.533-0.653
Chlorotrifluoroethene	1.72	3.34	0.515	ok	0.513	0.453-0.573
Chloroform	3.42	3.34	1.024	ok	1.024	0.964-1.084
Chloromethane	1.77	3.34	0.530	ok	0.531	0.471-0.591
3-Chloropropene	2.46	3.34	0.737	ok	0.737	0.677-0.797
2-Chlorotoluene	15.52	10.59	1.466	ok	1.466	1.406-1.526
Carbon tetrachloride	4.51	3.34	1.350	ok	1.348	1.288-1.408
Cyclohexane	4.61	4.74	0.973	ok	0.973	0.913-1.033
1,1-Dichloroethane	2.86	3.34	0.856	ok	0.854	0.794-0.914
1,1-Dichloroethylene	2.38	3.34	0.713	ok	0.713	0.653-0.773
1,2-Dibromoethane (EDB)	8.54	4.74	1.802	ok	1.803	1.743-1.863
1,2-Dichloroethane	3.87	3.34	1.159	ok	1.158	1.098-1.218
1,2-Dichloropropane	5.10	4.74	1.076	ok	1.078	1.018-1.138
1,3-Dichloropropane	7.68	4.74	1.620	ok	1.623	1.563-1.683
1,4-Dioxane	5.36	4.74	1.131	ok	1.136	1.076-1.196
Dichlorodifluoromethane	1.73	3.34	0.518	ok	0.518	0.458-0.578
Dichlorofluoromethane	2.00	3.34	0.599	ok	0.599	0.539-0.659
Dibromochloromethane	8.19	4.74	1.728	ok	1.729	1.669-1.789
Dibromomethane	5.06	4.74	1.068	ok	1.068	1.008-1.128
trans-1,2-Dichloroethylene	2.77	3.34	0.829	ok	0.829	0.769-0.889

Initial Calibration Retention Time/Internal Standard Area Summary

Job Number: JD59460
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample Number	Lab File ID	Injected	By	Level	Inst ID	Method	
V6W1125-IC1125	6W26448.D	10/19/22 19:10	TCH	0.04	GCMS6W	TO-15	
V6W1125-IC1125	6W26449.D	10/19/22 19:43	TCH	0.1	GCMS6W	TO-15	
V6W1125-IC1125	6W26450.D	10/19/22 20:15	TCH	0.2	GCMS6W	TO-15	
V6W1125-IC1125	6W26451.D	10/19/22 20:47	TCH	0.5	GCMS6W	TO-15	
V6W1125-IC1125	6W26453.D	10/19/22 21:52	TCH	5	GCMS6W	TO-15	
V6W1125-ICC1125	6W26454.D	10/19/22 22:25	TCH	10	GCMS6W	TO-15	
V6W1125-IC1125	6W26455.D	10/19/22 22:57	TCH	20	GCMS6W	TO-15	Reporting this level
V6W1125-IC1125	6W26456.D	10/19/22 23:29	TCH	40	GCMS6W	TO-15	
V6W1125-IC1125	6W26457.D	10/20/22 00:03	TCH	50	GCMS6W	TO-15	

Target Compound	RT (min.)	Istd RT (min.)	Rel RT		Mean Rel RT	Rel RT Range (+ /- .06)
cis-1,2-Dichloroethylene	3.26	3.34	0.976	ok	0.973	0.913-1.033
cis-1,3-Dichloropropene	6.35	4.74	1.340	ok	1.341	1.281-1.401
m-Dichlorobenzene	16.87	10.59	1.593	ok	1.593	1.533-1.653
o-Dichlorobenzene	17.23	10.59	1.627	ok	1.628	1.568-1.688
p-Dichlorobenzene	16.95	10.59	1.601	ok	1.601	1.541-1.661
trans-1,3-Dichloropropene	7.07	4.74	1.492	ok	1.492	1.432-1.552
Di-Isopropyl ether	3.40	3.34	1.018	ok	1.018	0.958-1.078
2,3-Dimethylpentane	4.88	4.74	1.030	ok	1.030	0.970-1.090
2,4-Dimethylpentane	3.96	3.34	1.186	ok	1.186	1.126-1.246
Ethanol	2.01	3.34	0.602	ok	0.601	0.541-0.661
Ethylbenzene	11.57	10.59	1.093	ok	1.093	1.033-1.153
Ethyl Acetate	3.41	3.34	1.021	ok	1.021	0.961-1.081
Ethyl Acrylate	5.23	4.74	1.103	ok	1.106	1.046-1.166
4-Ethyltoluene	16.21	10.59	1.531	ok	1.531	1.471-1.591
Freon 113	2.52	3.34	0.754	ok	0.754	0.694-0.814
Freon 114	1.80	3.34	0.539	ok	0.539	0.479-0.599
Freon 123	2.12	3.34	0.635	ok	0.634	0.574-0.694
Freon 123A	2.13	3.34	0.638	ok	0.638	0.578-0.698
Freon 142B	1.77	3.34	0.530	ok	0.530	0.470-0.590
Freon 152A	1.69	3.34	0.506	ok	0.506	0.446-0.566
Heptane	5.79	4.74	1.222	ok	1.222	1.162-1.282
Hexachlorobutadiene	18.78	10.59	1.773	ok	1.774	1.714-1.834
Hexachloroethane	17.77	10.59	1.678	ok	1.678	1.618-1.738
Hexane	3.40	3.34	1.018	ok	1.016	0.956-1.076
2-Hexanone	8.21	4.74	1.732	ok	1.737	1.677-1.797
Iodomethane	2.36	3.34	0.707	ok	0.706	0.646-0.766
Isopropylbenzene	14.50	10.59	1.369	ok	1.370	1.310-1.430
Isopropyl Alcohol	2.21	3.34	0.662	ok	0.662	0.602-0.722
p-Isopropyltoluene	17.25	10.59	1.629	ok	1.629	1.569-1.689
Methylene chloride	2.42	3.34	0.725	ok	0.725	0.665-0.785
Methyl ethyl ketone	3.04	3.34	0.910	ok	0.911	0.851-0.971
Methyl Isobutyl Ketone	6.46	4.74	1.363	ok	1.367	1.307-1.427
Methyl Tert Butyl Ether	2.89	3.34	0.865	ok	0.865	0.805-0.925
Methylmethacrylate	5.68	4.74	1.198	ok	1.201	1.141-1.261
Naphthalene	18.53	10.59	1.750	ok	1.750	1.690-1.810
Nonane	14.09	10.59	1.331	ok	1.331	1.271-1.391
Octane	9.56	4.74	2.017	ok	2.020	1.960-2.080
Pentane	2.30	3.34	0.689	ok	0.689	0.629-0.749
n-Propylbenzene	15.86	10.59	1.498	ok	1.498	1.438-1.558

Initial Calibration Retention Time/Internal Standard Area Summary

Job Number: JD59460
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample Number	Lab File ID	Injected	By	Level	Inst ID	Method	
V6W1125-IC1125	6W26448.D	10/19/22 19:10	TCH	0.04	GCMS6W	TO-15	
V6W1125-IC1125	6W26449.D	10/19/22 19:43	TCH	0.1	GCMS6W	TO-15	
V6W1125-IC1125	6W26450.D	10/19/22 20:15	TCH	0.2	GCMS6W	TO-15	
V6W1125-IC1125	6W26451.D	10/19/22 20:47	TCH	0.5	GCMS6W	TO-15	
V6W1125-IC1125	6W26453.D	10/19/22 21:52	TCH	5	GCMS6W	TO-15	
V6W1125-ICC1125	6W26454.D	10/19/22 22:25	TCH	10	GCMS6W	TO-15	
V6W1125-IC1125	6W26455.D	10/19/22 22:57	TCH	20	GCMS6W	TO-15	Reporting this level
V6W1125-IC1125	6W26456.D	10/19/22 23:29	TCH	40	GCMS6W	TO-15	
V6W1125-IC1125	6W26457.D	10/20/22 00:03	TCH	50	GCMS6W	TO-15	

Target Compound	RT (min.)	Istd RT (min.)	Rel RT		Mean Rel RT	Rel RT Range (+ /- .06)
Propylene	1.71	3.34	0.512	ok	0.512	0.452-0.572
Styrene	12.75	10.59	1.204	ok	1.204	1.144-1.264
1,1,1-Trichloroethane	4.05	3.34	1.213	ok	1.212	1.152-1.272
1,1,1,2-Tetrachloroethane	10.68	10.59	1.008	ok	1.009	0.949-1.069
1,1,2,2-Tetrachloroethane	12.99	10.59	1.227	ok	1.227	1.167-1.287
1,1,2-Trichloroethane	7.23	4.74	1.525	ok	1.528	1.468-1.588
1,2,4-Trichlorobenzene	18.48	10.59	1.745	ok	1.746	1.686-1.806
1,2,3-Trichloropropane	13.27	10.59	1.253	ok	1.253	1.193-1.313
1,2,3-Trimethylbenzene	17.18	10.59	1.622	ok	1.623	1.563-1.683
1,2,4-Trimethylbenzene	16.81	10.59	1.587	ok	1.587	1.527-1.647
1,3,5-Trimethylbenzene	16.35	10.59	1.544	ok	1.545	1.485-1.605
2,2,4-Trimethylpentane	5.45	4.74	1.150	ok	1.151	1.091-1.211
Tertiary Butyl Alcohol	2.40	3.34	0.719	ok	0.719	0.659-0.779
Tetrachloroethylene	9.42	4.74	1.987	ok	1.989	1.929-2.049
Tetrahydrofuran	3.65	3.34	1.093	ok	1.094	1.034-1.154
Toluene	7.62	4.74	1.608	ok	1.609	1.549-1.669
Trichloroethylene	5.35	4.74	1.129	ok	1.130	1.070-1.190
Trichlorofluoromethane	2.19	3.34	0.656	ok	0.656	0.596-0.716
Vinyl chloride	1.83	3.34	0.548	ok	0.548	0.488-0.608
Vinyl Acetate	2.93	3.34	0.877	ok	0.877	0.817-0.937
m,p-Xylene	12.01	10.59	1.134	ok	1.135	1.075-1.195
o-Xylene	12.97	10.59	1.225	ok	1.224	1.164-1.284

Internal Standard	RT (min.)		Mean RT(min.)	RT Range (+ /- 0.33)	Area		Mean Area	Area Range (+ /- 40 %)
Bromochloromethane	3.34	ok	3.34	3.01-3.67	49377	ok	48058	28835-67281
1,4-Difluorobenzene	4.74	ok	4.73	4.40-5.06	249392	ok	240724	144434-337014
Chlorobenzene-D5	10.59	ok	10.59	10.26-10.92	219656	ok	213567	128140-298994

Initial Calibration Retention Time/Internal Standard Area Summary

Job Number: JD59460
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample Number	Lab File ID	Injected	By	Level	Inst ID	Method	
V6W1125-IC1125	6W26448.D	10/19/22 19:10	TCH	0.04	GCMS6W	TO-15	
V6W1125-IC1125	6W26449.D	10/19/22 19:43	TCH	0.1	GCMS6W	TO-15	
V6W1125-IC1125	6W26450.D	10/19/22 20:15	TCH	0.2	GCMS6W	TO-15	
V6W1125-IC1125	6W26451.D	10/19/22 20:47	TCH	0.5	GCMS6W	TO-15	
V6W1125-IC1125	6W26453.D	10/19/22 21:52	TCH	5	GCMS6W	TO-15	
V6W1125-ICC1125	6W26454.D	10/19/22 22:25	TCH	10	GCMS6W	TO-15	
V6W1125-IC1125	6W26455.D	10/19/22 22:57	TCH	20	GCMS6W	TO-15	
V6W1125-IC1125	6W26456.D	10/19/22 23:29	TCH	40	GCMS6W	TO-15	Reporting this level
V6W1125-IC1125	6W26457.D	10/20/22 00:03	TCH	50	GCMS6W	TO-15	

Target Compound	RT (min.)	Istd RT (min.)	Rel RT		Mean Rel RT	Rel RT Range (+ /- .06)
Acetone (2-Propanone)	2.14	3.34	0.641	ok	0.641	0.581-0.701
Acrolein	2.10	3.34	0.629	ok	0.629	0.569-0.689
Acrylonitrile	2.27	3.34	0.680	ok	0.680	0.620-0.740
Acetonitrile	2.06	3.34	0.617	ok	0.618	0.558-0.678
1,3-Butadiene	1.86	3.34	0.557	ok	0.559	0.499-0.619
Benzene	4.38	3.34	1.311	ok	1.312	1.252-1.372
Bromobenzene	14.39	10.59	1.359	ok	1.358	1.298-1.418
Bromodichloromethane	5.30	4.74	1.118	ok	1.119	1.059-1.179
Bromoform	11.84	10.59	1.118	ok	1.117	1.057-1.177
Bromomethane	1.93	3.34	0.578	ok	0.579	0.519-0.639
Bromoethene	2.07	3.34	0.620	ok	0.620	0.560-0.680
n-Butane	1.88	3.34	0.563	ok	0.563	0.503-0.623
Benzyl Chloride	16.89	10.59	1.595	ok	1.595	1.535-1.655
n-Butylbenzene	17.59	10.59	1.661	ok	1.661	1.601-1.721
sec-Butylbenzene	17.07	10.59	1.612	ok	1.613	1.553-1.673
tert-Butylbenzene	16.81	10.59	1.587	ok	1.587	1.527-1.647
Carbon disulfide	2.52	3.34	0.754	ok	0.754	0.694-0.814
Chlorobenzene	10.67	10.59	1.008	ok	1.008	0.948-1.068
Chlorodifluoromethane	1.70	3.34	0.509	ok	0.511	0.451-0.571
Chloroethane	1.98	3.34	0.593	ok	0.593	0.533-0.653
Chlorotrifluoroethene	1.71	3.34	0.512	ok	0.513	0.453-0.573
Chloroform	3.42	3.34	1.024	ok	1.024	0.964-1.084
Chloromethane	1.77	3.34	0.530	ok	0.531	0.471-0.591
3-Chloropropene	2.46	3.34	0.737	ok	0.737	0.677-0.797
2-Chlorotoluene	15.53	10.59	1.466	ok	1.466	1.406-1.526
Carbon tetrachloride	4.50	3.34	1.347	ok	1.348	1.288-1.408
Cyclohexane	4.60	4.74	0.970	ok	0.973	0.913-1.033
1,1-Dichloroethane	2.85	3.34	0.853	ok	0.854	0.794-0.914
1,1-Dichloroethylene	2.38	3.34	0.713	ok	0.713	0.653-0.773
1,2-Dibromoethane (EDB)	8.55	4.74	1.804	ok	1.803	1.743-1.863
1,2-Dichloroethane	3.87	3.34	1.159	ok	1.158	1.098-1.218
1,2-Dichloropropane	5.10	4.74	1.076	ok	1.078	1.018-1.138
1,3-Dichloropropane	7.69	4.74	1.622	ok	1.623	1.563-1.683
1,4-Dioxane	5.37	4.74	1.133	ok	1.136	1.076-1.196
Dichlorodifluoromethane	1.73	3.34	0.518	ok	0.518	0.458-0.578
Dichlorofluoromethane	2.00	3.34	0.599	ok	0.599	0.539-0.659
Dibromochloromethane	8.19	4.74	1.728	ok	1.729	1.669-1.789
Dibromomethane	5.06	4.74	1.068	ok	1.068	1.008-1.128
trans-1,2-Dichloroethylene	2.77	3.34	0.829	ok	0.829	0.769-0.889

Initial Calibration Retention Time/Internal Standard Area Summary

Job Number: JD59460
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample Number	Lab File ID	Injected	By	Level	Inst ID	Method	
V6W1125-IC1125	6W26448.D	10/19/22 19:10	TCH	0.04	GCMS6W	TO-15	
V6W1125-IC1125	6W26449.D	10/19/22 19:43	TCH	0.1	GCMS6W	TO-15	
V6W1125-IC1125	6W26450.D	10/19/22 20:15	TCH	0.2	GCMS6W	TO-15	
V6W1125-IC1125	6W26451.D	10/19/22 20:47	TCH	0.5	GCMS6W	TO-15	
V6W1125-IC1125	6W26453.D	10/19/22 21:52	TCH	5	GCMS6W	TO-15	
V6W1125-ICC1125	6W26454.D	10/19/22 22:25	TCH	10	GCMS6W	TO-15	
V6W1125-IC1125	6W26455.D	10/19/22 22:57	TCH	20	GCMS6W	TO-15	
V6W1125-IC1125	6W26456.D	10/19/22 23:29	TCH	40	GCMS6W	TO-15	Reporting this level
V6W1125-IC1125	6W26457.D	10/20/22 00:03	TCH	50	GCMS6W	TO-15	

Target Compound	RT (min.)	Istd RT (min.)	Rel RT		Mean Rel RT	Rel RT Range (+ /- .06)
cis-1,2-Dichloroethylene	3.25	3.34	0.973	ok	0.973	0.913-1.033
cis-1,3-Dichloropropene	6.35	4.74	1.340	ok	1.341	1.281-1.401
m-Dichlorobenzene	16.87	10.59	1.593	ok	1.593	1.533-1.653
o-Dichlorobenzene	17.24	10.59	1.628	ok	1.628	1.568-1.688
p-Dichlorobenzene	16.95	10.59	1.601	ok	1.601	1.541-1.661
trans-1,3-Dichloropropene	7.07	4.74	1.492	ok	1.492	1.432-1.552
Di-Isopropyl ether	3.40	3.34	1.018	ok	1.018	0.958-1.078
2,3-Dimethylpentane	4.88	4.74	1.030	ok	1.030	0.970-1.090
2,4-Dimethylpentane	3.96	3.34	1.186	ok	1.186	1.126-1.246
Ethanol	2.00	3.34	0.599	ok	0.601	0.541-0.661
Ethylbenzene	11.58	10.59	1.093	ok	1.093	1.033-1.153
Ethyl Acetate	3.41	3.34	1.021	ok	1.021	0.961-1.081
Ethyl Acrylate	5.24	4.74	1.105	ok	1.106	1.046-1.166
4-Ethyltoluene	16.21	10.59	1.531	ok	1.531	1.471-1.591
Freon 113	2.52	3.34	0.754	ok	0.754	0.694-0.814
Freon 114	1.80	3.34	0.539	ok	0.539	0.479-0.599
Freon 123	2.12	3.34	0.635	ok	0.634	0.574-0.694
Freon 123A	2.13	3.34	0.638	ok	0.638	0.578-0.698
Freon 142B	1.77	3.34	0.530	ok	0.530	0.470-0.590
Freon 152A	1.70	3.34	0.509	ok	0.506	0.446-0.566
Heptane	5.79	4.74	1.222	ok	1.222	1.162-1.282
Hexachlorobutadiene	18.78	10.59	1.773	ok	1.774	1.714-1.834
Hexachloroethane	17.77	10.59	1.678	ok	1.678	1.618-1.738
Hexane	3.39	3.34	1.015	ok	1.016	0.956-1.076
2-Hexanone	8.22	4.74	1.734	ok	1.737	1.677-1.797
Iodomethane	2.35	3.34	0.704	ok	0.706	0.646-0.766
Isopropylbenzene	14.51	10.59	1.370	ok	1.370	1.310-1.430
Isopropyl Alcohol	2.20	3.34	0.659	ok	0.662	0.602-0.722
p-Isopropyltoluene	17.25	10.59	1.629	ok	1.629	1.569-1.689
Methylene chloride	2.42	3.34	0.725	ok	0.725	0.665-0.785
Methyl ethyl ketone	3.04	3.34	0.910	ok	0.911	0.851-0.971
Methyl Isobutyl Ketone	6.46	4.74	1.363	ok	1.367	1.307-1.427
Methyl Tert Butyl Ether	2.89	3.34	0.865	ok	0.865	0.805-0.925
Methylmethacrylate	5.68	4.74	1.198	ok	1.201	1.141-1.261
Naphthalene	18.53	10.59	1.750	ok	1.750	1.690-1.810
Nonane	14.10	10.59	1.331	ok	1.331	1.271-1.391
Octane	9.57	4.74	2.019	ok	2.020	1.960-2.080
Pentane	2.30	3.34	0.689	ok	0.689	0.629-0.749
n-Propylbenzene	15.87	10.59	1.499	ok	1.498	1.438-1.558

Initial Calibration Retention Time/Internal Standard Area Summary

Job Number: JD59460
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample Number	Lab File ID	Injected	By	Level	Inst ID	Method	
V6W1125-IC1125	6W26448.D	10/19/22 19:10	TCH	0.04	GCMS6W	TO-15	
V6W1125-IC1125	6W26449.D	10/19/22 19:43	TCH	0.1	GCMS6W	TO-15	
V6W1125-IC1125	6W26450.D	10/19/22 20:15	TCH	0.2	GCMS6W	TO-15	
V6W1125-IC1125	6W26451.D	10/19/22 20:47	TCH	0.5	GCMS6W	TO-15	
V6W1125-IC1125	6W26453.D	10/19/22 21:52	TCH	5	GCMS6W	TO-15	
V6W1125-ICC1125	6W26454.D	10/19/22 22:25	TCH	10	GCMS6W	TO-15	
V6W1125-IC1125	6W26455.D	10/19/22 22:57	TCH	20	GCMS6W	TO-15	
V6W1125-IC1125	6W26456.D	10/19/22 23:29	TCH	40	GCMS6W	TO-15	Reporting this level
V6W1125-IC1125	6W26457.D	10/20/22 00:03	TCH	50	GCMS6W	TO-15	

Target Compound	RT (min.)	Istd RT (min.)	Rel RT		Mean Rel RT	Rel RT Range (+ /- .06)
Propylene	1.71	3.34	0.512	ok	0.512	0.452-0.572
Styrene	12.76	10.59	1.205	ok	1.204	1.144-1.264
1,1,1-Trichloroethane	4.05	3.34	1.213	ok	1.212	1.152-1.272
1,1,1,2-Tetrachloroethane	10.69	10.59	1.009	ok	1.009	0.949-1.069
1,1,2,2-Tetrachloroethane	13.00	10.59	1.228	ok	1.227	1.167-1.287
1,1,2-Trichloroethane	7.24	4.74	1.527	ok	1.528	1.468-1.588
1,2,4-Trichlorobenzene	18.49	10.59	1.746	ok	1.746	1.686-1.806
1,2,3-Trichloropropane	13.28	10.59	1.254	ok	1.253	1.193-1.313
1,2,3-Trimethylbenzene	17.18	10.59	1.622	ok	1.623	1.563-1.683
1,2,4-Trimethylbenzene	16.81	10.59	1.587	ok	1.587	1.527-1.647
1,3,5-Trimethylbenzene	16.36	10.59	1.545	ok	1.545	1.485-1.605
2,2,4-Trimethylpentane	5.45	4.74	1.150	ok	1.151	1.091-1.211
Tertiary Butyl Alcohol	2.39	3.34	0.716	ok	0.719	0.659-0.779
Tetrachloroethylene	9.42	4.74	1.987	ok	1.989	1.929-2.049
Tetrahydrofuran	3.65	3.34	1.093	ok	1.094	1.034-1.154
Toluene	7.62	4.74	1.608	ok	1.609	1.549-1.669
Trichloroethylene	5.36	4.74	1.131	ok	1.130	1.070-1.190
Trichlorofluoromethane	2.19	3.34	0.656	ok	0.656	0.596-0.716
Vinyl chloride	1.83	3.34	0.548	ok	0.548	0.488-0.608
Vinyl Acetate	2.93	3.34	0.877	ok	0.877	0.817-0.937
m,p-Xylene	12.02	10.59	1.135	ok	1.135	1.075-1.195
o-Xylene	12.97	10.59	1.225	ok	1.224	1.164-1.284

Internal Standard	RT (min.)		Mean RT(min.)	RT Range (+ /- 0.33)	Area		Mean Area	Area Range (+ /- 40 %)
Bromochloromethane	3.34	ok	3.34	3.01-3.67	46967	ok	48058	28835-67281
1,4-Difluorobenzene	4.74	ok	4.73	4.40-5.06	253136	ok	240724	144434-337014
Chlorobenzene-D5	10.59	ok	10.59	10.26-10.92	227517	ok	213567	128140-298994

Initial Calibration Retention Time/Internal Standard Area Summary

Job Number: JD59460
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample Number	Lab File ID	Injected	By	Level	Inst ID	Method	
V6W1125-IC1125	6W26448.D	10/19/22 19:10	TCH	0.04	GCMS6W	TO-15	
V6W1125-IC1125	6W26449.D	10/19/22 19:43	TCH	0.1	GCMS6W	TO-15	
V6W1125-IC1125	6W26450.D	10/19/22 20:15	TCH	0.2	GCMS6W	TO-15	
V6W1125-IC1125	6W26451.D	10/19/22 20:47	TCH	0.5	GCMS6W	TO-15	
V6W1125-IC1125	6W26453.D	10/19/22 21:52	TCH	5	GCMS6W	TO-15	
V6W1125-ICC1125	6W26454.D	10/19/22 22:25	TCH	10	GCMS6W	TO-15	
V6W1125-IC1125	6W26455.D	10/19/22 22:57	TCH	20	GCMS6W	TO-15	
V6W1125-IC1125	6W26456.D	10/19/22 23:29	TCH	40	GCMS6W	TO-15	
V6W1125-IC1125	6W26457.D	10/20/22 00:03	TCH	50	GCMS6W	TO-15	Reporting this level

Target Compound	RT (min.)	Istd RT (min.)	Rel RT		Mean Rel RT	Rel RT Range (+ /- .06)
Acetone (2-Propanone)	2.14	3.34	0.641	ok	0.641	0.581-0.701
Acrolein	2.10	3.34	0.629	ok	0.629	0.569-0.689
Acrylonitrile	2.27	3.34	0.680	ok	0.680	0.620-0.740
Acetonitrile	2.06	3.34	0.617	ok	0.618	0.558-0.678
1,3-Butadiene	1.86	3.34	0.557	ok	0.559	0.499-0.619
Benzene	4.38	3.34	1.311	ok	1.312	1.252-1.372
Bromobenzene	14.39	10.59	1.359	ok	1.358	1.298-1.418
Bromodichloromethane	5.30	4.74	1.118	ok	1.119	1.059-1.179
Bromoform	11.84	10.59	1.118	ok	1.117	1.057-1.177
Bromomethane	1.93	3.34	0.578	ok	0.579	0.519-0.639
Bromoethene	2.07	3.34	0.620	ok	0.620	0.560-0.680
n-Butane	1.88	3.34	0.563	ok	0.563	0.503-0.623
Benzyl Chloride	16.89	10.59	1.595	ok	1.595	1.535-1.655
n-Butylbenzene	17.59	10.59	1.661	ok	1.661	1.601-1.721
sec-Butylbenzene	17.08	10.59	1.613	ok	1.613	1.553-1.673
tert-Butylbenzene	16.81	10.59	1.587	ok	1.587	1.527-1.647
Carbon disulfide	2.52	3.34	0.754	ok	0.754	0.694-0.814
Chlorobenzene	10.68	10.59	1.008	ok	1.008	0.948-1.068
Chlorodifluoromethane	1.70	3.34	0.509	ok	0.511	0.451-0.571
Chloroethane	1.98	3.34	0.593	ok	0.593	0.533-0.653
Chlorotrifluoroethene	1.71	3.34	0.512	ok	0.513	0.453-0.573
Chloroform	3.42	3.34	1.024	ok	1.024	0.964-1.084
Chloromethane	1.77	3.34	0.530	ok	0.531	0.471-0.591
3-Chloropropene	2.46	3.34	0.737	ok	0.737	0.677-0.797
2-Chlorotoluene	15.53	10.59	1.466	ok	1.466	1.406-1.526
Carbon tetrachloride	4.50	3.34	1.347	ok	1.348	1.288-1.408
Cyclohexane	4.60	4.74	0.970	ok	0.973	0.913-1.033
1,1-Dichloroethane	2.85	3.34	0.853	ok	0.854	0.794-0.914
1,1-Dichloroethylene	2.38	3.34	0.713	ok	0.713	0.653-0.773
1,2-Dibromoethane (EDB)	8.55	4.74	1.804	ok	1.803	1.743-1.863
1,2-Dichloroethane	3.87	3.34	1.159	ok	1.158	1.098-1.218
1,2-Dichloropropane	5.11	4.74	1.078	ok	1.078	1.018-1.138
1,3-Dichloropropane	7.69	4.74	1.622	ok	1.623	1.563-1.683
1,4-Dioxane	5.37	4.74	1.133	ok	1.136	1.076-1.196
Dichlorodifluoromethane	1.73	3.34	0.518	ok	0.518	0.458-0.578
Dichlorofluoromethane	2.00	3.34	0.599	ok	0.599	0.539-0.659
Dibromochloromethane	8.19	4.74	1.728	ok	1.729	1.669-1.789
Dibromomethane	5.06	4.74	1.068	ok	1.068	1.008-1.128
trans-1,2-Dichloroethylene	2.77	3.34	0.829	ok	0.829	0.769-0.889

Initial Calibration Retention Time/Internal Standard Area Summary

Job Number: JD59460
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample Number	Lab File ID	Injected	By	Level	Inst ID	Method	
V6W1125-IC1125	6W26448.D	10/19/22 19:10	TCH	0.04	GCMS6W	TO-15	
V6W1125-IC1125	6W26449.D	10/19/22 19:43	TCH	0.1	GCMS6W	TO-15	
V6W1125-IC1125	6W26450.D	10/19/22 20:15	TCH	0.2	GCMS6W	TO-15	
V6W1125-IC1125	6W26451.D	10/19/22 20:47	TCH	0.5	GCMS6W	TO-15	
V6W1125-IC1125	6W26453.D	10/19/22 21:52	TCH	5	GCMS6W	TO-15	
V6W1125-ICC1125	6W26454.D	10/19/22 22:25	TCH	10	GCMS6W	TO-15	
V6W1125-IC1125	6W26455.D	10/19/22 22:57	TCH	20	GCMS6W	TO-15	
V6W1125-IC1125	6W26456.D	10/19/22 23:29	TCH	40	GCMS6W	TO-15	
V6W1125-IC1125	6W26457.D	10/20/22 00:03	TCH	50	GCMS6W	TO-15	Reporting this level

Target Compound	RT (min.)	Istd RT (min.)	Rel RT		Mean Rel RT	Rel RT Range (+ /- .06)
cis-1,2-Dichloroethylene	3.25	3.34	0.973	ok	0.973	0.913-1.033
cis-1,3-Dichloropropene	6.35	4.74	1.340	ok	1.341	1.281-1.401
m-Dichlorobenzene	16.87	10.59	1.593	ok	1.593	1.533-1.653
o-Dichlorobenzene	17.24	10.59	1.628	ok	1.628	1.568-1.688
p-Dichlorobenzene	16.95	10.59	1.601	ok	1.601	1.541-1.661
trans-1,3-Dichloropropene	7.07	4.74	1.492	ok	1.492	1.432-1.552
Di-Isopropyl ether	3.40	3.34	1.018	ok	1.018	0.958-1.078
2,3-Dimethylpentane	4.88	4.74	1.030	ok	1.030	0.970-1.090
2,4-Dimethylpentane	3.96	3.34	1.186	ok	1.186	1.126-1.246
Ethanol	2.00	3.34	0.599	ok	0.601	0.541-0.661
Ethylbenzene	11.58	10.59	1.093	ok	1.093	1.033-1.153
Ethyl Acetate	3.41	3.34	1.021	ok	1.021	0.961-1.081
Ethyl Acrylate	5.24	4.74	1.105	ok	1.106	1.046-1.166
4-Ethyltoluene	16.21	10.59	1.531	ok	1.531	1.471-1.591
Freon 113	2.52	3.34	0.754	ok	0.754	0.694-0.814
Freon 114	1.80	3.34	0.539	ok	0.539	0.479-0.599
Freon 123	2.11	3.34	0.632	ok	0.634	0.574-0.694
Freon 123A	2.13	3.34	0.638	ok	0.638	0.578-0.698
Freon 142B	1.77	3.34	0.530	ok	0.530	0.470-0.590
Freon 152A	1.69	3.34	0.506	ok	0.506	0.446-0.566
Heptane	5.78	4.74	1.219	ok	1.222	1.162-1.282
Hexachlorobutadiene	18.78	10.59	1.773	ok	1.774	1.714-1.834
Hexachloroethane	17.77	10.59	1.678	ok	1.678	1.618-1.738
Hexane	3.39	3.34	1.015	ok	1.016	0.956-1.076
2-Hexanone	8.22	4.74	1.734	ok	1.737	1.677-1.797
Iodomethane	2.35	3.34	0.704	ok	0.706	0.646-0.766
Isopropylbenzene	14.51	10.59	1.370	ok	1.370	1.310-1.430
Isopropyl Alcohol	2.20	3.34	0.659	ok	0.662	0.602-0.722
p-Isopropyltoluene	17.25	10.59	1.629	ok	1.629	1.569-1.689
Methylene chloride	2.42	3.34	0.725	ok	0.725	0.665-0.785
Methyl ethyl ketone	3.04	3.34	0.910	ok	0.911	0.851-0.971
Methyl Isobutyl Ketone	6.47	4.74	1.365	ok	1.367	1.307-1.427
Methyl Tert Butyl Ether	2.89	3.34	0.865	ok	0.865	0.805-0.925
Methylmethacrylate	5.69	4.74	1.200	ok	1.201	1.141-1.261
Naphthalene	18.53	10.59	1.750	ok	1.750	1.690-1.810
Nonane	14.11	10.59	1.332	ok	1.331	1.271-1.391
Octane	9.57	4.74	2.019	ok	2.020	1.960-2.080
Pentane	2.30	3.34	0.689	ok	0.689	0.629-0.749
n-Propylbenzene	15.87	10.59	1.499	ok	1.498	1.438-1.558

Initial Calibration Retention Time/Internal Standard Area Summary

Job Number: JD59460
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample Number	Lab File ID	Injected	By	Level	Inst ID	Method	
V6W1125-IC1125	6W26448.D	10/19/22 19:10	TCH	0.04	GCMS6W	TO-15	
V6W1125-IC1125	6W26449.D	10/19/22 19:43	TCH	0.1	GCMS6W	TO-15	
V6W1125-IC1125	6W26450.D	10/19/22 20:15	TCH	0.2	GCMS6W	TO-15	
V6W1125-IC1125	6W26451.D	10/19/22 20:47	TCH	0.5	GCMS6W	TO-15	
V6W1125-IC1125	6W26453.D	10/19/22 21:52	TCH	5	GCMS6W	TO-15	
V6W1125-ICC1125	6W26454.D	10/19/22 22:25	TCH	10	GCMS6W	TO-15	
V6W1125-IC1125	6W26455.D	10/19/22 22:57	TCH	20	GCMS6W	TO-15	
V6W1125-IC1125	6W26456.D	10/19/22 23:29	TCH	40	GCMS6W	TO-15	
V6W1125-IC1125	6W26457.D	10/20/22 00:03	TCH	50	GCMS6W	TO-15	Reporting this level

Target Compound	RT (min.)	Istd RT (min.)	Rel RT		Mean Rel RT	Rel RT Range (+ /- .06)
Propylene	1.71	3.34	0.512	ok	0.512	0.452-0.572
Styrene	12.76	10.59	1.205	ok	1.204	1.144-1.264
1,1,1-Trichloroethane	4.05	3.34	1.213	ok	1.212	1.152-1.272
1,1,1,2-Tetrachloroethane	10.69	10.59	1.009	ok	1.009	0.949-1.069
1,1,2,2-Tetrachloroethane	13.00	10.59	1.228	ok	1.227	1.167-1.287
1,1,2-Trichloroethane	7.24	4.74	1.527	ok	1.528	1.468-1.588
1,2,4-Trichlorobenzene	18.49	10.59	1.746	ok	1.746	1.686-1.806
1,2,3-Trichloropropane	13.29	10.59	1.255	ok	1.253	1.193-1.313
1,2,3-Trimethylbenzene	17.19	10.59	1.623	ok	1.623	1.563-1.683
1,2,4-Trimethylbenzene	16.81	10.59	1.587	ok	1.587	1.527-1.647
1,3,5-Trimethylbenzene	16.36	10.59	1.545	ok	1.545	1.485-1.605
2,2,4-Trimethylpentane	5.45	4.74	1.150	ok	1.151	1.091-1.211
Tertiary Butyl Alcohol	2.39	3.34	0.716	ok	0.719	0.659-0.779
Tetrachloroethylene	9.42	4.74	1.987	ok	1.989	1.929-2.049
Tetrahydrofuran	3.65	3.34	1.093	ok	1.094	1.034-1.154
Toluene	7.62	4.74	1.608	ok	1.609	1.549-1.669
Trichloroethylene	5.35	4.74	1.129	ok	1.130	1.070-1.190
Trichlorofluoromethane	2.19	3.34	0.656	ok	0.656	0.596-0.716
Vinyl chloride	1.83	3.34	0.548	ok	0.548	0.488-0.608
Vinyl Acetate	2.93	3.34	0.877	ok	0.877	0.817-0.937
m,p-Xylene	12.02	10.59	1.135	ok	1.135	1.075-1.195
o-Xylene	12.97	10.59	1.225	ok	1.224	1.164-1.284

Internal Standard	RT (min.)		Mean RT(min.)	RT Range (+ /- 0.33)	Area		Mean Area	Area Range (+ /- 40 %)
Bromochloromethane	3.34	ok	3.34	3.01-3.67	49484	ok	48058	28835-67281
1,4-Difluorobenzene	4.74	ok	4.73	4.40-5.06	256894	ok	240724	144434-337014
Chlorobenzene-D5	10.59	ok	10.59	10.26-10.92	229830	ok	213567	128140-298994

Surrogate Recovery Summary

Job Number: JD59460
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Method: TO-15 **Matrix:** AIR

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1
JD59460-1	2W63190.D	92
JD59460-2	2W63191.D	93
JD59460-3	2W63192.D	93
JD59460-5	2W63193.D	94
JD59460-6	2W63195.D	93
JD59460-5DUP	2W63194.D	92
V2W2809-BS	2W63184.D	95
V2W2809-BSD	2W63185.D	94
V2W2809-MB	2W63189.D	93
V6W1142-SCC	6W26998.D	104
V6W1142-SCC	6W26997.D	105
V6W1146-SCC	6W27128.D	97
V6W1152-SCC	6W27325.D	92
V6W1142-BS	6W26991.D	110
V6W1142-BSD	6W26992.D	111
V6W1142-MB	6W26995.D	106
V6W1146-BS	6W27094.D	104
V6W1146-BSD	6W27095.D	103
V6W1146-MB	6W27097.D	99
V6W1152-BS	6W27293.D	97
V6W1152-BSD	6W27294.D	97
V6W1152-MB	6W27296.D	92

Surrogate Compounds	Recovery Limits
S1 = 4-Bromofluorobenzene	65-128%

Initial Calibration Summary

Job Number: JD59460
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample: V2W2776-ICC2776
Lab FileID: 2W62389.D

Response Factor Report MS2W

Method : C:\msdchem\1\METHODS\M2W2776.M (RTE Integrator)
Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
Last Update : Mon Dec 19 08:01:01 2022
Response via : Initial Calibration

Calibration Files
0.5 =2w62386.D 0.2 =2w62385.D 40 =2w62391.D 0.04=2w62383.D
5 =2w62388.D 10 =2w62389.D 20 =2w62390.D 0.1 =2w62384.D
50 =2w62392.D =

Compound	0.5	0.2	40	0.04	5	10	20	0.1	50	Avg	%RSD
1) I BROMOCHLOROMETHANE	ISTD										
2) FREON 115										0.000	-1.00
3) FREON 152A	0.798	0.722	0.762		0.734	0.757	0.749		0.770	0.756	3.26
4) CHLORODIFLUOROMETHANE	0.400	0.401	0.403		0.393	0.402	0.395		0.407	0.400	1.21
5) CHLOROTRIFLUOROETHENE	2.030	1.920	1.865		1.798	1.825	1.822	2.076	1.881	1.902	5.32
6) DICHLORODIFLUOROMETHANE	5.171	5.270	4.936	4.911	4.811	4.828	4.834	5.053	4.926	4.971	3.24
7) PROPYLENE	1.060	1.022	0.883		0.862	0.870	0.873		0.894	0.924	8.86
8) 1-CHLORO-1,1-DIFLUOROETHANE	3.988	3.885	3.572	3.435	3.603	3.574	3.555	3.791	3.518	3.658	5.07
9) FREON 114	4.336	4.366	4.249	3.653	4.055	4.067	4.120	4.221	4.231	4.144	5.16
10) CHLOROMETHANE	0.451	0.458	0.396		0.385	0.393	0.389	0.412	0.393	0.410	7.06
11) VINYL CHLORIDE	1.651	1.578	1.448		1.450	1.434	1.423	1.508	1.461	1.494	5.41
12) 1,3-BUTADIENE	1.212	1.227	1.110		1.063	1.074	1.094	1.233	1.109	1.140	6.26
13) N-BUTANE	2.258	2.418	1.938		1.934	1.934	1.894	2.095	1.930	2.050	9.38
14) BROMOMETHANE	1.519	1.577	1.423		1.370	1.385	1.385	1.611	1.428	1.462	6.42
15) CHLOROETHANE	0.832	0.816	0.780		0.751	0.759	0.762	0.731	0.778	0.776	4.32
16) DICHLOROFLUOROMETHANE	3.451	3.341	3.322	3.363	3.228	3.234	3.236	3.418	3.343	3.326	2.43
17) ACETONITRILE	1.246	1.405	1.124		1.121	1.105	1.093	1.235	1.128	1.182	9.08
18) ACROLEIN	0.683	0.744	0.661		0.637	0.637	0.636		0.660	0.665	5.85
19) FREON 123	3.847	3.725	3.681	3.518	3.441	3.470	3.538	3.886	3.729	3.648	4.48
20) FREON 123A	2.352	2.341	2.141		2.001	2.029	2.055	2.339	2.166	2.178	6.79
21) TRICHLOROFLUOROMETHANE	5.013	5.100	4.724	4.476	4.577	4.632	4.593	4.876	4.756	4.750	4.42
22) ISOPROPYL ALCOHOL	3.479	3.929	2.751		2.784	2.796	2.741		2.758	3.034	15.70
23) ACETONE											

Initial Calibration Summary

Job Number: JD59460
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample: V2W2776-ICC2776
Lab FileID: 2W62389.D

	1.051	1.128	0.773		0.744	0.741	0.733		0.776	0.850	19.59
24)	PENTANE										
	1.621	1.863	1.444		1.434	1.480	1.447	1.990	1.445	1.591	13.74
25)	IODOMETHANE										
	4.562	4.633	4.420	3.982	4.255	4.351	4.346	4.263	4.449	4.362	4.37
26)	1,1-DICHLOROETHYLENE										
	1.879	1.916	1.739		1.715	1.726	1.714	1.958	1.748	1.799	5.60
27)	CARBON DISULFIDE										
	4.978	4.924	5.382	4.423	5.014	5.150	5.228	5.067	5.382	5.061	5.75
28)	ETHANOL										
	0.910	1.134	0.595		0.600	0.580	0.578		0.595	0.713	30.98
29)	BROMOETHENE										
	1.560	1.497	1.506		1.414	1.446	1.463	1.520	1.509	1.489	3.10
30)	ACRYLONITRILE										
	1.180	1.121	1.073		1.035	1.066	1.057	1.161	1.069	1.095	4.79
31)	METHYLENE CHLORIDE										
	2.194	3.044	1.595		1.631	1.628	1.587		1.596	1.896	29.09
32)	3-CHLOROPROPENE										
	0.902	0.937	0.862		0.835	0.853	0.851	0.952	0.863	0.882	4.91
33)	FREON 113										
	2.957	3.019	2.957		2.855	2.882	2.908	2.890	2.959	2.928	1.83
34)	TRANS-1,2-DICHLOROETHENE										
	1.594	1.757	1.629		1.511	1.547	1.576	1.564	1.640	1.602	4.70
35)	TERTIARY BUTYL ALCOHOL										
	5.533	5.731	4.022		4.220	4.252	4.032		4.033	4.546	16.49
36)	METHYL TERTIARY BUTYL ETHER										
	4.598	4.740	4.553	4.839	4.292	4.366	4.376	4.502	4.608	4.541	3.95
37)	TETRAHYDROFURAN										
	0.700	0.670	0.756		0.718	0.734	0.739		0.766	0.726	4.56
38)	HEXANE										
	2.705	2.950	2.608		2.445	2.446	2.507	3.095	2.636	2.674	8.85
39)	VINYL ACETATE										
	0.361	0.426	0.405		0.217	0.285	0.352		0.425	0.353	22.06
40)	1,1-DICHLOROETHANE										
	2.760	2.684	2.725	2.594	2.624	2.625	2.652	2.667	2.740	2.674	2.14
41)	METHYL ETHYL KETONE										
	0.766	0.836	0.775		0.716	0.746	0.748		0.783	0.767	4.90
42)	CIS-1,2-DICHLOROETHENE										
	1.698	1.729	1.700		1.610	1.655	1.653	1.460	1.718	1.653	5.28
43)	DIISOPROPYL ETHER										
	0.798	0.803	0.790		0.745	0.739	0.755		0.798	0.775	3.59
44)	ETHYL ACETATE										
	0.550	0.580	0.544		0.496	0.520	0.520		0.555	0.538	5.15
45)	METHYL ACRYLATE										
	3.153	3.269	3.308	2.845	3.059	3.151	3.154	3.030	3.318	3.143	4.81
46)	CHLOROFORM										
	3.718	3.711	3.747	3.068	3.517	3.583	3.605	3.488	3.782	3.580	6.09
47)	2,4-DIMETHYLPENTANE										
	2.997	3.055	3.014	2.797	2.833	2.890	2.918	3.275	3.030	2.979	4.80
48)	1,1,1-TRICHLOROETHANE										
	3.665	3.648	3.932	3.223	3.642	3.715	3.799	3.677	3.949	3.694	5.75
49)	CARBON TETRACHLORIDE										
	3.503	3.394	4.142	2.637	3.595	3.774	3.928	3.374	4.183	3.615	13.12
50)	1,2-DICHLOROETHANE										
	2.753	2.558	2.607		2.520	2.521	2.548	2.490	2.605	2.575	3.22
51)	BENZENE										
	5.232	5.988	4.900		4.615	4.696	4.730	6.201	4.889	5.156	11.85
52)	I 1,4-DIFLUOROBENZENE	----------ISTD----------									
53)	CYCLOHEXANE										

	0.422	0.440	0.438		0.404	0.411	0.417	0.381	0.434	0.418	4.78
54) 2,3-DIMETHYLPENTANE											
	0.212	0.201	0.216		0.203	0.203	0.208		0.218	0.209	3.23
55) TRICHLOROETHENE											
	0.473	0.475	0.486	0.330	0.443	0.446	0.459	0.454	0.485	0.450	10.64
56) 1,2-DICHLOROPROPANE											
	0.340	0.341	0.371		0.343	0.346	0.354	0.317	0.368	0.347	4.94
57) DIBROMOMETHANE											
	0.406	0.420	0.422		0.384	0.391	0.398	0.445	0.424	0.411	4.92
58) ETHYL ACRYLATE											
	0.758	0.754	0.832	0.552	0.785	0.776	0.791	0.646	0.833	0.747	12.26
59) BROMODICHLOROMETHANE											
	0.710	0.697	0.831	0.554	0.743	0.760	0.788	0.640	0.829	0.728	12.38
60) 2,2,4-TRIMETHYLPENTANE											
	1.636	1.611	1.639	1.416	1.555	1.547	1.568	1.625	1.639	1.582	4.57
61) 1,4-DIOXANE											
	0.251	0.258	0.237		0.240	0.231	0.228	0.257	0.238	0.242	4.70
62) HEPTANE											
	0.559	0.555	0.557	0.574	0.530	0.527	0.537	0.564	0.552	0.550	2.87
63) METHYL METHACRYLATE											
	0.359	0.333	0.384		0.347	0.350	0.366	0.315	0.386	0.355	6.83
64) METHYL ISOBUTYL KETONE											
	0.372	0.388	0.329		0.335	0.335	0.324	0.349	0.328	0.345	6.68
65) CIS-1,3-DICHLOROPROPENE											
	0.509	0.527	0.613		0.530	0.547	0.574	0.464	0.616	0.547	9.48
66) TOLUENE											
	1.281	1.356	1.249		1.157	1.164	1.190	1.424	1.255	1.260	7.44
67) 1,3-DICHLOROPROPANE											
	0.587	0.578	0.631	0.533	0.585	0.590	0.601	0.590	0.634	0.592	5.03
68) TRANS-1,3-DICHLOROPROPENE											
	0.429	0.420	0.592		0.488	0.517	0.550	0.423	0.600	0.502	14.82
69) 1,1,2-TRICHLOROETHANE											
	0.356	0.338	0.372		0.342	0.344	0.353	0.338	0.371	0.352	3.97
70) 2-HEXANONE											
	0.358	0.687	0.461	0.588	0.512	0.487	0.475	0.675	0.453	0.522	20.78
71) ETHYL METHACRYLATE											
	0.604	0.537	0.648		0.596	0.608	0.622	0.530	0.649	0.599	7.48
72) TETRACHLOROETHENE											
	0.457	0.457	0.484	0.349	0.438	0.446	0.457	0.420	0.487	0.444	9.34
73) DIBROMOCHLOROMETHANE											
	0.584	0.555	0.833		0.690	0.732	0.774	0.521	0.842	0.691	18.16
74) 1,2-DIBROMOETHANE											
	0.660	0.639	0.720		0.645	0.661	0.680	0.568	0.719	0.662	7.34
75) OCTANE											
	0.772	0.766	0.778	0.860	0.737	0.741	0.748	0.803	0.778	0.776	4.85
76) I CHLOROBENZENE-D5	----------				ISTD						
77) 1,1,1,2-TETRACHLOROETHANE											
	0.498	0.494	0.634		0.538	0.565	0.590	0.456	0.618	0.549	11.61
78) CHLOROBENZENE											
	1.074	1.095	1.149	0.920	1.051	1.063	1.089	1.041	1.120	1.067	6.06
79) ETHYLBENZENE											
	1.933	2.117	1.903		1.779	1.791	1.814	2.337	1.859	1.941	9.94
80) M,P-XYLENE											
	1.477	1.603	1.517		1.391	1.411	1.435	1.805	1.478	1.515	8.91
81) O-XYLENE											
	1.550	1.679	1.548		1.411	1.419	1.462	1.903	1.519	1.561	10.42
82) STYRENE											
	1.011	1.004	1.179	1.021	1.043	1.069	1.093	0.974	1.158	1.061	6.63
83) NONANE											

Initial Calibration Summary

Job Number: JD59460
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample: V2W2776-ICC2776
Lab FileID: 2W62389.D

		0.903	0.886	0.933	0.790	0.876	0.882	0.885	0.921	0.897	0.886	4.57
84)	BROMOFORM											
		0.539	0.511	0.889		0.689	0.751	0.804	0.485	0.875	0.693	23.62
85)	1,1,2,2-TETRACHLOROETHANE											
		1.025	0.993	1.142	0.794	1.028	1.052	1.071	0.910	1.109	1.014	10.46
86)	1,2,3-TRICHLOROPROPANE											
		0.811	0.790	0.860	0.723	0.790	0.803	0.819	0.771	0.843	0.801	5.01
87)	4-BROMOFLUOROBENZENE											
		0.760	0.758	0.792	0.766	0.771	0.779	0.782	0.770	0.774	0.772	1.39
88)	ISOPROPYLBENZENE											
		0.521	0.527	0.591		0.524	0.536	0.552	0.490	0.576	0.540	5.99
89)	BROMOBENZENE											
		0.955	0.995	1.093	0.803	0.990	1.012	1.035	0.920	1.071	0.986	8.84
90)	2-CHLOROTOLUENE											
		0.459	0.460	0.527		0.469	0.482	0.494	0.424	0.514	0.479	6.94
91)	N-PROPYLBENZENE											
		0.553	0.524	0.614		0.550	0.560	0.575	0.486	0.603	0.558	7.39
92)	4-ETHYLTOLUENE											
		1.959	1.850	2.311	1.552	2.015	2.051	2.147	1.715	2.295	1.988	12.74
93)	1,3,5-TRIMETHYLBENZENE											
		1.691	1.638	2.019	1.295	1.717	1.753	1.836	1.561	1.989	1.722	12.81
94)	ALPHA-METHYLSTYRENE											
		0.744	0.772	1.053	0.598	0.857	0.906	0.951	0.649	1.040	0.841	19.32
95)	TERT-BUTYLBENZENE											
		0.395	0.364	0.486		0.401	0.416	0.436	0.366	0.476	0.418	10.97
96)	1,2,4-TRIMETHYLBENZENE											
		1.730	1.708	2.221	1.475	1.785	1.867	1.996	1.651	2.188	1.847	13.44
97)	BENZYL CHLORIDE											
		0.811	0.735	2.075		1.407	1.621	1.831		2.092	1.510	37.00
98)	M-DICHLOROBENZENE											
		1.038	0.999	1.336	0.878	1.086	1.141	1.209	0.990	1.315	1.110	13.87
99)	P-DICHLOROBENZENE											
		1.063	1.017	1.379	0.922	1.091	1.165	1.230	0.925	1.404	1.133	15.67
100)	O-DICHLOROBENZENE											
		1.053	1.000	1.326	0.814	1.058	1.125	1.200	0.986	1.323	1.098	15.10
101)	SEC-BUTYLBENZENE											
		0.487	0.495	0.617		0.507	0.538	0.564	0.444	0.601	0.532	11.17
102)	1,2,3-TRIMETHYLBENZENE											
		1.708	1.658	2.136	1.455	1.746	1.845	1.955	1.662	2.121	1.810	12.53
103)	P-ISOPROPYLTOLUENE											
		0.496	0.507	0.701		0.568	0.596	0.632	0.486	0.693	0.585	14.64
104)	N-BUTYLBENZENE											
		0.503	0.444	0.682		0.548	0.577	0.611	0.450	0.680	0.562	16.59
105)	HEXACHLOROETHANE											
		0.462	0.480	0.905		0.652	0.734	0.805	0.463	0.906	0.676	28.31
106)	HEXACHLOROBUTADIENE											
		0.847	0.858	1.370	0.732	0.951	1.038	1.120	0.780	1.471	1.018	25.48
107)	1,2,4-TRICHLOROBENZENE											
		0.980	0.949	1.613		1.149	1.244	1.338	0.849	1.794	1.240	26.74
108)	NAPHTHALENE											
		2.419	2.285	4.583		2.981	3.241	3.436	2.199	5.284	3.303	33.80

(#) = Out of Range ### Number of calibration levels exceeded format ###

M2W2776.M Mon Dec 19 08:11:22 2022 GCMS2W

Initial Calibration Verification

Job Number: JD59460
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample: V2W2776-ICV2776
Lab FileID: 2W62395.D

Evaluate Continuing Calibration Report

Data Path : C:\msdchem\1\DATA\
Data File : 2w62395.D
Acq On : 15 Dec 2022 12:22 am
Operator : thomash
Sample : icv2776-10
Misc : MS64819,V2w2776,,,,,1
ALS Vial : 5 Sample Multiplier: 1

Quant Time: Dec 19 08:04:28 2022
Quant Method : C:\msdchem\1\METHODS\M2W2776.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Mon Dec 19 08:01:03 2022
Response via : Initial Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.33min
Max. RRF Dev : 30% Max. Rel. Area : 150%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
1	I	BROMOCHLOROMETHANE	1.000	1.000	0.0	101	0.00
2	T	FREON 115	0.000	0.000	0.0	0#	-1.81#
3	T	FREON 152A	0.756	0.825	-9.1	110	0.00
4	T	CHLORODIFLUOROMETHANE	0.400	0.426	-6.5	107	0.00
5	T	CHLOROTRIFLUOROETHENE	1.902	2.006	-5.5	111	0.00
6	T	DICHLORODIFLUOROMETHANE	4.971	5.196	-4.5	109	0.00
7	T	PROPYLENE	0.924	0.978	-5.8	114	0.00
8	T	1-CHLORO-1,1-DIFLUOROETHANE	3.658	3.887	-6.3	110	0.00
9	T	FREON 114	4.144	4.421	-6.7	110	0.00
10	T	CHLOROMETHANE	0.410	0.421	-2.7	108	0.00
11	T	VINYL CHLORIDE	1.494	1.547	-3.5	109	0.00
12	t	1,3-BUTADIENE	1.140	1.158	-1.6	109	0.00
13	T	N-BUTANE	2.050	2.022	1.4	106	0.00
14	T	BROMOMETHANE	1.462	1.486	-1.6	108	0.00
15	T	CHLOROETHANE	0.776	0.814	-4.9	108	0.00
16	T	DICHLOROFLUOROMETHANE	3.326	3.385	-1.8	106	0.00
17	T	ACETONITRILE	1.182	1.158	2.0	106	0.00
18	T	ACROLEIN	0.665	0.614	7.7	97	0.00
19	T	FREON 123	3.648	3.844	-5.4	112	0.00
20	T	FREON 123A	2.178	2.401	-10.2	120	0.00
21	T	TRICHLOROFLUOROMETHANE	4.750	5.006	-5.4	109	0.00
22	T	ISOPROPYL ALCOHOL	3.034	3.009	0.8	109	0.00
23	T	ACETONE	0.850	0.838	1.4	114	0.00
24	T	PENTANE	1.591	1.568	1.4	107	0.00
25	T	IODOMETHANE	4.362	4.668	-7.0	108	0.00
26	T	1,1-DICHLOROETHYLENE	1.799	1.861	-3.4	109	0.00
27	T	CARBON DISULFIDE	5.061	5.123	-1.2	100	0.00
28	T	ETHANOL	0.713	0.737	-3.4	128	0.00
29	T	BROMOETHENE	1.489	1.567	-5.2	109	0.00
30	T	ACRYLONITRILE	1.095	1.116	-1.9	106	0.00
31	T	METHYLENE CHLORIDE	1.896	1.701	10.3	106	0.00
32	T	3-CHLOROPROPENE	0.882	0.924	-4.8	109	0.00
33	T	FREON 113	2.928	2.997	-2.4	105	0.00
34	T	TRANS-1,2-DICHLOROETHENE	1.602	1.667	-4.1	109	0.00
35	T	TERTIARY BUTYL ALCOHOL	4.546	4.158	8.5	99	0.00
36	t	METHYL TERTIARY BUTYL ETHER	4.541	4.769	-5.0	110	0.00
37	T	TETRAHYDROFURAN	0.726	0.799	-10.1	110	0.00
38	T	HEXANE	2.674	2.773	-3.7	114	0.00

Initial Calibration Verification

Job Number: JD59460
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample: V2W2776-ICV2776
Lab FileID: 2W62395.D

39	T	VINYL ACETATE	0.353	0.291	17.6	103	0.00
40	T	1,1-DICHLOROETHANE	2.674	2.921	-9.2	112	0.00
41	T	METHYL ETHYL KETONE	0.767	0.836	-9.0	113	0.00
42	T	CIS-1,2-DICHLOROETHENE	1.653	1.806	-9.3	110	0.00
43	T	DIISOPROPYL ETHER	0.775	0.803	-3.6	110	0.00
44	T	ETHYL ACETATE	0.538	0.574	-6.7	111	0.00
45	T	METHYL ACRYLATE	3.143	3.376	-7.4	108	0.00
46	T	CHLOROFORM	3.580	3.814	-6.5	108	0.00
47	T	2,4-DIMETHYLPENTANE	2.979	3.195	-7.3	112	0.00
48	T	1,1,1-TRICHLOROETHANE	3.694	4.019	-8.8	109	0.00
49	T	CARBON TETRACHLORIDE	3.615	4.126	-14.1	110	0.00
50	T	1,2-DICHLOROETHANE	2.575	2.762	-7.3	111	0.00
51	t	BENZENE	5.156	5.103	1.0	110	0.00
52	I	1,4-DIFLUOROBENZENE	1.000	1.000	0.0	100	0.00
53	T	CYCLOHEXANE	0.418	0.454	-8.6	111	0.00
54	T	2,3-DIMETHYLPENTANE	0.209	0.227	-8.6	112	0.00
55	T	TRICHLOROETHENE	0.450	0.491	-9.1	110	0.00
56	T	1,2-DICHLOROPROPANE	0.347	0.381	-9.8	110	0.00
57	T	DIBROMOMETHANE	0.411	0.429	-4.4	110	0.00
58	T	ETHYL ACRYLATE	0.747	0.852	-14.1	110	0.00
59	T	BROMODICHLOROMETHANE	0.728	0.833	-14.4	110	0.00
60	T	2,2,4-TRIMETHYLPENTANE	1.582	1.728	-9.2	112	0.00
61	T	1,4-DIOXANE	0.242	0.292	-20.7	126	0.00
62	T	HEPTANE	0.550	0.592	-7.6	113	0.00
63	T	METHYL METHACRYLATE	0.355	0.386	-8.7	110	0.00
64	T	METHYL ISOBUTYL KETONE	0.345	0.377	-9.3	113	0.00
65	T	CIS-1,3-DICHLOROPROPENE	0.547	0.650	-18.8	119	0.00
66	T	TOLUENE	1.260	1.291	-2.5	111	0.00
67	T	1,3-DICHLOROPROPANE	0.592	0.641	-8.3	109	0.00
68	T	TRANS-1,3-DICHLOROPROPENE	0.502	0.576	-14.7	112	0.00
69	T	1,1,2-TRICHLOROETHANE	0.352	0.377	-7.1	110	0.00
70	T	2-HEXANONE	0.522	0.557	-6.7	115	0.00
71	T	ETHYL METHACRYLATE	0.599	0.673	-12.4	111	0.00
72	T	TETRACHLOROETHENE	0.444	0.487	-9.7	110	0.00
73	T	DIBROMOCHLOROMETHANE	0.691	0.807	-16.8	111	0.00
74	T	1,2-DIBROMOETHANE	0.662	0.734	-10.9	111	0.00
75	T	OCTANE	0.776	0.830	-7.0	112	0.00
76	I	CHLOROBENZENE-D5	1.000	1.000	0.0	101	0.00
77	T	1,1,1,2-TETRACHLOROETHANE	0.549	0.625	-13.8	112	0.00
78	T	CHLOROBENZENE	1.067	1.184	-11.0	112	0.00
79	t	ETHYLBENZENE	1.941	1.963	-1.1	111	0.00
80	t	M,P-XYLENE	1.515	1.563	-3.2	112	0.00
81	t	O-XYLENE	1.561	1.582	-1.3	113	0.00
82	T	STYRENE	1.061	1.179	-11.1	111	0.00
83	T	NONANE	0.886	0.979	-10.5	112	0.00
84	T	BROMOFORM	0.693	0.833	-20.2	112	0.00
85	T	1,1,2,2-TETRACHLOROETHANE	1.014	1.153	-13.7	111	0.00
86	T	1,2,3-TRICHLOROPROPANE	0.801	0.879	-9.7	110	0.00
87	S	4-BROMOFLUOROBENZENE	0.772	0.778	-0.8	101	0.00
88	T	ISOPROPYLBENZENE	0.540	0.595	-10.2	112	0.00
89	T	BROMOBENZENE	0.986	1.107	-12.3	110	0.00
90	T	2-CHLOROTOLUENE	0.479	0.524	-9.4	110	0.00
91	T	N-PROPYLBENZENE	0.558	0.606	-8.6	109	0.00
92	T	4-ETHYLTOLUENE	1.988	2.326	-17.0	114	0.00
93	T	1,3,5-TRIMETHYLBENZENE	1.722	1.972	-14.5	113	0.00
94	T	ALPHA-METHYLSTYRENE	0.841	0.937	-11.4	104	0.00
95	T	TERT-BUTYLBENZENE	0.418	0.454	-8.6	110	0.00
96	T	1,2,4-TRIMETHYLBENZENE	1.847	2.055	-11.3	111	0.00

Initial Calibration Verification

Job Number: JD59460
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample: V2W2776-ICV2776
Lab FileID: 2W62395.D

97	T	BENZYL CHLORIDE	1.510	1.693	-12.1	105	0.00
98	T	M-DICHLOROBENZENE	1.110	1.256	-13.2	111	0.00
99	T	P-DICHLOROBENZENE	1.133	1.271	-12.2	110	0.00
100	T	O-DICHLOROBENZENE	1.098	1.245	-13.4	112	0.00
101	T	SEC-BUTYLBENZENE	0.532	0.575	-8.1	108	0.00
102	T	1,2,3-TRIMETHYLBENZENE	1.810	2.022	-11.7	110	0.00
103	T	P-ISOPROPYLTOLUENE	0.585	0.651	-11.3	110	0.00
104	T	N-BUTYLBENZENE	0.562	0.636	-13.2	111	0.00
105	T	HEXACHLOROETHANE	0.676	0.798	-18.0	110	0.00
106	T	HEXACHLOROBUTADIENE	1.018	1.075	-5.6	104	0.00
107	T	1,2,4-TRICHLOROBENZENE	1.240	1.316	-6.1	107	0.00
108	T	NAPHTHALENE	3.303	3.318	-0.5	103	0.00

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

M2W2776.M Mon Dec 19 08:10:29 2022 GCMS2W

Continuing Calibration Summary

Job Number: JD59460
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample: V2W2809-CC2776
Lab FileID: 2W63183.D

Evaluate Continuing Calibration Report

Data Path : C:\msdchem\1\DATA\
Data File : 2w63183.D
Acq On : 1 Feb 2023 9:18 am
Operator : thomash
Sample : cc2776-10
Misc : MS66176,v2w2809,,,,,1
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Feb 02 14:40:33 2023
Quant Method : C:\msdchem\1\METHODS\M2W2776.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Mon Dec 19 08:01:03 2022
Response via : Initial Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.33min
Max. RRF Dev : 30% Max. Rel. Area : 150%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
1	I	BROMOCHLOROMETHANE	1.000	1.000	0.0	112	0.01
2	T	FREON 115	0.000	0.000	0.0	0#	-1.81#
3	T	FREON 152A	0.756	0.916	-21.2	135	0.00
4	T	CHLORODIFLUOROMETHANE	0.400	0.430	-7.5	120	0.00
5	T	CHLOROTRIFLUOROETHENE	1.902	2.006	-5.5	123	0.00
6	T	DICHLORODIFLUOROMETHANE	4.971	4.524	9.0	105	0.00
7	T	PROPYLENE	0.924	1.251	-35.4#	161#	0.00
8	T	1-CHLORO-1,1-DIFLUOROETHANE	3.658	3.203	12.4	100	0.00
9	T	FREON 114	4.144	3.893	6.1	107	0.00
10	T	CHLOROMETHANE	0.410	0.490	-19.5	140	0.00
11	T	VINYL CHLORIDE	1.494	1.664	-11.4	130	0.00
12	t	1,3-BUTADIENE	1.140	1.400	-22.8	146	0.00
13	T	N-BUTANE	2.050	2.470	-20.5	143	0.00
14	T	BROMOMETHANE	1.462	1.368	6.4	110	0.00
15	T	CHLOROETHANE	0.776	0.882	-13.7	130	0.00
16	T	DICHLOROFLUOROMETHANE	3.326	3.427	-3.0	119	0.00
17	T	ACETONITRILE	1.182	1.498	-26.7	152#	0.01
18	T	ACROLEIN	0.665	0.811	-22.0	142	0.01
19	T	FREON 123	3.648	3.525	3.4	114	0.00
20	T	FREON 123A	2.178	1.962	9.9	108	0.01
21	T	TRICHLOROFLUOROMETHANE	4.750	4.107	13.5	99	0.00
22	T	ISOPROPYL ALCOHOL	3.034	3.365	-10.9	135	0.00
23	T	ACETONE	0.850	0.911	-7.2	137	0.00
24	T	PENTANE	1.591	1.781	-11.9	135	0.01
25	T	IODOMETHANE	4.362	3.922	10.1	101	0.00
26	T	1,1-DICHLOROETHYLENE	1.799	1.560	13.3	101	0.01
27	T	CARBON DISULFIDE	5.061	4.876	3.7	106	0.01
28	T	ETHANOL	0.713	0.769	-7.9	148	0.00
29	T	BROMOETHENE	1.489	1.448	2.8	112	0.00
30	T	ACRYLONITRILE	1.095	1.329	-21.4	140	0.01
31	T	METHYLENE CHLORIDE	1.896	1.502	20.8	103	0.01
32	T	3-CHLOROPROPENE	0.882	0.770	12.7	101	0.01
33	T	FREON 113	2.928	2.473	15.5	96	0.01
34	T	TRANS-1,2-DICHLOROETHENE	1.602	1.685	-5.2	122	0.00
35	T	TERTIARY BUTYL ALCOHOL	4.546	3.747	17.6	99	0.01
36	t	METHYL TERTIARY BUTYL ETHER	4.541	4.399	3.1	113	0.00
37	T	TETRAHYDROFURAN	0.726	0.831	-14.5	127	0.01
38	T	HEXANE	2.674	3.162	-18.2	145	0.00

Continuing Calibration Summary

Job Number: JD59460
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample: V2W2809-CC2776
Lab FileID: 2W63183.D

39	T	VINYL ACETATE	0.353	0.416	-17.8	163#	0.01
40	T	1,1-DICHLOROETHANE	2.674	3.027	-13.2	129	0.00
41	T	METHYL ETHYL KETONE	0.767	0.868	-13.2	130	0.01
42	T	CIS-1,2-DICHLOROETHENE	1.653	1.745	-5.6	118	0.00
43	T	DIISOPROPYL ETHER	0.775	0.937	-20.9	142	0.00
44	T	ETHYL ACETATE	0.538	0.640	-19.0	138	0.01
45	T	METHYL ACRYLATE	3.143	3.895	-23.9	138	0.00
46	T	CHLOROFORM	3.580	3.640	-1.7	114	0.01
47	T	2,4-DIMETHYLPENTANE	2.979	3.663	-23.0	142	0.00
48	T	1,1,1-TRICHLOROETHANE	3.694	3.449	6.6	104	0.00
49	T	CARBON TETRACHLORIDE	3.615	3.568	1.3	106	0.00
50	T	1,2-DICHLOROETHANE	2.575	2.486	3.5	110	0.01
51	t	BENZENE	5.156	5.245	-1.7	125	0.00
52	I	1,4-DIFLUOROBENZENE	1.000	1.000	0.0	113	0.00
53	T	CYCLOHEXANE	0.418	0.442	-5.7	121	0.01
54	T	2,3-DIMETHYLPENTANE	0.209	0.231	-10.5	128	0.00
55	T	TRICHLOROETHENE	0.450	0.459	-2.0	116	0.01
56	T	1,2-DICHLOROPROPANE	0.347	0.405	-16.7	132	0.00
57	T	DIBROMOMETHANE	0.411	0.390	5.1	112	0.00
58	T	ETHYL ACRYLATE	0.747	0.942	-26.1	137	0.00
59	T	BROMODICHLOROMETHANE	0.728	0.776	-6.6	115	0.00
60	T	2,2,4-TRIMETHYLPENTANE	1.582	1.955	-23.6	142	0.00
61	T	1,4-DIOXANE	0.242	0.249	-2.9	121	0.01
62	T	HEPTANE	0.550	0.676	-22.9	144	0.00
63	T	METHYL METHACRYLATE	0.355	0.397	-11.8	128	0.00
64	T	METHYL ISOBUTYL KETONE	0.345	0.420	-21.7	141	0.00
65	T	CIS-1,3-DICHLOROPROPENE	0.547	0.550	-0.5	113	0.00
66	T	TOLUENE	1.260	1.249	0.9	121	0.00
67	T	1,3-DICHLOROPROPANE	0.592	0.628	-6.1	120	0.00
68	T	TRANS-1,3-DICHLOROPROPENE	0.502	0.473	5.8	103	0.00
69	T	1,1,2-TRICHLOROETHANE	0.352	0.374	-6.3	123	0.00
70	T	2-HEXANONE	0.522	0.644	-23.4	149	0.00
71	T	ETHYL METHACRYLATE	0.599	0.688	-14.9	127	0.00
72	T	TETRACHLOROETHENE	0.444	0.474	-6.8	120	0.00
73	T	DIBROMOCHLOROMETHANE	0.691	0.753	-9.0	116	0.00
74	T	1,2-DIBROMOETHANE	0.662	0.696	-5.1	119	0.00
75	T	OCTANE	0.776	0.949	-22.3	144	0.00
76	I	CHLOROBENZENE-D5	1.000	1.000	0.0	114	0.00
77	T	1,1,1,2-TETRACHLOROETHANE	0.549	0.588	-7.1	119	0.00
78	T	CHLOROBENZENE	1.067	1.117	-4.7	119	0.00
79	t	ETHYLBENZENE	1.941	1.875	3.4	119	0.00
80	t	M,P-XYLENE	1.515	1.462	3.5	118	0.00
81	t	O-XYLENE	1.561	1.474	5.6	118	0.00
82	T	STYRENE	1.061	1.166	-9.9	124	0.00
83	T	NONANE	0.886	1.119	-26.3	144	0.00
84	T	BROMOFORM	0.693	0.742	-7.1	112	0.00
85	T	1,1,2,2-TETRACHLOROETHANE	1.014	1.122	-10.7	121	0.00
86	T	1,2,3-TRICHLOROPROPANE	0.801	0.834	-4.1	118	0.00
87	S	4-BROMOFLUOROBENZENE	0.772	0.727	5.8	106	0.00
88	T	ISOPROPYLBENZENE	0.540	0.558	-3.3	118	0.00
89	T	BROMOBENZENE	0.986	1.053	-6.8	118	0.00
90	T	2-CHLOROTOLUENE	0.479	0.496	-3.5	117	0.00
91	T	N-PROPYLBENZENE	0.558	0.581	-4.1	118	0.00
92	T	4-ETHYLTOLUENE	1.988	2.224	-11.9	123	0.00
93	T	1,3,5-TRIMETHYLBENZENE	1.722	1.867	-8.4	121	0.00
94	T	ALPHA-METHYLSTYRENE	0.841	0.962	-14.4	121	0.00
95	T	TERT-BUTYLBENZENE	0.418	0.437	-4.5	120	0.00
96	T	1,2,4-TRIMETHYLBENZENE	1.847	1.980	-7.2	121	0.00

Continuing Calibration Summary

Job Number: JD59460
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample: V2W2809-CC2776
Lab FileID: 2W63183.D

97	T	BENZYL CHLORIDE	1.510	1.031	31.7#	72	0.00
98	T	M-DICHLOROBENZENE	1.110	1.249	-12.5	125	0.00
99	T	P-DICHLOROBENZENE	1.133	1.271	-12.2	124	0.00
100	T	O-DICHLOROBENZENE	1.098	1.209	-10.1	122	0.00
101	T	SEC-BUTYLBENZENE	0.532	0.559	-5.1	118	0.00
102	T	1,2,3-TRIMETHYLBENZENE	1.810	1.955	-8.0	121	0.00
103	T	P-ISOPROPYLTOLUENE	0.585	0.631	-7.9	120	0.00
104	T	N-BUTYLBENZENE	0.562	0.612	-8.9	121	0.00
105	T	HEXACHLOROETHANE	0.676	0.663	1.9	103	0.00
106	T	HEXACHLOROBUTADIENE	1.018	0.890	12.6	98	0.00
107	T	1,2,4-TRICHLOROBENZENE	1.240	1.189	4.1	109	0.00
108	T	NAPHTHALENE	3.303	3.246	1.7	114	0.00

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

M2W2776.M Thu Feb 02 14:43:52 2023 GCMS2W

Initial Calibration Summary

Job Number: JD59460
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample: V6W1125-ICC1125
Lab FileID: 6W26454.D

Response Factor Report GCMS6W

Method : C:\msdchem\1\methods\M6W1125.M (RTE Integrator)
Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
Last Update : Thu Oct 20 08:34:08 2022
Response via : Initial Calibration

Calibration Files
0.5 =6W26451.D 0.2 =6W26450.D 40 =6W26456.D 0.04=6W26448.D
5 =6W26453.D 10 =6W26454.D 20 =6W26455.D 0.1 =6W26449.D
50 =6W26457.D =

Compound	0.5	0.2	40	0.04	5	10	20	0.1	50	Avg	%RSD
1) I BROMOCHLOROMETHANE	----------ISTD----------										
2) FREON 115										0.000	-1.00
3) FREON 152A	0.934	0.912	0.873		0.829	0.811	0.827		0.832	0.860	5.52
4) CHLORODIFLUOROMETHANE	0.420	0.395	0.400		0.382	0.370	0.376		0.385	0.390	4.35
5) CHLOROTRIFLUOROETHENE	1.960	1.906	1.955		1.804	1.758	1.822	1.971	1.883	1.882	4.26
6) DICHLORODIFLUOROMETHANE	3.357	3.217	3.294	2.916	3.054	3.026	3.039	3.162	3.076	3.127	4.54
7) PROPYLENE	1.494	1.325	1.331		1.220	1.220	1.251	1.153	1.255	1.281	8.08
8) 1-CHLORO-1,1-DIFLUOROETHANE	2.949	2.871	3.044	2.840	2.746	2.692	2.822	2.804	3.010	2.864	4.10
9) FREON 114	3.364	3.288	3.533	3.395	3.023	3.026	3.171	3.313	3.492	3.289	5.61
10) CHLOROMETHANE	0.492	0.442	0.457	0.570	0.419	0.412	0.419	0.409	0.446	0.452	11.43
11) VINYL CHLORIDE	1.472	1.419	1.397	1.357	1.278	1.264	1.325	1.460	1.357	1.370	5.40
12) 1,3-BUTADIENE	1.177	1.139	1.183		1.064	1.040	1.097	1.090	1.171	1.120	4.91
13) N-BUTANE	2.520	2.468	2.396	3.758	2.228	2.149	2.225	2.657	2.326	2.525	19.38
14) BROMOMETHANE	1.098	1.082	1.127		1.025	0.985	1.028	1.033	1.098	1.059	4.59
15) CHLOROETHANE	0.694	0.708	0.693		0.640	0.623	0.647	0.564	0.679	0.656	7.24
16) DICHLOROFLUOROMETHANE	2.888	2.866	2.977	2.810	2.661	2.583	2.713	2.624	2.936	2.784	5.16
17) ACETONITRILE	1.581	1.552	1.473		1.363	1.306	1.365	1.706	1.419	1.471	9.14
18) ACROLEIN	0.519	0.487	0.699		0.628	0.616	0.634		0.677	0.608	12.87
19) FREON 123	2.752	2.686	2.847	2.562	2.453	2.413	2.571	2.663	2.818	2.640	5.79
20) FREON 123A	1.694	1.554	1.729		1.499	1.481	1.555	1.517	1.711	1.592	6.40
21) TRICHLOROFLUOROMETHANE	3.377	3.173	3.409	3.475	3.401	2.960	3.114	3.086	3.350	3.261	5.52
22) ISOPROPYL ALCOHOL	3.252	3.259	3.371	4.111	2.939	2.825	2.976	3.579	3.295	3.290	11.80
23) ACETONE											

Initial Calibration Summary

Job Number: JD59460
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample: V6W1125-ICC1125
Lab FileID: 6W26454.D

		0.935	0.918	0.730		0.596	0.629	0.662		0.713	0.740	18.27
24)	PENTANE											
		1.873	1.831	1.826		1.761	1.536	1.580	1.978	1.652	1.755	8.72
25)	IODOMETHANE											
		3.299	3.098	3.499	2.835	3.391	2.905	2.919	3.162	3.183	3.143	7.27
26)	1,1-DICHLOROETHYLENE											
		1.304	1.243	1.305		1.288	1.197	1.101	1.266	1.212	1.239	5.57
27)	CARBON DISULFIDE											
		4.087	4.029	4.165	3.889	3.954	3.777	3.604	3.841	3.999	3.927	4.36
28)	ETHANOL											
		1.005	0.967	0.721		0.635	0.625	0.661		0.702	0.759	20.89
29)	BROMOETHENE											
		1.176	1.110	1.184		1.028	1.032	1.078	1.119	1.157	1.110	5.48
30)	ACRYLONITRILE											
		1.248	1.048	1.187		1.159	1.002	1.033	1.106	1.092	1.109	7.57
31)	METHYLENE CHLORIDE											
		1.451	1.623	1.198		1.207	1.142	1.010		1.073	1.243	17.49
32)	3-CHLOROPROPENE											
		0.650	0.568	0.653		0.621	0.601	0.550		0.594	0.605	6.47
33)	FREON 113											
		2.299	2.280	2.327		2.279	2.177	1.995	2.023	2.208	2.199	5.77
34)	TRANS-1,2-DICHLOROETHENE											
		1.419	1.382	1.414		1.399	1.343	1.303	1.421	1.392	1.384	3.00
35)	TERTIARY BUTYL ALCOHOL											
		2.800	2.456	3.153		2.386	2.441	2.573	2.734	2.980	2.690	10.29
36)	METHYL TERTIARY BUTYL ETHER											
		3.528	3.479	3.735		3.283	3.303	3.463	3.025	3.743	3.445	6.97
37)	TETRAHYDROFURAN											
		0.654	0.569	0.703		0.627	0.605	0.649		0.674	0.640	6.94
38)	HEXANE											
		2.904	2.704	2.773		2.634	2.550	2.634	2.538	2.740	2.685	4.55
39)	VINYL ACETATE											
		0.250	0.366	0.376		0.297	0.314	0.344		0.375	0.332	14.23
40)	1,1-DICHLOROETHANE											
		2.791	2.661	2.731	2.633	2.658	2.540	2.555	2.497	2.685	2.639	3.58
41)	METHYL ETHYL KETONE											
		0.654	0.686	0.716		0.639	0.644	0.671		0.698	0.673	4.31
42)	CIS-1,2-DICHLOROETHENE											
		1.525	1.498	1.438		1.422	1.381	1.418	1.513	1.427	1.453	3.59
43)	DIISOPROPYL ETHER											
		0.781	0.716	0.819		0.761	0.742	0.774		0.808	0.772	4.64
44)	ETHYL ACETATE											
		0.551	0.511	0.560		0.506	0.503	0.528		0.553	0.530	4.55
45)	METHYL ACRYLATE											
		3.661	3.389	3.601	2.522	3.205	3.202	3.381	3.376	3.540	3.320	10.21
46)	CHLOROFORM											
		3.136	3.071	3.022	2.830	2.955	2.872	2.964	3.000	2.984	2.982	3.14
47)	2,4-DIMETHYLPENTANE											
		3.177	2.936	3.321	2.840	3.027	2.972	3.090	2.843	3.101	3.034	5.18
48)	1,1,1-TRICHLOROETHANE											
		2.950	2.871	3.129		2.796	2.778	2.899	2.980	3.034	2.930	4.05
49)	CARBON TETRACHLORIDE											
		3.118	3.178	3.488	2.764	3.116	3.100	3.212	2.912	3.384	3.141	6.97
50)	1,2-DICHLOROETHANE											
		2.370	2.316	2.358		2.216	2.154	2.204	2.258	2.276	2.269	3.36
51)	BENZENE											
		4.357	4.672	4.576	4.974	4.218	4.103	4.247	4.516	4.462	4.458	5.97
52)	I 1,4-DIFLUOROBENZENE	----------				ISTD						
53)	CYCLOHEXANE											

	0.383	0.356	0.372	0.357	0.359	0.368	0.349	0.374	0.365	3.08
54)	2,3-DIMETHYLPENTANE										
	0.206	0.206	0.198	0.194	0.192	0.194		0.200	0.199	2.90
55)	TRICHLOROETHENE										
	0.431	0.403	0.395	0.338	0.399	0.386	0.391	0.389	0.400	0.393	6.22
56)	1,2-DICHLOROPROPANE										
	0.390	0.353	0.359	0.361	0.353	0.357	0.346	0.364	0.361	3.68
57)	DIBROMOMETHANE										
	0.362	0.380	0.363	0.357	0.353	0.358	0.419	0.368	0.370	5.82
58)	ETHYL ACRYLATE										
	0.773	0.701	0.839	0.751	0.764	0.803	0.634	0.855	0.765	9.47
59)	BROMODICHLOROMETHANE										
	0.709	0.646	0.660	0.624	0.656	0.646	0.650	0.695	0.666	0.661	3.93
60)	2,2,4-TRIMETHYLPENTANE										
	1.778	1.654	1.684	1.494	1.682	1.645	1.671	1.576	1.705	1.654	4.86
61)	1,4-DIOXANE										
	0.172	0.140	0.186	0.165	0.171	0.181		0.193	0.173	10.04
62)	HEPTANE										
	0.692	0.634	0.666	0.702	0.668	0.647	0.660	0.655	0.675	0.667	3.17
63)	METHYL METHACRYLATE										
	0.319	0.293	0.342	0.311	0.317	0.329	0.297	0.349	0.319	6.23
64)	METHYL ISOBUTYL KETONE										
	0.240	0.206	0.312	0.282	0.287	0.305	0.211	0.319	0.270	16.72
65)	CIS-1,3-DICHLOROPROPENE										
	0.500	0.435	0.513	0.461	0.473	0.493	0.423	0.522	0.478	7.51
66)	TOLUENE										
	1.113	1.089	1.064	1.388	1.012	1.014	1.038	1.153	1.083	1.106	10.42
67)	1,3-DICHLOROPROPANE										
	0.554	0.517	0.543	0.531	0.517	0.534	0.520	0.551	0.533	2.78
68)	TRANS-1,3-DICHLOROPROPENE										
	0.413	0.353	0.474	0.400	0.419	0.453	0.369	0.487	0.421	11.38
69)	1,1,2-TRICHLOROETHANE										
	0.358	0.315	0.315	0.315	0.307	0.312	0.286	0.320	0.316	6.35
70)	2-HEXANONE										
	0.229	0.186	0.394	0.287	0.325	0.373		0.410	0.315	27.07
71)	ETHYL METHACRYLATE										
	0.422	0.365	0.547	0.481	0.498	0.529	0.365	0.562	0.471	16.70
72)	TETRACHLOROETHENE										
	0.428	0.387	0.405	0.245	0.393	0.389	0.396	0.384	0.413	0.382	13.91
73)	DIBROMOCHLOROMETHANE										
	0.725	0.661	0.725	0.547	0.688	0.683	0.702	0.673	0.736	0.682	8.31
74)	1,2-DIBROMOETHANE										
	0.607	0.561	0.593	0.566	0.561	0.580	0.555	0.604	0.579	3.57
75)	OCTANE										
	0.889	0.757	0.930	0.926	0.884	0.884	0.919	0.808	0.939	0.882	6.94
76)	I CHLOROBENZENE-D5	----------ISTD----------									
77)	1,1,1,2-TETRACHLOROETHANE										
	0.505	0.564	0.548	0.535	0.537	0.543	0.501	0.560	0.537	4.30
78)	CHLOROBENZENE										
	0.979	1.000	0.986	0.843	0.977	0.970	0.986	0.946	1.009	0.966	5.12
79)	ETHYLBENZENE										
	1.466	1.655	1.598	2.607	1.528	1.551	1.591	1.867	1.633	1.722	20.34
80)	M,P-XYLENE										
	1.113	1.192	1.228	1.772	1.195	1.200	1.228	1.384	1.259	1.286	15.25
81)	O-XYLENE										
	1.095	1.190	1.240	1.803	1.205	1.212	1.240	1.332	1.265	1.287	15.82
82)	STYRENE										
	0.747	0.732	0.967	0.789	0.888	0.925	0.959	0.750	0.986	0.860	12.22
83)	NONANE										

Initial Calibration Summary

Job Number: JD59460
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample: V6W1125-ICC1125
Lab FileID: 6W26454.D

```
          1.108 1.087 1.087 1.126 1.099 1.087 1.098 1.176 1.097   1.107    2.58
 84)  BROMOFORM
          0.664 0.670 0.736       0.693 0.702 0.728 0.660 0.759   0.702    5.22
 85)  1,1,2,2-TETRACHLOROETHANE
          0.972 0.932 0.925 0.767 0.922 0.918 0.925 0.922 0.943   0.914    6.30
 86)  1,2,3-TRICHLOROPROPANE
          0.748 0.671 0.724       0.720 0.711 0.726 0.682 0.739   0.715    3.70
 87)  4-BROMOFLUOROBENZENE
          0.684 0.686 0.710 0.685 0.698 0.708 0.716 0.684 0.714   0.698    1.98
 88)  ISOPROPYLBENZENE
          1.676 1.769 1.849 1.689 1.772 1.799 1.846 1.688 1.880   1.774    4.31
 89)  BROMOBENZENE
          0.845 0.846 0.893 0.734 0.867 0.868 0.894 0.848 0.909   0.856    5.98
 90)  2-CHLOROTOLUENE
          1.063 1.028 1.288 0.968 1.223 1.232 1.276 1.041 1.306   1.158   11.35
 91)  N-PROPYLBENZENE
          1.745 1.692 2.210 1.647 2.092 2.123 2.191 1.632 2.259   1.955   13.69
 92)  4-ETHYLTOLUENE
          1.372 1.250 1.891 1.134 1.764 1.803 1.863 1.236 1.920   1.581   20.56
 93)  1,3,5-TRIMETHYLBENZENE
          1.183 1.097 1.573 1.068 1.456 1.468 1.538 1.039 1.612   1.337   17.65
 94)  ALPHA-METHYLSTYRENE
          0.546 0.529 0.791       0.720 0.733 0.773 0.463 0.806   0.670   20.20
 95)  TERT-BUTYLBENZENE
          1.326 1.218 1.766 1.190 1.642 1.657 1.729 1.180 1.798   1.501   17.69
 96)  1,2,4-TRIMETHYLBENZENE
          1.221 1.118 1.643 1.023 1.538 1.539 1.601 1.074 1.675   1.381   19.32
 97)  BENZYL CHLORIDE
          0.662 0.534 1.156       0.764 0.860 1.027 0.454 1.240   0.837   34.25
 98)  M-DICHLOROBENZENE
          0.951 0.913 1.079 0.694 1.003 1.013 1.058 0.828 1.107   0.961   13.77
 99)  P-DICHLOROBENZENE
          0.940 0.876 1.096 0.737 0.997 1.010 1.058 0.781 1.137   0.959   14.39
100)  O-DICHLOROBENZENE
          0.943 0.886 1.057 0.733 0.976 0.971 1.025 0.763 1.103   0.940   13.41
101)  SEC-BUTYLBENZENE
          1.899 1.766 2.378 1.415 2.244 2.262 2.355 1.644 2.450   2.046   18.24
102)  1,2,3-TRIMETHYLBENZENE
          1.255 1.124 1.596 0.979 1.476 1.499 1.567 1.046 1.635   1.353   18.78
103)  P-ISOPROPYLTOLUENE
          1.632 1.456 2.104 1.114 1.929 1.967 2.048 1.364 2.171   1.754   21.37
104)  N-BUTYLBENZENE
          1.339 1.192 1.986 0.884 1.770 1.804 1.924 1.073 2.056   1.559   28.16
105)  HEXACHLOROETHANE
          0.578 0.566 0.715 0.612 0.611 0.625 0.680 0.605 0.741   0.637    9.59
106)  HEXACHLOROBUTADIENE
          0.626 0.623 0.832       0.650 0.681 0.742 0.502 0.914   0.696   18.67
107)  1,2,4-TRICHLOROBENZENE
          0.561 0.435 1.013       0.691 0.790 0.903       1.070   0.781   29.98
108)  NAPHTHALENE
          1.190 0.816 2.659       1.672 1.979 2.331       2.829   1.925   38.86
 ----------------------------------------------------------------------------
 (#) = Out of Range  ###  Number of calibration levels exceeded format  ###

          M6W1125.M         Thu Oct 20 09:52:34 2022
```

Initial Calibration Verification

Job Number: JD59460
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample: V6W1125-ICV1125
Lab FileID: 6W26462.D

Evaluate Continuing Calibration Report

Data File : C:\msdchem\1\data\6W26462.D Vial: 5
Acq On : 20 Oct 2022 9:08 am Operator: thomash
Sample : icv1125-10 Inst : GCMS6W
Misc : MS63121,V6W1125,,,,,1 Multiplr: 1.00
MS Integration Params: rteint.p

Method : C:\msdchem\1\methods\M6W1125.M (RTE Integrator)
Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
Last Update : Thu Oct 20 08:34:08 2022
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 60% Max. R.T. Dev 0.33min
Max. RRF Dev : 30% Max. Rel. Area : 140%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)	R.T.
1	I	BROMOCHLOROMETHANE	1.000	1.000	0.0	94	0.00	3.34
2	T	FREON 115		----------NA----------				
3	T	FREON 152A	0.860	0.892	-3.7	104	0.00	1.69
4	T	CHLORODIFLUOROMETHANE	0.390	0.396	-1.5	101	0.00	1.71
5	T	CHLOROTRIFLUOROETHENE	1.882	1.926	-2.3	103	0.00	1.72
6	T	DICHLORODIFLUOROMETHANE	3.127	3.309	-5.8	103	0.00	1.73
7	T	PROPYLENE	1.281	1.312	-2.4	102	0.00	1.71
8	T	1-CHLORO-1,1-DIFLUOROETHA	2.864	2.939	-2.6	103	0.00	1.77
9	T	FREON 114	3.289	3.334	-1.4	104	0.00	1.80
10	T	CHLOROMETHANE	0.452	0.457	-1.1	105	0.00	1.77
11	T	VINYL CHLORIDE	1.370	1.380	-0.7	103	0.00	1.83
12	t	1,3-BUTADIENE	1.120	1.166	-4.1	106	0.00	1.87
13	T	N-BUTANE	2.525	2.357	6.7	104	0.00	1.88
14	T	BROMOMETHANE	1.059	1.098	-3.7	105	0.00	1.93
15	T	CHLOROETHANE	0.656	0.691	-5.3	105	0.00	1.98
16	T	DICHLOROFLUOROMETHANE	2.784	2.839	-2.0	104	0.00	2.00
17	T	ACETONITRILE	1.471	1.418	3.6	103	0.00	2.06
18	T	ACROLEIN	0.608	0.618	-1.6	95	0.00	2.10
19	T	FREON 123	2.640	2.774	-5.1	109	0.00	2.11
20	T	FREON 123A	1.592	1.816	-14.1	116	0.00	2.13
21	T	TRICHLOROFLUOROMETHANE	3.261	3.314	-1.6	106	0.00	2.19
22	T	ISOPROPYL ALCOHOL	3.290	3.087	6.2	103	0.00	2.21
23	T	ACETONE	0.740	0.737	0.4	111	0.00	2.14
24	T	PENTANE	1.755	1.688	3.8	104	0.00	2.30
25	T	IODOMETHANE	3.143	3.058	2.7	99	0.00	2.35
26	T	1,1-DICHLOROETHYLENE	1.239	1.162	6.2	92	0.00	2.38
27	T	CARBON DISULFIDE	3.927	3.333	15.1	83	0.00	2.52
28	T	ETHANOL	0.759	0.817	-7.6	123	0.00	2.01
29	T	BROMOETHENE	1.110	1.144	-3.1	105	0.00	2.07
30	T	ACRYLONITRILE	1.109	1.095	1.3	103	0.00	2.27
31	T	METHYLENE CHLORIDE	1.243	1.030	17.1	85	0.00	2.42
32	T	3-CHLOROPROPENE	0.605	0.559	7.6	88	0.00	2.46
33	T	FREON 113	2.199	1.934	12.1	84	0.00	2.52
34	T	TRANS-1,2-DICHLOROETHENE	1.384	1.318	4.8	93	0.00	2.77
35	T	TERTIARY BUTYL ALCOHOL	2.690	2.435	9.5	94	0.00	2.40
36	t	METHYL TERTIARY BUTYL ETH	3.445	3.498	-1.5	100	0.00	2.89
37	T	TETRAHYDROFURAN	0.640	0.635	0.8	99	0.00	3.65
38	T	HEXANE	2.685	2.704	-0.7	100	0.00	3.39
39	T	VINYL ACETATE	0.332	0.332	0.0	100	0.00	2.93
40	T	1,1-DICHLOROETHANE	2.639	2.663	-0.9	99	0.00	2.85
41	T	METHYL ETHYL KETONE	0.673	0.670	0.4	98	0.00	3.04
42	T	CIS-1,2-DICHLOROETHENE	1.453	1.379	5.1	94	0.00	3.25

Initial Calibration Verification

Job Number: JD59460
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample: V6W1125-ICV1125
Lab FileID: 6W26462.D

43	T	DIISOPROPYL ETHER	0.772	0.762	1.3	97	0.00	3.40
44	T	ETHYL ACETATE	0.530	0.536	-1.1	101	0.00	3.40
45	T	METHYL ACRYLATE	3.320	3.384	-1.9	100	0.00	3.39
46	T	CHLOROFORM	2.982	2.822	5.4	93	0.00	3.42
47	T	2,4-DIMETHYLPENTANE	3.034	3.133	-3.3	100	0.00	3.95
48	T	1,1,1-TRICHLOROETHANE	2.930	2.812	4.0	96	0.00	4.04
49	T	CARBON TETRACHLORIDE	3.141	3.003	4.4	91	0.00	4.50
50	T	1,2-DICHLOROETHANE	2.269	2.259	0.4	99	0.00	3.87
51	t	BENZENE	4.458	4.101	8.0	94	0.00	4.38
52	I	1,4-DIFLUOROBENZENE	1.000	1.000	0.0	94	0.00	4.73
53	T	CYCLOHEXANE	0.365	0.359	1.6	94	0.00	4.60
54	T	2,3-DIMETHYLPENTANE	0.199	0.194	2.5	95	-0.01	4.87
55	T	TRICHLOROETHENE	0.393	0.371	5.6	90	0.00	5.34
56	T	1,2-DICHLOROPROPANE	0.361	0.356	1.4	95	0.00	5.10
57	T	DIBROMOMETHANE	0.370	0.332	10.3	89	0.00	5.05
58	T	ETHYL ACRYLATE	0.765	0.817	-6.8	101	0.00	5.23
59	T	BROMODICHLOROMETHANE	0.661	0.635	3.9	93	0.00	5.29
60	T	2,2,4-TRIMETHYLPENTANE	1.654	1.719	-3.9	99	0.00	5.44
61	T	1,4-DIOXANE	0.173	0.184	-6.4	101	0.00	5.37
62	T	HEPTANE	0.667	0.686	-2.8	100	-0.01	5.78
63	T	METHYL METHACRYLATE	0.319	0.314	1.6	94	0.00	5.68
64	T	METHYL ISOBUTYL KETONE	0.270	0.307	-13.7	101	0.02	6.47
65	T	CIS-1,3-DICHLOROPROPENE	0.478	0.519	-8.6	104	0.00	6.34
66	T	TOLUENE	1.106	1.062	4.0	99	0.00	7.61
67	T	1,3-DICHLOROPROPANE	0.533	0.542	-1.7	99	0.00	7.68
68	T	TRANS-1,3-DICHLOROPROPENE	0.421	0.441	-4.8	99	0.00	7.06
69	T	1,1,2-TRICHLOROETHANE	0.316	0.316	0.0	97	0.00	7.23
70	T	2-HEXANONE	0.315	0.391	-24.1	113	0.02	8.22
71	T	ETHYL METHACRYLATE	0.471	0.518	-10.0	98	0.00	8.35
72	T	TETRACHLOROETHENE	0.382	0.404	-5.8	98	0.00	9.41
73	T	DIBROMOCHLOROMETHANE	0.682	0.699	-2.5	96	0.00	8.18
74	T	1,2-DIBROMOETHANE	0.579	0.584	-0.9	98	0.00	8.53
75	T	OCTANE	0.882	0.941	-6.7	100	0.00	9.55
76	I	CHLOROBENZENE-D5	1.000	1.000	0.0	104	0.00	10.58
77	T	1,1,1,2-TETRACHLOROETHANE	0.537	0.496	7.6	96	0.00	10.68
78	T	CHLOROBENZENE	0.966	0.923	4.5	99	0.00	10.66
79	t	ETHYLBENZENE	1.722	1.446	16.0	97	0.00	11.56
80	t	M,P-XYLENE	1.286	1.118	13.1	97	0.00	12.00
81	t	O-XYLENE	1.287	1.139	11.5	97	0.00	12.96
82	T	STYRENE	0.860	0.815	5.2	91	0.00	12.74
83	T	NONANE	1.107	1.028	7.1	98	0.00	14.08
84	T	BROMOFORM	0.702	0.656	6.6	97	0.00	11.82
85	T	1,1,2,2-TETRACHLOROETHANE	0.914	0.857	6.2	97	0.00	12.98
86	T	1,2,3-TRICHLOROPROPANE	0.715	0.651	9.0	95	0.00	13.26
87	S	4-BROMOFLUOROBENZENE	0.698	0.707	-1.3	104	0.00	14.02
88	T	ISOPROPYLBENZENE	1.774	1.636	7.8	94	0.00	14.50
89	T	BROMOBENZENE	0.856	0.796	7.0	95	0.00	14.37
90	T	2-CHLOROTOLUENE	1.158	1.097	5.3	92	0.00	15.52
91	T	N-PROPYLBENZENE	1.955	1.917	1.9	94	0.00	15.86
92	T	4-ETHYLTOLUENE	1.581	1.624	-2.7	93	0.00	16.20
93	T	1,3,5-TRIMETHYLBENZENE	1.337	1.317	1.5	93	0.00	16.35
94	T	ALPHA-METHYLSTYRENE	0.670	0.574	14.3	81	0.00	16.54
95	T	TERT-BUTYLBENZENE	1.501	1.461	2.7	91	0.00	16.80
96	T	1,2,4-TRIMETHYLBENZENE	1.381	1.345	2.6	91	0.00	16.80
97	T	BENZYL CHLORIDE	0.837	0.777	7.2	94	0.00	16.89
98	T	M-DICHLOROBENZENE	0.961	0.891	7.3	91	0.00	16.86
99	T	P-DICHLOROBENZENE	0.959	0.899	6.3	92	0.00	16.95
100	T	O-DICHLOROBENZENE	0.940	0.850	9.6	91	0.00	17.23

Initial Calibration Verification

Job Number: JD59460
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample: V6W1125-ICV1125
Lab FileID: 6W26462.D

101	T	SEC-BUTYLBENZENE	2.046	1.980	3.2	91	0.00	17.07
102	T	1,2,3-TRIMETHYLBENZENE	1.353	1.283	5.2	89	0.00	17.18
103	T	P-ISOPROPYLTOLUENE	1.754	1.646	6.2	87	0.00	17.25
104	T	N-BUTYLBENZENE	1.559	1.552	0.4	89	0.00	17.59
105	T	HEXACHLOROETHANE	0.637	0.494	22.4	82	0.00	17.77
106	T	HEXACHLOROBUTADIENE	0.696	0.507	27.2	77	0.02	18.80
107	T	1,2,4-TRICHLOROBENZENE	0.781	0.630	19.3	83	0.02	18.50
108	T	NAPHTHALENE	1.925	1.665	13.5	87	0.02	18.55

(#) = Out of Range SPCC's out = 0 CCC's out = 0
6W26454.D M6W1125.M Thu Oct 20 09:53:29 2022

Continuing Calibration Summary

Job Number: JD59460
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample: V6W1142-CC1125
Lab FileID: 6W26990.D

Evaluate Continuing Calibration Report

Data File : C:\msdchem\1\data\6W26990.D Vial: 2
Acq On : 8 Nov 2022 1:46 pm Operator: thomash
Sample : cc1125-10 Inst : GCMS6W
Misc : MS63597,V6W1142,,,,,1 Multiplr: 1.00
MS Integration Params: rteint.p

Method : C:\msdchem\1\methods\M6W1125.M (RTE Integrator)
Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
Last Update : Thu Oct 20 08:34:08 2022
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 60% Max. R.T. Dev 0.33min
Max. RRF Dev : 30% Max. Rel. Area : 140%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)	R.T.
1	I	BROMOCHLOROMETHANE	1.000	1.000	0.0	84	0.00	3.34
2	T	FREON 115	0.000	0.232	0.0	0#	0.00	1.67
3	T	FREON 152A	0.860	0.877	-2.0	91	0.00	1.69
4	T	CHLORODIFLUOROMETHANE	0.390	0.399	-2.3	91	0.00	1.71
5	T	CHLOROTRIFLUOROETHENE	1.882	1.771	5.9	85	0.00	1.72
6	T	DICHLORODIFLUOROMETHANE	3.127	4.788	-53.1#	134	0.00	1.73
7	T	PROPYLENE	1.281	1.374	-7.3	95	0.00	1.71
8	T	1-CHLORO-1,1-DIFLUOROETHA	2.864	3.749	-30.9#	118	0.00	1.77
9	T	FREON 114	3.289	4.290	-30.4#	120	0.00	1.80
10	T	CHLOROMETHANE	0.452	0.634	-40.3#	130	0.00	1.77
11	T	VINYL CHLORIDE	1.370	1.977	-44.3#	132	0.00	1.83
12	t	1,3-BUTADIENE	1.120	1.667	-48.8#	135	0.00	1.87
13	T	N-BUTANE	2.525	3.501	-38.7#	138	0.00	1.88
14	T	BROMOMETHANE	1.059	1.444	-36.4#	124	0.00	1.93
15	T	CHLOROETHANE	0.656	0.975	-48.6#	132	0.00	1.98
16	T	DICHLOROFLUOROMETHANE	2.784	3.890	-39.7#	127	0.00	2.00
17	T	ACETONITRILE	1.471	2.239	-52.2#	145#	0.00	2.06
18	T	ACROLEIN	0.608	0.911	-49.8#	125	0.00	2.10
19	T	FREON 123	2.640	3.641	-37.9#	127	0.00	2.12
20	T	FREON 123A	1.592	1.908	-19.8	109	0.00	2.13
21	T	TRICHLOROFLUOROMETHANE	3.261	3.942	-20.9	113	0.00	2.19
22	T	ISOPROPYL ALCOHOL	3.290	4.582	-39.3#	137	0.00	2.21
23	T	ACETONE	0.740	1.116	-50.8#	150#	0.00	2.14
24	T	PENTANE	1.755	2.496	-42.2#	137	0.00	2.30
25	T	IODOMETHANE	3.143	3.667	-16.7	107	0.00	2.35
26	T	1,1-DICHLOROETHYLENE	1.239	1.523	-22.9	108	0.00	2.38
27	T	CARBON DISULFIDE	3.927	4.943	-25.9	111	0.00	2.52
28	T	ETHANOL	0.759	1.089	-43.5#	147#	0.00	2.01
29	T	BROMOETHENE	1.110	1.382	-24.5	113	0.00	2.07
30	T	ACRYLONITRILE	1.109	1.569	-41.5#	132	0.00	2.27
31	T	METHYLENE CHLORIDE	1.243	1.470	-18.3	109	0.00	2.42
32	T	3-CHLOROPROPENE	0.605	0.788	-30.2#	111	0.00	2.46
33	T	FREON 113	2.199	2.422	-10.1	94	0.00	2.52
34	T	TRANS-1,2-DICHLOROETHENE	1.384	1.629	-17.7	102	0.00	2.77
35	T	TERTIARY BUTYL ALCOHOL	2.690	3.045	-13.2	105	0.00	2.40
36	t	METHYL TERTIARY BUTYL ETH	3.445	3.362	2.4	86	0.00	2.89
37	T	TETRAHYDROFURAN	0.640	0.833	-30.2#	116	0.00	3.65
38	T	HEXANE	2.685	3.460	-28.9	115	0.00	3.39
39	T	VINYL ACETATE	0.332	0.413	-24.4	111	0.00	2.93
40	T	1,1-DICHLOROETHANE	2.639	3.355	-27.1	112	0.00	2.85
41	T	METHYL ETHYL KETONE	0.673	0.860	-27.8	113	0.00	3.04
42	T	CIS-1,2-DICHLOROETHENE	1.453	1.645	-13.2	101	0.00	3.25

Continuing Calibration Summary

Job Number: JD59460
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample: V6W1142-CC1125
Lab FileID: 6W26990.D

43	T	DIISOPROPYL ETHER	0.772	0.917	-18.8	104	0.00	3.40
44	T	ETHYL ACETATE	0.530	0.702	-32.5#	118	0.00	3.41
45	T	METHYL ACRYLATE	3.320	4.522	-36.2#	119	0.00	3.39
46	T	CHLOROFORM	2.982	3.587	-20.3	106	0.00	3.42
47	T	2,4-DIMETHYLPENTANE	3.034	3.989	-31.5#	113	0.00	3.95
48	T	1,1,1-TRICHLOROETHANE	2.930	3.287	-12.2	100	0.00	4.04
49	T	CARBON TETRACHLORIDE	3.141	3.334	-6.1	91	0.00	4.50
50	T	1,2-DICHLOROETHANE	2.269	2.777	-22.4	109	0.00	3.87
51	t	BENZENE	4.458	5.134	-15.2	106	0.00	4.38
52	I	1,4-DIFLUOROBENZENE	1.000	1.000	0.0	86	0.00	4.73
53	T	CYCLOHEXANE	0.365	0.433	-18.6	104	0.00	4.60
54	T	2,3-DIMETHYLPENTANE	0.199	0.233	-17.1	105	-0.01	4.87
55	T	TRICHLOROETHENE	0.393	0.445	-13.2	99	0.00	5.34
56	T	1,2-DICHLOROPROPANE	0.361	0.453	-25.5	111	0.00	5.10
57	T	DIBROMOMETHANE	0.370	0.383	-3.5	94	0.00	5.05
58	T	ETHYL ACRYLATE	0.765	1.089	-42.4#	123	0.00	5.23
59	T	BROMODICHLOROMETHANE	0.661	0.766	-15.9	102	0.00	5.29
60	T	2,2,4-TRIMETHYLPENTANE	1.654	2.190	-32.4#	115	0.00	5.44
61	T	1,4-DIOXANE	0.173	0.239	-38.2#	121	0.00	5.37
62	T	HEPTANE	0.667	0.697	-4.5	93	-0.01	5.78
63	T	METHYL METHACRYLATE	0.319	0.341	-6.9	93	0.00	5.68
64	T	METHYL ISOBUTYL KETONE	0.270	0.337	-24.8	101	0.02	6.47
65	T	CIS-1,3-DICHLOROPROPENE	0.478	0.490	-2.5	89	0.00	6.34
66	T	TOLUENE	1.106	1.009	8.8	86	0.00	7.61
67	T	1,3-DICHLOROPROPANE	0.533	0.552	-3.6	92	0.00	7.68
68	T	TRANS-1,3-DICHLOROPROPENE	0.421	0.434	-3.1	89	0.00	7.06
69	T	1,1,2-TRICHLOROETHANE	0.316	0.326	-3.2	92	0.00	7.23
70	T	2-HEXANONE	0.315	0.438	-39.0#	116	0.01	8.22
71	T	ETHYL METHACRYLATE	0.471	0.560	-18.9	97	0.00	8.35
72	T	TETRACHLOROETHENE	0.382	0.375	1.8	83	0.00	9.41
73	T	DIBROMOCHLOROMETHANE	0.682	0.626	8.2	79	0.00	8.18
74	T	1,2-DIBROMOETHANE	0.579	0.551	4.8	85	0.00	8.53
75	T	OCTANE	0.882	0.956	-8.4	93	0.00	9.55
76	I	CHLOROBENZENE-D5	1.000	1.000	0.0	75	0.00	10.58
77	T	1,1,1,2-TETRACHLOROETHANE	0.537	0.565	-5.2	79	0.00	10.67
78	T	CHLOROBENZENE	0.966	1.061	-9.8	82	-0.01	10.66
79	t	ETHYLBENZENE	1.722	1.814	-5.3	87	0.00	11.56
80	t	M,P-XYLENE	1.286	1.391	-8.2	87	0.00	12.00
81	t	O-XYLENE	1.287	1.424	-10.6	88	0.00	12.95
82	T	STYRENE	0.860	1.007	-17.1	81	0.00	12.74
83	T	NONANE	1.107	1.368	-23.6	94	0.00	14.08
84	T	BROMOFORM	0.702	0.778	-10.8	83	0.00	11.83
85	T	1,1,2,2-TETRACHLOROETHANE	0.914	1.161	-27.0	95	0.00	12.98
86	T	1,2,3-TRICHLOROPROPANE	0.715	0.875	-22.4	92	0.00	13.27
87	S	4-BROMOFLUOROBENZENE	0.698	0.769	-10.2	81	0.00	14.02
88	T	ISOPROPYLBENZENE	1.774	1.994	-12.4	83	0.00	14.50
89	T	BROMOBENZENE	0.856	1.043	-21.8	90	0.00	14.37
90	T	2-CHLOROTOLUENE	1.158	1.444	-24.7	88	0.00	15.51
91	T	N-PROPYLBENZENE	1.955	2.520	-28.9	89	0.00	15.86
92	T	4-ETHYLTOLUENE	1.581	2.001	-26.6	83	0.00	16.20
93	T	1,3,5-TRIMETHYLBENZENE	1.337	1.648	-23.3	84	0.00	16.35
94	T	ALPHA-METHYLSTYRENE	0.670	0.811	-21.0	83	0.00	16.54
95	T	TERT-BUTYLBENZENE	1.501	1.805	-20.3	81	0.00	16.80
96	T	1,2,4-TRIMETHYLBENZENE	1.381	1.760	-27.4	85	0.00	16.80
97	T	BENZYL CHLORIDE	0.837	1.090	-30.2#	95	0.00	16.89
98	T	M-DICHLOROBENZENE	0.961	1.153	-20.0	85	0.00	16.86
99	T	P-DICHLOROBENZENE	0.959	1.148	-19.7	85	0.00	16.95
100	T	O-DICHLOROBENZENE	0.940	1.122	-19.4	86	0.00	17.24

Continuing Calibration Summary

Job Number: JD59460
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample: V6W1142-CC1125
Lab FileID: 6W26990.D

101	T	SEC-BUTYLBENZENE	2.046	2.615	-27.8	86	0.00	17.07
102	T	1,2,3-TRIMETHYLBENZENE	1.353	1.725	-27.5	86	0.00	17.18
103	T	P-ISOPROPYLTOLUENE	1.754	2.218	-26.5	84	0.00	17.25
104	T	N-BUTYLBENZENE	1.559	2.311	-48.2#	96	0.00	17.59
105	T	HEXACHLOROETHANE	0.637	0.734	-15.2	88	0.01	17.77
106	T	HEXACHLOROBUTADIENE	0.696	0.953	-36.9#	105	0.03	18.81
107	T	1,2,4-TRICHLOROBENZENE	0.781	1.086	-39.1#	103	0.02	18.50
108	T	NAPHTHALENE	1.925	2.809	-45.9#	106	0.02	18.55

(#) = Out of Range SPCC's out = 0 CCC's out = 0
6W26454.D M6W1125.M Tue Nov 15 16:22:40 2022

Continuing Calibration Summary

Job Number: JD59460
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample: V6W1146-CC1125
Lab FileID: 6W27093.D

Evaluate Continuing Calibration Report

Data File : C:\msdchem\1\data\6W27093.D Vial: 2
Acq On : 22 Nov 2022 9:12 am Operator: thomash
Sample : cc1125-10 Inst : GCMS6W
Misc : MS63734,V6W1146,,,,,1 Multiplr: 1.00
MS Integration Params: rteint.p

Method : C:\msdchem\1\methods\M6W1125.M (RTE Integrator)
Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
Last Update : Thu Oct 20 08:34:08 2022
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 60% Max. R.T. Dev 0.33min
Max. RRF Dev : 30% Max. Rel. Area : 140%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)	R.T.
1	I	BROMOCHLOROMETHANE	1.000	1.000	0.0	113	0.00	3.34
2	T	FREON 115		----------NA----------				
3	T	FREON 152A	0.860	0.782	9.1	109	0.00	1.70
4	T	CHLORODIFLUOROMETHANE	0.390	0.348	10.8	107	0.00	1.71
5	T	CHLOROTRIFLUOROETHENE	1.882	1.733	7.9	112	0.00	1.72
6	T	DICHLORODIFLUOROMETHANE	3.127	3.144	-0.5	118	0.07	1.80
7	T	PROPYLENE	1.281	1.210	5.5	112	0.00	1.71
8	T	1-CHLORO-1,1-DIFLUOROETHA	2.864	2.809	1.9	118	0.00	1.77
9	T	FREON 114	3.289	3.392	-3.1	127	0.00	1.80
10	T	CHLOROMETHANE	0.452	0.466	-3.1	128	0.00	1.77
11	T	VINYL CHLORIDE	1.370	1.471	-7.4	132	0.00	1.83
12	t	1,3-BUTADIENE	1.120	1.266	-13.0	138	0.00	1.87
13	T	N-BUTANE	2.525	2.602	-3.0	137	0.00	1.88
14	T	BROMOMETHANE	1.059	1.227	-15.9	141#	0.00	1.94
15	T	CHLOROETHANE	0.656	0.752	-14.6	137	0.00	1.98
16	T	DICHLOROFLUOROMETHANE	2.784	2.978	-7.0	131	0.00	2.00
17	T	ACETONITRILE	1.471	1.711	-16.3	149#	0.00	2.07
18	T	ACROLEIN	0.608	0.792	-30.3#	146#	0.00	2.10
19	T	FREON 123	2.640	3.044	-15.3	143#	0.00	2.12
20	T	FREON 123A	1.592	1.710	-7.4	131	0.00	2.13
21	T	TRICHLOROFLUOROMETHANE	3.261	3.310	-1.5	127	0.00	2.19
22	T	ISOPROPYL ALCOHOL	3.290	3.390	-3.0	136	0.00	2.21
23	T	ACETONE	0.740	0.810	-9.5	146#	0.00	2.14
24	T	PENTANE	1.755	1.917	-9.2	142#	0.00	2.30
25	T	IODOMETHANE	3.143	3.454	-9.9	135	0.00	2.36
26	T	1,1-DICHLOROETHYLENE	1.239	1.318	-6.4	125	0.00	2.38
27	T	CARBON DISULFIDE	3.927	4.029	-2.6	121	0.00	2.52
28	T	ETHANOL	0.759	0.824	-8.6	150#	0.00	2.01
29	T	BROMOETHENE	1.110	1.233	-11.1	136	0.00	2.07
30	T	ACRYLONITRILE	1.109	1.253	-13.0	142#	0.00	2.27
31	T	METHYLENE CHLORIDE	1.243	1.247	-0.3	124	0.00	2.42
32	T	3-CHLOROPROPENE	0.605	0.620	-2.5	117	0.00	2.46
33	T	FREON 113	2.199	2.220	-1.0	116	0.00	2.52
34	T	TRANS-1,2-DICHLOROETHENE	1.384	1.434	-3.6	121	0.00	2.77
35	T	TERTIARY BUTYL ALCOHOL	2.690	2.445	9.1	114	0.00	2.40
36	t	METHYL TERTIARY BUTYL ETH	3.445	2.747	20.3	94	0.00	2.89
37	T	TETRAHYDROFURAN	0.640	0.686	-7.2	129	0.00	3.65
38	T	HEXANE	2.685	2.718	-1.2	121	0.00	3.39
39	T	VINYL ACETATE	0.332	0.361	-8.7	131	0.00	2.93
40	T	1,1-DICHLOROETHANE	2.639	2.634	0.2	118	0.00	2.85
41	T	METHYL ETHYL KETONE	0.673	0.709	-5.3	125	0.00	3.04
42	T	CIS-1,2-DICHLOROETHENE	1.453	1.460	-0.5	120	0.00	3.25

Continuing Calibration Summary

Job Number: JD59460
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample: V6W1146-CC1125
Lab FileID: 6W27093.D

43	T	DIISOPROPYL ETHER	0.772	0.749	3.0	114	0.00	3.40
44	T	ETHYL ACETATE	0.530	0.573	-8.1	129	0.00	3.41
45	T	METHYL ACRYLATE	3.320	3.625	-9.2	128	0.00	3.39
46	T	CHLOROFORM	2.982	2.937	1.5	116	0.00	3.42
47	T	2,4-DIMETHYLPENTANE	3.034	3.214	-5.9	123	0.00	3.96
48	T	1,1,1-TRICHLOROETHANE	2.930	2.731	6.8	112	0.00	4.05
49	T	CARBON TETRACHLORIDE	3.141	2.899	7.7	106	0.00	4.50
50	T	1,2-DICHLOROETHANE	2.269	2.078	8.4	109	0.00	3.87
51	t	BENZENE	4.458	4.271	4.2	118	0.00	4.38
52	I	1,4-DIFLUOROBENZENE	1.000	1.000	0.0	116	0.00	4.73
53	T	CYCLOHEXANE	0.365	0.365	0.0	118	0.00	4.60
54	T	2,3-DIMETHYLPENTANE	0.199	0.190	4.5	114	0.00	4.88
55	T	TRICHLOROETHENE	0.393	0.379	3.6	114	0.00	5.35
56	T	1,2-DICHLOROPROPANE	0.361	0.362	-0.3	119	0.00	5.10
57	T	DIBROMOMETHANE	0.370	0.354	4.3	116	0.00	5.06
58	T	ETHYL ACRYLATE	0.765	0.825	-7.8	125	0.00	5.24
59	T	BROMODICHLOROMETHANE	0.661	0.628	5.0	112	0.00	5.30
60	T	2,2,4-TRIMETHYLPENTANE	1.654	1.597	3.4	112	0.00	5.44
61	T	1,4-DIOXANE	0.173	0.216	-24.9	146#	0.01	5.38
62	T	HEPTANE	0.667	0.638	4.3	114	0.00	5.78
63	T	METHYL METHACRYLATE	0.319	0.325	-1.9	119	0.00	5.69
64	T	METHYL ISOBUTYL KETONE	0.270	0.321	-18.9	130	0.02	6.47
65	T	CIS-1,3-DICHLOROPROPENE	0.478	0.445	6.9	109	0.00	6.35
66	T	TOLUENE	1.106	0.991	10.4	113	0.00	7.61
67	T	1,3-DICHLOROPROPANE	0.533	0.508	4.7	114	0.00	7.68
68	T	TRANS-1,3-DICHLOROPROPENE	0.421	0.394	6.4	109	0.00	7.07
69	T	1,1,2-TRICHLOROETHANE	0.316	0.315	0.3	119	0.00	7.24
70	T	2-HEXANONE	0.315	0.434	-37.8#	154#	0.02	8.22
71	T	ETHYL METHACRYLATE	0.471	0.534	-13.4	124	0.01	8.36
72	T	TETRACHLOROETHENE	0.382	0.384	-0.5	114	0.00	9.41
73	T	DIBROMOCHLOROMETHANE	0.682	0.656	3.8	111	0.00	8.18
74	T	1,2-DIBROMOETHANE	0.579	0.573	1.0	118	0.00	8.54
75	T	OCTANE	0.882	0.876	0.7	115	0.00	9.56
76	I	CHLOROBENZENE-D5	1.000	1.000	0.0	112	0.00	10.58
77	T	1,1,1,2-TETRACHLOROETHANE	0.537	0.523	2.6	109	0.00	10.68
78	T	CHLOROBENZENE	0.966	0.977	-1.1	113	0.00	10.66
79	t	ETHYLBENZENE	1.722	1.581	8.2	114	0.00	11.57
80	t	M,P-XYLENE	1.286	1.215	5.5	113	0.00	12.01
81	t	O-XYLENE	1.287	1.245	3.3	115	0.00	12.96
82	T	STYRENE	0.860	0.963	-12.0	116	0.00	12.75
83	T	NONANE	1.107	1.108	-0.1	114	0.00	14.09
84	T	BROMOFORM	0.702	0.755	-7.5	120	0.00	11.83
85	T	1,1,2,2-TETRACHLOROETHANE	0.914	1.003	-9.7	122	0.00	12.98
86	T	1,2,3-TRICHLOROPROPANE	0.715	0.728	-1.8	114	0.00	13.27
87	S	4-BROMOFLUOROBENZENE	0.698	0.724	-3.7	114	0.00	14.02
88	T	ISOPROPYLBENZENE	1.774	1.805	-1.7	112	0.00	14.50
89	T	BROMOBENZENE	0.856	0.902	-5.4	116	0.00	14.38
90	T	2-CHLOROTOLUENE	1.158	1.285	-11.0	116	0.00	15.52
91	T	N-PROPYLBENZENE	1.955	2.194	-12.2	115	0.00	15.86
92	T	4-ETHYLTOLUENE	1.581	1.830	-15.7	113	0.00	16.20
93	T	1,3,5-TRIMETHYLBENZENE	1.337	1.518	-13.5	115	0.00	16.35
94	T	ALPHA-METHYLSTYRENE	0.670	0.791	-18.1	120	0.00	16.55
95	T	TERT-BUTYLBENZENE	1.501	1.698	-13.1	114	0.00	16.80
96	T	1,2,4-TRIMETHYLBENZENE	1.381	1.588	-15.0	115	0.00	16.80
97	T	BENZYL CHLORIDE	0.837	0.983	-17.4	128	0.00	16.89
98	T	M-DICHLOROBENZENE	0.961	1.082	-12.6	119	0.00	16.86
99	T	P-DICHLOROBENZENE	0.959	1.100	-14.7	122	0.00	16.95
100	T	O-DICHLOROBENZENE	0.940	1.070	-13.8	123	0.00	17.23

Continuing Calibration Summary

Job Number: JD59460
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample: V6W1146-CC1125
Lab FileID: 6W27093.D

101	T	SEC-BUTYLBENZENE	2.046	2.340	-14.4	116	0.00	17.07
102	T	1,2,3-TRIMETHYLBENZENE	1.353	1.562	-15.4	116	0.00	17.18
103	T	P-ISOPROPYLTOLUENE	1.754	2.056	-17.2	117	0.00	17.25
104	T	N-BUTYLBENZENE	1.559	1.943	-24.6	120	0.00	17.59
105	T	HEXACHLOROETHANE	0.637	0.668	-4.9	119	0.00	17.77
106	T	HEXACHLOROBUTADIENE	0.696	0.895	-28.6	147#	0.00	18.79
107	T	1,2,4-TRICHLOROBENZENE	0.781	1.039	-33.0#	147#	0.00	18.49
108	T	NAPHTHALENE	1.925	2.874	-49.3#	162#	0.01	18.54

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

6W26454.D M6W1125.M Tue Nov 22 14:43:45 2022

Continuing Calibration Summary

Job Number: JD59460
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample: V6W1152-CC1125
Lab FileID: 6W27292.D

Evaluate Continuing Calibration Report

Data File : C:\msdchem\1\data\6W27292.D Vial: 18
Acq On : 28 Nov 2022 1:24 pm Operator: thomash
Sample : cc1125-10 Inst : GCMS6W
Misc : MS64243,V6W1152,,,,,1 Multiplr: 1.00
MS Integration Params: rteint.p

Method : C:\msdchem\1\methods\M6W1125.M (RTE Integrator)
Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
Last Update : Thu Oct 20 08:34:08 2022
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 60% Max. R.T. Dev 0.33min
Max. RRF Dev : 30% Max. Rel. Area : 140%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)	R.T.
1	I	BROMOCHLOROMETHANE	1.000	1.000	0.0	95	0.00	3.34
2	T	FREON 115		----------NA----------				
3	T	FREON 152A	0.860	0.798	7.2	93	0.00	1.70
4	T	CHLORODIFLUOROMETHANE	0.390	0.331	15.1	85	0.00	1.70
5	T	CHLOROTRIFLUOROETHENE	1.882	1.817	3.5	98	0.00	1.72
6	T	DICHLORODIFLUOROMETHANE	3.127	3.567	-14.1	112	0.00	1.73
7	T	PROPYLENE	1.281	1.144	10.7	89	0.00	1.71
8	T	1-CHLORO-1,1-DIFLUOROETHA	2.864	2.459	14.1	87	0.00	1.77
9	T	FREON 114	3.289	3.107	5.5	98	0.00	1.80
10	T	CHLOROMETHANE	0.452	0.399	11.7	92	0.00	1.77
11	T	VINYL CHLORIDE	1.370	1.275	6.9	96	0.00	1.83
12	t	1,3-BUTADIENE	1.120	1.078	3.8	99	0.00	1.87
13	T	N-BUTANE	2.525	2.123	15.9	94	0.00	1.88
14	T	BROMOMETHANE	1.059	1.157	-9.3	112	0.00	1.93
15	T	CHLOROETHANE	0.656	0.673	-2.6	103	0.00	1.98
16	T	DICHLOROFLUOROMETHANE	2.784	2.674	4.0	98	0.00	2.00
17	T	ACETONITRILE	1.471	1.407	4.4	102	0.00	2.07
18	T	ACROLEIN	0.608	0.652	-7.2	101	0.00	2.10
19	T	FREON 123	2.640	2.785	-5.5	110	0.00	2.12
20	T	FREON 123A	1.592	1.695	-6.5	109	0.00	2.13
21	T	TRICHLOROFLUOROMETHANE	3.261	3.144	3.6	101	0.00	2.19
22	T	ISOPROPYL ALCOHOL	3.290	2.773	15.7	93	0.00	2.21
23	T	ACETONE	0.740	0.706	4.6	107	0.00	2.14
24	T	PENTANE	1.755	1.576	10.2	97	0.00	2.30
25	T	IODOMETHANE	3.143	3.505	-11.5	115	0.00	2.36
26	T	1,1-DICHLOROETHYLENE	1.239	1.229	0.8	98	0.00	2.38
27	T	CARBON DISULFIDE	3.927	3.627	7.6	91	0.00	2.52
28	T	ETHANOL	0.759	0.685	9.7	104	0.00	2.01
29	T	BROMOETHENE	1.110	1.215	-9.5	112	0.00	2.07
30	T	ACRYLONITRILE	1.109	1.063	4.1	101	0.00	2.27
31	T	METHYLENE CHLORIDE	1.243	1.126	9.4	94	0.00	2.42
32	T	3-CHLOROPROPENE	0.605	0.569	6.0	90	0.00	2.46
33	T	FREON 113	2.199	2.287	-4.0	100	0.00	2.52
34	T	TRANS-1,2-DICHLOROETHENE	1.384	1.320	4.6	93	0.00	2.77
35	T	TERTIARY BUTYL ALCOHOL	2.690	2.130	20.8	83	0.00	2.40
36	t	METHYL TERTIARY BUTYL ETH	3.445	2.423	29.7	70	0.00	2.89
37	T	TETRAHYDROFURAN	0.640	0.599	6.4	94	0.00	3.65
38	T	HEXANE	2.685	2.286	14.9	85	0.00	3.39
39	T	VINYL ACETATE	0.332	0.340	-2.4	103	0.00	2.93
40	T	1,1-DICHLOROETHANE	2.639	2.334	11.6	87	0.00	2.85
41	T	METHYL ETHYL KETONE	0.673	0.636	5.5	94	0.00	3.04
42	T	CIS-1,2-DICHLOROETHENE	1.453	1.362	6.3	94	0.00	3.25

Continuing Calibration Summary

Job Number: JD59460
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample: V6W1152-CC1125
Lab FileID: 6W27292.D

43	T	DIISOPROPYL ETHER	0.772	0.625	19.0	80	0.00	3.40
44	T	ETHYL ACETATE	0.530	0.500	5.7	94	0.00	3.41
45	T	METHYL ACRYLATE	3.320	3.023	8.9	90	0.00	3.39
46	T	CHLOROFORM	2.982	2.688	9.9	89	0.00	3.42
47	T	2,4-DIMETHYLPENTANE	3.034	2.660	12.3	85	0.00	3.95
48	T	1,1,1-TRICHLOROETHANE	2.930	2.551	12.9	87	0.00	4.04
49	T	CARBON TETRACHLORIDE	3.141	2.761	12.1	85	0.00	4.50
50	T	1,2-DICHLOROETHANE	2.269	1.813	20.1	80	0.00	3.87
51	t	BENZENE	4.458	3.793	14.9	88	0.00	4.38
52	I	1,4-DIFLUOROBENZENE	1.000	1.000	0.0	94	0.00	4.73
53	T	CYCLOHEXANE	0.365	0.330	9.6	86	0.00	4.60
54	T	2,3-DIMETHYLPENTANE	0.199	0.168	15.6	82	-0.01	4.87
55	T	TRICHLOROETHENE	0.393	0.353	10.2	86	0.00	5.34
56	T	1,2-DICHLOROPROPANE	0.361	0.316	12.5	84	0.00	5.10
57	T	DIBROMOMETHANE	0.370	0.369	0.3	98	0.00	5.06
58	T	ETHYL ACRYLATE	0.765	0.720	5.9	89	0.00	5.23
59	T	BROMODICHLOROMETHANE	0.661	0.577	12.7	84	0.00	5.30
60	T	2,2,4-TRIMETHYLPENTANE	1.654	1.434	13.3	82	0.00	5.44
61	T	1,4-DIOXANE	0.173	0.189	-9.2	104	0.00	5.37
62	T	HEPTANE	0.667	0.599	10.2	87	-0.02	5.77
63	T	METHYL METHACRYLATE	0.319	0.317	0.6	94	0.00	5.68
64	T	METHYL ISOBUTYL KETONE	0.270	0.309	-14.4	101	0.02	6.47
65	T	CIS-1,3-DICHLOROPROPENE	0.478	0.440	7.9	87	0.00	6.34
66	T	TOLUENE	1.106	1.010	8.7	94	0.00	7.61
67	T	1,3-DICHLOROPROPANE	0.533	0.510	4.3	93	0.00	7.68
68	T	TRANS-1,3-DICHLOROPROPENE	0.421	0.391	7.1	87	0.00	7.06
69	T	1,1,2-TRICHLOROETHANE	0.316	0.318	-0.6	97	0.00	7.24
70	T	2-HEXANONE	0.315	0.405	-28.6	117	0.02	8.22
71	T	ETHYL METHACRYLATE	0.471	0.524	-11.3	99	0.01	8.35
72	T	TETRACHLOROETHENE	0.382	0.410	-7.3	99	0.00	9.41
73	T	DIBROMOCHLOROMETHANE	0.682	0.677	0.7	93	0.00	8.18
74	T	1,2-DIBROMOETHANE	0.579	0.588	-1.6	98	0.00	8.54
75	T	OCTANE	0.882	0.820	7.0	87	0.00	9.55
76	I	CHLOROBENZENE-D5	1.000	1.000	0.0	96	0.00	10.58
77	T	1,1,1,2-TETRACHLOROETHANE	0.537	0.525	2.2	94	0.00	10.68
78	T	CHLOROBENZENE	0.966	0.964	0.2	95	0.00	10.66
79	t	ETHYLBENZENE	1.722	1.500	12.9	93	0.00	11.56
80	t	M,P-XYLENE	1.286	1.171	8.9	94	0.00	12.00
81	t	O-XYLENE	1.287	1.197	7.0	95	0.00	12.96
82	T	STYRENE	0.860	0.916	-6.5	95	0.00	12.74
83	T	NONANE	1.107	1.001	9.6	88	0.00	14.09
84	T	BROMOFORM	0.702	0.742	-5.7	101	0.00	11.82
85	T	1,1,2,2-TETRACHLOROETHANE	0.914	0.972	-6.3	102	0.00	12.98
86	T	1,2,3-TRICHLOROPROPANE	0.715	0.688	3.8	93	0.00	13.26
87	S	4-BROMOFLUOROBENZENE	0.698	0.686	1.7	93	0.00	14.02
88	T	ISOPROPYLBENZENE	1.774	1.757	1.0	94	0.00	14.50
89	T	BROMOBENZENE	0.856	0.841	1.8	93	0.00	14.37
90	T	2-CHLOROTOLUENE	1.158	1.221	-5.4	95	0.00	15.52
91	T	N-PROPYLBENZENE	1.955	2.105	-7.7	95	0.00	15.86
92	T	4-ETHYLTOLUENE	1.581	1.779	-12.5	95	0.00	16.20
93	T	1,3,5-TRIMETHYLBENZENE	1.337	1.490	-11.4	97	0.00	16.35
94	T	ALPHA-METHYLSTYRENE	0.670	0.789	-17.8	103	0.00	16.54
95	T	TERT-BUTYLBENZENE	1.501	1.656	-10.3	96	0.00	16.79
96	T	1,2,4-TRIMETHYLBENZENE	1.381	1.574	-14.0	98	0.00	16.80
97	T	BENZYL CHLORIDE	0.837	1.028	-22.8	115	0.00	16.89
98	T	M-DICHLOROBENZENE	0.961	1.133	-17.9	107	0.00	16.86
99	T	P-DICHLOROBENZENE	0.959	1.139	-18.8	108	0.00	16.95
100	T	O-DICHLOROBENZENE	0.940	1.107	-17.8	109	0.00	17.23

Continuing Calibration Summary

Job Number: JD59460
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample: V6W1152-CC1125
Lab FileID: 6W27292.D

101	T	SEC-BUTYLBENZENE	2.046	2.306	-12.7	98	0.00	17.07
102	T	1,2,3-TRIMETHYLBENZENE	1.353	1.538	-13.7	99	0.00	17.18
103	T	P-ISOPROPYLTOLUENE	1.754	2.003	-14.2	98	0.00	17.25
104	T	N-BUTYLBENZENE	1.559	1.916	-22.9	102	0.00	17.59
105	T	HEXACHLOROETHANE	0.637	0.667	-4.7	102	0.00	17.77
106	T	HEXACHLOROBUTADIENE	0.696	0.950	-36.5#	134	0.01	18.79
107	T	1,2,4-TRICHLOROBENZENE	0.781	1.119	-43.3#	136	0.01	18.49
108	T	NAPHTHALENE	1.925	2.941	-52.8#	143#	0.01	18.54

(#) = Out of Range SPCC's out = 0 CCC's out = 0
6W26454.D M6W1125.M Mon Nov 28 15:03:17 2022

Run Sequence Report

Job Number: JD59460
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Run ID: V2W2776 **Method:** TO-15 **Instrument ID:** GCMS2W

Lab Sample ID	Lab File ID	Date/Time Analyzed	Prep QC Batch	Client Sample ID
V2W2776-BFB	2W62382.D	12/14/22 17:23	n/a	BFB Tune
V2W2776-IC2776	2W62383.D	12/14/22 17:55	n/a	Initial cal 0.04
V2W2776-IC2776	2W62384.D	12/14/22 18:28	n/a	Initial cal 0.1
V2W2776-IC2776	2W62385.D	12/14/22 18:59	n/a	Initial cal 0.2
V2W2776-IC2776	2W62386.D	12/14/22 19:31	n/a	Initial cal 0.5
V2W2776-IC2776	2W62388.D	12/14/22 20:33	n/a	Initial cal 5
V2W2776-ICC2776	2W62389.D	12/14/22 21:05	n/a	Initial cal 10
V2W2776-IC2776	2W62390.D	12/14/22 21:37	n/a	Initial cal 20
V2W2776-IC2776	2W62391.D	12/14/22 22:12	n/a	Initial cal 40
V2W2776-IC2776	2W62392.D	12/14/22 22:47	n/a	Initial cal 50
V2W2776-ICV2776	2W62395.D	12/15/22 00:22	n/a	Initial cal verification 10

Run Sequence Report

Job Number: JD59460
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Run ID: V2W2809 **Method:** TO-15 **Instrument ID:** GCMS2W

Lab Sample ID	Lab File ID	Date/Time Analyzed	Prep QC Batch	Client Sample ID
V2W2809-BFB	2W63182.D	02/01/23 08:45	n/a	BFB Tune
V2W2809-CC2776	2W63183.D	02/01/23 09:18	n/a	Continuing cal 10
V2W2809-BS	2W63184.D	02/01/23 10:10	n/a	Blank Spike
V2W2809-BSD	2W63185.D	02/01/23 10:44	n/a	Blank Spike Duplicate
V2W2809-MB	2W63189.D	02/01/23 13:28	n/a	Method Blank
JD59460-1	2W63190.D	02/01/23 15:35	n/a	CRCA-AMB02.20230126
JD59460-2	2W63191.D	02/01/23 16:14	n/a	CRCA-AMB01.20230126
JD59460-3	2W63192.D	02/01/23 16:49	n/a	CRCA-VMP01.20230126
JD59460-5	2W63193.D	02/01/23 17:23	n/a	CRCA-VMP04.20230126
JD59460-5DUP	2W63194.D	02/01/23 17:58	n/a	Duplicate
JD59460-6	2W63195.D	02/01/23 18:31	n/a	CRCA-VMP02.20230126
ZZZZZZ	2W63196.D	02/01/23 19:04	n/a	(unrelated sample)
ZZZZZZ	2W63197.D	02/01/23 19:37	n/a	(unrelated sample)
ZZZZZZ	2W63198.D	02/01/23 20:10	n/a	(unrelated sample)
ZZZZZZ	2W63200.D	02/01/23 21:17	n/a	(unrelated sample)
ZZZZZZ	2W63201.D	02/01/23 21:57	n/a	(unrelated sample)
ZZZZZZ	2W63202.D	02/01/23 22:36	n/a	(unrelated sample)
ZZZZZZ	2W63203.D	02/01/23 23:15	n/a	(unrelated sample)
ZZZZZZ	2W63204.D	02/01/23 23:55	n/a	(unrelated sample)
ZZZZZZ	2W63205.D	02/02/23 00:34	n/a	(unrelated sample)
ZZZZZZ	2W63206.D	02/02/23 01:13	n/a	(unrelated sample)
ZZZZZZ	2W63207.D	02/02/23 01:52	n/a	(unrelated sample)
ZZZZZZ	2W63208.D	02/02/23 02:32	n/a	(unrelated sample)
ZZZZZZ	2W63209.D	02/02/23 03:12	n/a	(unrelated sample)
ZZZZZZ	2W63210.D	02/02/23 03:51	n/a	(unrelated sample)

Run Sequence Report

Job Number: JD59460
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Run ID: V6W1125	**Method:** TO-15	**Instrument ID:** GCMS6W

Lab Sample ID	Lab File ID	Date/Time Analyzed	Prep QC Batch	Client Sample ID
V6W1125-BFB	6W26446.D	10/19/22 17:44	n/a	BFB Tune
V6W1125-IC1125	6W26448.D	10/19/22 19:10	n/a	Initial cal 0.04
V6W1125-IC1125	6W26449.D	10/19/22 19:43	n/a	Initial cal 0.1
V6W1125-IC1125	6W26450.D	10/19/22 20:15	n/a	Initial cal 0.2
V6W1125-IC1125	6W26451.D	10/19/22 20:47	n/a	Initial cal 0.5
V6W1125-IC1125	6W26453.D	10/19/22 21:52	n/a	Initial cal 5
V6W1125-ICC1125	6W26454.D	10/19/22 22:25	n/a	Initial cal 10
V6W1125-IC1125	6W26455.D	10/19/22 22:57	n/a	Initial cal 20
V6W1125-IC1125	6W26456.D	10/19/22 23:29	n/a	Initial cal 40
V6W1125-IC1125	6W26457.D	10/20/22 00:03	n/a	Initial cal 50
V6W1125-ICV1125	6W26462.D	10/20/22 09:08	n/a	Initial cal verification 10

Run Sequence Report

Job Number: JD59460
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Run ID: V6W1142 **Method:** TO-15 **Instrument ID:** GCMS6W

Lab Sample ID	Lab File ID	Date/Time Analyzed	Prep QC Batch	Client Sample ID
V6W1142-BFB	6W26988.D	11/08/22 11:50	n/a	BFB Tune
V6W1142-CC1125	6W26990.D	11/08/22 13:46	n/a	Continuing cal 10
V6W1142-BS	6W26991.D	11/08/22 14:43	n/a	Blank Spike
V6W1142-BSD	6W26992.D	11/08/22 15:14	n/a	Blank Spike Duplicate
V6W1142-MB	6W26995.D	11/08/22 17:27	n/a	Method Blank
V6W1142-SCC	6W26997.D	11/08/22 19:33	n/a	Summa Cleaning Certification
V6W1142-SCC	6W26998.D	11/08/22 20:05	n/a	Summa Cleaning Certification
V6W1142-SCC	6W26999.D	11/08/22 20:37	n/a	Summa Cleaning Certification
V6W1142-SCC	6W27000.D	11/08/22 21:11	n/a	Summa Cleaning Certification
V6W1142-SCC	6W27001.D	11/08/22 21:44	n/a	Summa Cleaning Certification
V6W1142-SCC	6W27002.D	11/08/22 22:17	n/a	Summa Cleaning Certification
V6W1142-SCC	6W27003.D	11/08/22 22:50	n/a	Summa Cleaning Certification
V6W1142-SCC	6W27004.D	11/08/22 23:22	n/a	Summa Cleaning Certification
V6W1142-SCC	6W27005.D	11/08/22 23:55	n/a	Summa Cleaning Certification
V6W1142-SCC	6W27006.D	11/09/22 00:29	n/a	Summa Cleaning Certification
V6W1142-SCC	6W27008.D	11/09/22 01:34	n/a	Summa Cleaning Certification
V6W1142-SCC	6W27009.D	11/09/22 02:07	n/a	Summa Cleaning Certification
V6W1142-SCC	6W27010.D	11/09/22 02:40	n/a	Summa Cleaning Certification
V6W1142-SCC	6W27011.D	11/09/22 03:12	n/a	Summa Cleaning Certification
V6W1142-SCC	6W27013.D	11/09/22 04:20	n/a	Summa Cleaning Certification
V6W1142-SCC	6W27014.D	11/09/22 04:52	n/a	Summa Cleaning Certification
V6W1142-SCC	6W27015.D	11/09/22 05:25	n/a	Summa Cleaning Certification
V6W1142-SCC	6W27016.D	11/09/22 05:58	n/a	Summa Cleaning Certification
V6W1142-SCC	6W27017.D	11/09/22 06:31	n/a	Summa Cleaning Certification
V6W1142-SCC	6W27018.D	11/09/22 07:03	n/a	Summa Cleaning Certification
V6W1142-SCC	6W27021.D	11/09/22 08:43	n/a	Summa Cleaning Certification

Run Sequence Report

Job Number: JD59460
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Run ID: V6W1146 **Method:** TO-15 **Instrument ID:** GCMS6W

Lab Sample ID	Lab File ID	Date/Time Analyzed	Prep QC Batch	Client Sample ID
V6W1146-BFB	6W27092.D	11/22/22 08:39	n/a	BFB Tune
V6W1146-CC1125	6W27093.D	11/22/22 09:12	n/a	Continuing cal 10
V6W1146-BS	6W27094.D	11/22/22 10:08	n/a	Blank Spike
V6W1146-BSD	6W27095.D	11/22/22 10:40	n/a	Blank Spike Duplicate
V6W1146-MB	6W27097.D	11/22/22 12:29	n/a	Method Blank
ZZZZZZ	6W27098.D	11/22/22 13:32	n/a	(unrelated sample)
ZZZZZZ	6W27099.D	11/22/22 14:16	n/a	(unrelated sample)
JD55460-10	6W27100.D	11/22/22 14:49	n/a	(used for QC only; not part of job JD59460)
JD55460-10DUP	6W27101.D	11/22/22 15:23	n/a	Duplicate
ZZZZZZ	6W27102.D	11/22/22 15:55	n/a	(unrelated sample)
ZZZZZZ	6W27103.D	11/22/22 16:29	n/a	(unrelated sample)
ZZZZZZ	6W27104.D	11/22/22 17:03	n/a	(unrelated sample)
ZZZZZZ	6W27105.D	11/22/22 17:36	n/a	(unrelated sample)
ZZZZZZ	6W27106.D	11/22/22 18:09	n/a	(unrelated sample)
ZZZZZZ	6W27107.D	11/22/22 18:42	n/a	(unrelated sample)
ZZZZZZ	6W27108.D	11/22/22 19:15	n/a	(unrelated sample)
ZZZZZZ	6W27109.D	11/22/22 19:48	n/a	(unrelated sample)
ZZZZZZ	6W27110.D	11/22/22 20:22	n/a	(unrelated sample)
ZZZZZZ	6W27111.D	11/22/22 20:55	n/a	(unrelated sample)
ZZZZZZ	6W27112.D	11/22/22 21:30	n/a	(unrelated sample)
ZZZZZZ	6W27113.D	11/22/22 22:03	n/a	(unrelated sample)
ZZZZZZ	6W27114.D	11/22/22 22:38	n/a	(unrelated sample)
ZZZZZZ	6W27115.D	11/22/22 23:10	n/a	(unrelated sample)
ZZZZZZ	6W27116.D	11/22/22 23:43	n/a	(unrelated sample)
ZZZZZZ	6W27117.D	11/23/22 00:17	n/a	(unrelated sample)
ZZZZZZ	6W27118.D	11/23/22 00:50	n/a	(unrelated sample)
V6W1146-SCC	6W27121.D	11/23/22 02:30	n/a	Summa Cleaning Certification
V6W1146-SCC	6W27122.D	11/23/22 03:02	n/a	Summa Cleaning Certification
V6W1146-SCC	6W27123.D	11/23/22 03:36	n/a	Summa Cleaning Certification
V6W1146-SCC	6W27124.D	11/23/22 04:09	n/a	Summa Cleaning Certification
V6W1146-SCC	6W27125.D	11/23/22 04:42	n/a	Summa Cleaning Certification
V6W1146-SCC	6W27127.D	11/23/22 05:50	n/a	Summa Cleaning Certification
V6W1146-SCC	6W27128.D	11/23/22 06:23	n/a	Summa Cleaning Certification

Run Sequence Report

Job Number: JD59460
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Run ID: V6W1152 **Method:** TO-15 **Instrument ID:** GCMS6W

Lab Sample ID	Lab File ID	Date/Time Analyzed	Prep QC Batch	Client Sample ID
V6W1152-BFB	6W27290.D	11/28/22 11:58	n/a	BFB Tune
V6W1152-CC1125	6W27292.D	11/28/22 13:24	n/a	Continuing cal 10
V6W1152-BS	6W27293.D	11/28/22 14:03	n/a	Blank Spike
V6W1152-BSD	6W27294.D	11/28/22 14:36	n/a	Blank Spike Duplicate
V6W1152-MB	6W27296.D	11/28/22 15:57	n/a	Method Blank
ZZZZZZ	6W27297.D	11/28/22 16:38	n/a	(unrelated sample)
ZZZZZZ	6W27299.D	11/28/22 17:44	n/a	(unrelated sample)
ZZZZZZ	6W27300.D	11/28/22 18:18	n/a	(unrelated sample)
ZZZZZZ	6W27301.D	11/28/22 18:52	n/a	(unrelated sample)
ZZZZZZ	6W27302.D	11/28/22 19:25	n/a	(unrelated sample)
ZZZZZZ	6W27303.D	11/28/22 19:59	n/a	(unrelated sample)
JD56027-4	6W27304.D	11/28/22 20:33	n/a	(used for QC only; not part of job JD59460)
JD56027-4DUP	6W27305.D	11/28/22 21:06	n/a	Duplicate
ZZZZZZ	6W27307.D	11/28/22 22:14	n/a	(unrelated sample)
ZZZZZZ	6W27308.D	11/28/22 22:48	n/a	(unrelated sample)
ZZZZZZ	6W27309.D	11/28/22 23:22	n/a	(unrelated sample)
ZZZZZZ	6W27310.D	11/28/22 23:56	n/a	(unrelated sample)
ZZZZZZ	6W27311.D	11/29/22 00:29	n/a	(unrelated sample)
ZZZZZZ	6W27312.D	11/29/22 01:03	n/a	(unrelated sample)
ZZZZZZ	6W27313.D	11/29/22 01:36	n/a	(unrelated sample)
ZZZZZZ	6W27314.D	11/29/22 02:10	n/a	(unrelated sample)
ZZZZZZ	6W27315.D	11/29/22 02:43	n/a	(unrelated sample)
ZZZZZZ	6W27316.D	11/29/22 03:16	n/a	(unrelated sample)
V6W1152-SCC	6W27320.D	11/29/22 05:29	n/a	Summa Cleaning Certification
V6W1152-SCC	6W27321.D	11/29/22 06:01	n/a	Summa Cleaning Certification
V6W1152-SCC	6W27322.D	11/29/22 06:33	n/a	Summa Cleaning Certification
V6W1152-SCC	6W27323.D	11/29/22 07:07	n/a	Summa Cleaning Certification
V6W1152-SCC	6W27324.D	11/29/22 07:40	n/a	Summa Cleaning Certification
V6W1152-SCC	6W27325.D	11/29/22 08:13	n/a	Summa Cleaning Certification
V6W1152-SCC	6W27326.D	11/29/22 08:46	n/a	Summa Cleaning Certification
V6W1152-SCC	6W27327.D	11/29/22 09:19	n/a	Summa Cleaning Certification
V6W1152-SCC	6W27328.D	11/29/22 09:52	n/a	Summa Cleaning Certification
V6W1152-SCC	6W27329.D	11/29/22 10:26	n/a	Summa Cleaning Certification
V6W1152-SCC	6W27330.D	11/29/22 10:59	n/a	Summa Cleaning Certification

MS Volatiles

Raw Data

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\
Data File : 2w63190.D
Acq On : 1 Feb 2023 3:35 pm
Operator : thomash
Sample : jd59460-1
Misc : MS66193,v2w2809,400,,,,1
ALS Vial : 4 Sample Multiplier: 1

Quant Time: Feb 02 14:55:23 2023
Quant Method : C:\msdchem\1\METHODS\M2W2776.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Mon Dec 19 08:01:03 2022
Response via : Initial Calibration

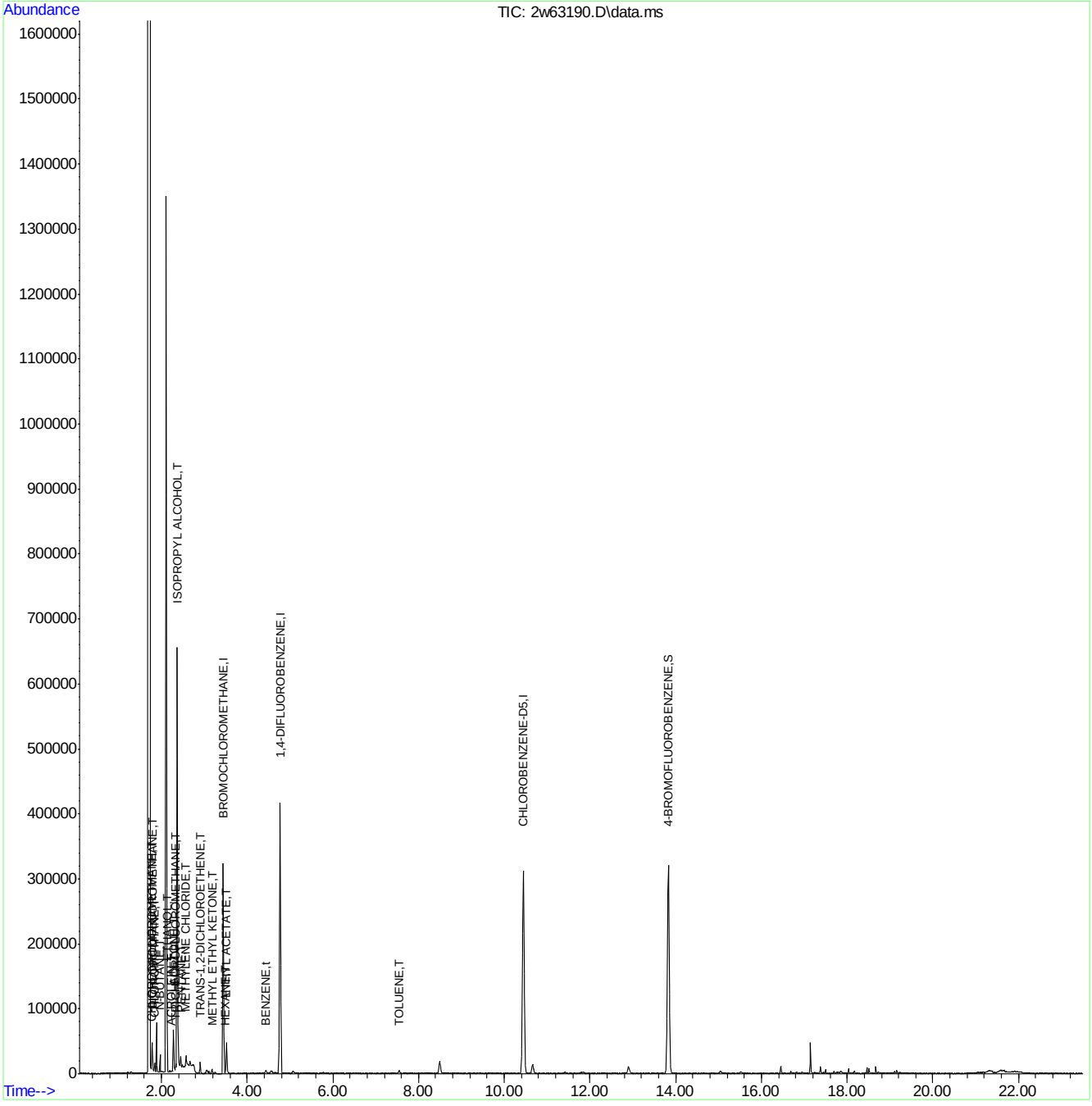
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) BROMOCHLOROMETHANE	3.444	128	61831	10.00	PPBV	# 0.01
52) 1,4-DIFLUOROBENZENE	4.769	114	318569	10.00	PPBV	0.00
76) CHLOROBENZENE-D5	10.444	117	286141	10.00	PPBV	0.00
System Monitoring Compounds						
87) 4-BROMOFLUOROBENZENE	13.823	95	204412	9.25	PPBV	0.00
Target Compounds						Qvalue
4) CHLORODIFLUOROMETHANE	1.766	67	581	0.23	PPBV	# 40
6) DICHLORODIFLUOROMETHANE	1.795	85	9972	0.32	PPBV	# 95
10) CHLOROMETHANE	1.843	52	1867	0.74	PPBV	92
13) N-BUTANE	1.968	43	12582	0.99	PPBV	# 93
18) ACROLEIN	2.232	56	652	0.16	PPBV	# 14
21) TRICHLOROFLUOROMETHANE	2.335	101	5065	0.17	PPBV	# 90
22) ISOPROPYL ALCOHOL	2.367	45	520149	27.73	PPBV	93
23) ACETONE	2.280	58	13902	2.65	PPBV	93
24) PENTANE	2.451	42	4332	0.44	PPBV	85
28) ETHANOL	2.129	45	7320	1.66	PPBV	# 88
31) METHYLENE CHLORIDE	2.573	84	3548	0.30	PPBV	90
34) TRANS-1,2-DICHLOROETHENE	2.907	96	3995	0.40	PPBV	93
38) HEXANE	3.499	57	1627	0.10	PPBV	93
41) METHYL ETHYL KETONE	3.184	72	1281	0.27	PPBV	# 72
44) ETHYL ACETATE	3.518	61	5663	1.70	PPBV	# 1
51) BENZENE	4.438	78	3781	0.12	PPBV	95
66) TOLUENE	7.550	91	4772	0.12	PPBV	96

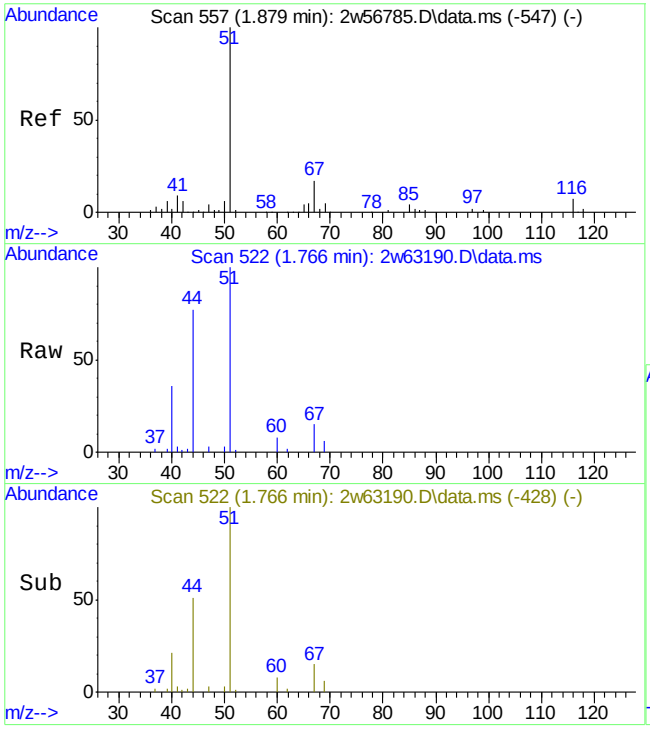
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\
Data File : 2w63190.D
Acq On : 1 Feb 2023 3:35 pm
Operator : thomash
Sample : jd59460-1
Misc : MS66193,v2w2809,400,,,,1
ALS Vial : 4 Sample Multiplier: 1

Quant Time: Feb 02 14:55:23 2023
Quant Method : C:\msdchem\1\METHODS\M2W2776.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Mon Dec 19 08:01:03 2022
Response via : Initial Calibration

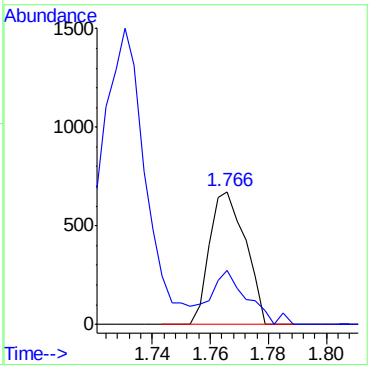


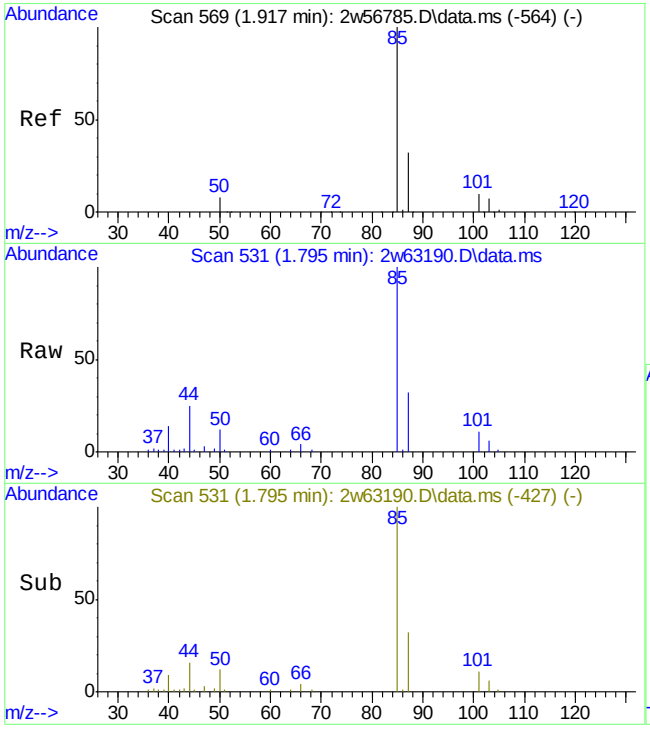


#4
CHLORODIFLUOROMETHANE
Concen: 0.23 PPBV
RT: 1.766 min Scan# 522
Delta R.T. 0.003 min
Lab File: 2w63190.D
Acq: 1 Feb 2023 3:35 pm

Tgt Ion: 67 Resp: 581

Ion	Ratio	Lower	Upper
67	100		
69	0.0	27.4	41.0#

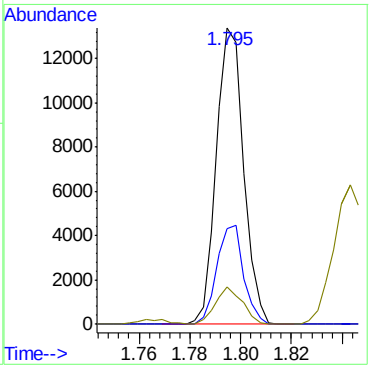


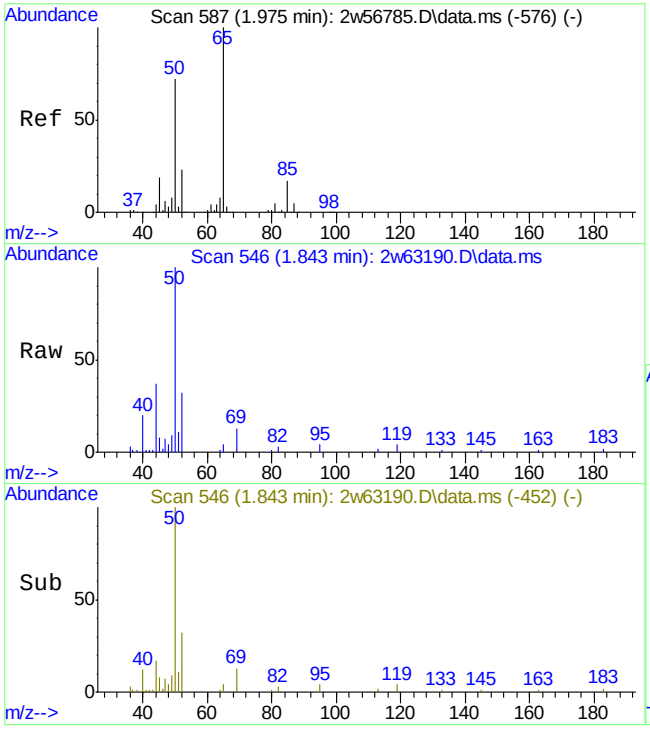


#6
DICHLORODIFLUOROMETHANE
Concen: 0.32 PPBV
RT: 1.795 min Scan# 531
Delta R.T. 0.003 min
Lab File: 2w63190.D
Acq: 1 Feb 2023 3:35 pm

Tgt Ion: 85 Resp: 9972

Ion	Ratio	Lower	Upper
85	100		
87	32.4	25.9	38.9
50	12.4	14.6	21.8#

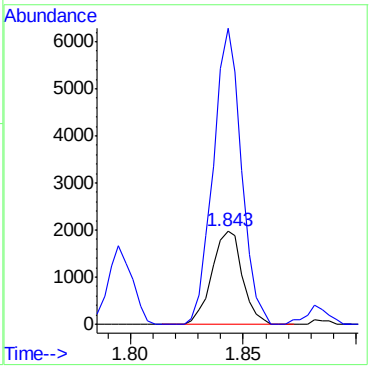


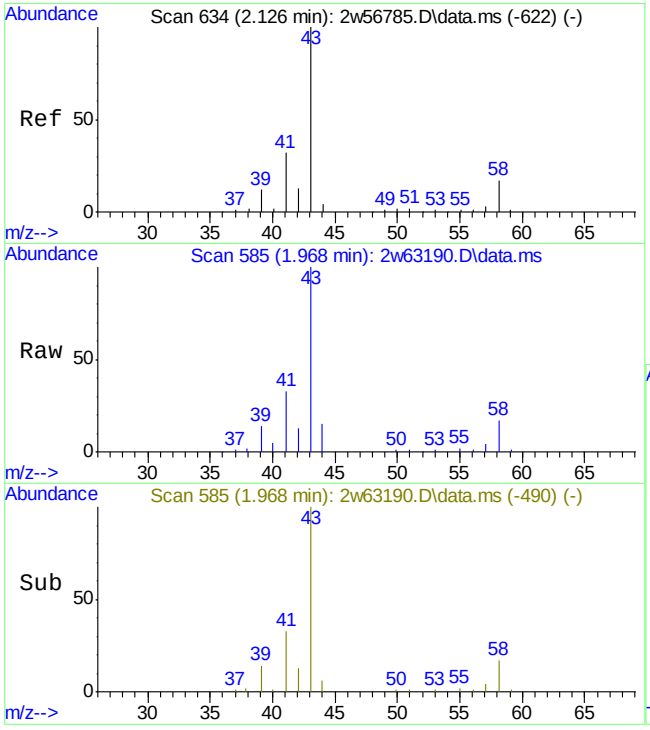


#10
CHLOROMETHANE
Concen: 0.74 PPBV
RT: 1.843 min Scan# 546
Delta R.T. 0.003 min
Lab File: 2w63190.D
Acq: 1 Feb 2023 3:35 pm

Tgt Ion: 52 Resp: 1867

Ion	Ratio	Lower	Upper
52	100		
50	296.0	249.6	374.4

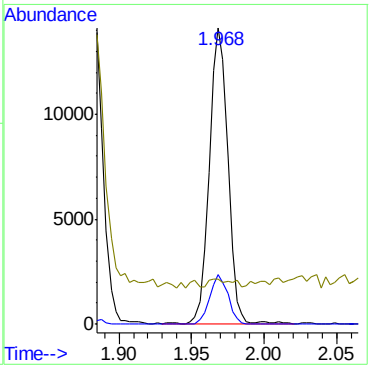


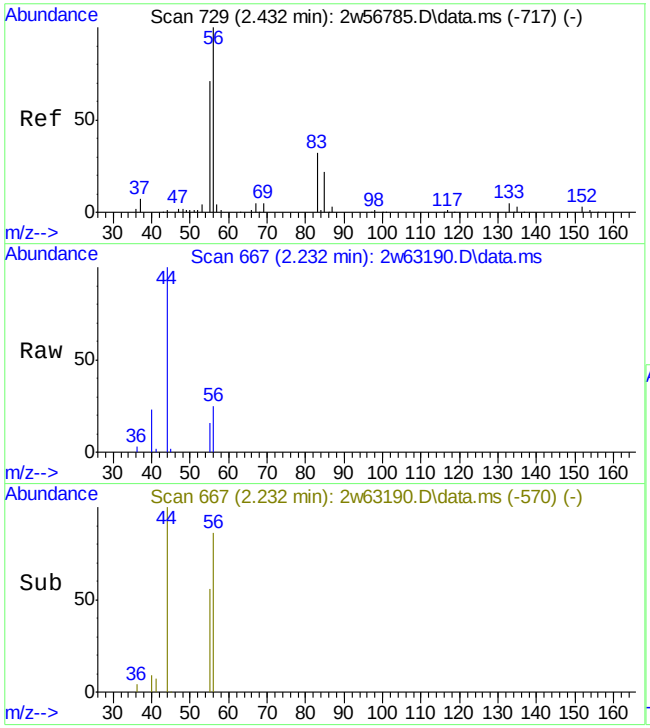


#13
N-BUTANE
Concen: 0.99 PPBV
RT: 1.968 min Scan# 585
Delta R.T. 0.007 min
Lab File: 2w63190.D
Acq: 1 Feb 2023 3:35 pm

Tgt Ion: 43 Resp: 12582

Ion	Ratio	Lower	Upper
43	100		
58	16.2	15.0	22.4
44	0.0	3.4	5.2#

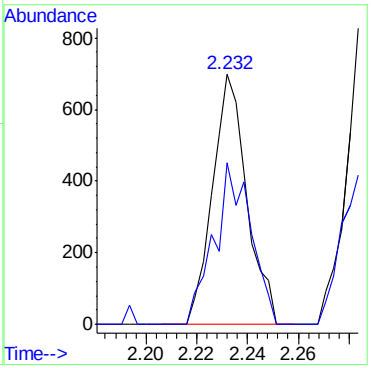


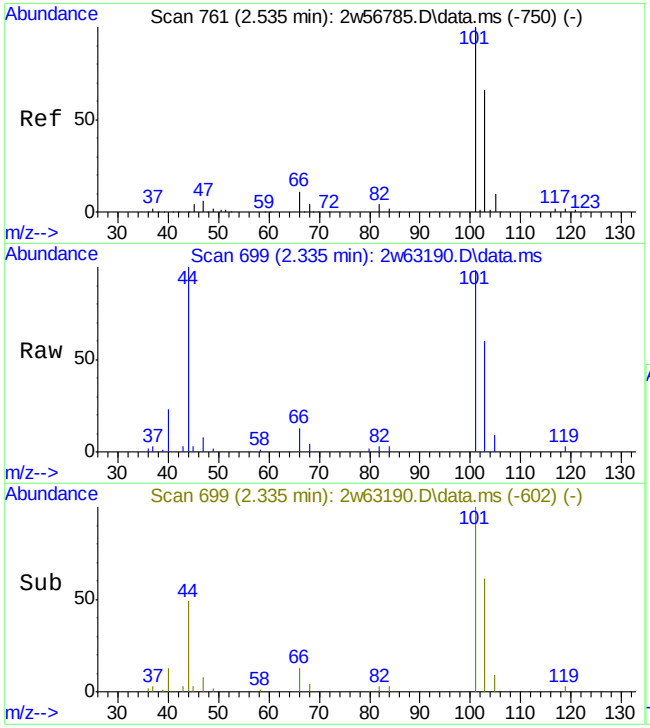


#18
ACROLEIN
Concen: 0.16 PPBV
RT: 2.232 min Scan# 667
Delta R.T. 0.013 min
Lab File: 2w63190.D
Acq: 1 Feb 2023 3:35 pm

Tgt Ion: 56 Resp: 652

Ion	Ratio	Lower	Upper
56	100		
55	0.0	56.9	85.3#

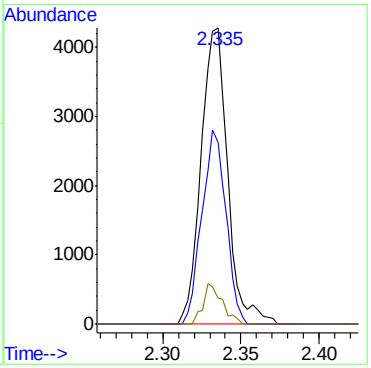


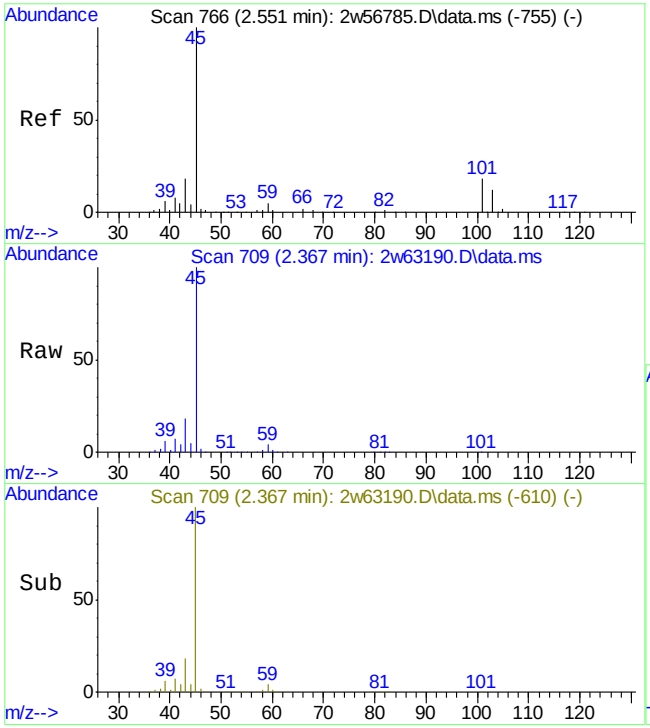


#21
TRICHLOROFLUOROMETHANE
Concen: 0.17 PPBV
RT: 2.335 min Scan# 699
Delta R.T. 0.013 min
Lab File: 2w63190.D
Acq: 1 Feb 2023 3:35 pm

Tgt Ion:101 Resp: 5065

Ion	Ratio	Lower	Upper
101	100		
103	59.2	52.1	78.1
105	0.0	8.3	12.5#

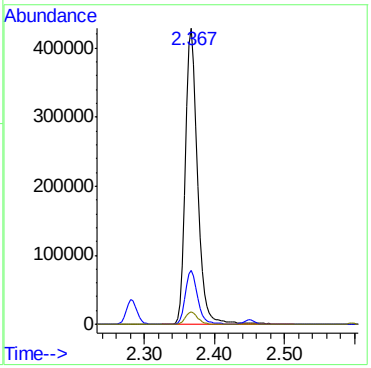


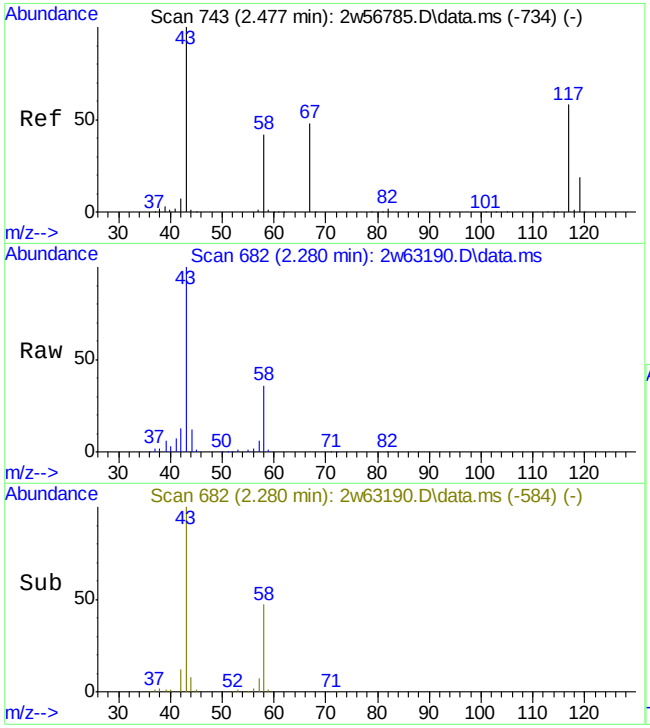


#22
ISOPROPYL ALCOHOL
Concen: 27.73 PPBV
RT: 2.367 min Scan# 709
Delta R.T. 0.020 min
Lab File: 2w63190.D
Acq: 1 Feb 2023 3:35 pm

Tgt Ion: 45 Resp: 520149

Ion	Ratio	Lower	Upper
45	100		
43	18.5	17.8	26.6
59	4.3	3.6	5.4

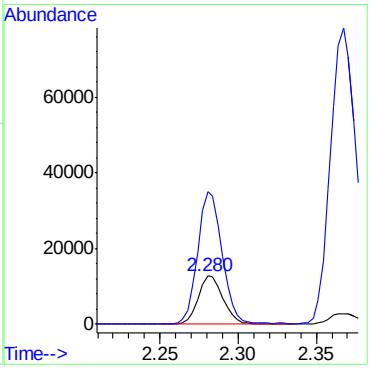


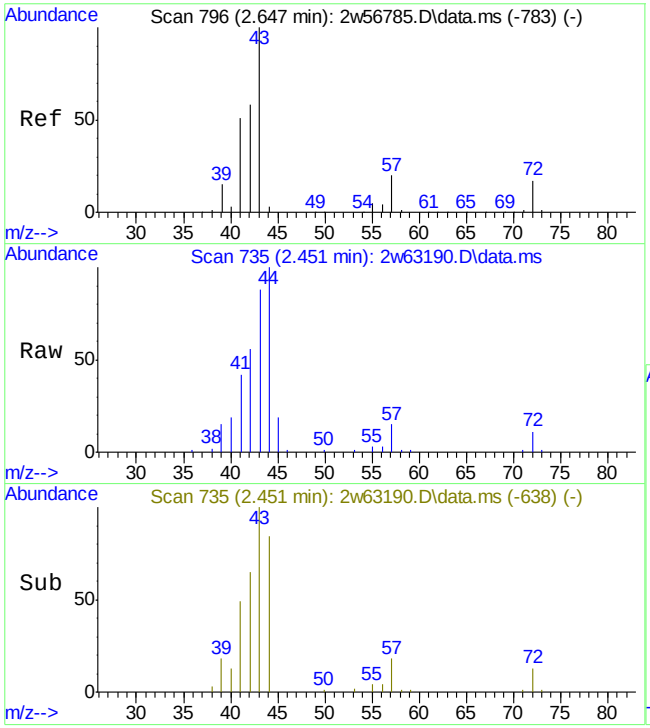


#23
ACETONE
Concen: 2.65 PPBV
RT: 2.280 min Scan# 682
Delta R.T. 0.016 min
Lab File: 2w63190.D
Acq: 1 Feb 2023 3:35 pm

Tgt Ion: 58 Resp: 13902

Ion	Ratio	Lower	Upper
58	100		
43	274.6	229.9	344.9

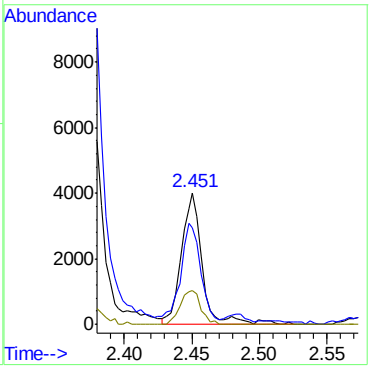


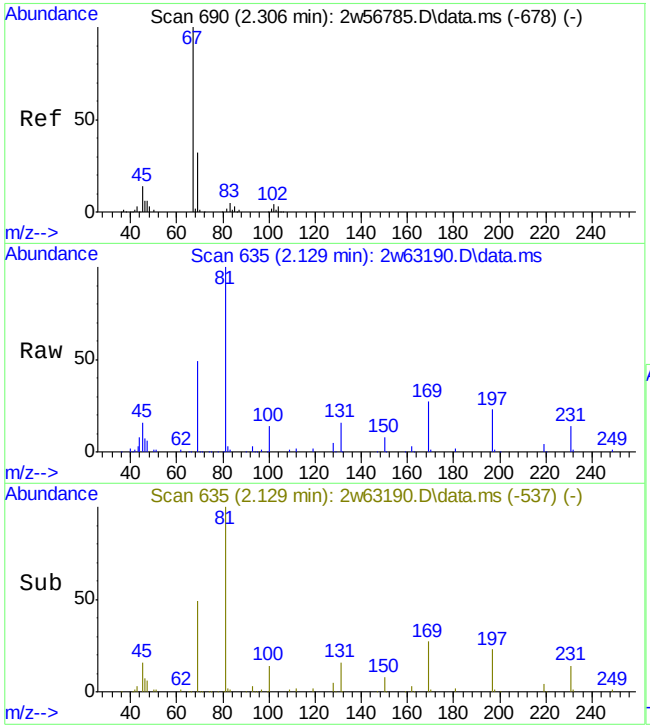


#24
PENTANE
Concen: 0.44 PPBV
RT: 2.451 min Scan# 735
Delta R.T. 0.013 min
Lab File: 2w63190.D
Acq: 1 Feb 2023 3:35 pm

Tgt Ion: 42 Resp: 4332

Ion	Ratio	Lower	Upper
42	100		
41	78.8	75.7	113.5
57	25.3	25.0	37.6

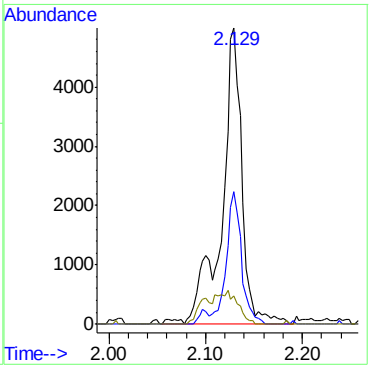


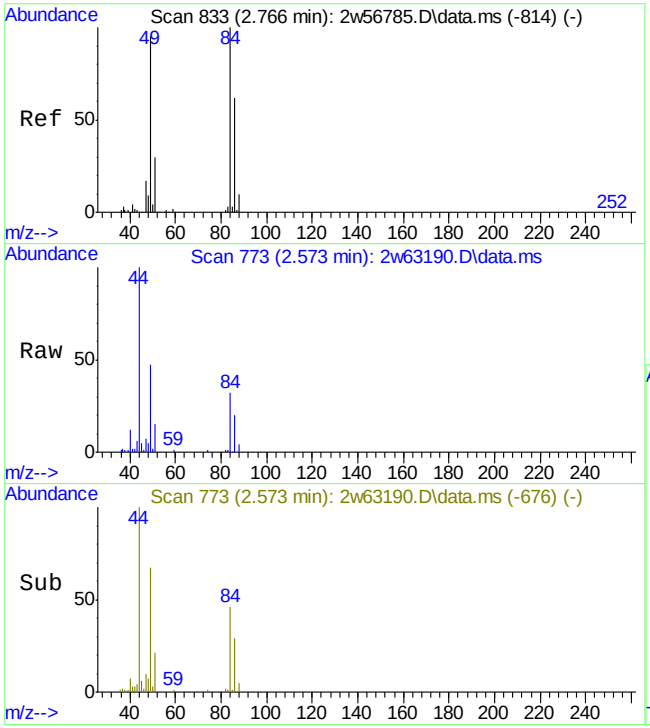


#28
ETHANOL
Concen: 1.66 PPBV
RT: 2.129 min Scan# 635
Delta R.T. 0.016 min
Lab File: 2w63190.D
Acq: 1 Feb 2023 3:35 pm

Tgt Ion: 45 Resp: 7320

Ion	Ratio	Lower	Upper
45	100		
46	35.5	33.4	50.2
42	17.7	7.4	11.2#

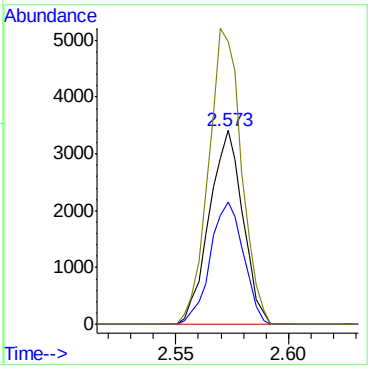


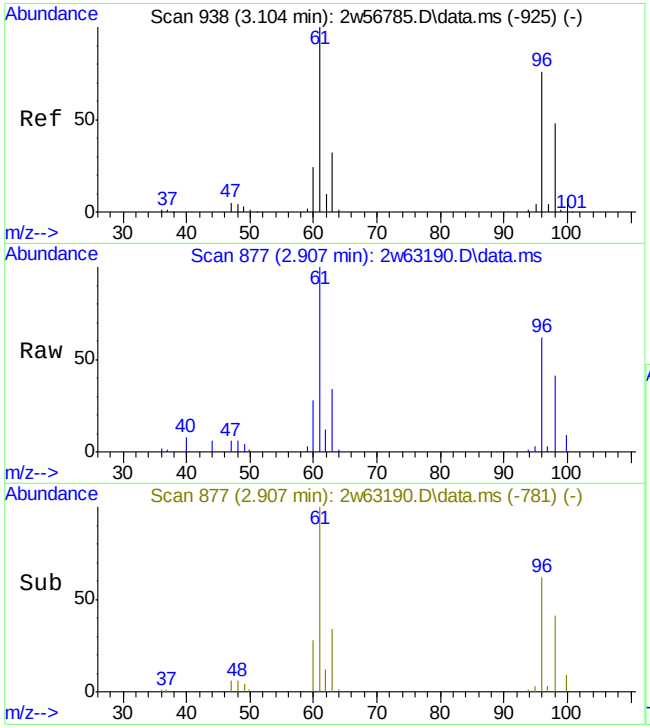


#31
METHYLENE CHLORIDE
Concen: 0.30 PPBV
RT: 2.573 min Scan# 773
Delta R.T. 0.013 min
Lab File: 2w63190.D
Acq: 1 Feb 2023 3:35 pm

Tgt Ion: 84 Resp: 3548

Ion	Ratio	Lower	Upper
84	100		
86	62.5	51.3	76.9
49	149.6	133.3	199.9

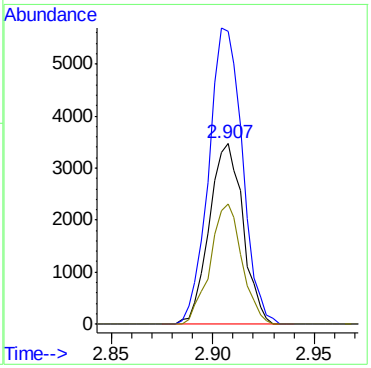


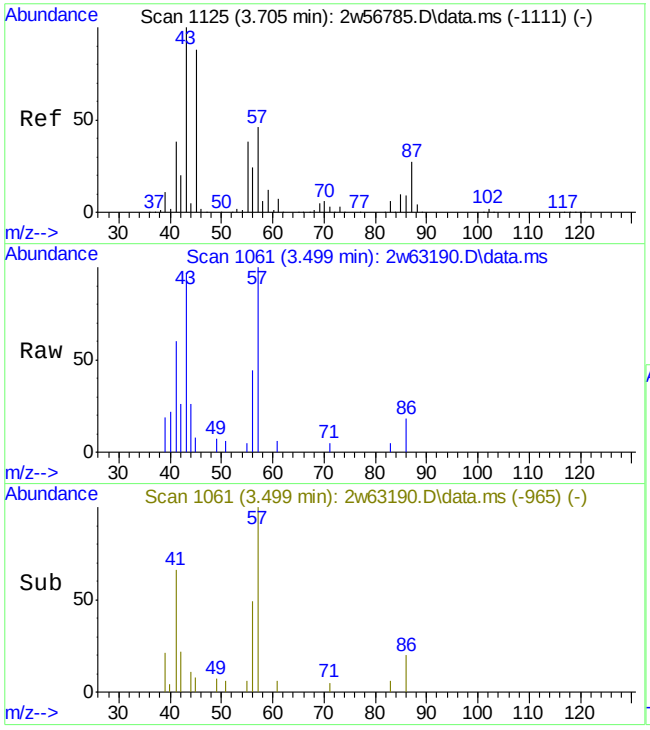


#34
TRANS-1,2-DICHLOROETHENE
Concen: 0.40 PPBV
RT: 2.907 min Scan# 877
Delta R.T. 0.010 min
Lab File: 2w63190.D
Acq: 1 Feb 2023 3:35 pm

Tgt Ion: 96 Resp: 3995

Ion	Ratio	Lower	Upper
96	100		
61	164.4	121.8	182.8
98	62.7	51.4	77.0

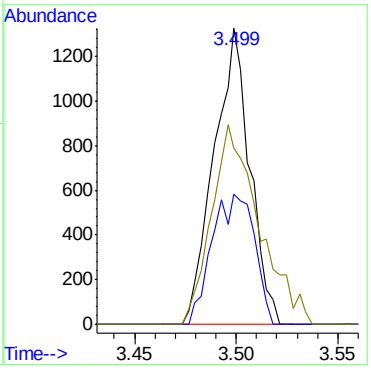


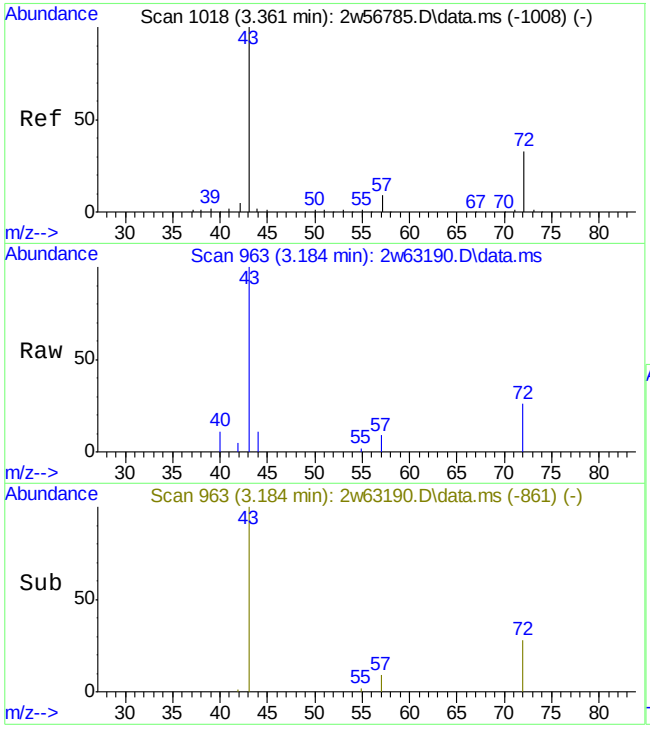


#38
HEXANE
Concen: 0.10 PPBV
RT: 3.499 min Scan# 1061
Delta R.T. 0.010 min
Lab File: 2w63190.D
Acq: 1 Feb 2023 3:35 pm

Tgt Ion: 57 Resp: 1627

Ion	Ratio	Lower	Upper
57	100		
56	51.8	42.2	63.2
41	89.4	79.4	119.2

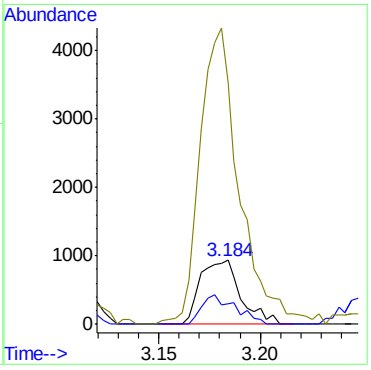


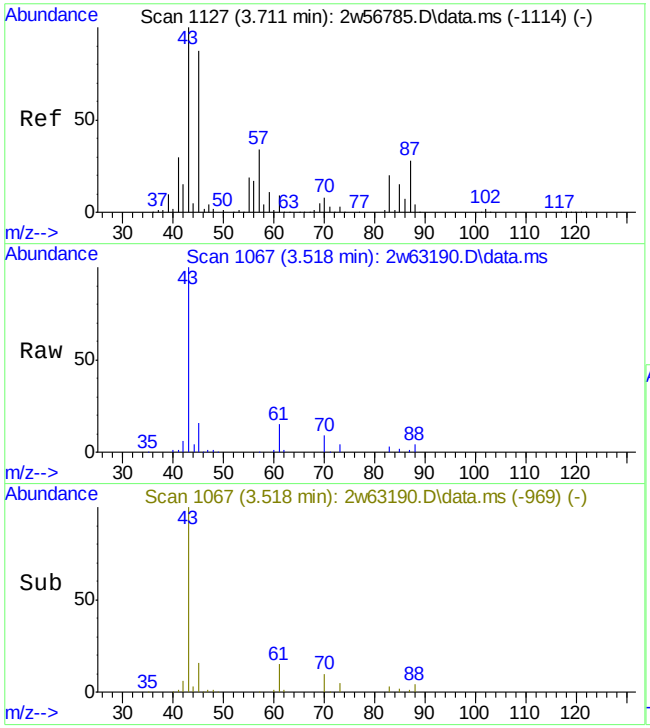


#41
METHYL ETHYL KETONE
Concen: 0.27 PPBV
RT: 3.184 min Scan# 963
Delta R.T. 0.029 min
Lab File: 2w63190.D
Acq: 1 Feb 2023 3:35 pm

Tgt Ion: 72 Resp: 1281

Ion	Ratio	Lower	Upper
72	100		
57	0.0	29.1	43.7#
43	460.7	321.0	481.4

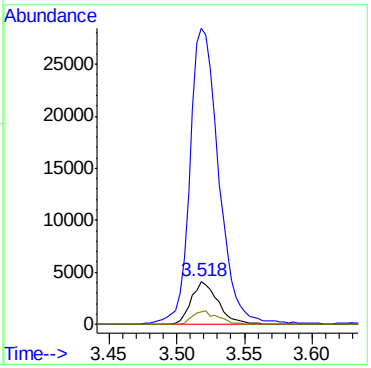


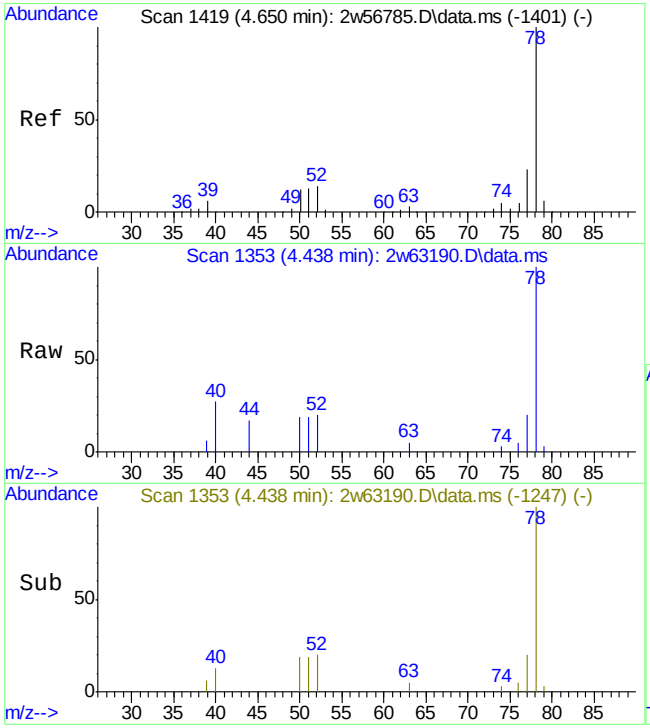


#44
ETHYL ACETATE
Concen: 1.70 PPBV
RT: 3.518 min Scan# 1067
Delta R.T. 0.016 min
Lab File: 2w63190.D
Acq: 1 Feb 2023 3:35 pm

Tgt Ion: 61 Resp: 5663

Ion	Ratio	Lower	Upper
61	100		
43	747.6	1054.2	1581.2#
88	28.7	34.4	51.6#

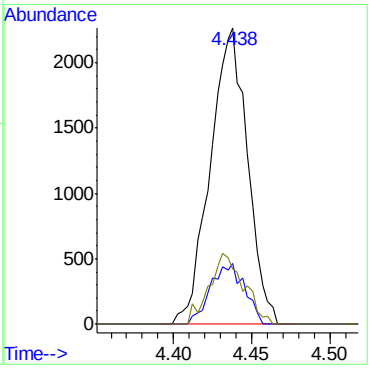


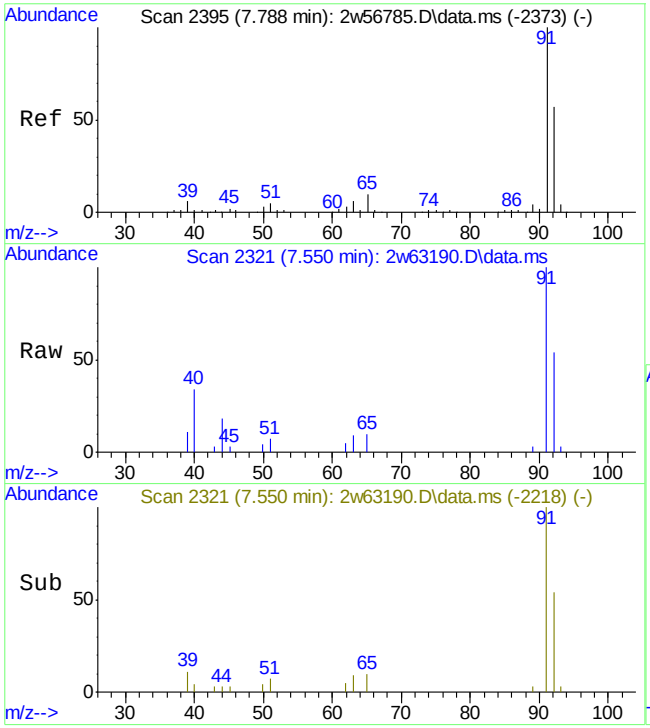


#51
BENZENE
Concen: 0.12 PPBV
RT: 4.438 min Scan# 1353
Delta R.T. 0.010 min
Lab File: 2w63190.D
Acq: 1 Feb 2023 3:35 pm

Tgt Ion: 78 Resp: 3781

Ion	Ratio	Lower	Upper
78	100		
52	18.5	0.0	37.3
51	21.9	0.0	38.9

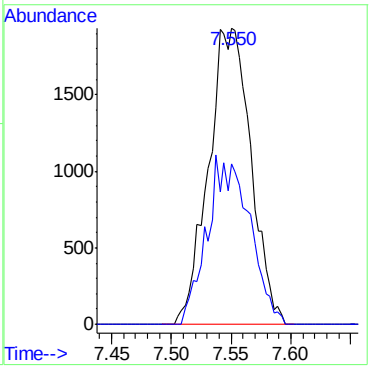




#66
TOLUENE
Concen: 0.12 PPBV
RT: 7.550 min Scan# 2321
Delta R.T. 0.000 min
Lab File: 2w63190.D
Acq: 1 Feb 2023 3:35 pm

Tgt Ion: 91 Resp: 4772

Ion	Ratio	Lower	Upper
91	100		
92	56.6	39.3	79.3



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\
Data File : 2w63191.D
Acq On : 1 Feb 2023 4:14 pm
Operator : thomash
Sample : jd59460-2
Misc : MS66193,v2w2809,400,,,,1
ALS Vial : 5 Sample Multiplier: 1

Quant Time: Feb 02 14:59:22 2023
Quant Method : C:\msdchem\1\METHODS\M2W2776.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Mon Dec 19 08:01:03 2022
Response via : Initial Calibration

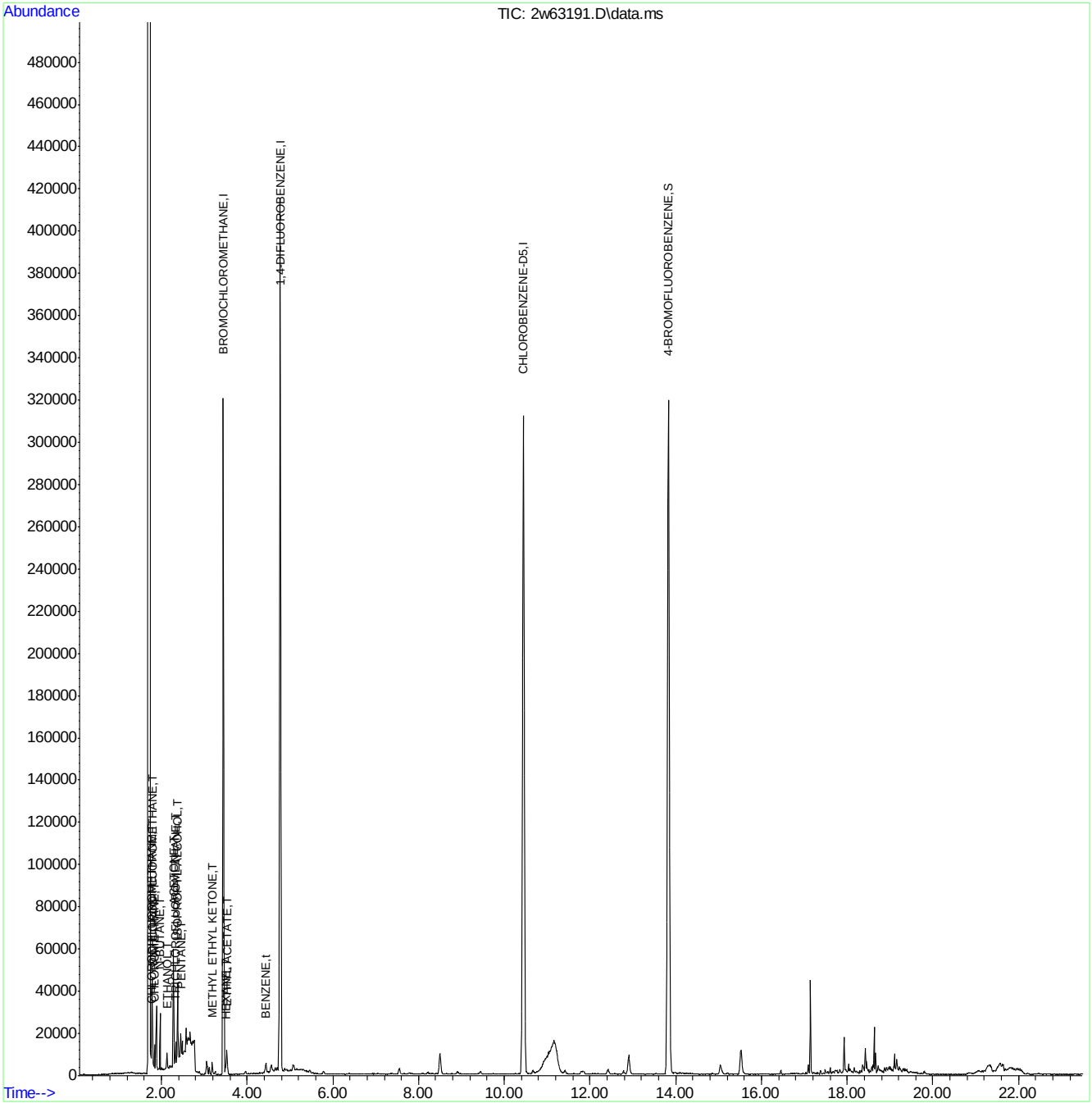
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) BROMOCHLOROMETHANE	3.445	128	60901	10.00	PPBV	# 0.01
52) 1,4-DIFLUOROBENZENE	4.772	114	312236	10.00	PPBV	0.01
76) CHLOROBENZENE-D5	10.444	117	283446	10.00	PPBV	0.00
System Monitoring Compounds						
87) 4-BROMOFLUOROBENZENE	13.830	95	203776	9.31	PPBV	0.00
Target Compounds						Qvalue
4) CHLORODIFLUOROMETHANE	1.766	67	628	0.26	PPBV	# 40
6) DICHLORODIFLUOROMETHANE	1.795	85	9741	0.32	PPBV	# 94
10) CHLOROMETHANE	1.843	52	1834	0.74	PPBV	96
13) N-BUTANE	1.969	43	12389	0.99	PPBV	# 92
21) TRICHLOROFLUOROMETHANE	2.329	101	4989	0.17	PPBV	# 93
22) ISOPROPYL ALCOHOL	2.377	45	27881	1.51	PPBV	96
23) ACETONE	2.284	58	12001	2.32	PPBV	91
24) PENTANE	2.451	42	2341	0.24	PPBV	85
28) ETHANOL	2.133	45	5115	1.18	PPBV	# 93
38) HEXANE	3.502	57	1741	0.11	PPBV	# 79
41) METHYL ETHYL KETONE	3.187	72	1094	0.23	PPBV	# 63
44) ETHYL ACETATE	3.528	61	1373	0.42	PPBV	# 11
51) BENZENE	4.438	78	3604	0.11	PPBV	87

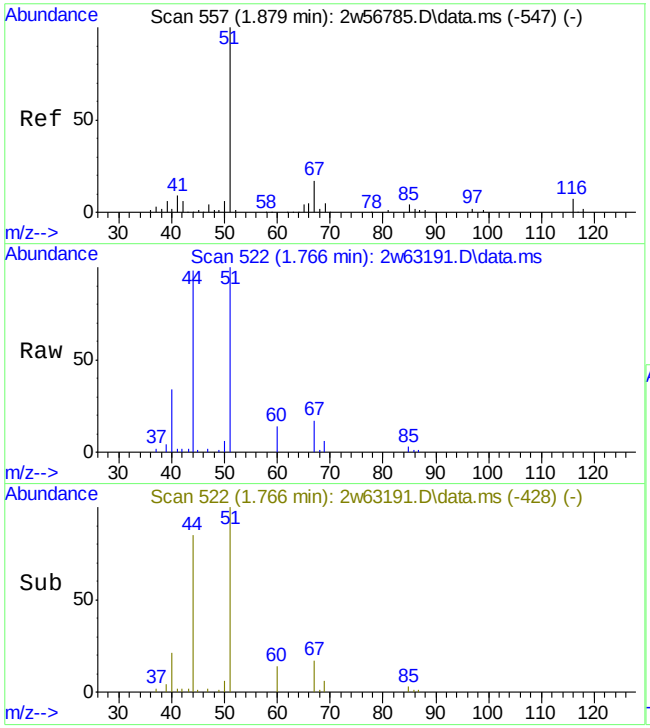
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\
Data File : 2w63191.D
Acq On : 1 Feb 2023 4:14 pm
Operator : thomash
Sample : jd59460-2
Misc : MS66193,v2w2809,400,,,,1
ALS Vial : 5 Sample Multiplier: 1

Quant Time: Feb 02 14:59:22 2023
Quant Method : C:\msdchem\1\METHODS\M2W2776.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Mon Dec 19 08:01:03 2022
Response via : Initial Calibration

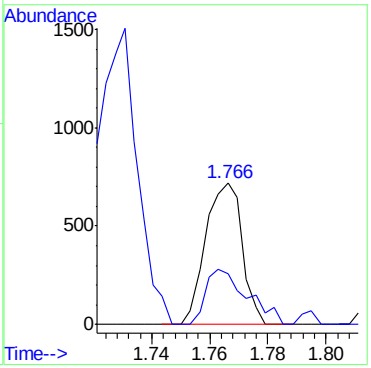


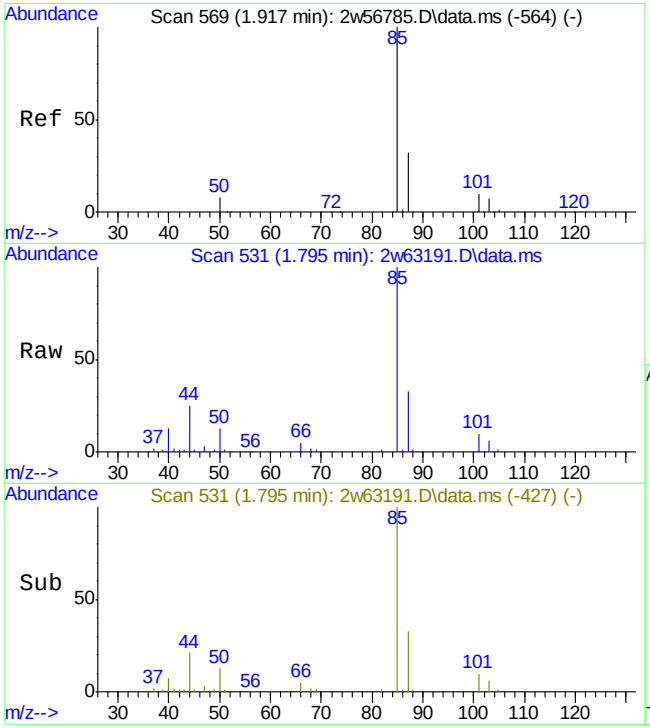


#4
CHLORODIFLUOROMETHANE
Concen: 0.26 PPBV
RT: 1.766 min Scan# 522
Delta R.T. 0.004 min
Lab File: 2w63191.D
Acq: 1 Feb 2023 4:14 pm

Tgt Ion: 67 Resp: 628

Ion	Ratio	Lower	Upper
67	100		
69	0.0	27.4	41.0#

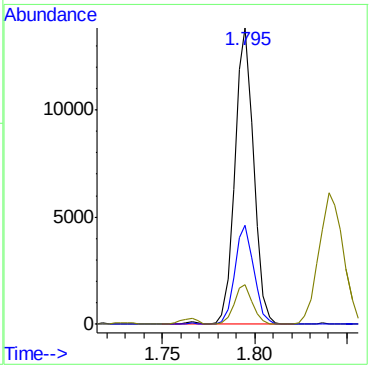


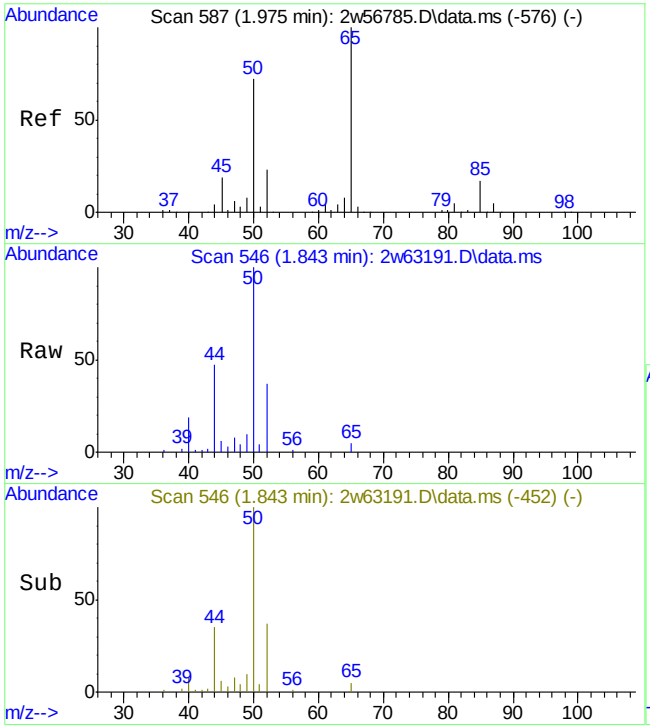


#6
DICHLORODIFLUOROMETHANE
Concen: 0.32 PPBV
RT: 1.795 min Scan# 531
Delta R.T. 0.004 min
Lab File: 2w63191.D
Acq: 1 Feb 2023 4:14 pm

Tgt Ion: 85 Resp: 9741

Ion	Ratio	Lower	Upper
85	100		
87	33.6	25.9	38.9
50	12.9	14.6	21.8#

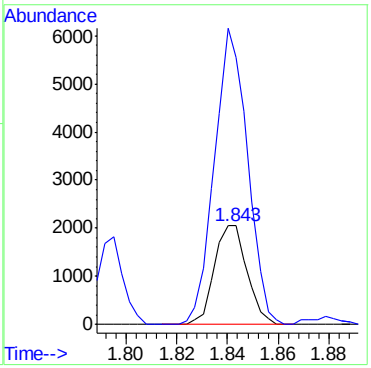


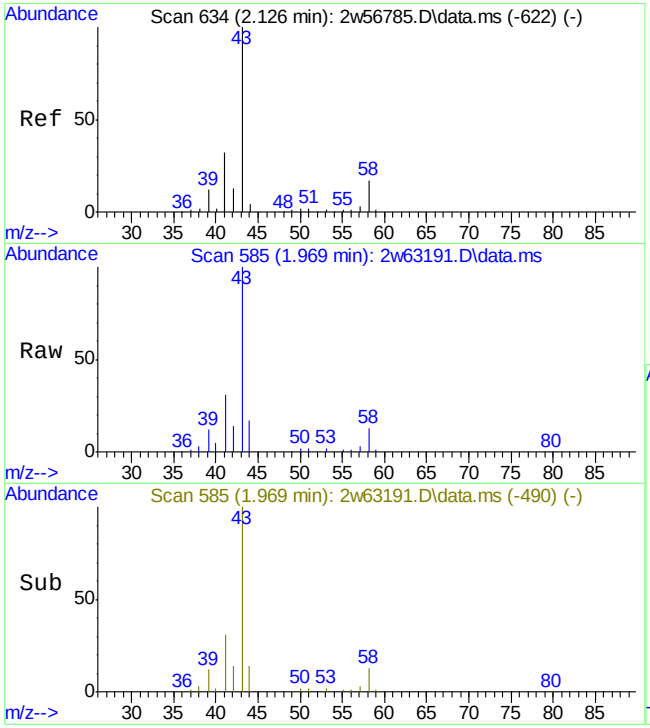


#10
CHLOROMETHANE
Concen: 0.74 PPBV
RT: 1.843 min Scan# 546
Delta R.T. 0.004 min
Lab File: 2w63191.D
Acq: 1 Feb 2023 4:14 pm

Tgt Ion: 52 Resp: 1834

Ion	Ratio	Lower	Upper
52	100		
50	304.3	249.6	374.4

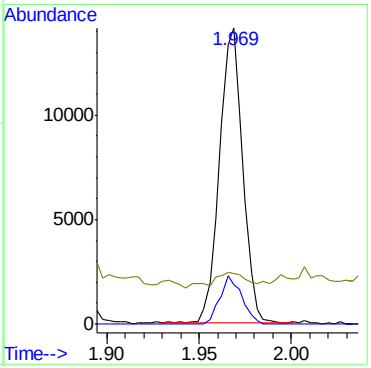


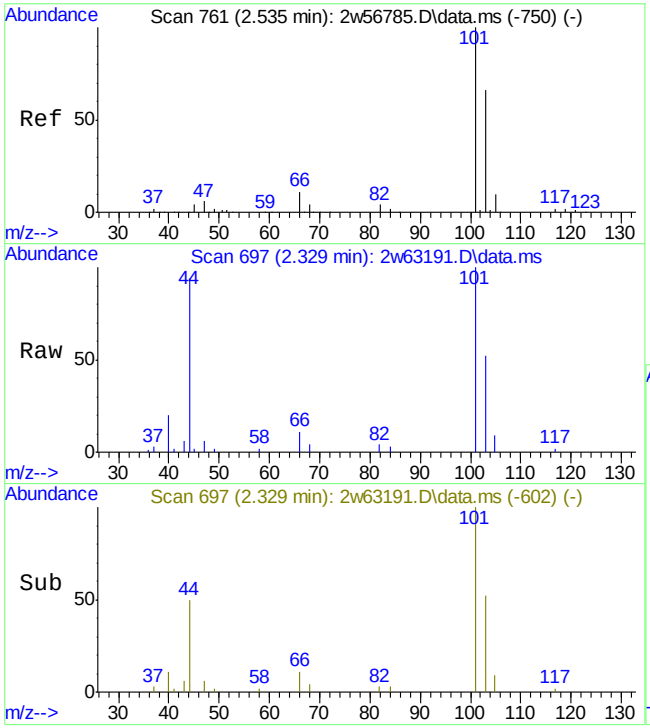


#13
N-BUTANE
Concen: 0.99 PPBV
RT: 1.969 min Scan# 585
Delta R.T. 0.007 min
Lab File: 2w63191.D
Acq: 1 Feb 2023 4:14 pm

Tgt Ion: 43 Resp: 12389

Ion	Ratio	Lower	Upper
43	100		
58	15.4	15.0	22.4
44	7.4	3.4	5.2#

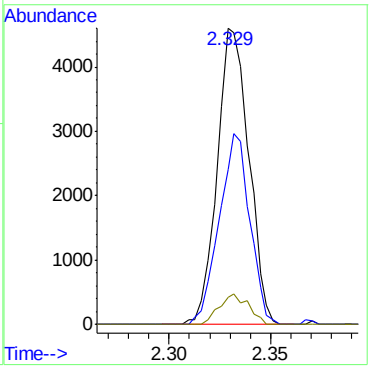


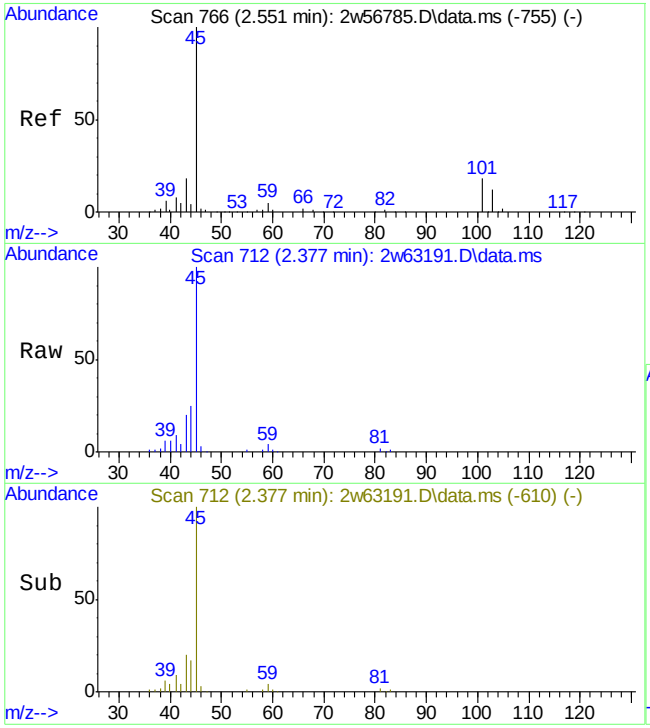


#21
TRICHLOROFLUOROMETHANE
Concen: 0.17 PPBV
RT: 2.329 min Scan# 697
Delta R.T. 0.007 min
Lab File: 2w63191.D
Acq: 1 Feb 2023 4:14 pm

Tgt Ion:101 Resp: 4989

Ion	Ratio	Lower	Upper
101	100		
103	62.4	52.1	78.1
105	0.0	8.3	12.5#

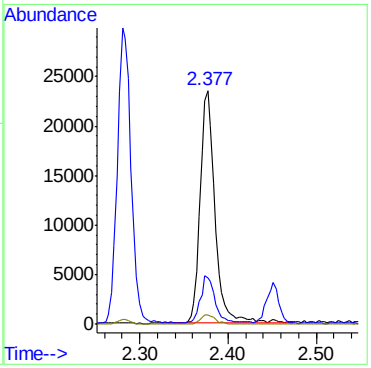


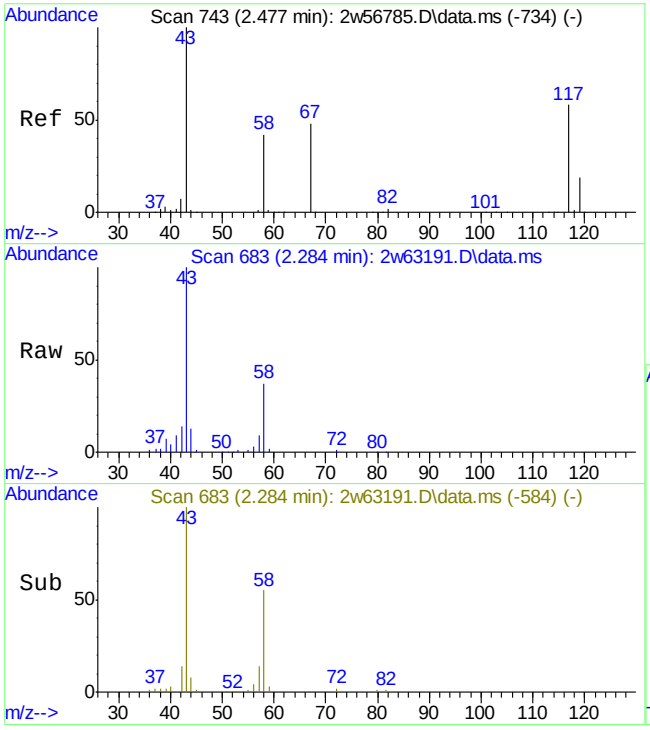


#22
ISOPROPYL ALCOHOL
Concen: 1.51 PPBV
RT: 2.377 min Scan# 712
Delta R.T. 0.029 min
Lab File: 2w63191.D
Acq: 1 Feb 2023 4:14 pm

Tgt Ion: 45 Resp: 27881

Ion	Ratio	Lower	Upper
45	100		
43	20.3	17.8	26.6
59	3.9	3.6	5.4

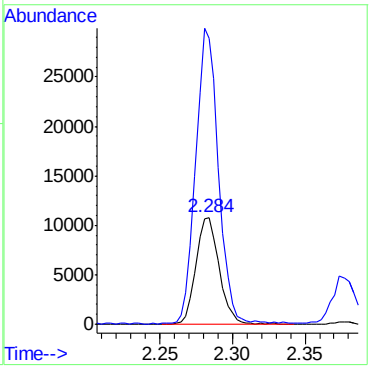


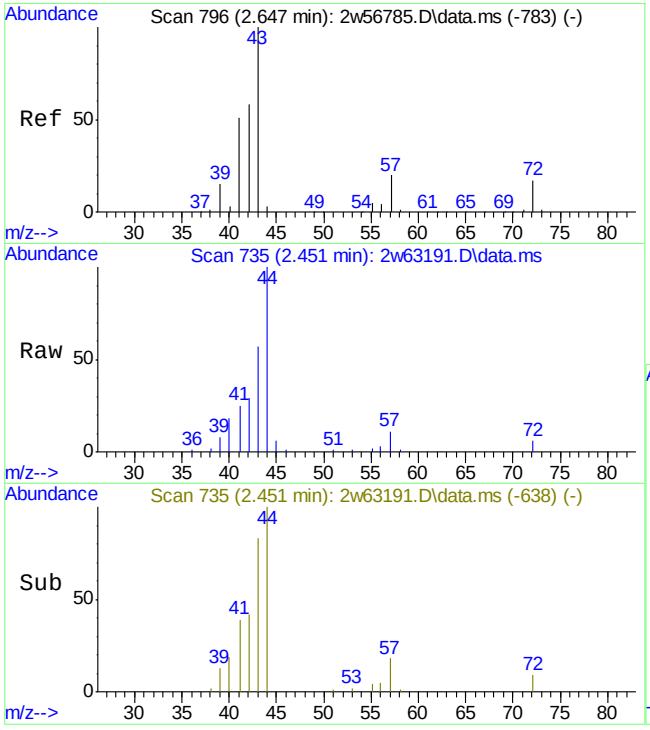


#23
ACETONE
Concen: 2.32 PPBV
RT: 2.284 min Scan# 683
Delta R.T. 0.020 min
Lab File: 2w63191.D
Acq: 1 Feb 2023 4:14 pm

Tgt Ion: 58 Resp: 12001

Ion	Ratio	Lower	Upper
58	100		
43	271.1	229.9	344.9

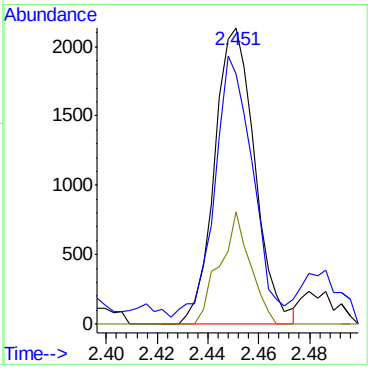


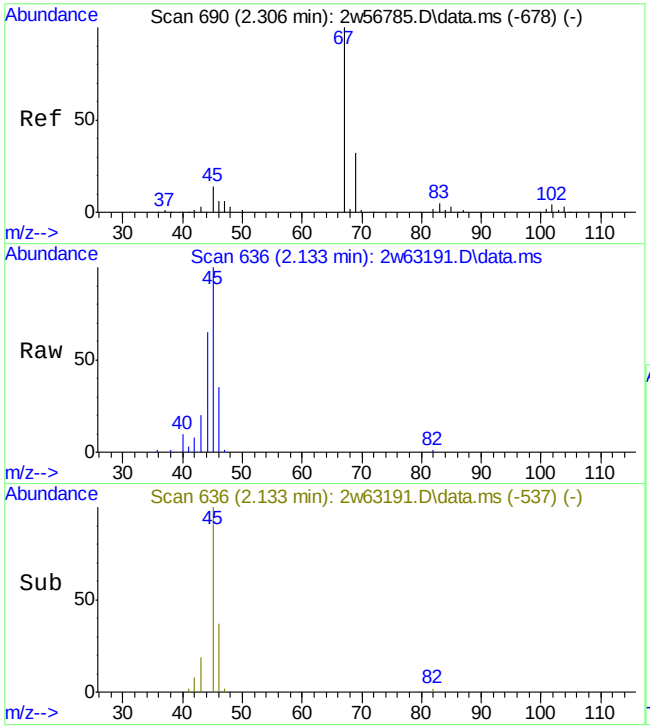


#24
PENTANE
Concen: 0.24 PPBV
RT: 2.451 min Scan# 735
Delta R.T. 0.013 min
Lab File: 2w63191.D
Acq: 1 Feb 2023 4:14 pm

Tgt Ion: 42 Resp: 2341

Ion	Ratio	Lower	Upper
42	100		
41	76.2	75.7	113.5
57	28.9	25.0	37.6

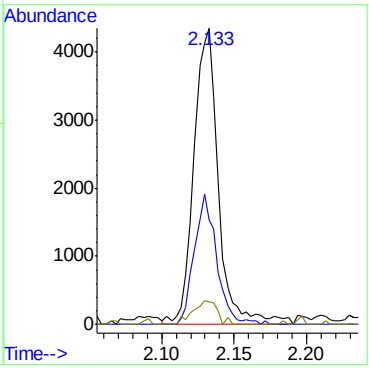


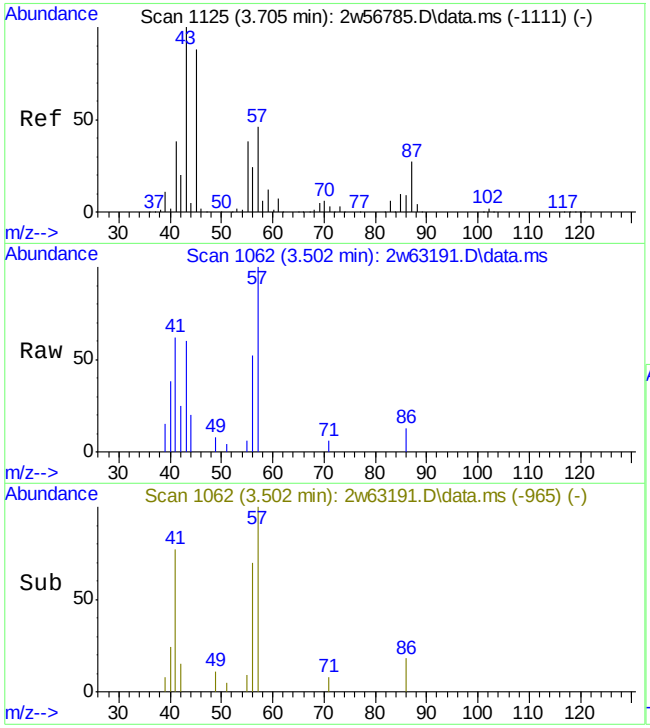


#28
ETHANOL
Concen: 1.18 PPBV
RT: 2.133 min Scan# 636
Delta R.T. 0.020 min
Lab File: 2w63191.D
Acq: 1 Feb 2023 4:14 pm

Tgt Ion: 45 Resp: 5115

Ion	Ratio	Lower	Upper
45	100		
46	40.0	33.4	50.2
42	0.0	7.4	11.2#

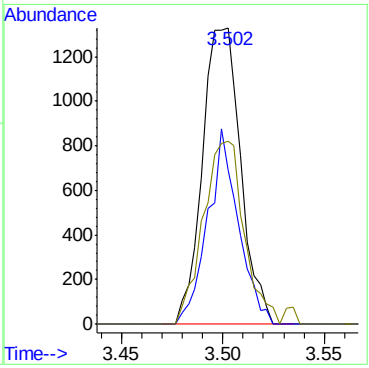


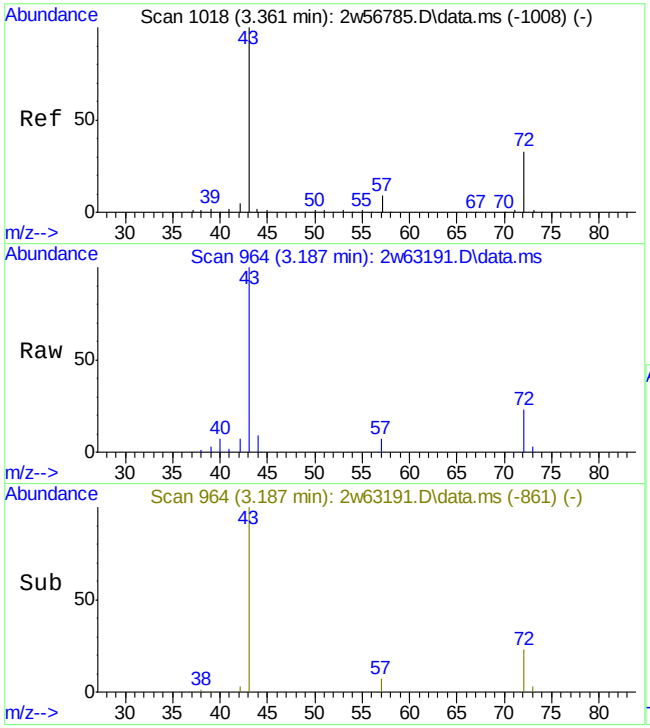


#38
HEXANE
Concen: 0.11 PPBV
RT: 3.502 min Scan# 1062
Delta R.T. 0.013 min
Lab File: 2w63191.D
Acq: 1 Feb 2023 4:14 pm

Tgt Ion: 57 Resp: 1741

Ion	Ratio	Lower	Upper
57	100		
56	52.6	42.2	63.2
41	67.4	79.4	119.2#

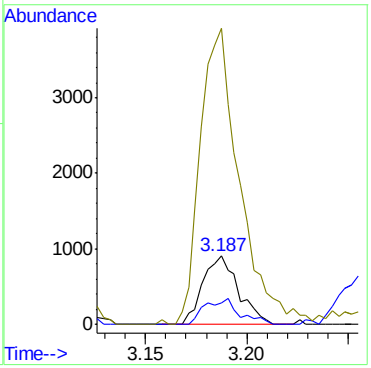


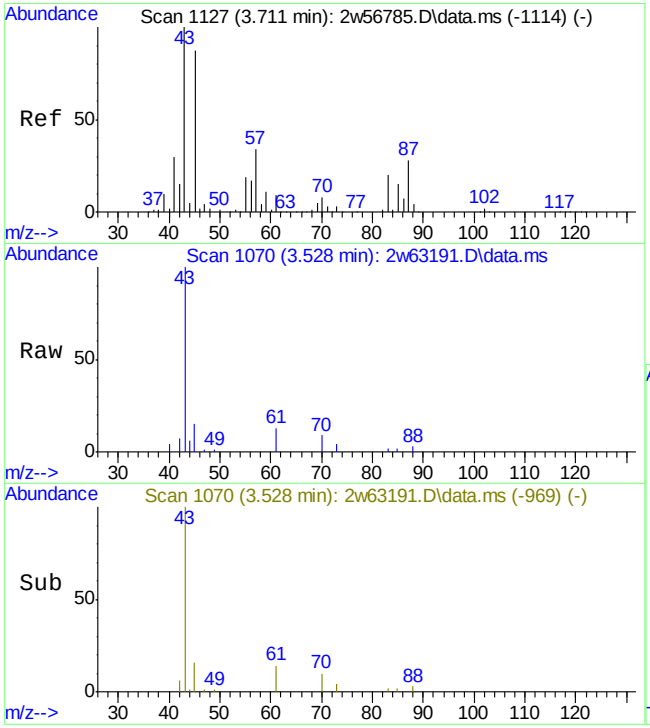


#41
METHYL ETHYL KETONE
Concen: 0.23 PPBV
RT: 3.187 min Scan# 964
Delta R.T. 0.033 min
Lab File: 2w63191.D
Acq: 1 Feb 2023 4:14 pm

Tgt Ion: 72 Resp: 1094

Ion	Ratio	Lower	Upper
72	100		
57	0.0	29.1	43.7#
43	483.9	321.0	481.4#

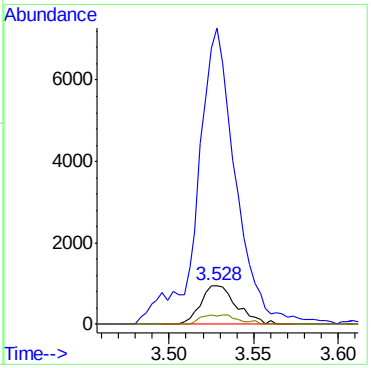


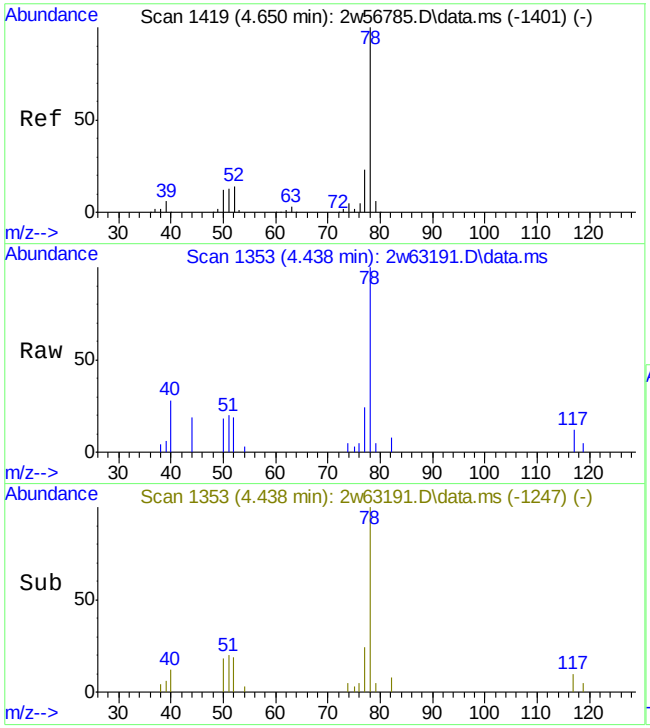


#44
ETHYL ACETATE
Concen: 0.42 PPBV
RT: 3.528 min Scan# 1070
Delta R.T. 0.026 min
Lab File: 2w63191.D
Acq: 1 Feb 2023 4:14 pm

Tgt Ion: 61 Resp: 1373

Ion	Ratio	Lower	Upper
61	100		
43	832.3	1054.2	1581.2#
88	0.0	34.4	51.6#

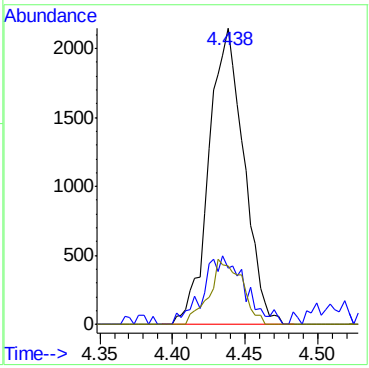




#51
BENZENE
Concen: 0.11 PPBV
RT: 4.438 min Scan# 1353
Delta R.T. 0.010 min
Lab File: 2w63191.D
Acq: 1 Feb 2023 4:14 pm

Tgt Ion: 78 Resp: 3604

Ion	Ratio	Lower	Upper
78	100		
52	27.7	0.0	37.3
51	20.4	0.0	38.9



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\
Data File : 2w63192.D
Acq On : 1 Feb 2023 4:49 pm
Operator : thomash
Sample : jd59460-3
Misc : MS66193,v2w2809,165,,,,1.65
ALS Vial : 6 Sample Multiplier: 1

Quant Time: Feb 02 15:22:04 2023
Quant Method : C:\msdchem\1\METHODS\M2W2776.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Mon Dec 19 08:01:03 2022
Response via : Initial Calibration

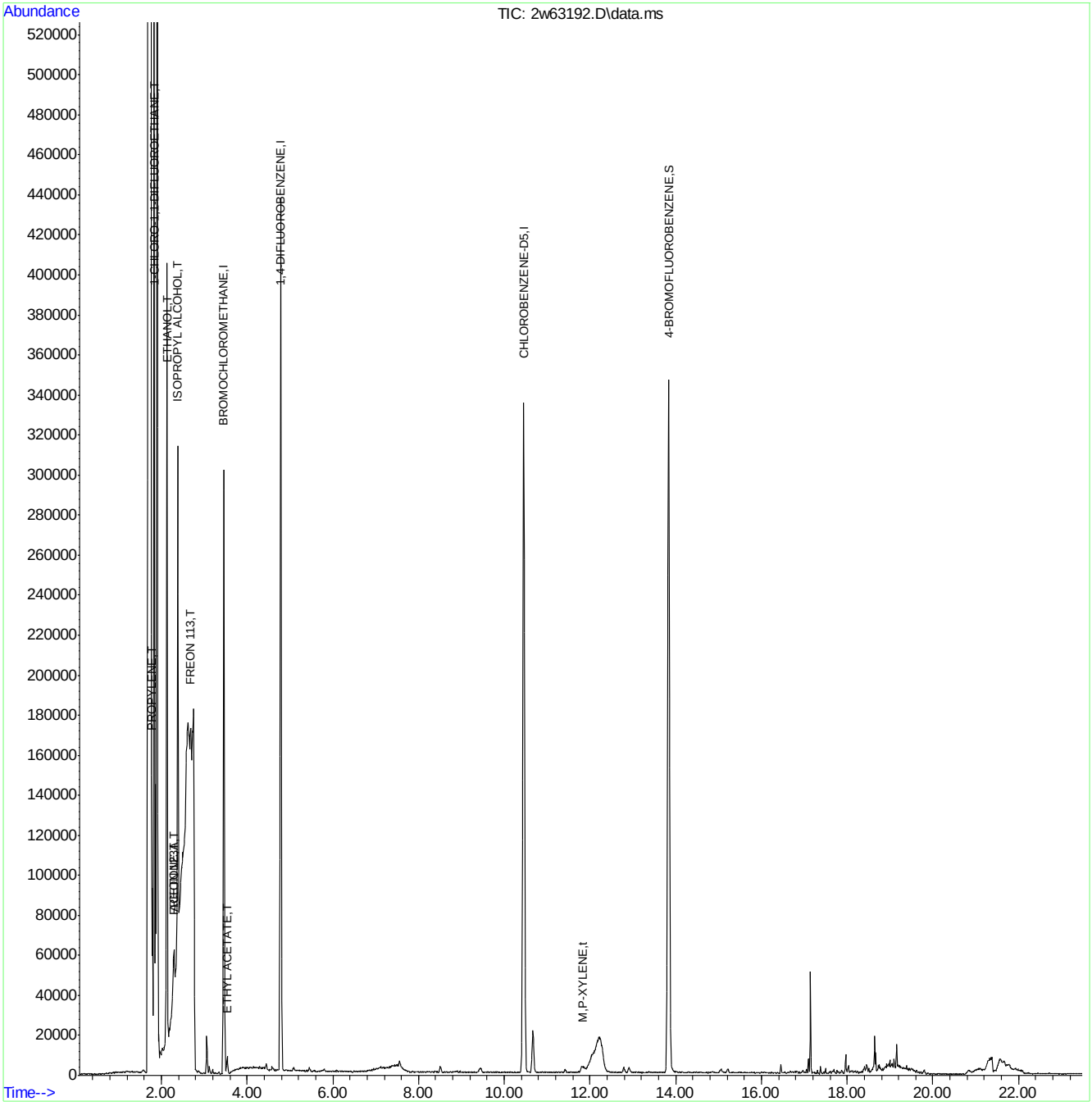
Compound	R.T.	QIon	Response	Conc	Units		Dev(Min)
Internal Standards							
1) BROMOCHLOROMETHANE	3.457	128	63224	10.00	PPBV	#	0.02
52) 1,4-DIFLUOROBENZENE	4.782	114	339424	10.00	PPBV		0.02
76) CHLOROBENZENE-D5	10.454	117	307593	10.00	PPBV		0.00
System Monitoring Compounds							
87) 4-BROMOFLUOROBENZENE	13.836	95	220520	9.28	PPBV		0.00
Target Compounds							Qvalue
7) PROPYLENE	1.766	41	824	0.14	PPBV		93
8) 1-CHLORO-1,1-DIFLUOROE...	1.830	65	364606	15.77	PPBV		95
20) FREON 123A	2.280	117	4108	0.30	PPBV		92
22) ISOPROPYL ALCOHOL	2.380	45	207423	10.81	PPBV		93
23) ACETONE	2.297	58	4838	0.90	PPBV		76
28) ETHANOL	2.136	45	3487	0.77	PPBV	#	83
33) FREON 113	2.686	151	5630	0.30	PPBV		94
44) ETHYL ACETATE	3.531	61	841	0.25	PPBV	#	11
80) M,P-XYLENE	11.833	91	4875	0.10	PPBV	#	59

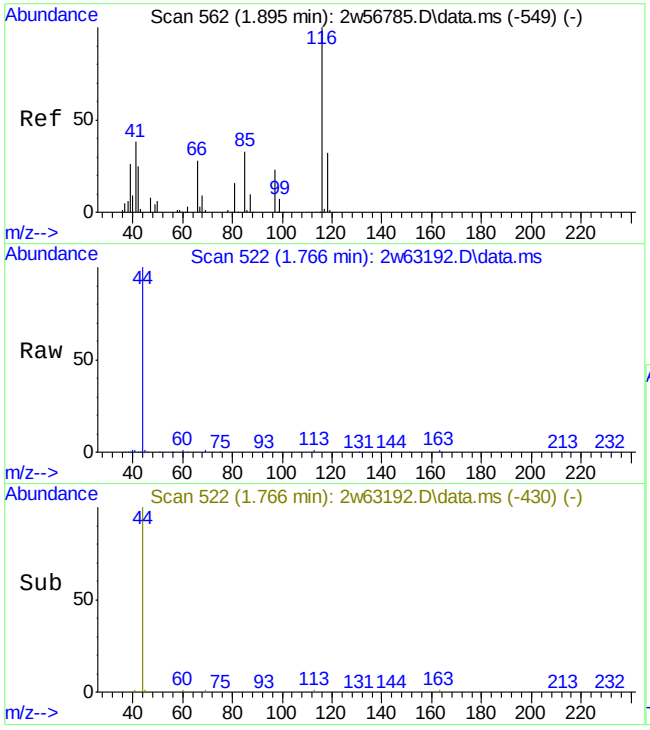
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\
Data File : 2w63192.D
Acq On : 1 Feb 2023 4:49 pm
Operator : thomash
Sample : jd59460-3
Misc : MS66193,v2w2809,165,,,,1.65
ALS Vial : 6 Sample Multiplier: 1

Quant Time: Feb 02 15:22:04 2023
Quant Method : C:\msdchem\1\METHODS\M2W2776.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Mon Dec 19 08:01:03 2022
Response via : Initial Calibration

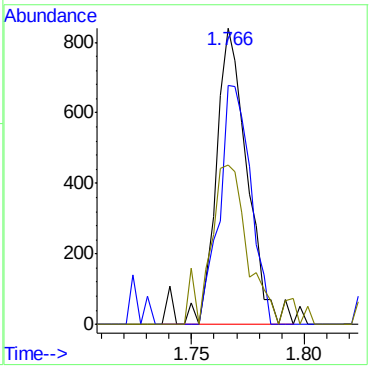


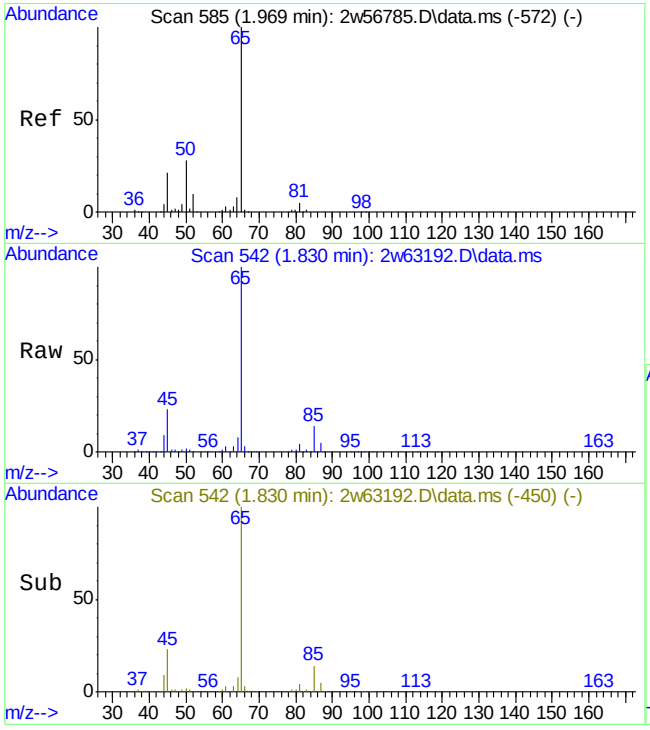


#7
PROPYLENE
Concen: 0.14 PPBV
RT: 1.766 min Scan# 522
Delta R.T. -0.003 min
Lab File: 2w63192.D
Acq: 1 Feb 2023 4:49 pm

Tgt Ion: 41 Resp: 824

Ion	Ratio	Lower	Upper
41	100		
39	79.9	57.7	86.5
42	62.5	53.5	80.3

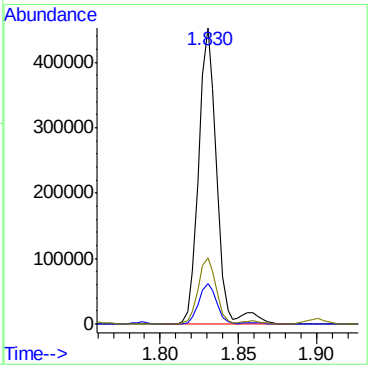


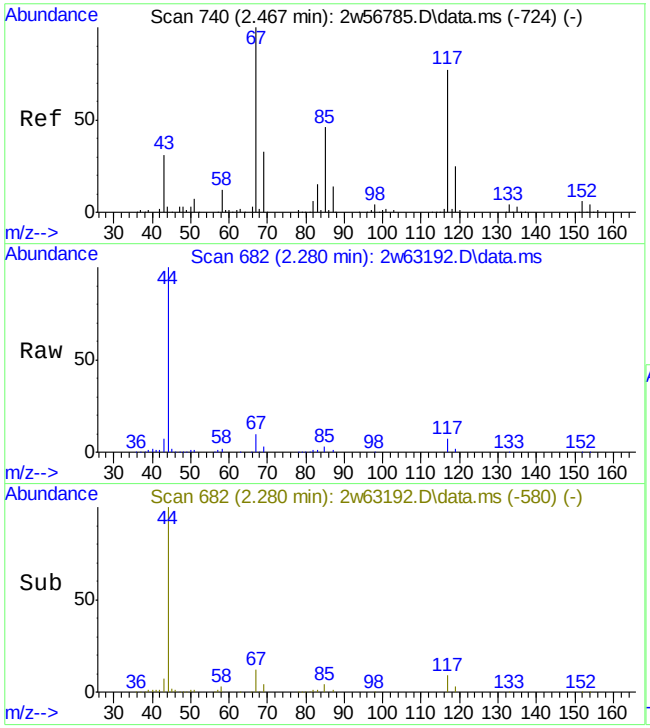


#8
1-CHLORO-1,1-DIFLUOROETHANE
Concen: 15.77 PPBV
RT: 1.830 min Scan# 542
Delta R.T. -0.003 min
Lab File: 2w63192.D
Acq: 1 Feb 2023 4:49 pm

Tgt Ion: 65 Resp: 364606

Ion	Ratio	Lower	Upper
65	100		
85	14.0	10.9	16.3
45	22.3	20.5	30.7

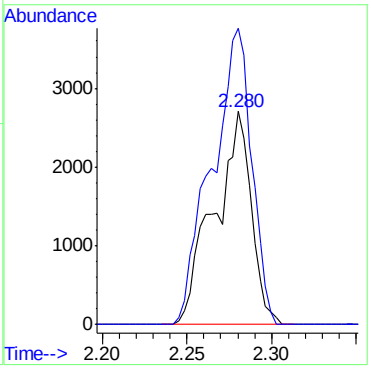


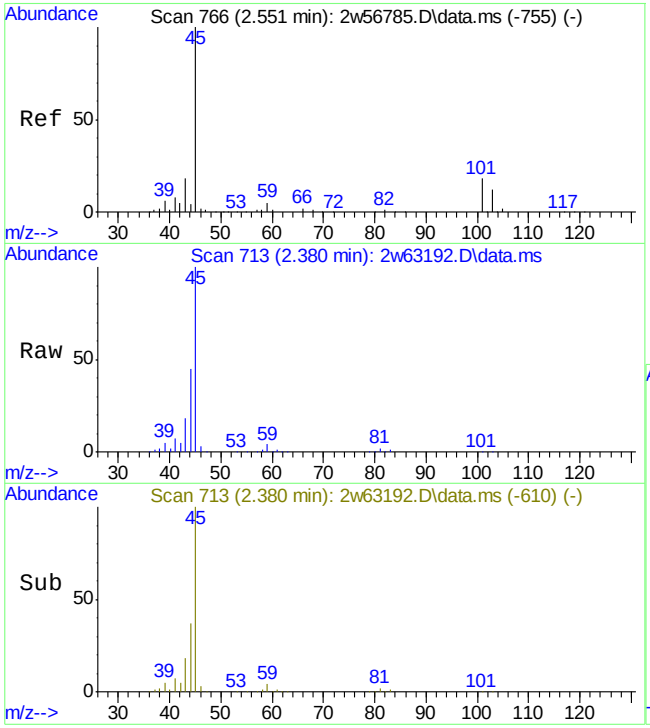


#20
FREON 123A
Concen: 0.30 PPBV
RT: 2.280 min Scan# 682
Delta R.T. 0.029 min
Lab File: 2w63192.D
Acq: 1 Feb 2023 4:49 pm

Tgt Ion:117 Resp: 4108

Ion	Ratio	Lower	Upper
117	100		
67	149.9	128.6	192.8

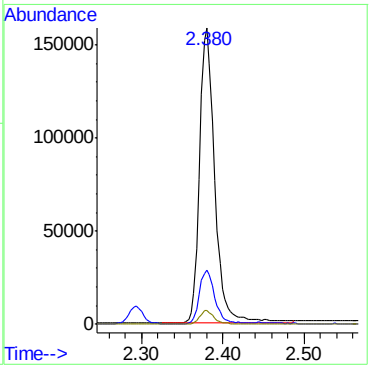


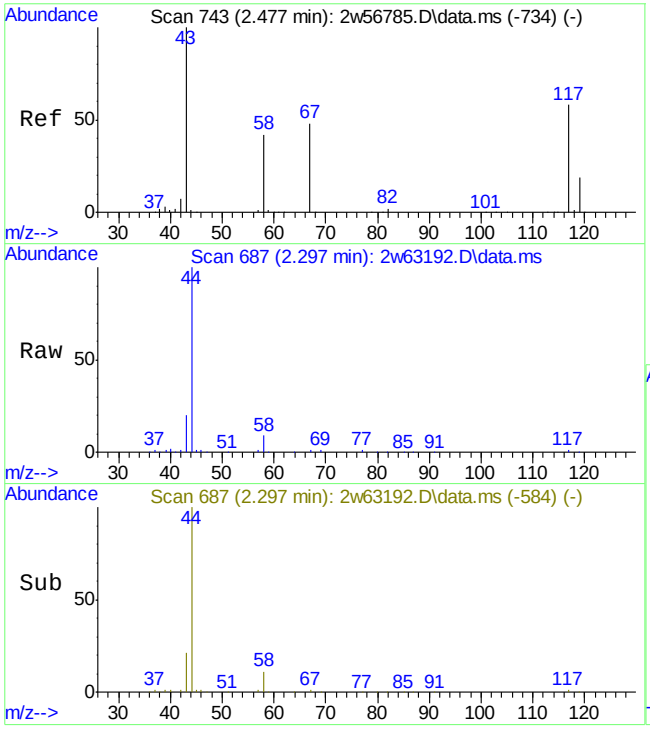


#22
ISOPROPYL ALCOHOL
Concen: 10.81 PPBV
RT: 2.380 min Scan# 713
Delta R.T. 0.032 min
Lab File: 2w63192.D
Acq: 1 Feb 2023 4:49 pm

Tgt Ion: 45 Resp: 207423

Ion	Ratio	Lower	Upper
45	100		
43	18.3	17.8	26.6
59	4.3	3.6	5.4

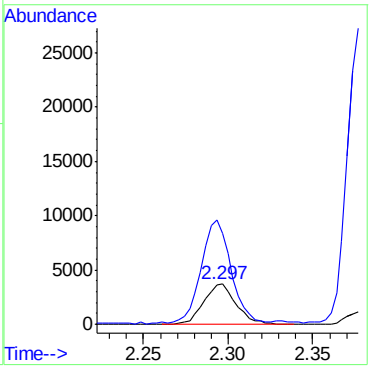


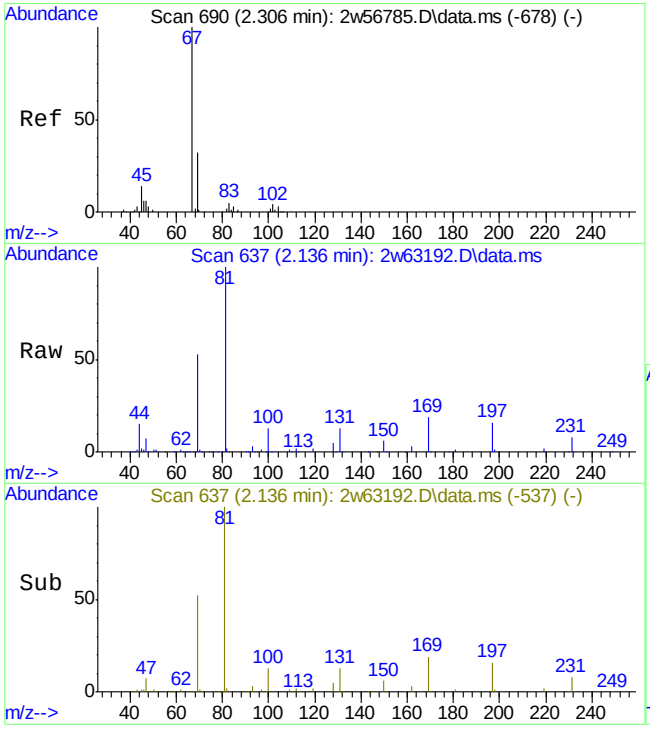


#23
ACETONE
Concen: 0.90 PPBV
RT: 2.297 min Scan# 687
Delta R.T. 0.032 min
Lab File: 2w63192.D
Acq: 1 Feb 2023 4:49 pm

Tgt Ion: 58 Resp: 4838

Ion	Ratio	Lower	Upper
58	100		
43	240.7	229.9	344.9

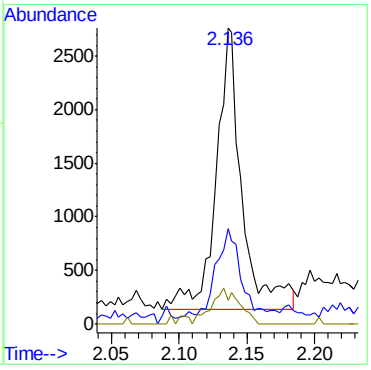


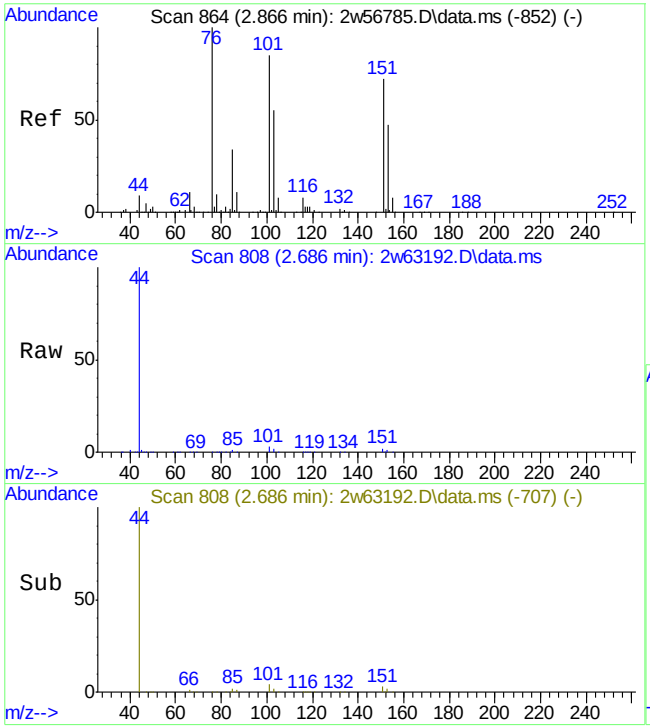


#28
ETHANOL
Concen: 0.77 PPBV
RT: 2.136 min Scan# 637
Delta R.T. 0.023 min
Lab File: 2w63192.D
Acq: 1 Feb 2023 4:49 pm

Tgt Ion: 45 Resp: 3487

Ion	Ratio	Lower	Upper
45	100		
46	30.6	33.4	50.2#
42	15.1	7.4	11.2#

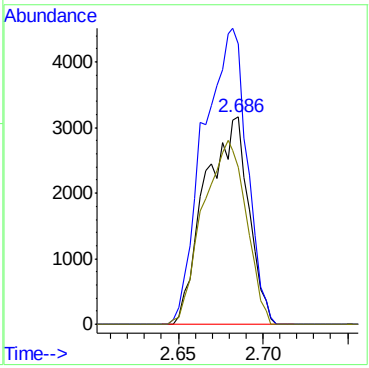


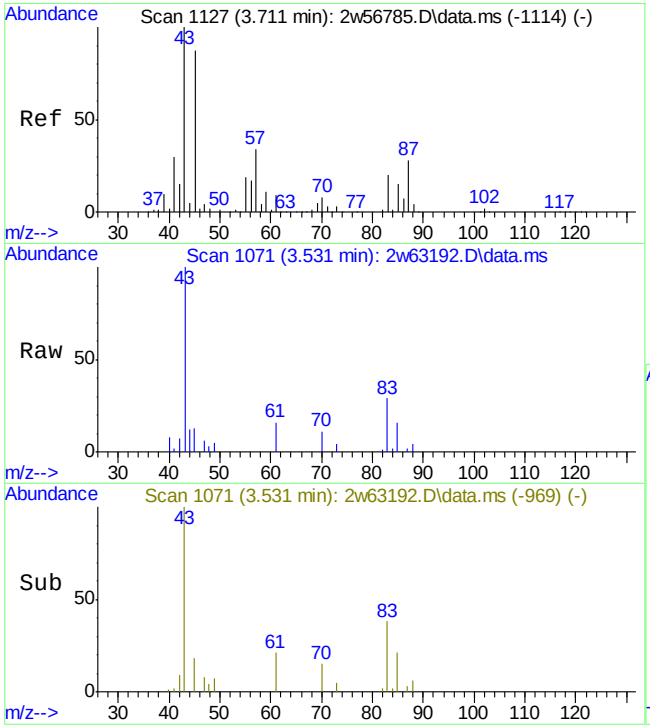


#33
FREON 113
Concen: 0.30 PPBV
RT: 2.686 min Scan# 808
Delta R.T. 0.026 min
Lab File: 2w63192.D
Acq: 1 Feb 2023 4:49 pm

Tgt Ion:151 Resp: 5630

Ion	Ratio	Lower	Upper
151	100		
101	143.6	106.5	159.7
103	88.4	69.2	103.8

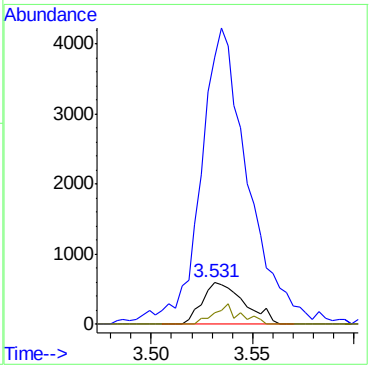


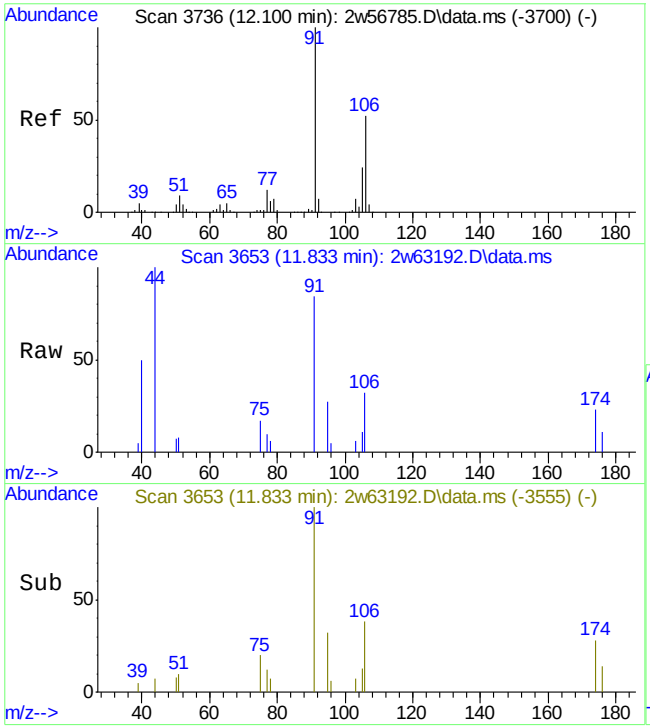


#44
ETHYL ACETATE
Concen: 0.25 PPBV
RT: 3.531 min Scan# 1071
Delta R.T. 0.029 min
Lab File: 2w63192.D
Acq: 1 Feb 2023 4:49 pm

Tgt Ion: 61 Resp: 841

Ion	Ratio	Lower	Upper
61	100		
43	830.8	1054.2	1581.2#
88	0.0	34.4	51.6#

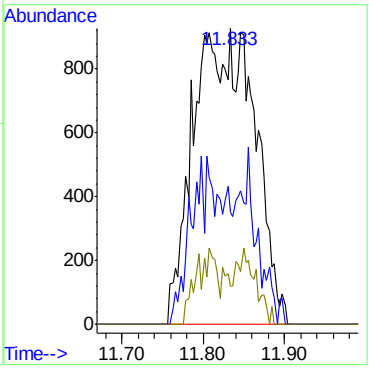




#80
M,P-XYLENE
Concen: 0.10 PPBV
RT: 11.833 min Scan# 3653
Delta R.T. -0.016 min
Lab File: 2w63192.D
Acq: 1 Feb 2023 4:49 pm

Tgt Ion: 91 Resp: 4875

Ion	Ratio	Lower	Upper
91	100		
106	0.0	3.0	43.0#
105	0.0	0.0	30.9



Manual Integrations APPROVED (compounds with "m" flag)
Kanya Veerawat 02/02/23 17:19

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\
Data File : 2w63193.D
Acq On : 1 Feb 2023 5:23 pm
Operator : thomash
Sample : jd59460-5
Misc : MS66193,v2w2809,155,,,,1.55
ALS Vial : 7 Sample Multiplier: 1

Quant Time: Feb 02 16:06:22 2023
Quant Method : C:\msdchem\1\METHODS\M2W2776.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Mon Dec 19 08:01:03 2022
Response via : Initial Calibration

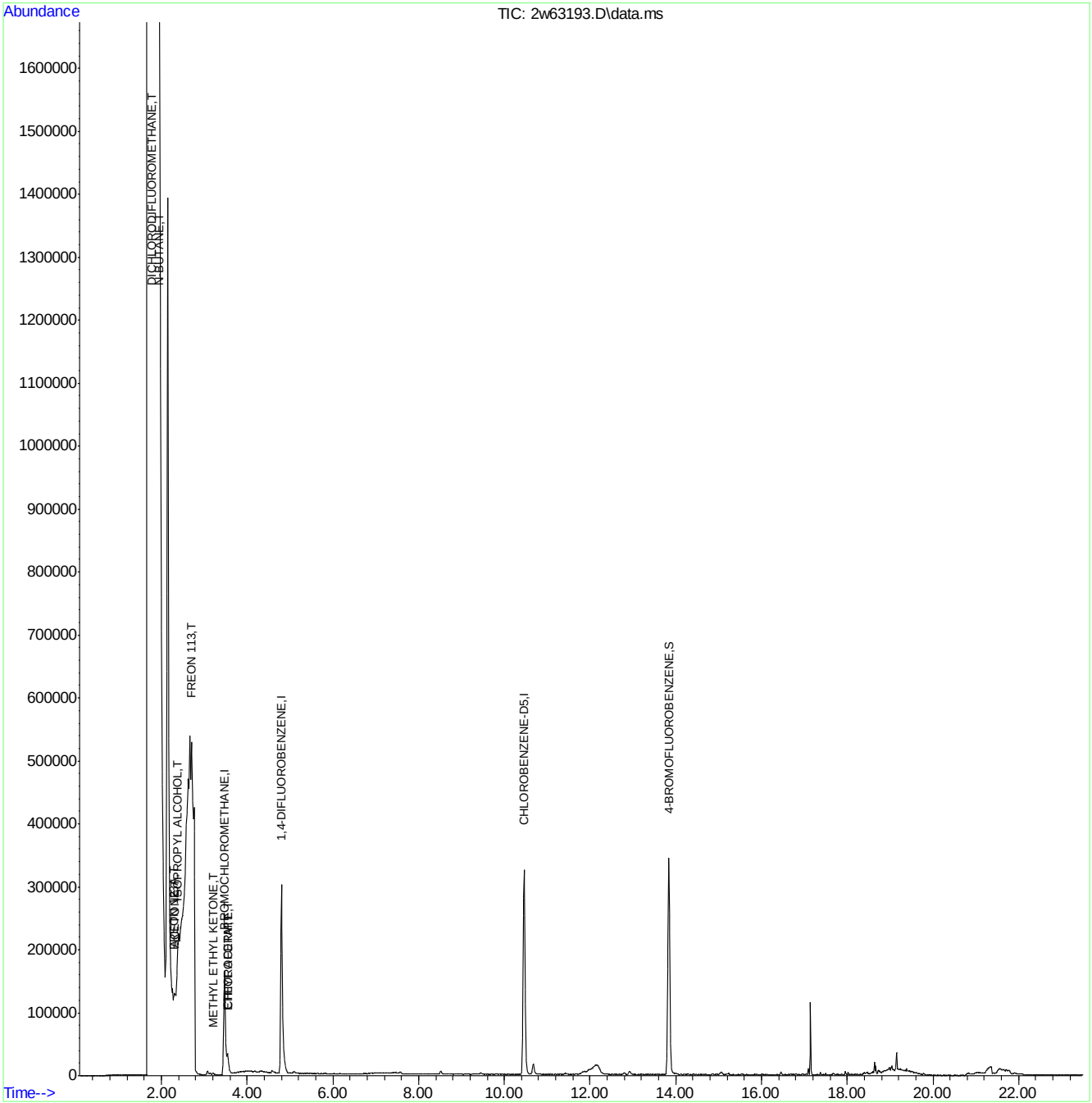
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) BROMOCHLOROMETHANE	3.476	128	68071	10.00	PPBV	# 0.04
52) 1,4-DIFLUOROBENZENE	4.801	114	359480	10.00	PPBV	0.04
76) CHLOROBENZENE-D5	10.460	117	323584	10.00	PPBV	0.00
System Monitoring Compounds						
87) 4-BROMOFLUOROBENZENE	13.839	95	235165	9.41	PPBV	0.00
Target Compounds						Qvalue
6) DICHLORODIFLUOROMETHANE	1.779	85	3726m	0.11	PPBV	
13) N-BUTANE	1.956	43	7671	0.55	PPBV	# 64
20) FREON 123A	2.300	117	4615	0.31	PPBV	83
22) ISOPROPYL ALCOHOL	2.377	45	78606	3.81	PPBV	# 90
23) ACETONE	2.309	58	8369	1.45	PPBV	77
33) FREON 113	2.698	151	68059m	3.41	PPBV	
41) METHYL ETHYL KETONE	3.206	72	961	0.18	PPBV	# 84
44) ETHYL ACETATE	3.550	61	1176	0.32	PPBV	# 3
46) CHLOROFORM	3.547	83	14632	0.60	PPBV	# 80

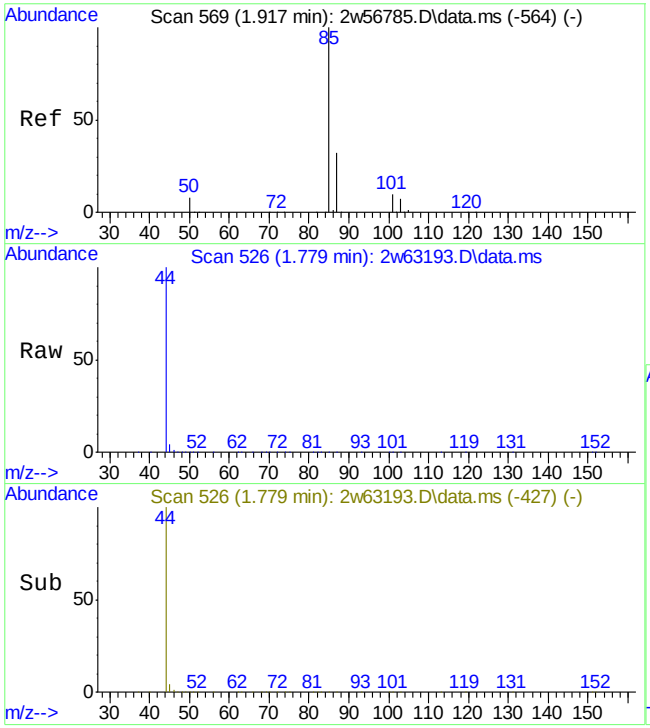
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\
Data File : 2w63193.D
Acq On : 1 Feb 2023 5:23 pm
Operator : thomash
Sample : jd59460-5
Misc : MS66193,v2w2809,155,,,,1.55
ALS Vial : 7 Sample Multiplier: 1

Quant Time: Feb 02 16:06:22 2023
Quant Method : C:\msdchem\1\METHODS\M2W2776.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Mon Dec 19 08:01:03 2022
Response via : Initial Calibration

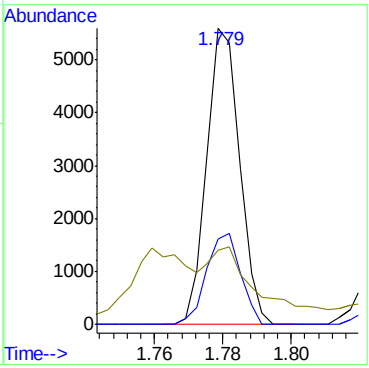


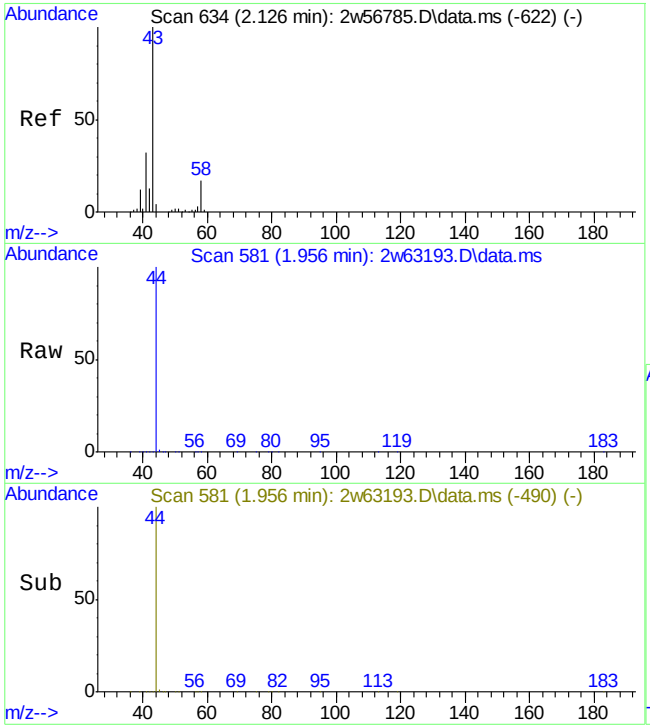


#6
DICHLORODIFLUOROMETHANE
Concen: 0.11 PPBV m
RT: 1.779 min Scan# 526
Delta R.T. -0.013 min
Lab File: 2w63193.D
Acq: 1 Feb 2023 5:23 pm

Tgt Ion: 85 Resp: 3726

Ion	Ratio	Lower	Upper
85	100		
87	0.0	25.9	38.9#
50	0.0	14.6	21.8#

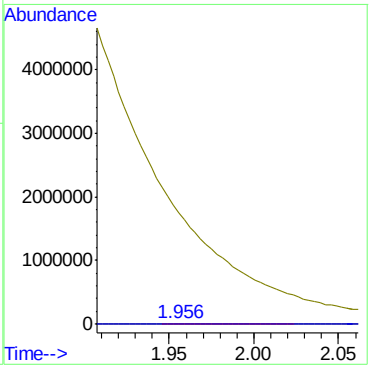


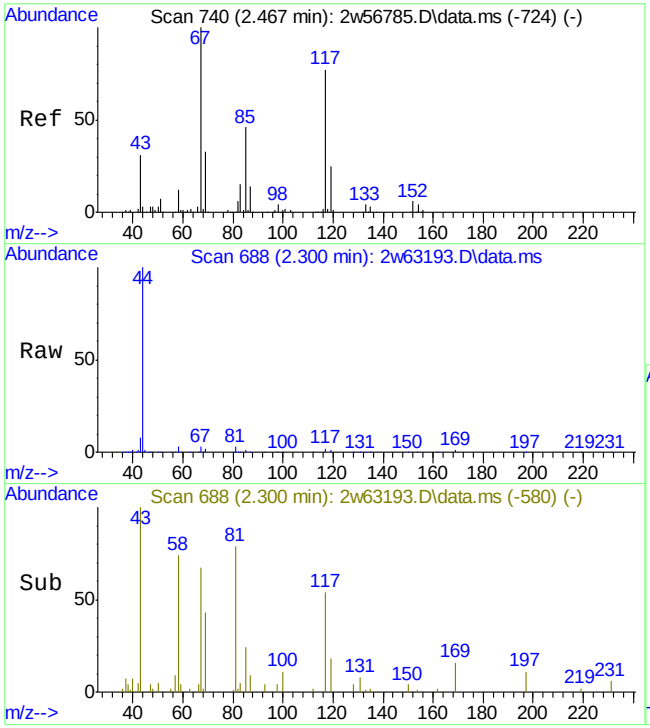


#13
N-BUTANE
Concen: 0.55 PPBV
RT: 1.956 min Scan# 581
Delta R.T. -0.006 min
Lab File: 2w63193.D
Acq: 1 Feb 2023 5:23 pm

Tgt Ion: 43 Resp: 7671

Ion	Ratio	Lower	Upper
43	100		
58	0.0	15.0	22.4#
44	0.0	3.4	5.2#

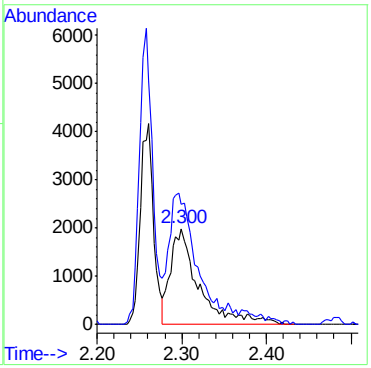


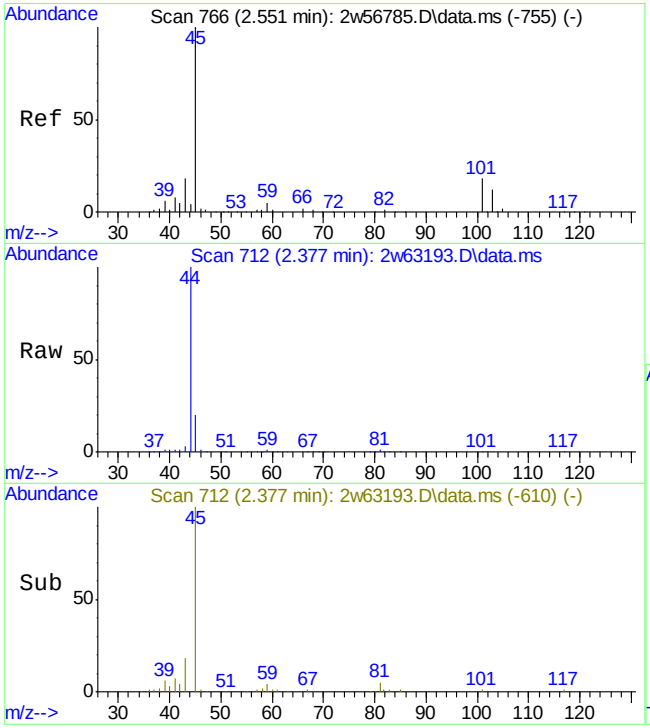


#20
FREON 123A
Concen: 0.31 PPBV
RT: 2.300 min Scan# 688
Delta R.T. 0.048 min
Lab File: 2w63193.D
Acq: 1 Feb 2023 5:23 pm

Tgt Ion:117 Resp: 4615

Ion	Ratio	Lower	Upper
117	100		
67	137.9	128.6	192.8

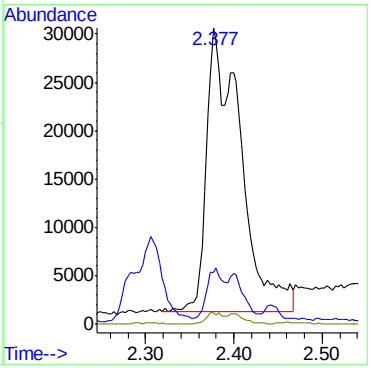


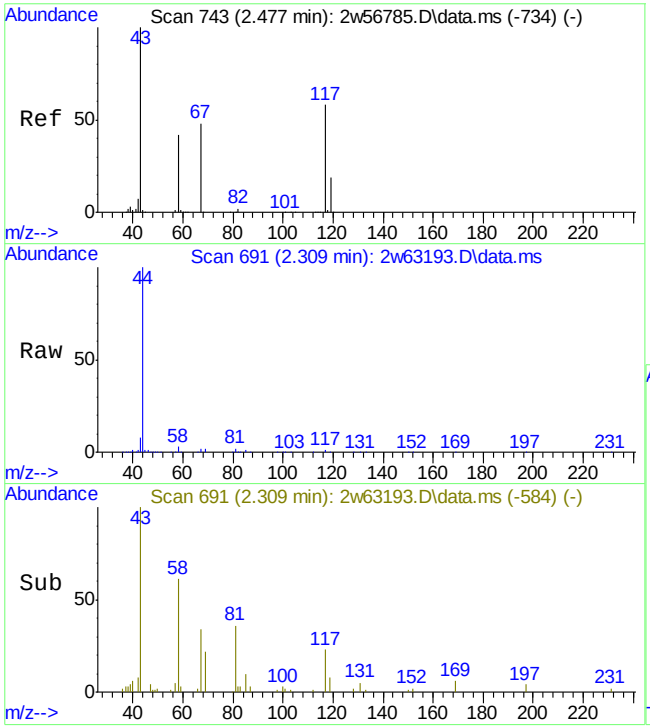


#22
ISOPROPYL ALCOHOL
Concen: 3.81 PPBV
RT: 2.377 min Scan# 712
Delta R.T. 0.029 min
Lab File: 2w63193.D
Acq: 1 Feb 2023 5:23 pm

Tgt Ion: 45 Resp: 78606

Ion	Ratio	Lower	Upper
45	100		
43	16.7	17.8	26.6#
59	3.7	3.6	5.4

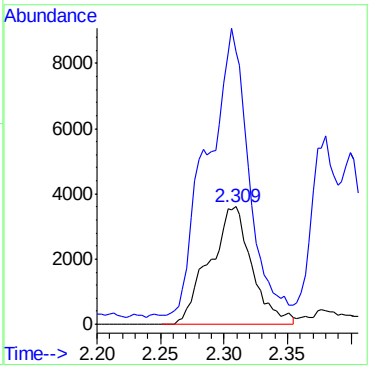


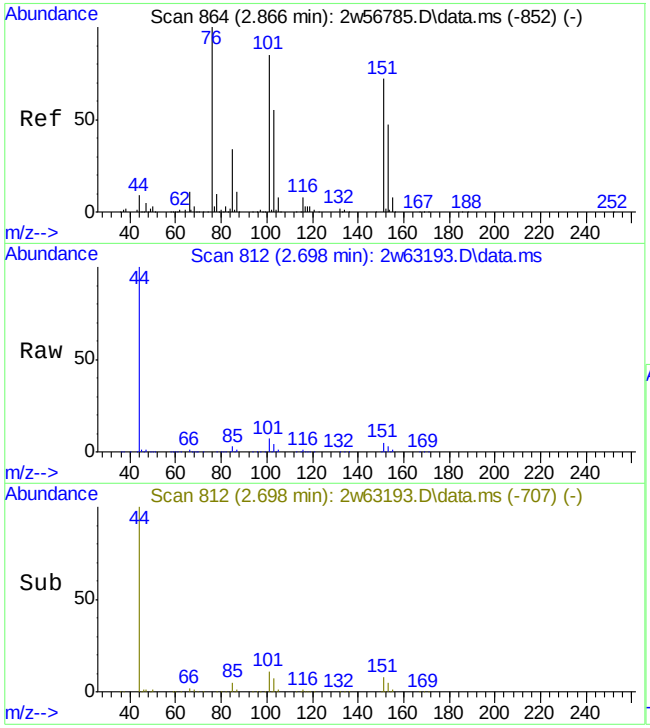


#23
ACETONE
Concen: 1.45 PPBV
RT: 2.309 min Scan# 691
Delta R.T. 0.045 min
Lab File: 2w63193.D
Acq: 1 Feb 2023 5:23 pm

Tgt Ion: 58 Resp: 8369

Ion	Ratio	Lower	Upper
58	100		
43	244.2	229.9	344.9

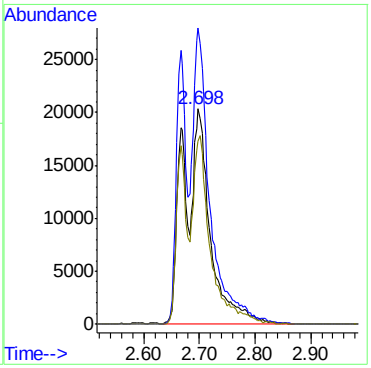


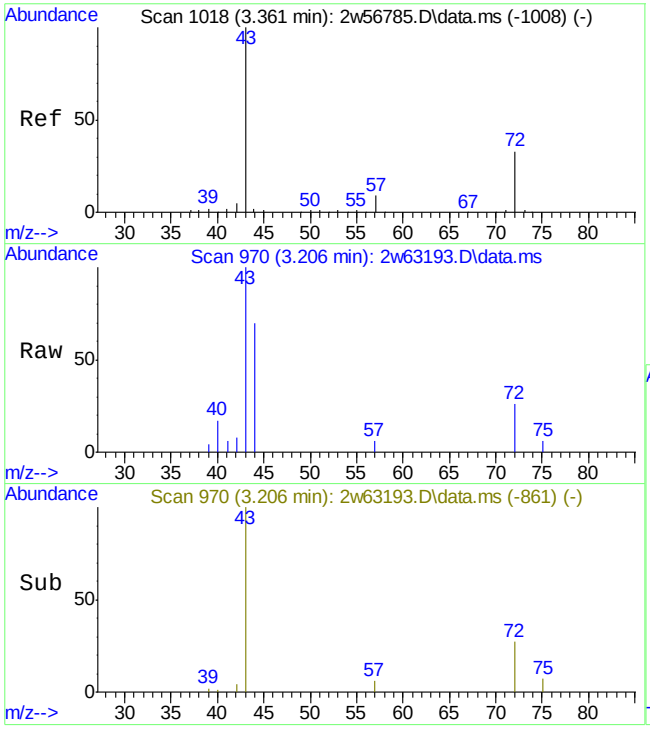


#33
FREON 113
Concen: 3.41 PPBV m
RT: 2.698 min Scan# 812
Delta R.T. 0.039 min
Lab File: 2w63193.D
Acq: 1 Feb 2023 5:23 pm

Tgt Ion:151 Resp: 68059

Ion	Ratio	Lower	Upper
151	100		
101	92.4	106.5	159.7#
103	59.0	69.2	103.8#

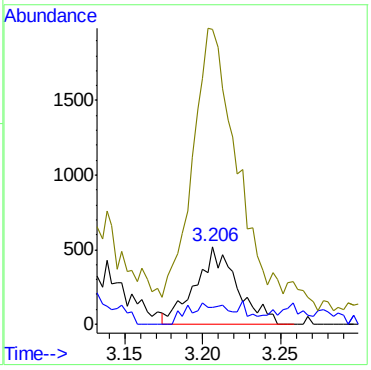


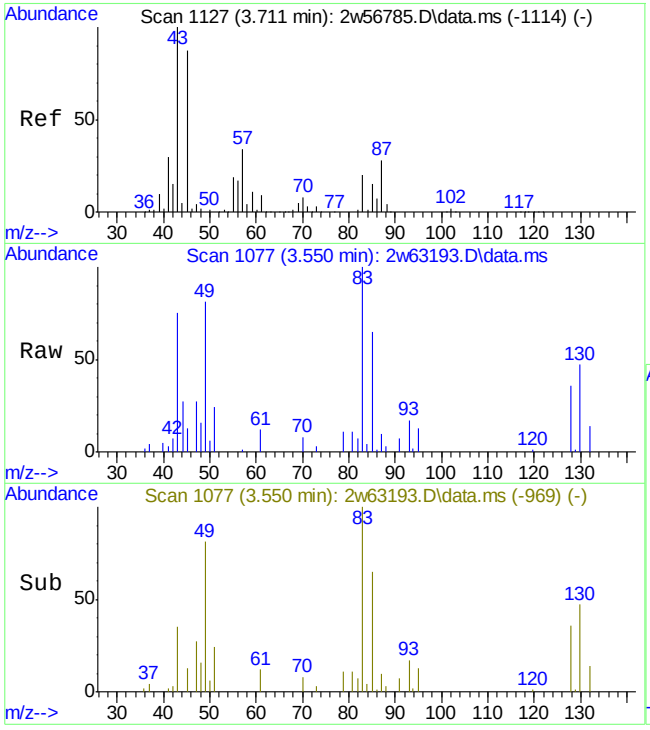


#41
METHYL ETHYL KETONE
Concen: 0.18 PPBV
RT: 3.206 min Scan# 970
Delta R.T. 0.052 min
Lab File: 2w63193.D
Acq: 1 Feb 2023 5:23 pm

Tgt Ion: 72 Resp: 961

Ion	Ratio	Lower	Upper
72	100		
57	0.0	29.1	43.7#
43	430.5	321.0	481.4

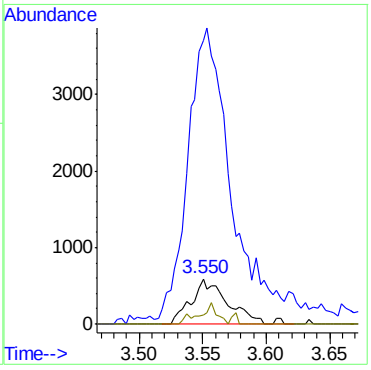


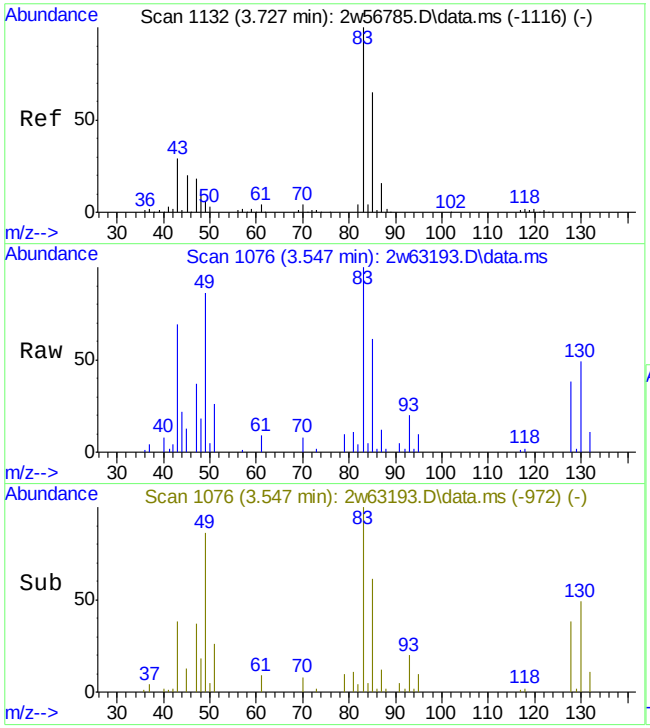


#44
ETHYL ACETATE
Concen: 0.32 PPBV
RT: 3.550 min Scan# 1077
Delta R.T. 0.048 min
Lab File: 2w63193.D
Acq: 1 Feb 2023 5:23 pm

Tgt Ion: 61 Resp: 1176

Ion	Ratio	Lower	Upper
61	100		
43	783.2	1054.2	1581.2#
88	0.0	34.4	51.6#

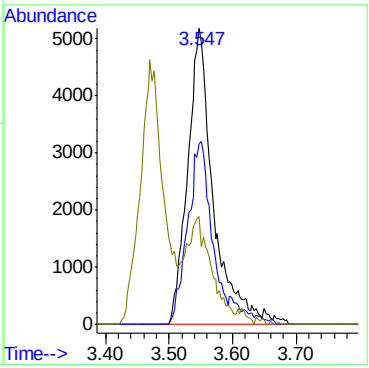




#46
CHLOROFORM
Concen: 0.60 PPBV
RT: 3.547 min Scan# 1076
Delta R.T. 0.035 min
Lab File: 2w63193.D
Acq: 1 Feb 2023 5:23 pm

Tgt Ion: 83 Resp: 14632

Ion	Ratio	Lower	Upper
83	100		
85	62.4	63.6	95.4#
47	39.1	22.6	33.8#



Manual Integration Approval Summary

Sample Number: JD59460-5
Lab FileID: 2W63193.D
Injection Time: 02/01/23 17:23

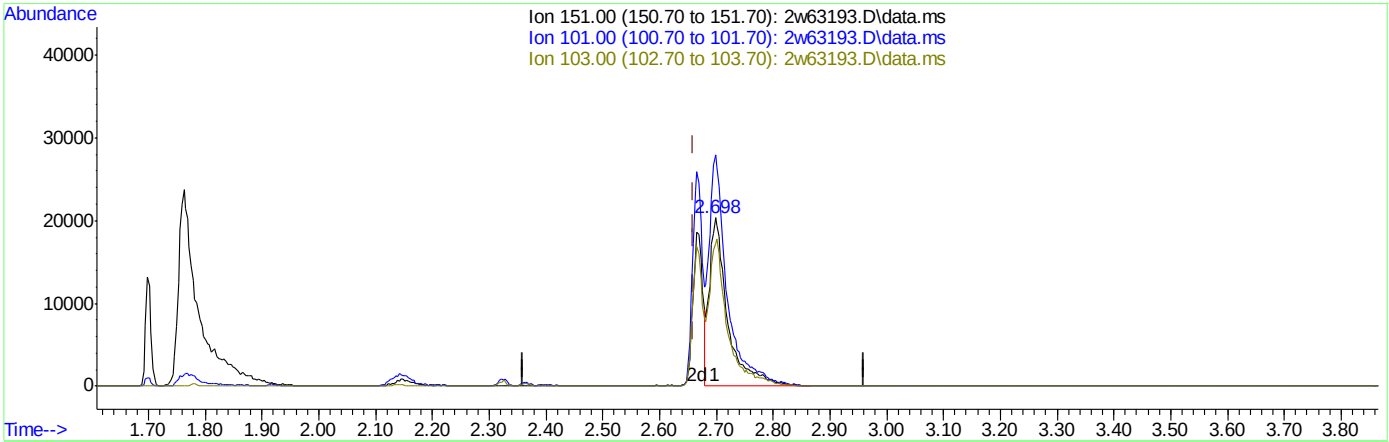
Method: TO-15
Analyst approved: 02/02/23 16:08 Thomas Hilbig
Supervisor approved: 02/02/23 17:19 Kanya Veerawat

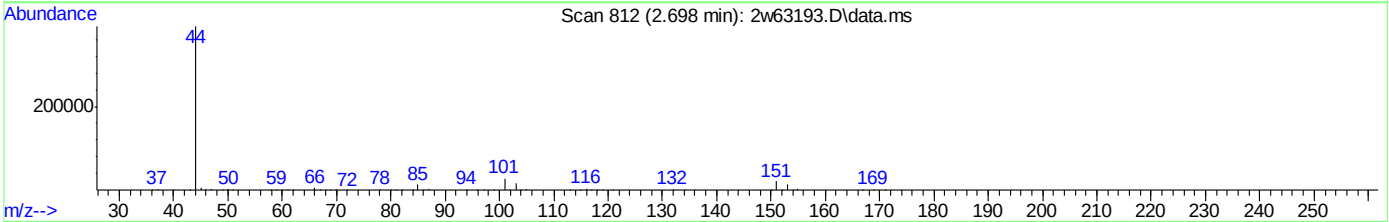
Parameter	CAS	Sig#	R.T. (min.)	Reason
Dichlorodifluoromethane	75-71-8		1.78	Missed peak
Freon 113	76-13-1		2.70	Split peak

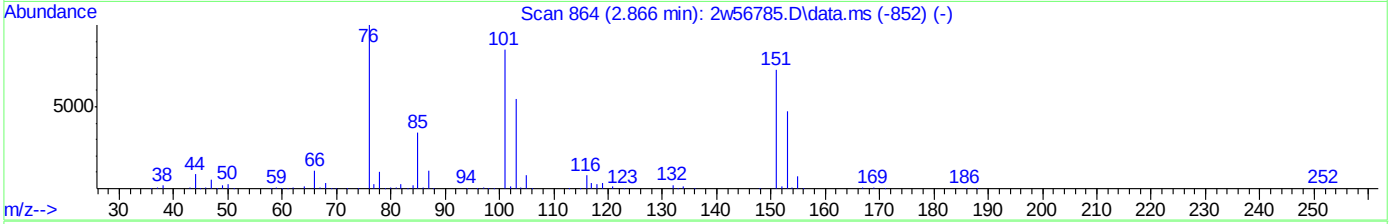
Quantitation Report (Qedit)

Data Path : C:\msdchem\1\DATA\
Data File : 2w63193.D
Acq On : 1 Feb 2023 5:23 pm
Operator : thomash
Sample : jd59460-5
Misc : MS66193,v2w2809,155,,,,1.55
ALS Vial : 7 Sample Multiplier: 1

Quant Time: Feb 02 07:27:21 2023
Quant Method : C:\msdchem\1\METHODS\M2W2776.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Mon Dec 19 08:01:03 2022
Response via : Initial Calibration







TIC: 2w63193.D\data.ms

(33) FREON 113 (T)

2.698min (+0.039) 2.32PPBV

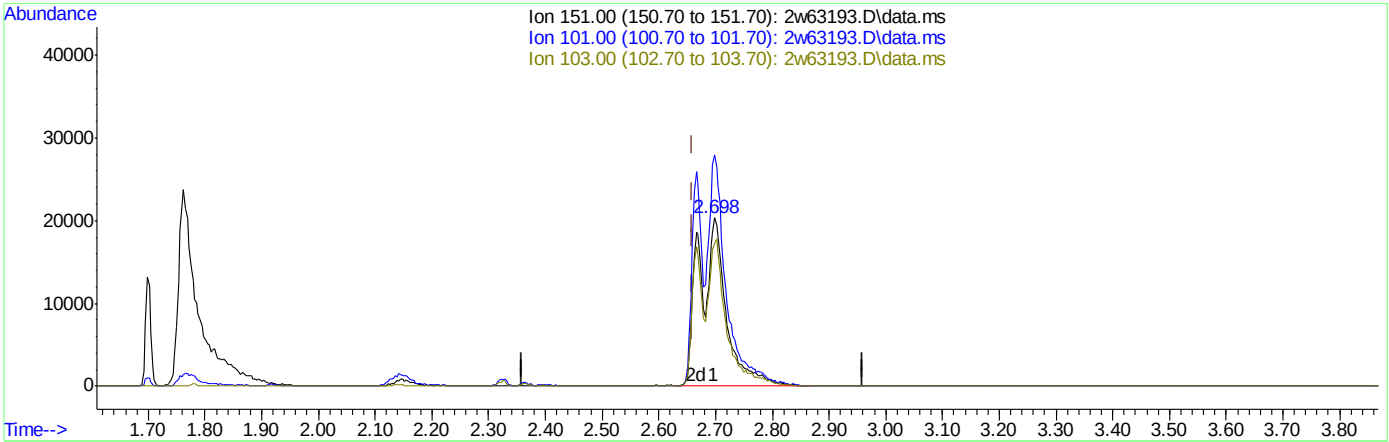
response 46286

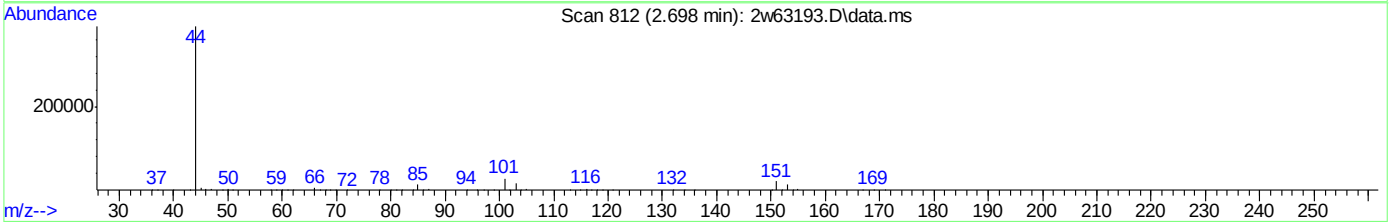
Ion	Exp%	Act%
151.00	100	100
101.00	133.10	135.92
103.00	86.50	86.72
0.00	0.00	0.00

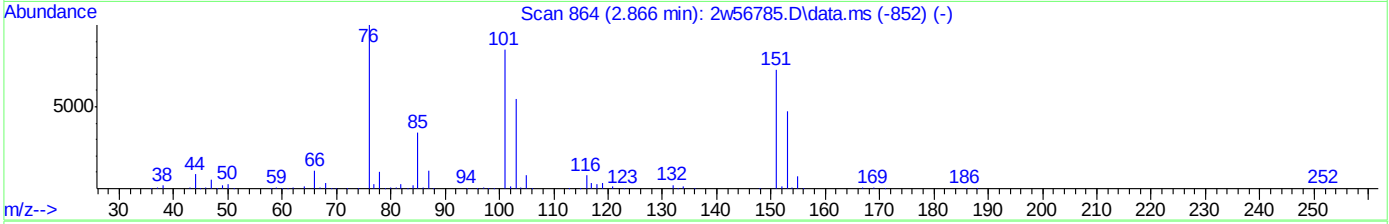
Quantitation Report (Qedit)

Data Path : C:\msdchem\1\DATA\
Data File : 2w63193.D
Acq On : 1 Feb 2023 5:23 pm
Operator : thomash
Sample : jd59460-5
Misc : MS66193,v2w2809,155,,,,1.55
ALS Vial : 7 Sample Multiplier: 1

Quant Time: Feb 02 07:27:21 2023
Quant Method : C:\msdchem\1\METHODS\M2W2776.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Mon Dec 19 08:01:03 2022
Response via : Initial Calibration







TIC: 2w63193.D\data.ms

(33) FREON 113 (T)

2.698min (+0.039) 3.41PPBV m

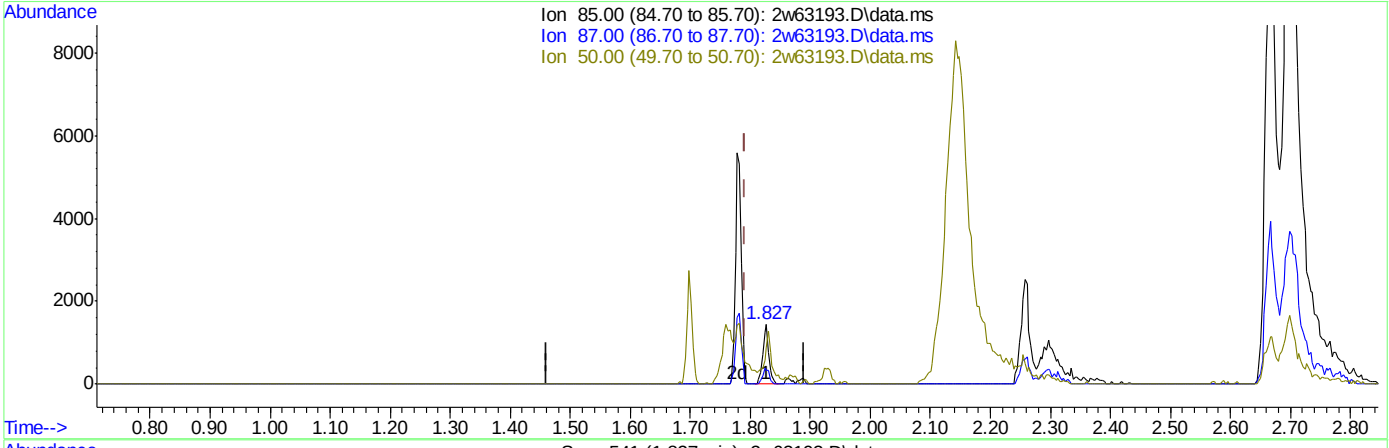
response 68059

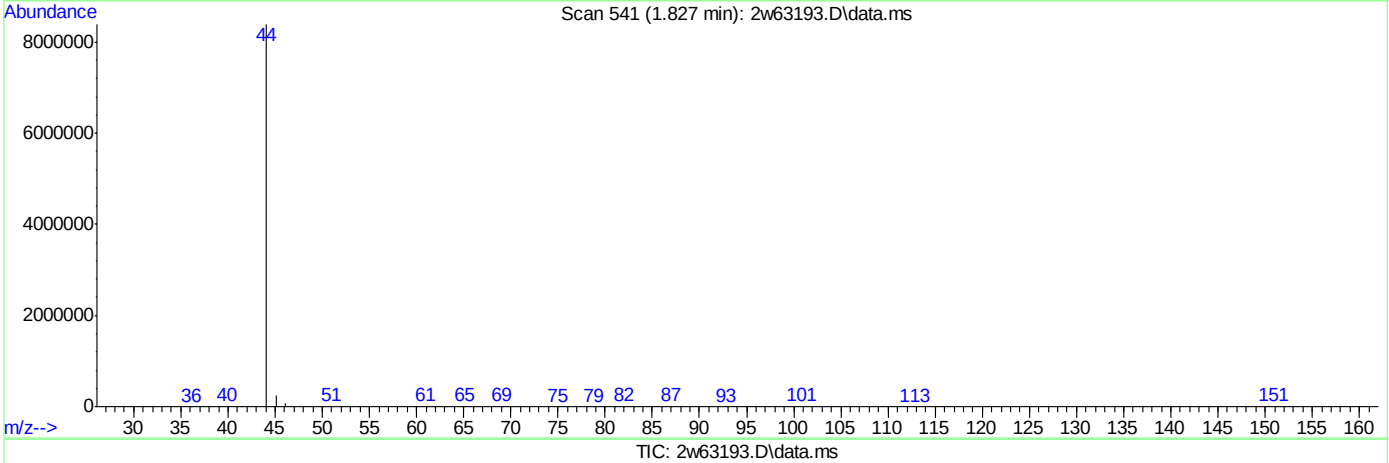
Ion	Exp%	Act%
151.00	100	100
101.00	133.10	92.44#
103.00	86.50	58.98#
0.00	0.00	0.00

Quantitation Report (Qedit)

Data Path : C:\msdchem\1\DATA\Raw DATA\
Data File : 2w63193.D
Acq On : 1 Feb 2023 5:23 pm
Operator : thomash
Sample : jd59460-5
Misc : MS66193,v2w2809,155,,,,1.55
ALS Vial : 7 Sample Multiplier: 1

Quant Time: Feb 02 15:53:20 2023
Quant Method : C:\msdchem\1\METHODS\M2W2776.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Mon Dec 19 08:01:03 2022
Response via : Initial Calibration





TIC: 2w63193.D\data.ms

(6) DICHLORODIFLUOROMETHANE (T)

1.827min (+0.035) 0.03PPBV

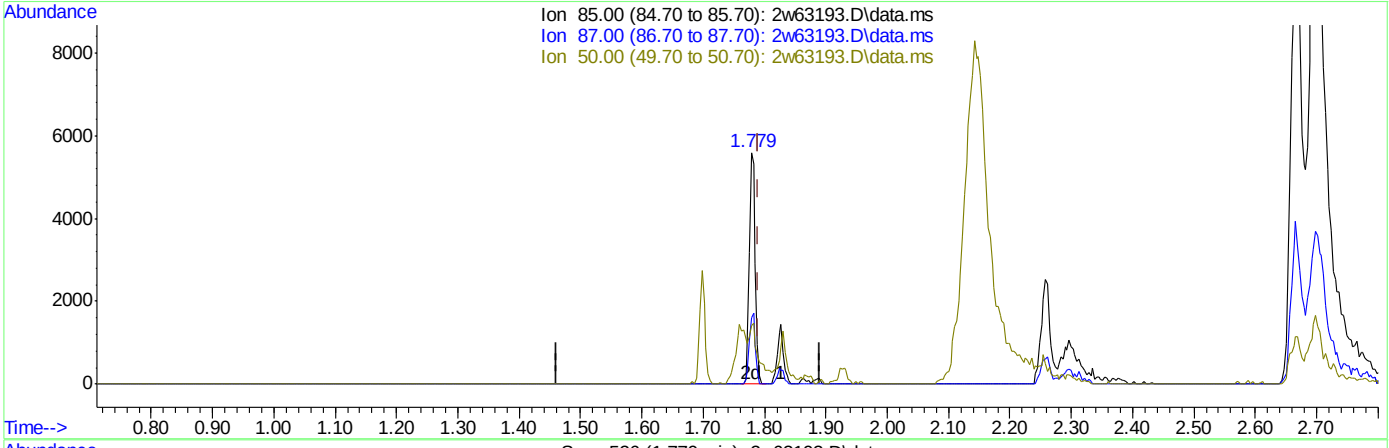
response 1007

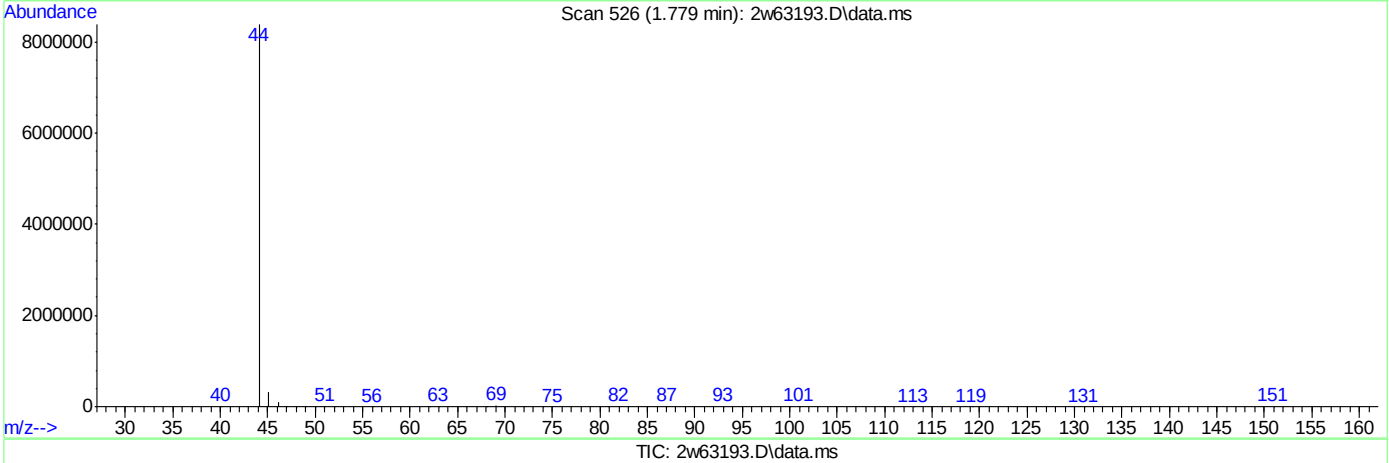
Ion	Exp%	Act%
85.00	100	100
87.00	32.40	0.00#
50.00	18.20	87.39#
0.00	0.00	0.00

Quantitation Report (Qedit)

Data Path : C:\msdchem\1\DATA\
Data File : 2w63193.D
Acq On : 1 Feb 2023 5:23 pm
Operator : thomash
Sample : jd59460-5
Misc : MS66193,v2w2809,155,,,,1.55
ALS Vial : 7 Sample Multiplier: 1

Quant Time: Feb 02 15:52:21 2023
Quant Method : C:\msdchem\1\METHODS\M2W2776.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Mon Dec 19 08:01:03 2022
Response via : Initial Calibration





TIC: 2w63193.D\data.ms

(6) DICHLORODIFLUOROMETHANE (T)

1.779min (-0.013) 0.11PPBV m

response 3726

Ion	Exp%	Act%
85.00	100	100
87.00	32.40	0.00#
50.00	18.20	0.00#
0.00	0.00	0.00

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\
Data File : 2w63195.D
Acq On : 1 Feb 2023 6:31 pm
Operator : thomash
Sample : jd59460-6
Misc : MS66193,v2w2809,100,,,,1
ALS Vial : 8 Sample Multiplier: 1

Quant Time: Feb 02 16:01:03 2023
Quant Method : C:\msdchem\1\METHODS\M2W2776.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Mon Dec 19 08:01:03 2022
Response via : Initial Calibration

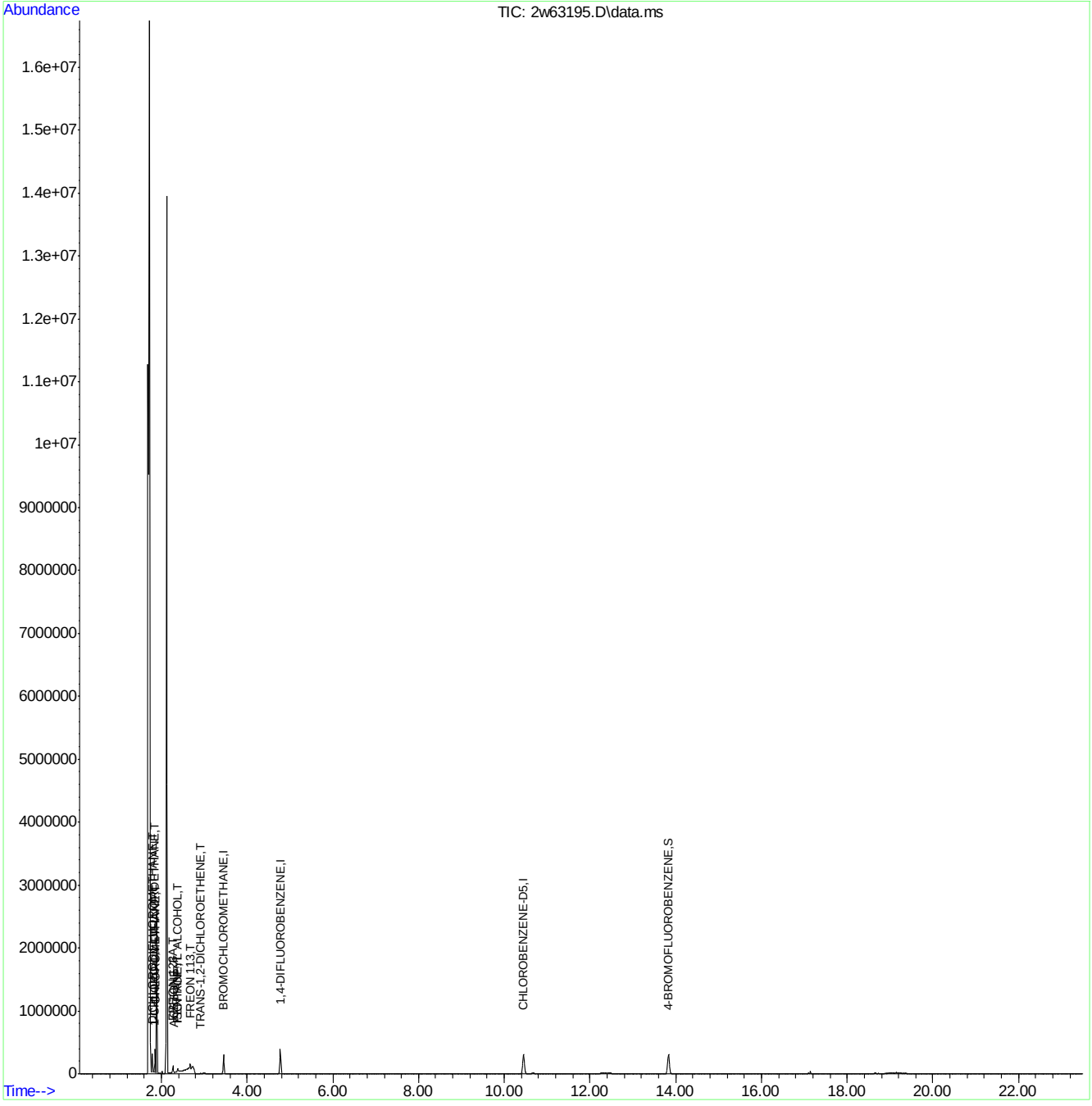
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) BROMOCHLOROMETHANE	3.451	128	58014	10.00	PPBV	# 0.02
52) 1,4-DIFLUOROBENZENE	4.776	114	299658	10.00	PPBV	0.01
76) CHLOROBENZENE-D5	10.447	117	273660	10.00	PPBV	0.00
System Monitoring Compounds						
87) 4-BROMOFLUOROBENZENE	13.830	95	196351	9.29	PPBV	0.00
Target Compounds						Qvalue
6) DICHLORODIFLUOROMETHANE	1.792	85	3010	0.10	PPBV #	61
8) 1-CHLORO-1,1-DIFLUOROE...	1.837	65	19067	0.90	PPBV #	91
10) CHLOROMETHANE	1.853	52	541	0.23	PPBV	83
20) FREON 123A	2.268	117	24331	1.93	PPBV	91
22) ISOPROPYL ALCOHOL	2.380	45	42879	2.44	PPBV #	92
23) ACETONE	2.287	58	2731	0.55	PPBV	89
24) PENTANE	2.380	42	1955	0.21	PPBV #	34
33) FREON 113	2.676	151	16566	0.98	PPBV	99
34) TRANS-1,2-DICHLOROETHENE	2.911	96	2191	0.24	PPBV	89

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

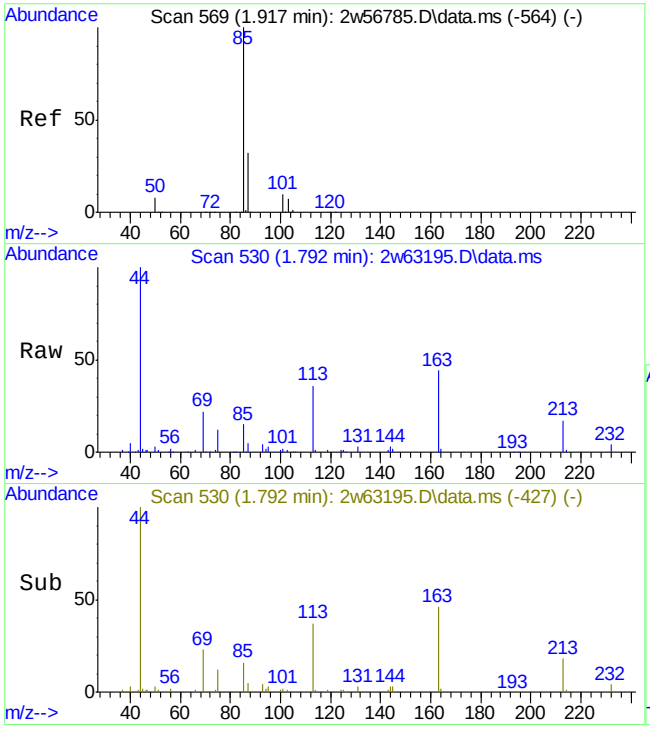
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\
Data File : 2w63195.D
Acq On : 1 Feb 2023 6:31 pm
Operator : thomash
Sample : jd59460-6
Misc : MS66193,v2w2809,100,,,,1
ALS Vial : 8 Sample Multiplier: 1

Quant Time: Feb 02 16:01:03 2023
Quant Method : C:\msdchem\1\METHODS\M2W2776.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Mon Dec 19 08:01:03 2022
Response via : Initial Calibration



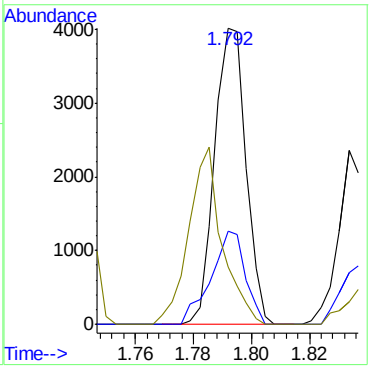
M2W2776.M Thu Feb 02 16:02:30 2023 GCMS2W Page: 2

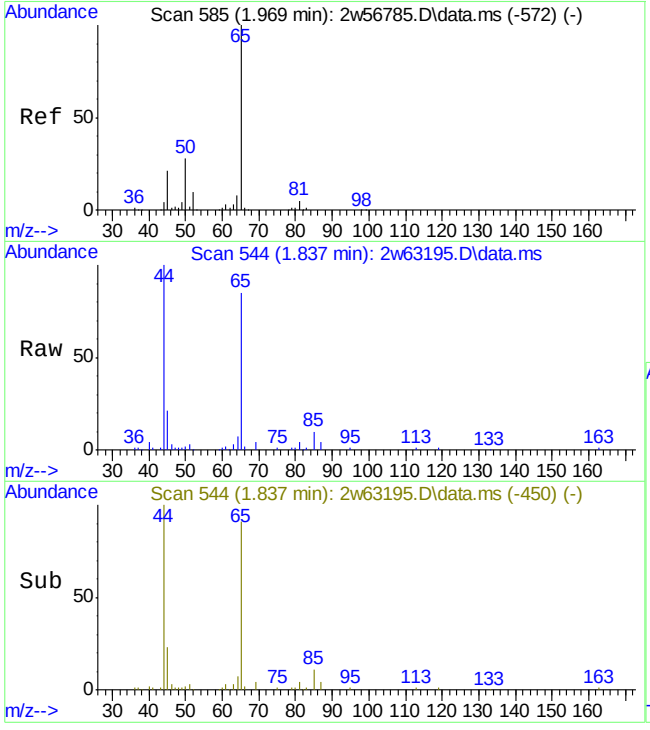


#6
DICHLORODIFLUOROMETHANE
Concen: 0.10 PPBV
RT: 1.792 min Scan# 530
Delta R.T. 0.000 min
Lab File: 2w63195.D
Acq: 1 Feb 2023 6:31 pm

Tgt Ion: 85 Resp: 3010

Ion	Ratio	Lower	Upper
85	100		
87	34.4	25.9	38.9
50	63.7	14.6	21.8#

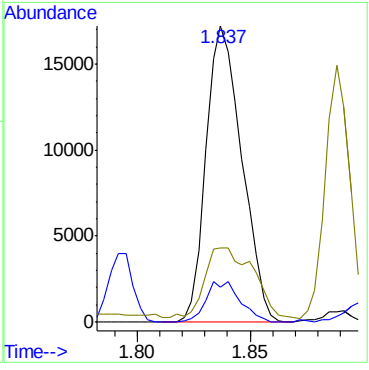


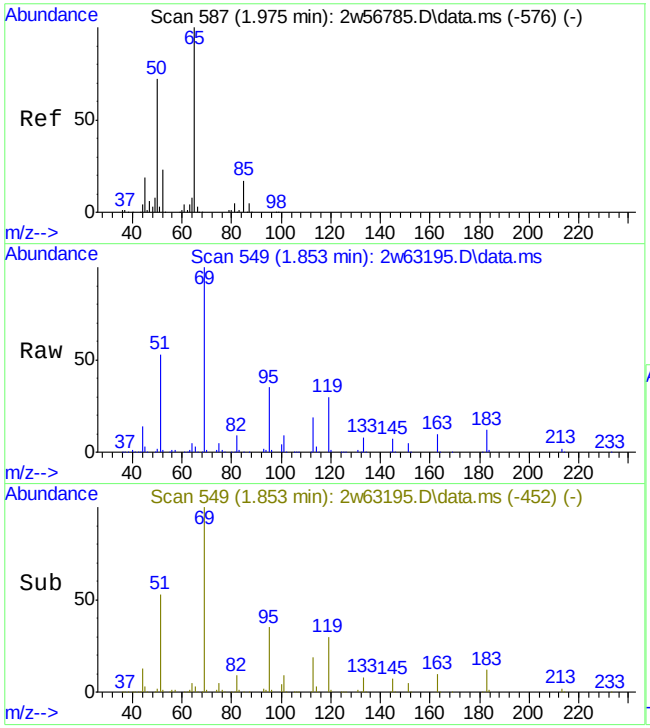


#8
1-CHLORO-1,1-DIFLUOROETHANE
Concen: 0.90 PPBV
RT: 1.837 min Scan# 544
Delta R.T. 0.004 min
Lab File: 2w63195.D
Acq: 1 Feb 2023 6:31 pm

Tgt Ion: 65 Resp: 19067

Ion	Ratio	Lower	Upper
65	100		
85	13.1	10.9	16.3
45	32.2	20.5	30.7#

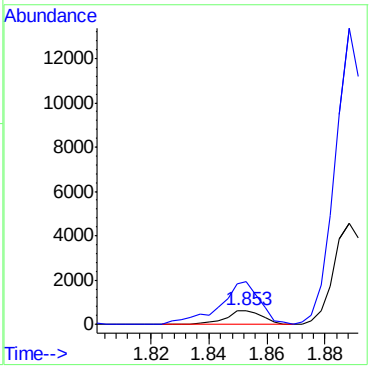


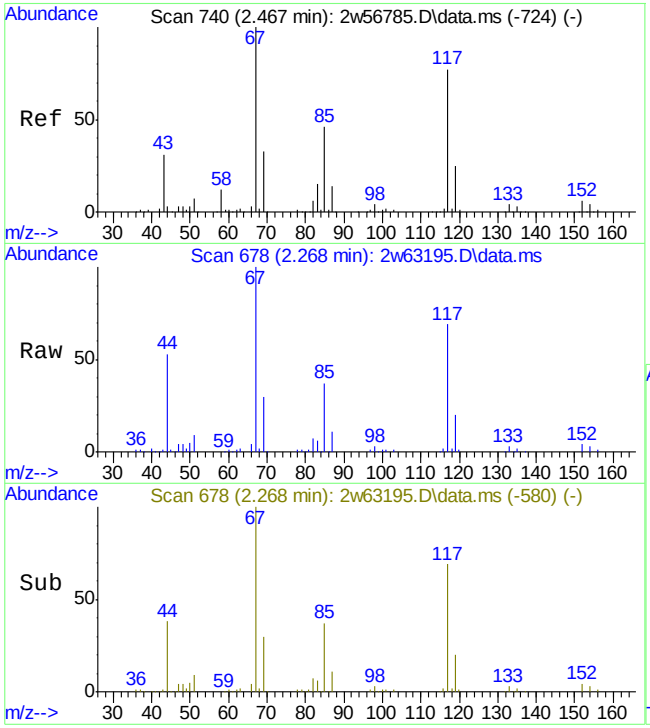


#10
CHLOROMETHANE
Concen: 0.23 PPBV
RT: 1.853 min Scan# 549
Delta R.T. 0.013 min
Lab File: 2w63195.D
Acq: 1 Feb 2023 6:31 pm

Tgt Ion: 52 Resp: 541

Ion	Ratio	Lower	Upper
52	100		
50	346.8	249.6	374.4

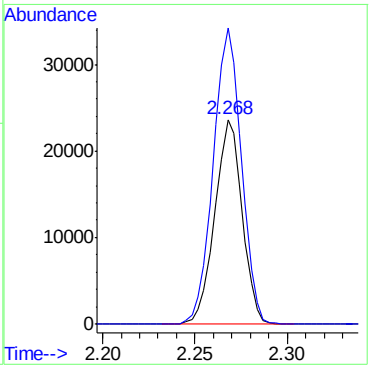


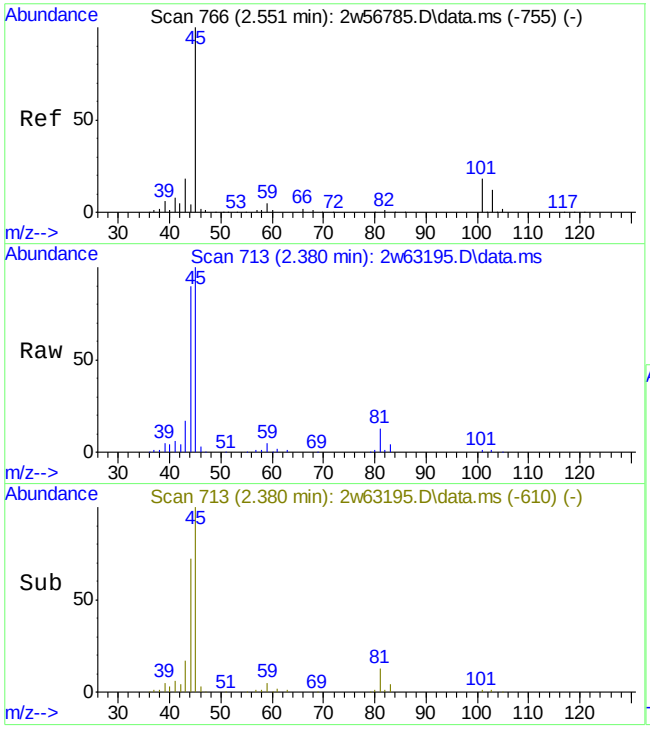


#20
FREON 123A
Concen: 1.93 PPBV
RT: 2.268 min Scan# 678
Delta R.T. 0.016 min
Lab File: 2w63195.D
Acq: 1 Feb 2023 6:31 pm

Tgt Ion:117 Resp: 24331

Ion	Ratio	Lower	Upper
117	100		
67	148.9	128.6	192.8

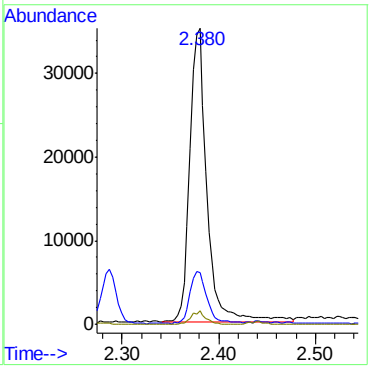


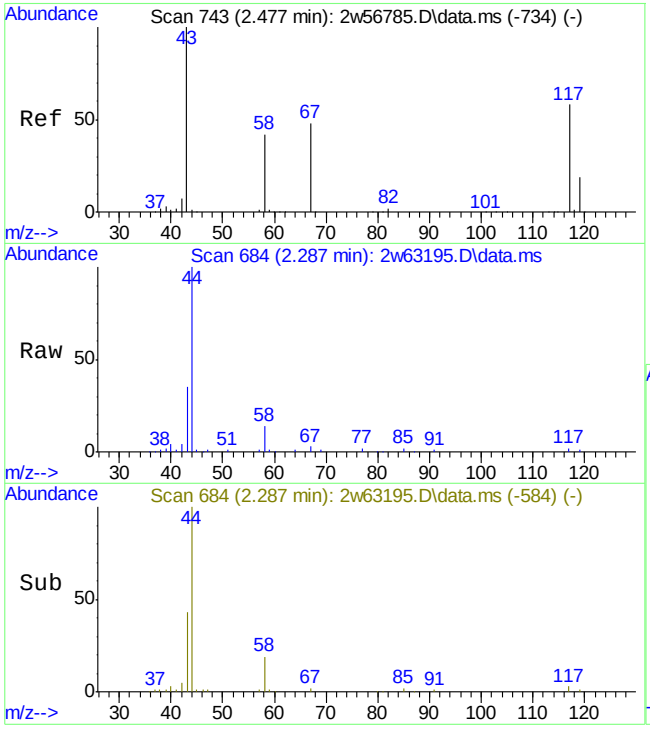


#22
ISOPROPYL ALCOHOL
Concen: 2.44 PPBV
RT: 2.380 min Scan# 713
Delta R.T. 0.033 min
Lab File: 2w63195.D
Acq: 1 Feb 2023 6:31 pm

Tgt Ion: 45 Resp: 42879

Ion	Ratio	Lower	Upper
45	100		
43	17.6	17.8	26.6#
59	3.9	3.6	5.4

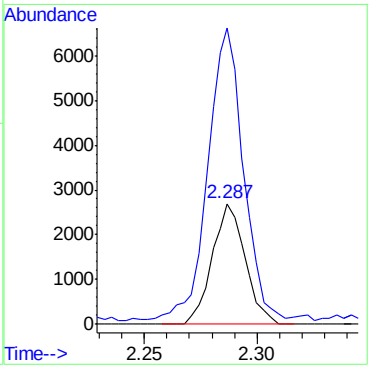


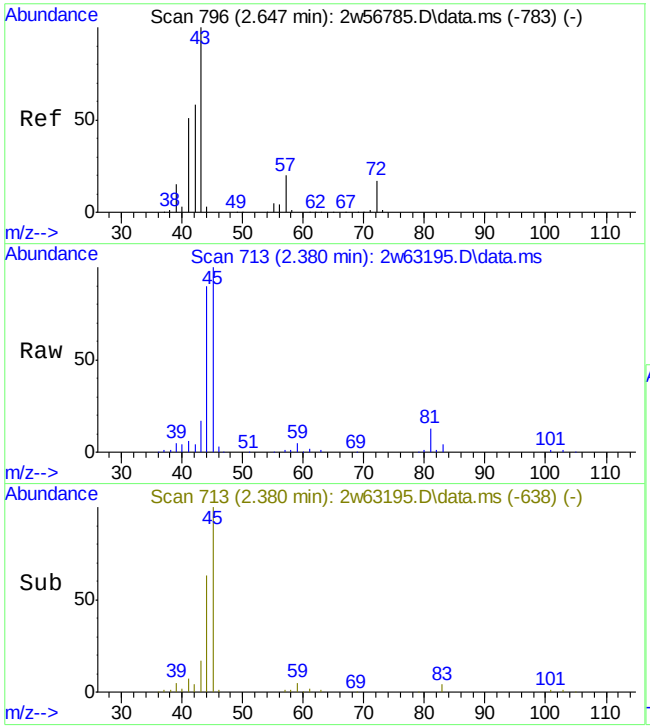


#23
ACETONE
Concen: 0.55 PPBV
RT: 2.287 min Scan# 684
Delta R.T. 0.023 min
Lab File: 2w63195.D
Acq: 1 Feb 2023 6:31 pm

Tgt Ion: 58 Resp: 2731

Ion	Ratio	Lower	Upper
58	100		
43	266.1	229.9	344.9

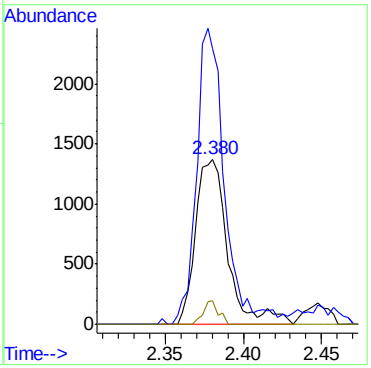


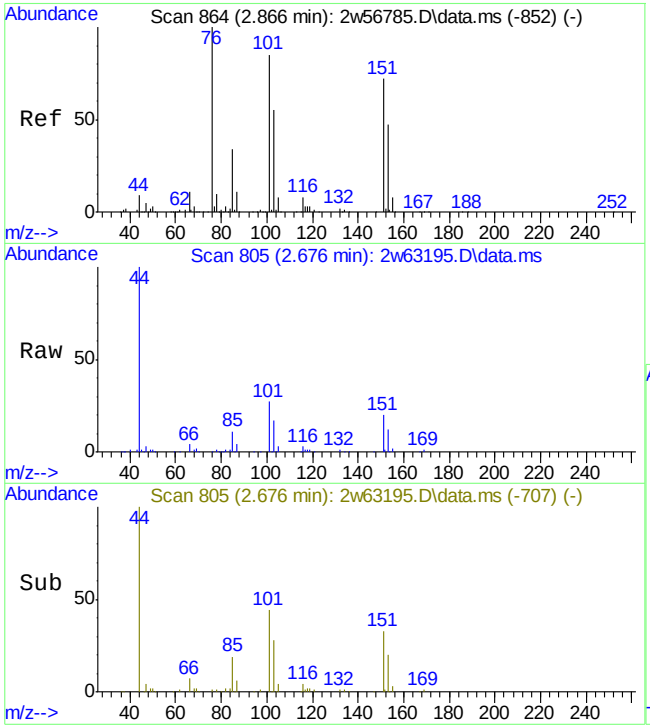


#24
PENTANE
Concen: 0.21 PPBV
RT: 2.380 min Scan# 713
Delta R.T. -0.058 min
Lab File: 2w63195.D
Acq: 1 Feb 2023 6:31 pm

Tgt Ion: 42 Resp: 1955

Ion	Ratio	Lower	Upper
42	100		
41	161.2	75.7	113.5#
57	0.0	25.0	37.6#

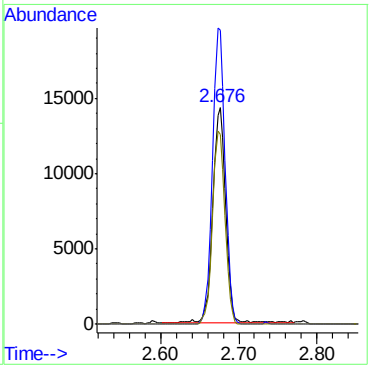


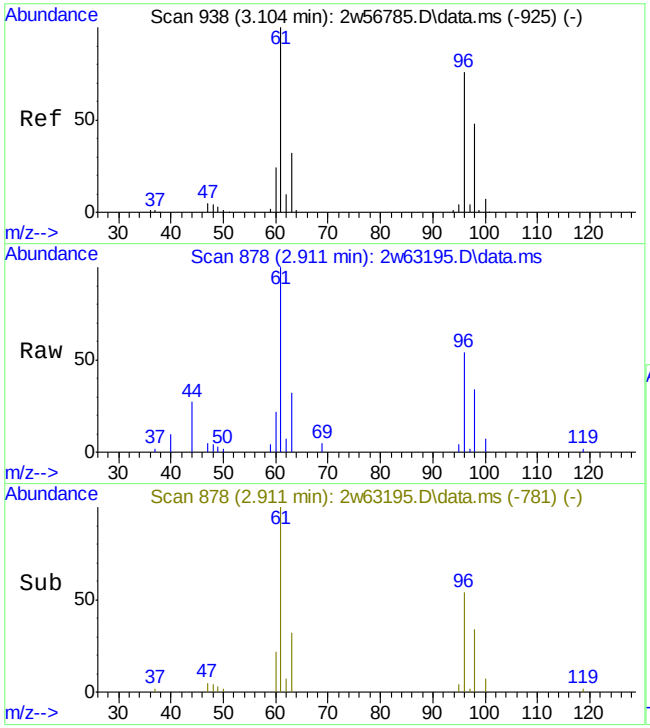


#33
FREON 113
Concen: 0.98 PPBV
RT: 2.676 min Scan# 805
Delta R.T. 0.016 min
Lab File: 2w63195.D
Acq: 1 Feb 2023 6:31 pm

Tgt Ion:151 Resp: 16566

Ion	Ratio	Lower	Upper
151	100		
101	132.5	106.5	159.7
103	85.7	69.2	103.8

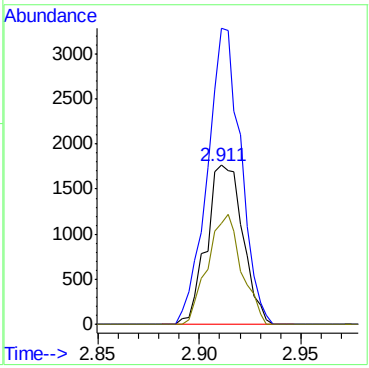




#34
TRANS-1,2-DICHLOROETHENE
Concen: 0.24 PPBV
RT: 2.911 min Scan# 878
Delta R.T. 0.013 min
Lab File: 2w63195.D
Acq: 1 Feb 2023 6:31 pm

Tgt Ion: 96 Resp: 2191

Ion	Ratio	Lower	Upper
96	100		
61	172.3	121.8	182.8
98	64.3	51.4	77.0



7.1.5

7

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\
Data File : 2w63189.D
Acq On : 1 Feb 2023 1:28 pm
Operator : thomash
Sample : mb
Misc : MS66176,v2w2809,,,,,1
ALS Vial : 3 Sample Multiplier: 1

Quant Time: Feb 02 14:42:56 2023
Quant Method : C:\msdchem\1\METHODS\M2W2776.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Mon Dec 19 08:01:03 2022
Response via : Initial Calibration

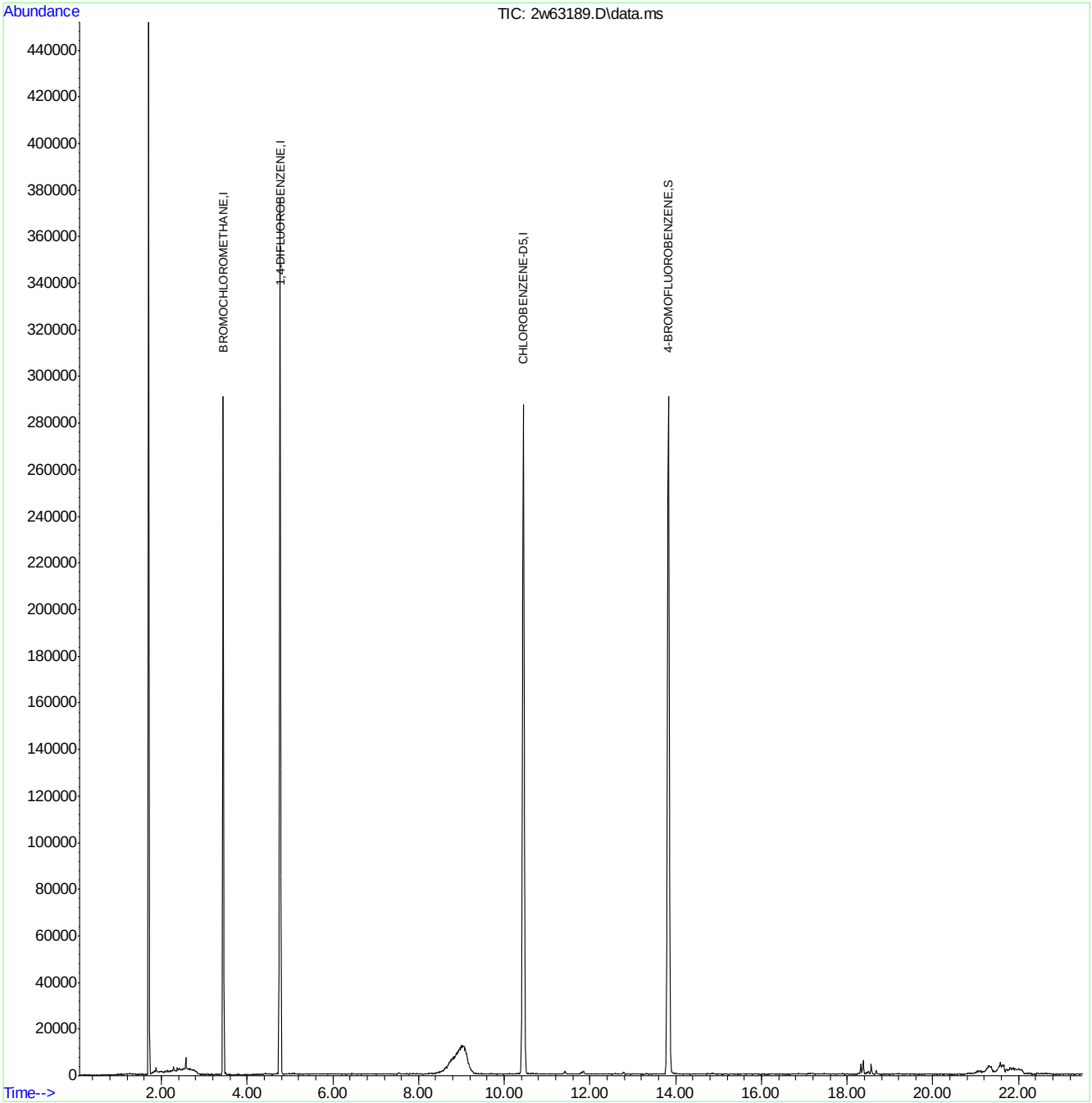
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) BROMOCHLOROMETHANE	3.441	128	55924	10.00	PPBV	# 0.00
52) 1,4-DIFLUOROBENZENE	4.769	114	287782	10.00	PPBV	0.00
76) CHLOROBENZENE-D5	10.441	117	261139	10.00	PPBV	0.00
System Monitoring Compounds						
87) 4-BROMOFLUOROBENZENE	13.827	95	186767	9.26	PPBV	0.00
Target Compounds						Qvalue

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

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\
Data File : 2w63189.D
Acq On : 1 Feb 2023 1:28 pm
Operator : thomash
Sample : mb
Misc : MS66176,v2w2809,,,,,1
ALS Vial : 3 Sample Multiplier: 1

Quant Time: Feb 02 14:42:56 2023
Quant Method : C:\msdchem\1\METHODS\M2W2776.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Mon Dec 19 08:01:03 2022
Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\
Data File : 6W26995.D
Acq On : 8 Nov 2022 5:27 pm
Operator : thomash
Sample : mb
Misc : MS63597,V6W1142,,,,,1
ALS Vial : 1 Sample Multiplier: 1

Quant Time: Nov 08 18:35:47 2022
Quant Method : C:\msdchem\1\methods\M6W1125.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Thu Oct 20 08:34:08 2022
Response via : Initial Calibration

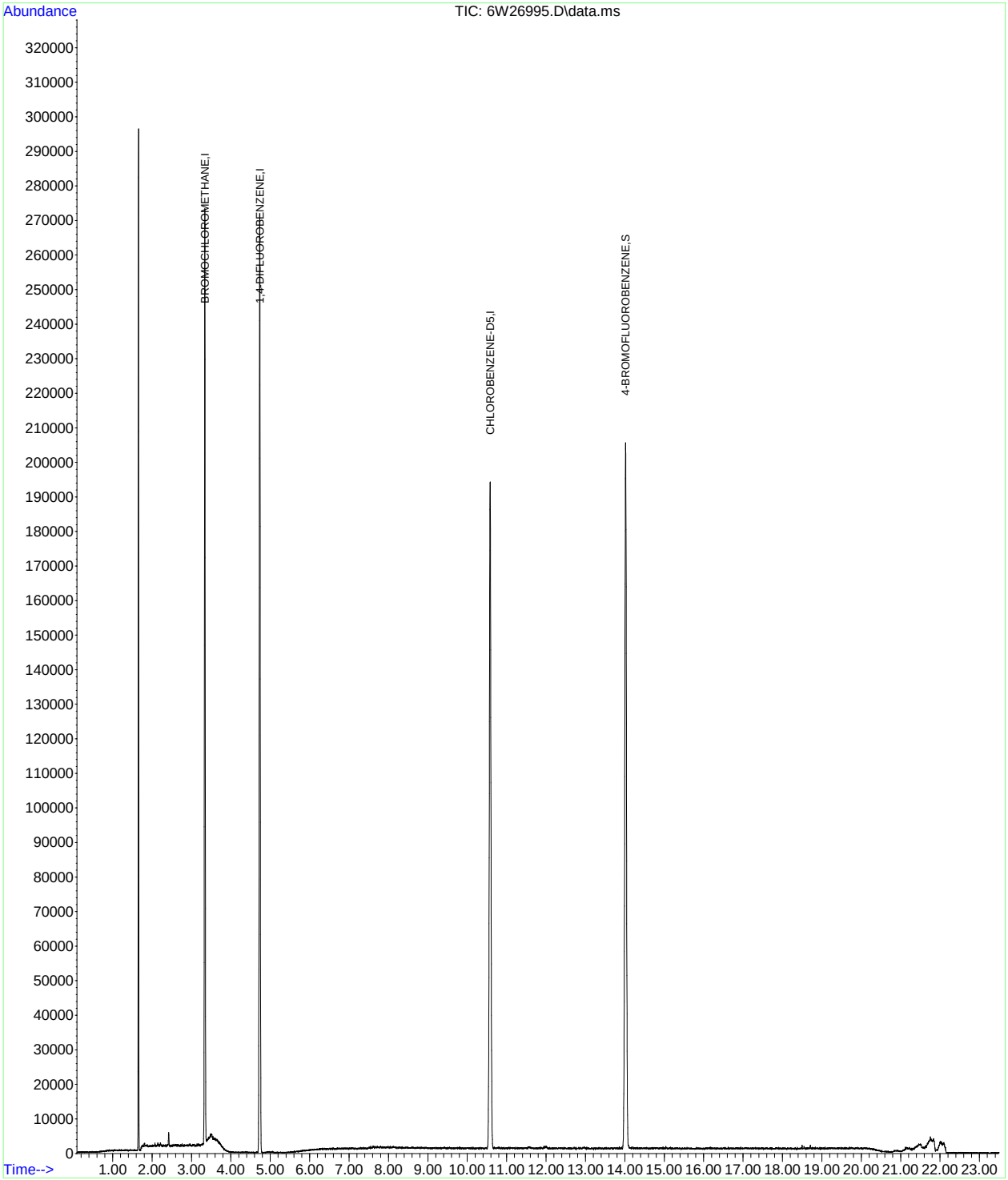
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) BROMOCHLOROMETHANE	3.338	128	42962	10.00	PPBV	# 0.00
52) 1,4-DIFLUOROBENZENE	4.733	114	188822	10.00	PPBV	0.00
76) CHLOROBENZENE-D5	10.582	117	158207	10.00	PPBV	0.00
System Monitoring Compounds						
87) 4-BROMOFLUOROBENZENE	14.016	95	117044	10.59	PPBV	0.00
Target Compounds						Qvalue

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

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\
Data File : 6W26995.D
Acq On : 8 Nov 2022 5:27 pm
Operator : thomash
Sample : mb
Misc : MS63597,V6W1142,,,,,1
ALS Vial : 1 Sample Multiplier: 1

Quant Time: Nov 08 18:35:47 2022
Quant Method : C:\msdchem\1\methods\M6W1125.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Thu Oct 20 08:34:08 2022
Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\
Data File : 6W27097.D
Acq On : 22 Nov 2022 12:29 pm
Operator : thomash
Sample : mb
Misc : MS63734,V6W1146,,,,,1
ALS Vial : 3 Sample Multiplier: 1

Quant Time: Nov 22 14:43:09 2022
Quant Method : C:\msdchem\1\methods\M6W1125.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Thu Oct 20 08:34:08 2022
Response via : Initial Calibration

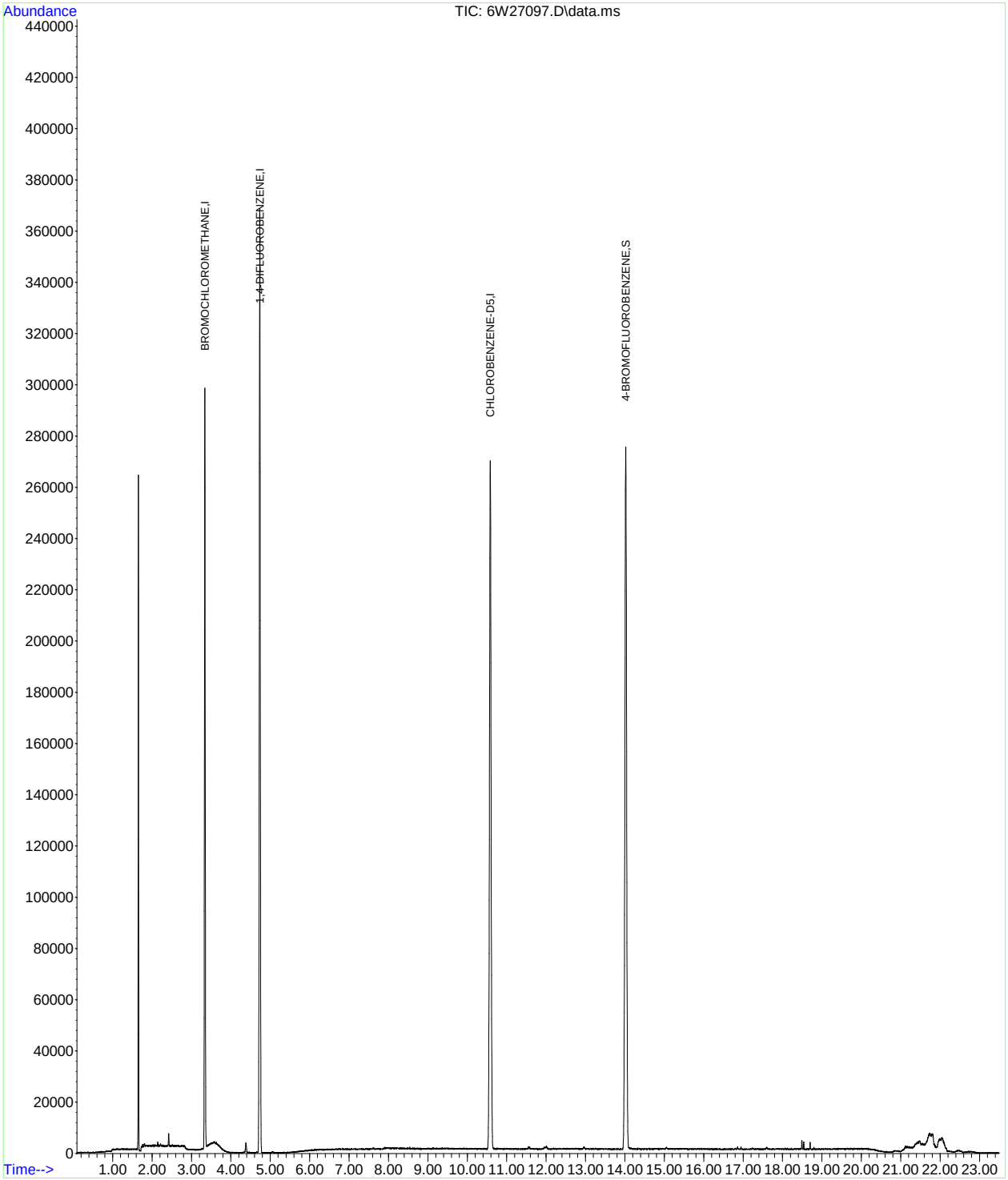
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) BROMOCHLOROMETHANE	3.341	128	56935	10.00	PPBV	# 0.00
52) 1,4-DIFLUOROBENZENE	4.734	114	281246	10.00	PPBV	0.00
76) CHLOROBENZENE-D5	10.585	117	239631	10.00	PPBV	0.00
System Monitoring Compounds						
87) 4-BROMOFLUOROBENZENE	14.023	95	165932	9.92	PPBV	0.00
Target Compounds						Qvalue

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

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\
Data File : 6W27097.D
Acq On : 22 Nov 2022 12:29 pm
Operator : thomash
Sample : mb
Misc : MS63734,V6W1146,,,,,1
ALS Vial : 3 Sample Multiplier: 1

Quant Time: Nov 22 14:43:09 2022
Quant Method : C:\msdchem\1\methods\M6W1125.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Thu Oct 20 08:34:08 2022
Response via : Initial Calibration



Quantitation Report (QT/LSC Reviewed)

Data Path : C:\msdchem\1\data\
Data File : 6W27296.D
Acq On : 28 Nov 2022 3:57 pm
Operator : thomash
Sample : mb
Misc : MS64243,V6W1152,,,,,1
ALS Vial : 20 Sample Multiplier: 1

Quant Time: Nov 29 06:47:43 2022
Quant Method : C:\msdchem\1\methods\M6W1125.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Thu Oct 20 08:34:08 2022
Response via : Initial Calibration

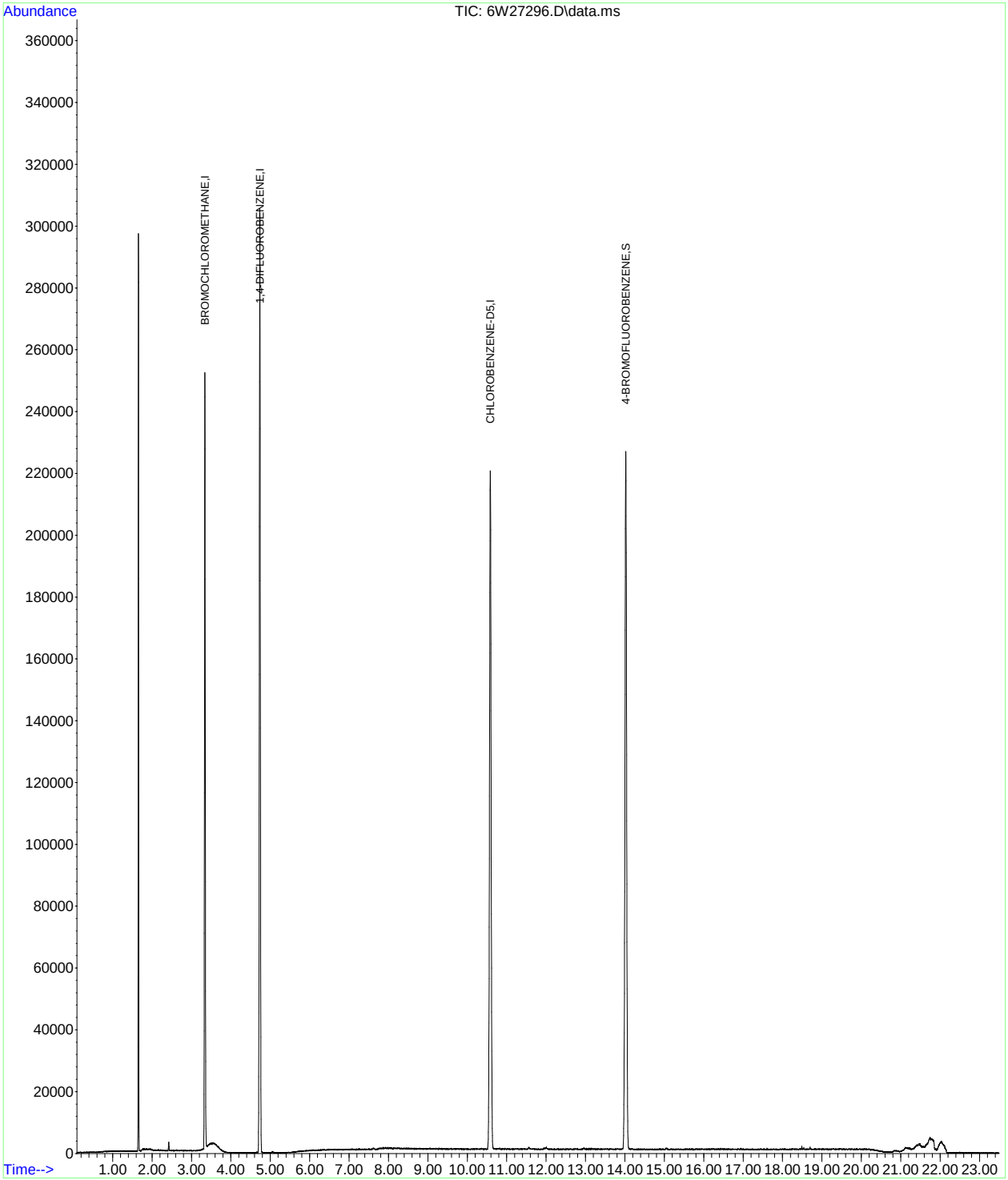
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) BROMOCHLOROMETHANE	3.342	128	51542	10.00	PPBV	# 0.00
52) 1,4-DIFLUOROBENZENE	4.734	114	241566	10.00	PPBV	0.00
76) CHLOROBENZENE-D5	10.586	117	206667	10.00	PPBV	0.00
System Monitoring Compounds						
87) 4-BROMOFLUOROBENZENE	14.023	95	132439	9.18	PPBV	0.00
Target Compounds						Qvalue

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

Quantitation Report (QT/LSC Reviewed)

Data Path : C:\msdchem\1\data\
Data File : 6W27296.D
Acq On : 28 Nov 2022 3:57 pm
Operator : thomash
Sample : mb
Misc : MS64243,V6W1152,,,,,1
ALS Vial : 20 Sample Multiplier: 1

Quant Time: Nov 29 06:47:43 2022
Quant Method : C:\msdchem\1\methods\M6W1125.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Thu Oct 20 08:34:08 2022
Response via : Initial Calibration



Manual Integrations APPROVED (compounds with "m" flag)
Kanya Veerawat 02/02/23 16:45

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\
Data File : 2w63184.D
Acq On : 1 Feb 2023 10:10 am
Operator : thomash
Sample : bs
Misc : MS66176,v2w2809,,,,,1
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Feb 02 14:41:04 2023
Quant Method : C:\msdchem\1\METHODS\M2W2776.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Mon Dec 19 08:01:03 2022
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units		Dev(Min)
Internal Standards							
1) BROMOCHLOROMETHANE	3.444	128	59237	10.00	PPBV	#	0.01
52) 1,4-DIFLUOROBENZENE	4.769	114	303506	10.00	PPBV		0.00
76) CHLOROBENZENE-D5	10.447	117	273258	10.00	PPBV		0.00
System Monitoring Compounds							
87) 4-BROMOFLUOROBENZENE	13.830	95	200031	9.48	PPBV		0.00
Target Compounds							Qvalue
3) FREON 152A	1.753	65	53883	12.03	PPBV	#	100
4) CHLORODIFLUOROMETHANE	1.766	67	25458	10.74	PPBV		100
5) CHLOROTRIFLUOROETHENE	1.779	116	119370	10.59	PPBV		98
6) DICHLORODIFLUOROMETHANE	1.798	85	268846	9.13	PPBV		100
7) PROPYLENE	1.776	41	74548	13.63	PPBV		99
8) 1-CHLORO-1,1-DIFLUOROE...	1.840	65	189481	8.74	PPBV		97
9) FREON 114	1.875	85	229948	9.37	PPBV		98
10) CHLOROMETHANE	1.843	52	28599	11.79	PPBV		95
11) VINYL CHLORIDE	1.911	62	99118	11.20	PPBV		99
12) 1,3-BUTADIENE	1.952	54	82084	12.15	PPBV		97
13) N-BUTANE	1.968	43	143046	11.78	PPBV		94
14) BROMOMETHANE	2.033	94	80884	9.34	PPBV		99
15) CHLOROETHANE	2.087	64	51342	11.17	PPBV		98
16) DICHLOROFLUOROMETHANE	2.113	67	201922	10.25	PPBV		97
17) ACETONITRILE	2.187	41	87371	12.48	PPBV		99
18) ACROLEIN	2.229	56	48154	12.22	PPBV		98
19) FREON 123	2.245	83	208802	9.66	PPBV		97
20) FREON 123A	2.261	117	115184	8.93	PPBV		100
21) TRICHLOROFLUOROMETHANE	2.332	101	242244	8.61	PPBV		99
22) ISOPROPYL ALCOHOL	2.357	45	194737	10.84	PPBV		95
23) ACETONE	2.274	58	52518	10.44	PPBV		98
24) PENTANE	2.448	42	104045	11.04	PPBV		91
25) IODOMETHANE	2.509	142	232689	9.00	PPBV		97
26) 1,1-DICHLOROETHYLENE	2.534	96	90942	8.53	PPBV		87
27) CARBON DISULFIDE	2.669	76	289543m	9.66	PPBV		
28) ETHANOL	2.123	45	45449	10.76	PPBV		98
29) BROMOETHENE	2.197	106	85900	9.74	PPBV		99
30) ACRYLONITRILE	2.422	52	76596	11.81	PPBV		99
31) METHYLENE CHLORIDE	2.570	84	87880	7.82	PPBV		87
32) 3-CHLOROPROPENE	2.615	76	45143	8.64	PPBV	#	85
33) FREON 113	2.669	151	147209	8.49	PPBV		96
34) TRANS-1,2-DICHLOROETHENE	2.907	96	99942	10.53	PPBV		98
35) TERTIARY BUTYL ALCOHOL	2.567	59	226848	8.42	PPBV	#	95
36) METHYL TERTIARY BUTYL ...	3.023	73	260596	9.69	PPBV		99
37) TETRAHYDROFURAN	3.747	72	49131	11.42	PPBV		83
38) HEXANE	3.499	57	184418	11.64	PPBV		97
39) VINYL ACETATE	3.058	86	25155	12.03	PPBV		70
40) 1,1-DICHLOROETHANE	2.984	63	176530	11.14	PPBV		99
41) METHYL ETHYL KETONE	3.165	72	50657	11.15	PPBV		88
42) CIS-1,2-DICHLOROETHENE	3.364	96	103042	10.52	PPBV		96
43) DIISOPROPYL ETHER	3.505	59	54435	11.85	PPBV		81

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\
Data File : 2w63184.D
Acq On : 1 Feb 2023 10:10 am
Operator : thomash
Sample : bs
Misc : MS66176,v2w2809,,,,,1
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Feb 02 14:41:04 2023
Quant Method : C:\msdchem\1\METHODS\M2W2776.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Mon Dec 19 08:01:03 2022
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units		Dev(Min)
44) ETHYL ACETATE	3.512	61	37126	11.65	PPBV		77
45) METHYL ACRYLATE	3.496	55	228235	12.26	PPBV	#	100
46) CHLOROFORM	3.518	83	216399	10.20	PPBV		98
47) 2,4-DIMETHYLPENTANE	4.033	57	215327	12.20	PPBV		98
48) 1,1,1-TRICHLOROETHANE	4.113	97	206674	9.44	PPBV		98
49) CARBON TETRACHLORIDE	4.550	117	215180	10.05	PPBV		99
50) 1,2-DICHLOROETHANE	3.943	62	147662	9.68	PPBV		99
51) BENZENE	4.435	78	308715	10.11	PPBV		97
53) CYCLOHEXANE	4.650	84	133880	10.54	PPBV		88
54) 2,3-DIMETHYLPENTANE	4.914	71	69609	10.98	PPBV		90
55) TRICHLOROETHENE	5.361	95	137985	10.10	PPBV		98
56) 1,2-DICHLOROPROPANE	5.119	63	123836	11.74	PPBV		99
57) DIBROMOMETHANE	5.081	174	119556	9.58	PPBV		95
58) ETHYL ACRYLATE	5.245	55	286758	12.64	PPBV		99
59) BROMODICHLOROMETHANE	5.306	83	235363	10.65	PPBV		100
60) 2,2,4-TRIMETHYLPENTANE	5.457	57	585278	12.19	PPBV		100
61) 1,4-DIOXANE	5.390	88	75291	10.23	PPBV		96
62) HEPTANE	5.782	43	204638	12.25	PPBV		90
63) METHYL METHACRYLATE	5.679	69	120686	11.20	PPBV		87
64) METHYL ISOBUTYL KETONE	6.444	58	127324	12.16	PPBV		93
65) CIS-1,3-DICHLOROPROPENE	6.319	75	169441	10.20	PPBV		99
66) TOLUENE	7.547	91	377753	9.88	PPBV		100
67) 1,3-DICHLOROPROPANE	7.608	76	190167	10.58	PPBV		99
68) TRANS-1,3-DICHLOROPROPENE	7.010	75	145729	9.56	PPBV		98
69) 1,1,2-TRICHLOROETHANE	7.171	83	112869	10.57	PPBV		97
70) 2-HEXANONE	8.155	58	194331	12.27	PPBV		94
71) ETHYL METHACRYLATE	8.267	69	208617	11.47	PPBV		93
72) TETRACHLOROETHENE	9.303	164	143657	10.66	PPBV		94
73) DIBROMOCHLOROMETHANE	8.094	129	230175	10.97	PPBV		99
74) 1,2-DIBROMOETHANE	8.438	107	210650	10.49	PPBV		99
75) OCTANE	9.447	43	285999	12.14	PPBV		89
77) 1,1,1,2-TETRACHLOROETHANE	10.537	131	161383	10.75	PPBV		100
78) CHLOROBENZENE	10.524	112	308602	10.58	PPBV		97
79) ETHYLBENZENE	11.412	91	514498	9.70	PPBV		99
80) M,P-XYLENE	11.843	91	804526	19.44	PPBV		98
81) O-XYLENE	12.785	91	402160	9.43	PPBV		98
82) STYRENE	12.569	104	321443	11.08	PPBV		99
83) NONANE	13.910	43	302702	12.51	PPBV		93
84) BROMOFORM	11.656	173	204292	10.79	PPBV		98
85) 1,1,2,2-TETRACHLOROETHANE	12.798	83	302820	10.93	PPBV		99
86) 1,2,3-TRICHLOROPROPANE	13.084	75	228660	10.44	PPBV	#	100
88) ISOPROPYLBENZENE	14.306	120	152711	10.35	PPBV		97
89) BROMOBENZENE	14.177	77	288598	10.71	PPBV		90
90) 2-CHLOROTOLUENE	15.315	126	136271	10.42	PPBV		99
91) N-PROPYLBENZENE	15.653	120	158177	10.37	PPBV		98
92) 4-ETHYLTOLUENE	16.064	105	616409	11.35	PPBV		97
93) 1,3,5-TRIMETHYLBENZENE	16.235	105	543182	11.54	PPBV		95
94) ALPHA-METHYLSTYRENE	16.450	118	264617	11.51	PPBV		98
95) TERT-BUTYLBENZENE	16.714	134	120616	10.57	PPBV		95
96) 1,2,4-TRIMETHYLBENZENE	16.723	105	541201	10.73	PPBV		95

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\
Data File : 2w63184.D
Acq On : 1 Feb 2023 10:10 am
Operator : thomash
Sample : bs
Misc : MS66176,v2w2809,,,,,1
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Feb 02 14:41:04 2023
Quant Method : C:\msdchem\1\METHODS\M2W2776.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Mon Dec 19 08:01:03 2022
Response via : Initial Calibration

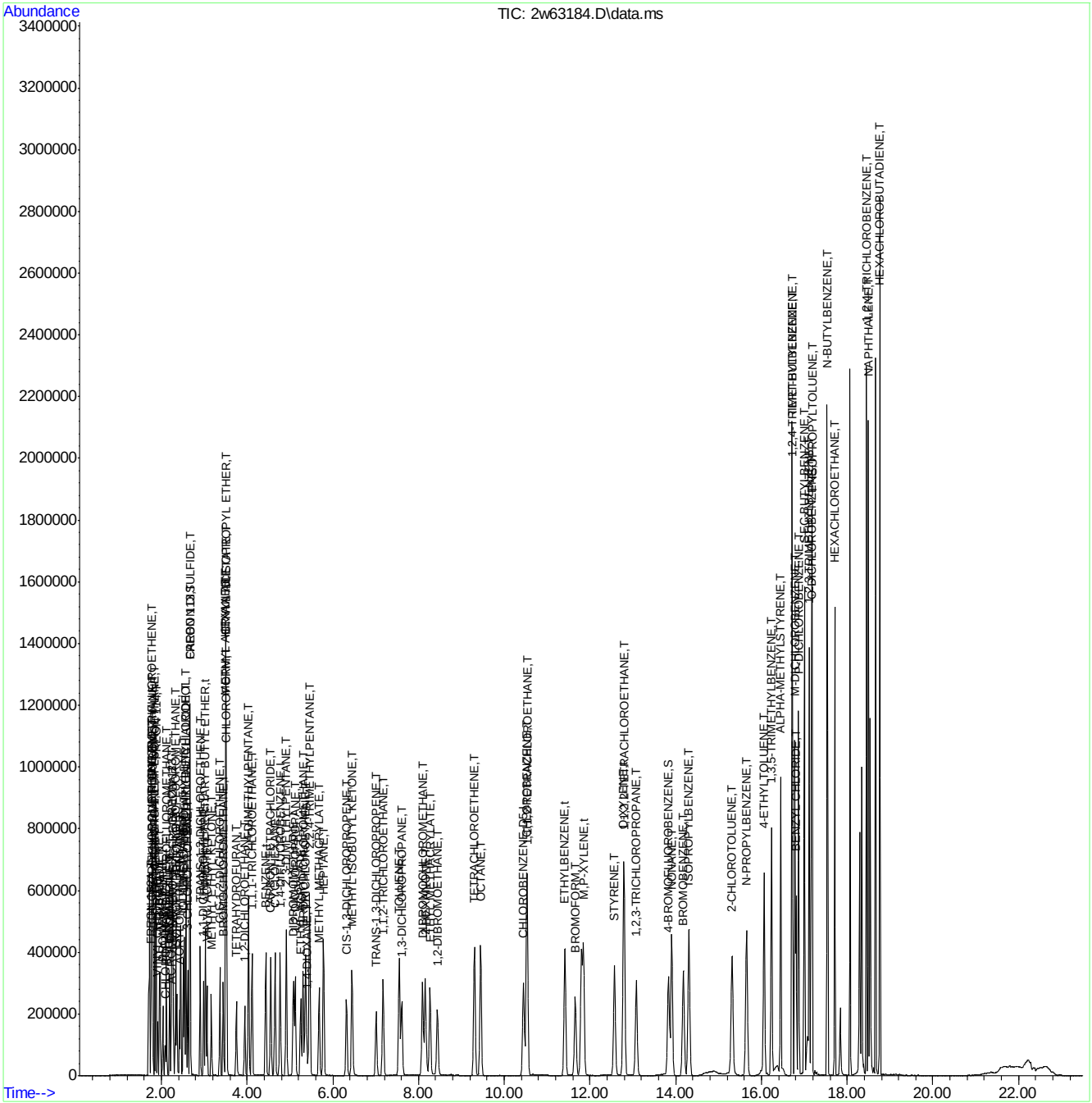
	Compound	R.T.	QIon	Response	Conc	Units		Dev(Min)
97)	BENZYL CHLORIDE	16.807	91	296527	7.19	PPBV		97
98)	M-DICHLOROBENZENE	16.781	146	340568	11.23	PPBV		99
99)	P-DICHLOROBENZENE	16.868	146	343585	11.10	PPBV		99
100)	O-DICHLOROBENZENE	17.167	146	331155	11.03	PPBV		99
101)	SEC-BUTYLBENZENE	17.000	134	153235	10.55	PPBV		92
102)	1,2,3-TRIMETHYLBENZENE	17.113	105	543203	10.98	PPBV	#	90
103)	P-ISOPROPYLTOLUENE	17.183	134	171115	10.70	PPBV		97
104)	N-BUTYLBENZENE	17.531	134	167034	10.88	PPBV		97
105)	HEXACHLOROETHANE	17.711	117	179387	9.71	PPBV		96
106)	HEXACHLOROBUTADIENE	18.762	225	244300	8.78	PPBV		99
107)	1,2,4-TRICHLOROBENZENE	18.450	180	329429	9.73	PPBV		98
108)	NAPHTHALENE	18.498	128	884476	9.80	PPBV		100

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

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\
Data File : 2w63184.D
Acq On : 1 Feb 2023 10:10 am
Operator : thomash
Sample : bs
Misc : MS66176,v2w2809,,,,,1
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Feb 02 14:41:04 2023
Quant Method : C:\msdchem\1\METHODS\M2W2776.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Mon Dec 19 08:01:03 2022
Response via : Initial Calibration



Manual Integration Approval Summary

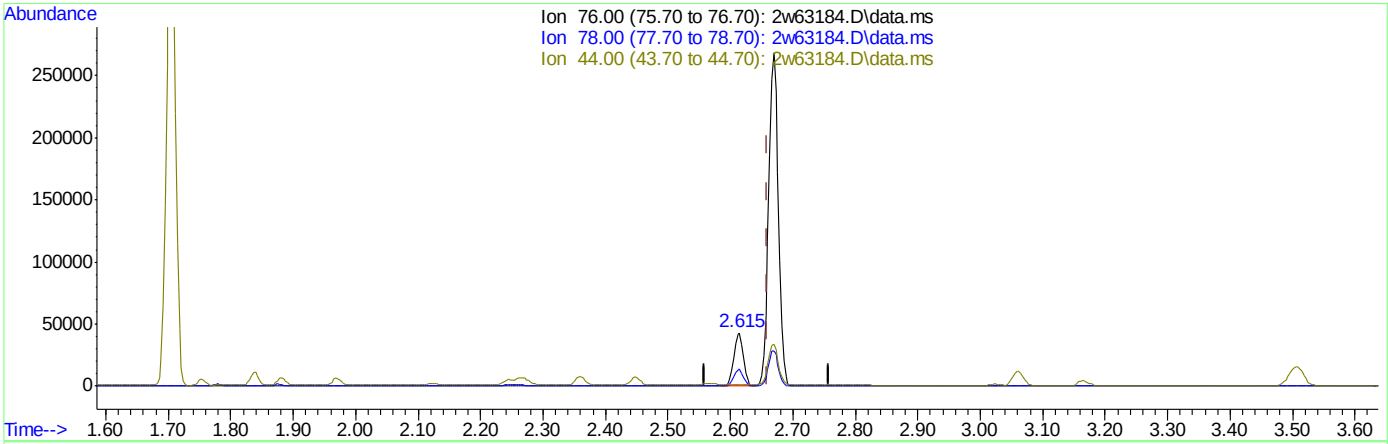
Sample Number: V2W2809-BS
Lab FileID: 2W63184.D
Injection Time: 02/01/23 10:10
Method: TO-15
Analyst approved: 02/02/23 14:49 Thomas Hilbig
Supervisor approved: 02/02/23 16:45 Kanya Veerawat

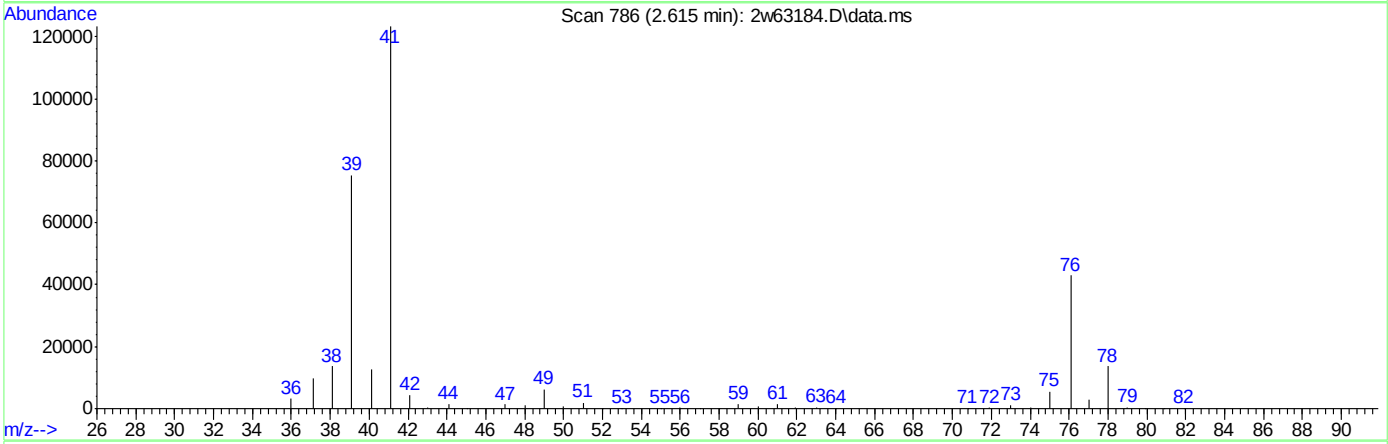
Parameter	CAS	Sig#	R.T. (min.)	Reason
Carbon disulfide	75-15-0		2.67	Missed peak

Quantitation Report (Qedit)

Data Path : C:\msdchem\1\DATA\
Data File : 2w63184.D
Acq On : 1 Feb 2023 10:10 am
Operator : thomash
Sample : bs
Misc : MS66176,v2w2809,,,,,1
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Feb 01 11:08:07 2023
Quant Method : C:\msdchem\1\METHODS\M2W2776.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Mon Dec 19 08:01:03 2022
Response via : Initial Calibration





TIC: 2w63184.D\data.ms

(27) CARBON DISULFIDE (T)

2.615min (-0.045) 1.51PPBV

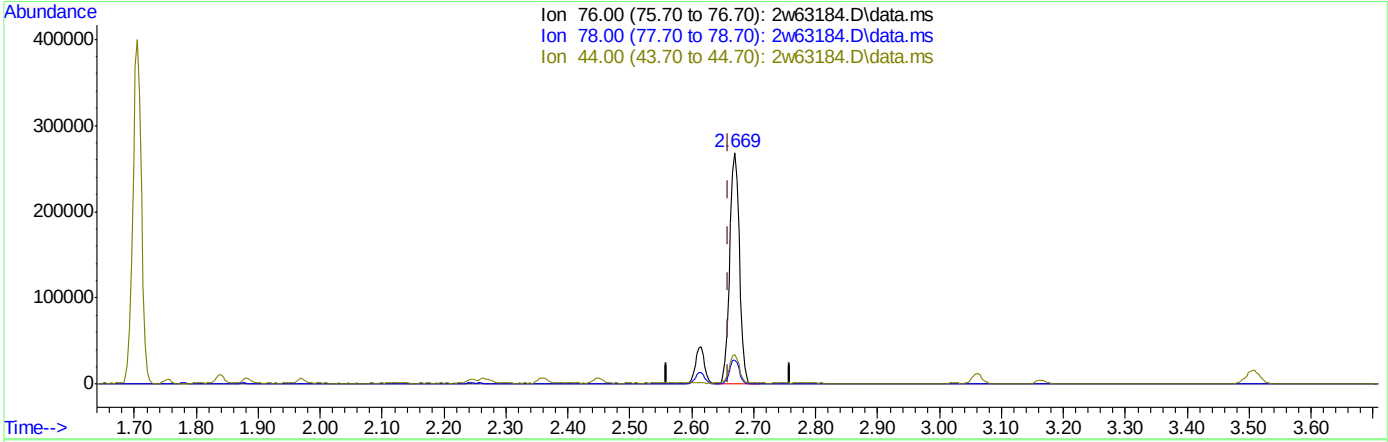
response 45141

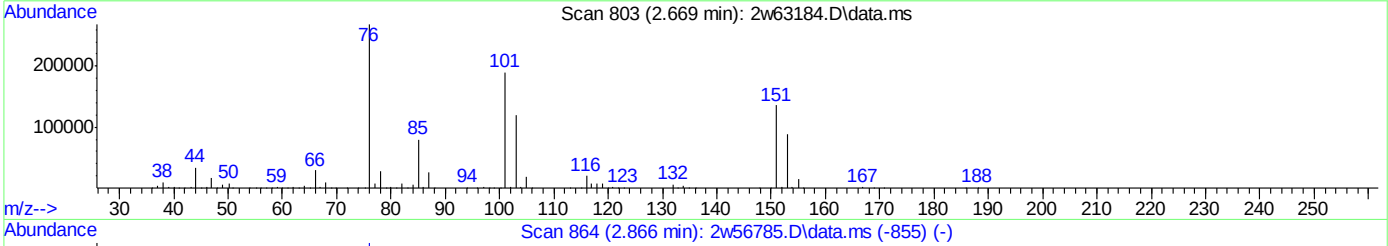
Ion	Exp%	Act%
76.00	100	100
78.00	11.10	31.99#
44.00	18.00	0.00#
0.00	0.00	0.00

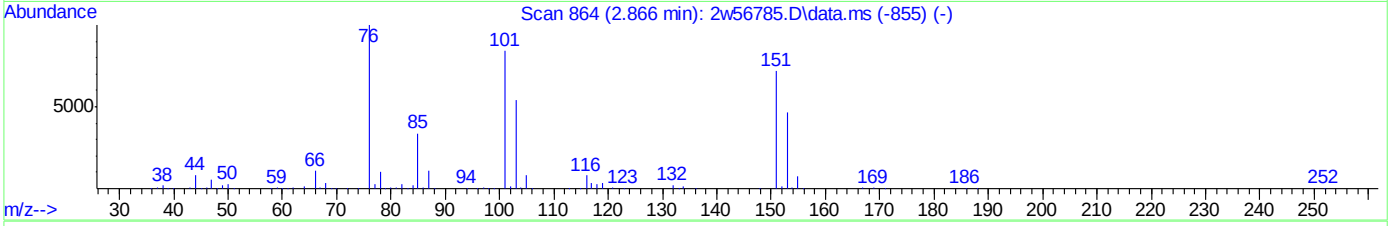
Quantitation Report (Qedit)

Data Path : C:\msdchem\1\DATA\
Data File : 2w63184.D
Acq On : 1 Feb 2023 10:10 am
Operator : thomash
Sample : bs
Misc : MS66176,v2w2809,,,,,1
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Feb 01 11:08:07 2023
Quant Method : C:\msdchem\1\METHODS\M2W2776.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Mon Dec 19 08:01:03 2022
Response via : Initial Calibration







TIC: 2w63184.D\data.ms

(27) CARBON DISULFIDE (T)

2.669min (+0.010) 9.66PPBV m

response 289543

Ion	Exp%	Act%
76.00	100	100
78.00	11.10	4.99#
44.00	18.00	0.00#
0.00	0.00	0.00

Manual Integrations APPROVED (compounds with "m" flag)
Kanya Veerawat 02/02/23 16:45

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\
Data File : 2w63185.D
Acq On : 1 Feb 2023 10:44 am
Operator : thomash
Sample : bsd
Misc : MS66176,v2w2809,,,,,1
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Feb 02 14:41:38 2023
Quant Method : C:\msdchem\1\METHODS\M2W2776.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Mon Dec 19 08:01:03 2022
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units		Dev(Min)
Internal Standards							
1) BROMOCHLOROMETHANE	3.441	128	58679	10.00	PPBV	#	0.00
52) 1,4-DIFLUOROBENZENE	4.769	114	302004	10.00	PPBV		0.00
76) CHLOROBENZENE-D5	10.447	117	276545	10.00	PPBV		0.00
System Monitoring Compounds							
87) 4-BROMOFLUOROBENZENE	13.830	95	201096	9.41	PPBV		0.00
Target Compounds							Qvalue
3) FREON 152A	1.750	65	53833m	12.14	PPBV		
4) CHLORODIFLUOROMETHANE	1.763	67	25958	11.05	PPBV		99
5) CHLOROTRIFLUOROETHENE	1.776	116	119212	10.68	PPBV		97
6) DICHLORODIFLUOROMETHANE	1.795	85	267068	9.16	PPBV		100
7) PROPYLENE	1.772	41	74156	13.68	PPBV		99
8) 1-CHLORO-1,1-DIFLUOROE...	1.837	65	187756	8.75	PPBV		97
9) FREON 114	1.872	85	226578	9.32	PPBV		98
10) CHLOROMETHANE	1.840	52	28844	12.00	PPBV		99
11) VINYL CHLORIDE	1.907	62	96956	11.06	PPBV		99
12) 1,3-BUTADIENE	1.949	54	80452	12.03	PPBV		97
13) N-BUTANE	1.965	43	142206	11.82	PPBV		94
14) BROMOMETHANE	2.030	94	80082	9.33	PPBV		99
15) CHLOROETHANE	2.084	64	51503	11.31	PPBV		98
16) DICHLOROFLUOROMETHANE	2.110	67	201623	10.33	PPBV		97
17) ACETONITRILE	2.187	41	87537	12.62	PPBV		99
18) ACROLEIN	2.226	56	47341	12.12	PPBV		97
19) FREON 123	2.242	83	207011	9.67	PPBV		98
20) FREON 123A	2.258	117	115475	9.04	PPBV		98
21) TRICHLOROFLUOROMETHANE	2.329	101	241674	8.67	PPBV		100
22) ISOPROPYL ALCOHOL	2.354	45	198000	11.12	PPBV		95
23) ACETONE	2.271	58	52175	10.47	PPBV		97
24) PENTANE	2.444	42	103578	11.10	PPBV		91
25) IODOMETHANE	2.505	142	231559	9.05	PPBV		97
26) 1,1-DICHLOROETHYLENE	2.531	96	90145	8.54	PPBV		88
27) CARBON DISULFIDE	2.666	76	285613	9.62	PPBV	#	92
28) ETHANOL	2.120	45	44608	10.66	PPBV		99
29) BROMOETHENE	2.194	106	85464	9.78	PPBV		99
30) ACRYLONITRILE	2.419	52	76614	11.92	PPBV		99
31) METHYLENE CHLORIDE	2.570	84	86902	7.81	PPBV		91
32) 3-CHLOROPROPENE	2.612	76	45152	8.73	PPBV	#	84
33) FREON 113	2.666	151	146599	8.53	PPBV		97
34) TRANS-1,2-DICHLOROETHENE	2.904	96	100957	10.74	PPBV		99
35) TERTIARY BUTYL ALCOHOL	2.563	59	226572	8.49	PPBV	#	94
36) METHYL TERTIARY BUTYL ...	3.023	73	263879	9.90	PPBV		100
37) TETRAHYDROFURAN	3.743	72	49522	11.62	PPBV		84
38) HEXANE	3.496	57	185401	11.82	PPBV		97
39) VINYL ACETATE	3.058	86	24761	11.95	PPBV		66
40) 1,1-DICHLOROETHANE	2.985	63	176737	11.26	PPBV		99
41) METHYL ETHYL KETONE	3.161	72	50768	11.28	PPBV		86
42) CIS-1,2-DICHLOROETHENE	3.364	96	103352	10.66	PPBV		96
43) DIISOPROPYL ETHER	3.505	59	55477	12.19	PPBV		84

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\
Data File : 2w63185.D
Acq On : 1 Feb 2023 10:44 am
Operator : thomash
Sample : bsd
Misc : MS66176,v2w2809,,,,,1
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Feb 02 14:41:38 2023
Quant Method : C:\msdchem\1\METHODS\M2W2776.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Mon Dec 19 08:01:03 2022
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units		Dev(Min)
44) ETHYL ACETATE	3.509	61	37542	11.89	PPBV		79
45) METHYL ACRYLATE	3.496	55	229220	12.43	PPBV	#	100
46) CHLOROFORM	3.518	83	216501	10.31	PPBV		99
47) 2,4-DIMETHYLPENTANE	4.029	57	216204	12.37	PPBV		98
48) 1,1,1-TRICHLOROETHANE	4.113	97	207938	9.59	PPBV		99
49) CARBON TETRACHLORIDE	4.550	117	215274	10.15	PPBV		99
50) 1,2-DICHLOROETHANE	3.943	62	146478	9.69	PPBV		100
51) BENZENE	4.435	78	308887	10.21	PPBV		97
53) CYCLOHEXANE	4.650	84	135660	10.74	PPBV		89
54) 2,3-DIMETHYLPENTANE	4.914	71	70789	11.22	PPBV		93
55) TRICHLOROETHENE	5.361	95	138802	10.21	PPBV		98
56) 1,2-DICHLOROPROPANE	5.119	63	122514	11.68	PPBV		99
57) DIBROMOMETHANE	5.078	174	119412	9.62	PPBV		95
58) ETHYL ACRYLATE	5.245	55	285560	12.65	PPBV		99
59) BROMODICHLOROMETHANE	5.306	83	235004	10.69	PPBV		100
60) 2,2,4-TRIMETHYLPENTANE	5.457	57	591897	12.39	PPBV		99
61) 1,4-DIOXANE	5.386	88	78266	10.69	PPBV		94
62) HEPTANE	5.782	43	202836	12.20	PPBV		91
63) METHYL METHACRYLATE	5.676	69	122251	11.40	PPBV		88
64) METHYL ISOBUTYL KETONE	6.447	58	127512	12.24	PPBV		93
65) CIS-1,3-DICHLOROPROPENE	6.322	75	170958	10.34	PPBV		97
66) TOLUENE	7.550	91	378673	9.95	PPBV		99
67) 1,3-DICHLOROPROPANE	7.608	76	190377	10.65	PPBV		100
68) TRANS-1,3-DICHLOROPROPENE	7.010	75	147356	9.71	PPBV		99
69) 1,1,2-TRICHLOROETHANE	7.171	83	113233	10.66	PPBV		97
70) 2-HEXANONE	8.155	58	195775	12.42	PPBV		95
71) ETHYL METHACRYLATE	8.267	69	211262	11.67	PPBV		93
72) TETRACHLOROETHENE	9.306	164	143501	10.71	PPBV		94
73) DIBROMOCHLOROMETHANE	8.094	129	230701	11.05	PPBV		99
74) 1,2-DIBROMOETHANE	8.441	107	212220	10.62	PPBV		99
75) OCTANE	9.454	43	286766	12.24	PPBV		89
77) 1,1,1,2-TETRACHLOROETHANE	10.540	131	160736	10.58	PPBV		100
78) CHLOROBENZENE	10.524	112	309449	10.49	PPBV		97
79) ETHYLBENZENE	11.415	91	516224	9.61	PPBV		100
80) M,P-XYLENE	11.849	91	804868	19.22	PPBV		99
81) O-XYLENE	12.791	91	407355	9.43	PPBV		97
82) STYRENE	12.576	104	322587	10.99	PPBV		99
83) NONANE	13.910	43	304492	12.43	PPBV		92
84) BROMOFORM	11.656	173	206055	10.75	PPBV		98
85) 1,1,2,2-TETRACHLOROETHANE	12.801	83	304920	10.88	PPBV		99
86) 1,2,3-TRICHLOROPROPANE	13.084	75	229759	10.37	PPBV	#	100
88) ISOPROPYLBENZENE	14.306	120	153895	10.31	PPBV		97
89) BROMOBENZENE	14.180	77	290138	10.64	PPBV		90
90) 2-CHLOROTOLUENE	15.315	126	136790	10.33	PPBV		99
91) N-PROPYLBENZENE	15.659	120	160159	10.38	PPBV		98
92) 4-ETHYLTOLUENE	16.064	105	610409	11.10	PPBV		98
93) 1,3,5-TRIMETHYLBENZENE	16.235	105	513329	10.78	PPBV		97
94) ALPHA-METHYLSTYRENE	16.450	118	265444	11.41	PPBV		98
95) TERT-BUTYLBENZENE	16.717	134	126213	10.93	PPBV		96
96) 1,2,4-TRIMETHYLBENZENE	16.724	105	566908	11.10	PPBV		91

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\
Data File : 2w63185.D
Acq On : 1 Feb 2023 10:44 am
Operator : thomash
Sample : bsd
Misc : MS66176,v2w2809,,,,,1
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Feb 02 14:41:38 2023
Quant Method : C:\msdchem\1\METHODS\M2W2776.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Mon Dec 19 08:01:03 2022
Response via : Initial Calibration

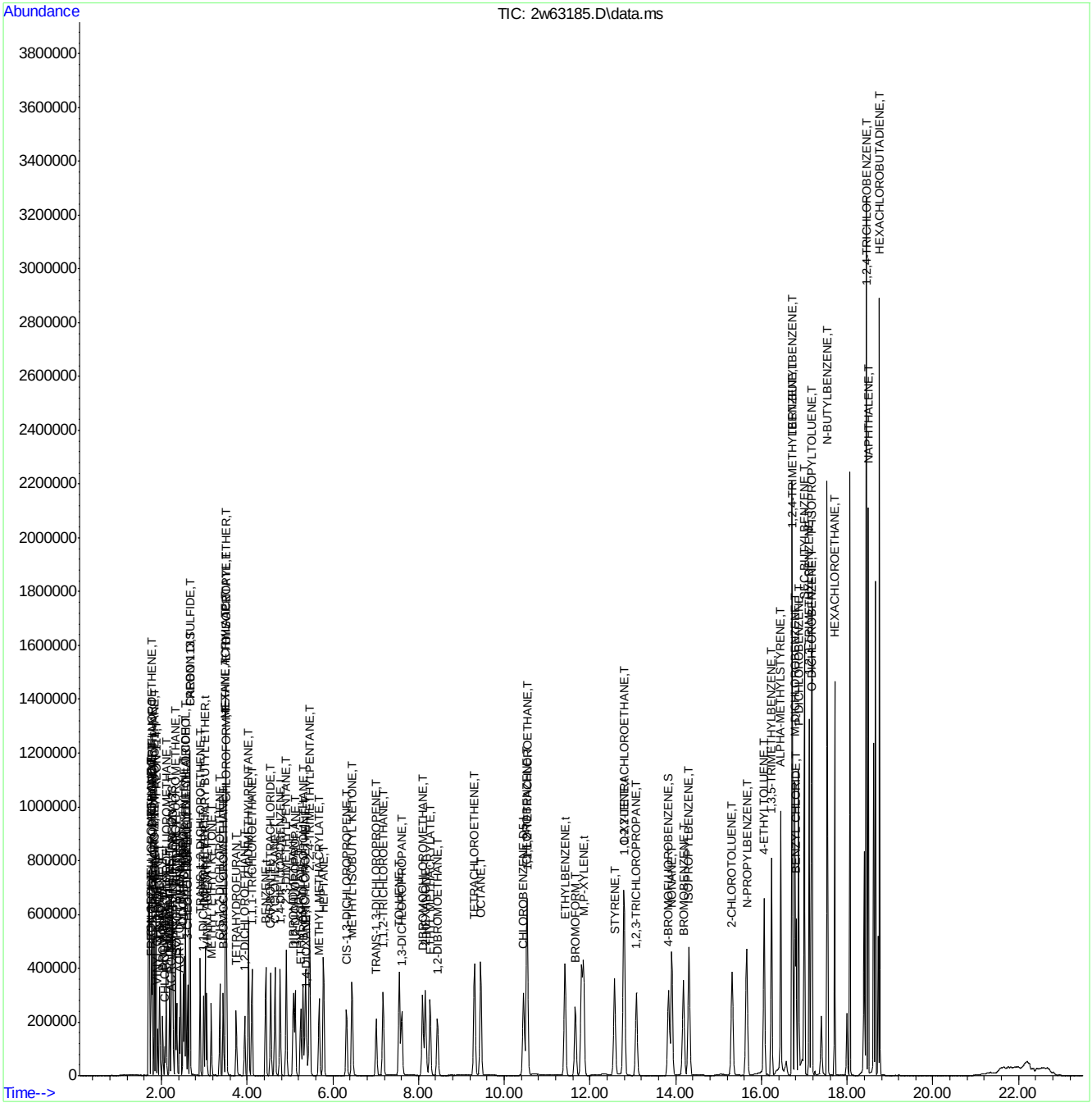
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
97) BENZYL CHLORIDE	16.807	91	303956	7.28	PPBV	97
98) M-DICHLOROBENZENE	16.781	146	340092	11.08	PPBV	98
99) P-DICHLOROBENZENE	16.868	146	343591	10.97	PPBV	99
100) O-DICHLOROBENZENE	17.164	146	331543	10.92	PPBV	99
101) SEC-BUTYLBENZENE	17.000	134	161516	10.98	PPBV	100
102) 1,2,3-TRIMETHYLBENZENE	17.113	105	532140	10.63	PPBV	97
103) P-ISOPROPYLTOLUENE	17.180	134	171406	10.59	PPBV	97
104) N-BUTYLBENZENE	17.531	134	168107	10.82	PPBV	98
105) HEXACHLOROETHANE	17.711	117	179874	9.62	PPBV	96
106) HEXACHLOROBUTADIENE	18.756	225	246755	8.76	PPBV	99
107) 1,2,4-TRICHLOROBENZENE	18.447	180	324682	9.47	PPBV	98
108) NAPHTHALENE	18.495	128	894330	9.79	PPBV	100

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

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\
Data File : 2w63185.D
Acq On : 1 Feb 2023 10:44 am
Operator : thomash
Sample : bsd
Misc : MS66176,v2w2809,,,,,1
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Feb 02 14:41:38 2023
Quant Method : C:\msdchem\1\METHODS\M2W2776.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Mon Dec 19 08:01:03 2022
Response via : Initial Calibration



Manual Integration Approval Summary

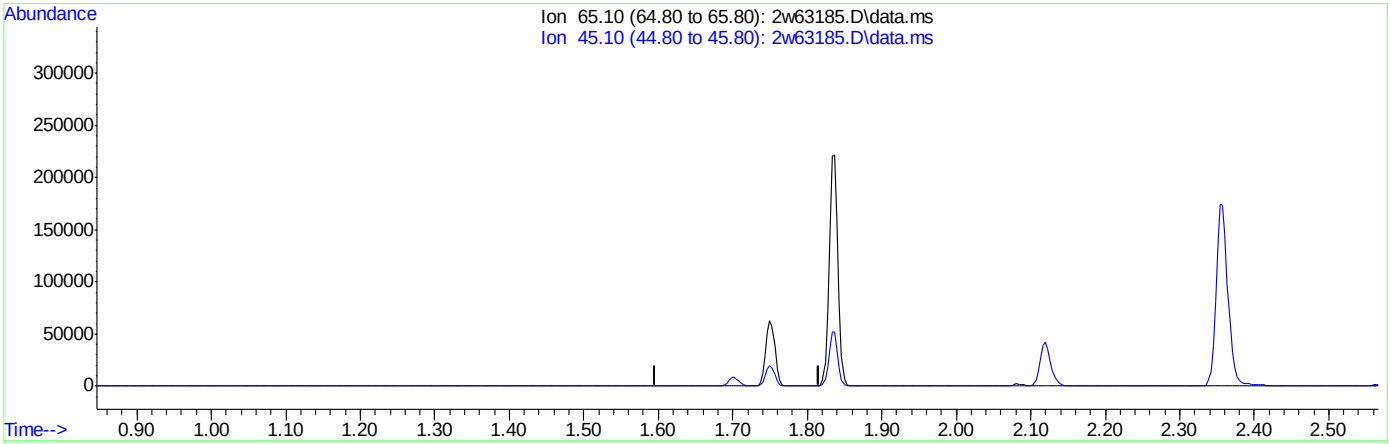
Sample Number:	V2W2809-BSD	**Method:**	TO-15
Lab FileID:	2W63185.D	**Analyst approved:**	02/02/23 14:49 Thomas Hilbig
Injection Time:	02/01/23 10:44	**Supervisor approved:**	02/02/23 16:45 Kanya Veerawat

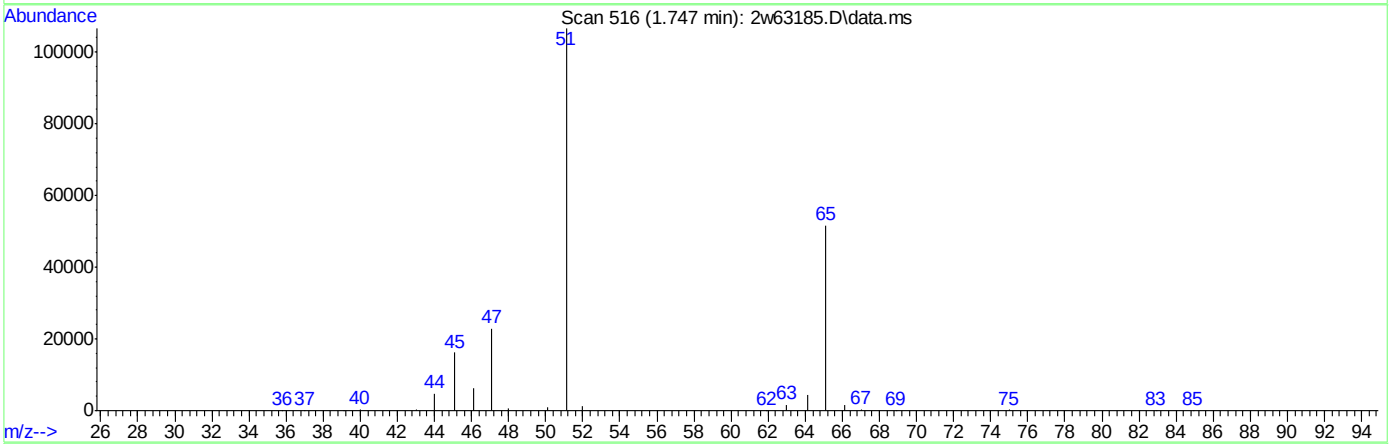
Parameter	CAS	Sig#	R.T. (min.)	Reason
Freon 152A	75-37-6		1.75	Missed peak

Quantitation Report (Qedit)

Data Path : C:\msdchem\1\DATA\
Data File : 2w63185.D
Acq On : 1 Feb 2023 10:44 am
Operator : thomash
Sample : bsd
Misc : MS66176,v2w2809,,,,,1
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Feb 01 11:09:00 2023
Quant Method : C:\msdchem\1\METHODS\M2W2776.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Mon Dec 19 08:01:03 2022
Response via : Initial Calibration





TIC: 2w63185.D\data.ms

(3) FREON 152A (T)

1.746min (-1.746) 0.00PPBV

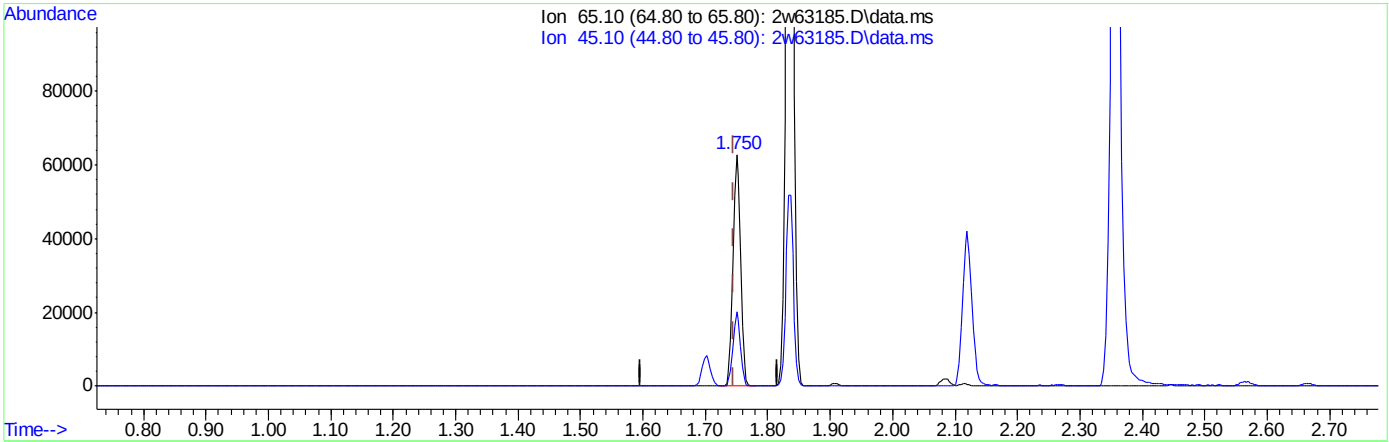
response 0

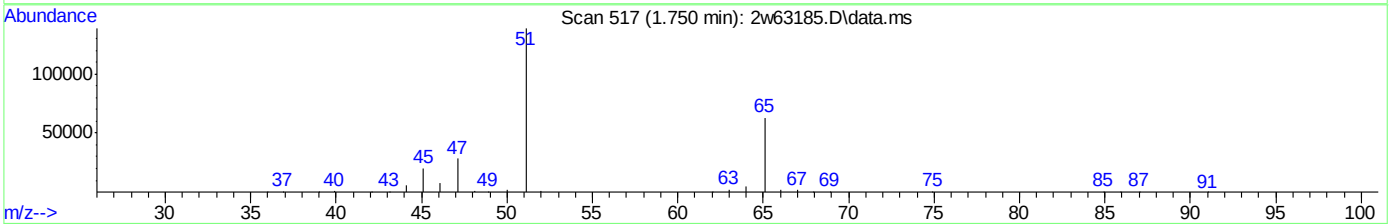
Ion	Exp%	Act%
65.10	100	0.00
45.10	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00

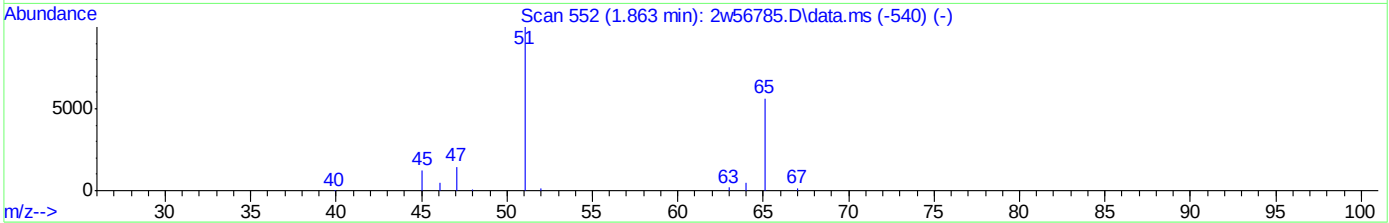
Quantitation Report (Qedit)

Data Path : C:\msdchem\1\DATA\
Data File : 2w63185.D
Acq On : 1 Feb 2023 10:44 am
Operator : thomash
Sample : bsd
Misc : MS66176,v2w2809,,,,,1
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Feb 01 11:09:00 2023
Quant Method : C:\msdchem\1\METHODS\M2W2776.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Mon Dec 19 08:01:03 2022
Response via : Initial Calibration







TIC: 2w63185.D\data.ms

(3) FREON 152A (T)

1.750min (+0.003) 12.14PPBV m

response 53833

Ion	Exp%	Act%
65.10	100	100
45.10	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\
Data File : 6W26991.D
Acq On : 8 Nov 2022 2:43 pm
Operator : thomash
Sample : bs
Misc : MS63597,V6W1142,,,,,1
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Nov 08 15:22:39 2022
Quant Method : C:\msdchem\1\methods\M6W1125.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Thu Oct 20 08:34:08 2022
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) BROMOCHLOROMETHANE	3.338	128	42763	10.00	PPBV	# 0.00
52) 1,4-DIFLUOROBENZENE	4.730	114	215690	10.00	PPBV	0.00
76) CHLOROBENZENE-D5	10.582	117	162892	10.00	PPBV	0.00
System Monitoring Compounds						
87) 4-BROMOFLUOROBENZENE	14.016	95	125051	10.99	PPBV	0.00
Target Compounds						Qvalue
3) FREON 152A	1.695	65	37926	10.32	PPBV	# 79
4) CHLORODIFLUOROMETHANE	1.708	67	17067	10.24	PPBV	99
5) CHLOROTRIFLUOROETHENE	1.718	116	76910	9.55	PPBV	# 99
6) DICHLORODIFLUOROMETHANE	1.798	85	174492	13.05	PPBV	99
7) PROPYLENE	1.714	41	60328	11.01	PPBV	96
8) 1-CHLORO-1,1-DIFLUOROE...	1.766	65	162220	13.24	PPBV	# 87
9) FREON 114	1.798	85	185763	13.21	PPBV	92
10) CHLOROMETHANE	1.772	52	27783	14.38	PPBV	93
11) VINYL CHLORIDE	1.830	62	84838	14.48	PPBV	97
12) 1,3-BUTADIENE	1.865	54	70833	14.79	PPBV	# 71
13) N-BUTANE	1.878	43	152379	14.11	PPBV	# 89
14) BROMOMETHANE	1.933	94	63578	14.03	PPBV	99
15) CHLOROETHANE	1.978	64	42495	15.15	PPBV	94
16) DICHLOROFLUOROMETHANE	2.004	67	167507	14.07	PPBV	# 95
17) ACETONITRILE	2.065	41	96916	15.41	PPBV	97
18) ACROLEIN	2.100	56	39473	15.17	PPBV	100
19) FREON 123	2.116	83	157537	13.95	PPBV	99
20) FREON 123A	2.132	117	82906	12.17	PPBV	# 65
21) TRICHLOROFLUOROMETHANE	2.190	101	170642	12.24	PPBV	100
22) ISOPROPYL ALCOHOL	2.206	45	198830	14.13	PPBV	# 97
23) ACETONE	2.139	58	46907	14.81	PPBV	# 45
24) PENTANE	2.300	42	107482	14.33	PPBV	# 92
25) IODOMETHANE	2.357	142	159896	11.90	PPBV	# 82
26) 1,1-DICHLOROETHYLENE	2.383	96	66174	12.48	PPBV	# 46
27) CARBON DISULFIDE	2.521	76	213766	12.73	PPBV	# 87
28) ETHANOL	2.007	45	47244	14.55	PPBV	98
29) BROMOETHENE	2.074	106	60729	12.79	PPBV	# 97
30) ACRYLONITRILE	2.271	52	68834	14.51	PPBV	96
31) METHYLENE CHLORIDE	2.422	84	64138	12.06	PPBV	# 39
32) 3-CHLOROPROPENE	2.464	76	34627	13.38	PPBV	# 1
33) FREON 113	2.518	151	105636	11.24	PPBV	88
34) TRANS-1,2-DICHLOROETHENE	2.769	96	69645	11.77	PPBV	# 70
35) TERTIARY BUTYL ALCOHOL	2.396	59	133810	11.63	PPBV	# 77
36) METHYL TERTIARY BUTYL ...	2.888	73	148594	10.09	PPBV	# 91
37) TETRAHYDROFURAN	3.653	72	36460	13.32	PPBV	# 26
38) HEXANE	3.390	57	149058	12.98	PPBV	# 72
39) VINYL ACETATE	2.930	86	18605	13.11	PPBV	# 1
40) 1,1-DICHLOROETHANE	2.853	63	145643	12.91	PPBV	97
41) METHYL ETHYL KETONE	3.036	72	37331	12.98	PPBV	# 1
42) CIS-1,2-DICHLOROETHENE	3.254	96	72996	11.75	PPBV	# 72
43) DIISOPROPYL ETHER	3.399	59	40702	12.33	PPBV	# 26
44) ETHYL ACETATE	3.406	61	29728	13.11	PPBV	# 1
45) METHYL ACRYLATE	3.390	55	194922	13.73	PPBV	# 97
46) CHLOROFORM	3.418	83	154625	12.13	PPBV	# 92
47) 2,4-DIMETHYLPENTANE	3.952	57	174046	13.41	PPBV	# 92
48) 1,1,1-TRICHLOROETHANE	4.039	97	142430	11.37	PPBV	# 90
49) CARBON TETRACHLORIDE	4.496	117	146400	10.90	PPBV	98
50) 1,2-DICHLOROETHANE	3.865	62	119000	12.26	PPBV	# 95
51) BENZENE	4.377	78	222622	11.68	PPBV	76
53) CYCLOHEXANE	4.598	84	95675	12.16	PPBV	# 63
54) 2,3-DIMETHYLPENTANE	4.872	71	51073	11.92	PPBV	# 38
55) TRICHLOROETHENE	5.344	95	96395	11.38	PPBV	94
56) 1,2-DICHLOROPROPANE	5.100	63	100140	12.88	PPBV	98
57) DIBROMOMETHANE	5.055	174	83697	10.48	PPBV	# 84

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\
Data File : 6W26991.D
Acq On : 8 Nov 2022 2:43 pm
Operator : thomash
Sample : bs
Misc : MS63597,V6W1142,,,,,1
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Nov 08 15:22:39 2022
Quant Method : C:\msdchem\1\methods\M6W1125.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Thu Oct 20 08:34:08 2022
Response via : Initial Calibration

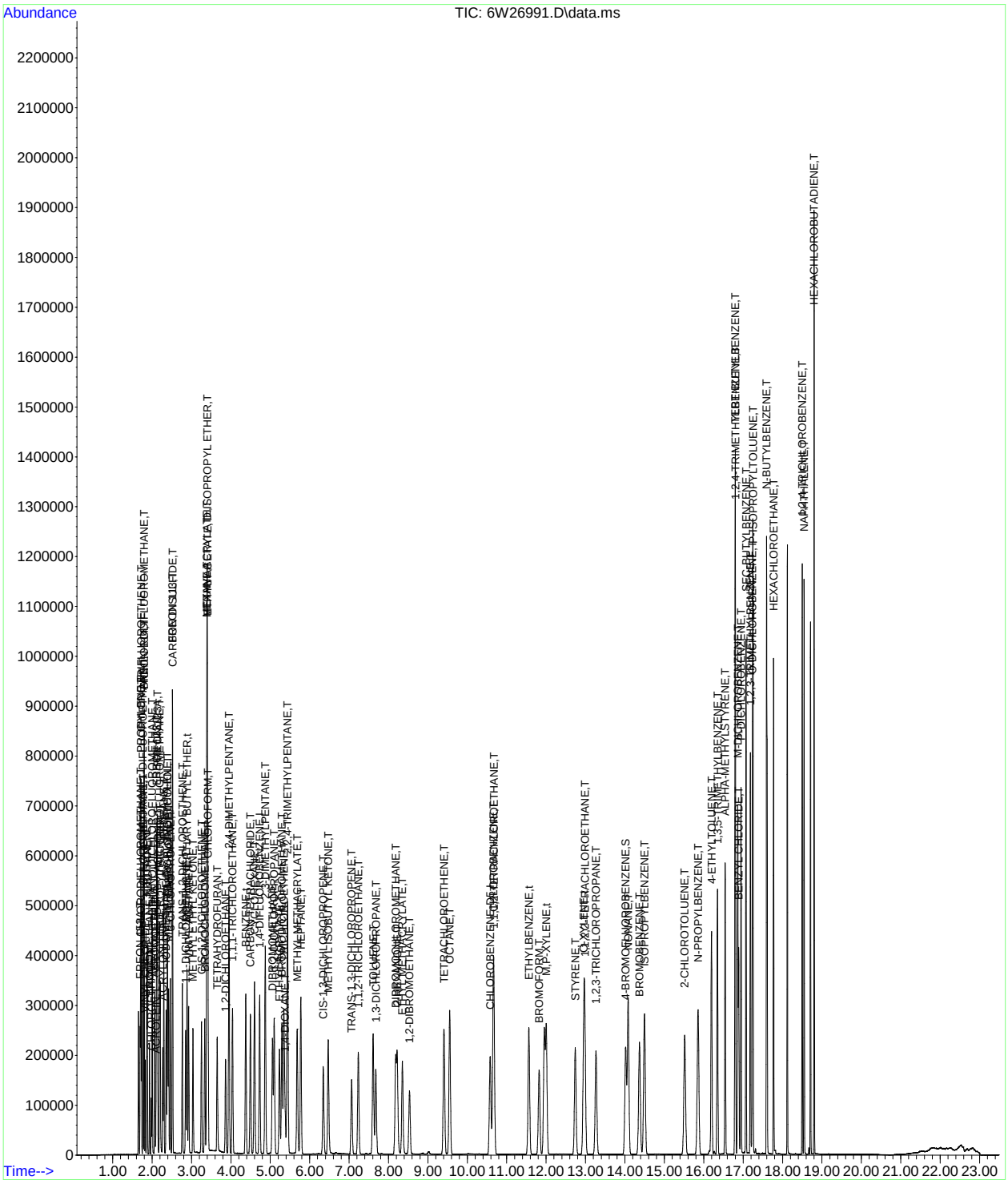
	Compound	R.T.	QIon	Response	Conc	Units		Dev(Min)
58)	ETHYL ACRYLATE	5.232	55	238649	14.47	PPBV	#	96
59)	BROMODICHLOROMETHANE	5.293	83	167402	11.74	PPBV		99
60)	2,2,4-TRIMETHYLPENTANE	5.438	57	477129	13.37	PPBV	#	97
61)	1,4-DIOXANE	5.373	88	53528	14.38	PPBV	#	65
62)	HEPTANE	5.775	43	156550	10.89	PPBV	#	71
63)	METHYL METHACRYLATE	5.685	69	89970	13.06	PPBV	#	32
64)	METHYL ISOBUTYL KETONE	6.470	58	74906	12.85	PPBV	#	61
65)	CIS-1,3-DICHLOROPROPENE	6.344	75	106654	10.35	PPBV	#	70
66)	TOLUENE	7.611	91	223672	9.37	PPBV		99
67)	1,3-DICHLOROPROPANE	7.679	76	120667	10.49	PPBV	#	97
68)	TRANS-1,3-DICHLOROPROPENE	7.061	75	94859	10.45	PPBV	#	73
69)	1,1,2-TRICHLOROETHANE	7.238	83	71695	10.52	PPBV		98
70)	2-HEXANONE	8.222	58	95631	14.09	PPBV	#	61
71)	ETHYL METHACRYLATE	8.351	69	122117	12.02	PPBV	#	65
72)	TETRACHLOROETHENE	9.412	164	83377	10.11	PPBV		96
73)	DIBROMOCHLOROMETHANE	8.180	129	136804	9.29	PPBV		99
74)	1,2-DIBROMOETHANE	8.534	107	121192	9.71	PPBV		100
75)	OCTANE	9.550	43	209499	11.02	PPBV	#	72
77)	1,1,1,2-TETRACHLOROETHANE	10.675	131	93911	10.75	PPBV		91
78)	CHLOROBENZENE	10.663	112	173983	11.05	PPBV		94
79)	ETHYLBENZENE	11.563	91	299038	10.66	PPBV		95
80)	M,P-XYLENE	12.003	91	463369	22.13	PPBV	#	63
81)	O-XYLENE	12.955	91	236801	11.30	PPBV		95
82)	STYRENE	12.736	104	166526	11.88	PPBV		95
83)	NONANE	14.084	43	225874	12.52	PPBV	#	71
84)	BROMOFORM	11.820	173	128648	11.26	PPBV	#	98
85)	1,1,2,2-TETRACHLOROETHANE	12.984	83	190814	12.82	PPBV		100
86)	1,2,3-TRICHLOROPROPANE	13.267	75	145379	12.48	PPBV		95
88)	ISOPROPYLBENZENE	14.498	105	329099	11.39	PPBV		96
89)	BROMOBENZENE	14.373	77	173550	12.45	PPBV		89
90)	2-CHLOROTOLUENE	15.518	91	239371	12.69	PPBV		96
91)	N-PROPYLBENZENE	15.855	91	421046	13.22	PPBV	#	92
92)	4-ETHYLTOLUENE	16.199	105	335350	13.02	PPBV		98
93)	1,3,5-TRIMETHYLBENZENE	16.350	105	276105	12.68	PPBV		97
94)	ALPHA-METHYLSTYRENE	16.543	118	134626	12.33	PPBV		98
95)	TERT-BUTYLBENZENE	16.797	119	303767	12.43	PPBV		92
96)	1,2,4-TRIMETHYLBENZENE	16.804	105	293260	13.03	PPBV		93
97)	BENZYL CHLORIDE	16.887	91	184052	13.49	PPBV		95
98)	M-DICHLOROBENZENE	16.865	146	192502	12.30	PPBV		99
99)	P-DICHLOROBENZENE	16.945	146	190614	12.20	PPBV		99
100)	O-DICHLOROBENZENE	17.235	146	187707	12.26	PPBV		99
101)	SEC-BUTYLBENZENE	17.074	105	431887	12.96	PPBV		98
102)	1,2,3-TRIMETHYLBENZENE	17.183	105	287600	13.05	PPBV		97
103)	P-ISOPROPYLTOLUENE	17.251	119	368816	12.91	PPBV	#	95
104)	N-BUTYLBENZENE	17.595	91	383150	15.09	PPBV		98
105)	HEXACHLOROETHANE	17.772	117	121182	11.68	PPBV		92
106)	HEXACHLOROBUTADIENE	18.800	225	159855	14.10	PPBV		100
107)	1,2,4-TRICHLOROBENZENE	18.498	180	179841	14.14	PPBV		99
108)	NAPHTHALENE	18.546	128	466312	14.87	PPBV		100

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

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\
Data File : 6W26991.D
Acq On : 8 Nov 2022 2:43 pm
Operator : thomash
Sample : bs
Misc : MS63597,V6W1142,,,,,1
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Nov 08 15:22:39 2022
Quant Method : C:\msdchem\1\methods\M6W1125.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Thu Oct 20 08:34:08 2022
Response via : Initial Calibration



Manual Integrations APPROVED (compounds with "m" flag)
Kanya Veerawat 12/09/22 12:14

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\
Data File : 6W26992.D
Acq On : 8 Nov 2022 3:14 pm
Operator : thomash
Sample : bsd
Misc : MS63597,V6W1142,,,,,1
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Dec 09 11:33:56 2022
Quant Method : C:\msdchem\1\methods\M6W1125.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Thu Oct 20 08:34:08 2022
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units		Dev(Min)
Internal Standards							
1) BROMOCHLOROMETHANE	3.338	128	45121	10.00	PPBV	#	0.00
52) 1,4-DIFLUOROBENZENE	4.734	114	225399	10.00	PPBV		0.00
76) CHLOROBENZENE-D5	10.585	117	172398	10.00	PPBV		0.00
System Monitoring Compounds							
87) 4-BROMOFLUOROBENZENE	14.019	95	133722	11.11	PPBV		0.00
Target Compounds							Qvalue
3) FREON 152A	1.698	65	38206	9.85	PPBV	#	75
4) CHLORODIFLUOROMETHANE	1.708	67	17619	10.02	PPBV		98
5) CHLOROTRIFLUOROETHENE	1.718	116	78760	9.27	PPBV	#	99
6) DICHLORODIFLUOROMETHANE	1.798	85	166695	11.82	PPBV		99
7) PROPYLENE	1.718	41	61769	10.68	PPBV		96
8) 1-CHLORO-1,1-DIFLUOROE...	1.769	65	165562	12.81	PPBV	#	86
9) FREON 114	1.801	85	186608	12.57	PPBV		92
10) CHLOROMETHANE	1.775	52	28161	13.82	PPBV		93
11) VINYL CHLORIDE	1.830	62	85974	13.91	PPBV		97
12) 1,3-BUTADIENE	1.865	54	71790	14.20	PPBV	#	71
13) N-BUTANE	1.882	43	153834	13.50	PPBV	#	89
14) BROMOMETHANE	1.936	94	63695	13.32	PPBV		100
15) CHLOROETHANE	1.981	64	42711	14.43	PPBV		94
16) DICHLOROFLUOROMETHANE	2.004	67	169816	13.52	PPBV	#	95
17) ACETONITRILE	2.068	41	99535	15.00	PPBV		98
18) ACROLEIN	2.103	56	40575	14.78	PPBV		99
19) FREON 123	2.116	83	159567	13.39	PPBV		99
20) FREON 123A	2.132	117	84480	11.76	PPBV	#	66
21) TRICHLOROFLUOROMETHANE	2.193	101	172585	11.73	PPBV		100
22) ISOPROPYL ALCOHOL	2.209	45	202990	13.68	PPBV	#	96
23) ACETONE	2.139	58	48156	14.41	PPBV	#	45
24) PENTANE	2.300	42	110883	14.01	PPBV	#	92
25) IODOMETHANE	2.357	142	160786	11.34	PPBV	#	81
26) 1,1-DICHLOROETHYLENE	2.386	96	66178	11.83	PPBV	#	43
27) CARBON DISULFIDE	2.521	76	216170	12.20	PPBV	#	87
28) ETHANOL	2.007	45	48214	14.07	PPBV		97
29) BROMOETHENE	2.074	106	60521	12.08	PPBV	#	98
30) ACRYLONITRILE	2.274	52	70573	14.10	PPBV		95
31) METHYLENE CHLORIDE	2.422	84	65089	11.60	PPBV	#	43
32) 3-CHLOROPROPENE	2.463	76	34902	12.78	PPBV	#	1
33) FREON 113	2.521	151	107022	10.79	PPBV		87
34) TRANS-1,2-DICHLOROETHENE	2.772	96	71249	11.41	PPBV	#	70
35) TERTIARY BUTYL ALCOHOL	2.396	59	137929	11.36	PPBV	#	78
36) METHYL TERTIARY BUTYL ...	2.888	73	152531	9.81	PPBV	#	90
37) TETRAHYDROFURAN	3.656	72	36765	12.73	PPBV	#	23
38) HEXANE	3.393	57	149904	12.37	PPBV	#	71
39) VINYL ACETATE	2.933	86	18837	12.58	PPBV	#	1
40) 1,1-DICHLOROETHANE	2.856	63	146575	12.31	PPBV		98
41) METHYL ETHYL KETONE	3.039	72	37999	12.52	PPBV	#	1
42) CIS-1,2-DICHLOROETHENE	3.258	96	73413	11.20	PPBV	#	72
43) DIISOPROPYL ETHER	3.402	59	40988	11.77	PPBV	#	21
44) ETHYL ACETATE	3.406	61	30744	12.85	PPBV	#	7
45) METHYL ACRYLATE	3.393	55	198946	13.28	PPBV	#	96
46) CHLOROFORM	3.422	83	156730	11.65	PPBV	#	93
47) 2,4-DIMETHYLPENTANE	3.955	57	175302	12.81	PPBV	#	90
48) 1,1,1-TRICHLOROETHANE	4.045	97	145739	11.03	PPBV	#	90
49) CARBON TETRACHLORIDE	4.499	117	146686	10.35	PPBV		100
50) 1,2-DICHLOROETHANE	3.872	62	122768	11.99	PPBV	#	94
51) BENZENE	4.380	78	225109	11.19	PPBV		75
53) CYCLOHEXANE	4.602	84	96350	11.72	PPBV	#	63
54) 2,3-DIMETHYLPENTANE	4.878	71	52944	11.83	PPBV	#	42
55) TRICHLOROETHENE	5.351	95	96007	10.85	PPBV		94
56) 1,2-DICHLOROPROPANE	5.103	63	102109	12.56	PPBV		98
57) DIBROMOMETHANE	5.058	174	84229	10.09	PPBV	#	84

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\
Data File : 6W26992.D
Acq On : 8 Nov 2022 3:14 pm
Operator : thomash
Sample : bsd
Misc : MS63597,V6W1142,,,,,1
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Dec 09 11:33:56 2022
Quant Method : C:\msdchem\1\methods\M6W1125.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Thu Oct 20 08:34:08 2022
Response via : Initial Calibration

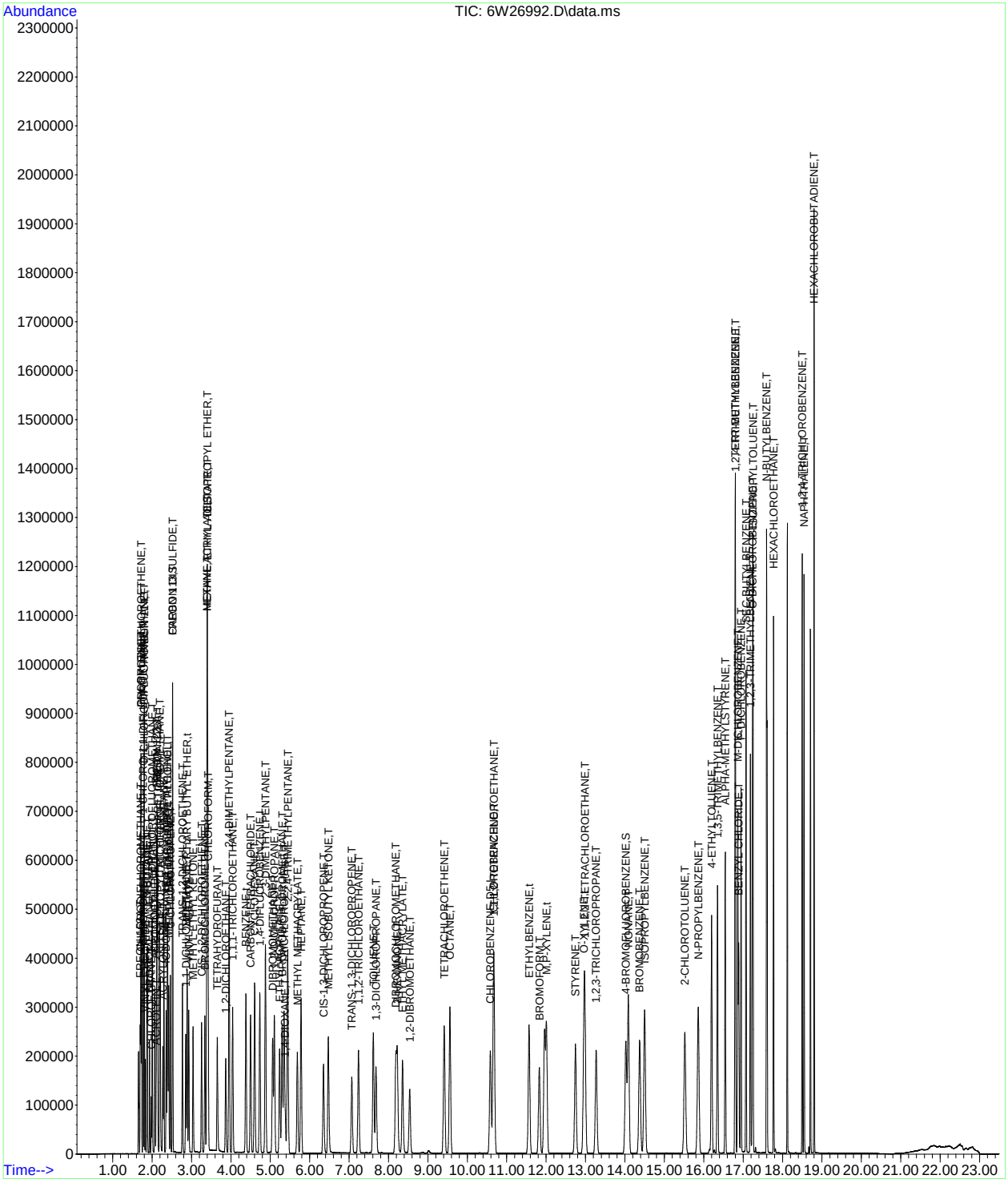
	Compound	R.T.	QIon	Response	Conc	Units		Dev(Min)
58)	ETHYL ACRYLATE	5.238	55	243619	14.13	PPBV	#	95
59)	BROMODICHLOROMETHANE	5.299	83	169345	11.36	PPBV		98
60)	2,2,4-TRIMETHYLPENTANE	5.444	57	388101	10.41	PPBV	#	97
61)	1,4-DIOXANE	5.377	88	48179	12.39	PPBV	#	69
62)	HEPTANE	5.782	43	157322	10.47	PPBV	#	72
63)	METHYL METHACRYLATE	5.688	69	77752	10.80	PPBV	#	45
64)	METHYL ISOBUTYL KETONE	6.473	58	76444	12.55	PPBV	#	60
65)	CIS-1,3-DICHLOROPROPENE	6.351	75	110058	10.22	PPBV	#	70
66)	TOLUENE	7.618	91	229062	9.19	PPBV		99
67)	1,3-DICHLOROPROPANE	7.685	76	123840	10.30	PPBV	#	98
68)	TRANS-1,3-DICHLOROPROPENE	7.068	75	98383	10.37	PPBV	#	73
69)	1,1,2-TRICHLOROETHANE	7.241	83	73690	10.35	PPBV		97
70)	2-HEXANONE	8.225	58	97085	13.68	PPBV	#	59
71)	ETHYL METHACRYLATE	8.357	69	125765	11.85	PPBV	#	65
72)	TETRACHLOROETHENE	9.415	164	86093	9.99	PPBV		96
73)	DIBROMOCHLOROMETHANE	8.184	129	140558	9.14	PPBV		99
74)	1,2-DIBROMOETHANE	8.540	107	124219	9.53	PPBV		100
75)	OCTANE	9.560	43	215666	10.85	PPBV	#	72
77)	1,1,1,2-TETRACHLOROETHANE	10.679	131	97345	10.52	PPBV		90
78)	CHLOROBENZENE	10.666	112	180177	10.82	PPBV		95
79)	ETHYLBENZENE	11.569	91	308170	10.38	PPBV		96
80)	M,P-XYLENE	12.010	91	475969m	21.48	PPBV		
81)	O-XYLENE	12.958	91	243198	10.96	PPBV		93
82)	STYRENE	12.743	104	173056	11.67	PPBV		94
83)	NONANE	14.087	43	231855	12.15	PPBV	#	72
84)	BROMOFORM	11.830	173	132064	10.92	PPBV	#	98
85)	1,1,2,2-TETRACHLOROETHANE	12.984	83	197675	12.54	PPBV		100
86)	1,2,3-TRICHLOROPROPANE	13.267	75	149693	12.14	PPBV		95
88)	ISOPROPYLBENZENE	14.502	105	340159	11.12	PPBV		96
89)	BROMOBENZENE	14.373	77	179551	12.17	PPBV		89
90)	2-CHLOROTOLUENE	15.521	91	246857	12.36	PPBV		96
91)	N-PROPYLBENZENE	15.862	91	429854	12.76	PPBV	#	93
92)	4-ETHYLTOLUENE	16.199	105	342389	12.56	PPBV		98
93)	1,3,5-TRIMETHYLBENZENE	16.347	105	285056	12.36	PPBV	#	97
94)	ALPHA-METHYLSTYRENE	16.547	118	139418	12.07	PPBV		98
95)	TERT-BUTYLBENZENE	16.797	119	312821	12.09	PPBV		92
96)	1,2,4-TRIMETHYLBENZENE	16.804	105	301342	12.65	PPBV		93
97)	BENZYL CHLORIDE	16.887	91	189929	13.16	PPBV		95
98)	M-DICHLOROBENZENE	16.865	146	196669	11.88	PPBV		99
99)	P-DICHLOROBENZENE	16.945	146	198689	12.02	PPBV		98
100)	O-DICHLOROBENZENE	17.238	146	192415	11.88	PPBV		98
101)	SEC-BUTYLBENZENE	17.074	105	446892	12.67	PPBV		98
102)	1,2,3-TRIMETHYLBENZENE	17.183	105	292716	12.55	PPBV	#	97
103)	P-ISOPROPYLTOLUENE	17.251	119	380633	12.59	PPBV	#	95
104)	N-BUTYLBENZENE	17.595	91	393053	14.63	PPBV		98
105)	HEXACHLOROETHANE	17.772	117	121509	11.07	PPBV		93
106)	HEXACHLOROBUTADIENE	18.800	225	162130	13.51	PPBV		100
107)	1,2,4-TRICHLOROBENZENE	18.498	180	183710	13.65	PPBV		99
108)	NAPHTHALENE	18.546	128	474296	14.29	PPBV		100

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

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\
Data File : 6W26992.D
Acq On : 8 Nov 2022 3:14 pm
Operator : thomash
Sample : bsd
Misc : MS63597,V6W1142,,,,,1
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Dec 09 11:33:56 2022
Quant Method : C:\msdchem\1\methods\M6W1125.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Thu Oct 20 08:34:08 2022
Response via : Initial Calibration



Manual Integration Approval Summary

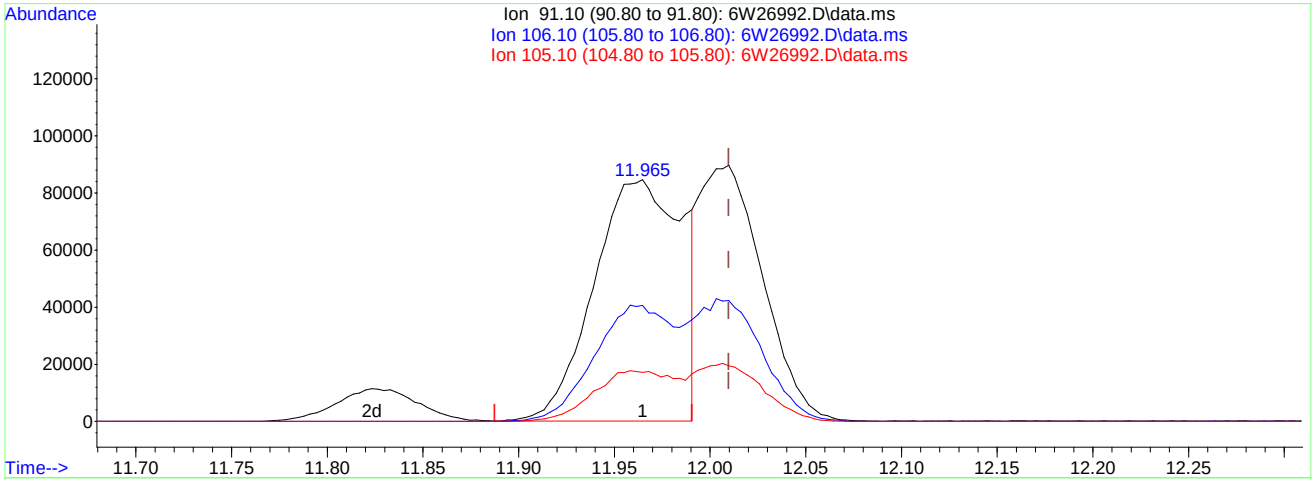
Sample Number:	V6W1142-BSD	**Method:**	TO-15
Lab FileID:	6W26992.D	**Analyst approved:**	12/09/22 11:35 William Cruser
Injection Time:	11/08/22 15:14	**Supervisor approved:**	12/09/22 12:14 Kanya Veerawat

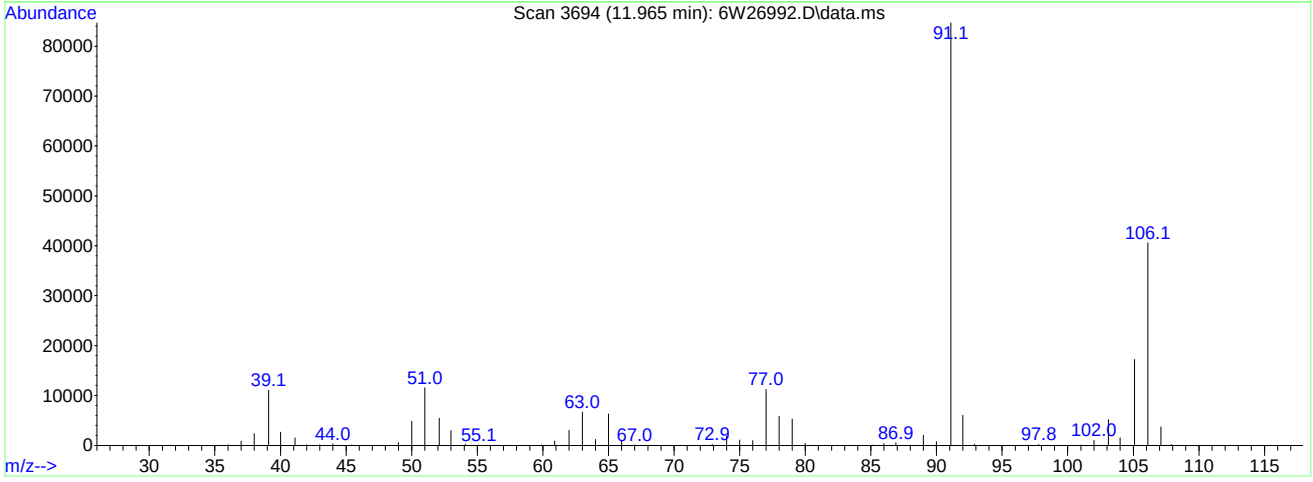
Parameter	CAS	Sig#	R.T. (min.)	Reason
m,p-Xylene			12.01	Split peak

Quantitation Report (Qedit)

Data Path : C:\msdchem\1\data\
Data File : 6W26992.D
Acq On : 8 Nov 2022 3:14 pm
Operator : thomash
Sample : bsd
Misc : MS63597,V6W1142,,,,,1
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Nov 08 15:40:52 2022
Quant Method : C:\msdchem\1\methods\M6W1125.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Thu Oct 20 08:34:08 2022
Response via : Initial Calibration





TIC: 6W26992.D\data.ms

(80) M,P-XYLENE (t)

11.965min (-0.045) 12.16PPBV

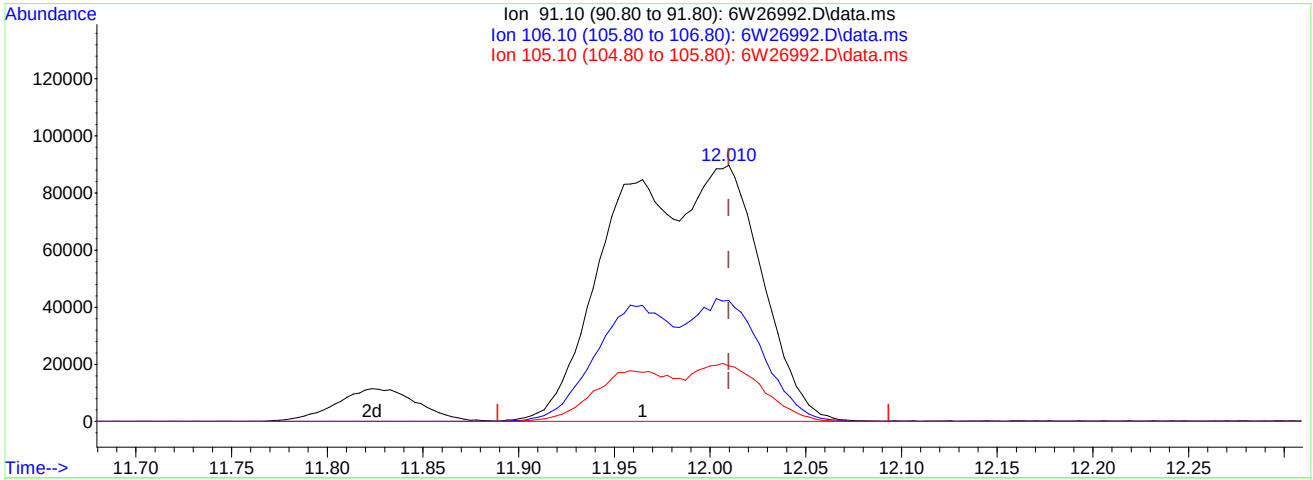
response 269421

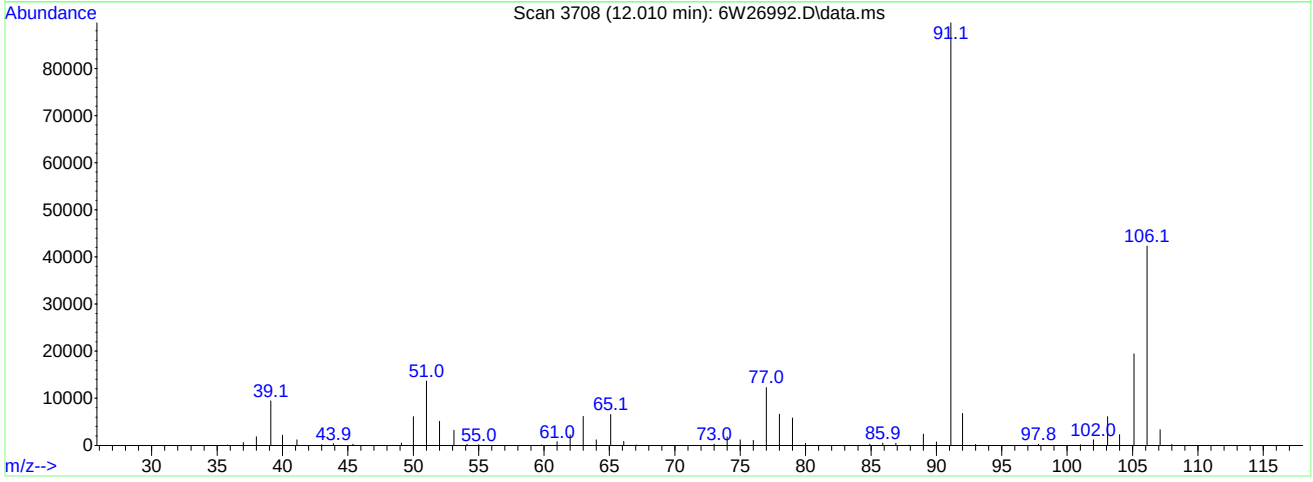
Ion	Exp%	Act%
91.10	100	100
106.10	51.50	42.58
105.10	23.60	18.91
0.00	0.00	0.00

Quantitation Report (Qedit)

Data Path : C:\msdchem\1\data\
Data File : 6W26992.D
Acq On : 8 Nov 2022 3:14 pm
Operator : thomash
Sample : bsd
Misc : MS63597,V6W1142,,,,,1
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Nov 08 15:40:52 2022
Quant Method : C:\msdchem\1\methods\M6W1125.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Thu Oct 20 08:34:08 2022
Response via : Initial Calibration





TIC: 6W26992.D\data.ms

(80) M,P-XYLENE (t)

12.010min (+0.000) 21.48PPBV m

response 475969

Ion	Exp%	Act%
91.10	100	100
106.10	51.50	24.10#
105.10	23.60	10.70
0.00	0.00	0.00

Manual Integrations APPROVED (compounds with "m" flag)
Kanya Veerawat 11/23/22 02:19

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\
Data File : 6W27094.D
Acq On : 22 Nov 2022 10:08 am
Operator : thomash
Sample : bs
Misc : MS63734,V6W1146,,,,,1
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Nov 22 14:41:46 2022
Quant Method : C:\msdchem\1\methods\M6W1125.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Thu Oct 20 08:34:08 2022
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units		Dev(Min)
Internal Standards							
1) BROMOCHLOROMETHANE	3.338	128	54690	10.00	PPBV	#	0.00
52) 1,4-DIFLUOROBENZENE	4.730	114	278664	10.00	PPBV		0.00
76) CHLOROBENZENE-D5	10.579	117	230637	10.00	PPBV		0.00
System Monitoring Compounds							
87) 4-BROMOFLUOROBENZENE	14.022	95	167426	10.40	PPBV		0.00
Target Compounds							Qvalue
3) FREON 152A	1.695	65	43764m	9.31	PPBV		
4) CHLORODIFLUOROMETHANE	1.708	67	19273	9.04	PPBV		99
5) CHLOROTRIFLUOROETHENE	1.717	116	98642	9.58	PPBV	#	100
6) DICHLORODIFLUOROMETHANE	1.730	85	216987	12.69	PPBV	#	93
7) PROPYLENE	1.714	41	66882	9.54	PPBV		97
8) 1-CHLORO-1,1-DIFLUOROE...	1.766	65	156082	9.96	PPBV	#	88
9) FREON 114	1.798	85	192123	10.68	PPBV		99
10) CHLOROMETHANE	1.772	52	26147	10.58	PPBV		94
11) VINYL CHLORIDE	1.830	62	82027	10.95	PPBV		97
12) 1,3-BUTADIENE	1.865	54	70426	11.50	PPBV	#	75
13) N-BUTANE	1.878	43	142565	10.32	PPBV	#	91
14) BROMOMETHANE	1.933	94	69025	11.91	PPBV		99
15) CHLOROETHANE	1.978	64	42680	11.90	PPBV		95
16) DICHLOROFLUOROMETHANE	2.000	67	168668	11.08	PPBV	#	95
17) ACETONITRILE	2.065	41	94694	11.77	PPBV		97
18) ACROLEIN	2.100	56	44131	13.26	PPBV		98
19) FREON 123	2.116	83	170440	11.80	PPBV		99
20) FREON 123A	2.132	117	96675	11.10	PPBV		86
21) TRICHLOROFLUOROMETHANE	2.190	101	186230	10.44	PPBV		99
22) ISOPROPYL ALCOHOL	2.206	45	190043	10.56	PPBV	#	98
23) ACETONE	2.139	58	43894	10.84	PPBV	#	36
24) PENTANE	2.296	42	106189	11.07	PPBV	#	92
25) IODOMETHANE	2.357	142	196476	11.43	PPBV		89
26) 1,1-DICHLOROETHYLENE	2.383	96	74328	10.97	PPBV	#	65
27) CARBON DISULFIDE	2.518	76	226452	10.54	PPBV	#	91
28) ETHANOL	2.007	45	45730	11.01	PPBV		98
29) BROMOETHENE	2.071	106	70887	11.67	PPBV	#	98
30) ACRYLONITRILE	2.270	52	69444	11.45	PPBV		98
31) METHYLENE CHLORIDE	2.418	84	69498	10.22	PPBV	#	56
32) 3-CHLOROPROPENE	2.463	76	35476	10.72	PPBV	#	1
33) FREON 113	2.518	151	125746	10.46	PPBV		92
34) TRANS-1,2-DICHLOROETHENE	2.769	96	80152	10.59	PPBV	#	81
35) TERTIARY BUTYL ALCOHOL	2.396	59	139059	9.45	PPBV	#	83
36) METHYL TERTIARY BUTYL ...	2.888	73	158812	8.43	PPBV	#	92
37) TETRAHYDROFURAN	3.653	72	38793	11.08	PPBV	#	37
38) HEXANE	3.389	57	151862	10.34	PPBV	#	78
39) VINYL ACETATE	2.930	86	20327	11.20	PPBV	#	1
40) 1,1-DICHLOROETHANE	2.852	63	147735	10.24	PPBV		98
41) METHYL ETHYL KETONE	3.036	72	40114	10.90	PPBV	#	1
42) CIS-1,2-DICHLOROETHENE	3.251	96	82594	10.39	PPBV	#	81
43) DIISOPROPYL ETHER	3.399	59	41952	9.94	PPBV	#	39
44) ETHYL ACETATE	3.406	61	31925	11.01	PPBV	#	33
45) METHYL ACRYLATE	3.389	55	200843	11.06	PPBV	#	96
46) CHLOROFORM	3.418	83	165891	10.17	PPBV	#	94
47) 2,4-DIMETHYLPENTANE	3.952	57	178315	10.75	PPBV	#	93
48) 1,1,1-TRICHLOROETHANE	4.042	97	154228	9.63	PPBV	#	93
49) CARBON TETRACHLORIDE	4.495	117	161361	9.39	PPBV		99
50) 1,2-DICHLOROETHANE	3.865	62	115366	9.30	PPBV	#	95
51) BENZENE	4.377	78	238647	9.79	PPBV		79
53) CYCLOHEXANE	4.598	84	103705	10.20	PPBV	#	73
54) 2,3-DIMETHYLPENTANE	4.875	71	53827	9.72	PPBV	#	51
55) TRICHLOROETHENE	5.344	95	107128	9.79	PPBV		99
56) 1,2-DICHLOROPROPANE	5.100	63	102130	10.17	PPBV		98
57) DIBROMOMETHANE	5.055	174	100037	9.70	PPBV		95

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\
Data File : 6W27094.D
Acq On : 22 Nov 2022 10:08 am
Operator : thomash
Sample : bs
Misc : MS63734,V6W1146,,,,,1
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Nov 22 14:41:46 2022
Quant Method : C:\msdchem\1\methods\M6W1125.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Thu Oct 20 08:34:08 2022
Response via : Initial Calibration

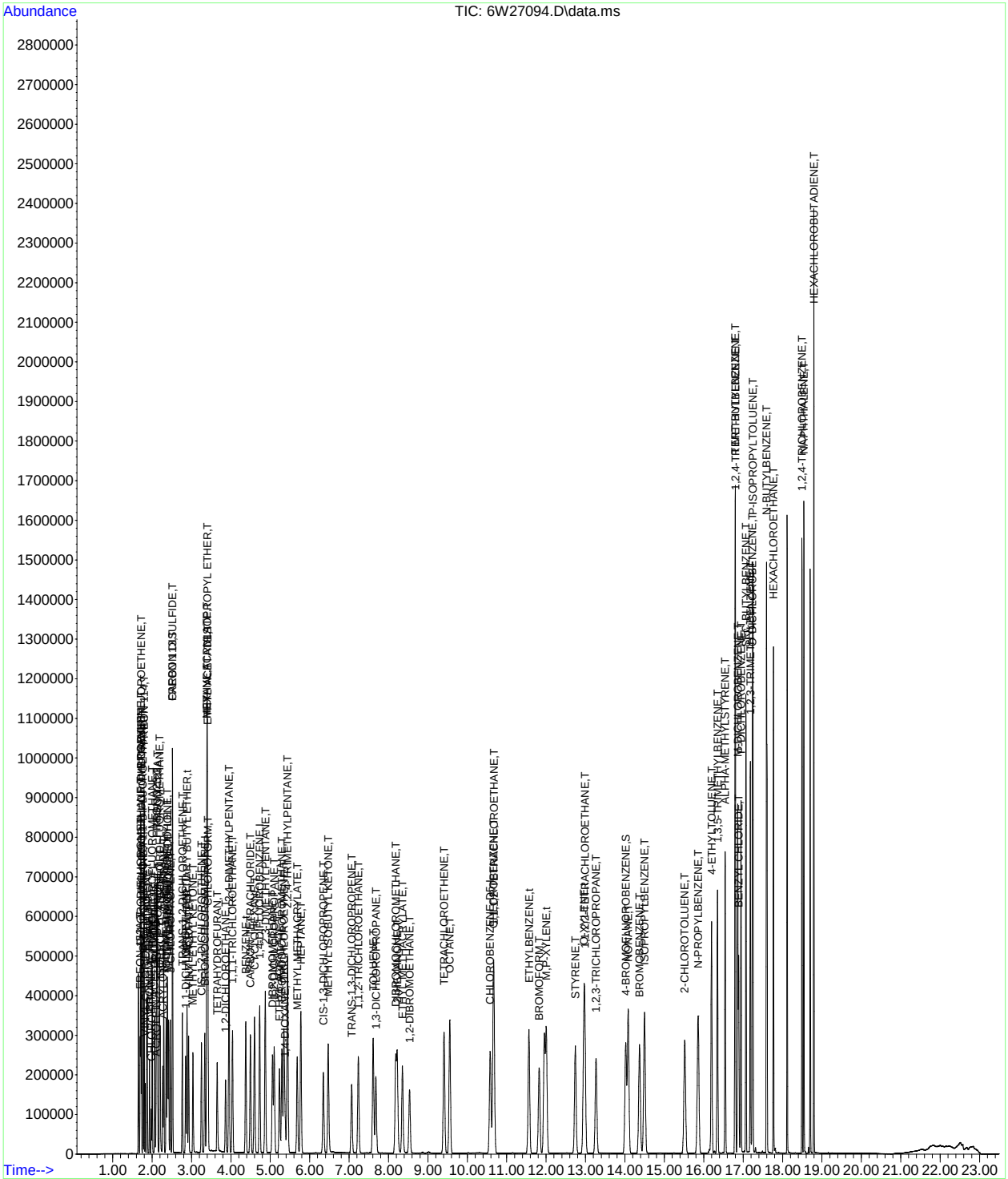
	Compound	R.T.	QIon	Response	Conc	Units		Dev(Min)
58)	ETHYL ACRYLATE	5.232	55	243359	11.42	PPBV	#	96
59)	BROMODICHLOROMETHANE	5.293	83	178433	9.68	PPBV		99
60)	2,2,4-TRIMETHYLPENTANE	5.438	57	481250	10.44	PPBV	#	99
61)	1,4-DIOXANE	5.373	88	61066	12.70	PPBV	#	74
62)	HEPTANE	5.775	43	177597	9.56	PPBV	#	74
63)	METHYL METHACRYLATE	5.682	69	91551	10.28	PPBV	#	50
64)	METHYL ISOBUTYL KETONE	6.470	58	90657	12.04	PPBV	#	63
65)	CIS-1,3-DICHLOROPROPENE	6.348	75	125503	9.43	PPBV	#	73
66)	TOLUENE	7.611	91	277670	9.01	PPBV		100
67)	1,3-DICHLOROPROPANE	7.682	76	142108	9.56	PPBV	#	98
68)	TRANS-1,3-DICHLOROPROPENE	7.065	75	110760	9.44	PPBV	#	75
69)	1,1,2-TRICHLOROETHANE	7.235	83	88027	10.00	PPBV		99
70)	2-HEXANONE	8.219	58	120467	13.73	PPBV	#	62
71)	ETHYL METHACRYLATE	8.354	69	150956	11.50	PPBV	#	69
72)	TETRACHLOROETHENE	9.408	164	106888	10.04	PPBV		96
73)	DIBROMOCHLOROMETHANE	8.183	129	181240	9.53	PPBV		99
74)	1,2-DIBROMOETHANE	8.537	107	160269	9.94	PPBV		99
75)	OCTANE	9.556	43	242498	9.87	PPBV	#	75
77)	1,1,1,2-TETRACHLOROETHANE	10.675	131	121715	9.84	PPBV		94
78)	CHLOROBENZENE	10.659	112	228597	10.26	PPBV		98
79)	ETHYLBENZENE	11.566	91	373102	9.40	PPBV		99
80)	M,P-XYLENE	12.003	91	568803	19.18	PPBV	#	68
81)	O-XYLENE	12.961	91	290746	9.80	PPBV		98
82)	STYRENE	12.743	104	225407	11.36	PPBV		98
83)	NONANE	14.084	43	257425	10.08	PPBV	#	75
84)	BROMOFORM	11.823	173	177360	10.96	PPBV	#	97
85)	1,1,2,2-TETRACHLOROETHANE	12.981	83	236729	11.23	PPBV		99
86)	1,2,3-TRICHLOROPROPANE	13.264	75	170050	10.31	PPBV		99
88)	ISOPROPYLBENZENE	14.498	105	421542	10.30	PPBV	#	93
89)	BROMOBENZENE	14.370	77	210714	10.67	PPBV		98
90)	2-CHLOROTOLUENE	15.518	91	298719	11.18	PPBV		99
91)	N-PROPYLBENZENE	15.858	91	517094	11.47	PPBV	#	96
92)	4-ETHYLTOLUENE	16.199	105	431370	11.83	PPBV		100
93)	1,3,5-TRIMETHYLBENZENE	16.347	105	354360	11.49	PPBV		99
94)	ALPHA-METHYLSTYRENE	16.543	118	185329	11.99	PPBV		98
95)	TERT-BUTYLBENZENE	16.797	119	396498	11.46	PPBV		97
96)	1,2,4-TRIMETHYLBENZENE	16.804	105	372144	11.68	PPBV		96
97)	BENZYL CHLORIDE	16.887	91	232316	12.03	PPBV		98
98)	M-DICHLOROBENZENE	16.862	146	255625	11.54	PPBV		100
99)	P-DICHLOROBENZENE	16.945	146	258176	11.67	PPBV		100
100)	O-DICHLOROBENZENE	17.235	146	249476	11.51	PPBV		100
101)	SEC-BUTYLBENZENE	17.071	105	541686	11.48	PPBV		99
102)	1,2,3-TRIMETHYLBENZENE	17.183	105	362360	11.61	PPBV		99
103)	P-ISOPROPYLTOLUENE	17.247	119	478680	11.83	PPBV		98
104)	N-BUTYLBENZENE	17.591	91	456587	12.70	PPBV		99
105)	HEXACHLOROETHANE	17.768	117	157704	10.74	PPBV		92
106)	HEXACHLOROBUTADIENE	18.794	225	208249	12.97	PPBV		99
107)	1,2,4-TRICHLOROBENZENE	18.492	180	252372	14.02	PPBV		98
108)	NAPHTHALENE	18.540	128	684040	15.41	PPBV		100

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

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\
Data File : 6W27094.D
Acq On : 22 Nov 2022 10:08 am
Operator : thomash
Sample : bs
Misc : MS63734,V6W1146,,,,,1
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Nov 22 14:41:46 2022
Quant Method : C:\msdchem\1\methods\M6W1125.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Thu Oct 20 08:34:08 2022
Response via : Initial Calibration



Manual Integration Approval Summary

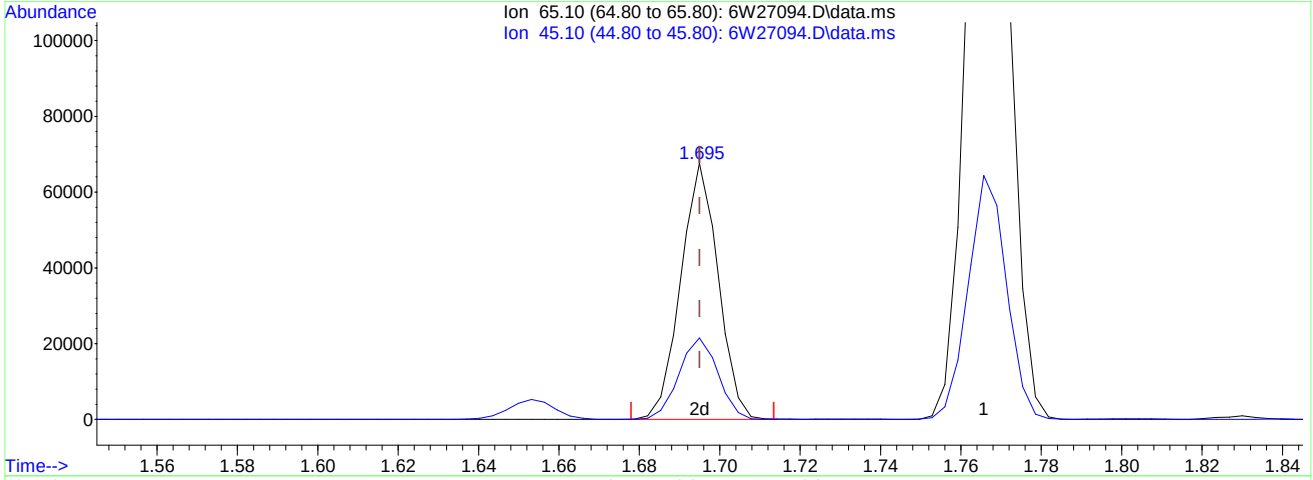
Sample Number:	V6W1146-BS	**Method:**	TO-15
Lab FileID:	6W27094.D	**Analyst approved:**	11/22/22 14:47 Thomas Hilbig
Injection Time:	11/22/22 10:08	**Supervisor approved:**	11/23/22 02:19 Kanya Veerawat

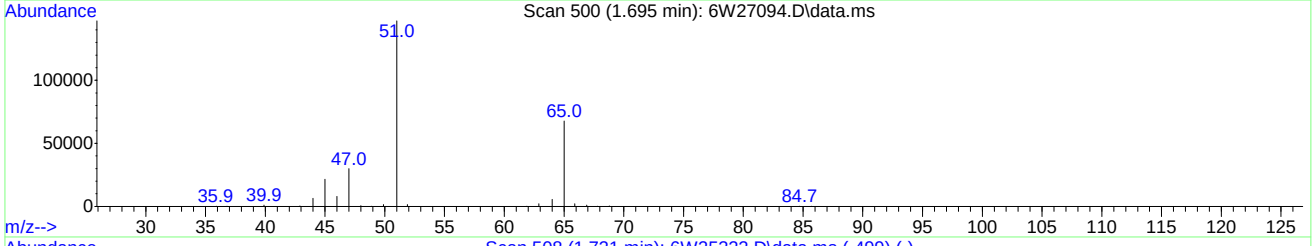
Parameter	CAS	Sig#	R.T. (min.)	Reason
Freon 152A	75-37-6		1.69	Missed peak

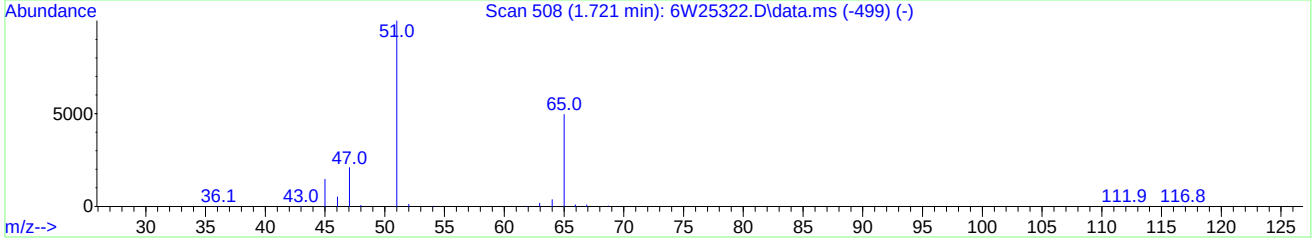
Quantitation Report (Qedit)

Data Path : C:\msdchem\1\data\
Data File : 6W27094.D
Acq On : 22 Nov 2022 10:08 am
Operator : thomash
Sample : bs
Misc : MS63734,V6W1146,,,,,1
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Nov 22 10:46:18 2022
Quant Method : C:\msdchem\1\methods\M6W1125.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Thu Oct 20 08:34:08 2022
Response via : Initial Calibration







TIC: 6W27094.D\data.ms

(3) FREON 152A (T)

1.695min (-0.000) 9.31PPBV m

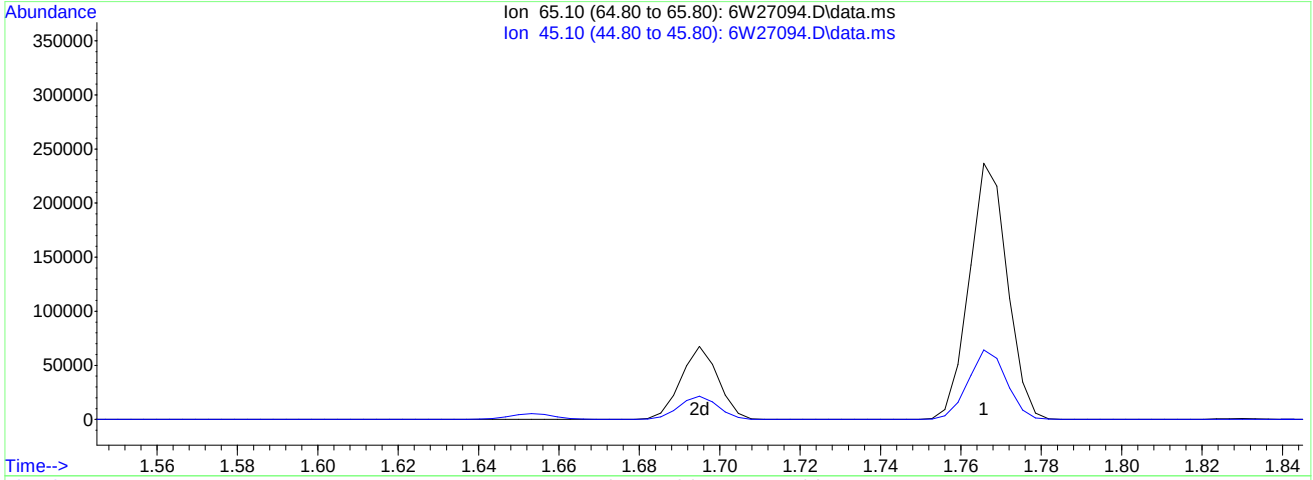
response 43764

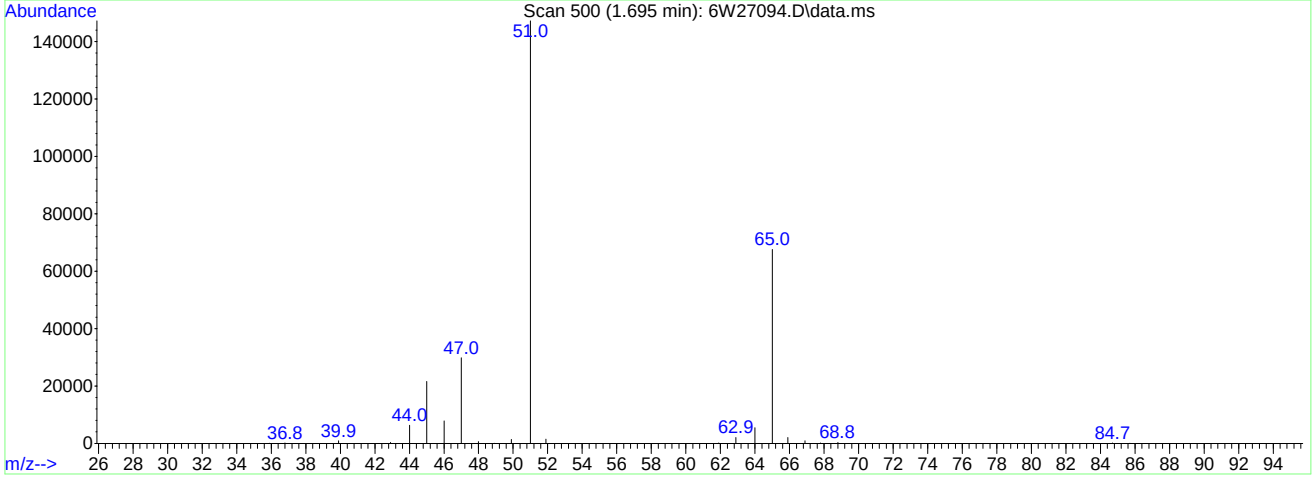
Ion	Exp%	Act%
65.10	100	100
45.10	22.90	97.63#
0.00	0.00	0.00
0.00	0.00	0.00

Quantitation Report (Qedit)

Data Path : C:\msdchem\1\data\
Data File : 6W27094.D
Acq On : 22 Nov 2022 10:08 am
Operator : thomash
Sample : bs
Misc : MS63734,V6W1146,,,,,1
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Nov 23 01:33:49 2022
Quant Method : C:\msdchem\1\methods\M6W1125.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Thu Oct 20 08:34:08 2022
Response via : Initial Calibration





TIC: 6W27094.D\data.ms

(3) FREON 152A (T)

1.695min 0.00PPBV d

response 0

Ion	Exp%	Act%
65.10	100	0.00
45.10	22.90	0.00
0.00	0.00	0.00
0.00	0.00	0.00

Manual Integrations APPROVED (compounds with "m" flag)
Kanya Veerawat 11/23/22 02:19

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\
Data File : 6W27095.D
Acq On : 22 Nov 2022 10:40 am
Operator : thomash
Sample : bsd
Misc : MS63734,V6W1146,,,,,1
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Nov 22 14:42:28 2022
Quant Method : C:\msdchem\1\methods\M6W1125.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Thu Oct 20 08:34:08 2022
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units		Dev(Min)
Internal Standards							
1) BROMOCHLOROMETHANE	3.341	128	57755	10.00	PPBV	#	0.00
52) 1,4-DIFLUOROBENZENE	4.733	114	289723	10.00	PPBV		0.00
76) CHLOROBENZENE-D5	10.585	117	245651	10.00	PPBV		0.00
System Monitoring Compounds							
87) 4-BROMOFLUOROBENZENE	14.022	95	176786	10.31	PPBV		0.00
Target Compounds							Qvalue
3) FREON 152A	1.695	65	44499m	8.96	PPBV		
4) CHLORODIFLUOROMETHANE	1.708	67	19532	8.68	PPBV		99
5) CHLOROTRIFLUOROETHENE	1.717	116	99754	9.18	PPBV	#	99
6) DICHLORODIFLUOROMETHANE	1.733	85	219085	12.13	PPBV	#	93
7) PROPYLENE	1.717	41	67800	9.16	PPBV		96
8) 1-CHLORO-1,1-DIFLUOROE...	1.769	65	157890	9.54	PPBV	#	88
9) FREON 114	1.801	85	192248	10.12	PPBV		100
10) CHLOROMETHANE	1.772	52	26308	10.08	PPBV		92
11) VINYL CHLORIDE	1.830	62	82625	10.44	PPBV		97
12) 1,3-BUTADIENE	1.865	54	71644	11.07	PPBV	#	76
13) N-BUTANE	1.881	43	144015	9.88	PPBV	#	91
14) BROMOMETHANE	1.936	94	70977	11.60	PPBV		99
15) CHLOROETHANE	1.981	64	41984	11.08	PPBV	#	90
16) DICHLOROFLUOROMETHANE	2.003	67	167828	10.44	PPBV	#	97
17) ACETONITRILE	2.068	41	94913	11.17	PPBV		98
18) ACROLEIN	2.103	56	44608	12.69	PPBV		98
19) FREON 123	2.116	83	172730	11.33	PPBV		99
20) FREON 123A	2.132	117	97843	10.64	PPBV		87
21) TRICHLOROFLUOROMETHANE	2.193	101	187367	9.95	PPBV		100
22) ISOPROPYL ALCOHOL	2.209	45	193182	10.17	PPBV	#	97
23) ACETONE	2.139	58	44534	10.41	PPBV	#	38
24) PENTANE	2.299	42	107029	10.56	PPBV	#	92
25) IODOMETHANE	2.357	142	199015	10.96	PPBV		90
26) 1,1-DICHLOROETHYLENE	2.386	96	75435	10.54	PPBV	#	65
27) CARBON DISULFIDE	2.521	76	228486	10.07	PPBV	#	91
28) ETHANOL	2.007	45	46524	10.61	PPBV		97
29) BROMOETHENE	2.074	106	70776	11.04	PPBV	#	96
30) ACRYLONITRILE	2.274	52	70456	11.00	PPBV		97
31) METHYLENE CHLORIDE	2.422	84	71392	9.94	PPBV	#	58
32) 3-CHLOROPROPENE	2.463	76	35947	10.29	PPBV	#	1
33) FREON 113	2.521	151	129448	10.19	PPBV		95
34) TRANS-1,2-DICHLOROETHENE	2.772	96	82450	10.31	PPBV	#	84
35) TERTIARY BUTYL ALCOHOL	2.399	59	144273	9.29	PPBV	#	85
36) METHYL TERTIARY BUTYL ...	2.891	73	163449	8.22	PPBV	#	91
37) TETRAHYDROFURAN	3.656	72	39584	10.71	PPBV	#	39
38) HEXANE	3.393	57	153582	9.91	PPBV	#	79
39) VINYL ACETATE	2.930	86	20904	10.91	PPBV	#	1
40) 1,1-DICHLOROETHANE	2.856	63	149081	9.78	PPBV		98
41) METHYL ETHYL KETONE	3.039	72	40356	10.39	PPBV	#	1
42) CIS-1,2-DICHLOROETHENE	3.254	96	83558	9.96	PPBV	#	82
43) DIISOPROPYL ETHER	3.402	59	43804	9.83	PPBV	#	43
44) ETHYL ACETATE	3.409	61	32209	10.51	PPBV	#	32
45) METHYL ACRYLATE	3.393	55	202429	10.56	PPBV	#	96
46) CHLOROFORM	3.421	83	169219	9.83	PPBV	#	94
47) 2,4-DIMETHYLPENTANE	3.955	57	179868	10.26	PPBV	#	93
48) 1,1,1-TRICHLOROETHANE	4.045	97	156553	9.25	PPBV	#	93
49) CARBON TETRACHLORIDE	4.502	117	165646	9.13	PPBV		99
50) 1,2-DICHLOROETHANE	3.868	62	118000	9.00	PPBV	#	95
51) BENZENE	4.380	78	241767	9.39	PPBV		79
53) CYCLOHEXANE	4.601	84	104947	9.93	PPBV	#	72
54) 2,3-DIMETHYLPENTANE	4.878	71	55172	9.59	PPBV	#	51
55) TRICHLOROETHENE	5.351	95	109612	9.64	PPBV		99
56) 1,2-DICHLOROPROPANE	5.103	63	103370	9.90	PPBV		98
57) DIBROMOMETHANE	5.061	174	103243	9.63	PPBV		96

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\
Data File : 6W27095.D
Acq On : 22 Nov 2022 10:40 am
Operator : thomash
Sample : bsd
Misc : MS63734,V6W1146,,,,,1
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Nov 22 14:42:28 2022
Quant Method : C:\msdchem\1\methods\M6W1125.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Thu Oct 20 08:34:08 2022
Response via : Initial Calibration

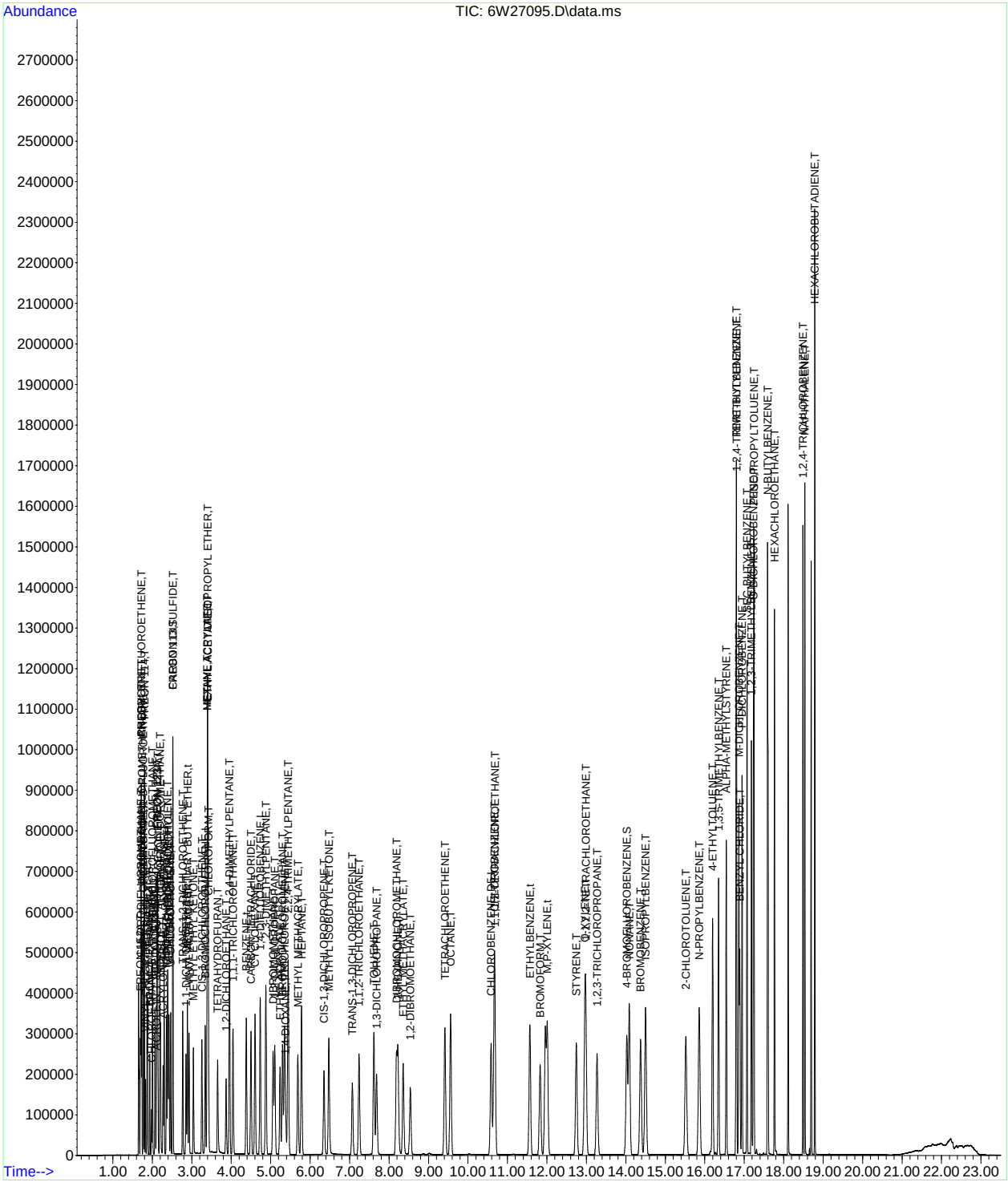
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
58) ETHYL ACRYLATE	5.238	55	246388	11.12	PPBV #	97
59) BROMODICHLOROMETHANE	5.299	83	179609	9.37	PPBV	100
60) 2,2,4-TRIMETHYLPENTANE	5.441	57	462574	9.65	PPBV #	99
61) 1,4-DIOXANE	5.376	88	61637	12.33	PPBV #	74
62) HEPTANE	5.781	43	180583	9.35	PPBV #	74
63) METHYL METHACRYLATE	5.688	69	93949	10.15	PPBV #	53
64) METHYL ISOBUTYL KETONE	6.473	58	93200	11.90	PPBV #	63
65) CIS-1,3-DICHLOROPROPENE	6.351	75	129176	9.34	PPBV #	73
66) TOLUENE	7.614	91	284437	8.88	PPBV	99
67) 1,3-DICHLOROPROPANE	7.688	76	145848	9.44	PPBV #	97
68) TRANS-1,3-DICHLOROPROPENE	7.068	75	114817	9.41	PPBV #	75
69) 1,1,2-TRICHLOROETHANE	7.238	83	89176	9.74	PPBV	99
70) 2-HEXANONE	8.225	58	124153	13.61	PPBV #	63
71) ETHYL METHACRYLATE	8.357	69	155053	11.37	PPBV #	69
72) TETRACHLOROETHENE	9.415	164	110748	10.00	PPBV	97
73) DIBROMOCHLOROMETHANE	8.187	129	188584	9.54	PPBV	100
74) 1,2-DIBROMOETHANE	8.537	107	164662	9.82	PPBV	100
75) OCTANE	9.559	43	248021	9.71	PPBV #	74
77) 1,1,1,2-TETRACHLOROETHANE	10.682	131	126815	9.62	PPBV	95
78) CHLOROBENZENE	10.666	112	234216	9.87	PPBV	98
79) ETHYLBENZENE	11.569	91	381580	9.02	PPBV	100
80) M,P-XYLENE	12.006	91	588118	18.62	PPBV #	66
81) O-XYLENE	12.961	91	301007	9.52	PPBV	97
82) STYRENE	12.743	104	232604	11.01	PPBV	98
83) NONANE	14.090	43	264705	9.73	PPBV #	75
84) BROMOFORM	11.826	173	182722	10.60	PPBV #	97
85) 1,1,2,2-TETRACHLOROETHANE	12.984	83	242723	10.81	PPBV	100
86) 1,2,3-TRICHLOROPROPANE	13.270	75	174458	9.93	PPBV	99
88) ISOPROPYLBENZENE	14.498	105	433993	9.96	PPBV #	93
89) BROMOBENZENE	14.373	77	217832	10.36	PPBV	97
90) 2-CHLOROTOLUENE	15.524	91	306436	10.77	PPBV	99
91) N-PROPYLBENZENE	15.858	91	530063	11.04	PPBV #	96
92) 4-ETHYLTOLUENE	16.199	105	441436	11.36	PPBV	99
93) 1,3,5-TRIMETHYLBENZENE	16.350	105	365326	11.12	PPBV	99
94) ALPHA-METHYLSTYRENE	16.546	118	192536	11.70	PPBV	99
95) TERT-BUTYLBENZENE	16.797	119	409846	11.12	PPBV	98
96) 1,2,4-TRIMETHYLBENZENE	16.804	105	381292	11.24	PPBV	96
97) BENZYL CHLORIDE	16.887	91	242548	11.79	PPBV	98
98) M-DICHLOROBENZENE	16.865	146	264979	11.23	PPBV	100
99) P-DICHLOROBENZENE	16.945	146	269102	11.42	PPBV	99
100) O-DICHLOROBENZENE	17.234	146	256000	11.09	PPBV	100
101) SEC-BUTYLBENZENE	17.070	105	556821	11.08	PPBV	99
102) 1,2,3-TRIMETHYLBENZENE	17.183	105	376364	11.32	PPBV	99
103) P-ISOPROPYLTOLUENE	17.247	119	490670	11.39	PPBV	97
104) N-BUTYLBENZENE	17.588	91	473037	12.35	PPBV	99
105) HEXACHLOROETHANE	17.768	117	162945	10.41	PPBV	92
106) HEXACHLOROBUTADIENE	18.787	225	213933	12.51	PPBV	100
107) 1,2,4-TRICHLOROBENZENE	18.488	180	254312	13.26	PPBV	98
108) NAPHTHALENE	18.537	128	699537	14.79	PPBV	100

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

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\
Data File : 6W27095.D
Acq On : 22 Nov 2022 10:40 am
Operator : thomash
Sample : bsd
Misc : MS63734,V6W1146,,,,,1
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Nov 22 14:42:28 2022
Quant Method : C:\msdchem\1\methods\M6W1125.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Thu Oct 20 08:34:08 2022
Response via : Initial Calibration



Manual Integration Approval Summary

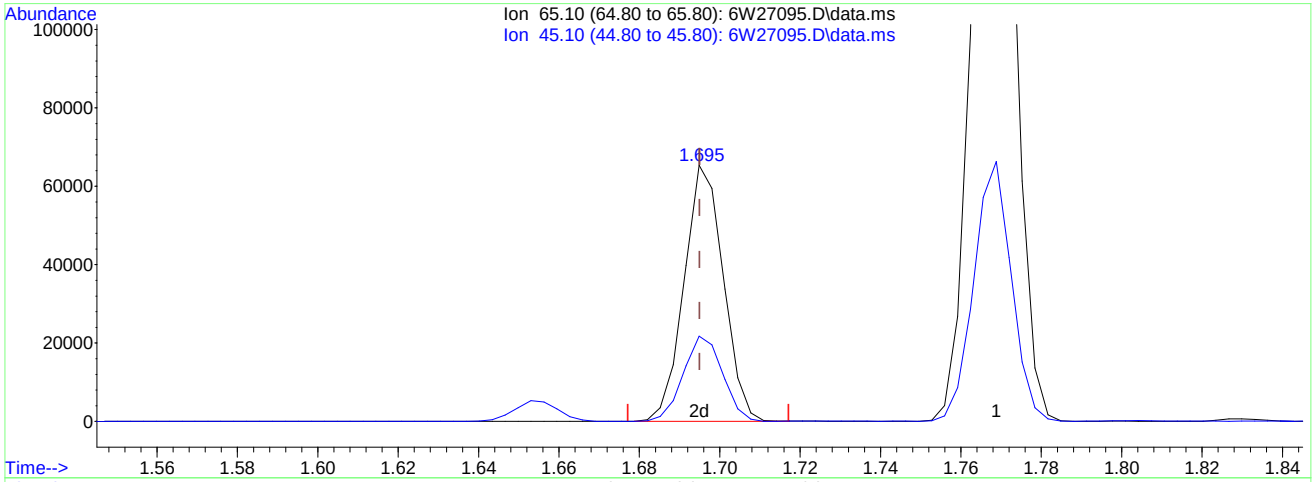
Sample Number:	V6W1146-BSD	**Method:**	TO-15
Lab FileID:	6W27095.D	**Analyst approved:**	11/22/22 14:47 Thomas Hilbig
Injection Time:	11/22/22 10:40	**Supervisor approved:**	11/23/22 02:19 Kanya Veerawat

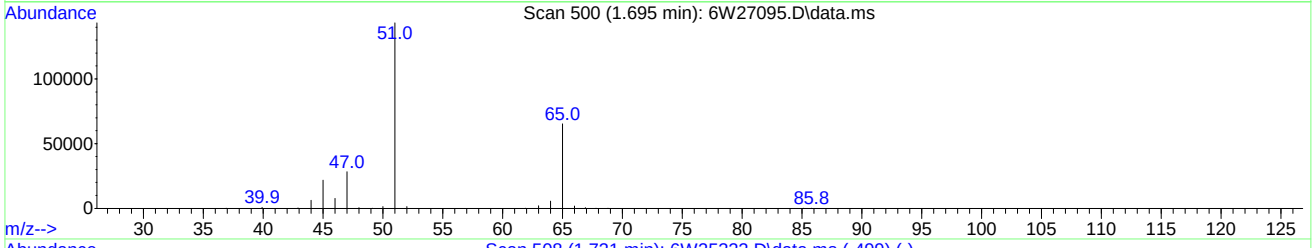
Parameter	CAS	Sig#	R.T. (min.)	Reason
Freon 152A	75-37-6		1.69	Missed peak

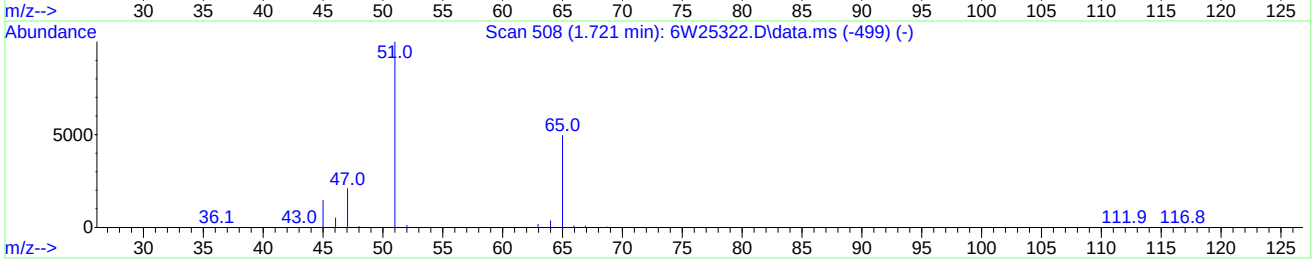
Quantitation Report (Qedit)

Data Path : C:\msdchem\1\data\
Data File : 6W27095.D
Acq On : 22 Nov 2022 10:40 am
Operator : thomash
Sample : bsd
Misc : MS63734,V6W1146,,,,,1
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Nov 22 14:42:15 2022
Quant Method : C:\msdchem\1\methods\M6W1125.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Thu Oct 20 08:34:08 2022
Response via : Initial Calibration







TIC: 6W27095.D\data.ms

(3) FREON 152A (T)

1.695min (-0.000) 8.96PPBV m

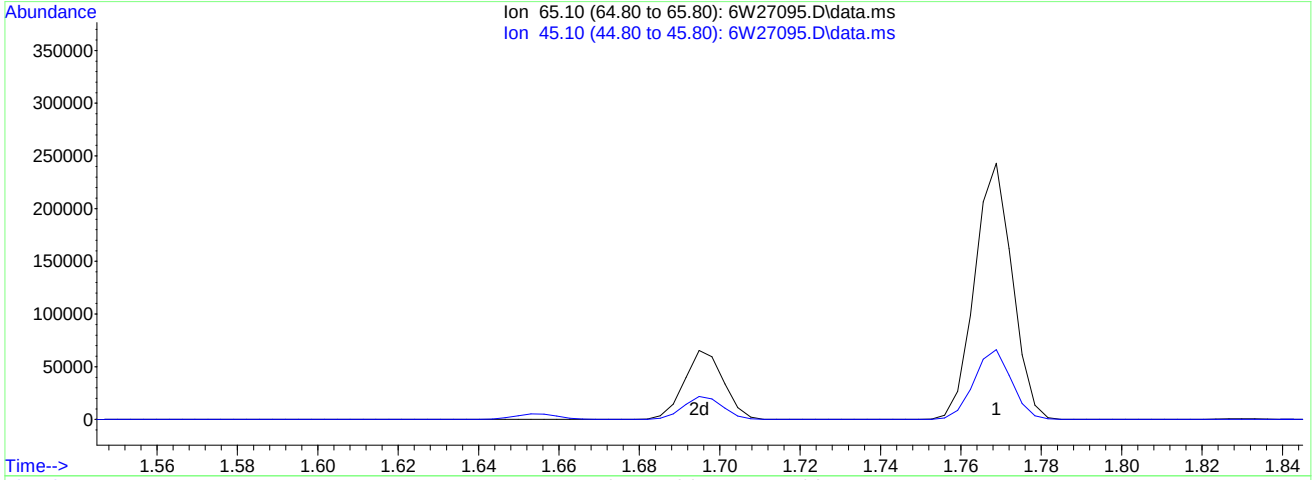
response 44499

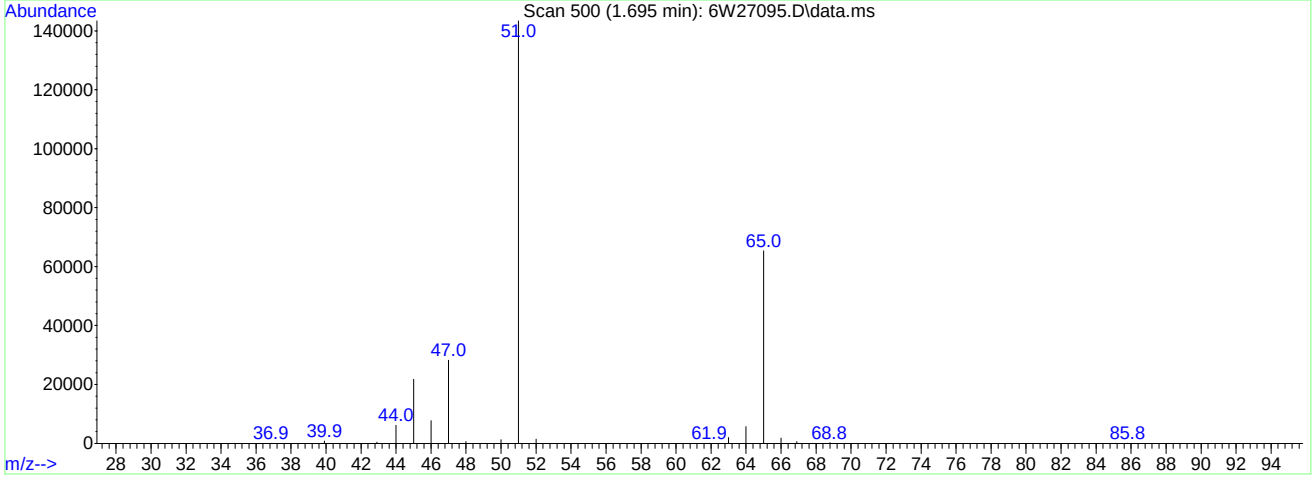
Ion	Exp%	Act%
65.10	100	100
45.10	22.90	96.65#
0.00	0.00	0.00
0.00	0.00	0.00

Quantitation Report (Qedit)

Data Path : C:\msdchem\1\data\
Data File : 6W27095.D
Acq On : 22 Nov 2022 10:40 am
Operator : thomash
Sample : bsd
Misc : MS63734,V6W1146,,,,,1
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Nov 23 01:34:26 2022
Quant Method : C:\msdchem\1\methods\M6W1125.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Thu Oct 20 08:34:08 2022
Response via : Initial Calibration





TIC: 6W27095.D\data.ms

(3) FREON 152A (T)

1.695min 0.00PPBV d

response 0

Ion	Exp%	Act%
65.10	100	0.00
45.10	22.90	0.00
0.00	0.00	0.00
0.00	0.00	0.00

Manual Integrations APPROVED (compounds with "m" flag)
Kanya Veerawat 12/01/22 15:56

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\
Data File : 6W27293.D
Acq On : 28 Nov 2022 2:03 pm
Operator : thomash
Sample : bs
Misc : MS64243,V6W1152,,,,,1
ALS Vial : 18 Sample Multiplier: 1

Quant Time: Nov 28 15:00:58 2022
Quant Method : C:\msdchem\1\methods\M6W1125.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Thu Oct 20 08:34:08 2022
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units		Dev(Min)
Internal Standards							
1) BROMOCHLOROMETHANE	3.338	128	48412	10.00	PPBV	#	0.00
52) 1,4-DIFLUOROBENZENE	4.730	114	233056	10.00	PPBV		0.00
76) CHLOROBENZENE-D5	10.585	117	208863	10.00	PPBV		0.00
System Monitoring Compounds							
87) 4-BROMOFLUOROBENZENE	14.023	95	141474	9.70	PPBV		0.00
Target Compounds							Qvalue
3) FREON 152A	1.695	65	38669m	9.29	PPBV		
4) CHLORODIFLUOROMETHANE	1.705	67	15731	8.34	PPBV		98
5) CHLOROTRIFLUOROETHENE	1.718	116	87473	9.60	PPBV	#	99
6) DICHLORODIFLUOROMETHANE	1.730	85	170665	11.27	PPBV	#	94
7) PROPYLENE	1.714	41	54087	8.72	PPBV		98
8) 1-CHLORO-1,1-DIFLUOROE...	1.766	65	118042	8.51	PPBV	#	90
9) FREON 114	1.798	85	148105	9.30	PPBV		96
10) CHLOROMETHANE	1.772	52	18612	8.51	PPBV		94
11) VINYL CHLORIDE	1.827	62	60625	9.14	PPBV		98
12) 1,3-BUTADIENE	1.866	54	50296	9.27	PPBV	#	76
13) N-BUTANE	1.878	43	101132	8.27	PPBV	#	92
14) BROMOMETHANE	1.933	94	54965	10.72	PPBV		100
15) CHLOROETHANE	1.978	64	31636	9.96	PPBV		98
16) DICHLOROFLUOROMETHANE	2.001	67	127914	9.49	PPBV	#	97
17) ACETONITRILE	2.065	41	67116	9.43	PPBV		98
18) ACROLEIN	2.100	56	31116	10.56	PPBV		99
19) FREON 123	2.116	83	132354	10.35	PPBV		98
20) FREON 123A	2.129	117	81035	10.51	PPBV		98
21) TRICHLOROFLUOROMETHANE	2.190	101	149402	9.46	PPBV		99
22) ISOPROPYL ALCOHOL	2.206	45	133193	8.36	PPBV	#	96
23) ACETONE	2.139	58	33000	9.21	PPBV	#	47
24) PENTANE	2.296	42	74882	8.82	PPBV	#	92
25) IODOMETHANE	2.357	142	167355	11.00	PPBV		92
26) 1,1-DICHLOROETHYLENE	2.383	96	58595	9.77	PPBV	#	71
27) CARBON DISULFIDE	2.521	76	172519	9.07	PPBV	#	92
28) ETHANOL	2.007	45	32785	8.92	PPBV		96
29) BROMOETHENE	2.071	106	57489	10.69	PPBV	#	99
30) ACRYLONITRILE	2.271	52	50499	9.40	PPBV		97
31) METHYLENE CHLORIDE	2.419	84	54446	9.04	PPBV	#	61
32) 3-CHLOROPROPENE	2.464	76	27246	9.30	PPBV	#	4
33) FREON 113	2.518	151	108937	10.23	PPBV		99
34) TRANS-1,2-DICHLOROETHENE	2.769	96	63861	9.53	PPBV		88
35) TERTIARY BUTYL ALCOHOL	2.396	59	102813	7.89	PPBV	#	85
36) METHYL TERTIARY BUTYL ...	2.888	73	117966	7.07	PPBV	#	92
37) TETRAHYDROFURAN	3.653	72	28510	9.20	PPBV	#	47
38) HEXANE	3.390	57	107773	8.29	PPBV	#	78
39) VINYL ACETATE	2.930	86	16341	10.17	PPBV	#	1
40) 1,1-DICHLOROETHANE	2.853	63	111645	8.74	PPBV		98
41) METHYL ETHYL KETONE	3.036	72	30433	9.34	PPBV	#	11
42) CIS-1,2-DICHLOROETHENE	3.255	96	64676	9.19	PPBV		88
43) DIISOPROPYL ETHER	3.399	59	29567	7.91	PPBV	#	49
44) ETHYL ACETATE	3.409	61	23354	9.10	PPBV	#	50
45) METHYL ACRYLATE	3.390	55	144345	8.98	PPBV	#	97
46) CHLOROFORM	3.419	83	127446	8.83	PPBV	#	96
47) 2,4-DIMETHYLPENTANE	3.952	57	127111	8.65	PPBV	#	93
48) 1,1,1-TRICHLOROETHANE	4.042	97	123001	8.67	PPBV		96
49) CARBON TETRACHLORIDE	4.499	117	131497	8.65	PPBV		99
50) 1,2-DICHLOROETHANE	3.865	62	86523	7.88	PPBV	#	96
51) BENZENE	4.377	78	180358	8.36	PPBV		82
53) CYCLOHEXANE	4.599	84	77281	9.09	PPBV	#	79
54) 2,3-DIMETHYLPENTANE	4.872	71	39672	8.57	PPBV	#	59
55) TRICHLOROETHENE	5.344	95	82362	9.00	PPBV		94
56) 1,2-DICHLOROPROPANE	5.100	63	73694	8.77	PPBV		98
57) DIBROMOMETHANE	5.055	174	86595	10.04	PPBV		98

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\
Data File : 6W27293.D
Acq On : 28 Nov 2022 2:03 pm
Operator : thomash
Sample : bs
Misc : MS64243,V6W1152,,,,,1
ALS Vial : 18 Sample Multiplier: 1

Quant Time: Nov 28 15:00:58 2022
Quant Method : C:\msdchem\1\methods\M6W1125.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Thu Oct 20 08:34:08 2022
Response via : Initial Calibration

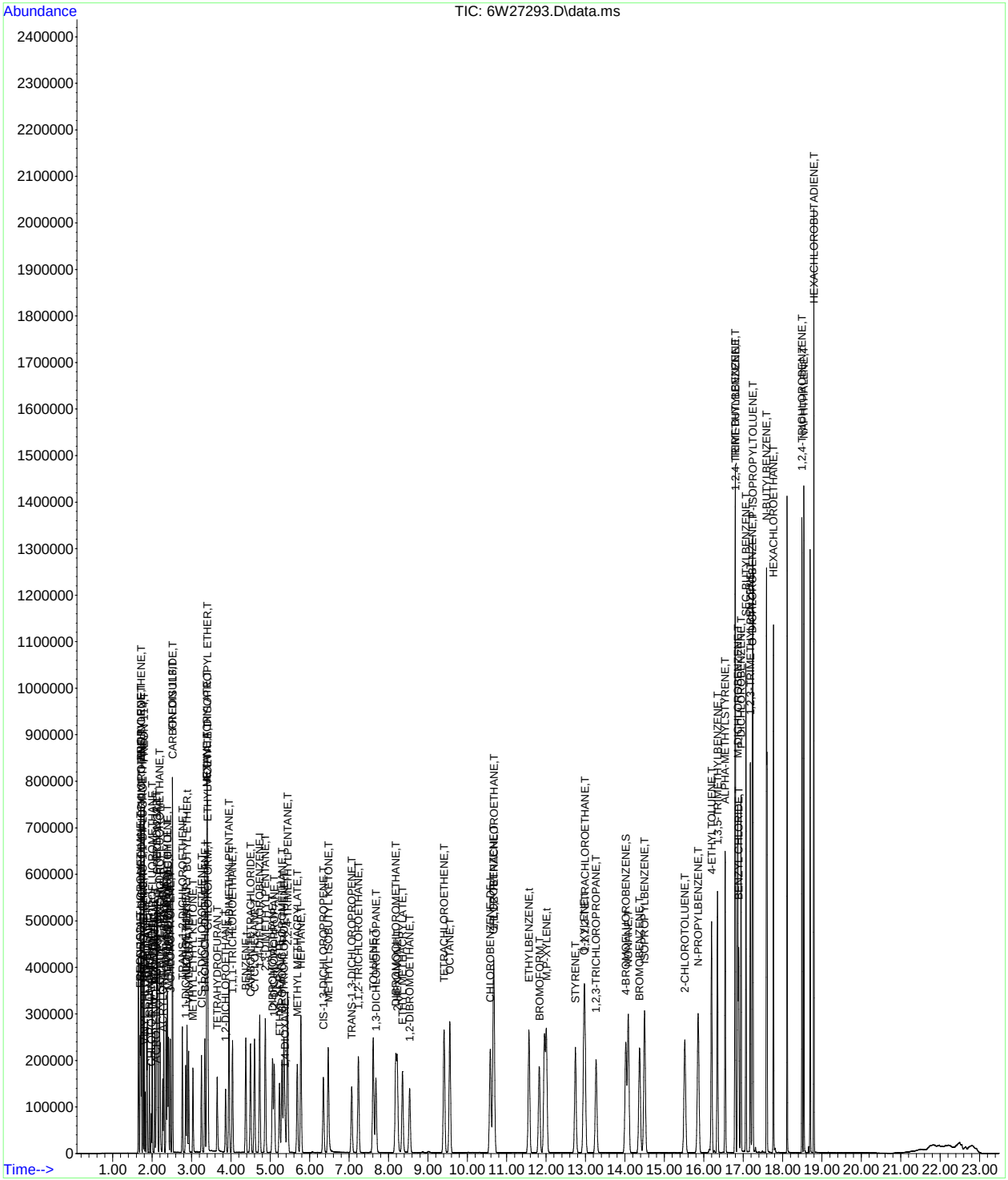
Compound	R.T.	QIon	Response	Conc	Units		Dev(Min)
58) ETHYL ACRYLATE	5.235	55	167603	9.40	PPBV	#	97
59) BROMODICHLOROMETHANE	5.296	83	134736	8.74	PPBV		98
60) 2,2,4-TRIMETHYLPENTANE	5.441	57	333656	8.65	PPBV		99
61) 1,4-DIOXANE	5.377	88	44769	11.13	PPBV	#	78
62) HEPTANE	5.775	43	142068	9.15	PPBV	#	75
63) METHYL METHACRYLATE	5.685	69	74682	10.03	PPBV	#	59
64) METHYL ISOBUTYL KETONE	6.473	58	72473	11.51	PPBV	#	62
65) CIS-1,3-DICHLOROPROPENE	6.348	75	102805	9.24	PPBV	#	78
66) TOLUENE	7.611	91	237456	9.21	PPBV		100
67) 1,3-DICHLOROPROPANE	7.682	76	120504	9.69	PPBV	#	97
68) TRANS-1,3-DICHLOROPROPENE	7.065	75	92141	9.39	PPBV	#	80
69) 1,1,2-TRICHLOROETHANE	7.238	83	74509	10.12	PPBV		100
70) 2-HEXANONE	8.222	58	95753	13.05	PPBV	#	66
71) ETHYL METHACRYLATE	8.354	69	122432	11.16	PPBV	#	72
72) TETRACHLOROETHENE	9.412	164	96783	10.87	PPBV		97
73) DIBROMOCHLOROMETHANE	8.184	129	159856	10.05	PPBV		99
74) 1,2-DIBROMOETHANE	8.537	107	137111	10.17	PPBV		99
75) OCTANE	9.557	43	193526	9.42	PPBV	#	76
77) 1,1,1,2-TETRACHLOROETHANE	10.679	131	109409	9.76	PPBV		99
78) CHLOROBENZENE	10.659	112	200786	9.95	PPBV		98
79) ETHYLBENZENE	11.563	91	313233	8.71	PPBV		99
80) M,P-XYLENE	12.007	91	490933	18.28	PPBV	#	66
81) O-XYLENE	12.958	91	248406	9.24	PPBV		98
82) STYRENE	12.746	104	191493	10.66	PPBV		99
83) NONANE	14.084	43	208877	9.03	PPBV	#	76
84) BROMOFORM	11.830	173	156065	10.65	PPBV		98
85) 1,1,2,2-TETRACHLOROETHANE	12.984	83	202754	10.62	PPBV		99
86) 1,2,3-TRICHLOROPROPANE	13.267	75	142663	9.55	PPBV		97
88) ISOPROPYLBENZENE	14.498	105	367531	9.92	PPBV	#	92
89) BROMOBENZENE	14.373	77	176484	9.87	PPBV		95
90) 2-CHLOROTOLUENE	15.521	91	253400	10.47	PPBV		98
91) N-PROPYLBENZENE	15.859	91	440291	10.79	PPBV	#	96
92) 4-ETHYLTOLUENE	16.199	105	372077	11.27	PPBV		100
93) 1,3,5-TRIMETHYLBENZENE	16.350	105	309991	11.10	PPBV		99
94) ALPHA-METHYLSTYRENE	16.543	118	165709	11.84	PPBV		99
95) TERT-BUTYLBENZENE	16.797	119	346658	11.06	PPBV		99
96) 1,2,4-TRIMETHYLBENZENE	16.804	105	327801	11.36	PPBV		95
97) BENZYL CHLORIDE	16.887	91	216867	12.40	PPBV		99
98) M-DICHLOROBENZENE	16.865	146	237018	11.81	PPBV		99
99) P-DICHLOROBENZENE	16.945	146	239806	11.97	PPBV		99
100) O-DICHLOROBENZENE	17.235	146	228857	11.66	PPBV		99
101) SEC-BUTYLBENZENE	17.071	105	481972	11.28	PPBV		99
102) 1,2,3-TRIMETHYLBENZENE	17.183	105	324688	11.49	PPBV		99
103) P-ISOPROPYLTOLUENE	17.248	119	415870	11.35	PPBV		97
104) N-BUTYLBENZENE	17.592	91	394489	12.12	PPBV		98
105) HEXACHLOROETHANE	17.768	117	135946	10.22	PPBV	#	46
106) HEXACHLOROBUTADIENE	18.794	225	196939	13.55	PPBV		100
107) 1,2,4-TRICHLOROBENZENE	18.492	180	233855	14.34	PPBV		99
108) NAPHTHALENE	18.540	128	614797	15.29	PPBV		100

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

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\
Data File : 6W27293.D
Acq On : 28 Nov 2022 2:03 pm
Operator : thomash
Sample : bs
Misc : MS64243,V6W1152,,,,,1
ALS Vial : 18 Sample Multiplier: 1

Quant Time: Nov 28 15:00:58 2022
Quant Method : C:\msdchem\1\methods\M6W1125.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Thu Oct 20 08:34:08 2022
Response via : Initial Calibration



Manual Integration Approval Summary

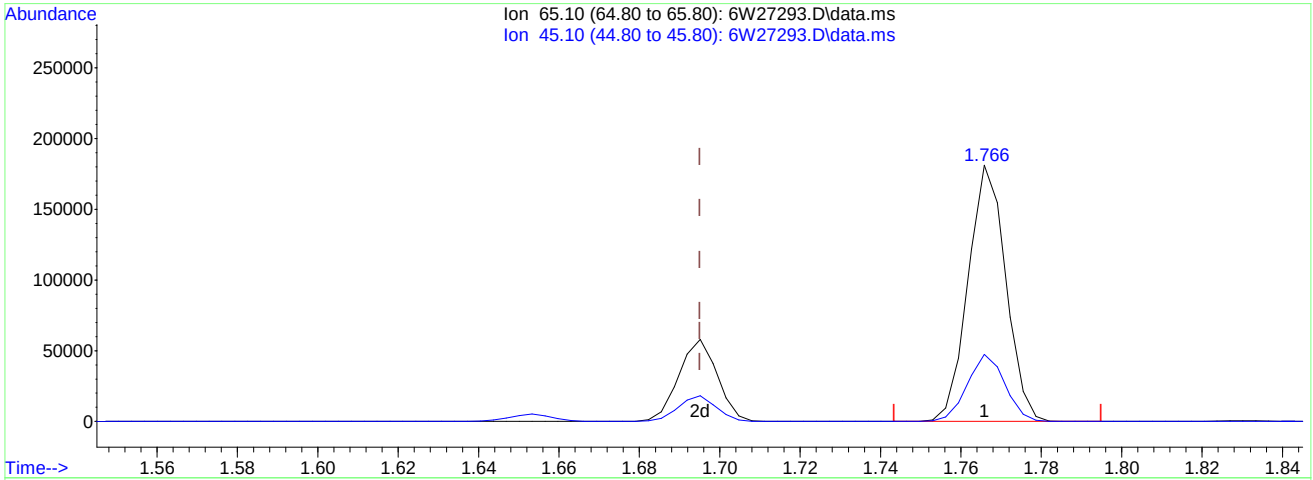
Sample Number:	V6W1152-BS	**Method:**	TO-15
Lab FileID:	6W27293.D	**Analyst approved:**	11/28/22 15:04 Thomas Hilbig
Injection Time:	11/28/22 14:03	**Supervisor approved:**	12/01/22 15:56 Kanya Veerawat

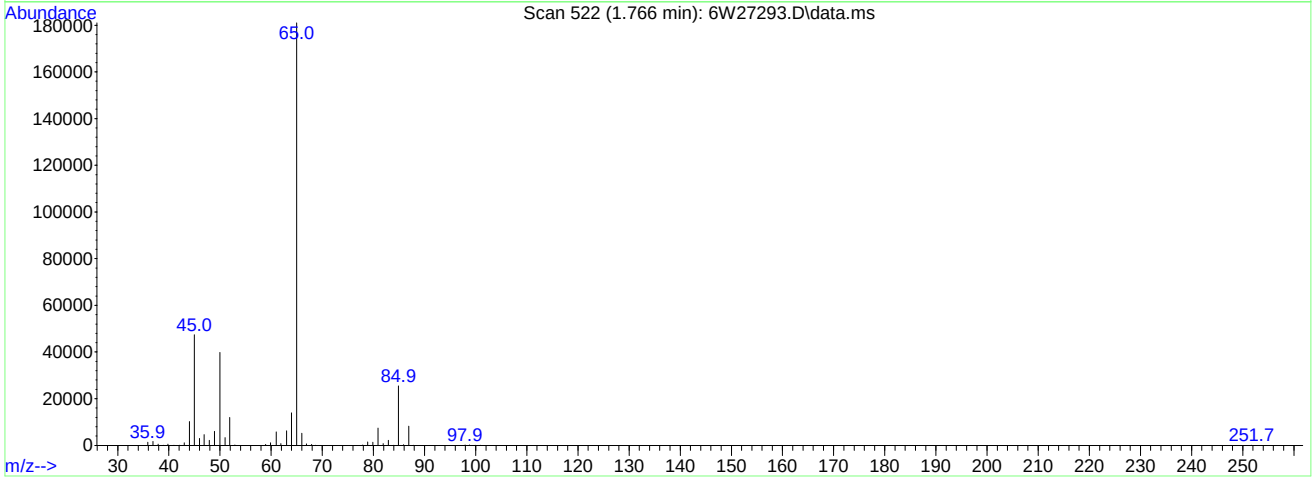
Parameter	CAS	Sig#	R.T. (min.)	Reason
Freon 152A	75-37-6		1.70	Missed peak

Quantitation Report (Qedit)

Data Path : C:\msdchem\1\data\
Data File : 6W27293.D
Acq On : 28 Nov 2022 2:03 pm
Operator : thomash
Sample : bs
Misc : MS64243,V6W1152,,,,,1
ALS Vial : 18 Sample Multiplier: 1

Quant Time: Nov 28 14:50:42 2022
Quant Method : C:\msdchem\1\methods\M6W1125.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Thu Oct 20 08:34:08 2022
Response via : Initial Calibration





TIC: 6W27293.D\data.ms

(3) FREON 152A (T)

1.766min (+0.071) 28.37PPBV

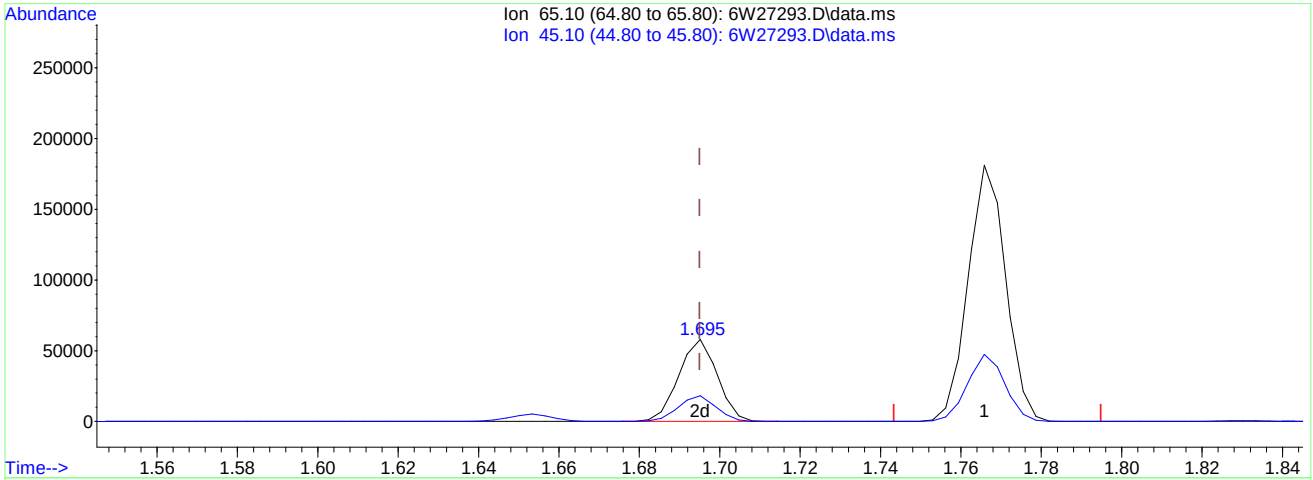
response 118042

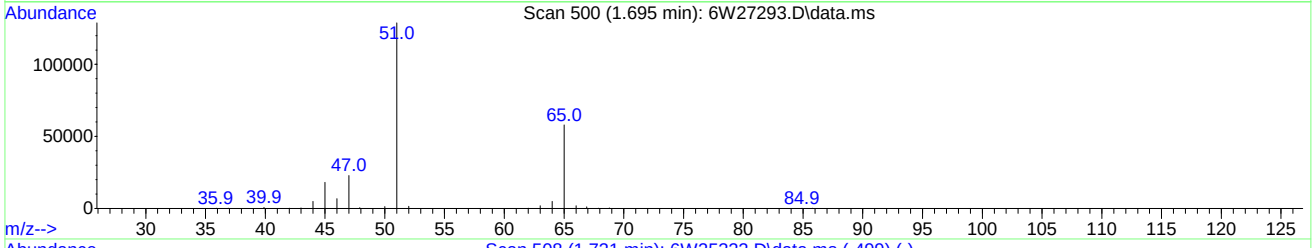
Ion	Exp%	Act%
65.10	100	100
45.10	22.90	26.19
0.00	0.00	0.00
0.00	0.00	0.00

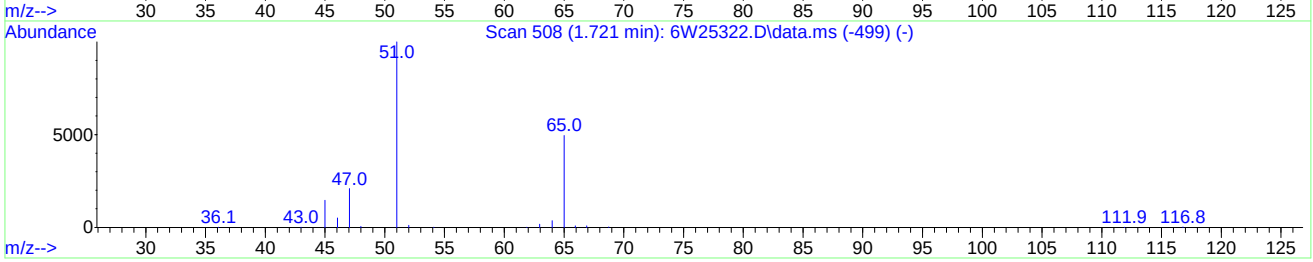
Quantitation Report (Qedit)

Data Path : C:\msdchem\1\data\
Data File : 6W27293.D
Acq On : 28 Nov 2022 2:03 pm
Operator : thomash
Sample : bs
Misc : MS64243,V6W1152,,,,,1
ALS Vial : 18 Sample Multiplier: 1

Quant Time: Nov 28 14:50:42 2022
Quant Method : C:\msdchem\1\methods\M6W1125.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Thu Oct 20 08:34:08 2022
Response via : Initial Calibration







TIC: 6W27293.D\data.ms

(3) FREON 152A (T)

1.695min (+0.000) 9.29PPBV m

response 38669

Ion	Exp%	Act%
65.10	100	100
45.10	22.90	79.94#
0.00	0.00	0.00
0.00	0.00	0.00

Manual Integrations APPROVED (compounds with "m" flag)
Kanya Veerawat 12/01/22 15:56

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\
Data File : 6W27294.D
Acq On : 28 Nov 2022 2:36 pm
Operator : thomash
Sample : bsd
Misc : MS64243,V6W1152,,,,,1
ALS Vial : 18 Sample Multiplier: 1

Quant Time: Nov 28 15:01:58 2022
Quant Method : C:\msdchem\1\methods\M6W1125.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Thu Oct 20 08:34:08 2022
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units		Dev(Min)
Internal Standards							
1) BROMOCHLOROMETHANE	3.342	128	49041	10.00	PPBV	#	0.00
52) 1,4-DIFLUOROBENZENE	4.737	114	239067	10.00	PPBV		0.00
76) CHLOROBENZENE-D5	10.586	117	213877	10.00	PPBV		0.00
System Monitoring Compounds							
87) 4-BROMOFLUOROBENZENE	14.023	95	145386	9.73	PPBV		0.00
Target Compounds							Qvalue
3) FREON 152A	1.698	65	39491m	9.37	PPBV		
4) CHLORODIFLUOROMETHANE	1.708	67	16067	8.41	PPBV		98
5) CHLOROTRIFLUOROETHENE	1.718	116	89256	9.67	PPBV	#	100
6) DICHLORODIFLUOROMETHANE	1.734	85	174280	11.37	PPBV	#	94
7) PROPYLENE	1.718	41	55559	8.84	PPBV		98
8) 1-CHLORO-1,1-DIFLUOROE...	1.769	65	120739	8.60	PPBV	#	90
9) FREON 114	1.801	85	151894	9.42	PPBV		96
10) CHLOROMETHANE	1.776	52	18677	8.43	PPBV		92
11) VINYL CHLORIDE	1.830	62	62284	9.27	PPBV		97
12) 1,3-BUTADIENE	1.866	54	51775	9.43	PPBV	#	77
13) N-BUTANE	1.882	43	103581	8.36	PPBV	#	92
14) BROMOMETHANE	1.936	94	56172	10.81	PPBV		100
15) CHLOROETHANE	1.981	64	32353	10.06	PPBV		97
16) DICHLOROFLUOROMETHANE	2.004	67	131687	9.64	PPBV	#	97
17) ACETONITRILE	2.068	41	68780	9.54	PPBV		98
18) ACROLEIN	2.104	56	31732	10.63	PPBV		98
19) FREON 123	2.116	83	135576	10.47	PPBV		98
20) FREON 123A	2.133	117	83563	10.70	PPBV		100
21) TRICHLOROFLUOROMETHANE	2.194	101	153844	9.62	PPBV		100
22) ISOPROPYL ALCOHOL	2.210	45	138267	8.57	PPBV	#	96
23) ACETONE	2.139	58	33570	9.25	PPBV	#	47
24) PENTANE	2.300	42	76444	8.88	PPBV	#	93
25) IODOMETHANE	2.358	142	173305	11.24	PPBV		92
26) 1,1-DICHLOROETHYLENE	2.387	96	60188	9.90	PPBV	#	73
27) CARBON DISULFIDE	2.522	76	176372	9.16	PPBV	#	92
28) ETHANOL	2.007	45	33663	9.04	PPBV		96
29) BROMOETHENE	2.075	106	59232	10.88	PPBV	#	98
30) ACRYLONITRILE	2.274	52	51982	9.56	PPBV		97
31) METHYLENE CHLORIDE	2.425	84	55710	9.14	PPBV	#	64
32) 3-CHLOROPROPENE	2.464	76	28057	9.45	PPBV	#	7
33) FREON 113	2.522	151	112989	10.48	PPBV		100
34) TRANS-1,2-DICHLOROETHENE	2.772	96	65413	9.64	PPBV		88
35) TERTIARY BUTYL ALCOHOL	2.396	59	106955	8.11	PPBV	#	87
36) METHYL TERTIARY BUTYL ...	2.891	73	123383	7.30	PPBV	#	92
37) TETRAHYDROFURAN	3.653	72	29511	9.40	PPBV	#	48
38) HEXANE	3.396	57	111609	8.48	PPBV	#	80
39) VINYL ACETATE	2.933	86	17006	10.45	PPBV	#	1
40) 1,1-DICHLOROETHANE	2.856	63	114350	8.84	PPBV		98
41) METHYL ETHYL KETONE	3.043	72	31004	9.40	PPBV	#	10
42) CIS-1,2-DICHLOROETHENE	3.258	96	66621	9.35	PPBV		87
43) DIISOPROPYL ETHER	3.403	59	30837	8.15	PPBV	#	51
44) ETHYL ACETATE	3.409	61	23668	9.10	PPBV	#	49
45) METHYL ACRYLATE	3.393	55	146830	9.02	PPBV	#	97
46) CHLOROFORM	3.425	83	130666	8.94	PPBV	#	96
47) 2,4-DIMETHYLPENTANE	3.956	57	129653	8.71	PPBV	#	93
48) 1,1,1-TRICHLOROETHANE	4.046	97	126139	8.78	PPBV		96
49) CARBON TETRACHLORIDE	4.502	117	134997	8.76	PPBV		99
50) 1,2-DICHLOROETHANE	3.872	62	89112	8.01	PPBV	#	96
51) BENZENE	4.383	78	185341	8.48	PPBV		83
53) CYCLOHEXANE	4.602	84	79386	9.11	PPBV	#	78
54) 2,3-DIMETHYLPENTANE	4.878	71	40354	8.50	PPBV	#	59
55) TRICHLOROETHENE	5.351	95	85215	9.08	PPBV		94
56) 1,2-DICHLOROPROPANE	5.104	63	75539	8.76	PPBV		97
57) DIBROMOMETHANE	5.062	174	89367	10.10	PPBV		98

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\
Data File : 6W27294.D
Acq On : 28 Nov 2022 2:36 pm
Operator : thomash
Sample : bsd
Misc : MS64243,V6W1152,,,,,1
ALS Vial : 18 Sample Multiplier: 1

Quant Time: Nov 28 15:01:58 2022
Quant Method : C:\msdchem\1\methods\M6W1125.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Thu Oct 20 08:34:08 2022
Response via : Initial Calibration

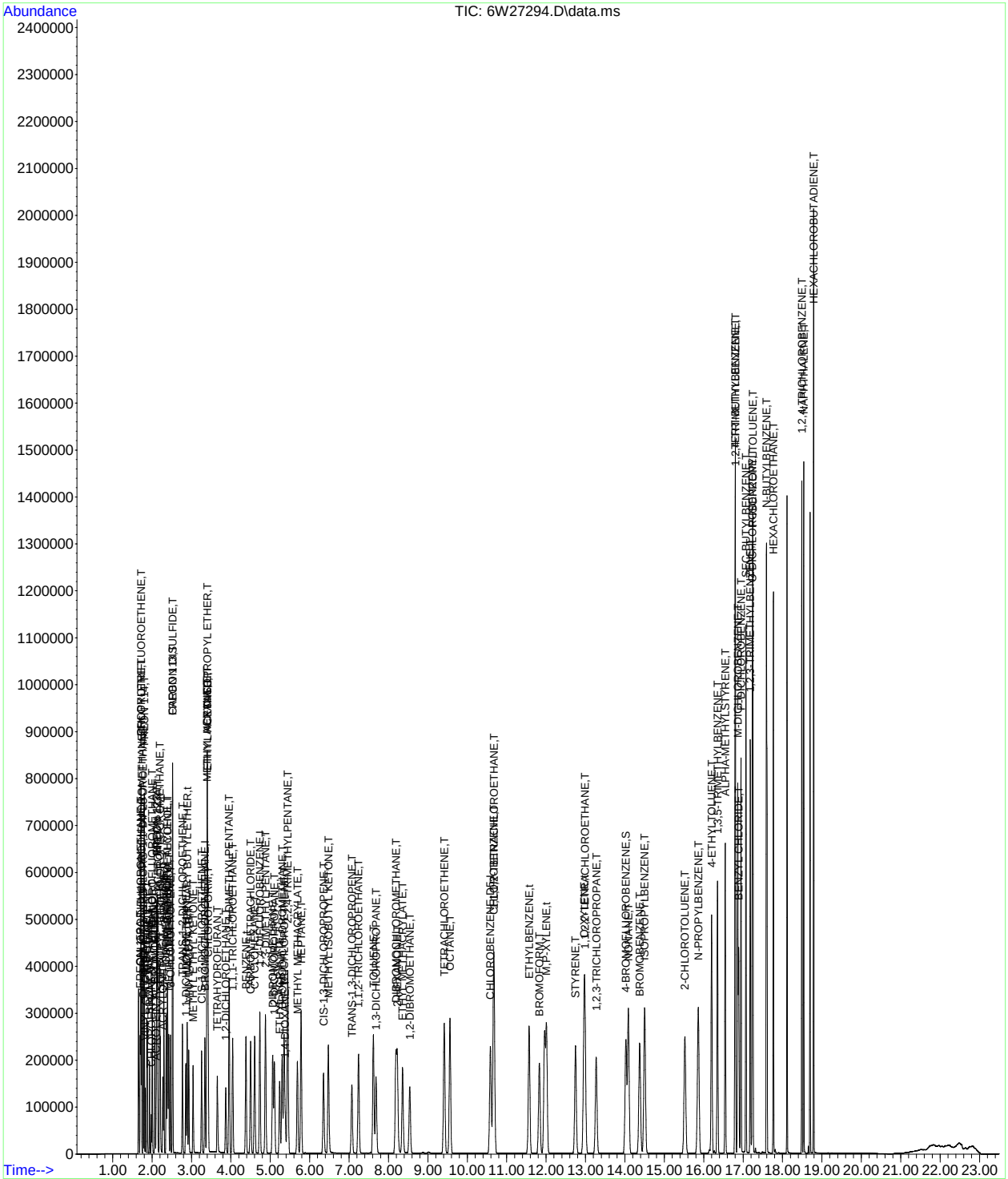
	Compound	R.T.	QIon	Response	Conc	Units		Dev(Min)
58)	ETHYL ACRYLATE	5.239	55	172816	9.45	PPBV	#	97
59)	BROMODICHLOROMETHANE	5.300	83	138013	8.73	PPBV		99
60)	2,2,4-TRIMETHYLPENTANE	5.441	57	376718	9.52	PPBV	#	98
61)	1,4-DIOXANE	5.377	88	48676	11.80	PPBV	#	79
62)	HEPTANE	5.782	43	147068	9.23	PPBV	#	75
63)	METHYL METHACRYLATE	5.689	69	78185	10.24	PPBV	#	60
64)	METHYL ISOBUTYL KETONE	6.473	58	74919	11.60	PPBV	#	66
65)	CIS-1,3-DICHLOROPROPENE	6.351	75	106909	9.36	PPBV	#	78
66)	TOLUENE	7.618	91	247549	9.36	PPBV		100
67)	1,3-DICHLOROPROPANE	7.685	76	122964	9.64	PPBV	#	98
68)	TRANS-1,3-DICHLOROPROPENE	7.071	75	95399	9.48	PPBV	#	80
69)	1,1,2-TRICHLOROETHANE	7.238	83	78120	10.34	PPBV		99
70)	2-HEXANONE	8.226	58	97777	12.99	PPBV	#	65
71)	ETHYL METHACRYLATE	8.357	69	127338	11.31	PPBV	#	75
72)	TETRACHLOROETHENE	9.415	164	100882	11.04	PPBV		98
73)	DIBROMOCHLOROMETHANE	8.187	129	164689	10.10	PPBV		99
74)	1,2-DIBROMOETHANE	8.541	107	143253	10.36	PPBV		99
75)	OCTANE	9.560	43	198882	9.43	PPBV	#	76
77)	1,1,1,2-TETRACHLOROETHANE	10.679	131	113731	9.91	PPBV		99
78)	CHLOROBENZENE	10.666	112	210184	10.17	PPBV		98
79)	ETHYLBENZENE	11.569	91	325199	8.83	PPBV		100
80)	M,P-XYLENE	12.004	91	508154	18.48	PPBV	#	67
81)	O-XYLENE	12.965	91	258486	9.39	PPBV		100
82)	STYRENE	12.746	104	199374	10.84	PPBV		99
83)	NONANE	14.087	43	215137	9.08	PPBV	#	77
84)	BROMOFORM	11.827	173	160710	10.71	PPBV		99
85)	1,1,2,2-TETRACHLOROETHANE	12.987	83	208959	10.69	PPBV		100
86)	1,2,3-TRICHLOROPROPANE	13.274	75	147390	9.64	PPBV		98
88)	ISOPROPYLBENZENE	14.499	105	381854	10.06	PPBV	#	93
89)	BROMOBENZENE	14.376	77	182755	9.98	PPBV		95
90)	2-CHLOROTOLUENE	15.521	91	262764	10.61	PPBV		98
91)	N-PROPYLBENZENE	15.862	91	456381	10.92	PPBV	#	96
92)	4-ETHYLTOLUENE	16.200	105	386646	11.43	PPBV		100
93)	1,3,5-TRIMETHYLBENZENE	16.347	105	320393	11.20	PPBV		100
94)	ALPHA-METHYLSTYRENE	16.547	118	170969	11.93	PPBV		99
95)	TERT-BUTYLBENZENE	16.798	119	358108	11.16	PPBV		98
96)	1,2,4-TRIMETHYLBENZENE	16.804	105	337917	11.44	PPBV		95
97)	BENZYL CHLORIDE	16.888	91	222336	12.42	PPBV		99
98)	M-DICHLOROBENZENE	16.865	146	243650	11.86	PPBV		99
99)	P-DICHLOROBENZENE	16.945	146	245618	11.97	PPBV		99
100)	O-DICHLOROBENZENE	17.235	146	239969	11.94	PPBV		99
101)	SEC-BUTYLBENZENE	17.071	105	499548	11.42	PPBV		99
102)	1,2,3-TRIMETHYLBENZENE	17.180	105	334879	11.57	PPBV		99
103)	P-ISOPROPYLTOLUENE	17.248	119	429706	11.45	PPBV		97
104)	N-BUTYLBENZENE	17.589	91	410123	12.30	PPBV		98
105)	HEXACHLOROETHANE	17.765	117	139459	10.24	PPBV		96
106)	HEXACHLOROBUTADIENE	18.791	225	203835	13.69	PPBV		100
107)	1,2,4-TRICHLOROBENZENE	18.489	180	238398	14.28	PPBV		99
108)	NAPHTHALENE	18.537	128	625442	15.19	PPBV		100

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

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\
Data File : 6W27294.D
Acq On : 28 Nov 2022 2:36 pm
Operator : thomash
Sample : bsd
Misc : MS64243,V6W1152,,,,,1
ALS Vial : 18 Sample Multiplier: 1

Quant Time: Nov 28 15:01:58 2022
Quant Method : C:\msdchem\1\methods\M6W1125.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Thu Oct 20 08:34:08 2022
Response via : Initial Calibration



Manual Integration Approval Summary

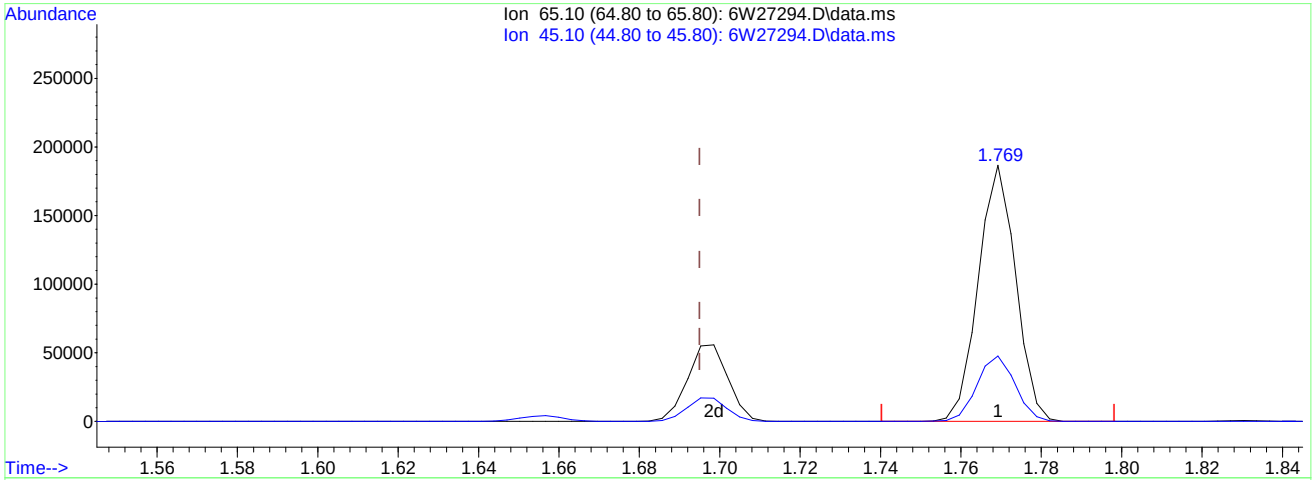
Sample Number:	V6W1152-BSD	**Method:**	TO-15
Lab FileID:	6W27294.D	**Analyst approved:**	11/28/22 15:04 Thomas Hilbig
Injection Time:	11/28/22 14:36	**Supervisor approved:**	12/01/22 15:56 Kanya Veerawat

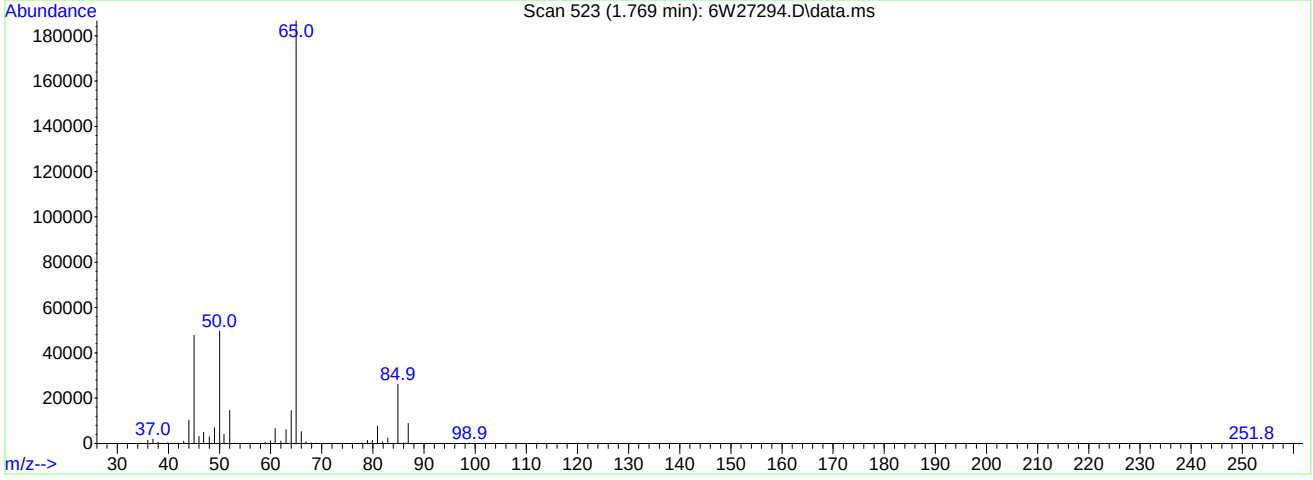
Parameter	CAS	Sig#	R.T. (min.)	Reason
Freon 152A	75-37-6		1.70	Missed peak

Quantitation Report (Qedit)

Data Path : C:\msdchem\1\data\
Data File : 6W27294.D
Acq On : 28 Nov 2022 2:36 pm
Operator : thomash
Sample : bsd
Misc : MS64243,V6W1152,,,,,1
ALS Vial : 18 Sample Multiplier: 1

Quant Time: Nov 28 15:01:43 2022
Quant Method : C:\msdchem\1\methods\M6W1125.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Thu Oct 20 08:34:08 2022
Response via : Initial Calibration





TIC: 6W27294.D\data.ms

(3) FREON 152A (T)

1.769min (+0.074) 28.64PPBV

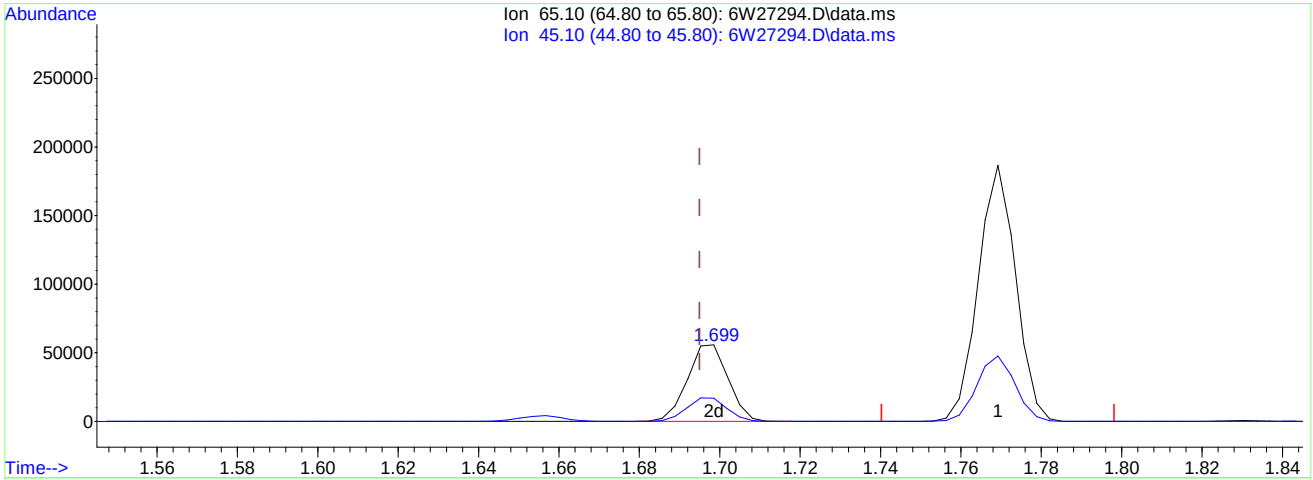
response 120748

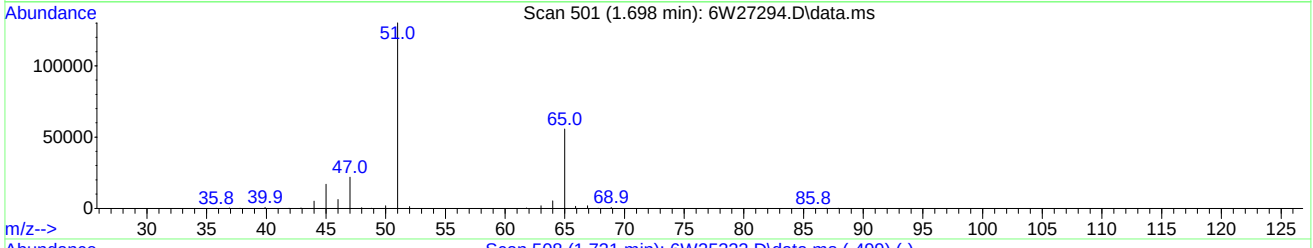
Ion	Exp%	Act%
65.10	100	100
45.10	22.90	26.07
0.00	0.00	0.00
0.00	0.00	0.00

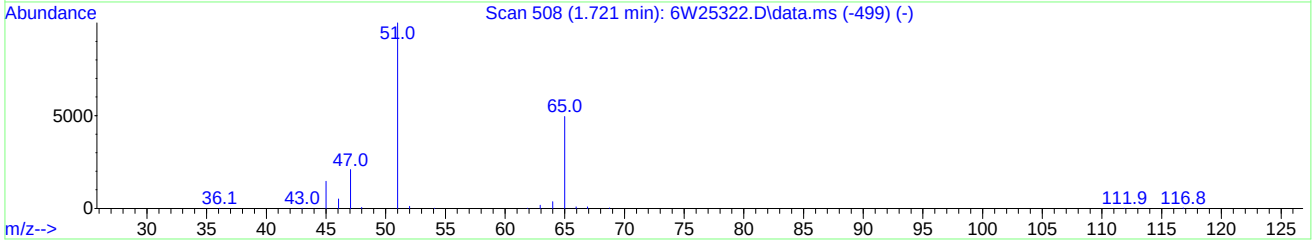
Quantitation Report (Qedit)

Data Path : C:\msdchem\1\data\
Data File : 6W27294.D
Acq On : 28 Nov 2022 2:36 pm
Operator : thomash
Sample : bsd
Misc : MS64243,V6W1152,,,,,1
ALS Vial : 18 Sample Multiplier: 1

Quant Time: Nov 28 15:01:43 2022
Quant Method : C:\msdchem\1\methods\M6W1125.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Thu Oct 20 08:34:08 2022
Response via : Initial Calibration







TIC: 6W27294.D\data.ms

(3) FREON 152A (T)

1.698min (+0.003) 9.37PPBV m

response 39491

Ion	Exp%	Act%
65.10	100	100
45.10	22.90	79.71#
0.00	0.00	0.00
0.00	0.00	0.00

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\
Data File : 2w63194.D
Acq On : 1 Feb 2023 5:58 pm
Operator : thomash
Sample : jd59460-5dup
Misc : MS66193,v2w2809,155,,,,1.55
ALS Vial : 7 Sample Multiplier: 1

Quant Time: Feb 02 15:50:01 2023
Quant Method : C:\msdchem\1\METHODS\M2W2776.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Mon Dec 19 08:01:03 2022
Response via : Initial Calibration

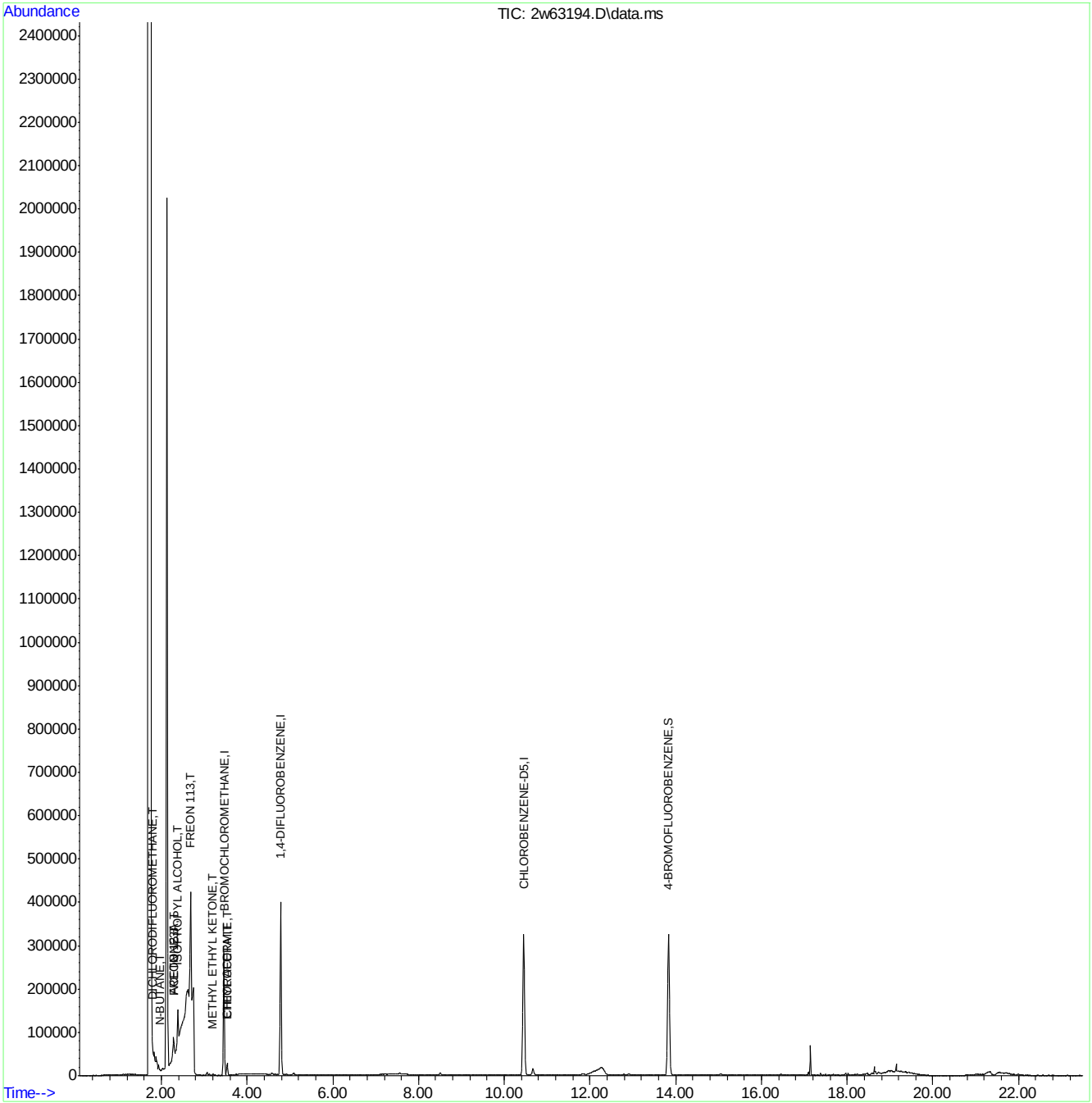
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) BROMOCHLOROMETHANE	3.460	128	61999	10.00	PPBV	# 0.03
52) 1,4-DIFLUOROBENZENE	4.785	114	323887	10.00	PPBV	0.02
76) CHLOROBENZENE-D5	10.454	117	294765	10.00	PPBV	0.00
System Monitoring Compounds						
87) 4-BROMOFLUOROBENZENE	13.833	95	208356	9.15	PPBV	0.00
Target Compounds						Qvalue
6) DICHLORODIFLUOROMETHANE	1.789	85	3400	0.11	PPBV	# 84
13) N-BUTANE	1.962	43	2028	0.16	PPBV	# 54
20) FREON 123A	2.280	117	8816	0.65	PPBV	91
22) ISOPROPYL ALCOHOL	2.380	45	72778	3.87	PPBV	# 91
23) ACETONE	2.290	58	8470	1.61	PPBV	77
33) FREON 113	2.682	151	63006	3.47	PPBV	96
41) METHYL ETHYL KETONE	3.190	72	904	0.19	PPBV	# 68
44) ETHYL ACETATE	3.538	61	1254	0.38	PPBV	# 1
46) CHLOROFORM	3.531	83	13145	0.59	PPBV	87

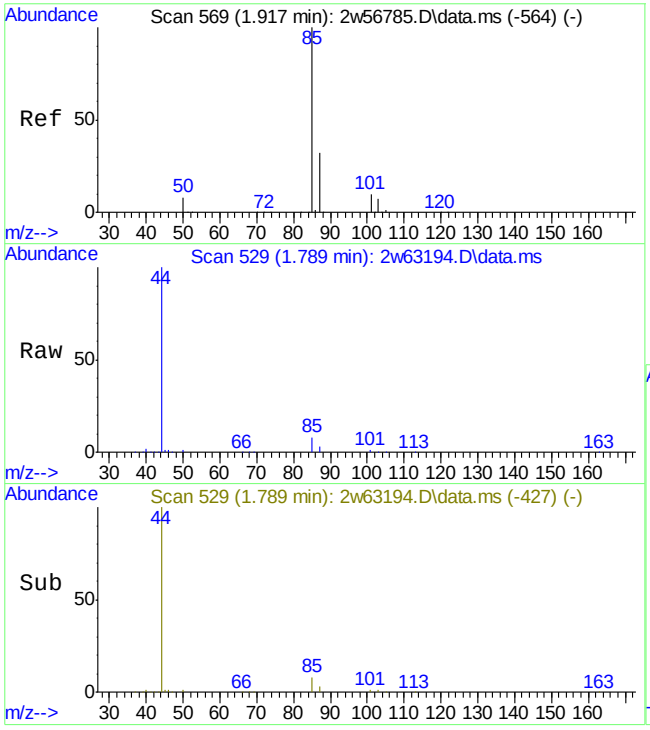
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\
Data File : 2w63194.D
Acq On : 1 Feb 2023 5:58 pm
Operator : thomash
Sample : jd59460-5dup
Misc : MS66193,v2w2809,155,,,,1.55
ALS Vial : 7 Sample Multiplier: 1

Quant Time: Feb 02 15:50:01 2023
Quant Method : C:\msdchem\1\METHODS\M2W2776.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Mon Dec 19 08:01:03 2022
Response via : Initial Calibration

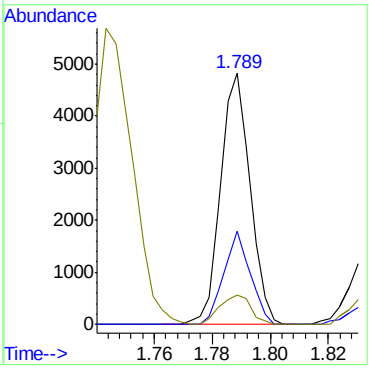


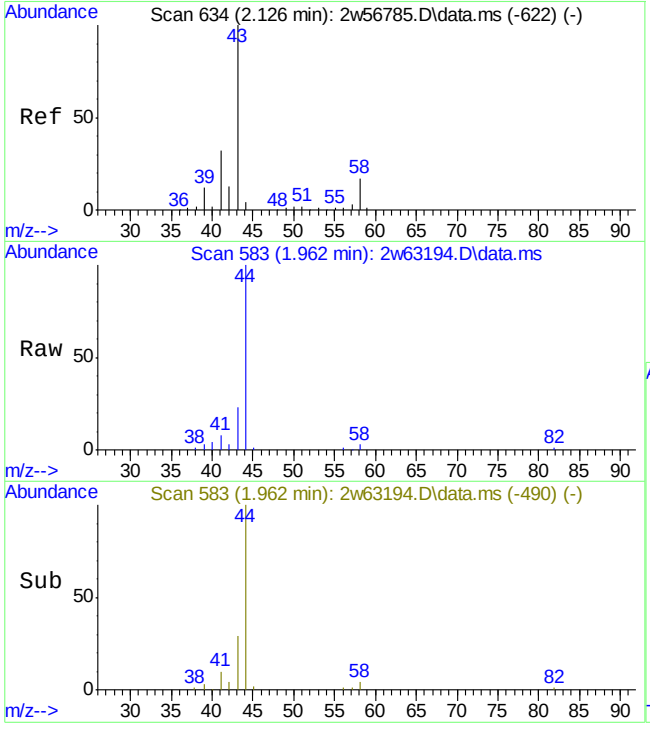


#6
DICHLORODIFLUOROMETHANE
Concen: 0.11 PPBV
RT: 1.789 min Scan# 529
Delta R.T. -0.003 min
Lab File: 2w63194.D
Acq: 1 Feb 2023 5:58 pm

Tgt Ion: 85 Resp: 3400

Ion	Ratio	Lower	Upper
85	100		
87	33.4	25.9	38.9
50	0.0	14.6	21.8#

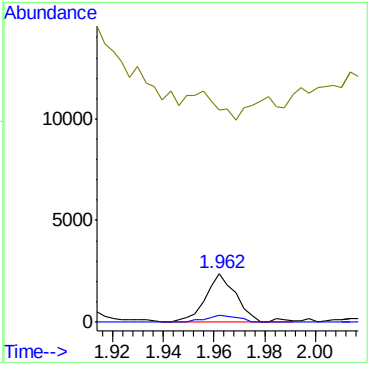


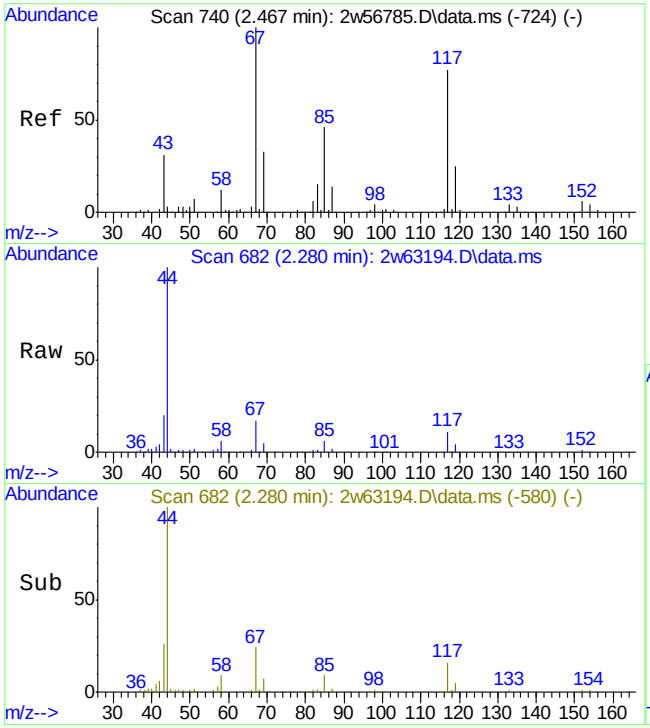


#13
N-BUTANE
Concen: 0.16 PPBV
RT: 1.962 min Scan# 583
Delta R.T. 0.000 min
Lab File: 2w63194.D
Acq: 1 Feb 2023 5:58 pm

Tgt Ion: 43 Resp: 2028

Ion	Ratio	Lower	Upper
43	100		
58	0.0	15.0	22.4#
44	25.0	3.4	5.2#

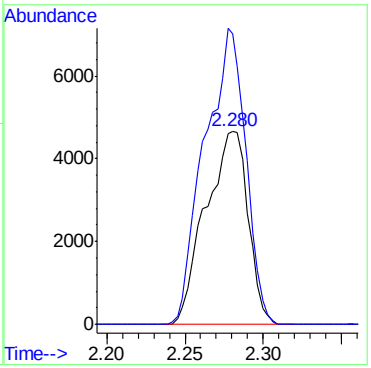


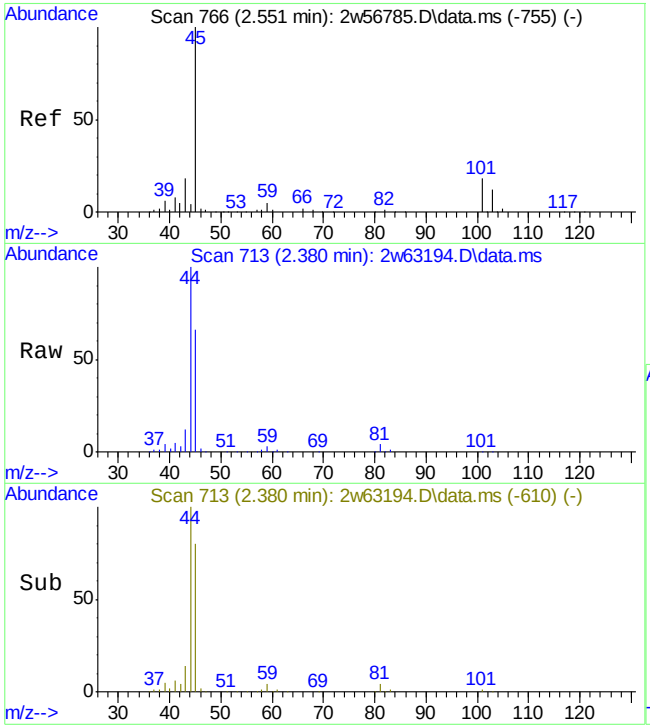


#20
FREON 123A
Concen: 0.65 PPBV
RT: 2.280 min Scan# 682
Delta R.T. 0.029 min
Lab File: 2w63194.D
Acq: 1 Feb 2023 5:58 pm

Tgt Ion:117 Resp: 8816

Ion	Ratio	Lower	Upper
117	100		
67	148.9	128.6	192.8

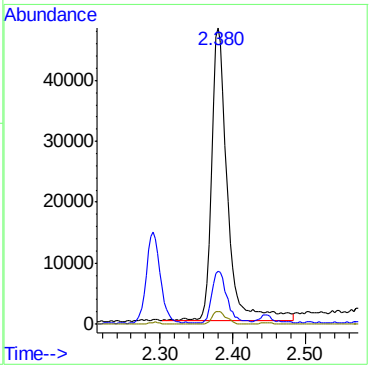


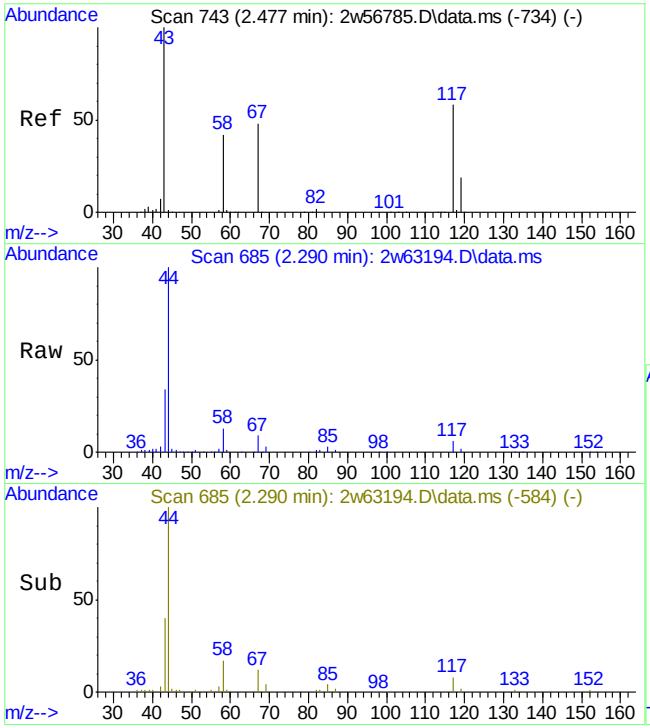


#22
ISOPROPYL ALCOHOL
Concen: 3.87 PPBV
RT: 2.380 min Scan# 713
Delta R.T. 0.032 min
Lab File: 2w63194.D
Acq: 1 Feb 2023 5:58 pm

Tgt Ion: 45 Resp: 72778

Ion	Ratio	Lower	Upper
45	100		
43	17.3	17.8	26.6#
59	4.0	3.6	5.4

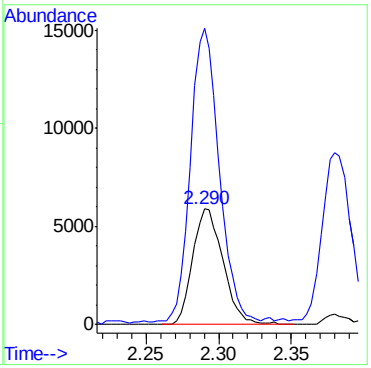


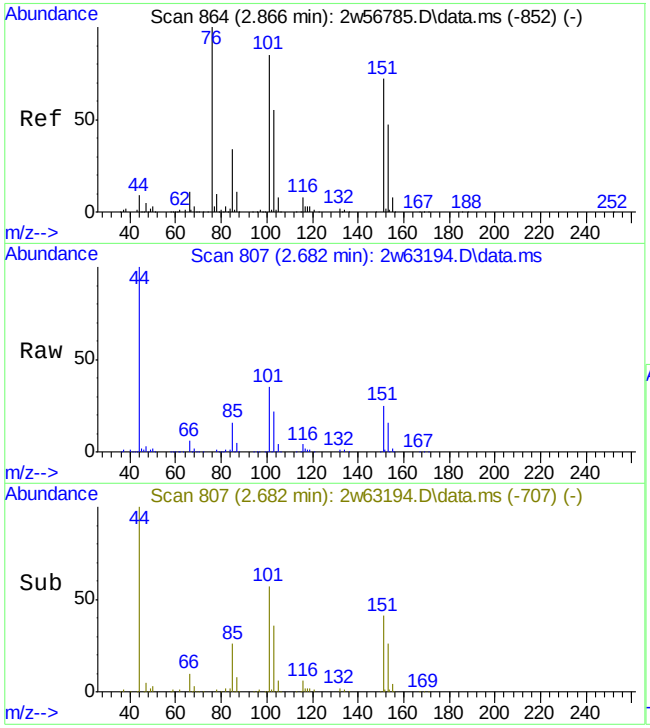


#23
ACETONE
Concen: 1.61 PPBV
RT: 2.290 min Scan# 685
Delta R.T. 0.026 min
Lab File: 2w63194.D
Acq: 1 Feb 2023 5:58 pm

Tgt Ion: 58 Resp: 8470

Ion	Ratio	Lower	Upper
58	100		
43	242.9	229.9	344.9

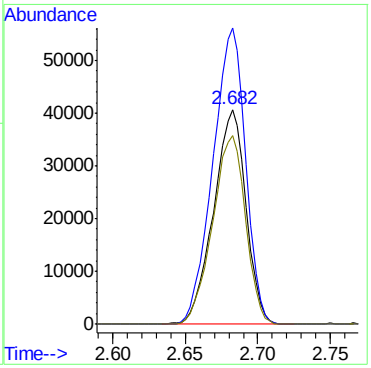


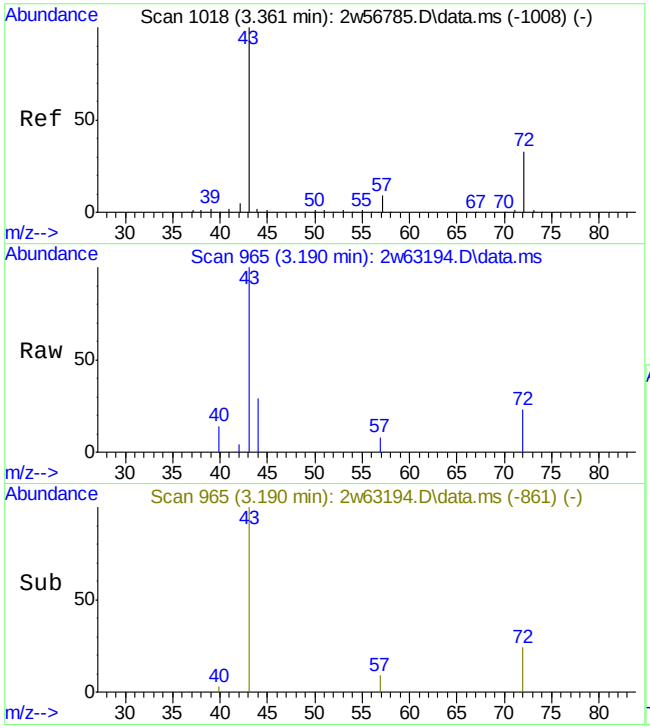


#33
FREON 113
Concen: 3.47 PPBV
RT: 2.682 min Scan# 807
Delta R.T. 0.023 min
Lab File: 2w63194.D
Acq: 1 Feb 2023 5:58 pm

Tgt Ion:151 Resp: 63006

Ion	Ratio	Lower	Upper
151	100		
101	139.0	106.5	159.7
103	89.1	69.2	103.8

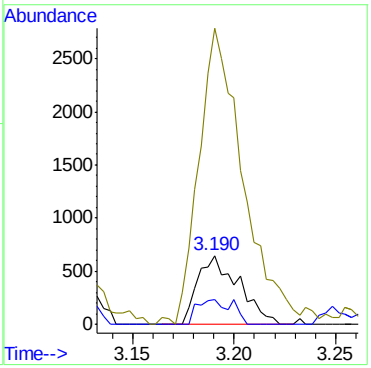


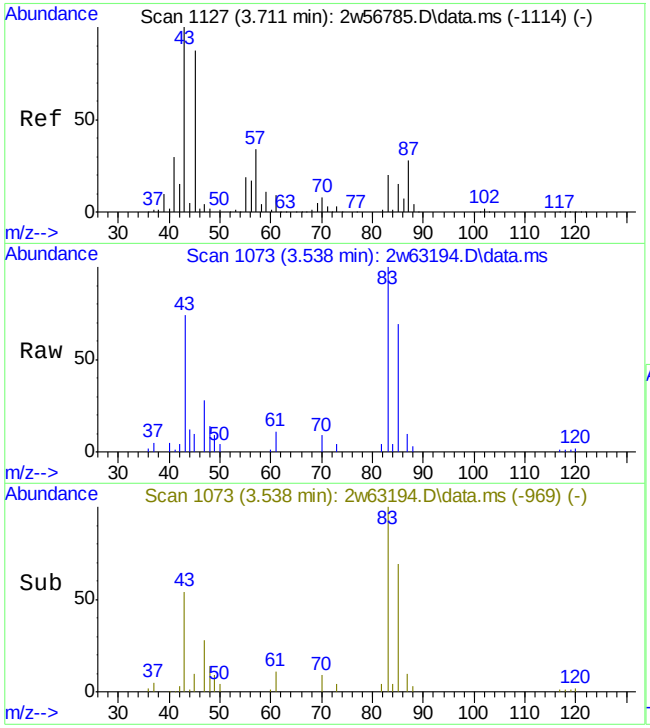


#41
METHYL ETHYL KETONE
Concen: 0.19 PPBV
RT: 3.190 min Scan# 965
Delta R.T. 0.036 min
Lab File: 2w63194.D
Acq: 1 Feb 2023 5:58 pm

Tgt Ion: 72 Resp: 904

Ion	Ratio	Lower	Upper
72	100		
57	0.0	29.1	43.7#
43	472.0	321.0	481.4

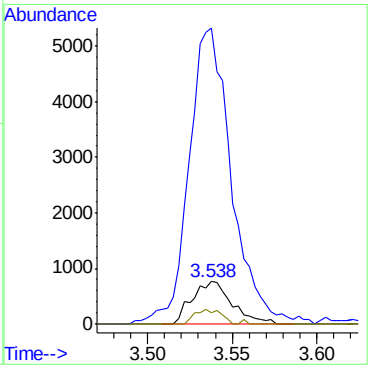


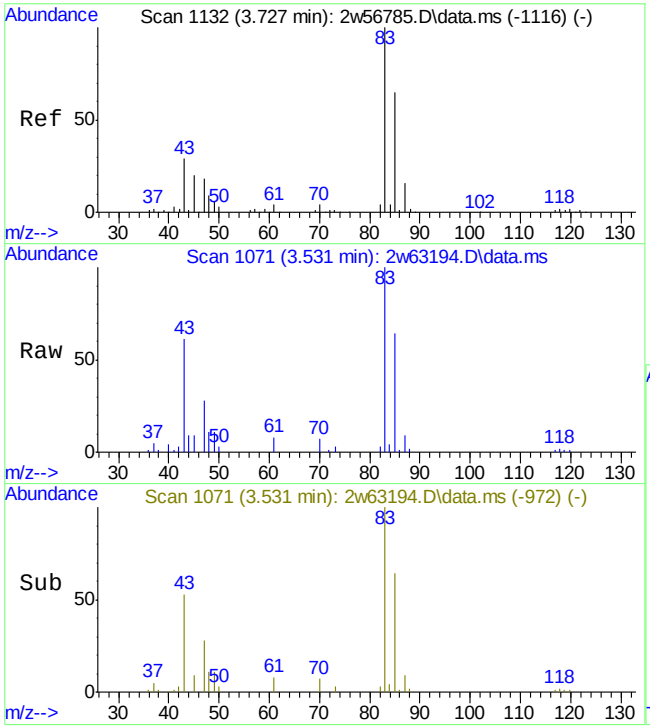


#44
ETHYL ACETATE
Concen: 0.38 PPBV
RT: 3.538 min Scan# 1073
Delta R.T. 0.036 min
Lab File: 2w63194.D
Acq: 1 Feb 2023 5:58 pm

Tgt Ion: 61 Resp: 1254

Ion	Ratio	Lower	Upper
61	100		
43	742.6	1054.2	1581.2#
88	0.0	34.4	51.6#

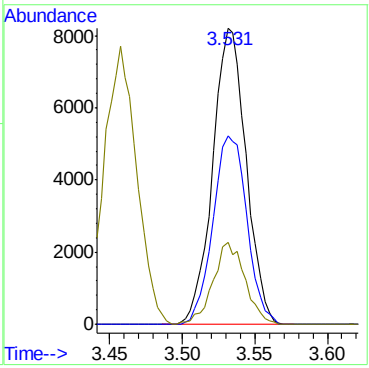




#46
CHLOROFORM
Concen: 0.59 PPBV
RT: 3.531 min Scan# 1071
Delta R.T. 0.020 min
Lab File: 2w63194.D
Acq: 1 Feb 2023 5:58 pm

Tgt Ion: 83 Resp: 13145

Ion	Ratio	Lower	Upper
83	100		
85	64.8	63.6	95.4
47	26.4	22.6	33.8



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\
Data File : 6W26997.D
Acq On : 8 Nov 2022 7:33 pm
Operator : thomash
Sample : scc(a1807),cp11924
Misc : MS63483,V6W1142,,,,,1
ALS Vial : 4 Sample Multiplier: 1

Quant Time: Nov 25 12:56:53 2022
Quant Method : C:\msdchem\1\methods\M6W1125.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Thu Oct 20 08:34:08 2022
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) BROMOCHLOROMETHANE	3.338	128	42731	10.00	PPBV	# 0.00
52) 1,4-DIFLUOROBENZENE	4.733	114	187943	10.00	PPBV	0.00
76) CHLOROBENZENE-D5	10.579	117	159540	10.00	PPBV	0.00
System Monitoring Compounds						
87) 4-BROMOFLUOROBENZENE	14.019	95	117139	10.51	PPBV	0.00
Target Compounds						Qvalue

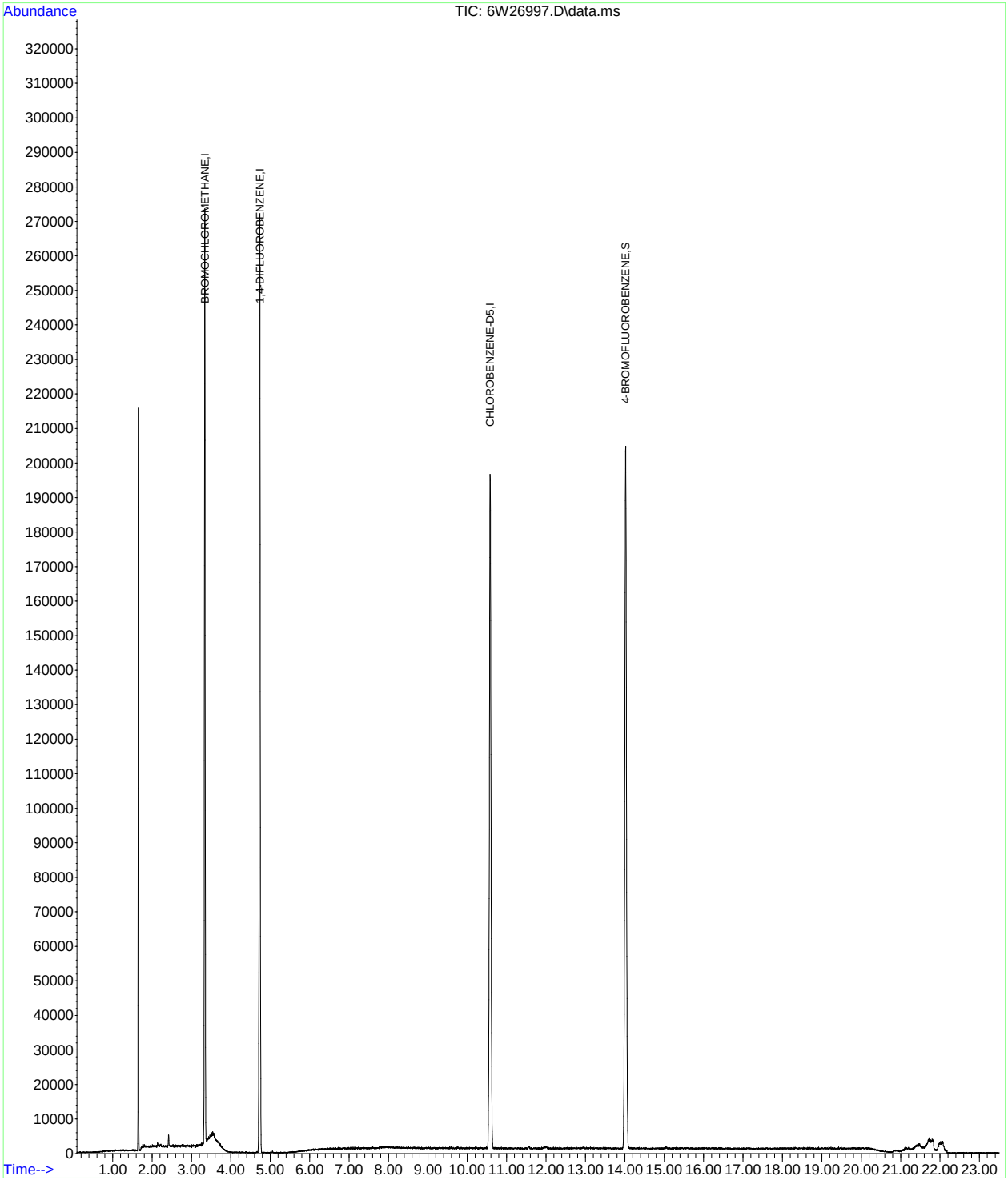
(#) = qualifier out of range (m) = manual integration (+) = signals summed

7.5.1
7

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\
Data File : 6W26997.D
Acq On : 8 Nov 2022 7:33 pm
Operator : thomash
Sample : scc(a1807),cp11924
Misc : MS63483,V6W1142,,,,,1
ALS Vial : 4 Sample Multiplier: 1

Quant Time: Nov 25 12:56:53 2022
Quant Method : C:\msdchem\1\methods\M6W1125.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Thu Oct 20 08:34:08 2022
Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\
Data File : 6W26998.D
Acq On : 8 Nov 2022 8:05 pm
Operator : thomash
Sample : scc(a1186),cp11914
Misc : MS63483,V6W1142,,,,,1
ALS Vial : 5 Sample Multiplier: 1

Quant Time: Nov 25 12:49:00 2022
Quant Method : C:\msdchem\1\methods\M6W1125.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Thu Oct 20 08:34:08 2022
Response via : Initial Calibration

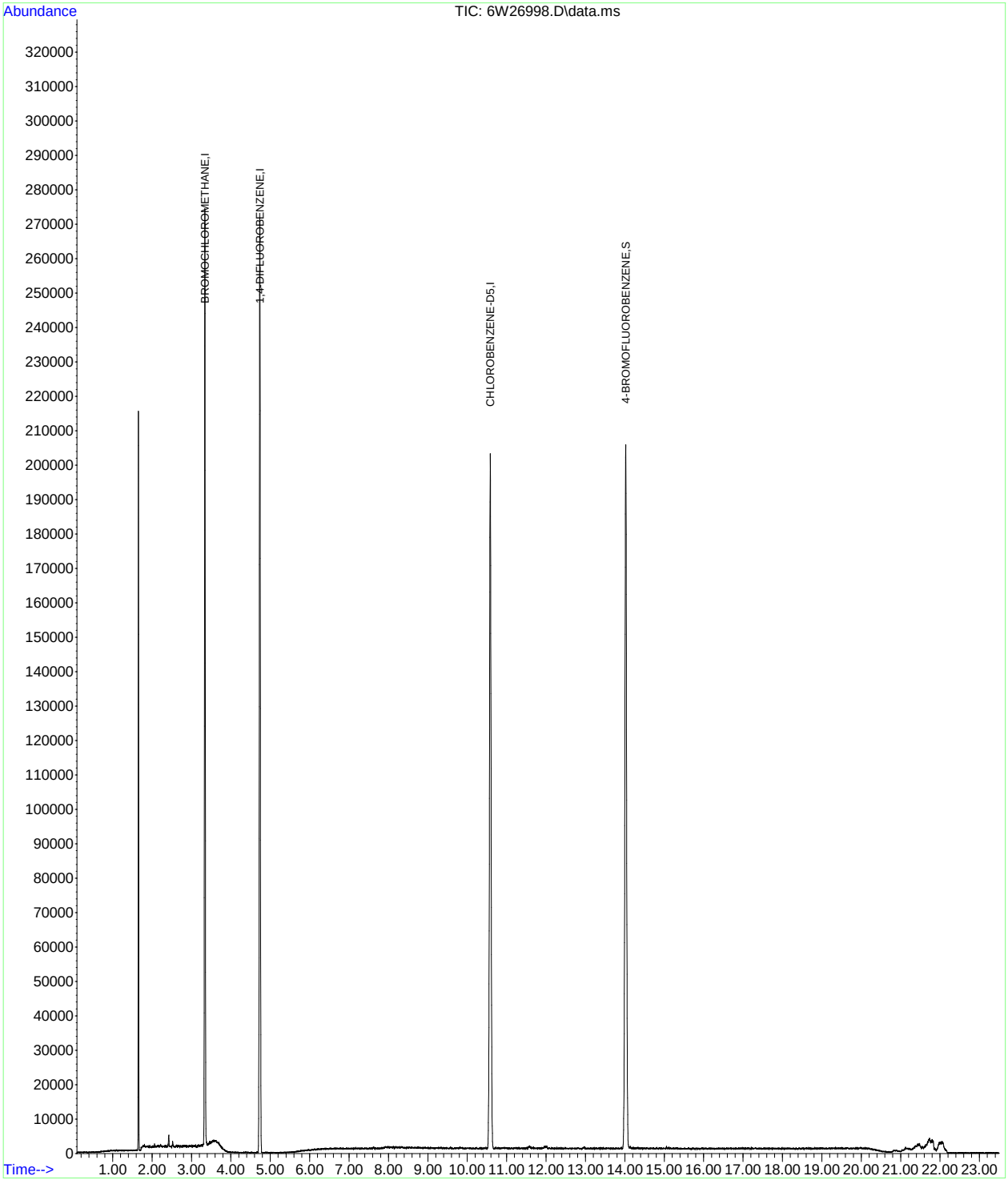
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) BROMOCHLOROMETHANE	3.338	128	42961	10.00	PPBV	# 0.00
52) 1,4-DIFLUOROBENZENE	4.733	114	189202	10.00	PPBV	0.00
76) CHLOROBENZENE-D5	10.585	117	162059	10.00	PPBV	0.00
System Monitoring Compounds						
87) 4-BROMOFLUOROBENZENE	14.026	95	118085	10.43	PPBV	0.00
Target Compounds						Qvalue

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

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\
Data File : 6W26998.D
Acq On : 8 Nov 2022 8:05 pm
Operator : thomash
Sample : scc(a1186),cp11914
Misc : MS63483,V6W1142,,,,,1
ALS Vial : 5 Sample Multiplier: 1

Quant Time: Nov 25 12:49:00 2022
Quant Method : C:\msdchem\1\methods\M6W1125.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Thu Oct 20 08:34:08 2022
Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\
Data File : 6W27128.D
Acq On : 23 Nov 2022 6:23 am
Operator : thomash
Sample : scc(a1065),cp11961
Misc : MS63992,V6W1146,400,,,,1
ALS Vial : 5 Sample Multiplier: 1

Quant Time: Nov 26 20:00:28 2022
Quant Method : C:\msdchem\1\methods\M6W1125.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Thu Oct 20 08:34:08 2022
Response via : Initial Calibration

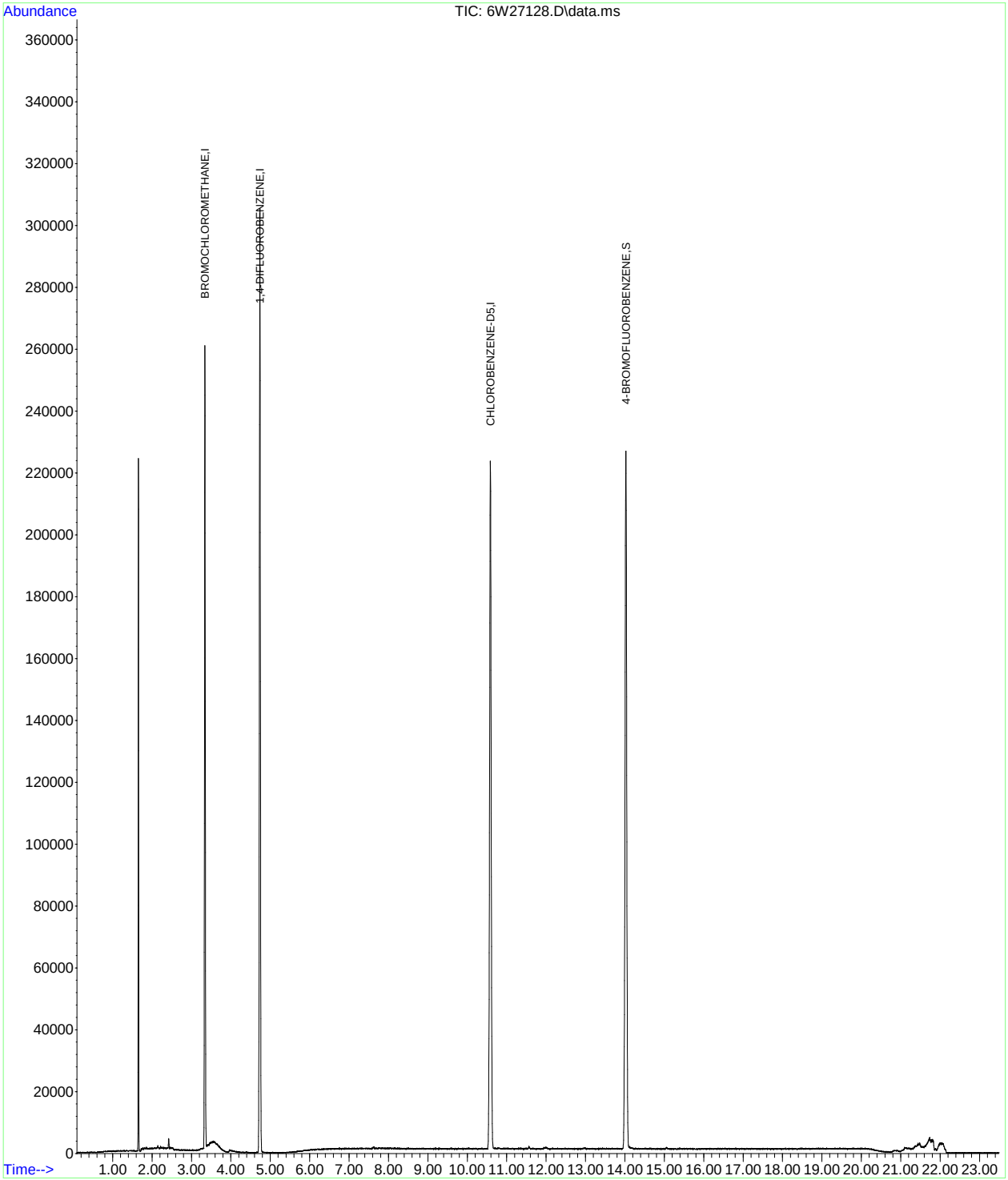
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) BROMOCHLOROMETHANE	3.342	128	50404	10.00	PPBV	# 0.00
52) 1,4-DIFLUOROBENZENE	4.737	114	232166	10.00	PPBV	0.00
76) CHLOROBENZENE-D5	10.589	117	198073	10.00	PPBV	0.00
System Monitoring Compounds						
87) 4-BROMOFLUOROBENZENE	14.026	95	134101	9.70	PPBV	0.00
Target Compounds						Qvalue

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

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\
Data File : 6W27128.D
Acq On : 23 Nov 2022 6:23 am
Operator : thomash
Sample : scc(a1065),cp11961
Misc : MS63992,V6W1146,400,,,,1
ALS Vial : 5 Sample Multiplier: 1

Quant Time: Nov 26 20:00:28 2022
Quant Method : C:\msdchem\1\methods\M6W1125.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Thu Oct 20 08:34:08 2022
Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\
Data File : 6W27325.D
Acq On : 29 Nov 2022 8:13 am
Operator : thomash
Sample : scc(a770),cp11975
Misc : MS64353,V6W1152,,,,,1
ALS Vial : 1 Sample Multiplier: 1

Quant Time: Dec 08 10:38:09 2022
Quant Method : C:\msdchem\1\methods\M6W1125.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Thu Oct 20 08:34:08 2022
Response via : Initial Calibration

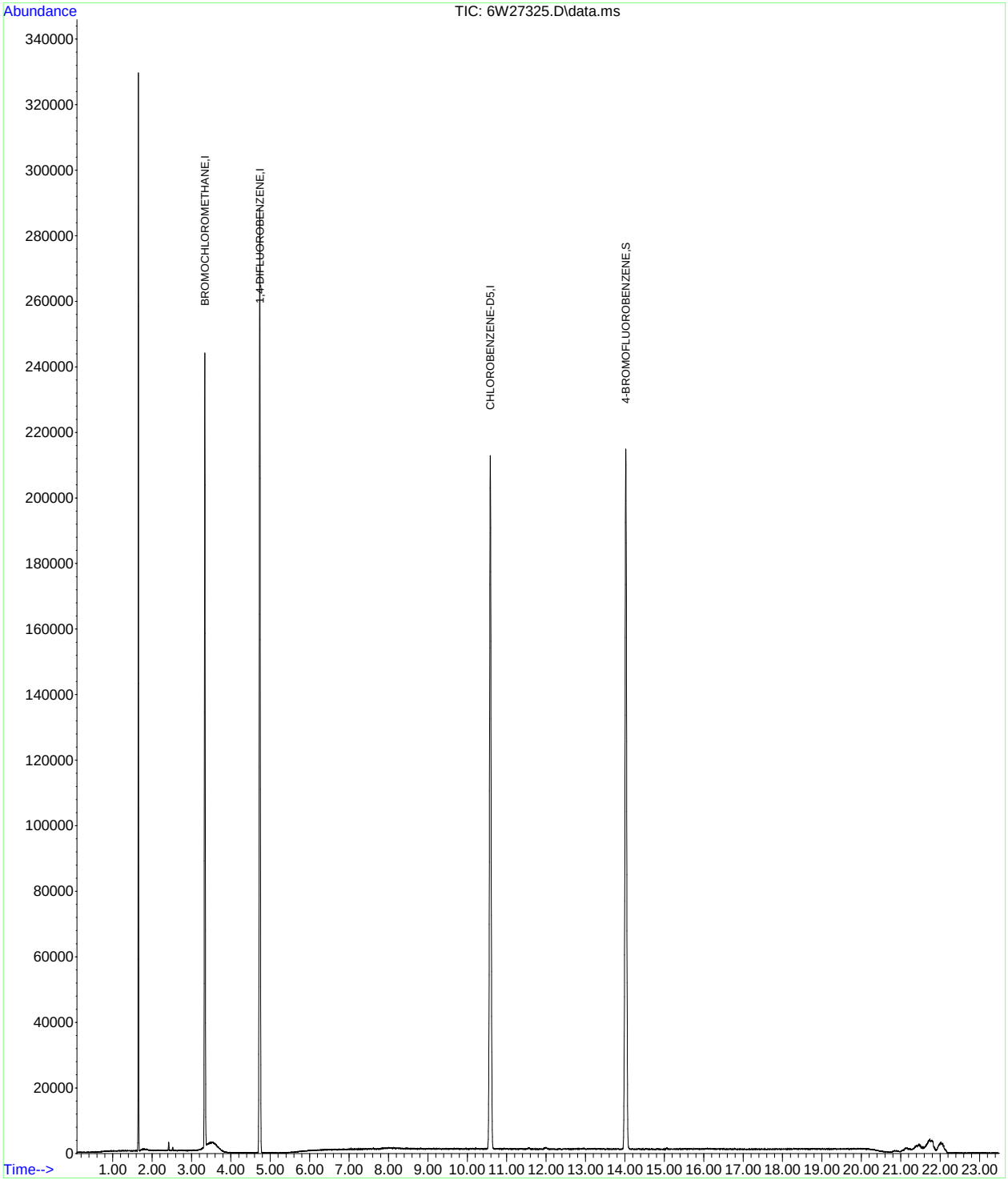
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) BROMOCHLOROMETHANE	3.338	128	50506	10.00	PPBV	# 0.00
52) 1,4-DIFLUOROBENZENE	4.734	114	230115	10.00	PPBV	0.00
76) CHLOROBENZENE-D5	10.582	117	195528	10.00	PPBV	0.00
System Monitoring Compounds						
87) 4-BROMOFLUOROBENZENE	14.020	95	125774	9.21	PPBV	0.00
Target Compounds						Qvalue

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

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\
Data File : 6W27325.D
Acq On : 29 Nov 2022 8:13 am
Operator : thomash
Sample : scc(a770),cp11975
Misc : MS64353,V6W1152,,,,,1
ALS Vial : 1 Sample Multiplier: 1

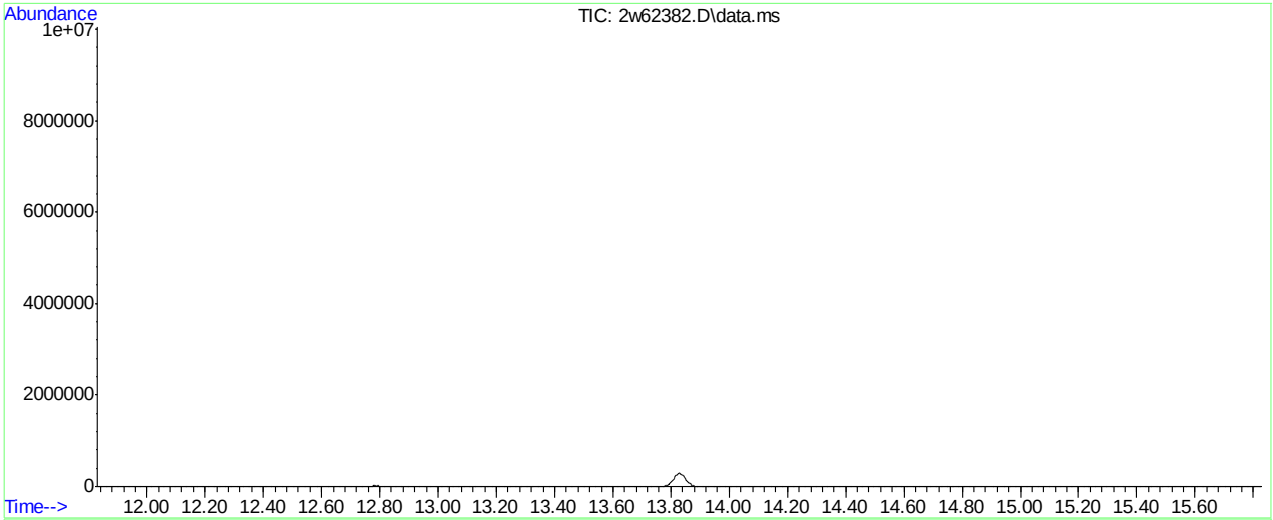
Quant Time: Dec 08 10:38:09 2022
Quant Method : C:\msdchem\1\methods\M6W1125.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Thu Oct 20 08:34:08 2022
Response via : Initial Calibration

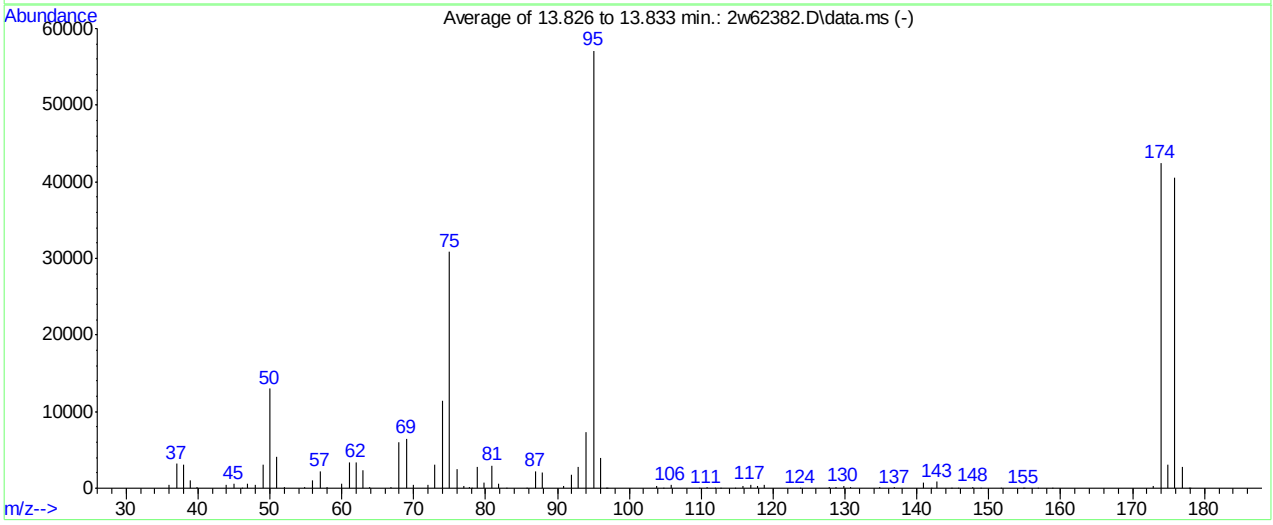


BFB

Data File : C:\msdchem\1\DATA\2w62382.D Vial: 1
Acq On : 14 Dec 2022 5:23 pm Operator: thomash
Sample : bfb Inst : MS2W
Misc : MS64821,V2w2776,,,,,1 Multiplr: 1.00
MS Integration Params: rteint.p

Method : C:\msdchem\1\METHODS\M2W2776.M (RTE Integrator)
Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um





AutoFind: Scans 4273, 4274, 4275; Background Corrected with Scan 4246

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
50	95	8	40	22.8	13015	PASS
75	95	30	66	54.0	30880	PASS
95	95	100	100	100.0	57157	PASS
96	95	5	9	6.8	3907	PASS
173	174	0.00	2	0.6	242	PASS
174	95	50	120	74.4	42512	PASS
175	174	4	9	7.2	3043	PASS
176	174	93	101	95.3	40504	PASS
177	176	5	9	6.8	2767	PASS

2w62382.D M2W2776.M Fri Dec 16 16:23:45 2022 GCMS2W

Average of 13.826 to 13.833 min.: 2w62382.D\data.ms
bfb
Modified:subtracted

m/z	abund.	m/z	abund.	m/z	abund.	m/z	abund.
36.00	508	50.00	13015	63.95	188	77.80	177
37.00	3191	51.00	4103	66.85	128	78.10	31
38.00	3078	52.00	135	68.00	5974	78.90	2816
39.00	1096	54.90	140	69.00	6480	79.85	720
39.90	89	55.95	1052	69.95	493	80.90	2937
44.00	407	57.00	2213	71.95	390	81.85	655
45.00	539	57.90	84	73.00	3018	82.85	65
46.10	42	59.95	656	74.00	11425	85.70	18
46.95	556	61.00	3393	75.00	30880	86.95	2203
47.95	388	62.00	3393	76.00	2512	87.95	2078
49.00	3065	63.00	2364	76.95	268	90.80	334

Average of 13.826 to 13.833 min.: 2w62382.D\data.ms
bfb
Modified:subtracted

m/z	abund.	m/z	abund.	m/z	abund.	m/z	abund.
91.95	1828	110.80	112	129.80	237	151.70	21
92.95	2809	111.90	22	130.85	81	154.80	74
94.00	7266	112.75	67	134.85	116	155.00	17
95.00	57157	114.70	55	136.90	122	156.80	68
96.00	3907	115.85	245	140.85	690	158.90	60
96.80	26	116.90	450	141.95	56	172.90	242
97.00	65	117.85	271	142.85	861	173.90	42512
103.80	369	118.80	411	144.85	58	174.90	3043
104.75	71	123.80	27	145.80	31	175.90	40504
105.80	392	127.80	187	147.80	183	176.90	2767
109.80	21	128.80	116	148.90	23	177.80	45

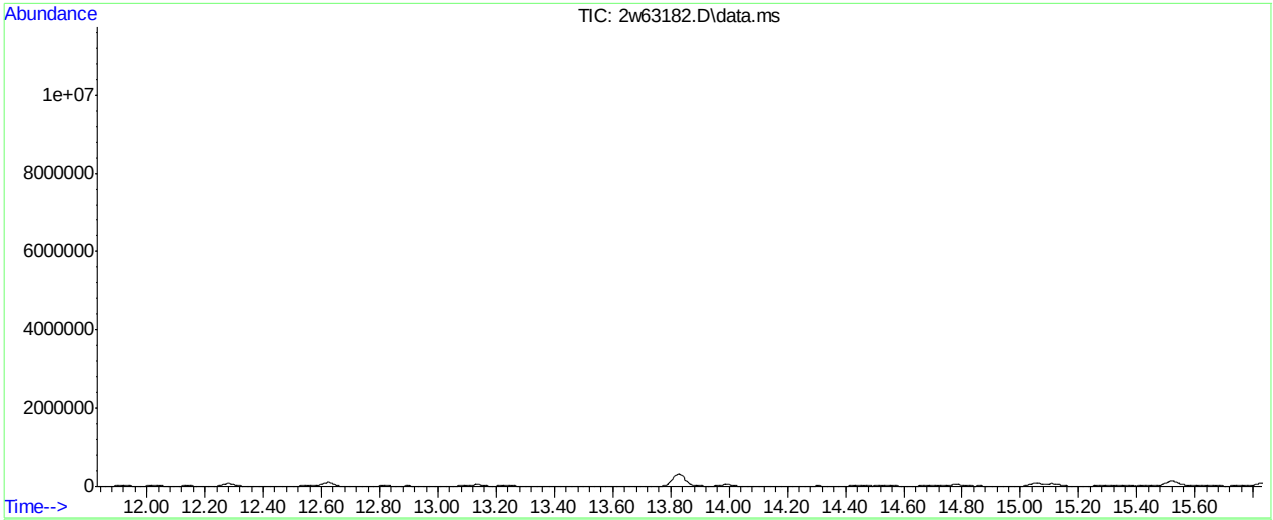
Average of 13.826 to 13.833 min.: 2w62382.D\data.ms
bfb
Modified:subtracted

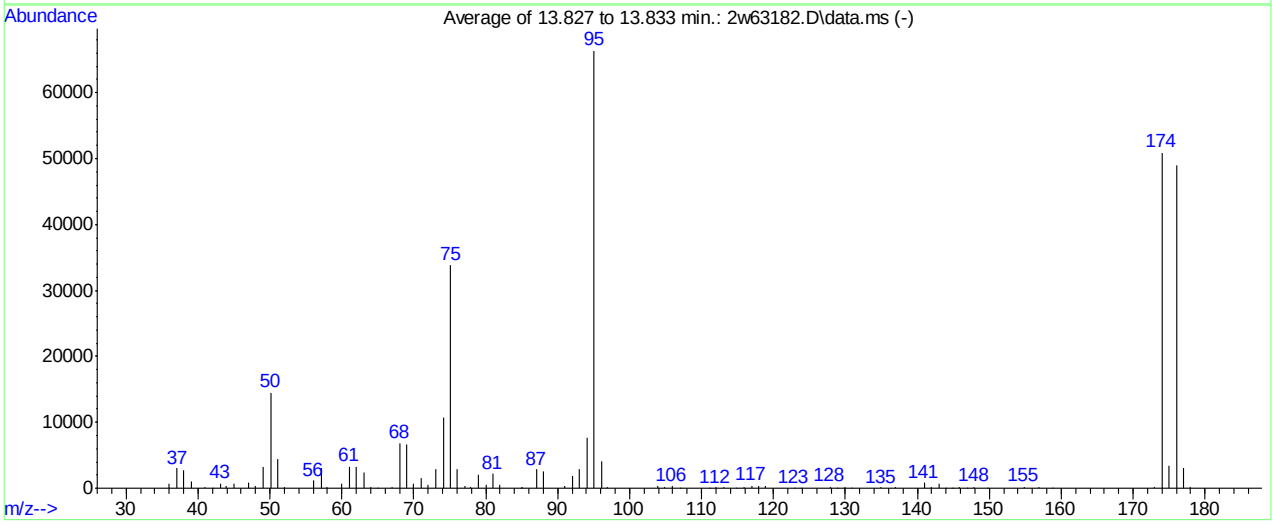
m/z	abund.	m/z	abund.	m/z	abund.	m/z	abund.
178.00	40						

BFB

Data File : C:\msdchem\1\DATA\2w63182.D Vial: 1
Acq On : 1 Feb 2023 8:45 am Operator: thomash
Sample : bfb Inst : MS2W
Misc : MS66176,v2w2809,,,,,1 Multiplr: 1.00
MS Integration Params: rteint.p

Method : C:\msdchem\1\METHODS\M2W2776.M (RTE Integrator)
Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um





AutoFind: Scans 4273, 4274, 4275; Background Corrected with Scan 4240

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
50	95	8	40	21.8	14467	PASS
75	95	30	66	51.1	33928	PASS
95	95	100	100	100.0	66405	PASS
96	95	5	9	6.2	4114	PASS
173	174	0.00	2	0.5	246	PASS
174	95	50	120	76.7	50931	PASS
175	174	4	9	6.7	3399	PASS
176	174	93	101	96.3	49035	PASS
177	176	5	9	6.3	3070	PASS

2w63182.D M2W2776.M Thu Feb 02 14:46:02 2023 GCMS2W

Average of 13.827 to 13.833 min.: 2w63182.D\data.ms
bfb
Modified:subtracted

m/z	abund.	m/z	abund.	m/z	abund.	m/z	abund.
36.00	649	49.05	3172	64.00	202	76.05	2899
37.10	3031	50.10	14467	65.00	18	77.05	380
38.05	2773	51.10	4374	67.05	160	77.95	246
39.05	1059	52.05	169	68.00	6827	78.95	2065
41.00	188	56.00	1141	69.00	6596	80.00	544
42.10	56	57.10	3114	70.00	697	81.00	2135
43.10	760	57.95	125	71.10	1482	81.95	434
43.95	349	60.00	659	71.95	446	84.90	46
45.00	610	61.05	3296	73.05	2821	85.10	94
47.05	855	62.05	3251	74.10	10712	87.00	2835
47.95	367	63.05	2393	75.10	33928	88.00	2565

Average of 13.827 to 13.833 min.: 2w63182.D\data.ms
bfb
Modified:subtracted

m/z	abund.	m/z	abund.	m/z	abund.	m/z	abund.
90.90	295	111.10	86	128.90	91	146.90	23
92.00	1919	112.00	127	129.90	198	147.90	175
93.00	2971	113.05	213	130.85	90	149.70	55
94.05	7719	114.85	64	134.95	123	154.85	172
95.05	66405	115.95	252	136.90	127	156.90	96
96.05	4114	116.95	373	140.95	790	158.80	54
96.95	129	117.90	298	141.90	99	172.95	246
103.95	313	118.85	345	142.95	631	174.00	50931
104.85	120	122.90	40	143.90	18	175.00	3399
105.90	318	123.90	20	144.85	70	176.00	49035
107.00	56	127.90	203	145.85	94	177.00	3070

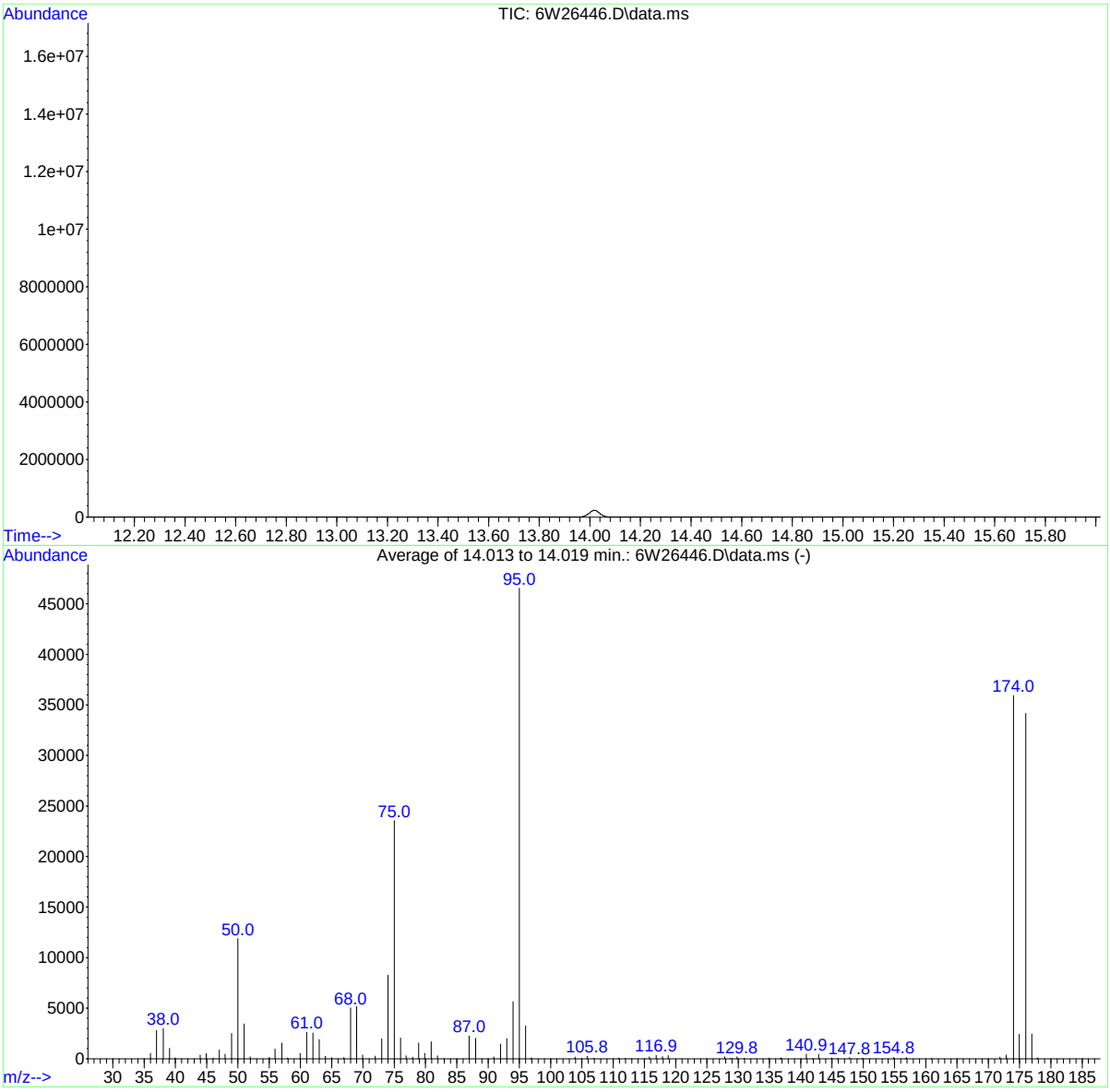
Average of 13.827 to 13.833 min.: 2w63182.D\data.ms
bfb
Modified:subtracted

m/z	abund.	m/z	abund.	m/z	abund.	m/z	abund.
177.90	96						

BFB

Data File : C:\msdchem\1\data\6W26446.D Vial: 5
Acq On : 19 Oct 2022 5:44 pm Operator: thomash
Sample : bfb Inst : GCMS6W
Misc : MS63121,V6W1125,,,,,1 Multiplr: 1.00
MS Integration Params: rteint.p

Method : C:\msdchem\1\methods\M6W1125.M (RTE Integrator)
Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um



AutoFind: Scans 4331, 4332, 4333; Background Corrected with Scan 4304

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
50	95	8	40	25.6	11894	PASS
75	95	30	66	50.6	23544	PASS
95	95	100	100	100.0	46541	PASS
96	95	5	9	7.0	3244	PASS
173	174	0.00	2	1.0	352	PASS
174	95	50	120	77.2	35928	PASS
175	174	4	9	6.8	2432	PASS
176	174	93	101	95.1	34165	PASS
177	176	5	9	7.1	2442	PASS

6W26446.D M6W1125.M Thu Oct 20 09:35:17 2022

Average of 14.013 to 14.019 min.: 6W26446.D\data.ms
bfb
Modified:subtracted

m/z	abund.	m/z	abund.	m/z	abund.	m/z	abund.
36.00	546	50.00	11894	63.95	247	76.90	286
37.00	2807	51.00	3433	65.00	125	77.95	172
38.05	3001	51.95	185	66.95	113	78.90	1543
39.05	1041	55.00	126	68.00	5020	79.85	527
39.95	91	55.95	965	69.00	5150	80.90	1687
43.95	372	57.00	1557	69.95	355	81.90	284
44.95	508	57.95	74	71.95	267	82.90	17
46.05	53	59.95	539	73.00	1986	86.95	2250
47.00	861	61.00	2622	74.00	8253	88.00	2020
47.95	437	62.00	2554	75.00	23544	90.90	189
49.00	2485	63.00	1902	76.00	2043	92.00	1449

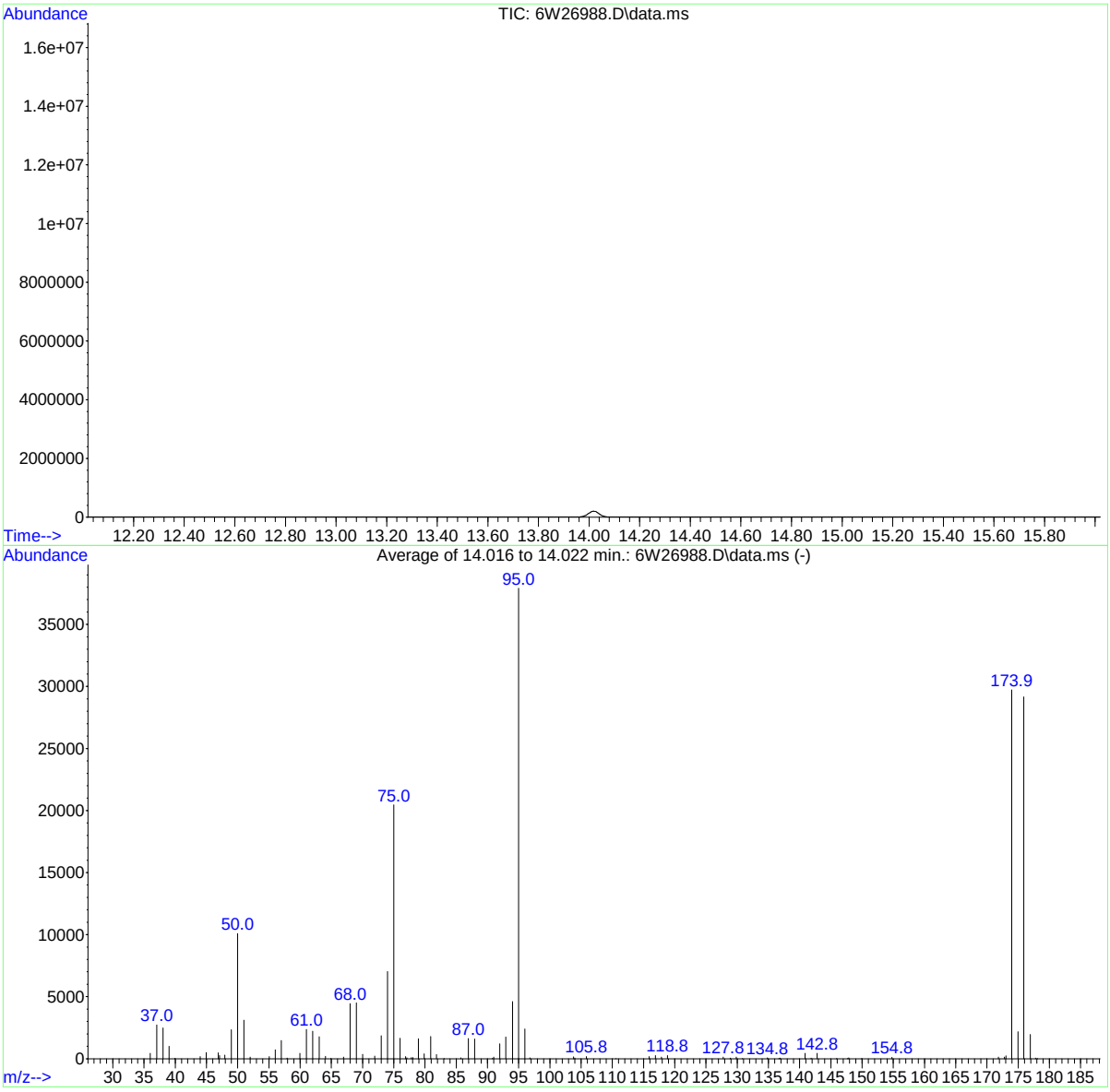
Average of 14.013 to 14.019 min.: 6W26446.D\data.ms
bfb
Modified:subtracted

m/z	abund.	m/z	abund.	m/z	abund.	m/z	abund.
93.00	2011	113.00	23	136.85	76	160.90	35
94.00	5659	115.80	178	140.90	450	171.85	167
95.00	46541	116.90	333	141.90	18	172.85	352
96.00	3244	117.90	205	142.85	442	174.00	35928
96.90	83	118.80	305	144.95	79	174.95	2432
103.90	155	127.85	190	145.90	28	176.00	34165
104.95	39	128.80	72	147.80	114	176.95	2442
105.85	229	129.80	191	149.80	50	177.85	82
106.90	48	130.95	40	154.85	129		
110.85	70	134.85	74	156.70	18		
111.95	40	136.70	24	156.90	103		

BFB

Data File : C:\msdchem\1\data\6W26988.D Vial: 3
Acq On : 8 Nov 2022 11:50 am Operator: thomash
Sample : bfb Inst : GCMS6W
Misc : MS63127,V6W1142,,,,,1 Multiplr: 1.00
MS Integration Params: rteint.p

Method : C:\msdchem\1\methods\M6W1125.M (RTE Integrator)
Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um



AutoFind: Scans 4332, 4333, 4334; Background Corrected with Scan 4304

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
50	95	8	40	26.6	10078	PASS
75	95	30	66	54.0	20464	PASS
95	95	100	100	100.0	37915	PASS
96	95	5	9	6.3	2397	PASS
173	174	0.00	2	0.8	238	PASS
174	95	50	120	78.4	29728	PASS
175	174	4	9	7.3	2169	PASS
176	174	93	101	98.1	29152	PASS
177	176	5	9	6.7	1948	PASS

6W26988.D M6W1125.M Tue Nov 15 16:16:25 2022

Average of 14.016 to 14.022 min.: 6W26988.D\data.ms
bfb
Modified:subtracted

m/z	abund.	m/z	abund.	m/z	abund.	m/z	abund.
36.00	442	50.00	10078	64.05	192	76.90	168
37.05	2724	51.00	3098	64.90	18	77.10	74
38.05	2477	52.00	142	66.95	142	77.80	86
39.00	994	55.05	168	68.00	4448	78.05	101
39.95	31	56.00	723	69.00	4506	78.95	1615
44.00	182	57.00	1464	70.00	349	79.85	387
44.95	500	57.90	46	71.95	223	80.90	1789
46.90	466	59.95	440	73.00	1861	81.85	339
47.10	244	61.00	2353	74.00	7037	83.10	17
47.95	300	62.00	2208	75.00	20464	85.75	64
49.00	2332	63.05	1767	76.00	1644	86.95	1637

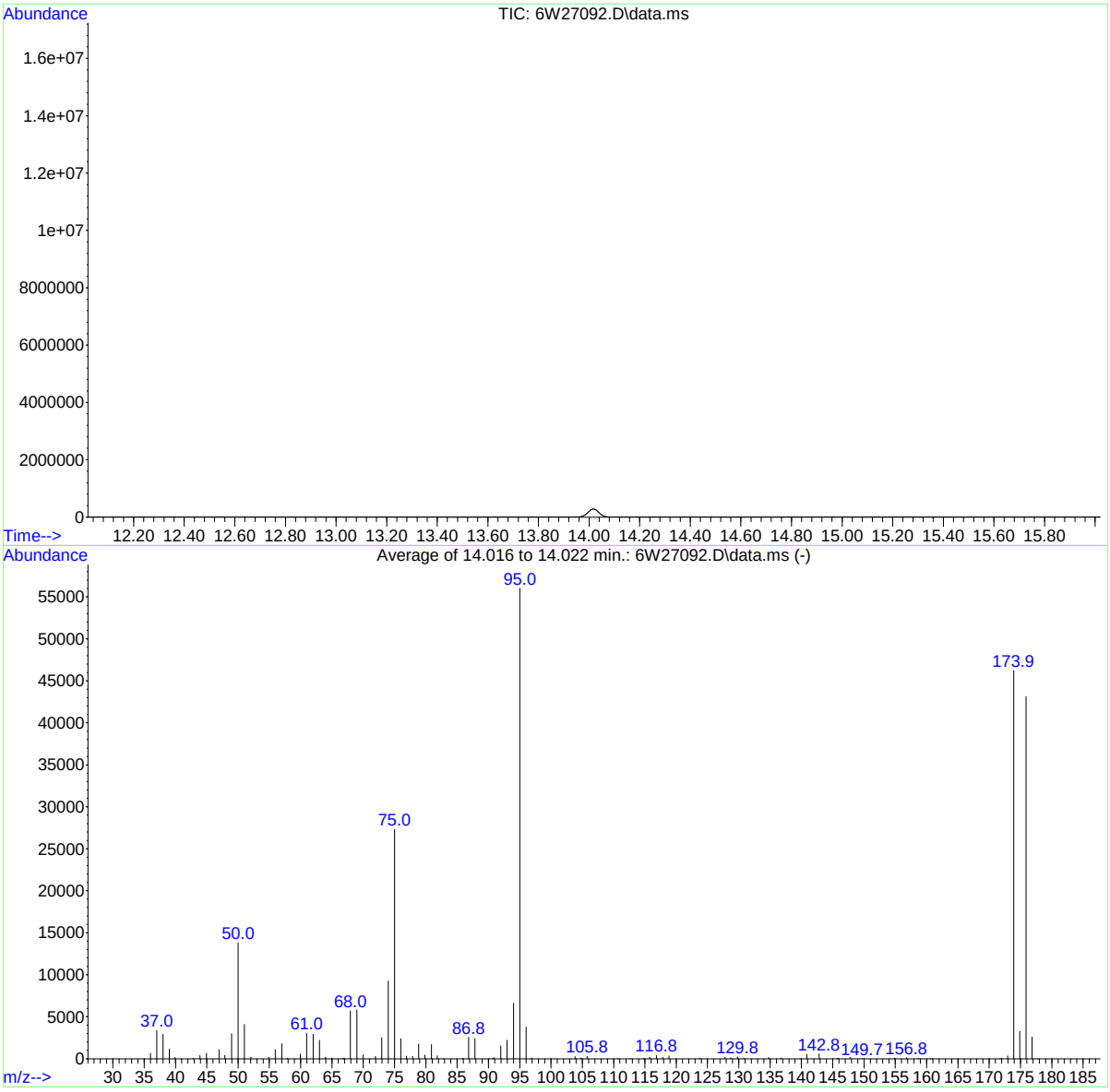
Average of 14.016 to 14.022 min.: 6W26988.D\data.ms
bfb
Modified:subtracted

m/z	abund.	m/z	abund.	m/z	abund.	m/z	abund.
87.95	1580	105.85	164	136.70	25	172.80	128
90.80	37	110.60	18	136.85	52	173.05	238
91.00	138	115.90	182	140.85	429	173.95	29728
91.95	1203	116.90	248	141.85	47	174.95	2169
92.95	1744	117.85	132	142.80	438	175.90	29152
94.00	4608	118.85	254	145.90	18	176.95	1948
95.00	37915	127.75	138	147.70	33	177.80	55
96.00	2397	128.90	55	147.85	62	178.10	19
96.80	70	129.85	127	149.90	19		
103.80	152	130.80	17	154.80	116		
104.00	50	134.85	78	171.85	138		

BFB

Data File : C:\msdchem\1\data\6W27092.D Vial: 1
Acq On : 22 Nov 2022 8:39 am Operator: thomash
Sample : bfb Inst : GCMS6W
Misc : MS63734,V6W1146,,,,,1 Multiplr: 1.00
MS Integration Params: rteint.p

Method : C:\msdchem\1\methods\M6W1125.M (RTE Integrator)
Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um



AutoFind: Scans 4332, 4333, 4334; Background Corrected with Scan 4304

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
50	95	8	40	24.6	13793	PASS
75	95	30	66	48.7	27269	PASS
95	95	100	100	100.0	56024	PASS
96	95	5	9	6.7	3767	PASS
173	174	0.00	2	0.8	348	PASS
174	95	50	120	82.5	46229	PASS
175	174	4	9	7.1	3274	PASS
176	174	93	101	93.3	43128	PASS
177	176	5	9	6.0	2590	PASS

6W27092.D M6W1125.M Tue Nov 22 14:40:54 2022

Average of 14.016 to 14.022 min.: 6W27092.D\data.ms
bfb
Modified:subtracted

m/z	abund.	m/z	abund.	m/z	abund.	m/z	abund.
36.00	655	48.95	2965	63.00	2190	75.00	27269
37.00	3366	50.00	13793	63.95	196	76.00	2374
38.00	2924	51.00	4073	64.95	72	76.90	310
39.00	1166	52.05	182	66.70	38	77.90	298
39.90	140	54.90	178	66.95	87	78.85	1760
41.00	19	55.95	1077	67.95	5700	79.85	441
42.80	40	57.00	1771	69.00	5781	80.90	1697
43.90	367	57.90	63	70.00	470	81.80	334
44.95	659	59.95	542	71.95	280	82.80	20
46.95	1063	60.95	3014	72.95	2489	85.90	48
47.90	418	62.00	2931	74.00	9242	86.85	2550

Average of 14.016 to 14.022 min.: 6W27092.D\data.ms
bfb
Modified:subtracted

m/z	abund.	m/z	abund.	m/z	abund.	m/z	abund.
87.85	2365	105.75	270	129.80	229	154.85	89
90.70	50	110.75	59	130.80	78	156.80	105
90.90	130	112.70	17	134.75	127	158.70	46
91.95	1546	114.80	47	136.75	98	160.60	20
92.95	2185	115.75	208	139.80	18	160.90	22
94.00	6587	116.85	389	140.85	486	171.70	19
95.00	56024	117.85	172	142.85	572	171.95	75
96.00	3767	118.85	335	145.70	32	172.95	348
96.90	96	123.75	70	145.90	33	173.90	46229
103.85	242	127.80	208	147.75	179	174.90	3274
104.80	116	128.70	111	149.70	22	175.90	43128

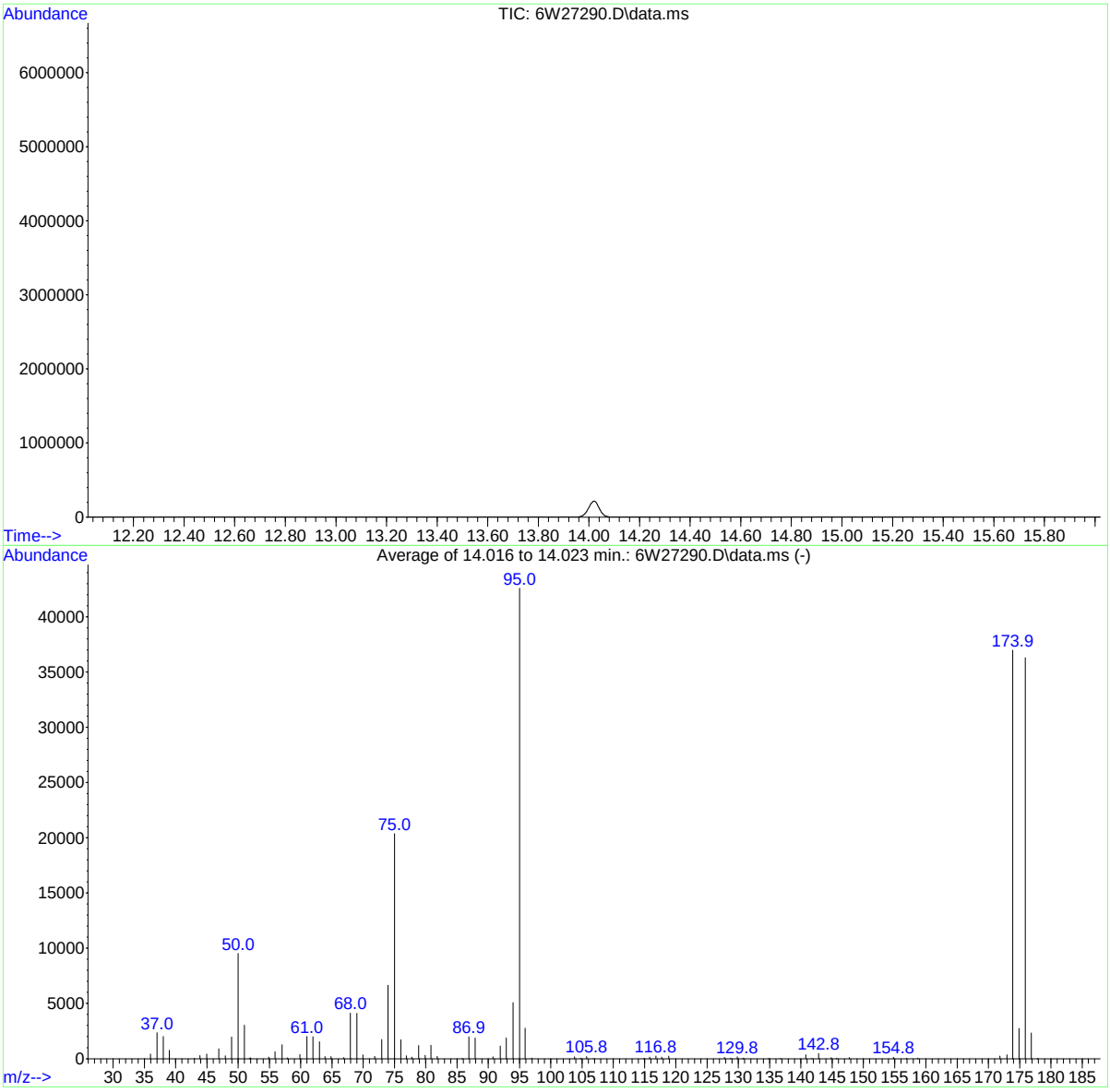
Average of 14.016 to 14.022 min.: 6W27092.D\data.ms
bfb
Modified:subtracted

m/z	abund.	m/z	abund.	m/z	abund.	m/z	abund.
176.85	2590						
177.70	31						

BFB

Data File : C:\msdchem\1\data\6W27290.D Vial: 17
Acq On : 28 Nov 2022 11:58 am Operator: thomash
Sample : bfb Inst : GCMS6W
Misc : MS64243,V6W1152,,,,,1 Multiplr: 1.00
MS Integration Params: rteint.p

Method : C:\msdchem\1\methods\M6W1125.M (RTE Integrator)
Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um



AutoFind: Scans 4332, 4333, 4334; Background Corrected with Scan 4306

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
50	95	8	40	22.4	9522	PASS
75	95	30	66	47.8	20360	PASS
95	95	100	100	100.0	42576	PASS
96	95	5	9	6.5	2763	PASS
173	174	0.00	2	1.0	354	PASS
174	95	50	120	86.8	36965	PASS
175	174	4	9	7.4	2745	PASS
176	174	93	101	98.1	36280	PASS
177	176	5	9	6.4	2339	PASS

6W27290.D M6W1125.M Mon Nov 28 15:02:38 2022

Average of 14.016 to 14.023 min.: 6W27290.D\data.ms
bfb
Modified:subtracted

m/z	abund.	m/z	abund.	m/z	abund.	m/z	abund.
35.95	421	51.00	3039	63.90	190	76.90	257
37.00	2346	51.80	38	64.85	184	77.80	142
38.00	2004	52.00	74	66.85	95	78.85	1184
39.00	767	54.90	154	67.95	4131	79.90	306
43.00	33	55.90	633	69.00	4093	80.85	1212
43.90	294	57.00	1255	69.95	342	81.85	223
44.95	426	57.85	70	71.85	213	85.80	36
46.90	897	59.85	376	72.95	1738	86.90	1989
47.95	268	61.00	2013	73.95	6645	87.90	1886
48.95	1962	61.95	1982	75.00	20360	90.75	168
50.00	9522	63.00	1539	76.00	1710	91.90	1154

Average of 14.016 to 14.023 min.: 6W27290.D\data.ms
bfb
Modified:subtracted

m/z	abund.	m/z	abund.	m/z	abund.	m/z	abund.
92.90	1884	116.80	240	141.75	43	174.90	2745
93.95	5068	117.75	150	142.85	465	175.90	36280
95.00	42576	118.85	228	144.85	101	176.85	2339
95.90	2763	127.80	134	145.75	67	177.85	45
96.95	63	128.80	52	147.75	93		
103.80	170	129.85	161	154.80	125		
104.75	60	130.70	22	156.90	34		
105.75	184	130.85	52	158.70	51		
106.80	19	134.85	46	171.85	244		
114.90	47	136.75	40	172.95	354		
115.80	156	140.80	355	173.90	36965		

Manual Integrations APPROVED (compounds with "m" flag)
Kanya Veerawat 12/19/22 12:10

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\
Data File : 2w62383.D
Acq On : 14 Dec 2022 5:55 pm
Operator : thomash
Sample : ic2776-0.04
Misc : MS64821,V2w2776,,,,,1
ALS Vial : 1 Sample Multiplier: 1

Quant Time: Dec 16 16:21:31 2022
Quant Method : C:\msdchem\1\METHODS\M2W2776.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Fri Dec 16 07:28:46 2022
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) BROMOCHLOROMETHANE	3.438	128	51667	10.00	PPBV	0.00
52) 1,4-DIFLUOROBENZENE	4.765	114	263205	10.00	PPBV	0.00
76) CHLOROBENZENE-D5	10.447	117	235091	10.00	PPBV	0.00
System Monitoring Compounds						
87) 4-BROMOFLUOROBENZENE	13.826	95	180123	9.88	PPBV	0.00
Target Compounds						Qvalue
6) DICHLORODIFLUOROMETHANE	1.795	85	1015	0.04	PPBV #	48
8) 1-CHLORO-1,1-DIFLUOROE...	1.833	65	710	0.04	PPBV #	27
9) FREON 114	1.868	85	755	0.04	PPBV #	80
16) DICHLOROFLUOROMETHANE	2.106	67	695	0.04	PPBV #	52
19) FREON 123	2.238	83	727	0.04	PPBV #	90
21) TRICHLOROFLUOROMETHANE	2.325	101	925	0.04	PPBV #	90
25) IODOMETHANE	2.502	142	823	0.04	PPBV #	30
27) CARBON DISULFIDE	2.663	76	914	0.03	PPBV #	1
36) METHYL TERTIARY BUTYL ...	3.032	73	1000	0.04	PPBV #	84
40) 1,1-DICHLOROETHANE	2.981	63	536	0.04	PPBV #	51
45) METHYL ACRYLATE	3.505	55	588	0.04	PPBV #	67
46) CHLOROFORM	3.512	83	634	0.03	PPBV #	75
47) 2,4-DIMETHYLPENTANE	4.029	57	578	0.04	PPBV #	31
48) 1,1,1-TRICHLOROETHANE	4.110	97	666	0.03	PPBV #	23
49) CARBON TETRACHLORIDE	4.544	117	545	0.03	PPBV #	12
55) TRICHLOROETHENE	5.364	95	347m	0.03	PPBV	
58) ETHYL ACRYLATE	5.257	55	581	0.03	PPBV #	74
59) BROMODICHLOROMETHANE	5.299	83	583	0.03	PPBV #	18
60) 2,2,4-TRIMETHYLPENTANE	5.447	57	1491	0.04	PPBV #	48
62) HEPTANE	5.778	43	604	0.04	PPBV #	18
67) 1,3-DICHLOROPROPANE	7.601	76	561	0.04	PPBV #	50
70) 2-HEXANONE	8.196	58	619	0.05	PPBV #	89
72) TETRACHLOROETHENE	9.302	164	367m	0.03	PPBV	
75) OCTANE	9.453	43	905	0.05	PPBV #	27
78) CHLOROBENZENE	10.521	112	865	0.03	PPBV #	30
82) STYRENE	12.575	104	960	0.04	PPBV #	32
83) NONANE	13.894	43	743	0.04	PPBV #	66
85) 1,1,2,2-TETRACHLOROETHANE	12.804	83	747	0.03	PPBV #	25
86) 1,2,3-TRICHLOROPROPANE	13.087	75	680	0.04	PPBV #	99
89) BROMOBENZENE	14.183	77	755	0.03	PPBV #	16
92) 4-ETHYLTOLUENE	16.067	105	1459	0.03	PPBV #	48
93) 1,3,5-TRIMETHYLBENZENE	16.231	105	1218	0.03	PPBV #	91
94) ALPHA-METHYLSTYRENE	16.453	118	562	0.03	PPBV #	60
96) 1,2,4-TRIMETHYLBENZENE	16.717	105	1387	0.03	PPBV	91
98) M-DICHLOROBENZENE	16.781	146	826	0.03	PPBV #	74
99) P-DICHLOROBENZENE	16.865	146	867	0.03	PPBV #	25
100) O-DICHLOROBENZENE	17.167	146	765	0.03	PPBV #	25
102) 1,2,3-TRIMETHYLBENZENE	17.109	105	1368	0.03	PPBV #	94
106) HEXACHLOROBUTADIENE	18.755	225	688	0.03	PPBV #	19

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\
Data File : 2w62383.D
Acq On : 14 Dec 2022 5:55 pm
Operator : thomash
Sample : ic2776-0.04
Misc : MS64821,V2w2776,,,,,1
ALS Vial : 1 Sample Multiplier: 1

Quant Time: Dec 16 16:21:31 2022
Quant Method : C:\msdchem\1\METHODS\M2W2776.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Fri Dec 16 07:28:46 2022
Response via : Initial Calibration

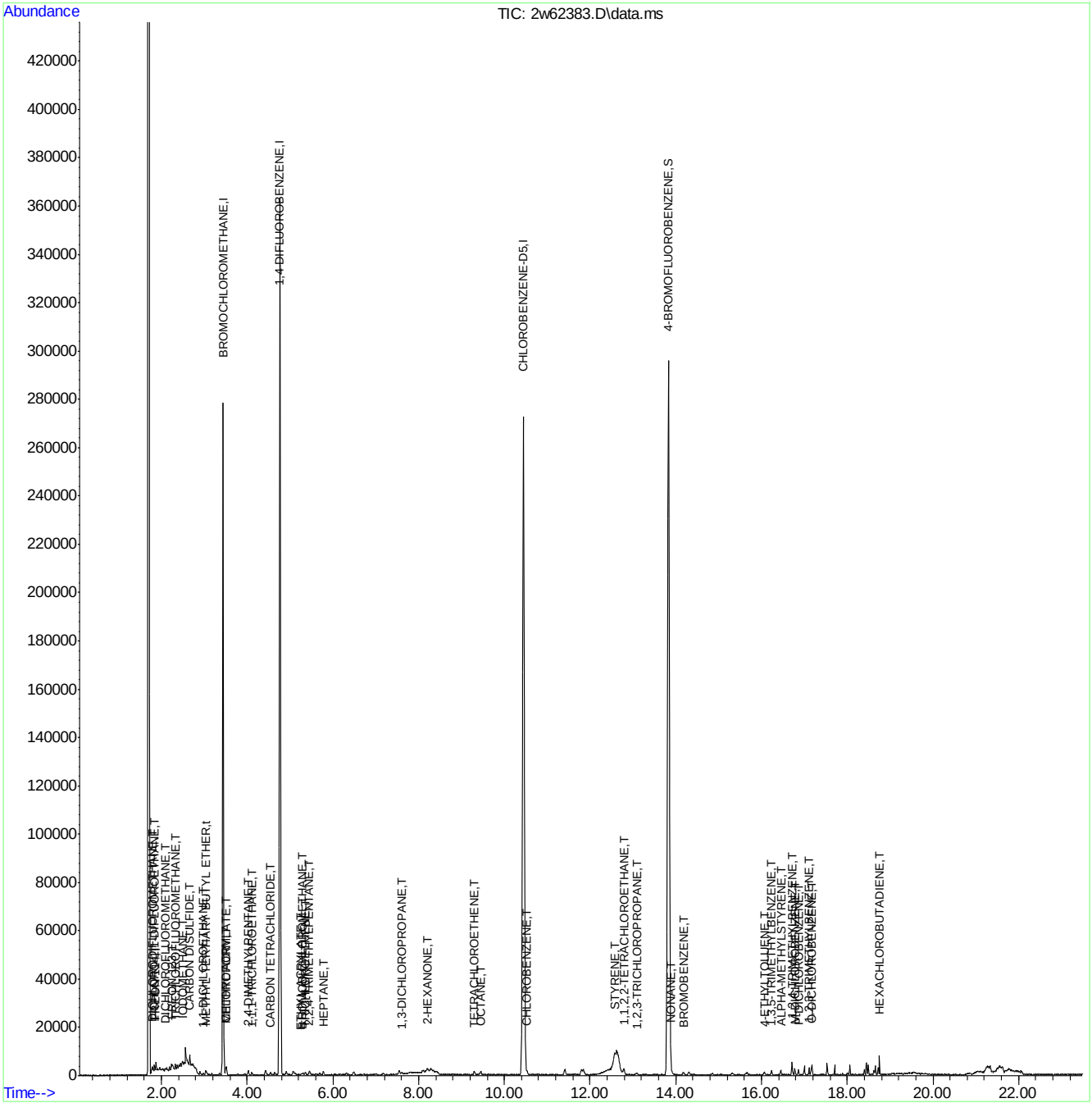
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)

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

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\
Data File : 2w62383.D
Acq On : 14 Dec 2022 5:55 pm
Operator : thomash
Sample : ic2776-0.04
Misc : MS64821,V2w2776,,,,,1
ALS Vial : 1 Sample Multiplier: 1

Quant Time: Dec 16 16:21:31 2022
Quant Method : C:\msdchem\1\METHODS\M2W2776.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Fri Dec 16 07:28:46 2022
Response via : Initial Calibration



Manual Integration Approval Summary

Sample Number: V2W2776-IC2776
Lab FileID: 2W62383.D
Injection Time: 12/14/22 17:55

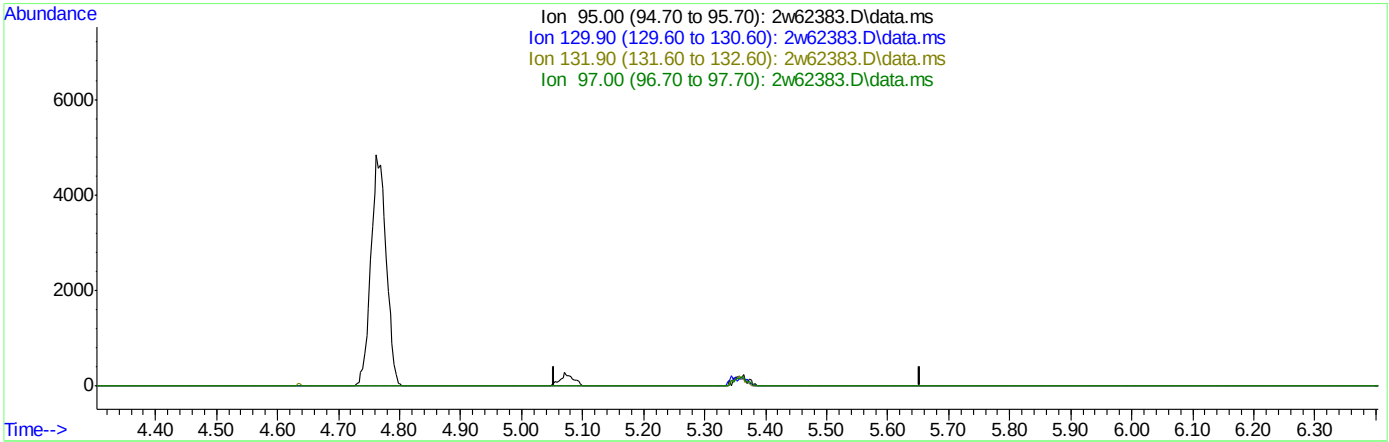
Method: TO-15
Analyst approved: 12/16/22 16:35 Thomas Hilbig
Supervisor approved: 12/19/22 12:10 Kanya Veerawat

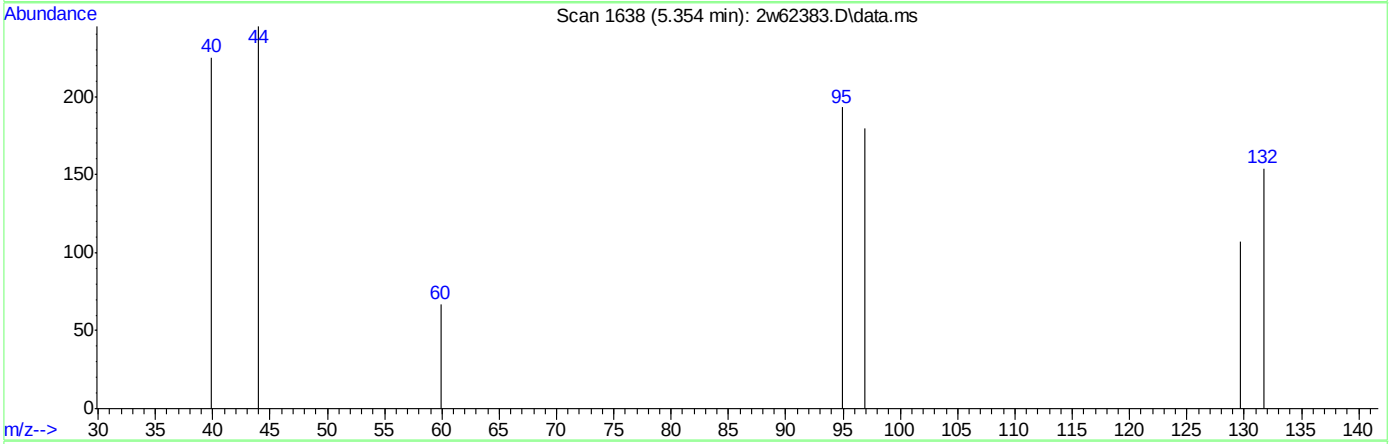
Parameter	CAS	Sig#	R.T. (min.)	Reason
Trichloroethylene	79-01-6		5.36	Missed peak
Tetrachloroethylene	127-18-4		9.30	Missed peak

Quantitation Report (Qedit)

Data Path : C:\msdchem\1\DATA\
Data File : 2w62383.D
Acq On : 14 Dec 2022 5:55 pm
Operator : thomash
Sample : ic2776-0.04
Misc : MS64821,V2w2776,,,,,1
ALS Vial : 1 Sample Multiplier: 1

Quant Time: Dec 16 07:29:51 2022
Quant Method : C:\msdchem\1\METHODS\M2W2776.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Fri Dec 16 07:28:46 2022
Response via : Initial Calibration





TIC: 2w62383.D\data.ms

(55) TRICHLOROETHENE (T)

5.354min (-5.354) 0.00PPBV

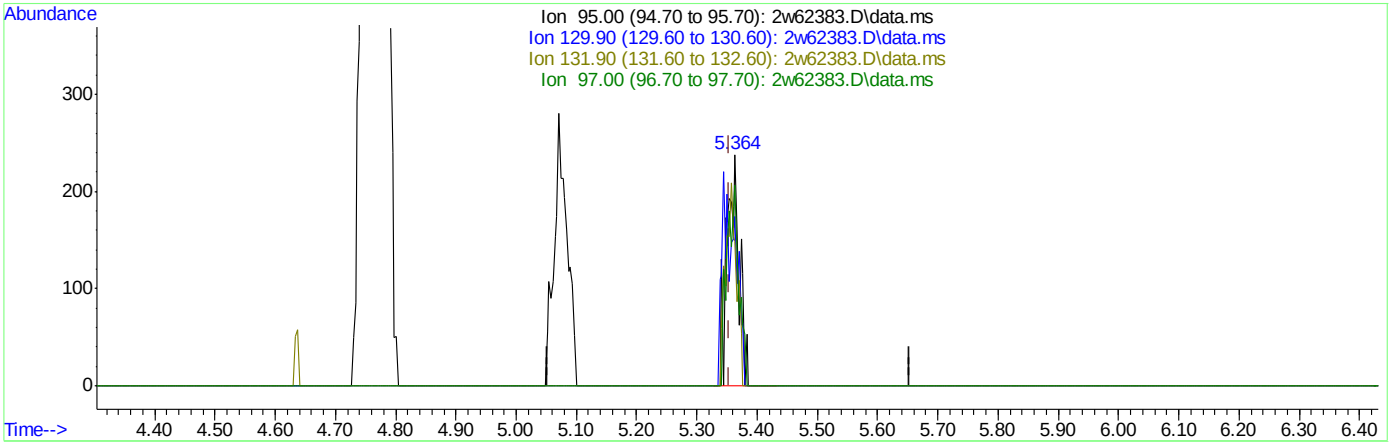
response 0

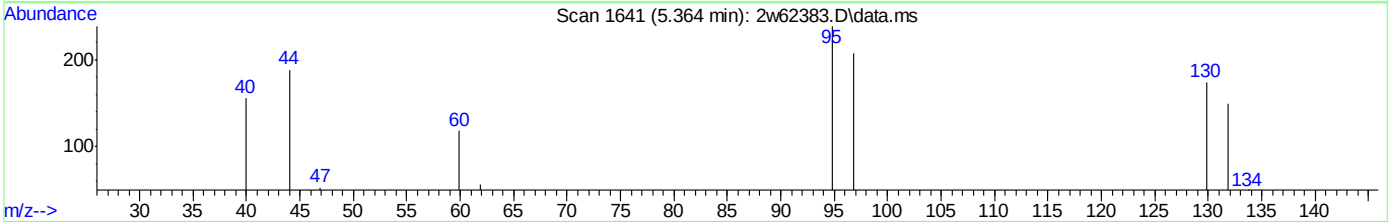
Ion	Exp%	Act%
95.00	100	0.00
129.90	103.50	0.00#
131.90	99.10	0.00#
97.00	65.00	0.00#

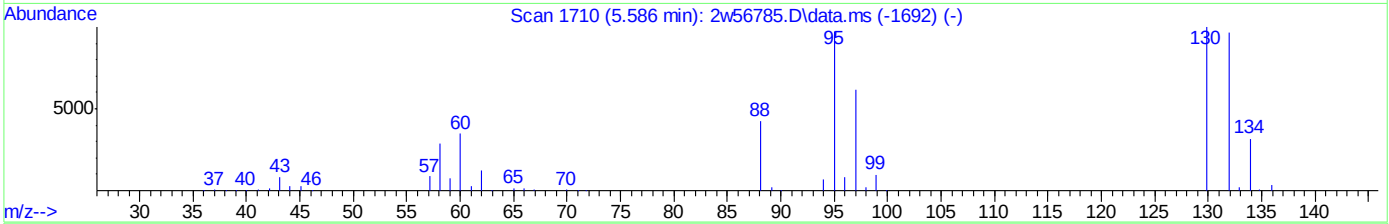
Quantitation Report (Qedit)

Data Path : C:\msdchem\1\DATA\
Data File : 2w62383.D
Acq On : 14 Dec 2022 5:55 pm
Operator : thomash
Sample : ic2776-0.04
Misc : MS64821,V2w2776,,,,,1
ALS Vial : 1 Sample Multiplier: 1

Quant Time: Dec 16 07:29:51 2022
Quant Method : C:\msdchem\1\METHODS\M2W2776.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Fri Dec 16 07:28:46 2022
Response via : Initial Calibration







TIC: 2w62383.D\data.ms

(55) TRICHLOROETHENE (T)

5.364min (+0.010) 0.03PPBV m

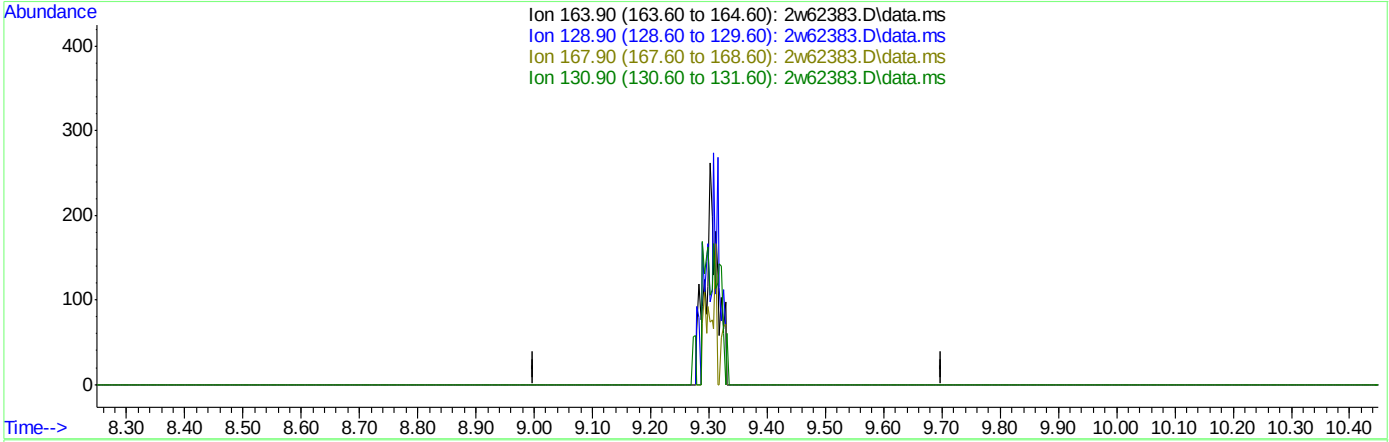
response 347

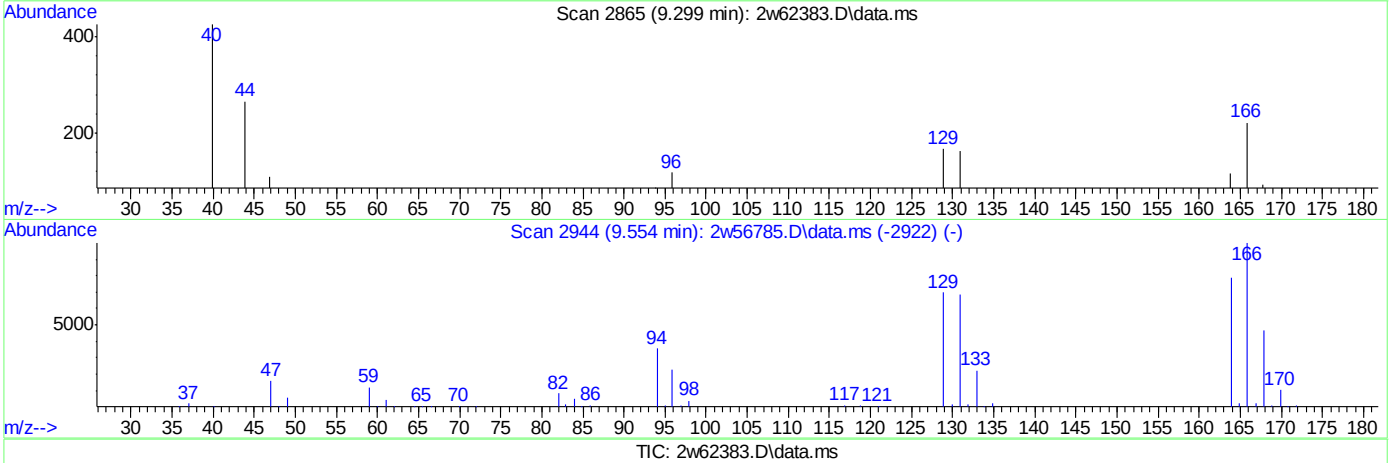
Ion	Exp%	Act%
95.00	100	100
129.90	103.50	0.00#
131.90	99.10	0.00#
97.00	65.00	0.00#

Quantitation Report (Qedit)

Data Path : C:\msdchem\1\DATA\
Data File : 2w62383.D
Acq On : 14 Dec 2022 5:55 pm
Operator : thomash
Sample : ic2776-0.04
Misc : MS64821,V2w2776,,,,,1
ALS Vial : 1 Sample Multiplier: 1

Quant Time: Dec 16 07:29:51 2022
Quant Method : C:\msdchem\1\METHODS\M2W2776.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Fri Dec 16 07:28:46 2022
Response via : Initial Calibration





TIC: 2w62383.D\data.ms

(72) TETRACHLOROETHENE (T)

9.299min (-9.299) 0.00PPBV

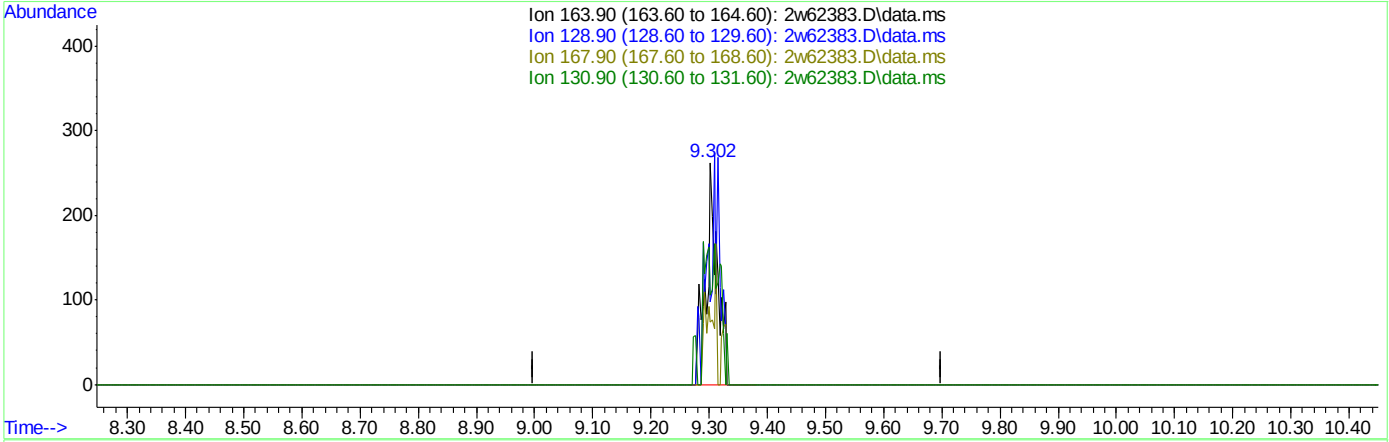
response 0

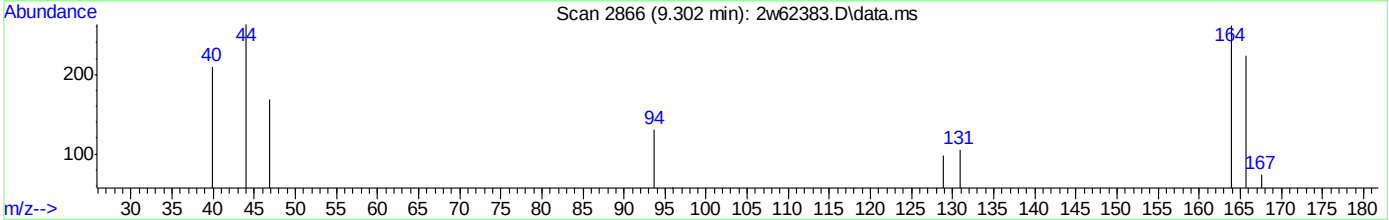
Ion	Exp%	Act%
163.90	100	0.00
128.90	92.00	0.00#
167.90	60.70	0.00#
130.90	89.30	0.00#

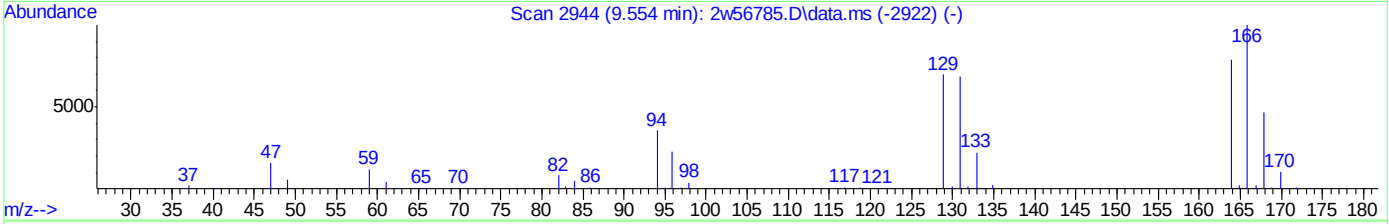
Quantitation Report (Qedit)

Data Path : C:\msdchem\1\DATA\
Data File : 2w62383.D
Acq On : 14 Dec 2022 5:55 pm
Operator : thomash
Sample : ic2776-0.04
Misc : MS64821,V2w2776,,,,,1
ALS Vial : 1 Sample Multiplier: 1

Quant Time: Dec 16 07:29:51 2022
Quant Method : C:\msdchem\1\METHODS\M2W2776.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Fri Dec 16 07:28:46 2022
Response via : Initial Calibration







TIC: 2w62383.D\data.ms

(72) TETRACHLOROETHENE (T)

9.302min (+0.003) 0.03PPBV m

response 367

Ion	Exp%	Act%
163.90	100	100
128.90	92.00	0.00#
167.90	60.70	0.00#
130.90	89.30	0.00#

Manual Integrations APPROVED (compounds with "m" flag)
Kanya Veerawat 12/19/22 12:10

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\
Data File : 2w62384.D
Acq On : 14 Dec 2022 6:28 pm
Operator : thomash
Sample : ic2776-0.1
Misc : MS64821,V2w2776,,,,,1
ALS Vial : 1 Sample Multiplier: 1

Quant Time: Dec 16 16:22:03 2022
Quant Method : C:\msdchem\1\METHODS\M2W2776.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Fri Dec 16 07:28:46 2022
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units		Dev(Min)
Internal Standards							
1) BROMOCHLOROMETHANE	3.438	128	50203	10.00	PPBV		0.00
52) 1,4-DIFLUOROBENZENE	4.762	114	258267	10.00	PPBV		0.00
76) CHLOROBENZENE-D5	10.447	117	230636	10.00	PPBV		0.00
System Monitoring Compounds							
87) 4-BROMOFLUOROBENZENE	13.829	95	177670	9.93	PPBV		0.00
Target Compounds							Qvalue
5) CHLOROTRIFLUOROETHENE	1.775	116	1042	0.11	PPBV	#	85
6) DICHLORODIFLUOROMETHANE	1.795	85	2537	0.10	PPBV	#	83
8) 1-CHLORO-1,1-DIFLUOROE...	1.830	65	1903	0.11	PPBV	#	68
9) FREON 114	1.872	85	2119	0.10	PPBV		97
10) CHLOROMETHANE	1.836	52	207m	0.11	PPBV		
11) VINYL CHLORIDE	1.904	62	757	0.11	PPBV	#	50
12) 1,3-BUTADIENE	1.949	54	619	0.11	PPBV	#	38
13) N-BUTANE	1.962	43	1052	0.11	PPBV	#	39
14) BROMOMETHANE	2.029	94	809	0.12	PPBV	#	90
15) CHLOROETHANE	2.077	64	367m	0.10	PPBV		
16) DICHLOROFLUOROMETHANE	2.106	67	1716	0.11	PPBV	#	84
17) ACETONITRILE	2.184	41	620	0.11	PPBV	#	46
19) FREON 123	2.235	83	1951	0.11	PPBV	#	89
20) FREON 123A	2.254	117	1174	0.12	PPBV		89
21) TRICHLOROFLUOROMETHANE	2.325	101	2448	0.11	PPBV	#	93
24) PENTANE	2.441	42	999	0.13	PPBV	#	78
25) IODOMETHANE	2.499	142	2140	0.10	PPBV		96
26) 1,1-DICHLOROETHYLENE	2.528	96	983	0.11	PPBV	#	74
27) CARBON DISULFIDE	2.663	76	2544	0.10	PPBV	#	64
29) BROMOETHENE	2.190	106	763	0.11	PPBV	#	93
30) ACRYLONITRILE	2.418	52	583	0.11	PPBV	#	69
32) 3-CHLOROPROPENE	2.605	76	478m	0.11	PPBV		
33) FREON 113	2.663	151	1451	0.10	PPBV		95
34) TRANS-1,2-DICHLOROETHENE	2.901	96	785	0.10	PPBV		96
36) METHYL TERTIARY BUTYL ...	3.029	73	2260	0.10	PPBV	#	84
38) HEXANE	3.489	57	1554	0.13	PPBV		87
40) 1,1-DICHLOROETHANE	2.975	63	1339	0.10	PPBV	#	51
42) CIS-1,2-DICHLOROETHENE	3.357	96	733	0.09	PPBV	#	66
45) METHYL ACRYLATE	3.499	55	1521	0.10	PPBV	#	67
46) CHLOROFORM	3.508	83	1751	0.10	PPBV		97
47) 2,4-DIMETHYLPENTANE	4.026	57	1644	0.11	PPBV	#	83
48) 1,1,1-TRICHLOROETHANE	4.110	97	1846	0.10	PPBV		99
49) CARBON TETRACHLORIDE	4.540	117	1694	0.09	PPBV		93
50) 1,2-DICHLOROETHANE	3.936	62	1250	0.10	PPBV	#	50
51) BENZENE	4.431	78	3113	0.13	PPBV		96
53) CYCLOHEXANE	4.650	84	983	0.09	PPBV	#	79
55) TRICHLOROETHENE	5.357	95	1173	0.10	PPBV		90
56) 1,2-DICHLOROPROPANE	5.113	63	819	0.09	PPBV	#	39
57) DIBROMOMETHANE	5.074	174	1149	0.11	PPBV		96
58) ETHYL ACRYLATE	5.264	55	1669	0.08	PPBV	#	74
59) BROMODICHLOROMETHANE	5.299	83	1654	0.08	PPBV		95

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\
Data File : 2w62384.D
Acq On : 14 Dec 2022 6:28 pm
Operator : thomash
Sample : ic2776-0.1
Misc : MS64821,V2w2776,,,,,1
ALS Vial : 1 Sample Multiplier: 1

Quant Time: Dec 16 16:22:03 2022
Quant Method : C:\msdchem\1\METHODS\M2W2776.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Fri Dec 16 07:28:46 2022
Response via : Initial Calibration

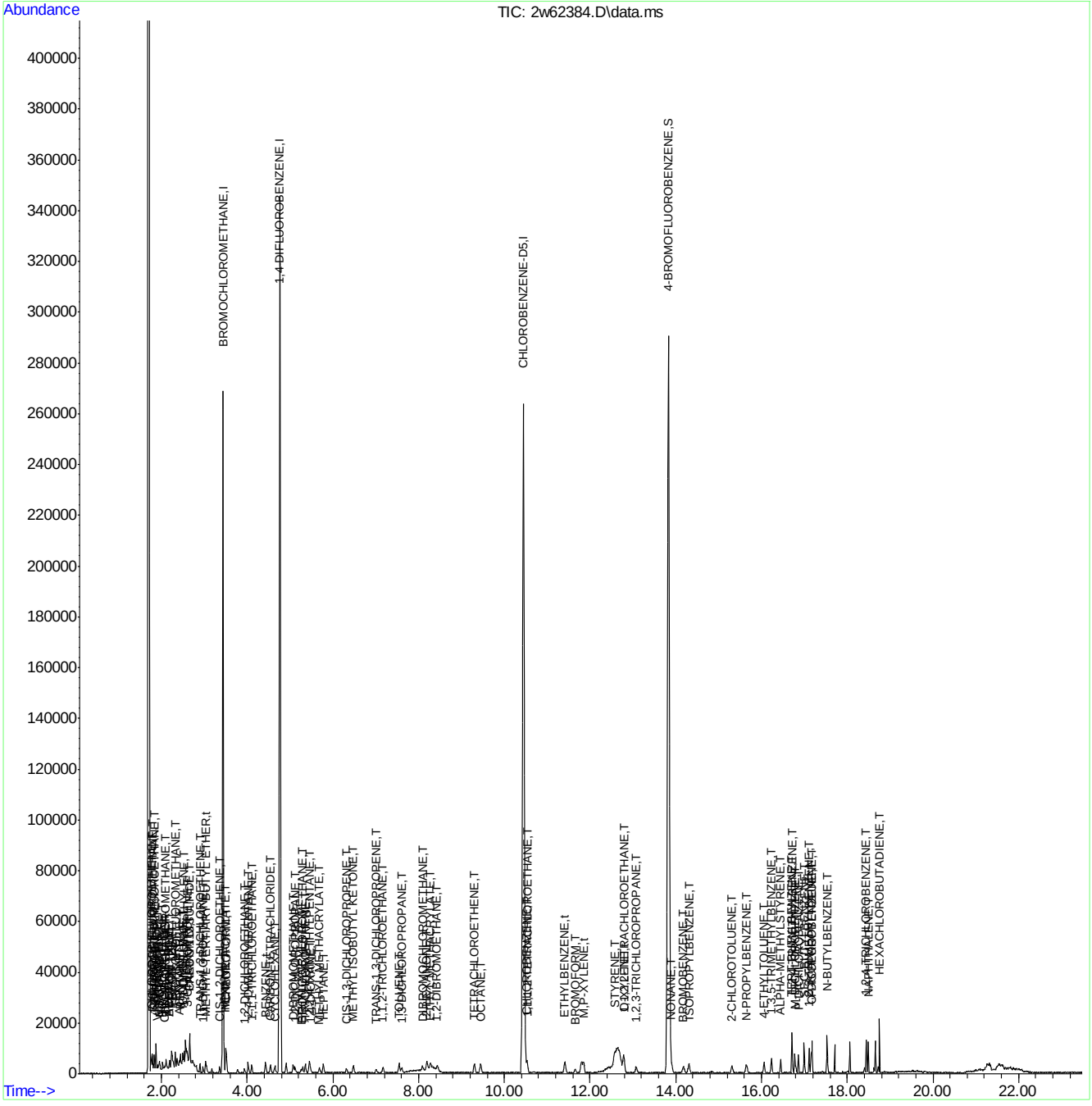
	Compound	R.T.	QIon	Response	Conc	Units		Dev(Min)
60)	2,2,4-TRIMETHYLPENTANE	5.457	57	4197	0.11	PPBV	#	95
61)	1,4-DIOXANE	5.476	88	664	0.11	PPBV	#	1
62)	HEPTANE	5.781	43	1456	0.11	PPBV		91
63)	METHYL METHACRYLATE	5.679	69	814	0.09	PPBV	#	57
64)	METHYL ISOBUTYL KETONE	6.476	58	902	0.10	PPBV	#	57
65)	CIS-1,3-DICHLOROPROPENE	6.312	75	1198	0.08	PPBV	#	64
66)	TOLUENE	7.550	91	3679	0.12	PPBV		88
67)	1,3-DICHLOROPROPANE	7.608	76	1525	0.10	PPBV	#	50
68)	TRANS-1,3-DICHLOROPROPENE	7.013	75	1092	0.08	PPBV	#	69
69)	1,1,2-TRICHLOROETHANE	7.164	83	872	0.10	PPBV		98
70)	2-HEXANONE	8.187	58	1744	0.14	PPBV	#	87
71)	ETHYL METHACRYLATE	8.267	69	1370	0.09	PPBV	#	72
72)	TETRACHLOROETHENE	9.305	164	1084	0.09	PPBV		96
73)	DIBROMOCHLOROMETHANE	8.090	129	1345	0.07	PPBV	#	83
74)	1,2-DIBROMOETHANE	8.431	107	1467	0.09	PPBV	#	96
75)	OCTANE	9.457	43	2074	0.11	PPBV	#	85
77)	1,1,1,2-TETRACHLOROETHANE	10.534	131	1051	0.08	PPBV	#	37
78)	CHLOROBENZENE	10.527	112	2402	0.10	PPBV		97
79)	ETHYLBENZENE	11.402	91	5389	0.13	PPBV		100
80)	M,P-XYLENE	11.842	91	8327m	0.26	PPBV		
81)	O-XYLENE	12.794	91	4389	0.13	PPBV	#	77
82)	STYRENE	12.575	104	2246	0.09	PPBV	#	80
83)	NONANE	13.900	43	2124	0.10	PPBV		83
84)	BROMOFORM	11.653	173	1119	0.06	PPBV	#	93
85)	1,1,2,2-TETRACHLOROETHANE	12.797	83	2099	0.09	PPBV	#	95
86)	1,2,3-TRICHLOROPROPANE	13.077	75	1778	0.10	PPBV	#	99
88)	ISOPROPYLBENZENE	14.308	120	1130	0.09	PPBV		93
89)	BROMOBENZENE	14.173	77	2122	0.09	PPBV		89
90)	2-CHLOROTOLUENE	15.315	126	977	0.09	PPBV	#	42
91)	N-PROPYLBENZENE	15.646	120	1121	0.09	PPBV	#	62
92)	4-ETHYLTOLUENE	16.061	105	3956	0.08	PPBV	#	99
93)	1,3,5-TRIMETHYLBENZENE	16.231	105	3600	0.09	PPBV	#	95
94)	ALPHA-METHYLSTYRENE	16.450	118	1497	0.07	PPBV		91
95)	TERT-BUTYLBENZENE	16.707	134	845	0.09	PPBV		93
96)	1,2,4-TRIMETHYLBENZENE	16.720	105	3807	0.09	PPBV		95
98)	M-DICHLOROBENZENE	16.778	146	2284	0.09	PPBV		97
99)	P-DICHLOROBENZENE	16.865	146	2134m	0.08	PPBV		
100)	O-DICHLOROBENZENE	17.160	146	2274	0.09	PPBV		93
101)	SEC-BUTYLBENZENE	16.996	134	1025	0.08	PPBV		73
102)	1,2,3-TRIMETHYLBENZENE	17.112	105	3834	0.09	PPBV	#	87
103)	P-ISOPROPYLTOLUENE	17.180	134	1122	0.08	PPBV		84
104)	N-BUTYLBENZENE	17.527	134	1039	0.08	PPBV		87
106)	HEXACHLOROBUTADIENE	18.755	225	1799	0.07	PPBV		97
107)	1,2,4-TRICHLOROBENZENE	18.443	180	1958	0.07	PPBV		99
108)	NAPHTHALENE	18.492	128	5071	0.07	PPBV		98

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

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\
Data File : 2w62384.D
Acq On : 14 Dec 2022 6:28 pm
Operator : thomash
Sample : ic2776-0.1
Misc : MS64821,V2w2776,,,,,1
ALS Vial : 1 Sample Multiplier: 1

Quant Time: Dec 16 16:22:03 2022
Quant Method : C:\msdchem\1\METHODS\M2W2776.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Fri Dec 16 07:28:46 2022
Response via : Initial Calibration



Manual Integration Approval Summary

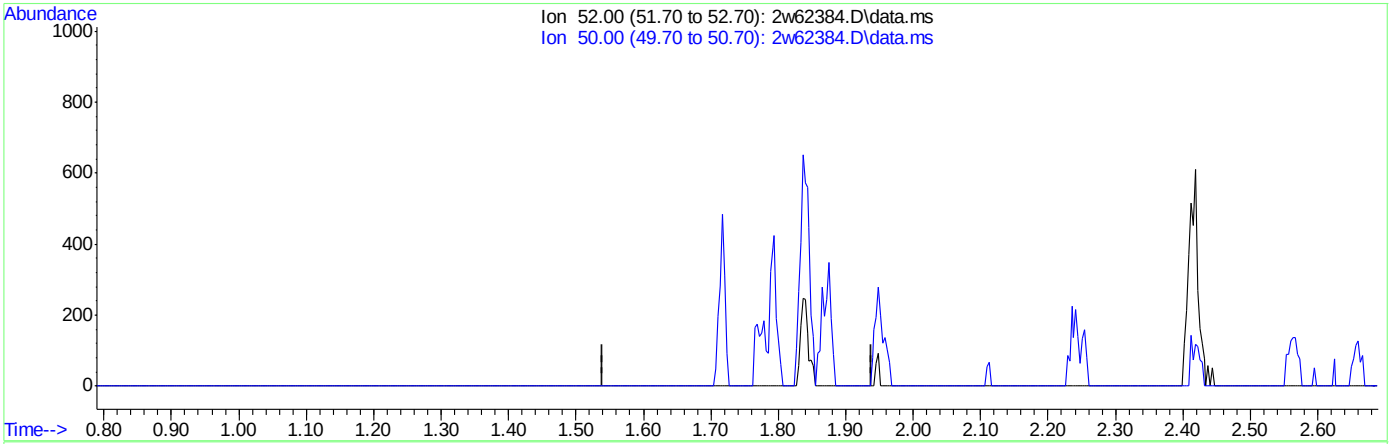
Sample Number: V2W2776-IC2776 **Method:** TO-15
Lab FileID: 2W62384.D **Analyst approved:** 12/16/22 16:35 Thomas Hilbig
Injection Time: 12/14/22 18:28 **Supervisor approved:** 12/19/22 12:10 Kanya Veerawat

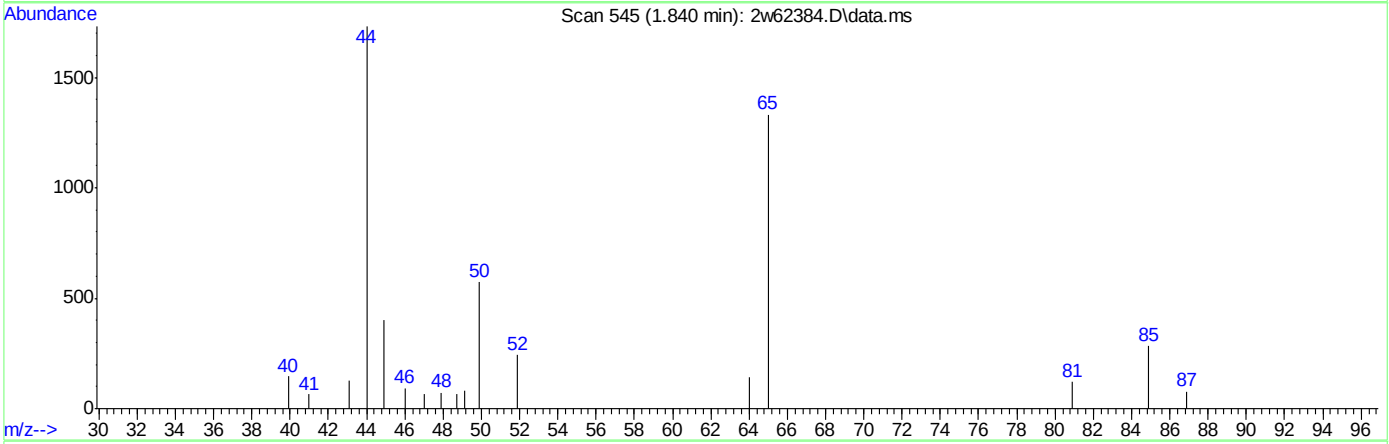
Parameter	CAS	Sig#	R.T. (min.)	Reason
Chloromethane	74-87-3		1.84	Missed peak
Chloroethane	75-00-3		2.08	Missed peak
3-Chloropropene	107-05-1		2.60	Missed peak
m,p-Xylene			11.84	Split peak
p-Dichlorobenzene	106-46-7		16.86	Missed peak

Quantitation Report (Qedit)

Data Path : C:\msdchem\1\DATA\
Data File : 2w62384.D
Acq On : 14 Dec 2022 6:28 pm
Operator : thomash
Sample : ic2776-0.1
Misc : MS64821,V2w2776,,,,,1
ALS Vial : 1 Sample Multiplier: 1

Quant Time: Dec 16 07:29:59 2022
Quant Method : C:\msdchem\1\METHODS\M2W2776.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Fri Dec 16 07:28:46 2022
Response via : Initial Calibration





TIC: 2w62384.D\data.ms

(10) CHLOROMETHANE (T)

1.840min (-1.840) 0.00PPBV

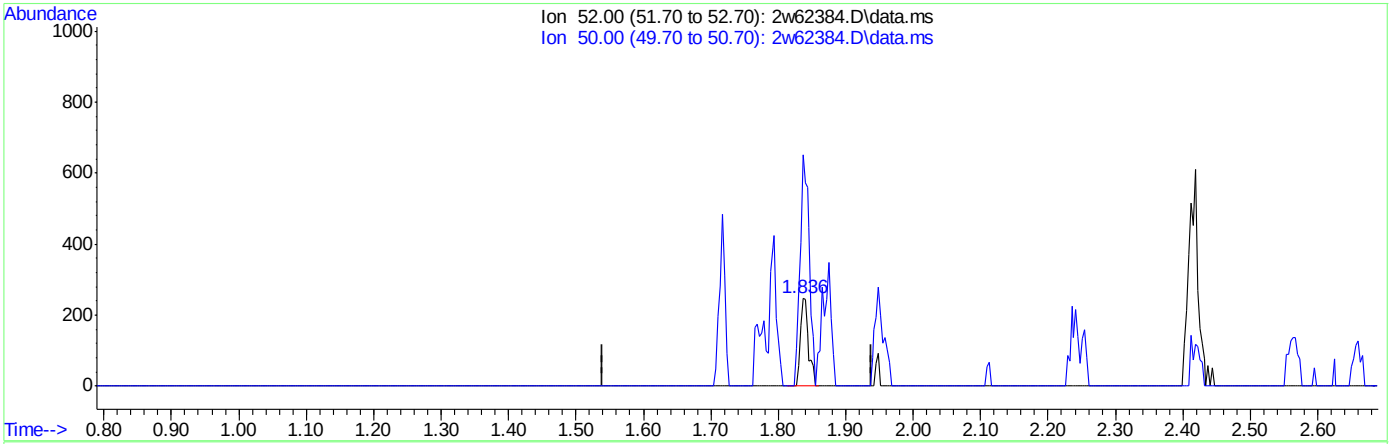
response 0

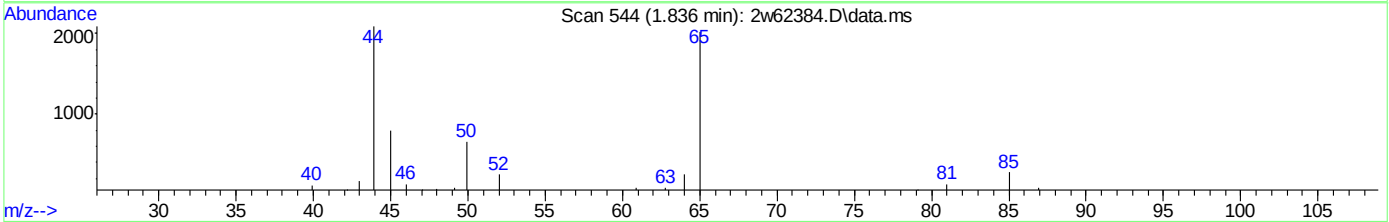
Ion	Exp%	Act%
52.00	100	0.00
50.00	312.00	0.00#
0.00	0.00	0.00
0.00	0.00	0.00

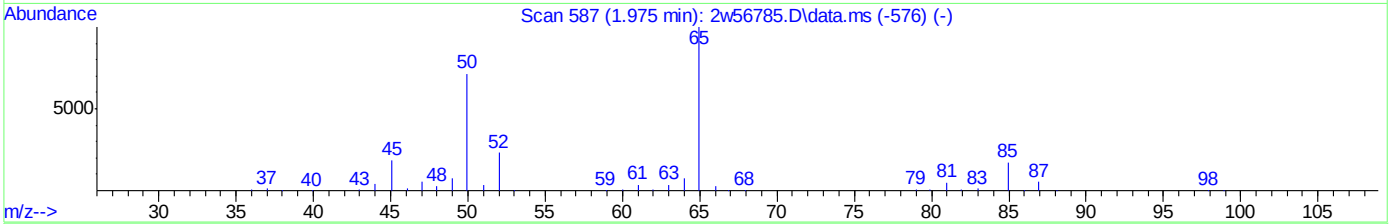
Quantitation Report (Qedit)

Data Path : C:\msdchem\1\DATA\
Data File : 2w62384.D
Acq On : 14 Dec 2022 6:28 pm
Operator : thomash
Sample : ic2776-0.1
Misc : MS64821,V2w2776,,,,,1
ALS Vial : 1 Sample Multiplier: 1

Quant Time: Dec 16 07:29:59 2022
Quant Method : C:\msdchem\1\METHODS\M2W2776.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Fri Dec 16 07:28:46 2022
Response via : Initial Calibration







TIC: 2w62384.D\data.ms

(10) CHLOROMETHANE (T)

1.836min (-0.003) 0.11PPBV m

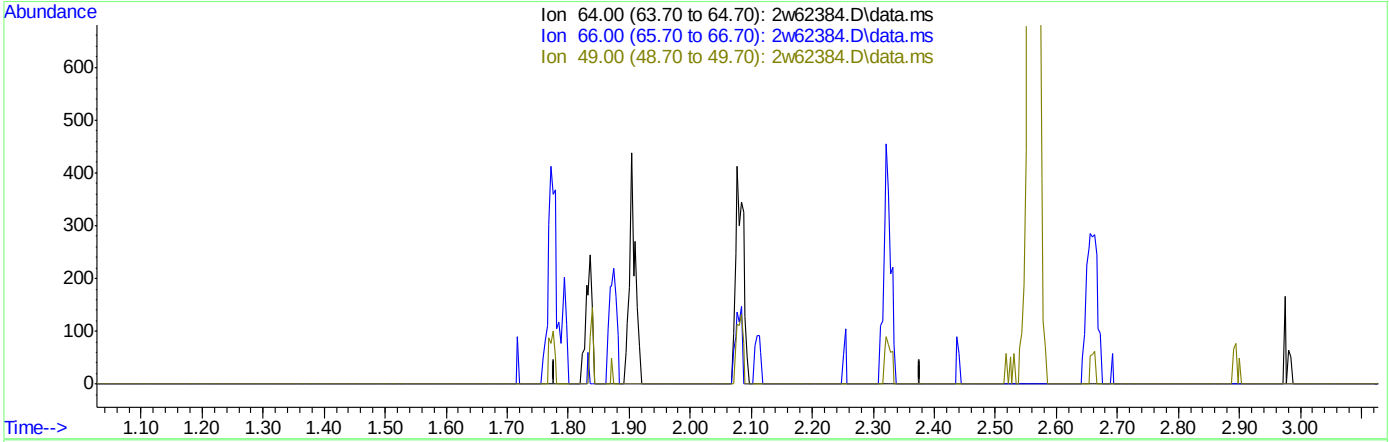
response 207

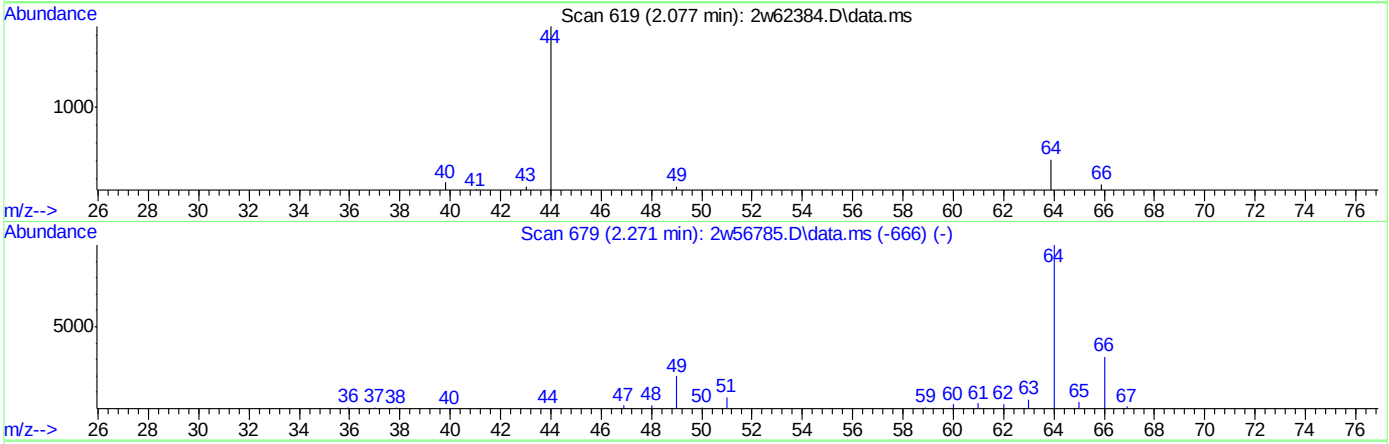
Ion	Exp%	Act%
52.00	100	100
50.00	312.00	0.00#
0.00	0.00	0.00
0.00	0.00	0.00

Quantitation Report (Qedit)

Data Path : C:\msdchem\1\DATA\
Data File : 2w62384.D
Acq On : 14 Dec 2022 6:28 pm
Operator : thomash
Sample : ic2776-0.1
Misc : MS64821,V2w2776,,,,,1
ALS Vial : 1 Sample Multiplier: 1

Quant Time: Dec 16 07:29:59 2022
Quant Method : C:\msdchem\1\METHODS\M2W2776.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Fri Dec 16 07:28:46 2022
Response via : Initial Calibration





TIC: 2w62384.D\data.ms

(15) CHLOROETHANE (T)

2.078min (-2.078) 0.00PPBV

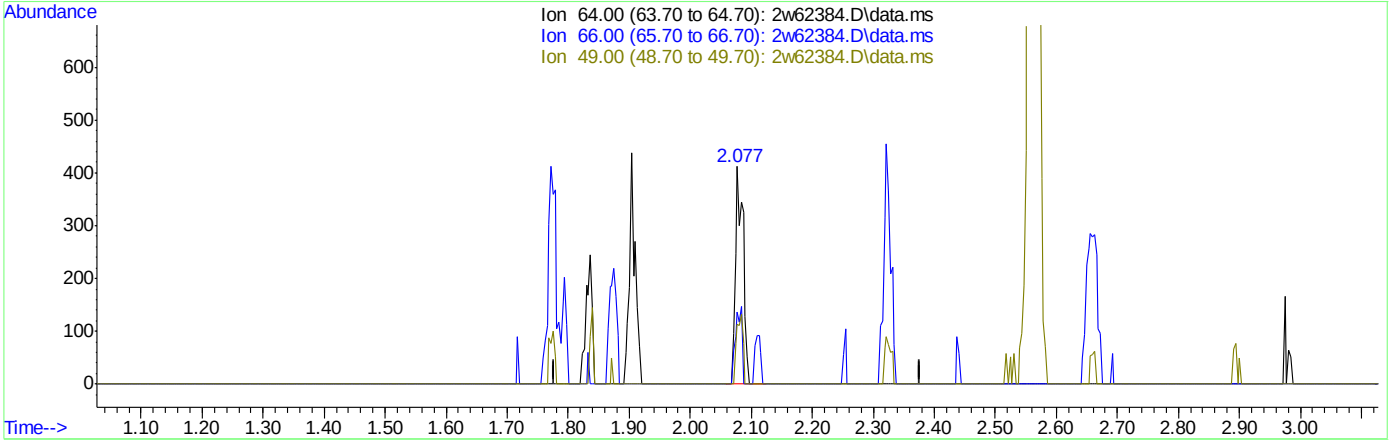
response 0

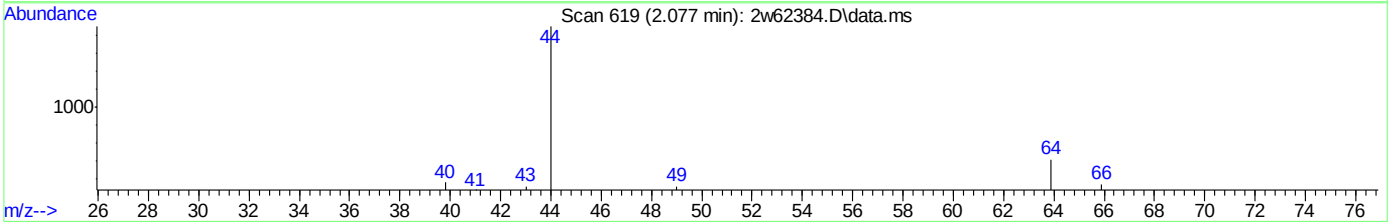
Ion	Exp%	Act%
64.00	100	0.00
66.00	31.40	0.00#
49.00	27.90	0.00#
0.00	0.00	0.00

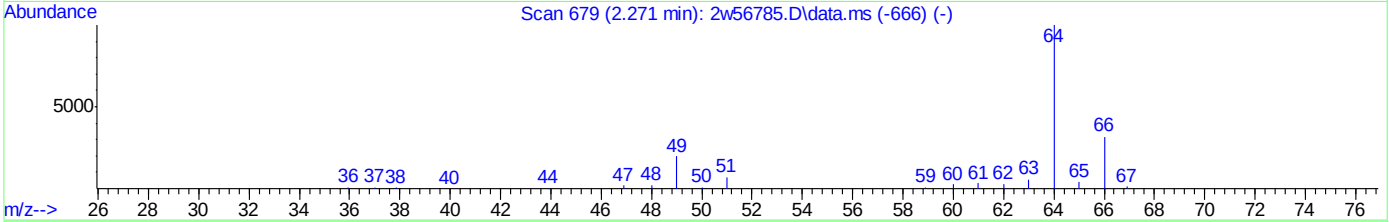
Quantitation Report (Qedit)

Data Path : C:\msdchem\1\DATA\
Data File : 2w62384.D
Acq On : 14 Dec 2022 6:28 pm
Operator : thomash
Sample : ic2776-0.1
Misc : MS64821,V2w2776,,,,,1
ALS Vial : 1 Sample Multiplier: 1

Quant Time: Dec 16 07:29:59 2022
Quant Method : C:\msdchem\1\METHODS\M2W2776.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Fri Dec 16 07:28:46 2022
Response via : Initial Calibration







TIC: 2w62384.D\data.ms

(15) CHLOROETHANE (T)

2.077min (-0.000) 0.10PPBV m

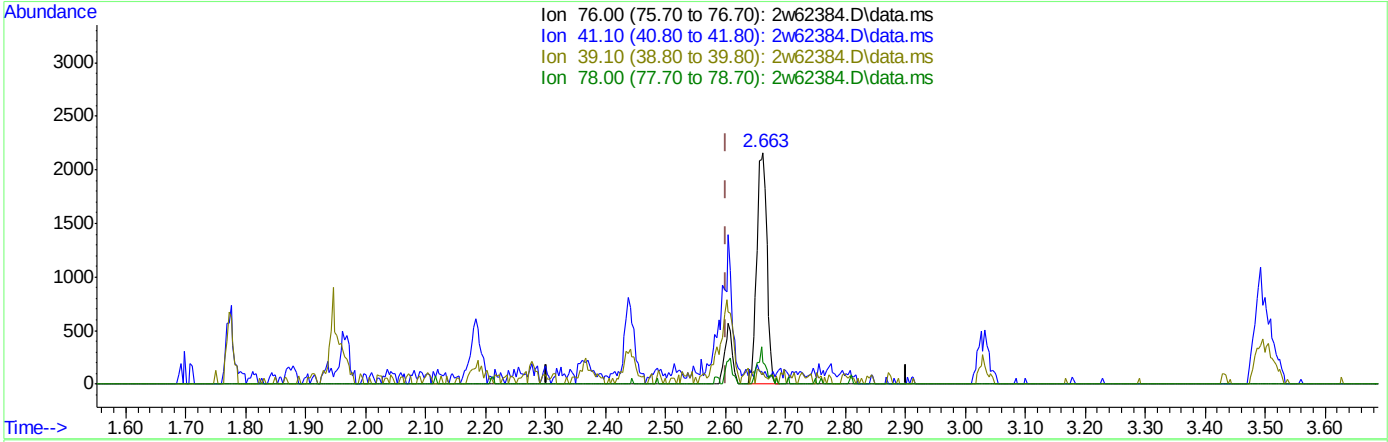
response 367

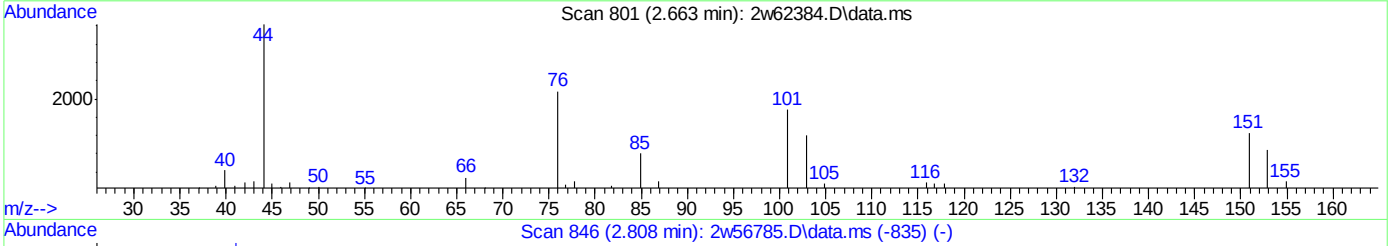
Ion	Exp%	Act%
64.00	100	100
66.00	31.40	0.00#
49.00	27.90	0.00#
0.00	0.00	0.00

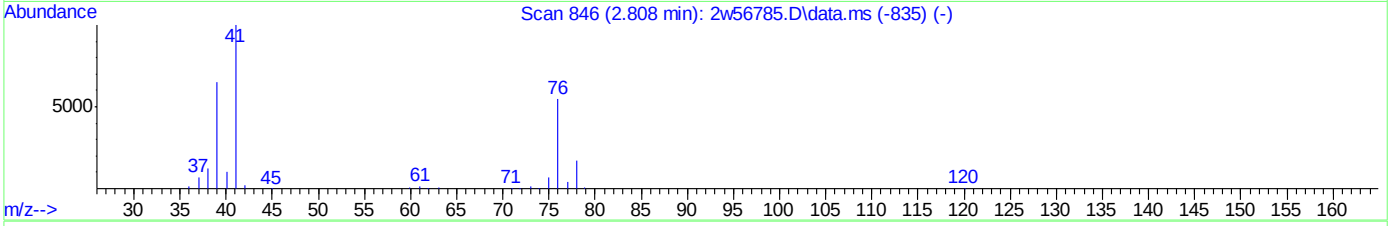
Quantitation Report (Qedit)

Data Path : C:\msdchem\1\DATA\
Data File : 2w62384.D
Acq On : 14 Dec 2022 6:28 pm
Operator : thomash
Sample : ic2776-0.1
Misc : MS64821,V2w2776,,,,,1
ALS Vial : 1 Sample Multiplier: 1

Quant Time: Dec 16 07:29:59 2022
Quant Method : C:\msdchem\1\METHODS\M2W2776.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Fri Dec 16 07:28:46 2022
Response via : Initial Calibration







TIC: 2w62384.D\data.ms

(32) 3-CHLOROPROPENE (T)

2.663min (+0.061) 0.59PPBV

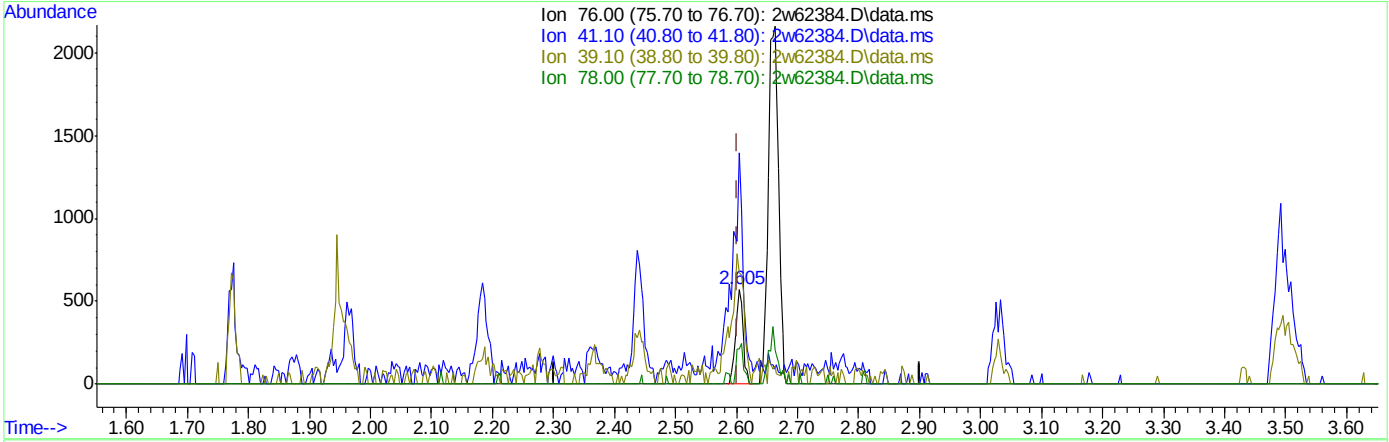
response 2544

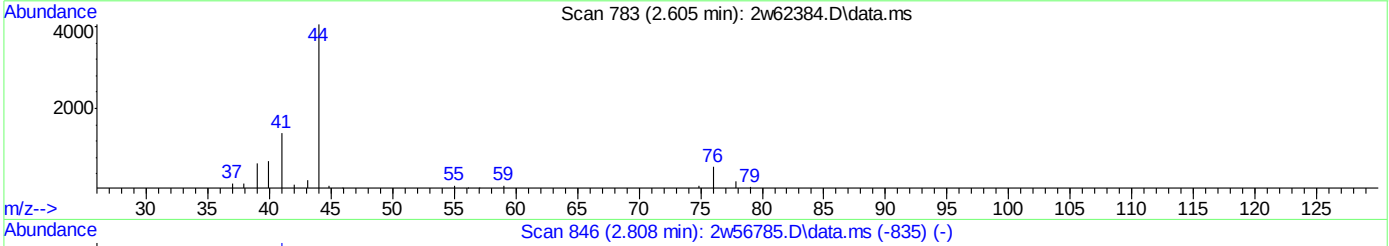
Ion	Exp%	Act%
76.00	100	100
41.10	296.90	0.00#
39.10	235.10	0.00#
78.00	32.70	0.00#

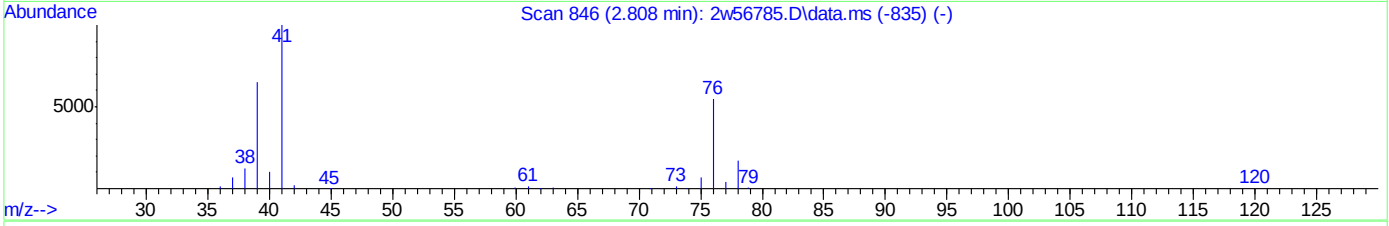
Quantitation Report (Qedit)

Data Path : C:\msdchem\1\DATA\
Data File : 2w62384.D
Acq On : 14 Dec 2022 6:28 pm
Operator : thomash
Sample : ic2776-0.1
Misc : MS64821,V2w2776,,,,,1
ALS Vial : 1 Sample Multiplier: 1

Quant Time: Dec 16 07:29:59 2022
Quant Method : C:\msdchem\1\METHODS\M2W2776.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Fri Dec 16 07:28:46 2022
Response via : Initial Calibration







TIC: 2w62384.D\data.ms

(32) 3-CHLOROPROPENE (T)

2.605min (+0.003) 0.11PPBV m

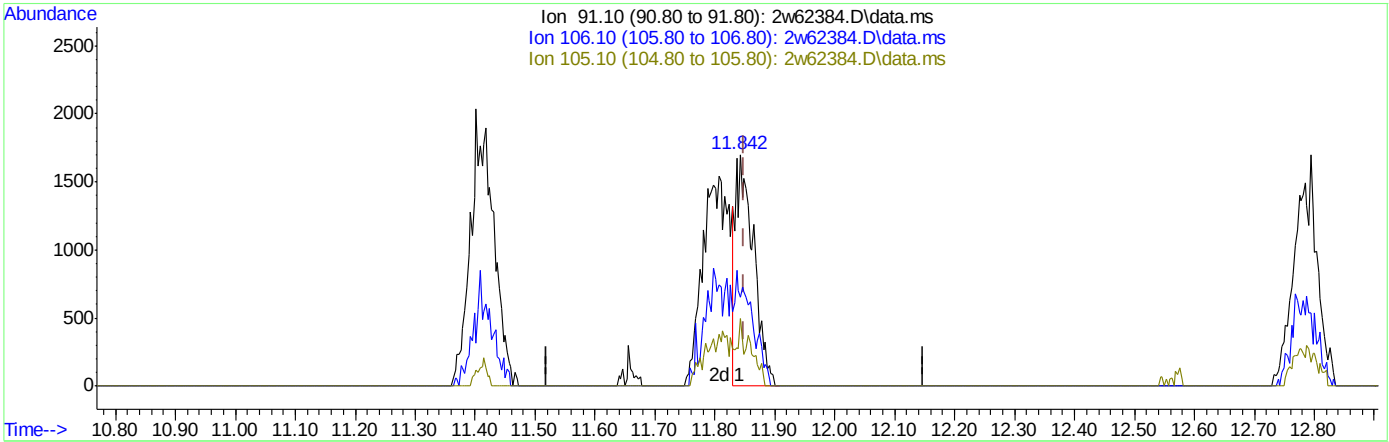
response 478

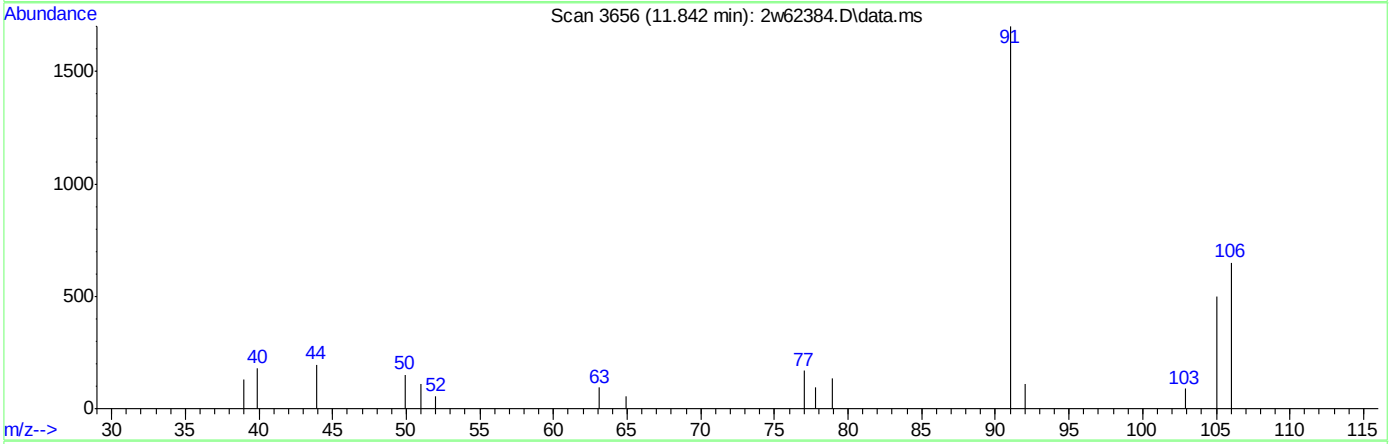
Ion	Exp%	Act%
76.00	100	100
41.10	296.90	0.00#
39.10	235.10	0.00#
78.00	32.70	0.00#

Quantitation Report (Qedit)

Data Path : C:\msdchem\1\DATA\
Data File : 2w62384.D
Acq On : 14 Dec 2022 6:28 pm
Operator : thomash
Sample : ic2776-0.1
Misc : MS64821,V2w2776,,,,,1
ALS Vial : 1 Sample Multiplier: 1

Quant Time: Dec 16 15:58:49 2022
Quant Method : C:\msdchem\1\METHODS\M2W2776.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Fri Dec 16 07:28:46 2022
Response via : Initial Calibration





TIC: 2w62384.D\data.ms

(80) M,P-XYLENE (t)

11.842min (-0.007) 0.11PPBV

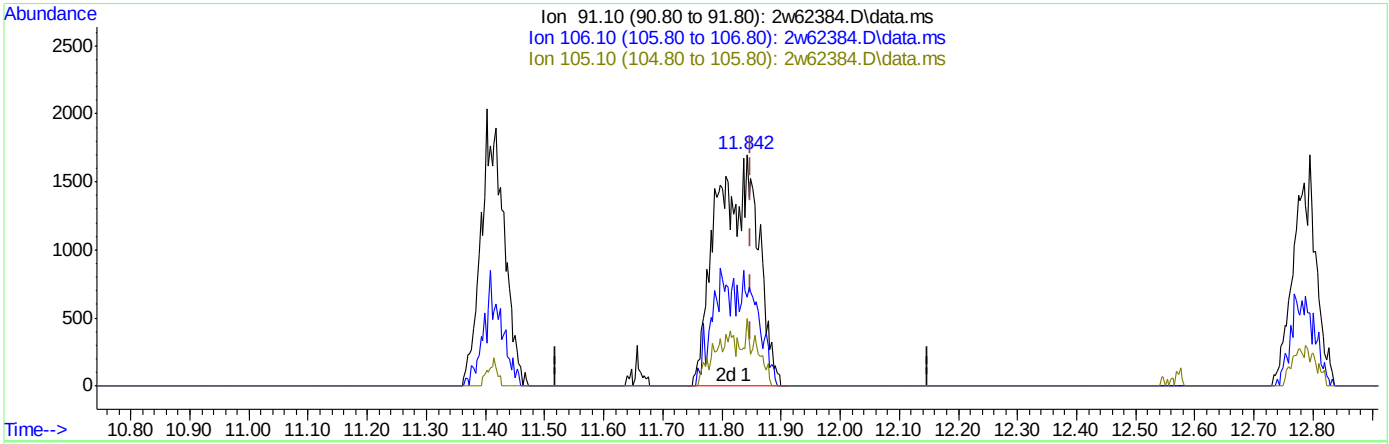
response 3522

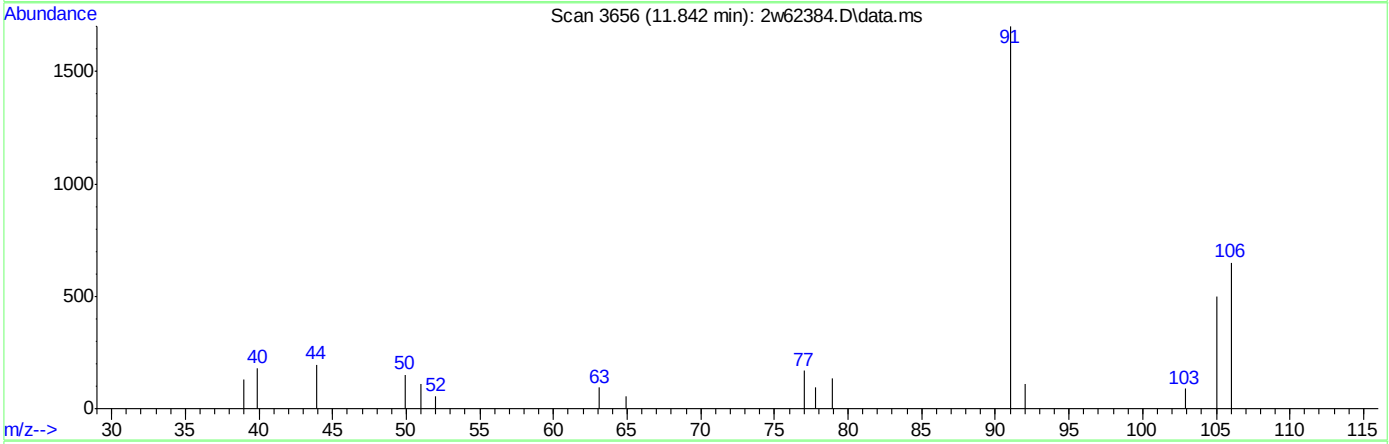
Ion	Exp%	Act%
91.10	100	100
106.10	23.00	55.39#
105.10	10.90	25.47
0.00	0.00	0.00

Quantitation Report (Qedit)

Data Path : C:\msdchem\1\DATA\
Data File : 2w62384.D
Acq On : 14 Dec 2022 6:28 pm
Operator : thomash
Sample : ic2776-0.1
Misc : MS64821,V2w2776,,,,,1
ALS Vial : 1 Sample Multiplier: 1

Quant Time: Dec 16 15:58:49 2022
Quant Method : C:\msdchem\1\METHODS\M2W2776.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Fri Dec 16 07:28:46 2022
Response via : Initial Calibration





TIC: 2w62384.D\data.ms

(80) M,P-XYLENE (t)

11.842min (-0.007) 0.26PPBV m

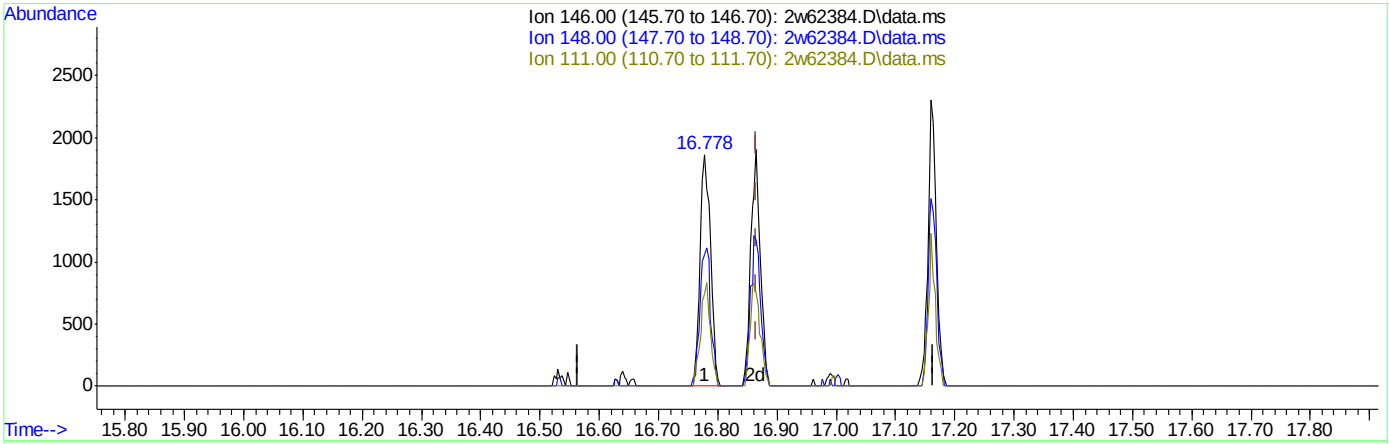
response 8327

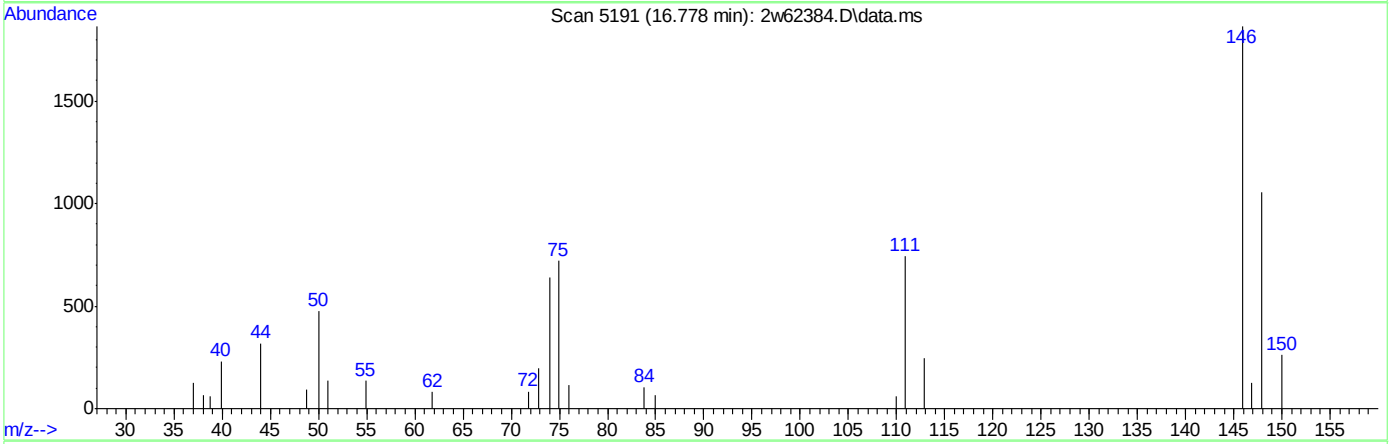
Ion	Exp%	Act%
91.10	100	100
106.10	23.00	23.43
105.10	10.90	10.77
0.00	0.00	0.00

Quantitation Report (Qedit)

Data Path : C:\msdchem\1\DATA\
Data File : 2w62384.D
Acq On : 14 Dec 2022 6:28 pm
Operator : thomash
Sample : ic2776-0.1
Misc : MS64821,V2w2776,,,,,1
ALS Vial : 1 Sample Multiplier: 1

Quant Time: Dec 16 15:58:49 2022
Quant Method : C:\msdchem\1\METHODS\M2W2776.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Fri Dec 16 07:28:46 2022
Response via : Initial Calibration





TIC: 2w62384.D\data.ms

(99) P-DICHLOROBENZENE (T)

16.778min (-0.087) 0.09PPBV

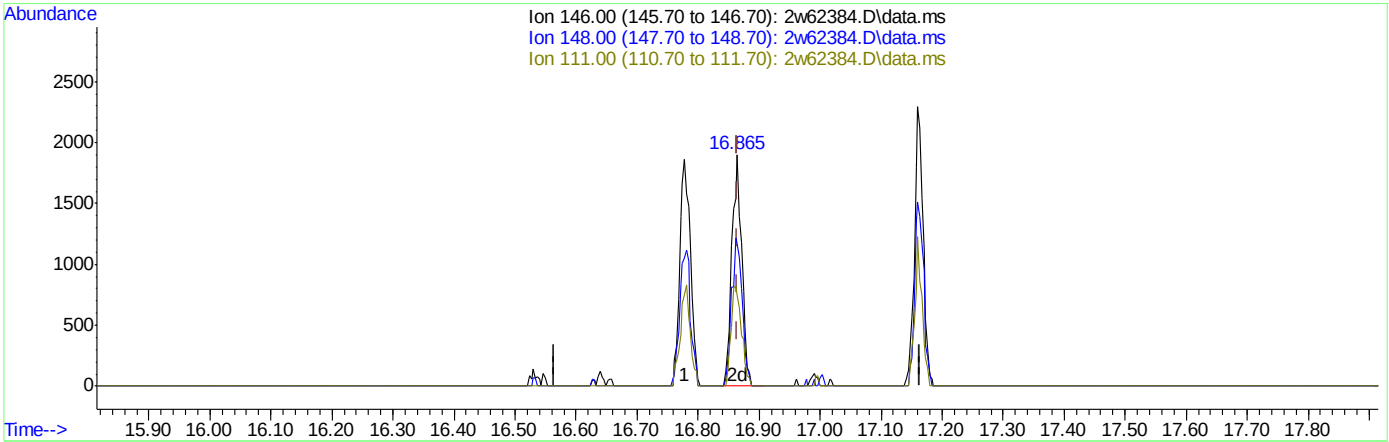
response 2284

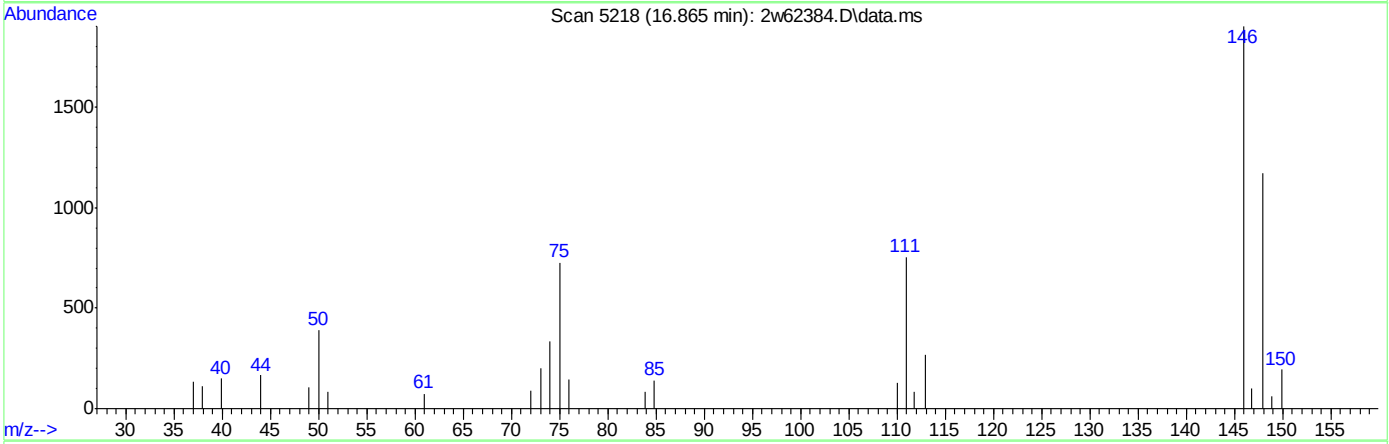
Ion	Exp%	Act%
146.00	100	100
148.00	64.10	61.30
111.00	37.90	41.20
0.00	0.00	0.00

Quantitation Report (Qedit)

Data Path : C:\msdchem\1\DATA\
Data File : 2w62384.D
Acq On : 14 Dec 2022 6:28 pm
Operator : thomash
Sample : ic2776-0.1
Misc : MS64821,V2w2776,,,,,1
ALS Vial : 1 Sample Multiplier: 1

Quant Time: Dec 16 15:58:49 2022
Quant Method : C:\msdchem\1\METHODS\M2W2776.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Fri Dec 16 07:28:46 2022
Response via : Initial Calibration





TIC: 2w62384.D\data.ms

(99) P-DICHLOROBENZENE (T)

16.865min (-0.000) 0.08PPBV m

response 2134

Ion	Exp%	Act%
146.00	100	100
148.00	64.10	65.60
111.00	37.90	44.10
0.00	0.00	0.00

Manual Integrations APPROVED (compounds with "m" flag)
Kanya Veerawat 12/19/22 12:10

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\
Data File : 2w62385.D
Acq On : 14 Dec 2022 6:59 pm
Operator : thomash
Sample : ic2776-0.2
Misc : MS64821,V2w2776,,,,,1
ALS Vial : 1 Sample Multiplier: 1

Quant Time: Dec 16 16:04:33 2022
Quant Method : C:\msdchem\1\METHODS\M2W2776.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Fri Dec 16 07:28:46 2022
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units		Dev(Min)
Internal Standards							
1) BROMOCHLOROMETHANE	3.434	128	49634	10.00	PPBV		0.00
52) 1,4-DIFLUOROBENZENE	4.765	114	255066	10.00	PPBV		0.00
76) CHLOROBENZENE-D5	10.447	117	228303	10.00	PPBV		0.00
System Monitoring Compounds							
87) 4-BROMOFLUOROBENZENE	13.826	95	172976	9.77	PPBV		0.00
Target Compounds							Qvalue
3) FREON 152A	1.746	65	717	0.19	PPBV	#	100
4) CHLORODIFLUOROMETHANE	1.759	67	398m	0.20	PPBV		
5) CHLOROTRIFLUOROETHENE	1.772	116	1906	0.21	PPBV	#	76
6) DICHLORODIFLUOROMETHANE	1.788	85	5231	0.22	PPBV		100
7) PROPYLENE	1.772	41	1015	0.23	PPBV		96
8) 1-CHLORO-1,1-DIFLUOROE...	1.830	65	3857	0.22	PPBV	#	89
9) FREON 114	1.868	85	4334	0.21	PPBV		95
10) CHLOROMETHANE	1.839	52	455m	0.23	PPBV		
11) VINYL CHLORIDE	1.901	62	1566	0.22	PPBV	#	50
12) 1,3-BUTADIENE	1.946	54	1218	0.23	PPBV	#	86
13) N-BUTANE	1.958	43	2400	0.25	PPBV	#	51
14) BROMOMETHANE	2.023	94	1565	0.23	PPBV	#	85
15) CHLOROETHANE	2.077	64	810	0.21	PPBV	#	45
16) DICHLOROFLUOROMETHANE	2.103	67	3317	0.21	PPBV	#	83
17) ACETONITRILE	2.180	41	1395	0.25	PPBV	#	1
18) ACROLEIN	2.219	56	739	0.24	PPBV		86
19) FREON 123	2.232	83	3698	0.21	PPBV		94
20) FREON 123A	2.251	117	2324	0.23	PPBV		92
21) TRICHLOROFLUOROMETHANE	2.319	101	5063	0.22	PPBV	#	97
22) ISOPROPYL ALCOHOL	2.360	45	3900	0.28	PPBV	#	96
23) ACETONE	2.267	58	1120	0.30	PPBV		72
24) PENTANE	2.438	42	1849	0.25	PPBV		99
25) IODOMETHANE	2.495	142	4599	0.21	PPBV		96
26) 1,1-DICHLOROETHYLENE	2.524	96	1902	0.22	PPBV		76
27) CARBON DISULFIDE	2.659	76	4888	0.19	PPBV	#	73
28) ETHANOL	2.116	45	1126	0.39	PPBV	#	41
29) BROMOETHENE	2.180	106	1486	0.21	PPBV	#	89
30) ACRYLONITRILE	2.412	52	1113	0.21	PPBV		94
31) METHYLENE CHLORIDE	2.560	84	3022	0.37	PPBV	#	81
32) 3-CHLOROPROPENE	2.602	76	930	0.22	PPBV	#	64
33) FREON 113	2.656	151	2997	0.21	PPBV		95
34) TRANS-1,2-DICHLOROETHENE	2.901	96	1744	0.23	PPBV		90
35) TERTIARY BUTYL ALCOHOL	2.582	59	5689	0.27	PPBV	#	46
36) METHYL TERTIARY BUTYL ...	3.029	73	4705	0.22	PPBV	#	81
37) TETRAHYDROFURAN	3.765	72	665	0.18	PPBV	#	76
38) HEXANE	3.489	57	2928	0.24	PPBV		92
39) VINYL ACETATE	3.052	86	423m	0.30	PPBV		
40) 1,1-DICHLOROETHANE	2.974	63	2664	0.20	PPBV	#	88
41) METHYL ETHYL KETONE	3.174	72	830	0.22	PPBV	#	91
42) CIS-1,2-DICHLOROETHENE	3.354	96	1716	0.21	PPBV		97
43) DIISOPROPYL ETHER	3.511	59	797	0.22	PPBV		84

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\
Data File : 2w62385.D
Acq On : 14 Dec 2022 6:59 pm
Operator : thomash
Sample : ic2776-0.2
Misc : MS64821,V2w2776,,,,,1
ALS Vial : 1 Sample Multiplier: 1

Quant Time: Dec 16 16:04:33 2022
Quant Method : C:\msdchem\1\METHODS\M2W2776.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Fri Dec 16 07:28:46 2022
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units		Dev(Min)
44) ETHYL ACETATE	3.515	61	576	0.22	PPBV	#	73
45) METHYL ACRYLATE	3.495	55	3245	0.21	PPBV	#	67
46) CHLOROFORM	3.511	83	3684	0.21	PPBV		99
47) 2,4-DIMETHYLPENTANE	4.019	57	3033	0.21	PPBV		96
48) 1,1,1-TRICHLOROETHANE	4.106	97	3621	0.20	PPBV		97
49) CARBON TETRACHLORIDE	4.540	117	3369	0.18	PPBV		100
50) 1,2-DICHLOROETHANE	3.936	62	2539	0.20	PPBV	#	90
51) BENZENE	4.431	78	5944	0.25	PPBV		99
53) CYCLOHEXANE	4.643	84	2244	0.21	PPBV		97
54) 2,3-DIMETHYLPENTANE	4.900	71	1026	0.20	PPBV	#	97
55) TRICHLOROETHENE	5.357	95	2423	0.21	PPBV		89
56) 1,2-DICHLOROPROPANE	5.113	63	1740	0.20	PPBV	#	89
57) DIBROMOMETHANE	5.071	174	2145	0.22	PPBV		95
58) ETHYL ACRYLATE	5.254	55	3846	0.19	PPBV	#	74
59) BROMODICHLOROMETHANE	5.302	83	3556	0.18	PPBV		99
60) 2,2,4-TRIMETHYLPENTANE	5.447	57	8219	0.21	PPBV	#	96
61) 1,4-DIOXANE	5.460	88	1314	0.22	PPBV	#	1
62) HEPTANE	5.775	43	2829	0.21	PPBV		91
63) METHYL METHACRYLATE	5.682	69	1698	0.19	PPBV		85
64) METHYL ISOBUTYL KETONE	6.479	58	1977	0.23	PPBV		86
65) CIS-1,3-DICHLOROPROPENE	6.315	75	2690	0.19	PPBV	#	90
66) TOLUENE	7.550	91	6916	0.23	PPBV		98
67) 1,3-DICHLOROPROPANE	7.608	76	2951	0.20	PPBV	#	89
68) TRANS-1,3-DICHLOROPROPENE	7.003	75	2141	0.16	PPBV	#	87
69) 1,1,2-TRICHLOROETHANE	7.161	83	1724	0.20	PPBV		99
70) 2-HEXANONE	8.190	58	3504	0.28	PPBV		87
71) ETHYL METHACRYLATE	8.273	69	2741	0.18	PPBV	#	78
72) TETRACHLOROETHENE	9.299	164	2329	0.20	PPBV		97
73) DIBROMOCHLOROMETHANE	8.090	129	2831	0.15	PPBV		98
74) 1,2-DIBROMOETHANE	8.437	107	3262	0.19	PPBV	#	95
75) OCTANE	9.444	43	3908	0.21	PPBV		92
77) 1,1,1,2-TETRACHLOROETHANE	10.540	131	2257	0.18	PPBV		97
78) CHLOROBENZENE	10.521	112	4998	0.21	PPBV		96
79) ETHYLBENZENE	11.405	91	9666	0.24	PPBV		99
80) M,P-XYLENE	11.842	91	14636m	0.46	PPBV		
81) O-XYLENE	12.784	91	7665	0.24	PPBV	#	87
82) STYRENE	12.579	104	4584	0.19	PPBV		95
83) NONANE	13.907	43	4045	0.20	PPBV		92
84) BROMOFORM	11.656	173	2332	0.14	PPBV	#	90
85) 1,1,2,2-TETRACHLOROETHANE	12.791	83	4532	0.19	PPBV	#	95
86) 1,2,3-TRICHLOROPROPANE	13.077	75	3605	0.20	PPBV	#	99
88) ISOPROPYLBENZENE	14.302	120	2407	0.20	PPBV		95
89) BROMOBENZENE	14.177	77	4545	0.20	PPBV	#	81
90) 2-CHLOROTOLUENE	15.312	126	2099	0.19	PPBV		91
91) N-PROPYLBENZENE	15.662	120	2391	0.19	PPBV	#	62
92) 4-ETHYLTOLUENE	16.061	105	8447	0.18	PPBV	#	95
93) 1,3,5-TRIMETHYLBENZENE	16.231	105	7477	0.19	PPBV		99
94) ALPHA-METHYLSTYRENE	16.453	118	3524	0.17	PPBV		94
95) TERT-BUTYLBENZENE	16.710	134	1664	0.18	PPBV		87
96) 1,2,4-TRIMETHYLBENZENE	16.717	105	7797	0.18	PPBV		94

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\
Data File : 2w62385.D
Acq On : 14 Dec 2022 6:59 pm
Operator : thomash
Sample : ic2776-0.2
Misc : MS64821,V2w2776,,,,,1
ALS Vial : 1 Sample Multiplier: 1

Quant Time: Dec 16 16:04:33 2022
Quant Method : C:\msdchem\1\METHODS\M2W2776.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Fri Dec 16 07:28:46 2022
Response via : Initial Calibration

	Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
98)	M-DICHLOROBENZENE	16.781	146	4560	0.18	PPBV	96
99)	P-DICHLOROBENZENE	16.865	146	4645	0.18	PPBV	98
100)	O-DICHLOROBENZENE	17.164	146	4568	0.18	PPBV	94
101)	SEC-BUTYLBENZENE	16.996	134	2262	0.19	PPBV	91
102)	1,2,3-TRIMETHYLBENZENE	17.112	105	7569	0.18	PPBV	98
103)	P-ISOPROPYLTOLUENE	17.180	134	2317	0.17	PPBV	94
104)	N-BUTYLBENZENE	17.530	134	2029	0.15	PPBV	79
106)	HEXACHLOROBUTADIENE	18.752	225	3916	0.15	PPBV	87
107)	1,2,4-TRICHLOROBENZENE	18.443	180	4334	0.15	PPBV	96
108)	NAPHTHALENE	18.492	128	10432	0.14	PPBV	99

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

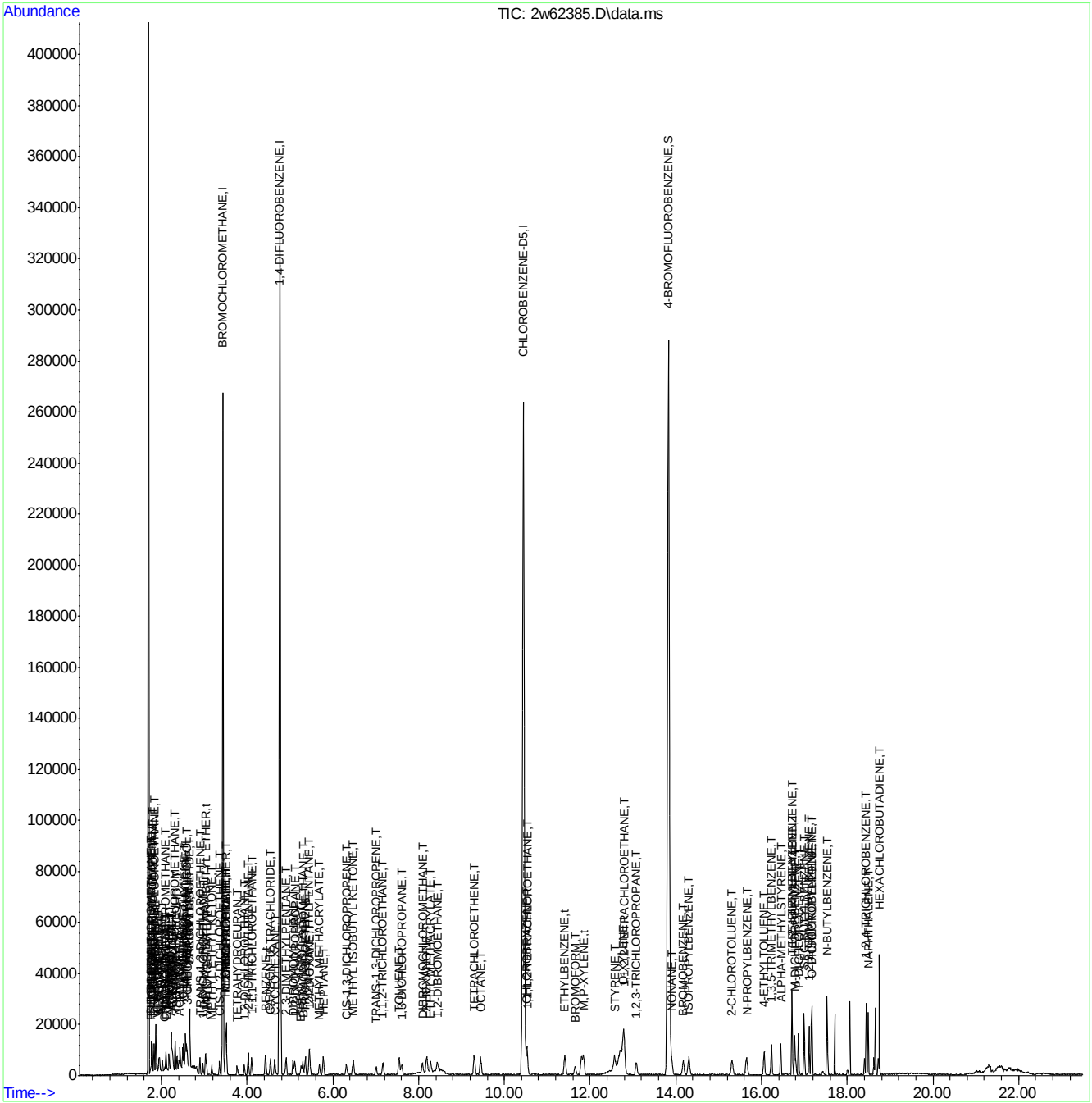
7.7.3

7

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\
Data File : 2w62385.D
Acq On : 14 Dec 2022 6:59 pm
Operator : thomash
Sample : ic2776-0.2
Misc : MS64821,V2w2776,,,,,1
ALS Vial : 1 Sample Multiplier: 1

Quant Time: Dec 16 16:04:33 2022
Quant Method : C:\msdchem\1\METHODS\M2W2776.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Fri Dec 16 07:28:46 2022
Response via : Initial Calibration



Manual Integration Approval Summary

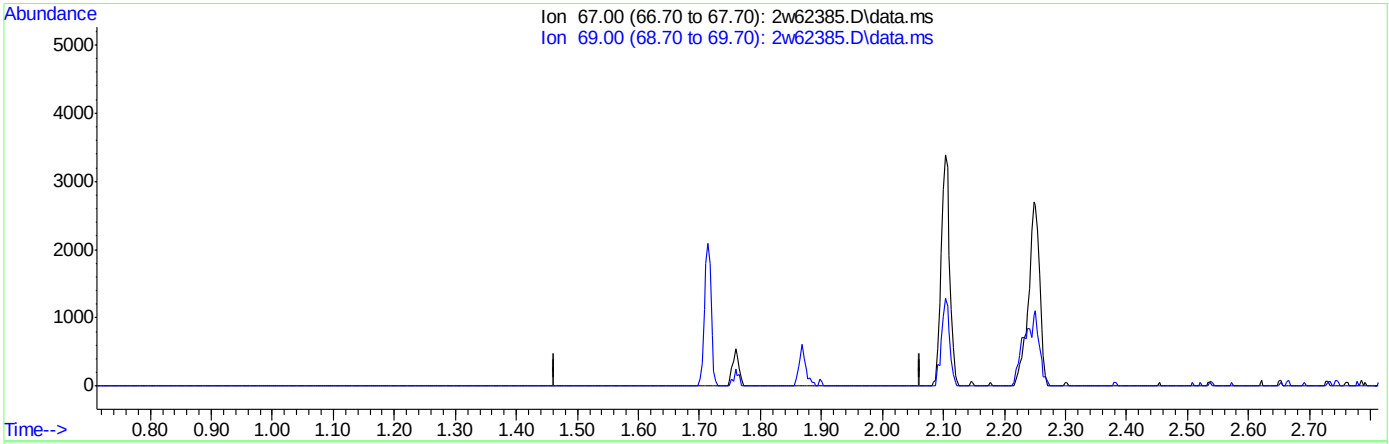
Sample Number: V2W2776-IC2776 **Method:** TO-15
Lab FileID: 2W62385.D **Analyst approved:** 12/16/22 16:35 Thomas Hilbig
Injection Time: 12/14/22 18:59 **Supervisor approved:** 12/19/22 12:10 Kanya Veerawat

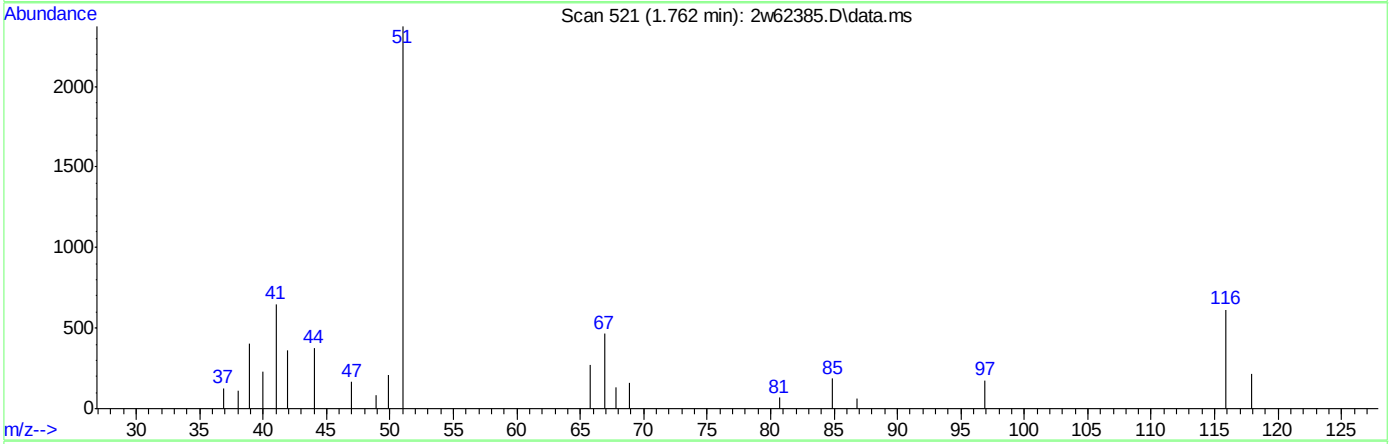
Parameter	CAS	Sig#	R.T. (min.)	Reason
Chlorodifluoromethane	75-45-6		1.76	Missed peak
Chloromethane	74-87-3		1.84	Missed peak
Vinyl Acetate	108-05-4		3.05	Missed peak
m,p-Xylene			11.84	Split peak

Quantitation Report (Qedit)

Data Path : C:\msdchem\1\DATA\
Data File : 2w62385.D
Acq On : 14 Dec 2022 6:59 pm
Operator : thomash
Sample : ic2776-0.2
Misc : MS64821,V2w2776,,,,,1
ALS Vial : 1 Sample Multiplier: 1

Quant Time: Dec 16 07:30:08 2022
Quant Method : C:\msdchem\1\METHODS\M2W2776.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Fri Dec 16 07:28:46 2022
Response via : Initial Calibration





TIC: 2w62385.D\data.ms

(4) CHLORODIFLUOROMETHANE (T)

1.763min (-1.763) 0.00PPBV

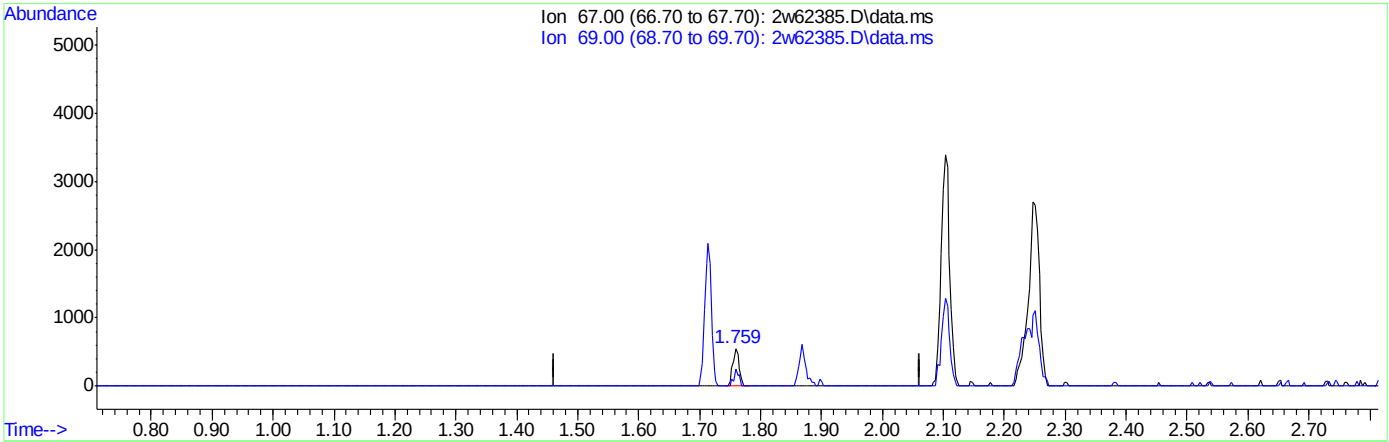
response 0

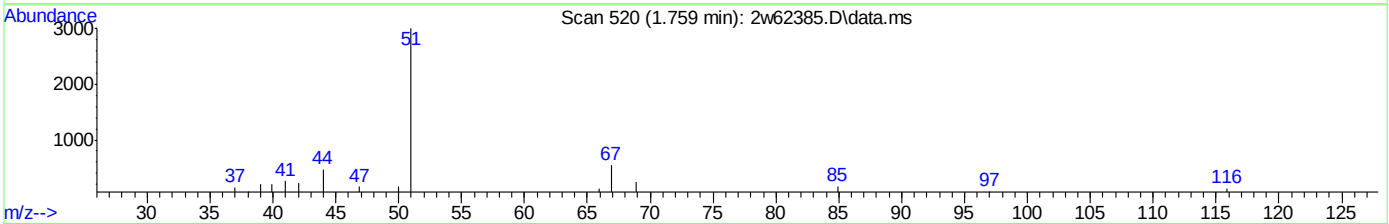
Ion	Exp%	Act%
67.00	100	0.00
69.00	34.20	0.00#
0.00	0.00	0.00
0.00	0.00	0.00

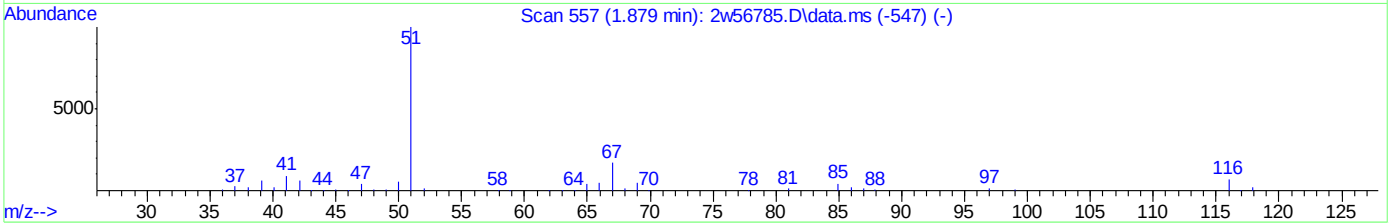
Quantitation Report (Qedit)

Data Path : C:\msdchem\1\DATA\
Data File : 2w62385.D
Acq On : 14 Dec 2022 6:59 pm
Operator : thomash
Sample : ic2776-0.2
Misc : MS64821,V2w2776,,,,,1
ALS Vial : 1 Sample Multiplier: 1

Quant Time: Dec 16 07:30:08 2022
Quant Method : C:\msdchem\1\METHODS\M2W2776.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Fri Dec 16 07:28:46 2022
Response via : Initial Calibration







TIC: 2w62385.D\data.ms

(4) CHLORODIFLUOROMETHANE (T)

1.759min (-0.003) 0.20PPBV m

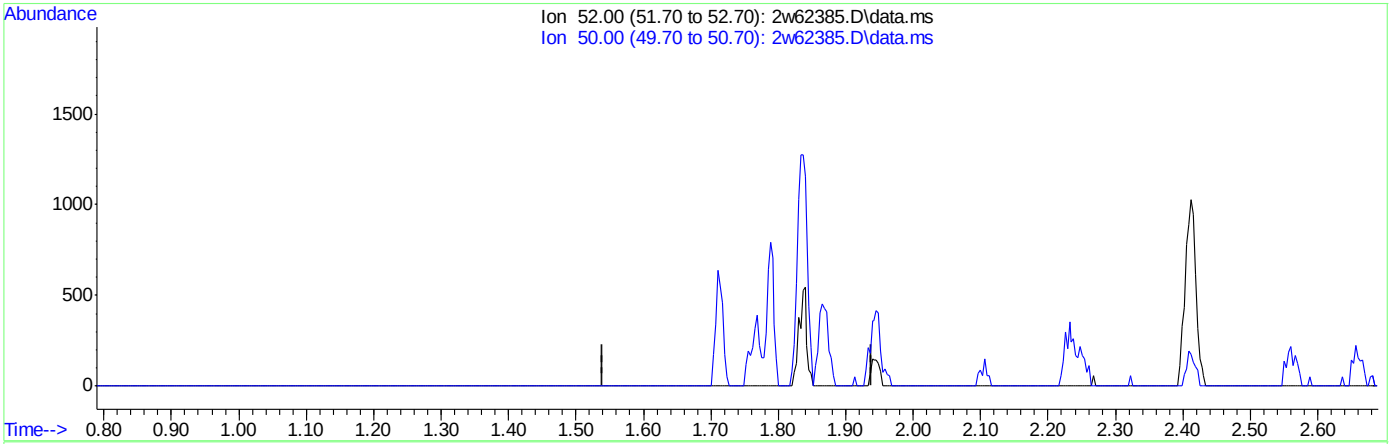
response 398

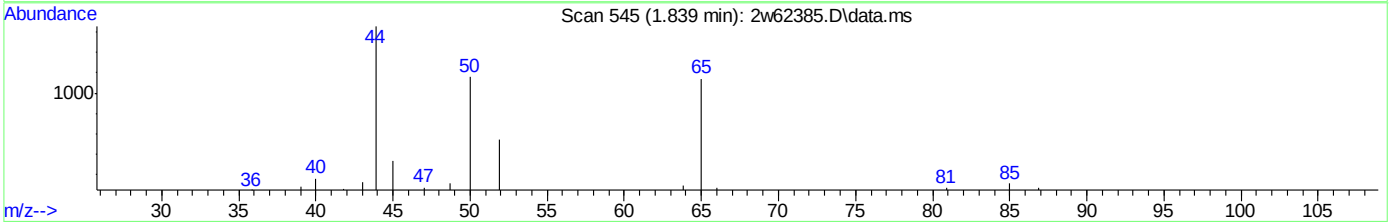
Ion	Exp%	Act%
67.00	100	100
69.00	34.20	0.00#
0.00	0.00	0.00
0.00	0.00	0.00

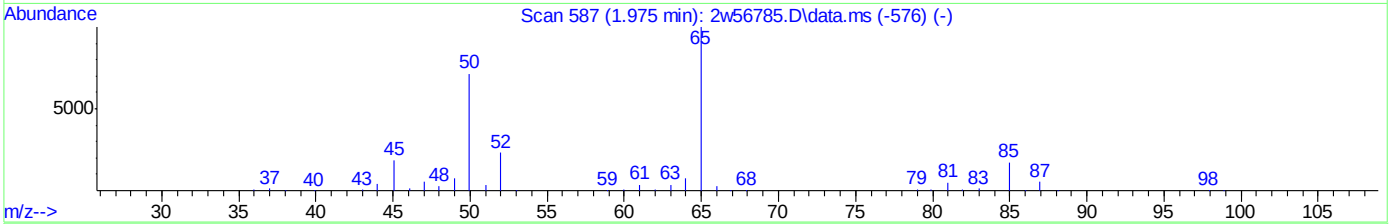
Quantitation Report (Qedit)

Data Path : C:\msdchem\1\DATA\
Data File : 2w62385.D
Acq On : 14 Dec 2022 6:59 pm
Operator : thomash
Sample : ic2776-0.2
Misc : MS64821,V2w2776,,,,,1
ALS Vial : 1 Sample Multiplier: 1

Quant Time: Dec 16 07:30:08 2022
Quant Method : C:\msdchem\1\METHODS\M2W2776.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Fri Dec 16 07:28:46 2022
Response via : Initial Calibration







TIC: 2w62385.D\data.ms

(10) CHLOROMETHANE (T)

1.840min (-1.840) 0.00PPBV

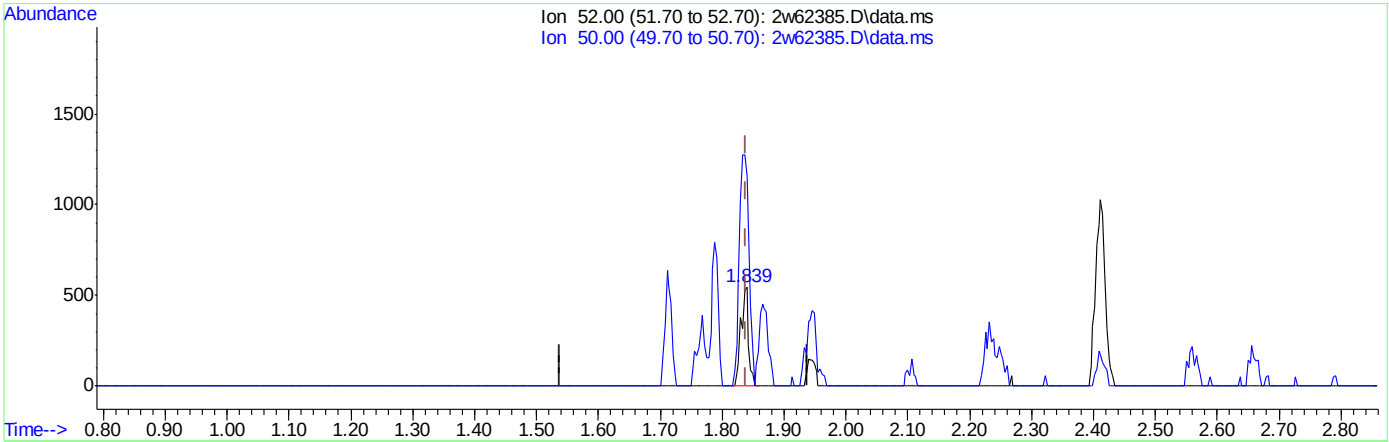
response 0

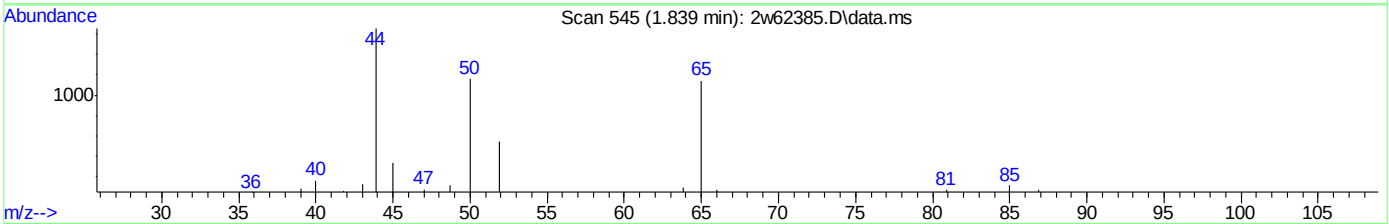
Ion	Exp%	Act%
52.00	100	0.00
50.00	312.00	0.00#
0.00	0.00	0.00
0.00	0.00	0.00

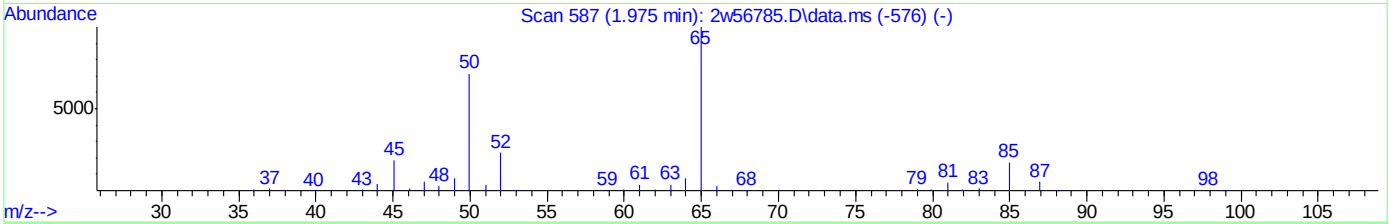
Quantitation Report (Qedit)

Data Path : C:\msdchem\1\DATA\
Data File : 2w62385.D
Acq On : 14 Dec 2022 6:59 pm
Operator : thomash
Sample : ic2776-0.2
Misc : MS64821,V2w2776,,,,,1
ALS Vial : 1 Sample Multiplier: 1

Quant Time: Dec 16 07:30:08 2022
Quant Method : C:\msdchem\1\METHODS\M2W2776.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Fri Dec 16 07:28:46 2022
Response via : Initial Calibration







TIC: 2w62385.D\data.ms

(10) CHLOROMETHANE (T)

1.839min (-0.000) 0.23PPBV m

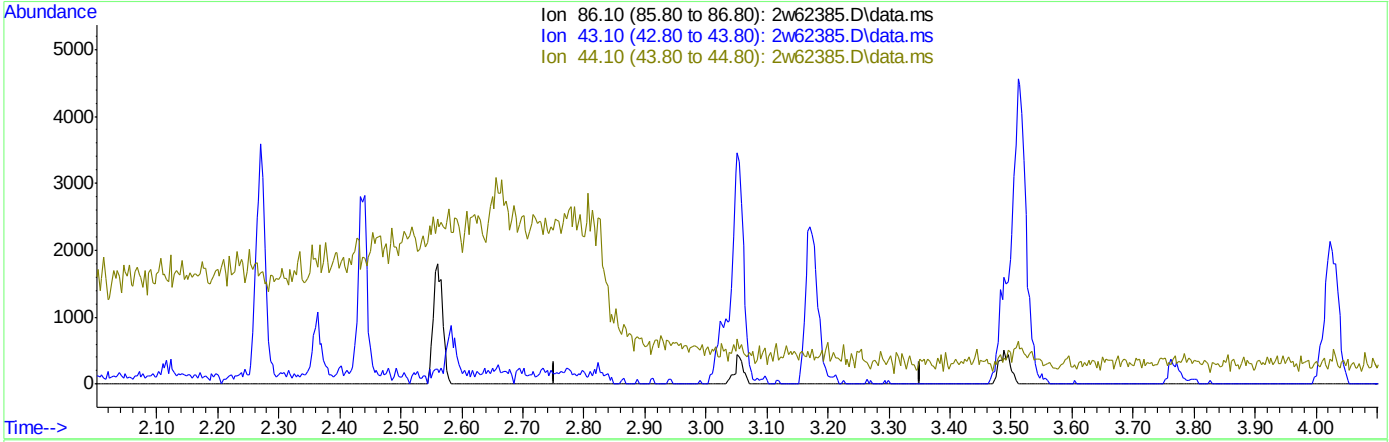
response 455

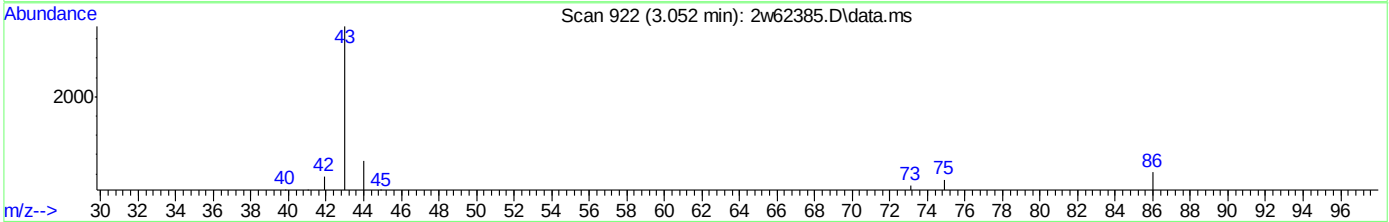
Ion	Exp%	Act%
52.00	100	100
50.00	312.00	0.00#
0.00	0.00	0.00
0.00	0.00	0.00

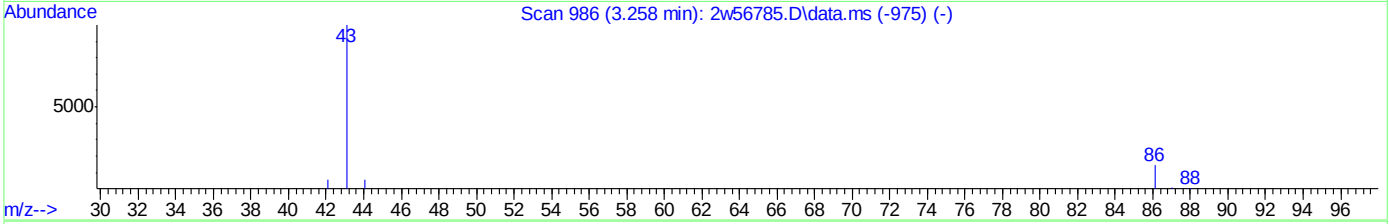
Quantitation Report (Qedit)

Data Path : C:\msdchem\1\DATA\
Data File : 2w62385.D
Acq On : 14 Dec 2022 6:59 pm
Operator : thomash
Sample : ic2776-0.2
Misc : MS64821,V2w2776,,,,,1
ALS Vial : 1 Sample Multiplier: 1

Quant Time: Dec 16 07:30:08 2022
Quant Method : C:\msdchem\1\METHODS\M2W2776.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Fri Dec 16 07:28:46 2022
Response via : Initial Calibration







TIC: 2w62385.D\data.ms

(39) VINYL ACETATE (T)

3.052min (-3.052) 0.00PPBV

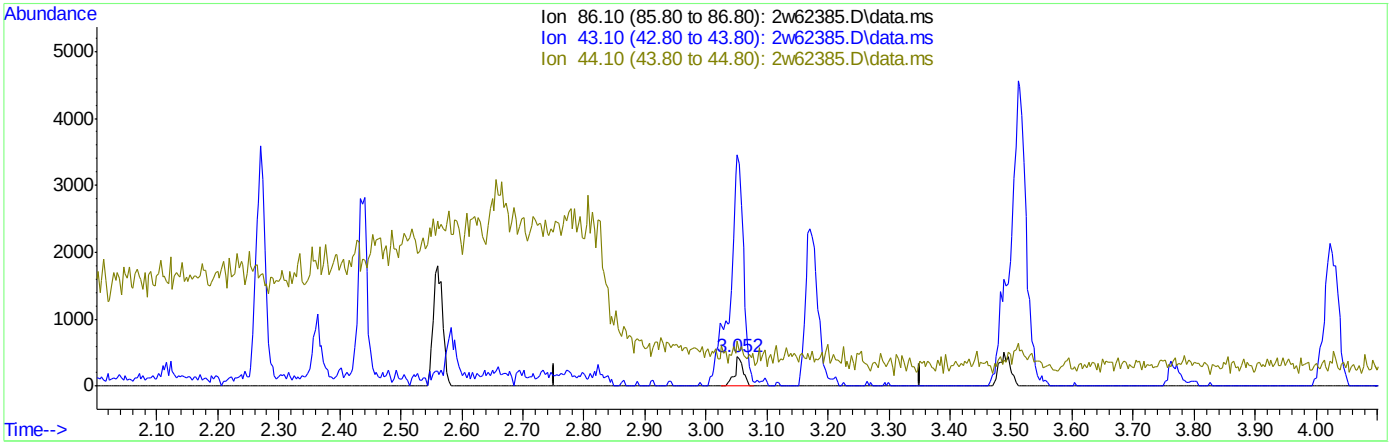
response 0

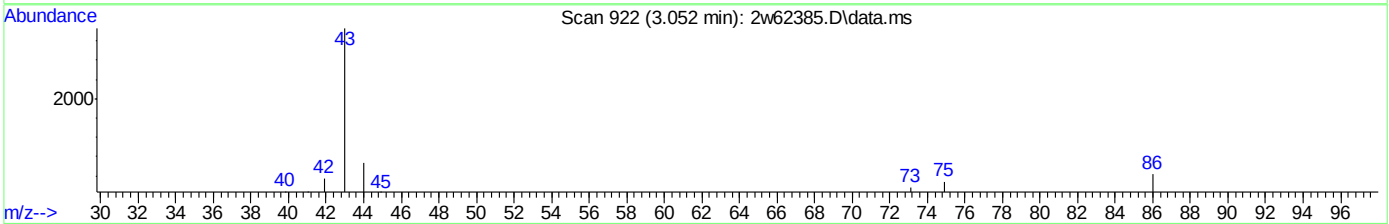
Ion	Exp%	Act%
86.10	100	0.00
43.10	958.60	0.00#
44.10	52.20	0.00#
0.00	0.00	0.00

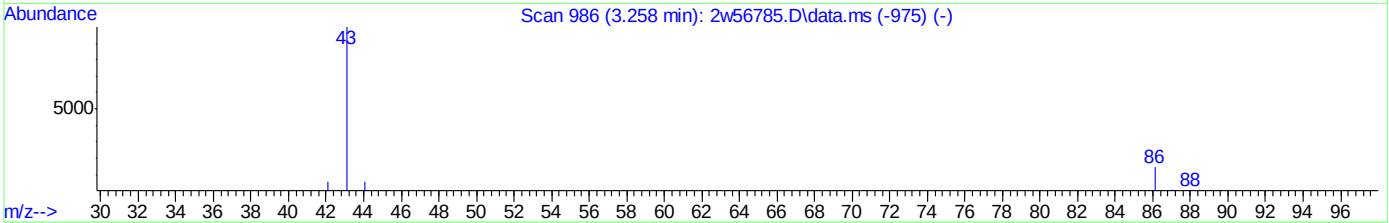
Quantitation Report (Qedit)

Data Path : C:\msdchem\1\DATA\
Data File : 2w62385.D
Acq On : 14 Dec 2022 6:59 pm
Operator : thomash
Sample : ic2776-0.2
Misc : MS64821,V2w2776,,,,,1
ALS Vial : 1 Sample Multiplier: 1

Quant Time: Dec 16 07:30:08 2022
Quant Method : C:\msdchem\1\METHODS\M2W2776.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Fri Dec 16 07:28:46 2022
Response via : Initial Calibration







TIC: 2w62385.D\data.ms

(39) VINYL ACETATE (T)

3.052min (-0.000) 0.30PPBV m

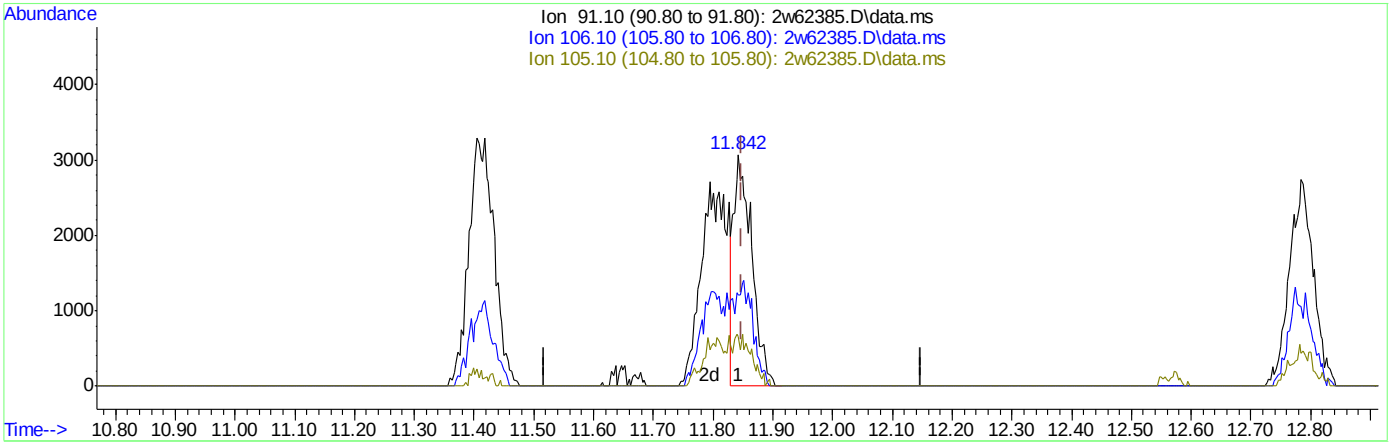
response 423

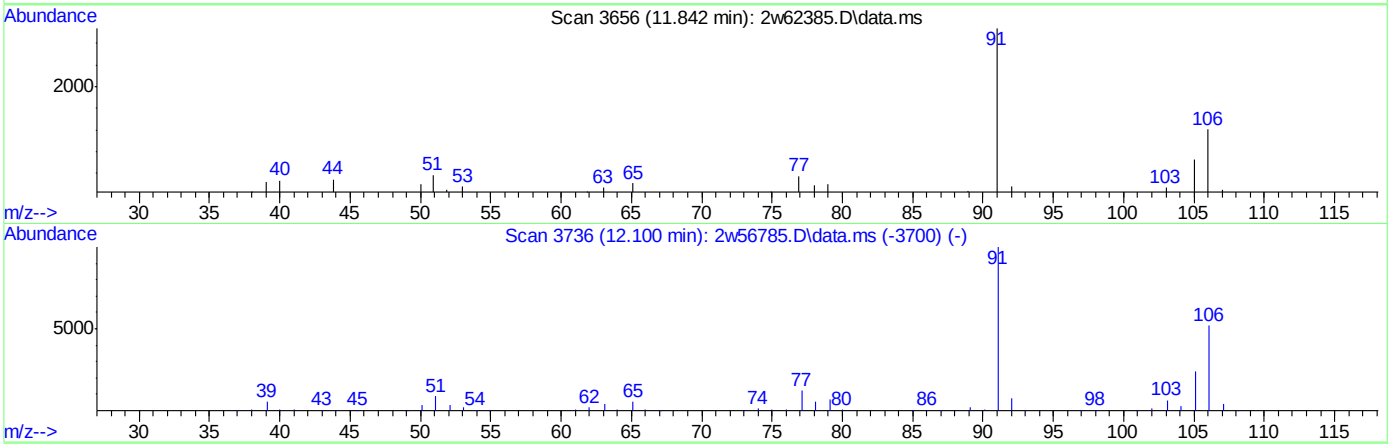
Ion	Exp%	Act%
86.10	100	100
43.10	958.60	0.00#
44.10	52.20	0.00#
0.00	0.00	0.00

Quantitation Report (Qedit)

Data Path : C:\msdchem\1\DATA\
Data File : 2w62385.D
Acq On : 14 Dec 2022 6:59 pm
Operator : thomash
Sample : ic2776-0.2
Misc : MS64821,V2w2776,,,,,1
ALS Vial : 1 Sample Multiplier: 1

Quant Time: Dec 16 07:30:08 2022
Quant Method : C:\msdchem\1\METHODS\M2W2776.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Fri Dec 16 07:28:46 2022
Response via : Initial Calibration





TIC: 2w62385.D\data.ms

(80) M,P-XYLENE (t)

11.842min (-0.007) 0.20PPBV

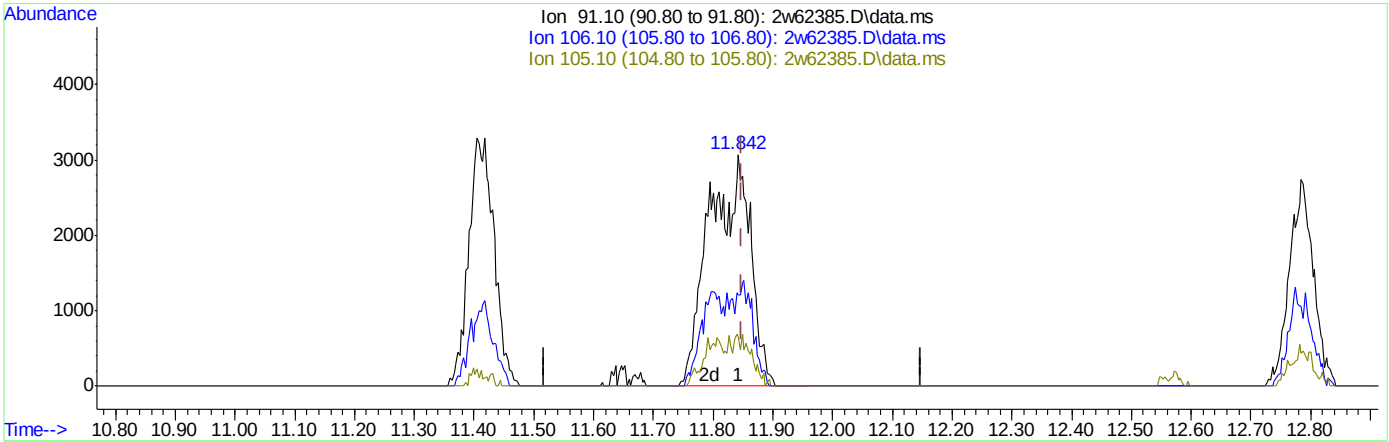
response 6428

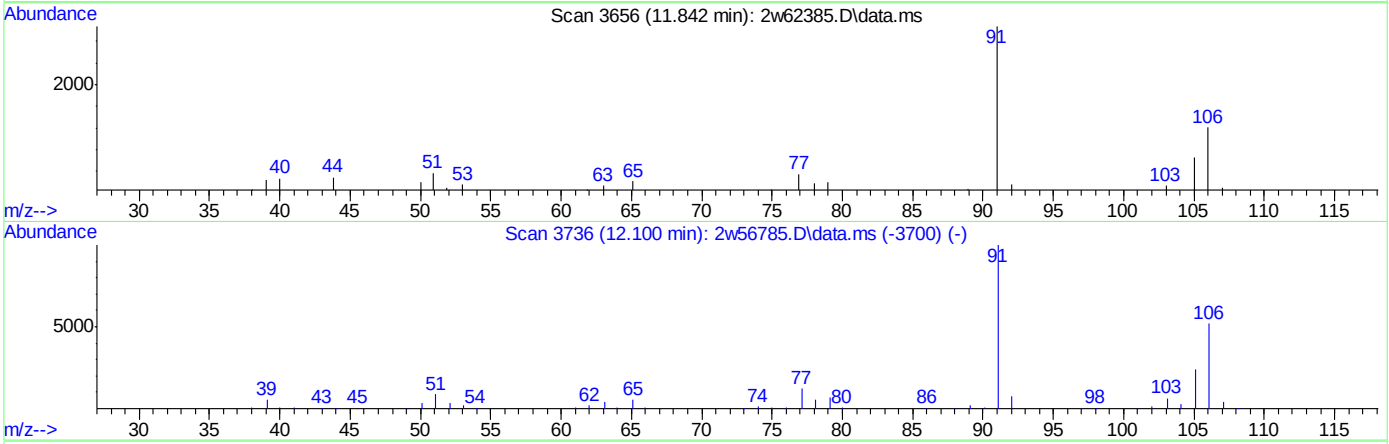
Ion	Exp%	Act%
91.10	100	100
106.10	23.00	40.77
105.10	10.90	28.56
0.00	0.00	0.00

Quantitation Report (Qedit)

Data Path : C:\msdchem\1\DATA\
Data File : 2w62385.D
Acq On : 14 Dec 2022 6:59 pm
Operator : thomash
Sample : ic2776-0.2
Misc : MS64821,V2w2776,,,,,1
ALS Vial : 1 Sample Multiplier: 1

Quant Time: Dec 16 07:30:08 2022
Quant Method : C:\msdchem\1\METHODS\M2W2776.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Fri Dec 16 07:28:46 2022
Response via : Initial Calibration





TIC: 2w62385.D\data.ms

(80) M,P-XYLENE (t)

11.842min (-0.007) 0.46PPBV m

response 14636

Ion	Exp%	Act%
91.10	100	100
106.10	23.00	17.91
105.10	10.90	12.54
0.00	0.00	0.00

Manual Integrations APPROVED (compounds with "m" flag)
Kanya Veerawat 12/19/22 12:10

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\
Data File : 2w62386.D
Acq On : 14 Dec 2022 7:31 pm
Operator : thomash
Sample : ic2776-0.5
Misc : MS64821,V2w2776,,,,,1
ALS Vial : 1 Sample Multiplier: 1

Quant Time: Dec 19 07:59:05 2022
Quant Method : C:\msdchem\1\METHODS\M2W2776.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Fri Dec 16 07:28:46 2022
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units		Dev(Min)
Internal Standards							
1) BROMOCHLOROMETHANE	3.438	128	50548	10.00	PPBV		0.00
52) 1,4-DIFLUOROBENZENE	4.765	114	260091	10.00	PPBV		0.00
76) CHLOROBENZENE-D5	10.447	117	233239	10.00	PPBV		0.00
System Monitoring Compounds							
87) 4-BROMOFLUOROBENZENE	13.833	95	177306	9.80	PPBV		0.00
Target Compounds							Qvalue
3) FREON 152A	1.749	65	2016	0.53	PPBV	#	100
4) CHLORODIFLUOROMETHANE	1.759	67	1010	0.50	PPBV	#	40
5) CHLOROTRIFLUOROETHENE	1.775	116	5131	0.56	PPBV		86
6) DICHLORODIFLUOROMETHANE	1.791	85	13069	0.54	PPBV		99
7) PROPYLENE	1.772	41	2680	0.61	PPBV		94
8) 1-CHLORO-1,1-DIFLUOROE...	1.833	65	10079	0.56	PPBV		98
9) FREON 114	1.872	85	10958	0.53	PPBV		95
10) CHLOROMETHANE	1.836	52	1139	0.57	PPBV		100
11) VINYL CHLORIDE	1.904	62	4174	0.58	PPBV	#	93
12) 1,3-BUTADIENE	1.946	54	3062	0.56	PPBV		91
13) N-BUTANE	1.965	43	5706	0.58	PPBV	#	71
14) BROMOMETHANE	2.029	94	3840	0.55	PPBV		97
15) CHLOROETHANE	2.077	64	2103	0.55	PPBV	#	82
16) DICHLOROFLUOROMETHANE	2.106	67	8722	0.53	PPBV		95
17) ACETONITRILE	2.184	41	3150	0.56	PPBV	#	83
18) ACROLEIN	2.225	56	1725	0.54	PPBV		83
19) FREON 123	2.238	83	9722	0.55	PPBV		100
20) FREON 123A	2.257	117	5944	0.58	PPBV		87
21) TRICHLOROFLUOROMETHANE	2.325	101	12670	0.54	PPBV		99
22) ISOPROPYL ALCOHOL	2.364	45	8794	0.62	PPBV	#	93
23) ACETONE	2.274	58	2657	0.71	PPBV		86
24) PENTANE	2.441	42	4097	0.55	PPBV		98
25) IODOMETHANE	2.499	142	11529	0.52	PPBV		94
26) 1,1-DICHLOROETHYLENE	2.528	96	4750	0.54	PPBV		80
27) CARBON DISULFIDE	2.659	76	12581	0.48	PPBV		97
28) ETHANOL	2.122	45	2300	0.79	PPBV	#	90
29) BROMOETHENE	2.187	106	3942	0.54	PPBV	#	96
30) ACRYLONITRILE	2.415	52	2982	0.55	PPBV	#	92
31) METHYLENE CHLORIDE	2.563	84	5545	0.67	PPBV	#	80
32) 3-CHLOROPROPENE	2.605	76	2280	0.53	PPBV	#	77
33) FREON 113	2.659	151	7473	0.51	PPBV		94
34) TRANS-1,2-DICHLOROETHENE	2.901	96	4028	0.52	PPBV		97
35) TERTIARY BUTYL ALCOHOL	2.582	59	13985	0.65	PPBV	#	51
36) METHYL TERTIARY BUTYL ...	3.026	73	11622	0.53	PPBV	#	89
37) TETRAHYDROFURAN	3.769	72	1770	0.48	PPBV		88
38) HEXANE	3.492	57	6836	0.55	PPBV		89
39) VINYL ACETATE	3.052	86	913	0.63	PPBV	#	1
40) 1,1-DICHLOROETHANE	2.978	63	6976	0.53	PPBV		97
41) METHYL ETHYL KETONE	3.171	72	1937	0.51	PPBV		84
42) CIS-1,2-DICHLOROETHENE	3.357	96	4291	0.51	PPBV		96
43) DIISOPROPYL ETHER	3.508	59	2016	0.54	PPBV		86

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\
Data File : 2w62386.D
Acq On : 14 Dec 2022 7:31 pm
Operator : thomash
Sample : ic2776-0.5
Misc : MS64821,V2w2776,,,,,1
ALS Vial : 1 Sample Multiplier: 1

Quant Time: Dec 19 07:59:05 2022
Quant Method : C:\msdchem\1\METHODS\M2W2776.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Fri Dec 16 07:28:46 2022
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units		Dev(Min)
44) ETHYL ACETATE	3.518	61	1391	0.53	PPBV		74
45) METHYL ACRYLATE	3.495	55	7970	0.50	PPBV	#	92
46) CHLOROFORM	3.511	83	9397	0.52	PPBV		97
47) 2,4-DIMETHYLPENTANE	4.023	57	7575	0.52	PPBV		94
48) 1,1,1-TRICHLOROETHANE	4.103	97	9263	0.49	PPBV		98
49) CARBON TETRACHLORIDE	4.547	117	8854	0.46	PPBV		98
50) 1,2-DICHLOROETHANE	3.939	62	6959	0.55	PPBV	#	93
51) BENZENE	4.428	78	13224	0.56	PPBV		99
53) CYCLOHEXANE	4.643	84	5494	0.51	PPBV		96
54) 2,3-DIMETHYLPENTANE	4.910	71	2757	0.52	PPBV	#	94
55) TRICHLOROETHENE	5.357	95	6157	0.53	PPBV		92
56) 1,2-DICHLOROPROPANE	5.116	63	4420	0.49	PPBV	#	91
57) DIBROMOMETHANE	5.071	174	5279	0.52	PPBV		91
58) ETHYL ACRYLATE	5.254	55	9851	0.49	PPBV		98
59) BROMODICHLOROMETHANE	5.299	83	9233	0.47	PPBV		94
60) 2,2,4-TRIMETHYLPENTANE	5.454	57	21278	0.53	PPBV		99
61) 1,4-DIOXANE	5.437	88	3262	0.54	PPBV	#	1
62) HEPTANE	5.778	43	7269	0.53	PPBV		93
63) METHYL METHACRYLATE	5.685	69	4673	0.51	PPBV		92
64) METHYL ISOBUTYL KETONE	6.470	58	4836	0.56	PPBV		85
65) CIS-1,3-DICHLOROPROPENE	6.318	75	6617	0.47	PPBV		91
66) TOLUENE	7.547	91	16657	0.55	PPBV		97
67) 1,3-DICHLOROPROPANE	7.601	76	7639	0.50	PPBV		99
68) TRANS-1,3-DICHLOROPROPENE	7.007	75	5581	0.42	PPBV		94
69) 1,1,2-TRICHLOROETHANE	7.170	83	4625	0.52	PPBV		96
70) 2-HEXANONE	8.183	58	4652	0.37	PPBV		81
71) ETHYL METHACRYLATE	8.283	69	7855	0.50	PPBV		94
72) TETRACHLOROETHENE	9.299	164	5938	0.51	PPBV		93
73) DIBROMOCHLOROMETHANE	8.093	129	7596	0.40	PPBV		99
74) 1,2-DIBROMOETHANE	8.437	107	8583	0.50	PPBV	#	95
75) OCTANE	9.450	43	10036	0.52	PPBV		92
77) 1,1,1,2-TETRACHLOROETHANE	10.530	131	5806	0.44	PPBV		89
78) CHLOROBENZENE	10.521	112	12527	0.51	PPBV		95
79) ETHYLBENZENE	11.418	91	22543	0.54	PPBV		97
80) M,P-XYLENE	11.842	91	34445m	1.05	PPBV		
81) O-XYLENE	12.778	91	18071	0.55	PPBV	#	87
82) STYRENE	12.563	104	11793	0.48	PPBV		98
83) NONANE	13.907	43	10534	0.51	PPBV		88
84) BROMOFORM	11.653	173	6291	0.36	PPBV		100
85) 1,1,2,2-TETRACHLOROETHANE	12.791	83	11952	0.49	PPBV		99
86) 1,2,3-TRICHLOROPROPANE	13.077	75	9457	0.51	PPBV	#	99
88) ISOPROPYLBENZENE	14.305	120	6073	0.49	PPBV		90
89) BROMOBENZENE	14.177	77	11133	0.47	PPBV		88
90) 2-CHLOROTOLUENE	15.315	126	5357	0.48	PPBV		95
91) N-PROPYLBENZENE	15.659	120	6449	0.50	PPBV		99
92) 4-ETHYLTOLUENE	16.067	105	22849	0.48	PPBV	#	97
93) 1,3,5-TRIMETHYLBENZENE	16.234	105	19721	0.48	PPBV		97
94) ALPHA-METHYLSTYRENE	16.447	118	8677	0.41	PPBV		97
95) TERT-BUTYLBENZENE	16.710	134	4609	0.48	PPBV		98
96) 1,2,4-TRIMETHYLBENZENE	16.717	105	20170	0.47	PPBV		95

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\
Data File : 2w62386.D
Acq On : 14 Dec 2022 7:31 pm
Operator : thomash
Sample : ic2776-0.5
Misc : MS64821,V2w2776,,,,,1
ALS Vial : 1 Sample Multiplier: 1

Quant Time: Dec 19 07:59:05 2022
Quant Method : C:\msdchem\1\METHODS\M2W2776.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Fri Dec 16 07:28:46 2022
Response via : Initial Calibration

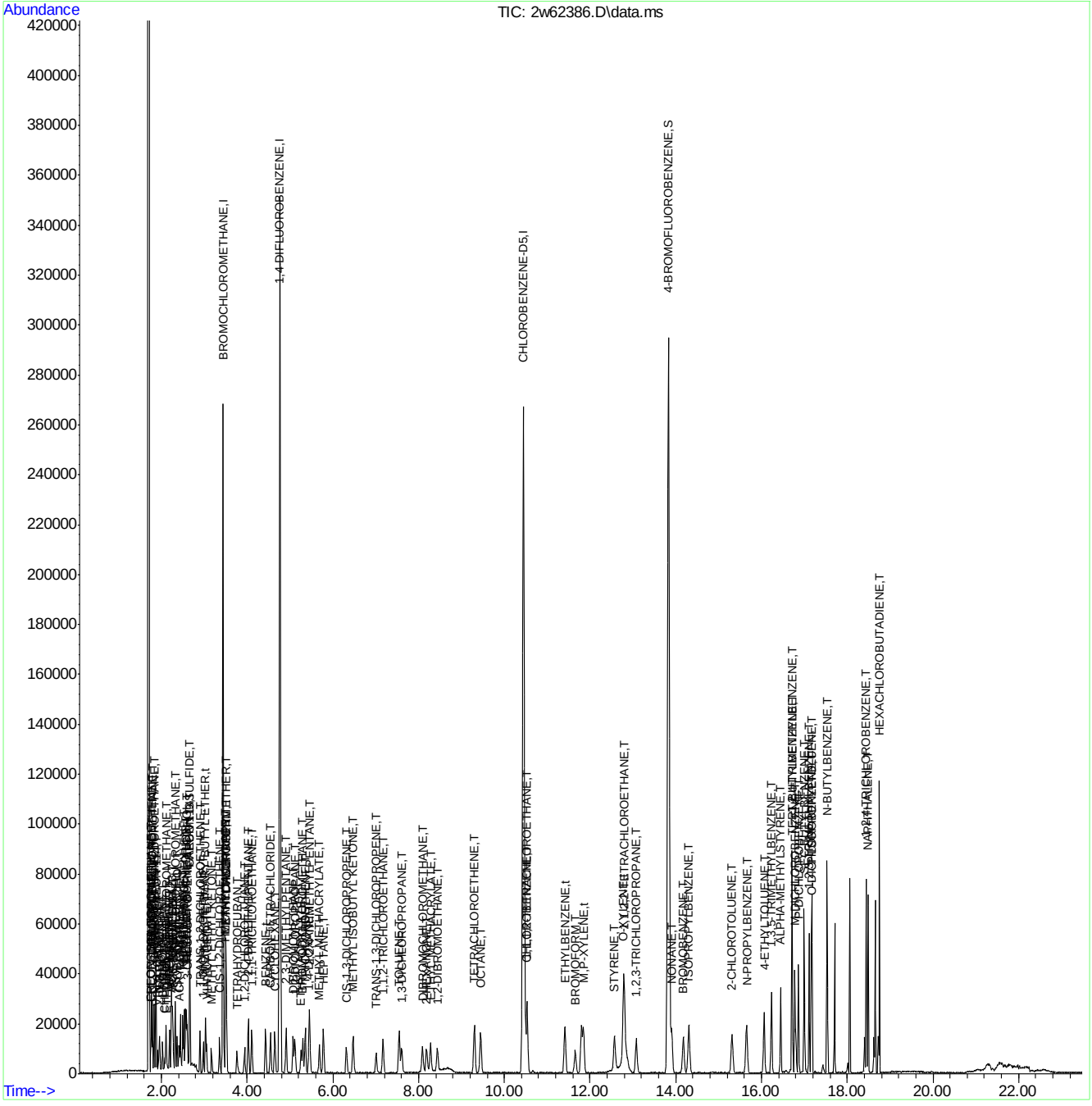
	Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
98)	M-DICHLOROBENZENE	16.778	146	12107	0.46	PPBV	96
99)	P-DICHLOROBENZENE	16.865	146	12400	0.46	PPBV	96
100)	O-DICHLOROBENZENE	17.164	146	12282	0.47	PPBV	97
101)	SEC-BUTYLBENZENE	17.000	134	5682	0.45	PPBV	91
102)	1,2,3-TRIMETHYLBENZENE	17.109	105	19922	0.47	PPBV	99
103)	P-ISOPROPYLTOLUENE	17.180	134	5783	0.42	PPBV	84
104)	N-BUTYLBENZENE	17.527	134	5869	0.44	PPBV	83
106)	HEXACHLOROBUTADIENE	18.752	225	9874m	0.37	PPBV	
107)	1,2,4-TRICHLOROBENZENE	18.443	180	11425	0.40	PPBV	96
108)	NAPHTHALENE	18.488	128	28216	0.38	PPBV	99

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

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\
Data File : 2w62386.D
Acq On : 14 Dec 2022 7:31 pm
Operator : thomash
Sample : ic2776-0.5
Misc : MS64821,V2w2776,,,,,1
ALS Vial : 1 Sample Multiplier: 1

Quant Time: Dec 19 07:59:05 2022
Quant Method : C:\msdchem\1\METHODS\M2W2776.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Fri Dec 16 07:28:46 2022
Response via : Initial Calibration



Manual Integration Approval Summary

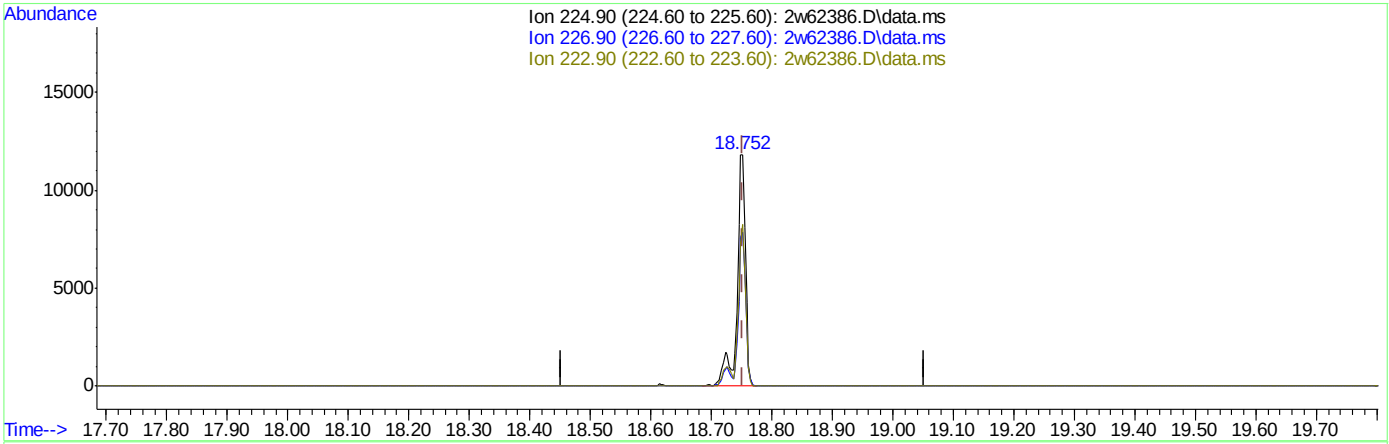
Sample Number: V2W2776-IC2776
Lab FileID: 2W62386.D
Injection Time: 12/14/22 19:31
Method: TO-15
Analyst approved: 12/19/22 08:14 Thomas Hilbig
Supervisor approved: 12/19/22 12:10 Kanya Veerawat

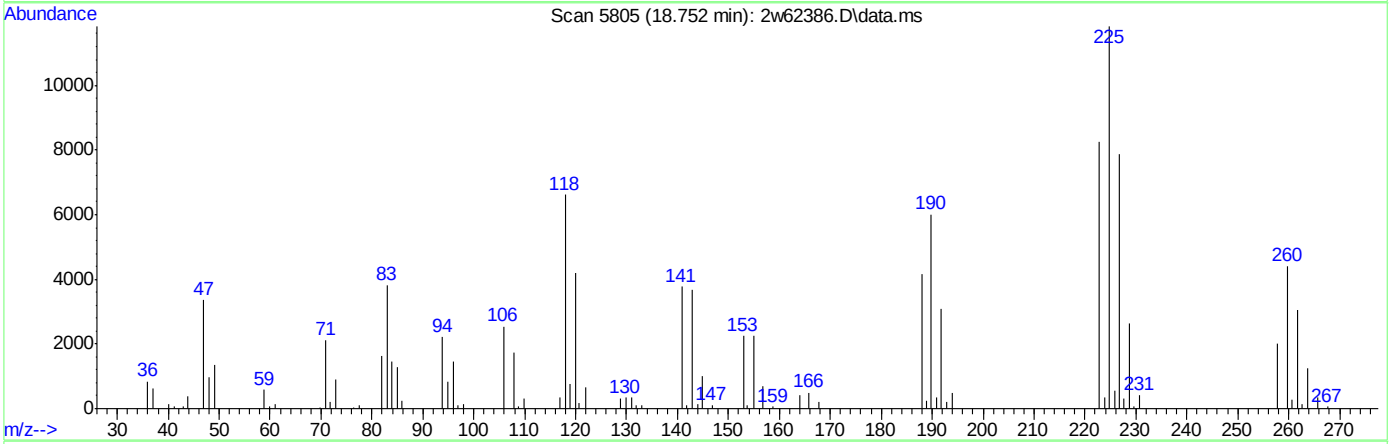
Parameter	CAS	Sig#	R.T. (min.)	Reason
m,p-Xylene			11.84	Split peak
Hexachlorobutadiene	87-68-3		18.75	Overlapping peak

Quantitation Report (Qedit)

Data Path : C:\msdchem\1\DATA\
Data File : 2w62386.D
Acq On : 14 Dec 2022 7:31 pm
Operator : thomash
Sample : ic2776-0.5
Misc : MS64821,V2w2776,,,,,1
ALS Vial : 1 Sample Multiplier: 1

Quant Time: Dec 16 07:30:16 2022
Quant Method : C:\msdchem\1\METHODS\M2W2776.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Fri Dec 16 07:28:46 2022
Response via : Initial Calibration





TIC: 2w62386.D\data.ms

(106) HEXACHLOROBUTADIENE (T)

18.752min (-0.000) 0.43PPBV

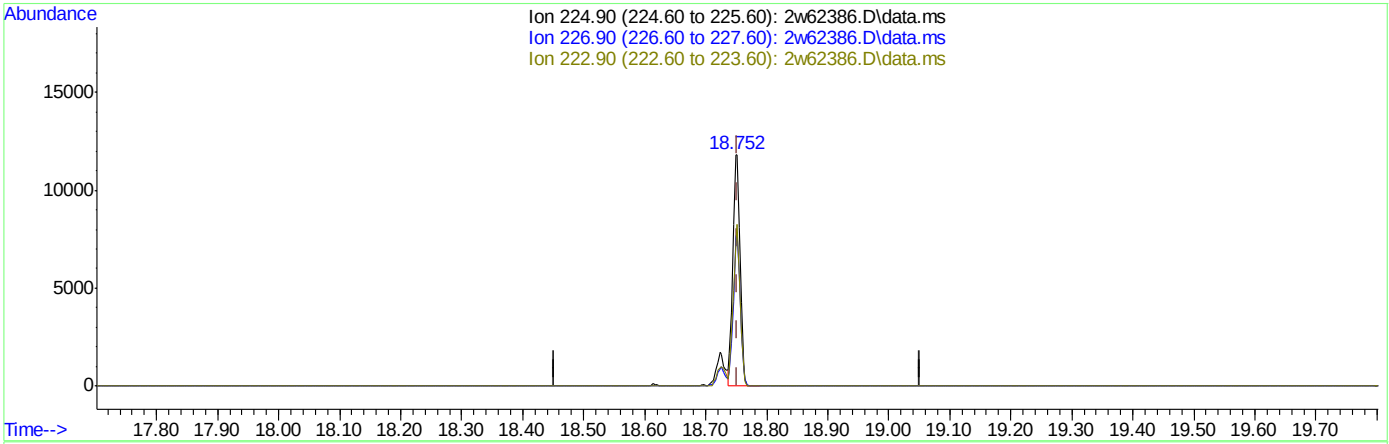
response 11578

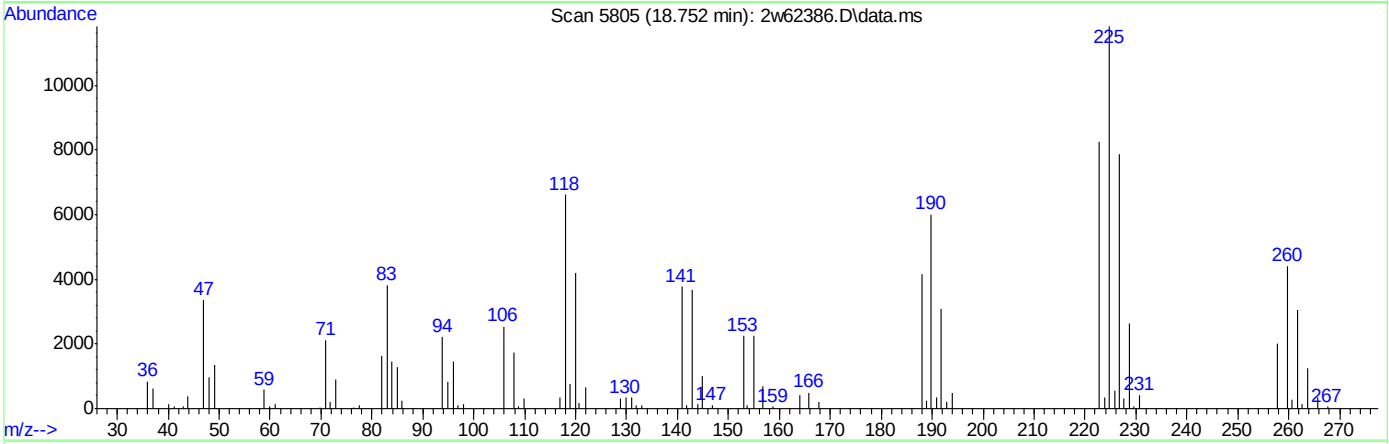
Ion	Exp%	Act%
224.90	100	100
226.90	63.90	61.96
222.90	62.70	64.42
0.00	0.00	0.00

Quantitation Report (Qedit)

Data Path : C:\msdchem\1\DATA\
Data File : 2w62386.D
Acq On : 14 Dec 2022 7:31 pm
Operator : thomash
Sample : ic2776-0.5
Misc : MS64821,V2w2776,,,,,1
ALS Vial : 1 Sample Multiplier: 1

Quant Time: Dec 16 16:07:59 2022
Quant Method : C:\msdchem\1\METHODS\M2W2776.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Fri Dec 16 07:28:46 2022
Response via : Initial Calibration





TIC: 2w62386.D\data.ms

(106) HEXACHLOROBUTADIENE (T)

18.752min (-0.000) 0.37PPBV m

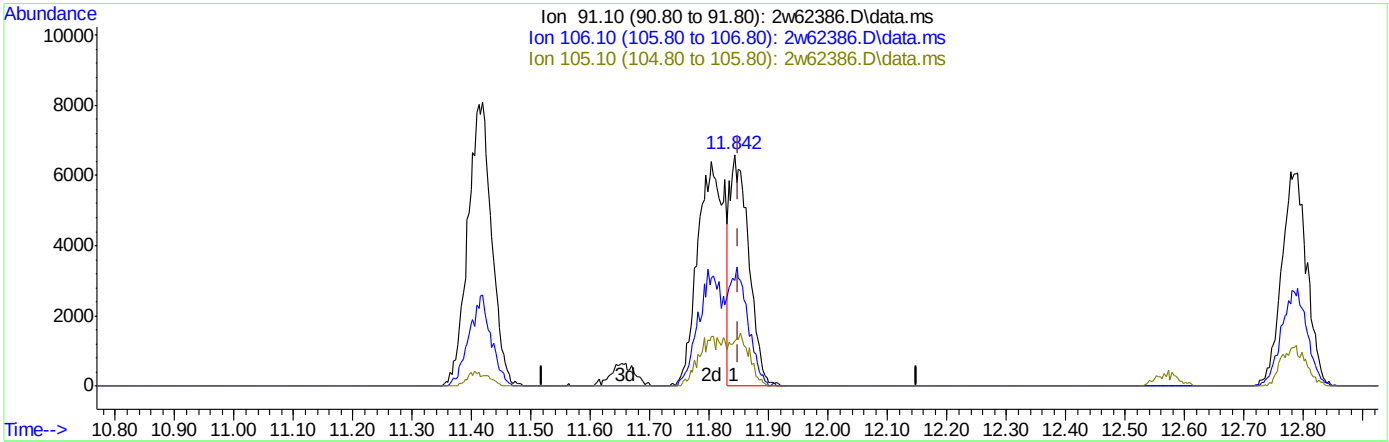
response 9874

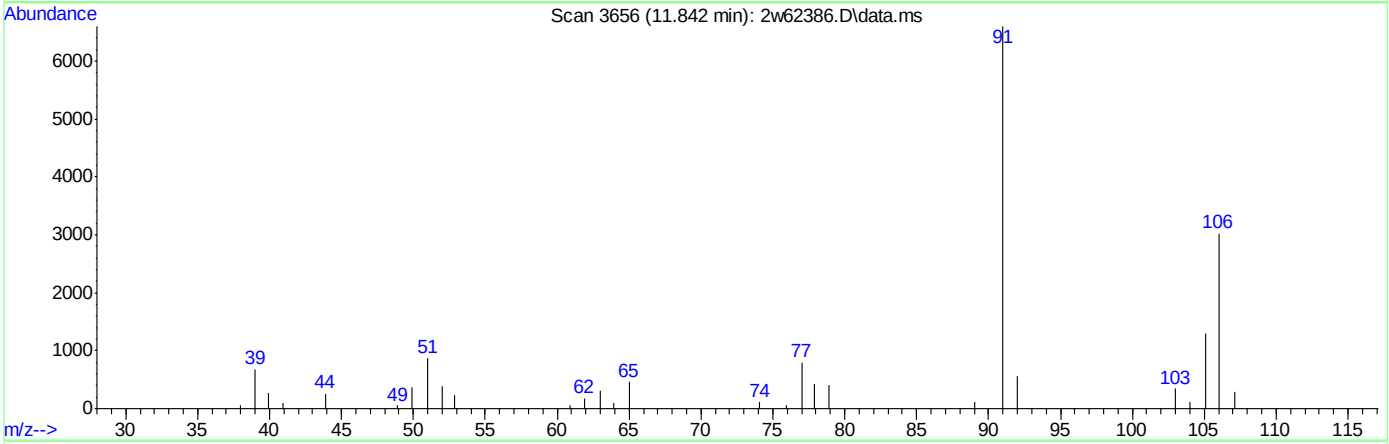
Ion	Exp%	Act%
224.90	100	100
226.90	63.90	72.66
222.90	62.70	75.53#
0.00	0.00	0.00

Quantitation Report (Qedit)

Data Path : C:\msdchem\1\DATA\
Data File : 2w62386.D
Acq On : 14 Dec 2022 7:31 pm
Operator : thomash
Sample : ic2776-0.5
Misc : MS64821,V2w2776,,,,,1
ALS Vial : 1 Sample Multiplier: 1

Quant Time: Dec 16 16:07:59 2022
Quant Method : C:\msdchem\1\METHODS\M2W2776.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Fri Dec 16 07:28:46 2022
Response via : Initial Calibration





TIC: 2w62386.D\data.ms

(80) M,P-XYLENE (t)

11.842min (-0.007) 0.45PPBV

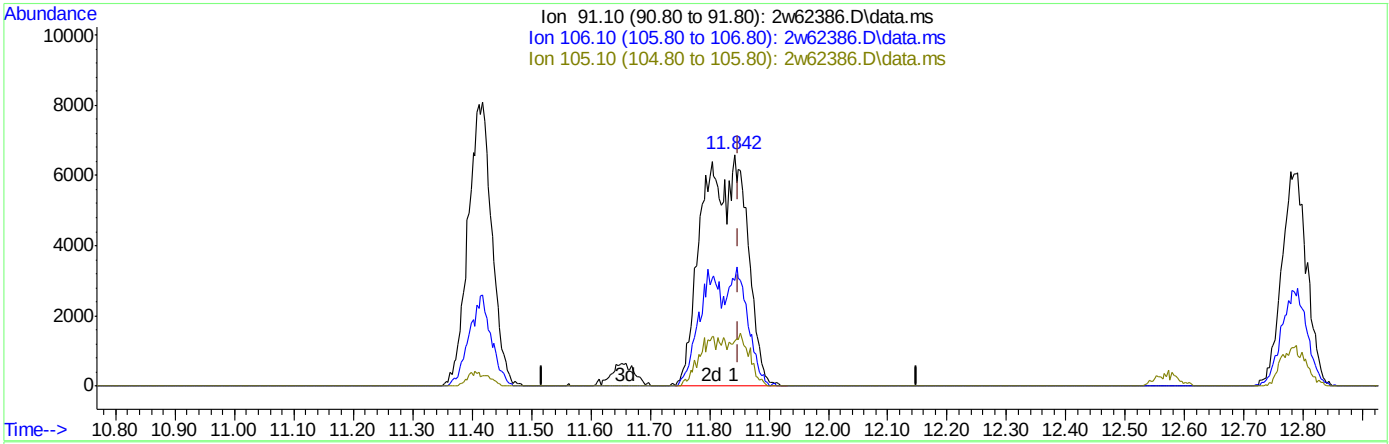
response 14794

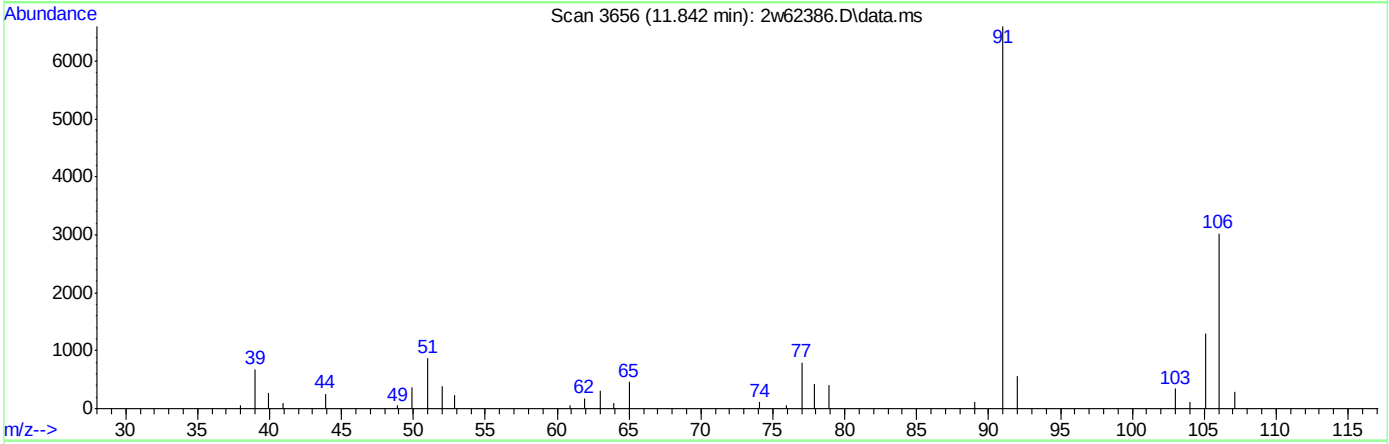
Ion	Exp%	Act%
91.10	100	100
106.10	23.00	48.93#
105.10	10.90	21.95
0.00	0.00	0.00

Quantitation Report (Qedit)

Data Path : C:\msdchem\1\DATA\
Data File : 2w62386.D
Acq On : 14 Dec 2022 7:31 pm
Operator : thomash
Sample : ic2776-0.5
Misc : MS64821,V2w2776,,,,,1
ALS Vial : 1 Sample Multiplier: 1

Quant Time: Dec 16 16:07:59 2022
Quant Method : C:\msdchem\1\METHODS\M2W2776.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Fri Dec 16 07:28:46 2022
Response via : Initial Calibration





TIC: 2w62386.D\data.ms

(80) M,P-XYLENE (t)

11.842min (-0.007) 1.05PPBV m

response 34445

Ion	Exp%	Act%
91.10	100	100
106.10	23.00	21.01
105.10	10.90	9.43
0.00	0.00	0.00

Manual Integrations APPROVED (compounds with "m" flag)
Kanya Veerawat 12/19/22 12:10

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\
Data File : 2w62388.D
Acq On : 14 Dec 2022 8:33 pm
Operator : thomash
Sample : ic2776-5
Misc : MS64821,V2w2776,,,,,1
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Dec 16 16:10:17 2022
Quant Method : C:\msdchem\1\METHODS\M2W2776.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Fri Dec 16 07:28:46 2022
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units		Dev(Min)
Internal Standards							
1) BROMOCHLOROMETHANE	3.438	128	52118	10.00	PPBV		0.00
52) 1,4-DIFLUOROBENZENE	4.765	114	261282	10.00	PPBV		0.00
76) CHLOROBENZENE-D5	10.447	117	234808	10.00	PPBV		0.00
System Monitoring Compounds							
87) 4-BROMOFLUOROBENZENE	13.829	95	180981	9.94	PPBV		0.00
Target Compounds							Qvalue
3) FREON 152A	1.746	65	19130	4.85	PPBV	#	100
4) CHLORODIFLUOROMETHANE	1.759	67	10254	4.89	PPBV		100
5) CHLOROTRIFLUOROETHENE	1.772	116	46855	4.93	PPBV		79
6) DICHLORODIFLUOROMETHANE	1.788	85	125374	4.98	PPBV		100
7) PROPYLENE	1.769	41	22459	4.95	PPBV		96
8) 1-CHLORO-1,1-DIFLUOROE...	1.830	65	93902	5.04	PPBV		96
9) FREON 114	1.868	85	105678	4.99	PPBV		95
10) CHLOROMETHANE	1.836	52	10039	4.91	PPBV		94
11) VINYL CHLORIDE	1.904	62	37795	5.05	PPBV		99
12) 1,3-BUTADIENE	1.942	54	27688	4.95	PPBV		93
13) N-BUTANE	1.958	43	50393	5.00	PPBV	#	92
14) BROMOMETHANE	2.023	94	35705	4.94	PPBV		99
15) CHLOROETHANE	2.077	64	19580	4.95	PPBV		96
16) DICHLOROFLUOROMETHANE	2.103	67	84110	4.99	PPBV		97
17) ACETONITRILE	2.177	41	29201	5.06	PPBV		97
18) ACROLEIN	2.219	56	16594	5.06	PPBV		94
19) FREON 123	2.232	83	89674	4.96	PPBV		99
20) FREON 123A	2.251	117	52135	4.93	PPBV		87
21) TRICHLOROFLUOROMETHANE	2.319	101	119285	4.94	PPBV		99
22) ISOPROPYL ALCOHOL	2.354	45	72553	4.98	PPBV		100
23) ACETONE	2.264	58	19390	5.02	PPBV		89
24) PENTANE	2.438	42	37379	4.85	PPBV		99
25) IODOMETHANE	2.499	142	110887	4.89	PPBV		93
26) 1,1-DICHLOROETHYLENE	2.524	96	44702	4.97	PPBV		81
27) CARBON DISULFIDE	2.659	76	130650	4.87	PPBV	#	93
28) ETHANOL	2.113	45	15636	5.22	PPBV		100
29) BROMOETHENE	2.184	106	36842	4.89	PPBV		97
30) ACRYLONITRILE	2.412	52	26980	4.86	PPBV		98
31) METHYLENE CHLORIDE	2.563	84	42511	5.01	PPBV	#	78
32) 3-CHLOROPROPENE	2.602	76	21755	4.90	PPBV	#	69
33) FREON 113	2.659	151	74403	4.95	PPBV		96
34) TRANS-1,2-DICHLOROETHENE	2.897	96	39380	4.88	PPBV		97
35) TERTIARY BUTYL ALCOHOL	2.563	59	109961	4.96	PPBV	#	92
36) METHYL TERTIARY BUTYL ...	3.020	73	111856	4.92	PPBV		99
37) TETRAHYDROFURAN	3.743	72	18719	4.89	PPBV		94
38) HEXANE	3.492	57	63724	5.00	PPBV		91
39) VINYL ACETATE	3.055	86	5650	3.80	PPBV		97
40) 1,1-DICHLOROETHANE	2.978	63	68377	5.00	PPBV		97
41) METHYL ETHYL KETONE	3.158	72	18661	4.80	PPBV		96
42) CIS-1,2-DICHLOROETHENE	3.357	96	41966	4.87	PPBV		100
43) DIISOPROPYL ETHER	3.499	59	19418	5.04	PPBV		89

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\
Data File : 2w62388.D
Acq On : 14 Dec 2022 8:33 pm
Operator : thomash
Sample : ic2776-5
Misc : MS64821,V2w2776,,,,,1
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Dec 16 16:10:17 2022
Quant Method : C:\msdchem\1\METHODS\M2W2776.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Fri Dec 16 07:28:46 2022
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units		Dev(Min)
44) ETHYL ACETATE	3.505	61	12935	4.77	PPBV		68
45) METHYL ACRYLATE	3.492	55	79704	4.85	PPBV	#	99
46) CHLOROFORM	3.511	83	91640	4.91	PPBV		99
47) 2,4-DIMETHYLPENTANE	4.026	57	73823	4.90	PPBV		99
48) 1,1,1-TRICHLOROETHANE	4.110	97	94895	4.90	PPBV		99
49) CARBON TETRACHLORIDE	4.547	117	93688	4.76	PPBV		99
50) 1,2-DICHLOROETHANE	3.939	62	65669	5.00	PPBV		99
51) BENZENE	4.431	78	120253	4.91	PPBV		98
53) CYCLOHEXANE	4.643	84	52782	4.91	PPBV		98
54) 2,3-DIMETHYLPENTANE	4.910	71	26564	5.01	PPBV		96
55) TRICHLOROETHENE	5.357	95	57859	4.96	PPBV		95
56) 1,2-DICHLOROPROPANE	5.116	63	44799	4.96	PPBV		93
57) DIBROMOMETHANE	5.077	174	50162	4.91	PPBV		91
58) ETHYL ACRYLATE	5.248	55	102545	5.06	PPBV		99
59) BROMODICHLOROMETHANE	5.299	83	97072	4.89	PPBV		99
60) 2,2,4-TRIMETHYLPENTANE	5.454	57	203136	5.03	PPBV		99
61) 1,4-DIOXANE	5.396	88	31374	5.19	PPBV	#	96
62) HEPTANE	5.778	43	69211	5.02	PPBV		94
63) METHYL METHACRYLATE	5.679	69	45309	4.95	PPBV		89
64) METHYL ISOBUTYL KETONE	6.450	58	43811	5.01	PPBV		87
65) CIS-1,3-DICHLOROPROPENE	6.318	75	69191	4.84	PPBV		93
66) TOLUENE	7.547	91	151176	4.97	PPBV		99
67) 1,3-DICHLOROPROPANE	7.608	76	76367	4.95	PPBV		100
68) TRANS-1,3-DICHLOROPROPENE	7.010	75	63723	4.72	PPBV		96
69) 1,1,2-TRICHLOROETHANE	7.170	83	44694	4.97	PPBV		99
70) 2-HEXANONE	8.158	58	66929	5.26	PPBV		87
71) ETHYL METHACRYLATE	8.267	69	77907	4.90	PPBV		93
72) TETRACHLOROETHENE	9.302	164	57256	4.91	PPBV		95
73) DIBROMOCHLOROMETHANE	8.090	129	90157	4.72	PPBV		99
74) 1,2-DIBROMOETHANE	8.434	107	84313	4.88	PPBV		97
75) OCTANE	9.447	43	96342	4.97	PPBV		95
77) 1,1,1,2-TETRACHLOROETHANE	10.534	131	63163	4.79	PPBV		91
78) CHLOROBENZENE	10.521	112	123425	4.97	PPBV		95
79) ETHYLBENZENE	11.411	91	208821	4.98	PPBV		98
80) M,P-XYLENE	11.846	91	326628	9.91	PPBV		98
81) O-XYLENE	12.791	91	165668	5.00	PPBV		94
82) STYRENE	12.572	104	122487	4.90	PPBV		96
83) NONANE	13.907	43	102803	4.99	PPBV		93
84) BROMOFORM	11.653	173	80910	4.61	PPBV		100
85) 1,1,2,2-TETRACHLOROETHANE	12.797	83	120701	4.91	PPBV		99
86) 1,2,3-TRICHLOROPROPANE	13.080	75	92793	4.94	PPBV	#	99
88) ISOPROPYLBENZENE	14.308	120	61577	4.91	PPBV		91
89) BROMOBENZENE	14.180	77	116250	4.92	PPBV		86
90) 2-CHLOROTOLUENE	15.315	126	55102	4.89	PPBV		99
91) N-PROPYLBENZENE	15.649	120	64516	4.93	PPBV		99
92) 4-ETHYLTOLUENE	16.061	105	236565	4.94	PPBV		97
93) 1,3,5-TRIMETHYLBENZENE	16.234	105	201574	4.92	PPBV		97
94) ALPHA-METHYLSTYRENE	16.450	118	100614	4.75	PPBV		98
95) TERT-BUTYLBENZENE	16.714	134	47128	4.85	PPBV		94
96) 1,2,4-TRIMETHYLBENZENE	16.720	105	209548	4.81	PPBV		96

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\
Data File : 2w62388.D
Acq On : 14 Dec 2022 8:33 pm
Operator : thomash
Sample : ic2776-5
Misc : MS64821,V2w2776,,,,,1
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Dec 16 16:10:17 2022
Quant Method : C:\msdchem\1\METHODS\M2W2776.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Fri Dec 16 07:28:46 2022
Response via : Initial Calibration

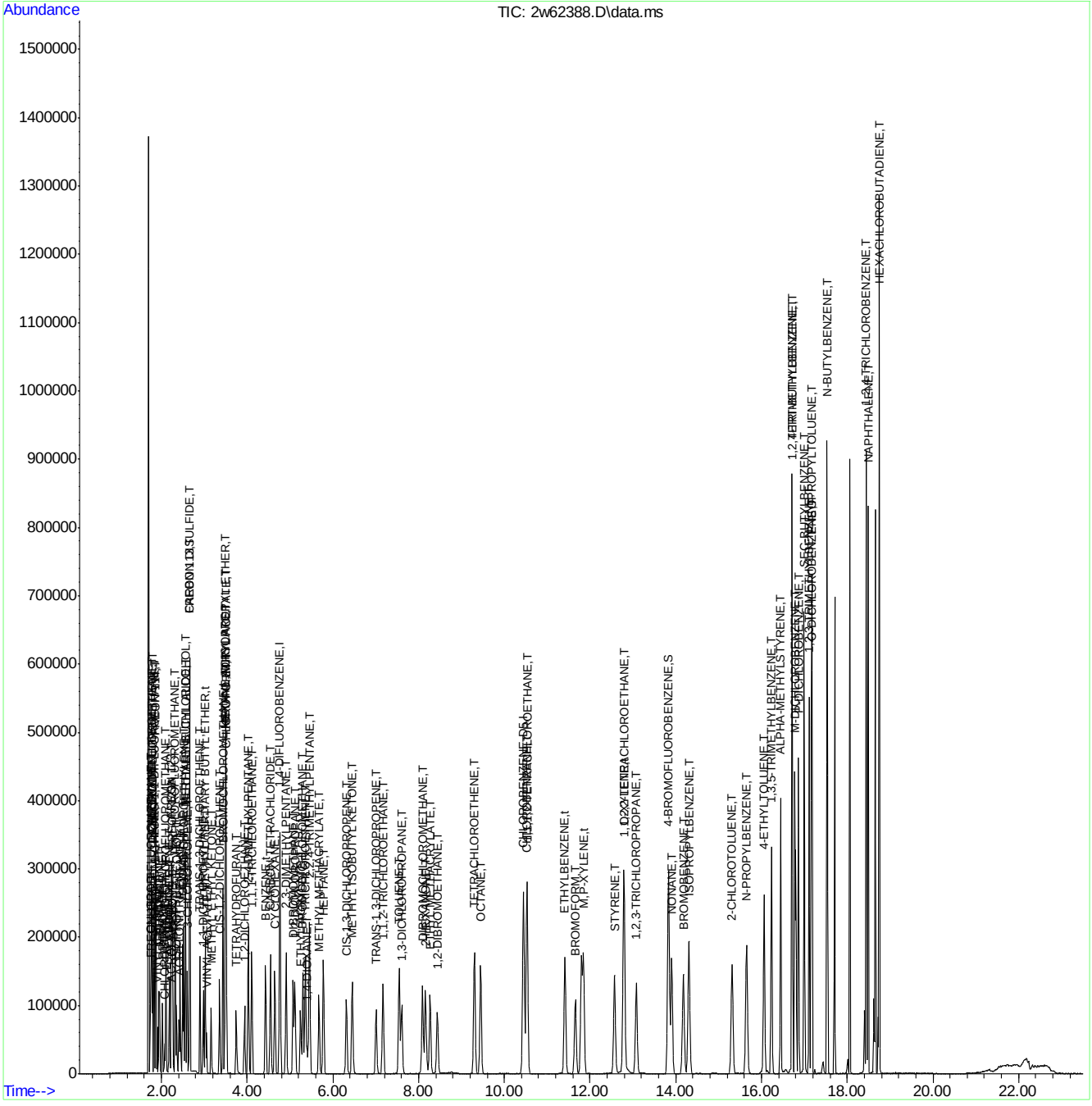
	Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
98)	M-DICHLOROBENZENE	16.781	146	127510	4.79	PPBV	97
99)	P-DICHLOROBENZENE	16.865	146	128112	4.71	PPBV	97
100)	O-DICHLOROBENZENE	17.164	146	124241	4.73	PPBV	96
101)	SEC-BUTYLBENZENE	16.996	134	59478	4.73	PPBV	92
102)	1,2,3-TRIMETHYLBENZENE	17.109	105	205039	4.75	PPBV	98
103)	P-ISOPROPYLTOLUENE	17.180	134	66729	4.79	PPBV	94
104)	N-BUTYLBENZENE	17.527	134	64329	4.77	PPBV	92
106)	HEXACHLOROBUTADIENE	18.752	225	111600m	4.16	PPBV	
107)	1,2,4-TRICHLOROBENZENE	18.443	180	134909	4.65	PPBV	98
108)	NAPHTHALENE	18.492	128	349929	4.64	PPBV	100

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

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\
Data File : 2w62388.D
Acq On : 14 Dec 2022 8:33 pm
Operator : thomash
Sample : ic2776-5
Misc : MS64821,V2w2776,,,,,1
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Dec 16 16:10:17 2022
Quant Method : C:\msdchem\1\METHODS\M2W2776.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Fri Dec 16 07:28:46 2022
Response via : Initial Calibration



Manual Integration Approval Summary

Sample Number: V2W2776-IC2776
Lab FileID: 2W62388.D
Injection Time: 12/14/22 20:33

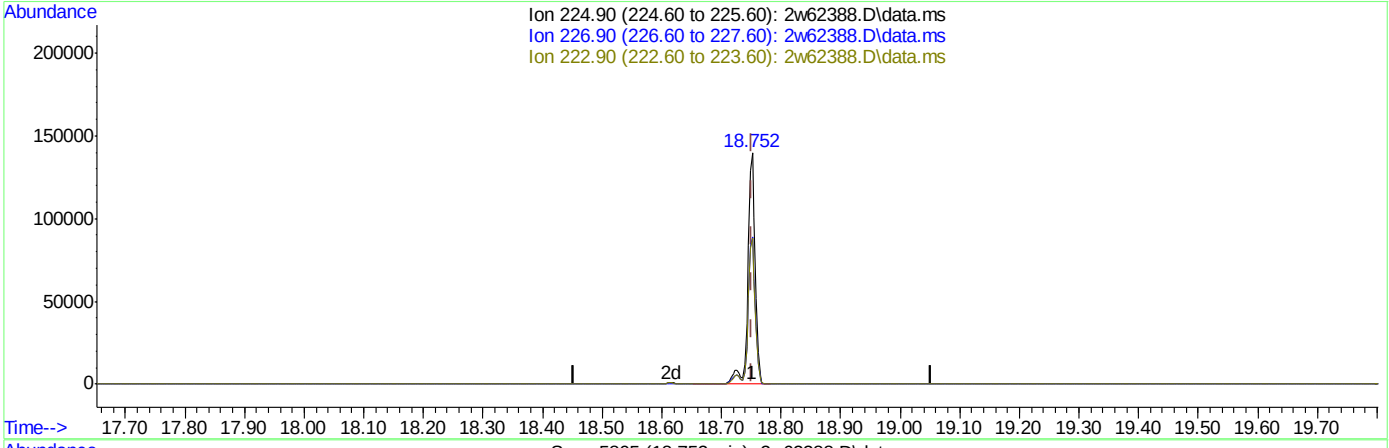
Method: TO-15
Analyst approved: 12/16/22 16:35 Thomas Hilbig
Supervisor approved: 12/19/22 12:10 Kanya Veerawat

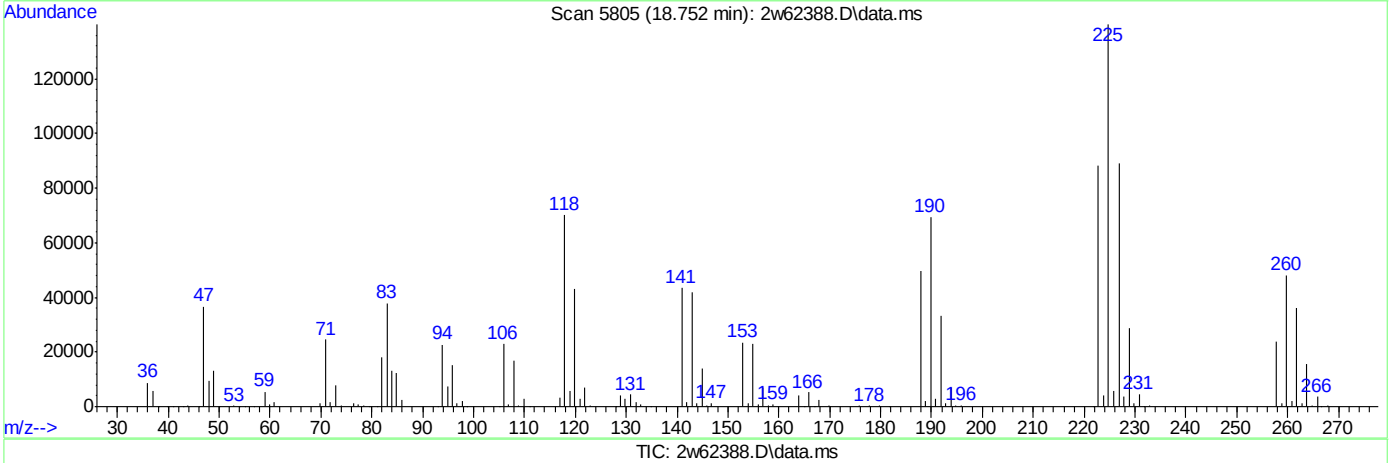
Parameter	CAS	Sig#	R.T. (min.)	Reason
Hexachlorobutadiene	87-68-3		18.75	Overlapping peak

Quantitation Report (Qedit)

Data Path : C:\msdchem\1\DATA\
Data File : 2w62388.D
Acq On : 14 Dec 2022 8:33 pm
Operator : thomash
Sample : ic2776-5
Misc : MS64821,V2w2776,,,,,1
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Dec 16 07:31:11 2022
Quant Method : C:\msdchem\1\METHODS\M2W2776.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Fri Dec 16 07:28:46 2022
Response via : Initial Calibration





TIC: 2w62388.D\data.ms

(106) HEXACHLOROBUTADIENE (T)

18.752min (-0.000) 4.50PPBV

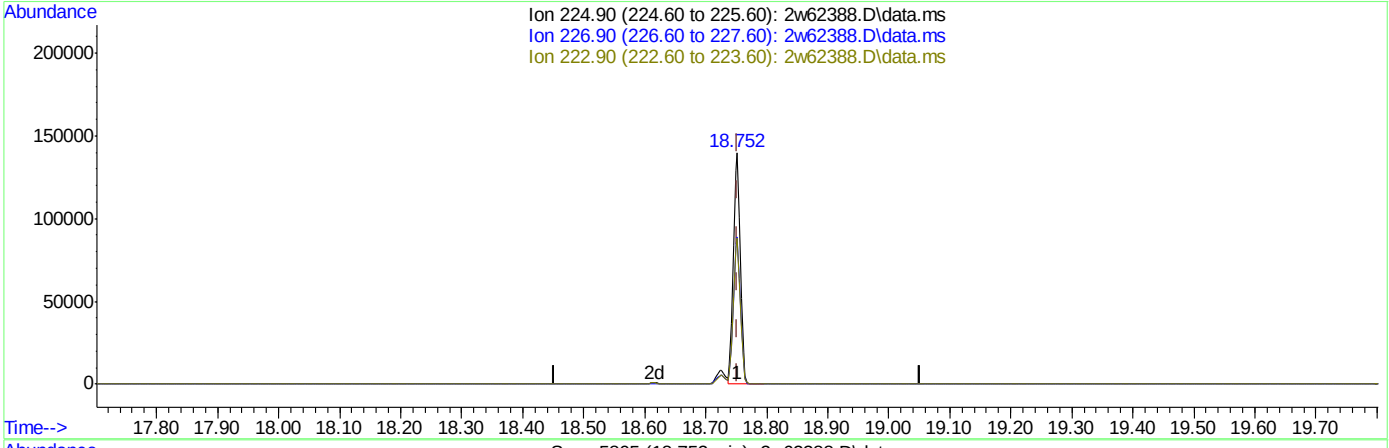
response 120556

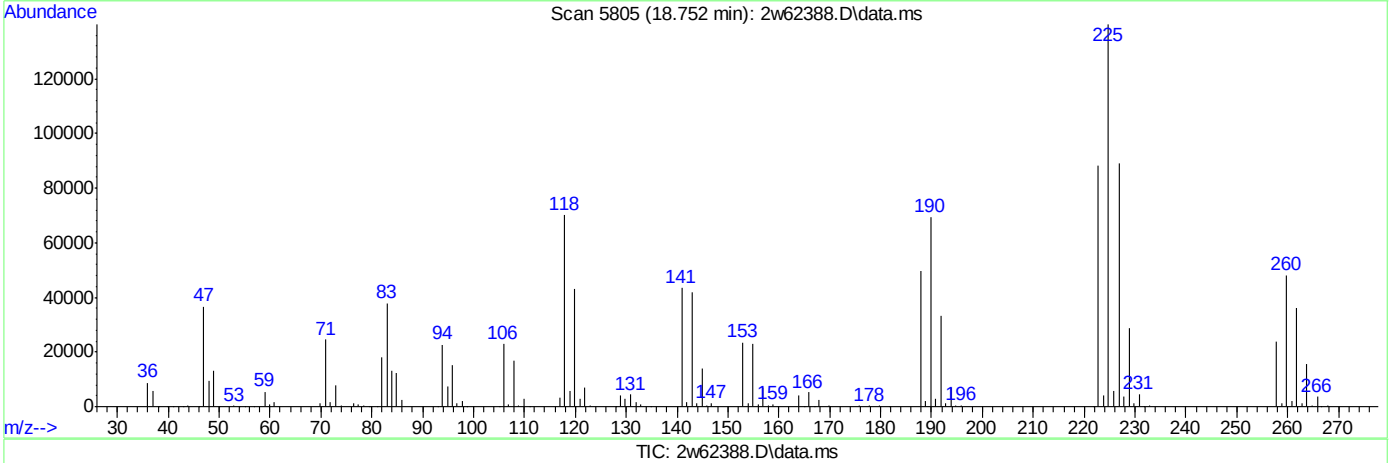
Ion	Exp%	Act%
224.90	100	100
226.90	63.90	63.67
222.90	62.70	62.68
0.00	0.00	0.00

Quantitation Report (Qedit)

Data Path : C:\msdchem\1\DATA\
Data File : 2w62388.D
Acq On : 14 Dec 2022 8:33 pm
Operator : thomash
Sample : ic2776-5
Misc : MS64821,V2w2776,,,,,1
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Dec 16 07:31:11 2022
Quant Method : C:\msdchem\1\METHODS\M2W2776.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Fri Dec 16 07:28:46 2022
Response via : Initial Calibration





TIC: 2w62388.D\data.ms

(106) HEXACHLOROBUTADIENE (T)

18.752min (-0.000) 4.16PPBV m

response 111600

Ion	Exp%	Act%
224.90	100	100
226.90	63.90	68.77
222.90	62.70	67.71
0.00	0.00	0.00

Manual Integrations APPROVED (compounds with "m" flag)
Kanya Veerawat 12/19/22 12:10

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\
Data File : 2w62389.D
Acq On : 14 Dec 2022 9:05 pm
Operator : thomash
Sample : icc2776-10
Misc : MS64821,V2w2776,,,,,1
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Dec 16 16:11:20 2022
Quant Method : C:\msdchem\1\METHODS\M2W2776.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Fri Dec 16 07:28:46 2022
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units		Dev(Min)
Internal Standards							
1) BROMOCHLOROMETHANE	3.434	128	52169	10.00	PPBV		0.00
52) 1,4-DIFLUOROBENZENE	4.762	114	265394	10.00	PPBV		0.00
76) CHLOROBENZENE-D5	10.450	117	237992	10.00	PPBV		0.00
System Monitoring Compounds							
87) 4-BROMOFLUOROBENZENE	13.833	95	185417	10.05	PPBV		0.00
Target Compounds							Qvalue
3) FREON 152A	1.746	65	39474	10.00	PPBV	#	100
4) CHLORODIFLUOROMETHANE	1.763	67	20991	10.00	PPBV		100
5) CHLOROTRIFLUOROETHENE	1.772	116	95205	10.00	PPBV		81
6) DICHLORODIFLUOROMETHANE	1.791	85	251869	10.00	PPBV		100
7) PROPYLENE	1.769	41	45391	9.99	PPBV		96
8) 1-CHLORO-1,1-DIFLUOROE...	1.833	65	186456	10.00	PPBV		96
9) FREON 114	1.869	85	212171	10.00	PPBV		96
10) CHLOROMETHANE	1.840	52	20485	10.00	PPBV		97
11) VINYL CHLORIDE	1.904	62	74807	9.99	PPBV		100
12) 1,3-BUTADIENE	1.946	54	56046	10.00	PPBV		95
13) N-BUTANE	1.962	43	100888	10.00	PPBV		95
14) BROMOMETHANE	2.026	94	72276	10.00	PPBV		100
15) CHLOROETHANE	2.078	64	39607	10.00	PPBV		99
16) DICHLOROFLUOROMETHANE	2.103	67	168711	10.00	PPBV		96
17) ACETONITRILE	2.177	41	57656	9.98	PPBV		100
18) ACROLEIN	2.219	56	33231	10.12	PPBV		99
19) FREON 123	2.235	83	181017	10.00	PPBV		99
20) FREON 123A	2.251	117	105833	10.00	PPBV		88
21) TRICHLOROFLUOROMETHANE	2.322	101	241649	10.00	PPBV		100
22) ISOPROPYL ALCOHOL	2.348	45	145856	10.00	PPBV		97
23) ACETONE	2.264	58	38666	10.00	PPBV		88
24) PENTANE	2.438	42	77189	10.00	PPBV		96
25) IODOMETHANE	2.499	142	226981	10.00	PPBV		94
26) 1,1-DICHLOROETHYLENE	2.525	96	90058	10.00	PPBV		80
27) CARBON DISULFIDE	2.660	76	268677	10.00	PPBV	#	93
28) ETHANOL	2.113	45	30276	10.10	PPBV		98
29) BROMOETHENE	2.187	106	75429	10.00	PPBV		97
30) ACRYLONITRILE	2.409	52	55598	10.00	PPBV		99
31) METHYLENE CHLORIDE	2.560	84	84908	10.00	PPBV	#	79
32) 3-CHLOROPROPENE	2.602	76	44482	10.00	PPBV	#	65
33) FREON 113	2.660	151	150372	10.00	PPBV		96
34) TRANS-1,2-DICHLOROETHENE	2.898	96	80689	10.00	PPBV		97
35) TERTIARY BUTYL ALCOHOL	2.553	59	221829	10.00	PPBV	#	91
36) METHYL TERTIARY BUTYL ...	3.013	73	227745	10.00	PPBV		99
37) TETRAHYDROFURAN	3.737	72	38285	10.00	PPBV		96
38) HEXANE	3.489	57	127616	10.00	PPBV		90
39) VINYL ACETATE	3.052	86	14892	10.00	PPBV		99
40) 1,1-DICHLOROETHANE	2.975	63	136943	10.00	PPBV		98
41) METHYL ETHYL KETONE	3.155	72	38925	10.01	PPBV		96
42) CIS-1,2-DICHLOROETHENE	3.357	96	86326	10.00	PPBV		99
43) DIISOPROPYL ETHER	3.499	59	38558	10.00	PPBV		88

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\
Data File : 2w62389.D
Acq On : 14 Dec 2022 9:05 pm
Operator : thomash
Sample : icc2776-10
Misc : MS64821,V2w2776,,,,,1
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Dec 16 16:11:20 2022
Quant Method : C:\msdchem\1\METHODS\M2W2776.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Fri Dec 16 07:28:46 2022
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units		Dev(Min)
44) ETHYL ACETATE	3.502	61	27146	10.00	PPBV		79
45) METHYL ACRYLATE	3.489	55	164367	10.00	PPBV	#	99
46) CHLOROFORM	3.512	83	186929	10.00	PPBV		99
47) 2,4-DIMETHYLPENTANE	4.026	57	150794	10.00	PPBV		98
48) 1,1,1-TRICHLOROETHANE	4.106	97	193806	10.00	PPBV		100
49) CARBON TETRACHLORIDE	4.544	117	196892	10.00	PPBV		99
50) 1,2-DICHLOROETHANE	3.936	62	131510	10.00	PPBV		99
51) BENZENE	4.428	78	245010	10.00	PPBV		99
53) CYCLOHEXANE	4.643	84	109156	10.00	PPBV		96
54) 2,3-DIMETHYLPENTANE	4.907	71	53876	10.00	PPBV		97
55) TRICHLOROETHENE	5.354	95	118383	10.00	PPBV		95
56) 1,2-DICHLOROPROPANE	5.116	63	91828	10.00	PPBV		93
57) DIBROMOMETHANE	5.074	174	103711	10.00	PPBV		92
58) ETHYL ACRYLATE	5.241	55	205911	10.00	PPBV		99
59) BROMODICHLOROMETHANE	5.299	83	201743	10.00	PPBV		100
60) 2,2,4-TRIMETHYLPENTANE	5.450	57	410566	10.00	PPBV		100
61) 1,4-DIOXANE	5.383	88	61386	10.00	PPBV		98
62) HEPTANE	5.778	43	139932	10.00	PPBV		94
63) METHYL METHACRYLATE	5.672	69	92975	10.00	PPBV		91
64) METHYL ISOBUTYL KETONE	6.441	58	88804	10.00	PPBV		90
65) CIS-1,3-DICHLOROPROPENE	6.315	75	145143	10.00	PPBV		94
66) TOLUENE	7.550	91	308882	10.00	PPBV		98
67) 1,3-DICHLOROPROPANE	7.605	76	156573	10.00	PPBV		100
68) TRANS-1,3-DICHLOROPROPENE	7.010	75	137151	10.00	PPBV		96
69) 1,1,2-TRICHLOROETHANE	7.167	83	91322	10.00	PPBV		99
70) 2-HEXANONE	8.151	58	129363	10.01	PPBV		88
71) ETHYL METHACRYLATE	8.267	69	161429	10.00	PPBV		95
72) TETRACHLOROETHENE	9.299	164	118354	10.00	PPBV		95
73) DIBROMOCHLOROMETHANE	8.090	129	194222	10.00	PPBV		99
74) 1,2-DIBROMOETHANE	8.441	107	175407	10.00	PPBV		98
75) OCTANE	9.450	43	196729	10.00	PPBV		96
77) 1,1,1,2-TETRACHLOROETHANE	10.534	131	134421	10.05	PPBV		92
78) CHLOROBENZENE	10.521	112	253097	10.05	PPBV		97
79) ETHYLBENZENE	11.415	91	426233	10.03	PPBV		98
80) M,P-XYLENE	11.849	91	671552	20.10	PPBV		100
81) O-XYLENE	12.791	91	337596	10.05	PPBV		94
82) STYRENE	12.572	104	254525	10.05	PPBV		96
83) NONANE	13.907	43	209982	10.05	PPBV		94
84) BROMOFORM	11.653	173	178719	10.05	PPBV		100
85) 1,1,2,2-TETRACHLOROETHANE	12.797	83	250401	10.05	PPBV		99
86) 1,2,3-TRICHLOROPROPANE	13.080	75	191186	10.05	PPBV	#	100
88) ISOPROPYLBENZENE	14.309	120	127633	10.05	PPBV		92
89) BROMOBENZENE	14.180	77	240747	10.05	PPBV		87
90) 2-CHLOROTOLUENE	15.315	126	114693	10.05	PPBV		99
91) N-PROPYLBENZENE	15.653	120	133280	10.06	PPBV		95
92) 4-ETHYLTOLUENE	16.061	105	488039	10.05	PPBV		99
93) 1,3,5-TRIMETHYLBENZENE	16.238	105	417104	10.05	PPBV		97
94) ALPHA-METHYLSTYRENE	16.450	118	215547	10.05	PPBV		99
95) TERT-BUTYLBENZENE	16.714	134	99003	10.05	PPBV		93
96) 1,2,4-TRIMETHYLBENZENE	16.723	105	444244	10.07	PPBV		96

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\
Data File : 2w62389.D
Acq On : 14 Dec 2022 9:05 pm
Operator : thomash
Sample : icc2776-10
Misc : MS64821,V2w2776,,,,,1
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Dec 16 16:11:20 2022
Quant Method : C:\msdchem\1\METHODS\M2W2776.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Fri Dec 16 07:28:46 2022
Response via : Initial Calibration

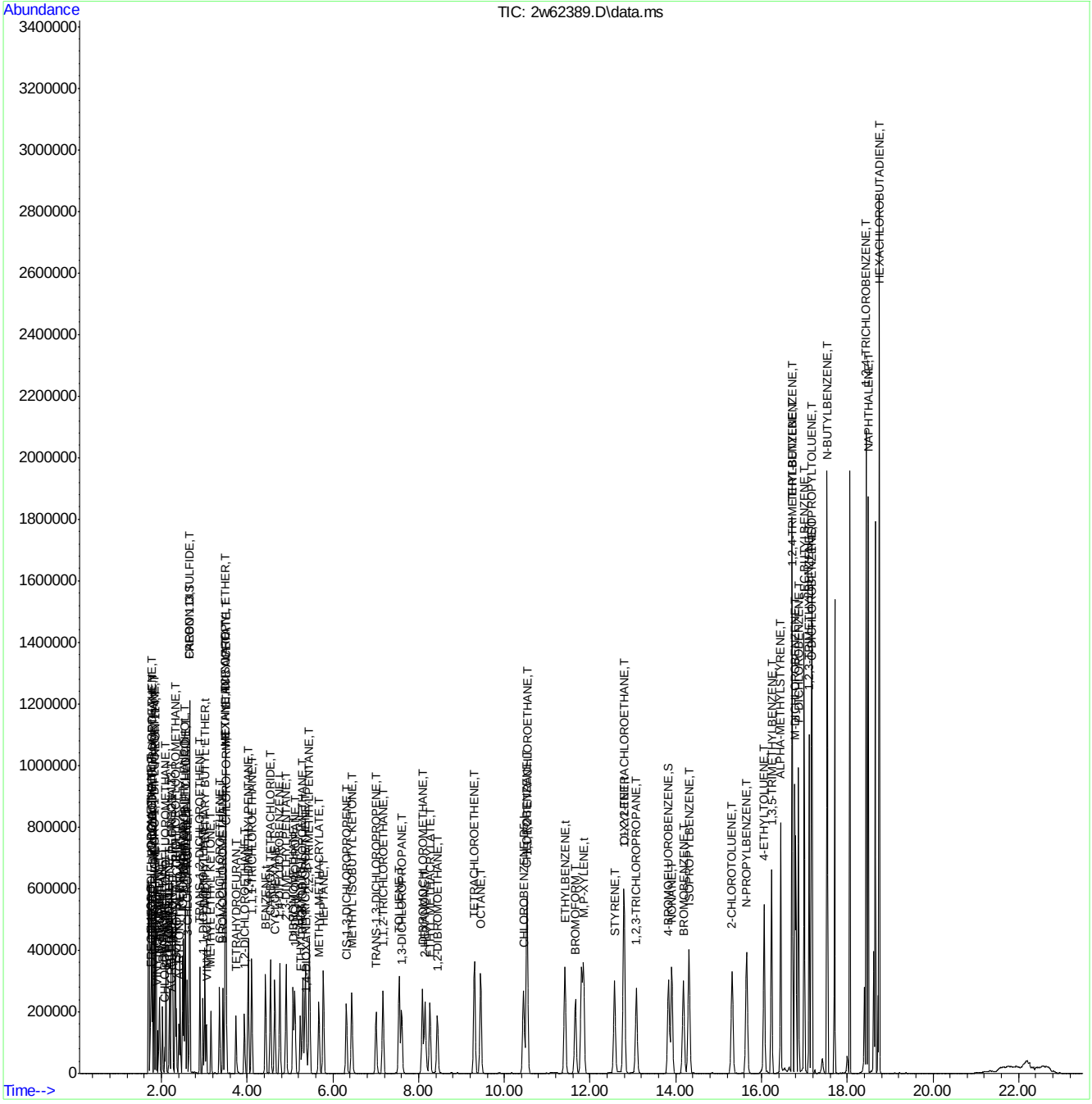
	Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
98)	M-DICHLOROBENZENE	16.781	146	271459	10.06	PPBV	97
99)	P-DICHLOROBENZENE	16.865	146	277210	10.05	PPBV	97
100)	O-DICHLOROBENZENE	17.164	146	267753	10.05	PPBV	96
101)	SEC-BUTYLBENZENE	17.000	134	128031	10.05	PPBV	94
102)	1,2,3-TRIMETHYLBENZENE	17.112	105	439173	10.05	PPBV	98
103)	P-ISOPROPYLTOLUENE	17.180	134	141850	10.05	PPBV	92
104)	N-BUTYLBENZENE	17.527	134	137253	10.05	PPBV	95
106)	HEXACHLOROBUTADIENE	18.752	225	246991m	9.09	PPBV	
107)	1,2,4-TRICHLOROBENZENE	18.444	180	296130	10.06	PPBV	100
108)	NAPHTHALENE	18.492	128	771450	10.10	PPBV	100

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

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\
Data File : 2w62389.D
Acq On : 14 Dec 2022 9:05 pm
Operator : thomash
Sample : icc2776-10
Misc : MS64821,V2w2776,,,,,1
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Dec 16 16:11:20 2022
Quant Method : C:\msdchem\1\METHODS\M2W2776.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Fri Dec 16 07:28:46 2022
Response via : Initial Calibration



Manual Integration Approval Summary

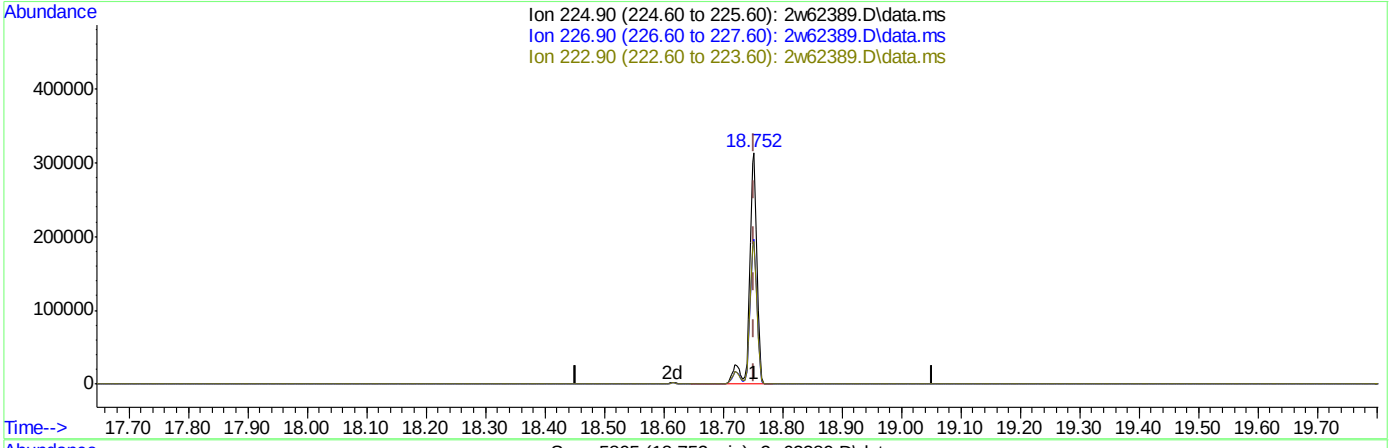
Sample Number:	V2W2776-ICC2776	**Method:**	TO-15
Lab FileID:	2W62389.D	**Analyst approved:**	12/16/22 16:35 Thomas Hilbig
Injection Time:	12/14/22 21:05	**Supervisor approved:**	12/19/22 12:10 Kanya Veerawat

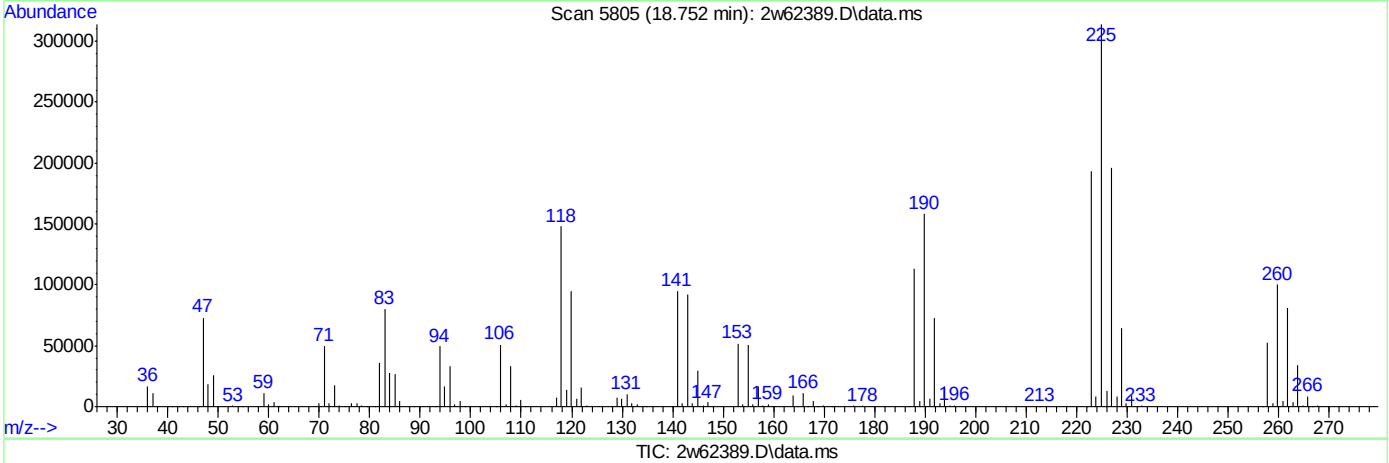
Parameter	CAS	Sig#	R.T. (min.)	Reason
Hexachlorobutadiene	87-68-3		18.75	Overlapping peak

Quantitation Report (Qedit)

Data Path : C:\msdchem\1\DATA\
Data File : 2w62389.D
Acq On : 14 Dec 2022 9:05 pm
Operator : thomash
Sample : icc2776-10
Misc : MS64821,V2w2776,,,,,1
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Dec 16 07:28:55 2022
Quant Method : C:\msdchem\1\METHODS\M2W2776.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Fri Dec 16 07:28:46 2022
Response via : Initial Calibration





TIC: 2w62389.D\data.ms

(106) HEXACHLOROBUTADIENE (T)

18.752min (0.000) 10.05PPBV

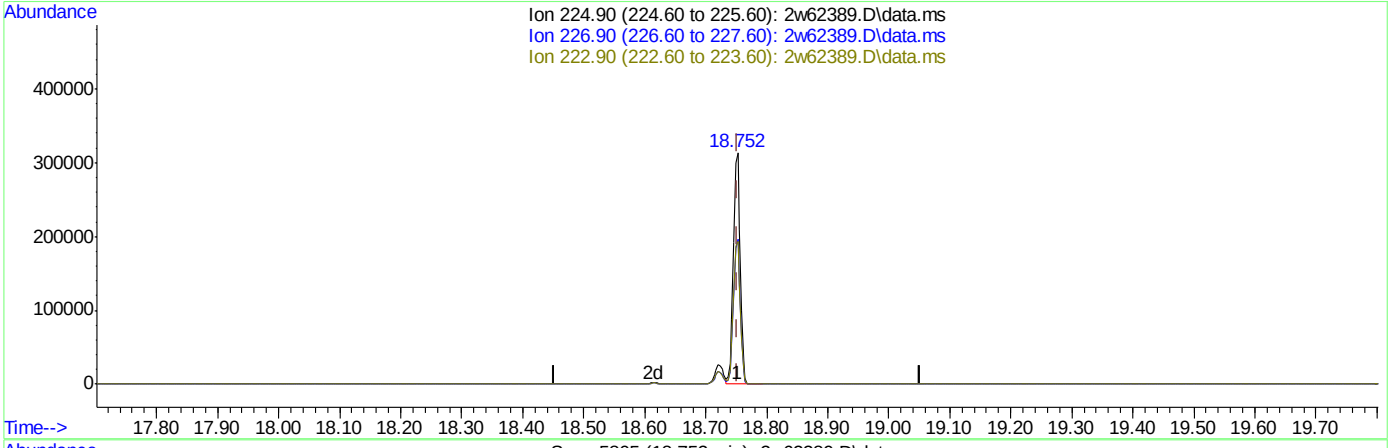
response 273099

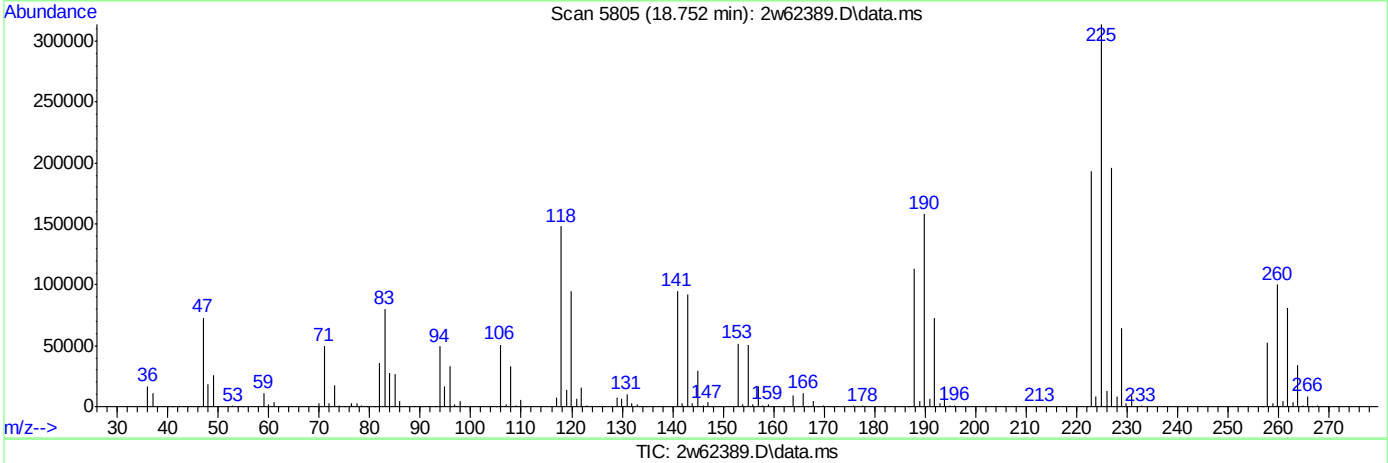
Ion	Exp%	Act%
224.90	100	100
226.90	63.90	62.66
222.90	62.70	62.81
0.00	0.00	0.00

Quantitation Report (Qedit)

Data Path : C:\msdchem\1\DATA\
Data File : 2w62389.D
Acq On : 14 Dec 2022 9:05 pm
Operator : thomash
Sample : icc2776-10
Misc : MS64821,V2w2776,,,,,1
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Dec 16 16:11:20 2022
Quant Method : C:\msdchem\1\METHODS\M2W2776.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Fri Dec 16 07:28:46 2022
Response via : Initial Calibration





TIC: 2w62389.D\data.ms

(106) HEXACHLOROBUTADIENE (T)

18.752min (0.000) 9.09PPBV m

response 246991

Ion	Exp%	Act%
224.90	100	100
226.90	63.90	69.29
222.90	62.70	69.45
0.00	0.00	0.00

2W62390.D

Manual Integrations APPROVED (compounds with "m" flag)

Kanya Veerawat 12/19/22 12:10

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\
Data File : 2w62390.D
Acq On : 14 Dec 2022 9:37 pm
Operator : thomash
Sample : ic2776-20
Misc : MS64821,V2w2776,,,,,1
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Dec 16 16:12:58 2022
Quant Method : C:\msdchem\1\METHODS\M2W2776.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Fri Dec 16 07:28:46 2022
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units		Dev(Min)
Internal Standards							
1) BROMOCHLOROMETHANE	3.438	128	53995	10.00	PPBV		0.00
52) 1,4-DIFLUOROBENZENE	4.766	114	274154	10.00	PPBV		0.00
76) CHLOROBENZENE-D5	10.447	117	248143	10.00	PPBV		0.00
System Monitoring Compounds							
87) 4-BROMOFLUOROBENZENE	13.833	95	193934	10.08	PPBV		0.00
Target Compounds							Qvalue
3) FREON 152A	1.750	65	80880	19.80	PPBV	#	100
4) CHLORODIFLUOROMETHANE	1.763	67	42618	19.62	PPBV		98
5) CHLOROTRIFLUOROETHENE	1.772	116	196789	19.98	PPBV		81
6) DICHLORODIFLUOROMETHANE	1.791	85	522032	20.03	PPBV		100
7) PROPYLENE	1.772	41	94321	20.06	PPBV		98
8) 1-CHLORO-1,1-DIFLUOROE...	1.833	65	383943	19.90	PPBV		95
9) FREON 114	1.869	85	444926	20.27	PPBV		96
10) CHLOROMETHANE	1.836	52	41982	19.80	PPBV		98
11) VINYL CHLORIDE	1.904	62	153630	19.83	PPBV		100
12) 1,3-BUTADIENE	1.946	54	118119	20.36	PPBV		98
13) N-BUTANE	1.962	43	204509	19.59	PPBV		96
14) BROMOMETHANE	2.026	94	149526	19.99	PPBV		100
15) CHLOROETHANE	2.078	64	82249	20.06	PPBV		99
16) DICHLOROFLUOROMETHANE	2.107	67	349439	20.01	PPBV		96
17) ACETONITRILE	2.177	41	118017	19.74	PPBV		99
18) ACROLEIN	2.219	56	68669	20.21	PPBV		99
19) FREON 123	2.235	83	382090	20.39	PPBV		98
20) FREON 123A	2.254	117	221906	20.25	PPBV		87
21) TRICHLOROFLUOROMETHANE	2.322	101	496032	19.83	PPBV		100
22) ISOPROPYL ALCOHOL	2.344	45	295972	19.61	PPBV		97
23) ACETONE	2.261	58	79110	19.77	PPBV		89
24) PENTANE	2.441	42	156257	19.56	PPBV		96
25) IODOMETHANE	2.499	142	469337	19.98	PPBV		94
26) 1,1-DICHLOROETHYLENE	2.528	96	185096	19.86	PPBV		80
27) CARBON DISULFIDE	2.660	76	564556	20.30	PPBV	#	92
28) ETHANOL	2.110	45	62388	20.11	PPBV		100
29) BROMOETHENE	2.187	106	157954	20.23	PPBV		98
30) ACRYLONITRILE	2.409	52	114178	19.84	PPBV		99
31) METHYLENE CHLORIDE	2.563	84	171347	19.50	PPBV	#	78
32) 3-CHLOROPROPENE	2.605	76	91914	19.96	PPBV	#	63
33) FREON 113	2.660	151	314042	20.18	PPBV		97
34) TRANS-1,2-DICHLOROETHENE	2.898	96	170220	20.38	PPBV		96
35) TERTIARY BUTYL ALCOHOL	2.544	59	435432	18.96	PPBV	#	90
36) METHYL TERTIARY BUTYL ...	3.013	73	472534	20.05	PPBV		99
37) TETRAHYDROFURAN	3.733	72	79815	20.14	PPBV		97
38) HEXANE	3.492	57	270721	20.50	PPBV		94
39) VINYL ACETATE	3.052	86	37987	24.65	PPBV		97
40) 1,1-DICHLOROETHANE	2.978	63	286433	20.21	PPBV		99
41) METHYL ETHYL KETONE	3.155	72	80771	20.07	PPBV		99
42) CIS-1,2-DICHLOROETHENE	3.357	96	178479	19.98	PPBV		99
43) DIISOPROPYL ETHER	3.499	59	81486	20.42	PPBV		93

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\
Data File : 2w62390.D
Acq On : 14 Dec 2022 9:37 pm
Operator : thomash
Sample : ic2776-20
Misc : MS64821,V2w2776,,,,,1
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Dec 16 16:12:58 2022
Quant Method : C:\msdchem\1\METHODS\M2W2776.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Fri Dec 16 07:28:46 2022
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units		Dev(Min)
44) ETHYL ACETATE	3.502	61	56193	20.00	PPBV		80
45) METHYL ACRYLATE	3.486	55	340595	20.02	PPBV	#	99
46) CHLOROFORM	3.515	83	389296	20.12	PPBV		100
47) 2,4-DIMETHYLPENTANE	4.029	57	315134	20.19	PPBV		98
48) 1,1,1-TRICHLOROETHANE	4.110	97	410269	20.45	PPBV		100
49) CARBON TETRACHLORIDE	4.547	117	424154	20.81	PPBV		99
50) 1,2-DICHLOROETHANE	3.939	62	275108	20.21	PPBV		99
51) BENZENE	4.431	78	510785	20.14	PPBV		99
53) CYCLOHEXANE	4.647	84	228443	20.26	PPBV		96
54) 2,3-DIMETHYLPENTANE	4.907	71	114123	20.51	PPBV		95
55) TRICHLOROETHENE	5.357	95	251921	20.60	PPBV		96
56) 1,2-DICHLOROPROPANE	5.116	63	193883	20.44	PPBV		93
57) DIBROMOMETHANE	5.074	174	217954	20.34	PPBV		92
58) ETHYL ACRYLATE	5.241	55	433699	20.39	PPBV		99
59) BROMODICHLOROMETHANE	5.303	83	432007	20.73	PPBV		100
60) 2,2,4-TRIMETHYLPENTANE	5.454	57	859763	20.27	PPBV		99
61) 1,4-DIOXANE	5.373	88	124834	19.69	PPBV		99
62) HEPTANE	5.778	43	294547	20.38	PPBV		94
63) METHYL METHACRYLATE	5.672	69	200418	20.87	PPBV		94
64) METHYL ISOBUTYL KETONE	6.434	58	177547	19.35	PPBV		91
65) CIS-1,3-DICHLOROPROPENE	6.319	75	314664	20.99	PPBV		96
66) TOLUENE	7.550	91	652719	20.46	PPBV		99
67) 1,3-DICHLOROPROPANE	7.611	76	329475	20.37	PPBV		100
68) TRANS-1,3-DICHLOROPROPENE	7.013	75	301598	21.29	PPBV		97
69) 1,1,2-TRICHLOROETHANE	7.171	83	193743	20.54	PPBV		99
70) 2-HEXANONE	8.145	58	260637	19.52	PPBV		90
71) ETHYL METHACRYLATE	8.264	69	341114	20.46	PPBV		96
72) TETRACHLOROETHENE	9.309	164	250506	20.49	PPBV		96
73) DIBROMOCHLOROMETHANE	8.097	129	424308	21.15	PPBV		99
74) 1,2-DIBROMOETHANE	8.444	107	372799	20.57	PPBV		99
75) OCTANE	9.454	43	410170	20.18	PPBV		97
77) 1,1,1,2-TETRACHLOROETHANE	10.540	131	292997	21.00	PPBV		94
78) CHLOROBENZENE	10.527	112	540308	20.57	PPBV		97
79) ETHYLBENZENE	11.418	91	900166	20.32	PPBV		99
80) M,P-XYLENE	11.852	91	1424506	40.88	PPBV		99
81) O-XYLENE	12.794	91	725566	20.71	PPBV		95
82) STYRENE	12.579	104	542309	20.53	PPBV		96
83) NONANE	13.913	43	439367	20.16	PPBV		95
84) BROMOFORM	11.659	173	399038	21.52	PPBV		99
85) 1,1,2,2-TETRACHLOROETHANE	12.801	83	531436	20.45	PPBV		100
86) 1,2,3-TRICHLOROPROPANE	13.087	75	406609	20.49	PPBV	#	100
88) ISOPROPYLBENZENE	14.318	120	274186	20.70	PPBV		93
89) BROMOBENZENE	14.183	77	513600	20.56	PPBV		86
90) 2-CHLOROTOLUENE	15.321	126	245325	20.61	PPBV		99
91) N-PROPYLBENZENE	15.662	120	285299	20.64	PPBV		97
92) 4-ETHYLTOLUENE	16.067	105	1065350	21.04	PPBV		98
93) 1,3,5-TRIMETHYLBENZENE	16.238	105	910977	21.05	PPBV		98
94) ALPHA-METHYLSTYRENE	16.450	118	471769	21.09	PPBV		99
95) TERT-BUTYLBENZENE	16.717	134	216427	21.07	PPBV		90
96) 1,2,4-TRIMETHYLBENZENE	16.727	105	990794	21.54	PPBV		96

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\
Data File : 2w62390.D
Acq On : 14 Dec 2022 9:37 pm
Operator : thomash
Sample : ic2776-20
Misc : MS64821,V2w2776,,,,,1
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Dec 16 16:12:58 2022
Quant Method : C:\msdchem\1\METHODS\M2W2776.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Fri Dec 16 07:28:46 2022
Response via : Initial Calibration

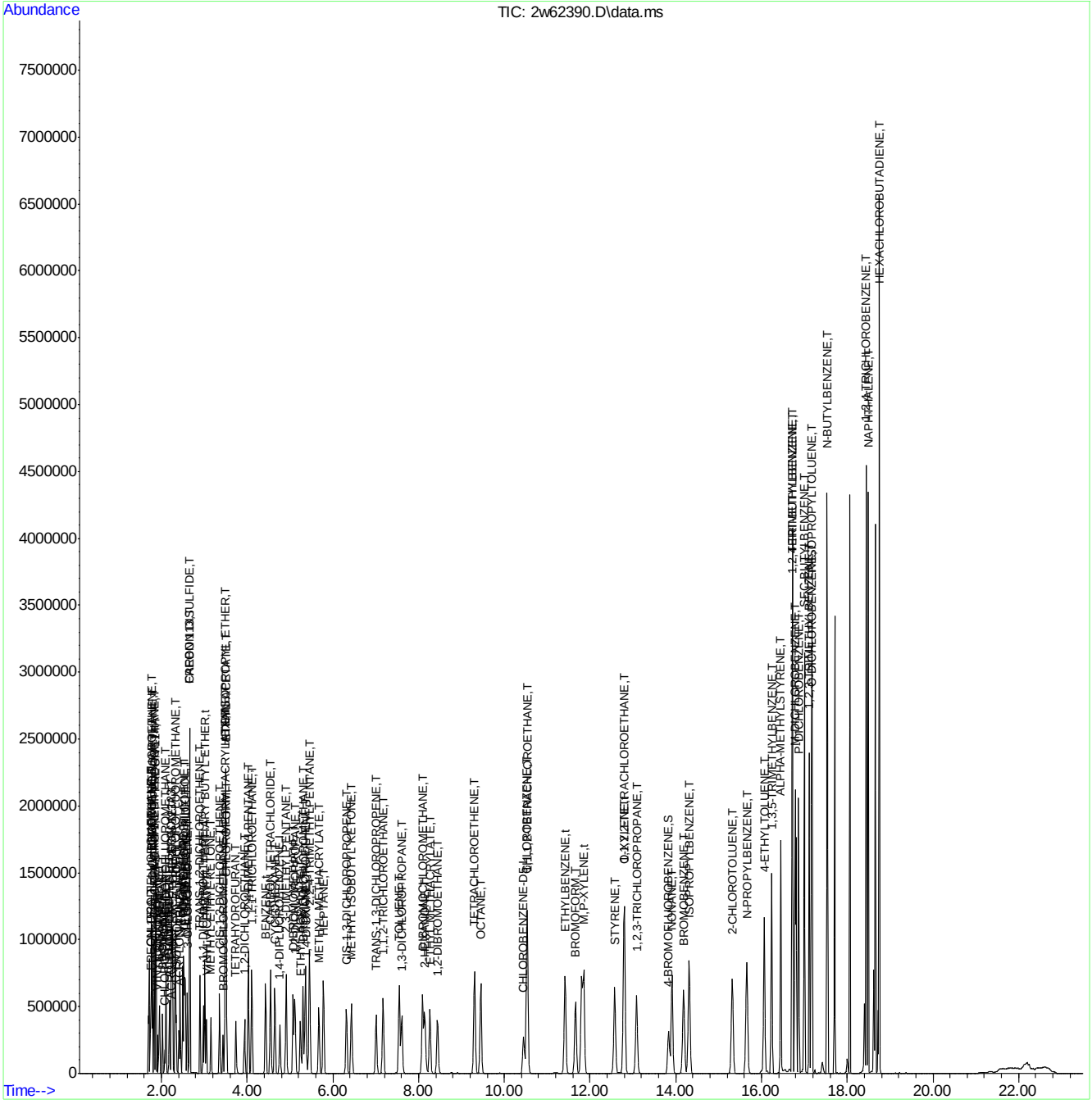
	Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
98)	M-DICHLOROBENZENE	16.784	146	600144	21.34	PPBV	96
99)	P-DICHLOROBENZENE	16.868	146	610216	21.21	PPBV	97
100)	O-DICHLOROBENZENE	17.164	146	595647	21.44	PPBV	97
101)	SEC-BUTYLBENZENE	17.000	134	280150	21.09	PPBV	95
102)	1,2,3-TRIMETHYLBENZENE	17.112	105	970255	21.29	PPBV	98
103)	P-ISOPROPYLTOLUENE	17.180	134	313638	21.31	PPBV	93
104)	N-BUTYLBENZENE	17.530	134	303071	21.28	PPBV	95
106)	HEXACHLOROBUTADIENE	18.752	225	555964m	19.62	PPBV	
107)	1,2,4-TRICHLOROBENZENE	18.444	180	664269	21.65	PPBV	99
108)	NAPHTHALENE	18.492	128	1705365	21.41	PPBV	100

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

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\
Data File : 2w62390.D
Acq On : 14 Dec 2022 9:37 pm
Operator : thomash
Sample : ic2776-20
Misc : MS64821,V2w2776,,,,,1
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Dec 16 16:12:58 2022
Quant Method : C:\msdchem\1\METHODS\M2W2776.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Fri Dec 16 07:28:46 2022
Response via : Initial Calibration



Manual Integration Approval Summary

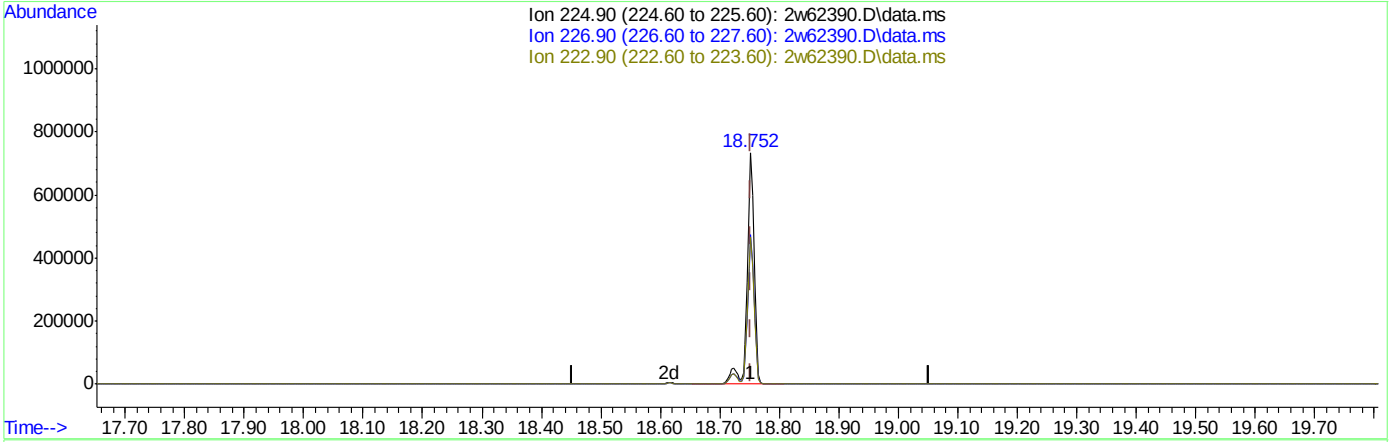
Sample Number:	V2W2776-IC2776	**Method:**	TO-15
Lab FileID:	2W62390.D	**Analyst approved:**	12/16/22 16:35 Thomas Hilbig
Injection Time:	12/14/22 21:37	**Supervisor approved:**	12/19/22 12:10 Kanya Veerawat

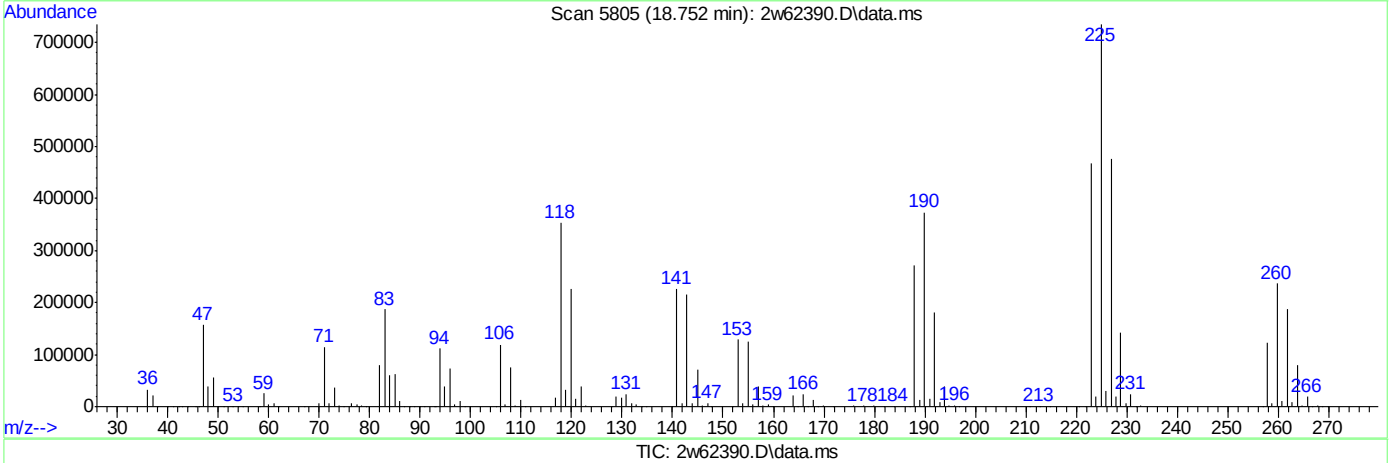
Parameter	CAS	Sig#	R.T. (min.)	Reason
Hexachlorobutadiene	87-68-3		18.75	Overlapping peak

Quantitation Report (Qedit)

Data Path : C:\msdchem\1\DATA\
Data File : 2w62390.D
Acq On : 14 Dec 2022 9:37 pm
Operator : thomash
Sample : ic2776-20
Misc : MS64821,V2w2776,,,,,1
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Dec 16 07:31:28 2022
Quant Method : C:\msdchem\1\METHODS\M2W2776.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Fri Dec 16 07:28:46 2022
Response via : Initial Calibration





TIC: 2w62390.D\data.ms

(106) HEXACHLOROBUTADIENE (T)

18.752min (+0.000) 21.47PPBV

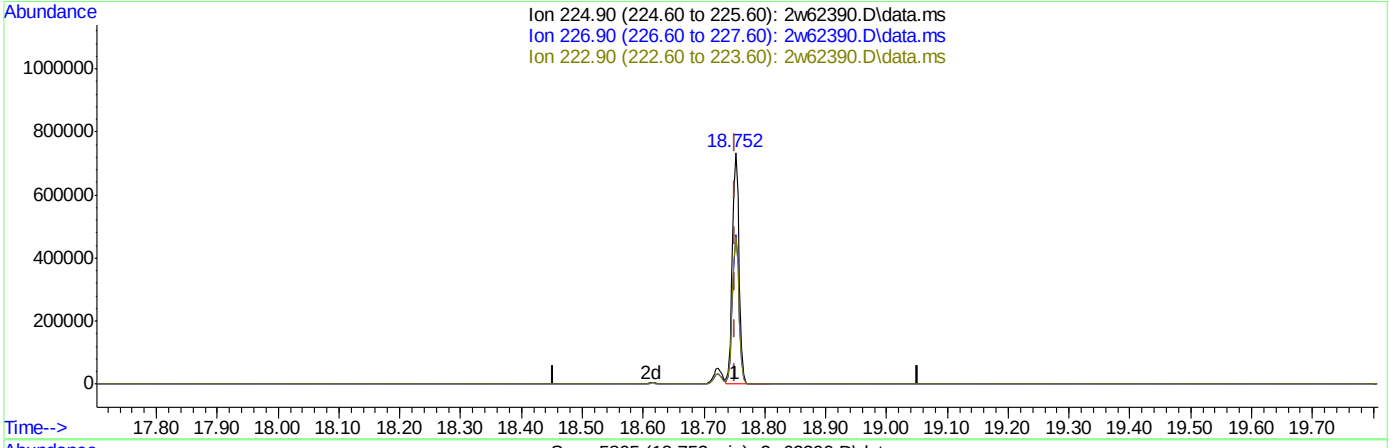
response 608442

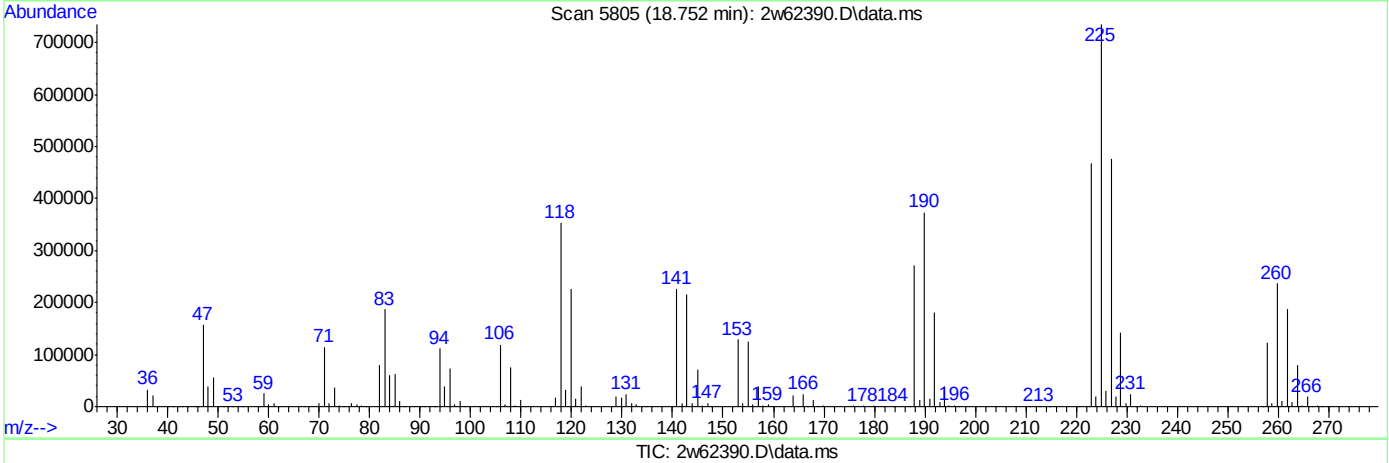
Ion	Exp%	Act%
224.90	100	100
226.90	63.90	63.59
222.90	62.70	63.58
0.00	0.00	0.00

Quantitation Report (Qedit)

Data Path : C:\msdchem\1\DATA\
Data File : 2w62390.D
Acq On : 14 Dec 2022 9:37 pm
Operator : thomash
Sample : ic2776-20
Misc : MS64821,V2w2776,,,,,1
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Dec 16 16:12:58 2022
Quant Method : C:\msdchem\1\METHODS\M2W2776.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Fri Dec 16 07:28:46 2022
Response via : Initial Calibration





TIC: 2w62390.D\data.ms

(106) HEXACHLOROBUTADIENE (T)

18.752min (+0.000) 19.62PPBV m

response 555964

Ion	Exp%	Act%
224.90	100	100
226.90	63.90	69.59
222.90	62.70	69.58
0.00	0.00	0.00

Manual Integrations APPROVED (compounds with "m" flag)
Kanya Veerawat 12/19/22 12:10

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\
Data File : 2w62391.D
Acq On : 14 Dec 2022 10:12 pm
Operator : thomash
Sample : ic2776-40
Misc : MS64821,V2w2776,,,,,1
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Dec 16 16:13:22 2022
Quant Method : C:\msdchem\1\METHODS\M2W2776.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Fri Dec 16 07:28:46 2022
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units		Dev(Min)
Internal Standards							
1) BROMOCHLOROMETHANE	3.435	128	55525	10.00	PPBV		0.00
52) 1,4-DIFLUOROBENZENE	4.766	114	278211	10.00	PPBV		0.00
76) CHLOROBENZENE-D5	10.447	117	250406	10.00	PPBV		0.00
System Monitoring Compounds							
87) 4-BROMOFLUOROBENZENE	13.833	95	198278	10.21	PPBV		0.00
Target Compounds							Qvalue
3) FREON 152A	1.746	65	169328m	40.31	PPBV		
4) CHLORODIFLUOROMETHANE	1.759	67	89579	40.10	PPBV		100
5) CHLOROTRIFLUOROETHENE	1.772	116	414225	40.89	PPBV		81
6) DICHLORODIFLUOROMETHANE	1.788	85	1096255	40.90	PPBV		99
7) PROPYLENE	1.769	41	196125	40.56	PPBV		98
8) 1-CHLORO-1,1-DIFLUOROE...	1.830	65	793315	39.98	PPBV		94
9) FREON 114	1.869	85	943697	41.81	PPBV		96
10) CHLOROMETHANE	1.837	52	87915	40.32	PPBV		98
11) VINYL CHLORIDE	1.904	62	321551	40.36	PPBV		100
12) 1,3-BUTADIENE	1.943	54	246442	41.31	PPBV		99
13) N-BUTANE	1.962	43	430337	40.08	PPBV		96
14) BROMOMETHANE	2.023	94	315949	41.07	PPBV		99
15) CHLOROETHANE	2.078	64	173290	41.11	PPBV		98
16) DICHLOROFLUOROMETHANE	2.103	67	737846	41.09	PPBV		96
17) ACETONITRILE	2.174	41	249615	40.61	PPBV		99
18) ACROLEIN	2.219	56	146873	42.04	PPBV		98
19) FREON 123	2.232	83	817492	42.43	PPBV		99
20) FREON 123A	2.251	117	475423	42.20	PPBV		87
21) TRICHLOROFLUOROMETHANE	2.319	101	1049267	40.80	PPBV		99
22) ISOPROPYL ALCOHOL	2.338	45	610927	39.35	PPBV		96
23) ACETONE	2.258	58	171687	41.72	PPBV		96
24) PENTANE	2.438	42	320803	39.05	PPBV		97
25) IODOMETHANE	2.499	142	981724	40.64	PPBV		95
26) 1,1-DICHLOROETHYLENE	2.525	96	386217	40.29	PPBV		79
27) CARBON DISULFIDE	2.660	76	1195436	41.81	PPBV	#	91
28) ETHANOL	2.107	45	132079	41.40	PPBV		98
29) BROMOETHENE	2.184	106	334541	41.67	PPBV		99
30) ACRYLONITRILE	2.409	52	238223	40.26	PPBV		99
31) METHYLENE CHLORIDE	2.563	84	354157	39.19	PPBV	#	77
32) 3-CHLOROPROPENE	2.605	76	191425	40.43	PPBV	#	61
33) FREON 113	2.660	151	656766	41.04	PPBV		97
34) TRANS-1,2-DICHLOROETHENE	2.898	96	361692	42.11	PPBV		95
35) TERTIARY BUTYL ALCOHOL	2.541	59	893267	37.83	PPBV	#	89
36) METHYL TERTIARY BUTYL ...	3.013	73	1011137	41.71	PPBV		100
37) TETRAHYDROFURAN	3.730	72	167843	41.19	PPBV		97
38) HEXANE	3.492	57	579233	42.65	PPBV		96
39) VINYL ACETATE	3.052	86	89927	56.74	PPBV		92
40) 1,1-DICHLOROETHANE	2.978	63	605179	41.52	PPBV		99
41) METHYL ETHYL KETONE	3.152	72	172105	41.59	PPBV		97
42) CIS-1,2-DICHLOROETHENE	3.357	96	377606	41.10	PPBV		99
43) DIISOPROPYL ETHER	3.496	59	175535	42.77	PPBV		96

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\
Data File : 2w62391.D
Acq On : 14 Dec 2022 10:12 pm
Operator : thomash
Sample : ic2776-40
Misc : MS64821,V2w2776,,,,,1
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Dec 16 16:13:22 2022
Quant Method : C:\msdchem\1\METHODS\M2W2776.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Fri Dec 16 07:28:46 2022
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units		Dev(Min)
44) ETHYL ACETATE	3.502	61	120855	41.82	PPBV		86
45) METHYL ACRYLATE	3.486	55	734621	41.99	PPBV	#	99
46) CHLOROFORM	3.515	83	832275	41.83	PPBV		99
47) 2,4-DIMETHYLPENTANE	4.026	57	669458	41.71	PPBV		98
48) 1,1,1-TRICHLOROETHANE	4.110	97	873287	42.34	PPBV		100
49) CARBON TETRACHLORIDE	4.547	117	920014	43.90	PPBV		99
50) 1,2-DICHLOROETHANE	3.939	62	579003	41.37	PPBV		99
51) BENZENE	4.431	78	1088187	41.73	PPBV		100
53) CYCLOHEXANE	4.647	84	487293	42.58	PPBV		95
54) 2,3-DIMETHYLPENTANE	4.910	71	240254	42.54	PPBV		96
55) TRICHLOROETHENE	5.361	95	540630	43.56	PPBV		96
56) 1,2-DICHLOROPROPANE	5.119	63	412522	42.85	PPBV		93
57) DIBROMOMETHANE	5.078	174	469513	43.19	PPBV		93
58) ETHYL ACRYLATE	5.242	55	925914	42.90	PPBV		99
59) BROMODICHLOROMETHANE	5.303	83	924775	43.73	PPBV		100
60) 2,2,4-TRIMETHYLPENTANE	5.457	57	1823502	42.37	PPBV		100
61) 1,4-DIOXANE	5.370	88	264003	41.03	PPBV		99
62) HEPTANE	5.782	43	619683	42.24	PPBV		96
63) METHYL METHACRYLATE	5.672	69	427141	43.83	PPBV		94
64) METHYL ISOBUTYL KETONE	6.431	58	366605	39.38	PPBV		92
65) CIS-1,3-DICHLOROPROPENE	6.319	75	681652	44.80	PPBV		98
66) TOLUENE	7.553	91	1390172	42.93	PPBV		99
67) 1,3-DICHLOROPROPANE	7.611	76	701785	42.76	PPBV		100
68) TRANS-1,3-DICHLOROPROPENE	7.013	75	659064	45.84	PPBV		99
69) 1,1,2-TRICHLOROETHANE	7.177	83	414512	43.30	PPBV		98
70) 2-HEXANONE	8.139	58	512721	37.84	PPBV		92
71) ETHYL METHACRYLATE	8.267	69	721036	42.61	PPBV		96
72) TETRACHLOROETHENE	9.309	164	539098	43.45	PPBV		96
73) DIBROMOCHLOROMETHANE	8.094	129	927029	45.54	PPBV		99
74) 1,2-DIBROMOETHANE	8.450	107	800898	43.56	PPBV		99
75) OCTANE	9.454	43	865603	41.97	PPBV		97
77) 1,1,1,2-TETRACHLOROETHANE	10.544	131	635284	45.13	PPBV		94
78) CHLOROBENZENE	10.534	112	1151130	43.44	PPBV		98
79) ETHYLBENZENE	11.425	91	1906219	42.63	PPBV		99
80) M,P-XYLENE	11.859	91	3039399	86.44	PPBV		99
81) O-XYLENE	12.797	91	1550606	43.86	PPBV		96
82) STYRENE	12.582	104	1180835	44.30	PPBV		97
83) NONANE	13.923	43	934024	42.47	PPBV		95
84) BROMOFORM	11.666	173	890682	47.60	PPBV		99
85) 1,1,2,2-TETRACHLOROETHANE	12.810	83	1144345	43.64	PPBV		100
86) 1,2,3-TRICHLOROPROPANE	13.093	75	861093	43.01	PPBV	#	100
88) ISOPROPYLBENZENE	14.318	120	591502	44.26	PPBV		94
89) BROMOBENZENE	14.190	77	1095238	43.44	PPBV		87
90) 2-CHLOROTOLUENE	15.325	126	528354	43.99	PPBV		99
91) N-PROPYLBENZENE	15.662	120	615052	44.10	PPBV		99
92) 4-ETHYLTOLUENE	16.071	105	2314886	45.30	PPBV		100
93) 1,3,5-TRIMETHYLBENZENE	16.244	105	2022148	46.30	PPBV		97
94) ALPHA-METHYLSTYRENE	16.453	118	1054595	46.72	PPBV		99
95) TERT-BUTYLBENZENE	16.723	134	486746	46.95	PPBV		92
96) 1,2,4-TRIMETHYLBENZENE	16.730	105	2224178	47.92	PPBV		95

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\
Data File : 2w62391.D
Acq On : 14 Dec 2022 10:12 pm
Operator : thomash
Sample : ic2776-40
Misc : MS64821,V2w2776,,,,,1
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Dec 16 16:13:22 2022
Quant Method : C:\msdchem\1\METHODS\M2W2776.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Fri Dec 16 07:28:46 2022
Response via : Initial Calibration

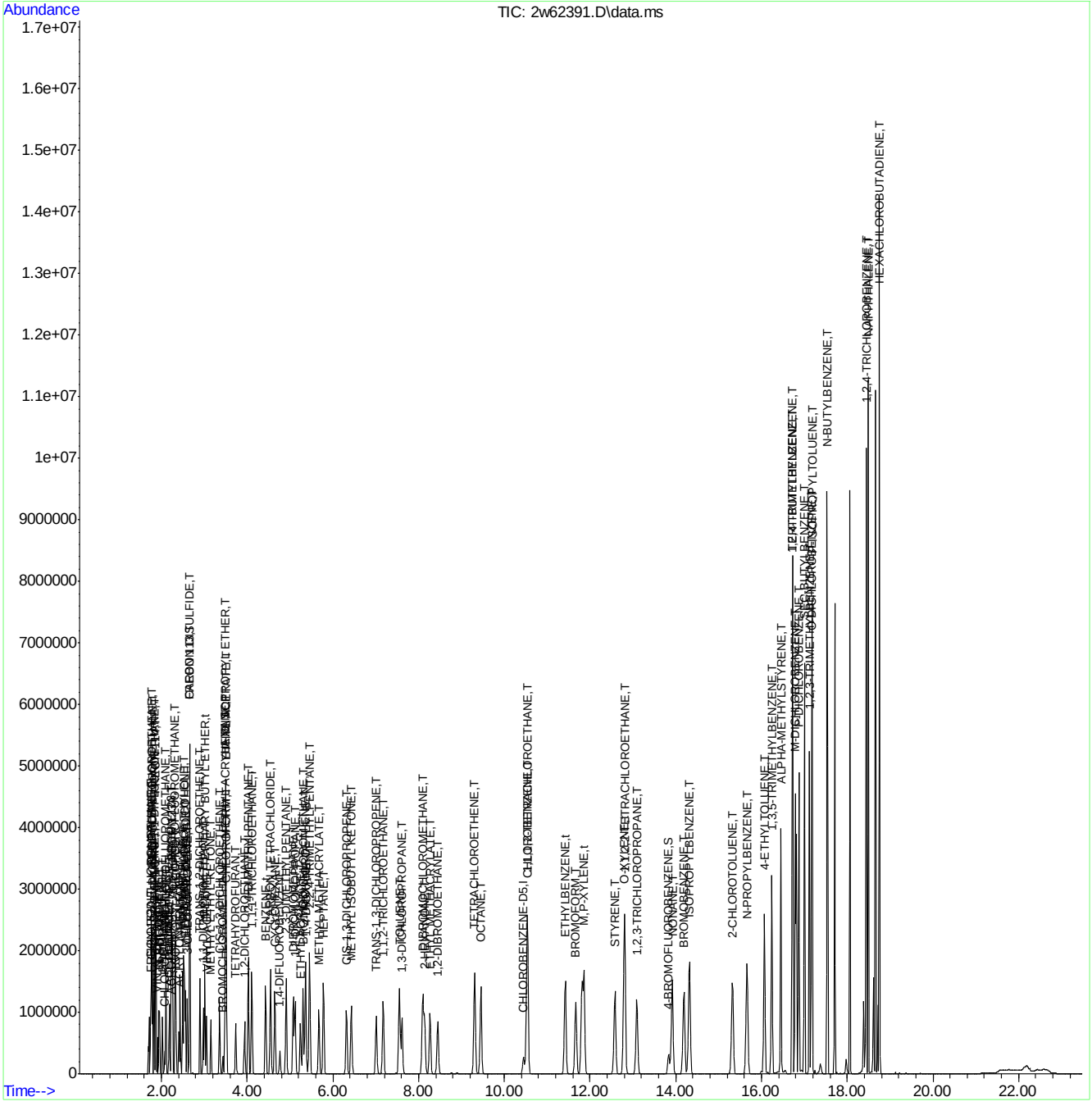
	Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
98)	M-DICHLOROBENZENE	16.791	146	1338085	47.14	PPBV	96
99)	P-DICHLOROBENZENE	16.871	146	1381721	47.60	PPBV	97
100)	O-DICHLOROBENZENE	17.170	146	1327817	47.36	PPBV	97
101)	SEC-BUTYLBENZENE	17.003	134	617611	46.07	PPBV	95
102)	1,2,3-TRIMETHYLBENZENE	17.119	105	2139891	46.53	PPBV	99
103)	P-ISOPROPYLTOLUENE	17.183	134	702338	47.28	PPBV	94
104)	N-BUTYLBENZENE	17.534	134	683022	47.52	PPBV	97
106)	HEXACHLOROBUTADIENE	18.755	225	1372651	48.00	PPBV	98
107)	1,2,4-TRICHLOROBENZENE	18.447	180	1615886	52.20	PPBV	99
108)	NAPHTHALENE	18.498	128	4590023	57.10	PPBV	99

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

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\
Data File : 2w62391.D
Acq On : 14 Dec 2022 10:12 pm
Operator : thomash
Sample : ic2776-40
Misc : MS64821,V2w2776,,,,,1
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Dec 16 16:13:22 2022
Quant Method : C:\msdchem\1\METHODS\M2W2776.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Fri Dec 16 07:28:46 2022
Response via : Initial Calibration



Manual Integration Approval Summary

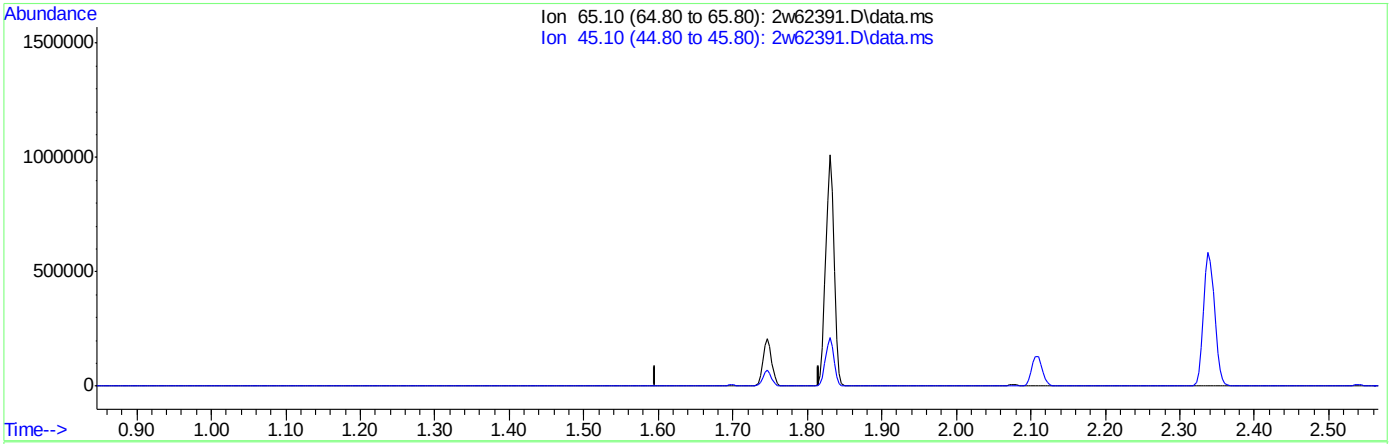
Sample Number:	V2W2776-IC2776	**Method:**	TO-15
Lab FileID:	2W62391.D	**Analyst approved:**	12/16/22 16:35 Thomas Hilbig
Injection Time:	12/14/22 22:12	**Supervisor approved:**	12/19/22 12:10 Kanya Veerawat

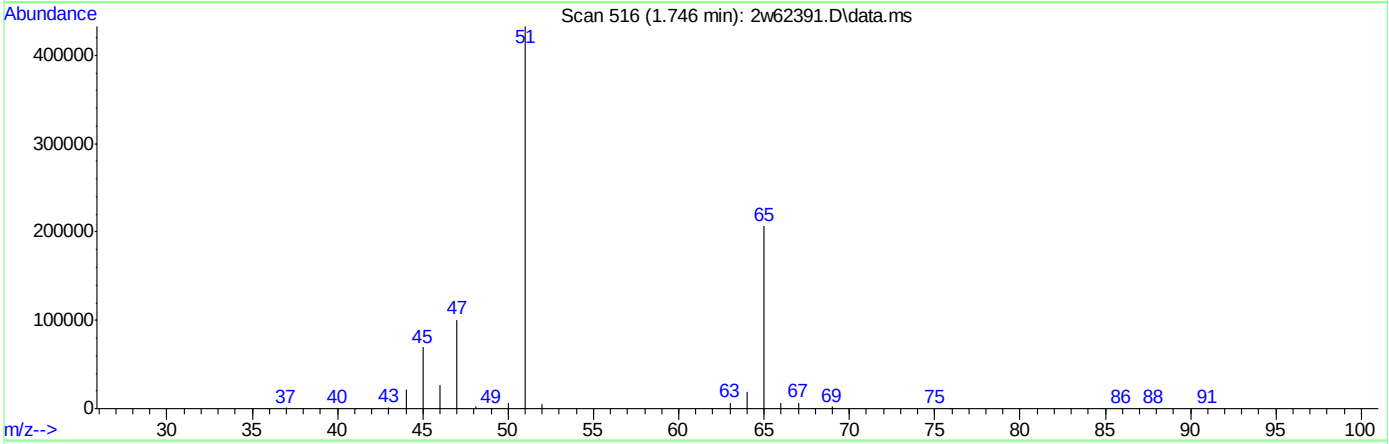
Parameter	CAS	Sig#	R.T. (min.)	Reason
Freon 152A	75-37-6		1.75	Missed peak

Quantitation Report (Qedit)

Data Path : C:\msdchem\1\DATA\
Data File : 2w62391.D
Acq On : 14 Dec 2022 10:12 pm
Operator : thomash
Sample : ic2776-40
Misc : MS64821,V2w2776,,,,,1
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Dec 16 07:31:36 2022
Quant Method : C:\msdchem\1\METHODS\M2W2776.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Fri Dec 16 07:28:46 2022
Response via : Initial Calibration





TIC: 2w62391.D\data.ms

(3) FREON 152A (T)

1.746min (-1.746) 0.00PPBV

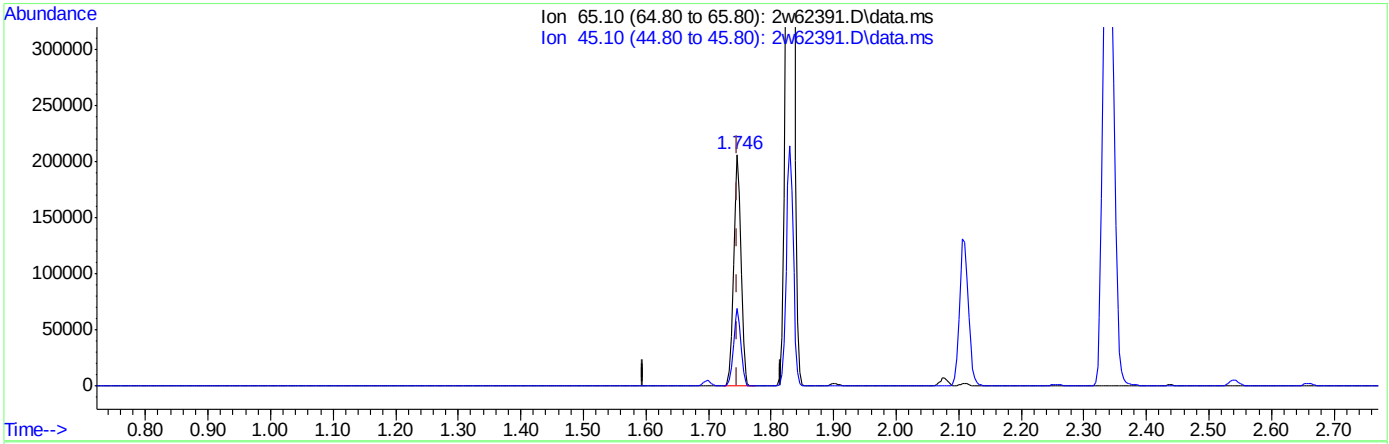
response 0

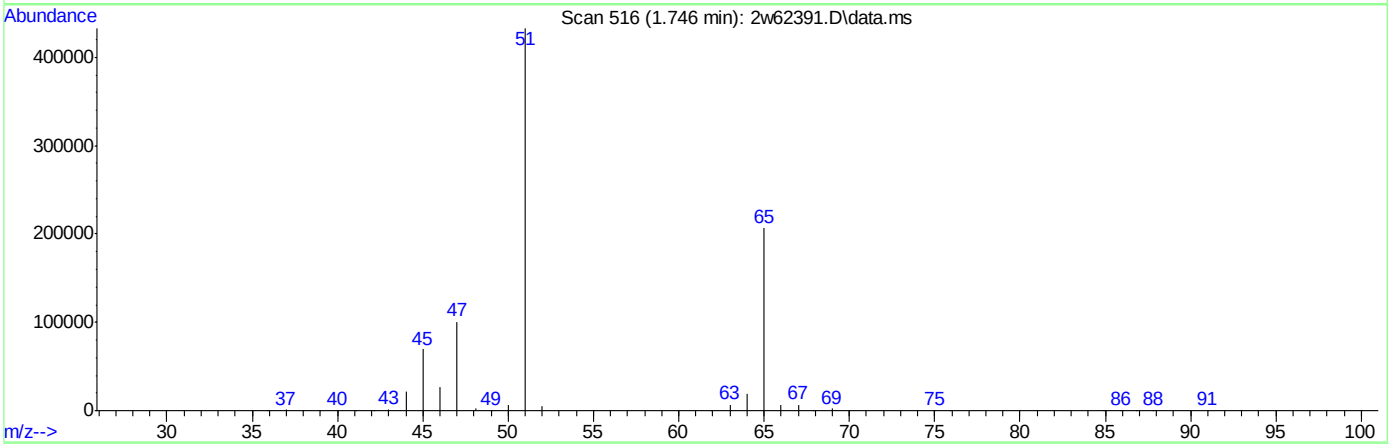
Ion	Exp%	Act%
65.10	100	0.00
45.10	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00

Quantitation Report (Qedit)

Data Path : C:\msdchem\1\DATA\
Data File : 2w62391.D
Acq On : 14 Dec 2022 10:12 pm
Operator : thomash
Sample : ic2776-40
Misc : MS64821,V2w2776,,,,,1
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Dec 16 07:31:36 2022
Quant Method : C:\msdchem\1\METHODS\M2W2776.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Fri Dec 16 07:28:46 2022
Response via : Initial Calibration





TIC: 2w62391.D\data.ms

(3) FREON 152A (T)

1.746min (+0.000) 40.31PPBV m

response 169328

Ion	Exp%	Act%
65.10	100	100
45.10	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\
Data File : 2w62392.D
Acq On : 14 Dec 2022 10:47 pm
Operator : thomash
Sample : ic2776-50
Misc : MS64821,V2w2776,,,,,1
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Dec 16 16:14:32 2022
Quant Method : C:\msdchem\1\METHODS\M2W2776.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Fri Dec 16 07:28:46 2022
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units		Dev(Min)
Internal Standards							
1) BROMOCHLOROMETHANE	3.438	128	57243	10.00	PPBV		0.00
52) 1,4-DIFLUOROBENZENE	4.765	114	287885	10.00	PPBV		0.00
76) CHLOROBENZENE-D5	10.447	117	267047	10.00	PPBV		0.00
System Monitoring Compounds							
87) 4-BROMOFLUOROBENZENE	13.836	95	206642	9.98	PPBV		0.00
Target Compounds							Qvalue
3) FREON 152A	1.750	65	220378	50.88	PPBV	#	100
4) CHLORODIFLUOROMETHANE	1.762	67	116543	50.60	PPBV		99
5) CHLOROTRIFLUOROETHENE	1.775	116	538385	51.55	PPBV		82
6) DICHLORODIFLUOROMETHANE	1.791	85	1409899	51.02	PPBV		99
7) PROPYLENE	1.772	41	255831	51.32	PPBV		98
8) 1-CHLORO-1,1-DIFLUOROE...	1.833	65	1006807	49.21	PPBV		94
9) FREON 114	1.872	85	1210933	52.04	PPBV		96
10) CHLOROMETHANE	1.840	52	112447	50.02	PPBV		97
11) VINYL CHLORIDE	1.904	62	418270	50.93	PPBV		99
12) 1,3-BUTADIENE	1.946	54	317488	51.63	PPBV		99
13) N-BUTANE	1.965	43	552325	49.89	PPBV		96
14) BROMOMETHANE	2.026	94	408690	51.53	PPBV		99
15) CHLOROETHANE	2.081	64	222765	51.26	PPBV		98
16) DICHLOROFLUOROMETHANE	2.106	67	956739	51.68	PPBV		96
17) ACETONITRILE	2.177	41	322807	50.94	PPBV		99
18) ACROLEIN	2.219	56	188928	52.45	PPBV		98
19) FREON 123	2.235	83	1067354	53.74	PPBV		98
20) FREON 123A	2.254	117	619815	53.36	PPBV		86
21) TRICHLOROFLUOROMETHANE	2.322	101	1361331	51.34	PPBV		99
22) ISOPROPYL ALCOHOL	2.341	45	789430	49.33	PPBV		96
23) ACETONE	2.261	58	222233	52.38	PPBV		98
24) PENTANE	2.441	42	413679	48.84	PPBV		97
25) IODOMETHANE	2.499	142	1273421	51.13	PPBV		96
26) 1,1-DICHLOROETHYLENE	2.528	96	500225	50.62	PPBV		78
27) CARBON DISULFIDE	2.659	76	1540373	52.25	PPBV	#	91
28) ETHANOL	2.110	45	170363	51.80	PPBV		99
29) BROMOETHENE	2.187	106	431992	52.19	PPBV		99
30) ACRYLONITRILE	2.412	52	306026	50.16	PPBV		98
31) METHYLENE CHLORIDE	2.563	84	456882	49.04	PPBV	#	76
32) 3-CHLOROPROPENE	2.605	76	247058	50.62	PPBV	#	60
33) FREON 113	2.659	151	846874	51.33	PPBV		97
34) TRANS-1,2-DICHLOROETHENE	2.897	96	469399	53.01	PPBV		95
35) TERTIARY BUTYL ALCOHOL	2.540	59	1154424	47.43	PPBV	#	89
36) METHYL TERTIARY BUTYL ...	3.013	73	1318863	52.78	PPBV		100
37) TETRAHYDROFURAN	3.730	72	219288	52.20	PPBV		99
38) HEXANE	3.492	57	754342	53.87	PPBV		97
39) VINYL ACETATE	3.052	86	121628	74.43	PPBV		87
40) 1,1-DICHLOROETHANE	2.978	63	784090	52.18	PPBV		99
41) METHYL ETHYL KETONE	3.151	72	224010	52.51	PPBV		95
42) CIS-1,2-DICHLOROETHENE	3.357	96	491778	51.92	PPBV		98
43) DIISOPROPYL ETHER	3.499	59	228303	53.96	PPBV		97

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\
Data File : 2w62392.D
Acq On : 14 Dec 2022 10:47 pm
Operator : thomash
Sample : ic2776-50
Misc : MS64821,V2w2776,,,,,1
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Dec 16 16:14:32 2022
Quant Method : C:\msdchem\1\METHODS\M2W2776.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Fri Dec 16 07:28:46 2022
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units		Dev(Min)
44) ETHYL ACETATE	3.502	61	158744	53.29	PPBV		91
45) METHYL ACRYLATE	3.489	55	949749	52.66	PPBV	#	98
46) CHLOROFORM	3.518	83	1082358	52.77	PPBV		99
47) 2,4-DIMETHYLPENTANE	4.026	57	867207	52.41	PPBV		98
48) 1,1,1-TRICHLOROETHANE	4.110	97	1130219	53.15	PPBV		99
49) CARBON TETRACHLORIDE	4.547	117	1197377	55.42	PPBV		99
50) 1,2-DICHLOROETHANE	3.939	62	745644	51.67	PPBV		99
51) BENZENE	4.431	78	1399378	52.05	PPBV		100
53) CYCLOHEXANE	4.646	84	625371	52.81	PPBV		95
54) 2,3-DIMETHYLPENTANE	4.913	71	314160	53.76	PPBV		94
55) TRICHLOROETHENE	5.360	95	698535	54.40	PPBV		96
56) 1,2-DICHLOROPROPANE	5.122	63	530353	53.24	PPBV		93
57) DIBROMOMETHANE	5.077	174	609724	54.20	PPBV		93
58) ETHYL ACRYLATE	5.245	55	1198911	53.68	PPBV		99
59) BROMODICHLOROMETHANE	5.306	83	1193176	54.52	PPBV		100
60) 2,2,4-TRIMETHYLPENTANE	5.457	57	2359627	52.98	PPBV		99
61) 1,4-DIOXANE	5.370	88	342736	51.47	PPBV		98
62) HEPTANE	5.782	43	794937	52.37	PPBV		97
63) METHYL METHACRYLATE	5.675	69	556263	55.16	PPBV		95
64) METHYL ISOBUTYL KETONE	6.434	58	472693	49.07	PPBV		92
65) CIS-1,3-DICHLOROPROPENE	6.318	75	886903	56.33	PPBV		98
66) TOLUENE	7.553	91	1806900	53.93	PPBV		99
67) 1,3-DICHLOROPROPANE	7.614	76	912757	53.74	PPBV		100
68) TRANS-1,3-DICHLOROPROPENE	7.013	75	863407	58.03	PPBV		99
69) 1,1,2-TRICHLOROETHANE	7.177	83	534219	53.93	PPBV		99
70) 2-HEXANONE	8.138	58	651658	46.48	PPBV		92
71) ETHYL METHACRYLATE	8.270	69	934545	53.37	PPBV		97
72) TETRACHLOROETHENE	9.312	164	701665	54.65	PPBV		96
73) DIBROMOCHLOROMETHANE	8.097	129	1211332	57.50	PPBV		99
74) 1,2-DIBROMOETHANE	8.450	107	1035011	54.40	PPBV		99
75) OCTANE	9.457	43	1120551	52.51	PPBV		98
77) 1,1,1,2-TETRACHLOROETHANE	10.547	131	825604	55.00	PPBV		94
78) CHLOROBENZENE	10.537	112	1496029	52.93	PPBV		98
79) ETHYLBENZENE	11.424	91	2481841	52.05	PPBV		99
80) M,P-XYLENE	11.862	91	3946317	105.24	PPBV		96
81) O-XYLENE	12.804	91	2028805	53.81	PPBV		96
82) STYRENE	12.582	104	1546195	54.40	PPBV		97
83) NONANE	13.923	43	1197072	51.04	PPBV		96
84) BROMOFORM	11.669	173	1168994	58.58	PPBV		99
85) 1,1,2,2-TETRACHLOROETHANE	12.813	83	1480819	52.95	PPBV		100
86) 1,2,3-TRICHLOROPROPANE	13.100	75	1125862	52.73	PPBV	#	100
88) ISOPROPYLBENZENE	14.325	120	769599	53.99	PPBV		94
89) BROMOBENZENE	14.196	77	1429756	53.18	PPBV		87
90) 2-CHLOROTOLUENE	15.331	126	686012	53.56	PPBV		100
91) N-PROPYLBENZENE	15.669	120	805189	54.14	PPBV		100
92) 4-ETHYLTOLUENE	16.074	105	3064376	56.22	PPBV		98
93) 1,3,5-TRIMETHYLBENZENE	16.244	105	2655609	57.01	PPBV		98
94) ALPHA-METHYLSTYRENE	16.456	118	1388919	57.70	PPBV		99
95) TERT-BUTYLBENZENE	16.723	134	636138	57.54	PPBV		93
96) 1,2,4-TRIMETHYLBENZENE	16.733	105	2921128	59.01	PPBV		95

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\
Data File : 2w62392.D
Acq On : 14 Dec 2022 10:47 pm
Operator : thomash
Sample : ic2776-50
Misc : MS64821,V2w2776,,,,,1
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Dec 16 16:14:32 2022
Quant Method : C:\msdchem\1\METHODS\M2W2776.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Fri Dec 16 07:28:46 2022
Response via : Initial Calibration

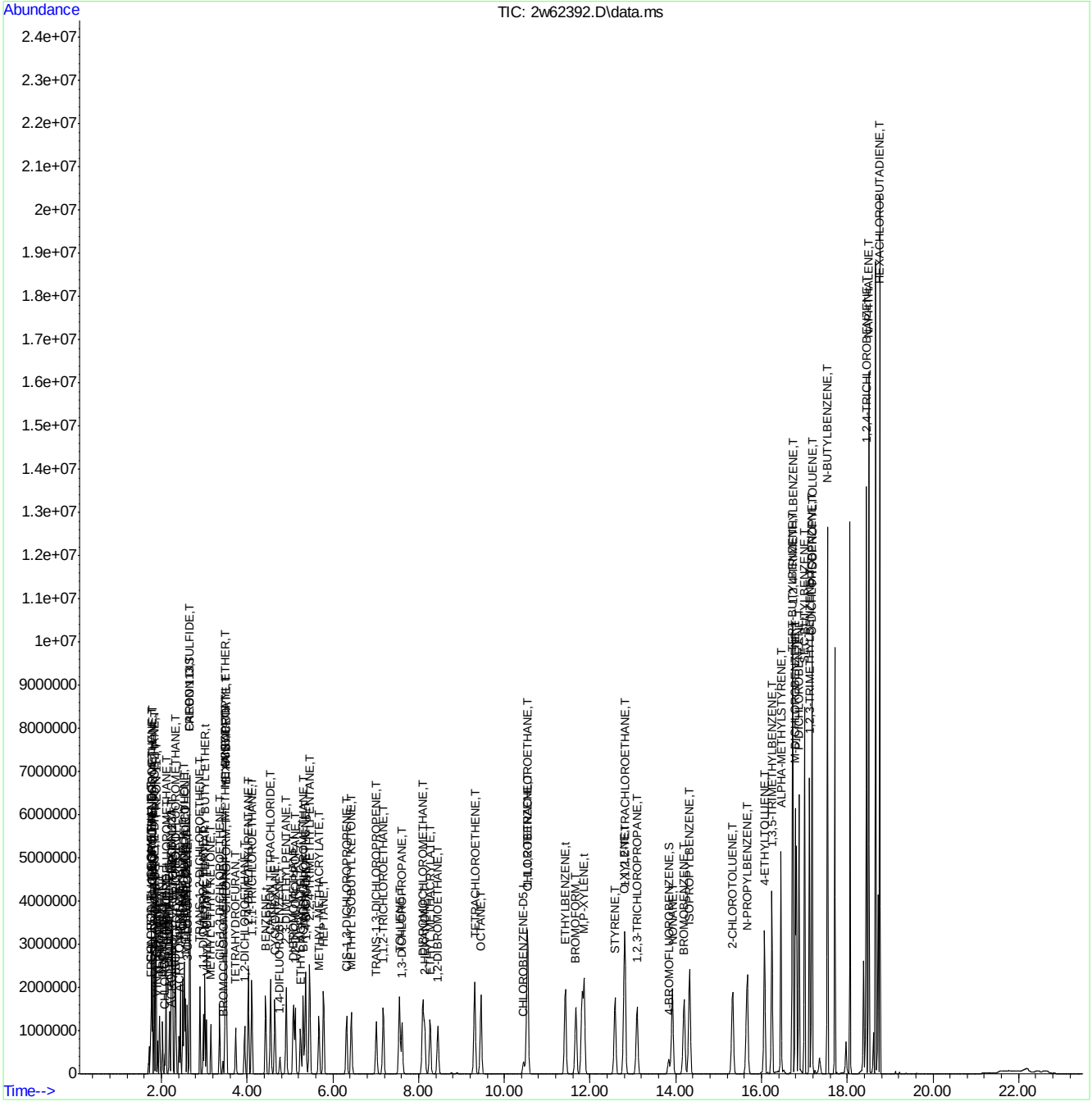
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
98) M-DICHLOROBENZENE	16.791	146	1755247	57.99	PPBV	97
99) P-DICHLOROBENZENE	16.874	146	1874947	60.56	PPBV	97
100) O-DICHLOROBENZENE	17.173	146	1766426	59.07	PPBV	97
101) SEC-BUTYLBENZENE	17.006	134	802501	56.13	PPBV	94
102) 1,2,3-TRIMETHYLBENZENE	17.119	105	2832589	57.75	PPBV	98
103) P-ISOPROPYLTOLUENE	17.186	134	924979	58.39	PPBV	94
104) N-BUTYLBENZENE	17.537	134	908331	59.26	PPBV	99
106) HEXACHLOROBUTADIENE	18.758	225	1964300	64.41	PPBV	99
107) 1,2,4-TRICHLOROBENZENE	18.453	180	2395172	72.55	PPBV	99
108) NAPHTHALENE	18.504	128	7055572	82.31	PPBV	97

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

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\
Data File : 2w62392.D
Acq On : 14 Dec 2022 10:47 pm
Operator : thomash
Sample : ic2776-50
Misc : MS64821,V2w2776,,,,,1
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Dec 16 16:14:32 2022
Quant Method : C:\msdchem\1\METHODS\M2W2776.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Fri Dec 16 07:28:46 2022
Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\
Data File : 2w62395.D
Acq On : 15 Dec 2022 12:22 am
Operator : thomash
Sample : icv2776-10
Misc : MS64821,V2w2776,,,,,1
ALS Vial : 5 Sample Multiplier: 1

Quant Time: Dec 19 08:04:28 2022
Quant Method : C:\msdchem\1\METHODS\M2W2776.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Mon Dec 19 08:01:03 2022
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units		Dev(Min)
Internal Standards							
1) BROMOCHLOROMETHANE	3.438	128	52695	10.00	PPBV		0.00
52) 1,4-DIFLUOROBENZENE	4.765	114	265948	10.00	PPBV		0.00
76) CHLOROBENZENE-D5	10.447	117	239999	10.00	PPBV		0.00
System Monitoring Compounds							
87) 4-BROMOFLUOROBENZENE	13.833	95	186644	10.07	PPBV		0.00
Target Compounds							Qvalue
3) FREON 152A	1.750	65	43487	10.92	PPBV	#	100
4) CHLORODIFLUOROMETHANE	1.762	67	22457	10.65	PPBV		99
5) CHLOROTRIFLUOROETHENE	1.775	116	105718	10.55	PPBV		84
6) DICHLORODIFLUOROMETHANE	1.791	85	273806	10.45	PPBV		99
7) PROPYLENE	1.772	41	51540	10.59	PPBV		98
8) 1-CHLORO-1,1-DIFLUOROE...	1.833	65	204806	10.63	PPBV		95
9) FREON 114	1.872	85	232966	10.67	PPBV		96
10) CHLOROMETHANE	1.840	52	22204	10.29	PPBV		98
11) VINYL CHLORIDE	1.907	62	81524	10.35	PPBV		99
12) 1,3-BUTADIENE	1.949	54	61009	10.15	PPBV		96
13) N-BUTANE	1.965	43	106559	9.86	PPBV		96
14) BROMOMETHANE	2.026	94	78279	10.16	PPBV		99
15) CHLOROETHANE	2.081	64	42898	10.49	PPBV		97
16) DICHLOROFLUOROMETHANE	2.106	67	178389	10.18	PPBV		96
17) ACETONITRILE	2.180	41	61001	9.79	PPBV		100
18) ACROLEIN	2.222	56	32351	9.23	PPBV		98
19) FREON 123	2.235	83	202573	10.54	PPBV		98
20) FREON 123A	2.254	117	126531	11.03	PPBV		86
21) TRICHLOROFLUOROMETHANE	2.322	101	263768	10.54	PPBV		99
22) ISOPROPYL ALCOHOL	2.348	45	158564	9.92	PPBV		98
23) ACETONE	2.264	58	44143	9.86	PPBV		97
24) PENTANE	2.441	42	82644	9.86	PPBV		98
25) IODOMETHANE	2.499	142	245976	10.70	PPBV		94
26) 1,1-DICHLOROETHYLENE	2.528	96	98083	10.34	PPBV		80
27) CARBON DISULFIDE	2.663	76	269937	10.12	PPBV	#	93
28) ETHANOL	2.113	45	38812	10.33	PPBV		98
29) BROMOETHENE	2.187	106	82583	10.52	PPBV		98
30) ACRYLONITRILE	2.412	52	58805	10.19	PPBV		98
31) METHYLENE CHLORIDE	2.563	84	89655	8.97	PPBV	#	77
32) 3-CHLOROPROPENE	2.605	76	48701	10.48	PPBV	#	65
33) FREON 113	2.659	151	157949	10.24	PPBV		96
34) TRANS-1,2-DICHLOROETHENE	2.901	96	87840	10.40	PPBV		96
35) TERTIARY BUTYL ALCOHOL	2.553	59	219125	9.15	PPBV	#	91
36) METHYL TERTIARY BUTYL ...	3.016	73	251285	10.50	PPBV		99
37) TETRAHYDROFURAN	3.740	72	42117	11.01	PPBV		96
38) HEXANE	3.492	57	146114	10.37	PPBV		93
39) VINYL ACETATE	3.055	86	15350	8.25	PPBV		97
40) 1,1-DICHLOROETHANE	2.978	63	153947	10.92	PPBV		99
41) METHYL ETHYL KETONE	3.155	72	44075	10.90	PPBV		99
42) CIS-1,2-DICHLOROETHENE	3.360	96	95170	10.93	PPBV		99
43) DIISOPROPYL ETHER	3.499	59	42339	10.36	PPBV		87

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\
Data File : 2w62395.D
Acq On : 15 Dec 2022 12:22 am
Operator : thomash
Sample : icv2776-10
Misc : MS64821,V2w2776,,,,,1
ALS Vial : 5 Sample Multiplier: 1

Quant Time: Dec 19 08:04:28 2022
Quant Method : C:\msdchem\1\METHODS\M2W2776.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Mon Dec 19 08:01:03 2022
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units		Dev(Min)
44) ETHYL ACETATE	3.505	61	30267	10.67	PPBV		77
45) METHYL ACRYLATE	3.489	55	177903	10.74	PPBV	#	98
46) CHLOROFORM	3.515	83	200994	10.65	PPBV		100
47) 2,4-DIMETHYLPENTANE	4.029	57	168340	10.72	PPBV		98
48) 1,1,1-TRICHLOROETHANE	4.110	97	211774	10.88	PPBV		99
49) CARBON TETRACHLORIDE	4.547	117	217409	11.41	PPBV		99
50) 1,2-DICHLOROETHANE	3.939	62	145546	10.73	PPBV		99
51) BENZENE	4.431	78	268884	9.90	PPBV		99
53) CYCLOHEXANE	4.647	84	120707	10.85	PPBV		97
54) 2,3-DIMETHYLPENTANE	4.910	71	60378	10.87	PPBV		97
55) TRICHLOROETHENE	5.357	95	130612	10.91	PPBV		96
56) 1,2-DICHLOROPROPANE	5.119	63	101415	10.97	PPBV		93
57) DIBROMOMETHANE	5.077	174	114164	10.44	PPBV		92
58) ETHYL ACRYLATE	5.241	55	226659	11.40	PPBV		99
59) BROMODICHLOROMETHANE	5.302	83	221450	11.44	PPBV		99
60) 2,2,4-TRIMETHYLPENTANE	5.454	57	459518	10.92	PPBV		99
61) 1,4-DIOXANE	5.383	88	77556	12.03	PPBV		99
62) HEPTANE	5.778	43	157470	10.76	PPBV		95
63) METHYL METHACRYLATE	5.675	69	102542	10.86	PPBV		91
64) METHYL ISOBUTYL KETONE	6.441	58	100153	10.91	PPBV		90
65) CIS-1,3-DICHLOROPROPENE	6.315	75	172902	11.88	PPBV		95
66) TOLUENE	7.550	91	343359	10.25	PPBV		99
67) 1,3-DICHLOROPROPANE	7.605	76	170522	10.83	PPBV		100
68) TRANS-1,3-DICHLOROPROPENE	7.010	75	153118	11.46	PPBV		96
69) 1,1,2-TRICHLOROETHANE	7.171	83	100348	10.73	PPBV		100
70) 2-HEXANONE	8.151	58	148138	10.67	PPBV		89
71) ETHYL METHACRYLATE	8.264	69	178885	11.22	PPBV		95
72) TETRACHLOROETHENE	9.302	164	129607	10.98	PPBV		96
73) DIBROMOCHLOROMETHANE	8.093	129	214721	11.68	PPBV		100
74) 1,2-DIBROMOETHANE	8.441	107	195319	11.10	PPBV		99
75) OCTANE	9.450	43	220827	10.70	PPBV		96
77) 1,1,1,2-TETRACHLOROETHANE	10.534	131	150079	11.39	PPBV		93
78) CHLOROBENZENE	10.524	112	284193	11.10	PPBV		96
79) ETHYLBENZENE	11.415	91	471010	10.11	PPBV		99
80) M,P-XYLENE	11.852	91	750049	20.63	PPBV		98
81) O-XYLENE	12.791	91	379797	10.14	PPBV		94
82) STYRENE	12.569	104	282956	11.11	PPBV		96
83) NONANE	13.910	43	235036	11.06	PPBV		95
84) BROMOFORM	11.659	173	199857	12.02	PPBV		99
85) 1,1,2,2-TETRACHLOROETHANE	12.797	83	276831	11.38	PPBV		100
86) 1,2,3-TRICHLOROPROPANE	13.087	75	210904	10.97	PPBV		100
88) ISOPROPYLBENZENE	14.309	120	142905	11.03	PPBV		92
89) BROMOBENZENE	14.180	77	265600	11.22	PPBV		86
90) 2-CHLOROTOLUENE	15.321	126	125796	10.95	PPBV		99
91) N-PROPYLBENZENE	15.656	120	145533	10.87	PPBV		100
92) 4-ETHYLTOLUENE	16.064	105	558277	11.70	PPBV		99
93) 1,3,5-TRIMETHYLBENZENE	16.238	105	473275	11.45	PPBV		97
94) ALPHA-METHYLSTYRENE	16.450	118	224853	11.14	PPBV		98
95) TERT-BUTYLBENZENE	16.714	134	109039	10.88	PPBV		93
96) 1,2,4-TRIMETHYLBENZENE	16.723	105	493267	11.13	PPBV		96

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\
Data File : 2w62395.D
Acq On : 15 Dec 2022 12:22 am
Operator : thomash
Sample : icv2776-10
Misc : MS64821,V2w2776,,,,,1
ALS Vial : 5 Sample Multiplier: 1

Quant Time: Dec 19 08:04:28 2022
Quant Method : C:\msdchem\1\METHODS\M2W2776.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Mon Dec 19 08:01:03 2022
Response via : Initial Calibration

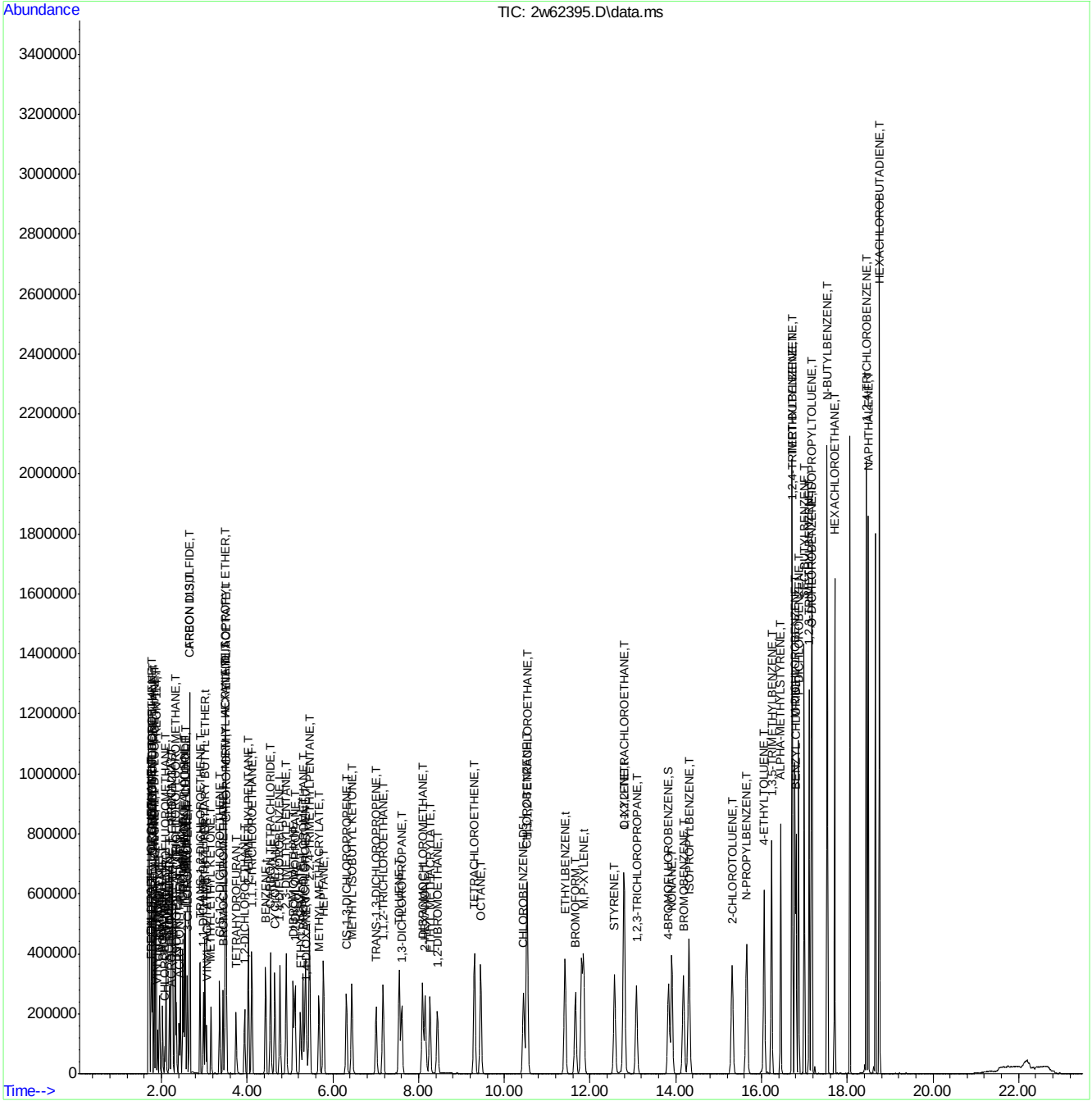
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
97) BENZYL CHLORIDE	16.807	91	406358	11.21	PPBV	99
98) M-DICHLOROBENZENE	16.781	146	301410	11.31	PPBV	97
99) P-DICHLOROBENZENE	16.865	146	305098	11.22	PPBV	97
100) O-DICHLOROBENZENE	17.164	146	298781	11.33	PPBV	97
101) SEC-BUTYLBENZENE	16.997	134	137939	10.81	PPBV	93
102) 1,2,3-TRIMETHYLBENZENE	17.112	105	485263	11.17	PPBV	98
103) P-ISOPROPYLTOLUENE	17.180	134	156244	11.13	PPBV	93
104) N-BUTYLBENZENE	17.530	134	152587	11.31	PPBV	94
105) HEXACHLOROETHANE	17.707	117	191458	11.80	PPBV	98
106) HEXACHLOROBUTADIENE	18.755	225	257967	10.55	PPBV	99
107) 1,2,4-TRICHLOROBENZENE	18.447	180	315882	10.62	PPBV	99
108) NAPHTHALENE	18.492	128	796318	10.04	PPBV	100

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

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\
Data File : 2w62395.D
Acq On : 15 Dec 2022 12:22 am
Operator : thomash
Sample : icv2776-10
Misc : MS64821,V2w2776,,,,,1
ALS Vial : 5 Sample Multiplier: 1

Quant Time: Dec 19 08:04:28 2022
Quant Method : C:\msdchem\1\METHODS\M2W2776.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Mon Dec 19 08:01:03 2022
Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\
Data File : 2w63183.D
Acq On : 1 Feb 2023 9:18 am
Operator : thomash
Sample : cc2776-10
Misc : MS66176,v2w2809,,,,,1
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Feb 02 14:40:33 2023
Quant Method : C:\msdchem\1\METHODS\M2W2776.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Mon Dec 19 08:01:03 2022
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units		Dev(Min)
Internal Standards							
1) BROMOCHLOROMETHANE	3.444	128	58370	10.00	PPBV	#	0.01
52) 1,4-DIFLUOROBENZENE	4.769	114	299128	10.00	PPBV		0.00
76) CHLOROBENZENE-D5	10.451	117	270811	10.00	PPBV		0.00
System Monitoring Compounds							
87) 4-BROMOFLUOROBENZENE	13.836	95	196813	9.41	PPBV		0.00
Target Compounds							Qvalue
3) FREON 152A	1.750	65	53451	12.11	PPBV	#	100
4) CHLORODIFLUOROMETHANE	1.763	67	25102	10.75	PPBV		99
5) CHLOROTRIFLUOROETHENE	1.776	116	117065	10.54	PPBV		98
6) DICHLORODIFLUOROMETHANE	1.795	85	264041	9.10	PPBV		99
7) PROPYLENE	1.773	41	73022	13.55	PPBV		99
8) 1-CHLORO-1,1-DIFLUOROE...	1.837	65	186936	8.76	PPBV		98
9) FREON 114	1.872	85	227207	9.39	PPBV		97
10) CHLOROMETHANE	1.843	52	28620	11.97	PPBV		97
11) VINYL CHLORIDE	1.908	62	97113	11.14	PPBV		99
12) 1,3-BUTADIENE	1.949	54	81723	12.28	PPBV		97
13) N-BUTANE	1.965	43	144199	12.05	PPBV		94
14) BROMOMETHANE	2.033	94	79863	9.36	PPBV		99
15) CHLOROETHANE	2.084	64	51464	11.36	PPBV		98
16) DICHLOROFLUOROMETHANE	2.110	67	200007	10.30	PPBV		97
17) ACETONITRILE	2.187	41	87416	12.67	PPBV		99
18) ACROLEIN	2.229	56	47324	12.18	PPBV		98
19) FREON 123	2.242	83	205774	9.66	PPBV		98
20) FREON 123A	2.261	117	114542	9.01	PPBV		100
21) TRICHLOROFLUOROMETHANE	2.329	101	239703	8.65	PPBV		100
22) ISOPROPYL ALCOHOL	2.358	45	196387	11.09	PPBV		95
23) ACETONE	2.271	58	53146	10.72	PPBV		98
24) PENTANE	2.448	42	103947	11.20	PPBV		92
25) IODOMETHANE	2.506	142	228926	8.99	PPBV		96
26) 1,1-DICHLOROETHYLENE	2.535	96	91041	8.67	PPBV		87
27) CARBON DISULFIDE	2.670	76	284607	9.63	PPBV	#	92
28) ETHANOL	2.120	45	44894	10.78	PPBV		99
29) BROMOETHENE	2.194	106	84543	9.73	PPBV		99
30) ACRYLONITRILE	2.419	52	77565	12.13	PPBV		99
31) METHYLENE CHLORIDE	2.570	84	87697	7.92	PPBV		88
32) 3-CHLOROPROPENE	2.612	76	44973	8.74	PPBV	#	87
33) FREON 113	2.670	151	144358	8.45	PPBV		96
34) TRANS-1,2-DICHLOROETHENE	2.904	96	98379	10.52	PPBV		98
35) TERTIARY BUTYL ALCOHOL	2.567	59	218739	8.24	PPBV	#	94
36) METHYL TERTIARY BUTYL ...	3.023	73	256789	9.69	PPBV		99
37) TETRAHYDROFURAN	3.747	72	48530	11.45	PPBV		82
38) HEXANE	3.499	57	184561	11.82	PPBV		98
39) VINYL ACETATE	3.062	86	24283	11.78	PPBV		69
40) 1,1-DICHLOROETHANE	2.985	63	176696	11.32	PPBV		100
41) METHYL ETHYL KETONE	3.165	72	50667	11.31	PPBV		86
42) CIS-1,2-DICHLOROETHENE	3.364	96	101862	10.56	PPBV		95
43) DIISOPROPYL ETHER	3.506	59	54693	12.09	PPBV		82

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\
Data File : 2w63183.D
Acq On : 1 Feb 2023 9:18 am
Operator : thomash
Sample : cc2776-10
Misc : MS66176,v2w2809,,,,,1
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Feb 02 14:40:33 2023
Quant Method : C:\msdchem\1\METHODS\M2W2776.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Mon Dec 19 08:01:03 2022
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units		Dev(Min)
44) ETHYL ACETATE	3.512	61	37378	11.90	PPBV		79
45) METHYL ACRYLATE	3.496	55	227338	12.39	PPBV	#	99
46) CHLOROFORM	3.522	83	212456	10.17	PPBV		98
47) 2,4-DIMETHYLPENTANE	4.033	57	213816	12.30	PPBV		98
48) 1,1,1-TRICHLOROETHANE	4.113	97	201316	9.34	PPBV		98
49) CARBON TETRACHLORIDE	4.551	117	208279	9.87	PPBV		99
50) 1,2-DICHLOROETHANE	3.946	62	145104	9.65	PPBV		99
51) BENZENE	4.435	78	306157	10.17	PPBV		97
53) CYCLOHEXANE	4.653	84	132234	10.57	PPBV		87
54) 2,3-DIMETHYLPENTANE	4.914	71	68971	11.04	PPBV		89
55) TRICHLOROETHENE	5.364	95	137407	10.20	PPBV		97
56) 1,2-DICHLOROPROPANE	5.123	63	121060	11.65	PPBV		99
57) DIBROMOMETHANE	5.081	174	116589	9.48	PPBV		94
58) ETHYL ACRYLATE	5.248	55	281741	12.60	PPBV		98
59) BROMODICHLOROMETHANE	5.306	83	232220	10.66	PPBV		100
60) 2,2,4-TRIMETHYLPENTANE	5.457	57	584707	12.36	PPBV		99
61) 1,4-DIOXANE	5.393	88	74511	10.27	PPBV		94
62) HEPTANE	5.782	43	202163	12.28	PPBV		90
63) METHYL METHACRYLATE	5.679	69	118729	11.18	PPBV		87
64) METHYL ISOBUTYL KETONE	6.448	58	125552	12.16	PPBV		92
65) CIS-1,3-DICHLOROPROPENE	6.322	75	164560	10.05	PPBV		99
66) TOLUENE	7.550	91	373702	9.92	PPBV		99
67) 1,3-DICHLOROPROPANE	7.612	76	187784	10.60	PPBV		100
68) TRANS-1,3-DICHLOROPROPENE	7.013	75	141467	9.42	PPBV		99
69) 1,1,2-TRICHLOROETHANE	7.174	83	111927	10.64	PPBV		97
70) 2-HEXANONE	8.155	58	192617	12.34	PPBV		94
71) ETHYL METHACRYLATE	8.267	69	205801	11.48	PPBV		93
72) TETRACHLOROETHENE	9.306	164	141866	10.69	PPBV		94
73) DIBROMOCHLOROMETHANE	8.094	129	225135	10.89	PPBV		100
74) 1,2-DIBROMOETHANE	8.441	107	208098	10.52	PPBV		98
75) OCTANE	9.454	43	283726	12.22	PPBV		89
77) 1,1,1,2-TETRACHLOROETHANE	10.534	131	159319	10.71	PPBV		100
78) CHLOROBENZENE	10.528	112	302381	10.46	PPBV		97
79) ETHYLBENZENE	11.415	91	507885	9.66	PPBV		99
80) M,P-XYLENE	11.846	91	792018	19.31	PPBV		97
81) O-XYLENE	12.788	91	399103	9.44	PPBV		98
82) STYRENE	12.576	104	315898	10.99	PPBV		99
83) NONANE	13.907	43	303036	12.63	PPBV		92
84) BROMOFORM	11.660	173	200924	10.71	PPBV		99
85) 1,1,2,2-TETRACHLOROETHANE	12.801	83	303736	11.06	PPBV		99
86) 1,2,3-TRICHLOROPROPANE	13.084	75	225961	10.41	PPBV	#	100
88) ISOPROPYLBENZENE	14.306	120	151177	10.34	PPBV		97
89) BROMOBENZENE	14.177	77	285273	10.68	PPBV		90
90) 2-CHLOROTOLUENE	15.319	126	134369	10.37	PPBV		99
91) N-PROPYLBENZENE	15.656	120	157302	10.41	PPBV		99
92) 4-ETHYLTOLUENE	16.061	105	602405	11.19	PPBV		98
93) 1,3,5-TRIMETHYLBENZENE	16.238	105	505709	10.84	PPBV		97
94) ALPHA-METHYLSTYRENE	16.450	118	260599	11.44	PPBV		98
95) TERT-BUTYLBENZENE	16.714	134	118433	10.47	PPBV		94
96) 1,2,4-TRIMETHYLBENZENE	16.724	105	536279	10.72	PPBV		95

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\
Data File : 2w63183.D
Acq On : 1 Feb 2023 9:18 am
Operator : thomash
Sample : cc2776-10
Misc : MS66176,v2w2809,,,,,1
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Feb 02 14:40:33 2023
Quant Method : C:\msdchem\1\METHODS\M2W2776.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Mon Dec 19 08:01:03 2022
Response via : Initial Calibration

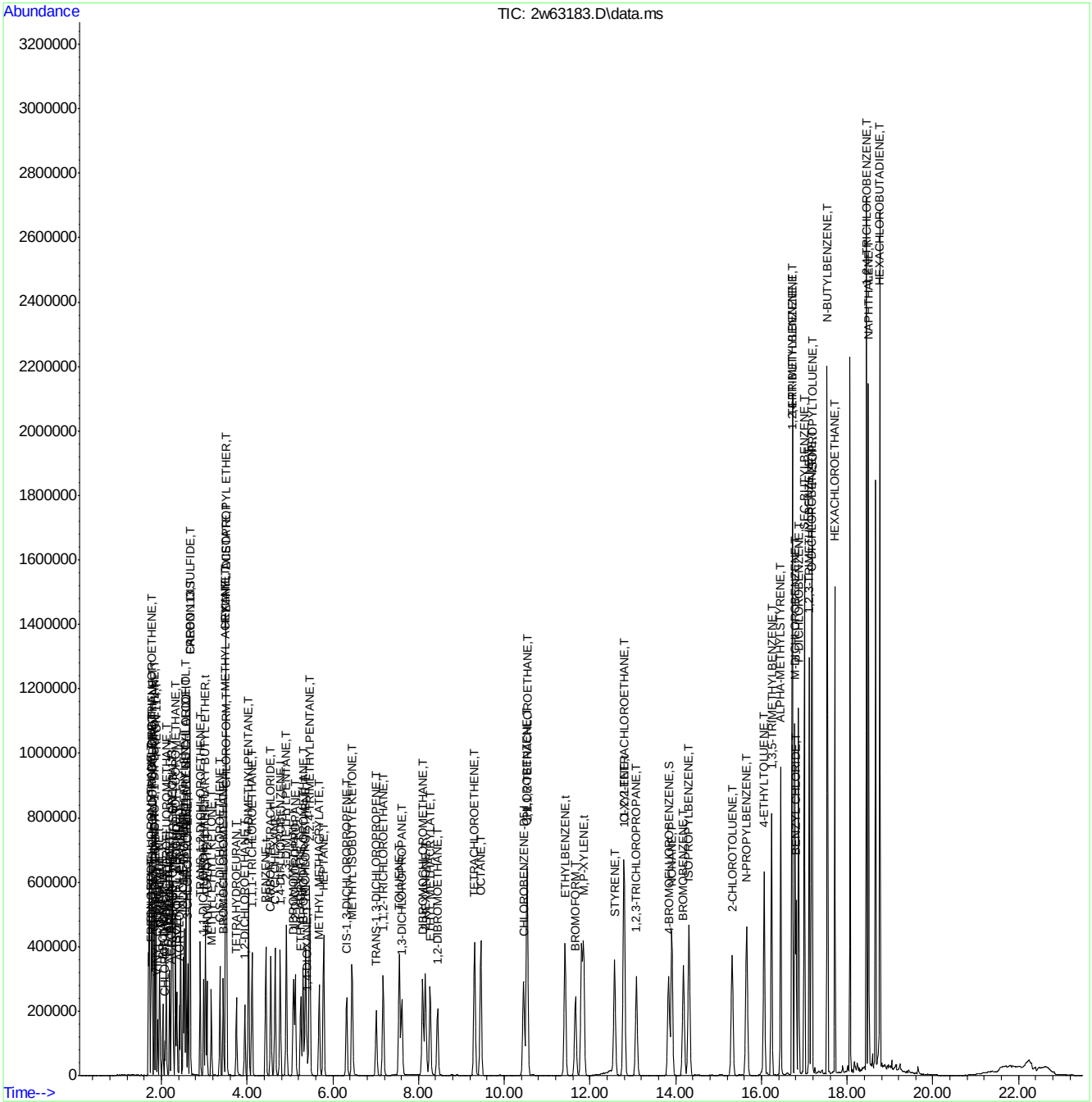
	Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
97)	BENZYL CHLORIDE	16.807	91	279176	6.83	PPBV	97
98)	M-DICHLOROBENZENE	16.782	146	338281	11.25	PPBV	98
99)	P-DICHLOROBENZENE	16.865	146	344206	11.22	PPBV	98
100)	O-DICHLOROBENZENE	17.167	146	327331	11.00	PPBV	98
101)	SEC-BUTYLBENZENE	17.000	134	151343	10.51	PPBV	93
102)	1,2,3-TRIMETHYLBENZENE	17.113	105	529539	10.80	PPBV	97
103)	P-ISOPROPYLTOLUENE	17.183	134	170764	10.78	PPBV	99
104)	N-BUTYLBENZENE	17.534	134	165656	10.89	PPBV	98
105)	HEXACHLOROETHANE	17.711	117	179679	9.82	PPBV	94
106)	HEXACHLOROBUTADIENE	18.762	225	241082	8.74	PPBV	99
107)	1,2,4-TRICHLOROBENZENE	18.450	180	322101	9.60	PPBV	98
108)	NAPHTHALENE	18.499	128	878955	9.82	PPBV	100

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

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\
Data File : 2w63183.D
Acq On : 1 Feb 2023 9:18 am
Operator : thomash
Sample : cc2776-10
Misc : MS66176,v2w2809,,,,,1
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Feb 02 14:40:33 2023
Quant Method : C:\msdchem\1\METHODS\M2W2776.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Mon Dec 19 08:01:03 2022
Response via : Initial Calibration



Manual Integrations APPROVED (compounds with "m" flag)
Kanya Veerawat 10/20/22 12:15

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\
Data File : 6W26448.D
Acq On : 19 Oct 2022 7:10 pm
Operator : thomash
Sample : ic1125-0.04
Misc : MS63121,V6W1125,,,,,1
ALS Vial : 1 Sample Multiplier: 1

Quant Time: Oct 20 09:48:06 2022
Quant Method : C:\msdchem\1\methods\M6W1125.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Thu Oct 20 07:44:13 2022
Response via : Initial Calibration

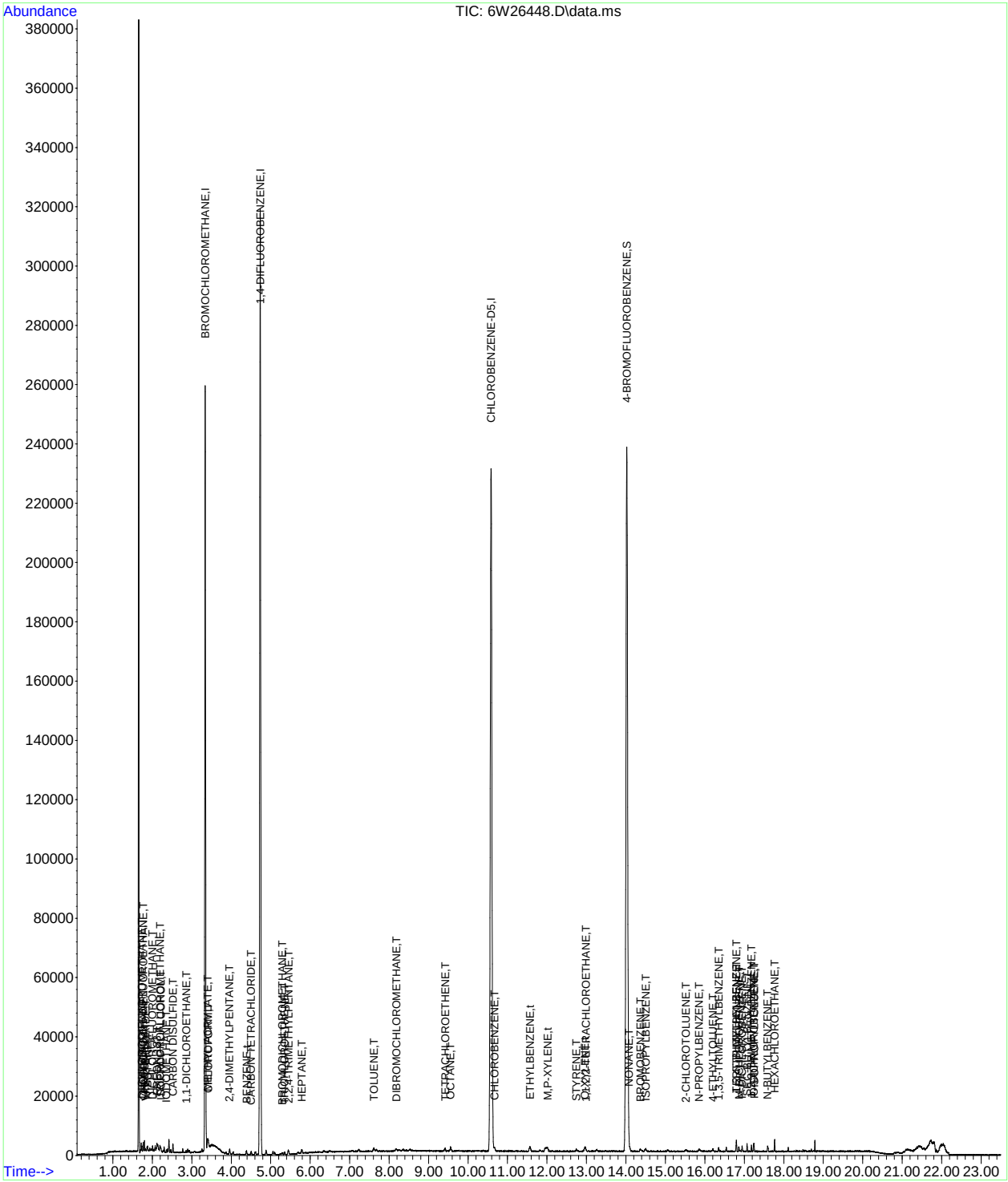
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) BROMOCHLOROMETHANE	3.341	128	49562	10.00	PPBV	# 0.00
52) 1,4-DIFLUOROBENZENE	4.733	114	238408	10.00	PPBV	0.00
76) CHLOROBENZENE-D5	10.585	117	206644	10.00	PPBV	0.00
System Monitoring Compounds						
87) 4-BROMOFLUOROBENZENE	14.022	95	141592	9.68	PPBV	0.00
Target Compounds						Qvalue
6) DICHLORODIFLUOROMETHANE	1.734	85	578m	0.04	PPBV	
8) 1-CHLORO-1,1-DIFLUOROE...	1.769	65	563	0.04	PPBV	# 2
9) FREON 114	1.801	85	673	0.04	PPBV	# 24
10) CHLOROMETHANE	1.775	52	113m	0.06	PPBV	
11) VINYL CHLORIDE	1.830	62	269m	0.04	PPBV	
13) N-BUTANE	1.878	43	745	0.07	PPBV	# 65
16) DICHLOROFLUOROMETHANE	2.004	67	557	0.04	PPBV	# 49
19) FREON 123	2.116	83	508	0.04	PPBV	# 83
21) TRICHLOROFLUOROMETHANE	2.193	101	689	0.05	PPBV	# 25
22) ISOPROPYL ALCOHOL	2.216	45	815	0.06	PPBV	# 63
25) IODOMETHANE	2.357	142	562	0.04	PPBV	# 38
27) CARBON DISULFIDE	2.521	76	771	0.04	PPBV	# 73
40) 1,1-DICHLOROETHANE	2.856	63	522	0.04	PPBV	# 50
45) METHYL ACRYLATE	3.402	55	500	0.03	PPBV	# 65
46) CHLOROFORM	3.418	83	561	0.04	PPBV	# 18
47) 2,4-DIMETHYLPENTANE	3.955	57	563	0.04	PPBV	# 31
49) CARBON TETRACHLORIDE	4.499	117	548	0.04	PPBV	# 86
51) BENZENE	4.389	78	986	0.05	PPBV	# 66
55) TRICHLOROETHENE	5.344	95	322m	0.03	PPBV	
59) BROMODICHLOROMETHANE	5.290	83	595	0.04	PPBV	# 18
60) 2,2,4-TRIMETHYLPENTANE	5.450	57	1425	0.04	PPBV	# 48
62) HEPTANE	5.785	43	669	0.04	PPBV	# 15
66) TOLUENE	7.611	91	1324	0.05	PPBV	94
72) TETRACHLOROETHENE	9.421	164	234m	0.03	PPBV	
73) DIBROMOCHLOROMETHANE	8.180	129	522	0.03	PPBV	# 21
75) OCTANE	9.556	43	883	0.04	PPBV	# 23
78) CHLOROBENZENE	10.666	112	697	0.03	PPBV	# 30
79) ETHYLBENZENE	11.572	91	2155	0.07	PPBV	95
80) M,P-XYLENE	12.016	91	2929m	0.12	PPBV	
81) O-XYLENE	12.958	91	1490	0.06	PPBV	# 82
82) STYRENE	12.740	104	652	0.03	PPBV	# 33
83) NONANE	14.077	43	931	0.04	PPBV	# 45
85) 1,1,2,2-TETRACHLOROETHANE	12.984	83	634	0.03	PPBV	# 25
88) ISOPROPYLBENZENE	14.502	105	1396	0.04	PPBV	# 53
89) BROMOBENZENE	14.370	77	607	0.03	PPBV	# 17
90) 2-CHLOROTOLUENE	15.521	91	800	0.03	PPBV	# 47
91) N-PROPYLBENZENE	15.852	91	1361	0.03	PPBV	# 56
92) 4-ETHYLTOLUENE	16.199	105	937	0.03	PPBV	# 49
93) 1,3,5-TRIMETHYLBENZENE	16.350	105	883	0.03	PPBV	# 34
95) TERT-BUTYLBENZENE	16.797	119	984	0.03	PPBV	# 85
96) 1,2,4-TRIMETHYLBENZENE	16.797	105	846	0.03	PPBV	# 72
98) M-DICHLOROBENZENE	16.865	146	574	0.03	PPBV	# 25
99) P-DICHLOROBENZENE	16.942	146	609	0.03	PPBV	# 26
100) O-DICHLOROBENZENE	17.238	146	606	0.03	PPBV	# 25
101) SEC-BUTYLBENZENE	17.071	105	1170	0.03	PPBV	# 60
102) 1,2,3-TRIMETHYLBENZENE	17.180	105	809	0.03	PPBV	# 39
103) P-ISOPROPYLTOLUENE	17.251	119	921	0.02	PPBV	# 53
104) N-BUTYLBENZENE	17.585	91	731	0.02	PPBV	# 32
105) HEXACHLOROETHANE	17.765	117	506	0.04	PPBV	# 4

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

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\
Data File : 6W26448.D
Acq On : 19 Oct 2022 7:10 pm
Operator : thomash
Sample : ic1125-0.04
Misc : MS63121,V6W1125,,,,,1
ALS Vial : 1 Sample Multiplier: 1

Quant Time: Oct 20 09:48:06 2022
Quant Method : C:\msdchem\1\methods\M6W1125.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Thu Oct 20 07:44:13 2022
Response via : Initial Calibration



Manual Integration Approval Summary

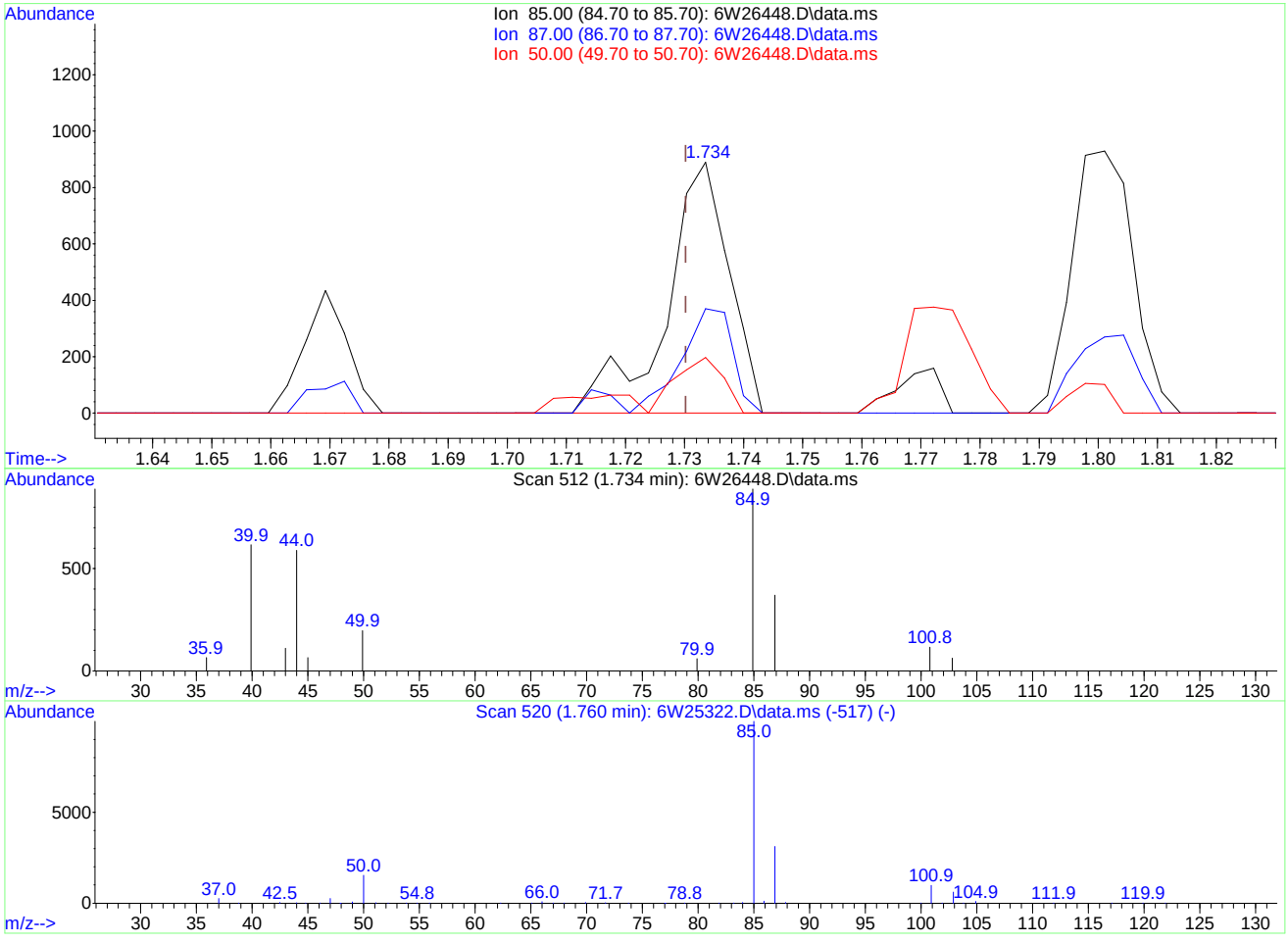
Sample Number: V6W1125-IC1125 **Method:** TO-15
Lab FileID: 6W26448.D **Analyst approved:** 10/20/22 10:04 Thomas Hilbig
Injection Time: 10/19/22 19:10 **Supervisor approved:** 10/20/22 12:15 Kanya Veerawat

Parameter	CAS	Sig#	R.T. (min.)	Reason
Dichlorodifluoromethane	75-71-8		1.73	Overlapping peak
Chloromethane	74-87-3		1.78	Missed peak
Vinyl chloride	75-01-4		1.83	Missed peak
Trichloroethylene	79-01-6		5.34	Missed peak
Tetrachloroethylene	127-18-4		9.42	Missed peak
m,p-Xylene			12.02	Split peak

Quantitation Report (Qedit)

Data Path : C:\msdchem\1\data\
Data File : 6W26448.D
Acq On : 19 Oct 2022 7:10 pm
Operator : thomash
Sample : ic1125-0.04
Misc : MS63121,V6W1125,,,,,1
ALS Vial : 1 Sample Multiplier: 1

Quant Time: Oct 20 07:55:00 2022
Quant Method : C:\msdchem\1\methods\M6W1125.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Thu Oct 20 07:44:13 2022
Response via : Initial Calibration



TIC: 6W26448.D\data.ms

(6) DICHLORODIFLUOROMETHANE (T)

1.734min (+0.003) 0.04PPBV

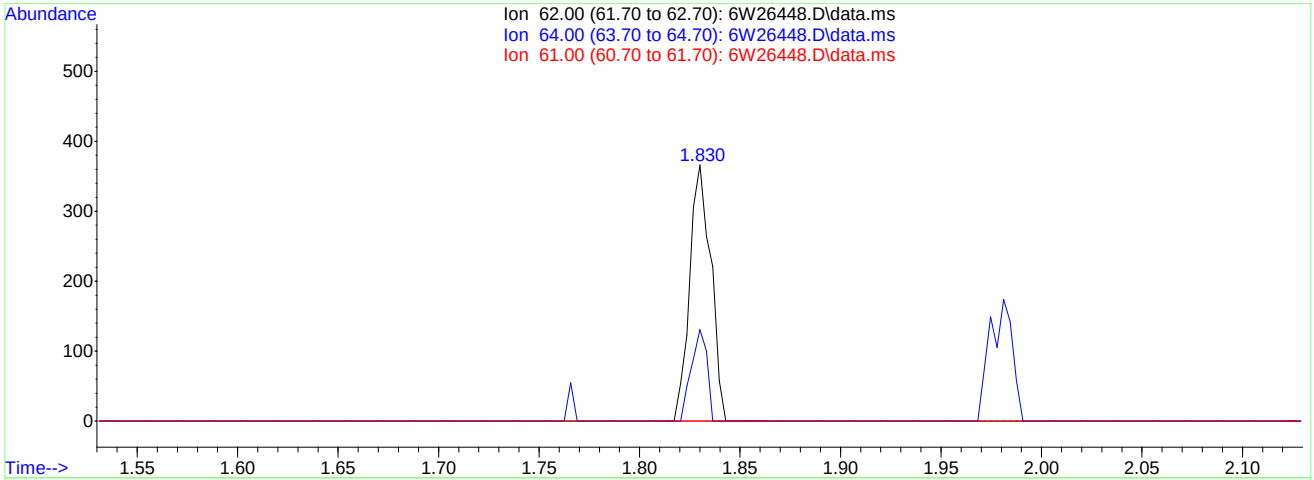
response 657

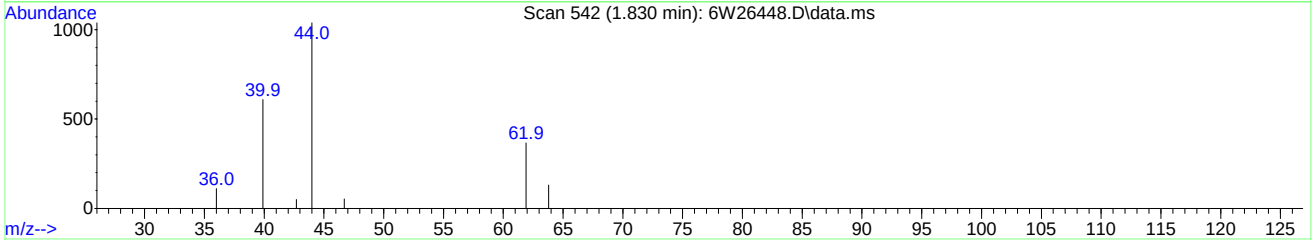
Ion	Exp%	Act%
85.00	100	100
87.00	32.20	0.00#
50.00	9.30	0.00#
0.00	0.00	0.00

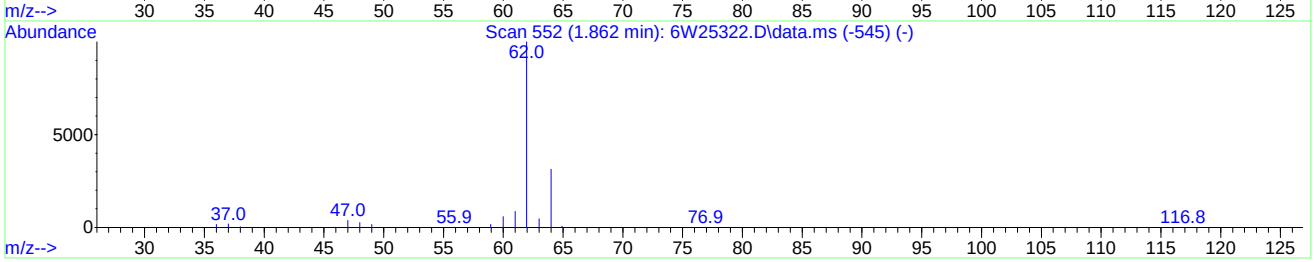
Quantitation Report (Qedit)

Data Path : C:\msdchem\1\data\
Data File : 6W26448.D
Acq On : 19 Oct 2022 7:10 pm
Operator : thomash
Sample : ic1125-0.04
Misc : MS63121,V6W1125,,,,,1
ALS Vial : 1 Sample Multiplier: 1

Quant Time: Oct 20 07:55:00 2022
Quant Method : C:\msdchem\1\methods\M6W1125.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Thu Oct 20 07:44:13 2022
Response via : Initial Calibration







TIC: 6W26448.D\data.ms

(11) VINYL CHLORIDE (T)

1.830min (+0.000) 0.04PPBV m

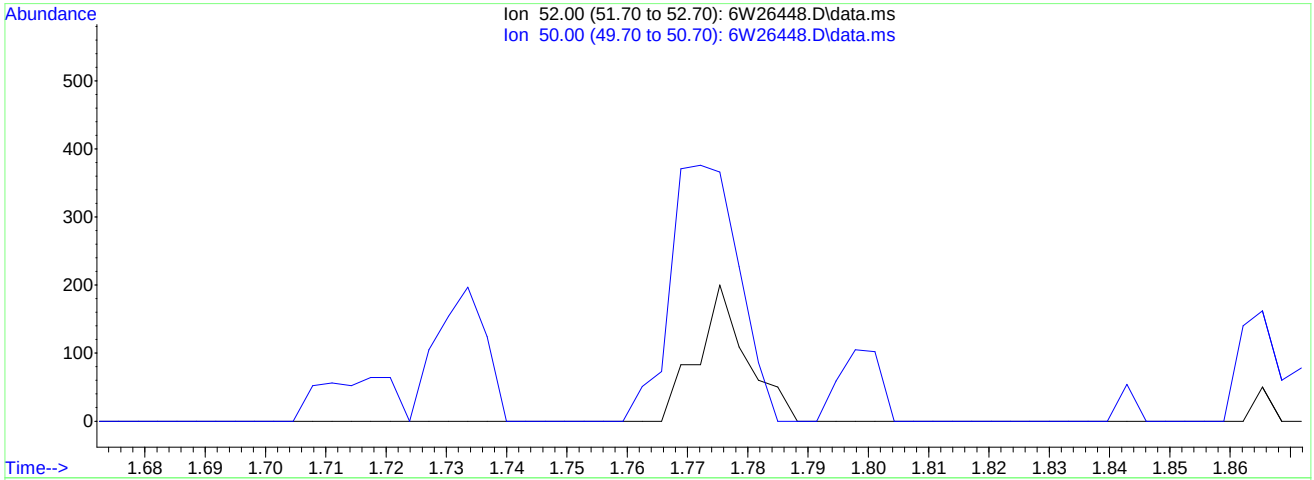
response 269

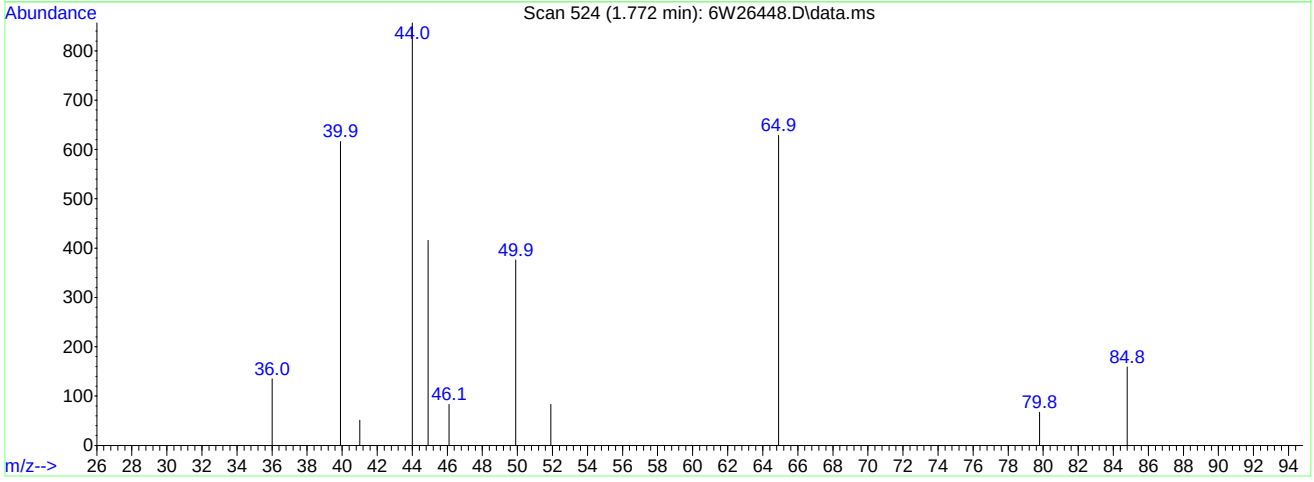
Ion	Exp%	Act%
62.00	100	100
64.00	32.10	0.00#
61.00	8.40	0.00#
0.00	0.00	0.00

Quantitation Report (Qedit)

Data Path : C:\msdchem\1\data\
Data File : 6W26448.D
Acq On : 19 Oct 2022 7:10 pm
Operator : thomash
Sample : ic1125-0.04
Misc : MS63121,V6W1125,,,,,1
ALS Vial : 1 Sample Multiplier: 1

Quant Time: Oct 20 07:55:00 2022
Quant Method : C:\msdchem\1\methods\M6W1125.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Thu Oct 20 07:44:13 2022
Response via : Initial Calibration





TIC: 6W26448.D\data.ms

(10) CHLOROMETHANE (T)

1.772min (-1.772) 0.00PPBV

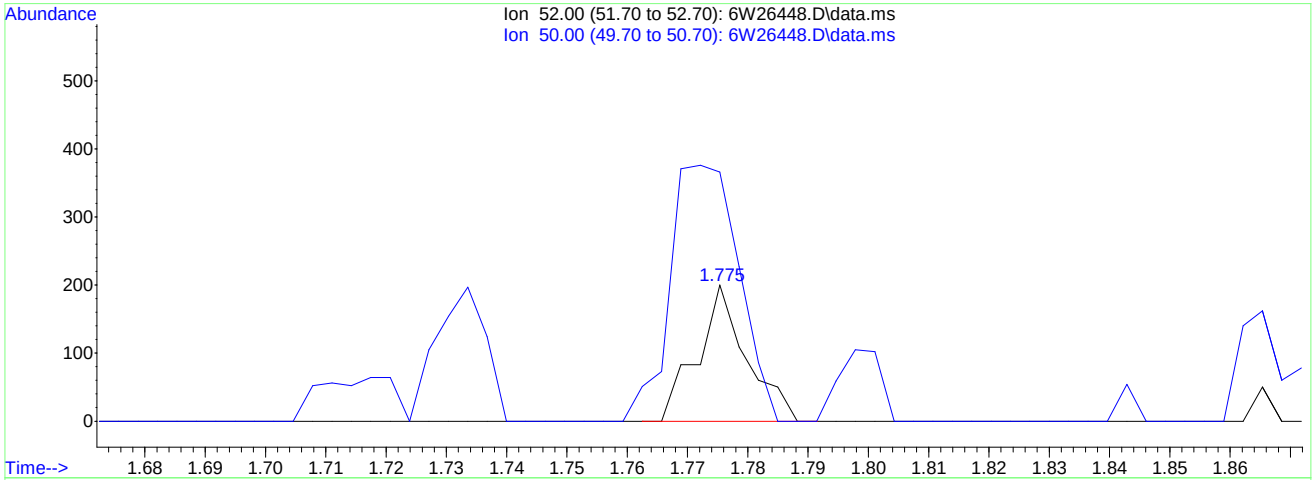
response 0

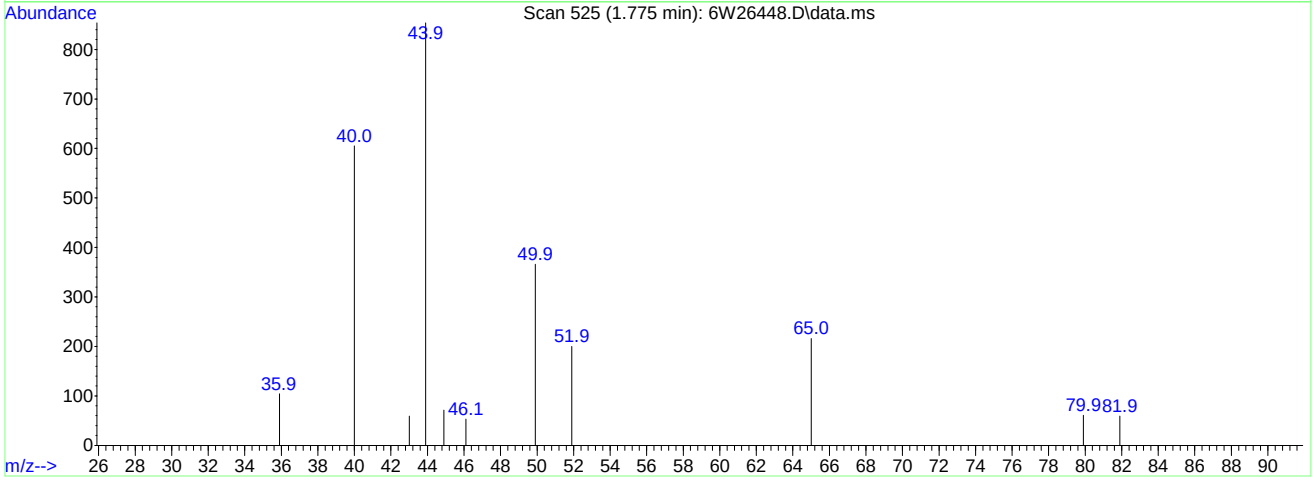
Ion	Exp%	Act%
52.00	100	0.00
50.00	310.20	0.00#
0.00	0.00	0.00
0.00	0.00	0.00

Quantitation Report (Qedit)

Data Path : C:\msdchem\1\data\
Data File : 6W26448.D
Acq On : 19 Oct 2022 7:10 pm
Operator : thomash
Sample : ic1125-0.04
Misc : MS63121,V6W1125,,,,,1
ALS Vial : 1 Sample Multiplier: 1

Quant Time: Oct 20 07:55:00 2022
Quant Method : C:\msdchem\1\methods\M6W1125.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Thu Oct 20 07:44:13 2022
Response via : Initial Calibration





TIC: 6W26448.D\data.ms

(10) CHLOROMETHANE (T)

1.775min (+0.003) 0.06PPBV m

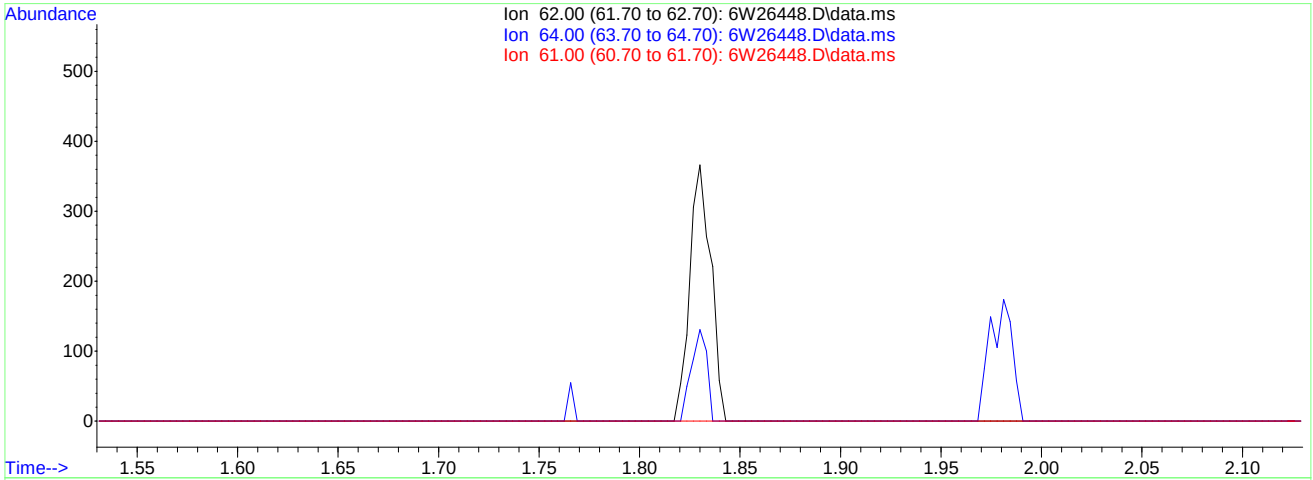
response 113

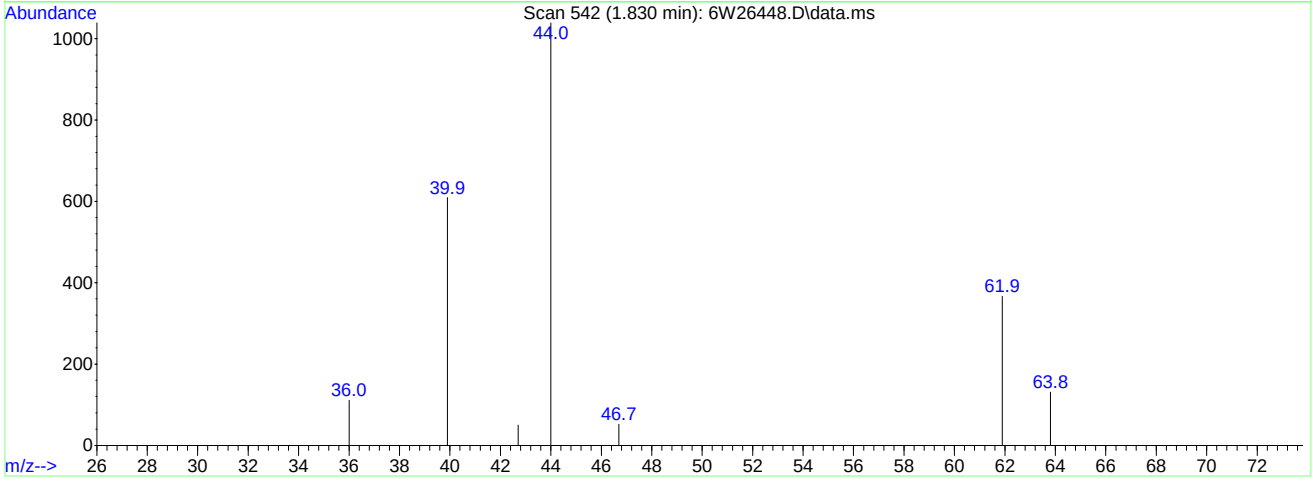
Ion	Exp%	Act%
52.00	100	100
50.00	310.20	0.00#
0.00	0.00	0.00
0.00	0.00	0.00

Quantitation Report (Qedit)

Data Path : C:\msdchem\1\data\
Data File : 6W26448.D
Acq On : 19 Oct 2022 7:10 pm
Operator : thomash
Sample : ic1125-0.04
Misc : MS63121,V6W1125,,,,,1
ALS Vial : 1 Sample Multiplier: 1

Quant Time: Oct 20 07:55:00 2022
Quant Method : C:\msdchem\1\methods\M6W1125.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Thu Oct 20 07:44:13 2022
Response via : Initial Calibration





TIC: 6W26448.D\data.ms

(11) VINYL CHLORIDE (T)

1.830min (-1.830) 0.00PPBV

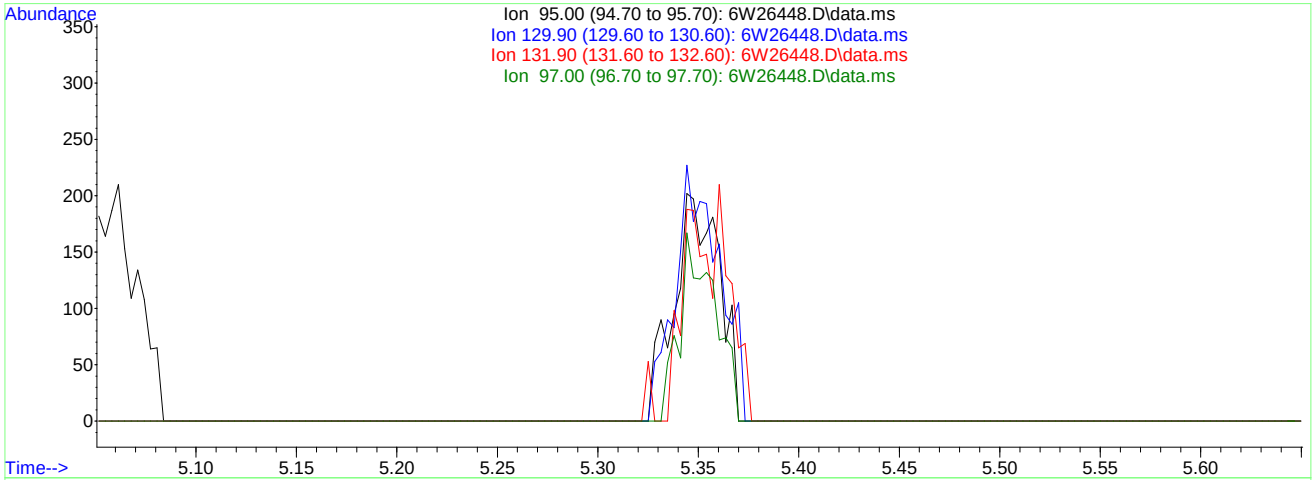
response 0

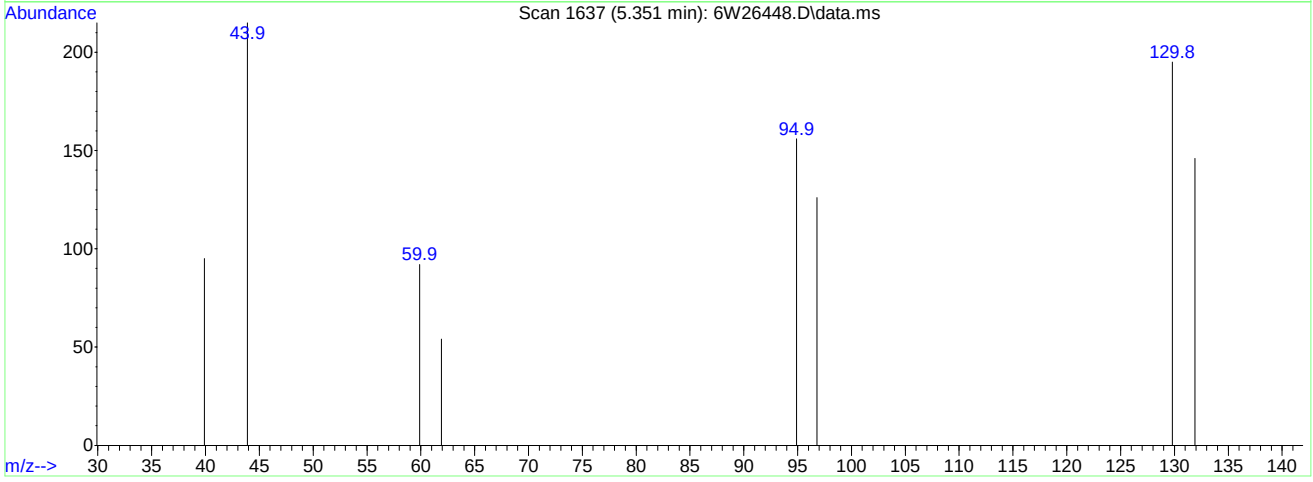
Ion	Exp%	Act%
62.00	100	0.00
64.00	32.10	0.00#
61.00	8.40	0.00#
0.00	0.00	0.00

Quantitation Report (Qedit)

Data Path : C:\msdchem\1\data\
Data File : 6W26448.D
Acq On : 19 Oct 2022 7:10 pm
Operator : thomash
Sample : ic1125-0.04
Misc : MS63121,V6W1125,,,,,1
ALS Vial : 1 Sample Multiplier: 1

Quant Time: Oct 20 07:55:00 2022
Quant Method : C:\msdchem\1\methods\M6W1125.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Thu Oct 20 07:44:13 2022
Response via : Initial Calibration





TIC: 6W26448.D\data.ms

(55) TRICHLOROETHENE (T)

5.351min (-5.351) 0.00PPBV

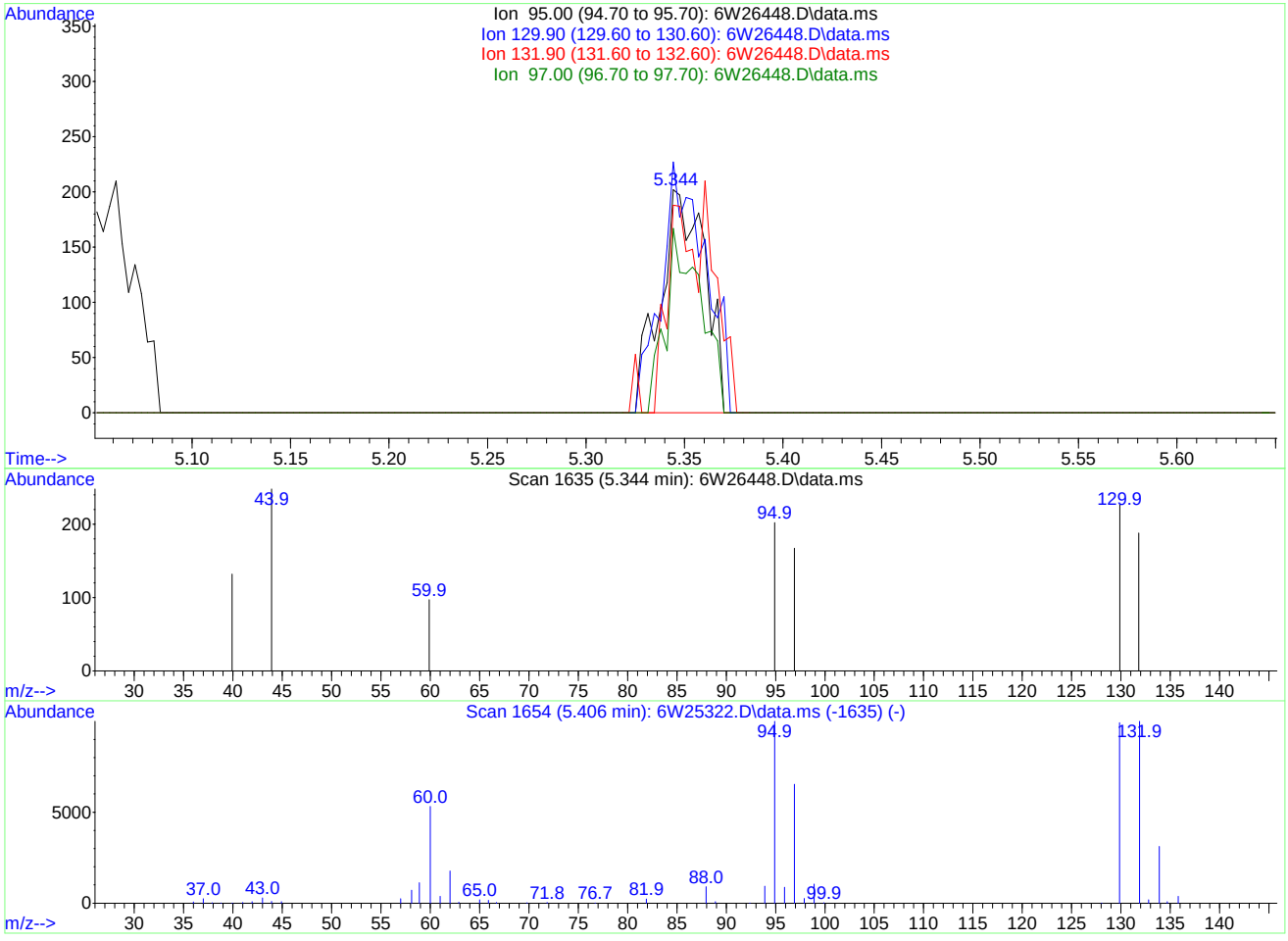
response 0

Ion	Exp%	Act%
95.00	100	0.00
129.90	104.00	0.00#
131.90	99.70	0.00#
97.00	64.10	0.00#

Quantitation Report (Qedit)

Data Path : C:\msdchem\1\data\
Data File : 6W26448.D
Acq On : 19 Oct 2022 7:10 pm
Operator : thomash
Sample : ic1125-0.04
Misc : MS63121,V6W1125,,,,,1
ALS Vial : 1 Sample Multiplier: 1

Quant Time: Oct 20 07:55:00 2022
Quant Method : C:\msdchem\1\methods\M6W1125.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Thu Oct 20 07:44:13 2022
Response via : Initial Calibration



TIC: 6W26448.D\data.ms

(55) TRICHLOROETHENE (T)

5.344min (-0.006) 0.03PPBV m

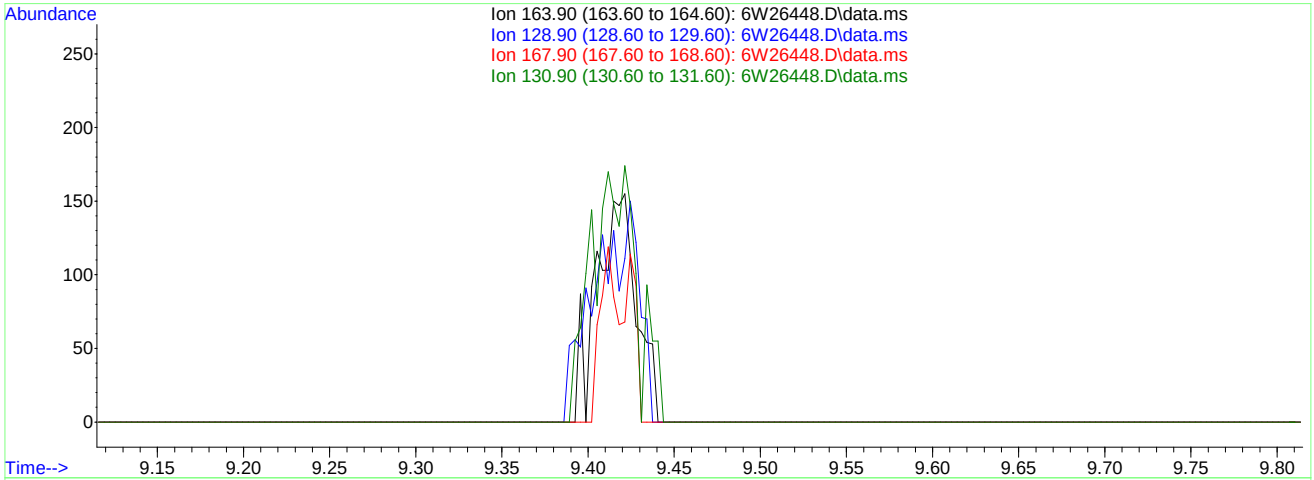
response 322

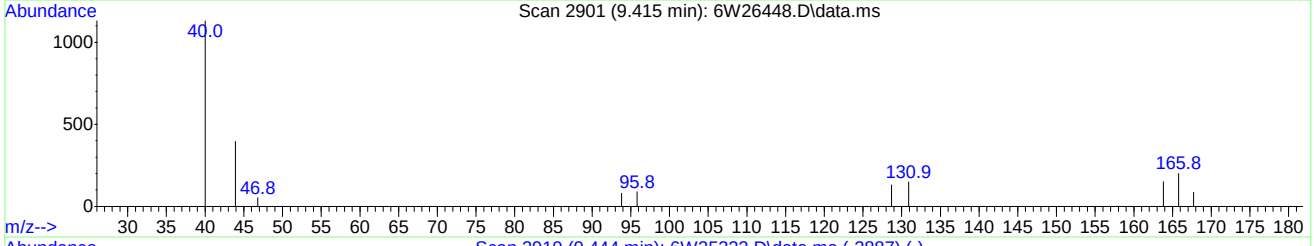
Ion	Exp%	Act%
95.00	100	100
129.90	104.00	0.00#
131.90	99.70	0.00#
97.00	64.10	0.00#

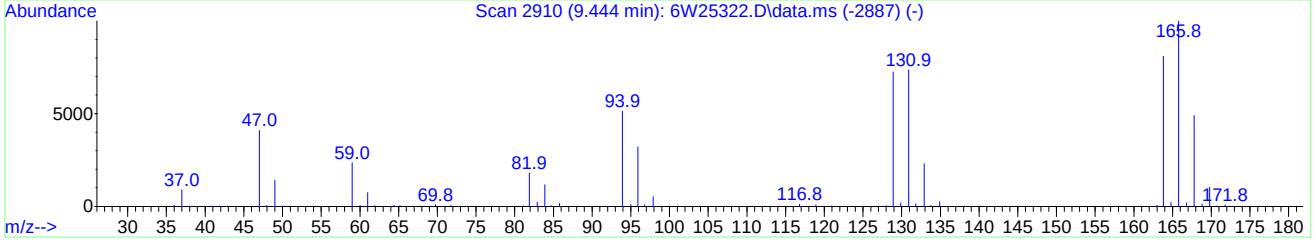
Quantitation Report (Qedit)

Data Path : C:\msdchem\1\data\
Data File : 6W26448.D
Acq On : 19 Oct 2022 7:10 pm
Operator : thomash
Sample : ic1125-0.04
Misc : MS63121,V6W1125,,,,,1
ALS Vial : 1 Sample Multiplier: 1

Quant Time: Oct 20 07:55:00 2022
Quant Method : C:\msdchem\1\methods\M6W1125.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Thu Oct 20 07:44:13 2022
Response via : Initial Calibration







TIC: 6W26448.D\data.ms

(72) TETRACHLOROETHENE (T)

9.415min (-9.415) 0.00PPBV

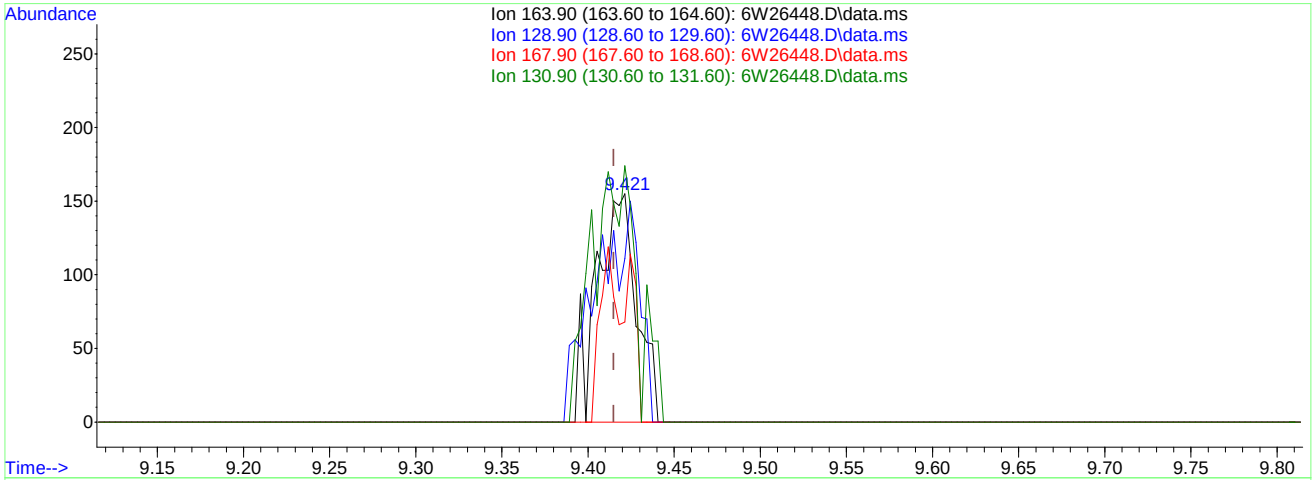
response 0

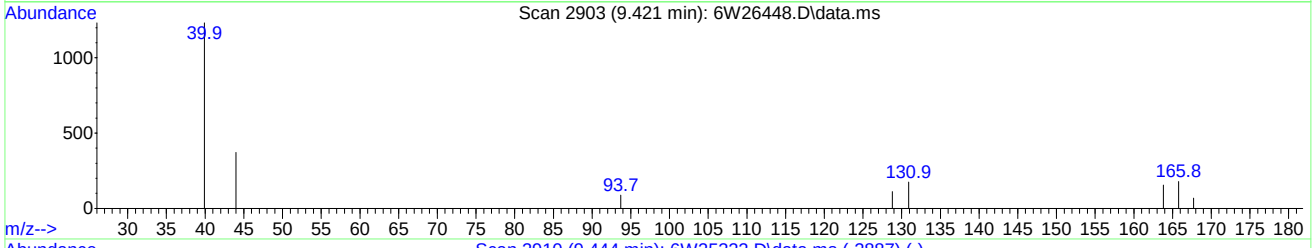
Ion	Exp%	Act%
163.90	100	0.00
128.90	90.00	0.00#
167.90	60.70	0.00#
130.90	86.30	0.00#

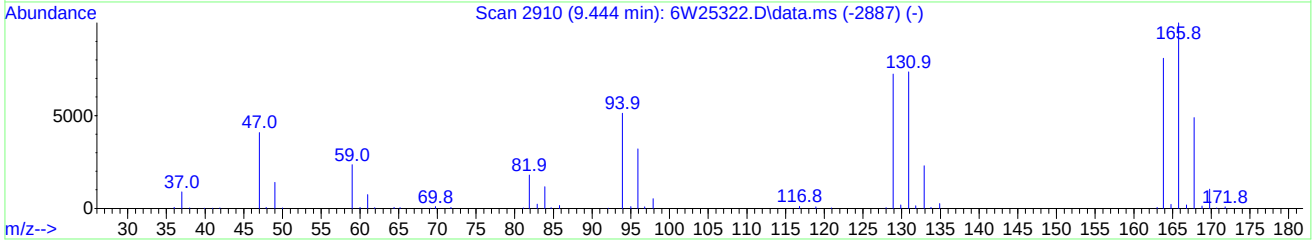
Quantitation Report (Qedit)

Data Path : C:\msdchem\1\data\
Data File : 6W26448.D
Acq On : 19 Oct 2022 7:10 pm
Operator : thomash
Sample : ic1125-0.04
Misc : MS63121,V6W1125,,,,,1
ALS Vial : 1 Sample Multiplier: 1

Quant Time: Oct 20 07:55:00 2022
Quant Method : C:\msdchem\1\methods\M6W1125.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Thu Oct 20 07:44:13 2022
Response via : Initial Calibration







TIC: 6W26448.D\data.ms

(72) TETRACHLOROETHENE (T)

9.421min (+0.007) 0.03PPBV m

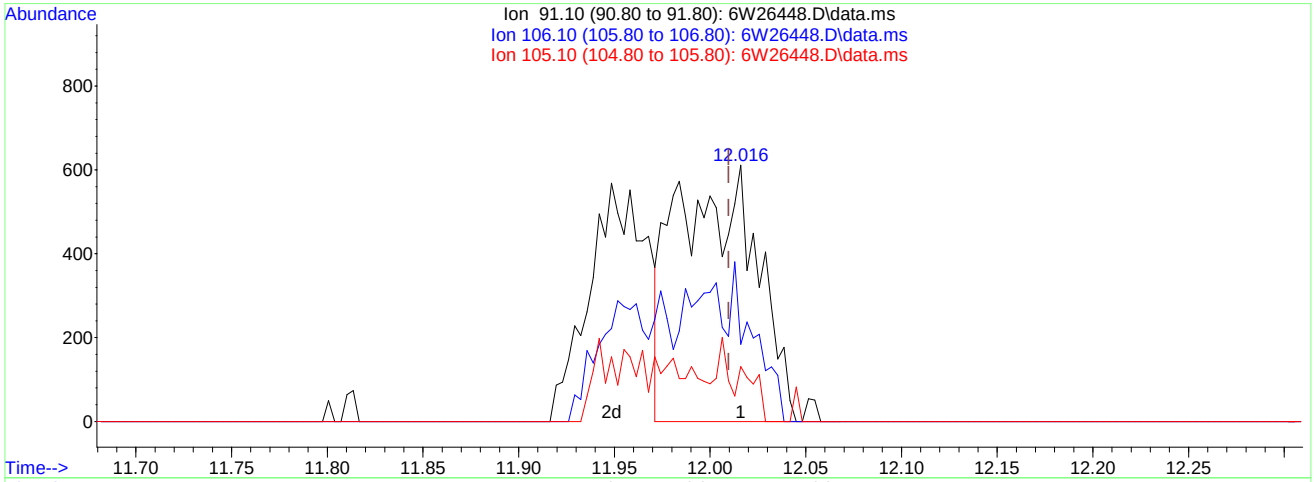
response 234

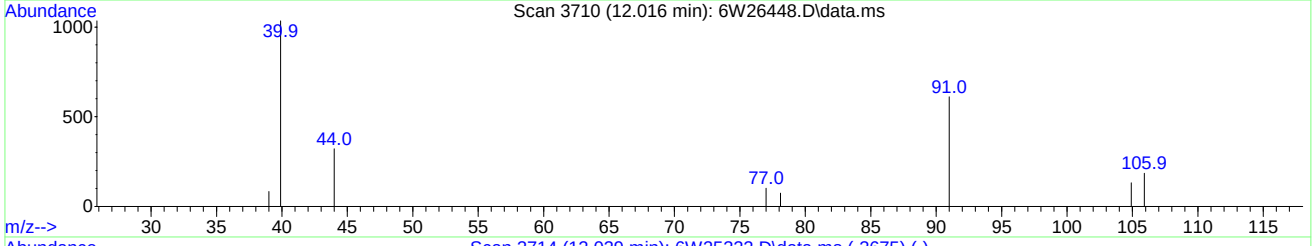
Ion	Exp%	Act%
163.90	100	100
128.90	90.00	0.00#
167.90	60.70	0.00#
130.90	86.30	0.00#

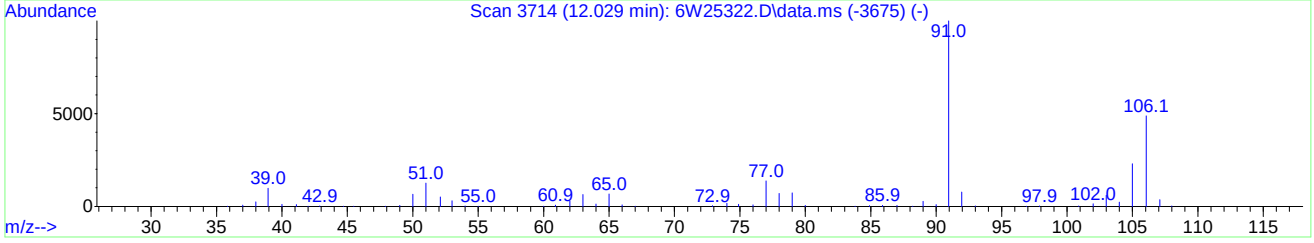
Quantitation Report (Qedit)

Data Path : C:\msdchem\1\data\
Data File : 6W26448.D
Acq On : 19 Oct 2022 7:10 pm
Operator : thomash
Sample : ic1125-0.04
Misc : MS63121,V6W1125,,,,,1
ALS Vial : 1 Sample Multiplier: 1

Quant Time: Oct 20 07:55:00 2022
Quant Method : C:\msdchem\1\methods\M6W1125.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Thu Oct 20 07:44:13 2022
Response via : Initial Calibration







TIC: 6W26448.D\data.ms

(80) M,P-XYLENE (t)

12.016min (+0.007) 0.07PPBV

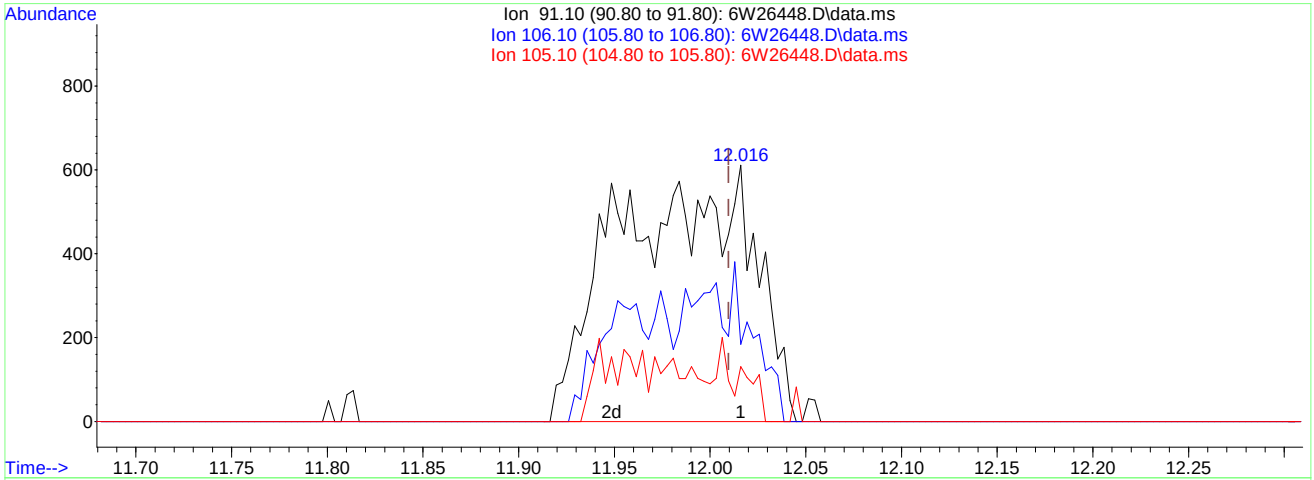
response 1786

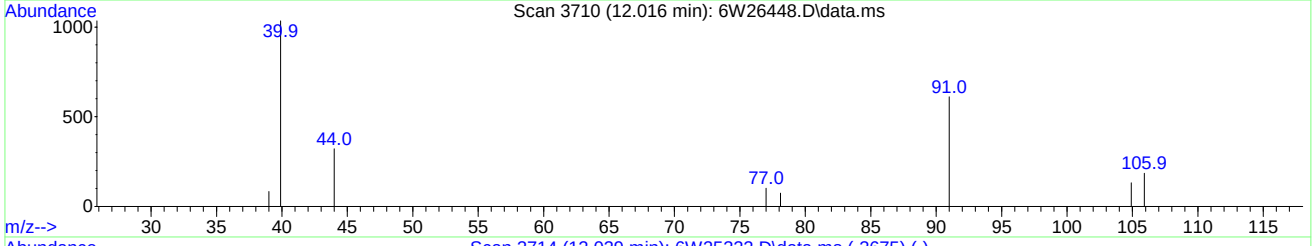
Ion	Exp%	Act%
91.10	100	100
106.10	51.50	41.27
105.10	23.60	0.00#
0.00	0.00	0.00

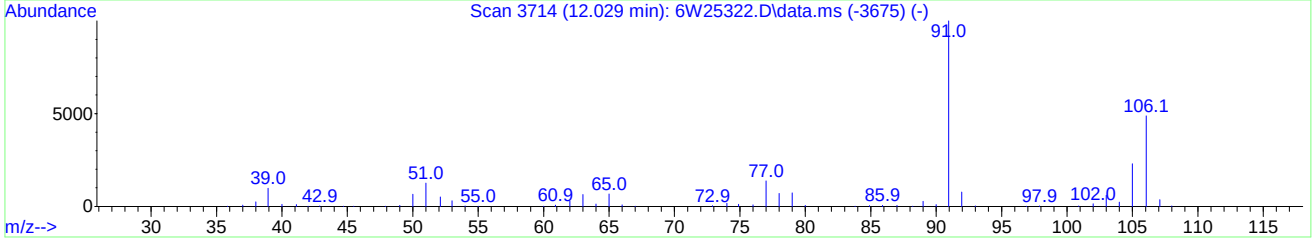
Quantitation Report (Qedit)

Data Path : C:\msdchem\1\data\
Data File : 6W26448.D
Acq On : 19 Oct 2022 7:10 pm
Operator : thomash
Sample : ic1125-0.04
Misc : MS63121,V6W1125,,,,,1
ALS Vial : 1 Sample Multiplier: 1

Quant Time: Oct 20 07:55:00 2022
Quant Method : C:\msdchem\1\methods\M6W1125.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Thu Oct 20 07:44:13 2022
Response via : Initial Calibration







TIC: 6W26448.D\data.ms

(80) M,P-XYLENE (t)

12.016min (+0.007) 0.12PPBV m

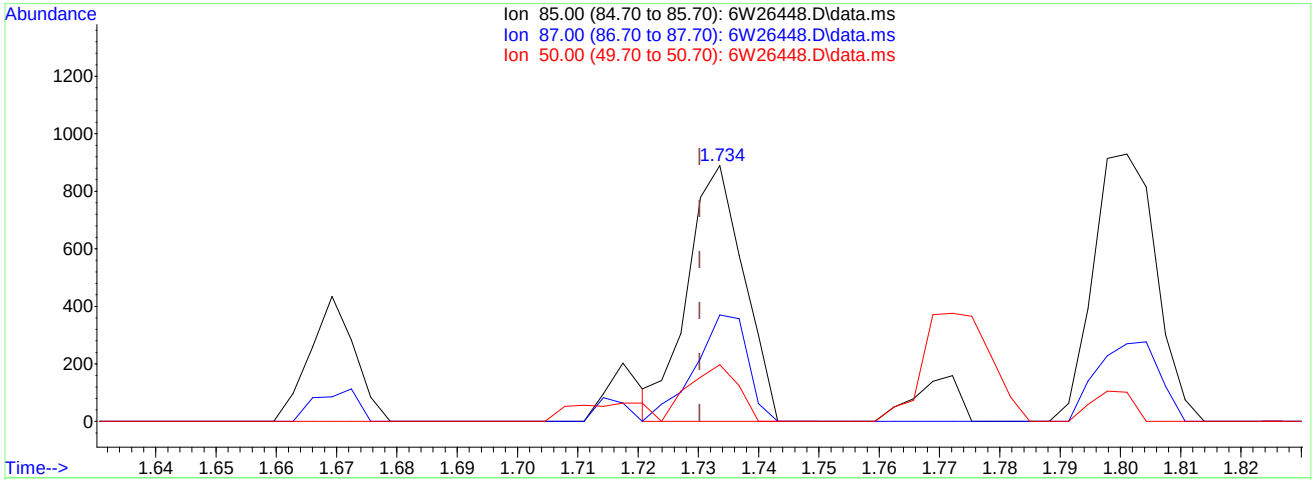
response 2929

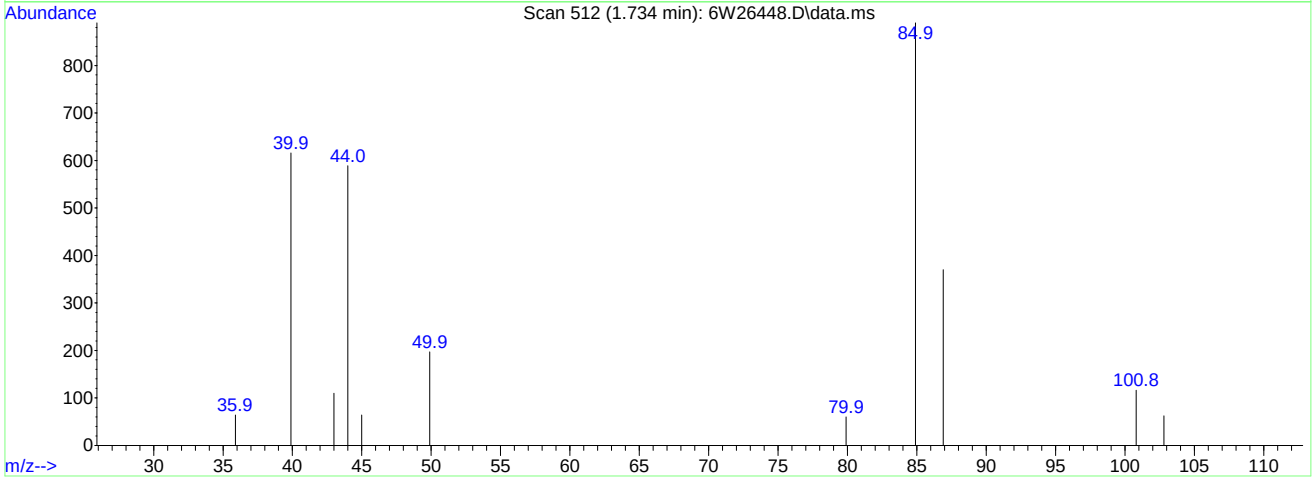
Ion	Exp%	Act%
91.10	100	100
106.10	51.50	25.16#
105.10	23.60	0.00#
0.00	0.00	0.00

Quantitation Report (Qedit)

Data Path : C:\msdchem\1\data\
Data File : 6W26448.D
Acq On : 19 Oct 2022 7:10 pm
Operator : thomash
Sample : ic1125-0.04
Misc : MS63121,V6W1125,,,,,1
ALS Vial : 1 Sample Multiplier: 1

Quant Time: Oct 20 09:48:06 2022
Quant Method : C:\msdchem\1\methods\M6W1125.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Thu Oct 20 07:44:13 2022
Response via : Initial Calibration





TIC: 6W26448.D\data.ms

(6) DICHLORODIFLUOROMETHANE (T)

1.734min (+0.003) 0.04PPBV m

response 578

Ion	Exp%	Act%
85.00	100	100
87.00	32.20	0.00#
50.00	9.30	0.00#
0.00	0.00	0.00

Manual Integrations APPROVED (compounds with "m" flag)
Kanya Veerawat 10/20/22 12:15

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\
Data File : 6W26449.D
Acq On : 19 Oct 2022 7:43 pm
Operator : thomash
Sample : ic1125-0.1
Misc : MS63121,V6W1125,,,,,1
ALS Vial : 1 Sample Multiplier: 1

Quant Time: Oct 20 09:45:19 2022
Quant Method : C:\msdchem\1\methods\M6W1125.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Thu Oct 20 07:44:13 2022
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units		Dev(Min)
Internal Standards							
1) BROMOCHLOROMETHANE	3.341	128	48898	10.00	PPBV	#	0.00
52) 1,4-DIFLUOROBENZENE	4.733	114	236998	10.00	PPBV		0.00
76) CHLOROBENZENE-D5	10.582	117	208233	10.00	PPBV		0.00
System Monitoring Compounds							
87) 4-BROMOFLUOROBENZENE	14.026	95	142510	9.67	PPBV		0.00
Target Compounds							Qvalue
5) CHLOROTRIFLUOROETHENE	1.717	116	964	0.11	PPBV	#	42
6) DICHLORODIFLUOROMETHANE	1.733	85	1546m	0.10	PPBV		
7) PROPYLENE	1.714	41	564	0.09	PPBV	#	44
8) 1-CHLORO-1,1-DIFLUOROE...	1.769	65	1371	0.10	PPBV	#	46
9) FREON 114	1.801	85	1620	0.11	PPBV	#	75
10) CHLOROMETHANE	1.775	52	200m	0.10	PPBV		
11) VINYL CHLORIDE	1.830	62	714	0.12	PPBV	#	50
12) 1,3-BUTADIENE	1.868	54	533	0.10	PPBV	#	27
13) N-BUTANE	1.881	43	1299	0.12	PPBV	#	65
14) BROMOMETHANE	1.936	94	505	0.10	PPBV	#	11
15) CHLOROETHANE	1.978	64	276m	0.09	PPBV		
16) DICHLOROFLUOROMETHANE	2.004	67	1283	0.10	PPBV	#	49
17) ACETONITRILE	2.068	41	834	0.13	PPBV	#	9
19) FREON 123	2.116	83	1302	0.11	PPBV	#	92
20) FREON 123A	2.135	117	742	0.10	PPBV		81
21) TRICHLOROFLUOROMETHANE	2.193	101	1509	0.10	PPBV	#	96
22) ISOPROPYL ALCOHOL	2.216	45	1750	0.13	PPBV	#	79
24) PENTANE	2.299	42	967	0.13	PPBV	#	78
25) IODOMETHANE	2.357	142	1546	0.11	PPBV		92
26) 1,1-DICHLOROETHYLENE	2.386	96	619	0.11	PPBV	#	56
27) CARBON DISULFIDE	2.524	76	1878	0.10	PPBV	#	50
29) BROMOETHENE	2.077	106	547	0.11	PPBV	#	86
30) ACRYLONITRILE	2.274	52	541	0.11	PPBV	#	76
33) FREON 113	2.521	151	989	0.09	PPBV	#	84
34) TRANS-1,2-DICHLOROETHENE	2.769	96	695	0.11	PPBV	#	61
35) TERTIARY BUTYL ALCOHOL	2.409	59	1337	0.11	PPBV	#	76
36) METHYL TERTIARY BUTYL ...	2.894	73	1479	0.09	PPBV	#	88
38) HEXANE	3.396	57	1241	0.10	PPBV	#	74
40) 1,1-DICHLOROETHANE	2.859	63	1221	0.10	PPBV	#	50
42) CIS-1,2-DICHLOROETHENE	3.254	96	740	0.11	PPBV	#	55
45) METHYL ACRYLATE	3.405	55	1651	0.11	PPBV	#	65
46) CHLOROFORM	3.421	83	1467	0.10	PPBV	#	91
47) 2,4-DIMETHYLPENTANE	3.955	57	1390	0.10	PPBV	#	71
48) 1,1,1-TRICHLOROETHANE	4.052	97	1457	0.11	PPBV		92
49) CARBON TETRACHLORIDE	4.495	117	1424	0.09	PPBV	#	78
50) 1,2-DICHLOROETHANE	3.868	62	1104	0.10	PPBV	#	49
51) BENZENE	4.380	78	2208	0.11	PPBV	#	66
53) CYCLOHEXANE	4.611	84	828	0.10	PPBV	#	58
55) TRICHLOROETHENE	5.347	95	922	0.10	PPBV		98
56) 1,2-DICHLOROPROPANE	5.100	63	821	0.10	PPBV	#	41
57) DIBROMOMETHANE	5.058	174	994	0.12	PPBV		91
58) ETHYL ACRYLATE	5.241	55	1502	0.08	PPBV	#	73
59) BROMODICHLOROMETHANE	5.290	83	1646	0.11	PPBV		97
60) 2,2,4-TRIMETHYLPENTANE	5.454	57	3736	0.10	PPBV	#	92
62) HEPTANE	5.791	43	1552	0.10	PPBV	#	72
63) METHYL METHACRYLATE	5.688	69	704	0.09	PPBV	#	40
64) METHYL ISOBUTYL KETONE	6.482	58	501	0.07	PPBV	#	47
65) CIS-1,3-DICHLOROPROPENE	6.351	75	1002	0.09	PPBV	#	37
66) TOLUENE	7.617	91	2732	0.11	PPBV		99
67) 1,3-DICHLOROPROPANE	7.685	76	1233	0.10	PPBV	#	49
68) TRANS-1,3-DICHLOROPROPENE	7.061	75	875	0.09	PPBV	#	42
69) 1,1,2-TRICHLOROETHANE	7.228	83	677	0.09	PPBV		89
71) ETHYL METHACRYLATE	8.363	69	864	0.07	PPBV	#	56
72) TETRACHLOROETHENE	9.415	164	911	0.10	PPBV	#	70

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\
Data File : 6W26449.D
Acq On : 19 Oct 2022 7:43 pm
Operator : thomash
Sample : ic1125-0.1
Misc : MS63121,V6W1125,,,,,1
ALS Vial : 1 Sample Multiplier: 1

Quant Time: Oct 20 09:45:19 2022
Quant Method : C:\msdchem\1\methods\M6W1125.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Thu Oct 20 07:44:13 2022
Response via : Initial Calibration

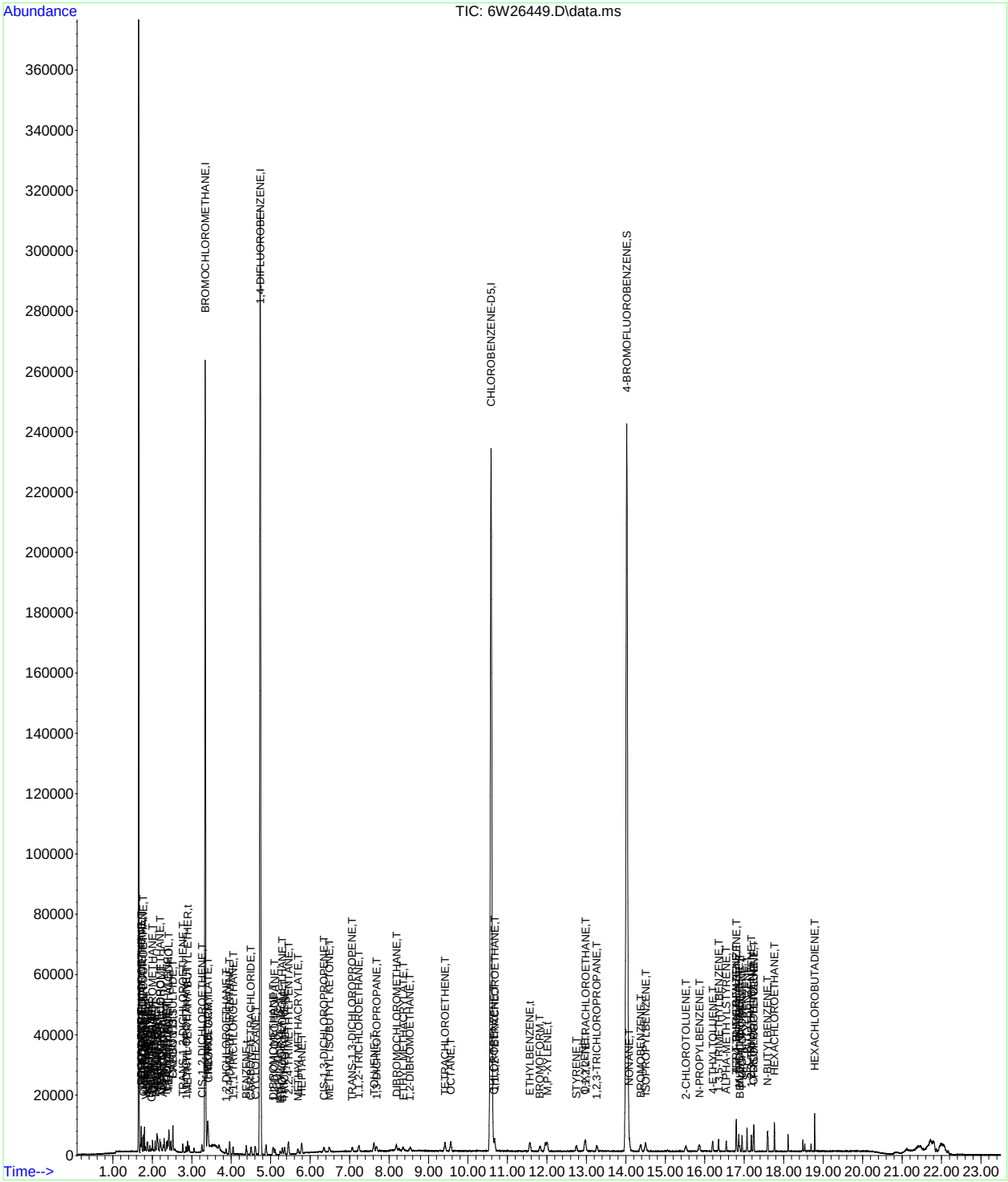
	Compound	R.T.	QIon	Response	Conc	Units		Dev(Min)
73)	DIBROMOCHLOROMETHANE	8.187	129	1596	0.10	PPBV	#	83
74)	1,2-DIBROMOETHANE	8.524	107	1316	0.10	PPBV	#	98
75)	OCTANE	9.563	43	1915	0.09	PPBV	#	70
77)	1,1,1,2-TETRACHLOROETHANE	10.675	131	1043	0.09	PPBV	#	39
78)	CHLOROBENZENE	10.656	112	1970	0.10	PPBV		98
79)	ETHYLBENZENE	11.563	91	3888	0.12	PPBV		95
80)	M,P-XYLENE	12.013	91	5763m	0.23	PPBV		
81)	O-XYLENE	12.955	91	2774	0.11	PPBV	#	87
82)	STYRENE	12.746	104	1561	0.08	PPBV		96
83)	NONANE	14.083	43	2448	0.11	PPBV	#	63
84)	BROMOFORM	11.820	173	1374	0.09	PPBV	#	83
85)	1,1,2,2-TETRACHLOROETHANE	12.981	83	1920	0.10	PPBV	#	94
86)	1,2,3-TRICHLOROPROPANE	13.254	75	1421	0.10	PPBV	#	41
88)	ISOPROPYLBENZENE	14.505	105	3516	0.09	PPBV	#	78
89)	BROMOBENZENE	14.376	77	1766	0.10	PPBV	#	87
90)	2-CHLOROTOLUENE	15.521	91	2168	0.08	PPBV	#	94
91)	N-PROPYLBENZENE	15.865	91	3399	0.08	PPBV	#	94
92)	4-ETHYLTOLUENE	16.202	105	2574	0.07	PPBV	#	97
93)	1,3,5-TRIMETHYLBENZENE	16.350	105	2163	0.07	PPBV	#	95
94)	ALPHA-METHYLSTYRENE	16.546	118	964	0.06	PPBV		95
95)	TERT-BUTYLBENZENE	16.794	119	2458	0.07	PPBV		95
96)	1,2,4-TRIMETHYLBENZENE	16.800	105	2237	0.07	PPBV		98
97)	BENZYL CHLORIDE	16.887	91	945	0.05	PPBV	#	60
98)	M-DICHLOROBENZENE	16.865	146	1725	0.08	PPBV		97
99)	P-DICHLOROBENZENE	16.945	146	1627	0.08	PPBV		93
100)	O-DICHLOROBENZENE	17.231	146	1588	0.08	PPBV		96
101)	SEC-BUTYLBENZENE	17.070	105	3423	0.07	PPBV		96
102)	1,2,3-TRIMETHYLBENZENE	17.180	105	2179	0.07	PPBV	#	93
103)	P-ISOPROPYLTOLUENE	17.244	119	2841	0.07	PPBV	#	94
104)	N-BUTYLBENZENE	17.585	91	2234	0.06	PPBV		94
105)	HEXACHLOROETHANE	17.765	117	1259	0.10	PPBV	#	87
106)	HEXACHLOROBUTADIENE	18.787	225	1045	0.07	PPBV		94

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

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\
Data File : 6W26449.D
Acq On : 19 Oct 2022 7:43 pm
Operator : thomash
Sample : ic1125-0.1
Misc : MS63121,V6W1125,,,,,1
ALS Vial : 1 Sample Multiplier: 1

Quant Time: Oct 20 09:45:19 2022
Quant Method : C:\msdchem\1\methods\M6W1125.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Thu Oct 20 07:44:13 2022
Response via : Initial Calibration



Manual Integration Approval Summary

Sample Number: V6W1125-IC1125
Lab FileID: 6W26449.D
Injection Time: 10/19/22 19:43

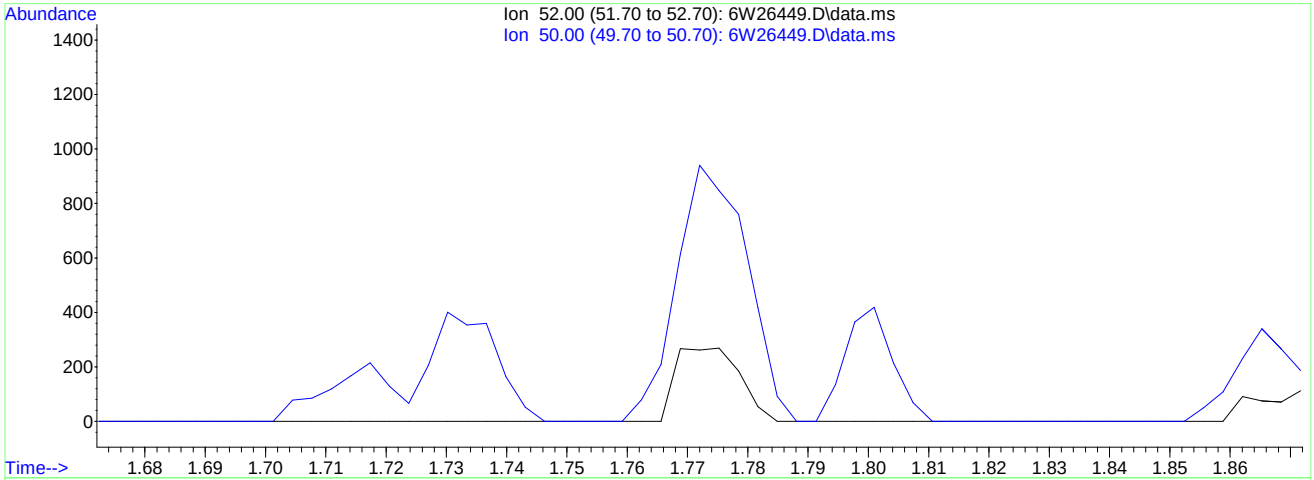
Method: TO-15
Analyst approved: 10/20/22 10:04 Thomas Hilbig
Supervisor approved: 10/20/22 12:15 Kanya Veerawat

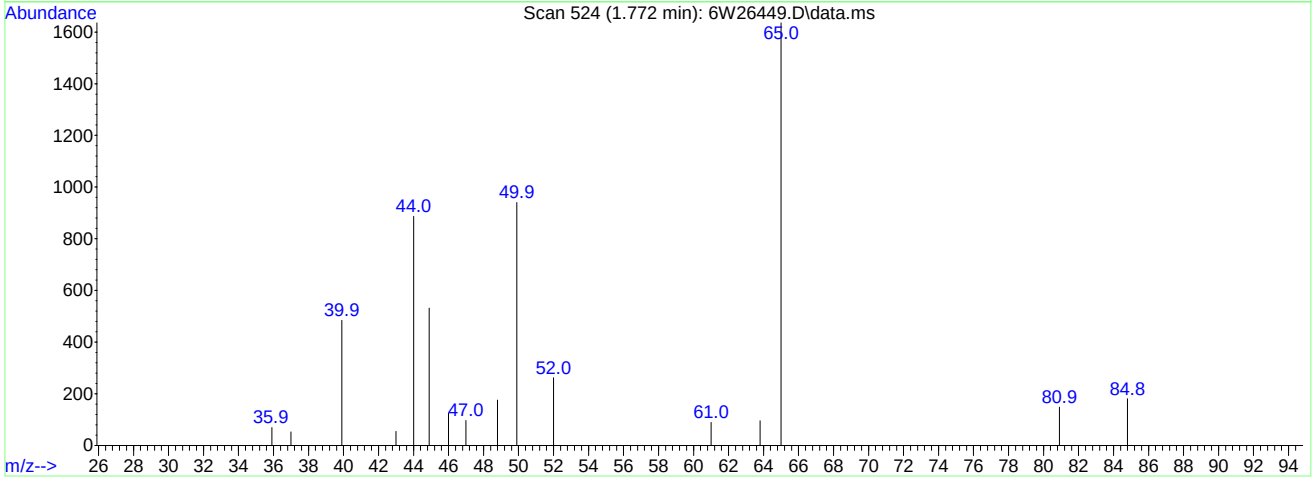
Parameter	CAS	Sig#	R.T. (min.)	Reason
Dichlorodifluoromethane	75-71-8		1.73	Overlapping peak
Chloromethane	74-87-3		1.78	Missed peak
Chloroethane	75-00-3		1.98	Missed peak
m,p-Xylene			12.01	Split peak

Quantitation Report (Qedit)

Data Path : C:\msdchem\1\data\
Data File : 6W26449.D
Acq On : 19 Oct 2022 7:43 pm
Operator : thomash
Sample : ic1125-0.1
Misc : MS63121,V6W1125,,,,,1
ALS Vial : 1 Sample Multiplier: 1

Quant Time: Oct 20 08:06:39 2022
Quant Method : C:\msdchem\1\methods\M6W1125.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Thu Oct 20 07:44:13 2022
Response via : Initial Calibration





TIC: 6W26449.D\data.ms

(10) CHLOROMETHANE (T)

1.772min (-1.772) 0.00PPBV

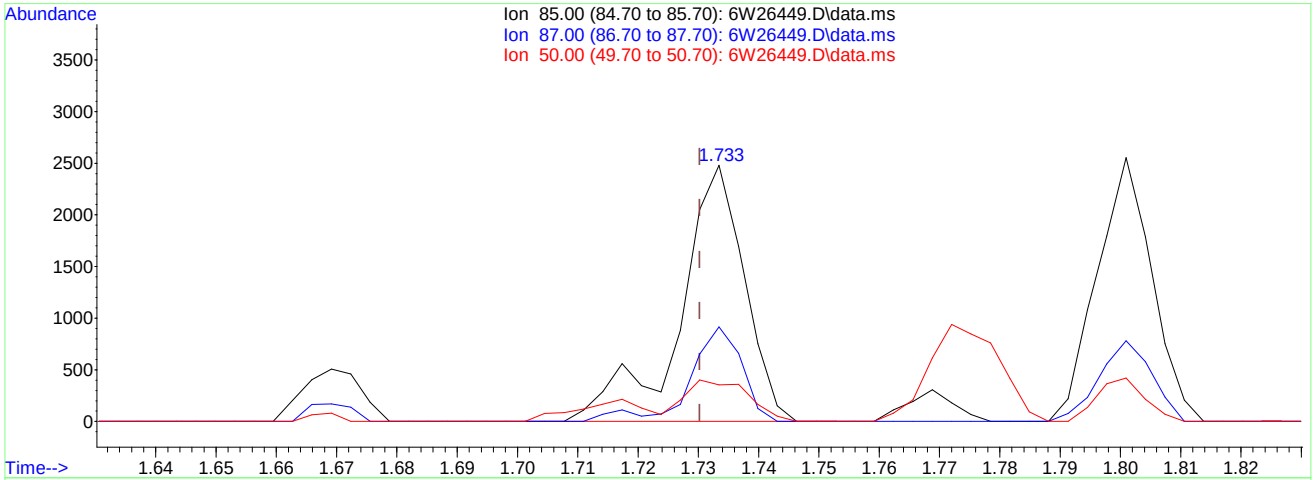
response 0

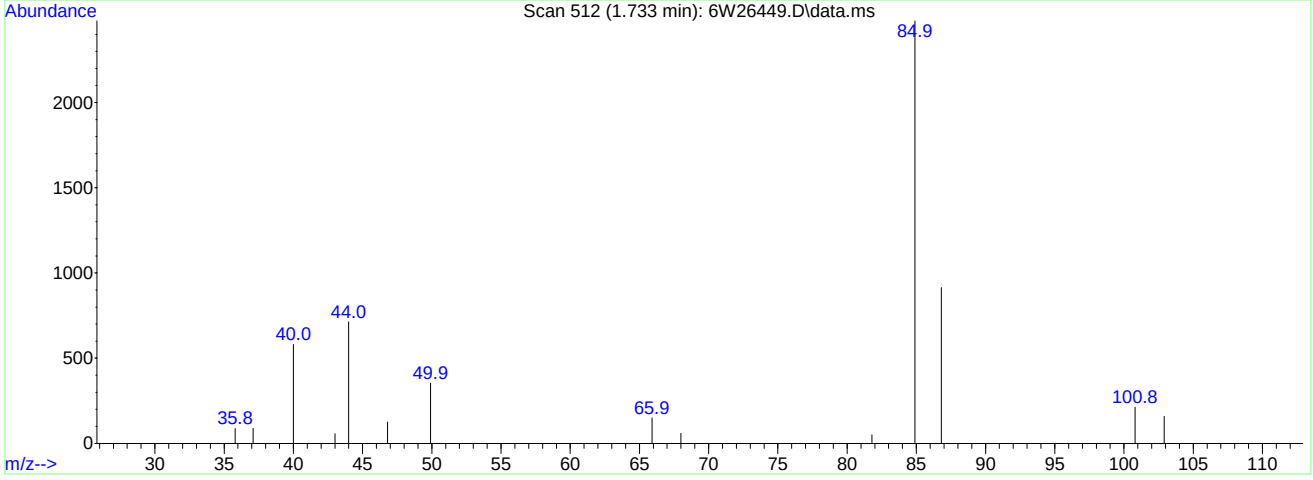
Ion	Exp%	Act%
52.00	100	0.00
50.00	310.20	0.00#
0.00	0.00	0.00
0.00	0.00	0.00

Quantitation Report (Qedit)

Data Path : C:\msdchem\1\data\
Data File : 6W26449.D
Acq On : 19 Oct 2022 7:43 pm
Operator : thomash
Sample : ic1125-0.1
Misc : MS63121,V6W1125,,,,,1
ALS Vial : 1 Sample Multiplier: 1

Quant Time: Oct 20 08:06:39 2022
Quant Method : C:\msdchem\1\methods\M6W1125.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Thu Oct 20 07:44:13 2022
Response via : Initial Calibration





TIC: 6W26449.D\data.ms

(6) DICHLORODIFLUOROMETHANE (T)

1.733min (+0.003) 0.13PPBV

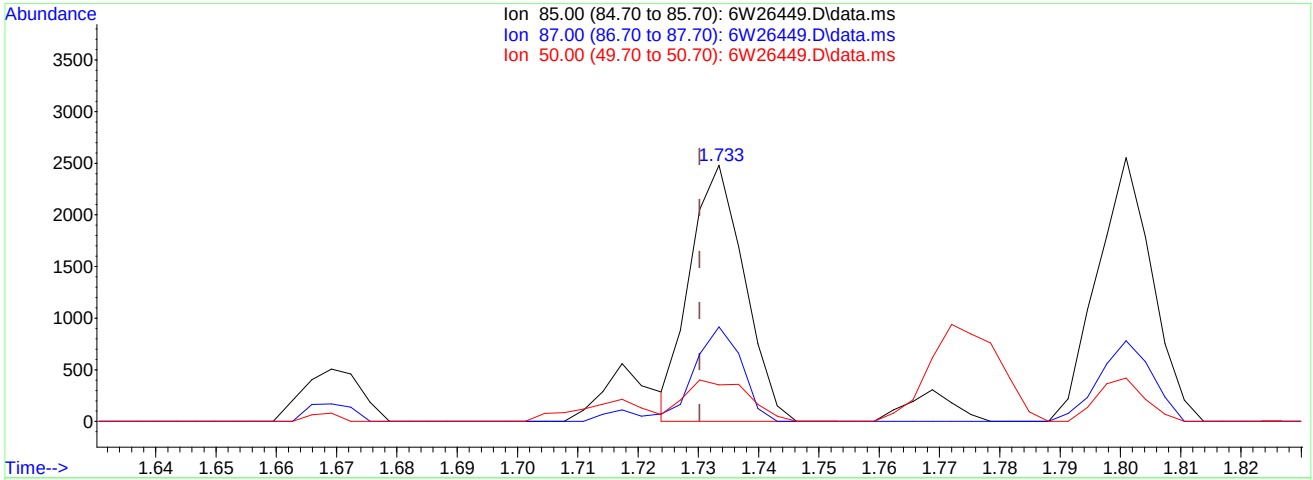
response 1852

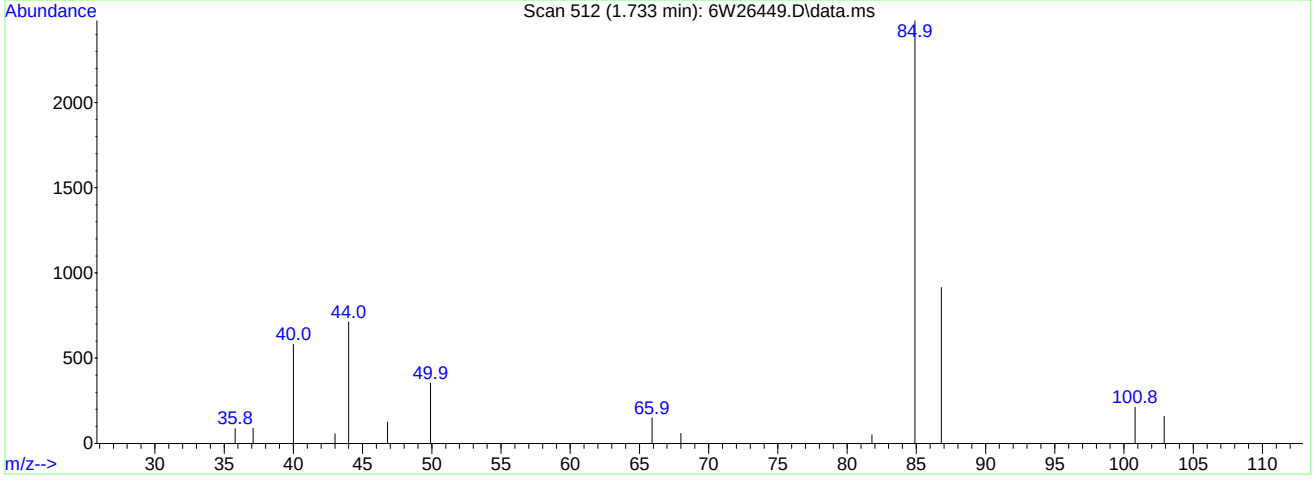
Ion	Exp%	Act%
85.00	100	100
87.00	32.20	29.37
50.00	9.30	0.00#
0.00	0.00	0.00

Quantitation Report (Qedit)

Data Path : C:\msdchem\1\data\
Data File : 6W26449.D
Acq On : 19 Oct 2022 7:43 pm
Operator : thomash
Sample : ic1125-0.1
Misc : MS63121,V6W1125,,,,,1
ALS Vial : 1 Sample Multiplier: 1

Quant Time: Oct 20 08:06:39 2022
Quant Method : C:\msdchem\1\methods\M6W1125.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Thu Oct 20 07:44:13 2022
Response via : Initial Calibration





TIC: 6W26449.D\data.ms

(6) DICHLORODIFLUOROMETHANE (T)

1.733min (+0.003) 0.10PPBV m

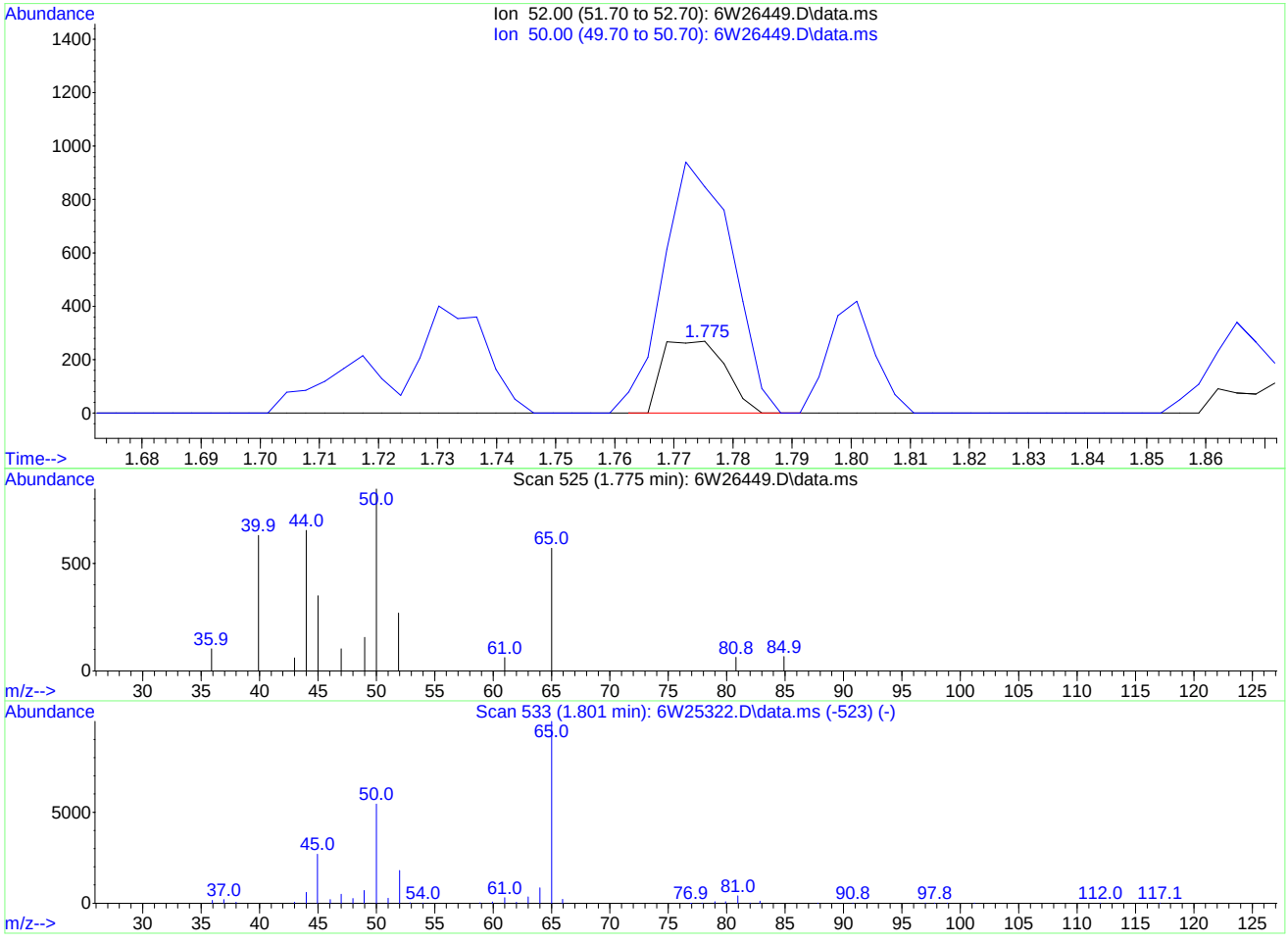
response 1546

Ion	Exp%	Act%
85.00	100	100
87.00	32.20	35.19
50.00	9.30	0.00#
0.00	0.00	0.00

Quantitation Report (Qedit)

Data Path : C:\msdchem\1\data\
Data File : 6W26449.D
Acq On : 19 Oct 2022 7:43 pm
Operator : thomash
Sample : ic1125-0.1
Misc : MS63121,V6W1125,,,,,1
ALS Vial : 1 Sample Multiplier: 1

Quant Time: Oct 20 08:06:39 2022
Quant Method : C:\msdchem\1\methods\M6W1125.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Thu Oct 20 07:44:13 2022
Response via : Initial Calibration



TIC: 6W26449.D\data.ms

(10) CHLOROMETHANE (T)

1.775min (+0.003) 0.10PPBV m

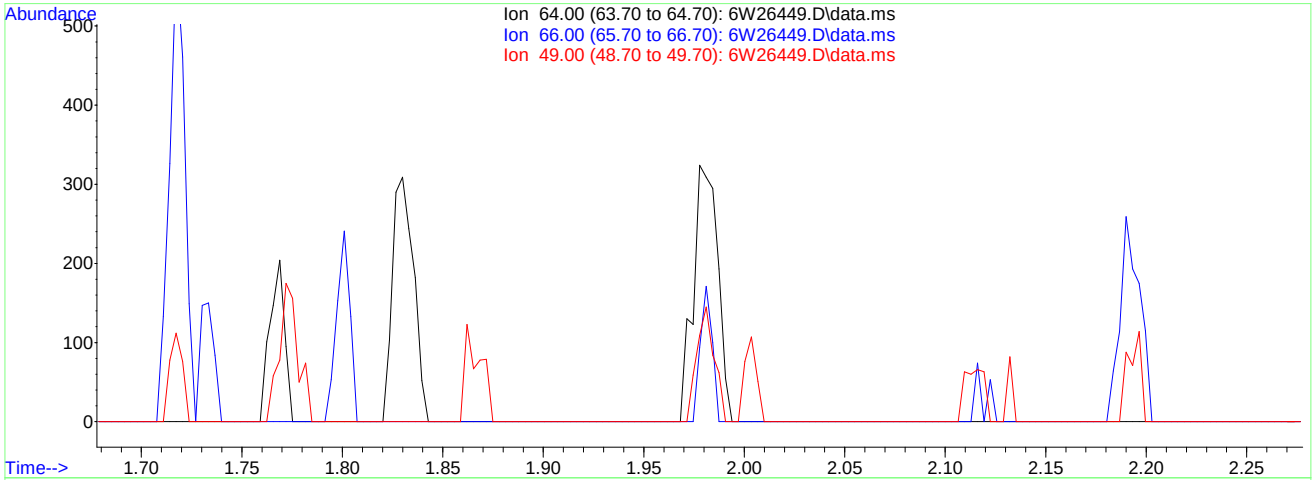
response 200

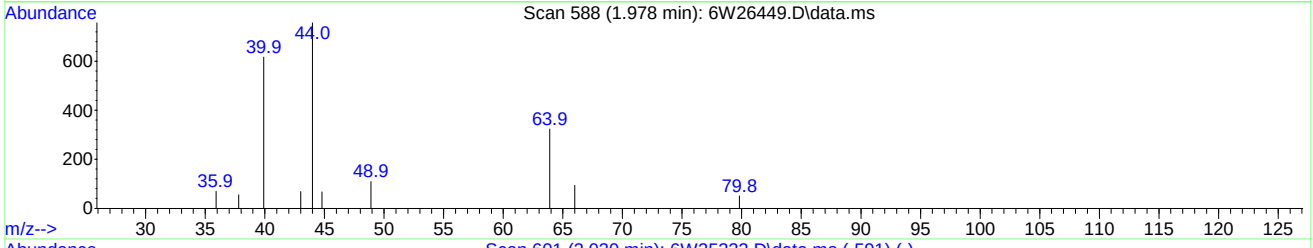
Ion	Exp%	Act%
52.00	100	100
50.00	310.20	0.00#
0.00	0.00	0.00
0.00	0.00	0.00

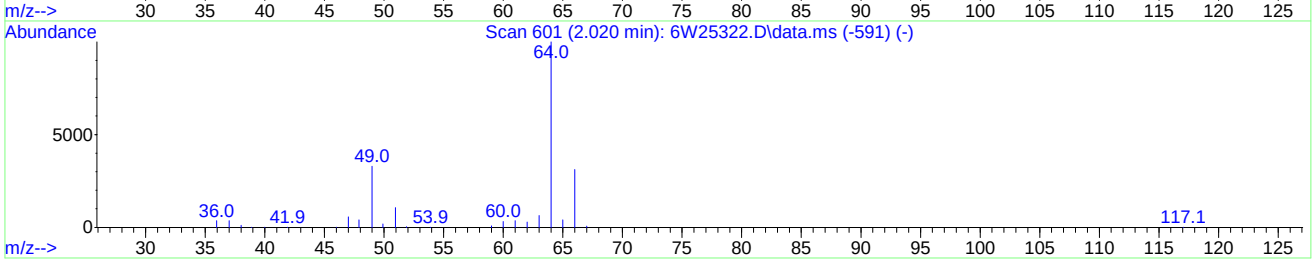
Quantitation Report (Qedit)

Data Path : C:\msdchem\1\data\
Data File : 6W26449.D
Acq On : 19 Oct 2022 7:43 pm
Operator : thomash
Sample : ic1125-0.1
Misc : MS63121,V6W1125,,,,,1
ALS Vial : 1 Sample Multiplier: 1

Quant Time: Oct 20 08:06:39 2022
Quant Method : C:\msdchem\1\methods\M6W1125.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Thu Oct 20 07:44:13 2022
Response via : Initial Calibration







TIC: 6W26449.D\data.ms

(15) CHLOROETHANE (T)

1.978min (-1.978) 0.00PPBV

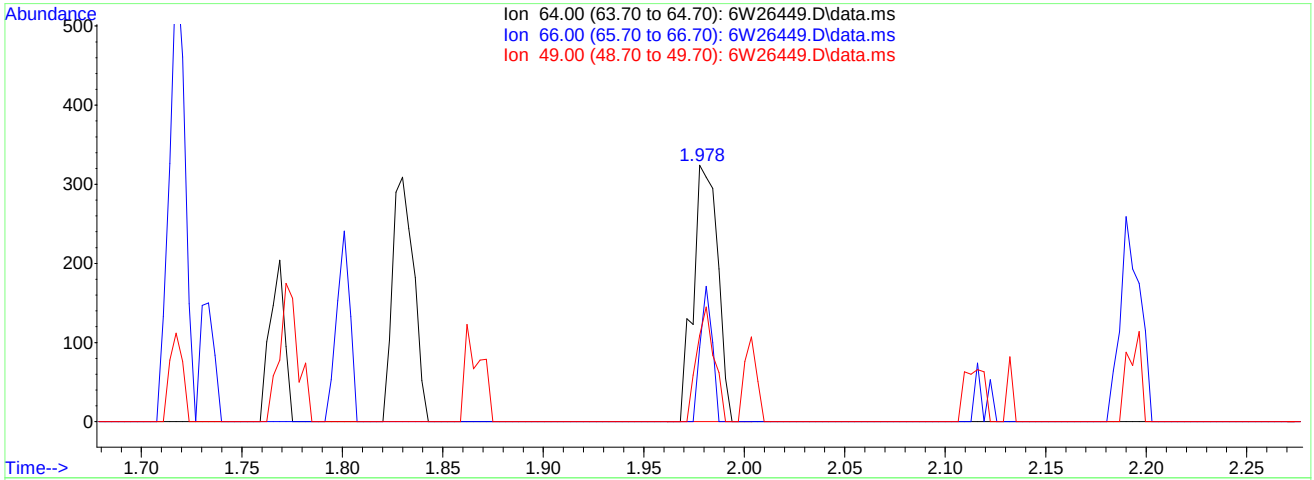
response 0

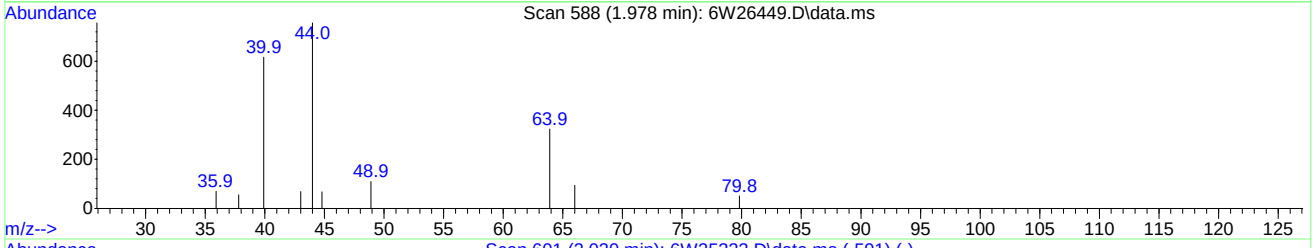
Ion	Exp%	Act%
64.00	100	0.00
66.00	33.90	0.00#
49.00	29.10	0.00#
0.00	0.00	0.00

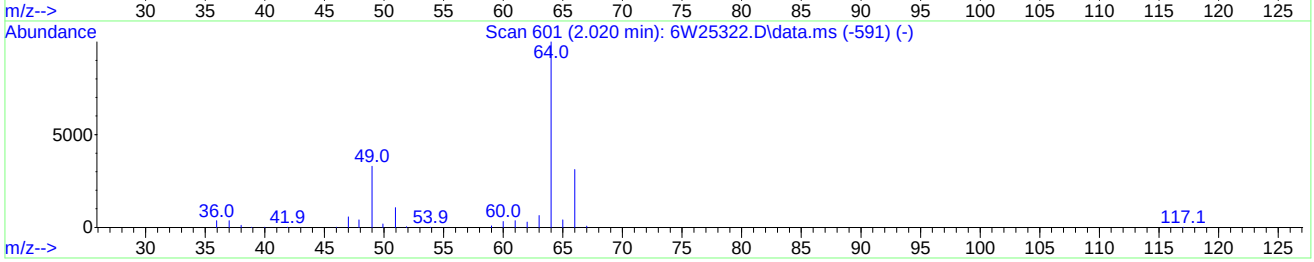
Quantitation Report (Qedit)

Data Path : C:\msdchem\1\data\
Data File : 6W26449.D
Acq On : 19 Oct 2022 7:43 pm
Operator : thomash
Sample : ic1125-0.1
Misc : MS63121,V6W1125,,,,,1
ALS Vial : 1 Sample Multiplier: 1

Quant Time: Oct 20 08:06:39 2022
Quant Method : C:\msdchem\1\methods\M6W1125.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Thu Oct 20 07:44:13 2022
Response via : Initial Calibration







TIC: 6W26449.D\data.ms

(15) CHLOROETHANE (T)

1.978min (0.000) 0.09PPBV m

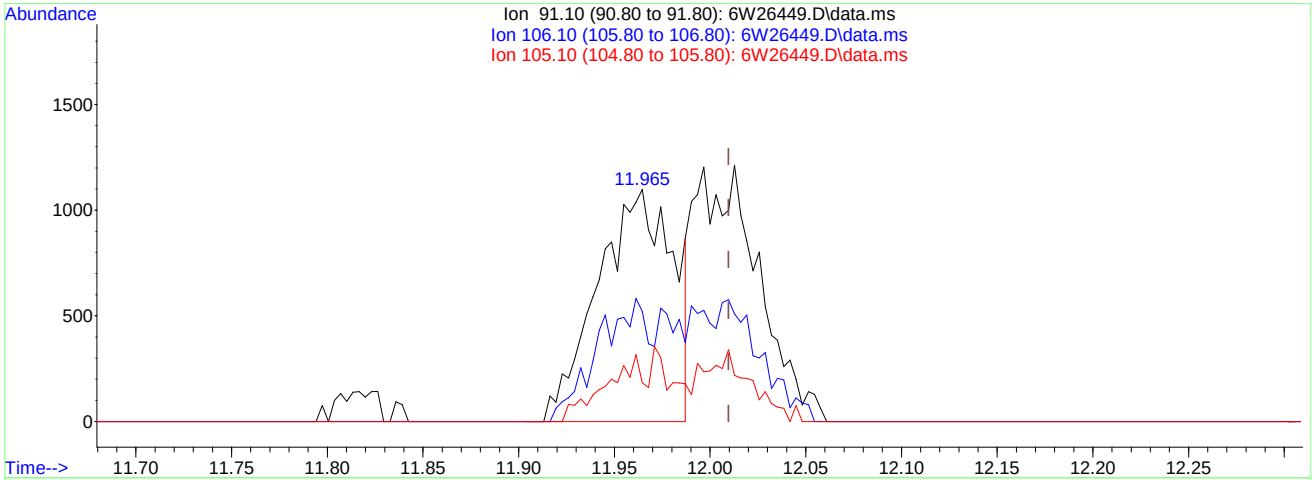
response 276

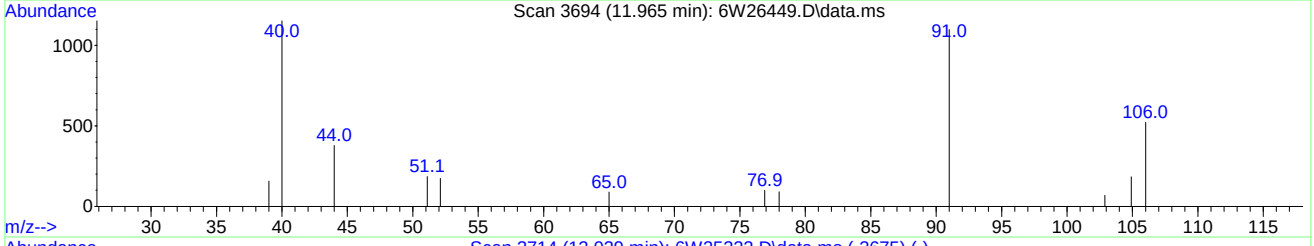
Ion	Exp%	Act%
64.00	100	100
66.00	33.90	0.00#
49.00	29.10	0.00#
0.00	0.00	0.00

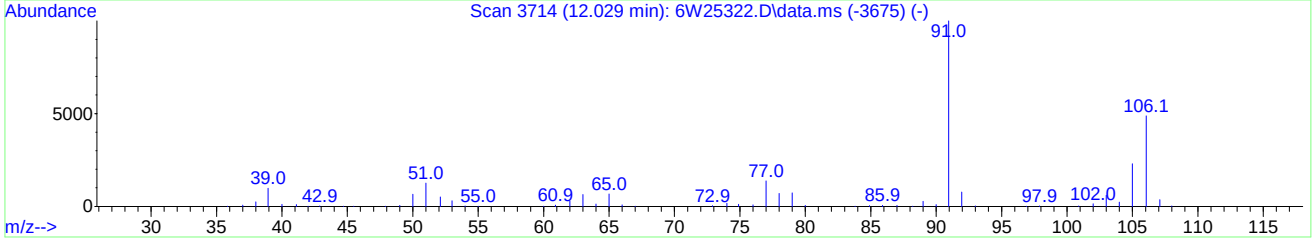
Quantitation Report (Qedit)

Data Path : C:\msdchem\1\data\
Data File : 6W26449.D
Acq On : 19 Oct 2022 7:43 pm
Operator : thomash
Sample : ic1125-0.1
Misc : MS63121,V6W1125,,,,,1
ALS Vial : 1 Sample Multiplier: 1

Quant Time: Oct 20 08:06:39 2022
Quant Method : C:\msdchem\1\methods\M6W1125.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Thu Oct 20 07:44:13 2022
Response via : Initial Calibration







TIC: 6W26449.D\data.ms

(80) M,P-XYLENE (t)

11.965min (-0.045) 0.12PPBV

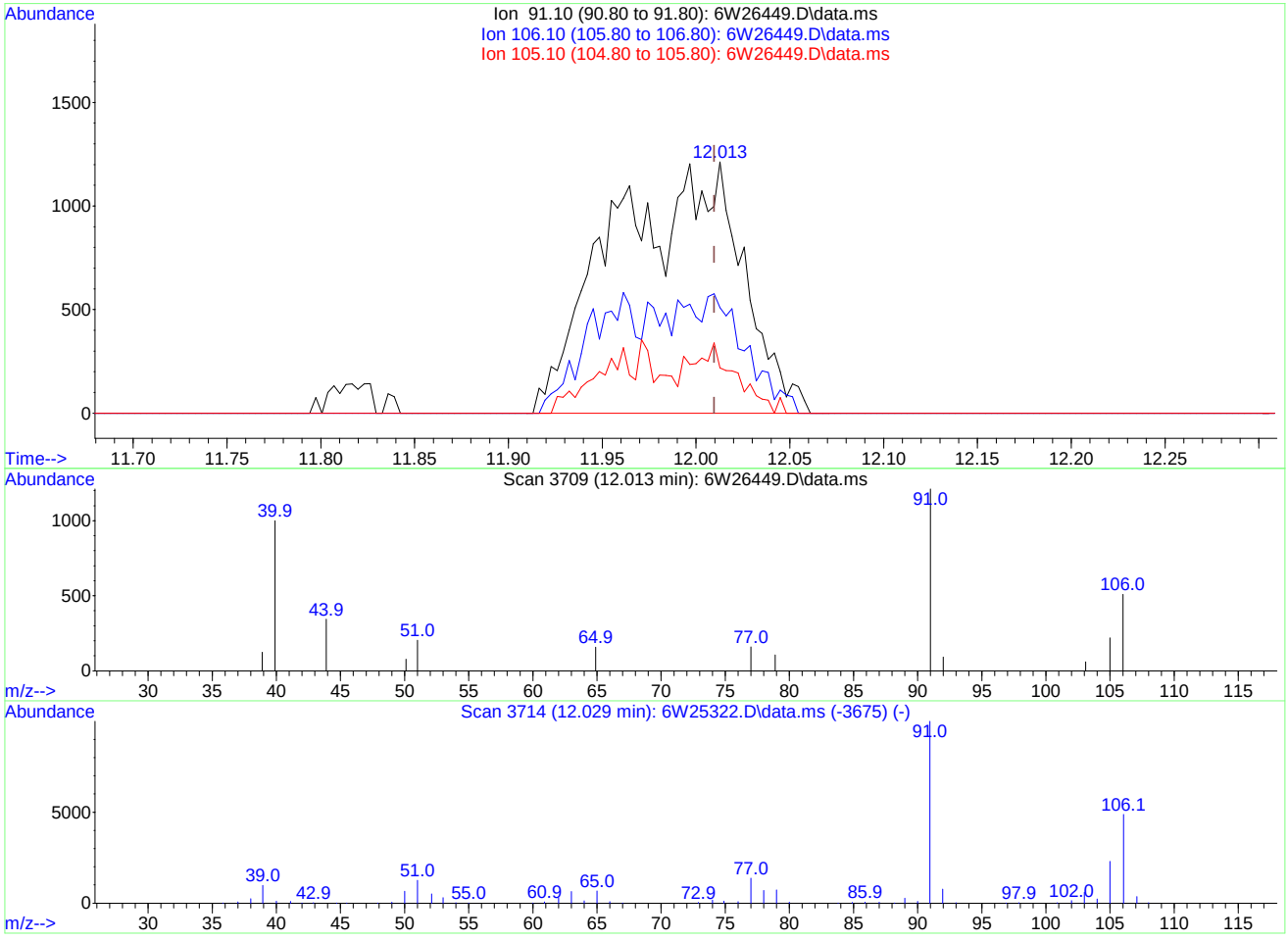
response 2993

Ion	Exp%	Act%
91.10	100	100
106.10	51.50	51.45
105.10	23.60	23.52
0.00	0.00	0.00

Quantitation Report (Qedit)

Data Path : C:\msdchem\1\data\
Data File : 6W26449.D
Acq On : 19 Oct 2022 7:43 pm
Operator : thomash
Sample : ic1125-0.1
Misc : MS63121,V6W1125,,,,,1
ALS Vial : 1 Sample Multiplier: 1

Quant Time: Oct 20 08:06:39 2022
Quant Method : C:\msdchem\1\methods\M6W1125.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Thu Oct 20 07:44:13 2022
Response via : Initial Calibration



TIC: 6W26449.D\data.ms

(80) M,P-XYLENE (t)

12.013min (+0.003) 0.23PPBV m

response 5763

Ion	Exp%	Act%
91.10	100	100
106.10	51.50	26.72#
105.10	23.60	12.22
0.00	0.00	0.00

Manual Integrations APPROVED (compounds with "m" flag)
Kanya Veerawat 10/20/22 12:15

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\
Data File : 6W26450.D
Acq On : 19 Oct 2022 8:15 pm
Operator : thomash
Sample : ic1125-0.2
Misc : MS63121,V6W1125,,,,,1
ALS Vial : 1 Sample Multiplier: 1

Quant Time: Oct 20 08:22:22 2022
Quant Method : C:\msdchem\1\methods\M6W1125.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Thu Oct 20 07:44:13 2022
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) BROMOCHLOROMETHANE	3.338	128	46339	10.00	PPBV	# 0.00
52) 1,4-DIFLUOROBENZENE	4.733	114	232045	10.00	PPBV	0.00
76) CHLOROBENZENE-D5	10.582	117	202916	10.00	PPBV	0.00
System Monitoring Compounds						
87) 4-BROMOFLUOROBENZENE	14.022	95	139177	9.69	PPBV	0.00
Target Compounds						Qvalue
3) FREON 152A	1.695	65	845	0.22	PPBV	# 53
4) CHLORODIFLUOROMETHANE	1.708	67	366m	0.21	PPBV	
5) CHLOROTRIFLUOROETHENE	1.718	116	1766	0.22	PPBV	# 97
6) DICHLORODIFLUOROMETHANE	1.734	85	2981m	0.21	PPBV	
7) PROPYLENE	1.714	41	1228	0.22	PPBV	# 91
8) 1-CHLORO-1,1-DIFLUOROE...	1.766	65	2661	0.21	PPBV	# 56
9) FREON 114	1.798	85	3047	0.22	PPBV	98
10) CHLOROMETHANE	1.772	52	410m	0.21	PPBV	
11) VINYL CHLORIDE	1.827	62	1315	0.22	PPBV	# 50
12) 1,3-BUTADIENE	1.865	54	1056	0.22	PPBV	# 60
13) N-BUTANE	1.878	43	2287	0.23	PPBV	# 65
14) BROMOMETHANE	1.933	94	1003	0.22	PPBV	# 91
15) CHLOROETHANE	1.981	64	656	0.23	PPBV	# 43
16) DICHLOROFLUOROMETHANE	2.004	67	2656	0.22	PPBV	# 92
17) ACETONITRILE	2.068	41	1438	0.24	PPBV	# 84
18) ACROLEIN	2.103	56	451m	0.16	PPBV	
19) FREON 123	2.113	83	2489	0.22	PPBV	98
20) FREON 123A	2.132	117	1440	0.21	PPBV	84
21) TRICHLOROFLUOROMETHANE	2.190	101	2941	0.21	PPBV	# 96
22) ISOPROPYL ALCOHOL	2.213	45	3020	0.23	PPBV	# 75
23) ACETONE	2.142	58	851	0.29	PPBV	# 39
24) PENTANE	2.296	42	1697	0.24	PPBV	# 79
25) IODOMETHANE	2.357	142	2871	0.21	PPBV	# 87
26) 1,1-DICHLOROETHYLENE	2.383	96	1152	0.21	PPBV	# 65
27) CARBON DISULFIDE	2.521	76	3734	0.21	PPBV	# 52
28) ETHANOL	2.007	45	896	0.31	PPBV	# 40
29) BROMOETHENE	2.074	106	1029	0.22	PPBV	# 96
30) ACRYLONITRILE	2.274	52	971	0.21	PPBV	# 78
31) METHYLENE CHLORIDE	2.422	84	1504	0.28	PPBV	# 39
32) 3-CHLOROPROPENE	2.463	76	526	0.19	PPBV	# 1
33) FREON 113	2.521	151	2113	0.21	PPBV	92
34) TRANS-1,2-DICHLOROETHENE	2.769	96	1281	0.21	PPBV	# 78
35) TERTIARY BUTYL ALCOHOL	2.406	59	2276	0.20	PPBV	# 79
36) METHYL TERTIARY BUTYL ...	2.894	73	3224	0.21	PPBV	# 88
37) TETRAHYDROFURAN	3.672	72	527	0.19	PPBV	# 1
38) HEXANE	3.389	57	2506	0.21	PPBV	# 77
39) VINYL ACETATE	2.933	86	339m	0.23	PPBV	
40) 1,1-DICHLOROETHANE	2.849	63	2466	0.21	PPBV	# 88
41) METHYL ETHYL KETONE	3.052	72	636	0.21	PPBV	# 1
42) CIS-1,2-DICHLOROETHENE	3.254	96	1388	0.22	PPBV	# 82
43) DIISOPROPYL ETHER	3.402	59	664	0.19	PPBV	# 31
44) ETHYL ACETATE	3.415	61	474m	0.20	PPBV	
45) METHYL ACRYLATE	3.396	55	3141	0.21	PPBV	# 65
46) CHLOROFORM	3.418	83	2846	0.21	PPBV	# 92
47) 2,4-DIMETHYLPENTANE	3.955	57	2721	0.20	PPBV	# 87
48) 1,1,1-TRICHLOROETHANE	4.049	97	2661	0.21	PPBV	# 92
49) CARBON TETRACHLORIDE	4.499	117	2945	0.20	PPBV	96
50) 1,2-DICHLOROETHANE	3.872	62	2146	0.21	PPBV	# 88
51) BENZENE	4.383	78	4330	0.23	PPBV	80
53) CYCLOHEXANE	4.605	84	1651	0.20	PPBV	# 77
54) 2,3-DIMETHYLPENTANE	4.885	71	956	0.21	PPBV	# 59
55) TRICHLOROETHENE	5.348	95	1872	0.21	PPBV	98
56) 1,2-DICHLOROPROPANE	5.103	63	1638	0.20	PPBV	# 72
57) DIBROMOMETHANE	5.055	174	1765	0.22	PPBV	90

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\
Data File : 6W26450.D
Acq On : 19 Oct 2022 8:15 pm
Operator : thomash
Sample : ic1125-0.2
Misc : MS63121,V6W1125,,,,,1
ALS Vial : 1 Sample Multiplier: 1

Quant Time: Oct 20 08:22:22 2022
Quant Method : C:\msdchem\1\methods\M6W1125.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Thu Oct 20 07:44:13 2022
Response via : Initial Calibration

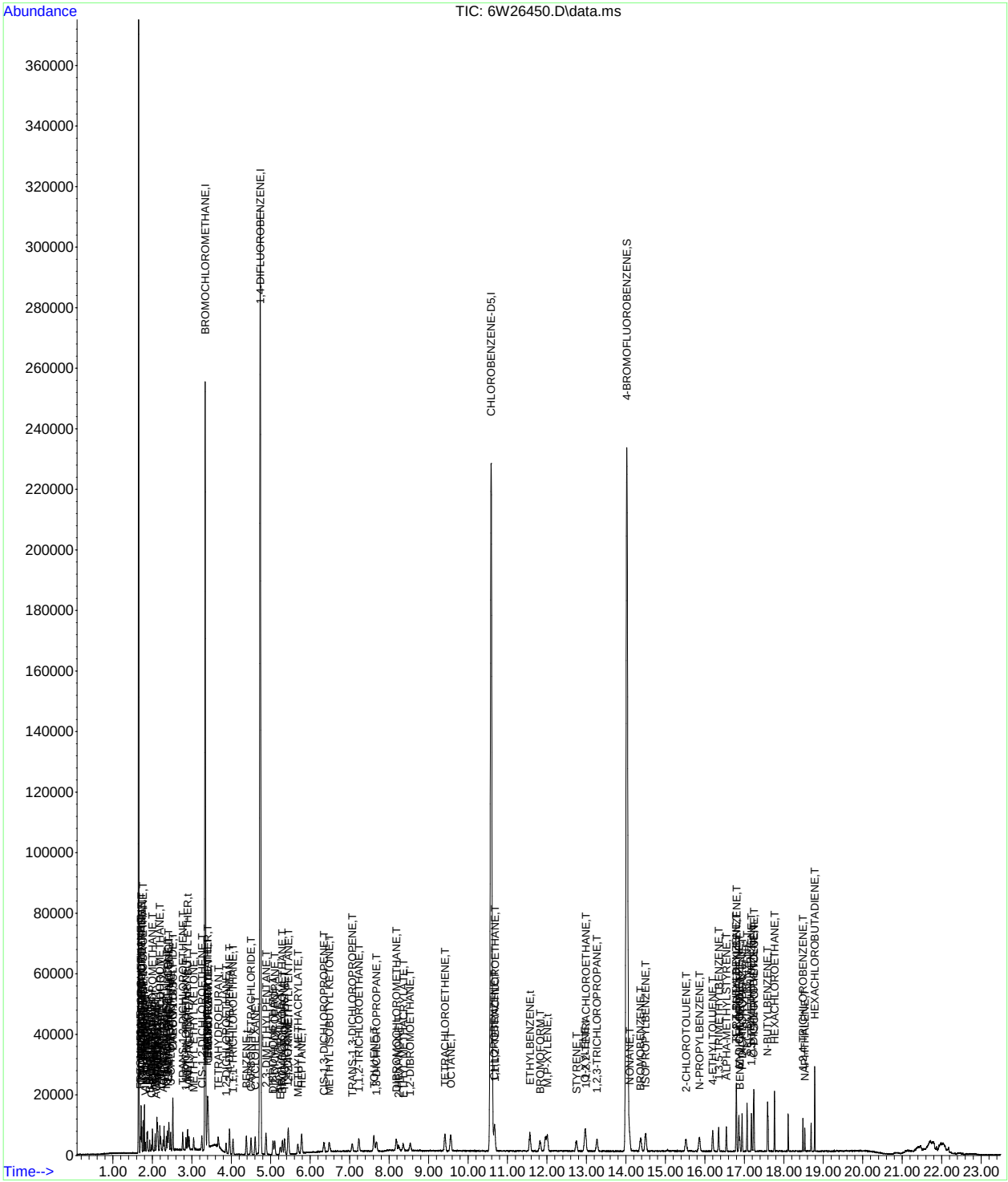
Compound	R.T.	QIon	Response	Conc	Units		Dev(Min)
58) ETHYL ACRYLATE	5.241	55	3251	0.18	PPBV	#	73
59) BROMODICHLOROMETHANE	5.293	83	2997	0.20	PPBV		92
60) 2,2,4-TRIMETHYLPENTANE	5.447	57	7674	0.20	PPBV	#	97
61) 1,4-DIOXANE	5.434	88	650m	0.16	PPBV		
62) HEPTANE	5.788	43	2944	0.20	PPBV	#	75
63) METHYL METHACRYLATE	5.688	69	1358	0.18	PPBV	#	34
64) METHYL ISOBUTYL KETONE	6.483	58	954	0.14	PPBV	#	30
65) CIS-1,3-DICHLOROPROPENE	6.348	75	2021	0.18	PPBV	#	68
66) TOLUENE	7.621	91	5056	0.21	PPBV		95
67) 1,3-DICHLOROPROPANE	7.672	76	2398	0.20	PPBV	#	93
68) TRANS-1,3-DICHLOROPROPENE	7.065	75	1636	0.17	PPBV	#	68
69) 1,1,2-TRICHLOROETHANE	7.238	83	1464	0.21	PPBV		96
70) 2-HEXANONE	8.238	58	861	0.11	PPBV	#	45
71) ETHYL METHACRYLATE	8.367	69	1692	0.15	PPBV	#	54
72) TETRACHLOROETHENE	9.415	164	1798	0.20	PPBV		92
73) DIBROMOCHLOROMETHANE	8.180	129	3068	0.19	PPBV		99
74) 1,2-DIBROMOETHANE	8.534	107	2603	0.20	PPBV	#	99
75) OCTANE	9.563	43	3514	0.17	PPBV	#	73
77) 1,1,1,2-TETRACHLOROETHANE	10.682	131	2288	0.21	PPBV		96
78) CHLOROBENZENE	10.659	112	4059	0.21	PPBV		98
79) ETHYLBENZENE	11.566	91	6718	0.21	PPBV		97
80) M,P-XYLENE	12.010	91	9676	0.40	PPBV	#	67
81) O-XYLENE	12.958	91	4830	0.20	PPBV	#	88
82) STYRENE	12.752	104	2971	0.16	PPBV		97
83) NONANE	14.096	43	4410	0.20	PPBV	#	65
84) BROMOFORM	11.826	173	2719	0.19	PPBV	#	91
85) 1,1,2,2-TETRACHLOROETHANE	12.990	83	3781	0.20	PPBV	#	94
86) 1,2,3-TRICHLOROPROPANE	13.264	75	2723	0.19	PPBV		99
88) ISOPROPYLBENZENE	14.495	105	7179	0.20	PPBV		93
89) BROMOBENZENE	14.367	77	3434	0.19	PPBV		95
90) 2-CHLOROTOLUENE	15.524	91	4173	0.17	PPBV	#	92
91) N-PROPYLBENZENE	15.862	91	6867	0.16	PPBV	#	94
92) 4-ETHYLTOLUENE	16.196	105	5072	0.14	PPBV	#	99
93) 1,3,5-TRIMETHYLBENZENE	16.350	105	4453	0.15	PPBV	#	94
94) ALPHA-METHYLSTYRENE	16.546	118	2146	0.14	PPBV		95
95) TERT-BUTYLBENZENE	16.794	119	4944	0.15	PPBV		90
96) 1,2,4-TRIMETHYLBENZENE	16.800	105	4538	0.15	PPBV		96
97) BENZYL CHLORIDE	16.884	91	2169	0.12	PPBV	#	60
98) M-DICHLOROBENZENE	16.865	146	3704	0.18	PPBV		99
99) P-DICHLOROBENZENE	16.945	146	3555	0.17	PPBV		98
100) O-DICHLOROBENZENE	17.231	146	3596	0.18	PPBV		97
101) SEC-BUTYLBENZENE	17.071	105	7168	0.16	PPBV		98
102) 1,2,3-TRIMETHYLBENZENE	17.180	105	4563	0.15	PPBV	#	94
103) P-ISOPROPYLTOLUENE	17.244	119	5909	0.15	PPBV		95
104) N-BUTYLBENZENE	17.585	91	4838	0.13	PPBV		97
105) HEXACHLOROETHANE	17.765	117	2295	0.18	PPBV	#	87
106) HEXACHLOROBUTADIENE	18.784	225	2527	0.18	PPBV		97
107) 1,2,4-TRICHLOROBENZENE	18.485	180	1765	0.11	PPBV		100
108) NAPHTHALENE	18.534	128	3313	0.08	PPBV	#	69

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

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\
Data File : 6W26450.D
Acq On : 19 Oct 2022 8:15 pm
Operator : thomash
Sample : ic1125-0.2
Misc : MS63121,V6W1125,,,,,1
ALS Vial : 1 Sample Multiplier: 1

Quant Time: Oct 20 08:22:22 2022
Quant Method : C:\msdchem\1\methods\M6W1125.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Thu Oct 20 07:44:13 2022
Response via : Initial Calibration



Manual Integration Approval Summary

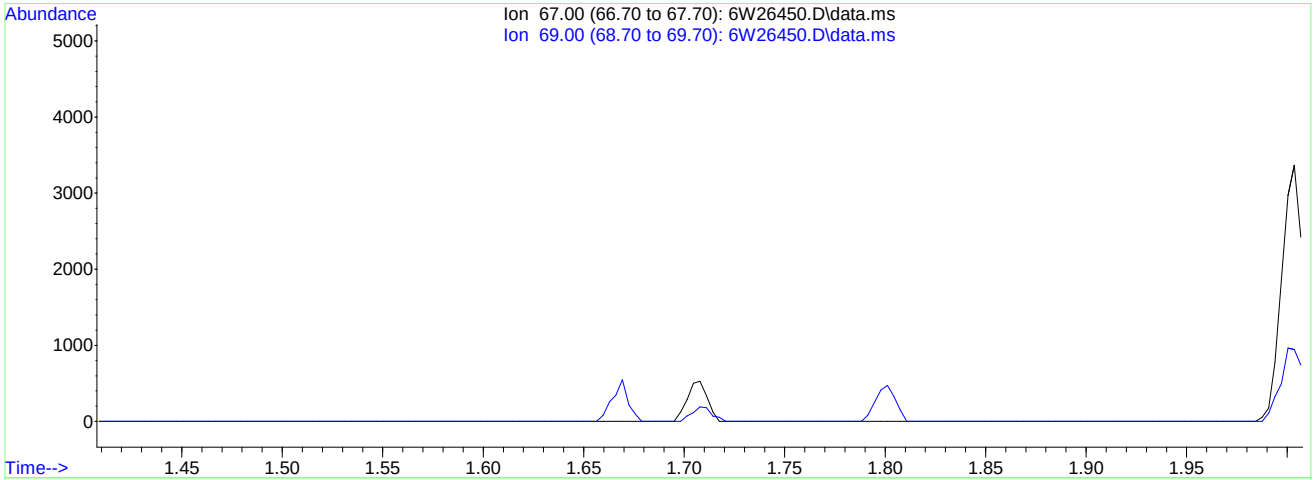
Sample Number: V6W1125-IC1125
Lab FileID: 6W26450.D
Injection Time: 10/19/22 20:15
Method: TO-15
Analyst approved: 10/20/22 10:04 Thomas Hilbig
Supervisor approved: 10/20/22 12:15 Kanya Veerawat

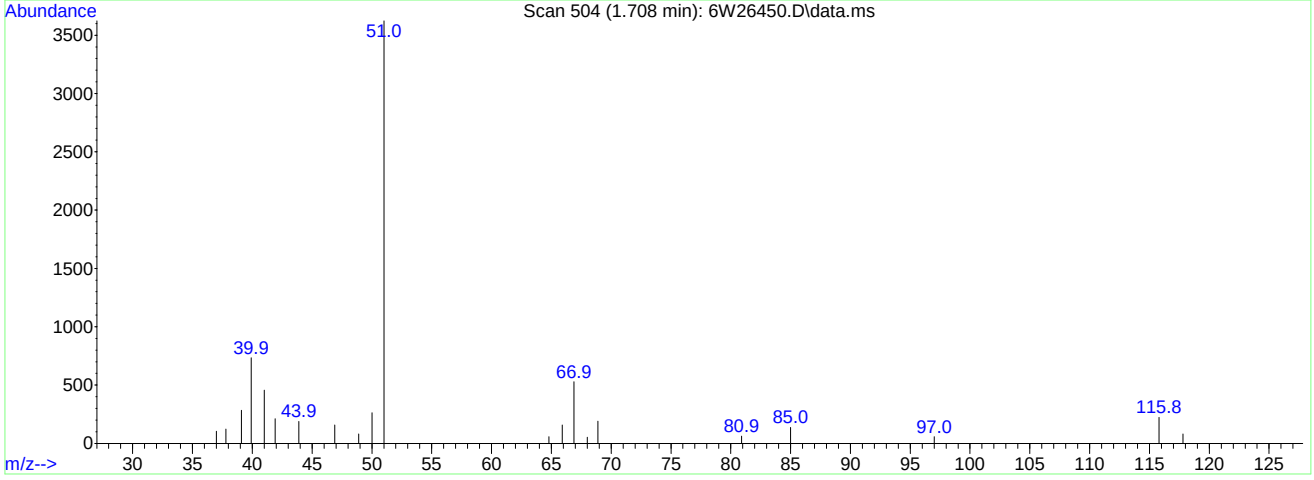
Parameter	CAS	Sig#	R.T. (min.)	Reason
Chlorodifluoromethane	75-45-6		1.71	Missed peak
Dichlorodifluoromethane	75-71-8		1.73	Overlapping peak
Chloromethane	74-87-3		1.77	Missed peak
Acrolein	107-02-8		2.10	Missed peak
Vinyl Acetate	108-05-4		2.93	Missed peak
Ethyl Acetate	141-78-6		3.42	Missed peak
1,4-Dioxane	123-91-1		5.43	Missed peak

Quantitation Report (Qedit)

Data Path : C:\msdchem\1\data\
Data File : 6W26450.D
Acq On : 19 Oct 2022 8:15 pm
Operator : thomash
Sample : ic1125-0.2
Misc : MS63121,V6W1125,,,,,1
ALS Vial : 1 Sample Multiplier: 1

Quant Time: Oct 20 08:14:54 2022
Quant Method : C:\msdchem\1\methods\M6W1125.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Thu Oct 20 07:44:13 2022
Response via : Initial Calibration





TIC: 6W26450.D\data.ms

(4) CHLORODIFLUOROMETHANE (T)

1.708min (-1.708) 0.00PPBV

response 0

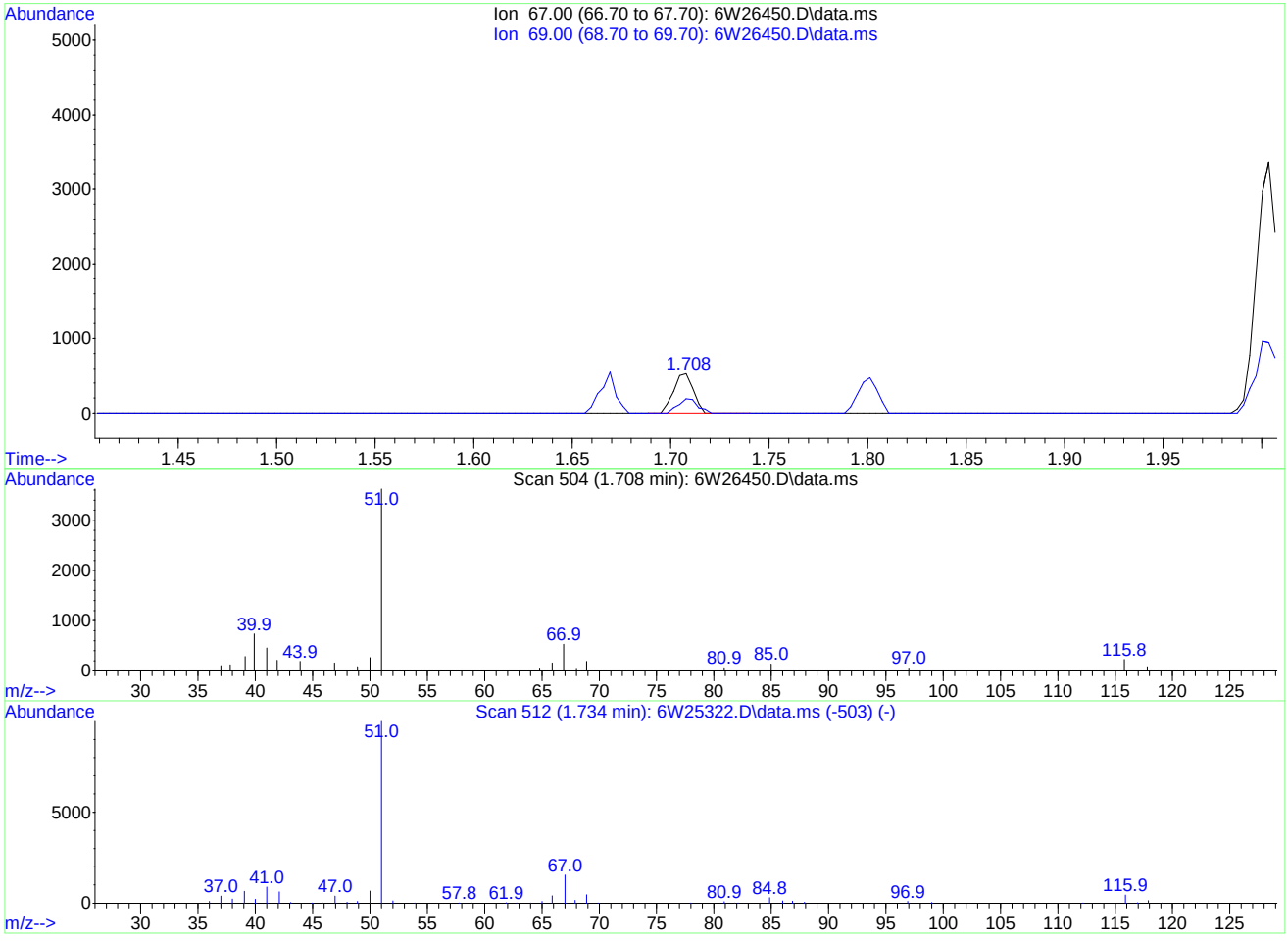
Ion	Exp%	Act%
67.00	100	0.00
69.00	36.00	0.00#
0.00	0.00	0.00
0.00	0.00	0.00

6W26450.D edits: CHLORODIFLUOROMETHANE

Quantitation Report (Qedit)

Data Path : C:\msdchem\1\data\
Data File : 6W26450.D
Acq On : 19 Oct 2022 8:15 pm
Operator : thomash
Sample : ic1125-0.2
Misc : MS63121,V6W1125,,,,,1
ALS Vial : 1 Sample Multiplier: 1

Quant Time: Oct 20 08:14:54 2022
Quant Method : C:\msdchem\1\methods\M6W1125.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Thu Oct 20 07:44:13 2022
Response via : Initial Calibration



TIC: 6W26450.D\data.ms

(4) CHLORODIFLUOROMETHANE (T)

1.708min (+0.000) 0.21PPBV m

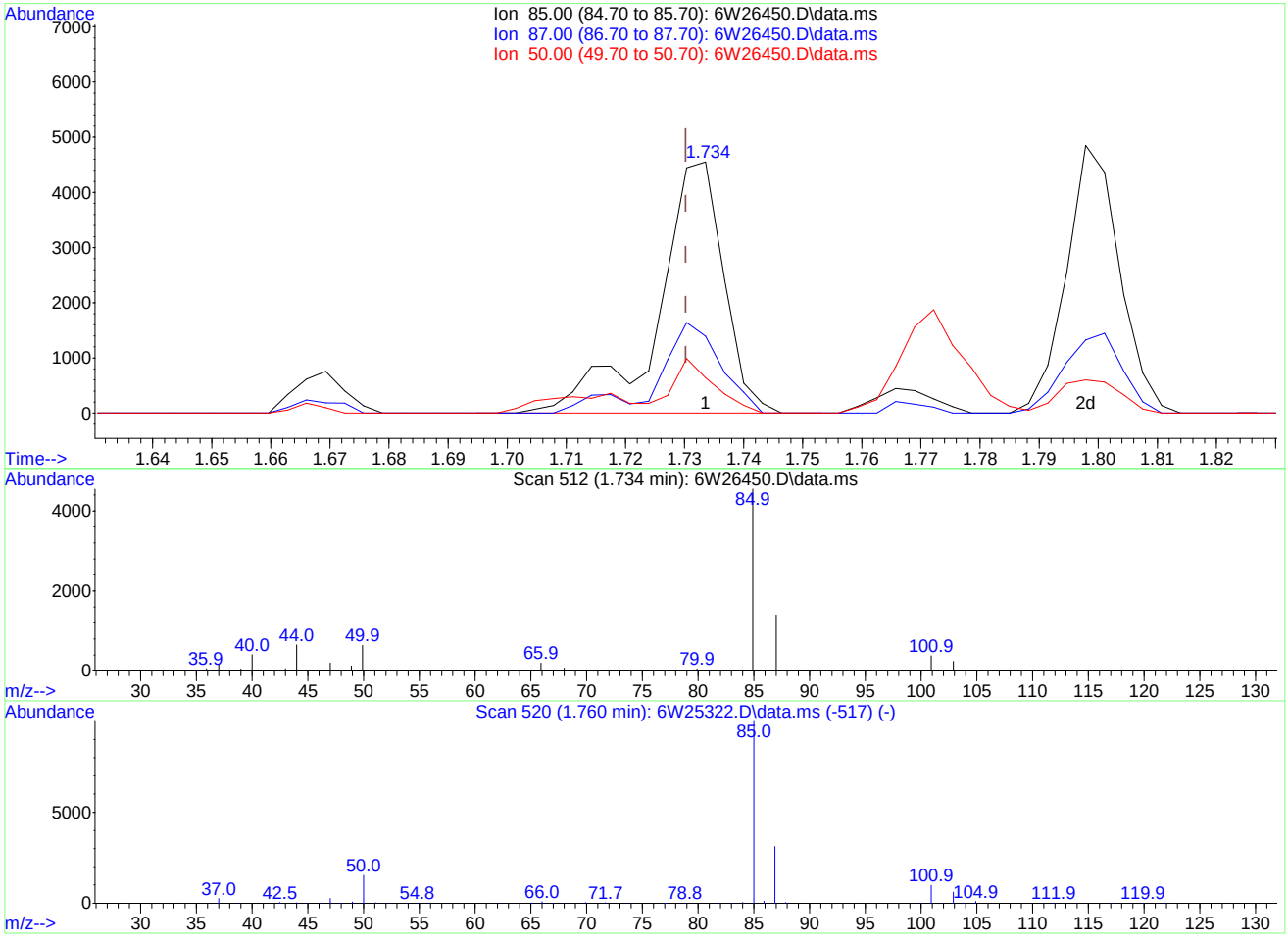
response 366

Ion	Exp%	Act%
67.00	100	100
69.00	36.00	0.00#
0.00	0.00	0.00
0.00	0.00	0.00

Quantitation Report (Qedit)

Data Path : C:\msdchem\1\data\
Data File : 6W26450.D
Acq On : 19 Oct 2022 8:15 pm
Operator : thomash
Sample : ic1125-0.2
Misc : MS63121,V6W1125,,,,,1
ALS Vial : 1 Sample Multiplier: 1

Quant Time: Oct 20 08:14:54 2022
Quant Method : C:\msdchem\1\methods\M6W1125.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Thu Oct 20 07:44:13 2022
Response via : Initial Calibration



TIC: 6W26450.D\data.ms

(6) DICHLORODIFLUOROMETHANE (T)

1.734min (+0.003) 0.25PPBV

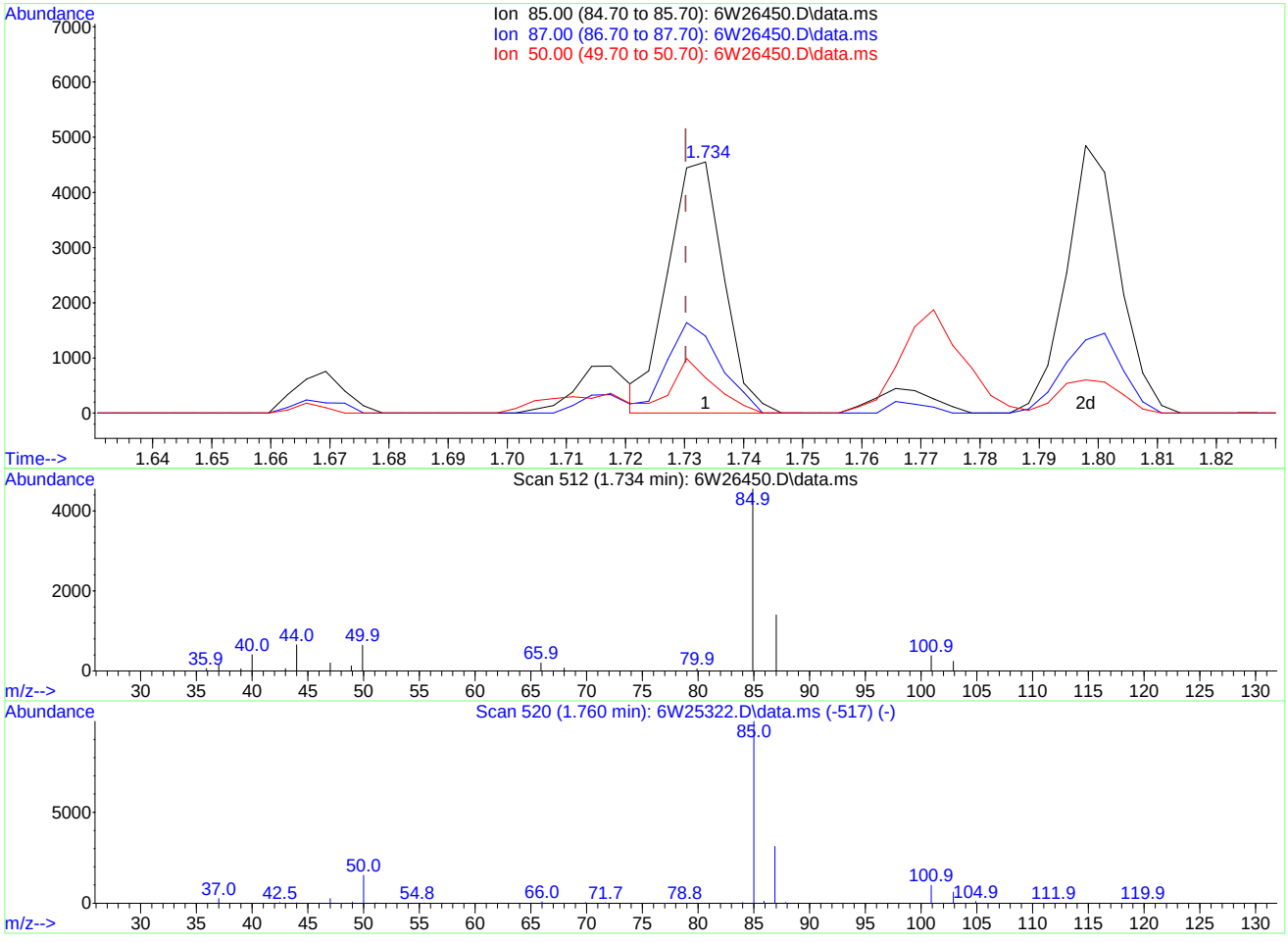
response 3525

Ion	Exp%	Act%
85.00	100	100
87.00	32.20	34.44
50.00	9.30	23.43#
0.00	0.00	0.00

Quantitation Report (Qedit)

Data Path : C:\msdchem\1\data\
Data File : 6W26450.D
Acq On : 19 Oct 2022 8:15 pm
Operator : thomash
Sample : ic1125-0.2
Misc : MS63121,V6W1125,,,,,1
ALS Vial : 1 Sample Multiplier: 1

Quant Time: Oct 20 08:14:54 2022
Quant Method : C:\msdchem\1\methods\M6W1125.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Thu Oct 20 07:44:13 2022
Response via : Initial Calibration



TIC: 6W26450.D\data.ms

(6) DICHLORODIFLUOROMETHANE (T)

1.734min (+0.003) 0.21PPBV m

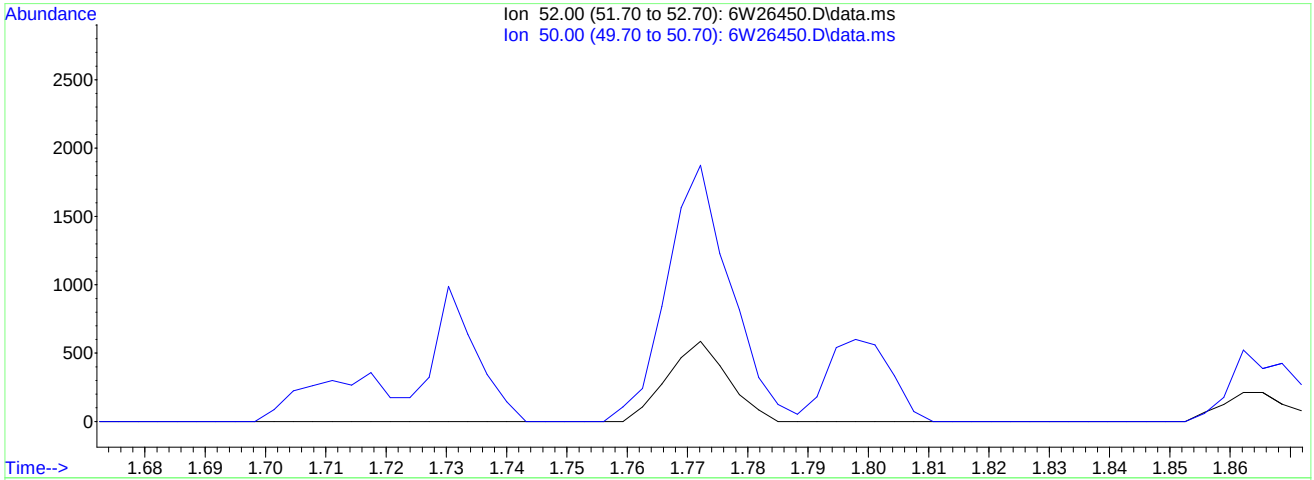
response 2981

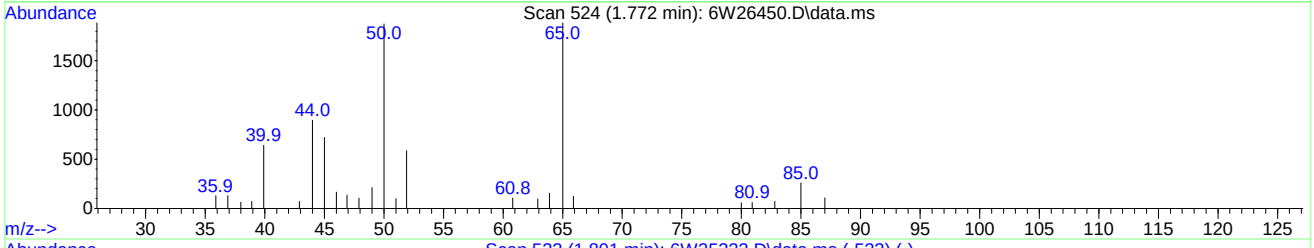
Ion	Exp%	Act%
85.00	100	100
87.00	32.20	40.72#
50.00	9.30	27.71#
0.00	0.00	0.00

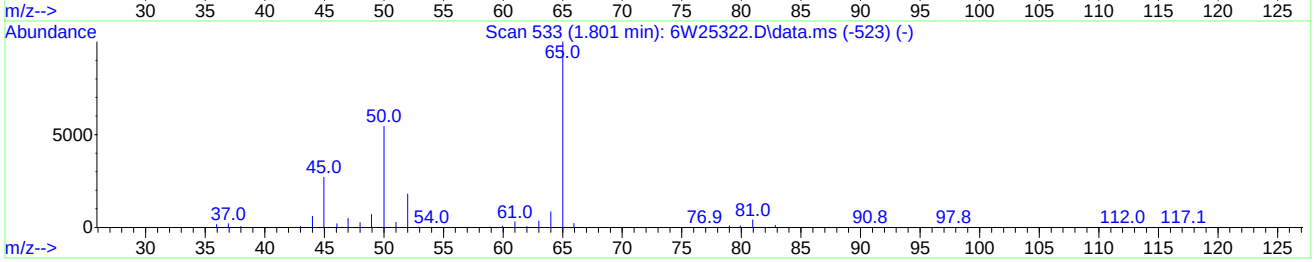
Quantitation Report (Qedit)

Data Path : C:\msdchem\1\data\
Data File : 6W26450.D
Acq On : 19 Oct 2022 8:15 pm
Operator : thomash
Sample : ic1125-0.2
Misc : MS63121,V6W1125,,,,,1
ALS Vial : 1 Sample Multiplier: 1

Quant Time: Oct 20 08:14:54 2022
Quant Method : C:\msdchem\1\methods\M6W1125.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Thu Oct 20 07:44:13 2022
Response via : Initial Calibration







TIC: 6W26450.D\data.ms

(10) CHLOROMETHANE (T)

1.772min (-1.772) 0.00PPBV

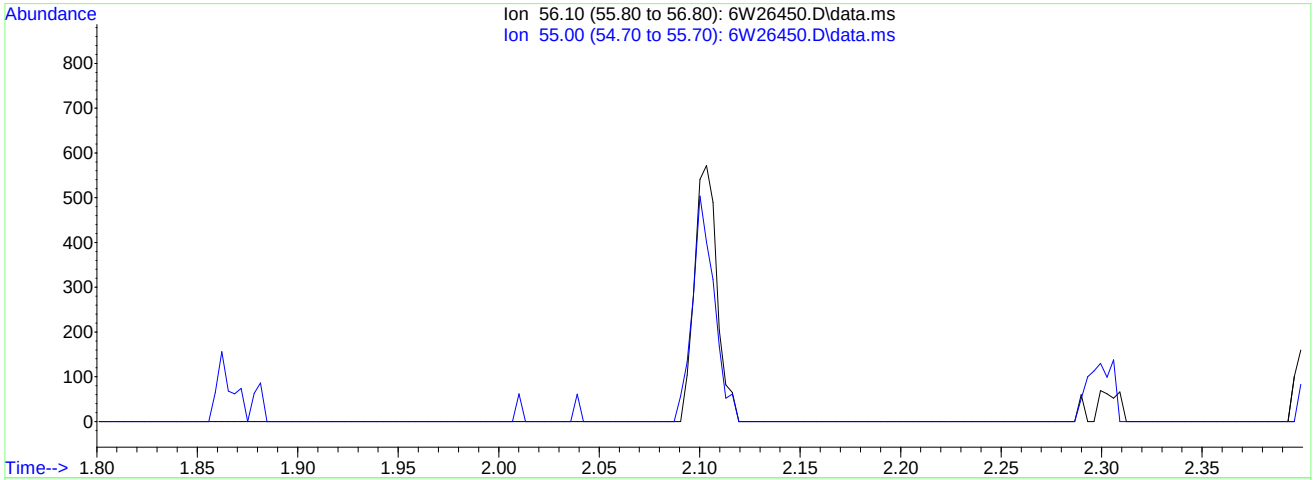
response 0

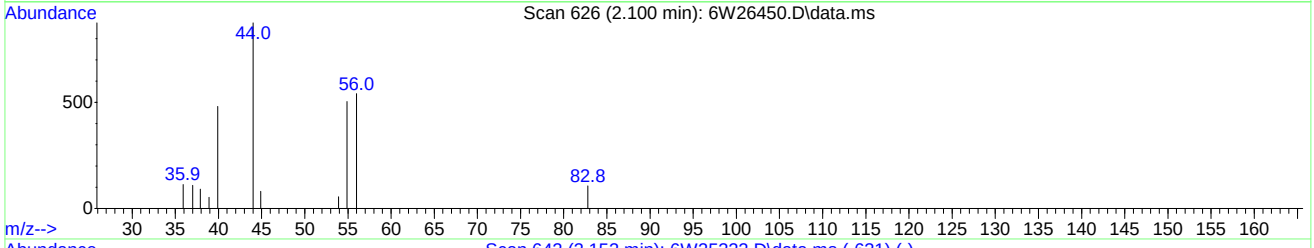
Ion	Exp%	Act%
52.00	100	0.00
50.00	310.20	0.00#
0.00	0.00	0.00
0.00	0.00	0.00

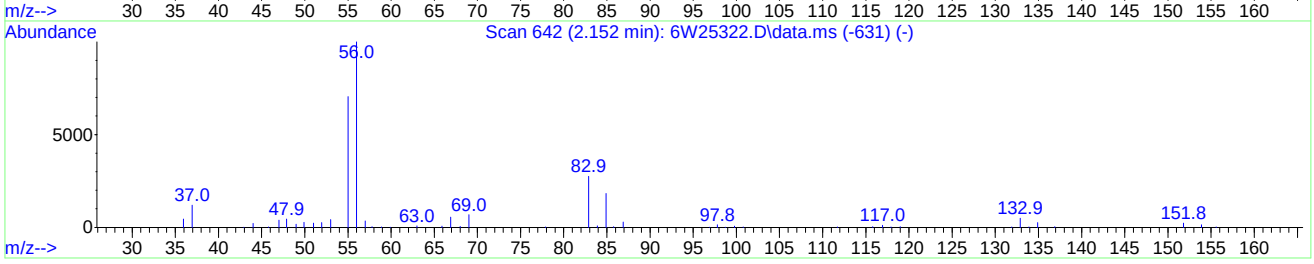
Quantitation Report (Qedit)

Data Path : C:\msdchem\1\data\
Data File : 6W26450.D
Acq On : 19 Oct 2022 8:15 pm
Operator : thomash
Sample : ic1125-0.2
Misc : MS63121,V6W1125,,,,,1
ALS Vial : 1 Sample Multiplier: 1

Quant Time: Oct 20 08:14:54 2022
Quant Method : C:\msdchem\1\methods\M6W1125.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Thu Oct 20 07:44:13 2022
Response via : Initial Calibration







TIC: 6W26450.D\data.ms

(18) ACROLEIN (T)

2.100min (-2.100) 0.00PPBV

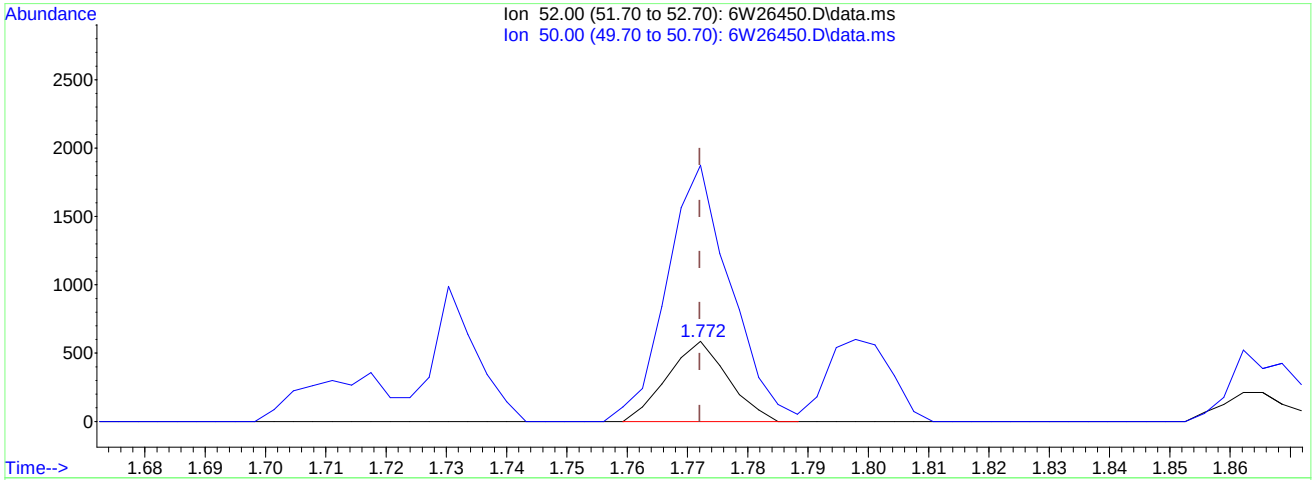
response 0

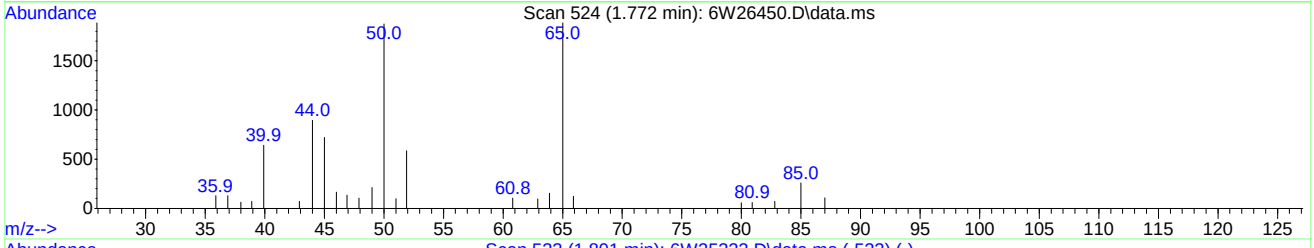
Ion	Exp%	Act%
56.10	100	0.00
55.00	70.00	0.00#
0.00	0.00	0.00
0.00	0.00	0.00

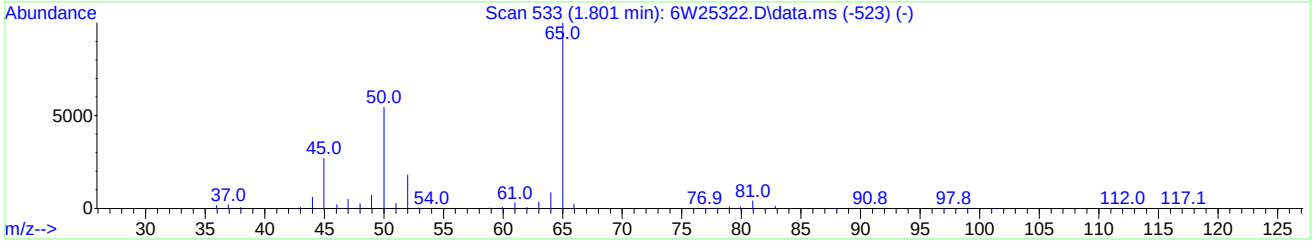
Quantitation Report (Qedit)

Data Path : C:\msdchem\1\data\
Data File : 6W26450.D
Acq On : 19 Oct 2022 8:15 pm
Operator : thomash
Sample : ic1125-0.2
Misc : MS63121,V6W1125,,,,,1
ALS Vial : 1 Sample Multiplier: 1

Quant Time: Oct 20 08:14:54 2022
Quant Method : C:\msdchem\1\methods\M6W1125.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Thu Oct 20 07:44:13 2022
Response via : Initial Calibration







TIC: 6W26450.D\data.ms

(10) CHLOROMETHANE (T)

1.772min (+0.000) 0.21PPBV m

response 410

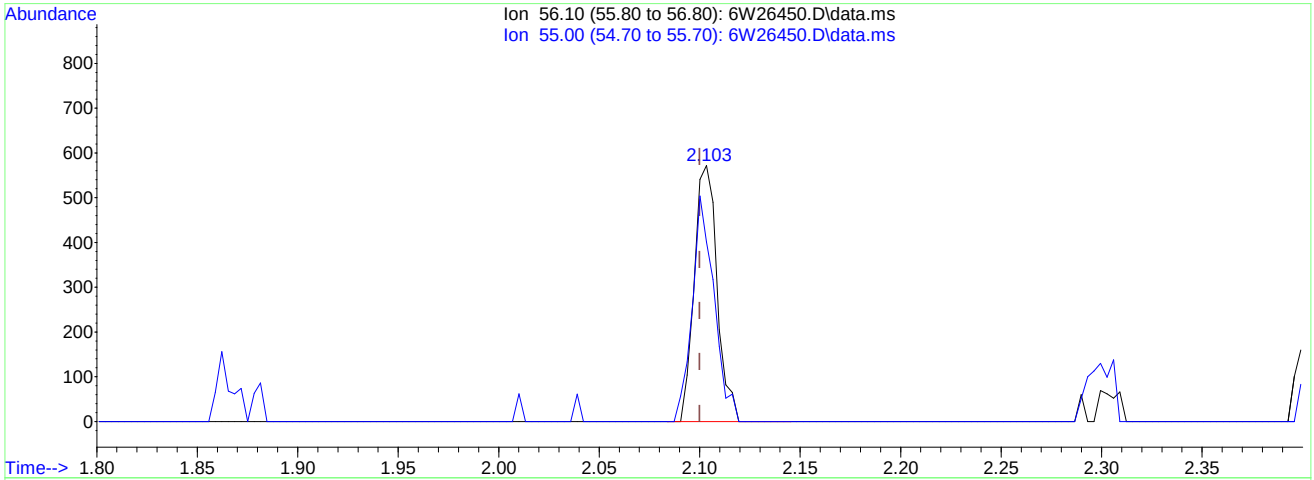
Ion	Exp%	Act%
52.00	100	100
50.00	310.20	0.00#
0.00	0.00	0.00
0.00	0.00	0.00

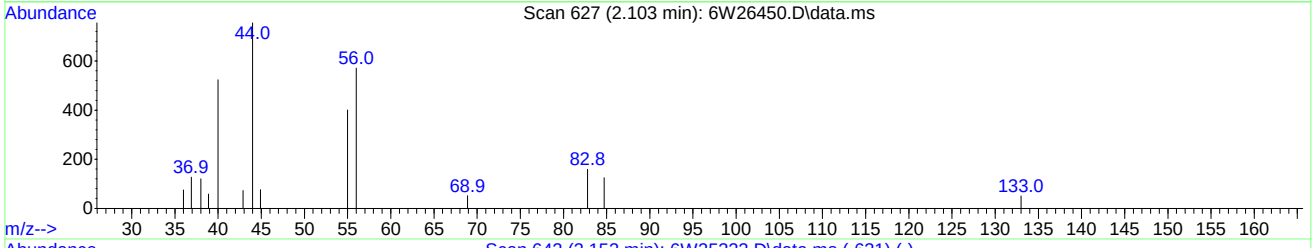
6W26450.D edits: CHLOROMETHANE

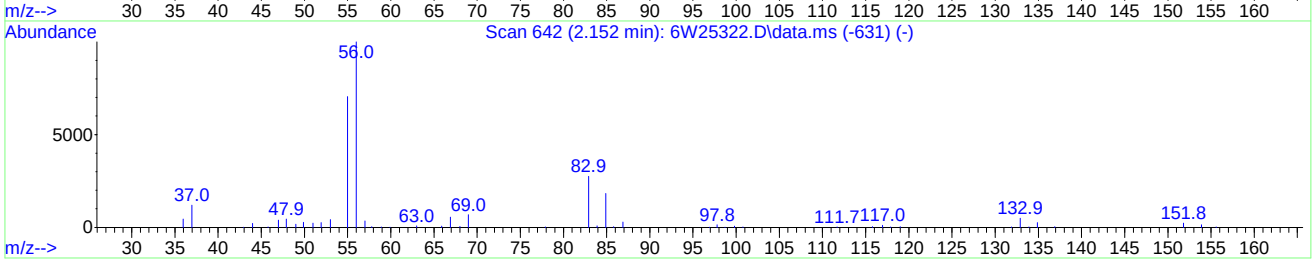
Quantitation Report (Qedit)

Data Path : C:\msdchem\1\data\
Data File : 6W26450.D
Acq On : 19 Oct 2022 8:15 pm
Operator : thomash
Sample : ic1125-0.2
Misc : MS63121,V6W1125,,,,,1
ALS Vial : 1 Sample Multiplier: 1

Quant Time: Oct 20 08:14:54 2022
Quant Method : C:\msdchem\1\methods\M6W1125.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Thu Oct 20 07:44:13 2022
Response via : Initial Calibration







TIC: 6W26450.D\data.ms

(18) ACROLEIN (T)

2.103min (+0.003) 0.16PPBV m

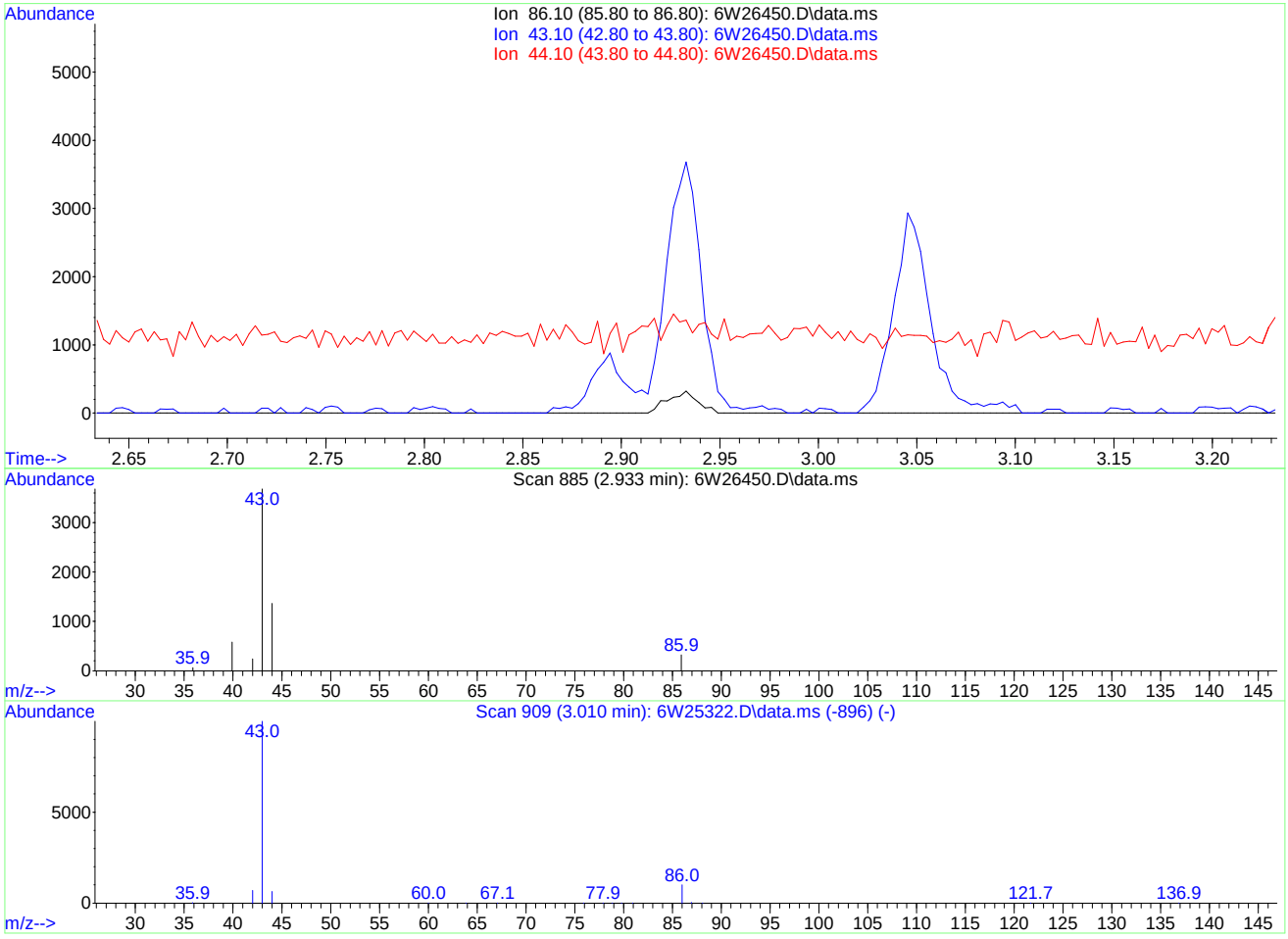
response 451

Ion	Exp%	Act%
56.10	100	100
55.00	70.00	0.00#
0.00	0.00	0.00
0.00	0.00	0.00

Quantitation Report (Qedit)

Data Path : C:\msdchem\1\data\
Data File : 6W26450.D
Acq On : 19 Oct 2022 8:15 pm
Operator : thomash
Sample : ic1125-0.2
Misc : MS63121,V6W1125,,,,,1
ALS Vial : 1 Sample Multiplier: 1

Quant Time: Oct 20 08:14:54 2022
Quant Method : C:\msdchem\1\methods\M6W1125.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Thu Oct 20 07:44:13 2022
Response via : Initial Calibration



TIC: 6W26450.D\data.ms

(39) VINYL ACETATE (T)

2.933min (-2.933) 0.00PPBV

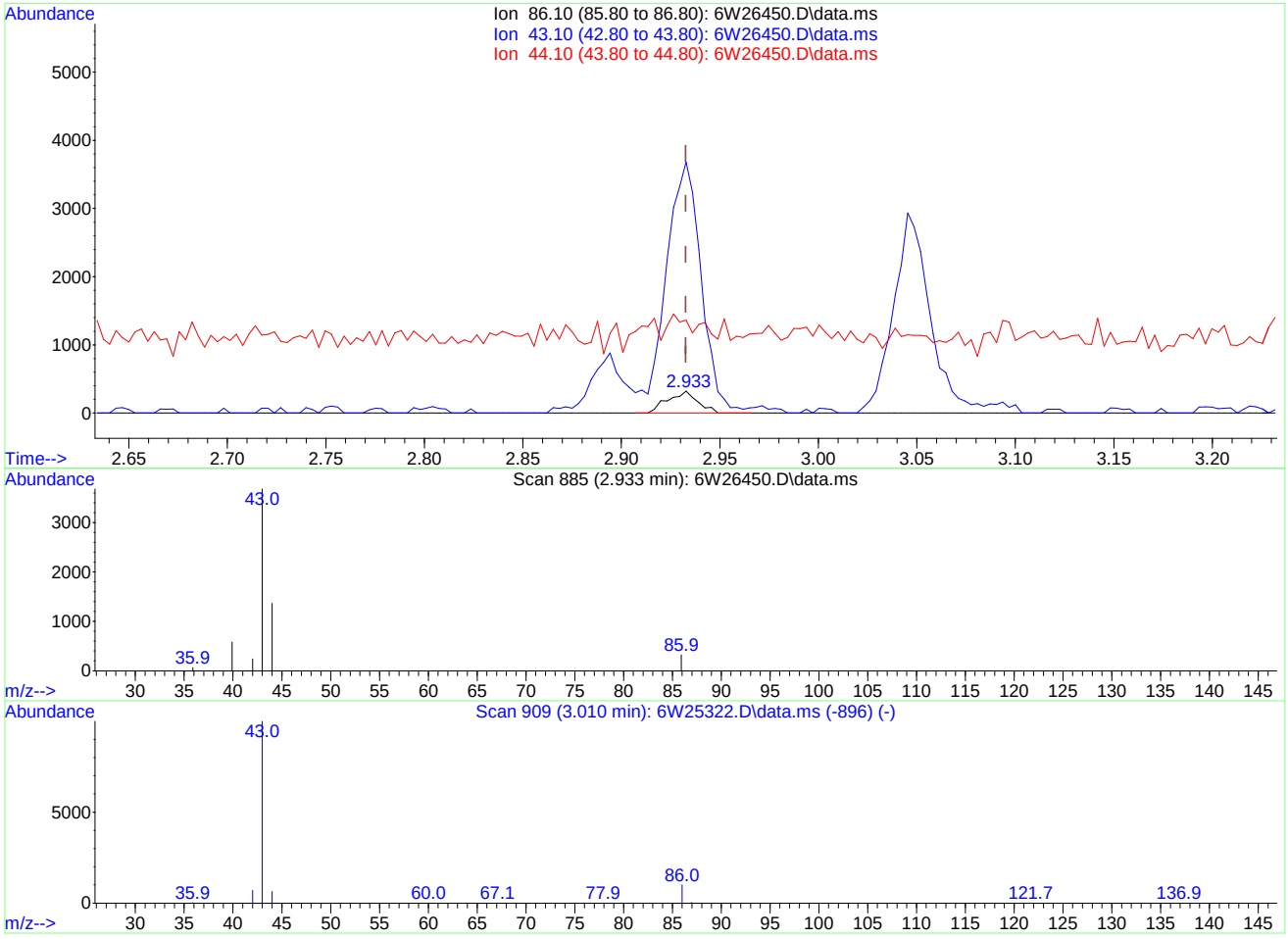
response 0

Ion	Exp%	Act%
86.10	100	0.00
43.10	782.90	0.00#
44.10	43.10	0.00#
0.00	0.00	0.00

Quantitation Report (Qedit)

Data Path : C:\msdchem\1\data\
Data File : 6W26450.D
Acq On : 19 Oct 2022 8:15 pm
Operator : thomash
Sample : ic1125-0.2
Misc : MS63121,V6W1125,,,,,1
ALS Vial : 1 Sample Multiplier: 1

Quant Time: Oct 20 08:14:54 2022
Quant Method : C:\msdchem\1\methods\M6W1125.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Thu Oct 20 07:44:13 2022
Response via : Initial Calibration



TIC: 6W26450.D\data.ms

(39) VINYL ACETATE (T)

2.933min (+0.000) 0.23PPBV m

response 339

Ion	Exp%	Act%
86.10	100	100
43.10	782.90	0.00#
44.10	43.10	0.00#
0.00	0.00	0.00

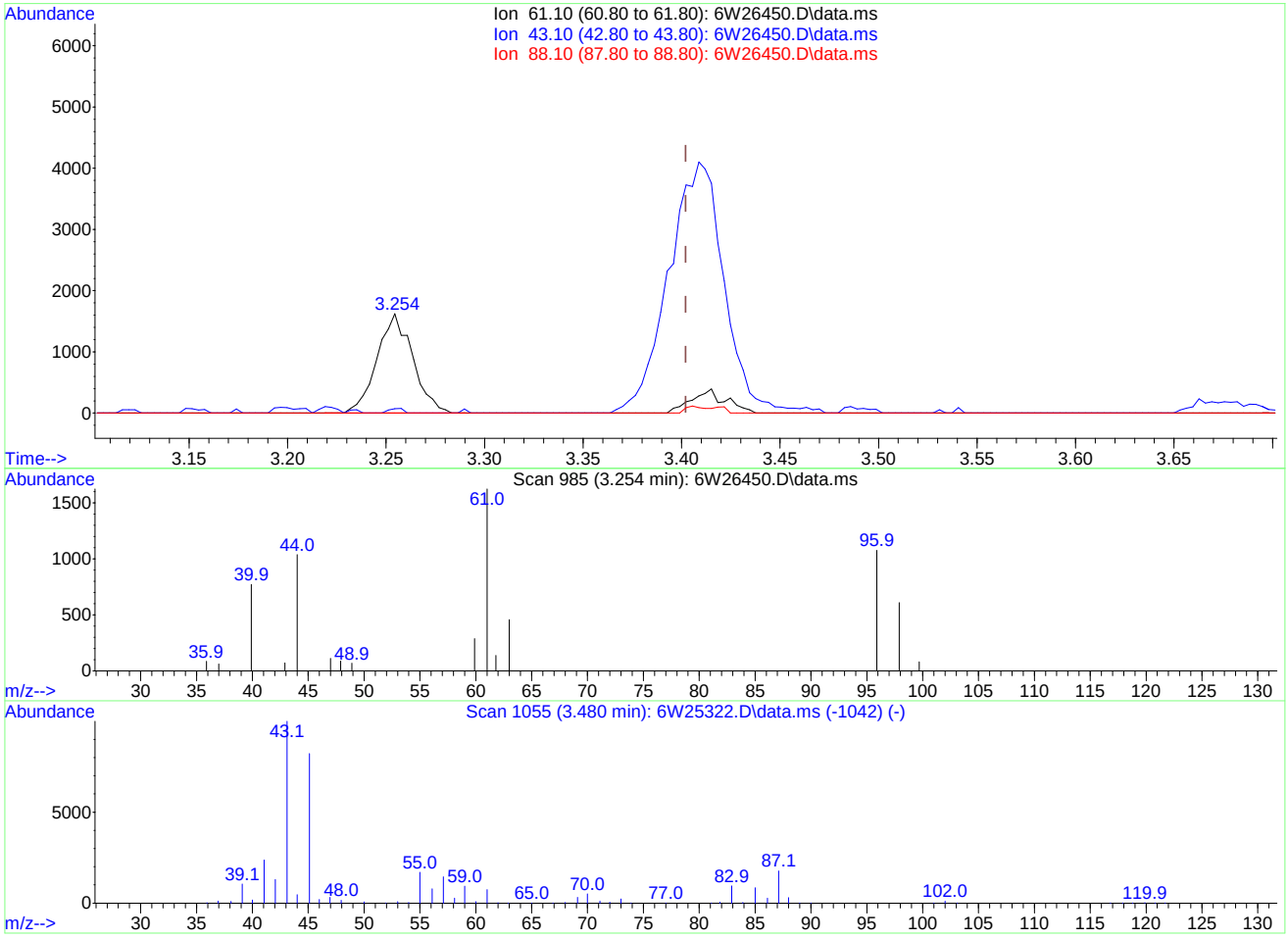
6W26450.D edits: VINYL ACETATE

JD59460

Quantitation Report (Qedit)

Data Path : C:\msdchem\1\data\
Data File : 6W26450.D
Acq On : 19 Oct 2022 8:15 pm
Operator : thomash
Sample : ic1125-0.2
Misc : MS63121,V6W1125,,,,,1
ALS Vial : 1 Sample Multiplier: 1

Quant Time: Oct 20 08:14:54 2022
Quant Method : C:\msdchem\1\methods\M6W1125.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Thu Oct 20 07:44:13 2022
Response via : Initial Calibration



TIC: 6W26450.D\data.ms

(44) ETHYL ACETATE (T)

3.254min (-0.148) 0.87PPBV

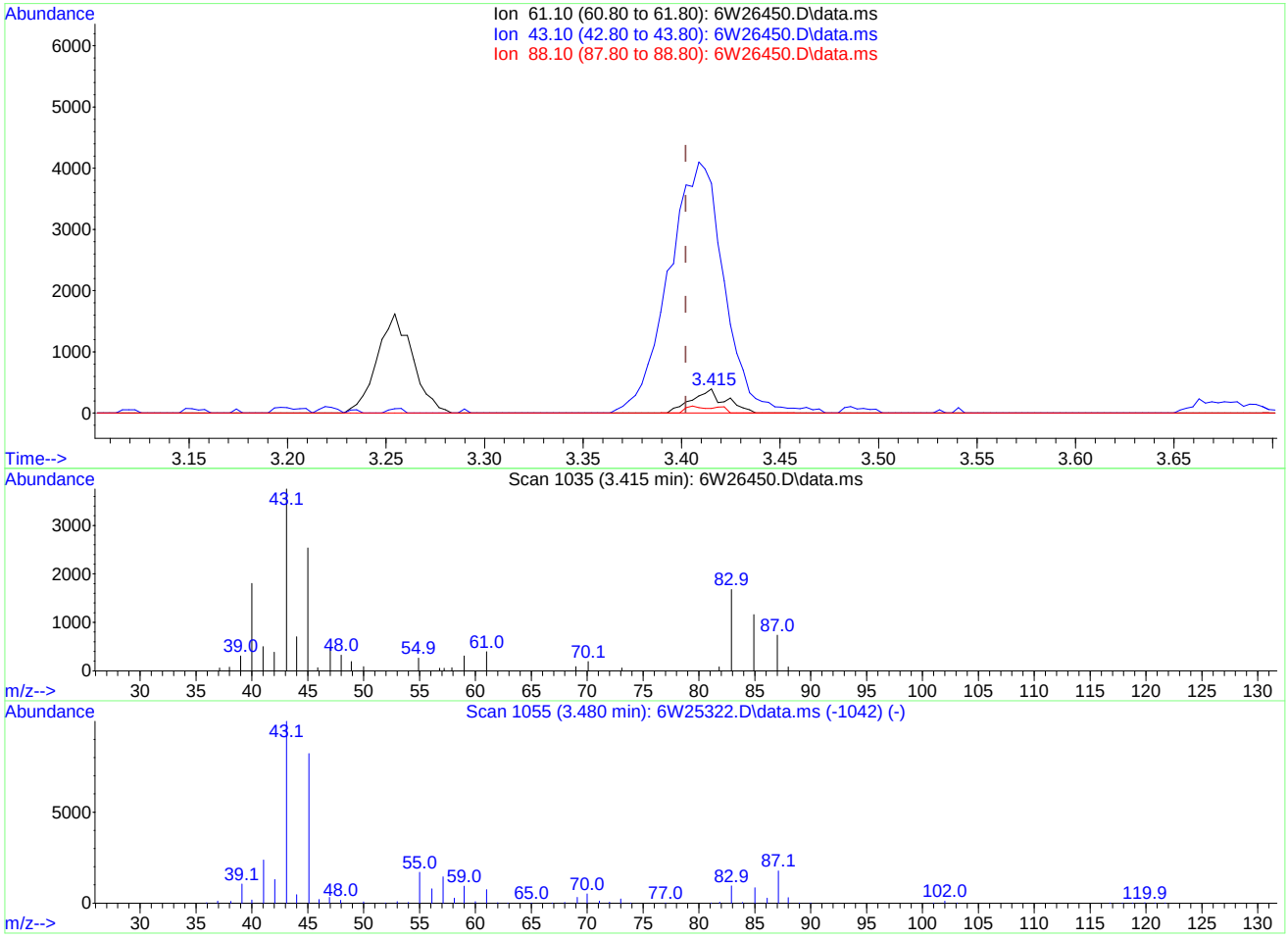
response 2040

Ion	Exp%	Act%
61.10	100	100
43.10	1232.70	0.00#
88.10	48.50	0.00#
0.00	0.00	0.00

Quantitation Report (Qedit)

Data Path : C:\msdchem\1\data\
Data File : 6W26450.D
Acq On : 19 Oct 2022 8:15 pm
Operator : thomash
Sample : ic1125-0.2
Misc : MS63121,V6W1125,,,,,1
ALS Vial : 1 Sample Multiplier: 1

Quant Time: Oct 20 08:14:54 2022
Quant Method : C:\msdchem\1\methods\M6W1125.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Thu Oct 20 07:44:13 2022
Response via : Initial Calibration



TIC: 6W26450.D\data.ms

(44) ETHYL ACETATE (T)

3.415min (+0.013) 0.20PPBV m

response 474

Ion	Exp%	Act%
61.10	100	100
43.10	1232.70	0.00#
88.10	48.50	0.00#
0.00	0.00	0.00

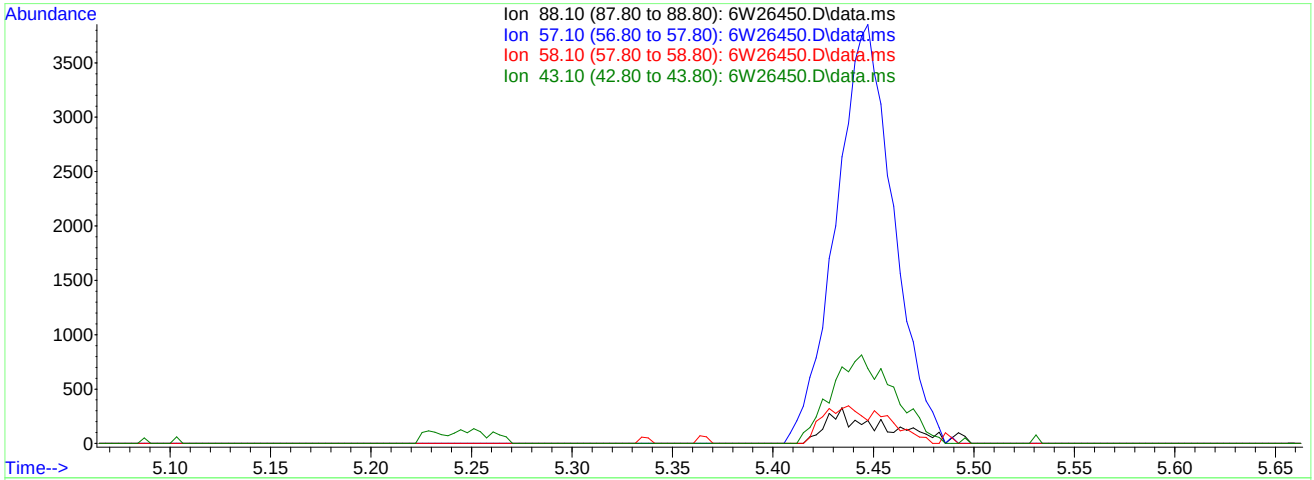
6W26450.D edits: ETHYL ACETATE

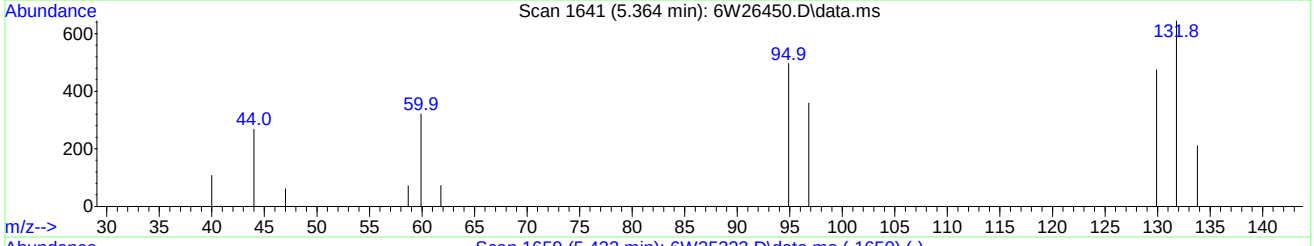
JD59460

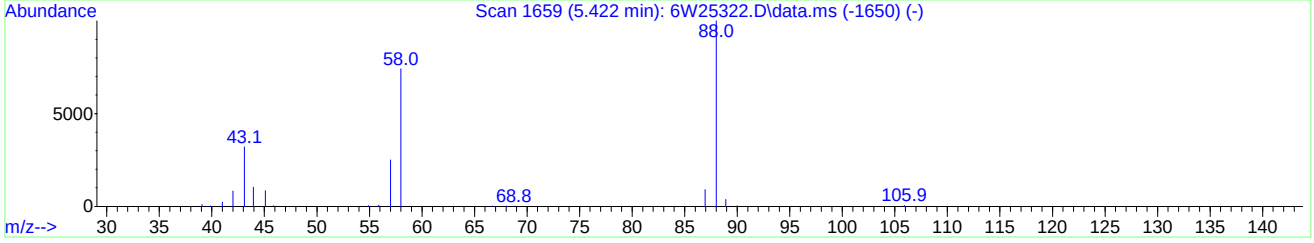
Quantitation Report (Qedit)

Data Path : C:\msdchem\1\data\
Data File : 6W26450.D
Acq On : 19 Oct 2022 8:15 pm
Operator : thomash
Sample : ic1125-0.2
Misc : MS63121,V6W1125,,,,,1
ALS Vial : 1 Sample Multiplier: 1

Quant Time: Oct 20 08:14:54 2022
Quant Method : C:\msdchem\1\methods\M6W1125.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Thu Oct 20 07:44:13 2022
Response via : Initial Calibration







TIC: 6W26450.D\data.ms

(61) 1,4-DIOXANE (T)

5.364min (-5.364) 0.00PPBV

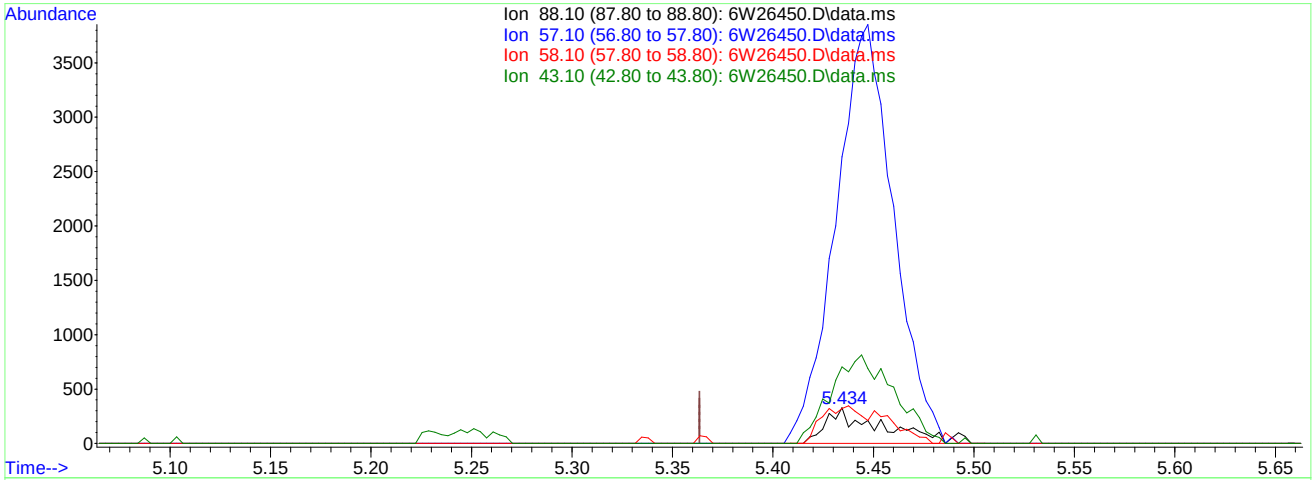
response 0

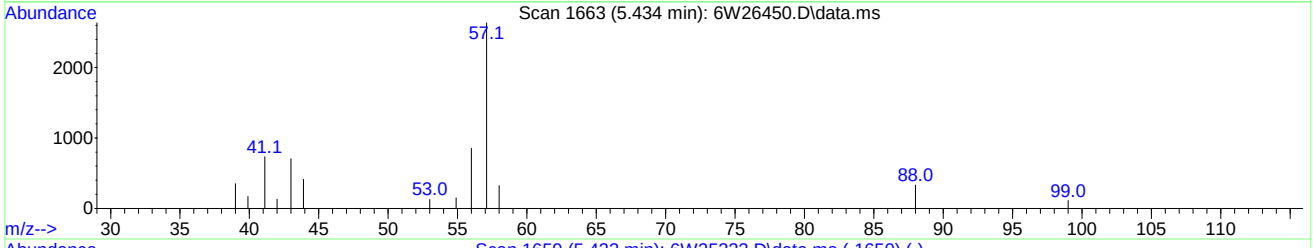
Ion	Exp%	Act%
88.10	100	0.00
57.10	18.70	0.00#
58.10	62.60	0.00#
43.10	19.20	0.00#

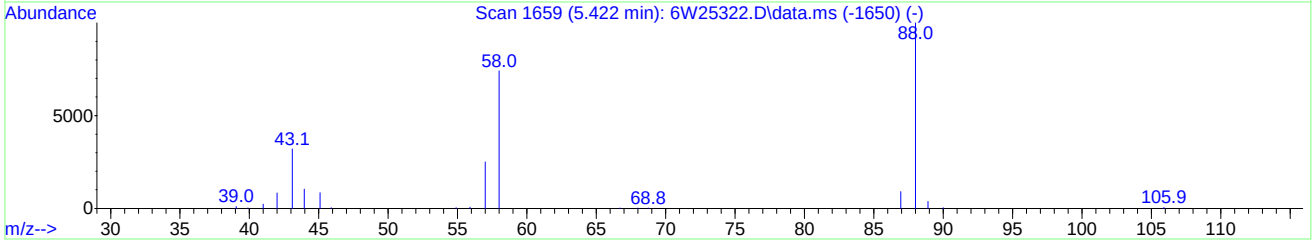
Quantitation Report (Qedit)

Data Path : C:\msdchem\1\data\
Data File : 6W26450.D
Acq On : 19 Oct 2022 8:15 pm
Operator : thomash
Sample : ic1125-0.2
Misc : MS63121,V6W1125,,,,,1
ALS Vial : 1 Sample Multiplier: 1

Quant Time: Oct 20 08:14:54 2022
Quant Method : C:\msdchem\1\methods\M6W1125.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Thu Oct 20 07:44:13 2022
Response via : Initial Calibration







TIC: 6W26450.D\data.ms

(61) 1,4-DIOXANE (T)

5.434min (+0.071) 0.16PPBV m

response 650

Ion	Exp%	Act%
88.10	100	100
57.10	18.70	0.00#
58.10	62.60	0.00#
43.10	19.20	0.00#

6W26450.D edits: 1,4-DIOXANE

Manual Integrations APPROVED (compounds with "m" flag)
Kanya Veerawat 10/20/22 12:15

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\
Data File : 6W26451.D
Acq On : 19 Oct 2022 8:47 pm
Operator : thomash
Sample : ic1125-0.5
Misc : MS63121,V6W1125,,,,,1
ALS Vial : 1 Sample Multiplier: 1

Quant Time: Oct 20 08:25:54 2022
Quant Method : C:\msdchem\1\methods\M6W1125.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Thu Oct 20 07:44:13 2022
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units		Dev(Min)
Internal Standards							
1) BROMOCHLOROMETHANE	3.338	128	43611	10.00	PPBV	#	0.00
52) 1,4-DIFLUOROBENZENE	4.733	114	212847	10.00	PPBV		0.00
76) CHLOROBENZENE-D5	10.588	117	201898	10.00	PPBV		0.00
System Monitoring Compounds							
87) 4-BROMOFLUOROBENZENE	14.022	95	138007	9.66	PPBV		0.00
Target Compounds							Qvalue
3) FREON 152A	1.695	65	2036	0.58	PPBV	#	76
4) CHLORODIFLUOROMETHANE	1.708	67	916	0.57	PPBV	#	39
5) CHLOROTRIFLUOROETHENE	1.714	116	4273	0.56	PPBV	#	98
6) DICHLORODIFLUOROMETHANE	1.730	85	7321m	0.55	PPBV		
7) PROPYLENE	1.714	41	3257	0.61	PPBV		92
8) 1-CHLORO-1,1-DIFLUOROE...	1.766	65	6430	0.55	PPBV	#	78
9) FREON 114	1.798	85	7336	0.56	PPBV		94
10) CHLOROMETHANE	1.769	52	1073	0.60	PPBV		98
11) VINYL CHLORIDE	1.830	62	3210	0.58	PPBV	#	91
12) 1,3-BUTADIENE	1.862	54	2567	0.57	PPBV	#	68
13) N-BUTANE	1.878	43	5494	0.59	PPBV	#	87
14) BROMOMETHANE	1.933	94	2394	0.56	PPBV	#	93
15) CHLOROETHANE	1.978	64	1513	0.56	PPBV	#	62
16) DICHLOROFLUOROMETHANE	2.004	67	6298	0.56	PPBV	#	94
17) ACETONITRILE	2.068	41	3448	0.61	PPBV	#	87
18) ACROLEIN	2.100	56	1132	0.42	PPBV		95
19) FREON 123	2.116	83	6000	0.57	PPBV		96
20) FREON 123A	2.129	117	3693	0.57	PPBV		88
21) TRICHLOROFLUOROMETHANE	2.190	101	7363	0.57	PPBV		99
22) ISOPROPYL ALCOHOL	2.209	45	7092	0.58	PPBV	#	89
23) ACETONE	2.142	58	2039	0.74	PPBV	#	45
24) PENTANE	2.299	42	4085	0.61	PPBV	#	93
25) IODOMETHANE	2.354	142	7193	0.57	PPBV	#	83
26) 1,1-DICHLOROETHYLENE	2.383	96	2843	0.54	PPBV	#	55
27) CARBON DISULFIDE	2.521	76	8911	0.54	PPBV	#	78
28) ETHANOL	2.010	45	2191	0.80	PPBV	#	95
29) BROMOETHENE	2.071	106	2565	0.57	PPBV	#	97
30) ACRYLONITRILE	2.270	52	2722	0.62	PPBV		90
31) METHYLENE CHLORIDE	2.422	84	3163	0.63	PPBV	#	35
32) 3-CHLOROPROPENE	2.463	76	1418	0.54	PPBV	#	1
33) FREON 113	2.521	151	5014	0.53	PPBV		90
34) TRANS-1,2-DICHLOROETHENE	2.769	96	3094	0.53	PPBV	#	74
35) TERTIARY BUTYL ALCOHOL	2.402	59	6106	0.57	PPBV	#	88
36) METHYL TERTIARY BUTYL ...	2.891	73	7692	0.53	PPBV	#	84
37) TETRAHYDROFURAN	3.659	72	1425	0.54	PPBV	#	15
38) HEXANE	3.389	57	6333	0.57	PPBV	#	74
39) VINYL ACETATE	2.933	86	545	0.40	PPBV	#	1
40) 1,1-DICHLOROETHANE	2.852	63	6085	0.55	PPBV		97
41) METHYL ETHYL KETONE	3.045	72	1427	0.51	PPBV	#	1
42) CIS-1,2-DICHLOROETHENE	3.254	96	3326	0.55	PPBV	#	82
43) DIISOPROPYL ETHER	3.402	59	1703	0.53	PPBV	#	33
44) ETHYL ACETATE	3.412	61	1201	0.55	PPBV	#	1
45) METHYL ACRYLATE	3.393	55	7982	0.57	PPBV	#	98
46) CHLOROFORM	3.418	83	6839	0.55	PPBV	#	92
47) 2,4-DIMETHYLPENTANE	3.955	57	6927	0.53	PPBV	#	91
48) 1,1,1-TRICHLOROETHANE	4.042	97	6432	0.53	PPBV	#	90
49) CARBON TETRACHLORIDE	4.495	117	6798	0.50	PPBV		98
50) 1,2-DICHLOROETHANE	3.862	62	5168	0.55	PPBV	#	91
51) BENZENE	4.376	78	9500	0.53	PPBV		72
53) CYCLOHEXANE	4.601	84	4074	0.53	PPBV	#	70
54) 2,3-DIMETHYLPENTANE	4.868	71	2195	0.54	PPBV	#	42
55) TRICHLOROETHENE	5.344	95	4586	0.56	PPBV		98
56) 1,2-DICHLOROPROPANE	5.100	63	4155	0.55	PPBV		97
57) DIBROMOMETHANE	5.055	174	3857	0.51	PPBV	#	84

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\
Data File : 6W26451.D
Acq On : 19 Oct 2022 8:47 pm
Operator : thomash
Sample : ic1125-0.5
Misc : MS63121,V6W1125,,,,,1
ALS Vial : 1 Sample Multiplier: 1

Quant Time: Oct 20 08:25:54 2022
Quant Method : C:\msdchem\1\methods\M6W1125.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Thu Oct 20 07:44:13 2022
Response via : Initial Calibration

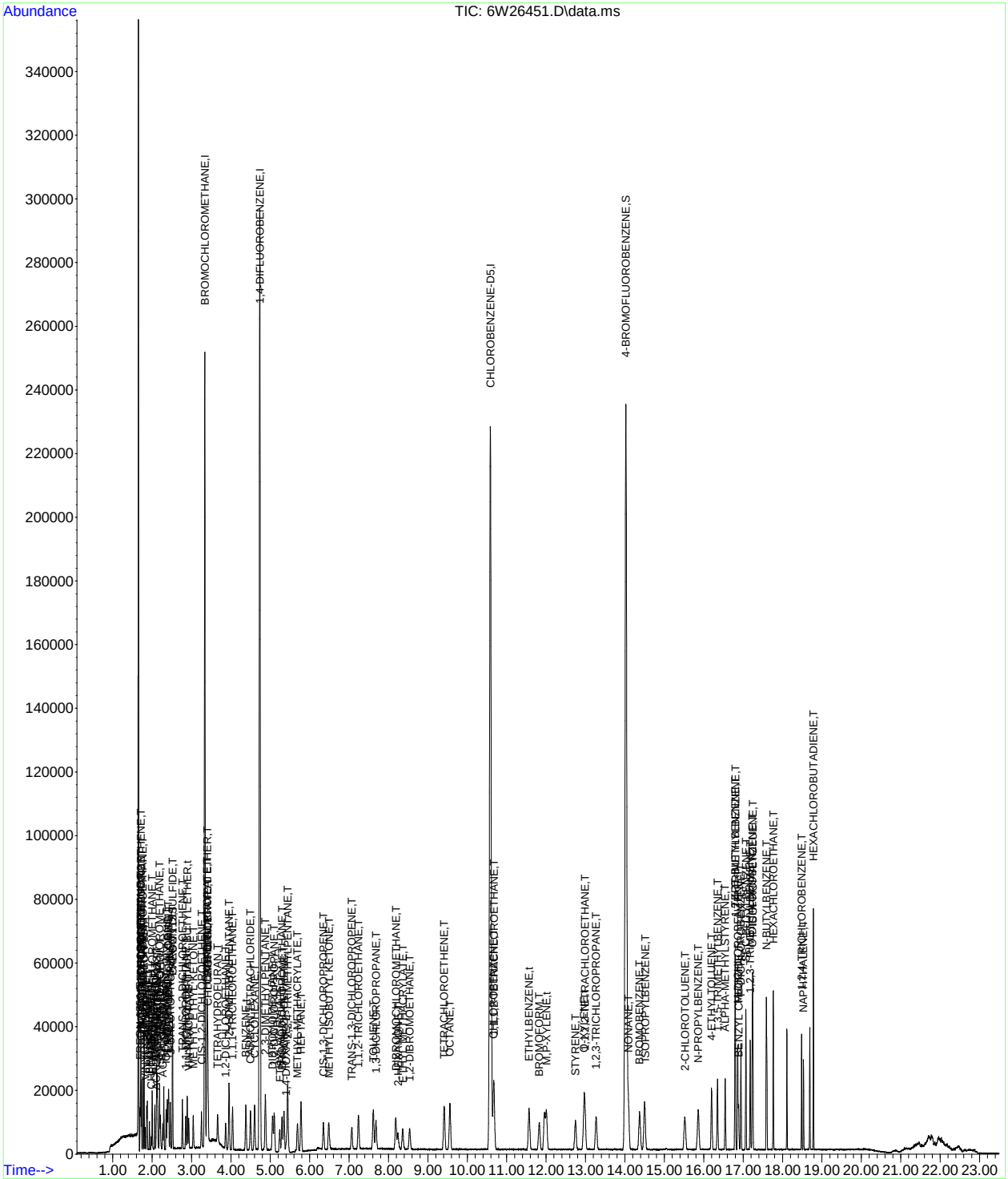
Compound	R.T.	QIon	Response	Conc	Units		Dev(Min)
58) ETHYL ACRYLATE	5.241	55	8223	0.51	PPBV	#	90
59) BROMODICHLOROMETHANE	5.296	83	7543	0.55	PPBV		100
60) 2,2,4-TRIMETHYLPENTANE	5.441	57	18927	0.54	PPBV	#	98
61) 1,4-DIOXANE	5.402	88	1827	0.50	PPBV	#	69
62) HEPTANE	5.778	43	7366	0.54	PPBV	#	74
63) METHYL METHACRYLATE	5.685	69	3392	0.50	PPBV	#	46
64) METHYL ISOBUTYL KETONE	6.489	58	2555	0.42	PPBV	#	44
65) CIS-1,3-DICHLOROPROPENE	6.347	75	5324	0.53	PPBV	#	69
66) TOLUENE	7.614	91	11850	0.55	PPBV		99
67) 1,3-DICHLOROPROPANE	7.685	76	5895	0.54	PPBV	#	97
68) TRANS-1,3-DICHLOROPROPENE	7.064	75	4397	0.49	PPBV	#	70
69) 1,1,2-TRICHLOROETHANE	7.238	83	3813	0.58	PPBV		93
70) 2-HEXANONE	8.241	58	2442	0.35	PPBV	#	39
71) ETHYL METHACRYLATE	8.363	69	4486	0.42	PPBV	#	65
72) TETRACHLOROETHENE	9.412	164	4552	0.55	PPBV		92
73) DIBROMOCHLOROMETHANE	8.187	129	7719	0.53	PPBV		100
74) 1,2-DIBROMOETHANE	8.537	107	6461	0.54	PPBV	#	99
75) OCTANE	9.553	43	9456	0.50	PPBV	#	71
77) 1,1,1,2-TETRACHLOROETHANE	10.675	131	5101	0.47	PPBV		96
78) CHLOROBENZENE	10.662	112	9881	0.50	PPBV		98
79) ETHYLBENZENE	11.563	91	14798	0.47	PPBV		99
80) M,P-XYLENE	12.010	91	22467m	0.93	PPBV		
81) O-XYLENE	12.961	91	11051	0.45	PPBV	#	91
82) STYRENE	12.736	104	7540	0.40	PPBV		97
83) NONANE	14.090	43	11183	0.51	PPBV	#	71
84) BROMOFORM	11.823	173	6708	0.47	PPBV	#	90
85) 1,1,2,2-TETRACHLOROETHANE	12.984	83	9811	0.53	PPBV		98
86) 1,2,3-TRICHLOROPROPANE	13.267	75	7550	0.53	PPBV		97
88) ISOPROPYLBENZENE	14.511	105	16923	0.47	PPBV		94
89) BROMOBENZENE	14.373	77	8531	0.49	PPBV		97
90) 2-CHLOROTOLUENE	15.524	91	10727	0.43	PPBV		98
91) N-PROPYLBENZENE	15.858	91	17614	0.41	PPBV	#	96
92) 4-ETHYLTOLUENE	16.196	105	13852	0.38	PPBV	#	99
93) 1,3,5-TRIMETHYLBENZENE	16.350	105	11943	0.40	PPBV		97
94) ALPHA-METHYLSTYRENE	16.543	118	5514	0.37	PPBV		99
95) TERT-BUTYLBENZENE	16.797	119	13389	0.40	PPBV		94
96) 1,2,4-TRIMETHYLBENZENE	16.800	105	12326	0.40	PPBV		97
97) BENZYL CHLORIDE	16.887	91	6681	0.38	PPBV		96
98) M-DICHLOROBENZENE	16.865	146	9596	0.47	PPBV		97
99) P-DICHLOROBENZENE	16.942	146	9486	0.47	PPBV		98
100) O-DICHLOROBENZENE	17.234	146	9520	0.49	PPBV		98
101) SEC-BUTYLBENZENE	17.070	105	19173	0.42	PPBV		97
102) 1,2,3-TRIMETHYLBENZENE	17.180	105	12666	0.42	PPBV	#	96
103) P-ISOPROPYLTOLUENE	17.244	119	16473	0.41	PPBV		95
104) N-BUTYLBENZENE	17.588	91	13519	0.37	PPBV		98
105) HEXACHLOROETHANE	17.765	117	5837	0.46	PPBV	#	87
106) HEXACHLOROBUTADIENE	18.784	225	6322	0.46	PPBV		100
107) 1,2,4-TRICHLOROBENZENE	18.485	180	5667	0.36	PPBV		99
108) NAPHTHALENE	18.530	128	12011	0.30	PPBV		99

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

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\
Data File : 6W26451.D
Acq On : 19 Oct 2022 8:47 pm
Operator : thomash
Sample : ic1125-0.5
Misc : MS63121,V6W1125,,,,,1
ALS Vial : 1 Sample Multiplier: 1

Quant Time: Oct 20 08:25:54 2022
Quant Method : C:\msdchem\1\methods\M6W1125.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Thu Oct 20 07:44:13 2022
Response via : Initial Calibration



Manual Integration Approval Summary

Sample Number: V6W1125-IC1125
Lab FileID: 6W26451.D
Injection Time: 10/19/22 20:47

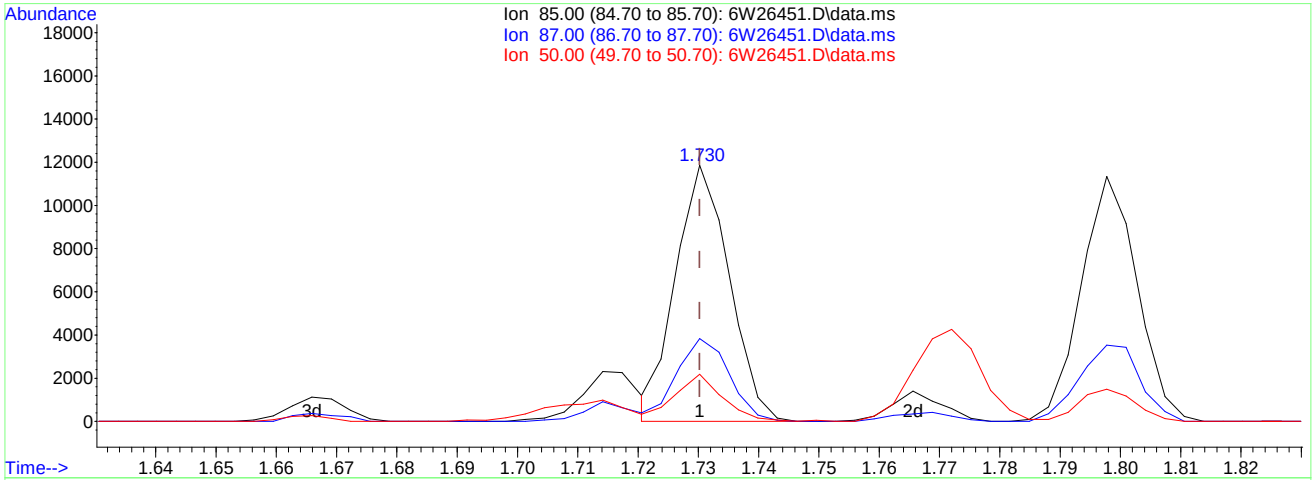
Method: TO-15
Analyst approved: 10/20/22 10:04 Thomas Hilbig
Supervisor approved: 10/20/22 12:15 Kanya Veerawat

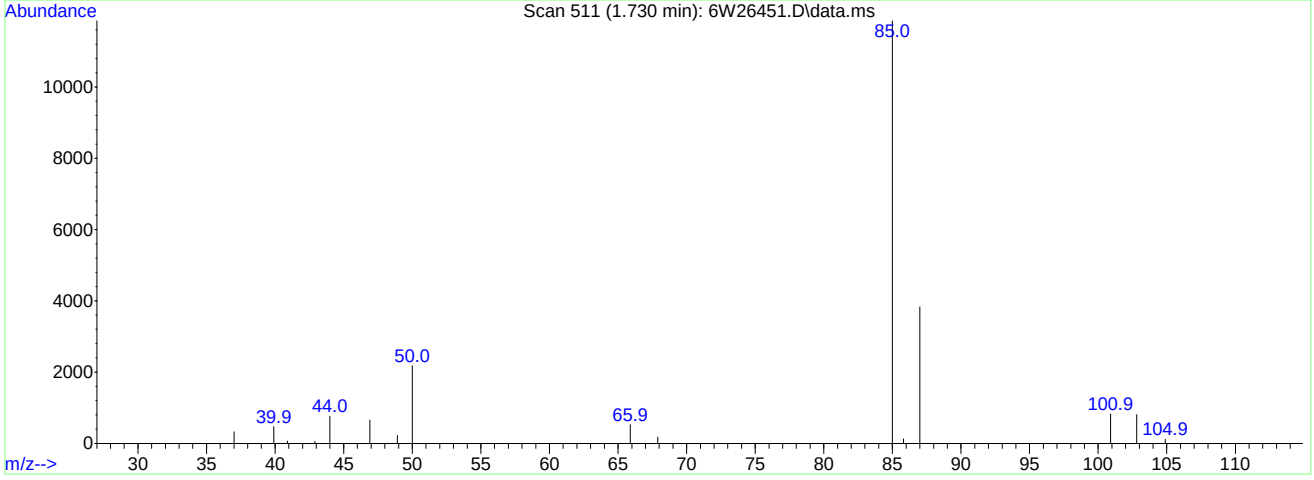
Parameter	CAS	Sig#	R.T. (min.)	Reason
Dichlorodifluoromethane	75-71-8		1.73	Overlapping peak
m,p-Xylene			12.01	Split peak

Quantitation Report (Qedit)

Data Path : C:\msdchem\1\data\
Data File : 6W26451.D
Acq On : 19 Oct 2022 8:47 pm
Operator : thomash
Sample : ic1125-0.5
Misc : MS63121,V6W1125,,,,,1
ALS Vial : 1 Sample Multiplier: 1

Quant Time: Oct 20 08:23:56 2022
Quant Method : C:\msdchem\1\methods\M6W1125.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Thu Oct 20 07:44:13 2022
Response via : Initial Calibration





TIC: 6W26451.D\data.ms

(6) DICHLORODIFLUOROMETHANE (T)

1.730min (0.000) 0.55PPBV m

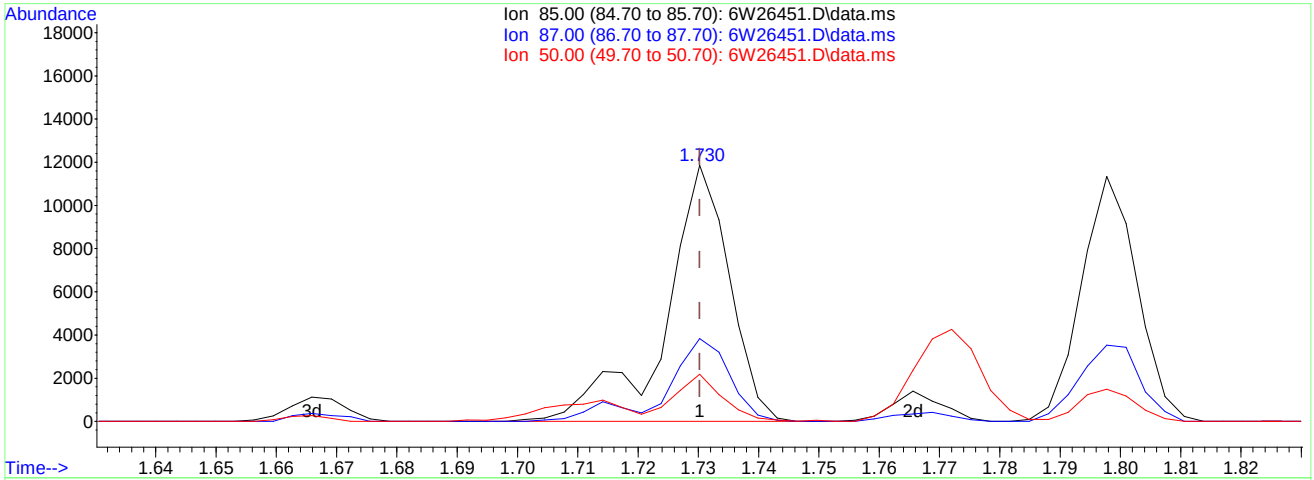
response 7321

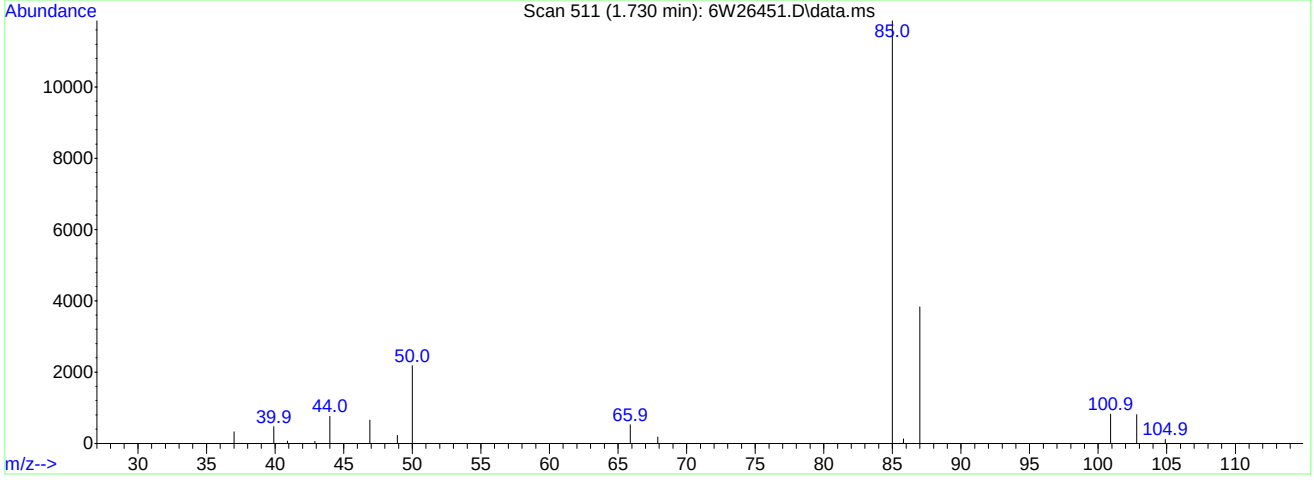
Ion	Exp%	Act%
85.00	100	100
87.00	32.20	38.64#
50.00	9.30	29.12#
0.00	0.00	0.00

Quantitation Report (Qedit)

Data Path : C:\msdchem\1\data\
Data File : 6W26451.D
Acq On : 19 Oct 2022 8:47 pm
Operator : thomash
Sample : ic1125-0.5
Misc : MS63121,V6W1125,,,,,1
ALS Vial : 1 Sample Multiplier: 1

Quant Time: Oct 20 08:23:56 2022
Quant Method : C:\msdchem\1\methods\M6W1125.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Thu Oct 20 07:44:13 2022
Response via : Initial Calibration





TIC: 6W26451.D\data.ms

(6) DICHLORODIFLUOROMETHANE (T)

1.730min (0.000) 0.67PPBV

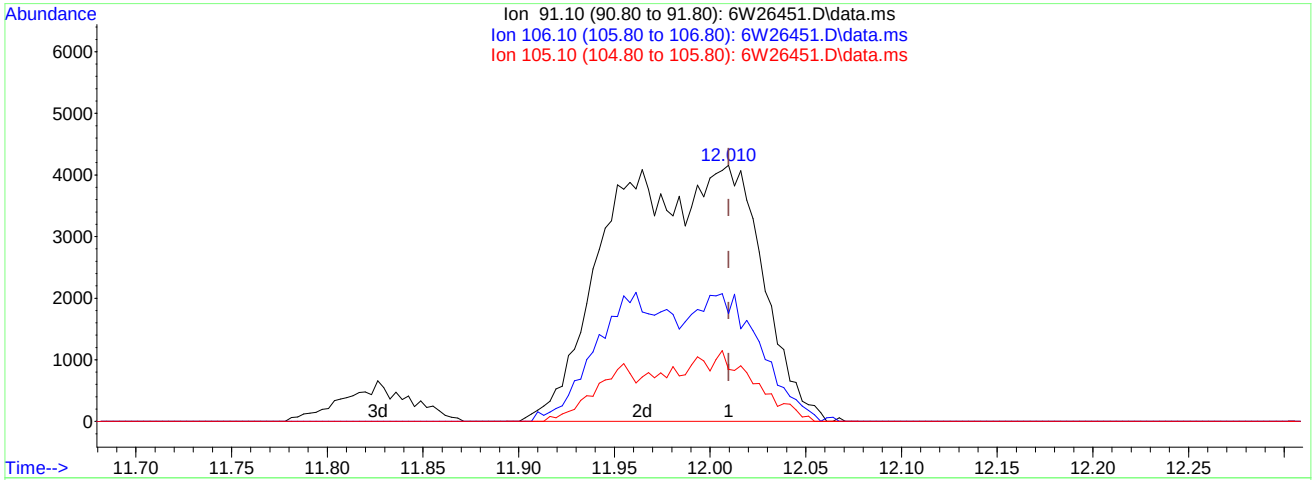
response 8806

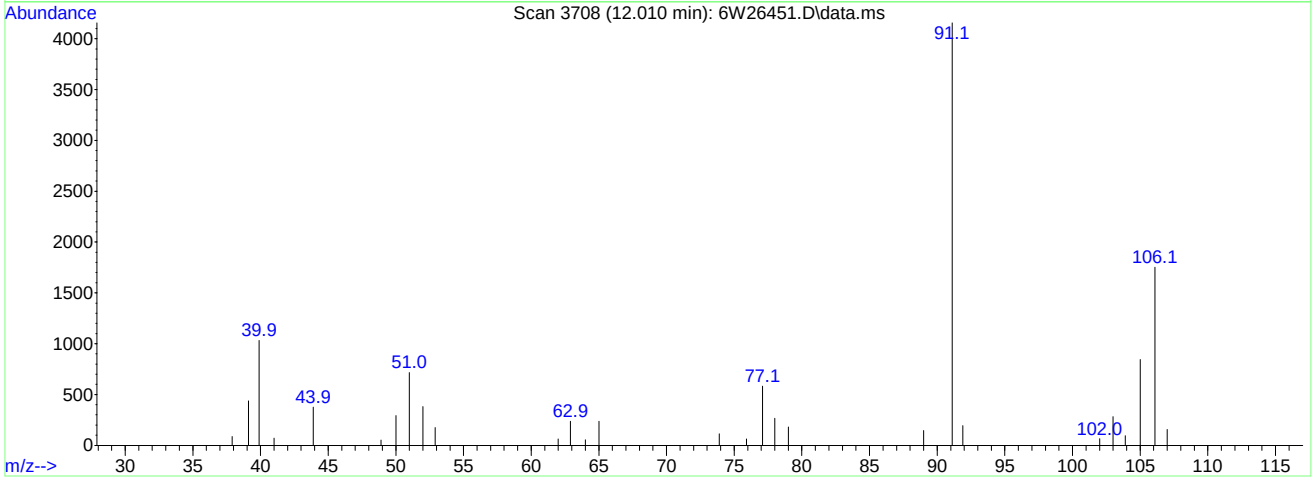
Ion	Exp%	Act%
85.00	100	100
87.00	32.20	32.13
50.00	9.30	24.21#
0.00	0.00	0.00

Quantitation Report (Qedit)

Data Path : C:\msdchem\1\data\
Data File : 6W26451.D
Acq On : 19 Oct 2022 8:47 pm
Operator : thomash
Sample : ic1125-0.5
Misc : MS63121,V6W1125,,,,,1
ALS Vial : 1 Sample Multiplier: 1

Quant Time: Oct 20 08:23:56 2022
Quant Method : C:\msdchem\1\methods\M6W1125.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Thu Oct 20 07:44:13 2022
Response via : Initial Calibration





TIC: 6W26451.D\data.ms

(80) M,P-XYLENE (t)

12.010min (0.000) 0.93PPBV m

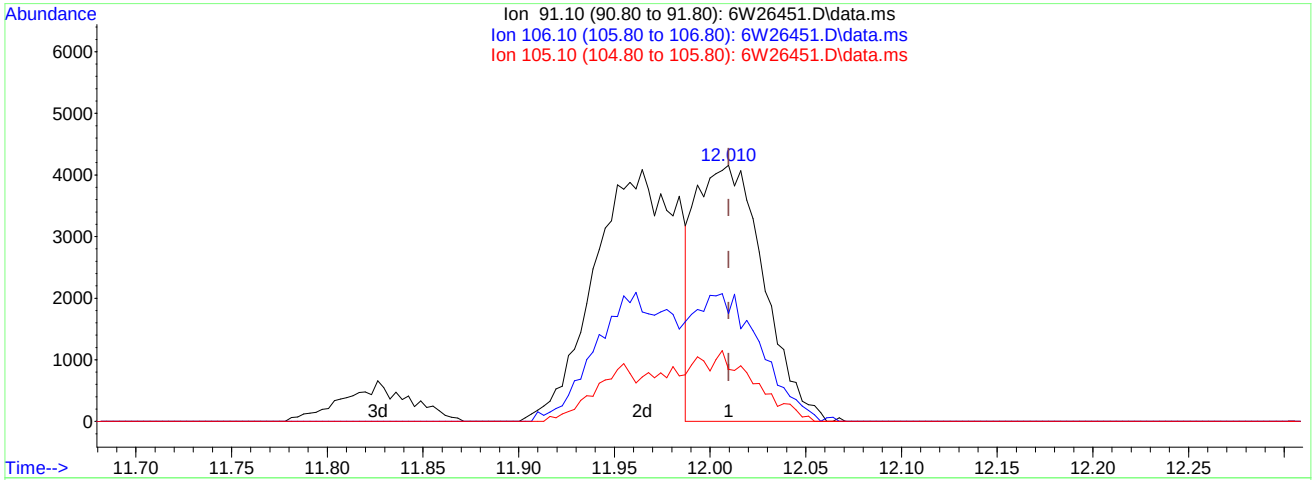
response 22467

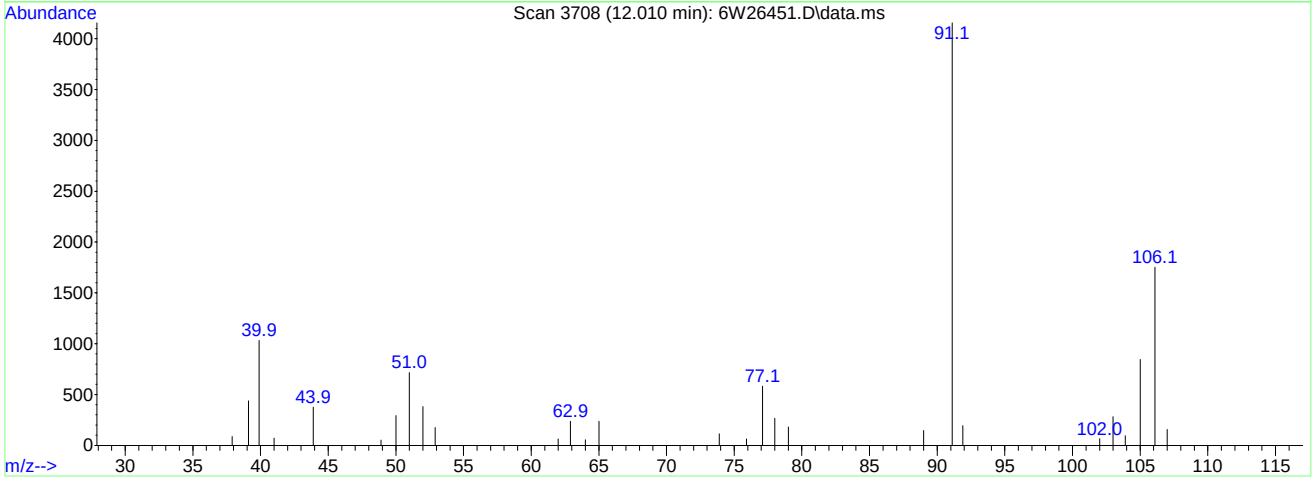
Ion	Exp%	Act%
91.10	100	100
106.10	51.50	22.10#
105.10	23.60	16.03
0.00	0.00	0.00

Quantitation Report (Qedit)

Data Path : C:\msdchem\1\data\Raw Data\
Data File : 6W26451.D
Acq On : 19 Oct 2022 8:47 pm
Operator : thomash
Sample : ic1125-0.5
Misc : MS63121,V6W1125,,,,,1
ALS Vial : 1 Sample Multiplier: 1

Quant Time: Oct 20 10:02:04 2022
Quant Method : C:\msdchem\1\methods\M6W1125.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Thu Oct 20 08:34:08 2022
Response via : Initial Calibration





TIC: 6W26451.D\data.ms

(80) M,P-XYLENE (t)

12.010min (0.000) 0.40PPBV

response 10308

Ion	Exp%	Act%
91.10	100	100
106.10	51.50	48.18
105.10	23.60	34.93
0.00	0.00	0.00

6W26451.D edits: M,P-XYLENE

Manual Integrations APPROVED (compounds with "m" flag)
Kanya Veerawat 10/20/22 12:15

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\
Data File : 6W26453.D
Acq On : 19 Oct 2022 9:52 pm
Operator : thomash
Sample : ic1125-5
Misc : MS63121,V6W1125,,,,,1
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Oct 20 08:28:12 2022
Quant Method : C:\msdchem\1\methods\M6W1125.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Thu Oct 20 08:27:42 2022
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units		Dev(Min)
Internal Standards							
1) BROMOCHLOROMETHANE	3.338	128	48052	10.00	PPBV	#	0.00
52) 1,4-DIFLUOROBENZENE	4.733	114	238668	10.00	PPBV		0.00
76) CHLOROBENZENE-D5	10.582	117	209355	10.00	PPBV		0.00
System Monitoring Compounds							
87) 4-BROMOFLUOROBENZENE	14.022	95	146090	10.19	PPBV		0.00
Target Compounds							Qvalue
3) FREON 152A	1.695	65	19907	2.65	PPBV	#	74
4) CHLORODIFLUOROMETHANE	1.705	67	9181	4.69	PPBV		97
5) CHLOROTRIFLUOROETHENE	1.714	116	43331	4.64	PPBV	#	99
6) DICHLORODIFLUOROMETHANE	1.730	85	73368m	4.83	PPBV		
7) PROPYLENE	1.714	41	29308	4.61	PPBV		96
8) 1-CHLORO-1,1-DIFLUOROE...	1.766	65	65971	4.79	PPBV	#	85
9) FREON 114	1.798	85	72621	4.52	PPBV		97
10) CHLOROMETHANE	1.772	52	10071	4.38	PPBV		91
11) VINYL CHLORIDE	1.827	62	30710	4.48	PPBV		97
12) 1,3-BUTADIENE	1.865	54	25561	4.68	PPBV	#	68
13) N-BUTANE	1.878	43	53529	3.91	PPBV	#	91
14) BROMOMETHANE	1.933	94	24626	4.79	PPBV		97
15) CHLOROETHANE	1.978	64	15370	4.88	PPBV		92
16) DICHLOROFLUOROMETHANE	2.000	67	63935	4.76	PPBV	#	94
17) ACETONITRILE	2.065	41	32753	4.23	PPBV		96
18) ACROLEIN	2.100	56	15089	6.24	PPBV		100
19) FREON 123	2.116	83	58941	4.60	PPBV		94
20) FREON 123A	2.132	117	36017	4.72	PPBV		85
21) TRICHLOROFLUOROMETHANE	2.190	101	81701	5.19	PPBV		100
22) ISOPROPYL ALCOHOL	2.209	45	70608	4.14	PPBV	#	93
23) ACETONE	2.139	58	14329	3.22	PPBV	#	20
24) PENTANE	2.299	42	42306	4.65	PPBV	#	93
25) IODOMETHANE	2.357	142	81476	5.47	PPBV	#	85
26) 1,1-DICHLOROETHYLENE	2.383	96	30944	5.07	PPBV	#	60
27) CARBON DISULFIDE	2.521	76	94990	4.99	PPBV	#	88
28) ETHANOL	2.007	45	15267	3.22	PPBV	#	96
29) BROMOETHENE	2.071	106	24699	4.53	PPBV	#	95
30) ACRYLONITRILE	2.274	52	27837	5.11	PPBV		95
31) METHYLENE CHLORIDE	2.422	84	29001	3.93	PPBV	#	51
32) 3-CHLOROPROPENE	2.463	76	14916	1.84	PPBV	#	1
33) FREON 113	2.521	151	54753	5.18	PPBV		91
34) TRANS-1,2-DICHLOROETHENE	2.769	96	33613	4.97	PPBV	#	81
35) TERTIARY BUTYL ALCOHOL	2.396	59	57315	4.48	PPBV	#	93
36) METHYL TERTIARY BUTYL ...	2.888	73	78884	4.91	PPBV	#	92
37) TETRAHYDROFURAN	3.653	72	15076	5.13	PPBV	#	44
38) HEXANE	3.396	57	63277	4.85	PPBV	#	77
39) VINYL ACETATE	2.930	86	7142	4.83	PPBV	#	1
40) 1,1-DICHLOROETHANE	2.852	63	63853	5.02	PPBV		98
41) METHYL ETHYL KETONE	3.036	72	15342	4.76	PPBV	#	1
42) CIS-1,2-DICHLOROETHENE	3.254	96	34169	4.70	PPBV	#	80
43) DIISOPROPYL ETHER	3.396	59	18288	5.08	PPBV	#	51
44) ETHYL ACETATE	3.402	61	12164	4.77	PPBV	#	13
45) METHYL ACRYLATE	3.389	55	77002	4.95	PPBV	#	98
46) CHLOROFORM	3.418	83	70989	4.91	PPBV	#	93
47) 2,4-DIMETHYLPENTANE	3.958	57	72717	5.13	PPBV		92
48) 1,1,1-TRICHLOROETHANE	4.045	97	67185	4.77	PPBV	#	90
49) CARBON TETRACHLORIDE	4.502	117	74873	5.21	PPBV		100
50) 1,2-DICHLOROETHANE	3.868	62	53248	4.79	PPBV	#	94
51) BENZENE	4.383	78	101339	4.56	PPBV		79
53) CYCLOHEXANE	4.605	84	42608	4.92	PPBV	#	73
54) 2,3-DIMETHYLPENTANE	4.881	71	23101	4.70	PPBV	#	54
55) TRICHLOROETHENE	5.347	95	47636	5.11	PPBV		98
56) 1,2-DICHLOROPROPANE	5.100	63	43029	4.96	PPBV		97
57) DIBROMOMETHANE	5.058	174	42656	4.61	PPBV		90

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\
Data File : 6W26453.D
Acq On : 19 Oct 2022 9:52 pm
Operator : thomash
Sample : ic1125-5
Misc : MS63121,V6W1125,,,,,1
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Oct 20 08:28:12 2022
Quant Method : C:\msdchem\1\methods\M6W1125.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Thu Oct 20 08:27:42 2022
Response via : Initial Calibration

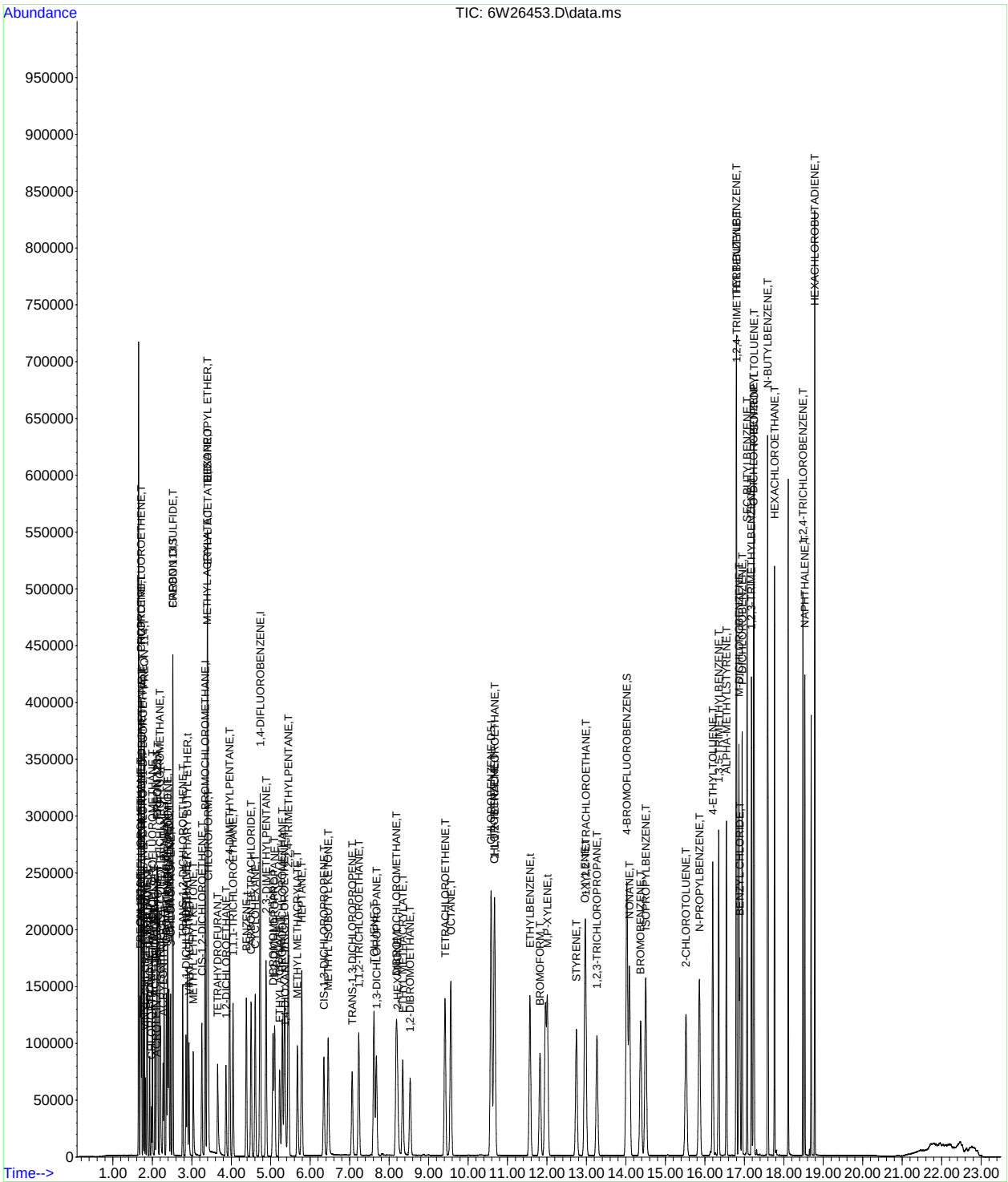
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
58) ETHYL ACRYLATE	5.225	55	89611	5.35	PPBV #	96
59) BROMODICHLOROMETHANE	5.293	83	78333	4.91	PPBV	99
60) 2,2,4-TRIMETHYLPENTANE	5.447	57	200710	5.17	PPBV #	98
61) 1,4-DIOXANE	5.370	88	19670	5.29	PPBV #	85
62) HEPTANE	5.785	43	79722	4.98	PPBV #	73
63) METHYL METHACRYLATE	5.675	69	37067	5.13	PPBV #	50
64) METHYL ISOBUTYL KETONE	6.457	58	33688	6.44	PPBV #	62
65) CIS-1,3-DICHLOROPROPENE	6.347	75	55063	5.09	PPBV #	71
66) TOLUENE	7.617	91	120813	4.27	PPBV	99
67) 1,3-DICHLOROPROPANE	7.679	76	63315	5.00	PPBV	99
68) TRANS-1,3-DICHLOROPROPENE	7.064	75	47715	5.28	PPBV #	74
69) 1,1,2-TRICHLOROETHANE	7.235	83	37548	4.92	PPBV	98
70) 2-HEXANONE	8.212	58	34192	6.90	PPBV #	56
71) ETHYL METHACRYLATE	8.347	69	57397	6.27	PPBV #	69
72) TETRACHLOROETHENE	9.421	164	46844	5.43	PPBV	92
73) DIBROMOCHLOROMETHANE	8.180	129	82147	5.28	PPBV	99
74) 1,2-DIBROMOETHANE	8.531	107	67572	4.93	PPBV	99
75) OCTANE	9.566	43	105512	5.23	PPBV #	74
77) 1,1,1,2-TETRACHLOROETHANE	10.675	131	55973	5.11	PPBV	97
78) CHLOROBENZENE	10.662	112	102291	5.19	PPBV	100
79) ETHYLBENZENE	11.569	91	159993	4.02	PPBV	99
80) M,P-XYLENE	12.006	91	250224	8.76	PPBV #	68
81) O-XYLENE	12.958	91	126171	4.45	PPBV	99
82) STYRENE	12.746	104	92962	5.89	PPBV	97
83) NONANE	14.087	43	115009	4.89	PPBV #	75
84) BROMOFORM	11.823	173	72574	5.21	PPBV #	97
85) 1,1,2,2-TETRACHLOROETHANE	12.981	83	96502	5.13	PPBV	98
86) 1,2,3-TRICHLOROPROPANE	13.264	75	75375	5.14	PPBV	99
88) ISOPROPYLBENZENE	14.501	105	185523	5.20	PPBV #	94
89) BROMOBENZENE	14.373	77	90723	5.29	PPBV	96
90) 2-CHLOROTOLUENE	15.521	91	127993	5.96	PPBV	99
91) N-PROPYLBENZENE	15.861	91	218987	6.23	PPBV #	97
92) 4-ETHYLTOLUENE	16.199	105	184676	7.07	PPBV	100
93) 1,3,5-TRIMETHYLBENZENE	16.350	105	152452	6.64	PPBV	99
94) ALPHA-METHYLSTYRENE	16.546	118	75375	7.02	PPBV	99
95) TERT-BUTYLBENZENE	16.797	119	171850	6.68	PPBV	98
96) 1,2,4-TRIMETHYLBENZENE	16.804	105	160966	6.93	PPBV	95
97) BENZYL CHLORIDE	16.887	91	79996	6.95	PPBV	98
98) M-DICHLOROBENZENE	16.861	146	105031	5.93	PPBV	98
99) P-DICHLOROBENZENE	16.945	146	104393	5.98	PPBV	98
100) O-DICHLOROBENZENE	17.234	146	102199	5.87	PPBV	99
101) SEC-BUTYLBENZENE	17.070	105	234846	6.67	PPBV	99
102) 1,2,3-TRIMETHYLBENZENE	17.180	105	154554	6.70	PPBV	99
103) P-ISOPROPYLTOLUENE	17.247	119	201910	6.93	PPBV	97
104) N-BUTYLBENZENE	17.588	91	185283	7.89	PPBV	98
105) HEXACHLOROETHANE	17.765	117	63914	5.17	PPBV #	88
106) HEXACHLOROBUTADIENE	18.784	225	68032	5.57	PPBV	100
107) 1,2,4-TRICHLOROBENZENE	18.485	180	72353	7.80	PPBV	97
108) NAPHTHALENE	18.533	128	175017	9.54	PPBV	100

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

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\
Data File : 6W26453.D
Acq On : 19 Oct 2022 9:52 pm
Operator : thomash
Sample : ic1125-5
Misc : MS63121,V6W1125,,,,,1
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Oct 20 08:28:12 2022
Quant Method : C:\msdchem\1\methods\M6W1125.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Thu Oct 20 08:27:42 2022
Response via : Initial Calibration



Manual Integration Approval Summary

Sample Number: V6W1125-IC1125
Lab FileID: 6W26453.D
Injection Time: 10/19/22 21:52

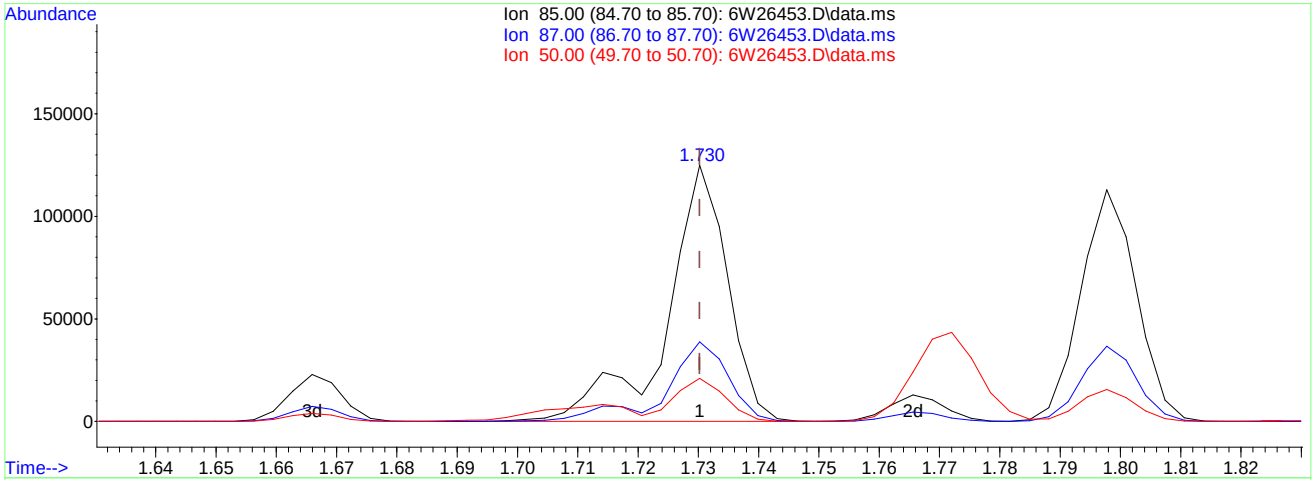
Method: TO-15
Analyst approved: 10/20/22 10:04 Thomas Hilbig
Supervisor approved: 10/20/22 12:15 Kanya Veerawat

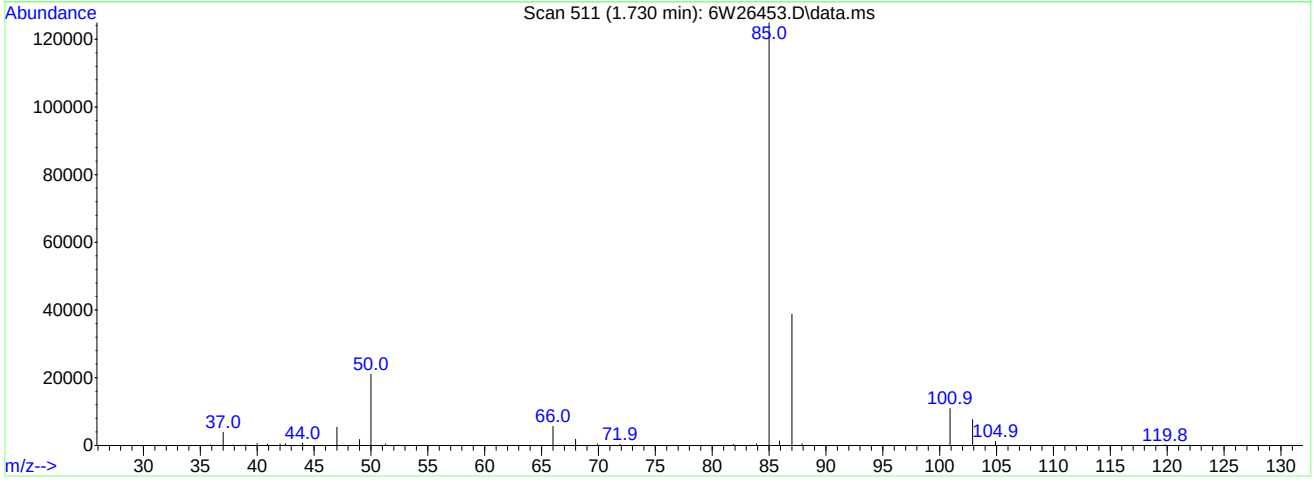
Parameter	CAS	Sig#	R.T. (min.)	Reason
Dichlorodifluoromethane	75-71-8		1.73	Overlapping peak

Quantitation Report (Qedit)

Data Path : C:\msdchem\1\data\
Data File : 6W26453.D
Acq On : 19 Oct 2022 9:52 pm
Operator : thomash
Sample : ic1125-5
Misc : MS63121,V6W1125,,,,,1
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Oct 20 08:27:56 2022
Quant Method : C:\msdchem\1\methods\M6W1125.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Thu Oct 20 08:27:42 2022
Response via : Initial Calibration





TIC: 6W26453.D\data.ms

(6) DICHLORODIFLUOROMETHANE (T)

1.730min (+0.000) 5.81PPBV

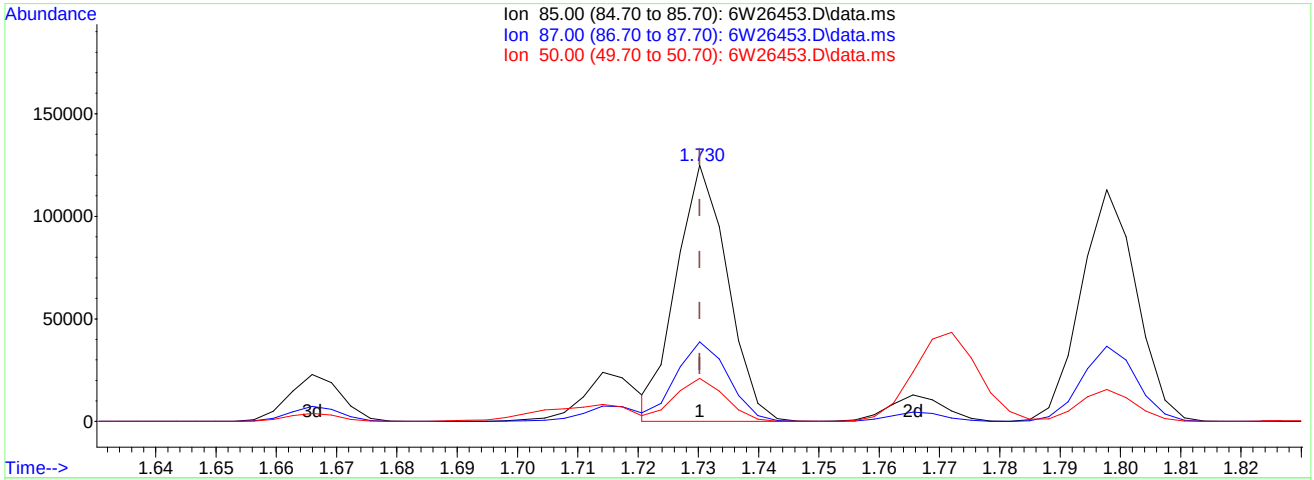
response 88251

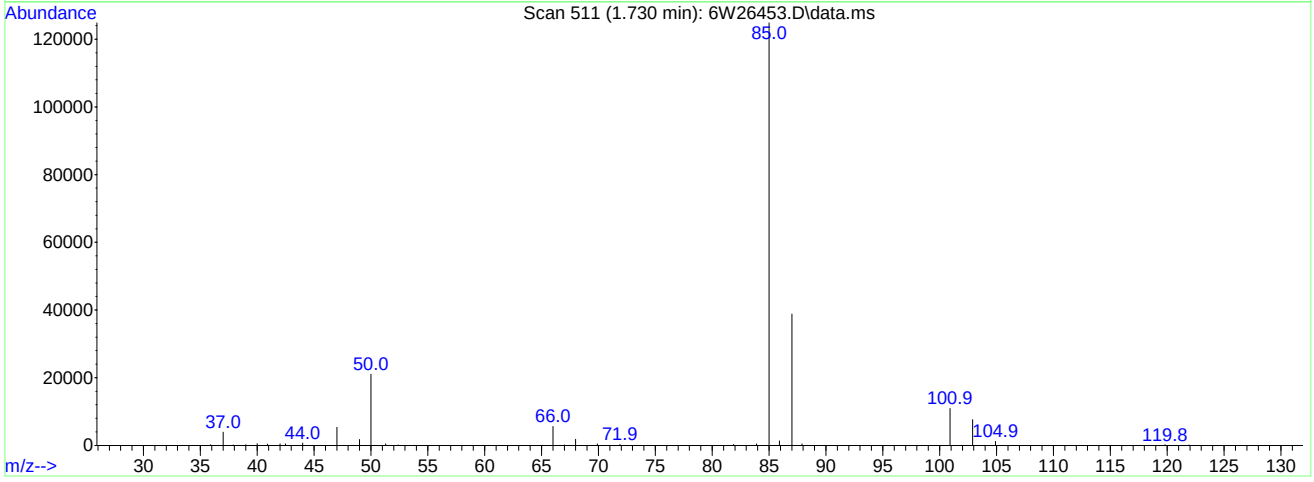
Ion	Exp%	Act%
85.00	100	100
87.00	32.20	31.94
50.00	9.30	23.58#
0.00	0.00	0.00

Quantitation Report (Qedit)

Data Path : C:\msdchem\1\data\
Data File : 6W26453.D
Acq On : 19 Oct 2022 9:52 pm
Operator : thomash
Sample : ic1125-5
Misc : MS63121,V6W1125,,,,,1
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Oct 20 08:27:56 2022
Quant Method : C:\msdchem\1\methods\M6W1125.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Thu Oct 20 08:27:42 2022
Response via : Initial Calibration





TIC: 6W26453.D\data.ms

(6) DICHLORODIFLUOROMETHANE (T)

1.730min (+0.000) 4.83PPBV m

response 73368

Ion	Exp%	Act%
85.00	100	100
87.00	32.20	38.42
50.00	9.30	28.36#
0.00	0.00	0.00

Manual Integrations APPROVED (compounds with "m" flag)
Kanya Veerawat 10/20/22 12:15

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\
Data File : 6W26454.D
Acq On : 19 Oct 2022 10:25 pm
Operator : thomash
Sample : icc1125-10
Misc : MS63121,V6W1125,,,,,1
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Oct 20 07:46:44 2022
Quant Method : C:\msdchem\1\methods\M6W1125.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Thu Oct 20 07:44:13 2022
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units		Dev(Min)
Internal Standards							
1) BROMOCHLOROMETHANE	3.338	128	50236	10.00	PPBV	#	0.00
52) 1,4-DIFLUOROBENZENE	4.733	114	248131	10.00	PPBV		0.00
76) CHLOROBENZENE-D5	10.588	117	216051	10.00	PPBV		0.00
System Monitoring Compounds							
87) 4-BROMOFLUOROBENZENE	14.019	95	152864	10.00	PPBV		0.00
Target Compounds							Qvalue
3) FREON 152A	1.695	65	40766	10.00	PPBV	#	76
4) CHLORODIFLUOROMETHANE	1.708	67	18586	10.00	PPBV		97
5) CHLOROTRIFLUOROETHENE	1.717	116	88306	10.00	PPBV	#	100
6) DICHLORODIFLUOROMETHANE	1.730	85	152018m	10.00	PPBV		
7) PROPYLENE	1.714	41	61296	10.00	PPBV		96
8) 1-CHLORO-1,1-DIFLUOROE...	1.766	65	135235	10.00	PPBV	#	86
9) FREON 114	1.798	85	152030	10.00	PPBV		97
10) CHLOROMETHANE	1.772	52	20678	10.00	PPBV		93
11) VINYL CHLORIDE	1.830	62	63489	10.00	PPBV		96
12) 1,3-BUTADIENE	1.865	54	52245	10.00	PPBV	#	72
13) N-BUTANE	1.878	43	107971	10.00	PPBV	#	90
14) BROMOMETHANE	1.933	94	49482	10.00	PPBV		98
15) CHLOROETHANE	1.978	64	31300	10.00	PPBV		93
16) DICHLOROFLUOROMETHANE	2.004	67	129761	10.00	PPBV	#	95
17) ACETONITRILE	2.065	41	65598	10.00	PPBV		96
18) ACROLEIN	2.100	56	30940	10.00	PPBV		99
19) FREON 123	2.116	83	121214	10.00	PPBV		95
20) FREON 123A	2.132	117	74375	10.00	PPBV		86
21) TRICHLOROFLUOROMETHANE	2.190	101	148677	10.00	PPBV		100
22) ISOPROPYL ALCOHOL	2.206	45	141893	10.00	PPBV	#	95
23) ACETONE	2.139	58	31578	10.00	PPBV	#	21
24) PENTANE	2.299	42	77159	10.00	PPBV	#	93
25) IODOMETHANE	2.357	142	145923	10.00	PPBV	#	84
26) 1,1-DICHLOROETHYLENE	2.383	96	60120	10.00	PPBV	#	57
27) CARBON DISULFIDE	2.521	76	189741	10.00	PPBV	#	88
28) ETHANOL	2.007	45	31409	10.00	PPBV	#	95
29) BROMOETHENE	2.074	106	51820	10.00	PPBV	#	98
30) ACRYLONITRILE	2.270	52	50315	10.00	PPBV		95
31) METHYLENE CHLORIDE	2.422	84	57394	10.00	PPBV	#	53
32) 3-CHLOROPROPENE	2.463	76	30196	10.00	PPBV	#	1
33) FREON 113	2.521	151	109383	10.00	PPBV		91
34) TRANS-1,2-DICHLOROETHENE	2.769	96	67461	10.00	PPBV	#	80
35) TERTIARY BUTYL ALCOHOL	2.396	59	122603	10.00	PPBV	#	96
36) METHYL TERTIARY BUTYL ...	2.888	73	165919	10.00	PPBV	#	92
37) TETRAHYDROFURAN	3.653	72	30407	10.00	PPBV	#	39
38) HEXANE	3.396	57	128093	10.00	PPBV	#	77
39) VINYL ACETATE	2.933	86	15763	10.00	PPBV	#	1
40) 1,1-DICHLOROETHANE	2.852	63	127587	10.00	PPBV		98
41) METHYL ETHYL KETONE	3.036	72	32369	10.00	PPBV	#	1
42) CIS-1,2-DICHLOROETHENE	3.254	96	69388	10.00	PPBV	#	80
43) DIISOPROPYL ETHER	3.396	59	37294	10.00	PPBV	#	48
44) ETHYL ACETATE	3.402	61	25284	10.00	PPBV	#	17
45) METHYL ACRYLATE	3.389	55	160871	10.00	PPBV	#	97
46) CHLOROFORM	3.421	83	144284	10.00	PPBV	#	93
47) 2,4-DIMETHYLPENTANE	3.958	57	149307	10.00	PPBV	#	93
48) 1,1,1-TRICHLOROETHANE	4.045	97	139532	10.00	PPBV	#	93
49) CARBON TETRACHLORIDE	4.505	117	155756	10.00	PPBV		99
50) 1,2-DICHLOROETHANE	3.868	62	108219	10.00	PPBV	#	94
51) BENZENE	4.383	78	206141	10.00	PPBV		79
53) CYCLOHEXANE	4.608	84	89028	10.00	PPBV	#	75
54) 2,3-DIMETHYLPENTANE	4.884	71	47700	10.00	PPBV	#	54
55) TRICHLOROETHENE	5.351	95	95859	10.00	PPBV		97
56) 1,2-DICHLOROPROPANE	5.100	63	87652	10.00	PPBV		97
57) DIBROMOMETHANE	5.058	174	87533	10.00	PPBV		92

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\
Data File : 6W26454.D
Acq On : 19 Oct 2022 10:25 pm
Operator : thomash
Sample : icc1125-10
Misc : MS63121,V6W1125,,,,,1
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Oct 20 07:46:44 2022
Quant Method : C:\msdchem\1\methods\M6W1125.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Thu Oct 20 07:44:13 2022
Response via : Initial Calibration

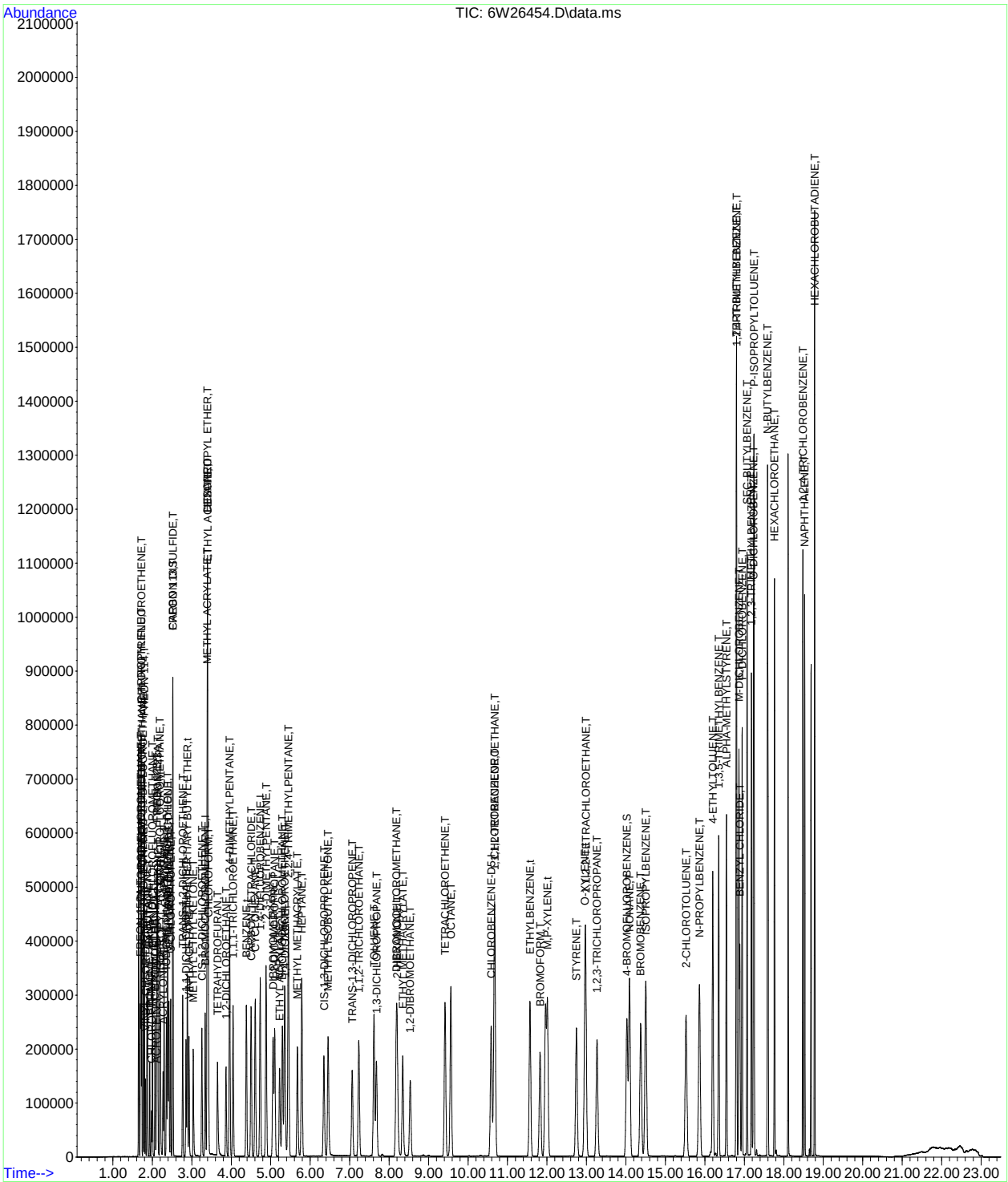
Compound	R.T.	QIon	Response	Conc	Units		Dev(Min)
58) ETHYL ACRYLATE	5.225	55	189495	10.00	PPBV	#	96
59) BROMODICHLOROMETHANE	5.293	83	160365	10.00	PPBV		98
60) 2,2,4-TRIMETHYLPENTANE	5.447	57	408278	10.00	PPBV	#	98
61) 1,4-DIOXANE	5.364	88	42438	10.00	PPBV	#	79
62) HEPTANE	5.788	43	160426	10.00	PPBV	#	74
63) METHYL METHACRYLATE	5.675	69	78547	10.00	PPBV	#	51
64) METHYL ISOBUTYL KETONE	6.450	58	71179	10.00	PPBV	#	64
65) CIS-1,3-DICHLOROPROPENE	6.351	75	117430	10.00	PPBV	#	72
66) TOLUENE	7.617	91	251686	10.00	PPBV		100
67) 1,3-DICHLOROPROPANE	7.679	76	128382	10.00	PPBV	#	98
68) TRANS-1,3-DICHLOROPROPENE	7.064	75	104079	10.00	PPBV	#	75
69) 1,1,2-TRICHLOROETHANE	7.232	83	76257	10.00	PPBV		98
70) 2-HEXANONE	8.206	58	80744	10.00	PPBV	#	61
71) ETHYL METHACRYLATE	8.344	69	123552	10.00	PPBV	#	68
72) TETRACHLOROETHENE	9.415	164	96515	10.00	PPBV		92
73) DIBROMOCHLOROMETHANE	8.180	129	169421	10.00	PPBV		99
74) 1,2-DIBROMOETHANE	8.534	107	139318	10.00	PPBV		100
75) OCTANE	9.563	43	219399	10.00	PPBV	#	75
77) 1,1,1,2-TETRACHLOROETHANE	10.678	131	115919	10.00	PPBV		97
78) CHLOROBENZENE	10.669	112	209525	10.00	PPBV		100
79) ETHYLBENZENE	11.569	91	335086	10.00	PPBV		100
80) M,P-XYLENE	12.010	91	518412	20.00	PPBV	#	66
81) O-XYLENE	12.961	91	261863	10.00	PPBV		98
82) STYRENE	12.746	104	199893	10.00	PPBV		98
83) NONANE	14.090	43	234816	10.00	PPBV	#	75
84) BROMOFORM	11.826	173	151696	10.00	PPBV	#	97
85) 1,1,2,2-TETRACHLOROETHANE	12.981	83	198246	10.00	PPBV		98
86) 1,2,3-TRICHLOROPROPANE	13.267	75	153573	10.00	PPBV		99
88) ISOPROPYLBENZENE	14.501	105	388762	10.00	PPBV	#	94
89) BROMOBENZENE	14.373	77	187543	10.00	PPBV		97
90) 2-CHLOROTOLUENE	15.524	91	266209	10.00	PPBV		99
91) N-PROPYLBENZENE	15.861	91	458661	10.00	PPBV	#	97
92) 4-ETHYLTOLUENE	16.199	105	389486	10.00	PPBV		100
93) 1,3,5-TRIMETHYLBENZENE	16.350	105	317114	10.00	PPBV		99
94) ALPHA-METHYLSTYRENE	16.546	118	158288	10.00	PPBV		99
95) TERT-BUTYLBENZENE	16.797	119	357976	10.00	PPBV		98
96) 1,2,4-TRIMETHYLBENZENE	16.804	105	332506	10.00	PPBV		96
97) BENZYL CHLORIDE	16.887	91	185883	10.00	PPBV		98
98) M-DICHLOROBENZENE	16.865	146	218815	10.00	PPBV		99
99) P-DICHLOROBENZENE	16.945	146	218232	10.00	PPBV		99
100) O-DICHLOROBENZENE	17.231	146	209883	10.00	PPBV		99
101) SEC-BUTYLBENZENE	17.070	105	488617	10.00	PPBV		99
102) 1,2,3-TRIMETHYLBENZENE	17.180	105	323807	10.00	PPBV		99
103) P-ISOPROPYLTOLUENE	17.244	119	424958	10.00	PPBV		97
104) N-BUTYLBENZENE	17.585	91	389723	10.00	PPBV		98
105) HEXACHLOROETHANE	17.762	117	135061	10.00	PPBV	#	88
106) HEXACHLOROBUTADIENE	18.781	225	147086	10.00	PPBV		100
107) 1,2,4-TRICHLOROBENZENE	18.482	180	170601	10.00	PPBV		98
108) NAPHTHALENE	18.530	128	427473	10.00	PPBV		100

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

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\
Data File : 6W26454.D
Acq On : 19 Oct 2022 10:25 pm
Operator : thomash
Sample : icc1125-10
Misc : MS63121,V6W1125,,,,,1
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Oct 20 07:46:44 2022
Quant Method : C:\msdchem\1\methods\M6W1125.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Thu Oct 20 07:44:13 2022
Response via : Initial Calibration



Manual Integration Approval Summary

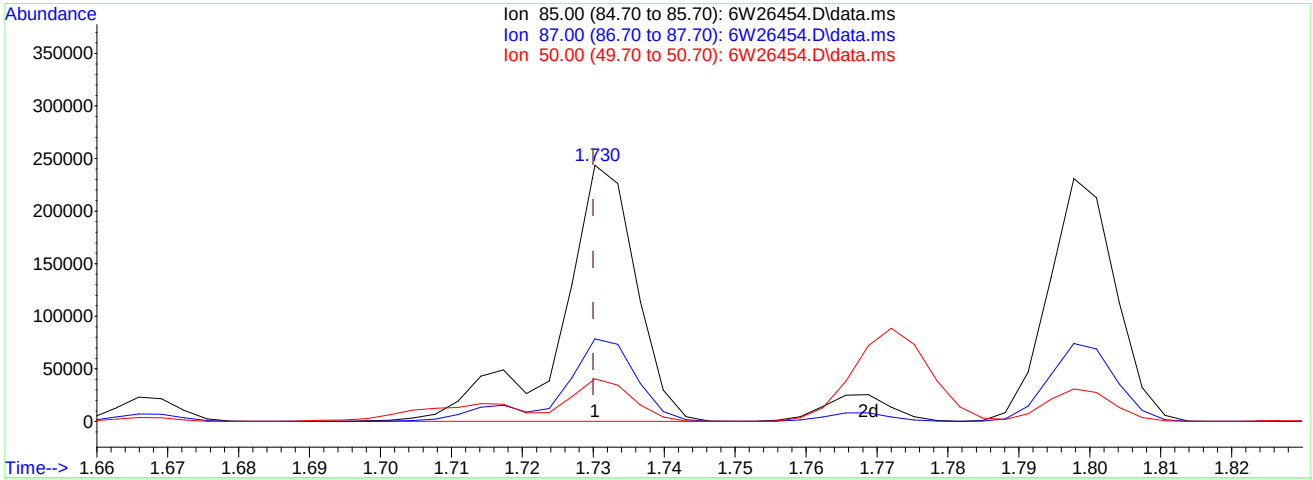
Sample Number:	V6W1125-ICC1125	**Method:**	TO-15
Lab FileID:	6W26454.D	**Analyst approved:**	10/20/22 10:04 Thomas Hilbig
Injection Time:	10/19/22 22:25	**Supervisor approved:**	10/20/22 12:15 Kanya Veerawat

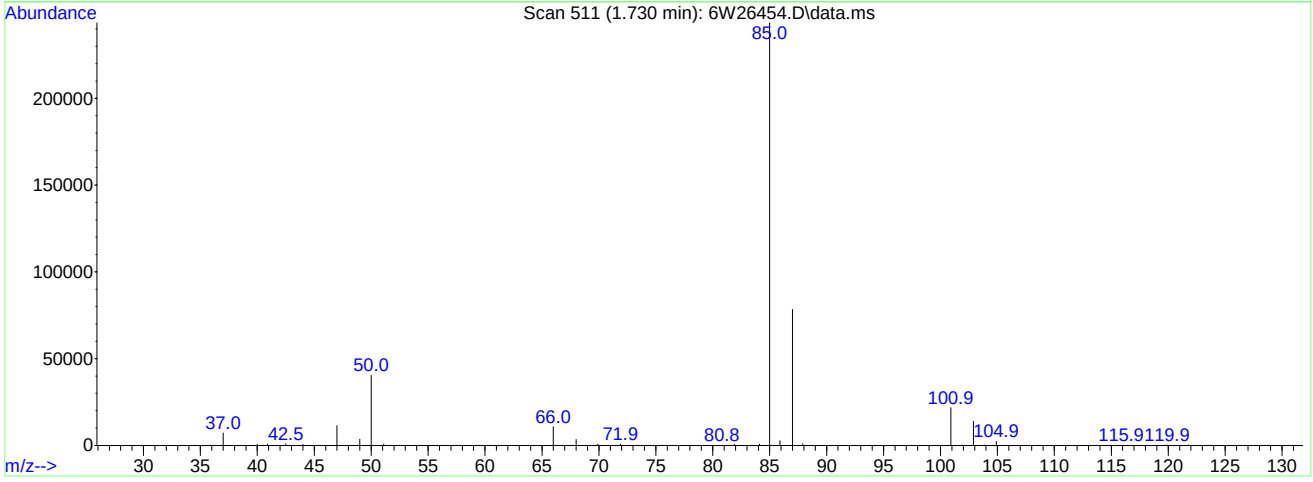
Parameter	CAS	Sig#	R.T. (min.)	Reason
Dichlorodifluoromethane	75-71-8		1.73	Overlapping peak

Quantitation Report (Qedit)

Data Path : C:\msdchem\1\data\
Data File : 6W26454.D
Acq On : 19 Oct 2022 10:25 pm
Operator : thomash
Sample : icc1125-10
Misc : MS63121,V6W1125,,,,,1
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Oct 20 07:32:14 2022
Quant Method : C:\msdchem\1\methods\M6W1125.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Wed Sep 21 12:48:04 2022
Response via : Initial Calibration





TIC: 6W26454.D\data.ms

(6) DICHLORODIFLUOROMETHANE (T)

1.730min (+0.000) 7.75PPBV

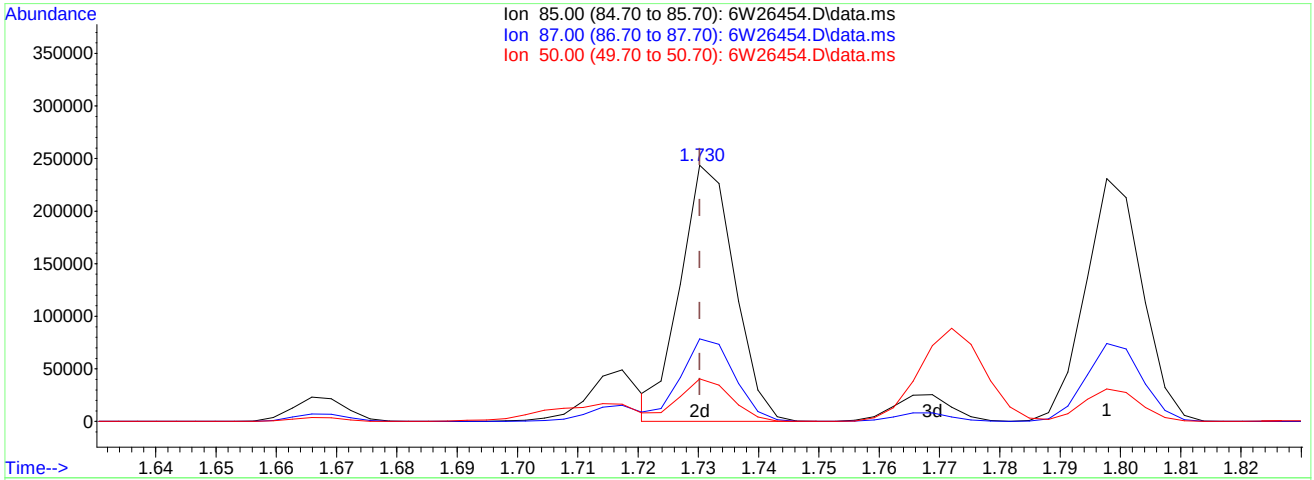
response 181010

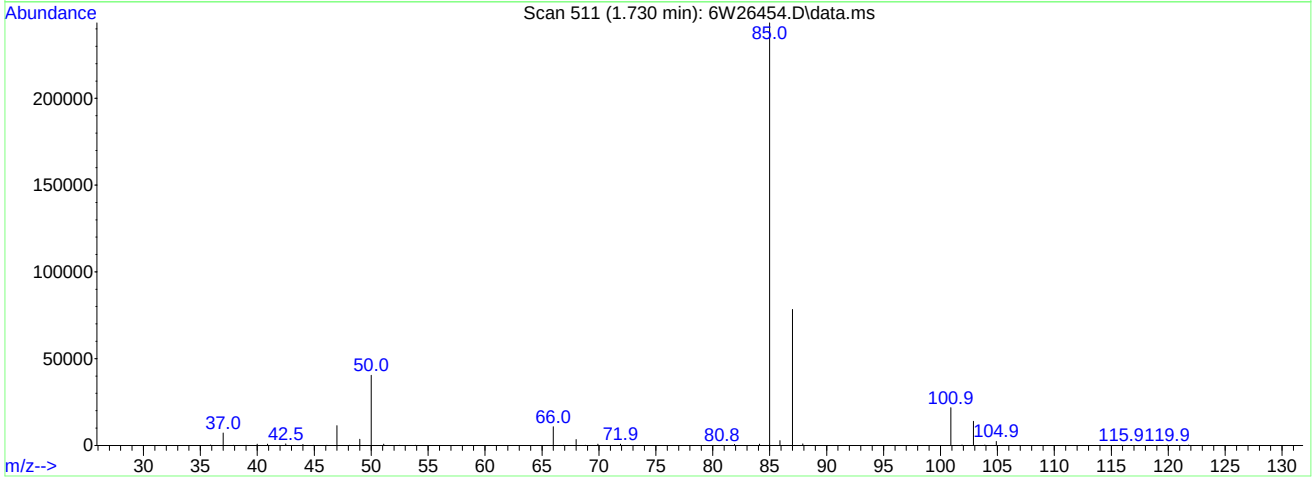
Ion	Exp%	Act%
85.00	100	100
87.00	32.20	32.08
50.00	9.30	23.20#
0.00	0.00	0.00

Quantitation Report (Qedit)

Data Path : C:\msdchem\1\data\
Data File : 6W26454.D
Acq On : 19 Oct 2022 10:25 pm
Operator : thomash
Sample : icc1125-10
Misc : MS63121,V6W1125,,,,,1
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Oct 20 07:46:44 2022
Quant Method : C:\msdchem\1\methods\M6W1125.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Thu Oct 20 07:44:13 2022
Response via : Initial Calibration





TIC: 6W26454.D\data.ms

(6) DICHLORODIFLUOROMETHANE (T)

1.730min (0.000) 10.00PPBV m

response 152018

Ion	Exp%	Act%
85.00	100	100
87.00	32.20	30.24
50.00	9.30	8.09
0.00	0.00	0.00

6W26455.D

Manual Integrations APPROVED (compounds with "m" flag)

Kanya Veerawat 10/20/22 12:15

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\
Data File : 6W26455.D
Acq On : 19 Oct 2022 10:57 pm
Operator : thomash
Sample : ic1125-20
Misc : MS63121,V6W1125,,,,,1
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Oct 20 07:48:06 2022
Quant Method : C:\msdchem\1\methods\M6W1125.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Thu Oct 20 07:44:13 2022
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units		Dev(Min)
Internal Standards							
1) BROMOCHLOROMETHANE	3.341	128	49377	10.00	PPBV	#	0.00
52) 1,4-DIFLUOROBENZENE	4.737	114	249392	10.00	PPBV		0.00
76) CHLOROBENZENE-D5	10.589	117	219656	10.00	PPBV		0.00
System Monitoring Compounds							
87) 4-BROMOFLUOROBENZENE	14.026	95	157260	10.12	PPBV		0.00
Target Compounds							Qvalue
3) FREON 152A	1.695	65	81708	20.39	PPBV	#	74
4) CHLORODIFLUOROMETHANE	1.708	67	37113	20.32	PPBV		98
5) CHLOROTRIFLUOROETHENE	1.717	116	179947	20.73	PPBV	#	100
6) DICHLORODIFLUOROMETHANE	1.734	85	300113m	20.08	PPBV		
7) PROPYLENE	1.714	41	123567	20.51	PPBV		97
8) 1-CHLORO-1,1-DIFLUOROE...	1.769	65	278726	20.97	PPBV	#	86
9) FREON 114	1.801	85	313198	20.96	PPBV		97
10) CHLOROMETHANE	1.772	52	41351	20.35	PPBV		92
11) VINYL CHLORIDE	1.830	62	130827	20.96	PPBV		97
12) 1,3-BUTADIENE	1.865	54	108336	21.10	PPBV	#	73
13) N-BUTANE	1.878	43	219713	20.70	PPBV	#	90
14) BROMOMETHANE	1.936	94	101473	20.86	PPBV		99
15) CHLOROETHANE	1.981	64	63936	20.78	PPBV		93
16) DICHLOROFLUOROMETHANE	2.004	67	267942	21.01	PPBV	#	95
17) ACETONITRILE	2.068	41	134828	20.91	PPBV		96
18) ACROLEIN	2.103	56	62598	20.58	PPBV		98
19) FREON 123	2.116	83	253873	21.31	PPBV		95
20) FREON 123A	2.132	117	153590	21.01	PPBV		84
21) TRICHLOROFLUOROMETHANE	2.190	101	307551	21.05	PPBV		100
22) ISOPROPYL ALCOHOL	2.206	45	293937	21.08	PPBV	#	96
23) ACETONE	2.139	58	65338	21.05	PPBV	#	23
24) PENTANE	2.299	42	156002	20.57	PPBV	#	93
25) IODOMETHANE	2.357	142	288300	20.10	PPBV	#	84
26) 1,1-DICHLOROETHYLENE	2.383	96	108698	18.39	PPBV	#	52
27) CARBON DISULFIDE	2.521	76	355957	19.09	PPBV	#	86
28) ETHANOL	2.007	45	65286	21.15	PPBV		96
29) BROMOETHENE	2.074	106	106499	20.91	PPBV	#	98
30) ACRYLONITRILE	2.274	52	101996	20.62	PPBV		95
31) METHYLENE CHLORIDE	2.422	84	99743	17.68	PPBV	#	45
32) 3-CHLOROPROPENE	2.463	76	54273	18.29	PPBV	#	1
33) FREON 113	2.521	151	197048	18.33	PPBV		88
34) TRANS-1,2-DICHLOROETHENE	2.772	96	128675	19.41	PPBV	#	78
35) TERTIARY BUTYL ALCOHOL	2.396	59	254046	21.08	PPBV	#	93
36) METHYL TERTIARY BUTYL ...	2.888	73	342029	20.97	PPBV	#	92
37) TETRAHYDROFURAN	3.653	72	64103	21.45	PPBV	#	43
38) HEXANE	3.396	57	260116	20.66	PPBV	#	77
39) VINYL ACETATE	2.930	86	34002	21.95	PPBV	#	1
40) 1,1-DICHLOROETHANE	2.856	63	252325	20.12	PPBV		99
41) METHYL ETHYL KETONE	3.039	72	66263	20.83	PPBV	#	1
42) CIS-1,2-DICHLOROETHENE	3.258	96	140062	20.54	PPBV	#	80
43) DIISOPROPYL ETHER	3.399	59	76459	20.86	PPBV	#	47
44) ETHYL ACETATE	3.406	61	52127	20.98	PPBV	#	17
45) METHYL ACRYLATE	3.393	55	333930	21.12	PPBV	#	96
46) CHLOROFORM	3.425	83	292725	20.64	PPBV	#	93
47) 2,4-DIMETHYLPENTANE	3.959	57	305149	20.79	PPBV	#	94
48) 1,1,1-TRICHLOROETHANE	4.045	97	286273	20.87	PPBV	#	93
49) CARBON TETRACHLORIDE	4.505	117	317238	20.72	PPBV		99
50) 1,2-DICHLOROETHANE	3.869	62	217638	20.46	PPBV	#	95
51) BENZENE	4.383	78	419451	20.70	PPBV		80
53) CYCLOHEXANE	4.608	84	183360	20.49	PPBV	#	76
54) 2,3-DIMETHYLPENTANE	4.885	71	96958	20.22	PPBV	#	56
55) TRICHLOROETHENE	5.354	95	195262	20.27	PPBV		97
56) 1,2-DICHLOROPROPANE	5.103	63	178229	20.23	PPBV		97
57) DIBROMOMETHANE	5.061	174	178772	20.32	PPBV		93

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\
Data File : 6W26455.D
Acq On : 19 Oct 2022 10:57 pm
Operator : thomash
Sample : ic1125-20
Misc : MS63121,V6W1125,,,,,1
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Oct 20 07:48:06 2022
Quant Method : C:\msdchem\1\methods\M6W1125.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Thu Oct 20 07:44:13 2022
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units		Dev(Min)
58) ETHYL ACRYLATE	5.229	55	400306	21.02	PPBV	#	97
59) BROMODICHLOROMETHANE	5.299	83	324106	20.11	PPBV		98
60) 2,2,4-TRIMETHYLPENTANE	5.450	57	833535	20.31	PPBV	#	99
61) 1,4-DIOXANE	5.364	88	90098	21.12	PPBV	#	78
62) HEPTANE	5.788	43	329247	20.42	PPBV	#	74
63) METHYL METHACRYLATE	5.679	69	164347	20.82	PPBV	#	50
64) METHYL ISOBUTYL KETONE	6.457	58	151905	21.23	PPBV	#	64
65) CIS-1,3-DICHLOROPROPENE	6.351	75	245846	20.83	PPBV	#	73
66) TOLUENE	7.621	91	517544	20.46	PPBV		100
67) 1,3-DICHLOROPROPANE	7.682	76	266301	20.64	PPBV	#	98
68) TRANS-1,3-DICHLOROPROPENE	7.068	75	225877	21.59	PPBV	#	76
69) 1,1,2-TRICHLOROETHANE	7.235	83	155471	20.28	PPBV		98
70) 2-HEXANONE	8.209	58	185953	22.91	PPBV	#	62
71) ETHYL METHACRYLATE	8.347	69	263702	21.24	PPBV	#	68
72) TETRACHLOROETHENE	9.418	164	197298	20.34	PPBV		92
73) DIBROMOCHLOROMETHANE	8.187	129	350108	20.56	PPBV		99
74) 1,2-DIBROMOETHANE	8.540	107	289296	20.66	PPBV		99
75) OCTANE	9.563	43	458487	20.79	PPBV	#	75
77) 1,1,1,2-TETRACHLOROETHANE	10.682	131	238370	20.23	PPBV		97
78) CHLOROBENZENE	10.669	112	433066	20.33	PPBV		99
79) ETHYLBENZENE	11.572	91	699055	20.52	PPBV		100
80) M,P-XYLENE	12.013	91	1079066	40.95	PPBV	#	67
81) O-XYLENE	12.968	91	544844	20.46	PPBV		99
82) STYRENE	12.746	104	421198	20.73	PPBV		98
83) NONANE	14.093	43	482472	20.21	PPBV	#	74
84) BROMOFORM	11.830	173	319790	20.73	PPBV	#	97
85) 1,1,2,2-TETRACHLOROETHANE	12.987	83	406520	20.17	PPBV		98
86) 1,2,3-TRICHLOROPROPANE	13.273	75	318990	20.43	PPBV		99
88) ISOPROPYLBENZENE	14.505	105	810979	20.52	PPBV	#	93
89) BROMOBENZENE	14.379	77	392588	20.59	PPBV		96
90) 2-CHLOROTOLUENE	15.524	91	560685	20.72	PPBV		99
91) N-PROPYLBENZENE	15.865	91	962567	20.64	PPBV	#	97
92) 4-ETHYLTOLUENE	16.206	105	818293	20.66	PPBV		100
93) 1,3,5-TRIMETHYLBENZENE	16.354	105	675844	20.96	PPBV		99
94) ALPHA-METHYLSTYRENE	16.546	118	339449	21.09	PPBV		99
95) TERT-BUTYLBENZENE	16.800	119	759425	20.87	PPBV		98
96) 1,2,4-TRIMETHYLBENZENE	16.807	105	703276	20.80	PPBV		96
97) BENZYL CHLORIDE	16.887	91	451364	23.88	PPBV		98
98) M-DICHLOROBENZENE	16.868	146	464681	20.89	PPBV		99
99) P-DICHLOROBENZENE	16.945	146	464922	20.95	PPBV		99
100) O-DICHLOROBENZENE	17.235	146	450179	21.10	PPBV		99
101) SEC-BUTYLBENZENE	17.074	105	1034528	20.83	PPBV		99
102) 1,2,3-TRIMETHYLBENZENE	17.183	105	688211	20.90	PPBV		99
103) P-ISOPROPYLTOLUENE	17.247	119	899797	20.83	PPBV		97
104) N-BUTYLBENZENE	17.588	91	845271	21.33	PPBV		98
105) HEXACHLOROETHANE	17.765	117	298884	21.77	PPBV	#	89
106) HEXACHLOROBUTADIENE	18.781	225	325753	21.78	PPBV		99
107) 1,2,4-TRICHLOROBENZENE	18.482	180	396784	22.88	PPBV		98
108) NAPHTHALENE	18.530	128	1024136	23.56	PPBV		100

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

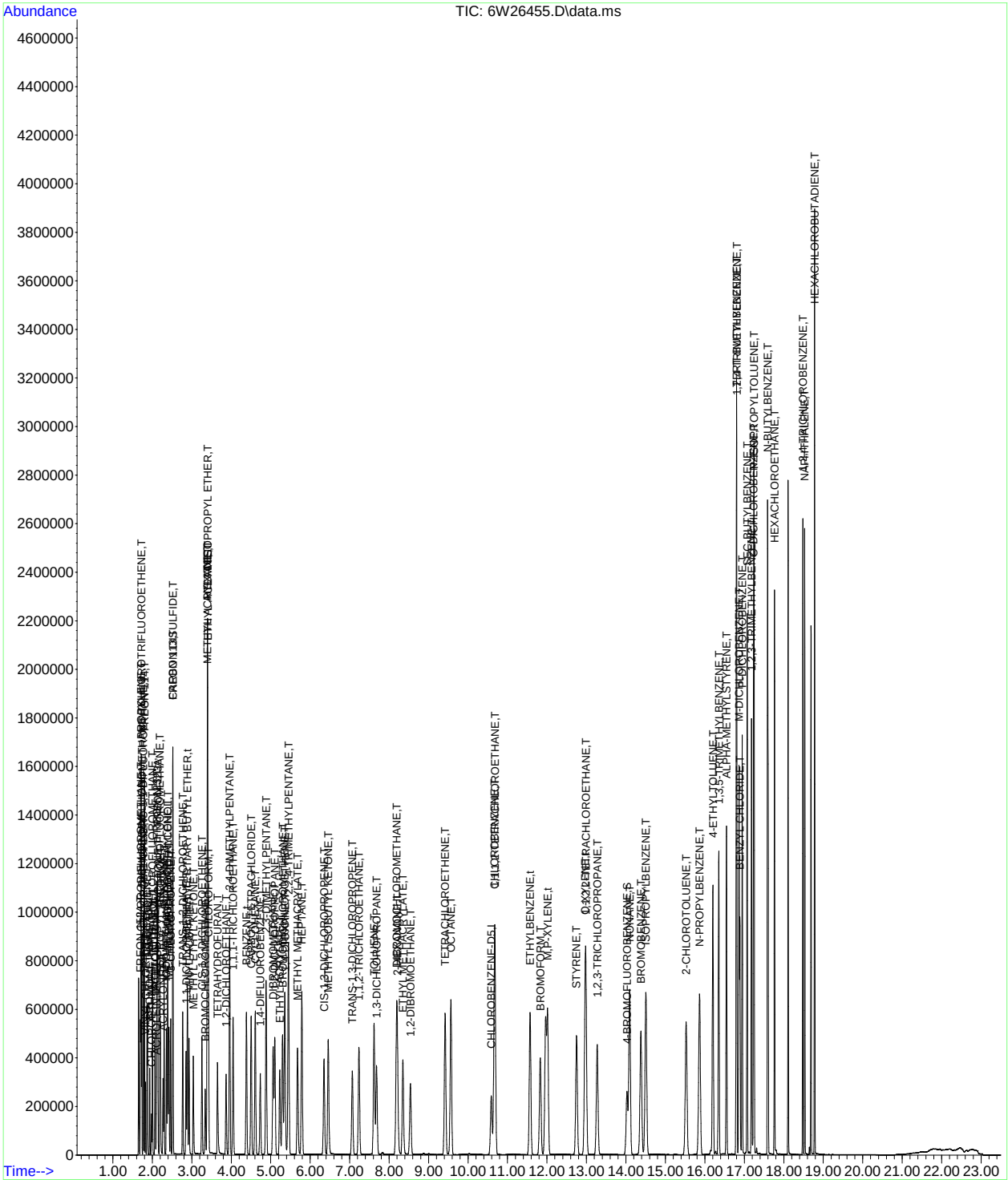
7.7.18

7

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\
Data File : 6W26455.D
Acq On : 19 Oct 2022 10:57 pm
Operator : thomash
Sample : ic1125-20
Misc : MS63121,V6W1125,,,,,1
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Oct 20 07:48:06 2022
Quant Method : C:\msdchem\1\methods\M6W1125.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Thu Oct 20 07:44:13 2022
Response via : Initial Calibration



Manual Integration Approval Summary

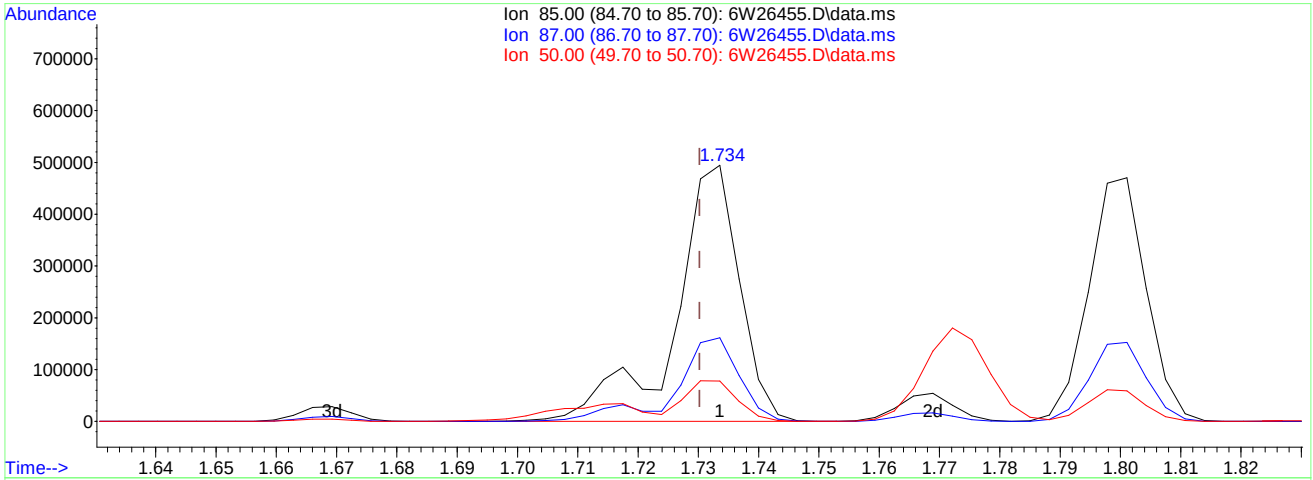
Sample Number: V6W1125-IC1125
Lab FileID: 6W26455.D
Injection Time: 10/19/22 22:57
Method: TO-15
Analyst approved: 10/20/22 10:04 Thomas Hilbig
Supervisor approved: 10/20/22 12:15 Kanya Veerawat

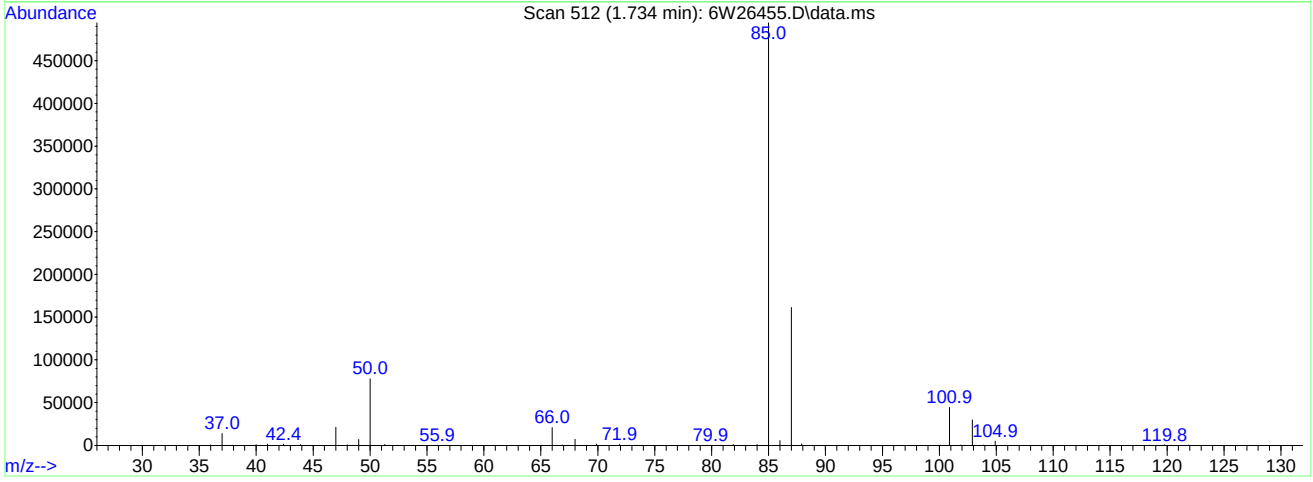
Parameter	CAS	Sig#	R.T. (min.)	Reason
Dichlorodifluoromethane	75-71-8		1.73	Overlapping peak

Quantitation Report (Qedit)

Data Path : C:\msdchem\1\data\
Data File : 6W26455.D
Acq On : 19 Oct 2022 10:57 pm
Operator : thomash
Sample : ic1125-20
Misc : MS63121,V6W1125,,,,,1
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Oct 20 07:47:41 2022
Quant Method : C:\msdchem\1\methods\M6W1125.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Thu Oct 20 07:44:13 2022
Response via : Initial Calibration





TIC: 6W26455.D\data.ms

(6) DICHLORODIFLUOROMETHANE (T)

1.734min (+0.003) 24.73PPBV

response 369647

Ion	Exp%	Act%
85.00	100	100
87.00	32.20	32.23
50.00	9.30	22.85#
0.00	0.00	0.00

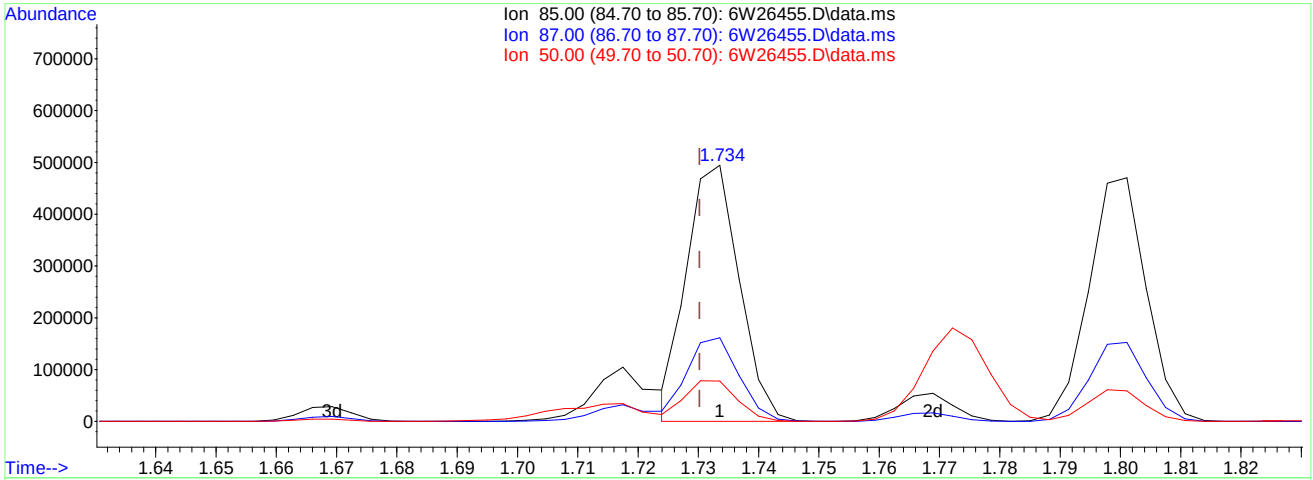
6W26455.D edits: DICHLORODIFLUOROMETHANE

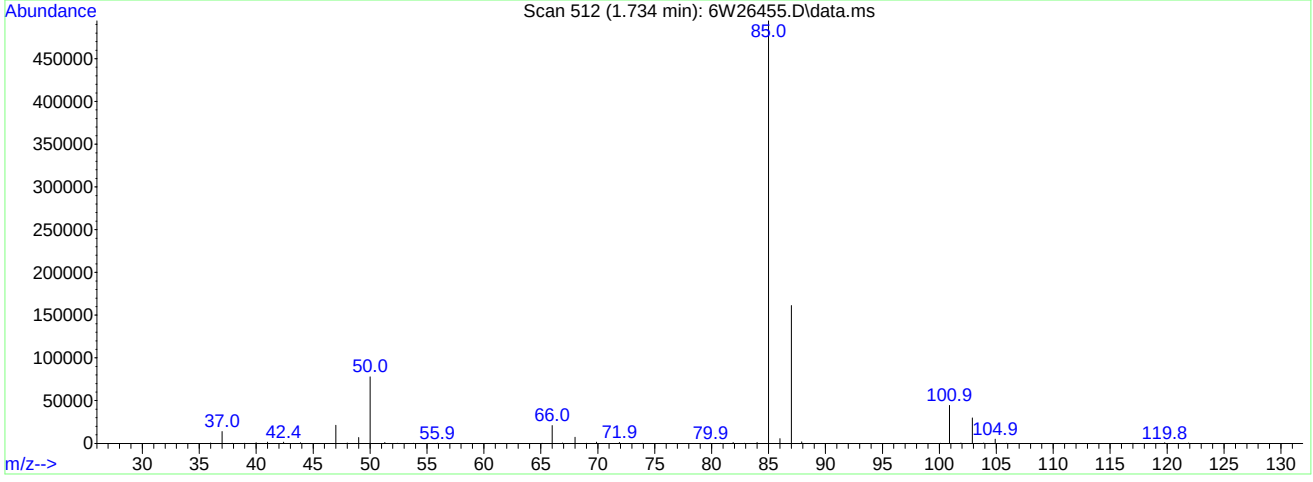
SGS JD59460

Quantitation Report (Qedit)

Data Path : C:\msdchem\1\data\
Data File : 6W26455.D
Acq On : 19 Oct 2022 10:57 pm
Operator : thomash
Sample : ic1125-20
Misc : MS63121,V6W1125,,,,,1
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Oct 20 07:47:41 2022
Quant Method : C:\msdchem\1\methods\M6W1125.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Thu Oct 20 07:44:13 2022
Response via : Initial Calibration





TIC: 6W26455.D\data.ms

(6) DICHLORODIFLUOROMETHANE (T)

1.734min (+0.003) 20.08PPBV m

response 300113

Ion	Exp%	Act%
85.00	100	100
87.00	32.20	39.70#
50.00	9.30	28.15#
0.00	0.00	0.00

Manual Integrations APPROVED (compounds with "m" flag)
Kanya Veerawat 10/20/22 12:15

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\
Data File : 6W26456.D
Acq On : 19 Oct 2022 11:29 pm
Operator : thomash
Sample : ic1125-40
Misc : MS63121,V6W1125,,,,,1
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Oct 20 07:49:51 2022
Quant Method : C:\msdchem\1\methods\M6W1125.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Thu Oct 20 07:44:13 2022
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units		Dev(Min)
Internal Standards							
1) BROMOCHLOROMETHANE	3.341	128	46967	10.00	PPBV	#	0.00
52) 1,4-DIFLUOROBENZENE	4.737	114	253136	10.00	PPBV		0.00
76) CHLOROBENZENE-D5	10.589	117	227517	10.00	PPBV		0.00
System Monitoring Compounds							
87) 4-BROMOFLUOROBENZENE	14.029	95	161635	10.04	PPBV		0.00
Target Compounds							Qvalue
3) FREON 152A	1.695	65	163961	43.02	PPBV	#	76
4) CHLORODIFLUOROMETHANE	1.705	67	75194	43.27	PPBV		97
5) CHLOROTRIFLUOROETHENE	1.714	116	367249	44.48	PPBV	#	100
6) DICHLORODIFLUOROMETHANE	1.730	85	618919m	43.53	PPBV		
7) PROPYLENE	1.714	41	250115	43.64	PPBV		97
8) 1-CHLORO-1,1-DIFLUOROE...	1.766	65	571824	45.23	PPBV	#	86
9) FREON 114	1.798	85	663817	46.70	PPBV		97
10) CHLOROMETHANE	1.772	52	85767	44.36	PPBV		92
11) VINYL CHLORIDE	1.827	62	262363	44.20	PPBV		97
12) 1,3-BUTADIENE	1.862	54	222248	45.50	PPBV	#	72
13) N-BUTANE	1.878	43	450101	44.59	PPBV	#	90
14) BROMOMETHANE	1.933	94	211773	45.78	PPBV		99
15) CHLOROETHANE	1.978	64	130163	44.48	PPBV		93
16) DICHLOROFLUOROMETHANE	2.000	67	559369	46.11	PPBV	#	95
17) ACETONITRILE	2.065	41	276741	45.12	PPBV		97
18) ACROLEIN	2.100	56	131385	45.42	PPBV		100
19) FREON 123	2.116	83	534859	47.20	PPBV		96
20) FREON 123A	2.129	117	324907	46.73	PPBV		85
21) TRICHLOROFLUOROMETHANE	2.190	101	640519	46.08	PPBV		100
22) ISOPROPYL ALCOHOL	2.203	45	633268	47.74	PPBV	#	97
23) ACETONE	2.136	58	137114	46.44	PPBV	#	25
24) PENTANE	2.296	42	343004	47.55	PPBV	#	94
25) IODOMETHANE	2.354	142	657283	48.18	PPBV	#	85
26) 1,1-DICHLOROETHYLENE	2.383	96	245216	43.63	PPBV	#	53
27) CARBON DISULFIDE	2.518	76	782562	44.11	PPBV	#	88
28) ETHANOL	2.004	45	135376	46.10	PPBV		97
29) BROMOETHENE	2.071	106	222371	45.90	PPBV	#	97
30) ACRYLONITRILE	2.271	52	222964	47.40	PPBV		95
31) METHYLENE CHLORIDE	2.418	84	225128	41.96	PPBV	#	49
32) 3-CHLOROPROPENE	2.460	76	122652	43.45	PPBV	#	1
33) FREON 113	2.518	151	437104	42.74	PPBV		90
34) TRANS-1,2-DICHLOROETHENE	2.769	96	265721	42.13	PPBV	#	77
35) TERTIARY BUTYL ALCOHOL	2.393	59	592362	51.68	PPBV	#	90
36) METHYL TERTIARY BUTYL ...	2.888	73	701685	45.23	PPBV	#	91
37) TETRAHYDROFURAN	3.650	72	132108	46.47	PPBV	#	45
38) HEXANE	3.393	57	521004	43.50	PPBV	#	76
39) VINYL ACETATE	2.930	86	70686	47.96	PPBV	#	1
40) 1,1-DICHLOROETHANE	2.853	63	513148	43.02	PPBV		98
41) METHYL ETHYL KETONE	3.036	72	134598	44.48	PPBV	#	1
42) CIS-1,2-DICHLOROETHENE	3.254	96	270232	41.66	PPBV	#	77
43) DIISOPROPYL ETHER	3.402	59	153829	44.12	PPBV	#	46
44) ETHYL ACETATE	3.409	61	105294	44.54	PPBV	#	16
45) METHYL ACRYLATE	3.393	55	676447	44.98	PPBV	#	97
46) CHLOROFORM	3.425	83	567828	42.09	PPBV	#	93
47) 2,4-DIMETHYLPENTANE	3.955	57	623824	44.69	PPBV	#	94
48) 1,1,1-TRICHLOROETHANE	4.045	97	587783	45.06	PPBV	#	94
49) CARBON TETRACHLORIDE	4.502	117	655252	45.00	PPBV		99
50) 1,2-DICHLOROETHANE	3.869	62	442918	43.78	PPBV	#	94
51) BENZENE	4.383	78	859631	44.60	PPBV		80
53) CYCLOHEXANE	4.605	84	376495	41.45	PPBV	#	75
54) 2,3-DIMETHYLPENTANE	4.881	71	200257	41.15	PPBV	#	57
55) TRICHLOROETHENE	5.357	95	400192	40.92	PPBV		96
56) 1,2-DICHLOROPROPANE	5.103	63	363456	40.65	PPBV		97
57) DIBROMOMETHANE	5.061	174	367548	41.16	PPBV		92

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\
Data File : 6W26456.D
Acq On : 19 Oct 2022 11:29 pm
Operator : thomash
Sample : ic1125-40
Misc : MS63121,V6W1125,,,,,1
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Oct 20 07:49:51 2022
Quant Method : C:\msdchem\1\methods\M6W1125.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Thu Oct 20 07:44:13 2022
Response via : Initial Calibration

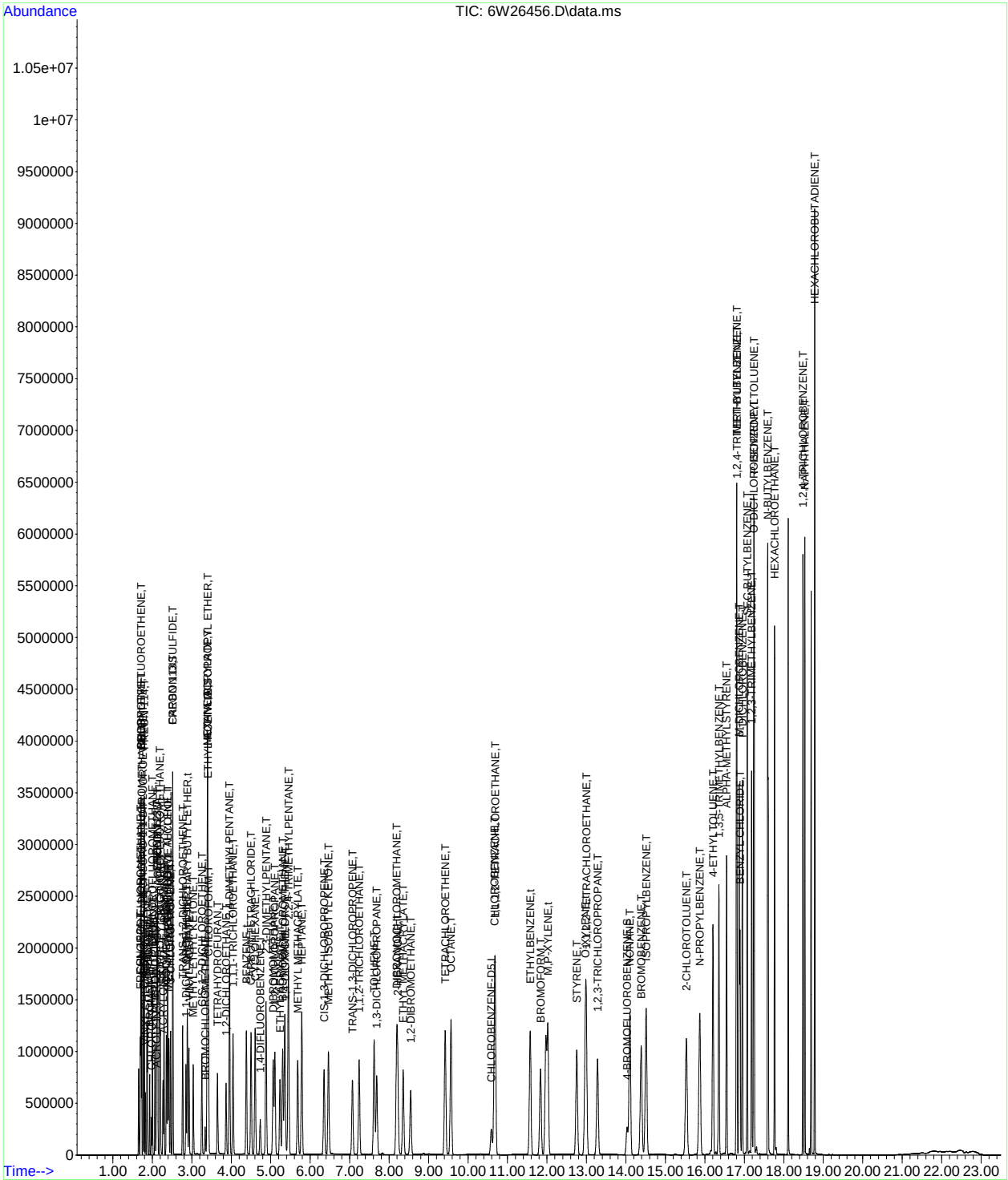
Compound	R.T.	QIon	Response	Conc	Units		Dev(Min)
58) ETHYL ACRYLATE	5.235	55	849451	43.94	PPBV	#	97
59) BROMODICHLOROMETHANE	5.303	83	668008	40.83	PPBV		99
60) 2,2,4-TRIMETHYLPENTANE	5.450	57	1705560	40.95	PPBV	#	98
61) 1,4-DIOXANE	5.367	88	188728	43.59	PPBV	#	77
62) HEPTANE	5.788	43	674381	41.21	PPBV	#	75
63) METHYL METHACRYLATE	5.682	69	346293	43.22	PPBV	#	51
64) METHYL ISOBUTYL KETONE	6.463	58	315845	43.50	PPBV	#	65
65) CIS-1,3-DICHLOROPROPENE	6.351	75	519377	43.35	PPBV	#	73
66) TOLUENE	7.621	91	1077600	41.97	PPBV		100
67) 1,3-DICHLOROPROPANE	7.688	76	550084	42.00	PPBV	#	98
68) TRANS-1,3-DICHLOROPROPENE	7.071	75	479918	45.20	PPBV	#	76
69) 1,1,2-TRICHLOROETHANE	7.241	83	318639	40.96	PPBV		98
70) 2-HEXANONE	8.216	58	398485	48.38	PPBV	#	64
71) ETHYL METHACRYLATE	8.357	69	553422	43.91	PPBV	#	67
72) TETRACHLOROETHENE	9.421	164	410286	41.67	PPBV		92
73) DIBROMOCHLOROMETHANE	8.190	129	733897	42.46	PPBV		99
74) 1,2-DIBROMOETHANE	8.547	107	600655	42.26	PPBV		99
75) OCTANE	9.566	43	941590	42.07	PPBV	#	75
77) 1,1,1,2-TETRACHLOROETHANE	10.688	131	498844	40.87	PPBV		98
78) CHLOROBENZENE	10.672	112	897241	40.66	PPBV		99
79) ETHYLBENZENE	11.576	91	1454202	41.21	PPBV		100
80) M,P-XYLENE	12.019	91	2235018	81.88	PPBV	#	67
81) O-XYLENE	12.971	91	1128138	40.91	PPBV		99
82) STYRENE	12.756	104	879675	41.79	PPBV		98
83) NONANE	14.100	43	989572	40.02	PPBV	#	74
84) BROMOFORM	11.839	173	669992	41.94	PPBV	#	97
85) 1,1,2,2-TETRACHLOROETHANE	12.997	83	842134	40.34	PPBV		98
86) 1,2,3-TRICHLOROPROPANE	13.280	75	658833	40.74	PPBV		99
88) ISOPROPYLBENZENE	14.511	105	1682867	41.11	PPBV	#	93
89) BROMOBENZENE	14.386	77	812725	41.15	PPBV		97
90) 2-CHLOROTOLUENE	15.530	91	1171885	41.80	PPBV		98
91) N-PROPYLBENZENE	15.871	91	2011221	41.64	PPBV	#	97
92) 4-ETHYLTOLUENE	16.206	105	1721193	41.96	PPBV		99
93) 1,3,5-TRIMETHYLBENZENE	16.357	105	1431579	42.87	PPBV		99
94) ALPHA-METHYLSTYRENE	16.550	118	719858	43.19	PPBV		99
95) TERT-BUTYLBENZENE	16.807	119	1606964	42.63	PPBV		98
96) 1,2,4-TRIMETHYLBENZENE	16.810	105	1495113	42.70	PPBV		96
97) BENZYL CHLORIDE	16.894	91	1052168	53.75	PPBV		98
98) M-DICHLOROBENZENE	16.871	146	982044	42.62	PPBV		99
99) P-DICHLOROBENZENE	16.952	146	997166	43.39	PPBV		99
100) O-DICHLOROBENZENE	17.238	146	962371	43.54	PPBV		99
101) SEC-BUTYLBENZENE	17.074	105	2164365	42.06	PPBV		99
102) 1,2,3-TRIMETHYLBENZENE	17.183	105	1452418	42.59	PPBV		100
103) P-ISOPROPYLTOLUENE	17.247	119	1915158	42.80	PPBV		97
104) N-BUTYLBENZENE	17.588	91	1807256	44.04	PPBV		98
105) HEXACHLOROETHANE	17.765	117	650411	45.74	PPBV	#	89
106) HEXACHLOROBUTADIENE	18.784	225	757147	48.88	PPBV		99
107) 1,2,4-TRICHLOROBENZENE	18.485	180	922193	51.33	PPBV		97
108) NAPHTHALENE	18.534	128	2419856	53.76	PPBV		100

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

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\
Data File : 6W26456.D
Acq On : 19 Oct 2022 11:29 pm
Operator : thomash
Sample : ic1125-40
Misc : MS63121,V6W1125,,,,,1
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Oct 20 07:49:51 2022
Quant Method : C:\msdchem\1\methods\M6W1125.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Thu Oct 20 07:44:13 2022
Response via : Initial Calibration



Manual Integration Approval Summary

Sample Number: V6W1125-IC1125
Lab FileID: 6W26456.D
Injection Time: 10/19/22 23:29

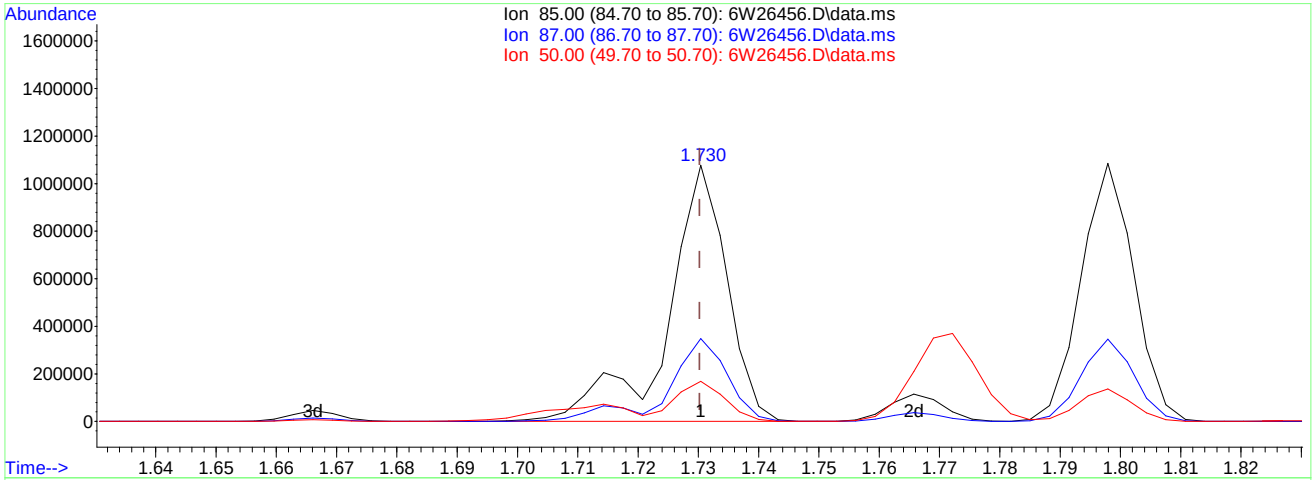
Method: TO-15
Analyst approved: 10/20/22 10:04 Thomas Hilbig
Supervisor approved: 10/20/22 12:15 Kanya Veerawat

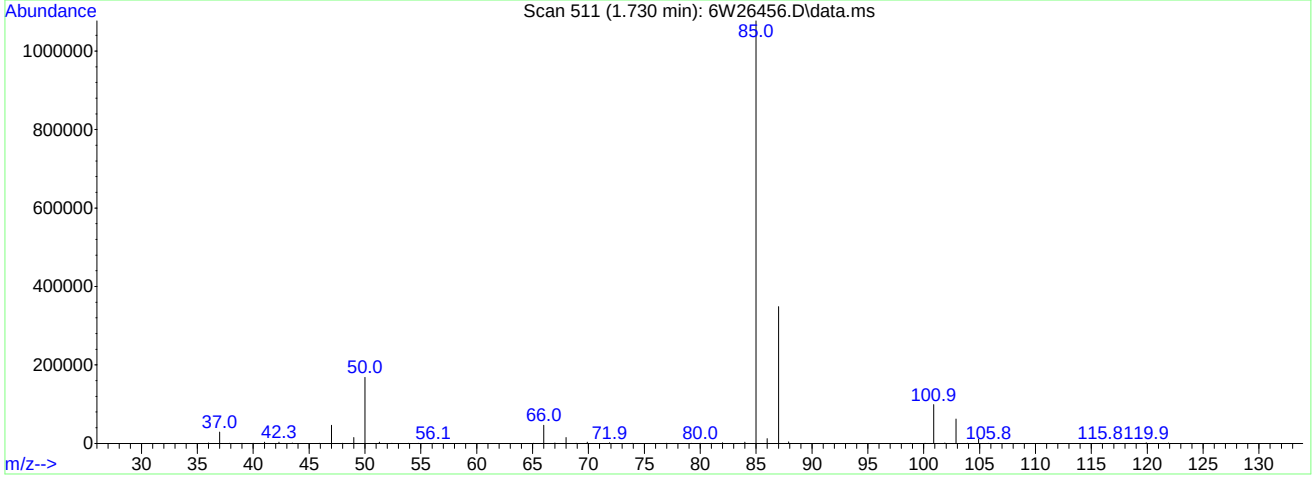
Parameter	CAS	Sig#	R.T. (min.)	Reason
Dichlorodifluoromethane	75-71-8		1.73	Overlapping peak

Quantitation Report (Qedit)

Data Path : C:\msdchem\1\data\
Data File : 6W26456.D
Acq On : 19 Oct 2022 11:29 pm
Operator : thomash
Sample : ic1125-40
Misc : MS63121,V6W1125,,,,,1
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Oct 20 07:49:29 2022
Quant Method : C:\msdchem\1\methods\M6W1125.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Thu Oct 20 07:44:13 2022
Response via : Initial Calibration





TIC: 6W26456.D\data.ms

(6) DICHLORODIFLUOROMETHANE (T)

1.730min (+0.000) 52.36PPBV

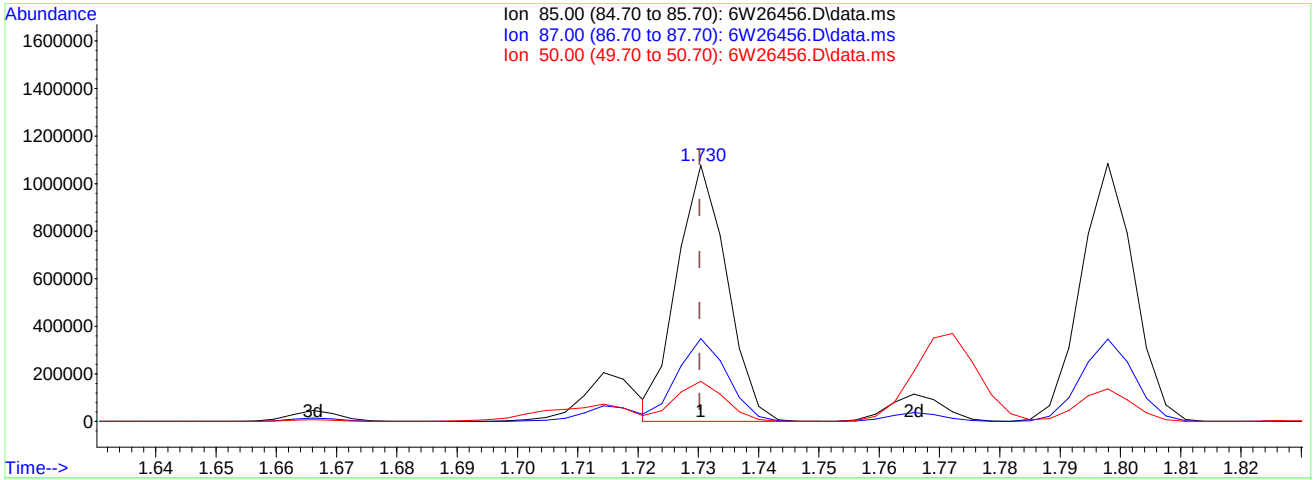
response 744497

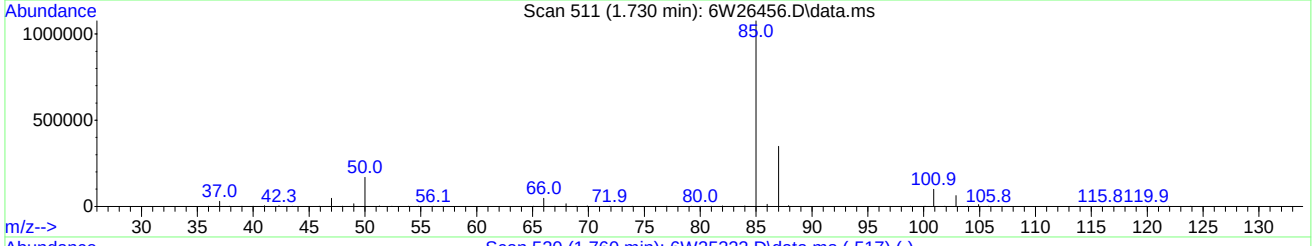
Ion	Exp%	Act%
85.00	100	100
87.00	32.20	32.34
50.00	9.30	22.51#
0.00	0.00	0.00

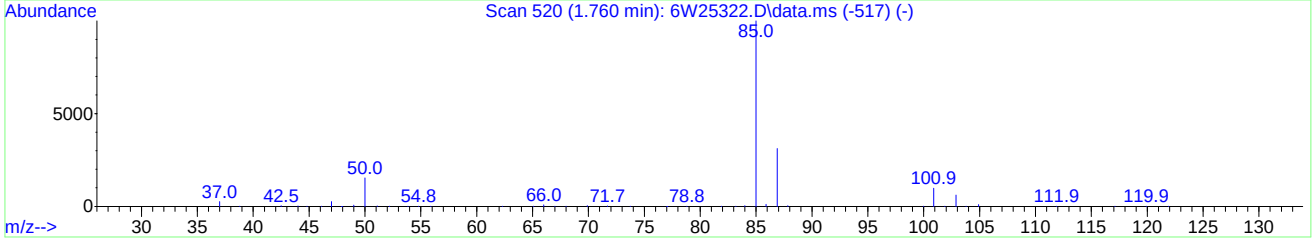
Quantitation Report (Qedit)

Data Path : C:\msdchem\1\data\
Data File : 6W26456.D
Acq On : 19 Oct 2022 11:29 pm
Operator : thomash
Sample : ic1125-40
Misc : MS63121,V6W1125,,,,,1
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Oct 20 07:49:29 2022
Quant Method : C:\msdchem\1\methods\M6W1125.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Thu Oct 20 07:44:13 2022
Response via : Initial Calibration







TIC: 6W26456.D\data.ms

(6) DICHLORODIFLUOROMETHANE (T)

1.730min (+0.000) 43.53PPBV m

response 618919

Ion	Exp%	Act%
85.00	100	100
87.00	32.20	38.90#
50.00	9.30	27.07#
0.00	0.00	0.00

Manual Integrations APPROVED (compounds with "m" flag)
Kanya Veerawat 10/20/22 12:15

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\
Data File : 6W26457.D
Acq On : 20 Oct 2022 12:03 am
Operator : thomash
Sample : ic1125-50
Misc : MS63121,V6W1125,,,,,1
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Oct 20 07:53:45 2022
Quant Method : C:\msdchem\1\methods\M6W1125.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Thu Oct 20 07:44:13 2022
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units		Dev(Min)
Internal Standards							
1) BROMOCHLOROMETHANE	3.341	128	49484	10.00	PPBV	#	0.00
52) 1,4-DIFLUOROBENZENE	4.737	114	256894	10.00	PPBV		0.00
76) CHLOROBENZENE-D5	10.588	117	229830	10.00	PPBV		0.00
System Monitoring Compounds							
87) 4-BROMOFLUOROBENZENE	14.032	95	164056	10.09	PPBV		0.01
Target Compounds							Qvalue
3) FREON 152A	1.695	65	205752	51.24	PPBV	#	76
4) CHLORODIFLUOROMETHANE	1.705	67	95178	51.99	PPBV		98
5) CHLOROTRIFLUOROETHENE	1.714	116	465990	53.57	PPBV	#	100
6) DICHLORODIFLUOROMETHANE	1.730	85	760993m	50.80	PPBV		
7) PROPYLENE	1.714	41	310615	51.44	PPBV		97
8) 1-CHLORO-1,1-DIFLUOROE...	1.766	65	744693	55.90	PPBV	#	86
9) FREON 114	1.798	85	863921	57.69	PPBV		98
10) CHLOROMETHANE	1.772	52	110393	54.20	PPBV		92
11) VINYL CHLORIDE	1.827	62	335776	53.69	PPBV		98
12) 1,3-BUTADIENE	1.862	54	289612	56.28	PPBV	#	74
13) N-BUTANE	1.878	43	575553	54.12	PPBV	#	91
14) BROMOMETHANE	1.933	94	271714	55.75	PPBV		100
15) CHLOROETHANE	1.978	64	167979	54.48	PPBV		94
16) DICHLOROFLUOROMETHANE	2.000	67	726431	56.83	PPBV	#	95
17) ACETONITRILE	2.065	41	351071	54.33	PPBV		97
18) ACROLEIN	2.100	56	167398	54.93	PPBV		98
19) FREON 123	2.113	83	697138	58.39	PPBV		95
20) FREON 123A	2.129	117	423251	57.77	PPBV		85
21) TRICHLOROFLUOROMETHANE	2.190	101	828916	56.60	PPBV		100
22) ISOPROPYL ALCOHOL	2.203	45	815195	58.32	PPBV	#	99
23) ACETONE	2.135	58	176460	56.73	PPBV	#	26
24) PENTANE	2.296	42	408771	53.78	PPBV	#	94
25) IODOMETHANE	2.354	142	787579	54.79	PPBV	#	83
26) 1,1-DICHLOROETHYLENE	2.383	96	299957	50.65	PPBV	#	53
27) CARBON DISULFIDE	2.518	76	989379	52.94	PPBV	#	88
28) ETHANOL	2.004	45	173809	56.18	PPBV	#	97
29) BROMOETHENE	2.071	106	286147	56.06	PPBV	#	98
30) ACRYLONITRILE	2.270	52	270180	54.51	PPBV		95
31) METHYLENE CHLORIDE	2.418	84	265469	46.96	PPBV	#	47
32) 3-CHLOROPROPENE	2.463	76	146926	49.40	PPBV	#	1
33) FREON 113	2.518	151	546341	50.71	PPBV		88
34) TRANS-1,2-DICHLOROETHENE	2.769	96	344381	51.82	PPBV	#	78
35) TERTIARY BUTYL ALCOHOL	2.393	59	737234	61.05	PPBV	#	89
36) METHYL TERTIARY BUTYL ...	2.888	73	925978	56.66	PPBV	#	91
37) TETRAHYDROFURAN	3.650	72	166673	55.65	PPBV	#	39
38) HEXANE	3.393	57	678018	53.74	PPBV	#	77
39) VINYL ACETATE	2.930	86	92754	59.74	PPBV	#	1
40) 1,1-DICHLOROETHANE	2.852	63	664396	52.87	PPBV		98
41) METHYL ETHYL KETONE	3.036	72	172738	54.18	PPBV	#	1
42) CIS-1,2-DICHLOROETHENE	3.254	96	353037	51.65	PPBV	#	78
43) DIISOPROPYL ETHER	3.402	59	200034	54.45	PPBV	#	51
44) ETHYL ACETATE	3.409	61	136714	54.89	PPBV	#	22
45) METHYL ACRYLATE	3.393	55	875745	55.26	PPBV	#	97
46) CHLOROFORM	3.425	83	738319	51.95	PPBV	#	93
47) 2,4-DIMETHYLPENTANE	3.955	57	767338	52.17	PPBV	#	93
48) 1,1,1-TRICHLOROETHANE	4.045	97	750699	54.62	PPBV	#	94
49) CARBON TETRACHLORIDE	4.502	117	837332	54.58	PPBV		99
50) 1,2-DICHLOROETHANE	3.868	62	563096	52.82	PPBV	#	94
51) BENZENE	4.383	78	1103884	54.36	PPBV		80
53) CYCLOHEXANE	4.605	84	480631	52.14	PPBV	#	75
54) 2,3-DIMETHYLPENTANE	4.881	71	257103	52.06	PPBV	#	57
55) TRICHLOROETHENE	5.354	95	514119	51.80	PPBV		97
56) 1,2-DICHLOROPROPANE	5.106	63	468131	51.59	PPBV		97
57) DIBROMOMETHANE	5.061	174	472796	52.17	PPBV		93

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\
Data File : 6W26457.D
Acq On : 20 Oct 2022 12:03 am
Operator : thomash
Sample : ic1125-50
Misc : MS63121,V6W1125,,,,,1
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Oct 20 07:53:45 2022
Quant Method : C:\msdchem\1\methods\M6W1125.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Thu Oct 20 07:44:13 2022
Response via : Initial Calibration

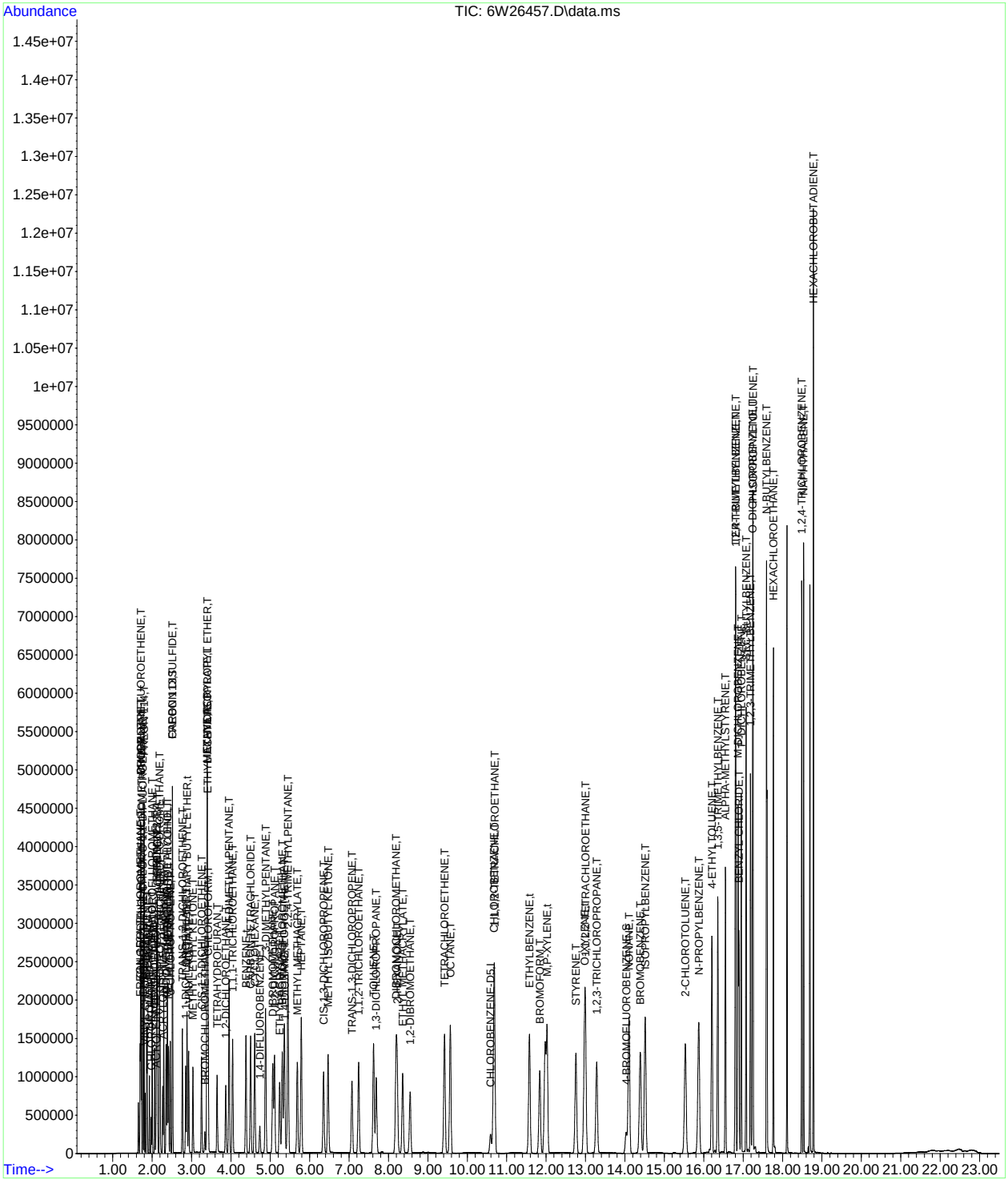
Compound	R.T.	QIon	Response	Conc	Units		Dev(Min)
58) ETHYL ACRYLATE	5.238	55	1098830	56.01	PPBV	#	97
59) BROMODICHLOROMETHANE	5.303	83	855768	51.54	PPBV		98
60) 2,2,4-TRIMETHYLPENTANE	5.447	57	2189480	51.80	PPBV	#	98
61) 1,4-DIOXANE	5.370	88	248097	56.47	PPBV	#	77
62) HEPTANE	5.785	43	867169	52.21	PPBV	#	75
63) METHYL METHACRYLATE	5.685	69	447804	55.07	PPBV	#	51
64) METHYL ISOBUTYL KETONE	6.466	58	410011	55.64	PPBV	#	65
65) CIS-1,3-DICHLOROPROPENE	6.354	75	670342	55.14	PPBV	#	73
66) TOLUENE	7.621	91	1390715	53.37	PPBV		100
67) 1,3-DICHLOROPROPANE	7.688	76	707445	53.22	PPBV	#	98
68) TRANS-1,3-DICHLOROPROPENE	7.071	75	625674	58.06	PPBV	#	76
69) 1,1,2-TRICHLOROETHANE	7.245	83	410658	52.01	PPBV		98
70) 2-HEXANONE	8.219	58	526885	63.03	PPBV	#	65
71) ETHYL METHACRYLATE	8.360	69	721957	56.44	PPBV	#	68
72) TETRACHLOROETHENE	9.421	164	529858	53.03	PPBV		92
73) DIBROMOCHLOROMETHANE	8.190	129	945732	53.92	PPBV		99
74) 1,2-DIBROMOETHANE	8.550	107	775972	53.80	PPBV		99
75) OCTANE	9.569	43	1205638	53.08	PPBV	#	75
77) 1,1,1,2-TETRACHLOROETHANE	10.691	131	643742	52.20	PPBV		98
78) CHLOROBENZENE	10.675	112	1159394	52.02	PPBV		100
79) ETHYLBENZENE	11.579	91	1876315	52.64	PPBV		100
80) M,P-XYLENE	12.023	91	2892477m	104.90	PPBV		
81) O-XYLENE	12.974	91	1453541	52.18	PPBV		97
82) STYRENE	12.756	104	1132584	53.26	PPBV		98
83) NONANE	14.106	43	1260959	50.48	PPBV	#	74
84) BROMOFORM	11.839	173	872403	54.06	PPBV	#	97
85) 1,1,2,2-TETRACHLOROETHANE	13.000	83	1084180	51.41	PPBV		98
86) 1,2,3-TRICHLOROPROPANE	13.286	75	848963	51.97	PPBV		99
88) ISOPROPYLBENZENE	14.514	105	2159991	52.23	PPBV	#	93
89) BROMOBENZENE	14.389	77	1045006	52.38	PPBV		97
90) 2-CHLOROTOLUENE	15.534	91	1501344	53.02	PPBV		98
91) N-PROPYLBENZENE	15.874	91	2595777	53.20	PPBV	#	97
92) 4-ETHYLTOLUENE	16.209	105	2206279	53.25	PPBV		99
93) 1,3,5-TRIMETHYLBENZENE	16.357	105	1852741	54.92	PPBV		99
94) ALPHA-METHYLSTYRENE	16.550	118	926148	55.00	PPBV		99
95) TERT-BUTYLBENZENE	16.807	119	2065662	54.24	PPBV		98
96) 1,2,4-TRIMETHYLBENZENE	16.813	105	1925116	54.43	PPBV		96
97) BENZYL CHLORIDE	16.894	91	1425408	72.09	PPBV		98
98) M-DICHLOROBENZENE	16.871	146	1271661	54.63	PPBV		99
99) P-DICHLOROBENZENE	16.952	146	1306388	56.27	PPBV		99
100) O-DICHLOROBENZENE	17.241	146	1267285	56.76	PPBV		99
101) SEC-BUTYLBENZENE	17.077	105	2815719	54.17	PPBV		99
102) 1,2,3-TRIMETHYLBENZENE	17.186	105	1878817	54.54	PPBV		99
103) P-ISOPROPYLTOLUENE	17.251	119	2494674	55.18	PPBV		96
104) N-BUTYLBENZENE	17.591	91	2362429	56.98	PPBV		98
105) HEXACHLOROETHANE	17.768	117	851741	59.29	PPBV	#	90
106) HEXACHLOROBUTADIENE	18.784	225	1049841	67.10	PPBV		99
107) 1,2,4-TRICHLOROBENZENE	18.485	180	1229650	67.76	PPBV		97
108) NAPHTHALENE	18.534	128	3251100	71.49	PPBV		100

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

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\
Data File : 6W26457.D
Acq On : 20 Oct 2022 12:03 am
Operator : thomash
Sample : ic1125-50
Misc : MS63121,V6W1125,,,,,1
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Oct 20 07:53:45 2022
Quant Method : C:\msdchem\1\methods\M6W1125.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Thu Oct 20 07:44:13 2022
Response via : Initial Calibration



Manual Integration Approval Summary

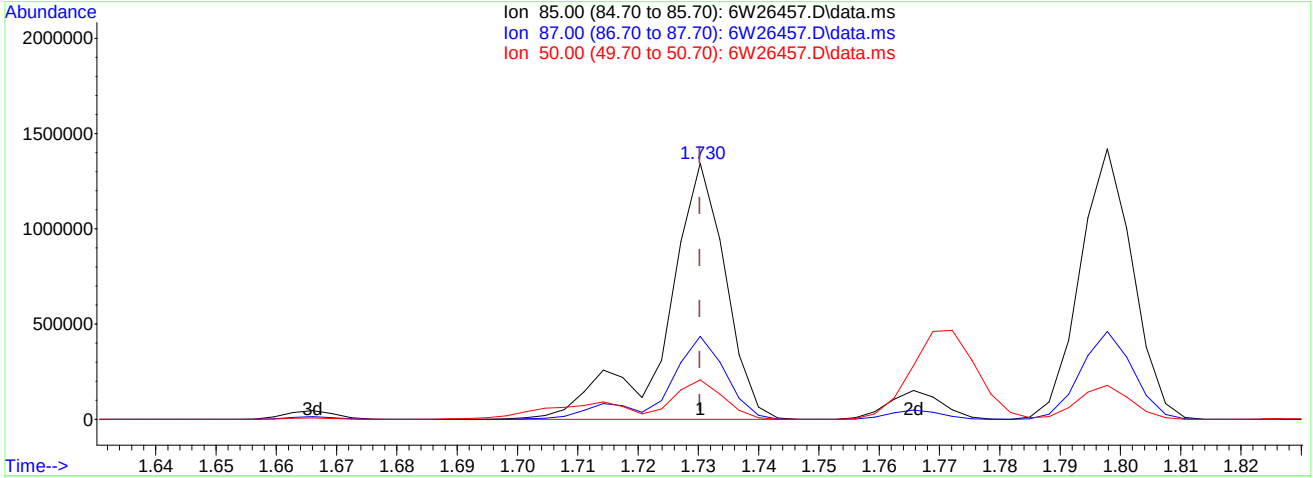
Sample Number: V6W1125-IC1125
Lab FileID: 6W26457.D
Injection Time: 10/20/22 00:03
Method: TO-15
Analyst approved: 10/20/22 10:04 Thomas Hilbig
Supervisor approved: 10/20/22 12:15 Kanya Veerawat

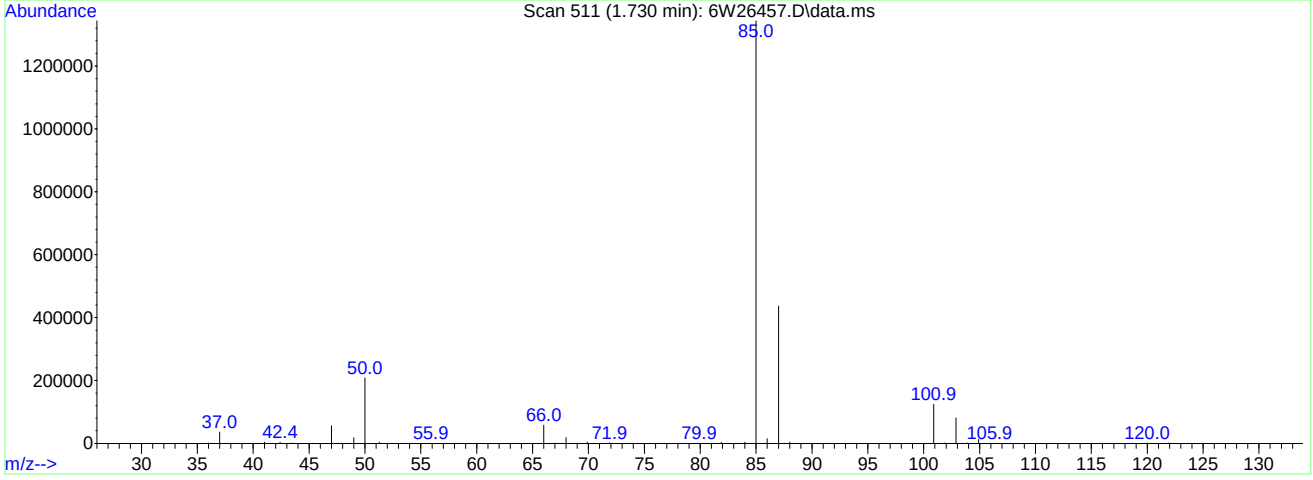
Parameter	CAS	Sig#	R.T. (min.)	Reason
Dichlorodifluoromethane	75-71-8		1.73	Overlapping peak
m,p-Xylene			12.02	Split peak

Quantitation Report (Qedit)

Data Path : C:\msdchem\1\data\
Data File : 6W26457.D
Acq On : 20 Oct 2022 12:03 am
Operator : thomash
Sample : ic1125-50
Misc : MS63121,V6W1125,,,,,1
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Oct 20 07:51:22 2022
Quant Method : C:\msdchem\1\methods\M6W1125.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Thu Oct 20 07:44:13 2022
Response via : Initial Calibration





TIC: 6W26457.D\data.ms

(6) DICHLORODIFLUOROMETHANE (T)

1.730min (+0.000) 61.45PPBV

response 920555

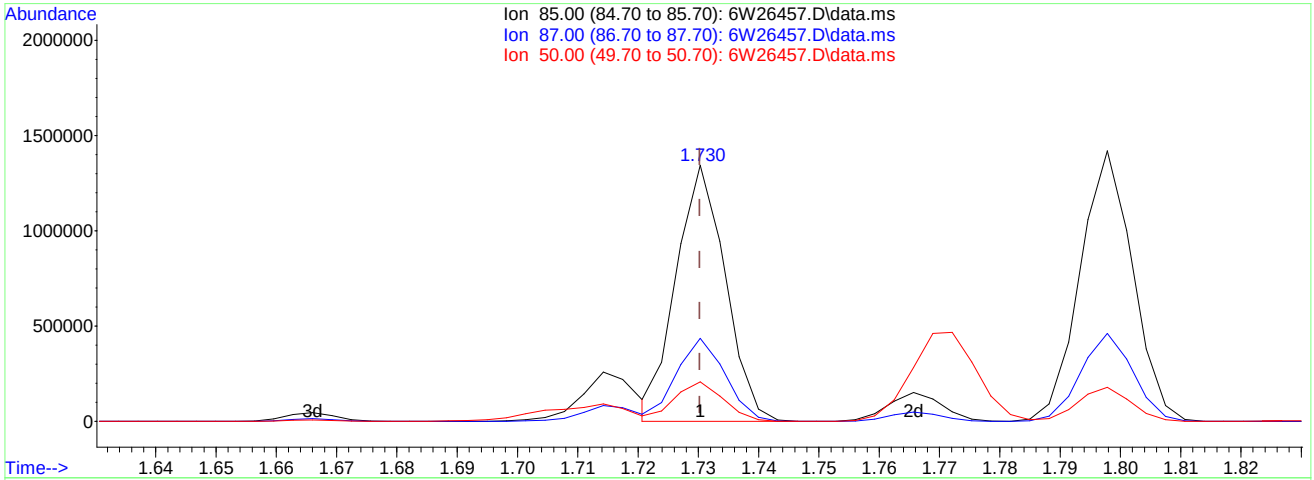
Ion	Exp%	Act%
85.00	100	100
87.00	32.20	32.24
50.00	9.30	22.41#
0.00	0.00	0.00

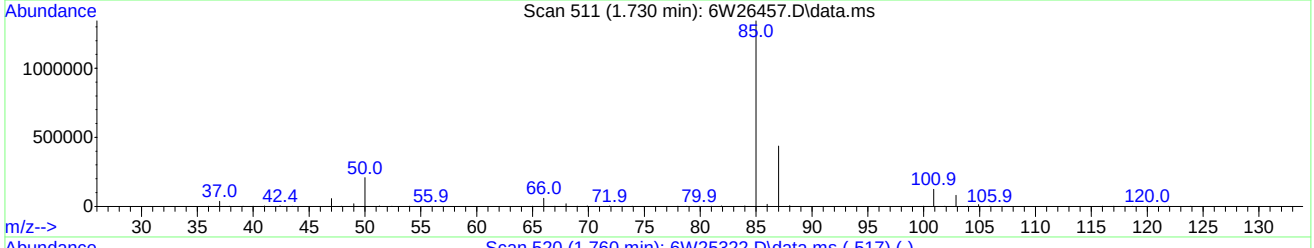
6W26457.D edits: DICHLORODIFLUOROMETHANE

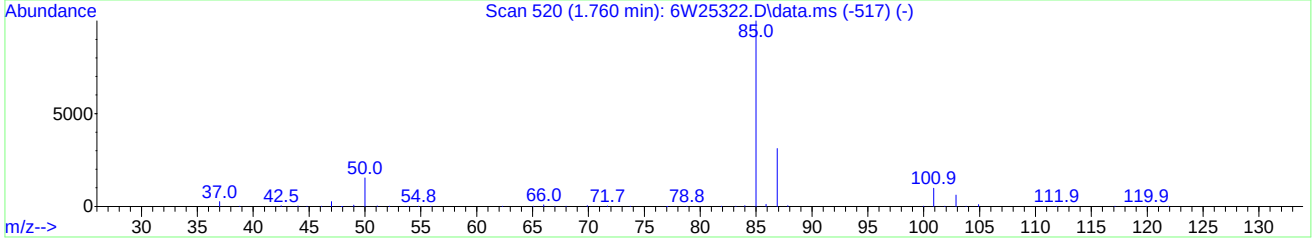
Quantitation Report (Qedit)

Data Path : C:\msdchem\1\data\
Data File : 6W26457.D
Acq On : 20 Oct 2022 12:03 am
Operator : thomash
Sample : ic1125-50
Misc : MS63121,V6W1125,,,,,1
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Oct 20 07:51:22 2022
Quant Method : C:\msdchem\1\methods\M6W1125.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Thu Oct 20 07:44:13 2022
Response via : Initial Calibration







TIC: 6W26457.D\data.ms

(6) DICHLORODIFLUOROMETHANE (T)

1.730min (+0.000) 50.80PPBV m

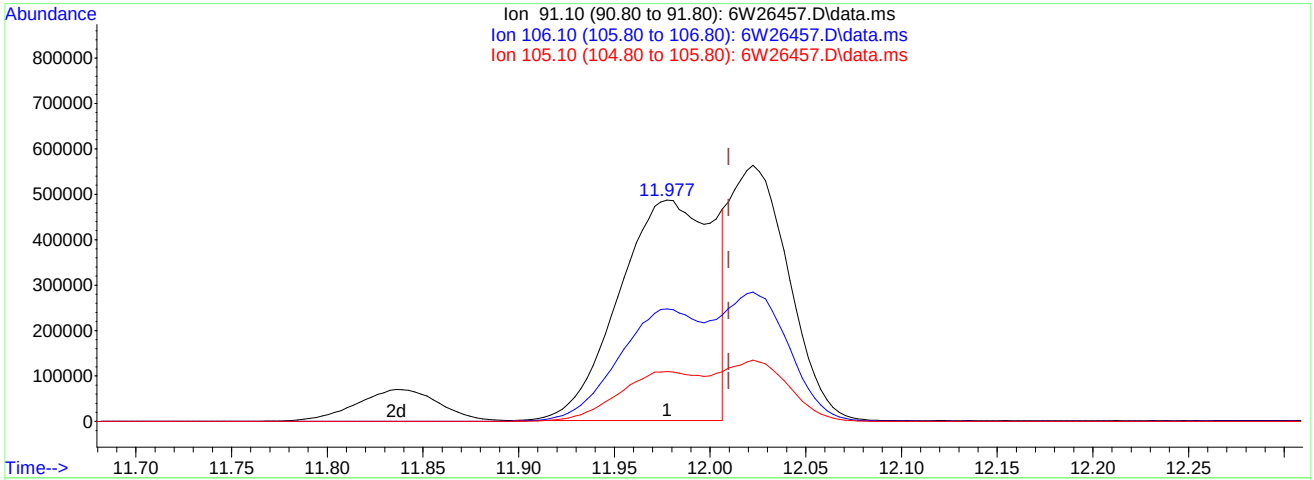
response 760993

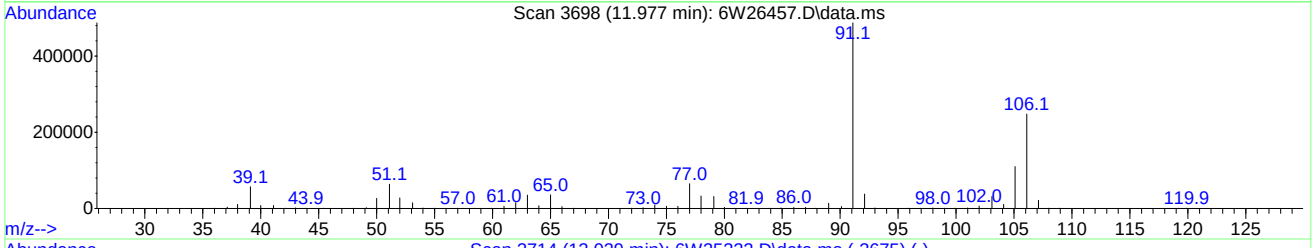
Ion	Exp%	Act%
85.00	100	100
87.00	32.20	39.00#
50.00	9.30	27.11#
0.00	0.00	0.00

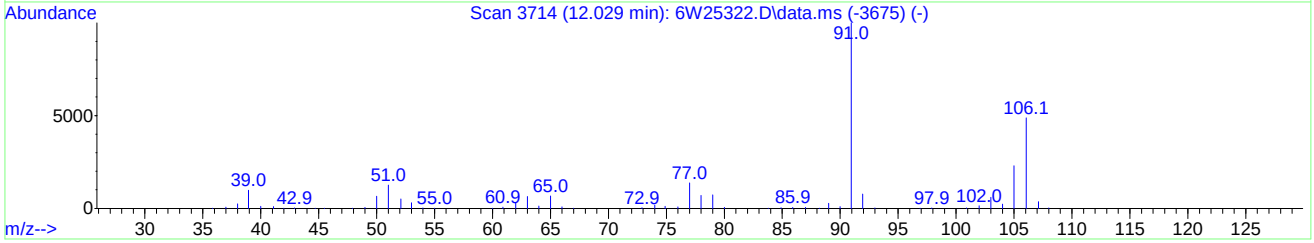
Quantitation Report (Qedit)

Data Path : C:\msdchem\1\data\
Data File : 6W26457.D
Acq On : 20 Oct 2022 12:03 am
Operator : thomash
Sample : ic1125-50
Misc : MS63121,V6W1125,,,,,1
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Oct 20 07:51:22 2022
Quant Method : C:\msdchem\1\methods\M6W1125.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Thu Oct 20 07:44:13 2022
Response via : Initial Calibration







TIC: 6W26457.D\data.ms

(80) M,P-XYLENE (t)

11.977min (-0.032) 60.92PPBV

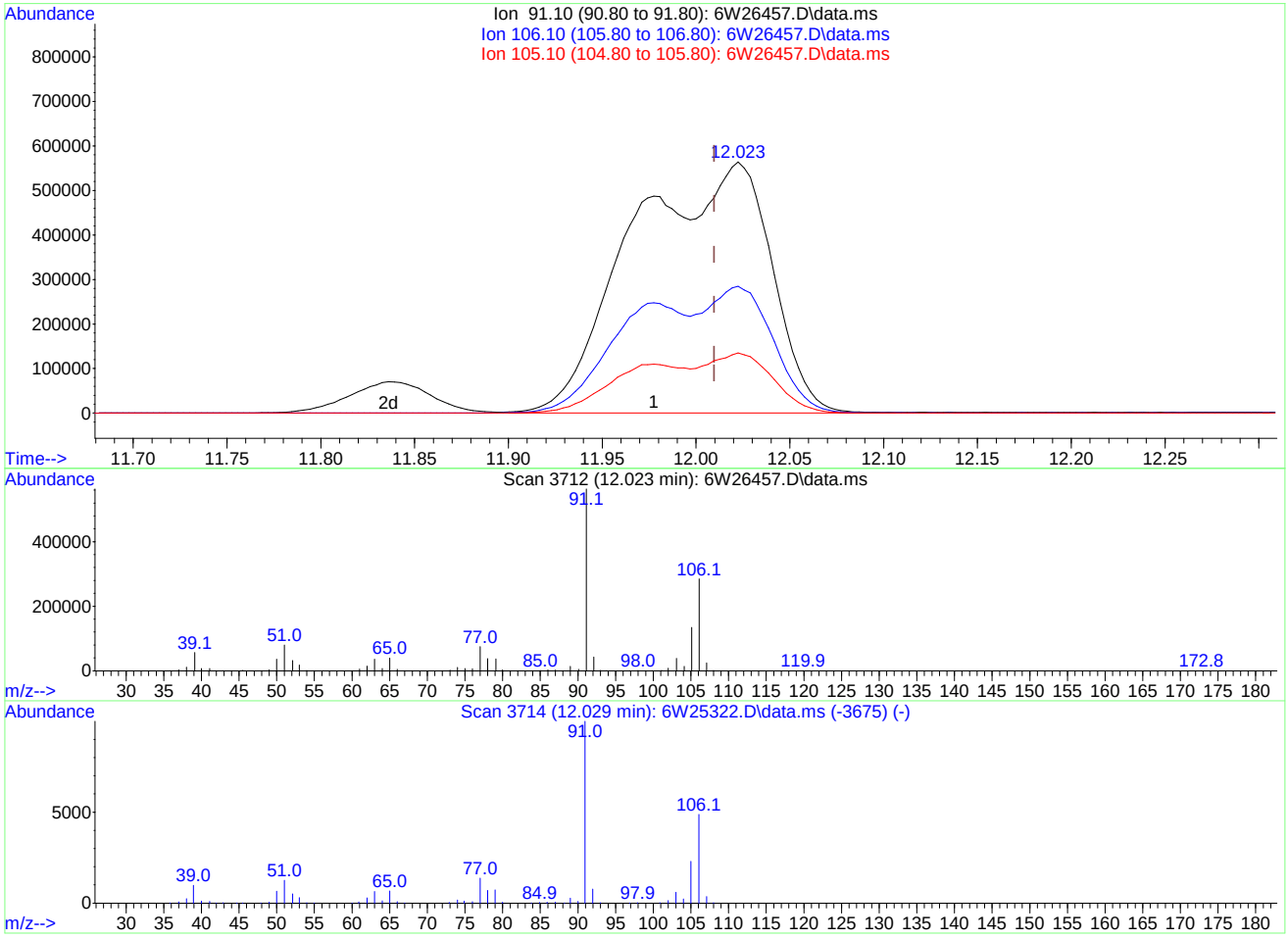
response 1679843

Ion	Exp%	Act%
91.10	100	100
106.10	51.50	45.60
105.10	23.60	20.28
0.00	0.00	0.00

Quantitation Report (Qedit)

Data Path : C:\msdchem\1\data\
Data File : 6W26457.D
Acq On : 20 Oct 2022 12:03 am
Operator : thomash
Sample : ic1125-50
Misc : MS63121,V6W1125,,,,,1
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Oct 20 07:51:22 2022
Quant Method : C:\msdchem\1\methods\M6W1125.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Thu Oct 20 07:44:13 2022
Response via : Initial Calibration



TIC: 6W26457.D\data.ms

(80) M,P-XYLENE (t)

12.023min (+0.013) 104.90PPBV m

response 2892477

Ion	Exp%	Act%
91.10	100	100
106.10	51.50	26.48#
105.10	23.60	11.78
0.00	0.00	0.00

Manual Integrations APPROVED (compounds with "m" flag)
Kanya Veerawat 10/20/22 12:15

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\
Data File : 6W26462.D
Acq On : 20 Oct 2022 9:08 am
Operator : thomash
Sample : icv1125-10
Misc : MS63121,V6W1125,,,,,1
ALS Vial : 5 Sample Multiplier: 1

Quant Time: Oct 20 09:33:55 2022
Quant Method : C:\msdchem\1\methods\M6W1125.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Thu Oct 20 08:34:08 2022
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units		Dev(Min)
Internal Standards							
1) BROMOCHLOROMETHANE	3.338	128	47437	10.00	PPBV	#	0.00
52) 1,4-DIFLUOROBENZENE	4.730	114	233994	10.00	PPBV		0.00
76) CHLOROBENZENE-D5	10.582	117	223956	10.00	PPBV		0.00
System Monitoring Compounds							
87) 4-BROMOFLUOROBENZENE	14.019	95	158390	10.13	PPBV		0.00
Target Compounds							Qvalue
3) FREON 152A	1.695	65	42315	10.38	PPBV	#	74
4) CHLORODIFLUOROMETHANE	1.708	67	18777	10.16	PPBV		96
5) CHLOROTRIFLUOROETHENE	1.717	116	91347	10.23	PPBV	#	99
6) DICHLORODIFLUOROMETHANE	1.730	85	156989m	10.58	PPBV		
7) PROPYLENE	1.714	41	62221	10.24	PPBV		96
8) 1-CHLORO-1,1-DIFLUOROE...	1.766	65	139422	10.26	PPBV	#	86
9) FREON 114	1.798	85	158149	10.13	PPBV		96
10) CHLOROMETHANE	1.772	52	21693	10.12	PPBV		94
11) VINYL CHLORIDE	1.830	62	65451	10.07	PPBV		97
12) 1,3-BUTADIENE	1.865	54	55315	10.41	PPBV	#	73
13) N-BUTANE	1.878	43	111808	9.33	PPBV	#	91
14) BROMOMETHANE	1.933	94	52086	10.36	PPBV		100
15) CHLOROETHANE	1.978	64	32770	10.53	PPBV		94
16) DICHLOROFLUOROMETHANE	2.000	67	134666	10.20	PPBV	#	95
17) ACETONITRILE	2.065	41	67287	9.65	PPBV		97
18) ACROLEIN	2.100	56	29314	10.16	PPBV		99
19) FREON 123	2.113	83	131588	10.51	PPBV		93
20) FREON 123A	2.129	117	86126	11.40	PPBV		86
21) TRICHLOROFLUOROMETHANE	2.190	101	157212	10.16	PPBV		99
22) ISOPROPYL ALCOHOL	2.206	45	146415	9.38	PPBV	#	96
23) ACETONE	2.139	58	34982	9.96	PPBV	#	33
24) PENTANE	2.296	42	80052	9.62	PPBV	#	94
25) IODOMETHANE	2.354	142	145044	9.73	PPBV	#	84
26) 1,1-DICHLOROETHYLENE	2.383	96	55100	9.37	PPBV	#	52
27) CARBON DISULFIDE	2.518	76	158110	8.49	PPBV	#	85
28) ETHANOL	2.007	45	38760	10.76	PPBV	#	96
29) BROMOETHENE	2.071	106	54264	10.30	PPBV	#	98
30) ACRYLONITRILE	2.270	52	51960	9.87	PPBV		95
31) METHYLENE CHLORIDE	2.418	84	48842	8.28	PPBV	#	42
32) 3-CHLOROPROPENE	2.460	76	26504	9.23	PPBV	#	1
33) FREON 113	2.518	151	91762	8.80	PPBV		87
34) TRANS-1,2-DICHLOROETHENE	2.769	96	62540	9.52	PPBV	#	77
35) TERTIARY BUTYL ALCOHOL	2.396	59	115504	9.05	PPBV	#	94
36) METHYL TERTIARY BUTYL ...	2.888	73	165951	10.16	PPBV	#	90
37) TETRAHYDROFURAN	3.653	72	30116	9.92	PPBV	#	34
38) HEXANE	3.389	57	128292	10.07	PPBV	#	74
39) VINYL ACETATE	2.930	86	15728	9.99	PPBV	#	1
40) 1,1-DICHLOROETHANE	2.849	63	126305	10.09	PPBV		98
41) METHYL ETHYL KETONE	3.036	72	31791	9.96	PPBV	#	1
42) CIS-1,2-DICHLOROETHENE	3.251	96	65428	9.49	PPBV	#	75
43) DIISOPROPYL ETHER	3.396	59	36125	9.87	PPBV	#	36
44) ETHYL ACETATE	3.402	61	25425	10.11	PPBV	#	9
45) METHYL ACRYLATE	3.389	55	160519	10.19	PPBV	#	97
46) CHLOROFORM	3.418	83	133863	9.46	PPBV	#	93
47) 2,4-DIMETHYLPENTANE	3.952	57	148602	10.33	PPBV	#	92
48) 1,1,1-TRICHLOROETHANE	4.039	97	133393	9.60	PPBV	#	92
49) CARBON TETRACHLORIDE	4.495	117	142449	9.56	PPBV		100
50) 1,2-DICHLOROETHANE	3.865	62	107146	9.96	PPBV	#	93
51) BENZENE	4.376	78	194518	9.20	PPBV		76
53) CYCLOHEXANE	4.598	84	84081	9.85	PPBV	#	67
54) 2,3-DIMETHYLPENTANE	4.872	71	45326	9.75	PPBV	#	46
55) TRICHLOROETHENE	5.344	95	86713	9.44	PPBV		98
56) 1,2-DICHLOROPROPANE	5.100	63	83363	9.88	PPBV		96
57) DIBROMOMETHANE	5.055	174	77798	8.98	PPBV		90

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\
Data File : 6W26462.D
Acq On : 20 Oct 2022 9:08 am
Operator : thomash
Sample : icv1125-10
Misc : MS63121,V6W1125,,,,,1
ALS Vial : 5 Sample Multiplier: 1

Quant Time: Oct 20 09:33:55 2022
Quant Method : C:\msdchem\1\methods\M6W1125.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Thu Oct 20 08:34:08 2022
Response via : Initial Calibration

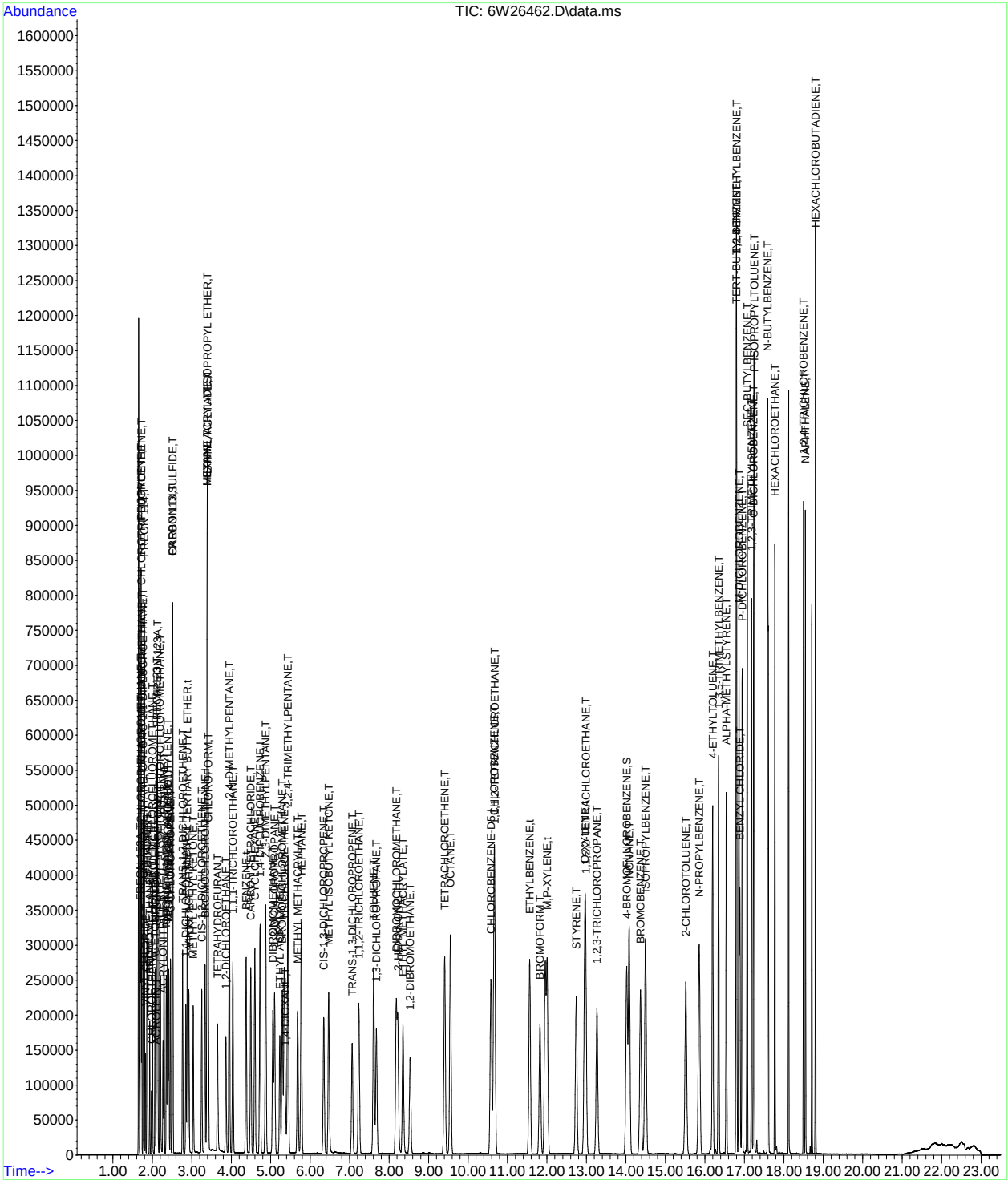
Compound	R.T.	QIon	Response	Conc	Units		Dev(Min)
58) ETHYL ACRYLATE	5.229	55	191235	10.69	PPBV	#	96
59) BROMODICHLOROMETHANE	5.293	83	148702	9.61	PPBV		99
60) 2,2,4-TRIMETHYLPENTANE	5.438	57	402185	10.39	PPBV	#	98
61) 1,4-DIOXANE	5.373	88	43069	10.67	PPBV	#	70
62) HEPTANE	5.775	43	160441	10.29	PPBV	#	73
63) METHYL METHACRYLATE	5.682	69	73460	9.83	PPBV	#	41
64) METHYL ISOBUTYL KETONE	6.466	58	71816	11.36	PPBV	#	60
65) CIS-1,3-DICHLOROPROPENE	6.344	75	121546	10.88	PPBV	#	72
66) TOLUENE	7.608	91	248582	9.60	PPBV		100
67) 1,3-DICHLOROPROPANE	7.675	76	126893	10.17	PPBV	#	98
68) TRANS-1,3-DICHLOROPROPENE	7.064	75	103164	10.47	PPBV	#	74
69) 1,1,2-TRICHLOROETHANE	7.235	83	73991	10.01	PPBV		98
70) 2-HEXANONE	8.222	58	91501	12.42	PPBV	#	60
71) ETHYL METHACRYLATE	8.351	69	121309	11.01	PPBV	#	68
72) TETRACHLOROETHENE	9.408	164	94636	10.58	PPBV		92
73) DIBROMOCHLOROMETHANE	8.180	129	163474	10.24	PPBV		99
74) 1,2-DIBROMOETHANE	8.531	107	136603	10.09	PPBV		100
75) OCTANE	9.553	43	220193	10.67	PPBV	#	74
77) 1,1,1,2-TETRACHLOROETHANE	10.675	131	111154	9.25	PPBV		97
78) CHLOROBENZENE	10.659	112	206823	9.56	PPBV		99
79) ETHYLBENZENE	11.559	91	323736	8.40	PPBV		100
80) M,P-XYLENE	12.003	91	500976	17.40	PPBV	#	69
81) O-XYLENE	12.958	91	255001	8.85	PPBV		98
82) STYRENE	12.739	104	182497	9.47	PPBV		97
83) NONANE	14.083	43	230186	9.28	PPBV	#	74
84) BROMOFORM	11.820	173	146828	9.34	PPBV	#	97
85) 1,1,2,2-TETRACHLOROETHANE	12.981	83	191853	9.37	PPBV		99
86) 1,2,3-TRICHLOROPROPANE	13.264	75	145786	9.10	PPBV		99
88) ISOPROPYLBENZENE	14.495	105	366488	9.22	PPBV	#	93
89) BROMOBENZENE	14.373	77	178240	9.30	PPBV		96
90) 2-CHLOROTOLUENE	15.521	91	245770	9.47	PPBV		99
91) N-PROPYLBENZENE	15.855	91	429418	9.81	PPBV	#	97
92) 4-ETHYLTOLUENE	16.199	105	363789	10.27	PPBV		99
93) 1,3,5-TRIMETHYLBENZENE	16.347	105	295002	9.85	PPBV		99
94) ALPHA-METHYLSTYRENE	16.543	118	128522	8.56	PPBV		99
95) TERT-BUTYLBENZENE	16.797	119	327236	9.74	PPBV		99
96) 1,2,4-TRIMETHYLBENZENE	16.804	105	301145	9.73	PPBV		97
97) BENZYL CHLORIDE	16.887	91	173940	9.28	PPBV		98
98) M-DICHLOROBENZENE	16.865	146	199466	9.27	PPBV		99
99) P-DICHLOROBENZENE	16.945	146	201407	9.38	PPBV		99
100) O-DICHLOROBENZENE	17.234	146	190368	9.05	PPBV		99
101) SEC-BUTYLBENZENE	17.074	105	443476	9.68	PPBV		99
102) 1,2,3-TRIMETHYLBENZENE	17.183	105	287306	9.48	PPBV		99
103) P-ISOPROPYLTOLUENE	17.251	119	368720	9.39	PPBV		97
104) N-BUTYLBENZENE	17.595	91	347673	9.96	PPBV		98
105) HEXACHLOROETHANE	17.771	117	110715	7.76	PPBV	#	89
106) HEXACHLOROBUTADIENE	18.804	225	113599	7.29	PPBV		99
107) 1,2,4-TRICHLOROBENZENE	18.498	180	141128	8.07	PPBV		99
108) NAPHTHALENE	18.546	128	372884	8.65	PPBV		99

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

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\
Data File : 6W26462.D
Acq On : 20 Oct 2022 9:08 am
Operator : thomash
Sample : icv1125-10
Misc : MS63121,V6W1125,,,,,1
ALS Vial : 5 Sample Multiplier: 1

Quant Time: Oct 20 09:33:55 2022
Quant Method : C:\msdchem\1\methods\M6W1125.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Thu Oct 20 08:34:08 2022
Response via : Initial Calibration



Manual Integration Approval Summary

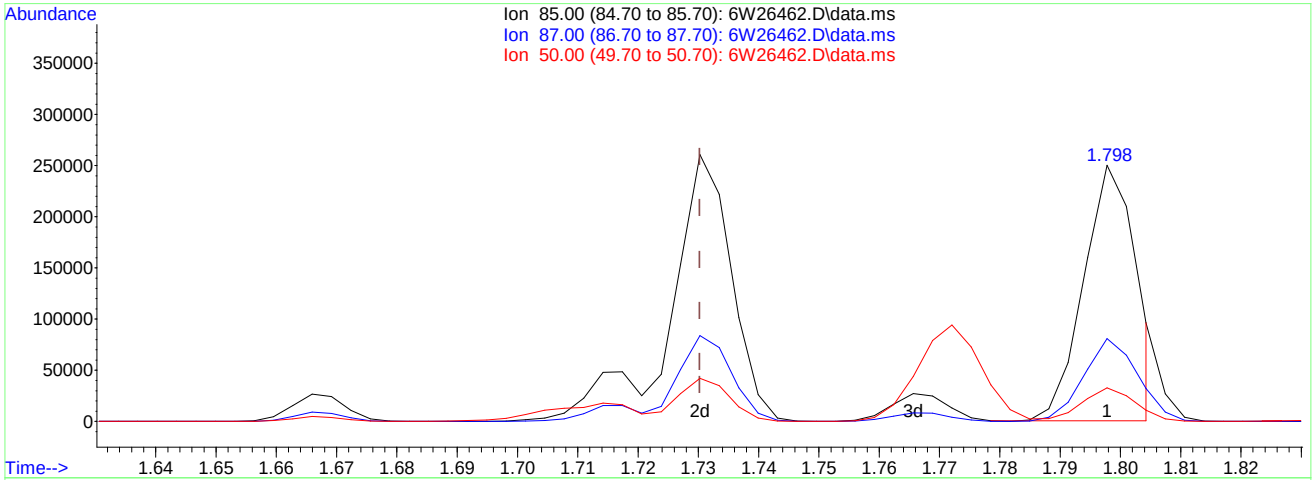
Sample Number:	V6W1125-ICV1125	**Method:**	TO-15
Lab FileID:	6W26462.D	**Analyst approved:**	10/20/22 10:04 Thomas Hilbig
Injection Time:	10/20/22 09:08	**Supervisor approved:**	10/20/22 12:15 Kanya Veerawat

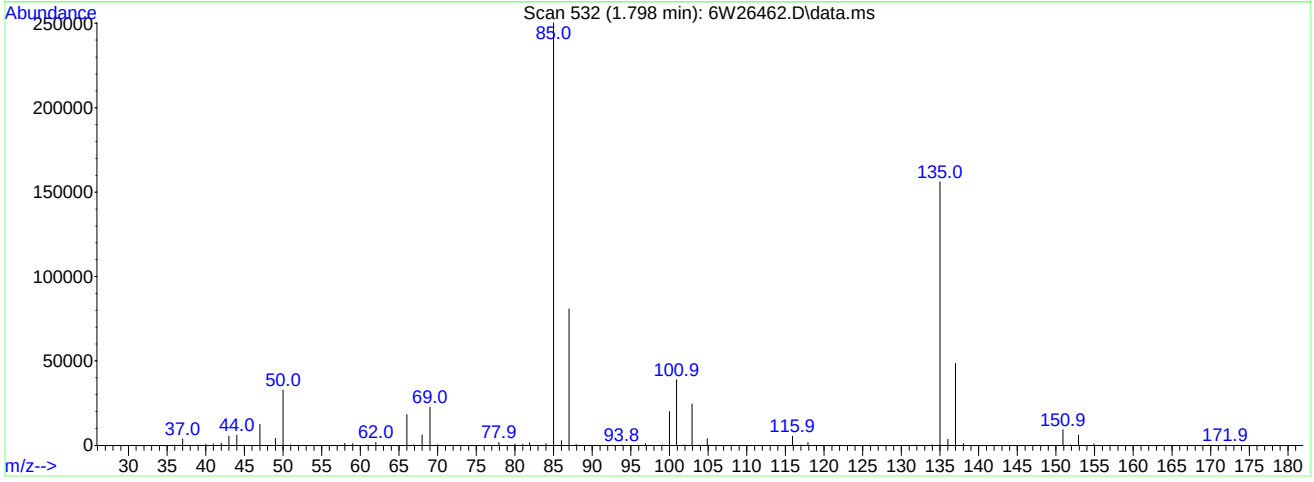
Parameter	CAS	Sig#	R.T. (min.)	Reason
Dichlorodifluoromethane	75-71-8		1.73	Missed peak

Quantitation Report (Qedit)

Data Path : C:\msdchem\1\data\
Data File : 6W26462.D
Acq On : 20 Oct 2022 9:08 am
Operator : thomash
Sample : icv1125-10
Misc : MS63121,V6W1125,,,,,1
ALS Vial : 5 Sample Multiplier: 1

Quant Time: Oct 20 09:33:03 2022
Quant Method : C:\msdchem\1\methods\M6W1125.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Thu Oct 20 08:34:08 2022
Response via : Initial Calibration





TIC: 6W26462.D\data.ms

(6) DICHLORODIFLUOROMETHANE (T)

1.798min (+0.068) 10.18PPBV

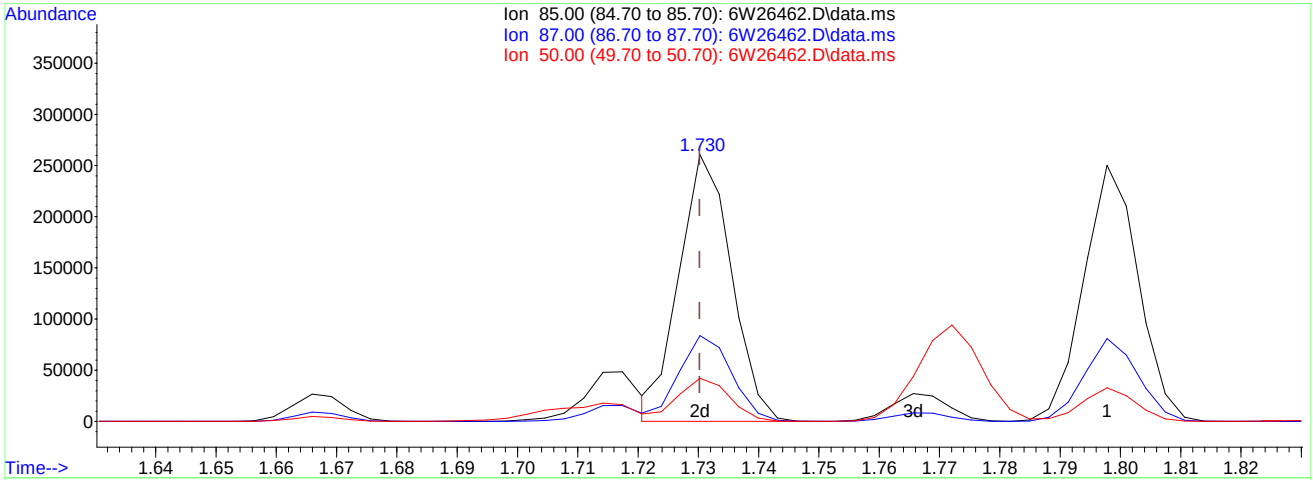
response 150961

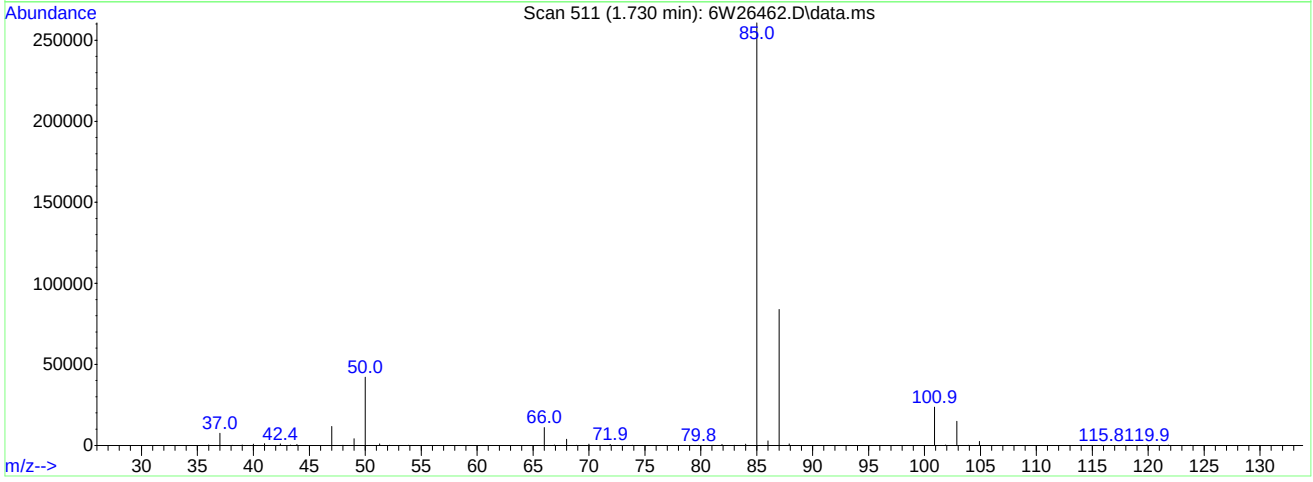
Ion	Exp%	Act%
85.00	100	100
87.00	32.20	32.06
50.00	9.30	11.14
0.00	0.00	0.00

Quantitation Report (Qedit)

Data Path : C:\msdchem\1\data\
Data File : 6W26462.D
Acq On : 20 Oct 2022 9:08 am
Operator : thomash
Sample : icv1125-10
Misc : MS63121,V6W1125,,,,,1
ALS Vial : 5 Sample Multiplier: 1

Quant Time: Oct 20 09:33:03 2022
Quant Method : C:\msdchem\1\methods\M6W1125.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Thu Oct 20 08:34:08 2022
Response via : Initial Calibration





TIC: 6W26462.D\data.ms

(6) DICHLORODIFLUOROMETHANE (T)

1.730min (+0.000) 10.58PPBV m

response 156989

Ion	Exp%	Act%
85.00	100	100
87.00	32.20	30.83
50.00	9.30	10.71
0.00	0.00	0.00

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\
Data File : 6W26990.D
Acq On : 8 Nov 2022 1:46 pm
Operator : thomash
Sample : cc1125-10
Misc : MS63597,V6W1142,,,,,1
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Nov 08 14:10:56 2022
Quant Method : C:\msdchem\1\methods\M6W1125.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Thu Oct 20 08:34:08 2022
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units		Dev(Min)
Internal Standards							
1) BROMOCHLOROMETHANE	3.338	128	42449	10.00	PPBV	#	0.00
52) 1,4-DIFLUOROBENZENE	4.730	114	214251	10.00	PPBV		0.00
76) CHLOROBENZENE-D5	10.579	117	161482	10.00	PPBV		0.00
System Monitoring Compounds							
87) 4-BROMOFLUOROBENZENE	14.022	95	124123	11.01	PPBV		0.00
Target Compounds							Qvalue
3) FREON 152A	1.695	65	37247	10.21	PPBV	#	78
4) CHLORODIFLUOROMETHANE	1.708	67	16932	10.24	PPBV		95
5) CHLOROTRIFLUOROETHENE	1.717	116	75181	9.41	PPBV	#	99
6) DICHLORODIFLUOROMETHANE	1.730	85	203259	15.31	PPBV	#	92
7) PROPYLENE	1.714	41	58312	10.72	PPBV		97
8) 1-CHLORO-1,1-DIFLUOROE...	1.766	65	159126	13.09	PPBV	#	86
9) FREON 114	1.798	85	182103	13.04	PPBV		91
10) CHLOROMETHANE	1.772	52	26905	14.03	PPBV		91
11) VINYL CHLORIDE	1.830	62	83910	14.43	PPBV		98
12) 1,3-BUTADIENE	1.865	54	70756	14.88	PPBV	#	74
13) N-BUTANE	1.878	43	148625	13.87	PPBV	#	90
14) BROMOMETHANE	1.933	94	61284	13.63	PPBV		99
15) CHLOROETHANE	1.978	64	41386	14.86	PPBV		94
16) DICHLOROFLUOROMETHANE	2.004	67	165140	13.97	PPBV	#	95
17) ACETONITRILE	2.065	41	95023	15.22	PPBV		99
18) ACROLEIN	2.100	56	38685	14.98	PPBV		99
19) FREON 123	2.116	83	154547	13.79	PPBV		99
20) FREON 123A	2.132	117	81010	11.98	PPBV	#	64
21) TRICHLOROFLUOROMETHANE	2.190	101	167350	12.09	PPBV		100
22) ISOPROPYL ALCOHOL	2.206	45	194501	13.93	PPBV	#	96
23) ACETONE	2.139	58	47365	15.07	PPBV	#	49
24) PENTANE	2.296	42	105970	14.23	PPBV	#	92
25) IODOMETHANE	2.354	142	155673	11.67	PPBV	#	81
26) 1,1-DICHLOROETHYLENE	2.383	96	64630	12.28	PPBV	#	46
27) CARBON DISULFIDE	2.518	76	209807	12.59	PPBV	#	88
28) ETHANOL	2.007	45	46235	14.34	PPBV		97
29) BROMOETHENE	2.071	106	58684	12.45	PPBV	#	98
30) ACRYLONITRILE	2.271	52	66602	14.14	PPBV		96
31) METHYLENE CHLORIDE	2.418	84	62415	11.82	PPBV	#	41
32) 3-CHLOROPROPENE	2.463	76	33431	13.01	PPBV	#	1
33) FREON 113	2.518	151	102816	11.02	PPBV		87
34) TRANS-1,2-DICHLOROETHENE	2.769	96	69130	11.77	PPBV	#	71
35) TERTIARY BUTYL ALCOHOL	2.396	59	129273	11.32	PPBV	#	75
36) METHYL TERTIARY BUTYL ...	2.888	73	142712	9.76	PPBV	#	90
37) TETRAHYDROFURAN	3.650	72	35372	13.02	PPBV	#	22
38) HEXANE	3.389	57	146894	12.89	PPBV	#	72
39) VINYL ACETATE	2.930	86	17547	12.46	PPBV	#	1
40) 1,1-DICHLOROETHANE	2.852	63	142426	12.71	PPBV		97
41) METHYL ETHYL KETONE	3.036	72	36489	12.78	PPBV	#	1
42) CIS-1,2-DICHLOROETHENE	3.251	96	69825	11.32	PPBV	#	70
43) DIISOPROPYL ETHER	3.399	59	38909	11.88	PPBV	#	21
44) ETHYL ACETATE	3.406	61	29800	13.24	PPBV	#	10
45) METHYL ACRYLATE	3.389	55	191965	13.62	PPBV	#	97
46) CHLOROFORM	3.418	83	152258	12.03	PPBV	#	92
47) 2,4-DIMETHYLPENTANE	3.949	57	169335	13.15	PPBV	#	91
48) 1,1,1-TRICHLOROETHANE	4.039	97	139514	11.22	PPBV	#	90
49) CARBON TETRACHLORIDE	4.495	117	141543	10.61	PPBV		99
50) 1,2-DICHLOROETHANE	3.865	62	117883	12.24	PPBV	#	94
51) BENZENE	4.377	78	217915	11.51	PPBV		75
53) CYCLOHEXANE	4.598	84	92673	11.86	PPBV	#	63
54) 2,3-DIMETHYLPENTANE	4.872	71	49993	11.75	PPBV	#	38
55) TRICHLOROETHENE	5.344	95	95297	11.33	PPBV		94
56) 1,2-DICHLOROPROPANE	5.100	63	97143	12.58	PPBV		98
57) DIBROMOMETHANE	5.055	174	82024	10.34	PPBV	#	85

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\
Data File : 6W26990.D
Acq On : 8 Nov 2022 1:46 pm
Operator : thomash
Sample : cc1125-10
Misc : MS63597,V6W1142,,,,,1
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Nov 08 14:10:56 2022
Quant Method : C:\msdchem\1\methods\M6W1125.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Thu Oct 20 08:34:08 2022
Response via : Initial Calibration

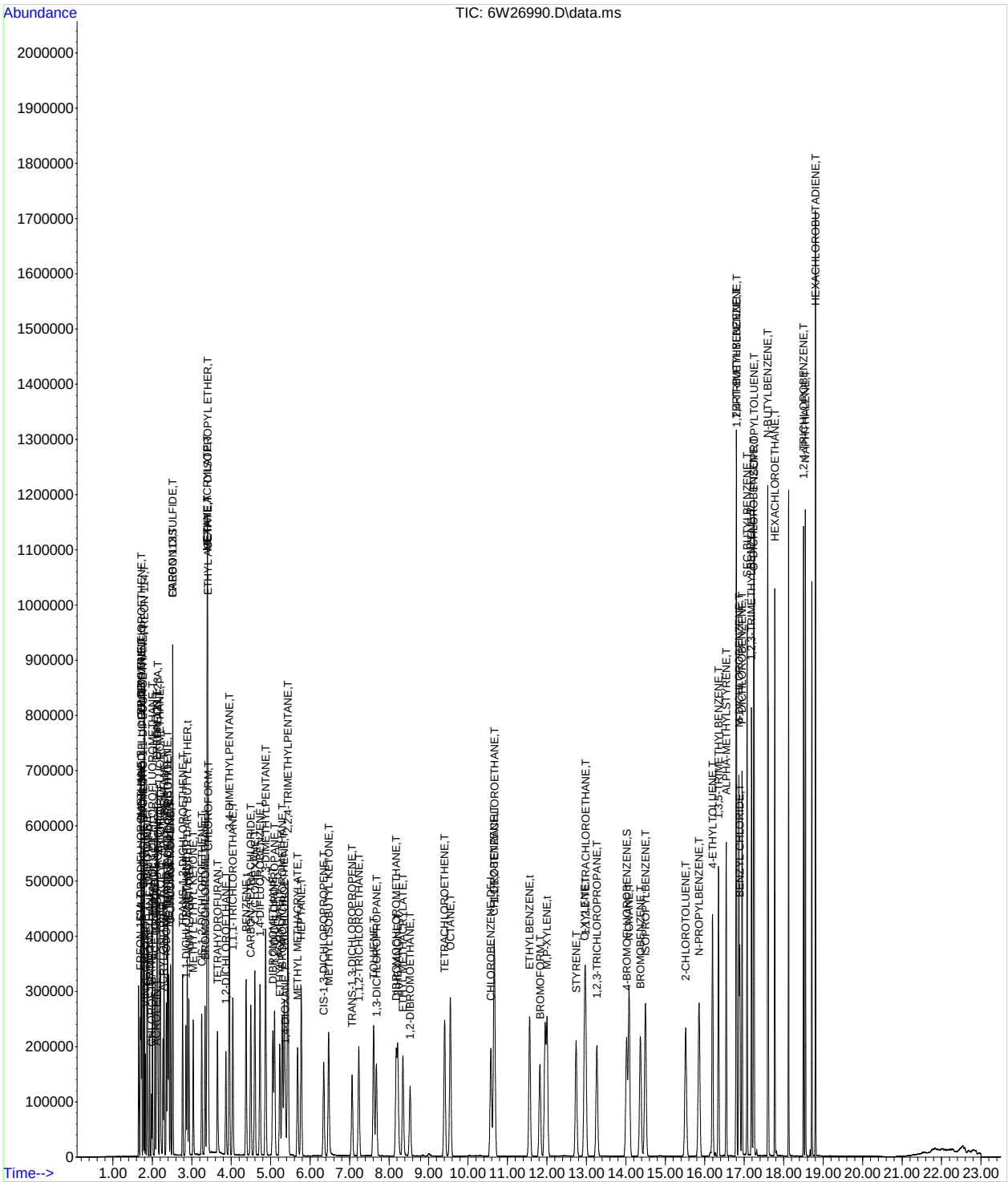
Compound	R.T.	QIon	Response	Conc	Units		Dev(Min)
58) ETHYL ACRYLATE	5.232	55	233283	14.24	PPBV	#	96
59) BROMODICHLOROMETHANE	5.293	83	164018	11.58	PPBV		98
60) 2,2,4-TRIMETHYLPENTANE	5.438	57	469120	13.23	PPBV	#	97
61) 1,4-DIOXANE	5.370	88	51283	13.87	PPBV	#	63
62) HEPTANE	5.775	43	149433	10.46	PPBV	#	72
63) METHYL METHACRYLATE	5.682	69	73095	10.68	PPBV	#	44
64) METHYL ISOBUTYL KETONE	6.470	58	72202	12.47	PPBV	#	58
65) CIS-1,3-DICHLOROPROPENE	6.344	75	104933	10.25	PPBV	#	71
66) TOLUENE	7.611	91	216074	9.12	PPBV		100
67) 1,3-DICHLOROPROPANE	7.679	76	118226	10.35	PPBV	#	97
68) TRANS-1,3-DICHLOROPROPENE	7.061	75	93012	10.31	PPBV	#	74
69) 1,1,2-TRICHLOROETHANE	7.235	83	69797	10.31	PPBV		97
70) 2-HEXANONE	8.219	58	93838	13.91	PPBV	#	61
71) ETHYL METHACRYLATE	8.347	69	120023	11.90	PPBV	#	64
72) TETRACHLOROETHENE	9.408	164	80320	9.81	PPBV		95
73) DIBROMOCHLOROMETHANE	8.180	129	134199	9.18	PPBV		100
74) 1,2-DIBROMOETHANE	8.534	107	118024	9.52	PPBV		100
75) OCTANE	9.553	43	204893	10.85	PPBV	#	72
77) 1,1,1,2-TETRACHLOROETHANE	10.672	131	91280	10.54	PPBV		89
78) CHLOROBENZENE	10.656	112	171369	10.98	PPBV		95
79) ETHYLBENZENE	11.560	91	293000	10.54	PPBV		96
80) M,P-XYLENE	12.000	91	449150	21.64	PPBV	#	65
81) O-XYLENE	12.955	91	229893	11.06	PPBV		94
82) STYRENE	12.740	104	162552	11.70	PPBV		94
83) NONANE	14.080	43	220871	12.35	PPBV	#	71
84) BROMOFORM	11.826	173	125705	11.09	PPBV	#	98
85) 1,1,2,2-TETRACHLOROETHANE	12.981	83	187485	12.70	PPBV		100
86) 1,2,3-TRICHLOROPROPANE	13.267	75	141224	12.23	PPBV		95
88) ISOPROPYLBENZENE	14.498	105	321922	11.24	PPBV		96
89) BROMOBENZENE	14.366	77	168496	12.19	PPBV		89
90) 2-CHLOROTOLUENE	15.514	91	233236	12.47	PPBV		96
91) N-PROPYLBENZENE	15.855	91	406930	12.89	PPBV	#	93
92) 4-ETHYLTOLUENE	16.199	105	323074	12.65	PPBV		99
93) 1,3,5-TRIMETHYLBENZENE	16.347	105	266151	12.33	PPBV	#	97
94) ALPHA-METHYLSTYRENE	16.543	118	130897	12.10	PPBV		98
95) TERT-BUTYLBENZENE	16.797	119	291396	12.02	PPBV		91
96) 1,2,4-TRIMETHYLBENZENE	16.804	105	284173	12.74	PPBV		92
97) BENZYL CHLORIDE	16.887	91	175936	13.01	PPBV	#	95
98) M-DICHLOROBENZENE	16.865	146	186216	12.00	PPBV		98
99) P-DICHLOROBENZENE	16.945	146	185373	11.97	PPBV		98
100) O-DICHLOROBENZENE	17.238	146	181199	11.94	PPBV		98
101) SEC-BUTYLBENZENE	17.074	105	422345	12.78	PPBV		98
102) 1,2,3-TRIMETHYLBENZENE	17.183	105	278495	12.75	PPBV	#	97
103) P-ISOPROPYLTOLUENE	17.251	119	358190	12.65	PPBV	#	95
104) N-BUTYLBENZENE	17.595	91	373155	14.83	PPBV		98
105) HEXACHLOROETHANE	17.775	117	118521	11.52	PPBV		92
106) HEXACHLOROBUTADIENE	18.807	225	153962	13.70	PPBV		100
107) 1,2,4-TRICHLOROBENZENE	18.501	180	175300	13.91	PPBV		99
108) NAPHTHALENE	18.550	128	453542	14.59	PPBV		100

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

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\
Data File : 6W26990.D
Acq On : 8 Nov 2022 1:46 pm
Operator : thomash
Sample : cc1125-10
Misc : MS63597,V6W1142,,,,,1
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Nov 08 14:10:56 2022
Quant Method : C:\msdchem\1\methods\M6W1125.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Thu Oct 20 08:34:08 2022
Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\
Data File : 6W27093.D
Acq On : 22 Nov 2022 9:12 am
Operator : thomash
Sample : cc1125-10
Misc : MS63734,V6W1146,,,,,1
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Nov 22 14:41:04 2022
Quant Method : C:\msdchem\1\methods\M6W1125.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Thu Oct 20 08:34:08 2022
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units		Dev(Min)
Internal Standards							
1) BROMOCHLOROMETHANE	3.338	128	56997	10.00	PPBV	#	0.00
52) 1,4-DIFLUOROBENZENE	4.734	114	287203	10.00	PPBV		0.00
76) CHLOROBENZENE-D5	10.582	117	241261	10.00	PPBV		0.00
System Monitoring Compounds							
87) 4-BROMOFLUOROBENZENE	14.023	95	174561	10.36	PPBV		0.00
Target Compounds							Qvalue
3) FREON 152A	1.695	65	44565	9.10	PPBV	#	77
4) CHLORODIFLUOROMETHANE	1.708	67	19841	8.93	PPBV		99
5) CHLOROTRIFLUOROETHENE	1.718	116	98775	9.21	PPBV	#	100
6) DICHLORODIFLUOROMETHANE	1.798	85	179193	10.06	PPBV		99
7) PROPYLENE	1.714	41	68938	9.44	PPBV		96
8) 1-CHLORO-1,1-DIFLUOROE...	1.769	65	160111	9.81	PPBV	#	88
9) FREON 114	1.801	85	193316	10.31	PPBV		99
10) CHLOROMETHANE	1.772	52	26571	10.32	PPBV		92
11) VINYL CHLORIDE	1.830	62	83850	10.74	PPBV		96
12) 1,3-BUTADIENE	1.865	54	72178	11.31	PPBV	#	75
13) N-BUTANE	1.878	43	148296	10.30	PPBV	#	90
14) BROMOMETHANE	1.936	94	69963	11.59	PPBV		100
15) CHLOROETHANE	1.981	64	42876	11.47	PPBV		96
16) DICHLOROFLUOROMETHANE	2.004	67	169741	10.70	PPBV	#	96
17) ACETONITRILE	2.068	41	97543	11.64	PPBV		97
18) ACROLEIN	2.103	56	45147	13.02	PPBV		97
19) FREON 123	2.116	83	173479	11.53	PPBV		99
20) FREON 123A	2.132	117	97447	10.74	PPBV		85
21) TRICHLOROFLUOROMETHANE	2.190	101	188655	10.15	PPBV		99
22) ISOPROPYL ALCOHOL	2.206	45	193196	10.30	PPBV	#	96
23) ACETONE	2.139	58	46155	10.94	PPBV	#	39
24) PENTANE	2.300	42	109284	10.93	PPBV	#	92
25) IODOMETHANE	2.357	142	196843	10.99	PPBV		89
26) 1,1-DICHLOROETHYLENE	2.383	96	75096	10.63	PPBV	#	63
27) CARBON DISULFIDE	2.521	76	229668	10.26	PPBV	#	90
28) ETHANOL	2.007	45	46961	10.85	PPBV		97
29) BROMOETHENE	2.074	106	70300	11.11	PPBV	#	96
30) ACRYLONITRILE	2.274	52	71398	11.29	PPBV		98
31) METHYLENE CHLORIDE	2.422	84	71064	10.03	PPBV	#	55
32) 3-CHLOROPROPENE	2.463	76	35366	10.25	PPBV	#	1
33) FREON 113	2.521	151	126556	10.10	PPBV		93
34) TRANS-1,2-DICHLOROETHENE	2.769	96	81762	10.36	PPBV	#	82
35) TERTIARY BUTYL ALCOHOL	2.396	59	139330	9.09	PPBV	#	80
36) METHYL TERTIARY BUTYL ...	2.888	73	156588	7.98	PPBV	#	91
37) TETRAHYDROFURAN	3.653	72	39115	10.72	PPBV	#	32
38) HEXANE	3.393	57	154904	10.12	PPBV	#	76
39) VINYL ACETATE	2.930	86	20590	10.89	PPBV	#	1
40) 1,1-DICHLOROETHANE	2.853	63	150124	9.98	PPBV		98
41) METHYL ETHYL KETONE	3.039	72	40405	10.54	PPBV	#	1
42) CIS-1,2-DICHLOROETHENE	3.254	96	83215	10.05	PPBV	#	81
43) DIISOPROPYL ETHER	3.402	59	42695	9.71	PPBV	#	35
44) ETHYL ACETATE	3.409	61	32640	10.80	PPBV	#	31
45) METHYL ACRYLATE	3.393	55	206602	10.92	PPBV	#	96
46) CHLOROFORM	3.422	83	167378	9.85	PPBV	#	94
47) 2,4-DIMETHYLPENTANE	3.955	57	183160	10.59	PPBV	#	93
48) 1,1,1-TRICHLOROETHANE	4.045	97	155679	9.32	PPBV	#	92
49) CARBON TETRACHLORIDE	4.499	117	165221	9.23	PPBV		99
50) 1,2-DICHLOROETHANE	3.869	62	118468	9.16	PPBV	#	96
51) BENZENE	4.380	78	243430	9.58	PPBV		78
53) CYCLOHEXANE	4.602	84	104811	10.01	PPBV	#	71
54) 2,3-DIMETHYLPENTANE	4.878	71	54529	9.56	PPBV	#	48
55) TRICHLOROETHENE	5.348	95	108973	9.66	PPBV		98
56) 1,2-DICHLOROPROPANE	5.103	63	104031	10.05	PPBV		98
57) DIBROMOMETHANE	5.061	174	101712	9.57	PPBV		94

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\
Data File : 6W27093.D
Acq On : 22 Nov 2022 9:12 am
Operator : thomash
Sample : cc1125-10
Misc : MS63734,V6W1146,,,,,1
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Nov 22 14:41:04 2022
Quant Method : C:\msdchem\1\methods\M6W1125.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Thu Oct 20 08:34:08 2022
Response via : Initial Calibration

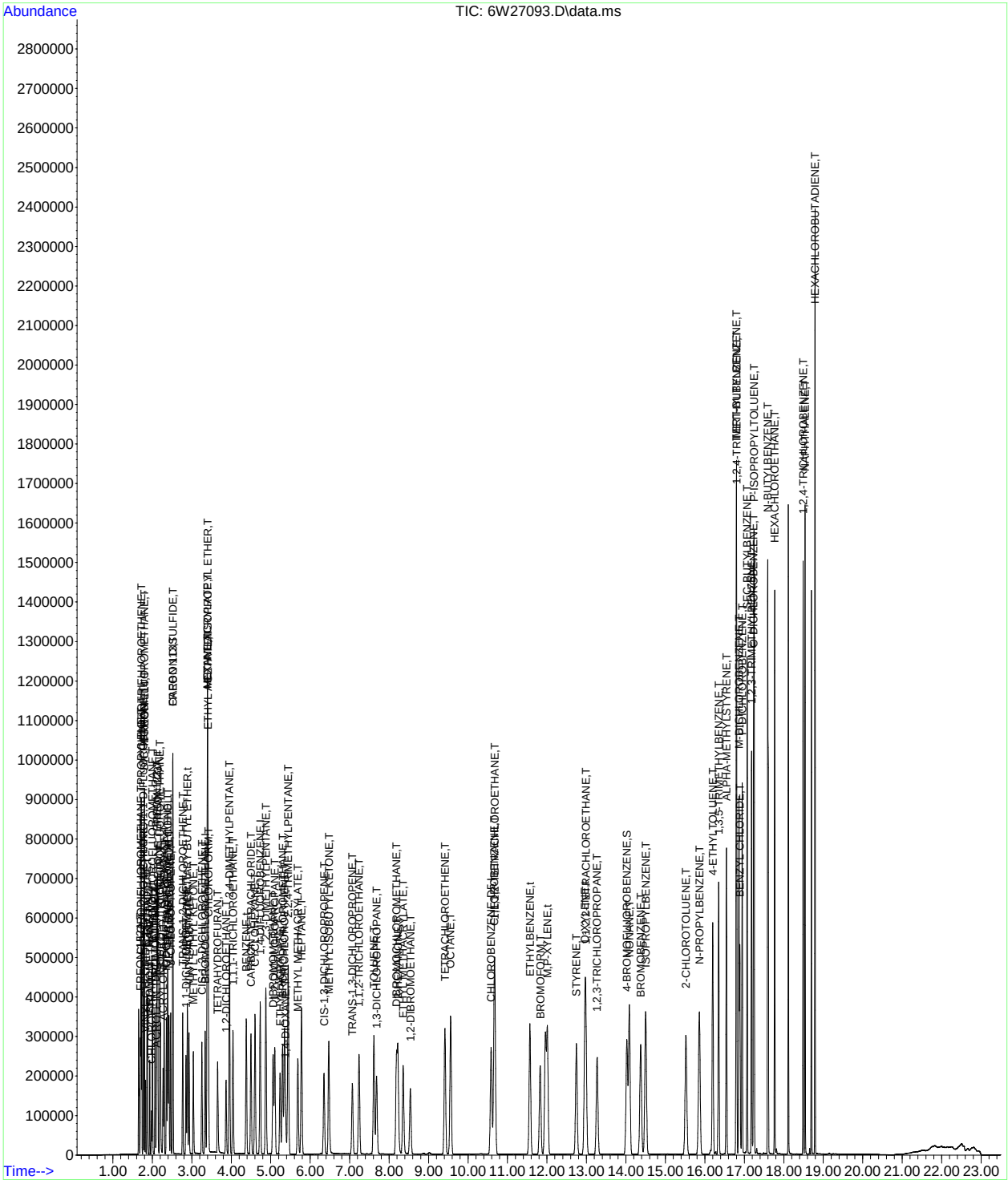
Compound	R.T.	QIon	Response	Conc	Units		Dev(Min)
58) ETHYL ACRYLATE	5.235	55	236968	10.79	PPBV	#	96
59) BROMODICHLOROMETHANE	5.299	83	180350	9.50	PPBV		100
60) 2,2,4-TRIMETHYLPENTANE	5.441	57	458685	9.65	PPBV	#	99
61) 1,4-DIOXANE	5.377	88	62083	12.53	PPBV	#	78
62) HEPTANE	5.778	43	183211	9.57	PPBV	#	74
63) METHYL METHACRYLATE	5.685	69	93373	10.18	PPBV	#	51
64) METHYL ISOBUTYL KETONE	6.473	58	92254	11.89	PPBV	#	61
65) CIS-1,3-DICHLOROPROPENE	6.351	75	127875	9.32	PPBV	#	73
66) TOLUENE	7.614	91	284585	8.96	PPBV		100
67) 1,3-DICHLOROPROPANE	7.682	76	145780	9.52	PPBV	#	97
68) TRANS-1,3-DICHLOROPROPENE	7.068	75	113034	9.35	PPBV	#	76
69) 1,1,2-TRICHLOROETHANE	7.238	83	90581	9.98	PPBV		99
70) 2-HEXANONE	8.222	58	124695	13.79	PPBV	#	62
71) ETHYL METHACRYLATE	8.357	69	153496	11.35	PPBV	#	68
72) TETRACHLOROETHENE	9.415	164	110424	10.06	PPBV		96
73) DIBROMOCHLOROMETHANE	8.184	129	188331	9.61	PPBV		100
74) 1,2-DIBROMOETHANE	8.540	107	164592	9.91	PPBV		99
75) OCTANE	9.556	43	251504	9.93	PPBV	#	74
77) 1,1,1,2-TETRACHLOROETHANE	10.679	131	126271	9.76	PPBV		93
78) CHLOROBENZENE	10.663	112	235726	10.11	PPBV		99
79) ETHYLBENZENE	11.566	91	381521	9.18	PPBV		100
80) M,P-XYLENE	12.010	91	586270	18.90	PPBV	#	65
81) O-XYLENE	12.961	91	300266	9.67	PPBV		100
82) STYRENE	12.746	104	232299	11.19	PPBV		97
83) NONANE	14.087	43	267257	10.00	PPBV	#	74
84) BROMOFORM	11.830	173	182267	10.77	PPBV	#	97
85) 1,1,2,2-TETRACHLOROETHANE	12.984	83	241909	10.97	PPBV		100
86) 1,2,3-TRICHLOROPROPANE	13.267	75	175668	10.18	PPBV		99
88) ISOPROPYLBENZENE	14.502	105	435363	10.17	PPBV	#	93
89) BROMOBENZENE	14.376	77	217663	10.54	PPBV		97
90) 2-CHLOROTOLUENE	15.521	91	310126	11.10	PPBV		99
91) N-PROPYLBENZENE	15.862	91	529420	11.23	PPBV	#	97
92) 4-ETHYLTOLUENE	16.199	105	441467	11.57	PPBV		98
93) 1,3,5-TRIMETHYLBENZENE	16.347	105	366254	11.35	PPBV		99
94) ALPHA-METHYLSTYRENE	16.547	118	190718	11.80	PPBV		99
95) TERT-BUTYLBENZENE	16.797	119	409773	11.32	PPBV		98
96) 1,2,4-TRIMETHYLBENZENE	16.804	105	383072	11.49	PPBV		96
97) BENZYL CHLORIDE	16.887	91	237105	11.74	PPBV		97
98) M-DICHLOROBENZENE	16.865	146	261060	11.26	PPBV		100
99) P-DICHLOROBENZENE	16.945	146	265507	11.47	PPBV		99
100) O-DICHLOROBENZENE	17.235	146	258247	11.39	PPBV		100
101) SEC-BUTYLBENZENE	17.071	105	564465	11.44	PPBV		99
102) 1,2,3-TRIMETHYLBENZENE	17.183	105	376818	11.54	PPBV		99
103) P-ISOPROPYLTOLUENE	17.247	119	496055	11.72	PPBV		98
104) N-BUTYLBENZENE	17.592	91	468683	12.46	PPBV		99
105) HEXACHLOROETHANE	17.768	117	161165	10.49	PPBV		92
106) HEXACHLOROBUTADIENE	18.791	225	215953	12.86	PPBV		99
107) 1,2,4-TRICHLOROBENZENE	18.492	180	250770	13.32	PPBV		99
108) NAPHTHALENE	18.540	128	693352	14.93	PPBV		100

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

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\
Data File : 6W27093.D
Acq On : 22 Nov 2022 9:12 am
Operator : thomash
Sample : cc1125-10
Misc : MS63734,V6W1146,,,,,1
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Nov 22 14:41:04 2022
Quant Method : C:\msdchem\1\methods\M6W1125.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Thu Oct 20 08:34:08 2022
Response via : Initial Calibration



Manual Integrations APPROVED (compounds with "m" flag)
Kanya Veerawat 12/01/22 15:56

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\
Data File : 6W27292.D
Acq On : 28 Nov 2022 1:24 pm
Operator : thomash
Sample : cc1125-10
Misc : MS64243,V6W1152,,,,,1
ALS Vial : 18 Sample Multiplier: 1

Quant Time: Nov 28 15:01:32 2022
Quant Method : C:\msdchem\1\methods\M6W1125.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Thu Oct 20 08:34:08 2022
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units		Dev(Min)
Internal Standards							
1) BROMOCHLOROMETHANE	3.338	128	47743	10.00	PPBV	#	0.00
52) 1,4-DIFLUOROBENZENE	4.731	114	233190	10.00	PPBV		0.00
76) CHLOROBENZENE-D5	10.582	117	207412	10.00	PPBV		0.00
System Monitoring Compounds							
87) 4-BROMOFLUOROBENZENE	14.020	95	142378	9.83	PPBV		0.00
Target Compounds							Qvalue
3) FREON 152A	1.695	65	38085m	9.28	PPBV		
4) CHLORODIFLUOROMETHANE	1.705	67	15813	8.50	PPBV		99
5) CHLOROTRIFLUOROETHENE	1.718	116	86772	9.66	PPBV	#	100
6) DICHLORODIFLUOROMETHANE	1.731	85	170314	11.41	PPBV	#	93
7) PROPYLENE	1.715	41	54636	8.93	PPBV		98
8) 1-CHLORO-1,1-DIFLUOROE...	1.766	65	117416	8.59	PPBV	#	90
9) FREON 114	1.798	85	148328	9.44	PPBV		96
10) CHLOROMETHANE	1.772	52	19055	8.84	PPBV		96
11) VINYL CHLORIDE	1.827	62	60894	9.31	PPBV		97
12) 1,3-BUTADIENE	1.866	54	51478	9.63	PPBV	#	78
13) N-BUTANE	1.879	43	101357	8.41	PPBV	#	91
14) BROMOMETHANE	1.933	94	55237	10.92	PPBV		99
15) CHLOROETHANE	1.978	64	32108	10.25	PPBV		96
16) DICHLOROFLUOROMETHANE	2.001	67	127688	9.61	PPBV	#	97
17) ACETONITRILE	2.065	41	67175	9.57	PPBV		98
18) ACROLEIN	2.100	56	31110	10.71	PPBV		98
19) FREON 123	2.116	83	132970	10.55	PPBV		98
20) FREON 123A	2.133	117	80915	10.64	PPBV		98
21) TRICHLOROFLUOROMETHANE	2.190	101	150083	9.64	PPBV		100
22) ISOPROPYL ALCOHOL	2.207	45	132377	8.43	PPBV	#	96
23) ACETONE	2.139	58	33684	9.53	PPBV	#	50
24) PENTANE	2.297	42	75222	8.98	PPBV	#	93
25) IODOMETHANE	2.358	142	167349	11.15	PPBV		92
26) 1,1-DICHLOROETHYLENE	2.383	96	58677	9.92	PPBV	#	71
27) CARBON DISULFIDE	2.518	76	173172	9.24	PPBV	#	92
28) ETHANOL	2.007	45	32700	9.02	PPBV		98
29) BROMOETHENE	2.071	106	57989	10.94	PPBV	#	98
30) ACRYLONITRILE	2.271	52	50731	9.58	PPBV		98
31) METHYLENE CHLORIDE	2.419	84	53774	9.06	PPBV	#	61
32) 3-CHLOROPROPENE	2.461	76	27155	9.40	PPBV	#	3
33) FREON 113	2.518	151	109169	10.40	PPBV		99
34) TRANS-1,2-DICHLOROETHENE	2.769	96	63016	9.54	PPBV		86
35) TERTIARY BUTYL ALCOHOL	2.396	59	101669	7.92	PPBV	#	83
36) METHYL TERTIARY BUTYL ...	2.888	73	115681	7.03	PPBV	#	93
37) TETRAHYDROFURAN	3.653	72	28579	9.35	PPBV	#	47
38) HEXANE	3.390	57	109129	8.51	PPBV	#	78
39) VINYL ACETATE	2.930	86	16235	10.25	PPBV	#	1
40) 1,1-DICHLOROETHANE	2.853	63	111421	8.84	PPBV		98
41) METHYL ETHYL KETONE	3.036	72	30351	9.45	PPBV	#	8
42) CIS-1,2-DICHLOROETHENE	3.252	96	65023	9.37	PPBV		88
43) DIISOPROPYL ETHER	3.399	59	29825	8.09	PPBV	#	49
44) ETHYL ACETATE	3.406	61	23857	9.42	PPBV	#	57
45) METHYL ACRYLATE	3.390	55	144324	9.11	PPBV	#	98
46) CHLOROFORM	3.419	83	128344	9.02	PPBV	#	95
47) 2,4-DIMETHYLPENTANE	3.952	57	126989	8.77	PPBV	#	92
48) 1,1,1-TRICHLOROETHANE	4.039	97	121783	8.71	PPBV		95
49) CARBON TETRACHLORIDE	4.496	117	131810	8.79	PPBV		99
50) 1,2-DICHLOROETHANE	3.866	62	86539	7.99	PPBV	#	96
51) BENZENE	4.377	78	181087	8.51	PPBV		82
53) CYCLOHEXANE	4.599	84	76963	9.05	PPBV	#	78
54) 2,3-DIMETHYLPENTANE	4.872	71	39221	8.47	PPBV	#	57
55) TRICHLOROETHENE	5.345	95	82426	9.00	PPBV		94
56) 1,2-DICHLOROPROPANE	5.100	63	73711	8.77	PPBV		97
57) DIBROMOMETHANE	5.059	174	85984	9.96	PPBV		99

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\
Data File : 6W27292.D
Acq On : 28 Nov 2022 1:24 pm
Operator : thomash
Sample : cc1125-10
Misc : MS64243,V6W1152,,,,,1
ALS Vial : 18 Sample Multiplier: 1

Quant Time: Nov 28 15:01:32 2022
Quant Method : C:\msdchem\1\methods\M6W1125.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Thu Oct 20 08:34:08 2022
Response via : Initial Calibration

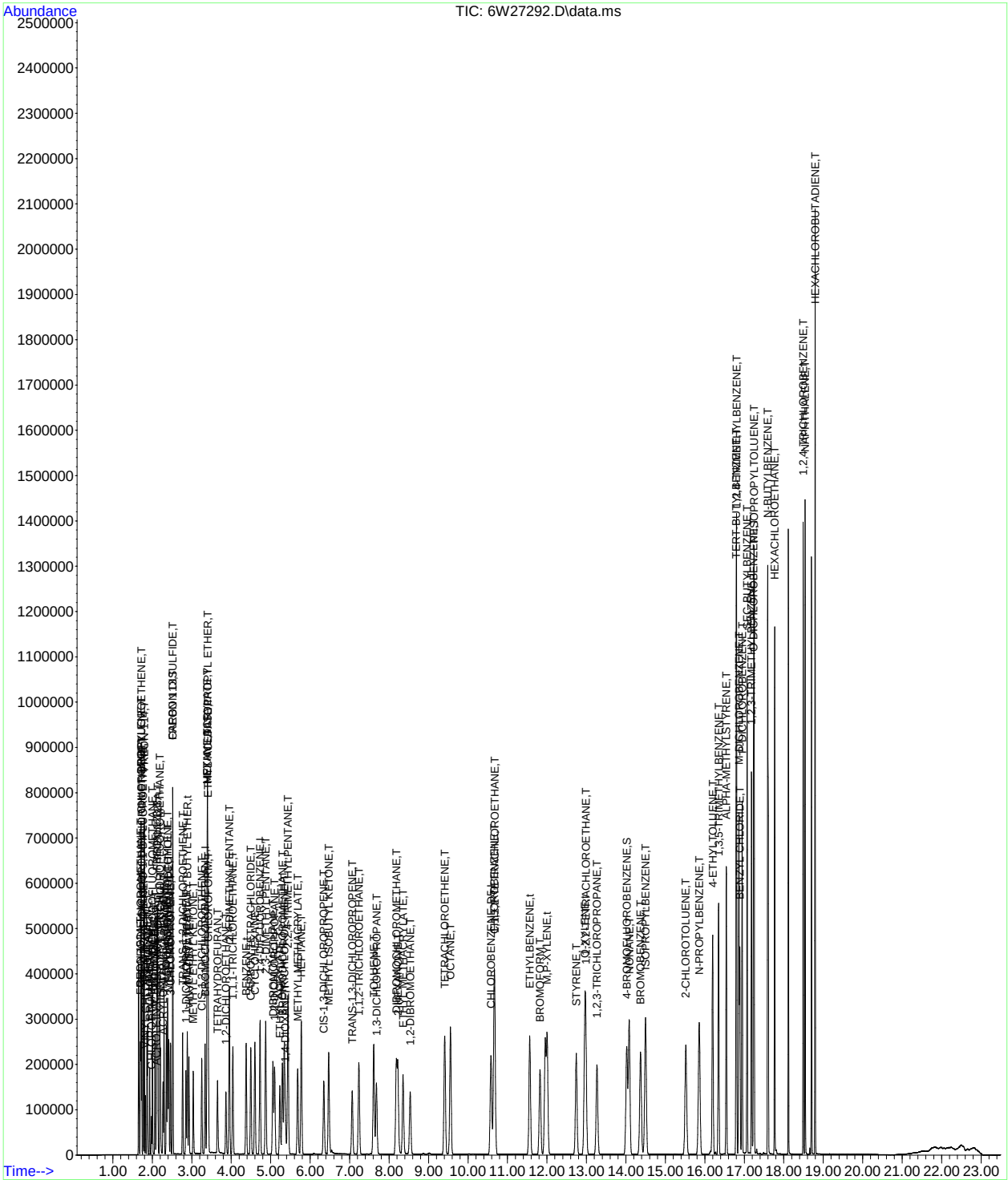
Compound	R.T.	QIon	Response	Conc	Units		Dev(Min)
58) ETHYL ACRYLATE	5.232	55	167928	9.42	PPBV	#	97
59) BROMODICHLOROMETHANE	5.296	83	134619	8.73	PPBV		100
60) 2,2,4-TRIMETHYLPENTANE	5.438	57	334449	8.67	PPBV		99
61) 1,4-DIOXANE	5.370	88	44155	10.97	PPBV	#	77
62) HEPTANE	5.772	43	139623	8.98	PPBV	#	76
63) METHYL METHACRYLATE	5.682	69	73872	9.92	PPBV	#	59
64) METHYL ISOBUTYL KETONE	6.470	58	72054	11.43	PPBV	#	67
65) CIS-1,3-DICHLOROPROPENE	6.345	75	102555	9.21	PPBV	#	78
66) TOLUENE	7.611	91	235428	9.13	PPBV		100
67) 1,3-DICHLOROPROPANE	7.679	76	119043	9.57	PPBV	#	98
68) TRANS-1,3-DICHLOROPROPENE	7.065	75	91069	9.28	PPBV	#	80
69) 1,1,2-TRICHLOROETHANE	7.235	83	74232	10.08	PPBV		99
70) 2-HEXANONE	8.222	58	94361	12.86	PPBV	#	64
71) ETHYL METHACRYLATE	8.354	69	122128	11.12	PPBV	#	74
72) TETRACHLOROETHENE	9.409	164	95667	10.73	PPBV		97
73) DIBROMOCHLOROMETHANE	8.181	129	157814	9.92	PPBV		99
74) 1,2-DIBROMOETHANE	8.537	107	137192	10.17	PPBV		99
75) OCTANE	9.553	43	191180	9.30	PPBV	#	76
77) 1,1,1,2-TETRACHLOROETHANE	10.676	131	108955	9.79	PPBV		99
78) CHLOROBENZENE	10.660	112	200043	9.98	PPBV		99
79) ETHYLBENZENE	11.563	91	311051	8.71	PPBV		99
80) M,P-XYLENE	12.000	91	485790	18.22	PPBV	#	66
81) O-XYLENE	12.959	91	248245	9.30	PPBV		97
82) STYRENE	12.743	104	189917	10.64	PPBV		99
83) NONANE	14.087	43	207719	9.05	PPBV	#	76
84) BROMOFORM	11.823	173	153923	10.58	PPBV		98
85) 1,1,2,2-TETRACHLOROETHANE	12.984	83	201512	10.63	PPBV		100
86) 1,2,3-TRICHLOROPROPANE	13.264	75	142604	9.61	PPBV		98
88) ISOPROPYLBENZENE	14.495	105	364397	9.90	PPBV	#	93
89) BROMOBENZENE	14.370	77	174446	9.82	PPBV		95
90) 2-CHLOROTOLUENE	15.518	91	253292	10.54	PPBV		98
91) N-PROPYLBENZENE	15.855	91	436638	10.77	PPBV	#	96
92) 4-ETHYLTOLUENE	16.200	105	369028	11.25	PPBV		100
93) 1,3,5-TRIMETHYLBENZENE	16.347	105	308998	11.14	PPBV		99
94) ALPHA-METHYLSTYRENE	16.544	118	163662	11.78	PPBV		99
95) TERT-BUTYLBENZENE	16.794	119	343371	11.03	PPBV		98
96) 1,2,4-TRIMETHYLBENZENE	16.804	105	326495	11.40	PPBV		95
97) BENZYL CHLORIDE	16.888	91	213316	12.28	PPBV		99
98) M-DICHLOROBENZENE	16.862	146	235006	11.79	PPBV		99
99) P-DICHLOROBENZENE	16.945	146	236273	11.88	PPBV		100
100) O-DICHLOROBENZENE	17.235	146	229621	11.78	PPBV		99
101) SEC-BUTYLBENZENE	17.071	105	478362	11.27	PPBV		99
102) 1,2,3-TRIMETHYLBENZENE	17.180	105	318986	11.37	PPBV		99
103) P-ISOPROPYLTOLUENE	17.248	119	415504	11.42	PPBV		97
104) N-BUTYLBENZENE	17.592	91	397312	12.29	PPBV		98
105) HEXACHLOROETHANE	17.769	117	138374	10.47	PPBV		96
106) HEXACHLOROBUTADIENE	18.794	225	196941	13.64	PPBV		100
107) 1,2,4-TRICHLOROBENZENE	18.492	180	232011	14.33	PPBV		98
108) NAPHTHALENE	18.540	128	610069	15.28	PPBV		100

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

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\
Data File : 6W27292.D
Acq On : 28 Nov 2022 1:24 pm
Operator : thomash
Sample : cc1125-10
Misc : MS64243,V6W1152,,,,,1
ALS Vial : 18 Sample Multiplier: 1

Quant Time: Nov 28 15:01:32 2022
Quant Method : C:\msdchem\1\methods\M6W1125.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Thu Oct 20 08:34:08 2022
Response via : Initial Calibration



Manual Integration Approval Summary

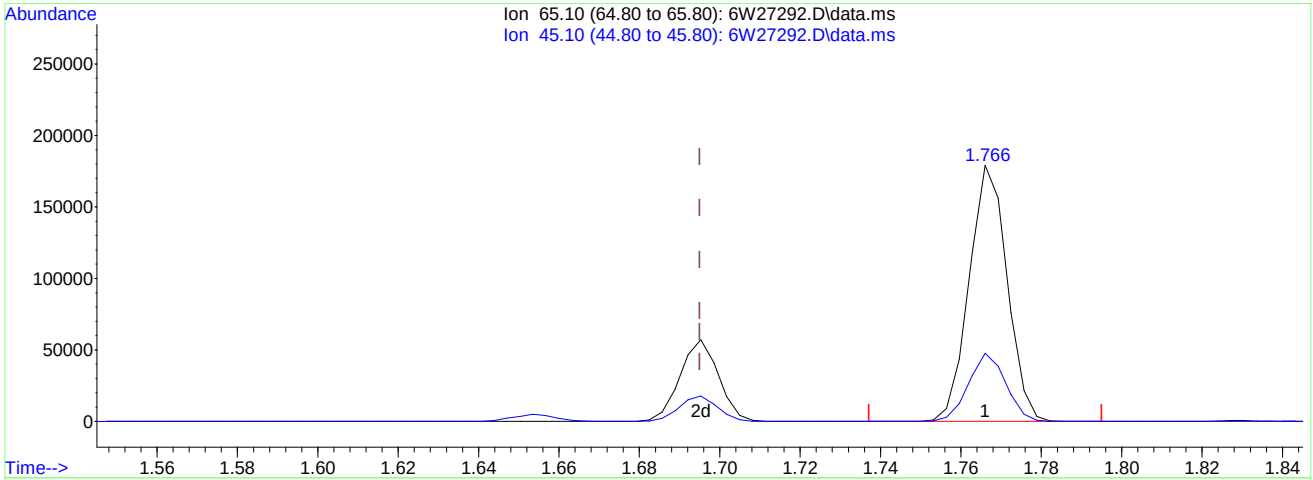
Sample Number:	V6W1152-CC1125	**Method:**	TO-15
Lab FileID:	6W27292.D	**Analyst approved:**	11/28/22 15:04 Thomas Hilbig
Injection Time:	11/28/22 13:24	**Supervisor approved:**	12/01/22 15:56 Kanya Veerawat

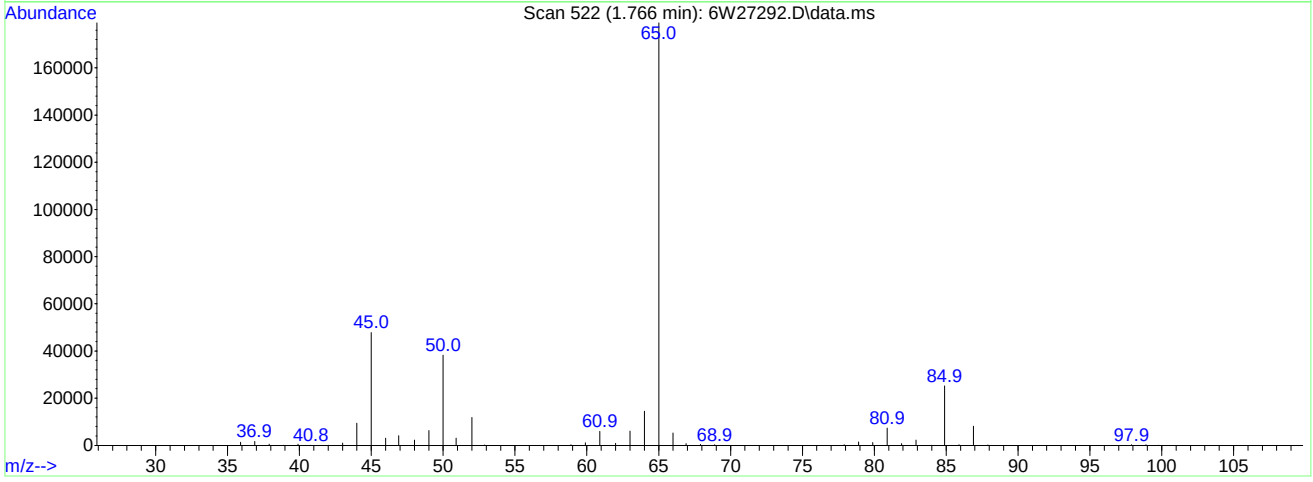
Parameter	CAS	Sig#	R.T. (min.)	Reason
Freon 152A	75-37-6		1.70	Missed peak

Quantitation Report (Qedit)

Data Path : C:\msdchem\1\data\
Data File : 6W27292.D
Acq On : 28 Nov 2022 1:24 pm
Operator : thomash
Sample : cc1125-10
Misc : MS64243,V6W1152,,,,,1
ALS Vial : 18 Sample Multiplier: 1

Quant Time: Nov 28 14:59:58 2022
Quant Method : C:\msdchem\1\methods\M6W1125.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Thu Oct 20 08:34:08 2022
Response via : Initial Calibration





TIC: 6W27292.D\data.ms

(3) FREON 152A (T)

1.766min (+0.071) 28.61PPBV

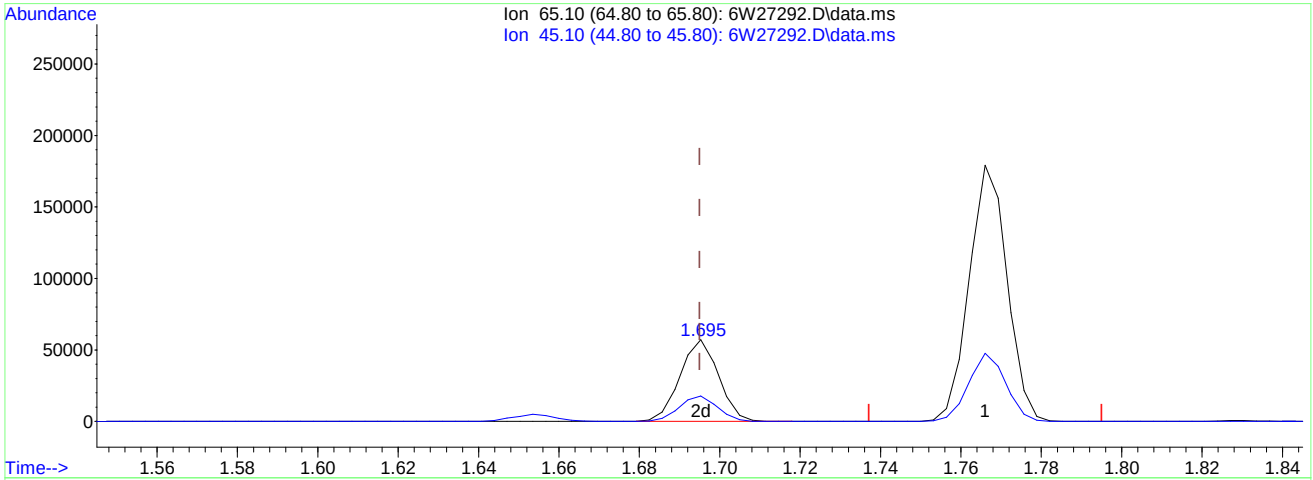
response 117416

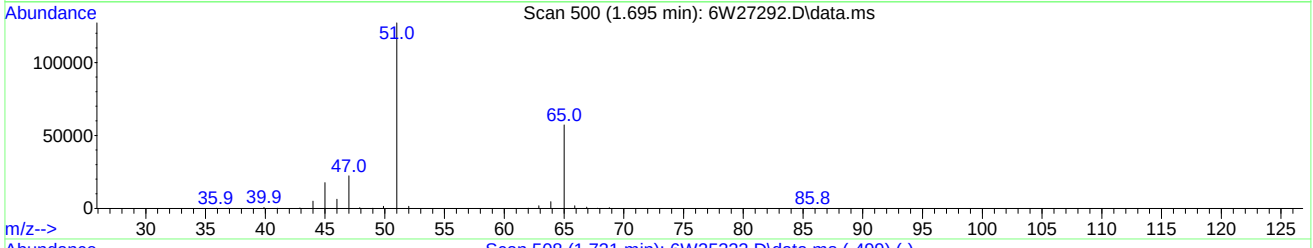
Ion	Exp%	Act%
65.10	100	100
45.10	22.90	26.28
0.00	0.00	0.00
0.00	0.00	0.00

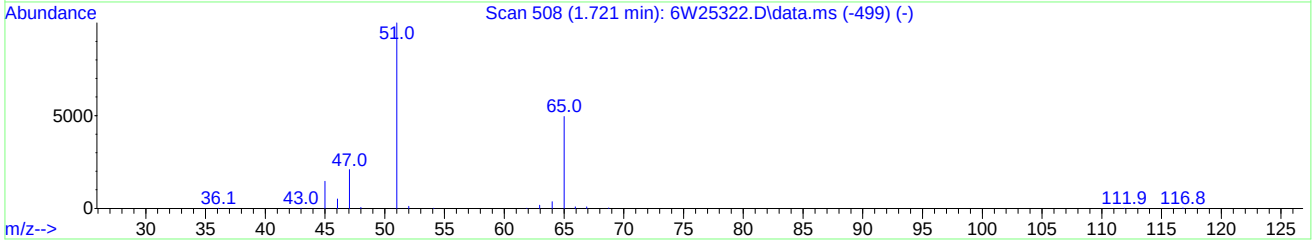
Quantitation Report (Qedit)

Data Path : C:\msdchem\1\data\
Data File : 6W27292.D
Acq On : 28 Nov 2022 1:24 pm
Operator : thomash
Sample : cc1125-10
Misc : MS64243,V6W1152,,,,,1
ALS Vial : 18 Sample Multiplier: 1

Quant Time: Nov 28 14:59:58 2022
Quant Method : C:\msdchem\1\methods\M6W1125.M
Quant Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
QLast Update : Thu Oct 20 08:34:08 2022
Response via : Initial Calibration







TIC: 6W27292.D\data.ms

(3) FREON 152A (T)

1.695min (+0.000) 9.28PPBV m

response 38085

Ion	Exp%	Act%
65.10	100	100
45.10	22.90	81.02#
0.00	0.00	0.00
0.00	0.00	0.00

SGS

TO-15

Batch ID: V2W2776

Date: 12/14/22

Analyst Signature:

Columns: DB-1 30m x 0.25mm x 0.5µm

Method: 2WTO15.M

Seq. File: 2W20221214.S

Initial Cal. Method: M2W2776.M

AS Data

Method: TO15.T200A.CTD

Standard Data

Lot #	Description	Conc.

Standard Data

Lot #	Description	Conc.
A59525	Int/Surr	100ppbv
A59676	TO15 STD (A1785)	40ppbv
A59675	TO15 STD (A1810)	1.0ppbv
A59656	TO15 LCS (A1805)	40ppbv

(M) Manually integrated chromatographic peaks in the following reportable file have been reviewed and verified to comply with the criter of SGS SOP EQA044.

Supervisor Signature: Date: 12/21/2022

AS #	Data File	Sample ID	TEST	Canister Serial #	Vol Sample	Dil Fact	TICS	Int. STD Areas	Surr	Status Data	Comments
3	2W62379	IB			20					–	
3	2W62380	IB			20					–	
3	2W62381	IB			20					–	
1	2W62382	BFB			16					OK	
1	2W62383	IC2776-0.01			16			✓	✓	OK	
1	2W62384	IC2776-0.1			40			✓	✓	OK	
1	2W62385	IC2776-0.2			80			✓	✓	OK	
1	2W62386	IC2776-0.5			200			✓	✓	OK	
2	2W62387	IC2776-0.5			5			✓	✓	OK	
2	2W62388	IC2776-5			50			✓	✓	OK	
2	2W62389	IC2776-10			100			✓	✓	OK	
2	2W62390	IC2776-20			200			✓	✓	OK	
2	2W62391	IC2776-40			400			✓	✓	OK	
2	2W62392	IC2776-50			500			✓	✓	OK	
3	2W62393	IB			20					–	
3	2W62394	IB			20					–	
4	2W62395	ICV2776-10			100			✓	✓	OK	

TA 12/16/22

All strikeouts must be initial and dated. Comment is require for anything other than a transcription error.

SGS

TO-15

Batch ID: V2W2809

Date: 2/1/2023

Analyst Signature:

Columns: DB-1 30m x 0.25mm x 0.5µm
Method: 2W TO15_M
Seq. File: 2w20230201-5
Initial Cal. Method: M2W2776.M

AS Data

Method: TO15A.7200A.STD

Standard Data

Lot #	Description	Conc.

Standard Data

Lot #	Description	Conc.
AS9585	Int/Surr.	10ppbv
AS9702	TO15 STD (A976)	40ppbv

(M) Manually integrated chromatographic peaks in the following reportable file have been reviewed and verified to comply with the criteri of SGS SOP EQA044.

Supervisor Signature: Date: 2/2/23

AS #	Data File	Sample ID	TEST	Canister Serial #	Vol Sample	Dil Fact	TICS	Int. STD Areas	Surr	Status Data	Comments
1-1	2w63182	BFB		open position	400					OK	
1-2	2w63183	cc2776-10		A976	100					OK	
1-2	2w63184	BS		A976	100			✓	✓	OK	Propane ↑ benzyl chloride ↓ propene ↑
1-2	2w63185	BSD		A976	100			✓	✓	OK	
1-3	2w63186	IB		A976	100			✓	✓	OK	Propane ↑
1-3	2w63187	IB		A959	100					—	
1-3	2w63188	IB		A959	200					—	
1-3	2w63189	MB		A959	400					—	
1-4	2w63190	JD59460-1	STD MS66193	A831	400	1		✓	✓	OK	
1-5	2w63191	JD59460-2	✓	A1844	400	1		✓	✓	OK	
1-6	2w63192	JD59460-3	✓	A347	400	1		✓	✓	OK	
1-7	~~2w63194~~ TH	JD59460-5	✓	A279	165	1.65		✓	✓	OK	
1-7	~~2w63195~~ TH	JD59460-5DUP	✓	A279	155	1.55		✓	✓	OK	2W63193
1-8	~~2w63196~~ TH	JD59460-6	✓	A467	155	1.55		✓	✓	OK	2W63194
1-9	~~2w63197~~ TH	JD59378-1	STD, MAP MS66176	M206	100	1		✓	✓	OK	2W63195
1-10	~~2w63198~~ TH	JD59378-4	✓	A518	50	1		✓	✓	OK	2W63196
1-11	~~2w63199~~ TH	JD59378-5	✓	M192	50	1		✓	✓	OK/DL	2W63197
1-12	~~2w63200~~ TH	JD59379-9	✓	M422	40	1		✓	✓	OK/DL	2W63198
1-13	~~2w63201~~ TH	JD59143-11	STD MS66628	A1530	100	1		-	-	OK	2W63199 too dilute RR 4X
1-14	~~2w63202~~ TH	JD59118-1	TCE MS66179	A739	400	1		✓	✓	OK	2W63200
1-15	~~2w63203~~ TH	JD59118-2	✓	A1305	400	1		✓	✓	OK	2W63201
1-16	~~2w63204~~ TH	JD59118-7	✓	A333	400	1		✓	✓	OK	2W63202
2-1	~~2w63205~~ TH	JD59389-3	STD MS66176	A255	400	1		✓	✓	OK	2W63203
2-2	~~2w63206~~ TH	JD59389-4	✓	A444	400	1					2W63204 over cal ppm conc
2-3	~~2w63207~~ TH	JD59389-5	✓	A1870	400	1					2W63205 over cal RR zoom
2-4	~~2w63208~~ TH	JD59389-6	✓	A747	400	1					2W63206 over cal RR zoom
2-5	~~2w63209~~ TH	JD59463-1	STD MS66193	A1180	400	1					2W63207 ~~over cal~~ TH
2-6	~~2w63210~~ TH	JD59463-2	✓	A2182	400	1					2W63208
2-7	~~2w63211~~ TH	JD59463-3	✓	A1477	400	1					2W63209
	2w63211										2W63210

TH 2/2/23

All strikeouts must be initial and dated. Comment is require for anything other than a transcription error.

DAYT-AIR-0008-06-FORM-TO15 Instrument Log

SGS

TO-15

Batch ID: V6W1125

Analyst Signature:

Date: 10/19/2022

Columns: DB-1: 3m x 0.25mm x 0.5μm
Method: 6W1015.M
Seq. File: 6W2022 1019.S
Initial Cal. Method: 6W1125.M

AS Data

Method: 6W1015.T20.A.CD

Standard Data

Lot #	Description	Conc.
AS9620	TO15 LCS (A1805)	40ppbv

Standard Data

Lot #	Description	Conc.
AS9585	IS/SS	100ppbv
AS9618	TO15 LCS (A777)	40ppbv
AS9613	TO15 SD (A1824)	1ppbv
AS9617	TO15 SD (A1794)	40ppbv

(M) Manually integrated chromatographic peaks in the following reportable file have been reviewed and verified to comply with the criteria of SGS SOP EQA044.

Supervisor Signature: Date: 10/20/22

AS #	Data File	Sample ID	TEST	Canister Serial #	Vol Sample	Dil Fact	TICS	Int. STD Areas	Surr	Status Data	Comments
5	6W26446	BFB		OPEN	400					OK	
1	6W26447	FB		A1824	16					—	
1	6W26448	IC1125-0.04		A1824	16			✓	✓	OK	
1	6W26449	IC1125-0.1		A1824	40			✓	✓	OK	
1	6W26450	IC1125-0.2		A1824	80			✓	✓	OK	
1	6W26451	IC1125-0.5		A1824	200			✓	✓	OK	
2	6W26452	IC1125-0.5		A1794	5					not used	
2	6W26453	IC1125-5		A1794	50			✓	✓	OK	
2	6W26454	IC1125-10		A1794	100			✓	✓	OK	
2	6W26455	IC1125-20		A1794	200			✓	✓	OK	
2	6W26456	IC1125-40		A1794	400			✓	✓	OK	
2	6W26457	IC1125-50		A1794	500			✓	✓	OK	
3	6W26458	IB		A963	20					—	
3	6W26459	IB		A963	400					—	
4	6W26460	ICV1125-10		AS9618	~~400~~ 200	BFB 10/19/22				PM	
3	6W26461	IB		A963	400					—	
5	6W26462	ICV1125-10		A1805	100			✓	✓	OK	

AH 10/20/22

All strikeouts must be initial and dated. Comment is require for anything other than a transcription error.

TO-15

Batch ID: V6W1142

Date: 11/8/22

Analyst Signature:

Columns: 2B-1 30m x 0.25mm x 0.5µm

Method: 6W TO15

Seq. File: 6W2022 1108-5

Initial Cal. Method: M6W1125.M

AS Data

Method: 6W TO15.720A.M

Standard Data

Lot #	Description	Conc.

Standard Data

Lot #	Description	Conc.
AS9588	Int/Surr.	200ppbv
AS9624	TO15 STD (A976)	40ppbv
AS9621	TO15 STD (A179-1)	40ppbv

(M) Manually integrated chromatographic peaks in the following reportable file have been reviewed and verified to comply with the criteri of SGS SOP EQA044.

Supervisor Signature: Date: 12/21/2022

AS #	Data File	Sample ID	TEST	Canister Serial #	Vol Sample	Dil Fact	TICS	Int. STD Areas	Surr	Status Data	Comments
2-3	6W26983	BFB		OPEN POSITION	400						T=7:54 AM
2-2	6W26984	CC1125-10		A976	100						
2-3	6W26985	BFB		OPEN POSITION	400						
2-2	6W26986	CC1125-10		A976	100						
2-2	6W26987	CC1125-10		A976	100						
2-3	6W26988	BFB		OPEN POSITION A976	400						
2-2	6W26989	CC1125-10		A976	100					OK	T=11:50
2-2	6W26990	CC1125-10		A1794	100			-	-	RR	NEW CAN
2-2	6W26991	BS		A1794	100					OK	
2-2	6W26992	BSD		A1794	100					OK	
2-1	6W26993	IB		A962	100					OK	
2-1	6W26994	MB		A962	400			-	-	-	
2-1	6W26995	MB		A962	400			-	-	RR	METOH, MCL
2-3	6W26996	Scc, CP11951	STD 052483	A1815	400					OK	
2-4	6W26997	Scc, CP11924		A1807	400			-	-	NG	RET = 0.15ppbv
2-5	6W26998	Scc, CP11914		A1186	400					OK	
2-6	6W26999	Scc, CP11918		M214	400					OK	
2-7	6W27000	Scc, CP11952		A1779	400					OK	
2-8	6W27001	Scc, CP11938		A1906	100					OK	
2-9	6W27002	Scc, CP11938		A1917	100					OK	
2-10	6W27003	Scc, CP11938		A525	100					OK	
2-11	6W27004	Scc, CP11936		A1385	100					OK	
2-12	6W27005	Scc, CP11936		A1998	100					OK	
2-13	6W27006	Scc, CP11936		A544	100					OK	
2-14	6W27007	Scc, CP11940		A1419	100					OK	
2-15	6W27008	Scc, CP11940		A1509	100			-	-	NG	IPA = 0.24 ppbv
2-16	6W27009	Scc, CP11940		A1445	100					OK	
1-1	6W27010	Scc, CP11916		A1180	400					OK	
1-2	6W27011	Scc, CP11930		M014	400					OK	
1-3	6W27012	Scc, CP11935		A352	400			-	-	-	VALVE CLOSED

All strikeouts must be initial and dated. Comment is require for anything other than a transcription error.

SGS

TO-15

Batch ID: V6W1142 (CONT)

Date: 11/8/2022

Analyst Signature:

Columns: DB1: 30m x 0.25mm x 0.25µm
Method: GWTO15.
Seq. File: 6W2022 1108.S
Initial Cal. Method: M6W1125.M

AS Data

Method: 6WTO15.720A.CTD

Standard Data

Lot #	Description	Conc.

Standard Data

Lot #	Description	Conc.
AS825	1515	100ppbv
AS9624	TO15 STD (A97C)	40ppbv
AS9621	TO15 STD (A1794)	40ppbv

(M) Manually integrated chromatographic peaks in the following reportable file have been reviewed and verified to comply with the criter of SGS SOP EQA044.

Supervisor Signature: Date: 12/21/2022

AS #	Data File	Sample ID	TEST	Canister Serial #	Vol Sample	Dil Fact	TICS	Int. STD Areas	Surr	Status Data	Comments
1-4	6W27013	scc, CP11935		A1790	400			✓	✓	OK	
1-5	6W27014	scc, CP11935		A1852	400			✓	✓	OK	
1-6	6W27015	scc, CP11935		A2018	400			✓	✓	OK	
1-7	6W27016	scc, CP11949		A1715	400			✓	✓	OK	
1-8	6W27017	scc, CP11949		A1584	400			✓	✓	OK	
1-9	6W27018	scc, CP11949		M168	400			✓	✓	OK	
1-10	6W27019	scc, CP11920		A774	400			-	-	NG	ACETONE=2.0%
1-11	6W27020	scc, CP11920		A264	400			-	-	NG	ACETONE↑ MEK↑
1-12	6W27021	scc, CP11949		A1349	400			✓	✓	OK	
1-13	6W27022	scc, CP11933		A1588	400			-	-	NG	CS_2↑ = 0.13ppbv
1-14	6W27023	scc, CP11933		A1661	400			-	-	NG	CS_2↑= 0.13ppbv
1-15	6W27024	scc, CP11933		M064	400			-	-	NG	CS_2↑= 0.13ppbv
1-16	6W27025	scc, CP11933		A1196	400			-	-	NG	CS_2↑=0.12ppbv

WC 11/9/22

All strikeouts must be initial and dated. Comment is require for anything other than a transcription error.

TO-15

Batch ID: V6W1146

Date: 11/22/22

Analyst Signature:

Columns: DB-1 30m x 0.25mm x 0.25µm

Method: 6WT015.M

Seq. File: 6W20221122.S

Initial Cal. Method: M6W1125.M

AS Data

Method: 6WT015.7200A.CFG

Standard Data

Lot #	Description	Conc.

Standard Data

Lot #	Description	Conc.
AS9585	IntStd mix	100ppbv
AS9645	TO15 STD (A1797)	40ppbv

(M) Manually integrated chromatographic peaks in the following reportable file have been reviewed and verified to comply with the criteria of SGS SOP EQA044.

Supervisor Signature: Date: 11/26/2022

AS #	Data File	Sample ID	TEST	Canister Serial #	Vol Sample	Dil Fact	TICS	Int. STD Areas	Surr	Status Data	Comments
2-1	6W27092	BFB		open position	400					OK	8:39AM
2-2	6W27093	CC1125-10		A1797	100			✓	✓	OK	124TCB↑ NAP↑ 2-hexanone↑
2-2	6W27094	BS		A1797	100			✓	✓	OK	2-hexanone↑
2-2	6W27095	BSD		A1797	100			✓	✓	OK	124TCB↑, NAP↑ 2-hexanone↑ 124TCB↑ NAP↑
2-3	6W27096	IB		A958	100					—	
2-3	6W27097	MB		A958	400		+	✓	✓	OK	
2-4	6W27098	JD55815-1	STD+ MS64171	A509	40	1	+	✓	✓	OK	
2-5	6W27099	JD55460-9	SC MS63991	A1687	400	1		✓	✓	OK	
2-6	6W27100	JD55460-10	✓	A086	400	1		✓	✓	OK	
2-6	6W27101	JD55460-10MP	✓	A086	400	1		✓	✓	OK	
2-7	6W27102	JD55483-1	STD NAP MS63982	A2077	400	1		✓	✓	OK	
2-8	6W27103	JD55483-2	✓	A2087	400	1		✓	✓	OK	
2-9	6W27104	JD55954-6	STD MS64243	A1770	400	1		✓	✓	OK	
2-10	6W27105	JD55954-7	✓	A2062	400	1		✓	✓	OK	
2-11	6W27106	JD55954-8	✓	M208	400	1		✓	✓	OK	
2-12	6W27107	JD55954-9	✓	A1273	400	1		✓	✓	OK	
2-13	6W27108	JD55954-10	✓	A813	400	1		✓	✓	OK	
2-14	6W27109	JD55954-11	✓	A323	400	1		✓	✓	OK	
2-15	6W27110	JD55954-12	✓	M224	400	1		✓	✓	OK	
2-16	6W27111	JD55954-13	✓	A2056	400	1		✓	✓	OK	
1-1	6W27112	JD55954-14	✓	A815	400	1		✓	✓	OK	
1-2	6W27113	JD55954-15	✓	A2034	400	1		✓	✓	OK	
1-6	6W27114	JD55954-16	✓	A2048	400	1		✓	✓	OK	
1-7	6W27115	JD55954-17	✓	A1860	400	1		✓	✓	OK	
1-8	6W27116	JD55954-18	✓	A2014	400	1		✓	✓	OK	
1-9	6W27117	JD55954-19	✓	M152	400	1		✓	✓	OK	
1-10	6W27118	JD55954-20	✓	A993	400	1		✓	✓	OK	
1-11	6W27119	SCC CP11972		A2115	400				✓	RERUN	↑Acetic Acid
1-12	6W27120	SCC CP11980		A2142	400			—	✓	RERUN	↑Acetic Acid
1-13	6W27121	SCC CP11969		A1773	400			✓	✓	OK	

All strikeouts must be initial and dated. Comment is require for anything other than a transcription error.

SGS

TO-15

Batch ID: V6W1146

Date: 11/22/22

Analyst Signature:

Columns: DB-1 30m x 0.25mm x 0.5µm
Method: 6W7215.M
Seq. File: 6W20221122.S
Initial Cal. Method: M6W1125.M

AS Data

Method: 6W7215, 7200A.CFG

Standard Data

Lot #	Description	Conc.

Standard Data

Lot #	Description	Conc.
AS7585	Int/Surr	100ppbv
~~AS6478~~		
AS9645	TO15 STD (A1797)	40 ppbv

(M) Manually integrated chromatographic peaks in the following reportable file have been reviewed and verified to comply with the criteria of SGS SOP EQA044.

Supervisor Signature: Date: 11/26/2022

AS #	Data File	Sample ID	TEST	Canister Serial #	Vol Sample	Dil Fact	TICS	Int. STD Areas	Surr	Status Data	Comments
1-14	6W27122	SCC CP11978		A2132	400			/	/	ok	
1-15	6W27123	SCC CP11971		A2185	400			/	/	ok	
1-16	6W27124	SCC CP11973		A2099	400			/	/	ok	
2-1	6W27125	SCC CP11776		A2130	400			/	/	ok	
2-3	6W27126	SCC, CP11951		A1815	400			-	-	-	wrong position initialed
2-4	6W27127	~~SCC, CP11961~~	A1815	~~A1065TH~~	400			/	/	ok	CP11951
2-5	6W27128	~~SCC, CP11933~~	A1065	~~A1588TH~~	400			/	/	ok	CP11961
2-6	6W27129	SCC, CP11933	4th dilution	A1661	400			-	-	not run	run cancelled
2-7	6W27130	SCC CP11960	A750	~~A1180~~	400			-	-	not run	↓
2-8	6W27131	SCC, CP11975		A2171	400			-	-	not run	↓

TH 11/23/22

All strikeouts must be initial and dated. Comment is require for anything other than a transcription error.

TO-15

Batch ID: V6W1152

Date: 11/28/22

Analyst Signature:

Columns: DB-1 30m x 0.25mm x 0.5µm

Method: 6W7215.M

Seq. File: 6W20221128.S

Initial Cal. Method: M6W1125.M

AS Data

Method: 6W7215,72mA.CFG

Standard Data

Lot #	Description	Conc.

Standard Data

Lot #	Description	Conc.
AS9585	Int/Surr.	100ppbv
AS9645	7215 STD (A1797)	40ppbv

(M) Manually integrated chromatographic peaks in the following reportable file have been reviewed and verified to comply with the criteria of SGS SOP EQA044.

Supervisor Signature: Date: 12/4/2022

AS #	Data File	Sample ID	TEST	Canister Serial #	Vol Sample	Dil Fact	TICS	Int. STD Areas	Surr	Status Data	Comments
2-1	6W27290	BFB		open position	20					OK	T= 11:58 AM
2-2	6W27291	CC1125-10		A1797	100					RR	methods compounds ↑
2-2	6W27292	CC1125-10		A1797	100			✓	✓	OK	HCBD↑, 124TCBT, NAP↑
2-2	6W27293	BS		A1797	100			✓	✓	OK	2-hexanone ↑ HCBD↑, NAP↑, 124TCBT
2-2	6W27294	BSD		A1797	100			✓	✓	OK	HCBD↑ 124TCBT, NAP↑
2-3	6W27295	1B		A2038	100					—	
2-3	6W27296	MB		A2038	400		+	✓	✓	OK	
2-12	6W27297	JD55933-4	STD MS64242	M1230	10	1		✓	✓	OK/DL	
2-13	6W27298	JD55933-3	✓	A437	50	1		—	—	RR	wrong volume RR 20mL
2-14	6W27299	JD55933-2	✓	A1151	50	1		✓	✓	OK	
2-15	6W27300	JD55969-1	STD MS64243	A1550	10	1		✓	✓	OK	
2-16	6W27301	JD55969-2	✓	A1369	50	1		✓	✓	OK	RR 12/1/22
1-1	6W27302	JD55969-3	✓	A1393	20	1		✓	✓	OK DL	over cal RR 10mL
1-11	6W27303	JD56027-3	✓	A428	100	1		✓	✓	OK	
1-12	6W27304	JD56027-4	✓	M326	100	1		✓	✓	OK	
1-12	6W27305	JD56027-4DUP	✓	M326	100	1		✓	✓	OK	
1-13	6W27306	JD55931-1	STD MS64242	A1196	5	1		—	—	RR	too dilute RR 5mL
1-14	6W27307	JD56028-1	STD MS64243	A606	100	1		✓	✓	OK	
1-15	6W27308	JD56028-2	✓	M431	100	1		✓	✓	OK	
1-16	6W27309	JD56028-3	✓	M430	100	1		✓	✓	OK	
2-1	6W27310	JD56031-1	STD/NAP	M460	100	1	+	✓	✓	OK	
2-4	6W27311	JD56031-2	✓	A505	100	1	+	✓	✓	OK	
2-5	6W27312	JD56031-3	✓	A806	100	1	+	✓	✓	OK	
2-6	6W27313	JD56087-1	STD, NAP MS64295	A640	400	1		✓	✓	OK	
2-7	6W27314	JD56087-2	✓	M226	400	1		✓	✓	OK	
2-8	6W27315	JD56118-1	STD MS64316	A371	400	1		✓	✓	OK	
2-9	6W27316	JD56118-2	✓	A1822	400	2.57		✓	✓	OK	
2-10	6W27317	JD56219-1	STD MS64353	A418	10	1		—	—	RR	too dilute
2-10	6W27318	JD56219-1	✓	A418	20	1		—	—	RR	too dilute RR 1X
2-16	6W27319	scc, CP11977		A410	100	1				MB	ACETONE ↑

All strikeouts must be initial and dated. Comment is require for anything other than a transcription error.

SGS

TO-15

Batch ID: V6W1152(CONT.)

Date: 11/28/2022

Analyst Signature:

Columns: DB-1 30m x 0.25mm x 0.25µm
Method: 6WTO15.M
Seq. File: 6W20221128.S
Initial Cal. Method: M6W1125.M

AS Data

Method: 6WTO15.7200A.ctd

Standard Data

Lot #	Description	Conc.

Standard Data

Lot #	Description	Conc.
A39585	1,4-D/Smix	1ppbv
A39645	TO15 STD (A1797)	4ppbv

(M) Manually integrated chromatographic peaks in the following reportable file have been reviewed and verified to comply with the criteria of SGS SOP EQA044.

Supervisor Signature: Date: 12/8/22

AS #	Data File	Sample ID	TEST	Canister Serial #	Vol Sample	Dil Fact	TICS	Int. STD Areas	Surr	Status Data	Comments
2-12	6W27320	scc, CP11977		A1966	100			✓	✓	ok	
2-13	6W27321	scc, CP11977		A1563	100			✓	✓	ok	
2-14	6W27322	scc, CP11974		A1115	100			✓	✓	ok	
2-15	6W27323	scc, CP11974		A589	100			✓	✓	ok	
2-16	6W27324	scc, CP11982		A1482	400			✓	✓	ok	
1-1	6W27325	scc, CP11963		A770	400			✓	✓	ok	
1-2	6W27326	scc, ~~CP11968~~ WH		A491	100			✓	✓	ok	CP11974
1-6	6W27327	scc, CP11975		A2171	400			✓	✓	ok	
1-7	6W27328	scc, CP11965		A1733	400			✓	✓	ok	
1-8	6W27329	scc, CP11970		A1760	400			✓	✓	ok	
1-9	6W27330	scc, CP11967		A1734	400			✓	✓	ok	
1-10	6W27331	scc, CP11960		A750	400					NG	RCE= 0.1ppbv
1-11	6W27332	scc, CP11979		A2170	400			—	—	RR	out of BFB window

TH 11/29/22

All strikeouts must be initial and dated. Comment is require for anything other than a transcription error.

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

e-Hardcopy 2.0
Automated Report

Technical Report for

Tetra Tech NUS

KSC-CRCA, FL

112G08970

SGS Job Number: JD60001

Sampling Date: 02/08/23

Report to:

andrea.colby@sgs.com

Total number of pages in report: **120**

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable unless noted in the narrative, comments or footnotes.

David Chastain
General Manager

Client Service contact: Jadon Schiller 732-329-0200
Certifications: NJ(12129), NY(10983), CA, CT, FL, IL, IN, KS, KY, LA, MA, MD, ME, MN, NC, OH VAP (CL0056), AK (UST-103), AZ (AZ0786), PA(68-00408), RI, SC, TX, UT, VA, WV

This report shall not be reproduced, except in its entirety, without the written approval of SGS.
Test results relate only to samples analyzed.

SGS is the sole authority for authorizing edits or modifications to this document.
Unauthorized modification of this report is strictly prohibited.
Review standard terms at: http://www.sgs.com/en/terms-and-conditions

Please share your ideas about how we can serve you better at:
EHS.US.CustomerCare@sgs.com

Sections: 1 2 3 4 5 6

Table of Contents

Section 1: Sample Summary **3**
Section 2: Case Narrative/Conformance Summary **4**
Section 3: Summary of Hits **5**
Section 4: Sample Results **6**
4.1: JD60001-1: CRCA-VMP03.20230208 7
Section 5: MS Volatiles - QC Data Summaries **9**
5.1: Chain of Custody 10
5.2: Summa Canister and Flow Controller Log 13
5.3: Sample Tracking Chronicle 14
5.4: Internal Chain of Custody 15
5.5: 2021 MDL Study - Method: TO-15 16
Section 6: MS Volatiles - QC Data Summaries **18**
6.1: Method Blank Summary 19
6.2: Blank Spike/Blank Spike Duplicate Summary 25
6.3: Duplicate Summary 31
6.4: Summa Cleaning Certification 34
6.5: Instrument Performance Checks (BFB) 37
6.6: Internal Standard Area Summaries 42
6.7: Initial Calibration RT/ISTD Area Summaries 44
6.8: Surrogate Recovery Summaries 96
6.9: Initial and Continuing Calibration Summaries 97
6.10: Run Sequence Reports 117

SGS North America Inc.

Sample Summary

Tetra Tech NUS

Job No: JD60001

KSC-CRCA, FL
Project No: 112G08970

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
JD60001-1	02/08/23	12:25	RS	02/09/23	AIR	Soil Vapor Comp.	CRCA-VMP03.20230208

This report contains results reported as ND = Not detected. The following applies:
Organics ND = Not detected above the MDL

CASE NARRATIVE / CONFORMANCE SUMMARY

Client:	Tetra Tech NUS	**Job No:**	JD60001
Site:	KSC-CRCA, FL	**Report Date**	2/16/2023 1:07:14 PM

On 02/09/2023, 1 Sample(s), 0 Trip Blank(s) and 0 Field Blank(s) were received at SGS North America Inc. A SGS North America Inc. Job Number of JD60001 was assigned to the project. Laboratory sample ID, client sample ID and dates of sample collection are detailed in the report's Results Summary Section.

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

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

MS Volatiles By Method TO-15

Matrix: AIR **Batch ID:** V7W22

- All samples were analyzed within the recommended method holding time.
- Sample(s) JD60001-1DUP were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.

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

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

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

Summary of Hits

Job Number: JD60001
Account: Tetra Tech NUS
Project: KSC-CRCA, FL
Collected: 02/08/23

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
JD60001-1	**CRCA-VMP03.20230208**					
Acetone (2-Propanone)		13.7	0.80	0.58	ppbv	TO-15
Chloroform		3.0	0.80	0.15	ppbv	TO-15
Cyclohexane		0.98	0.80	0.44	ppbv	TO-15
Dichlorodifluoromethane		0.48 J	0.80	0.13	ppbv	TO-15
trans-1,2-Dichloroethylene		0.43 J	0.80	0.28	ppbv	TO-15
Ethanol		20.0	2.0	1.6	ppbv	TO-15
Ethyl Acetate		49.8	0.80	0.42	ppbv	TO-15
Freon 113		1.9	0.80	0.12	ppbv	TO-15
Isopropyl Alcohol		52.8	0.80	0.56	ppbv	TO-15
Methyl ethyl ketone		0.84	0.80	0.44	ppbv	TO-15
Toluene		1.4	0.80	0.23	ppbv	TO-15
o-Xylene		1.1	0.80	0.31	ppbv	TO-15
Xylenes (total)		1.1	0.80	0.31	ppbv	TO-15
Acetone (2-Propanone)		32.5	1.9	1.4	ug/m3	TO-15
Chloroform		15	3.9	0.73	ug/m3	TO-15
Cyclohexane		3.4	2.8	1.5	ug/m3	TO-15
Dichlorodifluoromethane		2.4 J	4.0	0.64	ug/m3	TO-15
trans-1,2-Dichloroethylene		1.7 J	3.2	1.1	ug/m3	TO-15
Ethanol		37.7	3.8	3.0	ug/m3	TO-15
Ethyl Acetate		179	2.9	1.5	ug/m3	TO-15
Freon 113		15	6.1	0.92	ug/m3	TO-15
Isopropyl Alcohol		130	2.0	1.4	ug/m3	TO-15
Methyl ethyl ketone		2.5	2.4	1.3	ug/m3	TO-15
Toluene		5.3	3.0	0.87	ug/m3	TO-15
o-Xylene		4.8	3.5	1.3	ug/m3	TO-15
Xylenes (total)		4.8	3.5	1.3	ug/m3	TO-15

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID: CRCA-VMP03.20230208
Lab Sample ID: JD60001-1
Matrix: AIR - Soil Vapor Comp. Summa ID: A1066
Method: TO-15
Project: KSC-CRCA, FL

Date Sampled: 02/08/23
Date Received: 02/09/23
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	7W00430.D	1	02/13/23 15:37	TCH	n/a	n/a	V7W22
Run #2							

	Initial Volume
Run #1	100 ml
Run #2	

VOA TO15 List

CAS No.	MW	Compound	Result	RL	MDL	Units	Q	Result	RL	MDL	Units
67-64-1	58.08	Acetone (2-Propanone)	13.7	0.80	0.58	ppbv		32.5	1.9	1.4	ug/m3
106-99-0	54.09	1,3-Butadiene	ND	0.80	0.34	ppbv		ND	1.8	0.75	ug/m3
71-43-2	78.11	Benzene	ND	0.80	0.25	ppbv		ND	2.6	0.80	ug/m3
75-27-4	163.8	Bromodichloromethane	ND	0.80	0.12	ppbv		ND	5.4	0.80	ug/m3
75-25-2	252.8	Bromoform	ND	0.80	0.28	ppbv		ND	8.3	2.9	ug/m3
74-83-9	94.94	Bromomethane	ND	0.80	0.28	ppbv		ND	3.1	1.1	ug/m3
593-60-2	106.9	Bromoethene	ND	0.80	0.24	ppbv		ND	3.5	1.0	ug/m3
100-44-7	126	Benzyl Chloride	ND	0.80	0.50	ppbv		ND	4.1	2.6	ug/m3
75-15-0	76.14	Carbon disulfide	ND	0.80	0.18	ppbv		ND	2.5	0.56	ug/m3
108-90-7	112.6	Chlorobenzene	ND	0.80	0.30	ppbv		ND	3.7	1.4	ug/m3
75-00-3	64.52	Chloroethane	ND	0.80	0.27	ppbv		ND	2.1	0.71	ug/m3
67-66-3	119.4	Chloroform	3.0	0.80	0.15	ppbv		15	3.9	0.73	ug/m3
74-87-3	50.49	Chloromethane	ND	0.80	0.36	ppbv		ND	1.7	0.74	ug/m3
107-05-1	76.53	3-Chloropropene	ND	0.80	0.33	ppbv		ND	2.5	1.0	ug/m3
95-49-8	126.6	2-Chlorotoluene	ND	0.80	0.29	ppbv		ND	4.1	1.5	ug/m3
56-23-5	153.8	Carbon tetrachloride	ND	0.80	0.16	ppbv		ND	5.0	1.0	ug/m3
110-82-7	84.16	Cyclohexane	0.98	0.80	0.44	ppbv		3.4	2.8	1.5	ug/m3
75-34-3	98.96	1,1-Dichloroethane	ND	0.80	0.23	ppbv		ND	3.2	0.93	ug/m3
75-35-4	96.94	1,1-Dichloroethylene	ND	0.80	0.24	ppbv		ND	3.2	0.95	ug/m3
106-93-4	187.9	1,2-Dibromoethane (EDB)	ND	0.80	0.39	ppbv		ND	6.1	3.0	ug/m3
107-06-2	98.96	1,2-Dichloroethane	ND	0.80	0.28	ppbv		ND	3.2	1.1	ug/m3
78-87-5	113	1,2-Dichloropropane	ND	0.80	0.25	ppbv		ND	3.7	1.2	ug/m3
123-91-1	88.12	1,4-Dioxane	ND	0.80	0.47	ppbv		ND	2.9	1.7	ug/m3
75-71-8	120.9	Dichlorodifluoromethane	0.48	0.80	0.13	ppbv	J	2.4	4.0	0.64	ug/m3
124-48-1	208.3	Dibromochloromethane	ND	0.80	0.21	ppbv		ND	6.8	1.8	ug/m3
156-60-5	96.94	trans-1,2-Dichloroethylene	0.43	0.80	0.28	ppbv	J	1.7	3.2	1.1	ug/m3
156-59-2	96.94	cis-1,2-Dichloroethylene	ND	0.80	0.31	ppbv		ND	3.2	1.2	ug/m3
10061-01-5	111	cis-1,3-Dichloropropene	ND	0.80	0.25	ppbv		ND	3.6	1.1	ug/m3
541-73-1	147	m-Dichlorobenzene	ND	0.80	0.16	ppbv		ND	4.8	0.96	ug/m3
95-50-1	147	o-Dichlorobenzene	ND	0.80	0.62	ppbv		ND	4.8	3.7	ug/m3
106-46-7	147	p-Dichlorobenzene	ND	0.80	0.76	ppbv		ND	4.8	4.6	ug/m3
10061-02-6	111	trans-1,3-Dichloropropene	ND	0.80	0.40	ppbv		ND	3.6	1.8	ug/m3

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

Report of Analysis

Client Sample ID: CRCA-VMP03.20230208
Lab Sample ID: JD60001-1
Matrix: AIR - Soil Vapor Comp. Summa ID: A1066
Method: TO-15
Project: KSC-CRCA, FL

Date Sampled: 02/08/23
Date Received: 02/09/23
Percent Solids: n/a

VOA TO15 List

CAS No.	MW	Compound	Result	RL	MDL	Units	Q	Result	RL	MDL	Units
64-17-5	46.07	Ethanol	20.0	2.0	1.6	ppbv		37.7	3.8	3.0	ug/m3
100-41-4	106.2	Ethylbenzene	ND	0.80	0.24	ppbv		ND	3.5	1.0	ug/m3
141-78-6	88	Ethyl Acetate	49.8	0.80	0.42	ppbv		179	2.9	1.5	ug/m3
622-96-8	120.19	4-Ethyltoluene	ND	0.80	0.38	ppbv		ND	3.9	1.9	ug/m3
76-13-1	187.4	Freon 113	1.9	0.80	0.12	ppbv		15	6.1	0.92	ug/m3
76-14-2	170.9	Freon 114	ND	0.80	0.20	ppbv		ND	5.6	1.4	ug/m3
142-82-5	100.2	Heptane	ND	0.80	0.37	ppbv		ND	3.3	1.5	ug/m3
87-68-3	260.8	Hexachlorobutadiene	ND	0.80	0.25	ppbv		ND	8.5	2.7	ug/m3
110-54-3	86.18	Hexane	ND	0.80	0.45	ppbv		ND	2.8	1.6	ug/m3
591-78-6	100	2-Hexanone	ND	0.80	0.58	ppbv		ND	3.3	2.4	ug/m3
67-63-0	60.1	Isopropyl Alcohol	52.8	0.80	0.56	ppbv		130	2.0	1.4	ug/m3
75-09-2	84.94	Methylene chloride	ND	0.80	0.22	ppbv		ND	2.8	0.76	ug/m3
78-93-3	72.11	Methyl ethyl ketone	0.84	0.80	0.44	ppbv		2.5	2.4	1.3	ug/m3
108-10-1	100.2	Methyl Isobutyl Ketone	ND	0.80	0.29	ppbv		ND	3.3	1.2	ug/m3
1634-04-4	88.15	Methyl Tert Butyl Ether	ND	0.80	0.32	ppbv		ND	2.9	1.2	ug/m3
80-62-6	100.12	Methylmethacrylate	ND	0.80	0.28	ppbv		ND	3.3	1.1	ug/m3
115-07-1	42	Propylene	ND	2.0	0.57	ppbv		ND	3.4	0.98	ug/m3
100-42-5	104.1	Styrene	ND	0.80	0.47	ppbv		ND	3.4	2.0	ug/m3
71-55-6	133.4	1,1,1-Trichloroethane	ND	0.80	0.15	ppbv		ND	4.4	0.82	ug/m3
79-34-5	167.85	1,1,2,2-Tetrachloroethane	ND	0.80	0.19	ppbv		ND	5.5	1.3	ug/m3
79-00-5	133.4	1,1,2-Trichloroethane	ND	0.80	0.15	ppbv		ND	4.4	0.82	ug/m3
120-82-1	181.5	1,2,4-Trichlorobenzene	ND	0.80	0.48	ppbv		ND	5.9	3.6	ug/m3
95-63-6	120.19	1,2,4-Trimethylbenzene	ND	0.80	0.35	ppbv		ND	3.9	1.7	ug/m3
108-67-8	120.19	1,3,5-Trimethylbenzene	ND	0.80	0.32	ppbv		ND	3.9	1.6	ug/m3
540-84-1	114.2	2,2,4-Trimethylpentane	ND	0.80	0.38	ppbv		ND	3.7	1.8	ug/m3
75-65-0	74.12	Tertiary Butyl Alcohol	ND	0.80	0.37	ppbv		ND	2.4	1.1	ug/m3
127-18-4	165.8	Tetrachloroethylene	ND	0.16	0.056	ppbv		ND	1.1	0.38	ug/m3
109-99-9	72.11	Tetrahydrofuran	ND	0.80	0.36	ppbv		ND	2.4	1.1	ug/m3
108-88-3	92.14	Toluene	1.4	0.80	0.23	ppbv		5.3	3.0	0.87	ug/m3
79-01-6	131.4	Trichloroethylene	ND	0.16	0.076	ppbv		ND	0.86	0.41	ug/m3
75-69-4	137.4	Trichlorofluoromethane	ND	0.80	0.14	ppbv		ND	4.5	0.79	ug/m3
75-01-4	62.5	Vinyl chloride	ND	0.80	0.28	ppbv		ND	2.0	0.72	ug/m3
108-05-4	86	Vinyl Acetate	ND	0.80	0.45	ppbv		ND	2.8	1.6	ug/m3
	106.2	m,p-Xylene	ND	0.80	0.56	ppbv		ND	3.5	2.4	ug/m3
95-47-6	106.2	o-Xylene	1.1	0.80	0.31	ppbv		4.8	3.5	1.3	ug/m3
1330-20-7	106.2	Xylenes (total)	1.1	0.80	0.31	ppbv		4.8	3.5	1.3	ug/m3

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	4-Bromofluorobenzene	99%		65-128%

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

MS Volatiles

QC Data Summaries

Includes the following where applicable:

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

CHAIN OF CUSTODY - AIR

AIR

SGS North America Inc. - Dayton
2235 Route 130, Dayton, NJ 08810
TEL. 732-329-0200 FAX 732-329-3499
www.sgs.com/ehsusa

FED-EX Tracking # 5894 7370 8336 | Bottle Order Control # PASI-JS-00003-50
SGS Quote # | SGS Job # JD60001

Client / Reporting Information

Company Name: Tetra Tech
Address: 1353 N Courtenay Pky Suite S
City: Merritt Island State: FL Zip: 32953
Project Contact: Alex Murphy E-mail:
Phone #: 321.637.8530
Sampler(s) Name(s): Robert Siegel

Project Information

Project Name: KSC-NASA-CRCA
Street:
City: State:
Project #: 112 60 8970
Client Purchase Order #:

Weather Parameters

Temperature (Fahrenheit) Start: 75° Stop: 75° Maximum: Minimum:
Atmoshpheric Pressure (Inches of Hg) Start: 30.26 Stop: 30.26 Maximum: Minimum:
Other weather comment: Clear Upto 5mph

Requested Analysis

TO 15 STD DOD

Lab Sample #	Field ID / Point of Collection	Air Type: Ind (I) Soil Vap (SV) Amb (A)	Air Type: Res (R) Non-Res (NR)	Sampling Equipment Info: Canister Serial #	Sampling Equipment Info: Canister Size 6L or 1L	Sampling Equipment Info: Flow Controller Serial #	Start Sampling Information: Date	Start: Time (24hr clock)	Start: Canister Pressure ("Hg)	Start: Interior Temp (F)	Start: Sampler Init.	Stop Sampling Information: Date	Stop: Time (24hr clock)	Stop: Canister Pressure ("Hg)	Stop: Interior Temp (F)	Stop: Sampler Init.	X
1	CRCA-VMP03-20230208	SV	NR	A1066	6L	FC 1238	02.08.23	1125	-29.0	75.0	RS	020823	1225	-7.0	75°	RS	X

SUMMA

Turnaround Time (Business days)

- 15 Business Days
- 10 Business Days
- 5 Business Days
- 3 Business Days *
- 2 Business Days *
- 1 Business Day *
- Other

Approved By:
Date:
* Approval needed for 1-3 Business Day TAT

Data Deliverable Information

All NJDEP TO-15 is mandatory Full T1

- Comm A
- Comm B
- Reduced T2
- Full T1
- Other:
- DKQP reporting

Comments / Remarks

Sample inventory is verified upon receipt in the Laboratory

Sample Custody must be documented below each time samples change possession, including courier delivery.

	Relinquished by Laboratory:	Date / Time:	Received By:	Relinquished By:	Date / Time:	Received By:
1		2/3/23 14:50		2	020823/1430	FX
3	FX	2/9/23 10:10		4		
5				Custody Seal #		

http://www.sgs.com/en/terms-and-conditions

Initial Assessment YA EC

Label Verification

EHSA-QAC-0022-01-FORM-Dayton-Air COC
Rev.date:1/15/2021

Tetra Tech, Inc. CHAIN OF CUSTODY | NUMBER No. 1751 |

PROJECT NO: 112G08970	FACILITY: KSC - NASA CRCA	PROJECT MANAGER Alex Murphy	PHONE NUMBER 321-637-8530	LABORATORY NAME AND CONTACT: SGS N America
SAMPLERS (SIGNATURE) Robert Stegall		FIELD OPERATIONS LEADER Chuck Sorden	PHONE NUMBER 321-591-7580	ADDRESS 2235 Route 130
		CARRIER/WAYBILL NUMBER		CITY, STATE Dayton NJ 08810

STANDARD TAT ☐ RUSH TAT ☐ ☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

CONTAINER TYPES Steel PLASTIC (P) or GLASS (G) S

PRESERVATIVE USED None

TYPE OF ANALYSIS: STD DOD TO 15; Res (GR) Non-Res (NR) Can #; Flow Controller #; Start Press ("Hg); Start Temp °F; End Press ("Hg); End Temp °F

DATE YEAR 2023	TIME	SAMPLE ID	LOCATION ID	~~TOP DEPTH (FT)~~ Start Time	~~BOTTOM DEPTH (FT)~~ End Time	MATRIX (GW, SO, SW, SD, QC, ETC.)	COLLECTION METHOD GRAB (G) COMP (C)	No. OF CONTAINERS									COMMENTS
02/08	1225	CRCA-VMP03-20230208	3	1125	1225	SV	C	1	X	NA	A1046	FC 1230	-29.0	75.0	-7.0	75.0	6 Can

1. RELINQUISHED BY	DATE 2823	TIME 1430	1. RECEIVED BY Fedex	DATE	TIME
2. RELINQUISHED BY Fedex	DATE 2/9/23	TIME 10:10	2. RECEIVED BY	DATE	TIME
3. RELINQUISHED BY	DATE	TIME	3. RECEIVED BY	DATE	TIME

COMMENTS

DISTRIBUTION: WHITE (ACCOMPANIES SAMPLE) YELLOW (FIELD COPY) PINK (FILE COPY) 4/02R FORM NO. TtNUS-001

SGS Sample Receipt Summary

Job Number: JD60001 **Client:** TETRA TECH NUS **Project:** KSC-CRCA

Date / Time Received: 2/9/2023 10:10:00 AM **Delivery Method:** FEDEX **Airbill #'s:**

Cooler Temps (Raw Measured) °C:

Cooler Temps (Corrected) °C:

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

Cooler Temperature	Y	or	N
1. Temp criteria achieved:	☐		☐
2. Cooler temp verification:	N/A		
3. Cooler media:	N/A		
4. No. Coolers:	N/A		

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

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

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

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

Test Strip Lot #s: pH 1-12: 231619 pH 12+: 203117A Other: (Specify)

Comments

SM089-03
Rev. Date 12/7/17

Summa Canister and Flow Controller Log

Job Number: JD60001
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL
Received: 02/09/23

SUMMA CANISTERS

Shipping							Receiving					
Summa ID	L	Vac " Hg	Date Out	By	SCC Batch	SCC FileID	Sample Number	Date In	By	Vac " Hg	Pres psig	Final psig	Dil Fact
A1066	6	29.4	02/03/23	DG	CP12010	2W63335.D	JD60001-1	02/10/23	DG	7			1

FLOW CONTROLLERS / OTHER

Shipping					Receiving				
Flow Crtl ID	Date Out	By	cc/ min	Time hrs.	Date In	By	cc/ min	Flow RPD	Equipment Type
FC1238	02/03/23	DG	84	1	02/10/23	DG	84	0	Flow Controller

SGS Bottle Order(s):
PREM-JS-02223-50

Prep Date	Room Temp(F)	Bar Pres "Hg
02/03/23	70	29.92

Internal Sample Tracking Chronicle

Tetra Tech NUS

Job No: JD60001

KSC-CRCA, FL
Project No: 112G08970

Sample Number	Method	Analyzed	By	Prepped	By	Test Codes
JD60001-1	Collected: 08-FEB-23 12:25 By: RS			Received: 09-FEB-23 By: JP		
	CRCA-VMP03.20230208					
JD60001-1	TO-15	13-FEB-23 15:37	TCH			VTO15STD

SGS Internal Chain of Custody

Job Number: JD60001
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL
Received: 02/09/23

Sample.Bottle Number	Transfer FROM	Transfer TO	Date/Time	Reason
JD60001-1.1	Emmanuel Hosein	Secured Storage	02/09/23 19:51	Return to Storage
JD60001-1.1	Dave Hunkele		03/25/23 04:54	Disposed
JD60001-1.2	Emmanuel Hosein	Secured Storage	02/09/23 19:51	Return to Storage
JD60001-1.2	Dave Hunkele		03/25/23 04:54	Disposed

SGS North America Inc.-Dayton laboratory
TO-15 FINAL MDL for 2020-2021

METHODRI	LOGINNUM	SPEC_MAT	SAMPLENUM	CLIENTID	MEASUREDATE	INSTRUME	PARM_STO	PARM_SYN	FINAL MDL	RDLVALUE	COMMENT	UNITS
TO-15	JD18443D	STYA	JD18443D-4D	MDLV : 0.04 PPBV 2W	12/30/21 4:00	GCMS2W	120-82-1	1,2,4-Trichlorobenzene	0.121	0.2	2W Q-4	ppbv
TO-15	JD18443D	STYA	JD18443D-4D	MDLV : 0.04 PPBV 2W	12/30/21 4:00	GCMS2W	541-73-1	m-Dichlorobenzene	0.04	0.2	2W Q-4	ppbv
TO-15	JD18443D	STYA	JD18443D-4D	MDLV : 0.04 PPBV 2W	12/30/21 4:00	GCMS2W	91-20-3	Naphthalene	0.127	0.2	2W Q-4	ppbv
TO-15	JD18443D	STYA	JD18443D-4D	MDLV : 0.04 PPBV 2W	12/30/21 4:00	GCMS2W	127-18-4	Tetrachloroethylene	0.014	0.04	2W Q-4	ppbv
TO-15	JD18443D	STYA	JD18443D-4D	MDLV : 0.04 PPBV 2W	12/30/21 4:00	GCMS2W	79-01-6	Trichloroethylene	0.019	0.04	2W Q-4	ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2 PPBV 5W	12/30/21 5:36	GCMS5W	630-20-6	1,1,1,2-Tetrachloroethane	0.042	0.2	5W Q-4	ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2 PPBV 5W	12/30/21 5:36	GCMS5W	71-55-6	1,1,1-Trichloroethane	0.037	0.2	5W Q-4	ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2 PPBV 5W	12/30/21 5:36	GCMS5W	79-34-5	1,1,2,2-Tetrachloroethane	0.048	0.2	5W Q-4	ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2 PPBV 5W	12/30/21 5:36	GCMS5W	79-00-5	1,1,2-Trichloroethane	0.038	0.2	5W Q-4	ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2 PPBV 5W	12/30/21 5:36	GCMS5W	75-34-3	1,1-Dichloroethane	0.057	0.2	5W Q-4	ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2 PPBV 5W	12/30/21 5:36	GCMS5W	75-35-4	1,1-Dichloroethylene	0.059	0.2	5W Q-4	ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2 PPBV 5W	12/30/21 5:36	GCMS5W	96-18-4	1,2,3-Trichloropropane	0.05	0.2	5W Q-4	ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2 PPBV 5W	12/30/21 5:36	GCMS5W	526-73-8	1,2,3-Trimethylbenzene	0.099	0.2	5W Q-4	ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2 PPBV 5W	12/30/21 5:36	GCMS5W	95-63-6	1,2,4-Trimethylbenzene	0.087	0.2	5W Q-4	ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2 PPBV 5W	12/30/21 5:36	GCMS5W	106-93-4	1,2-Dibromoethane (EDB)	0.097	0.2	5W Q-4	ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2 PPBV 5W	12/30/21 5:36	GCMS5W	107-06-2	1,2-Dichloroethane	0.07	0.2	5W Q-4	ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2 PPBV 5W	12/30/21 5:36	GCMS5W	78-87-5	1,2-Dichloropropane	0.062	0.2	5W Q-4	ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2 PPBV 5W	12/30/21 5:36	GCMS5W	108-67-8	1,3,5-Trimethylbenzene	0.062	0.2	5W Q-4	ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2 PPBV 5W	12/30/21 5:36	GCMS5W	106-99-0	1,3-Butadiene	0.084	0.2	5W Q-4	ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2 PPBV 5W	12/30/21 5:36	GCMS5W	142-28-9	1,3-Dichloropropane	0.057	0.2	5W Q-4	ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2 PPBV 5W	12/30/21 5:36	GCMS5W	123-91-1	1,4-Dioxane	0.117	0.2	5W Q-4	ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2 PPBV 5W	12/30/21 5:36	GCMS5W	540-84-1	2,2,4-Trimethylpentane	0.095	0.2	5W Q-4	ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2 PPBV 5W	12/30/21 5:36	GCMS5W	565-59-3	2,3-Dimethylpentane	0.089	0.2	5W Q-4	ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2 PPBV 5W	12/30/21 5:36	GCMS5W	108-08-7	2,4-Dimethylpentane	0.104	0.2	5W Q-4	ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2 PPBV 5W	12/30/21 5:36	GCMS5W	95-49-8	2-Chlorotoluene	0.072	0.2	5W Q-4	ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2 PPBV 5W	12/30/21 5:36	GCMS5W	591-78-6	2-Hexanone	0.145	0.2	5W Q-4	ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2 PPBV 5W	12/30/21 5:36	GCMS5W	107-05-1	3-Chloropropene	0.083	0.2	5W Q-4	ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2 PPBV 5W	12/30/21 5:36	GCMS5W	622-96-8	4-Ethyltoluene	0.095	0.2	5W Q-4	ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2 PPBV 5W	12/30/21 5:36	GCMS5W	67-64-1	Acetone (2-Propanone)	0.145	0.2	5W Q-4	ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2 PPBV 5W	12/30/21 5:36	GCMS5W	75-05-8	Acetonitrile	0.171	0.2	5W Q-4	ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2 PPBV 5W	12/30/21 5:36	GCMS5W	107-02-8	Acrolein	0.0883	0.2	5W Q-4	ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2 PPBV 5W	12/30/21 5:36	GCMS5W	107-13-1	Acrylonitrile	0.091	0.2	5W Q-4	ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2 PPBV 5W	12/30/21 5:36	GCMS5W	71-43-2	Benzene	0.062	0.2	5W Q-4	ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2 PPBV 5W	12/30/21 5:36	GCMS5W	100-44-7	Benzyl Chloride	0.125	0.2	5W Q-4	ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2 PPBV 5W	12/30/21 5:36	GCMS5W	108-86-1	Bromobenzene	0.154	0.2	5W Q-4	ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2 PPBV 5W	12/30/21 5:36	GCMS5W	75-27-4	Bromodichloromethane	0.03	0.2	5W Q-4	ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2 PPBV 5W	12/30/21 5:36	GCMS5W	593-60-2	Bromoethene	0.061	0.2	5W Q-4	ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2 PPBV 5W	12/30/21 5:36	GCMS5W	75-25-2	Bromoform	0.071	0.2	5W Q-4	ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2 PPBV 5W	12/30/21 5:36	GCMS5W	74-83-9	Bromomethane	0.069	0.2	5W Q-4	ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2 PPBV 5W	12/30/21 5:36	GCMS5W	75-15-0	Carbon disulfide	0.045	0.2	5W Q-4	ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2 PPBV 5W	12/30/21 5:36	GCMS5W	56-23-5	Carbon tetrachloride	0.04	0.2	5W Q-4	ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2 PPBV 5W	12/30/21 5:36	GCMS5W	108-90-7	Chlorobenzene	0.074	0.2	5W Q-4	ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2 PPBV 5W	12/30/21 5:36	GCMS5W	75-45-6	Chlorodifluoromethane	0.106	0.2	5W Q-4	ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2 PPBV 5W	12/30/21 5:36	GCMS5W	75-00-3	Chloroethane	0.068	0.2	5W Q-4	ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2 PPBV 5W	12/30/21 5:36	GCMS5W	67-66-3	Chloroform	0.037	0.2	5W Q-4	ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2 PPBV 5W	12/30/21 5:36	GCMS5W	74-87-3	Chloromethane	0.09	0.2	5W Q-4	ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2 PPBV 5W	12/30/21 5:36	GCMS5W	79-38-9	Chlorotrifluoroethene	0.024	0.2	5W Q-4	ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2 PPBV 5W	12/30/21 5:36	GCMS5W	156-59-2	cis-1,2-Dichloroethylene	0.077	0.2	5W Q-4	ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2 PPBV 5W	12/30/21 5:36	GCMS5W	10061-01-5	cis-1,3-Dichloropropene	0.062	0.2	5W Q-4	ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2 PPBV 5W	12/30/21 5:36	GCMS5W	110-82-7	Cyclohexane	0.11	0.2	5W Q-4	ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2 PPBV 5W	12/30/21 5:36	GCMS5W	124-48-1	Dibromochloromethane	0.052	0.2	5W Q-4	ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2 PPBV 5W	12/30/21 5:36	GCMS5W	74-95-3	Dibromomethane	0.053	0.2	5W Q-4	ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2 PPBV 5W	12/30/21 5:36	GCMS5W	75-71-8	Dichlorodifluoromethane	0.032	0.2	5W Q-4	ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2 PPBV 5W	12/30/21 5:36	GCMS5W	75-43-4	Dichlorofluoromethane	0.066	0.2	5W Q-4	ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2 PPBV 5W	12/30/21 5:36	GCMS5W	108-20-3	Di-Isopropyl ether	0.082	0.2	5W Q-4	ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2 PPBV 5W	12/30/21 5:36	GCMS5W	64-17-5	Ethanol	0.394	0.5	5W Q-4	ppbv

TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2	PPBV	5W	12/30/21	5:36	GCMS5W	141-78-6	Ethyl Acetate	0.104	0.2	5W	Q-4	I	ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2	PPBV	5W	12/30/21	5:36	GCMS5W	140-88-5	Ethyl Acrylate	0.105	0.2	5W	Q-4	I	ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2	PPBV	5W	12/30/21	5:36	GCMS5W	100-41-4	Ethylbenzene	0.061	0.2	5W	Q-4	I	ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2	PPBV	5W	12/30/21	5:36	GCMS5W	76-13-1	Freon 113	0.031	0.2	5W	Q-4	I	ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2	PPBV	5W	12/30/21	5:36	GCMS5W	76-14-2	Freon 114	0.05	0.2	5W	Q-4	I	ppbv
TO-15	JD18443B	STYA	JD18443B-1F	MDLV : 0.2	PPBV	3W	4/27/21	5:01	GCMS3W	76-15-3	Freon 115	0.0077	0.2	3W	Q-2	I	ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2	PPBV	5W	12/30/21	5:36	GCMS5W	306-83-2	Freon 123	0.083	0.2	5W	Q-4	I	ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2	PPBV	5W	12/30/21	5:36	GCMS5W	354-23-4	Freon 123A	0.068	0.2	5W	Q-4	I	ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2	PPBV	5W	12/30/21	5:36	GCMS5W	75-68-3	Freon 142B	0.07	0.2	5W	Q-4	I	ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2	PPBV	5W	12/30/21	5:36	GCMS5W	75-37-6	Freon 152A	0.06	0.2	5W	Q-4	I	ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2	PPBV	5W	12/30/21	5:36	GCMS5W	142-82-5	Heptane	0.092	0.2	5W	Q-4	I	ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2	PPBV	5W	12/30/21	5:36	GCMS5W	87-68-3	Hexachlorobutadiene	0.062	0.2	5W	Q-4	I	ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2	PPBV	5W	12/30/21	5:36	GCMS5W	67-72-1	Hexachloroethane	0.082	0.2	5W	Q-4	I	ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2	PPBV	5W	12/30/21	5:36	GCMS5W	110-54-3	Hexane	0.112	0.2	5W	Q-4	I	ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2	PPBV	5W	12/30/21	5:36	GCMS5W	74-88-4	Iodomethane	0.037	0.2	5W	Q-4	I	ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2	PPBV	5W	12/30/21	5:36	GCMS5W	67-63-0	Isopropyl Alcohol	0.187	0.2	5W	Q-4	I	ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2	PPBV	5W	12/30/21	5:36	GCMS5W	98-82-8	Isopropylbenzene	0.064	0.2	5W	Q-4	I	ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2	PPBV	5W	12/30/21	5:36	GCMS5W	M,P-XYLEN	m,p-Xylene	0.139	0.2	5W	Q-4	I	ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2	PPBV	5W	12/30/21	5:36	GCMS5W	78-93-3	Methyl ethyl ketone	0.11	0.2	5W	Q-4	I	ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2	PPBV	5W	12/30/21	5:36	GCMS5W	108-10-1	Methyl Isobutyl Ketone	0.073	0.2	5W	Q-4	I	ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2	PPBV	5W	12/30/21	5:36	GCMS5W	1634-04-4	Methyl Tert Butyl Ether	0.08	0.2	5W	Q-4	I	ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2	PPBV	5W	12/30/21	5:36	GCMS5W	75-09-2	Methylene chloride	0.056	0.2	5W	Q-4	I	ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2	PPBV	5W	12/30/21	5:36	GCMS5W	80-62-6	Methylmethacrylate	0.07	0.2	5W	Q-4	I	ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2	PPBV	5W	12/30/21	5:36	GCMS5W	106-97-8	n-Butane	0.106	0.2	5W	Q-4	I	ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2	PPBV	5W	12/30/21	5:36	GCMS5W	104-51-8	n-Butylbenzene	0.106	0.2	5W	Q-4	I	ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2	PPBV	5W	12/30/21	5:36	GCMS5W	111-84-2	Nonane	0.1	0.2	5W	Q-4	I	ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2	PPBV	5W	12/30/21	5:36	GCMS5W	103-65-1	n-Propylbenzene	0.091	0.2	5W	Q-4	I	ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2	PPBV	5W	12/30/21	5:36	GCMS5W	111-65-9	Octane	0.12	0.2	5W	Q-4	I	ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2	PPBV	5W	12/30/21	5:36	GCMS5W	95-50-1	o-Dichlorobenzene	0.154	0.2	5W	Q-4	I	ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2	PPBV	5W	12/30/21	5:36	GCMS5W	95-47-6	o-Xylene	0.077	0.2	5W	Q-4	I	ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2	PPBV	5W	12/30/21	5:36	GCMS5W	106-46-7	p-Dichlorobenzene	0.191	0.2	5W	Q-4	I	ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2	PPBV	5W	12/30/21	5:36	GCMS5W	109-66-0	Pentane	0.138	0.2	5W	Q-4	I	ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2	PPBV	5W	12/30/21	5:36	GCMS5W	99-87-6	p-Isopropyltoluene	0.08	0.2	5W	Q-4	I	ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2	PPBV	5W	12/30/21	5:36	GCMS5W	115-07-1	Propylene	0.142	0.5	5W	Q-4	I	ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2	PPBV	5W	12/30/21	5:36	GCMS5W	135-98-8	sec-Butylbenzene	0.081	0.2	5W	Q-4	I	ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2	PPBV	5W	12/30/21	5:36	GCMS5W	100-42-5	Styrene	0.118	0.2	5W	Q-4	I	ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2	PPBV	5W	12/30/21	5:36	GCMS5W	98-06-6	tert-Butylbenzene	0.083	0.2	5W	Q-4	I	ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2	PPBV	5W	12/30/21	5:36	GCMS5W	75-65-0	Tertiary Butyl Alcohol	0.093	0.2	5W	Q-4	I	ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2	PPBV	5W	12/30/21	5:36	GCMS5W	109-99-9	Tetrahydrofuran	0.09	0.2	5W	Q-4	I	ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2	PPBV	5W	12/30/21	5:36	GCMS5W	108-88-3	Toluene	0.057	0.2	5W	Q-4	I	ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2	PPBV	5W	12/30/21	5:36	GCMS5W	156-60-5	trans-1,2-Dichloroethylene	0.069	0.2	5W	Q-4	I	ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2	PPBV	5W	12/30/21	5:36	GCMS5W	10061-02-6	trans-1,3-Dichloropropene	0.101	0.2	5W	Q-4	I	ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2	PPBV	5W	12/30/21	5:36	GCMS5W	75-69-4	Trichlorofluoromethane	0.036	0.2	5W	Q-4	I	ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2	PPBV	5W	12/30/21	5:36	GCMS5W	TVHC AS EC	TVHC As Equiv Pentane	0.136	10	5W	Q-4	I	ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2	PPBV	5W	12/30/21	5:36	GCMS5W	108-05-4	Vinyl Acetate	0.112	0.2	5W	Q-4	I	ppbv
TO-15	JD18443D	STYA	JD18443D-2F	MDLV : 0.2	PPBV	5W	12/30/21	5:36	GCMS5W	75-01-4	Vinyl chloride	0.069	0.2	5W	Q-4	I	ppbv
TO-15	JD18443D	STYA	JD18443D-4E	MDLV : 0.1	PPBV	2W	12/30/21	4:35	GCMS2W	67-63-0	Isopropyl Alcohol	0.141	0.2	2W	Q-4	I	ppbv

MS Volatiles

6

QC Data Summaries

Includes the following where applicable:

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

Method Blank Summary

Job Number: JD60001
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V7W22-MB	7W00426.D	1	02/13/23	TCH	n/a	n/a	V7W22

The QC reported here applies to the following samples: **Method:** TO-15

JD60001-1

CAS No.	Compound	Result	RL	MDL	Units	Q	Result	RL	Units
67-64-1	Acetone (2-Propanone)	ND	0.20	0.15	ppbv		ND	0.48	ug/m3
106-99-0	1,3-Butadiene	ND	0.20	0.084	ppbv		ND	0.44	ug/m3
71-43-2	Benzene	ND	0.20	0.062	ppbv		ND	0.64	ug/m3
75-27-4	Bromodichloromethane	ND	0.20	0.030	ppbv		ND	1.3	ug/m3
75-25-2	Bromoform	ND	0.20	0.071	ppbv		ND	2.1	ug/m3
74-83-9	Bromomethane	ND	0.20	0.069	ppbv		ND	0.78	ug/m3
593-60-2	Bromoethene	ND	0.20	0.061	ppbv		ND	0.87	ug/m3
100-44-7	Benzyl Chloride	ND	0.20	0.13	ppbv		ND	1.0	ug/m3
75-15-0	Carbon disulfide	ND	0.20	0.045	ppbv		ND	0.62	ug/m3
108-90-7	Chlorobenzene	ND	0.20	0.074	ppbv		ND	0.92	ug/m3
75-00-3	Chloroethane	ND	0.20	0.068	ppbv		ND	0.53	ug/m3
67-66-3	Chloroform	ND	0.20	0.037	ppbv		ND	0.98	ug/m3
74-87-3	Chloromethane	ND	0.20	0.090	ppbv		ND	0.41	ug/m3
107-05-1	3-Chloropropene	ND	0.20	0.083	ppbv		ND	0.63	ug/m3
95-49-8	2-Chlorotoluene	ND	0.20	0.072	ppbv		ND	1.0	ug/m3
56-23-5	Carbon tetrachloride	ND	0.20	0.040	ppbv		ND	1.3	ug/m3
110-82-7	Cyclohexane	ND	0.20	0.11	ppbv		ND	0.69	ug/m3
75-34-3	1,1-Dichloroethane	ND	0.20	0.057	ppbv		ND	0.81	ug/m3
75-35-4	1,1-Dichloroethylene	ND	0.20	0.059	ppbv		ND	0.79	ug/m3
106-93-4	1,2-Dibromoethane (EDB)	ND	0.20	0.097	ppbv		ND	1.5	ug/m3
107-06-2	1,2-Dichloroethane	ND	0.20	0.070	ppbv		ND	0.81	ug/m3
78-87-5	1,2-Dichloropropane	ND	0.20	0.062	ppbv		ND	0.92	ug/m3
123-91-1	1,4-Dioxane	ND	0.20	0.12	ppbv		ND	0.72	ug/m3
75-71-8	Dichlorodifluoromethane	ND	0.20	0.032	ppbv		ND	0.99	ug/m3
124-48-1	Dibromochloromethane	ND	0.20	0.052	ppbv		ND	1.7	ug/m3
156-60-5	trans-1,2-Dichloroethylene	ND	0.20	0.069	ppbv		ND	0.79	ug/m3
156-59-2	cis-1,2-Dichloroethylene	ND	0.20	0.077	ppbv		ND	0.79	ug/m3
10061-01-5	cis-1,3-Dichloropropene	ND	0.20	0.062	ppbv		ND	0.91	ug/m3
541-73-1	m-Dichlorobenzene	ND	0.20	0.040	ppbv		ND	1.2	ug/m3
95-50-1	o-Dichlorobenzene	ND	0.20	0.15	ppbv		ND	1.2	ug/m3
106-46-7	p-Dichlorobenzene	ND	0.20	0.19	ppbv		ND	1.2	ug/m3
10061-02-6	trans-1,3-Dichloropropene	ND	0.20	0.10	ppbv		ND	0.91	ug/m3
64-17-5	Ethanol	ND	0.50	0.39	ppbv		ND	0.94	ug/m3
100-41-4	Ethylbenzene	ND	0.20	0.061	ppbv		ND	0.87	ug/m3
141-78-6	Ethyl Acetate	ND	0.20	0.10	ppbv		ND	0.72	ug/m3
622-96-8	4-Ethyltoluene	ND	0.20	0.095	ppbv		ND	0.98	ug/m3

Method Blank Summary

Job Number: JD60001
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V7W22-MB	7W00426.D	1	02/13/23	TCH	n/a	n/a	V7W22

The QC reported here applies to the following samples: **Method:** TO-15

JD60001-1

CAS No.	Compound	Result	RL	MDL	Units	Q	Result	RL	Units
76-13-1	Freon 113	ND	0.20	0.031	ppbv		ND	1.5	ug/m3
76-14-2	Freon 114	ND	0.20	0.050	ppbv		ND	1.4	ug/m3
142-82-5	Heptane	ND	0.20	0.092	ppbv		ND	0.82	ug/m3
87-68-3	Hexachlorobutadiene	ND	0.20	0.062	ppbv		ND	2.1	ug/m3
110-54-3	Hexane	ND	0.20	0.11	ppbv		ND	0.70	ug/m3
591-78-6	2-Hexanone	ND	0.20	0.15	ppbv		ND	0.82	ug/m3
67-63-0	Isopropyl Alcohol	ND	0.20	0.14	ppbv		ND	0.49	ug/m3
75-09-2	Methylene chloride	ND	0.20	0.056	ppbv		ND	0.69	ug/m3
78-93-3	Methyl ethyl ketone	ND	0.20	0.11	ppbv		ND	0.59	ug/m3
108-10-1	Methyl Isobutyl Ketone	ND	0.20	0.073	ppbv		ND	0.82	ug/m3
1634-04-4	Methyl Tert Butyl Ether	ND	0.20	0.080	ppbv		ND	0.72	ug/m3
80-62-6	Methylmethacrylate	ND	0.20	0.070	ppbv		ND	0.82	ug/m3
115-07-1	Propylene	ND	0.50	0.14	ppbv		ND	0.86	ug/m3
100-42-5	Styrene	ND	0.20	0.12	ppbv		ND	0.85	ug/m3
71-55-6	1,1,1-Trichloroethane	ND	0.20	0.037	ppbv		ND	1.1	ug/m3
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.20	0.048	ppbv		ND	1.4	ug/m3
79-00-5	1,1,2-Trichloroethane	ND	0.20	0.038	ppbv		ND	1.1	ug/m3
120-82-1	1,2,4-Trichlorobenzene	ND	0.20	0.12	ppbv		ND	1.5	ug/m3
95-63-6	1,2,4-Trimethylbenzene	ND	0.20	0.087	ppbv		ND	0.98	ug/m3
108-67-8	1,3,5-Trimethylbenzene	ND	0.20	0.080	ppbv		ND	0.98	ug/m3
540-84-1	2,2,4-Trimethylpentane	ND	0.20	0.095	ppbv		ND	0.93	ug/m3
75-65-0	Tertiary Butyl Alcohol	ND	0.20	0.093	ppbv		ND	0.61	ug/m3
127-18-4	Tetrachloroethylene	ND	0.040	0.014	ppbv		ND	0.27	ug/m3
109-99-9	Tetrahydrofuran	ND	0.20	0.090	ppbv		ND	0.59	ug/m3
108-88-3	Toluene	ND	0.20	0.057	ppbv		ND	0.75	ug/m3
79-01-6	Trichloroethylene	ND	0.040	0.019	ppbv		ND	0.21	ug/m3
75-69-4	Trichlorofluoromethane	ND	0.20	0.036	ppbv		ND	1.1	ug/m3
75-01-4	Vinyl chloride	ND	0.20	0.069	ppbv		ND	0.51	ug/m3
108-05-4	Vinyl Acetate	ND	0.20	0.11	ppbv		ND	0.70	ug/m3
	m,p-Xylene	ND	0.20	0.14	ppbv		ND	0.87	ug/m3
95-47-6	o-Xylene	ND	0.20	0.077	ppbv		ND	0.87	ug/m3
1330-20-7	Xylenes (total)	ND	0.20	0.077	ppbv		ND	0.87	ug/m3

Method Blank Summary

Job Number: JD60001
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V7W22-MB	7W00426.D	1	02/13/23	TCH	n/a	n/a	V7W22

The QC reported here applies to the following samples: **Method:** TO-15

JD60001-1

CAS No.	Surrogate Recoveries		Limits
460-00-4	4-Bromofluorobenzene	97%	65-128%

CAS No.	Tentatively Identified Compounds	R.T.	Est. Conc.	Units	Q
124-38-9	Carbon dioxide	1.75	4.3	ppbv	JN
	Total TIC, Volatile		0	ppbv	

Method Blank Summary

Job Number: JD60001
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V6W1177-MB	6W28035.D	1	01/27/23	TCH	n/a	n/a	V6W1177

The QC reported here applies to the following samples: **Method:** TO-15

V6W1177-SCC

CAS No.	Compound	Result	RL	MDL	Units	Q	Result	RL	Units
67-64-1	Acetone (2-Propanone)	ND	0.20	0.15	ppbv		ND	0.48	ug/m3
106-99-0	1,3-Butadiene	ND	0.20	0.084	ppbv		ND	0.44	ug/m3
71-43-2	Benzene	ND	0.20	0.062	ppbv		ND	0.64	ug/m3
75-27-4	Bromodichloromethane	ND	0.20	0.030	ppbv		ND	1.3	ug/m3
75-25-2	Bromoform	ND	0.20	0.071	ppbv		ND	2.1	ug/m3
74-83-9	Bromomethane	ND	0.20	0.069	ppbv		ND	0.78	ug/m3
593-60-2	Bromoethene	ND	0.20	0.061	ppbv		ND	0.87	ug/m3
100-44-7	Benzyl Chloride	ND	0.20	0.13	ppbv		ND	1.0	ug/m3
75-15-0	Carbon disulfide	ND	0.20	0.045	ppbv		ND	0.62	ug/m3
108-90-7	Chlorobenzene	ND	0.20	0.074	ppbv		ND	0.92	ug/m3
75-00-3	Chloroethane	ND	0.20	0.068	ppbv		ND	0.53	ug/m3
67-66-3	Chloroform	ND	0.20	0.037	ppbv		ND	0.98	ug/m3
74-87-3	Chloromethane	ND	0.20	0.090	ppbv		ND	0.41	ug/m3
107-05-1	3-Chloropropene	ND	0.20	0.083	ppbv		ND	0.63	ug/m3
95-49-8	2-Chlorotoluene	ND	0.20	0.072	ppbv		ND	1.0	ug/m3
56-23-5	Carbon tetrachloride	ND	0.20	0.040	ppbv		ND	1.3	ug/m3
110-82-7	Cyclohexane	ND	0.20	0.11	ppbv		ND	0.69	ug/m3
75-34-3	1,1-Dichloroethane	ND	0.20	0.057	ppbv		ND	0.81	ug/m3
75-35-4	1,1-Dichloroethylene	ND	0.20	0.059	ppbv		ND	0.79	ug/m3
106-93-4	1,2-Dibromoethane (EDB)	ND	0.20	0.097	ppbv		ND	1.5	ug/m3
107-06-2	1,2-Dichloroethane	ND	0.20	0.070	ppbv		ND	0.81	ug/m3
78-87-5	1,2-Dichloropropane	ND	0.20	0.062	ppbv		ND	0.92	ug/m3
123-91-1	1,4-Dioxane	ND	0.20	0.12	ppbv		ND	0.72	ug/m3
75-71-8	Dichlorodifluoromethane	ND	0.20	0.032	ppbv		ND	0.99	ug/m3
124-48-1	Dibromochloromethane	ND	0.20	0.052	ppbv		ND	1.7	ug/m3
156-60-5	trans-1,2-Dichloroethylene	ND	0.20	0.069	ppbv		ND	0.79	ug/m3
156-59-2	cis-1,2-Dichloroethylene	ND	0.20	0.077	ppbv		ND	0.79	ug/m3
10061-01-5	cis-1,3-Dichloropropene	ND	0.20	0.062	ppbv		ND	0.91	ug/m3
541-73-1	m-Dichlorobenzene	ND	0.20	0.040	ppbv		ND	1.2	ug/m3
95-50-1	o-Dichlorobenzene	ND	0.20	0.15	ppbv		ND	1.2	ug/m3
106-46-7	p-Dichlorobenzene	ND	0.20	0.19	ppbv		ND	1.2	ug/m3
10061-02-6	trans-1,3-Dichloropropene	ND	0.20	0.10	ppbv		ND	0.91	ug/m3
64-17-5	Ethanol	ND	0.50	0.39	ppbv		ND	0.94	ug/m3
100-41-4	Ethylbenzene	ND	0.20	0.061	ppbv		ND	0.87	ug/m3
141-78-6	Ethyl Acetate	ND	0.20	0.10	ppbv		ND	0.72	ug/m3
622-96-8	4-Ethyltoluene	ND	0.20	0.095	ppbv		ND	0.98	ug/m3

Method Blank Summary

Job Number: JD60001
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V6W1177-MB	6W28035.D	1	01/27/23	TCH	n/a	n/a	V6W1177

The QC reported here applies to the following samples: **Method:** TO-15

V6W1177-SCC

CAS No.	Compound	Result	RL	MDL	Units	Q	Result	RL	Units
76-13-1	Freon 113	ND	0.20	0.031	ppbv		ND	1.5	ug/m3
76-14-2	Freon 114	ND	0.20	0.050	ppbv		ND	1.4	ug/m3
142-82-5	Heptane	ND	0.20	0.092	ppbv		ND	0.82	ug/m3
87-68-3	Hexachlorobutadiene	ND	0.20	0.062	ppbv		ND	2.1	ug/m3
110-54-3	Hexane	ND	0.20	0.11	ppbv		ND	0.70	ug/m3
591-78-6	2-Hexanone	ND	0.20	0.15	ppbv		ND	0.82	ug/m3
67-63-0	Isopropyl Alcohol	ND	0.20	0.14	ppbv		ND	0.49	ug/m3
75-09-2	Methylene chloride	ND	0.20	0.056	ppbv		ND	0.69	ug/m3
78-93-3	Methyl ethyl ketone	ND	0.20	0.11	ppbv		ND	0.59	ug/m3
108-10-1	Methyl Isobutyl Ketone	ND	0.20	0.073	ppbv		ND	0.82	ug/m3
1634-04-4	Methyl Tert Butyl Ether	ND	0.20	0.080	ppbv		ND	0.72	ug/m3
80-62-6	Methylmethacrylate	ND	0.20	0.070	ppbv		ND	0.82	ug/m3
115-07-1	Propylene	ND	0.50	0.14	ppbv		ND	0.86	ug/m3
100-42-5	Styrene	ND	0.20	0.12	ppbv		ND	0.85	ug/m3
71-55-6	1,1,1-Trichloroethane	ND	0.20	0.037	ppbv		ND	1.1	ug/m3
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.20	0.048	ppbv		ND	1.4	ug/m3
79-00-5	1,1,2-Trichloroethane	ND	0.20	0.038	ppbv		ND	1.1	ug/m3
120-82-1	1,2,4-Trichlorobenzene	ND	0.20	0.12	ppbv		ND	1.5	ug/m3
95-63-6	1,2,4-Trimethylbenzene	ND	0.20	0.087	ppbv		ND	0.98	ug/m3
108-67-8	1,3,5-Trimethylbenzene	ND	0.20	0.080	ppbv		ND	0.98	ug/m3
540-84-1	2,2,4-Trimethylpentane	ND	0.20	0.095	ppbv		ND	0.93	ug/m3
75-65-0	Tertiary Butyl Alcohol	ND	0.20	0.093	ppbv		ND	0.61	ug/m3
127-18-4	Tetrachloroethylene	ND	0.040	0.014	ppbv		ND	0.27	ug/m3
109-99-9	Tetrahydrofuran	ND	0.20	0.090	ppbv		ND	0.59	ug/m3
108-88-3	Toluene	ND	0.20	0.057	ppbv		ND	0.75	ug/m3
79-01-6	Trichloroethylene	ND	0.040	0.019	ppbv		ND	0.21	ug/m3
75-69-4	Trichlorofluoromethane	ND	0.20	0.036	ppbv		ND	1.1	ug/m3
75-01-4	Vinyl chloride	ND	0.20	0.069	ppbv		ND	0.51	ug/m3
108-05-4	Vinyl Acetate	ND	0.20	0.11	ppbv		ND	0.70	ug/m3
	m,p-Xylene	ND	0.20	0.14	ppbv		ND	0.87	ug/m3
95-47-6	o-Xylene	ND	0.20	0.077	ppbv		ND	0.87	ug/m3
1330-20-7	Xylenes (total)	ND	0.20	0.077	ppbv		ND	0.87	ug/m3

Method Blank Summary

Job Number: JD60001
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V6W1177-MB	6W28035.D	1	01/27/23	TCH	n/a	n/a	V6W1177

The QC reported here applies to the following samples: **Method:** TO-15

V6W1177-SCC

CAS No.	Surrogate Recoveries		Limits
460-00-4	4-Bromofluorobenzene	107%	65-128%

Blank Spike/Blank Spike Duplicate Summary

Job Number: JD60001
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V7W22-BS	7W00423.D	1	02/13/23	TCH	n/a	n/a	V7W22
V7W22-BSD	7W00424.D	1	02/13/23	TCH	n/a	n/a	V7W22

The QC reported here applies to the following samples: **Method:** TO-15

JD60001-1

CAS No.	Compound	Spike ppbv	BSP ppbv	BSP %	BSD ppbv	BSD %	RPD	Limits Rec/RPD
67-64-1	Acetone (2-Propanone)	10	10.0	100	9.9	99	1	70-130/30
106-99-0	1,3-Butadiene	10	11.3	113	11.2	112	1	70-130/30
71-43-2	Benzene	10	9.3	93	9.3	93	0	70-130/30
75-27-4	Bromodichloromethane	10	10.4	104	10.3	103	1	70-130/30
75-25-2	Bromoform	10	10.3	103	10.4	104	1	70-130/30
74-83-9	Bromomethane	10	10.2	102	10.1	101	1	70-130/30
593-60-2	Bromoethene	10	9.9	99	9.6	96	3	70-130/30
100-44-7	Benzyl Chloride	10	8.3	83	8.2	82	1	70-130/30
75-15-0	Carbon disulfide	10	10.5	105	10.3	103	2	70-130/30
108-90-7	Chlorobenzene	10	10.3	103	10.4	104	1	70-130/30
75-00-3	Chloroethane	10	10.8	108	10.7	107	1	70-130/30
67-66-3	Chloroform	10	9.8	98	9.9	99	1	70-130/30
74-87-3	Chloromethane	10	12.2	122	11.7	117	4	70-130/30
107-05-1	3-Chloropropene	10	10.7	107	10.7	107	0	70-130/30
95-49-8	2-Chlorotoluene	10	10.4	104	10.4	104	0	70-130/30
56-23-5	Carbon tetrachloride	10	9.2	92	9.2	92	0	70-130/30
110-82-7	Cyclohexane	10	10.1	101	10.1	101	0	70-130/30
75-34-3	1,1-Dichloroethane	10	10	100	9.9	99	1	70-130/30
75-35-4	1,1-Dichloroethylene	10	10.0	100	9.9	99	1	70-130/30
106-93-4	1,2-Dibromoethane (EDB)	10	10.2	102	10.1	101	1	70-130/30
107-06-2	1,2-Dichloroethane	10	9.9	99	9.7	97	2	70-130/30
78-87-5	1,2-Dichloropropane	10	9.8	98	9.8	98	0	70-130/30
123-91-1	1,4-Dioxane	10	10.1	101	10	100	1	70-130/30
75-71-8	Dichlorodifluoromethane	10	10.4	104	10.6	106	2	70-130/30
124-48-1	Dibromochloromethane	10	10.1	101	9.9	99	2	70-130/30
156-60-5	trans-1,2-Dichloroethylene	10	9.6	96	9.4	94	2	70-130/30
156-59-2	cis-1,2-Dichloroethylene	10	9.7	97	9.7	97	0	70-130/30
10061-01-5	cis-1,3-Dichloropropene	10	9.9	99	9.8	98	1	70-130/30
541-73-1	m-Dichlorobenzene	10	10.1	101	10.2	102	1	70-130/30
95-50-1	o-Dichlorobenzene	10	10.1	101	10.2	102	1	70-130/30
106-46-7	p-Dichlorobenzene	10	10	100	10.1	101	1	70-130/30
10061-02-6	trans-1,3-Dichloropropene	10	10.0	100	9.9	99	1	70-130/30
64-17-5	Ethanol	10	11.6	116	11.5	115	1	70-130/30
100-41-4	Ethylbenzene	10	9.4	94	9.5	95	1	70-130/30
141-78-6	Ethyl Acetate	10	10.8	108	10.2	102	6	70-130/30
622-96-8	4-Ethyltoluene	10	10.4	104	10.5	105	1	70-130/30

* = Outside of Control Limits.

Blank Spike/Blank Spike Duplicate Summary

Job Number: JD60001
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V7W22-BS	7W00423.D	1	02/13/23	TCH	n/a	n/a	V7W22
V7W22-BSD	7W00424.D	1	02/13/23	TCH	n/a	n/a	V7W22

The QC reported here applies to the following samples: **Method:** TO-15

JD60001-1

CAS No.	Compound	Spike ppbv	BSP ppbv	BSP %	BSD ppbv	BSD %	RPD	Limits Rec/RPD
76-13-1	Freon 113	10	9.7	97	9.7	97	0	70-130/30
76-14-2	Freon 114	10	10.3	103	10.3	103	0	70-130/30
142-82-5	Heptane	10	10.6	106	10.5	105	1	70-130/30
87-68-3	Hexachlorobutadiene	10	9.1	91	9.0	90	1	70-130/30
110-54-3	Hexane	10	10.4	104	10.3	103	1	70-130/30
591-78-6	2-Hexanone	10	10.2	102	9.9	99	3	70-130/30
67-63-0	Isopropyl Alcohol	10	11.6	116	11.2	112	4	70-130/30
75-09-2	Methylene chloride	10	10.2	102	10.1	101	1	70-130/30
78-93-3	Methyl ethyl ketone	10	9.7	97	9.7	97	0	70-130/30
108-10-1	Methyl Isobutyl Ketone	10	9.8	98	9.6	96	2	70-130/30
1634-04-4	Methyl Tert Butyl Ether	10	9.0	90	9.0	90	0	70-130/30
80-62-6	Methylmethacrylate	10	9.9	99	9.8	98	1	70-130/30
115-07-1	Propylene	10	11.0	110	11.2	112	2	70-130/30
100-42-5	Styrene	10	10.2	102	10.3	103	1	70-130/30
71-55-6	1,1,1-Trichloroethane	10	9.6	96	9.5	95	1	70-130/30
79-34-5	1,1,2,2-Tetrachloroethane	10	11.0	110	10.9	109	1	70-130/30
79-00-5	1,1,2-Trichloroethane	10	10.0	100	10.1	101	1	70-130/30
120-82-1	1,2,4-Trichlorobenzene	10	8.7	87	8.3	83	5	70-130/30
95-63-6	1,2,4-Trimethylbenzene	10	10.5	105	10.7	107	2	70-130/30
108-67-8	1,3,5-Trimethylbenzene	10	10.2	102	10.4	104	2	70-130/30
540-84-1	2,2,4-Trimethylpentane	10	10.4	104	10.3	103	1	70-130/30
75-65-0	Tertiary Butyl Alcohol	10	11.3	113	11.1	111	2	70-130/30
127-18-4	Tetrachloroethylene	10	9.1	91	9.0	90	1	70-130/30
109-99-9	Tetrahydrofuran	10	10.1	101	9.8	98	3	70-130/30
108-88-3	Toluene	10	8.9	89	8.8	88	1	70-130/30
79-01-6	Trichloroethylene	10	9.8	98	9.9	99	1	70-130/30
75-69-4	Trichlorofluoromethane	10	9.9	99	9.6	96	3	70-130/30
75-01-4	Vinyl chloride	10	11.2	112	11.0	110	2	70-130/30
108-05-4	Vinyl Acetate	10	9.4	94	9.1	91	3	70-130/30
	m,p-Xylene	20	19.2	96	19.4	97	1	70-130/30
95-47-6	o-Xylene	10	9.6	96	9.7	97	1	70-130/30
1330-20-7	Xylenes (total)	30	28.9	96	29.0	97	0	70-130/30

* = Outside of Control Limits.

Blank Spike/Blank Spike Duplicate Summary

Job Number: JD60001
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V7W22-BS	7W00423.D	1	02/13/23	TCH	n/a	n/a	V7W22
V7W22-BSD	7W00424.D	1	02/13/23	TCH	n/a	n/a	V7W22

The QC reported here applies to the following samples: **Method:** TO-15

JD60001-1

CAS No.	Surrogate Recoveries	BSP	BSD	Limits
460-00-4	4-Bromofluorobenzene	104%	106%	65-128%

* = Outside of Control Limits.

Blank Spike/Blank Spike Duplicate Summary

Job Number: JD60001
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V6W1177-BS	6W28032.D	1	01/27/23	TCH	n/a	n/a	V6W1177
V6W1177-BSD	6W28033.D	1	01/27/23	TCH	n/a	n/a	V6W1177

The QC reported here applies to the following samples: **Method:** TO-15

V6W1177-SCC

CAS No.	Compound	Spike ppbv	BSP ppbv	BSP %	BSD ppbv	BSD %	RPD	Limits Rec/RPD
67-64-1	Acetone (2-Propanone)	10	8.8	88	9.0	90	2	70-130/30
106-99-0	1,3-Butadiene	10	9.1	91	9.2	92	1	70-130/30
71-43-2	Benzene	10	11.1	111	11.1	111	0	70-130/30
75-27-4	Bromodichloromethane	10	11.8	118	13.4	134* [a]	13	70-130/30
75-25-2	Bromoform	10	9.5	95	9.6	96	1	70-130/30
74-83-9	Bromomethane	10	10.7	107	10.7	107	0	70-130/30
593-60-2	Bromoethene	10	10.6	106	10.5	105	1	70-130/30
100-44-7	Benzyl Chloride	10	9.8	98	9.9	99	1	70-130/30
75-15-0	Carbon disulfide	10	11.1	111	11.1	111	0	70-130/30
108-90-7	Chlorobenzene	10	10.8	108	11.0	110	2	70-130/30
75-00-3	Chloroethane	10	10.8	108	10.5	105	3	70-130/30
67-66-3	Chloroform	10	11.9	119	11.9	119	0	70-130/30
74-87-3	Chloromethane	10	8.1	81	8.2	82	1	70-130/30
107-05-1	3-Chloropropene	10	11.4	114	11.3	113	1	70-130/30
95-49-8	2-Chlorotoluene	10	13.1	131* [a]	13.3	133* [a]	2	70-130/30
56-23-5	Carbon tetrachloride	10	12.3	123	12.0	120	2	70-130/30
110-82-7	Cyclohexane	10	11.3	113	11.2	112	1	70-130/30
75-34-3	1,1-Dichloroethane	10	10.9	109	10.9	109	0	70-130/30
75-35-4	1,1-Dichloroethylene	10	10.7	107	10.7	107	0	70-130/30
106-93-4	1,2-Dibromoethane (EDB)	10	12.0	120	12.1	121	1	70-130/30
107-06-2	1,2-Dichloroethane	10	12.9	129	12.8	128	1	70-130/30
78-87-5	1,2-Dichloropropane	10	10.3	103	10.4	104	1	70-130/30
123-91-1	1,4-Dioxane	10	11.7	117	13.8	138* [a]	16	70-130/30
75-71-8	Dichlorodifluoromethane	10	14.4	144* [a]	14.4	144* [a]	0	70-130/30
124-48-1	Dibromochloromethane	10	12.3	123	12.4	124	1	70-130/30
156-60-5	trans-1,2-Dichloroethylene	10	11.0	110	11.1	111	1	70-130/30
156-59-2	cis-1,2-Dichloroethylene	10	11.3	113	11.1	111	2	70-130/30
10061-01-5	cis-1,3-Dichloropropene	10	12.8	128	13.1	131* [a]	2	70-130/30
541-73-1	m-Dichlorobenzene	10	10.8	108	10.9	109	1	70-130/30
95-50-1	o-Dichlorobenzene	10	10.6	106	10.7	107	1	70-130/30
106-46-7	p-Dichlorobenzene	10	11.0	110	11.0	110	0	70-130/30
10061-02-6	trans-1,3-Dichloropropene	10	13.3	133* [a]	13.6	136* [a]	2	70-130/30
64-17-5	Ethanol	10	7.4	74	7.5	75	1	70-130/30
100-41-4	Ethylbenzene	10	11.0	110	11.0	110	0	70-130/30
141-78-6	Ethyl Acetate	10	11.2	112	11.4	114	2	70-130/30
622-96-8	4-Ethyltoluene	10	12.7	127	12.8	128	1	70-130/30

* = Outside of Control Limits.

Blank Spike/Blank Spike Duplicate Summary

Job Number: JD60001
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V6W1177-BS	6W28032.D	1	01/27/23	TCH	n/a	n/a	V6W1177
V6W1177-BSD	6W28033.D	1	01/27/23	TCH	n/a	n/a	V6W1177

The QC reported here applies to the following samples: **Method:** TO-15

V6W1177-SCC

CAS No.	Compound	Spike ppbv	BSP ppbv	BSP %	BSD ppbv	BSD %	RPD	Limits Rec/RPD
76-13-1	Freon 113	10	10.6	106	10.7	107	1	70-130/30
76-14-2	Freon 114	10	11.2	112	11.1	111	1	70-130/30
142-82-5	Heptane	10	11.4	114	11.6	116	2	70-130/30
87-68-3	Hexachlorobutadiene	10	9.4	94	9.4	94	0	70-130/30
110-54-3	Hexane	10	10.2	102	10.1	101	1	70-130/30
591-78-6	2-Hexanone	10	15.1	151* [a]	15.2	152* [a]	1	70-130/30
67-63-0	Isopropyl Alcohol	10	7.5	75	7.6	76	1	70-130/30
75-09-2	Methylene chloride	10	9.7	97	9.8	98	1	70-130/30
78-93-3	Methyl ethyl ketone	10	11.2	112	11.2	112	0	70-130/30
108-10-1	Methyl Isobutyl Ketone	10	14.3	143* [a]	14.5	145* [a]	1	70-130/30
1634-04-4	Methyl Tert Butyl Ether	10	10.4	104	10.7	107	3	70-130/30
80-62-6	Methylmethacrylate	10	12.9	129	13.4	134* [a]	4	70-130/30
115-07-1	Propylene	10	10.4	104	10.5	105	1	70-130/30
100-42-5	Styrene	10	12.5	125	12.6	126	1	70-130/30
71-55-6	1,1,1-Trichloroethane	10	11.9	119	12.1	121	2	70-130/30
79-34-5	1,1,2,2-Tetrachloroethane	10	11.0	110	10.9	109	1	70-130/30
79-00-5	1,1,2-Trichloroethane	10	12.1	121	12.2	122	1	70-130/30
120-82-1	1,2,4-Trichlorobenzene	10	9.3	93	9.2	92	1	70-130/30
95-63-6	1,2,4-Trimethylbenzene	10	12.3	123	12.6	126	2	70-130/30
108-67-8	1,3,5-Trimethylbenzene	10	13.3	133* [a]	13.2	132* [a]	1	70-130/30
540-84-1	2,2,4-Trimethylpentane	10	10.1	101	13.0	130	25	70-130/30
75-65-0	Tertiary Butyl Alcohol	10	10.1	101	10.4	104	3	70-130/30
127-18-4	Tetrachloroethylene	10	11.9	119	11.9	119	0	70-130/30
109-99-9	Tetrahydrofuran	10	11.3	113	11.7	117	3	70-130/30
108-88-3	Toluene	10	12.8	128	12.8	128	0	70-130/30
79-01-6	Trichloroethylene	10	11.2	112	13.0	130	15	70-130/30
75-69-4	Trichlorofluoromethane	10	11.9	119	11.9	119	0	70-130/30
75-01-4	Vinyl chloride	10	10.3	103	10.4	104	1	70-130/30
108-05-4	Vinyl Acetate	10	11.0	110	11.3	113	3	70-130/30
	m,p-Xylene	20	23.4	117	23.6	118	1	70-130/30
95-47-6	o-Xylene	10	11.6	116	11.7	117	1	70-130/30
1330-20-7	Xylenes (total)	30	35.0	117	35.3	118	1	70-130/30

* = Outside of Control Limits.

Blank Spike/Blank Spike Duplicate Summary

Job Number: JD60001
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V6W1177-BS	6W28032.D	1	01/27/23	TCH	n/a	n/a	V6W1177
V6W1177-BSD	6W28033.D	1	01/27/23	TCH	n/a	n/a	V6W1177

The QC reported here applies to the following samples: **Method:** TO-15

V6W1177-SCC

CAS No.	Surrogate Recoveries	BSP	BSD	Limits
460-00-4	4-Bromofluorobenzene	112%	112%	65-128%

(a) High percent recovery and no associated positive reported in the QC batch.

* = Outside of Control Limits.

Duplicate Summary

Job Number: JD60001
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
JD60001-1DUP	7W00431.D	1	02/13/23	TCH	n/a	n/a	V7W22
JD60001-1	7W00430.D	1	02/13/23	TCH	n/a	n/a	V7W22

The QC reported here applies to the following samples: **Method:** TO-15

JD60001-1

CAS No.	Compound	JD60001-1 ppbv	Q	DUP ppbv	Q	RPD	Limits
67-64-1	Acetone (2-Propanone)	13.7		13.5		1	25
106-99-0	1,3-Butadiene	ND		ND		nc	25
71-43-2	Benzene	ND		ND		nc	25
75-27-4	Bromodichloromethane	ND		ND		nc	25
75-25-2	Bromoform	ND		ND		nc	25
74-83-9	Bromomethane	ND		ND		nc	25
593-60-2	Bromoethene	ND		ND		nc	25
100-44-7	Benzyl Chloride	ND		ND		nc	25
75-15-0	Carbon disulfide	ND		ND		nc	25
108-90-7	Chlorobenzene	ND		ND		nc	25
75-00-3	Chloroethane	ND		ND		nc	25
67-66-3	Chloroform	3.0		3.0		0	25
74-87-3	Chloromethane	ND		ND		nc	25
107-05-1	3-Chloropropene	ND		ND		nc	25
95-49-8	2-Chlorotoluene	ND		ND		nc	25
56-23-5	Carbon tetrachloride	ND		ND		nc	25
110-82-7	Cyclohexane	0.98		0.94		4	25
75-34-3	1,1-Dichloroethane	ND		ND		nc	25
75-35-4	1,1-Dichloroethylene	ND		ND		nc	25
106-93-4	1,2-Dibromoethane (EDB)	ND		ND		nc	25
107-06-2	1,2-Dichloroethane	ND		ND		nc	25
78-87-5	1,2-Dichloropropane	ND		ND		nc	25
123-91-1	1,4-Dioxane	ND		ND		nc	25
75-71-8	Dichlorodifluoromethane	0.48	J	0.44	J	9	25
124-48-1	Dibromochloromethane	ND		ND		nc	25
156-60-5	trans-1,2-Dichloroethylene	0.43	J	0.52	J	19	25
156-59-2	cis-1,2-Dichloroethylene	ND		ND		nc	25
10061-01-5	cis-1,3-Dichloropropene	ND		ND		nc	25
541-73-1	m-Dichlorobenzene	ND		ND		nc	25
95-50-1	o-Dichlorobenzene	ND		ND		nc	25
106-46-7	p-Dichlorobenzene	ND		ND		nc	25
10061-02-6	trans-1,3-Dichloropropene	ND		ND		nc	25
64-17-5	Ethanol	20.0		20.6		3	25
100-41-4	Ethylbenzene	ND		ND		nc	25
141-78-6	Ethyl Acetate	49.8		49.0		2	25
622-96-8	4-Ethyltoluene	ND		ND		nc	25

* = Outside of Control Limits.

Duplicate Summary

Job Number: JD60001
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
JD60001-1DUP	7W00431.D	1	02/13/23	TCH	n/a	n/a	V7W22
JD60001-1	7W00430.D	1	02/13/23	TCH	n/a	n/a	V7W22

The QC reported here applies to the following samples: **Method:** TO-15

JD60001-1

CAS No.	Compound	JD60001-1 ppbv	Q	DUP ppbv	Q	RPD	Limits
76-13-1	Freon 113	1.9		1.9		0	25
76-14-2	Freon 114	ND		ND		nc	25
142-82-5	Heptane	ND		ND		nc	25
87-68-3	Hexachlorobutadiene	ND		ND		nc	25
110-54-3	Hexane	ND		ND		nc	25
591-78-6	2-Hexanone	ND		ND		nc	25
67-63-0	Isopropyl Alcohol	52.8		50.8		4	25
75-09-2	Methylene chloride	ND		ND		nc	25
78-93-3	Methyl ethyl ketone	0.84		0.70	J	18	25
108-10-1	Methyl Isobutyl Ketone	ND		ND		nc	25
1634-04-4	Methyl Tert Butyl Ether	ND		ND		nc	25
80-62-6	Methylmethacrylate	ND		ND		nc	25
115-07-1	Propylene	ND		ND		nc	25
100-42-5	Styrene	ND		ND		nc	25
71-55-6	1,1,1-Trichloroethane	ND		ND		nc	25
79-34-5	1,1,2,2-Tetrachloroethane	ND		ND		nc	25
79-00-5	1,1,2-Trichloroethane	ND		ND		nc	25
120-82-1	1,2,4-Trichlorobenzene	ND		ND		nc	25
95-63-6	1,2,4-Trimethylbenzene	ND		ND		nc	25
108-67-8	1,3,5-Trimethylbenzene	ND		ND		nc	25
540-84-1	2,2,4-Trimethylpentane	ND		ND		nc	25
75-65-0	Tertiary Butyl Alcohol	ND		ND		nc	25
127-18-4	Tetrachloroethylene	ND		ND		nc	25
109-99-9	Tetrahydrofuran	ND		ND		nc	25
108-88-3	Toluene	1.4		1.2		15	25
79-01-6	Trichloroethylene	ND		ND		nc	25
75-69-4	Trichlorofluoromethane	ND		ND		nc	25
75-01-4	Vinyl chloride	ND		ND		nc	25
108-05-4	Vinyl Acetate	ND		ND		nc	25
	m,p-Xylene	ND		ND		nc	25
95-47-6	o-Xylene	1.1		1.0		10	25
1330-20-7	Xylenes (total)	1.1		1.0		10	25

* = Outside of Control Limits.

Duplicate Summary

Job Number: JD60001
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
JD60001-1DUP	7W00431.D	1	02/13/23	TCH	n/a	n/a	V7W22
JD60001-1	7W00430.D	1	02/13/23	TCH	n/a	n/a	V7W22

The QC reported here applies to the following samples: **Method:** TO-15

JD60001-1

CAS No.	Surrogate Recoveries	DUP	JD60001-1	Limits
460-00-4	4-Bromofluorobenzene	101%	99%	65-128%

* = Outside of Control Limits.

Summa Cleaning Certification

Job Number: JD60001
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V6W1177-SCC	6W28047.D	1	01/28/23	TCH	n/a	n/a	V6W1177

The QC reported here (Summa A1066) applies to the following samples: **Method:** TO-15

Batch CP12010 cleaned 12/12/22: JD60001-1(A1066)

CAS No.	Compound	Result	RL	MDL	Units	Q	Result	RL	Units
67-64-1	Acetone (2-Propanone)	ND	0.20	0.15	ppbv		ND	0.48	ug/m3
106-99-0	1,3-Butadiene	ND	0.20	0.084	ppbv		ND	0.44	ug/m3
71-43-2	Benzene	ND	0.20	0.062	ppbv		ND	0.64	ug/m3
75-27-4	Bromodichloromethane	ND	0.20	0.030	ppbv		ND	1.3	ug/m3
75-25-2	Bromoform	ND	0.20	0.071	ppbv		ND	2.1	ug/m3
74-83-9	Bromomethane	ND	0.20	0.069	ppbv		ND	0.78	ug/m3
593-60-2	Bromoethene	ND	0.20	0.061	ppbv		ND	0.87	ug/m3
100-44-7	Benzyl Chloride	ND	0.20	0.13	ppbv		ND	1.0	ug/m3
75-15-0	Carbon disulfide	ND	0.20	0.045	ppbv		ND	0.62	ug/m3
108-90-7	Chlorobenzene	ND	0.20	0.074	ppbv		ND	0.92	ug/m3
75-00-3	Chloroethane	ND	0.20	0.068	ppbv		ND	0.53	ug/m3
67-66-3	Chloroform	ND	0.20	0.037	ppbv		ND	0.98	ug/m3
74-87-3	Chloromethane	ND	0.20	0.090	ppbv		ND	0.41	ug/m3
107-05-1	3-Chloropropene	ND	0.20	0.083	ppbv		ND	0.63	ug/m3
95-49-8	2-Chlorotoluene	ND	0.20	0.072	ppbv		ND	1.0	ug/m3
56-23-5	Carbon tetrachloride	ND	0.20	0.040	ppbv		ND	1.3	ug/m3
110-82-7	Cyclohexane	ND	0.20	0.11	ppbv		ND	0.69	ug/m3
75-34-3	1,1-Dichloroethane	ND	0.20	0.057	ppbv		ND	0.81	ug/m3
75-35-4	1,1-Dichloroethylene	ND	0.20	0.059	ppbv		ND	0.79	ug/m3
106-93-4	1,2-Dibromoethane (EDB)	ND	0.20	0.097	ppbv		ND	1.5	ug/m3
107-06-2	1,2-Dichloroethane	ND	0.20	0.070	ppbv		ND	0.81	ug/m3
78-87-5	1,2-Dichloropropane	ND	0.20	0.062	ppbv		ND	0.92	ug/m3
123-91-1	1,4-Dioxane	ND	0.20	0.12	ppbv		ND	0.72	ug/m3
75-71-8	Dichlorodifluoromethane	ND	0.20	0.032	ppbv		ND	0.99	ug/m3
124-48-1	Dibromochloromethane	ND	0.20	0.052	ppbv		ND	1.7	ug/m3
156-60-5	trans-1,2-Dichloroethylene	ND	0.20	0.069	ppbv		ND	0.79	ug/m3
156-59-2	cis-1,2-Dichloroethylene	ND	0.20	0.077	ppbv		ND	0.79	ug/m3
10061-01-5	cis-1,3-Dichloropropene	ND	0.20	0.062	ppbv		ND	0.91	ug/m3
541-73-1	m-Dichlorobenzene	ND	0.20	0.040	ppbv		ND	1.2	ug/m3
95-50-1	o-Dichlorobenzene	ND	0.20	0.15	ppbv		ND	1.2	ug/m3
106-46-7	p-Dichlorobenzene	ND	0.20	0.19	ppbv		ND	1.2	ug/m3
10061-02-6	trans-1,3-Dichloropropene	ND	0.20	0.10	ppbv		ND	0.91	ug/m3
64-17-5	Ethanol	ND	0.50	0.39	ppbv		ND	0.94	ug/m3
100-41-4	Ethylbenzene	ND	0.20	0.061	ppbv		ND	0.87	ug/m3
141-78-6	Ethyl Acetate	ND	0.20	0.10	ppbv		ND	0.72	ug/m3
622-96-8	4-Ethyltoluene	ND	0.20	0.095	ppbv		ND	0.98	ug/m3

Summa Cleaning Certification

Job Number: JD60001
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V6W1177-SCC	6W28047.D	1	01/28/23	TCH	n/a	n/a	V6W1177

The QC reported here (Summa A1066) applies to the following samples: **Method:** TO-15

Batch CP12010 cleaned 12/12/22: JD60001-1(A1066)

CAS No.	Compound	Result	RL	MDL	Units	Q	Result	RL	Units
76-13-1	Freon 113	ND	0.20	0.031	ppbv		ND	1.5	ug/m3
76-14-2	Freon 114	ND	0.20	0.050	ppbv		ND	1.4	ug/m3
142-82-5	Heptane	ND	0.20	0.092	ppbv		ND	0.82	ug/m3
87-68-3	Hexachlorobutadiene	ND	0.20	0.062	ppbv		ND	2.1	ug/m3
110-54-3	Hexane	ND	0.20	0.11	ppbv		ND	0.70	ug/m3
591-78-6	2-Hexanone	ND	0.20	0.15	ppbv		ND	0.82	ug/m3
67-63-0	Isopropyl Alcohol	ND	0.20	0.14	ppbv		ND	0.49	ug/m3
75-09-2	Methylene chloride	ND	0.20	0.056	ppbv		ND	0.69	ug/m3
78-93-3	Methyl ethyl ketone	ND	0.20	0.11	ppbv		ND	0.59	ug/m3
108-10-1	Methyl Isobutyl Ketone	ND	0.20	0.073	ppbv		ND	0.82	ug/m3
1634-04-4	Methyl Tert Butyl Ether	ND	0.20	0.080	ppbv		ND	0.72	ug/m3
80-62-6	Methylmethacrylate	ND	0.20	0.070	ppbv		ND	0.82	ug/m3
115-07-1	Propylene	ND	0.50	0.14	ppbv		ND	0.86	ug/m3
100-42-5	Styrene	ND	0.20	0.12	ppbv		ND	0.85	ug/m3
71-55-6	1,1,1-Trichloroethane	ND	0.20	0.037	ppbv		ND	1.1	ug/m3
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.20	0.048	ppbv		ND	1.4	ug/m3
79-00-5	1,1,2-Trichloroethane	ND	0.20	0.038	ppbv		ND	1.1	ug/m3
120-82-1	1,2,4-Trichlorobenzene	ND	0.20	0.12	ppbv		ND	1.5	ug/m3
95-63-6	1,2,4-Trimethylbenzene	ND	0.20	0.087	ppbv		ND	0.98	ug/m3
108-67-8	1,3,5-Trimethylbenzene	ND	0.20	0.080	ppbv		ND	0.98	ug/m3
540-84-1	2,2,4-Trimethylpentane	ND	0.20	0.095	ppbv		ND	0.93	ug/m3
75-65-0	Tertiary Butyl Alcohol	ND	0.20	0.093	ppbv		ND	0.61	ug/m3
127-18-4	Tetrachloroethylene	ND	0.040	0.014	ppbv		ND	0.27	ug/m3
109-99-9	Tetrahydrofuran	ND	0.20	0.090	ppbv		ND	0.59	ug/m3
108-88-3	Toluene	ND	0.20	0.057	ppbv		ND	0.75	ug/m3
79-01-6	Trichloroethylene	ND	0.040	0.019	ppbv		ND	0.21	ug/m3
75-69-4	Trichlorofluoromethane	ND	0.20	0.036	ppbv		ND	1.1	ug/m3
75-01-4	Vinyl chloride	ND	0.20	0.069	ppbv		ND	0.51	ug/m3
108-05-4	Vinyl Acetate	ND	0.20	0.11	ppbv		ND	0.70	ug/m3
	m,p-Xylene	ND	0.20	0.14	ppbv		ND	0.87	ug/m3
95-47-6	o-Xylene	ND	0.20	0.077	ppbv		ND	0.87	ug/m3
1330-20-7	Xylenes (total)	ND	0.20	0.077	ppbv		ND	0.87	ug/m3

Summa Cleaning Certification

Job Number: JD60001
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V6W1177-SCC	6W28047.D	1	01/28/23	TCH	n/a	n/a	V6W1177

The QC reported here (Summa A1066) applies to the following samples: **Method:** TO-15

Batch CP12010 cleaned 12/12/22: JD60001-1(A1066)

CAS No.	Surrogate Recoveries		Limits
460-00-4	4-Bromofluorobenzene	108%	65-128%

Instrument Performance Check (BFB)

Job Number: JD60001
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample: V6W1158-BFB
Lab File ID: 6W27499.D
Instrument ID: GCMS6W
Injection Date: 12/05/22
Injection Time: 21:18

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
50	8.0 - 40.0% of mass 95	13227	24.7		Pass
75	30.0 - 66.0% of mass 95	26331	49.2		Pass
95	Base peak, 100% relative abundance	53568	100.0		Pass
96	5.0 - 9.0% of mass 95	3417	6.38		Pass
173	Less than 2.0% of mass 174	420	0.78	(0.97) [a]	Pass
174	50.0 - 120.0% of mass 95	43253	80.7		Pass
175	4.0 - 9.01% of mass 174	3129	5.84	(7.23) [a]	Pass
176	93.0 - 101.0% of mass 174	41891	78.2	(96.9) [a]	Pass
177	5.0 - 9.0% of mass 176	2804	5.23	(6.69) [b]	Pass

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

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

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
V6W1158-IC1158	6W27500.D	12/05/22	21:51	00:33	Initial cal 0.04
V6W1158-IC1158	6W27501.D	12/05/22	22:24	01:06	Initial cal 0.1
V6W1158-IC1158	6W27502.D	12/05/22	22:57	01:39	Initial cal 0.2
V6W1158-IC1158	6W27503.D	12/05/22	23:30	02:12	Initial cal 0.5
V6W1158-IC1158	6W27505.D	12/06/22	00:35	03:17	Initial cal 5
V6W1158-ICC1158	6W27506.D	12/06/22	01:07	03:49	Initial cal 10
V6W1158-IC1158	6W27507.D	12/06/22	01:39	04:21	Initial cal 20
V6W1158-IC1158	6W27508.D	12/06/22	02:12	04:54	Initial cal 40
V6W1158-IC1158	6W27509.D	12/06/22	02:47	05:29	Initial cal 50

Instrument Performance Check (BFB)

Job Number: JD60001
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample:	V6W1158-BFB	**Injection Date:**	12/07/22
Lab File ID:	6W27516.D	**Injection Time:**	13:49
Instrument ID:	GCMS6W		

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
50	8.0 - 40.0% of mass 95	14161	24.6		Pass
75	30.0 - 66.0% of mass 95	27760	48.3		Pass
95	Base peak, 100% relative abundance	57517	100.0		Pass
96	5.0 - 9.0% of mass 95	3939	6.85		Pass
173	Less than 2.0% of mass 174	345	0.60	(0.75) [a]	Pass
174	50.0 - 120.0% of mass 95	46243	80.4		Pass
175	4.0 - 9.01% of mass 174	3399	5.91	(7.35) [a]	Pass
176	93.0 - 101.0% of mass 174	43488	75.6	(94.0) [a]	Pass
177	5.0 - 9.0% of mass 176	2778	4.83	(6.39) [b]	Pass

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

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

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
V6W1158-ICV1158	6W27517.D	12/07/22	14:22	00:33	Initial cal verification 10

Instrument Performance Check (BFB)

Job Number: JD60001
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample: V6W1177-BFB
Lab File ID: 6W28029.D
Instrument ID: GCMS6W
Injection Date: 01/27/23
Injection Time: 13:42

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
50	8.0 - 40.0% of mass 95	13911	22.4		Pass
75	30.0 - 66.0% of mass 95	30173	48.7		Pass
95	Base peak, 100% relative abundance	61987	100.0		Pass
96	5.0 - 9.0% of mass 95	4530	7.31		Pass
173	Less than 2.0% of mass 174	184	0.30	(0.43) [a]	Pass
174	50.0 - 120.0% of mass 95	43245	69.8		Pass
175	4.0 - 9.01% of mass 174	3292	5.31	(7.61) [a]	Pass
176	93.0 - 101.0% of mass 174	40813	65.8	(94.4) [a]	Pass
177	5.0 - 9.0% of mass 176	2757	4.45	(6.76) [b]	Pass

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

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

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
V6W1177-CC1158	6W28031.D	01/27/23	15:22	01:40	Continuing cal 10
V6W1177-BS	6W28032.D	01/27/23	16:07	02:25	Blank Spike
V6W1177-BSD	6W28033.D	01/27/23	16:39	02:57	Blank Spike Duplicate
V6W1177-MB	6W28035.D	01/27/23	20:49	07:07	Method Blank
V6W1177-SCC	6W28037.D	01/27/23	22:08	08:26	Summa Cleaning Certification
V6W1177-SCC	6W28038.D	01/27/23	22:40	08:58	Summa Cleaning Certification
V6W1177-SCC	6W28039.D	01/27/23	23:12	09:30	Summa Cleaning Certification
V6W1177-SCC	6W28040.D	01/27/23	23:44	10:02	Summa Cleaning Certification
V6W1177-SCC	6W28041.D	01/28/23	00:16	10:34	Summa Cleaning Certification
V6W1177-SCC	6W28042.D	01/28/23	00:49	11:07	Summa Cleaning Certification
V6W1177-SCC	6W28043.D	01/28/23	01:21	11:39	Summa Cleaning Certification
V6W1177-SCC	6W28044.D	01/28/23	01:53	12:11	Summa Cleaning Certification
V6W1177-SCC	6W28045.D	01/28/23	02:26	12:44	Summa Cleaning Certification
V6W1177-SCC	6W28046.D	01/28/23	02:59	13:17	Summa Cleaning Certification
V6W1177-SCC	6W28047.D	01/28/23	03:32	13:50	Summa Cleaning Certification
V6W1177-SCC	6W28048.D	01/28/23	04:04	14:22	Summa Cleaning Certification
V6W1177-SCC	6W28050.D	01/28/23	05:09	15:27	Summa Cleaning Certification
V6W1177-SCC	6W28051.D	01/28/23	05:42	16:00	Summa Cleaning Certification
V6W1177-SCC	6W28052.D	01/28/23	06:15	16:33	Summa Cleaning Certification
V6W1177-SCC	6W28053.D	01/28/23	06:47	17:05	Summa Cleaning Certification
V6W1177-SCC	6W28054.D	01/28/23	07:19	17:37	Summa Cleaning Certification
V6W1177-SCC	6W28055.D	01/28/23	07:52	18:10	Summa Cleaning Certification
V6W1177-SCC	6W28056.D	01/28/23	08:25	18:43	Summa Cleaning Certification

Instrument Performance Check (BFB)

Job Number: JD60001
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample:	V7W5-BFB	**Injection Date:**	11/30/22
Lab File ID:	7W00090.D	**Injection Time:**	09:57
Instrument ID:	GCMS7W		

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
50	8.0 - 40.0% of mass 95	15648	20.2		Pass
75	30.0 - 66.0% of mass 95	39362	50.9		Pass
95	Base peak, 100% relative abundance	77379	100.0		Pass
96	5.0 - 9.0% of mass 95	4703	6.08		Pass
173	Less than 2.0% of mass 174	502	0.65	(0.84) [a]	Pass
174	50.0 - 120.0% of mass 95	60048	77.6		Pass
175	4.0 - 9.01% of mass 174	4685	6.05	(7.80) [a]	Pass
176	93.0 - 101.0% of mass 174	59629	77.1	(99.3) [a]	Pass
177	5.0 - 9.0% of mass 176	4038	5.22	(6.77) [b]	Pass

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

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

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
V7W5-IC0005	7W00093.D	11/30/22	11:33	01:36	Initial cal 0.04
V7W5-IC0005	7W00094.D	11/30/22	12:06	02:09	Initial cal 0.1
V7W5-IC0005	7W00095.D	11/30/22	12:38	02:41	Initial cal 0.2
V7W5-IC0005	7W00096.D	11/30/22	13:09	03:12	Initial cal 0.5
V7W5-IC0005	7W00098.D	11/30/22	14:12	04:15	Initial cal 5
V7W5-ICC0005	7W00099.D	11/30/22	14:44	04:47	Initial cal 10
V7W5-IC0005	7W00100.D	11/30/22	15:16	05:19	Initial cal 20
V7W5-IC0005	7W00101.D	11/30/22	15:51	05:54	Initial cal 40
V7W5-IC0005	7W00102.D	11/30/22	16:26	06:29	Initial cal 50
V7W5-ICV0005	7W00105.D	11/30/22	17:59	08:02	Initial cal verification 10

Instrument Performance Check (BFB)

Job Number: JD60001
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample: V7W22-BFB
Lab File ID: 7W00421.D
Instrument ID: GCMS7W
Injection Date: 02/13/23
Injection Time: 10:12

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
50	8.0 - 40.0% of mass 95	14149	20.2		Pass
75	30.0 - 66.0% of mass 95	36944	52.8		Pass
95	Base peak, 100% relative abundance	69952	100.0		Pass
96	5.0 - 9.0% of mass 95	4472	6.39		Pass
173	Less than 2.0% of mass 174	563	0.80	(1.10) [a]	Pass
174	50.0 - 120.0% of mass 95	51104	73.1		Pass
175	4.0 - 9.01% of mass 174	3632	5.19	(7.11) [a]	Pass
176	93.0 - 101.0% of mass 174	48947	70.0	(95.8) [a]	Pass
177	5.0 - 9.0% of mass 176	3046	4.35	(6.22) [b]	Pass

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

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

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
V7W22-CC0005	7W00422.D	02/13/23	10:43	00:31	Continuing cal 10
V7W22-BS	7W00423.D	02/13/23	11:25	01:13	Blank Spike
V7W22-BSD	7W00424.D	02/13/23	11:57	01:45	Blank Spike Duplicate
V7W22-MB	7W00426.D	02/13/23	13:04	02:52	Method Blank
ZZZZZZ	7W00427.D	02/13/23	13:54	03:42	(unrelated sample)
ZZZZZZ	7W00429.D	02/13/23	15:05	04:53	(unrelated sample)
JD60001-1	7W00430.D	02/13/23	15:37	05:25	CRCA-VMP03.20230208
JD60001-1DUP	7W00431.D	02/13/23	16:08	05:56	Duplicate
ZZZZZZ	7W00432.D	02/13/23	16:39	06:27	(unrelated sample)
ZZZZZZ	7W00433.D	02/13/23	17:11	06:59	(unrelated sample)
ZZZZZZ	7W00435.D	02/13/23	18:17	08:05	(unrelated sample)
ZZZZZZ	7W00436.D	02/13/23	18:51	08:39	(unrelated sample)
ZZZZZZ	7W00437.D	02/13/23	19:26	09:14	(unrelated sample)
ZZZZZZ	7W00438.D	02/13/23	20:01	09:49	(unrelated sample)
ZZZZZZ	7W00439.D	02/13/23	20:35	10:23	(unrelated sample)
ZZZZZZ	7W00440.D	02/13/23	21:11	10:59	(unrelated sample)
ZZZZZZ	7W00442.D	02/13/23	22:29	12:17	(unrelated sample)
ZZZZZZ	7W00443.D	02/13/23	23:01	12:49	(unrelated sample)

Internal Standard Area Summary

Job Number: JD60001
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Check Std:	V6W1177-CC1158	**Injection Date:**	01/27/23
Lab File ID:	6W28031.D	**Injection Time:**	15:22
Instrument ID:	GCMS6W	**Method:**	TO-15

	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT
Check Std	42254	3.34	210211	4.73	215130	10.58
Upper Limit [a]	59156	3.67	294295	5.06	301182	10.91
Lower Limit [b]	25352	3.01	126127	4.40	129078	10.25

Lab Sample ID	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT
V6W1177-BS	42740	3.34	214225	4.73	217246	10.58
V6W1177-BSD	42916	3.34	213977	4.73	216831	10.59
V6W1177-MB	39942	3.34	204757	4.73	203825	10.58
V6W1177-SCC	40021	3.34	204265	4.73	201419	10.58
V6W1177-SCC	39478	3.34	203443	4.73	200678	10.59
V6W1177-SCC	38850	3.34	199294	4.73	194980	10.59
V6W1177-SCC	37923	3.34	194309	4.73	190627	10.58
V6W1177-SCC	37658	3.34	191731	4.74	188070	10.59
V6W1177-SCC	37266	3.34	194739	4.73	190273	10.58
V6W1177-SCC	37646	3.34	195219	4.73	187959	10.59
V6W1177-SCC	37868	3.34	193474	4.74	189931	10.59
V6W1177-SCC	38468	3.34	196113	4.74	190855	10.59
V6W1177-SCC	38927	3.34	197386	4.74	192758	10.59
V6W1177-SCC	37377	3.34	190973	4.73	184846	10.58
V6W1177-SCC	36612	3.34	190897	4.73	185913	10.59
V6W1177-SCC	37575	3.34	189334	4.73	182142	10.59
V6W1177-SCC	37353	3.34	190260	4.73	185740	10.58
V6W1177-SCC	37986	3.34	194329	4.73	187314	10.59
V6W1177-SCC	37046	3.34	190627	4.74	183412	10.59
V6W1177-SCC	37231	3.34	192937	4.73	186588	10.58
V6W1177-SCC	38035	3.34	195270	4.74	187675	10.59
V6W1177-SCC	36989	3.34	194511	4.74	185298	10.59

IS 1 = Bromochloromethane
IS 2 = 1,4-Difluorobenzene
IS 3 = Chlorobenzene-D5

(a) Upper Limit = + 40% of check standard area; Retention time + 0.33 minutes.
(b) Lower Limit = -40% of check standard area; Retention time -0.33 minutes.

Internal Standard Area Summary

Job Number: JD60001
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Check Std:	V7W22-CC0005	**Injection Date:**	02/13/23
Lab File ID:	7W00422.D	**Injection Time:**	10:43
Instrument ID:	GCMS7W	**Method:**	TO-15

	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT
Check Std	74567	3.56	370813	4.95	329575	10.78
Upper Limit [a]	104394	3.89	519138	5.28	461405	11.11
Lower Limit [b]	44740	3.23	222488	4.62	197745	10.45

Lab Sample ID	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT
V7W22-BS	79155	3.57	387438	4.95	340297	10.78
V7W22-BSD	79403	3.57	390296	4.95	338370	10.79
V7W22-MB	77933	3.57	383424	4.95	322476	10.78
ZZZZZZ	71589	3.57	349624	4.95	300378	10.78
ZZZZZZ	69641	3.57	344185	4.95	290569	10.78
JD60001-1	60523	3.57	296078	4.96	258548	10.79
JD60001-1DUP	60671	3.57	300481	4.95	259152	10.78
ZZZZZZ	68002	3.57	332138	4.95	285123	10.78
ZZZZZZ	67858	3.57	331661	4.95	277093	10.79
ZZZZZZ	68138	3.56	332567	4.95	281924	10.79
ZZZZZZ	69072	3.57	334917	4.95	287575	10.78
ZZZZZZ	69236	3.57	336612	4.95	284173	10.78
ZZZZZZ	68930	3.56	331607	4.95	286248	10.78
ZZZZZZ	71324	3.57	344659	4.95	289399	10.78
ZZZZZZ	73563	3.57	355846	4.96	303239	10.78
ZZZZZZ	70746	3.57	354183	4.95	305689	10.78
ZZZZZZ	70683	3.57	342062	4.95	286034	10.78

IS 1 = Bromochloromethane
IS 2 = 1,4-Difluorobenzene
IS 3 = Chlorobenzene-D5

(a) Upper Limit = + 40% of check standard area; Retention time + 0.33 minutes.
(b) Lower Limit = -40% of check standard area; Retention time -0.33 minutes.

Initial Calibration Retention Time/Internal Standard Area Summary

Job Number: JD60001
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample Number	Lab File ID	Injected	By	Level	Inst ID	Method	
V6W1158-IC1158	6W27500.D	12/05/22 21:51	TCH	0.04	GCMS6W	TO-15	Reporting this level
V6W1158-IC1158	6W27501.D	12/05/22 22:24	TCH	0.1	GCMS6W	TO-15	
V6W1158-IC1158	6W27502.D	12/05/22 22:57	TCH	0.2	GCMS6W	TO-15	
V6W1158-IC1158	6W27503.D	12/05/22 23:30	TCH	0.5	GCMS6W	TO-15	
V6W1158-IC1158	6W27505.D	12/06/22 00:35	TCH	5	GCMS6W	TO-15	
V6W1158-ICC1158	6W27506.D	12/06/22 01:07	TCH	10	GCMS6W	TO-15	
V6W1158-IC1158	6W27507.D	12/06/22 01:39	TCH	20	GCMS6W	TO-15	
V6W1158-IC1158	6W27508.D	12/06/22 02:12	TCH	40	GCMS6W	TO-15	
V6W1158-IC1158	6W27509.D	12/06/22 02:47	TCH	50	GCMS6W	TO-15	

Target Compound	RT (min.)	Istd RT (min.)	Rel RT		Mean Rel RT	Rel RT Range (+ /- .06)
Benzene	4.39	3.34	1.314	ok	1.312	1.252-1.372
Bromobenzene	14.38	10.59	1.358	ok	1.358	1.298-1.418
Bromodichloromethane	5.30	4.74	1.118	ok	1.119	1.059-1.179
n-Butane	1.88	3.34	0.563	ok	0.563	0.503-0.623
sec-Butylbenzene	17.07	10.59	1.612	ok	1.612	1.552-1.672
Carbon disulfide	2.52	3.34	0.754	ok	0.754	0.694-0.814
Chlorobenzene	10.67	10.59	1.008	ok	1.007	0.947-1.067
Chloroform	3.43	3.34	1.027	ok	1.024	0.964-1.084
2-Chlorotoluene	15.52	10.59	1.466	ok	1.466	1.406-1.526
Carbon tetrachloride	4.50	3.34	1.347	ok	1.348	1.288-1.408
1,1-Dichloroethane	2.86	3.34	0.856	ok	0.856	0.796-0.916
1,3-Dichloropropane	7.69	4.74	1.622	ok	1.622	1.562-1.682
Dichlorodifluoromethane	1.73	3.34	0.518	ok	0.518	0.458-0.578
Dichlorofluoromethane	2.00	3.34	0.599	ok	0.599	0.539-0.659
Dibromochloromethane	8.18	4.74	1.726	ok	1.728	1.668-1.788
m-Dichlorobenzene	16.86	10.59	1.592	ok	1.592	1.532-1.652
o-Dichlorobenzene	17.23	10.59	1.627	ok	1.627	1.567-1.687
p-Dichlorobenzene	16.95	10.59	1.601	ok	1.601	1.541-1.661
2,4-Dimethylpentane	3.95	3.34	1.183	ok	1.185	1.125-1.245
Ethylbenzene	11.57	10.59	1.093	ok	1.093	1.033-1.153
Ethyl Acrylate	5.24	4.74	1.105	ok	1.106	1.046-1.166
Freon 114	1.80	3.34	0.539	ok	0.539	0.479-0.599
Freon 123	2.12	3.34	0.635	ok	0.635	0.575-0.695
Freon 142B	1.77	3.34	0.530	ok	0.530	0.470-0.590
Heptane	5.78	4.74	1.219	ok	1.220	1.160-1.280
Hexachlorobutadiene	18.78	10.59	1.773	ok	1.774	1.714-1.834
Hexachloroethane	17.76	10.59	1.677	ok	1.677	1.617-1.737
Iodomethane	2.36	3.34	0.707	ok	0.707	0.647-0.767
Isopropylbenzene	14.49	10.59	1.368	ok	1.369	1.309-1.429
Isopropyl Alcohol	2.21	3.34	0.662	ok	0.662	0.602-0.722
p-Isopropyltoluene	17.24	10.59	1.628	ok	1.628	1.568-1.688
Nonane	14.09	10.59	1.331	ok	1.330	1.270-1.390
Octane	9.56	4.74	2.017	ok	2.018	1.958-2.078
Pentane	2.30	3.34	0.689	ok	0.689	0.629-0.749
n-Propylbenzene	15.86	10.59	1.498	ok	1.498	1.438-1.558
Styrene	12.74	10.59	1.203	ok	1.204	1.144-1.264
1,1,2,2-Tetrachloroethane	12.98	10.59	1.226	ok	1.226	1.166-1.286
1,2,3-Trichloropropane	13.26	10.59	1.252	ok	1.253	1.193-1.313
1,2,3-Trimethylbenzene	17.18	10.59	1.622	ok	1.622	1.562-1.682

Initial Calibration Retention Time/Internal Standard Area Summary

Job Number: JD60001
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample Number	Lab File ID	Injected	By	Level	Inst ID	Method	
V6W1158-IC1158	6W27500.D	12/05/22 21:51	TCH	0.04	GCMS6W	TO-15	Reporting this level
V6W1158-IC1158	6W27501.D	12/05/22 22:24	TCH	0.1	GCMS6W	TO-15	
V6W1158-IC1158	6W27502.D	12/05/22 22:57	TCH	0.2	GCMS6W	TO-15	
V6W1158-IC1158	6W27503.D	12/05/22 23:30	TCH	0.5	GCMS6W	TO-15	
V6W1158-IC1158	6W27505.D	12/06/22 00:35	TCH	5	GCMS6W	TO-15	
V6W1158-ICC1158	6W27506.D	12/06/22 01:07	TCH	10	GCMS6W	TO-15	
V6W1158-IC1158	6W27507.D	12/06/22 01:39	TCH	20	GCMS6W	TO-15	
V6W1158-IC1158	6W27508.D	12/06/22 02:12	TCH	40	GCMS6W	TO-15	
V6W1158-IC1158	6W27509.D	12/06/22 02:47	TCH	50	GCMS6W	TO-15	

Target Compound	RT (min.)	Istd RT (min.)	Rel RT		Mean Rel RT	Rel RT Range (+ /- .06)
1,3,5-Trimethylbenzene	16.35	10.59	1.544	ok	1.544	1.484-1.604
2,2,4-Trimethylpentane	5.45	4.74	1.150	ok	1.149	1.089-1.209
Tetrachloroethylene	9.41	4.74	1.985	ok	1.986	1.926-2.046
Toluene	7.61	4.74	1.605	ok	1.607	1.547-1.667
Trichloroethylene	5.34	4.74	1.127	ok	1.128	1.068-1.188
Trichlorofluoromethane	2.19	3.34	0.656	ok	0.656	0.596-0.716
m,p-Xylene	11.96	10.59	1.129	ok	1.134	1.074-1.194
o-Xylene	12.96	10.59	1.224	ok	1.224	1.164-1.284

Internal Standard	RT (min.)		Mean RT(min.)	RT Range (+ /- 0.33)	Area		Mean Area	Area Range (+ /- 40 %)
Bromochloromethane	3.34	ok	3.34	3.01-3.67	54356	ok	56264	33758-78770
1,4-Difluorobenzene	4.74	ok	4.74	4.41-5.07	268655	ok	274058	164435-383681
Chlorobenzene-D5	10.59	ok	10.59	10.26-10.92	232965	ok	244142	146485-341799

Initial Calibration Retention Time/Internal Standard Area Summary

Job Number: JD60001
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample Number	Lab File ID	Injected	By	Level	Inst ID	Method	
V6W1158-IC1158	6W27500.D	12/05/22 21:51	TCH	0.04	GCMS6W	TO-15	
V6W1158-IC1158	6W27501.D	12/05/22 22:24	TCH	0.1	GCMS6W	TO-15	Reporting this level
V6W1158-IC1158	6W27502.D	12/05/22 22:57	TCH	0.2	GCMS6W	TO-15	
V6W1158-IC1158	6W27503.D	12/05/22 23:30	TCH	0.5	GCMS6W	TO-15	
V6W1158-IC1158	6W27505.D	12/06/22 00:35	TCH	5	GCMS6W	TO-15	
V6W1158-ICC1158	6W27506.D	12/06/22 01:07	TCH	10	GCMS6W	TO-15	
V6W1158-IC1158	6W27507.D	12/06/22 01:39	TCH	20	GCMS6W	TO-15	
V6W1158-IC1158	6W27508.D	12/06/22 02:12	TCH	40	GCMS6W	TO-15	
V6W1158-IC1158	6W27509.D	12/06/22 02:47	TCH	50	GCMS6W	TO-15	

Target Compound	RT (min.)	Istd RT (min.)	Rel RT		Mean Rel RT	Rel RT Range (+ /- .06)
Acetone (2-Propanone)	2.15	3.34	0.644	ok	0.641	0.581-0.701
Acrolein	2.10	3.34	0.629	ok	0.629	0.569-0.689
Acrylonitrile	2.28	3.34	0.683	ok	0.680	0.620-0.740
Acetonitrile	2.07	3.34	0.620	ok	0.619	0.559-0.679
1,3-Butadiene	1.87	3.34	0.560	ok	0.560	0.500-0.620
Benzene	4.38	3.34	1.311	ok	1.312	1.252-1.372
Bromobenzene	14.37	10.59	1.357	ok	1.358	1.298-1.418
Bromodichloromethane	5.30	4.74	1.118	ok	1.119	1.059-1.179
Bromoform	11.82	10.59	1.116	ok	1.117	1.057-1.177
Bromomethane	1.94	3.34	0.581	ok	0.581	0.521-0.641
Bromoethene	2.07	3.34	0.620	ok	0.620	0.560-0.680
n-Butane	1.88	3.34	0.563	ok	0.563	0.503-0.623
n-Butylbenzene	17.59	10.59	1.661	ok	1.661	1.601-1.721
sec-Butylbenzene	17.07	10.59	1.612	ok	1.612	1.552-1.672
tert-Butylbenzene	16.79	10.59	1.585	ok	1.586	1.526-1.646
Carbon disulfide	2.52	3.34	0.754	ok	0.754	0.694-0.814
Chlorobenzene	10.67	10.59	1.008	ok	1.007	0.947-1.067
Chlorodifluoromethane	1.70	3.34	0.509	ok	0.512	0.452-0.572
Chloroethane	1.98	3.34	0.593	ok	0.593	0.533-0.653
Chlorotrifluoroethene	1.72	3.34	0.515	ok	0.515	0.455-0.575
Chloroform	3.42	3.34	1.024	ok	1.024	0.964-1.084
Chloromethane	1.77	3.34	0.530	ok	0.531	0.471-0.591
3-Chloropropene	2.46	3.34	0.737	ok	0.737	0.677-0.797
2-Chlorotoluene	15.52	10.59	1.466	ok	1.466	1.406-1.526
Carbon tetrachloride	4.50	3.34	1.347	ok	1.348	1.288-1.408
Cyclohexane	4.60	4.74	0.970	ok	0.971	0.911-1.031
1,1-Dichloroethane	2.86	3.34	0.856	ok	0.856	0.796-0.916
1,1-Dichloroethylene	2.39	3.34	0.716	ok	0.715	0.655-0.775
1,2-Dibromoethane (EDB)	8.53	4.74	1.800	ok	1.802	1.742-1.862
1,2-Dichloroethane	3.87	3.34	1.159	ok	1.159	1.099-1.219
1,2-Dichloropropane	5.11	4.74	1.078	ok	1.077	1.017-1.137
1,3-Dichloropropane	7.69	4.74	1.622	ok	1.622	1.562-1.682
1,4-Dioxane	5.41	4.74	1.141	ok	1.137	1.077-1.197
Dichlorodifluoromethane	1.74	3.34	0.521	ok	0.518	0.458-0.578
Dichlorofluoromethane	2.00	3.34	0.599	ok	0.599	0.539-0.659
Dibromochloromethane	8.18	4.74	1.726	ok	1.728	1.668-1.788
Dibromomethane	5.06	4.74	1.068	ok	1.068	1.008-1.128
trans-1,2-Dichloroethylene	2.77	3.34	0.829	ok	0.829	0.769-0.889
cis-1,2-Dichloroethylene	3.26	3.34	0.976	ok	0.976	0.916-1.036

Initial Calibration Retention Time/Internal Standard Area Summary

Job Number: JD60001
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample Number	Lab File ID	Injected	By	Level	Inst ID	Method	
V6W1158-IC1158	6W27500.D	12/05/22 21:51	TCH	0.04	GCMS6W	TO-15	
V6W1158-IC1158	6W27501.D	12/05/22 22:24	TCH	0.1	GCMS6W	TO-15	Reporting this level
V6W1158-IC1158	6W27502.D	12/05/22 22:57	TCH	0.2	GCMS6W	TO-15	
V6W1158-IC1158	6W27503.D	12/05/22 23:30	TCH	0.5	GCMS6W	TO-15	
V6W1158-IC1158	6W27505.D	12/06/22 00:35	TCH	5	GCMS6W	TO-15	
V6W1158-ICC1158	6W27506.D	12/06/22 01:07	TCH	10	GCMS6W	TO-15	
V6W1158-IC1158	6W27507.D	12/06/22 01:39	TCH	20	GCMS6W	TO-15	
V6W1158-IC1158	6W27508.D	12/06/22 02:12	TCH	40	GCMS6W	TO-15	
V6W1158-IC1158	6W27509.D	12/06/22 02:47	TCH	50	GCMS6W	TO-15	

Target Compound	RT (min.)	Istd RT (min.)	Rel RT		Mean Rel RT	Rel RT Range (+ /- .06)
cis-1,3-Dichloropropene	6.35	4.74	1.340	ok	1.340	1.280-1.400
m-Dichlorobenzene	16.86	10.59	1.592	ok	1.592	1.532-1.652
o-Dichlorobenzene	17.23	10.59	1.627	ok	1.627	1.567-1.687
p-Dichlorobenzene	16.95	10.59	1.601	ok	1.601	1.541-1.661
trans-1,3-Dichloropropene	7.07	4.74	1.492	ok	1.492	1.432-1.552
Di-Isopropyl ether	3.41	3.34	1.021	ok	1.020	0.960-1.080
2,3-Dimethylpentane	4.87	4.74	1.027	ok	1.029	0.969-1.089
2,4-Dimethylpentane	3.96	3.34	1.186	ok	1.185	1.125-1.245
Ethylbenzene	11.57	10.59	1.093	ok	1.093	1.033-1.153
Ethyl Acetate	3.42	3.34	1.024	ok	1.022	0.962-1.082
Ethyl Acrylate	5.24	4.74	1.105	ok	1.106	1.046-1.166
4-Ethyltoluene	16.20	10.59	1.530	ok	1.530	1.470-1.590
Freon 113	2.52	3.34	0.754	ok	0.754	0.694-0.814
Freon 114	1.80	3.34	0.539	ok	0.539	0.479-0.599
Freon 123	2.12	3.34	0.635	ok	0.635	0.575-0.695
Freon 123A	2.14	3.34	0.641	ok	0.638	0.578-0.698
Freon 142B	1.77	3.34	0.530	ok	0.530	0.470-0.590
Freon 152A	1.70	3.34	0.509	ok	0.508	0.448-0.568
Heptane	5.78	4.74	1.219	ok	1.220	1.160-1.280
Hexachlorobutadiene	18.79	10.59	1.774	ok	1.774	1.714-1.834
Hexachloroethane	17.77	10.59	1.678	ok	1.677	1.617-1.737
Hexane	3.39	3.34	1.015	ok	1.016	0.956-1.076
2-Hexanone	8.24	4.74	1.738	ok	1.737	1.677-1.797
Iodomethane	2.36	3.34	0.707	ok	0.707	0.647-0.767
Isopropylbenzene	14.50	10.59	1.369	ok	1.369	1.309-1.429
Isopropyl Alcohol	2.22	3.34	0.665	ok	0.662	0.602-0.722
p-Isopropyltoluene	17.24	10.59	1.628	ok	1.628	1.568-1.688
Methyl ethyl ketone	3.05	3.34	0.913	ok	0.911	0.851-0.971
Methyl Isobutyl Ketone	6.50	4.74	1.371	ok	1.367	1.307-1.427
Methyl Tert Butyl Ether	2.89	3.34	0.865	ok	0.865	0.805-0.925
Methylmethacrylate	5.69	4.74	1.200	ok	1.201	1.141-1.261
Nonane	14.09	10.59	1.331	ok	1.330	1.270-1.390
Octane	9.56	4.74	2.017	ok	2.018	1.958-2.078
Pentane	2.30	3.34	0.689	ok	0.689	0.629-0.749
n-Propylbenzene	15.85	10.59	1.497	ok	1.498	1.438-1.558
Propylene	1.72	3.34	0.515	ok	0.515	0.455-0.575
Styrene	12.74	10.59	1.203	ok	1.204	1.144-1.264
1,1,1-Trichloroethane	4.05	3.34	1.213	ok	1.213	1.153-1.273
1,1,1,2-Tetrachloroethane	10.68	10.59	1.008	ok	1.009	0.949-1.069

Initial Calibration Retention Time/Internal Standard Area Summary

Job Number: JD60001
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample Number	Lab File ID	Injected	By	Level	Inst ID	Method	
V6W1158-IC1158	6W27500.D	12/05/22 21:51	TCH	0.04	GCMS6W	TO-15	
V6W1158-IC1158	6W27501.D	12/05/22 22:24	TCH	0.1	GCMS6W	TO-15	Reporting this level
V6W1158-IC1158	6W27502.D	12/05/22 22:57	TCH	0.2	GCMS6W	TO-15	
V6W1158-IC1158	6W27503.D	12/05/22 23:30	TCH	0.5	GCMS6W	TO-15	
V6W1158-IC1158	6W27505.D	12/06/22 00:35	TCH	5	GCMS6W	TO-15	
V6W1158-ICC1158	6W27506.D	12/06/22 01:07	TCH	10	GCMS6W	TO-15	
V6W1158-IC1158	6W27507.D	12/06/22 01:39	TCH	20	GCMS6W	TO-15	
V6W1158-IC1158	6W27508.D	12/06/22 02:12	TCH	40	GCMS6W	TO-15	
V6W1158-IC1158	6W27509.D	12/06/22 02:47	TCH	50	GCMS6W	TO-15	

Target Compound	RT (min.)	Istd RT (min.)	Rel RT		Mean Rel RT	Rel RT Range (+ /- .06)
1,1,2,2-Tetrachloroethane	12.98	10.59	1.226	ok	1.226	1.166-1.286
1,1,2-Trichloroethane	7.24	4.74	1.527	ok	1.528	1.468-1.588
1,2,3-Trichloropropane	13.26	10.59	1.252	ok	1.253	1.193-1.313
1,2,3-Trimethylbenzene	17.18	10.59	1.622	ok	1.622	1.562-1.682
1,2,4-Trimethylbenzene	16.80	10.59	1.586	ok	1.587	1.527-1.647
1,3,5-Trimethylbenzene	16.34	10.59	1.543	ok	1.544	1.484-1.604
2,2,4-Trimethylpentane	5.44	4.74	1.148	ok	1.149	1.089-1.209
Tertiary Butyl Alcohol	2.41	3.34	0.722	ok	0.719	0.659-0.779
Tetrachloroethylene	9.41	4.74	1.985	ok	1.986	1.926-2.046
Tetrahydrofuran	3.67	3.34	1.099	ok	1.095	1.035-1.155
Toluene	7.61	4.74	1.605	ok	1.607	1.547-1.667
Trichloroethylene	5.35	4.74	1.129	ok	1.128	1.068-1.188
Trichlorofluoromethane	2.20	3.34	0.659	ok	0.656	0.596-0.716
Vinyl chloride	1.83	3.34	0.548	ok	0.548	0.488-0.608
Vinyl Acetate	2.93	3.34	0.877	ok	0.878	0.818-0.938
m,p-Xylene	12.00	10.59	1.133	ok	1.134	1.074-1.194
o-Xylene	12.97	10.59	1.225	ok	1.224	1.164-1.284

Internal Standard	RT (min.)		Mean RT(min.)	RT Range (+ /- 0.33)	Area		Mean Area	Area Range (+ /- 40 %)
Bromochloromethane	3.34	ok	3.34	3.01-3.67	53022	ok	56264	33758-78770
1,4-Difluorobenzene	4.74	ok	4.74	4.41-5.07	262218	ok	274058	164435-383681
Chlorobenzene-D5	10.59	ok	10.59	10.26-10.92	227488	ok	244142	146485-341799

Initial Calibration Retention Time/Internal Standard Area Summary

Job Number: JD60001
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample Number	Lab File ID	Injected	By	Level	Inst ID	Method	
V6W1158-IC1158	6W27500.D	12/05/22 21:51	TCH	0.04	GCMS6W	TO-15	
V6W1158-IC1158	6W27501.D	12/05/22 22:24	TCH	0.1	GCMS6W	TO-15	
V6W1158-IC1158	6W27502.D	12/05/22 22:57	TCH	0.2	GCMS6W	TO-15	Reporting this level
V6W1158-IC1158	6W27503.D	12/05/22 23:30	TCH	0.5	GCMS6W	TO-15	
V6W1158-IC1158	6W27505.D	12/06/22 00:35	TCH	5	GCMS6W	TO-15	
V6W1158-ICC1158	6W27506.D	12/06/22 01:07	TCH	10	GCMS6W	TO-15	
V6W1158-IC1158	6W27507.D	12/06/22 01:39	TCH	20	GCMS6W	TO-15	
V6W1158-IC1158	6W27508.D	12/06/22 02:12	TCH	40	GCMS6W	TO-15	
V6W1158-IC1158	6W27509.D	12/06/22 02:47	TCH	50	GCMS6W	TO-15	

Target Compound	RT (min.)	Istd RT (min.)	Rel RT		Mean Rel RT	Rel RT Range (+ /- .06)
Acetone (2-Propanone)	2.14	3.34	0.641	ok	0.641	0.581-0.701
Acrolein	2.10	3.34	0.629	ok	0.629	0.569-0.689
Acrylonitrile	2.27	3.34	0.680	ok	0.680	0.620-0.740
Acetonitrile	2.07	3.34	0.620	ok	0.619	0.559-0.679
1,3-Butadiene	1.87	3.34	0.560	ok	0.560	0.500-0.620
Benzene	4.38	3.34	1.311	ok	1.312	1.252-1.372
Bromobenzene	14.37	10.59	1.357	ok	1.358	1.298-1.418
Bromodichloromethane	5.30	4.74	1.118	ok	1.119	1.059-1.179
Bromoform	11.82	10.59	1.116	ok	1.117	1.057-1.177
Bromomethane	1.94	3.34	0.581	ok	0.581	0.521-0.641
Bromoethene	2.07	3.34	0.620	ok	0.620	0.560-0.680
n-Butane	1.88	3.34	0.563	ok	0.563	0.503-0.623
Benzyl Chloride	16.88	10.59	1.594	ok	1.595	1.535-1.655
n-Butylbenzene	17.58	10.59	1.660	ok	1.661	1.601-1.721
sec-Butylbenzene	17.07	10.59	1.612	ok	1.612	1.552-1.672
tert-Butylbenzene	16.79	10.59	1.585	ok	1.586	1.526-1.646
Carbon disulfide	2.52	3.34	0.754	ok	0.754	0.694-0.814
Chlorobenzene	10.67	10.59	1.008	ok	1.007	0.947-1.067
Chlorodifluoromethane	1.71	3.34	0.512	ok	0.512	0.452-0.572
Chloroethane	1.98	3.34	0.593	ok	0.593	0.533-0.653
Chlorotrifluoroethene	1.72	3.34	0.515	ok	0.515	0.455-0.575
Chloroform	3.42	3.34	1.024	ok	1.024	0.964-1.084
Chloromethane	1.77	3.34	0.530	ok	0.531	0.471-0.591
3-Chloropropene	2.46	3.34	0.737	ok	0.737	0.677-0.797
2-Chlorotoluene	15.51	10.59	1.465	ok	1.466	1.406-1.526
Carbon tetrachloride	4.51	3.34	1.350	ok	1.348	1.288-1.408
Cyclohexane	4.61	4.74	0.973	ok	0.971	0.911-1.031
1,1-Dichloroethane	2.86	3.34	0.856	ok	0.856	0.796-0.916
1,1-Dichloroethylene	2.39	3.34	0.716	ok	0.715	0.655-0.775
1,2-Dibromoethane (EDB)	8.54	4.74	1.802	ok	1.802	1.742-1.862
1,2-Dichloroethane	3.87	3.34	1.159	ok	1.159	1.099-1.219
1,2-Dichloropropane	5.10	4.74	1.076	ok	1.077	1.017-1.137
1,3-Dichloropropane	7.69	4.74	1.622	ok	1.622	1.562-1.682
1,4-Dioxane	5.41	4.74	1.141	ok	1.137	1.077-1.197
Dichlorodifluoromethane	1.73	3.34	0.518	ok	0.518	0.458-0.578
Dichlorofluoromethane	2.00	3.34	0.599	ok	0.599	0.539-0.659
Dibromochloromethane	8.19	4.74	1.728	ok	1.728	1.668-1.788
Dibromomethane	5.06	4.74	1.068	ok	1.068	1.008-1.128
trans-1,2-Dichloroethylene	2.77	3.34	0.829	ok	0.829	0.769-0.889

Initial Calibration Retention Time/Internal Standard Area Summary

Job Number: JD60001
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample Number	Lab File ID	Injected	By	Level	Inst ID	Method	
V6W1158-IC1158	6W27500.D	12/05/22 21:51	TCH	0.04	GCMS6W	TO-15	
V6W1158-IC1158	6W27501.D	12/05/22 22:24	TCH	0.1	GCMS6W	TO-15	
V6W1158-IC1158	6W27502.D	12/05/22 22:57	TCH	0.2	GCMS6W	TO-15	Reporting this level
V6W1158-IC1158	6W27503.D	12/05/22 23:30	TCH	0.5	GCMS6W	TO-15	
V6W1158-IC1158	6W27505.D	12/06/22 00:35	TCH	5	GCMS6W	TO-15	
V6W1158-ICC1158	6W27506.D	12/06/22 01:07	TCH	10	GCMS6W	TO-15	
V6W1158-IC1158	6W27507.D	12/06/22 01:39	TCH	20	GCMS6W	TO-15	
V6W1158-IC1158	6W27508.D	12/06/22 02:12	TCH	40	GCMS6W	TO-15	
V6W1158-IC1158	6W27509.D	12/06/22 02:47	TCH	50	GCMS6W	TO-15	

Target Compound	RT (min.)	Istd RT (min.)	Rel RT		Mean Rel RT	Rel RT Range (+ /- .06)
cis-1,2-Dichloroethylene	3.26	3.34	0.976	ok	0.976	0.916-1.036
cis-1,3-Dichloropropene	6.35	4.74	1.340	ok	1.340	1.280-1.400
m-Dichlorobenzene	16.86	10.59	1.592	ok	1.592	1.532-1.652
o-Dichlorobenzene	17.23	10.59	1.627	ok	1.627	1.567-1.687
p-Dichlorobenzene	16.95	10.59	1.601	ok	1.601	1.541-1.661
trans-1,3-Dichloropropene	7.07	4.74	1.492	ok	1.492	1.432-1.552
Di-Isopropyl ether	3.41	3.34	1.021	ok	1.020	0.960-1.080
2,3-Dimethylpentane	4.88	4.74	1.030	ok	1.029	0.969-1.089
2,4-Dimethylpentane	3.96	3.34	1.186	ok	1.185	1.125-1.245
Ethanol	2.01	3.34	0.602	ok	0.602	0.542-0.662
Ethylbenzene	11.56	10.59	1.092	ok	1.093	1.033-1.153
Ethyl Acetate	3.41	3.34	1.021	ok	1.022	0.962-1.082
Ethyl Acrylate	5.24	4.74	1.105	ok	1.106	1.046-1.166
4-Ethyltoluene	16.20	10.59	1.530	ok	1.530	1.470-1.590
Freon 113	2.52	3.34	0.754	ok	0.754	0.694-0.814
Freon 114	1.80	3.34	0.539	ok	0.539	0.479-0.599
Freon 123	2.12	3.34	0.635	ok	0.635	0.575-0.695
Freon 123A	2.13	3.34	0.638	ok	0.638	0.578-0.698
Freon 142B	1.77	3.34	0.530	ok	0.530	0.470-0.590
Freon 152A	1.70	3.34	0.509	ok	0.508	0.448-0.568
Heptane	5.78	4.74	1.219	ok	1.220	1.160-1.280
Hexachlorobutadiene	18.78	10.59	1.773	ok	1.774	1.714-1.834
Hexachloroethane	17.76	10.59	1.677	ok	1.677	1.617-1.737
Hexane	3.39	3.34	1.015	ok	1.016	0.956-1.076
2-Hexanone	8.24	4.74	1.738	ok	1.737	1.677-1.797
Iodomethane	2.36	3.34	0.707	ok	0.707	0.647-0.767
Isopropylbenzene	14.50	10.59	1.369	ok	1.369	1.309-1.429
Isopropyl Alcohol	2.21	3.34	0.662	ok	0.662	0.602-0.722
p-Isopropyltoluene	17.25	10.59	1.629	ok	1.628	1.568-1.688
Methylene chloride	2.42	3.34	0.725	ok	0.725	0.665-0.785
Methyl ethyl ketone	3.05	3.34	0.913	ok	0.911	0.851-0.971
Methyl Isobutyl Ketone	6.48	4.74	1.367	ok	1.367	1.307-1.427
Methyl Tert Butyl Ether	2.89	3.34	0.865	ok	0.865	0.805-0.925
Methylmethacrylate	5.69	4.74	1.200	ok	1.201	1.141-1.261
Naphthalene	18.53	10.59	1.750	ok	1.750	1.690-1.810
Nonane	14.07	10.59	1.329	ok	1.330	1.270-1.390
Octane	9.56	4.74	2.017	ok	2.018	1.958-2.078
Pentane	2.30	3.34	0.689	ok	0.689	0.629-0.749
n-Propylbenzene	15.86	10.59	1.498	ok	1.498	1.438-1.558

Initial Calibration Retention Time/Internal Standard Area Summary

Job Number: JD60001
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample Number	Lab File ID	Injected	By	Level	Inst ID	Method	
V6W1158-IC1158	6W27500.D	12/05/22 21:51	TCH	0.04	GCMS6W	TO-15	
V6W1158-IC1158	6W27501.D	12/05/22 22:24	TCH	0.1	GCMS6W	TO-15	
V6W1158-IC1158	6W27502.D	12/05/22 22:57	TCH	0.2	GCMS6W	TO-15	Reporting this level
V6W1158-IC1158	6W27503.D	12/05/22 23:30	TCH	0.5	GCMS6W	TO-15	
V6W1158-IC1158	6W27505.D	12/06/22 00:35	TCH	5	GCMS6W	TO-15	
V6W1158-ICC1158	6W27506.D	12/06/22 01:07	TCH	10	GCMS6W	TO-15	
V6W1158-IC1158	6W27507.D	12/06/22 01:39	TCH	20	GCMS6W	TO-15	
V6W1158-IC1158	6W27508.D	12/06/22 02:12	TCH	40	GCMS6W	TO-15	
V6W1158-IC1158	6W27509.D	12/06/22 02:47	TCH	50	GCMS6W	TO-15	

Target Compound	RT (min.)	Istd RT (min.)	Rel RT		Mean Rel RT	Rel RT Range (+ /- .06)
Propylene	1.72	3.34	0.515	ok	0.515	0.455-0.575
Styrene	12.74	10.59	1.203	ok	1.204	1.144-1.264
1,1,1-Trichloroethane	4.05	3.34	1.213	ok	1.213	1.153-1.273
1,1,1,2-Tetrachloroethane	10.68	10.59	1.008	ok	1.009	0.949-1.069
1,1,2,2-Tetrachloroethane	12.98	10.59	1.226	ok	1.226	1.166-1.286
1,1,2-Trichloroethane	7.23	4.74	1.525	ok	1.528	1.468-1.588
1,2,4-Trichlorobenzene	18.49	10.59	1.746	ok	1.746	1.686-1.806
1,2,3-Trichloropropane	13.27	10.59	1.253	ok	1.253	1.193-1.313
1,2,3-Trimethylbenzene	17.18	10.59	1.622	ok	1.622	1.562-1.682
1,2,4-Trimethylbenzene	16.80	10.59	1.586	ok	1.587	1.527-1.647
1,3,5-Trimethylbenzene	16.34	10.59	1.543	ok	1.544	1.484-1.604
2,2,4-Trimethylpentane	5.44	4.74	1.148	ok	1.149	1.089-1.209
Tertiary Butyl Alcohol	2.41	3.34	0.722	ok	0.719	0.659-0.779
Tetrachloroethylene	9.41	4.74	1.985	ok	1.986	1.926-2.046
Tetrahydrofuran	3.67	3.34	1.099	ok	1.095	1.035-1.155
Toluene	7.62	4.74	1.608	ok	1.607	1.547-1.667
Trichloroethylene	5.35	4.74	1.129	ok	1.128	1.068-1.188
Trichlorofluoromethane	2.19	3.34	0.656	ok	0.656	0.596-0.716
Vinyl chloride	1.83	3.34	0.548	ok	0.548	0.488-0.608
Vinyl Acetate	2.93	3.34	0.877	ok	0.878	0.818-0.938
m,p-Xylene	12.01	10.59	1.134	ok	1.134	1.074-1.194
o-Xylene	12.96	10.59	1.224	ok	1.224	1.164-1.284

Internal Standard	RT (min.)		Mean RT(min.)	RT Range (+ /- 0.33)	Area		Mean Area	Area Range (+ /- 40 %)
Bromochloromethane	3.34	ok	3.34	3.01-3.67	53117	ok	56264	33758-78770
1,4-Difluorobenzene	4.74	ok	4.74	4.41-5.07	261174	ok	274058	164435-383681
Chlorobenzene-D5	10.59	ok	10.59	10.26-10.92	227851	ok	244142	146485-341799

Initial Calibration Retention Time/Internal Standard Area Summary

Job Number: JD60001
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample Number	Lab File ID	Injected	By	Level	Inst ID	Method	
V6W1158-IC1158	6W27500.D	12/05/22 21:51	TCH	0.04	GCMS6W	TO-15	
V6W1158-IC1158	6W27501.D	12/05/22 22:24	TCH	0.1	GCMS6W	TO-15	
V6W1158-IC1158	6W27502.D	12/05/22 22:57	TCH	0.2	GCMS6W	TO-15	
V6W1158-IC1158	6W27503.D	12/05/22 23:30	TCH	0.5	GCMS6W	TO-15	Reporting this level
V6W1158-IC1158	6W27505.D	12/06/22 00:35	TCH	5	GCMS6W	TO-15	
V6W1158-ICC1158	6W27506.D	12/06/22 01:07	TCH	10	GCMS6W	TO-15	
V6W1158-IC1158	6W27507.D	12/06/22 01:39	TCH	20	GCMS6W	TO-15	
V6W1158-IC1158	6W27508.D	12/06/22 02:12	TCH	40	GCMS6W	TO-15	
V6W1158-IC1158	6W27509.D	12/06/22 02:47	TCH	50	GCMS6W	TO-15	

Target Compound	RT (min.)	Istd RT (min.)	Rel RT		Mean Rel RT	Rel RT Range (+ /- .06)
Acetone (2-Propanone)	2.14	3.34	0.641	ok	0.641	0.581-0.701
Acrolein	2.10	3.34	0.629	ok	0.629	0.569-0.689
Acrylonitrile	2.27	3.34	0.680	ok	0.680	0.620-0.740
Acetonitrile	2.07	3.34	0.620	ok	0.619	0.559-0.679
1,3-Butadiene	1.87	3.34	0.560	ok	0.560	0.500-0.620
Benzene	4.38	3.34	1.311	ok	1.312	1.252-1.372
Bromobenzene	14.37	10.59	1.357	ok	1.358	1.298-1.418
Bromodichloromethane	5.30	4.73	1.121	ok	1.119	1.059-1.179
Bromoform	11.83	10.59	1.117	ok	1.117	1.057-1.177
Bromomethane	1.94	3.34	0.581	ok	0.581	0.521-0.641
Bromoethene	2.07	3.34	0.620	ok	0.620	0.560-0.680
n-Butane	1.88	3.34	0.563	ok	0.563	0.503-0.623
Benzyl Chloride	16.88	10.59	1.594	ok	1.595	1.535-1.655
n-Butylbenzene	17.59	10.59	1.661	ok	1.661	1.601-1.721
sec-Butylbenzene	17.07	10.59	1.612	ok	1.612	1.552-1.672
tert-Butylbenzene	16.80	10.59	1.586	ok	1.586	1.526-1.646
Carbon disulfide	2.52	3.34	0.754	ok	0.754	0.694-0.814
Chlorobenzene	10.66	10.59	1.007	ok	1.007	0.947-1.067
Chlorodifluoromethane	1.71	3.34	0.512	ok	0.512	0.452-0.572
Chloroethane	1.98	3.34	0.593	ok	0.593	0.533-0.653
Chlorotrifluoroethene	1.72	3.34	0.515	ok	0.515	0.455-0.575
Chloroform	3.42	3.34	1.024	ok	1.024	0.964-1.084
Chloromethane	1.78	3.34	0.533	ok	0.531	0.471-0.591
3-Chloropropene	2.46	3.34	0.737	ok	0.737	0.677-0.797
2-Chlorotoluene	15.52	10.59	1.466	ok	1.466	1.406-1.526
Carbon tetrachloride	4.50	3.34	1.347	ok	1.348	1.288-1.408
Cyclohexane	4.60	4.73	0.973	ok	0.971	0.911-1.031
1,1-Dichloroethane	2.85	3.34	0.853	ok	0.856	0.796-0.916
1,1-Dichloroethylene	2.39	3.34	0.716	ok	0.715	0.655-0.775
1,2-Dibromoethane (EDB)	8.54	4.73	1.805	ok	1.802	1.742-1.862
1,2-Dichloroethane	3.87	3.34	1.159	ok	1.159	1.099-1.219
1,2-Dichloropropane	5.11	4.73	1.080	ok	1.077	1.017-1.137
1,3-Dichloropropane	7.68	4.73	1.624	ok	1.622	1.562-1.682
1,4-Dioxane	5.40	4.73	1.142	ok	1.137	1.077-1.197
Dichlorodifluoromethane	1.73	3.34	0.518	ok	0.518	0.458-0.578
Dichlorofluoromethane	2.00	3.34	0.599	ok	0.599	0.539-0.659
Dibromochloromethane	8.18	4.73	1.729	ok	1.728	1.668-1.788
Dibromomethane	5.06	4.73	1.070	ok	1.068	1.008-1.128
trans-1,2-Dichloroethylene	2.77	3.34	0.829	ok	0.829	0.769-0.889

Initial Calibration Retention Time/Internal Standard Area Summary

Job Number: JD60001
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample Number	Lab File ID	Injected	By	Level	Inst ID	Method	
V6W1158-IC1158	6W27500.D	12/05/22 21:51	TCH	0.04	GCMS6W	TO-15	
V6W1158-IC1158	6W27501.D	12/05/22 22:24	TCH	0.1	GCMS6W	TO-15	
V6W1158-IC1158	6W27502.D	12/05/22 22:57	TCH	0.2	GCMS6W	TO-15	
V6W1158-IC1158	6W27503.D	12/05/22 23:30	TCH	0.5	GCMS6W	TO-15	Reporting this level
V6W1158-IC1158	6W27505.D	12/06/22 00:35	TCH	5	GCMS6W	TO-15	
V6W1158-ICC1158	6W27506.D	12/06/22 01:07	TCH	10	GCMS6W	TO-15	
V6W1158-IC1158	6W27507.D	12/06/22 01:39	TCH	20	GCMS6W	TO-15	
V6W1158-IC1158	6W27508.D	12/06/22 02:12	TCH	40	GCMS6W	TO-15	
V6W1158-IC1158	6W27509.D	12/06/22 02:47	TCH	50	GCMS6W	TO-15	

Target Compound	RT (min.)	Istd RT (min.)	Rel RT		Mean Rel RT	Rel RT Range (+ /- .06)
cis-1,2-Dichloroethylene	3.26	3.34	0.976	ok	0.976	0.916-1.036
cis-1,3-Dichloropropene	6.35	4.73	1.342	ok	1.340	1.280-1.400
m-Dichlorobenzene	16.86	10.59	1.592	ok	1.592	1.532-1.652
o-Dichlorobenzene	17.23	10.59	1.627	ok	1.627	1.567-1.687
p-Dichlorobenzene	16.95	10.59	1.601	ok	1.601	1.541-1.661
trans-1,3-Dichloropropene	7.06	4.73	1.493	ok	1.492	1.432-1.552
Di-Isopropyl ether	3.41	3.34	1.021	ok	1.020	0.960-1.080
2,3-Dimethylpentane	4.87	4.73	1.030	ok	1.029	0.969-1.089
2,4-Dimethylpentane	3.96	3.34	1.186	ok	1.185	1.125-1.245
Ethanol	2.01	3.34	0.602	ok	0.602	0.542-0.662
Ethylbenzene	11.57	10.59	1.093	ok	1.093	1.033-1.153
Ethyl Acetate	3.42	3.34	1.024	ok	1.022	0.962-1.082
Ethyl Acrylate	5.24	4.73	1.108	ok	1.106	1.046-1.166
4-Ethyltoluene	16.20	10.59	1.530	ok	1.530	1.470-1.590
Freon 113	2.52	3.34	0.754	ok	0.754	0.694-0.814
Freon 114	1.80	3.34	0.539	ok	0.539	0.479-0.599
Freon 123	2.12	3.34	0.635	ok	0.635	0.575-0.695
Freon 123A	2.13	3.34	0.638	ok	0.638	0.578-0.698
Freon 142B	1.77	3.34	0.530	ok	0.530	0.470-0.590
Freon 152A	1.69	3.34	0.506	ok	0.508	0.448-0.568
Heptane	5.78	4.73	1.222	ok	1.220	1.160-1.280
Hexachlorobutadiene	18.78	10.59	1.773	ok	1.774	1.714-1.834
Hexachloroethane	17.76	10.59	1.677	ok	1.677	1.617-1.737
Hexane	3.40	3.34	1.018	ok	1.016	0.956-1.076
2-Hexanone	8.23	4.73	1.740	ok	1.737	1.677-1.797
Iodomethane	2.36	3.34	0.707	ok	0.707	0.647-0.767
Isopropylbenzene	14.50	10.59	1.369	ok	1.369	1.309-1.429
Isopropyl Alcohol	2.21	3.34	0.662	ok	0.662	0.602-0.722
p-Isopropyltoluene	17.24	10.59	1.628	ok	1.628	1.568-1.688
Methylene chloride	2.42	3.34	0.725	ok	0.725	0.665-0.785
Methyl ethyl ketone	3.05	3.34	0.913	ok	0.911	0.851-0.971
Methyl Isobutyl Ketone	6.48	4.73	1.370	ok	1.367	1.307-1.427
Methyl Tert Butyl Ether	2.89	3.34	0.865	ok	0.865	0.805-0.925
Methylmethacrylate	5.69	4.73	1.203	ok	1.201	1.141-1.261
Naphthalene	18.53	10.59	1.750	ok	1.750	1.690-1.810
Nonane	14.08	10.59	1.330	ok	1.330	1.270-1.390
Octane	9.56	4.73	2.021	ok	2.018	1.958-2.078
Pentane	2.30	3.34	0.689	ok	0.689	0.629-0.749
n-Propylbenzene	15.86	10.59	1.498	ok	1.498	1.438-1.558

Initial Calibration Retention Time/Internal Standard Area Summary

Job Number: JD60001
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample Number	Lab File ID	Injected	By	Level	Inst ID	Method	
V6W1158-IC1158	6W27500.D	12/05/22 21:51	TCH	0.04	GCMS6W	TO-15	
V6W1158-IC1158	6W27501.D	12/05/22 22:24	TCH	0.1	GCMS6W	TO-15	
V6W1158-IC1158	6W27502.D	12/05/22 22:57	TCH	0.2	GCMS6W	TO-15	
V6W1158-IC1158	6W27503.D	12/05/22 23:30	TCH	0.5	GCMS6W	TO-15	Reporting this level
V6W1158-IC1158	6W27505.D	12/06/22 00:35	TCH	5	GCMS6W	TO-15	
V6W1158-ICC1158	6W27506.D	12/06/22 01:07	TCH	10	GCMS6W	TO-15	
V6W1158-IC1158	6W27507.D	12/06/22 01:39	TCH	20	GCMS6W	TO-15	
V6W1158-IC1158	6W27508.D	12/06/22 02:12	TCH	40	GCMS6W	TO-15	
V6W1158-IC1158	6W27509.D	12/06/22 02:47	TCH	50	GCMS6W	TO-15	

Target Compound	RT (min.)	Istd RT (min.)	Rel RT		Mean Rel RT	Rel RT Range (+ /- .06)
Propylene	1.72	3.34	0.515	ok	0.515	0.455-0.575
Styrene	12.74	10.59	1.203	ok	1.204	1.144-1.264
1,1,1-Trichloroethane	4.05	3.34	1.213	ok	1.213	1.153-1.273
1,1,1,2-Tetrachloroethane	10.68	10.59	1.008	ok	1.009	0.949-1.069
1,1,2,2-Tetrachloroethane	12.98	10.59	1.226	ok	1.226	1.166-1.286
1,1,2-Trichloroethane	7.24	4.73	1.531	ok	1.528	1.468-1.588
1,2,4-Trichlorobenzene	18.48	10.59	1.745	ok	1.746	1.686-1.806
1,2,3-Trichloropropane	13.27	10.59	1.253	ok	1.253	1.193-1.313
1,2,3-Trimethylbenzene	17.18	10.59	1.622	ok	1.622	1.562-1.682
1,2,4-Trimethylbenzene	16.80	10.59	1.586	ok	1.587	1.527-1.647
1,3,5-Trimethylbenzene	16.35	10.59	1.544	ok	1.544	1.484-1.604
2,2,4-Trimethylpentane	5.45	4.73	1.152	ok	1.149	1.089-1.209
Tertiary Butyl Alcohol	2.40	3.34	0.719	ok	0.719	0.659-0.779
Tetrachloroethylene	9.41	4.73	1.989	ok	1.986	1.926-2.046
Tetrahydrofuran	3.67	3.34	1.099	ok	1.095	1.035-1.155
Toluene	7.61	4.73	1.609	ok	1.607	1.547-1.667
Trichloroethylene	5.34	4.73	1.129	ok	1.128	1.068-1.188
Trichlorofluoromethane	2.19	3.34	0.656	ok	0.656	0.596-0.716
Vinyl chloride	1.83	3.34	0.548	ok	0.548	0.488-0.608
Vinyl Acetate	2.94	3.34	0.880	ok	0.878	0.818-0.938
m,p-Xylene	12.01	10.59	1.134	ok	1.134	1.074-1.194
o-Xylene	12.95	10.59	1.223	ok	1.224	1.164-1.284

Internal Standard	RT (min.)		Mean RT(min.)	RT Range (+ /- 0.33)	Area		Mean Area	Area Range (+ /- 40 %)
Bromochloromethane	3.34	ok	3.34	3.01-3.67	52653	ok	56264	33758-78770
1,4-Difluorobenzene	4.73	ok	4.74	4.41-5.07	259282	ok	274058	164435-383681
Chlorobenzene-D5	10.59	ok	10.59	10.26-10.92	225432	ok	244142	146485-341799

Initial Calibration Retention Time/Internal Standard Area Summary

Job Number: JD60001
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample Number	Lab File ID	Injected	By	Level	Inst ID	Method	
V6W1158-IC1158	6W27500.D	12/05/22 21:51	TCH	0.04	GCMS6W	TO-15	
V6W1158-IC1158	6W27501.D	12/05/22 22:24	TCH	0.1	GCMS6W	TO-15	
V6W1158-IC1158	6W27502.D	12/05/22 22:57	TCH	0.2	GCMS6W	TO-15	
V6W1158-IC1158	6W27503.D	12/05/22 23:30	TCH	0.5	GCMS6W	TO-15	
V6W1158-IC1158	6W27505.D	12/06/22 00:35	TCH	5	GCMS6W	TO-15	Reporting this level
V6W1158-ICC1158	6W27506.D	12/06/22 01:07	TCH	10	GCMS6W	TO-15	
V6W1158-IC1158	6W27507.D	12/06/22 01:39	TCH	20	GCMS6W	TO-15	
V6W1158-IC1158	6W27508.D	12/06/22 02:12	TCH	40	GCMS6W	TO-15	
V6W1158-IC1158	6W27509.D	12/06/22 02:47	TCH	50	GCMS6W	TO-15	

Target Compound	RT (min.)	Istd RT (min.)	Rel RT		Mean Rel RT	Rel RT Range (+ /- .06)
Acetone (2-Propanone)	2.14	3.34	0.641	ok	0.641	0.581-0.701
Acrolein	2.10	3.34	0.629	ok	0.629	0.569-0.689
Acrylonitrile	2.27	3.34	0.680	ok	0.680	0.620-0.740
Acetonitrile	2.07	3.34	0.620	ok	0.619	0.559-0.679
1,3-Butadiene	1.87	3.34	0.560	ok	0.560	0.500-0.620
Benzene	4.38	3.34	1.311	ok	1.312	1.252-1.372
Bromobenzene	14.37	10.59	1.357	ok	1.358	1.298-1.418
Bromodichloromethane	5.30	4.74	1.118	ok	1.119	1.059-1.179
Bromoform	11.83	10.59	1.117	ok	1.117	1.057-1.177
Bromomethane	1.94	3.34	0.581	ok	0.581	0.521-0.641
Bromoethene	2.07	3.34	0.620	ok	0.620	0.560-0.680
n-Butane	1.88	3.34	0.563	ok	0.563	0.503-0.623
Benzyl Chloride	16.89	10.59	1.595	ok	1.595	1.535-1.655
n-Butylbenzene	17.59	10.59	1.661	ok	1.661	1.601-1.721
sec-Butylbenzene	17.07	10.59	1.612	ok	1.612	1.552-1.672
tert-Butylbenzene	16.80	10.59	1.586	ok	1.586	1.526-1.646
Carbon disulfide	2.52	3.34	0.754	ok	0.754	0.694-0.814
Chlorobenzene	10.67	10.59	1.008	ok	1.007	0.947-1.067
Chlorodifluoromethane	1.71	3.34	0.512	ok	0.512	0.452-0.572
Chloroethane	1.98	3.34	0.593	ok	0.593	0.533-0.653
Chlorotrifluoroethene	1.72	3.34	0.515	ok	0.515	0.455-0.575
Chloroform	3.42	3.34	1.024	ok	1.024	0.964-1.084
Chloromethane	1.78	3.34	0.533	ok	0.531	0.471-0.591
3-Chloropropene	2.46	3.34	0.737	ok	0.737	0.677-0.797
2-Chlorotoluene	15.53	10.59	1.466	ok	1.466	1.406-1.526
Carbon tetrachloride	4.50	3.34	1.347	ok	1.348	1.288-1.408
Cyclohexane	4.60	4.74	0.970	ok	0.971	0.911-1.031
1,1-Dichloroethane	2.86	3.34	0.856	ok	0.856	0.796-0.916
1,1-Dichloroethylene	2.39	3.34	0.716	ok	0.715	0.655-0.775
1,2-Dibromoethane (EDB)	8.54	4.74	1.802	ok	1.802	1.742-1.862
1,2-Dichloroethane	3.87	3.34	1.159	ok	1.159	1.099-1.219
1,2-Dichloropropane	5.10	4.74	1.076	ok	1.077	1.017-1.137
1,3-Dichloropropane	7.68	4.74	1.620	ok	1.622	1.562-1.682
1,4-Dioxane	5.38	4.74	1.135	ok	1.137	1.077-1.197
Dichlorodifluoromethane	1.73	3.34	0.518	ok	0.518	0.458-0.578
Dichlorofluoromethane	2.00	3.34	0.599	ok	0.599	0.539-0.659
Dibromochloromethane	8.19	4.74	1.728	ok	1.728	1.668-1.788
Dibromomethane	5.06	4.74	1.068	ok	1.068	1.008-1.128
trans-1,2-Dichloroethylene	2.77	3.34	0.829	ok	0.829	0.769-0.889

Initial Calibration Retention Time/Internal Standard Area Summary

Job Number: JD60001
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample Number	Lab File ID	Injected	By	Level	Inst ID	Method	
V6W1158-IC1158	6W27500.D	12/05/22 21:51	TCH	0.04	GCMS6W	TO-15	
V6W1158-IC1158	6W27501.D	12/05/22 22:24	TCH	0.1	GCMS6W	TO-15	
V6W1158-IC1158	6W27502.D	12/05/22 22:57	TCH	0.2	GCMS6W	TO-15	
V6W1158-IC1158	6W27503.D	12/05/22 23:30	TCH	0.5	GCMS6W	TO-15	
V6W1158-IC1158	6W27505.D	12/06/22 00:35	TCH	5	GCMS6W	TO-15	Reporting this level
V6W1158-ICC1158	6W27506.D	12/06/22 01:07	TCH	10	GCMS6W	TO-15	
V6W1158-IC1158	6W27507.D	12/06/22 01:39	TCH	20	GCMS6W	TO-15	
V6W1158-IC1158	6W27508.D	12/06/22 02:12	TCH	40	GCMS6W	TO-15	
V6W1158-IC1158	6W27509.D	12/06/22 02:47	TCH	50	GCMS6W	TO-15	

Target Compound	RT (min.)	Istd RT (min.)	Rel RT		Mean Rel RT	Rel RT Range (+ /- .06)
cis-1,2-Dichloroethylene	3.26	3.34	0.976	ok	0.976	0.916-1.036
cis-1,3-Dichloropropene	6.35	4.74	1.340	ok	1.340	1.280-1.400
m-Dichlorobenzene	16.86	10.59	1.592	ok	1.592	1.532-1.652
o-Dichlorobenzene	17.23	10.59	1.627	ok	1.627	1.567-1.687
p-Dichlorobenzene	16.95	10.59	1.601	ok	1.601	1.541-1.661
trans-1,3-Dichloropropene	7.07	4.74	1.492	ok	1.492	1.432-1.552
Di-Isopropyl ether	3.41	3.34	1.021	ok	1.020	0.960-1.080
2,3-Dimethylpentane	4.88	4.74	1.030	ok	1.029	0.969-1.089
2,4-Dimethylpentane	3.96	3.34	1.186	ok	1.185	1.125-1.245
Ethanol	2.01	3.34	0.602	ok	0.602	0.542-0.662
Ethylbenzene	11.57	10.59	1.093	ok	1.093	1.033-1.153
Ethyl Acetate	3.41	3.34	1.021	ok	1.022	0.962-1.082
Ethyl Acrylate	5.24	4.74	1.105	ok	1.106	1.046-1.166
4-Ethyltoluene	16.20	10.59	1.530	ok	1.530	1.470-1.590
Freon 113	2.52	3.34	0.754	ok	0.754	0.694-0.814
Freon 114	1.80	3.34	0.539	ok	0.539	0.479-0.599
Freon 123	2.12	3.34	0.635	ok	0.635	0.575-0.695
Freon 123A	2.13	3.34	0.638	ok	0.638	0.578-0.698
Freon 142B	1.77	3.34	0.530	ok	0.530	0.470-0.590
Freon 152A	1.70	3.34	0.509	ok	0.508	0.448-0.568
Heptane	5.78	4.74	1.219	ok	1.220	1.160-1.280
Hexachlorobutadiene	18.78	10.59	1.773	ok	1.774	1.714-1.834
Hexachloroethane	17.77	10.59	1.678	ok	1.677	1.617-1.737
Hexane	3.39	3.34	1.015	ok	1.016	0.956-1.076
2-Hexanone	8.23	4.74	1.736	ok	1.737	1.677-1.797
Iodomethane	2.36	3.34	0.707	ok	0.707	0.647-0.767
Isopropylbenzene	14.50	10.59	1.369	ok	1.369	1.309-1.429
Isopropyl Alcohol	2.21	3.34	0.662	ok	0.662	0.602-0.722
p-Isopropyltoluene	17.25	10.59	1.629	ok	1.628	1.568-1.688
Methylene chloride	2.42	3.34	0.725	ok	0.725	0.665-0.785
Methyl ethyl ketone	3.04	3.34	0.910	ok	0.911	0.851-0.971
Methyl Isobutyl Ketone	6.47	4.74	1.365	ok	1.367	1.307-1.427
Methyl Tert Butyl Ether	2.89	3.34	0.865	ok	0.865	0.805-0.925
Methylmethacrylate	5.69	4.74	1.200	ok	1.201	1.141-1.261
Naphthalene	18.53	10.59	1.750	ok	1.750	1.690-1.810
Nonane	14.08	10.59	1.330	ok	1.330	1.270-1.390
Octane	9.56	4.74	2.017	ok	2.018	1.958-2.078
Pentane	2.30	3.34	0.689	ok	0.689	0.629-0.749
n-Propylbenzene	15.86	10.59	1.498	ok	1.498	1.438-1.558

Initial Calibration Retention Time/Internal Standard Area Summary

Job Number: JD60001
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample Number	Lab File ID	Injected	By	Level	Inst ID	Method	
V6W1158-IC1158	6W27500.D	12/05/22 21:51	TCH	0.04	GCMS6W	TO-15	
V6W1158-IC1158	6W27501.D	12/05/22 22:24	TCH	0.1	GCMS6W	TO-15	
V6W1158-IC1158	6W27502.D	12/05/22 22:57	TCH	0.2	GCMS6W	TO-15	
V6W1158-IC1158	6W27503.D	12/05/22 23:30	TCH	0.5	GCMS6W	TO-15	
V6W1158-IC1158	6W27505.D	12/06/22 00:35	TCH	5	GCMS6W	TO-15	Reporting this level
V6W1158-ICC1158	6W27506.D	12/06/22 01:07	TCH	10	GCMS6W	TO-15	
V6W1158-IC1158	6W27507.D	12/06/22 01:39	TCH	20	GCMS6W	TO-15	
V6W1158-IC1158	6W27508.D	12/06/22 02:12	TCH	40	GCMS6W	TO-15	
V6W1158-IC1158	6W27509.D	12/06/22 02:47	TCH	50	GCMS6W	TO-15	

Target Compound	RT (min.)	Istd RT (min.)	Rel RT		Mean Rel RT	Rel RT Range (+ /- .06)
Propylene	1.72	3.34	0.515	ok	0.515	0.455-0.575
Styrene	12.75	10.59	1.204	ok	1.204	1.144-1.264
1,1,1-Trichloroethane	4.05	3.34	1.213	ok	1.213	1.153-1.273
1,1,1,2-Tetrachloroethane	10.68	10.59	1.008	ok	1.009	0.949-1.069
1,1,2,2-Tetrachloroethane	12.99	10.59	1.227	ok	1.226	1.166-1.286
1,1,2-Trichloroethane	7.24	4.74	1.527	ok	1.528	1.468-1.588
1,2,4-Trichlorobenzene	18.49	10.59	1.746	ok	1.746	1.686-1.806
1,2,3-Trichloropropane	13.27	10.59	1.253	ok	1.253	1.193-1.313
1,2,3-Trimethylbenzene	17.18	10.59	1.622	ok	1.622	1.562-1.682
1,2,4-Trimethylbenzene	16.80	10.59	1.586	ok	1.587	1.527-1.647
1,3,5-Trimethylbenzene	16.35	10.59	1.544	ok	1.544	1.484-1.604
2,2,4-Trimethylpentane	5.44	4.74	1.148	ok	1.149	1.089-1.209
Tertiary Butyl Alcohol	2.40	3.34	0.719	ok	0.719	0.659-0.779
Tetrachloroethylene	9.41	4.74	1.985	ok	1.986	1.926-2.046
Tetrahydrofuran	3.66	3.34	1.096	ok	1.095	1.035-1.155
Toluene	7.62	4.74	1.608	ok	1.607	1.547-1.667
Trichloroethylene	5.35	4.74	1.129	ok	1.128	1.068-1.188
Trichlorofluoromethane	2.19	3.34	0.656	ok	0.656	0.596-0.716
Vinyl chloride	1.83	3.34	0.548	ok	0.548	0.488-0.608
Vinyl Acetate	2.93	3.34	0.877	ok	0.878	0.818-0.938
m,p-Xylene	12.01	10.59	1.134	ok	1.134	1.074-1.194
o-Xylene	12.96	10.59	1.224	ok	1.224	1.164-1.284

Internal Standard	RT (min.)		Mean RT(min.)	RT Range (+ /- 0.33)	Area		Mean Area	Area Range (+ /- 40 %)
Bromochloromethane	3.34	ok	3.34	3.01-3.67	54076	ok	56264	33758-78770
1,4-Difluorobenzene	4.74	ok	4.74	4.41-5.07	268566	ok	274058	164435-383681
Chlorobenzene-D5	10.59	ok	10.59	10.26-10.92	238643	ok	244142	146485-341799

Initial Calibration Retention Time/Internal Standard Area Summary

Job Number: JD60001
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample Number	Lab File ID	Injected	By	Level	Inst ID	Method	
V6W1158-IC1158	6W27500.D	12/05/22 21:51	TCH	0.04	GCMS6W	TO-15	
V6W1158-IC1158	6W27501.D	12/05/22 22:24	TCH	0.1	GCMS6W	TO-15	
V6W1158-IC1158	6W27502.D	12/05/22 22:57	TCH	0.2	GCMS6W	TO-15	
V6W1158-IC1158	6W27503.D	12/05/22 23:30	TCH	0.5	GCMS6W	TO-15	
V6W1158-IC1158	6W27505.D	12/06/22 00:35	TCH	5	GCMS6W	TO-15	
V6W1158-ICC1158	6W27506.D	12/06/22 01:07	TCH	10	GCMS6W	TO-15	Reporting this level
V6W1158-IC1158	6W27507.D	12/06/22 01:39	TCH	20	GCMS6W	TO-15	
V6W1158-IC1158	6W27508.D	12/06/22 02:12	TCH	40	GCMS6W	TO-15	
V6W1158-IC1158	6W27509.D	12/06/22 02:47	TCH	50	GCMS6W	TO-15	

Target Compound	RT (min.)	Istd RT (min.)	Rel RT		Mean Rel RT	Rel RT Range (+ /- .06)
Acetone (2-Propanone)	2.14	3.34	0.641	ok	0.641	0.581-0.701
Acrolein	2.10	3.34	0.629	ok	0.629	0.569-0.689
Acrylonitrile	2.27	3.34	0.680	ok	0.680	0.620-0.740
Acetonitrile	2.07	3.34	0.620	ok	0.619	0.559-0.679
1,3-Butadiene	1.87	3.34	0.560	ok	0.560	0.500-0.620
Benzene	4.38	3.34	1.311	ok	1.312	1.252-1.372
Bromobenzene	14.38	10.59	1.358	ok	1.358	1.298-1.418
Bromodichloromethane	5.30	4.74	1.118	ok	1.119	1.059-1.179
Bromoform	11.83	10.59	1.117	ok	1.117	1.057-1.177
Bromomethane	1.94	3.34	0.581	ok	0.581	0.521-0.641
Bromoethene	2.07	3.34	0.620	ok	0.620	0.560-0.680
n-Butane	1.88	3.34	0.563	ok	0.563	0.503-0.623
Benzyl Chloride	16.89	10.59	1.595	ok	1.595	1.535-1.655
n-Butylbenzene	17.58	10.59	1.660	ok	1.661	1.601-1.721
sec-Butylbenzene	17.07	10.59	1.612	ok	1.612	1.552-1.672
tert-Butylbenzene	16.80	10.59	1.586	ok	1.586	1.526-1.646
Carbon disulfide	2.52	3.34	0.754	ok	0.754	0.694-0.814
Chlorobenzene	10.66	10.59	1.007	ok	1.007	0.947-1.067
Chlorodifluoromethane	1.71	3.34	0.512	ok	0.512	0.452-0.572
Chloroethane	1.98	3.34	0.593	ok	0.593	0.533-0.653
Chlorotrifluoroethene	1.72	3.34	0.515	ok	0.515	0.455-0.575
Chloroform	3.42	3.34	1.024	ok	1.024	0.964-1.084
Chloromethane	1.77	3.34	0.530	ok	0.531	0.471-0.591
3-Chloropropene	2.46	3.34	0.737	ok	0.737	0.677-0.797
2-Chlorotoluene	15.52	10.59	1.466	ok	1.466	1.406-1.526
Carbon tetrachloride	4.50	3.34	1.347	ok	1.348	1.288-1.408
Cyclohexane	4.60	4.74	0.970	ok	0.971	0.911-1.031
1,1-Dichloroethane	2.85	3.34	0.853	ok	0.856	0.796-0.916
1,1-Dichloroethylene	2.38	3.34	0.713	ok	0.715	0.655-0.775
1,2-Dibromoethane (EDB)	8.54	4.74	1.802	ok	1.802	1.742-1.862
1,2-Dichloroethane	3.87	3.34	1.159	ok	1.159	1.099-1.219
1,2-Dichloropropane	5.10	4.74	1.076	ok	1.077	1.017-1.137
1,3-Dichloropropane	7.68	4.74	1.620	ok	1.622	1.562-1.682
1,4-Dioxane	5.38	4.74	1.135	ok	1.137	1.077-1.197
Dichlorodifluoromethane	1.73	3.34	0.518	ok	0.518	0.458-0.578
Dichlorofluoromethane	2.00	3.34	0.599	ok	0.599	0.539-0.659
Dibromochloromethane	8.19	4.74	1.728	ok	1.728	1.668-1.788
Dibromomethane	5.06	4.74	1.068	ok	1.068	1.008-1.128
trans-1,2-Dichloroethylene	2.77	3.34	0.829	ok	0.829	0.769-0.889

Initial Calibration Retention Time/Internal Standard Area Summary

Job Number: JD60001
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample Number	Lab File ID	Injected	By	Level	Inst ID	Method	
V6W1158-IC1158	6W27500.D	12/05/22 21:51	TCH	0.04	GCMS6W	TO-15	
V6W1158-IC1158	6W27501.D	12/05/22 22:24	TCH	0.1	GCMS6W	TO-15	
V6W1158-IC1158	6W27502.D	12/05/22 22:57	TCH	0.2	GCMS6W	TO-15	
V6W1158-IC1158	6W27503.D	12/05/22 23:30	TCH	0.5	GCMS6W	TO-15	
V6W1158-IC1158	6W27505.D	12/06/22 00:35	TCH	5	GCMS6W	TO-15	
V6W1158-ICC1158	6W27506.D	12/06/22 01:07	TCH	10	GCMS6W	TO-15	Reporting this level
V6W1158-IC1158	6W27507.D	12/06/22 01:39	TCH	20	GCMS6W	TO-15	
V6W1158-IC1158	6W27508.D	12/06/22 02:12	TCH	40	GCMS6W	TO-15	
V6W1158-IC1158	6W27509.D	12/06/22 02:47	TCH	50	GCMS6W	TO-15	

Target Compound	RT (min.)	Istd RT (min.)	Rel RT		Mean Rel RT	Rel RT Range (+ /- .06)
cis-1,2-Dichloroethylene	3.25	3.34	0.973	ok	0.976	0.916-1.036
cis-1,3-Dichloropropene	6.35	4.74	1.340	ok	1.340	1.280-1.400
m-Dichlorobenzene	16.86	10.59	1.592	ok	1.592	1.532-1.652
o-Dichlorobenzene	17.23	10.59	1.627	ok	1.627	1.567-1.687
p-Dichlorobenzene	16.95	10.59	1.601	ok	1.601	1.541-1.661
trans-1,3-Dichloropropene	7.07	4.74	1.492	ok	1.492	1.432-1.552
Di-Isopropyl ether	3.40	3.34	1.018	ok	1.020	0.960-1.080
2,3-Dimethylpentane	4.88	4.74	1.030	ok	1.029	0.969-1.089
2,4-Dimethylpentane	3.96	3.34	1.186	ok	1.185	1.125-1.245
Ethanol	2.01	3.34	0.602	ok	0.602	0.542-0.662
Ethylbenzene	11.57	10.59	1.093	ok	1.093	1.033-1.153
Ethyl Acetate	3.41	3.34	1.021	ok	1.022	0.962-1.082
Ethyl Acrylate	5.24	4.74	1.105	ok	1.106	1.046-1.166
4-Ethyltoluene	16.20	10.59	1.530	ok	1.530	1.470-1.590
Freon 113	2.52	3.34	0.754	ok	0.754	0.694-0.814
Freon 114	1.80	3.34	0.539	ok	0.539	0.479-0.599
Freon 123	2.12	3.34	0.635	ok	0.635	0.575-0.695
Freon 123A	2.13	3.34	0.638	ok	0.638	0.578-0.698
Freon 142B	1.77	3.34	0.530	ok	0.530	0.470-0.590
Freon 152A	1.69	3.34	0.506	ok	0.508	0.448-0.568
Heptane	5.78	4.74	1.219	ok	1.220	1.160-1.280
Hexachlorobutadiene	18.78	10.59	1.773	ok	1.774	1.714-1.834
Hexachloroethane	17.76	10.59	1.677	ok	1.677	1.617-1.737
Hexane	3.39	3.34	1.015	ok	1.016	0.956-1.076
2-Hexanone	8.23	4.74	1.736	ok	1.737	1.677-1.797
Iodomethane	2.36	3.34	0.707	ok	0.707	0.647-0.767
Isopropylbenzene	14.50	10.59	1.369	ok	1.369	1.309-1.429
Isopropyl Alcohol	2.21	3.34	0.662	ok	0.662	0.602-0.722
p-Isopropyltoluene	17.24	10.59	1.628	ok	1.628	1.568-1.688
Methylene chloride	2.42	3.34	0.725	ok	0.725	0.665-0.785
Methyl ethyl ketone	3.04	3.34	0.910	ok	0.911	0.851-0.971
Methyl Isobutyl Ketone	6.47	4.74	1.365	ok	1.367	1.307-1.427
Methyl Tert Butyl Ether	2.89	3.34	0.865	ok	0.865	0.805-0.925
Methylmethacrylate	5.69	4.74	1.200	ok	1.201	1.141-1.261
Naphthalene	18.53	10.59	1.750	ok	1.750	1.690-1.810
Nonane	14.09	10.59	1.331	ok	1.330	1.270-1.390
Octane	9.56	4.74	2.017	ok	2.018	1.958-2.078
Pentane	2.30	3.34	0.689	ok	0.689	0.629-0.749
n-Propylbenzene	15.86	10.59	1.498	ok	1.498	1.438-1.558

Initial Calibration Retention Time/Internal Standard Area Summary

Job Number: JD60001
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample Number	Lab File ID	Injected	By	Level	Inst ID	Method	
V6W1158-IC1158	6W27500.D	12/05/22 21:51	TCH	0.04	GCMS6W	TO-15	
V6W1158-IC1158	6W27501.D	12/05/22 22:24	TCH	0.1	GCMS6W	TO-15	
V6W1158-IC1158	6W27502.D	12/05/22 22:57	TCH	0.2	GCMS6W	TO-15	
V6W1158-IC1158	6W27503.D	12/05/22 23:30	TCH	0.5	GCMS6W	TO-15	
V6W1158-IC1158	6W27505.D	12/06/22 00:35	TCH	5	GCMS6W	TO-15	
V6W1158-ICC1158	6W27506.D	12/06/22 01:07	TCH	10	GCMS6W	TO-15	Reporting this level
V6W1158-IC1158	6W27507.D	12/06/22 01:39	TCH	20	GCMS6W	TO-15	
V6W1158-IC1158	6W27508.D	12/06/22 02:12	TCH	40	GCMS6W	TO-15	
V6W1158-IC1158	6W27509.D	12/06/22 02:47	TCH	50	GCMS6W	TO-15	

Target Compound	RT (min.)	Istd RT (min.)	Rel RT		Mean Rel RT	Rel RT Range (+ /- .06)
Propylene	1.72	3.34	0.515	ok	0.515	0.455-0.575
Styrene	12.75	10.59	1.204	ok	1.204	1.144-1.264
1,1,1-Trichloroethane	4.05	3.34	1.213	ok	1.213	1.153-1.273
1,1,1,2-Tetrachloroethane	10.68	10.59	1.008	ok	1.009	0.949-1.069
1,1,2,2-Tetrachloroethane	12.99	10.59	1.227	ok	1.226	1.166-1.286
1,1,2-Trichloroethane	7.24	4.74	1.527	ok	1.528	1.468-1.588
1,2,4-Trichlorobenzene	18.48	10.59	1.745	ok	1.746	1.686-1.806
1,2,3-Trichloropropane	13.27	10.59	1.253	ok	1.253	1.193-1.313
1,2,3-Trimethylbenzene	17.18	10.59	1.622	ok	1.622	1.562-1.682
1,2,4-Trimethylbenzene	16.80	10.59	1.586	ok	1.587	1.527-1.647
1,3,5-Trimethylbenzene	16.35	10.59	1.544	ok	1.544	1.484-1.604
2,2,4-Trimethylpentane	5.44	4.74	1.148	ok	1.149	1.089-1.209
Tertiary Butyl Alcohol	2.40	3.34	0.719	ok	0.719	0.659-0.779
Tetrachloroethylene	9.41	4.74	1.985	ok	1.986	1.926-2.046
Tetrahydrofuran	3.65	3.34	1.093	ok	1.095	1.035-1.155
Toluene	7.62	4.74	1.608	ok	1.607	1.547-1.667
Trichloroethylene	5.35	4.74	1.129	ok	1.128	1.068-1.188
Trichlorofluoromethane	2.19	3.34	0.656	ok	0.656	0.596-0.716
Vinyl chloride	1.83	3.34	0.548	ok	0.548	0.488-0.608
Vinyl Acetate	2.93	3.34	0.877	ok	0.878	0.818-0.938
m,p-Xylene	12.01	10.59	1.134	ok	1.134	1.074-1.194
o-Xylene	12.96	10.59	1.224	ok	1.224	1.164-1.284

Internal Standard	RT (min.)		Mean RT(min.)	RT Range (+ /- 0.33)	Area		Mean Area	Area Range (+ /- 40 %)
Bromochloromethane	3.34	ok	3.34	3.01-3.67	56618	ok	56264	33758-78770
1,4-Difluorobenzene	4.74	ok	4.74	4.41-5.07	275198	ok	274058	164435-383681
Chlorobenzene-D5	10.59	ok	10.59	10.26-10.92	247897	ok	244142	146485-341799

Initial Calibration Retention Time/Internal Standard Area Summary

Job Number: JD60001
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample Number	Lab File ID	Injected	By	Level	Inst ID	Method	
V6W1158-IC1158	6W27500.D	12/05/22 21:51	TCH	0.04	GCMS6W	TO-15	
V6W1158-IC1158	6W27501.D	12/05/22 22:24	TCH	0.1	GCMS6W	TO-15	
V6W1158-IC1158	6W27502.D	12/05/22 22:57	TCH	0.2	GCMS6W	TO-15	
V6W1158-IC1158	6W27503.D	12/05/22 23:30	TCH	0.5	GCMS6W	TO-15	
V6W1158-IC1158	6W27505.D	12/06/22 00:35	TCH	5	GCMS6W	TO-15	
V6W1158-ICC1158	6W27506.D	12/06/22 01:07	TCH	10	GCMS6W	TO-15	
V6W1158-IC1158	6W27507.D	12/06/22 01:39	TCH	20	GCMS6W	TO-15	Reporting this level
V6W1158-IC1158	6W27508.D	12/06/22 02:12	TCH	40	GCMS6W	TO-15	
V6W1158-IC1158	6W27509.D	12/06/22 02:47	TCH	50	GCMS6W	TO-15	

Target Compound	RT (min.)	Istd RT (min.)	Rel RT		Mean Rel RT	Rel RT Range (+ /- .06)
Acetone (2-Propanone)	2.14	3.34	0.641	ok	0.641	0.581-0.701
Acrolein	2.10	3.34	0.629	ok	0.629	0.569-0.689
Acrylonitrile	2.27	3.34	0.680	ok	0.680	0.620-0.740
Acetonitrile	2.07	3.34	0.620	ok	0.619	0.559-0.679
1,3-Butadiene	1.87	3.34	0.560	ok	0.560	0.500-0.620
Benzene	4.38	3.34	1.311	ok	1.312	1.252-1.372
Bromobenzene	14.38	10.59	1.358	ok	1.358	1.298-1.418
Bromodichloromethane	5.30	4.74	1.118	ok	1.119	1.059-1.179
Bromoform	11.83	10.59	1.117	ok	1.117	1.057-1.177
Bromomethane	1.94	3.34	0.581	ok	0.581	0.521-0.641
Bromoethene	2.07	3.34	0.620	ok	0.620	0.560-0.680
n-Butane	1.88	3.34	0.563	ok	0.563	0.503-0.623
Benzyl Chloride	16.89	10.59	1.595	ok	1.595	1.535-1.655
n-Butylbenzene	17.59	10.59	1.661	ok	1.661	1.601-1.721
sec-Butylbenzene	17.07	10.59	1.612	ok	1.612	1.552-1.672
tert-Butylbenzene	16.80	10.59	1.586	ok	1.586	1.526-1.646
Carbon disulfide	2.52	3.34	0.754	ok	0.754	0.694-0.814
Chlorobenzene	10.67	10.59	1.008	ok	1.007	0.947-1.067
Chlorodifluoromethane	1.71	3.34	0.512	ok	0.512	0.452-0.572
Chloroethane	1.98	3.34	0.593	ok	0.593	0.533-0.653
Chlorotrifluoroethene	1.72	3.34	0.515	ok	0.515	0.455-0.575
Chloroform	3.42	3.34	1.024	ok	1.024	0.964-1.084
Chloromethane	1.77	3.34	0.530	ok	0.531	0.471-0.591
3-Chloropropene	2.46	3.34	0.737	ok	0.737	0.677-0.797
2-Chlorotoluene	15.53	10.59	1.466	ok	1.466	1.406-1.526
Carbon tetrachloride	4.50	3.34	1.347	ok	1.348	1.288-1.408
Cyclohexane	4.60	4.74	0.970	ok	0.971	0.911-1.031
1,1-Dichloroethane	2.86	3.34	0.856	ok	0.856	0.796-0.916
1,1-Dichloroethylene	2.39	3.34	0.716	ok	0.715	0.655-0.775
1,2-Dibromoethane (EDB)	8.54	4.74	1.802	ok	1.802	1.742-1.862
1,2-Dichloroethane	3.87	3.34	1.159	ok	1.159	1.099-1.219
1,2-Dichloropropane	5.10	4.74	1.076	ok	1.077	1.017-1.137
1,3-Dichloropropane	7.69	4.74	1.622	ok	1.622	1.562-1.682
1,4-Dioxane	5.38	4.74	1.135	ok	1.137	1.077-1.197
Dichlorodifluoromethane	1.73	3.34	0.518	ok	0.518	0.458-0.578
Dichlorofluoromethane	2.00	3.34	0.599	ok	0.599	0.539-0.659
Dibromochloromethane	8.19	4.74	1.728	ok	1.728	1.668-1.788
Dibromomethane	5.06	4.74	1.068	ok	1.068	1.008-1.128
trans-1,2-Dichloroethylene	2.77	3.34	0.829	ok	0.829	0.769-0.889

Initial Calibration Retention Time/Internal Standard Area Summary

Job Number: JD60001
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample Number	Lab File ID	Injected	By	Level	Inst ID	Method	
V6W1158-IC1158	6W27500.D	12/05/22 21:51	TCH	0.04	GCMS6W	TO-15	
V6W1158-IC1158	6W27501.D	12/05/22 22:24	TCH	0.1	GCMS6W	TO-15	
V6W1158-IC1158	6W27502.D	12/05/22 22:57	TCH	0.2	GCMS6W	TO-15	
V6W1158-IC1158	6W27503.D	12/05/22 23:30	TCH	0.5	GCMS6W	TO-15	
V6W1158-IC1158	6W27505.D	12/06/22 00:35	TCH	5	GCMS6W	TO-15	
V6W1158-ICC1158	6W27506.D	12/06/22 01:07	TCH	10	GCMS6W	TO-15	
V6W1158-IC1158	6W27507.D	12/06/22 01:39	TCH	20	GCMS6W	TO-15	Reporting this level
V6W1158-IC1158	6W27508.D	12/06/22 02:12	TCH	40	GCMS6W	TO-15	
V6W1158-IC1158	6W27509.D	12/06/22 02:47	TCH	50	GCMS6W	TO-15	

Target Compound	RT (min.)	Istd RT (min.)	Rel RT		Mean Rel RT	Rel RT Range (+ /- .06)
cis-1,2-Dichloroethylene	3.26	3.34	0.976	ok	0.976	0.916-1.036
cis-1,3-Dichloropropene	6.35	4.74	1.340	ok	1.340	1.280-1.400
m-Dichlorobenzene	16.86	10.59	1.592	ok	1.592	1.532-1.652
o-Dichlorobenzene	17.23	10.59	1.627	ok	1.627	1.567-1.687
p-Dichlorobenzene	16.95	10.59	1.601	ok	1.601	1.541-1.661
trans-1,3-Dichloropropene	7.07	4.74	1.492	ok	1.492	1.432-1.552
Di-Isopropyl ether	3.41	3.34	1.021	ok	1.020	0.960-1.080
2,3-Dimethylpentane	4.88	4.74	1.030	ok	1.029	0.969-1.089
2,4-Dimethylpentane	3.96	3.34	1.186	ok	1.185	1.125-1.245
Ethanol	2.01	3.34	0.602	ok	0.602	0.542-0.662
Ethylbenzene	11.57	10.59	1.093	ok	1.093	1.033-1.153
Ethyl Acetate	3.41	3.34	1.021	ok	1.022	0.962-1.082
Ethyl Acrylate	5.24	4.74	1.105	ok	1.106	1.046-1.166
4-Ethyltoluene	16.20	10.59	1.530	ok	1.530	1.470-1.590
Freon 113	2.52	3.34	0.754	ok	0.754	0.694-0.814
Freon 114	1.80	3.34	0.539	ok	0.539	0.479-0.599
Freon 123	2.12	3.34	0.635	ok	0.635	0.575-0.695
Freon 123A	2.13	3.34	0.638	ok	0.638	0.578-0.698
Freon 142B	1.77	3.34	0.530	ok	0.530	0.470-0.590
Freon 152A	1.69	3.34	0.506	ok	0.508	0.448-0.568
Heptane	5.78	4.74	1.219	ok	1.220	1.160-1.280
Hexachlorobutadiene	18.78	10.59	1.773	ok	1.774	1.714-1.834
Hexachloroethane	17.76	10.59	1.677	ok	1.677	1.617-1.737
Hexane	3.39	3.34	1.015	ok	1.016	0.956-1.076
2-Hexanone	8.23	4.74	1.736	ok	1.737	1.677-1.797
Iodomethane	2.36	3.34	0.707	ok	0.707	0.647-0.767
Isopropylbenzene	14.50	10.59	1.369	ok	1.369	1.309-1.429
Isopropyl Alcohol	2.21	3.34	0.662	ok	0.662	0.602-0.722
p-Isopropyltoluene	17.25	10.59	1.629	ok	1.628	1.568-1.688
Methylene chloride	2.42	3.34	0.725	ok	0.725	0.665-0.785
Methyl ethyl ketone	3.04	3.34	0.910	ok	0.911	0.851-0.971
Methyl Isobutyl Ketone	6.47	4.74	1.365	ok	1.367	1.307-1.427
Methyl Tert Butyl Ether	2.89	3.34	0.865	ok	0.865	0.805-0.925
Methylmethacrylate	5.69	4.74	1.200	ok	1.201	1.141-1.261
Naphthalene	18.53	10.59	1.750	ok	1.750	1.690-1.810
Nonane	14.09	10.59	1.331	ok	1.330	1.270-1.390
Octane	9.56	4.74	2.017	ok	2.018	1.958-2.078
Pentane	2.30	3.34	0.689	ok	0.689	0.629-0.749
n-Propylbenzene	15.86	10.59	1.498	ok	1.498	1.438-1.558

Initial Calibration Retention Time/Internal Standard Area Summary

Job Number: JD60001
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample Number	Lab File ID	Injected	By	Level	Inst ID	Method	
V6W1158-IC1158	6W27500.D	12/05/22 21:51	TCH	0.04	GCMS6W	TO-15	
V6W1158-IC1158	6W27501.D	12/05/22 22:24	TCH	0.1	GCMS6W	TO-15	
V6W1158-IC1158	6W27502.D	12/05/22 22:57	TCH	0.2	GCMS6W	TO-15	
V6W1158-IC1158	6W27503.D	12/05/22 23:30	TCH	0.5	GCMS6W	TO-15	
V6W1158-IC1158	6W27505.D	12/06/22 00:35	TCH	5	GCMS6W	TO-15	
V6W1158-ICC1158	6W27506.D	12/06/22 01:07	TCH	10	GCMS6W	TO-15	
V6W1158-IC1158	6W27507.D	12/06/22 01:39	TCH	20	GCMS6W	TO-15	Reporting this level
V6W1158-IC1158	6W27508.D	12/06/22 02:12	TCH	40	GCMS6W	TO-15	
V6W1158-IC1158	6W27509.D	12/06/22 02:47	TCH	50	GCMS6W	TO-15	

Target Compound	RT (min.)	Istd RT (min.)	Rel RT		Mean Rel RT	Rel RT Range (+ /- .06)
Propylene	1.72	3.34	0.515	ok	0.515	0.455-0.575
Styrene	12.75	10.59	1.204	ok	1.204	1.144-1.264
1,1,1-Trichloroethane	4.05	3.34	1.213	ok	1.213	1.153-1.273
1,1,1,2-Tetrachloroethane	10.68	10.59	1.008	ok	1.009	0.949-1.069
1,1,2,2-Tetrachloroethane	12.99	10.59	1.227	ok	1.226	1.166-1.286
1,1,2-Trichloroethane	7.24	4.74	1.527	ok	1.528	1.468-1.588
1,2,4-Trichlorobenzene	18.49	10.59	1.746	ok	1.746	1.686-1.806
1,2,3-Trichloropropane	13.28	10.59	1.254	ok	1.253	1.193-1.313
1,2,3-Trimethylbenzene	17.18	10.59	1.622	ok	1.622	1.562-1.682
1,2,4-Trimethylbenzene	16.81	10.59	1.587	ok	1.587	1.527-1.647
1,3,5-Trimethylbenzene	16.35	10.59	1.544	ok	1.544	1.484-1.604
2,2,4-Trimethylpentane	5.44	4.74	1.148	ok	1.149	1.089-1.209
Tertiary Butyl Alcohol	2.40	3.34	0.719	ok	0.719	0.659-0.779
Tetrachloroethylene	9.42	4.74	1.987	ok	1.986	1.926-2.046
Tetrahydrofuran	3.65	3.34	1.093	ok	1.095	1.035-1.155
Toluene	7.62	4.74	1.608	ok	1.607	1.547-1.667
Trichloroethylene	5.35	4.74	1.129	ok	1.128	1.068-1.188
Trichlorofluoromethane	2.19	3.34	0.656	ok	0.656	0.596-0.716
Vinyl chloride	1.83	3.34	0.548	ok	0.548	0.488-0.608
Vinyl Acetate	2.93	3.34	0.877	ok	0.878	0.818-0.938
m,p-Xylene	12.01	10.59	1.134	ok	1.134	1.074-1.194
o-Xylene	12.96	10.59	1.224	ok	1.224	1.164-1.284

Internal Standard	RT (min.)		Mean RT(min.)	RT Range (+ /- 0.33)	Area		Mean Area	Area Range (+ /- 40 %)
Bromochloromethane	3.34	ok	3.34	3.01-3.67	58430	ok	56264	33758-78770
1,4-Difluorobenzene	4.74	ok	4.74	4.41-5.07	278933	ok	274058	164435-383681
Chlorobenzene-D5	10.59	ok	10.59	10.26-10.92	254502	ok	244142	146485-341799

Initial Calibration Retention Time/Internal Standard Area Summary

Job Number: JD60001
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample Number	Lab File ID	Injected	By	Level	Inst ID	Method	
V6W1158-IC1158	6W27500.D	12/05/22 21:51	TCH	0.04	GCMS6W	TO-15	
V6W1158-IC1158	6W27501.D	12/05/22 22:24	TCH	0.1	GCMS6W	TO-15	
V6W1158-IC1158	6W27502.D	12/05/22 22:57	TCH	0.2	GCMS6W	TO-15	
V6W1158-IC1158	6W27503.D	12/05/22 23:30	TCH	0.5	GCMS6W	TO-15	
V6W1158-IC1158	6W27505.D	12/06/22 00:35	TCH	5	GCMS6W	TO-15	
V6W1158-ICC1158	6W27506.D	12/06/22 01:07	TCH	10	GCMS6W	TO-15	
V6W1158-IC1158	6W27507.D	12/06/22 01:39	TCH	20	GCMS6W	TO-15	
V6W1158-IC1158	6W27508.D	12/06/22 02:12	TCH	40	GCMS6W	TO-15	Reporting this level
V6W1158-IC1158	6W27509.D	12/06/22 02:47	TCH	50	GCMS6W	TO-15	

Target Compound	RT (min.)	Istd RT (min.)	Rel RT		Mean Rel RT	Rel RT Range (+ /- .06)
Acetone (2-Propanone)	2.14	3.34	0.641	ok	0.641	0.581-0.701
Acrolein	2.10	3.34	0.629	ok	0.629	0.569-0.689
Acrylonitrile	2.27	3.34	0.680	ok	0.680	0.620-0.740
Acetonitrile	2.07	3.34	0.620	ok	0.619	0.559-0.679
1,3-Butadiene	1.87	3.34	0.560	ok	0.560	0.500-0.620
Benzene	4.38	3.34	1.311	ok	1.312	1.252-1.372
Bromobenzene	14.39	10.59	1.359	ok	1.358	1.298-1.418
Bromodichloromethane	5.31	4.74	1.120	ok	1.119	1.059-1.179
Bromoform	11.84	10.59	1.118	ok	1.117	1.057-1.177
Bromomethane	1.94	3.34	0.581	ok	0.581	0.521-0.641
Bromoethene	2.07	3.34	0.620	ok	0.620	0.560-0.680
n-Butane	1.88	3.34	0.563	ok	0.563	0.503-0.623
Benzyl Chloride	16.89	10.59	1.595	ok	1.595	1.535-1.655
n-Butylbenzene	17.59	10.59	1.661	ok	1.661	1.601-1.721
sec-Butylbenzene	17.07	10.59	1.612	ok	1.612	1.552-1.672
tert-Butylbenzene	16.80	10.59	1.586	ok	1.586	1.526-1.646
Carbon disulfide	2.52	3.34	0.754	ok	0.754	0.694-0.814
Chlorobenzene	10.67	10.59	1.008	ok	1.007	0.947-1.067
Chlorodifluoromethane	1.71	3.34	0.512	ok	0.512	0.452-0.572
Chloroethane	1.98	3.34	0.593	ok	0.593	0.533-0.653
Chlorotrifluoroethene	1.72	3.34	0.515	ok	0.515	0.455-0.575
Chloroform	3.42	3.34	1.024	ok	1.024	0.964-1.084
Chloromethane	1.78	3.34	0.533	ok	0.531	0.471-0.591
3-Chloropropene	2.46	3.34	0.737	ok	0.737	0.677-0.797
2-Chlorotoluene	15.53	10.59	1.466	ok	1.466	1.406-1.526
Carbon tetrachloride	4.50	3.34	1.347	ok	1.348	1.288-1.408
Cyclohexane	4.60	4.74	0.970	ok	0.971	0.911-1.031
1,1-Dichloroethane	2.86	3.34	0.856	ok	0.856	0.796-0.916
1,1-Dichloroethylene	2.39	3.34	0.716	ok	0.715	0.655-0.775
1,2-Dibromoethane (EDB)	8.55	4.74	1.804	ok	1.802	1.742-1.862
1,2-Dichloroethane	3.87	3.34	1.159	ok	1.159	1.099-1.219
1,2-Dichloropropane	5.11	4.74	1.078	ok	1.077	1.017-1.137
1,3-Dichloropropane	7.69	4.74	1.622	ok	1.622	1.562-1.682
1,4-Dioxane	5.38	4.74	1.135	ok	1.137	1.077-1.197
Dichlorodifluoromethane	1.73	3.34	0.518	ok	0.518	0.458-0.578
Dichlorofluoromethane	2.00	3.34	0.599	ok	0.599	0.539-0.659
Dibromochloromethane	8.19	4.74	1.728	ok	1.728	1.668-1.788
Dibromomethane	5.06	4.74	1.068	ok	1.068	1.008-1.128
trans-1,2-Dichloroethylene	2.77	3.34	0.829	ok	0.829	0.769-0.889

Initial Calibration Retention Time/Internal Standard Area Summary

Job Number: JD60001
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample Number	Lab File ID	Injected	By	Level	Inst ID	Method	
V6W1158-IC1158	6W27500.D	12/05/22 21:51	TCH	0.04	GCMS6W	TO-15	
V6W1158-IC1158	6W27501.D	12/05/22 22:24	TCH	0.1	GCMS6W	TO-15	
V6W1158-IC1158	6W27502.D	12/05/22 22:57	TCH	0.2	GCMS6W	TO-15	
V6W1158-IC1158	6W27503.D	12/05/22 23:30	TCH	0.5	GCMS6W	TO-15	
V6W1158-IC1158	6W27505.D	12/06/22 00:35	TCH	5	GCMS6W	TO-15	
V6W1158-ICC1158	6W27506.D	12/06/22 01:07	TCH	10	GCMS6W	TO-15	
V6W1158-IC1158	6W27507.D	12/06/22 01:39	TCH	20	GCMS6W	TO-15	
V6W1158-IC1158	6W27508.D	12/06/22 02:12	TCH	40	GCMS6W	TO-15	Reporting this level
V6W1158-IC1158	6W27509.D	12/06/22 02:47	TCH	50	GCMS6W	TO-15	

Target Compound	RT (min.)	Istd RT (min.)	Rel RT		Mean Rel RT	Rel RT Range (+ /- .06)
cis-1,2-Dichloroethylene	3.26	3.34	0.976	ok	0.976	0.916-1.036
cis-1,3-Dichloropropene	6.35	4.74	1.340	ok	1.340	1.280-1.400
m-Dichlorobenzene	16.87	10.59	1.593	ok	1.592	1.532-1.652
o-Dichlorobenzene	17.24	10.59	1.628	ok	1.627	1.567-1.687
p-Dichlorobenzene	16.95	10.59	1.601	ok	1.601	1.541-1.661
trans-1,3-Dichloropropene	7.07	4.74	1.492	ok	1.492	1.432-1.552
Di-Isopropyl ether	3.41	3.34	1.021	ok	1.020	0.960-1.080
2,3-Dimethylpentane	4.88	4.74	1.030	ok	1.029	0.969-1.089
2,4-Dimethylpentane	3.96	3.34	1.186	ok	1.185	1.125-1.245
Ethanol	2.01	3.34	0.602	ok	0.602	0.542-0.662
Ethylbenzene	11.58	10.59	1.093	ok	1.093	1.033-1.153
Ethyl Acetate	3.41	3.34	1.021	ok	1.022	0.962-1.082
Ethyl Acrylate	5.24	4.74	1.105	ok	1.106	1.046-1.166
4-Ethyltoluene	16.21	10.59	1.531	ok	1.530	1.470-1.590
Freon 113	2.52	3.34	0.754	ok	0.754	0.694-0.814
Freon 114	1.80	3.34	0.539	ok	0.539	0.479-0.599
Freon 123	2.12	3.34	0.635	ok	0.635	0.575-0.695
Freon 123A	2.13	3.34	0.638	ok	0.638	0.578-0.698
Freon 142B	1.77	3.34	0.530	ok	0.530	0.470-0.590
Freon 152A	1.70	3.34	0.509	ok	0.508	0.448-0.568
Heptane	5.78	4.74	1.219	ok	1.220	1.160-1.280
Hexachlorobutadiene	18.78	10.59	1.773	ok	1.774	1.714-1.834
Hexachloroethane	17.77	10.59	1.678	ok	1.677	1.617-1.737
Hexane	3.40	3.34	1.018	ok	1.016	0.956-1.076
2-Hexanone	8.23	4.74	1.736	ok	1.737	1.677-1.797
Iodomethane	2.36	3.34	0.707	ok	0.707	0.647-0.767
Isopropylbenzene	14.51	10.59	1.370	ok	1.369	1.309-1.429
Isopropyl Alcohol	2.21	3.34	0.662	ok	0.662	0.602-0.722
p-Isopropyltoluene	17.25	10.59	1.629	ok	1.628	1.568-1.688
Methylene chloride	2.42	3.34	0.725	ok	0.725	0.665-0.785
Methyl ethyl ketone	3.04	3.34	0.910	ok	0.911	0.851-0.971
Methyl Isobutyl Ketone	6.48	4.74	1.367	ok	1.367	1.307-1.427
Methyl Tert Butyl Ether	2.89	3.34	0.865	ok	0.865	0.805-0.925
Methylmethacrylate	5.69	4.74	1.200	ok	1.201	1.141-1.261
Naphthalene	18.53	10.59	1.750	ok	1.750	1.690-1.810
Nonane	14.10	10.59	1.331	ok	1.330	1.270-1.390
Octane	9.56	4.74	2.017	ok	2.018	1.958-2.078
Pentane	2.30	3.34	0.689	ok	0.689	0.629-0.749
n-Propylbenzene	15.87	10.59	1.499	ok	1.498	1.438-1.558

Initial Calibration Retention Time/Internal Standard Area Summary

Job Number: JD60001
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample Number	Lab File ID	Injected	By	Level	Inst ID	Method	
V6W1158-IC1158	6W27500.D	12/05/22 21:51	TCH	0.04	GCMS6W	TO-15	
V6W1158-IC1158	6W27501.D	12/05/22 22:24	TCH	0.1	GCMS6W	TO-15	
V6W1158-IC1158	6W27502.D	12/05/22 22:57	TCH	0.2	GCMS6W	TO-15	
V6W1158-IC1158	6W27503.D	12/05/22 23:30	TCH	0.5	GCMS6W	TO-15	
V6W1158-IC1158	6W27505.D	12/06/22 00:35	TCH	5	GCMS6W	TO-15	
V6W1158-ICC1158	6W27506.D	12/06/22 01:07	TCH	10	GCMS6W	TO-15	
V6W1158-IC1158	6W27507.D	12/06/22 01:39	TCH	20	GCMS6W	TO-15	
V6W1158-IC1158	6W27508.D	12/06/22 02:12	TCH	40	GCMS6W	TO-15	Reporting this level
V6W1158-IC1158	6W27509.D	12/06/22 02:47	TCH	50	GCMS6W	TO-15	

Target Compound	RT (min.)	Istd RT (min.)	Rel RT		Mean Rel RT	Rel RT Range (+ /- .06)
Propylene	1.72	3.34	0.515	ok	0.515	0.455-0.575
Styrene	12.75	10.59	1.204	ok	1.204	1.144-1.264
1,1,1-Trichloroethane	4.05	3.34	1.213	ok	1.213	1.153-1.273
1,1,1,2-Tetrachloroethane	10.69	10.59	1.009	ok	1.009	0.949-1.069
1,1,2,2-Tetrachloroethane	13.00	10.59	1.228	ok	1.226	1.166-1.286
1,1,2-Trichloroethane	7.24	4.74	1.527	ok	1.528	1.468-1.588
1,2,4-Trichlorobenzene	18.49	10.59	1.746	ok	1.746	1.686-1.806
1,2,3-Trichloropropane	13.28	10.59	1.254	ok	1.253	1.193-1.313
1,2,3-Trimethylbenzene	17.19	10.59	1.623	ok	1.622	1.562-1.682
1,2,4-Trimethylbenzene	16.81	10.59	1.587	ok	1.587	1.527-1.647
1,3,5-Trimethylbenzene	16.36	10.59	1.545	ok	1.544	1.484-1.604
2,2,4-Trimethylpentane	5.45	4.74	1.150	ok	1.149	1.089-1.209
Tertiary Butyl Alcohol	2.40	3.34	0.719	ok	0.719	0.659-0.779
Tetrachloroethylene	9.42	4.74	1.987	ok	1.986	1.926-2.046
Tetrahydrofuran	3.65	3.34	1.093	ok	1.095	1.035-1.155
Toluene	7.62	4.74	1.608	ok	1.607	1.547-1.667
Trichloroethylene	5.35	4.74	1.129	ok	1.128	1.068-1.188
Trichlorofluoromethane	2.19	3.34	0.656	ok	0.656	0.596-0.716
Vinyl chloride	1.83	3.34	0.548	ok	0.548	0.488-0.608
Vinyl Acetate	2.93	3.34	0.877	ok	0.878	0.818-0.938
m,p-Xylene	12.02	10.59	1.135	ok	1.134	1.074-1.194
o-Xylene	12.97	10.59	1.225	ok	1.224	1.164-1.284

Internal Standard	RT (min.)		Mean RT(min.)	RT Range (+ /- 0.33)	Area		Mean Area	Area Range (+ /- 40 %)
Bromochloromethane	3.34	ok	3.34	3.01-3.67	60939	ok	56264	33758-78770
1,4-Difluorobenzene	4.74	ok	4.74	4.41-5.07	291972	ok	274058	164435-383681
Chlorobenzene-D5	10.59	ok	10.59	10.26-10.92	267297	ok	244142	146485-341799

Initial Calibration Retention Time/Internal Standard Area Summary

Job Number: JD60001
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample Number	Lab File ID	Injected	By	Level	Inst ID	Method	
V6W1158-IC1158	6W27500.D	12/05/22 21:51	TCH	0.04	GCMS6W	TO-15	
V6W1158-IC1158	6W27501.D	12/05/22 22:24	TCH	0.1	GCMS6W	TO-15	
V6W1158-IC1158	6W27502.D	12/05/22 22:57	TCH	0.2	GCMS6W	TO-15	
V6W1158-IC1158	6W27503.D	12/05/22 23:30	TCH	0.5	GCMS6W	TO-15	
V6W1158-IC1158	6W27505.D	12/06/22 00:35	TCH	5	GCMS6W	TO-15	
V6W1158-ICC1158	6W27506.D	12/06/22 01:07	TCH	10	GCMS6W	TO-15	
V6W1158-IC1158	6W27507.D	12/06/22 01:39	TCH	20	GCMS6W	TO-15	
V6W1158-IC1158	6W27508.D	12/06/22 02:12	TCH	40	GCMS6W	TO-15	
V6W1158-IC1158	6W27509.D	12/06/22 02:47	TCH	50	GCMS6W	TO-15	Reporting this level

Target Compound	RT (min.)	Istd RT (min.)	Rel RT		Mean Rel RT	Rel RT Range (+ /- .06)
Acetone (2-Propanone)	2.14	3.34	0.641	ok	0.641	0.581-0.701
Acrolein	2.10	3.34	0.629	ok	0.629	0.569-0.689
Acrylonitrile	2.27	3.34	0.680	ok	0.680	0.620-0.740
Acetonitrile	2.06	3.34	0.617	ok	0.619	0.559-0.679
1,3-Butadiene	1.87	3.34	0.560	ok	0.560	0.500-0.620
Benzene	4.38	3.34	1.311	ok	1.312	1.252-1.372
Bromobenzene	14.39	10.59	1.359	ok	1.358	1.298-1.418
Bromodichloromethane	5.31	4.74	1.120	ok	1.119	1.059-1.179
Bromoform	11.84	10.59	1.118	ok	1.117	1.057-1.177
Bromomethane	1.94	3.34	0.581	ok	0.581	0.521-0.641
Bromoethene	2.07	3.34	0.620	ok	0.620	0.560-0.680
n-Butane	1.88	3.34	0.563	ok	0.563	0.503-0.623
Benzyl Chloride	16.90	10.59	1.596	ok	1.595	1.535-1.655
n-Butylbenzene	17.59	10.59	1.661	ok	1.661	1.601-1.721
sec-Butylbenzene	17.08	10.59	1.613	ok	1.612	1.552-1.672
tert-Butylbenzene	16.80	10.59	1.586	ok	1.586	1.526-1.646
Carbon disulfide	2.52	3.34	0.754	ok	0.754	0.694-0.814
Chlorobenzene	10.68	10.59	1.008	ok	1.007	0.947-1.067
Chlorodifluoromethane	1.71	3.34	0.512	ok	0.512	0.452-0.572
Chloroethane	1.98	3.34	0.593	ok	0.593	0.533-0.653
Chlorotrifluoroethene	1.72	3.34	0.515	ok	0.515	0.455-0.575
Chloroform	3.42	3.34	1.024	ok	1.024	0.964-1.084
Chloromethane	1.77	3.34	0.530	ok	0.531	0.471-0.591
3-Chloropropene	2.46	3.34	0.737	ok	0.737	0.677-0.797
2-Chlorotoluene	15.53	10.59	1.466	ok	1.466	1.406-1.526
Carbon tetrachloride	4.50	3.34	1.347	ok	1.348	1.288-1.408
Cyclohexane	4.60	4.74	0.970	ok	0.971	0.911-1.031
1,1-Dichloroethane	2.86	3.34	0.856	ok	0.856	0.796-0.916
1,1-Dichloroethylene	2.39	3.34	0.716	ok	0.715	0.655-0.775
1,2-Dibromoethane (EDB)	8.55	4.74	1.804	ok	1.802	1.742-1.862
1,2-Dichloroethane	3.87	3.34	1.159	ok	1.159	1.099-1.219
1,2-Dichloropropane	5.11	4.74	1.078	ok	1.077	1.017-1.137
1,3-Dichloropropane	7.69	4.74	1.622	ok	1.622	1.562-1.682
1,4-Dioxane	5.38	4.74	1.135	ok	1.137	1.077-1.197
Dichlorodifluoromethane	1.73	3.34	0.518	ok	0.518	0.458-0.578
Dichlorofluoromethane	2.00	3.34	0.599	ok	0.599	0.539-0.659
Dibromochloromethane	8.20	4.74	1.730	ok	1.728	1.668-1.788
Dibromomethane	5.06	4.74	1.068	ok	1.068	1.008-1.128
trans-1,2-Dichloroethylene	2.77	3.34	0.829	ok	0.829	0.769-0.889

Initial Calibration Retention Time/Internal Standard Area Summary

Job Number: JD60001
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample Number	Lab File ID	Injected	By	Level	Inst ID	Method	
V6W1158-IC1158	6W27500.D	12/05/22 21:51	TCH	0.04	GCMS6W	TO-15	
V6W1158-IC1158	6W27501.D	12/05/22 22:24	TCH	0.1	GCMS6W	TO-15	
V6W1158-IC1158	6W27502.D	12/05/22 22:57	TCH	0.2	GCMS6W	TO-15	
V6W1158-IC1158	6W27503.D	12/05/22 23:30	TCH	0.5	GCMS6W	TO-15	
V6W1158-IC1158	6W27505.D	12/06/22 00:35	TCH	5	GCMS6W	TO-15	
V6W1158-ICC1158	6W27506.D	12/06/22 01:07	TCH	10	GCMS6W	TO-15	
V6W1158-IC1158	6W27507.D	12/06/22 01:39	TCH	20	GCMS6W	TO-15	
V6W1158-IC1158	6W27508.D	12/06/22 02:12	TCH	40	GCMS6W	TO-15	
V6W1158-IC1158	6W27509.D	12/06/22 02:47	TCH	50	GCMS6W	TO-15	Reporting this level

Target Compound	RT (min.)	Istd RT (min.)	Rel RT		Mean Rel RT	Rel RT Range (+ /- .06)
cis-1,2-Dichloroethylene	3.26	3.34	0.976	ok	0.976	0.916-1.036
cis-1,3-Dichloropropene	6.35	4.74	1.340	ok	1.340	1.280-1.400
m-Dichlorobenzene	16.87	10.59	1.593	ok	1.592	1.532-1.652
o-Dichlorobenzene	17.24	10.59	1.628	ok	1.627	1.567-1.687
p-Dichlorobenzene	16.95	10.59	1.601	ok	1.601	1.541-1.661
trans-1,3-Dichloropropene	7.08	4.74	1.494	ok	1.492	1.432-1.552
Di-Isopropyl ether	3.40	3.34	1.018	ok	1.020	0.960-1.080
2,3-Dimethylpentane	4.88	4.74	1.030	ok	1.029	0.969-1.089
2,4-Dimethylpentane	3.96	3.34	1.186	ok	1.185	1.125-1.245
Ethanol	2.01	3.34	0.602	ok	0.602	0.542-0.662
Ethylbenzene	11.57	10.59	1.093	ok	1.093	1.033-1.153
Ethyl Acetate	3.41	3.34	1.021	ok	1.022	0.962-1.082
Ethyl Acrylate	5.24	4.74	1.105	ok	1.106	1.046-1.166
4-Ethyltoluene	16.21	10.59	1.531	ok	1.530	1.470-1.590
Freon 113	2.52	3.34	0.754	ok	0.754	0.694-0.814
Freon 114	1.80	3.34	0.539	ok	0.539	0.479-0.599
Freon 123	2.12	3.34	0.635	ok	0.635	0.575-0.695
Freon 123A	2.13	3.34	0.638	ok	0.638	0.578-0.698
Freon 142B	1.77	3.34	0.530	ok	0.530	0.470-0.590
Freon 152A	1.70	3.34	0.509	ok	0.508	0.448-0.568
Heptane	5.78	4.74	1.219	ok	1.220	1.160-1.280
Hexachlorobutadiene	18.79	10.59	1.774	ok	1.774	1.714-1.834
Hexachloroethane	17.77	10.59	1.678	ok	1.677	1.617-1.737
Hexane	3.40	3.34	1.018	ok	1.016	0.956-1.076
2-Hexanone	8.23	4.74	1.736	ok	1.737	1.677-1.797
Iodomethane	2.36	3.34	0.707	ok	0.707	0.647-0.767
Isopropylbenzene	14.51	10.59	1.370	ok	1.369	1.309-1.429
Isopropyl Alcohol	2.21	3.34	0.662	ok	0.662	0.602-0.722
p-Isopropyltoluene	17.25	10.59	1.629	ok	1.628	1.568-1.688
Methylene chloride	2.42	3.34	0.725	ok	0.725	0.665-0.785
Methyl ethyl ketone	3.04	3.34	0.910	ok	0.911	0.851-0.971
Methyl Isobutyl Ketone	6.48	4.74	1.367	ok	1.367	1.307-1.427
Methyl Tert Butyl Ether	2.89	3.34	0.865	ok	0.865	0.805-0.925
Methylmethacrylate	5.69	4.74	1.200	ok	1.201	1.141-1.261
Naphthalene	18.54	10.59	1.751	ok	1.750	1.690-1.810
Nonane	14.10	10.59	1.331	ok	1.330	1.270-1.390
Octane	9.57	4.74	2.019	ok	2.018	1.958-2.078
Pentane	2.30	3.34	0.689	ok	0.689	0.629-0.749
n-Propylbenzene	15.87	10.59	1.499	ok	1.498	1.438-1.558

Initial Calibration Retention Time/Internal Standard Area Summary

Job Number: JD60001
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample Number	Lab File ID	Injected	By	Level	Inst ID	Method	
V6W1158-IC1158	6W27500.D	12/05/22 21:51	TCH	0.04	GCMS6W	TO-15	
V6W1158-IC1158	6W27501.D	12/05/22 22:24	TCH	0.1	GCMS6W	TO-15	
V6W1158-IC1158	6W27502.D	12/05/22 22:57	TCH	0.2	GCMS6W	TO-15	
V6W1158-IC1158	6W27503.D	12/05/22 23:30	TCH	0.5	GCMS6W	TO-15	
V6W1158-IC1158	6W27505.D	12/06/22 00:35	TCH	5	GCMS6W	TO-15	
V6W1158-ICC1158	6W27506.D	12/06/22 01:07	TCH	10	GCMS6W	TO-15	
V6W1158-IC1158	6W27507.D	12/06/22 01:39	TCH	20	GCMS6W	TO-15	
V6W1158-IC1158	6W27508.D	12/06/22 02:12	TCH	40	GCMS6W	TO-15	
V6W1158-IC1158	6W27509.D	12/06/22 02:47	TCH	50	GCMS6W	TO-15	Reporting this level

Target Compound	RT (min.)	Istd RT (min.)	Rel RT		Mean Rel RT	Rel RT Range (+ /- .06)
Propylene	1.72	3.34	0.515	ok	0.515	0.455-0.575
Styrene	12.76	10.59	1.205	ok	1.204	1.144-1.264
1,1,1-Trichloroethane	4.05	3.34	1.213	ok	1.213	1.153-1.273
1,1,1,2-Tetrachloroethane	10.69	10.59	1.009	ok	1.009	0.949-1.069
1,1,2,2-Tetrachloroethane	13.00	10.59	1.228	ok	1.226	1.166-1.286
1,1,2-Trichloroethane	7.24	4.74	1.527	ok	1.528	1.468-1.588
1,2,4-Trichlorobenzene	18.49	10.59	1.746	ok	1.746	1.686-1.806
1,2,3-Trichloropropane	13.29	10.59	1.255	ok	1.253	1.193-1.313
1,2,3-Trimethylbenzene	17.19	10.59	1.623	ok	1.622	1.562-1.682
1,2,4-Trimethylbenzene	16.81	10.59	1.587	ok	1.587	1.527-1.647
1,3,5-Trimethylbenzene	16.36	10.59	1.545	ok	1.544	1.484-1.604
2,2,4-Trimethylpentane	5.45	4.74	1.150	ok	1.149	1.089-1.209
Tertiary Butyl Alcohol	2.40	3.34	0.719	ok	0.719	0.659-0.779
Tetrachloroethylene	9.42	4.74	1.987	ok	1.986	1.926-2.046
Tetrahydrofuran	3.65	3.34	1.093	ok	1.095	1.035-1.155
Toluene	7.62	4.74	1.608	ok	1.607	1.547-1.667
Trichloroethylene	5.35	4.74	1.129	ok	1.128	1.068-1.188
Trichlorofluoromethane	2.19	3.34	0.656	ok	0.656	0.596-0.716
Vinyl chloride	1.83	3.34	0.548	ok	0.548	0.488-0.608
Vinyl Acetate	2.93	3.34	0.877	ok	0.878	0.818-0.938
m,p-Xylene	12.02	10.59	1.135	ok	1.134	1.074-1.194
o-Xylene	12.97	10.59	1.225	ok	1.224	1.164-1.284

Internal Standard	RT (min.)		Mean RT(min.)	RT Range (+ /- 0.33)	Area		Mean Area	Area Range (+ /- 40 %)
Bromochloromethane	3.34	ok	3.34	3.01-3.67	63167	ok	56264	33758-78770
1,4-Difluorobenzene	4.74	ok	4.74	4.41-5.07	300525	ok	274058	164435-383681
Chlorobenzene-D5	10.59	ok	10.59	10.26-10.92	275200	ok	244142	146485-341799

Initial Calibration Retention Time/Internal Standard Area Summary

Job Number: JD60001
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample Number	Lab File ID	Injected	By	Level	Inst ID	Method	
V7W5-IC0005	7W00093.D	11/30/22 11:33	TCH	0.04	GCMS7W	TO-15	Reporting this level
V7W5-IC0005	7W00094.D	11/30/22 12:06	TCH	0.1	GCMS7W	TO-15	
V7W5-IC0005	7W00095.D	11/30/22 12:38	TCH	0.2	GCMS7W	TO-15	
V7W5-IC0005	7W00096.D	11/30/22 13:09	TCH	0.5	GCMS7W	TO-15	
V7W5-IC0005	7W00098.D	11/30/22 14:12	TCH	5	GCMS7W	TO-15	
V7W5-ICC0005	7W00099.D	11/30/22 14:44	TCH	10	GCMS7W	TO-15	
V7W5-IC0005	7W00100.D	11/30/22 15:16	TCH	20	GCMS7W	TO-15	
V7W5-IC0005	7W00101.D	11/30/22 15:51	TCH	40	GCMS7W	TO-15	
V7W5-IC0005	7W00102.D	11/30/22 16:26	TCH	50	GCMS7W	TO-15	

Target Compound	RT (min.)	Istd RT (min.)	Rel RT		Mean Rel RT	Rel RT Range (+ /- .06)
Acrylonitrile	2.49	3.56	0.699	ok	0.698	0.638-0.758
1,3-Butadiene	2.01	3.56	0.565	ok	0.563	0.503-0.623
Benzene	4.60	3.56	1.292	ok	1.291	1.231-1.351
Bromobenzene	14.58	10.78	1.353	ok	1.352	1.292-1.412
Bromodichloromethane	5.51	4.95	1.113	ok	1.112	1.052-1.172
Bromomethane	2.09	3.56	0.587	ok	0.586	0.526-0.646
Bromoethene	2.26	3.56	0.635	ok	0.633	0.573-0.693
n-Butane	2.03	3.56	0.570	ok	0.569	0.509-0.629
sec-Butylbenzene	17.13	10.78	1.589	ok	1.589	1.529-1.649
tert-Butylbenzene	16.87	10.78	1.565	ok	1.564	1.504-1.624
Carbon disulfide	2.74	3.56	0.770	ok	0.770	0.710-0.830
Chlorotrifluoroethene	1.83	3.56	0.514	ok	0.513	0.453-0.573
Chloroform	3.65	3.56	1.025	ok	1.023	0.963-1.083
2-Chlorotoluene	15.73	10.78	1.459	ok	1.458	1.398-1.518
Carbon tetrachloride	4.73	3.56	1.329	ok	1.325	1.265-1.385
Cyclohexane	4.84	4.95	0.978	ok	0.976	0.916-1.036
1,1-Dichloroethane	3.08	3.56	0.865	ok	0.863	0.803-0.923
1,1-Dichloroethylene	2.61	3.56	0.733	ok	0.730	0.670-0.790
1,2-Dibromoethane (EDB)	8.75	4.95	1.768	ok	1.765	1.705-1.825
1,2-Dichloroethane	4.08	3.56	1.146	ok	1.147	1.087-1.207
1,2-Dichloropropane	5.32	4.95	1.075	ok	1.074	1.014-1.134
1,3-Dichloropropane	7.88	4.95	1.592	ok	1.592	1.532-1.652
Dichlorodifluoromethane	1.85	3.56	0.520	ok	0.519	0.459-0.579
Dichlorofluoromethane	2.17	3.56	0.610	ok	0.609	0.549-0.669
Dibromochloromethane	8.40	4.95	1.697	ok	1.694	1.634-1.754
Dibromomethane	5.27	4.95	1.065	ok	1.065	1.005-1.125
trans-1,2-Dichloroethylene	2.99	3.56	0.840	ok	0.841	0.781-0.901
cis-1,2-Dichloroethylene	3.49	3.56	0.980	ok	0.976	0.916-1.036
cis-1,3-Dichloropropene	6.56	4.95	1.325	ok	1.324	1.264-1.384
m-Dichlorobenzene	16.94	10.78	1.571	ok	1.571	1.511-1.631
o-Dichlorobenzene	17.30	10.78	1.605	ok	1.605	1.545-1.665
p-Dichlorobenzene	17.02	10.78	1.579	ok	1.578	1.518-1.638
trans-1,3-Dichloropropene	7.27	4.95	1.469	ok	1.467	1.407-1.527
2,4-Dimethylpentane	4.19	3.56	1.177	ok	1.173	1.113-1.233
Ethyl Acrylate	5.45	4.95	1.101	ok	1.100	1.040-1.160
4-Ethyltoluene	16.31	10.78	1.513	ok	1.512	1.452-1.572
Freon 113	2.75	3.56	0.772	ok	0.771	0.711-0.831
Freon 114	1.93	3.56	0.542	ok	0.541	0.481-0.601
Freon 123	2.31	3.56	0.649	ok	0.647	0.587-0.707

Initial Calibration Retention Time/Internal Standard Area Summary

Job Number: JD60001
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample Number	Lab File ID	Injected	By	Level	Inst ID	Method	
V7W5-IC0005	7W00093.D	11/30/22 11:33	TCH	0.04	GCMS7W	TO-15	Reporting this level
V7W5-IC0005	7W00094.D	11/30/22 12:06	TCH	0.1	GCMS7W	TO-15	
V7W5-IC0005	7W00095.D	11/30/22 12:38	TCH	0.2	GCMS7W	TO-15	
V7W5-IC0005	7W00096.D	11/30/22 13:09	TCH	0.5	GCMS7W	TO-15	
V7W5-IC0005	7W00098.D	11/30/22 14:12	TCH	5	GCMS7W	TO-15	
V7W5-ICC0005	7W00099.D	11/30/22 14:44	TCH	10	GCMS7W	TO-15	
V7W5-IC0005	7W00100.D	11/30/22 15:16	TCH	20	GCMS7W	TO-15	
V7W5-IC0005	7W00101.D	11/30/22 15:51	TCH	40	GCMS7W	TO-15	
V7W5-IC0005	7W00102.D	11/30/22 16:26	TCH	50	GCMS7W	TO-15	

Target Compound	RT (min.)	Istd RT (min.)	Rel RT		Mean Rel RT	Rel RT Range (+ /- .06)
Freon 123A	2.33	3.56	0.654	ok	0.653	0.593-0.713
Freon 142B	1.89	3.56	0.531	ok	0.530	0.470-0.590
Heptane	6.00	4.95	1.212	ok	1.212	1.152-1.272
Hexachlorobutadiene	18.87	10.78	1.750	ok	1.750	1.690-1.810
Hexachloroethane	17.84	10.78	1.655	ok	1.654	1.594-1.714
Hexane	3.62	3.56	1.017	ok	1.015	0.955-1.075
2-Hexanone	8.47	4.95	1.711	ok	1.703	1.643-1.763
Iodomethane	2.58	3.56	0.725	ok	0.723	0.663-0.783
Isopropylbenzene	14.70	10.78	1.364	ok	1.363	1.303-1.423
p-Isopropyltoluene	17.31	10.78	1.606	ok	1.605	1.545-1.665
Methyl Isobutyl Ketone	6.71	4.95	1.356	ok	1.350	1.290-1.410
Methyl Tert Butyl Ether	3.13	3.56	0.879	ok	0.876	0.816-0.936
Methylmethacrylate	5.90	4.95	1.192	ok	1.190	1.130-1.250
Nonane	14.28	10.78	1.325	ok	1.324	1.264-1.384
Octane	9.76	4.95	1.972	ok	1.971	1.911-2.031
n-Propylbenzene	16.03	10.78	1.487	ok	1.487	1.427-1.547
Styrene	12.94	10.78	1.200	ok	1.200	1.140-1.260
1,1,1-Trichloroethane	4.26	3.56	1.197	ok	1.196	1.136-1.256
1,1,1,2-Tetrachloroethane	10.87	10.78	1.008	ok	1.008	0.948-1.068
1,1,2,2-Tetrachloroethane	13.16	10.78	1.221	ok	1.221	1.161-1.281
1,1,2-Trichloroethane	7.44	4.95	1.503	ok	1.502	1.442-1.562
1,2,3-Trichloropropane	13.47	10.78	1.250	ok	1.248	1.188-1.308
1,2,3-Trimethylbenzene	17.25	10.78	1.600	ok	1.600	1.540-1.660
1,2,4-Trimethylbenzene	16.87	10.78	1.565	ok	1.565	1.505-1.625
1,3,5-Trimethylbenzene	16.44	10.78	1.525	ok	1.525	1.465-1.585
2,2,4-Trimethylpentane	5.66	4.95	1.143	ok	1.144	1.084-1.204
Tetrachloroethylene	9.62	4.95	1.943	ok	1.943	1.883-2.003
Toluene	7.82	4.95	1.580	ok	1.581	1.521-1.641
Trichloroethylene	5.57	4.95	1.125	ok	1.125	1.065-1.185
Trichlorofluoromethane	2.40	3.56	0.674	ok	0.673	0.613-0.733
Vinyl chloride	1.97	3.56	0.553	ok	0.552	0.492-0.612

Internal Standard	RT (min.)		Mean RT(min.)	RT Range (+ /- 0.33)	Area		Mean Area	Area Range (+ /- 40 %)
Bromochloromethane	3.56	ok	3.57	3.24-3.90	77355	ok	79502	47701-111303
1,4-Difluorobenzene	4.95	ok	4.95	4.62-5.28	388809	ok	395530	237318-553742
Chlorobenzene-D5	10.78	ok	10.78	10.45-11.11	347804	ok	366125	219675-512575

Initial Calibration Retention Time/Internal Standard Area Summary

Job Number: JD60001
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample Number	Lab File ID	Injected	By	Level	Inst ID	Method	
V7W5-IC0005	7W00093.D	11/30/22 11:33	TCH	0.04	GCMS7W	TO-15	
V7W5-IC0005	7W00094.D	11/30/22 12:06	TCH	0.1	GCMS7W	TO-15	Reporting this level
V7W5-IC0005	7W00095.D	11/30/22 12:38	TCH	0.2	GCMS7W	TO-15	
V7W5-IC0005	7W00096.D	11/30/22 13:09	TCH	0.5	GCMS7W	TO-15	
V7W5-IC0005	7W00098.D	11/30/22 14:12	TCH	5	GCMS7W	TO-15	
V7W5-ICC0005	7W00099.D	11/30/22 14:44	TCH	10	GCMS7W	TO-15	
V7W5-IC0005	7W00100.D	11/30/22 15:16	TCH	20	GCMS7W	TO-15	
V7W5-IC0005	7W00101.D	11/30/22 15:51	TCH	40	GCMS7W	TO-15	
V7W5-IC0005	7W00102.D	11/30/22 16:26	TCH	50	GCMS7W	TO-15	

Target Compound	RT (min.)	Istd RT (min.)	Rel RT		Mean Rel RT	Rel RT Range (+ /- .06)
Acrolein	2.29	3.57	0.641	ok	0.642	0.582-0.702
Acrylonitrile	2.49	3.57	0.697	ok	0.698	0.638-0.758
Acetonitrile	2.25	3.57	0.630	ok	0.631	0.571-0.691
1,3-Butadiene	2.01	3.57	0.563	ok	0.563	0.503-0.623
Benzene	4.61	3.57	1.291	ok	1.291	1.231-1.351
Bromobenzene	14.57	10.78	1.352	ok	1.352	1.292-1.412
Bromodichloromethane	5.51	4.95	1.113	ok	1.112	1.052-1.172
Bromoform	12.02	10.78	1.115	ok	1.115	1.055-1.175
Bromomethane	2.09	3.57	0.585	ok	0.586	0.526-0.646
Bromoethene	2.26	3.57	0.633	ok	0.633	0.573-0.693
n-Butane	2.03	3.57	0.569	ok	0.569	0.509-0.629
n-Butylbenzene	17.66	10.78	1.638	ok	1.637	1.577-1.697
sec-Butylbenzene	17.14	10.78	1.590	ok	1.589	1.529-1.649
tert-Butylbenzene	16.87	10.78	1.565	ok	1.564	1.504-1.624
Carbon disulfide	2.75	3.57	0.770	ok	0.770	0.710-0.830
Chlorobenzene	10.86	10.78	1.007	ok	1.008	0.948-1.068
Chloroethane	2.14	3.57	0.599	ok	0.602	0.542-0.662
Chlorotrifluoroethene	1.83	3.57	0.513	ok	0.513	0.453-0.573
Chloroform	3.65	3.57	1.022	ok	1.023	0.963-1.083
3-Chloropropene	2.69	3.57	0.754	ok	0.754	0.694-0.814
2-Chlorotoluene	15.70	10.78	1.456	ok	1.458	1.398-1.518
Carbon tetrachloride	4.72	3.57	1.322	ok	1.325	1.265-1.385
Cyclohexane	4.83	4.95	0.976	ok	0.976	0.916-1.036
1,1-Dichloroethane	3.08	3.57	0.863	ok	0.863	0.803-0.923
1,1-Dichloroethylene	2.61	3.57	0.731	ok	0.730	0.670-0.790
1,2-Dibromoethane (EDB)	8.74	4.95	1.766	ok	1.765	1.705-1.825
1,2-Dichloroethane	4.10	3.57	1.148	ok	1.147	1.087-1.207
1,2-Dichloropropane	5.32	4.95	1.075	ok	1.074	1.014-1.134
1,3-Dichloropropane	7.88	4.95	1.592	ok	1.592	1.532-1.652
1,4-Dioxane	5.69	4.95	1.149	ok	1.135	1.075-1.195
Dichlorodifluoromethane	1.85	3.57	0.518	ok	0.519	0.459-0.579
Dichlorofluoromethane	2.17	3.57	0.608	ok	0.609	0.549-0.669
Dibromochloromethane	8.38	4.95	1.693	ok	1.694	1.634-1.754
Dibromomethane	5.27	4.95	1.065	ok	1.065	1.005-1.125
trans-1,2-Dichloroethylene	3.00	3.57	0.840	ok	0.841	0.781-0.901
cis-1,2-Dichloroethylene	3.48	3.57	0.975	ok	0.976	0.916-1.036
cis-1,3-Dichloropropene	6.56	4.95	1.325	ok	1.324	1.264-1.384
m-Dichlorobenzene	16.94	10.78	1.571	ok	1.571	1.511-1.631
o-Dichlorobenzene	17.30	10.78	1.605	ok	1.605	1.545-1.665

Initial Calibration Retention Time/Internal Standard Area Summary

Job Number: JD60001
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample Number	Lab File ID	Injected	By	Level	Inst ID	Method	
V7W5-IC0005	7W00093.D	11/30/22 11:33	TCH	0.04	GCMS7W	TO-15	
V7W5-IC0005	7W00094.D	11/30/22 12:06	TCH	0.1	GCMS7W	TO-15	Reporting this level
V7W5-IC0005	7W00095.D	11/30/22 12:38	TCH	0.2	GCMS7W	TO-15	
V7W5-IC0005	7W00096.D	11/30/22 13:09	TCH	0.5	GCMS7W	TO-15	
V7W5-IC0005	7W00098.D	11/30/22 14:12	TCH	5	GCMS7W	TO-15	
V7W5-ICC0005	7W00099.D	11/30/22 14:44	TCH	10	GCMS7W	TO-15	
V7W5-IC0005	7W00100.D	11/30/22 15:16	TCH	20	GCMS7W	TO-15	
V7W5-IC0005	7W00101.D	11/30/22 15:51	TCH	40	GCMS7W	TO-15	
V7W5-IC0005	7W00102.D	11/30/22 16:26	TCH	50	GCMS7W	TO-15	

Target Compound	RT (min.)	Istd RT (min.)	Rel RT		Mean Rel RT	Rel RT Range (+ /- .06)
p-Dichlorobenzene	17.02	10.78	1.579	ok	1.578	1.518-1.638
trans-1,3-Dichloropropene	7.25	4.95	1.465	ok	1.467	1.407-1.527
Di-Isopropyl ether	3.64	3.57	1.020	ok	1.019	0.959-1.079
2,3-Dimethylpentane	5.10	4.95	1.030	ok	1.030	0.970-1.090
2,4-Dimethylpentane	4.18	3.57	1.171	ok	1.173	1.113-1.233
Ethylbenzene	11.77	10.78	1.092	ok	1.091	1.031-1.151
Ethyl Acrylate	5.46	4.95	1.103	ok	1.100	1.040-1.160
4-Ethyltoluene	16.31	10.78	1.513	ok	1.512	1.452-1.572
Freon 113	2.75	3.57	0.770	ok	0.771	0.711-0.831
Freon 114	1.93	3.57	0.541	ok	0.541	0.481-0.601
Freon 123	2.31	3.57	0.647	ok	0.647	0.587-0.707
Freon 123A	2.33	3.57	0.653	ok	0.653	0.593-0.713
Freon 142B	1.89	3.57	0.529	ok	0.530	0.470-0.590
Freon 152A	1.80	3.57	0.504	ok	0.504	0.444-0.564
Heptane	6.00	4.95	1.212	ok	1.212	1.152-1.272
Hexachlorobutadiene	18.87	10.78	1.750	ok	1.750	1.690-1.810
Hexachloroethane	17.84	10.78	1.655	ok	1.654	1.594-1.714
Hexane	3.62	3.57	1.014	ok	1.015	0.955-1.075
2-Hexanone	8.45	4.95	1.707	ok	1.703	1.643-1.763
Iodomethane	2.58	3.57	0.723	ok	0.723	0.663-0.783
Isopropylbenzene	14.69	10.78	1.363	ok	1.363	1.303-1.423
Isopropyl Alcohol	2.43	3.57	0.681	ok	0.679	0.619-0.739
p-Isopropyltoluene	17.31	10.78	1.606	ok	1.605	1.545-1.665
Methyl ethyl ketone	3.29	3.57	0.922	ok	0.917	0.857-0.977
Methyl Isobutyl Ketone	6.70	4.95	1.354	ok	1.350	1.290-1.410
Methyl Tert Butyl Ether	3.13	3.57	0.877	ok	0.876	0.816-0.936
Methylmethacrylate	5.91	4.95	1.194	ok	1.190	1.130-1.250
Nonane	14.27	10.78	1.324	ok	1.324	1.264-1.384
Octane	9.76	4.95	1.972	ok	1.971	1.911-2.031
Pentane	2.51	3.57	0.703	ok	0.705	0.645-0.765
n-Propylbenzene	16.03	10.78	1.487	ok	1.487	1.427-1.547
Styrene	12.94	10.78	1.200	ok	1.200	1.140-1.260
1,1,1-Trichloroethane	4.26	3.57	1.193	ok	1.196	1.136-1.256
1,1,1,2-Tetrachloroethane	10.86	10.78	1.007	ok	1.008	0.948-1.068
1,1,2,2-Tetrachloroethane	13.16	10.78	1.221	ok	1.221	1.161-1.281
1,1,2-Trichloroethane	7.44	4.95	1.503	ok	1.502	1.442-1.562
1,2,3-Trichloropropane	13.44	10.78	1.247	ok	1.248	1.188-1.308
1,2,3-Trimethylbenzene	17.25	10.78	1.600	ok	1.600	1.540-1.660
1,2,4-Trimethylbenzene	16.88	10.78	1.566	ok	1.565	1.505-1.625

Initial Calibration Retention Time/Internal Standard Area Summary

Job Number: JD60001
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample Number	Lab File ID	Injected	By	Level	Inst ID	Method	
V7W5-IC0005	7W00093.D	11/30/22 11:33	TCH	0.04	GCMS7W	TO-15	
V7W5-IC0005	7W00094.D	11/30/22 12:06	TCH	0.1	GCMS7W	TO-15	Reporting this level
V7W5-IC0005	7W00095.D	11/30/22 12:38	TCH	0.2	GCMS7W	TO-15	
V7W5-IC0005	7W00096.D	11/30/22 13:09	TCH	0.5	GCMS7W	TO-15	
V7W5-IC0005	7W00098.D	11/30/22 14:12	TCH	5	GCMS7W	TO-15	
V7W5-ICC0005	7W00099.D	11/30/22 14:44	TCH	10	GCMS7W	TO-15	
V7W5-IC0005	7W00100.D	11/30/22 15:16	TCH	20	GCMS7W	TO-15	
V7W5-IC0005	7W00101.D	11/30/22 15:51	TCH	40	GCMS7W	TO-15	
V7W5-IC0005	7W00102.D	11/30/22 16:26	TCH	50	GCMS7W	TO-15	

Target Compound	RT (min.)	Istd RT (min.)	Rel RT		Mean Rel RT	Rel RT Range (+ /- .06)
1,3,5-Trimethylbenzene	16.44	10.78	1.525	ok	1.525	1.465-1.585
2,2,4-Trimethylpentane	5.67	4.95	1.145	ok	1.144	1.084-1.204
Tetrachloroethylene	9.62	4.95	1.943	ok	1.943	1.883-2.003
Tetrahydrofuran	3.91	3.57	1.095	ok	1.089	1.029-1.149
Toluene	7.83	4.95	1.582	ok	1.581	1.521-1.641
Trichloroethylene	5.58	4.95	1.127	ok	1.125	1.065-1.185
Trichlorofluoromethane	2.40	3.57	0.672	ok	0.673	0.613-0.733
Vinyl chloride	1.97	3.57	0.552	ok	0.552	0.492-0.612
m,p-Xylene	12.18	10.78	1.130	ok	1.132	1.072-1.192
o-Xylene	13.15	10.78	1.220	ok	1.220	1.160-1.280

Internal Standard	RT (min.)		Mean RT(min.)	RT Range (+ /- 0.33)	Area		Mean Area	Area Range (+ /- 40 %)
Bromochloromethane	3.57	ok	3.57	3.24-3.90	77449	ok	79502	47701-111303
1,4-Difluorobenzene	4.95	ok	4.95	4.62-5.28	393882	ok	395530	237318-553742
Chlorobenzene-D5	10.78	ok	10.78	10.45-11.11	354578	ok	366125	219675-512575

Initial Calibration Retention Time/Internal Standard Area Summary

Job Number: JD60001
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample Number	Lab File ID	Injected	By	Level	Inst ID	Method	
V7W5-IC0005	7W00093.D	11/30/22 11:33	TCH	0.04	GCMS7W	TO-15	
V7W5-IC0005	7W00094.D	11/30/22 12:06	TCH	0.1	GCMS7W	TO-15	
V7W5-IC0005	7W00095.D	11/30/22 12:38	TCH	0.2	GCMS7W	TO-15	Reporting this level
V7W5-IC0005	7W00096.D	11/30/22 13:09	TCH	0.5	GCMS7W	TO-15	
V7W5-IC0005	7W00098.D	11/30/22 14:12	TCH	5	GCMS7W	TO-15	
V7W5-ICC0005	7W00099.D	11/30/22 14:44	TCH	10	GCMS7W	TO-15	
V7W5-IC0005	7W00100.D	11/30/22 15:16	TCH	20	GCMS7W	TO-15	
V7W5-IC0005	7W00101.D	11/30/22 15:51	TCH	40	GCMS7W	TO-15	
V7W5-IC0005	7W00102.D	11/30/22 16:26	TCH	50	GCMS7W	TO-15	

Target Compound	RT (min.)	Istd RT (min.)	Rel RT		Mean Rel RT	Rel RT Range (+ /- .06)
Acetone (2-Propanone)	2.34	3.57	0.655	ok	0.655	0.595-0.715
Acrolein	2.29	3.57	0.641	ok	0.642	0.582-0.702
Acrylonitrile	2.49	3.57	0.697	ok	0.698	0.638-0.758
Acetonitrile	2.25	3.57	0.630	ok	0.631	0.571-0.691
1,3-Butadiene	2.01	3.57	0.563	ok	0.563	0.503-0.623
Benzene	4.60	3.57	1.289	ok	1.291	1.231-1.351
Bromobenzene	14.57	10.78	1.352	ok	1.352	1.292-1.412
Bromodichloromethane	5.51	4.95	1.113	ok	1.112	1.052-1.172
Bromoform	12.01	10.78	1.114	ok	1.115	1.055-1.175
Bromomethane	2.09	3.57	0.585	ok	0.586	0.526-0.646
Bromoethene	2.26	3.57	0.633	ok	0.633	0.573-0.693
n-Butane	2.03	3.57	0.569	ok	0.569	0.509-0.629
Benzyl Chloride	16.96	10.78	1.573	ok	1.573	1.513-1.633
n-Butylbenzene	17.66	10.78	1.638	ok	1.637	1.577-1.697
sec-Butylbenzene	17.14	10.78	1.590	ok	1.589	1.529-1.649
tert-Butylbenzene	16.87	10.78	1.565	ok	1.564	1.504-1.624
Carbon disulfide	2.75	3.57	0.770	ok	0.770	0.710-0.830
Chlorobenzene	10.86	10.78	1.007	ok	1.008	0.948-1.068
Chlorodifluoromethane	1.81	3.57	0.507	ok	0.510	0.450-0.570
Chloroethane	2.15	3.57	0.602	ok	0.602	0.542-0.662
Chlorotrifluoroethene	1.83	3.57	0.513	ok	0.513	0.453-0.573
Chloroform	3.65	3.57	1.022	ok	1.023	0.963-1.083
Chloromethane	1.89	3.57	0.529	ok	0.531	0.471-0.591
3-Chloropropene	2.69	3.57	0.754	ok	0.754	0.694-0.814
2-Chlorotoluene	15.72	10.78	1.458	ok	1.458	1.398-1.518
Carbon tetrachloride	4.73	3.57	1.325	ok	1.325	1.265-1.385
Cyclohexane	4.83	4.95	0.976	ok	0.976	0.916-1.036
1,1-Dichloroethane	3.08	3.57	0.863	ok	0.863	0.803-0.923
1,1-Dichloroethylene	2.60	3.57	0.728	ok	0.730	0.670-0.790
1,2-Dibromoethane (EDB)	8.74	4.95	1.766	ok	1.765	1.705-1.825
1,2-Dichloroethane	4.09	3.57	1.146	ok	1.147	1.087-1.207
1,2-Dichloropropane	5.32	4.95	1.075	ok	1.074	1.014-1.134
1,3-Dichloropropane	7.88	4.95	1.592	ok	1.592	1.532-1.652
1,4-Dioxane	5.68	4.95	1.147	ok	1.135	1.075-1.195
Dichlorodifluoromethane	1.85	3.57	0.518	ok	0.519	0.459-0.579
Dichlorofluoromethane	2.17	3.57	0.608	ok	0.609	0.549-0.669
Dibromochloromethane	8.40	4.95	1.697	ok	1.694	1.634-1.754
Dibromomethane	5.27	4.95	1.065	ok	1.065	1.005-1.125
trans-1,2-Dichloroethylene	3.00	3.57	0.840	ok	0.841	0.781-0.901

Initial Calibration Retention Time/Internal Standard Area Summary

Job Number: JD60001
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample Number	Lab File ID	Injected	By	Level	Inst ID	Method	
V7W5-IC0005	7W00093.D	11/30/22 11:33	TCH	0.04	GCMS7W	TO-15	
V7W5-IC0005	7W00094.D	11/30/22 12:06	TCH	0.1	GCMS7W	TO-15	
V7W5-IC0005	7W00095.D	11/30/22 12:38	TCH	0.2	GCMS7W	TO-15	Reporting this level
V7W5-IC0005	7W00096.D	11/30/22 13:09	TCH	0.5	GCMS7W	TO-15	
V7W5-IC0005	7W00098.D	11/30/22 14:12	TCH	5	GCMS7W	TO-15	
V7W5-ICC0005	7W00099.D	11/30/22 14:44	TCH	10	GCMS7W	TO-15	
V7W5-IC0005	7W00100.D	11/30/22 15:16	TCH	20	GCMS7W	TO-15	
V7W5-IC0005	7W00101.D	11/30/22 15:51	TCH	40	GCMS7W	TO-15	
V7W5-IC0005	7W00102.D	11/30/22 16:26	TCH	50	GCMS7W	TO-15	

Target Compound	RT (min.)	Istd RT (min.)	Rel RT		Mean Rel RT	Rel RT Range (+ /- .06)
cis-1,2-Dichloroethylene	3.48	3.57	0.975	ok	0.976	0.916-1.036
cis-1,3-Dichloropropene	6.55	4.95	1.323	ok	1.324	1.264-1.384
m-Dichlorobenzene	16.94	10.78	1.571	ok	1.571	1.511-1.631
o-Dichlorobenzene	17.30	10.78	1.605	ok	1.605	1.545-1.665
p-Dichlorobenzene	17.01	10.78	1.578	ok	1.578	1.518-1.638
trans-1,3-Dichloropropene	7.27	4.95	1.469	ok	1.467	1.407-1.527
Di-Isopropyl ether	3.64	3.57	1.020	ok	1.019	0.959-1.079
2,3-Dimethylpentane	5.10	4.95	1.030	ok	1.030	0.970-1.090
2,4-Dimethylpentane	4.19	3.57	1.174	ok	1.173	1.113-1.233
Ethanol	2.18	3.57	0.611	ok	0.612	0.552-0.672
Ethylbenzene	11.77	10.78	1.092	ok	1.091	1.031-1.151
Ethyl Acetate	3.64	3.57	1.020	ok	1.019	0.959-1.079
Ethyl Acrylate	5.46	4.95	1.103	ok	1.100	1.040-1.160
4-Ethyltoluene	16.31	10.78	1.513	ok	1.512	1.452-1.572
Freon 113	2.75	3.57	0.770	ok	0.771	0.711-0.831
Freon 114	1.93	3.57	0.541	ok	0.541	0.481-0.601
Freon 123	2.31	3.57	0.647	ok	0.647	0.587-0.707
Freon 123A	2.33	3.57	0.653	ok	0.653	0.593-0.713
Freon 142B	1.89	3.57	0.529	ok	0.530	0.470-0.590
Freon 152A	1.80	3.57	0.504	ok	0.504	0.444-0.564
Heptane	6.01	4.95	1.214	ok	1.212	1.152-1.272
Hexachlorobutadiene	18.87	10.78	1.750	ok	1.750	1.690-1.810
Hexachloroethane	17.84	10.78	1.655	ok	1.654	1.594-1.714
Hexane	3.62	3.57	1.014	ok	1.015	0.955-1.075
2-Hexanone	8.45	4.95	1.707	ok	1.703	1.643-1.763
Iodomethane	2.58	3.57	0.723	ok	0.723	0.663-0.783
Isopropylbenzene	14.70	10.78	1.364	ok	1.363	1.303-1.423
Isopropyl Alcohol	2.42	3.57	0.678	ok	0.679	0.619-0.739
p-Isopropyltoluene	17.31	10.78	1.606	ok	1.605	1.545-1.665
Methylene chloride	2.64	3.57	0.739	ok	0.740	0.680-0.800
Methyl ethyl ketone	3.28	3.57	0.919	ok	0.917	0.857-0.977
Methyl Isobutyl Ketone	6.70	4.95	1.354	ok	1.350	1.290-1.410
Methyl Tert Butyl Ether	3.13	3.57	0.877	ok	0.876	0.816-0.936
Methylmethacrylate	5.89	4.95	1.190	ok	1.190	1.130-1.250
Naphthalene	18.61	10.78	1.726	ok	1.726	1.666-1.786
Nonane	14.28	10.78	1.325	ok	1.324	1.264-1.384
Octane	9.75	4.95	1.970	ok	1.971	1.911-2.031
Pentane	2.52	3.57	0.706	ok	0.705	0.645-0.765
n-Propylbenzene	16.03	10.78	1.487	ok	1.487	1.427-1.547

Initial Calibration Retention Time/Internal Standard Area Summary

Job Number: JD60001
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample Number	Lab File ID	Injected	By	Level	Inst ID	Method	
V7W5-IC0005	7W00093.D	11/30/22 11:33	TCH	0.04	GCMS7W	TO-15	
V7W5-IC0005	7W00094.D	11/30/22 12:06	TCH	0.1	GCMS7W	TO-15	
V7W5-IC0005	7W00095.D	11/30/22 12:38	TCH	0.2	GCMS7W	TO-15	Reporting this level
V7W5-IC0005	7W00096.D	11/30/22 13:09	TCH	0.5	GCMS7W	TO-15	
V7W5-IC0005	7W00098.D	11/30/22 14:12	TCH	5	GCMS7W	TO-15	
V7W5-ICC0005	7W00099.D	11/30/22 14:44	TCH	10	GCMS7W	TO-15	
V7W5-IC0005	7W00100.D	11/30/22 15:16	TCH	20	GCMS7W	TO-15	
V7W5-IC0005	7W00101.D	11/30/22 15:51	TCH	40	GCMS7W	TO-15	
V7W5-IC0005	7W00102.D	11/30/22 16:26	TCH	50	GCMS7W	TO-15	

Target Compound	RT (min.)	Istd RT (min.)	Rel RT		Mean Rel RT	Rel RT Range (+ /- .06)
Propylene	1.83	3.57	0.513	ok	0.513	0.453-0.573
Styrene	12.95	10.78	1.201	ok	1.200	1.140-1.260
1,1,1-Trichloroethane	4.27	3.57	1.196	ok	1.196	1.136-1.256
1,1,1,2-Tetrachloroethane	10.87	10.78	1.008	ok	1.008	0.948-1.068
1,1,2,2-Tetrachloroethane	13.16	10.78	1.221	ok	1.221	1.161-1.281
1,1,2-Trichloroethane	7.44	4.95	1.503	ok	1.502	1.442-1.562
1,2,4-Trichlorobenzene	18.56	10.78	1.722	ok	1.721	1.661-1.781
1,2,3-Trichloropropane	13.45	10.78	1.248	ok	1.248	1.188-1.308
1,2,3-Trimethylbenzene	17.25	10.78	1.600	ok	1.600	1.540-1.660
1,2,4-Trimethylbenzene	16.88	10.78	1.566	ok	1.565	1.505-1.625
1,3,5-Trimethylbenzene	16.44	10.78	1.525	ok	1.525	1.465-1.585
2,2,4-Trimethylpentane	5.67	4.95	1.145	ok	1.144	1.084-1.204
Tertiary Butyl Alcohol	2.64	3.57	0.739	ok	0.737	0.677-0.797
Tetrachloroethylene	9.62	4.95	1.943	ok	1.943	1.883-2.003
Tetrahydrofuran	3.91	3.57	1.095	ok	1.089	1.029-1.149
Toluene	7.83	4.95	1.582	ok	1.581	1.521-1.641
Trichloroethylene	5.57	4.95	1.125	ok	1.125	1.065-1.185
Trichlorofluoromethane	2.40	3.57	0.672	ok	0.673	0.613-0.733
Vinyl chloride	1.97	3.57	0.552	ok	0.552	0.492-0.612
Vinyl Acetate	3.16	3.57	0.885	ok	0.886	0.826-0.946
m,p-Xylene	12.21	10.78	1.133	ok	1.132	1.072-1.192
o-Xylene	13.16	10.78	1.221	ok	1.220	1.160-1.280

Internal Standard	RT (min.)		Mean RT(min.)	RT Range (+ /- 0.33)	Area		Mean Area	Area Range (+ /- 40 %)
Bromochloromethane	3.57	ok	3.57	3.24-3.90	78130	ok	79502	47701-111303
1,4-Difluorobenzene	4.95	ok	4.95	4.62-5.28	394439	ok	395530	237318-553742
Chlorobenzene-D5	10.78	ok	10.78	10.45-11.11	358370	ok	366125	219675-512575

Initial Calibration Retention Time/Internal Standard Area Summary

Job Number: JD60001
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample Number	Lab File ID	Injected	By	Level	Inst ID	Method	
V7W5-IC0005	7W00093.D	11/30/22 11:33	TCH	0.04	GCMS7W	TO-15	
V7W5-IC0005	7W00094.D	11/30/22 12:06	TCH	0.1	GCMS7W	TO-15	
V7W5-IC0005	7W00095.D	11/30/22 12:38	TCH	0.2	GCMS7W	TO-15	
V7W5-IC0005	7W00096.D	11/30/22 13:09	TCH	0.5	GCMS7W	TO-15	Reporting this level
V7W5-IC0005	7W00098.D	11/30/22 14:12	TCH	5	GCMS7W	TO-15	
V7W5-ICC0005	7W00099.D	11/30/22 14:44	TCH	10	GCMS7W	TO-15	
V7W5-IC0005	7W00100.D	11/30/22 15:16	TCH	20	GCMS7W	TO-15	
V7W5-IC0005	7W00101.D	11/30/22 15:51	TCH	40	GCMS7W	TO-15	
V7W5-IC0005	7W00102.D	11/30/22 16:26	TCH	50	GCMS7W	TO-15	

Target Compound	RT (min.)	Istd RT (min.)	Rel RT		Mean Rel RT	Rel RT Range (+ /- .06)
Acetone (2-Propanone)	2.35	3.57	0.658	ok	0.655	0.595-0.715
Acrolein	2.30	3.57	0.644	ok	0.642	0.582-0.702
Acrylonitrile	2.49	3.57	0.697	ok	0.698	0.638-0.758
Acetonitrile	2.26	3.57	0.633	ok	0.631	0.571-0.691
1,3-Butadiene	2.01	3.57	0.563	ok	0.563	0.503-0.623
Benzene	4.60	3.57	1.289	ok	1.291	1.231-1.351
Bromobenzene	14.58	10.78	1.353	ok	1.352	1.292-1.412
Bromodichloromethane	5.50	4.96	1.109	ok	1.112	1.052-1.172
Bromoform	12.03	10.78	1.116	ok	1.115	1.055-1.175
Bromomethane	2.09	3.57	0.585	ok	0.586	0.526-0.646
Bromoethene	2.26	3.57	0.633	ok	0.633	0.573-0.693
n-Butane	2.03	3.57	0.569	ok	0.569	0.509-0.629
Benzyl Chloride	16.96	10.78	1.573	ok	1.573	1.513-1.633
n-Butylbenzene	17.66	10.78	1.638	ok	1.637	1.577-1.697
sec-Butylbenzene	17.14	10.78	1.590	ok	1.589	1.529-1.649
tert-Butylbenzene	16.87	10.78	1.565	ok	1.564	1.504-1.624
Carbon disulfide	2.75	3.57	0.770	ok	0.770	0.710-0.830
Chlorobenzene	10.87	10.78	1.008	ok	1.008	0.948-1.068
Chlorodifluoromethane	1.82	3.57	0.510	ok	0.510	0.450-0.570
Chloroethane	2.15	3.57	0.602	ok	0.602	0.542-0.662
Chlorotrifluoroethene	1.83	3.57	0.513	ok	0.513	0.453-0.573
Chloroform	3.64	3.57	1.020	ok	1.023	0.963-1.083
Chloromethane	1.90	3.57	0.532	ok	0.531	0.471-0.591
3-Chloropropene	2.69	3.57	0.754	ok	0.754	0.694-0.814
2-Chlorotoluene	15.73	10.78	1.459	ok	1.458	1.398-1.518
Carbon tetrachloride	4.72	3.57	1.322	ok	1.325	1.265-1.385
Cyclohexane	4.83	4.96	0.974	ok	0.976	0.916-1.036
1,1-Dichloroethane	3.08	3.57	0.863	ok	0.863	0.803-0.923
1,1-Dichloroethylene	2.60	3.57	0.728	ok	0.730	0.670-0.790
1,2-Dibromoethane (EDB)	8.74	4.96	1.762	ok	1.765	1.705-1.825
1,2-Dichloroethane	4.09	3.57	1.146	ok	1.147	1.087-1.207
1,2-Dichloropropane	5.32	4.96	1.073	ok	1.074	1.014-1.134
1,3-Dichloropropane	7.88	4.96	1.589	ok	1.592	1.532-1.652
1,4-Dioxane	5.66	4.96	1.141	ok	1.135	1.075-1.195
Dichlorodifluoromethane	1.85	3.57	0.518	ok	0.519	0.459-0.579
Dichlorofluoromethane	2.17	3.57	0.608	ok	0.609	0.549-0.669
Dibromochloromethane	8.39	4.96	1.692	ok	1.694	1.634-1.754
Dibromomethane	5.28	4.96	1.065	ok	1.065	1.005-1.125
trans-1,2-Dichloroethylene	3.00	3.57	0.840	ok	0.841	0.781-0.901

Initial Calibration Retention Time/Internal Standard Area Summary

Job Number: JD60001
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample Number	Lab File ID	Injected	By	Level	Inst ID	Method	
V7W5-IC0005	7W00093.D	11/30/22 11:33	TCH	0.04	GCMS7W	TO-15	
V7W5-IC0005	7W00094.D	11/30/22 12:06	TCH	0.1	GCMS7W	TO-15	
V7W5-IC0005	7W00095.D	11/30/22 12:38	TCH	0.2	GCMS7W	TO-15	
V7W5-IC0005	7W00096.D	11/30/22 13:09	TCH	0.5	GCMS7W	TO-15	Reporting this level
V7W5-IC0005	7W00098.D	11/30/22 14:12	TCH	5	GCMS7W	TO-15	
V7W5-ICC0005	7W00099.D	11/30/22 14:44	TCH	10	GCMS7W	TO-15	
V7W5-IC0005	7W00100.D	11/30/22 15:16	TCH	20	GCMS7W	TO-15	
V7W5-IC0005	7W00101.D	11/30/22 15:51	TCH	40	GCMS7W	TO-15	
V7W5-IC0005	7W00102.D	11/30/22 16:26	TCH	50	GCMS7W	TO-15	

Target Compound	RT (min.)	Istd RT (min.)	Rel RT		Mean Rel RT	Rel RT Range (+ /- .06)
cis-1,2-Dichloroethylene	3.48	3.57	0.975	ok	0.976	0.916-1.036
cis-1,3-Dichloropropene	6.56	4.96	1.323	ok	1.324	1.264-1.384
m-Dichlorobenzene	16.94	10.78	1.571	ok	1.571	1.511-1.631
o-Dichlorobenzene	17.30	10.78	1.605	ok	1.605	1.545-1.665
p-Dichlorobenzene	17.02	10.78	1.579	ok	1.578	1.518-1.638
trans-1,3-Dichloropropene	7.26	4.96	1.464	ok	1.467	1.407-1.527
Di-Isopropyl ether	3.65	3.57	1.022	ok	1.019	0.959-1.079
2,3-Dimethylpentane	5.10	4.96	1.028	ok	1.030	0.970-1.090
2,4-Dimethylpentane	4.18	3.57	1.171	ok	1.173	1.113-1.233
Ethanol	2.19	3.57	0.613	ok	0.612	0.552-0.672
Ethylbenzene	11.77	10.78	1.092	ok	1.091	1.031-1.151
Ethyl Acetate	3.65	3.57	1.022	ok	1.019	0.959-1.079
Ethyl Acrylate	5.46	4.96	1.101	ok	1.100	1.040-1.160
4-Ethyltoluene	16.31	10.78	1.513	ok	1.512	1.452-1.572
Freon 113	2.75	3.57	0.770	ok	0.771	0.711-0.831
Freon 114	1.93	3.57	0.541	ok	0.541	0.481-0.601
Freon 123	2.31	3.57	0.647	ok	0.647	0.587-0.707
Freon 123A	2.33	3.57	0.653	ok	0.653	0.593-0.713
Freon 142B	1.89	3.57	0.529	ok	0.530	0.470-0.590
Freon 152A	1.80	3.57	0.504	ok	0.504	0.444-0.564
Heptane	6.00	4.96	1.210	ok	1.212	1.152-1.272
Hexachlorobutadiene	18.87	10.78	1.750	ok	1.750	1.690-1.810
Hexachloroethane	17.84	10.78	1.655	ok	1.654	1.594-1.714
Hexane	3.62	3.57	1.014	ok	1.015	0.955-1.075
2-Hexanone	8.46	4.96	1.706	ok	1.703	1.643-1.763
Iodomethane	2.58	3.57	0.723	ok	0.723	0.663-0.783
Isopropylbenzene	14.70	10.78	1.364	ok	1.363	1.303-1.423
Isopropyl Alcohol	2.44	3.57	0.683	ok	0.679	0.619-0.739
p-Isopropyltoluene	17.31	10.78	1.606	ok	1.605	1.545-1.665
Methylene chloride	2.64	3.57	0.739	ok	0.740	0.680-0.800
Methyl ethyl ketone	3.29	3.57	0.922	ok	0.917	0.857-0.977
Methyl Isobutyl Ketone	6.71	4.96	1.353	ok	1.350	1.290-1.410
Methyl Tert Butyl Ether	3.14	3.57	0.880	ok	0.876	0.816-0.936
Methylmethacrylate	5.91	4.96	1.192	ok	1.190	1.130-1.250
Naphthalene	18.61	10.78	1.726	ok	1.726	1.666-1.786
Nonane	14.28	10.78	1.325	ok	1.324	1.264-1.384
Octane	9.76	4.96	1.968	ok	1.971	1.911-2.031
Pentane	2.51	3.57	0.703	ok	0.705	0.645-0.765
n-Propylbenzene	16.03	10.78	1.487	ok	1.487	1.427-1.547

Initial Calibration Retention Time/Internal Standard Area Summary

Job Number: JD60001
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample Number	Lab File ID	Injected	By	Level	Inst ID	Method	
V7W5-IC0005	7W00093.D	11/30/22 11:33	TCH	0.04	GCMS7W	TO-15	
V7W5-IC0005	7W00094.D	11/30/22 12:06	TCH	0.1	GCMS7W	TO-15	
V7W5-IC0005	7W00095.D	11/30/22 12:38	TCH	0.2	GCMS7W	TO-15	
V7W5-IC0005	7W00096.D	11/30/22 13:09	TCH	0.5	GCMS7W	TO-15	Reporting this level
V7W5-IC0005	7W00098.D	11/30/22 14:12	TCH	5	GCMS7W	TO-15	
V7W5-ICC0005	7W00099.D	11/30/22 14:44	TCH	10	GCMS7W	TO-15	
V7W5-IC0005	7W00100.D	11/30/22 15:16	TCH	20	GCMS7W	TO-15	
V7W5-IC0005	7W00101.D	11/30/22 15:51	TCH	40	GCMS7W	TO-15	
V7W5-IC0005	7W00102.D	11/30/22 16:26	TCH	50	GCMS7W	TO-15	

Target Compound	RT (min.)	Istd RT (min.)	Rel RT		Mean Rel RT	Rel RT Range (+ /- .06)
Propylene	1.83	3.57	0.513	ok	0.513	0.453-0.573
Styrene	12.94	10.78	1.200	ok	1.200	1.140-1.260
1,1,1-Trichloroethane	4.27	3.57	1.196	ok	1.196	1.136-1.256
1,1,1,2-Tetrachloroethane	10.87	10.78	1.008	ok	1.008	0.948-1.068
1,1,2,2-Tetrachloroethane	13.16	10.78	1.221	ok	1.221	1.161-1.281
1,1,2-Trichloroethane	7.43	4.96	1.498	ok	1.502	1.442-1.562
1,2,4-Trichlorobenzene	18.56	10.78	1.722	ok	1.721	1.661-1.781
1,2,3-Trichloropropane	13.45	10.78	1.248	ok	1.248	1.188-1.308
1,2,3-Trimethylbenzene	17.25	10.78	1.600	ok	1.600	1.540-1.660
1,2,4-Trimethylbenzene	16.87	10.78	1.565	ok	1.565	1.505-1.625
1,3,5-Trimethylbenzene	16.44	10.78	1.525	ok	1.525	1.465-1.585
2,2,4-Trimethylpentane	5.67	4.96	1.143	ok	1.144	1.084-1.204
Tertiary Butyl Alcohol	2.66	3.57	0.745	ok	0.737	0.677-0.797
Tetrachloroethylene	9.62	4.96	1.940	ok	1.943	1.883-2.003
Tetrahydrofuran	3.91	3.57	1.095	ok	1.089	1.029-1.149
Toluene	7.83	4.96	1.579	ok	1.581	1.521-1.641
Trichloroethylene	5.57	4.96	1.123	ok	1.125	1.065-1.185
Trichlorofluoromethane	2.40	3.57	0.672	ok	0.673	0.613-0.733
Vinyl chloride	1.96	3.57	0.549	ok	0.552	0.492-0.612
Vinyl Acetate	3.17	3.57	0.888	ok	0.886	0.826-0.946
m,p-Xylene	12.21	10.78	1.133	ok	1.132	1.072-1.192
o-Xylene	13.16	10.78	1.221	ok	1.220	1.160-1.280

Internal Standard	RT (min.)		Mean RT(min.)	RT Range (+ /- 0.33)	Area		Mean Area	Area Range (+ /- 40 %)
Bromochloromethane	3.57	ok	3.57	3.24-3.90	76962	ok	79502	47701-111303
1,4-Difluorobenzene	4.96	ok	4.95	4.62-5.28	384573	ok	395530	237318-553742
Chlorobenzene-D5	10.78	ok	10.78	10.45-11.11	350815	ok	366125	219675-512575

Initial Calibration Retention Time/Internal Standard Area Summary

Job Number: JD60001
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample Number	Lab File ID	Injected	By	Level	Inst ID	Method	
V7W5-IC0005	7W00093.D	11/30/22 11:33	TCH	0.04	GCMS7W	TO-15	
V7W5-IC0005	7W00094.D	11/30/22 12:06	TCH	0.1	GCMS7W	TO-15	
V7W5-IC0005	7W00095.D	11/30/22 12:38	TCH	0.2	GCMS7W	TO-15	
V7W5-IC0005	7W00096.D	11/30/22 13:09	TCH	0.5	GCMS7W	TO-15	
V7W5-IC0005	7W00098.D	11/30/22 14:12	TCH	5	GCMS7W	TO-15	Reporting this level
V7W5-ICC0005	7W00099.D	11/30/22 14:44	TCH	10	GCMS7W	TO-15	
V7W5-IC0005	7W00100.D	11/30/22 15:16	TCH	20	GCMS7W	TO-15	
V7W5-IC0005	7W00101.D	11/30/22 15:51	TCH	40	GCMS7W	TO-15	
V7W5-IC0005	7W00102.D	11/30/22 16:26	TCH	50	GCMS7W	TO-15	

Target Compound	RT (min.)	Istd RT (min.)	Rel RT		Mean Rel RT	Rel RT Range (+ /- .06)
Acetone (2-Propanone)	2.34	3.57	0.655	ok	0.655	0.595-0.715
Acrolein	2.30	3.57	0.644	ok	0.642	0.582-0.702
Acrylonitrile	2.49	3.57	0.697	ok	0.698	0.638-0.758
Acetonitrile	2.25	3.57	0.630	ok	0.631	0.571-0.691
1,3-Butadiene	2.01	3.57	0.563	ok	0.563	0.503-0.623
Benzene	4.61	3.57	1.291	ok	1.291	1.231-1.351
Bromobenzene	14.58	10.79	1.351	ok	1.352	1.292-1.412
Bromodichloromethane	5.51	4.95	1.113	ok	1.112	1.052-1.172
Bromoform	12.02	10.79	1.114	ok	1.115	1.055-1.175
Bromomethane	2.09	3.57	0.585	ok	0.586	0.526-0.646
Bromoethene	2.26	3.57	0.633	ok	0.633	0.573-0.693
n-Butane	2.03	3.57	0.569	ok	0.569	0.509-0.629
Benzyl Chloride	16.96	10.79	1.572	ok	1.573	1.513-1.633
n-Butylbenzene	17.66	10.79	1.637	ok	1.637	1.577-1.697
sec-Butylbenzene	17.14	10.79	1.589	ok	1.589	1.529-1.649
tert-Butylbenzene	16.87	10.79	1.563	ok	1.564	1.504-1.624
Carbon disulfide	2.75	3.57	0.770	ok	0.770	0.710-0.830
Chlorobenzene	10.86	10.79	1.006	ok	1.008	0.948-1.068
Chlorodifluoromethane	1.82	3.57	0.510	ok	0.510	0.450-0.570
Chloroethane	2.15	3.57	0.602	ok	0.602	0.542-0.662
Chlorotrifluoroethene	1.83	3.57	0.513	ok	0.513	0.453-0.573
Chloroform	3.65	3.57	1.022	ok	1.023	0.963-1.083
Chloromethane	1.90	3.57	0.532	ok	0.531	0.471-0.591
3-Chloropropene	2.69	3.57	0.754	ok	0.754	0.694-0.814
2-Chlorotoluene	15.72	10.79	1.457	ok	1.458	1.398-1.518
Carbon tetrachloride	4.73	3.57	1.325	ok	1.325	1.265-1.385
Cyclohexane	4.83	4.95	0.976	ok	0.976	0.916-1.036
1,1-Dichloroethane	3.08	3.57	0.863	ok	0.863	0.803-0.923
1,1-Dichloroethylene	2.61	3.57	0.731	ok	0.730	0.670-0.790
1,2-Dibromoethane (EDB)	8.74	4.95	1.766	ok	1.765	1.705-1.825
1,2-Dichloroethane	4.10	3.57	1.148	ok	1.147	1.087-1.207
1,2-Dichloropropane	5.33	4.95	1.077	ok	1.074	1.014-1.134
1,3-Dichloropropane	7.89	4.95	1.594	ok	1.592	1.532-1.652
1,4-Dioxane	5.61	4.95	1.133	ok	1.135	1.075-1.195
Dichlorodifluoromethane	1.85	3.57	0.518	ok	0.519	0.459-0.579
Dichlorofluoromethane	2.17	3.57	0.608	ok	0.609	0.549-0.669
Dibromochloromethane	8.39	4.95	1.695	ok	1.694	1.634-1.754
Dibromomethane	5.28	4.95	1.067	ok	1.065	1.005-1.125
trans-1,2-Dichloroethylene	3.00	3.57	0.840	ok	0.841	0.781-0.901

Initial Calibration Retention Time/Internal Standard Area Summary

Job Number: JD60001
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample Number	Lab File ID	Injected	By	Level	Inst ID	Method	
V7W5-IC0005	7W00093.D	11/30/22 11:33	TCH	0.04	GCMS7W	TO-15	
V7W5-IC0005	7W00094.D	11/30/22 12:06	TCH	0.1	GCMS7W	TO-15	
V7W5-IC0005	7W00095.D	11/30/22 12:38	TCH	0.2	GCMS7W	TO-15	
V7W5-IC0005	7W00096.D	11/30/22 13:09	TCH	0.5	GCMS7W	TO-15	
V7W5-IC0005	7W00098.D	11/30/22 14:12	TCH	5	GCMS7W	TO-15	Reporting this level
V7W5-ICC0005	7W00099.D	11/30/22 14:44	TCH	10	GCMS7W	TO-15	
V7W5-IC0005	7W00100.D	11/30/22 15:16	TCH	20	GCMS7W	TO-15	
V7W5-IC0005	7W00101.D	11/30/22 15:51	TCH	40	GCMS7W	TO-15	
V7W5-IC0005	7W00102.D	11/30/22 16:26	TCH	50	GCMS7W	TO-15	

Target Compound	RT (min.)	Istd RT (min.)	Rel RT		Mean Rel RT	Rel RT Range (+ /- .06)
cis-1,2-Dichloroethylene	3.49	3.57	0.978	ok	0.976	0.916-1.036
cis-1,3-Dichloropropene	6.56	4.95	1.325	ok	1.324	1.264-1.384
m-Dichlorobenzene	16.94	10.79	1.570	ok	1.571	1.511-1.631
o-Dichlorobenzene	17.31	10.79	1.604	ok	1.605	1.545-1.665
p-Dichlorobenzene	17.02	10.79	1.577	ok	1.578	1.518-1.638
trans-1,3-Dichloropropene	7.27	4.95	1.469	ok	1.467	1.407-1.527
Di-Isopropyl ether	3.63	3.57	1.017	ok	1.019	0.959-1.079
2,3-Dimethylpentane	5.10	4.95	1.030	ok	1.030	0.970-1.090
2,4-Dimethylpentane	4.19	3.57	1.174	ok	1.173	1.113-1.233
Ethanol	2.19	3.57	0.613	ok	0.612	0.552-0.672
Ethylbenzene	11.77	10.79	1.091	ok	1.091	1.031-1.151
Ethyl Acetate	3.64	3.57	1.020	ok	1.019	0.959-1.079
Ethyl Acrylate	5.45	4.95	1.101	ok	1.100	1.040-1.160
4-Ethyltoluene	16.31	10.79	1.512	ok	1.512	1.452-1.572
Freon 113	2.75	3.57	0.770	ok	0.771	0.711-0.831
Freon 114	1.93	3.57	0.541	ok	0.541	0.481-0.601
Freon 123	2.31	3.57	0.647	ok	0.647	0.587-0.707
Freon 123A	2.33	3.57	0.653	ok	0.653	0.593-0.713
Freon 142B	1.89	3.57	0.529	ok	0.530	0.470-0.590
Freon 152A	1.80	3.57	0.504	ok	0.504	0.444-0.564
Heptane	6.00	4.95	1.212	ok	1.212	1.152-1.272
Hexachlorobutadiene	18.87	10.79	1.749	ok	1.750	1.690-1.810
Hexachloroethane	17.84	10.79	1.653	ok	1.654	1.594-1.714
Hexane	3.62	3.57	1.014	ok	1.015	0.955-1.075
2-Hexanone	8.44	4.95	1.705	ok	1.703	1.643-1.763
Iodomethane	2.58	3.57	0.723	ok	0.723	0.663-0.783
Isopropylbenzene	14.69	10.79	1.361	ok	1.363	1.303-1.423
Isopropyl Alcohol	2.43	3.57	0.681	ok	0.679	0.619-0.739
p-Isopropyltoluene	17.31	10.79	1.604	ok	1.605	1.545-1.665
Methylene chloride	2.65	3.57	0.742	ok	0.740	0.680-0.800
Methyl ethyl ketone	3.27	3.57	0.916	ok	0.917	0.857-0.977
Methyl Isobutyl Ketone	6.69	4.95	1.352	ok	1.350	1.290-1.410
Methyl Tert Butyl Ether	3.13	3.57	0.877	ok	0.876	0.816-0.936
Methylmethacrylate	5.89	4.95	1.190	ok	1.190	1.130-1.250
Naphthalene	18.61	10.79	1.725	ok	1.726	1.666-1.786
Nonane	14.28	10.79	1.323	ok	1.324	1.264-1.384
Octane	9.77	4.95	1.974	ok	1.971	1.911-2.031
Pentane	2.52	3.57	0.706	ok	0.705	0.645-0.765
n-Propylbenzene	16.04	10.79	1.487	ok	1.487	1.427-1.547

Initial Calibration Retention Time/Internal Standard Area Summary

Job Number: JD60001
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample Number	Lab File ID	Injected	By	Level	Inst ID	Method	
V7W5-IC0005	7W00093.D	11/30/22 11:33	TCH	0.04	GCMS7W	TO-15	
V7W5-IC0005	7W00094.D	11/30/22 12:06	TCH	0.1	GCMS7W	TO-15	
V7W5-IC0005	7W00095.D	11/30/22 12:38	TCH	0.2	GCMS7W	TO-15	
V7W5-IC0005	7W00096.D	11/30/22 13:09	TCH	0.5	GCMS7W	TO-15	
V7W5-IC0005	7W00098.D	11/30/22 14:12	TCH	5	GCMS7W	TO-15	Reporting this level
V7W5-ICC0005	7W00099.D	11/30/22 14:44	TCH	10	GCMS7W	TO-15	
V7W5-IC0005	7W00100.D	11/30/22 15:16	TCH	20	GCMS7W	TO-15	
V7W5-IC0005	7W00101.D	11/30/22 15:51	TCH	40	GCMS7W	TO-15	
V7W5-IC0005	7W00102.D	11/30/22 16:26	TCH	50	GCMS7W	TO-15	

Target Compound	RT (min.)	Istd RT (min.)	Rel RT		Mean Rel RT	Rel RT Range (+ /- .06)
Propylene	1.83	3.57	0.513	ok	0.513	0.453-0.573
Styrene	12.95	10.79	1.200	ok	1.200	1.140-1.260
1,1,1-Trichloroethane	4.27	3.57	1.196	ok	1.196	1.136-1.256
1,1,1,2-Tetrachloroethane	10.88	10.79	1.008	ok	1.008	0.948-1.068
1,1,2,2-Tetrachloroethane	13.17	10.79	1.221	ok	1.221	1.161-1.281
1,1,2-Trichloroethane	7.44	4.95	1.503	ok	1.502	1.442-1.562
1,2,4-Trichlorobenzene	18.56	10.79	1.720	ok	1.721	1.661-1.781
1,2,3-Trichloropropane	13.46	10.79	1.247	ok	1.248	1.188-1.308
1,2,3-Trimethylbenzene	17.25	10.79	1.599	ok	1.600	1.540-1.660
1,2,4-Trimethylbenzene	16.88	10.79	1.564	ok	1.565	1.505-1.625
1,3,5-Trimethylbenzene	16.44	10.79	1.524	ok	1.525	1.465-1.585
2,2,4-Trimethylpentane	5.67	4.95	1.145	ok	1.144	1.084-1.204
Tertiary Butyl Alcohol	2.64	3.57	0.739	ok	0.737	0.677-0.797
Tetrachloroethylene	9.62	4.95	1.943	ok	1.943	1.883-2.003
Tetrahydrofuran	3.89	3.57	1.090	ok	1.089	1.029-1.149
Toluene	7.83	4.95	1.582	ok	1.581	1.521-1.641
Trichloroethylene	5.57	4.95	1.125	ok	1.125	1.065-1.185
Trichlorofluoromethane	2.40	3.57	0.672	ok	0.673	0.613-0.733
Vinyl chloride	1.97	3.57	0.552	ok	0.552	0.492-0.612
Vinyl Acetate	3.16	3.57	0.885	ok	0.886	0.826-0.946
m,p-Xylene	12.20	10.79	1.131	ok	1.132	1.072-1.192
o-Xylene	13.16	10.79	1.220	ok	1.220	1.160-1.280

Internal Standard	RT (min.)		Mean RT(min.)	RT Range (+ /- 0.33)	Area		Mean Area	Area Range (+ /- 40 %)
Bromochloromethane	3.57	ok	3.57	3.24-3.90	78209	ok	79502	47701-111303
1,4-Difluorobenzene	4.95	ok	4.95	4.62-5.28	386395	ok	395530	237318-553742
Chlorobenzene-D5	10.79	ok	10.78	10.45-11.11	357427	ok	366125	219675-512575

Initial Calibration Retention Time/Internal Standard Area Summary

Job Number: JD60001
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample Number	Lab File ID	Injected	By	Level	Inst ID	Method	
V7W5-IC0005	7W00093.D	11/30/22 11:33	TCH	0.04	GCMS7W	TO-15	
V7W5-IC0005	7W00094.D	11/30/22 12:06	TCH	0.1	GCMS7W	TO-15	
V7W5-IC0005	7W00095.D	11/30/22 12:38	TCH	0.2	GCMS7W	TO-15	
V7W5-IC0005	7W00096.D	11/30/22 13:09	TCH	0.5	GCMS7W	TO-15	
V7W5-IC0005	7W00098.D	11/30/22 14:12	TCH	5	GCMS7W	TO-15	
V7W5-ICC0005	7W00099.D	11/30/22 14:44	TCH	10	GCMS7W	TO-15	Reporting this level
V7W5-IC0005	7W00100.D	11/30/22 15:16	TCH	20	GCMS7W	TO-15	
V7W5-IC0005	7W00101.D	11/30/22 15:51	TCH	40	GCMS7W	TO-15	
V7W5-IC0005	7W00102.D	11/30/22 16:26	TCH	50	GCMS7W	TO-15	

Target Compound	RT (min.)	Istd RT (min.)	Rel RT		Mean Rel RT	Rel RT Range (+ /- .06)
Acetone (2-Propanone)	2.33	3.56	0.654	ok	0.655	0.595-0.715
Acrolein	2.29	3.56	0.643	ok	0.642	0.582-0.702
Acrylonitrile	2.49	3.56	0.699	ok	0.698	0.638-0.758
Acetonitrile	2.25	3.56	0.632	ok	0.631	0.571-0.691
1,3-Butadiene	2.01	3.56	0.565	ok	0.563	0.503-0.623
Benzene	4.60	3.56	1.292	ok	1.291	1.231-1.351
Bromobenzene	14.58	10.78	1.353	ok	1.352	1.292-1.412
Bromodichloromethane	5.51	4.95	1.113	ok	1.112	1.052-1.172
Bromoform	12.02	10.78	1.115	ok	1.115	1.055-1.175
Bromomethane	2.09	3.56	0.587	ok	0.586	0.526-0.646
Bromoethene	2.26	3.56	0.635	ok	0.633	0.573-0.693
n-Butane	2.03	3.56	0.570	ok	0.569	0.509-0.629
Benzyl Chloride	16.96	10.78	1.573	ok	1.573	1.513-1.633
n-Butylbenzene	17.66	10.78	1.638	ok	1.637	1.577-1.697
sec-Butylbenzene	17.14	10.78	1.590	ok	1.589	1.529-1.649
tert-Butylbenzene	16.87	10.78	1.565	ok	1.564	1.504-1.624
Carbon disulfide	2.75	3.56	0.772	ok	0.770	0.710-0.830
Chlorobenzene	10.87	10.78	1.008	ok	1.008	0.948-1.068
Chlorodifluoromethane	1.82	3.56	0.511	ok	0.510	0.450-0.570
Chloroethane	2.15	3.56	0.604	ok	0.602	0.542-0.662
Chlorotrifluoroethene	1.83	3.56	0.514	ok	0.513	0.453-0.573
Chloroform	3.65	3.56	1.025	ok	1.023	0.963-1.083
Chloromethane	1.90	3.56	0.534	ok	0.531	0.471-0.591
3-Chloropropene	2.69	3.56	0.756	ok	0.754	0.694-0.814
2-Chlorotoluene	15.72	10.78	1.458	ok	1.458	1.398-1.518
Carbon tetrachloride	4.73	3.56	1.329	ok	1.325	1.265-1.385
Cyclohexane	4.83	4.95	0.976	ok	0.976	0.916-1.036
1,1-Dichloroethane	3.08	3.56	0.865	ok	0.863	0.803-0.923
1,1-Dichloroethylene	2.60	3.56	0.730	ok	0.730	0.670-0.790
1,2-Dibromoethane (EDB)	8.74	4.95	1.766	ok	1.765	1.705-1.825
1,2-Dichloroethane	4.09	3.56	1.149	ok	1.147	1.087-1.207
1,2-Dichloropropane	5.32	4.95	1.075	ok	1.074	1.014-1.134
1,3-Dichloropropane	7.88	4.95	1.592	ok	1.592	1.532-1.652
1,4-Dioxane	5.59	4.95	1.129	ok	1.135	1.075-1.195
Dichlorodifluoromethane	1.85	3.56	0.520	ok	0.519	0.459-0.579
Dichlorofluoromethane	2.17	3.56	0.610	ok	0.609	0.549-0.669
Dibromochloromethane	8.38	4.95	1.693	ok	1.694	1.634-1.754
Dibromomethane	5.27	4.95	1.065	ok	1.065	1.005-1.125
trans-1,2-Dichloroethylene	3.00	3.56	0.843	ok	0.841	0.781-0.901

Initial Calibration Retention Time/Internal Standard Area Summary

Job Number: JD60001
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample Number	Lab File ID	Injected	By	Level	Inst ID	Method	
V7W5-IC0005	7W00093.D	11/30/22 11:33	TCH	0.04	GCMS7W	TO-15	
V7W5-IC0005	7W00094.D	11/30/22 12:06	TCH	0.1	GCMS7W	TO-15	
V7W5-IC0005	7W00095.D	11/30/22 12:38	TCH	0.2	GCMS7W	TO-15	
V7W5-IC0005	7W00096.D	11/30/22 13:09	TCH	0.5	GCMS7W	TO-15	
V7W5-IC0005	7W00098.D	11/30/22 14:12	TCH	5	GCMS7W	TO-15	
V7W5-ICC0005	7W00099.D	11/30/22 14:44	TCH	10	GCMS7W	TO-15	Reporting this level
V7W5-IC0005	7W00100.D	11/30/22 15:16	TCH	20	GCMS7W	TO-15	
V7W5-IC0005	7W00101.D	11/30/22 15:51	TCH	40	GCMS7W	TO-15	
V7W5-IC0005	7W00102.D	11/30/22 16:26	TCH	50	GCMS7W	TO-15	

Target Compound	RT (min.)	Istd RT (min.)	Rel RT		Mean Rel RT	Rel RT Range (+ /- .06)
cis-1,2-Dichloroethylene	3.48	3.56	0.978	ok	0.976	0.916-1.036
cis-1,3-Dichloropropene	6.56	4.95	1.325	ok	1.324	1.264-1.384
m-Dichlorobenzene	16.94	10.78	1.571	ok	1.571	1.511-1.631
o-Dichlorobenzene	17.31	10.78	1.606	ok	1.605	1.545-1.665
p-Dichlorobenzene	17.02	10.78	1.579	ok	1.578	1.518-1.638
trans-1,3-Dichloropropene	7.27	4.95	1.469	ok	1.467	1.407-1.527
Di-Isopropyl ether	3.63	3.56	1.020	ok	1.019	0.959-1.079
2,3-Dimethylpentane	5.10	4.95	1.030	ok	1.030	0.970-1.090
2,4-Dimethylpentane	4.18	3.56	1.174	ok	1.173	1.113-1.233
Ethanol	2.18	3.56	0.612	ok	0.612	0.552-0.672
Ethylbenzene	11.77	10.78	1.092	ok	1.091	1.031-1.151
Ethyl Acetate	3.63	3.56	1.020	ok	1.019	0.959-1.079
Ethyl Acrylate	5.44	4.95	1.099	ok	1.100	1.040-1.160
4-Ethyltoluene	16.31	10.78	1.513	ok	1.512	1.452-1.572
Freon 113	2.75	3.56	0.772	ok	0.771	0.711-0.831
Freon 114	1.93	3.56	0.542	ok	0.541	0.481-0.601
Freon 123	2.31	3.56	0.649	ok	0.647	0.587-0.707
Freon 123A	2.33	3.56	0.654	ok	0.653	0.593-0.713
Freon 142B	1.89	3.56	0.531	ok	0.530	0.470-0.590
Freon 152A	1.80	3.56	0.506	ok	0.504	0.444-0.564
Heptane	6.00	4.95	1.212	ok	1.212	1.152-1.272
Hexachlorobutadiene	18.87	10.78	1.750	ok	1.750	1.690-1.810
Hexachloroethane	17.84	10.78	1.655	ok	1.654	1.594-1.714
Hexane	3.62	3.56	1.017	ok	1.015	0.955-1.075
2-Hexanone	8.42	4.95	1.701	ok	1.703	1.643-1.763
Iodomethane	2.58	3.56	0.725	ok	0.723	0.663-0.783
Isopropylbenzene	14.70	10.78	1.364	ok	1.363	1.303-1.423
Isopropyl Alcohol	2.42	3.56	0.680	ok	0.679	0.619-0.739
p-Isopropyltoluene	17.31	10.78	1.606	ok	1.605	1.545-1.665
Methylene chloride	2.64	3.56	0.742	ok	0.740	0.680-0.800
Methyl ethyl ketone	3.27	3.56	0.919	ok	0.917	0.857-0.977
Methyl Isobutyl Ketone	6.67	4.95	1.347	ok	1.350	1.290-1.410
Methyl Tert Butyl Ether	3.12	3.56	0.876	ok	0.876	0.816-0.936
Methylmethacrylate	5.89	4.95	1.190	ok	1.190	1.130-1.250
Naphthalene	18.61	10.78	1.726	ok	1.726	1.666-1.786
Nonane	14.28	10.78	1.325	ok	1.324	1.264-1.384
Octane	9.77	4.95	1.974	ok	1.971	1.911-2.031
Pentane	2.52	3.56	0.708	ok	0.705	0.645-0.765
n-Propylbenzene	16.03	10.78	1.487	ok	1.487	1.427-1.547

Initial Calibration Retention Time/Internal Standard Area Summary

Job Number: JD60001
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample Number	Lab File ID	Injected	By	Level	Inst ID	Method	
V7W5-IC0005	7W00093.D	11/30/22 11:33	TCH	0.04	GCMS7W	TO-15	
V7W5-IC0005	7W00094.D	11/30/22 12:06	TCH	0.1	GCMS7W	TO-15	
V7W5-IC0005	7W00095.D	11/30/22 12:38	TCH	0.2	GCMS7W	TO-15	
V7W5-IC0005	7W00096.D	11/30/22 13:09	TCH	0.5	GCMS7W	TO-15	
V7W5-IC0005	7W00098.D	11/30/22 14:12	TCH	5	GCMS7W	TO-15	
V7W5-ICC0005	7W00099.D	11/30/22 14:44	TCH	10	GCMS7W	TO-15	Reporting this level
V7W5-IC0005	7W00100.D	11/30/22 15:16	TCH	20	GCMS7W	TO-15	
V7W5-IC0005	7W00101.D	11/30/22 15:51	TCH	40	GCMS7W	TO-15	
V7W5-IC0005	7W00102.D	11/30/22 16:26	TCH	50	GCMS7W	TO-15	

Target Compound	RT (min.)	Istd RT (min.)	Rel RT		Mean Rel RT	Rel RT Range (+ /- .06)
Propylene	1.83	3.56	0.514	ok	0.513	0.453-0.573
Styrene	12.94	10.78	1.200	ok	1.200	1.140-1.260
1,1,1-Trichloroethane	4.27	3.56	1.199	ok	1.196	1.136-1.256
1,1,1,2-Tetrachloroethane	10.87	10.78	1.008	ok	1.008	0.948-1.068
1,1,2,2-Tetrachloroethane	13.17	10.78	1.222	ok	1.221	1.161-1.281
1,1,2-Trichloroethane	7.44	4.95	1.503	ok	1.502	1.442-1.562
1,2,4-Trichlorobenzene	18.56	10.78	1.722	ok	1.721	1.661-1.781
1,2,3-Trichloropropane	13.45	10.78	1.248	ok	1.248	1.188-1.308
1,2,3-Trimethylbenzene	17.25	10.78	1.600	ok	1.600	1.540-1.660
1,2,4-Trimethylbenzene	16.88	10.78	1.566	ok	1.565	1.505-1.625
1,3,5-Trimethylbenzene	16.44	10.78	1.525	ok	1.525	1.465-1.585
2,2,4-Trimethylpentane	5.67	4.95	1.145	ok	1.144	1.084-1.204
Tertiary Butyl Alcohol	2.62	3.56	0.736	ok	0.737	0.677-0.797
Tetrachloroethylene	9.63	4.95	1.945	ok	1.943	1.883-2.003
Tetrahydrofuran	3.87	3.56	1.087	ok	1.089	1.029-1.149
Toluene	7.83	4.95	1.582	ok	1.581	1.521-1.641
Trichloroethylene	5.57	4.95	1.125	ok	1.125	1.065-1.185
Trichlorofluoromethane	2.40	3.56	0.674	ok	0.673	0.613-0.733
Vinyl chloride	1.97	3.56	0.553	ok	0.552	0.492-0.612
Vinyl Acetate	3.16	3.56	0.888	ok	0.886	0.826-0.946
m,p-Xylene	12.21	10.78	1.133	ok	1.132	1.072-1.192
o-Xylene	13.16	10.78	1.221	ok	1.220	1.160-1.280

Internal Standard	RT (min.)		Mean RT(min.)	RT Range (+ /- 0.33)	Area		Mean Area	Area Range (+ /- 40 %)
Bromochloromethane	3.56	ok	3.57	3.24-3.90	75986	ok	79502	47701-111303
1,4-Difluorobenzene	4.95	ok	4.95	4.62-5.28	381248	ok	395530	237318-553742
Chlorobenzene-D5	10.78	ok	10.78	10.45-11.11	356128	ok	366125	219675-512575

Initial Calibration Retention Time/Internal Standard Area Summary

Job Number: JD60001
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample Number	Lab File ID	Injected	By	Level	Inst ID	Method	
V7W5-IC0005	7W00093.D	11/30/22 11:33	TCH	0.04	GCMS7W	TO-15	
V7W5-IC0005	7W00094.D	11/30/22 12:06	TCH	0.1	GCMS7W	TO-15	
V7W5-IC0005	7W00095.D	11/30/22 12:38	TCH	0.2	GCMS7W	TO-15	
V7W5-IC0005	7W00096.D	11/30/22 13:09	TCH	0.5	GCMS7W	TO-15	
V7W5-IC0005	7W00098.D	11/30/22 14:12	TCH	5	GCMS7W	TO-15	
V7W5-ICC0005	7W00099.D	11/30/22 14:44	TCH	10	GCMS7W	TO-15	
V7W5-IC0005	7W00100.D	11/30/22 15:16	TCH	20	GCMS7W	TO-15	Reporting this level
V7W5-IC0005	7W00101.D	11/30/22 15:51	TCH	40	GCMS7W	TO-15	
V7W5-IC0005	7W00102.D	11/30/22 16:26	TCH	50	GCMS7W	TO-15	

Target Compound	RT (min.)	Istd RT (min.)	Rel RT		Mean Rel RT	Rel RT Range (+ /- .06)
Acetone (2-Propanone)	2.33	3.57	0.653	ok	0.655	0.595-0.715
Acrolein	2.29	3.57	0.641	ok	0.642	0.582-0.702
Acrylonitrile	2.49	3.57	0.697	ok	0.698	0.638-0.758
Acetonitrile	2.25	3.57	0.630	ok	0.631	0.571-0.691
1,3-Butadiene	2.01	3.57	0.563	ok	0.563	0.503-0.623
Benzene	4.61	3.57	1.291	ok	1.291	1.231-1.351
Bromobenzene	14.58	10.79	1.351	ok	1.352	1.292-1.412
Bromodichloromethane	5.51	4.95	1.113	ok	1.112	1.052-1.172
Bromoform	12.03	10.79	1.115	ok	1.115	1.055-1.175
Bromomethane	2.09	3.57	0.585	ok	0.586	0.526-0.646
Bromoethene	2.26	3.57	0.633	ok	0.633	0.573-0.693
n-Butane	2.03	3.57	0.569	ok	0.569	0.509-0.629
Benzyl Chloride	16.96	10.79	1.572	ok	1.573	1.513-1.633
n-Butylbenzene	17.66	10.79	1.637	ok	1.637	1.577-1.697
sec-Butylbenzene	17.14	10.79	1.589	ok	1.589	1.529-1.649
tert-Butylbenzene	16.87	10.79	1.563	ok	1.564	1.504-1.624
Carbon disulfide	2.75	3.57	0.770	ok	0.770	0.710-0.830
Chlorobenzene	10.87	10.79	1.007	ok	1.008	0.948-1.068
Chlorodifluoromethane	1.82	3.57	0.510	ok	0.510	0.450-0.570
Chloroethane	2.14	3.57	0.599	ok	0.602	0.542-0.662
Chlorotrifluoroethene	1.83	3.57	0.513	ok	0.513	0.453-0.573
Chloroform	3.65	3.57	1.022	ok	1.023	0.963-1.083
Chloromethane	1.89	3.57	0.529	ok	0.531	0.471-0.591
3-Chloropropene	2.69	3.57	0.754	ok	0.754	0.694-0.814
2-Chlorotoluene	15.72	10.79	1.457	ok	1.458	1.398-1.518
Carbon tetrachloride	4.73	3.57	1.325	ok	1.325	1.265-1.385
Cyclohexane	4.83	4.95	0.976	ok	0.976	0.916-1.036
1,1-Dichloroethane	3.08	3.57	0.863	ok	0.863	0.803-0.923
1,1-Dichloroethylene	2.60	3.57	0.728	ok	0.730	0.670-0.790
1,2-Dibromoethane (EDB)	8.75	4.95	1.768	ok	1.765	1.705-1.825
1,2-Dichloroethane	4.09	3.57	1.146	ok	1.147	1.087-1.207
1,2-Dichloropropane	5.32	4.95	1.075	ok	1.074	1.014-1.134
1,3-Dichloropropane	7.88	4.95	1.592	ok	1.592	1.532-1.652
1,4-Dioxane	5.58	4.95	1.127	ok	1.135	1.075-1.195
Dichlorodifluoromethane	1.85	3.57	0.518	ok	0.519	0.459-0.579
Dichlorofluoromethane	2.17	3.57	0.608	ok	0.609	0.549-0.669
Dibromochloromethane	8.39	4.95	1.695	ok	1.694	1.634-1.754
Dibromomethane	5.28	4.95	1.067	ok	1.065	1.005-1.125
trans-1,2-Dichloroethylene	3.00	3.57	0.840	ok	0.841	0.781-0.901

Initial Calibration Retention Time/Internal Standard Area Summary

Job Number: JD60001
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample Number	Lab File ID	Injected	By	Level	Inst ID	Method	
V7W5-IC0005	7W00093.D	11/30/22 11:33	TCH	0.04	GCMS7W	TO-15	
V7W5-IC0005	7W00094.D	11/30/22 12:06	TCH	0.1	GCMS7W	TO-15	
V7W5-IC0005	7W00095.D	11/30/22 12:38	TCH	0.2	GCMS7W	TO-15	
V7W5-IC0005	7W00096.D	11/30/22 13:09	TCH	0.5	GCMS7W	TO-15	
V7W5-IC0005	7W00098.D	11/30/22 14:12	TCH	5	GCMS7W	TO-15	
V7W5-ICC0005	7W00099.D	11/30/22 14:44	TCH	10	GCMS7W	TO-15	
V7W5-IC0005	7W00100.D	11/30/22 15:16	TCH	20	GCMS7W	TO-15	Reporting this level
V7W5-IC0005	7W00101.D	11/30/22 15:51	TCH	40	GCMS7W	TO-15	
V7W5-IC0005	7W00102.D	11/30/22 16:26	TCH	50	GCMS7W	TO-15	

Target Compound	RT (min.)	Istd RT (min.)	Rel RT		Mean Rel RT	Rel RT Range (+ /- .06)
cis-1,2-Dichloroethylene	3.48	3.57	0.975	ok	0.976	0.916-1.036
cis-1,3-Dichloropropene	6.56	4.95	1.325	ok	1.324	1.264-1.384
m-Dichlorobenzene	16.94	10.79	1.570	ok	1.571	1.511-1.631
o-Dichlorobenzene	17.31	10.79	1.604	ok	1.605	1.545-1.665
p-Dichlorobenzene	17.02	10.79	1.577	ok	1.578	1.518-1.638
trans-1,3-Dichloropropene	7.27	4.95	1.469	ok	1.467	1.407-1.527
Di-Isopropyl ether	3.63	3.57	1.017	ok	1.019	0.959-1.079
2,3-Dimethylpentane	5.10	4.95	1.030	ok	1.030	0.970-1.090
2,4-Dimethylpentane	4.18	3.57	1.171	ok	1.173	1.113-1.233
Ethanol	2.18	3.57	0.611	ok	0.612	0.552-0.672
Ethylbenzene	11.77	10.79	1.091	ok	1.091	1.031-1.151
Ethyl Acetate	3.63	3.57	1.017	ok	1.019	0.959-1.079
Ethyl Acrylate	5.44	4.95	1.099	ok	1.100	1.040-1.160
4-Ethyltoluene	16.31	10.79	1.512	ok	1.512	1.452-1.572
Freon 113	2.75	3.57	0.770	ok	0.771	0.711-0.831
Freon 114	1.93	3.57	0.541	ok	0.541	0.481-0.601
Freon 123	2.31	3.57	0.647	ok	0.647	0.587-0.707
Freon 123A	2.33	3.57	0.653	ok	0.653	0.593-0.713
Freon 142B	1.89	3.57	0.529	ok	0.530	0.470-0.590
Freon 152A	1.80	3.57	0.504	ok	0.504	0.444-0.564
Heptane	6.01	4.95	1.214	ok	1.212	1.152-1.272
Hexachlorobutadiene	18.87	10.79	1.749	ok	1.750	1.690-1.810
Hexachloroethane	17.84	10.79	1.653	ok	1.654	1.594-1.714
Hexane	3.62	3.57	1.014	ok	1.015	0.955-1.075
2-Hexanone	8.41	4.95	1.699	ok	1.703	1.643-1.763
Iodomethane	2.58	3.57	0.723	ok	0.723	0.663-0.783
Isopropylbenzene	14.70	10.79	1.362	ok	1.363	1.303-1.423
Isopropyl Alcohol	2.42	3.57	0.678	ok	0.679	0.619-0.739
p-Isopropyltoluene	17.31	10.79	1.604	ok	1.605	1.545-1.665
Methylene chloride	2.64	3.57	0.739	ok	0.740	0.680-0.800
Methyl ethyl ketone	3.26	3.57	0.913	ok	0.917	0.857-0.977
Methyl Isobutyl Ketone	6.67	4.95	1.347	ok	1.350	1.290-1.410
Methyl Tert Butyl Ether	3.12	3.57	0.874	ok	0.876	0.816-0.936
Methylmethacrylate	5.89	4.95	1.190	ok	1.190	1.130-1.250
Naphthalene	18.61	10.79	1.725	ok	1.726	1.666-1.786
Nonane	14.29	10.79	1.324	ok	1.324	1.264-1.384
Octane	9.77	4.95	1.974	ok	1.971	1.911-2.031
Pentane	2.52	3.57	0.706	ok	0.705	0.645-0.765
n-Propylbenzene	16.04	10.79	1.487	ok	1.487	1.427-1.547

Initial Calibration Retention Time/Internal Standard Area Summary

Job Number: JD60001
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample Number	Lab File ID	Injected	By	Level	Inst ID	Method	
V7W5-IC0005	7W00093.D	11/30/22 11:33	TCH	0.04	GCMS7W	TO-15	
V7W5-IC0005	7W00094.D	11/30/22 12:06	TCH	0.1	GCMS7W	TO-15	
V7W5-IC0005	7W00095.D	11/30/22 12:38	TCH	0.2	GCMS7W	TO-15	
V7W5-IC0005	7W00096.D	11/30/22 13:09	TCH	0.5	GCMS7W	TO-15	
V7W5-IC0005	7W00098.D	11/30/22 14:12	TCH	5	GCMS7W	TO-15	
V7W5-ICC0005	7W00099.D	11/30/22 14:44	TCH	10	GCMS7W	TO-15	
V7W5-IC0005	7W00100.D	11/30/22 15:16	TCH	20	GCMS7W	TO-15	Reporting this level
V7W5-IC0005	7W00101.D	11/30/22 15:51	TCH	40	GCMS7W	TO-15	
V7W5-IC0005	7W00102.D	11/30/22 16:26	TCH	50	GCMS7W	TO-15	

Target Compound	RT (min.)	Istd RT (min.)	Rel RT		Mean Rel RT	Rel RT Range (+ /- .06)
Propylene	1.83	3.57	0.513	ok	0.513	0.453-0.573
Styrene	12.95	10.79	1.200	ok	1.200	1.140-1.260
1,1,1-Trichloroethane	4.27	3.57	1.196	ok	1.196	1.136-1.256
1,1,1,2-Tetrachloroethane	10.88	10.79	1.008	ok	1.008	0.948-1.068
1,1,2,2-Tetrachloroethane	13.17	10.79	1.221	ok	1.221	1.161-1.281
1,1,2-Trichloroethane	7.44	4.95	1.503	ok	1.502	1.442-1.562
1,2,4-Trichlorobenzene	18.56	10.79	1.720	ok	1.721	1.661-1.781
1,2,3-Trichloropropane	13.46	10.79	1.247	ok	1.248	1.188-1.308
1,2,3-Trimethylbenzene	17.25	10.79	1.599	ok	1.600	1.540-1.660
1,2,4-Trimethylbenzene	16.88	10.79	1.564	ok	1.565	1.505-1.625
1,3,5-Trimethylbenzene	16.45	10.79	1.525	ok	1.525	1.465-1.585
2,2,4-Trimethylpentane	5.67	4.95	1.145	ok	1.144	1.084-1.204
Tertiary Butyl Alcohol	2.62	3.57	0.734	ok	0.737	0.677-0.797
Tetrachloroethylene	9.63	4.95	1.945	ok	1.943	1.883-2.003
Tetrahydrofuran	3.87	3.57	1.084	ok	1.089	1.029-1.149
Toluene	7.83	4.95	1.582	ok	1.581	1.521-1.641
Trichloroethylene	5.57	4.95	1.125	ok	1.125	1.065-1.185
Trichlorofluoromethane	2.40	3.57	0.672	ok	0.673	0.613-0.733
Vinyl chloride	1.96	3.57	0.549	ok	0.552	0.492-0.612
Vinyl Acetate	3.16	3.57	0.885	ok	0.886	0.826-0.946
m,p-Xylene	12.21	10.79	1.132	ok	1.132	1.072-1.192
o-Xylene	13.17	10.79	1.221	ok	1.220	1.160-1.280

Internal Standard	RT (min.)		Mean RT(min.)	RT Range (+ /- 0.33)	Area		Mean Area	Area Range (+ /- 40 %)
Bromochloromethane	3.57	ok	3.57	3.24-3.90	80741	ok	79502	47701-111303
1,4-Difluorobenzene	4.95	ok	4.95	4.62-5.28	404758	ok	395530	237318-553742
Chlorobenzene-D5	10.79	ok	10.78	10.45-11.11	380384	ok	366125	219675-512575

Initial Calibration Retention Time/Internal Standard Area Summary

Job Number: JD60001
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample Number	Lab File ID	Injected	By	Level	Inst ID	Method	
V7W5-IC0005	7W00093.D	11/30/22 11:33	TCH	0.04	GCMS7W	TO-15	
V7W5-IC0005	7W00094.D	11/30/22 12:06	TCH	0.1	GCMS7W	TO-15	
V7W5-IC0005	7W00095.D	11/30/22 12:38	TCH	0.2	GCMS7W	TO-15	
V7W5-IC0005	7W00096.D	11/30/22 13:09	TCH	0.5	GCMS7W	TO-15	
V7W5-IC0005	7W00098.D	11/30/22 14:12	TCH	5	GCMS7W	TO-15	
V7W5-ICC0005	7W00099.D	11/30/22 14:44	TCH	10	GCMS7W	TO-15	
V7W5-IC0005	7W00100.D	11/30/22 15:16	TCH	20	GCMS7W	TO-15	
V7W5-IC0005	7W00101.D	11/30/22 15:51	TCH	40	GCMS7W	TO-15	Reporting this level
V7W5-IC0005	7W00102.D	11/30/22 16:26	TCH	50	GCMS7W	TO-15	

Target Compound	RT (min.)	Istd RT (min.)	Rel RT		Mean Rel RT	Rel RT Range (+ /- .06)
Acetone (2-Propanone)	2.34	3.57	0.655	ok	0.655	0.595-0.715
Acrolein	2.29	3.57	0.641	ok	0.642	0.582-0.702
Acrylonitrile	2.49	3.57	0.697	ok	0.698	0.638-0.758
Acetonitrile	2.25	3.57	0.630	ok	0.631	0.571-0.691
1,3-Butadiene	2.01	3.57	0.563	ok	0.563	0.503-0.623
Benzene	4.61	3.57	1.291	ok	1.291	1.231-1.351
Bromobenzene	14.59	10.79	1.352	ok	1.352	1.292-1.412
Bromodichloromethane	5.51	4.96	1.111	ok	1.112	1.052-1.172
Bromoform	12.03	10.79	1.115	ok	1.115	1.055-1.175
Bromomethane	2.09	3.57	0.585	ok	0.586	0.526-0.646
Bromoethene	2.26	3.57	0.633	ok	0.633	0.573-0.693
n-Butane	2.03	3.57	0.569	ok	0.569	0.509-0.629
Benzyl Chloride	16.96	10.79	1.572	ok	1.573	1.513-1.633
n-Butylbenzene	17.66	10.79	1.637	ok	1.637	1.577-1.697
sec-Butylbenzene	17.14	10.79	1.589	ok	1.589	1.529-1.649
tert-Butylbenzene	16.88	10.79	1.564	ok	1.564	1.504-1.624
Carbon disulfide	2.75	3.57	0.770	ok	0.770	0.710-0.830
Chlorobenzene	10.87	10.79	1.007	ok	1.008	0.948-1.068
Chlorodifluoromethane	1.82	3.57	0.510	ok	0.510	0.450-0.570
Chloroethane	2.15	3.57	0.602	ok	0.602	0.542-0.662
Chlorotrifluoroethene	1.83	3.57	0.513	ok	0.513	0.453-0.573
Chloroform	3.65	3.57	1.022	ok	1.023	0.963-1.083
Chloromethane	1.90	3.57	0.532	ok	0.531	0.471-0.591
3-Chloropropene	2.69	3.57	0.754	ok	0.754	0.694-0.814
2-Chlorotoluene	15.73	10.79	1.458	ok	1.458	1.398-1.518
Carbon tetrachloride	4.73	3.57	1.325	ok	1.325	1.265-1.385
Cyclohexane	4.83	4.96	0.974	ok	0.976	0.916-1.036
1,1-Dichloroethane	3.08	3.57	0.863	ok	0.863	0.803-0.923
1,1-Dichloroethylene	2.61	3.57	0.731	ok	0.730	0.670-0.790
1,2-Dibromoethane (EDB)	8.75	4.96	1.764	ok	1.765	1.705-1.825
1,2-Dichloroethane	4.09	3.57	1.146	ok	1.147	1.087-1.207
1,2-Dichloropropane	5.33	4.96	1.075	ok	1.074	1.014-1.134
1,3-Dichloropropane	7.89	4.96	1.591	ok	1.592	1.532-1.652
1,4-Dioxane	5.58	4.96	1.125	ok	1.135	1.075-1.195
Dichlorodifluoromethane	1.85	3.57	0.518	ok	0.519	0.459-0.579
Dichlorofluoromethane	2.18	3.57	0.611	ok	0.609	0.549-0.669
Dibromochloromethane	8.39	4.96	1.692	ok	1.694	1.634-1.754
Dibromomethane	5.28	4.96	1.065	ok	1.065	1.005-1.125
trans-1,2-Dichloroethylene	3.00	3.57	0.840	ok	0.841	0.781-0.901

Initial Calibration Retention Time/Internal Standard Area Summary

Job Number: JD60001
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample Number	Lab File ID	Injected	By	Level	Inst ID	Method	
V7W5-IC0005	7W00093.D	11/30/22 11:33	TCH	0.04	GCMS7W	TO-15	
V7W5-IC0005	7W00094.D	11/30/22 12:06	TCH	0.1	GCMS7W	TO-15	
V7W5-IC0005	7W00095.D	11/30/22 12:38	TCH	0.2	GCMS7W	TO-15	
V7W5-IC0005	7W00096.D	11/30/22 13:09	TCH	0.5	GCMS7W	TO-15	
V7W5-IC0005	7W00098.D	11/30/22 14:12	TCH	5	GCMS7W	TO-15	
V7W5-ICC0005	7W00099.D	11/30/22 14:44	TCH	10	GCMS7W	TO-15	
V7W5-IC0005	7W00100.D	11/30/22 15:16	TCH	20	GCMS7W	TO-15	
V7W5-IC0005	7W00101.D	11/30/22 15:51	TCH	40	GCMS7W	TO-15	Reporting this level
V7W5-IC0005	7W00102.D	11/30/22 16:26	TCH	50	GCMS7W	TO-15	

Target Compound	RT (min.)	Istd RT (min.)	Rel RT		Mean Rel RT	Rel RT Range (+ /- .06)
cis-1,2-Dichloroethylene	3.48	3.57	0.975	ok	0.976	0.916-1.036
cis-1,3-Dichloropropene	6.56	4.96	1.323	ok	1.324	1.264-1.384
m-Dichlorobenzene	16.95	10.79	1.571	ok	1.571	1.511-1.631
o-Dichlorobenzene	17.31	10.79	1.604	ok	1.605	1.545-1.665
p-Dichlorobenzene	17.02	10.79	1.577	ok	1.578	1.518-1.638
trans-1,3-Dichloropropene	7.27	4.96	1.466	ok	1.467	1.407-1.527
Di-Isopropyl ether	3.63	3.57	1.017	ok	1.019	0.959-1.079
2,3-Dimethylpentane	5.11	4.96	1.030	ok	1.030	0.970-1.090
2,4-Dimethylpentane	4.19	3.57	1.174	ok	1.173	1.113-1.233
Ethanol	2.18	3.57	0.611	ok	0.612	0.552-0.672
Ethylbenzene	11.77	10.79	1.091	ok	1.091	1.031-1.151
Ethyl Acetate	3.63	3.57	1.017	ok	1.019	0.959-1.079
Ethyl Acrylate	5.44	4.96	1.097	ok	1.100	1.040-1.160
4-Ethyltoluene	16.31	10.79	1.512	ok	1.512	1.452-1.572
Freon 113	2.75	3.57	0.770	ok	0.771	0.711-0.831
Freon 114	1.93	3.57	0.541	ok	0.541	0.481-0.601
Freon 123	2.31	3.57	0.647	ok	0.647	0.587-0.707
Freon 123A	2.33	3.57	0.653	ok	0.653	0.593-0.713
Freon 142B	1.89	3.57	0.529	ok	0.530	0.470-0.590
Freon 152A	1.80	3.57	0.504	ok	0.504	0.444-0.564
Heptane	6.01	4.96	1.212	ok	1.212	1.152-1.272
Hexachlorobutadiene	18.87	10.79	1.749	ok	1.750	1.690-1.810
Hexachloroethane	17.84	10.79	1.653	ok	1.654	1.594-1.714
Hexane	3.62	3.57	1.014	ok	1.015	0.955-1.075
2-Hexanone	8.41	4.96	1.696	ok	1.703	1.643-1.763
Iodomethane	2.58	3.57	0.723	ok	0.723	0.663-0.783
Isopropylbenzene	14.71	10.79	1.363	ok	1.363	1.303-1.423
Isopropyl Alcohol	2.42	3.57	0.678	ok	0.679	0.619-0.739
p-Isopropyltoluene	17.32	10.79	1.605	ok	1.605	1.545-1.665
Methylene chloride	2.64	3.57	0.739	ok	0.740	0.680-0.800
Methyl ethyl ketone	3.26	3.57	0.913	ok	0.917	0.857-0.977
Methyl Isobutyl Ketone	6.67	4.96	1.345	ok	1.350	1.290-1.410
Methyl Tert Butyl Ether	3.12	3.57	0.874	ok	0.876	0.816-0.936
Methylmethacrylate	5.89	4.96	1.188	ok	1.190	1.130-1.250
Naphthalene	18.62	10.79	1.726	ok	1.726	1.666-1.786
Nonane	14.29	10.79	1.324	ok	1.324	1.264-1.384
Octane	9.77	4.96	1.970	ok	1.971	1.911-2.031
Pentane	2.52	3.57	0.706	ok	0.705	0.645-0.765
n-Propylbenzene	16.04	10.79	1.487	ok	1.487	1.427-1.547

Initial Calibration Retention Time/Internal Standard Area Summary

Job Number: JD60001
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample Number	Lab File ID	Injected	By	Level	Inst ID	Method	
V7W5-IC0005	7W00093.D	11/30/22 11:33	TCH	0.04	GCMS7W	TO-15	
V7W5-IC0005	7W00094.D	11/30/22 12:06	TCH	0.1	GCMS7W	TO-15	
V7W5-IC0005	7W00095.D	11/30/22 12:38	TCH	0.2	GCMS7W	TO-15	
V7W5-IC0005	7W00096.D	11/30/22 13:09	TCH	0.5	GCMS7W	TO-15	
V7W5-IC0005	7W00098.D	11/30/22 14:12	TCH	5	GCMS7W	TO-15	
V7W5-ICC0005	7W00099.D	11/30/22 14:44	TCH	10	GCMS7W	TO-15	
V7W5-IC0005	7W00100.D	11/30/22 15:16	TCH	20	GCMS7W	TO-15	
V7W5-IC0005	7W00101.D	11/30/22 15:51	TCH	40	GCMS7W	TO-15	Reporting this level
V7W5-IC0005	7W00102.D	11/30/22 16:26	TCH	50	GCMS7W	TO-15	

Target Compound	RT (min.)	Istd RT (min.)	Rel RT		Mean Rel RT	Rel RT Range (+ /- .06)
Propylene	1.83	3.57	0.513	ok	0.513	0.453-0.573
Styrene	12.95	10.79	1.200	ok	1.200	1.140-1.260
1,1,1-Trichloroethane	4.27	3.57	1.196	ok	1.196	1.136-1.256
1,1,1,2-Tetrachloroethane	10.88	10.79	1.008	ok	1.008	0.948-1.068
1,1,2,2-Tetrachloroethane	13.18	10.79	1.222	ok	1.221	1.161-1.281
1,1,2-Trichloroethane	7.44	4.96	1.500	ok	1.502	1.442-1.562
1,2,4-Trichlorobenzene	18.57	10.79	1.721	ok	1.721	1.661-1.781
1,2,3-Trichloropropane	13.46	10.79	1.247	ok	1.248	1.188-1.308
1,2,3-Trimethylbenzene	17.26	10.79	1.600	ok	1.600	1.540-1.660
1,2,4-Trimethylbenzene	16.88	10.79	1.564	ok	1.565	1.505-1.625
1,3,5-Trimethylbenzene	16.45	10.79	1.525	ok	1.525	1.465-1.585
2,2,4-Trimethylpentane	5.67	4.96	1.143	ok	1.144	1.084-1.204
Tertiary Butyl Alcohol	2.62	3.57	0.734	ok	0.737	0.677-0.797
Tetrachloroethylene	9.63	4.96	1.942	ok	1.943	1.883-2.003
Tetrahydrofuran	3.87	3.57	1.084	ok	1.089	1.029-1.149
Toluene	7.83	4.96	1.579	ok	1.581	1.521-1.641
Trichloroethylene	5.57	4.96	1.123	ok	1.125	1.065-1.185
Trichlorofluoromethane	2.40	3.57	0.672	ok	0.673	0.613-0.733
Vinyl chloride	1.97	3.57	0.552	ok	0.552	0.492-0.612
Vinyl Acetate	3.16	3.57	0.885	ok	0.886	0.826-0.946
m,p-Xylene	12.22	10.79	1.133	ok	1.132	1.072-1.192
o-Xylene	13.17	10.79	1.221	ok	1.220	1.160-1.280

Internal Standard	RT (min.)		Mean RT(min.)	RT Range (+ /- 0.33)	Area		Mean Area	Area Range (+ /- 40 %)
Bromochloromethane	3.57	ok	3.57	3.24-3.90	83054	ok	79502	47701-111303
1,4-Difluorobenzene	4.96	ok	4.95	4.62-5.28	408760	ok	395530	237318-553742
Chlorobenzene-D5	10.79	ok	10.78	10.45-11.11	387368	ok	366125	219675-512575

Initial Calibration Retention Time/Internal Standard Area Summary

Job Number: JD60001
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample Number	Lab File ID	Injected	By	Level	Inst ID	Method	
V7W5-IC0005	7W00093.D	11/30/22 11:33	TCH	0.04	GCMS7W	TO-15	
V7W5-IC0005	7W00094.D	11/30/22 12:06	TCH	0.1	GCMS7W	TO-15	
V7W5-IC0005	7W00095.D	11/30/22 12:38	TCH	0.2	GCMS7W	TO-15	
V7W5-IC0005	7W00096.D	11/30/22 13:09	TCH	0.5	GCMS7W	TO-15	
V7W5-IC0005	7W00098.D	11/30/22 14:12	TCH	5	GCMS7W	TO-15	
V7W5-ICC0005	7W00099.D	11/30/22 14:44	TCH	10	GCMS7W	TO-15	
V7W5-IC0005	7W00100.D	11/30/22 15:16	TCH	20	GCMS7W	TO-15	
V7W5-IC0005	7W00101.D	11/30/22 15:51	TCH	40	GCMS7W	TO-15	
V7W5-IC0005	7W00102.D	11/30/22 16:26	TCH	50	GCMS7W	TO-15	Reporting this level

Target Compound	RT (min.)	Istd RT (min.)	Rel RT		Mean Rel RT	Rel RT Range (+ /- .06)
Acetone (2-Propanone)	2.33	3.57	0.653	ok	0.655	0.595-0.715
Acrolein	2.29	3.57	0.641	ok	0.642	0.582-0.702
Acrylonitrile	2.49	3.57	0.697	ok	0.698	0.638-0.758
Acetonitrile	2.25	3.57	0.630	ok	0.631	0.571-0.691
1,3-Butadiene	2.01	3.57	0.563	ok	0.563	0.503-0.623
Benzene	4.61	3.57	1.291	ok	1.291	1.231-1.351
Bromobenzene	14.59	10.79	1.352	ok	1.352	1.292-1.412
Bromodichloromethane	5.52	4.96	1.113	ok	1.112	1.052-1.172
Bromoform	12.03	10.79	1.115	ok	1.115	1.055-1.175
Bromomethane	2.09	3.57	0.585	ok	0.586	0.526-0.646
Bromoethene	2.26	3.57	0.633	ok	0.633	0.573-0.693
n-Butane	2.03	3.57	0.569	ok	0.569	0.509-0.629
Benzyl Chloride	16.97	10.79	1.573	ok	1.573	1.513-1.633
n-Butylbenzene	17.66	10.79	1.637	ok	1.637	1.577-1.697
sec-Butylbenzene	17.15	10.79	1.589	ok	1.589	1.529-1.649
tert-Butylbenzene	16.88	10.79	1.564	ok	1.564	1.504-1.624
Carbon disulfide	2.75	3.57	0.770	ok	0.770	0.710-0.830
Chlorobenzene	10.88	10.79	1.008	ok	1.008	0.948-1.068
Chlorodifluoromethane	1.82	3.57	0.510	ok	0.510	0.450-0.570
Chloroethane	2.15	3.57	0.602	ok	0.602	0.542-0.662
Chlorotrifluoroethene	1.83	3.57	0.513	ok	0.513	0.453-0.573
Chloroform	3.65	3.57	1.022	ok	1.023	0.963-1.083
Chloromethane	1.89	3.57	0.529	ok	0.531	0.471-0.591
3-Chloropropene	2.69	3.57	0.754	ok	0.754	0.694-0.814
2-Chlorotoluene	15.73	10.79	1.458	ok	1.458	1.398-1.518
Carbon tetrachloride	4.73	3.57	1.325	ok	1.325	1.265-1.385
Cyclohexane	4.84	4.96	0.976	ok	0.976	0.916-1.036
1,1-Dichloroethane	3.08	3.57	0.863	ok	0.863	0.803-0.923
1,1-Dichloroethylene	2.61	3.57	0.731	ok	0.730	0.670-0.790
1,2-Dibromoethane (EDB)	8.75	4.96	1.764	ok	1.765	1.705-1.825
1,2-Dichloroethane	4.09	3.57	1.146	ok	1.147	1.087-1.207
1,2-Dichloropropane	5.32	4.96	1.073	ok	1.074	1.014-1.134
1,3-Dichloropropane	7.89	4.96	1.591	ok	1.592	1.532-1.652
1,4-Dioxane	5.58	4.96	1.125	ok	1.135	1.075-1.195
Dichlorodifluoromethane	1.85	3.57	0.518	ok	0.519	0.459-0.579
Dichlorofluoromethane	2.17	3.57	0.608	ok	0.609	0.549-0.669
Dibromochloromethane	8.39	4.96	1.692	ok	1.694	1.634-1.754
Dibromomethane	5.28	4.96	1.065	ok	1.065	1.005-1.125
trans-1,2-Dichloroethylene	3.00	3.57	0.840	ok	0.841	0.781-0.901

Initial Calibration Retention Time/Internal Standard Area Summary

Job Number: JD60001
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample Number	Lab File ID	Injected	By	Level	Inst ID	Method	
V7W5-IC0005	7W00093.D	11/30/22 11:33	TCH	0.04	GCMS7W	TO-15	
V7W5-IC0005	7W00094.D	11/30/22 12:06	TCH	0.1	GCMS7W	TO-15	
V7W5-IC0005	7W00095.D	11/30/22 12:38	TCH	0.2	GCMS7W	TO-15	
V7W5-IC0005	7W00096.D	11/30/22 13:09	TCH	0.5	GCMS7W	TO-15	
V7W5-IC0005	7W00098.D	11/30/22 14:12	TCH	5	GCMS7W	TO-15	
V7W5-ICC0005	7W00099.D	11/30/22 14:44	TCH	10	GCMS7W	TO-15	
V7W5-IC0005	7W00100.D	11/30/22 15:16	TCH	20	GCMS7W	TO-15	
V7W5-IC0005	7W00101.D	11/30/22 15:51	TCH	40	GCMS7W	TO-15	
V7W5-IC0005	7W00102.D	11/30/22 16:26	TCH	50	GCMS7W	TO-15	Reporting this level

Target Compound	RT (min.)	Istd RT (min.)	Rel RT		Mean Rel RT	Rel RT Range (+ /- .06)
cis-1,2-Dichloroethylene	3.49	3.57	0.978	ok	0.976	0.916-1.036
cis-1,3-Dichloropropene	6.56	4.96	1.323	ok	1.324	1.264-1.384
m-Dichlorobenzene	16.95	10.79	1.571	ok	1.571	1.511-1.631
o-Dichlorobenzene	17.31	10.79	1.604	ok	1.605	1.545-1.665
p-Dichlorobenzene	17.03	10.79	1.578	ok	1.578	1.518-1.638
trans-1,3-Dichloropropene	7.28	4.96	1.468	ok	1.467	1.407-1.527
Di-Isopropyl ether	3.63	3.57	1.017	ok	1.019	0.959-1.079
2,3-Dimethylpentane	5.11	4.96	1.030	ok	1.030	0.970-1.090
2,4-Dimethylpentane	4.19	3.57	1.174	ok	1.173	1.113-1.233
Ethanol	2.18	3.57	0.611	ok	0.612	0.552-0.672
Ethylbenzene	11.78	10.79	1.092	ok	1.091	1.031-1.151
Ethyl Acetate	3.63	3.57	1.017	ok	1.019	0.959-1.079
Ethyl Acrylate	5.44	4.96	1.097	ok	1.100	1.040-1.160
4-Ethyltoluene	16.32	10.79	1.513	ok	1.512	1.452-1.572
Freon 113	2.75	3.57	0.770	ok	0.771	0.711-0.831
Freon 114	1.93	3.57	0.541	ok	0.541	0.481-0.601
Freon 123	2.31	3.57	0.647	ok	0.647	0.587-0.707
Freon 123A	2.33	3.57	0.653	ok	0.653	0.593-0.713
Freon 142B	1.89	3.57	0.529	ok	0.530	0.470-0.590
Freon 152A	1.80	3.57	0.504	ok	0.504	0.444-0.564
Heptane	6.01	4.96	1.212	ok	1.212	1.152-1.272
Hexachlorobutadiene	18.87	10.79	1.749	ok	1.750	1.690-1.810
Hexachloroethane	17.84	10.79	1.653	ok	1.654	1.594-1.714
Hexane	3.62	3.57	1.014	ok	1.015	0.955-1.075
2-Hexanone	8.41	4.96	1.696	ok	1.703	1.643-1.763
Iodomethane	2.58	3.57	0.723	ok	0.723	0.663-0.783
Isopropylbenzene	14.71	10.79	1.363	ok	1.363	1.303-1.423
Isopropyl Alcohol	2.41	3.57	0.675	ok	0.679	0.619-0.739
p-Isopropyltoluene	17.32	10.79	1.605	ok	1.605	1.545-1.665
Methylene chloride	2.64	3.57	0.739	ok	0.740	0.680-0.800
Methyl ethyl ketone	3.26	3.57	0.913	ok	0.917	0.857-0.977
Methyl Isobutyl Ketone	6.67	4.96	1.345	ok	1.350	1.290-1.410
Methyl Tert Butyl Ether	3.12	3.57	0.874	ok	0.876	0.816-0.936
Methylmethacrylate	5.89	4.96	1.188	ok	1.190	1.130-1.250
Naphthalene	18.62	10.79	1.726	ok	1.726	1.666-1.786
Nonane	14.30	10.79	1.325	ok	1.324	1.264-1.384
Octane	9.77	4.96	1.970	ok	1.971	1.911-2.031
Pentane	2.52	3.57	0.706	ok	0.705	0.645-0.765
n-Propylbenzene	16.04	10.79	1.487	ok	1.487	1.427-1.547

Initial Calibration Retention Time/Internal Standard Area Summary

Job Number: JD60001
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample Number	Lab File ID	Injected	By	Level	Inst ID	Method	
V7W5-IC0005	7W00093.D	11/30/22 11:33	TCH	0.04	GCMS7W	TO-15	
V7W5-IC0005	7W00094.D	11/30/22 12:06	TCH	0.1	GCMS7W	TO-15	
V7W5-IC0005	7W00095.D	11/30/22 12:38	TCH	0.2	GCMS7W	TO-15	
V7W5-IC0005	7W00096.D	11/30/22 13:09	TCH	0.5	GCMS7W	TO-15	
V7W5-IC0005	7W00098.D	11/30/22 14:12	TCH	5	GCMS7W	TO-15	
V7W5-ICC0005	7W00099.D	11/30/22 14:44	TCH	10	GCMS7W	TO-15	
V7W5-IC0005	7W00100.D	11/30/22 15:16	TCH	20	GCMS7W	TO-15	
V7W5-IC0005	7W00101.D	11/30/22 15:51	TCH	40	GCMS7W	TO-15	
V7W5-IC0005	7W00102.D	11/30/22 16:26	TCH	50	GCMS7W	TO-15	Reporting this level

Target Compound	RT (min.)	Istd RT (min.)	Rel RT		Mean Rel RT	Rel RT Range (+ /- .06)
Propylene	1.83	3.57	0.513	ok	0.513	0.453-0.573
Styrene	12.95	10.79	1.200	ok	1.200	1.140-1.260
1,1,1-Trichloroethane	4.27	3.57	1.196	ok	1.196	1.136-1.256
1,1,1,2-Tetrachloroethane	10.89	10.79	1.009	ok	1.008	0.948-1.068
1,1,2,2-Tetrachloroethane	13.18	10.79	1.222	ok	1.221	1.161-1.281
1,1,2-Trichloroethane	7.44	4.96	1.500	ok	1.502	1.442-1.562
1,2,4-Trichlorobenzene	18.57	10.79	1.721	ok	1.721	1.661-1.781
1,2,3-Trichloropropane	13.47	10.79	1.248	ok	1.248	1.188-1.308
1,2,3-Trimethylbenzene	17.26	10.79	1.600	ok	1.600	1.540-1.660
1,2,4-Trimethylbenzene	16.89	10.79	1.565	ok	1.565	1.505-1.625
1,3,5-Trimethylbenzene	16.45	10.79	1.525	ok	1.525	1.465-1.585
2,2,4-Trimethylpentane	5.67	4.96	1.143	ok	1.144	1.084-1.204
Tertiary Butyl Alcohol	2.62	3.57	0.734	ok	0.737	0.677-0.797
Tetrachloroethylene	9.63	4.96	1.942	ok	1.943	1.883-2.003
Tetrahydrofuran	3.87	3.57	1.084	ok	1.089	1.029-1.149
Toluene	7.84	4.96	1.581	ok	1.581	1.521-1.641
Trichloroethylene	5.58	4.96	1.125	ok	1.125	1.065-1.185
Trichlorofluoromethane	2.40	3.57	0.672	ok	0.673	0.613-0.733
Vinyl chloride	1.97	3.57	0.552	ok	0.552	0.492-0.612
Vinyl Acetate	3.16	3.57	0.885	ok	0.886	0.826-0.946
m,p-Xylene	12.22	10.79	1.133	ok	1.132	1.072-1.192
o-Xylene	13.17	10.79	1.221	ok	1.220	1.160-1.280

Internal Standard	RT (min.)		Mean RT(min.)	RT Range (+ /- 0.33)	Area		Mean Area	Area Range (+ /- 40 %)
Bromochloromethane	3.57	ok	3.57	3.24-3.90	87636	ok	79502	47701-111303
1,4-Difluorobenzene	4.96	ok	4.95	4.62-5.28	416908	ok	395530	237318-553742
Chlorobenzene-D5	10.79	ok	10.78	10.45-11.11	402247	ok	366125	219675-512575

Surrogate Recovery Summary

Job Number: JD60001
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Method: TO-15 **Matrix:** AIR

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1
JD60001-1	7W00430.D	99
JD60001-1DUP	7W00431.D	101
V6W1177-SCC	6W28047.D	108
V7W22-BS	7W00423.D	104
V7W22-BSD	7W00424.D	106
V7W22-MB	7W00426.D	97
V6W1177-BS	6W28032.D	112
V6W1177-BSD	6W28033.D	112
V6W1177-MB	6W28035.D	107

Surrogate Compounds	Recovery Limits
S1 = 4-Bromofluorobenzene	65-128%

Initial Calibration Summary

Job Number: JD60001
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample: V6W1158-ICC1158
Lab FileID: 6W27506.D

Response Factor Report GCMS6W

Method : C:\msdchem\1\methods\M6W1158.M (RTE Integrator)
Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
Last Update : Thu Dec 08 07:56:18 2022
Response via : Initial Calibration

Calibration Files
0.5 =6W27503.D 0.2 =6W27502.D 40 =6W27508.D 0.04=6W27500.D
5 =6W27505.D 10 =6W27506.D 20 =6W27507.D 0.1 =6W27501.D
50 =6W27509.D =

Compound	0.5	0.2	40	0.04	5	10	20	0.1	50	Avg	%RSD
1) I BROMOCHLOROMETHANE	----------ISTD----------										
2) FREON 115										0.000	-1.00
3) FREON 152A	0.899	0.829	0.845		0.870	0.842	0.852	0.871	0.828	0.855	2.81
4) CHLORODIFLUOROMETHANE	0.362	0.321	0.364		0.370	0.375	0.361	0.289	0.357	0.350	8.47
5) CHLOROTRIFLUOROETHENE	1.779	1.629	1.834		1.821	1.801	1.832	1.894	1.811	1.800	4.26
6) DICHLORODIFLUOROMETHANE	3.268	3.279	3.037	2.672	3.251	3.113	3.142	3.308	2.854	3.103	6.99
7) PROPYLENE	1.255	1.208	1.361		1.322	1.348	1.372	1.301	1.332	1.312	4.28
8) 1-CHLORO-1,1-DIFLUOROETHANE	2.892	2.938	2.754	2.461	2.884	2.833	2.810	2.899	2.679	2.794	5.33
9) FREON 114	3.379	3.377	3.233	2.714	3.347	3.258	3.270	3.167	3.163	3.212	6.34
10) CHLOROMETHANE	0.492	0.499	0.449		0.478	0.459	0.464	0.466	0.435	0.468	4.53
11) VINYL CHLORIDE	1.412	1.465	1.386		1.423	1.386	1.409	1.254	1.371	1.388	4.42
12) 1,3-BUTADIENE	1.263	1.117	1.216		1.285	1.213	1.239	1.194	1.199	1.216	4.17
13) N-BUTANE	2.723	2.831	2.501	3.615	2.673	2.567	2.563	2.963	2.431	2.763	13.03
14) BROMOMETHANE	1.230	1.227	1.190		1.240	1.194	1.201	1.192	1.178	1.207	1.88
15) CHLOROETHANE	0.721	0.777	0.718		0.745	0.714	0.722	0.709	0.704	0.726	3.26
16) DICHLOROFLUOROMETHANE	2.930	3.049	2.837	2.764	2.916	2.871	2.862	2.984	2.774	2.887	3.23
17) ACETONITRILE	1.788	1.726	1.675		1.795	1.718	1.712	1.746	1.625	1.723	3.26
18) ACROLEIN	0.770	0.828	0.732		0.736	0.716	0.727	0.769	0.716	0.749	5.11
19) FREON 123	2.945	2.944	2.908	2.617	3.011	2.902	2.916	2.648	2.850	2.860	4.77
20) FREON 123A	1.740	1.690	1.696		1.746	1.691	1.695	1.729	1.678	1.708	1.52
21) TRICHLOROFLUOROMETHANE	3.435	3.312	3.294	3.118	3.414	3.340	3.323	3.433	3.224	3.322	3.12
22) ISOPROPYL ALCOHOL	3.179	3.402	3.235	4.346	3.269	3.185	3.215	3.548	3.224	3.400	11.02
23) ACETONE											

Initial Calibration Summary

Job Number: JD60001
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample: V6W1158-ICC1158
Lab FileID: 6W27506.D

		1.153	1.160	0.784		0.826	0.790	0.793	1.122	0.777	0.926	19.71
24)	PENTANE											
		1.970	1.983	1.824	2.461	1.966	1.885	1.882	2.001	1.789	1.973	9.99
25)	IODOMETHANE											
		3.486	3.363	3.517	3.339	3.543	3.465	3.477	3.382	3.496	3.452	2.10
26)	1,1-DICHLOROETHYLENE											
		1.335	1.357	1.278		1.301	1.270	1.271	1.348	1.270	1.304	2.88
27)	CARBON DISULFIDE											
		3.680	3.519	3.804	3.376	3.852	3.718	3.781	3.685	3.811	3.692	4.19
28)	ETHANOL											
		1.013	1.163	0.781		0.825	0.803	0.780		0.762	0.875	17.47
29)	BROMOETHENE											
		1.265	1.156	1.218		1.259	1.219	1.217	1.211	1.203	1.218	2.77
30)	ACRYLONITRILE											
		1.209	1.275	1.216		1.265	1.227	1.230	1.262	1.197	1.235	2.32
31)	METHYLENE CHLORIDE											
		1.502	1.908	1.172		1.244	1.190	1.185		1.169	1.339	20.73
32)	3-CHLOROPROPENE											
		0.602	0.580	0.611		0.594	0.588	0.600	0.475	0.617	0.584	7.78
33)	FREON 113											
		2.249	2.207	2.285		2.324	2.305	2.272	2.275	2.293	2.276	1.57
34)	TRANS-1,2-DICHLOROETHENE											
		1.440	1.423	1.373		1.420	1.383	1.384	1.369	1.380	1.396	1.92
35)	TERTIARY BUTYL ALCOHOL											
		1.921	1.947	2.192		2.080	2.069	2.131	1.905	2.285	2.066	6.58
36)	METHYL TERTIARY BUTYL ETHER											
		2.060	2.113	2.410		2.188	2.231	2.313	2.133	2.542	2.249	7.27
37)	TETRAHYDROFURAN											
		0.559	0.553	0.632		0.642	0.624	0.632	0.502	0.640	0.598	8.81
38)	HEXANE											
		2.711	2.624	2.500		2.644	2.558	2.555	2.606	2.493	2.586	2.88
39)	VINYL ACETATE											
		0.288	0.300	0.361		0.321	0.341	0.357	0.279	0.373	0.328	10.90
40)	1,1-DICHLOROETHANE											
		2.531	2.640	2.533	2.612	2.630	2.532	2.530	2.669	2.536	2.579	2.23
41)	METHYL ETHYL KETONE											
		0.721	0.608	0.651		0.653	0.653	0.656	0.477	0.659	0.635	11.14
42)	CIS-1,2-DICHLOROETHENE											
		1.459	1.492	1.396		1.424	1.402	1.411	1.426	1.400	1.426	2.36
43)	DIISOPROPYL ETHER											
		0.628	0.600	0.655		0.645	0.642	0.642	0.658	0.663	0.642	3.16
44)	ETHYL ACETATE											
		0.492	0.437	0.531		0.549	0.533	0.534	0.324	0.522	0.490	15.46
45)	METHYL ACRYLATE											
		3.354	3.345	3.382	3.243	3.519	3.430	3.441	3.436	3.350	3.389	2.33
46)	CHLOROFORM											
		2.901	2.877	2.820	2.833	2.964	2.877	2.847	2.688	2.798	2.845	2.70
47)	2,4-DIMETHYLPENTANE											
		3.079	2.976	2.991	2.925	3.074	2.963	3.001	3.031	2.953	2.999	1.77
48)	1,1,1-TRICHLOROETHANE											
		2.512	2.418	2.749		2.671	2.676	2.730	2.461	2.722	2.617	5.05
49)	CARBON TETRACHLORIDE											
		2.757	2.816	2.956	2.387	2.902	2.876	2.913	2.559	2.924	2.788	6.92
50)	1,2-DICHLOROETHANE											
		2.146	1.933	2.050		2.151	2.079	2.063	2.056	2.020	2.062	3.38
51)	BENZENE											
		4.027	4.394	3.962	4.498	4.083	3.935	3.973	4.393	3.916	4.131	5.57
52)	I 1,4-DIFLUOROBENZENE	----------ISTD----------										
53)	CYCLOHEXANE											

	0.344	0.345	0.357	0.348	0.347	0.358	0.340	0.358	0.350	2.01
54)	2,3-DIMETHYLPENTANE											
	0.179	0.168	0.183	0.181	0.179	0.182	0.186	0.180	0.180	2.93
55)	TRICHLOROETHENE											
	0.397	0.368	0.382	0.342	0.402	0.403	0.387	0.393	0.376	0.383	5.06
56)	1,2-DICHLOROPROPANE											
	0.352	0.329	0.352	0.348	0.342	0.356	0.347	0.347	0.347	2.39
57)	DIBROMOMETHANE											
	0.347	0.363	0.368	0.357	0.359	0.367	0.378	0.367	0.363	2.56
58)	ETHYL ACRYLATE											
	0.696	0.709	0.861	0.590	0.818	0.847	0.854	0.616	0.849	0.760	14.29
59)	BROMODICHLOROMETHANE											
	0.603	0.574	0.638	0.536	0.648	0.668	0.638	0.532	0.634	0.608	8.18
60)	2,2,4-TRIMETHYLPENTANE											
	1.691	1.598	1.644	1.583	1.698	1.714	1.751	1.658	1.620	1.662	3.37
61)	1,4-DIOXANE											
	0.185	0.174	0.192	0.207	0.208	0.191	0.159	0.192	0.189	8.66
62)	HEPTANE											
	0.660	0.666	0.721	0.633	0.687	0.702	0.719	0.642	0.665	0.677	4.71
63)	METHYL METHACRYLATE											
	0.285	0.257	0.322	0.316	0.334	0.348	0.260	0.319	0.305	11.13
64)	METHYL ISOBUTYL KETONE											
	0.252	0.221	0.347	0.313	0.334	0.344	0.235	0.346	0.299	18.03
65)	CIS-1,3-DICHLOROPROPENE											
	0.365	0.362	0.510	0.424	0.458	0.494	0.334	0.516	0.433	16.72
66)	TOLUENE											
	0.940	0.949	1.098	1.223	1.004	1.041	1.081	1.014	1.088	1.049	8.29
67)	1,3-DICHLOROPROPANE											
	0.511	0.475	0.560	0.487	0.532	0.547	0.557	0.495	0.552	0.524	6.22
68)	TRANS-1,3-DICHLOROPROPENE											
	0.294	0.289	0.472	0.370	0.408	0.448	0.290	0.479	0.381	21.63
69)	1,1,2-TRICHLOROETHANE											
	0.321	0.307	0.345	0.334	0.336	0.343	0.306	0.340	0.329	4.75
70)	2-HEXANONE											
	0.285	0.244	0.465	0.388	0.423	0.454	0.223	0.468	0.369	27.78
71)	ETHYL METHACRYLATE											
	0.378	0.335	0.584	0.507	0.543	0.569	0.330	0.586	0.479	23.47
72)	TETRACHLOROETHENE											
	0.384	0.388	0.423	0.354	0.402	0.409	0.423	0.371	0.421	0.397	6.22
73)	DIBROMOCHLOROMETHANE											
	0.616	0.600	0.732	0.541	0.674	0.693	0.722	0.600	0.731	0.656	10.58
74)	1,2-DIBROMOETHANE											
	0.537	0.542	0.647	0.601	0.620	0.642	0.526	0.644	0.595	8.75
75)	OCTANE											
	0.752	0.727	1.016	0.788	0.935	0.965	1.002	0.777	1.002	0.885	13.67
76)	I CHLOROBENZENE-D5	----------ISTD----------										
77)	1,1,1,2-TETRACHLOROETHANE											
	0.502	0.503	0.557	0.524	0.530	0.549	0.468	0.554	0.523	5.93
78)	CHLOROBENZENE											
	0.980	0.991	1.023	0.847	0.985	0.986	1.010	0.874	1.014	0.968	6.50
79)	ETHYLBENZENE											
	1.313	1.433	1.632	2.475	1.473	1.540	1.614	1.742	1.617	1.649	20.29
80)	M,P-XYLENE											
	1.011	1.029	1.263	1.621	1.195	1.213	1.246	1.182	1.260	1.225	14.34
81)	O-XYLENE											
	0.983	1.059	1.292	1.605	1.208	1.236	1.268	1.224	1.281	1.240	13.94
82)	STYRENE											
	0.666	0.649	1.009	0.674	0.869	0.930	0.984	0.598	0.997	0.820	20.80
83)	NONANE											

Initial Calibration Summary

Job Number: JD60001
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample: V6W1158-ICC1158
Lab FileID: 6W27506.D

		1.116	1.111	1.187	0.886	1.175	1.177	1.191	1.092	1.175	1.123	8.56
84)	BROMOFORM											
		0.623	0.596	0.769		0.689	0.716	0.747	0.587	0.768	0.687	11.00
85)	1,1,2,2-TETRACHLOROETHANE											
		0.978	0.933	1.046	0.755	1.029	1.023	1.040	0.881	1.039	0.969	10.12
86)	1,2,3-TRICHLOROPROPANE											
		0.713	0.678	0.758	0.543	0.727	0.736	0.745	0.645	0.751	0.700	9.90
87)	4-BROMOFLUOROBENZENE											
		0.689	0.686	0.737	0.682	0.712	0.723	0.732	0.682	0.733	0.708	3.33
88)	ISOPROPYLBENZENE											
		1.438	1.329	1.893	1.147	1.758	1.798	1.868	1.351	1.871	1.606	17.91
89)	BROMOBENZENE											
		0.807	0.741	0.941	0.651	0.891	0.899	0.931	0.787	0.937	0.843	12.10
90)	2-CHLOROTOLUENE											
		0.969	0.950	1.347	0.837	1.200	1.257	1.314	0.907	1.336	1.124	18.28
91)	N-PROPYLBENZENE											
		1.588	1.416	2.294	1.252	2.092	2.184	2.276	1.362	2.271	1.859	23.88
92)	4-ETHYLTOLUENE											
		1.211	1.065	1.947		1.745	1.830	1.881	0.971	1.931	1.573	26.44
93)	1,3,5-TRIMETHYLBENZENE											
		1.031	0.910	1.627	0.876	1.477	1.524	1.587	0.933	1.599	1.285	26.08
94)	ALPHA-METHYLSTYRENE											
		0.523	0.424	0.851		0.751	0.786	0.823	0.371	0.852	0.673	29.77
95)	TERT-BUTYLBENZENE											
		1.253	1.113	1.842		1.722	1.738	1.803	1.097	1.840	1.551	21.56
96)	1,2,4-TRIMETHYLBENZENE											
		1.124	0.952	1.711		1.589	1.606	1.674	0.877	1.710	1.405	25.46
97)	BENZYL CHLORIDE											
		0.578	0.489	1.319		0.840	0.975	1.138		1.375	0.959	36.02
98)	M-DICHLOROBENZENE											
		0.959	0.864	1.194	0.696	1.105	1.129	1.170	0.786	1.195	1.011	18.82
99)	P-DICHLOROBENZENE											
		0.968	0.844	1.231	0.659	1.096	1.132	1.185	0.725	1.228	1.008	21.71
100)	O-DICHLOROBENZENE											
		0.924	0.836	1.189	0.686	1.090	1.101	1.139	0.743	1.200	0.990	19.88
101)	SEC-BUTYLBENZENE											
		1.777	1.459	2.531	1.366	2.309	2.339	2.456	1.426	2.502	2.018	24.91
102)	1,2,3-TRIMETHYLBENZENE											
		1.152	0.975	1.725	0.863	1.534	1.563	1.664	0.844	1.705	1.336	27.96
103)	P-ISOPROPYLTOLUENE											
		1.516	1.206	2.269	1.104	2.054	2.081	2.177	1.141	2.293	1.760	29.00
104)	N-BUTYLBENZENE											
		1.320	1.090	2.132		1.892	1.962	2.077	1.052	2.186	1.714	27.94
105)	HEXACHLOROETHANE											
		0.589	0.542	0.770	0.590	0.645	0.678	0.718	0.577	0.788	0.655	13.52
106)	HEXACHLOROBUTADIENE											
		0.731	0.713	1.072	0.595	0.824	0.859	0.942	0.680	1.171	0.843	22.51
107)	1,2,4-TRICHLOROBENZENE											
		0.593	0.478	1.335		0.937	1.045	1.178		1.406	0.996	35.57
108)	NAPHTHALENE											
		1.318	1.055	3.469		2.669	2.863	3.157		3.582	2.587	39.07

(#) = Out of Range ### Number of calibration levels exceeded format ###

M6W1158.M Thu Dec 08 08:01:30 2022

Initial Calibration Verification

Job Number: JD60001
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample: V6W1158-ICV1158
Lab FileID: 6W27517.D

Evaluate Continuing Calibration Report

Data File : C:\msdchem\1\data\6W27517.D Vial: 1
Acq On : 7 Dec 2022 2:22 pm Operator: thomash
Sample : icv1158-10 Inst : GCMS6W
Misc : MS64377,V6W1158,,,,,1 Multiplr: 1.00
MS Integration Params: rteint.p

Method : C:\msdchem\1\methods\M6W1158.M (RTE Integrator)
Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
Last Update : Thu Dec 08 07:56:18 2022
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 60% Max. R.T. Dev 0.33min
Max. RRF Dev : 30% Max. Rel. Area : 140%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)	R.T.
1	I	BROMOCHLOROMETHANE	1.000	1.000	0.0	102	0.00	3.34
2	T	FREON 115		----------NA----------				
3	T	FREON 152A	0.855	0.838	2.0	101	0.00	1.69
4	T	CHLORODIFLUOROMETHANE	0.350	0.361	-3.1	98	0.00	1.71
5	T	CHLOROTRIFLUOROETHENE	1.800	1.799	0.1	102	0.00	1.72
6	T	DICHLORODIFLUOROMETHANE	3.103	3.250	-4.7	106	0.00	1.73
7	T	PROPYLENE	1.312	1.339	-2.1	101	0.00	1.71
8	T	1-CHLORO-1,1-DIFLUOROETHA	2.794	2.913	-4.3	105	0.00	1.77
9	T	FREON 114	3.212	3.321	-3.4	104	0.00	1.80
10	T	CHLOROMETHANE	0.468	0.489	-4.5	108	0.00	1.77
11	T	VINYL CHLORIDE	1.388	1.449	-4.4	107	0.00	1.83
12	t	1,3-BUTADIENE	1.216	1.275	-4.9	107	0.00	1.87
13	T	N-BUTANE	2.763	2.697	2.4	107	0.00	1.88
14	T	BROMOMETHANE	1.207	1.228	-1.7	105	0.00	1.93
15	T	CHLOROETHANE	0.726	0.747	-2.9	107	0.00	1.98
16	T	DICHLOROFLUOROMETHANE	2.887	2.916	-1.0	104	0.00	2.00
17	T	ACETONITRILE	1.723	1.763	-2.3	105	0.00	2.06
18	T	ACROLEIN	0.749	0.762	-1.7	109	0.00	2.10
19	T	FREON 123	2.860	3.079	-7.7	108	0.00	2.12
20	T	FREON 123A	1.708	1.870	-9.5	113	0.00	2.13
21	T	TRICHLOROFLUOROMETHANE	3.322	3.362	-1.2	103	0.00	2.19
22	T	ISOPROPYL ALCOHOL	3.400	3.536	-4.0	113	0.00	2.21
23	T	ACETONE	0.926	0.807	12.9	104	0.00	2.14
24	T	PENTANE	1.973	2.020	-2.4	109	0.00	2.30
25	T	IODOMETHANE	3.452	3.489	-1.1	103	0.00	2.36
26	T	1,1-DICHLOROETHYLENE	1.304	1.295	0.7	104	0.00	2.38
27	T	CARBON DISULFIDE	3.692	3.634	1.6	100	0.00	2.52
28	T	ETHANOL	0.875	0.985	-12.6	125	0.00	2.01
29	T	BROMOETHENE	1.218	1.245	-2.2	104	0.00	2.07
30	T	ACRYLONITRILE	1.235	1.283	-3.9	107	0.00	2.27
31	T	METHYLENE CHLORIDE	1.339	1.199	10.5	103	0.00	2.42
32	T	3-CHLOROPROPENE	0.584	0.615	-5.3	107	0.00	2.46
33	T	FREON 113	2.276	2.201	3.3	97	0.00	2.52
34	T	TRANS-1,2-DICHLOROETHENE	1.396	1.367	2.1	101	0.00	2.77
35	T	TERTIARY BUTYL ALCOHOL	2.066	2.220	-7.5	109	0.00	2.40
36	t	METHYL TERTIARY BUTYL ETH	2.249	2.635	-17.2	120	0.00	2.89
37	T	TETRAHYDROFURAN	0.598	0.642	-7.4	105	0.00	3.65
38	T	HEXANE	2.586	2.762	-6.8	110	0.00	3.39
39	T	VINYL ACETATE	0.328	0.340	-3.7	102	0.00	2.93
40	T	1,1-DICHLOROETHANE	2.579	2.667	-3.4	107	0.00	2.85
41	T	METHYL ETHYL KETONE	0.635	0.689	-8.5	107	0.00	3.04
42	T	CIS-1,2-DICHLOROETHENE	1.426	1.430	-0.3	104	0.00	3.25

Initial Calibration Verification

Job Number: JD60001
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample: V6W1158-ICV1158
Lab FileID: 6W27517.D

43	T	DIISOPROPYL ETHER	0.642	0.753	-17.3	119	0.00	3.40
44	T	ETHYL ACETATE	0.490	0.564	-15.1	108	0.00	3.41
45	T	METHYL ACRYLATE	3.389	3.618	-6.8	108	0.00	3.39
46	T	CHLOROFORM	2.845	2.855	-0.4	101	0.00	3.42
47	T	2,4-DIMETHYLPENTANE	2.999	3.201	-6.7	110	0.00	3.96
48	T	1,1,1-TRICHLOROETHANE	2.617	2.691	-2.8	103	0.00	4.04
49	T	CARBON TETRACHLORIDE	2.788	2.952	-5.9	105	0.00	4.50
50	T	1,2-DICHLOROETHANE	2.062	2.146	-4.1	105	0.00	3.87
51	t	BENZENE	4.131	4.106	0.6	106	0.00	4.38
52	I	1,4-DIFLUOROBENZENE	1.000	1.000	0.0	102	0.00	4.73
53	T	CYCLOHEXANE	0.350	0.366	-4.6	108	0.00	4.60
54	T	2,3-DIMETHYLPENTANE	0.180	0.190	-5.6	108	0.00	4.87
55	T	TRICHLOROETHENE	0.383	0.398	-3.9	101	0.00	5.34
56	T	1,2-DICHLOROPROPANE	0.347	0.367	-5.8	109	0.00	5.10
57	T	DIBROMOMETHANE	0.363	0.347	4.4	99	0.00	5.06
58	T	ETHYL ACRYLATE	0.760	0.882	-16.1	106	0.00	5.23
59	T	BROMODICHLOROMETHANE	0.608	0.642	-5.6	98	0.00	5.30
60	T	2,2,4-TRIMETHYLPENTANE	1.662	1.722	-3.6	103	0.00	5.44
61	T	1,4-DIOXANE	0.189	0.242	-28.0	119	0.00	5.38
62	T	HEPTANE	0.677	0.711	-5.0	104	0.00	5.78
63	T	METHYL METHACRYLATE	0.305	0.336	-10.2	103	0.00	5.69
64	T	METHYL ISOBUTYL KETONE	0.299	0.346	-15.7	106	0.00	6.47
65	T	CIS-1,3-DICHLOROPROPENE	0.433	0.500	-15.5	112	0.00	6.35
66	T	TOLUENE	1.049	1.040	0.9	102	0.00	7.61
67	T	1,3-DICHLOROPROPANE	0.524	0.538	-2.7	100	0.00	7.68
68	T	TRANS-1,3-DICHLOROPROPENE	0.381	0.417	-9.4	105	0.00	7.07
69	T	1,1,2-TRICHLOROETHANE	0.329	0.331	-0.6	101	0.00	7.23
70	T	2-HEXANONE	0.369	0.462	-25.2	112	0.00	8.22
71	T	ETHYL METHACRYLATE	0.479	0.562	-17.3	106	0.00	8.35
72	T	TETRACHLOROETHENE	0.397	0.393	1.0	98	0.00	9.41
73	T	DIBROMOCHLOROMETHANE	0.656	0.682	-4.0	100	0.00	8.18
74	T	1,2-DIBROMOETHANE	0.595	0.611	-2.7	101	0.00	8.54
75	T	OCTANE	0.885	0.979	-10.6	104	0.00	9.56
76	I	CHLOROBENZENE-D5	1.000	1.000	0.0	100	0.00	10.58
77	T	1,1,1,2-TETRACHLOROETHANE	0.523	0.534	-2.1	101	0.00	10.68
78	T	CHLOROBENZENE	0.968	0.999	-3.2	101	0.00	10.66
79	t	ETHYLBENZENE	1.649	1.580	4.2	103	0.00	11.57
80	t	M,P-XYLENE	1.225	1.228	-0.2	101	0.00	12.01
81	t	O-XYLENE	1.240	1.260	-1.6	102	0.00	12.96
82	T	STYRENE	0.820	0.953	-16.2	103	0.00	12.75
83	T	NONANE	1.123	1.199	-6.8	102	0.00	14.08
84	T	BROMOFORM	0.687	0.743	-8.2	104	0.00	11.83
85	T	1,1,2,2-TETRACHLOROETHANE	0.969	1.015	-4.7	99	0.00	12.99
86	T	1,2,3-TRICHLOROPROPANE	0.700	0.727	-3.9	99	0.00	13.27
87	S	4-BROMOFLUOROBENZENE	0.708	0.733	-3.5	102	0.00	14.02
88	T	ISOPROPYLBENZENE	1.606	1.791	-11.5	100	0.00	14.50
89	T	BROMOBENZENE	0.843	0.898	-6.5	100	0.00	14.37
90	T	2-CHLOROTOLUENE	1.124	1.259	-12.0	100	0.00	15.52
91	T	N-PROPYLBENZENE	1.859	2.198	-18.2	101	0.00	15.86
92	T	4-ETHYLTOLUENE	1.573	1.829	-16.3	100	0.00	16.20
93	T	1,3,5-TRIMETHYLBENZENE	1.285	1.517	-18.1	100	0.00	16.35
94	T	ALPHA-METHYLSTYRENE	0.673	0.762	-13.2	97	0.00	16.55
95	T	TERT-BUTYLBENZENE	1.551	1.712	-10.4	99	0.00	16.80
96	T	1,2,4-TRIMETHYLBENZENE	1.405	1.596	-13.6	100	0.00	16.80
97	T	BENZYL CHLORIDE	0.959	0.965	-0.6	99	0.00	16.89
98	T	M-DICHLOROBENZENE	1.011	1.091	-7.9	97	0.00	16.86
99	T	P-DICHLOROBENZENE	1.008	1.093	-8.4	97	0.00	16.95
100	T	O-DICHLOROBENZENE	0.990	1.068	-7.9	97	0.00	17.23

Initial Calibration Verification

Job Number: JD60001
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample: V6W1158-ICV1158
Lab FileID: 6W27517.D

101	T	SEC-BUTYLBENZENE	2.018	2.314	-14.7	99	0.00	17.07
102	T	1,2,3-TRIMETHYLBENZENE	1.336	1.564	-17.1	100	0.00	17.18
103	T	P-ISOPROPYLTOLUENE	1.760	2.020	-14.8	97	0.00	17.25
104	T	N-BUTYLBENZENE	1.714	1.974	-15.2	101	0.00	17.59
105	T	HEXACHLOROETHANE	0.655	0.695	-6.1	103	0.00	17.77
106	T	HEXACHLOROBUTADIENE	0.843	0.823	2.4	96	0.01	18.79
107	T	1,2,4-TRICHLOROBENZENE	0.996	1.011	-1.5	97	0.00	18.49
108	T	NAPHTHALENE	2.587	2.603	-0.6	91	0.00	18.54

(#) = Out of Range SPCC's out = 0 CCC's out = 0
6W27506.D M6W1158.M Thu Dec 08 08:00:41 2022

Continuing Calibration Summary

Job Number: JD60001
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample: V6W1177-CC1158
Lab FileID: 6W28031.D

Evaluate Continuing Calibration Report

Data File : C:\msdchem\1\data\6W28031.D Vial: 2
Acq On : 27 Jan 2023 3:22 pm Operator: thomash
Sample : cc1158-10 Inst : GCMS6W
Misc : MS65007,V6W1177,,,,,1 Multiplr: 1.00
MS Integration Params: rteint.p

Method : C:\msdchem\1\methods\M6W1158.M (RTE Integrator)
Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
Last Update : Tue Dec 06 08:52:45 2022
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 60% Max. R.T. Dev 0.33min
Max. RRF Dev : 30% Max. Rel. Area : 140%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)	R.T.
1	I	BROMOCHLOROMETHANE	1.000	1.000	0.0	75	0.00	3.34
2	T	FREON 115	0.000	0.302	0.0	0#	0.00	1.67
3	T	FREON 152A	0.855	3.353	-292.2#	297#	0.07	1.77
4	T	CHLORODIFLUOROMETHANE	0.350	0.509	-45.4#	101	0.00	1.70
5	T	CHLOROTRIFLUOROETHENE	1.800	2.091	-16.2	87	0.00	1.72
6	T	DICHLORODIFLUOROMETHANE	3.103	4.474	-44.2#	107	0.00	1.73
7	T	PROPYLENE	1.312	1.366	-4.1	76	0.00	1.71
8	T	1-CHLORO-1,1-DIFLUOROETHA	2.794	3.353	-20.0	88	0.00	1.77
9	T	FREON 114	3.212	3.534	-10.0	81	0.00	1.80
10	T	CHLOROMETHANE	0.468	0.384	17.9	62	0.00	1.77
11	T	VINYL CHLORIDE	1.388	1.444	-4.0	78	0.00	1.83
12	t	1,3-BUTADIENE	1.216	1.104	9.2	68	0.00	1.86
13	T	N-BUTANE	2.763	1.892	31.5#	55#	0.00	1.88
14	T	BROMOMETHANE	1.207	1.281	-6.1	80	0.00	1.93
15	T	CHLOROETHANE	0.726	0.771	-6.2	81	0.00	1.98
16	T	DICHLOROFLUOROMETHANE	2.887	3.216	-11.4	84	0.00	2.00
17	T	ACETONITRILE	1.723	1.175	31.8#	51#	0.00	2.06
18	T	ACROLEIN	0.749	0.612	18.3	64	0.00	2.10
19	T	FREON 123	2.860	3.110	-8.7	80	0.00	2.11
20	T	FREON 123A	1.708	1.835	-7.4	81	0.00	2.13
21	T	TRICHLOROFLUOROMETHANE	3.322	3.904	-17.5	87	0.00	2.19
22	T	ISOPROPYL ALCOHOL	3.400	2.439	28.3	57#	0.00	2.21
23	T	ACETONE	0.926	0.833	10.0	79	0.00	2.14
24	T	PENTANE	1.973	1.396	29.2	55#	0.00	2.30
25	T	IODOMETHANE	3.452	3.531	-2.3	76	0.00	2.35
26	T	1,1-DICHLOROETHYLENE	1.304	1.388	-6.4	82	0.00	2.38
27	T	CARBON DISULFIDE	3.692	4.097	-11.0	82	0.00	2.52
28	T	ETHANOL	0.875	0.647	26.1	60	0.00	2.01
29	T	BROMOETHENE	1.218	1.280	-5.1	78	0.00	2.07
30	T	ACRYLONITRILE	1.235	1.115	9.7	68	0.00	2.27
31	T	METHYLENE CHLORIDE	1.339	1.296	3.2	81	0.00	2.42
32	T	3-CHLOROPROPENE	0.584	0.655	-12.2	83	0.00	2.46
33	T	FREON 113	2.276	2.391	-5.1	77	0.00	2.52
34	T	TRANS-1,2-DICHLOROETHENE	1.396	1.527	-9.4	82	0.00	2.77
35	T	TERTIARY BUTYL ALCOHOL	2.066	2.018	2.3	73	0.00	2.39
36	t	METHYL TERTIARY BUTYL ETH	2.249	2.264	-0.7	76	0.00	2.88
37	T	TETRAHYDROFURAN	0.598	0.690	-15.4	82	0.00	3.65
38	T	HEXANE	2.586	2.621	-1.4	76	0.00	3.39
39	T	VINYL ACETATE	0.331	0.350	-5.7	77	0.00	2.93
40	T	1,1-DICHLOROETHANE	2.579	2.782	-7.9	82	0.00	2.85
41	T	METHYL ETHYL KETONE	0.635	0.692	-9.0	79	0.00	3.04
42	T	CIS-1,2-DICHLOROETHENE	1.426	1.550	-8.7	83	0.00	3.25

Continuing Calibration Summary

Job Number: JD60001
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample: V6W1177-CC1158
Lab FileID: 6W28031.D

43	T	DIISOPROPYL ETHER	0.642	0.608	5.3	71	0.00	3.40
44	T	ETHYL ACETATE	0.490	0.555	-13.3	78	0.00	3.41
45	T	METHYL ACRYLATE	3.389	3.361	0.8	73	0.00	3.39
46	T	CHLOROFORM	2.845	3.386	-19.0	88	0.00	3.42
47	T	2,4-DIMETHYLPENTANE	2.999	3.107	-3.6	78	0.00	3.95
48	T	1,1,1-TRICHLOROETHANE	2.617	3.017	-15.3	84	0.00	4.04
49	T	CARBON TETRACHLORIDE	2.788	3.363	-20.6	87	0.00	4.50
50	T	1,2-DICHLOROETHANE	2.062	2.601	-26.1	93	0.00	3.87
51	t	BENZENE	4.131	4.583	-10.9	87	0.00	4.38
52	I	1,4-DIFLUOROBENZENE	1.000	1.000	0.0	76	0.00	4.73
53	T	CYCLOHEXANE	0.350	0.395	-12.9	87	0.00	4.60
54	T	2,3-DIMETHYLPENTANE	0.180	0.193	-7.2	82	0.00	4.87
55	T	TRICHLOROETHENE	0.383	0.434	-13.3	82	0.00	5.34
56	T	1,2-DICHLOROPROPANE	0.347	0.351	-1.2	78	0.00	5.10
57	T	DIBROMOMETHANE	0.363	0.382	-5.2	81	0.00	5.05
58	T	ETHYL ACRYLATE	0.760	0.798	-5.0	72	0.00	5.24
59	T	BROMODICHLOROMETHANE	0.608	0.708	-16.4	81	0.00	5.29
60	T	2,2,4-TRIMETHYLPENTANE	1.662	1.668	-0.4	74	0.00	5.44
61	T	1,4-DIOXANE	0.189	0.222	-17.5	82	0.00	5.37
62	T	HEPTANE	0.677	0.781	-15.4	85	0.00	5.78
63	T	METHYL METHACRYLATE	0.305	0.392	-28.5	90	0.00	5.68
64	T	METHYL ISOBUTYL KETONE	0.299	0.422	-41.1#	97	0.00	6.47
65	T	CIS-1,3-DICHLOROPROPENE	0.433	0.545	-25.9	91	0.00	6.35
66	T	TOLUENE	1.049	1.336	-27.4	98	0.00	7.61
67	T	1,3-DICHLOROPROPANE	0.524	0.685	-30.7#	96	0.00	7.68
68	T	TRANS-1,3-DICHLOROPROPENE	0.381	0.494	-29.7	93	0.00	7.06
69	T	1,1,2-TRICHLOROETHANE	0.329	0.402	-22.2	91	0.00	7.23
70	T	2-HEXANONE	0.369	0.552	-49.6#	100	0.00	8.22
71	T	ETHYL METHACRYLATE	0.479	0.656	-37.0#	92	0.00	8.35
72	T	TETRACHLOROETHENE	0.397	0.464	-16.9	87	0.00	9.41
73	T	DIBROMOCHLOROMETHANE	0.656	0.800	-22.0	88	0.00	8.18
74	T	1,2-DIBROMOETHANE	0.595	0.706	-18.7	87	0.00	8.53
75	T	OCTANE	0.885	1.110	-25.4	88	0.00	9.55
76	I	CHLOROBENZENE-D5	1.000	1.000	0.0	87	0.00	10.58
77	T	1,1,1,2-TETRACHLOROETHANE	0.523	0.544	-4.0	89	0.00	10.67
78	T	CHLOROBENZENE	0.968	1.051	-8.6	92	0.00	10.66
79	t	ETHYLBENZENE	1.649	1.790	-8.6	101	0.00	11.56
80	t	M,P-XYLENE	1.225	1.411	-15.2	101	0.00	12.00
81	t	O-XYLENE	1.240	1.430	-15.3	100	0.00	12.96
82	T	STYRENE	0.820	1.014	-23.7	95	0.00	12.74
83	T	NONANE	1.123	1.165	-3.7	86	0.00	14.08
84	T	BROMOFORM	0.687	0.650	5.4	79	0.00	11.83
85	T	1,1,2,2-TETRACHLOROETHANE	0.969	1.051	-8.5	89	0.00	12.98
86	T	1,2,3-TRICHLOROPROPANE	0.700	0.813	-16.1	96	0.00	13.27
87	S	4-BROMOFLUOROBENZENE	0.708	0.790	-11.6	95	0.00	14.02
88	T	ISOPROPYLBENZENE	1.606	1.970	-22.7	95	0.00	14.50
89	T	BROMOBENZENE	0.843	1.026	-21.7	99	0.00	14.37
90	T	2-CHLOROTOLUENE	1.124	1.475	-31.2#	102	0.00	15.52
91	T	N-PROPYLBENZENE	1.859	2.467	-32.7#	98	0.00	15.86
92	T	4-ETHYLTOLUENE	1.573	1.978	-25.7	94	0.00	16.20
93	T	1,3,5-TRIMETHYLBENZENE	1.285	1.687	-31.3#	96	0.00	16.35
94	T	ALPHA-METHYLSTYRENE	0.673	0.812	-20.7	90	0.00	16.54
95	T	TERT-BUTYLBENZENE	1.551	1.820	-17.3	91	0.00	16.80
96	T	1,2,4-TRIMETHYLBENZENE	1.405	1.734	-23.4	94	0.00	16.80
97	T	BENZYL CHLORIDE	0.959	0.910	5.1	81	0.00	16.89
98	T	M-DICHLOROBENZENE	1.011	1.088	-7.6	84	0.00	16.86
99	T	P-DICHLOROBENZENE	1.008	1.102	-9.3	85	0.00	16.95
100	T	O-DICHLOROBENZENE	0.990	1.050	-6.1	83	0.00	17.23

Continuing Calibration Summary

Job Number: JD60001
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample: V6W1177-CC1158
Lab FileID: 6W28031.D

101	T	SEC-BUTYLBENZENE	2.018	2.458	-21.8	91	0.00	17.07
102	T	1,2,3-TRIMETHYLBENZENE	1.336	1.678	-25.6	93	0.00	17.18
103	T	P-ISOPROPYLTOLUENE	1.760	2.137	-21.4	89	0.00	17.25
104	T	N-BUTYLBENZENE	1.714	2.103	-22.7	93	0.00	17.59
105	T	HEXACHLOROETHANE	0.655	0.684	-4.4	88	0.00	17.77
106	T	HEXACHLOROBUTADIENE	0.843	0.790	6.3	80	0.02	18.80
107	T	1,2,4-TRICHLOROBENZENE	0.996	0.925	7.1	77	0.01	18.49
108	T	NAPHTHALENE	2.587	2.509	3.0	76	0.01	18.54

(#) = Out of Range SPCC's out = 0 CCC's out = 0
6W27506.D M6W1158.M Fri Jan 27 20:07:43 2023

Initial Calibration Summary

Job Number: JD60001
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample: V7W5-ICC0005
Lab FileID: 7W00099.D

Response Factor Report MS7W

Method : C:\msdchem\1\methods\M7W0005.M (RTE Integrator)
Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
Last Update : Wed Dec 07 14:36:34 2022
Response via : Initial Calibration

Calibration Files
0.5 =7W00096.D 0.2 =7W00095.D 40 =7W00101.D 0.04=7W00093.D
5 =7W00098.D 10 =7W00099.D 20 =7W00100.D 0.1 =7W00094.D
50 =7W00102.D =

Compound	0.5	0.2	40	0.04	5	10	20	0.1	50	Avg	%RSD
1) I BROMOCHLOROMETHANE	----------ISTD----------										
2) FREON 115										0.000	-1.00
3) FREON 152A	0.625	0.612	0.654		0.675	0.670	0.642	0.719	0.667	0.658	5.03
4) CHLORODIFLUOROMETHANE	0.353	0.350	0.325		0.335	0.332	0.324		0.328	0.335	3.50
5) CHLOROTRIFLUOROETHENE	1.546	1.869	1.839	1.852	1.683	1.836	1.784	1.966	1.865	1.804	6.80
6) DICHLORODIFLUOROMETHANE	4.302	5.207	5.245	6.347	4.171	5.518	5.284	5.706	5.048	5.203	12.84
7) PROPYLENE	0.814	1.044	0.793		0.766	0.822	0.773		0.793	0.829	11.68
8) 1-CHLORO-1,1-DIFLUOROETHANE	3.862	4.098	3.904	5.103	4.099	4.114	3.920	4.868	3.805	4.197	11.07
9) FREON 114	4.754	4.668	4.726	5.643	4.947	4.929	4.713	5.395	4.623	4.933	7.19
10) CHLOROMETHANE	0.464	0.523	0.414		0.438	0.446	0.425		0.409	0.446	8.81
11) VINYL CHLORIDE	1.629	1.636	1.504	2.046	1.638	1.642	1.546	1.790	1.464	1.655	10.54
12) 1,3-BUTADIENE	1.236	1.355	1.176	1.891	1.263	1.272	1.194	1.416	1.140	1.327	17.20
13) N-BUTANE	2.247	2.283	2.137	3.610	2.315	2.308	2.166	3.064	2.051	2.465	21.11
14) BROMOMETHANE	1.546	1.707	1.459	2.236	1.600	1.585	1.494	1.748	1.425	1.645	14.98
15) CHLOROETHANE	0.867	0.906	0.778		0.857	0.844	0.792	1.152	0.758	0.869	14.34
16) DICHLOROFLUOROMETHANE	3.667	3.866	3.520	5.100	3.754	3.765	3.554	4.137	3.454	3.868	13.07
17) ACETONITRILE	1.486	1.618	1.210		1.311	1.304	1.241	2.271	1.181	1.453	24.93
18) ACROLEIN	0.774	0.851	0.677		0.731	0.717	0.681	1.067	0.652	0.769	17.67
19) FREON 123	3.777	3.872	3.713	4.334	3.925	3.907	3.713	4.204	3.615	3.895	6.08
20) FREON 123A	2.438	2.504	2.286	2.870	2.423	2.427	2.293	2.657	2.216	2.457	8.26
21) TRICHLOROFLUOROMETHANE	4.978	5.172	4.814	6.590	5.292	5.277	4.881	5.715	4.635	5.262	11.24
22) ISOPROPYL ALCOHOL	3.819	3.887	3.096		3.672	3.470	3.084	4.875	2.925	3.604	17.41
23) ACETONE											

Initial Calibration Summary

Job Number: JD60001
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample: V7W5-ICC0005
Lab FileID: 7W00099.D

		1.100	1.314	0.783		0.884	0.852	0.790		0.752	0.925	22.41
24)	PENTANE											
		1.820	2.151	1.620		1.904	1.848	1.688	2.108	1.531	1.834	12.01
25)	IODOMETHANE											
		5.301	5.227	4.643	6.267	5.374	5.273	4.882	5.657	4.489	5.235	10.24
26)	1,1-DICHLOROETHYLENE											
		1.992	2.080	1.734	2.644	2.013	1.944	1.806	2.354	1.659	2.025	15.30
27)	CARBON DISULFIDE											
		5.937	6.178	5.361	7.844	6.089	6.006	5.550	6.351	5.178	6.055	12.83
28)	ETHANOL											
		0.943	1.032	0.629		0.701	0.690	0.627		0.628	0.750	22.27
29)	BROMOETHENE											
		1.682	1.611	1.544	2.224	1.689	1.667	1.567	1.881	1.516	1.709	12.94
30)	ACRYLONITRILE											
		1.327	1.426	1.102	1.790	1.277	1.238	1.143	1.624	1.042	1.330	18.59
31)	METHYLENE CHLORIDE											
		2.209	2.989	1.537		1.838	1.787	1.629		1.473	1.923	27.54
32)	3-CHLOROPROPENE											
		0.953	0.900	0.839		0.983	0.959	0.886	1.153	0.812	0.936	11.33
33)	FREON 113											
		3.559	3.447	3.040	4.211	3.588	3.462	3.200	3.901	2.911	3.480	11.70
34)	TRANS-1,2-DICHLOROETHENE											
		1.550	1.503	1.436	2.010	1.513	1.485	1.432	1.592	1.425	1.550	11.72
35)	TERTIARY BUTYL ALCOHOL											
		5.012	5.199	4.162		5.176	4.859	4.303		4.005	4.674	10.78
36)	METHYL TERTIARY BUTYL ETHER											
		4.254	4.244	3.956	5.640	4.244	4.087	3.942	4.875	3.907	4.350	13.00
37)	TETRAHYDROFURAN											
		0.700	0.748	0.680		0.749	0.716	0.697	0.736	0.668	0.712	4.30
38)	HEXANE											
		2.083	2.243	2.264	2.744	2.276	2.276	2.206	2.637	2.266	2.333	9.14
39)	VINYL ACETATE											
		0.436	0.467	0.429		0.446	0.442	0.427		0.422	0.438	3.43
40)	1,1-DICHLOROETHANE											
		2.439	2.454	2.300	3.019	2.474	2.405	2.290	2.532	2.267	2.464	9.21
41)	METHYL ETHYL KETONE											
		0.766	0.781	0.710		0.761	0.744	0.714	0.970	0.694	0.767	11.38
42)	CIS-1,2-DICHLOROETHENE											
		1.613	1.495	1.518	2.075	1.629	1.586	1.525	1.624	1.497	1.618	11.11
43)	DIISOPROPYL ETHER											
		0.701	0.711	0.683		0.701	0.700	0.667	0.852	0.690	0.713	8.10
44)	ETHYL ACETATE											
		0.475	0.452	0.474		0.510	0.486	0.471		0.476	0.478	3.69
45)	METHYL ACRYLATE											
		2.877	2.703	2.791	3.342	2.862	2.857	2.724	3.104	2.784	2.894	7.08
46)	CHLOROFORM											
		3.069	3.314	3.055	3.894	3.291	3.246	3.074	3.598	2.989	3.281	9.04
47)	2,4-DIMETHYLPENTANE											
		2.513	2.751	2.488	2.841	2.592	2.618	2.508	2.804	2.454	2.619	5.56
48)	1,1,1-TRICHLOROETHANE											
		3.123	3.146	3.201	3.704	3.216	3.273	3.167	3.366	3.149	3.261	5.60
49)	CARBON TETRACHLORIDE											
		3.115	3.080	3.563	4.033	3.376	3.503	3.479	3.209	3.546	3.434	8.47
50)	1,2-DICHLOROETHANE											
		2.135	2.087	1.956	2.266	2.110	2.089	1.958	2.363	1.925	2.099	6.94
51)	BENZENE											
		4.379	4.587	4.348	6.435	4.510	4.524	4.348	5.154	4.293	4.731	14.57
52)	I 1,4-DIFLUOROBENZENE	----------				ISTD						
53)	CYCLOHEXANE											

		0.373	0.370	0.385	0.473	0.399	0.393	0.382	0.390	0.394	0.395	7.73
54)	2,3-DIMETHYLPENTANE											
		0.204	0.192	0.200		0.207	0.200	0.196	0.210	0.205	0.202	2.99
55)	TRICHLOROETHENE											
		0.410	0.398	0.418	0.448	0.426	0.426	0.412	0.488	0.426	0.428	6.15
56)	1,2-DICHLOROPROPANE											
		0.326	0.352	0.323	0.466	0.333	0.330	0.319	0.352	0.330	0.348	13.10
57)	DIBROMOMETHANE											
		0.363	0.362	0.381	0.541	0.373	0.368	0.364	0.429	0.395	0.397	14.66
58)	ETHYL ACRYLATE											
		0.657	0.638	0.686	0.814	0.721	0.689	0.670	0.680	0.699	0.695	7.29
59)	BROMODICHLOROMETHANE											
		0.619	0.612	0.695	0.694	0.696	0.700	0.679	0.683	0.713	0.677	5.34
60)	2,2,4-TRIMETHYLPENTANE											
		1.422	1.386	1.369	1.701	1.474	1.412	1.353	1.591	1.393	1.456	8.00
61)	1,4-DIOXANE											
		0.249	0.244	0.218		0.260	0.226	0.215	0.148	0.225	0.223	15.31
62)	HEPTANE											
		0.481	0.471	0.473	0.724	0.486	0.480	0.461	0.553	0.483	0.512	16.32
63)	METHYL METHACRYLATE											
		0.333	0.329	0.349	0.382	0.367	0.351	0.344	0.399	0.357	0.357	6.41
64)	METHYL ISOBUTYL KETONE											
		0.306	0.299	0.281	0.442	0.324	0.290	0.278	0.303	0.284	0.312	16.39
65)	CIS-1,3-DICHLOROPROPENE											
		0.440	0.451	0.546	0.584	0.518	0.528	0.522	0.515	0.563	0.519	9.14
66)	TOLUENE											
		1.137	1.226	1.163	1.815	1.160	1.149	1.126	1.326	1.188	1.254	17.45
67)	1,3-DICHLOROPROPANE											
		0.534	0.514	0.568	0.610	0.583	0.567	0.552	0.608	0.578	0.568	5.59
68)	TRANS-1,3-DICHLOROPROPENE											
		0.400	0.374	0.525	0.478	0.484	0.495	0.499	0.391	0.543	0.465	13.22
69)	1,1,2-TRICHLOROETHANE											
		0.313	0.323	0.335	0.389	0.338	0.334	0.324	0.353	0.344	0.339	6.55
70)	2-HEXANONE											
		0.426	0.392	0.392	0.606	0.436	0.401	0.393	0.398	0.395	0.427	16.22
71)	ETHYL METHACRYLATE											
		0.552	0.511	0.589		0.625	0.589	0.572		0.599	0.577	6.35
72)	TETRACHLOROETHENE											
		0.400	0.388	0.443	0.449	0.422	0.425	0.420	0.455	0.458	0.429	5.70
73)	DIBROMOCHLOROMETHANE											
		0.590	0.562	0.783	0.625	0.689	0.721	0.733	0.629	0.813	0.683	12.72
74)	1,2-DIBROMOETHANE											
		0.582	0.580	0.669	0.630	0.651	0.660	0.648	0.595	0.682	0.633	6.10
75)	OCTANE											
		0.654	0.653	0.676	0.922	0.682	0.674	0.657	0.724	0.689	0.703	12.06
76)	I CHLOROBENZENE-D5	----------				ISTD						
77)	1,1,1,2-TETRACHLOROETHANE											
		0.481	0.464	0.590	0.637	0.562	0.561	0.557	0.537	0.597	0.554	9.88
78)	CHLOROBENZENE											
		0.949	1.018	1.043		1.043	1.030	1.003	1.122	1.056	1.033	4.76
79)	ETHYLBENZENE											
		1.739	1.857	1.676		1.720	1.676	1.624	2.283	1.684	1.782	11.98
80)	M,P-XYLENE											
		1.304	1.389	1.290		1.335	1.306	1.270	1.702	1.289	1.361	10.50
81)	O-XYLENE											
		1.348	1.426	1.334		1.367	1.339	1.294	1.738	1.332	1.397	10.20
82)	STYRENE											
		0.868	0.821	1.050	1.097	1.020	1.020	1.012	0.910	1.058	0.984	9.61
83)	NONANE											

Initial Calibration Summary

Job Number: JD60001
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample: V7W5-ICC0005
Lab FileID: 7W00099.D

```
          0.726 0.759 0.778 1.130 0.797 0.776 0.754 0.872 0.784   0.820   15.02
 84)  BROMOFORM
          0.485 0.468 0.782       0.665 0.691 0.718 0.511 0.803   0.640   20.99
 85)  1,1,2,2-TETRACHLOROETHANE
          0.933 0.880 0.996 0.993 1.004 0.988 0.962 0.934 0.995   0.965    4.34
 86)  1,2,3-TRICHLOROPROPANE
          0.713 0.703 0.733 0.852 0.765 0.742 0.720 0.757 0.734   0.747    5.93
 87)  4-BROMOFLUOROBENZENE
          0.674 0.668 0.697 0.657 0.692 0.679 0.672 0.657 0.684   0.676    2.09
 88)  ISOPROPYLBENZENE
          0.492 0.493 0.546 0.656 0.545 0.533 0.523 0.544 0.545   0.542    8.88
 89)  BROMOBENZENE
          0.868 0.840 0.923 1.034 0.942 0.928 0.892 0.960 0.927   0.924    6.03
 90)  2-CHLOROTOLUENE
          0.438 0.442 0.502 0.437 0.496 0.486 0.478 0.462 0.504   0.472    5.83
 91)  N-PROPYLBENZENE
          0.506 0.452 0.579 0.537 0.573 0.554 0.553 0.492 0.584   0.537    8.30
 92)  4-ETHYLTOLUENE
          1.713 1.588 2.095 1.727 2.042 2.005 1.985 1.690 2.114   1.884   10.72
 93)  1,3,5-TRIMETHYLBENZENE
          1.455 1.349 1.750 1.640 1.717 1.670 1.652 1.519 1.759   1.612    8.77
 94)  ALPHA-METHYLSTYRENE
          0.698 0.608 0.946 0.775 0.864 0.863 0.877 0.671 0.948   0.806   15.29
 95)  TERT-BUTYLBENZENE
          0.370 0.375 0.472 0.428 0.441 0.422 0.434 0.386 0.471   0.422    9.04
 96)  1,2,4-TRIMETHYLBENZENE
          1.545 1.400 1.934 1.451 1.792 1.756 1.787 1.393 1.953   1.668   13.39
 97)  BENZYL CHLORIDE
          0.704 0.565 1.647       1.290 1.393 1.490       1.665   1.251   35.42
 98)  M-DICHLOROBENZENE
          0.996 0.884 1.252 1.025 1.164 1.165 1.171 1.010 1.262   1.103   11.72
 99)  P-DICHLOROBENZENE
          0.958 0.943 1.271 1.079 1.171 1.162 1.181 0.923 1.272   1.107   12.38
100)  O-DICHLOROBENZENE
          0.972 0.938 1.275 1.008 1.156 1.142 1.169 0.972 1.300   1.104   12.31
101)  SEC-BUTYLBENZENE
          0.472 0.450 0.573 0.466 0.549 0.541 0.541 0.477 0.576   0.516    9.61
102)  1,2,3-TRIMETHYLBENZENE
          1.512 1.398 1.810 1.473 1.789 1.715 1.704 1.456 1.809   1.630   10.29
103)  P-ISOPROPYLTOLUENE
          0.498 0.468 0.665 0.495 0.622 0.609 0.621 0.487 0.681   0.572   14.65
104)  N-BUTYLBENZENE
          0.454 0.363 0.657       0.598 0.587 0.598 0.356 0.672   0.536   23.64
105)  HEXACHLOROETHANE
          0.499 0.467 0.844 0.525 0.711 0.727 0.752 0.491 0.876   0.655   24.51
106)  HEXACHLOROBUTADIENE
          0.732 0.689 1.183 0.730 0.919 0.896 0.966 0.687 1.256   0.895   23.63
107)  1,2,4-TRICHLOROBENZENE
          0.659 0.434 1.433       1.071 1.093 1.181       1.535   1.058   37.27
108)  NAPHTHALENE
          1.722 1.228 3.451       2.960 2.909 3.037       3.592   2.700   32.82
 ------------------------------------------------------------------------------
 (#) = Out of Range  ###  Number of calibration levels exceeded format  ###

           M7W0005.M         Wed Dec 07 14:54:45 2022
```

Initial Calibration Verification

Job Number: JD60001
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample: V7W5-ICV0005
Lab FileID: 7W00105.D

Evaluate Continuing Calibration Report

Data File : C:\msdchem\1\data\7W00105.D Vial: 4
Acq On : 30 Nov 2022 5:59 pm Operator: thomash
Sample : ICV0005-10 Inst : MS7W
Misc : MS64487,V7W0005,,,,,1 Multiplr: 1.00
MS Integration Params: rteint.p

Method : C:\msdchem\1\methods\M7W0005.M (RTE Integrator)
Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
Last Update : Wed Dec 07 14:36:34 2022
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.33min
Max. RRF Dev : 30% Max. Rel. Area : 150%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)	R.T.
1	I	BROMOCHLOROMETHANE	1.000	1.000	0.0	109	0.00	3.57
2	T	FREON 115		----------NA----------				
3	T	FREON 152A	0.658	0.689	-4.7	112	0.00	1.80
4	T	CHLORODIFLUOROMETHANE	0.335	0.335	0.0	109	0.00	1.82
5	T	CHLOROTRIFLUOROETHENE	1.804	1.882	-4.3	111	0.00	1.83
6	T	DICHLORODIFLUOROMETHANE	5.203	5.503	-5.8	108	0.00	1.85
7	T	PROPYLENE	0.829	0.817	1.4	108	0.00	1.83
8	T	1-CHLORO-1,1-DIFLUOROETHA	4.197	4.123	1.8	109	0.00	1.89
9	T	FREON 114	4.933	4.956	-0.5	109	0.00	1.93
10	T	CHLOROMETHANE	0.446	0.456	-2.2	111	0.00	1.90
11	T	VINYL CHLORIDE	1.655	1.635	1.2	108	0.00	1.97
12	t	1,3-BUTADIENE	1.327	1.256	5.4	107	0.00	2.01
13	T	N-BUTANE	2.465	2.271	7.9	107	0.00	2.03
14	T	BROMOMETHANE	1.645	1.599	2.8	110	0.00	2.09
15	T	CHLOROETHANE	0.869	0.851	2.1	110	0.00	2.15
16	T	DICHLOROFLUOROMETHANE	3.868	3.671	5.1	106	0.00	2.17
17	T	ACETONITRILE	1.453	1.096	24.6	91	0.00	2.25
18	T	ACROLEIN	0.769	0.613	20.3	93	0.00	2.29
19	T	FREON 123	3.895	3.993	-2.5	111	0.00	2.31
20	T	FREON 123A	2.457	2.667	-8.5	119	0.00	2.33
21	T	TRICHLOROFLUOROMETHANE	5.262	5.193	1.3	107	0.00	2.40
22	T	ISOPROPYL ALCOHOL	3.604	3.498	2.9	110	0.00	2.42
23	T	ACETONE	0.925	0.796	13.9	102	0.00	2.34
24	T	PENTANE	1.834	1.816	1.0	107	0.00	2.52
25	T	IODOMETHANE	5.235	4.955	5.3	102	0.00	2.58
26	T	1,1-DICHLOROETHYLENE	2.025	1.936	4.4	108	0.00	2.61
27	T	CARBON DISULFIDE	6.055	5.504	9.1	100	0.00	2.75
28	T	ETHANOL	0.750	0.627	16.4	99	0.00	2.18
29	T	BROMOETHENE	1.709	1.686	1.3	110	0.00	2.26
30	T	ACRYLONITRILE	1.330	1.110	16.5	97	0.00	2.49
31	T	METHYLENE CHLORIDE	1.923	1.725	10.3	105	0.00	2.64
32	T	3-CHLOROPROPENE	0.936	0.926	1.1	105	0.00	2.69
33	T	FREON 113	3.480	3.363	3.4	106	0.00	2.75
34	T	TRANS-1,2-DICHLOROETHENE	1.550	1.474	4.9	108	0.00	3.00
35	T	TERTIARY BUTYL ALCOHOL	4.674	3.979	14.9	89	0.00	2.62
36	t	METHYL TERTIARY BUTYL ETH	4.350	4.110	5.5	109	0.00	3.12
37	T	TETRAHYDROFURAN	0.712	0.668	6.2	101	0.00	3.87
38	T	HEXANE	2.333	2.329	0.2	111	0.00	3.62
39	T	VINYL ACETATE	0.438	0.388	11.4	95	0.00	3.16
40	T	1,1-DICHLOROETHANE	2.464	2.445	0.8	110	0.00	3.08
41	T	METHYL ETHYL KETONE	0.767	0.718	6.4	105	0.00	3.26
42	T	CIS-1,2-DICHLOROETHENE	1.618	1.590	1.7	109	0.00	3.48

Initial Calibration Verification

Job Number: JD60001
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample: V7W5-ICV0005
Lab FileID: 7W00105.D

43	T	DIISOPROPYL ETHER	0.713	0.688	3.5	107	0.00	3.63
44	T	ETHYL ACETATE	0.478	0.464	2.9	104	0.00	3.63
45	T	METHYL ACRYLATE	2.894	2.683	7.3	102	0.00	3.62
46	T	CHLOROFORM	3.281	3.190	2.8	107	0.00	3.65
47	T	2,4-DIMETHYLPENTANE	2.619	2.601	0.7	108	0.00	4.19
48	T	1,1,1-TRICHLOROETHANE	3.261	3.241	0.6	108	0.00	4.27
49	T	CARBON TETRACHLORIDE	3.434	3.437	-0.1	107	0.00	4.73
50	T	1,2-DICHLOROETHANE	2.099	2.081	0.9	108	0.00	4.09
51	t	BENZENE	4.731	4.538	4.1	109	0.00	4.60
52	I	1,4-DIFLUOROBENZENE	1.000	1.000	0.0	107	0.00	4.95
53	T	CYCLOHEXANE	0.395	0.406	-2.8	111	0.00	4.83
54	T	2,3-DIMETHYLPENTANE	0.202	0.206	-2.0	111	0.00	5.11
55	T	TRICHLOROETHENE	0.428	0.443	-3.5	112	0.00	5.57
56	T	1,2-DICHLOROPROPANE	0.348	0.332	4.6	108	0.00	5.32
57	T	DIBROMOMETHANE	0.397	0.370	6.8	108	0.00	5.28
58	T	ETHYL ACRYLATE	0.695	0.647	6.9	101	0.00	5.44
59	T	BROMODICHLOROMETHANE	0.677	0.697	-3.0	107	0.00	5.51
60	T	2,2,4-TRIMETHYLPENTANE	1.456	1.440	1.1	110	0.00	5.67
61	T	1,4-DIOXANE	0.223	0.194	13.0	92	0.00	5.59
62	T	HEPTANE	0.512	0.491	4.1	110	0.00	6.00
63	T	METHYL METHACRYLATE	0.357	0.341	4.5	105	0.00	5.89
64	T	METHYL ISOBUTYL KETONE	0.312	0.257	17.6	95	0.00	6.68
65	T	CIS-1,3-DICHLOROPROPENE	0.519	0.545	-5.0	111	0.00	6.56
66	T	TOLUENE	1.254	1.187	5.3	111	0.00	7.82
67	T	1,3-DICHLOROPROPANE	0.568	0.569	-0.2	108	0.00	7.89
68	T	TRANS-1,3-DICHLOROPROPENE	0.465	0.471	-1.3	102	0.00	7.27
69	T	1,1,2-TRICHLOROETHANE	0.339	0.335	1.2	108	0.00	7.44
70	T	2-HEXANONE	0.427	0.317	25.8	85	0.00	8.42
71	T	ETHYL METHACRYLATE	0.577	0.549	4.9	100	0.00	8.54
72	T	TETRACHLOROETHENE	0.429	0.442	-3.0	112	0.00	9.62
73	T	DIBROMOCHLOROMETHANE	0.683	0.716	-4.8	107	0.00	8.38
74	T	1,2-DIBROMOETHANE	0.633	0.655	-3.5	107	0.00	8.74
75	T	OCTANE	0.703	0.683	2.8	109	0.00	9.76
76	I	CHLOROBENZENE-D5	1.000	1.000	0.0	107	0.00	10.79
77	T	1,1,1,2-TETRACHLOROETHANE	0.554	0.563	-1.6	107	0.00	10.88
78	T	CHLOROBENZENE	1.033	1.047	-1.4	109	0.00	10.86
79	t	ETHYLBENZENE	1.782	1.704	4.4	109	0.00	11.77
80	t	M,P-XYLENE	1.361	1.339	1.6	110	0.00	12.21
81	t	O-XYLENE	1.397	1.371	1.9	110	0.00	13.16
82	T	STYRENE	0.984	0.970	1.4	102	0.00	12.94
83	T	NONANE	0.820	0.794	3.2	109	0.00	14.28
84	T	BROMOFORM	0.640	0.701	-9.5	109	0.00	12.02
85	T	1,1,2,2-TETRACHLOROETHANE	0.965	0.973	-0.8	105	0.00	13.16
86	T	1,2,3-TRICHLOROPROPANE	0.747	0.736	1.5	106	0.00	13.45
87	S	4-BROMOFLUOROBENZENE	0.676	0.678	-0.3	107	0.00	14.21
88	T	ISOPROPYLBENZENE	0.542	0.541	0.2	109	0.00	14.70
89	T	BROMOBENZENE	0.924	0.918	0.6	106	0.00	14.58
90	T	2-CHLOROTOLUENE	0.472	0.493	-4.4	109	0.00	15.72
91	T	N-PROPYLBENZENE	0.537	0.567	-5.6	110	0.00	16.03
92	T	4-ETHYLTOLUENE	1.884	2.039	-8.2	109	0.00	16.31
93	T	1,3,5-TRIMETHYLBENZENE	1.612	1.686	-4.6	108	0.00	16.44
94	T	ALPHA-METHYLSTYRENE	0.806	0.708	12.2	88	0.00	16.63
95	T	TERT-BUTYLBENZENE	0.422	0.429	-1.7	109	0.00	16.87
96	T	1,2,4-TRIMETHYLBENZENE	1.668	1.790	-7.3	109	0.00	16.88
97	T	BENZYL CHLORIDE	1.251	1.037	17.1	80	0.00	16.96
98	T	M-DICHLOROBENZENE	1.103	1.163	-5.4	107	0.00	16.94
99	T	P-DICHLOROBENZENE	1.107	1.162	-5.0	107	0.00	17.02
100	T	O-DICHLOROBENZENE	1.104	1.152	-4.3	108	0.00	17.30

Initial Calibration Verification

Job Number: JD60001
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample: V7W5-ICV0005
Lab FileID: 7W00105.D

101	T	SEC-BUTYLBENZENE	0.516	0.542	-5.0	107	0.00	17.14
102	T	1,2,3-TRIMETHYLBENZENE	1.630	1.713	-5.1	107	0.00	17.25
103	T	P-ISOPROPYLTOLUENE	0.572	0.607	-6.1	107	0.00	17.31
104	T	N-BUTYLBENZENE	0.536	0.588	-9.7	107	0.00	17.65
105	T	HEXACHLOROETHANE	0.655	0.604	7.8	89	0.00	17.83
106	T	HEXACHLOROBUTADIENE	0.895	0.867	3.1	104	0.00	18.86
107	T	1,2,4-TRICHLOROBENZENE	1.058	0.976	7.8	96	0.00	18.56
108	T	NAPHTHALENE	2.700	2.253	16.6	83	0.00	18.60

(#) = Out of Range SPCC's out = 0 CCC's out = 0
7W00099.D M7W0005.M Wed Dec 07 14:54:15 2022

Continuing Calibration Summary

Job Number: JD60001
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample: V7W22-CC0005
Lab FileID: 7W00422.D

Evaluate Continuing Calibration Report

Data File : C:\msdchem\1\data\7W00422.D Vial: 2
Acq On : 13 Feb 2023 10:43 am Operator: thomash
Sample : cc0005-10 Inst : MS7W
Misc : MS66469,V7W0022,,,,,1 Multiplr: 1.00
MS Integration Params: rteint.p

Method : C:\msdchem\1\methods\M7W0005.M (RTE Integrator)
Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
Last Update : Wed Dec 07 14:36:34 2022
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 60% Max. R.T. Dev 0.33min
Max. RRF Dev : 30% Max. Rel. Area : 140%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)	R.T.
1	I	BROMOCHLOROMETHANE	1.000	1.000	0.0	98	0.00	3.56
2	T	FREON 115	0.000	0.643	0.0	0#	-0.03	1.77
3	T	FREON 152A	0.658	0.702	-6.7	103	0.00	1.80
4	T	CHLORODIFLUOROMETHANE	0.335	0.347	-3.6	102	0.00	1.82
5	T	CHLOROTRIFLUOROETHENE	1.804	1.743	3.4	93	0.00	1.83
6	T	DICHLORODIFLUOROMETHANE	5.203	5.876	-12.9	104	0.00	1.85
7	T	PROPYLENE	0.829	0.972	-17.2	116	0.00	1.83
8	T	1-CHLORO-1,1-DIFLUOROETHA	4.197	4.611	-9.9	110	0.00	1.89
9	T	FREON 114	4.933	5.416	-9.8	108	0.00	1.93
10	T	CHLOROMETHANE	0.446	0.565	-26.7	125	0.00	1.89
11	T	VINYL CHLORIDE	1.655	1.964	-18.7	117	0.00	1.97
12	t	1,3-BUTADIENE	1.327	1.585	-19.4	122	0.00	2.01
13	T	N-BUTANE	2.465	3.096	-25.6	132	0.00	2.03
14	T	BROMOMETHANE	1.645	1.753	-6.6	109	0.00	2.09
15	T	CHLOROETHANE	0.869	1.000	-15.1	116	0.00	2.15
16	T	DICHLOROFLUOROMETHANE	3.868	4.286	-10.8	112	0.00	2.17
17	T	ACETONITRILE	1.453	1.823	-25.5	137	0.00	2.25
18	T	ACROLEIN	0.769	0.902	-17.3	123	0.00	2.29
19	T	FREON 123	3.895	4.376	-12.3	110	0.00	2.31
20	T	FREON 123A	2.457	2.449	0.3	99	0.00	2.33
21	T	TRICHLOROFLUOROMETHANE	5.262	5.498	-4.5	102	0.00	2.40
22	T	ISOPROPYL ALCOHOL	3.604	4.449	-23.4	126	0.00	2.42
23	T	ACETONE	0.925	0.993	-7.4	114	0.00	2.33
24	T	PENTANE	1.834	2.555	-39.3#	136	0.00	2.51
25	T	IODOMETHANE	5.235	5.462	-4.3	102	0.00	2.58
26	T	1,1-DICHLOROETHYLENE	2.025	2.161	-6.7	109	0.00	2.61
27	T	CARBON DISULFIDE	6.055	6.871	-13.5	112	0.00	2.75
28	T	ETHANOL	0.750	0.908	-21.1	129	0.00	2.18
29	T	BROMOETHENE	1.709	1.746	-2.2	103	0.00	2.26
30	T	ACRYLONITRILE	1.330	1.585	-19.2	126	0.00	2.49
31	T	METHYLENE CHLORIDE	1.923	2.101	-9.3	115	0.00	2.64
32	T	3-CHLOROPROPENE	0.936	1.082	-15.6	111	0.00	2.69
33	T	FREON 113	3.480	3.616	-3.9	102	0.00	2.75
34	T	TRANS-1,2-DICHLOROETHENE	1.550	1.531	1.2	101	0.00	3.00
35	T	TERTIARY BUTYL ALCOHOL	4.674	5.618	-20.2	113	0.00	2.62
36	t	METHYL TERTIARY BUTYL ETH	4.350	4.064	6.6	98	0.00	3.12
37	T	TETRAHYDROFURAN	0.712	0.735	-3.2	101	0.00	3.88
38	T	HEXANE	2.333	2.544	-9.0	110	0.00	3.62
39	T	VINYL ACETATE	0.438	0.413	5.7	92	0.00	3.16
40	T	1,1-DICHLOROETHANE	2.464	2.572	-4.4	105	0.00	3.08
41	T	METHYL ETHYL KETONE	0.767	0.770	-0.4	102	0.00	3.26
42	T	CIS-1,2-DICHLOROETHENE	1.618	1.639	-1.3	101	0.00	3.48

Continuing Calibration Summary

Job Number: JD60001
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample: V7W22-CC0005
Lab FileID: 7W00422.D

43	T	DIISOPROPYL ETHER	0.713	0.745	-4.5	104	0.00	3.63
44	T	ETHYL ACETATE	0.478	0.522	-9.2	105	0.00	3.63
45	T	METHYL ACRYLATE	2.894	3.102	-7.2	107	0.00	3.62
46	T	CHLOROFORM	3.281	3.413	-4.0	103	0.00	3.65
47	T	2,4-DIMETHYLPENTANE	2.619	2.840	-8.4	106	0.00	4.18
48	T	1,1,1-TRICHLOROETHANE	3.261	3.212	1.5	96	0.00	4.27
49	T	CARBON TETRACHLORIDE	3.434	3.262	5.0	91	0.00	4.73
50	T	1,2-DICHLOROETHANE	2.099	2.172	-3.5	102	0.00	4.09
51	t	BENZENE	4.731	4.577	3.3	99	0.00	4.60
52	I	1,4-DIFLUOROBENZENE	1.000	1.000	0.0	97	0.00	4.95
53	T	CYCLOHEXANE	0.395	0.409	-3.5	101	0.00	4.83
54	T	2,3-DIMETHYLPENTANE	0.202	0.210	-4.0	102	0.00	5.10
55	T	TRICHLOROETHENE	0.428	0.439	-2.6	100	0.00	5.57
56	T	1,2-DICHLOROPROPANE	0.348	0.357	-2.6	105	0.00	5.32
57	T	DIBROMOMETHANE	0.397	0.345	13.1	91	0.00	5.28
58	T	ETHYL ACRYLATE	0.695	0.741	-6.6	105	0.00	5.44
59	T	BROMODICHLOROMETHANE	0.677	0.723	-6.8	100	0.00	5.51
60	T	2,2,4-TRIMETHYLPENTANE	1.456	1.557	-6.9	107	0.00	5.67
61	T	1,4-DIOXANE	0.223	0.228	-2.2	98	0.00	5.59
62	T	HEPTANE	0.512	0.559	-9.2	113	0.00	6.00
63	T	METHYL METHACRYLATE	0.357	0.362	-1.4	100	0.00	5.89
64	T	METHYL ISOBUTYL KETONE	0.312	0.312	0.0	105	0.00	6.67
65	T	CIS-1,3-DICHLOROPROPENE	0.519	0.517	0.4	95	0.00	6.56
66	T	TOLUENE	1.254	1.130	9.9	96	0.00	7.82
67	T	1,3-DICHLOROPROPANE	0.568	0.581	-2.3	100	0.00	7.88
68	T	TRANS-1,3-DICHLOROPROPENE	0.465	0.471	-1.3	92	0.00	7.26
69	T	1,1,2-TRICHLOROETHANE	0.339	0.355	-4.7	104	0.00	7.43
70	T	2-HEXANONE	0.427	0.439	-2.8	106	0.00	8.42
71	T	ETHYL METHACRYLATE	0.577	0.595	-3.1	98	0.00	8.54
72	T	TETRACHLOROETHENE	0.429	0.396	7.7	91	0.00	9.62
73	T	DIBROMOCHLOROMETHANE	0.683	0.702	-2.8	95	0.00	8.38
74	T	1,2-DIBROMOETHANE	0.633	0.659	-4.1	97	0.00	8.74
75	T	OCTANE	0.703	0.782	-11.2	113	0.00	9.76
76	I	CHLOROBENZENE-D5	1.000	1.000	0.0	93	0.00	10.78
77	T	1,1,1,2-TETRACHLOROETHANE	0.554	0.565	-2.0	93	0.00	10.87
78	T	CHLOROBENZENE	1.033	1.081	-4.6	97	0.00	10.86
79	t	ETHYLBENZENE	1.782	1.713	3.9	95	0.00	11.77
80	t	M,P-XYLENE	1.361	1.332	2.1	94	0.00	12.20
81	t	O-XYLENE	1.397	1.359	2.7	94	0.00	13.15
82	T	STYRENE	0.984	1.022	-3.9	93	0.00	12.94
83	T	NONANE	0.820	0.956	-16.6	114	0.00	14.28
84	T	BROMOFORM	0.640	0.666	-4.1	89	0.00	12.02
85	T	1,1,2,2-TETRACHLOROETHANE	0.965	1.083	-12.2	101	0.00	13.16
86	T	1,2,3-TRICHLOROPROPANE	0.747	0.788	-5.5	98	0.00	13.45
87	S	4-BROMOFLUOROBENZENE	0.676	0.701	-3.7	96	0.00	14.21
88	T	ISOPROPYLBENZENE	0.542	0.550	-1.5	95	0.00	14.69
89	T	BROMOBENZENE	0.924	0.945	-2.3	94	0.00	14.57
90	T	2-CHLOROTOLUENE	0.472	0.488	-3.4	93	0.00	15.71
91	T	N-PROPYLBENZENE	0.537	0.571	-6.3	95	0.00	16.03
92	T	4-ETHYLTOLUENE	1.884	2.004	-6.4	93	0.00	16.31
93	T	1,3,5-TRIMETHYLBENZENE	1.612	1.670	-3.6	93	0.00	16.44
94	T	ALPHA-METHYLSTYRENE	0.806	0.868	-7.7	93	0.00	16.62
95	T	TERT-BUTYLBENZENE	0.422	0.430	-1.9	94	0.00	16.87
96	T	1,2,4-TRIMETHYLBENZENE	1.668	1.805	-8.2	95	0.00	16.88
97	T	BENZYL CHLORIDE	1.251	1.049	16.1	70	0.00	16.96
98	T	M-DICHLOROBENZENE	1.103	1.132	-2.6	90	0.00	16.94
99	T	P-DICHLOROBENZENE	1.107	1.120	-1.2	89	0.00	17.02
100	T	O-DICHLOROBENZENE	1.104	1.128	-2.2	91	0.00	17.30

Continuing Calibration Summary

Job Number: JD60001
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample: V7W22-CC0005
Lab FileID: 7W00422.D

101	T	SEC-BUTYLBENZENE	0.516	0.550	-6.6	94	0.00	17.14
102	T	1,2,3-TRIMETHYLBENZENE	1.630	1.742	-6.9	94	0.00	17.25
103	T	P-ISOPROPYLTOLUENE	0.572	0.625	-9.3	95	0.00	17.31
104	T	N-BUTYLBENZENE	0.536	0.588	-9.7	93	0.00	17.65
105	T	HEXACHLOROETHANE	0.655	0.705	-7.6	90	0.00	17.83
106	T	HEXACHLOROBUTADIENE	0.895	0.810	9.5	84	-0.01	18.86
107	T	1,2,4-TRICHLOROBENZENE	1.058	0.894	15.5	76	-0.01	18.55
108	T	NAPHTHALENE	2.700	2.757	-2.1	88	-0.01	18.60

(#) = Out of Range SPCC's out = 0 CCC's out = 0
7W00099.D M7W0005.M Mon Feb 13 14:33:28 2023

Run Sequence Report

Job Number: JD60001
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Run ID: V6W1158	**Method:** TO-15	**Instrument ID:** GCMS6W

Lab Sample ID	Lab File ID	Date/Time Analyzed	Prep QC Batch	Client Sample ID
V6W1158-BFB	6W27499.D	12/05/22 21:18	n/a	BFB Tune
V6W1158-IC1158	6W27500.D	12/05/22 21:51	n/a	Initial cal 0.04
V6W1158-IC1158	6W27501.D	12/05/22 22:24	n/a	Initial cal 0.1
V6W1158-IC1158	6W27502.D	12/05/22 22:57	n/a	Initial cal 0.2
V6W1158-IC1158	6W27503.D	12/05/22 23:30	n/a	Initial cal 0.5
V6W1158-IC1158	6W27505.D	12/06/22 00:35	n/a	Initial cal 5
V6W1158-ICC1158	6W27506.D	12/06/22 01:07	n/a	Initial cal 10
V6W1158-IC1158	6W27507.D	12/06/22 01:39	n/a	Initial cal 20
V6W1158-IC1158	6W27508.D	12/06/22 02:12	n/a	Initial cal 40
V6W1158-IC1158	6W27509.D	12/06/22 02:47	n/a	Initial cal 50
V6W1158-BFB	6W27516.D	12/07/22 13:49	n/a	BFB Tune
V6W1158-ICV1158	6W27517.D	12/07/22 14:22	n/a	Initial cal verification 10

Run Sequence Report

Job Number: JD60001
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Run ID: V6W1177	**Method:** TO-15	**Instrument ID:** GCMS6W

Lab Sample ID	Lab File ID	Date/Time Analyzed	Prep QC Batch	Client Sample ID
V6W1177-BFB	6W28029.D	01/27/23 13:42	n/a	BFB Tune
V6W1177-CC1158	6W28031.D	01/27/23 15:22	n/a	Continuing cal 10
V6W1177-BS	6W28032.D	01/27/23 16:07	n/a	Blank Spike
V6W1177-BSD	6W28033.D	01/27/23 16:39	n/a	Blank Spike Duplicate
V6W1177-MB	6W28035.D	01/27/23 20:49	n/a	Method Blank
V6W1177-SCC	6W28037.D	01/27/23 22:08	n/a	Summa Cleaning Certification
V6W1177-SCC	6W28038.D	01/27/23 22:40	n/a	Summa Cleaning Certification
V6W1177-SCC	6W28039.D	01/27/23 23:12	n/a	Summa Cleaning Certification
V6W1177-SCC	6W28040.D	01/27/23 23:44	n/a	Summa Cleaning Certification
V6W1177-SCC	6W28041.D	01/28/23 00:16	n/a	Summa Cleaning Certification
V6W1177-SCC	6W28042.D	01/28/23 00:49	n/a	Summa Cleaning Certification
V6W1177-SCC	6W28043.D	01/28/23 01:21	n/a	Summa Cleaning Certification
V6W1177-SCC	6W28044.D	01/28/23 01:53	n/a	Summa Cleaning Certification
V6W1177-SCC	6W28045.D	01/28/23 02:26	n/a	Summa Cleaning Certification
V6W1177-SCC	6W28046.D	01/28/23 02:59	n/a	Summa Cleaning Certification
V6W1177-SCC	6W28047.D	01/28/23 03:32	n/a	Summa Cleaning Certification
V6W1177-SCC	6W28048.D	01/28/23 04:04	n/a	Summa Cleaning Certification
V6W1177-SCC	6W28050.D	01/28/23 05:09	n/a	Summa Cleaning Certification
V6W1177-SCC	6W28051.D	01/28/23 05:42	n/a	Summa Cleaning Certification
V6W1177-SCC	6W28052.D	01/28/23 06:15	n/a	Summa Cleaning Certification
V6W1177-SCC	6W28053.D	01/28/23 06:47	n/a	Summa Cleaning Certification
V6W1177-SCC	6W28054.D	01/28/23 07:19	n/a	Summa Cleaning Certification
V6W1177-SCC	6W28055.D	01/28/23 07:52	n/a	Summa Cleaning Certification
V6W1177-SCC	6W28056.D	01/28/23 08:25	n/a	Summa Cleaning Certification

Run Sequence Report

Job Number: JD60001
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Run ID: V7W22	**Method:** TO-15	**Instrument ID:** GCMS7W

Lab Sample ID	Lab File ID	Date/Time Analyzed	Prep QC Batch	Client Sample ID
V7W22-BFB	7W00421.D	02/13/23 10:12	n/a	BFB Tune
V7W22-CC0005	7W00422.D	02/13/23 10:43	n/a	Continuing cal 10
V7W22-BS	7W00423.D	02/13/23 11:25	n/a	Blank Spike
V7W22-BSD	7W00424.D	02/13/23 11:57	n/a	Blank Spike Duplicate
V7W22-MB	7W00426.D	02/13/23 13:04	n/a	Method Blank
ZZZZZZ	7W00427.D	02/13/23 13:54	n/a	(unrelated sample)
ZZZZZZ	7W00429.D	02/13/23 15:05	n/a	(unrelated sample)
JD60001-1	7W00430.D	02/13/23 15:37	n/a	CRCA-VMP03.20230208
JD60001-1DUP	7W00431.D	02/13/23 16:08	n/a	Duplicate
ZZZZZZ	7W00432.D	02/13/23 16:39	n/a	(unrelated sample)
ZZZZZZ	7W00433.D	02/13/23 17:11	n/a	(unrelated sample)
ZZZZZZ	7W00435.D	02/13/23 18:17	n/a	(unrelated sample)
ZZZZZZ	7W00436.D	02/13/23 18:51	n/a	(unrelated sample)
ZZZZZZ	7W00437.D	02/13/23 19:26	n/a	(unrelated sample)
ZZZZZZ	7W00438.D	02/13/23 20:01	n/a	(unrelated sample)
ZZZZZZ	7W00439.D	02/13/23 20:35	n/a	(unrelated sample)
ZZZZZZ	7W00440.D	02/13/23 21:11	n/a	(unrelated sample)
ZZZZZZ	7W00442.D	02/13/23 22:29	n/a	(unrelated sample)
ZZZZZZ	7W00443.D	02/13/23 23:01	n/a	(unrelated sample)

Run Sequence Report

Job Number: JD60001
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Run ID: V7W5	**Method:** TO-15	**Instrument ID:** GCMS7W

Lab Sample ID	Lab File ID	Date/Time Analyzed	Prep QC Batch	Client Sample ID
V7W5-BFB	7W00090.D	11/30/22 09:57	n/a	BFB Tune
V7W5-IC0005	7W00093.D	11/30/22 11:33	n/a	Initial cal 0.04
V7W5-IC0005	7W00094.D	11/30/22 12:06	n/a	Initial cal 0.1
V7W5-IC0005	7W00095.D	11/30/22 12:38	n/a	Initial cal 0.2
V7W5-IC0005	7W00096.D	11/30/22 13:09	n/a	Initial cal 0.5
V7W5-IC0005	7W00098.D	11/30/22 14:12	n/a	Initial cal 5
V7W5-ICC0005	7W00099.D	11/30/22 14:44	n/a	Initial cal 10
V7W5-IC0005	7W00100.D	11/30/22 15:16	n/a	Initial cal 20
V7W5-IC0005	7W00101.D	11/30/22 15:51	n/a	Initial cal 40
V7W5-IC0005	7W00102.D	11/30/22 16:26	n/a	Initial cal 50
V7W5-ICV0005	7W00105.D	11/30/22 17:59	n/a	Initial cal verification 10

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

e-Hardcopy 2.0
Automated Report

Technical Report for

Tetra Tech NUS

KSC-CRCA

112G08970

SGS Job Number: FC3044

Sampling Date: 02/28/23

Report to:

Tetra-Tech, Inc.
661 Andersen Drive Foster Plaza 7
Pittsburgh, PA 15220
amy.thomson@tetratech.com; carrie.stock@tetratech.com;
alex.murphy@tetratech.com
ATTN: Amy Thomson

Total number of pages in report: 42

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

Norm Farmer
Technical Director

Client Service contact: Andrea Colby 407-425-6700

Certifications: FL(E83510), LA(03051), KS(E-10327), NC(573), NJ(FL002), NY(12022), SC(96038001) DoD ELAP(ANAB L2229), AZ(AZ0806), CA(2937), TX(T104704404), PA(68-03573), VA(460177), AL, AK, AR, CT, IA, KY, MA, MI. MS, ND, NH, NV, OK, OR, IL, UT, VT, WA, WI, WV

This report shall not be reproduced, except in its entirety, without the written approval of SGS.
Test results relate only to samples analyzed.

SGS is the sole authority for authorizing edits or modifications to this document.
Unauthorized modification of this report is strictly prohibited.
Review standard terms at: http://www.sgs.com/en/terms-and-conditions

Please share your ideas about how we can serve you better at:
EHS.US.CustomerCare@sgs.com

Sections: 1 2 3 4 5 6 7

Table of Contents

Section 1: Sample Summary **3**
Section 2: Case Narrative/Conformance Summary **4**
Section 3: Summary of Hits **5**
Section 4: Sample Results **6**
4.1: FC3044-1: CRCA-ASINFLUENT-20230228 7
4.2: FC3044-2: CRCA-ASEFFLUENT-20230228 11
4.3: FC3044-3: CRCA-REDUX-20230228 15
Section 5: Misc. Forms **17**
5.1: Chain of Custody 18
Section 6: MS Volatiles - QC Data Summaries **20**
6.1: Method Blank Summary 21
6.2: Blank Spike Summary 23
6.3: Matrix Spike/Matrix Spike Duplicate Summary 25
Section 7: MS Semi-volatiles - QC Data Summaries **27**
7.1: Method Blank Summary 28
7.2: Blank Spike Summary 37
7.3: Matrix Spike Summary 41

Sample Summary

Tetra Tech NUS

Job No: FC3044

KSC-CRCA
Project No: 112G08970

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
FC3044-1	02/28/23	08:30	CS	02/28/23	AQ	Ground Water	CRCA-ASINFLUENT-20230228
FC3044-2	02/28/23	08:50	CS	02/28/23	AQ	Ground Water	CRCA-ASEFFLUENT-20230228
FC3044-3	02/28/23	09:30	CS	02/28/23	AQ	Ground Water	CRCA-REDUX-20230228

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: Tetra Tech NUS **Job No:** FC3044

Site: KSC-CRCA **Report Date:** 3/16/2023 3:50:17 PM

On 02/28/2023, 3 Sample(s), 0 Trip Blank(s) and 0 Field Blank(s) were received at SGS North America Inc - Orlando. at a maximum corrected temperature of 4.4 C. Samples were intact and chemically preserved, unless noted below. A SGS North America Inc. - Orlando Job Number of FC3044 was assigned to the project.

Laboratory sample ID, client sample ID and dates of sample collection are detailed in the report's Results Summary Section. Specified quality control criteria were achieved for this job except as noted below. For more information, please refer to the analytical results and QC summary pages.

MS Volatiles By Method SW846 8260D

Matrix: AQ **Batch ID:** V5E1695

Sample(s) FC3001-1MS, FC3001-1MSD were used as the QC samples indicated.

FC3044-2: Sample was treated with an anti-foaming agent.

FC3044-1: Sample was treated with an anti-foaming agent.

FC3044-1 for Dichlorodifluoromethane: Associated ICV outside control limits high, however sample ND.

FC3044-2 for Dichlorodifluoromethane: Associated ICV outside control limits high, however sample ND.

MS Semi-volatiles By Method EPA 537M QSM5.3 B-15

Matrix: AQ **Batch ID:** OP95681

Sample(s) FC3011-39MS were used as the QC samples indicated.

Matrix Spike Recovery(s) for 8:2 Fluorotelomer sulfonate, 6:2 Fluorotelomer sulfonate, Perfluorobutanoic acid, Perfluoroheptanesulfonic acid, Perfluoroheptanoic acid, Perfluorohexanesulfonic acid, Perfluorohexanoic acid, Perfluorooctanesulfonic acid, Perfluorooctanoic acid, Perfluoropentanoic acid are outside control limits. Outside control limits due to high level in sample relative to spike amount.

Sample(s) FC3044-1, FC3044-2, FC3044-3 have surrogates outside control limits.

FC3044-1 for 11Cl-PF3OUdS (F-53B Minor): Associated CCV and Low Level CCV outside of control limits high, sample was ND. Associated CCV outside of control limits high, sample was ND.

FC3044-1 for 13C4-PFBA: Outside control limits.

FC3044-2 for 11Cl-PF3OUdS (F-53B Minor): Associated CCV and Low Level CCV outside of control limits high, sample was ND. Associated CCV outside of control limits high, sample was ND.

FC3044-2 for 13C4-PFBA: Outside control limits.

FC3044-3: Confirmation run.

Matrix: AQ **Batch ID:** OP95829

OP95829-BS: Insufficient sample for MS/MSD.

Sample(s) FC3044-3 have surrogates outside control limits.

FC3044-3: Dilution required (ID recovery standard failure).

FC3044-3: Sample pre-diluted due to matrix.

FC3044-3 for 4:2 Fluorotelomer sulfonate: Associated ID Standard outside control limits.

SGS North America Inc. - Orlando certifies that data reported for samples received, listed on the associated custody chain or analytical task order, were produced to specifications meeting the Quality System precision, accuracy and completeness objectives except as noted. Estimated non-standard method measurement uncertainty data is available on request, based on quality control bias and implicit for standard methods. Acceptable uncertainty requires tested parameter quality control data to meet method criteria. SGS North America Inc.- Orlando is not responsible for data quality assumptions if partial reports are used and recommends that this report be used in its entirety.

Narrative prepared by:

_____

Kim Benham, Client Services *(Signature on File)*

Summary of Hits

Job Number: FC3044
Account: Tetra Tech NUS
Project: KSC-CRCA
Collected: 02/28/23

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	PQL	MDL	Units	Method
FC3044-1	**CRCA-ASINFLUENT-20230228**					
Vinyl Chloride [a]		1.9	1.0	0.41	ug/l	SW846 8260D
Perfluorobutanoic acid		30.9	0.80	0.20	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid		0.0205	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0198	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.0080	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0161	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0049 I	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0096	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
FC3044-2	**CRCA-ASEFFLUENT-20230228**					
Perfluorobutanoic acid		24.5	0.80	0.20	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid		0.0222	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0192	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.0084	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0147	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0045 I	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0065 I	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
FC3044-3	**CRCA-REDUX-20230228**					
Perfluoroheptanesulfonic acid [b]		0.0330 I	0.040	0.010	ug/l	EPA 537M QSM5.3 B-15

(a) Sample was treated with an anti-foaming agent.
(b) Sample pre-diluted due to matrix.

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID:	CRCA-ASINFLUENT-20230228		
Lab Sample ID:	FC3044-1	**Date Sampled:**	02/28/23
Matrix:	AQ - Ground Water	**Date Received:**	02/28/23
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	KSC-CRCA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	5E37694.D	1	03/02/23 18:34	JL	n/a	n/a	V5E1695
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL 4.2 List

CAS No.	Compound	Result	PQL	MDL	Units	Q
67-64-1	Acetone	10 U	25	10	ug/l	
71-43-2	Benzene	0.31 U	1.0	0.31	ug/l	
75-27-4	Bromodichloromethane	0.24 U	1.0	0.24	ug/l	
75-25-2	Bromoform	0.41 U	1.0	0.41	ug/l	
78-93-3	2-Butanone (MEK)	2.0 U	5.0	2.0	ug/l	
75-15-0	Carbon Disulfide	0.53 U	2.0	0.53	ug/l	
56-23-5	Carbon Tetrachloride	0.36 U	1.0	0.36	ug/l	
108-90-7	Chlorobenzene	0.20 U	1.0	0.20	ug/l	
75-00-3	Chloroethane	0.67 U	2.0	0.67	ug/l	
67-66-3	Chloroform	0.30 U	1.0	0.30	ug/l	
110-82-7	Cyclohexane	0.39 U	1.0	0.39	ug/l	
124-48-1	Dibromochloromethane	0.28 U	1.0	0.28	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	1.0 U	5.0	1.0	ug/l	
106-93-4	1,2-Dibromoethane	0.28 U	2.0	0.28	ug/l	
75-71-8	Dichlorodifluoromethane [b]	0.50 U	2.0	0.50	ug/l	
95-50-1	1,2-Dichlorobenzene	0.32 U	1.0	0.32	ug/l	
541-73-1	1,3-Dichlorobenzene	0.22 U	1.0	0.22	ug/l	
106-46-7	1,4-Dichlorobenzene	0.26 U	1.0	0.26	ug/l	
75-34-3	1,1-Dichloroethane	0.34 U	1.0	0.34	ug/l	
107-06-2	1,2-Dichloroethane	0.31 U	1.0	0.31	ug/l	
75-35-4	1,1-Dichloroethylene	0.32 U	1.0	0.32	ug/l	
156-59-2	cis-1,2-Dichloroethylene	0.28 U	1.0	0.28	ug/l	
156-60-5	trans-1,2-Dichloroethylene	0.22 U	1.0	0.22	ug/l	
78-87-5	1,2-Dichloropropane	0.43 U	1.0	0.43	ug/l	
10061-01-5	cis-1,3-Dichloropropene	0.29 U	1.0	0.29	ug/l	
10061-02-6	trans-1,3-Dichloropropene	0.21 U	1.0	0.21	ug/l	
100-41-4	Ethylbenzene	0.36 U	1.0	0.36	ug/l	
76-13-1	Freon 113	0.48 U	1.0	0.48	ug/l	
591-78-6	2-Hexanone	2.0 U	10	2.0	ug/l	
98-82-8	Isopropylbenzene	0.22 U	1.0	0.22	ug/l	
79-20-9	Methyl Acetate	5.0 U	20	5.0	ug/l	
74-83-9	Methyl Bromide	2.0 U	5.0	2.0	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-ASINFLUENT-20230228		
Lab Sample ID:	FC3044-1	**Date Sampled:**	02/28/23
Matrix:	AQ - Ground Water	**Date Received:**	02/28/23
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	KSC-CRCA		

VOA TCL 4.2 List

CAS No.	Compound	Result	PQL	MDL	Units	Q
74-87-3	Methyl Chloride	0.50 U	2.0	0.50	ug/l	
108-87-2	Methylcyclohexane	0.44 U	1.0	0.44	ug/l	
75-09-2	Methylene Chloride	2.0 U	5.0	2.0	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	1.0 U	5.0	1.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	0.23 U	1.0	0.23	ug/l	
100-42-5	Styrene	0.22 U	1.0	0.22	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	0.30 U	1.0	0.30	ug/l	
127-18-4	Tetrachloroethylene	0.22 U	1.0	0.22	ug/l	
108-88-3	Toluene	0.30 U	1.0	0.30	ug/l	
120-82-1	1,2,4-Trichlorobenzene	0.50 U	2.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	0.25 U	1.0	0.25	ug/l	
79-00-5	1,1,2-Trichloroethane	0.47 U	1.0	0.47	ug/l	
79-01-6	Trichloroethylene	0.35 U	1.0	0.35	ug/l	
75-69-4	Trichlorofluoromethane	0.50 U	2.0	0.50	ug/l	
75-01-4	Vinyl Chloride	1.9	1.0	0.41	ug/l	
1330-20-7	Xylene (total)	0.72 U	3.0	0.72	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	98%		83-118%
17060-07-0	1,2-Dichloroethane-D4	104%		79-125%
2037-26-5	Toluene-D8	96%		85-112%
460-00-4	4-Bromofluorobenzene	102%		83-118%

(a) Sample was treated with an anti-foaming agent.
(b) Associated ICV outside control limits high, however sample ND.

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: CRCA-ASINFLUENT-20230228
Lab Sample ID: FC3044-1
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: KSC-CRCA

Date Sampled: 02/28/23
Date Received: 02/28/23
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q106835.D	1	03/02/23 21:36	LR	03/01/23 11:16	OP95681	S2Q1491
Run #2	2Q106993.D	50	03/08/23 17:05	LR	03/01/23 11:16	OP95681	S2Q1495

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2	125 ml	1.0 ml

CAS No.	Compound	Result	PQL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	30.9 [a]	0.80	0.20	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0205	0.0080	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	0.0198	0.0080	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0080	0.0080	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	0.0161	0.0080	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0020 U	0.0080	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS						
375-73-5	Perfluorobutanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0049	0.0080	0.0020	ug/l	I
375-92-8	Perfluoroheptanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0096	0.0080	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA	0.0020 U	0.0080	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	0.0040 U	0.016	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0040 U	0.016	0.0040	ug/l	
FLUOROTELOMER SULFONATES						
757124-72-4	4:2 Fluorotelomer sulfonate	0.0040 U	0.016	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0040 U	0.016	0.0040	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-ASINFLUENT-20230228		
Lab Sample ID:	FC3044-1	**Date Sampled:**	02/28/23
Matrix:	AQ - Ground Water	**Date Received:**	02/28/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	KSC-CRCA		

CAS No.	Compound	Result	PQL	MDL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0040 U	0.016	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES						
13252-13-6	HFPO-DA (GenX)	0.0040 U	0.016	0.0040	ug/l	
919005-14-4	ADONA	0.0040 U	0.016	0.0040	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0040 U	0.016	0.0040	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Mino [b]	0.0040 U	0.016	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	43% [c]	105%	50-150%
	13C5-PFPeA	63%	105%	50-150%
	13C5-PFHxA	70%	107%	50-150%
	13C4-PFHpA	75%	107%	50-150%
	13C8-PFOA	81%	106%	50-150%
	13C9-PFNA	81%	106%	50-150%
	13C6-PFDA	80%	108%	50-150%
	13C7-PFUnDA	70%	106%	50-150%
	13C2-PFDoDA	63%	103%	50-150%
	13C2-PFTeDA	62%	103%	50-150%
	13C3-PFBS	73%	104%	50-150%
	13C3-PFHxS	76%	103%	50-150%
	13C8-PFOS	78%	108%	50-150%
	13C8-FOSA	60%	110%	50-150%
	d3-MeFOSAA	71%	109%	50-150%
	d5-EtFOSAA	60%	111%	50-150%
	13C2-4:2FTS	68%	102%	50-150%
	13C2-6:2FTS	85%	101%	50-150%
	13C2-8:2FTS	80%	101%	50-150%
	13C3-HFPO-DA	68%	103%	50-150%

(a) Result is from Run# 2
(b) Associated CCV and Low Level CCV outside of control limits high, sample was ND. Associated CCV outside of control limits high, sample was ND.
(c) Outside control limits.

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-ASEFFLUENT-20230228		
Lab Sample ID:	FC3044-2	**Date Sampled:**	02/28/23
Matrix:	AQ - Ground Water	**Date Received:**	02/28/23
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	KSC-CRCA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	5E37695.D	1	03/02/23 18:58	JL	n/a	n/a	V5E1695
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL 4.2 List

CAS No.	Compound	Result	PQL	MDL	Units	Q
67-64-1	Acetone	10 U	25	10	ug/l	
71-43-2	Benzene	0.31 U	1.0	0.31	ug/l	
75-27-4	Bromodichloromethane	0.24 U	1.0	0.24	ug/l	
75-25-2	Bromoform	0.41 U	1.0	0.41	ug/l	
78-93-3	2-Butanone (MEK)	2.0 U	5.0	2.0	ug/l	
75-15-0	Carbon Disulfide	0.53 U	2.0	0.53	ug/l	
56-23-5	Carbon Tetrachloride	0.36 U	1.0	0.36	ug/l	
108-90-7	Chlorobenzene	0.20 U	1.0	0.20	ug/l	
75-00-3	Chloroethane	0.67 U	2.0	0.67	ug/l	
67-66-3	Chloroform	0.30 U	1.0	0.30	ug/l	
110-82-7	Cyclohexane	0.39 U	1.0	0.39	ug/l	
124-48-1	Dibromochloromethane	0.28 U	1.0	0.28	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	1.0 U	5.0	1.0	ug/l	
106-93-4	1,2-Dibromoethane	0.28 U	2.0	0.28	ug/l	
75-71-8	Dichlorodifluoromethane [b]	0.50 U	2.0	0.50	ug/l	
95-50-1	1,2-Dichlorobenzene	0.32 U	1.0	0.32	ug/l	
541-73-1	1,3-Dichlorobenzene	0.22 U	1.0	0.22	ug/l	
106-46-7	1,4-Dichlorobenzene	0.26 U	1.0	0.26	ug/l	
75-34-3	1,1-Dichloroethane	0.34 U	1.0	0.34	ug/l	
107-06-2	1,2-Dichloroethane	0.31 U	1.0	0.31	ug/l	
75-35-4	1,1-Dichloroethylene	0.32 U	1.0	0.32	ug/l	
156-59-2	cis-1,2-Dichloroethylene	0.28 U	1.0	0.28	ug/l	
156-60-5	trans-1,2-Dichloroethylene	0.22 U	1.0	0.22	ug/l	
78-87-5	1,2-Dichloropropane	0.43 U	1.0	0.43	ug/l	
10061-01-5	cis-1,3-Dichloropropene	0.29 U	1.0	0.29	ug/l	
10061-02-6	trans-1,3-Dichloropropene	0.21 U	1.0	0.21	ug/l	
100-41-4	Ethylbenzene	0.36 U	1.0	0.36	ug/l	
76-13-1	Freon 113	0.48 U	1.0	0.48	ug/l	
591-78-6	2-Hexanone	2.0 U	10	2.0	ug/l	
98-82-8	Isopropylbenzene	0.22 U	1.0	0.22	ug/l	
79-20-9	Methyl Acetate	5.0 U	20	5.0	ug/l	
74-83-9	Methyl Bromide	2.0 U	5.0	2.0	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-ASEFFLUENT-20230228		
Lab Sample ID:	FC3044-2	**Date Sampled:**	02/28/23
Matrix:	AQ - Ground Water	**Date Received:**	02/28/23
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	KSC-CRCA		

VOA TCL 4.2 List

CAS No.	Compound	Result	PQL	MDL	Units	Q
74-87-3	Methyl Chloride	0.50 U	2.0	0.50	ug/l	
108-87-2	Methylcyclohexane	0.44 U	1.0	0.44	ug/l	
75-09-2	Methylene Chloride	2.0 U	5.0	2.0	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	1.0 U	5.0	1.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	0.23 U	1.0	0.23	ug/l	
100-42-5	Styrene	0.22 U	1.0	0.22	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	0.30 U	1.0	0.30	ug/l	
127-18-4	Tetrachloroethylene	0.22 U	1.0	0.22	ug/l	
108-88-3	Toluene	0.30 U	1.0	0.30	ug/l	
120-82-1	1,2,4-Trichlorobenzene	0.50 U	2.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	0.25 U	1.0	0.25	ug/l	
79-00-5	1,1,2-Trichloroethane	0.47 U	1.0	0.47	ug/l	
79-01-6	Trichloroethylene	0.35 U	1.0	0.35	ug/l	
75-69-4	Trichlorofluoromethane	0.50 U	2.0	0.50	ug/l	
75-01-4	Vinyl Chloride	0.41 U	1.0	0.41	ug/l	
1330-20-7	Xylene (total)	0.72 U	3.0	0.72	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	99%		83-118%
17060-07-0	1,2-Dichloroethane-D4	104%		79-125%
2037-26-5	Toluene-D8	97%		85-112%
460-00-4	4-Bromofluorobenzene	102%		83-118%

(a) Sample was treated with an anti-foaming agent.
(b) Associated ICV outside control limits high, however sample ND.

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: CRCA-ASEFFLUENT-20230228
Lab Sample ID: FC3044-2
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: KSC-CRCA

Date Sampled: 02/28/23
Date Received: 02/28/23
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q106836.D	1	03/02/23 21:57	LR	03/01/23 11:16	OP95681	S2Q1491
Run #2	2Q106997.D	50	03/08/23 18:15	LR	03/01/23 11:16	OP95681	S2Q1495

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2	125 ml	1.0 ml

CAS No.	Compound	Result	PQL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	24.5 [a]	0.80	0.20	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0222	0.0080	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	0.0192	0.0080	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0084	0.0080	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	0.0147	0.0080	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0020 U	0.0080	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS						
375-73-5	Perfluorobutanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0045	0.0080	0.0020	ug/l	I
375-92-8	Perfluoroheptanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0065	0.0080	0.0020	ug/l	I
68259-12-1	Perfluorononanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA	0.0020 U	0.0080	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	0.0040 U	0.016	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0040 U	0.016	0.0040	ug/l	
FLUOROTELOMER SULFONATES						
757124-72-4	4:2 Fluorotelomer sulfonate	0.0040 U	0.016	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0040 U	0.016	0.0040	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-ASEFFLUENT-20230228		
Lab Sample ID:	FC3044-2	**Date Sampled:**	02/28/23
Matrix:	AQ - Ground Water	**Date Received:**	02/28/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	KSC-CRCA		

CAS No.	Compound	Result	PQL	MDL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0040 U	0.016	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES						
13252-13-6	HFPO-DA (GenX)	0.0040 U	0.016	0.0040	ug/l	
919005-14-4	ADONA	0.0040 U	0.016	0.0040	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0040 U	0.016	0.0040	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Mino [b]	0.0040 U	0.016	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	38% [c]	104%	50-150%
	13C5-PFPeA	58%	104%	50-150%
	13C5-PFHxA	62%	106%	50-150%
	13C4-PFHpA	67%	105%	50-150%
	13C8-PFOA	72%	105%	50-150%
	13C9-PFNA	72%	104%	50-150%
	13C6-PFDA	71%	108%	50-150%
	13C7-PFUnDA	64%	105%	50-150%
	13C2-PFDoDA	58%	104%	50-150%
	13C2-PFTeDA	53%	103%	50-150%
	13C3-PFBS	67%	103%	50-150%
	13C3-PFHxS	67%	104%	50-150%
	13C8-PFOS	72%	105%	50-150%
	13C8-FOSA	59%	109%	50-150%
	d3-MeFOSAA	66%	110%	50-150%
	d5-EtFOSAA	57%	112%	50-150%
	13C2-4:2FTS	59%	101%	50-150%
	13C2-6:2FTS	74%	101%	50-150%
	13C2-8:2FTS	70%	99%	50-150%
	13C3-HFPO-DA	62%	99%	50-150%

(a) Result is from Run# 2
(b) Associated CCV and Low Level CCV outside of control limits high, sample was ND. Associated CCV outside of control limits high, sample was ND.
(c) Outside control limits.

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-REDUX-20230228		
Lab Sample ID:	FC3044-3	**Date Sampled:**	02/28/23
Matrix:	AQ - Ground Water	**Date Received:**	02/28/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	KSC-CRCA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	5Q11855.D	1	03/14/23 20:39	LR	03/10/23 10:40	OP95829	S5Q181
Run #2 [b]	5Q11854.D	10	03/14/23 20:23	LR	03/10/23 10:40	OP95829	S5Q181
Run #3 [c]	2Q106998.D	25	03/08/23 18:32	LR	03/01/23 11:16	OP95681	S2Q1495

	Initial Volume	Final Volume
Run #1	25.0 ml	1.0 ml
Run #2	25.0 ml	1.0 ml
Run #3	270 ml	1.0 ml

CAS No.	Compound	Result	PQL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid [d]	0.20 U [e]	0.80	0.20	ug/l	
2706-90-3	Perfluoropentanoic acid [d]	0.10 U [e]	0.40	0.10	ug/l	
307-24-4	Perfluorohexanoic acid [d]	0.10 U [e]	0.40	0.10	ug/l	
375-85-9	Perfluoroheptanoic acid [d]	0.010 U	0.040	0.010	ug/l	
335-67-1	Perfluorooctanoic acid [d]	0.010 U	0.040	0.010	ug/l	
375-95-1	Perfluorononanoic acid [d]	0.010 U	0.040	0.010	ug/l	
335-76-2	Perfluorodecanoic acid	0.010 U	0.040	0.010	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.010 U	0.040	0.010	ug/l	
307-55-1	Perfluorododecanoic acid	0.010 U	0.040	0.010	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.010 U	0.040	0.010	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.010 U	0.040	0.010	ug/l	
PERFLUOROALKYLSULFONIC ACIDS						
375-73-5	Perfluorobutanesulfonic acid [d]	0.10 U [e]	0.40	0.10	ug/l	
2706-91-4	Perfluoropentanesulfonic aci [d]	0.010 U	0.040	0.010	ug/l	
355-46-4	Perfluorohexanesulfonic acid [d]	0.010 U	0.040	0.010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0330	0.040	0.010	ug/l	I
1763-23-1	Perfluorooctanesulfonic acid	0.010 U	0.040	0.010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.010 U	0.040	0.010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.010 U	0.040	0.010	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA [d]	0.10 U [e]	0.40	0.10	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA [d]	0.020 U	0.080	0.020	ug/l	
2991-50-6	EtFOSAA [d]	0.020 U	0.080	0.020	ug/l	
FLUOROTELOMER SULFONATES						

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-REDUX-20230228		
Lab Sample ID:	FC3044-3	**Date Sampled:**	02/28/23
Matrix:	AQ - Ground Water	**Date Received:**	02/28/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	KSC-CRCA		

CAS No.	Compound	Result	PQL	MDL	Units	Q
757124-72-4	4:2 Fluorotelomer sulfonate [d]	0.20 U [e]	0.80	0.20	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate [d]	0.020 U	0.080	0.020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.020 U	0.080	0.020	ug/l	
NEXT GENERATION PFAS ANALYTES						
13252-13-6	HFPO-DA (GenX) [d]	0.20 U [e]	0.80	0.20	ug/l	
919005-14-4	ADONA [d]	0.020 U	0.080	0.020	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.020 U	0.080	0.020	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.020 U	0.080	0.020	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Run# 3	Limits
	13C4-PFBA	10% [f]	14% [f]	2% [f]	50-150%
	13C5-PFPeA	12% [f]	15% [f]	2% [f]	50-150%
	13C5-PFHxA	16% [f]	36% [f]	5% [f]	50-150%
	13C4-PFHpA	26% [f]	56%	11% [f]	50-150%
	13C8-PFOA	32% [f]	61%	30% [f]	50-150%
	13C9-PFNA	41% [f]	59%	43% [f]	50-150%
	13C6-PFDA	50%	68%	49% [f]	50-150%
	13C7-PFUnDA	60%	64%	42% [f]	50-150%
	13C2-PFDoDA	58%	54%	34% [f]	50-150%
	13C2-PFTeDA	53%	37% [f]	24% [f]	50-150%
	13C3-PFBS	19% [f]	25% [f]	1% [f]	50-150%
	13C3-PFHxS	44% [f]	68%	13% [f]	50-150%
	13C8-PFOS	50%	66%	37% [f]	50-150%
	13C8-FOSA	6% [f]	16% [f]	11% [f]	50-150%
	d3-MeFOSAA	45% [f]	79%	54%	50-150%
	d5-EtFOSAA	44% [f]	79%	48% [f]	50-150%
	13C2-4:2FTS	14% [f]	29% [f]	4% [f]	50-150%
	13C2-6:2FTS	40% [f]	71%	24% [f]	50-150%
	13C2-8:2FTS	57%	70%	39% [f]	50-150%
	13C3-HFPO-DA	12% [f]	33% [f]	4% [f]	50-150%

(a) Sample pre-diluted due to matrix.
(b) Dilution required (ID recovery standard failure).
(c) Confirmation run.
(d) Associated ID Standard outside control limits.
(e) Result is from Run# 2
(f) Outside control limits.

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody

FC 3044

Tetra Tech, Inc. CHAIN OF CUSTODY | NUMBER No. 2326 | PAGE 1 OF 1

PROJECT NO: 112G08970	FACILITY: KSC-CRCA	PROJECT MANAGER: Chris Newmann	PHONE NUMBER: (321) 636-6470	LABORATORY NAME AND CONTACT: SGS — Andrea Colby
SAMPLERS (SIGNATURE): Chuck Sorden		FIELD OPERATIONS LEADER: Chuck Sorden	PHONE NUMBER: (321) 591-7580	ADDRESS: 4405 Vineland Rd. Ste. C-15
		CARRIER/WAYBILL NUMBER		CITY, STATE: Orlando, FL

STANDARD TAT ☒
RUSH TAT ☐ ☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

CONTAINER TYPE PLASTIC (P) or GLASS (G): G P
PRESERVATIVE USED: HCl / 4°C

	DATE YEAR 2023	TIME	SAMPLE ID	LOCATION ID	TOP DEPTH (FT)	BOTTOM DEPTH (FT)	MATRIX (GW, SO, SW, SD, QC, ETC.)	COLLECTION METHOD GRAB (G) COMP (C)	No. OF CONTAINERS	TYPE OF ANALYSIS: V8260 TCL 42	LL QSM 537 MI-28	COMMENTS
1	02/28	0830	CRCA-ASINFLUENT-20230228		—	—	GW	G	5	X	X	
2	02/28	0850	CRCA-ASEFFLUENT-20230228		—	—	GW	G	5	X	X	
3	02/28	0930	CRCA-REDUX-20230228		—	—	AQ	G	2		X	

INITIAL ASSESSMENT
LABEL VERIFICATION
20° IR#

	DATE	TIME		DATE	TIME
1. RELINQUISHED BY	02/28/23	1205	1. RECEIVED BY	2/28/23	12:05
2. RELINQUISHED BY	2/28/23	1515	2. RECEIVED BY	SGS	
3. RELINQUISHED BY	DATE	TIME	3. RECEIVED BY	DATE	TIME

COMMENTS

DISTRIBUTION: WHITE (ACCOMPANIES SAMPLE) YELLOW (FIELD COPY) PINK (FILE COPY) 4/02R
FORM NO. TtNUS-001

FC3044: Chain of Custody
Page 1 of 2

SGS Sample Receipt Summary

Job Number: FC3044 **Client:** TETRA TECH **Project:** 112G08970

Date / Time Received: 2/28/2023 1:45:00 PM **Delivery Method:** COURIER **Airbill #'s:**

Therm ID: IR 1; **Therm CF:** 0.2; **# of Coolers:** 1

Cooler Temps (Raw Measured) °C: Cooler 1: (4.2);

Cooler Temps (Corrected) °C: Cooler 1: (4.4);

Cooler Information	Y	N
1. Custody Seals Present	☑	☐
2. Custody Seals Intact	☑	☐
3. Temp criteria achieved	☑	☐
4. Cooler temp verification	IR Gun	
5. Cooler media	Ice (Bag)	

Trip Blank Information	Y	N	N/A
1. Trip Blank present / cooler	☐	☐	☑
2. Trip Blank listed on COC	☐	☐	☑

	W	S	N/A
3. Type Of TB Received	☐	☐	☑

Sample Information	Y	N	N/A
1. Sample labels present on bottles	☑	☐	
2. Samples preserved properly	☑	☐	
3. Sufficient volume/containers recvd for analysis:	☑	☐	
4. Condition of sample	Intact		
5. Sample recvd within HT	☑	☐	
6. Dates/Times/IDs on COC match Sample Label	☑	☐	
7. VOCs have headspace	☐	☑	☐
8. Bottles received for unspecified tests	☐	☑	
9. Compositing instructions clear	☐	☐	☑
10. Voa Soil Kits/Jars received past 48hrs?	☐	☐	☑
11. % Solids Jar received?	☐	☐	☑
12. Residual Chlorine Present?	☐	☐	☑

Misc. Information

Number of Encores: 25-Gram _____ 5-Gram _____ Number of 5035 Field Kits: _____ Number of Lab Filtered Metals: _____

Test Strip Lot #s: pH 0-3 230315 pH 10-12 219813A Other: (Specify) _____ _____

Residual Chlorine Test Strip Lot #: _____

Comments

SM001
Rev. Date 05/24/17

Technician: TORYW Date: 2/28/2023 1:45:00 PM Reviewer: _____ Date: _____

FC3044: Chain of Custody
Page 2 of 2

MS Volatiles

6

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Job Number: FC3044
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V5E1695-MB	5E37676.D	1	03/02/23	JL	n/a	n/a	V5E1695

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

FC3044-1, FC3044-2

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	25	10	ug/l	
71-43-2	Benzene	ND	1.0	0.31	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.24	ug/l	
75-25-2	Bromoform	ND	1.0	0.41	ug/l	
78-93-3	2-Butanone (MEK)	ND	5.0	2.0	ug/l	
75-15-0	Carbon Disulfide	ND	2.0	0.53	ug/l	
56-23-5	Carbon Tetrachloride	ND	1.0	0.36	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.20	ug/l	
75-00-3	Chloroethane	ND	2.0	0.67	ug/l	
67-66-3	Chloroform	ND	1.0	0.30	ug/l	
110-82-7	Cyclohexane	ND	1.0	0.39	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.28	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	5.0	1.0	ug/l	
106-93-4	1,2-Dibromoethane	ND	2.0	0.28	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	0.50	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	0.32	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	0.22	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	0.26	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.34	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.31	ug/l	
75-35-4	1,1-Dichloroethylene	ND	1.0	0.32	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	0.28	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	0.22	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.43	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.29	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.21	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.36	ug/l	
76-13-1	Freon 113	ND	1.0	0.48	ug/l	
591-78-6	2-Hexanone	ND	10	2.0	ug/l	
98-82-8	Isopropylbenzene	ND	1.0	0.22	ug/l	
79-20-9	Methyl Acetate	ND	20	5.0	ug/l	
74-83-9	Methyl Bromide	ND	5.0	2.0	ug/l	
74-87-3	Methyl Chloride	ND	2.0	0.50	ug/l	
108-87-2	Methylcyclohexane	ND	1.0	0.44	ug/l	
75-09-2	Methylene Chloride	ND	5.0	2.0	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	5.0	1.0	ug/l	

Method Blank Summary

Job Number: FC3044
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V5E1695-MB	5E37676.D	1	03/02/23	JL	n/a	n/a	V5E1695

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

FC3044-1, FC3044-2

CAS No.	Compound	Result	RL	MDL	Units	Q
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.23	ug/l	
100-42-5	Styrene	ND	1.0	0.22	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.30	ug/l	
127-18-4	Tetrachloroethylene	ND	1.0	0.22	ug/l	
108-88-3	Toluene	ND	1.0	0.30	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	2.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.25	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.47	ug/l	
79-01-6	Trichloroethylene	ND	1.0	0.35	ug/l	
75-69-4	Trichlorofluoromethane	ND	2.0	0.50	ug/l	
75-01-4	Vinyl Chloride	ND	1.0	0.41	ug/l	
1330-20-7	Xylene (total)	ND	3.0	0.72	ug/l	

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	98%	83-118%
17060-07-0	1,2-Dichloroethane-D4	104%	79-125%
2037-26-5	Toluene-D8	98%	85-112%
460-00-4	4-Bromofluorobenzene	101%	83-118%

Blank Spike Summary

Job Number: FC3044
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V5E1695-BS	5E37673.D	1	03/02/23	JL	n/a	n/a	V5E1695

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

FC3044-1, FC3044-2

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
67-64-1	Acetone	125	151	121	50-147
71-43-2	Benzene	25	25.2	101	81-122
75-27-4	Bromodichloromethane	25	23.9	96	79-123
75-25-2	Bromoform	25	23.6	94	66-123
78-93-3	2-Butanone (MEK)	125	155	124	56-143
75-15-0	Carbon Disulfide	25	25.6	102	66-148
56-23-5	Carbon Tetrachloride	25	25.6	102	76-136
108-90-7	Chlorobenzene	25	24.3	97	82-124
75-00-3	Chloroethane	25	26.7	107	62-144
67-66-3	Chloroform	25	25.3	101	80-124
110-82-7	Cyclohexane	25	26.4	106	73-138
124-48-1	Dibromochloromethane	25	25.0	100	78-122
96-12-8	1,2-Dibromo-3-chloropropane	25	24.6	98	64-123
106-93-4	1,2-Dibromoethane	25	24.2	97	75-120
75-71-8	Dichlorodifluoromethane	25	36.8	147	42-167
95-50-1	1,2-Dichlorobenzene	25	24.0	96	82-124
541-73-1	1,3-Dichlorobenzene	25	23.9	96	84-125
106-46-7	1,4-Dichlorobenzene	25	24.2	97	78-120
75-34-3	1,1-Dichloroethane	25	24.1	96	81-122
107-06-2	1,2-Dichloroethane	25	25.8	103	75-125
75-35-4	1,1-Dichloroethylene	25	25.5	102	78-137
156-59-2	cis-1,2-Dichloroethylene	25	24.5	98	78-120
156-60-5	trans-1,2-Dichloroethylene	25	25.1	100	76-127
78-87-5	1,2-Dichloropropane	25	25.1	100	76-124
10061-01-5	cis-1,3-Dichloropropene	25	24.7	99	75-118
10061-02-6	trans-1,3-Dichloropropene	25	23.3	93	80-120
100-41-4	Ethylbenzene	25	24.5	98	81-121
76-13-1	Freon 113	25	30.1	120	72-134
591-78-6	2-Hexanone	125	150	120	61-129
98-82-8	Isopropylbenzene	25	24.0	96	83-132
79-20-9	Methyl Acetate	125	124	99	65-126
74-83-9	Methyl Bromide	25	31.7	127	59-143
74-87-3	Methyl Chloride	25	29.6	118	50-159
108-87-2	Methylcyclohexane	25	25.9	104	76-129
75-09-2	Methylene Chloride	25	24.3	97	69-135
108-10-1	4-Methyl-2-pentanone (MIBK)	125	143	114	66-122

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FC3044
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V5E1695-BS	5E37673.D	1	03/02/23	JL	n/a	n/a	V5E1695

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

FC3044-1, FC3044-2

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
1634-04-4	Methyl Tert Butyl Ether	25	25.1	100	72-117
100-42-5	Styrene	25	24.1	96	78-119
79-34-5	1,1,2,2-Tetrachloroethane	25	23.4	94	72-120
127-18-4	Tetrachloroethylene	25	24.9	100	76-135
108-88-3	Toluene	25	24.8	99	80-120
120-82-1	1,2,4-Trichlorobenzene	25	24.5	98	73-129
71-55-6	1,1,1-Trichloroethane	25	24.4	98	75-130
79-00-5	1,1,2-Trichloroethane	25	23.5	94	76-119
79-01-6	Trichloroethylene	25	24.7	99	81-126
75-69-4	Trichlorofluoromethane	25	28.2	113	71-156
75-01-4	Vinyl Chloride	25	28.0	112	69-159
1330-20-7	Xylene (total)	75	72.6	97	80-126

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	100%	83-118%
17060-07-0	1,2-Dichloroethane-D4	104%	79-125%
2037-26-5	Toluene-D8	98%	85-112%
460-00-4	4-Bromofluorobenzene	99%	83-118%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FC3044
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
FC3001-1MS	5E37696.D	200	03/02/23	JL	n/a	n/a	V5E1695
FC3001-1MSD	5E37697.D	200	03/02/23	JL	n/a	n/a	V5E1695
FC3001-1	5E37679.D	200	03/02/23	JL	n/a	n/a	V5E1695

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

FC3044-1, FC3044-2

CAS No.	Compound	FC3001-1 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
67-64-1	Acetone	5000	U	25000	24400	98	25000	24700	99	1	50-147/21
71-43-2	Benzene	200	U	5000	5060	101	5000	4950	99	2	81-122/14
75-27-4	Bromodichloromethane	200	U	5000	4680	94	5000	4600	92	2	79-123/19
75-25-2	Bromoform	200	U	5000	4570	91	5000	4610	92	1	66-123/21
78-93-3	2-Butanone (MEK)	1000	U	25000	28100	112	25000	28800	115	2	56-143/18
75-15-0	Carbon Disulfide	400	U	5000	5180	104	5000	4970	99	4	66-148/23
56-23-5	Carbon Tetrachloride	200	U	5000	5270	105	5000	5100	102	3	76-136/23
108-90-7	Chlorobenzene	200	U	5000	4900	98	5000	4730	95	4	82-124/14
75-00-3	Chloroethane	400	U	5000	5700	114	5000	5420	108	5	62-144/20
67-66-3	Chloroform	200	U	5000	4970	99	5000	4950	99	0	80-124/15
110-82-7	Cyclohexane	200	U	5000	5590	112	5000	5400	108	3	73-138/18
124-48-1	Dibromochloromethane	200	U	5000	4830	97	5000	4880	98	1	78-122/19
96-12-8	1,2-Dibromo-3-chloropropane	1000	U	5000	4770	95	5000	5070	101	6	64-123/18
106-93-4	1,2-Dibromoethane	400	U	5000	4860	97	5000	4880	98	0	75-120/13
75-71-8	Dichlorodifluoromethane	400	U	5000	7560	151	5000	7160	143	5	42-167/19
95-50-1	1,2-Dichlorobenzene	200	U	5000	4750	95	5000	4700	94	1	82-124/14
541-73-1	1,3-Dichlorobenzene	200	U	5000	4690	94	5000	4610	92	2	84-125/14
106-46-7	1,4-Dichlorobenzene	200	U	5000	4820	96	5000	4720	94	2	78-120/15
75-34-3	1,1-Dichloroethane	200	U	5000	4820	96	5000	4680	94	3	81-122/15
107-06-2	1,2-Dichloroethane	200	U	5000	5100	102	5000	5050	101	1	75-125/14
75-35-4	1,1-Dichloroethylene	200	U	5000	5110	102	5000	4980	100	3	78-137/18
156-59-2	cis-1,2-Dichloroethylene	10700		5000	16500	116	5000	16200	110	2	78-120/15
156-60-5	trans-1,2-Dichloroethylene	200	U	5000	5020	100	5000	4880	98	3	76-127/17
78-87-5	1,2-Dichloropropane	200	U	5000	5090	102	5000	5060	101	1	76-124/14
10061-01-5	cis-1,3-Dichloropropene	200	U	5000	4740	95	5000	4660	93	2	75-118/23
10061-02-6	trans-1,3-Dichloropropene	200	U	5000	4470	89	5000	4370	87	2	80-120/22
100-41-4	Ethylbenzene	200	U	5000	4920	98	5000	4770	95	3	81-121/14
76-13-1	Freon 113	200	U	5000	6350	127	5000	6040	121	5	72-134/20
591-78-6	2-Hexanone	2000	U	25000	27400	110	25000	27800	111	1	61-129/18
98-82-8	Isopropylbenzene	200	U	5000	4850	97	5000	4690	94	3	83-132/15
79-20-9	Methyl Acetate	4000	U	25000	27300	109	25000	27500	110	1	65-126/18
74-83-9	Methyl Bromide	1000	U	5000	5170	103	5000	5940	119	14	59-143/19
74-87-3	Methyl Chloride	400	U	5000	6240	125	5000	5940	119	5	50-159/19
108-87-2	Methylcyclohexane	200	U	5000	5550	111	5000	5250	105	6	76-129/17
75-09-2	Methylene Chloride	1000	U	5000	4950	99	5000	4780	96	3	69-135/16
108-10-1	4-Methyl-2-pentanone (MIBK)	1000	U	25000	27600	110	25000	28100	112	2	66-122/16

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FC3044
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
FC3001-1MS	5E37696.D	200	03/02/23	JL	n/a	n/a	V5E1695
FC3001-1MSD	5E37697.D	200	03/02/23	JL	n/a	n/a	V5E1695
FC3001-1	5E37679.D	200	03/02/23	JL	n/a	n/a	V5E1695

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

FC3044-1, FC3044-2

CAS No.	Compound	FC3001-1 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
1634-04-4	Methyl Tert Butyl Ether	200	U	5000	5090	102	5000	5130	103	1	72-117/14
100-42-5	Styrene	200	U	5000	4740	95	5000	4630	93	2	78-119/23
79-34-5	1,1,2,2-Tetrachloroethane	200	U	5000	4890	98	5000	4900	98	0	72-120/14
127-18-4	Tetrachloroethylene	353		5000	5480	103	5000	5270	98	4	76-135/16
108-88-3	Toluene	200	U	5000	4910	98	5000	4780	96	3	80-120/14
120-82-1	1,2,4-Trichlorobenzene	400	U	5000	4970	99	5000	4920	98	1	73-129/20
71-55-6	1,1,1-Trichloroethane	200	U	5000	5010	100	5000	4860	97	3	75-130/16
79-00-5	1,1,2-Trichloroethane	200	U	5000	4620	92	5000	4680	94	1	76-119/14
79-01-6	Trichloroethylene	6080		5000	11600	110	5000	11200	102	4	81-126/15
75-69-4	Trichlorofluoromethane	400	U	5000	5900	118	5000	5680	114	4	71-156/21
75-01-4	Vinyl Chloride	2400		5000	8530	123	5000	8060	113	6	69-159/18
1330-20-7	Xylene (total)	600	U	15000	14500	97	15000	14200	95	2	80-126/15

CAS No.	Surrogate Recoveries	MS	MSD	FC3001-1	Limits
1868-53-7	Dibromofluoromethane	100%	99%	99%	83-118%
17060-07-0	1,2-Dichloroethane-D4	105%	100%	103%	79-125%
2037-26-5	Toluene-D8	98%	99%	97%	85-112%
460-00-4	4-Bromofluorobenzene	100%	100%	103%	83-118%

* = Outside of Control Limits.

MS Semi-volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Instrument Blank

Job Number: FC3044
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S2Q1491-IBLK	2Q106807.D	1	03/02/23	LR	n/a	n/a	S2Q1491

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC3044-1, FC3044-2

CAS No.	Compound	Result	RL	MDL	Units	Q
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	
2355-31-9	MeFOSAA	ND	0.0080	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0080	0.0020	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	
919005-14-4	ADONA	ND	0.0080	0.0020	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.0080	0.0020	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.0080	0.0020	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	106%	50-150%
	13C5-PFPeA	95%	50-150%
	13C5-PFHxA	92%	50-150%
	13C4-PFHpA	94%	50-150%
	13C8-PFOA	93%	50-150%

Instrument Blank

Job Number: FC3044
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S2Q1491-IBLK	2Q106807.D	1	03/02/23	LR	n/a	n/a	S2Q1491

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC3044-1, FC3044-2

CAS No.	ID Standard Recoveries		Limits
	13C9-PFNA	91%	50-150%
	13C6-PFDA	87%	50-150%
	13C7-PFUnDA	84%	50-150%
	13C2-PFDoDA	80%	50-150%
	13C2-PFTeDA	86%	50-150%
	13C3-PFBS	101%	50-150%
	13C3-PFHxS	99%	50-150%
	13C8-PFOS	96%	50-150%
	13C8-FOSA	92%	50-150%
	d3-MeFOSA	83%	50-150%
	d3-MeFOSAA	82%	50-150%
	d5-EtFOSAA	71%	50-150%
	13C2-4:2FTS	81%	50-150%
	13C2-6:2FTS	89%	50-150%
	13C2-8:2FTS	85%	50-150%
	13C3-HFPO-DA	102%	50-150%

Instrument Blank

Job Number: FC3044
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S2Q1495-IBLK	2Q106971.D	1	03/08/23	LR	n/a	n/a	S2Q1495

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC3044-1, FC3044-2

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	99%	50-150%
	13C5-PFPeA	98%	50-150%
	13C5-PFHxA	98%	50-150%
	13C4-PFHpA	98%	50-150%
	13C8-PFOA	98%	50-150%
	13C9-PFNA	98%	50-150%
	13C6-PFDA	99%	50-150%
	13C7-PFUnDA	100%	50-150%
	13C2-PFDoDA	97%	50-150%
	13C2-PFTeDA	95%	50-150%
	13C3-PFBS	98%	50-150%
	13C3-PFHxS	97%	50-150%
	13C8-PFOS	101%	50-150%
	13C8-FOSA	104%	50-150%
	d3-MeFOSAA	101%	50-150%
	d5-EtFOSAA	105%	50-150%
	13C2-4:2FTS	93%	50-150%
	13C2-6:2FTS	93%	50-150%
	13C2-8:2FTS	91%	50-150%
	13C3-HFPO-DA	96%	50-150%

Instrument Blank

Job Number: FC3044
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S5Q181-IBLK	5Q11835.D	1	03/14/23	LR	n/a	n/a	S5Q181

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC3044-3

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	
2355-31-9	MeFOSAA	ND	0.0080	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0080	0.0020	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	
919005-14-4	ADONA	ND	0.0080	0.0020	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.0080	0.0020	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.0080	0.0020	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	104%	50-150%
	13C5-PFPeA	104%	50-150%
	13C5-PFHxA	103%	50-150%
	13C4-PFHpA	105%	50-150%

Instrument Blank

Job Number: FC3044
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S5Q181-IBLK	5Q11835.D	1	03/14/23	LR	n/a	n/a	S5Q181

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC3044-3

CAS No.	ID Standard Recoveries		Limits
	13C8-PFOA	104%	50-150%
	13C9-PFNA	105%	50-150%
	13C6-PFDA	108%	50-150%
	13C7-PFUnDA	106%	50-150%
	13C2-PFDoDA	105%	50-150%
	13C2-PFTeDA	105%	50-150%
	13C3-PFBS	104%	50-150%
	13C3-PFHxS	106%	50-150%
	13C8-PFOS	105%	50-150%
	13C8-FOSA	109%	50-150%
	d3-MeFOSAA	104%	50-150%
	d5-EtFOSAA	105%	50-150%
	13C2-4:2FTS	98%	50-150%
	13C2-6:2FTS	101%	50-150%
	13C2-8:2FTS	98%	50-150%
	13C3-HFPO-DA	103%	50-150%

Method Blank Summary

Job Number: FC3044
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP95681-MB	2Q106830.D	1	03/02/23	LR	03/01/23	OP95681	S2Q1491

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC3044-1, FC3044-2

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	
2355-31-9	MeFOSAA	ND	0.0080	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0080	0.0020	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	
919005-14-4	ADONA	ND	0.0080	0.0020	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.0080	0.0020	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.0080	0.0020	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	110%	50-150%
	13C5-PFPeA	100%	50-150%
	13C5-PFHxA	98%	50-150%
	13C4-PFHpA	102%	50-150%

Method Blank Summary

Job Number: FC3044
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP95681-MB	2Q106830.D	1	03/02/23	LR	03/01/23	OP95681	S2Q1491

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC3044-1, FC3044-2

CAS No.	ID Standard Recoveries		Limits
	13C8-PFOA	99%	50-150%
	13C9-PFNA	98%	50-150%
	13C6-PFDA	96%	50-150%
	13C7-PFUnDA	89%	50-150%
	13C2-PFDoDA	79%	50-150%
	13C2-PFTeDA	75%	50-150%
	13C3-PFBS	102%	50-150%
	13C3-PFHxS	103%	50-150%
	13C8-PFOS	100%	50-150%
	13C8-FOSA	79%	50-150%
	d3-MeFOSAA	85%	50-150%
	d5-EtFOSAA	73%	50-150%
	13C2-4:2FTS	88%	50-150%
	13C2-6:2FTS	95%	50-150%
	13C2-8:2FTS	94%	50-150%
	13C3-HFPO-DA	94%	50-150%

Method Blank Summary

Job Number: FC3044
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP95829-MB	5Q11853.D	1	03/14/23	LR	03/10/23	OP95829	S5Q181

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC3044-3

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.016	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0080	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0080	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0080	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0080	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0080	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0080	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0080	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0080	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0080	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0080	0.0020	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0080	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0080	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0080	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0080	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0080	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0080	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0080	0.0020	ug/l	
754-91-6	PFOSA	ND	0.0080	0.0020	ug/l	
2355-31-9	MeFOSAA	ND	0.016	0.0040	ug/l	
2991-50-6	EtFOSAA	ND	0.016	0.0040	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.016	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.016	0.0040	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.016	0.0040	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.016	0.0040	ug/l	
919005-14-4	ADONA	ND	0.016	0.0040	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.016	0.0040	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.016	0.0040	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	74%	50-150%
	13C5-PFPeA	73%	50-150%
	13C5-PFHxA	74%	50-150%
	13C4-PFHpA	75%	50-150%

Method Blank Summary

Job Number: FC3044
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP95829-MB	5Q11853.D	1	03/14/23	LR	03/10/23	OP95829	S5Q181

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC3044-3

CAS No.	ID Standard Recoveries		Limits
	13C8-PFOA	75%	50-150%
	13C9-PFNA	75%	50-150%
	13C6-PFDA	77%	50-150%
	13C7-PFUnDA	75%	50-150%
	13C2-PFDoDA	67%	50-150%
	13C2-PFTeDA	63%	50-150%
	13C3-PFBS	75%	50-150%
	13C3-PFHxS	77%	50-150%
	13C8-PFOS	74%	50-150%
	13C8-FOSA	67%	50-150%
	d3-MeFOSAA	72%	50-150%
	d5-EtFOSAA	71%	50-150%
	13C2-4:2FTS	70%	50-150%
	13C2-6:2FTS	73%	50-150%
	13C2-8:2FTS	71%	50-150%
	13C3-HFPO-DA	70%	50-150%

Blank Spike Summary

Job Number: FC3044
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP95681-BS	2Q106829.D	1	03/02/23	LR	03/01/23	OP95681	S2Q1491

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC3044-1, FC3044-2

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
375-22-4	Perfluorobutanoic acid	0.08	0.0663	83	73-129
2706-90-3	Perfluoropentanoic acid	0.08	0.0770	96	72-129
307-24-4	Perfluorohexanoic acid	0.08	0.0800	100	72-129
375-85-9	Perfluoroheptanoic acid	0.08	0.0787	98	72-130
335-67-1	Perfluorooctanoic acid	0.08	0.0815	102	71-133
375-95-1	Perfluorononanoic acid	0.08	0.0824	103	69-130
335-76-2	Perfluorodecanoic acid	0.08	0.0801	100	71-129
2058-94-8	Perfluoroundecanoic acid	0.08	0.0846	106	69-133
307-55-1	Perfluorododecanoic acid	0.08	0.0806	101	72-134
72629-94-8	Perfluorotridecanoic acid	0.08	0.0747	93	65-144
376-06-7	Perfluorotetradecanoic acid	0.08	0.0855	107	71-132
375-73-5	Perfluorobutanesulfonic acid	0.08	0.0740	93	72-130
2706-91-4	Perfluoropentanesulfonic acid	0.08	0.0756	95	71-127
355-46-4	Perfluorohexanesulfonic acid	0.08	0.0769	96	68-131
375-92-8	Perfluoroheptanesulfonic acid	0.08	0.0778	97	69-134
1763-23-1	Perfluorooctanesulfonic acid	0.08	0.0864	108	65-140
68259-12-1	Perfluorononanesulfonic acid	0.08	0.0816	102	69-127
335-77-3	Perfluorodecanesulfonic acid	0.08	0.0858	107	53-142
754-91-6	PFOSA	0.08	0.0827	103	67-137
2355-31-9	MeFOSAA	0.08	0.0794	99	65-136
2991-50-6	EtFOSAA	0.08	0.0826	103	61-135
757124-72-4	4:2 Fluorotelomer sulfonate	0.08	0.0770	96	63-143
27619-97-2	6:2 Fluorotelomer sulfonate	0.08	0.0741	93	64-140
39108-34-4	8:2 Fluorotelomer sulfonate	0.08	0.0773	97	67-138
13252-13-6	HFPO-DA (GenX)	0.08	0.0803	100	60-140
919005-14-4	ADONA	0.08	0.0772	97	60-140
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.08	0.0842	105	60-140
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.08	0.109	136	60-140

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFBA	119%	50-150%
	13C5-PFPeA	109%	50-150%
	13C5-PFHxA	106%	50-150%
	13C4-PFHpA	111%	50-150%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FC3044
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP95681-BS	2Q106829.D	1	03/02/23	LR	03/01/23	OP95681	S2Q1491

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC3044-1, FC3044-2

CAS No.	ID Standard Recoveries	BSP	Limits
	13C8-PFOA	107%	50-150%
	13C9-PFNA	106%	50-150%
	13C6-PFDA	104%	50-150%
	13C7-PFUnDA	94%	50-150%
	13C2-PFDoDA	83%	50-150%
	13C2-PFTeDA	72%	50-150%
	13C3-PFBS	113%	50-150%
	13C3-PFHxS	112%	50-150%
	13C8-PFOS	106%	50-150%
	13C8-FOSA	78%	50-150%
	d3-MeFOSAA	89%	50-150%
	d5-EtFOSAA	76%	50-150%
	13C2-4:2FTS	107%	50-150%
	13C2-6:2FTS	116%	50-150%
	13C2-8:2FTS	112%	50-150%
	13C3-HFPO-DA	105%	50-150%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FC3044
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP95829-BS [a]	5Q11852.D	1	03/14/23	LR	03/10/23	OP95829	S5Q181

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC3044-3

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
375-22-4	Perfluorobutanoic acid	0.16	0.190	119	73-129
2706-90-3	Perfluoropentanoic acid	0.16	0.188	118	72-129
307-24-4	Perfluorohexanoic acid	0.16	0.190	119	72-129
375-85-9	Perfluoroheptanoic acid	0.16	0.190	119	72-130
335-67-1	Perfluorooctanoic acid	0.16	0.189	118	71-133
375-95-1	Perfluorononanoic acid	0.16	0.189	118	69-130
335-76-2	Perfluorodecanoic acid	0.16	0.193	121	71-129
2058-94-8	Perfluoroundecanoic acid	0.16	0.191	119	69-133
307-55-1	Perfluorododecanoic acid	0.16	0.192	120	72-134
72629-94-8	Perfluorotridecanoic acid	0.16	0.176	110	65-144
376-06-7	Perfluorotetradecanoic acid	0.16	0.187	117	71-132
375-73-5	Perfluorobutanesulfonic acid	0.16	0.190	119	72-130
2706-91-4	Perfluoropentanesulfonic acid	0.16	0.185	116	71-127
355-46-4	Perfluorohexanesulfonic acid	0.16	0.187	117	68-131
375-92-8	Perfluoroheptanesulfonic acid	0.16	0.189	118	69-134
1763-23-1	Perfluorooctanesulfonic acid	0.16	0.182	114	65-140
68259-12-1	Perfluorononanesulfonic acid	0.16	0.189	118	69-127
335-77-3	Perfluorodecanesulfonic acid	0.16	0.173	108	53-142
754-91-6	PFOSA	0.16	0.190	119	67-137
2355-31-9	MeFOSAA	0.16	0.190	119	65-136
2991-50-6	EtFOSAA	0.16	0.196	123	61-135
757124-72-4	4:2 Fluorotelomer sulfonate	0.16	0.181	113	63-143
27619-97-2	6:2 Fluorotelomer sulfonate	0.16	0.181	113	64-140
39108-34-4	8:2 Fluorotelomer sulfonate	0.16	0.177	111	67-138
13252-13-6	HFPO-DA (GenX)	0.16	0.191	119	60-140
919005-14-4	ADONA	0.16	0.186	116	60-140
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.16	0.183	114	60-140
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.16	0.189	118	60-140

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFBA	80%	50-150%
	13C5-PFPeA	80%	50-150%
	13C5-PFHxA	81%	50-150%
	13C4-PFHpA	82%	50-150%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FC3044
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP95829-BS [a]	5Q11852.D	1	03/14/23	LR	03/10/23	OP95829	S5Q181

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC3044-3

CAS No.	ID Standard Recoveries	BSP	Limits
	13C8-PFOA	82%	50-150%
	13C9-PFNA	82%	50-150%
	13C6-PFDA	82%	50-150%
	13C7-PFUnDA	79%	50-150%
	13C2-PFDoDA	73%	50-150%
	13C2-PFTeDA	66%	50-150%
	13C3-PFBS	80%	50-150%
	13C3-PFHxS	81%	50-150%
	13C8-PFOS	83%	50-150%
	13C8-FOSA	57%	50-150%
	d3-MeFOSAA	77%	50-150%
	d5-EtFOSAA	70%	50-150%
	13C2-4:2FTS	85%	50-150%
	13C2-6:2FTS	88%	50-150%
	13C2-8:2FTS	89%	50-150%
	13C3-HFPO-DA	77%	50-150%

(a) Insufficient sample for MS/MSD.

* = Outside of Control Limits.

Matrix Spike Summary

Job Number: FC3044
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP95681-MS	2Q106986.D	10	03/08/23	LR	03/01/23	OP95681	S2Q1495
FC3011-39	2Q106831.D	1	03/02/23	LR	03/01/23	OP95681	S2Q1491
FC3011-39	2Q106984.D	10	03/08/23	LR	03/01/23	OP95681	S2Q1495

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC3044-1, FC3044-2

CAS No.	Compound	FC3011-39 ug/l	Q	Spike ug/l	MS ug/l	MS %	Limits
375-22-4	Perfluorobutanoic acid	1.39 [b]		0.174	1.49	58* [a]	73-129
2706-90-3	Perfluoropentanoic acid	3.54 [b]		0.174	3.49	-29* [a]	72-129
307-24-4	Perfluorohexanoic acid	5.92 [b]		0.174	5.94	12* [a]	72-129
375-85-9	Perfluoroheptanoic acid	1.79 [b]		0.174	1.90	63* [a]	72-130
335-67-1	Perfluorooctanoic acid	3.86 [b]		0.174	3.94	46* [a]	71-133
375-95-1	Perfluorononanoic acid	0.592		0.174	0.723	75	69-130
335-76-2	Perfluorodecanoic acid	0.0469		0.174	0.188	81	71-129
2058-94-8	Perfluoroundecanoic acid	0.0087	U	0.174	0.152	87	69-133
307-55-1	Perfluorododecanoic acid	0.0087	U	0.174	0.152	87	72-134
72629-94-8	Perfluorotridecanoic acid	0.0087	U	0.174	0.150	86	65-144
376-06-7	Perfluorotetradecanoic acid	0.0087	U	0.174	0.148	85	71-132
375-73-5	Perfluorobutanesulfonic acid	1.50 [b]		0.174	1.64	81	72-130
2706-91-4	Perfluoropentanesulfonic acid	1.69 [b]		0.174	1.83	81	71-127
355-46-4	Perfluorohexanesulfonic acid	10.3 [c]		0.174	14.1	2185* [a]	68-131
375-92-8	Perfluoroheptanesulfonic acid	0.735		0.174	0.778	25* [a]	69-134
1763-23-1	Perfluorooctanesulfonic acid	13.6 [c]		0.174	19.0	3105* [a]	65-140
68259-12-1	Perfluorononanesulfonic acid	0.0318		0.174	0.155	71	69-127
335-77-3	Perfluorodecanesulfonic acid	0.0042	J	0.174	0.153	86	53-142
754-91-6	PFOSA	0.0549		0.174	0.203	85	67-137
2355-31-9	MeFOSAA	0.017	U	0.174	0.145	83	65-136
2991-50-6	EtFOSAA	0.017	U	0.174	0.146	84	61-135
757124-72-4	4:2 Fluorotelomer sulfonate	0.0919		0.174	0.206	66	63-143
27619-97-2	6:2 Fluorotelomer sulfonate	2.98 [c]		0.174	1.20	-1024* [a]	64-140
39108-34-4	8:2 Fluorotelomer sulfonate	0.296		0.174	0.380	48*	67-138
13252-13-6	HFPO-DA (GenX)	0.017	U	0.174	0.149	86	60-140
919005-14-4	ADONA	0.017	U	0.174	0.139	80	60-140
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.017	U	0.174	0.134	77	60-140
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.017	U	0.174	0.149	86	60-140

CAS No.	ID Standard Recoveries	MS	FC3011-39	FC3011-39	Limits
	13C4-PFBA	75%	66%	70%	50-150%
	13C5-PFPeA	80%	63%	72%	50-150%
	13C5-PFHxA	82%	62%	77%	50-150%
	13C4-PFHpA	81%	60%	77%	50-150%

* = Outside of Control Limits.

Matrix Spike Summary

Job Number: FC3044
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP95681-MS	2Q106986.D	10	03/08/23	LR	03/01/23	OP95681	S2Q1495
FC3011-39	2Q106831.D	1	03/02/23	LR	03/01/23	OP95681	S2Q1491
FC3011-39	2Q106984.D	10	03/08/23	LR	03/01/23	OP95681	S2Q1495

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC3044-1, FC3044-2

CAS No.	ID Standard Recoveries	MS	FC3011-39	FC3011-39	Limits
	13C8-PFOA	83%	65%	78%	50-150%
	13C9-PFNA	78%	60%	77%	50-150%
	13C6-PFDA	84%	67%	79%	50-150%
	13C7-PFUnDA	75%	60%	73%	50-150%
	13C2-PFDoDA	73%	54%	69%	50-150%
	13C2-PFTeDA	74%	59%	68%	50-150%
	13C3-PFBS	83%	72%	79%	50-150%
	13C3-PFHxS	83%	62%	82%	50-150%
	13C8-PFOS	82%	59%	86%	50-150%
	13C8-FOSA	82%	55%	79%	50-150%
	d3-MeFOSAA	83%	61%	80%	50-150%
	d5-EtFOSAA	81%	53%	75%	50-150%
	13C2-4:2FTS	95%	66%	81%	50-150%
	13C2-6:2FTS	299%* e	239%* d	277%* d	50-150%
	13C2-8:2FTS	107%	80%	91%	50-150%
	13C3-HFPO-DA	82%	66%	75%	50-150%

(a) Outside control limits due to high level in sample relative to spike amount.
(b) Result is from Run #2.
(c) Result is from Run #3.
(d) Outside control limits.
(e) Outside control limits due to dilution.

* = Outside of Control Limits.

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

e-Hardcopy 2.0
Automated Report

Technical Report for

Tetra Tech NUS

KSC-CRCA

112G08970

SGS Job Number: FC3766

Sampling Date: 03/27/23

Report to:

Tetra-Tech, Inc.
661 Andersen Drive Foster Plaza 7
Pittsburgh, PA 15220
amy.thomson@tetratech.com; carrie.stock@tetratech.com;
alex.murphy@tetratech.com
ATTN: Amy Thomson

Total number of pages in report: **38**

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

Norm Farmer
Technical Director

Client Service contact: Andrea Colby 407-425-6700

Certifications: FL(E83510), LA(03051), KS(E-10327), NC(573), NJ(FL002), NY(12022), SC(96038001) DoD ELAP(ANAB L2229), AZ(AZ0806), CA(2937), TX(T104704404), PA(68-03573), VA(460177), AL, AK, AR, CT, IA, KY, MA, MI. MS, ND, NH, NV, OK, OR, IL, UT, VT, WA, WI, WV

This report shall not be reproduced, except in its entirety, without the written approval of SGS.

Test results relate only to samples analyzed.

SGS is the sole authority for authorizing edits or modifications to this document.
Unauthorized modification of this report is strictly prohibited.
Review standard terms at: http://www.sgs.com/en/terms-and-conditions

Please share your ideas about how we can serve you better at:
EHS.US.CustomerCare@sgs.com

Sections: 1 2 3 4 5 6 7

Table of Contents

Section 1: Sample Summary **3**
Section 2: Case Narrative/Conformance Summary **4**
Section 3: Summary of Hits **6**
Section 4: Sample Results **7**
4.1: FC3766-1: CRCA-ASINFLUENT-20230327 8
4.2: FC3766-2: CRCA-ASEFFLUENT-20230327 12
Section 5: Misc. Forms **16**
5.1: Chain of Custody 17
Section 6: MS Volatiles - QC Data Summaries **19**
6.1: Method Blank Summary 20
6.2: Blank Spike Summary 22
6.3: Matrix Spike/Matrix Spike Duplicate Summary 24
Section 7: MS Semi-volatiles - QC Data Summaries **26**
7.1: Method Blank Summary 27
7.2: Blank Spike Summary 33
7.3: Matrix Spike Summary 35
7.4: Duplicate Summary 37

SGS North America Inc.

Sample Summary

Tetra Tech NUS

Job No: FC3766

KSC-CRCA
Project No: 112G08970

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
FC3766-1	03/27/23	14:00	CS	03/28/23	AQ	Ground Water	CRCA-ASINFLUENT-20230327
FC3766-2	03/27/23	14:15	CS	03/28/23	AQ	Ground Water	CRCA-ASEFFLUENT-20230327

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: Tetra Tech NUS **Job No:** FC3766

Site: KSC-CRCA **Report Date:** 4/18/2023 11:07:54 AM

On 03/28/2023, 2 Sample(s), 0 Trip Blank(s) and 0 Field Blank(s) were received at SGS North America Inc - Orlando. at a maximum corrected temperature of 3.3 C. Samples were intact and chemically preserved, unless noted below. A SGS North America Inc. - Orlando Job Number of FC3766 was assigned to the project.

Laboratory sample ID, client sample ID and dates of sample collection are detailed in the report's Results Summary Section. Specified quality control criteria were achieved for this job except as noted below. For more information, please refer to the analytical results and QC summary pages.

MS Volatiles By Method SW846 8260D

Matrix: AQ **Batch ID:** VI2869

Sample(s) FC3822-1MS, FC3822-1MSD were used as the QC samples indicated.

RPD(s) for MSD for Methyl Bromide are outside control limits for sample FC3822-1MSD. Probable cause is due to sample non-homogeneity.

VI2869-MB: Sample was treated with an anti-foaming agent.

FC3766-1 for 2-Butanone (MEK): Associated CCV outside control limits high, sample is ND.

FC3766-1 for Tetrachloroethylene: Associated CCV outside control limits high, sample is ND.

FC3766-2 for 2-Butanone (MEK): Associated CCV outside control limits high, sample is ND.

FC3766-2 for Tetrachloroethylene: Associated CCV outside control limits high, sample is ND.

MS Semi-volatiles By Method EPA 537M QSM5.3 B-15

Matrix: AQ **Batch ID:** OP96274

Sample(s) FC3765-77MS, FC3766-1DUP were used as the QC samples indicated.

RPD(s) for Duplicate for Perfluoroheptanoic acid, Perfluorohexanesulfonic acid, Perfluorohexanoic acid, Perfluorooctanesulfonic acid, Perfluorooctanoic acid, Perfluoropentanoic acid are outside control limits for sample OP96274-DUP. Probable cause is due to sample non-homogeneity.

Sample(s) FC3766-1, FC3766-2 have surrogates outside control limits.

FC3766-1 for 13C3-HFPO-DA: Outside control limits.

FC3766-1 for 13C3-PFBS: Outside control limits.

FC3766-1 for 13C4-PFBA: Outside control limits.

FC3766-1 for 13C5-PFHxA: Outside control limits.

FC3766-1 for 13C5-PFPeA: Outside control limits.

FC3766-1 for 13C8-FOSA: Outside control limits.

FC3766-1 for 13C8-FOSA: Outside control limits.

FC3766-1 for d3-MeFOSAA: Outside control limits.

FC3766-1 for PFOSA: Associated ID Standard outside control limits.

FC3766-2 for 13C2-4:2FTS: Outside control limits.

FC3766-2 for 13C3-HFPO-DA: Outside control limits.

FC3766-2 for 13C3-PFBS: Outside control limits.

FC3766-2 for 13C4-PFBA: Outside control limits.

FC3766-2 for 13C4-PFHpA: Outside control limits.

FC3766-2 for 13C5-PFHxA: Outside control limits.

FC3766-2 for 13C5-PFPeA: Outside control limits.

FC3766-2 for 13C8-FOSA: Outside control limits.

FC3766-2 for 13C8-FOSA: Outside control limits.

FC3766-2 for d3-MeFOSAA: Outside control limits.

FC3766-2 for d5-EtFOSAA: Outside control limits.

FC3766-2 for Perfluoroheptanoic acid: Associated ID Standard outside control limits.

FC3766-2 for PFOSA: Associated ID Standard outside control limits.

SGS North America Inc. - Orlando certifies that data reported for samples received, listed on the associated custody chain or analytical task order, were produced to specifications meeting the Quality System precision, accuracy and completeness objectives except as noted. Estimated non-standard method measurement uncertainty data is available on request, based on quality control bias and implicit for standard methods. Acceptable uncertainty requires tested parameter quality control data to meet method criteria. SGS North America Inc.- Orlando is not responsible for data quality assumptions if partial reports are used and recommends that this report be used in its entirety.

Narrative prepared by:

_____

Kim Benham, Client Services *(Signature on File)*

Summary of Hits

Job Number: FC3766
Account: Tetra Tech NUS
Project: KSC-CRCA
Collected: 03/27/23

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	PQL	MDL	Units	Method
FC3766-1	**CRCA-ASINFLUENT-20230327**					
Vinyl Chloride		1.7	1.0	0.41	ug/l	SW846 8260D
Perfluorobutanoic acid		34.8	1.6	0.40	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid		0.0227 I	0.080	0.020	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0213 I	0.080	0.020	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.0088	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0176	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0053 I	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0072 I	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
FC3766-2	**CRCA-ASEFFLUENT-20230327**					
Perfluorobutanoic acid		28.2	1.6	0.40	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid		0.0248 I	0.080	0.020	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0249 I	0.080	0.020	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid [a]		0.0088	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0196	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0055 I	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0150	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15

(a) Associated ID Standard outside control limits.

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID:	CRCA-ASINFLUENT-20230327		
Lab Sample ID:	FC3766-1	**Date Sampled:**	03/27/23
Matrix:	AQ - Ground Water	**Date Received:**	03/28/23
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	KSC-CRCA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	I755485.D	1	04/04/23 02:14	JW	n/a	n/a	VI2869
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL 4.2 List

CAS No.	Compound	Result	PQL	MDL	Units	Q
67-64-1	Acetone	10 U	25	10	ug/l	
71-43-2	Benzene	0.31 U	1.0	0.31	ug/l	
75-27-4	Bromodichloromethane	0.24 U	1.0	0.24	ug/l	
75-25-2	Bromoform	0.41 U	1.0	0.41	ug/l	
78-93-3	2-Butanone (MEK) [a]	2.0 U	5.0	2.0	ug/l	
75-15-0	Carbon Disulfide	0.53 U	2.0	0.53	ug/l	
56-23-5	Carbon Tetrachloride	0.36 U	1.0	0.36	ug/l	
108-90-7	Chlorobenzene	0.20 U	1.0	0.20	ug/l	
75-00-3	Chloroethane	0.67 U	2.0	0.67	ug/l	
67-66-3	Chloroform	0.30 U	1.0	0.30	ug/l	
110-82-7	Cyclohexane	0.39 U	1.0	0.39	ug/l	
124-48-1	Dibromochloromethane	0.28 U	1.0	0.28	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	1.0 U	5.0	1.0	ug/l	
106-93-4	1,2-Dibromoethane	0.28 U	2.0	0.28	ug/l	
75-71-8	Dichlorodifluoromethane	0.50 U	2.0	0.50	ug/l	
95-50-1	1,2-Dichlorobenzene	0.32 U	1.0	0.32	ug/l	
541-73-1	1,3-Dichlorobenzene	0.22 U	1.0	0.22	ug/l	
106-46-7	1,4-Dichlorobenzene	0.26 U	1.0	0.26	ug/l	
75-34-3	1,1-Dichloroethane	0.34 U	1.0	0.34	ug/l	
107-06-2	1,2-Dichloroethane	0.31 U	1.0	0.31	ug/l	
75-35-4	1,1-Dichloroethylene	0.32 U	1.0	0.32	ug/l	
156-59-2	cis-1,2-Dichloroethylene	0.28 U	1.0	0.28	ug/l	
156-60-5	trans-1,2-Dichloroethylene	0.22 U	1.0	0.22	ug/l	
78-87-5	1,2-Dichloropropane	0.43 U	1.0	0.43	ug/l	
10061-01-5	cis-1,3-Dichloropropene	0.29 U	1.0	0.29	ug/l	
10061-02-6	trans-1,3-Dichloropropene	0.21 U	1.0	0.21	ug/l	
100-41-4	Ethylbenzene	0.36 U	1.0	0.36	ug/l	
76-13-1	Freon 113	0.48 U	1.0	0.48	ug/l	
591-78-6	2-Hexanone	2.0 U	10	2.0	ug/l	
98-82-8	Isopropylbenzene	0.22 U	1.0	0.22	ug/l	
79-20-9	Methyl Acetate	5.0 U	20	5.0	ug/l	
74-83-9	Methyl Bromide	2.0 U	5.0	2.0	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-ASINFLUENT-20230327		
Lab Sample ID:	FC3766-1	**Date Sampled:**	03/27/23
Matrix:	AQ - Ground Water	**Date Received:**	03/28/23
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	KSC-CRCA		

VOA TCL 4.2 List

CAS No.	Compound	Result	PQL	MDL	Units	Q
74-87-3	Methyl Chloride	0.50 U	2.0	0.50	ug/l	
108-87-2	Methylcyclohexane	0.44 U	1.0	0.44	ug/l	
75-09-2	Methylene Chloride	2.0 U	5.0	2.0	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	1.0 U	5.0	1.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	0.23 U	1.0	0.23	ug/l	
100-42-5	Styrene	0.22 U	1.0	0.22	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	0.30 U	1.0	0.30	ug/l	
127-18-4	Tetrachloroethylene [a]	0.22 U	1.0	0.22	ug/l	
108-88-3	Toluene	0.30 U	1.0	0.30	ug/l	
120-82-1	1,2,4-Trichlorobenzene	0.50 U	2.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	0.25 U	1.0	0.25	ug/l	
79-00-5	1,1,2-Trichloroethane	0.47 U	1.0	0.47	ug/l	
79-01-6	Trichloroethylene	0.35 U	1.0	0.35	ug/l	
75-69-4	Trichlorofluoromethane	0.50 U	2.0	0.50	ug/l	
75-01-4	Vinyl Chloride	1.7	1.0	0.41	ug/l	
1330-20-7	Xylene (total)	0.72 U	3.0	0.72	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	102%		83-118%
17060-07-0	1,2-Dichloroethane-D4	100%		79-125%
2037-26-5	Toluene-D8	95%		85-112%
460-00-4	4-Bromofluorobenzene	99%		83-118%

(a) Associated CCV outside control limits high, sample is ND.

U = Not detected MDL = Method Detection Limit
PQL = Practical Quantitation Limit
L = Indicates value exceeds calibration range
I = Result > = MDL but < PQL J = Estimated value
V = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-ASINFLUENT-20230327		
Lab Sample ID:	FC3766-1	**Date Sampled:**	03/27/23
Matrix:	AQ - Ground Water	**Date Received:**	03/28/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	KSC-CRCA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q42720.D	1	04/09/23 01:22	AL	04/06/23 14:52	OP96274	S4Q616
Run #2	4Q42893.D	10	04/13/23 03:11	AL	04/06/23 14:52	OP96274	S4Q619
Run #3	4Q42925.D	100	04/13/23 18:13	AL	04/06/23 14:52	OP96274	S4Q620

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2	125 ml	1.0 ml
Run #3	125 ml	1.0 ml

CAS No.	Compound	Result	PQL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	34.8 [a]	1.6	0.40	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0227 [b]	0.080	0.020	ug/l	I
307-24-4	Perfluorohexanoic acid	0.0213 [b]	0.080	0.020	ug/l	I
375-85-9	Perfluoroheptanoic acid	0.0088	0.0080	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	0.0176	0.0080	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0020 U	0.0080	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS						
375-73-5	Perfluorobutanesulfonic acid	0.020 U [b]	0.080	0.020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.020 U [b]	0.080	0.020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0053	0.0080	0.0020	ug/l	I
375-92-8	Perfluoroheptanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0072	0.0080	0.0020	ug/l	I
68259-12-1	Perfluorononanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA [c]	0.020 U [b]	0.080	0.020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	0.0040 U	0.016	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0040 U	0.016	0.0040	ug/l	
FLUOROTELOMER SULFONATES						

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-ASINFLUENT-20230327		
Lab Sample ID:	FC3766-1	**Date Sampled:**	03/27/23
Matrix:	AQ - Ground Water	**Date Received:**	03/28/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	KSC-CRCA		

CAS No.	Compound	Result	PQL	MDL	Units	Q
757124-72-4	4:2 Fluorotelomer sulfonate	0.0040 U	0.016	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0040 U	0.016	0.0040	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0040 U	0.016	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES						
13252-13-6	HFPO-DA (GenX)	0.040 U [b]	0.16	0.040	ug/l	
919005-14-4	ADONA	0.0040 U	0.016	0.0040	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0040 U	0.016	0.0040	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0040 U	0.016	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Run# 3	Limits
	13C4-PFBA	26% [d]	70%	111%	50-150%
	13C5-PFPeA	43% [d]	71%	109%	50-150%
	13C5-PFHxA	48% [d]	73%	107%	50-150%
	13C4-PFHpA	53%	75%	107%	50-150%
	13C8-PFOA	67%	87%	115%	50-150%
	13C9-PFNA	71%	92%	119%	50-150%
	13C6-PFDA	75%	85%	117%	50-150%
	13C7-PFUnDA	67%	70%	114%	50-150%
	13C2-PFDoDA	72%	66%	113%	50-150%
	13C2-PFTeDA	60%	54%	110%	50-150%
	13C3-PFBS	44% [d]	76%	111%	50-150%
	13C3-PFHxS	59%	79%	109%	50-150%
	13C8-PFOS	60%	72%	109%	50-150%
	13C8-FOSA	26% [d]	45% [d]	136%	50-150%
	d3-MeFOSAA	95%	111%	153% [d]	50-150%
	d5-EtFOSAA	91%	92%	147%	50-150%
	13C2-4:2FTS	50%	69%	94%	50-150%
	13C2-6:2FTS	79%	85%	108%	50-150%
	13C2-8:2FTS	75%	76%	103%	50-150%
	13C3-HFPO-DA	43% [d]	67%	91%	50-150%

(a) Result is from Run# 3
(b) Result is from Run# 2
(c) Associated ID Standard outside control limits.
(d) Outside control limits.

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-ASEFFLUENT-20230327		
Lab Sample ID:	FC3766-2	**Date Sampled:**	03/27/23
Matrix:	AQ - Ground Water	**Date Received:**	03/28/23
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	KSC-CRCA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	I755486.D	1	04/04/23 02:37	JW	n/a	n/a	VI2869
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL 4.2 List

CAS No.	Compound	Result	PQL	MDL	Units	Q
67-64-1	Acetone	10 U	25	10	ug/l	
71-43-2	Benzene	0.31 U	1.0	0.31	ug/l	
75-27-4	Bromodichloromethane	0.24 U	1.0	0.24	ug/l	
75-25-2	Bromoform	0.41 U	1.0	0.41	ug/l	
78-93-3	2-Butanone (MEK) [a]	2.0 U	5.0	2.0	ug/l	
75-15-0	Carbon Disulfide	0.53 U	2.0	0.53	ug/l	
56-23-5	Carbon Tetrachloride	0.36 U	1.0	0.36	ug/l	
108-90-7	Chlorobenzene	0.20 U	1.0	0.20	ug/l	
75-00-3	Chloroethane	0.67 U	2.0	0.67	ug/l	
67-66-3	Chloroform	0.30 U	1.0	0.30	ug/l	
110-82-7	Cyclohexane	0.39 U	1.0	0.39	ug/l	
124-48-1	Dibromochloromethane	0.28 U	1.0	0.28	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	1.0 U	5.0	1.0	ug/l	
106-93-4	1,2-Dibromoethane	0.28 U	2.0	0.28	ug/l	
75-71-8	Dichlorodifluoromethane	0.50 U	2.0	0.50	ug/l	
95-50-1	1,2-Dichlorobenzene	0.32 U	1.0	0.32	ug/l	
541-73-1	1,3-Dichlorobenzene	0.22 U	1.0	0.22	ug/l	
106-46-7	1,4-Dichlorobenzene	0.26 U	1.0	0.26	ug/l	
75-34-3	1,1-Dichloroethane	0.34 U	1.0	0.34	ug/l	
107-06-2	1,2-Dichloroethane	0.31 U	1.0	0.31	ug/l	
75-35-4	1,1-Dichloroethylene	0.32 U	1.0	0.32	ug/l	
156-59-2	cis-1,2-Dichloroethylene	0.28 U	1.0	0.28	ug/l	
156-60-5	trans-1,2-Dichloroethylene	0.22 U	1.0	0.22	ug/l	
78-87-5	1,2-Dichloropropane	0.43 U	1.0	0.43	ug/l	
10061-01-5	cis-1,3-Dichloropropene	0.29 U	1.0	0.29	ug/l	
10061-02-6	trans-1,3-Dichloropropene	0.21 U	1.0	0.21	ug/l	
100-41-4	Ethylbenzene	0.36 U	1.0	0.36	ug/l	
76-13-1	Freon 113	0.48 U	1.0	0.48	ug/l	
591-78-6	2-Hexanone	2.0 U	10	2.0	ug/l	
98-82-8	Isopropylbenzene	0.22 U	1.0	0.22	ug/l	
79-20-9	Methyl Acetate	5.0 U	20	5.0	ug/l	
74-83-9	Methyl Bromide	2.0 U	5.0	2.0	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-ASEFFLUENT-20230327		
Lab Sample ID:	FC3766-2	**Date Sampled:**	03/27/23
Matrix:	AQ - Ground Water	**Date Received:**	03/28/23
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	KSC-CRCA		

VOA TCL 4.2 List

CAS No.	Compound	Result	PQL	MDL	Units	Q
74-87-3	Methyl Chloride	0.50 U	2.0	0.50	ug/l	
108-87-2	Methylcyclohexane	0.44 U	1.0	0.44	ug/l	
75-09-2	Methylene Chloride	2.0 U	5.0	2.0	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	1.0 U	5.0	1.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	0.23 U	1.0	0.23	ug/l	
100-42-5	Styrene	0.22 U	1.0	0.22	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	0.30 U	1.0	0.30	ug/l	
127-18-4	Tetrachloroethylene [a]	0.22 U	1.0	0.22	ug/l	
108-88-3	Toluene	0.30 U	1.0	0.30	ug/l	
120-82-1	1,2,4-Trichlorobenzene	0.50 U	2.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	0.25 U	1.0	0.25	ug/l	
79-00-5	1,1,2-Trichloroethane	0.47 U	1.0	0.47	ug/l	
79-01-6	Trichloroethylene	0.35 U	1.0	0.35	ug/l	
75-69-4	Trichlorofluoromethane	0.50 U	2.0	0.50	ug/l	
75-01-4	Vinyl Chloride	0.41 U	1.0	0.41	ug/l	
1330-20-7	Xylene (total)	0.72 U	3.0	0.72	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	101%		83-118%
17060-07-0	1,2-Dichloroethane-D4	100%		79-125%
2037-26-5	Toluene-D8	95%		85-112%
460-00-4	4-Bromofluorobenzene	98%		83-118%

(a) Associated CCV outside control limits high, sample is ND.

U = Not detected MDL = Method Detection Limit
PQL = Practical Quantitation Limit
L = Indicates value exceeds calibration range
I = Result > = MDL but < PQL J = Estimated value
V = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-ASEFFLUENT-20230327		
Lab Sample ID:	FC3766-2	**Date Sampled:**	03/27/23
Matrix:	AQ - Ground Water	**Date Received:**	03/28/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	KSC-CRCA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q42722.D	1	04/09/23 01:53	AL	04/06/23 14:52	OP96274	S4Q616
Run #2	4Q42895.D	10	04/13/23 03:42	AL	04/06/23 14:52	OP96274	S4Q619
Run #3	4Q42927.D	100	04/13/23 18:44	AL	04/06/23 14:52	OP96274	S4Q620

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2	125 ml	1.0 ml
Run #3	125 ml	1.0 ml

CAS No.	Compound	Result	PQL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	28.2 [a]	1.6	0.40	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0248 [b]	0.080	0.020	ug/l	I
307-24-4	Perfluorohexanoic acid	0.0249 [b]	0.080	0.020	ug/l	I
375-85-9	Perfluoroheptanoic acid [c]	0.0088	0.0080	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	0.0196	0.0080	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0020 U	0.0080	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS						
375-73-5	Perfluorobutanesulfonic acid	0.020 U [b]	0.080	0.020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.020 U [b]	0.080	0.020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0055	0.0080	0.0020	ug/l	I
375-92-8	Perfluoroheptanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0150	0.0080	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA [c]	0.020 U [b]	0.080	0.020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	0.0040 U	0.016	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0040 U	0.016	0.0040	ug/l	
FLUOROTELOMER SULFONATES						

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-ASEFFLUENT-20230327		
Lab Sample ID:	FC3766-2	**Date Sampled:**	03/27/23
Matrix:	AQ - Ground Water	**Date Received:**	03/28/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	KSC-CRCA		

CAS No.	Compound	Result	PQL	MDL	Units	Q
757124-72-4	4:2 Fluorotelomer sulfonate	0.040 U [b]	0.16	0.040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0040 U	0.016	0.0040	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0040 U	0.016	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES						
13252-13-6	HFPO-DA (GenX)	0.040 U [b]	0.16	0.040	ug/l	
919005-14-4	ADONA	0.0040 U	0.016	0.0040	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0040 U	0.016	0.0040	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0040 U	0.016	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Run# 3	Limits
	13C4-PFBA	24% [d]	52%	118%	50-150%
	13C5-PFPeA	44% [d]	69%	116%	50-150%
	13C5-PFHxA	45% [d]	67%	113%	50-150%
	13C4-PFHpA	48% [d]	69%	112%	50-150%
	13C8-PFOA	61%	78%	122%	50-150%
	13C9-PFNA	64%	85%	126%	50-150%
	13C6-PFDA	64%	72%	124%	50-150%
	13C7-PFUnDA	56%	63%	119%	50-150%
	13C2-PFDoDA	60%	57%	120%	50-150%
	13C2-PFTeDA	50%	51%	117%	50-150%
	13C3-PFBS	43% [d]	75%	119%	50-150%
	13C3-PFHxS	52%	74%	117%	50-150%
	13C8-PFOS	51%	72%	117%	50-150%
	13C8-FOSA	29% [d]	46% [d]	141%	50-150%
	d3-MeFOSAA	78%	96%	160% [d]	50-150%
	d5-EtFOSAA	75%	69%	151% [d]	50-150%
	13C2-4:2FTS	47% [d]	68%	101%	50-150%
	13C2-6:2FTS	71%	78%	113%	50-150%
	13C2-8:2FTS	65%	68%	109%	50-150%
	13C3-HFPO-DA	39% [d]	59%	98%	50-150%

(a) Result is from Run# 3
(b) Result is from Run# 2
(c) Associated ID Standard outside control limits.
(d) Outside control limits.

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody

Tetra Tech, Inc.

CHAIN OF CUSTODY | NUMBER No. 2324 FC3766 | PAGE 1 OF 1

PROJECT NO: 112G08970	FACILITY: KSC-CRCA	PROJECT MANAGER Chris Neumann	PHONE NUMBER (321) 636-6470	LABORATORY NAME AND CONTACT: SGS — Andrea Colby
SAMPLERS (SIGNATURE) – Chuck Sorden		FIELD OPERATIONS LEADER Chuck Sorden	PHONE NUMBER (321) 591-7580	ADDRESS 4405 Vineland Rd. Ste. C-15
		CARRIER/WAYBILL NUMBER		CITY, STATE Orlando / FL

STANDARD TAT ☒
RUSH TAT ☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

	DATE YEAR 2023	TIME	SAMPLE ID	LOCATION ID	TOP DEPTH (FT)	BOTTOM DEPTH (FT)	MATRIX (GW, SO, SW, SD, QC, ETC.)	COLLECTION METHOD GRAB (G) COMP (C)	No. OF CONTAINERS	CONTAINER TYPE PLASTIC (P) or GLASS (G)	PRESERVATIVE USED	TYPE OF ANALYSIS V8260 TCL 42	TYPE OF ANALYSIS LCQSM537M128	COMMENTS
										G / P	HCl/4°C 4°C			
1	03/27	1400	CRCA-ASINFLUENT-20230327 ~~CRCA-SINFLUENT-MS~~		—	—	GW	G	5			X	X	
2	03/27	1415	CRCA-ASEFFLUENT-20230327		—	—	GW	G	5			X	X	

INITIAL ASSESSMENT ZB
LABEL VERIFICATION ZB
3.4 IR1

	DATE	TIME		DATE	TIME
1. RELINQUISHED BY	3-28-23	11:45	1. RECEIVED BY	3-28-23	1145
2. RELINQUISHED BY	3-28-23	1150	2. RECEIVED BY	3/28/23	11:45
3. RELINQUISHED BY	3/28/23	13:30	3. RECEIVED BY	3/28/23	~~1145~~ 1330 ZB

COMMENTS

DISTRIBUTION: WHITE (ACCOMPANIES SAMPLE) YELLOW (FIELD COPY) PINK (FILE COPY) 4/02R
FORM NO. TtNUS-001

FC3766: Chain of Custody
Page 1 of 2

SGS Sample Receipt Summary

Job Number: FC3766 **Client:** TETRA TECH **Project:** 112G08970

Date / Time Received: 3/28/2023 1:30:00 PM **Delivery Method:** COURIER **Airbill #'s:**

Therm ID: IR 1; **Therm CF:** -0.1; **# of Coolers:** 1

Cooler Temps (Raw Measured) °C: Cooler 1: (3.4);

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

Cooler Information	Y	or	N
1. Custody Seals Present	☑		☐
2. Custody Seals Intact	☑		☐
3. Temp criteria achieved	☑		☐
4. Cooler temp verification	IR Gun		
5. Cooler media	Ice (Bag)		

Trip Blank Information	Y	or	N	N/A
1. Trip Blank present / cooler	☐		☐	☑
2. Trip Blank listed on COC	☐		☐	☑

	W	or	S	N/A
3. Type Of TB Received	☐		☐	☑

Sample Information	Y	or	N	N/A
1. Sample labels present on bottles	☑		☐	
2. Samples preserved properly	☑		☐	
3. Sufficient volume/containers recvd for analysis:	☑		☐	
4. Condition of sample	Intact			
5. Sample recvd within HT	☑		☐	
6. Dates/Times/IDs on COC match Sample Label	☑		☐	
7. VOCs have headspace	☐		☑	☐
8. Bottles received for unspecified tests	☐		☑	
9. Compositing instructions clear	☐		☐	☑
10. Voa Soil Kits/Jars received past 48hrs?	☐		☐	☑
11. % Solids Jar received?	☐		☐	☑
12. Residual Chlorine Present?	☐		☐	☑

Misc. Information

Number of Encores: 25-Gram _____ 5-Gram _____ Number of 5035 Field Kits: _____ Number of Lab Filtered Metals: _____

Test Strip Lot #s: pH 0-3 230320 pH 10-12 25BDH07 Other: (Specify) pH 1.0 - 12.0 222221

Residual Chlorine Test Strip Lot #: _____

Comments

SM001
Rev. Date 05/24/17

Technician: ZANEB Date: 3/28/2023 1:30:00 PM Reviewer: _____ Date: _____

FC3766: Chain of Custody
Page 2 of 2

MS Volatiles

6

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Job Number: FC3766
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VI2869-MB [a]	I755474.D	1	04/03/23	JW	n/a	n/a	VI2869

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

FC3766-1, FC3766-2

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	25	10	ug/l	
71-43-2	Benzene	ND	1.0	0.31	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.24	ug/l	
75-25-2	Bromoform	ND	1.0	0.41	ug/l	
78-93-3	2-Butanone (MEK)	ND	5.0	2.0	ug/l	
75-15-0	Carbon Disulfide	ND	2.0	0.53	ug/l	
56-23-5	Carbon Tetrachloride	ND	1.0	0.36	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.20	ug/l	
75-00-3	Chloroethane	ND	2.0	0.67	ug/l	
67-66-3	Chloroform	ND	1.0	0.30	ug/l	
110-82-7	Cyclohexane	ND	1.0	0.39	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.28	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	5.0	1.0	ug/l	
106-93-4	1,2-Dibromoethane	ND	2.0	0.28	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	0.50	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	0.32	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	0.22	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	0.26	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.34	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.31	ug/l	
75-35-4	1,1-Dichloroethylene	ND	1.0	0.32	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	0.28	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	0.22	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.43	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.29	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.21	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.36	ug/l	
76-13-1	Freon 113	ND	1.0	0.48	ug/l	
591-78-6	2-Hexanone	ND	10	2.0	ug/l	
98-82-8	Isopropylbenzene	ND	1.0	0.22	ug/l	
79-20-9	Methyl Acetate	ND	20	5.0	ug/l	
74-83-9	Methyl Bromide	ND	5.0	2.0	ug/l	
74-87-3	Methyl Chloride	ND	2.0	0.50	ug/l	
108-87-2	Methylcyclohexane	ND	1.0	0.44	ug/l	
75-09-2	Methylene Chloride	ND	5.0	2.0	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	5.0	1.0	ug/l	

Method Blank Summary

Job Number: FC3766
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VI2869-MB [a]	I755474.D	1	04/03/23	JW	n/a	n/a	VI2869

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

FC3766-1, FC3766-2

CAS No.	Compound	Result	RL	MDL	Units	Q
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.23	ug/l	
100-42-5	Styrene	ND	1.0	0.22	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.30	ug/l	
127-18-4	Tetrachloroethylene	ND	1.0	0.22	ug/l	
108-88-3	Toluene	ND	1.0	0.30	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	2.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.25	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.47	ug/l	
79-01-6	Trichloroethylene	ND	1.0	0.35	ug/l	
75-69-4	Trichlorofluoromethane	ND	2.0	0.50	ug/l	
75-01-4	Vinyl Chloride	ND	1.0	0.41	ug/l	
1330-20-7	Xylene (total)	ND	3.0	0.72	ug/l	

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	100%	83-118%
17060-07-0	1,2-Dichloroethane-D4	97%	79-125%
2037-26-5	Toluene-D8	97%	85-112%
460-00-4	4-Bromofluorobenzene	99%	83-118%

(a) Sample was treated with an anti-foaming agent.

Blank Spike Summary

Job Number: FC3766
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VI2869-BS	I755473.D	1	04/03/23	JW	n/a	n/a	VI2869

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

FC3766-1, FC3766-2

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
67-64-1	Acetone	125	149	119	50-147
71-43-2	Benzene	25	26.6	106	81-122
75-27-4	Bromodichloromethane	25	26.7	107	79-123
75-25-2	Bromoform	25	23.4	94	66-123
78-93-3	2-Butanone (MEK)	125	148	118	56-143
75-15-0	Carbon Disulfide	25	34.1	136	66-148
56-23-5	Carbon Tetrachloride	25	27.7	111	76-136
108-90-7	Chlorobenzene	25	25.4	102	82-124
75-00-3	Chloroethane	25	28.9	116	62-144
67-66-3	Chloroform	25	28.8	115	80-124
110-82-7	Cyclohexane	25	28.1	112	73-138
124-48-1	Dibromochloromethane	25	25.8	103	78-122
96-12-8	1,2-Dibromo-3-chloropropane	25	25.4	102	64-123
106-93-4	1,2-Dibromoethane	25	26.0	104	75-120
75-71-8	Dichlorodifluoromethane	25	31.9	128	42-167
95-50-1	1,2-Dichlorobenzene	25	25.0	100	82-124
541-73-1	1,3-Dichlorobenzene	25	24.6	98	84-125
106-46-7	1,4-Dichlorobenzene	25	25.6	102	78-120
75-34-3	1,1-Dichloroethane	25	25.7	103	81-122
107-06-2	1,2-Dichloroethane	25	26.6	106	75-125
75-35-4	1,1-Dichloroethylene	25	31.6	126	78-137
156-59-2	cis-1,2-Dichloroethylene	25	25.9	104	78-120
156-60-5	trans-1,2-Dichloroethylene	25	26.7	107	76-127
78-87-5	1,2-Dichloropropane	25	28.4	114	76-124
10061-01-5	cis-1,3-Dichloropropene	25	26.2	105	75-118
10061-02-6	trans-1,3-Dichloropropene	25	22.6	90	80-120
100-41-4	Ethylbenzene	25	25.5	102	81-121
76-13-1	Freon 113	25	33.2	133	72-134
591-78-6	2-Hexanone	125	136	109	61-129
98-82-8	Isopropylbenzene	25	24.6	98	83-132
79-20-9	Methyl Acetate	125	140	112	65-126
74-83-9	Methyl Bromide	25	30.8	123	59-143
74-87-3	Methyl Chloride	25	28.7	115	50-159
108-87-2	Methylcyclohexane	25	25.6	102	76-129
75-09-2	Methylene Chloride	25	29.4	118	69-135
108-10-1	4-Methyl-2-pentanone (MIBK)	125	140	112	66-122

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FC3766
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VI2869-BS	I755473.D	1	04/03/23	JW	n/a	n/a	VI2869

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

FC3766-1, FC3766-2

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
1634-04-4	Methyl Tert Butyl Ether	25	27.3	109	72-117
100-42-5	Styrene	25	24.4	98	78-119
79-34-5	1,1,2,2-Tetrachloroethane	25	24.7	99	72-120
127-18-4	Tetrachloroethylene	25	33.6	134	76-135
108-88-3	Toluene	25	26.3	105	80-120
120-82-1	1,2,4-Trichlorobenzene	25	23.5	94	73-129
71-55-6	1,1,1-Trichloroethane	25	27.8	111	75-130
79-00-5	1,1,2-Trichloroethane	25	24.9	100	76-119
79-01-6	Trichloroethylene	25	27.6	110	81-126
75-69-4	Trichlorofluoromethane	25	24.1	96	71-156
75-01-4	Vinyl Chloride	25	28.0	112	69-159
1330-20-7	Xylene (total)	75	75.1	100	80-126

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	103%	83-118%
17060-07-0	1,2-Dichloroethane-D4	103%	79-125%
2037-26-5	Toluene-D8	98%	85-112%
460-00-4	4-Bromofluorobenzene	101%	83-118%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FC3766
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
FC3822-1MS	I755489.D	5	04/04/23	JW	n/a	n/a	VI2869
FC3822-1MSD	I755490.D	5	04/04/23	JW	n/a	n/a	VI2869
FC3822-1	I755475.D	1	04/03/23	JW	n/a	n/a	VI2869

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

FC3766-1, FC3766-2

CAS No.	Compound	FC3822-1 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
67-64-1	Acetone	ND		625	648	104	625	665	106	3	50-147/21
71-43-2	Benzene	ND		125	132	106	125	136	109	3	81-122/14
75-27-4	Bromodichloromethane	ND		125	131	105	125	135	108	3	79-123/19
75-25-2	Bromoform	ND		125	115	92	125	113	90	2	66-123/21
78-93-3	2-Butanone (MEK)	ND		625	724	116	625	742	119	2	56-143/18
75-15-0	Carbon Disulfide	ND		125	147	118	125	154	123	5	66-148/23
56-23-5	Carbon Tetrachloride	ND		125	135	108	125	141	113	4	76-136/23
108-90-7	Chlorobenzene	ND		125	122	98	125	126	101	3	82-124/14
75-00-3	Chloroethane	ND		125	143	114	125	141	113	1	62-144/20
67-66-3	Chloroform	1.3		125	145	115	125	148	117	2	80-124/15
110-82-7	Cyclohexane	ND		125	135	108	125	143	114	6	73-138/18
124-48-1	Dibromochloromethane	ND		125	125	100	125	128	102	2	78-122/19
96-12-8	1,2-Dibromo-3-chloropropane	ND		125	116	93	125	125	100	7	64-123/18
106-93-4	1,2-Dibromoethane	ND		125	125	100	125	124	99	1	75-120/13
75-71-8	Dichlorodifluoromethane	ND		125	152	122	125	154	123	1	42-167/19
95-50-1	1,2-Dichlorobenzene	ND		125	122	98	125	120	96	2	82-124/14
541-73-1	1,3-Dichlorobenzene	ND		125	116	93	125	118	94	2	84-125/14
106-46-7	1,4-Dichlorobenzene	ND		125	122	98	125	120	96	2	78-120/15
75-34-3	1,1-Dichloroethane	2.9		125	129	101	125	136	106	5	81-122/15
107-06-2	1,2-Dichloroethane	ND		125	140	112	125	138	110	1	75-125/14
75-35-4	1,1-Dichloroethylene	10.1		125	141	105	125	143	106	1	78-137/18
156-59-2	cis-1,2-Dichloroethylene	ND		125	126	101	125	132	106	5	78-120/15
156-60-5	trans-1,2-Dichloroethylene	ND		125	132	106	125	136	109	3	76-127/17
78-87-5	1,2-Dichloropropane	ND		125	138	110	125	140	112	1	76-124/14
10061-01-5	cis-1,3-Dichloropropene	ND		125	116	93	125	119	95	3	75-118/23
10061-02-6	trans-1,3-Dichloropropene	ND		125	106	85	125	107	86	1	80-120/22
100-41-4	Ethylbenzene	ND		125	119	95	125	124	99	4	81-121/14
76-13-1	Freon 113	ND		125	148	118	125	156	125	5	72-134/20
591-78-6	2-Hexanone	ND		625	675	108	625	683	109	1	61-129/18
98-82-8	Isopropylbenzene	ND		125	116	93	125	120	96	3	83-132/15
79-20-9	Methyl Acetate	ND		625	658	105	625	674	108	2	65-126/18
74-83-9	Methyl Bromide	ND		125	106	85	125	136	109	25*	59-143/19
74-87-3	Methyl Chloride	ND		125	144	115	125	146	117	1	50-159/19
108-87-2	Methylcyclohexane	ND		125	123	98	125	128	102	4	76-129/17
75-09-2	Methylene Chloride	ND		125	153	122	125	152	122	1	69-135/16
108-10-1	4-Methyl-2-pentanone (MIBK)	ND		625	694	111	625	698	112	1	66-122/16

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FC3766
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
FC3822-1MS	I755489.D	5	04/04/23	JW	n/a	n/a	VI2869
FC3822-1MSD	I755490.D	5	04/04/23	JW	n/a	n/a	VI2869
FC3822-1	I755475.D	1	04/03/23	JW	n/a	n/a	VI2869

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

FC3766-1, FC3766-2

CAS No.	Compound	FC3822-1 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
1634-04-4	Methyl Tert Butyl Ether	ND		125	139	111	125	139	111	0	72-117/14
100-42-5	Styrene	ND		125	115	92	125	119	95	3	78-119/23
79-34-5	1,1,2,2-Tetrachloroethane	ND		125	129	103	125	128	102	1	72-120/14
127-18-4	Tetrachloroethylene	ND		125	109	87	125	117	94	7	76-135/16
108-88-3	Toluene	ND		125	123	98	125	129	103	5	80-120/14
120-82-1	1,2,4-Trichlorobenzene	ND		125	109	87	125	112	90	3	73-129/20
71-55-6	1,1,1-Trichloroethane	ND		125	135	108	125	141	113	4	75-130/16
79-00-5	1,1,2-Trichloroethane	ND		125	127	102	125	128	102	1	76-119/14
79-01-6	Trichloroethylene	0.67	J	125	132	105	125	134	107	2	81-126/15
75-69-4	Trichlorofluoromethane	ND		125	117	94	125	118	94	1	71-156/21
75-01-4	Vinyl Chloride	ND		125	135	108	125	144	115	6	69-159/18
1330-20-7	Xylene (total)	ND		375	355	95	375	371	99	4	80-126/15

CAS No.	Surrogate Recoveries	MS	MSD	FC3822-1	Limits
1868-53-7	Dibromofluoromethane	104%	102%	100%	83-118%
17060-07-0	1,2-Dichloroethane-D4	105%	98%	99%	79-125%
2037-26-5	Toluene-D8	96%	96%	95%	85-112%
460-00-4	4-Bromofluorobenzene	99%	98%	101%	83-118%

* = Outside of Control Limits.

MS Semi-volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Instrument Blank

Job Number: FC3766
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S4Q616-IBLK	4Q42663.D	1	04/08/23	AL	n/a	n/a	S4Q616

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC3766-1, FC3766-2

CAS No.	Compound	Result	RL	MDL	Units	Q
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.0010	ug/l	
2355-31-9	MeFOSAA	ND	0.0080	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0080	0.0020	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
919005-14-4	ADONA	ND	0.0080	0.0020	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.0080	0.0020	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.0080	0.0020	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	114%	50-150%
	13C5-PFPeA	108%	50-150%
	13C5-PFHxA	95%	50-150%
	13C4-PFHpA	89%	50-150%
	13C8-PFOA	98%	50-150%
	13C9-PFNA	106%	50-150%
	13C6-PFDA	104%	50-150%
	13C7-PFUnDA	100%	50-150%
	13C2-PFDoDA	109%	50-150%
	13C2-PFTeDA	97%	50-150%
	13C3-PFBS	107%	50-150%

Instrument Blank

Job Number: FC3766
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S4Q616-IBLK	4Q42663.D	1	04/08/23	AL	n/a	n/a	S4Q616

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC3766-1, FC3766-2

CAS No.	ID Standard Recoveries		Limits
	13C3-PFHxS	93%	50-150%
	13C8-PFOS	98%	50-150%
	13C8-FOSA	118%	50-150%
	d3-MeFOSAA	120%	50-150%
	d5-EtFOSAA	123%	50-150%
	13C2-4:2FTS	86%	50-150%
	13C2-6:2FTS	92%	50-150%
	13C2-8:2FTS	92%	50-150%

Instrument Blank

Job Number: FC3766
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S4Q619-IBLK	4Q42835.D	1	04/12/23	AL	n/a	n/a	S4Q619

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC3766-1, FC3766-2

CAS No.	Compound	Result	RL	MDL	Units	Q
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	109%	50-150%
	13C5-PFPeA	111%	50-150%
	13C5-PFHxA	109%	50-150%
	13C4-PFHpA	107%	50-150%
	13C8-PFOA	116%	50-150%
	13C9-PFNA	121%	50-150%
	13C6-PFDA	116%	50-150%
	13C7-PFUnDA	113%	50-150%
	13C2-PFDoDA	112%	50-150%
	13C2-PFTeDA	110%	50-150%
	13C3-PFBS	116%	50-150%
	13C3-PFHxS	113%	50-150%
	13C8-PFOS	118%	50-150%
	13C8-FOSA	120%	50-150%
	d3-MeFOSAA	135%	50-150%
	d5-EtFOSAA	124%	50-150%
	13C2-4:2FTS	96%	50-150%
	13C2-6:2FTS	107%	50-150%
	13C2-8:2FTS	103%	50-150%

Instrument Blank

Job Number: FC3766
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S4Q620-IBLK	4Q42902.D	1	04/13/23	AL	n/a	n/a	S4Q620

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC3766-1, FC3766-2

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	105%	50-150%
	13C5-PFPeA	107%	50-150%
	13C5-PFHxA	105%	50-150%
	13C4-PFHpA	104%	50-150%
	13C8-PFOA	108%	50-150%
	13C9-PFNA	114%	50-150%
	13C6-PFDA	112%	50-150%
	13C7-PFUnDA	108%	50-150%
	13C2-PFDoDA	107%	50-150%
	13C2-PFTeDA	109%	50-150%
	13C3-PFBS	112%	50-150%
	13C3-PFHxS	109%	50-150%
	13C8-PFOS	112%	50-150%
	13C8-FOSA	120%	50-150%
	d3-MeFOSAA	138%	50-150%
	d5-EtFOSAA	128%	50-150%
	13C2-4:2FTS	92%	50-150%
	13C2-6:2FTS	102%	50-150%
	13C2-8:2FTS	99%	50-150%

Method Blank Summary

Job Number: FC3766
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP96274-MB	4Q42699.D	1	04/08/23	AL	04/06/23	OP96274	S4Q616

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC3766-1, FC3766-2

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.016	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0080	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0080	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0080	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0080	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0080	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0080	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0080	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0080	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0080	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0080	0.0020	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0080	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0080	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0080	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0080	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0080	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0080	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0080	0.0020	ug/l	
754-91-6	PFOSA	ND	0.0080	0.0020	ug/l	
2355-31-9	MeFOSAA	ND	0.016	0.0040	ug/l	
2991-50-6	EtFOSAA	ND	0.016	0.0040	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.016	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.016	0.0040	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.016	0.0040	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.016	0.0040	ug/l	
919005-14-4	ADONA	ND	0.016	0.0040	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.016	0.0040	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.016	0.0040	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	99%	50-150%
	13C5-PFPeA	91%	50-150%
	13C5-PFHxA	81%	50-150%
	13C4-PFHpA	76%	50-150%

Method Blank Summary

Job Number: FC3766
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP96274-MB	4Q42699.D	1	04/08/23	AL	04/06/23	OP96274	S4Q616

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC3766-1, FC3766-2

CAS No.	ID Standard Recoveries		Limits
	13C8-PFOA	83%	50-150%
	13C9-PFNA	91%	50-150%
	13C6-PFDA	89%	50-150%
	13C7-PFUnDA	81%	50-150%
	13C2-PFDoDA	83%	50-150%
	13C2-PFTeDA	63%	50-150%
	13C3-PFBS	88%	50-150%
	13C3-PFHxS	76%	50-150%
	13C8-PFOS	83%	50-150%
	13C8-FOSA	80%	50-150%
	d3-MeFOSAA	100%	50-150%
	d5-EtFOSAA	98%	50-150%
	13C2-4:2FTS	73%	50-150%
	13C2-6:2FTS	77%	50-150%
	13C2-8:2FTS	78%	50-150%
	13C3-HFPO-DA	72%	50-150%

Blank Spike Summary

Job Number: FC3766
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP96274-BS	4Q42698.D	1	04/08/23	AL	04/06/23	OP96274	S4Q616

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC3766-1, FC3766-2

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
375-22-4	Perfluorobutanoic acid	0.16	0.140	88	73-129
2706-90-3	Perfluoropentanoic acid	0.16	0.148	93	72-129
307-24-4	Perfluorohexanoic acid	0.16	0.148	93	72-129
375-85-9	Perfluoroheptanoic acid	0.16	0.148	93	72-130
335-67-1	Perfluorooctanoic acid	0.16	0.145	91	71-133
375-95-1	Perfluorononanoic acid	0.16	0.142	89	69-130
335-76-2	Perfluorodecanoic acid	0.16	0.149	93	71-129
2058-94-8	Perfluoroundecanoic acid	0.16	0.148	93	69-133
307-55-1	Perfluorododecanoic acid	0.16	0.156	98	72-134
72629-94-8	Perfluorotridecanoic acid	0.16	0.124	78	65-144
376-06-7	Perfluorotetradecanoic acid	0.16	0.167	104	71-132
375-73-5	Perfluorobutanesulfonic acid	0.16	0.147	92	72-130
2706-91-4	Perfluoropentanesulfonic acid	0.16	0.133	83	71-127
355-46-4	Perfluorohexanesulfonic acid	0.16	0.161	101	68-131
375-92-8	Perfluoroheptanesulfonic acid	0.16	0.154	96	69-134
1763-23-1	Perfluorooctanesulfonic acid	0.16	0.145	91	65-140
68259-12-1	Perfluorononanesulfonic acid	0.16	0.149	93	69-127
335-77-3	Perfluorodecanesulfonic acid	0.16	0.154	96	53-142
754-91-6	PFOSA	0.16	0.163	102	67-137
2355-31-9	MeFOSAA	0.16	0.149	93	65-136
2991-50-6	EtFOSAA	0.16	0.156	98	61-135
757124-72-4	4:2 Fluorotelomer sulfonate	0.16	0.168	105	63-143
27619-97-2	6:2 Fluorotelomer sulfonate	0.16	0.169	106	64-140
39108-34-4	8:2 Fluorotelomer sulfonate	0.16	0.170	106	67-138
13252-13-6	HFPO-DA (GenX)	0.16	0.141	88	60-140
919005-14-4	ADONA	0.16	0.143	89	60-140
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.16	0.130	81	60-140
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.16	0.145	91	60-140

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFBA	104%	50-150%
	13C5-PFPeA	96%	50-150%
	13C5-PFHxA	84%	50-150%
	13C4-PFHpA	79%	50-150%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FC3766
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP96274-BS	4Q42698.D	1	04/08/23	AL	04/06/23	OP96274	S4Q616

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC3766-1, FC3766-2

CAS No.	ID Standard Recoveries	BSP	Limits
	13C8-PFOA	83%	50-150%
	13C9-PFNA	86%	50-150%
	13C6-PFDA	87%	50-150%
	13C7-PFUnDA	84%	50-150%
	13C2-PFDoDA	83%	50-150%
	13C2-PFTeDA	61%	50-150%
	13C3-PFBS	92%	50-150%
	13C3-PFHxS	79%	50-150%
	13C8-PFOS	82%	50-150%
	13C8-FOSA	67%	50-150%
	d3-MeFOSAA	95%	50-150%
	d5-EtFOSAA	94%	50-150%
	13C2-4:2FTS	86%	50-150%
	13C2-6:2FTS	85%	50-150%
	13C2-8:2FTS	87%	50-150%
	13C3-HFPO-DA	77%	50-150%

* = Outside of Control Limits.

Matrix Spike Summary

Job Number: FC3766
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP96274-MS	4Q42705.D	1	04/08/23	AL	04/06/23	OP96274	S4Q616
FC3765-77	4Q42704.D	1	04/08/23	AL	04/06/23	OP96274	S4Q616
FC3765-77 [a]	4Q42881.D	5	04/13/23	AL	04/06/23	OP96274	S4Q619

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC3766-1, FC3766-2

CAS No.	Compound	FC3765-77 ug/l	Q	Spike ug/l	MS ug/l	MS %	Limits
375-22-4	Perfluorobutanoic acid	0.0075	J	0.167	0.154	88	73-129
2706-90-3	Perfluoropentanoic acid	0.0025	J	0.167	0.143	84	72-129
307-24-4	Perfluorohexanoic acid	0.0083	U	0.167	0.140	84	72-129
375-85-9	Perfluoroheptanoic acid	0.0022	J	0.167	0.141	83	72-130
335-67-1	Perfluorooctanoic acid	0.0030	J	0.167	0.141	83	71-133
375-95-1	Perfluorononanoic acid	0.0083	U	0.167	0.140	84	69-130
335-76-2	Perfluorodecanoic acid	0.0083	U	0.167	0.144	86	71-129
2058-94-8	Perfluoroundecanoic acid	0.0083	U	0.167	0.147	88	69-133
307-55-1	Perfluorododecanoic acid	0.0083	U	0.167	0.148	89	72-134
72629-94-8	Perfluorotridecanoic acid	0.0083	U	0.167	0.116	70	65-144
376-06-7	Perfluorotetradecanoic acid	0.042	U [b]	0.167	0.150	90	71-132
375-73-5	Perfluorobutanesulfonic acid	0.0026	J	0.167	0.142	84	72-130
2706-91-4	Perfluoropentanesulfonic acid	0.0083	U	0.167	0.152	91	71-127
355-46-4	Perfluorohexanesulfonic acid	0.0038	J	0.167	0.154	90	68-131
375-92-8	Perfluoroheptanesulfonic acid	0.0083	U	0.167	0.171	103	69-134
1763-23-1	Perfluorooctanesulfonic acid	0.0187		0.167	0.161	85	65-140
68259-12-1	Perfluorononanesulfonic acid	0.0083	U	0.167	0.138	83	69-127
335-77-3	Perfluorodecanesulfonic acid	0.0083	U	0.167	0.150	90	53-142
754-91-6	PFOSA	0.042	U [b]	0.167	0.145	87	67-137
2355-31-9	MeFOSAA	0.017	U	0.167	0.139	83	65-136
2991-50-6	EtFOSAA	0.017	U	0.167	0.149	89	61-135
757124-72-4	4:2 Fluorotelomer sulfonate	0.017	U	0.167	0.161	97	63-143
27619-97-2	6:2 Fluorotelomer sulfonate	0.017	U	0.167	0.160	96	64-140
39108-34-4	8:2 Fluorotelomer sulfonate	0.017	U	0.167	0.166	100	67-138
13252-13-6	HFPO-DA (GenX)	0.017	U	0.167	0.135	81	60-140
919005-14-4	ADONA	0.017	U	0.167	0.128	77	60-140
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.017	U	0.167	0.117	70	60-140
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.017	U	0.167	0.141	85	60-140

CAS No.	ID Standard Recoveries	MS	FC3765-77	FC3765-77	Limits
	13C4-PFBA	44%* [c]	44%* [c]	50%	50-150%
	13C5-PFPeA	60%	59%	68%	50-150%
	13C5-PFHxA	61%	59%	68%	50-150%
	13C4-PFHpA	59%	57%	68%	50-150%

* = Outside of Control Limits.

Matrix Spike Summary

Job Number: FC3766
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP96274-MS	4Q42705.D	1	04/08/23	AL	04/06/23	OP96274	S4Q616
FC3765-77	4Q42704.D	1	04/08/23	AL	04/06/23	OP96274	S4Q616
FC3765-77 [a]	4Q42881.D	5	04/13/23	AL	04/06/23	OP96274	S4Q619

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC3766-1, FC3766-2

CAS No.	ID Standard Recoveries	MS	FC3765-77	FC3765-77	Limits
	13C8-PFOA	65%	66%	75%	50-150%
	13C9-PFNA	63%	65%	78%	50-150%
	13C6-PFDA	61%	65%	70%	50-150%
	13C7-PFUnDA	54%	56%	59%	50-150%
	13C2-PFDoDA	57%	57%	54%	50-150%
	13C2-PFTeDA	37%* [c]	36%* [c]	39%* [c]	50-150%
	13C3-PFBS	59%	59%	74%	50-150%
	13C3-PFHxS	63%	61%	65%	50-150%
	13C8-PFOS	55%	59%	71%	50-150%
	13C8-FOSA	56%	29%* [c]	39%* [c]	50-150%
	d3-MeFOSAA	67%	67%	82%	50-150%
	d5-EtFOSAA	68%	66%	67%	50-150%
	13C2-4:2FTS	60%	52%	61%	50-150%
	13C2-6:2FTS	71%	65%	68%	50-150%
	13C2-8:2FTS	62%	58%	64%	50-150%
	13C3-HFPO-DA	56%	52%	58%	50-150%

(a) Dilution required (ID recovery standard failure).
(b) Result is from Run #2.
(c) Outside control limits.

* = Outside of Control Limits.

Duplicate Summary

Job Number: FC3766
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP96274-DUP	4Q42926.D	100	04/13/23	AL	04/06/23	OP96274	S4Q620
FC3766-1	4Q42720.D	1	04/09/23	AL	04/06/23	OP96274	S4Q616
FC3766-1	4Q42893.D	10	04/13/23	AL	04/06/23	OP96274	S4Q619

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC3766-1, FC3766-2

CAS No.	Compound	FC3766-1 ug/l	Q	DUP ug/l	Q	RPD	Limits
375-22-4	Perfluorobutanoic acid	34.8 [a]		28.0		22	30
2706-90-3	Perfluoropentanoic acid	0.0227 [b]	I	ND		200*	30
307-24-4	Perfluorohexanoic acid	0.0213 [b]	I	ND		200*	30
375-85-9	Perfluoroheptanoic acid	0.0088		ND		200*	30
335-67-1	Perfluorooctanoic acid	0.0176		ND		200*	30
375-95-1	Perfluorononanoic acid	0.0080	U	ND		nc	30
335-76-2	Perfluorodecanoic acid	0.0080	U	ND		nc	30
2058-94-8	Perfluoroundecanoic acid	0.0080	U	ND		nc	30
307-55-1	Perfluorododecanoic acid	0.0080	U	ND		nc	30
72629-94-8	Perfluorotridecanoic acid	0.0080	U	ND		nc	30
376-06-7	Perfluorotetradecanoic acid	0.0080	U	ND		nc	30
375-73-5	Perfluorobutanesulfonic acid	0.080	U [b]	ND		nc	30
2706-91-4	Perfluoropentanesulfonic acid	0.080	U [b]	ND		nc	30
355-46-4	Perfluorohexanesulfonic acid	0.0053	I	ND		200*	30
375-92-8	Perfluoroheptanesulfonic acid	0.0080	U	ND		nc	30
1763-23-1	Perfluorooctanesulfonic acid	0.0072	I	ND		200*	30
68259-12-1	Perfluorononanesulfonic acid	0.0080	U	ND		nc	30
335-77-3	Perfluorodecanesulfonic acid	0.0080	U	ND		nc	30
754-91-6	PFOSA	0.080	U [b]	ND		nc	30
2355-31-9	MeFOSAA	0.016	U	ND		nc	30
2991-50-6	EtFOSAA	0.016	U	ND		nc	30
757124-72-4	4:2 Fluorotelomer sulfonate	0.016	U	ND		nc	30
27619-97-2	6:2 Fluorotelomer sulfonate	0.016	U	ND		nc	30
39108-34-4	8:2 Fluorotelomer sulfonate	0.016	U	ND		nc	30
13252-13-6	HFPO-DA (GenX)	0.16	U [b]	ND		nc	30
919005-14-4	ADONA	0.016	U	ND		nc	30
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.016	U	ND		nc	30
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.016	U	ND		nc	30

CAS No.	ID Standard Recoveries	DUP	FC3766-1	FC3766-1	Limits
	13C4-PFBA	114%	26%* [c]	70%	50-150%
	13C5-PFPeA	112%	43%* [c]	71%	50-150%
	13C5-PFHxA	110%	48%* [c]	73%	50-150%
	13C4-PFHpA	111%	53%	75%	50-150%

* = Outside of Control Limits.

Duplicate Summary

Job Number: FC3766
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP96274-DUP	4Q42926.D	100	04/13/23	AL	04/06/23	OP96274	S4Q620
FC3766-1	4Q42720.D	1	04/09/23	AL	04/06/23	OP96274	S4Q616
FC3766-1	4Q42893.D	10	04/13/23	AL	04/06/23	OP96274	S4Q619

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC3766-1, FC3766-2

CAS No.	ID Standard Recoveries	DUP	FC3766-1	FC3766-1	Limits
	13C8-PFOA	118%	67%	87%	50-150%
	13C9-PFNA	123%	71%	92%	50-150%
	13C6-PFDA	121%	75%	85%	50-150%
	13C7-PFUnDA	117%	67%	70%	50-150%
	13C2-PFDoDA	117%	72%	66%	50-150%
	13C2-PFTeDA	112%	60%	54%	50-150%
	13C3-PFBS	114%	44%* c	76%	50-150%
	13C3-PFHxS	111%	59%	79%	50-150%
	13C8-PFOS	112%	60%	72%	50-150%
	13C8-FOSA	138%	26%* c	45%* c	50-150%
	d3-MeFOSAA	154%* c	95%	111%	50-150%
	d5-EtFOSAA	151%* c	91%	92%	50-150%
	13C2-4:2FTS	97%	50%	69%	50-150%
	13C2-6:2FTS	110%	79%	85%	50-150%
	13C2-8:2FTS	106%	75%	76%	50-150%
	13C3-HFPO-DA	97%	43%* c	67%	50-150%

(a) Result is from Run #3.
(b) Result is from Run #2.
(c) Outside control limits.

* = Outside of Control Limits.

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

e-Hardcopy 2.0
Automated Report

Technical Report for

Tetra Tech NUS

KSC-CRCA

112G08970

SGS Job Number: FC5657

Sampling Date: 04/28/23

Report to:

Tetra-Tech, Inc.
661 Andersen Drive Foster Plaza 7
Pittsburgh, PA 15220
amy.thomson@tetratech.com; carrie.stock@tetratech.com;
alex.murphy@tetratech.com
ATTN: Amy Thomson

Total number of pages in report: 34

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

Norm Farmer
Technical Director

Client Service contact: Andrea Colby 407-425-6700

Certifications: FL(E83510), LA(03051), KS(E-10327), NC(573), NJ(FL002), NY(12022), SC(96038001) DoD ELAP(ANAB L2229), AZ(AZ0806), CA(2937), TX(T104704404), PA(68-03573), VA(460177), AL, AK, AR, CT, IA, KY, MA, MI. MS, ND, NH, NV, OK, OR, IL, UT, VT, WA, WI, WV

This report shall not be reproduced, except in its entirety, without the written approval of SGS.
Test results relate only to samples analyzed.

SGS is the sole authority for authorizing edits or modifications to this document.
Unauthorized modification of this report is strictly prohibited.
Review standard terms at: http://www.sgs.com/en/terms-and-conditions

Please share your ideas about how we can serve you better at:
EHS.US.CustomerCare@sgs.com

Sections: 1 2 3 4 5 6 7

Table of Contents

Section 1: Sample Summary **3**
Section 2: Case Narrative/Conformance Summary **4**
Section 3: Summary of Hits **5**
Section 4: Sample Results **6**
4.1: FC5657-1: CRCA-ASEFFLUENT-20230428 7
4.2: FC5657-2: CRCA-ASINFLUENT-20230428 11
Section 5: Misc. Forms **15**
5.1: Chain of Custody 16
Section 6: MS Volatiles - QC Data Summaries **18**
6.1: Method Blank Summary 19
6.2: Blank Spike Summary 21
6.3: Matrix Spike/Matrix Spike Duplicate Summary 23
Section 7: MS Semi-volatiles - QC Data Summaries **25**
7.1: Method Blank Summary 26
7.2: Blank Spike Summary 31
7.3: Matrix Spike/Matrix Spike Duplicate Summary 33

SGS North America Inc.

Sample Summary

Tetra Tech NUS

Job No: FC5657

KSC-CRCA
Project No: 112G08970

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
FC5657-1	04/28/23	10:00	DA	04/28/23	AQ	Ground Water	CRCA-ASEFFLUENT-20230428
FC5657-2	04/28/23	10:20	DA	04/28/23	AQ	Ground Water	CRCA-ASINFLUENT-20230428

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: Tetra Tech NUS **Job No:** FC5657

Site: KSC-CRCA **Report Date:** 5/18/2023 4:18:15 PM

On 04/28/2023, 2 Sample(s), 0 Trip Blank(s) and 0 Field Blank(s) were received at SGS North America Inc - Orlando. at a maximum corrected temperature of 2.6 C. Samples were intact and chemically preserved, unless noted below. A SGS North America Inc. - Orlando Job Number of FC5657 was assigned to the project.

Laboratory sample ID, client sample ID and dates of sample collection are detailed in the report's Results Summary Section. Specified quality control criteria were achieved for this job except as noted below. For more information, please refer to the analytical results and QC summary pages.

MS Volatiles By Method SW846 8260D

Matrix: AQ **Batch ID:** V1A1806

Sample(s) FC5728-14MS, FC5728-14MSD were used as the QC samples indicated.

Matrix Spike Duplicate Recovery(s) for 1,1,1-Trichloroethane, 1,1-Dichloroethylene, 1,2-Dichloropropane, Benzene, Carbon Tetrachloride, Chloroethane, Chloroform, cis-1,2-Dichloroethylene, Dichlorodifluoromethane, Ethylbenzene, Freon 113, Methyl Bromide, Methyl Tert Butyl Ether, Methylcyclohexane, Styrene, Toluene, trans-1,2-Dichloroethylene, Trichloroethylene, Trichlorofluoromethane are outside control limits. Probable cause is due to matrix interference.

RPD(s) for MSD for 1,1,1-Trichloroethane, 1,1,2,2-Tetrachloroethane, 1,1,2-Trichloroethane, 1,1-Dichloroethane, 1,2-Dibromoethane, 1,2-Dichlorobenzene, 1,2-Dichloroethane, 1,2-Dichloropropane, 1,3-Dichlorobenzene, 4-Methyl-2-pentanone (MIBK), Benzene, Chlorobenzene, Chloroethane, Chloroform, cis-1,2-Dichloroethylene, Dichlorodifluoromethane, Ethylbenzene, Isopropylbenzene, Methyl Tert Butyl Ether, Tetrachloroethylene, Toluene, Trichloroethylene, Vinyl Chloride, Xylene (total) are outside control limits for sample FC5728-14MSD. Probable cause is due to

V1A1806-MB: Sample was treated with an anti-foaming agent.

FC5657-1 for Dichlorodifluoromethane: Associated ICV outside control limits high, however sample ND.

FC5657-1 for Trichlorofluoromethane: Associated CCV outside control limits high, sample is ND.

FC5657-2 for Dichlorodifluoromethane: Associated ICV outside control limits high, however sample ND.

FC5657-2 for Trichlorofluoromethane: Associated CCV outside control limits high, sample is ND.

MS Semi-volatiles By Method EPA 537M QSM5.3 B-15

Matrix: AQ **Batch ID:** OP96783

Sample(s) FC5654-10MS, FC5654-10MSD were used as the QC samples indicated.

Sample(s) FC5657-1, FC5657-2 have surrogates outside control limits.

FC5657-1 for 13C2-PFTeDA: Outside control limits.

FC5657-1 for 13C4-PFBA: Outside control limits.

FC5657-1 for Perfluorotetradecanoic acid: Associated ID Standard outside control limits.

FC5657-2 for 13C4-PFBA: Outside control limits.

SGS North America Inc. - Orlando certifies that data reported for samples received, listed on the associated custody chain or analytical task order, were produced to specifications meeting the Quality System precision, accuracy and completeness objectives except as noted. Estimated non-standard method measurement uncertainty data is available on request, based on quality control bias and implicit for standard methods. Acceptable uncertainty requires tested parameter quality control data to meet method criteria. SGS North America Inc.- Orlando is not responsible for data quality assumptions if partial reports are used and recommends that this report be used in its entirety.

Narrative prepared by:

_____

Kim Benham, Client Services *(Signature on File)*

Summary of Hits

Job Number: FC5657
Account: Tetra Tech NUS
Project: KSC-CRCA
Collected: 04/28/23

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	PQL	MDL	Units	Method
FC5657-1	**CRCA-ASEFFLUENT-20230428**					
Perfluorobutanoic acid		17.1	1.6	0.40	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid		0.0187	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0164	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.0070 I	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0134	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0041 I	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0050 I	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
FC5657-2	**CRCA-ASINFLUENT-20230428**					
Perfluorobutanoic acid		23.2	1.6	0.40	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid		0.0187	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0162	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.0069 I	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0141	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0041 I	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0063 I	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID:	CRCA-ASEFFLUENT-20230428		
Lab Sample ID:	FC5657-1	**Date Sampled:**	04/28/23
Matrix:	AQ - Ground Water	**Date Received:**	04/28/23
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	KSC-CRCA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	1A45897.D	1	05/05/23 06:22	JW	n/a	n/a	V1A1806
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL 4.2 List

CAS No.	Compound	Result	PQL	MDL	Units	Q
67-64-1	Acetone	10 U	25	10	ug/l	
71-43-2	Benzene	0.31 U	1.0	0.31	ug/l	
75-27-4	Bromodichloromethane	0.24 U	1.0	0.24	ug/l	
75-25-2	Bromoform	0.41 U	1.0	0.41	ug/l	
78-93-3	2-Butanone (MEK)	2.0 U	5.0	2.0	ug/l	
75-15-0	Carbon Disulfide	0.53 U	2.0	0.53	ug/l	
56-23-5	Carbon Tetrachloride	0.36 U	1.0	0.36	ug/l	
108-90-7	Chlorobenzene	0.20 U	1.0	0.20	ug/l	
75-00-3	Chloroethane	0.67 U	2.0	0.67	ug/l	
67-66-3	Chloroform	0.30 U	1.0	0.30	ug/l	
110-82-7	Cyclohexane	0.39 U	1.0	0.39	ug/l	
124-48-1	Dibromochloromethane	0.28 U	1.0	0.28	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	1.0 U	5.0	1.0	ug/l	
106-93-4	1,2-Dibromoethane	0.28 U	2.0	0.28	ug/l	
75-71-8	Dichlorodifluoromethane [a]	0.50 U	2.0	0.50	ug/l	
95-50-1	1,2-Dichlorobenzene	0.32 U	1.0	0.32	ug/l	
541-73-1	1,3-Dichlorobenzene	0.22 U	1.0	0.22	ug/l	
106-46-7	1,4-Dichlorobenzene	0.26 U	1.0	0.26	ug/l	
75-34-3	1,1-Dichloroethane	0.34 U	1.0	0.34	ug/l	
107-06-2	1,2-Dichloroethane	0.31 U	1.0	0.31	ug/l	
75-35-4	1,1-Dichloroethylene	0.32 U	1.0	0.32	ug/l	
156-59-2	cis-1,2-Dichloroethylene	0.28 U	1.0	0.28	ug/l	
156-60-5	trans-1,2-Dichloroethylene	0.22 U	1.0	0.22	ug/l	
78-87-5	1,2-Dichloropropane	0.43 U	1.0	0.43	ug/l	
10061-01-5	cis-1,3-Dichloropropene	0.29 U	1.0	0.29	ug/l	
10061-02-6	trans-1,3-Dichloropropene	0.21 U	1.0	0.21	ug/l	
100-41-4	Ethylbenzene	0.36 U	1.0	0.36	ug/l	
76-13-1	Freon 113	0.48 U	1.0	0.48	ug/l	
591-78-6	2-Hexanone	2.0 U	10	2.0	ug/l	
98-82-8	Isopropylbenzene	0.22 U	1.0	0.22	ug/l	
79-20-9	Methyl Acetate	5.0 U	20	5.0	ug/l	
74-83-9	Methyl Bromide	2.0 U	5.0	2.0	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-ASEFFLUENT-20230428		
Lab Sample ID:	FC5657-1	**Date Sampled:**	04/28/23
Matrix:	AQ - Ground Water	**Date Received:**	04/28/23
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	KSC-CRCA		

VOA TCL 4.2 List

CAS No.	Compound	Result	PQL	MDL	Units	Q
74-87-3	Methyl Chloride	0.50 U	2.0	0.50	ug/l	
108-87-2	Methylcyclohexane	0.44 U	1.0	0.44	ug/l	
75-09-2	Methylene Chloride	2.0 U	5.0	2.0	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	1.0 U	5.0	1.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	0.23 U	1.0	0.23	ug/l	
100-42-5	Styrene	0.22 U	1.0	0.22	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	0.30 U	1.0	0.30	ug/l	
127-18-4	Tetrachloroethylene	0.22 U	1.0	0.22	ug/l	
108-88-3	Toluene	0.30 U	1.0	0.30	ug/l	
120-82-1	1,2,4-Trichlorobenzene	0.50 U	2.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	0.25 U	1.0	0.25	ug/l	
79-00-5	1,1,2-Trichloroethane	0.47 U	1.0	0.47	ug/l	
79-01-6	Trichloroethylene	0.35 U	1.0	0.35	ug/l	
75-69-4	Trichlorofluoromethane [b]	0.50 U	2.0	0.50	ug/l	
75-01-4	Vinyl Chloride	0.41 U	1.0	0.41	ug/l	
1330-20-7	Xylene (total)	0.72 U	3.0	0.72	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	101%		83-118%
17060-07-0	1,2-Dichloroethane-D4	99%		79-125%
2037-26-5	Toluene-D8	97%		85-112%
460-00-4	4-Bromofluorobenzene	100%		83-118%

(a) Associated ICV outside control limits high, however sample ND.
(b) Associated CCV outside control limits high, sample is ND.

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-ASEFFLUENT-20230428		
Lab Sample ID:	FC5657-1	**Date Sampled:**	04/28/23
Matrix:	AQ - Ground Water	**Date Received:**	04/28/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	KSC-CRCA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3Q76743.D	1	05/17/23 11:16	JL	05/08/23 10:30	OP96783	S3Q1059
Run #2	3Q76772.D	100	05/17/23 20:03	JL	05/08/23 10:30	OP96783	S3Q1060

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2	125 ml	1.0 ml

CAS No.	Compound	Result	PQL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	17.1 [a]	1.6	0.40	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0187	0.0080	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	0.0164	0.0080	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0070	0.0080	0.0020	ug/l	I
335-67-1	Perfluorooctanoic acid	0.0134	0.0080	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0020 U	0.0080	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid [b]	0.0020 U	0.0080	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS						
375-73-5	Perfluorobutanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0041	0.0080	0.0020	ug/l	I
375-92-8	Perfluoroheptanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0050	0.0080	0.0020	ug/l	I
68259-12-1	Perfluorononanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA	0.0020 U	0.0080	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	0.0040 U	0.016	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0040 U	0.016	0.0040	ug/l	
FLUOROTELOMER SULFONATES						
757124-72-4	4:2 Fluorotelomer sulfonate	0.0040 U	0.016	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0040 U	0.016	0.0040	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-ASEFFLUENT-20230428		
Lab Sample ID:	FC5657-1	**Date Sampled:**	04/28/23
Matrix:	AQ - Ground Water	**Date Received:**	04/28/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	KSC-CRCA		

CAS No.	Compound	Result	PQL	MDL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0040 U	0.016	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES						
13252-13-6	HFPO-DA (GenX)	0.0040 U	0.016	0.0040	ug/l	
919005-14-4	ADONA	0.0040 U	0.016	0.0040	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0040 U	0.016	0.0040	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0040 U	0.016	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	34% [c]	112%	50-150%
	13C5-PFPeA	71%	114%	50-150%
	13C5-PFHxA	81%	113%	50-150%
	13C4-PFHpA	94%	114%	50-150%
	13C8-PFOA	110%	117%	50-150%
	13C9-PFNA	109%	115%	50-150%
	13C6-PFDA	95%	108%	50-150%
	13C7-PFUnDA	86%	119%	50-150%
	13C2-PFDoDA	82%	115%	50-150%
	13C2-PFTeDA	41% [c]	117%	50-150%
	13C3-PFBS	83%	113%	50-150%
	13C3-PFHxS	94%	116%	50-150%
	13C8-PFOS	96%	114%	50-150%
	13C8-FOSA	67%	121%	50-150%
	d3-MeFOSAA	96%	118%	50-150%
	d5-EtFOSAA	94%	123%	50-150%
	13C2-4:2FTS	79%	105%	50-150%
	13C2-6:2FTS	112%	108%	50-150%
	13C2-8:2FTS	88%	107%	50-150%
	13C3-HFPO-DA	79%	112%	50-150%

(a) Result is from Run# 2
(b) Associated ID Standard outside control limits.
(c) Outside control limits.

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-ASINFLUENT-20230428		
Lab Sample ID:	FC5657-2	**Date Sampled:**	04/28/23
Matrix:	AQ - Ground Water	**Date Received:**	04/28/23
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	KSC-CRCA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	1A45898.D	1	05/05/23 06:46	JW	n/a	n/a	V1A1806
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL 4.2 List

CAS No.	Compound	Result	PQL	MDL	Units	Q
67-64-1	Acetone	10 U	25	10	ug/l	
71-43-2	Benzene	0.31 U	1.0	0.31	ug/l	
75-27-4	Bromodichloromethane	0.24 U	1.0	0.24	ug/l	
75-25-2	Bromoform	0.41 U	1.0	0.41	ug/l	
78-93-3	2-Butanone (MEK)	2.0 U	5.0	2.0	ug/l	
75-15-0	Carbon Disulfide	0.53 U	2.0	0.53	ug/l	
56-23-5	Carbon Tetrachloride	0.36 U	1.0	0.36	ug/l	
108-90-7	Chlorobenzene	0.20 U	1.0	0.20	ug/l	
75-00-3	Chloroethane	0.67 U	2.0	0.67	ug/l	
67-66-3	Chloroform	0.30 U	1.0	0.30	ug/l	
110-82-7	Cyclohexane	0.39 U	1.0	0.39	ug/l	
124-48-1	Dibromochloromethane	0.28 U	1.0	0.28	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	1.0 U	5.0	1.0	ug/l	
106-93-4	1,2-Dibromoethane	0.28 U	2.0	0.28	ug/l	
75-71-8	Dichlorodifluoromethane [a]	0.50 U	2.0	0.50	ug/l	
95-50-1	1,2-Dichlorobenzene	0.32 U	1.0	0.32	ug/l	
541-73-1	1,3-Dichlorobenzene	0.22 U	1.0	0.22	ug/l	
106-46-7	1,4-Dichlorobenzene	0.26 U	1.0	0.26	ug/l	
75-34-3	1,1-Dichloroethane	0.34 U	1.0	0.34	ug/l	
107-06-2	1,2-Dichloroethane	0.31 U	1.0	0.31	ug/l	
75-35-4	1,1-Dichloroethylene	0.32 U	1.0	0.32	ug/l	
156-59-2	cis-1,2-Dichloroethylene	0.28 U	1.0	0.28	ug/l	
156-60-5	trans-1,2-Dichloroethylene	0.22 U	1.0	0.22	ug/l	
78-87-5	1,2-Dichloropropane	0.43 U	1.0	0.43	ug/l	
10061-01-5	cis-1,3-Dichloropropene	0.29 U	1.0	0.29	ug/l	
10061-02-6	trans-1,3-Dichloropropene	0.21 U	1.0	0.21	ug/l	
100-41-4	Ethylbenzene	0.36 U	1.0	0.36	ug/l	
76-13-1	Freon 113	0.48 U	1.0	0.48	ug/l	
591-78-6	2-Hexanone	2.0 U	10	2.0	ug/l	
98-82-8	Isopropylbenzene	0.22 U	1.0	0.22	ug/l	
79-20-9	Methyl Acetate	5.0 U	20	5.0	ug/l	
74-83-9	Methyl Bromide	2.0 U	5.0	2.0	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-ASINFLUENT-20230428		
Lab Sample ID:	FC5657-2	**Date Sampled:**	04/28/23
Matrix:	AQ - Ground Water	**Date Received:**	04/28/23
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	KSC-CRCA		

VOA TCL 4.2 List

CAS No.	Compound	Result	PQL	MDL	Units	Q
74-87-3	Methyl Chloride	0.50 U	2.0	0.50	ug/l	
108-87-2	Methylcyclohexane	0.44 U	1.0	0.44	ug/l	
75-09-2	Methylene Chloride	2.0 U	5.0	2.0	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	1.0 U	5.0	1.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	0.23 U	1.0	0.23	ug/l	
100-42-5	Styrene	0.22 U	1.0	0.22	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	0.30 U	1.0	0.30	ug/l	
127-18-4	Tetrachloroethylene	0.22 U	1.0	0.22	ug/l	
108-88-3	Toluene	0.30 U	1.0	0.30	ug/l	
120-82-1	1,2,4-Trichlorobenzene	0.50 U	2.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	0.25 U	1.0	0.25	ug/l	
79-00-5	1,1,2-Trichloroethane	0.47 U	1.0	0.47	ug/l	
79-01-6	Trichloroethylene	0.35 U	1.0	0.35	ug/l	
75-69-4	Trichlorofluoromethane [b]	0.50 U	2.0	0.50	ug/l	
75-01-4	Vinyl Chloride	0.41 U	1.0	0.41	ug/l	
1330-20-7	Xylene (total)	0.72 U	3.0	0.72	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	101%		83-118%
17060-07-0	1,2-Dichloroethane-D4	98%		79-125%
2037-26-5	Toluene-D8	96%		85-112%
460-00-4	4-Bromofluorobenzene	101%		83-118%

(a) Associated ICV outside control limits high, however sample ND.
(b) Associated CCV outside control limits high, sample is ND.

U = Not detected MDL = Method Detection Limit
PQL = Practical Quantitation Limit
L = Indicates value exceeds calibration range
I = Result > = MDL but < PQL J = Estimated value
V = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-ASINFLUENT-20230428		
Lab Sample ID:	FC5657-2	**Date Sampled:**	04/28/23
Matrix:	AQ - Ground Water	**Date Received:**	04/28/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	KSC-CRCA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3Q76744.D	1	05/17/23 11:33	JL	05/08/23 10:30	OP96783	S3Q1059
Run #2	3Q76773.D	100	05/17/23 20:19	JL	05/08/23 10:30	OP96783	S3Q1060

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2	125 ml	1.0 ml

CAS No.	Compound	Result	PQL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	23.2 [a]	1.6	0.40	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0187	0.0080	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	0.0162	0.0080	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0069	0.0080	0.0020	ug/l	I
335-67-1	Perfluorooctanoic acid	0.0141	0.0080	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0020 U	0.0080	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS						
375-73-5	Perfluorobutanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0041	0.0080	0.0020	ug/l	I
375-92-8	Perfluoroheptanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0063	0.0080	0.0020	ug/l	I
68259-12-1	Perfluorononanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA	0.0020 U	0.0080	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	0.0040 U	0.016	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0040 U	0.016	0.0040	ug/l	
FLUOROTELOMER SULFONATES						
757124-72-4	4:2 Fluorotelomer sulfonate	0.0040 U	0.016	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0040 U	0.016	0.0040	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-ASINFLUENT-20230428		
Lab Sample ID:	FC5657-2	**Date Sampled:**	04/28/23
Matrix:	AQ - Ground Water	**Date Received:**	04/28/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	KSC-CRCA		

CAS No.	Compound	Result	PQL	MDL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0040 U	0.016	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES						
13252-13-6	HFPO-DA (GenX)	0.0040 U	0.016	0.0040	ug/l	
919005-14-4	ADONA	0.0040 U	0.016	0.0040	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0040 U	0.016	0.0040	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0040 U	0.016	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	40% [b]	90%	50-150%
	13C5-PFPeA	82%	91%	50-150%
	13C5-PFHxA	89%	91%	50-150%
	13C4-PFHpA	102%	92%	50-150%
	13C8-PFOA	123%	94%	50-150%
	13C9-PFNA	125%	94%	50-150%
	13C6-PFDA	114%	90%	50-150%
	13C7-PFUnDA	98%	97%	50-150%
	13C2-PFDoDA	98%	94%	50-150%
	13C2-PFTeDA	75%	94%	50-150%
	13C3-PFBS	90%	91%	50-150%
	13C3-PFHxS	105%	94%	50-150%
	13C8-PFOS	108%	94%	50-150%
	13C8-FOSA	68%	97%	50-150%
	d3-MeFOSAA	114%	97%	50-150%
	d5-EtFOSAA	108%	98%	50-150%
	13C2-4:2FTS	86%	85%	50-150%
	13C2-6:2FTS	126%	86%	50-150%
	13C2-8:2FTS	106%	85%	50-150%
	13C3-HFPO-DA	87%	89%	50-150%

(a) Result is from Run# 2
(b) Outside control limits.

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody

FC5657

Tetra Tech, Inc. CHAIN OF CUSTODY | NUMBER No. 2722 | PAGE 1 OF 1

PROJECT NO: 112G089701	FACILITY: CLCA	PROJECT MANAGER ALEX MURPHY	PHONE NUMBER 321-637-8530	LABORATORY NAME AND CONTACT: SGS
SAMPLERS (SIGNATURE)		FIELD OPERATIONS LEADER DAN FORESTER	PHONE NUMBER 304-780-1426	ADDRESS
		CARRIER/WAYBILL NUMBER		CITY, STATE ORLANDO, FL

STANDARD TAT ☑
RUSH TAT ☐ ☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

DATE YEAR 2023	TIME	SAMPLE ID	LOCATION ID	TOP DEPTH (FT)	BOTTOM DEPTH (FT)	MATRIX (GW, SO, SW, SD, QC, ETC.)	COLLECTION METHOD GRAB (G) COMP (C)	No. OF CONTAINERS	TYPE OF ANALYSIS: VOC's 8260	PFAS	CONTAINER TYPE PLASTIC (P) or GLASS (G)	PRESERVATIVE USED: HCL	NA	COMMENTS
Apr 28	1000	CLCA-AS EFFLUENT-20230428		/	=	GW	G	5	3X	2X				
Apr 28	1030	CLCA-AS INFLUENT-20230428		/	/	GW	G	3	3X	2X				

INITIAL ASSESSMENT SP
FINAL VERIFICATION

	DATE	TIME		DATE	TIME
1. RELINQUISHED BY	28 APR 23	1215	1. RECEIVED BY	04/28/23	1215
2. RELINQUISHED BY	04/28/23	1430	2. RECEIVED BY	04/28/23	14:30
3. RELINQUISHED BY	4/28/23	1750	3. RECEIVED BY	04/28/23	1750

COMMENTS

DISTRIBUTION: WHITE (ACCOMPANIES SAMPLE) YELLOW (FIELD COPY) PINK (FILE COPY) 4/02R
FORM NO. TtNUS-001

2.6 FR #1

FC5657: Chain of Custody
Page 1 of 2

SGS Sample Receipt Summary

Job Number: FC5657 **Client:** TETRA TECH **Project:** 112G08970

Date / Time Received: 4/28/2023 5:50:00 PM **Delivery Method:** COURIER **Airbill #'s:** N/A

Therm ID: IR 1; **Therm CF:** -0.1; **# of Coolers:** 1

Cooler Temps (Raw Measured) °C: Cooler 1: (2.7);

Cooler Temps (Corrected) °C: Cooler 1: (2.6);

Cooler Information	Y	or	N
1. Custody Seals Present	☑		☐
2. Custody Seals Intact	☑		☐
3. Temp criteria achieved	☑		☐
4. Cooler temp verification	IR Gun		
5. Cooler media	Ice (Bag)		

Trip Blank Information	Y	or	N	N/A
1. Trip Blank present / cooler	☐		☑	☐
2. Trip Blank listed on COC	☐		☑	☐

	W	or	S	N/A
3. Type Of TB Received	☐		☐	☑

Sample Information	Y	or	N	N/A
1. Sample labels present on bottles	☑		☐	
2. Samples preserved properly	☑		☐	
3. Sufficient volume/containers recvd for analysis:	☑		☐	
4. Condition of sample	Intact			
5. Sample recvd within HT	☑		☐	
6. Dates/Times/IDs on COC match Sample Label	☑		☐	
7. VOCs have headspace	☐		☑	☐
8. Bottles received for unspecified tests	☐		☑	
9. Compositing instructions clear	☐		☐	☑
10. Voa Soil Kits/Jars received past 48hrs?	☐		☐	☑
11. % Solids Jar received?	☐		☐	☑
12. Residual Chlorine Present?	☐		☐	☑

Misc. Information

Number of Encores: 25-Gram _____ 5-Gram _____ Number of 5035 Field Kits: _____ Number of Lab Filtered Metals: _____

Test Strip Lot #s: pH 0-3 230320 pH 10-12 25BDH07 Other: (Specify) pH 1.0 - 12.0 222221

Residual Chlorine Test Strip Lot #: _____

Comments

SM001
Rev. Date 05/24/17

Technician: SHAYLAP Date: 4/28/2023 5:50:00 PM Reviewer: _____ Date: _____

FC5657: Chain of Custody
Page 2 of 2

MS Volatiles

6

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Job Number: FC5657
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V1A1806-MB [a]	1A45878.D	1	05/04/23	JW	n/a	n/a	V1A1806

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

FC5657-1, FC5657-2

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	25	10	ug/l	
71-43-2	Benzene	ND	1.0	0.31	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.24	ug/l	
75-25-2	Bromoform	ND	1.0	0.41	ug/l	
78-93-3	2-Butanone (MEK)	ND	5.0	2.0	ug/l	
75-15-0	Carbon Disulfide	ND	2.0	0.53	ug/l	
56-23-5	Carbon Tetrachloride	ND	1.0	0.36	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.20	ug/l	
75-00-3	Chloroethane	ND	2.0	0.67	ug/l	
67-66-3	Chloroform	ND	1.0	0.30	ug/l	
110-82-7	Cyclohexane	ND	1.0	0.39	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.28	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	5.0	1.0	ug/l	
106-93-4	1,2-Dibromoethane	ND	2.0	0.28	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	0.50	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	0.32	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	0.22	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	0.26	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.34	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.31	ug/l	
75-35-4	1,1-Dichloroethylene	ND	1.0	0.32	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	0.28	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	0.22	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.43	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.29	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.21	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.36	ug/l	
76-13-1	Freon 113	ND	1.0	0.48	ug/l	
591-78-6	2-Hexanone	ND	10	2.0	ug/l	
98-82-8	Isopropylbenzene	ND	1.0	0.22	ug/l	
79-20-9	Methyl Acetate	ND	20	5.0	ug/l	
74-83-9	Methyl Bromide	ND	5.0	2.0	ug/l	
74-87-3	Methyl Chloride	ND	2.0	0.50	ug/l	
108-87-2	Methylcyclohexane	ND	1.0	0.44	ug/l	
75-09-2	Methylene Chloride	ND	5.0	2.0	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	5.0	1.0	ug/l	

Method Blank Summary

Job Number: FC5657
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V1A1806-MB [a]	1A45878.D	1	05/04/23	JW	n/a	n/a	V1A1806

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

FC5657-1, FC5657-2

CAS No.	Compound	Result	RL	MDL	Units	Q
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.23	ug/l	
100-42-5	Styrene	ND	1.0	0.22	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.30	ug/l	
127-18-4	Tetrachloroethylene	ND	1.0	0.22	ug/l	
108-88-3	Toluene	ND	1.0	0.30	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	2.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.25	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.47	ug/l	
79-01-6	Trichloroethylene	ND	1.0	0.35	ug/l	
75-69-4	Trichlorofluoromethane	ND	2.0	0.50	ug/l	
75-01-4	Vinyl Chloride	ND	1.0	0.41	ug/l	
1330-20-7	Xylene (total)	ND	3.0	0.72	ug/l	

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	102%	83-118%
17060-07-0	1,2-Dichloroethane-D4	99%	79-125%
2037-26-5	Toluene-D8	98%	85-112%
460-00-4	4-Bromofluorobenzene	99%	83-118%

(a) Sample was treated with an anti-foaming agent.

Blank Spike Summary

Job Number: FC5657
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V1A1806-BS	1A45874.D	1	05/04/23	JW	n/a	n/a	V1A1806

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

FC5657-1, FC5657-2

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
67-64-1	Acetone	125	130	104	50-147
71-43-2	Benzene	25	25.6	102	81-122
75-27-4	Bromodichloromethane	25	24.3	97	79-123
75-25-2	Bromoform	25	23.1	92	66-123
78-93-3	2-Butanone (MEK)	125	128	102	56-143
75-15-0	Carbon Disulfide	25	27.3	109	66-148
56-23-5	Carbon Tetrachloride	25	25.6	102	76-136
108-90-7	Chlorobenzene	25	24.9	100	82-124
75-00-3	Chloroethane	25	26.5	106	62-144
67-66-3	Chloroform	25	25.7	103	80-124
110-82-7	Cyclohexane	25	24.6	98	73-138
124-48-1	Dibromochloromethane	25	24.4	98	78-122
96-12-8	1,2-Dibromo-3-chloropropane	25	23.9	96	64-123
106-93-4	1,2-Dibromoethane	25	25.6	102	75-120
75-71-8	Dichlorodifluoromethane	25	33.8	135	42-167
95-50-1	1,2-Dichlorobenzene	25	24.5	98	82-124
541-73-1	1,3-Dichlorobenzene	25	24.2	97	84-125
106-46-7	1,4-Dichlorobenzene	25	24.4	98	78-120
75-34-3	1,1-Dichloroethane	25	24.6	98	81-122
107-06-2	1,2-Dichloroethane	25	26.8	107	75-125
75-35-4	1,1-Dichloroethylene	25	26.9	108	78-137
156-59-2	cis-1,2-Dichloroethylene	25	25.3	101	78-120
156-60-5	trans-1,2-Dichloroethylene	25	25.4	102	76-127
78-87-5	1,2-Dichloropropane	25	26.1	104	76-124
10061-01-5	cis-1,3-Dichloropropene	25	23.4	94	75-118
10061-02-6	trans-1,3-Dichloropropene	25	21.1	84	80-120
100-41-4	Ethylbenzene	25	24.8	99	81-121
76-13-1	Freon 113	25	28.0	112	72-134
591-78-6	2-Hexanone	125	114	91	61-129
98-82-8	Isopropylbenzene	25	25.2	101	83-132
79-20-9	Methyl Acetate	125	97.6	78	65-126
74-83-9	Methyl Bromide	25	32.1	128	59-143
74-87-3	Methyl Chloride	25	26.9	108	50-159
108-87-2	Methylcyclohexane	25	25.3	101	76-129
75-09-2	Methylene Chloride	25	28.1	112	69-135
108-10-1	4-Methyl-2-pentanone (MIBK)	125	115	92	66-122

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FC5657
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V1A1806-BS	1A45874.D	1	05/04/23	JW	n/a	n/a	V1A1806

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

FC5657-1, FC5657-2

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
1634-04-4	Methyl Tert Butyl Ether	25	26.7	107	72-117
100-42-5	Styrene	25	24.6	98	78-119
79-34-5	1,1,2,2-Tetrachloroethane	25	23.9	96	72-120
127-18-4	Tetrachloroethylene	25	24.2	97	76-135
108-88-3	Toluene	25	24.4	98	80-120
120-82-1	1,2,4-Trichlorobenzene	25	24.6	98	73-129
71-55-6	1,1,1-Trichloroethane	25	25.7	103	75-130
79-00-5	1,1,2-Trichloroethane	25	24.3	97	76-119
79-01-6	Trichloroethylene	25	25.5	102	81-126
75-69-4	Trichlorofluoromethane	25	32.0	128	71-156
75-01-4	Vinyl Chloride	25	27.6	110	69-159
1330-20-7	Xylene (total)	75	74.3	99	80-126

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	103%	83-118%
17060-07-0	1,2-Dichloroethane-D4	101%	79-125%
2037-26-5	Toluene-D8	97%	85-112%
460-00-4	4-Bromofluorobenzene	101%	83-118%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FC5657
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
FC5728-14MS	1A45875.D	1	05/04/23	JW	n/a	n/a	V1A1806
FC5728-14MSD	1A45876.D	1	05/04/23	JW	n/a	n/a	V1A1806
FC5728-14	1A45883.D	1	05/05/23	JW	n/a	n/a	V1A1806

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

FC5657-1, FC5657-2

CAS No.	Compound	FC5728-14 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
67-64-1	Acetone	25	U	125	125	100	125	141	113	12	50-147/21
71-43-2	Benzene	1.0	U	25	27.0	108	25	31.8	127*	16*	81-122/14
75-27-4	Bromodichloromethane	1.0	U	25	24.4	98	25	28.6	114	16	79-123/19
75-25-2	Bromoform	1.0	U	25	23.1	92	25	27.1	108	16	66-123/21
78-93-3	2-Butanone (MEK)	5.0	U	125	120	96	125	138	110	14	56-143/18
75-15-0	Carbon Disulfide	2.0	U	25	29.9	120	25	35.3	141	17	66-148/23
56-23-5	Carbon Tetrachloride	1.0	U	25	29.2	117	25	34.7	139*	17	76-136/23
108-90-7	Chlorobenzene	2.6		25	27.9	101	25	32.8	121	16*	82-124/14
75-00-3	Chloroethane	2.0	U	25	30.1	120	25	38.4	154*	24*	62-144/20
67-66-3	Chloroform	1.0	U	25	26.7	107	25	31.7	127*	17*	80-124/15
110-82-7	Cyclohexane	1.0	U	25	28.1	112	25	33.3	133	17	73-138/18
124-48-1	Dibromochloromethane	1.0	U	25	24.1	96	25	29.1	116	19	78-122/19
96-12-8	1,2-Dibromo-3-chloropropane	5.0	U	25	24.6	98	25	28.2	113	14	64-123/18
106-93-4	1,2-Dibromoethane	2.0	U	25	24.6	98	25	29.4	118	18*	75-120/13
75-71-8	Dichlorodifluoromethane	2.0	U	25	41.4	166	25	51.2	205*	21*	42-167/19
95-50-1	1,2-Dichlorobenzene	1.0	U	25	25.2	101	25	29.7	119	16*	82-124/14
541-73-1	1,3-Dichlorobenzene	3.4		25	28.6	101	25	33.1	119	15*	84-125/14
106-46-7	1,4-Dichlorobenzene	8.1		25	33.5	102	25	37.7	118	12	78-120/15
75-34-3	1,1-Dichloroethane	1.0	U	25	25.9	104	25	30.6	122	17*	81-122/15
107-06-2	1,2-Dichloroethane	1.0	U	25	26.4	106	25	31.2	125	17*	75-125/14
75-35-4	1,1-Dichloroethylene	1.0	U	25	30.2	121	25	35.7	143*	17	78-137/18
156-59-2	cis-1,2-Dichloroethylene	1.0	U	25	26.0	104	25	31.6	126*	19*	78-120/15
156-60-5	trans-1,2-Dichloroethylene	1.0	U	25	27.4	110	25	32.5	130*	17	76-127/17
78-87-5	1,2-Dichloropropane	1.0	U	25	26.8	107	25	31.9	128*	17*	76-124/14
10061-01-5	cis-1,3-Dichloropropene	1.0	U	25	23.4	94	25	27.3	109	15	75-118/23
10061-02-6	trans-1,3-Dichloropropene	1.0	U	25	20.9	84	25	24.7	99	17	80-120/22
100-41-4	Ethylbenzene	1.0	U	25	26.2	105	25	31.5	126*	18*	81-121/14
76-13-1	Freon 113	1.0	U	25	31.5	126	25	37.8	151*	18	72-134/20
591-78-6	2-Hexanone	10	U	125	123	98	125	141	113	14	61-129/18
98-82-8	Isopropylbenzene	1.0	U	25	26.7	107	25	31.9	128	18*	83-132/15
79-20-9	Methyl Acetate	20	U	125	95.3	76	125	108	86	12	65-126/18
74-83-9	Methyl Bromide	5.0	U	25	31.9	128	25	36.8	147*	14	59-143/19
74-87-3	Methyl Chloride	2.0	U	25	30.0	120	25	35.1	140	16	50-159/19
108-87-2	Methylcyclohexane	1.0	U	25	28.2	113	25	33.5	134*	17	76-129/17
75-09-2	Methylene Chloride	5.0	U	25	27.3	109	25	31.2	125	13	69-135/16
108-10-1	4-Methyl-2-pentanone (MIBK)	5.0	U	125	115	92	125	136	109	17*	66-122/16

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FC5657
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
FC5728-14MS	1A45875.D	1	05/04/23	JW	n/a	n/a	V1A1806
FC5728-14MSD	1A45876.D	1	05/04/23	JW	n/a	n/a	V1A1806
FC5728-14	1A45883.D	1	05/05/23	JW	n/a	n/a	V1A1806

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

FC5657-1, FC5657-2

CAS No.	Compound	FC5728-14 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
1634-04-4	Methyl Tert Butyl Ether	1.0 U		25	26.1	104	25	31.0	124*	17*	72-117/14
100-42-5	Styrene	1.0 U		25	24.9	100	25	29.9	120*	18	78-119/23
79-34-5	1,1,2,2-Tetrachloroethane	1.0 U		25	23.8	95	25	28.2	113	17*	72-120/14
127-18-4	Tetrachloroethylene	1.0 U		25	26.0	104	25	30.9	124	17*	76-135/16
108-88-3	Toluene	0.47	I	25	26.2	103	25	30.9	122*	16*	80-120/14
120-82-1	1,2,4-Trichlorobenzene	2.6		25	27.0	98	25	31.0	114	14	73-129/20
71-55-6	1,1,1-Trichloroethane	1.0 U		25	28.7	115	25	34.1	136*	17*	75-130/16
79-00-5	1,1,2-Trichloroethane	1.0 U		25	23.7	95	25	27.8	111	16*	76-119/14
79-01-6	Trichloroethylene	1.0 U		25	27.9	112	25	33.1	132*	17*	81-126/15
75-69-4	Trichlorofluoromethane	2.0 U		25	38.6	154	25	46.8	187*	19	71-156/21
75-01-4	Vinyl Chloride	1.0 U		25	32.6	130	25	39.3	157	19*	69-159/18
1330-20-7	Xylene (total)	3.0 U		75	77.6	103	75	92.3	123	17*	80-126/15

CAS No.	Surrogate Recoveries	MS	MSD	FC5728-14	Limits
1868-53-7	Dibromofluoromethane	102%	102%	100%	83-118%
17060-07-0	1,2-Dichloroethane-D4	102%	102%	97%	79-125%
2037-26-5	Toluene-D8	96%	98%	98%	85-112%
460-00-4	4-Bromofluorobenzene	102%	100%	100%	83-118%

* = Outside of Control Limits.

MS Semi-volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Instrument Blank

Job Number: FC5657
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S3Q1059-IBLK	3Q76681.D	1	05/16/23	JL	n/a	n/a	S3Q1059

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC5657-1, FC5657-2

CAS No.	Compound	Result	RL	MDL	Units	Q
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	
2355-31-9	MeFOSAA	ND	0.0080	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0080	0.0020	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	
919005-14-4	ADONA	ND	0.0080	0.0020	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.0080	0.0020	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.0080	0.0020	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	94%	50-150%
	13C5-PFPeA	94%	50-150%
	13C5-PFHxA	95%	50-150%
	13C4-PFHpA	96%	50-150%
	13C8-PFOA	97%	50-150%

Instrument Blank

Job Number: FC5657
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S3Q1059-IBLK	3Q76681.D	1	05/16/23	JL	n/a	n/a	S3Q1059

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC5657-1, FC5657-2

CAS No.	ID Standard Recoveries		Limits
	13C9-PFNA	96%	50-150%
	13C6-PFDA	100%	50-150%
	13C7-PFUnDA	95%	50-150%
	13C2-PFDoDA	96%	50-150%
	13C2-PFTeDA	97%	50-150%
	13C3-PFBS	95%	50-150%
	13C3-PFHxS	100%	50-150%
	13C8-PFOS	96%	50-150%
	13C8-FOSA	101%	50-150%
	d3-MeFOSA	103%	50-150%
	d3-MeFOSAA	94%	50-150%
	d5-EtFOSAA	96%	50-150%
	13C2-4:2FTS	87%	50-150%
	13C2-6:2FTS	88%	50-150%
	13C2-8:2FTS	89%	50-150%
	13C3-HFPO-DA	93%	50-150%

Instrument Blank

Job Number: FC5657
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S3Q1060-IBLK	3Q76750.D	1	05/17/23	JL	n/a	n/a	S3Q1060

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC5657-1, FC5657-2

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	77%	50-150%
	13C5-PFPeA	76%	50-150%
	13C5-PFHxA	76%	50-150%
	13C4-PFHpA	77%	50-150%
	13C8-PFOA	80%	50-150%
	13C9-PFNA	80%	50-150%
	13C6-PFDA	77%	50-150%
	13C7-PFUnDA	77%	50-150%
	13C2-PFDoDA	77%	50-150%
	13C2-PFTeDA	79%	50-150%
	13C3-PFBS	75%	50-150%
	13C3-PFHxS	80%	50-150%
	13C8-PFOS	77%	50-150%
	13C8-FOSA	83%	50-150%
	d3-MeFOSAA	79%	50-150%
	d5-EtFOSAA	81%	50-150%
	13C2-4:2FTS	70%	50-150%
	13C2-6:2FTS	73%	50-150%
	13C2-8:2FTS	72%	50-150%
	13C3-HFPO-DA	78%	50-150%

Method Blank Summary

Job Number: FC5657
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP96783-MB	3Q76718.D	1	05/17/23	JL	05/08/23	OP96783	S3Q1059

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC5657-1, FC5657-2

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	
2355-31-9	MeFOSAA	ND	0.0080	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0080	0.0020	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	
919005-14-4	ADONA	ND	0.0080	0.0020	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.0080	0.0020	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.0080	0.0020	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	100%	50-150%
	13C5-PFPeA	102%	50-150%
	13C5-PFHxA	102%	50-150%
	13C4-PFHpA	103%	50-150%

Method Blank Summary

Job Number: FC5657
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP96783-MB	3Q76718.D	1	05/17/23	JL	05/08/23	OP96783	S3Q1059

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC5657-1, FC5657-2

CAS No.	ID Standard Recoveries		Limits
	13C8-PFOA	105%	50-150%
	13C9-PFNA	103%	50-150%
	13C6-PFDA	103%	50-150%
	13C7-PFUnDA	106%	50-150%
	13C2-PFDoDA	103%	50-150%
	13C2-PFTeDA	95%	50-150%
	13C3-PFBS	102%	50-150%
	13C3-PFHxS	106%	50-150%
	13C8-PFOS	102%	50-150%
	13C8-FOSA	89%	50-150%
	d3-MeFOSAA	100%	50-150%
	d5-EtFOSAA	101%	50-150%
	13C2-4:2FTS	94%	50-150%
	13C2-6:2FTS	96%	50-150%
	13C2-8:2FTS	116%	50-150%
	13C3-HFPO-DA	96%	50-150%

Blank Spike Summary

Job Number: FC5657
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP96783-BS	3Q76717.D	1	05/17/23	JL	05/08/23	OP96783	S3Q1059

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC5657-1, FC5657-2

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
375-22-4	Perfluorobutanoic acid	0.08	0.0655	82	73-129
2706-90-3	Perfluoropentanoic acid	0.08	0.0657	82	72-129
307-24-4	Perfluorohexanoic acid	0.08	0.0651	81	72-129
375-85-9	Perfluoroheptanoic acid	0.08	0.0656	82	72-130
335-67-1	Perfluorooctanoic acid	0.08	0.0643	80	71-133
375-95-1	Perfluorononanoic acid	0.08	0.0660	83	69-130
335-76-2	Perfluorodecanoic acid	0.08	0.0659	82	71-129
2058-94-8	Perfluoroundecanoic acid	0.08	0.0649	81	69-133
307-55-1	Perfluorododecanoic acid	0.08	0.0663	83	72-134
72629-94-8	Perfluorotridecanoic acid	0.08	0.0618	77	65-144
376-06-7	Perfluorotetradecanoic acid	0.08	0.0657	82	71-132
375-73-5	Perfluorobutanesulfonic acid	0.08	0.0667	83	72-130
2706-91-4	Perfluoropentanesulfonic acid	0.08	0.0679	85	71-127
355-46-4	Perfluorohexanesulfonic acid	0.08	0.0661	83	68-131
375-92-8	Perfluoroheptanesulfonic acid	0.08	0.0659	82	69-134
1763-23-1	Perfluorooctanesulfonic acid	0.08	0.0635	79	65-140
68259-12-1	Perfluorononanesulfonic acid	0.08	0.0654	82	69-127
335-77-3	Perfluorodecanesulfonic acid	0.08	0.0665	83	53-142
754-91-6	PFOSA	0.08	0.0698	87	67-137
2355-31-9	MeFOSAA	0.08	0.0677	85	65-136
2991-50-6	EtFOSAA	0.08	0.0661	83	61-135
757124-72-4	4:2 Fluorotelomer sulfonate	0.08	0.0716	90	63-143
27619-97-2	6:2 Fluorotelomer sulfonate	0.08	0.0724	91	64-140
39108-34-4	8:2 Fluorotelomer sulfonate	0.08	0.0713	89	67-138
13252-13-6	HFPO-DA (GenX)	0.08	0.0670	84	60-140
919005-14-4	ADONA	0.08	0.0653	82	60-140
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.08	0.0626	78	60-140
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.08	0.0680	85	60-140

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFBA	106%	50-150%
	13C5-PFPeA	107%	50-150%
	13C5-PFHxA	105%	50-150%
	13C4-PFHpA	105%	50-150%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FC5657
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP96783-BS	3Q76717.D	1	05/17/23	JL	05/08/23	OP96783	S3Q1059

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC5657-1, FC5657-2

CAS No.	ID Standard Recoveries	BSP	Limits
	13C8-PFOA	106%	50-150%
	13C9-PFNA	105%	50-150%
	13C6-PFDA	104%	50-150%
	13C7-PFUnDA	109%	50-150%
	13C2-PFDoDA	102%	50-150%
	13C2-PFTeDA	91%	50-150%
	13C3-PFBS	106%	50-150%
	13C3-PFHxS	107%	50-150%
	13C8-PFOS	106%	50-150%
	13C8-FOSA	83%	50-150%
	d3-MeFOSAA	104%	50-150%
	d5-EtFOSAA	100%	50-150%
	13C2-4:2FTS	111%	50-150%
	13C2-6:2FTS	106%	50-150%
	13C2-8:2FTS	119%	50-150%
	13C3-HFPO-DA	98%	50-150%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FC5657
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP96783-MS	3Q76732.D	1	05/17/23	JL	05/08/23	OP96783	S3Q1059
OP96783-MSD	3Q76733.D	1	05/17/23	JL	05/08/23	OP96783	S3Q1059
FC5654-10	3Q76731.D	1	05/17/23	JL	05/08/23	OP96783	S3Q1059

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC5657-1, FC5657-2

CAS No.	Compound	FC5654-10 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
375-22-4	Perfluorobutanoic acid	0.0043	J	0.16	0.138	84	0.16	0.143	87	4	73-129/30
2706-90-3	Perfluoropentanoic acid	0.0038	J	0.16	0.143	87	0.16	0.152	93	6	72-129/30
307-24-4	Perfluorohexanoic acid	0.0033	J	0.16	0.141	86	0.16	0.146	89	3	72-129/30
375-85-9	Perfluoroheptanoic acid	0.0034	J	0.16	0.143	87	0.16	0.150	92	5	72-130/30
335-67-1	Perfluorooctanoic acid	0.0135		0.16	0.157	90	0.16	0.168	97	7	71-133/30
375-95-1	Perfluorononanoic acid	0.0048	J	0.16	0.150	91	0.16	0.161	98	7	69-130/30
335-76-2	Perfluorodecanoic acid	0.0080	U	0.16	0.144	90	0.16	0.154	96	7	71-129/30
2058-94-8	Perfluoroundecanoic acid	0.0080	U	0.16	0.138	86	0.16	0.148	93	7	69-133/30
307-55-1	Perfluorododecanoic acid	0.0080	U	0.16	0.142	89	0.16	0.149	93	5	72-134/30
72629-94-8	Perfluorotridecanoic acid	0.0080	U	0.16	0.131	82	0.16	0.139	87	6	65-144/30
376-06-7	Perfluorotetradecanoic acid	0.0080	U	0.16	0.139	87	0.16	0.148	93	6	71-132/30
375-73-5	Perfluorobutanesulfonic acid	0.0032	J	0.16	0.143	87	0.16	0.152	93	6	72-130/30
2706-91-4	Perfluoropentanesulfonic acid	0.0080	U	0.16	0.140	88	0.16	0.149	93	6	71-127/30
355-46-4	Perfluorohexanesulfonic acid	0.0051	J	0.16	0.146	88	0.16	0.157	95	7	68-131/30
375-92-8	Perfluoroheptanesulfonic acid	0.0080	U	0.16	0.146	91	0.16	0.163	102	11	69-134/30
1763-23-1	Perfluorooctanesulfonic acid	0.0276		0.16	0.168	88	0.16	0.179	95	6	65-140/30
68259-12-1	Perfluorononanesulfonic acid	0.0080	U	0.16	0.134	84	0.16	0.153	96	13	69-127/30
335-77-3	Perfluorodecanesulfonic acid	0.0080	U	0.16	0.118	74	0.16	0.134	84	13	53-142/30
754-91-6	PFOSA	0.0080	U	0.16	0.159	99	0.16	0.164	103	3	67-137/30
2355-31-9	MeFOSAA	0.016	U	0.16	0.150	94	0.16	0.155	97	3	65-136/30
2991-50-6	EtFOSAA	0.016	U	0.16	0.144	90	0.16	0.150	94	4	61-135/30
757124-72-4	4:2 Fluorotelomer sulfonate	0.016	U	0.16	0.150	94	0.16	0.157	98	5	63-143/30
27619-97-2	6:2 Fluorotelomer sulfonate	0.016	U	0.16	0.159	99	0.16	0.166	104	4	64-140/30
39108-34-4	8:2 Fluorotelomer sulfonate	0.016	U	0.16	0.157	98	0.16	0.168	105	7	67-138/30
13252-13-6	HFPO-DA (GenX)	0.016	U	0.16	0.142	89	0.16	0.151	94	6	60-140/30
919005-14-4	ADONA	0.016	U	0.16	0.144	90	0.16	0.149	93	3	60-140/30
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.016	U	0.16	0.126	79	0.16	0.131	82	4	60-140/30
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.016	U	0.16	0.126	79	0.16	0.141	88	11	60-140/30

CAS No.	ID Standard Recoveries	MS	MSD	FC5654-10	Limits
	13C4-PFBA	102%	79%	98%	50-150%
	13C5-PFPeA	103%	79%	99%	50-150%
	13C5-PFHxA	101%	78%	100%	50-150%
	13C4-PFHpA	100%	78%	100%	50-150%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FC5657
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP96783-MS	3Q76732.D	1	05/17/23	JL	05/08/23	OP96783	S3Q1059
OP96783-MSD	3Q76733.D	1	05/17/23	JL	05/08/23	OP96783	S3Q1059
FC5654-10	3Q76731.D	1	05/17/23	JL	05/08/23	OP96783	S3Q1059

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC5657-1, FC5657-2

CAS No.	ID Standard Recoveries	MS	MSD	FC5654-10	Limits
	13C8-PFOA	97%	75%	99%	50-150%
	13C9-PFNA	92%	69%	95%	50-150%
	13C6-PFDA	93%	73%	95%	50-150%
	13C7-PFUnDA	92%	69%	88%	50-150%
	13C2-PFDoDA	87%	67%	83%	50-150%
	13C2-PFTeDA	77%	60%	69%	50-150%
	13C3-PFBS	102%	78%	98%	50-150%
	13C3-PFHxS	96%	76%	95%	50-150%
	13C8-PFOS	89%	68%	89%	50-150%
	13C8-FOSA	78%	64%	83%	50-150%
	d3-MeFOSAA	90%	68%		50-150%
	d5-EtFOSAA	92%	71%		50-150%
	13C2-4:2FTS	107%	82%		50-150%
	13C2-6:2FTS	93%	77%	89%	50-150%
	13C2-8:2FTS	103%	73%	96%	50-150%
	13C3-HFPO-DA	98%	74%		50-150%

* = Outside of Control Limits.

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

e-Hardcopy 2.0
Automated Report

Technical Report for

Tetra Tech NUS

KSC-CRCA

112G08970

SGS Job Number: FC5785

Sampling Dates: 05/01/23 - 05/02/23

Report to:

Tetra-Tech, Inc.
661 Andersen Drive Foster Plaza 7
Pittsburgh, PA 15220
amy.thomson@tetratech.com; carrie.stock@tetratech.com;
alex.murphy@tetratech.com
ATTN: Amy Thomson

Total number of pages in report: **136**

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

Norm Farmer
Technical Director

Client Service contact: Andrea Colby 407-425-6700

Certifications: FL(E83510), LA(03051), KS(E-10327), NC(573), NJ(FL002), NY(12022), SC(96038001) DoD ELAP(ANAB L2229), AZ(AZ0806), CA(2937), TX(T104704404), PA(68-03573), VA(460177), AL, AK, AR, CT, IA, KY, MA, MI. MS, ND, NH, NV, OK, OR, IL, UT, VT, WA, WI, WV

This report shall not be reproduced, except in its entirety, without the written approval of SGS.
Test results relate only to samples analyzed.

SGS is the sole authority for authorizing edits or modifications to this document.
Unauthorized modification of this report is strictly prohibited.
Review standard terms at: http://www.sgs.com/en/terms-and-conditions

Please share your ideas about how we can serve you better at:
EHS.US.CustomerCare@sgs.com

Table of Contents

Section 1: Sample Summary **4**
Section 2: Case Narrative/Conformance Summary **7**
Section 3: Summary of Hits **10**
Section 4: Sample Results **15**
4.1: FC5785-1: CRCA-EB-20230501-01 16
4.2: FC5785-2: CRCA-DPT0279-008.0-20230501 18
4.3: FC5785-3: CRCA-FB-20230501-01 20
4.4: FC5785-4: CRCA-DPT0279-018.0-20230501 22
4.5: FC5785-5: CRCA-DPT0279-028.0-20230501 24
4.6: FC5785-6: CRCA-DPT0279-038.0-20230501 26
4.7: FC5785-7: CRCA-DPT0279-048.0-20230501 28
4.8: FC5785-8: CRCA-DPT0279-057.0-20230501 30
4.9: FC5785-9: CRCA-DPT0280-008.0-20230501 32
4.10: FC5785-10: CRCA-DPT0280-013.0-20230502 36
4.11: FC5785-11: CRCA-DPT0280-018.0-20230502 38
4.12: FC5785-12: CRCA-DPT0280-023.0-20230502 42
4.13: FC5785-13: CRCA-DPT0280-028.0-20230502 44
4.14: FC5785-14: CRCA-DPT0280-033.0-20230502 48
4.15: FC5785-15: CRCA-DPT0280-038.0-20230502 50
4.16: FC5785-16: CRCA-DPT0280-043.0-20230502 54
4.17: FC5785-17: CRCA-DPT0280-048.0-20230502 56
4.18: FC5785-18: CRCA-DPT0280-053.0-20230502 60
4.19: FC5785-19: CRCA-DPT0280-057.0-20230502 62
4.20: FC5785-20: CRCA-EB-20230502-01 66
4.21: FC5785-21: CRCA-DPT0281-008.0-20230502 68
4.22: FC5785-22: CRCA-DPT0281-018.0-20230502 70
4.23: FC5785-23: CRCA-DPT0281-028.0-20230502 72
4.24: FC5785-24: CRCA-DPT0281-038.0-20230502 74
4.25: FC5785-25: CRCA-DPT0281-048.0-20230502 76
4.26: FC5785-26: CRCA-FB-20230502-01 78
4.27: FC5785-27: CRCA-DPT0281-057.0-20230502 80
4.28: FC5785-28: CRCA-FD-20230501-01 82
4.29: FC5785-29: CRCA-FD-20230502-01 84
Section 5: Misc. Forms **86**
5.1: Chain of Custody 87
Section 6: MS Volatiles - QC Data Summaries **91**
6.1: Method Blank Summary 92
6.2: Blank Spike Summary 96
6.3: Matrix Spike/Matrix Spike Duplicate Summary 100
Section 7: MS Semi-volatiles - QC Data Summaries **104**
7.1: Method Blank Summary 105
7.2: Blank Spike Summary 125

Table of Contents

7.3: Blank Spike/Blank Spike Duplicate Summary 131
7.4: Matrix Spike/Matrix Spike Duplicate Summary 133

SGS North America Inc.

Sample Summary

Tetra Tech NUS

Job No: FC5785

KSC-CRCA
Project No: 112G08970

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
FC5785-1	05/01/23	12:35	CS	05/02/23	AQ	Equipment Blank	CRCA-EB-20230501-01
FC5785-2	05/01/23	13:20	CS	05/02/23	AQ	Ground Water	CRCA-DPT0279-008.0-20230501
FC5785-3	05/01/23	13:25	CS	05/02/23	AQ	Field Blank Water	CRCA-FB-20230501-01
FC5785-4	05/01/23	13:40	CS	05/02/23	AQ	Ground Water	CRCA-DPT0279-018.0-20230501
FC5785-5	05/01/23	14:00	CS	05/02/23	AQ	Ground Water	CRCA-DPT0279-028.0-20230501
FC5785-6	05/01/23	14:20	CS	05/02/23	AQ	Ground Water	CRCA-DPT0279-038.0-20230501
FC5785-7	05/01/23	14:50	CS	05/02/23	AQ	Ground Water	CRCA-DPT0279-048.0-20230501
FC5785-8	05/01/23	15:20	CS	05/02/23	AQ	Ground Water	CRCA-DPT0279-057.0-20230501
FC5785-9	05/01/23	16:45	CS	05/02/23	AQ	Ground Water	CRCA-DPT0280-008.0-20230501
FC5785-9D	05/01/23	16:45	CS	05/02/23	AQ	Water Dup/MSD	CRCA-DPT0280-008.0-20230501
FC5785-9S	05/01/23	16:45	CS	05/02/23	AQ	Water Matrix Spike	CRCA-DPT0280-008.0-20230501
FC5785-10	05/01/23	17:20	CS	05/02/23	AQ	Ground Water	CRCA-DPT0280-013.0-20230502
FC5785-11	05/02/23	07:15	CS	05/02/23	AQ	Ground Water	CRCA-DPT0280-018.0-20230502

Sample Summary
(continued)

Tetra Tech NUS

Job No: FC5785

KSC-CRCA
Project No: 112G08970

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
FC5785-12	05/02/23	07:40	CS	05/02/23	AQ	Ground Water	CRCA-DPT0280-023.0-20230502
FC5785-13	05/02/23	08:10	CS	05/02/23	AQ	Ground Water	CRCA-DPT0280-028.0-20230502
FC5785-14	05/02/23	08:40	CS	05/02/23	AQ	Ground Water	CRCA-DPT0280-033.0-20230502
FC5785-15	05/02/23	09:00	CS	05/02/23	AQ	Ground Water	CRCA-DPT0280-038.0-20230502
FC5785-16	05/02/23	09:30	CS	05/02/23	AQ	Ground Water	CRCA-DPT0280-043.0-20230502
FC5785-17	05/02/23	10:10	CS	05/02/23	AQ	Ground Water	CRCA-DPT0280-048.0-20230502
FC5785-18	05/02/23	10:50	CS	05/02/23	AQ	Ground Water	CRCA-DPT0280-053.0-20230502
FC5785-19	05/02/23	11:25	CS	05/02/23	AQ	Ground Water	CRCA-DPT0280-057.0-20230502
FC5785-20	05/02/23	12:10	CS	05/02/23	AQ	Equipment Blank	CRCA-EB-20230502-01
FC5785-21	05/02/23	12:35	CS	05/02/23	AQ	Ground Water	CRCA-DPT0281-008.0-20230502
FC5785-22	05/02/23	13:00	CS	05/02/23	AQ	Ground Water	CRCA-DPT0281-018.0-20230502
FC5785-23	05/02/23	13:20	CS	05/02/23	AQ	Ground Water	CRCA-DPT0281-028.0-20230502
FC5785-23D	05/02/23	13:20	CS	05/02/23	AQ	Water Dup/MSD	CRCA-DPT0281-028.0-20230502

Sample Summary
(continued)

Tetra Tech NUS

Job No: FC5785

KSC-CRCA
Project No: 112G08970

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
FC5785-23S	05/02/23	13:20	CS	05/02/23	AQ	Water Matrix Spike	CRCA-DPT0281-028.0-20230502
FC5785-24	05/02/23	13:50	CS	05/02/23	AQ	Ground Water	CRCA-DPT0281-038.0-20230502
FC5785-25	05/02/23	14:20	CS	05/02/23	AQ	Ground Water	CRCA-DPT0281-048.0-20230502
FC5785-26	05/02/23	14:25	CS	05/02/23	AQ	Field Blank Water	CRCA-FB-20230502-01
FC5785-27	05/02/23	14:55	CS	05/02/23	AQ	Ground Water	CRCA-DPT0281-057.0-20230502
FC5785-28	05/02/23	00:00	CS	05/02/23	AQ	Ground Water	CRCA-FD-20230501-01
FC5785-29	05/02/23	00:00	CS	05/02/23	AQ	Ground Water	CRCA-FD-20230502-01

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: Tetra Tech NUS **Job No:** FC5785

Site: KSC-CRCA **Report Date** 5/26/2023 8:46:27 AM

On 05/02/2023, 27 Samples and 2 Field Blanks were received at SGS North America Inc - Orlando. at a maximum corrected temperature of 3.2 C. Samples were intact and chemically preserved, unless noted below. A SGS North America Inc. - Orlando Job Number of FC5785 was assigned to the project.

Laboratory sample ID, client sample ID and dates of sample collection are detailed in the report's Results Summary Section. Specified quality control criteria were achieved for this job except as noted below. For more information, please refer to the analytical results and QC summary pages.

MS Volatiles By Method SW846 8260D

Matrix: AQ **Batch ID:** V1A1807

- All samples were analyzed within the recommended method holding time.
- Samples FC5638-13MS, FC5638-13MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.
- Matrix Spike Recovery for trans-1,3-Dichloropropene is outside control limits. Probable cause is due to matrix interference.
- Matrix Spike Duplicate Recovery for trans-1,3-Dichloropropene are outside control limits. Probable cause is due to matrix interference.
- FC5785-19: Sample was treated with an anti-foaming agent. Sample was not preserved to a pH < 2.
- V1A1807-MB: Sample was treated with an anti-foaming agent.
- FC5785-19 for Chloroethane: Associated CCV outside control limits high, sample is ND.
- FC5785-19 for Dichlorodifluoromethane: Associated ICV outside control limits high, sample is ND.

Matrix: AQ **Batch ID:** VI2915

- All samples were analyzed within the recommended method holding time.
- Samples FC5785-9MS, FC5785-9MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.
- Matrix Spike Recoveries for Freon 113, Methyl Bromide are outside control limits. Probable cause is due to matrix interference.
- Matrix Spike Duplicate Recoveries for 1,1,1-Trichloroethane, Freon 113, Methyl Tert Butyl Ether are outside control limits. Probable cause is due to matrix interference.
- RPD for MSD for Methyl Bromide is outside control limits for sample FC5785-9MSD. Probable cause is due to sample non-homogeneity.
- VI2915-MB: Sample was treated with an anti-foaming agent.
- FC5785-9, FC5785-10, FC5785-11, FC5785-12, FC5785-13, FC5785-14, FC5785-15, FC5785-16, FC5785-17, FC5785-18: Sample was not preserved to a pH < 2. Sample was treated with an anti-foaming agent.
- FC5785-9, FC5785-10, FC5785-11, FC5785-12, FC5785- 13, FC5785-14, FC5785-15, FC5785-16, FC5785-17, FC5785-18, for Dichlorodifluoromethane: Associated ICV outside control limits high, however sample ND.
- FC5785-9, FC5785-10, FC5785-11, FC5785-12, FC5785- 13, FC5785-14, FC5785-15, FC5785-16, FC5785-17, FC5785-18, for Dichlorodifluoromethane: Associated CCV outside control limits high, sample is ND.

MS Semi-volatiles By Method EPA 537M QSM5.3 B-15

Matrix: AQ **Batch ID:** OP96805

- All samples were extracted within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Samples FC5785-9MS, FC5785-9MSD were used as the QC samples indicated.
- Samples FC5785-1, FC5785-11, FC5785-13, FC5785-15, FC5785-17, FC5785-19, FC5785-2, FC5785-21, FC5785-22, FC5785-24, FC5785-25, FC5785-4, FC5785-5, FC5785-6, FC5785-7, FC5785-8, FC5785-9 have surrogates outside control limits.
- FC5785-2, FC5785-4, FC5785-6, FC5785-7, FC5785-8, FC5785-9, FC5785-11, FC5785-13, FC5785-17, FC5785-22, FC5785-24: Dilution required (ID recovery standard failure).
- FC5785-1 for 13C2-PFTeDA: Outside control limits.
- FC5785-1 for Perfluorotetradecanoic acid: Associated ID Standard outside control limits.
- FC5785-2 for 13C2-PFTeDA, 13C8-FOSA: Outside control limits.
- FC5785-2 for Perfluorotetradecanoic acid: Associated ID Standard outside control limits.
- FC5785-4: Insufficient sample for re-extraction.
- FC5785-4 for 11Cl-PF3OUdS (F-53B Minor): Associated ID Standard outside control limits.
- FC5785-5 for 13C2-PFTeDA: Outside control limits.
- FC5785-6 for 11Cl-PF3OUdS (F-53B Minor): Associated ID Standard outside control limits.
- FC5785-6 for 13C2-PFDoDA, 13C2-PFTeDA, 13C8-FOSA: Outside control limits.
- FC5785-7 for 13C2-PFDoDA, 13C2-PFTeDA, 13C8-FOSA: Outside control limits.
- FC5785-7 for 11Cl-PF3OUdS (F-53B Minor): Associated ID Standard outside control limits.
- FC5785-8 for 13C8-FOSA, 13C2-PFTeDA: Outside control limits.
- FC5785-8 for PFOSA: Associated ID Standard outside control limits.
- FC5785-9 for 13C8-FOSA, 13C2-PFTeDA: Outside control limits.
- FC5785-9 for Perfluorotetradecanoic acid: Associated ID Standard outside control limits.
- FC5785-11 for 11Cl-PF3OUdS (F-53B Minor): Associated ID Standard outside control limits.
- FC5785-11 for 13C7-PFUnDA, 13C2-PFDoDA, 13C2-PFTeDA, 13C8-FOSA, d5-EtFOSAA: Outside control limits.
- FC5785-13 for 11Cl-PF3OUdS (F-53B Minor): Associated ID Standard outside control limits.
- FC5785-13 for 13C2-PFDoDA, 13C2-PFTeDA, 13C8-FOSA: Outside control limits.
- FC5785-15, FC5785-19: Confirmation run.
- FC5785-15 for 13C2-PFTeDA: Outside control limits.
- FC5785-15 for Perfluorotetradecanoic acid: Associated ID Standard outside control limits.
- FC5785-17 for 13C2-PFTeDA, 13C4-PFBA, 13C8-FOSA: Outside control limits.
- FC5785-17 for Perfluorotetradecanoic acid: Associated ID Standard outside control limits.
- FC5785-19 for 13C2-PFTeDA: Outside control limits.
- FC5785-19 for Perfluorotetradecanoic acid: Associated ID Standard outside control limits.
- FC5785-21 for PFOSA, Perfluorotetradecanoic acid: Associated ID Standard outside control limits.
- FC5785-21 for 13C2-PFTeDA, 13C8-FOSA: Outside control limits.
- FC5785-22 for 13C2-PFDoDA, 13C2-PFTeDA, 13C4-PFBA, 13C7-PFUnDA, 13C8-FOSA: Outside control limits.
- FC5785-22 for 11Cl-PF3OUdS (F-53B Minor): Associated ID Standard outside control limits.
- FC5785-24 for Perfluorotetradecanoic acid: Associated ID Standard outside control limits.
- FC5785-24 for 13C2-PFTeDA: Outside control limits.
- FC5785-25 for 13C2-PFTeDA: Outside control limits.
- OP96805-BS for 13C2-PFTeDA: Outside control limits.

MS Semi-volatiles By Method EPA 537M QSM5.3 B-15

Matrix: AQ **Batch ID:** OP96821

- All samples were extracted within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- Samples FC5785-23MS, FC5785-23MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.
- Samples FC5785-23, FC5785-27, FC5785-28, FC5785-29 have surrogates outside control limits.
- FC5785-23 for 13C2-PFTeDA, 13C4-PFBA, 13C8-FOSA: Outside control limits.
- FC5785-23 for Perfluorobutanoic acid: Associated ID Standard outside control limits.
- FC5785-23: Dilution required (ID recovery standard failure).
- FC5785-26: Confirmation run.
- FC5785-27 for 13C2-PFTeDA, 13C4-PFBA, 13C8-FOSA: Outside control limits.
- FC5785-27 for PFOSA, Perfluorotetradecanoic acid: Associated ID Standard outside control limits.
- FC5785-27: Dilution required (ID recovery standard failure).
- FC5785-28 for 11Cl-PF3OUdS (F-53B Minor): Associated ID Standard outside control limits.
- FC5785-28 for 13C2-PFDoDA, 13C2-PFTeDA: Outside control limits.
- FC5785-28 for Perfluorododecanoic acid, Perfluorotetradecanoic acid, Perfluorotridecanoic acid: Associated ID Standard outside control limits.
- FC5785-28: Dilution required (ID recovery standard failure).
- FC5785-29 for 13C2-PFTeDA, 13C4-PFBA, 13C8-FOSA: Outside control limits.
- FC5785-29 for Perfluorotetradecanoic acid: Associated ID Standard outside control limits.
- FC5785-29: Dilution required (ID recovery standard failure).

Matrix: AQ **Batch ID:** OP96962

- All samples were extracted within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Samples FC5785-1, FC5785-11, FC5785-13, FC5785-21, FC5785-22, FC5785-25, FC5785-5, FC5785-6 have surrogates outside control limits.
- FC5785-1, FC5785-21, FC5785-22: Confirmation run.
- FC5785-5 for 13C8-FOSA: Outside control limits.
- FC5785-6 for 13C5-PFHxA, 13C7-PFUnDA, 13C2-PFDoDA, 13C2-PFTeDA, 13C3-HFPO-DA, 13C3-PFBS, 13C4-PFBA, 13C5-PFPeA, 13C8-FOSA: Outside control limits.
- FC5785-6 for Perfluorododecanoic acid, Perfluorotetradecanoic acid, Perfluorotridecanoic acid: Associated ID Standard outside control limits.
- FC5785-11 for 13C2-PFDoDA, 13C2-PFTeDA, 13C3-HFPO-DA, 13C4-PFBA, 13C5-PFPeA, 13C7-PFUnDA, 13C8-FOSA, d5-EtFOSAA: Outside control limits.
- FC5785-11 for Perfluorododecanoic acid, Perfluorotetradecanoic acid, Perfluorotridecanoic acid: Associated ID Standard outside control limits.
- FC5785-13 for 13C2-PFDoDA, 13C2-PFTeDA, 13C4-PFBA, 13C8-FOSA: Outside control limits.
- FC5785-13 for Perfluorotetradecanoic acid, Perfluorotridecanoic acid, Perfluorododecanoic acid: Associated ID Standard outside control limits.
- FC5785-25 for 13C3-HFPO-DA, 13C5-PFPeA, 13C7-PFUnDA, 13C8-FOSA, 13C2-4:2FTS, 13C2-8:2FTS, 13C2-PFDoDA, 13C2-PFTeDA, 13C3-PFBS, 13C4-PFBA, 13C4-PFHpA, 13C5-PFHxA, 13C8-PFOS, d3-MeFOSAA, d5-EtFOSAA: Outside control limits.
- FC5785-25 for Perfluorotetradecanoic acid: Associated ID Standard outside control limits.
- OP96962-BSD for 13C8-FOSA: Outside control limits.

SGS North America Inc. - Orlando certifies that data reported for samples received, listed on the associated custody chain or analytical task order, were produced to specifications meeting the Quality System precision, accuracy and completeness objectives except as noted. Estimated non-standard method measurement uncertainty data is available on request, based on quality control bias and implicit for standard methods. Acceptable uncertainty requires tested parameter quality control data to meet method criteria. SGS North America Inc.- Orlando is not responsible for data quality assumptions if partial reports are used and recommends that this report be used in its entirety.

Narrative prepared by:

_____

Gabriela Benitez, QA Coordinator *(Signature on File)*

Summary of Hits

Job Number: FC5785
Account: Tetra Tech NUS
Project: KSC-CRCA
Collected: 05/01/23 thru 05/02/23

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	PQL	MDL	Units	Method
FC5785-1	**CRCA-EB-20230501-01**					
No hits reported in this sample.						
FC5785-2	**CRCA-DPT0279-008.0-20230501**					
Perfluorobutanoic acid		0.507	0.016	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid		0.0022 I	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0030 I	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.0021 I	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0040 I	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0051 I	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0054 I	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
FC5785-3	**CRCA-FB-20230501-01**					
No hits reported in this sample.						
FC5785-4	**CRCA-DPT0279-018.0-20230501**					
Perfluorobutanoic acid [a]		0.796	0.080	0.020	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid [b]		0.0026 I	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid [b]		0.0041 I	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid [b]		0.0023 I	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid [b]		0.0051 I	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid [b]		0.0059 I	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid [b]		0.0053 I	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
FC5785-5	**CRCA-DPT0279-028.0-20230501**					
Perfluorobutanoic acid		0.0511	0.016	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0028 I	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0027 I	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0026 I	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
FC5785-6	**CRCA-DPT0279-038.0-20230501**					
Perfluorobutanoic acid		0.0413	0.016	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0025 I	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0043 I	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0025 I	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0022 I	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15

Summary of Hits

Job Number: FC5785
Account: Tetra Tech NUS
Project: KSC-CRCA
Collected: 05/01/23 thru 05/02/23

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	PQL	MDL	Units	Method
FC5785-7	**CRCA-DPT0279-048.0-20230501**					
Perfluorobutanoic acid		0.195	0.016	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid		0.0032 I	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0046 I	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.0024 I	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0054 I	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid		0.0024 I	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0039 I	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
FC5785-8	**CRCA-DPT0279-057.0-20230501**					
No hits reported in this sample.						
FC5785-9	**CRCA-DPT0280-008.0-20230501**					
Perfluorobutanoic acid		0.206	0.016	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid		0.0026 I	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0025 I	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.0022 I	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0063 I	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0026 I	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0145	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
FC5785-10	**CRCA-DPT0280-013.0-20230502**					
No hits reported in this sample.						
FC5785-11	**CRCA-DPT0280-018.0-20230502**					
Perfluorobutanoic acid [a]		0.912	0.080	0.020	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid		0.0034 I	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0043 I	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.0024 I	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0063 I	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0158	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
FC5785-12	**CRCA-DPT0280-023.0-20230502**					
No hits reported in this sample.						
FC5785-13	**CRCA-DPT0280-028.0-20230502**					
Perfluorobutanoic acid [a]		0.813	0.080	0.020	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid		0.0041 I	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15

Summary of Hits

Job Number: FC5785
Account: Tetra Tech NUS
Project: KSC-CRCA
Collected: 05/01/23 thru 05/02/23

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	PQL	MDL	Units	Method
Perfluorohexanoic acid		0.0045 I	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.0030 I	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0087	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0033 I	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
FC5785-14	**CRCA-DPT0280-033.0-20230502**					
No hits reported in this sample.						
FC5785-15	**CRCA-DPT0280-038.0-20230502**					
Vinyl Chloride [c]		0.54 I	1.0	0.41	ug/l	SW846 8260D
Perfluorobutanoic acid		0.611	0.016	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid		0.0050 I	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0077 I	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.0056 I	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0195	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorononanoic acid		0.0021 I	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0098	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
FC5785-16	**CRCA-DPT0280-043.0-20230502**					
Vinyl Chloride [c]		2.9	1.0	0.41	ug/l	SW846 8260D
FC5785-17	**CRCA-DPT0280-048.0-20230502**					
Vinyl Chloride [c]		2.7	1.0	0.41	ug/l	SW846 8260D
Perfluorobutanoic acid [a]		0.266	0.080	0.020	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid		0.0049 I	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0086	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.0036 I	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0114	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
FC5785-18	**CRCA-DPT0280-053.0-20230502**					
No hits reported in this sample.						
FC5785-19	**CRCA-DPT0280-057.0-20230502**					
No hits reported in this sample.						
FC5785-20	**CRCA-EB-20230502-01**					
No hits reported in this sample.						

Summary of Hits

Job Number: FC5785
Account: Tetra Tech NUS
Project: KSC-CRCA
Collected: 05/01/23 thru 05/02/23

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	PQL	MDL	Units	Method
FC5785-21	**CRCA-DPT0281-008.0-20230502**					
Perfluorobutanoic acid		0.194	0.016	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid		0.0084	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0109	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.0047 I	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0163	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorononanoic acid		0.0023 I	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorodecanoic acid		0.0098	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluoroundecanoic acid		0.0027 I	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0045 I	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
FC5785-22	**CRCA-DPT0281-018.0-20230502**					
Perfluorobutanoic acid [a]		0.850	0.080	0.020	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid		0.0070 I	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0086	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.0068 I	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0175	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorononanoic acid		0.0033 I	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorodecanoic acid		0.0037 I	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0028 I	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0089	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
FC5785-23	**CRCA-DPT0281-028.0-20230502**					
Perfluorobutanoic acid [d]		0.629	0.071	0.018	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid		0.0095	0.0071	0.0018	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0099	0.0071	0.0018	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.0050 I	0.0071	0.0018	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0143	0.0071	0.0018	ug/l	EPA 537M QSM5.3 B-15
Perfluorononanoic acid		0.0029 I	0.0071	0.0018	ug/l	EPA 537M QSM5.3 B-15
Perfluorodecanoic acid		0.0129	0.0071	0.0018	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0026 I	0.0071	0.0018	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0089	0.0071	0.0018	ug/l	EPA 537M QSM5.3 B-15
FC5785-24	**CRCA-DPT0281-038.0-20230502**					
Perfluorobutanoic acid		0.414	0.016	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid		0.0074 I	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0078 I	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.0058 I	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0205	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorononanoic acid		0.0047 I	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0024 I	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15

Summary of Hits

Job Number: FC5785
Account: Tetra Tech NUS
Project: KSC-CRCA
Collected: 05/01/23 thru 05/02/23

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	PQL	MDL	Units	Method
Perfluorooctanesulfonic acid		0.0059 I	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
FC5785-25	**CRCA-DPT0281-048.0-20230502**					
No hits reported in this sample.						
FC5785-26	**CRCA-FB-20230502-01**					
PFOSA		0.0027 I	0.0063	0.0016	ug/l	EPA 537M QSM5.3 B-15
FC5785-27	**CRCA-DPT0281-057.0-20230502**					
Perfluorooctanesulfonic acid		0.0033 I	0.0071	0.0018	ug/l	EPA 537M QSM5.3 B-15
FC5785-28	**CRCA-FD-20230501-01**					
No hits reported in this sample.						
FC5785-29	**CRCA-FD-20230502-01**					
Perfluorobutanoic acid [a]		0.675	0.071	0.018	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid		0.0084	0.0071	0.0018	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0082	0.0071	0.0018	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.0064 I	0.0071	0.0018	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0166	0.0071	0.0018	ug/l	EPA 537M QSM5.3 B-15
Perfluorononanoic acid		0.0032 I	0.0071	0.0018	ug/l	EPA 537M QSM5.3 B-15
Perfluorodecanoic acid		0.0037 I	0.0071	0.0018	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0029 I	0.0071	0.0018	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0078	0.0071	0.0018	ug/l	EPA 537M QSM5.3 B-15

(a) Dilution required (ID recovery standard failure).
(b) Insufficient sample for re-extraction.
(c) Sample was not preserved to a pH < 2. Sample was treated with an anti-foaming agent.
(d) Dilution required (ID recovery standard failure). Associated ID Standard outside control limits.

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID: CRCA-EB-20230501-01
Lab Sample ID: FC5785-1
Matrix: AQ - Equipment Blank
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: KSC-CRCA

Date Sampled: 05/01/23
Date Received: 05/02/23
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q109166.D	1	05/13/23 02:06	LR	05/09/23 12:50	OP96805	S2Q1537
Run #2 [a]	3Q77045.D	1	05/23/23 18:37	AL	05/18/23 15:33	OP96962	S3Q1064

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2	155 ml	1.0 ml

CAS No.	Compound	Result	PQL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	0.0040 U	0.016	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0020 U	0.0080	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	0.0020 U	0.0080	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0020 U	0.0080	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	0.0020 U	0.0080	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0020 U	0.0080	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid [b]	0.0020 U	0.0080	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS						
375-73-5	Perfluorobutanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA	0.0020 U	0.0080	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	0.0040 U	0.016	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0040 U	0.016	0.0040	ug/l	
FLUOROTELOMER SULFONATES						
757124-72-4	4:2 Fluorotelomer sulfonate	0.0040 U	0.016	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0040 U	0.016	0.0040	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: CRCA-EB-20230501-01
Lab Sample ID: FC5785-1
Matrix: AQ - Equipment Blank
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: KSC-CRCA

Date Sampled: 05/01/23
Date Received: 05/02/23
Percent Solids: n/a

CAS No.	Compound	Result	PQL	MDL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0040 U	0.016	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES						
13252-13-6	HFPO-DA (GenX)	0.0040 U	0.016	0.0040	ug/l	
919005-14-4	ADONA	0.0040 U	0.016	0.0040	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0040 U	0.016	0.0040	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0040 U	0.016	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	73%	61%	50-150%
	13C5-PFPeA	74%	66%	50-150%
	13C5-PFHxA	74%	70%	50-150%
	13C4-PFHpA	74%	73%	50-150%
	13C8-PFOA	75%	74%	50-150%
	13C9-PFNA	73%	72%	50-150%
	13C6-PFDA	70%	67%	50-150%
	13C7-PFUnDA	65%	59%	50-150%
	13C2-PFDoDA	59%	54%	50-150%
	13C2-PFTeDA	42% [c]	46% [c]	50-150%
	13C3-PFBS	73%	71%	50-150%
	13C3-PFHxS	71%	73%	50-150%
	13C8-PFOS	68%	66%	50-150%
	13C8-FOSA	67%	58%	50-150%
	d3-MeFOSAA	72%	69%	50-150%
	d5-EtFOSAA	71%	64%	50-150%
	13C2-4:2FTS	69%	70%	50-150%
	13C2-6:2FTS	73%	73%	50-150%
	13C2-8:2FTS	74%	65%	50-150%
	13C3-HFPO-DA	69%	63%	50-150%

(a) Confirmation run.
(b) Associated ID Standard outside control limits.
(c) Outside control limits.

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0279-008.0-20230501		
Lab Sample ID:	FC5785-2	**Date Sampled:**	05/01/23
Matrix:	AQ - Ground Water	**Date Received:**	05/02/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	KSC-CRCA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q109167.D	1	05/13/23 02:24	LR	05/09/23 12:50	OP96805	S2Q1537
Run #2 [a]	2Q109341.D	5	05/16/23 18:06	LR	05/09/23 12:50	OP96805	S2Q1540

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2	125 ml	1.0 ml

CAS No.	Compound	Result	PQL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	0.507	0.016	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0022	0.0080	0.0020	ug/l	I
307-24-4	Perfluorohexanoic acid	0.0030	0.0080	0.0020	ug/l	I
375-85-9	Perfluoroheptanoic acid	0.0021	0.0080	0.0020	ug/l	I
335-67-1	Perfluorooctanoic acid	0.0040	0.0080	0.0020	ug/l	I
375-95-1	Perfluorononanoic acid	0.0020 U	0.0080	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid [b]	0.0020 U	0.0080	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS						
375-73-5	Perfluorobutanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0051	0.0080	0.0020	ug/l	I
375-92-8	Perfluoroheptanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0054	0.0080	0.0020	ug/l	I
68259-12-1	Perfluorononanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA	0.010 U [c]	0.040	0.010	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	0.0040 U	0.016	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0040 U	0.016	0.0040	ug/l	
FLUOROTELOMER SULFONATES						
757124-72-4	4:2 Fluorotelomer sulfonate	0.0040 U	0.016	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0040 U	0.016	0.0040	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0279-008.0-20230501		
Lab Sample ID:	FC5785-2	**Date Sampled:**	05/01/23
Matrix:	AQ - Ground Water	**Date Received:**	05/02/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	KSC-CRCA		

CAS No.	Compound	Result	PQL	MDL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0040 U	0.016	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES						
13252-13-6	HFPO-DA (GenX)	0.0040 U	0.016	0.0040	ug/l	
919005-14-4	ADONA	0.0040 U	0.016	0.0040	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0040 U	0.016	0.0040	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0040 U	0.016	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	58%	78%	50-150%
	13C5-PFPeA	60%	79%	50-150%
	13C5-PFHxA	61%	79%	50-150%
	13C4-PFHpA	63%	79%	50-150%
	13C8-PFOA	66%	80%	50-150%
	13C9-PFNA	66%	80%	50-150%
	13C6-PFDA	66%	78%	50-150%
	13C7-PFUnDA	60%	69%	50-150%
	13C2-PFDoDA	58%	59%	50-150%
	13C2-PFTeDA	39% d	27% d	50-150%
	13C3-PFBS	62%	81%	50-150%
	13C3-PFHxS	61%	82%	50-150%
	13C8-PFOS	59%	78%	50-150%
	13C8-FOSA	43% d	54%	50-150%
	d3-MeFOSAA	67%	73%	50-150%
	d5-EtFOSAA	62%	70%	50-150%
	13C2-4:2FTS	64%	77%	50-150%
	13C2-6:2FTS	67%	78%	50-150%
	13C2-8:2FTS	62%	77%	50-150%
	13C3-HFPO-DA	61%	73%	50-150%

(a) Dilution required (ID recovery standard failure).
(b) Associated ID Standard outside control limits.
(c) Result is from Run# 2
(d) Outside control limits.

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-FB-20230501-01		
Lab Sample ID:	FC5785-3	**Date Sampled:**	05/01/23
Matrix:	AQ - Field Blank Water	**Date Received:**	05/02/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	KSC-CRCA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q109168.D	1	05/13/23 02:41	LR	05/09/23 12:50	OP96805	S2Q1537
Run #2							

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	PQL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	0.0040 U	0.016	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0020 U	0.0080	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	0.0020 U	0.0080	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0020 U	0.0080	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	0.0020 U	0.0080	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0020 U	0.0080	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS						
375-73-5	Perfluorobutanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA	0.0020 U	0.0080	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	0.0040 U	0.016	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0040 U	0.016	0.0040	ug/l	
FLUOROTELOMER SULFONATES						
757124-72-4	4:2 Fluorotelomer sulfonate	0.0040 U	0.016	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0040 U	0.016	0.0040	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: CRCA-FB-20230501-01
Lab Sample ID: FC5785-3
Matrix: AQ - Field Blank Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: KSC-CRCA

Date Sampled: 05/01/23
Date Received: 05/02/23
Percent Solids: n/a

CAS No.	Compound	Result	PQL	MDL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0040 U	0.016	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES						
13252-13-6	HFPO-DA (GenX)	0.0040 U	0.016	0.0040	ug/l	
919005-14-4	ADONA	0.0040 U	0.016	0.0040	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0040 U	0.016	0.0040	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0040 U	0.016	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	71%		50-150%
	13C5-PFPeA	71%		50-150%
	13C5-PFHxA	71%		50-150%
	13C4-PFHpA	69%		50-150%
	13C8-PFOA	68%		50-150%
	13C9-PFNA	64%		50-150%
	13C6-PFDA	63%		50-150%
	13C7-PFUnDA	63%		50-150%
	13C2-PFDoDA	61%		50-150%
	13C2-PFTeDA	56%		50-150%
	13C3-PFBS	70%		50-150%
	13C3-PFHxS	67%		50-150%
	13C8-PFOS	62%		50-150%
	13C8-FOSA	68%		50-150%
	d3-MeFOSAA	69%		50-150%
	d5-EtFOSAA	67%		50-150%
	13C2-4:2FTS	65%		50-150%
	13C2-6:2FTS	64%		50-150%
	13C2-8:2FTS	62%		50-150%
	13C3-HFPO-DA	65%		50-150%

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0279-018.0-20230501		
Lab Sample ID:	FC5785-4	**Date Sampled:**	05/01/23
Matrix:	AQ - Ground Water	**Date Received:**	05/02/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	KSC-CRCA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	2Q109169.D	1	05/13/23 02:59	LR	05/09/23 12:50	OP96805	S2Q1537
Run #2 [b]	2Q109342.D	5	05/16/23 18:24	LR	05/09/23 12:50	OP96805	S2Q1540

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2	125 ml	1.0 ml

CAS No.	Compound	Result	PQL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	0.796 [c]	0.080	0.020	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0026	0.0080	0.0020	ug/l	I
307-24-4	Perfluorohexanoic acid	0.0041	0.0080	0.0020	ug/l	I
375-85-9	Perfluoroheptanoic acid	0.0023	0.0080	0.0020	ug/l	I
335-67-1	Perfluorooctanoic acid	0.0051	0.0080	0.0020	ug/l	I
375-95-1	Perfluorononanoic acid	0.0020 U	0.0080	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.010 U [c]	0.040	0.010	ug/l	
307-55-1	Perfluorododecanoic acid [d]	0.010 U [c]	0.040	0.010	ug/l	
72629-94-8	Perfluorotridecanoic acid [d]	0.010 U [c]	0.040	0.010	ug/l	
376-06-7	Perfluorotetradecanoic acid [d]	0.010 U [c]	0.040	0.010	ug/l	
PERFLUOROALKYLSULFONIC ACIDS						
375-73-5	Perfluorobutanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0059	0.0080	0.0020	ug/l	I
375-92-8	Perfluoroheptanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0053	0.0080	0.0020	ug/l	I
68259-12-1	Perfluorononanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.010 U [c]	0.040	0.010	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA [d]	0.010 U [c]	0.040	0.010	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	0.0040 U	0.016	0.0040	ug/l	
2991-50-6	EtFOSAA	0.020 U [c]	0.080	0.020	ug/l	
FLUOROTELOMER SULFONATES						
757124-72-4	4:2 Fluorotelomer sulfonate	0.0040 U	0.016	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0040 U	0.016	0.0040	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0279-018.0-20230501		
Lab Sample ID:	FC5785-4	**Date Sampled:**	05/01/23
Matrix:	AQ - Ground Water	**Date Received:**	05/02/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	KSC-CRCA		

CAS No.	Compound	Result	PQL	MDL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0040 U	0.016	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES						
13252-13-6	HFPO-DA (GenX)	0.0040 U	0.016	0.0040	ug/l	
919005-14-4	ADONA	0.0040 U	0.016	0.0040	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0040 U	0.016	0.0040	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Mino [d]	0.020 U [c]	0.080	0.020	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	55%	78%	50-150%
	13C5-PFPeA	58%	80%	50-150%
	13C5-PFHxA	62%	82%	50-150%
	13C4-PFHpA	65%	81%	50-150%
	13C8-PFOA	70%	82%	50-150%
	13C9-PFNA	72%	83%	50-150%
	13C6-PFDA	63%	79%	50-150%
	13C7-PFUnDA	45% [e]	57%	50-150%
	13C2-PFDoDA	19% [e]	31% [e]	50-150%
	13C2-PFTeDA	2% [e]	6% [e]	50-150%
	13C3-PFBS	62%	80%	50-150%
	13C3-PFHxS	62%	85%	50-150%
	13C8-PFOS	62%	87%	50-150%
	13C8-FOSA	20% [e]	35% [e]	50-150%
	d3-MeFOSAA	57%	71%	50-150%
	d5-EtFOSAA	47% [e]	59%	50-150%
	13C2-4:2FTS	66%	81%	50-150%
	13C2-6:2FTS	77%	80%	50-150%
	13C2-8:2FTS	67%	79%	50-150%
	13C3-HFPO-DA	61%	74%	50-150%

(a) Insufficient sample for re-extraction.
(b) Dilution required (ID recovery standard failure).
(c) Result is from Run# 2
(d) Associated ID Standard outside control limits.
(e) Outside control limits.

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0279-028.0-20230501		
Lab Sample ID:	FC5785-5	**Date Sampled:**	05/01/23
Matrix:	AQ - Ground Water	**Date Received:**	05/02/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	KSC-CRCA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3Q77046.D	1	05/23/23 18:53	AL	05/18/23 15:33	OP96962	S3Q1064
Run #2	2Q109343.D	1	05/16/23 18:41	LR	05/09/23 12:50	OP96805	S2Q1540

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2	125 ml	1.0 ml

CAS No.	Compound	Result	PQL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	0.0511	0.016	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0020 U	0.0080	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	0.0020 U	0.0080	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0020 U	0.0080	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	0.0028	0.0080	0.0020	ug/l	I
375-95-1	Perfluorononanoic acid	0.0020 U	0.0080	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS						
375-73-5	Perfluorobutanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0027	0.0080	0.0020	ug/l	I
375-92-8	Perfluoroheptanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0026	0.0080	0.0020	ug/l	I
68259-12-1	Perfluorononanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA	0.0020 U [a]	0.0080	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	0.0040 U	0.016	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0040 U	0.016	0.0040	ug/l	
FLUOROTELOMER SULFONATES						
757124-72-4	4:2 Fluorotelomer sulfonate	0.0040 U	0.016	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0040 U	0.016	0.0040	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: CRCA-DPT0279-028.0-20230501
Lab Sample ID: FC5785-5
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: KSC-CRCA

Date Sampled: 05/01/23
Date Received: 05/02/23
Percent Solids: n/a

CAS No.	Compound	Result	PQL	MDL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0040 U	0.016	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES						
13252-13-6	HFPO-DA (GenX)	0.0040 U	0.016	0.0040	ug/l	
919005-14-4	ADONA	0.0040 U	0.016	0.0040	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0040 U	0.016	0.0040	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0040 U	0.016	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	87%	61%	50-150%
	13C5-PFPeA	101%	62%	50-150%
	13C5-PFHxA	102%	66%	50-150%
	13C4-PFHpA	110%	68%	50-150%
	13C8-PFOA	124%	71%	50-150%
	13C9-PFNA	125%	73%	50-150%
	13C6-PFDA	115%	75%	50-150%
	13C7-PFUnDA	97%	66%	50-150%
	13C2-PFDoDA	83%	50%	50-150%
	13C2-PFTeDA	66%	7% [b]	50-150%
	13C3-PFBS	102%	63%	50-150%
	13C3-PFHxS	117%	68%	50-150%
	13C8-PFOS	108%	70%	50-150%
	13C8-FOSA	45% [b]	52%	50-150%
	d3-MeFOSAA	126%	79%	50-150%
	d5-EtFOSAA	118%	73%	50-150%
	13C2-4:2FTS	114%	68%	50-150%
	13C2-6:2FTS	147%	81%	50-150%
	13C2-8:2FTS	114%	80%	50-150%
	13C3-HFPO-DA	92%	59%	50-150%

(a) Result is from Run# 2
(b) Outside control limits.

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0279-038.0-20230501		
Lab Sample ID:	FC5785-6	**Date Sampled:**	05/01/23
Matrix:	AQ - Ground Water	**Date Received:**	05/02/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	KSC-CRCA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q109347.D	1	05/16/23 19:51	LR	05/09/23 12:50	OP96805	S2Q1540
Run #2	3Q77049.D	1	05/23/23 19:44	AL	05/18/23 15:33	OP96962	S3Q1064
Run #3 [a]	2Q109394.D	5	05/17/23 18:27	LR	05/09/23 12:50	OP96805	S2Q1541

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2	140 ml	1.0 ml
Run #3	125 ml	1.0 ml

CAS No.	Compound	Result	PQL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	0.0413	0.016	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0020 U	0.0080	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	0.0025	0.0080	0.0020	ug/l	I
375-85-9	Perfluoroheptanoic acid	0.0020 U	0.0080	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	0.0043	0.0080	0.0020	ug/l	I
375-95-1	Perfluorononanoic acid	0.0020 U	0.0080	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid [b]	0.0018 U [c]	0.0071	0.0018	ug/l	
72629-94-8	Perfluorotridecanoic acid [b]	0.0018 U [c]	0.0071	0.0018	ug/l	
376-06-7	Perfluorotetradecanoic acid [b]	0.0018 U [c]	0.0071	0.0018	ug/l	
PERFLUOROALKYLSULFONIC ACIDS						
375-73-5	Perfluorobutanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0025	0.0080	0.0020	ug/l	I
375-92-8	Perfluoroheptanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0022	0.0080	0.0020	ug/l	I
68259-12-1	Perfluorononanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA	0.010 U [d]	0.040	0.010	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	0.0040 U	0.016	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0040 U	0.016	0.0040	ug/l	
FLUOROTELOMER SULFONATES						

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0279-038.0-20230501		
Lab Sample ID:	FC5785-6	**Date Sampled:**	05/01/23
Matrix:	AQ - Ground Water	**Date Received:**	05/02/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	KSC-CRCA		

CAS No.	Compound	Result	PQL	MDL	Units	Q
757124-72-4	4:2 Fluorotelomer sulfonate	0.0040 U	0.016	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0040 U	0.016	0.0040	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0040 U	0.016	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES						
13252-13-6	HFPO-DA (GenX)	0.0040 U	0.016	0.0040	ug/l	
919005-14-4	ADONA	0.0040 U	0.016	0.0040	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0040 U	0.016	0.0040	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Mino [b]	0.0040 U	0.016	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Run# 3	Limits
	13C4-PFBA	64%	44% [e]	80%	50-150%
	13C5-PFPeA	65%	47% [e]	81%	50-150%
	13C5-PFHxA	70%	49% [e]	84%	50-150%
	13C4-PFHpA	72%	59%	82%	50-150%
	13C8-PFOA	76%	67%	80%	50-150%
	13C9-PFNA	76%	70%	81%	50-150%
	13C6-PFDA	68%	63%	69%	50-150%
	13C7-PFUnDA	52%	47% [e]	52%	50-150%
	13C2-PFDoDA	33% [e]	45% [e]	33% [e]	50-150%
	13C2-PFTeDA	4% [e]	44% [e]	6% [e]	50-150%
	13C3-PFBS	69%	49% [e]	83%	50-150%
	13C3-PFHxS	71%	62%	78%	50-150%
	13C8-PFOS	66%	61%	74%	50-150%
	13C8-FOSA	46% [e]	17% [e]	58%	50-150%
	d3-MeFOSAA	64%	58%	59%	50-150%
	d5-EtFOSAA	58%	52%	53%	50-150%
	13C2-4:2FTS	72%	53%	82%	50-150%
	13C2-6:2FTS	82%	76%	77%	50-150%
	13C2-8:2FTS	69%	59%	68%	50-150%
	13C3-HFPO-DA	63%	44% [e]	68%	50-150%

(a) Dilution required (ID recovery standard failure).
(b) Associated ID Standard outside control limits.
(c) Result is from Run# 2
(d) Result is from Run# 3
(e) Outside control limits.

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0279-048.0-20230501		
Lab Sample ID:	FC5785-7	**Date Sampled:**	05/01/23
Matrix:	AQ - Ground Water	**Date Received:**	05/02/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	KSC-CRCA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q109172.D	1	05/13/23 03:51	LR	05/09/23 12:50	OP96805	S2Q1537
Run #2 [a]	2Q109348.D	5	05/16/23 20:09	LR	05/09/23 12:50	OP96805	S2Q1540

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2	125 ml	1.0 ml

CAS No.	Compound	Result	PQL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	0.195	0.016	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0032	0.0080	0.0020	ug/l	I
307-24-4	Perfluorohexanoic acid	0.0046	0.0080	0.0020	ug/l	I
375-85-9	Perfluoroheptanoic acid	0.0024	0.0080	0.0020	ug/l	I
335-67-1	Perfluorooctanoic acid	0.0054	0.0080	0.0020	ug/l	I
375-95-1	Perfluorononanoic acid	0.0020 U	0.0080	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid [b]	0.010 U [c]	0.040	0.010	ug/l	
72629-94-8	Perfluorotridecanoic acid [b]	0.010 U [c]	0.040	0.010	ug/l	
376-06-7	Perfluorotetradecanoic acid [b]	0.010 U [c]	0.040	0.010	ug/l	
PERFLUOROALKYLSULFONIC ACIDS						
375-73-5	Perfluorobutanesulfonic acid	0.0024	0.0080	0.0020	ug/l	I
2706-91-4	Perfluoropentanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0039	0.0080	0.0020	ug/l	I
68259-12-1	Perfluorononanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA	0.010 U [c]	0.040	0.010	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	0.0040 U	0.016	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0040 U	0.016	0.0040	ug/l	
FLUOROTELOMER SULFONATES						
757124-72-4	4:2 Fluorotelomer sulfonate	0.0040 U	0.016	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0040 U	0.016	0.0040	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0279-048.0-20230501		
Lab Sample ID:	FC5785-7	**Date Sampled:**	05/01/23
Matrix:	AQ - Ground Water	**Date Received:**	05/02/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	KSC-CRCA		

CAS No.	Compound	Result	PQL	MDL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0040 U	0.016	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES						
13252-13-6	HFPO-DA (GenX)	0.0040 U	0.016	0.0040	ug/l	
919005-14-4	ADONA	0.0040 U	0.016	0.0040	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0040 U	0.016	0.0040	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Mino [b]	0.020 U [c]	0.080	0.020	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	63%	86%	50-150%
	13C5-PFPeA	65%	87%	50-150%
	13C5-PFHxA	69%	89%	50-150%
	13C4-PFHpA	70%	87%	50-150%
	13C8-PFOA	72%	85%	50-150%
	13C9-PFNA	73%	84%	50-150%
	13C6-PFDA	74%	81%	50-150%
	13C7-PFUnDA	58%	64%	50-150%
	13C2-PFDoDA	40% [d]	47% [d]	50-150%
	13C2-PFTeDA	9% [d]	24% [d]	50-150%
	13C3-PFBS	66%	88%	50-150%
	13C3-PFHxS	69%	88%	50-150%
	13C8-PFOS	67%	81%	50-150%
	13C8-FOSA	34% [d]	59%	50-150%
	d3-MeFOSAA	79%	79%	50-150%
	d5-EtFOSAA	73%	73%	50-150%
	13C2-4:2FTS	73%	87%	50-150%
	13C2-6:2FTS	84%	93%	50-150%
	13C2-8:2FTS	75%	82%	50-150%
	13C3-HFPO-DA	67%	74%	50-150%

(a) Dilution required (ID recovery standard failure).
(b) Associated ID Standard outside control limits.
(c) Result is from Run# 2
(d) Outside control limits.

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0279-057.0-20230501		
Lab Sample ID:	FC5785-8	**Date Sampled:**	05/01/23
Matrix:	AQ - Ground Water	**Date Received:**	05/02/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	KSC-CRCA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q109175.D	1	05/13/23 04:44	LR	05/09/23 12:50	OP96805	S2Q1537
Run #2 [a]	2Q109349.D	5	05/16/23 20:26	LR	05/09/23 12:50	OP96805	S2Q1540

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2	125 ml	1.0 ml

CAS No.	Compound	Result	PQL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	0.0040 U	0.016	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0020 U	0.0080	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	0.0020 U	0.0080	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0020 U	0.0080	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	0.0020 U	0.0080	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0020 U	0.0080	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.010 U [b]	0.040	0.010	ug/l	
PERFLUOROALKYLSULFONIC ACIDS						
375-73-5	Perfluorobutanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA [c]	0.010 U [b]	0.040	0.010	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	0.0040 U	0.016	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0040 U	0.016	0.0040	ug/l	
FLUOROTELOMER SULFONATES						
757124-72-4	4:2 Fluorotelomer sulfonate	0.0040 U	0.016	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0040 U	0.016	0.0040	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0279-057.0-20230501		
Lab Sample ID:	FC5785-8	**Date Sampled:**	05/01/23
Matrix:	AQ - Ground Water	**Date Received:**	05/02/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	KSC-CRCA		

CAS No.	Compound	Result	PQL	MDL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0040 U	0.016	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES						
13252-13-6	HFPO-DA (GenX)	0.0040 U	0.016	0.0040	ug/l	
919005-14-4	ADONA	0.0040 U	0.016	0.0040	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0040 U	0.016	0.0040	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0040 U	0.016	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	55%	68%	50-150%
	13C5-PFPeA	56%	69%	50-150%
	13C5-PFHxA	56%	69%	50-150%
	13C4-PFHpA	57%	68%	50-150%
	13C8-PFOA	61%	69%	50-150%
	13C9-PFNA	60%	70%	50-150%
	13C6-PFDA	57%	65%	50-150%
	13C7-PFUnDA	54%	61%	50-150%
	13C2-PFDoDA	52%	59%	50-150%
	13C2-PFTeDA	44% d	50%	50-150%
	13C3-PFBS	57%	67%	50-150%
	13C3-PFHxS	57%	67%	50-150%
	13C8-PFOS	55%	70%	50-150%
	13C8-FOSA	37% d	49% d	50-150%
	d3-MeFOSAA	60%	68%	50-150%
	d5-EtFOSAA	58%	65%	50-150%
	13C2-4:2FTS	58%	67%	50-150%
	13C2-6:2FTS	62%	67%	50-150%
	13C2-8:2FTS	57%	67%	50-150%
	13C3-HFPO-DA	55%	58%	50-150%

(a) Dilution required (ID recovery standard failure).
(b) Result is from Run# 2
(c) Associated ID Standard outside control limits.
(d) Outside control limits.

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0280-008.0-20230501		
Lab Sample ID:	FC5785-9	**Date Sampled:**	05/01/23
Matrix:	AQ - Ground Water	**Date Received:**	05/02/23
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	KSC-CRCA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	I756462.D	1	05/05/23 09:01	JW	n/a	n/a	VI2915
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL 4.2 List

CAS No.	Compound	Result	PQL	MDL	Units	Q
67-64-1	Acetone	10 U	25	10	ug/l	
71-43-2	Benzene	0.31 U	1.0	0.31	ug/l	
75-27-4	Bromodichloromethane	0.24 U	1.0	0.24	ug/l	
75-25-2	Bromoform	0.41 U	1.0	0.41	ug/l	
78-93-3	2-Butanone (MEK)	2.0 U	5.0	2.0	ug/l	
75-15-0	Carbon Disulfide	0.53 U	2.0	0.53	ug/l	
56-23-5	Carbon Tetrachloride	0.36 U	1.0	0.36	ug/l	
108-90-7	Chlorobenzene	0.20 U	1.0	0.20	ug/l	
75-00-3	Chloroethane	0.67 U	2.0	0.67	ug/l	
67-66-3	Chloroform	0.30 U	1.0	0.30	ug/l	
110-82-7	Cyclohexane	0.39 U	1.0	0.39	ug/l	
124-48-1	Dibromochloromethane	0.28 U	1.0	0.28	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	1.0 U	5.0	1.0	ug/l	
106-93-4	1,2-Dibromoethane	0.28 U	2.0	0.28	ug/l	
75-71-8	Dichlorodifluoromethane [b]	0.50 U	2.0	0.50	ug/l	
95-50-1	1,2-Dichlorobenzene	0.32 U	1.0	0.32	ug/l	
541-73-1	1,3-Dichlorobenzene	0.22 U	1.0	0.22	ug/l	
106-46-7	1,4-Dichlorobenzene	0.26 U	1.0	0.26	ug/l	
75-34-3	1,1-Dichloroethane	0.34 U	1.0	0.34	ug/l	
107-06-2	1,2-Dichloroethane	0.31 U	1.0	0.31	ug/l	
75-35-4	1,1-Dichloroethylene	0.32 U	1.0	0.32	ug/l	
156-59-2	cis-1,2-Dichloroethylene	0.28 U	1.0	0.28	ug/l	
156-60-5	trans-1,2-Dichloroethylene	0.22 U	1.0	0.22	ug/l	
78-87-5	1,2-Dichloropropane	0.43 U	1.0	0.43	ug/l	
10061-01-5	cis-1,3-Dichloropropene	0.29 U	1.0	0.29	ug/l	
10061-02-6	trans-1,3-Dichloropropene	0.21 U	1.0	0.21	ug/l	
100-41-4	Ethylbenzene	0.36 U	1.0	0.36	ug/l	
76-13-1	Freon 113	0.48 U	1.0	0.48	ug/l	
591-78-6	2-Hexanone	2.0 U	10	2.0	ug/l	
98-82-8	Isopropylbenzene	0.22 U	1.0	0.22	ug/l	
79-20-9	Methyl Acetate	5.0 U	20	5.0	ug/l	
74-83-9	Methyl Bromide	2.0 U	5.0	2.0	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0280-008.0-20230501		
Lab Sample ID:	FC5785-9	**Date Sampled:**	05/01/23
Matrix:	AQ - Ground Water	**Date Received:**	05/02/23
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	KSC-CRCA		

VOA TCL 4.2 List

CAS No.	Compound	Result	PQL	MDL	Units	Q
74-87-3	Methyl Chloride	0.50 U	2.0	0.50	ug/l	
108-87-2	Methylcyclohexane	0.44 U	1.0	0.44	ug/l	
75-09-2	Methylene Chloride [c]	2.0 U	5.0	2.0	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	1.0 U	5.0	1.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	0.23 U	1.0	0.23	ug/l	
100-42-5	Styrene	0.22 U	1.0	0.22	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	0.30 U	1.0	0.30	ug/l	
127-18-4	Tetrachloroethylene	0.22 U	1.0	0.22	ug/l	
108-88-3	Toluene	0.30 U	1.0	0.30	ug/l	
120-82-1	1,2,4-Trichlorobenzene	0.50 U	2.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	0.25 U	1.0	0.25	ug/l	
79-00-5	1,1,2-Trichloroethane	0.47 U	1.0	0.47	ug/l	
79-01-6	Trichloroethylene	0.35 U	1.0	0.35	ug/l	
75-69-4	Trichlorofluoromethane	0.50 U	2.0	0.50	ug/l	
75-01-4	Vinyl Chloride	0.41 U	1.0	0.41	ug/l	
1330-20-7	Xylene (total)	0.72 U	3.0	0.72	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	100%		83-118%
17060-07-0	1,2-Dichloroethane-D4	98%		79-125%
2037-26-5	Toluene-D8	99%		85-112%
460-00-4	4-Bromofluorobenzene	103%		83-118%

(a) Sample was not preserved to a pH < 2. Sample was treated with an anti-foaming agent.
(b) Associated ICV outside control limits high, however sample ND.
(c) Associated CCV outside control limits high, sample is ND.

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0280-008.0-20230501		
Lab Sample ID:	FC5785-9	**Date Sampled:**	05/01/23
Matrix:	AQ - Ground Water	**Date Received:**	05/02/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	KSC-CRCA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q109176.D	1	05/13/23 05:01	LR	05/09/23 12:50	OP96805	S2Q1537
Run #2 [a]	2Q109350.D	5	05/16/23 20:44	LR	05/09/23 12:50	OP96805	S2Q1540

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2	125 ml	1.0 ml

CAS No.	Compound	Result	PQL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	0.206	0.016	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0026	0.0080	0.0020	ug/l	I
307-24-4	Perfluorohexanoic acid	0.0025	0.0080	0.0020	ug/l	I
375-85-9	Perfluoroheptanoic acid	0.0022	0.0080	0.0020	ug/l	I
335-67-1	Perfluorooctanoic acid	0.0063	0.0080	0.0020	ug/l	I
375-95-1	Perfluorononanoic acid	0.0020 U	0.0080	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid [b]	0.010 U [c]	0.040	0.010	ug/l	
PERFLUOROALKYLSULFONIC ACIDS						
375-73-5	Perfluorobutanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0026	0.0080	0.0020	ug/l	I
375-92-8	Perfluoroheptanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0145	0.0080	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA [b]	0.010 U [c]	0.040	0.010	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	0.0040 U	0.016	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0040 U	0.016	0.0040	ug/l	
FLUOROTELOMER SULFONATES						
757124-72-4	4:2 Fluorotelomer sulfonate	0.0040 U	0.016	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0040 U	0.016	0.0040	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0280-008.0-20230501		
Lab Sample ID:	FC5785-9	**Date Sampled:**	05/01/23
Matrix:	AQ - Ground Water	**Date Received:**	05/02/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	KSC-CRCA		

CAS No.	Compound	Result	PQL	MDL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0040 U	0.016	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES						
13252-13-6	HFPO-DA (GenX)	0.0040 U	0.016	0.0040	ug/l	
919005-14-4	ADONA	0.0040 U	0.016	0.0040	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0040 U	0.016	0.0040	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0040 U	0.016	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	55%	73%	50-150%
	13C5-PFPeA	56%	76%	50-150%
	13C5-PFHxA	59%	78%	50-150%
	13C4-PFHpA	60%	76%	50-150%
	13C8-PFOA	64%	79%	50-150%
	13C9-PFNA	66%	80%	50-150%
	13C6-PFDA	65%	82%	50-150%
	13C7-PFUnDA	64%	76%	50-150%
	13C2-PFDoDA	55%	63%	50-150%
	13C2-PFTeDA	27% d	30% d	50-150%
	13C3-PFBS	60%	80%	50-150%
	13C3-PFHxS	59%	79%	50-150%
	13C8-PFOS	64%	82%	50-150%
	13C8-FOSA	17% d	24% d	50-150%
	d3-MeFOSAA	69%	80%	50-150%
	d5-EtFOSAA	62%	69%	50-150%
	13C2-4:2FTS	60%	75%	50-150%
	13C2-6:2FTS	66%	75%	50-150%
	13C2-8:2FTS	68%	78%	50-150%
	13C3-HFPO-DA	55%	65%	50-150%

(a) Dilution required (ID recovery standard failure).
(b) Associated ID Standard outside control limits.
(c) Result is from Run# 2
(d) Outside control limits.

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0280-013.0-20230502		
Lab Sample ID:	FC5785-10	**Date Sampled:**	05/01/23
Matrix:	AQ - Ground Water	**Date Received:**	05/02/23
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	KSC-CRCA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	I756463.D	1	05/05/23 09:25	JW	n/a	n/a	VI2915
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL 4.2 List

CAS No.	Compound	Result	PQL	MDL	Units	Q
67-64-1	Acetone	10 U	25	10	ug/l	
71-43-2	Benzene	0.31 U	1.0	0.31	ug/l	
75-27-4	Bromodichloromethane	0.24 U	1.0	0.24	ug/l	
75-25-2	Bromoform	0.41 U	1.0	0.41	ug/l	
78-93-3	2-Butanone (MEK)	2.0 U	5.0	2.0	ug/l	
75-15-0	Carbon Disulfide	0.53 U	2.0	0.53	ug/l	
56-23-5	Carbon Tetrachloride	0.36 U	1.0	0.36	ug/l	
108-90-7	Chlorobenzene	0.20 U	1.0	0.20	ug/l	
75-00-3	Chloroethane	0.67 U	2.0	0.67	ug/l	
67-66-3	Chloroform	0.30 U	1.0	0.30	ug/l	
110-82-7	Cyclohexane	0.39 U	1.0	0.39	ug/l	
124-48-1	Dibromochloromethane	0.28 U	1.0	0.28	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	1.0 U	5.0	1.0	ug/l	
106-93-4	1,2-Dibromoethane	0.28 U	2.0	0.28	ug/l	
75-71-8	Dichlorodifluoromethane [b]	0.50 U	2.0	0.50	ug/l	
95-50-1	1,2-Dichlorobenzene	0.32 U	1.0	0.32	ug/l	
541-73-1	1,3-Dichlorobenzene	0.22 U	1.0	0.22	ug/l	
106-46-7	1,4-Dichlorobenzene	0.26 U	1.0	0.26	ug/l	
75-34-3	1,1-Dichloroethane	0.34 U	1.0	0.34	ug/l	
107-06-2	1,2-Dichloroethane	0.31 U	1.0	0.31	ug/l	
75-35-4	1,1-Dichloroethylene	0.32 U	1.0	0.32	ug/l	
156-59-2	cis-1,2-Dichloroethylene	0.28 U	1.0	0.28	ug/l	
156-60-5	trans-1,2-Dichloroethylene	0.22 U	1.0	0.22	ug/l	
78-87-5	1,2-Dichloropropane	0.43 U	1.0	0.43	ug/l	
10061-01-5	cis-1,3-Dichloropropene	0.29 U	1.0	0.29	ug/l	
10061-02-6	trans-1,3-Dichloropropene	0.21 U	1.0	0.21	ug/l	
100-41-4	Ethylbenzene	0.36 U	1.0	0.36	ug/l	
76-13-1	Freon 113	0.48 U	1.0	0.48	ug/l	
591-78-6	2-Hexanone	2.0 U	10	2.0	ug/l	
98-82-8	Isopropylbenzene	0.22 U	1.0	0.22	ug/l	
79-20-9	Methyl Acetate	5.0 U	20	5.0	ug/l	
74-83-9	Methyl Bromide	2.0 U	5.0	2.0	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0280-013.0-20230502		
Lab Sample ID:	FC5785-10	**Date Sampled:**	05/01/23
Matrix:	AQ - Ground Water	**Date Received:**	05/02/23
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	KSC-CRCA		

VOA TCL 4.2 List

CAS No.	Compound	Result	PQL	MDL	Units	Q
74-87-3	Methyl Chloride	0.50 U	2.0	0.50	ug/l	
108-87-2	Methylcyclohexane	0.44 U	1.0	0.44	ug/l	
75-09-2	Methylene Chloride [c]	2.0 U	5.0	2.0	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	1.0 U	5.0	1.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	0.23 U	1.0	0.23	ug/l	
100-42-5	Styrene	0.22 U	1.0	0.22	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	0.30 U	1.0	0.30	ug/l	
127-18-4	Tetrachloroethylene	0.22 U	1.0	0.22	ug/l	
108-88-3	Toluene	0.30 U	1.0	0.30	ug/l	
120-82-1	1,2,4-Trichlorobenzene	0.50 U	2.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	0.25 U	1.0	0.25	ug/l	
79-00-5	1,1,2-Trichloroethane	0.47 U	1.0	0.47	ug/l	
79-01-6	Trichloroethylene	0.35 U	1.0	0.35	ug/l	
75-69-4	Trichlorofluoromethane	0.50 U	2.0	0.50	ug/l	
75-01-4	Vinyl Chloride	0.41 U	1.0	0.41	ug/l	
1330-20-7	Xylene (total)	0.72 U	3.0	0.72	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	100%		83-118%
17060-07-0	1,2-Dichloroethane-D4	97%		79-125%
2037-26-5	Toluene-D8	98%		85-112%
460-00-4	4-Bromofluorobenzene	106%		83-118%

(a) Sample was not preserved to a pH < 2. Sample was treated with an anti-foaming agent.
(b) Associated ICV outside control limits high, however sample ND.
(c) Associated CCV outside control limits high, sample is ND.

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0280-018.0-20230502		
Lab Sample ID:	FC5785-11	**Date Sampled:**	05/02/23
Matrix:	AQ - Ground Water	**Date Received:**	05/02/23
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	KSC-CRCA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	I756464.D	1	05/05/23 09:50	JW	n/a	n/a	VI2915
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL 4.2 List

CAS No.	Compound	Result	PQL	MDL	Units	Q
67-64-1	Acetone	10 U	25	10	ug/l	
71-43-2	Benzene	0.31 U	1.0	0.31	ug/l	
75-27-4	Bromodichloromethane	0.24 U	1.0	0.24	ug/l	
75-25-2	Bromoform	0.41 U	1.0	0.41	ug/l	
78-93-3	2-Butanone (MEK)	2.0 U	5.0	2.0	ug/l	
75-15-0	Carbon Disulfide	0.53 U	2.0	0.53	ug/l	
56-23-5	Carbon Tetrachloride	0.36 U	1.0	0.36	ug/l	
108-90-7	Chlorobenzene	0.20 U	1.0	0.20	ug/l	
75-00-3	Chloroethane	0.67 U	2.0	0.67	ug/l	
67-66-3	Chloroform	0.30 U	1.0	0.30	ug/l	
110-82-7	Cyclohexane	0.39 U	1.0	0.39	ug/l	
124-48-1	Dibromochloromethane	0.28 U	1.0	0.28	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	1.0 U	5.0	1.0	ug/l	
106-93-4	1,2-Dibromoethane	0.28 U	2.0	0.28	ug/l	
75-71-8	Dichlorodifluoromethane [b]	0.50 U	2.0	0.50	ug/l	
95-50-1	1,2-Dichlorobenzene	0.32 U	1.0	0.32	ug/l	
541-73-1	1,3-Dichlorobenzene	0.22 U	1.0	0.22	ug/l	
106-46-7	1,4-Dichlorobenzene	0.26 U	1.0	0.26	ug/l	
75-34-3	1,1-Dichloroethane	0.34 U	1.0	0.34	ug/l	
107-06-2	1,2-Dichloroethane	0.31 U	1.0	0.31	ug/l	
75-35-4	1,1-Dichloroethylene	0.32 U	1.0	0.32	ug/l	
156-59-2	cis-1,2-Dichloroethylene	0.28 U	1.0	0.28	ug/l	
156-60-5	trans-1,2-Dichloroethylene	0.22 U	1.0	0.22	ug/l	
78-87-5	1,2-Dichloropropane	0.43 U	1.0	0.43	ug/l	
10061-01-5	cis-1,3-Dichloropropene	0.29 U	1.0	0.29	ug/l	
10061-02-6	trans-1,3-Dichloropropene	0.21 U	1.0	0.21	ug/l	
100-41-4	Ethylbenzene	0.36 U	1.0	0.36	ug/l	
76-13-1	Freon 113	0.48 U	1.0	0.48	ug/l	
591-78-6	2-Hexanone	2.0 U	10	2.0	ug/l	
98-82-8	Isopropylbenzene	0.22 U	1.0	0.22	ug/l	
79-20-9	Methyl Acetate	5.0 U	20	5.0	ug/l	
74-83-9	Methyl Bromide	2.0 U	5.0	2.0	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0280-018.0-20230502		
Lab Sample ID:	FC5785-11	**Date Sampled:**	05/02/23
Matrix:	AQ - Ground Water	**Date Received:**	05/02/23
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	KSC-CRCA		

VOA TCL 4.2 List

CAS No.	Compound	Result	PQL	MDL	Units	Q
74-87-3	Methyl Chloride	0.50 U	2.0	0.50	ug/l	
108-87-2	Methylcyclohexane	0.44 U	1.0	0.44	ug/l	
75-09-2	Methylene Chloride [c]	2.0 U	5.0	2.0	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	1.0 U	5.0	1.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	0.23 U	1.0	0.23	ug/l	
100-42-5	Styrene	0.22 U	1.0	0.22	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	0.30 U	1.0	0.30	ug/l	
127-18-4	Tetrachloroethylene	0.22 U	1.0	0.22	ug/l	
108-88-3	Toluene	0.30 U	1.0	0.30	ug/l	
120-82-1	1,2,4-Trichlorobenzene	0.50 U	2.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	0.25 U	1.0	0.25	ug/l	
79-00-5	1,1,2-Trichloroethane	0.47 U	1.0	0.47	ug/l	
79-01-6	Trichloroethylene	0.35 U	1.0	0.35	ug/l	
75-69-4	Trichlorofluoromethane	0.50 U	2.0	0.50	ug/l	
75-01-4	Vinyl Chloride	0.41 U	1.0	0.41	ug/l	
1330-20-7	Xylene (total)	0.72 U	3.0	0.72	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	99%		83-118%
17060-07-0	1,2-Dichloroethane-D4	99%		79-125%
2037-26-5	Toluene-D8	96%		85-112%
460-00-4	4-Bromofluorobenzene	104%		83-118%

(a) Sample was not preserved to a pH < 2. Sample was treated with an anti-foaming agent.
(b) Associated ICV outside control limits high, however sample ND.
(c) Associated CCV outside control limits high, sample is ND.

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0280-018.0-20230502		
Lab Sample ID:	FC5785-11	**Date Sampled:**	05/02/23
Matrix:	AQ - Ground Water	**Date Received:**	05/02/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	KSC-CRCA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q109179.D	1	05/13/23 05:54	LR	05/09/23 12:50	OP96805	S2Q1537
Run #2 [a]	2Q109351.D	5	05/16/23 21:01	LR	05/09/23 12:50	OP96805	S2Q1540
Run #3	3Q77051.D	5	05/23/23 20:17	AL	05/18/23 15:33	OP96962	S3Q1064

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2	125 ml	1.0 ml
Run #3	135 ml	1.0 ml

CAS No.	Compound	Result	PQL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	0.912 [b]	0.080	0.020	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0034	0.0080	0.0020	ug/l	I
307-24-4	Perfluorohexanoic acid	0.0043	0.0080	0.0020	ug/l	I
375-85-9	Perfluoroheptanoic acid	0.0024	0.0080	0.0020	ug/l	I
335-67-1	Perfluorooctanoic acid	0.0063	0.0080	0.0020	ug/l	I
375-95-1	Perfluorononanoic acid	0.0020 U	0.0080	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.010 U [b]	0.040	0.010	ug/l	
307-55-1	Perfluorododecanoic acid [c]	0.0093 U [d]	0.037	0.0093	ug/l	
72629-94-8	Perfluorotridecanoic acid [c]	0.0093 U [d]	0.037	0.0093	ug/l	
376-06-7	Perfluorotetradecanoic acid [c]	0.0093 U [d]	0.037	0.0093	ug/l	
PERFLUOROALKYLSULFONIC ACIDS						
375-73-5	Perfluorobutanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0158	0.0080	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.010 U [b]	0.040	0.010	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA [c]	0.010 U [b]	0.040	0.010	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	0.0040 U	0.016	0.0040	ug/l	
2991-50-6	EtFOSAA	0.020 U [b]	0.080	0.020	ug/l	
FLUOROTELOMER SULFONATES						

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0280-018.0-20230502		
Lab Sample ID:	FC5785-11	**Date Sampled:**	05/02/23
Matrix:	AQ - Ground Water	**Date Received:**	05/02/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	KSC-CRCA		

CAS No.	Compound	Result	PQL	MDL	Units	Q
757124-72-4	4:2 Fluorotelomer sulfonate	0.0040 U	0.016	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0040 U	0.016	0.0040	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0040 U	0.016	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES						
13252-13-6	HFPO-DA (GenX)	0.0040 U	0.016	0.0040	ug/l	
919005-14-4	ADONA	0.0040 U	0.016	0.0040	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0040 U	0.016	0.0040	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Mino [c]	0.020 U [b]	0.080	0.020	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Run# 3	Limits
	13C4-PFBA	51%	75%	47% [e]	50-150%
	13C5-PFPeA	54%	78%	49% [e]	50-150%
	13C5-PFHxA	56%	80%	51%	50-150%
	13C4-PFHpA	57%	77%	54%	50-150%
	13C8-PFOA	63%	77%	59%	50-150%
	13C9-PFNA	63%	78%	60%	50-150%
	13C6-PFDA	56%	71%	54%	50-150%
	13C7-PFUnDA	40% [e]	55%	42% [e]	50-150%
	13C2-PFDoDA	22% [e]	38% [e]	37% [e]	50-150%
	13C2-PFTeDA	4% [e]	13% [e]	33% [e]	50-150%
	13C3-PFBS	55%	79%	52%	50-150%
	13C3-PFHxS	56%	78%	59%	50-150%
	13C8-PFOS	53%	75%	54%	50-150%
	13C8-FOSA	25% [e]	42% [e]	31% [e]	50-150%
	d3-MeFOSAA	55%	70%	53%	50-150%
	d5-EtFOSAA	46% [e]	61%	43% [e]	50-150%
	13C2-4:2FTS	60%	80%	51%	50-150%
	13C2-6:2FTS	67%	75%	59%	50-150%
	13C2-8:2FTS	58%	71%	51%	50-150%
	13C3-HFPO-DA	56%	64%	45% [e]	50-150%

(a) Dilution required (ID recovery standard failure).
(b) Result is from Run# 2
(c) Associated ID Standard outside control limits.
(d) Result is from Run# 3
(e) Outside control limits.

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0280-023.0-20230502		
Lab Sample ID:	FC5785-12	**Date Sampled:**	05/02/23
Matrix:	AQ - Ground Water	**Date Received:**	05/02/23
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	KSC-CRCA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	I756465.D	1	05/05/23 10:15	JW	n/a	n/a	VI2915
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL 4.2 List

CAS No.	Compound	Result	PQL	MDL	Units	Q
67-64-1	Acetone	10 U	25	10	ug/l	
71-43-2	Benzene	0.31 U	1.0	0.31	ug/l	
75-27-4	Bromodichloromethane	0.24 U	1.0	0.24	ug/l	
75-25-2	Bromoform	0.41 U	1.0	0.41	ug/l	
78-93-3	2-Butanone (MEK)	2.0 U	5.0	2.0	ug/l	
75-15-0	Carbon Disulfide	0.53 U	2.0	0.53	ug/l	
56-23-5	Carbon Tetrachloride	0.36 U	1.0	0.36	ug/l	
108-90-7	Chlorobenzene	0.20 U	1.0	0.20	ug/l	
75-00-3	Chloroethane	0.67 U	2.0	0.67	ug/l	
67-66-3	Chloroform	0.30 U	1.0	0.30	ug/l	
110-82-7	Cyclohexane	0.39 U	1.0	0.39	ug/l	
124-48-1	Dibromochloromethane	0.28 U	1.0	0.28	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	1.0 U	5.0	1.0	ug/l	
106-93-4	1,2-Dibromoethane	0.28 U	2.0	0.28	ug/l	
75-71-8	Dichlorodifluoromethane [b]	0.50 U	2.0	0.50	ug/l	
95-50-1	1,2-Dichlorobenzene	0.32 U	1.0	0.32	ug/l	
541-73-1	1,3-Dichlorobenzene	0.22 U	1.0	0.22	ug/l	
106-46-7	1,4-Dichlorobenzene	0.26 U	1.0	0.26	ug/l	
75-34-3	1,1-Dichloroethane	0.34 U	1.0	0.34	ug/l	
107-06-2	1,2-Dichloroethane	0.31 U	1.0	0.31	ug/l	
75-35-4	1,1-Dichloroethylene	0.32 U	1.0	0.32	ug/l	
156-59-2	cis-1,2-Dichloroethylene	0.28 U	1.0	0.28	ug/l	
156-60-5	trans-1,2-Dichloroethylene	0.22 U	1.0	0.22	ug/l	
78-87-5	1,2-Dichloropropane	0.43 U	1.0	0.43	ug/l	
10061-01-5	cis-1,3-Dichloropropene	0.29 U	1.0	0.29	ug/l	
10061-02-6	trans-1,3-Dichloropropene	0.21 U	1.0	0.21	ug/l	
100-41-4	Ethylbenzene	0.36 U	1.0	0.36	ug/l	
76-13-1	Freon 113	0.48 U	1.0	0.48	ug/l	
591-78-6	2-Hexanone	2.0 U	10	2.0	ug/l	
98-82-8	Isopropylbenzene	0.22 U	1.0	0.22	ug/l	
79-20-9	Methyl Acetate	5.0 U	20	5.0	ug/l	
74-83-9	Methyl Bromide	2.0 U	5.0	2.0	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0280-023.0-20230502		
Lab Sample ID:	FC5785-12	**Date Sampled:**	05/02/23
Matrix:	AQ - Ground Water	**Date Received:**	05/02/23
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	KSC-CRCA		

VOA TCL 4.2 List

CAS No.	Compound	Result	PQL	MDL	Units	Q
74-87-3	Methyl Chloride	0.50 U	2.0	0.50	ug/l	
108-87-2	Methylcyclohexane	0.44 U	1.0	0.44	ug/l	
75-09-2	Methylene Chloride [c]	2.0 U	5.0	2.0	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	1.0 U	5.0	1.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	0.23 U	1.0	0.23	ug/l	
100-42-5	Styrene	0.22 U	1.0	0.22	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	0.30 U	1.0	0.30	ug/l	
127-18-4	Tetrachloroethylene	0.22 U	1.0	0.22	ug/l	
108-88-3	Toluene	0.30 U	1.0	0.30	ug/l	
120-82-1	1,2,4-Trichlorobenzene	0.50 U	2.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	0.25 U	1.0	0.25	ug/l	
79-00-5	1,1,2-Trichloroethane	0.47 U	1.0	0.47	ug/l	
79-01-6	Trichloroethylene	0.35 U	1.0	0.35	ug/l	
75-69-4	Trichlorofluoromethane	0.50 U	2.0	0.50	ug/l	
75-01-4	Vinyl Chloride	0.41 U	1.0	0.41	ug/l	
1330-20-7	Xylene (total)	0.72 U	3.0	0.72	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	98%		83-118%
17060-07-0	1,2-Dichloroethane-D4	98%		79-125%
2037-26-5	Toluene-D8	96%		85-112%
460-00-4	4-Bromofluorobenzene	104%		83-118%

(a) Sample was not preserved to a pH < 2. Sample was treated with an anti-foaming agent.
(b) Associated ICV outside control limits high, however sample ND.
(c) Associated CCV outside control limits high, sample is ND.

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0280-028.0-20230502		
Lab Sample ID:	FC5785-13	**Date Sampled:**	05/02/23
Matrix:	AQ - Ground Water	**Date Received:**	05/02/23
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	KSC-CRCA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	I756466.D	1	05/05/23 10:39	JW	n/a	n/a	VI2915
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL 4.2 List

CAS No.	Compound	Result	PQL	MDL	Units	Q
67-64-1	Acetone	10 U	25	10	ug/l	
71-43-2	Benzene	0.31 U	1.0	0.31	ug/l	
75-27-4	Bromodichloromethane	0.24 U	1.0	0.24	ug/l	
75-25-2	Bromoform	0.41 U	1.0	0.41	ug/l	
78-93-3	2-Butanone (MEK)	2.0 U	5.0	2.0	ug/l	
75-15-0	Carbon Disulfide	0.53 U	2.0	0.53	ug/l	
56-23-5	Carbon Tetrachloride	0.36 U	1.0	0.36	ug/l	
108-90-7	Chlorobenzene	0.20 U	1.0	0.20	ug/l	
75-00-3	Chloroethane	0.67 U	2.0	0.67	ug/l	
67-66-3	Chloroform	0.30 U	1.0	0.30	ug/l	
110-82-7	Cyclohexane	0.39 U	1.0	0.39	ug/l	
124-48-1	Dibromochloromethane	0.28 U	1.0	0.28	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	1.0 U	5.0	1.0	ug/l	
106-93-4	1,2-Dibromoethane	0.28 U	2.0	0.28	ug/l	
75-71-8	Dichlorodifluoromethane [b]	0.50 U	2.0	0.50	ug/l	
95-50-1	1,2-Dichlorobenzene	0.32 U	1.0	0.32	ug/l	
541-73-1	1,3-Dichlorobenzene	0.22 U	1.0	0.22	ug/l	
106-46-7	1,4-Dichlorobenzene	0.26 U	1.0	0.26	ug/l	
75-34-3	1,1-Dichloroethane	0.34 U	1.0	0.34	ug/l	
107-06-2	1,2-Dichloroethane	0.31 U	1.0	0.31	ug/l	
75-35-4	1,1-Dichloroethylene	0.32 U	1.0	0.32	ug/l	
156-59-2	cis-1,2-Dichloroethylene	0.28 U	1.0	0.28	ug/l	
156-60-5	trans-1,2-Dichloroethylene	0.22 U	1.0	0.22	ug/l	
78-87-5	1,2-Dichloropropane	0.43 U	1.0	0.43	ug/l	
10061-01-5	cis-1,3-Dichloropropene	0.29 U	1.0	0.29	ug/l	
10061-02-6	trans-1,3-Dichloropropene	0.21 U	1.0	0.21	ug/l	
100-41-4	Ethylbenzene	0.36 U	1.0	0.36	ug/l	
76-13-1	Freon 113	0.48 U	1.0	0.48	ug/l	
591-78-6	2-Hexanone	2.0 U	10	2.0	ug/l	
98-82-8	Isopropylbenzene	0.22 U	1.0	0.22	ug/l	
79-20-9	Methyl Acetate	5.0 U	20	5.0	ug/l	
74-83-9	Methyl Bromide	2.0 U	5.0	2.0	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0280-028.0-20230502		
Lab Sample ID:	FC5785-13	**Date Sampled:**	05/02/23
Matrix:	AQ - Ground Water	**Date Received:**	05/02/23
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	KSC-CRCA		

VOA TCL 4.2 List

CAS No.	Compound	Result	PQL	MDL	Units	Q
74-87-3	Methyl Chloride	0.50 U	2.0	0.50	ug/l	
108-87-2	Methylcyclohexane	0.44 U	1.0	0.44	ug/l	
75-09-2	Methylene Chloride [c]	2.0 U	5.0	2.0	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	1.0 U	5.0	1.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	0.23 U	1.0	0.23	ug/l	
100-42-5	Styrene	0.22 U	1.0	0.22	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	0.30 U	1.0	0.30	ug/l	
127-18-4	Tetrachloroethylene	0.22 U	1.0	0.22	ug/l	
108-88-3	Toluene	0.30 U	1.0	0.30	ug/l	
120-82-1	1,2,4-Trichlorobenzene	0.50 U	2.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	0.25 U	1.0	0.25	ug/l	
79-00-5	1,1,2-Trichloroethane	0.47 U	1.0	0.47	ug/l	
79-01-6	Trichloroethylene	0.35 U	1.0	0.35	ug/l	
75-69-4	Trichlorofluoromethane	0.50 U	2.0	0.50	ug/l	
75-01-4	Vinyl Chloride	0.41 U	1.0	0.41	ug/l	
1330-20-7	Xylene (total)	0.72 U	3.0	0.72	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	101%		83-118%
17060-07-0	1,2-Dichloroethane-D4	98%		79-125%
2037-26-5	Toluene-D8	97%		85-112%
460-00-4	4-Bromofluorobenzene	106%		83-118%

(a) Sample was not preserved to a pH < 2. Sample was treated with an anti-foaming agent.
(b) Associated ICV outside control limits high, however sample ND.
(c) Associated CCV outside control limits high, sample is ND.

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0280-028.0-20230502		
Lab Sample ID:	FC5785-13	**Date Sampled:**	05/02/23
Matrix:	AQ - Ground Water	**Date Received:**	05/02/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	KSC-CRCA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q109180.D	1	05/13/23 06:11	LR	05/09/23 12:50	OP96805	S2Q1537
Run #2	3Q77053.D	5	05/23/23 20:51	AL	05/18/23 15:33	OP96962	S3Q1064
Run #3 [a]	2Q109352.D	5	05/16/23 21:19	LR	05/09/23 12:50	OP96805	S2Q1540

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2	140 ml	1.0 ml
Run #3	125 ml	1.0 ml

CAS No.	Compound	Result	PQL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	0.813 [b]	0.080	0.020	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0041	0.0080	0.0020	ug/l	I
307-24-4	Perfluorohexanoic acid	0.0045	0.0080	0.0020	ug/l	I
375-85-9	Perfluoroheptanoic acid	0.0030	0.0080	0.0020	ug/l	I
335-67-1	Perfluorooctanoic acid	0.0087	0.0080	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0020 U	0.0080	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid [c]	0.0089 U [d]	0.036	0.0089	ug/l	
72629-94-8	Perfluorotridecanoic acid [c]	0.0089 U [d]	0.036	0.0089	ug/l	
376-06-7	Perfluorotetradecanoic acid [c]	0.0089 U [d]	0.036	0.0089	ug/l	
PERFLUOROALKYLSULFONIC ACIDS						
375-73-5	Perfluorobutanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0033	0.0080	0.0020	ug/l	I
68259-12-1	Perfluorononanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA	0.010 U [b]	0.040	0.010	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	0.0040 U	0.016	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0040 U	0.016	0.0040	ug/l	
FLUOROTELOMER SULFONATES						

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0280-028.0-20230502		
Lab Sample ID:	FC5785-13	**Date Sampled:**	05/02/23
Matrix:	AQ - Ground Water	**Date Received:**	05/02/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	KSC-CRCA		

CAS No.	Compound	Result	PQL	MDL	Units	Q
757124-72-4	4:2 Fluorotelomer sulfonate	0.0040 U	0.016	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0040 U	0.016	0.0040	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0040 U	0.016	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES						
13252-13-6	HFPO-DA (GenX)	0.0040 U	0.016	0.0040	ug/l	
919005-14-4	ADONA	0.0040 U	0.016	0.0040	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0040 U	0.016	0.0040	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Mino [c]	0.0040 U	0.016	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Run# 3	Limits
	13C4-PFBA	52%	48% [e]	71%	50-150%
	13C5-PFPeA	56%	58%	75%	50-150%
	13C5-PFHxA	58%	61%	76%	50-150%
	13C4-PFHpA	60%	66%	74%	50-150%
	13C8-PFOA	65%	71%	75%	50-150%
	13C9-PFNA	65%	73%	74%	50-150%
	13C6-PFDA	60%	64%	70%	50-150%
	13C7-PFUnDA	53%	51%	56%	50-150%
	13C2-PFDoDA	38% [e]	44% [e]	40% [e]	50-150%
	13C2-PFTeDA	9% [e]	29% [e]	15% [e]	50-150%
	13C3-PFBS	58%	63%	74%	50-150%
	13C3-PFHxS	58%	72%	76%	50-150%
	13C8-PFOS	59%	62%	71%	50-150%
	13C8-FOSA	40% [e]	28% [e]	55%	50-150%
	d3-MeFOSAA	62%	58%	66%	50-150%
	d5-EtFOSAA	58%	54%	58%	50-150%
	13C2-4:2FTS	61%	63%	75%	50-150%
	13C2-6:2FTS	68%	71%	73%	50-150%
	13C2-8:2FTS	64%	57%	75%	50-150%
	13C3-HFPO-DA	58%	55%	65%	50-150%

(a) Dilution required (ID recovery standard failure).
(b) Result is from Run# 3
(c) Associated ID Standard outside control limits.
(d) Result is from Run# 2
(e) Outside control limits.

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0280-033.0-20230502		
Lab Sample ID:	FC5785-14	**Date Sampled:**	05/02/23
Matrix:	AQ - Ground Water	**Date Received:**	05/02/23
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	KSC-CRCA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	I756467.D	1	05/05/23 11:04	JW	n/a	n/a	VI2915
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL 4.2 List

CAS No.	Compound	Result	PQL	MDL	Units	Q
67-64-1	Acetone	10 U	25	10	ug/l	
71-43-2	Benzene	0.31 U	1.0	0.31	ug/l	
75-27-4	Bromodichloromethane	0.24 U	1.0	0.24	ug/l	
75-25-2	Bromoform	0.41 U	1.0	0.41	ug/l	
78-93-3	2-Butanone (MEK)	2.0 U	5.0	2.0	ug/l	
75-15-0	Carbon Disulfide	0.53 U	2.0	0.53	ug/l	
56-23-5	Carbon Tetrachloride	0.36 U	1.0	0.36	ug/l	
108-90-7	Chlorobenzene	0.20 U	1.0	0.20	ug/l	
75-00-3	Chloroethane	0.67 U	2.0	0.67	ug/l	
67-66-3	Chloroform	0.30 U	1.0	0.30	ug/l	
110-82-7	Cyclohexane	0.39 U	1.0	0.39	ug/l	
124-48-1	Dibromochloromethane	0.28 U	1.0	0.28	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	1.0 U	5.0	1.0	ug/l	
106-93-4	1,2-Dibromoethane	0.28 U	2.0	0.28	ug/l	
75-71-8	Dichlorodifluoromethane [b]	0.50 U	2.0	0.50	ug/l	
95-50-1	1,2-Dichlorobenzene	0.32 U	1.0	0.32	ug/l	
541-73-1	1,3-Dichlorobenzene	0.22 U	1.0	0.22	ug/l	
106-46-7	1,4-Dichlorobenzene	0.26 U	1.0	0.26	ug/l	
75-34-3	1,1-Dichloroethane	0.34 U	1.0	0.34	ug/l	
107-06-2	1,2-Dichloroethane	0.31 U	1.0	0.31	ug/l	
75-35-4	1,1-Dichloroethylene	0.32 U	1.0	0.32	ug/l	
156-59-2	cis-1,2-Dichloroethylene	0.28 U	1.0	0.28	ug/l	
156-60-5	trans-1,2-Dichloroethylene	0.22 U	1.0	0.22	ug/l	
78-87-5	1,2-Dichloropropane	0.43 U	1.0	0.43	ug/l	
10061-01-5	cis-1,3-Dichloropropene	0.29 U	1.0	0.29	ug/l	
10061-02-6	trans-1,3-Dichloropropene	0.21 U	1.0	0.21	ug/l	
100-41-4	Ethylbenzene	0.36 U	1.0	0.36	ug/l	
76-13-1	Freon 113	0.48 U	1.0	0.48	ug/l	
591-78-6	2-Hexanone	2.0 U	10	2.0	ug/l	
98-82-8	Isopropylbenzene	0.22 U	1.0	0.22	ug/l	
79-20-9	Methyl Acetate	5.0 U	20	5.0	ug/l	
74-83-9	Methyl Bromide	2.0 U	5.0	2.0	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0280-033.0-20230502		
Lab Sample ID:	FC5785-14	**Date Sampled:**	05/02/23
Matrix:	AQ - Ground Water	**Date Received:**	05/02/23
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	KSC-CRCA		

VOA TCL 4.2 List

CAS No.	Compound	Result	PQL	MDL	Units	Q
74-87-3	Methyl Chloride	0.50 U	2.0	0.50	ug/l	
108-87-2	Methylcyclohexane	0.44 U	1.0	0.44	ug/l	
75-09-2	Methylene Chloride [c]	2.0 U	5.0	2.0	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	1.0 U	5.0	1.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	0.23 U	1.0	0.23	ug/l	
100-42-5	Styrene	0.22 U	1.0	0.22	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	0.30 U	1.0	0.30	ug/l	
127-18-4	Tetrachloroethylene	0.22 U	1.0	0.22	ug/l	
108-88-3	Toluene	0.30 U	1.0	0.30	ug/l	
120-82-1	1,2,4-Trichlorobenzene	0.50 U	2.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	0.25 U	1.0	0.25	ug/l	
79-00-5	1,1,2-Trichloroethane	0.47 U	1.0	0.47	ug/l	
79-01-6	Trichloroethylene	0.35 U	1.0	0.35	ug/l	
75-69-4	Trichlorofluoromethane	0.50 U	2.0	0.50	ug/l	
75-01-4	Vinyl Chloride	0.41 U	1.0	0.41	ug/l	
1330-20-7	Xylene (total)	0.72 U	3.0	0.72	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	101%		83-118%
17060-07-0	1,2-Dichloroethane-D4	98%		79-125%
2037-26-5	Toluene-D8	99%		85-112%
460-00-4	4-Bromofluorobenzene	105%		83-118%

(a) Sample was not preserved to a pH < 2. Sample was treated with an anti-foaming agent.
(b) Associated ICV outside control limits high, however sample ND.
(c) Associated CCV outside control limits high, sample is ND.

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0280-038.0-20230502		
Lab Sample ID:	FC5785-15	**Date Sampled:**	05/02/23
Matrix:	AQ - Ground Water	**Date Received:**	05/02/23
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	KSC-CRCA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	I756468.D	1	05/05/23 11:29	JW	n/a	n/a	VI2915
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL 4.2 List

CAS No.	Compound	Result	PQL	MDL	Units	Q
67-64-1	Acetone	10 U	25	10	ug/l	
71-43-2	Benzene	0.31 U	1.0	0.31	ug/l	
75-27-4	Bromodichloromethane	0.24 U	1.0	0.24	ug/l	
75-25-2	Bromoform	0.41 U	1.0	0.41	ug/l	
78-93-3	2-Butanone (MEK)	2.0 U	5.0	2.0	ug/l	
75-15-0	Carbon Disulfide	0.53 U	2.0	0.53	ug/l	
56-23-5	Carbon Tetrachloride	0.36 U	1.0	0.36	ug/l	
108-90-7	Chlorobenzene	0.20 U	1.0	0.20	ug/l	
75-00-3	Chloroethane	0.67 U	2.0	0.67	ug/l	
67-66-3	Chloroform	0.30 U	1.0	0.30	ug/l	
110-82-7	Cyclohexane	0.39 U	1.0	0.39	ug/l	
124-48-1	Dibromochloromethane	0.28 U	1.0	0.28	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	1.0 U	5.0	1.0	ug/l	
106-93-4	1,2-Dibromoethane	0.28 U	2.0	0.28	ug/l	
75-71-8	Dichlorodifluoromethane [b]	0.50 U	2.0	0.50	ug/l	
95-50-1	1,2-Dichlorobenzene	0.32 U	1.0	0.32	ug/l	
541-73-1	1,3-Dichlorobenzene	0.22 U	1.0	0.22	ug/l	
106-46-7	1,4-Dichlorobenzene	0.26 U	1.0	0.26	ug/l	
75-34-3	1,1-Dichloroethane	0.34 U	1.0	0.34	ug/l	
107-06-2	1,2-Dichloroethane	0.31 U	1.0	0.31	ug/l	
75-35-4	1,1-Dichloroethylene	0.32 U	1.0	0.32	ug/l	
156-59-2	cis-1,2-Dichloroethylene	0.28 U	1.0	0.28	ug/l	
156-60-5	trans-1,2-Dichloroethylene	0.22 U	1.0	0.22	ug/l	
78-87-5	1,2-Dichloropropane	0.43 U	1.0	0.43	ug/l	
10061-01-5	cis-1,3-Dichloropropene	0.29 U	1.0	0.29	ug/l	
10061-02-6	trans-1,3-Dichloropropene	0.21 U	1.0	0.21	ug/l	
100-41-4	Ethylbenzene	0.36 U	1.0	0.36	ug/l	
76-13-1	Freon 113	0.48 U	1.0	0.48	ug/l	
591-78-6	2-Hexanone	2.0 U	10	2.0	ug/l	
98-82-8	Isopropylbenzene	0.22 U	1.0	0.22	ug/l	
79-20-9	Methyl Acetate	5.0 U	20	5.0	ug/l	
74-83-9	Methyl Bromide	2.0 U	5.0	2.0	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0280-038.0-20230502		
Lab Sample ID:	FC5785-15	**Date Sampled:**	05/02/23
Matrix:	AQ - Ground Water	**Date Received:**	05/02/23
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	KSC-CRCA		

VOA TCL 4.2 List

CAS No.	Compound	Result	PQL	MDL	Units	Q
74-87-3	Methyl Chloride	0.50 U	2.0	0.50	ug/l	
108-87-2	Methylcyclohexane	0.44 U	1.0	0.44	ug/l	
75-09-2	Methylene Chloride [c]	2.0 U	5.0	2.0	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	1.0 U	5.0	1.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	0.23 U	1.0	0.23	ug/l	
100-42-5	Styrene	0.22 U	1.0	0.22	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	0.30 U	1.0	0.30	ug/l	
127-18-4	Tetrachloroethylene	0.22 U	1.0	0.22	ug/l	
108-88-3	Toluene	0.30 U	1.0	0.30	ug/l	
120-82-1	1,2,4-Trichlorobenzene	0.50 U	2.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	0.25 U	1.0	0.25	ug/l	
79-00-5	1,1,2-Trichloroethane	0.47 U	1.0	0.47	ug/l	
79-01-6	Trichloroethylene	0.35 U	1.0	0.35	ug/l	
75-69-4	Trichlorofluoromethane	0.50 U	2.0	0.50	ug/l	
75-01-4	Vinyl Chloride	0.54	1.0	0.41	ug/l	I
1330-20-7	Xylene (total)	0.72 U	3.0	0.72	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	101%		83-118%
17060-07-0	1,2-Dichloroethane-D4	99%		79-125%
2037-26-5	Toluene-D8	98%		85-112%
460-00-4	4-Bromofluorobenzene	105%		83-118%

(a) Sample was not preserved to a pH < 2. Sample was treated with an anti-foaming agent.
(b) Associated ICV outside control limits high, however sample ND.
(c) Associated CCV outside control limits high, sample is ND.

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0280-038.0-20230502		
Lab Sample ID:	FC5785-15	**Date Sampled:**	05/02/23
Matrix:	AQ - Ground Water	**Date Received:**	05/02/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	KSC-CRCA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q109353.D	1	05/16/23 21:36	LR	05/09/23 12:50	OP96805	S2Q1540
Run #2 [a]	2Q109354.D	5	05/16/23 21:54	LR	05/09/23 12:50	OP96805	S2Q1540

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2	125 ml	1.0 ml

CAS No.	Compound	Result	PQL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	0.611	0.016	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0050	0.0080	0.0020	ug/l	I
307-24-4	Perfluorohexanoic acid	0.0077	0.0080	0.0020	ug/l	I
375-85-9	Perfluoroheptanoic acid	0.0056	0.0080	0.0020	ug/l	I
335-67-1	Perfluorooctanoic acid	0.0195	0.0080	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0021	0.0080	0.0020	ug/l	I
335-76-2	Perfluorodecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid [b]	0.0020 U	0.0080	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS						
375-73-5	Perfluorobutanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0098	0.0080	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA	0.0020 U	0.0080	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	0.0040 U	0.016	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0040 U	0.016	0.0040	ug/l	
FLUOROTELOMER SULFONATES						
757124-72-4	4:2 Fluorotelomer sulfonate	0.0040 U	0.016	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0040 U	0.016	0.0040	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: CRCA-DPT0280-038.0-20230502
Lab Sample ID: FC5785-15
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: KSC-CRCA

Date Sampled: 05/02/23
Date Received: 05/02/23
Percent Solids: n/a

CAS No.	Compound	Result	PQL	MDL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0040 U	0.016	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES						
13252-13-6	HFPO-DA (GenX)	0.0040 U	0.016	0.0040	ug/l	
919005-14-4	ADONA	0.0040 U	0.016	0.0040	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0040 U	0.016	0.0040	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0040 U	0.016	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	70%	85%	50-150%
	13C5-PFPeA	72%	88%	50-150%
	13C5-PFHxA	76%	88%	50-150%
	13C4-PFHpA	76%	86%	50-150%
	13C8-PFOA	81%	89%	50-150%
	13C9-PFNA	87%	89%	50-150%
	13C6-PFDA	92%	84%	50-150%
	13C7-PFUnDA	89%	67%	50-150%
	13C2-PFDoDA	83%	50%	50-150%
	13C2-PFTeDA	36% [c]	24% [c]	50-150%
	13C3-PFBS	74%	87%	50-150%
	13C3-PFHxS	75%	86%	50-150%
	13C8-PFOS	83%	84%	50-150%
	13C8-FOSA	54%	51%	50-150%
	d3-MeFOSAA	99%	79%	50-150%
	d5-EtFOSAA	94%	72%	50-150%
	13C2-4:2FTS	72%	88%	50-150%
	13C2-6:2FTS	87%	87%	50-150%
	13C2-8:2FTS	93%	85%	50-150%
	13C3-HFPO-DA	66%	81%	50-150%

(a) Confirmation run.
(b) Associated ID Standard outside control limits.
(c) Outside control limits.

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0280-043.0-20230502		
Lab Sample ID:	FC5785-16	**Date Sampled:**	05/02/23
Matrix:	AQ - Ground Water	**Date Received:**	05/02/23
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	KSC-CRCA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	I756469.D	1	05/05/23 11:54	JW	n/a	n/a	VI2915
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL 4.2 List

CAS No.	Compound	Result	PQL	MDL	Units	Q
67-64-1	Acetone	10 U	25	10	ug/l	
71-43-2	Benzene	0.31 U	1.0	0.31	ug/l	
75-27-4	Bromodichloromethane	0.24 U	1.0	0.24	ug/l	
75-25-2	Bromoform	0.41 U	1.0	0.41	ug/l	
78-93-3	2-Butanone (MEK)	2.0 U	5.0	2.0	ug/l	
75-15-0	Carbon Disulfide	0.53 U	2.0	0.53	ug/l	
56-23-5	Carbon Tetrachloride	0.36 U	1.0	0.36	ug/l	
108-90-7	Chlorobenzene	0.20 U	1.0	0.20	ug/l	
75-00-3	Chloroethane	0.67 U	2.0	0.67	ug/l	
67-66-3	Chloroform	0.30 U	1.0	0.30	ug/l	
110-82-7	Cyclohexane	0.39 U	1.0	0.39	ug/l	
124-48-1	Dibromochloromethane	0.28 U	1.0	0.28	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	1.0 U	5.0	1.0	ug/l	
106-93-4	1,2-Dibromoethane	0.28 U	2.0	0.28	ug/l	
75-71-8	Dichlorodifluoromethane [b]	0.50 U	2.0	0.50	ug/l	
95-50-1	1,2-Dichlorobenzene	0.32 U	1.0	0.32	ug/l	
541-73-1	1,3-Dichlorobenzene	0.22 U	1.0	0.22	ug/l	
106-46-7	1,4-Dichlorobenzene	0.26 U	1.0	0.26	ug/l	
75-34-3	1,1-Dichloroethane	0.34 U	1.0	0.34	ug/l	
107-06-2	1,2-Dichloroethane	0.31 U	1.0	0.31	ug/l	
75-35-4	1,1-Dichloroethylene	0.32 U	1.0	0.32	ug/l	
156-59-2	cis-1,2-Dichloroethylene	0.28 U	1.0	0.28	ug/l	
156-60-5	trans-1,2-Dichloroethylene	0.22 U	1.0	0.22	ug/l	
78-87-5	1,2-Dichloropropane	0.43 U	1.0	0.43	ug/l	
10061-01-5	cis-1,3-Dichloropropene	0.29 U	1.0	0.29	ug/l	
10061-02-6	trans-1,3-Dichloropropene	0.21 U	1.0	0.21	ug/l	
100-41-4	Ethylbenzene	0.36 U	1.0	0.36	ug/l	
76-13-1	Freon 113	0.48 U	1.0	0.48	ug/l	
591-78-6	2-Hexanone	2.0 U	10	2.0	ug/l	
98-82-8	Isopropylbenzene	0.22 U	1.0	0.22	ug/l	
79-20-9	Methyl Acetate	5.0 U	20	5.0	ug/l	
74-83-9	Methyl Bromide	2.0 U	5.0	2.0	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0280-043.0-20230502		
Lab Sample ID:	FC5785-16	**Date Sampled:**	05/02/23
Matrix:	AQ - Ground Water	**Date Received:**	05/02/23
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	KSC-CRCA		

VOA TCL 4.2 List

CAS No.	Compound	Result	PQL	MDL	Units	Q
74-87-3	Methyl Chloride	0.50 U	2.0	0.50	ug/l	
108-87-2	Methylcyclohexane	0.44 U	1.0	0.44	ug/l	
75-09-2	Methylene Chloride [c]	2.0 U	5.0	2.0	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	1.0 U	5.0	1.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	0.23 U	1.0	0.23	ug/l	
100-42-5	Styrene	0.22 U	1.0	0.22	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	0.30 U	1.0	0.30	ug/l	
127-18-4	Tetrachloroethylene	0.22 U	1.0	0.22	ug/l	
108-88-3	Toluene	0.30 U	1.0	0.30	ug/l	
120-82-1	1,2,4-Trichlorobenzene	0.50 U	2.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	0.25 U	1.0	0.25	ug/l	
79-00-5	1,1,2-Trichloroethane	0.47 U	1.0	0.47	ug/l	
79-01-6	Trichloroethylene	0.35 U	1.0	0.35	ug/l	
75-69-4	Trichlorofluoromethane	0.50 U	2.0	0.50	ug/l	
75-01-4	Vinyl Chloride	2.9	1.0	0.41	ug/l	
1330-20-7	Xylene (total)	0.72 U	3.0	0.72	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	101%		83-118%
17060-07-0	1,2-Dichloroethane-D4	100%		79-125%
2037-26-5	Toluene-D8	98%		85-112%
460-00-4	4-Bromofluorobenzene	103%		83-118%

(a) Sample was not preserved to a pH < 2. Sample was treated with an anti-foaming agent.
(b) Associated ICV outside control limits high, however sample ND.
(c) Associated CCV outside control limits high, sample is ND.

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0280-048.0-20230502		
Lab Sample ID:	FC5785-17	**Date Sampled:**	05/02/23
Matrix:	AQ - Ground Water	**Date Received:**	05/02/23
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	KSC-CRCA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	I756470.D	1	05/05/23 12:19	JW	n/a	n/a	VI2915
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL 4.2 List

CAS No.	Compound	Result	PQL	MDL	Units	Q
67-64-1	Acetone	10 U	25	10	ug/l	
71-43-2	Benzene	0.31 U	1.0	0.31	ug/l	
75-27-4	Bromodichloromethane	0.24 U	1.0	0.24	ug/l	
75-25-2	Bromoform	0.41 U	1.0	0.41	ug/l	
78-93-3	2-Butanone (MEK)	2.0 U	5.0	2.0	ug/l	
75-15-0	Carbon Disulfide	0.53 U	2.0	0.53	ug/l	
56-23-5	Carbon Tetrachloride	0.36 U	1.0	0.36	ug/l	
108-90-7	Chlorobenzene	0.20 U	1.0	0.20	ug/l	
75-00-3	Chloroethane	0.67 U	2.0	0.67	ug/l	
67-66-3	Chloroform	0.30 U	1.0	0.30	ug/l	
110-82-7	Cyclohexane	0.39 U	1.0	0.39	ug/l	
124-48-1	Dibromochloromethane	0.28 U	1.0	0.28	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	1.0 U	5.0	1.0	ug/l	
106-93-4	1,2-Dibromoethane	0.28 U	2.0	0.28	ug/l	
75-71-8	Dichlorodifluoromethane [b]	0.50 U	2.0	0.50	ug/l	
95-50-1	1,2-Dichlorobenzene	0.32 U	1.0	0.32	ug/l	
541-73-1	1,3-Dichlorobenzene	0.22 U	1.0	0.22	ug/l	
106-46-7	1,4-Dichlorobenzene	0.26 U	1.0	0.26	ug/l	
75-34-3	1,1-Dichloroethane	0.34 U	1.0	0.34	ug/l	
107-06-2	1,2-Dichloroethane	0.31 U	1.0	0.31	ug/l	
75-35-4	1,1-Dichloroethylene	0.32 U	1.0	0.32	ug/l	
156-59-2	cis-1,2-Dichloroethylene	0.28 U	1.0	0.28	ug/l	
156-60-5	trans-1,2-Dichloroethylene	0.22 U	1.0	0.22	ug/l	
78-87-5	1,2-Dichloropropane	0.43 U	1.0	0.43	ug/l	
10061-01-5	cis-1,3-Dichloropropene	0.29 U	1.0	0.29	ug/l	
10061-02-6	trans-1,3-Dichloropropene	0.21 U	1.0	0.21	ug/l	
100-41-4	Ethylbenzene	0.36 U	1.0	0.36	ug/l	
76-13-1	Freon 113	0.48 U	1.0	0.48	ug/l	
591-78-6	2-Hexanone	2.0 U	10	2.0	ug/l	
98-82-8	Isopropylbenzene	0.22 U	1.0	0.22	ug/l	
79-20-9	Methyl Acetate	5.0 U	20	5.0	ug/l	
74-83-9	Methyl Bromide	2.0 U	5.0	2.0	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0280-048.0-20230502		
Lab Sample ID:	FC5785-17	**Date Sampled:**	05/02/23
Matrix:	AQ - Ground Water	**Date Received:**	05/02/23
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	KSC-CRCA		

VOA TCL 4.2 List

CAS No.	Compound	Result	PQL	MDL	Units	Q
74-87-3	Methyl Chloride	0.50 U	2.0	0.50	ug/l	
108-87-2	Methylcyclohexane	0.44 U	1.0	0.44	ug/l	
75-09-2	Methylene Chloride [c]	2.0 U	5.0	2.0	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	1.0 U	5.0	1.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	0.23 U	1.0	0.23	ug/l	
100-42-5	Styrene	0.22 U	1.0	0.22	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	0.30 U	1.0	0.30	ug/l	
127-18-4	Tetrachloroethylene	0.22 U	1.0	0.22	ug/l	
108-88-3	Toluene	0.30 U	1.0	0.30	ug/l	
120-82-1	1,2,4-Trichlorobenzene	0.50 U	2.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	0.25 U	1.0	0.25	ug/l	
79-00-5	1,1,2-Trichloroethane	0.47 U	1.0	0.47	ug/l	
79-01-6	Trichloroethylene	0.35 U	1.0	0.35	ug/l	
75-69-4	Trichlorofluoromethane	0.50 U	2.0	0.50	ug/l	
75-01-4	Vinyl Chloride	2.7	1.0	0.41	ug/l	
1330-20-7	Xylene (total)	0.72 U	3.0	0.72	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	101%		83-118%
17060-07-0	1,2-Dichloroethane-D4	99%		79-125%
2037-26-5	Toluene-D8	96%		85-112%
460-00-4	4-Bromofluorobenzene	106%		83-118%

(a) Sample was not preserved to a pH < 2. Sample was treated with an anti-foaming agent.
(b) Associated ICV outside control limits high, however sample ND.
(c) Associated CCV outside control limits high, sample is ND.

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0280-048.0-20230502		
Lab Sample ID:	FC5785-17	**Date Sampled:**	05/02/23
Matrix:	AQ - Ground Water	**Date Received:**	05/02/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	KSC-CRCA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q109182.D	1	05/13/23 06:46	LR	05/09/23 12:50	OP96805	S2Q1537
Run #2 [a]	2Q109355.D	5	05/16/23 22:11	LR	05/09/23 12:50	OP96805	S2Q1540

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2	125 ml	1.0 ml

CAS No.	Compound	Result	PQL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	0.266 [b]	0.080	0.020	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0049	0.0080	0.0020	ug/l	I
307-24-4	Perfluorohexanoic acid	0.0086	0.0080	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0036	0.0080	0.0020	ug/l	I
335-67-1	Perfluorooctanoic acid	0.0114	0.0080	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0020 U	0.0080	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid [c]	0.010 U [b]	0.040	0.010	ug/l	
PERFLUOROALKYLSULFONIC ACIDS						
375-73-5	Perfluorobutanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA [c]	0.010 U [b]	0.040	0.010	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	0.0040 U	0.016	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0040 U	0.016	0.0040	ug/l	
FLUOROTELOMER SULFONATES						
757124-72-4	4:2 Fluorotelomer sulfonate	0.0040 U	0.016	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0040 U	0.016	0.0040	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0280-048.0-20230502		
Lab Sample ID:	FC5785-17	**Date Sampled:**	05/02/23
Matrix:	AQ - Ground Water	**Date Received:**	05/02/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	KSC-CRCA		

CAS No.	Compound	Result	PQL	MDL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0040 U	0.016	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES						
13252-13-6	HFPO-DA (GenX)	0.0040 U	0.016	0.0040	ug/l	
919005-14-4	ADONA	0.0040 U	0.016	0.0040	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0040 U	0.016	0.0040	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0040 U	0.016	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	48% d	77%	50-150%
	13C5-PFPeA	51%	80%	50-150%
	13C5-PFHxA	56%	82%	50-150%
	13C4-PFHpA	61%	82%	50-150%
	13C8-PFOA	68%	87%	50-150%
	13C9-PFNA	68%	90%	50-150%
	13C6-PFDA	70%	89%	50-150%
	13C7-PFUnDA	70%	82%	50-150%
	13C2-PFDoDA	63%	68%	50-150%
	13C2-PFTeDA	31% d	34% d	50-150%
	13C3-PFBS	54%	81%	50-150%
	13C3-PFHxS	59%	87%	50-150%
	13C8-PFOS	63%	93%	50-150%
	13C8-FOSA	25% d	37% d	50-150%
	d3-MeFOSAA	85%	94%	50-150%
	d5-EtFOSAA	82%	94%	50-150%
	13C2-4:2FTS	59%	84%	50-150%
	13C2-6:2FTS	77%	87%	50-150%
	13C2-8:2FTS	77%	97%	50-150%
	13C3-HFPO-DA	58%	71%	50-150%

(a) Dilution required (ID recovery standard failure).
(b) Result is from Run# 2
(c) Associated ID Standard outside control limits.
(d) Outside control limits.

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0280-053.0-20230502		
Lab Sample ID:	FC5785-18	**Date Sampled:**	05/02/23
Matrix:	AQ - Ground Water	**Date Received:**	05/02/23
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	KSC-CRCA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	I756471.D	1	05/05/23 12:43	JW	n/a	n/a	VI2915
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL 4.2 List

CAS No.	Compound	Result	PQL	MDL	Units	Q
67-64-1	Acetone	10 U	25	10	ug/l	
71-43-2	Benzene	0.31 U	1.0	0.31	ug/l	
75-27-4	Bromodichloromethane	0.24 U	1.0	0.24	ug/l	
75-25-2	Bromoform	0.41 U	1.0	0.41	ug/l	
78-93-3	2-Butanone (MEK)	2.0 U	5.0	2.0	ug/l	
75-15-0	Carbon Disulfide	0.53 U	2.0	0.53	ug/l	
56-23-5	Carbon Tetrachloride	0.36 U	1.0	0.36	ug/l	
108-90-7	Chlorobenzene	0.20 U	1.0	0.20	ug/l	
75-00-3	Chloroethane	0.67 U	2.0	0.67	ug/l	
67-66-3	Chloroform	0.30 U	1.0	0.30	ug/l	
110-82-7	Cyclohexane	0.39 U	1.0	0.39	ug/l	
124-48-1	Dibromochloromethane	0.28 U	1.0	0.28	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	1.0 U	5.0	1.0	ug/l	
106-93-4	1,2-Dibromoethane	0.28 U	2.0	0.28	ug/l	
75-71-8	Dichlorodifluoromethane [b]	0.50 U	2.0	0.50	ug/l	
95-50-1	1,2-Dichlorobenzene	0.32 U	1.0	0.32	ug/l	
541-73-1	1,3-Dichlorobenzene	0.22 U	1.0	0.22	ug/l	
106-46-7	1,4-Dichlorobenzene	0.26 U	1.0	0.26	ug/l	
75-34-3	1,1-Dichloroethane	0.34 U	1.0	0.34	ug/l	
107-06-2	1,2-Dichloroethane	0.31 U	1.0	0.31	ug/l	
75-35-4	1,1-Dichloroethylene	0.32 U	1.0	0.32	ug/l	
156-59-2	cis-1,2-Dichloroethylene	0.28 U	1.0	0.28	ug/l	
156-60-5	trans-1,2-Dichloroethylene	0.22 U	1.0	0.22	ug/l	
78-87-5	1,2-Dichloropropane	0.43 U	1.0	0.43	ug/l	
10061-01-5	cis-1,3-Dichloropropene	0.29 U	1.0	0.29	ug/l	
10061-02-6	trans-1,3-Dichloropropene	0.21 U	1.0	0.21	ug/l	
100-41-4	Ethylbenzene	0.36 U	1.0	0.36	ug/l	
76-13-1	Freon 113	0.48 U	1.0	0.48	ug/l	
591-78-6	2-Hexanone	2.0 U	10	2.0	ug/l	
98-82-8	Isopropylbenzene	0.22 U	1.0	0.22	ug/l	
79-20-9	Methyl Acetate	5.0 U	20	5.0	ug/l	
74-83-9	Methyl Bromide	2.0 U	5.0	2.0	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0280-053.0-20230502		
Lab Sample ID:	FC5785-18	**Date Sampled:**	05/02/23
Matrix:	AQ - Ground Water	**Date Received:**	05/02/23
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	KSC-CRCA		

VOA TCL 4.2 List

CAS No.	Compound	Result	PQL	MDL	Units	Q
74-87-3	Methyl Chloride	0.50 U	2.0	0.50	ug/l	
108-87-2	Methylcyclohexane	0.44 U	1.0	0.44	ug/l	
75-09-2	Methylene Chloride [c]	2.0 U	5.0	2.0	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	1.0 U	5.0	1.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	0.23 U	1.0	0.23	ug/l	
100-42-5	Styrene	0.22 U	1.0	0.22	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	0.30 U	1.0	0.30	ug/l	
127-18-4	Tetrachloroethylene	0.22 U	1.0	0.22	ug/l	
108-88-3	Toluene	0.30 U	1.0	0.30	ug/l	
120-82-1	1,2,4-Trichlorobenzene	0.50 U	2.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	0.25 U	1.0	0.25	ug/l	
79-00-5	1,1,2-Trichloroethane	0.47 U	1.0	0.47	ug/l	
79-01-6	Trichloroethylene	0.35 U	1.0	0.35	ug/l	
75-69-4	Trichlorofluoromethane	0.50 U	2.0	0.50	ug/l	
75-01-4	Vinyl Chloride	0.41 U	1.0	0.41	ug/l	
1330-20-7	Xylene (total)	0.72 U	3.0	0.72	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	101%		83-118%
17060-07-0	1,2-Dichloroethane-D4	98%		79-125%
2037-26-5	Toluene-D8	98%		85-112%
460-00-4	4-Bromofluorobenzene	105%		83-118%

(a) Sample was not preserved to a pH < 2. Sample was treated with an anti-foaming agent.
(b) Associated ICV outside control limits high, however sample ND.
(c) Associated CCV outside control limits high, sample is ND.

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0280-057.0-20230502		
Lab Sample ID:	FC5785-19	**Date Sampled:**	05/02/23
Matrix:	AQ - Ground Water	**Date Received:**	05/02/23
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	KSC-CRCA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	1A45909.D	1	05/05/23 14:06	JW	n/a	n/a	V1A1807
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL 4.2 List

CAS No.	Compound	Result	PQL	MDL	Units	Q
67-64-1	Acetone	10 U	25	10	ug/l	
71-43-2	Benzene	0.31 U	1.0	0.31	ug/l	
75-27-4	Bromodichloromethane	0.24 U	1.0	0.24	ug/l	
75-25-2	Bromoform	0.41 U	1.0	0.41	ug/l	
78-93-3	2-Butanone (MEK)	2.0 U	5.0	2.0	ug/l	
75-15-0	Carbon Disulfide	0.53 U	2.0	0.53	ug/l	
56-23-5	Carbon Tetrachloride	0.36 U	1.0	0.36	ug/l	
108-90-7	Chlorobenzene	0.20 U	1.0	0.20	ug/l	
75-00-3	Chloroethane [b]	0.67 U	2.0	0.67	ug/l	
67-66-3	Chloroform	0.30 U	1.0	0.30	ug/l	
110-82-7	Cyclohexane	0.39 U	1.0	0.39	ug/l	
124-48-1	Dibromochloromethane	0.28 U	1.0	0.28	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	1.0 U	5.0	1.0	ug/l	
106-93-4	1,2-Dibromoethane	0.28 U	2.0	0.28	ug/l	
75-71-8	Dichlorodifluoromethane [c]	0.50 U	2.0	0.50	ug/l	
95-50-1	1,2-Dichlorobenzene	0.32 U	1.0	0.32	ug/l	
541-73-1	1,3-Dichlorobenzene	0.22 U	1.0	0.22	ug/l	
106-46-7	1,4-Dichlorobenzene	0.26 U	1.0	0.26	ug/l	
75-34-3	1,1-Dichloroethane	0.34 U	1.0	0.34	ug/l	
107-06-2	1,2-Dichloroethane	0.31 U	1.0	0.31	ug/l	
75-35-4	1,1-Dichloroethylene	0.32 U	1.0	0.32	ug/l	
156-59-2	cis-1,2-Dichloroethylene	0.28 U	1.0	0.28	ug/l	
156-60-5	trans-1,2-Dichloroethylene	0.22 U	1.0	0.22	ug/l	
78-87-5	1,2-Dichloropropane	0.43 U	1.0	0.43	ug/l	
10061-01-5	cis-1,3-Dichloropropene	0.29 U	1.0	0.29	ug/l	
10061-02-6	trans-1,3-Dichloropropene	0.21 U	1.0	0.21	ug/l	
100-41-4	Ethylbenzene	0.36 U	1.0	0.36	ug/l	
76-13-1	Freon 113	0.48 U	1.0	0.48	ug/l	
591-78-6	2-Hexanone	2.0 U	10	2.0	ug/l	
98-82-8	Isopropylbenzene	0.22 U	1.0	0.22	ug/l	
79-20-9	Methyl Acetate	5.0 U	20	5.0	ug/l	
74-83-9	Methyl Bromide	2.0 U	5.0	2.0	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0280-057.0-20230502		
Lab Sample ID:	FC5785-19	**Date Sampled:**	05/02/23
Matrix:	AQ - Ground Water	**Date Received:**	05/02/23
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	KSC-CRCA		

VOA TCL 4.2 List

CAS No.	Compound	Result	PQL	MDL	Units	Q
74-87-3	Methyl Chloride	0.50 U	2.0	0.50	ug/l	
108-87-2	Methylcyclohexane	0.44 U	1.0	0.44	ug/l	
75-09-2	Methylene Chloride	2.0 U	5.0	2.0	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	1.0 U	5.0	1.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	0.23 U	1.0	0.23	ug/l	
100-42-5	Styrene	0.22 U	1.0	0.22	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	0.30 U	1.0	0.30	ug/l	
127-18-4	Tetrachloroethylene	0.22 U	1.0	0.22	ug/l	
108-88-3	Toluene	0.30 U	1.0	0.30	ug/l	
120-82-1	1,2,4-Trichlorobenzene	0.50 U	2.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	0.25 U	1.0	0.25	ug/l	
79-00-5	1,1,2-Trichloroethane	0.47 U	1.0	0.47	ug/l	
79-01-6	Trichloroethylene	0.35 U	1.0	0.35	ug/l	
75-69-4	Trichlorofluoromethane [b]	0.50 U	2.0	0.50	ug/l	
75-01-4	Vinyl Chloride	0.41 U	1.0	0.41	ug/l	
1330-20-7	Xylene (total)	0.72 U	3.0	0.72	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	100%		83-118%
17060-07-0	1,2-Dichloroethane-D4	100%		79-125%
2037-26-5	Toluene-D8	97%		85-112%
460-00-4	4-Bromofluorobenzene	99%		83-118%

(a) Sample was treated with an anti-foaming agent. Sample was not preserved to a pH < 2.
(b) Associated CCV outside control limits high, sample is ND.
(c) Associated ICV outside control limits high, sample is ND.

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0280-057.0-20230502		
Lab Sample ID:	FC5785-19	**Date Sampled:**	05/02/23
Matrix:	AQ - Ground Water	**Date Received:**	05/02/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	KSC-CRCA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q109183.D	1	05/13/23 07:04	LR	05/09/23 12:50	OP96805	S2Q1537
Run #2 [a]	2Q109356.D	5	05/16/23 22:29	LR	05/09/23 12:50	OP96805	S2Q1540

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2	125 ml	1.0 ml

CAS No.	Compound	Result	PQL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	0.0040 U	0.016	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0020 U	0.0080	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	0.0020 U	0.0080	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0020 U	0.0080	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	0.0020 U	0.0080	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0020 U	0.0080	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid [b]	0.0020 U	0.0080	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS						
375-73-5	Perfluorobutanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA	0.0020 U	0.0080	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	0.0040 U	0.016	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0040 U	0.016	0.0040	ug/l	
FLUOROTELOMER SULFONATES						
757124-72-4	4:2 Fluorotelomer sulfonate	0.0040 U	0.016	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0040 U	0.016	0.0040	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: CRCA-DPT0280-057.0-20230502
Lab Sample ID: FC5785-19
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: KSC-CRCA

Date Sampled: 05/02/23
Date Received: 05/02/23
Percent Solids: n/a

CAS No.	Compound	Result	PQL	MDL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0040 U	0.016	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES						
13252-13-6	HFPO-DA (GenX)	0.0040 U	0.016	0.0040	ug/l	
919005-14-4	ADONA	0.0040 U	0.016	0.0040	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0040 U	0.016	0.0040	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0040 U	0.016	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	61%	82%	50-150%
	13C5-PFPeA	62%	85%	50-150%
	13C5-PFHxA	64%	86%	50-150%
	13C4-PFHpA	64%	86%	50-150%
	13C8-PFOA	69%	85%	50-150%
	13C9-PFNA	69%	82%	50-150%
	13C6-PFDA	69%	78%	50-150%
	13C7-PFUnDA	66%	67%	50-150%
	13C2-PFDoDA	62%	55%	50-150%
	13C2-PFTeDA	40% [c]	28% [c]	50-150%
	13C3-PFBS	64%	85%	50-150%
	13C3-PFHxS	62%	88%	50-150%
	13C8-PFOS	64%	82%	50-150%
	13C8-FOSA	58%	64%	50-150%
	d3-MeFOSAA	74%	79%	50-150%
	d5-EtFOSAA	71%	70%	50-150%
	13C2-4:2FTS	66%	83%	50-150%
	13C2-6:2FTS	71%	85%	50-150%
	13C2-8:2FTS	68%	80%	50-150%
	13C3-HFPO-DA	62%	73%	50-150%

(a) Confirmation run.
(b) Associated ID Standard outside control limits.
(c) Outside control limits.

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-EB-20230502-01		
Lab Sample ID:	FC5785-20	**Date Sampled:**	05/02/23
Matrix:	AQ - Equipment Blank	**Date Received:**	05/02/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	KSC-CRCA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3Q77054.D	1	05/23/23 21:08	AL	05/18/23 15:33	OP96962	S3Q1064
Run #2							

	Initial Volume	Final Volume
Run #1	155 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	PQL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	0.0032 U	0.013	0.0032	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0016 U	0.0065	0.0016	ug/l	
307-24-4	Perfluorohexanoic acid	0.0016 U	0.0065	0.0016	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0016 U	0.0065	0.0016	ug/l	
335-67-1	Perfluorooctanoic acid	0.0016 U	0.0065	0.0016	ug/l	
375-95-1	Perfluorononanoic acid	0.0016 U	0.0065	0.0016	ug/l	
335-76-2	Perfluorodecanoic acid	0.0016 U	0.0065	0.0016	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0016 U	0.0065	0.0016	ug/l	
307-55-1	Perfluorododecanoic acid	0.0016 U	0.0065	0.0016	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0016 U	0.0065	0.0016	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0016 U	0.0065	0.0016	ug/l	
PERFLUOROALKYLSULFONIC ACIDS						
375-73-5	Perfluorobutanesulfonic acid	0.0016 U	0.0065	0.0016	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0016 U	0.0065	0.0016	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0016 U	0.0065	0.0016	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0016 U	0.0065	0.0016	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0016 U	0.0065	0.0016	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0016 U	0.0065	0.0016	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0016 U	0.0065	0.0016	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA	0.0016 U	0.0065	0.0016	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	0.0032 U	0.013	0.0032	ug/l	
2991-50-6	EtFOSAA	0.0032 U	0.013	0.0032	ug/l	
FLUOROTELOMER SULFONATES						
757124-72-4	4:2 Fluorotelomer sulfonate	0.0032 U	0.013	0.0032	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0032 U	0.013	0.0032	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-EB-20230502-01		
Lab Sample ID:	FC5785-20	**Date Sampled:**	05/02/23
Matrix:	AQ - Equipment Blank	**Date Received:**	05/02/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	KSC-CRCA		

CAS No.	Compound	Result	PQL	MDL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0032 U	0.013	0.0032	ug/l	
NEXT GENERATION PFAS ANALYTES						
13252-13-6	HFPO-DA (GenX)	0.0032 U	0.013	0.0032	ug/l	
919005-14-4	ADONA	0.0032 U	0.013	0.0032	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0032 U	0.013	0.0032	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0032 U	0.013	0.0032	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	62%		50-150%
	13C5-PFPeA	62%		50-150%
	13C5-PFHxA	64%		50-150%
	13C4-PFHpA	66%		50-150%
	13C8-PFOA	67%		50-150%
	13C9-PFNA	65%		50-150%
	13C6-PFDA	64%		50-150%
	13C7-PFUnDA	54%		50-150%
	13C2-PFDoDA	52%		50-150%
	13C2-PFTeDA	50%		50-150%
	13C3-PFBS	63%		50-150%
	13C3-PFHxS	65%		50-150%
	13C8-PFOS	60%		50-150%
	13C8-FOSA	64%		50-150%
	d3-MeFOSAA	65%		50-150%
	d5-EtFOSAA	61%		50-150%
	13C2-4:2FTS	60%		50-150%
	13C2-6:2FTS	66%		50-150%
	13C2-8:2FTS	58%		50-150%
	13C3-HFPO-DA	58%		50-150%

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0281-008.0-20230502		
Lab Sample ID:	FC5785-21	**Date Sampled:**	05/02/23
Matrix:	AQ - Ground Water	**Date Received:**	05/02/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	KSC-CRCA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q109187.D	1	05/13/23 08:14	LR	05/09/23 12:50	OP96805	S2Q1537
Run #2 [a]	3Q77055.D	1	05/23/23 21:24	AL	05/18/23 15:33	OP96962	S3Q1064

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2	140 ml	1.0 ml

CAS No.	Compound	Result	PQL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	0.194	0.016	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0084	0.0080	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	0.0109	0.0080	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0047	0.0080	0.0020	ug/l	I
335-67-1	Perfluorooctanoic acid	0.0163	0.0080	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0023	0.0080	0.0020	ug/l	I
335-76-2	Perfluorodecanoic acid	0.0098	0.0080	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0027	0.0080	0.0020	ug/l	I
307-55-1	Perfluorododecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid [b]	0.0020 U	0.0080	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS						
375-73-5	Perfluorobutanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0045	0.0080	0.0020	ug/l	I
68259-12-1	Perfluorononanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA [b]	0.0020 U	0.0080	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	0.0040 U	0.016	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0040 U	0.016	0.0040	ug/l	
FLUOROTELOMER SULFONATES						
757124-72-4	4:2 Fluorotelomer sulfonate	0.0040 U	0.016	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0040 U	0.016	0.0040	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0281-008.0-20230502		
Lab Sample ID:	FC5785-21	**Date Sampled:**	05/02/23
Matrix:	AQ - Ground Water	**Date Received:**	05/02/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	KSC-CRCA		

CAS No.	Compound	Result	PQL	MDL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0040 U	0.016	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES						
13252-13-6	HFPO-DA (GenX)	0.0040 U	0.016	0.0040	ug/l	
919005-14-4	ADONA	0.0040 U	0.016	0.0040	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0040 U	0.016	0.0040	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0040 U	0.016	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	59%	49% [c]	50-150%
	13C5-PFPeA	58%	50%	50-150%
	13C5-PFHxA	57%	48% [c]	50-150%
	13C4-PFHpA	56%	50%	50-150%
	13C8-PFOA	58%	55%	50-150%
	13C9-PFNA	59%	59%	50-150%
	13C6-PFDA	60%	59%	50-150%
	13C7-PFUnDA	58%	51%	50-150%
	13C2-PFDoDA	50%	44% [c]	50-150%
	13C2-PFTeDA	15% [c]	17% [c]	50-150%
	13C3-PFBS	60%	54%	50-150%
	13C3-PFHxS	56%	60%	50-150%
	13C8-PFOS	55%	59%	50-150%
	13C8-FOSA	31% [c]	16% [c]	50-150%
	d3-MeFOSAA	71%	67%	50-150%
	d5-EtFOSAA	68%	58%	50-150%
	13C2-4:2FTS	59%	55%	50-150%
	13C2-6:2FTS	64%	72%	50-150%
	13C2-8:2FTS	66%	66%	50-150%
	13C3-HFPO-DA	54%	42% [c]	50-150%

(a) Confirmation run.
(b) Associated ID Standard outside control limits.
(c) Outside control limits.

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0281-018.0-20230502		
Lab Sample ID:	FC5785-22	**Date Sampled:**	05/02/23
Matrix:	AQ - Ground Water	**Date Received:**	05/02/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	KSC-CRCA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q109188.D	1	05/13/23 08:31	LR	05/09/23 12:50	OP96805	S2Q1537
Run #2 [a]	3Q77064.D	1	05/23/23 23:55	AL	05/18/23 15:33	OP96962	S3Q1064
Run #3 [b]	2Q109361.D	5	05/16/23 23:57	LR	05/09/23 12:50	OP96805	S2Q1540

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2	135 ml	1.0 ml
Run #3	125 ml	1.0 ml

CAS No.	Compound	Result	PQL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	0.850 [c]	0.080	0.020	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0070	0.0080	0.0020	ug/l	I
307-24-4	Perfluorohexanoic acid	0.0086	0.0080	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0068	0.0080	0.0020	ug/l	I
335-67-1	Perfluorooctanoic acid	0.0175	0.0080	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0033	0.0080	0.0020	ug/l	I
335-76-2	Perfluorodecanoic acid	0.0037	0.0080	0.0020	ug/l	I
2058-94-8	Perfluoroundecanoic acid	0.010 U [c]	0.040	0.010	ug/l	
307-55-1	Perfluorododecanoic acid [d]	0.010 U [c]	0.040	0.010	ug/l	
72629-94-8	Perfluorotridecanoic acid [d]	0.010 U [c]	0.040	0.010	ug/l	
376-06-7	Perfluorotetradecanoic acid [d]	0.010 U [c]	0.040	0.010	ug/l	
PERFLUOROALKYLSULFONIC ACIDS						
375-73-5	Perfluorobutanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0028	0.0080	0.0020	ug/l	I
375-92-8	Perfluoroheptanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0089	0.0080	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.010 U [c]	0.040	0.010	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA	0.010 U [c]	0.040	0.010	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	0.0040 U	0.016	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0040 U	0.016	0.0040	ug/l	
FLUOROTELOMER SULFONATES						

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0281-018.0-20230502		
Lab Sample ID:	FC5785-22	**Date Sampled:**	05/02/23
Matrix:	AQ - Ground Water	**Date Received:**	05/02/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	KSC-CRCA		

CAS No.	Compound	Result	PQL	MDL	Units	Q
757124-72-4	4:2 Fluorotelomer sulfonate	0.0040 U	0.016	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0040 U	0.016	0.0040	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0040 U	0.016	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES						
13252-13-6	HFPO-DA (GenX)	0.0040 U	0.016	0.0040	ug/l	
919005-14-4	ADONA	0.0040 U	0.016	0.0040	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0040 U	0.016	0.0040	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Mino [d]	0.020 U [c]	0.080	0.020	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Run# 3	Limits
	13C4-PFBA	48% [e]	38% [e]	73%	50-150%
	13C5-PFPeA	52%	42% [e]	79%	50-150%
	13C5-PFHxA	54%	42% [e]	81%	50-150%
	13C4-PFHpA	56%	51%	81%	50-150%
	13C8-PFOA	62%	57%	85%	50-150%
	13C9-PFNA	63%	58%	90%	50-150%
	13C6-PFDA	60%	61%	86%	50-150%
	13C7-PFUnDA	46% [e]	54%	67%	50-150%
	13C2-PFDoDA	25% [e]	45% [e]	43% [e]	50-150%
	13C2-PFTeDA	3% [e]	35% [e]	12% [e]	50-150%
	13C3-PFBS	56%	45% [e]	82%	50-150%
	13C3-PFHxS	55%	55%	79%	50-150%
	13C8-PFOS	56%	54%	91%	50-150%
	13C8-FOSA	25% [e]	14% [e]	59%	50-150%
	d3-MeFOSAA	60%	62%	85%	50-150%
	d5-EtFOSAA	51%	56%	78%	50-150%
	13C2-4:2FTS	57%	46% [e]	79%	50-150%
	13C2-6:2FTS	68%	68%	85%	50-150%
	13C2-8:2FTS	62%	59%	91%	50-150%
	13C3-HFPO-DA	55%	39% [e]	69%	50-150%

(a) Confirmation run.
(b) Dilution required (ID recovery standard failure).
(c) Result is from Run# 3
(d) Associated ID Standard outside control limits.
(e) Outside control limits.

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0281-028.0-20230502		
Lab Sample ID:	FC5785-23	**Date Sampled:**	05/02/23
Matrix:	AQ - Ground Water	**Date Received:**	05/02/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	KSC-CRCA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5Q14363.D	1	05/15/23 16:59	LR	05/10/23 11:00	OP96821	S5Q225
Run #2 [a]	5Q14361A.D	5	05/16/23 14:12	LR	05/10/23 11:00	OP96821	S5Q226

	Initial Volume	Final Volume
Run #1	140 ml	1.0 ml
Run #2	140 ml	1.0 ml

CAS No.	Compound	Result	PQL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid [b]	0.629 [c]	0.071	0.018	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0095	0.0071	0.0018	ug/l	
307-24-4	Perfluorohexanoic acid	0.0099	0.0071	0.0018	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0050	0.0071	0.0018	ug/l	I
335-67-1	Perfluorooctanoic acid	0.0143	0.0071	0.0018	ug/l	
375-95-1	Perfluorononanoic acid	0.0029	0.0071	0.0018	ug/l	I
335-76-2	Perfluorodecanoic acid	0.0129	0.0071	0.0018	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0018 U	0.0071	0.0018	ug/l	
307-55-1	Perfluorododecanoic acid	0.0018 U	0.0071	0.0018	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0018 U	0.0071	0.0018	ug/l	
376-06-7	Perfluorotetradecanoic acid [b]	0.0089 U [c]	0.036	0.0089	ug/l	
PERFLUOROALKYLSULFONIC ACIDS						
375-73-5	Perfluorobutanesulfonic acid	0.0018 U	0.0071	0.0018	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0018 U	0.0071	0.0018	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0026	0.0071	0.0018	ug/l	I
375-92-8	Perfluoroheptanesulfonic acid	0.0018 U	0.0071	0.0018	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0089	0.0071	0.0018	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0018 U	0.0071	0.0018	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0018 U	0.0071	0.0018	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA [b]	0.0089 U [c]	0.036	0.0089	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	0.0036 U	0.014	0.0036	ug/l	
2991-50-6	EtFOSAA	0.0036 U	0.014	0.0036	ug/l	
FLUOROTELOMER SULFONATES						
757124-72-4	4:2 Fluorotelomer sulfonate	0.0036 U	0.014	0.0036	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0036 U	0.014	0.0036	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0281-028.0-20230502		
Lab Sample ID:	FC5785-23	**Date Sampled:**	05/02/23
Matrix:	AQ - Ground Water	**Date Received:**	05/02/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	KSC-CRCA		

CAS No.	Compound	Result	PQL	MDL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0036 U	0.014	0.0036	ug/l	
NEXT GENERATION PFAS ANALYTES						
13252-13-6	HFPO-DA (GenX)	0.0036 U	0.014	0.0036	ug/l	
919005-14-4	ADONA	0.0036 U	0.014	0.0036	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0036 U	0.014	0.0036	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0036 U	0.014	0.0036	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	41% d	48% d	50-150%
	13C5-PFPeA	50%	58%	50-150%
	13C5-PFHxA	65%	67%	50-150%
	13C4-PFHpA	73%	76%	50-150%
	13C8-PFOA	80%	77%	50-150%
	13C9-PFNA	82%	78%	50-150%
	13C6-PFDA	72%	71%	50-150%
	13C7-PFUnDA	62%	60%	50-150%
	13C2-PFDoDA	52%	50%	50-150%
	13C2-PFTeDA	40% d	43% d	50-150%
	13C3-PFBS	62%	71%	50-150%
	13C3-PFHxS	76%	77%	50-150%
	13C8-PFOS	68%	72%	50-150%
	13C8-FOSA	43% d	45% d	50-150%
	d3-MeFOSAA	70%	61%	50-150%
	d5-EtFOSAA	63%	54%	50-150%
	13C2-4:2FTS	67%	67%	50-150%
	13C2-6:2FTS	84%	76%	50-150%
	13C2-8:2FTS	97%	80%	50-150%
	13C3-HFPO-DA	55%	63%	50-150%

(a) Dilution required (ID recovery standard failure).
(b) Associated ID Standard outside control limits.
(c) Result is from Run# 2
(d) Outside control limits.

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0281-038.0-20230502		
Lab Sample ID:	FC5785-24	**Date Sampled:**	05/02/23
Matrix:	AQ - Ground Water	**Date Received:**	05/02/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	KSC-CRCA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q109362.D	1	05/17/23 00:14	LR	05/09/23 12:50	OP96805	S2Q1540
Run #2 [a]	2Q109363.D	5	05/17/23 00:32	LR	05/09/23 12:50	OP96805	S2Q1540

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2	125 ml	1.0 ml

CAS No.	Compound	Result	PQL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	0.414	0.016	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0074	0.0080	0.0020	ug/l	I
307-24-4	Perfluorohexanoic acid	0.0078	0.0080	0.0020	ug/l	I
375-85-9	Perfluoroheptanoic acid	0.0058	0.0080	0.0020	ug/l	I
335-67-1	Perfluorooctanoic acid	0.0205	0.0080	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0047	0.0080	0.0020	ug/l	I
335-76-2	Perfluorodecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid [b]	0.010 U [c]	0.040	0.010	ug/l	
PERFLUOROALKYLSULFONIC ACIDS						
375-73-5	Perfluorobutanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0024	0.0080	0.0020	ug/l	I
375-92-8	Perfluoroheptanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0059	0.0080	0.0020	ug/l	I
68259-12-1	Perfluorononanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA	0.0020 U	0.0080	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	0.0040 U	0.016	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0040 U	0.016	0.0040	ug/l	
FLUOROTELOMER SULFONATES						
757124-72-4	4:2 Fluorotelomer sulfonate	0.0040 U	0.016	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0040 U	0.016	0.0040	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0281-038.0-20230502		
Lab Sample ID:	FC5785-24	**Date Sampled:**	05/02/23
Matrix:	AQ - Ground Water	**Date Received:**	05/02/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	KSC-CRCA		

CAS No.	Compound	Result	PQL	MDL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0040 U	0.016	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES						
13252-13-6	HFPO-DA (GenX)	0.0040 U	0.016	0.0040	ug/l	
919005-14-4	ADONA	0.0040 U	0.016	0.0040	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0040 U	0.016	0.0040	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0040 U	0.016	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	70%	82%	50-150%
	13C5-PFPeA	71%	85%	50-150%
	13C5-PFHxA	73%	86%	50-150%
	13C4-PFHpA	74%	86%	50-150%
	13C8-PFOA	78%	86%	50-150%
	13C9-PFNA	83%	89%	50-150%
	13C6-PFDA	88%	97%	50-150%
	13C7-PFUnDA	82%	91%	50-150%
	13C2-PFDoDA	73%	82%	50-150%
	13C2-PFTeDA	43% d	46% d	50-150%
	13C3-PFBS	72%	84%	50-150%
	13C3-PFHxS	75%	88%	50-150%
	13C8-PFOS	82%	92%	50-150%
	13C8-FOSA	70%	88%	50-150%
	d3-MeFOSAA	91%	96%	50-150%
	d5-EtFOSAA	85%	94%	50-150%
	13C2-4:2FTS	75%	85%	50-150%
	13C2-6:2FTS	85%	87%	50-150%
	13C2-8:2FTS	97%	97%	50-150%
	13C3-HFPO-DA	65%	74%	50-150%

(a) Dilution required (ID recovery standard failure).
(b) Associated ID Standard outside control limits.
(c) Result is from Run# 2
(d) Outside control limits.

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0281-048.0-20230502		
Lab Sample ID:	FC5785-25	**Date Sampled:**	05/02/23
Matrix:	AQ - Ground Water	**Date Received:**	05/02/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	KSC-CRCA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q109190.D	1	05/13/23 09:06	LR	05/09/23 12:50	OP96805	S2Q1537
Run #2	3Q77058.D	1	05/23/23 22:15	AL	05/18/23 15:33	OP96962	S3Q1064

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2	140 ml	1.0 ml

CAS No.	Compound	Result	PQL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	0.0040 U	0.016	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0020 U	0.0080	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	0.0020 U	0.0080	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0020 U	0.0080	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	0.0020 U	0.0080	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0020 U	0.0080	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid [a]	0.0018 U [b]	0.0071	0.0018	ug/l	
PERFLUOROALKYLSULFONIC ACIDS						
375-73-5	Perfluorobutanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA	0.0020 U	0.0080	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	0.0040 U	0.016	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0040 U	0.016	0.0040	ug/l	
FLUOROTELOMER SULFONATES						
757124-72-4	4:2 Fluorotelomer sulfonate	0.0040 U	0.016	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0040 U	0.016	0.0040	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: CRCA-DPT0281-048.0-20230502
Lab Sample ID: FC5785-25
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: KSC-CRCA

Date Sampled: 05/02/23
Date Received: 05/02/23
Percent Solids: n/a

CAS No.	Compound	Result	PQL	MDL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0040 U	0.016	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES						
13252-13-6	HFPO-DA (GenX)	0.0040 U	0.016	0.0040	ug/l	
919005-14-4	ADONA	0.0040 U	0.016	0.0040	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0040 U	0.016	0.0040	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0040 U	0.016	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	58%	38% [c]	50-150%
	13C5-PFPeA	60%	42% [c]	50-150%
	13C5-PFHxA	64%	43% [c]	50-150%
	13C4-PFHpA	67%	49% [c]	50-150%
	13C8-PFOA	73%	54%	50-150%
	13C9-PFNA	72%	54%	50-150%
	13C6-PFDA	67%	50%	50-150%
	13C7-PFUnDA	63%	41% [c]	50-150%
	13C2-PFDoDA	51%	41% [c]	50-150%
	13C2-PFTeDA	14% [c]	38% [c]	50-150%
	13C3-PFBS	64%	42% [c]	50-150%
	13C3-PFHxS	67%	52%	50-150%
	13C8-PFOS	63%	45% [c]	50-150%
	13C8-FOSA	58%	41% [c]	50-150%
	d3-MeFOSAA	72%	43% [c]	50-150%
	d5-EtFOSAA	65%	41% [c]	50-150%
	13C2-4:2FTS	67%	47% [c]	50-150%
	13C2-6:2FTS	73%	56%	50-150%
	13C2-8:2FTS	70%	48% [c]	50-150%
	13C3-HFPO-DA	63%	40% [c]	50-150%

(a) Associated ID Standard outside control limits.
(b) Result is from Run# 2
(c) Outside control limits.

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-FB-20230502-01		
Lab Sample ID:	FC5785-26	**Date Sampled:**	05/02/23
Matrix:	AQ - Field Blank Water	**Date Received:**	05/02/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	KSC-CRCA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5Q14366.D	1	05/15/23 17:46	LR	05/10/23 11:00	OP96821	S5Q225
Run #2 [a]	2Q109390.D	1	05/17/23 17:17	LR	05/10/23 11:00	OP96821	S2Q1541

	Initial Volume	Final Volume
Run #1	160 ml	1.0 ml
Run #2	160 ml	1.0 ml

CAS No.	Compound	Result	PQL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	0.0031 U	0.013	0.0031	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0016 U	0.0063	0.0016	ug/l	
307-24-4	Perfluorohexanoic acid	0.0016 U	0.0063	0.0016	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0016 U	0.0063	0.0016	ug/l	
335-67-1	Perfluorooctanoic acid	0.0016 U	0.0063	0.0016	ug/l	
375-95-1	Perfluorononanoic acid	0.0016 U	0.0063	0.0016	ug/l	
335-76-2	Perfluorodecanoic acid	0.0016 U	0.0063	0.0016	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0016 U	0.0063	0.0016	ug/l	
307-55-1	Perfluorododecanoic acid	0.0016 U	0.0063	0.0016	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0016 U	0.0063	0.0016	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0016 U	0.0063	0.0016	ug/l	
PERFLUOROALKYLSULFONIC ACIDS						
375-73-5	Perfluorobutanesulfonic acid	0.0016 U	0.0063	0.0016	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0016 U	0.0063	0.0016	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0016 U	0.0063	0.0016	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0016 U	0.0063	0.0016	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0016 U	0.0063	0.0016	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0016 U	0.0063	0.0016	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0016 U	0.0063	0.0016	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA	0.0027	0.0063	0.0016	ug/l	I
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	0.0031 U	0.013	0.0031	ug/l	
2991-50-6	EtFOSAA	0.0031 U	0.013	0.0031	ug/l	
FLUOROTELOMER SULFONATES						
757124-72-4	4:2 Fluorotelomer sulfonate	0.0031 U	0.013	0.0031	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0031 U	0.013	0.0031	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: CRCA-FB-20230502-01
Lab Sample ID: FC5785-26
Matrix: AQ - Field Blank Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: KSC-CRCA

Date Sampled: 05/02/23
Date Received: 05/02/23
Percent Solids: n/a

CAS No.	Compound	Result	PQL	MDL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0031 U	0.013	0.0031	ug/l	
NEXT GENERATION PFAS ANALYTES						
13252-13-6	HFPO-DA (GenX)	0.0031 U	0.013	0.0031	ug/l	
919005-14-4	ADONA	0.0031 U	0.013	0.0031	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0031 U	0.013	0.0031	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0031 U	0.013	0.0031	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	91%	98%	50-150%
	13C5-PFPeA	89%	99%	50-150%
	13C5-PFHxA	87%	98%	50-150%
	13C4-PFHpA	88%	98%	50-150%
	13C8-PFOA	86%	93%	50-150%
	13C9-PFNA	83%	89%	50-150%
	13C6-PFDA	81%	90%	50-150%
	13C7-PFUnDA	79%	81%	50-150%
	13C2-PFDoDA	76%	83%	50-150%
	13C2-PFTeDA	73%	76%	50-150%
	13C3-PFBS	87%	95%	50-150%
	13C3-PFHxS	83%	90%	50-150%
	13C8-PFOS	76%	89%	50-150%
	13C8-FOSA	76%	82%	50-150%
	d3-MeFOSAA	77%	76%	50-150%
	d5-EtFOSAA	77%	74%	50-150%
	13C2-4:2FTS	85%	90%	50-150%
	13C2-6:2FTS	85%	83%	50-150%
	13C2-8:2FTS	80%	86%	50-150%
	13C3-HFPO-DA	79%	82%	50-150%

(a) Confirmation run.

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0281-057.0-20230502		
Lab Sample ID:	FC5785-27	**Date Sampled:**	05/02/23
Matrix:	AQ - Ground Water	**Date Received:**	05/02/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	KSC-CRCA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5Q14367.D	1	05/15/23 18:02	LR	05/10/23 11:00	OP96821	S5Q225
Run #2 [a]	5Q14365A.D	5	05/16/23 14:27	LR	05/10/23 11:00	OP96821	S5Q226

	Initial Volume	Final Volume
Run #1	140 ml	1.0 ml
Run #2	140 ml	1.0 ml

CAS No.	Compound	Result	PQL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	0.018 U [b]	0.071	0.018	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0018 U	0.0071	0.0018	ug/l	
307-24-4	Perfluorohexanoic acid	0.0018 U	0.0071	0.0018	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0018 U	0.0071	0.0018	ug/l	
335-67-1	Perfluorooctanoic acid	0.0018 U	0.0071	0.0018	ug/l	
375-95-1	Perfluorononanoic acid	0.0018 U	0.0071	0.0018	ug/l	
335-76-2	Perfluorodecanoic acid	0.0018 U	0.0071	0.0018	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0018 U	0.0071	0.0018	ug/l	
307-55-1	Perfluorododecanoic acid	0.0018 U	0.0071	0.0018	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0018 U	0.0071	0.0018	ug/l	
376-06-7	Perfluorotetradecanoic acid [c]	0.0018 U	0.0071	0.0018	ug/l	
PERFLUOROALKYLSULFONIC ACIDS						
375-73-5	Perfluorobutanesulfonic acid	0.0018 U	0.0071	0.0018	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0018 U	0.0071	0.0018	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0018 U	0.0071	0.0018	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0018 U	0.0071	0.0018	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0033	0.0071	0.0018	ug/l	I
68259-12-1	Perfluorononanesulfonic acid	0.0018 U	0.0071	0.0018	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0018 U	0.0071	0.0018	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA [c]	0.0089 U [b]	0.036	0.0089	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	0.0036 U	0.014	0.0036	ug/l	
2991-50-6	EtFOSAA	0.0036 U	0.014	0.0036	ug/l	
FLUOROTELOMER SULFONATES						
757124-72-4	4:2 Fluorotelomer sulfonate	0.0036 U	0.014	0.0036	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0036 U	0.014	0.0036	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0281-057.0-20230502		
Lab Sample ID:	FC5785-27	**Date Sampled:**	05/02/23
Matrix:	AQ - Ground Water	**Date Received:**	05/02/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	KSC-CRCA		

CAS No.	Compound	Result	PQL	MDL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0036 U	0.014	0.0036	ug/l	
NEXT GENERATION PFAS ANALYTES						
13252-13-6	HFPO-DA (GenX)	0.0036 U	0.014	0.0036	ug/l	
919005-14-4	ADONA	0.0036 U	0.014	0.0036	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0036 U	0.014	0.0036	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0036 U	0.014	0.0036	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	44% d	51%	50-150%
	13C5-PFPeA	53%	65%	50-150%
	13C5-PFHxA	67%	75%	50-150%
	13C4-PFHpA	76%	80%	50-150%
	13C8-PFOA	82%	81%	50-150%
	13C9-PFNA	84%	82%	50-150%
	13C6-PFDA	74%	79%	50-150%
	13C7-PFUnDA	75%	73%	50-150%
	13C2-PFDoDA	66%	63%	50-150%
	13C2-PFTeDA	42% d	37% d	50-150%
	13C3-PFBS	62%	73%	50-150%
	13C3-PFHxS	76%	87%	50-150%
	13C8-PFOS	79%	84%	50-150%
	13C8-FOSA	39% d	45% d	50-150%
	d3-MeFOSAA	85%	77%	50-150%
	d5-EtFOSAA	84%	72%	50-150%
	13C2-4:2FTS	71%	72%	50-150%
	13C2-6:2FTS	92%	82%	50-150%
	13C2-8:2FTS	107%	98%	50-150%
	13C3-HFPO-DA	57%	71%	50-150%

(a) Dilution required (ID recovery standard failure).
(b) Result is from Run# 2
(c) Associated ID Standard outside control limits.
(d) Outside control limits.

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-FD-20230501-01		
Lab Sample ID:	FC5785-28	**Date Sampled:**	05/02/23
Matrix:	AQ - Ground Water	**Date Received:**	05/02/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	KSC-CRCA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5Q14370.D	1	05/15/23 18:49	LR	05/10/23 11:00	OP96821	S5Q225
Run #2 [a]	5Q14366A.D	5	05/16/23 14:43	LR	05/10/23 11:00	OP96821	S5Q226

	Initial Volume	Final Volume
Run #1	144 ml	1.0 ml
Run #2	144 ml	1.0 ml

CAS No.	Compound	Result	PQL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	0.0035 U	0.014	0.0035	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0017 U	0.0069	0.0017	ug/l	
307-24-4	Perfluorohexanoic acid	0.0017 U	0.0069	0.0017	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0017 U	0.0069	0.0017	ug/l	
335-67-1	Perfluorooctanoic acid	0.0017 U	0.0069	0.0017	ug/l	
375-95-1	Perfluorononanoic acid	0.0017 U	0.0069	0.0017	ug/l	
335-76-2	Perfluorodecanoic acid	0.0017 U	0.0069	0.0017	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0017 U	0.0069	0.0017	ug/l	
307-55-1	Perfluorododecanoic acid [b]	0.0017 U	0.0069	0.0017	ug/l	
72629-94-8	Perfluorotridecanoic acid [b]	0.0017 U	0.0069	0.0017	ug/l	
376-06-7	Perfluorotetradecanoic acid [b]	0.0087 U [c]	0.035	0.0087	ug/l	
PERFLUOROALKYLSULFONIC ACIDS						
375-73-5	Perfluorobutanesulfonic acid	0.0017 U	0.0069	0.0017	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0017 U	0.0069	0.0017	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0017 U	0.0069	0.0017	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0017 U	0.0069	0.0017	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0017 U	0.0069	0.0017	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0017 U	0.0069	0.0017	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0017 U	0.0069	0.0017	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA	0.0017 U	0.0069	0.0017	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	0.0035 U	0.014	0.0035	ug/l	
2991-50-6	EtFOSAA	0.0035 U	0.014	0.0035	ug/l	
FLUOROTELOMER SULFONATES						
757124-72-4	4:2 Fluorotelomer sulfonate	0.0035 U	0.014	0.0035	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0035 U	0.014	0.0035	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-FD-20230501-01		
Lab Sample ID:	FC5785-28	**Date Sampled:**	05/02/23
Matrix:	AQ - Ground Water	**Date Received:**	05/02/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	KSC-CRCA		

CAS No.	Compound	Result	PQL	MDL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0035 U	0.014	0.0035	ug/l	
NEXT GENERATION PFAS ANALYTES						
13252-13-6	HFPO-DA (GenX)	0.0035 U	0.014	0.0035	ug/l	
919005-14-4	ADONA	0.0035 U	0.014	0.0035	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0035 U	0.014	0.0035	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Mino [b]	0.0035 U	0.014	0.0035	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	56%	57%	50-150%
	13C5-PFPeA	67%	76%	50-150%
	13C5-PFHxA	81%	83%	50-150%
	13C4-PFHpA	88%	85%	50-150%
	13C8-PFOA	92%	87%	50-150%
	13C9-PFNA	84%	77%	50-150%
	13C6-PFDA	65%	63%	50-150%
	13C7-PFUnDA	56%	52%	50-150%
	13C2-PFDoDA	49% [d]	45% [d]	50-150%
	13C2-PFTeDA	41% [d]	43% [d]	50-150%
	13C3-PFBS	75%	80%	50-150%
	13C3-PFHxS	88%	87%	50-150%
	13C8-PFOS	60%	63%	50-150%
	13C8-FOSA	59%	59%	50-150%
	d3-MeFOSAA	62%	57%	50-150%
	d5-EtFOSAA	60%	53%	50-150%
	13C2-4:2FTS	86%	82%	50-150%
	13C2-6:2FTS	97%	87%	50-150%
	13C2-8:2FTS	90%	74%	50-150%
	13C3-HFPO-DA	71%	74%	50-150%

(a) Dilution required (ID recovery standard failure).
(b) Associated ID Standard outside control limits.
(c) Result is from Run# 2
(d) Outside control limits.

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-FD-20230502-01		
Lab Sample ID:	FC5785-29	**Date Sampled:**	05/02/23
Matrix:	AQ - Ground Water	**Date Received:**	05/02/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	KSC-CRCA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5Q14371.D	1	05/15/23 19:05	LR	05/10/23 11:00	OP96821	S5Q225
Run #2 [a]	5Q14367A.D	5	05/16/23 14:59	LR	05/10/23 11:00	OP96821	S5Q226

	Initial Volume	Final Volume
Run #1	140 ml	1.0 ml
Run #2	140 ml	1.0 ml

CAS No.	Compound	Result	PQL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	0.675 [b]	0.071	0.018	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0084	0.0071	0.0018	ug/l	
307-24-4	Perfluorohexanoic acid	0.0082	0.0071	0.0018	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0064	0.0071	0.0018	ug/l	I
335-67-1	Perfluorooctanoic acid	0.0166	0.0071	0.0018	ug/l	
375-95-1	Perfluorononanoic acid	0.0032	0.0071	0.0018	ug/l	I
335-76-2	Perfluorodecanoic acid	0.0037	0.0071	0.0018	ug/l	I
2058-94-8	Perfluoroundecanoic acid	0.0018 U	0.0071	0.0018	ug/l	
307-55-1	Perfluorododecanoic acid	0.0018 U	0.0071	0.0018	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0018 U	0.0071	0.0018	ug/l	
376-06-7	Perfluorotetradecanoic acid [c]	0.0018 U	0.0071	0.0018	ug/l	
PERFLUOROALKYLSULFONIC ACIDS						
375-73-5	Perfluorobutanesulfonic acid	0.0018 U	0.0071	0.0018	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0018 U	0.0071	0.0018	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0029	0.0071	0.0018	ug/l	I
375-92-8	Perfluoroheptanesulfonic acid	0.0018 U	0.0071	0.0018	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0078	0.0071	0.0018	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0018 U	0.0071	0.0018	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0018 U	0.0071	0.0018	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA	0.0089 U [b]	0.036	0.0089	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	0.0036 U	0.014	0.0036	ug/l	
2991-50-6	EtFOSAA	0.0036 U	0.014	0.0036	ug/l	
FLUOROTELOMER SULFONATES						
757124-72-4	4:2 Fluorotelomer sulfonate	0.0036 U	0.014	0.0036	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0036 U	0.014	0.0036	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-FD-20230502-01		
Lab Sample ID:	FC5785-29	**Date Sampled:**	05/02/23
Matrix:	AQ - Ground Water	**Date Received:**	05/02/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	KSC-CRCA		

CAS No.	Compound	Result	PQL	MDL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0036 U	0.014	0.0036	ug/l	
NEXT GENERATION PFAS ANALYTES						
13252-13-6	HFPO-DA (GenX)	0.0036 U	0.014	0.0036	ug/l	
919005-14-4	ADONA	0.0036 U	0.014	0.0036	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0036 U	0.014	0.0036	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0036 U	0.014	0.0036	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	45% [d]	53%	50-150%
	13C5-PFPeA	51%	61%	50-150%
	13C5-PFHxA	65%	71%	50-150%
	13C4-PFHpA	74%	76%	50-150%
	13C8-PFOA	81%	80%	50-150%
	13C9-PFNA	83%	79%	50-150%
	13C6-PFDA	73%	73%	50-150%
	13C7-PFUnDA	65%	58%	50-150%
	13C2-PFDoDA	57%	49% [d]	50-150%
	13C2-PFTeDA	45% [d]	36% [d]	50-150%
	13C3-PFBS	60%	73%	50-150%
	13C3-PFHxS	77%	80%	50-150%
	13C8-PFOS	68%	69%	50-150%
	13C8-FOSA	49% [d]	55%	50-150%
	d3-MeFOSAA	76%	62%	50-150%
	d5-EtFOSAA	71%	60%	50-150%
	13C2-4:2FTS	68%	66%	50-150%
	13C2-6:2FTS	90%	78%	50-150%
	13C2-8:2FTS	104%	89%	50-150%
	13C3-HFPO-DA	55%	63%	50-150%

(a) Dilution required (ID recovery standard failure).
(b) Result is from Run# 2
(c) Associated ID Standard outside control limits.
(d) Outside control limits.

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody

FC5785

Tetra Tech, Inc. CHAIN OF CUSTODY NUMBER No. 1815 PAGE 1 OF 3

PROJECT NO: 112G08970	FACILITY: KSC-CRCA	PROJECT MANAGER: Chris Neumann	PHONE NUMBER: (321) 636-6470
SAMPLERS (SIGNATURE): Chuck Sorden		FIELD OPERATIONS LEADER: Chuck Sorden	PHONE NUMBER: (321) 591-7580
		CARRIER/WAYBILL NUMBER:	

LABORATORY NAME AND CONTACT: SGS - Andrea Colby
ADDRESS: 4405 Vineland Rd. Ste. C-15
CITY, STATE: Orlando, FL

STANDARD TAT ☐
RUSH TAT ☐ ☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

CONTAINER TYPE PLASTIC (P) or GLASS (G): P G G
PRESERVATIVE USED: 4°C | HCl/4°C | 4°C
TYPE OF ANALYSIS: LL624MS537 MI 28 | V624GDTCL42 | V624GTCL42-NMS+DNPA

	DATE (YEAR 2023)	TIME	SAMPLE ID	LOCATION ID	TOP DEPTH (FT)	BOTTOM DEPTH (FT)	MATRIX (GW, SO, SW, SD, QC, ETC.)	COLLECTION METHOD GRAB (G) COMP (C)	No. OF CONTAINERS								COMMENTS
1	05/01	1235	CRCA-EB-20230501-01	—	—	—	QC	G	2	X							Equipment Blank
2	1	1320	CRCA-DPT0279-008.0-20230501	C	6	10	GW	1	2	X							
3		1325	CRCA-FB-20230501-01	—	—	—	QC		2	X							Field Blank
4		1340	CRCA-DPT0279-018.0-20230501	C	16	20	GW		2	X							
5		1400	CRCA-DPT0279-028.0-20230501	C	26	30	1		2	X							
6		1420	CRCA-DPT0279-038.0-20230501	C	36	40			2	X							
7		1450	CRCA-DPT0279-048.0-20230501	C	46	50			2	X							
8		1520	CRCA-DPT0279-57.0-20230501	C	55	59			2	X							
9		1645	CRCA-DPT0280-005.0-20230501	D	6	10			12	X	X	X					PFAS ONLY MS/MSD Collected
10	05/01	1720	CRCA-DPT0280-013.0-20230501	D	11	15			6		X	X					
11	05/02	0715	CRCA-DPT0280-018.0-20230502	D	16	20			8	X	X	X					
12	V	0740	CRCA-DPT0280-023.0-20230502	D	21	25		V	6		X	X					
13	05/02	0810	CRCA-DPT0280-028.0-20230502	D	26	30	GW	G	8	X	X	X					

INITIAL ASSESSMENT ZB
LABEL VERIFICATION ZB
3.2 IR1, 1.4 IR1

	DATE	TIME		DATE	TIME
1. RELINQUISHED BY	05/02/23	1530	1. RECEIVED BY	5/2/23	15:30
2. RELINQUISHED BY	5/2/23	0:00	2. RECEIVED BY	05/02/23	1700
3. RELINQUISHED BY	DATE	TIME	3. RECEIVED BY	DATE	TIME

COMMENTS

DISTRIBUTION: WHITE (ACCOMPANIES SAMPLE) YELLOW (FIELD COPY) PINK (FILE COPY) 4/02R
FORM NO. TtNUS-001

5.1 5

FC5785: Chain of Custody
Page 1 of 4

FC5785

Tetra Tech, Inc. CHAIN OF CUSTODY | NUMBER No. 1770 | PAGE 2 OF 3

PROJECT NO: 112G08970	FACILITY: RSL-CRCA	PROJECT MANAGER: Chris Neumann	PHONE NUMBER: (321) 636-6470
SAMPLERS (SIGNATURE): -Chuck Sorden		FIELD OPERATIONS LEADER: Chuck Sorden	PHONE NUMBER: (321) 591-7580
		CARRIER/WAYBILL NUMBER:	

LABORATORY NAME AND CONTACT: SGS - Andrea Colby
ADDRESS: 4405 Vineland Rd. Ste. C-15
CITY, STATE: Orlando, FL

STANDARD TAT ☐ RUSH TAT ☐ ☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

CONTAINER TYPE PLASTIC (P) or GLASS (G): P G G
PRESERVATIVE USED: 4°C HCl/4°C 4°C
TYPE OF ANALYSIS: LL@SM 537 MS28 | VG2COTCL 42 | VG2COTCL 42 VMS+UNPR.

	DATE (YEAR 2023)	TIME	SAMPLE ID	LOCATION ID	TOP DEPTH (FT)	BOTTOM DEPTH (FT)	MATRIX (GW, SO, SW, SD, QC, ETC.)	COLLECTION METHOD GRAB (G) COMP (C)	No. OF CONTAINERS									COMMENTS
14	05/02	0840	CRCA-DPT0280-033.0-20230502	D	31	35	GW	G	6		X	X						
15	1	0900	CRCA-DPT0280-038.0-20230502	D	36	40	1	1	8	X	X	X						
16		0930	CRCA-DPT0280-043.0-20230502	D	41	45			6		X	X						
17		1010	CRCA-DPT0280-048.0-20230502	D	46	50			8	X	X	X						
18		1050	CRCA-DPT0280-053.0-20230502	D	51	55			6		X	X						
19		1125	CRCA-DPT0280-057.0-20230502	D	55	59	GW		8	X	X	X						
20		1210	CRCA-EB-20230502-01	—	—	—	QC		2	X								Equipment Blank
21		1235	CRCA-DPT0281-008.0-20230502	F	6	10	GW		2	X								
22		1300	CRCA-DPT0281-018.0-20230502	F	16	20	1		2	X								
23		1320	CRCA-DPT0281-028.0-20230502	F	26	30			6	X								MS/MSD Collected
24		1350	CRCA-DPT0281-038.0-20230502	F	36	40			2	X								
25		1420	CRCA-DPT0281-048.0-20230502	F	46	50	GW		2	X								
26	05/02	1425	CRCA-FB-20230502-01	—	—	—	QC	G	2	X								Field Blank

	DATE	TIME		DATE	TIME
1. RELINQUISHED BY	05/02/23	1530	1. RECEIVED BY	5/2/23	1530
2. RELINQUISHED BY	5/2/23	1700	2. RECEIVED BY	05/02/23	1700
3. RELINQUISHED BY	DATE	TIME	3. RECEIVED BY	DATE	TIME

COMMENTS

DISTRIBUTION: WHITE (ACCOMPANIES SAMPLE) YELLOW (FIELD COPY) PINK (FILE COPY) 4/02R
FORM NO. TtNUS-001

FC5785 3

Tetra Tech, Inc. CHAIN OF CUSTODY | NUMBER No. 1771 | PAGE 2 OF 3

PROJECT NO: 112G08970	FACILITY: KSC-CRCA	PROJECT MANAGER: Chris Neumann	PHONE NUMBER: (321) 636-6470
SAMPLERS (SIGNATURE): – Chuck Sorden		FIELD OPERATIONS LEADER: Chuck Sorden	PHONE NUMBER: (321) 591-7580
		CARRIER/WAYBILL NUMBER:	

LABORATORY NAME AND CONTACT: SGS – Andrea Colby
ADDRESS: 4405 Vineland Rd. Ste. C-15
CITY, STATE: Orlando, FL

STANDARD TAT ☐
RUSH TAT ☐ ☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

	DATE YEAR 2023	TIME	SAMPLE ID	LOCATION ID	TOP DEPTH (FT)	BOTTOM DEPTH (FT)	MATRIX (GW, SO, SW, SD, QC, ETC.)	COLLECTION METHOD GRAB (G) COMP (C)	No. OF CONTAINERS	CONTAINER TYPE PLASTIC (P) or GLASS (G)			PRESERVATIVE USED			TYPE OF ANALYSIS			COMMENTS
										P	G	G		4°C	HCl/4°C	4°C			
										LCQ&MS 537MS 28	V8260 TCL 42	V8260TCL42+VM3-UNPR							
27	05/02	1455	CRCA-DMT02B1-057.0-20230502	F	55	59	GW	G	2	X									
		0000	~~CRCA-DMT~~ C.S.													C.S.			
28	05/01	0000	CRCA-FD-20230501-01	—	—	—	QC	G	2	X									Field Duplicate
29	05/02	0000	CRCA-FD-20230502-01	—	—	—	QC	G	2	X									Field Duplicate

1. RELINQUISHED BY	DATE 05/02/23	TIME 1530 1500cs	1. RECEIVED BY	DATE 5/2/23	TIME 15:30
2. RELINQUISHED BY	DATE 5/2/23	TIME 17:00	2. RECEIVED BY	DATE 05/02/23	TIME 1700
3. RELINQUISHED BY	DATE	TIME	3. RECEIVED BY	DATE	TIME

COMMENTS

DISTRIBUTION: WHITE (ACCOMPANIES SAMPLE) YELLOW (FIELD COPY) PINK (FILE COPY) 4/02R
FORM NO. TtNUS-001

5.1 5

FC5785: Chain of Custody
Page 3 of 4

SGS Sample Receipt Summary

Job Number: FC5785 **Client:** TETRA TECH **Project:** 112 G 08970

Date / Time Received: 5/2/2023 5:00:00 PM **Delivery Method:** COURIER **Airbill #'s:** N/A

Therm ID: IR 1; **Therm CF:** -0.1; **# of Coolers:** 2

Cooler Temps (Raw Measured) °C: Cooler 1: (3.3); Cooler 2: (1.5);

Cooler Temps (Corrected) °C: Cooler 1: (3.2); Cooler 2: (1.4);

Cooler Information	Y	or	N
1. Custody Seals Present	☑		☐
2. Custody Seals Intact	☑		☐
3. Temp criteria achieved	☑		☐
4. Cooler temp verification	IR Gun		
5. Cooler media	Ice (Bag)		

Trip Blank Information	Y	or	N	N/A
1. Trip Blank present / cooler	☐		☑	☐
2. Trip Blank listed on COC	☐		☑	☐

	W	or	S	N/A
3. Type Of TB Received	☐		☐	☑

Sample Information	Y	or	N	N/A
1. Sample labels present on bottles	☑		☐	
2. Samples preserved properly	☑		☐	
3. Sufficient volume/containers recvd for analysis:	☑		☐	
4. Condition of sample	Intact			
5. Sample recvd within HT	☑		☐	
6. Dates/Times/IDs on COC match Sample Label	☐		☑	
7. VOCs have headspace	☐		☑	☐
8. Bottles received for unspecified tests	☐		☑	
9. Compositing instructions clear	☐		☐	☑
10. Voa Soil Kits/Jars received past 48hrs?	☐		☐	☑
11. % Solids Jar received?	☐		☐	☑
12. Residual Chlorine Present?	☐		☐	☑

Misc. Information

Number of Encores: 25-Gram _____ 5-Gram _____ Number of 5035 Field Kits: _____ Number of Lab Filtered Metals: _____

Test Strip Lot #s: pH 0-3 230320 pH 10-12 25BDH07 Other: (Specify) pH 1.0 - 12.0 222221

Residual Chlorine Test Strip Lot #: _____

Comments SAMPLE #14 ID LABEL TIME READS 0835. COC READS 0840.

SM001
Rev. Date 05/24/17

Technician: SHAYLAP Date: 5/2/2023 5:00:00 PM Reviewer: _____ Date: _____

MS Volatiles

6

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Job Number: FC5785
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VI2915-MB [a]	I756461.D	1	05/05/23	JW	n/a	n/a	VI2915

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

FC5785-9, FC5785-10, FC5785-11, FC5785-12, FC5785-13, FC5785-14, FC5785-15, FC5785-16, FC5785-17, FC5785-18

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	25	10	ug/l	
71-43-2	Benzene	ND	1.0	0.31	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.24	ug/l	
75-25-2	Bromoform	ND	1.0	0.41	ug/l	
78-93-3	2-Butanone (MEK)	ND	5.0	2.0	ug/l	
75-15-0	Carbon Disulfide	ND	2.0	0.53	ug/l	
56-23-5	Carbon Tetrachloride	ND	1.0	0.36	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.20	ug/l	
75-00-3	Chloroethane	ND	2.0	0.67	ug/l	
67-66-3	Chloroform	ND	1.0	0.30	ug/l	
110-82-7	Cyclohexane	ND	1.0	0.39	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.28	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	5.0	1.0	ug/l	
106-93-4	1,2-Dibromoethane	ND	2.0	0.28	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	0.50	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	0.32	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	0.22	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	0.26	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.34	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.31	ug/l	
75-35-4	1,1-Dichloroethylene	ND	1.0	0.32	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	0.28	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	0.22	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.43	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.29	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.21	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.36	ug/l	
76-13-1	Freon 113	ND	1.0	0.48	ug/l	
591-78-6	2-Hexanone	ND	10	2.0	ug/l	
98-82-8	Isopropylbenzene	ND	1.0	0.22	ug/l	
79-20-9	Methyl Acetate	ND	20	5.0	ug/l	
74-83-9	Methyl Bromide	ND	5.0	2.0	ug/l	
74-87-3	Methyl Chloride	ND	2.0	0.50	ug/l	
108-87-2	Methylcyclohexane	ND	1.0	0.44	ug/l	
75-09-2	Methylene Chloride	ND	5.0	2.0	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	5.0	1.0	ug/l	

Method Blank Summary

Job Number: FC5785
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VI2915-MB [a]	I756461.D	1	05/05/23	JW	n/a	n/a	VI2915

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

FC5785-9, FC5785-10, FC5785-11, FC5785-12, FC5785-13, FC5785-14, FC5785-15, FC5785-16, FC5785-17, FC5785-18

CAS No.	Compound	Result	RL	MDL	Units	Q
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.23	ug/l	
100-42-5	Styrene	ND	1.0	0.22	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.30	ug/l	
127-18-4	Tetrachloroethylene	ND	1.0	0.22	ug/l	
108-88-3	Toluene	ND	1.0	0.30	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	2.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.25	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.47	ug/l	
79-01-6	Trichloroethylene	ND	1.0	0.35	ug/l	
75-69-4	Trichlorofluoromethane	ND	2.0	0.50	ug/l	
75-01-4	Vinyl Chloride	ND	1.0	0.41	ug/l	
1330-20-7	Xylene (total)	ND	3.0	0.72	ug/l	

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	99%	83-118%
17060-07-0	1,2-Dichloroethane-D4	98%	79-125%
2037-26-5	Toluene-D8	98%	85-112%
460-00-4	4-Bromofluorobenzene	105%	83-118%

(a) Sample was treated with an anti-foaming agent.

Method Blank Summary

Job Number: FC5785
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V1A1807-MB [a]	1A45904.D	1	05/05/23	JW	n/a	n/a	V1A1807

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

FC5785-19

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	25	10	ug/l	
71-43-2	Benzene	ND	1.0	0.31	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.24	ug/l	
75-25-2	Bromoform	ND	1.0	0.41	ug/l	
78-93-3	2-Butanone (MEK)	ND	5.0	2.0	ug/l	
75-15-0	Carbon Disulfide	ND	2.0	0.53	ug/l	
56-23-5	Carbon Tetrachloride	ND	1.0	0.36	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.20	ug/l	
75-00-3	Chloroethane	ND	2.0	0.67	ug/l	
67-66-3	Chloroform	ND	1.0	0.30	ug/l	
110-82-7	Cyclohexane	ND	1.0	0.39	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.28	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	5.0	1.0	ug/l	
106-93-4	1,2-Dibromoethane	ND	2.0	0.28	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	0.50	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	0.32	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	0.22	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	0.26	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.34	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.31	ug/l	
75-35-4	1,1-Dichloroethylene	ND	1.0	0.32	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	0.28	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	0.22	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.43	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.29	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.21	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.36	ug/l	
76-13-1	Freon 113	ND	1.0	0.48	ug/l	
591-78-6	2-Hexanone	ND	10	2.0	ug/l	
98-82-8	Isopropylbenzene	ND	1.0	0.22	ug/l	
79-20-9	Methyl Acetate	ND	20	5.0	ug/l	
74-83-9	Methyl Bromide	ND	5.0	2.0	ug/l	
74-87-3	Methyl Chloride	ND	2.0	0.50	ug/l	
108-87-2	Methylcyclohexane	ND	1.0	0.44	ug/l	
75-09-2	Methylene Chloride	ND	5.0	2.0	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	5.0	1.0	ug/l	

Method Blank Summary

Job Number: FC5785
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V1A1807-MB [a]	1A45904.D	1	05/05/23	JW	n/a	n/a	V1A1807

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

FC5785-19

CAS No.	Compound	Result	RL	MDL	Units	Q
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.23	ug/l	
100-42-5	Styrene	ND	1.0	0.22	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.30	ug/l	
127-18-4	Tetrachloroethylene	ND	1.0	0.22	ug/l	
108-88-3	Toluene	ND	1.0	0.30	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	2.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.25	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.47	ug/l	
79-01-6	Trichloroethylene	ND	1.0	0.35	ug/l	
75-69-4	Trichlorofluoromethane	ND	2.0	0.50	ug/l	
75-01-4	Vinyl Chloride	ND	1.0	0.41	ug/l	
1330-20-7	Xylene (total)	ND	3.0	0.72	ug/l	

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	100%	83-118%
17060-07-0	1,2-Dichloroethane-D4	99%	79-125%
2037-26-5	Toluene-D8	96%	85-112%
460-00-4	4-Bromofluorobenzene	100%	83-118%

(a) Sample was treated with an anti-foaming agent.

Blank Spike Summary

Job Number: FC5785
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VI2915-BS	I756460.D	1	05/05/23	JW	n/a	n/a	VI2915

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

FC5785-9, FC5785-10, FC5785-11, FC5785-12, FC5785-13, FC5785-14, FC5785-15, FC5785-16, FC5785-17, FC5785-18

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
67-64-1	Acetone	125	135	108	50-147
71-43-2	Benzene	25	26.5	106	81-122
75-27-4	Bromodichloromethane	25	26.2	105	79-123
75-25-2	Bromoform	25	25.4	102	66-123
78-93-3	2-Butanone (MEK)	125	134	107	56-143
75-15-0	Carbon Disulfide	25	28.7	115	66-148
56-23-5	Carbon Tetrachloride	25	28.8	115	76-136
108-90-7	Chlorobenzene	25	25.2	101	82-124
75-00-3	Chloroethane	25	23.1	92	62-144
67-66-3	Chloroform	25	27.2	109	80-124
110-82-7	Cyclohexane	25	29.3	117	73-138
124-48-1	Dibromochloromethane	25	27.4	110	78-122
96-12-8	1,2-Dibromo-3-chloropropane	25	26.8	107	64-123
106-93-4	1,2-Dibromoethane	25	27.1	108	75-120
75-71-8	Dichlorodifluoromethane	25	32.0	128	42-167
95-50-1	1,2-Dichlorobenzene	25	24.9	100	82-124
541-73-1	1,3-Dichlorobenzene	25	24.5	98	84-125
106-46-7	1,4-Dichlorobenzene	25	23.6	94	78-120
75-34-3	1,1-Dichloroethane	25	26.0	104	81-122
107-06-2	1,2-Dichloroethane	25	25.3	101	75-125
75-35-4	1,1-Dichloroethylene	25	27.4	110	78-137
156-59-2	cis-1,2-Dichloroethylene	25	27.6	110	78-120
156-60-5	trans-1,2-Dichloroethylene	25	27.3	109	76-127
78-87-5	1,2-Dichloropropane	25	27.2	109	76-124
10061-01-5	cis-1,3-Dichloropropene	25	27.1	108	75-118
10061-02-6	trans-1,3-Dichloropropene	25	25.5	102	80-120
100-41-4	Ethylbenzene	25	25.8	103	81-121
76-13-1	Freon 113	25	31.9	128	72-134
591-78-6	2-Hexanone	125	123	98	61-129
98-82-8	Isopropylbenzene	25	26.8	107	83-132
79-20-9	Methyl Acetate	125	126	101	65-126
74-83-9	Methyl Bromide	25	32.6	130	59-143
74-87-3	Methyl Chloride	25	28.7	115	50-159
108-87-2	Methylcyclohexane	25	27.5	110	76-129
75-09-2	Methylene Chloride	25	29.6	118	69-135
108-10-1	4-Methyl-2-pentanone (MIBK)	125	121	97	66-122

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FC5785
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VI2915-BS	I756460.D	1	05/05/23	JW	n/a	n/a	VI2915

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

FC5785-9, FC5785-10, FC5785-11, FC5785-12, FC5785-13, FC5785-14, FC5785-15, FC5785-16, FC5785-17, FC5785-18

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
1634-04-4	Methyl Tert Butyl Ether	25	27.6	110	72-117
100-42-5	Styrene	25	27.6	110	78-119
79-34-5	1,1,2,2-Tetrachloroethane	25	24.0	96	72-120
127-18-4	Tetrachloroethylene	25	26.8	107	76-135
108-88-3	Toluene	25	26.7	107	80-120
120-82-1	1,2,4-Trichlorobenzene	25	26.5	106	73-129
71-55-6	1,1,1-Trichloroethane	25	28.4	114	75-130
79-00-5	1,1,2-Trichloroethane	25	25.6	102	76-119
79-01-6	Trichloroethylene	25	26.3	105	81-126
75-69-4	Trichlorofluoromethane	25	25.3	101	71-156
75-01-4	Vinyl Chloride	25	26.6	106	69-159
1330-20-7	Xylene (total)	75	80.4	107	80-126

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	104%	83-118%
17060-07-0	1,2-Dichloroethane-D4	102%	79-125%
2037-26-5	Toluene-D8	103%	85-112%
460-00-4	4-Bromofluorobenzene	101%	83-118%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FC5785
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V1A1807-BS	1A45902.D	1	05/05/23	JW	n/a	n/a	V1A1807

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

FC5785-19

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
67-64-1	Acetone	125	114	91	50-147
71-43-2	Benzene	25	24.7	99	81-122
75-27-4	Bromodichloromethane	25	22.9	92	79-123
75-25-2	Bromoform	25	20.1	80	66-123
78-93-3	2-Butanone (MEK)	125	106	85	56-143
75-15-0	Carbon Disulfide	25	25.9	104	66-148
56-23-5	Carbon Tetrachloride	25	24.2	97	76-136
108-90-7	Chlorobenzene	25	24.1	96	82-124
75-00-3	Chloroethane	25	27.4	110	62-144
67-66-3	Chloroform	25	24.9	100	80-124
110-82-7	Cyclohexane	25	22.1	88	73-138
124-48-1	Dibromochloromethane	25	22.4	90	78-122
96-12-8	1,2-Dibromo-3-chloropropane	25	19.8	79	64-123
106-93-4	1,2-Dibromoethane	25	23.6	94	75-120
75-71-8	Dichlorodifluoromethane	25	31.7	127	42-167
95-50-1	1,2-Dichlorobenzene	25	23.0	92	82-124
541-73-1	1,3-Dichlorobenzene	25	23.2	93	84-125
106-46-7	1,4-Dichlorobenzene	25	23.6	94	78-120
75-34-3	1,1-Dichloroethane	25	23.4	94	81-122
107-06-2	1,2-Dichloroethane	25	25.3	101	75-125
75-35-4	1,1-Dichloroethylene	25	25.5	102	78-137
156-59-2	cis-1,2-Dichloroethylene	25	24.4	98	78-120
156-60-5	trans-1,2-Dichloroethylene	25	24.3	97	76-127
78-87-5	1,2-Dichloropropane	25	25.0	100	76-124
10061-01-5	cis-1,3-Dichloropropene	25	24.0	96	75-118
10061-02-6	trans-1,3-Dichloropropene	25	21.6	86	80-120
100-41-4	Ethylbenzene	25	23.6	94	81-121
76-13-1	Freon 113	25	25.5	102	72-134
591-78-6	2-Hexanone	125	102	82	61-129
98-82-8	Isopropylbenzene	25	23.2	93	83-132
79-20-9	Methyl Acetate	125	106	85	65-126
74-83-9	Methyl Bromide	25	28.2	113	59-143
74-87-3	Methyl Chloride	25	26.5	106	50-159
108-87-2	Methylcyclohexane	25	22.8	91	76-129
75-09-2	Methylene Chloride	25	27.1	108	69-135
108-10-1	4-Methyl-2-pentanone (MIBK)	125	107	86	66-122

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FC5785
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V1A1807-BS	1A45902.D	1	05/05/23	JW	n/a	n/a	V1A1807

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

FC5785-19

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
1634-04-4	Methyl Tert Butyl Ether	25	24.4	98	72-117
100-42-5	Styrene	25	23.8	95	78-119
79-34-5	1,1,2,2-Tetrachloroethane	25	22.2	89	72-120
127-18-4	Tetrachloroethylene	25	22.7	91	76-135
108-88-3	Toluene	25	23.6	94	80-120
120-82-1	1,2,4-Trichlorobenzene	25	22.5	90	73-129
71-55-6	1,1,1-Trichloroethane	25	24.2	97	75-130
79-00-5	1,1,2-Trichloroethane	25	22.4	90	76-119
79-01-6	Trichloroethylene	25	24.6	98	81-126
75-69-4	Trichlorofluoromethane	25	29.9	120	71-156
75-01-4	Vinyl Chloride	25	25.9	104	69-159
1330-20-7	Xylene (total)	75	70.7	94	80-126

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	100%	83-118%
17060-07-0	1,2-Dichloroethane-D4	100%	79-125%
2037-26-5	Toluene-D8	97%	85-112%
460-00-4	4-Bromofluorobenzene	101%	83-118%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FC5785
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
FC5785-9MS	I756482.D	1	05/05/23	JW	n/a	n/a	VI2915
FC5785-9MSD	I756483.D	1	05/05/23	JW	n/a	n/a	VI2915
FC5785-9 [a]	I756462.D	1	05/05/23	JW	n/a	n/a	VI2915

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

FC5785-9, FC5785-10, FC5785-11, FC5785-12, FC5785-13, FC5785-14, FC5785-15, FC5785-16, FC5785-17, FC5785-18

CAS No.	Compound	FC5785-9 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
67-64-1	Acetone	25	U	125	126	101	125	130	104	3	50-147/21
71-43-2	Benzene	1.0	U	25	27.7	111	25	28.6	114	3	81-122/14
75-27-4	Bromodichloromethane	1.0	U	25	26.8	107	25	27.8	111	4	79-123/19
75-25-2	Bromoform	1.0	U	25	24.9	100	25	26.3	105	5	66-123/21
78-93-3	2-Butanone (MEK)	5.0	U	125	129	103	125	132	106	2	56-143/18
75-15-0	Carbon Disulfide	2.0	U	25	30.8	123	25	32.6	130	6	66-148/23
56-23-5	Carbon Tetrachloride	1.0	U	25	31.8	127	25	33.2	133	4	76-136/23
108-90-7	Chlorobenzene	1.0	U	25	25.7	103	25	26.4	106	3	82-124/14
75-00-3	Chloroethane	2.0	U	25	24.5	98	25	26.4	106	7	62-144/20
67-66-3	Chloroform	1.0	U	25	28.6	114	25	29.7	119	4	80-124/15
110-82-7	Cyclohexane	1.0	U	25	31.8	127	25	33.2	133	4	73-138/18
124-48-1	Dibromochloromethane	1.0	U	25	26.9	108	25	27.5	110	2	78-122/19
96-12-8	1,2-Dibromo-3-chloropropane	5.0	U	25	26.4	106	25	26.6	106	1	64-123/18
106-93-4	1,2-Dibromoethane	2.0	U	25	26.5	106	25	27.2	109	3	75-120/13
75-71-8	Dichlorodifluoromethane	2.0	U	25	37.8	151	25	39.6	158	5	42-167/19
95-50-1	1,2-Dichlorobenzene	1.0	U	25	25.0	100	25	24.9	100	0	82-124/14
541-73-1	1,3-Dichlorobenzene	1.0	U	25	24.6	98	25	23.9	96	3	84-125/14
106-46-7	1,4-Dichlorobenzene	1.0	U	25	23.4	94	25	23.7	95	1	78-120/15
75-34-3	1,1-Dichloroethane	1.0	U	25	27.2	109	25	28.4	114	4	81-122/15
107-06-2	1,2-Dichloroethane	1.0	U	25	26.6	106	25	27.4	110	3	75-125/14
75-35-4	1,1-Dichloroethylene	1.0	U	25	30.8	123	25	31.7	127	3	78-137/18
156-59-2	cis-1,2-Dichloroethylene	1.0	U	25	29.1	116	25	28.7	115	1	78-120/15
156-60-5	trans-1,2-Dichloroethylene	1.0	U	25	28.6	114	25	29.9	120	4	76-127/17
78-87-5	1,2-Dichloropropane	1.0	U	25	27.7	111	25	29.4	118	6	76-124/14
10061-01-5	cis-1,3-Dichloropropene	1.0	U	25	25.6	102	25	26.3	105	3	75-118/23
10061-02-6	trans-1,3-Dichloropropene	1.0	U	25	23.1	92	25	23.2	93	0	80-120/22
100-41-4	Ethylbenzene	1.0	U	25	26.6	106	25	27.2	109	2	81-121/14
76-13-1	Freon 113	1.0	U	25	35.9	144*	25	37.3	149*	4	72-134/20
591-78-6	2-Hexanone	10	U	125	122	98	125	121	97	1	61-129/18
98-82-8	Isopropylbenzene	1.0	U	25	27.9	112	25	28.3	113	1	83-132/15
79-20-9	Methyl Acetate	20	U	125	120	96	125	127	102	6	65-126/18
74-83-9	Methyl Bromide	5.0	U	25	14.3	57*	25	24.1	96	51*	59-143/19
74-87-3	Methyl Chloride	2.0	U	25	29.4	118	25	31.5	126	7	50-159/19
108-87-2	Methylcyclohexane	1.0	U	25	29.2	117	25	29.7	119	2	76-129/17
75-09-2	Methylene Chloride	5.0	U	25	29.8	119	25	31.3	125	5	69-135/16
108-10-1	4-Methyl-2-pentanone (MIBK)	5.0	U	125	119	95	125	118	94	1	66-122/16

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FC5785
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
FC5785-9MS	I756482.D	1	05/05/23	JW	n/a	n/a	VI2915
FC5785-9MSD	I756483.D	1	05/05/23	JW	n/a	n/a	VI2915
FC5785-9 [a]	I756462.D	1	05/05/23	JW	n/a	n/a	VI2915

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

FC5785-9, FC5785-10, FC5785-11, FC5785-12, FC5785-13, FC5785-14, FC5785-15, FC5785-16, FC5785-17, FC5785-18

CAS No.	Compound	FC5785-9 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
1634-04-4	Methyl Tert Butyl Ether	1.0 U		25	27.9	112	25	29.7	119*	6	72-117/14
100-42-5	Styrene	1.0 U		25	27.3	109	25	28.3	113	4	78-119/23
79-34-5	1,1,2,2-Tetrachloroethane	1.0 U		25	23.4	94	25	22.7	91	3	72-120/14
127-18-4	Tetrachloroethylene	1.0 U		25	28.6	114	25	29.2	117	2	76-135/16
108-88-3	Toluene	1.0 U		25	27.1	108	25	27.4	110	1	80-120/14
120-82-1	1,2,4-Trichlorobenzene	2.0 U		25	26.8	107	25	26.7	107	0	73-129/20
71-55-6	1,1,1-Trichloroethane	1.0 U		25	31.8	127	25	33.2	133*	4	75-130/16
79-00-5	1,1,2-Trichloroethane	1.0 U		25	24.9	100	25	25.2	101	1	76-119/14
79-01-6	Trichloroethylene	1.0 U		25	27.7	111	25	28.2	113	2	81-126/15
75-69-4	Trichlorofluoromethane	2.0 U		25	29.7	119	25	31.1	124	5	71-156/21
75-01-4	Vinyl Chloride	1.0 U		25	29.4	118	25	31.4	126	7	69-159/18
1330-20-7	Xylene (total)	3.0 U		75	82.0	109	75	83.5	111	2	80-126/15

CAS No.	Surrogate Recoveries	MS	MSD	FC5785-9	Limits
1868-53-7	Dibromofluoromethane	106%	108%	100%	83-118%
17060-07-0	1,2-Dichloroethane-D4	102%	110%	98%	79-125%
2037-26-5	Toluene-D8	101%	100%	99%	85-112%
460-00-4	4-Bromofluorobenzene	101%	99%	103%	83-118%

(a) Sample was not preserved to a pH < 2. Sample was treated with an anti-foaming agent.

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FC5785
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
FC5638-13MS	1A45925.D	1000	05/05/23	JW	n/a	n/a	V1A1807
FC5638-13MSD	1A45926.D	1000	05/05/23	JW	n/a	n/a	V1A1807
FC5638-13	1A45906.D	1000	05/05/23	JW	n/a	n/a	V1A1807

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

FC5785-19

CAS No.	Compound	FC5638-13 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
67-64-1	Acetone	25000	U	125000	115000	92	125000	117000	94	2	50-147/21
71-43-2	Benzene	1000	U	25000	23400	94	25000	25200	101	7	81-122/14
75-27-4	Bromodichloromethane	1000	U	25000	22100	88	25000	23300	93	5	79-123/19
75-25-2	Bromoform	1000	U	25000	20700	83	25000	21500	86	4	66-123/21
78-93-3	2-Butanone (MEK)	5000	U	125000	109000	87	125000	112000	90	3	56-143/18
75-15-0	Carbon Disulfide	2000	U	25000	24800	99	25000	26700	107	7	66-148/23
56-23-5	Carbon Tetrachloride	1000	U	25000	24000	96	25000	25300	101	5	76-136/23
108-90-7	Chlorobenzene	1000	U	25000	22800	91	25000	24500	98	7	82-124/14
75-00-3	Chloroethane	2000	U	25000	26400	106	25000	29600	118	11	62-144/20
67-66-3	Chloroform	1000	U	25000	23600	94	25000	25100	100	6	80-124/15
110-82-7	Cyclohexane	1000	U	25000	22700	91	25000	24400	98	7	73-138/18
124-48-1	Dibromochloromethane	1000	U	25000	21900	88	25000	23100	92	5	78-122/19
96-12-8	1,2-Dibromo-3-chloropropane	5000	U	25000	22000	88	25000	20900	84	5	64-123/18
106-93-4	1,2-Dibromoethane	2000	U	25000	23700	95	25000	24600	98	4	75-120/13
75-71-8	Dichlorodifluoromethane	2000	U	25000	32000	128	25000	35700	143	11	42-167/19
95-50-1	1,2-Dichlorobenzene	1000	U	25000	22700	91	25000	23800	95	5	82-124/14
541-73-1	1,3-Dichlorobenzene	1000	U	25000	22000	88	25000	23500	94	7	84-125/14
106-46-7	1,4-Dichlorobenzene	1000	U	25000	22800	91	25000	23900	96	5	78-120/15
75-34-3	1,1-Dichloroethane	1000	U	25000	22400	90	25000	24400	98	9	81-122/15
107-06-2	1,2-Dichloroethane	1000	U	25000	25600	102	25000	27000	108	5	75-125/14
75-35-4	1,1-Dichloroethylene	1000	U	25000	24900	100	25000	26700	107	7	78-137/18
156-59-2	cis-1,2-Dichloroethylene	1000	U	25000	24400	98	25000	26500	106	8	78-120/15
156-60-5	trans-1,2-Dichloroethylene	1000	U	25000	23200	93	25000	24800	99	7	76-127/17
78-87-5	1,2-Dichloropropane	1000	U	25000	23800	95	25000	25400	102	7	76-124/14
10061-01-5	cis-1,3-Dichloropropene	1000	U	25000	20900	84	25000	22100	88	6	75-118/23
10061-02-6	trans-1,3-Dichloropropene	1000	U	25000	18800	75*	25000	19800	79*	5	80-120/22
100-41-4	Ethylbenzene	1000	U	25000	22600	90	25000	24200	97	7	81-121/14
76-13-1	Freon 113	1000	U	25000	27200	109	25000	28400	114	4	72-134/20
591-78-6	2-Hexanone	10000	U	125000	107000	86	125000	111000	89	4	61-129/18
98-82-8	Isopropylbenzene	1000	U	25000	22900	92	25000	24700	99	8	83-132/15
79-20-9	Methyl Acetate	20000	U	125000	142000	114	125000	150000	120	5	65-126/18
74-83-9	Methyl Bromide	5000	U	25000	30100	120	25000	32900	132	9	59-143/19
74-87-3	Methyl Chloride	2000	U	25000	26700	107	25000	29400	118	10	50-159/19
108-87-2	Methylcyclohexane	1000	U	25000	23700	95	25000	25200	101	6	76-129/17
75-09-2	Methylene Chloride	5000	U	25000	27900	112	25000	28700	115	3	69-135/16
108-10-1	4-Methyl-2-pentanone (MIBK)	5000	U	125000	111000	89	125000	114000	91	3	66-122/16

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FC5785
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
FC5638-13MS	1A45925.D	1000	05/05/23	JW	n/a	n/a	V1A1807
FC5638-13MSD	1A45926.D	1000	05/05/23	JW	n/a	n/a	V1A1807
FC5638-13	1A45906.D	1000	05/05/23	JW	n/a	n/a	V1A1807

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

FC5785-19

CAS No.	Compound	FC5638-13 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
1634-04-4	Methyl Tert Butyl Ether	1000	U	25000	24600	98	25000	25900	104	5	72-117/14
100-42-5	Styrene	1000	U	25000	22100	88	25000	24100	96	9	78-119/23
79-34-5	1,1,2,2-Tetrachloroethane	1000	U	25000	22400	90	25000	22700	91	1	72-120/14
127-18-4	Tetrachloroethylene	1000	U	25000	25400	102	25000	27300	109	7	76-135/16
108-88-3	Toluene	1000	U	25000	22600	90	25000	24000	96	6	80-120/14
120-82-1	1,2,4-Trichlorobenzene	2000	U	25000	22300	89	25000	24000	96	7	73-129/20
71-55-6	1,1,1-Trichloroethane	1000	U	25000	23300	93	25000	25700	103	10	75-130/16
79-00-5	1,1,2-Trichloroethane	1000	U	25000	22400	90	25000	23500	94	5	76-119/14
79-01-6	Trichloroethylene	1000	U	25000	24000	96	25000	25600	102	6	81-126/15
75-69-4	Trichlorofluoromethane	2000	U	25000	32500	130	25000	35300	141	8	71-156/21
75-01-4	Vinyl Chloride	26300		25000	51100	99	25000	55000	115	7	69-159/18
1330-20-7	Xylene (total)	3000	U	75000	66800	89	75000	72200	96	8	80-126/15

CAS No.	Surrogate Recoveries	MS	MSD	FC5638-13	Limits
1868-53-7	Dibromofluoromethane	101%	101%	101%	83-118%
17060-07-0	1,2-Dichloroethane-D4	104%	104%	101%	79-125%
2037-26-5	Toluene-D8	96%	96%	96%	85-112%
460-00-4	4-Bromofluorobenzene	100%	99%	99%	83-118%

* = Outside of Control Limits.

MS Semi-volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Instrument Blank

Job Number: FC5785
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S2Q1537-IBLK	2Q109135.D	1	05/12/23	LR	n/a	n/a	S2Q1537

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC5785-1, FC5785-2, FC5785-3, FC5785-4, FC5785-7, FC5785-8, FC5785-9, FC5785-11, FC5785-13, FC5785-17, FC5785-19, FC5785-21, FC5785-22, FC5785-25

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	
2355-31-9	MeFOSAA	ND	0.0080	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0080	0.0020	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	
919005-14-4	ADONA	ND	0.0080	0.0020	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.0080	0.0020	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.0080	0.0020	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	90%	50-150%
	13C5-PFPeA	91%	50-150%
	13C5-PFHxA	91%	50-150%
	13C4-PFHpA	92%	50-150%

Instrument Blank

Job Number: FC5785
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S2Q1537-IBLK	2Q109135.D	1	05/12/23	LR	n/a	n/a	S2Q1537

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC5785-1, FC5785-2, FC5785-3, FC5785-4, FC5785-7, FC5785-8, FC5785-9, FC5785-11, FC5785-13, FC5785-17, FC5785-19, FC5785-21, FC5785-22, FC5785-25

CAS No.	ID Standard Recoveries		Limits
	13C8-PFOA	92%	50-150%
	13C9-PFNA	93%	50-150%
	13C6-PFDA	92%	50-150%
	13C7-PFUnDA	91%	50-150%
	13C2-PFDoDA	90%	50-150%
	13C2-PFTeDA	90%	50-150%
	13C3-PFBS	90%	50-150%
	13C3-PFHxS	92%	50-150%
	13C8-PFOS	92%	50-150%
	13C8-FOSA	96%	50-150%
	d3-MeFOSAA	91%	50-150%
	d5-EtFOSAA	90%	50-150%
	13C2-4:2FTS	85%	50-150%
	13C2-6:2FTS	85%	50-150%
	13C2-8:2FTS	86%	50-150%

Instrument Blank

Job Number: FC5785
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S5Q225-IBLK	5Q14353.D	1	05/15/23	LR	n/a	n/a	S5Q225

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC5785-23, FC5785-27, FC5785-28, FC5785-29

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	
2355-31-9	MeFOSAA	ND	0.0080	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0080	0.0020	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	
919005-14-4	ADONA	ND	0.0080	0.0020	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.0080	0.0020	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.0080	0.0020	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	97%	50-150%
	13C5-PFPeA	96%	50-150%
	13C5-PFHxA	96%	50-150%
	13C4-PFHpA	97%	50-150%

Instrument Blank

Job Number: FC5785
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S5Q225-IBLK	5Q14353.D	1	05/15/23	LR	n/a	n/a	S5Q225

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC5785-23, FC5785-27, FC5785-28, FC5785-29

CAS No.	ID Standard Recoveries		Limits
	13C8-PFOA	97%	50-150%
	13C9-PFNA	96%	50-150%
	13C6-PFDA	98%	50-150%
	13C7-PFUnDA	97%	50-150%
	13C2-PFDoDA	98%	50-150%
	13C2-PFTeDA	92%	50-150%
	13C3-PFBS	96%	50-150%
	13C3-PFHxS	97%	50-150%
	13C8-PFOS	96%	50-150%
	13C8-FOSA	99%	50-150%
	d3-MeFOSAA	97%	50-150%
	d5-EtFOSAA	97%	50-150%
	13C2-4:2FTS	92%	50-150%
	13C2-6:2FTS	92%	50-150%
	13C2-8:2FTS	93%	50-150%

Instrument Blank

Job Number: FC5785
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S5Q226-IBLK	5Q14417.D	1	05/16/23	LR	n/a	n/a	S5Q226

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC5785-23, FC5785-27, FC5785-28, FC5785-29

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	96%	50-150%
	13C5-PFPeA	95%	50-150%
	13C5-PFHxA	94%	50-150%
	13C4-PFHpA	96%	50-150%
	13C8-PFOA	95%	50-150%
	13C9-PFNA	96%	50-150%
	13C6-PFDA	99%	50-150%
	13C7-PFUnDA	97%	50-150%
	13C2-PFDoDA	96%	50-150%
	13C2-PFTeDA	93%	50-150%
	13C3-PFBS	94%	50-150%
	13C3-PFHxS	96%	50-150%
	13C8-PFOS	95%	50-150%
	13C8-FOSA	102%	50-150%
	d3-MeFOSAA	94%	50-150%
	d5-EtFOSAA	93%	50-150%
	13C2-4:2FTS	89%	50-150%
	13C2-6:2FTS	92%	50-150%
	13C2-8:2FTS	96%	50-150%

Instrument Blank

Job Number: FC5785
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S2Q1540-IBLK	2Q109331.D	1	05/16/23	LR	n/a	n/a	S2Q1540

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC5785-2, FC5785-4, FC5785-6, FC5785-7, FC5785-8, FC5785-9, FC5785-11, FC5785-13, FC5785-15, FC5785-17, FC5785-22, FC5785-24

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	
2355-31-9	MeFOSAA	ND	0.0080	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0080	0.0020	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	
919005-14-4	ADONA	ND	0.0080	0.0020	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.0080	0.0020	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.0080	0.0020	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	93%	50-150%
	13C5-PFPeA	93%	50-150%
	13C5-PFHxA	92%	50-150%
	13C4-PFHpA	92%	50-150%

Instrument Blank

Job Number: FC5785
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S2Q1540-IBLK	2Q109331.D	1	05/16/23	LR	n/a	n/a	S2Q1540

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC5785-2, FC5785-4, FC5785-6, FC5785-7, FC5785-8, FC5785-9, FC5785-11, FC5785-13, FC5785-15, FC5785-17, FC5785-22, FC5785-24

CAS No.	ID Standard Recoveries		Limits
	13C8-PFOA	93%	50-150%
	13C9-PFNA	92%	50-150%
	13C6-PFDA	94%	50-150%
	13C7-PFUnDA	93%	50-150%
	13C2-PFDoDA	91%	50-150%
	13C2-PFTeDA	87%	50-150%
	13C3-PFBS	93%	50-150%
	13C3-PFHxS	92%	50-150%
	13C8-PFOS	93%	50-150%
	13C8-FOSA	99%	50-150%
	d3-MeFOSAA	94%	50-150%
	d5-EtFOSAA	92%	50-150%
	13C2-4:2FTS	86%	50-150%
	13C2-6:2FTS	86%	50-150%
	13C2-8:2FTS	91%	50-150%

Instrument Blank

Job Number: FC5785
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S2Q1541-IBLK	2Q109372.D	1	05/17/23	LR	n/a	n/a	S2Q1541

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC5785-6

CAS No.	Compound	Result	RL	MDL	Units	Q
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	93%	50-150%
	13C5-PFPeA	94%	50-150%
	13C5-PFHxA	94%	50-150%
	13C4-PFHpA	94%	50-150%
	13C8-PFOA	95%	50-150%
	13C9-PFNA	94%	50-150%
	13C6-PFDA	94%	50-150%
	13C7-PFUnDA	93%	50-150%
	13C2-PFDoDA	96%	50-150%
	13C2-PFTeDA	88%	50-150%
	13C3-PFBS	93%	50-150%
	13C3-PFHxS	96%	50-150%
	13C8-PFOS	94%	50-150%
	13C8-FOSA	98%	50-150%
	d3-MeFOSAA	85%	50-150%
	d5-EtFOSAA	86%	50-150%
	13C2-4:2FTS	87%	50-150%
	13C2-6:2FTS	87%	50-150%
	13C2-8:2FTS	88%	50-150%

Instrument Blank

Job Number: FC5785
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S3Q1064-IBLK	3Q77027.D	1	05/23/23	AL	n/a	n/a	S3Q1064

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC5785-5, FC5785-20

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	
2355-31-9	MeFOSAA	ND	0.0080	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0080	0.0020	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	
919005-14-4	ADONA	ND	0.0080	0.0020	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.0080	0.0020	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.0080	0.0020	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	99%	50-150%
	13C5-PFPeA	100%	50-150%
	13C5-PFHxA	100%	50-150%
	13C4-PFHpA	101%	50-150%

Instrument Blank

Job Number: FC5785
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S3Q1064-IBLK	3Q77027.D	1	05/23/23	AL	n/a	n/a	S3Q1064

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC5785-5, FC5785-20

CAS No.	ID Standard Recoveries		Limits
	13C8-PFOA	104%	50-150%
	13C9-PFNA	102%	50-150%
	13C6-PFDA	106%	50-150%
	13C7-PFUnDA	106%	50-150%
	13C2-PFDoDA	103%	50-150%
	13C2-PFTeDA	99%	50-150%
	13C3-PFBS	100%	50-150%
	13C3-PFHxS	101%	50-150%
	13C8-PFOS	99%	50-150%
	13C8-FOSA	110%	50-150%
	d3-MeFOSA	106%	50-150%
	d3-MeFOSAA	105%	50-150%
	d5-EtFOSAA	101%	50-150%
	13C2-4:2FTS	94%	50-150%
	13C2-6:2FTS	98%	50-150%
	13C2-8:2FTS	98%	50-150%
	13C3-HFPO-DA	101%	50-150%

Method Blank Summary

Job Number: FC5785
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP96805-MB	2Q109164.D	1	05/13/23	LR	05/09/23	OP96805	S2Q1537

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC5785-1, FC5785-2, FC5785-3, FC5785-4, FC5785-6, FC5785-7, FC5785-8, FC5785-9, FC5785-11, FC5785-13, FC5785-15, FC5785-17, FC5785-19, FC5785-21, FC5785-22, FC5785-24, FC5785-25

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.016	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0080	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0080	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0080	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0080	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0080	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0080	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0080	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0080	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0080	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0080	0.0020	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0080	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0080	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0080	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0080	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0080	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0080	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0080	0.0020	ug/l	
754-91-6	PFOSA	ND	0.0080	0.0020	ug/l	
2355-31-9	MeFOSAA	ND	0.016	0.0040	ug/l	
2991-50-6	EtFOSAA	ND	0.016	0.0040	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.016	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.016	0.0040	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.016	0.0040	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.016	0.0040	ug/l	
919005-14-4	ADONA	ND	0.016	0.0040	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.016	0.0040	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.016	0.0040	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	67%	50-150%
	13C5-PFPeA	67%	50-150%
	13C5-PFHxA	67%	50-150%
	13C4-PFHpA	67%	50-150%

Method Blank Summary

Job Number: FC5785
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP96805-MB	2Q109164.D	1	05/13/23	LR	05/09/23	OP96805	S2Q1537

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC5785-1, FC5785-2, FC5785-3, FC5785-4, FC5785-6, FC5785-7, FC5785-8, FC5785-9, FC5785-11, FC5785-13, FC5785-15, FC5785-17, FC5785-19, FC5785-21, FC5785-22, FC5785-24, FC5785-25

CAS No.	ID Standard Recoveries		Limits
	13C8-PFOA	68%	50-150%
	13C9-PFNA	67%	50-150%
	13C6-PFDA	66%	50-150%
	13C7-PFUnDA	64%	50-150%
	13C2-PFDoDA	59%	50-150%
	13C2-PFTeDA	51%	50-150%
	13C3-PFBS	67%	50-150%
	13C3-PFHxS	66%	50-150%
	13C8-PFOS	62%	50-150%
	13C8-FOSA	67%	50-150%
	d3-MeFOSAA	67%	50-150%
	d5-EtFOSAA	62%	50-150%
	13C2-4:2FTS	63%	50-150%
	13C2-6:2FTS	63%	50-150%
	13C2-8:2FTS	65%	50-150%
	13C3-HFPO-DA	63%	50-150%

Method Blank Summary

Job Number: FC5785
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP96821-MB	5Q14360.D	1	05/15/23	LR	05/10/23	OP96821	S5Q225

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC5785-23, FC5785-27, FC5785-28, FC5785-29

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.016	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0080	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0080	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0080	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0080	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0080	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0080	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0080	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0080	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0080	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0080	0.0020	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0080	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0080	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0080	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0080	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0080	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0080	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0080	0.0020	ug/l	
754-91-6	PFOSA	ND	0.0080	0.0020	ug/l	
2355-31-9	MeFOSAA	ND	0.016	0.0040	ug/l	
2991-50-6	EtFOSAA	ND	0.016	0.0040	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.016	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.016	0.0040	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.016	0.0040	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.016	0.0040	ug/l	
919005-14-4	ADONA	ND	0.016	0.0040	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.016	0.0040	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.016	0.0040	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	88%	50-150%
	13C5-PFPeA	87%	50-150%
	13C5-PFHxA	88%	50-150%
	13C4-PFHpA	88%	50-150%

Method Blank Summary

Job Number: FC5785
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP96821-MB	5Q14360.D	1	05/15/23	LR	05/10/23	OP96821	S5Q225

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC5785-23, FC5785-27, FC5785-28, FC5785-29

CAS No.	ID Standard Recoveries		Limits
	13C8-PFOA	87%	50-150%
	13C9-PFNA	89%	50-150%
	13C6-PFDA	91%	50-150%
	13C7-PFUnDA	88%	50-150%
	13C2-PFDoDA	83%	50-150%
	13C2-PFTeDA	76%	50-150%
	13C3-PFBS	88%	50-150%
	13C3-PFHxS	88%	50-150%
	13C8-PFOS	84%	50-150%
	13C8-FOSA	81%	50-150%
	d3-MeFOSAA	84%	50-150%
	d5-EtFOSAA	79%	50-150%
	13C2-4:2FTS	83%	50-150%
	13C2-6:2FTS	86%	50-150%
	13C2-8:2FTS	89%	50-150%
	13C3-HFPO-DA	81%	50-150%

Method Blank Summary

Job Number: FC5785
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP96821-MB	2Q109323.D	1	05/16/23	LR	05/10/23	OP96821	S2Q1539

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC5785-23, FC5785-27, FC5785-28, FC5785-29

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.016	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0080	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0080	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0080	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0080	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0080	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0080	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0080	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0080	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0080	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0080	0.0020	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0080	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0080	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0080	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0080	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0080	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0080	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0080	0.0020	ug/l	
754-91-6	PFOSA	ND	0.0080	0.0020	ug/l	
2355-31-9	MeFOSAA	ND	0.016	0.0040	ug/l	
2991-50-6	EtFOSAA	ND	0.016	0.0040	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.016	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.016	0.0040	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.016	0.0040	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.016	0.0040	ug/l	
919005-14-4	ADONA	ND	0.016	0.0040	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.016	0.0040	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.016	0.0040	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	89%	50-150%
	13C5-PFPeA	87%	50-150%
	13C5-PFHxA	85%	50-150%
	13C4-PFHpA	85%	50-150%

Method Blank Summary

Job Number: FC5785
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP96821-MB	2Q109323.D	1	05/16/23	LR	05/10/23	OP96821	S2Q1539

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC5785-23, FC5785-27, FC5785-28, FC5785-29

CAS No.	ID Standard Recoveries		Limits
	13C8-PFOA	84%	50-150%
	13C9-PFNA	86%	50-150%
	13C6-PFDA	87%	50-150%
	13C7-PFUnDA	81%	50-150%
	13C2-PFDoDA	79%	50-150%
	13C2-PFTeDA	72%	50-150%
	13C3-PFBS	87%	50-150%
	13C3-PFHxS	85%	50-150%
	13C8-PFOS	86%	50-150%
	13C8-FOSA	82%	50-150%
	d3-MeFOSAA	85%	50-150%
	d5-EtFOSAA	77%	50-150%
	13C2-4:2FTS	79%	50-150%
	13C2-6:2FTS	80%	50-150%
	13C2-8:2FTS	90%	50-150%
	13C3-HFPO-DA	84%	50-150%

Method Blank Summary

Job Number: FC5785
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP96962-MB	3Q77044.D	1	05/23/23	AL	05/18/23	OP96962	S3Q1064

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC5785-5, FC5785-20

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	
2355-31-9	MeFOSAA	ND	0.0080	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0080	0.0020	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	
919005-14-4	ADONA	ND	0.0080	0.0020	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.0080	0.0020	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.0080	0.0020	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	72%	50-150%
	13C5-PFPeA	76%	50-150%
	13C5-PFHxA	75%	50-150%
	13C4-PFHpA	79%	50-150%

Method Blank Summary

Job Number: FC5785
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP96962-MB	3Q77044.D	1	05/23/23	AL	05/18/23	OP96962	S3Q1064

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC5785-5, FC5785-20

CAS No.	ID Standard Recoveries		Limits
	13C8-PFOA	78%	50-150%
	13C9-PFNA	77%	50-150%
	13C6-PFDA	85%	50-150%
	13C7-PFUnDA	77%	50-150%
	13C2-PFDoDA	69%	50-150%
	13C2-PFTeDA	52%	50-150%
	13C3-PFBS	76%	50-150%
	13C3-PFHxS	78%	50-150%
	13C8-PFOS	71%	50-150%
	13C8-FOSA	56%	50-150%
	d3-MeFOSAA	75%	50-150%
	d5-EtFOSAA	65%	50-150%
	13C2-4:2FTS	73%	50-150%
	13C2-6:2FTS	76%	50-150%
	13C2-8:2FTS	78%	50-150%
	13C3-HFPO-DA	69%	50-150%

Instrument Blank

Job Number: FC5785
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S2Q1539-IBLK	2Q109255.D	1	05/15/23	LR	n/a	n/a	S2Q1539

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

OP96821-BS

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	
2355-31-9	MeFOSAA	ND	0.0080	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0080	0.0020	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	
919005-14-4	ADONA	ND	0.0080	0.0020	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.0080	0.0020	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.0080	0.0020	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	89%	50-150%
	13C5-PFPeA	89%	50-150%
	13C5-PFHxA	90%	50-150%
	13C4-PFHpA	90%	50-150%

Instrument Blank

Job Number: FC5785
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S2Q1539-IBLK	2Q109255.D	1	05/15/23	LR	n/a	n/a	S2Q1539

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

OP96821-BS

CAS No.	ID Standard Recoveries		Limits
	13C8-PFOA	91%	50-150%
	13C9-PFNA	90%	50-150%
	13C6-PFDA	91%	50-150%
	13C7-PFUnDA	90%	50-150%
	13C2-PFDoDA	89%	50-150%
	13C2-PFTeDA	88%	50-150%
	13C3-PFBS	89%	50-150%
	13C3-PFHxS	88%	50-150%
	13C8-PFOS	88%	50-150%
	13C8-FOSA	94%	50-150%
	d3-MeFOSAA	91%	50-150%
	d5-EtFOSAA	89%	50-150%
	13C2-4:2FTS	83%	50-150%
	13C2-6:2FTS	83%	50-150%
	13C2-8:2FTS	86%	50-150%

Blank Spike Summary

Job Number: FC5785
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP96805-BS	2Q109163.D	1	05/13/23	LR	05/09/23	OP96805	S2Q1537

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC5785-1, FC5785-2, FC5785-3, FC5785-4, FC5785-6, FC5785-7, FC5785-8, FC5785-9, FC5785-11, FC5785-13, FC5785-15, FC5785-17, FC5785-19, FC5785-21, FC5785-22, FC5785-24, FC5785-25

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
375-22-4	Perfluorobutanoic acid	0.16	0.179	112	73-129
2706-90-3	Perfluoropentanoic acid	0.16	0.183	114	72-129
307-24-4	Perfluorohexanoic acid	0.16	0.183	114	72-129
375-85-9	Perfluoroheptanoic acid	0.16	0.182	114	72-130
335-67-1	Perfluorooctanoic acid	0.16	0.181	113	71-133
375-95-1	Perfluorononanoic acid	0.16	0.184	115	69-130
335-76-2	Perfluorodecanoic acid	0.16	0.181	113	71-129
2058-94-8	Perfluoroundecanoic acid	0.16	0.177	111	69-133
307-55-1	Perfluorododecanoic acid	0.16	0.187	117	72-134
72629-94-8	Perfluorotridecanoic acid	0.16	0.174	109	65-144
376-06-7	Perfluorotetradecanoic acid	0.16	0.186	116	71-132
375-73-5	Perfluorobutanesulfonic acid	0.16	0.184	115	72-130
2706-91-4	Perfluoropentanesulfonic acid	0.16	0.183	114	71-127
355-46-4	Perfluorohexanesulfonic acid	0.16	0.176	110	68-131
375-92-8	Perfluoroheptanesulfonic acid	0.16	0.184	115	69-134
1763-23-1	Perfluorooctanesulfonic acid	0.16	0.183	114	65-140
68259-12-1	Perfluorononanesulfonic acid	0.16	0.186	116	69-127
335-77-3	Perfluorodecanesulfonic acid	0.16	0.163	102	53-142
754-91-6	PFOSA	0.16	0.179	112	67-137
2355-31-9	MeFOSAA	0.16	0.189	118	65-136
2991-50-6	EtFOSAA	0.16	0.185	116	61-135
757124-72-4	4:2 Fluorotelomer sulfonate	0.16	0.178	111	63-143
27619-97-2	6:2 Fluorotelomer sulfonate	0.16	0.188	118	64-140
39108-34-4	8:2 Fluorotelomer sulfonate	0.16	0.171	107	67-138
13252-13-6	HFPO-DA (GenX)	0.16	0.187	117	60-140
919005-14-4	ADONA	0.16	0.172	108	60-140
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.16	0.174	109	60-140
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.16	0.179	112	60-140

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFBA	68%	50-150%
	13C5-PFPeA	68%	50-150%
	13C5-PFHxA	68%	50-150%
	13C4-PFHpA	68%	50-150%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FC5785
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP96805-BS	2Q109163.D	1	05/13/23	LR	05/09/23	OP96805	S2Q1537

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC5785-1, FC5785-2, FC5785-3, FC5785-4, FC5785-6, FC5785-7, FC5785-8, FC5785-9, FC5785-11, FC5785-13, FC5785-15, FC5785-17, FC5785-19, FC5785-21, FC5785-22, FC5785-24, FC5785-25

CAS No.	ID Standard Recoveries	BSP	Limits
	13C8-PFOA	68%	50-150%
	13C9-PFNA	67%	50-150%
	13C6-PFDA	66%	50-150%
	13C7-PFUnDA	65%	50-150%
	13C2-PFDoDA	59%	50-150%
	13C2-PFTeDA	49%* [a]	50-150%
	13C3-PFBS	67%	50-150%
	13C3-PFHxS	66%	50-150%
	13C8-PFOS	61%	50-150%
	13C8-FOSA	62%	50-150%
	d3-MeFOSAA	66%	50-150%
	d5-EtFOSAA	61%	50-150%
	13C2-4:2FTS	72%	50-150%
	13C2-6:2FTS	70%	50-150%
	13C2-8:2FTS	72%	50-150%
	13C3-HFPO-DA	64%	50-150%

(a) Outside control limits.

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FC5785
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP96821-BS	5Q14359.D	1	05/15/23	LR	05/10/23	OP96821	S5Q225

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC5785-23, FC5785-27, FC5785-28, FC5785-29

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
375-22-4	Perfluorobutanoic acid	0.16	0.172	108	73-129
2706-90-3	Perfluoropentanoic acid	0.16	0.173	108	72-129
307-24-4	Perfluorohexanoic acid	0.16	0.175	109	72-129
375-85-9	Perfluoroheptanoic acid	0.16	0.173	108	72-130
335-67-1	Perfluorooctanoic acid	0.16	0.175	109	71-133
375-95-1	Perfluorononanoic acid	0.16	0.174	109	69-130
335-76-2	Perfluorodecanoic acid	0.16	0.175	109	71-129
2058-94-8	Perfluoroundecanoic acid	0.16	0.177	111	69-133
307-55-1	Perfluorododecanoic acid	0.16	0.177	111	72-134
72629-94-8	Perfluorotridecanoic acid	0.16	0.170	106	65-144
376-06-7	Perfluorotetradecanoic acid	0.16	0.176	110	71-132
375-73-5	Perfluorobutanesulfonic acid	0.16	0.174	109	72-130
2706-91-4	Perfluoropentanesulfonic acid	0.16	0.173	108	71-127
355-46-4	Perfluorohexanesulfonic acid	0.16	0.178	111	68-131
375-92-8	Perfluoroheptanesulfonic acid	0.16	0.178	111	69-134
1763-23-1	Perfluorooctanesulfonic acid	0.16	0.177	111	65-140
68259-12-1	Perfluorononanesulfonic acid	0.16	0.178	111	69-127
335-77-3	Perfluorodecanesulfonic acid	0.16	0.164	103	53-142
754-91-6	PFOSA	0.16	0.179	112	67-137
2355-31-9	MeFOSAA	0.16	0.175	109	65-136
2991-50-6	EtFOSAA	0.16	0.173	108	61-135
757124-72-4	4:2 Fluorotelomer sulfonate	0.16	0.169	106	63-143
27619-97-2	6:2 Fluorotelomer sulfonate	0.16	0.171	107	64-140
39108-34-4	8:2 Fluorotelomer sulfonate	0.16	0.165	103	67-138
13252-13-6	HFPO-DA (GenX)	0.16	0.176	110	60-140
919005-14-4	ADONA	0.16	0.178	111	60-140
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.16	0.168	105	60-140
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.16	0.172	108	60-140

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFBA	95%	50-150%
	13C5-PFPeA	95%	50-150%
	13C5-PFHxA	95%	50-150%
	13C4-PFHpA	94%	50-150%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FC5785
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP96821-BS	5Q14359.D	1	05/15/23	LR	05/10/23	OP96821	S5Q225

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC5785-23, FC5785-27, FC5785-28, FC5785-29

CAS No.	ID Standard Recoveries	BSP	Limits
	13C8-PFOA	95%	50-150%
	13C9-PFNA	96%	50-150%
	13C6-PFDA	97%	50-150%
	13C7-PFUnDA	95%	50-150%
	13C2-PFDoDA	90%	50-150%
	13C2-PFTeDA	84%	50-150%
	13C3-PFBS	95%	50-150%
	13C3-PFHxS	94%	50-150%
	13C8-PFOS	94%	50-150%
	13C8-FOSA	87%	50-150%
	d3-MeFOSAA	91%	50-150%
	d5-EtFOSAA	87%	50-150%
	13C2-4:2FTS	101%	50-150%
	13C2-6:2FTS	103%	50-150%
	13C2-8:2FTS	107%	50-150%
	13C3-HFPO-DA	93%	50-150%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FC5785
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP96821-BS	2Q109322.D	1	05/16/23	LR	05/10/23	OP96821	S2Q1539

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC5785-23, FC5785-27, FC5785-28, FC5785-29

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
375-22-4	Perfluorobutanoic acid	0.16	0.154	96	73-129
2706-90-3	Perfluoropentanoic acid	0.16	0.160	100	72-129
307-24-4	Perfluorohexanoic acid	0.16	0.159	99	72-129
375-85-9	Perfluoroheptanoic acid	0.16	0.158	99	72-130
335-67-1	Perfluorooctanoic acid	0.16	0.162	101	71-133
375-95-1	Perfluorononanoic acid	0.16	0.161	101	69-130
335-76-2	Perfluorodecanoic acid	0.16	0.156	98	71-129
2058-94-8	Perfluoroundecanoic acid	0.16	0.158	99	69-133
307-55-1	Perfluorododecanoic acid	0.16	0.162	101	72-134
72629-94-8	Perfluorotridecanoic acid	0.16	0.156	98	65-144
376-06-7	Perfluorotetradecanoic acid	0.16	0.160	100	71-132
375-73-5	Perfluorobutanesulfonic acid	0.16	0.158	99	72-130
2706-91-4	Perfluoropentanesulfonic acid	0.16	0.154	96	71-127
355-46-4	Perfluorohexanesulfonic acid	0.16	0.155	97	68-131
375-92-8	Perfluoroheptanesulfonic acid	0.16	0.160	100	69-134
1763-23-1	Perfluorooctanesulfonic acid	0.16	0.159	99	65-140
68259-12-1	Perfluorononanesulfonic acid	0.16	0.155	97	69-127
335-77-3	Perfluorodecanesulfonic acid	0.16	0.152	95	53-142
754-91-6	PFOSA	0.16	0.165	103	67-137
2355-31-9	MeFOSAA	0.16	0.163	102	65-136
2991-50-6	EtFOSAA	0.16	0.161	101	61-135
757124-72-4	4:2 Fluorotelomer sulfonate	0.16	0.158	99	63-143
27619-97-2	6:2 Fluorotelomer sulfonate	0.16	0.163	102	64-140
39108-34-4	8:2 Fluorotelomer sulfonate	0.16	0.155	97	67-138
13252-13-6	HFPO-DA (GenX)	0.16	0.156	98	60-140
919005-14-4	ADONA	0.16	0.151	94	60-140
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.16	0.151	94	60-140
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.16	0.163	102	60-140

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFBA	94%	50-150%
	13C5-PFPeA	93%	50-150%
	13C5-PFHxA	91%	50-150%
	13C4-PFHpA	90%	50-150%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FC5785
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP96821-BS	2Q109322.D	1	05/16/23	LR	05/10/23	OP96821	S2Q1539

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC5785-23, FC5785-27, FC5785-28, FC5785-29

CAS No.	ID Standard Recoveries	BSP	Limits
	13C8-PFOA	88%	50-150%
	13C9-PFNA	90%	50-150%
	13C6-PFDA	92%	50-150%
	13C7-PFUnDA	88%	50-150%
	13C2-PFDoDA	85%	50-150%
	13C2-PFTeDA	77%	50-150%
	13C3-PFBS	92%	50-150%
	13C3-PFHxS	90%	50-150%
	13C8-PFOS	90%	50-150%
	13C8-FOSA	84%	50-150%
	d3-MeFOSAA	88%	50-150%
	d5-EtFOSAA	82%	50-150%
	13C2-4:2FTS	94%	50-150%
	13C2-6:2FTS	94%	50-150%
	13C2-8:2FTS	105%	50-150%
	13C3-HFPO-DA	90%	50-150%

* = Outside of Control Limits.

Blank Spike/Blank Spike Duplicate Summary

Job Number: FC5785
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP96962-BS	3Q77042.D	1	05/23/23	AL	05/18/23	OP96962	S3Q1064
OP96962-BSD	3Q77043.D	1	05/23/23	AL	05/18/23	OP96962	S3Q1064

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC5785-5, FC5785-20

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	BSD ug/l	BSD %	RPD	Limits Rec/RPD
375-22-4	Perfluorobutanoic acid	0.08	0.0958	120	0.0916	115	4	73-129/30
2706-90-3	Perfluoropentanoic acid	0.08	0.0937	117	0.0902	113	4	72-129/30
307-24-4	Perfluorohexanoic acid	0.08	0.0942	118	0.0909	114	4	72-129/30
375-85-9	Perfluoroheptanoic acid	0.08	0.0938	117	0.0903	113	4	72-130/30
335-67-1	Perfluorooctanoic acid	0.08	0.0937	117	0.0894	112	5	71-133/30
375-95-1	Perfluorononanoic acid	0.08	0.0911	114	0.0874	109	4	69-130/30
335-76-2	Perfluorodecanoic acid	0.08	0.0932	117	0.0902	113	3	71-129/30
2058-94-8	Perfluoroundecanoic acid	0.08	0.0954	119	0.0907	113	5	69-133/30
307-55-1	Perfluorododecanoic acid	0.08	0.0964	121	0.0912	114	6	72-134/30
72629-94-8	Perfluorotridecanoic acid	0.08	0.0895	112	0.0870	109	3	65-144/30
376-06-7	Perfluorotetradecanoic acid	0.08	0.0979	122	0.0916	115	7	71-132/30
375-73-5	Perfluorobutanesulfonic acid	0.08	0.0952	119	0.0895	112	6	72-130/30
2706-91-4	Perfluoropentanesulfonic acid	0.08	0.0953	119	0.0899	112	6	71-127/30
355-46-4	Perfluorohexanesulfonic acid	0.08	0.0943	118	0.0928	116	2	68-131/30
375-92-8	Perfluoroheptanesulfonic acid	0.08	0.0983	123	0.0942	118	4	69-134/30
1763-23-1	Perfluorooctanesulfonic acid	0.08	0.0918	115	0.0886	111	4	65-140/30
68259-12-1	Perfluorononanesulfonic acid	0.08	0.0922	115	0.0968	121	5	69-127/30
335-77-3	Perfluorodecanesulfonic acid	0.08	0.0821	103	0.0896	112	9	53-142/30
754-91-6	PFOSA	0.08	0.0996	125	0.0948	119	5	67-137/30
2355-31-9	MeFOSAA	0.08	0.0925	116	0.0912	114	1	65-136/30
2991-50-6	EtFOSAA	0.08	0.0983	123	0.0943	118	4	61-135/30
757124-72-4	4:2 Fluorotelomer sulfonate	0.08	0.0942	118	0.0903	113	4	63-143/30
27619-97-2	6:2 Fluorotelomer sulfonate	0.08	0.0974	122	0.0943	118	3	64-140/30
39108-34-4	8:2 Fluorotelomer sulfonate	0.08	0.0955	119	0.0940	118	2	67-138/30
13252-13-6	HFPO-DA (GenX)	0.08	0.0969	121	0.0940	118	3	60-140/30
919005-14-4	ADONA	0.08	0.0921	115	0.0886	111	4	60-140/30
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.08	0.0799	100	0.0773	97	3	60-140/30
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.08	0.0923	115	0.0869	109	6	60-140/30

CAS No.	ID Standard Recoveries	BSP	BSD	Limits
	13C4-PFBA	75%	77%	50-150%
	13C5-PFPeA	78%	81%	50-150%
	13C5-PFHxA	78%	80%	50-150%
	13C4-PFHpA	80%	82%	50-150%

* = Outside of Control Limits.

Blank Spike/Blank Spike Duplicate Summary

Job Number: FC5785
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP96962-BS	3Q77042.D	1	05/23/23	AL	05/18/23	OP96962	S3Q1064
OP96962-BSD	3Q77043.D	1	05/23/23	AL	05/18/23	OP96962	S3Q1064

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC5785-5, FC5785-20

CAS No.	ID Standard Recoveries	BSP	BSD	Limits
	13C8-PFOA	78%	82%	50-150%
	13C9-PFNA	75%	82%	50-150%
	13C6-PFDA	87%	97%	50-150%
	13C7-PFUnDA	76%	87%	50-150%
	13C2-PFDoDA	67%	89%	50-150%
	13C2-PFTeDA	56%	72%	50-150%
	13C3-PFBS	77%	83%	50-150%
	13C3-PFHxS	80%	82%	50-150%
	13C8-PFOS	74%	82%	50-150%
	13C8-FOSA	59%	42%* [a]	50-150%
	d3-MeFOSAA	70%	79%	50-150%
	d5-EtFOSAA	60%	70%	50-150%
	13C2-4:2FTS	84%	88%	50-150%
	13C2-6:2FTS	84%	87%	50-150%
	13C2-8:2FTS	89%	94%	50-150%
	13C3-HFPO-DA	73%	76%	50-150%

(a) Outside control limits.

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FC5785
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP96805-MS	2Q109177.D	1	05/13/23	LR	05/09/23	OP96805	S2Q1537
OP96805-MSD	2Q109178.D	1	05/13/23	LR	05/09/23	OP96805	S2Q1537
FC5785-9	2Q109176.D	1	05/13/23	LR	05/09/23	OP96805	S2Q1537
FC5785-9 [a]	2Q109350.D	5	05/16/23	LR	05/09/23	OP96805	S2Q1540

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC5785-1, FC5785-2, FC5785-3, FC5785-4, FC5785-6, FC5785-7, FC5785-8, FC5785-9, FC5785-11, FC5785-13, FC5785-15, FC5785-17, FC5785-19, FC5785-21, FC5785-22, FC5785-24, FC5785-25

CAS No.	Compound	FC5785-9 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
375-22-4	Perfluorobutanoic acid	0.206		0.16	0.390	115	0.16	0.392	116	1	73-129/30
2706-90-3	Perfluoropentanoic acid	0.0026	I	0.16	0.183	113	0.16	0.180	111	2	72-129/30
307-24-4	Perfluorohexanoic acid	0.0025	I	0.16	0.185	114	0.16	0.186	115	1	72-129/30
375-85-9	Perfluoroheptanoic acid	0.0022	I	0.16	0.189	117	0.16	0.185	114	2	72-130/30
335-67-1	Perfluorooctanoic acid	0.0063	I	0.16	0.190	115	0.16	0.187	113	2	71-133/30
375-95-1	Perfluorononanoic acid	0.0080	U	0.16	0.182	114	0.16	0.180	113	1	69-130/30
335-76-2	Perfluorodecanoic acid	0.0080	U	0.16	0.181	113	0.16	0.178	111	2	71-129/30
2058-94-8	Perfluoroundecanoic acid	0.0080	U	0.16	0.178	111	0.16	0.177	111	1	69-133/30
307-55-1	Perfluorododecanoic acid	0.0080	U	0.16	0.186	116	0.16	0.184	115	1	72-134/30
72629-94-8	Perfluorotridecanoic acid	0.0080	U	0.16	0.148	93	0.16	0.140	88	6	65-144/30
376-06-7	Perfluorotetradecanoic acid	0.040	U [b]	0.16	0.182	114	0.16	0.181	113	1	71-132/30
375-73-5	Perfluorobutanesulfonic acid	0.0080	U	0.16	0.185	116	0.16	0.184	115	1	72-130/30
2706-91-4	Perfluoropentanesulfonic acid	0.0080	U	0.16	0.173	108	0.16	0.171	107	1	71-127/30
355-46-4	Perfluorohexanesulfonic acid	0.0026	I	0.16	0.178	110	0.16	0.177	109	1	68-131/30
375-92-8	Perfluoroheptanesulfonic acid	0.0080	U	0.16	0.196	123	0.16	0.197	123	1	69-134/30
1763-23-1	Perfluorooctanesulfonic acid	0.0145		0.16	0.196	113	0.16	0.190	110	3	65-140/30
68259-12-1	Perfluorononanesulfonic acid	0.0080	U	0.16	0.173	108	0.16	0.171	107	1	69-127/30
335-77-3	Perfluorodecanesulfonic acid	0.0080	U	0.16	0.156	98	0.16	0.153	96	2	53-142/30
754-91-6	PFOSA	0.040	U [b]	0.16	0.172	108	0.16	0.185	116	7	67-137/30
2355-31-9	MeFOSAA	0.016	U	0.16	0.187	117	0.16	0.182	114	3	65-136/30
2991-50-6	EtFOSAA	0.016	U	0.16	0.181	113	0.16	0.185	116	2	61-135/30
757124-72-4	4:2 Fluorotelomer sulfonate	0.016	U	0.16	0.177	111	0.16	0.180	113	2	63-143/30
27619-97-2	6:2 Fluorotelomer sulfonate	0.016	U	0.16	0.190	119	0.16	0.183	114	4	64-140/30
39108-34-4	8:2 Fluorotelomer sulfonate	0.016	U	0.16	0.181	113	0.16	0.174	109	4	67-138/30
13252-13-6	HFPO-DA (GenX)	0.016	U	0.16	0.194	121	0.16	0.184	115	5	60-140/30
919005-14-4	ADONA	0.016	U	0.16	0.162	101	0.16	0.161	101	1	60-140/30
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.016	U	0.16	0.168	105	0.16	0.169	106	1	60-140/30
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.016	U	0.16	0.182	114	0.16	0.183	114	1	60-140/30

CAS No.	ID Standard Recoveries	MS	MSD	FC5785-9	FC5785-9	Limits
	13C4-PFBA	48%* [c]	47%* [c]	55%	73%	50-150%
	13C5-PFPeA	48%* [c]	48%* [c]	56%	76%	50-150%
	13C5-PFHxA	51%	51%	59%	78%	50-150%
	13C4-PFHpA	51%	53%	60%	76%	50-150%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FC5785
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP96805-MS	2Q109177.D	1	05/13/23	LR	05/09/23	OP96805	S2Q1537
OP96805-MSD	2Q109178.D	1	05/13/23	LR	05/09/23	OP96805	S2Q1537
FC5785-9	2Q109176.D	1	05/13/23	LR	05/09/23	OP96805	S2Q1537
FC5785-9 [a]	2Q109350.D	5	05/16/23	LR	05/09/23	OP96805	S2Q1540

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC5785-1, FC5785-2, FC5785-3, FC5785-4, FC5785-6, FC5785-7, FC5785-8, FC5785-9, FC5785-11, FC5785-13, FC5785-15, FC5785-17, FC5785-19, FC5785-21, FC5785-22, FC5785-24, FC5785-25

CAS No.	ID Standard Recoveries	MS	MSD	FC5785-9	FC5785-9	Limits
	13C8-PFOA	54%	56%	64%	79%	50-150%
	13C9-PFNA	56%	57%	66%	80%	50-150%
	13C6-PFDA	56%	57%	65%	82%	50-150%
	13C7-PFUnDA	54%	55%	64%	76%	50-150%
	13C2-PFDoDA	47%* [c]	47%* [c]	55%	63%	50-150%
	13C2-PFTeDA	24%* [c]	20%* [c]	27%* [c]	30%* [c]	50-150%
	13C3-PFBS	51%	54%	60%	80%	50-150%
	13C3-PFHxS	50%	53%	59%	79%	50-150%
	13C8-PFOS	53%	57%	64%	82%	50-150%
	13C8-FOSA	21%* [c]	28%* [c]	17%* [c]	24%* [c]	50-150%
	d3-MeFOSAA	57%	58%	69%	80%	50-150%
	d5-EtFOSAA	53%	53%	62%	69%	50-150%
	13C2-4:2FTS	59%	58%	60%	75%	50-150%
	13C2-6:2FTS	61%	64%	66%	75%	50-150%
	13C2-8:2FTS	62%	64%	68%	78%	50-150%
	13C3-HFPO-DA	47%* [c]	47%* [c]	55%	65%	50-150%

(a) Dilution required (ID recovery standard failure).
(b) Result is from Run #2.
(c) Outside control limits.

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FC5785
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP96821-MS1	5Q14364.D	1	05/15/23	LR	05/10/23	OP96821	S5Q225
OP96821-MSD1	5Q14365.D	1	05/15/23	LR	05/10/23	OP96821	S5Q225
FC5785-23	5Q14363.D	1	05/15/23	LR	05/10/23	OP96821	S5Q225
FC5785-23 [a]	5Q14361A.D	5	05/16/23	LR	05/10/23	OP96821	S5Q226

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC5785-23, FC5785-27, FC5785-28, FC5785-29

CAS No.	Compound	FC5785-23 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
375-22-4	Perfluorobutanoic acid	0.629 [b]		0.143	0.738	76	0.143	0.738	76	0	73-129/30
2706-90-3	Perfluoropentanoic acid	0.0095		0.143	0.163	107	0.143	0.156	103	4	72-129/30
307-24-4	Perfluorohexanoic acid	0.0099		0.143	0.162	106	0.143	0.156	102	4	72-129/30
375-85-9	Perfluoroheptanoic acid	0.0050	I	0.143	0.157	106	0.143	0.150	101	5	72-130/30
335-67-1	Perfluorooctanoic acid	0.0143		0.143	0.166	106	0.143	0.162	103	2	71-133/30
375-95-1	Perfluorononanoic acid	0.0029	I	0.143	0.161	111	0.143	0.152	104	6	69-130/30
335-76-2	Perfluorodecanoic acid	0.0129		0.143	0.167	108	0.143	0.162	104	3	71-129/30
2058-94-8	Perfluoroundecanoic acid	0.0071	U	0.143	0.154	108	0.143	0.152	106	1	69-133/30
307-55-1	Perfluorododecanoic acid	0.0071	U	0.143	0.149	104	0.143	0.149	104	0	72-134/30
72629-94-8	Perfluorotridecanoic acid	0.0071	U	0.143	0.144	101	0.143	0.140	98	3	65-144/30
376-06-7	Perfluorotetradecanoic acid	0.036	U [b]	0.143	0.161	113	0.143	0.157	110	3	71-132/30
375-73-5	Perfluorobutanesulfonic acid	0.0071	U	0.143	0.151	106	0.143	0.147	103	3	72-130/30
2706-91-4	Perfluoropentanesulfonic acid	0.0071	U	0.143	0.182	127	0.143	0.175	122	4	71-127/30
355-46-4	Perfluorohexanesulfonic acid	0.0026	I	0.143	0.156	107	0.143	0.148	102	5	68-131/30
375-92-8	Perfluoroheptanesulfonic acid	0.0071	U	0.143	0.176	123	0.143	0.174	122	1	69-134/30
1763-23-1	Perfluorooctanesulfonic acid	0.0089		0.143	0.161	106	0.143	0.163	108	1	65-140/30
68259-12-1	Perfluorononanesulfonic acid	0.0071	U	0.143	0.122	85	0.143	0.127	89	4	69-127/30
335-77-3	Perfluorodecanesulfonic acid	0.0071	U	0.143	0.126	88	0.143	0.124	87	2	53-142/30
754-91-6	PFOSA	0.036	U [b]	0.143	0.154	108	0.143	0.153	107	1	67-137/30
2355-31-9	MeFOSAA	0.014	U	0.143	0.156	109	0.143	0.152	106	3	65-136/30
2991-50-6	EtFOSAA	0.014	U	0.143	0.149	104	0.143	0.149	104	0	61-135/30
757124-72-4	4:2 Fluorotelomer sulfonate	0.014	U	0.143	0.147	103	0.143	0.145	101	1	63-143/30
27619-97-2	6:2 Fluorotelomer sulfonate	0.014	U	0.143	0.151	106	0.143	0.149	104	1	64-140/30
39108-34-4	8:2 Fluorotelomer sulfonate	0.014	U	0.143	0.148	104	0.143	0.142	99	4	67-138/30
13252-13-6	HFPO-DA (GenX)	0.014	U	0.143	0.162	113	0.143	0.154	108	5	60-140/30
919005-14-4	ADONA	0.014	U	0.143	0.150	105	0.143	0.144	101	4	60-140/30
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.014	U	0.143	0.130	91	0.143	0.129	90	1	60-140/30
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.014	U	0.143	0.140	98	0.143	0.141	99	1	60-140/30

CAS No.	ID Standard Recoveries	MS	MSD	FC5785-23	FC5785-23	Limits
	13C4-PFBA	48%* [c]	51%	41%* [c]	48%* [c]	50-150%
	13C5-PFPeA	56%	60%	50%	58%	50-150%
	13C5-PFHxA	73%	77%	65%	67%	50-150%
	13C4-PFHpA	82%	88%	73%	76%	50-150%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FC5785
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP96821-MS1	5Q14364.D	1	05/15/23	LR	05/10/23	OP96821	S5Q225
OP96821-MSD1	5Q14365.D	1	05/15/23	LR	05/10/23	OP96821	S5Q225
FC5785-23	5Q14363.D	1	05/15/23	LR	05/10/23	OP96821	S5Q225
FC5785-23 [a]	5Q14361A.D	5	05/16/23	LR	05/10/23	OP96821	S5Q226

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC5785-23, FC5785-27, FC5785-28, FC5785-29

CAS No.	ID Standard Recoveries	MS	MSD	FC5785-23	FC5785-23	Limits
	13C8-PFOA	90%	95%	80%	77%	50-150%
	13C9-PFNA	90%	97%	82%	78%	50-150%
	13C6-PFDA	81%	86%	72%	71%	50-150%
	13C7-PFUnDA	66%	73%	62%	60%	50-150%
	13C2-PFDoDA	55%	61%	52%	50%	50-150%
	13C2-PFTeDA	45%* [c]	48%* [c]	40%* [c]	43%* [c]	50-150%
	13C3-PFBS	69%	71%	62%	71%	50-150%
	13C3-PFHxS	86%	92%	76%	77%	50-150%
	13C8-PFOS	76%	78%	68%	72%	50-150%
	13C8-FOSA	41%* [c]	63%	43%* [c]	45%* [c]	50-150%
	d3-MeFOSAA	71%	82%	70%	61%	50-150%
	d5-EtFOSAA	64%	76%	63%	54%	50-150%
	13C2-4:2FTS	85%	88%	67%	67%	50-150%
	13C2-6:2FTS	107%	114%	84%	76%	50-150%
	13C2-8:2FTS	117%	131%	97%	80%	50-150%
	13C3-HFPO-DA	64%	68%	55%	63%	50-150%

(a) Dilution required (ID recovery standard failure).
(b) Result is from Run #2.
(c) Outside control limits.

* = Outside of Control Limits.

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

e-Hardcopy 2.0
Automated Report

Technical Report for

Tetra Tech NUS

KSC-CRCA

112G08970

SGS Job Number: FC5867

Sampling Dates: 05/03/23 - 05/05/23

Report to:

Tetra-Tech, Inc.
661 Andersen Drive Foster Plaza 7
Pittsburgh, PA 15220
amy.thomson@tetratech.com; carrie.stock@tetratech.com;
alex.murphy@tetratech.com
ATTN: Amy Thomson

Total number of pages in report: **141**

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

Norm Farmer
Technical Director

Client Service contact: Andrea Colby 407-425-6700

Certifications: FL(E83510), LA(03051), KS(E-10327), NC(573), NJ(FL002), NY(12022), SC(96038001) DoD ELAP(ANAB L2229), AZ(AZ0806), CA(2937), TX(T104704404), PA(68-03573), VA(460177), AL, AK, AR, CT, IA, KY, MA, MI. MS, ND, NH, NV, OK, OR, IL, UT, VT, WA, WI, WV

This report shall not be reproduced, except in its entirety, without the written approval of SGS.
Test results relate only to samples analyzed.

SGS is the sole authority for authorizing edits or modifications to this document.
Unauthorized modification of this report is strictly prohibited.
Review standard terms at: http://www.sgs.com/en/terms-and-conditions

Please share your ideas about how we can serve you better at:
EHS.US.CustomerCare@sgs.com

Table of Contents

Section 1: Sample Summary 4
Section 2: Case Narrative/Conformance Summary 8
Section 3: Summary of Hits 14
Section 4: Sample Results 21
4.1: FC5867-1: CRCA-EB-20230503-02 22
4.2: FC5867-2: CRCA-DPT0285-008.0-20230503 24
4.3: FC5867-3: CRCA-DPT0285-013.0-20230503 26
4.4: FC5867-4: CRCA-DPT0285-018.0-20230503 28
4.5: FC5867-5: CRCA-DPT0285-023.0-20230503 30
4.6: FC5867-6: CRCA-DPT0285-028.0-20230503 32
4.7: FC5867-7: CRCA-DPT0285-048.0-20230503 34
4.8: FC5867-8: CRCA-FB-20230504-01 36
4.9: FC5867-9: CRCA-DPT0285-057.0-20230504 38
4.10: FC5867-10: CRCA-DPT0286-008.0-20230504 40
4.11: FC5867-11: CRCA-DPT0286-013.0-20230504 42
4.12: FC5867-12: CRCA-DPT0286-018.0-20230504 44
4.13: FC5867-13: CRCA-DPT0286-023.0-20230504 46
4.14: FC5867-14: CRCA-DPT0286-028.0-20230504 48
4.15: FC5867-15: CRCA-DPT0286-048.0-20230504 50
4.16: FC5867-16: CRCA-DPT0286-057.0-20230504 52
4.17: FC5867-17: CRCA-EB-20230504-01 54
4.18: FC5867-18: CRCA-DPT0287-008.0-20230504 56
4.19: FC5867-19: CRCA-DPT0287-018.0-20230504 58
4.20: FC5867-20: CRCA-DPT0287-028.0-20230504 60
4.21: FC5867-21: CRCA-DPT0287-038.0-20230504 62
4.22: FC5867-22: CRCA-DPT0287-048.0-20230504 64
4.23: FC5867-23: CRCA-DPT0287-057.0-20230504 66
4.24: FC5867-24: CRCA-EB-20230504-02 68
4.25: FC5867-25: CRCA-DPT0288-008.0-20230504 70
4.26: FC5867-26: CRCA-DPT0288-018.0-20230504 72
4.27: FC5867-27: CRCA-DPT0288-028.0-20230504 74
4.28: FC5867-28: CRCA-DPT0288-038.0-20230505 76
4.29: FC5867-29: CRCA-DPT0288-048.0-20230505 78
4.30: FC5867-30: CRCA-DPT0288-057.0-20230505 80
4.31: FC5867-31: CRCA-DPT0289-008.0-20230505 82
4.32: FC5867-32: CRCA-DPT0289-018.0-20230505 84
4.33: FC5867-33: CRCA-DPT0289-028.0-20230505 86
4.34: FC5867-34: CRCA-FB-20230505-01 88
4.35: FC5867-35: CRCA-DPT0289-038.0-20230505 90
4.36: FC5867-36: CRCA-DPT0289-048.0-20230505 92
4.37: FC5867-37: CRCA-DPT0289-057.0-20230505 94
4.38: FC5867-38: CRCA-FD-20230504-01 96

Sections: 1 2 3 4 5 6 7

Table of Contents

4.39: FC5867-39: CRCA-FD-20230505-01 98
Section 5: Misc. Forms 100
5.1: Chain of Custody 101
Section 6: MS Volatiles - QC Data Summaries 105
6.1: Method Blank Summary 106
6.2: Blank Spike Summary 108
6.3: Matrix Spike/Matrix Spike Duplicate Summary 110
Section 7: MS Semi-volatiles - QC Data Summaries 112
7.1: Method Blank Summary 113
7.2: Blank Spike Summary 130
7.3: Matrix Spike Summary 136
7.4: Matrix Spike/Matrix Spike Duplicate Summary 138
7.5: Duplicate Summary 140

SGS North America Inc.

Sample Summary

Tetra Tech NUS

Job No: FC5867

KSC-CRCA
Project No: 112G08970

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
FC5867-1	05/03/23	14:30	CS	05/05/23	AQ	Equipment Blank	CRCA-EB-20230503-02
FC5867-2	05/03/23	15:05	CS	05/05/23	AQ	Ground Water	CRCA-DPT0285-008.0-20230503
FC5867-3	05/03/23	15:15	CS	05/05/23	AQ	Ground Water	CRCA-DPT0285-013.0-20230503
FC5867-4	05/03/23	15:30	CS	05/05/23	AQ	Ground Water	CRCA-DPT0285-018.0-20230503
FC5867-5	05/03/23	15:50	CS	05/05/23	AQ	Ground Water	CRCA-DPT0285-023.0-20230503
FC5867-6	05/03/23	16:10	CS	05/05/23	AQ	Ground Water	CRCA-DPT0285-028.0-20230503
FC5867-7	05/03/23	16:40	CS	05/05/23	AQ	Ground Water	CRCA-DPT0285-048.0-20230503
FC5867-8	05/04/23	07:30	CS	05/05/23	AQ	Field Blank Water	CRCA-FB-20230504-01
FC5867-9	05/04/23	07:45	CS	05/05/23	AQ	Ground Water	CRCA-DPT0285-057.0-20230504
FC5867-10	05/04/23	08:45	CS	05/05/23	AQ	Ground Water	CRCA-DPT0286-008.0-20230504
FC5867-11	05/04/23	09:00	CS	05/05/23	AQ	Ground Water	CRCA-DPT0286-013.0-20230504
FC5867-12	05/04/23	09:15	CS	05/05/23	AQ	Ground Water	CRCA-DPT0286-018.0-20230504
FC5867-13	05/04/23	09:35	CS	05/05/23	AQ	Ground Water	CRCA-DPT0286-023.0-20230504

Sample Summary
(continued)

Tetra Tech NUS

Job No: FC5867

KSC-CRCA
Project No: 112G08970

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
FC5867-14	05/04/23	09:55	CS	05/05/23	AQ	Ground Water	CRCA-DPT0286-028.0-20230504
FC5867-15	05/04/23	10:20	CS	05/05/23	AQ	Ground Water	CRCA-DPT0286-048.0-20230504
FC5867-16	05/04/23	10:55	CS	05/05/23	AQ	Ground Water	CRCA-DPT0286-057.0-20230504
FC5867-17	05/04/23	11:30	CS	05/05/23	AQ	Equipment Blank	CRCA-EB-20230504-01
FC5867-18	05/04/23	12:30	CS	05/05/23	AQ	Ground Water	CRCA-DPT0287-008.0-20230504
FC5867-19	05/04/23	12:45	CS	05/05/23	AQ	Ground Water	CRCA-DPT0287-018.0-20230504
FC5867-19D	05/04/23	12:45	CS	05/05/23	AQ	Water Dup/MSD	CRCA-DPT0287-018.0-20230504
FC5867-19S	05/04/23	12:45	CS	05/05/23	AQ	Water Matrix Spike	CRCA-DPT0287-018.0-20230504
FC5867-20	05/04/23	13:05	CS	05/05/23	AQ	Ground Water	CRCA-DPT0287-028.0-20230504
FC5867-21	05/04/23	13:25	CS	05/05/23	AQ	Ground Water	CRCA-DPT0287-038.0-20230504
FC5867-22	05/04/23	13:55	CS	05/05/23	AQ	Ground Water	CRCA-DPT0287-048.0-20230504
FC5867-23	05/04/23	14:20	CS	05/05/23	AQ	Ground Water	CRCA-DPT0287-057.0-20230504
FC5867-24	05/04/23	14:55	CS	05/05/23	AQ	Equipment Blank	CRCA-EB-20230504-02

Sample Summary
(continued)

Tetra Tech NUS

Job No: FC5867

KSC-CRCA
Project No: 112G08970

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
FC5867-25	05/04/23	16:10	CS	05/05/23	AQ	Ground Water	CRCA-DPT0288-008.0-20230504
FC5867-26	05/04/23	16:25	CS	05/05/23	AQ	Ground Water	CRCA-DPT0288-018.0-20230504
FC5867-27	05/04/23	16:45	CS	05/05/23	AQ	Ground Water	CRCA-DPT0288-028.0-20230504
FC5867-28	05/05/23	07:40	CS	05/05/23	AQ	Ground Water	CRCA-DPT0288-038.0-20230505
FC5867-29	05/05/23	08:00	CS	05/05/23	AQ	Ground Water	CRCA-DPT0288-048.0-20230505
FC5867-30	05/05/23	08:20	CS	05/05/23	AQ	Ground Water	CRCA-DPT0288-057.0-20230505
FC5867-31	05/05/23	09:20	CS	05/05/23	AQ	Ground Water	CRCA-DPT0289-008.0-20230505
FC5867-32	05/05/23	09:35	CS	05/05/23	AQ	Ground Water	CRCA-DPT0289-018.0-20230505
FC5867-33	05/05/23	09:55	CS	05/05/23	AQ	Ground Water	CRCA-DPT0289-028.0-20230505
FC5867-34	05/05/23	10:00	CS	05/05/23	AQ	Field Blank Water	CRCA-FB-20230505-01
FC5867-35	05/05/23	10:45	CS	05/05/23	AQ	Ground Water	CRCA-DPT0289-038.0-20230505
FC5867-36	05/05/23	11:05	CS	05/05/23	AQ	Ground Water	CRCA-DPT0289-048.0-20230505
FC5867-37	05/05/23	11:35	CS	05/05/23	AQ	Ground Water	CRCA-DPT0289-057.0-20230505

Sample Summary
(continued)

Tetra Tech NUS

Job No: FC5867

KSC-CRCA
Project No: 112G08970

Sample Number	Collected Date	Time	By	Received	Matrix Code	Matrix Type	Client Sample ID
FC5867-38	05/04/23	00:00	CS	05/05/23	AQ	Ground Water	CRCA-FD-20230504-01
FC5867-39	05/05/23	00:00	CS	05/05/23	AQ	Ground Water	CRCA-FD-20230505-01

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: Tetra Tech NUS **Job No:** FC5867

Site: KSC-CRCA **Report Date:** 6/7/2023 12:54:01 PM

On 05/05/2023, 37 Sample(s), 0 Trip Blank(s) and 2 Field Blank(s) were received at SGS North America Inc - Orlando. at a maximum corrected temperature of 3 C. Samples were intact and chemically preserved, unless noted below. A SGS North America Inc. - Orlando Job Number of FC5867 was assigned to the project.

Laboratory sample ID, client sample ID and dates of sample collection are detailed in the report's Results Summary Section. Specified quality control criteria were achieved for this job except as noted below. For more information, please refer to the analytical results and QC summary pages.

MS Volatiles By Method SW846 8260D

Matrix: AQ **Batch ID:** VI2921

Sample(s) FC5846-2MS, FC5846-2MSD were used as the QC samples indicated.

Blank Spike Recovery(s) for Dichlorodifluoromethane, Tetrachloroethylene are outside control limits.

Matrix Spike Recovery(s) for Dichlorodifluoromethane are outside control limits. Probable cause is due to matrix interference.

Matrix Spike Duplicate Recovery(s) for 1,1,1-Trichloroethane, Carbon Tetrachloride, cis-1,2-Dichloroethylene, Dibromochloromethane, Dichlorodifluoromethane, Freon 113, Methyl Tert Butyl Ether, Styrene, Toluene are outside control limits. Probable cause is due to matrix interference.

RPD(s) for MSD for 1,3-Dichlorobenzene, 1,4-Dichlorobenzene, Dichlorodifluoromethane, Ethylbenzene, Methyl Bromide, Methylcyclohexane, Vinyl Chloride are outside control limits for sample FC5846-2MSD. Probable cause is due to sample non-homogeneity.

VI2921-MB: Sample was treated with an anti-foaming agent.

FC5867-2 for Dichlorodifluoromethane: Associated ICV, CCV and BS recovery outside control limits high, sample is ND.

FC5867-2 for Methyl Bromide: Associated CCV outside control limits low.

FC5867-2 for Tetrachloroethylene: Associated CCV and BS recovery outside control limits high, sample is ND.

FC5867-2: Sample was treated with an anti-foaming agent. Sample was not preserved to a pH < 2.

FC5867-3 for Dichlorodifluoromethane: Associated ICV, CCV and BS recovery outside control limits high, sample is ND.

FC5867-3 for Methyl Bromide: Associated CCV outside control limits low.

FC5867-3 for Tetrachloroethylene: Associated CCV and BS recovery outside control limits high, sample is ND.

FC5867-3: Sample was treated with an anti-foaming agent. Sample was not preserved to a pH < 2.

FC5867-4 for Dichlorodifluoromethane: Associated ICV, CCV and BS recovery outside control limits high, sample is ND.

FC5867-4 for Methyl Bromide: Associated CCV outside control limits low.

FC5867-4 for Tetrachloroethylene: Associated CCV and BS recovery outside control limits high, sample is ND.

FC5867-4: Sample was treated with an anti-foaming agent. Sample was not preserved to a pH < 2.

FC5867-5 for Dichlorodifluoromethane: Associated ICV, CCV and BS recovery outside control limits high, sample is ND.

FC5867-5 for Methyl Bromide: Associated CCV outside control limits low.

FC5867-5 for Tetrachloroethylene: Associated CCV and BS recovery outside control limits high, sample is ND.

FC5867-5: Sample was treated with an anti-foaming agent. Sample was not preserved to a pH < 2.

FC5867-6 for Dichlorodifluoromethane: Associated ICV, CCV and BS recovery outside control limits high, sample is ND.

FC5867-6 for Methyl Bromide: Associated CCV outside control limits low.

FC5867-6 for Tetrachloroethylene: Associated CCV and BS recovery outside control limits high, sample is ND.

FC5867-6: Sample was treated with an anti-foaming agent. Sample was not preserved to a pH < 2.

FC5867-10 for Dichlorodifluoromethane: Associated ICV, CCV and BS recovery outside control limits high, sample is ND.

FC5867-10 for Methyl Bromide: Associated CCV outside control limits low.

FC5867-10 for Tetrachloroethylene: Associated CCV and BS recovery outside control limits high, sample is ND.

FC5867-10: Sample was treated with an anti-foaming agent. Sample was not preserved to a pH < 2.

FC5867-11 for Dichlorodifluoromethane: Associated ICV, CCV and BS recovery outside control limits high, sample is ND.

FC5867-11 for Methyl Bromide: Associated CCV outside control limits low.

FC5867-11 for Tetrachloroethylene: Associated CCV and BS recovery outside control limits high, sample is ND.

FC5867-11: Sample was treated with an anti-foaming agent. Sample was not preserved to a pH < 2.

FC5867-12 for Dichlorodifluoromethane: Associated ICV, CCV and BS recovery outside control limits high, sample is ND.

FC5867-12 for Methyl Bromide: Associated CCV outside control limits low.

FC5867-12 for Tetrachloroethylene: Associated CCV and BS recovery outside control limits high, sample is ND.

FC5867-12: Sample was treated with an anti-foaming agent. Sample was not preserved to a pH < 2.

MS Volatiles By Method SW846 8260D

Matrix: AQ **Batch ID:** VI2921

FC5867-13 for Dichlorodifluoromethane: Associated ICV, CCV and BS recovery outside control limits high, sample is ND.

FC5867-13 for Methyl Bromide: Associated CCV outside control limits low.

FC5867-13 for Tetrachloroethylene: Associated CCV and BS recovery outside control limits high, sample is ND.

FC5867-13: Sample was treated with an anti-foaming agent. Sample was not preserved to a pH < 2.

FC5867-14 for Dichlorodifluoromethane: Associated ICV, CCV and BS recovery outside control limits high, sample is ND.

FC5867-14 for Methyl Bromide: Associated CCV outside control limits low.

FC5867-14 for Tetrachloroethylene: Associated CCV and BS recovery outside control limits high, sample is ND.

FC5867-14: Sample was treated with an anti-foaming agent. Sample was not preserved to a pH < 2.

MS Semi-volatiles By Method EPA 537M QSM5.3 B-15

Matrix: AQ **Batch ID:** OP96844

Sample(s) FC5867-19MS, FC5867-19MSD were used as the QC samples indicated.

Blank Spike Recovery(s) for Perfluorodecanoic acid, Perfluorononanesulfonic acid, Perfluorohexanoic acid are outside control limits.

Matrix Spike Recovery(s) for Perfluorodecanoic acid, Perfluoroheptanesulfonic acid, Perfluorononanesulfonic acid, Perfluoropentanesulfonic acid are outside control limits. Probable cause is due to matrix interference.

Matrix Spike Duplicate Recovery(s) for EtFOSAA, HFPO-DA (GenX), Perfluorodecanoic acid are outside control limits. Probable cause is due to matrix interference.

Matrix Spike/Matrix Spike Duplicate Recovery(s) for Perfluorobutanoic acid are outside control limits. Outside control limits due to high level in sample relative to spike amount.

Sample(s) FC5867-15, FC5867-16, FC5867-18, FC5867-19, FC5867-7, FC5867-9 have surrogates outside control limits.

OP96844-BS for Perfluorohexanoic acid: Sporadic marginal failure. Spike recovery within control limits in MS/MSD.

OP96844-MB for 13C2-PFTeDA: Outside control limits.

OP96844-MS for 13C2-PFTeDA: Outside control limits.

FC5867-1 for Perfluorodecanoic acid: Associated BS outside control limits high, sample was ND.

FC5867-1 for Perfluorononanesulfonic acid: Associated BS outside control limits high, sample was ND.

FC5867-7 for 13C2-4:2FTS: Outside control limits.

FC5867-7 for 13C2-PFTeDA: Outside control limits.

FC5867-7 for 13C2-PFTeDA: Outside control limits.

FC5867-7 for 13C3-HFPO-DA: Outside control limits.

FC5867-7 for 13C3-HFPO-DA: Outside control limits.

FC5867-7 for 13C3-PFBS: Outside control limits.

FC5867-7 for 13C4-PFBA: Outside control limits.

FC5867-7 for 13C5-PFHxA: Outside control limits.

FC5867-7 for 13C5-PFPeA: Outside control limits.

FC5867-7 for 13C8-FOSA: Outside control limits.

FC5867-7 for HFPO-DA (GenX): Associated ID Standard outside control limits.

FC5867-7 for Perfluorodecanoic acid: Associated BS outside control limits high, sample was ND.

FC5867-7 for Perfluorononanesulfonic acid: Associated BS outside control limits high, sample was ND.

FC5867-7 for Perfluorotetradecanoic acid: Associated ID Standard outside control limits.

FC5867-8 for Perfluorodecanoic acid: Associated BS outside control limits high, sample was ND.

FC5867-8 for Perfluorononanesulfonic acid: Associated BS outside control limits high, sample was ND.

FC5867-9 for 11Cl-PF3OUdS (F-53B Minor): Associated ID Standard outside control limits.

FC5867-9 for 13C2-4:2FTS: Outside control limits.

FC5867-9 for 13C2-PFDoDA: Outside control limits.

FC5867-9 for 13C2-PFTeDA: Outside control limits.

FC5867-9 for 13C3-HFPO-DA: Outside control limits.

FC5867-9 for 13C3-PFBS: Outside control limits.

FC5867-9 for 13C5-PFPeA: Outside control limits.

FC5867-9 for 13C8-FOSA: Outside control limits.

FC5867-9 for HFPO-DA (GenX): Associated ID Standard outside control limits.

FC5867-9 for Perfluorodecanoic acid: Associated BS outside control limits high, sample was ND.

FC5867-9 for Perfluorononanesulfonic acid: Associated BS outside control limits high, sample was ND.

FC5867-9: Dilution required (ID recovery standard failure).

FC5867-15 for 13C2-4:2FTS: Outside control limits.

MS Semi-volatiles By Method EPA 537M QSM5.3 B-15

Matrix: AQ **Batch ID:** OP96844

FC5867-15 for 13C3-HFPO-DA: Outside control limits.
FC5867-15 for 13C3-PFBS: Outside control limits.
FC5867-15 for 13C4-PFBA: Outside control limits.
FC5867-15 for 13C5-PFHxA: Outside control limits.
FC5867-15 for 13C5-PFPeA: Outside control limits.
FC5867-15 for 13C8-FOSA: Outside control limits.
FC5867-15 for 13C8-FOSA: Outside control limits.
FC5867-15 for Perfluorodecanoic acid: Associated BS outside control limits high, sample was ND.
FC5867-15 for Perfluorononanesulfonic acid: Associated BS outside control limits high, sample was ND.
FC5867-15 for PFOSA: Associated ID Standard outside control limits.
FC5867-16 for 13C2-PFTeDA: Outside control limits.
FC5867-16 for 13C2-PFTeDA: Outside control limits.
FC5867-16 for 13C3-HFPO-DA: Outside control limits.
FC5867-16 for 13C3-HFPO-DA: Outside control limits.
FC5867-16 for 13C3-PFBS: Outside control limits.
FC5867-16 for 13C4-PFBA: Outside control limits.
FC5867-16 for 13C5-PFPeA: Outside control limits.
FC5867-16 for 13C8-FOSA: Outside control limits.
FC5867-16 for 13C8-FOSA: Outside control limits.
FC5867-16 for HFPO-DA (GenX): Associated ID Standard outside control limits.
FC5867-16 for Perfluorodecanoic acid: Associated BS outside control limits high, sample was ND.
FC5867-16 for Perfluorononanesulfonic acid: Associated BS outside control limits high, sample was ND.
FC5867-16 for Perfluoropentanoic acid: Associated ID Standard outside control limits.
FC5867-16 for Perfluorotetradecanoic acid: Associated ID Standard outside control limits.
FC5867-16 for PFOSA: Associated ID Standard outside control limits.
FC5867-17 for Perfluorodecanoic acid: Associated BS outside control limits high, sample was ND.
FC5867-17 for Perfluorononanesulfonic acid: Associated BS outside control limits high, sample was ND.
FC5867-18 for 11Cl-PF3OUdS (F-53B Minor): Associated ID Standard outside control limits.
FC5867-18 for 13C2-4:2FTS: Outside control limits.
FC5867-18 for 13C2-PFDoDA: Outside control limits.
FC5867-18 for 13C2-PFTeDA: Outside control limits.
FC5867-18 for 13C3-HFPO-DA: Outside control limits.
FC5867-18 for 13C3-PFBS: Outside control limits.
FC5867-18 for 13C4-PFBA: Outside control limits.
FC5867-18 for 13C4-PFHpA: Outside control limits.
FC5867-18 for 13C5-PFHxA: Outside control limits.
FC5867-18 for 13C5-PFPeA: Outside control limits.
FC5867-18 for 13C8-FOSA: Outside control limits.
FC5867-18 for HFPO-DA (GenX): Associated ID Standard outside control limits.
FC5867-18 for Perfluorodecanoic acid: Associated BS outside control limits high, sample was ND.
FC5867-18 for Perfluoroheptanoic acid: Associated ID Standard outside control limits.
FC5867-18 for Perfluorohexanoic acid: Associated ID Standard outside control limits.
FC5867-18 for Perfluorononanesulfonic acid: Associated BS outside control limits high, sample was ND.
FC5867-18 for Perfluoropentanoic acid: Associated ID Standard outside control limits.
FC5867-18: Dilution required (ID recovery standard failure).
FC5867-19 for 13C2-PFTeDA: Outside control limits.
FC5867-19 for 13C3-HFPO-DA: Outside control limits.
FC5867-19 for 13C3-PFBS: Outside control limits.
FC5867-19 for 13C5-PFPeA: Outside control limits.
FC5867-19 for HFPO-DA (GenX): Associated ID Standard outside control limits.
FC5867-19 for Perfluorodecanoic acid: Associated BS outside control limits high, sample was ND.
FC5867-19 for Perfluorononanesulfonic acid: Associated BS outside control limits high, sample was ND.
FC5867-19 for Perfluoropentanoic acid: Associated ID Standard outside control limits.

MS Semi-volatiles By Method EPA 537M QSM5.3 B-15

Matrix: AQ **Batch ID:** OP96868

Sample(s) FC5867-22MS, FC5867-37DUP were used as the QC samples indicated.

RPD(s) for Duplicate for Perfluorooctanesulfonic acid are outside control limits for sample OP96868-DUP. Probable cause is due to sample non-homogeneity.

Sample(s) FC5867-20, FC5867-21, FC5867-22, FC5867-23, FC5867-25, FC5867-26, FC5867-27, FC5867-28, FC5867-29, FC5867-30, FC5867-31, FC5867-33, FC5867-35, FC5867-36, FC5867-37, FC5867-38, FC5867-39 have surrogates outside control limits.

FC5867-20 for 13C8-FOSA: Outside control limits.

FC5867-20 for 13C8-FOSA: Outside control limits.

FC5867-20 for PFOSA: Associated ID Standard outside control limits.

FC5867-21 for 13C2-PFTeDA: Outside control limits.

FC5867-21 for 13C4-PFBA: Outside control limits.

FC5867-21 for 13C8-FOSA: Outside control limits.

FC5867-21 for Perfluorotetradecanoic acid: Associated ID Standard outside control limits.

FC5867-21: Dilution required (ID recovery standard failure).

FC5867-22 for Perfluorotetradecanoic acid: Associated ID Standard outside control limits.

FC5867-22: Dilution required (ID recovery standard failure).

FC5867-22: Insufficient sample for re-extraction.

FC5867-23 for 13C8-FOSA: Outside control limits.

FC5867-23 for PFOSA: Associated ID Standard outside control limits.

FC5867-23: Confirmation run.

FC5867-25 for 13C2-PFTeDA: Outside control limits.

FC5867-25 for 13C4-PFBA: Outside control limits.

FC5867-25 for 13C8-FOSA: Outside control limits.

FC5867-25 for Perfluorobutanoic acid: Associated ID Standard outside control limits.

FC5867-25 for Perfluorotetradecanoic acid: Associated ID Standard outside control limits.

FC5867-25: Dilution required (ID recovery standard failure).

FC5867-26 for 13C2-PFTeDA: Outside control limits.

FC5867-26 for 13C8-FOSA: Outside control limits.

FC5867-26 for Perfluorotetradecanoic acid: Associated ID Standard outside control limits.

FC5867-26: Dilution required (ID recovery standard failure).

FC5867-27 for 13C2-PFTeDA: Outside control limits.

FC5867-27 for 13C8-FOSA: Outside control limits.

FC5867-27 for Perfluorotetradecanoic acid: Associated ID Standard outside control limits.

FC5867-27: Dilution required (ID recovery standard failure).

FC5867-28 for 13C8-FOSA: Outside control limits.

FC5867-28 for PFOSA: Associated ID Standard outside control limits.

FC5867-28: Dilution required (ID recovery standard failure).

FC5867-29: Confirmation run.

FC5867-30 for 13C8-FOSA: Outside control limits.

FC5867-30 for PFOSA: Associated ID Standard outside control limits.

FC5867-30: Dilution required (ID recovery standard failure).

FC5867-31: Confirmation run.

FC5867-33 for 13C4-PFBA: Outside control limits.

FC5867-33 for 13C5-PFPeA: Outside control limits.

FC5867-33 for 13C8-FOSA: Outside control limits.

FC5867-33 for Perfluoropentanoic acid: Associated ID Standard outside control limits.

FC5867-33 for PFOSA: Associated ID Standard outside control limits.

FC5867-33: Dilution required (ID recovery standard failure).

FC5867-35 for 13C2-PFTeDA: Outside control limits.

FC5867-35 for Perfluorotetradecanoic acid: Associated ID Standard outside control limits.

FC5867-35: Confirmation run.

FC5867-36 for 13C4-PFBA: Outside control limits.

FC5867-36 for 13C8-FOSA: Outside control limits.

FC5867-36 for PFOSA: Associated ID Standard outside control limits.

MS Semi-volatiles By Method EPA 537M QSM5.3 B-15

Matrix: AQ **Batch ID:** OP96868

FC5867-36: Dilution required (ID recovery standard failure).

FC5867-37 for 13C2-PFTeDA: Outside control limits.

FC5867-37 for 13C4-PFBA: Outside control limits.

FC5867-37 for Perfluorobutanoic acid: Associated ID Standard outside control limits.

FC5867-37 for Perfluorotetradecanoic acid: Associated ID Standard outside control limits.

FC5867-37: Confirmation run.

FC5867-38 for 13C2-PFDoDA: Outside control limits.

FC5867-38 for 13C2-PFTeDA: Outside control limits.

FC5867-38 for 13C6-PFDA: Outside control limits.

FC5867-38 for 13C7-PFUnDA: Outside control limits.

FC5867-38 for 13C8-FOSA: Outside control limits.

FC5867-38 for 13C8-PFOS: Outside control limits.

FC5867-38 for d3-MeFOSAA: Outside control limits.

FC5867-38 for d5-EtFOSAA: Outside control limits.

FC5867-38 for PFOSA: Associated ID Standard outside control limits.

FC5867-39 for 13C2-4:2FTS: Outside control limits.

FC5867-39 for 13C3-HFPO-DA: Outside control limits.

FC5867-39 for 13C3-PFBS: Outside control limits.

FC5867-39 for 13C3-PFHxS: Outside control limits.

FC5867-39 for 13C4-PFBA: Outside control limits.

FC5867-39 for 13C4-PFHpA: Outside control limits.

FC5867-39 for 13C5-PFHxA: Outside control limits.

FC5867-39 for 13C5-PFPeA: Outside control limits.

FC5867-39 for 13C8-FOSA: Outside control limits.

FC5867-39 for HFPO-DA (GenX): Associated ID Standard outside control limits.

FC5867-39 for Perfluorobutanoic acid: Associated ID Standard outside control limits.

FC5867-39 for Perfluoroheptanoic acid: Associated ID Standard outside control limits.

FC5867-39 for Perfluorohexanoic acid: Associated ID Standard outside control limits.

FC5867-39 for Perfluoropentanoic acid: Associated ID Standard outside control limits.

FC5867-39: Dilution required (ID recovery standard failure).

Matrix: AQ **Batch ID:** OP97141

OP97141-BS: Insufficient sample for MS/MSD.

Sample(s) FC5867-29, FC5867-31, FC5867-38 have surrogates outside control limits.

FC5867-29 for 13C2-PFTeDA: Outside control limits.

FC5867-29 for PFOSA: Associated ID Standard outside control limits. Confirmed by re-extraction and reanalysis.

FC5867-29 for Perfluorotetradecanoic acid: Associated ID Standard outside control limits. Confirmed by re-extraction and reanalysis.

FC5867-29 for 13C8-FOSA: Outside control limits.

FC5867-31 for 13C8-FOSA: Outside control limits.

FC5867-31 for PFOSA: Associated ID Standard outside control limits. Confirmed by re-extraction and reanalysis.

FC5867-31 for Perfluorobutanoic acid: Associated ID Standard outside control limits. Confirmed by re-extraction and reanalysis.

FC5867-31 for Perfluorotetradecanoic acid: Associated ID Standard outside control limits. Confirmed by re-extraction and reanalysis.

FC5867-31 for 13C2-PFTeDA: Outside control limits.

FC5867-31 for 13C4-PFBA: Outside control limits.

FC5867-38 for Perfluorotetradecanoic acid: Associated ID Standard outside control limits.

FC5867-38 for 13C4-PFBA: Outside control limits.

FC5867-38 for 13C2-PFTeDA: Outside control limits.

FC5867-38 for 11Cl-PF3OUdS (F-53B Minor): Associated ID Standard outside control limits.

FC5867-38 for 13C2-4:2FTS: Outside control limits.

FC5867-38 for 13C2-PFDoDA: Outside control limits.

FC5867-38 for 13C4-PFHpA: Outside control limits.

FC5867-38 for 13C5-PFHxA: Outside control limits.

MS Semi-volatiles By Method EPA 537M QSM5.3 B-15

Matrix: AQ **Batch ID:** OP97141

FC5867-38 for 13C5-PFPeA: Outside control limits.

FC5867-38 for Perfluorotridecanoic acid: Associated ID Standard outside control limits.

FC5867-38 for Perfluorododecanoic acid: Associated ID Standard outside control limits.

FC5867-38 for 13C8-FOSA: Outside control limits.

FC5867-38 for 13C3-HFPO-DA: Outside control limits.

SGS North America Inc. - Orlando certifies that data reported for samples received, listed on the associated custody chain or analytical task order, were produced to specifications meeting the Quality System precision, accuracy and completeness objectives except as noted. Estimated non-standard method measurement uncertainty data is available on request, based on quality control bias and implicit for standard methods. Acceptable uncertainty requires tested parameter quality control data to meet method criteria. SGS North America Inc.- Orlando is not responsible for data quality assumptions if partial reports are used and recommends that this report be used in its entirety.

Narrative prepared by:

_____

Kim Benham, Client Services *(Signature on File)*

Summary of Hits

Job Number: FC5867
Account: Tetra Tech NUS
Project: KSC-CRCA
Collected: 05/03/23 thru 05/05/23

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	PQL	MDL	Units	Method
FC5867-1	**CRCA-EB-20230503-02**					
No hits reported in this sample.						
FC5867-2	**CRCA-DPT0285-008.0-20230503**					
No hits reported in this sample.						
FC5867-3	**CRCA-DPT0285-013.0-20230503**					
Carbon Disulfide [a]		1.2 I	2.0	0.53	ug/l	SW846 8260D
FC5867-4	**CRCA-DPT0285-018.0-20230503**					
Carbon Disulfide [a]		0.66 I	2.0	0.53	ug/l	SW846 8260D
FC5867-5	**CRCA-DPT0285-023.0-20230503**					
Carbon Disulfide [a]		0.90 I	2.0	0.53	ug/l	SW846 8260D
FC5867-6	**CRCA-DPT0285-028.0-20230503**					
No hits reported in this sample.						
FC5867-7	**CRCA-DPT0285-048.0-20230503**					
Perfluorobutanoic acid		32.3	1.6	0.40	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid		0.0274 I	0.040	0.010	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0260 I	0.040	0.010	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.0107	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0191	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0064 I	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0070 I	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
FC5867-8	**CRCA-FB-20230504-01**					
No hits reported in this sample.						
FC5867-9	**CRCA-DPT0285-057.0-20230504**					
Perfluorobutanoic acid		0.0095 I	0.016	0.0040	ug/l	EPA 537M QSM5.3 B-15
FC5867-10	**CRCA-DPT0286-008.0-20230504**					
No hits reported in this sample.						

Summary of Hits

Job Number: FC5867
Account: Tetra Tech NUS
Project: KSC-CRCA
Collected: 05/03/23 thru 05/05/23

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	PQL	MDL	Units	Method
FC5867-11	**CRCA-DPT0286-013.0-20230504**					
Carbon Disulfide [a]		0.78 I	2.0	0.53	ug/l	SW846 8260D
FC5867-12	**CRCA-DPT0286-018.0-20230504**					
Carbon Disulfide [a]		0.87 I	2.0	0.53	ug/l	SW846 8260D
FC5867-13	**CRCA-DPT0286-023.0-20230504**					
cis-1,2-Dichloroethylene [a]		0.65 I	1.0	0.28	ug/l	SW846 8260D
FC5867-14	**CRCA-DPT0286-028.0-20230504**					
No hits reported in this sample.						
FC5867-15	**CRCA-DPT0286-048.0-20230504**					
Perfluorobutanoic acid		39.1	1.6	0.40	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid		0.0275 I	0.040	0.010	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0248 I	0.040	0.010	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.010	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0182	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0059 I	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0076 I	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
FC5867-16	**CRCA-DPT0286-057.0-20230504**					
Perfluorobutanoic acid		10.7	0.80	0.20	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid [b]		0.0089	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0078 I	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.0029 I	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0035 I	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0022 I	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
FC5867-17	**CRCA-EB-20230504-01**					
No hits reported in this sample.						
FC5867-18	**CRCA-DPT0287-008.0-20230504**					
Perfluorobutanoic acid [c]		0.119	0.080	0.020	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid [b]		0.0054 I	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid [b]		0.0070 I	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15

Summary of Hits

Job Number: FC5867
Account: Tetra Tech NUS
Project: KSC-CRCA
Collected: 05/03/23 thru 05/05/23

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	PQL	MDL	Units	Method
Perfluoroheptanoic acid [b]		0.0056 I	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0077 I	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0029 I	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0112	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
FC5867-19	**CRCA-DPT0287-018.0-20230504**					
Perfluorobutanoic acid		0.854	0.080	0.020	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid [b]		0.0029 I	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0029 I	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0125	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0039 I	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0039 I	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
FC5867-20	**CRCA-DPT0287-028.0-20230504**					
Perfluorobutanoic acid		0.922	0.15	0.037	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid		0.0043 I	0.0074	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0032 I	0.0074	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.0021 I	0.0074	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0033 I	0.0074	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid		0.0034 I	0.0074	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0042 I	0.0074	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0094	0.0074	0.0019	ug/l	EPA 537M QSM5.3 B-15
FC5867-21	**CRCA-DPT0287-038.0-20230504**					
Perfluorobutanoic acid [c]		0.338	0.074	0.019	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid		0.0020 I	0.0074	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0030 I	0.0074	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid		0.0021 I	0.0074	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0068 I	0.0074	0.0019	ug/l	EPA 537M QSM5.3 B-15
FC5867-22	**CRCA-DPT0287-048.0-20230504**					
Perfluorobutanoic acid [d]		0.242	0.015	0.0037	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid [d]		0.0040 I	0.0074	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid [d]		0.0032 I	0.0074	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid [d]		0.0038 I	0.0074	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid [d]		0.0019 I	0.0074	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid [d]		0.0087	0.0074	0.0019	ug/l	EPA 537M QSM5.3 B-15
FC5867-23	**CRCA-DPT0287-057.0-20230504**					

No hits reported in this sample.

Summary of Hits

Job Number: FC5867
Account: Tetra Tech NUS
Project: KSC-CRCA
Collected: 05/03/23 thru 05/05/23

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	PQL	MDL	Units	Method
FC5867-24	**CRCA-EB-20230504-02**					
No hits reported in this sample.						
FC5867-25	**CRCA-DPT0288-008.0-20230504**					
Perfluorobutanoic acid [e]		0.284	0.074	0.019	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid		0.0037 I	0.0074	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0042 I	0.0074	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.0030 I	0.0074	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0035 I	0.0074	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0090	0.0074	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0141	0.0074	0.0019	ug/l	EPA 537M QSM5.3 B-15
FC5867-26	**CRCA-DPT0288-018.0-20230504**					
Perfluorobutanoic acid		0.581	0.015	0.0037	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid		0.0057 I	0.0074	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0061 I	0.0074	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.0032 I	0.0074	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0030 I	0.0074	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid		0.0023 I	0.0074	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0119	0.0074	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0050 I	0.0074	0.0019	ug/l	EPA 537M QSM5.3 B-15
FC5867-27	**CRCA-DPT0288-028.0-20230504**					
Perfluorobutanoic acid		0.230	0.015	0.0037	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid		0.0026 I	0.0074	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0028 I	0.0074	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid		0.0031 I	0.0074	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0038 I	0.0074	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0038 I	0.0074	0.0019	ug/l	EPA 537M QSM5.3 B-15
FC5867-28	**CRCA-DPT0288-038.0-20230505**					
Perfluorobutanoic acid		0.205	0.014	0.0036	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid		0.0053 I	0.0071	0.0018	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0042 I	0.0071	0.0018	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.0027 I	0.0071	0.0018	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0021 I	0.0071	0.0018	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0053 I	0.0071	0.0018	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0027 I	0.0071	0.0018	ug/l	EPA 537M QSM5.3 B-15

Summary of Hits

Job Number: FC5867
Account: Tetra Tech NUS
Project: KSC-CRCA
Collected: 05/03/23 thru 05/05/23

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	PQL	MDL	Units	Method
FC5867-29	**CRCA-DPT0288-048.0-20230505**					
Perfluorobutanoic acid		0.0368	0.014	0.0034	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid		0.0029 I	0.0069	0.0017	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0025 I	0.0069	0.0017	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0024 I	0.0069	0.0017	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0018 I	0.0069	0.0017	ug/l	EPA 537M QSM5.3 B-15
FC5867-30	**CRCA-DPT0288-057.0-20230505**					
No hits reported in this sample.						
FC5867-31	**CRCA-DPT0289-008.0-20230505**					
Perfluorobutanoic acid [f]		0.0836	0.015	0.0037	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0040 I	0.0074	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0076	0.0074	0.0019	ug/l	EPA 537M QSM5.3 B-15
FC5867-32	**CRCA-DPT0289-018.0-20230505**					
Perfluorobutanoic acid		0.0494	0.015	0.0037	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid		0.0068 I	0.0074	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0066 I	0.0074	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.0040 I	0.0074	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0031 I	0.0074	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid		0.0023 I	0.0074	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanesulfonic acid		0.0021 I	0.0074	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0190	0.0074	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0030 I	0.0074	0.0019	ug/l	EPA 537M QSM5.3 B-15
FC5867-33	**CRCA-DPT0289-028.0-20230505**					
Perfluorobutanoic acid [c]		0.0966	0.071	0.018	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid [b]		0.0040 I	0.0071	0.0018	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0038 I	0.0071	0.0018	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.0026 I	0.0071	0.0018	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0029 I	0.0071	0.0018	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0100	0.0071	0.0018	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0052 I	0.0071	0.0018	ug/l	EPA 537M QSM5.3 B-15
FC5867-34	**CRCA-FB-20230505-01**					
No hits reported in this sample.						

Summary of Hits

Job Number: FC5867
Account: Tetra Tech NUS
Project: KSC-CRCA
Collected: 05/03/23 thru 05/05/23

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	PQL	MDL	Units	Method
FC5867-35	**CRCA-DPT0289-038.0-20230505**					
Perfluorobutanoic acid		0.159	0.015	0.0037	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid		0.0031 I	0.0074	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0036 I	0.0074	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.0021 I	0.0074	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0062 I	0.0074	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0022 I	0.0074	0.0019	ug/l	EPA 537M QSM5.3 B-15
FC5867-36	**CRCA-DPT0289-048.0-20230505**					
Perfluorobutanoic acid [c]		0.386	0.071	0.018	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid		0.0045 I	0.0071	0.0018	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0059 I	0.0071	0.0018	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.0033 I	0.0071	0.0018	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0110	0.0071	0.0018	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0028 I	0.0071	0.0018	ug/l	EPA 537M QSM5.3 B-15
FC5867-37	**CRCA-DPT0289-057.0-20230505**					
Perfluorooctanesulfonic acid		0.0048 I	0.0074	0.0019	ug/l	EPA 537M QSM5.3 B-15
FC5867-38	**CRCA-FD-20230504-01**					
Perfluorobutanoic acid		0.240	0.017	0.0044	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid		0.0030 I	0.0087	0.0022	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0035 I	0.0087	0.0022	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.0030 I	0.0087	0.0022	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0030 I	0.0087	0.0022	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0094	0.0087	0.0022	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0124	0.0071	0.0018	ug/l	EPA 537M QSM5.3 B-15
FC5867-39	**CRCA-FD-20230505-01**					
Perfluorobutanoic acid [e]		0.406	0.074	0.019	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid [b]		0.0051 I	0.0074	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid [b]		0.0067 I	0.0074	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid [b]		0.0039 I	0.0074	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0115	0.0074	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0033 I	0.0074	0.0019	ug/l	EPA 537M QSM5.3 B-15

(a) Sample was treated with an anti-foaming agent. Sample was not preserved to a pH < 2.
(b) Associated ID Standard outside control limits.
(c) Dilution required (ID recovery standard failure).
(d) Insufficient sample for re-extraction.

Summary of Hits

Job Number: FC5867
Account: Tetra Tech NUS
Project: KSC-CRCA
Collected: 05/03/23 thru 05/05/23

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	PQL	MDL	Units	Method

(e) Dilution required (ID recovery standard failure). Associated ID Standard outside control limits.
(f) Associated ID Standard outside control limits. Confirmed by re-extraction and reanalysis.

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID:	CRCA-EB-20230503-02		
Lab Sample ID:	FC5867-1	**Date Sampled:**	05/03/23
Matrix:	AQ - Equipment Blank	**Date Received:**	05/05/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	KSC-CRCA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q44970.D	1	05/24/23 21:30	AL	05/11/23 12:00	OP96844	S4Q654
Run #2							

	Initial Volume	Final Volume
Run #1	155 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	PQL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	0.0032 U	0.013	0.0032	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0016 U	0.0065	0.0016	ug/l	
307-24-4	Perfluorohexanoic acid	0.0016 U	0.0065	0.0016	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0016 U	0.0065	0.0016	ug/l	
335-67-1	Perfluorooctanoic acid	0.0016 U	0.0065	0.0016	ug/l	
375-95-1	Perfluorononanoic acid	0.0016 U	0.0065	0.0016	ug/l	
335-76-2	Perfluorodecanoic acid [a]	0.0016 U	0.0065	0.0016	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0016 U	0.0065	0.0016	ug/l	
307-55-1	Perfluorododecanoic acid	0.0016 U	0.0065	0.0016	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0016 U	0.0065	0.0016	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0016 U	0.0065	0.0016	ug/l	
PERFLUOROALKYLSULFONIC ACIDS						
375-73-5	Perfluorobutanesulfonic acid	0.0016 U	0.0065	0.0016	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0016 U	0.0065	0.0016	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0016 U	0.0065	0.0016	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0016 U	0.0065	0.0016	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0016 U	0.0065	0.0016	ug/l	
68259-12-1	Perfluorononanesulfonic acid [a]	0.0016 U	0.0065	0.0016	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0016 U	0.0065	0.0016	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA	0.0016 U	0.0065	0.0016	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	0.0032 U	0.013	0.0032	ug/l	
2991-50-6	EtFOSAA	0.0032 U	0.013	0.0032	ug/l	
FLUOROTELOMER SULFONATES						
757124-72-4	4:2 Fluorotelomer sulfonate	0.0032 U	0.013	0.0032	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0032 U	0.013	0.0032	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: CRCA-EB-20230503-02
Lab Sample ID: FC5867-1
Matrix: AQ - Equipment Blank
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: KSC-CRCA

Date Sampled: 05/03/23
Date Received: 05/05/23
Percent Solids: n/a

CAS No.	Compound	Result	PQL	MDL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0032 U	0.013	0.0032	ug/l	
NEXT GENERATION PFAS ANALYTES						
13252-13-6	HFPO-DA (GenX)	0.0032 U	0.013	0.0032	ug/l	
919005-14-4	ADONA	0.0032 U	0.013	0.0032	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0032 U	0.013	0.0032	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0032 U	0.013	0.0032	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	75%		50-150%
	13C5-PFPeA	76%		50-150%
	13C5-PFHxA	76%		50-150%
	13C4-PFHpA	76%		50-150%
	13C8-PFOA	77%		50-150%
	13C9-PFNA	78%		50-150%
	13C6-PFDA	75%		50-150%
	13C7-PFUnDA	73%		50-150%
	13C2-PFDoDA	68%		50-150%
	13C2-PFTeDA	61%		50-150%
	13C3-PFBS	75%		50-150%
	13C3-PFHxS	72%		50-150%
	13C8-PFOS	68%		50-150%
	13C8-FOSA	66%		50-150%
	d3-MeFOSAA	81%		50-150%
	d5-EtFOSAA	77%		50-150%
	13C2-4:2FTS	64%		50-150%
	13C2-6:2FTS	71%		50-150%
	13C2-8:2FTS	70%		50-150%
	13C3-HFPO-DA	69%		50-150%

(a) Associated BS outside control limits high, sample was ND.

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0285-008.0-20230503		
Lab Sample ID:	FC5867-2	**Date Sampled:**	05/03/23
Matrix:	AQ - Ground Water	**Date Received:**	05/05/23
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	KSC-CRCA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	I756615.D	1	05/10/23 01:39	JW	n/a	n/a	VI2921
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL 4.2 List

CAS No.	Compound	Result	PQL	MDL	Units	Q
67-64-1	Acetone	10 U	25	10	ug/l	
71-43-2	Benzene	0.31 U	1.0	0.31	ug/l	
75-27-4	Bromodichloromethane	0.24 U	1.0	0.24	ug/l	
75-25-2	Bromoform	0.41 U	1.0	0.41	ug/l	
78-93-3	2-Butanone (MEK)	2.0 U	5.0	2.0	ug/l	
75-15-0	Carbon Disulfide	0.53 U	2.0	0.53	ug/l	
56-23-5	Carbon Tetrachloride	0.36 U	1.0	0.36	ug/l	
108-90-7	Chlorobenzene	0.20 U	1.0	0.20	ug/l	
75-00-3	Chloroethane	0.67 U	2.0	0.67	ug/l	
67-66-3	Chloroform	0.30 U	1.0	0.30	ug/l	
110-82-7	Cyclohexane	0.39 U	1.0	0.39	ug/l	
124-48-1	Dibromochloromethane	0.28 U	1.0	0.28	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	1.0 U	5.0	1.0	ug/l	
106-93-4	1,2-Dibromoethane	0.28 U	2.0	0.28	ug/l	
75-71-8	Dichlorodifluoromethane [b]	0.50 U	2.0	0.50	ug/l	
95-50-1	1,2-Dichlorobenzene	0.32 U	1.0	0.32	ug/l	
541-73-1	1,3-Dichlorobenzene	0.22 U	1.0	0.22	ug/l	
106-46-7	1,4-Dichlorobenzene	0.26 U	1.0	0.26	ug/l	
75-34-3	1,1-Dichloroethane	0.34 U	1.0	0.34	ug/l	
107-06-2	1,2-Dichloroethane	0.31 U	1.0	0.31	ug/l	
75-35-4	1,1-Dichloroethylene	0.32 U	1.0	0.32	ug/l	
156-59-2	cis-1,2-Dichloroethylene	0.28 U	1.0	0.28	ug/l	
156-60-5	trans-1,2-Dichloroethylene	0.22 U	1.0	0.22	ug/l	
78-87-5	1,2-Dichloropropane	0.43 U	1.0	0.43	ug/l	
10061-01-5	cis-1,3-Dichloropropene	0.29 U	1.0	0.29	ug/l	
10061-02-6	trans-1,3-Dichloropropene	0.21 U	1.0	0.21	ug/l	
100-41-4	Ethylbenzene	0.36 U	1.0	0.36	ug/l	
76-13-1	Freon 113	0.48 U	1.0	0.48	ug/l	
591-78-6	2-Hexanone	2.0 U	10	2.0	ug/l	
98-82-8	Isopropylbenzene	0.22 U	1.0	0.22	ug/l	
79-20-9	Methyl Acetate	5.0 U	20	5.0	ug/l	
74-83-9	Methyl Bromide [c]	2.0 U	5.0	2.0	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0285-008.0-20230503		
Lab Sample ID:	FC5867-2	**Date Sampled:**	05/03/23
Matrix:	AQ - Ground Water	**Date Received:**	05/05/23
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	KSC-CRCA		

VOA TCL 4.2 List

CAS No.	Compound	Result	PQL	MDL	Units	Q
74-87-3	Methyl Chloride	0.50 U	2.0	0.50	ug/l	
108-87-2	Methylcyclohexane	0.44 U	1.0	0.44	ug/l	
75-09-2	Methylene Chloride	2.0 U	5.0	2.0	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	1.0 U	5.0	1.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	0.23 U	1.0	0.23	ug/l	
100-42-5	Styrene	0.22 U	1.0	0.22	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	0.30 U	1.0	0.30	ug/l	
127-18-4	Tetrachloroethylene [d]	0.22 U	1.0	0.22	ug/l	
108-88-3	Toluene	0.30 U	1.0	0.30	ug/l	
120-82-1	1,2,4-Trichlorobenzene	0.50 U	2.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	0.25 U	1.0	0.25	ug/l	
79-00-5	1,1,2-Trichloroethane	0.47 U	1.0	0.47	ug/l	
79-01-6	Trichloroethylene	0.35 U	1.0	0.35	ug/l	
75-69-4	Trichlorofluoromethane	0.50 U	2.0	0.50	ug/l	
75-01-4	Vinyl Chloride	0.41 U	1.0	0.41	ug/l	
1330-20-7	Xylene (total)	0.72 U	3.0	0.72	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	102%		83-118%
17060-07-0	1,2-Dichloroethane-D4	105%		79-125%
2037-26-5	Toluene-D8	98%		85-112%
460-00-4	4-Bromofluorobenzene	103%		83-118%

(a) Sample was treated with an anti-foaming agent. Sample was not preserved to a pH < 2.
(b) Associated ICV, CCV and BS recovery outside control limits high, sample is ND.
(c) Associated CCV outside control limits low.
(d) Associated CCV and BS recovery outside control limits high, sample is ND.

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0285-013.0-20230503		
Lab Sample ID:	FC5867-3	**Date Sampled:**	05/03/23
Matrix:	AQ - Ground Water	**Date Received:**	05/05/23
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	KSC-CRCA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	I756616.D	1	05/10/23 02:03	JW	n/a	n/a	VI2921
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL 4.2 List

CAS No.	Compound	Result	PQL	MDL	Units	Q
67-64-1	Acetone	10 U	25	10	ug/l	
71-43-2	Benzene	0.31 U	1.0	0.31	ug/l	
75-27-4	Bromodichloromethane	0.24 U	1.0	0.24	ug/l	
75-25-2	Bromoform	0.41 U	1.0	0.41	ug/l	
78-93-3	2-Butanone (MEK)	2.0 U	5.0	2.0	ug/l	
75-15-0	Carbon Disulfide	1.2	2.0	0.53	ug/l	I
56-23-5	Carbon Tetrachloride	0.36 U	1.0	0.36	ug/l	
108-90-7	Chlorobenzene	0.20 U	1.0	0.20	ug/l	
75-00-3	Chloroethane	0.67 U	2.0	0.67	ug/l	
67-66-3	Chloroform	0.30 U	1.0	0.30	ug/l	
110-82-7	Cyclohexane	0.39 U	1.0	0.39	ug/l	
124-48-1	Dibromochloromethane	0.28 U	1.0	0.28	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	1.0 U	5.0	1.0	ug/l	
106-93-4	1,2-Dibromoethane	0.28 U	2.0	0.28	ug/l	
75-71-8	Dichlorodifluoromethane [b]	0.50 U	2.0	0.50	ug/l	
95-50-1	1,2-Dichlorobenzene	0.32 U	1.0	0.32	ug/l	
541-73-1	1,3-Dichlorobenzene	0.22 U	1.0	0.22	ug/l	
106-46-7	1,4-Dichlorobenzene	0.26 U	1.0	0.26	ug/l	
75-34-3	1,1-Dichloroethane	0.34 U	1.0	0.34	ug/l	
107-06-2	1,2-Dichloroethane	0.31 U	1.0	0.31	ug/l	
75-35-4	1,1-Dichloroethylene	0.32 U	1.0	0.32	ug/l	
156-59-2	cis-1,2-Dichloroethylene	0.28 U	1.0	0.28	ug/l	
156-60-5	trans-1,2-Dichloroethylene	0.22 U	1.0	0.22	ug/l	
78-87-5	1,2-Dichloropropane	0.43 U	1.0	0.43	ug/l	
10061-01-5	cis-1,3-Dichloropropene	0.29 U	1.0	0.29	ug/l	
10061-02-6	trans-1,3-Dichloropropene	0.21 U	1.0	0.21	ug/l	
100-41-4	Ethylbenzene	0.36 U	1.0	0.36	ug/l	
76-13-1	Freon 113	0.48 U	1.0	0.48	ug/l	
591-78-6	2-Hexanone	2.0 U	10	2.0	ug/l	
98-82-8	Isopropylbenzene	0.22 U	1.0	0.22	ug/l	
79-20-9	Methyl Acetate	5.0 U	20	5.0	ug/l	
74-83-9	Methyl Bromide [c]	2.0 U	5.0	2.0	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0285-013.0-20230503		
Lab Sample ID:	FC5867-3	**Date Sampled:**	05/03/23
Matrix:	AQ - Ground Water	**Date Received:**	05/05/23
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	KSC-CRCA		

VOA TCL 4.2 List

CAS No.	Compound	Result	PQL	MDL	Units	Q
74-87-3	Methyl Chloride	0.50 U	2.0	0.50	ug/l	
108-87-2	Methylcyclohexane	0.44 U	1.0	0.44	ug/l	
75-09-2	Methylene Chloride	2.0 U	5.0	2.0	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	1.0 U	5.0	1.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	0.23 U	1.0	0.23	ug/l	
100-42-5	Styrene	0.22 U	1.0	0.22	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	0.30 U	1.0	0.30	ug/l	
127-18-4	Tetrachloroethylene [d]	0.22 U	1.0	0.22	ug/l	
108-88-3	Toluene	0.30 U	1.0	0.30	ug/l	
120-82-1	1,2,4-Trichlorobenzene	0.50 U	2.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	0.25 U	1.0	0.25	ug/l	
79-00-5	1,1,2-Trichloroethane	0.47 U	1.0	0.47	ug/l	
79-01-6	Trichloroethylene	0.35 U	1.0	0.35	ug/l	
75-69-4	Trichlorofluoromethane	0.50 U	2.0	0.50	ug/l	
75-01-4	Vinyl Chloride	0.41 U	1.0	0.41	ug/l	
1330-20-7	Xylene (total)	0.72 U	3.0	0.72	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	103%		83-118%
17060-07-0	1,2-Dichloroethane-D4	103%		79-125%
2037-26-5	Toluene-D8	99%		85-112%
460-00-4	4-Bromofluorobenzene	104%		83-118%

(a) Sample was treated with an anti-foaming agent. Sample was not preserved to a pH < 2.
(b) Associated ICV, CCV and BS recovery outside control limits high, sample is ND.
(c) Associated CCV outside control limits low.
(d) Associated CCV and BS recovery outside control limits high, sample is ND.

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0285-018.0-20230503		
Lab Sample ID:	FC5867-4	**Date Sampled:**	05/03/23
Matrix:	AQ - Ground Water	**Date Received:**	05/05/23
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	KSC-CRCA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	I756617.D	1	05/10/23 02:28	JW	n/a	n/a	VI2921
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL 4.2 List

CAS No.	Compound	Result	PQL	MDL	Units	Q
67-64-1	Acetone	10 U	25	10	ug/l	
71-43-2	Benzene	0.31 U	1.0	0.31	ug/l	
75-27-4	Bromodichloromethane	0.24 U	1.0	0.24	ug/l	
75-25-2	Bromoform	0.41 U	1.0	0.41	ug/l	
78-93-3	2-Butanone (MEK)	2.0 U	5.0	2.0	ug/l	
75-15-0	Carbon Disulfide	0.66	2.0	0.53	ug/l	I
56-23-5	Carbon Tetrachloride	0.36 U	1.0	0.36	ug/l	
108-90-7	Chlorobenzene	0.20 U	1.0	0.20	ug/l	
75-00-3	Chloroethane	0.67 U	2.0	0.67	ug/l	
67-66-3	Chloroform	0.30 U	1.0	0.30	ug/l	
110-82-7	Cyclohexane	0.39 U	1.0	0.39	ug/l	
124-48-1	Dibromochloromethane	0.28 U	1.0	0.28	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	1.0 U	5.0	1.0	ug/l	
106-93-4	1,2-Dibromoethane	0.28 U	2.0	0.28	ug/l	
75-71-8	Dichlorodifluoromethane [b]	0.50 U	2.0	0.50	ug/l	
95-50-1	1,2-Dichlorobenzene	0.32 U	1.0	0.32	ug/l	
541-73-1	1,3-Dichlorobenzene	0.22 U	1.0	0.22	ug/l	
106-46-7	1,4-Dichlorobenzene	0.26 U	1.0	0.26	ug/l	
75-34-3	1,1-Dichloroethane	0.34 U	1.0	0.34	ug/l	
107-06-2	1,2-Dichloroethane	0.31 U	1.0	0.31	ug/l	
75-35-4	1,1-Dichloroethylene	0.32 U	1.0	0.32	ug/l	
156-59-2	cis-1,2-Dichloroethylene	0.28 U	1.0	0.28	ug/l	
156-60-5	trans-1,2-Dichloroethylene	0.22 U	1.0	0.22	ug/l	
78-87-5	1,2-Dichloropropane	0.43 U	1.0	0.43	ug/l	
10061-01-5	cis-1,3-Dichloropropene	0.29 U	1.0	0.29	ug/l	
10061-02-6	trans-1,3-Dichloropropene	0.21 U	1.0	0.21	ug/l	
100-41-4	Ethylbenzene	0.36 U	1.0	0.36	ug/l	
76-13-1	Freon 113	0.48 U	1.0	0.48	ug/l	
591-78-6	2-Hexanone	2.0 U	10	2.0	ug/l	
98-82-8	Isopropylbenzene	0.22 U	1.0	0.22	ug/l	
79-20-9	Methyl Acetate	5.0 U	20	5.0	ug/l	
74-83-9	Methyl Bromide [c]	2.0 U	5.0	2.0	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0285-018.0-20230503		
Lab Sample ID:	FC5867-4	**Date Sampled:**	05/03/23
Matrix:	AQ - Ground Water	**Date Received:**	05/05/23
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	KSC-CRCA		

VOA TCL 4.2 List

CAS No.	Compound	Result	PQL	MDL	Units	Q
74-87-3	Methyl Chloride	0.50 U	2.0	0.50	ug/l	
108-87-2	Methylcyclohexane	0.44 U	1.0	0.44	ug/l	
75-09-2	Methylene Chloride	2.0 U	5.0	2.0	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	1.0 U	5.0	1.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	0.23 U	1.0	0.23	ug/l	
100-42-5	Styrene	0.22 U	1.0	0.22	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	0.30 U	1.0	0.30	ug/l	
127-18-4	Tetrachloroethylene [d]	0.22 U	1.0	0.22	ug/l	
108-88-3	Toluene	0.30 U	1.0	0.30	ug/l	
120-82-1	1,2,4-Trichlorobenzene	0.50 U	2.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	0.25 U	1.0	0.25	ug/l	
79-00-5	1,1,2-Trichloroethane	0.47 U	1.0	0.47	ug/l	
79-01-6	Trichloroethylene	0.35 U	1.0	0.35	ug/l	
75-69-4	Trichlorofluoromethane	0.50 U	2.0	0.50	ug/l	
75-01-4	Vinyl Chloride	0.41 U	1.0	0.41	ug/l	
1330-20-7	Xylene (total)	0.72 U	3.0	0.72	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	102%		83-118%
17060-07-0	1,2-Dichloroethane-D4	104%		79-125%
2037-26-5	Toluene-D8	98%		85-112%
460-00-4	4-Bromofluorobenzene	103%		83-118%

(a) Sample was treated with an anti-foaming agent. Sample was not preserved to a pH < 2.
(b) Associated ICV, CCV and BS recovery outside control limits high, sample is ND.
(c) Associated CCV outside control limits low.
(d) Associated CCV and BS recovery outside control limits high, sample is ND.

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0285-023.0-20230503		
Lab Sample ID:	FC5867-5	**Date Sampled:**	05/03/23
Matrix:	AQ - Ground Water	**Date Received:**	05/05/23
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	KSC-CRCA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	I756618.D	1	05/10/23 02:53	JW	n/a	n/a	VI2921
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL 4.2 List

CAS No.	Compound	Result	PQL	MDL	Units	Q
67-64-1	Acetone	10 U	25	10	ug/l	
71-43-2	Benzene	0.31 U	1.0	0.31	ug/l	
75-27-4	Bromodichloromethane	0.24 U	1.0	0.24	ug/l	
75-25-2	Bromoform	0.41 U	1.0	0.41	ug/l	
78-93-3	2-Butanone (MEK)	2.0 U	5.0	2.0	ug/l	
75-15-0	Carbon Disulfide	0.90	2.0	0.53	ug/l	I
56-23-5	Carbon Tetrachloride	0.36 U	1.0	0.36	ug/l	
108-90-7	Chlorobenzene	0.20 U	1.0	0.20	ug/l	
75-00-3	Chloroethane	0.67 U	2.0	0.67	ug/l	
67-66-3	Chloroform	0.30 U	1.0	0.30	ug/l	
110-82-7	Cyclohexane	0.39 U	1.0	0.39	ug/l	
124-48-1	Dibromochloromethane	0.28 U	1.0	0.28	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	1.0 U	5.0	1.0	ug/l	
106-93-4	1,2-Dibromoethane	0.28 U	2.0	0.28	ug/l	
75-71-8	Dichlorodifluoromethane [b]	0.50 U	2.0	0.50	ug/l	
95-50-1	1,2-Dichlorobenzene	0.32 U	1.0	0.32	ug/l	
541-73-1	1,3-Dichlorobenzene	0.22 U	1.0	0.22	ug/l	
106-46-7	1,4-Dichlorobenzene	0.26 U	1.0	0.26	ug/l	
75-34-3	1,1-Dichloroethane	0.34 U	1.0	0.34	ug/l	
107-06-2	1,2-Dichloroethane	0.31 U	1.0	0.31	ug/l	
75-35-4	1,1-Dichloroethylene	0.32 U	1.0	0.32	ug/l	
156-59-2	cis-1,2-Dichloroethylene	0.28 U	1.0	0.28	ug/l	
156-60-5	trans-1,2-Dichloroethylene	0.22 U	1.0	0.22	ug/l	
78-87-5	1,2-Dichloropropane	0.43 U	1.0	0.43	ug/l	
10061-01-5	cis-1,3-Dichloropropene	0.29 U	1.0	0.29	ug/l	
10061-02-6	trans-1,3-Dichloropropene	0.21 U	1.0	0.21	ug/l	
100-41-4	Ethylbenzene	0.36 U	1.0	0.36	ug/l	
76-13-1	Freon 113	0.48 U	1.0	0.48	ug/l	
591-78-6	2-Hexanone	2.0 U	10	2.0	ug/l	
98-82-8	Isopropylbenzene	0.22 U	1.0	0.22	ug/l	
79-20-9	Methyl Acetate	5.0 U	20	5.0	ug/l	
74-83-9	Methyl Bromide [c]	2.0 U	5.0	2.0	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0285-023.0-20230503		
Lab Sample ID:	FC5867-5	**Date Sampled:**	05/03/23
Matrix:	AQ - Ground Water	**Date Received:**	05/05/23
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	KSC-CRCA		

VOA TCL 4.2 List

CAS No.	Compound	Result	PQL	MDL	Units	Q
74-87-3	Methyl Chloride	0.50 U	2.0	0.50	ug/l	
108-87-2	Methylcyclohexane	0.44 U	1.0	0.44	ug/l	
75-09-2	Methylene Chloride	2.0 U	5.0	2.0	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	1.0 U	5.0	1.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	0.23 U	1.0	0.23	ug/l	
100-42-5	Styrene	0.22 U	1.0	0.22	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	0.30 U	1.0	0.30	ug/l	
127-18-4	Tetrachloroethylene [d]	0.22 U	1.0	0.22	ug/l	
108-88-3	Toluene	0.30 U	1.0	0.30	ug/l	
120-82-1	1,2,4-Trichlorobenzene	0.50 U	2.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	0.25 U	1.0	0.25	ug/l	
79-00-5	1,1,2-Trichloroethane	0.47 U	1.0	0.47	ug/l	
79-01-6	Trichloroethylene	0.35 U	1.0	0.35	ug/l	
75-69-4	Trichlorofluoromethane	0.50 U	2.0	0.50	ug/l	
75-01-4	Vinyl Chloride	0.41 U	1.0	0.41	ug/l	
1330-20-7	Xylene (total)	0.72 U	3.0	0.72	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	102%		83-118%
17060-07-0	1,2-Dichloroethane-D4	104%		79-125%
2037-26-5	Toluene-D8	98%		85-112%
460-00-4	4-Bromofluorobenzene	101%		83-118%

(a) Sample was treated with an anti-foaming agent. Sample was not preserved to a pH < 2.
(b) Associated ICV, CCV and BS recovery outside control limits high, sample is ND.
(c) Associated CCV outside control limits low.
(d) Associated CCV and BS recovery outside control limits high, sample is ND.

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0285-028.0-20230503		
Lab Sample ID:	FC5867-6	**Date Sampled:**	05/03/23
Matrix:	AQ - Ground Water	**Date Received:**	05/05/23
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	KSC-CRCA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	I756619.D	1	05/10/23 03:17	JW	n/a	n/a	VI2921
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL 4.2 List

CAS No.	Compound	Result	PQL	MDL	Units	Q
67-64-1	Acetone	10 U	25	10	ug/l	
71-43-2	Benzene	0.31 U	1.0	0.31	ug/l	
75-27-4	Bromodichloromethane	0.24 U	1.0	0.24	ug/l	
75-25-2	Bromoform	0.41 U	1.0	0.41	ug/l	
78-93-3	2-Butanone (MEK)	2.0 U	5.0	2.0	ug/l	
75-15-0	Carbon Disulfide	0.53 U	2.0	0.53	ug/l	
56-23-5	Carbon Tetrachloride	0.36 U	1.0	0.36	ug/l	
108-90-7	Chlorobenzene	0.20 U	1.0	0.20	ug/l	
75-00-3	Chloroethane	0.67 U	2.0	0.67	ug/l	
67-66-3	Chloroform	0.30 U	1.0	0.30	ug/l	
110-82-7	Cyclohexane	0.39 U	1.0	0.39	ug/l	
124-48-1	Dibromochloromethane	0.28 U	1.0	0.28	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	1.0 U	5.0	1.0	ug/l	
106-93-4	1,2-Dibromoethane	0.28 U	2.0	0.28	ug/l	
75-71-8	Dichlorodifluoromethane [b]	0.50 U	2.0	0.50	ug/l	
95-50-1	1,2-Dichlorobenzene	0.32 U	1.0	0.32	ug/l	
541-73-1	1,3-Dichlorobenzene	0.22 U	1.0	0.22	ug/l	
106-46-7	1,4-Dichlorobenzene	0.26 U	1.0	0.26	ug/l	
75-34-3	1,1-Dichloroethane	0.34 U	1.0	0.34	ug/l	
107-06-2	1,2-Dichloroethane	0.31 U	1.0	0.31	ug/l	
75-35-4	1,1-Dichloroethylene	0.32 U	1.0	0.32	ug/l	
156-59-2	cis-1,2-Dichloroethylene	0.28 U	1.0	0.28	ug/l	
156-60-5	trans-1,2-Dichloroethylene	0.22 U	1.0	0.22	ug/l	
78-87-5	1,2-Dichloropropane	0.43 U	1.0	0.43	ug/l	
10061-01-5	cis-1,3-Dichloropropene	0.29 U	1.0	0.29	ug/l	
10061-02-6	trans-1,3-Dichloropropene	0.21 U	1.0	0.21	ug/l	
100-41-4	Ethylbenzene	0.36 U	1.0	0.36	ug/l	
76-13-1	Freon 113	0.48 U	1.0	0.48	ug/l	
591-78-6	2-Hexanone	2.0 U	10	2.0	ug/l	
98-82-8	Isopropylbenzene	0.22 U	1.0	0.22	ug/l	
79-20-9	Methyl Acetate	5.0 U	20	5.0	ug/l	
74-83-9	Methyl Bromide [c]	2.0 U	5.0	2.0	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0285-028.0-20230503		
Lab Sample ID:	FC5867-6	**Date Sampled:**	05/03/23
Matrix:	AQ - Ground Water	**Date Received:**	05/05/23
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	KSC-CRCA		

VOA TCL 4.2 List

CAS No.	Compound	Result	PQL	MDL	Units	Q
74-87-3	Methyl Chloride	0.50 U	2.0	0.50	ug/l	
108-87-2	Methylcyclohexane	0.44 U	1.0	0.44	ug/l	
75-09-2	Methylene Chloride	2.0 U	5.0	2.0	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	1.0 U	5.0	1.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	0.23 U	1.0	0.23	ug/l	
100-42-5	Styrene	0.22 U	1.0	0.22	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	0.30 U	1.0	0.30	ug/l	
127-18-4	Tetrachloroethylene [d]	0.22 U	1.0	0.22	ug/l	
108-88-3	Toluene	0.30 U	1.0	0.30	ug/l	
120-82-1	1,2,4-Trichlorobenzene	0.50 U	2.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	0.25 U	1.0	0.25	ug/l	
79-00-5	1,1,2-Trichloroethane	0.47 U	1.0	0.47	ug/l	
79-01-6	Trichloroethylene	0.35 U	1.0	0.35	ug/l	
75-69-4	Trichlorofluoromethane	0.50 U	2.0	0.50	ug/l	
75-01-4	Vinyl Chloride	0.41 U	1.0	0.41	ug/l	
1330-20-7	Xylene (total)	0.72 U	3.0	0.72	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	103%		83-118%
17060-07-0	1,2-Dichloroethane-D4	106%		79-125%
2037-26-5	Toluene-D8	97%		85-112%
460-00-4	4-Bromofluorobenzene	104%		83-118%

(a) Sample was treated with an anti-foaming agent. Sample was not preserved to a pH < 2.
(b) Associated ICV, CCV and BS recovery outside control limits high, sample is ND.
(c) Associated CCV outside control limits low.
(d) Associated CCV and BS recovery outside control limits high, sample is ND.

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0285-048.0-20230503		
Lab Sample ID:	FC5867-7	**Date Sampled:**	05/03/23
Matrix:	AQ - Ground Water	**Date Received:**	05/05/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	KSC-CRCA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q44972.D	1	05/24/23 22:01	AL	05/11/23 12:00	OP96844	S4Q654
Run #2	4Q44973.D	5	05/24/23 22:16	AL	05/11/23 12:00	OP96844	S4Q654
Run #3	4Q45090.D	100	05/26/23 17:45	AL	05/11/23 12:00	OP96844	S4Q656

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2	125 ml	1.0 ml
Run #3	125 ml	1.0 ml

CAS No.	Compound	Result	PQL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	32.3 [a]	1.6	0.40	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0274 [b]	0.040	0.010	ug/l	I
307-24-4	Perfluorohexanoic acid	0.0260 [b]	0.040	0.010	ug/l	I
375-85-9	Perfluoroheptanoic acid	0.0107	0.0080	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	0.0191	0.0080	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0020 U	0.0080	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid [c]	0.0020 U	0.0080	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid [d]	0.010 U [b]	0.040	0.010	ug/l	
PERFLUOROALKYLSULFONIC ACIDS						
375-73-5	Perfluorobutanesulfonic acid	0.010 U [b]	0.040	0.010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.010 U [b]	0.040	0.010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0064	0.0080	0.0020	ug/l	I
375-92-8	Perfluoroheptanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0070	0.0080	0.0020	ug/l	I
68259-12-1	Perfluorononanesulfonic acid [c]	0.0020 U	0.0080	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA	0.010 U [b]	0.040	0.010	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	0.0040 U	0.016	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0040 U	0.016	0.0040	ug/l	
FLUOROTELOMER SULFONATES						

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0285-048.0-20230503		
Lab Sample ID:	FC5867-7	**Date Sampled:**	05/03/23
Matrix:	AQ - Ground Water	**Date Received:**	05/05/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	KSC-CRCA		

CAS No.	Compound	Result	PQL	MDL	Units	Q
757124-72-4	4:2 Fluorotelomer sulfonate	0.020 U [b]	0.080	0.020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0040 U	0.016	0.0040	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0040 U	0.016	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES						
13252-13-6	HFPO-DA (GenX) [d]	0.020 U [b]	0.080	0.020	ug/l	
919005-14-4	ADONA	0.0040 U	0.016	0.0040	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0040 U	0.016	0.0040	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0040 U	0.016	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Run# 3	Limits
	13C4-PFBA	24% [e]	51%	74%	50-150%
	13C5-PFPeA	38% [e]	52%	71%	50-150%
	13C5-PFHxA	45% [e]	56%	72%	50-150%
	13C4-PFHpA	52%	60%	75%	50-150%
	13C8-PFOA	62%	65%	78%	50-150%
	13C9-PFNA	65%	66%	79%	50-150%
	13C6-PFDA	63%	61%	88%	50-150%
	13C7-PFUnDA	50%	58%	86%	50-150%
	13C2-PFDoDA	53%	53%	77%	50-150%
	13C2-PFTeDA	41% [e]	44% [e]	73%	50-150%
	13C3-PFBS	38% [e]	52%	72%	50-150%
	13C3-PFHxS	58%	63%	73%	50-150%
	13C8-PFOS	58%	62%	73%	50-150%
	13C8-FOSA	44% [e]	52%	86%	50-150%
	d3-MeFOSAA	81%	72%	91%	50-150%
	d5-EtFOSAA	77%	71%	88%	50-150%
	13C2-4:2FTS	44% [e]	55%	63%	50-150%
	13C2-6:2FTS	66%	63%	71%	50-150%
	13C2-8:2FTS	66%	60%	77%	50-150%
	13C3-HFPO-DA	37% [e]	49% [e]	78%	50-150%

(a) Result is from Run# 3
(b) Result is from Run# 2
(c) Associated BS outside control limits high, sample was ND.
(d) Associated ID Standard outside control limits.
(e) Outside control limits.

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-FB-20230504-01		
Lab Sample ID:	FC5867-8	**Date Sampled:**	05/04/23
Matrix:	AQ - Field Blank Water	**Date Received:**	05/05/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	KSC-CRCA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q44977.D	1	05/24/23 23:18	AL	05/11/23 12:00	OP96844	S4Q654
Run #2							

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	PQL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	0.0040 U	0.016	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0020 U	0.0080	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	0.0020 U	0.0080	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0020 U	0.0080	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	0.0020 U	0.0080	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0020 U	0.0080	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid [a]	0.0020 U	0.0080	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS						
375-73-5	Perfluorobutanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid [a]	0.0020 U	0.0080	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA	0.0020 U	0.0080	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	0.0040 U	0.016	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0040 U	0.016	0.0040	ug/l	
FLUOROTELOMER SULFONATES						
757124-72-4	4:2 Fluorotelomer sulfonate	0.0040 U	0.016	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0040 U	0.016	0.0040	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-FB-20230504-01		
Lab Sample ID:	FC5867-8	**Date Sampled:**	05/04/23
Matrix:	AQ - Field Blank Water	**Date Received:**	05/05/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	KSC-CRCA		

CAS No.	Compound	Result	PQL	MDL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0040 U	0.016	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES						
13252-13-6	HFPO-DA (GenX)	0.0040 U	0.016	0.0040	ug/l	
919005-14-4	ADONA	0.0040 U	0.016	0.0040	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0040 U	0.016	0.0040	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0040 U	0.016	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	65%		50-150%
	13C5-PFPeA	65%		50-150%
	13C5-PFHxA	65%		50-150%
	13C4-PFHpA	65%		50-150%
	13C8-PFOA	63%		50-150%
	13C9-PFNA	62%		50-150%
	13C6-PFDA	59%		50-150%
	13C7-PFUnDA	60%		50-150%
	13C2-PFDoDA	57%		50-150%
	13C2-PFTeDA	50%		50-150%
	13C3-PFBS	65%		50-150%
	13C3-PFHxS	60%		50-150%
	13C8-PFOS	54%		50-150%
	13C8-FOSA	55%		50-150%
	d3-MeFOSAA	70%		50-150%
	d5-EtFOSAA	67%		50-150%
	13C2-4:2FTS	55%		50-150%
	13C2-6:2FTS	59%		50-150%
	13C2-8:2FTS	55%		50-150%
	13C3-HFPO-DA	56%		50-150%

(a) Associated BS outside control limits high, sample was ND.

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0285-057.0-20230504		
Lab Sample ID:	FC5867-9	**Date Sampled:**	05/04/23
Matrix:	AQ - Ground Water	**Date Received:**	05/05/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	KSC-CRCA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q44979.D	1	05/24/23 23:49	AL	05/11/23 12:00	OP96844	S4Q654
Run #2 [a]	4Q44980.D	5	05/25/23 00:05	AL	05/11/23 12:00	OP96844	S4Q654

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2	125 ml	1.0 ml

CAS No.	Compound	Result	PQL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	0.0095	0.016	0.0040	ug/l	I
2706-90-3	Perfluoropentanoic acid	0.010 U [b]	0.040	0.010	ug/l	
307-24-4	Perfluorohexanoic acid	0.0020 U	0.0080	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0020 U	0.0080	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	0.0020 U	0.0080	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0020 U	0.0080	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid [c]	0.0020 U	0.0080	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid [d]	0.010 U [b]	0.040	0.010	ug/l	
72629-94-8	Perfluorotridecanoic acid [d]	0.010 U [b]	0.040	0.010	ug/l	
376-06-7	Perfluorotetradecanoic acid [d]	0.010 U [b]	0.040	0.010	ug/l	
PERFLUOROALKYLSULFONIC ACIDS						
375-73-5	Perfluorobutanesulfonic acid	0.010 U [b]	0.040	0.010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.010 U [b]	0.040	0.010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid [c]	0.0020 U	0.0080	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA	0.010 U [b]	0.040	0.010	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	0.0040 U	0.016	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0040 U	0.016	0.0040	ug/l	
FLUOROTELOMER SULFONATES						
757124-72-4	4:2 Fluorotelomer sulfonate	0.020 U [b]	0.080	0.020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0040 U	0.016	0.0040	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0285-057.0-20230504		
Lab Sample ID:	FC5867-9	**Date Sampled:**	05/04/23
Matrix:	AQ - Ground Water	**Date Received:**	05/05/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	KSC-CRCA		

CAS No.	Compound	Result	PQL	MDL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0040 U	0.016	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES						
13252-13-6	HFPO-DA (GenX) [d]	0.0040 U	0.016	0.0040	ug/l	
919005-14-4	ADONA	0.0040 U	0.016	0.0040	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0040 U	0.016	0.0040	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Mino [d]	0.020 U [b]	0.080	0.020	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	50%	60%	50-150%
	13C5-PFPeA	44% [e]	56%	50-150%
	13C5-PFHxA	51%	58%	50-150%
	13C4-PFHpA	55%	62%	50-150%
	13C8-PFOA	62%	64%	50-150%
	13C9-PFNA	63%	64%	50-150%
	13C6-PFDA	61%	61%	50-150%
	13C7-PFUnDA	51%	58%	50-150%
	13C2-PFDoDA	47% [e]	48% [e]	50-150%
	13C2-PFTeDA	33% [e]	40% [e]	50-150%
	13C3-PFBS	43% [e]	55%	50-150%
	13C3-PFHxS	56%	65%	50-150%
	13C8-PFOS	56%	59%	50-150%
	13C8-FOSA	44% [e]	52%	50-150%
	d3-MeFOSAA	71%	70%	50-150%
	d5-EtFOSAA	69%	66%	50-150%
	13C2-4:2FTS	48% [e]	54%	50-150%
	13C2-6:2FTS	64%	61%	50-150%
	13C2-8:2FTS	62%	60%	50-150%
	13C3-HFPO-DA	42% [e]	49% [e]	50-150%

(a) Dilution required (ID recovery standard failure).
(b) Result is from Run# 2
(c) Associated BS outside control limits high, sample was ND.
(d) Associated ID Standard outside control limits.
(e) Outside control limits.

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0286-008.0-20230504		
Lab Sample ID:	FC5867-10	**Date Sampled:**	05/04/23
Matrix:	AQ - Ground Water	**Date Received:**	05/05/23
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	KSC-CRCA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	I756620.D	1	05/10/23 03:42	JW	n/a	n/a	VI2921
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL 4.2 List

CAS No.	Compound	Result	PQL	MDL	Units	Q
67-64-1	Acetone	10 U	25	10	ug/l	
71-43-2	Benzene	0.31 U	1.0	0.31	ug/l	
75-27-4	Bromodichloromethane	0.24 U	1.0	0.24	ug/l	
75-25-2	Bromoform	0.41 U	1.0	0.41	ug/l	
78-93-3	2-Butanone (MEK)	2.0 U	5.0	2.0	ug/l	
75-15-0	Carbon Disulfide	0.53 U	2.0	0.53	ug/l	
56-23-5	Carbon Tetrachloride	0.36 U	1.0	0.36	ug/l	
108-90-7	Chlorobenzene	0.20 U	1.0	0.20	ug/l	
75-00-3	Chloroethane	0.67 U	2.0	0.67	ug/l	
67-66-3	Chloroform	0.30 U	1.0	0.30	ug/l	
110-82-7	Cyclohexane	0.39 U	1.0	0.39	ug/l	
124-48-1	Dibromochloromethane	0.28 U	1.0	0.28	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	1.0 U	5.0	1.0	ug/l	
106-93-4	1,2-Dibromoethane	0.28 U	2.0	0.28	ug/l	
75-71-8	Dichlorodifluoromethane [b]	0.50 U	2.0	0.50	ug/l	
95-50-1	1,2-Dichlorobenzene	0.32 U	1.0	0.32	ug/l	
541-73-1	1,3-Dichlorobenzene	0.22 U	1.0	0.22	ug/l	
106-46-7	1,4-Dichlorobenzene	0.26 U	1.0	0.26	ug/l	
75-34-3	1,1-Dichloroethane	0.34 U	1.0	0.34	ug/l	
107-06-2	1,2-Dichloroethane	0.31 U	1.0	0.31	ug/l	
75-35-4	1,1-Dichloroethylene	0.32 U	1.0	0.32	ug/l	
156-59-2	cis-1,2-Dichloroethylene	0.28 U	1.0	0.28	ug/l	
156-60-5	trans-1,2-Dichloroethylene	0.22 U	1.0	0.22	ug/l	
78-87-5	1,2-Dichloropropane	0.43 U	1.0	0.43	ug/l	
10061-01-5	cis-1,3-Dichloropropene	0.29 U	1.0	0.29	ug/l	
10061-02-6	trans-1,3-Dichloropropene	0.21 U	1.0	0.21	ug/l	
100-41-4	Ethylbenzene	0.36 U	1.0	0.36	ug/l	
76-13-1	Freon 113	0.48 U	1.0	0.48	ug/l	
591-78-6	2-Hexanone	2.0 U	10	2.0	ug/l	
98-82-8	Isopropylbenzene	0.22 U	1.0	0.22	ug/l	
79-20-9	Methyl Acetate	5.0 U	20	5.0	ug/l	
74-83-9	Methyl Bromide [c]	2.0 U	5.0	2.0	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0286-008.0-20230504		
Lab Sample ID:	FC5867-10	**Date Sampled:**	05/04/23
Matrix:	AQ - Ground Water	**Date Received:**	05/05/23
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	KSC-CRCA		

VOA TCL 4.2 List

CAS No.	Compound	Result	PQL	MDL	Units	Q
74-87-3	Methyl Chloride	0.50 U	2.0	0.50	ug/l	
108-87-2	Methylcyclohexane	0.44 U	1.0	0.44	ug/l	
75-09-2	Methylene Chloride	2.0 U	5.0	2.0	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	1.0 U	5.0	1.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	0.23 U	1.0	0.23	ug/l	
100-42-5	Styrene	0.22 U	1.0	0.22	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	0.30 U	1.0	0.30	ug/l	
127-18-4	Tetrachloroethylene [d]	0.22 U	1.0	0.22	ug/l	
108-88-3	Toluene	0.30 U	1.0	0.30	ug/l	
120-82-1	1,2,4-Trichlorobenzene	0.50 U	2.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	0.25 U	1.0	0.25	ug/l	
79-00-5	1,1,2-Trichloroethane	0.47 U	1.0	0.47	ug/l	
79-01-6	Trichloroethylene	0.35 U	1.0	0.35	ug/l	
75-69-4	Trichlorofluoromethane	0.50 U	2.0	0.50	ug/l	
75-01-4	Vinyl Chloride	0.41 U	1.0	0.41	ug/l	
1330-20-7	Xylene (total)	0.72 U	3.0	0.72	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	103%		83-118%
17060-07-0	1,2-Dichloroethane-D4	103%		79-125%
2037-26-5	Toluene-D8	98%		85-112%
460-00-4	4-Bromofluorobenzene	104%		83-118%

(a) Sample was treated with an anti-foaming agent. Sample was not preserved to a pH < 2.
(b) Associated ICV, CCV and BS recovery outside control limits high, sample is ND.
(c) Associated CCV outside control limits low.
(d) Associated CCV and BS recovery outside control limits high, sample is ND.

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0286-013.0-20230504		
Lab Sample ID:	FC5867-11	**Date Sampled:**	05/04/23
Matrix:	AQ - Ground Water	**Date Received:**	05/05/23
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	KSC-CRCA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	I756621.D	1	05/10/23 04:07	JW	n/a	n/a	VI2921
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL 4.2 List

CAS No.	Compound	Result	PQL	MDL	Units	Q
67-64-1	Acetone	10 U	25	10	ug/l	
71-43-2	Benzene	0.31 U	1.0	0.31	ug/l	
75-27-4	Bromodichloromethane	0.24 U	1.0	0.24	ug/l	
75-25-2	Bromoform	0.41 U	1.0	0.41	ug/l	
78-93-3	2-Butanone (MEK)	2.0 U	5.0	2.0	ug/l	
75-15-0	Carbon Disulfide	0.78	2.0	0.53	ug/l	I
56-23-5	Carbon Tetrachloride	0.36 U	1.0	0.36	ug/l	
108-90-7	Chlorobenzene	0.20 U	1.0	0.20	ug/l	
75-00-3	Chloroethane	0.67 U	2.0	0.67	ug/l	
67-66-3	Chloroform	0.30 U	1.0	0.30	ug/l	
110-82-7	Cyclohexane	0.39 U	1.0	0.39	ug/l	
124-48-1	Dibromochloromethane	0.28 U	1.0	0.28	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	1.0 U	5.0	1.0	ug/l	
106-93-4	1,2-Dibromoethane	0.28 U	2.0	0.28	ug/l	
75-71-8	Dichlorodifluoromethane [b]	0.50 U	2.0	0.50	ug/l	
95-50-1	1,2-Dichlorobenzene	0.32 U	1.0	0.32	ug/l	
541-73-1	1,3-Dichlorobenzene	0.22 U	1.0	0.22	ug/l	
106-46-7	1,4-Dichlorobenzene	0.26 U	1.0	0.26	ug/l	
75-34-3	1,1-Dichloroethane	0.34 U	1.0	0.34	ug/l	
107-06-2	1,2-Dichloroethane	0.31 U	1.0	0.31	ug/l	
75-35-4	1,1-Dichloroethylene	0.32 U	1.0	0.32	ug/l	
156-59-2	cis-1,2-Dichloroethylene	0.28 U	1.0	0.28	ug/l	
156-60-5	trans-1,2-Dichloroethylene	0.22 U	1.0	0.22	ug/l	
78-87-5	1,2-Dichloropropane	0.43 U	1.0	0.43	ug/l	
10061-01-5	cis-1,3-Dichloropropene	0.29 U	1.0	0.29	ug/l	
10061-02-6	trans-1,3-Dichloropropene	0.21 U	1.0	0.21	ug/l	
100-41-4	Ethylbenzene	0.36 U	1.0	0.36	ug/l	
76-13-1	Freon 113	0.48 U	1.0	0.48	ug/l	
591-78-6	2-Hexanone	2.0 U	10	2.0	ug/l	
98-82-8	Isopropylbenzene	0.22 U	1.0	0.22	ug/l	
79-20-9	Methyl Acetate	5.0 U	20	5.0	ug/l	
74-83-9	Methyl Bromide [c]	2.0 U	5.0	2.0	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0286-013.0-20230504		
Lab Sample ID:	FC5867-11	**Date Sampled:**	05/04/23
Matrix:	AQ - Ground Water	**Date Received:**	05/05/23
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	KSC-CRCA		

VOA TCL 4.2 List

CAS No.	Compound	Result	PQL	MDL	Units	Q
74-87-3	Methyl Chloride	0.50 U	2.0	0.50	ug/l	
108-87-2	Methylcyclohexane	0.44 U	1.0	0.44	ug/l	
75-09-2	Methylene Chloride	2.0 U	5.0	2.0	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	1.0 U	5.0	1.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	0.23 U	1.0	0.23	ug/l	
100-42-5	Styrene	0.22 U	1.0	0.22	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	0.30 U	1.0	0.30	ug/l	
127-18-4	Tetrachloroethylene [d]	0.22 U	1.0	0.22	ug/l	
108-88-3	Toluene	0.30 U	1.0	0.30	ug/l	
120-82-1	1,2,4-Trichlorobenzene	0.50 U	2.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	0.25 U	1.0	0.25	ug/l	
79-00-5	1,1,2-Trichloroethane	0.47 U	1.0	0.47	ug/l	
79-01-6	Trichloroethylene	0.35 U	1.0	0.35	ug/l	
75-69-4	Trichlorofluoromethane	0.50 U	2.0	0.50	ug/l	
75-01-4	Vinyl Chloride	0.41 U	1.0	0.41	ug/l	
1330-20-7	Xylene (total)	0.72 U	3.0	0.72	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	101%		83-118%
17060-07-0	1,2-Dichloroethane-D4	106%		79-125%
2037-26-5	Toluene-D8	97%		85-112%
460-00-4	4-Bromofluorobenzene	104%		83-118%

(a) Sample was treated with an anti-foaming agent. Sample was not preserved to a pH < 2.
(b) Associated ICV, CCV and BS recovery outside control limits high, sample is ND.
(c) Associated CCV outside control limits low.
(d) Associated CCV and BS recovery outside control limits high, sample is ND.

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0286-018.0-20230504		
Lab Sample ID:	FC5867-12	**Date Sampled:**	05/04/23
Matrix:	AQ - Ground Water	**Date Received:**	05/05/23
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	KSC-CRCA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	I756622.D	1	05/10/23 04:31	JW	n/a	n/a	VI2921
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL 4.2 List

CAS No.	Compound	Result	PQL	MDL	Units	Q
67-64-1	Acetone	10 U	25	10	ug/l	
71-43-2	Benzene	0.31 U	1.0	0.31	ug/l	
75-27-4	Bromodichloromethane	0.24 U	1.0	0.24	ug/l	
75-25-2	Bromoform	0.41 U	1.0	0.41	ug/l	
78-93-3	2-Butanone (MEK)	2.0 U	5.0	2.0	ug/l	
75-15-0	Carbon Disulfide	0.87	2.0	0.53	ug/l	I
56-23-5	Carbon Tetrachloride	0.36 U	1.0	0.36	ug/l	
108-90-7	Chlorobenzene	0.20 U	1.0	0.20	ug/l	
75-00-3	Chloroethane	0.67 U	2.0	0.67	ug/l	
67-66-3	Chloroform	0.30 U	1.0	0.30	ug/l	
110-82-7	Cyclohexane	0.39 U	1.0	0.39	ug/l	
124-48-1	Dibromochloromethane	0.28 U	1.0	0.28	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	1.0 U	5.0	1.0	ug/l	
106-93-4	1,2-Dibromoethane	0.28 U	2.0	0.28	ug/l	
75-71-8	Dichlorodifluoromethane [b]	0.50 U	2.0	0.50	ug/l	
95-50-1	1,2-Dichlorobenzene	0.32 U	1.0	0.32	ug/l	
541-73-1	1,3-Dichlorobenzene	0.22 U	1.0	0.22	ug/l	
106-46-7	1,4-Dichlorobenzene	0.26 U	1.0	0.26	ug/l	
75-34-3	1,1-Dichloroethane	0.34 U	1.0	0.34	ug/l	
107-06-2	1,2-Dichloroethane	0.31 U	1.0	0.31	ug/l	
75-35-4	1,1-Dichloroethylene	0.32 U	1.0	0.32	ug/l	
156-59-2	cis-1,2-Dichloroethylene	0.28 U	1.0	0.28	ug/l	
156-60-5	trans-1,2-Dichloroethylene	0.22 U	1.0	0.22	ug/l	
78-87-5	1,2-Dichloropropane	0.43 U	1.0	0.43	ug/l	
10061-01-5	cis-1,3-Dichloropropene	0.29 U	1.0	0.29	ug/l	
10061-02-6	trans-1,3-Dichloropropene	0.21 U	1.0	0.21	ug/l	
100-41-4	Ethylbenzene	0.36 U	1.0	0.36	ug/l	
76-13-1	Freon 113	0.48 U	1.0	0.48	ug/l	
591-78-6	2-Hexanone	2.0 U	10	2.0	ug/l	
98-82-8	Isopropylbenzene	0.22 U	1.0	0.22	ug/l	
79-20-9	Methyl Acetate	5.0 U	20	5.0	ug/l	
74-83-9	Methyl Bromide [c]	2.0 U	5.0	2.0	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0286-018.0-20230504		
Lab Sample ID:	FC5867-12	**Date Sampled:**	05/04/23
Matrix:	AQ - Ground Water	**Date Received:**	05/05/23
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	KSC-CRCA		

VOA TCL 4.2 List

CAS No.	Compound	Result	PQL	MDL	Units	Q
74-87-3	Methyl Chloride	0.50 U	2.0	0.50	ug/l	
108-87-2	Methylcyclohexane	0.44 U	1.0	0.44	ug/l	
75-09-2	Methylene Chloride	2.0 U	5.0	2.0	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	1.0 U	5.0	1.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	0.23 U	1.0	0.23	ug/l	
100-42-5	Styrene	0.22 U	1.0	0.22	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	0.30 U	1.0	0.30	ug/l	
127-18-4	Tetrachloroethylene [d]	0.22 U	1.0	0.22	ug/l	
108-88-3	Toluene	0.30 U	1.0	0.30	ug/l	
120-82-1	1,2,4-Trichlorobenzene	0.50 U	2.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	0.25 U	1.0	0.25	ug/l	
79-00-5	1,1,2-Trichloroethane	0.47 U	1.0	0.47	ug/l	
79-01-6	Trichloroethylene	0.35 U	1.0	0.35	ug/l	
75-69-4	Trichlorofluoromethane	0.50 U	2.0	0.50	ug/l	
75-01-4	Vinyl Chloride	0.41 U	1.0	0.41	ug/l	
1330-20-7	Xylene (total)	0.72 U	3.0	0.72	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	103%		83-118%
17060-07-0	1,2-Dichloroethane-D4	105%		79-125%
2037-26-5	Toluene-D8	99%		85-112%
460-00-4	4-Bromofluorobenzene	101%		83-118%

(a) Sample was treated with an anti-foaming agent. Sample was not preserved to a pH < 2.
(b) Associated ICV, CCV and BS recovery outside control limits high, sample is ND.
(c) Associated CCV outside control limits low.
(d) Associated CCV and BS recovery outside control limits high, sample is ND.

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0286-023.0-20230504		
Lab Sample ID:	FC5867-13	**Date Sampled:**	05/04/23
Matrix:	AQ - Ground Water	**Date Received:**	05/05/23
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	KSC-CRCA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	I756623.D	1	05/10/23 04:56	JW	n/a	n/a	VI2921
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL 4.2 List

CAS No.	Compound	Result	PQL	MDL	Units	Q
67-64-1	Acetone	10 U	25	10	ug/l	
71-43-2	Benzene	0.31 U	1.0	0.31	ug/l	
75-27-4	Bromodichloromethane	0.24 U	1.0	0.24	ug/l	
75-25-2	Bromoform	0.41 U	1.0	0.41	ug/l	
78-93-3	2-Butanone (MEK)	2.0 U	5.0	2.0	ug/l	
75-15-0	Carbon Disulfide	0.53 U	2.0	0.53	ug/l	
56-23-5	Carbon Tetrachloride	0.36 U	1.0	0.36	ug/l	
108-90-7	Chlorobenzene	0.20 U	1.0	0.20	ug/l	
75-00-3	Chloroethane	0.67 U	2.0	0.67	ug/l	
67-66-3	Chloroform	0.30 U	1.0	0.30	ug/l	
110-82-7	Cyclohexane	0.39 U	1.0	0.39	ug/l	
124-48-1	Dibromochloromethane	0.28 U	1.0	0.28	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	1.0 U	5.0	1.0	ug/l	
106-93-4	1,2-Dibromoethane	0.28 U	2.0	0.28	ug/l	
75-71-8	Dichlorodifluoromethane [b]	0.50 U	2.0	0.50	ug/l	
95-50-1	1,2-Dichlorobenzene	0.32 U	1.0	0.32	ug/l	
541-73-1	1,3-Dichlorobenzene	0.22 U	1.0	0.22	ug/l	
106-46-7	1,4-Dichlorobenzene	0.26 U	1.0	0.26	ug/l	
75-34-3	1,1-Dichloroethane	0.34 U	1.0	0.34	ug/l	
107-06-2	1,2-Dichloroethane	0.31 U	1.0	0.31	ug/l	
75-35-4	1,1-Dichloroethylene	0.32 U	1.0	0.32	ug/l	
156-59-2	cis-1,2-Dichloroethylene	0.65	1.0	0.28	ug/l	I
156-60-5	trans-1,2-Dichloroethylene	0.22 U	1.0	0.22	ug/l	
78-87-5	1,2-Dichloropropane	0.43 U	1.0	0.43	ug/l	
10061-01-5	cis-1,3-Dichloropropene	0.29 U	1.0	0.29	ug/l	
10061-02-6	trans-1,3-Dichloropropene	0.21 U	1.0	0.21	ug/l	
100-41-4	Ethylbenzene	0.36 U	1.0	0.36	ug/l	
76-13-1	Freon 113	0.48 U	1.0	0.48	ug/l	
591-78-6	2-Hexanone	2.0 U	10	2.0	ug/l	
98-82-8	Isopropylbenzene	0.22 U	1.0	0.22	ug/l	
79-20-9	Methyl Acetate	5.0 U	20	5.0	ug/l	
74-83-9	Methyl Bromide [c]	2.0 U	5.0	2.0	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0286-023.0-20230504		
Lab Sample ID:	FC5867-13	**Date Sampled:**	05/04/23
Matrix:	AQ - Ground Water	**Date Received:**	05/05/23
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	KSC-CRCA		

VOA TCL 4.2 List

CAS No.	Compound	Result	PQL	MDL	Units	Q
74-87-3	Methyl Chloride	0.50 U	2.0	0.50	ug/l	
108-87-2	Methylcyclohexane	0.44 U	1.0	0.44	ug/l	
75-09-2	Methylene Chloride	2.0 U	5.0	2.0	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	1.0 U	5.0	1.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	0.23 U	1.0	0.23	ug/l	
100-42-5	Styrene	0.22 U	1.0	0.22	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	0.30 U	1.0	0.30	ug/l	
127-18-4	Tetrachloroethylene [d]	0.22 U	1.0	0.22	ug/l	
108-88-3	Toluene	0.30 U	1.0	0.30	ug/l	
120-82-1	1,2,4-Trichlorobenzene	0.50 U	2.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	0.25 U	1.0	0.25	ug/l	
79-00-5	1,1,2-Trichloroethane	0.47 U	1.0	0.47	ug/l	
79-01-6	Trichloroethylene	0.35 U	1.0	0.35	ug/l	
75-69-4	Trichlorofluoromethane	0.50 U	2.0	0.50	ug/l	
75-01-4	Vinyl Chloride	0.41 U	1.0	0.41	ug/l	
1330-20-7	Xylene (total)	0.72 U	3.0	0.72	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	104%		83-118%
17060-07-0	1,2-Dichloroethane-D4	107%		79-125%
2037-26-5	Toluene-D8	98%		85-112%
460-00-4	4-Bromofluorobenzene	105%		83-118%

(a) Sample was treated with an anti-foaming agent. Sample was not preserved to a pH < 2.
(b) Associated ICV, CCV and BS recovery outside control limits high, sample is ND.
(c) Associated CCV outside control limits low.
(d) Associated CCV and BS recovery outside control limits high, sample is ND.

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0286-028.0-20230504		
Lab Sample ID:	FC5867-14	**Date Sampled:**	05/04/23
Matrix:	AQ - Ground Water	**Date Received:**	05/05/23
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	KSC-CRCA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	I756624.D	1	05/10/23 05:21	JW	n/a	n/a	VI2921
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL 4.2 List

CAS No.	Compound	Result	PQL	MDL	Units	Q
67-64-1	Acetone	10 U	25	10	ug/l	
71-43-2	Benzene	0.31 U	1.0	0.31	ug/l	
75-27-4	Bromodichloromethane	0.24 U	1.0	0.24	ug/l	
75-25-2	Bromoform	0.41 U	1.0	0.41	ug/l	
78-93-3	2-Butanone (MEK)	2.0 U	5.0	2.0	ug/l	
75-15-0	Carbon Disulfide	0.53 U	2.0	0.53	ug/l	
56-23-5	Carbon Tetrachloride	0.36 U	1.0	0.36	ug/l	
108-90-7	Chlorobenzene	0.20 U	1.0	0.20	ug/l	
75-00-3	Chloroethane	0.67 U	2.0	0.67	ug/l	
67-66-3	Chloroform	0.30 U	1.0	0.30	ug/l	
110-82-7	Cyclohexane	0.39 U	1.0	0.39	ug/l	
124-48-1	Dibromochloromethane	0.28 U	1.0	0.28	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	1.0 U	5.0	1.0	ug/l	
106-93-4	1,2-Dibromoethane	0.28 U	2.0	0.28	ug/l	
75-71-8	Dichlorodifluoromethane [b]	0.50 U	2.0	0.50	ug/l	
95-50-1	1,2-Dichlorobenzene	0.32 U	1.0	0.32	ug/l	
541-73-1	1,3-Dichlorobenzene	0.22 U	1.0	0.22	ug/l	
106-46-7	1,4-Dichlorobenzene	0.26 U	1.0	0.26	ug/l	
75-34-3	1,1-Dichloroethane	0.34 U	1.0	0.34	ug/l	
107-06-2	1,2-Dichloroethane	0.31 U	1.0	0.31	ug/l	
75-35-4	1,1-Dichloroethylene	0.32 U	1.0	0.32	ug/l	
156-59-2	cis-1,2-Dichloroethylene	0.28 U	1.0	0.28	ug/l	
156-60-5	trans-1,2-Dichloroethylene	0.22 U	1.0	0.22	ug/l	
78-87-5	1,2-Dichloropropane	0.43 U	1.0	0.43	ug/l	
10061-01-5	cis-1,3-Dichloropropene	0.29 U	1.0	0.29	ug/l	
10061-02-6	trans-1,3-Dichloropropene	0.21 U	1.0	0.21	ug/l	
100-41-4	Ethylbenzene	0.36 U	1.0	0.36	ug/l	
76-13-1	Freon 113	0.48 U	1.0	0.48	ug/l	
591-78-6	2-Hexanone	2.0 U	10	2.0	ug/l	
98-82-8	Isopropylbenzene	0.22 U	1.0	0.22	ug/l	
79-20-9	Methyl Acetate	5.0 U	20	5.0	ug/l	
74-83-9	Methyl Bromide [c]	2.0 U	5.0	2.0	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0286-028.0-20230504		
Lab Sample ID:	FC5867-14	**Date Sampled:**	05/04/23
Matrix:	AQ - Ground Water	**Date Received:**	05/05/23
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	KSC-CRCA		

VOA TCL 4.2 List

CAS No.	Compound	Result	PQL	MDL	Units	Q
74-87-3	Methyl Chloride	0.50 U	2.0	0.50	ug/l	
108-87-2	Methylcyclohexane	0.44 U	1.0	0.44	ug/l	
75-09-2	Methylene Chloride	2.0 U	5.0	2.0	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	1.0 U	5.0	1.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	0.23 U	1.0	0.23	ug/l	
100-42-5	Styrene	0.22 U	1.0	0.22	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	0.30 U	1.0	0.30	ug/l	
127-18-4	Tetrachloroethylene [d]	0.22 U	1.0	0.22	ug/l	
108-88-3	Toluene	0.30 U	1.0	0.30	ug/l	
120-82-1	1,2,4-Trichlorobenzene	0.50 U	2.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	0.25 U	1.0	0.25	ug/l	
79-00-5	1,1,2-Trichloroethane	0.47 U	1.0	0.47	ug/l	
79-01-6	Trichloroethylene	0.35 U	1.0	0.35	ug/l	
75-69-4	Trichlorofluoromethane	0.50 U	2.0	0.50	ug/l	
75-01-4	Vinyl Chloride	0.41 U	1.0	0.41	ug/l	
1330-20-7	Xylene (total)	0.72 U	3.0	0.72	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	103%		83-118%
17060-07-0	1,2-Dichloroethane-D4	103%		79-125%
2037-26-5	Toluene-D8	99%		85-112%
460-00-4	4-Bromofluorobenzene	103%		83-118%

(a) Sample was treated with an anti-foaming agent. Sample was not preserved to a pH < 2.
(b) Associated ICV, CCV and BS recovery outside control limits high, sample is ND.
(c) Associated CCV outside control limits low.
(d) Associated CCV and BS recovery outside control limits high, sample is ND.

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0286-048.0-20230504		
Lab Sample ID:	FC5867-15	**Date Sampled:**	05/04/23
Matrix:	AQ - Ground Water	**Date Received:**	05/05/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	KSC-CRCA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q44981.D	1	05/25/23 00:21	AL	05/11/23 12:00	OP96844	S4Q654
Run #2	4Q44982.D	5	05/25/23 00:36	AL	05/11/23 12:00	OP96844	S4Q654
Run #3	4Q45091.D	100	05/26/23 18:01	AL	05/11/23 12:00	OP96844	S4Q656

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2	125 ml	1.0 ml
Run #3	125 ml	1.0 ml

CAS No.	Compound	Result	PQL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	39.1 [a]	1.6	0.40	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0275 [b]	0.040	0.010	ug/l	I
307-24-4	Perfluorohexanoic acid	0.0248 [b]	0.040	0.010	ug/l	I
375-85-9	Perfluoroheptanoic acid	0.010	0.0080	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	0.0182	0.0080	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0020 U	0.0080	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid [c]	0.0020 U	0.0080	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS						
375-73-5	Perfluorobutanesulfonic acid	0.010 U [b]	0.040	0.010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.010 U [b]	0.040	0.010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0059	0.0080	0.0020	ug/l	I
375-92-8	Perfluoroheptanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0076	0.0080	0.0020	ug/l	I
68259-12-1	Perfluorononanesulfonic acid [c]	0.0020 U	0.0080	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA [d]	0.010 U [b]	0.040	0.010	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	0.0040 U	0.016	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0040 U	0.016	0.0040	ug/l	
FLUOROTELOMER SULFONATES						

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0286-048.0-20230504		
Lab Sample ID:	FC5867-15	**Date Sampled:**	05/04/23
Matrix:	AQ - Ground Water	**Date Received:**	05/05/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	KSC-CRCA		

CAS No.	Compound	Result	PQL	MDL	Units	Q
757124-72-4	4:2 Fluorotelomer sulfonate	0.020 U [b]	0.080	0.020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0040 U	0.016	0.0040	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0040 U	0.016	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES						
13252-13-6	HFPO-DA (GenX)	0.020 U [b]	0.080	0.020	ug/l	
919005-14-4	ADONA	0.0040 U	0.016	0.0040	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0040 U	0.016	0.0040	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0040 U	0.016	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Run# 3	Limits
	13C4-PFBA	27% [e]	50%	70%	50-150%
	13C5-PFPeA	41% [e]	53%	68%	50-150%
	13C5-PFHxA	49% [e]	57%	68%	50-150%
	13C4-PFHpA	55%	59%	72%	50-150%
	13C8-PFOA	64%	64%	74%	50-150%
	13C9-PFNA	65%	66%	76%	50-150%
	13C6-PFDA	64%	64%	83%	50-150%
	13C7-PFUnDA	56%	59%	81%	50-150%
	13C2-PFDoDA	60%	59%	74%	50-150%
	13C2-PFTeDA	53%	51%	70%	50-150%
	13C3-PFBS	41% [e]	54%	68%	50-150%
	13C3-PFHxS	57%	61%	69%	50-150%
	13C8-PFOS	60%	61%	70%	50-150%
	13C8-FOSA	29% [e]	31% [e]	83%	50-150%
	d3-MeFOSAA	82%	74%	87%	50-150%
	d5-EtFOSAA	79%	71%	83%	50-150%
	13C2-4:2FTS	47% [e]	54%	59%	50-150%
	13C2-6:2FTS	67%	61%	68%	50-150%
	13C2-8:2FTS	64%	58%	75%	50-150%
	13C3-HFPO-DA	36% [e]	52%	72%	50-150%

(a) Result is from Run# 3
(b) Result is from Run# 2
(c) Associated BS outside control limits high, sample was ND.
(d) Associated ID Standard outside control limits.
(e) Outside control limits.

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0286-057.0-20230504		
Lab Sample ID:	FC5867-16	**Date Sampled:**	05/04/23
Matrix:	AQ - Ground Water	**Date Received:**	05/05/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	KSC-CRCA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q44983.D	1	05/25/23 00:52	AL	05/11/23 12:00	OP96844	S4Q654
Run #2	4Q44984.D	5	05/25/23 01:07	AL	05/11/23 12:00	OP96844	S4Q654
Run #3	4Q45092.D	50	05/26/23 18:16	AL	05/11/23 12:00	OP96844	S4Q656

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2	125 ml	1.0 ml
Run #3	125 ml	1.0 ml

CAS No.	Compound	Result	PQL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	10.7 [a]	0.80	0.20	ug/l	
2706-90-3	Perfluoropentanoic acid [b]	0.0089	0.0080	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	0.0078	0.0080	0.0020	ug/l	I
375-85-9	Perfluoroheptanoic acid	0.0029	0.0080	0.0020	ug/l	I
335-67-1	Perfluorooctanoic acid	0.0035	0.0080	0.0020	ug/l	I
375-95-1	Perfluorononanoic acid	0.0020 U	0.0080	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid [c]	0.0020 U	0.0080	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid [b]	0.010 U [d]	0.040	0.010	ug/l	
PERFLUOROALKYLSULFONIC ACIDS						
375-73-5	Perfluorobutanesulfonic acid	0.010 U [d]	0.040	0.010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.010 U [d]	0.040	0.010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0022	0.0080	0.0020	ug/l	I
375-92-8	Perfluoroheptanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid [c]	0.0020 U	0.0080	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA [b]	0.010 U [d]	0.040	0.010	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	0.0040 U	0.016	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0040 U	0.016	0.0040	ug/l	
FLUOROTELOMER SULFONATES						

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0286-057.0-20230504		
Lab Sample ID:	FC5867-16	**Date Sampled:**	05/04/23
Matrix:	AQ - Ground Water	**Date Received:**	05/05/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	KSC-CRCA		

CAS No.	Compound	Result	PQL	MDL	Units	Q
757124-72-4	4:2 Fluorotelomer sulfonate	0.0040 U	0.016	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0040 U	0.016	0.0040	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0040 U	0.016	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES						
13252-13-6	HFPO-DA (GenX) [b]	0.020 U [d]	0.080	0.020	ug/l	
919005-14-4	ADONA	0.0040 U	0.016	0.0040	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0040 U	0.016	0.0040	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0040 U	0.016	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Run# 3	Limits
	13C4-PFBA	40% [e]	61%	73%	50-150%
	13C5-PFPeA	45% [e]	59%	70%	50-150%
	13C5-PFHxA	53%	64%	71%	50-150%
	13C4-PFHpA	60%	67%	75%	50-150%
	13C8-PFOA	67%	70%	77%	50-150%
	13C9-PFNA	68%	71%	80%	50-150%
	13C6-PFDA	67%	68%	87%	50-150%
	13C7-PFUnDA	57%	63%	84%	50-150%
	13C2-PFDoDA	59%	59%	76%	50-150%
	13C2-PFTeDA	42% [e]	42% [e]	72%	50-150%
	13C3-PFBS	44% [e]	60%	71%	50-150%
	13C3-PFHxS	63%	66%	71%	50-150%
	13C8-PFOS	63%	68%	73%	50-150%
	13C8-FOSA	39% [e]	46% [e]	87%	50-150%
	d3-MeFOSAA	90%	82%	92%	50-150%
	d5-EtFOSAA	89%	78%	86%	50-150%
	13C2-4:2FTS	51%	58%	63%	50-150%
	13C2-6:2FTS	71%	68%	71%	50-150%
	13C2-8:2FTS	73%	66%	78%	50-150%
	13C3-HFPO-DA	45% [e]	48% [e]	74%	50-150%

(a) Result is from Run# 3
(b) Associated ID Standard outside control limits.
(c) Associated BS outside control limits high, sample was ND.
(d) Result is from Run# 2
(e) Outside control limits.

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-EB-20230504-01		
Lab Sample ID:	FC5867-17	**Date Sampled:**	05/04/23
Matrix:	AQ - Equipment Blank	**Date Received:**	05/05/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	KSC-CRCA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q44985.D	1	05/25/23 01:23	AL	05/11/23 12:00	OP96844	S4Q654
Run #2							

	Initial Volume	Final Volume
Run #1	155 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	PQL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	0.0032 U	0.013	0.0032	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0016 U	0.0065	0.0016	ug/l	
307-24-4	Perfluorohexanoic acid	0.0016 U	0.0065	0.0016	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0016 U	0.0065	0.0016	ug/l	
335-67-1	Perfluorooctanoic acid	0.0016 U	0.0065	0.0016	ug/l	
375-95-1	Perfluorononanoic acid	0.0016 U	0.0065	0.0016	ug/l	
335-76-2	Perfluorodecanoic acid [a]	0.0016 U	0.0065	0.0016	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0016 U	0.0065	0.0016	ug/l	
307-55-1	Perfluorododecanoic acid	0.0016 U	0.0065	0.0016	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0016 U	0.0065	0.0016	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0016 U	0.0065	0.0016	ug/l	
PERFLUOROALKYLSULFONIC ACIDS						
375-73-5	Perfluorobutanesulfonic acid	0.0016 U	0.0065	0.0016	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0016 U	0.0065	0.0016	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0016 U	0.0065	0.0016	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0016 U	0.0065	0.0016	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0016 U	0.0065	0.0016	ug/l	
68259-12-1	Perfluorononanesulfonic acid [a]	0.0016 U	0.0065	0.0016	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0016 U	0.0065	0.0016	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA	0.0016 U	0.0065	0.0016	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	0.0032 U	0.013	0.0032	ug/l	
2991-50-6	EtFOSAA	0.0032 U	0.013	0.0032	ug/l	
FLUOROTELOMER SULFONATES						
757124-72-4	4:2 Fluorotelomer sulfonate	0.0032 U	0.013	0.0032	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0032 U	0.013	0.0032	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-EB-20230504-01		
Lab Sample ID:	FC5867-17	**Date Sampled:**	05/04/23
Matrix:	AQ - Equipment Blank	**Date Received:**	05/05/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	KSC-CRCA		

CAS No.	Compound	Result	PQL	MDL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0032 U	0.013	0.0032	ug/l	
NEXT GENERATION PFAS ANALYTES						
13252-13-6	HFPO-DA (GenX)	0.0032 U	0.013	0.0032	ug/l	
919005-14-4	ADONA	0.0032 U	0.013	0.0032	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0032 U	0.013	0.0032	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0032 U	0.013	0.0032	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	64%		50-150%
	13C5-PFPeA	66%		50-150%
	13C5-PFHxA	66%		50-150%
	13C4-PFHpA	67%		50-150%
	13C8-PFOA	69%		50-150%
	13C9-PFNA	70%		50-150%
	13C6-PFDA	69%		50-150%
	13C7-PFUnDA	68%		50-150%
	13C2-PFDoDA	64%		50-150%
	13C2-PFTeDA	52%		50-150%
	13C3-PFBS	66%		50-150%
	13C3-PFHxS	65%		50-150%
	13C8-PFOS	64%		50-150%
	13C8-FOSA	61%		50-150%
	d3-MeFOSAA	79%		50-150%
	d5-EtFOSAA	75%		50-150%
	13C2-4:2FTS	56%		50-150%
	13C2-6:2FTS	62%		50-150%
	13C2-8:2FTS	64%		50-150%
	13C3-HFPO-DA	58%		50-150%

(a) Associated BS outside control limits high, sample was ND.

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0287-008.0-20230504		
Lab Sample ID:	FC5867-18	**Date Sampled:**	05/04/23
Matrix:	AQ - Ground Water	**Date Received:**	05/05/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	KSC-CRCA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q44989.D	1	05/25/23 02:25	AL	05/11/23 12:00	OP96844	S4Q654
Run #2 [a]	4Q44990.D	5	05/25/23 02:40	AL	05/11/23 12:00	OP96844	S4Q654

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2	125 ml	1.0 ml

CAS No.	Compound	Result	PQL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	0.119 [b]	0.080	0.020	ug/l	
2706-90-3	Perfluoropentanoic acid [c]	0.0054	0.0080	0.0020	ug/l	I
307-24-4	Perfluorohexanoic acid [c]	0.0070	0.0080	0.0020	ug/l	I
375-85-9	Perfluoroheptanoic acid [c]	0.0056	0.0080	0.0020	ug/l	I
335-67-1	Perfluorooctanoic acid	0.0077	0.0080	0.0020	ug/l	I
375-95-1	Perfluorononanoic acid	0.0020 U	0.0080	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid [d]	0.0020 U	0.0080	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid [c]	0.010 U [b]	0.040	0.010	ug/l	
72629-94-8	Perfluorotridecanoic acid [c]	0.010 U [b]	0.040	0.010	ug/l	
376-06-7	Perfluorotetradecanoic acid [c]	0.010 U [b]	0.040	0.010	ug/l	
PERFLUOROALKYLSULFONIC ACIDS						
375-73-5	Perfluorobutanesulfonic acid	0.010 U [b]	0.040	0.010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.010 U [b]	0.040	0.010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0029	0.0080	0.0020	ug/l	I
375-92-8	Perfluoroheptanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0112	0.0080	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid [d]	0.0020 U	0.0080	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA [c]	0.010 U [b]	0.040	0.010	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	0.0040 U	0.016	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0040 U	0.016	0.0040	ug/l	
FLUOROTELOMER SULFONATES						
757124-72-4	4:2 Fluorotelomer sulfonate	0.020 U [b]	0.080	0.020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0040 U	0.016	0.0040	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0287-008.0-20230504		
Lab Sample ID:	FC5867-18	**Date Sampled:**	05/04/23
Matrix:	AQ - Ground Water	**Date Received:**	05/05/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	KSC-CRCA		

CAS No.	Compound	Result	PQL	MDL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0040 U	0.016	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES						
13252-13-6	HFPO-DA (GenX) [c]	0.0040 U	0.016	0.0040	ug/l	
919005-14-4	ADONA	0.0040 U	0.016	0.0040	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0040 U	0.016	0.0040	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Mino [c]	0.020 U [b]	0.080	0.020	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	40% [e]	54%	50-150%
	13C5-PFPeA	37% [e]	51%	50-150%
	13C5-PFHxA	42% [e]	52%	50-150%
	13C4-PFHpA	47% [e]	56%	50-150%
	13C8-PFOA	55%	59%	50-150%
	13C9-PFNA	57%	61%	50-150%
	13C6-PFDA	55%	55%	50-150%
	13C7-PFUnDA	52%	51%	50-150%
	13C2-PFDoDA	45% [e]	37% [e]	50-150%
	13C2-PFTeDA	22% [e]	14% [e]	50-150%
	13C3-PFBS	39% [e]	53%	50-150%
	13C3-PFHxS	51%	59%	50-150%
	13C8-PFOS	53%	55%	50-150%
	13C8-FOSA	22% [e]	26% [e]	50-150%
	d3-MeFOSAA	65%	68%	50-150%
	d5-EtFOSAA	59%	58%	50-150%
	13C2-4:2FTS	41% [e]	50%	50-150%
	13C2-6:2FTS	60%	59%	50-150%
	13C2-8:2FTS	58%	58%	50-150%
	13C3-HFPO-DA	31% [e]	43% [e]	50-150%

(a) Dilution required (ID recovery standard failure).
(b) Result is from Run# 2
(c) Associated ID Standard outside control limits.
(d) Associated BS outside control limits high, sample was ND.
(e) Outside control limits.

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0287-018.0-20230504		
Lab Sample ID:	FC5867-19	**Date Sampled:**	05/04/23
Matrix:	AQ - Ground Water	**Date Received:**	05/05/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	KSC-CRCA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q44991.D	1	05/25/23 02:56	AL	05/11/23 12:00	OP96844	S4Q654
Run #2	4Q44992.D	5	05/25/23 03:11	AL	05/11/23 12:00	OP96844	S4Q654

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2	125 ml	1.0 ml

CAS No.	Compound	Result	PQL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	0.854 [a]	0.080	0.020	ug/l	
2706-90-3	Perfluoropentanoic acid [b]	0.0029	0.0080	0.0020	ug/l	I
307-24-4	Perfluorohexanoic acid	0.0029	0.0080	0.0020	ug/l	I
375-85-9	Perfluoroheptanoic acid	0.0020 U	0.0080	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	0.0125	0.0080	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0020 U	0.0080	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid [c]	0.0020 U	0.0080	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.010 U [a]	0.040	0.010	ug/l	
PERFLUOROALKYLSULFONIC ACIDS						
375-73-5	Perfluorobutanesulfonic acid	0.010 U [a]	0.040	0.010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.010 U [a]	0.040	0.010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0039	0.0080	0.0020	ug/l	I
375-92-8	Perfluoroheptanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0039	0.0080	0.0020	ug/l	I
68259-12-1	Perfluorononanesulfonic acid [c]	0.0020 U	0.0080	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA	0.0020 U	0.0080	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	0.0040 U	0.016	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0040 U	0.016	0.0040	ug/l	
FLUOROTELOMER SULFONATES						
757124-72-4	4:2 Fluorotelomer sulfonate	0.0040 U	0.016	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0040 U	0.016	0.0040	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0287-018.0-20230504		
Lab Sample ID:	FC5867-19	**Date Sampled:**	05/04/23
Matrix:	AQ - Ground Water	**Date Received:**	05/05/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	KSC-CRCA		

CAS No.	Compound	Result	PQL	MDL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0040 U	0.016	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES						
13252-13-6	HFPO-DA (GenX) [b]	0.0040 U	0.016	0.0040	ug/l	
919005-14-4	ADONA	0.0040 U	0.016	0.0040	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0040 U	0.016	0.0040	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0040 U	0.016	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	50%	64%	50-150%
	13C5-PFPeA	45% [d]	59%	50-150%
	13C5-PFHxA	51%	62%	50-150%
	13C4-PFHpA	56%	64%	50-150%
	13C8-PFOA	65%	67%	50-150%
	13C9-PFNA	66%	70%	50-150%
	13C6-PFDA	66%	65%	50-150%
	13C7-PFUnDA	52%	61%	50-150%
	13C2-PFDoDA	55%	58%	50-150%
	13C2-PFTeDA	40% [d]	50%	50-150%
	13C3-PFBS	43% [d]	60%	50-150%
	13C3-PFHxS	58%	65%	50-150%
	13C8-PFOS	60%	65%	50-150%
	13C8-FOSA	50%	61%	50-150%
	d3-MeFOSAA	86%	78%	50-150%
	d5-EtFOSAA	86%	73%	50-150%
	13C2-4:2FTS	50%	58%	50-150%
	13C2-6:2FTS	69%	65%	50-150%
	13C2-8:2FTS	69%	67%	50-150%
	13C3-HFPO-DA	41% [d]	53%	50-150%

(a) Result is from Run# 2
(b) Associated ID Standard outside control limits.
(c) Associated BS outside control limits high, sample was ND.
(d) Outside control limits.

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0287-028.0-20230504		
Lab Sample ID:	FC5867-20	**Date Sampled:**	05/04/23
Matrix:	AQ - Ground Water	**Date Received:**	05/05/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	KSC-CRCA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q109838.D	1	05/26/23 01:18	LR	05/12/23 15:49	OP96868	S2Q1547
Run #2	2Q109906.D	10	05/26/23 21:20	LR	05/12/23 15:49	OP96868	S2Q1548

	Initial Volume	Final Volume
Run #1	135 ml	1.0 ml
Run #2	135 ml	1.0 ml

CAS No.	Compound	Result	PQL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	0.922 [a]	0.15	0.037	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0043	0.0074	0.0019	ug/l	I
307-24-4	Perfluorohexanoic acid	0.0032	0.0074	0.0019	ug/l	I
375-85-9	Perfluoroheptanoic acid	0.0021	0.0074	0.0019	ug/l	I
335-67-1	Perfluorooctanoic acid	0.0033	0.0074	0.0019	ug/l	I
375-95-1	Perfluorononanoic acid	0.0019 U	0.0074	0.0019	ug/l	
335-76-2	Perfluorodecanoic acid	0.0019 U	0.0074	0.0019	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0019 U	0.0074	0.0019	ug/l	
307-55-1	Perfluorododecanoic acid	0.0019 U	0.0074	0.0019	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0019 U	0.0074	0.0019	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0019 U	0.0074	0.0019	ug/l	
PERFLUOROALKYLSULFONIC ACIDS						
375-73-5	Perfluorobutanesulfonic acid	0.0034	0.0074	0.0019	ug/l	I
2706-91-4	Perfluoropentanesulfonic acid	0.0019 U	0.0074	0.0019	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0042	0.0074	0.0019	ug/l	I
375-92-8	Perfluoroheptanesulfonic acid	0.0019 U	0.0074	0.0019	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0094	0.0074	0.0019	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0019 U	0.0074	0.0019	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0019 U	0.0074	0.0019	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA [b]	0.019 U [a]	0.074	0.019	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	0.0037 U	0.015	0.0037	ug/l	
2991-50-6	EtFOSAA	0.0037 U	0.015	0.0037	ug/l	
FLUOROTELOMER SULFONATES						
757124-72-4	4:2 Fluorotelomer sulfonate	0.0037 U	0.015	0.0037	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0037 U	0.015	0.0037	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: CRCA-DPT0287-028.0-20230504
Lab Sample ID: FC5867-20
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: KSC-CRCA

Date Sampled: 05/04/23
Date Received: 05/05/23
Percent Solids: n/a

CAS No.	Compound	Result	PQL	MDL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0037 U	0.015	0.0037	ug/l	
NEXT GENERATION PFAS ANALYTES						
13252-13-6	HFPO-DA (GenX)	0.0037 U	0.015	0.0037	ug/l	
919005-14-4	ADONA	0.0037 U	0.015	0.0037	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0037 U	0.015	0.0037	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0037 U	0.015	0.0037	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	53%	72%	50-150%
	13C5-PFPeA	59%	80%	50-150%
	13C5-PFHxA	63%	84%	50-150%
	13C4-PFHpA	65%	85%	50-150%
	13C8-PFOA	69%	83%	50-150%
	13C9-PFNA	73%	89%	50-150%
	13C6-PFDA	78%	87%	50-150%
	13C7-PFUnDA	71%	77%	50-150%
	13C2-PFDoDA	64%	69%	50-150%
	13C2-PFTeDA	55%	64%	50-150%
	13C3-PFBS	65%	81%	50-150%
	13C3-PFHxS	69%	83%	50-150%
	13C8-PFOS	81%	92%	50-150%
	13C8-FOSA	30% [c]	42% [c]	50-150%
	d3-MeFOSAA	82%	88%	50-150%
	d5-EtFOSAA	77%	94%	50-150%
	13C2-4:2FTS	65%	80%	50-150%
	13C2-6:2FTS	72%	84%	50-150%
	13C2-8:2FTS	79%	88%	50-150%
	13C3-HFPO-DA	57%	78%	50-150%

(a) Result is from Run# 2
(b) Associated ID Standard outside control limits.
(c) Outside control limits.

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0287-038.0-20230504		
Lab Sample ID:	FC5867-21	**Date Sampled:**	05/04/23
Matrix:	AQ - Ground Water	**Date Received:**	05/05/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	KSC-CRCA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q109907.D	1	05/26/23 21:37	LR	05/12/23 15:49	OP96868	S2Q1548
Run #2 [a]	2Q109908.D	5	05/26/23 21:55	LR	05/12/23 15:49	OP96868	S2Q1548

	Initial Volume	Final Volume
Run #1	135 ml	1.0 ml
Run #2	135 ml	1.0 ml

CAS No.	Compound	Result	PQL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	0.338 [b]	0.074	0.019	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0020	0.0074	0.0019	ug/l	I
307-24-4	Perfluorohexanoic acid	0.0019 U	0.0074	0.0019	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0019 U	0.0074	0.0019	ug/l	
335-67-1	Perfluorooctanoic acid	0.0030	0.0074	0.0019	ug/l	I
375-95-1	Perfluorononanoic acid	0.0019 U	0.0074	0.0019	ug/l	
335-76-2	Perfluorodecanoic acid	0.0019 U	0.0074	0.0019	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0019 U	0.0074	0.0019	ug/l	
307-55-1	Perfluorododecanoic acid	0.0019 U	0.0074	0.0019	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0019 U	0.0074	0.0019	ug/l	
376-06-7	Perfluorotetradecanoic acid [c]	0.0093 U [b]	0.037	0.0093	ug/l	
PERFLUOROALKYLSULFONIC ACIDS						
375-73-5	Perfluorobutanesulfonic acid	0.0021	0.0074	0.0019	ug/l	I
2706-91-4	Perfluoropentanesulfonic acid	0.0019 U	0.0074	0.0019	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0019 U	0.0074	0.0019	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0019 U	0.0074	0.0019	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0068	0.0074	0.0019	ug/l	I
68259-12-1	Perfluorononanesulfonic acid	0.0019 U	0.0074	0.0019	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0019 U	0.0074	0.0019	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA [c]	0.0093 U [b]	0.037	0.0093	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	0.0037 U	0.015	0.0037	ug/l	
2991-50-6	EtFOSAA	0.0037 U	0.015	0.0037	ug/l	
FLUOROTELOMER SULFONATES						
757124-72-4	4:2 Fluorotelomer sulfonate	0.0037 U	0.015	0.0037	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0037 U	0.015	0.0037	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0287-038.0-20230504		
Lab Sample ID:	FC5867-21	**Date Sampled:**	05/04/23
Matrix:	AQ - Ground Water	**Date Received:**	05/05/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	KSC-CRCA		

CAS No.	Compound	Result	PQL	MDL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0037 U	0.015	0.0037	ug/l	
NEXT GENERATION PFAS ANALYTES						
13252-13-6	HFPO-DA (GenX)	0.0037 U	0.015	0.0037	ug/l	
919005-14-4	ADONA	0.0037 U	0.015	0.0037	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0037 U	0.015	0.0037	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0037 U	0.015	0.0037	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	48% d	53%	50-150%
	13C5-PFPeA	52%	59%	50-150%
	13C5-PFHxA	54%	61%	50-150%
	13C4-PFHpA	57%	64%	50-150%
	13C8-PFOA	61%	64%	50-150%
	13C9-PFNA	63%	65%	50-150%
	13C6-PFDA	70%	66%	50-150%
	13C7-PFUnDA	63%	62%	50-150%
	13C2-PFDoDA	56%	59%	50-150%
	13C2-PFTeDA	26% d	43% d	50-150%
	13C3-PFBS	57%	61%	50-150%
	13C3-PFHxS	61%	65%	50-150%
	13C8-PFOS	69%	79%	50-150%
	13C8-FOSA	23% d	28% d	50-150%
	d3-MeFOSAA	76%	77%	50-150%
	d5-EtFOSAA	75%	72%	50-150%
	13C2-4:2FTS	55%	58%	50-150%
	13C2-6:2FTS	66%	64%	50-150%
	13C2-8:2FTS	69%	64%	50-150%
	13C3-HFPO-DA	50%	54%	50-150%

(a) Dilution required (ID recovery standard failure).
(b) Result is from Run# 2
(c) Associated ID Standard outside control limits.
(d) Outside control limits.

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0287-048.0-20230504		
Lab Sample ID:	FC5867-22	**Date Sampled:**	05/04/23
Matrix:	AQ - Ground Water	**Date Received:**	05/05/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	KSC-CRCA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	2Q109842.D	1	05/26/23 02:28	LR	05/12/23 15:49	OP96868	S2Q1547
Run #2 [b]	2Q109909.D	5	05/26/23 22:12	LR	05/12/23 15:49	OP96868	S2Q1548

	Initial Volume	Final Volume
Run #1	135 ml	1.0 ml
Run #2	135 ml	1.0 ml

CAS No.	Compound	Result	PQL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	0.242	0.015	0.0037	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0040	0.0074	0.0019	ug/l	I
307-24-4	Perfluorohexanoic acid	0.0032	0.0074	0.0019	ug/l	I
375-85-9	Perfluoroheptanoic acid	0.0019 U	0.0074	0.0019	ug/l	
335-67-1	Perfluorooctanoic acid	0.0038	0.0074	0.0019	ug/l	I
375-95-1	Perfluorononanoic acid	0.0019 U	0.0074	0.0019	ug/l	
335-76-2	Perfluorodecanoic acid	0.0019 U	0.0074	0.0019	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0019 U	0.0074	0.0019	ug/l	
307-55-1	Perfluorododecanoic acid	0.0093 U [c]	0.037	0.0093	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0093 U [c]	0.037	0.0093	ug/l	
376-06-7	Perfluorotetradecanoic acid [d]	0.0093 U [c]	0.037	0.0093	ug/l	
PERFLUOROALKYLSULFONIC ACIDS						
375-73-5	Perfluorobutanesulfonic acid	0.0019	0.0074	0.0019	ug/l	I
2706-91-4	Perfluoropentanesulfonic acid	0.0019 U	0.0074	0.0019	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0019 U	0.0074	0.0019	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0019 U	0.0074	0.0019	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0087	0.0074	0.0019	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0019 U	0.0074	0.0019	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0019 U	0.0074	0.0019	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA [d]	0.0093 U [c]	0.037	0.0093	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	0.0037 U	0.015	0.0037	ug/l	
2991-50-6	EtFOSAA	0.0037 U	0.015	0.0037	ug/l	
FLUOROTELOMER SULFONATES						
757124-72-4	4:2 Fluorotelomer sulfonate	0.0037 U	0.015	0.0037	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0037 U	0.015	0.0037	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0287-048.0-20230504		
Lab Sample ID:	FC5867-22	**Date Sampled:**	05/04/23
Matrix:	AQ - Ground Water	**Date Received:**	05/05/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	KSC-CRCA		

CAS No.	Compound	Result	PQL	MDL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0037 U	0.015	0.0037	ug/l	
NEXT GENERATION PFAS ANALYTES						
13252-13-6	HFPO-DA (GenX)	0.0037 U	0.015	0.0037	ug/l	
919005-14-4	ADONA	0.0037 U	0.015	0.0037	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0037 U	0.015	0.0037	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.019 U [c]	0.074	0.019	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	55%	65%	50-150%
	13C5-PFPeA	66%	80%	50-150%
	13C5-PFHxA	72%	85%	50-150%
	13C4-PFHpA	75%	88%	50-150%
	13C8-PFOA	82%	88%	50-150%
	13C9-PFNA	84%	90%	50-150%
	13C6-PFDA	83%	90%	50-150%
	13C7-PFUnDA	67%	72%	50-150%
	13C2-PFDoDA	47% [e]	56%	50-150%
	13C2-PFTeDA	12% [e]	15% [e]	50-150%
	13C3-PFBS	74%	89%	50-150%
	13C3-PFHxS	77%	90%	50-150%
	13C8-PFOS	84%	87%	50-150%
	13C8-FOSA	17% [e]	28% [e]	50-150%
	d3-MeFOSAA	83%	88%	50-150%
	d5-EtFOSAA	73%	69%	50-150%
	13C2-4:2FTS	73%	84%	50-150%
	13C2-6:2FTS	86%	86%	50-150%
	13C2-8:2FTS	82%	87%	50-150%
	13C3-HFPO-DA	67%	82%	50-150%

(a) Insufficient sample for re-extraction.
(b) Dilution required (ID recovery standard failure).
(c) Result is from Run# 2
(d) Associated ID Standard outside control limits.
(e) Outside control limits.

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0287-057.0-20230504		
Lab Sample ID:	FC5867-23	**Date Sampled:**	05/04/23
Matrix:	AQ - Ground Water	**Date Received:**	05/05/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	KSC-CRCA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q109844.D	1	05/26/23 03:03	LR	05/12/23 15:49	OP96868	S2Q1547
Run #2 [a]	2Q109910.D	5	05/26/23 22:30	LR	05/12/23 15:49	OP96868	S2Q1548

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2	125 ml	1.0 ml

CAS No.	Compound	Result	PQL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	0.0040 U	0.016	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0020 U	0.0080	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	0.0020 U	0.0080	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0020 U	0.0080	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	0.0020 U	0.0080	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0020 U	0.0080	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS						
375-73-5	Perfluorobutanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA [b]	0.0020 U	0.0080	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	0.0040 U	0.016	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0040 U	0.016	0.0040	ug/l	
FLUOROTELOMER SULFONATES						
757124-72-4	4:2 Fluorotelomer sulfonate	0.0040 U	0.016	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0040 U	0.016	0.0040	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0287-057.0-20230504		
Lab Sample ID:	FC5867-23	**Date Sampled:**	05/04/23
Matrix:	AQ - Ground Water	**Date Received:**	05/05/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	KSC-CRCA		

CAS No.	Compound	Result	PQL	MDL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0040 U	0.016	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES						
13252-13-6	HFPO-DA (GenX)	0.0040 U	0.016	0.0040	ug/l	
919005-14-4	ADONA	0.0040 U	0.016	0.0040	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0040 U	0.016	0.0040	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0040 U	0.016	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	66%	65%	50-150%
	13C5-PFPeA	68%	69%	50-150%
	13C5-PFHxA	72%	71%	50-150%
	13C4-PFHpA	72%	71%	50-150%
	13C8-PFOA	77%	72%	50-150%
	13C9-PFNA	79%	73%	50-150%
	13C6-PFDA	80%	73%	50-150%
	13C7-PFUnDA	67%	63%	50-150%
	13C2-PFDoDA	61%	58%	50-150%
	13C2-PFTeDA	57%	58%	50-150%
	13C3-PFBS	74%	75%	50-150%
	13C3-PFHxS	76%	73%	50-150%
	13C8-PFOS	82%	79%	50-150%
	13C8-FOSA	24% [c]	24% [c]	50-150%
	d3-MeFOSAA	83%	79%	50-150%
	d5-EtFOSAA	73%	78%	50-150%
	13C2-4:2FTS	72%	72%	50-150%
	13C2-6:2FTS	81%	73%	50-150%
	13C2-8:2FTS	80%	71%	50-150%
	13C3-HFPO-DA	66%	69%	50-150%

(a) Confirmation run.
(b) Associated ID Standard outside control limits.
(c) Outside control limits.

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-EB-20230504-02		
Lab Sample ID:	FC5867-24	**Date Sampled:**	05/04/23
Matrix:	AQ - Equipment Blank	**Date Received:**	05/05/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	KSC-CRCA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q109845.D	1	05/26/23 03:21	LR	05/12/23 15:49	OP96868	S2Q1547
Run #2							

	Initial Volume	Final Volume
Run #1	155 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	PQL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	0.0032 U	0.013	0.0032	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0016 U	0.0065	0.0016	ug/l	
307-24-4	Perfluorohexanoic acid	0.0016 U	0.0065	0.0016	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0016 U	0.0065	0.0016	ug/l	
335-67-1	Perfluorooctanoic acid	0.0016 U	0.0065	0.0016	ug/l	
375-95-1	Perfluorononanoic acid	0.0016 U	0.0065	0.0016	ug/l	
335-76-2	Perfluorodecanoic acid	0.0016 U	0.0065	0.0016	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0016 U	0.0065	0.0016	ug/l	
307-55-1	Perfluorododecanoic acid	0.0016 U	0.0065	0.0016	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0016 U	0.0065	0.0016	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0016 U	0.0065	0.0016	ug/l	
PERFLUOROALKYLSULFONIC ACIDS						
375-73-5	Perfluorobutanesulfonic acid	0.0016 U	0.0065	0.0016	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0016 U	0.0065	0.0016	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0016 U	0.0065	0.0016	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0016 U	0.0065	0.0016	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0016 U	0.0065	0.0016	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0016 U	0.0065	0.0016	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0016 U	0.0065	0.0016	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA	0.0016 U	0.0065	0.0016	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	0.0032 U	0.013	0.0032	ug/l	
2991-50-6	EtFOSAA	0.0032 U	0.013	0.0032	ug/l	
FLUOROTELOMER SULFONATES						
757124-72-4	4:2 Fluorotelomer sulfonate	0.0032 U	0.013	0.0032	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0032 U	0.013	0.0032	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: CRCA-EB-20230504-02
Lab Sample ID: FC5867-24
Matrix: AQ - Equipment Blank
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: KSC-CRCA

Date Sampled: 05/04/23
Date Received: 05/05/23
Percent Solids: n/a

CAS No.	Compound	Result	PQL	MDL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0032 U	0.013	0.0032	ug/l	
NEXT GENERATION PFAS ANALYTES						
13252-13-6	HFPO-DA (GenX)	0.0032 U	0.013	0.0032	ug/l	
919005-14-4	ADONA	0.0032 U	0.013	0.0032	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0032 U	0.013	0.0032	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0032 U	0.013	0.0032	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	79%		50-150%
	13C5-PFPeA	82%		50-150%
	13C5-PFHxA	84%		50-150%
	13C4-PFHpA	86%		50-150%
	13C8-PFOA	86%		50-150%
	13C9-PFNA	84%		50-150%
	13C6-PFDA	88%		50-150%
	13C7-PFUnDA	79%		50-150%
	13C2-PFDoDA	72%		50-150%
	13C2-PFTeDA	59%		50-150%
	13C3-PFBS	84%		50-150%
	13C3-PFHxS	83%		50-150%
	13C8-PFOS	85%		50-150%
	13C8-FOSA	76%		50-150%
	d3-MeFOSAA	85%		50-150%
	d5-EtFOSAA	84%		50-150%
	13C2-4:2FTS	76%		50-150%
	13C2-6:2FTS	82%		50-150%
	13C2-8:2FTS	92%		50-150%
	13C3-HFPO-DA	81%		50-150%

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0288-008.0-20230504		
Lab Sample ID:	FC5867-25	**Date Sampled:**	05/04/23
Matrix:	AQ - Ground Water	**Date Received:**	05/05/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	KSC-CRCA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q109846.D	1	05/26/23 03:38	LR	05/12/23 15:49	OP96868	S2Q1547
Run #2 [a]	2Q109913.D	5	05/26/23 23:22	LR	05/12/23 15:49	OP96868	S2Q1548

	Initial Volume	Final Volume
Run #1	135 ml	1.0 ml
Run #2	135 ml	1.0 ml

CAS No.	Compound	Result	PQL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid [b]	0.284 [c]	0.074	0.019	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0037	0.0074	0.0019	ug/l	I
307-24-4	Perfluorohexanoic acid	0.0042	0.0074	0.0019	ug/l	I
375-85-9	Perfluoroheptanoic acid	0.0030	0.0074	0.0019	ug/l	I
335-67-1	Perfluorooctanoic acid	0.0035	0.0074	0.0019	ug/l	I
375-95-1	Perfluorononanoic acid	0.0019 U	0.0074	0.0019	ug/l	
335-76-2	Perfluorodecanoic acid	0.0019 U	0.0074	0.0019	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0019 U	0.0074	0.0019	ug/l	
307-55-1	Perfluorododecanoic acid	0.0019 U	0.0074	0.0019	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0019 U	0.0074	0.0019	ug/l	
376-06-7	Perfluorotetradecanoic acid [b]	0.0019 U	0.0074	0.0019	ug/l	
PERFLUOROALKYLSULFONIC ACIDS						
375-73-5	Perfluorobutanesulfonic acid	0.0019 U	0.0074	0.0019	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0019 U	0.0074	0.0019	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0090	0.0074	0.0019	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0019 U	0.0074	0.0019	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0141	0.0074	0.0019	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0019 U	0.0074	0.0019	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0019 U	0.0074	0.0019	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA [b]	0.0093 U [c]	0.037	0.0093	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	0.0037 U	0.015	0.0037	ug/l	
2991-50-6	EtFOSAA	0.0037 U	0.015	0.0037	ug/l	
FLUOROTELOMER SULFONATES						
757124-72-4	4:2 Fluorotelomer sulfonate	0.0037 U	0.015	0.0037	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0037 U	0.015	0.0037	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0288-008.0-20230504		
Lab Sample ID:	FC5867-25	**Date Sampled:**	05/04/23
Matrix:	AQ - Ground Water	**Date Received:**	05/05/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	KSC-CRCA		

CAS No.	Compound	Result	PQL	MDL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0037 U	0.015	0.0037	ug/l	
NEXT GENERATION PFAS ANALYTES						
13252-13-6	HFPO-DA (GenX)	0.0037 U	0.015	0.0037	ug/l	
919005-14-4	ADONA	0.0037 U	0.015	0.0037	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0037 U	0.015	0.0037	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0037 U	0.015	0.0037	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	43% d	46% d	50-150%
	13C5-PFPeA	52%	55%	50-150%
	13C5-PFHxA	56%	59%	50-150%
	13C4-PFHpA	58%	59%	50-150%
	13C8-PFOA	62%	58%	50-150%
	13C9-PFNA	65%	61%	50-150%
	13C6-PFDA	68%	60%	50-150%
	13C7-PFUnDA	60%	55%	50-150%
	13C2-PFDoDA	54%	51%	50-150%
	13C2-PFTeDA	40% d	40% d	50-150%
	13C3-PFBS	59%	61%	50-150%
	13C3-PFHxS	62%	61%	50-150%
	13C8-PFOS	70%	66%	50-150%
	13C8-FOSA	18% d	27% d	50-150%
	d3-MeFOSAA	68%	68%	50-150%
	d5-EtFOSAA	64%	77%	50-150%
	13C2-4:2FTS	56%	56%	50-150%
	13C2-6:2FTS	61%	58%	50-150%
	13C2-8:2FTS	69%	58%	50-150%
	13C3-HFPO-DA	53%	51%	50-150%

(a) Dilution required (ID recovery standard failure).
(b) Associated ID Standard outside control limits.
(c) Result is from Run# 2
(d) Outside control limits.

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0288-018.0-20230504		
Lab Sample ID:	FC5867-26	**Date Sampled:**	05/04/23
Matrix:	AQ - Ground Water	**Date Received:**	05/05/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	KSC-CRCA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q109847.D	1	05/26/23 03:56	LR	05/12/23 15:49	OP96868	S2Q1547
Run #2 [a]	2Q109914.D	5	05/26/23 23:40	LR	05/12/23 15:49	OP96868	S2Q1548

	Initial Volume	Final Volume
Run #1	135 ml	1.0 ml
Run #2	135 ml	1.0 ml

CAS No.	Compound	Result	PQL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	0.581	0.015	0.0037	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0057	0.0074	0.0019	ug/l	I
307-24-4	Perfluorohexanoic acid	0.0061	0.0074	0.0019	ug/l	I
375-85-9	Perfluoroheptanoic acid	0.0032	0.0074	0.0019	ug/l	I
335-67-1	Perfluorooctanoic acid	0.0030	0.0074	0.0019	ug/l	I
375-95-1	Perfluorononanoic acid	0.0019 U	0.0074	0.0019	ug/l	
335-76-2	Perfluorodecanoic acid	0.0019 U	0.0074	0.0019	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0019 U	0.0074	0.0019	ug/l	
307-55-1	Perfluorododecanoic acid	0.0019 U	0.0074	0.0019	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0019 U	0.0074	0.0019	ug/l	
376-06-7	Perfluorotetradecanoic acid [b]	0.0093 U [c]	0.037	0.0093	ug/l	
PERFLUOROALKYLSULFONIC ACIDS						
375-73-5	Perfluorobutanesulfonic acid	0.0023	0.0074	0.0019	ug/l	I
2706-91-4	Perfluoropentanesulfonic acid	0.0019 U	0.0074	0.0019	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0119	0.0074	0.0019	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0019 U	0.0074	0.0019	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0050	0.0074	0.0019	ug/l	I
68259-12-1	Perfluorononanesulfonic acid	0.0019 U	0.0074	0.0019	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0019 U	0.0074	0.0019	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA [b]	0.0093 U [c]	0.037	0.0093	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	0.0037 U	0.015	0.0037	ug/l	
2991-50-6	EtFOSAA	0.0037 U	0.015	0.0037	ug/l	
FLUOROTELOMER SULFONATES						
757124-72-4	4:2 Fluorotelomer sulfonate	0.0037 U	0.015	0.0037	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0037 U	0.015	0.0037	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0288-018.0-20230504		
Lab Sample ID:	FC5867-26	**Date Sampled:**	05/04/23
Matrix:	AQ - Ground Water	**Date Received:**	05/05/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	KSC-CRCA		

CAS No.	Compound	Result	PQL	MDL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0037 U	0.015	0.0037	ug/l	
NEXT GENERATION PFAS ANALYTES						
13252-13-6	HFPO-DA (GenX)	0.0037 U	0.015	0.0037	ug/l	
919005-14-4	ADONA	0.0037 U	0.015	0.0037	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0037 U	0.015	0.0037	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0037 U	0.015	0.0037	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	66%	78%	50-150%
	13C5-PFPeA	71%	83%	50-150%
	13C5-PFHxA	79%	86%	50-150%
	13C4-PFHpA	84%	86%	50-150%
	13C8-PFOA	95%	88%	50-150%
	13C9-PFNA	99%	86%	50-150%
	13C6-PFDA	98%	82%	50-150%
	13C7-PFUnDA	79%	70%	50-150%
	13C2-PFDoDA	59%	54%	50-150%
	13C2-PFTeDA	22% d	33% d	50-150%
	13C3-PFBS	77%	83%	50-150%
	13C3-PFHxS	84%	90%	50-150%
	13C8-PFOS	96%	85%	50-150%
	13C8-FOSA	14% d	20% d	50-150%
	d3-MeFOSAA	96%	89%	50-150%
	d5-EtFOSAA	82%	82%	50-150%
	13C2-4:2FTS	81%	87%	50-150%
	13C2-6:2FTS	100%	89%	50-150%
	13C2-8:2FTS	97%	78%	50-150%
	13C3-HFPO-DA	72%	83%	50-150%

(a) Dilution required (ID recovery standard failure).
(b) Associated ID Standard outside control limits.
(c) Result is from Run# 2
(d) Outside control limits.

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: CRCA-DPT0288-028.0-20230504
Lab Sample ID: FC5867-27
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: KSC-CRCA

Date Sampled: 05/04/23
Date Received: 05/05/23
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q109848.D	1	05/26/23 04:13	LR	05/12/23 15:49	OP96868	S2Q1547
Run #2 [a]	2Q109915.D	5	05/26/23 23:57	LR	05/12/23 15:49	OP96868	S2Q1548

	Initial Volume	Final Volume
Run #1	135 ml	1.0 ml
Run #2	135 ml	1.0 ml

CAS No.	Compound	Result	PQL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	0.230	0.015	0.0037	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0026	0.0074	0.0019	ug/l	I
307-24-4	Perfluorohexanoic acid	0.0028	0.0074	0.0019	ug/l	I
375-85-9	Perfluoroheptanoic acid	0.0019 U	0.0074	0.0019	ug/l	
335-67-1	Perfluorooctanoic acid	0.0019 U	0.0074	0.0019	ug/l	
375-95-1	Perfluorononanoic acid	0.0019 U	0.0074	0.0019	ug/l	
335-76-2	Perfluorodecanoic acid	0.0019 U	0.0074	0.0019	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0019 U	0.0074	0.0019	ug/l	
307-55-1	Perfluorododecanoic acid	0.0019 U	0.0074	0.0019	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0019 U	0.0074	0.0019	ug/l	
376-06-7	Perfluorotetradecanoic acid [b]	0.0093 U [c]	0.037	0.0093	ug/l	
PERFLUOROALKYLSULFONIC ACIDS						
375-73-5	Perfluorobutanesulfonic acid	0.0031	0.0074	0.0019	ug/l	I
2706-91-4	Perfluoropentanesulfonic acid	0.0019 U	0.0074	0.0019	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0038	0.0074	0.0019	ug/l	I
375-92-8	Perfluoroheptanesulfonic acid	0.0019 U	0.0074	0.0019	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0038	0.0074	0.0019	ug/l	I
68259-12-1	Perfluorononanesulfonic acid	0.0019 U	0.0074	0.0019	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0019 U	0.0074	0.0019	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA [b]	0.0093 U [c]	0.037	0.0093	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	0.0037 U	0.015	0.0037	ug/l	
2991-50-6	EtFOSAA	0.0037 U	0.015	0.0037	ug/l	
FLUOROTELOMER SULFONATES						
757124-72-4	4:2 Fluorotelomer sulfonate	0.0037 U	0.015	0.0037	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0037 U	0.015	0.0037	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0288-028.0-20230504		
Lab Sample ID:	FC5867-27	**Date Sampled:**	05/04/23
Matrix:	AQ - Ground Water	**Date Received:**	05/05/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	KSC-CRCA		

CAS No.	Compound	Result	PQL	MDL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0037 U	0.015	0.0037	ug/l	
NEXT GENERATION PFAS ANALYTES						
13252-13-6	HFPO-DA (GenX)	0.0037 U	0.015	0.0037	ug/l	
919005-14-4	ADONA	0.0037 U	0.015	0.0037	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0037 U	0.015	0.0037	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0037 U	0.015	0.0037	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	60%	63%	50-150%
	13C5-PFPeA	67%	70%	50-150%
	13C5-PFHxA	72%	71%	50-150%
	13C4-PFHpA	76%	73%	50-150%
	13C8-PFOA	83%	73%	50-150%
	13C9-PFNA	87%	73%	50-150%
	13C6-PFDA	90%	73%	50-150%
	13C7-PFUnDA	71%	65%	50-150%
	13C2-PFDoDA	62%	55%	50-150%
	13C2-PFTeDA	25% d	43% d	50-150%
	13C3-PFBS	73%	73%	50-150%
	13C3-PFHxS	79%	73%	50-150%
	13C8-PFOS	85%	84%	50-150%
	13C8-FOSA	38% d	44% d	50-150%
	d3-MeFOSAA	93%	84%	50-150%
	d5-EtFOSAA	87%	76%	50-150%
	13C2-4:2FTS	77%	74%	50-150%
	13C2-6:2FTS	93%	74%	50-150%
	13C2-8:2FTS	113%	76%	50-150%
	13C3-HFPO-DA	66%	65%	50-150%

(a) Dilution required (ID recovery standard failure).
(b) Associated ID Standard outside control limits.
(c) Result is from Run# 2
(d) Outside control limits.

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0288-038.0-20230505		
Lab Sample ID:	FC5867-28	**Date Sampled:**	05/05/23
Matrix:	AQ - Ground Water	**Date Received:**	05/05/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	KSC-CRCA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q109849.D	1	05/26/23 04:31	LR	05/12/23 15:49	OP96868	S2Q1547
Run #2 [a]	2Q109916.D	5	05/27/23 00:15	LR	05/12/23 15:49	OP96868	S2Q1548

	Initial Volume	Final Volume
Run #1	140 ml	1.0 ml
Run #2	140 ml	1.0 ml

CAS No.	Compound	Result	PQL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	0.205	0.014	0.0036	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0053	0.0071	0.0018	ug/l	I
307-24-4	Perfluorohexanoic acid	0.0042	0.0071	0.0018	ug/l	I
375-85-9	Perfluoroheptanoic acid	0.0027	0.0071	0.0018	ug/l	I
335-67-1	Perfluorooctanoic acid	0.0021	0.0071	0.0018	ug/l	I
375-95-1	Perfluorononanoic acid	0.0018 U	0.0071	0.0018	ug/l	
335-76-2	Perfluorodecanoic acid	0.0018 U	0.0071	0.0018	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0018 U	0.0071	0.0018	ug/l	
307-55-1	Perfluorododecanoic acid	0.0018 U	0.0071	0.0018	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0018 U	0.0071	0.0018	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0018 U	0.0071	0.0018	ug/l	
PERFLUOROALKYLSULFONIC ACIDS						
375-73-5	Perfluorobutanesulfonic acid	0.0018 U	0.0071	0.0018	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0018 U	0.0071	0.0018	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0053	0.0071	0.0018	ug/l	I
375-92-8	Perfluoroheptanesulfonic acid	0.0018 U	0.0071	0.0018	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0027	0.0071	0.0018	ug/l	I
68259-12-1	Perfluorononanesulfonic acid	0.0018 U	0.0071	0.0018	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0018 U	0.0071	0.0018	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA [b]	0.0089 U [c]	0.036	0.0089	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	0.0036 U	0.014	0.0036	ug/l	
2991-50-6	EtFOSAA	0.0036 U	0.014	0.0036	ug/l	
FLUOROTELOMER SULFONATES						
757124-72-4	4:2 Fluorotelomer sulfonate	0.0036 U	0.014	0.0036	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0036 U	0.014	0.0036	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0288-038.0-20230505		
Lab Sample ID:	FC5867-28	**Date Sampled:**	05/05/23
Matrix:	AQ - Ground Water	**Date Received:**	05/05/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	KSC-CRCA		

CAS No.	Compound	Result	PQL	MDL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0036 U	0.014	0.0036	ug/l	
NEXT GENERATION PFAS ANALYTES						
13252-13-6	HFPO-DA (GenX)	0.0036 U	0.014	0.0036	ug/l	
919005-14-4	ADONA	0.0036 U	0.014	0.0036	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0036 U	0.014	0.0036	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0036 U	0.014	0.0036	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	66%	72%	50-150%
	13C5-PFPeA	70%	76%	50-150%
	13C5-PFHxA	77%	78%	50-150%
	13C4-PFHpA	78%	78%	50-150%
	13C8-PFOA	88%	78%	50-150%
	13C9-PFNA	90%	80%	50-150%
	13C6-PFDA	98%	80%	50-150%
	13C7-PFUnDA	83%	70%	50-150%
	13C2-PFDoDA	75%	64%	50-150%
	13C2-PFTeDA	63%	58%	50-150%
	13C3-PFBS	75%	79%	50-150%
	13C3-PFHxS	81%	81%	50-150%
	13C8-PFOS	90%	82%	50-150%
	13C8-FOSA	22% d	31% d	50-150%
	d3-MeFOSAA	102%	86%	50-150%
	d5-EtFOSAA	91%	83%	50-150%
	13C2-4:2FTS	77%	76%	50-150%
	13C2-6:2FTS	92%	79%	50-150%
	13C2-8:2FTS	101%	79%	50-150%
	13C3-HFPO-DA	74%	74%	50-150%

(a) Dilution required (ID recovery standard failure).
(b) Associated ID Standard outside control limits.
(c) Result is from Run# 2
(d) Outside control limits.

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0288-048.0-20230505		
Lab Sample ID:	FC5867-29	**Date Sampled:**	05/05/23
Matrix:	AQ - Ground Water	**Date Received:**	05/05/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	KSC-CRCA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q110238.D	1	06/05/23 21:51	LR	05/31/23 13:05	OP97141	S2Q1554
Run #2 [a]	2Q109850.D	1	05/26/23 04:48	LR	05/12/23 15:49	OP96868	S2Q1547

	Initial Volume	Final Volume
Run #1	145 ml	1.0 ml
Run #2	140 ml	1.0 ml

CAS No.	Compound	Result	PQL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	0.0368	0.014	0.0034	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0029	0.0069	0.0017	ug/l	I
307-24-4	Perfluorohexanoic acid	0.0025	0.0069	0.0017	ug/l	I
375-85-9	Perfluoroheptanoic acid	0.0017 U	0.0069	0.0017	ug/l	
335-67-1	Perfluorooctanoic acid	0.0017 U	0.0069	0.0017	ug/l	
375-95-1	Perfluorononanoic acid	0.0017 U	0.0069	0.0017	ug/l	
335-76-2	Perfluorodecanoic acid	0.0017 U	0.0069	0.0017	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0017 U	0.0069	0.0017	ug/l	
307-55-1	Perfluorododecanoic acid	0.0017 U	0.0069	0.0017	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0017 U	0.0069	0.0017	ug/l	
376-06-7	Perfluorotetradecanoic acid [b]	0.0017 U	0.0069	0.0017	ug/l	
PERFLUOROALKYLSULFONIC ACIDS						
375-73-5	Perfluorobutanesulfonic acid	0.0017 U	0.0069	0.0017	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0017 U	0.0069	0.0017	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0024	0.0069	0.0017	ug/l	I
375-92-8	Perfluoroheptanesulfonic acid	0.0017 U	0.0069	0.0017	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0018	0.0069	0.0017	ug/l	I
68259-12-1	Perfluorononanesulfonic acid	0.0017 U	0.0069	0.0017	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0017 U	0.0069	0.0017	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA [b]	0.0017 U	0.0069	0.0017	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	0.0034 U	0.014	0.0034	ug/l	
2991-50-6	EtFOSAA	0.0034 U	0.014	0.0034	ug/l	
FLUOROTELOMER SULFONATES						
757124-72-4	4:2 Fluorotelomer sulfonate	0.0034 U	0.014	0.0034	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0034 U	0.014	0.0034	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0288-048.0-20230505		
Lab Sample ID:	FC5867-29	**Date Sampled:**	05/05/23
Matrix:	AQ - Ground Water	**Date Received:**	05/05/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	KSC-CRCA		

CAS No.	Compound	Result	PQL	MDL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0034 U	0.014	0.0034	ug/l	
NEXT GENERATION PFAS ANALYTES						
13252-13-6	HFPO-DA (GenX)	0.0034 U	0.014	0.0034	ug/l	
919005-14-4	ADONA	0.0034 U	0.014	0.0034	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0034 U	0.014	0.0034	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0034 U	0.014	0.0034	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	55%	59%	50-150%
	13C5-PFPeA	60%	64%	50-150%
	13C5-PFHxA	66%	69%	50-150%
	13C4-PFHpA	67%	72%	50-150%
	13C8-PFOA	72%	78%	50-150%
	13C9-PFNA	73%	82%	50-150%
	13C6-PFDA	72%	82%	50-150%
	13C7-PFUnDA	64%	72%	50-150%
	13C2-PFDoDA	56%	55%	50-150%
	13C2-PFTeDA	42% [c]	14% [c]	50-150%
	13C3-PFBS	64%	69%	50-150%
	13C3-PFHxS	69%	75%	50-150%
	13C8-PFOS	67%	81%	50-150%
	13C8-FOSA	41% [c]	16% [c]	50-150%
	d3-MeFOSAA	69%	81%	50-150%
	d5-EtFOSAA	65%	69%	50-150%
	13C2-4:2FTS	66%	72%	50-150%
	13C2-6:2FTS	72%	79%	50-150%
	13C2-8:2FTS	68%	78%	50-150%
	13C3-HFPO-DA	65%	65%	50-150%

(a) Confirmation run.
(b) Associated ID Standard outside control limits. Confirmed by re-extraction and reanalysis.
(c) Outside control limits.

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0288-057.0-20230505		
Lab Sample ID:	FC5867-30	**Date Sampled:**	05/05/23
Matrix:	AQ - Ground Water	**Date Received:**	05/05/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	KSC-CRCA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q109851.D	1	05/26/23 05:06	LR	05/12/23 15:49	OP96868	S2Q1547
Run #2 [a]	2Q109918.D	5	05/27/23 00:50	LR	05/12/23 15:49	OP96868	S2Q1548

	Initial Volume	Final Volume
Run #1	140 ml	1.0 ml
Run #2	140 ml	1.0 ml

CAS No.	Compound	Result	PQL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	0.0036 U	0.014	0.0036	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0018 U	0.0071	0.0018	ug/l	
307-24-4	Perfluorohexanoic acid	0.0018 U	0.0071	0.0018	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0018 U	0.0071	0.0018	ug/l	
335-67-1	Perfluorooctanoic acid	0.0018 U	0.0071	0.0018	ug/l	
375-95-1	Perfluorononanoic acid	0.0018 U	0.0071	0.0018	ug/l	
335-76-2	Perfluorodecanoic acid	0.0018 U	0.0071	0.0018	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0018 U	0.0071	0.0018	ug/l	
307-55-1	Perfluorododecanoic acid	0.0018 U	0.0071	0.0018	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0018 U	0.0071	0.0018	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0018 U	0.0071	0.0018	ug/l	
PERFLUOROALKYLSULFONIC ACIDS						
375-73-5	Perfluorobutanesulfonic acid	0.0018 U	0.0071	0.0018	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0018 U	0.0071	0.0018	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0018 U	0.0071	0.0018	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0018 U	0.0071	0.0018	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0018 U	0.0071	0.0018	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0018 U	0.0071	0.0018	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0018 U	0.0071	0.0018	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA [b]	0.0089 U [c]	0.036	0.0089	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	0.0036 U	0.014	0.0036	ug/l	
2991-50-6	EtFOSAA	0.0036 U	0.014	0.0036	ug/l	
FLUOROTELOMER SULFONATES						
757124-72-4	4:2 Fluorotelomer sulfonate	0.0036 U	0.014	0.0036	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0036 U	0.014	0.0036	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0288-057.0-20230505		
Lab Sample ID:	FC5867-30	**Date Sampled:**	05/05/23
Matrix:	AQ - Ground Water	**Date Received:**	05/05/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	KSC-CRCA		

CAS No.	Compound	Result	PQL	MDL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0036 U	0.014	0.0036	ug/l	
NEXT GENERATION PFAS ANALYTES						
13252-13-6	HFPO-DA (GenX)	0.0036 U	0.014	0.0036	ug/l	
919005-14-4	ADONA	0.0036 U	0.014	0.0036	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0036 U	0.014	0.0036	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0036 U	0.014	0.0036	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	73%	76%	50-150%
	13C5-PFPeA	77%	81%	50-150%
	13C5-PFHxA	80%	84%	50-150%
	13C4-PFHpA	81%	85%	50-150%
	13C8-PFOA	88%	82%	50-150%
	13C9-PFNA	89%	84%	50-150%
	13C6-PFDA	92%	82%	50-150%
	13C7-PFUnDA	81%	74%	50-150%
	13C2-PFDoDA	74%	66%	50-150%
	13C2-PFTeDA	67%	64%	50-150%
	13C3-PFBS	82%	84%	50-150%
	13C3-PFHxS	85%	87%	50-150%
	13C8-PFOS	85%	86%	50-150%
	13C8-FOSA	34% d	37% d	50-150%
	d3-MeFOSAA	98%	84%	50-150%
	d5-EtFOSAA	91%	80%	50-150%
	13C2-4:2FTS	82%	85%	50-150%
	13C2-6:2FTS	91%	85%	50-150%
	13C2-8:2FTS	90%	80%	50-150%
	13C3-HFPO-DA	74%	78%	50-150%

(a) Dilution required (ID recovery standard failure).
(b) Associated ID Standard outside control limits.
(c) Result is from Run# 2
(d) Outside control limits.

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0289-008.0-20230505		
Lab Sample ID:	FC5867-31	**Date Sampled:**	05/05/23
Matrix:	AQ - Ground Water	**Date Received:**	05/05/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	KSC-CRCA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q110239.D	1	06/05/23 22:09	LR	05/31/23 13:05	OP97141	S2Q1554
Run #2 [a]	2Q109854.D	1	05/26/23 05:58	LR	05/12/23 15:49	OP96868	S2Q1547

	Initial Volume	Final Volume
Run #1	135 ml	1.0 ml
Run #2	135 ml	1.0 ml

CAS No.	Compound	Result	PQL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid [b]	0.0836	0.015	0.0037	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0019 U	0.0074	0.0019	ug/l	
307-24-4	Perfluorohexanoic acid	0.0019 U	0.0074	0.0019	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0019 U	0.0074	0.0019	ug/l	
335-67-1	Perfluorooctanoic acid	0.0019 U	0.0074	0.0019	ug/l	
375-95-1	Perfluorononanoic acid	0.0019 U	0.0074	0.0019	ug/l	
335-76-2	Perfluorodecanoic acid	0.0019 U	0.0074	0.0019	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0019 U	0.0074	0.0019	ug/l	
307-55-1	Perfluorododecanoic acid	0.0019 U	0.0074	0.0019	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0019 U	0.0074	0.0019	ug/l	
376-06-7	Perfluorotetradecanoic acid [b]	0.0019 U	0.0074	0.0019	ug/l	
PERFLUOROALKYLSULFONIC ACIDS						
375-73-5	Perfluorobutanesulfonic acid	0.0019 U	0.0074	0.0019	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0019 U	0.0074	0.0019	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0040	0.0074	0.0019	ug/l	I
375-92-8	Perfluoroheptanesulfonic acid	0.0019 U	0.0074	0.0019	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0076	0.0074	0.0019	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0019 U	0.0074	0.0019	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0019 U	0.0074	0.0019	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA [b]	0.0019 U	0.0074	0.0019	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	0.0037 U	0.015	0.0037	ug/l	
2991-50-6	EtFOSAA	0.0037 U	0.015	0.0037	ug/l	
FLUOROTELOMER SULFONATES						
757124-72-4	4:2 Fluorotelomer sulfonate	0.0037 U	0.015	0.0037	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0037 U	0.015	0.0037	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0289-008.0-20230505		
Lab Sample ID:	FC5867-31	**Date Sampled:**	05/05/23
Matrix:	AQ - Ground Water	**Date Received:**	05/05/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	KSC-CRCA		

CAS No.	Compound	Result	PQL	MDL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0037 U	0.015	0.0037	ug/l	
NEXT GENERATION PFAS ANALYTES						
13252-13-6	HFPO-DA (GenX)	0.0037 U	0.015	0.0037	ug/l	
919005-14-4	ADONA	0.0037 U	0.015	0.0037	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0037 U	0.015	0.0037	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0037 U	0.015	0.0037	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	48% [c]	46% [c]	50-150%
	13C5-PFPeA	51%	50%	50-150%
	13C5-PFHxA	55%	53%	50-150%
	13C4-PFHpA	56%	52%	50-150%
	13C8-PFOA	61%	57%	50-150%
	13C9-PFNA	63%	60%	50-150%
	13C6-PFDA	65%	61%	50-150%
	13C7-PFUnDA	56%	54%	50-150%
	13C2-PFDoDA	51%	46% [c]	50-150%
	13C2-PFTeDA	38% [c]	32% [c]	50-150%
	13C3-PFBS	57%	53%	50-150%
	13C3-PFHxS	59%	59%	50-150%
	13C8-PFOS	66%	63%	50-150%
	13C8-FOSA	33% [c]	20% [c]	50-150%
	d3-MeFOSAA	59%	61%	50-150%
	d5-EtFOSAA	57%	54%	50-150%
	13C2-4:2FTS	56%	52%	50-150%
	13C2-6:2FTS	58%	55%	50-150%
	13C2-8:2FTS	58%	62%	50-150%
	13C3-HFPO-DA	55%	49% [c]	50-150%

(a) Confirmation run.
(b) Associated ID Standard outside control limits. Confirmed by re-extraction and reanalysis.
(c) Outside control limits.

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0289-018.0-20230505		
Lab Sample ID:	FC5867-32	**Date Sampled:**	05/05/23
Matrix:	AQ - Ground Water	**Date Received:**	05/05/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	KSC-CRCA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q109855.D	1	05/26/23 06:16	LR	05/12/23 15:49	OP96868	S2Q1547
Run #2							

	Initial Volume	Final Volume
Run #1	135 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	PQL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	0.0494	0.015	0.0037	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0068	0.0074	0.0019	ug/l	I
307-24-4	Perfluorohexanoic acid	0.0066	0.0074	0.0019	ug/l	I
375-85-9	Perfluoroheptanoic acid	0.0040	0.0074	0.0019	ug/l	I
335-67-1	Perfluorooctanoic acid	0.0031	0.0074	0.0019	ug/l	I
375-95-1	Perfluorononanoic acid	0.0019 U	0.0074	0.0019	ug/l	
335-76-2	Perfluorodecanoic acid	0.0019 U	0.0074	0.0019	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0019 U	0.0074	0.0019	ug/l	
307-55-1	Perfluorododecanoic acid	0.0019 U	0.0074	0.0019	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0019 U	0.0074	0.0019	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0019 U	0.0074	0.0019	ug/l	
PERFLUOROALKYLSULFONIC ACIDS						
375-73-5	Perfluorobutanesulfonic acid	0.0023	0.0074	0.0019	ug/l	I
2706-91-4	Perfluoropentanesulfonic acid	0.0021	0.0074	0.0019	ug/l	I
355-46-4	Perfluorohexanesulfonic acid	0.0190	0.0074	0.0019	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0019 U	0.0074	0.0019	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0030	0.0074	0.0019	ug/l	I
68259-12-1	Perfluorononanesulfonic acid	0.0019 U	0.0074	0.0019	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0019 U	0.0074	0.0019	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA	0.0019 U	0.0074	0.0019	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	0.0037 U	0.015	0.0037	ug/l	
2991-50-6	EtFOSAA	0.0037 U	0.015	0.0037	ug/l	
FLUOROTELOMER SULFONATES						
757124-72-4	4:2 Fluorotelomer sulfonate	0.0037 U	0.015	0.0037	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0037 U	0.015	0.0037	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: CRCA-DPT0289-018.0-20230505
Lab Sample ID: FC5867-32
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: KSC-CRCA

Date Sampled: 05/05/23
Date Received: 05/05/23
Percent Solids: n/a

CAS No.	Compound	Result	PQL	MDL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0037 U	0.015	0.0037	ug/l	
NEXT GENERATION PFAS ANALYTES						
13252-13-6	HFPO-DA (GenX)	0.0037 U	0.015	0.0037	ug/l	
919005-14-4	ADONA	0.0037 U	0.015	0.0037	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0037 U	0.015	0.0037	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0037 U	0.015	0.0037	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	50%		50-150%
	13C5-PFPeA	60%		50-150%
	13C5-PFHxA	66%		50-150%
	13C4-PFHpA	68%		50-150%
	13C8-PFOA	76%		50-150%
	13C9-PFNA	78%		50-150%
	13C6-PFDA	77%		50-150%
	13C7-PFUnDA	66%		50-150%
	13C2-PFDoDA	58%		50-150%
	13C2-PFTeDA	54%		50-150%
	13C3-PFBS	65%		50-150%
	13C3-PFHxS	69%		50-150%
	13C8-PFOS	77%		50-150%
	13C8-FOSA	67%		50-150%
	d3-MeFOSAA	78%		50-150%
	d5-EtFOSAA	73%		50-150%
	13C2-4:2FTS	68%		50-150%
	13C2-6:2FTS	77%		50-150%
	13C2-8:2FTS	94%		50-150%
	13C3-HFPO-DA	61%		50-150%

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0289-028.0-20230505		
Lab Sample ID:	FC5867-33	**Date Sampled:**	05/05/23
Matrix:	AQ - Ground Water	**Date Received:**	05/05/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	KSC-CRCA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q109856.D	1	05/26/23 06:33	LR	05/12/23 15:49	OP96868	S2Q1547
Run #2 [a]	2Q109922.D	5	05/27/23 02:00	LR	05/12/23 15:49	OP96868	S2Q1548

	Initial Volume	Final Volume
Run #1	140 ml	1.0 ml
Run #2	140 ml	1.0 ml

CAS No.	Compound	Result	PQL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	0.0966 [b]	0.071	0.018	ug/l	
2706-90-3	Perfluoropentanoic acid [c]	0.0040	0.0071	0.0018	ug/l	I
307-24-4	Perfluorohexanoic acid	0.0038	0.0071	0.0018	ug/l	I
375-85-9	Perfluoroheptanoic acid	0.0026	0.0071	0.0018	ug/l	I
335-67-1	Perfluorooctanoic acid	0.0029	0.0071	0.0018	ug/l	I
375-95-1	Perfluorononanoic acid	0.0018 U	0.0071	0.0018	ug/l	
335-76-2	Perfluorodecanoic acid	0.0018 U	0.0071	0.0018	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0018 U	0.0071	0.0018	ug/l	
307-55-1	Perfluorododecanoic acid	0.0018 U	0.0071	0.0018	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0018 U	0.0071	0.0018	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0018 U	0.0071	0.0018	ug/l	
PERFLUOROALKYLSULFONIC ACIDS						
375-73-5	Perfluorobutanesulfonic acid	0.0018 U	0.0071	0.0018	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0018 U	0.0071	0.0018	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0100	0.0071	0.0018	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0018 U	0.0071	0.0018	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0052	0.0071	0.0018	ug/l	I
68259-12-1	Perfluorononanesulfonic acid	0.0018 U	0.0071	0.0018	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0018 U	0.0071	0.0018	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA [c]	0.0089 U [b]	0.036	0.0089	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	0.0036 U	0.014	0.0036	ug/l	
2991-50-6	EtFOSAA	0.0036 U	0.014	0.0036	ug/l	
FLUOROTELOMER SULFONATES						
757124-72-4	4:2 Fluorotelomer sulfonate	0.0036 U	0.014	0.0036	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0036 U	0.014	0.0036	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: CRCA-DPT0289-028.0-20230505
Lab Sample ID: FC5867-33
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: KSC-CRCA

Date Sampled: 05/05/23
Date Received: 05/05/23
Percent Solids: n/a

CAS No.	Compound	Result	PQL	MDL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0036 U	0.014	0.0036	ug/l	
NEXT GENERATION PFAS ANALYTES						
13252-13-6	HFPO-DA (GenX)	0.0036 U	0.014	0.0036	ug/l	
919005-14-4	ADONA	0.0036 U	0.014	0.0036	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0036 U	0.014	0.0036	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0036 U	0.014	0.0036	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	42% d	50%	50-150%
	13C5-PFPeA	49% d	57%	50-150%
	13C5-PFHxA	53%	61%	50-150%
	13C4-PFHpA	54%	61%	50-150%
	13C8-PFOA	60%	62%	50-150%
	13C9-PFNA	61%	62%	50-150%
	13C6-PFDA	63%	58%	50-150%
	13C7-PFUnDA	59%	57%	50-150%
	13C2-PFDoDA	56%	55%	50-150%
	13C2-PFTeDA	51%	51%	50-150%
	13C3-PFBS	54%	60%	50-150%
	13C3-PFHxS	59%	64%	50-150%
	13C8-PFOS	63%	74%	50-150%
	13C8-FOSA	29% d	34% d	50-150%
	d3-MeFOSAA	67%	69%	50-150%
	d5-EtFOSAA	65%	67%	50-150%
	13C2-4:2FTS	54%	61%	50-150%
	13C2-6:2FTS	61%	59%	50-150%
	13C2-8:2FTS	62%	62%	50-150%
	13C3-HFPO-DA	51%	57%	50-150%

(a) Dilution required (ID recovery standard failure).
(b) Result is from Run# 2
(c) Associated ID Standard outside control limits.
(d) Outside control limits.

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-FB-20230505-01		
Lab Sample ID:	FC5867-34	**Date Sampled:**	05/05/23
Matrix:	AQ - Field Blank Water	**Date Received:**	05/05/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	KSC-CRCA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q109857.D	1	05/26/23 06:51	LR	05/12/23 15:49	OP96868	S2Q1547
Run #2							

	Initial Volume	Final Volume
Run #1	170 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	PQL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	0.0029 U	0.012	0.0029	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0015 U	0.0059	0.0015	ug/l	
307-24-4	Perfluorohexanoic acid	0.0015 U	0.0059	0.0015	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0015 U	0.0059	0.0015	ug/l	
335-67-1	Perfluorooctanoic acid	0.0015 U	0.0059	0.0015	ug/l	
375-95-1	Perfluorononanoic acid	0.0015 U	0.0059	0.0015	ug/l	
335-76-2	Perfluorodecanoic acid	0.0015 U	0.0059	0.0015	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0015 U	0.0059	0.0015	ug/l	
307-55-1	Perfluorododecanoic acid	0.0015 U	0.0059	0.0015	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0015 U	0.0059	0.0015	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0015 U	0.0059	0.0015	ug/l	
PERFLUOROALKYLSULFONIC ACIDS						
375-73-5	Perfluorobutanesulfonic acid	0.0015 U	0.0059	0.0015	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0015 U	0.0059	0.0015	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0015 U	0.0059	0.0015	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0015 U	0.0059	0.0015	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0015 U	0.0059	0.0015	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0015 U	0.0059	0.0015	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0015 U	0.0059	0.0015	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA	0.0015 U	0.0059	0.0015	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	0.0029 U	0.012	0.0029	ug/l	
2991-50-6	EtFOSAA	0.0029 U	0.012	0.0029	ug/l	
FLUOROTELOMER SULFONATES						
757124-72-4	4:2 Fluorotelomer sulfonate	0.0029 U	0.012	0.0029	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0029 U	0.012	0.0029	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-FB-20230505-01		
Lab Sample ID:	FC5867-34	**Date Sampled:**	05/05/23
Matrix:	AQ - Field Blank Water	**Date Received:**	05/05/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	KSC-CRCA		

CAS No.	Compound	Result	PQL	MDL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0029 U	0.012	0.0029	ug/l	
NEXT GENERATION PFAS ANALYTES						
13252-13-6	HFPO-DA (GenX)	0.0029 U	0.012	0.0029	ug/l	
919005-14-4	ADONA	0.0029 U	0.012	0.0029	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0029 U	0.012	0.0029	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0029 U	0.012	0.0029	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	79%		50-150%
	13C5-PFPeA	81%		50-150%
	13C5-PFHxA	82%		50-150%
	13C4-PFHpA	84%		50-150%
	13C8-PFOA	85%		50-150%
	13C9-PFNA	80%		50-150%
	13C6-PFDA	71%		50-150%
	13C7-PFUnDA	58%		50-150%
	13C2-PFDoDA	56%		50-150%
	13C2-PFTeDA	54%		50-150%
	13C3-PFBS	85%		50-150%
	13C3-PFHxS	80%		50-150%
	13C8-PFOS	72%		50-150%
	13C8-FOSA	67%		50-150%
	d3-MeFOSAA	69%		50-150%
	d5-EtFOSAA	67%		50-150%
	13C2-4:2FTS	76%		50-150%
	13C2-6:2FTS	80%		50-150%
	13C2-8:2FTS	70%		50-150%
	13C3-HFPO-DA	84%		50-150%

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0289-038.0-20230505		
Lab Sample ID:	FC5867-35	**Date Sampled:**	05/05/23
Matrix:	AQ - Ground Water	**Date Received:**	05/05/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	KSC-CRCA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q109858.D	1	05/26/23 07:08	LR	05/12/23 15:49	OP96868	S2Q1547
Run #2 [a]	2Q109923.D	5	05/27/23 02:17	LR	05/12/23 15:49	OP96868	S2Q1548

	Initial Volume	Final Volume
Run #1	135 ml	1.0 ml
Run #2	135 ml	1.0 ml

CAS No.	Compound	Result	PQL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	0.159	0.015	0.0037	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0031	0.0074	0.0019	ug/l	I
307-24-4	Perfluorohexanoic acid	0.0036	0.0074	0.0019	ug/l	I
375-85-9	Perfluoroheptanoic acid	0.0021	0.0074	0.0019	ug/l	I
335-67-1	Perfluorooctanoic acid	0.0062	0.0074	0.0019	ug/l	I
375-95-1	Perfluorononanoic acid	0.0019 U	0.0074	0.0019	ug/l	
335-76-2	Perfluorodecanoic acid	0.0019 U	0.0074	0.0019	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0019 U	0.0074	0.0019	ug/l	
307-55-1	Perfluorododecanoic acid	0.0019 U	0.0074	0.0019	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0019 U	0.0074	0.0019	ug/l	
376-06-7	Perfluorotetradecanoic acid [b]	0.0019 U	0.0074	0.0019	ug/l	
PERFLUOROALKYLSULFONIC ACIDS						
375-73-5	Perfluorobutanesulfonic acid	0.0019 U	0.0074	0.0019	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0019 U	0.0074	0.0019	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0019 U	0.0074	0.0019	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0019 U	0.0074	0.0019	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0022	0.0074	0.0019	ug/l	I
68259-12-1	Perfluorononanesulfonic acid	0.0019 U	0.0074	0.0019	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0019 U	0.0074	0.0019	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA	0.0019 U	0.0074	0.0019	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	0.0037 U	0.015	0.0037	ug/l	
2991-50-6	EtFOSAA	0.0037 U	0.015	0.0037	ug/l	
FLUOROTELOMER SULFONATES						
757124-72-4	4:2 Fluorotelomer sulfonate	0.0037 U	0.015	0.0037	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0037 U	0.015	0.0037	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: CRCA-DPT0289-038.0-20230505
Lab Sample ID: FC5867-35
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: KSC-CRCA

Date Sampled: 05/05/23
Date Received: 05/05/23
Percent Solids: n/a

CAS No.	Compound	Result	PQL	MDL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0037 U	0.015	0.0037	ug/l	
NEXT GENERATION PFAS ANALYTES						
13252-13-6	HFPO-DA (GenX)	0.0037 U	0.015	0.0037	ug/l	
919005-14-4	ADONA	0.0037 U	0.015	0.0037	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0037 U	0.015	0.0037	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0037 U	0.015	0.0037	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	50%	54%	50-150%
	13C5-PFPeA	53%	58%	50-150%
	13C5-PFHxA	56%	58%	50-150%
	13C4-PFHpA	57%	59%	50-150%
	13C8-PFOA	61%	60%	50-150%
	13C9-PFNA	63%	60%	50-150%
	13C6-PFDA	63%	59%	50-150%
	13C7-PFUnDA	58%	54%	50-150%
	13C2-PFDoDA	54%	51%	50-150%
	13C2-PFTeDA	49% [c]	48% [c]	50-150%
	13C3-PFBS	57%	60%	50-150%
	13C3-PFHxS	60%	63%	50-150%
	13C8-PFOS	66%	70%	50-150%
	13C8-FOSA	57%	59%	50-150%
	d3-MeFOSAA	69%	63%	50-150%
	d5-EtFOSAA	67%	68%	50-150%
	13C2-4:2FTS	56%	60%	50-150%
	13C2-6:2FTS	63%	60%	50-150%
	13C2-8:2FTS	72%	58%	50-150%
	13C3-HFPO-DA	52%	54%	50-150%

(a) Confirmation run.
(b) Associated ID Standard outside control limits.
(c) Outside control limits.

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0289-048.0-20230505		
Lab Sample ID:	FC5867-36	**Date Sampled:**	05/05/23
Matrix:	AQ - Ground Water	**Date Received:**	05/05/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	KSC-CRCA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q109859.D	1	05/26/23 07:26	LR	05/12/23 15:49	OP96868	S2Q1547
Run #2 [a]	2Q109924.D	5	05/27/23 02:35	LR	05/12/23 15:49	OP96868	S2Q1548

	Initial Volume	Final Volume
Run #1	140 ml	1.0 ml
Run #2	140 ml	1.0 ml

CAS No.	Compound	Result	PQL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	0.386 [b]	0.071	0.018	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0045	0.0071	0.0018	ug/l	I
307-24-4	Perfluorohexanoic acid	0.0059	0.0071	0.0018	ug/l	I
375-85-9	Perfluoroheptanoic acid	0.0033	0.0071	0.0018	ug/l	I
335-67-1	Perfluorooctanoic acid	0.0110	0.0071	0.0018	ug/l	
375-95-1	Perfluorononanoic acid	0.0018 U	0.0071	0.0018	ug/l	
335-76-2	Perfluorodecanoic acid	0.0018 U	0.0071	0.0018	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0018 U	0.0071	0.0018	ug/l	
307-55-1	Perfluorododecanoic acid	0.0018 U	0.0071	0.0018	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0018 U	0.0071	0.0018	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0018 U	0.0071	0.0018	ug/l	
PERFLUOROALKYLSULFONIC ACIDS						
375-73-5	Perfluorobutanesulfonic acid	0.0018 U	0.0071	0.0018	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0018 U	0.0071	0.0018	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0018 U	0.0071	0.0018	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0018 U	0.0071	0.0018	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0028	0.0071	0.0018	ug/l	I
68259-12-1	Perfluorononanesulfonic acid	0.0018 U	0.0071	0.0018	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0018 U	0.0071	0.0018	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA [c]	0.0089 U [b]	0.036	0.0089	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	0.0036 U	0.014	0.0036	ug/l	
2991-50-6	EtFOSAA	0.0036 U	0.014	0.0036	ug/l	
FLUOROTELOMER SULFONATES						
757124-72-4	4:2 Fluorotelomer sulfonate	0.0036 U	0.014	0.0036	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0036 U	0.014	0.0036	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0289-048.0-20230505		
Lab Sample ID:	FC5867-36	**Date Sampled:**	05/05/23
Matrix:	AQ - Ground Water	**Date Received:**	05/05/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	KSC-CRCA		

CAS No.	Compound	Result	PQL	MDL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0036 U	0.014	0.0036	ug/l	
NEXT GENERATION PFAS ANALYTES						
13252-13-6	HFPO-DA (GenX)	0.0036 U	0.014	0.0036	ug/l	
919005-14-4	ADONA	0.0036 U	0.014	0.0036	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0036 U	0.014	0.0036	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0036 U	0.014	0.0036	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	47% d	55%	50-150%
	13C5-PFPeA	53%	62%	50-150%
	13C5-PFHxA	57%	65%	50-150%
	13C4-PFHpA	58%	65%	50-150%
	13C8-PFOA	64%	66%	50-150%
	13C9-PFNA	67%	67%	50-150%
	13C6-PFDA	69%	66%	50-150%
	13C7-PFUnDA	61%	60%	50-150%
	13C2-PFDoDA	58%	56%	50-150%
	13C2-PFTeDA	55%	54%	50-150%
	13C3-PFBS	59%	67%	50-150%
	13C3-PFHxS	62%	70%	50-150%
	13C8-PFOS	68%	71%	50-150%
	13C8-FOSA	27% d	30% d	50-150%
	d3-MeFOSAA	69%	66%	50-150%
	d5-EtFOSAA	66%	63%	50-150%
	13C2-4:2FTS	58%	64%	50-150%
	13C2-6:2FTS	64%	64%	50-150%
	13C2-8:2FTS	68%	62%	50-150%
	13C3-HFPO-DA	54%	56%	50-150%

(a) Dilution required (ID recovery standard failure).
(b) Result is from Run# 2
(c) Associated ID Standard outside control limits.
(d) Outside control limits.

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0289-057.0-20230505		
Lab Sample ID:	FC5867-37	**Date Sampled:**	05/05/23
Matrix:	AQ - Ground Water	**Date Received:**	05/05/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	KSC-CRCA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q109860.D	1	05/26/23 07:43	LR	05/12/23 15:49	OP96868	S2Q1547
Run #2 [a]	2Q109925.D	5	05/27/23 02:52	LR	05/12/23 15:49	OP96868	S2Q1548

	Initial Volume	Final Volume
Run #1	135 ml	1.0 ml
Run #2	135 ml	1.0 ml

CAS No.	Compound	Result	PQL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid [b]	0.0037 U	0.015	0.0037	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0019 U	0.0074	0.0019	ug/l	
307-24-4	Perfluorohexanoic acid	0.0019 U	0.0074	0.0019	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0019 U	0.0074	0.0019	ug/l	
335-67-1	Perfluorooctanoic acid	0.0019 U	0.0074	0.0019	ug/l	
375-95-1	Perfluorononanoic acid	0.0019 U	0.0074	0.0019	ug/l	
335-76-2	Perfluorodecanoic acid	0.0019 U	0.0074	0.0019	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0019 U	0.0074	0.0019	ug/l	
307-55-1	Perfluorododecanoic acid	0.0019 U	0.0074	0.0019	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0019 U	0.0074	0.0019	ug/l	
376-06-7	Perfluorotetradecanoic acid [b]	0.0019 U	0.0074	0.0019	ug/l	
PERFLUOROALKYLSULFONIC ACIDS						
375-73-5	Perfluorobutanesulfonic acid	0.0019 U	0.0074	0.0019	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0019 U	0.0074	0.0019	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0019 U	0.0074	0.0019	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0019 U	0.0074	0.0019	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0048	0.0074	0.0019	ug/l	I
68259-12-1	Perfluorononanesulfonic acid	0.0019 U	0.0074	0.0019	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0019 U	0.0074	0.0019	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA	0.0019 U	0.0074	0.0019	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	0.0037 U	0.015	0.0037	ug/l	
2991-50-6	EtFOSAA	0.0037 U	0.015	0.0037	ug/l	
FLUOROTELOMER SULFONATES						
757124-72-4	4:2 Fluorotelomer sulfonate	0.0037 U	0.015	0.0037	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0037 U	0.015	0.0037	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-DPT0289-057.0-20230505		
Lab Sample ID:	FC5867-37	**Date Sampled:**	05/05/23
Matrix:	AQ - Ground Water	**Date Received:**	05/05/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	KSC-CRCA		

CAS No.	Compound	Result	PQL	MDL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0037 U	0.015	0.0037	ug/l	
NEXT GENERATION PFAS ANALYTES						
13252-13-6	HFPO-DA (GenX)	0.0037 U	0.015	0.0037	ug/l	
919005-14-4	ADONA	0.0037 U	0.015	0.0037	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0037 U	0.015	0.0037	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0037 U	0.015	0.0037	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	46% [c]	49% [c]	50-150%
	13C5-PFPeA	53%	57%	50-150%
	13C5-PFHxA	55%	60%	50-150%
	13C4-PFHpA	56%	60%	50-150%
	13C8-PFOA	60%	59%	50-150%
	13C9-PFNA	62%	61%	50-150%
	13C6-PFDA	62%	60%	50-150%
	13C7-PFUnDA	55%	54%	50-150%
	13C2-PFDoDA	51%	49% [c]	50-150%
	13C2-PFTeDA	44% [c]	44% [c]	50-150%
	13C3-PFBS	60%	63%	50-150%
	13C3-PFHxS	59%	64%	50-150%
	13C8-PFOS	66%	63%	50-150%
	13C8-FOSA	55%	58%	50-150%
	d3-MeFOSAA	65%	66%	50-150%
	d5-EtFOSAA	61%	59%	50-150%
	13C2-4:2FTS	55%	59%	50-150%
	13C2-6:2FTS	61%	57%	50-150%
	13C2-8:2FTS	59%	61%	50-150%
	13C3-HFPO-DA	54%	55%	50-150%

(a) Confirmation run.
(b) Associated ID Standard outside control limits.
(c) Outside control limits.

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-FD-20230504-01		
Lab Sample ID:	FC5867-38	**Date Sampled:**	05/04/23
Matrix:	AQ - Ground Water	**Date Received:**	05/05/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	KSC-CRCA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q110240.D	1	06/05/23 22:26	LR	05/31/23 13:05	OP97141	S2Q1554
Run #2	2Q109862.D	1.22	05/26/23 08:18	LR	05/12/23 15:49	OP96868	S2Q1547

	Initial Volume	Final Volume
Run #1	140 ml	1.0 ml
Run #2	140 ml	1.0 ml

CAS No.	Compound	Result	PQL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	0.240 [a]	0.017	0.0044	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0030 [a]	0.0087	0.0022	ug/l	I
307-24-4	Perfluorohexanoic acid	0.0035 [a]	0.0087	0.0022	ug/l	I
375-85-9	Perfluoroheptanoic acid	0.0030 [a]	0.0087	0.0022	ug/l	I
335-67-1	Perfluorooctanoic acid	0.0030 [a]	0.0087	0.0022	ug/l	I
375-95-1	Perfluorononanoic acid	0.0022 U [a]	0.0087	0.0022	ug/l	
335-76-2	Perfluorodecanoic acid	0.0018 U	0.0071	0.0018	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0018 U	0.0071	0.0018	ug/l	
307-55-1	Perfluorododecanoic acid [b]	0.0018 U	0.0071	0.0018	ug/l	
72629-94-8	Perfluorotridecanoic acid [b]	0.0018 U	0.0071	0.0018	ug/l	
376-06-7	Perfluorotetradecanoic acid [b]	0.0018 U	0.0071	0.0018	ug/l	
PERFLUOROALKYLSULFONIC ACIDS						
375-73-5	Perfluorobutanesulfonic acid	0.0022 U [a]	0.0087	0.0022	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0022 U [a]	0.0087	0.0022	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0094 [a]	0.0087	0.0022	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0018 U	0.0071	0.0018	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0124	0.0071	0.0018	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0018 U	0.0071	0.0018	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0018 U	0.0071	0.0018	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA [b]	0.0022 U [a]	0.0087	0.0022	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	0.0036 U	0.014	0.0036	ug/l	
2991-50-6	EtFOSAA	0.0036 U	0.014	0.0036	ug/l	
FLUOROTELOMER SULFONATES						
757124-72-4	4:2 Fluorotelomer sulfonate	0.0044 U [a]	0.017	0.0044	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0044 U [a]	0.017	0.0044	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-FD-20230504-01		
Lab Sample ID:	FC5867-38	**Date Sampled:**	05/04/23
Matrix:	AQ - Ground Water	**Date Received:**	05/05/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	KSC-CRCA		

CAS No.	Compound	Result	PQL	MDL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0044 U [a]	0.017	0.0044	ug/l	
NEXT GENERATION PFAS ANALYTES						
13252-13-6	HFPO-DA (GenX)	0.0044 U [a]	0.017	0.0044	ug/l	
919005-14-4	ADONA	0.0044 U [a]	0.017	0.0044	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0036 U	0.014	0.0036	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Mino [b]	0.0036 U	0.014	0.0036	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	39% [c]	54%	50-150%
	13C5-PFPeA	43% [c]	58%	50-150%
	13C5-PFHxA	48% [c]	60%	50-150%
	13C4-PFHpA	49% [c]	59%	50-150%
	13C8-PFOA	55%	59%	50-150%
	13C9-PFNA	58%	54%	50-150%
	13C6-PFDA	58%	45% [c]	50-150%
	13C7-PFUnDA	50%	32% [c]	50-150%
	13C2-PFDoDA	46% [c]	26% [c]	50-150%
	13C2-PFTeDA	36% [c]	18% [c]	50-150%
	13C3-PFBS	50%	64%	50-150%
	13C3-PFHxS	51%	62%	50-150%
	13C8-PFOS	56%	45% [c]	50-150%
	13C8-FOSA	31% [c]	41% [c]	50-150%
	d3-MeFOSAA	54%	39% [c]	50-150%
	d5-EtFOSAA	51%	37% [c]	50-150%
	13C2-4:2FTS	49% [c]	62%	50-150%
	13C2-6:2FTS	53%	63%	50-150%
	13C2-8:2FTS	54%	50%	50-150%
	13C3-HFPO-DA	48% [c]	58%	50-150%

(a) Result is from Run# 2
(b) Associated ID Standard outside control limits.
(c) Outside control limits.

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-FD-20230505-01		
Lab Sample ID:	FC5867-39	**Date Sampled:**	05/05/23
Matrix:	AQ - Ground Water	**Date Received:**	05/05/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	KSC-CRCA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q109863.D	1	05/26/23 08:36	LR	05/12/23 15:49	OP96868	S2Q1547
Run #2 [a]	2Q109927.D	5	05/27/23 03:28	LR	05/12/23 15:49	OP96868	S2Q1548

	Initial Volume	Final Volume
Run #1	135 ml	1.0 ml
Run #2	135 ml	1.0 ml

CAS No.	Compound	Result	PQL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid [b]	0.406 [c]	0.074	0.019	ug/l	
2706-90-3	Perfluoropentanoic acid [b]	0.0051	0.0074	0.0019	ug/l	I
307-24-4	Perfluorohexanoic acid [b]	0.0067	0.0074	0.0019	ug/l	I
375-85-9	Perfluoroheptanoic acid [b]	0.0039	0.0074	0.0019	ug/l	I
335-67-1	Perfluorooctanoic acid	0.0115	0.0074	0.0019	ug/l	
375-95-1	Perfluorononanoic acid	0.0019 U	0.0074	0.0019	ug/l	
335-76-2	Perfluorodecanoic acid	0.0019 U	0.0074	0.0019	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0019 U	0.0074	0.0019	ug/l	
307-55-1	Perfluorododecanoic acid	0.0019 U	0.0074	0.0019	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0019 U	0.0074	0.0019	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0019 U	0.0074	0.0019	ug/l	
PERFLUOROALKYLSULFONIC ACIDS						
375-73-5	Perfluorobutanesulfonic acid	0.0093 U [c]	0.037	0.0093	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0093 U [c]	0.037	0.0093	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0093 U [c]	0.037	0.0093	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0019 U	0.0074	0.0019	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0033	0.0074	0.0019	ug/l	I
68259-12-1	Perfluorononanesulfonic acid	0.0019 U	0.0074	0.0019	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0019 U	0.0074	0.0019	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA [b]	0.0093 U [c]	0.037	0.0093	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	0.0037 U	0.015	0.0037	ug/l	
2991-50-6	EtFOSAA	0.0037 U	0.015	0.0037	ug/l	
FLUOROTELOMER SULFONATES						
757124-72-4	4:2 Fluorotelomer sulfonate	0.019 U [c]	0.074	0.019	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0037 U	0.015	0.0037	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-FD-20230505-01		
Lab Sample ID:	FC5867-39	**Date Sampled:**	05/05/23
Matrix:	AQ - Ground Water	**Date Received:**	05/05/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	KSC-CRCA		

CAS No.	Compound	Result	PQL	MDL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0037 U	0.015	0.0037	ug/l	
NEXT GENERATION PFAS ANALYTES						
13252-13-6	HFPO-DA (GenX) [b]	0.0037 U	0.015	0.0037	ug/l	
919005-14-4	ADONA	0.0037 U	0.015	0.0037	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0037 U	0.015	0.0037	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0037 U	0.015	0.0037	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	40% [d]	46% [d]	50-150%
	13C5-PFPeA	44% [d]	51%	50-150%
	13C5-PFHxA	46% [d]	53%	50-150%
	13C4-PFHpA	47% [d]	51%	50-150%
	13C8-PFOA	51%	51%	50-150%
	13C9-PFNA	53%	55%	50-150%
	13C6-PFDA	56%	57%	50-150%
	13C7-PFUnDA	54%	53%	50-150%
	13C2-PFDoDA	55%	54%	50-150%
	13C2-PFTeDA	52%	52%	50-150%
	13C3-PFBS	48% [d]	54%	50-150%
	13C3-PFHxS	49% [d]	54%	50-150%
	13C8-PFOS	54%	61%	50-150%
	13C8-FOSA	22% [d]	24% [d]	50-150%
	d3-MeFOSAA	62%	62%	50-150%
	d5-EtFOSAA	60%	69%	50-150%
	13C2-4:2FTS	47% [d]	50%	50-150%
	13C2-6:2FTS	51%	52%	50-150%
	13C2-8:2FTS	59%	53%	50-150%
	13C3-HFPO-DA	46% [d]	50%	50-150%

(a) Dilution required (ID recovery standard failure).
(b) Associated ID Standard outside control limits.
(c) Result is from Run# 2
(d) Outside control limits.

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody

Tetra Tech, Inc.

CHAIN OF CUSTODY | NUMBER No. 1813 FC 5867 | PAGE 1 OF 3

PROJECT NO: 112G08970	FACILITY: KSC-CRCA	PROJECT MANAGER Chris Neumann	PHONE NUMBER (321) 636-6470
SAMPLERS (SIGNATURE) – Chuck Sorden		FIELD OPERATIONS LEADER Chuck Sorden	PHONE NUMBER (321) 591-7580
		CARRIER/WAYBILL NUMBER	

LABORATORY NAME AND CONTACT: SGS – Andrea Colby
ADDRESS: 4405 Vineland Rd. Ste. C-15
CITY, STATE: Orlando, FL

STANDARD TAT ☒
RUSH TAT ☐
☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

CONTAINER TYPE PLASTIC (P) or GLASS (G): P G G
PRESERVATIVE USED: 4°C | HCl/4°C | 4°C
TYPE OF ANALYSIS: L-CRSM537 MS-26 | V8260 TCL 42 | V8260TCL42, VMS+UNPR

	DATE YEAR 2023	TIME	SAMPLE ID	LOCATION ID	TOP DEPTH (FT)	BOTTOM DEPTH (FT)	MATRIX (GW, SO, SW, SD, QC, ETC.)	COLLECTION METHOD GRAB (G) COMP (C)	No. OF CONTAINERS				COMMENTS
1	05/03	1430	CRCA-EB-20230503-02	—	—	—	QC	G	2	X			Equipment Blank
2	〃	1505	CRCA-DPT0285-008.0-20230503	H	6	10	GW	〃	6		X	X	
3		1515	CRCA-DPT0285-013.0-20230503	H	11	15	〃		〃		〃	〃	
4		1530	CRCA-DPT0285-018.0-20230503	H	16	20							
5		1550	CRCA-DPT0285-023.0-20230503	H	21	25							
6		1610	CRCA-DPT0285-028.0-20230503	H	26	30			6		X	X	
7	05/03	1640	CRCA-DPT0285-048.0-20230503	H	46	50	GW		2	X			
8	05/04	0730	CRCA-FB-20230504-01	—	—	—	QC		2	X			Field Blank
9	〃	0745	CRCA-DPT0285-057.0-20230504	H	55	59	GW		2	X			
10		0845	CRCA-DPT0286-008.0-20230504	I	6	10	〃		6		X	X	
11		0900	CRCA-DPT0286-013.0-20230504	I	11	15			〃		〃	〃	
12		0915	CRCA-DPT0286-018.0-20230504	I	16	20							
13	05/04	0935	CRCA-DPT0286-023.0-20230504	I	21	25	GW	G	6		X	X	2.8, 3.0° (RH

INITIAL ASSESSMENT
LABEL VERIFICATION

	DATE	TIME		DATE	TIME
1. RELINQUISHED BY	05/05/23	1530	1. RECEIVED BY	5/5/23	1530
2. RELINQUISHED BY	5/5/23	1700	2. RECEIVED BY	05/05/23	1700
3. RELINQUISHED BY	DATE	TIME	3. RECEIVED BY	DATE	TIME

COMMENTS

DISTRIBUTION: WHITE (ACCOMPANIES SAMPLE) YELLOW (FIELD COPY) PINK (FILE COPY)

4/02R
FORM NO. TtNUS-001

FC5867: Chain of Custody
Page 1 of 4

Tetra Tech, Inc. CHAIN OF CUSTODY NUMBER No. 1814

PROJECT NO: 112G08970	FACILITY: KSC-CRCA	PROJECT MANAGER: Chris Newmann	PHONE NUMBER: (321) ~~591~~-630-6470	LABORATORY NAME AND CONTACT: SGS - Andrea Colby
SAMPLERS (SIGNATURE): -Chuck Sorden		FIELD OPERATIONS LEADER: Chuck Sorden	PHONE NUMBER: (321) 591-7580	ADDRESS: 4405 Vineland Rd. Ste. C-15
		CARRIER/WAYBILL NUMBER:		CITY, STATE: Orlando, FL

STANDARD TAT ☒
RUSH TAT ☐ ☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

CONTAINER TYPE PLASTIC (P) or GLASS (G): ~~P~~ G G G
PRESERVATIVE USED: 4°C / HCl / 4°C / 4°C

	DATE YEAR 2023	TIME	SAMPLE ID	LOCATION ID	TOP DEPTH (FT)	BOTTOM DEPTH (FT)	MATRIX (GW, SO, SW, SD, QC, ETC.)	COLLECTION METHOD GRAB (G) COMP (C)	No. OF CONTAINERS	TYPE OF ANALYSIS: LCGSM537 MI 28	V8260TCL 42	V8260TCL42, VMS+UMR							COMMENTS
14	05/04	0955	CRCA-DPTO286-028.0-20230504	I	26	30	GW	G	6		X	X							
15	1	1020	CRCA-DPTO286-048.0-20230504	I	46	50	1	1	2	X									
16		1055	CRCA-DPTO286-057.0-20230504	I	55	59	GW		1	1									
17		1130	CRCA-EB-20230504-01	—	—	—	QC		↓										Equipment Blank
18		1230	CRCA-DPTO287-008.0-20230504	K	6	10	GW		2										
19		1245	CRCA-DPTO287-018.0-20230504	K	16	20	1		6										MS/MSD Collected
20		1305	CRCA-DPTO287-028.0-20230504	K	26	30			2										
21		1325	CRCA-DPTO287-038.0-20230504	K	36	40			1										
22		1355	CRCA-DPTO287-048.0-20230504	K	46	50	↓												
23		1420	CRCA-DPTO287-057.0-20230504	K	55	59	GW												
24		1455	CRCA-EB-20230504-02	—	—	—	QC												Equipment Blank
25	↓	1610	CRCA-DPTO288-008.0-20230504	A	6	10	GW	↓	↓	↓									
26	05/04	1625	CRCA-DPTO288-018.0-20230504	A	16	20	GW	G	2	X									

1. RELINQUISHED BY	DATE 05/05/23	TIME 1530	1. RECEIVED BY	DATE 5/5/23	TIME 15:30
2. RELINQUISHED BY	DATE 5/5/23	TIME 1700	2. RECEIVED BY	DATE 05/05/23	TIME 17:00
3. RELINQUISHED BY	DATE	TIME	3. RECEIVED BY	DATE	TIME

COMMENTS

DISTRIBUTION: WHITE (ACCOMPANIES SAMPLE) YELLOW (FIELD COPY) PINK (FILE COPY) 4/02R
FORM NO. TtNUS-001

5.1 5

FC5867: Chain of Custody
Page 2 of 4

Tetra Tech, Inc.

CHAIN OF CUSTODY | NUMBER No. 1816 FC5867 | PAGE 3 OF 3

PROJECT NO:	FACILITY:	PROJECT MANAGER	PHONE NUMBER	LABORATORY NAME AND CONTACT:
112G08970	KSC-CRCA	Chris Neumann	(321) 636-6470	SGS — Andrea Colby
SAMPLERS (SIGNATURE)		FIELD OPERATIONS LEADER	PHONE NUMBER	ADDRESS
— Chuck Sorden		Chuck Sorden	(321) 591-7580	4405 Vineland Rd. Ste. C-15
		CARRIER/WAYBILL NUMBER		CITY, STATE
				Orlando, FL

STANDARD TAT ☒
RUSH TAT ☐ ☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

	DATE YEAR 2023	TIME	SAMPLE ID	LOCATION ID	TOP DEPTH (FT)	BOTTOM DEPTH (FT)	MATRIX (GW, SO, SW, SD, QC, ETC.)	COLLECTION METHOD GRAB (G) COMP (C)	No. OF CONTAINERS	CONTAINER TYPE PLASTIC (P) or GLASS (G): P	PRESERVATIVE USED: 4°C	TYPE OF ANALYSIS: LCQSM537 MI 26	COMMENTS
27	05/04	1645	CRCA-DPT02SS-028.0-20230504	A	26	30	GW	G	2	X			
28	05/05	0740	CRCA-DPT02SS-038.0-20230505	A	36	40	↑	↑	↑	↑			
29	↑	0800	CRCA-DPT02SS-048.0-20230505	A	46	50							
30		0820	CRCA-DPT02SS-057.0-20230505	A	55	59							
31		0920	CRCA-DPT02S9-005.0-20230505	B	6	10							
32		0935	CRCA-DPT02S9-018.0-20230505	B	16	20	↓						
33		0955	CRCA-DPT02S9-028.0-20230505	B	26	30	GW						
34		1000	CRCA-FB-20230505-01	—	—	—	QC						Field Blank
35		1045	CRCA-DPT02S9-038.0-20230505	B	36	40	GW						
36	↓	1105	CRCA-DPT02S9-048.0-20230505	B	46	50	↓						
37	05/05	1135	CRCA-DPT02S9-057.0-20230505	B	55	59	GW						
38	05/04	0000	CRCA-FD-20230504-01	—	—	—	QC	↓	↓	↓			Field Duplicate
39	05/05	0000	CRCA-FD-20230505-01	—	—	—	QC	G	2	X			Field Duplicate

	DATE	TIME		DATE	TIME
1. RELINQUISHED BY	05/05/23	1530	1. RECEIVED BY	5/5/23	15:30
2. RELINQUISHED BY	5/5/23	17:00	2. RECEIVED BY	05/05/23	17:00
3. RELINQUISHED BY	DATE	TIME	3. RECEIVED BY	DATE	TIME

COMMENTS

DISTRIBUTION: WHITE (ACCOMPANIES SAMPLE) YELLOW (FIELD COPY) PINK (FILE COPY) 4/02R
FORM NO. TtNUS-001

FC5867: Chain of Custody
Page 3 of 4

SGS Sample Receipt Summary

Job Number: FC5867 **Client:** TERTA TECH **Project:** 112G08970

Date / Time Received: 5/5/2023 5:00:00 PM **Delivery Method:** COURIER **Airbill #'s:** N/A

Therm ID: IR 1; **Therm CF:** -0.1; **# of Coolers:** 2

Cooler Temps (Raw Measured) °C: Cooler 1: (2.9); Cooler 2: (3.1);

Cooler Temps (Corrected) °C: Cooler 1: (2.8); Cooler 2: (3.0);

Cooler Information	Y	or	N
1. Custody Seals Present	☑		☐
2. Custody Seals Intact	☑		☐
3. Temp criteria achieved	☑		☐
4. Cooler temp verification	IR Gun		
5. Cooler media	Ice (Bag)		

Trip Blank Information	Y	or	N	N/A
1. Trip Blank present / cooler	☐		☑	☐
2. Trip Blank listed on COC	☐		☑	☐

	W	or	S	N/A
3. Type Of TB Received	☐		☐	☑

Sample Information	Y	or	N	N/A
1. Sample labels present on bottles	☑		☐	
2. Samples preserved properly	☑		☐	
3. Sufficient volume/containers recvd for analysis:	☑		☐	
4. Condition of sample	Intact			
5. Sample recvd within HT	☑		☐	
6. Dates/Times/IDs on COC match Sample Label	☐		☑	
7. VOCs have headspace	☐		☑	☐
8. Bottles received for unspecified tests	☐		☑	
9. Compositing instructions clear	☐		☐	☑
10. Voa Soil Kits/Jars received past 48hrs?	☐		☐	☑
11. % Solids Jar received?	☐		☐	☑
12. Residual Chlorine Present?	☐		☐	☑

Misc. Information

Number of Encores: 25-Gram _____ 5-Gram _____ Number of 5035 Field Kits: _____ Number of Lab Filtered Metals: _____

Test Strip Lot #s: pH 0-3 230320 pH 10-12 25BDH07 Other: (Specify) pH 1.0 - 12.0 222221

Residual Chlorine Test Strip Lot #: _____

Comments SAMPLE #10 ID LABEL TIME READS 0745. COC READS 0845.

SM001
Rev. Date 05/24/17

Technician: SHAYLAP Date: 5/5/2023 5:00:00 PM Reviewer: _____ Date: _____

MS Volatiles

6

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Job Number: FC5867
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VI2921-MB [a]	I756611.D	1	05/09/23	JW	n/a	n/a	VI2921

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

FC5867-2, FC5867-3, FC5867-4, FC5867-5, FC5867-6, FC5867-10, FC5867-11, FC5867-12, FC5867-13, FC5867-14

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	25	10	ug/l	
71-43-2	Benzene	ND	1.0	0.31	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.24	ug/l	
75-25-2	Bromoform	ND	1.0	0.41	ug/l	
78-93-3	2-Butanone (MEK)	ND	5.0	2.0	ug/l	
75-15-0	Carbon Disulfide	ND	2.0	0.53	ug/l	
56-23-5	Carbon Tetrachloride	ND	1.0	0.36	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.20	ug/l	
75-00-3	Chloroethane	ND	2.0	0.67	ug/l	
67-66-3	Chloroform	ND	1.0	0.30	ug/l	
110-82-7	Cyclohexane	ND	1.0	0.39	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.28	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	5.0	1.0	ug/l	
106-93-4	1,2-Dibromoethane	ND	2.0	0.28	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	0.50	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	0.32	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	0.22	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	0.26	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.34	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.31	ug/l	
75-35-4	1,1-Dichloroethylene	ND	1.0	0.32	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	0.28	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	0.22	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.43	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.29	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.21	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.36	ug/l	
76-13-1	Freon 113	ND	1.0	0.48	ug/l	
591-78-6	2-Hexanone	ND	10	2.0	ug/l	
98-82-8	Isopropylbenzene	ND	1.0	0.22	ug/l	
79-20-9	Methyl Acetate	ND	20	5.0	ug/l	
74-83-9	Methyl Bromide	ND	5.0	2.0	ug/l	
74-87-3	Methyl Chloride	ND	2.0	0.50	ug/l	
108-87-2	Methylcyclohexane	ND	1.0	0.44	ug/l	
75-09-2	Methylene Chloride	ND	5.0	2.0	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	5.0	1.0	ug/l	

Method Blank Summary

Job Number: FC5867
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VI2921-MB [a]	I756611.D	1	05/09/23	JW	n/a	n/a	VI2921

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

FC5867-2, FC5867-3, FC5867-4, FC5867-5, FC5867-6, FC5867-10, FC5867-11, FC5867-12, FC5867-13, FC5867-14

CAS No.	Compound	Result	RL	MDL	Units	Q
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.23	ug/l	
100-42-5	Styrene	ND	1.0	0.22	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.30	ug/l	
127-18-4	Tetrachloroethylene	ND	1.0	0.22	ug/l	
108-88-3	Toluene	ND	1.0	0.30	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	2.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.25	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.47	ug/l	
79-01-6	Trichloroethylene	ND	1.0	0.35	ug/l	
75-69-4	Trichlorofluoromethane	ND	2.0	0.50	ug/l	
75-01-4	Vinyl Chloride	ND	1.0	0.41	ug/l	
1330-20-7	Xylene (total)	ND	3.0	0.72	ug/l	

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	101%	83-118%
17060-07-0	1,2-Dichloroethane-D4	105%	79-125%
2037-26-5	Toluene-D8	98%	85-112%
460-00-4	4-Bromofluorobenzene	102%	83-118%

(a) Sample was treated with an anti-foaming agent.

Blank Spike Summary

Job Number: FC5867
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VI2921-BS	I756607.D	1	05/09/23	JW	n/a	n/a	VI2921

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

FC5867-2, FC5867-3, FC5867-4, FC5867-5, FC5867-6, FC5867-10, FC5867-11, FC5867-12, FC5867-13, FC5867-14

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
67-64-1	Acetone	125	117	94	50-147
71-43-2	Benzene	25	23.6	94	81-122
75-27-4	Bromodichloromethane	25	25.1	100	79-123
75-25-2	Bromoform	25	26.4	106	66-123
78-93-3	2-Butanone (MEK)	125	113	90	56-143
75-15-0	Carbon Disulfide	25	25.3	101	66-148
56-23-5	Carbon Tetrachloride	25	29.1	116	76-136
108-90-7	Chlorobenzene	25	24.4	98	82-124
75-00-3	Chloroethane	25	22.0	88	62-144
67-66-3	Chloroform	25	26.0	104	80-124
110-82-7	Cyclohexane	25	25.9	104	73-138
124-48-1	Dibromochloromethane	25	27.8	111	78-122
96-12-8	1,2-Dibromo-3-chloropropane	25	27.0	108	64-123
106-93-4	1,2-Dibromoethane	25	26.1	104	75-120
75-71-8	Dichlorodifluoromethane	25	45.8	183*	42-167
95-50-1	1,2-Dichlorobenzene	25	24.8	99	82-124
541-73-1	1,3-Dichlorobenzene	25	23.9	96	84-125
106-46-7	1,4-Dichlorobenzene	25	22.8	91	78-120
75-34-3	1,1-Dichloroethane	25	23.8	95	81-122
107-06-2	1,2-Dichloroethane	25	24.9	100	75-125
75-35-4	1,1-Dichloroethylene	25	26.5	106	78-137
156-59-2	cis-1,2-Dichloroethylene	25	25.6	102	78-120
156-60-5	trans-1,2-Dichloroethylene	25	24.9	100	76-127
78-87-5	1,2-Dichloropropane	25	23.8	95	76-124
10061-01-5	cis-1,3-Dichloropropene	25	22.8	91	75-118
10061-02-6	trans-1,3-Dichloropropene	25	22.4	90	80-120
100-41-4	Ethylbenzene	25	24.3	97	81-121
76-13-1	Freon 113	25	29.3	117	72-134
591-78-6	2-Hexanone	125	111	89	61-129
98-82-8	Isopropylbenzene	25	26.6	106	83-132
79-20-9	Methyl Acetate	125	109	87	65-126
74-83-9	Methyl Bromide	25	18.8	75	59-143
74-87-3	Methyl Chloride	25	28.0	112	50-159
108-87-2	Methylcyclohexane	25	24.7	99	76-129
75-09-2	Methylene Chloride	25	26.1	104	69-135
108-10-1	4-Methyl-2-pentanone (MIBK)	125	111	89	66-122

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FC5867
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VI2921-BS	I756607.D	1	05/09/23	JW	n/a	n/a	VI2921

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

FC5867-2, FC5867-3, FC5867-4, FC5867-5, FC5867-6, FC5867-10, FC5867-11, FC5867-12, FC5867-13, FC5867-14

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
1634-04-4	Methyl Tert Butyl Ether	25	27.0	108	72-117
100-42-5	Styrene	25	27.2	109	78-119
79-34-5	1,1,2,2-Tetrachloroethane	25	21.1	84	72-120
127-18-4	Tetrachloroethylene	25	34.7	139*	76-135
108-88-3	Toluene	25	25.2	101	80-120
120-82-1	1,2,4-Trichlorobenzene	25	27.1	108	73-129
71-55-6	1,1,1-Trichloroethane	25	28.8	115	75-130
79-00-5	1,1,2-Trichloroethane	25	23.6	94	76-119
79-01-6	Trichloroethylene	25	24.8	99	81-126
75-69-4	Trichlorofluoromethane	25	26.3	105	71-156
75-01-4	Vinyl Chloride	25	27.2	109	69-159
1330-20-7	Xylene (total)	75	77.5	103	80-126

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	107%	83-118%
17060-07-0	1,2-Dichloroethane-D4	109%	79-125%
2037-26-5	Toluene-D8	104%	85-112%
460-00-4	4-Bromofluorobenzene	102%	83-118%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FC5867
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
FC5846-2MS	I756608.D	1	05/09/23	JW	n/a	n/a	VI2921
FC5846-2MSD	I756609.D	1	05/09/23	JW	n/a	n/a	VI2921
FC5846-2	I756613.D	1	05/10/23	JW	n/a	n/a	VI2921

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

FC5867-2, FC5867-3, FC5867-4, FC5867-5, FC5867-6, FC5867-10, FC5867-11, FC5867-12, FC5867-13, FC5867-14

CAS No.	Compound	FC5846-2 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
67-64-1	Acetone	ND		125	114	91	125	129	103	12	50-147/21
71-43-2	Benzene	ND		25	25.3	101	25	28.6	114	12	81-122/14
75-27-4	Bromodichloromethane	ND		25	25.5	102	25	29.1	116	13	79-123/19
75-25-2	Bromoform	ND		25	26.6	106	25	29.4	118	10	66-123/21
78-93-3	2-Butanone (MEK)	ND		125	111	89	125	128	102	14	56-143/18
75-15-0	Carbon Disulfide	ND		25	27.8	111	25	31.8	127	13	66-148/23
56-23-5	Carbon Tetrachloride	ND		25	31.9	128	25	36.9	148*	15	76-136/23
108-90-7	Chlorobenzene	ND		25	25.1	100	25	28.6	114	13	82-124/14
75-00-3	Chloroethane	ND		25	23.0	92	25	27.2	109	17	62-144/20
67-66-3	Chloroform	ND		25	27.3	109	25	30.8	123	12	80-124/15
110-82-7	Cyclohexane	ND		25	28.1	112	25	32.3	129	14	73-138/18
124-48-1	Dibromochloromethane	ND		25	28.2	113	25	32.1	128*	13	78-122/19
96-12-8	1,2-Dibromo-3-chloropropane	ND		25	26.6	106	25	30.4	122	13	64-123/18
106-93-4	1,2-Dibromoethane	ND		25	26.7	107	25	29.9	120	11	75-120/13
75-71-8	Dichlorodifluoromethane	ND		25	49.2	197*	25	60.2	241*	20*	42-167/19
95-50-1	1,2-Dichlorobenzene	ND		25	24.8	99	25	28.5	114	14	82-124/14
541-73-1	1,3-Dichlorobenzene	ND		25	23.9	96	25	28.2	113	17*	84-125/14
106-46-7	1,4-Dichlorobenzene	ND		25	22.9	92	25	26.8	107	16*	78-120/15
75-34-3	1,1-Dichloroethane	ND		25	25.1	100	25	28.3	113	12	81-122/15
107-06-2	1,2-Dichloroethane	ND		25	25.8	103	25	29.0	116	12	75-125/14
75-35-4	1,1-Dichloroethylene	ND		25	28.8	115	25	32.9	132	13	78-137/18
156-59-2	cis-1,2-Dichloroethylene	ND		25	27.1	108	25	30.2	121*	11	78-120/15
156-60-5	trans-1,2-Dichloroethylene	ND		25	26.3	105	25	30.4	122	14	76-127/17
78-87-5	1,2-Dichloropropane	ND		25	25.3	101	25	28.7	115	13	76-124/14
10061-01-5	cis-1,3-Dichloropropene	ND		25	21.6	86	25	24.7	99	13	75-118/23
10061-02-6	trans-1,3-Dichloropropene	ND		25	21.4	86	25	24.8	99	15	80-120/22
100-41-4	Ethylbenzene	ND		25	25.4	102	25	29.4	118	15*	81-121/14
76-13-1	Freon 113	ND		25	31.4	126	25	36.8	147*	16	72-134/20
591-78-6	2-Hexanone	ND		125	107	86	125	122	98	13	61-129/18
98-82-8	Isopropylbenzene	ND		25	27.8	111	25	32.3	129	15	83-132/15
79-20-9	Methyl Acetate	ND		125	93.0	74	125	102	82	9	65-126/18
74-83-9	Methyl Bromide	ND		25	19.9	80	25	25.2	101	24*	59-143/19
74-87-3	Methyl Chloride	ND		25	28.7	115	25	34.0	136	17	50-159/19
108-87-2	Methylcyclohexane	ND		25	26.2	105	25	31.8	127	19*	76-129/17
75-09-2	Methylene Chloride	ND		25	26.2	105	25	29.7	119	13	69-135/16
108-10-1	4-Methyl-2-pentanone (MIBK)	ND		125	106	85	125	123	98	15	66-122/16

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FC5867
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
FC5846-2MS	I756608.D	1	05/09/23	JW	n/a	n/a	VI2921
FC5846-2MSD	I756609.D	1	05/09/23	JW	n/a	n/a	VI2921
FC5846-2	I756613.D	1	05/10/23	JW	n/a	n/a	VI2921

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

FC5867-2, FC5867-3, FC5867-4, FC5867-5, FC5867-6, FC5867-10, FC5867-11, FC5867-12, FC5867-13, FC5867-14

CAS No.	Compound	FC5846-2 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
1634-04-4	Methyl Tert Butyl Ether	ND		25	28.0	112	25	31.3	125*	11	72-117/14
100-42-5	Styrene	ND		25	27.2	109	25	31.2	125*	14	78-119/23
79-34-5	1,1,2,2-Tetrachloroethane	ND		25	22.3	89	25	25.3	101	13	72-120/14
127-18-4	Tetrachloroethylene	ND		25	26.7	107	25	31.0	124	15	76-135/16
108-88-3	Toluene	ND		25	26.3	105	25	30.4	122*	14	80-120/14
120-82-1	1,2,4-Trichlorobenzene	ND		25	25.9	104	25	31.2	125	19	73-129/20
71-55-6	1,1,1-Trichloroethane	ND		25	31.4	126	25	36.0	144*	14	75-130/16
79-00-5	1,1,2-Trichloroethane	ND		25	23.8	95	25	26.4	106	10	76-119/14
79-01-6	Trichloroethylene	ND		25	25.3	101	25	29.3	117	15	81-126/15
75-69-4	Trichlorofluoromethane	ND		25	28.7	115	25	34.9	140	19	71-156/21
75-01-4	Vinyl Chloride	ND		25	28.6	114	25	35.1	140	20*	69-159/18
1330-20-7	Xylene (total)	ND		75	80.4	107	75	92.9	124	14	80-126/15

CAS No.	Surrogate Recoveries	MS	MSD	FC5846-2	Limits
1868-53-7	Dibromofluoromethane	106%	107%	102%	83-118%
17060-07-0	1,2-Dichloroethane-D4	111%	110%	104%	79-125%
2037-26-5	Toluene-D8	104%	104%	98%	85-112%
460-00-4	4-Bromofluorobenzene	102%	103%	102%	83-118%

* = Outside of Control Limits.

MS Semi-volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Instrument Blank

Job Number: FC5867
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S4Q654-IBLK	4Q44937.D	1	05/24/23	AL	n/a	n/a	S4Q654

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC5867-1, FC5867-7, FC5867-8, FC5867-9, FC5867-15, FC5867-16, FC5867-17, FC5867-18, FC5867-19

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	
2355-31-9	MeFOSAA	ND	0.0080	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0080	0.0020	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	
919005-14-4	ADONA	ND	0.0080	0.0020	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.0080	0.0020	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.0080	0.0020	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	95%	50-150%
	13C5-PFPeA	96%	50-150%
	13C5-PFHxA	96%	50-150%
	13C4-PFHpA	98%	50-150%

Instrument Blank

Job Number: FC5867
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S4Q654-IBLK	4Q44937.D	1	05/24/23	AL	n/a	n/a	S4Q654

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC5867-1, FC5867-7, FC5867-8, FC5867-9, FC5867-15, FC5867-16, FC5867-17, FC5867-18, FC5867-19

CAS No.	ID Standard Recoveries		Limits
	13C8-PFOA	97%	50-150%
	13C9-PFNA	99%	50-150%
	13C6-PFDA	96%	50-150%
	13C7-PFUnDA	99%	50-150%
	13C2-PFDoDA	98%	50-150%
	13C2-PFTeDA	94%	50-150%
	13C3-PFBS	100%	50-150%
	13C3-PFHxS	98%	50-150%
	13C8-PFOS	96%	50-150%
	13C8-FOSA	98%	50-150%
	d3-MeFOSA	93%	50-150%
	d3-MeFOSAA	105%	50-150%
	d5-EtFOSAA	103%	50-150%
	13C2-4:2FTS	82%	50-150%
	13C2-6:2FTS	88%	50-150%
	13C2-8:2FTS	90%	50-150%
	13C3-HFPO-DA	92%	50-150%

Instrument Blank

Job Number: FC5867
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S2Q1547-IBLK	2Q109792.D	1	05/25/23	LR	n/a	n/a	S2Q1547

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC5867-20, FC5867-22, FC5867-23, FC5867-24, FC5867-25, FC5867-26, FC5867-27, FC5867-28, FC5867-30, FC5867-32, FC5867-33, FC5867-34, FC5867-35, FC5867-36, FC5867-37, FC5867-38, FC5867-39

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	
2355-31-9	MeFOSAA	ND	0.0080	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0080	0.0020	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	
919005-14-4	ADONA	ND	0.0080	0.0020	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.0080	0.0020	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.0080	0.0020	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	93%	50-150%
	13C5-PFPeA	94%	50-150%
	13C5-PFHxA	95%	50-150%
	13C4-PFHpA	97%	50-150%

Instrument Blank

Job Number: FC5867
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S2Q1547-IBLK	2Q109792.D	1	05/25/23	LR	n/a	n/a	S2Q1547

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC5867-20, FC5867-22, FC5867-23, FC5867-24, FC5867-25, FC5867-26, FC5867-27, FC5867-28, FC5867-30, FC5867-32, FC5867-33, FC5867-34, FC5867-35, FC5867-36, FC5867-37, FC5867-38, FC5867-39

CAS No.	ID Standard Recoveries		Limits
	13C8-PFOA	98%	50-150%
	13C9-PFNA	98%	50-150%
	13C6-PFDA	100%	50-150%
	13C7-PFUnDA	97%	50-150%
	13C2-PFDoDA	96%	50-150%
	13C2-PFTeDA	98%	50-150%
	13C3-PFBS	93%	50-150%
	13C3-PFHxS	94%	50-150%
	13C8-PFOS	100%	50-150%
	13C8-FOSA	105%	50-150%
	d3-MeFOSA	100%	50-150%
	d3-MeFOSAA	103%	50-150%
	d5-EtFOSAA	100%	50-150%
	13C2-4:2FTS	87%	50-150%
	13C2-6:2FTS	87%	50-150%
	13C2-8:2FTS	91%	50-150%
	13C3-HFPO-DA	99%	50-150%

Instrument Blank

Job Number: FC5867
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S2Q1548-IBLK	2Q109867.D	1	05/26/23	LR	n/a	n/a	S2Q1548

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC5867-20, FC5867-21, FC5867-22, FC5867-25, FC5867-26, FC5867-27, FC5867-28, FC5867-33, FC5867-36, FC5867-39

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	
2355-31-9	MeFOSAA	ND	0.0080	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0080	0.0020	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	
919005-14-4	ADONA	ND	0.0080	0.0020	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.0080	0.0020	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.0080	0.0020	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	90%	50-150%
	13C5-PFPeA	92%	50-150%
	13C5-PFHxA	94%	50-150%
	13C4-PFHpA	94%	50-150%

Instrument Blank

Job Number: FC5867
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S2Q1548-IBLK	2Q109867.D	1	05/26/23	LR	n/a	n/a	S2Q1548

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC5867-20, FC5867-21, FC5867-22, FC5867-25, FC5867-26, FC5867-27, FC5867-28, FC5867-33, FC5867-36, FC5867-39

CAS No.	ID Standard Recoveries		Limits
	13C8-PFOA	94%	50-150%
	13C9-PFNA	94%	50-150%
	13C6-PFDA	94%	50-150%
	13C7-PFUnDA	90%	50-150%
	13C2-PFDoDA	89%	50-150%
	13C2-PFTeDA	91%	50-150%
	13C3-PFBS	93%	50-150%
	13C3-PFHxS	92%	50-150%
	13C8-PFOS	93%	50-150%
	13C8-FOSA	98%	50-150%
	d3-MeFOSAA	100%	50-150%
	d5-EtFOSAA	99%	50-150%
	13C2-4:2FTS	86%	50-150%
	13C2-6:2FTS	86%	50-150%
	13C2-8:2FTS	88%	50-150%
	13C3-HFPO-DA	95%	50-150%

Instrument Blank

Job Number: FC5867
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S4Q656-IBLK	4Q45086.D	1	05/26/23	AL	n/a	n/a	S4Q656

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC5867-7, FC5867-15, FC5867-16

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	93%	50-150%
	13C5-PFPeA	89%	50-150%
	13C5-PFHxA	88%	50-150%
	13C4-PFHpA	91%	50-150%
	13C8-PFOA	93%	50-150%
	13C9-PFNA	95%	50-150%
	13C6-PFDA	104%	50-150%
	13C7-PFUnDA	102%	50-150%
	13C2-PFDoDA	95%	50-150%
	13C2-PFTeDA	89%	50-150%
	13C3-PFBS	87%	50-150%
	13C3-PFHxS	85%	50-150%
	13C8-PFOS	89%	50-150%
	13C8-FOSA	98%	50-150%
	d3-MeFOSAA	105%	50-150%
	d5-EtFOSAA	105%	50-150%
	13C2-4:2FTS	77%	50-150%
	13C2-6:2FTS	85%	50-150%
	13C2-8:2FTS	94%	50-150%
	13C3-HFPO-DA	93%	50-150%

Instrument Blank

Job Number: FC5867
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S2Q1548-IBLK	2Q109930.D	1	05/27/23	LR	n/a	n/a	S2Q1548

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC5867-20, FC5867-21, FC5867-22, FC5867-25, FC5867-26, FC5867-27, FC5867-28, FC5867-33, FC5867-36, FC5867-39

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	
2355-31-9	MeFOSAA	ND	0.0080	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0080	0.0020	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	
919005-14-4	ADONA	ND	0.0080	0.0020	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.0080	0.0020	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.0080	0.0020	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	91%	50-150%
	13C5-PFPeA	94%	50-150%
	13C5-PFHxA	97%	50-150%
	13C4-PFHpA	98%	50-150%

Instrument Blank

Job Number: FC5867
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S2Q1548-IBLK	2Q109930.D	1	05/27/23	LR	n/a	n/a	S2Q1548

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC5867-20, FC5867-21, FC5867-22, FC5867-25, FC5867-26, FC5867-27, FC5867-28, FC5867-33, FC5867-36, FC5867-39

CAS No.	ID Standard Recoveries		Limits
	13C8-PFOA	97%	50-150%
	13C9-PFNA	98%	50-150%
	13C6-PFDA	99%	50-150%
	13C7-PFUnDA	98%	50-150%
	13C2-PFDoDA	97%	50-150%
	13C2-PFTeDA	100%	50-150%
	13C3-PFBS	94%	50-150%
	13C3-PFHxS	94%	50-150%
	13C8-PFOS	100%	50-150%
	13C8-FOSA	105%	50-150%
	d3-MeFOSAA	114%	50-150%
	d5-EtFOSAA	112%	50-150%
	13C2-4:2FTS	89%	50-150%
	13C2-6:2FTS	89%	50-150%
	13C2-8:2FTS	94%	50-150%
	13C3-HFPO-DA	90%	50-150%

Instrument Blank

Job Number: FC5867
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S2Q1554-IBLK	2Q110229.D	1	06/05/23	LR	n/a	n/a	S2Q1554

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC5867-29, FC5867-31, FC5867-38

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	
2355-31-9	MeFOSAA	ND	0.0080	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0080	0.0020	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	
919005-14-4	ADONA	ND	0.0080	0.0020	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.0080	0.0020	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.0080	0.0020	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	86%	50-150%
	13C5-PFPeA	86%	50-150%
	13C5-PFHxA	86%	50-150%
	13C4-PFHpA	88%	50-150%

Instrument Blank

Job Number: FC5867
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S2Q1554-IBLK	2Q110229.D	1	06/05/23	LR	n/a	n/a	S2Q1554

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC5867-29, FC5867-31, FC5867-38

CAS No.	ID Standard Recoveries		Limits
	13C8-PFOA	88%	50-150%
	13C9-PFNA	89%	50-150%
	13C6-PFDA	87%	50-150%
	13C7-PFUnDA	87%	50-150%
	13C2-PFDoDA	86%	50-150%
	13C2-PFTeDA	87%	50-150%
	13C3-PFBS	86%	50-150%
	13C3-PFHxS	87%	50-150%
	13C8-PFOS	88%	50-150%
	13C8-FOSA	92%	50-150%
	d3-MeFOSA	91%	50-150%
	d3-MeFOSAA	86%	50-150%
	d5-EtFOSAA	87%	50-150%
	13C2-4:2FTS	79%	50-150%
	13C2-6:2FTS	80%	50-150%
	13C2-8:2FTS	80%	50-150%
	13C3-HFPO-DA	84%	50-150%

Method Blank Summary

Job Number: FC5867
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP96844-MB	4Q44943.D	1	05/24/23	AL	05/11/23	OP96844	S4Q654

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC5867-1, FC5867-7, FC5867-8, FC5867-9, FC5867-15, FC5867-16, FC5867-17, FC5867-18, FC5867-19

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	
2355-31-9	MeFOSAA	ND	0.0080	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0080	0.0020	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	
919005-14-4	ADONA	ND	0.0080	0.0020	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.0080	0.0020	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.0080	0.0020	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	62%	50-150%
	13C5-PFPeA	63%	50-150%
	13C5-PFHxA	63%	50-150%
	13C4-PFHpA	63%	50-150%

Method Blank Summary

Job Number: FC5867
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP96844-MB	4Q44943.D	1	05/24/23	AL	05/11/23	OP96844	S4Q654

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC5867-1, FC5867-7, FC5867-8, FC5867-9, FC5867-15, FC5867-16, FC5867-17, FC5867-18, FC5867-19

CAS No.	ID Standard Recoveries		Limits
	13C8-PFOA	63%	50-150%
	13C9-PFNA	65%	50-150%
	13C6-PFDA	62%	50-150%
	13C7-PFUnDA	63%	50-150%
	13C2-PFDoDA	56%	50-150%
	13C2-PFTeDA	44%* [a]	50-150%
	13C3-PFBS	63%	50-150%
	13C3-PFHxS	62%	50-150%
	13C8-PFOS	60%	50-150%
	13C8-FOSA	55%	50-150%
	d3-MeFOSAA	68%	50-150%
	d5-EtFOSAA	60%	50-150%
	13C2-4:2FTS	53%	50-150%
	13C2-6:2FTS	57%	50-150%
	13C2-8:2FTS	59%	50-150%
	13C3-HFPO-DA	62%	50-150%

(a) Outside control limits.

Method Blank Summary

Job Number: FC5867
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP96868-MB	2Q109837.D	1	05/26/23	LR	05/12/23	OP96868	S2Q1547

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC5867-20, FC5867-21, FC5867-22, FC5867-23, FC5867-24, FC5867-25, FC5867-26, FC5867-27, FC5867-28, FC5867-30, FC5867-32, FC5867-33, FC5867-34, FC5867-35, FC5867-36, FC5867-37, FC5867-38, FC5867-39

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.016	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0080	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0080	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0080	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0080	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0080	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0080	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0080	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0080	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0080	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0080	0.0020	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0080	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0080	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0080	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0080	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0080	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0080	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0080	0.0020	ug/l	
754-91-6	PFOSA	ND	0.0080	0.0020	ug/l	
2355-31-9	MeFOSAA	ND	0.016	0.0040	ug/l	
2991-50-6	EtFOSAA	ND	0.016	0.0040	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.016	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.016	0.0040	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.016	0.0040	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.016	0.0040	ug/l	
919005-14-4	ADONA	ND	0.016	0.0040	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.016	0.0040	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.016	0.0040	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	99%	50-150%
	13C5-PFPeA	102%	50-150%
	13C5-PFHxA	104%	50-150%
	13C4-PFHpA	105%	50-150%

Method Blank Summary

Job Number: FC5867
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP96868-MB	2Q109837.D	1	05/26/23	LR	05/12/23	OP96868	S2Q1547

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC5867-20, FC5867-21, FC5867-22, FC5867-23, FC5867-24, FC5867-25, FC5867-26, FC5867-27, FC5867-28, FC5867-30, FC5867-32, FC5867-33, FC5867-34, FC5867-35, FC5867-36, FC5867-37, FC5867-38, FC5867-39

CAS No.	ID Standard Recoveries		Limits
	13C8-PFOA	105%	50-150%
	13C9-PFNA	103%	50-150%
	13C6-PFDA	105%	50-150%
	13C7-PFUnDA	97%	50-150%
	13C2-PFDoDA	95%	50-150%
	13C2-PFTeDA	93%	50-150%
	13C3-PFBS	99%	50-150%
	13C3-PFHxS	100%	50-150%
	13C8-PFOS	107%	50-150%
	13C8-FOSA	95%	50-150%
	d3-MeFOSAA	106%	50-150%
	d5-EtFOSAA	105%	50-150%
	13C2-4:2FTS	96%	50-150%
	13C2-6:2FTS	95%	50-150%
	13C2-8:2FTS	100%	50-150%
	13C3-HFPO-DA	95%	50-150%

Method Blank Summary

Job Number: FC5867
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP97141-MB	2Q110237.D	1	06/05/23	LR	05/31/23	OP97141	S2Q1554

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC5867-29, FC5867-31, FC5867-38

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.016	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0080	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0080	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0080	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0080	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0080	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0080	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0080	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0080	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0080	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0080	0.0020	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0080	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0080	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0080	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0080	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0080	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0080	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0080	0.0020	ug/l	
754-91-6	PFOSA	ND	0.0080	0.0020	ug/l	
2355-31-9	MeFOSAA	ND	0.016	0.0040	ug/l	
2991-50-6	EtFOSAA	ND	0.016	0.0040	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.016	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.016	0.0040	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.016	0.0040	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.016	0.0040	ug/l	
919005-14-4	ADONA	ND	0.016	0.0040	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.016	0.0040	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.016	0.0040	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	86%	50-150%
	13C5-PFPeA	86%	50-150%
	13C5-PFHxA	87%	50-150%
	13C4-PFHpA	87%	50-150%

Method Blank Summary

Job Number: FC5867
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP97141-MB	2Q110237.D	1	06/05/23	LR	05/31/23	OP97141	S2Q1554

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC5867-29, FC5867-31, FC5867-38

CAS No.	ID Standard Recoveries		Limits
	13C8-PFOA	90%	50-150%
	13C9-PFNA	89%	50-150%
	13C6-PFDA	89%	50-150%
	13C7-PFUnDA	83%	50-150%
	13C2-PFDoDA	73%	50-150%
	13C2-PFTeDA	57%	50-150%
	13C3-PFBS	87%	50-150%
	13C3-PFHxS	88%	50-150%
	13C8-PFOS	85%	50-150%
	13C8-FOSA	60%	50-150%
	d3-MeFOSAA	78%	50-150%
	d5-EtFOSAA	71%	50-150%
	13C2-4:2FTS	79%	50-150%
	13C2-6:2FTS	79%	50-150%
	13C2-8:2FTS	81%	50-150%
	13C3-HFPO-DA	88%	50-150%

Blank Spike Summary

Job Number: FC5867
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP96844-BS	4Q44942.D	1	05/24/23	AL	05/11/23	OP96844	S4Q654

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC5867-1, FC5867-7, FC5867-8, FC5867-9, FC5867-15, FC5867-16, FC5867-17, FC5867-18, FC5867-19

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
375-22-4	Perfluorobutanoic acid	0.08	0.0978	122	73-129
2706-90-3	Perfluoropentanoic acid	0.08	0.101	126	72-129
307-24-4	Perfluorohexanoic acid	0.08	0.104	130* [a]	72-129
375-85-9	Perfluoroheptanoic acid	0.08	0.101	126	72-130
335-67-1	Perfluorooctanoic acid	0.08	0.100	125	71-133
375-95-1	Perfluorononanoic acid	0.08	0.103	129	69-130
335-76-2	Perfluorodecanoic acid	0.08	0.106	133*	71-129
2058-94-8	Perfluoroundecanoic acid	0.08	0.0989	124	69-133
307-55-1	Perfluorododecanoic acid	0.08	0.0995	124	72-134
72629-94-8	Perfluorotridecanoic acid	0.08	0.0933	117	65-144
376-06-7	Perfluorotetradecanoic acid	0.08	0.101	126	71-132
375-73-5	Perfluorobutanesulfonic acid	0.08	0.0996	125	72-130
2706-91-4	Perfluoropentanesulfonic acid	0.08	0.0999	125	71-127
355-46-4	Perfluorohexanesulfonic acid	0.08	0.0976	122	68-131
375-92-8	Perfluoroheptanesulfonic acid	0.08	0.0996	125	69-134
1763-23-1	Perfluorooctanesulfonic acid	0.08	0.0990	124	65-140
68259-12-1	Perfluorononanesulfonic acid	0.08	0.107	134*	69-127
335-77-3	Perfluorodecanesulfonic acid	0.08	0.0952	119	53-142
754-91-6	PFOSA	0.08	0.100	125	67-137
2355-31-9	MeFOSAA	0.08	0.100	125	65-136
2991-50-6	EtFOSAA	0.08	0.100	125	61-135
757124-72-4	4:2 Fluorotelomer sulfonate	0.08	0.101	126	63-143
27619-97-2	6:2 Fluorotelomer sulfonate	0.08	0.0998	125	64-140
39108-34-4	8:2 Fluorotelomer sulfonate	0.08	0.101	126	67-138
13252-13-6	HFPO-DA (GenX)	0.08	0.109	136	60-140
919005-14-4	ADONA	0.08	0.0980	123	60-140
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.08	0.0958	120	60-140
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.08	0.101	126	60-140

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFBA	63%	50-150%
	13C5-PFPeA	64%	50-150%
	13C5-PFHxA	65%	50-150%
	13C4-PFHpA	65%	50-150%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FC5867
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP96844-BS	4Q44942.D	1	05/24/23	AL	05/11/23	OP96844	S4Q654

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC5867-1, FC5867-7, FC5867-8, FC5867-9, FC5867-15, FC5867-16, FC5867-17, FC5867-18, FC5867-19

CAS No.	ID Standard Recoveries	BSP	Limits
	13C8-PFOA	62%	50-150%
	13C9-PFNA	63%	50-150%
	13C6-PFDA	61%	50-150%
	13C7-PFUnDA	63%	50-150%
	13C2-PFDoDA	61%	50-150%
	13C2-PFTeDA	57%	50-150%
	13C3-PFBS	63%	50-150%
	13C3-PFHxS	63%	50-150%
	13C8-PFOS	61%	50-150%
	13C8-FOSA	55%	50-150%
	d3-MeFOSAA	69%	50-150%
	d5-EtFOSAA	68%	50-150%
	13C2-4:2FTS	62%	50-150%
	13C2-6:2FTS	62%	50-150%
	13C2-8:2FTS	66%	50-150%
	13C3-HFPO-DA	66%	50-150%

(a) Sporadic marginal failure. Spike recovery within control limits in MS/MSD.

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FC5867
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP96868-BS	2Q109836.D	1	05/26/23	LR	05/12/23	OP96868	S2Q1547

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC5867-20, FC5867-21, FC5867-22, FC5867-23, FC5867-24, FC5867-25, FC5867-26, FC5867-27, FC5867-28, FC5867-30, FC5867-32, FC5867-33, FC5867-34, FC5867-35, FC5867-36, FC5867-37, FC5867-38, FC5867-39

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
375-22-4	Perfluorobutanoic acid	0.16	0.165	103	73-129
2706-90-3	Perfluoropentanoic acid	0.16	0.161	101	72-129
307-24-4	Perfluorohexanoic acid	0.16	0.157	98	72-129
375-85-9	Perfluoroheptanoic acid	0.16	0.152	95	72-130
335-67-1	Perfluorooctanoic acid	0.16	0.159	99	71-133
375-95-1	Perfluorononanoic acid	0.16	0.158	99	69-130
335-76-2	Perfluorodecanoic acid	0.16	0.156	98	71-129
2058-94-8	Perfluoroundecanoic acid	0.16	0.156	98	69-133
307-55-1	Perfluorododecanoic acid	0.16	0.166	104	72-134
72629-94-8	Perfluorotridecanoic acid	0.16	0.166	104	65-144
376-06-7	Perfluorotetradecanoic acid	0.16	0.169	106	71-132
375-73-5	Perfluorobutanesulfonic acid	0.16	0.158	99	72-130
2706-91-4	Perfluoropentanesulfonic acid	0.16	0.158	99	71-127
355-46-4	Perfluorohexanesulfonic acid	0.16	0.159	99	68-131
375-92-8	Perfluoroheptanesulfonic acid	0.16	0.161	101	69-134
1763-23-1	Perfluorooctanesulfonic acid	0.16	0.155	97	65-140
68259-12-1	Perfluorononanesulfonic acid	0.16	0.154	96	69-127
335-77-3	Perfluorodecanesulfonic acid	0.16	0.153	96	53-142
754-91-6	PFOSA	0.16	0.164	103	67-137
2355-31-9	MeFOSAA	0.16	0.159	99	65-136
2991-50-6	EtFOSAA	0.16	0.165	103	61-135
757124-72-4	4:2 Fluorotelomer sulfonate	0.16	0.165	103	63-143
27619-97-2	6:2 Fluorotelomer sulfonate	0.16	0.169	106	64-140
39108-34-4	8:2 Fluorotelomer sulfonate	0.16	0.161	101	67-138
13252-13-6	HFPO-DA (GenX)	0.16	0.159	99	60-140
919005-14-4	ADONA	0.16	0.146	91	60-140
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.16	0.153	96	60-140
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.16	0.160	100	60-140

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFBA	101%	50-150%
	13C5-PFPeA	102%	50-150%
	13C5-PFHxA	105%	50-150%
	13C4-PFHpA	106%	50-150%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FC5867
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP96868-BS	2Q109836.D	1	05/26/23	LR	05/12/23	OP96868	S2Q1547

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC5867-20, FC5867-21, FC5867-22, FC5867-23, FC5867-24, FC5867-25, FC5867-26, FC5867-27, FC5867-28, FC5867-30, FC5867-32, FC5867-33, FC5867-34, FC5867-35, FC5867-36, FC5867-37, FC5867-38, FC5867-39

CAS No.	ID Standard Recoveries	BSP	Limits
	13C8-PFOA	103%	50-150%
	13C9-PFNA	101%	50-150%
	13C6-PFDA	104%	50-150%
	13C7-PFUnDA	92%	50-150%
	13C2-PFDoDA	86%	50-150%
	13C2-PFTeDA	85%	50-150%
	13C3-PFBS	104%	50-150%
	13C3-PFHxS	100%	50-150%
	13C8-PFOS	104%	50-150%
	13C8-FOSA	82%	50-150%
	d3-MeFOSAA	94%	50-150%
	d5-EtFOSAA	91%	50-150%
	13C2-4:2FTS	110%	50-150%
	13C2-6:2FTS	104%	50-150%
	13C2-8:2FTS	111%	50-150%
	13C3-HFPO-DA	97%	50-150%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FC5867
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP97141-BS [a]	2Q110236.D	1	06/05/23	LR	05/31/23	OP97141	S2Q1554

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC5867-29, FC5867-31, FC5867-38

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
375-22-4	Perfluorobutanoic acid	0.16	0.154	96	73-129
2706-90-3	Perfluoropentanoic acid	0.16	0.156	98	72-129
307-24-4	Perfluorohexanoic acid	0.16	0.153	96	72-129
375-85-9	Perfluoroheptanoic acid	0.16	0.154	96	72-130
335-67-1	Perfluorooctanoic acid	0.16	0.149	93	71-133
375-95-1	Perfluorononanoic acid	0.16	0.151	94	69-130
335-76-2	Perfluorodecanoic acid	0.16	0.152	95	71-129
2058-94-8	Perfluoroundecanoic acid	0.16	0.149	93	69-133
307-55-1	Perfluorododecanoic acid	0.16	0.159	99	72-134
72629-94-8	Perfluorotridecanoic acid	0.16	0.141	88	65-144
376-06-7	Perfluorotetradecanoic acid	0.16	0.162	101	71-132
375-73-5	Perfluorobutanesulfonic acid	0.16	0.151	94	72-130
2706-91-4	Perfluoropentanesulfonic acid	0.16	0.151	94	71-127
355-46-4	Perfluorohexanesulfonic acid	0.16	0.152	95	68-131
375-92-8	Perfluoroheptanesulfonic acid	0.16	0.158	99	69-134
1763-23-1	Perfluorooctanesulfonic acid	0.16	0.156	98	65-140
68259-12-1	Perfluorononanesulfonic acid	0.16	0.155	97	69-127
335-77-3	Perfluorodecanesulfonic acid	0.16	0.154	96	53-142
754-91-6	PFOSA	0.16	0.155	97	67-137
2355-31-9	MeFOSAA	0.16	0.161	101	65-136
2991-50-6	EtFOSAA	0.16	0.155	97	61-135
757124-72-4	4:2 Fluorotelomer sulfonate	0.16	0.163	102	63-143
27619-97-2	6:2 Fluorotelomer sulfonate	0.16	0.169	106	64-140
39108-34-4	8:2 Fluorotelomer sulfonate	0.16	0.160	100	67-138
13252-13-6	HFPO-DA (GenX)	0.16	0.144	90	60-140
919005-14-4	ADONA	0.16	0.139	87	60-140
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.16	0.148	93	60-140
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.16	0.156	98	60-140

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFBA	88%	50-150%
	13C5-PFPeA	87%	50-150%
	13C5-PFHxA	88%	50-150%
	13C4-PFHpA	88%	50-150%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FC5867
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP97141-BS [a]	2Q110236.D	1	06/05/23	LR	05/31/23	OP97141	S2Q1554

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC5867-29, FC5867-31, FC5867-38

CAS No.	ID Standard Recoveries	BSP	Limits
	13C8-PFOA	90%	50-150%
	13C9-PFNA	89%	50-150%
	13C6-PFDA	90%	50-150%
	13C7-PFUnDA	85%	50-150%
	13C2-PFDoDA	81%	50-150%
	13C2-PFTeDA	66%	50-150%
	13C3-PFBS	89%	50-150%
	13C3-PFHxS	90%	50-150%
	13C8-PFOS	89%	50-150%
	13C8-FOSA	68%	50-150%
	d3-MeFOSAA	81%	50-150%
	d5-EtFOSAA	79%	50-150%
	13C2-4:2FTS	89%	50-150%
	13C2-6:2FTS	87%	50-150%
	13C2-8:2FTS	92%	50-150%
	13C3-HFPO-DA	92%	50-150%

(a) Insufficient sample for MS/MSD.

* = Outside of Control Limits.

Matrix Spike Summary

Job Number: FC5867
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP96868-MS	2Q109843.D	1	05/26/23	LR	05/12/23	OP96868	S2Q1547
FC5867-22 [a]	2Q109842.D	1	05/26/23	LR	05/12/23	OP96868	S2Q1547
FC5867-22 [b]	2Q109909.D	5	05/26/23	LR	05/12/23	OP96868	S2Q1548

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC5867-20, FC5867-21, FC5867-22, FC5867-23, FC5867-24, FC5867-25, FC5867-26, FC5867-27, FC5867-28, FC5867-30, FC5867-32, FC5867-33, FC5867-34, FC5867-35, FC5867-36, FC5867-37, FC5867-38, FC5867-39

CAS No.	Compound	FC5867-22 ug/l	Q	Spike ug/l	MS ug/l	MS %	Limits
375-22-4	Perfluorobutanoic acid	0.242		0.143	0.352	77	73-129
2706-90-3	Perfluoropentanoic acid	0.0040	I	0.143	0.146	99	72-129
307-24-4	Perfluorohexanoic acid	0.0032	I	0.143	0.146	100	72-129
375-85-9	Perfluoroheptanoic acid	0.0074	U	0.143	0.144	101	72-130
335-67-1	Perfluorooctanoic acid	0.0038	I	0.143	0.150	102	71-133
375-95-1	Perfluorononanoic acid	0.0074	U	0.143	0.140	98	69-130
335-76-2	Perfluorodecanoic acid	0.0074	U	0.143	0.142	99	71-129
2058-94-8	Perfluoroundecanoic acid	0.0074	U	0.143	0.143	100	69-133
307-55-1	Perfluorododecanoic acid	0.037	U [c]	0.143	0.148	104	72-134
72629-94-8	Perfluorotridecanoic acid	0.037	U [c]	0.143	0.138	97	65-144
376-06-7	Perfluorotetradecanoic acid	0.037	U [c]	0.143	0.150	105	71-132
375-73-5	Perfluorobutanesulfonic acid	0.0019	I	0.143	0.143	99	72-130
2706-91-4	Perfluoropentanesulfonic acid	0.0074	U	0.143	0.140	98	71-127
355-46-4	Perfluorohexanesulfonic acid	0.0074	U	0.143	0.140	98	68-131
375-92-8	Perfluoroheptanesulfonic acid	0.0074	U	0.143	0.153	107	69-134
1763-23-1	Perfluorooctanesulfonic acid	0.0087		0.143	0.148	98	65-140
68259-12-1	Perfluorononanesulfonic acid	0.0074	U	0.143	0.141	99	69-127
335-77-3	Perfluorodecanesulfonic acid	0.0074	U	0.143	0.128	90	53-142
754-91-6	PFOSA	0.037	U [c]	0.143	0.145	101	67-137
2355-31-9	MeFOSAA	0.015	U	0.143	0.139	97	65-136
2991-50-6	EtFOSAA	0.015	U	0.143	0.144	101	61-135
757124-72-4	4:2 Fluorotelomer sulfonate	0.015	U	0.143	0.147	103	63-143
27619-97-2	6:2 Fluorotelomer sulfonate	0.015	U	0.143	0.152	106	64-140
39108-34-4	8:2 Fluorotelomer sulfonate	0.015	U	0.143	0.147	103	67-138
13252-13-6	HFPO-DA (GenX)	0.015	U	0.143	0.147	103	60-140
919005-14-4	ADONA	0.015	U	0.143	0.126	88	60-140
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.015	U	0.143	0.111	78	60-140
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.074	U [c]	0.143	0.149	104	60-140

CAS No.	ID Standard Recoveries	MS	FC5867-22	FC5867-22	Limits
	13C4-PFBA	67%	55%	65%	50-150%
	13C5-PFPeA	76%	66%	80%	50-150%
	13C5-PFHxA	81%	72%	85%	50-150%
	13C4-PFHpA	83%	75%	88%	50-150%

* = Outside of Control Limits.

Matrix Spike Summary

Job Number: FC5867
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP96868-MS	2Q109843.D	1	05/26/23	LR	05/12/23	OP96868	S2Q1547
FC5867-22 [a]	2Q109842.D	1	05/26/23	LR	05/12/23	OP96868	S2Q1547
FC5867-22 [b]	2Q109909.D	5	05/26/23	LR	05/12/23	OP96868	S2Q1548

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC5867-20, FC5867-21, FC5867-22, FC5867-23, FC5867-24, FC5867-25, FC5867-26, FC5867-27, FC5867-28, FC5867-30, FC5867-32, FC5867-33, FC5867-34, FC5867-35, FC5867-36, FC5867-37, FC5867-38, FC5867-39

CAS No.	ID Standard Recoveries	MS	FC5867-22	FC5867-22	Limits
	13C8-PFOA	89%	82%	88%	50-150%
	13C9-PFNA	94%	84%	90%	50-150%
	13C6-PFDA	97%	83%	90%	50-150%
	13C7-PFUnDA	83%	67%	72%	50-150%
	13C2-PFDoDA	73%	47%* [d]	56%	50-150%
	13C2-PFTeDA	59%	12%* [d]	15%* [d]	50-150%
	13C3-PFBS	80%	74%	89%	50-150%
	13C3-PFHxS	85%	77%	90%	50-150%
	13C8-PFOS	92%	84%	87%	50-150%
	13C8-FOSA	52%	17%* [d]	28%* [d]	50-150%
	d3-MeFOSAA	101%	83%	88%	50-150%
	d5-EtFOSAA	97%	73%	69%	50-150%
	13C2-4:2FTS	92%	73%	84%	50-150%
	13C2-6:2FTS	105%	86%	86%	50-150%
	13C2-8:2FTS	115%	82%	87%	50-150%
	13C3-HFPO-DA	75%	67%	82%	50-150%

(a) Insufficient sample for re-extraction.
(b) Dilution required (ID recovery standard failure).
(c) Result is from Run #2.
(d) Outside control limits.

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FC5867
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP96844-MS	4Q44994.D	5	05/25/23	AL	05/11/23	OP96844	S4Q654
OP96844-MSD	4Q44996.D	5	05/25/23	AL	05/11/23	OP96844	S4Q654
FC5867-19	4Q44991.D	1	05/25/23	AL	05/11/23	OP96844	S4Q654
FC5867-19	4Q44992.D	5	05/25/23	AL	05/11/23	OP96844	S4Q654

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC5867-1, FC5867-7, FC5867-8, FC5867-9, FC5867-15, FC5867-16, FC5867-17, FC5867-18, FC5867-19

CAS No.	Compound	FC5867-19 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
375-22-4	Perfluorobutanoic acid	0.854	b	0.16	1.07	135*	a 0.16	1.07	135*	a 0	73-129/30
2706-90-3	Perfluoropentanoic acid	0.0029	I	0.16	0.204	126	0.16	0.206	127	1	72-129/30
307-24-4	Perfluorohexanoic acid	0.0029	I	0.16	0.209	129	0.16	0.203	125	3	72-129/30
375-85-9	Perfluoroheptanoic acid	0.0080	U	0.16	0.203	127	0.16	0.198	124	2	72-130/30
335-67-1	Perfluorooctanoic acid	0.0125		0.16	0.213	125	0.16	0.211	124	1	71-133/30
375-95-1	Perfluorononanoic acid	0.0080	U	0.16	0.207	129	0.16	0.206	129	0	69-130/30
335-76-2	Perfluorodecanoic acid	0.0080	U	0.16	0.208	130*	0.16	0.210	131*	1 c	71-129/30
2058-94-8	Perfluoroundecanoic acid	0.0080	U	0.16	0.198	124	0.16	0.204	128	3	69-133/30
307-55-1	Perfluorododecanoic acid	0.0080	U	0.16	0.197	123	0.16	0.198	124	1	72-134/30
72629-94-8	Perfluorotridecanoic acid	0.0080	U	0.16	0.170	106	0.16	0.178	111	5	65-144/30
376-06-7	Perfluorotetradecanoic acid	0.040	U b	0.16	0.205	128	0.16	0.205	128	0	71-132/30
375-73-5	Perfluorobutanesulfonic acid	0.040	U b	0.16	0.195	122	0.16	0.198	124	2	72-130/30
2706-91-4	Perfluoropentanesulfonic acid	0.040	U b	0.16	0.204	128*	0.16	0.201	126	1	71-127/30
355-46-4	Perfluorohexanesulfonic acid	0.0039	I	0.16	0.202	124	0.16	0.197	121	3	68-131/30
375-92-8	Perfluoroheptanesulfonic acid	0.0080	U	0.16	0.219	137*	0.16	0.208	130	5	69-134/30
1763-23-1	Perfluorooctanesulfonic acid	0.0039	I	0.16	0.209	128	0.16	0.201	123	4	65-140/30
68259-12-1	Perfluorononanesulfonic acid	0.0080	U	0.16	0.213	133*	0.16	0.195	122	9 c	69-127/30
335-77-3	Perfluorodecanesulfonic acid	0.0080	U	0.16	0.162	101	0.16	0.171	107	5	53-142/30
754-91-6	PFOSA	0.0080	U	0.16	0.200	125	0.16	0.197	123	2	67-137/30
2355-31-9	MeFOSAA	0.016	U	0.16	0.208	130	0.16	0.204	128	2	65-136/30
2991-50-6	EtFOSAA	0.016	U	0.16	0.204	128	0.16	0.223	139*	9	61-135/30
757124-72-4	4:2 Fluorotelomer sulfonate	0.016	U	0.16	0.200	125	0.16	0.206	129	3	63-143/30
27619-97-2	6:2 Fluorotelomer sulfonate	0.016	U	0.16	0.191	119	0.16	0.204	128	7	64-140/30
39108-34-4	8:2 Fluorotelomer sulfonate	0.016	U	0.16	0.197	123	0.16	0.203	127	3	67-138/30
13252-13-6	HFPO-DA (GenX)	0.016	U	0.16	0.223	139	0.16	0.226	141*	1	60-140/30
919005-14-4	ADONA	0.016	U	0.16	0.190	119	0.16	0.185	116	3	60-140/30
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.016	U	0.16	0.177	111	0.16	0.183	114	3	60-140/30
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.016	U	0.16	0.191	119	0.16	0.194	121	2	60-140/30

CAS No.	ID Standard Recoveries	MS	MSD	FC5867-19	FC5867-19	Limits
	13C4-PFBA	59%	57%	50%	64%	50-150%
	13C5-PFPeA	55%	56%	45%* d	59%	50-150%
	13C5-PFHxA	57%	59%	51%	62%	50-150%
	13C4-PFHpA	61%	62%	56%	64%	50-150%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FC5867
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP96844-MS	4Q44994.D	5	05/25/23	AL	05/11/23	OP96844	S4Q654
OP96844-MSD	4Q44996.D	5	05/25/23	AL	05/11/23	OP96844	S4Q654
FC5867-19	4Q44991.D	1	05/25/23	AL	05/11/23	OP96844	S4Q654
FC5867-19	4Q44992.D	5	05/25/23	AL	05/11/23	OP96844	S4Q654

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC5867-1, FC5867-7, FC5867-8, FC5867-9, FC5867-15, FC5867-16, FC5867-17, FC5867-18, FC5867-19

CAS No.	ID Standard Recoveries	MS	MSD	FC5867-19	FC5867-19	Limits
	13C8-PFOA	63%	64%	65%	67%	50-150%
	13C9-PFNA	65%	67%	66%	70%	50-150%
	13C6-PFDA	63%	63%	66%	65%	50-150%
	13C7-PFUnDA	58%	58%	52%	61%	50-150%
	13C2-PFDoDA	53%	57%	55%	58%	50-150%
	13C2-PFTeDA	46%* d	51%	40%* d	50%	50-150%
	13C3-PFBS	57%	57%	43%* d	60%	50-150%
	13C3-PFHxS	62%	63%	58%	65%	50-150%
	13C8-PFOS	57%	60%	60%	65%	50-150%
	13C8-FOSA	60%	53%	50%	61%	50-150%
	d3-MeFOSAA	72%	76%	86%	78%	50-150%
	d5-EtFOSAA	70%	66%	86%	73%	50-150%
	13C2-4:2FTS	61%	60%	50%	58%	50-150%
	13C2-6:2FTS	71%	66%	69%	65%	50-150%
	13C2-8:2FTS	71%	71%	69%	67%	50-150%
	13C3-HFPO-DA	51%	53%	41%* d	53%	50-150%

(a) Outside control limits due to high level in sample relative to spike amount.
(b) Result is from Run #2.
(c) Associated BS outside control limits high, sample was ND.
(d) Outside control limits.

* = Outside of Control Limits.

Duplicate Summary

Job Number: FC5867
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP96868-DUP	2Q109861.D	1	05/26/23	LR	05/12/23	OP96868	S2Q1547
FC5867-37	2Q109860.D	1	05/26/23	LR	05/12/23	OP96868	S2Q1547
FC5867-37 [a]	2Q109925.D	5	05/27/23	LR	05/12/23	OP96868	S2Q1548

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC5867-20, FC5867-21, FC5867-22, FC5867-23, FC5867-24, FC5867-25, FC5867-26, FC5867-27, FC5867-28, FC5867-30, FC5867-32, FC5867-33, FC5867-34, FC5867-35, FC5867-36, FC5867-37, FC5867-38, FC5867-39

CAS No.	Compound	FC5867-37 ug/l	Q	DUP ug/l	Q	RPD	Limits
375-22-4	Perfluorobutanoic acid	0.015	U	ND		nc	30
2706-90-3	Perfluoropentanoic acid	0.0074	U	ND		nc	30
307-24-4	Perfluorohexanoic acid	0.0074	U	ND		nc	30
375-85-9	Perfluoroheptanoic acid	0.0074	U	ND		nc	30
335-67-1	Perfluorooctanoic acid	0.0074	U	ND		nc	30
375-95-1	Perfluorononanoic acid	0.0074	U	ND		nc	30
335-76-2	Perfluorodecanoic acid	0.0074	U	ND		nc	30
2058-94-8	Perfluoroundecanoic acid	0.0074	U	ND		nc	30
307-55-1	Perfluorododecanoic acid	0.0074	U	ND		nc	30
72629-94-8	Perfluorotridecanoic acid	0.0074	U	ND		nc	30
376-06-7	Perfluorotetradecanoic acid	0.0074	U	ND		nc	30
375-73-5	Perfluorobutanesulfonic acid	0.0074	U	ND		nc	30
2706-91-4	Perfluoropentanesulfonic acid	0.0074	U	ND		nc	30
355-46-4	Perfluorohexanesulfonic acid	0.0074	U	ND		nc	30
375-92-8	Perfluoroheptanesulfonic acid	0.0074	U	ND		nc	30
1763-23-1	Perfluorooctanesulfonic acid	0.0048	I	0.0020	J	82*	30
68259-12-1	Perfluorononanesulfonic acid	0.0074	U	ND		nc	30
335-77-3	Perfluorodecanesulfonic acid	0.0074	U	ND		nc	30
754-91-6	PFOSA	0.0074	U	ND		nc	30
2355-31-9	MeFOSAA	0.015	U	ND		nc	30
2991-50-6	EtFOSAA	0.015	U	ND		nc	30
757124-72-4	4:2 Fluorotelomer sulfonate	0.015	U	ND		nc	30
27619-97-2	6:2 Fluorotelomer sulfonate	0.015	U	ND		nc	30
39108-34-4	8:2 Fluorotelomer sulfonate	0.015	U	ND		nc	30
13252-13-6	HFPO-DA (GenX)	0.015	U	ND		nc	30
919005-14-4	ADONA	0.015	U	ND		nc	30
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.015	U	ND		nc	30
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.015	U	ND		nc	30

CAS No.	ID Standard Recoveries	DUP	FC5867-37	FC5867-37	Limits
	13C4-PFBA	68%	46%* [b]	49%* [b]	50-150%
	13C5-PFPeA	72%	53%	57%	50-150%
	13C5-PFHxA	74%	55%	60%	50-150%
	13C4-PFHpA	79%	56%	60%	50-150%

* = Outside of Control Limits.

Duplicate Summary

Job Number: FC5867
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP96868-DUP	2Q109861.D	1	05/26/23	LR	05/12/23	OP96868	S2Q1547
FC5867-37	2Q109860.D	1	05/26/23	LR	05/12/23	OP96868	S2Q1547
FC5867-37 [a]	2Q109925.D	5	05/27/23	LR	05/12/23	OP96868	S2Q1548

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC5867-20, FC5867-21, FC5867-22, FC5867-23, FC5867-24, FC5867-25, FC5867-26, FC5867-27, FC5867-28, FC5867-30, FC5867-32, FC5867-33, FC5867-34, FC5867-35, FC5867-36, FC5867-37, FC5867-38, FC5867-39

CAS No.	ID Standard Recoveries	DUP	FC5867-37	FC5867-37	Limits
	13C8-PFOA	87%	60%	59%	50-150%
	13C9-PFNA	84%	62%	61%	50-150%
	13C6-PFDA	84%	62%	60%	50-150%
	13C7-PFUnDA	71%	55%	54%	50-150%
	13C2-PFDoDA	67%	51%	49%* [b]	50-150%
	13C2-PFTeDA	69%	44%* [b]	44%* [b]	50-150%
	13C3-PFBS	78%	60%	63%	50-150%
	13C3-PFHxS	80%	59%	64%	50-150%
	13C8-PFOS	81%	66%	63%	50-150%
	13C8-FOSA	28%* [b]	55%	58%	50-150%
	d3-MeFOSAA	88%	65%	66%	50-150%
	d5-EtFOSAA	82%	61%	59%	50-150%
	13C2-4:2FTS	78%	55%	59%	50-150%
	13C2-6:2FTS	95%	61%	57%	50-150%
	13C2-8:2FTS	85%	59%	61%	50-150%
	13C3-HFPO-DA	69%	54%	55%	50-150%

(a) Confirmation run.
(b) Outside control limits.

* = Outside of Control Limits.

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

e-Hardcopy 2.0
Automated Report

Technical Report for

Tetra Tech NUS

KSC-CRCA

112G08970

SGS Job Number: FC5931

Sampling Date: 05/09/23

Report to:

Tetra-Tech, Inc.
661 Andersen Drive Foster Plaza 7
Pittsburgh, PA 15220
amy.thomson@tetratech.com; carrie.stock@tetratech.com;
alex.murphy@tetratech.com
ATTN: Amy Thomson

Total number of pages in report: **34**

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

Norm Farmer
Technical Director

Client Service contact: Andrea Colby 407-425-6700

Certifications: FL(E83510), LA(03051), KS(E-10327), NC(573), NJ(FL002), NY(12022), SC(96038001) DoD ELAP(ANAB L2229), AZ(AZ0806), CA(2937), TX(T104704404), PA(68-03573), VA(460177), AL, AK, AR, CT, IA, KY, MA, MI. MS, ND, NH, NV, OK, OR, IL, UT, VT, WA, WI, WV

This report shall not be reproduced, except in its entirety, without the written approval of SGS.
Test results relate only to samples analyzed.

SGS is the sole authority for authorizing edits or modifications to this document.
Unauthorized modification of this report is strictly prohibited.
Review standard terms at: http://www.sgs.com/en/terms-and-conditions

Please share your ideas about how we can serve you better at:
EHS.US.CustomerCare@sgs.com

Sections: 1 2 3 4 5 6 7

Table of Contents

Section 1: Sample Summary **3**
Section 2: Case Narrative/Conformance Summary **4**
Section 3: Summary of Hits **6**
Section 4: Sample Results **7**
4.1: FC5931-1: CRCA-ASINFLUENT-20230509 8
4.2: FC5931-2: CRCA-ASEFFLUENT-20230509 12
Section 5: Misc. Forms **16**
5.1: Chain of Custody 17
Section 6: MS Volatiles - QC Data Summaries **19**
6.1: Method Blank Summary 20
6.2: Blank Spike Summary 22
6.3: Matrix Spike/Matrix Spike Duplicate Summary 24
Section 7: MS Semi-volatiles - QC Data Summaries **26**
7.1: Method Blank Summary 27
7.2: Blank Spike/Blank Spike Duplicate Summary 33

SGS North America Inc.

Sample Summary

Tetra Tech NUS

Job No: FC5931

KSC-CRCA
Project No: 112G08970

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
FC5931-1	05/09/23	09:00	CS	05/09/23	AQ	Ground Water	CRCA-ASINFLUENT-20230509
FC5931-2	05/09/23	09:15	CS	05/09/23	AQ	Ground Water	CRCA-ASEFFLUENT-20230509

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: Tetra Tech NUS **Job No:** FC5931

Site: KSC-CRCA **Report Date:** 5/30/2023 6:25:21 PM

On 05/09/2023, 2 Sample(s), 0 Trip Blank(s) and 0 Field Blank(s) were received at SGS North America Inc - Orlando. at a maximum corrected temperature of 0.5 C. Samples were intact and chemically preserved, unless noted below. A SGS North America Inc. - Orlando Job Number of FC5931 was assigned to the project.

Laboratory sample ID, client sample ID and dates of sample collection are detailed in the report's Results Summary Section. Specified quality control criteria were achieved for this job except as noted below. For more information, please refer to the analytical results and QC summary pages.

MS Volatiles By Method SW846 8260D

Matrix: AQ **Batch ID:** V5E1773

Sample(s) FC5970-3MS, FC5970-3MSD were used as the QC samples indicated.

Blank Spike Recovery(s) for Methyl Bromide, trans-1,3-Dichloropropene are outside control limits.

Matrix Spike Recovery(s) for Acetone, Methyl Bromide are outside control limits. Probable cause is due to matrix interference.

Matrix Spike Duplicate Recovery(s) for Acetone, Methyl Bromide are outside control limits. Probable cause is due to matrix interference.

V5E1773-BS for trans-1,3-Dichloropropene: Sporadic marginal failure.

FC5931-1 for 1,2-Dibromo-3-chloropropane: Associated CCV outside control limits high, sample is ND.

FC5931-1 for 1,2-Dichloroethane: Associated CCV outside control limits high, sample is ND.

FC5931-1 for 2-Butanone (MEK): Associated CCV outside control limits high, sample is ND.

FC5931-1 for Acetone: Associated CCV outside control limits high, sample is ND.

FC5931-1 for Dichlorodifluoromethane: Associated ICV outside control limits high, however sample ND.

FC5931-1 for Methyl Acetate: Associated CCV outside control limits high, sample is ND.

FC5931-1 for Methyl Bromide: Associated ICV, BS and CCV outside control limits high, however sample ND.

FC5931-1 for trans-1,3-Dichloropropene: Associated BS recovery outside control limits low.

FC5931-2 for 1,2-Dibromo-3-chloropropane: Associated CCV outside control limits high, sample is ND.

FC5931-2 for 1,2-Dichloroethane: Associated CCV outside control limits high, sample is ND.

FC5931-2 for 2-Butanone (MEK): Associated CCV outside control limits high, sample is ND.

FC5931-2 for Acetone: Associated CCV outside control limits high, sample is ND.

FC5931-2 for Dichlorodifluoromethane: Associated ICV outside control limits high, however sample ND.

FC5931-2 for Methyl Acetate: Associated CCV outside control limits high, sample is ND.

FC5931-2 for Methyl Bromide: Associated ICV, BS and CCV outside control limits high, however sample ND.

FC5931-2 for trans-1,3-Dichloropropene: Associated BS recovery outside control limits low.

MS Semi-volatiles By Method EPA 537M QSM5.3 B-15

Matrix: AQ **Batch ID:** OP97046

OP97046-BS: Insufficient sample for MS/MSD.

OP97046-BSD for 13C8-FOSA: Outside control limits.

Sample(s) FC5931-1, FC5931-2 have surrogates outside control limits.

FC5931-1 for 13C4-PFBA: Outside control limits.

FC5931-1 for 13C8-FOSA: Outside control limits.

FC5931-1 for PFOSA: Associated ID Standard outside control limits.

FC5931-2 for 13C2-PFTeDA: Outside control limits.

FC5931-2 for 13C4-PFBA: Outside control limits.

FC5931-2 for 13C8-FOSA: Outside control limits.

FC5931-2 for Perfluorotetradecanoic acid: Associated ID Standard outside control limits.

FC5931-2 for PFOSA: Associated ID Standard outside control limits.

SGS North America Inc. - Orlando certifies that data reported for samples received, listed on the associated custody chain or analytical task order, were produced to specifications meeting the Quality System precision, accuracy and completeness objectives except as noted. Estimated non-standard method measurement uncertainty data is available on request, based on quality control bias and implicit for standard methods. Acceptable uncertainty requires tested parameter quality control data to meet method criteria. SGS North America Inc.- Orlando is not responsible for data quality assumptions if partial reports are used and recommends that this report be used in its entirety.

Narrative prepared by:

_____

Kim Benham, Client Services *(Signature on File)*

Summary of Hits

Job Number: FC5931
Account: Tetra Tech NUS
Project: KSC-CRCA
Collected: 05/09/23

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	PQL	MDL	Units	Method
FC5931-1	**CRCA-ASINFLUENT-20230509**					
Vinyl Chloride		1.9	1.0	0.41	ug/l	SW846 8260D
Perfluorobutanoic acid		39.7	1.6	0.40	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid		0.0187	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0175	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.0073 I	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0157	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0045 I	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0070 I	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
FC5931-2	**CRCA-ASEFFLUENT-20230509**					
Perfluorobutanoic acid		25.5	1.6	0.40	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid		0.0214	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0187	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.0088	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0181	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0046 I	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.010	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID:	CRCA-ASINFLUENT-20230509		
Lab Sample ID:	FC5931-1	**Date Sampled:**	05/09/23
Matrix:	AQ - Ground Water	**Date Received:**	05/09/23
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	KSC-CRCA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5E39709.D	1	05/16/23 05:08	JL	n/a	n/a	V5E1773
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL 4.2 List

CAS No.	Compound	Result	PQL	MDL	Units	Q
67-64-1	Acetone [a]	10 U	25	10	ug/l	
71-43-2	Benzene	0.31 U	1.0	0.31	ug/l	
75-27-4	Bromodichloromethane	0.24 U	1.0	0.24	ug/l	
75-25-2	Bromoform	0.41 U	1.0	0.41	ug/l	
78-93-3	2-Butanone (MEK) [a]	2.0 U	5.0	2.0	ug/l	
75-15-0	Carbon Disulfide	0.53 U	2.0	0.53	ug/l	
56-23-5	Carbon Tetrachloride	0.36 U	1.0	0.36	ug/l	
108-90-7	Chlorobenzene	0.20 U	1.0	0.20	ug/l	
75-00-3	Chloroethane	0.67 U	2.0	0.67	ug/l	
67-66-3	Chloroform	0.30 U	1.0	0.30	ug/l	
110-82-7	Cyclohexane	0.39 U	1.0	0.39	ug/l	
124-48-1	Dibromochloromethane	0.28 U	1.0	0.28	ug/l	
96-12-8	1,2-Dibromo-3-chloropropan [a]	1.0 U	5.0	1.0	ug/l	
106-93-4	1,2-Dibromoethane	0.28 U	2.0	0.28	ug/l	
75-71-8	Dichlorodifluoromethane [b]	0.50 U	2.0	0.50	ug/l	
95-50-1	1,2-Dichlorobenzene	0.32 U	1.0	0.32	ug/l	
541-73-1	1,3-Dichlorobenzene	0.22 U	1.0	0.22	ug/l	
106-46-7	1,4-Dichlorobenzene	0.26 U	1.0	0.26	ug/l	
75-34-3	1,1-Dichloroethane	0.34 U	1.0	0.34	ug/l	
107-06-2	1,2-Dichloroethane [a]	0.31 U	1.0	0.31	ug/l	
75-35-4	1,1-Dichloroethylene	0.32 U	1.0	0.32	ug/l	
156-59-2	cis-1,2-Dichloroethylene	0.28 U	1.0	0.28	ug/l	
156-60-5	trans-1,2-Dichloroethylene	0.22 U	1.0	0.22	ug/l	
78-87-5	1,2-Dichloropropane	0.43 U	1.0	0.43	ug/l	
10061-01-5	cis-1,3-Dichloropropene	0.29 U	1.0	0.29	ug/l	
10061-02-6	trans-1,3-Dichloropropene [c]	0.21 U	1.0	0.21	ug/l	
100-41-4	Ethylbenzene	0.36 U	1.0	0.36	ug/l	
76-13-1	Freon 113	0.48 U	1.0	0.48	ug/l	
591-78-6	2-Hexanone	2.0 U	10	2.0	ug/l	
98-82-8	Isopropylbenzene	0.22 U	1.0	0.22	ug/l	
79-20-9	Methyl Acetate [a]	5.0 U	20	5.0	ug/l	
74-83-9	Methyl Bromide [d]	2.0 U	5.0	2.0	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-ASINFLUENT-20230509		
Lab Sample ID:	FC5931-1	**Date Sampled:**	05/09/23
Matrix:	AQ - Ground Water	**Date Received:**	05/09/23
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	KSC-CRCA		

VOA TCL 4.2 List

CAS No.	Compound	Result	PQL	MDL	Units	Q
74-87-3	Methyl Chloride	0.50 U	2.0	0.50	ug/l	
108-87-2	Methylcyclohexane	0.44 U	1.0	0.44	ug/l	
75-09-2	Methylene Chloride	2.0 U	5.0	2.0	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	1.0 U	5.0	1.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	0.23 U	1.0	0.23	ug/l	
100-42-5	Styrene	0.22 U	1.0	0.22	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	0.30 U	1.0	0.30	ug/l	
127-18-4	Tetrachloroethylene	0.22 U	1.0	0.22	ug/l	
108-88-3	Toluene	0.30 U	1.0	0.30	ug/l	
120-82-1	1,2,4-Trichlorobenzene	0.50 U	2.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	0.25 U	1.0	0.25	ug/l	
79-00-5	1,1,2-Trichloroethane	0.47 U	1.0	0.47	ug/l	
79-01-6	Trichloroethylene	0.35 U	1.0	0.35	ug/l	
75-69-4	Trichlorofluoromethane	0.50 U	2.0	0.50	ug/l	
75-01-4	Vinyl Chloride	1.9	1.0	0.41	ug/l	
1330-20-7	Xylene (total)	0.72 U	3.0	0.72	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	104%		83-118%
17060-07-0	1,2-Dichloroethane-D4	120%		79-125%
2037-26-5	Toluene-D8	93%		85-112%
460-00-4	4-Bromofluorobenzene	99%		83-118%

(a) Associated CCV outside control limits high, sample is ND.
(b) Associated ICV outside control limits high, however sample ND.
(c) Associated BS recovery outside control limits low.
(d) Associated ICV, BS and CCV outside control limits high, however sample ND.

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-ASINFLUENT-20230509		
Lab Sample ID:	FC5931-1	**Date Sampled:**	05/09/23
Matrix:	AQ - Ground Water	**Date Received:**	05/09/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	KSC-CRCA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q109950.D	1	05/27/23 10:11	LR	05/24/23 13:29	OP97046	S2Q1548
Run #2	2Q109951.D	100	05/27/23 10:28	LR	05/24/23 13:29	OP97046	S2Q1548

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2	125 ml	1.0 ml

CAS No.	Compound	Result	PQL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	39.7 [a]	1.6	0.40	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0187	0.0080	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	0.0175	0.0080	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0073	0.0080	0.0020	ug/l	I
335-67-1	Perfluorooctanoic acid	0.0157	0.0080	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0020 U	0.0080	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS						
375-73-5	Perfluorobutanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0045	0.0080	0.0020	ug/l	I
375-92-8	Perfluoroheptanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0070	0.0080	0.0020	ug/l	I
68259-12-1	Perfluorononanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA [b]	0.0020 U	0.0080	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	0.0040 U	0.016	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0040 U	0.016	0.0040	ug/l	
FLUOROTELOMER SULFONATES						
757124-72-4	4:2 Fluorotelomer sulfonate	0.0040 U	0.016	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0040 U	0.016	0.0040	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-ASINFLUENT-20230509		
Lab Sample ID:	FC5931-1	**Date Sampled:**	05/09/23
Matrix:	AQ - Ground Water	**Date Received:**	05/09/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	KSC-CRCA		

CAS No.	Compound	Result	PQL	MDL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0040 U	0.016	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES						
13252-13-6	HFPO-DA (GenX)	0.0040 U	0.016	0.0040	ug/l	
919005-14-4	ADONA	0.0040 U	0.016	0.0040	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0040 U	0.016	0.0040	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0040 U	0.016	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	40% [c]	97%	50-150%
	13C5-PFPeA	67%	100%	50-150%
	13C5-PFHxA	74%	102%	50-150%
	13C4-PFHpA	76%	103%	50-150%
	13C8-PFOA	82%	103%	50-150%
	13C9-PFNA	83%	102%	50-150%
	13C6-PFDA	82%	103%	50-150%
	13C7-PFUnDA	71%	103%	50-150%
	13C2-PFDoDA	64%	102%	50-150%
	13C2-PFTeDA	53%	106%	50-150%
	13C3-PFBS	75%	99%	50-150%
	13C3-PFHxS	74%	100%	50-150%
	13C8-PFOS	77%	106%	50-150%
	13C8-FOSA	32% [c]	109%	50-150%
	d3-MeFOSAA	91%	122%	50-150%
	d5-EtFOSAA	85%	121%	50-150%
	13C2-4:2FTS	76%	93%	50-150%
	13C2-6:2FTS	85%	94%	50-150%
	13C2-8:2FTS	80%	100%	50-150%
	13C3-HFPO-DA	70%	97%	50-150%

(a) Result is from Run# 2
(b) Associated ID Standard outside control limits.
(c) Outside control limits.

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-ASEFFLUENT-20230509		
Lab Sample ID:	FC5931-2	**Date Sampled:**	05/09/23
Matrix:	AQ - Ground Water	**Date Received:**	05/09/23
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	KSC-CRCA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5E39710.D	1	05/16/23 05:33	JL	n/a	n/a	V5E1773
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL 4.2 List

CAS No.	Compound	Result	PQL	MDL	Units	Q
67-64-1	Acetone [a]	10 U	25	10	ug/l	
71-43-2	Benzene	0.31 U	1.0	0.31	ug/l	
75-27-4	Bromodichloromethane	0.24 U	1.0	0.24	ug/l	
75-25-2	Bromoform	0.41 U	1.0	0.41	ug/l	
78-93-3	2-Butanone (MEK) [a]	2.0 U	5.0	2.0	ug/l	
75-15-0	Carbon Disulfide	0.53 U	2.0	0.53	ug/l	
56-23-5	Carbon Tetrachloride	0.36 U	1.0	0.36	ug/l	
108-90-7	Chlorobenzene	0.20 U	1.0	0.20	ug/l	
75-00-3	Chloroethane	0.67 U	2.0	0.67	ug/l	
67-66-3	Chloroform	0.30 U	1.0	0.30	ug/l	
110-82-7	Cyclohexane	0.39 U	1.0	0.39	ug/l	
124-48-1	Dibromochloromethane	0.28 U	1.0	0.28	ug/l	
96-12-8	1,2-Dibromo-3-chloropropan [a]	1.0 U	5.0	1.0	ug/l	
106-93-4	1,2-Dibromoethane	0.28 U	2.0	0.28	ug/l	
75-71-8	Dichlorodifluoromethane [b]	0.50 U	2.0	0.50	ug/l	
95-50-1	1,2-Dichlorobenzene	0.32 U	1.0	0.32	ug/l	
541-73-1	1,3-Dichlorobenzene	0.22 U	1.0	0.22	ug/l	
106-46-7	1,4-Dichlorobenzene	0.26 U	1.0	0.26	ug/l	
75-34-3	1,1-Dichloroethane	0.34 U	1.0	0.34	ug/l	
107-06-2	1,2-Dichloroethane [a]	0.31 U	1.0	0.31	ug/l	
75-35-4	1,1-Dichloroethylene	0.32 U	1.0	0.32	ug/l	
156-59-2	cis-1,2-Dichloroethylene	0.28 U	1.0	0.28	ug/l	
156-60-5	trans-1,2-Dichloroethylene	0.22 U	1.0	0.22	ug/l	
78-87-5	1,2-Dichloropropane	0.43 U	1.0	0.43	ug/l	
10061-01-5	cis-1,3-Dichloropropene	0.29 U	1.0	0.29	ug/l	
10061-02-6	trans-1,3-Dichloropropene [c]	0.21 U	1.0	0.21	ug/l	
100-41-4	Ethylbenzene	0.36 U	1.0	0.36	ug/l	
76-13-1	Freon 113	0.48 U	1.0	0.48	ug/l	
591-78-6	2-Hexanone	2.0 U	10	2.0	ug/l	
98-82-8	Isopropylbenzene	0.22 U	1.0	0.22	ug/l	
79-20-9	Methyl Acetate [a]	5.0 U	20	5.0	ug/l	
74-83-9	Methyl Bromide [d]	2.0 U	5.0	2.0	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-ASEFFLUENT-20230509		
Lab Sample ID:	FC5931-2	**Date Sampled:**	05/09/23
Matrix:	AQ - Ground Water	**Date Received:**	05/09/23
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	KSC-CRCA		

VOA TCL 4.2 List

CAS No.	Compound	Result	PQL	MDL	Units	Q
74-87-3	Methyl Chloride	0.50 U	2.0	0.50	ug/l	
108-87-2	Methylcyclohexane	0.44 U	1.0	0.44	ug/l	
75-09-2	Methylene Chloride	2.0 U	5.0	2.0	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	1.0 U	5.0	1.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	0.23 U	1.0	0.23	ug/l	
100-42-5	Styrene	0.22 U	1.0	0.22	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	0.30 U	1.0	0.30	ug/l	
127-18-4	Tetrachloroethylene	0.22 U	1.0	0.22	ug/l	
108-88-3	Toluene	0.30 U	1.0	0.30	ug/l	
120-82-1	1,2,4-Trichlorobenzene	0.50 U	2.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	0.25 U	1.0	0.25	ug/l	
79-00-5	1,1,2-Trichloroethane	0.47 U	1.0	0.47	ug/l	
79-01-6	Trichloroethylene	0.35 U	1.0	0.35	ug/l	
75-69-4	Trichlorofluoromethane	0.50 U	2.0	0.50	ug/l	
75-01-4	Vinyl Chloride	0.41 U	1.0	0.41	ug/l	
1330-20-7	Xylene (total)	0.72 U	3.0	0.72	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	105%		83-118%
17060-07-0	1,2-Dichloroethane-D4	119%		79-125%
2037-26-5	Toluene-D8	96%		85-112%
460-00-4	4-Bromofluorobenzene	100%		83-118%

(a) Associated CCV outside control limits high, sample is ND.
(b) Associated ICV outside control limits high, however sample ND.
(c) Associated BS recovery outside control limits low.
(d) Associated ICV, BS and CCV outside control limits high, however sample ND.

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-ASEFFLUENT-20230509		
Lab Sample ID:	FC5931-2	**Date Sampled:**	05/09/23
Matrix:	AQ - Ground Water	**Date Received:**	05/09/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	KSC-CRCA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q109952.D	1	05/27/23 10:46	LR	05/24/23 13:29	OP97046	S2Q1548
Run #2	2Q109953.D	100	05/27/23 11:03	LR	05/24/23 13:29	OP97046	S2Q1548

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2	125 ml	1.0 ml

CAS No.	Compound	Result	PQL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	25.5 [a]	1.6	0.40	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0214	0.0080	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	0.0187	0.0080	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0088	0.0080	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	0.0181	0.0080	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0020 U	0.0080	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid [b]	0.0020 U	0.0080	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS						
375-73-5	Perfluorobutanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0046	0.0080	0.0020	ug/l	I
375-92-8	Perfluoroheptanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.010	0.0080	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA [b]	0.0020 U	0.0080	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	0.0040 U	0.016	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0040 U	0.016	0.0040	ug/l	
FLUOROTELOMER SULFONATES						
757124-72-4	4:2 Fluorotelomer sulfonate	0.0040 U	0.016	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0040 U	0.016	0.0040	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-ASEFFLUENT-20230509		
Lab Sample ID:	FC5931-2	**Date Sampled:**	05/09/23
Matrix:	AQ - Ground Water	**Date Received:**	05/09/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	KSC-CRCA		

CAS No.	Compound	Result	PQL	MDL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0040 U	0.016	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES						
13252-13-6	HFPO-DA (GenX)	0.0040 U	0.016	0.0040	ug/l	
919005-14-4	ADONA	0.0040 U	0.016	0.0040	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0040 U	0.016	0.0040	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0040 U	0.016	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	32% [c]	105%	50-150%
	13C5-PFPeA	56%	108%	50-150%
	13C5-PFHxA	66%	110%	50-150%
	13C4-PFHpA	69%	110%	50-150%
	13C8-PFOA	75%	111%	50-150%
	13C9-PFNA	71%	111%	50-150%
	13C6-PFDA	67%	112%	50-150%
	13C7-PFUnDA	61%	109%	50-150%
	13C2-PFDoDA	57%	109%	50-150%
	13C2-PFTeDA	35% [c]	114%	50-150%
	13C3-PFBS	69%	107%	50-150%
	13C3-PFHxS	67%	108%	50-150%
	13C8-PFOS	63%	113%	50-150%
	13C8-FOSA	45% [c]	119%	50-150%
	d3-MeFOSAA	76%	130%	50-150%
	d5-EtFOSAA	70%	127%	50-150%
	13C2-4:2FTS	66%	101%	50-150%
	13C2-6:2FTS	75%	101%	50-150%
	13C2-8:2FTS	66%	106%	50-150%
	13C3-HFPO-DA	59%	104%	50-150%

(a) Result is from Run# 2
(b) Associated ID Standard outside control limits.
(c) Outside control limits.

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody

Tetra Tech, Inc.

CHAIN OF CUSTODY NUMBER FC5931 No. 1825 | PAGE 1 OF 1

PROJECT NO: 112G08970	FACILITY: ITSL-CRCA	PROJECT MANAGER Chris Neumann	PHONE NUMBER (321) 636-6470	LABORATORY NAME AND CONTACT: SGS – Andrea Colby
SAMPLERS (SIGNATURE) – Chuck Sorden		FIELD OPERATIONS LEADER Chuck Sorden	PHONE NUMBER (321) 591-7580	ADDRESS 4405 Vineland Rd. Ste. C-15
		CARRIER/WAYBILL NUMBER		CITY, STATE Orlando, FL

STANDARD TAT ☒
RUSH TAT ☐ ☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

	DATE YEAR 2023	TIME	SAMPLE ID	LOCATION ID	TOP DEPTH (FT)	BOTTOM DEPTH (FT)	MATRIX (GW, SO, SW, SD, QC, ETC.)	COLLECTION METHOD GRAB (G) COMP (C)	No. OF CONTAINERS	CONTAINER TYPE PLASTIC (P) or GLASS (G)		PRESERVATIVE USED		TYPE OF ANALYSIS								COMMENTS
										G	P		HCl/4°C	4°C	V8260TCL 42	LCQSM5538 NS28						
1	05/09	0900	CRCA-ASINFLUENT-20230509	–	–	–	GW	G	5						X	X						
2	05/09	0915	CRCA-ASEFFLUENT-20230509	–	–	–	GW	G	5						X	X						

INITIAL ASSESSMENT

LABEL VERIFICATION

	DATE	TIME		DATE	TIME
1. RELINQUISHED BY	05/09/23	1200	1. RECEIVED BY	05/09/23	1200
2. RELINQUISHED BY	5/09/23	1250	2. RECEIVED BY	05/09/23	1250
3. RELINQUISHED BY	5/09/23	1500	3. RECEIVED BY	05/09/23	15:00
COMMENTS	5/9/23	17:20		5/9/23	1720

DISTRIBUTION: WHITE (ACCOMPANIES SAMPLE) YELLOW (FIELD COPY) PINK (FILE COPY) 4/02R

FORM NO. TtNUS-001

FC5931: Chain of Custody
Page 1 of 2

SGS Sample Receipt Summary

Job Number: FC5931 **Client:** TETRA TECH **Project:** 112G08970

Date / Time Received: 5/9/2023 5:20:00 PM **Delivery Method:** COURIER **Airbill #'s:**

Therm ID: IR 1; **Therm CF:** -0.1; **# of Coolers:** 1

Cooler Temps (Raw Measured) °C: Cooler 1: (0.6);

Cooler Temps (Corrected) °C: Cooler 1: (0.5);

Cooler Information	Y	or	N
1. Custody Seals Present	☑		☐
2. Custody Seals Intact	☑		☐
3. Temp criteria achieved	☑		☐
4. Cooler temp verification	IR Gun		
5. Cooler media	Ice (Bag)		

Trip Blank Information	Y	or	N	N/A
1. Trip Blank present / cooler	☐		☐	☑
2. Trip Blank listed on COC	☐		☐	☑

	W	or	S	N/A
3. Type Of TB Received	☐		☐	☑

Sample Information	Y	or	N	N/A
1. Sample labels present on bottles	☑		☐	
2. Samples preserved properly	☑		☐	
3. Sufficient volume/containers recvd for analysis:	☑		☐	
4. Condition of sample	Intact			
5. Sample recvd within HT	☑		☐	
6. Dates/Times/IDs on COC match Sample Label	☑		☐	
7. VOCs have headspace	☐		☑	☐
8. Bottles received for unspecified tests	☐		☑	
9. Compositing instructions clear	☐		☐	☑
10. Voa Soil Kits/Jars received past 48hrs?	☐		☐	☑
11. % Solids Jar received?	☐		☐	☑
12. Residual Chlorine Present?	☐		☐	☑

Misc. Information

Number of Encores: 25-Gram _____ 5-Gram _____

Number of 5035 Field Kits: _____

Number of Lab Filtered Metals: _____

Test Strip Lot #s: pH 0-3 230320 pH 10-12 25BDH07 Other: (Specify) pH 1.0 - 12.0 222221

Residual Chlorine Test Strip Lot #: _____

Comments

SM001
Rev. Date 05/24/17

Technician: NATHANS Date: 5/9/2023 5:20:00 PM Reviewer: _____ Date: _____

FC5931: Chain of Custody
Page 2 of 2

MS Volatiles

6

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Job Number: FC5931
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V5E1773-MB	5E39694.D	1	05/15/23	JL	n/a	n/a	V5E1773

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

FC5931-1, FC5931-2

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	25	10	ug/l	
71-43-2	Benzene	ND	1.0	0.31	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.24	ug/l	
75-25-2	Bromoform	ND	1.0	0.41	ug/l	
78-93-3	2-Butanone (MEK)	ND	5.0	2.0	ug/l	
75-15-0	Carbon Disulfide	ND	2.0	0.53	ug/l	
56-23-5	Carbon Tetrachloride	ND	1.0	0.36	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.20	ug/l	
75-00-3	Chloroethane	ND	2.0	0.67	ug/l	
67-66-3	Chloroform	ND	1.0	0.30	ug/l	
110-82-7	Cyclohexane	ND	1.0	0.39	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.28	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	5.0	1.0	ug/l	
106-93-4	1,2-Dibromoethane	ND	2.0	0.28	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	0.50	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	0.32	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	0.22	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	0.26	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.34	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.31	ug/l	
75-35-4	1,1-Dichloroethylene	ND	1.0	0.32	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	0.28	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	0.22	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.43	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.29	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.21	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.36	ug/l	
76-13-1	Freon 113	ND	1.0	0.48	ug/l	
591-78-6	2-Hexanone	ND	10	2.0	ug/l	
98-82-8	Isopropylbenzene	ND	1.0	0.22	ug/l	
79-20-9	Methyl Acetate	ND	20	5.0	ug/l	
74-83-9	Methyl Bromide	ND	5.0	2.0	ug/l	
74-87-3	Methyl Chloride	ND	2.0	0.50	ug/l	
108-87-2	Methylcyclohexane	ND	1.0	0.44	ug/l	
75-09-2	Methylene Chloride	ND	5.0	2.0	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	5.0	1.0	ug/l	

Method Blank Summary

Job Number: FC5931
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V5E1773-MB	5E39694.D	1	05/15/23	JL	n/a	n/a	V5E1773

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

FC5931-1, FC5931-2

CAS No.	Compound	Result	RL	MDL	Units	Q
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.23	ug/l	
100-42-5	Styrene	ND	1.0	0.22	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.30	ug/l	
127-18-4	Tetrachloroethylene	ND	1.0	0.22	ug/l	
108-88-3	Toluene	ND	1.0	0.30	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	2.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.25	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.47	ug/l	
79-01-6	Trichloroethylene	ND	1.0	0.35	ug/l	
75-69-4	Trichlorofluoromethane	ND	2.0	0.50	ug/l	
75-01-4	Vinyl Chloride	ND	1.0	0.41	ug/l	
1330-20-7	Xylene (total)	ND	3.0	0.72	ug/l	

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	104%	83-118%
17060-07-0	1,2-Dichloroethane-D4	113%	79-125%
2037-26-5	Toluene-D8	94%	85-112%
460-00-4	4-Bromofluorobenzene	100%	83-118%

Blank Spike Summary

Job Number: FC5931
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V5E1773-BS	5E39689.D	1	05/15/23	JL	n/a	n/a	V5E1773

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

FC5931-1, FC5931-2

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
67-64-1	Acetone	125	182	146	50-147
71-43-2	Benzene	25	23.7	95	81-122
75-27-4	Bromodichloromethane	25	23.7	95	79-123
75-25-2	Bromoform	25	21.8	87	66-123
78-93-3	2-Butanone (MEK)	125	162	130	56-143
75-15-0	Carbon Disulfide	25	24.6	98	66-148
56-23-5	Carbon Tetrachloride	25	27.1	108	76-136
108-90-7	Chlorobenzene	25	21.4	86	82-124
75-00-3	Chloroethane	25	23.7	95	62-144
67-66-3	Chloroform	25	24.3	97	80-124
110-82-7	Cyclohexane	25	24.9	100	73-138
124-48-1	Dibromochloromethane	25	23.6	94	78-122
96-12-8	1,2-Dibromo-3-chloropropane	25	26.6	106	64-123
106-93-4	1,2-Dibromoethane	25	22.3	89	75-120
75-71-8	Dichlorodifluoromethane	25	38.9	156	42-167
95-50-1	1,2-Dichlorobenzene	25	21.3	85	82-124
541-73-1	1,3-Dichlorobenzene	25	21.2	85	84-125
106-46-7	1,4-Dichlorobenzene	25	22.5	90	78-120
75-34-3	1,1-Dichloroethane	25	23.4	94	81-122
107-06-2	1,2-Dichloroethane	25	27.6	110	75-125
75-35-4	1,1-Dichloroethylene	25	25.3	101	78-137
156-59-2	cis-1,2-Dichloroethylene	25	22.6	90	78-120
156-60-5	trans-1,2-Dichloroethylene	25	24.0	96	76-127
78-87-5	1,2-Dichloropropane	25	24.8	99	76-124
10061-01-5	cis-1,3-Dichloropropene	25	21.4	86	75-118
10061-02-6	trans-1,3-Dichloropropene	25	19.4	78* [a]	80-120
100-41-4	Ethylbenzene	25	22.9	92	81-121
76-13-1	Freon 113	25	27.6	110	72-134
591-78-6	2-Hexanone	125	146	117	61-129
98-82-8	Isopropylbenzene	25	21.0	84	83-132
79-20-9	Methyl Acetate	125	142	114	65-126
74-83-9	Methyl Bromide	25	42.6	170*	59-143
74-87-3	Methyl Chloride	25	35.5	142	50-159
108-87-2	Methylcyclohexane	25	21.6	86	76-129
75-09-2	Methylene Chloride	25	26.2	105	69-135
108-10-1	4-Methyl-2-pentanone (MIBK)	125	134	107	66-122

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FC5931
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V5E1773-BS	5E39689.D	1	05/15/23	JL	n/a	n/a	V5E1773

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

FC5931-1, FC5931-2

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
1634-04-4	Methyl Tert Butyl Ether	25	25.0	100	72-117
100-42-5	Styrene	25	21.8	87	78-119
79-34-5	1,1,2,2-Tetrachloroethane	25	21.5	86	72-120
127-18-4	Tetrachloroethylene	25	28.5	114	76-135
108-88-3	Toluene	25	23.2	93	80-120
120-82-1	1,2,4-Trichlorobenzene	25	21.3	85	73-129
71-55-6	1,1,1-Trichloroethane	25	26.0	104	75-130
79-00-5	1,1,2-Trichloroethane	25	22.4	90	76-119
79-01-6	Trichloroethylene	25	24.8	99	81-126
75-69-4	Trichlorofluoromethane	25	33.6	134	71-156
75-01-4	Vinyl Chloride	25	29.0	116	69-159
1330-20-7	Xylene (total)	75	65.5	87	80-126

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	105%	83-118%
17060-07-0	1,2-Dichloroethane-D4	118%	79-125%
2037-26-5	Toluene-D8	96%	85-112%
460-00-4	4-Bromofluorobenzene	98%	83-118%

(a) Sporadic marginal failure.

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FC5931
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
FC5970-3MS	5E39690.D	5	05/15/23	JL	n/a	n/a	V5E1773
FC5970-3MSD	5E39691.D	5	05/15/23	JL	n/a	n/a	V5E1773
FC5970-3	5E39697.D	1	05/16/23	JL	n/a	n/a	V5E1773

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

FC5931-1, FC5931-2

CAS No.	Compound	FC5970-3 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
67-64-1	Acetone	25	U	625	941	151*	625	937	150*	0	50-147/21
71-43-2	Benzene	1.0	U	125	127	102	125	125	100	2	81-122/14
75-27-4	Bromodichloromethane	1.0	U	125	130	104	125	126	101	3	79-123/19
75-25-2	Bromoform	1.0	U	125	117	94	125	118	94	1	66-123/21
78-93-3	2-Butanone (MEK)	5.0	U	625	825	132	625	826	132	0	56-143/18
75-15-0	Carbon Disulfide	2.0	U	125	134	107	125	138	110	3	66-148/23
56-23-5	Carbon Tetrachloride	1.0	U	125	151	121	125	148	118	2	76-136/23
108-90-7	Chlorobenzene	1.0	U	125	119	95	125	118	94	1	82-124/14
75-00-3	Chloroethane	2.0	U	125	106	85	125	105	84	1	62-144/20
67-66-3	Chloroform	1.0	U	125	135	108	125	136	109	1	80-124/15
110-82-7	Cyclohexane	1.0	U	125	142	114	125	141	113	1	73-138/18
124-48-1	Dibromochloromethane	1.0	U	125	129	103	125	130	104	1	78-122/19
96-12-8	1,2-Dibromo-3-chloropropane	5.0	U	125	140	112	125	148	118	6	64-123/18
106-93-4	1,2-Dibromoethane	2.0	U	125	123	98	125	121	97	2	75-120/13
75-71-8	Dichlorodifluoromethane	2.0	U	125	184	147	125	179	143	3	42-167/19
95-50-1	1,2-Dichlorobenzene	1.0	U	125	116	93	125	116	93	0	82-124/14
541-73-1	1,3-Dichlorobenzene	1.0	U	125	114	91	125	116	93	2	84-125/14
106-46-7	1,4-Dichlorobenzene	1.0	U	125	122	98	125	124	99	2	78-120/15
75-34-3	1,1-Dichloroethane	1.0	U	125	128	102	125	127	102	1	81-122/15
107-06-2	1,2-Dichloroethane	1.0	U	125	150	120	125	149	119	1	75-125/14
75-35-4	1,1-Dichloroethylene	1.0	U	125	138	110	125	139	111	1	78-137/18
156-59-2	cis-1,2-Dichloroethylene	1.0	U	125	123	98	125	126	101	2	78-120/15
156-60-5	trans-1,2-Dichloroethylene	1.0	U	125	138	110	125	135	108	2	76-127/17
78-87-5	1,2-Dichloropropane	1.0	U	125	138	110	125	136	109	1	76-124/14
10061-01-5	cis-1,3-Dichloropropene	1.0	U	125	117	94	125	112	90	4	75-118/23
10061-02-6	trans-1,3-Dichloropropene	1.0	U	125	106	85	125	103	82	3	80-120/22
100-41-4	Ethylbenzene	1.0	U	125	128	102	125	128	102	0	81-121/14
76-13-1	Freon 113	1.0	U	125	150	120	125	152	122	1	72-134/20
591-78-6	2-Hexanone	10	U	625	750	120	625	750	120	0	61-129/18
98-82-8	Isopropylbenzene	1.0	U	125	120	96	125	119	95	1	83-132/15
79-20-9	Methyl Acetate	20	U	625	746	119	625	727	116	3	65-126/18
74-83-9	Methyl Bromide	5.0	U	125	205	164*	125	208	166*	1	59-143/19
74-87-3	Methyl Chloride	2.0	U	125	152	122	125	152	122	0	50-159/19
108-87-2	Methylcyclohexane	1.0	U	125	126	101	125	126	101	0	76-129/17
75-09-2	Methylene Chloride	5.0	U	125	143	114	125	141	113	1	69-135/16
108-10-1	4-Methyl-2-pentanone (MIBK)	5.0	U	625	687	110	625	686	110	0	66-122/16

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FC5931
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
FC5970-3MS	5E39690.D	5	05/15/23	JL	n/a	n/a	V5E1773
FC5970-3MSD	5E39691.D	5	05/15/23	JL	n/a	n/a	V5E1773
FC5970-3	5E39697.D	1	05/16/23	JL	n/a	n/a	V5E1773

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

FC5931-1, FC5931-2

CAS No.	Compound	FC5970-3 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
1634-04-4	Methyl Tert Butyl Ether	1.0 U		125	136	109	125	135	108	1	72-117/14
100-42-5	Styrene	1.0 U		125	119	95	125	119	95	0	78-119/23
79-34-5	1,1,2,2-Tetrachloroethane	1.0 U		125	117	94	125	118	94	1	72-120/14
127-18-4	Tetrachloroethylene	1.8		125	121	95	125	123	97	2	76-135/16
108-88-3	Toluene	1.0 U		125	125	100	125	124	99	1	80-120/14
120-82-1	1,2,4-Trichlorobenzene	2.0 U		125	119	95	125	117	94	2	73-129/20
71-55-6	1,1,1-Trichloroethane	1.0 U		125	143	114	125	141	113	1	75-130/16
79-00-5	1,1,2-Trichloroethane	1.0 U		125	123	98	125	125	100	2	76-119/14
79-01-6	Trichloroethylene	1.0 U		125	131	105	125	131	105	0	81-126/15
75-69-4	Trichlorofluoromethane	2.0 U		125	155	124	125	151	121	3	71-156/21
75-01-4	Vinyl Chloride	1.0 U		125	136	109	125	134	107	1	69-159/18
1330-20-7	Xylene (total)	3.0 U		375	356	95	375	357	95	0	80-126/15

CAS No.	Surrogate Recoveries	MS	MSD	FC5970-3	Limits
1868-53-7	Dibromofluoromethane	104%	105%	102%	83-118%
17060-07-0	1,2-Dichloroethane-D4	117%	117%	116%	79-125%
2037-26-5	Toluene-D8	95%	97%	94%	85-112%
460-00-4	4-Bromofluorobenzene	98%	99%	97%	83-118%

* = Outside of Control Limits.

MS Semi-volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Instrument Blank

Job Number: FC5931
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S2Q1548-IBLK	2Q109867.D	1	05/26/23	LR	n/a	n/a	S2Q1548

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC5931-1, FC5931-2

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	
2355-31-9	MeFOSAA	ND	0.0080	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0080	0.0020	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	
919005-14-4	ADONA	ND	0.0080	0.0020	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.0080	0.0020	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.0080	0.0020	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	90%	50-150%
	13C5-PFPeA	92%	50-150%
	13C5-PFHxA	94%	50-150%
	13C4-PFHpA	94%	50-150%

Instrument Blank

Job Number: FC5931
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S2Q1548-IBLK	2Q109867.D	1	05/26/23	LR	n/a	n/a	S2Q1548

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC5931-1, FC5931-2

CAS No.	ID Standard Recoveries		Limits
	13C8-PFOA	94%	50-150%
	13C9-PFNA	94%	50-150%
	13C6-PFDA	94%	50-150%
	13C7-PFUnDA	90%	50-150%
	13C2-PFDoDA	89%	50-150%
	13C2-PFTeDA	91%	50-150%
	13C3-PFBS	93%	50-150%
	13C3-PFHxS	92%	50-150%
	13C8-PFOS	93%	50-150%
	13C8-FOSA	98%	50-150%
	d3-MeFOSAA	100%	50-150%
	d5-EtFOSAA	99%	50-150%
	13C2-4:2FTS	86%	50-150%
	13C2-6:2FTS	86%	50-150%
	13C2-8:2FTS	88%	50-150%
	13C3-HFPO-DA	95%	50-150%

Instrument Blank

Job Number: FC5931
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S2Q1548-IBLK	2Q109930.D	1	05/27/23	LR	n/a	n/a	S2Q1548

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC5931-1, FC5931-2

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	
2355-31-9	MeFOSAA	ND	0.0080	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0080	0.0020	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	
919005-14-4	ADONA	ND	0.0080	0.0020	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.0080	0.0020	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.0080	0.0020	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	91%	50-150%
	13C5-PFPeA	94%	50-150%
	13C5-PFHxA	97%	50-150%
	13C4-PFHpA	98%	50-150%

Instrument Blank

Job Number: FC5931
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S2Q1548-IBLK	2Q109930.D	1	05/27/23	LR	n/a	n/a	S2Q1548

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC5931-1, FC5931-2

CAS No.	ID Standard Recoveries		Limits
	13C8-PFOA	97%	50-150%
	13C9-PFNA	98%	50-150%
	13C6-PFDA	99%	50-150%
	13C7-PFUnDA	98%	50-150%
	13C2-PFDoDA	97%	50-150%
	13C2-PFTeDA	100%	50-150%
	13C3-PFBS	94%	50-150%
	13C3-PFHxS	94%	50-150%
	13C8-PFOS	100%	50-150%
	13C8-FOSA	105%	50-150%
	d3-MeFOSAA	114%	50-150%
	d5-EtFOSAA	112%	50-150%
	13C2-4:2FTS	89%	50-150%
	13C2-6:2FTS	89%	50-150%
	13C2-8:2FTS	94%	50-150%
	13C3-HFPO-DA	90%	50-150%

Method Blank Summary

Job Number: FC5931
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP97046-MB	2Q109942.D	1	05/27/23	LR	05/24/23	OP97046	S2Q1548

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC5931-1, FC5931-2

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	
2355-31-9	MeFOSAA	ND	0.0080	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0080	0.0020	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	
919005-14-4	ADONA	ND	0.0080	0.0020	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.0080	0.0020	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.0080	0.0020	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	93%	50-150%
	13C5-PFPeA	97%	50-150%
	13C5-PFHxA	99%	50-150%
	13C4-PFHpA	99%	50-150%

Method Blank Summary

Job Number: FC5931
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP97046-MB	2Q109942.D	1	05/27/23	LR	05/24/23	OP97046	S2Q1548

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC5931-1, FC5931-2

CAS No.	ID Standard Recoveries		Limits
	13C8-PFOA	99%	50-150%
	13C9-PFNA	100%	50-150%
	13C6-PFDA	100%	50-150%
	13C7-PFUnDA	93%	50-150%
	13C2-PFDoDA	88%	50-150%
	13C2-PFTeDA	64%	50-150%
	13C3-PFBS	95%	50-150%
	13C3-PFHxS	96%	50-150%
	13C8-PFOS	101%	50-150%
	13C8-FOSA	78%	50-150%
	d3-MeFOSAA	109%	50-150%
	d5-EtFOSAA	103%	50-150%
	13C2-4:2FTS	91%	50-150%
	13C2-6:2FTS	92%	50-150%
	13C2-8:2FTS	97%	50-150%
	13C3-HFPO-DA	91%	50-150%

Blank Spike/Blank Spike Duplicate Summary

Job Number: FC5931
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP97046-BS [a]	2Q109940.D	1	05/27/23	LR	05/24/23	OP97046	S2Q1548
OP97046-BSD	2Q109941.D	1	05/27/23	LR	05/24/23	OP97046	S2Q1548

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC5931-1, FC5931-2

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	BSD ug/l	BSD %	RPD	Limits Rec/RPD
375-22-4	Perfluorobutanoic acid	0.08	0.0784	98	0.0748	94	5	73-129/30
2706-90-3	Perfluoropentanoic acid	0.08	0.0772	97	0.0736	92	5	72-129/30
307-24-4	Perfluorohexanoic acid	0.08	0.0750	94	0.0722	90	4	72-129/30
375-85-9	Perfluoroheptanoic acid	0.08	0.0760	95	0.0727	91	4	72-130/30
335-67-1	Perfluorooctanoic acid	0.08	0.0768	96	0.0736	92	4	71-133/30
375-95-1	Perfluorononanoic acid	0.08	0.0739	92	0.0720	90	3	69-130/30
335-76-2	Perfluorodecanoic acid	0.08	0.0765	96	0.0738	92	4	71-129/30
2058-94-8	Perfluoroundecanoic acid	0.08	0.0760	95	0.0727	91	4	69-133/30
307-55-1	Perfluorododecanoic acid	0.08	0.0791	99	0.0757	95	4	72-134/30
72629-94-8	Perfluorotridecanoic acid	0.08	0.0710	89	0.0653	82	8	65-144/30
376-06-7	Perfluorotetradecanoic acid	0.08	0.0820	103	0.0759	95	8	71-132/30
375-73-5	Perfluorobutanesulfonic acid	0.08	0.0766	96	0.0741	93	3	72-130/30
2706-91-4	Perfluoropentanesulfonic acid	0.08	0.0752	94	0.0730	91	3	71-127/30
355-46-4	Perfluorohexanesulfonic acid	0.08	0.0747	93	0.0712	89	5	68-131/30
375-92-8	Perfluoroheptanesulfonic acid	0.08	0.0777	97	0.0729	91	6	69-134/30
1763-23-1	Perfluorooctanesulfonic acid	0.08	0.0790	99	0.0739	92	7	65-140/30
68259-12-1	Perfluorononanesulfonic acid	0.08	0.0800	100	0.0693	87	14	69-127/30
335-77-3	Perfluorodecanesulfonic acid	0.08	0.0796	100	0.0677	85	16	53-142/30
754-91-6	PFOSA	0.08	0.0814	102	0.0734	92	10	67-137/30
2355-31-9	MeFOSAA	0.08	0.0735	92	0.0708	89	4	65-136/30
2991-50-6	EtFOSAA	0.08	0.0784	98	0.0728	91	7	61-135/30
757124-72-4	4:2 Fluorotelomer sulfonate	0.08	0.0776	97	0.0758	95	2	63-143/30
27619-97-2	6:2 Fluorotelomer sulfonate	0.08	0.0827	103	0.0786	98	5	64-140/30
39108-34-4	8:2 Fluorotelomer sulfonate	0.08	0.0799	100	0.0797	100	0	67-138/30
13252-13-6	HFPO-DA (GenX)	0.08	0.0745	93	0.0744	93	0	60-140/30
919005-14-4	ADONA	0.08	0.0688	86	0.0661	83	4	60-140/30
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.08	0.0755	94	0.0677	85	11	60-140/30
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.08	0.0769	96	0.0668	84	14	60-140/30

CAS No.	ID Standard Recoveries	BSP	BSD	Limits
	13C4-PFBA	86%	92%	50-150%
	13C5-PFPeA	89%	95%	50-150%
	13C5-PFHxA	92%	97%	50-150%
	13C4-PFHpA	91%	96%	50-150%

* = Outside of Control Limits.

Blank Spike/Blank Spike Duplicate Summary

Job Number: FC5931
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP97046-BS [a]	2Q109940.D	1	05/27/23	LR	05/24/23	OP97046	S2Q1548
OP97046-BSD	2Q109941.D	1	05/27/23	LR	05/24/23	OP97046	S2Q1548

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC5931-1, FC5931-2

CAS No.	ID Standard Recoveries	BSP	BSD	Limits
	13C8-PFOA	91%	95%	50-150%
	13C9-PFNA	91%	95%	50-150%
	13C6-PFDA	92%	95%	50-150%
	13C7-PFUnDA	84%	90%	50-150%
	13C2-PFDoDA	84%	83%	50-150%
	13C2-PFTeDA	67%	61%	50-150%
	13C3-PFBS	89%	92%	50-150%
	13C3-PFHxS	91%	94%	50-150%
	13C8-PFOS	91%	97%	50-150%
	13C8-FOSA	71%	44%* [b]	50-150%
	d3-MeFOSAA	101%	106%	50-150%
	d5-EtFOSAA	93%	100%	50-150%
	13C2-4:2FTS	96%	100%	50-150%
	13C2-6:2FTS	92%	98%	50-150%
	13C2-8:2FTS	99%	101%	50-150%
	13C3-HFPO-DA	87%	88%	50-150%

(a) Insufficient sample for MS/MSD.
(b) Outside control limits.

* = Outside of Control Limits.

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

e-Hardcopy 2.0
Automated Report

Technical Report for

Tetra Tech NUS

KSC-CRCA

112G08970

SGS Job Number: FC7212

Sampling Date: 06/23/23

Report to:

Tetra-Tech, Inc.
661 Andersen Drive Foster Plaza 7
Pittsburgh, PA 15220
amy.thomson@tetratech.com; carrie.stock@tetratech.com;
alex.murphy@tetratech.com
ATTN: Amy Thomson

Total number of pages in report: 44

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable unless noted in the narrative, comments or footnotes.

Norm Farmer
Technical Director

Client Service contact: Andrea Colby 407-425-6700

Certifications: FL(E83510), LA(03051), KS(E-10327), NC(573), NJ(FL002), NY(12022), SC(96038001) DoD ELAP(ANAB L2229), AZ(AZ0806), CA(2937), TX(T104704404), PA(68-03573), VA(460177), AL, AK, AR, CT, IA, KY, MA, MI. MS, ND, NH, NV, OK, OR, IL, UT, VT, WA, WI, WV

This report shall not be reproduced, except in its entirety, without the written approval of SGS.
Test results relate only to samples analyzed.

SGS is the sole authority for authorizing edits or modifications to this document.
Unauthorized modification of this report is strictly prohibited.
Review standard terms at: http://www.sgs.com/en/terms-and-conditions

Please share your ideas about how we can serve you better at:
EHS.US.CustomerCare@sgs.com

Sections: 1 2 3 4 5 6 7

Table of Contents

Section 1: Sample Summary **3**
Section 2: Case Narrative/Conformance Summary **4**
Section 3: Summary of Hits **6**
Section 4: Sample Results **7**
4.1: FC7212-1: CRCA-ASINFLUENT-20230623 8
4.2: FC7212-2: CRCA-ASEFFLUENT-20230623 12
Section 5: Misc. Forms **16**
5.1: Chain of Custody 17
Section 6: MS Volatiles - QC Data Summaries **19**
6.1: Method Blank Summary 20
6.2: Blank Spike Summary 22
6.3: Matrix Spike/Matrix Spike Duplicate Summary 24
Section 7: MS Semi-volatiles - QC Data Summaries **26**
7.1: Method Blank Summary 27
7.2: Blank Spike Summary 37
7.3: Matrix Spike/Matrix Spike Duplicate Summary 41

Sample Summary

Tetra Tech NUS

Job No: FC7212

KSC-CRCA
Project No: 112G08970

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
FC7212-1	06/23/23	10:45	CS	06/23/23	AQ	Ground Water	CRCA-ASINFLUENT-20230623
FC7212-2	06/23/23	11:00	CS	06/23/23	AQ	Ground Water	CRCA-ASEFFLUENT-20230623

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: Tetra Tech NUS **Job No:** FC7212

Site: KSC-CRCA **Report Date:** 7/31/2023 6:17:45 PM

On 06/23/2023, 2 Sample(s), 0 Trip Blank(s) and 0 Field Blank(s) were received at SGS North America Inc - Orlando. at a maximum corrected temperature of 0.5 C. Samples were intact and chemically preserved, unless noted below. A SGS North America Inc. - Orlando Job Number of FC7212 was assigned to the project.

Laboratory sample ID, client sample ID and dates of sample collection are detailed in the report's Results Summary Section. Specified quality control criteria were achieved for this job except as noted below. For more information, please refer to the analytical results and QC summary pages.

MS Volatiles By Method SW846 8260D

Matrix: AQ **Batch ID:** V2O3008

Sample(s) FC7244-1MS, FC7244-1MSD were used as the QC samples indicated.

Matrix Spike Recovery(s) for Isopropylbenzene, Methyl Bromide, Methylcyclohexane are outside control limits. Probable cause is due to matrix interference.

RPD(s) for MSD for Methyl Tert Butyl Ether are outside control limits for sample FC7244-1MSD. Probable cause is due to sample non-homogeneity.

FC7212-1 for 1,2,4-Trichlorobenzene: Associated CCV outside control limits low.

FC7212-1 for Dichlorodifluoromethane: Associated CCV outside control limits high, sample is ND.

FC7212-1: Sample was treated with an anti-foaming agent.

FC7212-2 for 1,2,4-Trichlorobenzene: Associated CCV outside control limits low.

FC7212-2 for Dichlorodifluoromethane: Associated CCV outside control limits high, sample is ND.

FC7212-2: Sample was treated with an anti-foaming agent.

V2O3008-MB: Sample was treated with an anti-foaming agent.

MS Semi-volatiles By Method EPA 537M QSM5.3 B-15

Matrix: AQ **Batch ID:** OP97944

Sample(s) FC7266-11MS, FC7266-11MSD were used as the QC samples indicated.

Blank Spike Recovery(s) for 11Cl-PF3OUdS (F-53B Minor), EtFOSAA, HFPO-DA (GenX), Perfluorodecanoic acid, Perfluoroheptanoic acid, Perfluorohexanoic acid, Perfluorononanesulfonic acid, Perfluorononanoic acid, Perfluorooctanoic acid, Perfluoropentanoic acid, Perfluorotetradecanoic acid, PFOSA are outside control limits.

Matrix Spike Recovery(s) for 6:2 Fluorotelomer sulfonate, 8:2 Fluorotelomer sulfonate, EtFOSAA, HFPO-DA (GenX), MeFOSAA, Perfluorodecanoic acid, Perfluorododecanoic acid, Perfluoroheptanesulfonic acid, Perfluoroheptanoic acid, Perfluorohexanesulfonic acid, Perfluorohexanoic acid, Perfluorononanesulfonic acid, Perfluorononanoic acid, Perfluorooctanesulfonic acid, Perfluorooctanoic acid, Perfluoropentanesulfonic acid, Perfluoropentanoic acid, Perfluorotetradecanoic acid, Perfluoroundecanoic acid are outside control limits. Probable cause is due to matrix interference.

Sample(s) FC7212-1, FC7212-2 have surrogates outside control limits.

FC7212-1 for 13C2-PFDoDA: Outside control limits.

FC7212-1 for 13C2-PFTeDA: Outside control limits.

FC7212-1 for 13C3-HFPO-DA: Outside control limits.

FC7212-1 for 13C3-HFPO-DA: Outside control limits.

FC7212-1 for 13C3-PFBS: Outside control limits.

FC7212-1 for 13C4-PFBA: Outside control limits.

FC7212-1 for 13C4-PFBA: Outside control limits.

FC7212-1 for 13C5-PFHxA: Outside control limits.

FC7212-1 for 13C5-PFPeA: Outside control limits.

FC7212-1 for 13C8-FOSA: Outside control limits.

FC7212-1 for HFPO-DA (GenX): Associated ID Standard outside control limits.

FC7212-2 for 13C2-4:2FTS: Outside control limits.

FC7212-2 for 13C2-4:2FTS: Outside control limits.

FC7212-2 for 13C2-PFTeDA: Outside control limits.

FC7212-2 for 13C2-PFTeDA: Outside control limits.

FC7212-2 for 13C3-HFPO-DA: Outside control limits.

FC7212-2 for 13C3-HFPO-DA: Outside control limits.

FC7212-2 for 13C3-PFBS: Outside control limits.

MS Semi-volatiles By Method EPA 537M QSM5.3 B-15

Matrix: AQ **Batch ID:** OP97944

FC7212-2 for 13C4-PFBA: Outside control limits.
FC7212-2 for 13C4-PFBA: Outside control limits.
FC7212-2 for 13C5-PFHxA: Outside control limits.
FC7212-2 for 13C5-PFPeA: Outside control limits.
FC7212-2 for 13C5-PFPeA: Outside control limits.
FC7212-2 for 13C8-FOSA: Outside control limits.
FC7212-2 for 4:2 Fluorotelomer sulfonate: Associated ID Standard outside control limits.
FC7212-2 for d3-MeFOSAA: Outside control limits.
FC7212-2 for d5-EtFOSAA: Outside control limits.
FC7212-2 for HFPO-DA (GenX): Associated ID Standard outside control limits.
FC7212-2 for Perfluoropentanoic acid: Associated ID Standard outside control limits.
FC7212-2 for Perfluorotetradecanoic acid: Associated ID Standard outside control limits.

SGS North America Inc. - Orlando certifies that data reported for samples received, listed on the associated custody chain or analytical task order, were produced to specifications meeting the Quality System precision, accuracy and completeness objectives except as noted. Estimated non-standard method measurement uncertainty data is available on request, based on quality control bias and implicit for standard methods. Acceptable uncertainty requires tested parameter quality control data to meet method criteria. SGS North America Inc.- Orlando is not responsible for data quality assumptions if partial reports are used and recommends that this report be used in its entirety.

Narrative prepared by:

_____

Kim Benham, Client Services *(Signature on File)*

Summary of Hits

Job Number: FC7212
Account: Tetra Tech NUS
Project: KSC-CRCA
Collected: 06/23/23

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	PQL	MDL	Units	Method
FC7212-1	**CRCA-ASINFLUENT-20230623**					
Vinyl Chloride [a]		2.6	1.0	0.41	ug/l	SW846 8260D
Perfluorobutanoic acid		15.2	1.6	0.40	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid		0.0222 I	0.040	0.010	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0209 I	0.040	0.010	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.0076 I	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0177	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0050 I	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0073 I	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
FC7212-2	**CRCA-ASEFFLUENT-20230623**					
Perfluorobutanoic acid		8.96	1.6	0.40	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid [b]		0.0242 I	0.040	0.010	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0206 I	0.040	0.010	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.0081	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0230	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorononanoic acid		0.0022 I	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0053 I	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0121	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15

(a) Sample was treated with an anti-foaming agent.
(b) Associated ID Standard outside control limits.

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID:	CRCA-ASINFLUENT-20230623		
Lab Sample ID:	FC7212-1	**Date Sampled:**	06/23/23
Matrix:	AQ - Ground Water	**Date Received:**	06/23/23
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	KSC-CRCA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	2O77233.D	1	06/27/23 13:37	JW	n/a	n/a	V2O3008
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL 4.2 List

CAS No.	Compound	Result	PQL	MDL	Units	Q
67-64-1	Acetone	10 U	25	10	ug/l	
71-43-2	Benzene	0.31 U	1.0	0.31	ug/l	
75-27-4	Bromodichloromethane	0.24 U	1.0	0.24	ug/l	
75-25-2	Bromoform	0.41 U	1.0	0.41	ug/l	
78-93-3	2-Butanone (MEK)	2.0 U	5.0	2.0	ug/l	
75-15-0	Carbon Disulfide	0.53 U	2.0	0.53	ug/l	
56-23-5	Carbon Tetrachloride	0.36 U	1.0	0.36	ug/l	
108-90-7	Chlorobenzene	0.20 U	1.0	0.20	ug/l	
75-00-3	Chloroethane	0.67 U	2.0	0.67	ug/l	
67-66-3	Chloroform	0.30 U	1.0	0.30	ug/l	
110-82-7	Cyclohexane	0.39 U	1.0	0.39	ug/l	
124-48-1	Dibromochloromethane	0.28 U	1.0	0.28	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	1.0 U	5.0	1.0	ug/l	
106-93-4	1,2-Dibromoethane	0.28 U	2.0	0.28	ug/l	
75-71-8	Dichlorodifluoromethane [b]	0.50 U	2.0	0.50	ug/l	
95-50-1	1,2-Dichlorobenzene	0.32 U	1.0	0.32	ug/l	
541-73-1	1,3-Dichlorobenzene	0.22 U	1.0	0.22	ug/l	
106-46-7	1,4-Dichlorobenzene	0.26 U	1.0	0.26	ug/l	
75-34-3	1,1-Dichloroethane	0.34 U	1.0	0.34	ug/l	
107-06-2	1,2-Dichloroethane	0.31 U	1.0	0.31	ug/l	
75-35-4	1,1-Dichloroethylene	0.32 U	1.0	0.32	ug/l	
156-59-2	cis-1,2-Dichloroethylene	0.28 U	1.0	0.28	ug/l	
156-60-5	trans-1,2-Dichloroethylene	0.22 U	1.0	0.22	ug/l	
78-87-5	1,2-Dichloropropane	0.43 U	1.0	0.43	ug/l	
10061-01-5	cis-1,3-Dichloropropene	0.29 U	1.0	0.29	ug/l	
10061-02-6	trans-1,3-Dichloropropene	0.21 U	1.0	0.21	ug/l	
100-41-4	Ethylbenzene	0.36 U	1.0	0.36	ug/l	
76-13-1	Freon 113	0.48 U	1.0	0.48	ug/l	
591-78-6	2-Hexanone	2.0 U	10	2.0	ug/l	
98-82-8	Isopropylbenzene	0.22 U	1.0	0.22	ug/l	
79-20-9	Methyl Acetate	5.0 U	20	5.0	ug/l	
74-83-9	Methyl Bromide [c]	2.0 U	5.0	2.0	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-ASINFLUENT-20230623		
Lab Sample ID:	FC7212-1	**Date Sampled:**	06/23/23
Matrix:	AQ - Ground Water	**Date Received:**	06/23/23
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	KSC-CRCA		

VOA TCL 4.2 List

CAS No.	Compound	Result	PQL	MDL	Units	Q
74-87-3	Methyl Chloride	0.50 U	2.0	0.50	ug/l	
108-87-2	Methylcyclohexane	0.44 U	1.0	0.44	ug/l	
75-09-2	Methylene Chloride	2.0 U	5.0	2.0	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	1.0 U	5.0	1.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	0.23 U	1.0	0.23	ug/l	
100-42-5	Styrene	0.22 U	1.0	0.22	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	0.30 U	1.0	0.30	ug/l	
127-18-4	Tetrachloroethylene	0.22 U	1.0	0.22	ug/l	
108-88-3	Toluene	0.30 U	1.0	0.30	ug/l	
120-82-1	1,2,4-Trichlorobenzene [c]	0.50 U	2.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	0.25 U	1.0	0.25	ug/l	
79-00-5	1,1,2-Trichloroethane	0.47 U	1.0	0.47	ug/l	
79-01-6	Trichloroethylene	0.35 U	1.0	0.35	ug/l	
75-69-4	Trichlorofluoromethane	0.50 U	2.0	0.50	ug/l	
75-01-4	Vinyl Chloride	2.6	1.0	0.41	ug/l	
1330-20-7	Xylene (total)	0.72 U	3.0	0.72	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	102%		83-118%
17060-07-0	1,2-Dichloroethane-D4	103%		79-125%
2037-26-5	Toluene-D8	104%		85-112%
460-00-4	4-Bromofluorobenzene	108%		83-118%

(a) Sample was treated with an anti-foaming agent.
(b) Associated CCV outside control limits high, sample is ND.
(c) Associated CCV outside control limits low.

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-ASINFLUENT-20230623		
Lab Sample ID:	FC7212-1	**Date Sampled:**	06/23/23
Matrix:	AQ - Ground Water	**Date Received:**	06/23/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	KSC-CRCA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5Q17461.D	1	07/27/23 01:37	LR	07/19/23 14:15	OP97944	S5Q276
Run #2	5Q17462.D	5	07/27/23 01:52	LR	07/19/23 14:15	OP97944	S5Q276
Run #3	5Q17463.D	100	07/27/23 02:08	LR	07/19/23 14:15	OP97944	S5Q276

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2	125 ml	1.0 ml
Run #3	125 ml	1.0 ml

CAS No.	Compound	Result	PQL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	15.2 [a]	1.6	0.40	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0222 [b]	0.040	0.010	ug/l	I
307-24-4	Perfluorohexanoic acid	0.0209 [b]	0.040	0.010	ug/l	I
375-85-9	Perfluoroheptanoic acid	0.0076	0.0080	0.0020	ug/l	I
335-67-1	Perfluorooctanoic acid	0.0177	0.0080	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0020 U	0.0080	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.010 U [b]	0.040	0.010	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.010 U [b]	0.040	0.010	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.010 U [b]	0.040	0.010	ug/l	
PERFLUOROALKYLSULFONIC ACIDS						
375-73-5	Perfluorobutanesulfonic acid	0.010 U [b]	0.040	0.010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.010 U [b]	0.040	0.010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0050	0.0080	0.0020	ug/l	I
375-92-8	Perfluoroheptanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0073	0.0080	0.0020	ug/l	I
68259-12-1	Perfluorononanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA	0.010 U [b]	0.040	0.010	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	0.0040 U	0.016	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0040 U	0.016	0.0040	ug/l	
FLUOROTELOMER SULFONATES						

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-ASINFLUENT-20230623		
Lab Sample ID:	FC7212-1	**Date Sampled:**	06/23/23
Matrix:	AQ - Ground Water	**Date Received:**	06/23/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	KSC-CRCA		

CAS No.	Compound	Result	PQL	MDL	Units	Q
757124-72-4	4:2 Fluorotelomer sulfonate	0.0040 U	0.016	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0040 U	0.016	0.0040	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0040 U	0.016	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES						
13252-13-6	HFPO-DA (GenX) [c]	0.0040 U	0.016	0.0040	ug/l	
919005-14-4	ADONA	0.0040 U	0.016	0.0040	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.020 U [b]	0.080	0.020	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Run# 3	Limits
	13C4-PFBA	28% [d]	47% [d]	120%	50-150%
	13C5-PFPeA	40% [d]	50%	117%	50-150%
	13C5-PFHxA	48% [d]	54%	116%	50-150%
	13C4-PFHpA	54%	58%	123%	50-150%
	13C8-PFOA	57%	59%	121%	50-150%
	13C9-PFNA	59%	61%	126%	50-150%
	13C6-PFDA	56%	57%	128%	50-150%
	13C7-PFUnDA	53%	56%	134%	50-150%
	13C2-PFDoDA	49% [d]	52%	127%	50-150%
	13C2-PFTeDA	48% [d]	53%	131%	50-150%
	13C3-PFBS	45% [d]	56%	109%	50-150%
	13C3-PFHxS	55%	58%	122%	50-150%
	13C8-PFOS	51%	55%	121%	50-150%
	13C8-FOSA	48% [d]	51%	142%	50-150%
	d3-MeFOSAA	59%	57%	134%	50-150%
	d5-EtFOSAA	54%	56%	140%	50-150%
	13C2-4:2FTS	51%	54%	116%	50-150%
	13C2-6:2FTS	62%	63%	119%	50-150%
	13C2-8:2FTS	59%	59%	129%	50-150%
	13C3-HFPO-DA	40% [d]	42% [d]	105%	50-150%

(a) Result is from Run# 3
(b) Result is from Run# 2
(c) Associated ID Standard outside control limits.
(d) Outside control limits.

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-ASEFFLUENT-20230623		
Lab Sample ID:	FC7212-2	**Date Sampled:**	06/23/23
Matrix:	AQ - Ground Water	**Date Received:**	06/23/23
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	KSC-CRCA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	2O77234.D	1	06/27/23 14:02	JW	n/a	n/a	V2O3008
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL 4.2 List

CAS No.	Compound	Result	PQL	MDL	Units	Q
67-64-1	Acetone	10 U	25	10	ug/l	
71-43-2	Benzene	0.31 U	1.0	0.31	ug/l	
75-27-4	Bromodichloromethane	0.24 U	1.0	0.24	ug/l	
75-25-2	Bromoform	0.41 U	1.0	0.41	ug/l	
78-93-3	2-Butanone (MEK)	2.0 U	5.0	2.0	ug/l	
75-15-0	Carbon Disulfide	0.53 U	2.0	0.53	ug/l	
56-23-5	Carbon Tetrachloride	0.36 U	1.0	0.36	ug/l	
108-90-7	Chlorobenzene	0.20 U	1.0	0.20	ug/l	
75-00-3	Chloroethane	0.67 U	2.0	0.67	ug/l	
67-66-3	Chloroform	0.30 U	1.0	0.30	ug/l	
110-82-7	Cyclohexane	0.39 U	1.0	0.39	ug/l	
124-48-1	Dibromochloromethane	0.28 U	1.0	0.28	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	1.0 U	5.0	1.0	ug/l	
106-93-4	1,2-Dibromoethane	0.28 U	2.0	0.28	ug/l	
75-71-8	Dichlorodifluoromethane [b]	0.50 U	2.0	0.50	ug/l	
95-50-1	1,2-Dichlorobenzene	0.32 U	1.0	0.32	ug/l	
541-73-1	1,3-Dichlorobenzene	0.22 U	1.0	0.22	ug/l	
106-46-7	1,4-Dichlorobenzene	0.26 U	1.0	0.26	ug/l	
75-34-3	1,1-Dichloroethane	0.34 U	1.0	0.34	ug/l	
107-06-2	1,2-Dichloroethane	0.31 U	1.0	0.31	ug/l	
75-35-4	1,1-Dichloroethylene	0.32 U	1.0	0.32	ug/l	
156-59-2	cis-1,2-Dichloroethylene	0.28 U	1.0	0.28	ug/l	
156-60-5	trans-1,2-Dichloroethylene	0.22 U	1.0	0.22	ug/l	
78-87-5	1,2-Dichloropropane	0.43 U	1.0	0.43	ug/l	
10061-01-5	cis-1,3-Dichloropropene	0.29 U	1.0	0.29	ug/l	
10061-02-6	trans-1,3-Dichloropropene	0.21 U	1.0	0.21	ug/l	
100-41-4	Ethylbenzene	0.36 U	1.0	0.36	ug/l	
76-13-1	Freon 113	0.48 U	1.0	0.48	ug/l	
591-78-6	2-Hexanone	2.0 U	10	2.0	ug/l	
98-82-8	Isopropylbenzene	0.22 U	1.0	0.22	ug/l	
79-20-9	Methyl Acetate	5.0 U	20	5.0	ug/l	
74-83-9	Methyl Bromide [c]	2.0 U	5.0	2.0	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-ASEFFLUENT-20230623		
Lab Sample ID:	FC7212-2	**Date Sampled:**	06/23/23
Matrix:	AQ - Ground Water	**Date Received:**	06/23/23
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	KSC-CRCA		

VOA TCL 4.2 List

CAS No.	Compound	Result	PQL	MDL	Units	Q
74-87-3	Methyl Chloride	0.50 U	2.0	0.50	ug/l	
108-87-2	Methylcyclohexane	0.44 U	1.0	0.44	ug/l	
75-09-2	Methylene Chloride	2.0 U	5.0	2.0	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	1.0 U	5.0	1.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	0.23 U	1.0	0.23	ug/l	
100-42-5	Styrene	0.22 U	1.0	0.22	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	0.30 U	1.0	0.30	ug/l	
127-18-4	Tetrachloroethylene	0.22 U	1.0	0.22	ug/l	
108-88-3	Toluene	0.30 U	1.0	0.30	ug/l	
120-82-1	1,2,4-Trichlorobenzene [c]	0.50 U	2.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	0.25 U	1.0	0.25	ug/l	
79-00-5	1,1,2-Trichloroethane	0.47 U	1.0	0.47	ug/l	
79-01-6	Trichloroethylene	0.35 U	1.0	0.35	ug/l	
75-69-4	Trichlorofluoromethane	0.50 U	2.0	0.50	ug/l	
75-01-4	Vinyl Chloride	0.41 U	1.0	0.41	ug/l	
1330-20-7	Xylene (total)	0.72 U	3.0	0.72	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	104%		83-118%
17060-07-0	1,2-Dichloroethane-D4	101%		79-125%
2037-26-5	Toluene-D8	103%		85-112%
460-00-4	4-Bromofluorobenzene	110%		83-118%

(a) Sample was treated with an anti-foaming agent.
(b) Associated CCV outside control limits high, sample is ND.
(c) Associated CCV outside control limits low.

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-ASEFFLUENT-20230623		
Lab Sample ID:	FC7212-2	**Date Sampled:**	06/23/23
Matrix:	AQ - Ground Water	**Date Received:**	06/23/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	KSC-CRCA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5Q17464.D	1	07/27/23 02:24	LR	07/19/23 14:15	OP97944	S5Q276
Run #2	5Q17465.D	5	07/27/23 02:39	LR	07/19/23 14:15	OP97944	S5Q276
Run #3	5Q17466.D	100	07/27/23 02:55	LR	07/19/23 14:15	OP97944	S5Q276

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2	125 ml	1.0 ml
Run #3	125 ml	1.0 ml

CAS No.	Compound	Result	PQL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	8.96 [a]	1.6	0.40	ug/l	
2706-90-3	Perfluoropentanoic acid [b]	0.0242 [c]	0.040	0.010	ug/l	I
307-24-4	Perfluorohexanoic acid	0.0206 [c]	0.040	0.010	ug/l	I
375-85-9	Perfluoroheptanoic acid	0.0081	0.0080	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	0.0230	0.0080	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0022	0.0080	0.0020	ug/l	I
335-76-2	Perfluorodecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid [b]	0.010 U [c]	0.040	0.010	ug/l	
PERFLUOROALKYLSULFONIC ACIDS						
375-73-5	Perfluorobutanesulfonic acid	0.010 U [c]	0.040	0.010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.010 U [c]	0.040	0.010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0053	0.0080	0.0020	ug/l	I
375-92-8	Perfluoroheptanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0121	0.0080	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA	0.0020 U	0.0080	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	0.0040 U	0.016	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0040 U	0.016	0.0040	ug/l	
FLUOROTELOMER SULFONATES						

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-ASEFFLUENT-20230623		
Lab Sample ID:	FC7212-2	**Date Sampled:**	06/23/23
Matrix:	AQ - Ground Water	**Date Received:**	06/23/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	KSC-CRCA		

CAS No.	Compound	Result	PQL	MDL	Units	Q
757124-72-4	4:2 Fluorotelomer sulfonate [b]	0.020 U [c]	0.080	0.020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0040 U	0.016	0.0040	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0040 U	0.016	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES						
13252-13-6	HFPO-DA (GenX) [b]	0.020 U [c]	0.080	0.020	ug/l	
919005-14-4	ADONA	0.0040 U	0.016	0.0040	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0040 U	0.016	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Run# 3	Limits
	13C4-PFBA	22% [d]	32% [d]	133%	50-150%
	13C5-PFPeA	34% [d]	42% [d]	130%	50-150%
	13C5-PFHxA	46% [d]	50%	130%	50-150%
	13C4-PFHpA	53%	56%	137%	50-150%
	13C8-PFOA	58%	58%	136%	50-150%
	13C9-PFNA	57%	59%	140%	50-150%
	13C6-PFDA	57%	57%	145%	50-150%
	13C7-PFUnDA	56%	56%	149%	50-150%
	13C2-PFDoDA	54%	54%	142%	50-150%
	13C2-PFTeDA	45% [d]	49% [d]	144%	50-150%
	13C3-PFBS	46% [d]	51%	121%	50-150%
	13C3-PFHxS	54%	61%	134%	50-150%
	13C8-PFOS	54%	53%	133%	50-150%
	13C8-FOSA	51%	55%	160% [d]	50-150%
	d3-MeFOSAA	58%	56%	154% [d]	50-150%
	d5-EtFOSAA	60%	61%	155% [d]	50-150%
	13C2-4:2FTS	47% [d]	49% [d]	130%	50-150%
	13C2-6:2FTS	61%	61%	134%	50-150%
	13C2-8:2FTS	57%	58%	143%	50-150%
	13C3-HFPO-DA	36% [d]	41% [d]	114%	50-150%

(a) Result is from Run# 3
(b) Associated ID Standard outside control limits.
(c) Result is from Run# 2
(d) Outside control limits.

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody

Tetra Tech, Inc.

CHAIN OF CUSTODY NUMBER FC7212 No. 2707 PAGE 1 OF 1

PROJECT NO: 112G08970	FACILITY: KSL-CRCA	PROJECT MANAGER Chris Neumann	PHONE NUMBER (321) 636-6470	LABORATORY NAME AND CONTACT: SGS - Andrea Colby
SAMPLERS (SIGNATURE) – Chuck Sorden		FIELD OPERATIONS LEADER Chuck Sorden	PHONE NUMBER (321) 591-7580	ADDRESS 4405 Vineland Rd. Ste. C-15
		CARRIER/WAYBILL NUMBER		CITY, STATE Orlando, FL

STANDARD TAT X
RUSH TAT ☐ ☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

	DATE YEAR 2023	TIME	SAMPLE ID	LOCATION ID	TOP DEPTH (FT)	BOTTOM DEPTH (FT)	MATRIX (GW, SO, SW, SD, QC, ETC.)	COLLECTION METHOD GRAB (G) COMP (C)	No. OF CONTAINERS	CONTAINER TYPE PLASTIC (P) or GLASS (G)	PRESERVATIVE USED	TYPE OF ANALYSIS V8260TCL 42	LL05MS537MS28	COMMENTS
										G	P			
											HCl/4°C		4°C	
1	OC/23	1045	CRCA-ASINFLUENT-20230623	—	—	—	GW	G	5			X	X	
2	06/23	1100	CRCA-ASEFFLUENT-20230623	—	—	—	GW	G	5			X	X	

INITIAL ASSESSMENT ZB
LABEL VERIFICATION
0.6IR1

	DATE	TIME		DATE	TIME
1. RELINQUISHED BY	06/23/23	1130	1. RECEIVED BY	6/23/23	11:30
2. RELINQUISHED BY	06/20/23	1305	2. RECEIVED BY	6/23/23	1308
3. RELINQUISHED BY	DATE	TIME	3. RECEIVED BY	DATE	TIME

COMMENTS

DISTRIBUTION: WHITE (ACCOMPANIES SAMPLE) YELLOW (FIELD COPY) PINK (FILE COPY) 4/02R
FORM NO. TtNUS-001

FC7212: Chain of Custody
Page 1 of 2

SGS Sample Receipt Summary

Job Number: FC7212 **Client:** TETRA TECH **Project:** 112G08970

Date / Time Received: 6/23/2023 1:08:00 PM **Delivery Method:** COURIER **Airbill #'s:**

Therm ID: IR 1; **Therm CF:** -0.1; **# of Coolers:** 1

Cooler Temps (Raw Measured) °C: Cooler 1: (0.6);

Cooler Temps (Corrected) °C: Cooler 1: (0.5);

Cooler Information	Y	or	N
1. Custody Seals Present	☑		☐
2. Custody Seals Intact	☑		☐
3. Temp criteria achieved	☑		☐
4. Cooler temp verification	IR Gun		
5. Cooler media	Ice (Bag)		

Trip Blank Information	Y	or	N	N/A
1. Trip Blank present / cooler	☐		☐	☑
2. Trip Blank listed on COC	☐		☐	☑

	W	or	S	N/A
3. Type Of TB Received	☐		☐	☑

Sample Information	Y	or	N	N/A
1. Sample labels present on bottles	☑		☐	
2. Samples preserved properly	☑		☐	
3. Sufficient volume/containers recvd for analysis:	☑		☐	
4. Condition of sample	Intact			
5. Sample recvd within HT	☑		☐	
6. Dates/Times/IDs on COC match Sample Label	☑		☐	
7. VOCs have headspace	☐		☑	☐
8. Bottles received for unspecified tests	☐		☑	
9. Compositing instructions clear	☐		☐	☑
10. Voa Soil Kits/Jars received past 48hrs?	☐		☐	☑
11. % Solids Jar received?	☐		☐	☑
12. Residual Chlorine Present?	☐		☐	☑

Misc. Information

Number of Encores: 25-Gram _____ 5-Gram _____ Number of 5035 Field Kits: _____ Number of Lab Filtered Metals: _____

Test Strip Lot #s: pH 0-3 230320 pH 10-12 _____ Other: (Specify) pH 1.0 - 12.0 222221

Residual Chlorine Test Strip Lot #: _____

Comments

SM001
Rev. Date 05/24/17

Technician: NATHANS Date: 6/23/2023 1:08:00 PM Reviewer: _____ Date: _____

FC7212: Chain of Custody
Page 2 of 2

MS Volatiles

6

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Job Number: FC7212
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V2O3008-MB [a]	2O77230.D	1	06/27/23	JW	n/a	n/a	V2O3008

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

FC7212-1, FC7212-2

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	25	10	ug/l	
71-43-2	Benzene	ND	1.0	0.31	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.24	ug/l	
75-25-2	Bromoform	ND	1.0	0.41	ug/l	
78-93-3	2-Butanone (MEK)	ND	5.0	2.0	ug/l	
75-15-0	Carbon Disulfide	ND	2.0	0.53	ug/l	
56-23-5	Carbon Tetrachloride	ND	1.0	0.36	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.20	ug/l	
75-00-3	Chloroethane	ND	2.0	0.67	ug/l	
67-66-3	Chloroform	ND	1.0	0.30	ug/l	
110-82-7	Cyclohexane	ND	1.0	0.39	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.28	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	5.0	1.0	ug/l	
106-93-4	1,2-Dibromoethane	ND	2.0	0.28	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	0.50	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	0.32	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	0.22	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	0.26	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.34	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.31	ug/l	
75-35-4	1,1-Dichloroethylene	ND	1.0	0.32	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	0.28	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	0.22	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.43	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.29	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.21	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.36	ug/l	
76-13-1	Freon 113	ND	1.0	0.48	ug/l	
591-78-6	2-Hexanone	ND	10	2.0	ug/l	
98-82-8	Isopropylbenzene	ND	1.0	0.22	ug/l	
79-20-9	Methyl Acetate	ND	20	5.0	ug/l	
74-83-9	Methyl Bromide	ND	5.0	2.0	ug/l	
74-87-3	Methyl Chloride	ND	2.0	0.50	ug/l	
108-87-2	Methylcyclohexane	ND	1.0	0.44	ug/l	
75-09-2	Methylene Chloride	ND	5.0	2.0	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	5.0	1.0	ug/l	

Method Blank Summary

Job Number: FC7212
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V2O3008-MB [a]	2O77230.D	1	06/27/23	JW	n/a	n/a	V2O3008

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

FC7212-1, FC7212-2

CAS No.	Compound	Result	RL	MDL	Units	Q
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.23	ug/l	
100-42-5	Styrene	ND	1.0	0.22	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.30	ug/l	
127-18-4	Tetrachloroethylene	ND	1.0	0.22	ug/l	
108-88-3	Toluene	ND	1.0	0.30	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	2.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.25	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.47	ug/l	
79-01-6	Trichloroethylene	ND	1.0	0.35	ug/l	
75-69-4	Trichlorofluoromethane	ND	2.0	0.50	ug/l	
75-01-4	Vinyl Chloride	ND	1.0	0.41	ug/l	
1330-20-7	Xylene (total)	ND	3.0	0.72	ug/l	

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	100%	83-118%
17060-07-0	1,2-Dichloroethane-D4	98%	79-125%
2037-26-5	Toluene-D8	102%	85-112%
460-00-4	4-Bromofluorobenzene	111%	83-118%

(a) Sample was treated with an anti-foaming agent.

Blank Spike Summary

Job Number: FC7212
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V2O3008-BS	2O77228.D	1	06/27/23	JW	n/a	n/a	V2O3008

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

FC7212-1, FC7212-2

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
67-64-1	Acetone	125	125	100	50-147
71-43-2	Benzene	25	25.0	100	81-122
75-27-4	Bromodichloromethane	25	23.5	94	79-123
75-25-2	Bromoform	25	22.8	91	66-123
78-93-3	2-Butanone (MEK)	125	125	100	56-143
75-15-0	Carbon Disulfide	25	24.5	98	66-148
56-23-5	Carbon Tetrachloride	25	23.6	94	76-136
108-90-7	Chlorobenzene	25	24.0	96	82-124
75-00-3	Chloroethane	25	23.8	95	62-144
67-66-3	Chloroform	25	24.2	97	80-124
110-82-7	Cyclohexane	25	22.4	90	73-138
124-48-1	Dibromochloromethane	25	24.6	98	78-122
96-12-8	1,2-Dibromo-3-chloropropane	25	27.3	109	64-123
106-93-4	1,2-Dibromoethane	25	23.0	92	75-120
75-71-8	Dichlorodifluoromethane	25	34.1	136	42-167
95-50-1	1,2-Dichlorobenzene	25	23.1	92	82-124
541-73-1	1,3-Dichlorobenzene	25	23.7	95	84-125
106-46-7	1,4-Dichlorobenzene	25	24.8	99	78-120
75-34-3	1,1-Dichloroethane	25	23.7	95	81-122
107-06-2	1,2-Dichloroethane	25	22.4	90	75-125
75-35-4	1,1-Dichloroethylene	25	22.8	91	78-137
156-59-2	cis-1,2-Dichloroethylene	25	22.3	89	78-120
156-60-5	trans-1,2-Dichloroethylene	25	24.1	96	76-127
78-87-5	1,2-Dichloropropane	25	25.8	103	76-124
10061-01-5	cis-1,3-Dichloropropene	25	25.7	103	75-118
10061-02-6	trans-1,3-Dichloropropene	25	23.9	96	80-120
100-41-4	Ethylbenzene	25	24.5	98	81-121
76-13-1	Freon 113	25	24.4	98	72-134
591-78-6	2-Hexanone	125	132	106	61-129
98-82-8	Isopropylbenzene	25	22.7	91	83-132
79-20-9	Methyl Acetate	125	112	90	65-126
74-83-9	Methyl Bromide	25	19.6	78	59-143
74-87-3	Methyl Chloride	25	30.3	121	50-159
108-87-2	Methylcyclohexane	25	21.7	87	76-129
75-09-2	Methylene Chloride	25	25.4	102	69-135
108-10-1	4-Methyl-2-pentanone (MIBK)	125	130	104	66-122

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FC7212
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V2O3008-BS	2O77228.D	1	06/27/23	JW	n/a	n/a	V2O3008

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

FC7212-1, FC7212-2

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
1634-04-4	Methyl Tert Butyl Ether	25	23.8	95	72-117
100-42-5	Styrene	25	23.7	95	78-119
79-34-5	1,1,2,2-Tetrachloroethane	25	25.4	102	72-120
127-18-4	Tetrachloroethylene	25	23.8	95	76-135
108-88-3	Toluene	25	24.2	97	80-120
120-82-1	1,2,4-Trichlorobenzene	25	21.2	85	73-129
71-55-6	1,1,1-Trichloroethane	25	23.8	95	75-130
79-00-5	1,1,2-Trichloroethane	25	24.6	98	76-119
79-01-6	Trichloroethylene	25	23.6	94	81-126
75-69-4	Trichlorofluoromethane	25	23.0	92	71-156
75-01-4	Vinyl Chloride	25	28.5	114	69-159
1330-20-7	Xylene (total)	75	70.3	94	80-126

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	99%	83-118%
17060-07-0	1,2-Dichloroethane-D4	96%	79-125%
2037-26-5	Toluene-D8	99%	85-112%
460-00-4	4-Bromofluorobenzene	98%	83-118%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FC7212
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
FC7244-1MS	2O77277.D	100	06/28/23	JW	n/a	n/a	V2O3008
FC7244-1MSD	2O77278.D	100	06/28/23	JW	n/a	n/a	V2O3008
FC7244-1	2O77232.D	100	06/27/23	JW	n/a	n/a	V2O3008

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

FC7212-1, FC7212-2

CAS No.	Compound	FC7244-1 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
67-64-1	Acetone	ND		12500	10700	86	12500	12000	96	11	50-147/21
71-43-2	Benzene	1040		2500	3380	94	2500	3720	107	10	81-122/14
75-27-4	Bromodichloromethane	ND		2500	2220	89	2500	2520	101	13	79-123/19
75-25-2	Bromoform	ND		2500	2150	86	2500	2430	97	12	66-123/21
78-93-3	2-Butanone (MEK)	ND		12500	11400	91	12500	12800	102	12	56-143/18
75-15-0	Carbon Disulfide	ND		2500	2170	87	2500	2470	99	13	66-148/23
56-23-5	Carbon Tetrachloride	ND		2500	2120	85	2500	2420	97	13	76-136/23
108-90-7	Chlorobenzene	5400		2500	7440	82	2500	7610	88	2	82-124/14
75-00-3	Chloroethane	ND		2500	2410	96	2500	2750	110	13	62-144/20
67-66-3	Chloroform	ND		2500	2210	88	2500	2490	100	12	80-124/15
110-82-7	Cyclohexane	ND		2500	1870	75	2500	2220	89	17	73-138/18
124-48-1	Dibromochloromethane	ND		2500	2280	91	2500	2550	102	11	78-122/19
96-12-8	1,2-Dibromo-3-chloropropane	ND		2500	2470	99	2500	2620	105	6	64-123/18
106-93-4	1,2-Dibromoethane	ND		2500	2200	88	2500	2370	95	7	75-120/13
75-71-8	Dichlorodifluoromethane	ND		2500	3000	120	2500	3390	136	12	42-167/19
95-50-1	1,2-Dichlorobenzene	41.1	J	2500	2280	90	2500	2360	93	3	82-124/14
541-73-1	1,3-Dichlorobenzene	ND		2500	2210	88	2500	2330	93	5	84-125/14
106-46-7	1,4-Dichlorobenzene	ND		2500	2380	95	2500	2520	101	6	78-120/15
75-34-3	1,1-Dichloroethane	ND		2500	2190	88	2500	2480	99	12	81-122/15
107-06-2	1,2-Dichloroethane	ND		2500	2140	86	2500	2360	94	10	75-125/14
75-35-4	1,1-Dichloroethylene	ND		2500	1990	80	2500	2270	91	13	78-137/18
156-59-2	cis-1,2-Dichloroethylene	ND		2500	2040	82	2500	2310	92	12	78-120/15
156-60-5	trans-1,2-Dichloroethylene	ND		2500	2140	86	2500	2430	97	13	76-127/17
78-87-5	1,2-Dichloropropane	ND		2500	2360	94	2500	2700	108	13	76-124/14
10061-01-5	cis-1,3-Dichloropropene	ND		2500	2230	89	2500	2550	102	13	75-118/23
10061-02-6	trans-1,3-Dichloropropene	ND		2500	2120	85	2500	2340	94	10	80-120/22
100-41-4	Ethylbenzene	ND		2500	2220	89	2500	2440	98	9	81-121/14
76-13-1	Freon 113	ND		2500	2110	84	2500	2390	96	12	72-134/20
591-78-6	2-Hexanone	ND		12500	12500	100	12500	13400	107	7	61-129/18
98-82-8	Isopropylbenzene	ND		2500	1970	79*	2500	2240	90	13	83-132/15
79-20-9	Methyl Acetate	ND		12500	10700	86	12500	12200	98	13	65-126/18
74-83-9	Methyl Bromide	ND		2500	1240	50*	2500	1480	59	18	59-143/19
74-87-3	Methyl Chloride	ND		2500	2810	112	2500	3170	127	12	50-159/19
108-87-2	Methylcyclohexane	ND		2500	1780	71*	2500	2060	82	15	76-129/17
75-09-2	Methylene Chloride	ND		2500	2330	93	2500	2600	104	11	69-135/16
108-10-1	4-Methyl-2-pentanone (MIBK)	ND		12500	12200	98	12500	13400	107	9	66-122/16

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FC7212
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
FC7244-1MS	2O77277.D	100	06/28/23	JW	n/a	n/a	V2O3008
FC7244-1MSD	2O77278.D	100	06/28/23	JW	n/a	n/a	V2O3008
FC7244-1	2O77232.D	100	06/27/23	JW	n/a	n/a	V2O3008

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

FC7212-1, FC7212-2

CAS No.	Compound	FC7244-1 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
1634-04-4	Methyl Tert Butyl Ether	ND		2500	2190	88	2500	2540	102	15*	72-117/14
100-42-5	Styrene	ND		2500	2180	87	2500	2420	97	10	78-119/23
79-34-5	1,1,2,2-Tetrachloroethane	ND		2500	2490	100	2500	2590	104	4	72-120/14
127-18-4	Tetrachloroethylene	ND		2500	2170	87	2500	2360	94	8	76-135/16
108-88-3	Toluene	171		2500	2410	90	2500	2620	98	8	80-120/14
120-82-1	1,2,4-Trichlorobenzene	ND		2500	1920	77	2500	2060	82	7	73-129/20
71-55-6	1,1,1-Trichloroethane	ND		2500	2120	85	2500	2420	97	13	75-130/16
79-00-5	1,1,2-Trichloroethane	ND		2500	2420	97	2500	2540	102	5	76-119/14
79-01-6	Trichloroethylene	240		2500	2340	84	2500	2640	96	12	81-126/15
75-69-4	Trichlorofluoromethane	ND		2500	2100	84	2500	2400	96	13	71-156/21
75-01-4	Vinyl Chloride	ND		2500	2620	105	2500	2950	118	12	69-159/18
1330-20-7	Xylene (total)	ND		7500	6350	85	7500	7080	94	11	80-126/15

CAS No.	Surrogate Recoveries	MS	MSD	FC7244-1	Limits
1868-53-7	Dibromofluoromethane	100%	101%	101%	83-118%
17060-07-0	1,2-Dichloroethane-D4	94%	102%	100%	79-125%
2037-26-5	Toluene-D8	102%	98%	103%	85-112%
460-00-4	4-Bromofluorobenzene	96%	94%	99%	83-118%

* = Outside of Control Limits.

MS Semi-volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Instrument Blank

Job Number: FC7212
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S5Q276-IBLK	5Q17419.D	1	07/26/23	LR	n/a	n/a	S5Q276

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC7212-1, FC7212-2

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	
2355-31-9	MeFOSAA	ND	0.0080	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0080	0.0020	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	
919005-14-4	ADONA	ND	0.0080	0.0020	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.0080	0.0020	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	91%	50-150%
	13C5-PFPeA	89%	50-150%
	13C5-PFHxA	88%	50-150%
	13C4-PFHpA	91%	50-150%
	13C8-PFOA	91%	50-150%

Instrument Blank

Job Number: FC7212
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S5Q276-IBLK	5Q17419.D	1	07/26/23	LR	n/a	n/a	S5Q276

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC7212-1, FC7212-2

CAS No.	ID Standard Recoveries		Limits
	13C9-PFNA	94%	50-150%
	13C6-PFDA	92%	50-150%
	13C7-PFUnDA	96%	50-150%
	13C2-PFDoDA	93%	50-150%
	13C2-PFTeDA	91%	50-150%
	13C3-PFBS	90%	50-150%
	13C3-PFHxS	92%	50-150%
	13C8-PFOS	93%	50-150%
	13C8-FOSA	101%	50-150%
	d3-MeFOSA	99%	50-150%
	d3-MeFOSAA	92%	50-150%
	d5-EtFOSAA	95%	50-150%
	13C2-4:2FTS	83%	50-150%
	13C2-6:2FTS	87%	50-150%
	13C2-8:2FTS	90%	50-150%
	13C3-HFPO-DA	88%	50-150%

Method Blank Summary

Job Number: FC7212
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP97944-MB	2Q112170.D	1	07/25/23	LR	07/19/23	OP97944	S2Q1587

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC7212-1, FC7212-2

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	
2355-31-9	MeFOSAA	ND	0.0080	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0080	0.0020	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	
919005-14-4	ADONA	ND	0.0080	0.0020	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.0080	0.0020	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	83%	50-150%
	13C5-PFPeA	78%	50-150%
	13C5-PFHxA	79%	50-150%
	13C4-PFHpA	76%	50-150%
	13C8-PFOA	76%	50-150%

Method Blank Summary

Job Number: FC7212
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP97944-MB	2Q112170.D	1	07/25/23	LR	07/19/23	OP97944	S2Q1587

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC7212-1, FC7212-2

CAS No.	ID Standard Recoveries		Limits
	13C9-PFNA	73%	50-150%
	13C6-PFDA	78%	50-150%
	13C7-PFUnDA	76%	50-150%
	13C2-PFDoDA	76%	50-150%
	13C2-PFTeDA	63%	50-150%
	13C3-PFBS	83%	50-150%
	13C3-PFHxS	76%	50-150%
	13C8-PFOS	78%	50-150%
	13C8-FOSA	73%	50-150%
	d3-MeFOSAA	82%	50-150%
	d5-EtFOSAA	77%	50-150%
	13C2-4:2FTS	70%	50-150%
	13C2-6:2FTS	72%	50-150%
	13C2-8:2FTS	77%	50-150%
	13C3-HFPO-DA	74%	50-150%

Method Blank Summary

Job Number: FC7212
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP97944-MB	5Q17424.D	1	07/26/23	LR	07/19/23	OP97944	S5Q276

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC7212-1, FC7212-2

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	
2355-31-9	MeFOSAA	ND	0.0080	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0080	0.0020	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	
919005-14-4	ADONA	ND	0.0080	0.0020	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.0080	0.0020	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	91%	50-150%
	13C5-PFPeA	88%	50-150%
	13C5-PFHxA	88%	50-150%
	13C4-PFHpA	91%	50-150%
	13C8-PFOA	93%	50-150%

Method Blank Summary

Job Number: FC7212
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP97944-MB	5Q17424.D	1	07/26/23	LR	07/19/23	OP97944	S5Q276

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC7212-1, FC7212-2

CAS No.	ID Standard Recoveries		Limits
	13C9-PFNA	94%	50-150%
	13C6-PFDA	95%	50-150%
	13C7-PFUnDA	94%	50-150%
	13C2-PFDoDA	86%	50-150%
	13C2-PFTeDA	75%	50-150%
	13C3-PFBS	89%	50-150%
	13C3-PFHxS	91%	50-150%
	13C8-PFOS	91%	50-150%
	13C8-FOSA	88%	50-150%
	d3-MeFOSA	62%	50-150%
	d3-MeFOSAA	94%	50-150%
	d5-EtFOSAA	90%	50-150%
	13C2-4:2FTS	84%	50-150%
	13C2-6:2FTS	88%	50-150%
	13C2-8:2FTS	89%	50-150%
	13C3-HFPO-DA	83%	50-150%

Instrument Blank

Job Number: FC7212
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S2Q1585-IBLK	2Q112041.D	1	07/21/23	LR	n/a	n/a	S2Q1585

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

OP97944-MS, OP97944-MSD

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	
2355-31-9	MeFOSAA	ND	0.0080	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0080	0.0020	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	
919005-14-4	ADONA	ND	0.0080	0.0020	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.0080	0.0020	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	89%	50-150%
	13C5-PFPeA	89%	50-150%
	13C5-PFHxA	89%	50-150%
	13C4-PFHpA	91%	50-150%
	13C8-PFOA	91%	50-150%

Instrument Blank

Job Number: FC7212
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S2Q1585-IBLK	2Q112041.D	1	07/21/23	LR	n/a	n/a	S2Q1585

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

OP97944-MS, OP97944-MSD

CAS No.	ID Standard Recoveries		Limits
	13C9-PFNA	91%	50-150%
	13C6-PFDA	90%	50-150%
	13C7-PFUnDA	91%	50-150%
	13C2-PFDoDA	91%	50-150%
	13C2-PFTeDA	89%	50-150%
	13C3-PFBS	89%	50-150%
	13C3-PFHxS	87%	50-150%
	13C8-PFOS	92%	50-150%
	13C8-FOSA	95%	50-150%
	d3-MeFOSA	94%	50-150%
	d3-MeFOSAA	95%	50-150%
	d5-EtFOSAA	90%	50-150%
	13C2-4:2FTS	83%	50-150%
	13C2-6:2FTS	83%	50-150%
	13C2-8:2FTS	82%	50-150%
	13C3-HFPO-DA	91%	50-150%

Instrument Blank

Job Number: FC7212
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S2Q1587-IBLK	2Q112165.D	1	07/25/23	LR	n/a	n/a	S2Q1587

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

OP97944-BS

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	
2355-31-9	MeFOSAA	ND	0.0080	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0080	0.0020	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	
919005-14-4	ADONA	ND	0.0080	0.0020	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.0080	0.0020	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	102%	50-150%
	13C5-PFPeA	99%	50-150%
	13C5-PFHxA	99%	50-150%
	13C4-PFHpA	96%	50-150%
	13C8-PFOA	96%	50-150%

Instrument Blank

Job Number: FC7212
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S2Q1587-IBLK	2Q112165.D	1	07/25/23	LR	n/a	n/a	S2Q1587

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

OP97944-BS

CAS No.	ID Standard Recoveries		Limits
	13C9-PFNA	95%	50-150%
	13C6-PFDA	97%	50-150%
	13C7-PFUnDA	96%	50-150%
	13C2-PFDoDA	95%	50-150%
	13C2-PFTeDA	94%	50-150%
	13C3-PFBS	98%	50-150%
	13C3-PFHxS	97%	50-150%
	13C8-PFOS	99%	50-150%
	13C8-FOSA	105%	50-150%
	d3-MeFOSAA	102%	50-150%
	d5-EtFOSAA	97%	50-150%
	13C2-4:2FTS	88%	50-150%
	13C2-6:2FTS	88%	50-150%
	13C2-8:2FTS	97%	50-150%

Blank Spike Summary

Job Number: FC7212
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP97944-BS	2Q112169.D	1	07/25/23	LR	07/19/23	OP97944	S2Q1587

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC7212-1, FC7212-2

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
375-22-4	Perfluorobutanoic acid	0.08	0.0975	122	73-129
2706-90-3	Perfluoropentanoic acid	0.08	0.104	130*	72-129
307-24-4	Perfluorohexanoic acid	0.08	0.104	130*	72-129
375-85-9	Perfluoroheptanoic acid	0.08	0.105	131*	72-130
335-67-1	Perfluorooctanoic acid	0.08	0.108	135*	71-133
375-95-1	Perfluorononanoic acid	0.08	0.108	135*	69-130
335-76-2	Perfluorodecanoic acid	0.08	0.106	133*	71-129
2058-94-8	Perfluoroundecanoic acid	0.08	0.106	133	69-133
307-55-1	Perfluorododecanoic acid	0.08	0.106	133	72-134
72629-94-8	Perfluorotridecanoic acid	0.08	0.0998	125	65-144
376-06-7	Perfluorotetradecanoic acid	0.08	0.114	143*	71-132
375-73-5	Perfluorobutanesulfonic acid	0.08	0.0986	123	72-130
2706-91-4	Perfluoropentanesulfonic acid	0.08	0.0970	121	71-127
355-46-4	Perfluorohexanesulfonic acid	0.08	0.101	126	68-131
375-92-8	Perfluoroheptanesulfonic acid	0.08	0.104	130	69-134
1763-23-1	Perfluorooctanesulfonic acid	0.08	0.107	134	65-140
68259-12-1	Perfluorononanesulfonic acid	0.08	0.109	136*	69-127
335-77-3	Perfluorodecanesulfonic acid	0.08	0.105	131	53-142
754-91-6	PFOSA	0.08	0.113	141*	67-137
2355-31-9	MeFOSAA	0.08	0.107	134	65-136
2991-50-6	EtFOSAA	0.08	0.112	140*	61-135
757124-72-4	4:2 Fluorotelomer sulfonate	0.08	0.113	141	63-143
27619-97-2	6:2 Fluorotelomer sulfonate	0.08	0.110	138	64-140
39108-34-4	8:2 Fluorotelomer sulfonate	0.08	0.107	134	67-138
13252-13-6	HFPO-DA (GenX)	0.08	0.113	141*	60-140
919005-14-4	ADONA	0.08	0.105	131	60-140
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.08	0.116	145*	60-140

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFBA	83%	50-150%
	13C5-PFPeA	78%	50-150%
	13C5-PFHxA	78%	50-150%
	13C4-PFHpA	74%	50-150%
	13C8-PFOA	73%	50-150%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FC7212
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP97944-BS	2Q112169.D	1	07/25/23	LR	07/19/23	OP97944	S2Q1587

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC7212-1, FC7212-2

CAS No.	ID Standard Recoveries	BSP	Limits
	13C9-PFNA	73%	50-150%
	13C6-PFDA	76%	50-150%
	13C7-PFUnDA	74%	50-150%
	13C2-PFDoDA	73%	50-150%
	13C2-PFTeDA	58%	50-150%
	13C3-PFBS	82%	50-150%
	13C3-PFHxS	77%	50-150%
	13C8-PFOS	74%	50-150%
	13C8-FOSA	66%	50-150%
	d3-MeFOSAA	74%	50-150%
	d5-EtFOSAA	69%	50-150%
	13C2-4:2FTS	77%	50-150%
	13C2-6:2FTS	78%	50-150%
	13C2-8:2FTS	86%	50-150%
	13C3-HFPO-DA	72%	50-150%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FC7212
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP97944-BS	5Q17423.D	1	07/26/23	LR	07/19/23	OP97944	S5Q276

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC7212-1, FC7212-2

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
375-22-4	Perfluorobutanoic acid	0.08	0.0865	108	73-129
2706-90-3	Perfluoropentanoic acid	0.08	0.0875	109	72-129
307-24-4	Perfluorohexanoic acid	0.08	0.0886	111	72-129
375-85-9	Perfluoroheptanoic acid	0.08	0.0874	109	72-130
335-67-1	Perfluorooctanoic acid	0.08	0.0876	110	71-133
375-95-1	Perfluorononanoic acid	0.08	0.0895	112	69-130
335-76-2	Perfluorodecanoic acid	0.08	0.0883	110	71-129
2058-94-8	Perfluoroundecanoic acid	0.08	0.0888	111	69-133
307-55-1	Perfluorododecanoic acid	0.08	0.0886	111	72-134
72629-94-8	Perfluorotridecanoic acid	0.08	0.0775	97	65-144
376-06-7	Perfluorotetradecanoic acid	0.08	0.0907	113	71-132
375-73-5	Perfluorobutanesulfonic acid	0.08	0.0854	107	72-130
2706-91-4	Perfluoropentanesulfonic acid	0.08	0.0853	107	71-127
355-46-4	Perfluorohexanesulfonic acid	0.08	0.0872	109	68-131
375-92-8	Perfluoroheptanesulfonic acid	0.08	0.0882	110	69-134
1763-23-1	Perfluorooctanesulfonic acid	0.08	0.0872	109	65-140
68259-12-1	Perfluorononanesulfonic acid	0.08	0.0877	110	69-127
335-77-3	Perfluorodecanesulfonic acid	0.08	0.0808	101	53-142
754-91-6	PFOSA	0.08	0.0887	111	67-137
2355-31-9	MeFOSAA	0.08	0.0904	113	65-136
2991-50-6	EtFOSAA	0.08	0.0917	115	61-135
757124-72-4	4:2 Fluorotelomer sulfonate	0.08	0.0881	110	63-143
27619-97-2	6:2 Fluorotelomer sulfonate	0.08	0.0905	113	64-140
39108-34-4	8:2 Fluorotelomer sulfonate	0.08	0.0900	113	67-138
13252-13-6	HFPO-DA (GenX)	0.08	0.0937	117	60-140
919005-14-4	ADONA	0.08	0.0852	107	60-140
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.08	0.0855	107	60-140

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFBA	89%	50-150%
	13C5-PFPeA	86%	50-150%
	13C5-PFHxA	87%	50-150%
	13C4-PFHpA	89%	50-150%
	13C8-PFOA	90%	50-150%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FC7212
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP97944-BS	5Q17423.D	1	07/26/23	LR	07/19/23	OP97944	S5Q276

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC7212-1, FC7212-2

CAS No.	ID Standard Recoveries	BSP	Limits
	13C9-PFNA	90%	50-150%
	13C6-PFDA	90%	50-150%
	13C7-PFUnDA	89%	50-150%
	13C2-PFDoDA	82%	50-150%
	13C2-PFTeDA	67%	50-150%
	13C3-PFBS	88%	50-150%
	13C3-PFHxS	89%	50-150%
	13C8-PFOS	88%	50-150%
	13C8-FOSA	81%	50-150%
	d3-MeFOSA	42%* [a]	50-150%
	d3-MeFOSAA	86%	50-150%
	d5-EtFOSAA	82%	50-150%
	13C2-4:2FTS	94%	50-150%
	13C2-6:2FTS	97%	50-150%
	13C2-8:2FTS	97%	50-150%
	13C3-HFPO-DA	79%	50-150%

(a) Outside control limits.

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FC7212
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP97944-MS	2Q112053.D	1	07/22/23	LR	07/19/23	OP97944	S2Q1585
OP97944-MSD	2Q112054.D	1	07/22/23	LR	07/19/23	OP97944	S2Q1585
FC7266-11	2Q112052.D	1	07/22/23	LR	07/19/23	OP97944	S2Q1585
FC7266-11	5Q17431.D	1	07/26/23	LR	07/19/23	OP97944	S5Q276

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC7212-1, FC7212-2

CAS No.	Compound	FC7266-11 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
375-22-4	Perfluorobutanoic acid	0.016 U	a	0.16	0.204	128	0.16	0.185	116	10	73-129/30
2706-90-3	Perfluoropentanoic acid	0.0080 U	a	0.16	0.222	139*	0.16	0.204	128	8	72-129/30
307-24-4	Perfluorohexanoic acid	0.0080 U	a	0.16	0.221	138*	0.16	0.201	126	9	72-129/30
375-85-9	Perfluoroheptanoic acid	0.0080 U	a	0.16	0.222	139*	0.16	0.202	126	9	72-130/30
335-67-1	Perfluorooctanoic acid	0.0080 U	a	0.16	0.216	135*	0.16	0.198	124	9	71-133/30
375-95-1	Perfluorononanoic acid	0.0080 U	a	0.16	0.227	142*	0.16	0.202	126	12	69-130/30
335-76-2	Perfluorodecanoic acid	0.0080 U	a	0.16	0.219	137*	0.16	0.206	129	6	71-129/30
2058-94-8	Perfluoroundecanoic acid	0.0080 U	a	0.16	0.222	139*	0.16	0.200	125	10	69-133/30
307-55-1	Perfluorododecanoic acid	0.0080 U	a	0.16	0.220	138*	0.16	0.199	124	10	72-134/30
72629-94-8	Perfluorotridecanoic acid	0.0080 U	a	0.16	0.224	140	0.16	0.203	127	10	65-144/30
376-06-7	Perfluorotetradecanoic acid	0.0080 U	a	0.16	0.231	144*	0.16	0.208	130	10	71-132/30
375-73-5	Perfluorobutanesulfonic acid	0.0080 U	a	0.16	0.200	125	0.16	0.183	114	9	72-130/30
2706-91-4	Perfluoropentanesulfonic acid	0.0080 U	a	0.16	0.205	128*	0.16	0.190	119	8	71-127/30
355-46-4	Perfluorohexanesulfonic acid	0.0080 U	a	0.16	0.217	136*	0.16	0.207	129	5	68-131/30
375-92-8	Perfluoroheptanesulfonic acid	0.0080 U	a	0.16	0.218	136*	0.16	0.212	133	3	69-134/30
1763-23-1	Perfluorooctanesulfonic acid	0.0080 U	a	0.16	0.227	142*	0.16	0.194	121	16	65-140/30
68259-12-1	Perfluorononanesulfonic acid	0.0080 U	a	0.16	0.221	138*	0.16	0.189	118	16	69-127/30
335-77-3	Perfluorodecanesulfonic acid	0.0080 U	a	0.16	0.214	134	0.16	0.201	126	6	53-142/30
754-91-6	PFOSA	0.0080 U	a	0.16	0.217	136	0.16	0.208	130	4	67-137/30
2355-31-9	MeFOSAA	0.016 U	a	0.16	0.219	137*	0.16	0.203	127	8	65-136/30
2991-50-6	EtFOSAA	0.016 U	a	0.16	0.224	140*	0.16	0.210	131	6	61-135/30
757124-72-4	4:2 Fluorotelomer sulfonate	0.016 U	a	0.16	0.224	140	0.16	0.211	132	6	63-143/30
27619-97-2	6:2 Fluorotelomer sulfonate	0.016 U	a	0.16	0.230	144*	0.16	0.211	132	9	64-140/30
39108-34-4	8:2 Fluorotelomer sulfonate	0.016 U	a	0.16	0.231	144*	0.16	0.212	133	9	67-138/30
13252-13-6	HFPO-DA (GenX)	0.016 U	a	0.16	0.227	142*	0.16	0.217	136	5	60-140/30
919005-14-4	ADONA	0.016 U	a	0.16	0.208	130	0.16	0.192	120	8	60-140/30
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.016 U	a	0.16	0.216	135	0.16	0.198	124	9	60-140/30

CAS No.	ID Standard Recoveries	MS	MSD	FC7266-11	FC7266-11	Limits
	13C4-PFBA	35%* b	52%	49%* b	64%	50-150%
	13C5-PFPeA	34%* b	50%	47%* b	63%	50-150%
	13C5-PFHxA	34%* b	50%	47%* b	63%	50-150%
	13C4-PFHpA	34%* b	49%* b	47%* b	65%	50-150%
	13C8-PFOA	36%* b	51%	48%* b	66%	50-150%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FC7212
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP97944-MS	2Q112053.D	1	07/22/23	LR	07/19/23	OP97944	S2Q1585
OP97944-MSD	2Q112054.D	1	07/22/23	LR	07/19/23	OP97944	S2Q1585
FC7266-11	2Q112052.D	1	07/22/23	LR	07/19/23	OP97944	S2Q1585
FC7266-11	5Q17431.D	1	07/26/23	LR	07/19/23	OP97944	S5Q276

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC7212-1, FC7212-2

CAS No.	ID Standard Recoveries	MS	MSD	FC7266-11	FC7266-11	Limits
	13C9-PFNA	33%* [b]	49%* [b]	45%* [b]	64%	50-150%
	13C6-PFDA	35%* [b]	48%* [b]	46%* [b]	64%	50-150%
	13C7-PFUnDA	34%* [b]	46%* [b]	46%* [b]	67%	50-150%
	13C2-PFDoDA	34%* [b]	46%* [b]	47%* [b]	65%	50-150%
	13C2-PFTeDA	29%* [b]	41%* [b]	42%* [b]	62%	50-150%
	13C3-PFBS	37%* [b]	52%	50%	66%	50-150%
	13C3-PFHxS	36%* [b]	48%* [b]	48%* [b]	65%	50-150%
	13C8-PFOS	34%* [b]	51%	48%* [b]	64%	50-150%
	13C8-FOSA	36%* [b]	45%* [b]	45%* [b]	68%	50-150%
	d3-MeFOSA			33%* [b]	45%* [b]	50-150%
	d3-MeFOSAA	36%* [b]	47%* [b]	45%* [b]	63%	50-150%
	d5-EtFOSAA	35%* [b]	45%* [b]	46%* [b]	64%	50-150%
	13C2-4:2FTS	35%* [b]	50%	42%* [b]	60%	50-150%
	13C2-6:2FTS	37%* [b]	53%	46%* [b]	63%	50-150%
	13C2-8:2FTS	36%* [b]	51%	42%* [b]	62%	50-150%
	13C3-HFPO-DA	34%* [b]	47%* [b]			50-150%

(a) Result is from Run #2.
(b) Outside control limits.

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FC7212
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP97944-MS	2Q112053.D	1	07/22/23	LR	07/19/23	OP97944	S2Q1585
OP97944-MSD	5Q17436.D	1	07/26/23	LR	07/19/23	OP97944	S5Q276
FC7266-11	2Q112052.D	1	07/22/23	LR	07/19/23	OP97944	S2Q1585
FC7266-11	5Q17431.D	1	07/26/23	LR	07/19/23	OP97944	S5Q276

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC7212-1, FC7212-2

CAS No.	Compound	FC7266-11 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
375-22-4	Perfluorobutanoic acid	0.016 U	a	0.16	0.204	128	0.16	0.163	102	8	73-129/30
2706-90-3	Perfluoropentanoic acid	0.0080 U	a	0.16	0.222	139*	0.16	0.166	104	10	72-129/30
307-24-4	Perfluorohexanoic acid	0.0080 U	a	0.16	0.221	138*	0.16	0.166	104	10	72-129/30
375-85-9	Perfluoroheptanoic acid	0.0080 U	a	0.16	0.222	139*	0.16	0.166	104	9	72-130/30
335-67-1	Perfluorooctanoic acid	0.0080 U	a	0.16	0.216	135*	0.16	0.169	106	10	71-133/30
375-95-1	Perfluorononanoic acid	0.0080 U	a	0.16	0.227	142*	0.16	0.171	107	9	69-130/30
335-76-2	Perfluorodecanoic acid	0.0080 U	a	0.16	0.219	137*	0.16	0.167	104	11	71-129/30
2058-94-8	Perfluoroundecanoic acid	0.0080 U	a	0.16	0.222	139*	0.16	0.167	104	13	69-133/30
307-55-1	Perfluorododecanoic acid	0.0080 U	a	0.16	0.220	138*	0.16	0.167	104	12	72-134/30
72629-94-8	Perfluorotridecanoic acid	0.0080 U	a	0.16	0.224	140	0.16	0.161	101	9	65-144/30
376-06-7	Perfluorotetradecanoic acid	0.0080 U	a	0.16	0.231	144*	0.16	0.171	107	8	71-132/30
375-73-5	Perfluorobutanesulfonic acid	0.0080 U	a	0.16	0.200	125	0.16	0.163	102	12	72-130/30
2706-91-4	Perfluoropentanesulfonic acid	0.0080 U	a	0.16	0.205	128*	0.16	0.162	101	11	71-127/30
355-46-4	Perfluorohexanesulfonic acid	0.0080 U	a	0.16	0.217	136*	0.16	0.173	108	3	68-131/30
375-92-8	Perfluoroheptanesulfonic acid	0.0080 U	a	0.16	0.218	136*	0.16	0.175	109	4	69-134/30
1763-23-1	Perfluorooctanesulfonic acid	0.0080 U	a	0.16	0.227	142*	0.16	0.170	106	8	65-140/30
68259-12-1	Perfluorononanesulfonic acid	0.0080 U	a	0.16	0.221	138*	0.16	0.165	103	10	69-127/30
335-77-3	Perfluorodecanesulfonic acid	0.0080 U	a	0.16	0.214	134	0.16	0.153	96	12	53-142/30
754-91-6	PFOSA	0.0080 U	a	0.16	0.217	136	0.16	0.169	106	11	67-137/30
2355-31-9	MeFOSAA	0.016 U	a	0.16	0.219	137*	0.16	0.166	104	9	65-136/30
2991-50-6	EtFOSAA	0.016 U	a	0.16	0.224	140*	0.16	0.167	104	10	61-135/30
757124-72-4	4:2 Fluorotelomer sulfonate	0.016 U	a	0.16	0.224	140	0.16	0.167	104	6	63-143/30
27619-97-2	6:2 Fluorotelomer sulfonate	0.016 U	a	0.16	0.230	144*	0.16	0.168	105	12	64-140/30
39108-34-4	8:2 Fluorotelomer sulfonate	0.016 U	a	0.16	0.231	144*	0.16	0.172	108	5	67-138/30
13252-13-6	HFPO-DA (GenX)	0.016 U	a	0.16	0.227	142*	0.16	0.168	105	6	60-140/30
919005-14-4	ADONA	0.016 U	a	0.16	0.208	130	0.16	0.165	103	5	60-140/30
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.016 U	a	0.16	0.216	135	0.16	0.167	104	5	60-140/30

CAS No.	ID Standard Recoveries	MS	MSD	FC7266-11	FC7266-11	Limits
	13C4-PFBA	35%* b	68%	49%* b	64%	50-150%
	13C5-PFPeA	34%* b	67%	47%* b	63%	50-150%
	13C5-PFHxA	34%* b	68%	47%* b	63%	50-150%
	13C4-PFHpA	34%* b	69%	47%* b	65%	50-150%
	13C8-PFOA	36%* b	70%	48%* b	66%	50-150%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FC7212
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP97944-MS	2Q112053.D	1	07/22/23	LR	07/19/23	OP97944	S2Q1585
OP97944-MSD	5Q17436.D	1	07/26/23	LR	07/19/23	OP97944	S5Q276
FC7266-11	2Q112052.D	1	07/22/23	LR	07/19/23	OP97944	S2Q1585
FC7266-11	5Q17431.D	1	07/26/23	LR	07/19/23	OP97944	S5Q276

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC7212-1, FC7212-2

CAS No.	ID Standard Recoveries	MS	MSD	FC7266-11	FC7266-11	Limits
	13C9-PFNA	33%* [b]	68%	45%* [b]	64%	50-150%
	13C6-PFDA	35%* [b]	68%	46%* [b]	64%	50-150%
	13C7-PFUnDA	34%* [b]	69%	46%* [b]	67%	50-150%
	13C2-PFDoDA	34%* [b]	65%	47%* [b]	65%	50-150%
	13C2-PFTeDA	29%* [b]	62%	42%* [b]	62%	50-150%
	13C3-PFBS	37%* [b]	70%	50%	66%	50-150%
	13C3-PFHxS	36%* [b]	68%	48%* [b]	65%	50-150%
	13C8-PFOS	34%* [b]	66%	48%* [b]	64%	50-150%
	13C8-FOSA	36%* [b]	68%	45%* [b]	68%	50-150%
	d3-MeFOSA			33%* [b]	45%* [b]	50-150%
	d3-MeFOSAA	36%* [b]	67%	45%* [b]	63%	50-150%
	d5-EtFOSAA	35%* [b]	68%	46%* [b]	64%	50-150%
	13C2-4:2FTS	35%* [b]	72%	42%* [b]	60%	50-150%
	13C2-6:2FTS	37%* [b]	75%	46%* [b]	63%	50-150%
	13C2-8:2FTS	36%* [b]	76%	42%* [b]	62%	50-150%
	13C3-HFPO-DA	34%* [b]	60%			50-150%

(a) Result is from Run #2.
(b) Outside control limits.

* = Outside of Control Limits.

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

e-Hardcopy 2.0
Automated Report

Technical Report for

Tetra Tech NUS

KSC-CRCA, FL

112G 08970

SGS Job Number: JD70271

Sampling Date: 07/31/23

Report to:

andrea.colby@sgs.com

Total number of pages in report: **136**

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable unless noted in the narrative, comments or footnotes.

David Chastain
General Manager

Client Service contact: Jadon Schiller 732-329-0200
Certifications: NJ(12129), NY(10983), CA, CT, FL, IL, IN, KS, KY, LA, MA, MD, ME, MN, NC, OH VAP (CL0056), AK (UST-103), AZ (AZ0786), PA(68-00408), RI, SC, TX, UT, VA, WV

This report shall not be reproduced, except in its entirety, without the written approval of SGS.
Test results relate only to samples analyzed.

SGS is the sole authority for authorizing edits or modifications to this document.
Unauthorized modification of this report is strictly prohibited.
Review standard terms at: http://www.sgs.com/en/terms-and-conditions

Please share your ideas about how we can serve you better at:
EHS.US.CustomerCare@sgs.com

Table of Contents

Section 1: Sample Summary **3**
Section 2: Case Narrative/Conformance Summary **4**
Section 3: Summary of Hits **5**
Section 4: Sample Results **8**
4.1: JD70271-1: CRCA-AMB01-20230731 9
4.2: JD70271-2: CRCA-AMB02-20230731 11
4.3: JD70271-3: CRCA-VMP01-20230731 13
4.4: JD70271-4: CRCA-VMP02-20230731 15
4.5: JD70271-5: CRCA-VMP03-20230731 17
4.6: JD70271-6: CRCA-VMP04-20230731 19
Section 5: MS Volatiles - QC Data Summaries **21**
5.1: Chain of Custody 22
5.2: Summa Canister and Flow Controller Log 25
5.3: Sample Tracking Chronicle 26
5.4: Internal Chain of Custody 27
5.5: 2023 MDL Study - Method: TO-15 28
Section 6: MS Volatiles - QC Data Summaries **30**
6.1: Method Blank Summary 31
6.2: Blank Spike/Blank Spike Duplicate Summary 37
6.3: Duplicate Summary 43
6.4: Summa Cleaning Certification 46
6.5: Instrument Performance Checks (BFB) 52
6.6: Internal Standard Area Summaries 56
6.7: Initial Calibration RT/ISTD Area Summaries 58
6.8: Surrogate Recovery Summaries 111
6.9: Initial and Continuing Calibration Summaries 112
6.10: Run Sequence Reports 133

SGS North America Inc.

Sample Summary

Tetra Tech NUS

Job No: JD70271

KSC-CRCA, FL
Project No: 112G 08970

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
JD70271-1	07/31/23	16:00	CS/NV08/01/23	AIR		Ambient Air Comp.	CRCA-AMB01-20230731
JD70271-2	07/31/23	16:05	CS/NV08/01/23	AIR		Ambient Air Comp.	CRCA-AMB02-20230731
JD70271-3	07/31/23	11:15	CS/NV08/01/23	AIR		Soil Vapor Comp.	CRCA-VMP01-20230731
JD70271-4	07/31/23	11:25	CS/NV08/01/23	AIR		Soil Vapor Comp.	CRCA-VMP02-20230731
JD70271-5	07/31/23	11:35	CS/NV08/01/23	AIR		Soil Vapor Comp.	CRCA-VMP03-20230731
JD70271-6	07/31/23	12:00	CS/NV08/01/23	AIR		Soil Vapor Comp.	CRCA-VMP04-20230731

This report contains results reported as ND = Not detected. The following applies:
Organics ND = Not detected above the MDL

CASE NARRATIVE / CONFORMANCE SUMMARY

Client:	Tetra Tech NUS	**Job No:**	JD70271
Site:	KSC-CRCA, FL	**Report Date**	8/15/2023 1:33:50 PM

On 08/01/2023, 6 sample(s), 0 Trip Blank(s), and 0 Field Blank(s) were received at SGS North America Inc. The samples were intact and properly preserved, unless noted below. An SGS Job Number of JD70271 was assigned to the project. The lab sample ID, client sample ID, and date of sample collection are detailed in the report's Results Summary.

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

MS Volatiles By Method TO-15

Matrix: AIR **Batch ID:** V7W113

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JD70271-1DUP were used as the QC samples indicated.
- The duplicate RPD(s) for 2,2,4-Trimethylpentane, Hexane, Methylene chloride are outside control limits.

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

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

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

Summary of Hits

Job Number: JD70271
Account: Tetra Tech NUS
Project: KSC-CRCA, FL
Collected: 07/31/23

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
JD70271-1	**CRCA-AMB01-20230731**					
Acetone (2-Propanone)		4.6	0.20	0.15	ppbv	TO-15
Chloroform		0.10 J	0.20	0.037	ppbv	TO-15
Chloromethane		0.49	0.20	0.090	ppbv	TO-15
Dichlorodifluoromethane		0.33	0.20	0.10	ppbv	TO-15
trans-1,2-Dichloroethylene		0.32	0.20	0.028	ppbv	TO-15
Ethanol		3.4	0.50	0.39	ppbv	TO-15
Ethyl Acetate		1.6	0.20	0.10	ppbv	TO-15
Freon 113		0.094 J	0.20	0.031	ppbv	TO-15
Hexane		3.9	0.20	0.052	ppbv	TO-15
Isopropyl Alcohol		3.9	0.20	0.14	ppbv	TO-15
Methylene chloride		7.7	0.20	0.056	ppbv	TO-15
Methyl ethyl ketone		0.36	0.20	0.11	ppbv	TO-15
Propylene		0.22 J	0.50	0.14	ppbv	TO-15
2,2,4-Trimethylpentane		0.081 J	0.20	0.040	ppbv	TO-15
Toluene		0.16 J	0.20	0.057	ppbv	TO-15
Trichlorofluoromethane		0.39	0.20	0.15	ppbv	TO-15
Acetone (2-Propanone)		11	0.48	0.36	ug/m3	TO-15
Chloroform		0.49 J	0.98	0.18	ug/m3	TO-15
Chloromethane		1.0	0.41	0.19	ug/m3	TO-15
Dichlorodifluoromethane		1.6	0.99	0.49	ug/m3	TO-15
trans-1,2-Dichloroethylene		1.3	0.79	0.11	ug/m3	TO-15
Ethanol		6.4	0.94	0.73	ug/m3	TO-15
Ethyl Acetate		5.8	0.72	0.36	ug/m3	TO-15
Freon 113		0.72 J	1.5	0.24	ug/m3	TO-15
Hexane		14	0.70	0.18	ug/m3	TO-15
Isopropyl Alcohol		9.6	0.49	0.34	ug/m3	TO-15
Methylene chloride		27	0.69	0.19	ug/m3	TO-15
Methyl ethyl ketone		1.1	0.59	0.32	ug/m3	TO-15
Propylene		0.38 J	0.86	0.24	ug/m3	TO-15
2,2,4-Trimethylpentane		0.38 J	0.93	0.19	ug/m3	TO-15
Toluene		0.60 J	0.75	0.21	ug/m3	TO-15
Trichlorofluoromethane		2.2	1.1	0.84	ug/m3	TO-15
JD70271-2	**CRCA-AMB02-20230731**					
Acetone (2-Propanone)		4.7	0.20	0.15	ppbv	TO-15
Chloromethane		0.53	0.20	0.090	ppbv	TO-15
Dichlorodifluoromethane		0.37	0.20	0.10	ppbv	TO-15
trans-1,2-Dichloroethylene		0.21	0.20	0.028	ppbv	TO-15
Ethanol		3.4	0.50	0.39	ppbv	TO-15
Ethyl Acetate		4.8	0.20	0.10	ppbv	TO-15
Freon 113		0.13 J	0.20	0.031	ppbv	TO-15
Hexane		2.1	0.20	0.052	ppbv	TO-15

Summary of Hits

Job Number: JD70271
Account: Tetra Tech NUS
Project: KSC-CRCA, FL
Collected: 07/31/23

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
Isopropyl Alcohol		3.8	0.20	0.14	ppbv	TO-15
Methylene chloride		5.3	0.20	0.056	ppbv	TO-15
Methyl ethyl ketone		0.50	0.20	0.11	ppbv	TO-15
Propylene		0.21 J	0.50	0.14	ppbv	TO-15
Tertiary Butyl Alcohol		0.17 J	0.20	0.093	ppbv	TO-15
Tetrachloroethylene		0.036 J	0.040	0.014	ppbv	TO-15
Toluene		0.25	0.20	0.057	ppbv	TO-15
Trichlorofluoromethane		0.35	0.20	0.15	ppbv	TO-15
Acetone (2-Propanone)		11	0.48	0.36	ug/m3	TO-15
Chloromethane		1.1	0.41	0.19	ug/m3	TO-15
Dichlorodifluoromethane		1.8	0.99	0.49	ug/m3	TO-15
trans-1,2-Dichloroethylene		0.83	0.79	0.11	ug/m3	TO-15
Ethanol		6.4	0.94	0.73	ug/m3	TO-15
Ethyl Acetate		17	0.72	0.36	ug/m3	TO-15
Freon 113		1.0 J	1.5	0.24	ug/m3	TO-15
Hexane		7.4	0.70	0.18	ug/m3	TO-15
Isopropyl Alcohol		9.3	0.49	0.34	ug/m3	TO-15
Methylene chloride		18	0.69	0.19	ug/m3	TO-15
Methyl ethyl ketone		1.5	0.59	0.32	ug/m3	TO-15
Propylene		0.36 J	0.86	0.24	ug/m3	TO-15
Tertiary Butyl Alcohol		0.52 J	0.61	0.28	ug/m3	TO-15
Tetrachloroethylene		0.24 J	0.27	0.095	ug/m3	TO-15
Toluene		0.94	0.75	0.21	ug/m3	TO-15
Trichlorofluoromethane		2.0	1.1	0.84	ug/m3	TO-15
JD70271-3	**CRCA-VMP01-20230731**					
Acetone (2-Propanone)		7.8	0.80	0.58	ppbv	TO-15
Benzene		0.60 J	0.80	0.58	ppbv	TO-15
Chloroform		0.40 J	0.80	0.15	ppbv	TO-15
Ethanol		3.9	2.0	1.6	ppbv	TO-15
Freon 113		3.8	0.80	0.12	ppbv	TO-15
Isopropyl Alcohol		4.0	0.80	0.56	ppbv	TO-15
Methyl ethyl ketone		1.0	0.80	0.44	ppbv	TO-15
Propylene		0.82 J	2.0	0.57	ppbv	TO-15
Tertiary Butyl Alcohol		1.0	0.80	0.37	ppbv	TO-15
Acetone (2-Propanone)		19	1.9	1.4	ug/m3	TO-15
Benzene		1.9 J	2.6	1.9	ug/m3	TO-15
Chloroform		2.0 J	3.9	0.73	ug/m3	TO-15
Ethanol		7.3	3.8	3.0	ug/m3	TO-15
Freon 113		29	6.1	0.92	ug/m3	TO-15
Isopropyl Alcohol		9.8	2.0	1.4	ug/m3	TO-15
Methyl ethyl ketone		2.9	2.4	1.3	ug/m3	TO-15
Propylene		1.4 J	3.4	0.98	ug/m3	TO-15
Tertiary Butyl Alcohol		3.0	2.4	1.1	ug/m3	TO-15

Summary of Hits

Job Number: JD70271
Account: Tetra Tech NUS
Project: KSC-CRCA, FL
Collected: 07/31/23

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
JD70271-4	**CRCA-VMP02-20230731**					
Acetone (2-Propanone)		5.8	0.80	0.58	ppbv	TO-15
trans-1,2-Dichloroethylene		5.1	0.80	0.11	ppbv	TO-15
Ethanol		18.9	2.0	1.6	ppbv	TO-15
Freon 113		2.4	0.80	0.12	ppbv	TO-15
Hexane		0.66 J	0.80	0.21	ppbv	TO-15
Isopropyl Alcohol		21.7	0.80	0.56	ppbv	TO-15
Methylene chloride		1.0	0.80	0.22	ppbv	TO-15
Acetone (2-Propanone)		14	1.9	1.4	ug/m3	TO-15
trans-1,2-Dichloroethylene		20	3.2	0.44	ug/m3	TO-15
Ethanol		35.6	3.8	3.0	ug/m3	TO-15
Freon 113		18	6.1	0.92	ug/m3	TO-15
Hexane		2.3 J	2.8	0.74	ug/m3	TO-15
Isopropyl Alcohol		53.3	2.0	1.4	ug/m3	TO-15
Methylene chloride		3.5	2.8	0.76	ug/m3	TO-15
JD70271-5	**CRCA-VMP03-20230731**					
Acetone (2-Propanone)		4.1	0.80	0.58	ppbv	TO-15
Chloroform		3.1	0.80	0.15	ppbv	TO-15
Ethanol		8.0	2.0	1.6	ppbv	TO-15
Freon 113		2.4	0.80	0.12	ppbv	TO-15
Isopropyl Alcohol		17.0	0.80	0.56	ppbv	TO-15
Acetone (2-Propanone)		9.7	1.9	1.4	ug/m3	TO-15
Chloroform		15	3.9	0.73	ug/m3	TO-15
Ethanol		15	3.8	3.0	ug/m3	TO-15
Freon 113		18	6.1	0.92	ug/m3	TO-15
Isopropyl Alcohol		41.8	2.0	1.4	ug/m3	TO-15
JD70271-6	**CRCA-VMP04-20230731**					
Acetone (2-Propanone)		1.4	0.80	0.58	ppbv	TO-15
Chloroform		1.6	0.80	0.15	ppbv	TO-15
Ethanol		2.1	2.0	1.6	ppbv	TO-15
Freon 113		8.2	0.80	0.12	ppbv	TO-15
Isopropyl Alcohol		1.6	0.80	0.56	ppbv	TO-15
Propylene		1.1 J	2.0	0.57	ppbv	TO-15
Acetone (2-Propanone)		3.3	1.9	1.4	ug/m3	TO-15
Chloroform		7.8	3.9	0.73	ug/m3	TO-15
Ethanol		4.0	3.8	3.0	ug/m3	TO-15
Freon 113		63	6.1	0.92	ug/m3	TO-15
Isopropyl Alcohol		3.9	2.0	1.4	ug/m3	TO-15
Propylene		1.9 J	3.4	0.98	ug/m3	TO-15

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID:	CRCA-AMB01-20230731		
Lab Sample ID:	JD70271-1	**Date Sampled:**	07/31/23
Matrix:	AIR - Ambient Air Comp. Summa ID: A1287	**Date Received:**	08/01/23
Method:	TO-15	**Percent Solids:**	n/a
Project:	KSC-CRCA, FL		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	7W02740.D	1	08/09/23 16:03	TCH	n/a	n/a	V7W113
Run #2							

	Initial Volume
Run #1	400 ml
Run #2	

VOA TO15 List

CAS No.	MW	Compound	Result	RL	MDL	Units	Q	Result	RL	MDL	Units
67-64-1	58.08	Acetone (2-Propanone)	4.6	0.20	0.15	ppbv		11	0.48	0.36	ug/m3
106-99-0	54.09	1,3-Butadiene	ND	0.20	0.084	ppbv		ND	0.44	0.19	ug/m3
71-43-2	78.11	Benzene	ND	0.20	0.15	ppbv		ND	0.64	0.48	ug/m3
75-27-4	163.8	Bromodichloromethane	ND	0.20	0.030	ppbv		ND	1.3	0.20	ug/m3
75-25-2	252.8	Bromoform	ND	0.20	0.071	ppbv		ND	2.1	0.73	ug/m3
74-83-9	94.94	Bromomethane	ND	0.20	0.069	ppbv		ND	0.78	0.27	ug/m3
593-60-2	106.9	Bromoethene	ND	0.20	0.061	ppbv		ND	0.87	0.27	ug/m3
100-44-7	126	Benzyl Chloride	ND	0.20	0.13	ppbv		ND	1.0	0.67	ug/m3
75-15-0	76.14	Carbon disulfide	ND	0.20	0.045	ppbv		ND	0.62	0.14	ug/m3
108-90-7	112.6	Chlorobenzene	ND	0.20	0.074	ppbv		ND	0.92	0.34	ug/m3
75-00-3	64.52	Chloroethane	ND	0.20	0.068	ppbv		ND	0.53	0.18	ug/m3
67-66-3	119.4	Chloroform	0.10	0.20	0.037	ppbv	J	0.49	0.98	0.18	ug/m3
74-87-3	50.49	Chloromethane	0.49	0.20	0.090	ppbv		1.0	0.41	0.19	ug/m3
107-05-1	76.53	3-Chloropropene	ND	0.20	0.083	ppbv		ND	0.63	0.26	ug/m3
95-49-8	126.6	2-Chlorotoluene	ND	0.20	0.072	ppbv		ND	1.0	0.37	ug/m3
56-23-5	153.8	Carbon tetrachloride	ND	0.20	0.040	ppbv		ND	1.3	0.25	ug/m3
110-82-7	84.16	Cyclohexane	ND	0.20	0.045	ppbv		ND	0.69	0.15	ug/m3
75-34-3	98.96	1,1-Dichloroethane	ND	0.20	0.057	ppbv		ND	0.81	0.23	ug/m3
75-35-4	96.94	1,1-Dichloroethylene	ND	0.20	0.059	ppbv		ND	0.79	0.23	ug/m3
106-93-4	187.9	1,2-Dibromoethane (EDB)	ND	0.20	0.030	ppbv		ND	1.5	0.23	ug/m3
107-06-2	98.96	1,2-Dichloroethane	ND	0.20	0.070	ppbv		ND	0.81	0.28	ug/m3
78-87-5	113	1,2-Dichloropropane	ND	0.20	0.062	ppbv		ND	0.92	0.29	ug/m3
123-91-1	88.12	1,4-Dioxane	ND	0.20	0.12	ppbv		ND	0.72	0.43	ug/m3
75-71-8	120.9	Dichlorodifluoromethane	0.33	0.20	0.10	ppbv		1.6	0.99	0.49	ug/m3
124-48-1	208.3	Dibromochloromethane	ND	0.20	0.052	ppbv		ND	1.7	0.44	ug/m3
156-60-5	96.94	trans-1,2-Dichloroethylene	0.32	0.20	0.028	ppbv		1.3	0.79	0.11	ug/m3
156-59-2	96.94	cis-1,2-Dichloroethylene	ND	0.20	0.030	ppbv		ND	0.79	0.12	ug/m3
10061-01-5	111	cis-1,3-Dichloropropene	ND	0.20	0.062	ppbv		ND	0.91	0.28	ug/m3
541-73-1	147	m-Dichlorobenzene	ND	0.20	0.040	ppbv		ND	1.2	0.24	ug/m3
95-50-1	147	o-Dichlorobenzene	ND	0.20	0.069	ppbv		ND	1.2	0.41	ug/m3
106-46-7	147	p-Dichlorobenzene	ND	0.20	0.079	ppbv		ND	1.2	0.47	ug/m3
10061-02-6	111	trans-1,3-Dichloropropene	ND	0.20	0.10	ppbv		ND	0.91	0.45	ug/m3

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

Report of Analysis

Client Sample ID:	CRCA-AMB01-20230731		
Lab Sample ID:	JD70271-1	**Date Sampled:**	07/31/23
Matrix:	AIR - Ambient Air Comp. Summa ID: A1287	**Date Received:**	08/01/23
Method:	TO-15	**Percent Solids:**	n/a
Project:	KSC-CRCA, FL		

VOA TO15 List

CAS No.	MW	Compound	Result	RL	MDL	Units	Q	Result	RL	MDL	Units
64-17-5	46.07	Ethanol	3.4	0.50	0.39	ppbv		6.4	0.94	0.73	ug/m3
100-41-4	106.2	Ethylbenzene	ND	0.20	0.061	ppbv		ND	0.87	0.26	ug/m3
141-78-6	88	Ethyl Acetate	1.6	0.20	0.10	ppbv		5.8	0.72	0.36	ug/m3
622-96-8	120.19	4-Ethyltoluene	ND	0.20	0.095	ppbv		ND	0.98	0.47	ug/m3
76-13-1	187.4	Freon 113	0.094	0.20	0.031	ppbv	J	0.72	1.5	0.24	ug/m3
76-14-2	170.9	Freon 114	ND	0.20	0.050	ppbv		ND	1.4	0.35	ug/m3
142-82-5	100.2	Heptane	ND	0.20	0.045	ppbv		ND	0.82	0.18	ug/m3
87-68-3	260.8	Hexachlorobutadiene	ND	0.20	0.062	ppbv		ND	2.1	0.66	ug/m3
110-54-3	86.18	Hexane	3.9	0.20	0.052	ppbv		14	0.70	0.18	ug/m3
591-78-6	100	2-Hexanone	ND	0.20	0.15	ppbv		ND	0.82	0.61	ug/m3
67-63-0	60.1	Isopropyl Alcohol	3.9	0.20	0.14	ppbv		9.6	0.49	0.34	ug/m3
75-09-2	84.94	Methylene chloride	7.7	0.20	0.056	ppbv		27	0.69	0.19	ug/m3
78-93-3	72.11	Methyl ethyl ketone	0.36	0.20	0.11	ppbv		1.1	0.59	0.32	ug/m3
108-10-1	100.2	Methyl Isobutyl Ketone	ND	0.20	0.073	ppbv		ND	0.82	0.30	ug/m3
1634-04-4	88.15	Methyl Tert Butyl Ether	ND	0.20	0.080	ppbv		ND	0.72	0.29	ug/m3
80-62-6	100.12	Methylmethacrylate	ND	0.20	0.070	ppbv		ND	0.82	0.29	ug/m3
115-07-1	42	Propylene	0.22	0.50	0.14	ppbv	J	0.38	0.86	0.24	ug/m3
100-42-5	104.1	Styrene	ND	0.20	0.053	ppbv		ND	0.85	0.23	ug/m3
71-55-6	133.4	1,1,1-Trichloroethane	ND	0.20	0.037	ppbv		ND	1.1	0.20	ug/m3
79-34-5	167.85	1,1,2,2-Tetrachloroethane	ND	0.20	0.048	ppbv		ND	1.4	0.33	ug/m3
79-00-5	133.4	1,1,2-Trichloroethane	ND	0.20	0.038	ppbv		ND	1.1	0.21	ug/m3
120-82-1	181.5	1,2,4-Trichlorobenzene	ND	0.20	0.12	ppbv		ND	1.5	0.89	ug/m3
95-63-6	120.19	1,2,4-Trimethylbenzene	ND	0.20	0.087	ppbv		ND	0.98	0.43	ug/m3
108-67-8	120.19	1,3,5-Trimethylbenzene	ND	0.20	0.080	ppbv		ND	0.98	0.39	ug/m3
540-84-1	114.2	2,2,4-Trimethylpentane	0.081	0.20	0.040	ppbv	J	0.38	0.93	0.19	ug/m3
75-65-0	74.12	Tertiary Butyl Alcohol	ND	0.20	0.093	ppbv		ND	0.61	0.28	ug/m3
127-18-4	165.8	Tetrachloroethylene	ND	0.040	0.014	ppbv		ND	0.27	0.095	ug/m3
109-99-9	72.11	Tetrahydrofuran	ND	0.20	0.090	ppbv		ND	0.59	0.27	ug/m3
108-88-3	92.14	Toluene	0.16	0.20	0.057	ppbv	J	0.60	0.75	0.21	ug/m3
79-01-6	131.4	Trichloroethylene	ND	0.040	0.019	ppbv		ND	0.21	0.10	ug/m3
75-69-4	137.4	Trichlorofluoromethane	0.39	0.20	0.15	ppbv		2.2	1.1	0.84	ug/m3
75-01-4	62.5	Vinyl chloride	ND	0.20	0.069	ppbv		ND	0.51	0.18	ug/m3
108-05-4	86	Vinyl Acetate	ND	0.20	0.11	ppbv		ND	0.70	0.39	ug/m3
	106.2	m,p-Xylene	ND	0.20	0.14	ppbv		ND	0.87	0.61	ug/m3
95-47-6	106.2	o-Xylene	ND	0.20	0.077	ppbv		ND	0.87	0.33	ug/m3
1330-20-7	106.2	Xylenes (total)	ND	0.20	0.077	ppbv		ND	0.87	0.33	ug/m3

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	4-Bromofluorobenzene	96%		65-128%

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

Report of Analysis

Client Sample ID:	CRCA-AMB02-20230731		
Lab Sample ID:	JD70271-2	**Date Sampled:**	07/31/23
Matrix:	AIR - Ambient Air Comp. Summa ID: A227	**Date Received:**	08/01/23
Method:	TO-15	**Percent Solids:**	n/a
Project:	KSC-CRCA, FL		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	7W02742.D	1	08/09/23 17:23	TCH	n/a	n/a	V7W113
Run #2							

	Initial Volume
Run #1	400 ml
Run #2	

VOA TO15 List

CAS No.	MW	Compound	Result	RL	MDL	Units	Q	Result	RL	MDL	Units
67-64-1	58.08	Acetone (2-Propanone)	4.7	0.20	0.15	ppbv		11	0.48	0.36	ug/m3
106-99-0	54.09	1,3-Butadiene	ND	0.20	0.084	ppbv		ND	0.44	0.19	ug/m3
71-43-2	78.11	Benzene	ND	0.20	0.15	ppbv		ND	0.64	0.48	ug/m3
75-27-4	163.8	Bromodichloromethane	ND	0.20	0.030	ppbv		ND	1.3	0.20	ug/m3
75-25-2	252.8	Bromoform	ND	0.20	0.071	ppbv		ND	2.1	0.73	ug/m3
74-83-9	94.94	Bromomethane	ND	0.20	0.069	ppbv		ND	0.78	0.27	ug/m3
593-60-2	106.9	Bromoethene	ND	0.20	0.061	ppbv		ND	0.87	0.27	ug/m3
100-44-7	126	Benzyl Chloride	ND	0.20	0.13	ppbv		ND	1.0	0.67	ug/m3
75-15-0	76.14	Carbon disulfide	ND	0.20	0.045	ppbv		ND	0.62	0.14	ug/m3
108-90-7	112.6	Chlorobenzene	ND	0.20	0.074	ppbv		ND	0.92	0.34	ug/m3
75-00-3	64.52	Chloroethane	ND	0.20	0.068	ppbv		ND	0.53	0.18	ug/m3
67-66-3	119.4	Chloroform	ND	0.20	0.037	ppbv		ND	0.98	0.18	ug/m3
74-87-3	50.49	Chloromethane	0.53	0.20	0.090	ppbv		1.1	0.41	0.19	ug/m3
107-05-1	76.53	3-Chloropropene	ND	0.20	0.083	ppbv		ND	0.63	0.26	ug/m3
95-49-8	126.6	2-Chlorotoluene	ND	0.20	0.072	ppbv		ND	1.0	0.37	ug/m3
56-23-5	153.8	Carbon tetrachloride	ND	0.20	0.040	ppbv		ND	1.3	0.25	ug/m3
110-82-7	84.16	Cyclohexane	ND	0.20	0.045	ppbv		ND	0.69	0.15	ug/m3
75-34-3	98.96	1,1-Dichloroethane	ND	0.20	0.057	ppbv		ND	0.81	0.23	ug/m3
75-35-4	96.94	1,1-Dichloroethylene	ND	0.20	0.059	ppbv		ND	0.79	0.23	ug/m3
106-93-4	187.9	1,2-Dibromoethane (EDB)	ND	0.20	0.030	ppbv		ND	1.5	0.23	ug/m3
107-06-2	98.96	1,2-Dichloroethane	ND	0.20	0.070	ppbv		ND	0.81	0.28	ug/m3
78-87-5	113	1,2-Dichloropropane	ND	0.20	0.062	ppbv		ND	0.92	0.29	ug/m3
123-91-1	88.12	1,4-Dioxane	ND	0.20	0.12	ppbv		ND	0.72	0.43	ug/m3
75-71-8	120.9	Dichlorodifluoromethane	0.37	0.20	0.10	ppbv		1.8	0.99	0.49	ug/m3
124-48-1	208.3	Dibromochloromethane	ND	0.20	0.052	ppbv		ND	1.7	0.44	ug/m3
156-60-5	96.94	trans-1,2-Dichloroethylene	0.21	0.20	0.028	ppbv		0.83	0.79	0.11	ug/m3
156-59-2	96.94	cis-1,2-Dichloroethylene	ND	0.20	0.030	ppbv		ND	0.79	0.12	ug/m3
10061-01-5	111	cis-1,3-Dichloropropene	ND	0.20	0.062	ppbv		ND	0.91	0.28	ug/m3
541-73-1	147	m-Dichlorobenzene	ND	0.20	0.040	ppbv		ND	1.2	0.24	ug/m3
95-50-1	147	o-Dichlorobenzene	ND	0.20	0.069	ppbv		ND	1.2	0.41	ug/m3
106-46-7	147	p-Dichlorobenzene	ND	0.20	0.079	ppbv		ND	1.2	0.47	ug/m3
10061-02-6	111	trans-1,3-Dichloropropene	ND	0.20	0.10	ppbv		ND	0.91	0.45	ug/m3

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

Report of Analysis

Client Sample ID:	CRCA-AMB02-20230731		
Lab Sample ID:	JD70271-2	**Date Sampled:**	07/31/23
Matrix:	AIR - Ambient Air Comp. Summa ID: A227	**Date Received:**	08/01/23
Method:	TO-15	**Percent Solids:**	n/a
Project:	KSC-CRCA, FL		

VOA TO15 List

CAS No.	MW	Compound	Result	RL	MDL	Units	Q	Result	RL	MDL	Units
64-17-5	46.07	Ethanol	3.4	0.50	0.39	ppbv		6.4	0.94	0.73	ug/m3
100-41-4	106.2	Ethylbenzene	ND	0.20	0.061	ppbv		ND	0.87	0.26	ug/m3
141-78-6	88	Ethyl Acetate	4.8	0.20	0.10	ppbv		17	0.72	0.36	ug/m3
622-96-8	120.19	4-Ethyltoluene	ND	0.20	0.095	ppbv		ND	0.98	0.47	ug/m3
76-13-1	187.4	Freon 113	0.13	0.20	0.031	ppbv	J	1.0	1.5	0.24	ug/m3
76-14-2	170.9	Freon 114	ND	0.20	0.050	ppbv		ND	1.4	0.35	ug/m3
142-82-5	100.2	Heptane	ND	0.20	0.045	ppbv		ND	0.82	0.18	ug/m3
87-68-3	260.8	Hexachlorobutadiene	ND	0.20	0.062	ppbv		ND	2.1	0.66	ug/m3
110-54-3	86.18	Hexane	2.1	0.20	0.052	ppbv		7.4	0.70	0.18	ug/m3
591-78-6	100	2-Hexanone	ND	0.20	0.15	ppbv		ND	0.82	0.61	ug/m3
67-63-0	60.1	Isopropyl Alcohol	3.8	0.20	0.14	ppbv		9.3	0.49	0.34	ug/m3
75-09-2	84.94	Methylene chloride	5.3	0.20	0.056	ppbv		18	0.69	0.19	ug/m3
78-93-3	72.11	Methyl ethyl ketone	0.50	0.20	0.11	ppbv		1.5	0.59	0.32	ug/m3
108-10-1	100.2	Methyl Isobutyl Ketone	ND	0.20	0.073	ppbv		ND	0.82	0.30	ug/m3
1634-04-4	88.15	Methyl Tert Butyl Ether	ND	0.20	0.080	ppbv		ND	0.72	0.29	ug/m3
80-62-6	100.12	Methylmethacrylate	ND	0.20	0.070	ppbv		ND	0.82	0.29	ug/m3
115-07-1	42	Propylene	0.21	0.50	0.14	ppbv	J	0.36	0.86	0.24	ug/m3
100-42-5	104.1	Styrene	ND	0.20	0.053	ppbv		ND	0.85	0.23	ug/m3
71-55-6	133.4	1,1,1-Trichloroethane	ND	0.20	0.037	ppbv		ND	1.1	0.20	ug/m3
79-34-5	167.85	1,1,2,2-Tetrachloroethane	ND	0.20	0.048	ppbv		ND	1.4	0.33	ug/m3
79-00-5	133.4	1,1,2-Trichloroethane	ND	0.20	0.038	ppbv		ND	1.1	0.21	ug/m3
120-82-1	181.5	1,2,4-Trichlorobenzene	ND	0.20	0.12	ppbv		ND	1.5	0.89	ug/m3
95-63-6	120.19	1,2,4-Trimethylbenzene	ND	0.20	0.087	ppbv		ND	0.98	0.43	ug/m3
108-67-8	120.19	1,3,5-Trimethylbenzene	ND	0.20	0.080	ppbv		ND	0.98	0.39	ug/m3
540-84-1	114.2	2,2,4-Trimethylpentane	ND	0.20	0.040	ppbv		ND	0.93	0.19	ug/m3
75-65-0	74.12	Tertiary Butyl Alcohol	0.17	0.20	0.093	ppbv	J	0.52	0.61	0.28	ug/m3
127-18-4	165.8	Tetrachloroethylene	0.036	0.040	0.014	ppbv	J	0.24	0.27	0.095	ug/m3
109-99-9	72.11	Tetrahydrofuran	ND	0.20	0.090	ppbv		ND	0.59	0.27	ug/m3
108-88-3	92.14	Toluene	0.25	0.20	0.057	ppbv		0.94	0.75	0.21	ug/m3
79-01-6	131.4	Trichloroethylene	ND	0.040	0.019	ppbv		ND	0.21	0.10	ug/m3
75-69-4	137.4	Trichlorofluoromethane	0.35	0.20	0.15	ppbv		2.0	1.1	0.84	ug/m3
75-01-4	62.5	Vinyl chloride	ND	0.20	0.069	ppbv		ND	0.51	0.18	ug/m3
108-05-4	86	Vinyl Acetate	ND	0.20	0.11	ppbv		ND	0.70	0.39	ug/m3
	106.2	m,p-Xylene	ND	0.20	0.14	ppbv		ND	0.87	0.61	ug/m3
95-47-6	106.2	o-Xylene	ND	0.20	0.077	ppbv		ND	0.87	0.33	ug/m3
1330-20-7	106.2	Xylenes (total)	ND	0.20	0.077	ppbv		ND	0.87	0.33	ug/m3

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	4-Bromofluorobenzene	95%		65-128%

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

Report of Analysis

Client Sample ID: CRCA-VMP01-20230731
Lab Sample ID: JD70271-3
Matrix: AIR - Soil Vapor Comp. Summa ID: A2159
Method: TO-15
Project: KSC-CRCA, FL

Date Sampled: 07/31/23
Date Received: 08/01/23
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	7W02743.D	1	08/09/23 17:58	TCH	n/a	n/a	V7W113
Run #2							

	Initial Volume
Run #1	100 ml
Run #2	

VOA TO15 List

CAS No.	MW	Compound	Result	RL	MDL	Units	Q	Result	RL	MDL	Units
67-64-1	58.08	Acetone (2-Propanone)	7.8	0.80	0.58	ppbv		19	1.9	1.4	ug/m3
106-99-0	54.09	1,3-Butadiene	ND	0.80	0.34	ppbv		ND	1.8	0.75	ug/m3
71-43-2	78.11	Benzene	0.60	0.80	0.58	ppbv	J	1.9	2.6	1.9	ug/m3
75-27-4	163.8	Bromodichloromethane	ND	0.80	0.12	ppbv		ND	5.4	0.80	ug/m3
75-25-2	252.8	Bromoform	ND	0.80	0.28	ppbv		ND	8.3	2.9	ug/m3
74-83-9	94.94	Bromomethane	ND	0.80	0.28	ppbv		ND	3.1	1.1	ug/m3
593-60-2	106.9	Bromoethene	ND	0.80	0.24	ppbv		ND	3.5	1.0	ug/m3
100-44-7	126	Benzyl Chloride	ND	0.80	0.50	ppbv		ND	4.1	2.6	ug/m3
75-15-0	76.14	Carbon disulfide	ND	0.80	0.18	ppbv		ND	2.5	0.56	ug/m3
108-90-7	112.6	Chlorobenzene	ND	0.80	0.30	ppbv		ND	3.7	1.4	ug/m3
75-00-3	64.52	Chloroethane	ND	0.80	0.27	ppbv		ND	2.1	0.71	ug/m3
67-66-3	119.4	Chloroform	0.40	0.80	0.15	ppbv	J	2.0	3.9	0.73	ug/m3
74-87-3	50.49	Chloromethane	ND	0.80	0.36	ppbv		ND	1.7	0.74	ug/m3
107-05-1	76.53	3-Chloropropene	ND	0.80	0.33	ppbv		ND	2.5	1.0	ug/m3
95-49-8	126.6	2-Chlorotoluene	ND	0.80	0.29	ppbv		ND	4.1	1.5	ug/m3
56-23-5	153.8	Carbon tetrachloride	ND	0.80	0.16	ppbv		ND	5.0	1.0	ug/m3
110-82-7	84.16	Cyclohexane	ND	0.80	0.18	ppbv		ND	2.8	0.62	ug/m3
75-34-3	98.96	1,1-Dichloroethane	ND	0.80	0.23	ppbv		ND	3.2	0.93	ug/m3
75-35-4	96.94	1,1-Dichloroethylene	ND	0.80	0.24	ppbv		ND	3.2	0.95	ug/m3
106-93-4	187.9	1,2-Dibromoethane (EDB)	ND	0.80	0.12	ppbv		ND	6.1	0.92	ug/m3
107-06-2	98.96	1,2-Dichloroethane	ND	0.80	0.28	ppbv		ND	3.2	1.1	ug/m3
78-87-5	113	1,2-Dichloropropane	ND	0.80	0.25	ppbv		ND	3.7	1.2	ug/m3
123-91-1	88.12	1,4-Dioxane	ND	0.80	0.47	ppbv		ND	2.9	1.7	ug/m3
75-71-8	120.9	Dichlorodifluoromethane	ND	0.80	0.42	ppbv		ND	4.0	2.1	ug/m3
124-48-1	208.3	Dibromochloromethane	ND	0.80	0.21	ppbv		ND	6.8	1.8	ug/m3
156-60-5	96.94	trans-1,2-Dichloroethylene	ND	0.80	0.11	ppbv		ND	3.2	0.44	ug/m3
156-59-2	96.94	cis-1,2-Dichloroethylene	ND	0.80	0.12	ppbv		ND	3.2	0.48	ug/m3
10061-01-5	111	cis-1,3-Dichloropropene	ND	0.80	0.25	ppbv		ND	3.6	1.1	ug/m3
541-73-1	147	m-Dichlorobenzene	ND	0.80	0.16	ppbv		ND	4.8	0.96	ug/m3
95-50-1	147	o-Dichlorobenzene	ND	0.80	0.28	ppbv		ND	4.8	1.7	ug/m3
106-46-7	147	p-Dichlorobenzene	ND	0.80	0.32	ppbv		ND	4.8	1.9	ug/m3
10061-02-6	111	trans-1,3-Dichloropropene	ND	0.80	0.40	ppbv		ND	3.6	1.8	ug/m3

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

Report of Analysis

Client Sample ID:	CRCA-VMP01-20230731		
Lab Sample ID:	JD70271-3	**Date Sampled:**	07/31/23
Matrix:	AIR - Soil Vapor Comp. Summa ID: A2159	**Date Received:**	08/01/23
Method:	TO-15	**Percent Solids:**	n/a
Project:	KSC-CRCA, FL		

VOA TO15 List

CAS No.	MW	Compound	Result	RL	MDL	Units	Q	Result	RL	MDL	Units
64-17-5	46.07	Ethanol	3.9	2.0	1.6	ppbv		7.3	3.8	3.0	ug/m3
100-41-4	106.2	Ethylbenzene	ND	0.80	0.24	ppbv		ND	3.5	1.0	ug/m3
141-78-6	88	Ethyl Acetate	ND	0.80	0.42	ppbv		ND	2.9	1.5	ug/m3
622-96-8	120.19	4-Ethyltoluene	ND	0.80	0.38	ppbv		ND	3.9	1.9	ug/m3
76-13-1	187.4	Freon 113	3.8	0.80	0.12	ppbv		29	6.1	0.92	ug/m3
76-14-2	170.9	Freon 114	ND	0.80	0.20	ppbv		ND	5.6	1.4	ug/m3
142-82-5	100.2	Heptane	ND	0.80	0.18	ppbv		ND	3.3	0.74	ug/m3
87-68-3	260.8	Hexachlorobutadiene	ND	0.80	0.25	ppbv		ND	8.5	2.7	ug/m3
110-54-3	86.18	Hexane	ND	0.80	0.21	ppbv		ND	2.8	0.74	ug/m3
591-78-6	100	2-Hexanone	ND	0.80	0.58	ppbv		ND	3.3	2.4	ug/m3
67-63-0	60.1	Isopropyl Alcohol	4.0	0.80	0.56	ppbv		9.8	2.0	1.4	ug/m3
75-09-2	84.94	Methylene chloride	ND	0.80	0.22	ppbv		ND	2.8	0.76	ug/m3
78-93-3	72.11	Methyl ethyl ketone	1.0	0.80	0.44	ppbv		2.9	2.4	1.3	ug/m3
108-10-1	100.2	Methyl Isobutyl Ketone	ND	0.80	0.29	ppbv		ND	3.3	1.2	ug/m3
1634-04-4	88.15	Methyl Tert Butyl Ether	ND	0.80	0.32	ppbv		ND	2.9	1.2	ug/m3
80-62-6	100.12	Methylmethacrylate	ND	0.80	0.28	ppbv		ND	3.3	1.1	ug/m3
115-07-1	42	Propylene	0.82	2.0	0.57	ppbv	J	1.4	3.4	0.98	ug/m3
100-42-5	104.1	Styrene	ND	0.80	0.21	ppbv		ND	3.4	0.89	ug/m3
71-55-6	133.4	1,1,1-Trichloroethane	ND	0.80	0.15	ppbv		ND	4.4	0.82	ug/m3
79-34-5	167.85	1,1,2,2-Tetrachloroethane	ND	0.80	0.19	ppbv		ND	5.5	1.3	ug/m3
79-00-5	133.4	1,1,2-Trichloroethane	ND	0.80	0.15	ppbv		ND	4.4	0.82	ug/m3
120-82-1	181.5	1,2,4-Trichlorobenzene	ND	0.80	0.48	ppbv		ND	5.9	3.6	ug/m3
95-63-6	120.19	1,2,4-Trimethylbenzene	ND	0.80	0.35	ppbv		ND	3.9	1.7	ug/m3
108-67-8	120.19	1,3,5-Trimethylbenzene	ND	0.80	0.32	ppbv		ND	3.9	1.6	ug/m3
540-84-1	114.2	2,2,4-Trimethylpentane	ND	0.80	0.16	ppbv		ND	3.7	0.75	ug/m3
75-65-0	74.12	Tertiary Butyl Alcohol	1.0	0.80	0.37	ppbv		3.0	2.4	1.1	ug/m3
127-18-4	165.8	Tetrachloroethylene	ND	0.16	0.056	ppbv		ND	1.1	0.38	ug/m3
109-99-9	72.11	Tetrahydrofuran	ND	0.80	0.36	ppbv		ND	2.4	1.1	ug/m3
108-88-3	92.14	Toluene	ND	0.80	0.23	ppbv		ND	3.0	0.87	ug/m3
79-01-6	131.4	Trichloroethylene	ND	0.16	0.076	ppbv		ND	0.86	0.41	ug/m3
75-69-4	137.4	Trichlorofluoromethane	ND	0.80	0.62	ppbv		ND	4.5	3.5	ug/m3
75-01-4	62.5	Vinyl chloride	ND	0.80	0.28	ppbv		ND	2.0	0.72	ug/m3
108-05-4	86	Vinyl Acetate	ND	0.80	0.45	ppbv		ND	2.8	1.6	ug/m3
	106.2	m,p-Xylene	ND	0.80	0.56	ppbv		ND	3.5	2.4	ug/m3
95-47-6	106.2	o-Xylene	ND	0.80	0.31	ppbv		ND	3.5	1.3	ug/m3
1330-20-7	106.2	Xylenes (total)	ND	0.80	0.31	ppbv		ND	3.5	1.3	ug/m3

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	4-Bromofluorobenzene	97%		65-128%

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

Report of Analysis

Client Sample ID: CRCA-VMP02-20230731
Lab Sample ID: JD70271-4
Matrix: AIR - Soil Vapor Comp. Summa ID: A2188
Method: TO-15
Project: KSC-CRCA, FL

Date Sampled: 07/31/23
Date Received: 08/01/23
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	7W02744.D	1	08/09/23 18:32	TCH	n/a	n/a	V7W113
Run #2							

	Initial Volume
Run #1	100 ml
Run #2	

VOA TO15 List

CAS No.	MW	Compound	Result	RL	MDL	Units	Q	Result	RL	MDL	Units
67-64-1	58.08	Acetone (2-Propanone)	5.8	0.80	0.58	ppbv		14	1.9	1.4	ug/m3
106-99-0	54.09	1,3-Butadiene	ND	0.80	0.34	ppbv		ND	1.8	0.75	ug/m3
71-43-2	78.11	Benzene	ND	0.80	0.58	ppbv		ND	2.6	1.9	ug/m3
75-27-4	163.8	Bromodichloromethane	ND	0.80	0.12	ppbv		ND	5.4	0.80	ug/m3
75-25-2	252.8	Bromoform	ND	0.80	0.28	ppbv		ND	8.3	2.9	ug/m3
74-83-9	94.94	Bromomethane	ND	0.80	0.28	ppbv		ND	3.1	1.1	ug/m3
593-60-2	106.9	Bromoethene	ND	0.80	0.24	ppbv		ND	3.5	1.0	ug/m3
100-44-7	126	Benzyl Chloride	ND	0.80	0.50	ppbv		ND	4.1	2.6	ug/m3
75-15-0	76.14	Carbon disulfide	ND	0.80	0.18	ppbv		ND	2.5	0.56	ug/m3
108-90-7	112.6	Chlorobenzene	ND	0.80	0.30	ppbv		ND	3.7	1.4	ug/m3
75-00-3	64.52	Chloroethane	ND	0.80	0.27	ppbv		ND	2.1	0.71	ug/m3
67-66-3	119.4	Chloroform	ND	0.80	0.15	ppbv		ND	3.9	0.73	ug/m3
74-87-3	50.49	Chloromethane	ND	0.80	0.36	ppbv		ND	1.7	0.74	ug/m3
107-05-1	76.53	3-Chloropropene	ND	0.80	0.33	ppbv		ND	2.5	1.0	ug/m3
95-49-8	126.6	2-Chlorotoluene	ND	0.80	0.29	ppbv		ND	4.1	1.5	ug/m3
56-23-5	153.8	Carbon tetrachloride	ND	0.80	0.16	ppbv		ND	5.0	1.0	ug/m3
110-82-7	84.16	Cyclohexane	ND	0.80	0.18	ppbv		ND	2.8	0.62	ug/m3
75-34-3	98.96	1,1-Dichloroethane	ND	0.80	0.23	ppbv		ND	3.2	0.93	ug/m3
75-35-4	96.94	1,1-Dichloroethylene	ND	0.80	0.24	ppbv		ND	3.2	0.95	ug/m3
106-93-4	187.9	1,2-Dibromoethane (EDB)	ND	0.80	0.12	ppbv		ND	6.1	0.92	ug/m3
107-06-2	98.96	1,2-Dichloroethane	ND	0.80	0.28	ppbv		ND	3.2	1.1	ug/m3
78-87-5	113	1,2-Dichloropropane	ND	0.80	0.25	ppbv		ND	3.7	1.2	ug/m3
123-91-1	88.12	1,4-Dioxane	ND	0.80	0.47	ppbv		ND	2.9	1.7	ug/m3
75-71-8	120.9	Dichlorodifluoromethane	ND	0.80	0.42	ppbv		ND	4.0	2.1	ug/m3
124-48-1	208.3	Dibromochloromethane	ND	0.80	0.21	ppbv		ND	6.8	1.8	ug/m3
156-60-5	96.94	trans-1,2-Dichloroethylene	5.1	0.80	0.11	ppbv		20	3.2	0.44	ug/m3
156-59-2	96.94	cis-1,2-Dichloroethylene	ND	0.80	0.12	ppbv		ND	3.2	0.48	ug/m3
10061-01-5	111	cis-1,3-Dichloropropene	ND	0.80	0.25	ppbv		ND	3.6	1.1	ug/m3
541-73-1	147	m-Dichlorobenzene	ND	0.80	0.16	ppbv		ND	4.8	0.96	ug/m3
95-50-1	147	o-Dichlorobenzene	ND	0.80	0.28	ppbv		ND	4.8	1.7	ug/m3
106-46-7	147	p-Dichlorobenzene	ND	0.80	0.32	ppbv		ND	4.8	1.9	ug/m3
10061-02-6	111	trans-1,3-Dichloropropene	ND	0.80	0.40	ppbv		ND	3.6	1.8	ug/m3

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

Report of Analysis

Client Sample ID: CRCA-VMP02-20230731
Lab Sample ID: JD70271-4
Matrix: AIR - Soil Vapor Comp. Summa ID: A2188
Method: TO-15
Project: KSC-CRCA, FL

Date Sampled: 07/31/23
Date Received: 08/01/23
Percent Solids: n/a

VOA TO15 List

CAS No.	MW	Compound	Result	RL	MDL	Units	Q	Result	RL	MDL	Units
64-17-5	46.07	Ethanol	18.9	2.0	1.6	ppbv		35.6	3.8	3.0	ug/m3
100-41-4	106.2	Ethylbenzene	ND	0.80	0.24	ppbv		ND	3.5	1.0	ug/m3
141-78-6	88	Ethyl Acetate	ND	0.80	0.42	ppbv		ND	2.9	1.5	ug/m3
622-96-8	120.19	4-Ethyltoluene	ND	0.80	0.38	ppbv		ND	3.9	1.9	ug/m3
76-13-1	187.4	Freon 113	2.4	0.80	0.12	ppbv		18	6.1	0.92	ug/m3
76-14-2	170.9	Freon 114	ND	0.80	0.20	ppbv		ND	5.6	1.4	ug/m3
142-82-5	100.2	Heptane	ND	0.80	0.18	ppbv		ND	3.3	0.74	ug/m3
87-68-3	260.8	Hexachlorobutadiene	ND	0.80	0.25	ppbv		ND	8.5	2.7	ug/m3
110-54-3	86.18	Hexane	0.66	0.80	0.21	ppbv	J	2.3	2.8	0.74	ug/m3
591-78-6	100	2-Hexanone	ND	0.80	0.58	ppbv		ND	3.3	2.4	ug/m3
67-63-0	60.1	Isopropyl Alcohol	21.7	0.80	0.56	ppbv		53.3	2.0	1.4	ug/m3
75-09-2	84.94	Methylene chloride	1.0	0.80	0.22	ppbv		3.5	2.8	0.76	ug/m3
78-93-3	72.11	Methyl ethyl ketone	ND	0.80	0.44	ppbv		ND	2.4	1.3	ug/m3
108-10-1	100.2	Methyl Isobutyl Ketone	ND	0.80	0.29	ppbv		ND	3.3	1.2	ug/m3
1634-04-4	88.15	Methyl Tert Butyl Ether	ND	0.80	0.32	ppbv		ND	2.9	1.2	ug/m3
80-62-6	100.12	Methylmethacrylate	ND	0.80	0.28	ppbv		ND	3.3	1.1	ug/m3
115-07-1	42	Propylene	ND	2.0	0.57	ppbv		ND	3.4	0.98	ug/m3
100-42-5	104.1	Styrene	ND	0.80	0.21	ppbv		ND	3.4	0.89	ug/m3
71-55-6	133.4	1,1,1-Trichloroethane	ND	0.80	0.15	ppbv		ND	4.4	0.82	ug/m3
79-34-5	167.85	1,1,2,2-Tetrachloroethane	ND	0.80	0.19	ppbv		ND	5.5	1.3	ug/m3
79-00-5	133.4	1,1,2-Trichloroethane	ND	0.80	0.15	ppbv		ND	4.4	0.82	ug/m3
120-82-1	181.5	1,2,4-Trichlorobenzene	ND	0.80	0.48	ppbv		ND	5.9	3.6	ug/m3
95-63-6	120.19	1,2,4-Trimethylbenzene	ND	0.80	0.35	ppbv		ND	3.9	1.7	ug/m3
108-67-8	120.19	1,3,5-Trimethylbenzene	ND	0.80	0.32	ppbv		ND	3.9	1.6	ug/m3
540-84-1	114.2	2,2,4-Trimethylpentane	ND	0.80	0.16	ppbv		ND	3.7	0.75	ug/m3
75-65-0	74.12	Tertiary Butyl Alcohol	ND	0.80	0.37	ppbv		ND	2.4	1.1	ug/m3
127-18-4	165.8	Tetrachloroethylene	ND	0.16	0.056	ppbv		ND	1.1	0.38	ug/m3
109-99-9	72.11	Tetrahydrofuran	ND	0.80	0.36	ppbv		ND	2.4	1.1	ug/m3
108-88-3	92.14	Toluene	ND	0.80	0.23	ppbv		ND	3.0	0.87	ug/m3
79-01-6	131.4	Trichloroethylene	ND	0.16	0.076	ppbv		ND	0.86	0.41	ug/m3
75-69-4	137.4	Trichlorofluoromethane	ND	0.80	0.62	ppbv		ND	4.5	3.5	ug/m3
75-01-4	62.5	Vinyl chloride	ND	0.80	0.28	ppbv		ND	2.0	0.72	ug/m3
108-05-4	86	Vinyl Acetate	ND	0.80	0.45	ppbv		ND	2.8	1.6	ug/m3
	106.2	m,p-Xylene	ND	0.80	0.56	ppbv		ND	3.5	2.4	ug/m3
95-47-6	106.2	o-Xylene	ND	0.80	0.31	ppbv		ND	3.5	1.3	ug/m3
1330-20-7	106.2	Xylenes (total)	ND	0.80	0.31	ppbv		ND	3.5	1.3	ug/m3

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	4-Bromofluorobenzene	97%		65-128%

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

Report of Analysis

Client Sample ID: CRCA-VMP03-20230731
Lab Sample ID: JD70271-5
Matrix: AIR - Soil Vapor Comp. Summa ID: A1858
Method: TO-15
Project: KSC-CRCA, FL

Date Sampled: 07/31/23
Date Received: 08/01/23
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	7W02745.D	1.55	08/09/23 19:06	TCH	n/a	n/a	V7W113
Run #2							

	Initial Volume
Run #1	155 ml
Run #2	

VOA TO15 List

CAS No.	MW	Compound	Result	RL	MDL	Units	Q	Result	RL	MDL	Units
67-64-1	58.08	Acetone (2-Propanone)	4.1	0.80	0.58	ppbv		9.7	1.9	1.4	ug/m3
106-99-0	54.09	1,3-Butadiene	ND	0.80	0.34	ppbv		ND	1.8	0.75	ug/m3
71-43-2	78.11	Benzene	ND	0.80	0.58	ppbv		ND	2.6	1.9	ug/m3
75-27-4	163.8	Bromodichloromethane	ND	0.80	0.12	ppbv		ND	5.4	0.80	ug/m3
75-25-2	252.8	Bromoform	ND	0.80	0.28	ppbv		ND	8.3	2.9	ug/m3
74-83-9	94.94	Bromomethane	ND	0.80	0.28	ppbv		ND	3.1	1.1	ug/m3
593-60-2	106.9	Bromoethene	ND	0.80	0.24	ppbv		ND	3.5	1.0	ug/m3
100-44-7	126	Benzyl Chloride	ND	0.80	0.50	ppbv		ND	4.1	2.6	ug/m3
75-15-0	76.14	Carbon disulfide	ND	0.80	0.18	ppbv		ND	2.5	0.56	ug/m3
108-90-7	112.6	Chlorobenzene	ND	0.80	0.30	ppbv		ND	3.7	1.4	ug/m3
75-00-3	64.52	Chloroethane	ND	0.80	0.27	ppbv		ND	2.1	0.71	ug/m3
67-66-3	119.4	Chloroform	3.1	0.80	0.15	ppbv		15	3.9	0.73	ug/m3
74-87-3	50.49	Chloromethane	ND	0.80	0.36	ppbv		ND	1.7	0.74	ug/m3
107-05-1	76.53	3-Chloropropene	ND	0.80	0.33	ppbv		ND	2.5	1.0	ug/m3
95-49-8	126.6	2-Chlorotoluene	ND	0.80	0.29	ppbv		ND	4.1	1.5	ug/m3
56-23-5	153.8	Carbon tetrachloride	ND	0.80	0.16	ppbv		ND	5.0	1.0	ug/m3
110-82-7	84.16	Cyclohexane	ND	0.80	0.18	ppbv		ND	2.8	0.62	ug/m3
75-34-3	98.96	1,1-Dichloroethane	ND	0.80	0.23	ppbv		ND	3.2	0.93	ug/m3
75-35-4	96.94	1,1-Dichloroethylene	ND	0.80	0.24	ppbv		ND	3.2	0.95	ug/m3
106-93-4	187.9	1,2-Dibromoethane (EDB)	ND	0.80	0.12	ppbv		ND	6.1	0.92	ug/m3
107-06-2	98.96	1,2-Dichloroethane	ND	0.80	0.28	ppbv		ND	3.2	1.1	ug/m3
78-87-5	113	1,2-Dichloropropane	ND	0.80	0.25	ppbv		ND	3.7	1.2	ug/m3
123-91-1	88.12	1,4-Dioxane	ND	0.80	0.47	ppbv		ND	2.9	1.7	ug/m3
75-71-8	120.9	Dichlorodifluoromethane	ND	0.80	0.42	ppbv		ND	4.0	2.1	ug/m3
124-48-1	208.3	Dibromochloromethane	ND	0.80	0.21	ppbv		ND	6.8	1.8	ug/m3
156-60-5	96.94	trans-1,2-Dichloroethylene	ND	0.80	0.11	ppbv		ND	3.2	0.44	ug/m3
156-59-2	96.94	cis-1,2-Dichloroethylene	ND	0.80	0.12	ppbv		ND	3.2	0.48	ug/m3
10061-01-5	111	cis-1,3-Dichloropropene	ND	0.80	0.25	ppbv		ND	3.6	1.1	ug/m3
541-73-1	147	m-Dichlorobenzene	ND	0.80	0.16	ppbv		ND	4.8	0.96	ug/m3
95-50-1	147	o-Dichlorobenzene	ND	0.80	0.28	ppbv		ND	4.8	1.7	ug/m3
106-46-7	147	p-Dichlorobenzene	ND	0.80	0.32	ppbv		ND	4.8	1.9	ug/m3
10061-02-6	111	trans-1,3-Dichloropropene	ND	0.80	0.40	ppbv		ND	3.6	1.8	ug/m3

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

Report of Analysis

Client Sample ID: CRCA-VMP03-20230731
Lab Sample ID: JD70271-5
Matrix: AIR - Soil Vapor Comp. Summa ID: A1858
Method: TO-15
Project: KSC-CRCA, FL

Date Sampled: 07/31/23
Date Received: 08/01/23
Percent Solids: n/a

VOA TO15 List

CAS No.	MW	Compound	Result	RL	MDL	Units	Q	Result	RL	MDL	Units
64-17-5	46.07	Ethanol	8.0	2.0	1.6	ppbv		15	3.8	3.0	ug/m3
100-41-4	106.2	Ethylbenzene	ND	0.80	0.24	ppbv		ND	3.5	1.0	ug/m3
141-78-6	88	Ethyl Acetate	ND	0.80	0.42	ppbv		ND	2.9	1.5	ug/m3
622-96-8	120.19	4-Ethyltoluene	ND	0.80	0.38	ppbv		ND	3.9	1.9	ug/m3
76-13-1	187.4	Freon 113	2.4	0.80	0.12	ppbv		18	6.1	0.92	ug/m3
76-14-2	170.9	Freon 114	ND	0.80	0.20	ppbv		ND	5.6	1.4	ug/m3
142-82-5	100.2	Heptane	ND	0.80	0.18	ppbv		ND	3.3	0.74	ug/m3
87-68-3	260.8	Hexachlorobutadiene	ND	0.80	0.25	ppbv		ND	8.5	2.7	ug/m3
110-54-3	86.18	Hexane	ND	0.80	0.21	ppbv		ND	2.8	0.74	ug/m3
591-78-6	100	2-Hexanone	ND	0.80	0.58	ppbv		ND	3.3	2.4	ug/m3
67-63-0	60.1	Isopropyl Alcohol	17.0	0.80	0.56	ppbv		41.8	2.0	1.4	ug/m3
75-09-2	84.94	Methylene chloride	ND	0.80	0.22	ppbv		ND	2.8	0.76	ug/m3
78-93-3	72.11	Methyl ethyl ketone	ND	0.80	0.44	ppbv		ND	2.4	1.3	ug/m3
108-10-1	100.2	Methyl Isobutyl Ketone	ND	0.80	0.29	ppbv		ND	3.3	1.2	ug/m3
1634-04-4	88.15	Methyl Tert Butyl Ether	ND	0.80	0.32	ppbv		ND	2.9	1.2	ug/m3
80-62-6	100.12	Methylmethacrylate	ND	0.80	0.28	ppbv		ND	3.3	1.1	ug/m3
115-07-1	42	Propylene	ND	2.0	0.57	ppbv		ND	3.4	0.98	ug/m3
100-42-5	104.1	Styrene	ND	0.80	0.21	ppbv		ND	3.4	0.89	ug/m3
71-55-6	133.4	1,1,1-Trichloroethane	ND	0.80	0.15	ppbv		ND	4.4	0.82	ug/m3
79-34-5	167.85	1,1,2,2-Tetrachloroethane	ND	0.80	0.19	ppbv		ND	5.5	1.3	ug/m3
79-00-5	133.4	1,1,2-Trichloroethane	ND	0.80	0.15	ppbv		ND	4.4	0.82	ug/m3
120-82-1	181.5	1,2,4-Trichlorobenzene	ND	0.80	0.48	ppbv		ND	5.9	3.6	ug/m3
95-63-6	120.19	1,2,4-Trimethylbenzene	ND	0.80	0.35	ppbv		ND	3.9	1.7	ug/m3
108-67-8	120.19	1,3,5-Trimethylbenzene	ND	0.80	0.32	ppbv		ND	3.9	1.6	ug/m3
540-84-1	114.2	2,2,4-Trimethylpentane	ND	0.80	0.16	ppbv		ND	3.7	0.75	ug/m3
75-65-0	74.12	Tertiary Butyl Alcohol	ND	0.80	0.37	ppbv		ND	2.4	1.1	ug/m3
127-18-4	165.8	Tetrachloroethylene	ND	0.16	0.056	ppbv		ND	1.1	0.38	ug/m3
109-99-9	72.11	Tetrahydrofuran	ND	0.80	0.36	ppbv		ND	2.4	1.1	ug/m3
108-88-3	92.14	Toluene	ND	0.80	0.23	ppbv		ND	3.0	0.87	ug/m3
79-01-6	131.4	Trichloroethylene	ND	0.16	0.076	ppbv		ND	0.86	0.41	ug/m3
75-69-4	137.4	Trichlorofluoromethane	ND	0.80	0.62	ppbv		ND	4.5	3.5	ug/m3
75-01-4	62.5	Vinyl chloride	ND	0.80	0.28	ppbv		ND	2.0	0.72	ug/m3
108-05-4	86	Vinyl Acetate	ND	0.80	0.45	ppbv		ND	2.8	1.6	ug/m3
	106.2	m,p-Xylene	ND	0.80	0.56	ppbv		ND	3.5	2.4	ug/m3
95-47-6	106.2	o-Xylene	ND	0.80	0.31	ppbv		ND	3.5	1.3	ug/m3
1330-20-7	106.2	Xylenes (total)	ND	0.80	0.31	ppbv		ND	3.5	1.3	ug/m3

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	4-Bromofluorobenzene	97%		65-128%

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

Report of Analysis

Client Sample ID: CRCA-VMP04-20230731
Lab Sample ID: JD70271-6
Matrix: AIR - Soil Vapor Comp. Summa ID: A2151
Method: TO-15
Project: KSC-CRCA, FL

Date Sampled: 07/31/23
Date Received: 08/01/23
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	7W02746.D	1	08/09/23 19:41	TCH	n/a	n/a	V7W113
Run #2							

	Initial Volume
Run #1	100 ml
Run #2	

VOA TO15 List

CAS No.	MW	Compound	Result	RL	MDL	Units	Q	Result	RL	MDL	Units
67-64-1	58.08	Acetone (2-Propanone)	1.4	0.80	0.58	ppbv		3.3	1.9	1.4	ug/m3
106-99-0	54.09	1,3-Butadiene	ND	0.80	0.34	ppbv		ND	1.8	0.75	ug/m3
71-43-2	78.11	Benzene	ND	0.80	0.58	ppbv		ND	2.6	1.9	ug/m3
75-27-4	163.8	Bromodichloromethane	ND	0.80	0.12	ppbv		ND	5.4	0.80	ug/m3
75-25-2	252.8	Bromoform	ND	0.80	0.28	ppbv		ND	8.3	2.9	ug/m3
74-83-9	94.94	Bromomethane	ND	0.80	0.28	ppbv		ND	3.1	1.1	ug/m3
593-60-2	106.9	Bromoethene	ND	0.80	0.24	ppbv		ND	3.5	1.0	ug/m3
100-44-7	126	Benzyl Chloride	ND	0.80	0.50	ppbv		ND	4.1	2.6	ug/m3
75-15-0	76.14	Carbon disulfide	ND	0.80	0.18	ppbv		ND	2.5	0.56	ug/m3
108-90-7	112.6	Chlorobenzene	ND	0.80	0.30	ppbv		ND	3.7	1.4	ug/m3
75-00-3	64.52	Chloroethane	ND	0.80	0.27	ppbv		ND	2.1	0.71	ug/m3
67-66-3	119.4	Chloroform	1.6	0.80	0.15	ppbv		7.8	3.9	0.73	ug/m3
74-87-3	50.49	Chloromethane	ND	0.80	0.36	ppbv		ND	1.7	0.74	ug/m3
107-05-1	76.53	3-Chloropropene	ND	0.80	0.33	ppbv		ND	2.5	1.0	ug/m3
95-49-8	126.6	2-Chlorotoluene	ND	0.80	0.29	ppbv		ND	4.1	1.5	ug/m3
56-23-5	153.8	Carbon tetrachloride	ND	0.80	0.16	ppbv		ND	5.0	1.0	ug/m3
110-82-7	84.16	Cyclohexane	ND	0.80	0.18	ppbv		ND	2.8	0.62	ug/m3
75-34-3	98.96	1,1-Dichloroethane	ND	0.80	0.23	ppbv		ND	3.2	0.93	ug/m3
75-35-4	96.94	1,1-Dichloroethylene	ND	0.80	0.24	ppbv		ND	3.2	0.95	ug/m3
106-93-4	187.9	1,2-Dibromoethane (EDB)	ND	0.80	0.12	ppbv		ND	6.1	0.92	ug/m3
107-06-2	98.96	1,2-Dichloroethane	ND	0.80	0.28	ppbv		ND	3.2	1.1	ug/m3
78-87-5	113	1,2-Dichloropropane	ND	0.80	0.25	ppbv		ND	3.7	1.2	ug/m3
123-91-1	88.12	1,4-Dioxane	ND	0.80	0.47	ppbv		ND	2.9	1.7	ug/m3
75-71-8	120.9	Dichlorodifluoromethane	ND	0.80	0.42	ppbv		ND	4.0	2.1	ug/m3
124-48-1	208.3	Dibromochloromethane	ND	0.80	0.21	ppbv		ND	6.8	1.8	ug/m3
156-60-5	96.94	trans-1,2-Dichloroethylene	ND	0.80	0.11	ppbv		ND	3.2	0.44	ug/m3
156-59-2	96.94	cis-1,2-Dichloroethylene	ND	0.80	0.12	ppbv		ND	3.2	0.48	ug/m3
10061-01-5	111	cis-1,3-Dichloropropene	ND	0.80	0.25	ppbv		ND	3.6	1.1	ug/m3
541-73-1	147	m-Dichlorobenzene	ND	0.80	0.16	ppbv		ND	4.8	0.96	ug/m3
95-50-1	147	o-Dichlorobenzene	ND	0.80	0.28	ppbv		ND	4.8	1.7	ug/m3
106-46-7	147	p-Dichlorobenzene	ND	0.80	0.32	ppbv		ND	4.8	1.9	ug/m3
10061-02-6	111	trans-1,3-Dichloropropene	ND	0.80	0.40	ppbv		ND	3.6	1.8	ug/m3

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

Report of Analysis

Client Sample ID: CRCA-VMP04-20230731
Lab Sample ID: JD70271-6
Matrix: AIR - Soil Vapor Comp. Summa ID: A2151
Method: TO-15
Project: KSC-CRCA, FL

Date Sampled: 07/31/23
Date Received: 08/01/23
Percent Solids: n/a

VOA TO15 List

CAS No.	MW	Compound	Result	RL	MDL	Units	Q	Result	RL	MDL	Units
64-17-5	46.07	Ethanol	2.1	2.0	1.6	ppbv		4.0	3.8	3.0	ug/m3
100-41-4	106.2	Ethylbenzene	ND	0.80	0.24	ppbv		ND	3.5	1.0	ug/m3
141-78-6	88	Ethyl Acetate	ND	0.80	0.42	ppbv		ND	2.9	1.5	ug/m3
622-96-8	120.19	4-Ethyltoluene	ND	0.80	0.38	ppbv		ND	3.9	1.9	ug/m3
76-13-1	187.4	Freon 113	8.2	0.80	0.12	ppbv		63	6.1	0.92	ug/m3
76-14-2	170.9	Freon 114	ND	0.80	0.20	ppbv		ND	5.6	1.4	ug/m3
142-82-5	100.2	Heptane	ND	0.80	0.18	ppbv		ND	3.3	0.74	ug/m3
87-68-3	260.8	Hexachlorobutadiene	ND	0.80	0.25	ppbv		ND	8.5	2.7	ug/m3
110-54-3	86.18	Hexane	ND	0.80	0.21	ppbv		ND	2.8	0.74	ug/m3
591-78-6	100	2-Hexanone	ND	0.80	0.58	ppbv		ND	3.3	2.4	ug/m3
67-63-0	60.1	Isopropyl Alcohol	1.6	0.80	0.56	ppbv		3.9	2.0	1.4	ug/m3
75-09-2	84.94	Methylene chloride	ND	0.80	0.22	ppbv		ND	2.8	0.76	ug/m3
78-93-3	72.11	Methyl ethyl ketone	ND	0.80	0.44	ppbv		ND	2.4	1.3	ug/m3
108-10-1	100.2	Methyl Isobutyl Ketone	ND	0.80	0.29	ppbv		ND	3.3	1.2	ug/m3
1634-04-4	88.15	Methyl Tert Butyl Ether	ND	0.80	0.32	ppbv		ND	2.9	1.2	ug/m3
80-62-6	100.12	Methylmethacrylate	ND	0.80	0.28	ppbv		ND	3.3	1.1	ug/m3
115-07-1	42	Propylene	1.1	2.0	0.57	ppbv	J	1.9	3.4	0.98	ug/m3
100-42-5	104.1	Styrene	ND	0.80	0.21	ppbv		ND	3.4	0.89	ug/m3
71-55-6	133.4	1,1,1-Trichloroethane	ND	0.80	0.15	ppbv		ND	4.4	0.82	ug/m3
79-34-5	167.85	1,1,2,2-Tetrachloroethane	ND	0.80	0.19	ppbv		ND	5.5	1.3	ug/m3
79-00-5	133.4	1,1,2-Trichloroethane	ND	0.80	0.15	ppbv		ND	4.4	0.82	ug/m3
120-82-1	181.5	1,2,4-Trichlorobenzene	ND	0.80	0.48	ppbv		ND	5.9	3.6	ug/m3
95-63-6	120.19	1,2,4-Trimethylbenzene	ND	0.80	0.35	ppbv		ND	3.9	1.7	ug/m3
108-67-8	120.19	1,3,5-Trimethylbenzene	ND	0.80	0.32	ppbv		ND	3.9	1.6	ug/m3
540-84-1	114.2	2,2,4-Trimethylpentane	ND	0.80	0.16	ppbv		ND	3.7	0.75	ug/m3
75-65-0	74.12	Tertiary Butyl Alcohol	ND	0.80	0.37	ppbv		ND	2.4	1.1	ug/m3
127-18-4	165.8	Tetrachloroethylene	ND	0.16	0.056	ppbv		ND	1.1	0.38	ug/m3
109-99-9	72.11	Tetrahydrofuran	ND	0.80	0.36	ppbv		ND	2.4	1.1	ug/m3
108-88-3	92.14	Toluene	ND	0.80	0.23	ppbv		ND	3.0	0.87	ug/m3
79-01-6	131.4	Trichloroethylene	ND	0.16	0.076	ppbv		ND	0.86	0.41	ug/m3
75-69-4	137.4	Trichlorofluoromethane	ND	0.80	0.62	ppbv		ND	4.5	3.5	ug/m3
75-01-4	62.5	Vinyl chloride	ND	0.80	0.28	ppbv		ND	2.0	0.72	ug/m3
108-05-4	86	Vinyl Acetate	ND	0.80	0.45	ppbv		ND	2.8	1.6	ug/m3
	106.2	m,p-Xylene	ND	0.80	0.56	ppbv		ND	3.5	2.4	ug/m3
95-47-6	106.2	o-Xylene	ND	0.80	0.31	ppbv		ND	3.5	1.3	ug/m3
1330-20-7	106.2	Xylenes (total)	ND	0.80	0.31	ppbv		ND	3.5	1.3	ug/m3

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	4-Bromofluorobenzene	96%		65-128%

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

MS Volatiles

QC Data Summaries

Includes the following where applicable:

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

SGS

AIR

CHAIN OF CUSTODY - AIR

5894 7375 06 (0) PAGE 1 OF 1

PM

SGS North America Inc. - Dayton
2235 Route 130, Dayton, NJ 08810
TEL. 732-329-0200 FAX 732-329-3499
www.sgs.com/ehsusa

FED-EX Tracking # 5894 7375 0671 | Bottle Order Control # PREM-JS-07523-40
SGS Quote # | SGS Job # JD70271

Client / Reporting Information	Project Information	Weather Parameters	Requested Analysis
Company Name: Terra Tech, Inc	Project Name: KSC - CRCA	Temperature (Fahrenheit) Start: 79°F Maximum: 92°F	
Address: 1353 N Courtenay Pkwy Ste. S	Street:	Stop: 92°F Minimum: 79°F	
City: Merritt Island, State: FL Zip: 32953	City: Kennedy Space Center, FL State:	Atmospheric Pressure (Inches of Hg) Start: 29.98"Hg Maximum: 30.02"Hg	
Project Contact: Chris Neumann E-mail: chris.neumann@terratech.com	Project #: 112G-08970	Stop: 30.02"Hg Minimum: 29.98"Hg	
Phone #: (321) 632-0470	Client Purchase Order #:	Other weather comment:	
Sampler(s) Name(s): Chuck Sorden / Natalie Volk			

Lab Sample #	Field ID / Point of Collection	Air Type: Ind (I) Soil Vap (SV) Amb (A)	Air Type: Res (R) Non-Res (NR)	Sampling Equipment Info: Canister Serial #	Canister Size 6L or 1L	Flow Controller Serial #	Start Sampling Information: Date	Time (24hr clock)	Canister Pressure ("Hg)	Interior Temp (F)	Sampler Init.	Stop Sampling Information: Date	Time (24hr clock)	Canister Pressure ("Hg)	Interior Temp (F)	Sampler Init.
1	CRCA-AM001-20230731	A	NR	A1265	6L	FC1024	07/31/23	0800	>30"	79°F	CS/NV	07/31/23	1600	6"	87°F	CS/NV
2	CRCA-AM002-20230731	A	NR	A1227	6L	FC1068	07/31/23	0810	30"	79°F	CS/NV	07/31/23	1605	6"	87°F	CS/NV
3	CRCA-UMP01-20230731	SU	NR	A2159	6L	FC1060	07/31/23	1015	29"	82°F	CS/NV	07/31/23	1115	4"	85°F	CS/NV
4	CRCA-UMP02-20230731	SU	NR	A2188	6L	FC1240	07/31/23	1025	30"	80°F	CS/NV	07/31/23	1125	4"	80°	CS/NV
5	CRCA-UMP03-20230731	SU	NR	A1858	6L	FC507	07/31/23	1035	28"	75°F	CS/NV	07/31/23	1135	5"	75°F	CS/NV
6	CRCA-UMP04-20230731	SU	NR	A2151	6L	FC1213	07/31/23	1100	29"	74°F	CS/NV	07/31/23	1200	9"	74°C	CS/NV

Turnaround Time (Business days)
- X 15 Business Days
- 10 Business Days
- 5 Business Days
- 3 Business Days *
- 2 Business Days *
- 1 Business Day *
- Other

Approved By: Date:
* Approval needed for 1-3 Business Day TAT

Data Deliverable Information
All NJDEP TO-15 is mandatory Full T1
Comm A
Comm B
Reduced T2
Full T1
Other:
DKQP reporting

Remarks
Label Verification BN
Sample inventory is verified upon receipt in the Laboratory

Sample Custody must be documented below each time samples change possession, including courier delivery.

	Relinquished by Laboratory:	Date / Time:	Received By:	Relinquished By:	Date / Time:	Received By:
1	W.T.	7/31/23 14:40	1	2	07/31/23 1615	2 FedEx
3	FedEx	8/1/23 10:20	3	4		4
5			5	Custody Seal #		

http://www.sgs.com/en/terms-and-conditions

EHSA-QAC-0022-01-FORM-Dayton-Air COC
Rev.date:1/15/2021

JD70271: Chain of Custody
Page 1 of 3

SGS Sample Receipt Summary

Job Number: JD70271 **Client:** TETRA TECH NUS **Project:** KSC-CRCA

Date / Time Received: 8/1/2023 10:20:00 AM **Delivery Method:** FED EX **Airbill #'s:** 5894 7375 0660 5894 7375 0671

Cooler Temps (Raw Measured) °C:

Cooler Temps (Corrected) °C:

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

Cooler Temperature	Y	or	N
1. Temp criteria achieved:	☐		☐
2. Cooler temp verification:	N/A		
3. Cooler media:	N/A		
4. No. Coolers:	N/A		

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

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

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

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

Test Strip Lot #s: pH 1-12: 231619 pH 12+: 203117A Other: (Specify)

Comments: -1 to -6 No analysis requested on COC. Please confirm.

Responded to by: Jadon Schiller

Response Date: 8/2/23

Analyze for VTO15STD

JD70271: Chain of Custody
Page 3 of 3

Summa Canister and Flow Controller Log

Job Number: JD70271
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL
Received: 08/01/23

SUMMA CANISTERS

Shipping							Receiving					
Summa ID	L	Vac " Hg	Date Out	By	SCC Batch	SCC FileID	Sample Number	Date In	By	Vac " Hg	Pres psig	Final psig	Dil Fact
A1287	6	30	07/06/23	ML	CP12296	5W50569.D	JD70271-1	08/01/23	DG	7.5			1
A227	6	30	07/06/23	ML	CP12296	5W50569.D	JD70271-2	08/01/23	DG	7			1
A2159	6	30	07/06/23	ML	CP12296	5W50569.D	JD70271-3	08/01/23	DG	6			1
A2188	6	30	07/06/23	ML	CP12296	5W50569.D	JD70271-4	08/01/23	DG	5			1
A1858	6	30	07/06/23	ML	CP12296	5W50569.D	JD70271-5	08/01/23	DG	5			1
A2151	6	30	07/06/23	ML	CP12306	6W29392.D	JD70271-6	08/01/23	DG	9		1.3	1.56

FLOW CONTROLLERS / OTHER

Shipping					Receiving				
Flow Crtl ID	Date Out	By	cc/ min	Time hrs.	Date In	By	cc/ min	Flow RPD	Equipment Type
FC507	07/06/23	ML	83	1	08/02/23	DG	89	7	Flow Controller
FC1050	07/06/23	ML	84	1	08/02/23	DG	87	3.5	Flow Controller
FC1064	07/06/23	ML	10.5	8	08/02/23	DG	10.4	1	Flow Controller
FC1068	07/06/23	ML	10.4	8	08/02/23	DG	10.4	0	Flow Controller
FC1213	07/06/23	ML	84	1	08/02/23	DG	87	3.5	Flow Controller
FC1240	07/06/23	ML	83	1	08/02/23	DG	80	3.7	Flow Controller

SGS Bottle Order(s):
PREM-JS-07523-40

Prep Date	Room Temp(F)	Bar Pres "Hg
07/06/23	70	29.92

Internal Sample Tracking Chronicle

Tetra Tech NUS

Job No: JD70271

KSC-CRCA, FL
Project No: 112G 08970

Sample Number	Method	Analyzed	By	Prepped	By	Test Codes
JD70271-1	Collected: 31-JUL-23 16:00 By: CS/NV	Received: 01-AUG-23 By: JK				
CRCA-AMB01-20230731						
JD70271-1	TO-15	09-AUG-23 16:03	TCH			VTO15STD
JD70271-2	Collected: 31-JUL-23 16:05 By: CS/NV	Received: 01-AUG-23 By: JK				
CRCA-AMB02-20230731						
JD70271-2	TO-15	09-AUG-23 17:23	TCH			VTO15STD
JD70271-3	Collected: 31-JUL-23 11:15 By: CS/NV	Received: 01-AUG-23 By: JK				
CRCA-VMP01-20230731						
JD70271-3	TO-15	09-AUG-23 17:58	TCH			VTO15STD
JD70271-4	Collected: 31-JUL-23 11:25 By: CS/NV	Received: 01-AUG-23 By: JK				
CRCA-VMP02-20230731						
JD70271-4	TO-15	09-AUG-23 18:32	TCH			VTO15STD
JD70271-5	Collected: 31-JUL-23 11:35 By: CS/NV	Received: 01-AUG-23 By: JK				
CRCA-VMP03-20230731						
JD70271-5	TO-15	09-AUG-23 19:06	TCH			VTO15STD
JD70271-6	Collected: 31-JUL-23 12:00 By: CS/NV	Received: 01-AUG-23 By: JK				
CRCA-VMP04-20230731						
JD70271-6	TO-15	09-AUG-23 19:41	TCH			VTO15STD

SGS Internal Chain of Custody

Job Number: JD70271
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL
Received: 08/01/23

Sample.Bottle Number	Transfer FROM	Transfer TO	Date/Time	Reason
JD70271-1.1	Bilaal Nazar	Air Storage	08/01/23 16:41	Return to Storage
JD70271-1.1	Dominic Guerriero		09/14/23 06:51	Disposed
JD70271-1.2	Bilaal Nazar	Air Storage	08/01/23 16:41	Return to Storage
JD70271-1.2	Dominic Guerriero		09/14/23 06:51	Disposed
JD70271-2.1	Bilaal Nazar	Air Storage	08/01/23 16:41	Return to Storage
JD70271-2.1	Dominic Guerriero		09/14/23 06:51	Disposed
JD70271-2.2	Bilaal Nazar	Air Storage	08/01/23 16:41	Return to Storage
JD70271-2.2	Dominic Guerriero		09/14/23 06:51	Disposed
JD70271-3.1	Bilaal Nazar	Air Storage	08/01/23 16:41	Return to Storage
JD70271-3.1	Dominic Guerriero		09/14/23 06:51	Disposed
JD70271-3.2	Bilaal Nazar	Air Storage	08/01/23 16:41	Return to Storage
JD70271-3.2	Dominic Guerriero		09/14/23 06:51	Disposed
JD70271-4.1	Bilaal Nazar	Air Storage	08/01/23 16:41	Return to Storage
JD70271-4.1	Dominic Guerriero		09/14/23 06:51	Disposed
JD70271-4.2	Bilaal Nazar	Air Storage	08/01/23 16:41	Return to Storage
JD70271-4.2	Dominic Guerriero		09/14/23 06:51	Disposed
JD70271-5.1	Bilaal Nazar	Air Storage	08/01/23 16:41	Return to Storage
JD70271-5.1	Dominic Guerriero		09/14/23 06:51	Disposed
JD70271-5.2	Bilaal Nazar	Air Storage	08/01/23 16:41	Return to Storage
JD70271-5.2	Dominic Guerriero		09/14/23 06:51	Disposed
JD70271-6.1	Bilaal Nazar	Air Storage	08/01/23 16:41	Return to Storage
JD70271-6.1	Dominic Guerriero		09/14/23 06:51	Disposed
JD70271-6.2	Bilaal Nazar	Air Storage	08/01/23 16:41	Return to Storage
JD70271-6.2	Dominic Guerriero		09/14/23 06:51	Disposed

METHODRE	LOGINNUM	DATE RECALC	INSTRUMEI	PARM_STO	PARM_SYN	MDLVALUE CURRENT	RDLVALUE	UNITS
TO-15	JD37733	5/4/2023 0:00	GCMS5W	630-20-6	1,1,1,2-Tetrachloroethane	0.042	0.2	ppbv
TO-15	JD37733	5/4/2023 0:00	GCMS6W	71-55-6	1,1,1-Trichloroethane	0.037	0.2	ppbv
TO-15	JD37733	5/4/2023 0:00	GCMS6W	79-34-5	1,1,2,2-Tetrachloroethane	0.048	0.2	ppbv
TO-15	JD37733	5/4/2023 0:00	GCMS6W	79-00-5	1,1,2-Trichloroethane	0.038	0.2	ppbv
TO-15	JD37733	5/4/2023 0:00	GCMS6W	75-34-3	1,1-Dichloroethane	0.057	0.2	ppbv
TO-15	JD37733	5/4/2023 0:00	GCMS6W	75-35-4	1,1-Dichloroethylene	0.059	0.2	ppbv
TO-15	JD37733	5/4/2023 0:00	GCMS6W	96-18-4	1,2,3-Trichloropropane	0.05	0.2	ppbv
TO-15	JD37733	5/4/2023 0:00	GCMS6W	526-73-8	1,2,3-Trimethylbenzene	0.099	0.2	ppbv
TO-15	JD37733	5/4/2023 0:00	GCMS6W	120-82-1	1,2,4-Trichlorobenzene	0.12	0.2	ppbv
TO-15	JD37733	5/4/2023 0:00	GCMS6W	95-63-6	1,2,4-Trimethylbenzene	0.087	0.2	ppbv
TO-15	JD37733	5/4/2023 0:00	GCMS5W	106-93-4	1,2-Dibromoethane (EDB)	0.03	0.2	ppbv
TO-15	JD37733	5/4/2023 0:00	GCMS6W	107-06-2	1,2-Dichloroethane	0.07	0.2	ppbv
TO-15	JD37733	5/4/2023 0:00	GCMS2W	78-87-5	1,2-Dichloropropane	0.062	0.2	ppbv
TO-15	JD37733	5/4/2023 0:00	GCMS6W	108-67-8	1,3,5-Trimethylbenzene	0.08	0.2	ppbv
TO-15	JD37733	5/4/2023 0:00	GCMS6W	106-99-0	1,3-Butadiene	0.084	0.2	ppbv
TO-15	JD37733	5/4/2023 0:00	GCMS6W	142-28-9	1,3-Dichloropropane	0.057	0.2	ppbv
TO-15	JD37733	5/4/2023 0:00	GCMS6W	123-91-1	1,4-Dioxane	0.12	0.2	ppbv
TO-15	JD37733	5/4/2023 0:00	GCMS6W	540-84-1	2,2,4-Trimethylpentane	0.04	0.2	ppbv
TO-15	JD37733	5/4/2023 0:00	GCMS6W	565-59-3	2,3-Dimethylpentane	0.036	0.2	ppbv
TO-15	JD37733	5/4/2023 0:00	GCMS6W	108-08-7	2,4-Dimethylpentane	0.048	0.2	ppbv
TO-15	JD37733	5/4/2023 0:00	GCMS6W	95-49-8	2-Chlorotoluene	0.072	0.2	ppbv
TO-15	JD37733	5/4/2023 0:00	GCMS5W	591-78-6	2-Hexanone	0.15	0.2	ppbv
TO-15	JD37733	5/4/2023 0:00	GCMS6W	107-05-1	3-Chloropropene	0.083	0.2	ppbv
TO-15	JD37733	5/4/2023 0:00	GCMS6W	622-96-8	4-Ethyltoluene	0.095	0.2	ppbv
TO-15	JD37733	5/4/2023 0:00	GCMS6W	67-64-1	Acetone (2-Propanone)	0.15	0.2	ppbv
TO-15	JD37733	5/4/2023 0:00	GCMS6W	75-05-8	Acetonitrile	0.17	0.2	ppbv
TO-15	JD37733	5/4/2023 0:00	GCMS6W	107-02-8	Acrolein	0.088	0.2	ppbv
TO-15	JD37733	5/4/2023 0:00	GCMS6W	107-13-1	Acrylonitrile	0.091	0.2	ppbv
TO-15	JD37733	5/4/2023 0:00	GCMS6W	71-43-2	Benzene	0.146	0.2	ppbv
TO-15	JD37733	5/4/2023 0:00	GCMS5W	100-44-7	Benzyl Chloride	0.125	0.2	ppbv
TO-15	JD37733	5/4/2023 0:00	GCMS5W	108-86-1	Bromobenzene	0.055	0.2	ppbv
TO-15	JD37733	5/4/2023 0:00	GCMS5W	75-27-4	Bromodichloromethane	0.03	0.2	ppbv
TO-15	JD37733	5/4/2023 0:00	GCMS6W	593-60-2	Bromoethene	0.061	0.2	ppbv
TO-15	JD37733	5/4/2023 0:00	GCMS5W	75-25-2	Bromoform	0.071	0.2	ppbv
TO-15	JD37733	5/4/2023 0:00	GCMS6W	74-83-9	Bromomethane	0.069	0.2	ppbv
TO-15	JD37733	5/4/2023 0:00	GCMS5W	75-15-0	Carbon disulfide	0.045	0.2	ppbv
TO-15	JD37733	5/4/2023 0:00	GCMS5W	56-23-5	Carbon tetrachloride	0.04	0.2	ppbv
TO-15	JD37733	5/4/2023 0:00	GCMS5W	108-90-7	Chlorobenzene	0.074	0.2	ppbv
TO-15	JD37733	5/4/2023 0:00	GCMS6W	75-45-6	Chlorodifluoromethane	0.11	0.2	ppbv
TO-15	JD37733	5/4/2023 0:00	GCMS6W	75-00-3	Chloroethane	0.068	0.2	ppbv
TO-15	JD37733	5/4/2023 0:00	GCMS6W	67-66-3	Chloroform	0.037	0.2	ppbv
TO-15	JD37733	5/4/2023 0:00	GCMS6W	74-87-3	Chloromethane	0.09	0.2	ppbv
TO-15	JD37733	5/4/2023 0:00	GCMS6W	79-38-9	Chlorotrifluoroethene	0.024	0.2	ppbv
TO-15	JD37733	5/4/2023 0:00	GCMS6W	110-82-7	Cyclohexane	0.045	0.2	ppbv
TO-15	JD37733	5/4/2023 0:00	GCMS6W	108-20-3	Di-Isopropyl ether	0.082	0.2	ppbv
TO-15	JD37733	5/4/2023 0:00	GCMS5W	124-48-1	Dibromochloromethane	0.052	0.2	ppbv
TO-15	JD37733	5/4/2023 0:00	GCMS6W	74-95-3	Dibromomethane	0.053	0.2	ppbv
TO-15	JD37733	5/4/2023 0:00	GCMS6W	75-71-8	Dichlorodifluoromethane	0.104	0.2	ppbv
TO-15	JD37733	5/4/2023 0:00	GCMS6W	75-43-4	Dichlorofluoromethane	0.066	0.2	ppbv
TO-15	JD37733	5/4/2023 0:00	GCMS6W	141-78-6	Ethyl Acetate	0.1	0.2	ppbv
TO-15	JD37733	5/4/2023 0:00	GCMS6W	140-88-5	Ethyl Acrylate	0.11	0.2	ppbv
TO-15	JD37733	5/4/2023 0:00	GCMS6W	100-41-4	Ethylbenzene	0.061	0.2	ppbv
TO-15	JD37733	5/4/2023 0:00	GCMS6W	76-13-1	Freon 113	0.031	0.2	ppbv
TO-15	JD37733	5/4/2023 0:00	GCMS6W	76-14-2	Freon 114	0.05	0.2	ppbv
TO-15	JD37733	5/4/2023 0:00	GCMS6W	306-83-2	Freon 123	0.035	0.2	ppbv
TO-15	JD37733	5/4/2023 0:00	GCMS6W	354-23-4	Freon 123A	0.031	0.2	ppbv
TO-15	JD37733	5/4/2023 0:00	GCMS6W	75-68-3	Freon 142B	0.07	0.2	ppbv

TO-15	JD37733	5/4/2023 0:00	GCMS2W	75-37-6	Freon 152A	0.06	0.2	ppbv
TO-15	JD37733	5/4/2023 0:00	GCMS6W	142-82-5	Heptane	0.045	0.2	ppbv
TO-15	JD37733	5/4/2023 0:00	GCMS5W	87-68-3	Hexachlorobutadiene	0.062	0.2	ppbv
TO-15	JD37733	5/4/2023 0:00	GCMS5W	67-72-1	Hexachloroethane	0.082	0.2	ppbv
TO-15	JD37733	5/4/2023 0:00	GCMS6W	110-54-3	Hexane	0.052	0.2	ppbv
TO-15	JD37733	5/4/2023 0:00	GCMS6W	74-88-4	Iodomethane	0.037	0.2	ppbv
TO-15	JD37733	5/4/2023 0:00	GCMS2W	67-63-0	Isopropyl Alcohol	0.19	0.2	ppbv
TO-15	JD37733	5/4/2023 0:00	GCMS6W	98-82-8	Isopropylbenzene	0.064	0.2	ppbv
TO-15	JD37733	5/4/2023 0:00	GCMS6W	108-10-1	Methyl Isobutyl Ketone	0.073	0.2	ppbv
TO-15	JD37733	5/4/2023 0:00	GCMS6W	1634-04-4	Methyl Tert Butyl Ether	0.08	0.2	ppbv
TO-15	JD37733	5/4/2023 0:00	GCMS6W	78-93-3	Methyl ethyl ketone	0.11	0.2	ppbv
TO-15	JD37733	5/4/2023 0:00	GCMS6W	75-09-2	Methylene chloride	0.056	0.2	ppbv
TO-15	JD37733	5/4/2023 0:00	GCMS6W	80-62-6	Methylmethacrylate	0.07	0.2	ppbv
TO-15	JD37790	5/4/2023 0:00	GCMS7W	91-20-3	Naphthalene	0.13	0.2	ppbv
TO-15	JD37733	5/4/2023 0:00	GCMS6W	111-84-2	Nonane	0.1	0.2	ppbv
TO-15	JD37733	5/4/2023 0:00	GCMS6W	111-65-9	Octane	0.12	0.2	ppbv
TO-15	JD37733	5/4/2023 0:00	GCMS6W	109-66-0	Pentane	0.14	0.2	ppbv
TO-15	JD37733	5/4/2023 0:00	GCMS6W	115-07-1	Propylene	0.14	0.5	ppbv
TO-15	JD37733	5/4/2023 0:00	GCMS5W	100-42-5	Styrene	0.053	0.2	ppbv
TO-15	JD37733	5/4/2023 0:00	GCMS6W	TVHC AS E(	TVHC As Equiv Pentane	0.14	10	ppbv
TO-15	JD37733	5/4/2023 0:00	GCMS6W	75-65-0	Tertiary Butyl Alcohol	0.093	0.2	ppbv
TO-15	JD37733	5/4/2023 0:00	GCMS5W	127-18-4	Tetrachloroethylene	0.014	0.04	ppbv
TO-15	JD37733	5/4/2023 0:00	GCMS6W	109-99-9	Tetrahydrofuran	0.09	0.2	ppbv
TO-15	JD37733	5/4/2023 0:00	GCMS6W	108-88-3	Toluene	0.057	0.2	ppbv
TO-15	JD37733	5/4/2023 0:00	GCMS6W	79-01-6	Trichloroethylene	0.019	0.04	ppbv
TO-15	JD37733	5/4/2023 0:00	GCMS6W	75-69-4	Trichlorofluoromethane	0.154	0.2	ppbv
TO-15	JD37733	5/4/2023 0:00	GCMS6W	108-05-4	Vinyl Acetate	0.11	0.2	ppbv
TO-15	JD37733	5/4/2023 0:00	GCMS6W	75-01-4	Vinyl chloride	0.069	0.2	ppbv
TO-15	JD37733	5/4/2023 0:00	GCMS6W	156-59-2	cis-1,2-Dichloroethylene	0.03	0.2	ppbv
TO-15	JD37733	5/4/2023 0:00	GCMS6W	10061-01-5	cis-1,3-Dichloropropene	0.062	0.2	ppbv
TO-15	JD37733	5/4/2023 0:00	GCMS6W	M,P-XYLEN	m,p-Xylene	0.14	0.2	ppbv
TO-15	JD37733	5/4/2023 0:00	GCMS5W	541-73-1	m-Dichlorobenzene	0.04	0.2	ppbv
TO-15	JD37733	5/4/2023 0:00	GCMS6W	106-97-8	n-Butane	0.11	0.2	ppbv
TO-15	JD37733	5/4/2023 0:00	GCMS6W	104-51-8	n-Butylbenzene	0.11	0.2	ppbv
TO-15	JD37733	5/4/2023 0:00	GCMS6W	103-65-1	n-Propylbenzene	0.091	0.2	ppbv
TO-15	JD37733	5/4/2023 0:00	GCMS6W	95-50-1	o-Dichlorobenzene	0.069	0.2	ppbv
TO-15	JD37733	5/4/2023 0:00	GCMS6W	95-47-6	o-Xylene	0.077	0.2	ppbv
TO-15	JD37733	5/4/2023 0:00	GCMS5W	106-46-7	p-Dichlorobenzene	0.079	0.2	ppbv
TO-15	JD37733	5/4/2023 0:00	GCMS6W	99-87-6	p-Isopropyltoluene	0.08	0.2	ppbv
TO-15	JD37733	5/4/2023 0:00	GCMS6W	135-98-8	sec-Butylbenzene	0.081	0.2	ppbv
TO-15	JD37733	5/4/2023 0:00	GCMS6W	98-06-6	tert-Butylbenzene	0.083	0.2	ppbv
TO-15	JD37733	5/4/2023 0:00	GCMS6W	156-60-5	trans-1,2-Dichloroethylene	0.028	0.2	ppbv
TO-15	JD37733	5/4/2023 0:00	GCMS6W	10061-02-6	trans-1,3-Dichloropropene	0.1	0.2	ppbv
TO-15	JD37790	5/4/2023 0:00	GCMS7W	64-17-5	Ethanol	0.39	0.5	ppbv

MS Volatiles

6

QC Data Summaries

Includes the following where applicable:

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

Method Blank Summary

Job Number: JD70271
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V7W113-MB	7W02737.D	1	08/09/23	TCH	n/a	n/a	V7W113

The QC reported here applies to the following samples: **Method:** TO-15

JD70271-1, JD70271-2, JD70271-3, JD70271-4, JD70271-5, JD70271-6

CAS No.	Compound	Result	RL	MDL	Units	Q	Result	RL	Units
67-64-1	Acetone (2-Propanone)	ND	0.20	0.15	ppbv		ND	0.48	ug/m3
106-99-0	1,3-Butadiene	ND	0.20	0.084	ppbv		ND	0.44	ug/m3
71-43-2	Benzene	ND	0.20	0.15	ppbv		ND	0.64	ug/m3
75-27-4	Bromodichloromethane	ND	0.20	0.030	ppbv		ND	1.3	ug/m3
75-25-2	Bromoform	ND	0.20	0.071	ppbv		ND	2.1	ug/m3
74-83-9	Bromomethane	ND	0.20	0.069	ppbv		ND	0.78	ug/m3
593-60-2	Bromoethene	ND	0.20	0.061	ppbv		ND	0.87	ug/m3
100-44-7	Benzyl Chloride	ND	0.20	0.13	ppbv		ND	1.0	ug/m3
75-15-0	Carbon disulfide	ND	0.20	0.045	ppbv		ND	0.62	ug/m3
108-90-7	Chlorobenzene	ND	0.20	0.074	ppbv		ND	0.92	ug/m3
75-00-3	Chloroethane	ND	0.20	0.068	ppbv		ND	0.53	ug/m3
67-66-3	Chloroform	ND	0.20	0.037	ppbv		ND	0.98	ug/m3
74-87-3	Chloromethane	ND	0.20	0.090	ppbv		ND	0.41	ug/m3
107-05-1	3-Chloropropene	ND	0.20	0.083	ppbv		ND	0.63	ug/m3
95-49-8	2-Chlorotoluene	ND	0.20	0.072	ppbv		ND	1.0	ug/m3
56-23-5	Carbon tetrachloride	ND	0.20	0.040	ppbv		ND	1.3	ug/m3
110-82-7	Cyclohexane	ND	0.20	0.045	ppbv		ND	0.69	ug/m3
75-34-3	1,1-Dichloroethane	ND	0.20	0.057	ppbv		ND	0.81	ug/m3
75-35-4	1,1-Dichloroethylene	ND	0.20	0.059	ppbv		ND	0.79	ug/m3
106-93-4	1,2-Dibromoethane (EDB)	ND	0.20	0.030	ppbv		ND	1.5	ug/m3
107-06-2	1,2-Dichloroethane	ND	0.20	0.070	ppbv		ND	0.81	ug/m3
78-87-5	1,2-Dichloropropane	ND	0.20	0.062	ppbv		ND	0.92	ug/m3
123-91-1	1,4-Dioxane	ND	0.20	0.12	ppbv		ND	0.72	ug/m3
75-71-8	Dichlorodifluoromethane	ND	0.20	0.10	ppbv		ND	0.99	ug/m3
124-48-1	Dibromochloromethane	ND	0.20	0.052	ppbv		ND	1.7	ug/m3
156-60-5	trans-1,2-Dichloroethylene	ND	0.20	0.028	ppbv		ND	0.79	ug/m3
156-59-2	cis-1,2-Dichloroethylene	ND	0.20	0.030	ppbv		ND	0.79	ug/m3
10061-01-5	cis-1,3-Dichloropropene	ND	0.20	0.062	ppbv		ND	0.91	ug/m3
541-73-1	m-Dichlorobenzene	ND	0.20	0.040	ppbv		ND	1.2	ug/m3
95-50-1	o-Dichlorobenzene	ND	0.20	0.069	ppbv		ND	1.2	ug/m3
106-46-7	p-Dichlorobenzene	ND	0.20	0.079	ppbv		ND	1.2	ug/m3
10061-02-6	trans-1,3-Dichloropropene	ND	0.20	0.10	ppbv		ND	0.91	ug/m3
64-17-5	Ethanol	ND	0.50	0.39	ppbv		ND	0.94	ug/m3
100-41-4	Ethylbenzene	ND	0.20	0.061	ppbv		ND	0.87	ug/m3
141-78-6	Ethyl Acetate	ND	0.20	0.10	ppbv		ND	0.72	ug/m3
622-96-8	4-Ethyltoluene	ND	0.20	0.095	ppbv		ND	0.98	ug/m3

Method Blank Summary

Job Number: JD70271
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V7W113-MB	7W02737.D	1	08/09/23	TCH	n/a	n/a	V7W113

The QC reported here applies to the following samples: **Method:** TO-15

JD70271-1, JD70271-2, JD70271-3, JD70271-4, JD70271-5, JD70271-6

CAS No.	Compound	Result	RL	MDL	Units	Q	Result	RL	Units
76-13-1	Freon 113	ND	0.20	0.031	ppbv		ND	1.5	ug/m3
76-14-2	Freon 114	ND	0.20	0.050	ppbv		ND	1.4	ug/m3
142-82-5	Heptane	ND	0.20	0.045	ppbv		ND	0.82	ug/m3
87-68-3	Hexachlorobutadiene	ND	0.20	0.062	ppbv		ND	2.1	ug/m3
110-54-3	Hexane	ND	0.20	0.052	ppbv		ND	0.70	ug/m3
591-78-6	2-Hexanone	ND	0.20	0.15	ppbv		ND	0.82	ug/m3
67-63-0	Isopropyl Alcohol	ND	0.20	0.14	ppbv		ND	0.49	ug/m3
75-09-2	Methylene chloride	ND	0.20	0.056	ppbv		ND	0.69	ug/m3
78-93-3	Methyl ethyl ketone	ND	0.20	0.11	ppbv		ND	0.59	ug/m3
108-10-1	Methyl Isobutyl Ketone	ND	0.20	0.073	ppbv		ND	0.82	ug/m3
1634-04-4	Methyl Tert Butyl Ether	ND	0.20	0.080	ppbv		ND	0.72	ug/m3
80-62-6	Methylmethacrylate	ND	0.20	0.070	ppbv		ND	0.82	ug/m3
115-07-1	Propylene	ND	0.50	0.14	ppbv		ND	0.86	ug/m3
100-42-5	Styrene	ND	0.20	0.053	ppbv		ND	0.85	ug/m3
71-55-6	1,1,1-Trichloroethane	ND	0.20	0.037	ppbv		ND	1.1	ug/m3
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.20	0.048	ppbv		ND	1.4	ug/m3
79-00-5	1,1,2-Trichloroethane	ND	0.20	0.038	ppbv		ND	1.1	ug/m3
120-82-1	1,2,4-Trichlorobenzene	ND	0.20	0.12	ppbv		ND	1.5	ug/m3
95-63-6	1,2,4-Trimethylbenzene	ND	0.20	0.087	ppbv		ND	0.98	ug/m3
108-67-8	1,3,5-Trimethylbenzene	ND	0.20	0.080	ppbv		ND	0.98	ug/m3
540-84-1	2,2,4-Trimethylpentane	ND	0.20	0.040	ppbv		ND	0.93	ug/m3
75-65-0	Tertiary Butyl Alcohol	ND	0.20	0.093	ppbv		ND	0.61	ug/m3
127-18-4	Tetrachloroethylene	ND	0.040	0.014	ppbv		ND	0.27	ug/m3
109-99-9	Tetrahydrofuran	ND	0.20	0.090	ppbv		ND	0.59	ug/m3
108-88-3	Toluene	ND	0.20	0.057	ppbv		ND	0.75	ug/m3
79-01-6	Trichloroethylene	ND	0.040	0.019	ppbv		ND	0.21	ug/m3
75-69-4	Trichlorofluoromethane	ND	0.20	0.15	ppbv		ND	1.1	ug/m3
75-01-4	Vinyl chloride	ND	0.20	0.069	ppbv		ND	0.51	ug/m3
108-05-4	Vinyl Acetate	ND	0.20	0.11	ppbv		ND	0.70	ug/m3
	m,p-Xylene	ND	0.20	0.14	ppbv		ND	0.87	ug/m3
95-47-6	o-Xylene	ND	0.20	0.077	ppbv		ND	0.87	ug/m3
1330-20-7	Xylenes (total)	ND	0.20	0.077	ppbv		ND	0.87	ug/m3

Method Blank Summary

Job Number: JD70271
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V7W113-MB	7W02737.D	1	08/09/23	TCH	n/a	n/a	V7W113

The QC reported here applies to the following samples: **Method:** TO-15

JD70271-1, JD70271-2, JD70271-3, JD70271-4, JD70271-5, JD70271-6

CAS No.	Surrogate Recoveries		Limits
460-00-4	4-Bromofluorobenzene	95%	65-128%

Method Blank Summary

Job Number: JD70271
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V5W2075-MB	5W50565.D	1	06/21/23	WC	n/a	n/a	V5W2075

The QC reported here applies to the following samples: **Method:** TO-15

V5W2075-SCC

CAS No.	Compound	Result	RL	MDL	Units	Q	Result	RL	Units
67-64-1	Acetone (2-Propanone)	ND	0.20	0.15	ppbv		ND	0.48	ug/m3
106-99-0	1,3-Butadiene	ND	0.20	0.084	ppbv		ND	0.44	ug/m3
71-43-2	Benzene	ND	0.20	0.15	ppbv		ND	0.64	ug/m3
75-27-4	Bromodichloromethane	ND	0.20	0.030	ppbv		ND	1.3	ug/m3
75-25-2	Bromoform	ND	0.20	0.071	ppbv		ND	2.1	ug/m3
74-83-9	Bromomethane	ND	0.20	0.069	ppbv		ND	0.78	ug/m3
593-60-2	Bromoethene	ND	0.20	0.061	ppbv		ND	0.87	ug/m3
100-44-7	Benzyl Chloride	ND	0.20	0.13	ppbv		ND	1.0	ug/m3
75-15-0	Carbon disulfide	ND	0.20	0.045	ppbv		ND	0.62	ug/m3
108-90-7	Chlorobenzene	ND	0.20	0.074	ppbv		ND	0.92	ug/m3
75-00-3	Chloroethane	ND	0.20	0.068	ppbv		ND	0.53	ug/m3
67-66-3	Chloroform	ND	0.20	0.037	ppbv		ND	0.98	ug/m3
74-87-3	Chloromethane	ND	0.20	0.090	ppbv		ND	0.41	ug/m3
107-05-1	3-Chloropropene	ND	0.20	0.083	ppbv		ND	0.63	ug/m3
95-49-8	2-Chlorotoluene	ND	0.20	0.072	ppbv		ND	1.0	ug/m3
56-23-5	Carbon tetrachloride	ND	0.20	0.040	ppbv		ND	1.3	ug/m3
110-82-7	Cyclohexane	ND	0.20	0.045	ppbv		ND	0.69	ug/m3
75-34-3	1,1-Dichloroethane	ND	0.20	0.057	ppbv		ND	0.81	ug/m3
75-35-4	1,1-Dichloroethylene	ND	0.20	0.059	ppbv		ND	0.79	ug/m3
106-93-4	1,2-Dibromoethane (EDB)	ND	0.20	0.030	ppbv		ND	1.5	ug/m3
107-06-2	1,2-Dichloroethane	ND	0.20	0.070	ppbv		ND	0.81	ug/m3
78-87-5	1,2-Dichloropropane	ND	0.20	0.062	ppbv		ND	0.92	ug/m3
123-91-1	1,4-Dioxane	ND	0.20	0.12	ppbv		ND	0.72	ug/m3
75-71-8	Dichlorodifluoromethane	ND	0.20	0.10	ppbv		ND	0.99	ug/m3
124-48-1	Dibromochloromethane	ND	0.20	0.052	ppbv		ND	1.7	ug/m3
156-60-5	trans-1,2-Dichloroethylene	ND	0.20	0.028	ppbv		ND	0.79	ug/m3
156-59-2	cis-1,2-Dichloroethylene	ND	0.20	0.030	ppbv		ND	0.79	ug/m3
10061-01-5	cis-1,3-Dichloropropene	ND	0.20	0.062	ppbv		ND	0.91	ug/m3
541-73-1	m-Dichlorobenzene	ND	0.20	0.040	ppbv		ND	1.2	ug/m3
95-50-1	o-Dichlorobenzene	ND	0.20	0.069	ppbv		ND	1.2	ug/m3
106-46-7	p-Dichlorobenzene	ND	0.20	0.079	ppbv		ND	1.2	ug/m3
10061-02-6	trans-1,3-Dichloropropene	ND	0.20	0.10	ppbv		ND	0.91	ug/m3
64-17-5	Ethanol	ND	0.50	0.39	ppbv		ND	0.94	ug/m3
100-41-4	Ethylbenzene	ND	0.20	0.061	ppbv		ND	0.87	ug/m3
141-78-6	Ethyl Acetate	ND	0.20	0.10	ppbv		ND	0.72	ug/m3
622-96-8	4-Ethyltoluene	ND	0.20	0.095	ppbv		ND	0.98	ug/m3

Method Blank Summary

Job Number: JD70271
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V5W2075-MB	5W50565.D	1	06/21/23	WC	n/a	n/a	V5W2075

The QC reported here applies to the following samples: **Method:** TO-15

V5W2075-SCC

CAS No.	Compound	Result	RL	MDL	Units	Q	Result	RL	Units
76-13-1	Freon 113	ND	0.20	0.031	ppbv		ND	1.5	ug/m3
76-14-2	Freon 114	ND	0.20	0.050	ppbv		ND	1.4	ug/m3
142-82-5	Heptane	ND	0.20	0.045	ppbv		ND	0.82	ug/m3
87-68-3	Hexachlorobutadiene	ND	0.20	0.062	ppbv		ND	2.1	ug/m3
110-54-3	Hexane	ND	0.20	0.052	ppbv		ND	0.70	ug/m3
591-78-6	2-Hexanone	ND	0.20	0.15	ppbv		ND	0.82	ug/m3
67-63-0	Isopropyl Alcohol	ND	0.20	0.14	ppbv		ND	0.49	ug/m3
75-09-2	Methylene chloride	ND	0.20	0.056	ppbv		ND	0.69	ug/m3
78-93-3	Methyl ethyl ketone	ND	0.20	0.11	ppbv		ND	0.59	ug/m3
108-10-1	Methyl Isobutyl Ketone	ND	0.20	0.073	ppbv		ND	0.82	ug/m3
1634-04-4	Methyl Tert Butyl Ether	ND	0.20	0.080	ppbv		ND	0.72	ug/m3
80-62-6	Methylmethacrylate	ND	0.20	0.070	ppbv		ND	0.82	ug/m3
115-07-1	Propylene	ND	0.50	0.14	ppbv		ND	0.86	ug/m3
100-42-5	Styrene	ND	0.20	0.053	ppbv		ND	0.85	ug/m3
71-55-6	1,1,1-Trichloroethane	ND	0.20	0.037	ppbv		ND	1.1	ug/m3
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.20	0.048	ppbv		ND	1.4	ug/m3
79-00-5	1,1,2-Trichloroethane	ND	0.20	0.038	ppbv		ND	1.1	ug/m3
120-82-1	1,2,4-Trichlorobenzene	ND	0.20	0.12	ppbv		ND	1.5	ug/m3
95-63-6	1,2,4-Trimethylbenzene	ND	0.20	0.087	ppbv		ND	0.98	ug/m3
108-67-8	1,3,5-Trimethylbenzene	ND	0.20	0.080	ppbv		ND	0.98	ug/m3
540-84-1	2,2,4-Trimethylpentane	ND	0.20	0.040	ppbv		ND	0.93	ug/m3
75-65-0	Tertiary Butyl Alcohol	ND	0.20	0.093	ppbv		ND	0.61	ug/m3
127-18-4	Tetrachloroethylene	ND	0.040	0.014	ppbv		ND	0.27	ug/m3
109-99-9	Tetrahydrofuran	ND	0.20	0.090	ppbv		ND	0.59	ug/m3
108-88-3	Toluene	ND	0.20	0.057	ppbv		ND	0.75	ug/m3
79-01-6	Trichloroethylene	ND	0.040	0.019	ppbv		ND	0.21	ug/m3
75-69-4	Trichlorofluoromethane	ND	0.20	0.15	ppbv		ND	1.1	ug/m3
75-01-4	Vinyl chloride	ND	0.20	0.069	ppbv		ND	0.51	ug/m3
108-05-4	Vinyl Acetate	ND	0.20	0.11	ppbv		ND	0.70	ug/m3
	m,p-Xylene	ND	0.20	0.14	ppbv		ND	0.87	ug/m3
95-47-6	o-Xylene	ND	0.20	0.077	ppbv		ND	0.87	ug/m3
1330-20-7	Xylenes (total)	ND	0.20	0.077	ppbv		ND	0.87	ug/m3

Method Blank Summary

Job Number: JD70271
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V5W2075-MB	5W50565.D	1	06/21/23	WC	n/a	n/a	V5W2075

The QC reported here applies to the following samples: **Method:** TO-15

V5W2075-SCC

CAS No.	Surrogate Recoveries		Limits
460-00-4	4-Bromofluorobenzene	107%	65-128%

Blank Spike/Blank Spike Duplicate Summary

Job Number: JD70271
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V7W113-BS	7W02734.D	1	08/09/23	TCH	n/a	n/a	V7W113
V7W113-BSD	7W02735.D	1	08/09/23	TCH	n/a	n/a	V7W113

The QC reported here applies to the following samples: **Method:** TO-15

JD70271-1, JD70271-2, JD70271-3, JD70271-4, JD70271-5, JD70271-6

CAS No.	Compound	Spike ppbv	BSP ppbv	BSP %	BSD ppbv	BSD %	RPD	Limits Rec/RPD
67-64-1	Acetone (2-Propanone)	10	7.0	70	7.0	70	0	70-130/30
106-99-0	1,3-Butadiene	10	8.0	80	8.0	80	0	70-130/30
71-43-2	Benzene	10	9.4	94	9.2	92	2	70-130/30
75-27-4	Bromodichloromethane	10	10.1	101	10.2	102	1	70-130/30
75-25-2	Bromoform	10	11.1	111	11.4	114	3	70-130/30
74-83-9	Bromomethane	10	8.3	83	8.3	83	0	70-130/30
593-60-2	Bromoethene	10	9.0	90	9.0	90	0	70-130/30
100-44-7	Benzyl Chloride	10	10.4	104	10.7	107	3	70-130/30
75-15-0	Carbon disulfide	10	8.0	80	8.0	80	0	70-130/30
108-90-7	Chlorobenzene	10	9.9	99	10	100	1	70-130/30
75-00-3	Chloroethane	10	8.1	81	8.1	81	0	70-130/30
67-66-3	Chloroform	10	9.7	97	9.6	96	1	70-130/30
74-87-3	Chloromethane	10	7.9	79	7.8	78	1	70-130/30
107-05-1	3-Chloropropene	10	7.9	79	7.8	78	1	70-130/30
95-49-8	2-Chlorotoluene	10	10	100	10.0	100	0	70-130/30
56-23-5	Carbon tetrachloride	10	11.0	110	11.0	110	0	70-130/30
110-82-7	Cyclohexane	10	9.4	94	9.5	95	1	70-130/30
75-34-3	1,1-Dichloroethane	10	9.3	93	9.2	92	1	70-130/30
75-35-4	1,1-Dichloroethylene	10	8.5	85	8.4	84	1	70-130/30
106-93-4	1,2-Dibromoethane (EDB)	10	10.4	104	10.5	105	1	70-130/30
107-06-2	1,2-Dichloroethane	10	9.7	97	9.7	97	0	70-130/30
78-87-5	1,2-Dichloropropane	10	9.2	92	9.3	93	1	70-130/30
123-91-1	1,4-Dioxane	10	9.4	94	9.5	95	1	70-130/30
75-71-8	Dichlorodifluoromethane	10	9.6	96	9.4	94	2	70-130/30
124-48-1	Dibromochloromethane	10	11.3	113	11.4	114	1	70-130/30
156-60-5	trans-1,2-Dichloroethylene	10	9.5	95	9.4	94	1	70-130/30
156-59-2	cis-1,2-Dichloroethylene	10	9.6	96	9.5	95	1	70-130/30
10061-01-5	cis-1,3-Dichloropropene	10	10.5	105	10.5	105	0	70-130/30
541-73-1	m-Dichlorobenzene	10	10.6	106	10.9	109	3	70-130/30
95-50-1	o-Dichlorobenzene	10	10.3	103	10.4	104	1	70-130/30
106-46-7	p-Dichlorobenzene	10	10.9	109	11.2	112	3	70-130/30
10061-02-6	trans-1,3-Dichloropropene	10	10.4	104	10.6	106	2	70-130/30
64-17-5	Ethanol	10	7.5	75	7.4	74	1	70-130/30
100-41-4	Ethylbenzene	10	9.7	97	9.8	98	1	70-130/30
141-78-6	Ethyl Acetate	10	9.3	93	9.4	94	1	70-130/30
622-96-8	4-Ethyltoluene	10	10.7	107	10.9	109	2	70-130/30

* = Outside of Control Limits.

Blank Spike/Blank Spike Duplicate Summary

Job Number: JD70271
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V7W113-BS	7W02734.D	1	08/09/23	TCH	n/a	n/a	V7W113
V7W113-BSD	7W02735.D	1	08/09/23	TCH	n/a	n/a	V7W113

The QC reported here applies to the following samples: **Method:** TO-15

JD70271-1, JD70271-2, JD70271-3, JD70271-4, JD70271-5, JD70271-6

CAS No.	Compound	Spike ppbv	BSP ppbv	BSP %	BSD ppbv	BSD %	RPD	Limits Rec/RPD
76-13-1	Freon 113	10	8.8	88	8.7	87	1	70-130/30
76-14-2	Freon 114	10	8.7	87	8.6	86	1	70-130/30
142-82-5	Heptane	10	9.2	92	9.3	93	1	70-130/30
87-68-3	Hexachlorobutadiene	10	9.8	98	10	100	2	70-130/30
110-54-3	Hexane	10	8.8	88	8.6	86	2	70-130/30
591-78-6	2-Hexanone	10	9.0	90	9.0	90	0	70-130/30
67-63-0	Isopropyl Alcohol	10	8.2	82	8.2	82	0	70-130/30
75-09-2	Methylene chloride	10	8.2	82	8.0	80	2	70-130/30
78-93-3	Methyl ethyl ketone	10	9.2	92	9.2	92	0	70-130/30
108-10-1	Methyl Isobutyl Ketone	10	8.8	88	8.8	88	0	70-130/30
1634-04-4	Methyl Tert Butyl Ether	10	9.5	95	9.4	94	1	70-130/30
80-62-6	Methylmethacrylate	10	9.9	99	9.9	99	0	70-130/30
115-07-1	Propylene	10	8.8	88	8.7	87	1	70-130/30
100-42-5	Styrene	10	10.4	104	10.5	105	1	70-130/30
71-55-6	1,1,1-Trichloroethane	10	10.4	104	10.2	102	2	70-130/30
79-34-5	1,1,2,2-Tetrachloroethane	10	9.7	97	9.9	99	2	70-130/30
79-00-5	1,1,2-Trichloroethane	10	9.5	95	9.7	97	2	70-130/30
120-82-1	1,2,4-Trichlorobenzene	10	10.4	104	10.5	105	1	70-130/30
95-63-6	1,2,4-Trimethylbenzene	10	10.2	102	10.5	105	3	70-130/30
108-67-8	1,3,5-Trimethylbenzene	10	10.2	102	10.3	103	1	70-130/30
540-84-1	2,2,4-Trimethylpentane	10	9.0	90	9.0	90	0	70-130/30
75-65-0	Tertiary Butyl Alcohol	10	8.8	88	8.8	88	0	70-130/30
127-18-4	Tetrachloroethylene	10	10.4	104	10.5	105	1	70-130/30
109-99-9	Tetrahydrofuran	10	9.3	93	9.1	91	2	70-130/30
108-88-3	Toluene	10	9.6	96	9.7	97	1	70-130/30
79-01-6	Trichloroethylene	10	10	100	10.1	101	1	70-130/30
75-69-4	Trichlorofluoromethane	10	9.8	98	9.8	98	0	70-130/30
75-01-4	Vinyl chloride	10	7.9	79	7.9	79	0	70-130/30
108-05-4	Vinyl Acetate	10	10.6	106	10.3	103	3	70-130/30
	m,p-Xylene	20	18.8	94	19.1	96	2	70-130/30
95-47-6	o-Xylene	10	9.7	97	10	100	3	70-130/30
1330-20-7	Xylenes (total)	30	28.5	95	29.0	97	2	70-130/30

* = Outside of Control Limits.

Blank Spike/Blank Spike Duplicate Summary

Job Number: JD70271
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V7W113-BS	7W02734.D	1	08/09/23	TCH	n/a	n/a	V7W113
V7W113-BSD	7W02735.D	1	08/09/23	TCH	n/a	n/a	V7W113

The QC reported here applies to the following samples: **Method:** TO-15

JD70271-1, JD70271-2, JD70271-3, JD70271-4, JD70271-5, JD70271-6

CAS No.	Surrogate Recoveries	BSP	BSD	Limits
460-00-4	4-Bromofluorobenzene	99%	99%	65-128%

* = Outside of Control Limits.

Blank Spike/Blank Spike Duplicate Summary

Job Number: JD70271
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V5W2075-BS	5W50561.D	1	06/21/23	WC	n/a	n/a	V5W2075
V5W2075-BSD	5W50562.D	1	06/21/23	WC	n/a	n/a	V5W2075

The QC reported here applies to the following samples: **Method:** TO-15

V5W2075-SCC

CAS No.	Compound	Spike ppbv	BSP ppbv	BSP %	BSD ppbv	BSD %	RPD	Limits Rec/RPD
67-64-1	Acetone (2-Propanone)	10	8.8	88	9.0	90	2	70-130/30
106-99-0	1,3-Butadiene	10	9.1	91	9.1	91	0	70-130/30
71-43-2	Benzene	10	10.3	103	10.5	105	2	70-130/30
75-27-4	Bromodichloromethane	10	9.8	98	9.9	99	1	70-130/30
75-25-2	Bromoform	10	10.9	109	11.2	112	3	70-130/30
74-83-9	Bromomethane	10	7.7	77	7.8	78	1	70-130/30
593-60-2	Bromoethene	10	7.5	75	7.6	76	1	70-130/30
100-44-7	Benzyl Chloride	10	10.7	107	11.0	110	3	70-130/30
75-15-0	Carbon disulfide	10	9.7	97	9.8	98	1	70-130/30
108-90-7	Chlorobenzene	10	9.8	98	10.1	101	3	70-130/30
75-00-3	Chloroethane	10	8.2	82	8.4	84	2	70-130/30
67-66-3	Chloroform	10	9.4	94	9.4	94	0	70-130/30
74-87-3	Chloromethane	10	9.4	94	9.5	95	1	70-130/30
107-05-1	3-Chloropropene	10	10.5	105	10.5	105	0	70-130/30
95-49-8	2-Chlorotoluene	10	10.8	108	11.1	111	3	70-130/30
56-23-5	Carbon tetrachloride	10	10.1	101	10.2	102	1	70-130/30
110-82-7	Cyclohexane	10	10.2	102	10.4	104	2	70-130/30
75-34-3	1,1-Dichloroethane	10	11.1	111	11.1	111	0	70-130/30
75-35-4	1,1-Dichloroethylene	10	7.8	78	8.0	80	3	70-130/30
106-93-4	1,2-Dibromoethane (EDB)	10	10.2	102	10.5	105	3	70-130/30
107-06-2	1,2-Dichloroethane	10	10.9	109	10.9	109	0	70-130/30
78-87-5	1,2-Dichloropropane	10	11.2	112	11.3	113	1	70-130/30
123-91-1	1,4-Dioxane	10	11.4	114	11.5	115	1	70-130/30
75-71-8	Dichlorodifluoromethane	10	10.3	103	10.4	104	1	70-130/30
124-48-1	Dibromochloromethane	10	10.6	106	10.9	109	3	70-130/30
156-60-5	trans-1,2-Dichloroethylene	10	9.0	90	9.2	92	2	70-130/30
156-59-2	cis-1,2-Dichloroethylene	10	8.8	88	8.9	89	1	70-130/30
10061-01-5	cis-1,3-Dichloropropene	10	10.9	109	11.1	111	2	70-130/30
541-73-1	m-Dichlorobenzene	10	10.6	106	10.7	107	1	70-130/30
95-50-1	o-Dichlorobenzene	10	10.5	105	10.7	107	2	70-130/30
106-46-7	p-Dichlorobenzene	10	10.4	104	10.6	106	2	70-130/30
10061-02-6	trans-1,3-Dichloropropene	10	10.9	109	11.1	111	2	70-130/30
64-17-5	Ethanol	10	9.5	95	9.5	95	0	70-130/30
100-41-4	Ethylbenzene	10	10.3	103	10.7	107	4	70-130/30
141-78-6	Ethyl Acetate	10	13.3	133* [a]	13.2	132* [a]	1	70-130/30
622-96-8	4-Ethyltoluene	10	11.2	112	11.4	114	2	70-130/30

* = Outside of Control Limits.

Blank Spike/Blank Spike Duplicate Summary

Job Number: JD70271
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V5W2075-BS	5W50561.D	1	06/21/23	WC	n/a	n/a	V5W2075
V5W2075-BSD	5W50562.D	1	06/21/23	WC	n/a	n/a	V5W2075

The QC reported here applies to the following samples: **Method:** TO-15

V5W2075-SCC

CAS No.	Compound	Spike ppbv	BSP ppbv	BSP %	BSD ppbv	BSD %	RPD	Limits Rec/RPD
76-13-1	Freon 113	10	9.3	93	9.5	95	2	70-130/30
76-14-2	Freon 114	10	8.6	86	8.5	85	1	70-130/30
142-82-5	Heptane	10	14.5	145* [a]	14.5	145* [a]	0	70-130/30
87-68-3	Hexachlorobutadiene	10	12.6	126	12.7	127	1	70-130/30
110-54-3	Hexane	10	12.5	125	12.5	125	0	70-130/30
591-78-6	2-Hexanone	10	14.6	146* [a]	15.0	150* [a]	3	70-130/30
67-63-0	Isopropyl Alcohol	10	12.8	128	12.6	126	2	70-130/30
75-09-2	Methylene chloride	10	8.6	86	8.6	86	0	70-130/30
78-93-3	Methyl ethyl ketone	10	11.4	114	11.4	114	0	70-130/30
108-10-1	Methyl Isobutyl Ketone	10	15.0	150* [a]	14.9	149* [a]	1	70-130/30
1634-04-4	Methyl Tert Butyl Ether	10	9.7	97	9.8	98	1	70-130/30
80-62-6	Methylmethacrylate	10	11.7	117	11.8	118	1	70-130/30
115-07-1	Propylene	10	14.4	144* [a]	14.1	141* [a]	2	70-130/30
100-42-5	Styrene	10	11.3	113	11.6	116	3	70-130/30
71-55-6	1,1,1-Trichloroethane	10	9.5	95	9.6	96	1	70-130/30
79-34-5	1,1,2,2-Tetrachloroethane	10	9.9	99	10.1	101	2	70-130/30
79-00-5	1,1,2-Trichloroethane	10	10.3	103	10.3	103	0	70-130/30
120-82-1	1,2,4-Trichlorobenzene	10	12.0	120	12.2	122	2	70-130/30
95-63-6	1,2,4-Trimethylbenzene	10	10.8	108	10.9	109	1	70-130/30
108-67-8	1,3,5-Trimethylbenzene	10	10.8	108	11.0	110	2	70-130/30
540-84-1	2,2,4-Trimethylpentane	10	12.9	129	12.8	128	1	70-130/30
75-65-0	Tertiary Butyl Alcohol	10	11.7	117	11.7	117	0	70-130/30
127-18-4	Tetrachloroethylene	10	9.7	97	10	100	3	70-130/30
109-99-9	Tetrahydrofuran	10	12.0	120	12.2	122	2	70-130/30
108-88-3	Toluene	10	10.6	106	10.7	107	1	70-130/30
79-01-6	Trichloroethylene	10	9.8	98	9.8	98	0	70-130/30
75-69-4	Trichlorofluoromethane	10	8.7	87	8.8	88	1	70-130/30
75-01-4	Vinyl chloride	10	8.6	86	8.6	86	0	70-130/30
108-05-4	Vinyl Acetate	10	9.3	93	9.7	97	4	70-130/30
	m,p-Xylene	20	21.2	106	21.7	109	2	70-130/30
95-47-6	o-Xylene	10	10.5	105	10.8	108	3	70-130/30
1330-20-7	Xylenes (total)	30	31.6	105	32.5	108	3	70-130/30

* = Outside of Control Limits.

Blank Spike/Blank Spike Duplicate Summary

Job Number: JD70271
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V5W2075-BS	5W50561.D	1	06/21/23	WC	n/a	n/a	V5W2075
V5W2075-BSD	5W50562.D	1	06/21/23	WC	n/a	n/a	V5W2075

The QC reported here applies to the following samples: **Method:** TO-15

V5W2075-SCC

CAS No.	Surrogate Recoveries	BSP	BSD	Limits
460-00-4	4-Bromofluorobenzene	103%	103%	65-128%

(a) High percent recovery and no associated positive reported in the QC batch.

* = Outside of Control Limits.

Duplicate Summary

Job Number: JD70271
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
JD70271-1DUP	7W02741.D	1	08/09/23	TCH	n/a	n/a	V7W113
JD70271-1	7W02740.D	1	08/09/23	TCH	n/a	n/a	V7W113

The QC reported here applies to the following samples: **Method:** TO-15

JD70271-1, JD70271-2, JD70271-3, JD70271-4, JD70271-5, JD70271-6

CAS No.	Compound	JD70271-1 ppbv	Q	DUP ppbv	Q	RPD	Limits
67-64-1	Acetone (2-Propanone)	4.6		5.2		12	25
106-99-0	1,3-Butadiene	ND		ND		nc	25
71-43-2	Benzene	ND		ND		nc	25
75-27-4	Bromodichloromethane	ND		ND		nc	25
75-25-2	Bromoform	ND		ND		nc	25
74-83-9	Bromomethane	ND		ND		nc	25
593-60-2	Bromoethene	ND		ND		nc	25
100-44-7	Benzyl Chloride	ND		ND		nc	25
75-15-0	Carbon disulfide	ND		ND		nc	25
108-90-7	Chlorobenzene	ND		ND		nc	25
75-00-3	Chloroethane	ND		ND		nc	25
67-66-3	Chloroform	0.10	J	0.092	J	8	25
74-87-3	Chloromethane	0.49		0.43		13	25
107-05-1	3-Chloropropene	ND		ND		nc	25
95-49-8	2-Chlorotoluene	ND		ND		nc	25
56-23-5	Carbon tetrachloride	ND		ND		nc	25
110-82-7	Cyclohexane	ND		ND		nc	25
75-34-3	1,1-Dichloroethane	ND		ND		nc	25
75-35-4	1,1-Dichloroethylene	ND		ND		nc	25
106-93-4	1,2-Dibromoethane (EDB)	ND		ND		nc	25
107-06-2	1,2-Dichloroethane	ND		ND		nc	25
78-87-5	1,2-Dichloropropane	ND		ND		nc	25
123-91-1	1,4-Dioxane	ND		ND		nc	25
75-71-8	Dichlorodifluoromethane	0.33		0.35		6	25
124-48-1	Dibromochloromethane	ND		ND		nc	25
156-60-5	trans-1,2-Dichloroethylene	0.32		0.31		3	25
156-59-2	cis-1,2-Dichloroethylene	ND		ND		nc	25
10061-01-5	cis-1,3-Dichloropropene	ND		ND		nc	25
541-73-1	m-Dichlorobenzene	ND		ND		nc	25
95-50-1	o-Dichlorobenzene	ND		ND		nc	25
106-46-7	p-Dichlorobenzene	ND		ND		nc	25
10061-02-6	trans-1,3-Dichloropropene	ND		ND		nc	25
64-17-5	Ethanol	3.4		3.4		0	25
100-41-4	Ethylbenzene	ND		ND		nc	25
141-78-6	Ethyl Acetate	1.6		1.6		0	25
622-96-8	4-Ethyltoluene	ND		ND		nc	25

* = Outside of Control Limits.

Duplicate Summary

Job Number: JD70271
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
JD70271-1DUP	7W02741.D	1	08/09/23	TCH	n/a	n/a	V7W113
JD70271-1	7W02740.D	1	08/09/23	TCH	n/a	n/a	V7W113

The QC reported here applies to the following samples: **Method:** TO-15

JD70271-1, JD70271-2, JD70271-3, JD70271-4, JD70271-5, JD70271-6

CAS No.	Compound	JD70271-1 ppbv	Q	DUP ppbv	Q	RPD	Limits
76-13-1	Freon 113	0.094	J	0.10	J	6	25
76-14-2	Freon 114	ND		ND		nc	25
142-82-5	Heptane	ND		ND		nc	25
87-68-3	Hexachlorobutadiene	ND		ND		nc	25
110-54-3	Hexane	3.9		7.5		63* [a]	25
591-78-6	2-Hexanone	ND		ND		nc	25
67-63-0	Isopropyl Alcohol	3.9		4.1		5	25
75-09-2	Methylene chloride	7.7		11.4		39* [a]	25
78-93-3	Methyl ethyl ketone	0.36		0.36		0	25
108-10-1	Methyl Isobutyl Ketone	ND		ND		nc	25
1634-04-4	Methyl Tert Butyl Ether	ND		ND		nc	25
80-62-6	Methylmethacrylate	ND		ND		nc	25
115-07-1	Propylene	0.22	J	0.21	J	5	25
100-42-5	Styrene	ND		ND		nc	25
71-55-6	1,1,1-Trichloroethane	ND		ND		nc	25
79-34-5	1,1,2,2-Tetrachloroethane	ND		ND		nc	25
79-00-5	1,1,2-Trichloroethane	ND		ND		nc	25
120-82-1	1,2,4-Trichlorobenzene	ND		ND		nc	25
95-63-6	1,2,4-Trimethylbenzene	ND		ND		nc	25
108-67-8	1,3,5-Trimethylbenzene	ND		ND		nc	25
540-84-1	2,2,4-Trimethylpentane	0.081	J	0.11	J	30* [a]	25
75-65-0	Tertiary Butyl Alcohol	ND		ND		nc	25
127-18-4	Tetrachloroethylene	ND		ND		nc	25
109-99-9	Tetrahydrofuran	ND		ND		nc	25
108-88-3	Toluene	0.16	J	0.17	J	6	25
79-01-6	Trichloroethylene	ND		ND		nc	25
75-69-4	Trichlorofluoromethane	0.39		0.46		16	25
75-01-4	Vinyl chloride	ND		ND		nc	25
108-05-4	Vinyl Acetate	ND		ND		nc	25
	m,p-Xylene	ND		ND		nc	25
95-47-6	o-Xylene	ND		ND		nc	25
1330-20-7	Xylenes (total)	ND		ND		nc	25

* = Outside of Control Limits.

Duplicate Summary

Job Number: JD70271
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
JD70271-1DUP	7W02741.D	1	08/09/23	TCH	n/a	n/a	V7W113
JD70271-1	7W02740.D	1	08/09/23	TCH	n/a	n/a	V7W113

The QC reported here applies to the following samples: **Method:** TO-15

JD70271-1, JD70271-2, JD70271-3, JD70271-4, JD70271-5, JD70271-6

CAS No.	Surrogate Recoveries	DUP	JD70271-1	Limits
460-00-4	4-Bromofluorobenzene	96%	96%	65-128%

(a) Outside control limits.

* = Outside of Control Limits.

Summa Cleaning Certification

Job Number: JD70271
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V5W2075-SCC	5W50569.D	1	06/21/23	WC	n/a	n/a	V5W2075

The QC reported here (Summa A2116) applies to the following samples: **Method:** TO-15

Batch CP12296 cleaned 05/27/23: JD70271-1(A1287), JD70271-2(A227), JD70271-3(A2159), JD70271-4(A2188), JD70271-5(A1858)

CAS No.	Compound	Result	RL	MDL	Units	Q	Result	RL	Units
67-64-1	Acetone (2-Propanone)	ND	0.20	0.15	ppbv		ND	0.48	ug/m3
106-99-0	1,3-Butadiene	ND	0.20	0.084	ppbv		ND	0.44	ug/m3
71-43-2	Benzene	ND	0.20	0.15	ppbv		ND	0.64	ug/m3
75-27-4	Bromodichloromethane	ND	0.20	0.030	ppbv		ND	1.3	ug/m3
75-25-2	Bromoform	ND	0.20	0.071	ppbv		ND	2.1	ug/m3
74-83-9	Bromomethane	ND	0.20	0.069	ppbv		ND	0.78	ug/m3
593-60-2	Bromoethene	ND	0.20	0.061	ppbv		ND	0.87	ug/m3
100-44-7	Benzyl Chloride	ND	0.20	0.13	ppbv		ND	1.0	ug/m3
75-15-0	Carbon disulfide	ND	0.20	0.045	ppbv		ND	0.62	ug/m3
108-90-7	Chlorobenzene	ND	0.20	0.074	ppbv		ND	0.92	ug/m3
75-00-3	Chloroethane	ND	0.20	0.068	ppbv		ND	0.53	ug/m3
67-66-3	Chloroform	ND	0.20	0.037	ppbv		ND	0.98	ug/m3
74-87-3	Chloromethane	ND	0.20	0.090	ppbv		ND	0.41	ug/m3
107-05-1	3-Chloropropene	ND	0.20	0.083	ppbv		ND	0.63	ug/m3
95-49-8	2-Chlorotoluene	ND	0.20	0.072	ppbv		ND	1.0	ug/m3
56-23-5	Carbon tetrachloride	ND	0.20	0.040	ppbv		ND	1.3	ug/m3
110-82-7	Cyclohexane	ND	0.20	0.045	ppbv		ND	0.69	ug/m3
75-34-3	1,1-Dichloroethane	ND	0.20	0.057	ppbv		ND	0.81	ug/m3
75-35-4	1,1-Dichloroethylene	ND	0.20	0.059	ppbv		ND	0.79	ug/m3
106-93-4	1,2-Dibromoethane (EDB)	ND	0.20	0.030	ppbv		ND	1.5	ug/m3
107-06-2	1,2-Dichloroethane	ND	0.20	0.070	ppbv		ND	0.81	ug/m3
78-87-5	1,2-Dichloropropane	ND	0.20	0.062	ppbv		ND	0.92	ug/m3
123-91-1	1,4-Dioxane	ND	0.20	0.12	ppbv		ND	0.72	ug/m3
75-71-8	Dichlorodifluoromethane	ND	0.20	0.10	ppbv		ND	0.99	ug/m3
124-48-1	Dibromochloromethane	ND	0.20	0.052	ppbv		ND	1.7	ug/m3
156-60-5	trans-1,2-Dichloroethylene	ND	0.20	0.028	ppbv		ND	0.79	ug/m3
156-59-2	cis-1,2-Dichloroethylene	ND	0.20	0.030	ppbv		ND	0.79	ug/m3
10061-01-5	cis-1,3-Dichloropropene	ND	0.20	0.062	ppbv		ND	0.91	ug/m3
541-73-1	m-Dichlorobenzene	ND	0.20	0.040	ppbv		ND	1.2	ug/m3
95-50-1	o-Dichlorobenzene	ND	0.20	0.069	ppbv		ND	1.2	ug/m3
106-46-7	p-Dichlorobenzene	ND	0.20	0.079	ppbv		ND	1.2	ug/m3
10061-02-6	trans-1,3-Dichloropropene	ND	0.20	0.10	ppbv		ND	0.91	ug/m3
64-17-5	Ethanol	ND	0.50	0.39	ppbv		ND	0.94	ug/m3
100-41-4	Ethylbenzene	ND	0.20	0.061	ppbv		ND	0.87	ug/m3
141-78-6	Ethyl Acetate	ND	0.20	0.10	ppbv		ND	0.72	ug/m3
622-96-8	4-Ethyltoluene	ND	0.20	0.095	ppbv		ND	0.98	ug/m3

Summa Cleaning Certification

Job Number: JD70271
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V5W2075-SCC	5W50569.D	1	06/21/23	WC	n/a	n/a	V5W2075

The QC reported here (Summa A2116) applies to the following samples: **Method:** TO-15

Batch CP12296 cleaned 05/27/23: JD70271-1(A1287), JD70271-2(A227), JD70271-3(A2159), JD70271-4(A2188), JD70271-5(A1858)

CAS No.	Compound	Result	RL	MDL	Units	Q	Result	RL	Units
76-13-1	Freon 113	ND	0.20	0.031	ppbv		ND	1.5	ug/m3
76-14-2	Freon 114	ND	0.20	0.050	ppbv		ND	1.4	ug/m3
142-82-5	Heptane	ND	0.20	0.045	ppbv		ND	0.82	ug/m3
87-68-3	Hexachlorobutadiene	ND	0.20	0.062	ppbv		ND	2.1	ug/m3
110-54-3	Hexane	ND	0.20	0.052	ppbv		ND	0.70	ug/m3
591-78-6	2-Hexanone	ND	0.20	0.15	ppbv		ND	0.82	ug/m3
67-63-0	Isopropyl Alcohol	ND	0.20	0.14	ppbv		ND	0.49	ug/m3
75-09-2	Methylene chloride	ND	0.20	0.056	ppbv		ND	0.69	ug/m3
78-93-3	Methyl ethyl ketone	ND	0.20	0.11	ppbv		ND	0.59	ug/m3
108-10-1	Methyl Isobutyl Ketone	ND	0.20	0.073	ppbv		ND	0.82	ug/m3
1634-04-4	Methyl Tert Butyl Ether	ND	0.20	0.080	ppbv		ND	0.72	ug/m3
80-62-6	Methylmethacrylate	ND	0.20	0.070	ppbv		ND	0.82	ug/m3
115-07-1	Propylene	ND	0.50	0.14	ppbv		ND	0.86	ug/m3
100-42-5	Styrene	ND	0.20	0.053	ppbv		ND	0.85	ug/m3
71-55-6	1,1,1-Trichloroethane	ND	0.20	0.037	ppbv		ND	1.1	ug/m3
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.20	0.048	ppbv		ND	1.4	ug/m3
79-00-5	1,1,2-Trichloroethane	ND	0.20	0.038	ppbv		ND	1.1	ug/m3
120-82-1	1,2,4-Trichlorobenzene	ND	0.20	0.12	ppbv		ND	1.5	ug/m3
95-63-6	1,2,4-Trimethylbenzene	ND	0.20	0.087	ppbv		ND	0.98	ug/m3
108-67-8	1,3,5-Trimethylbenzene	ND	0.20	0.080	ppbv		ND	0.98	ug/m3
540-84-1	2,2,4-Trimethylpentane	ND	0.20	0.040	ppbv		ND	0.93	ug/m3
75-65-0	Tertiary Butyl Alcohol	ND	0.20	0.093	ppbv		ND	0.61	ug/m3
127-18-4	Tetrachloroethylene	ND	0.040	0.014	ppbv		ND	0.27	ug/m3
109-99-9	Tetrahydrofuran	ND	0.20	0.090	ppbv		ND	0.59	ug/m3
108-88-3	Toluene	ND	0.20	0.057	ppbv		ND	0.75	ug/m3
79-01-6	Trichloroethylene	ND	0.040	0.019	ppbv		ND	0.21	ug/m3
75-69-4	Trichlorofluoromethane	ND	0.20	0.15	ppbv		ND	1.1	ug/m3
75-01-4	Vinyl chloride	ND	0.20	0.069	ppbv		ND	0.51	ug/m3
108-05-4	Vinyl Acetate	ND	0.20	0.11	ppbv		ND	0.70	ug/m3
	m,p-Xylene	ND	0.20	0.14	ppbv		ND	0.87	ug/m3
95-47-6	o-Xylene	ND	0.20	0.077	ppbv		ND	0.87	ug/m3
1330-20-7	Xylenes (total)	ND	0.20	0.077	ppbv		ND	0.87	ug/m3

Summa Cleaning Certification

Job Number: JD70271
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V5W2075-SCC	5W50569.D	1	06/21/23	WC	n/a	n/a	V5W2075

The QC reported here (Summa A2116) applies to the following samples: **Method:** TO-15

Batch CP12296 cleaned 05/27/23: JD70271-1(A1287), JD70271-2(A227), JD70271-3(A2159), JD70271-4(A2188), JD70271-5(A1858)

CAS No.	Surrogate Recoveries		Limits
460-00-4	4-Bromofluorobenzene	106%	65-128%

Summa Cleaning Certification

Job Number: JD70271
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V5W2075-SCC	5W50579.D	1	06/22/23	WC	n/a	n/a	V5W2075

The QC reported here (Summa A351) applies to the following samples: **Method:** TO-15

Batch CP12306 cleaned 06/06/23: JD70271-6(A2151)

CAS No.	Compound	Result	RL	MDL	Units	Q	Result	RL	Units
67-64-1	Acetone (2-Propanone)	ND	0.20	0.15	ppbv		ND	0.48	ug/m3
106-99-0	1,3-Butadiene	ND	0.20	0.084	ppbv		ND	0.44	ug/m3
71-43-2	Benzene	ND	0.20	0.15	ppbv		ND	0.64	ug/m3
75-27-4	Bromodichloromethane	ND	0.20	0.030	ppbv		ND	1.3	ug/m3
75-25-2	Bromoform	ND	0.20	0.071	ppbv		ND	2.1	ug/m3
74-83-9	Bromomethane	ND	0.20	0.069	ppbv		ND	0.78	ug/m3
593-60-2	Bromoethene	ND	0.20	0.061	ppbv		ND	0.87	ug/m3
100-44-7	Benzyl Chloride	ND	0.20	0.13	ppbv		ND	1.0	ug/m3
75-15-0	Carbon disulfide	ND	0.20	0.045	ppbv		ND	0.62	ug/m3
108-90-7	Chlorobenzene	ND	0.20	0.074	ppbv		ND	0.92	ug/m3
75-00-3	Chloroethane	ND	0.20	0.068	ppbv		ND	0.53	ug/m3
67-66-3	Chloroform	ND	0.20	0.037	ppbv		ND	0.98	ug/m3
74-87-3	Chloromethane	ND	0.20	0.090	ppbv		ND	0.41	ug/m3
107-05-1	3-Chloropropene	ND	0.20	0.083	ppbv		ND	0.63	ug/m3
95-49-8	2-Chlorotoluene	ND	0.20	0.072	ppbv		ND	1.0	ug/m3
56-23-5	Carbon tetrachloride	ND	0.20	0.040	ppbv		ND	1.3	ug/m3
110-82-7	Cyclohexane	ND	0.20	0.045	ppbv		ND	0.69	ug/m3
75-34-3	1,1-Dichloroethane	ND	0.20	0.057	ppbv		ND	0.81	ug/m3
75-35-4	1,1-Dichloroethylene	ND	0.20	0.059	ppbv		ND	0.79	ug/m3
106-93-4	1,2-Dibromoethane (EDB)	ND	0.20	0.030	ppbv		ND	1.5	ug/m3
107-06-2	1,2-Dichloroethane	ND	0.20	0.070	ppbv		ND	0.81	ug/m3
78-87-5	1,2-Dichloropropane	ND	0.20	0.062	ppbv		ND	0.92	ug/m3
123-91-1	1,4-Dioxane	ND	0.20	0.12	ppbv		ND	0.72	ug/m3
75-71-8	Dichlorodifluoromethane	ND	0.20	0.10	ppbv		ND	0.99	ug/m3
124-48-1	Dibromochloromethane	ND	0.20	0.052	ppbv		ND	1.7	ug/m3
156-60-5	trans-1,2-Dichloroethylene	ND	0.20	0.028	ppbv		ND	0.79	ug/m3
156-59-2	cis-1,2-Dichloroethylene	ND	0.20	0.030	ppbv		ND	0.79	ug/m3
10061-01-5	cis-1,3-Dichloropropene	ND	0.20	0.062	ppbv		ND	0.91	ug/m3
541-73-1	m-Dichlorobenzene	ND	0.20	0.040	ppbv		ND	1.2	ug/m3
95-50-1	o-Dichlorobenzene	ND	0.20	0.069	ppbv		ND	1.2	ug/m3
106-46-7	p-Dichlorobenzene	ND	0.20	0.079	ppbv		ND	1.2	ug/m3
10061-02-6	trans-1,3-Dichloropropene	ND	0.20	0.10	ppbv		ND	0.91	ug/m3
64-17-5	Ethanol	ND	0.50	0.39	ppbv		ND	0.94	ug/m3
100-41-4	Ethylbenzene	ND	0.20	0.061	ppbv		ND	0.87	ug/m3
141-78-6	Ethyl Acetate	ND	0.20	0.10	ppbv		ND	0.72	ug/m3
622-96-8	4-Ethyltoluene	ND	0.20	0.095	ppbv		ND	0.98	ug/m3

Summa Cleaning Certification

Job Number: JD70271
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V5W2075-SCC	5W50579.D	1	06/22/23	WC	n/a	n/a	V5W2075

The QC reported here (Summa A351) applies to the following samples: **Method:** TO-15

Batch CP12306 cleaned 06/06/23: JD70271-6(A2151)

CAS No.	Compound	Result	RL	MDL	Units	Q	Result	RL	Units
76-13-1	Freon 113	ND	0.20	0.031	ppbv		ND	1.5	ug/m3
76-14-2	Freon 114	ND	0.20	0.050	ppbv		ND	1.4	ug/m3
142-82-5	Heptane	ND	0.20	0.045	ppbv		ND	0.82	ug/m3
87-68-3	Hexachlorobutadiene	ND	0.20	0.062	ppbv		ND	2.1	ug/m3
110-54-3	Hexane	ND	0.20	0.052	ppbv		ND	0.70	ug/m3
591-78-6	2-Hexanone	ND	0.20	0.15	ppbv		ND	0.82	ug/m3
67-63-0	Isopropyl Alcohol	ND	0.20	0.14	ppbv		ND	0.49	ug/m3
75-09-2	Methylene chloride	ND	0.20	0.056	ppbv		ND	0.69	ug/m3
78-93-3	Methyl ethyl ketone	ND	0.20	0.11	ppbv		ND	0.59	ug/m3
108-10-1	Methyl Isobutyl Ketone	ND	0.20	0.073	ppbv		ND	0.82	ug/m3
1634-04-4	Methyl Tert Butyl Ether	ND	0.20	0.080	ppbv		ND	0.72	ug/m3
80-62-6	Methylmethacrylate	ND	0.20	0.070	ppbv		ND	0.82	ug/m3
115-07-1	Propylene	ND	0.50	0.14	ppbv		ND	0.86	ug/m3
100-42-5	Styrene	ND	0.20	0.053	ppbv		ND	0.85	ug/m3
71-55-6	1,1,1-Trichloroethane	ND	0.20	0.037	ppbv		ND	1.1	ug/m3
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.20	0.048	ppbv		ND	1.4	ug/m3
79-00-5	1,1,2-Trichloroethane	ND	0.20	0.038	ppbv		ND	1.1	ug/m3
120-82-1	1,2,4-Trichlorobenzene	ND	0.20	0.12	ppbv		ND	1.5	ug/m3
95-63-6	1,2,4-Trimethylbenzene	ND	0.20	0.087	ppbv		ND	0.98	ug/m3
108-67-8	1,3,5-Trimethylbenzene	ND	0.20	0.080	ppbv		ND	0.98	ug/m3
540-84-1	2,2,4-Trimethylpentane	ND	0.20	0.040	ppbv		ND	0.93	ug/m3
75-65-0	Tertiary Butyl Alcohol	ND	0.20	0.093	ppbv		ND	0.61	ug/m3
127-18-4	Tetrachloroethylene	ND	0.040	0.014	ppbv		ND	0.27	ug/m3
109-99-9	Tetrahydrofuran	ND	0.20	0.090	ppbv		ND	0.59	ug/m3
108-88-3	Toluene	ND	0.20	0.057	ppbv		ND	0.75	ug/m3
79-01-6	Trichloroethylene	ND	0.040	0.019	ppbv		ND	0.21	ug/m3
75-69-4	Trichlorofluoromethane	ND	0.20	0.15	ppbv		ND	1.1	ug/m3
75-01-4	Vinyl chloride	ND	0.20	0.069	ppbv		ND	0.51	ug/m3
108-05-4	Vinyl Acetate	ND	0.20	0.11	ppbv		ND	0.70	ug/m3
	m,p-Xylene	ND	0.20	0.14	ppbv		ND	0.87	ug/m3
95-47-6	o-Xylene	ND	0.20	0.077	ppbv		ND	0.87	ug/m3
1330-20-7	Xylenes (total)	ND	0.20	0.077	ppbv		ND	0.87	ug/m3

Summa Cleaning Certification

Job Number: JD70271
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V5W2075-SCC	5W50579.D	1	06/22/23	WC	n/a	n/a	V5W2075

The QC reported here (Summa A351) applies to the following samples: **Method:** TO-15

Batch CP12306 cleaned 06/06/23: JD70271-6(A2151)

CAS No.	Surrogate Recoveries		Limits
460-00-4	4-Bromofluorobenzene	106%	65-128%

Instrument Performance Check (BFB)

Job Number: JD70271
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample: V5W2072-BFB
Lab File ID: 5W50500.D
Instrument ID: GCMS5W
Injection Date: 06/09/23
Injection Time: 20:42

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
50	8.0 - 40.0% of mass 95	77189	19.4		Pass
75	30.0 - 66.0% of mass 95	192939	48.5		Pass
95	Base peak, 100% relative abundance	397547	100.0		Pass
96	5.0 - 9.0% of mass 95	27333	6.88		Pass
173	Less than 2.0% of mass 174	2656	0.67	(0.70) [a]	Pass
174	50.0 - 120.0% of mass 95	377237	94.9		Pass
175	4.0 - 9.01% of mass 174	27200	6.84	(7.21) [a]	Pass
176	93.0 - 101.0% of mass 174	358635	90.2	(95.1) [a]	Pass
177	5.0 - 9.0% of mass 176	23984	6.03	(6.69) [b]	Pass

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

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

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
V5W2072-IC2072	5W50501.D	06/09/23	21:21	00:39	Initial cal 0.04
V5W2072-IC2072	5W50502.D	06/09/23	22:00	01:18	Initial cal 0.1
V5W2072-IC2072	5W50503.D	06/09/23	22:39	01:57	Initial cal 0.2
V5W2072-IC2072	5W50504.D	06/09/23	23:17	02:35	Initial cal 0.5
V5W2072-IC2072	5W50506.D	06/10/23	00:36	03:54	Initial cal 5
V5W2072-ICC2072	5W50507.D	06/10/23	01:15	04:33	Initial cal 10
V5W2072-IC2072	5W50508.D	06/10/23	01:53	05:11	Initial cal 20
V5W2072-IC2072	5W50509.D	06/10/23	02:33	05:51	Initial cal 40
V5W2072-IC2072	5W50510.D	06/10/23	03:14	06:32	Initial cal 50
V5W2072-ICV2072	5W50513.D	06/10/23	05:12	08:30	Initial cal verification 10

Instrument Performance Check (BFB)

Job Number: JD70271
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample:	V5W2075-BFB	**Injection Date:**	06/21/23
Lab File ID:	5W50558.D	**Injection Time:**	12:08
Instrument ID:	GCMS5W		

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
50	8.0 - 40.0% of mass 95	73989	22.3		Pass
75	30.0 - 66.0% of mass 95	158293	47.6		Pass
95	Base peak, 100% relative abundance	332523	100.0		Pass
96	5.0 - 9.0% of mass 95	22411	6.74		Pass
173	Less than 2.0% of mass 174	0	0.00	(0.00) [a]	Pass
174	50.0 - 120.0% of mass 95	308139	92.7		Pass
175	4.0 - 9.01% of mass 174	22779	6.85	(7.39) [a]	Pass
176	93.0 - 101.0% of mass 174	300971	90.5	(97.7) [a]	Pass
177	5.0 - 9.0% of mass 176	20107	6.05	(6.68) [b]	Pass

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

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

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
V5W2075-CC2072	5W50559.D	06/21/23	12:47	00:39	Continuing cal 10
V5W2075-BS	5W50561.D	06/21/23	16:53	04:45	Blank Spike
V5W2075-BSD	5W50562.D	06/21/23	17:31	05:23	Blank Spike Duplicate
V5W2075-MB	5W50565.D	06/21/23	19:30	07:22	Method Blank
V5W2075-SCC	5W50566.D	06/21/23	20:08	08:00	Summa Cleaning Certification
V5W2075-SCC	5W50567.D	06/21/23	20:48	08:40	Summa Cleaning Certification
V5W2075-SCC	5W50568.D	06/21/23	21:26	09:18	Summa Cleaning Certification
V5W2075-SCC	5W50569.D	06/21/23	22:07	09:59	Summa Cleaning Certification
V5W2075-SCC	5W50570.D	06/21/23	22:45	10:37	Summa Cleaning Certification
V5W2075-SCC	5W50571.D	06/21/23	23:24	11:16	Summa Cleaning Certification
V5W2075-SCC	5W50572.D	06/22/23	00:03	11:55	Summa Cleaning Certification
V5W2075-SCC	5W50573.D	06/22/23	00:43	12:35	Summa Cleaning Certification
V5W2075-SCC	5W50574.D	06/22/23	01:21	13:13	Summa Cleaning Certification
V5W2075-SCC	5W50575.D	06/22/23	02:01	13:53	Summa Cleaning Certification
V5W2075-SCC	5W50576.D	06/22/23	02:39	14:31	Summa Cleaning Certification
V5W2075-SCC	5W50577.D	06/22/23	03:18	15:10	Summa Cleaning Certification
V5W2075-SCC	5W50579.D	06/22/23	04:40	16:32	Summa Cleaning Certification
V5W2075-SCC	5W50580.D	06/22/23	05:20	17:12	Summa Cleaning Certification
V5W2075-SCC	5W50581.D	06/22/23	06:00	17:52	Summa Cleaning Certification
V5W2075-SCC	5W50582.D	06/22/23	06:39	18:31	Summa Cleaning Certification

Instrument Performance Check (BFB)

Job Number: JD70271
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample: V7W109-BFB
Lab File ID: 7W02634.D
Instrument ID: GCMS7W
Injection Date: 08/03/23
Injection Time: 17:45

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
50	8.0 - 40.0% of mass 95	15954	33.2		Pass
75	30.0 - 66.0% of mass 95	24597	51.2		Pass
95	Base peak, 100% relative abundance	48064	100.0		Pass
96	5.0 - 9.0% of mass 95	3134	6.52		Pass
173	Less than 2.0% of mass 174	381	0.79	(1.11) [a]	Pass
174	50.0 - 120.0% of mass 95	34285	71.3		Pass
175	4.0 - 9.01% of mass 174	2465	5.13	(7.19) [a]	Pass
176	93.0 - 101.0% of mass 174	33696	70.1	(98.3) [a]	Pass
177	5.0 - 9.0% of mass 176	2104	4.38	(6.24) [b]	Pass

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

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

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
V7W109-IC0109	7W02635.D	08/03/23	18:19	00:34	Initial cal 0.04
V7W109-IC0109	7W02636.D	08/03/23	18:50	01:05	Initial cal 0.1
V7W109-IC0109	7W02637.D	08/03/23	19:25	01:40	Initial cal 0.2
V7W109-IC0109	7W02638.D	08/03/23	20:02	02:17	Initial cal 0.5
V7W109-IC0109	7W02640.D	08/03/23	21:09	03:24	Initial cal 5
V7W109-ICC0109	7W02641.D	08/03/23	21:44	03:59	Initial cal 10
V7W109-IC0109	7W02642.D	08/03/23	22:21	04:36	Initial cal 20
V7W109-IC0109	7W02643.D	08/03/23	23:00	05:15	Initial cal 40
V7W109-IC0109	7W02644.D	08/03/23	23:42	05:57	Initial cal 50
V7W109-ICV0109	7W02647.D	08/04/23	01:26	07:41	Initial cal verification 10

Instrument Performance Check (BFB)

Job Number: JD70271
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample: V7W113-BFB
Lab File ID: 7W02732.D
Instrument ID: GCMS7W
Injection Date: 08/09/23
Injection Time: 10:40

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
50	8.0 - 40.0% of mass 95	15404	31.7		Pass
75	30.0 - 66.0% of mass 95	24205	49.8		Pass
95	Base peak, 100% relative abundance	48568	100.0		Pass
96	5.0 - 9.0% of mass 95	2892	5.95		Pass
173	Less than 2.0% of mass 174	300	0.62	(0.89) [a]	Pass
174	50.0 - 120.0% of mass 95	33712	69.4		Pass
175	4.0 - 9.01% of mass 174	2569	5.29	(7.62) [a]	Pass
176	93.0 - 101.0% of mass 174	33616	69.2	(99.7) [a]	Pass
177	5.0 - 9.0% of mass 176	2228	4.59	(6.63) [b]	Pass

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

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

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
V7W113-CC0109	7W02733.D	08/09/23	11:15	00:35	Continuing cal 10
V7W113-BS	7W02734.D	08/09/23	11:54	01:14	Blank Spike
V7W113-BSD	7W02735.D	08/09/23	12:29	01:49	Blank Spike Duplicate
V7W113-MB	7W02737.D	08/09/23	13:53	03:13	Method Blank
JD70271-1	7W02740.D	08/09/23	16:03	05:23	CRCA-AMB01-20230731
JD70271-1DUP	7W02741.D	08/09/23	16:43	06:03	Duplicate
JD70271-2	7W02742.D	08/09/23	17:23	06:43	CRCA-AMB02-20230731
JD70271-3	7W02743.D	08/09/23	17:58	07:18	CRCA-VMP01-20230731
JD70271-4	7W02744.D	08/09/23	18:32	07:52	CRCA-VMP02-20230731
JD70271-5	7W02745.D	08/09/23	19:06	08:26	CRCA-VMP03-20230731
JD70271-6	7W02746.D	08/09/23	19:41	09:01	CRCA-VMP04-20230731
V7W113-SCC	7W02753.D	08/10/23	00:13	13:33	Summa Cleaning Certification
V7W113-SCC	7W02754.D	08/10/23	00:53	14:13	Summa Cleaning Certification

Internal Standard Area Summary

Job Number: JD70271
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Check Std:	V5W2075-CC2072	**Injection Date:**	06/21/23
Lab File ID:	5W50559.D	**Injection Time:**	12:47
Instrument ID:	GCMS5W	**Method:**	TO-15

	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT
Check Std	247823	7.85	1247227	10.01	639379	15.52
Upper Limit [a]	346952	8.18	1746118	10.34	895131	15.85
Lower Limit [b]	148694	7.52	748336	9.68	383627	15.19

Lab Sample ID	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT
V5W2075-BS	232436	7.85	1180350	10.01	620323	15.52
V5W2075-BSD	235825	7.85	1199840	10.02	620876	15.52
V5W2075-MB	249058	7.85	1279234	10.01	612040	15.52
V5W2075-SCC	244619	7.85	1248173	10.01	601305	15.52
V5W2075-SCC	238089	7.85	1217060	10.01	577837	15.52
V5W2075-SCC	240111	7.85	1220632	10.02	581183	15.52
V5W2075-SCC	229613	7.85	1176415	10.01	560213	15.52
V5W2075-SCC	229015	7.85	1173564	10.01	555888	15.52
V5W2075-SCC	229466	7.85	1183275	10.01	561272	15.52
V5W2075-SCC	231720	7.85	1177526	10.01	560412	15.52
V5W2075-SCC	227077	7.86	1157370	10.02	551747	15.52
V5W2075-SCC	233076	7.85	1186309	10.02	574743	15.52
V5W2075-SCC	224376	7.85	1153945	10.01	549560	15.52
V5W2075-SCC	223374	7.85	1147613	10.01	546341	15.52
V5W2075-SCC	226215	7.85	1155482	10.01	565906	15.52
V5W2075-SCC	222497	7.85	1139096	10.01	550621	15.52
V5W2075-SCC	223289	7.85	1139406	10.01	552373	15.52
V5W2075-SCC	217090	7.84	1107035	10.01	547120	15.52
V5W2075-SCC	221531	7.85	1130574	10.01	558064	15.52

IS 1 = Bromochloromethane
IS 2 = 1,4-Difluorobenzene
IS 3 = Chlorobenzene-D5

(a) Upper Limit = + 40% of check standard area; Retention time + 0.33 minutes.
(b) Lower Limit = -40% of check standard area; Retention time -0.33 minutes.

Internal Standard Area Summary

Job Number: JD70271
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Check Std:	V7W113-CC0109	**Injection Date:**	08/09/23
Lab File ID:	7W02733.D	**Injection Time:**	11:15
Instrument ID:	GCMS7W	**Method:**	TO-15

	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT
Check Std	40015	3.45	200624	4.79	183010	10.53
Upper Limit [a]	56021	3.78	280874	5.12	256214	10.86
Lower Limit [b]	24009	3.12	120374	4.46	109806	10.20

Lab Sample ID	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT
V7W113-BS	40034	3.45	201721	4.79	185827	10.53
V7W113-BSD	39998	3.44	198407	4.79	182492	10.52
V7W113-MB	40549	3.45	215733	4.79	192888	10.52
JD70271-1	38157	3.45	203396	4.79	185955	10.52
JD70271-1DUP	36827	3.45	194336	4.80	178587	10.52
JD70271-2	38384	3.45	197266	4.79	185148	10.53
JD70271-3	35334	3.45	185744	4.80	173773	10.53
JD70271-4	36441	3.45	194242	4.80	182021	10.53
JD70271-5	36813	3.45	191353	4.80	179544	10.53
JD70271-6	37733	3.45	196153	4.80	184488	10.52
V7W113-SCC	41384	3.44	213003	4.79	190806	10.53
V7W113-SCC	41261	3.44	209489	4.79	190766	10.53

IS 1 = Bromochloromethane
IS 2 = 1,4-Difluorobenzene
IS 3 = Chlorobenzene-D5

(a) Upper Limit = + 40% of check standard area; Retention time + 0.33 minutes.
(b) Lower Limit = -40% of check standard area; Retention time -0.33 minutes.

Initial Calibration Retention Time/Internal Standard Area Summary

Job Number: JD70271
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample Number	Lab File ID	Injected	By	Level	Inst ID	Method	
V5W2072-IC2072	5W50501.D	06/09/23 21:21	TCH	0.04	GCMS5W	TO-15	Reporting this level
V5W2072-IC2072	5W50502.D	06/09/23 22:00	TCH	0.1	GCMS5W	TO-15	
V5W2072-IC2072	5W50503.D	06/09/23 22:39	TCH	0.2	GCMS5W	TO-15	
V5W2072-IC2072	5W50504.D	06/09/23 23:17	TCH	0.5	GCMS5W	TO-15	
V5W2072-IC2072	5W50506.D	06/10/23 00:36	TCH	5	GCMS5W	TO-15	
V5W2072-ICC2072	5W50507.D	06/10/23 01:15	TCH	10	GCMS5W	TO-15	
V5W2072-IC2072	5W50508.D	06/10/23 01:53	TCH	20	GCMS5W	TO-15	
V5W2072-IC2072	5W50509.D	06/10/23 02:33	TCH	40	GCMS5W	TO-15	
V5W2072-IC2072	5W50510.D	06/10/23 03:14	TCH	50	GCMS5W	TO-15	

Target Compound	RT (min.)	Istd RT (min.)	Rel RT		Mean Rel RT	Rel RT Range (+ /- .06)
Acetone (2-Propanone)	5.02	7.86	0.639	ok	0.634	0.574-0.694
Acrolein	4.89	7.86	0.622	ok	0.620	0.560-0.680
Acetonitrile	4.79	7.86	0.609	ok	0.607	0.547-0.667
1,3-Butadiene	4.16	7.86	0.529	ok	0.529	0.469-0.589
Benzene	9.60	10.02	0.958	ok	0.957	0.897-1.017
Bromobenzene	18.09	15.52	1.166	ok	1.165	1.105-1.225
Bromodichloromethane	10.80	10.02	1.078	ok	1.077	1.017-1.137
Bromoform	16.48	15.52	1.062	ok	1.061	1.001-1.121
Bromomethane	4.37	7.86	0.556	ok	0.555	0.495-0.615
Bromoethene	4.77	7.86	0.607	ok	0.606	0.546-0.666
n-Butane	4.20	7.86	0.534	ok	0.533	0.473-0.593
Benzyl Chloride	19.97	15.52	1.287	ok	1.286	1.226-1.346
n-Butylbenzene	20.99	15.52	1.352	ok	1.352	1.292-1.412
sec-Butylbenzene	20.16	15.52	1.299	ok	1.299	1.239-1.359
tert-Butylbenzene	19.76	15.52	1.273	ok	1.273	1.213-1.333
Carbon disulfide	6.04	7.86	0.768	ok	0.767	0.707-0.827
Chlorobenzene	15.59	15.52	1.005	ok	1.004	0.944-1.064
Chlorodifluoromethane	3.70	7.86	0.471	ok	0.469	0.409-0.529
Chloroethane	4.50	7.86	0.573	ok	0.571	0.511-0.631
Chlorotrifluoroethene	3.72	7.86	0.473	ok	0.473	0.413-0.533
Chloroform	8.00	7.86	1.018	ok	1.018	0.958-1.078
Chloromethane	3.90	7.86	0.496	ok	0.495	0.435-0.555
3-Chloropropene	5.88	7.86	0.748	ok	0.746	0.686-0.806
2-Chlorotoluene	18.73	15.52	1.207	ok	1.206	1.146-1.266
Carbon tetrachloride	9.77	7.86	1.243	ok	1.242	1.182-1.302
Cyclohexane	9.89	10.02	0.987	ok	0.987	0.927-1.047
1,1-Dichloroethane	6.83	7.86	0.869	ok	0.869	0.809-0.929
1,1-Dichloroethylene	5.66	7.86	0.720	ok	0.719	0.659-0.779
1,2-Dibromoethane (EDB)	14.03	15.52	0.904	ok	0.903	0.843-0.963
1,2-Dichloroethane	8.81	7.86	1.121	ok	1.119	1.059-1.179
1,2-Dichloropropane	10.56	10.02	1.054	ok	1.053	0.993-1.113
1,3-Dichloropropane	13.21	10.02	1.318	ok	1.317	1.257-1.377
Dichlorodifluoromethane	3.77	7.86	0.480	ok	0.479	0.419-0.539
Dichlorofluoromethane	4.57	7.86	0.581	ok	0.580	0.520-0.640
Dibromochloromethane	13.70	15.52	0.883	ok	0.882	0.822-0.942
Dibromomethane	10.53	10.02	1.051	ok	1.051	0.991-1.111
trans-1,2-Dichloroethylene	6.63	7.86	0.844	ok	0.844	0.784-0.904
cis-1,2-Dichloroethylene	7.69	7.86	0.978	ok	0.978	0.918-1.038
cis-1,3-Dichloropropene	11.92	10.02	1.190	ok	1.189	1.129-1.249

Initial Calibration Retention Time/Internal Standard Area Summary

Job Number: JD70271
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample Number	Lab File ID	Injected	By	Level	Inst ID	Method	
V5W2072-IC2072	5W50501.D	06/09/23 21:21	TCH	0.04	GCMS5W	TO-15	Reporting this level
V5W2072-IC2072	5W50502.D	06/09/23 22:00	TCH	0.1	GCMS5W	TO-15	
V5W2072-IC2072	5W50503.D	06/09/23 22:39	TCH	0.2	GCMS5W	TO-15	
V5W2072-IC2072	5W50504.D	06/09/23 23:17	TCH	0.5	GCMS5W	TO-15	
V5W2072-IC2072	5W50506.D	06/10/23 00:36	TCH	5	GCMS5W	TO-15	
V5W2072-ICC2072	5W50507.D	06/10/23 01:15	TCH	10	GCMS5W	TO-15	
V5W2072-IC2072	5W50508.D	06/10/23 01:53	TCH	20	GCMS5W	TO-15	
V5W2072-IC2072	5W50509.D	06/10/23 02:33	TCH	40	GCMS5W	TO-15	
V5W2072-IC2072	5W50510.D	06/10/23 03:14	TCH	50	GCMS5W	TO-15	

Target Compound	RT (min.)	Istd RT (min.)	Rel RT		Mean Rel RT	Rel RT Range (+ /- .06)
m-Dichlorobenzene	19.97	15.52	1.287	ok	1.287	1.227-1.347
o-Dichlorobenzene	20.55	15.52	1.324	ok	1.324	1.264-1.384
p-Dichlorobenzene	20.08	15.52	1.294	ok	1.293	1.233-1.353
trans-1,3-Dichloropropene	12.62	10.02	1.259	ok	1.257	1.197-1.317
Di-Isopropyl ether	7.94	7.86	1.010	ok	1.007	0.947-1.067
2,3-Dimethylpentane	10.18	10.02	1.016	ok	1.016	0.956-1.076
2,4-Dimethylpentane	8.86	7.86	1.127	ok	1.127	1.067-1.187
Ethanol	4.62	7.86	0.588	ok	0.585	0.525-0.645
Ethylbenzene	16.15	15.52	1.041	ok	1.040	0.980-1.100
4-Ethyltoluene	19.04	15.52	1.227	ok	1.227	1.167-1.287
Freon 113	6.00	7.86	0.763	ok	0.763	0.703-0.823
Freon 114	3.97	7.86	0.505	ok	0.504	0.444-0.564
Freon 123	4.89	7.86	0.622	ok	0.622	0.562-0.682
Freon 123A	4.94	7.86	0.628	ok	0.627	0.567-0.687
Freon 142B	3.88	7.86	0.494	ok	0.493	0.433-0.553
Freon 152A	3.66	7.86	0.466	ok	0.465	0.405-0.525
Heptane	11.21	10.02	1.119	ok	1.119	1.059-1.179
Hexachlorobutadiene	23.48	15.52	1.513	ok	1.513	1.453-1.573
Hexachloroethane	21.45	15.52	1.382	ok	1.382	1.322-1.442
Hexane	7.90	7.86	1.005	ok	1.005	0.945-1.065
Iodomethane	5.59	7.86	0.711	ok	0.711	0.651-0.771
Isopropylbenzene	18.00	15.52	1.160	ok	1.159	1.099-1.219
Isopropyl Alcohol	5.24	7.86	0.667	ok	0.662	0.602-0.722
p-Isopropyltoluene	20.41	15.52	1.315	ok	1.314	1.254-1.374
Methylene chloride	5.77	7.86	0.734	ok	0.733	0.673-0.793
Methyl Isobutyl Ketone	12.07	10.02	1.205	ok	1.198	1.138-1.258
Methyl Tert Butyl Ether	6.97	7.86	0.887	ok	0.880	0.820-0.940
Methylmethacrylate	11.19	10.02	1.117	ok	1.112	1.052-1.172
Naphthalene	23.01	15.52	1.483	ok	1.482	1.422-1.542
Nonane	17.48	15.52	1.126	ok	1.126	1.066-1.186
Octane	14.50	15.52	0.934	ok	0.934	0.874-0.994
Pentane	5.41	7.86	0.688	ok	0.687	0.627-0.747
n-Propylbenzene	18.82	15.52	1.213	ok	1.212	1.152-1.272
Propylene	3.72	7.86	0.473	ok	0.472	0.412-0.532
Styrene	16.94	15.52	1.091	ok	1.091	1.031-1.151
1,1,1-Trichloroethane	9.07	7.86	1.154	ok	1.154	1.094-1.214
1,1,1,2-Tetrachloroethane	15.57	15.52	1.003	ok	1.003	0.943-1.063
1,1,2,2-Tetrachloroethane	17.09	15.52	1.101	ok	1.101	1.041-1.161
1,1,2-Trichloroethane	12.80	10.02	1.277	ok	1.277	1.217-1.337

Initial Calibration Retention Time/Internal Standard Area Summary

Job Number: JD70271
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample Number	Lab File ID	Injected	By	Level	Inst ID	Method	
V5W2072-IC2072	5W50501.D	06/09/23 21:21	TCH	0.04	GCMS5W	TO-15	Reporting this level
V5W2072-IC2072	5W50502.D	06/09/23 22:00	TCH	0.1	GCMS5W	TO-15	
V5W2072-IC2072	5W50503.D	06/09/23 22:39	TCH	0.2	GCMS5W	TO-15	
V5W2072-IC2072	5W50504.D	06/09/23 23:17	TCH	0.5	GCMS5W	TO-15	
V5W2072-IC2072	5W50506.D	06/10/23 00:36	TCH	5	GCMS5W	TO-15	
V5W2072-ICC2072	5W50507.D	06/10/23 01:15	TCH	10	GCMS5W	TO-15	
V5W2072-IC2072	5W50508.D	06/10/23 01:53	TCH	20	GCMS5W	TO-15	
V5W2072-IC2072	5W50509.D	06/10/23 02:33	TCH	40	GCMS5W	TO-15	
V5W2072-IC2072	5W50510.D	06/10/23 03:14	TCH	50	GCMS5W	TO-15	

Target Compound	RT (min.)	Istd RT (min.)	Rel RT		Mean Rel RT	Rel RT Range (+ /- .06)
1,2,4-Trichlorobenzene	23.34	15.52	1.504	ok	1.503	1.443-1.563
1,2,3-Trichloropropane	17.29	15.52	1.114	ok	1.113	1.053-1.173
1,2,3-Trimethylbenzene	20.38	15.52	1.313	ok	1.313	1.253-1.373
1,2,4-Trimethylbenzene	19.77	15.52	1.274	ok	1.274	1.214-1.334
1,3,5-Trimethylbenzene	19.18	15.52	1.236	ok	1.235	1.175-1.295
2,2,4-Trimethylpentane	10.87	10.02	1.085	ok	1.085	1.025-1.145
Tertiary Butyl Alcohol	5.80	7.86	0.738	ok	0.730	0.670-0.790
Tetrachloroethylene	14.65	15.52	0.944	ok	0.944	0.884-1.004
Tetrahydrofuran	8.56	7.86	1.089	ok	1.078	1.018-1.138
Toluene	13.16	10.02	1.313	ok	1.312	1.252-1.372
Trichloroethylene	10.84	10.02	1.082	ok	1.082	1.022-1.142
Trichlorofluoromethane	5.11	7.86	0.650	ok	0.650	0.590-0.710
Vinyl chloride	4.07	7.86	0.518	ok	0.516	0.456-0.576
m,p-Xylene	16.42	15.52	1.058	ok	1.057	0.997-1.117
o-Xylene	17.08	15.52	1.101	ok	1.100	1.040-1.160
TVHC As Equiv Pentane	5.41	15.52	0.349	ok	0.348	0.288-0.408

Internal Standard	RT (min.)		Mean RT(min.)	RT Range (+ /- 0.33)	Area		Mean Area	Area Range (+ /- 40 %)
Bromochloromethane	7.86	ok	7.86	7.53-8.19	302675	ok	317103	190262-443944
1,4-Difluorobenzene	10.02	ok	10.02	9.69-10.35	1579999	ok	1604410	962646-2246174
Chlorobenzene-D5	15.52	ok	15.52	15.19-15.85	736682	ok	840712	504427-1176997

Initial Calibration Retention Time/Internal Standard Area Summary

Job Number: JD70271
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample Number	Lab File ID	Injected	By	Level	Inst ID	Method	
V5W2072-IC2072	5W50501.D	06/09/23 21:21	TCH	0.04	GCMS5W	TO-15	
V5W2072-IC2072	5W50502.D	06/09/23 22:00	TCH	0.1	GCMS5W	TO-15	Reporting this level
V5W2072-IC2072	5W50503.D	06/09/23 22:39	TCH	0.2	GCMS5W	TO-15	
V5W2072-IC2072	5W50504.D	06/09/23 23:17	TCH	0.5	GCMS5W	TO-15	
V5W2072-IC2072	5W50506.D	06/10/23 00:36	TCH	5	GCMS5W	TO-15	
V5W2072-ICC2072	5W50507.D	06/10/23 01:15	TCH	10	GCMS5W	TO-15	
V5W2072-IC2072	5W50508.D	06/10/23 01:53	TCH	20	GCMS5W	TO-15	
V5W2072-IC2072	5W50509.D	06/10/23 02:33	TCH	40	GCMS5W	TO-15	
V5W2072-IC2072	5W50510.D	06/10/23 03:14	TCH	50	GCMS5W	TO-15	

Target Compound	RT (min.)	Istd RT (min.)	Rel RT		Mean Rel RT	Rel RT Range (+ /- .06)
Acetone (2-Propanone)	5.01	7.86	0.637	ok	0.634	0.574-0.694
Acrolein	4.89	7.86	0.622	ok	0.620	0.560-0.680
Acrylonitrile	5.40	7.86	0.687	ok	0.684	0.624-0.744
Acetonitrile	4.78	7.86	0.608	ok	0.607	0.547-0.667
1,3-Butadiene	4.16	7.86	0.529	ok	0.529	0.469-0.589
Benzene	9.59	10.02	0.957	ok	0.957	0.897-1.017
Bromobenzene	18.09	15.52	1.166	ok	1.165	1.105-1.225
Bromodichloromethane	10.79	10.02	1.077	ok	1.077	1.017-1.137
Bromoform	16.47	15.52	1.061	ok	1.061	1.001-1.121
Bromomethane	4.37	7.86	0.556	ok	0.555	0.495-0.615
Bromoethene	4.77	7.86	0.607	ok	0.606	0.546-0.666
n-Butane	4.19	7.86	0.533	ok	0.533	0.473-0.593
Benzyl Chloride	19.97	15.52	1.287	ok	1.286	1.226-1.346
n-Butylbenzene	20.98	15.52	1.352	ok	1.352	1.292-1.412
sec-Butylbenzene	20.16	15.52	1.299	ok	1.299	1.239-1.359
tert-Butylbenzene	19.76	15.52	1.273	ok	1.273	1.213-1.333
Carbon disulfide	6.03	7.86	0.767	ok	0.767	0.707-0.827
Chlorobenzene	15.59	15.52	1.005	ok	1.004	0.944-1.064
Chlorodifluoromethane	3.69	7.86	0.469	ok	0.469	0.409-0.529
Chloroethane	4.49	7.86	0.571	ok	0.571	0.511-0.631
Chlorotrifluoroethene	3.72	7.86	0.473	ok	0.473	0.413-0.533
Chloroform	7.99	7.86	1.017	ok	1.018	0.958-1.078
Chloromethane	3.89	7.86	0.495	ok	0.495	0.435-0.555
3-Chloropropene	5.87	7.86	0.747	ok	0.746	0.686-0.806
2-Chlorotoluene	18.74	15.52	1.207	ok	1.206	1.146-1.266
Carbon tetrachloride	9.75	7.86	1.240	ok	1.242	1.182-1.302
Cyclohexane	9.88	10.02	0.986	ok	0.987	0.927-1.047
1,1-Dichloroethane	6.84	7.86	0.870	ok	0.869	0.809-0.929
1,1-Dichloroethylene	5.65	7.86	0.719	ok	0.719	0.659-0.779
1,2-Dibromoethane (EDB)	14.02	15.52	0.903	ok	0.903	0.843-0.963
1,2-Dichloroethane	8.80	7.86	1.120	ok	1.119	1.059-1.179
1,2-Dichloropropane	10.56	10.02	1.054	ok	1.053	0.993-1.113
1,3-Dichloropropane	13.21	10.02	1.318	ok	1.317	1.257-1.377
1,4-Dioxane	10.99	10.02	1.097	ok	1.087	1.027-1.147
Dichlorodifluoromethane	3.77	7.86	0.480	ok	0.479	0.419-0.539
Dichlorofluoromethane	4.57	7.86	0.581	ok	0.580	0.520-0.640
Dibromochloromethane	13.70	15.52	0.883	ok	0.882	0.822-0.942
Dibromomethane	10.53	10.02	1.051	ok	1.051	0.991-1.111
trans-1,2-Dichloroethylene	6.63	7.86	0.844	ok	0.844	0.784-0.904

Initial Calibration Retention Time/Internal Standard Area Summary

Job Number: JD70271
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample Number	Lab File ID	Injected	By	Level	Inst ID	Method	
V5W2072-IC2072	5W50501.D	06/09/23 21:21	TCH	0.04	GCMS5W	TO-15	
V5W2072-IC2072	5W50502.D	06/09/23 22:00	TCH	0.1	GCMS5W	TO-15	Reporting this level
V5W2072-IC2072	5W50503.D	06/09/23 22:39	TCH	0.2	GCMS5W	TO-15	
V5W2072-IC2072	5W50504.D	06/09/23 23:17	TCH	0.5	GCMS5W	TO-15	
V5W2072-IC2072	5W50506.D	06/10/23 00:36	TCH	5	GCMS5W	TO-15	
V5W2072-ICC2072	5W50507.D	06/10/23 01:15	TCH	10	GCMS5W	TO-15	
V5W2072-IC2072	5W50508.D	06/10/23 01:53	TCH	20	GCMS5W	TO-15	
V5W2072-IC2072	5W50509.D	06/10/23 02:33	TCH	40	GCMS5W	TO-15	
V5W2072-IC2072	5W50510.D	06/10/23 03:14	TCH	50	GCMS5W	TO-15	

Target Compound	RT (min.)	Istd RT (min.)	Rel RT		Mean Rel RT	Rel RT Range (+ /- .06)
cis-1,2-Dichloroethylene	7.69	7.86	0.978	ok	0.978	0.918-1.038
cis-1,3-Dichloropropene	11.92	10.02	1.190	ok	1.189	1.129-1.249
m-Dichlorobenzene	19.97	15.52	1.287	ok	1.287	1.227-1.347
o-Dichlorobenzene	20.55	15.52	1.324	ok	1.324	1.264-1.384
p-Dichlorobenzene	20.08	15.52	1.294	ok	1.293	1.233-1.353
trans-1,3-Dichloropropene	12.61	10.02	1.258	ok	1.257	1.197-1.317
Di-Isopropyl ether	7.95	7.86	1.011	ok	1.007	0.947-1.067
2,3-Dimethylpentane	10.18	10.02	1.016	ok	1.016	0.956-1.076
2,4-Dimethylpentane	8.85	7.86	1.126	ok	1.127	1.067-1.187
Ethanol	4.62	7.86	0.588	ok	0.585	0.525-0.645
Ethylbenzene	16.14	15.52	1.040	ok	1.040	0.980-1.100
Ethyl Acetate	8.01	7.86	1.019	ok	1.013	0.953-1.073
Ethyl Acrylate	10.67	10.02	1.065	ok	1.059	0.999-1.119
4-Ethyltoluene	19.05	15.52	1.227	ok	1.227	1.167-1.287
Freon 113	6.00	7.86	0.763	ok	0.763	0.703-0.823
Freon 114	3.96	7.86	0.504	ok	0.504	0.444-0.564
Freon 123	4.89	7.86	0.622	ok	0.622	0.562-0.682
Freon 123A	4.93	7.86	0.627	ok	0.627	0.567-0.687
Freon 142B	3.88	7.86	0.494	ok	0.493	0.433-0.553
Freon 152A	3.66	7.86	0.466	ok	0.465	0.405-0.525
Heptane	11.21	10.02	1.119	ok	1.119	1.059-1.179
Hexachlorobutadiene	23.48	15.52	1.513	ok	1.513	1.453-1.573
Hexachloroethane	21.45	15.52	1.382	ok	1.382	1.322-1.442
Hexane	7.89	7.86	1.004	ok	1.005	0.945-1.065
2-Hexanone	13.62	15.52	0.878	ok	0.874	0.814-0.934
Iodomethane	5.59	7.86	0.711	ok	0.711	0.651-0.771
Isopropylbenzene	17.99	15.52	1.159	ok	1.159	1.099-1.219
Isopropyl Alcohol	5.24	7.86	0.667	ok	0.662	0.602-0.722
p-Isopropyltoluene	20.40	15.52	1.314	ok	1.314	1.254-1.374
Methylene chloride	5.77	7.86	0.734	ok	0.733	0.673-0.793
Methyl ethyl ketone	7.35	7.86	0.935	ok	0.925	0.865-0.985
Methyl Isobutyl Ketone	12.05	10.02	1.203	ok	1.198	1.138-1.258
Methyl Tert Butyl Ether	6.95	7.86	0.884	ok	0.880	0.820-0.940
Methylmethacrylate	11.17	10.02	1.115	ok	1.112	1.052-1.172
Naphthalene	23.00	15.52	1.482	ok	1.482	1.422-1.542
Nonane	17.48	15.52	1.126	ok	1.126	1.066-1.186
Octane	14.50	15.52	0.934	ok	0.934	0.874-0.994
Pentane	5.41	7.86	0.688	ok	0.687	0.627-0.747
n-Propylbenzene	18.80	15.52	1.211	ok	1.212	1.152-1.272

Initial Calibration Retention Time/Internal Standard Area Summary

Job Number: JD70271
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample Number	Lab File ID	Injected	By	Level	Inst ID	Method	
V5W2072-IC2072	5W50501.D	06/09/23 21:21	TCH	0.04	GCMS5W	TO-15	
V5W2072-IC2072	5W50502.D	06/09/23 22:00	TCH	0.1	GCMS5W	TO-15	Reporting this level
V5W2072-IC2072	5W50503.D	06/09/23 22:39	TCH	0.2	GCMS5W	TO-15	
V5W2072-IC2072	5W50504.D	06/09/23 23:17	TCH	0.5	GCMS5W	TO-15	
V5W2072-IC2072	5W50506.D	06/10/23 00:36	TCH	5	GCMS5W	TO-15	
V5W2072-ICC2072	5W50507.D	06/10/23 01:15	TCH	10	GCMS5W	TO-15	
V5W2072-IC2072	5W50508.D	06/10/23 01:53	TCH	20	GCMS5W	TO-15	
V5W2072-IC2072	5W50509.D	06/10/23 02:33	TCH	40	GCMS5W	TO-15	
V5W2072-IC2072	5W50510.D	06/10/23 03:14	TCH	50	GCMS5W	TO-15	

Target Compound	RT (min.)	Istd RT (min.)	Rel RT		Mean Rel RT	Rel RT Range (+ /- .06)
Propylene	3.72	7.86	0.473	ok	0.472	0.412-0.532
Styrene	16.94	15.52	1.091	ok	1.091	1.031-1.151
1,1,1-Trichloroethane	9.07	7.86	1.154	ok	1.154	1.094-1.214
1,1,1,2-Tetrachloroethane	15.57	15.52	1.003	ok	1.003	0.943-1.063
1,1,2,2-Tetrachloroethane	17.09	15.52	1.101	ok	1.101	1.041-1.161
1,1,2-Trichloroethane	12.81	10.02	1.278	ok	1.277	1.217-1.337
1,2,4-Trichlorobenzene	23.34	15.52	1.504	ok	1.503	1.443-1.563
1,2,3-Trichloropropane	17.29	15.52	1.114	ok	1.113	1.053-1.173
1,2,3-Trimethylbenzene	20.38	15.52	1.313	ok	1.313	1.253-1.373
1,2,4-Trimethylbenzene	19.78	15.52	1.274	ok	1.274	1.214-1.334
1,3,5-Trimethylbenzene	19.17	15.52	1.235	ok	1.235	1.175-1.295
2,2,4-Trimethylpentane	10.87	10.02	1.085	ok	1.085	1.025-1.145
Tertiary Butyl Alcohol	5.78	7.86	0.735	ok	0.730	0.670-0.790
Tetrachloroethylene	14.64	15.52	0.943	ok	0.944	0.884-1.004
Tetrahydrofuran	8.54	7.86	1.087	ok	1.078	1.018-1.138
Toluene	13.16	10.02	1.313	ok	1.312	1.252-1.372
Trichloroethylene	10.84	10.02	1.082	ok	1.082	1.022-1.142
Trichlorofluoromethane	5.11	7.86	0.650	ok	0.650	0.590-0.710
Vinyl chloride	4.06	7.86	0.517	ok	0.516	0.456-0.576
m,p-Xylene	16.42	15.52	1.058	ok	1.057	0.997-1.117
o-Xylene	17.08	15.52	1.101	ok	1.100	1.040-1.160
TVHC As Equiv Pentane	5.40	15.52	0.348	ok	0.348	0.288-0.408

Internal Standard	RT (min.)		Mean RT(min.)	RT Range (+ /- 0.33)	Area		Mean Area	Area Range (+ /- 40 %)
Bromochloromethane	7.86	ok	7.86	7.53-8.19	302204	ok	317103	190262-443944
1,4-Difluorobenzene	10.02	ok	10.02	9.69-10.35	1571478	ok	1604410	962646-2246174
Chlorobenzene-D5	15.52	ok	15.52	15.19-15.85	736739	ok	840712	504427-1176997

Initial Calibration Retention Time/Internal Standard Area Summary

Job Number: JD70271
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample Number	Lab File ID	Injected	By	Level	Inst ID	Method	
V5W2072-IC2072	5W50501.D	06/09/23 21:21	TCH	0.04	GCMS5W	TO-15	
V5W2072-IC2072	5W50502.D	06/09/23 22:00	TCH	0.1	GCMS5W	TO-15	
V5W2072-IC2072	5W50503.D	06/09/23 22:39	TCH	0.2	GCMS5W	TO-15	Reporting this level
V5W2072-IC2072	5W50504.D	06/09/23 23:17	TCH	0.5	GCMS5W	TO-15	
V5W2072-IC2072	5W50506.D	06/10/23 00:36	TCH	5	GCMS5W	TO-15	
V5W2072-ICC2072	5W50507.D	06/10/23 01:15	TCH	10	GCMS5W	TO-15	
V5W2072-IC2072	5W50508.D	06/10/23 01:53	TCH	20	GCMS5W	TO-15	
V5W2072-IC2072	5W50509.D	06/10/23 02:33	TCH	40	GCMS5W	TO-15	
V5W2072-IC2072	5W50510.D	06/10/23 03:14	TCH	50	GCMS5W	TO-15	

Target Compound	RT (min.)	Istd RT (min.)	Rel RT		Mean Rel RT	Rel RT Range (+ /- .06)
Acetone (2-Propanone)	5.00	7.85	0.637	ok	0.634	0.574-0.694
Acrolein	4.88	7.85	0.622	ok	0.620	0.560-0.680
Acrylonitrile	5.39	7.85	0.687	ok	0.684	0.624-0.744
Acetonitrile	4.78	7.85	0.609	ok	0.607	0.547-0.667
1,3-Butadiene	4.15	7.85	0.529	ok	0.529	0.469-0.589
Benzene	9.58	10.02	0.956	ok	0.957	0.897-1.017
Bromobenzene	18.09	15.52	1.166	ok	1.165	1.105-1.225
Bromodichloromethane	10.79	10.02	1.077	ok	1.077	1.017-1.137
Bromoform	16.47	15.52	1.061	ok	1.061	1.001-1.121
Bromomethane	4.36	7.85	0.555	ok	0.555	0.495-0.615
Bromoethene	4.76	7.85	0.606	ok	0.606	0.546-0.666
n-Butane	4.18	7.85	0.532	ok	0.533	0.473-0.593
Benzyl Chloride	19.96	15.52	1.286	ok	1.286	1.226-1.346
n-Butylbenzene	20.98	15.52	1.352	ok	1.352	1.292-1.412
sec-Butylbenzene	20.16	15.52	1.299	ok	1.299	1.239-1.359
tert-Butylbenzene	19.76	15.52	1.273	ok	1.273	1.213-1.333
Carbon disulfide	6.02	7.85	0.767	ok	0.767	0.707-0.827
Chlorobenzene	15.59	15.52	1.005	ok	1.004	0.944-1.064
Chlorodifluoromethane	3.68	7.85	0.469	ok	0.469	0.409-0.529
Chloroethane	4.49	7.85	0.572	ok	0.571	0.511-0.631
Chlorotrifluoroethene	3.71	7.85	0.473	ok	0.473	0.413-0.533
Chloroform	7.99	7.85	1.018	ok	1.018	0.958-1.078
Chloromethane	3.88	7.85	0.494	ok	0.495	0.435-0.555
3-Chloropropene	5.86	7.85	0.746	ok	0.746	0.686-0.806
2-Chlorotoluene	18.72	15.52	1.206	ok	1.206	1.146-1.266
Carbon tetrachloride	9.76	7.85	1.243	ok	1.242	1.182-1.302
Cyclohexane	9.89	10.02	0.987	ok	0.987	0.927-1.047
1,1-Dichloroethane	6.82	7.85	0.869	ok	0.869	0.809-0.929
1,1-Dichloroethylene	5.64	7.85	0.718	ok	0.719	0.659-0.779
1,2-Dibromoethane (EDB)	14.01	15.52	0.903	ok	0.903	0.843-0.963
1,2-Dichloroethane	8.79	7.85	1.120	ok	1.119	1.059-1.179
1,2-Dichloropropane	10.55	10.02	1.053	ok	1.053	0.993-1.113
1,3-Dichloropropane	13.20	10.02	1.317	ok	1.317	1.257-1.377
1,4-Dioxane	10.96	10.02	1.094	ok	1.087	1.027-1.147
Dichlorodifluoromethane	3.76	7.85	0.479	ok	0.479	0.419-0.539
Dichlorofluoromethane	4.55	7.85	0.580	ok	0.580	0.520-0.640
Dibromochloromethane	13.69	15.52	0.882	ok	0.882	0.822-0.942
Dibromomethane	10.53	10.02	1.051	ok	1.051	0.991-1.111
trans-1,2-Dichloroethylene	6.63	7.85	0.845	ok	0.844	0.784-0.904

Initial Calibration Retention Time/Internal Standard Area Summary

Job Number: JD70271
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample Number	Lab File ID	Injected	By	Level	Inst ID	Method	
V5W2072-IC2072	5W50501.D	06/09/23 21:21	TCH	0.04	GCMS5W	TO-15	
V5W2072-IC2072	5W50502.D	06/09/23 22:00	TCH	0.1	GCMS5W	TO-15	
V5W2072-IC2072	5W50503.D	06/09/23 22:39	TCH	0.2	GCMS5W	TO-15	Reporting this level
V5W2072-IC2072	5W50504.D	06/09/23 23:17	TCH	0.5	GCMS5W	TO-15	
V5W2072-IC2072	5W50506.D	06/10/23 00:36	TCH	5	GCMS5W	TO-15	
V5W2072-ICC2072	5W50507.D	06/10/23 01:15	TCH	10	GCMS5W	TO-15	
V5W2072-IC2072	5W50508.D	06/10/23 01:53	TCH	20	GCMS5W	TO-15	
V5W2072-IC2072	5W50509.D	06/10/23 02:33	TCH	40	GCMS5W	TO-15	
V5W2072-IC2072	5W50510.D	06/10/23 03:14	TCH	50	GCMS5W	TO-15	

Target Compound	RT (min.)	Istd RT (min.)	Rel RT		Mean Rel RT	Rel RT Range (+ /- .06)
cis-1,2-Dichloroethylene	7.68	7.85	0.978	ok	0.978	0.918-1.038
cis-1,3-Dichloropropene	11.91	10.02	1.189	ok	1.189	1.129-1.249
m-Dichlorobenzene	19.97	15.52	1.287	ok	1.287	1.227-1.347
o-Dichlorobenzene	20.55	15.52	1.324	ok	1.324	1.264-1.384
p-Dichlorobenzene	20.07	15.52	1.293	ok	1.293	1.233-1.353
trans-1,3-Dichloropropene	12.61	10.02	1.258	ok	1.257	1.197-1.317
Di-Isopropyl ether	7.93	7.85	1.010	ok	1.007	0.947-1.067
2,3-Dimethylpentane	10.18	10.02	1.016	ok	1.016	0.956-1.076
2,4-Dimethylpentane	8.85	7.85	1.127	ok	1.127	1.067-1.187
Ethanol	4.60	7.85	0.586	ok	0.585	0.525-0.645
Ethylbenzene	16.14	15.52	1.040	ok	1.040	0.980-1.100
Ethyl Acetate	7.99	7.85	1.018	ok	1.013	0.953-1.073
Ethyl Acrylate	10.65	10.02	1.063	ok	1.059	0.999-1.119
4-Ethyltoluene	19.05	15.52	1.227	ok	1.227	1.167-1.287
Freon 113	5.99	7.85	0.763	ok	0.763	0.703-0.823
Freon 114	3.96	7.85	0.504	ok	0.504	0.444-0.564
Freon 123	4.88	7.85	0.622	ok	0.622	0.562-0.682
Freon 123A	4.92	7.85	0.627	ok	0.627	0.567-0.687
Freon 142B	3.86	7.85	0.492	ok	0.493	0.433-0.553
Freon 152A	3.66	7.85	0.466	ok	0.465	0.405-0.525
Heptane	11.21	10.02	1.119	ok	1.119	1.059-1.179
Hexachlorobutadiene	23.48	15.52	1.513	ok	1.513	1.453-1.573
Hexachloroethane	21.45	15.52	1.382	ok	1.382	1.322-1.442
Hexane	7.89	7.85	1.005	ok	1.005	0.945-1.065
2-Hexanone	13.60	15.52	0.876	ok	0.874	0.814-0.934
Iodomethane	5.58	7.85	0.711	ok	0.711	0.651-0.771
Isopropylbenzene	17.99	15.52	1.159	ok	1.159	1.099-1.219
Isopropyl Alcohol	5.22	7.85	0.665	ok	0.662	0.602-0.722
p-Isopropyltoluene	20.39	15.52	1.314	ok	1.314	1.254-1.374
Methylene chloride	5.75	7.85	0.732	ok	0.733	0.673-0.793
Methyl ethyl ketone	7.30	7.85	0.930	ok	0.925	0.865-0.985
Methyl Isobutyl Ketone	12.03	10.02	1.201	ok	1.198	1.138-1.258
Methyl Tert Butyl Ether	6.93	7.85	0.883	ok	0.880	0.820-0.940
Methylmethacrylate	11.15	10.02	1.113	ok	1.112	1.052-1.172
Naphthalene	23.00	15.52	1.482	ok	1.482	1.422-1.542
Nonane	17.48	15.52	1.126	ok	1.126	1.066-1.186
Octane	14.50	15.52	0.934	ok	0.934	0.874-0.994
Pentane	5.39	7.85	0.687	ok	0.687	0.627-0.747
n-Propylbenzene	18.81	15.52	1.212	ok	1.212	1.152-1.272

Initial Calibration Retention Time/Internal Standard Area Summary

Job Number: JD70271
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample Number	Lab File ID	Injected	By	Level	Inst ID	Method	
V5W2072-IC2072	5W50501.D	06/09/23 21:21	TCH	0.04	GCMS5W	TO-15	
V5W2072-IC2072	5W50502.D	06/09/23 22:00	TCH	0.1	GCMS5W	TO-15	
V5W2072-IC2072	5W50503.D	06/09/23 22:39	TCH	0.2	GCMS5W	TO-15	Reporting this level
V5W2072-IC2072	5W50504.D	06/09/23 23:17	TCH	0.5	GCMS5W	TO-15	
V5W2072-IC2072	5W50506.D	06/10/23 00:36	TCH	5	GCMS5W	TO-15	
V5W2072-ICC2072	5W50507.D	06/10/23 01:15	TCH	10	GCMS5W	TO-15	
V5W2072-IC2072	5W50508.D	06/10/23 01:53	TCH	20	GCMS5W	TO-15	
V5W2072-IC2072	5W50509.D	06/10/23 02:33	TCH	40	GCMS5W	TO-15	
V5W2072-IC2072	5W50510.D	06/10/23 03:14	TCH	50	GCMS5W	TO-15	

Target Compound	RT (min.)	Istd RT (min.)	Rel RT		Mean Rel RT	Rel RT Range (+ /- .06)
Propylene	3.71	7.85	0.473	ok	0.472	0.412-0.532
Styrene	16.93	15.52	1.091	ok	1.091	1.031-1.151
1,1,1-Trichloroethane	9.06	7.85	1.154	ok	1.154	1.094-1.214
1,1,1,2-Tetrachloroethane	15.57	15.52	1.003	ok	1.003	0.943-1.063
1,1,2,2-Tetrachloroethane	17.09	15.52	1.101	ok	1.101	1.041-1.161
1,1,2-Trichloroethane	12.80	10.02	1.277	ok	1.277	1.217-1.337
1,2,4-Trichlorobenzene	23.34	15.52	1.504	ok	1.503	1.443-1.563
1,2,3-Trichloropropane	17.28	15.52	1.113	ok	1.113	1.053-1.173
1,2,3-Trimethylbenzene	20.38	15.52	1.313	ok	1.313	1.253-1.373
1,2,4-Trimethylbenzene	19.77	15.52	1.274	ok	1.274	1.214-1.334
1,3,5-Trimethylbenzene	19.17	15.52	1.235	ok	1.235	1.175-1.295
2,2,4-Trimethylpentane	10.86	10.02	1.084	ok	1.085	1.025-1.145
Tertiary Butyl Alcohol	5.77	7.85	0.735	ok	0.730	0.670-0.790
Tetrachloroethylene	14.65	15.52	0.944	ok	0.944	0.884-1.004
Tetrahydrofuran	8.51	7.85	1.084	ok	1.078	1.018-1.138
Toluene	13.15	10.02	1.312	ok	1.312	1.252-1.372
Trichloroethylene	10.84	10.02	1.082	ok	1.082	1.022-1.142
Trichlorofluoromethane	5.09	7.85	0.648	ok	0.650	0.590-0.710
Vinyl chloride	4.05	7.85	0.516	ok	0.516	0.456-0.576
Vinyl Acetate	7.01	7.85	0.893	ok	0.890	0.830-0.950
m,p-Xylene	16.42	15.52	1.058	ok	1.057	0.997-1.117
o-Xylene	17.08	15.52	1.101	ok	1.100	1.040-1.160
TVHC As Equiv Pentane	5.39	15.52	0.347	ok	0.348	0.288-0.408

Internal Standard	RT (min.)		Mean RT(min.)	RT Range (+ /- 0.33)	Area		Mean Area	Area Range (+ /- 40 %)
Bromochloromethane	7.85	ok	7.86	7.53-8.19	294189	ok	317103	190262-443944
1,4-Difluorobenzene	10.02	ok	10.02	9.69-10.35	1539284	ok	1604410	962646-2246174
Chlorobenzene-D5	15.52	ok	15.52	15.19-15.85	724486	ok	840712	504427-1176997

Initial Calibration Retention Time/Internal Standard Area Summary

Job Number: JD70271
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample Number	Lab File ID	Injected	By	Level	Inst ID	Method	
V5W2072-IC2072	5W50501.D	06/09/23 21:21	TCH	0.04	GCMS5W	TO-15	
V5W2072-IC2072	5W50502.D	06/09/23 22:00	TCH	0.1	GCMS5W	TO-15	
V5W2072-IC2072	5W50503.D	06/09/23 22:39	TCH	0.2	GCMS5W	TO-15	
V5W2072-IC2072	5W50504.D	06/09/23 23:17	TCH	0.5	GCMS5W	TO-15	Reporting this level
V5W2072-IC2072	5W50506.D	06/10/23 00:36	TCH	5	GCMS5W	TO-15	
V5W2072-ICC2072	5W50507.D	06/10/23 01:15	TCH	10	GCMS5W	TO-15	
V5W2072-IC2072	5W50508.D	06/10/23 01:53	TCH	20	GCMS5W	TO-15	
V5W2072-IC2072	5W50509.D	06/10/23 02:33	TCH	40	GCMS5W	TO-15	
V5W2072-IC2072	5W50510.D	06/10/23 03:14	TCH	50	GCMS5W	TO-15	

Target Compound	RT (min.)	Istd RT (min.)	Rel RT		Mean Rel RT	Rel RT Range (+ /- .06)
Acetone (2-Propanone)	4.98	7.85	0.634	ok	0.634	0.574-0.694
Acrolein	4.86	7.85	0.619	ok	0.620	0.560-0.680
Acrylonitrile	5.37	7.85	0.684	ok	0.684	0.624-0.744
Acetonitrile	4.76	7.85	0.606	ok	0.607	0.547-0.667
1,3-Butadiene	4.14	7.85	0.527	ok	0.529	0.469-0.589
Benzene	9.58	10.01	0.957	ok	0.957	0.897-1.017
Bromobenzene	18.09	15.52	1.166	ok	1.165	1.105-1.225
Bromodichloromethane	10.79	10.01	1.078	ok	1.077	1.017-1.137
Bromoform	16.47	15.52	1.061	ok	1.061	1.001-1.121
Bromomethane	4.35	7.85	0.554	ok	0.555	0.495-0.615
Bromoethene	4.75	7.85	0.605	ok	0.606	0.546-0.666
n-Butane	4.17	7.85	0.531	ok	0.533	0.473-0.593
Benzyl Chloride	19.96	15.52	1.286	ok	1.286	1.226-1.346
n-Butylbenzene	20.98	15.52	1.352	ok	1.352	1.292-1.412
sec-Butylbenzene	20.16	15.52	1.299	ok	1.299	1.239-1.359
tert-Butylbenzene	19.76	15.52	1.273	ok	1.273	1.213-1.333
Carbon disulfide	6.01	7.85	0.766	ok	0.767	0.707-0.827
Chlorobenzene	15.59	15.52	1.005	ok	1.004	0.944-1.064
Chlorodifluoromethane	3.67	7.85	0.468	ok	0.469	0.409-0.529
Chloroethane	4.48	7.85	0.571	ok	0.571	0.511-0.631
Chlorotrifluoroethene	3.69	7.85	0.470	ok	0.473	0.413-0.533
Chloroform	7.99	7.85	1.018	ok	1.018	0.958-1.078
Chloromethane	3.87	7.85	0.493	ok	0.495	0.435-0.555
3-Chloropropene	5.86	7.85	0.746	ok	0.746	0.686-0.806
2-Chlorotoluene	18.72	15.52	1.206	ok	1.206	1.146-1.266
Carbon tetrachloride	9.75	7.85	1.242	ok	1.242	1.182-1.302
Cyclohexane	9.88	10.01	0.987	ok	0.987	0.927-1.047
1,1-Dichloroethane	6.82	7.85	0.869	ok	0.869	0.809-0.929
1,1-Dichloroethylene	5.64	7.85	0.718	ok	0.719	0.659-0.779
1,2-Dibromoethane (EDB)	14.01	15.52	0.903	ok	0.903	0.843-0.963
1,2-Dichloroethane	8.79	7.85	1.120	ok	1.119	1.059-1.179
1,2-Dichloropropane	10.54	10.01	1.053	ok	1.053	0.993-1.113
1,3-Dichloropropane	13.19	10.01	1.318	ok	1.317	1.257-1.377
1,4-Dioxane	10.92	10.01	1.091	ok	1.087	1.027-1.147
Dichlorodifluoromethane	3.74	7.85	0.476	ok	0.479	0.419-0.539
Dichlorofluoromethane	4.54	7.85	0.578	ok	0.580	0.520-0.640
Dibromochloromethane	13.69	15.52	0.882	ok	0.882	0.822-0.942
Dibromomethane	10.52	10.01	1.051	ok	1.051	0.991-1.111
trans-1,2-Dichloroethylene	6.62	7.85	0.843	ok	0.844	0.784-0.904

Initial Calibration Retention Time/Internal Standard Area Summary

Job Number: JD70271
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample Number	Lab File ID	Injected	By	Level	Inst ID	Method	
V5W2072-IC2072	5W50501.D	06/09/23 21:21	TCH	0.04	GCMS5W	TO-15	
V5W2072-IC2072	5W50502.D	06/09/23 22:00	TCH	0.1	GCMS5W	TO-15	
V5W2072-IC2072	5W50503.D	06/09/23 22:39	TCH	0.2	GCMS5W	TO-15	
V5W2072-IC2072	5W50504.D	06/09/23 23:17	TCH	0.5	GCMS5W	TO-15	Reporting this level
V5W2072-IC2072	5W50506.D	06/10/23 00:36	TCH	5	GCMS5W	TO-15	
V5W2072-ICC2072	5W50507.D	06/10/23 01:15	TCH	10	GCMS5W	TO-15	
V5W2072-IC2072	5W50508.D	06/10/23 01:53	TCH	20	GCMS5W	TO-15	
V5W2072-IC2072	5W50509.D	06/10/23 02:33	TCH	40	GCMS5W	TO-15	
V5W2072-IC2072	5W50510.D	06/10/23 03:14	TCH	50	GCMS5W	TO-15	

Target Compound	RT (min.)	Istd RT (min.)	Rel RT		Mean Rel RT	Rel RT Range (+ /- .06)
cis-1,2-Dichloroethylene	7.68	7.85	0.978	ok	0.978	0.918-1.038
cis-1,3-Dichloropropene	11.91	10.01	1.190	ok	1.189	1.129-1.249
m-Dichlorobenzene	19.97	15.52	1.287	ok	1.287	1.227-1.347
o-Dichlorobenzene	20.54	15.52	1.323	ok	1.324	1.264-1.384
p-Dichlorobenzene	20.07	15.52	1.293	ok	1.293	1.233-1.353
trans-1,3-Dichloropropene	12.59	10.01	1.258	ok	1.257	1.197-1.317
Di-Isopropyl ether	7.91	7.85	1.008	ok	1.007	0.947-1.067
2,3-Dimethylpentane	10.18	10.01	1.017	ok	1.016	0.956-1.076
2,4-Dimethylpentane	8.84	7.85	1.126	ok	1.127	1.067-1.187
Ethanol	4.60	7.85	0.586	ok	0.585	0.525-0.645
Ethylbenzene	16.14	15.52	1.040	ok	1.040	0.980-1.100
Ethyl Acetate	7.97	7.85	1.015	ok	1.013	0.953-1.073
Ethyl Acrylate	10.63	10.01	1.062	ok	1.059	0.999-1.119
4-Ethyltoluene	19.04	15.52	1.227	ok	1.227	1.167-1.287
Freon 113	5.98	7.85	0.762	ok	0.763	0.703-0.823
Freon 114	3.94	7.85	0.502	ok	0.504	0.444-0.564
Freon 123	4.87	7.85	0.620	ok	0.622	0.562-0.682
Freon 123A	4.92	7.85	0.627	ok	0.627	0.567-0.687
Freon 142B	3.85	7.85	0.490	ok	0.493	0.433-0.553
Freon 152A	3.64	7.85	0.464	ok	0.465	0.405-0.525
Heptane	11.20	10.01	1.119	ok	1.119	1.059-1.179
Hexachlorobutadiene	23.48	15.52	1.513	ok	1.513	1.453-1.573
Hexachloroethane	21.45	15.52	1.382	ok	1.382	1.322-1.442
Hexane	7.88	7.85	1.004	ok	1.005	0.945-1.065
2-Hexanone	13.58	15.52	0.875	ok	0.874	0.814-0.934
Iodomethane	5.57	7.85	0.710	ok	0.711	0.651-0.771
Isopropylbenzene	17.99	15.52	1.159	ok	1.159	1.099-1.219
Isopropyl Alcohol	5.20	7.85	0.662	ok	0.662	0.602-0.722
p-Isopropyltoluene	20.39	15.52	1.314	ok	1.314	1.254-1.374
Methylene chloride	5.75	7.85	0.732	ok	0.733	0.673-0.793
Methyl ethyl ketone	7.28	7.85	0.927	ok	0.925	0.865-0.985
Methyl Isobutyl Ketone	12.01	10.01	1.200	ok	1.198	1.138-1.258
Methyl Tert Butyl Ether	6.92	7.85	0.882	ok	0.880	0.820-0.940
Methylmethacrylate	11.14	10.01	1.113	ok	1.112	1.052-1.172
Naphthalene	23.00	15.52	1.482	ok	1.482	1.422-1.542
Nonane	17.48	15.52	1.126	ok	1.126	1.066-1.186
Octane	14.50	15.52	0.934	ok	0.934	0.874-0.994
Pentane	5.38	7.85	0.685	ok	0.687	0.627-0.747
n-Propylbenzene	18.80	15.52	1.211	ok	1.212	1.152-1.272

Initial Calibration Retention Time/Internal Standard Area Summary

Job Number: JD70271
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample Number	Lab File ID	Injected	By	Level	Inst ID	Method	
V5W2072-IC2072	5W50501.D	06/09/23 21:21	TCH	0.04	GCMS5W	TO-15	
V5W2072-IC2072	5W50502.D	06/09/23 22:00	TCH	0.1	GCMS5W	TO-15	
V5W2072-IC2072	5W50503.D	06/09/23 22:39	TCH	0.2	GCMS5W	TO-15	
V5W2072-IC2072	5W50504.D	06/09/23 23:17	TCH	0.5	GCMS5W	TO-15	Reporting this level
V5W2072-IC2072	5W50506.D	06/10/23 00:36	TCH	5	GCMS5W	TO-15	
V5W2072-ICC2072	5W50507.D	06/10/23 01:15	TCH	10	GCMS5W	TO-15	
V5W2072-IC2072	5W50508.D	06/10/23 01:53	TCH	20	GCMS5W	TO-15	
V5W2072-IC2072	5W50509.D	06/10/23 02:33	TCH	40	GCMS5W	TO-15	
V5W2072-IC2072	5W50510.D	06/10/23 03:14	TCH	50	GCMS5W	TO-15	

Target Compound	RT (min.)	Istd RT (min.)	Rel RT		Mean Rel RT	Rel RT Range (+ /- .06)
Propylene	3.69	7.85	0.470	ok	0.472	0.412-0.532
Styrene	16.93	15.52	1.091	ok	1.091	1.031-1.151
1,1,1-Trichloroethane	9.06	7.85	1.154	ok	1.154	1.094-1.214
1,1,1,2-Tetrachloroethane	15.57	15.52	1.003	ok	1.003	0.943-1.063
1,1,2,2-Tetrachloroethane	17.08	15.52	1.101	ok	1.101	1.041-1.161
1,1,2-Trichloroethane	12.80	10.01	1.279	ok	1.277	1.217-1.337
1,2,4-Trichlorobenzene	23.34	15.52	1.504	ok	1.503	1.443-1.563
1,2,3-Trichloropropane	17.28	15.52	1.113	ok	1.113	1.053-1.173
1,2,3-Trimethylbenzene	20.38	15.52	1.313	ok	1.313	1.253-1.373
1,2,4-Trimethylbenzene	19.77	15.52	1.274	ok	1.274	1.214-1.334
1,3,5-Trimethylbenzene	19.17	15.52	1.235	ok	1.235	1.175-1.295
2,2,4-Trimethylpentane	10.86	10.01	1.085	ok	1.085	1.025-1.145
Tertiary Butyl Alcohol	5.74	7.85	0.731	ok	0.730	0.670-0.790
Tetrachloroethylene	14.64	15.52	0.943	ok	0.944	0.884-1.004
Tetrahydrofuran	8.49	7.85	1.082	ok	1.078	1.018-1.138
Toluene	13.14	10.01	1.313	ok	1.312	1.252-1.372
Trichloroethylene	10.83	10.01	1.082	ok	1.082	1.022-1.142
Trichlorofluoromethane	5.09	7.85	0.648	ok	0.650	0.590-0.710
Vinyl chloride	4.04	7.85	0.515	ok	0.516	0.456-0.576
Vinyl Acetate	7.00	7.85	0.892	ok	0.890	0.830-0.950
m,p-Xylene	16.41	15.52	1.057	ok	1.057	0.997-1.117
o-Xylene	17.08	15.52	1.101	ok	1.100	1.040-1.160
TVHC As Equiv Pentane	5.38	15.52	0.347	ok	0.348	0.288-0.408

Internal Standard	RT (min.)		Mean RT(min.)	RT Range (+ /- 0.33)	Area		Mean Area	Area Range (+ /- 40 %)
Bromochloromethane	7.85	ok	7.86	7.53-8.19	295357	ok	317103	190262-443944
1,4-Difluorobenzene	10.01	ok	10.02	9.69-10.35	1536542	ok	1604410	962646-2246174
Chlorobenzene-D5	15.52	ok	15.52	15.19-15.85	728228	ok	840712	504427-1176997

Initial Calibration Retention Time/Internal Standard Area Summary

Job Number: JD70271
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample Number	Lab File ID	Injected	By	Level	Inst ID	Method	
V5W2072-IC2072	5W50501.D	06/09/23 21:21	TCH	0.04	GCMS5W	TO-15	
V5W2072-IC2072	5W50502.D	06/09/23 22:00	TCH	0.1	GCMS5W	TO-15	
V5W2072-IC2072	5W50503.D	06/09/23 22:39	TCH	0.2	GCMS5W	TO-15	
V5W2072-IC2072	5W50504.D	06/09/23 23:17	TCH	0.5	GCMS5W	TO-15	
V5W2072-IC2072	5W50506.D	06/10/23 00:36	TCH	5	GCMS5W	TO-15	Reporting this level
V5W2072-ICC2072	5W50507.D	06/10/23 01:15	TCH	10	GCMS5W	TO-15	
V5W2072-IC2072	5W50508.D	06/10/23 01:53	TCH	20	GCMS5W	TO-15	
V5W2072-IC2072	5W50509.D	06/10/23 02:33	TCH	40	GCMS5W	TO-15	
V5W2072-IC2072	5W50510.D	06/10/23 03:14	TCH	50	GCMS5W	TO-15	

Target Compound	RT (min.)	Istd RT (min.)	Rel RT		Mean Rel RT	Rel RT Range (+ /- .06)
Acetone (2-Propanone)	4.98	7.86	0.634	ok	0.634	0.574-0.694
Acrolein	4.87	7.86	0.620	ok	0.620	0.560-0.680
Acrylonitrile	5.36	7.86	0.682	ok	0.684	0.624-0.744
Acetonitrile	4.77	7.86	0.607	ok	0.607	0.547-0.667
1,3-Butadiene	4.16	7.86	0.529	ok	0.529	0.469-0.589
Benzene	9.59	10.02	0.957	ok	0.957	0.897-1.017
Bromobenzene	18.09	15.52	1.166	ok	1.165	1.105-1.225
Bromodichloromethane	10.79	10.02	1.077	ok	1.077	1.017-1.137
Bromoform	16.47	15.52	1.061	ok	1.061	1.001-1.121
Bromomethane	4.37	7.86	0.556	ok	0.555	0.495-0.615
Bromoethene	4.77	7.86	0.607	ok	0.606	0.546-0.666
n-Butane	4.19	7.86	0.533	ok	0.533	0.473-0.593
Benzyl Chloride	19.95	15.52	1.285	ok	1.286	1.226-1.346
n-Butylbenzene	20.98	15.52	1.352	ok	1.352	1.292-1.412
sec-Butylbenzene	20.16	15.52	1.299	ok	1.299	1.239-1.359
tert-Butylbenzene	19.76	15.52	1.273	ok	1.273	1.213-1.333
Carbon disulfide	6.03	7.86	0.767	ok	0.767	0.707-0.827
Chlorobenzene	15.59	15.52	1.005	ok	1.004	0.944-1.064
Chlorodifluoromethane	3.69	7.86	0.469	ok	0.469	0.409-0.529
Chloroethane	4.49	7.86	0.571	ok	0.571	0.511-0.631
Chlorotrifluoroethene	3.72	7.86	0.473	ok	0.473	0.413-0.533
Chloroform	8.00	7.86	1.018	ok	1.018	0.958-1.078
Chloromethane	3.89	7.86	0.495	ok	0.495	0.435-0.555
3-Chloropropene	5.87	7.86	0.747	ok	0.746	0.686-0.806
2-Chlorotoluene	18.72	15.52	1.206	ok	1.206	1.146-1.266
Carbon tetrachloride	9.76	7.86	1.242	ok	1.242	1.182-1.302
Cyclohexane	9.89	10.02	0.987	ok	0.987	0.927-1.047
1,1-Dichloroethane	6.83	7.86	0.869	ok	0.869	0.809-0.929
1,1-Dichloroethylene	5.66	7.86	0.720	ok	0.719	0.659-0.779
1,2-Dibromoethane (EDB)	14.01	15.52	0.903	ok	0.903	0.843-0.963
1,2-Dichloroethane	8.79	7.86	1.118	ok	1.119	1.059-1.179
1,2-Dichloropropane	10.55	10.02	1.053	ok	1.053	0.993-1.113
1,3-Dichloropropane	13.19	10.02	1.316	ok	1.317	1.257-1.377
1,4-Dioxane	10.87	10.02	1.085	ok	1.087	1.027-1.147
Dichlorodifluoromethane	3.77	7.86	0.480	ok	0.479	0.419-0.539
Dichlorofluoromethane	4.56	7.86	0.580	ok	0.580	0.520-0.640
Dibromochloromethane	13.69	15.52	0.882	ok	0.882	0.822-0.942
Dibromomethane	10.53	10.02	1.051	ok	1.051	0.991-1.111
trans-1,2-Dichloroethylene	6.64	7.86	0.845	ok	0.844	0.784-0.904

Initial Calibration Retention Time/Internal Standard Area Summary

Job Number: JD70271
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample Number	Lab File ID	Injected	By	Level	Inst ID	Method	
V5W2072-IC2072	5W50501.D	06/09/23 21:21	TCH	0.04	GCMS5W	TO-15	
V5W2072-IC2072	5W50502.D	06/09/23 22:00	TCH	0.1	GCMS5W	TO-15	
V5W2072-IC2072	5W50503.D	06/09/23 22:39	TCH	0.2	GCMS5W	TO-15	
V5W2072-IC2072	5W50504.D	06/09/23 23:17	TCH	0.5	GCMS5W	TO-15	
V5W2072-IC2072	5W50506.D	06/10/23 00:36	TCH	5	GCMS5W	TO-15	Reporting this level
V5W2072-ICC2072	5W50507.D	06/10/23 01:15	TCH	10	GCMS5W	TO-15	
V5W2072-IC2072	5W50508.D	06/10/23 01:53	TCH	20	GCMS5W	TO-15	
V5W2072-IC2072	5W50509.D	06/10/23 02:33	TCH	40	GCMS5W	TO-15	
V5W2072-IC2072	5W50510.D	06/10/23 03:14	TCH	50	GCMS5W	TO-15	

Target Compound	RT (min.)	Istd RT (min.)	Rel RT		Mean Rel RT	Rel RT Range (+ /- .06)
cis-1,2-Dichloroethylene	7.69	7.86	0.978	ok	0.978	0.918-1.038
cis-1,3-Dichloropropene	11.91	10.02	1.189	ok	1.189	1.129-1.249
m-Dichlorobenzene	19.97	15.52	1.287	ok	1.287	1.227-1.347
o-Dichlorobenzene	20.54	15.52	1.323	ok	1.324	1.264-1.384
p-Dichlorobenzene	20.06	15.52	1.293	ok	1.293	1.233-1.353
trans-1,3-Dichloropropene	12.59	10.02	1.256	ok	1.257	1.197-1.317
Di-Isopropyl ether	7.90	7.86	1.005	ok	1.007	0.947-1.067
2,3-Dimethylpentane	10.19	10.02	1.017	ok	1.016	0.956-1.076
2,4-Dimethylpentane	8.86	7.86	1.127	ok	1.127	1.067-1.187
Ethanol	4.59	7.86	0.584	ok	0.585	0.525-0.645
Ethylbenzene	16.14	15.52	1.040	ok	1.040	0.980-1.100
Ethyl Acetate	7.94	7.86	1.010	ok	1.013	0.953-1.073
Ethyl Acrylate	10.60	10.02	1.058	ok	1.059	0.999-1.119
4-Ethyltoluene	19.04	15.52	1.227	ok	1.227	1.167-1.287
Freon 113	5.99	7.86	0.762	ok	0.763	0.703-0.823
Freon 114	3.96	7.86	0.504	ok	0.504	0.444-0.564
Freon 123	4.89	7.86	0.622	ok	0.622	0.562-0.682
Freon 123A	4.93	7.86	0.627	ok	0.627	0.567-0.687
Freon 142B	3.88	7.86	0.494	ok	0.493	0.433-0.553
Freon 152A	3.66	7.86	0.466	ok	0.465	0.405-0.525
Heptane	11.21	10.02	1.119	ok	1.119	1.059-1.179
Hexachlorobutadiene	23.48	15.52	1.513	ok	1.513	1.453-1.573
Hexachloroethane	21.45	15.52	1.382	ok	1.382	1.322-1.442
Hexane	7.90	7.86	1.005	ok	1.005	0.945-1.065
2-Hexanone	13.54	15.52	0.872	ok	0.874	0.814-0.934
Iodomethane	5.59	7.86	0.711	ok	0.711	0.651-0.771
Isopropylbenzene	17.99	15.52	1.159	ok	1.159	1.099-1.219
Isopropyl Alcohol	5.18	7.86	0.659	ok	0.662	0.602-0.722
p-Isopropyltoluene	20.39	15.52	1.314	ok	1.314	1.254-1.374
Methylene chloride	5.77	7.86	0.734	ok	0.733	0.673-0.793
Methyl ethyl ketone	7.25	7.86	0.922	ok	0.925	0.865-0.985
Methyl Isobutyl Ketone	11.98	10.02	1.196	ok	1.198	1.138-1.258
Methyl Tert Butyl Ether	6.90	7.86	0.878	ok	0.880	0.820-0.940
Methylmethacrylate	11.13	10.02	1.111	ok	1.112	1.052-1.172
Naphthalene	23.00	15.52	1.482	ok	1.482	1.422-1.542
Nonane	17.48	15.52	1.126	ok	1.126	1.066-1.186
Octane	14.50	15.52	0.934	ok	0.934	0.874-0.994
Pentane	5.40	7.86	0.687	ok	0.687	0.627-0.747
n-Propylbenzene	18.80	15.52	1.211	ok	1.212	1.152-1.272

Initial Calibration Retention Time/Internal Standard Area Summary

Job Number: JD70271
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample Number	Lab File ID	Injected	By	Level	Inst ID	Method	
V5W2072-IC2072	5W50501.D	06/09/23 21:21	TCH	0.04	GCMS5W	TO-15	
V5W2072-IC2072	5W50502.D	06/09/23 22:00	TCH	0.1	GCMS5W	TO-15	
V5W2072-IC2072	5W50503.D	06/09/23 22:39	TCH	0.2	GCMS5W	TO-15	
V5W2072-IC2072	5W50504.D	06/09/23 23:17	TCH	0.5	GCMS5W	TO-15	
V5W2072-IC2072	5W50506.D	06/10/23 00:36	TCH	5	GCMS5W	TO-15	Reporting this level
V5W2072-ICC2072	5W50507.D	06/10/23 01:15	TCH	10	GCMS5W	TO-15	
V5W2072-IC2072	5W50508.D	06/10/23 01:53	TCH	20	GCMS5W	TO-15	
V5W2072-IC2072	5W50509.D	06/10/23 02:33	TCH	40	GCMS5W	TO-15	
V5W2072-IC2072	5W50510.D	06/10/23 03:14	TCH	50	GCMS5W	TO-15	

Target Compound	RT (min.)	Istd RT (min.)	Rel RT		Mean Rel RT	Rel RT Range (+ /- .06)
Propylene	3.71	7.86	0.472	ok	0.472	0.412-0.532
Styrene	16.93	15.52	1.091	ok	1.091	1.031-1.151
1,1,1-Trichloroethane	9.07	7.86	1.154	ok	1.154	1.094-1.214
1,1,1,2-Tetrachloroethane	15.57	15.52	1.003	ok	1.003	0.943-1.063
1,1,2,2-Tetrachloroethane	17.08	15.52	1.101	ok	1.101	1.041-1.161
1,1,2-Trichloroethane	12.80	10.02	1.277	ok	1.277	1.217-1.337
1,2,4-Trichlorobenzene	23.33	15.52	1.503	ok	1.503	1.443-1.563
1,2,3-Trichloropropane	17.27	15.52	1.113	ok	1.113	1.053-1.173
1,2,3-Trimethylbenzene	20.38	15.52	1.313	ok	1.313	1.253-1.373
1,2,4-Trimethylbenzene	19.77	15.52	1.274	ok	1.274	1.214-1.334
1,3,5-Trimethylbenzene	19.17	15.52	1.235	ok	1.235	1.175-1.295
2,2,4-Trimethylpentane	10.87	10.02	1.085	ok	1.085	1.025-1.145
Tertiary Butyl Alcohol	5.71	7.86	0.726	ok	0.730	0.670-0.790
Tetrachloroethylene	14.65	15.52	0.944	ok	0.944	0.884-1.004
Tetrahydrofuran	8.45	7.86	1.075	ok	1.078	1.018-1.138
Toluene	13.14	10.02	1.311	ok	1.312	1.252-1.372
Trichloroethylene	10.84	10.02	1.082	ok	1.082	1.022-1.142
Trichlorofluoromethane	5.11	7.86	0.650	ok	0.650	0.590-0.710
Vinyl chloride	4.05	7.86	0.515	ok	0.516	0.456-0.576
Vinyl Acetate	6.99	7.86	0.889	ok	0.890	0.830-0.950
m,p-Xylene	16.41	15.52	1.057	ok	1.057	0.997-1.117
o-Xylene	17.08	15.52	1.101	ok	1.100	1.040-1.160
TVHC As Equiv Pentane	5.40	15.52	0.348	ok	0.348	0.288-0.408

Internal Standard	RT (min.)		Mean RT(min.)	RT Range (+ /- 0.33)	Area		Mean Area	Area Range (+ /- 40 %)
Bromochloromethane	7.86	ok	7.86	7.53-8.19	300252	ok	317103	190262-443944
1,4-Difluorobenzene	10.02	ok	10.02	9.69-10.35	1542554	ok	1604410	962646-2246174
Chlorobenzene-D5	15.52	ok	15.52	15.19-15.85	769162	ok	840712	504427-1176997

Initial Calibration Retention Time/Internal Standard Area Summary

Job Number: JD70271
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample Number	Lab File ID	Injected	By	Level	Inst ID	Method	
V5W2072-IC2072	5W50501.D	06/09/23 21:21	TCH	0.04	GCMS5W	TO-15	
V5W2072-IC2072	5W50502.D	06/09/23 22:00	TCH	0.1	GCMS5W	TO-15	
V5W2072-IC2072	5W50503.D	06/09/23 22:39	TCH	0.2	GCMS5W	TO-15	
V5W2072-IC2072	5W50504.D	06/09/23 23:17	TCH	0.5	GCMS5W	TO-15	
V5W2072-IC2072	5W50506.D	06/10/23 00:36	TCH	5	GCMS5W	TO-15	
V5W2072-ICC2072	5W50507.D	06/10/23 01:15	TCH	10	GCMS5W	TO-15	Reporting this level
V5W2072-IC2072	5W50508.D	06/10/23 01:53	TCH	20	GCMS5W	TO-15	
V5W2072-IC2072	5W50509.D	06/10/23 02:33	TCH	40	GCMS5W	TO-15	
V5W2072-IC2072	5W50510.D	06/10/23 03:14	TCH	50	GCMS5W	TO-15	

Target Compound	RT (min.)	Istd RT (min.)	Rel RT		Mean Rel RT	Rel RT Range (+ /- .06)
Acetone (2-Propanone)	4.96	7.86	0.631	ok	0.634	0.574-0.694
Acrolein	4.86	7.86	0.618	ok	0.620	0.560-0.680
Acrylonitrile	5.36	7.86	0.682	ok	0.684	0.624-0.744
Acetonitrile	4.76	7.86	0.606	ok	0.607	0.547-0.667
1,3-Butadiene	4.15	7.86	0.528	ok	0.529	0.469-0.589
Benzene	9.58	10.02	0.956	ok	0.957	0.897-1.017
Bromobenzene	18.09	15.52	1.166	ok	1.165	1.105-1.225
Bromodichloromethane	10.79	10.02	1.077	ok	1.077	1.017-1.137
Bromoform	16.47	15.52	1.061	ok	1.061	1.001-1.121
Bromomethane	4.36	7.86	0.555	ok	0.555	0.495-0.615
Bromoethene	4.76	7.86	0.606	ok	0.606	0.546-0.666
n-Butane	4.19	7.86	0.533	ok	0.533	0.473-0.593
Benzyl Chloride	19.95	15.52	1.285	ok	1.286	1.226-1.346
n-Butylbenzene	20.98	15.52	1.352	ok	1.352	1.292-1.412
sec-Butylbenzene	20.16	15.52	1.299	ok	1.299	1.239-1.359
tert-Butylbenzene	19.76	15.52	1.273	ok	1.273	1.213-1.333
Carbon disulfide	6.02	7.86	0.766	ok	0.767	0.707-0.827
Chlorobenzene	15.59	15.52	1.005	ok	1.004	0.944-1.064
Chlorodifluoromethane	3.68	7.86	0.468	ok	0.469	0.409-0.529
Chloroethane	4.49	7.86	0.571	ok	0.571	0.511-0.631
Chlorotrifluoroethene	3.71	7.86	0.472	ok	0.473	0.413-0.533
Chloroform	7.99	7.86	1.017	ok	1.018	0.958-1.078
Chloromethane	3.88	7.86	0.494	ok	0.495	0.435-0.555
3-Chloropropene	5.86	7.86	0.746	ok	0.746	0.686-0.806
2-Chlorotoluene	18.72	15.52	1.206	ok	1.206	1.146-1.266
Carbon tetrachloride	9.76	7.86	1.242	ok	1.242	1.182-1.302
Cyclohexane	9.89	10.02	0.987	ok	0.987	0.927-1.047
1,1-Dichloroethane	6.82	7.86	0.868	ok	0.869	0.809-0.929
1,1-Dichloroethylene	5.64	7.86	0.718	ok	0.719	0.659-0.779
1,2-Dibromoethane (EDB)	14.01	15.52	0.903	ok	0.903	0.843-0.963
1,2-Dichloroethane	8.79	7.86	1.118	ok	1.119	1.059-1.179
1,2-Dichloropropane	10.54	10.02	1.052	ok	1.053	0.993-1.113
1,3-Dichloropropane	13.19	10.02	1.316	ok	1.317	1.257-1.377
1,4-Dioxane	10.86	10.02	1.084	ok	1.087	1.027-1.147
Dichlorodifluoromethane	3.76	7.86	0.478	ok	0.479	0.419-0.539
Dichlorofluoromethane	4.56	7.86	0.580	ok	0.580	0.520-0.640
Dibromochloromethane	13.69	15.52	0.882	ok	0.882	0.822-0.942
Dibromomethane	10.53	10.02	1.051	ok	1.051	0.991-1.111
trans-1,2-Dichloroethylene	6.63	7.86	0.844	ok	0.844	0.784-0.904

Initial Calibration Retention Time/Internal Standard Area Summary

Job Number: JD70271
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample Number	Lab File ID	Injected	By	Level	Inst ID	Method	
V5W2072-IC2072	5W50501.D	06/09/23 21:21	TCH	0.04	GCMS5W	TO-15	
V5W2072-IC2072	5W50502.D	06/09/23 22:00	TCH	0.1	GCMS5W	TO-15	
V5W2072-IC2072	5W50503.D	06/09/23 22:39	TCH	0.2	GCMS5W	TO-15	
V5W2072-IC2072	5W50504.D	06/09/23 23:17	TCH	0.5	GCMS5W	TO-15	
V5W2072-IC2072	5W50506.D	06/10/23 00:36	TCH	5	GCMS5W	TO-15	
V5W2072-ICC2072	5W50507.D	06/10/23 01:15	TCH	10	GCMS5W	TO-15	Reporting this level
V5W2072-IC2072	5W50508.D	06/10/23 01:53	TCH	20	GCMS5W	TO-15	
V5W2072-IC2072	5W50509.D	06/10/23 02:33	TCH	40	GCMS5W	TO-15	
V5W2072-IC2072	5W50510.D	06/10/23 03:14	TCH	50	GCMS5W	TO-15	

Target Compound	RT (min.)	Istd RT (min.)	Rel RT		Mean Rel RT	Rel RT Range (+ /- .06)
cis-1,2-Dichloroethylene	7.68	7.86	0.977	ok	0.978	0.918-1.038
cis-1,3-Dichloropropene	11.91	10.02	1.189	ok	1.189	1.129-1.249
m-Dichlorobenzene	19.97	15.52	1.287	ok	1.287	1.227-1.347
o-Dichlorobenzene	20.54	15.52	1.323	ok	1.324	1.264-1.384
p-Dichlorobenzene	20.07	15.52	1.293	ok	1.293	1.233-1.353
trans-1,3-Dichloropropene	12.59	10.02	1.256	ok	1.257	1.197-1.317
Di-Isopropyl ether	7.90	7.86	1.005	ok	1.007	0.947-1.067
2,3-Dimethylpentane	10.18	10.02	1.016	ok	1.016	0.956-1.076
2,4-Dimethylpentane	8.85	7.86	1.126	ok	1.127	1.067-1.187
Ethanol	4.59	7.86	0.584	ok	0.585	0.525-0.645
Ethylbenzene	16.14	15.52	1.040	ok	1.040	0.980-1.100
Ethyl Acetate	7.93	7.86	1.009	ok	1.013	0.953-1.073
Ethyl Acrylate	10.59	10.02	1.057	ok	1.059	0.999-1.119
4-Ethyltoluene	19.04	15.52	1.227	ok	1.227	1.167-1.287
Freon 113	5.99	7.86	0.762	ok	0.763	0.703-0.823
Freon 114	3.96	7.86	0.504	ok	0.504	0.444-0.564
Freon 123	4.88	7.86	0.621	ok	0.622	0.562-0.682
Freon 123A	4.92	7.86	0.626	ok	0.627	0.567-0.687
Freon 142B	3.86	7.86	0.491	ok	0.493	0.433-0.553
Freon 152A	3.65	7.86	0.464	ok	0.465	0.405-0.525
Heptane	11.21	10.02	1.119	ok	1.119	1.059-1.179
Hexachlorobutadiene	23.48	15.52	1.513	ok	1.513	1.453-1.573
Hexachloroethane	21.45	15.52	1.382	ok	1.382	1.322-1.442
Hexane	7.89	7.86	1.004	ok	1.005	0.945-1.065
2-Hexanone	13.54	15.52	0.872	ok	0.874	0.814-0.934
Iodomethane	5.58	7.86	0.710	ok	0.711	0.651-0.771
Isopropylbenzene	17.99	15.52	1.159	ok	1.159	1.099-1.219
Isopropyl Alcohol	5.17	7.86	0.658	ok	0.662	0.602-0.722
p-Isopropyltoluene	20.40	15.52	1.314	ok	1.314	1.254-1.374
Methylene chloride	5.76	7.86	0.733	ok	0.733	0.673-0.793
Methyl ethyl ketone	7.24	7.86	0.921	ok	0.925	0.865-0.985
Methyl Isobutyl Ketone	11.97	10.02	1.195	ok	1.198	1.138-1.258
Methyl Tert Butyl Ether	6.89	7.86	0.877	ok	0.880	0.820-0.940
Methylmethacrylate	11.12	10.02	1.110	ok	1.112	1.052-1.172
Naphthalene	23.00	15.52	1.482	ok	1.482	1.422-1.542
Nonane	17.48	15.52	1.126	ok	1.126	1.066-1.186
Octane	14.50	15.52	0.934	ok	0.934	0.874-0.994
Pentane	5.39	7.86	0.686	ok	0.687	0.627-0.747
n-Propylbenzene	18.80	15.52	1.211	ok	1.212	1.152-1.272

Initial Calibration Retention Time/Internal Standard Area Summary

Job Number: JD70271
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample Number	Lab File ID	Injected	By	Level	Inst ID	Method	
V5W2072-IC2072	5W50501.D	06/09/23 21:21	TCH	0.04	GCMS5W	TO-15	
V5W2072-IC2072	5W50502.D	06/09/23 22:00	TCH	0.1	GCMS5W	TO-15	
V5W2072-IC2072	5W50503.D	06/09/23 22:39	TCH	0.2	GCMS5W	TO-15	
V5W2072-IC2072	5W50504.D	06/09/23 23:17	TCH	0.5	GCMS5W	TO-15	
V5W2072-IC2072	5W50506.D	06/10/23 00:36	TCH	5	GCMS5W	TO-15	
V5W2072-ICC2072	5W50507.D	06/10/23 01:15	TCH	10	GCMS5W	TO-15	Reporting this level
V5W2072-IC2072	5W50508.D	06/10/23 01:53	TCH	20	GCMS5W	TO-15	
V5W2072-IC2072	5W50509.D	06/10/23 02:33	TCH	40	GCMS5W	TO-15	
V5W2072-IC2072	5W50510.D	06/10/23 03:14	TCH	50	GCMS5W	TO-15	

Target Compound	RT (min.)	Istd RT (min.)	Rel RT		Mean Rel RT	Rel RT Range (+ /- .06)
Propylene	3.70	7.86	0.471	ok	0.472	0.412-0.532
Styrene	16.93	15.52	1.091	ok	1.091	1.031-1.151
1,1,1-Trichloroethane	9.06	7.86	1.153	ok	1.154	1.094-1.214
1,1,1,2-Tetrachloroethane	15.57	15.52	1.003	ok	1.003	0.943-1.063
1,1,2,2-Tetrachloroethane	17.08	15.52	1.101	ok	1.101	1.041-1.161
1,1,2-Trichloroethane	12.80	10.02	1.277	ok	1.277	1.217-1.337
1,2,4-Trichlorobenzene	23.33	15.52	1.503	ok	1.503	1.443-1.563
1,2,3-Trichloropropane	17.27	15.52	1.113	ok	1.113	1.053-1.173
1,2,3-Trimethylbenzene	20.38	15.52	1.313	ok	1.313	1.253-1.373
1,2,4-Trimethylbenzene	19.78	15.52	1.274	ok	1.274	1.214-1.334
1,3,5-Trimethylbenzene	19.17	15.52	1.235	ok	1.235	1.175-1.295
2,2,4-Trimethylpentane	10.87	10.02	1.085	ok	1.085	1.025-1.145
Tertiary Butyl Alcohol	5.70	7.86	0.725	ok	0.730	0.670-0.790
Tetrachloroethylene	14.65	15.52	0.944	ok	0.944	0.884-1.004
Tetrahydrofuran	8.43	7.86	1.073	ok	1.078	1.018-1.138
Toluene	13.14	10.02	1.311	ok	1.312	1.252-1.372
Trichloroethylene	10.84	10.02	1.082	ok	1.082	1.022-1.142
Trichlorofluoromethane	5.10	7.86	0.649	ok	0.650	0.590-0.710
Vinyl chloride	4.05	7.86	0.515	ok	0.516	0.456-0.576
Vinyl Acetate	6.98	7.86	0.888	ok	0.890	0.830-0.950
m,p-Xylene	16.41	15.52	1.057	ok	1.057	0.997-1.117
o-Xylene	17.08	15.52	1.101	ok	1.100	1.040-1.160
TVHC As Equiv Pentane	5.39	15.52	0.347	ok	0.348	0.288-0.408

Internal Standard	RT (min.)		Mean RT(min.)	RT Range (+ /- 0.33)	Area		Mean Area	Area Range (+ /- 40 %)
Bromochloromethane	7.86	ok	7.86	7.53-8.19	312240	ok	317103	190262-443944
1,4-Difluorobenzene	10.02	ok	10.02	9.69-10.35	1593124	ok	1604410	962646-2246174
Chlorobenzene-D5	15.52	ok	15.52	15.19-15.85	824683	ok	840712	504427-1176997

Initial Calibration Retention Time/Internal Standard Area Summary

Job Number: JD70271
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample Number	Lab File ID	Injected	By	Level	Inst ID	Method	
V5W2072-IC2072	5W50501.D	06/09/23 21:21	TCH	0.04	GCMS5W	TO-15	
V5W2072-IC2072	5W50502.D	06/09/23 22:00	TCH	0.1	GCMS5W	TO-15	
V5W2072-IC2072	5W50503.D	06/09/23 22:39	TCH	0.2	GCMS5W	TO-15	
V5W2072-IC2072	5W50504.D	06/09/23 23:17	TCH	0.5	GCMS5W	TO-15	
V5W2072-IC2072	5W50506.D	06/10/23 00:36	TCH	5	GCMS5W	TO-15	
V5W2072-ICC2072	5W50507.D	06/10/23 01:15	TCH	10	GCMS5W	TO-15	
V5W2072-IC2072	5W50508.D	06/10/23 01:53	TCH	20	GCMS5W	TO-15	Reporting this level
V5W2072-IC2072	5W50509.D	06/10/23 02:33	TCH	40	GCMS5W	TO-15	
V5W2072-IC2072	5W50510.D	06/10/23 03:14	TCH	50	GCMS5W	TO-15	

Target Compound	RT (min.)	Istd RT (min.)	Rel RT		Mean Rel RT	Rel RT Range (+ /- .06)
Acetone (2-Propanone)	4.97	7.86	0.632	ok	0.634	0.574-0.694
Acrolein	4.87	7.86	0.620	ok	0.620	0.560-0.680
Acrylonitrile	5.37	7.86	0.683	ok	0.684	0.624-0.744
Acetonitrile	4.76	7.86	0.606	ok	0.607	0.547-0.667
1,3-Butadiene	4.16	7.86	0.529	ok	0.529	0.469-0.589
Benzene	9.59	10.02	0.957	ok	0.957	0.897-1.017
Bromobenzene	18.09	15.53	1.165	ok	1.165	1.105-1.225
Bromodichloromethane	10.80	10.02	1.078	ok	1.077	1.017-1.137
Bromoform	16.48	15.53	1.061	ok	1.061	1.001-1.121
Bromomethane	4.37	7.86	0.556	ok	0.555	0.495-0.615
Bromoethene	4.77	7.86	0.607	ok	0.606	0.546-0.666
n-Butane	4.19	7.86	0.533	ok	0.533	0.473-0.593
Benzyl Chloride	19.96	15.53	1.285	ok	1.286	1.226-1.346
n-Butylbenzene	20.98	15.53	1.351	ok	1.352	1.292-1.412
sec-Butylbenzene	20.16	15.53	1.298	ok	1.299	1.239-1.359
tert-Butylbenzene	19.76	15.53	1.272	ok	1.273	1.213-1.333
Carbon disulfide	6.04	7.86	0.768	ok	0.767	0.707-0.827
Chlorobenzene	15.59	15.53	1.004	ok	1.004	0.944-1.064
Chlorodifluoromethane	3.69	7.86	0.469	ok	0.469	0.409-0.529
Chloroethane	4.49	7.86	0.571	ok	0.571	0.511-0.631
Chlorotrifluoroethene	3.72	7.86	0.473	ok	0.473	0.413-0.533
Chloroform	8.01	7.86	1.019	ok	1.018	0.958-1.078
Chloromethane	3.89	7.86	0.495	ok	0.495	0.435-0.555
3-Chloropropene	5.87	7.86	0.747	ok	0.746	0.686-0.806
2-Chlorotoluene	18.72	15.53	1.205	ok	1.206	1.146-1.266
Carbon tetrachloride	9.76	7.86	1.242	ok	1.242	1.182-1.302
Cyclohexane	9.90	10.02	0.988	ok	0.987	0.927-1.047
1,1-Dichloroethane	6.84	7.86	0.870	ok	0.869	0.809-0.929
1,1-Dichloroethylene	5.66	7.86	0.720	ok	0.719	0.659-0.779
1,2-Dibromoethane (EDB)	14.01	15.53	0.902	ok	0.903	0.843-0.963
1,2-Dichloroethane	8.79	7.86	1.118	ok	1.119	1.059-1.179
1,2-Dichloropropane	10.55	10.02	1.053	ok	1.053	0.993-1.113
1,3-Dichloropropane	13.19	10.02	1.316	ok	1.317	1.257-1.377
1,4-Dioxane	10.86	10.02	1.084	ok	1.087	1.027-1.147
Dichlorodifluoromethane	3.77	7.86	0.480	ok	0.479	0.419-0.539
Dichlorofluoromethane	4.57	7.86	0.581	ok	0.580	0.520-0.640
Dibromochloromethane	13.70	15.53	0.882	ok	0.882	0.822-0.942
Dibromomethane	10.53	10.02	1.051	ok	1.051	0.991-1.111
trans-1,2-Dichloroethylene	6.64	7.86	0.845	ok	0.844	0.784-0.904

Initial Calibration Retention Time/Internal Standard Area Summary

Job Number: JD70271
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample Number	Lab File ID	Injected	By	Level	Inst ID	Method	
V5W2072-IC2072	5W50501.D	06/09/23 21:21	TCH	0.04	GCMS5W	TO-15	
V5W2072-IC2072	5W50502.D	06/09/23 22:00	TCH	0.1	GCMS5W	TO-15	
V5W2072-IC2072	5W50503.D	06/09/23 22:39	TCH	0.2	GCMS5W	TO-15	
V5W2072-IC2072	5W50504.D	06/09/23 23:17	TCH	0.5	GCMS5W	TO-15	
V5W2072-IC2072	5W50506.D	06/10/23 00:36	TCH	5	GCMS5W	TO-15	
V5W2072-ICC2072	5W50507.D	06/10/23 01:15	TCH	10	GCMS5W	TO-15	
V5W2072-IC2072	5W50508.D	06/10/23 01:53	TCH	20	GCMS5W	TO-15	Reporting this level
V5W2072-IC2072	5W50509.D	06/10/23 02:33	TCH	40	GCMS5W	TO-15	
V5W2072-IC2072	5W50510.D	06/10/23 03:14	TCH	50	GCMS5W	TO-15	

Target Compound	RT (min.)	Istd RT (min.)	Rel RT		Mean Rel RT	Rel RT Range (+ /- .06)
cis-1,2-Dichloroethylene	7.69	7.86	0.978	ok	0.978	0.918-1.038
cis-1,3-Dichloropropene	11.91	10.02	1.189	ok	1.189	1.129-1.249
m-Dichlorobenzene	19.97	15.53	1.286	ok	1.287	1.227-1.347
o-Dichlorobenzene	20.55	15.53	1.323	ok	1.324	1.264-1.384
p-Dichlorobenzene	20.07	15.53	1.292	ok	1.293	1.233-1.353
trans-1,3-Dichloropropene	12.59	10.02	1.256	ok	1.257	1.197-1.317
Di-Isopropyl ether	7.90	7.86	1.005	ok	1.007	0.947-1.067
2,3-Dimethylpentane	10.19	10.02	1.017	ok	1.016	0.956-1.076
2,4-Dimethylpentane	8.86	7.86	1.127	ok	1.127	1.067-1.187
Ethanol	4.59	7.86	0.584	ok	0.585	0.525-0.645
Ethylbenzene	16.14	15.53	1.039	ok	1.040	0.980-1.100
Ethyl Acetate	7.94	7.86	1.010	ok	1.013	0.953-1.073
Ethyl Acrylate	10.60	10.02	1.058	ok	1.059	0.999-1.119
4-Ethyltoluene	19.04	15.53	1.226	ok	1.227	1.167-1.287
Freon 113	6.00	7.86	0.763	ok	0.763	0.703-0.823
Freon 114	3.96	7.86	0.504	ok	0.504	0.444-0.564
Freon 123	4.89	7.86	0.622	ok	0.622	0.562-0.682
Freon 123A	4.93	7.86	0.627	ok	0.627	0.567-0.687
Freon 142B	3.88	7.86	0.494	ok	0.493	0.433-0.553
Freon 152A	3.66	7.86	0.466	ok	0.465	0.405-0.525
Heptane	11.22	10.02	1.120	ok	1.119	1.059-1.179
Hexachlorobutadiene	23.48	15.53	1.512	ok	1.513	1.453-1.573
Hexachloroethane	21.45	15.53	1.381	ok	1.382	1.322-1.442
Hexane	7.90	7.86	1.005	ok	1.005	0.945-1.065
2-Hexanone	13.54	15.53	0.872	ok	0.874	0.814-0.934
Iodomethane	5.59	7.86	0.711	ok	0.711	0.651-0.771
Isopropylbenzene	17.99	15.53	1.158	ok	1.159	1.099-1.219
Isopropyl Alcohol	5.18	7.86	0.659	ok	0.662	0.602-0.722
p-Isopropyltoluene	20.40	15.53	1.314	ok	1.314	1.254-1.374
Methylene chloride	5.77	7.86	0.734	ok	0.733	0.673-0.793
Methyl ethyl ketone	7.24	7.86	0.921	ok	0.925	0.865-0.985
Methyl Isobutyl Ketone	11.98	10.02	1.196	ok	1.198	1.138-1.258
Methyl Tert Butyl Ether	6.89	7.86	0.877	ok	0.880	0.820-0.940
Methylmethacrylate	11.13	10.02	1.111	ok	1.112	1.052-1.172
Naphthalene	23.00	15.53	1.481	ok	1.482	1.422-1.542
Nonane	17.48	15.53	1.126	ok	1.126	1.066-1.186
Octane	14.50	15.53	0.934	ok	0.934	0.874-0.994
Pentane	5.40	7.86	0.687	ok	0.687	0.627-0.747
n-Propylbenzene	18.81	15.53	1.211	ok	1.212	1.152-1.272

Initial Calibration Retention Time/Internal Standard Area Summary

Job Number: JD70271
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample Number	Lab File ID	Injected	By	Level	Inst ID	Method	
V5W2072-IC2072	5W50501.D	06/09/23 21:21	TCH	0.04	GCMS5W	TO-15	
V5W2072-IC2072	5W50502.D	06/09/23 22:00	TCH	0.1	GCMS5W	TO-15	
V5W2072-IC2072	5W50503.D	06/09/23 22:39	TCH	0.2	GCMS5W	TO-15	
V5W2072-IC2072	5W50504.D	06/09/23 23:17	TCH	0.5	GCMS5W	TO-15	
V5W2072-IC2072	5W50506.D	06/10/23 00:36	TCH	5	GCMS5W	TO-15	
V5W2072-ICC2072	5W50507.D	06/10/23 01:15	TCH	10	GCMS5W	TO-15	
V5W2072-IC2072	5W50508.D	06/10/23 01:53	TCH	20	GCMS5W	TO-15	Reporting this level
V5W2072-IC2072	5W50509.D	06/10/23 02:33	TCH	40	GCMS5W	TO-15	
V5W2072-IC2072	5W50510.D	06/10/23 03:14	TCH	50	GCMS5W	TO-15	

Target Compound	RT (min.)	Istd RT (min.)	Rel RT		Mean Rel RT	Rel RT Range (+ /- .06)
Propylene	3.71	7.86	0.472	ok	0.472	0.412-0.532
Styrene	16.93	15.53	1.090	ok	1.091	1.031-1.151
1,1,1-Trichloroethane	9.07	7.86	1.154	ok	1.154	1.094-1.214
1,1,1,2-Tetrachloroethane	15.57	15.53	1.003	ok	1.003	0.943-1.063
1,1,2,2-Tetrachloroethane	17.08	15.53	1.100	ok	1.101	1.041-1.161
1,1,2-Trichloroethane	12.80	10.02	1.277	ok	1.277	1.217-1.337
1,2,4-Trichlorobenzene	23.34	15.53	1.503	ok	1.503	1.443-1.563
1,2,3-Trichloropropane	17.27	15.53	1.112	ok	1.113	1.053-1.173
1,2,3-Trimethylbenzene	20.38	15.53	1.312	ok	1.313	1.253-1.373
1,2,4-Trimethylbenzene	19.78	15.53	1.274	ok	1.274	1.214-1.334
1,3,5-Trimethylbenzene	19.17	15.53	1.234	ok	1.235	1.175-1.295
2,2,4-Trimethylpentane	10.87	10.02	1.085	ok	1.085	1.025-1.145
Tertiary Butyl Alcohol	5.70	7.86	0.725	ok	0.730	0.670-0.790
Tetrachloroethylene	14.65	15.53	0.943	ok	0.944	0.884-1.004
Tetrahydrofuran	8.43	7.86	1.073	ok	1.078	1.018-1.138
Toluene	13.15	10.02	1.312	ok	1.312	1.252-1.372
Trichloroethylene	10.84	10.02	1.082	ok	1.082	1.022-1.142
Trichlorofluoromethane	5.11	7.86	0.650	ok	0.650	0.590-0.710
Vinyl chloride	4.06	7.86	0.517	ok	0.516	0.456-0.576
Vinyl Acetate	6.99	7.86	0.889	ok	0.890	0.830-0.950
m,p-Xylene	16.41	15.53	1.057	ok	1.057	0.997-1.117
o-Xylene	17.08	15.53	1.100	ok	1.100	1.040-1.160
TVHC As Equiv Pentane	5.40	15.53	0.348	ok	0.348	0.288-0.408

Internal Standard	RT (min.)		Mean RT(min.)	RT Range (+ /- 0.33)	Area		Mean Area	Area Range (+ /- 40 %)
Bromochloromethane	7.86	ok	7.86	7.53-8.19	332167	ok	317103	190262-443944
1,4-Difluorobenzene	10.02	ok	10.02	9.69-10.35	1648637	ok	1604410	962646-2246174
Chlorobenzene-D5	15.53	ok	15.52	15.19-15.85	900027	ok	840712	504427-1176997

Initial Calibration Retention Time/Internal Standard Area Summary

Job Number: JD70271
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample Number	Lab File ID	Injected	By	Level	Inst ID	Method	
V5W2072-IC2072	5W50501.D	06/09/23 21:21	TCH	0.04	GCMS5W	TO-15	
V5W2072-IC2072	5W50502.D	06/09/23 22:00	TCH	0.1	GCMS5W	TO-15	
V5W2072-IC2072	5W50503.D	06/09/23 22:39	TCH	0.2	GCMS5W	TO-15	
V5W2072-IC2072	5W50504.D	06/09/23 23:17	TCH	0.5	GCMS5W	TO-15	
V5W2072-IC2072	5W50506.D	06/10/23 00:36	TCH	5	GCMS5W	TO-15	
V5W2072-ICC2072	5W50507.D	06/10/23 01:15	TCH	10	GCMS5W	TO-15	
V5W2072-IC2072	5W50508.D	06/10/23 01:53	TCH	20	GCMS5W	TO-15	
V5W2072-IC2072	5W50509.D	06/10/23 02:33	TCH	40	GCMS5W	TO-15	Reporting this level
V5W2072-IC2072	5W50510.D	06/10/23 03:14	TCH	50	GCMS5W	TO-15	

Target Compound	RT (min.)	Istd RT (min.)	Rel RT		Mean Rel RT	Rel RT Range (+ /- .06)
Acetone (2-Propanone)	4.97	7.86	0.632	ok	0.634	0.574-0.694
Acrolein	4.86	7.86	0.618	ok	0.620	0.560-0.680
Acrylonitrile	5.36	7.86	0.682	ok	0.684	0.624-0.744
Acetonitrile	4.76	7.86	0.606	ok	0.607	0.547-0.667
1,3-Butadiene	4.15	7.86	0.528	ok	0.529	0.469-0.589
Benzene	9.60	10.03	0.957	ok	0.957	0.897-1.017
Bromobenzene	18.09	15.53	1.165	ok	1.165	1.105-1.225
Bromodichloromethane	10.80	10.03	1.077	ok	1.077	1.017-1.137
Bromoform	16.48	15.53	1.061	ok	1.061	1.001-1.121
Bromomethane	4.37	7.86	0.556	ok	0.555	0.495-0.615
Bromoethene	4.77	7.86	0.607	ok	0.606	0.546-0.666
n-Butane	4.19	7.86	0.533	ok	0.533	0.473-0.593
Benzyl Chloride	19.97	15.53	1.286	ok	1.286	1.226-1.346
n-Butylbenzene	20.99	15.53	1.352	ok	1.352	1.292-1.412
sec-Butylbenzene	20.16	15.53	1.298	ok	1.299	1.239-1.359
tert-Butylbenzene	19.77	15.53	1.273	ok	1.273	1.213-1.333
Carbon disulfide	6.03	7.86	0.767	ok	0.767	0.707-0.827
Chlorobenzene	15.60	15.53	1.005	ok	1.004	0.944-1.064
Chlorodifluoromethane	3.69	7.86	0.469	ok	0.469	0.409-0.529
Chloroethane	4.49	7.86	0.571	ok	0.571	0.511-0.631
Chlorotrifluoroethene	3.72	7.86	0.473	ok	0.473	0.413-0.533
Chloroform	8.01	7.86	1.019	ok	1.018	0.958-1.078
Chloromethane	3.89	7.86	0.495	ok	0.495	0.435-0.555
3-Chloropropene	5.86	7.86	0.746	ok	0.746	0.686-0.806
2-Chlorotoluene	18.73	15.53	1.206	ok	1.206	1.146-1.266
Carbon tetrachloride	9.76	7.86	1.242	ok	1.242	1.182-1.302
Cyclohexane	9.90	10.03	0.987	ok	0.987	0.927-1.047
1,1-Dichloroethane	6.83	7.86	0.869	ok	0.869	0.809-0.929
1,1-Dichloroethylene	5.65	7.86	0.719	ok	0.719	0.659-0.779
1,2-Dibromoethane (EDB)	14.02	15.53	0.903	ok	0.903	0.843-0.963
1,2-Dichloroethane	8.80	7.86	1.120	ok	1.119	1.059-1.179
1,2-Dichloropropane	10.56	10.03	1.053	ok	1.053	0.993-1.113
1,3-Dichloropropane	13.19	10.03	1.315	ok	1.317	1.257-1.377
1,4-Dioxane	10.86	10.03	1.083	ok	1.087	1.027-1.147
Dichlorodifluoromethane	3.77	7.86	0.480	ok	0.479	0.419-0.539
Dichlorofluoromethane	4.56	7.86	0.580	ok	0.580	0.520-0.640
Dibromochloromethane	13.70	15.53	0.882	ok	0.882	0.822-0.942
Dibromomethane	10.53	10.03	1.050	ok	1.051	0.991-1.111
trans-1,2-Dichloroethylene	6.64	7.86	0.845	ok	0.844	0.784-0.904

Initial Calibration Retention Time/Internal Standard Area Summary

Job Number: JD70271
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample Number	Lab File ID	Injected	By	Level	Inst ID	Method	
V5W2072-IC2072	5W50501.D	06/09/23 21:21	TCH	0.04	GCMS5W	TO-15	
V5W2072-IC2072	5W50502.D	06/09/23 22:00	TCH	0.1	GCMS5W	TO-15	
V5W2072-IC2072	5W50503.D	06/09/23 22:39	TCH	0.2	GCMS5W	TO-15	
V5W2072-IC2072	5W50504.D	06/09/23 23:17	TCH	0.5	GCMS5W	TO-15	
V5W2072-IC2072	5W50506.D	06/10/23 00:36	TCH	5	GCMS5W	TO-15	
V5W2072-ICC2072	5W50507.D	06/10/23 01:15	TCH	10	GCMS5W	TO-15	
V5W2072-IC2072	5W50508.D	06/10/23 01:53	TCH	20	GCMS5W	TO-15	
V5W2072-IC2072	5W50509.D	06/10/23 02:33	TCH	40	GCMS5W	TO-15	Reporting this level
V5W2072-IC2072	5W50510.D	06/10/23 03:14	TCH	50	GCMS5W	TO-15	

Target Compound	RT (min.)	Istd RT (min.)	Rel RT		Mean Rel RT	Rel RT Range (+ /- .06)
cis-1,2-Dichloroethylene	7.69	7.86	0.978	ok	0.978	0.918-1.038
cis-1,3-Dichloropropene	11.92	10.03	1.188	ok	1.189	1.129-1.249
m-Dichlorobenzene	19.97	15.53	1.286	ok	1.287	1.227-1.347
o-Dichlorobenzene	20.55	15.53	1.323	ok	1.324	1.264-1.384
p-Dichlorobenzene	20.08	15.53	1.293	ok	1.293	1.233-1.353
trans-1,3-Dichloropropene	12.59	10.03	1.255	ok	1.257	1.197-1.317
Di-Isopropyl ether	7.90	7.86	1.005	ok	1.007	0.947-1.067
2,3-Dimethylpentane	10.19	10.03	1.016	ok	1.016	0.956-1.076
2,4-Dimethylpentane	8.86	7.86	1.127	ok	1.127	1.067-1.187
Ethanol	4.59	7.86	0.584	ok	0.585	0.525-0.645
Ethylbenzene	16.14	15.53	1.039	ok	1.040	0.980-1.100
Ethyl Acetate	7.94	7.86	1.010	ok	1.013	0.953-1.073
Ethyl Acrylate	10.60	10.03	1.057	ok	1.059	0.999-1.119
4-Ethyltoluene	19.05	15.53	1.227	ok	1.227	1.167-1.287
Freon 113	5.99	7.86	0.762	ok	0.763	0.703-0.823
Freon 114	3.96	7.86	0.504	ok	0.504	0.444-0.564
Freon 123	4.89	7.86	0.622	ok	0.622	0.562-0.682
Freon 123A	4.93	7.86	0.627	ok	0.627	0.567-0.687
Freon 142B	3.87	7.86	0.492	ok	0.493	0.433-0.553
Freon 152A	3.66	7.86	0.466	ok	0.465	0.405-0.525
Heptane	11.22	10.03	1.119	ok	1.119	1.059-1.179
Hexachlorobutadiene	23.48	15.53	1.512	ok	1.513	1.453-1.573
Hexachloroethane	21.45	15.53	1.381	ok	1.382	1.322-1.442
Hexane	7.90	7.86	1.005	ok	1.005	0.945-1.065
2-Hexanone	13.54	15.53	0.872	ok	0.874	0.814-0.934
Iodomethane	5.59	7.86	0.711	ok	0.711	0.651-0.771
Isopropylbenzene	18.00	15.53	1.159	ok	1.159	1.099-1.219
Isopropyl Alcohol	5.18	7.86	0.659	ok	0.662	0.602-0.722
p-Isopropyltoluene	20.41	15.53	1.314	ok	1.314	1.254-1.374
Methylene chloride	5.77	7.86	0.734	ok	0.733	0.673-0.793
Methyl ethyl ketone	7.23	7.86	0.920	ok	0.925	0.865-0.985
Methyl Isobutyl Ketone	11.98	10.03	1.194	ok	1.198	1.138-1.258
Methyl Tert Butyl Ether	6.89	7.86	0.877	ok	0.880	0.820-0.940
Methylmethacrylate	11.13	10.03	1.110	ok	1.112	1.052-1.172
Naphthalene	23.01	15.53	1.482	ok	1.482	1.422-1.542
Nonane	17.49	15.53	1.126	ok	1.126	1.066-1.186
Octane	14.51	15.53	0.934	ok	0.934	0.874-0.994
Pentane	5.40	7.86	0.687	ok	0.687	0.627-0.747
n-Propylbenzene	18.81	15.53	1.211	ok	1.212	1.152-1.272

Initial Calibration Retention Time/Internal Standard Area Summary

Job Number: JD70271
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample Number	Lab File ID	Injected	By	Level	Inst ID	Method	
V5W2072-IC2072	5W50501.D	06/09/23 21:21	TCH	0.04	GCMS5W	TO-15	
V5W2072-IC2072	5W50502.D	06/09/23 22:00	TCH	0.1	GCMS5W	TO-15	
V5W2072-IC2072	5W50503.D	06/09/23 22:39	TCH	0.2	GCMS5W	TO-15	
V5W2072-IC2072	5W50504.D	06/09/23 23:17	TCH	0.5	GCMS5W	TO-15	
V5W2072-IC2072	5W50506.D	06/10/23 00:36	TCH	5	GCMS5W	TO-15	
V5W2072-ICC2072	5W50507.D	06/10/23 01:15	TCH	10	GCMS5W	TO-15	
V5W2072-IC2072	5W50508.D	06/10/23 01:53	TCH	20	GCMS5W	TO-15	
V5W2072-IC2072	5W50509.D	06/10/23 02:33	TCH	40	GCMS5W	TO-15	Reporting this level
V5W2072-IC2072	5W50510.D	06/10/23 03:14	TCH	50	GCMS5W	TO-15	

Target Compound	RT (min.)	Istd RT (min.)	Rel RT		Mean Rel RT	Rel RT Range (+ /- .06)
Propylene	3.71	7.86	0.472	ok	0.472	0.412-0.532
Styrene	16.93	15.53	1.090	ok	1.091	1.031-1.151
1,1,1-Trichloroethane	9.07	7.86	1.154	ok	1.154	1.094-1.214
1,1,1,2-Tetrachloroethane	15.57	15.53	1.003	ok	1.003	0.943-1.063
1,1,2,2-Tetrachloroethane	17.09	15.53	1.100	ok	1.101	1.041-1.161
1,1,2-Trichloroethane	12.80	10.03	1.276	ok	1.277	1.217-1.337
1,2,4-Trichlorobenzene	23.34	15.53	1.503	ok	1.503	1.443-1.563
1,2,3-Trichloropropane	17.28	15.53	1.113	ok	1.113	1.053-1.173
1,2,3-Trimethylbenzene	20.38	15.53	1.312	ok	1.313	1.253-1.373
1,2,4-Trimethylbenzene	19.78	15.53	1.274	ok	1.274	1.214-1.334
1,3,5-Trimethylbenzene	19.18	15.53	1.235	ok	1.235	1.175-1.295
2,2,4-Trimethylpentane	10.87	10.03	1.084	ok	1.085	1.025-1.145
Tertiary Butyl Alcohol	5.70	7.86	0.725	ok	0.730	0.670-0.790
Tetrachloroethylene	14.66	15.53	0.944	ok	0.944	0.884-1.004
Tetrahydrofuran	8.43	7.86	1.073	ok	1.078	1.018-1.138
Toluene	13.15	10.03	1.311	ok	1.312	1.252-1.372
Trichloroethylene	10.84	10.03	1.081	ok	1.082	1.022-1.142
Trichlorofluoromethane	5.11	7.86	0.650	ok	0.650	0.590-0.710
Vinyl chloride	4.05	7.86	0.515	ok	0.516	0.456-0.576
Vinyl Acetate	6.99	7.86	0.889	ok	0.890	0.830-0.950
m,p-Xylene	16.42	15.53	1.057	ok	1.057	0.997-1.117
o-Xylene	17.08	15.53	1.100	ok	1.100	1.040-1.160
TVHC As Equiv Pentane	5.40	15.53	0.348	ok	0.348	0.288-0.408

Internal Standard	RT (min.)		Mean RT(min.)	RT Range (+ /- 0.33)	Area		Mean Area	Area Range (+ /- 40 %)
Bromochloromethane	7.86	ok	7.86	7.53-8.19	355428	ok	317103	190262-443944
1,4-Difluorobenzene	10.03	ok	10.02	9.69-10.35	1722815	ok	1604410	962646-2246174
Chlorobenzene-D5	15.53	ok	15.52	15.19-15.85	1054145	ok	840712	504427-1176997

Initial Calibration Retention Time/Internal Standard Area Summary

Job Number: JD70271
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample Number	Lab File ID	Injected	By	Level	Inst ID	Method	
V5W2072-IC2072	5W50501.D	06/09/23 21:21	TCH	0.04	GCMS5W	TO-15	
V5W2072-IC2072	5W50502.D	06/09/23 22:00	TCH	0.1	GCMS5W	TO-15	
V5W2072-IC2072	5W50503.D	06/09/23 22:39	TCH	0.2	GCMS5W	TO-15	
V5W2072-IC2072	5W50504.D	06/09/23 23:17	TCH	0.5	GCMS5W	TO-15	
V5W2072-IC2072	5W50506.D	06/10/23 00:36	TCH	5	GCMS5W	TO-15	
V5W2072-ICC2072	5W50507.D	06/10/23 01:15	TCH	10	GCMS5W	TO-15	
V5W2072-IC2072	5W50508.D	06/10/23 01:53	TCH	20	GCMS5W	TO-15	
V5W2072-IC2072	5W50509.D	06/10/23 02:33	TCH	40	GCMS5W	TO-15	
V5W2072-IC2072	5W50510.D	06/10/23 03:14	TCH	50	GCMS5W	TO-15	Reporting this level

Target Compound	RT (min.)	Istd RT (min.)	Rel RT		Mean Rel RT	Rel RT Range (+ /- .06)
Acetone (2-Propanone)	4.97	7.86	0.632	ok	0.634	0.574-0.694
Acrolein	4.86	7.86	0.618	ok	0.620	0.560-0.680
Acrylonitrile	5.36	7.86	0.682	ok	0.684	0.624-0.744
Acetonitrile	4.76	7.86	0.606	ok	0.607	0.547-0.667
1,3-Butadiene	4.15	7.86	0.528	ok	0.529	0.469-0.589
Benzene	9.60	10.03	0.957	ok	0.957	0.897-1.017
Bromobenzene	18.09	15.53	1.165	ok	1.165	1.105-1.225
Bromodichloromethane	10.80	10.03	1.077	ok	1.077	1.017-1.137
Bromoform	16.48	15.53	1.061	ok	1.061	1.001-1.121
Bromomethane	4.36	7.86	0.555	ok	0.555	0.495-0.615
Bromoethene	4.76	7.86	0.606	ok	0.606	0.546-0.666
n-Butane	4.19	7.86	0.533	ok	0.533	0.473-0.593
Benzyl Chloride	19.97	15.53	1.286	ok	1.286	1.226-1.346
n-Butylbenzene	20.99	15.53	1.352	ok	1.352	1.292-1.412
sec-Butylbenzene	20.17	15.53	1.299	ok	1.299	1.239-1.359
tert-Butylbenzene	19.77	15.53	1.273	ok	1.273	1.213-1.333
Carbon disulfide	6.03	7.86	0.767	ok	0.767	0.707-0.827
Chlorobenzene	15.60	15.53	1.005	ok	1.004	0.944-1.064
Chlorodifluoromethane	3.69	7.86	0.469	ok	0.469	0.409-0.529
Chloroethane	4.49	7.86	0.571	ok	0.571	0.511-0.631
Chlorotrifluoroethene	3.72	7.86	0.473	ok	0.473	0.413-0.533
Chloroform	8.01	7.86	1.019	ok	1.018	0.958-1.078
Chloromethane	3.89	7.86	0.495	ok	0.495	0.435-0.555
3-Chloropropene	5.86	7.86	0.746	ok	0.746	0.686-0.806
2-Chlorotoluene	18.73	15.53	1.206	ok	1.206	1.146-1.266
Carbon tetrachloride	9.76	7.86	1.242	ok	1.242	1.182-1.302
Cyclohexane	9.90	10.03	0.987	ok	0.987	0.927-1.047
1,1-Dichloroethane	6.84	7.86	0.870	ok	0.869	0.809-0.929
1,1-Dichloroethylene	5.65	7.86	0.719	ok	0.719	0.659-0.779
1,2-Dibromoethane (EDB)	14.02	15.53	0.903	ok	0.903	0.843-0.963
1,2-Dichloroethane	8.80	7.86	1.120	ok	1.119	1.059-1.179
1,2-Dichloropropane	10.56	10.03	1.053	ok	1.053	0.993-1.113
1,3-Dichloropropane	13.20	10.03	1.316	ok	1.317	1.257-1.377
1,4-Dioxane	10.86	10.03	1.083	ok	1.087	1.027-1.147
Dichlorodifluoromethane	3.77	7.86	0.480	ok	0.479	0.419-0.539
Dichlorofluoromethane	4.56	7.86	0.580	ok	0.580	0.520-0.640
Dibromochloromethane	13.70	15.53	0.882	ok	0.882	0.822-0.942
Dibromomethane	10.53	10.03	1.050	ok	1.051	0.991-1.111
trans-1,2-Dichloroethylene	6.64	7.86	0.845	ok	0.844	0.784-0.904

Initial Calibration Retention Time/Internal Standard Area Summary

Job Number: JD70271
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample Number	Lab File ID	Injected	By	Level	Inst ID	Method	
V5W2072-IC2072	5W50501.D	06/09/23 21:21	TCH	0.04	GCMS5W	TO-15	
V5W2072-IC2072	5W50502.D	06/09/23 22:00	TCH	0.1	GCMS5W	TO-15	
V5W2072-IC2072	5W50503.D	06/09/23 22:39	TCH	0.2	GCMS5W	TO-15	
V5W2072-IC2072	5W50504.D	06/09/23 23:17	TCH	0.5	GCMS5W	TO-15	
V5W2072-IC2072	5W50506.D	06/10/23 00:36	TCH	5	GCMS5W	TO-15	
V5W2072-ICC2072	5W50507.D	06/10/23 01:15	TCH	10	GCMS5W	TO-15	
V5W2072-IC2072	5W50508.D	06/10/23 01:53	TCH	20	GCMS5W	TO-15	
V5W2072-IC2072	5W50509.D	06/10/23 02:33	TCH	40	GCMS5W	TO-15	
V5W2072-IC2072	5W50510.D	06/10/23 03:14	TCH	50	GCMS5W	TO-15	Reporting this level

Target Compound	RT (min.)	Istd RT (min.)	Rel RT		Mean Rel RT	Rel RT Range (+ /- .06)
cis-1,2-Dichloroethylene	7.69	7.86	0.978	ok	0.978	0.918-1.038
cis-1,3-Dichloropropene	11.92	10.03	1.188	ok	1.189	1.129-1.249
m-Dichlorobenzene	19.98	15.53	1.287	ok	1.287	1.227-1.347
o-Dichlorobenzene	20.55	15.53	1.323	ok	1.324	1.264-1.384
p-Dichlorobenzene	20.08	15.53	1.293	ok	1.293	1.233-1.353
trans-1,3-Dichloropropene	12.59	10.03	1.255	ok	1.257	1.197-1.317
Di-Isopropyl ether	7.90	7.86	1.005	ok	1.007	0.947-1.067
2,3-Dimethylpentane	10.19	10.03	1.016	ok	1.016	0.956-1.076
2,4-Dimethylpentane	8.86	7.86	1.127	ok	1.127	1.067-1.187
Ethanol	4.59	7.86	0.584	ok	0.585	0.525-0.645
Ethylbenzene	16.14	15.53	1.039	ok	1.040	0.980-1.100
Ethyl Acetate	7.94	7.86	1.010	ok	1.013	0.953-1.073
Ethyl Acrylate	10.60	10.03	1.057	ok	1.059	0.999-1.119
4-Ethyltoluene	19.05	15.53	1.227	ok	1.227	1.167-1.287
Freon 113	5.99	7.86	0.762	ok	0.763	0.703-0.823
Freon 114	3.96	7.86	0.504	ok	0.504	0.444-0.564
Freon 115	4.17	7.86	0.531	ok	0.531	0.471-0.591
Freon 123	4.89	7.86	0.622	ok	0.622	0.562-0.682
Freon 123A	4.93	7.86	0.627	ok	0.627	0.567-0.687
Freon 142B	3.87	7.86	0.492	ok	0.493	0.433-0.553
Freon 152A	3.65	7.86	0.464	ok	0.465	0.405-0.525
Heptane	11.22	10.03	1.119	ok	1.119	1.059-1.179
Hexachlorobutadiene	23.48	15.53	1.512	ok	1.513	1.453-1.573
Hexachloroethane	21.45	15.53	1.381	ok	1.382	1.322-1.442
Hexane	7.90	7.86	1.005	ok	1.005	0.945-1.065
2-Hexanone	13.54	15.53	0.872	ok	0.874	0.814-0.934
Iodomethane	5.59	7.86	0.711	ok	0.711	0.651-0.771
Isopropylbenzene	18.00	15.53	1.159	ok	1.159	1.099-1.219
Isopropyl Alcohol	5.18	7.86	0.659	ok	0.662	0.602-0.722
p-Isopropyltoluene	20.41	15.53	1.314	ok	1.314	1.254-1.374
Methylene chloride	5.76	7.86	0.733	ok	0.733	0.673-0.793
Methyl ethyl ketone	7.23	7.86	0.920	ok	0.925	0.865-0.985
Methyl Isobutyl Ketone	11.98	10.03	1.194	ok	1.198	1.138-1.258
Methyl Tert Butyl Ether	6.89	7.86	0.877	ok	0.880	0.820-0.940
Methylmethacrylate	11.13	10.03	1.110	ok	1.112	1.052-1.172
Naphthalene	23.00	15.53	1.481	ok	1.482	1.422-1.542
Nonane	17.49	15.53	1.126	ok	1.126	1.066-1.186
Octane	14.51	15.53	0.934	ok	0.934	0.874-0.994
Pentane	5.40	7.86	0.687	ok	0.687	0.627-0.747

Initial Calibration Retention Time/Internal Standard Area Summary

Job Number: JD70271
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample Number	Lab File ID	Injected	By	Level	Inst ID	Method	
V5W2072-IC2072	5W50501.D	06/09/23 21:21	TCH	0.04	GCMS5W	TO-15	
V5W2072-IC2072	5W50502.D	06/09/23 22:00	TCH	0.1	GCMS5W	TO-15	
V5W2072-IC2072	5W50503.D	06/09/23 22:39	TCH	0.2	GCMS5W	TO-15	
V5W2072-IC2072	5W50504.D	06/09/23 23:17	TCH	0.5	GCMS5W	TO-15	
V5W2072-IC2072	5W50506.D	06/10/23 00:36	TCH	5	GCMS5W	TO-15	
V5W2072-ICC2072	5W50507.D	06/10/23 01:15	TCH	10	GCMS5W	TO-15	
V5W2072-IC2072	5W50508.D	06/10/23 01:53	TCH	20	GCMS5W	TO-15	
V5W2072-IC2072	5W50509.D	06/10/23 02:33	TCH	40	GCMS5W	TO-15	
V5W2072-IC2072	5W50510.D	06/10/23 03:14	TCH	50	GCMS5W	TO-15	Reporting this level

Target Compound	RT (min.)	Istd RT (min.)	Rel RT		Mean Rel RT	Rel RT Range (+ /- .06)
n-Propylbenzene	18.82	15.53	1.212	ok	1.212	1.152-1.272
Propylene	3.71	7.86	0.472	ok	0.472	0.412-0.532
Styrene	16.94	15.53	1.091	ok	1.091	1.031-1.151
1,1,1-Trichloroethane	9.07	7.86	1.154	ok	1.154	1.094-1.214
1,1,1,2-Tetrachloroethane	15.58	15.53	1.003	ok	1.003	0.943-1.063
1,1,2,2-Tetrachloroethane	17.09	15.53	1.100	ok	1.101	1.041-1.161
1,1,2-Trichloroethane	12.80	10.03	1.276	ok	1.277	1.217-1.337
1,2,4-Trichlorobenzene	23.34	15.53	1.503	ok	1.503	1.443-1.563
1,2,3-Trichloropropane	17.28	15.53	1.113	ok	1.113	1.053-1.173
1,2,3-Trimethylbenzene	20.38	15.53	1.312	ok	1.313	1.253-1.373
1,2,4-Trimethylbenzene	19.79	15.53	1.274	ok	1.274	1.214-1.334
1,3,5-Trimethylbenzene	19.18	15.53	1.235	ok	1.235	1.175-1.295
2,2,4-Trimethylpentane	10.88	10.03	1.085	ok	1.085	1.025-1.145
Tertiary Butyl Alcohol	5.71	7.86	0.726	ok	0.730	0.670-0.790
Tetrachloroethylene	14.66	15.53	0.944	ok	0.944	0.884-1.004
Tetrahydrofuran	8.43	7.86	1.073	ok	1.078	1.018-1.138
Toluene	13.15	10.03	1.311	ok	1.312	1.252-1.372
Trichloroethylene	10.84	10.03	1.081	ok	1.082	1.022-1.142
Trichlorofluoromethane	5.11	7.86	0.650	ok	0.650	0.590-0.710
Vinyl chloride	4.05	7.86	0.515	ok	0.516	0.456-0.576
Vinyl Acetate	6.99	7.86	0.889	ok	0.890	0.830-0.950
m,p-Xylene	16.42	15.53	1.057	ok	1.057	0.997-1.117
o-Xylene	17.08	15.53	1.100	ok	1.100	1.040-1.160
TVHC As Equiv Pentane	5.39	15.53	0.347	ok	0.348	0.288-0.408

Internal Standard	RT (min.)		Mean RT(min.)	RT Range (+ /- 0.33)	Area		Mean Area	Area Range (+ /- 40 %)
Bromochloromethane	7.86	ok	7.86	7.53-8.19	359415	ok	317103	190262-443944
1,4-Difluorobenzene	10.03	ok	10.02	9.69-10.35	1705259	ok	1604410	962646-2246174
Chlorobenzene-D5	15.53	ok	15.52	15.19-15.85	1092253	ok	840712	504427-1176997

Initial Calibration Retention Time/Internal Standard Area Summary

Job Number: JD70271
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample Number	Lab File ID	Injected	By	Level	Inst ID	Method	
V7W109-IC0109	7W02635.D	08/03/23 18:19	TCH	0.04	GCMS7W	TO-15	Reporting this level
V7W109-IC0109	7W02636.D	08/03/23 18:50	TCH	0.1	GCMS7W	TO-15	
V7W109-IC0109	7W02637.D	08/03/23 19:25	TCH	0.2	GCMS7W	TO-15	
V7W109-IC0109	7W02638.D	08/03/23 20:02	TCH	0.5	GCMS7W	TO-15	
V7W109-IC0109	7W02640.D	08/03/23 21:09	TCH	5	GCMS7W	TO-15	
V7W109-ICC0109	7W02641.D	08/03/23 21:44	TCH	10	GCMS7W	TO-15	
V7W109-IC0109	7W02642.D	08/03/23 22:21	TCH	20	GCMS7W	TO-15	
V7W109-IC0109	7W02643.D	08/03/23 23:00	TCH	40	GCMS7W	TO-15	
V7W109-IC0109	7W02644.D	08/03/23 23:42	TCH	50	GCMS7W	TO-15	

Target Compound	RT (min.)	Istd RT (min.)	Rel RT		Mean Rel RT	Rel RT Range (+ /- .06)
Benzene	4.45	3.44	1.294	ok	1.294	1.234-1.354
Bromobenzene	14.30	10.53	1.358	ok	1.357	1.297-1.417
n-Butane	1.95	3.44	0.567	ok	0.567	0.507-0.627
Chlorobenzene	10.61	10.53	1.008	ok	1.008	0.948-1.068
Chloromethane	1.83	3.44	0.532	ok	0.532	0.472-0.592
1,1-Dichloroethane	2.98	3.44	0.866	ok	0.866	0.806-0.926
1,2-Dichloroethane	3.95	3.44	1.148	ok	1.150	1.090-1.210
1,2-Dichloropropane	5.15	4.79	1.075	ok	1.075	1.015-1.135
1,3-Dichloropropane	7.66	4.79	1.599	ok	1.600	1.540-1.660
Dichlorodifluoromethane	1.78	3.44	0.517	ok	0.517	0.457-0.577
Dibromochloromethane	8.14	4.79	1.699	ok	1.702	1.642-1.762
cis-1,2-Dichloroethylene	3.36	3.44	0.977	ok	0.977	0.917-1.037
cis-1,3-Dichloropropene	6.36	4.79	1.328	ok	1.328	1.268-1.388
m-Dichlorobenzene	16.82	10.53	1.597	ok	1.598	1.538-1.658
p-Dichlorobenzene	16.90	10.53	1.605	ok	1.606	1.546-1.666
2,4-Dimethylpentane	4.04	3.44	1.174	ok	1.175	1.115-1.235
Ethylbenzene	11.50	10.53	1.092	ok	1.092	1.032-1.152
Ethyl Acrylate	5.30	4.79	1.106	ok	1.102	1.042-1.162
4-Ethyltoluene	16.15	10.53	1.534	ok	1.533	1.473-1.593
Freon 114	1.86	3.44	0.541	ok	0.541	0.481-0.601
Heptane	5.80	4.79	1.211	ok	1.214	1.154-1.274
Hexane	3.50	3.44	1.017	ok	1.017	0.957-1.077
2-Hexanone	8.27	4.79	1.727	ok	1.716	1.656-1.776
Methyl Tert Butyl Ether	3.03	3.44	0.881	ok	0.878	0.818-0.938
Octane	9.52	4.79	1.987	ok	1.987	1.927-2.047
Styrene	12.67	10.53	1.203	ok	1.203	1.143-1.263
1,1,1-Trichloroethane	4.12	3.44	1.198	ok	1.200	1.140-1.260
1,1,2,2-Tetrachloroethane	12.88	10.53	1.223	ok	1.224	1.164-1.284
1,2,3-Trichloropropane	13.18	10.53	1.252	ok	1.252	1.192-1.312
1,2,3-Trimethylbenzene	17.15	10.53	1.629	ok	1.629	1.569-1.689
1,2,4-Trimethylbenzene	16.76	10.53	1.592	ok	1.593	1.533-1.653
1,3,5-Trimethylbenzene	16.30	10.53	1.548	ok	1.548	1.488-1.608
2,2,4-Trimethylpentane	5.49	4.79	1.146	ok	1.146	1.086-1.206
Tertiary Butyl Alcohol	2.57	3.44	0.747	ok	0.741	0.681-0.801
Tetrachloroethylene	9.37	4.79	1.956	ok	1.957	1.897-2.017
Toluene	7.61	4.79	1.589	ok	1.588	1.528-1.648
Trichloroethylene	5.38	4.79	1.123	ok	1.125	1.065-1.185
Vinyl chloride	1.89	3.44	0.549	ok	0.549	0.489-0.609
o-Xylene	12.87	10.53	1.222	ok	1.224	1.164-1.284

Initial Calibration Retention Time/Internal Standard Area Summary

Job Number: JD70271
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample Number	Lab File ID	Injected	By	Level	Inst ID	Method	
V7W109-IC0109	7W02635.D	08/03/23 18:19	TCH	0.04	GCMS7W	TO-15	Reporting this level
V7W109-IC0109	7W02636.D	08/03/23 18:50	TCH	0.1	GCMS7W	TO-15	
V7W109-IC0109	7W02637.D	08/03/23 19:25	TCH	0.2	GCMS7W	TO-15	
V7W109-IC0109	7W02638.D	08/03/23 20:02	TCH	0.5	GCMS7W	TO-15	
V7W109-IC0109	7W02640.D	08/03/23 21:09	TCH	5	GCMS7W	TO-15	
V7W109-ICC0109	7W02641.D	08/03/23 21:44	TCH	10	GCMS7W	TO-15	
V7W109-IC0109	7W02642.D	08/03/23 22:21	TCH	20	GCMS7W	TO-15	
V7W109-IC0109	7W02643.D	08/03/23 23:00	TCH	40	GCMS7W	TO-15	
V7W109-IC0109	7W02644.D	08/03/23 23:42	TCH	50	GCMS7W	TO-15	

Internal Standard	RT (min.)		Mean RT(min.)	RT Range (+ /- 0.33)	Area		Mean Area	Area Range (+ /- 40 %)
Bromochloromethane	3.44	ok	3.44	3.11-3.77	44128	ok	42448	25469-59427
1,4-Difluorobenzene	4.79	ok	4.79	4.46-5.12	227912	ok	216937	130162-303712
Chlorobenzene-D5	10.53	ok	10.53	10.20-10.86	201325	ok	196218	117731-274705

Initial Calibration Retention Time/Internal Standard Area Summary

Job Number: JD70271
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample Number	Lab File ID	Injected	By	Level	Inst ID	Method	
V7W109-IC0109	7W02635.D	08/03/23 18:19	TCH	0.04	GCMS7W	TO-15	
V7W109-IC0109	7W02636.D	08/03/23 18:50	TCH	0.1	GCMS7W	TO-15	Reporting this level
V7W109-IC0109	7W02637.D	08/03/23 19:25	TCH	0.2	GCMS7W	TO-15	
V7W109-IC0109	7W02638.D	08/03/23 20:02	TCH	0.5	GCMS7W	TO-15	
V7W109-IC0109	7W02640.D	08/03/23 21:09	TCH	5	GCMS7W	TO-15	
V7W109-ICC0109	7W02641.D	08/03/23 21:44	TCH	10	GCMS7W	TO-15	
V7W109-IC0109	7W02642.D	08/03/23 22:21	TCH	20	GCMS7W	TO-15	
V7W109-IC0109	7W02643.D	08/03/23 23:00	TCH	40	GCMS7W	TO-15	
V7W109-IC0109	7W02644.D	08/03/23 23:42	TCH	50	GCMS7W	TO-15	

Target Compound	RT (min.)	Istd RT (min.)	Rel RT		Mean Rel RT	Rel RT Range (+ /- .06)
Acetone (2-Propanone)	2.26	3.44	0.657	ok	0.655	0.595-0.715
Acrylonitrile	2.40	3.44	0.698	ok	0.697	0.637-0.757
Acetonitrile	2.17	3.44	0.631	ok	0.630	0.570-0.690
1,3-Butadiene	1.93	3.44	0.561	ok	0.562	0.502-0.622
Benzene	4.45	3.44	1.294	ok	1.294	1.234-1.354
Bromobenzene	14.28	10.53	1.356	ok	1.357	1.297-1.417
Bromodichloromethane	5.34	4.79	1.115	ok	1.114	1.054-1.174
Bromoform	11.74	10.53	1.115	ok	1.116	1.056-1.176
n-Butane	1.95	3.44	0.567	ok	0.567	0.507-0.627
n-Butylbenzene	17.57	10.53	1.669	ok	1.668	1.608-1.728
sec-Butylbenzene	17.04	10.53	1.618	ok	1.619	1.559-1.679
tert-Butylbenzene	16.75	10.53	1.591	ok	1.592	1.532-1.652
Carbon disulfide	2.66	3.44	0.773	ok	0.773	0.713-0.833
Chlorobenzene	10.60	10.53	1.007	ok	1.008	0.948-1.068
Chlorotrifluoroethene	1.77	3.44	0.515	ok	0.512	0.452-0.572
Chloroform	3.53	3.44	1.026	ok	1.024	0.964-1.084
Chloromethane	1.83	3.44	0.532	ok	0.532	0.472-0.592
3-Chloropropene	2.60	3.44	0.756	ok	0.756	0.696-0.816
2-Chlorotoluene	15.42	10.53	1.464	ok	1.465	1.405-1.525
Carbon tetrachloride	4.58	3.44	1.331	ok	1.328	1.268-1.388
Cyclohexane	4.68	4.79	0.977	ok	0.976	0.916-1.036
1,1-Dichloroethane	2.98	3.44	0.866	ok	0.866	0.806-0.926
1,1-Dichloroethylene	2.52	3.44	0.733	ok	0.732	0.672-0.792
1,2-Dibromoethane (EDB)	8.51	4.79	1.777	ok	1.776	1.716-1.836
1,2-Dichloroethane	3.96	3.44	1.151	ok	1.150	1.090-1.210
1,2-Dichloropropane	5.15	4.79	1.075	ok	1.075	1.015-1.135
1,3-Dichloropropane	7.66	4.79	1.599	ok	1.600	1.540-1.660
Dichlorodifluoromethane	1.78	3.44	0.517	ok	0.517	0.457-0.577
Dichlorofluoromethane	2.10	3.44	0.610	ok	0.608	0.548-0.668
Dibromochloromethane	8.16	4.79	1.704	ok	1.702	1.642-1.762
Dibromomethane	5.11	4.79	1.067	ok	1.066	1.006-1.126
trans-1,2-Dichloroethylene	2.90	3.44	0.843	ok	0.843	0.783-0.903
cis-1,2-Dichloroethylene	3.36	3.44	0.977	ok	0.977	0.917-1.037
cis-1,3-Dichloropropene	6.36	4.79	1.328	ok	1.328	1.268-1.388
m-Dichlorobenzene	16.82	10.53	1.597	ok	1.598	1.538-1.658
o-Dichlorobenzene	17.20	10.53	1.633	ok	1.634	1.574-1.694
p-Dichlorobenzene	16.91	10.53	1.606	ok	1.606	1.546-1.666
trans-1,3-Dichloropropene	7.06	4.79	1.474	ok	1.474	1.414-1.534
2,3-Dimethylpentane	4.94	4.79	1.031	ok	1.031	0.971-1.091

Initial Calibration Retention Time/Internal Standard Area Summary

Job Number: JD70271
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample Number	Lab File ID	Injected	By	Level	Inst ID	Method	
V7W109-IC0109	7W02635.D	08/03/23 18:19	TCH	0.04	GCMS7W	TO-15	
V7W109-IC0109	7W02636.D	08/03/23 18:50	TCH	0.1	GCMS7W	TO-15	Reporting this level
V7W109-IC0109	7W02637.D	08/03/23 19:25	TCH	0.2	GCMS7W	TO-15	
V7W109-IC0109	7W02638.D	08/03/23 20:02	TCH	0.5	GCMS7W	TO-15	
V7W109-IC0109	7W02640.D	08/03/23 21:09	TCH	5	GCMS7W	TO-15	
V7W109-ICC0109	7W02641.D	08/03/23 21:44	TCH	10	GCMS7W	TO-15	
V7W109-IC0109	7W02642.D	08/03/23 22:21	TCH	20	GCMS7W	TO-15	
V7W109-IC0109	7W02643.D	08/03/23 23:00	TCH	40	GCMS7W	TO-15	
V7W109-IC0109	7W02644.D	08/03/23 23:42	TCH	50	GCMS7W	TO-15	

Target Compound	RT (min.)	Istd RT (min.)	Rel RT		Mean Rel RT	Rel RT Range (+ /- .06)
2,4-Dimethylpentane	4.04	3.44	1.174	ok	1.175	1.115-1.235
Ethylbenzene	11.50	10.53	1.092	ok	1.092	1.032-1.152
Ethyl Acrylate	5.29	4.79	1.104	ok	1.102	1.042-1.162
4-Ethyltoluene	16.13	10.53	1.532	ok	1.533	1.473-1.593
Freon 113	2.65	3.44	0.770	ok	0.771	0.711-0.831
Freon 114	1.86	3.44	0.541	ok	0.541	0.481-0.601
Freon 123	2.22	3.44	0.645	ok	0.645	0.585-0.705
Freon 123A	2.25	3.44	0.654	ok	0.651	0.591-0.711
Freon 142B	1.82	3.44	0.529	ok	0.529	0.469-0.589
Heptane	5.82	4.79	1.215	ok	1.214	1.154-1.274
Hexachlorobutadiene	18.78	10.53	1.783	ok	1.784	1.724-1.844
Hexachloroethane	17.74	10.53	1.685	ok	1.685	1.625-1.745
Hexane	3.50	3.44	1.017	ok	1.017	0.957-1.077
2-Hexanone	8.25	4.79	1.722	ok	1.716	1.656-1.776
Iodomethane	2.49	3.44	0.724	ok	0.724	0.664-0.784
Isopropylbenzene	14.42	10.53	1.369	ok	1.369	1.309-1.429
Isopropyl Alcohol	2.35	3.44	0.683	ok	0.680	0.620-0.740
p-Isopropyltoluene	17.21	10.53	1.634	ok	1.636	1.576-1.696
Methylene chloride	2.56	3.44	0.744	ok	0.742	0.682-0.802
Methyl Isobutyl Ketone	6.53	4.79	1.363	ok	1.355	1.295-1.415
Methyl Tert Butyl Ether	3.03	3.44	0.881	ok	0.878	0.818-0.938
Methylmethacrylate	5.73	4.79	1.196	ok	1.193	1.133-1.253
Nonane	13.99	10.53	1.329	ok	1.330	1.270-1.390
Octane	9.52	4.79	1.987	ok	1.987	1.927-2.047
Pentane	2.43	3.44	0.706	ok	0.706	0.646-0.766
n-Propylbenzene	15.76	10.53	1.497	ok	1.497	1.437-1.557
Propylene	1.76	3.44	0.512	ok	0.511	0.451-0.571
Styrene	12.66	10.53	1.202	ok	1.203	1.143-1.263
1,1,1-Trichloroethane	4.13	3.44	1.201	ok	1.200	1.140-1.260
1,1,1,2-Tetrachloroethane	10.62	10.53	1.009	ok	1.009	0.949-1.069
1,1,2,2-Tetrachloroethane	12.89	10.53	1.224	ok	1.224	1.164-1.284
1,1,2-Trichloroethane	7.22	4.79	1.507	ok	1.508	1.448-1.568
1,2,3-Trichloropropane	13.19	10.53	1.253	ok	1.252	1.192-1.312
1,2,3-Trimethylbenzene	17.15	10.53	1.629	ok	1.629	1.569-1.689
1,2,4-Trimethylbenzene	16.76	10.53	1.592	ok	1.593	1.533-1.653
1,3,5-Trimethylbenzene	16.29	10.53	1.547	ok	1.548	1.488-1.608
2,2,4-Trimethylpentane	5.49	4.79	1.146	ok	1.146	1.086-1.206
Tertiary Butyl Alcohol	2.57	3.44	0.747	ok	0.741	0.681-0.801
Tetrachloroethylene	9.38	4.79	1.958	ok	1.957	1.897-2.017

Initial Calibration Retention Time/Internal Standard Area Summary

Job Number: JD70271
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample Number	Lab File ID	Injected	By	Level	Inst ID	Method	
V7W109-IC0109	7W02635.D	08/03/23 18:19	TCH	0.04	GCMS7W	TO-15	
V7W109-IC0109	7W02636.D	08/03/23 18:50	TCH	0.1	GCMS7W	TO-15	Reporting this level
V7W109-IC0109	7W02637.D	08/03/23 19:25	TCH	0.2	GCMS7W	TO-15	
V7W109-IC0109	7W02638.D	08/03/23 20:02	TCH	0.5	GCMS7W	TO-15	
V7W109-IC0109	7W02640.D	08/03/23 21:09	TCH	5	GCMS7W	TO-15	
V7W109-ICC0109	7W02641.D	08/03/23 21:44	TCH	10	GCMS7W	TO-15	
V7W109-IC0109	7W02642.D	08/03/23 22:21	TCH	20	GCMS7W	TO-15	
V7W109-IC0109	7W02643.D	08/03/23 23:00	TCH	40	GCMS7W	TO-15	
V7W109-IC0109	7W02644.D	08/03/23 23:42	TCH	50	GCMS7W	TO-15	

Target Compound	RT (min.)	Istd RT (min.)	Rel RT		Mean Rel RT	Rel RT Range (+ /- .06)
Toluene	7.60	4.79	1.587	ok	1.588	1.528-1.648
Trichloroethylene	5.39	4.79	1.125	ok	1.125	1.065-1.185
Trichlorofluoromethane	2.31	3.44	0.672	ok	0.671	0.611-0.731
Vinyl chloride	1.89	3.44	0.549	ok	0.549	0.489-0.609
m,p-Xylene	11.90	10.53	1.130	ok	1.132	1.072-1.192
o-Xylene	12.87	10.53	1.222	ok	1.224	1.164-1.284

Internal Standard	RT (min.)		Mean RT(min.)	RT Range (+ /- 0.33)	Area		Mean Area	Area Range (+ /- 40 %)
Bromochloromethane	3.44	ok	3.44	3.11-3.77	44700	ok	42448	25469-59427
1,4-Difluorobenzene	4.79	ok	4.79	4.46-5.12	231587	ok	216937	130162-303712
Chlorobenzene-D5	10.53	ok	10.53	10.20-10.86	205229	ok	196218	117731-274705

Initial Calibration Retention Time/Internal Standard Area Summary

Job Number: JD70271
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample Number	Lab File ID	Injected	By	Level	Inst ID	Method	
V7W109-IC0109	7W02635.D	08/03/23 18:19	TCH	0.04	GCMS7W	TO-15	
V7W109-IC0109	7W02636.D	08/03/23 18:50	TCH	0.1	GCMS7W	TO-15	
V7W109-IC0109	7W02637.D	08/03/23 19:25	TCH	0.2	GCMS7W	TO-15	Reporting this level
V7W109-IC0109	7W02638.D	08/03/23 20:02	TCH	0.5	GCMS7W	TO-15	
V7W109-IC0109	7W02640.D	08/03/23 21:09	TCH	5	GCMS7W	TO-15	
V7W109-ICC0109	7W02641.D	08/03/23 21:44	TCH	10	GCMS7W	TO-15	
V7W109-IC0109	7W02642.D	08/03/23 22:21	TCH	20	GCMS7W	TO-15	
V7W109-IC0109	7W02643.D	08/03/23 23:00	TCH	40	GCMS7W	TO-15	
V7W109-IC0109	7W02644.D	08/03/23 23:42	TCH	50	GCMS7W	TO-15	

Target Compound	RT (min.)	Istd RT (min.)	Rel RT		Mean Rel RT	Rel RT Range (+ /- .06)
Acetone (2-Propanone)	2.26	3.44	0.657	ok	0.655	0.595-0.715
Acrolein	2.21	3.44	0.642	ok	0.642	0.582-0.702
Acrylonitrile	2.40	3.44	0.698	ok	0.697	0.637-0.757
Acetonitrile	2.17	3.44	0.631	ok	0.630	0.570-0.690
1,3-Butadiene	1.93	3.44	0.561	ok	0.562	0.502-0.622
Benzene	4.46	3.44	1.297	ok	1.294	1.234-1.354
Bromobenzene	14.28	10.53	1.356	ok	1.357	1.297-1.417
Bromodichloromethane	5.33	4.79	1.113	ok	1.114	1.054-1.174
Bromoform	11.74	10.53	1.115	ok	1.116	1.056-1.176
Bromomethane	2.01	3.44	0.584	ok	0.585	0.525-0.645
Bromoethene	2.17	3.44	0.631	ok	0.631	0.571-0.691
n-Butane	1.95	3.44	0.567	ok	0.567	0.507-0.627
Benzyl Chloride	16.85	10.53	1.600	ok	1.601	1.541-1.661
n-Butylbenzene	17.56	10.53	1.668	ok	1.668	1.608-1.728
sec-Butylbenzene	17.04	10.53	1.618	ok	1.619	1.559-1.679
tert-Butylbenzene	16.75	10.53	1.591	ok	1.592	1.532-1.652
Carbon disulfide	2.66	3.44	0.773	ok	0.773	0.713-0.833
Chlorobenzene	10.61	10.53	1.008	ok	1.008	0.948-1.068
Chlorodifluoromethane	1.75	3.44	0.509	ok	0.509	0.449-0.569
Chloroethane	2.06	3.44	0.599	ok	0.601	0.541-0.661
Chlorotrifluoroethene	1.76	3.44	0.512	ok	0.512	0.452-0.572
Chloroform	3.52	3.44	1.023	ok	1.024	0.964-1.084
Chloromethane	1.83	3.44	0.532	ok	0.532	0.472-0.592
3-Chloropropene	2.60	3.44	0.756	ok	0.756	0.696-0.816
2-Chlorotoluene	15.42	10.53	1.464	ok	1.465	1.405-1.525
Carbon tetrachloride	4.56	3.44	1.326	ok	1.328	1.268-1.388
Cyclohexane	4.68	4.79	0.977	ok	0.976	0.916-1.036
1,1-Dichloroethane	2.98	3.44	0.866	ok	0.866	0.806-0.926
1,1-Dichloroethylene	2.52	3.44	0.733	ok	0.732	0.672-0.792
1,2-Dibromoethane (EDB)	8.50	4.79	1.775	ok	1.776	1.716-1.836
1,2-Dichloroethane	3.95	3.44	1.148	ok	1.150	1.090-1.210
1,2-Dichloropropane	5.15	4.79	1.075	ok	1.075	1.015-1.135
1,3-Dichloropropane	7.66	4.79	1.599	ok	1.600	1.540-1.660
1,4-Dioxane	5.51	4.79	1.150	ok	1.134	1.074-1.194
Dichlorodifluoromethane	1.78	3.44	0.517	ok	0.517	0.457-0.577
Dichlorofluoromethane	2.09	3.44	0.608	ok	0.608	0.548-0.668
Dibromochloromethane	8.16	4.79	1.704	ok	1.702	1.642-1.762
Dibromomethane	5.11	4.79	1.067	ok	1.066	1.006-1.126
trans-1,2-Dichloroethylene	2.90	3.44	0.843	ok	0.843	0.783-0.903

Initial Calibration Retention Time/Internal Standard Area Summary

Job Number: JD70271
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample Number	Lab File ID	Injected	By	Level	Inst ID	Method	
V7W109-IC0109	7W02635.D	08/03/23 18:19	TCH	0.04	GCMS7W	TO-15	
V7W109-IC0109	7W02636.D	08/03/23 18:50	TCH	0.1	GCMS7W	TO-15	
V7W109-IC0109	7W02637.D	08/03/23 19:25	TCH	0.2	GCMS7W	TO-15	Reporting this level
V7W109-IC0109	7W02638.D	08/03/23 20:02	TCH	0.5	GCMS7W	TO-15	
V7W109-IC0109	7W02640.D	08/03/23 21:09	TCH	5	GCMS7W	TO-15	
V7W109-ICC0109	7W02641.D	08/03/23 21:44	TCH	10	GCMS7W	TO-15	
V7W109-IC0109	7W02642.D	08/03/23 22:21	TCH	20	GCMS7W	TO-15	
V7W109-IC0109	7W02643.D	08/03/23 23:00	TCH	40	GCMS7W	TO-15	
V7W109-IC0109	7W02644.D	08/03/23 23:42	TCH	50	GCMS7W	TO-15	

Target Compound	RT (min.)	Istd RT (min.)	Rel RT		Mean Rel RT	Rel RT Range (+ /- .06)
cis-1,2-Dichloroethylene	3.36	3.44	0.977	ok	0.977	0.917-1.037
cis-1,3-Dichloropropene	6.35	4.79	1.326	ok	1.328	1.268-1.388
m-Dichlorobenzene	16.82	10.53	1.597	ok	1.598	1.538-1.658
o-Dichlorobenzene	17.20	10.53	1.633	ok	1.634	1.574-1.694
p-Dichlorobenzene	16.90	10.53	1.605	ok	1.606	1.546-1.666
trans-1,3-Dichloropropene	7.06	4.79	1.474	ok	1.474	1.414-1.534
Di-Isopropyl ether	3.52	3.44	1.023	ok	1.021	0.961-1.081
2,3-Dimethylpentane	4.93	4.79	1.029	ok	1.031	0.971-1.091
2,4-Dimethylpentane	4.04	3.44	1.174	ok	1.175	1.115-1.235
Ethanol	2.11	3.44	0.613	ok	0.611	0.551-0.671
Ethylbenzene	11.50	10.53	1.092	ok	1.092	1.032-1.152
Ethyl Acetate	3.53	3.44	1.026	ok	1.021	0.961-1.081
Ethyl Acrylate	5.29	4.79	1.104	ok	1.102	1.042-1.162
4-Ethyltoluene	16.14	10.53	1.533	ok	1.533	1.473-1.593
Freon 113	2.65	3.44	0.770	ok	0.771	0.711-0.831
Freon 114	1.86	3.44	0.541	ok	0.541	0.481-0.601
Freon 123	2.22	3.44	0.645	ok	0.645	0.585-0.705
Freon 123A	2.24	3.44	0.651	ok	0.651	0.591-0.711
Freon 142B	1.82	3.44	0.529	ok	0.529	0.469-0.589
Freon 152A	1.74	3.44	0.506	ok	0.506	0.446-0.566
Heptane	5.81	4.79	1.213	ok	1.214	1.154-1.274
Hexachlorobutadiene	18.78	10.53	1.783	ok	1.784	1.724-1.844
Hexachloroethane	17.75	10.53	1.686	ok	1.685	1.625-1.745
Hexane	3.50	3.44	1.017	ok	1.017	0.957-1.077
2-Hexanone	8.24	4.79	1.720	ok	1.716	1.656-1.776
Iodomethane	2.49	3.44	0.724	ok	0.724	0.664-0.784
Isopropylbenzene	14.41	10.53	1.368	ok	1.369	1.309-1.429
Isopropyl Alcohol	2.35	3.44	0.683	ok	0.680	0.620-0.740
p-Isopropyltoluene	17.22	10.53	1.635	ok	1.636	1.576-1.696
Methylene chloride	2.55	3.44	0.741	ok	0.742	0.682-0.802
Methyl ethyl ketone	3.17	3.44	0.922	ok	0.918	0.858-0.978
Methyl Isobutyl Ketone	6.52	4.79	1.361	ok	1.355	1.295-1.415
Methyl Tert Butyl Ether	3.03	3.44	0.881	ok	0.878	0.818-0.938
Methylmethacrylate	5.72	4.79	1.194	ok	1.193	1.133-1.253
Naphthalene	18.52	10.53	1.759	ok	1.759	1.699-1.819
Nonane	14.00	10.53	1.330	ok	1.330	1.270-1.390
Octane	9.52	4.79	1.987	ok	1.987	1.927-2.047
Pentane	2.43	3.44	0.706	ok	0.706	0.646-0.766
n-Propylbenzene	15.77	10.53	1.498	ok	1.497	1.437-1.557

Initial Calibration Retention Time/Internal Standard Area Summary

Job Number: JD70271
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample Number	Lab File ID	Injected	By	Level	Inst ID	Method	
V7W109-IC0109	7W02635.D	08/03/23 18:19	TCH	0.04	GCMS7W	TO-15	
V7W109-IC0109	7W02636.D	08/03/23 18:50	TCH	0.1	GCMS7W	TO-15	
V7W109-IC0109	7W02637.D	08/03/23 19:25	TCH	0.2	GCMS7W	TO-15	Reporting this level
V7W109-IC0109	7W02638.D	08/03/23 20:02	TCH	0.5	GCMS7W	TO-15	
V7W109-IC0109	7W02640.D	08/03/23 21:09	TCH	5	GCMS7W	TO-15	
V7W109-ICC0109	7W02641.D	08/03/23 21:44	TCH	10	GCMS7W	TO-15	
V7W109-IC0109	7W02642.D	08/03/23 22:21	TCH	20	GCMS7W	TO-15	
V7W109-IC0109	7W02643.D	08/03/23 23:00	TCH	40	GCMS7W	TO-15	
V7W109-IC0109	7W02644.D	08/03/23 23:42	TCH	50	GCMS7W	TO-15	

Target Compound	RT (min.)	Istd RT (min.)	Rel RT		Mean Rel RT	Rel RT Range (+ /- .06)
Propylene	1.76	3.44	0.512	ok	0.511	0.451-0.571
Styrene	12.66	10.53	1.202	ok	1.203	1.143-1.263
1,1,1-Trichloroethane	4.12	3.44	1.198	ok	1.200	1.140-1.260
1,1,1,2-Tetrachloroethane	10.61	10.53	1.008	ok	1.009	0.949-1.069
1,1,2,2-Tetrachloroethane	12.89	10.53	1.224	ok	1.224	1.164-1.284
1,1,2-Trichloroethane	7.22	4.79	1.507	ok	1.508	1.448-1.568
1,2,4-Trichlorobenzene	18.48	10.53	1.755	ok	1.755	1.695-1.815
1,2,3-Trichloropropane	13.18	10.53	1.252	ok	1.252	1.192-1.312
1,2,3-Trimethylbenzene	17.15	10.53	1.629	ok	1.629	1.569-1.689
1,2,4-Trimethylbenzene	16.77	10.53	1.593	ok	1.593	1.533-1.653
1,3,5-Trimethylbenzene	16.29	10.53	1.547	ok	1.548	1.488-1.608
2,2,4-Trimethylpentane	5.49	4.79	1.146	ok	1.146	1.086-1.206
Tertiary Butyl Alcohol	2.56	3.44	0.744	ok	0.741	0.681-0.801
Tetrachloroethylene	9.37	4.79	1.956	ok	1.957	1.897-2.017
Tetrahydrofuran	3.78	3.44	1.099	ok	1.091	1.031-1.151
Toluene	7.60	4.79	1.587	ok	1.588	1.528-1.648
Trichloroethylene	5.38	4.79	1.123	ok	1.125	1.065-1.185
Trichlorofluoromethane	2.31	3.44	0.672	ok	0.671	0.611-0.731
Vinyl chloride	1.89	3.44	0.549	ok	0.549	0.489-0.609
Vinyl Acetate	3.06	3.44	0.890	ok	0.887	0.827-0.947
m,p-Xylene	11.94	10.53	1.134	ok	1.132	1.072-1.192
o-Xylene	12.88	10.53	1.223	ok	1.224	1.164-1.284

Internal Standard	RT (min.)		Mean RT(min.)	RT Range (+ /- 0.33)	Area		Mean Area	Area Range (+ /- 40 %)
Bromochloromethane	3.44	ok	3.44	3.11-3.77	44382	ok	42448	25469-59427
1,4-Difluorobenzene	4.79	ok	4.79	4.46-5.12	229689	ok	216937	130162-303712
Chlorobenzene-D5	10.53	ok	10.53	10.20-10.86	205537	ok	196218	117731-274705

Initial Calibration Retention Time/Internal Standard Area Summary

Job Number: JD70271
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample Number	Lab File ID	Injected	By	Level	Inst ID	Method	
V7W109-IC0109	7W02635.D	08/03/23 18:19	TCH	0.04	GCMS7W	TO-15	
V7W109-IC0109	7W02636.D	08/03/23 18:50	TCH	0.1	GCMS7W	TO-15	
V7W109-IC0109	7W02637.D	08/03/23 19:25	TCH	0.2	GCMS7W	TO-15	
V7W109-IC0109	7W02638.D	08/03/23 20:02	TCH	0.5	GCMS7W	TO-15	Reporting this level
V7W109-IC0109	7W02640.D	08/03/23 21:09	TCH	5	GCMS7W	TO-15	
V7W109-ICC0109	7W02641.D	08/03/23 21:44	TCH	10	GCMS7W	TO-15	
V7W109-IC0109	7W02642.D	08/03/23 22:21	TCH	20	GCMS7W	TO-15	
V7W109-IC0109	7W02643.D	08/03/23 23:00	TCH	40	GCMS7W	TO-15	
V7W109-IC0109	7W02644.D	08/03/23 23:42	TCH	50	GCMS7W	TO-15	

Target Compound	RT (min.)	Istd RT (min.)	Rel RT		Mean Rel RT	Rel RT Range (+ /- .06)
Acetone (2-Propanone)	2.26	3.44	0.657	ok	0.655	0.595-0.715
Acrolein	2.21	3.44	0.642	ok	0.642	0.582-0.702
Acrylonitrile	2.40	3.44	0.698	ok	0.697	0.637-0.757
Acetonitrile	2.17	3.44	0.631	ok	0.630	0.570-0.690
1,3-Butadiene	1.93	3.44	0.561	ok	0.562	0.502-0.622
Benzene	4.45	3.44	1.294	ok	1.294	1.234-1.354
Bromobenzene	14.28	10.53	1.356	ok	1.357	1.297-1.417
Bromodichloromethane	5.34	4.79	1.115	ok	1.114	1.054-1.174
Bromoform	11.75	10.53	1.116	ok	1.116	1.056-1.176
Bromomethane	2.01	3.44	0.584	ok	0.585	0.525-0.645
Bromoethene	2.17	3.44	0.631	ok	0.631	0.571-0.691
n-Butane	1.95	3.44	0.567	ok	0.567	0.507-0.627
Benzyl Chloride	16.85	10.53	1.600	ok	1.601	1.541-1.661
n-Butylbenzene	17.56	10.53	1.668	ok	1.668	1.608-1.728
sec-Butylbenzene	17.04	10.53	1.618	ok	1.619	1.559-1.679
tert-Butylbenzene	16.76	10.53	1.592	ok	1.592	1.532-1.652
Carbon disulfide	2.66	3.44	0.773	ok	0.773	0.713-0.833
Chlorobenzene	10.60	10.53	1.007	ok	1.008	0.948-1.068
Chlorodifluoromethane	1.75	3.44	0.509	ok	0.509	0.449-0.569
Chloroethane	2.07	3.44	0.602	ok	0.601	0.541-0.661
Chlorotrifluoroethene	1.76	3.44	0.512	ok	0.512	0.452-0.572
Chloroform	3.53	3.44	1.026	ok	1.024	0.964-1.084
Chloromethane	1.83	3.44	0.532	ok	0.532	0.472-0.592
3-Chloropropene	2.60	3.44	0.756	ok	0.756	0.696-0.816
2-Chlorotoluene	15.42	10.53	1.464	ok	1.465	1.405-1.525
Carbon tetrachloride	4.57	3.44	1.328	ok	1.328	1.268-1.388
Cyclohexane	4.67	4.79	0.975	ok	0.976	0.916-1.036
1,1-Dichloroethane	2.98	3.44	0.866	ok	0.866	0.806-0.926
1,1-Dichloroethylene	2.52	3.44	0.733	ok	0.732	0.672-0.792
1,2-Dibromoethane (EDB)	8.50	4.79	1.775	ok	1.776	1.716-1.836
1,2-Dichloroethane	3.95	3.44	1.148	ok	1.150	1.090-1.210
1,2-Dichloropropane	5.15	4.79	1.075	ok	1.075	1.015-1.135
1,3-Dichloropropane	7.66	4.79	1.599	ok	1.600	1.540-1.660
1,4-Dioxane	5.49	4.79	1.146	ok	1.134	1.074-1.194
Dichlorodifluoromethane	1.78	3.44	0.517	ok	0.517	0.457-0.577
Dichlorofluoromethane	2.09	3.44	0.608	ok	0.608	0.548-0.668
Dibromochloromethane	8.15	4.79	1.701	ok	1.702	1.642-1.762
Dibromomethane	5.10	4.79	1.065	ok	1.066	1.006-1.126
trans-1,2-Dichloroethylene	2.90	3.44	0.843	ok	0.843	0.783-0.903

Initial Calibration Retention Time/Internal Standard Area Summary

Job Number: JD70271
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample Number	Lab File ID	Injected	By	Level	Inst ID	Method	
V7W109-IC0109	7W02635.D	08/03/23 18:19	TCH	0.04	GCMS7W	TO-15	
V7W109-IC0109	7W02636.D	08/03/23 18:50	TCH	0.1	GCMS7W	TO-15	
V7W109-IC0109	7W02637.D	08/03/23 19:25	TCH	0.2	GCMS7W	TO-15	
V7W109-IC0109	7W02638.D	08/03/23 20:02	TCH	0.5	GCMS7W	TO-15	Reporting this level
V7W109-IC0109	7W02640.D	08/03/23 21:09	TCH	5	GCMS7W	TO-15	
V7W109-ICC0109	7W02641.D	08/03/23 21:44	TCH	10	GCMS7W	TO-15	
V7W109-IC0109	7W02642.D	08/03/23 22:21	TCH	20	GCMS7W	TO-15	
V7W109-IC0109	7W02643.D	08/03/23 23:00	TCH	40	GCMS7W	TO-15	
V7W109-IC0109	7W02644.D	08/03/23 23:42	TCH	50	GCMS7W	TO-15	

Target Compound	RT (min.)	Istd RT (min.)	Rel RT		Mean Rel RT	Rel RT Range (+ /- .06)
cis-1,2-Dichloroethylene	3.36	3.44	0.977	ok	0.977	0.917-1.037
cis-1,3-Dichloropropene	6.37	4.79	1.330	ok	1.328	1.268-1.388
m-Dichlorobenzene	16.82	10.53	1.597	ok	1.598	1.538-1.658
o-Dichlorobenzene	17.20	10.53	1.633	ok	1.634	1.574-1.694
p-Dichlorobenzene	16.91	10.53	1.606	ok	1.606	1.546-1.666
trans-1,3-Dichloropropene	7.06	4.79	1.474	ok	1.474	1.414-1.534
Di-Isopropyl ether	3.52	3.44	1.023	ok	1.021	0.961-1.081
2,3-Dimethylpentane	4.93	4.79	1.029	ok	1.031	0.971-1.091
2,4-Dimethylpentane	4.05	3.44	1.177	ok	1.175	1.115-1.235
Ethanol	2.11	3.44	0.613	ok	0.611	0.551-0.671
Ethylbenzene	11.50	10.53	1.092	ok	1.092	1.032-1.152
Ethyl Acetate	3.52	3.44	1.023	ok	1.021	0.961-1.081
Ethyl Acrylate	5.28	4.79	1.102	ok	1.102	1.042-1.162
4-Ethyltoluene	16.14	10.53	1.533	ok	1.533	1.473-1.593
Freon 113	2.66	3.44	0.773	ok	0.771	0.711-0.831
Freon 114	1.86	3.44	0.541	ok	0.541	0.481-0.601
Freon 123	2.22	3.44	0.645	ok	0.645	0.585-0.705
Freon 123A	2.24	3.44	0.651	ok	0.651	0.591-0.711
Freon 142B	1.82	3.44	0.529	ok	0.529	0.469-0.589
Freon 152A	1.74	3.44	0.506	ok	0.506	0.446-0.566
Heptane	5.81	4.79	1.213	ok	1.214	1.154-1.274
Hexachlorobutadiene	18.78	10.53	1.783	ok	1.784	1.724-1.844
Hexachloroethane	17.74	10.53	1.685	ok	1.685	1.625-1.745
Hexane	3.50	3.44	1.017	ok	1.017	0.957-1.077
2-Hexanone	8.23	4.79	1.718	ok	1.716	1.656-1.776
Iodomethane	2.49	3.44	0.724	ok	0.724	0.664-0.784
Isopropylbenzene	14.41	10.53	1.368	ok	1.369	1.309-1.429
Isopropyl Alcohol	2.35	3.44	0.683	ok	0.680	0.620-0.740
p-Isopropyltoluene	17.22	10.53	1.635	ok	1.636	1.576-1.696
Methylene chloride	2.55	3.44	0.741	ok	0.742	0.682-0.802
Methyl ethyl ketone	3.17	3.44	0.922	ok	0.918	0.858-0.978
Methyl Isobutyl Ketone	6.51	4.79	1.359	ok	1.355	1.295-1.415
Methyl Tert Butyl Ether	3.03	3.44	0.881	ok	0.878	0.818-0.938
Methylmethacrylate	5.72	4.79	1.194	ok	1.193	1.133-1.253
Naphthalene	18.52	10.53	1.759	ok	1.759	1.699-1.819
Nonane	14.00	10.53	1.330	ok	1.330	1.270-1.390
Octane	9.52	4.79	1.987	ok	1.987	1.927-2.047
Pentane	2.43	3.44	0.706	ok	0.706	0.646-0.766
n-Propylbenzene	15.75	10.53	1.496	ok	1.497	1.437-1.557

Initial Calibration Retention Time/Internal Standard Area Summary

Job Number: JD70271
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample Number	Lab File ID	Injected	By	Level	Inst ID	Method	
V7W109-IC0109	7W02635.D	08/03/23 18:19	TCH	0.04	GCMS7W	TO-15	
V7W109-IC0109	7W02636.D	08/03/23 18:50	TCH	0.1	GCMS7W	TO-15	
V7W109-IC0109	7W02637.D	08/03/23 19:25	TCH	0.2	GCMS7W	TO-15	
V7W109-IC0109	7W02638.D	08/03/23 20:02	TCH	0.5	GCMS7W	TO-15	Reporting this level
V7W109-IC0109	7W02640.D	08/03/23 21:09	TCH	5	GCMS7W	TO-15	
V7W109-ICC0109	7W02641.D	08/03/23 21:44	TCH	10	GCMS7W	TO-15	
V7W109-IC0109	7W02642.D	08/03/23 22:21	TCH	20	GCMS7W	TO-15	
V7W109-IC0109	7W02643.D	08/03/23 23:00	TCH	40	GCMS7W	TO-15	
V7W109-IC0109	7W02644.D	08/03/23 23:42	TCH	50	GCMS7W	TO-15	

Target Compound	RT (min.)	Istd RT (min.)	Rel RT		Mean Rel RT	Rel RT Range (+ /- .06)
Propylene	1.76	3.44	0.512	ok	0.511	0.451-0.571
Styrene	12.66	10.53	1.202	ok	1.203	1.143-1.263
1,1,1-Trichloroethane	4.13	3.44	1.201	ok	1.200	1.140-1.260
1,1,1,2-Tetrachloroethane	10.61	10.53	1.008	ok	1.009	0.949-1.069
1,1,2,2-Tetrachloroethane	12.88	10.53	1.223	ok	1.224	1.164-1.284
1,1,2-Trichloroethane	7.22	4.79	1.507	ok	1.508	1.448-1.568
1,2,4-Trichlorobenzene	18.48	10.53	1.755	ok	1.755	1.695-1.815
1,2,3-Trichloropropane	13.17	10.53	1.251	ok	1.252	1.192-1.312
1,2,3-Trimethylbenzene	17.15	10.53	1.629	ok	1.629	1.569-1.689
1,2,4-Trimethylbenzene	16.76	10.53	1.592	ok	1.593	1.533-1.653
1,3,5-Trimethylbenzene	16.29	10.53	1.547	ok	1.548	1.488-1.608
2,2,4-Trimethylpentane	5.49	4.79	1.146	ok	1.146	1.086-1.206
Tertiary Butyl Alcohol	2.57	3.44	0.747	ok	0.741	0.681-0.801
Tetrachloroethylene	9.37	4.79	1.956	ok	1.957	1.897-2.017
Tetrahydrofuran	3.78	3.44	1.099	ok	1.091	1.031-1.151
Toluene	7.61	4.79	1.589	ok	1.588	1.528-1.648
Trichloroethylene	5.39	4.79	1.125	ok	1.125	1.065-1.185
Trichlorofluoromethane	2.31	3.44	0.672	ok	0.671	0.611-0.731
Vinyl chloride	1.89	3.44	0.549	ok	0.549	0.489-0.609
Vinyl Acetate	3.06	3.44	0.890	ok	0.887	0.827-0.947
m,p-Xylene	11.89	10.53	1.129	ok	1.132	1.072-1.192
o-Xylene	12.88	10.53	1.223	ok	1.224	1.164-1.284

Internal Standard	RT (min.)		Mean RT(min.)	RT Range (+ /- 0.33)	Area		Mean Area	Area Range (+ /- 40 %)
Bromochloromethane	3.44	ok	3.44	3.11-3.77	43732	ok	42448	25469-59427
1,4-Difluorobenzene	4.79	ok	4.79	4.46-5.12	228460	ok	216937	130162-303712
Chlorobenzene-D5	10.53	ok	10.53	10.20-10.86	202205	ok	196218	117731-274705

Initial Calibration Retention Time/Internal Standard Area Summary

Job Number: JD70271
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample Number	Lab File ID	Injected	By	Level	Inst ID	Method	
V7W109-IC0109	7W02635.D	08/03/23 18:19	TCH	0.04	GCMS7W	TO-15	
V7W109-IC0109	7W02636.D	08/03/23 18:50	TCH	0.1	GCMS7W	TO-15	
V7W109-IC0109	7W02637.D	08/03/23 19:25	TCH	0.2	GCMS7W	TO-15	
V7W109-IC0109	7W02638.D	08/03/23 20:02	TCH	0.5	GCMS7W	TO-15	
V7W109-IC0109	7W02640.D	08/03/23 21:09	TCH	5	GCMS7W	TO-15	Reporting this level
V7W109-ICC0109	7W02641.D	08/03/23 21:44	TCH	10	GCMS7W	TO-15	
V7W109-IC0109	7W02642.D	08/03/23 22:21	TCH	20	GCMS7W	TO-15	
V7W109-IC0109	7W02643.D	08/03/23 23:00	TCH	40	GCMS7W	TO-15	
V7W109-IC0109	7W02644.D	08/03/23 23:42	TCH	50	GCMS7W	TO-15	

Target Compound	RT (min.)	Istd RT (min.)	Rel RT		Mean Rel RT	Rel RT Range (+ /- .06)
Acetone (2-Propanone)	2.25	3.44	0.654	ok	0.655	0.595-0.715
Acrolein	2.21	3.44	0.642	ok	0.642	0.582-0.702
Acrylonitrile	2.40	3.44	0.698	ok	0.697	0.637-0.757
Acetonitrile	2.17	3.44	0.631	ok	0.630	0.570-0.690
1,3-Butadiene	1.94	3.44	0.564	ok	0.562	0.502-0.622
Benzene	4.45	3.44	1.294	ok	1.294	1.234-1.354
Bromobenzene	14.28	10.52	1.357	ok	1.357	1.297-1.417
Bromodichloromethane	5.33	4.79	1.113	ok	1.114	1.054-1.174
Bromoform	11.74	10.52	1.116	ok	1.116	1.056-1.176
Bromomethane	2.02	3.44	0.587	ok	0.585	0.525-0.645
Bromoethene	2.17	3.44	0.631	ok	0.631	0.571-0.691
n-Butane	1.95	3.44	0.567	ok	0.567	0.507-0.627
Benzyl Chloride	16.85	10.52	1.602	ok	1.601	1.541-1.661
n-Butylbenzene	17.56	10.52	1.669	ok	1.668	1.608-1.728
sec-Butylbenzene	17.04	10.52	1.620	ok	1.619	1.559-1.679
tert-Butylbenzene	16.76	10.52	1.593	ok	1.592	1.532-1.652
Carbon disulfide	2.66	3.44	0.773	ok	0.773	0.713-0.833
Chlorobenzene	10.61	10.52	1.009	ok	1.008	0.948-1.068
Chlorodifluoromethane	1.75	3.44	0.509	ok	0.509	0.449-0.569
Chloroethane	2.07	3.44	0.602	ok	0.601	0.541-0.661
Chlorotrifluoroethene	1.76	3.44	0.512	ok	0.512	0.452-0.572
Chloroform	3.52	3.44	1.023	ok	1.024	0.964-1.084
Chloromethane	1.83	3.44	0.532	ok	0.532	0.472-0.592
3-Chloropropene	2.60	3.44	0.756	ok	0.756	0.696-0.816
2-Chlorotoluene	15.42	10.52	1.466	ok	1.465	1.405-1.525
Carbon tetrachloride	4.57	3.44	1.328	ok	1.328	1.268-1.388
Cyclohexane	4.67	4.79	0.975	ok	0.976	0.916-1.036
1,1-Dichloroethane	2.98	3.44	0.866	ok	0.866	0.806-0.926
1,1-Dichloroethylene	2.52	3.44	0.733	ok	0.732	0.672-0.792
1,2-Dibromoethane (EDB)	8.50	4.79	1.775	ok	1.776	1.716-1.836
1,2-Dichloroethane	3.96	3.44	1.151	ok	1.150	1.090-1.210
1,2-Dichloropropane	5.15	4.79	1.075	ok	1.075	1.015-1.135
1,3-Dichloropropane	7.66	4.79	1.599	ok	1.600	1.540-1.660
1,4-Dioxane	5.43	4.79	1.134	ok	1.134	1.074-1.194
Dichlorodifluoromethane	1.78	3.44	0.517	ok	0.517	0.457-0.577
Dichlorofluoromethane	2.09	3.44	0.608	ok	0.608	0.548-0.668
Dibromochloromethane	8.15	4.79	1.701	ok	1.702	1.642-1.762
Dibromomethane	5.10	4.79	1.065	ok	1.066	1.006-1.126
trans-1,2-Dichloroethylene	2.90	3.44	0.843	ok	0.843	0.783-0.903

Initial Calibration Retention Time/Internal Standard Area Summary

Job Number: JD70271
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample Number	Lab File ID	Injected	By	Level	Inst ID	Method	
V7W109-IC0109	7W02635.D	08/03/23 18:19	TCH	0.04	GCMS7W	TO-15	
V7W109-IC0109	7W02636.D	08/03/23 18:50	TCH	0.1	GCMS7W	TO-15	
V7W109-IC0109	7W02637.D	08/03/23 19:25	TCH	0.2	GCMS7W	TO-15	
V7W109-IC0109	7W02638.D	08/03/23 20:02	TCH	0.5	GCMS7W	TO-15	
V7W109-IC0109	7W02640.D	08/03/23 21:09	TCH	5	GCMS7W	TO-15	Reporting this level
V7W109-ICC0109	7W02641.D	08/03/23 21:44	TCH	10	GCMS7W	TO-15	
V7W109-IC0109	7W02642.D	08/03/23 22:21	TCH	20	GCMS7W	TO-15	
V7W109-IC0109	7W02643.D	08/03/23 23:00	TCH	40	GCMS7W	TO-15	
V7W109-IC0109	7W02644.D	08/03/23 23:42	TCH	50	GCMS7W	TO-15	

Target Compound	RT (min.)	Istd RT (min.)	Rel RT		Mean Rel RT	Rel RT Range (+ /- .06)
cis-1,2-Dichloroethylene	3.36	3.44	0.977	ok	0.977	0.917-1.037
cis-1,3-Dichloropropene	6.36	4.79	1.328	ok	1.328	1.268-1.388
m-Dichlorobenzene	16.82	10.52	1.599	ok	1.598	1.538-1.658
o-Dichlorobenzene	17.20	10.52	1.635	ok	1.634	1.574-1.694
p-Dichlorobenzene	16.91	10.52	1.607	ok	1.606	1.546-1.666
trans-1,3-Dichloropropene	7.06	4.79	1.474	ok	1.474	1.414-1.534
Di-Isopropyl ether	3.51	3.44	1.020	ok	1.021	0.961-1.081
2,3-Dimethylpentane	4.94	4.79	1.031	ok	1.031	0.971-1.091
2,4-Dimethylpentane	4.04	3.44	1.174	ok	1.175	1.115-1.235
Ethanol	2.10	3.44	0.610	ok	0.611	0.551-0.671
Ethylbenzene	11.50	10.52	1.093	ok	1.092	1.032-1.152
Ethyl Acetate	3.51	3.44	1.020	ok	1.021	0.961-1.081
Ethyl Acrylate	5.27	4.79	1.100	ok	1.102	1.042-1.162
4-Ethyltoluene	16.14	10.52	1.534	ok	1.533	1.473-1.593
Freon 113	2.65	3.44	0.770	ok	0.771	0.711-0.831
Freon 114	1.86	3.44	0.541	ok	0.541	0.481-0.601
Freon 123	2.22	3.44	0.645	ok	0.645	0.585-0.705
Freon 123A	2.24	3.44	0.651	ok	0.651	0.591-0.711
Freon 142B	1.82	3.44	0.529	ok	0.529	0.469-0.589
Freon 152A	1.74	3.44	0.506	ok	0.506	0.446-0.566
Heptane	5.82	4.79	1.215	ok	1.214	1.154-1.274
Hexachlorobutadiene	18.78	10.52	1.785	ok	1.784	1.724-1.844
Hexachloroethane	17.74	10.52	1.686	ok	1.685	1.625-1.745
Hexane	3.50	3.44	1.017	ok	1.017	0.957-1.077
2-Hexanone	8.20	4.79	1.712	ok	1.716	1.656-1.776
Iodomethane	2.49	3.44	0.724	ok	0.724	0.664-0.784
Isopropylbenzene	14.41	10.52	1.370	ok	1.369	1.309-1.429
Isopropyl Alcohol	2.34	3.44	0.680	ok	0.680	0.620-0.740
p-Isopropyltoluene	17.22	10.52	1.637	ok	1.636	1.576-1.696
Methylene chloride	2.55	3.44	0.741	ok	0.742	0.682-0.802
Methyl ethyl ketone	3.16	3.44	0.919	ok	0.918	0.858-0.978
Methyl Isobutyl Ketone	6.48	4.79	1.353	ok	1.355	1.295-1.415
Methyl Tert Butyl Ether	3.02	3.44	0.878	ok	0.878	0.818-0.938
Methylmethacrylate	5.71	4.79	1.192	ok	1.193	1.133-1.253
Naphthalene	18.52	10.52	1.760	ok	1.759	1.699-1.819
Nonane	14.00	10.52	1.331	ok	1.330	1.270-1.390
Octane	9.52	4.79	1.987	ok	1.987	1.927-2.047
Pentane	2.43	3.44	0.706	ok	0.706	0.646-0.766
n-Propylbenzene	15.76	10.52	1.498	ok	1.497	1.437-1.557

Initial Calibration Retention Time/Internal Standard Area Summary

Job Number: JD70271
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample Number	Lab File ID	Injected	By	Level	Inst ID	Method	
V7W109-IC0109	7W02635.D	08/03/23 18:19	TCH	0.04	GCMS7W	TO-15	
V7W109-IC0109	7W02636.D	08/03/23 18:50	TCH	0.1	GCMS7W	TO-15	
V7W109-IC0109	7W02637.D	08/03/23 19:25	TCH	0.2	GCMS7W	TO-15	
V7W109-IC0109	7W02638.D	08/03/23 20:02	TCH	0.5	GCMS7W	TO-15	
V7W109-IC0109	7W02640.D	08/03/23 21:09	TCH	5	GCMS7W	TO-15	Reporting this level
V7W109-ICC0109	7W02641.D	08/03/23 21:44	TCH	10	GCMS7W	TO-15	
V7W109-IC0109	7W02642.D	08/03/23 22:21	TCH	20	GCMS7W	TO-15	
V7W109-IC0109	7W02643.D	08/03/23 23:00	TCH	40	GCMS7W	TO-15	
V7W109-IC0109	7W02644.D	08/03/23 23:42	TCH	50	GCMS7W	TO-15	

Target Compound	RT (min.)	Istd RT (min.)	Rel RT		Mean Rel RT	Rel RT Range (+ /- .06)
Propylene	1.76	3.44	0.512	ok	0.511	0.451-0.571
Styrene	12.67	10.52	1.204	ok	1.203	1.143-1.263
1,1,1-Trichloroethane	4.13	3.44	1.201	ok	1.200	1.140-1.260
1,1,1,2-Tetrachloroethane	10.62	10.52	1.010	ok	1.009	0.949-1.069
1,1,2,2-Tetrachloroethane	12.89	10.52	1.225	ok	1.224	1.164-1.284
1,1,2-Trichloroethane	7.23	4.79	1.509	ok	1.508	1.448-1.568
1,2,4-Trichlorobenzene	18.47	10.52	1.756	ok	1.755	1.695-1.815
1,2,3-Trichloropropane	13.17	10.52	1.252	ok	1.252	1.192-1.312
1,2,3-Trimethylbenzene	17.15	10.52	1.630	ok	1.629	1.569-1.689
1,2,4-Trimethylbenzene	16.76	10.52	1.593	ok	1.593	1.533-1.653
1,3,5-Trimethylbenzene	16.30	10.52	1.549	ok	1.548	1.488-1.608
2,2,4-Trimethylpentane	5.49	4.79	1.146	ok	1.146	1.086-1.206
Tertiary Butyl Alcohol	2.54	3.44	0.738	ok	0.741	0.681-0.801
Tetrachloroethylene	9.37	4.79	1.956	ok	1.957	1.897-2.017
Tetrahydrofuran	3.75	3.44	1.090	ok	1.091	1.031-1.151
Toluene	7.60	4.79	1.587	ok	1.588	1.528-1.648
Trichloroethylene	5.39	4.79	1.125	ok	1.125	1.065-1.185
Trichlorofluoromethane	2.31	3.44	0.672	ok	0.671	0.611-0.731
Vinyl chloride	1.89	3.44	0.549	ok	0.549	0.489-0.609
Vinyl Acetate	3.05	3.44	0.887	ok	0.887	0.827-0.947
m,p-Xylene	11.89	10.52	1.130	ok	1.132	1.072-1.192
o-Xylene	12.88	10.52	1.224	ok	1.224	1.164-1.284

Internal Standard	RT (min.)		Mean RT(min.)	RT Range (+ /- 0.33)	Area		Mean Area	Area Range (+ /- 40 %)
Bromochloromethane	3.44	ok	3.44	3.11-3.77	42849	ok	42448	25469-59427
1,4-Difluorobenzene	4.79	ok	4.79	4.46-5.12	220225	ok	216937	130162-303712
Chlorobenzene-D5	10.52	ok	10.53	10.20-10.86	195415	ok	196218	117731-274705

Initial Calibration Retention Time/Internal Standard Area Summary

Job Number: JD70271
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample Number	Lab File ID	Injected	By	Level	Inst ID	Method	
V7W109-IC0109	7W02635.D	08/03/23 18:19	TCH	0.04	GCMS7W	TO-15	
V7W109-IC0109	7W02636.D	08/03/23 18:50	TCH	0.1	GCMS7W	TO-15	
V7W109-IC0109	7W02637.D	08/03/23 19:25	TCH	0.2	GCMS7W	TO-15	
V7W109-IC0109	7W02638.D	08/03/23 20:02	TCH	0.5	GCMS7W	TO-15	
V7W109-IC0109	7W02640.D	08/03/23 21:09	TCH	5	GCMS7W	TO-15	
V7W109-ICC0109	7W02641.D	08/03/23 21:44	TCH	10	GCMS7W	TO-15	Reporting this level
V7W109-IC0109	7W02642.D	08/03/23 22:21	TCH	20	GCMS7W	TO-15	
V7W109-IC0109	7W02643.D	08/03/23 23:00	TCH	40	GCMS7W	TO-15	
V7W109-IC0109	7W02644.D	08/03/23 23:42	TCH	50	GCMS7W	TO-15	

Target Compound	RT (min.)	Istd RT (min.)	Rel RT		Mean Rel RT	Rel RT Range (+ /- .06)
Acetone (2-Propanone)	2.25	3.44	0.654	ok	0.655	0.595-0.715
Acrolein	2.21	3.44	0.642	ok	0.642	0.582-0.702
Acrylonitrile	2.40	3.44	0.698	ok	0.697	0.637-0.757
Acetonitrile	2.17	3.44	0.631	ok	0.630	0.570-0.690
1,3-Butadiene	1.93	3.44	0.561	ok	0.562	0.502-0.622
Benzene	4.45	3.44	1.294	ok	1.294	1.234-1.354
Bromobenzene	14.28	10.53	1.356	ok	1.357	1.297-1.417
Bromodichloromethane	5.34	4.79	1.115	ok	1.114	1.054-1.174
Bromoform	11.74	10.53	1.115	ok	1.116	1.056-1.176
Bromomethane	2.01	3.44	0.584	ok	0.585	0.525-0.645
Bromoethene	2.17	3.44	0.631	ok	0.631	0.571-0.691
n-Butane	1.95	3.44	0.567	ok	0.567	0.507-0.627
Benzyl Chloride	16.85	10.53	1.600	ok	1.601	1.541-1.661
n-Butylbenzene	17.56	10.53	1.668	ok	1.668	1.608-1.728
sec-Butylbenzene	17.04	10.53	1.618	ok	1.619	1.559-1.679
tert-Butylbenzene	16.76	10.53	1.592	ok	1.592	1.532-1.652
Carbon disulfide	2.66	3.44	0.773	ok	0.773	0.713-0.833
Chlorobenzene	10.61	10.53	1.008	ok	1.008	0.948-1.068
Chlorodifluoromethane	1.75	3.44	0.509	ok	0.509	0.449-0.569
Chloroethane	2.07	3.44	0.602	ok	0.601	0.541-0.661
Chlorotrifluoroethene	1.76	3.44	0.512	ok	0.512	0.452-0.572
Chloroform	3.52	3.44	1.023	ok	1.024	0.964-1.084
Chloromethane	1.83	3.44	0.532	ok	0.532	0.472-0.592
3-Chloropropene	2.60	3.44	0.756	ok	0.756	0.696-0.816
2-Chlorotoluene	15.42	10.53	1.464	ok	1.465	1.405-1.525
Carbon tetrachloride	4.57	3.44	1.328	ok	1.328	1.268-1.388
Cyclohexane	4.67	4.79	0.975	ok	0.976	0.916-1.036
1,1-Dichloroethane	2.98	3.44	0.866	ok	0.866	0.806-0.926
1,1-Dichloroethylene	2.52	3.44	0.733	ok	0.732	0.672-0.792
1,2-Dibromoethane (EDB)	8.51	4.79	1.777	ok	1.776	1.716-1.836
1,2-Dichloroethane	3.95	3.44	1.148	ok	1.150	1.090-1.210
1,2-Dichloropropane	5.15	4.79	1.075	ok	1.075	1.015-1.135
1,3-Dichloropropane	7.66	4.79	1.599	ok	1.600	1.540-1.660
1,4-Dioxane	5.41	4.79	1.129	ok	1.134	1.074-1.194
Dichlorodifluoromethane	1.78	3.44	0.517	ok	0.517	0.457-0.577
Dichlorofluoromethane	2.09	3.44	0.608	ok	0.608	0.548-0.668
Dibromochloromethane	8.15	4.79	1.701	ok	1.702	1.642-1.762
Dibromomethane	5.11	4.79	1.067	ok	1.066	1.006-1.126
trans-1,2-Dichloroethylene	2.90	3.44	0.843	ok	0.843	0.783-0.903

Initial Calibration Retention Time/Internal Standard Area Summary

Job Number: JD70271
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample Number	Lab File ID	Injected	By	Level	Inst ID	Method	
V7W109-IC0109	7W02635.D	08/03/23 18:19	TCH	0.04	GCMS7W	TO-15	
V7W109-IC0109	7W02636.D	08/03/23 18:50	TCH	0.1	GCMS7W	TO-15	
V7W109-IC0109	7W02637.D	08/03/23 19:25	TCH	0.2	GCMS7W	TO-15	
V7W109-IC0109	7W02638.D	08/03/23 20:02	TCH	0.5	GCMS7W	TO-15	
V7W109-IC0109	7W02640.D	08/03/23 21:09	TCH	5	GCMS7W	TO-15	
V7W109-ICC0109	7W02641.D	08/03/23 21:44	TCH	10	GCMS7W	TO-15	Reporting this level
V7W109-IC0109	7W02642.D	08/03/23 22:21	TCH	20	GCMS7W	TO-15	
V7W109-IC0109	7W02643.D	08/03/23 23:00	TCH	40	GCMS7W	TO-15	
V7W109-IC0109	7W02644.D	08/03/23 23:42	TCH	50	GCMS7W	TO-15	

Target Compound	RT (min.)	Istd RT (min.)	Rel RT		Mean Rel RT	Rel RT Range (+ /- .06)
cis-1,2-Dichloroethylene	3.36	3.44	0.977	ok	0.977	0.917-1.037
cis-1,3-Dichloropropene	6.36	4.79	1.328	ok	1.328	1.268-1.388
m-Dichlorobenzene	16.82	10.53	1.597	ok	1.598	1.538-1.658
o-Dichlorobenzene	17.20	10.53	1.633	ok	1.634	1.574-1.694
p-Dichlorobenzene	16.91	10.53	1.606	ok	1.606	1.546-1.666
trans-1,3-Dichloropropene	7.06	4.79	1.474	ok	1.474	1.414-1.534
Di-Isopropyl ether	3.51	3.44	1.020	ok	1.021	0.961-1.081
2,3-Dimethylpentane	4.94	4.79	1.031	ok	1.031	0.971-1.091
2,4-Dimethylpentane	4.04	3.44	1.174	ok	1.175	1.115-1.235
Ethanol	2.10	3.44	0.610	ok	0.611	0.551-0.671
Ethylbenzene	11.50	10.53	1.092	ok	1.092	1.032-1.152
Ethyl Acetate	3.51	3.44	1.020	ok	1.021	0.961-1.081
Ethyl Acrylate	5.27	4.79	1.100	ok	1.102	1.042-1.162
4-Ethyltoluene	16.14	10.53	1.533	ok	1.533	1.473-1.593
Freon 113	2.65	3.44	0.770	ok	0.771	0.711-0.831
Freon 114	1.86	3.44	0.541	ok	0.541	0.481-0.601
Freon 123	2.22	3.44	0.645	ok	0.645	0.585-0.705
Freon 123A	2.24	3.44	0.651	ok	0.651	0.591-0.711
Freon 142B	1.82	3.44	0.529	ok	0.529	0.469-0.589
Freon 152A	1.74	3.44	0.506	ok	0.506	0.446-0.566
Heptane	5.82	4.79	1.215	ok	1.214	1.154-1.274
Hexachlorobutadiene	18.78	10.53	1.783	ok	1.784	1.724-1.844
Hexachloroethane	17.74	10.53	1.685	ok	1.685	1.625-1.745
Hexane	3.50	3.44	1.017	ok	1.017	0.957-1.077
2-Hexanone	8.20	4.79	1.712	ok	1.716	1.656-1.776
Iodomethane	2.49	3.44	0.724	ok	0.724	0.664-0.784
Isopropylbenzene	14.41	10.53	1.368	ok	1.369	1.309-1.429
Isopropyl Alcohol	2.33	3.44	0.677	ok	0.680	0.620-0.740
p-Isopropyltoluene	17.22	10.53	1.635	ok	1.636	1.576-1.696
Methylene chloride	2.55	3.44	0.741	ok	0.742	0.682-0.802
Methyl ethyl ketone	3.16	3.44	0.919	ok	0.918	0.858-0.978
Methyl Isobutyl Ketone	6.48	4.79	1.353	ok	1.355	1.295-1.415
Methyl Tert Butyl Ether	3.01	3.44	0.875	ok	0.878	0.818-0.938
Methylmethacrylate	5.70	4.79	1.190	ok	1.193	1.133-1.253
Naphthalene	18.52	10.53	1.759	ok	1.759	1.699-1.819
Nonane	14.00	10.53	1.330	ok	1.330	1.270-1.390
Octane	9.52	4.79	1.987	ok	1.987	1.927-2.047
Pentane	2.43	3.44	0.706	ok	0.706	0.646-0.766
n-Propylbenzene	15.76	10.53	1.497	ok	1.497	1.437-1.557

Initial Calibration Retention Time/Internal Standard Area Summary

Job Number: JD70271
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample Number	Lab File ID	Injected	By	Level	Inst ID	Method	
V7W109-IC0109	7W02635.D	08/03/23 18:19	TCH	0.04	GCMS7W	TO-15	
V7W109-IC0109	7W02636.D	08/03/23 18:50	TCH	0.1	GCMS7W	TO-15	
V7W109-IC0109	7W02637.D	08/03/23 19:25	TCH	0.2	GCMS7W	TO-15	
V7W109-IC0109	7W02638.D	08/03/23 20:02	TCH	0.5	GCMS7W	TO-15	
V7W109-IC0109	7W02640.D	08/03/23 21:09	TCH	5	GCMS7W	TO-15	
V7W109-ICC0109	7W02641.D	08/03/23 21:44	TCH	10	GCMS7W	TO-15	Reporting this level
V7W109-IC0109	7W02642.D	08/03/23 22:21	TCH	20	GCMS7W	TO-15	
V7W109-IC0109	7W02643.D	08/03/23 23:00	TCH	40	GCMS7W	TO-15	
V7W109-IC0109	7W02644.D	08/03/23 23:42	TCH	50	GCMS7W	TO-15	

Target Compound	RT (min.)	Istd RT (min.)	Rel RT		Mean Rel RT	Rel RT Range (+ /- .06)
Propylene	1.76	3.44	0.512	ok	0.511	0.451-0.571
Styrene	12.67	10.53	1.203	ok	1.203	1.143-1.263
1,1,1-Trichloroethane	4.13	3.44	1.201	ok	1.200	1.140-1.260
1,1,1,2-Tetrachloroethane	10.61	10.53	1.008	ok	1.009	0.949-1.069
1,1,2,2-Tetrachloroethane	12.89	10.53	1.224	ok	1.224	1.164-1.284
1,1,2-Trichloroethane	7.22	4.79	1.507	ok	1.508	1.448-1.568
1,2,4-Trichlorobenzene	18.47	10.53	1.754	ok	1.755	1.695-1.815
1,2,3-Trichloropropane	13.17	10.53	1.251	ok	1.252	1.192-1.312
1,2,3-Trimethylbenzene	17.15	10.53	1.629	ok	1.629	1.569-1.689
1,2,4-Trimethylbenzene	16.77	10.53	1.593	ok	1.593	1.533-1.653
1,3,5-Trimethylbenzene	16.30	10.53	1.548	ok	1.548	1.488-1.608
2,2,4-Trimethylpentane	5.49	4.79	1.146	ok	1.146	1.086-1.206
Tertiary Butyl Alcohol	2.54	3.44	0.738	ok	0.741	0.681-0.801
Tetrachloroethylene	9.38	4.79	1.958	ok	1.957	1.897-2.017
Tetrahydrofuran	3.75	3.44	1.090	ok	1.091	1.031-1.151
Toluene	7.61	4.79	1.589	ok	1.588	1.528-1.648
Trichloroethylene	5.39	4.79	1.125	ok	1.125	1.065-1.185
Trichlorofluoromethane	2.31	3.44	0.672	ok	0.671	0.611-0.731
Vinyl chloride	1.89	3.44	0.549	ok	0.549	0.489-0.609
Vinyl Acetate	3.05	3.44	0.887	ok	0.887	0.827-0.947
m,p-Xylene	11.93	10.53	1.133	ok	1.132	1.072-1.192
o-Xylene	12.88	10.53	1.223	ok	1.224	1.164-1.284

Internal Standard	RT (min.)		Mean RT(min.)	RT Range (+ /- 0.33)	Area		Mean Area	Area Range (+ /- 40 %)
Bromochloromethane	3.44	ok	3.44	3.11-3.77	42308	ok	42448	25469-59427
1,4-Difluorobenzene	4.79	ok	4.79	4.46-5.12	214327	ok	216937	130162-303712
Chlorobenzene-D5	10.53	ok	10.53	10.20-10.86	194765	ok	196218	117731-274705

Initial Calibration Retention Time/Internal Standard Area Summary

Job Number: JD70271
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample Number	Lab File ID	Injected	By	Level	Inst ID	Method	
V7W109-IC0109	7W02635.D	08/03/23 18:19	TCH	0.04	GCMS7W	TO-15	
V7W109-IC0109	7W02636.D	08/03/23 18:50	TCH	0.1	GCMS7W	TO-15	
V7W109-IC0109	7W02637.D	08/03/23 19:25	TCH	0.2	GCMS7W	TO-15	
V7W109-IC0109	7W02638.D	08/03/23 20:02	TCH	0.5	GCMS7W	TO-15	
V7W109-IC0109	7W02640.D	08/03/23 21:09	TCH	5	GCMS7W	TO-15	
V7W109-ICC0109	7W02641.D	08/03/23 21:44	TCH	10	GCMS7W	TO-15	
V7W109-IC0109	7W02642.D	08/03/23 22:21	TCH	20	GCMS7W	TO-15	Reporting this level
V7W109-IC0109	7W02643.D	08/03/23 23:00	TCH	40	GCMS7W	TO-15	
V7W109-IC0109	7W02644.D	08/03/23 23:42	TCH	50	GCMS7W	TO-15	

Target Compound	RT (min.)	Istd RT (min.)	Rel RT		Mean Rel RT	Rel RT Range (+ /- .06)
Acetone (2-Propanone)	2.25	3.44	0.654	ok	0.655	0.595-0.715
Acrolein	2.21	3.44	0.642	ok	0.642	0.582-0.702
Acrylonitrile	2.40	3.44	0.698	ok	0.697	0.637-0.757
Acetonitrile	2.17	3.44	0.631	ok	0.630	0.570-0.690
1,3-Butadiene	1.94	3.44	0.564	ok	0.562	0.502-0.622
Benzene	4.45	3.44	1.294	ok	1.294	1.234-1.354
Bromobenzene	14.29	10.53	1.357	ok	1.357	1.297-1.417
Bromodichloromethane	5.33	4.79	1.113	ok	1.114	1.054-1.174
Bromoform	11.75	10.53	1.116	ok	1.116	1.056-1.176
Bromomethane	2.02	3.44	0.587	ok	0.585	0.525-0.645
Bromoethene	2.18	3.44	0.634	ok	0.631	0.571-0.691
n-Butane	1.95	3.44	0.567	ok	0.567	0.507-0.627
Benzyl Chloride	16.85	10.53	1.600	ok	1.601	1.541-1.661
n-Butylbenzene	17.56	10.53	1.668	ok	1.668	1.608-1.728
sec-Butylbenzene	17.04	10.53	1.618	ok	1.619	1.559-1.679
tert-Butylbenzene	16.76	10.53	1.592	ok	1.592	1.532-1.652
Carbon disulfide	2.66	3.44	0.773	ok	0.773	0.713-0.833
Chlorobenzene	10.61	10.53	1.008	ok	1.008	0.948-1.068
Chlorodifluoromethane	1.75	3.44	0.509	ok	0.509	0.449-0.569
Chloroethane	2.07	3.44	0.602	ok	0.601	0.541-0.661
Chlorotrifluoroethene	1.76	3.44	0.512	ok	0.512	0.452-0.572
Chloroform	3.52	3.44	1.023	ok	1.024	0.964-1.084
Chloromethane	1.83	3.44	0.532	ok	0.532	0.472-0.592
3-Chloropropene	2.60	3.44	0.756	ok	0.756	0.696-0.816
2-Chlorotoluene	15.42	10.53	1.464	ok	1.465	1.405-1.525
Carbon tetrachloride	4.57	3.44	1.328	ok	1.328	1.268-1.388
Cyclohexane	4.68	4.79	0.977	ok	0.976	0.916-1.036
1,1-Dichloroethane	2.98	3.44	0.866	ok	0.866	0.806-0.926
1,1-Dichloroethylene	2.52	3.44	0.733	ok	0.732	0.672-0.792
1,2-Dibromoethane (EDB)	8.51	4.79	1.777	ok	1.776	1.716-1.836
1,2-Dichloroethane	3.96	3.44	1.151	ok	1.150	1.090-1.210
1,2-Dichloropropane	5.15	4.79	1.075	ok	1.075	1.015-1.135
1,3-Dichloropropane	7.67	4.79	1.601	ok	1.600	1.540-1.660
1,4-Dioxane	5.41	4.79	1.129	ok	1.134	1.074-1.194
Dichlorodifluoromethane	1.78	3.44	0.517	ok	0.517	0.457-0.577
Dichlorofluoromethane	2.09	3.44	0.608	ok	0.608	0.548-0.668
Dibromochloromethane	8.16	4.79	1.704	ok	1.702	1.642-1.762
Dibromomethane	5.11	4.79	1.067	ok	1.066	1.006-1.126
trans-1,2-Dichloroethylene	2.90	3.44	0.843	ok	0.843	0.783-0.903

Initial Calibration Retention Time/Internal Standard Area Summary

Job Number: JD70271
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample Number	Lab File ID	Injected	By	Level	Inst ID	Method	
V7W109-IC0109	7W02635.D	08/03/23 18:19	TCH	0.04	GCMS7W	TO-15	
V7W109-IC0109	7W02636.D	08/03/23 18:50	TCH	0.1	GCMS7W	TO-15	
V7W109-IC0109	7W02637.D	08/03/23 19:25	TCH	0.2	GCMS7W	TO-15	
V7W109-IC0109	7W02638.D	08/03/23 20:02	TCH	0.5	GCMS7W	TO-15	
V7W109-IC0109	7W02640.D	08/03/23 21:09	TCH	5	GCMS7W	TO-15	
V7W109-ICC0109	7W02641.D	08/03/23 21:44	TCH	10	GCMS7W	TO-15	
V7W109-IC0109	7W02642.D	08/03/23 22:21	TCH	20	GCMS7W	TO-15	Reporting this level
V7W109-IC0109	7W02643.D	08/03/23 23:00	TCH	40	GCMS7W	TO-15	
V7W109-IC0109	7W02644.D	08/03/23 23:42	TCH	50	GCMS7W	TO-15	

Target Compound	RT (min.)	Istd RT (min.)	Rel RT		Mean Rel RT	Rel RT Range (+ /- .06)
cis-1,2-Dichloroethylene	3.37	3.44	0.980	ok	0.977	0.917-1.037
cis-1,3-Dichloropropene	6.36	4.79	1.328	ok	1.328	1.268-1.388
m-Dichlorobenzene	16.83	10.53	1.598	ok	1.598	1.538-1.658
o-Dichlorobenzene	17.21	10.53	1.634	ok	1.634	1.574-1.694
p-Dichlorobenzene	16.91	10.53	1.606	ok	1.606	1.546-1.666
trans-1,3-Dichloropropene	7.06	4.79	1.474	ok	1.474	1.414-1.534
Di-Isopropyl ether	3.51	3.44	1.020	ok	1.021	0.961-1.081
2,3-Dimethylpentane	4.94	4.79	1.031	ok	1.031	0.971-1.091
2,4-Dimethylpentane	4.05	3.44	1.177	ok	1.175	1.115-1.235
Ethanol	2.10	3.44	0.610	ok	0.611	0.551-0.671
Ethylbenzene	11.50	10.53	1.092	ok	1.092	1.032-1.152
Ethyl Acetate	3.51	3.44	1.020	ok	1.021	0.961-1.081
Ethyl Acrylate	5.27	4.79	1.100	ok	1.102	1.042-1.162
4-Ethyltoluene	16.14	10.53	1.533	ok	1.533	1.473-1.593
Freon 113	2.66	3.44	0.773	ok	0.771	0.711-0.831
Freon 114	1.86	3.44	0.541	ok	0.541	0.481-0.601
Freon 123	2.23	3.44	0.648	ok	0.645	0.585-0.705
Freon 123A	2.24	3.44	0.651	ok	0.651	0.591-0.711
Freon 142B	1.82	3.44	0.529	ok	0.529	0.469-0.589
Freon 152A	1.74	3.44	0.506	ok	0.506	0.446-0.566
Heptane	5.82	4.79	1.215	ok	1.214	1.154-1.274
Hexachlorobutadiene	18.78	10.53	1.783	ok	1.784	1.724-1.844
Hexachloroethane	17.74	10.53	1.685	ok	1.685	1.625-1.745
Hexane	3.50	3.44	1.017	ok	1.017	0.957-1.077
2-Hexanone	8.20	4.79	1.712	ok	1.716	1.656-1.776
Iodomethane	2.49	3.44	0.724	ok	0.724	0.664-0.784
Isopropylbenzene	14.41	10.53	1.368	ok	1.369	1.309-1.429
Isopropyl Alcohol	2.33	3.44	0.677	ok	0.680	0.620-0.740
p-Isopropyltoluene	17.22	10.53	1.635	ok	1.636	1.576-1.696
Methylene chloride	2.56	3.44	0.744	ok	0.742	0.682-0.802
Methyl ethyl ketone	3.15	3.44	0.916	ok	0.918	0.858-0.978
Methyl Isobutyl Ketone	6.47	4.79	1.351	ok	1.355	1.295-1.415
Methyl Tert Butyl Ether	3.01	3.44	0.875	ok	0.878	0.818-0.938
Methylmethacrylate	5.71	4.79	1.192	ok	1.193	1.133-1.253
Naphthalene	18.52	10.53	1.759	ok	1.759	1.699-1.819
Nonane	14.01	10.53	1.330	ok	1.330	1.270-1.390
Octane	9.52	4.79	1.987	ok	1.987	1.927-2.047
Pentane	2.43	3.44	0.706	ok	0.706	0.646-0.766
n-Propylbenzene	15.76	10.53	1.497	ok	1.497	1.437-1.557

Initial Calibration Retention Time/Internal Standard Area Summary

Job Number: JD70271
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample Number	Lab File ID	Injected	By	Level	Inst ID	Method	
V7W109-IC0109	7W02635.D	08/03/23 18:19	TCH	0.04	GCMS7W	TO-15	
V7W109-IC0109	7W02636.D	08/03/23 18:50	TCH	0.1	GCMS7W	TO-15	
V7W109-IC0109	7W02637.D	08/03/23 19:25	TCH	0.2	GCMS7W	TO-15	
V7W109-IC0109	7W02638.D	08/03/23 20:02	TCH	0.5	GCMS7W	TO-15	
V7W109-IC0109	7W02640.D	08/03/23 21:09	TCH	5	GCMS7W	TO-15	
V7W109-ICC0109	7W02641.D	08/03/23 21:44	TCH	10	GCMS7W	TO-15	
V7W109-IC0109	7W02642.D	08/03/23 22:21	TCH	20	GCMS7W	TO-15	Reporting this level
V7W109-IC0109	7W02643.D	08/03/23 23:00	TCH	40	GCMS7W	TO-15	
V7W109-IC0109	7W02644.D	08/03/23 23:42	TCH	50	GCMS7W	TO-15	

Target Compound	RT (min.)	Istd RT (min.)	Rel RT		Mean Rel RT	Rel RT Range (+ /- .06)
Propylene	1.76	3.44	0.512	ok	0.511	0.451-0.571
Styrene	12.67	10.53	1.203	ok	1.203	1.143-1.263
1,1,1-Trichloroethane	4.13	3.44	1.201	ok	1.200	1.140-1.260
1,1,1,2-Tetrachloroethane	10.62	10.53	1.009	ok	1.009	0.949-1.069
1,1,2,2-Tetrachloroethane	12.89	10.53	1.224	ok	1.224	1.164-1.284
1,1,2-Trichloroethane	7.22	4.79	1.507	ok	1.508	1.448-1.568
1,2,4-Trichlorobenzene	18.48	10.53	1.755	ok	1.755	1.695-1.815
1,2,3-Trichloropropane	13.18	10.53	1.252	ok	1.252	1.192-1.312
1,2,3-Trimethylbenzene	17.15	10.53	1.629	ok	1.629	1.569-1.689
1,2,4-Trimethylbenzene	16.77	10.53	1.593	ok	1.593	1.533-1.653
1,3,5-Trimethylbenzene	16.30	10.53	1.548	ok	1.548	1.488-1.608
2,2,4-Trimethylpentane	5.49	4.79	1.146	ok	1.146	1.086-1.206
Tertiary Butyl Alcohol	2.53	3.44	0.735	ok	0.741	0.681-0.801
Tetrachloroethylene	9.38	4.79	1.958	ok	1.957	1.897-2.017
Tetrahydrofuran	3.74	3.44	1.087	ok	1.091	1.031-1.151
Toluene	7.61	4.79	1.589	ok	1.588	1.528-1.648
Trichloroethylene	5.40	4.79	1.127	ok	1.125	1.065-1.185
Trichlorofluoromethane	2.31	3.44	0.672	ok	0.671	0.611-0.731
Vinyl chloride	1.89	3.44	0.549	ok	0.549	0.489-0.609
Vinyl Acetate	3.05	3.44	0.887	ok	0.887	0.827-0.947
m,p-Xylene	11.94	10.53	1.134	ok	1.132	1.072-1.192
o-Xylene	12.89	10.53	1.224	ok	1.224	1.164-1.284

Internal Standard	RT (min.)		Mean RT(min.)	RT Range (+ /- 0.33)	Area		Mean Area	Area Range (+ /- 40 %)
Bromochloromethane	3.44	ok	3.44	3.11-3.77	41767	ok	42448	25469-59427
1,4-Difluorobenzene	4.79	ok	4.79	4.46-5.12	208895	ok	216937	130162-303712
Chlorobenzene-D5	10.53	ok	10.53	10.20-10.86	193042	ok	196218	117731-274705

Initial Calibration Retention Time/Internal Standard Area Summary

Job Number: JD70271
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample Number	Lab File ID	Injected	By	Level	Inst ID	Method	
V7W109-IC0109	7W02635.D	08/03/23 18:19	TCH	0.04	GCMS7W	TO-15	
V7W109-IC0109	7W02636.D	08/03/23 18:50	TCH	0.1	GCMS7W	TO-15	
V7W109-IC0109	7W02637.D	08/03/23 19:25	TCH	0.2	GCMS7W	TO-15	
V7W109-IC0109	7W02638.D	08/03/23 20:02	TCH	0.5	GCMS7W	TO-15	
V7W109-IC0109	7W02640.D	08/03/23 21:09	TCH	5	GCMS7W	TO-15	
V7W109-ICC0109	7W02641.D	08/03/23 21:44	TCH	10	GCMS7W	TO-15	
V7W109-IC0109	7W02642.D	08/03/23 22:21	TCH	20	GCMS7W	TO-15	
V7W109-IC0109	7W02643.D	08/03/23 23:00	TCH	40	GCMS7W	TO-15	Reporting this level
V7W109-IC0109	7W02644.D	08/03/23 23:42	TCH	50	GCMS7W	TO-15	

Target Compound	RT (min.)	Istd RT (min.)	Rel RT		Mean Rel RT	Rel RT Range (+ /- .06)
Acetone (2-Propanone)	2.25	3.44	0.654	ok	0.655	0.595-0.715
Acrolein	2.21	3.44	0.642	ok	0.642	0.582-0.702
Acrylonitrile	2.40	3.44	0.698	ok	0.697	0.637-0.757
Acetonitrile	2.16	3.44	0.628	ok	0.630	0.570-0.690
1,3-Butadiene	1.93	3.44	0.561	ok	0.562	0.502-0.622
Benzene	4.45	3.44	1.294	ok	1.294	1.234-1.354
Bromobenzene	14.29	10.53	1.357	ok	1.357	1.297-1.417
Bromodichloromethane	5.34	4.80	1.113	ok	1.114	1.054-1.174
Bromoform	11.76	10.53	1.117	ok	1.116	1.056-1.176
Bromomethane	2.01	3.44	0.584	ok	0.585	0.525-0.645
Bromoethene	2.17	3.44	0.631	ok	0.631	0.571-0.691
n-Butane	1.95	3.44	0.567	ok	0.567	0.507-0.627
Benzyl Chloride	16.86	10.53	1.601	ok	1.601	1.541-1.661
n-Butylbenzene	17.57	10.53	1.669	ok	1.668	1.608-1.728
sec-Butylbenzene	17.04	10.53	1.618	ok	1.619	1.559-1.679
tert-Butylbenzene	16.77	10.53	1.593	ok	1.592	1.532-1.652
Carbon disulfide	2.66	3.44	0.773	ok	0.773	0.713-0.833
Chlorobenzene	10.62	10.53	1.009	ok	1.008	0.948-1.068
Chlorodifluoromethane	1.75	3.44	0.509	ok	0.509	0.449-0.569
Chloroethane	2.07	3.44	0.602	ok	0.601	0.541-0.661
Chlorotrifluoroethene	1.76	3.44	0.512	ok	0.512	0.452-0.572
Chloroform	3.52	3.44	1.023	ok	1.024	0.964-1.084
Chloromethane	1.83	3.44	0.532	ok	0.532	0.472-0.592
3-Chloropropene	2.60	3.44	0.756	ok	0.756	0.696-0.816
2-Chlorotoluene	15.43	10.53	1.465	ok	1.465	1.405-1.525
Carbon tetrachloride	4.57	3.44	1.328	ok	1.328	1.268-1.388
Cyclohexane	4.68	4.80	0.975	ok	0.976	0.916-1.036
1,1-Dichloroethane	2.98	3.44	0.866	ok	0.866	0.806-0.926
1,1-Dichloroethylene	2.52	3.44	0.733	ok	0.732	0.672-0.792
1,2-Dibromoethane (EDB)	8.52	4.80	1.775	ok	1.776	1.716-1.836
1,2-Dichloroethane	3.96	3.44	1.151	ok	1.150	1.090-1.210
1,2-Dichloropropane	5.15	4.80	1.073	ok	1.075	1.015-1.135
1,3-Dichloropropane	7.67	4.80	1.598	ok	1.600	1.540-1.660
1,4-Dioxane	5.40	4.80	1.125	ok	1.134	1.074-1.194
Dichlorodifluoromethane	1.78	3.44	0.517	ok	0.517	0.457-0.577
Dichlorofluoromethane	2.09	3.44	0.608	ok	0.608	0.548-0.668
Dibromochloromethane	8.16	4.80	1.700	ok	1.702	1.642-1.762
Dibromomethane	5.11	4.80	1.065	ok	1.066	1.006-1.126
trans-1,2-Dichloroethylene	2.90	3.44	0.843	ok	0.843	0.783-0.903

Initial Calibration Retention Time/Internal Standard Area Summary

Job Number: JD70271
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample Number	Lab File ID	Injected	By	Level	Inst ID	Method	
V7W109-IC0109	7W02635.D	08/03/23 18:19	TCH	0.04	GCMS7W	TO-15	
V7W109-IC0109	7W02636.D	08/03/23 18:50	TCH	0.1	GCMS7W	TO-15	
V7W109-IC0109	7W02637.D	08/03/23 19:25	TCH	0.2	GCMS7W	TO-15	
V7W109-IC0109	7W02638.D	08/03/23 20:02	TCH	0.5	GCMS7W	TO-15	
V7W109-IC0109	7W02640.D	08/03/23 21:09	TCH	5	GCMS7W	TO-15	
V7W109-ICC0109	7W02641.D	08/03/23 21:44	TCH	10	GCMS7W	TO-15	
V7W109-IC0109	7W02642.D	08/03/23 22:21	TCH	20	GCMS7W	TO-15	
V7W109-IC0109	7W02643.D	08/03/23 23:00	TCH	40	GCMS7W	TO-15	Reporting this level
V7W109-IC0109	7W02644.D	08/03/23 23:42	TCH	50	GCMS7W	TO-15	

Target Compound	RT (min.)	Istd RT (min.)	Rel RT		Mean Rel RT	Rel RT Range (+ /- .06)
cis-1,2-Dichloroethylene	3.36	3.44	0.977	ok	0.977	0.917-1.037
cis-1,3-Dichloropropene	6.36	4.80	1.325	ok	1.328	1.268-1.388
m-Dichlorobenzene	16.83	10.53	1.598	ok	1.598	1.538-1.658
o-Dichlorobenzene	17.21	10.53	1.634	ok	1.634	1.574-1.694
p-Dichlorobenzene	16.91	10.53	1.606	ok	1.606	1.546-1.666
trans-1,3-Dichloropropene	7.06	4.80	1.471	ok	1.474	1.414-1.534
Di-Isopropyl ether	3.51	3.44	1.020	ok	1.021	0.961-1.081
2,3-Dimethylpentane	4.94	4.80	1.029	ok	1.031	0.971-1.091
2,4-Dimethylpentane	4.05	3.44	1.177	ok	1.175	1.115-1.235
Ethanol	2.10	3.44	0.610	ok	0.611	0.551-0.671
Ethylbenzene	11.51	10.53	1.093	ok	1.092	1.032-1.152
Ethyl Acetate	3.51	3.44	1.020	ok	1.021	0.961-1.081
Ethyl Acrylate	5.27	4.80	1.098	ok	1.102	1.042-1.162
4-Ethyltoluene	16.14	10.53	1.533	ok	1.533	1.473-1.593
Freon 113	2.65	3.44	0.770	ok	0.771	0.711-0.831
Freon 114	1.86	3.44	0.541	ok	0.541	0.481-0.601
Freon 123	2.22	3.44	0.645	ok	0.645	0.585-0.705
Freon 123A	2.24	3.44	0.651	ok	0.651	0.591-0.711
Freon 142B	1.82	3.44	0.529	ok	0.529	0.469-0.589
Freon 152A	1.74	3.44	0.506	ok	0.506	0.446-0.566
Heptane	5.82	4.80	1.212	ok	1.214	1.154-1.274
Hexachlorobutadiene	18.78	10.53	1.783	ok	1.784	1.724-1.844
Hexachloroethane	17.75	10.53	1.686	ok	1.685	1.625-1.745
Hexane	3.50	3.44	1.017	ok	1.017	0.957-1.077
2-Hexanone	8.19	4.80	1.706	ok	1.716	1.656-1.776
Iodomethane	2.49	3.44	0.724	ok	0.724	0.664-0.784
Isopropylbenzene	14.42	10.53	1.369	ok	1.369	1.309-1.429
Isopropyl Alcohol	2.33	3.44	0.677	ok	0.680	0.620-0.740
p-Isopropyltoluene	17.22	10.53	1.635	ok	1.636	1.576-1.696
Methylene chloride	2.55	3.44	0.741	ok	0.742	0.682-0.802
Methyl ethyl ketone	3.15	3.44	0.916	ok	0.918	0.858-0.978
Methyl Isobutyl Ketone	6.47	4.80	1.348	ok	1.355	1.295-1.415
Methyl Tert Butyl Ether	3.01	3.44	0.875	ok	0.878	0.818-0.938
Methylmethacrylate	5.71	4.80	1.190	ok	1.193	1.133-1.253
Naphthalene	18.53	10.53	1.760	ok	1.759	1.699-1.819
Nonane	14.01	10.53	1.330	ok	1.330	1.270-1.390
Octane	9.53	4.80	1.985	ok	1.987	1.927-2.047
Pentane	2.43	3.44	0.706	ok	0.706	0.646-0.766
n-Propylbenzene	15.77	10.53	1.498	ok	1.497	1.437-1.557

Initial Calibration Retention Time/Internal Standard Area Summary

Job Number: JD70271
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample Number	Lab File ID	Injected	By	Level	Inst ID	Method	
V7W109-IC0109	7W02635.D	08/03/23 18:19	TCH	0.04	GCMS7W	TO-15	
V7W109-IC0109	7W02636.D	08/03/23 18:50	TCH	0.1	GCMS7W	TO-15	
V7W109-IC0109	7W02637.D	08/03/23 19:25	TCH	0.2	GCMS7W	TO-15	
V7W109-IC0109	7W02638.D	08/03/23 20:02	TCH	0.5	GCMS7W	TO-15	
V7W109-IC0109	7W02640.D	08/03/23 21:09	TCH	5	GCMS7W	TO-15	
V7W109-ICC0109	7W02641.D	08/03/23 21:44	TCH	10	GCMS7W	TO-15	
V7W109-IC0109	7W02642.D	08/03/23 22:21	TCH	20	GCMS7W	TO-15	
V7W109-IC0109	7W02643.D	08/03/23 23:00	TCH	40	GCMS7W	TO-15	Reporting this level
V7W109-IC0109	7W02644.D	08/03/23 23:42	TCH	50	GCMS7W	TO-15	

Target Compound	RT (min.)	Istd RT (min.)	Rel RT		Mean Rel RT	Rel RT Range (+ /- .06)
Propylene	1.76	3.44	0.512	ok	0.511	0.451-0.571
Styrene	12.68	10.53	1.204	ok	1.203	1.143-1.263
1,1,1-Trichloroethane	4.13	3.44	1.201	ok	1.200	1.140-1.260
1,1,1,2-Tetrachloroethane	10.63	10.53	1.009	ok	1.009	0.949-1.069
1,1,2,2-Tetrachloroethane	12.90	10.53	1.225	ok	1.224	1.164-1.284
1,1,2-Trichloroethane	7.23	4.80	1.506	ok	1.508	1.448-1.568
1,2,4-Trichlorobenzene	18.48	10.53	1.755	ok	1.755	1.695-1.815
1,2,3-Trichloropropane	13.19	10.53	1.253	ok	1.252	1.192-1.312
1,2,3-Trimethylbenzene	17.15	10.53	1.629	ok	1.629	1.569-1.689
1,2,4-Trimethylbenzene	16.78	10.53	1.594	ok	1.593	1.533-1.653
1,3,5-Trimethylbenzene	16.30	10.53	1.548	ok	1.548	1.488-1.608
2,2,4-Trimethylpentane	5.49	4.80	1.144	ok	1.146	1.086-1.206
Tertiary Butyl Alcohol	2.53	3.44	0.735	ok	0.741	0.681-0.801
Tetrachloroethylene	9.38	4.80	1.954	ok	1.957	1.897-2.017
Tetrahydrofuran	3.74	3.44	1.087	ok	1.091	1.031-1.151
Toluene	7.61	4.80	1.585	ok	1.588	1.528-1.648
Trichloroethylene	5.40	4.80	1.125	ok	1.125	1.065-1.185
Trichlorofluoromethane	2.31	3.44	0.672	ok	0.671	0.611-0.731
Vinyl chloride	1.89	3.44	0.549	ok	0.549	0.489-0.609
Vinyl Acetate	3.05	3.44	0.887	ok	0.887	0.827-0.947
m,p-Xylene	11.95	10.53	1.135	ok	1.132	1.072-1.192
o-Xylene	12.89	10.53	1.224	ok	1.224	1.164-1.284

Internal Standard	RT (min.)		Mean RT(min.)	RT Range (+ /- 0.33)	Area		Mean Area	Area Range (+ /- 40 %)
Bromochloromethane	3.44	ok	3.44	3.11-3.77	39642	ok	42448	25469-59427
1,4-Difluorobenzene	4.80	ok	4.79	4.46-5.12	198177	ok	216937	130162-303712
Chlorobenzene-D5	10.53	ok	10.53	10.20-10.86	186637	ok	196218	117731-274705

Initial Calibration Retention Time/Internal Standard Area Summary

Job Number: JD70271
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample Number	Lab File ID	Injected	By	Level	Inst ID	Method	
V7W109-IC0109	7W02635.D	08/03/23 18:19	TCH	0.04	GCMS7W	TO-15	
V7W109-IC0109	7W02636.D	08/03/23 18:50	TCH	0.1	GCMS7W	TO-15	
V7W109-IC0109	7W02637.D	08/03/23 19:25	TCH	0.2	GCMS7W	TO-15	
V7W109-IC0109	7W02638.D	08/03/23 20:02	TCH	0.5	GCMS7W	TO-15	
V7W109-IC0109	7W02640.D	08/03/23 21:09	TCH	5	GCMS7W	TO-15	
V7W109-ICC0109	7W02641.D	08/03/23 21:44	TCH	10	GCMS7W	TO-15	
V7W109-IC0109	7W02642.D	08/03/23 22:21	TCH	20	GCMS7W	TO-15	
V7W109-IC0109	7W02643.D	08/03/23 23:00	TCH	40	GCMS7W	TO-15	
V7W109-IC0109	7W02644.D	08/03/23 23:42	TCH	50	GCMS7W	TO-15	Reporting this level

Target Compound	RT (min.)	Istd RT (min.)	Rel RT		Mean Rel RT	Rel RT Range (+ /- .06)
Acetone (2-Propanone)	2.25	3.45	0.652	ok	0.655	0.595-0.715
Acrolein	2.21	3.45	0.641	ok	0.642	0.582-0.702
Acrylonitrile	2.40	3.45	0.696	ok	0.697	0.637-0.757
Acetonitrile	2.16	3.45	0.626	ok	0.630	0.570-0.690
1,3-Butadiene	1.94	3.45	0.562	ok	0.562	0.502-0.622
Benzene	4.46	3.45	1.293	ok	1.294	1.234-1.354
Bromobenzene	14.30	10.53	1.358	ok	1.357	1.297-1.417
Bromodichloromethane	5.34	4.79	1.115	ok	1.114	1.054-1.174
Bromoform	11.76	10.53	1.117	ok	1.116	1.056-1.176
Bromomethane	2.02	3.45	0.586	ok	0.585	0.525-0.645
Bromoethene	2.17	3.45	0.629	ok	0.631	0.571-0.691
n-Butane	1.95	3.45	0.565	ok	0.567	0.507-0.627
Benzyl Chloride	16.86	10.53	1.601	ok	1.601	1.541-1.661
n-Butylbenzene	17.57	10.53	1.669	ok	1.668	1.608-1.728
sec-Butylbenzene	17.05	10.53	1.619	ok	1.619	1.559-1.679
tert-Butylbenzene	16.77	10.53	1.593	ok	1.592	1.532-1.652
Carbon disulfide	2.66	3.45	0.771	ok	0.773	0.713-0.833
Chlorobenzene	10.61	10.53	1.008	ok	1.008	0.948-1.068
Chlorodifluoromethane	1.75	3.45	0.507	ok	0.509	0.449-0.569
Chloroethane	2.07	3.45	0.600	ok	0.601	0.541-0.661
Chlorotrifluoroethene	1.76	3.45	0.510	ok	0.512	0.452-0.572
Chloroform	3.53	3.45	1.023	ok	1.024	0.964-1.084
Chloromethane	1.83	3.45	0.530	ok	0.532	0.472-0.592
3-Chloropropene	2.60	3.45	0.754	ok	0.756	0.696-0.816
2-Chlorotoluene	15.44	10.53	1.466	ok	1.465	1.405-1.525
Carbon tetrachloride	4.57	3.45	1.325	ok	1.328	1.268-1.388
Cyclohexane	4.68	4.79	0.977	ok	0.976	0.916-1.036
1,1-Dichloroethane	2.98	3.45	0.864	ok	0.866	0.806-0.926
1,1-Dichloroethylene	2.52	3.45	0.730	ok	0.732	0.672-0.792
1,2-Dibromoethane (EDB)	8.52	4.79	1.779	ok	1.776	1.716-1.836
1,2-Dichloroethane	3.96	3.45	1.148	ok	1.150	1.090-1.210
1,2-Dichloropropane	5.16	4.79	1.077	ok	1.075	1.015-1.135
1,3-Dichloropropane	7.68	4.79	1.603	ok	1.600	1.540-1.660
1,4-Dioxane	5.40	4.79	1.127	ok	1.134	1.074-1.194
Dichlorodifluoromethane	1.78	3.45	0.516	ok	0.517	0.457-0.577
Dichlorofluoromethane	2.09	3.45	0.606	ok	0.608	0.548-0.668
Dibromochloromethane	8.16	4.79	1.704	ok	1.702	1.642-1.762
Dibromomethane	5.11	4.79	1.067	ok	1.066	1.006-1.126
trans-1,2-Dichloroethylene	2.90	3.45	0.841	ok	0.843	0.783-0.903

Initial Calibration Retention Time/Internal Standard Area Summary

Job Number: JD70271
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample Number	Lab File ID	Injected	By	Level	Inst ID	Method	
V7W109-IC0109	7W02635.D	08/03/23 18:19	TCH	0.04	GCMS7W	TO-15	
V7W109-IC0109	7W02636.D	08/03/23 18:50	TCH	0.1	GCMS7W	TO-15	
V7W109-IC0109	7W02637.D	08/03/23 19:25	TCH	0.2	GCMS7W	TO-15	
V7W109-IC0109	7W02638.D	08/03/23 20:02	TCH	0.5	GCMS7W	TO-15	
V7W109-IC0109	7W02640.D	08/03/23 21:09	TCH	5	GCMS7W	TO-15	
V7W109-ICC0109	7W02641.D	08/03/23 21:44	TCH	10	GCMS7W	TO-15	
V7W109-IC0109	7W02642.D	08/03/23 22:21	TCH	20	GCMS7W	TO-15	
V7W109-IC0109	7W02643.D	08/03/23 23:00	TCH	40	GCMS7W	TO-15	
V7W109-IC0109	7W02644.D	08/03/23 23:42	TCH	50	GCMS7W	TO-15	Reporting this level

Target Compound	RT (min.)	Istd RT (min.)	Rel RT		Mean Rel RT	Rel RT Range (+ /- .06)
cis-1,2-Dichloroethylene	3.36	3.45	0.974	ok	0.977	0.917-1.037
cis-1,3-Dichloropropene	6.37	4.79	1.330	ok	1.328	1.268-1.388
m-Dichlorobenzene	16.84	10.53	1.599	ok	1.598	1.538-1.658
o-Dichlorobenzene	17.21	10.53	1.634	ok	1.634	1.574-1.694
p-Dichlorobenzene	16.92	10.53	1.607	ok	1.606	1.546-1.666
trans-1,3-Dichloropropene	7.07	4.79	1.476	ok	1.474	1.414-1.534
Di-Isopropyl ether	3.51	3.45	1.017	ok	1.021	0.961-1.081
2,3-Dimethylpentane	4.94	4.79	1.031	ok	1.031	0.971-1.091
2,4-Dimethylpentane	4.05	3.45	1.174	ok	1.175	1.115-1.235
Ethanol	2.10	3.45	0.609	ok	0.611	0.551-0.671
Ethylbenzene	11.51	10.53	1.093	ok	1.092	1.032-1.152
Ethyl Acetate	3.51	3.45	1.017	ok	1.021	0.961-1.081
Ethyl Acrylate	5.27	4.79	1.100	ok	1.102	1.042-1.162
4-Ethyltoluene	16.14	10.53	1.533	ok	1.533	1.473-1.593
Freon 113	2.66	3.45	0.771	ok	0.771	0.711-0.831
Freon 114	1.86	3.45	0.539	ok	0.541	0.481-0.601
Freon 123	2.22	3.45	0.643	ok	0.645	0.585-0.705
Freon 123A	2.24	3.45	0.649	ok	0.651	0.591-0.711
Freon 142B	1.82	3.45	0.528	ok	0.529	0.469-0.589
Freon 152A	1.74	3.45	0.504	ok	0.506	0.446-0.566
Heptane	5.82	4.79	1.215	ok	1.214	1.154-1.274
Hexachlorobutadiene	18.78	10.53	1.783	ok	1.784	1.724-1.844
Hexachloroethane	17.75	10.53	1.686	ok	1.685	1.625-1.745
Hexane	3.50	3.45	1.014	ok	1.017	0.957-1.077
2-Hexanone	8.20	4.79	1.712	ok	1.716	1.656-1.776
Iodomethane	2.49	3.45	0.722	ok	0.724	0.664-0.784
Isopropylbenzene	14.42	10.53	1.369	ok	1.369	1.309-1.429
Isopropyl Alcohol	2.33	3.45	0.675	ok	0.680	0.620-0.740
p-Isopropyltoluene	17.23	10.53	1.636	ok	1.636	1.576-1.696
Methylene chloride	2.56	3.45	0.742	ok	0.742	0.682-0.802
Methyl ethyl ketone	3.16	3.45	0.916	ok	0.918	0.858-0.978
Methyl Isobutyl Ketone	6.47	4.79	1.351	ok	1.355	1.295-1.415
Methyl Tert Butyl Ether	3.01	3.45	0.872	ok	0.878	0.818-0.938
Methylmethacrylate	5.71	4.79	1.192	ok	1.193	1.133-1.253
Naphthalene	18.53	10.53	1.760	ok	1.759	1.699-1.819
Nonane	14.02	10.53	1.331	ok	1.330	1.270-1.390
Octane	9.53	4.79	1.990	ok	1.987	1.927-2.047
Pentane	2.43	3.45	0.704	ok	0.706	0.646-0.766
n-Propylbenzene	15.77	10.53	1.498	ok	1.497	1.437-1.557

Initial Calibration Retention Time/Internal Standard Area Summary

Job Number: JD70271
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample Number	Lab File ID	Injected	By	Level	Inst ID	Method	
V7W109-IC0109	7W02635.D	08/03/23 18:19	TCH	0.04	GCMS7W	TO-15	
V7W109-IC0109	7W02636.D	08/03/23 18:50	TCH	0.1	GCMS7W	TO-15	
V7W109-IC0109	7W02637.D	08/03/23 19:25	TCH	0.2	GCMS7W	TO-15	
V7W109-IC0109	7W02638.D	08/03/23 20:02	TCH	0.5	GCMS7W	TO-15	
V7W109-IC0109	7W02640.D	08/03/23 21:09	TCH	5	GCMS7W	TO-15	
V7W109-ICC0109	7W02641.D	08/03/23 21:44	TCH	10	GCMS7W	TO-15	
V7W109-IC0109	7W02642.D	08/03/23 22:21	TCH	20	GCMS7W	TO-15	
V7W109-IC0109	7W02643.D	08/03/23 23:00	TCH	40	GCMS7W	TO-15	
V7W109-IC0109	7W02644.D	08/03/23 23:42	TCH	50	GCMS7W	TO-15	Reporting this level

Target Compound	RT (min.)	Istd RT (min.)	Rel RT		Mean Rel RT	Rel RT Range (+ /- .06)
Propylene	1.76	3.45	0.510	ok	0.511	0.451-0.571
Styrene	12.68	10.53	1.204	ok	1.203	1.143-1.263
1,1,1-Trichloroethane	4.13	3.45	1.197	ok	1.200	1.140-1.260
1,1,1,2-Tetrachloroethane	10.63	10.53	1.009	ok	1.009	0.949-1.069
1,1,2,2-Tetrachloroethane	12.91	10.53	1.226	ok	1.224	1.164-1.284
1,1,2-Trichloroethane	7.23	4.79	1.509	ok	1.508	1.448-1.568
1,2,4-Trichlorobenzene	18.48	10.53	1.755	ok	1.755	1.695-1.815
1,2,3-Trichloropropane	13.19	10.53	1.253	ok	1.252	1.192-1.312
1,2,3-Trimethylbenzene	17.16	10.53	1.630	ok	1.629	1.569-1.689
1,2,4-Trimethylbenzene	16.78	10.53	1.594	ok	1.593	1.533-1.653
1,3,5-Trimethylbenzene	16.30	10.53	1.548	ok	1.548	1.488-1.608
2,2,4-Trimethylpentane	5.50	4.79	1.148	ok	1.146	1.086-1.206
Tertiary Butyl Alcohol	2.53	3.45	0.733	ok	0.741	0.681-0.801
Tetrachloroethylene	9.38	4.79	1.958	ok	1.957	1.897-2.017
Tetrahydrofuran	3.74	3.45	1.084	ok	1.091	1.031-1.151
Toluene	7.61	4.79	1.589	ok	1.588	1.528-1.648
Trichloroethylene	5.40	4.79	1.127	ok	1.125	1.065-1.185
Trichlorofluoromethane	2.31	3.45	0.670	ok	0.671	0.611-0.731
Vinyl chloride	1.89	3.45	0.548	ok	0.549	0.489-0.609
Vinyl Acetate	3.05	3.45	0.884	ok	0.887	0.827-0.947
m,p-Xylene	11.95	10.53	1.135	ok	1.132	1.072-1.192
o-Xylene	12.90	10.53	1.225	ok	1.224	1.164-1.284

Internal Standard	RT (min.)		Mean RT(min.)	RT Range (+ /- 0.33)	Area		Mean Area	Area Range (+ /- 40 %)
Bromochloromethane	3.45	ok	3.44	3.11-3.77	38523	ok	42448	25469-59427
1,4-Difluorobenzene	4.79	ok	4.79	4.46-5.12	193160	ok	216937	130162-303712
Chlorobenzene-D5	10.53	ok	10.53	10.20-10.86	181805	ok	196218	117731-274705

Surrogate Recovery Summary

Job Number: JD70271
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Method: TO-15 **Matrix:** AIR

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1
JD70271-1	7W02740.D	96
JD70271-2	7W02742.D	95
JD70271-3	7W02743.D	97
JD70271-4	7W02744.D	97
JD70271-5	7W02745.D	97
JD70271-6	7W02746.D	96
JD70271-1DUP	7W02741.D	96
V5W2075-SCC	5W50569.D	106
V5W2075-SCC	5W50579.D	106
V7W113-BS	7W02734.D	99
V7W113-BSD	7W02735.D	99
V7W113-MB	7W02737.D	95
V5W2075-BS	5W50561.D	103
V5W2075-BSD	5W50562.D	103
V5W2075-MB	5W50565.D	107

Surrogate Compounds	Recovery Limits
S1 = 4-Bromofluorobenzene	65-128%

Initial Calibration Summary

Job Number: JD70271
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample: V5W2072-ICC2072
Lab FileID: 5W50507.D

Response Factor Report GCMS5W

Method : C:\msdchem\1\methods\M5w2072.M (RTE Integrator)
Title : TO15 by GCMS w/Rtx-1, 60 m X 0.32mm ID X 1.0 um
Last Update : Mon Jun 19 09:01:03 2023
Response via : Initial Calibration

Calibration Files
0.04=5w50501.D 0.1 =5w50502.D 0.2 =5w50503.D 0.5 =5w50504.D
5 =5w50506.D 10 =5w50507.D 20 =5w50508.D 40 =5w50509.D
50 =5w50510.D =

Compound	0.04	0.1	0.2	0.5	5	10	20	40	50	Avg	%RSD
1) I BROMOCHLOROMETHANE	----------ISTD----------										
2) FREON 115										0.000	-1.00
3) FREON 152A	0.663	0.795	0.789	0.743	0.804	0.745	0.718	0.680	0.675	0.735	7.40
4) CHLORODIFLUOROMETHANE	0.291	0.411	0.417	0.394	0.420	0.400	0.384	0.371	0.375	0.385	10.22
5) CHLOROTRIFLUOROETHENE	2.185	2.000	1.973	1.845	2.009	1.906	1.854	1.801	1.835	1.934	6.25
6) DICHLORODIFLUOROMETHANE	4.818	4.303	4.119	2.299	4.142	3.855	3.710	3.167	2.990	3.712	20.78
7) PROPYLENE	1.134	0.999	0.846	0.892	0.838	0.798	0.740	0.729		0.872	15.63
8) 1-CHLORO-1,1-DIFLUOROETHANE	3.932	3.621	3.336	3.209	3.312	3.085	2.886	2.696	2.730	3.201	12.75
9) FREON 114	4.478	4.438	3.978	3.760	3.946	3.635	3.350	3.104	3.150	3.760	13.44
10) CHLOROMETHANE	0.571	0.506	0.432	0.429	0.393	0.362	0.323	0.325		0.418	20.86
11) VINYL CHLORIDE	1.785	1.474	1.295	1.221	1.352	1.235	1.149	1.068	1.079	1.295	17.34
12) 1,3-BUTADIENE	1.285	1.053	0.926	0.873	0.932	0.876	0.798	0.745	0.753	0.916	18.47
13) n-BUTANE	2.858	1.930	1.669	1.782	1.656	1.511	1.373	1.363		1.768	27.24
14) BROMOMETHANE	1.685	1.433	1.217	1.238	1.117	1.046	1.001	1.058		1.224	18.95
15) CHLOROETHANE	0.501	0.592	0.568	0.479	0.525	0.483	0.446	0.430	0.446	0.497	11.28
16) DICHLOROFLUOROMETHANE	3.644	3.228	2.997	2.708	2.894	2.592	2.404	2.244	2.332	2.783	16.45
17) ACETONITRILE	0.979	1.063	1.052	0.953	1.098	0.980	0.952	0.851	0.853	0.976	8.89
18) ACROLEIN	0.505	0.449	0.469	0.487	0.514	0.494	0.465	0.437	0.432	0.473	6.26
19) FREON 123	3.349	3.353	3.154	3.018	3.155	2.969	2.823	2.672	2.705	3.022	8.41
20) FREON 123A	1.823	1.855	1.704	1.626	1.719	1.621	1.559	1.511	1.562	1.664	7.19
21) TRICHLOROFLUOROMETHANE	4.182	3.918	3.690	3.594	3.809	3.642	3.489	3.374	3.485	3.687	6.79
22) ISOPROPYL ALCOHOL	3.079	2.469	2.213	2.194	2.303	2.235	2.119	1.957	1.907	2.275	15.21
23) ACETONE											

Initial Calibration Summary

Job Number: JD70271
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample: V5W2072-ICC2072
Lab FileID: 5W50507.D

```
                0.652 0.594 0.525 0.531 0.510 0.488 0.447 0.431   0.522   13.97
24)  PENTANE
          1.341 1.198 1.152 1.103 1.158 1.123 1.068 0.979 0.949   1.119   10.46
25)  IODOMETHANE
          4.083 3.880 3.585 3.438 3.862 3.763 3.717 3.644 3.820   3.755    5.00
26)  1,1-DICHLOROETHYLENE
          2.031 1.796 1.559 1.555 1.260 1.201 1.185 1.115 1.136   1.426   22.90
27)  CARBON DISULFIDE
          3.899 3.869 3.598 3.483 3.885 3.688 3.571 3.324 3.297   3.624    6.39
28)  ETHANOL
                            0.666 0.552 0.499 0.460 0.428 0.437   0.507   17.75
29)  BROMOETHENE
          1.382 1.286 1.185 1.056 1.198 1.064 1.043 0.997 1.076   1.143   11.23
30)  ACRYLONITRILE
                0.423 0.565 0.633 0.766 0.759 0.734 0.678 0.665   0.653   17.59
31)  METHYLENE CHLORIDE
                      1.733 1.330 1.175 1.120 1.078 1.003 1.000   1.206   21.44
32)  3-CHLOROPROPENE
          0.344 0.493 0.453 0.501 0.556 0.549 0.528 0.500 0.499   0.491   12.94
33)  FREON 113
          2.501 2.343 2.315 2.205 2.407 2.340 2.287 2.277 2.385   2.340    3.64
34)  TRANS-1,2-DICHLOROETHYLENE
                1.473 1.709 1.372 1.314 1.286 1.268 1.222 1.233   1.360   11.99
35)  TERTIARY BUTYL ALCOHOL
          2.678 2.373 2.282 2.222 2.544 2.464 2.461 2.230 2.228   2.387    6.77
36)  METHYL TERTIARY BUTYL ETHER
          4.480 3.582 3.432 3.219 3.472 3.412 3.334 3.185 3.208   3.481   11.44
37)  TETRAHYDROFURAN
          0.136 0.434 0.427 0.462 0.554 0.538 0.539 0.511 0.507   0.456   28.18
38)  HEXANE
          1.849 1.707 1.692 1.574 1.857 1.806 1.762 1.666 1.640   1.728    5.62
39)  VINYL ACETATE
                      0.030 0.053 0.187 0.210 0.226 0.233 0.235   0.168   52.42
           ---- Linear regression ----  Coefficient =  0.9996
             Response Ratio = -0.01699 + 0.23756 *A

40)  1,1-DICHLOROETHANE
          2.405 2.310 2.210 2.174 2.327 2.255 2.179 2.048 2.036   2.216    5.58
41)  METHYL ETHYL KETONE
                0.253 0.394 0.456 0.529 0.535 0.537 0.509 0.509   0.465   21.17
42)  cis-1,2-DICHLOROETHYLENE
          1.976 2.070 1.460 1.265 1.374 1.324 1.320 1.276 1.284   1.483   21.08
43)  DIISOPROPYL ETHER
          0.337 0.491 0.493 0.490 0.578 0.557 0.547 0.520 0.513   0.503   13.86
44)  ETHYL ACETATE
                0.220 0.306 0.334 0.414 0.412 0.399 0.377 0.374   0.355   18.63
45)  METHYL ACRYLATE
          1.189 1.602 1.632 1.574 2.364 2.339 2.296 2.173 2.145   1.924   22.25
46)  CHLOROFORM
          3.477 3.428 3.135 2.957 3.204 3.059 2.935 2.791 2.810   3.089    8.01
47)  2,4-DIMETHYLPENTANE
          2.245 1.993 1.919 1.834 2.155 2.102 2.043 1.927 1.908   2.014    6.63
48)  1,1,1-TRICHLOROETHANE
          3.895 3.431 3.138 2.980 3.245 3.129 3.087 3.033 3.112   3.228    8.74
49)  CARBON TETRACHLORIDE
          3.595 3.350 3.366 3.182 3.579 3.544 3.501 3.522 3.630   3.474    4.20
50)  1,2-DICHLOROETHANE
          2.028 1.963 1.929 1.837 2.067 1.996 1.926 1.858 1.887   1.943    3.98

51) I   1,4-DIFLUOROBENZENE   ----------------ISTD---------------------
```

Initial Calibration Summary

Job Number: JD70271
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample: V5W2072-ICC2072
Lab FileID: 5W50507.D

52) BENZENE
0.805 0.740 0.708 0.664 0.757 0.737 0.743 0.716 0.736 0.734 5.18
53) CYCLOHEXANE
0.290 0.272 0.273 0.261 0.304 0.297 0.301 0.291 0.297 0.287 5.20
54) 2,3-DIMETHYLPENTANE
0.145 0.137 0.137 0.131 0.154 0.148 0.152 0.146 0.149 0.144 5.36
55) TRICHLOROETHYLENE
0.420 0.380 0.366 0.349 0.407 0.390 0.390 0.382 0.395 0.387 5.42
56) 1,2-DICHLOROPROPANE
0.313 0.284 0.291 0.271 0.296 0.290 0.290 0.279 0.282 0.288 4.15
57) DIBROMOMETHANE
0.530 0.422 0.381 0.363 0.403 0.401 0.410 0.427 0.464 0.422 11.72
58) ETHYL ACRYLATE
0.283 0.375 0.412 0.447 0.562 0.555 0.570 0.557 0.560 0.480 21.88
59) BROMODICHLOROMETHANE
0.639 0.668 0.633 0.619 0.706 0.686 0.688 0.683 0.705 0.670 4.82
60) 2,2,4-TRIMETHYLPENTANE
1.180 1.088 1.009 1.016 1.205 1.173 1.159 1.107 1.116 1.117 6.29
61) 1,4-DIOXANE
0.139 0.123 0.150 0.179 0.177 0.178 0.172 0.178 0.162 13.48
62) HEPTANE
0.391 0.388 0.356 0.353 0.408 0.399 0.399 0.384 0.385 0.385 4.92
63) METHYL METHACRYLATE
0.145 0.187 0.207 0.210 0.259 0.263 0.268 0.257 0.265 0.229 19.15
64) METHYL ISOBUTYL KETONE
0.081 0.150 0.158 0.167 0.223 0.223 0.226 0.216 0.218 0.185 26.83
65) cis-1,3-DICHLOROPROPENE
0.369 0.383 0.380 0.385 0.472 0.471 0.484 0.483 0.498 0.436 12.55
66) TOLUENE
0.494 0.484 0.479 0.463 0.551 0.545 0.557 0.551 0.572 0.522 7.87
67) 1,3-DICHLOROPROPANE
0.387 0.402 0.392 0.396 0.465 0.453 0.456 0.443 0.451 0.427 7.48
68) trans-1,3-DICHLOROPROPENE
0.284 0.314 0.334 0.350 0.451 0.451 0.484 0.469 0.483 0.402 19.95
69) 1,1,2-TRICHLOROETHANE
0.270 0.284 0.278 0.284 0.321 0.315 0.316 0.307 0.318 0.299 6.69

70) I CHLOROBENZENE-D5 ----------ISTD----------
71) 2-HEXANONE
0.208 0.458 0.627 0.606 0.413 0.515 0.500 0.476 29.48
72) ETHYL METHACRYLATE
0.625 0.663 0.648 0.677 0.935 0.893 0.869 0.757 0.741 0.756 15.33
73) TETRACHLOROETHYLENE
1.050 0.976 0.856 0.854 0.906 0.863 0.846 0.780 0.790 0.880 9.81
74) DIBROMOCHLOROMETHANE
1.272 1.324 1.269 1.294 1.540 1.484 1.448 1.305 1.314 1.361 7.45
75) 1,2-DIBROMOETHANE
1.043 1.066 1.061 1.083 1.222 1.168 1.128 1.005 1.007 1.087 6.72
76) OCTANE
1.163 1.021 1.012 0.974 1.141 1.089 1.053 0.906 0.880 1.027 9.45
77) 1,1,1,2-TETRACHLOROETHANE
1.038 0.943 0.906 0.892 1.023 0.975 0.950 0.866 0.861 0.939 6.85
78) CHLOROBENZENE
1.864 1.710 1.580 1.572 1.694 1.605 1.551 1.383 1.361 1.591 9.87
79) ETHYLBENZENE
2.645 2.384 2.321 2.232 2.571 2.471 2.402 2.130 2.124 2.364 7.72
80) m,p-XYLENE
0.886 0.863 0.833 0.823 0.984 0.940 0.917 0.820 0.818 0.876 6.86
81) o-XYLENE
0.910 0.834 0.823 0.814 0.970 0.915 0.884 0.777 0.756 0.854 8.24

Initial Calibration Summary

Job Number: JD70271
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample: V5W2072-ICC2072
Lab FileID: 5W50507.D

```
 82)  STYRENE
           1.118 1.130 1.086 1.117 1.439 1.391 1.386 1.246 1.247   1.240   11.03
 83)  NONANE
           1.140 1.060 1.023 1.038 1.212 1.130 1.084 0.947 0.921   1.062    8.74
 84)  BROMOFORM
           1.196 1.217 1.197 1.254 1.669 1.627 1.603 1.480 1.493   1.415   14.04
 85)  4-BROMOFLUOROBENZENE
           1.279 1.285 1.286 1.282 1.275 1.222 1.167 1.039 0.994   1.203    9.43
 86)  1,1,2,2-TETRACHLOROETHANE
           1.692 1.637 1.570 1.537 1.719 1.609 1.537 1.345 1.296   1.549    9.34
 87)  1,2,3-TRICHLOROPROPANE
           1.128 1.175 1.120 1.107 1.207 1.139 1.076 0.947 0.927   1.092    8.76
 88)  ISOPROPYLBENZENE
           2.860 2.725 2.559 2.498 2.939 2.798 2.723 2.431 2.437   2.663    7.07
 89)  BROMOBENZENE
           1.344 1.444 1.357 1.284 1.454 1.366 1.310 1.149 1.137   1.316    8.55
 90)  2-CHLOROTOLUENE
           0.702 0.630 0.665 0.640 0.774 0.739 0.719 0.650 0.653   0.686    7.28
 91)  n-PROPYLBENZENE
           0.664 0.649 0.621 0.639 0.790 0.762 0.738 0.654 0.658   0.686    8.83
 92)  4-ETHYLTOLUENE
           2.497 2.430 2.356 2.361 2.899 2.787 2.713 2.450 2.430   2.547    7.85
 93)  1,3,5-TRIMETHYLBENZENE
           2.160 2.134 2.074 2.058 2.479 2.361 2.287 2.064 2.050   2.185    7.09
 94)  ALPHA-METHYLSTYRENE
           0.756 0.761 0.766 0.819 1.103 1.087 1.085 0.991 0.986   0.928   16.30
 95)  tert-BUTYLBENZENE
                0.392 0.409 0.414 0.530 0.503 0.489 0.436 0.429   0.450   11.15
 96)  1,2,4-TRIMETHYLBENZENE
           2.254 2.110 2.052 2.070 2.613 2.501 2.425 2.142 2.075   2.249    9.42
 97)  m-DICHLOROBENZENE
           1.752 1.648 1.648 1.583 1.927 1.855 1.796 1.617 1.565   1.710    7.48
 98)  BENZYL CHLORIDE
           1.463 1.566 1.583 1.677 1.998 2.016 2.075 1.933 1.868   1.798   12.65
 99)  p-DICHLOROBENZENE
           1.861 1.734 1.675 1.624 1.926 1.869 1.798 1.680 1.657   1.758    6.17
100)  sec-BUTYLBENZENE
           0.526 0.540 0.524 0.557 0.685 0.652 0.621 0.564 0.558   0.581    9.98
101)  1,2,3-Trimethylbenzene
           2.350 2.176 2.075 2.137 2.624 2.507 2.442 2.231 2.184   2.303    8.14
102)  p-ISOPROPYLTOLUENE
           0.650 0.652 0.625 0.632 0.810 0.772 0.489 0.661 0.647   0.660   13.84
103)  o-DICHLOROBENZENE
           1.618 1.635 1.538 1.544 1.843 1.749 1.732 1.603 1.596   1.651    6.21
104)  n-BUTYLBENZENE
           0.570 0.513 0.532 0.563 0.743 0.712 0.713 0.652 0.635   0.626   13.60
105)  HEXACHLOROETHANE
           1.081 1.025 0.988 0.929 1.234 1.212 1.208 1.065 1.036   1.086    9.96
106)  HEXACHLOROBUTADIENE
           1.337 1.248 1.239 1.243 1.717 1.794 1.842 1.465 1.295   1.464   17.18
107)  1,2,4-TRICHLOROBENZENE
           1.218 1.084 1.145 1.163 1.705 1.764 1.849 1.683 1.635   1.472   21.08
108)  NAPHTHALENE
           2.100 2.125 2.157 2.438 3.694 3.738 3.643 3.241 2.947   2.898   24.43

109) I   BROMOCHLOROMETHANE (A ----------------ISTD----------------------
110)  TVHC as equiv Pentane
           1.213 0.818 0.758 0.722 0.771 0.747 0.714 0.661 0.657   0.785 E1   21.47
 ---------------------------------------------------------------------------
 (#) = Out of Range  ###  Number of calibration levels exceeded format  ###
```

Initial Calibration Summary

Job Number: JD70271
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample: V5W2072-ICC2072
Lab FileID: 5W50507.D

M5w2072.M Mon Jun 19 09:04:36 2023

Initial Calibration Verification

Job Number: JD70271
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample: V5W2072-ICV2072
Lab FileID: 5W50513.D

Evaluate Continuing Calibration Report

Data File : C:\msdchem\1\data\5w\5w50513.D Vial: 4
Acq On : 10 Jun 2023 5:12 am Operator: thomash
Sample : icv2072-10 Inst : GCMS5W
Misc : MS63562,V5W2072,,,,,1 Multiplr: 1.00
MS Integration Params: RTEINT1.P

Method : C:\msdchem\1\methods\M5w2072.M (RTE Integrator)
Title : TO15 by GCMS w/Rtx-1, 60 m X 0.32mm ID X 1.0 um
Last Update : Mon Jun 19 09:01:03 2023
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 60% Max. R.T. Dev 0.50min
Max. RRF Dev : 30% Max. Rel. Area : 140%

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)	R.T.
1 I	BROMOCHLOROMETHANE	1.000	1.000	0.0	106	0.00	7.86
2	FREON 115	0.000	0.000	0.0	0#	0.04	4.17
3	FREON 152A	0.735	0.698	5.0	99	0.00	3.66
4	CHLORODIFLUOROMETHANE	0.385	0.370	3.9	98	0.01	3.69
5	CHLOROTRIFLUOROETHENE	1.934	1.798	7.0	100	0.01	3.72
6	DICHLORODIFLUOROMETHANE	3.712	3.585	3.4	98	0.01	3.77
7	PROPYLENE	0.872	0.769	11.8	97	0.01	3.72
8	1-CHLORO-1,1-DIFLUOROETHA	3.201	2.999	6.3	103	0.01	3.88
9	FREON 114	3.760	3.578	4.8	104	0.00	3.96
10	CHLOROMETHANE	0.418	0.368	12.0	99	0.01	3.89
11	VINYL CHLORIDE	1.295	1.186	8.4	101	0.01	4.06
12	1,3-BUTADIENE	0.916	0.818	10.7	99	0.00	4.16
13	n-BUTANE	1.768	1.518	14.1	97	0.00	4.19
14	BROMOMETHANE	1.224	1.126	8.0	107	0.00	4.37
15	CHLOROETHANE	0.497	0.475	4.4	104	0.00	4.49
16	DICHLOROFLUOROMETHANE	2.783	2.454	11.8	100	0.01	4.57
17	ACETONITRILE	0.976	0.898	8.0	97	0.01	4.77
18	ACROLEIN	0.473	0.443	6.3	95	0.00	4.87
19	FREON 123	3.022	2.867	5.1	102	0.01	4.89
20	FREON 123A	1.664	1.697	-2.0	111	0.01	4.93
21	TRICHLOROFLUOROMETHANE	3.687	3.458	6.2	100	0.00	5.11
22	ISOPROPYL ALCOHOL	2.275	2.013	11.5	95	0.00	5.18
23	ACETONE	0.522	0.472	9.6	98	0.01	4.98
24	PENTANE	1.119	1.013	9.5	95	0.00	5.40
25	IODOMETHANE	3.755	3.566	5.0	100	0.00	5.59
26	1,1-DICHLOROETHYLENE	1.426	1.129	20.8	99	0.01	5.66
27	CARBON DISULFIDE	3.624	3.181	12.2	91	0.01	6.04
28	ETHANOL	0.507	0.505	0.4	107	0.00	4.59
29	BROMOETHENE	1.143	1.107	3.1	110	0.00	4.77
30	ACRYLONITRILE	0.653	0.675	-3.4	94	0.00	5.36
31	METHYLENE CHLORIDE	1.206	1.010	16.3	95	0.00	5.77
32	3-CHLOROPROPENE	0.491	0.498	-1.4	96	0.00	5.87
33	FREON 113	2.340	2.164	7.5	98	0.01	6.00
34	TRANS-1,2-DICHLOROETHYLEN	1.360	1.154	15.1	95	0.00	6.64
35	TERTIARY BUTYL ALCOHOL	2.387	2.138	10.4	92	0.00	5.71
36	METHYL TERTIARY BUTYL ETH	3.481	3.134	10.0	97	0.00	6.89
37	TETRAHYDROFURAN	0.456	0.487	-6.8	96	0.00	8.44
38	HEXANE	1.728	1.690	2.2	99	0.00	7.90
	----------	True	Calc.	% Drift	----------		
39	VINYL ACETATE	10.000	8.573	14.3	94	0.00	6.99

Initial Calibration Verification

Job Number: JD70271
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample: V5W2072-ICV2072
Lab FileID: 5W50513.D

			AvgRF	CCRF	% Dev			
40		1,1-DICHLOROETHANE	2.216	2.079	6.2	97	0.01	6.84
41		METHYL ETHYL KETONE	0.465	0.489	-5.2	97	0.00	7.24
42		cis-1,2-DICHLOROETHYLENE	1.483	1.228	17.2	98	0.00	7.69
43		DIISOPROPYL ETHER	0.503	0.517	-2.8	98	0.00	7.90
44		ETHYL ACETATE	0.355	0.380	-7.0	97	0.00	7.94
45		METHYL ACRYLATE	1.924	2.116	-10.0	96	0.00	7.93
46		CHLOROFORM	3.089	2.779	10.0	96	0.00	8.00
47		2,4-DIMETHYLPENTANE	2.014	1.925	4.4	97	0.00	8.86
48		1,1,1-TRICHLOROETHANE	3.228	2.937	9.0	99	0.00	9.07
49		CARBON TETRACHLORIDE	3.474	3.318	4.5	99	0.00	9.76
50		1,2-DICHLOROETHANE	1.943	1.851	4.7	98	0.00	8.79
51	I	1,4-DIFLUOROBENZENE	1.000	1.000	0.0	104	0.00	10.02
52		BENZENE	0.734	0.681	7.2	96	0.00	9.59
53		CYCLOHEXANE	0.287	0.278	3.1	98	0.00	9.90
54		2,3-DIMETHYLPENTANE	0.144	0.139	3.5	98	0.00	10.19
55		TRICHLOROETHYLENE	0.387	0.371	4.1	99	0.00	10.84
56		1,2-DICHLOROPROPANE	0.288	0.265	8.0	95	0.00	10.55
57		DIBROMOMETHANE	0.422	0.375	11.1	98	0.00	10.53
58		ETHYL ACRYLATE	0.480	0.498	-3.8	94	0.00	10.60
59		BROMODICHLOROMETHANE	0.670	0.643	4.0	98	0.00	10.80
60		2,2,4-TRIMETHYLPENTANE	1.117	1.091	2.3	97	0.00	10.87
61		1,4-DIOXANE	0.162	0.162	0.0	95	0.00	10.86
62		HEPTANE	0.385	0.368	4.4	96	0.00	11.21
63		METHYL METHACRYLATE	0.229	0.241	-5.2	96	0.00	11.13
64		METHYL ISOBUTYL KETONE	0.185	0.202	-9.2	95	0.00	11.98
65		cis-1,3-DICHLOROPROPENE	0.436	0.465	-6.7	103	0.00	11.91
66		TOLUENE	0.522	0.508	2.7	97	0.00	13.14
67		1,3-DICHLOROPROPANE	0.427	0.417	2.3	96	0.00	13.19
68		trans-1,3-DICHLOROPROPENE	0.402	0.417	-3.7	97	0.00	12.59
69		1,1,2-TRICHLOROETHANE	0.299	0.288	3.7	95	0.00	12.80
70	I	CHLOROBENZENE-D5	1.000	1.000	0.0	102	0.00	15.53
71		2-HEXANONE	0.476	0.553	-16.2	93	0.00	13.54
72		ETHYL METHACRYLATE	0.756	0.822	-8.7	94	0.00	13.57
73		TETRACHLOROETHYLENE	0.880	0.830	5.7	98	0.00	14.65
74		DIBROMOCHLOROMETHANE	1.361	1.414	-3.9	98	0.00	13.69
75		1,2-DIBROMOETHANE	1.087	1.118	-2.9	98	0.00	14.01
76		OCTANE	1.027	1.033	-0.6	97	0.00	14.50
77		1,1,1,2-TETRACHLOROETHANE	0.939	0.938	0.1	98	0.00	15.57
78		CHLOROBENZENE	1.591	1.534	3.6	98	0.00	15.59
79		ETHYLBENZENE	2.364	2.339	1.1	97	0.00	16.14
80		m,p-XYLENE	0.876	0.899	-2.6	98	0.00	16.41
81		o-XYLENE	0.854	0.886	-3.7	99	0.00	17.08
82		STYRENE	1.240	1.340	-8.1	99	0.00	16.93
83		NONANE	1.062	1.074	-1.1	97	0.00	17.48
84		BROMOFORM	1.415	1.608	-13.6	101	0.00	16.47
85	S	4-BROMOFLUOROBENZENE	1.203	1.222	-1.6	102	0.00	17.77
86		1,1,2,2-TETRACHLOROETHANE	1.549	1.544	0.3	98	0.00	17.08
87		1,2,3-TRICHLOROPROPANE	1.092	1.056	3.3	95	0.00	17.27
88		ISOPROPYLBENZENE	2.663	2.649	0.5	97	0.00	17.99
89		BROMOBENZENE	1.316	1.262	4.1	95	0.00	18.09
90		2-CHLOROTOLUENE	0.686	0.691	-0.7	96	0.00	18.72
91		n-PROPYLBENZENE	0.686	0.723	-5.4	97	0.00	18.81
92		4-ETHYLTOLUENE	2.547	2.664	-4.6	98	0.00	19.04
93		1,3,5-TRIMETHYLBENZENE	2.185	2.265	-3.7	98	0.00	19.17
94		ALPHA-METHYLSTYRENE	0.928	1.063	-14.5	100	0.00	19.41
95		tert-BUTYLBENZENE	0.450	0.492	-9.3	100	0.00	19.76
96		1,2,4-TRIMETHYLBENZENE	2.249	2.422	-7.7	99	0.00	19.78

Initial Calibration Verification

Job Number: JD70271
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample: V5W2072-ICV2072
Lab FileID: 5W50513.D

97		m-DICHLOROBENZENE	1.710	1.786	-4.4	99	0.00	19.97
98		BENZYL CHLORIDE	1.798	1.907	-6.1	97	0.00	19.96
99		p-DICHLOROBENZENE	1.758	1.772	-0.8	97	0.00	20.07
100		sec-BUTYLBENZENE	0.581	0.626	-7.7	98	0.00	20.16
101		1,2,3-Trimethylbenzene	2.303	2.400	-4.2	98	0.00	20.38
102		p-ISOPROPYLTOLUENE	0.660	0.737	-11.7	98	0.00	20.40
103		o-DICHLOROBENZENE	1.651	1.694	-2.6	99	0.00	20.54
104		n-BUTYLBENZENE	0.626	0.695	-11.0	100	0.00	20.98
105		HEXACHLOROETHANE	1.086	1.143	-5.2	97	0.00	21.45
106		HEXACHLOROBUTADIENE	1.464	1.671	-14.1	95	0.00	23.48
107		1,2,4-TRICHLOROBENZENE	1.472	1.518	-3.1	88	0.00	23.34
108		NAPHTHALENE	2.898	2.895	0.1	79	0.00	23.00
109	I	BROMOCHLOROMETHANE (A)	1.000	1.000	0.0	106	0.00	7.86
110		TVHC as equiv Pentane	7.846	6.801	13.3	96	0.00	5.40

(#) = Out of Range SPCC's out = 0 CCC's out = 0
5w50507.D M5w2072.M Mon Jun 19 09:04:07 2023

Continuing Calibration Summary

Job Number: JD70271
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample: V5W2075-CC2072
Lab FileID: 5W50559.D

Evaluate Continuing Calibration Report

Data File : C:\msdchem\1\data\5w50559.D Vial: 2
Acq On : 21 Jun 2023 12:47 pm Operator: williamc
Sample : cc2072-10 Inst : GCMS5W
Misc : MS70341,V5W2075,,,,,1 Multiplr: 1.00
MS Integration Params: RTEINT1.P

Method : C:\msdchem\1\methods\M5w2080.M (RTE Integrator)
Title : TO15 by GCMS w/Rtx-1, 60 m X 0.32mm ID X 1.0 um
Last Update : Fri Jun 30 09:19:53 2023
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 60% Max. R.T. Dev 0.50min
Max. RRF Dev : 30% Max. Rel. Area : 140%

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)	R.T.
1 I	BROMOCHLOROMETHANE	1.000	1.000	0.0	144#	0.00	7.85
2	FREON 115		----------NA----------				
3	FREON 152A	0.705	0.827	-17.3	149#	0.00	3.64
4	CHLORODIFLUOROMETHANE	0.402	0.393	2.2	134	0.00	3.67
5	CHLOROTRIFLUOROETHENE	1.821	1.875	-3.0	143#	0.00	3.70
6	DICHLORODIFLUOROMETHANE	4.122	3.654	11.4	126	0.00	3.75
7	PROPYLENE	1.090	1.137	-4.3	159#	0.00	3.70
8	1-CHLORO-1,1-DIFLUOROETHA	3.941	2.836	28.0	109	0.00	3.86
9	FREON 114	4.887	3.108	36.4#	95	0.00	3.94
10	CHLOROMETHANE	0.497	0.381	23.3	116	0.00	3.88
11	VINYL CHLORIDE	1.524	1.077	29.3	104	0.00	4.03
12	1,3-BUTADIENE	1.058	0.798	24.6	114	0.00	4.14
13	n-BUTANE	2.299	1.556	32.3#	111	0.00	4.18
14	BROMOMETHANE	1.637	0.912	44.3#	93	0.00	4.35
15	CHLOROETHANE	0.577	0.404	30.0	101	0.00	4.48
16	DICHLOROFLUOROMETHANE	3.268	2.154	34.1#	99	0.00	4.54
17	ACETONITRILE	1.082	0.841	22.3	107	0.00	4.74
18	ACROLEIN	0.522	0.384	26.4	125	0.00	4.85
19	FREON 123	3.164	1.970	37.7#	92	0.00	4.87
20	FREON 123A	1.696	1.199	29.3	104	0.00	4.92
21	TRICHLOROFLUOROMETHANE	4.031	3.153	21.8	118	0.00	5.09
22	ISOPROPYL ALCOHOL	2.370	2.748	-15.9	152#	0.00	5.16
	----------	True	Calc.	% Drift	----------		
23	ACETONE	10.000	8.569	14.3	121	0.00	4.96
	----------	AvgRF	CCRF	% Dev	----------		
24	PENTANE	1.084	1.438	-32.7#	180#	0.00	5.38
25	IODOMETHANE	3.040	3.388	-11.4	150#	0.00	5.57
26	1,1-DICHLOROETHYLENE	1.161	1.128	2.8	152#	0.00	5.64
27	CARBON DISULFIDE	3.533	3.481	1.5	147#	0.00	6.02
28	ETHANOL	0.682	0.479	29.8	115	0.00	4.57
29	BROMOETHENE	1.236	0.840	32.0#	97	0.00	4.75
30	ACRYLONITRILE	0.671	0.923	-37.6#	187#	0.00	5.35
31	METHYLENE CHLORIDE	1.160	1.029	11.3	146#	0.00	5.75
32	3-CHLOROPROPENE	0.441	0.514	-16.6	151#	0.00	5.85
33	FREON 113	2.004	2.142	-6.9	148#	0.00	5.98
34	TRANS-1,2-DICHLOROETHYLEN	1.223	1.211	1.0	156#	0.00	6.62
35	TERTIARY BUTYL ALCOHOL	1.942	2.700	-39.0#	172#	0.00	5.69
36	METHYL TERTIARY BUTYL ETH	2.847	3.325	-16.8	155#	0.00	6.88
37	TETRAHYDROFURAN	0.431	0.546	-26.7	157#	0.00	8.43
38	HEXANE	1.523	2.122	-39.3#	179#	0.00	7.88

Continuing Calibration Summary

Job Number: JD70271
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample: V5W2075-CC2072
Lab FileID: 5W50559.D

39		VINYL ACETATE	0.170	0.210	-23.5	161#	0.00	6.97
40		1,1-DICHLOROETHANE	1.996	2.392	-19.8	166#	0.00	6.82
41		METHYL ETHYL KETONE	0.463	0.522	-12.7	154#	0.00	7.23
42		cis-1,2-DICHLOROETHYLENE	1.337	1.302	2.6	161#	0.00	7.67
43		DIISOPROPYL ETHER	0.484	0.631	-30.4#	172#	0.00	7.89
44		ETHYL ACETATE	0.342	0.459	-34.2#	169#	0.00	7.93
45		METHYL ACRYLATE	2.007	2.736	-36.3#	176#	0.00	7.91
46		CHLOROFORM	2.771	2.834	-2.3	143#	0.00	7.99
47		2,4-DIMETHYLPENTANE	1.683	2.515	-49.4#	191#	0.00	8.84
48		1,1,1-TRICHLOROETHANE	2.787	3.001	-7.7	152#	0.00	9.06
49		CARBON TETRACHLORIDE	2.990	3.407	-13.9	155#	0.00	9.75
50		1,2-DICHLOROETHANE	1.823	2.057	-12.8	161#	0.00	8.78
51	I	1,4-DIFLUOROBENZENE	1.000	1.000	0.0	151#	0.00	10.01
52		BENZENE	0.672	0.759	-12.9	164#	0.00	9.58
53		CYCLOHEXANE	0.245	0.290	-18.4	156#	0.00	9.88
54		2,3-DIMETHYLPENTANE	0.141	0.154	-9.2	159#	0.00	10.18
55		TRICHLOROETHYLENE	0.362	0.371	-2.5	148#	0.00	10.83
56		1,2-DICHLOROPROPANE	0.272	0.320	-17.6	166#	0.00	10.54
57		DIBROMOMETHANE	0.416	0.383	7.9	150#	0.00	10.51
58		ETHYL ACRYLATE	0.477	0.677	-41.9#	184#	0.00	10.59
59		BROMODICHLOROMETHANE	0.649	0.652	-0.5	144#	0.00	10.78
60		2,2,4-TRIMETHYLPENTANE	1.040	1.410	-35.6#	180#	0.00	10.86
61		1,4-DIOXANE	0.148	0.173	-16.9	151#	0.00	10.86
62		HEPTANE	0.375	0.539	-43.7#	187#	0.00	11.20
63		METHYL METHACRYLATE	0.223	0.264	-18.4	153#	0.00	11.12
64		METHYL ISOBUTYL KETONE	0.186	0.271	-45.7#	191#	0.00	11.97
65		cis-1,3-DICHLOROPROPENE	0.399	0.473	-18.5	158#	0.00	11.91
66		TOLUENE	0.471	0.549	-16.6	161#	0.00	13.14
67		1,3-DICHLOROPROPANE	0.421	0.453	-7.6	153#	0.00	13.19
68		trans-1,3-DICHLOROPROPENE	0.403	0.450	-11.7	158#	0.00	12.59
69		1,1,2-TRICHLOROETHANE	0.289	0.304	-5.2	151#	0.00	12.79
70	I	CHLOROBENZENE-D5	1.000	1.000	0.0	140#	0.00	15.52
71		2-HEXANONE	0.461	0.739	-60.3#	187#	0.00	13.53
72		ETHYL METHACRYLATE	0.669	0.922	-37.8#	154#	0.00	13.57
73		TETRACHLOROETHYLENE	0.763	0.853	-11.8	155#	0.00	14.64
74		DIBROMOCHLOROMETHANE	1.229	1.463	-19.0	152#	0.00	13.69
75		1,2-DIBROMOETHANE	1.090	1.134	-4.0	153#	0.00	14.01
76		OCTANE	0.943	1.502	-59.3#	187#	0.00	14.50
77		1,1,1,2-TETRACHLOROETHANE	0.842	0.956	-13.5	150#	0.00	15.57
78		CHLOROBENZENE	1.557	1.578	-1.3	151#	0.00	15.59
79		ETHYLBENZENE	1.989	2.467	-24.0	153#	0.00	16.13
80		m,p-XYLENE	0.727	0.933	-28.3	152#	0.00	16.40
81		o-XYLENE	0.690	0.896	-29.9	145#	0.00	17.08
82		STYRENE	1.112	1.409	-26.7	158#	0.00	16.92
83		NONANE	1.007	1.557	-54.6#	176#	0.00	17.48
84		BROMOFORM	1.384	1.551	-12.1	143#	0.00	16.47
85	S	4-BROMOFLUOROBENZENE	1.227	1.240	-1.1	140	0.00	17.77
86		1,1,2,2-TETRACHLOROETHANE	1.494	1.552	-3.9	132	0.00	17.08
87		1,2,3-TRICHLOROPROPANE	1.032	1.139	-10.4	145#	0.00	17.27
88		ISOPROPYLBENZENE	2.217	2.785	-25.6	150#	0.00	17.98
89		BROMOBENZENE	1.440	1.370	4.9	146#	0.00	18.08
90		2-CHLOROTOLUENE	0.560	0.737	-31.6#	158#	0.00	18.72
91		n-PROPYLBENZENE	0.543	0.762	-40.3#	156#	0.00	18.80
92		4-ETHYLTOLUENE	2.114	2.786	-31.8#	148#	0.00	19.04
93		1,3,5-TRIMETHYLBENZENE	1.793	2.344	-30.7#	146#	0.00	19.16
94		ALPHA-METHYLSTYRENE	0.760	1.099	-44.6#	177#	0.00	19.41
95		tert-BUTYLBENZENE	0.393	0.494	-25.7	141#	0.00	19.76
96		1,2,4-TRIMETHYLBENZENE	1.954	2.425	-24.1	134	0.00	19.77

Continuing Calibration Summary

Job Number: JD70271
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample: V5W2075-CC2072
Lab FileID: 5W50559.D

97		m-DICHLOROBENZENE	1.847	1.788	3.2	140#	0.00	19.96
98		BENZYL CHLORIDE	2.065	1.929	6.6	124	0.00	19.95
99		p-DICHLOROBENZENE	2.010	1.823	9.3	148#	0.00	20.06
100		sec-BUTYLBENZENE	0.477	0.638	-33.8#	150#	0.00	20.16
101		1,2,3-Trimethylbenzene	1.944	2.440	-25.5	137	0.00	20.37
102		p-ISOPROPYLTOLUENE	0.602	0.754	-25.2	144#	0.00	20.39
103		o-DICHLOROBENZENE	1.640	1.717	-4.7	144#	0.00	20.54
104		n-BUTYLBENZENE	0.562	0.715	-27.2	152#	0.00	20.98
105		HEXACHLOROETHANE	0.958	1.162	-21.3	141#	0.00	21.44
106		HEXACHLOROBUTADIENE	1.620	1.749	-8.0	135	-0.10	23.37
107		1,2,4-TRICHLOROBENZENE	1.420	1.681	-18.4	154#	-0.10	23.23
108		NAPHTHALENE	3.676	3.743	-1.8	152#	-0.08	22.91
109	I	BROMOCHLOROMETHANE (A)	1.000	1.000	0.0	144#	0.00	7.85
110		TVHC as equiv Pentane	7.482	9.283	-24.1	179#	0.00	5.38

(#) = Out of Range SPCC's out = 0 CCC's out = 0
5w50672.D M5w2080.M Wed Jul 05 16:00:17 2023

Initial Calibration Summary

Job Number: JD70271
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample: V7W109-ICC0109
Lab FileID: 7W02641.D

Response Factor Report MS7W

Method : C:\msdchem\1\methods\M7W0109.M (RTE Integrator)
Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
Last Update : Fri Aug 04 15:12:32 2023
Response via : Initial Calibration

Calibration Files
0.04=7w02635.D 0.10=7w02636.D 0.20=7w02637.D 0.5 =7w02638.D
5.0 =7w02640.D 10 =7w02641.D 20 =7w02642.D 40 =7w02643.D
50 =7w02644.D =

Compound	0.04	0.10	0.20	0.5	5.0	10	20	40	50	Avg	%RSD
1) I BROMOCHLOROMETHANE	----------ISTD----------										
2) FREON 115										0.000	-1.00
3) FREON 152A			1.004	1.037	1.039	1.004	1.006	1.036	1.063	1.027	2.23
4) CHLORODIFLUOROMETHANE			0.435	0.472	0.438	0.423	0.424	0.435	0.446	0.439	3.82
5) CHLOROTRIFLUOROETHENE		2.031	1.817	1.754	1.852	1.844	1.846	1.872	1.906	1.865	4.30
6) DICHLORODIFLUOROMETHANE	3.320	3.828	3.832	3.930	3.991	3.927	3.917	3.945	4.165	3.873	5.93
7) PROPYLENE		2.864	2.840	2.492	2.443	2.386	2.383	2.436	2.504	2.543	7.67
8) 1-CHLORO-1,1-DIFLUOROETHANE		2.848	2.969	3.088	3.021	2.991	2.979	3.021	3.105	3.003	2.65
9) FREON 114	2.810	2.928	3.120	2.939	3.128	3.028	3.006	3.006	3.068	3.004	3.35
10) CHLOROMETHANE	0.686	0.655	0.751	0.675	0.669	0.663	0.655	0.659	0.676	0.677	4.42
11) VINYL CHLORIDE	1.297	1.548	1.626	1.554	1.584	1.532	1.524	1.531	1.560	1.529	6.03
12) 1,3-BUTADIENE		1.602	1.670	1.645	1.735	1.652	1.659	1.661	1.680	1.663	2.24
13) N-BUTANE	3.966	4.349	4.369	4.168	4.157	4.024	3.986	4.004	4.016	4.115	3.77
14) BROMOMETHANE			1.171	1.055	1.100	1.061	1.056	1.052	1.062	1.080	4.01
15) CHLOROETHANE			0.822	0.753	0.800	0.776	0.776	0.763	0.776	0.781	2.98
16) DICHLOROFLUOROMETHANE		2.996	2.862	2.842	2.949	2.845	2.845	2.820	2.847	2.876	2.16
17) ACETONITRILE		2.915	3.076	2.853	2.646	2.553	2.519	2.507	2.542	2.701	8.04
18) ACROLEIN			0.974	1.041	1.007	0.979	0.962	0.946	0.956	0.981	3.37
19) FREON 123		2.933	2.765	2.824	2.804	2.738	2.694	2.602	2.624	2.748	3.97
20) FREON 123A		1.304	1.531	1.600	1.577	1.560	1.526	1.460	1.476	1.504	6.23
21) TRICHLOROFLUOROMETHANE		2.982	3.248	3.411	3.268	3.194	3.174	3.057	3.133	3.183	4.15
22) ISOPROPYL ALCOHOL		6.781	6.227	5.721	5.615	5.524	5.314	5.146	5.260	5.698	9.69
23) ACETONE											

Initial Calibration Summary

Job Number: JD70271
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample: V7W109-ICC0109
Lab FileID: 7W02641.D

		1.463	1.180	1.273	0.969	0.949	0.920	0.895	0.908	1.070	19.73
24)	PENTANE										
		3.045	3.059	3.011	2.918	2.850	2.774	2.699	2.738	2.887	4.94
25)	IODOMETHANE										
		2.801	2.862	2.991	2.889	2.863	2.808	2.744	2.745	2.838	2.89
26)	1,1-DICHLOROETHYLENE										
		1.081	1.070	1.216	1.139	1.131	1.104	1.061	1.075	1.110	4.64
27)	CARBON DISULFIDE										
		3.143	2.869	3.188	3.086	2.987	2.937	2.794	2.811	2.977	5.06
28)	ETHANOL										
			2.017	1.719	1.375	1.331	1.290	1.272	1.288	1.470	19.51
29)	BROMOETHENE										
			1.054	1.056	1.103	1.094	1.072	1.048	1.055	1.069	2.01
30)	ACRYLONITRILE										
		1.633	1.650	1.717	1.763	1.731	1.679	1.631	1.693	1.687	2.84
31)	METHYLENE CHLORIDE										
		1.150	1.121	0.970	1.038	1.035	1.004	0.971	0.984	1.034	6.60
32)	3-CHLOROPROPENE										
		0.655	0.683	0.645	0.581	0.588	0.576	0.551	0.565	0.605	8.01
33)	FREON 113										
		1.973	1.761	1.915	1.898	1.831	1.785	1.707	1.713	1.823	5.39
34)	TRANS-1,2-DICHLOROETHENE										
		1.564	1.379	1.451	1.545	1.488	1.450	1.421	1.440	1.467	4.24
35)	TERTIARY BUTYL ALCOHOL										
		3.507	4.047	4.206	4.234	4.250	4.201	4.025	3.862	3.960	4.033	5.93
36)	METHYL TERTIARY BUTYL ETHER										
		3.943	4.754	4.583	4.574	4.654	4.519	4.384	4.345	4.419	4.464	5.27
37)	TETRAHYDROFURAN										
			0.784	0.868	0.790	0.761	0.737	0.734	0.744	0.774	6.06
38)	HEXANE										
		3.733	3.980	3.730	4.145	4.056	3.839	3.708	3.622	3.616	3.825	5.03
39)	VINYL ACETATE										
			0.329	0.296	0.356	0.378	0.397	0.409	0.420	0.369	12.18
40)	1,1-DICHLOROETHANE										
		2.946	3.358	3.335	3.343	3.560	3.375	3.270	3.251	3.292	3.303	4.88
41)	METHYL ETHYL KETONE										
			0.911	0.829	0.849	0.812	0.794	0.780	0.798	0.825	5.40
42)	CIS-1,2-DICHLOROETHENE										
		1.280	1.671	1.543	1.672	1.656	1.580	1.548	1.530	1.555	1.559	7.65
43)	DIISOPROPYL ETHER										
			1.183	1.170	1.119	1.076	1.038	1.007	1.016	1.087	6.61
44)	ETHYL ACETATE										
			0.588	0.599	0.655	0.632	0.623	0.607	0.608	0.616	3.64
45)	METHYL ACRYLATE										
		3.875	4.662	4.470	4.633	5.070	4.979	4.911	4.868	4.925	4.710	7.79
46)	CHLOROFORM										
		3.313	3.212	3.141	3.231	3.108	2.980	2.890	2.902	3.097	5.10
47)	2,4-DIMETHYLPENTANE										
		4.181	4.700	4.617	4.712	4.837	4.625	4.452	4.433	4.478	4.559	4.28
48)	1,1,1-TRICHLOROETHANE										
		2.232	2.705	2.987	2.977	3.072	3.022	2.997	3.007	3.069	2.896	9.39
49)	CARBON TETRACHLORIDE										
		2.515	2.508	2.547	2.872	2.887	2.922	3.014	3.114	2.797	8.58
50)	1,2-DICHLOROETHANE										
		2.125	2.732	2.798	2.770	2.795	2.713	2.643	2.638	2.677	2.654	7.82
51)	BENZENE										
		4.702	4.895	4.835	4.709	4.971	4.689	4.554	4.538	4.587	4.720	3.23
52)	I 1,4-DIFLUOROBENZENE	----------	ISTD	----------							
53)	CYCLOHEXANE										

Initial Calibration Summary

Job Number: JD70271
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample: V7W109-ICC0109
Lab FileID: 7W02641.D

		0.419	0.392	0.417	0.427	0.418	0.409	0.407	0.412	0.413	2.57
54)	2,3-DIMETHYLPENTANE										
		0.250	0.230	0.230	0.226	0.224	0.220	0.217	0.219	0.227	4.65
55)	TRICHLOROETHENE										
		0.254	0.421	0.424	0.413	0.424	0.404	0.397	0.394	0.400	0.392	13.51
56)	1,2-DICHLOROPROPANE										
		0.326	0.463	0.433	0.435	0.450	0.436	0.431	0.428	0.436	0.426	9.21
57)	DIBROMOMETHANE										
		0.406	0.381	0.345	0.357	0.348	0.345	0.348	0.353	0.360	6.08
58)	ETHYL ACRYLATE										
		0.802	0.967	1.023	1.009	1.181	1.191	1.213	1.227	1.258	1.097	14.03
59)	BROMODICHLOROMETHANE										
		0.593	0.641	0.637	0.680	0.670	0.666	0.671	0.684	0.655	4.61
60)	2,2,4-TRIMETHYLPENTANE										
		2.171	2.305	2.454	2.511	2.596	2.434	2.379	2.354	2.379	2.398	5.09
61)	1,4-DIOXANE										
				0.219	0.283	0.256	0.235	0.224	0.214	0.216	0.235	10.88
62)	HEPTANE										
		1.134	1.171	1.200	1.177	1.228	1.184	1.162	1.150	1.171	1.175	2.33
63)	METHYL METHACRYLATE										
		0.323	0.340	0.333	0.370	0.363	0.362	0.363	0.369	0.353	5.17
64)	METHYL ISOBUTYL KETONE										
		0.482	0.520	0.518	0.510	0.487	0.467	0.464	0.470	0.490	4.75
65)	CIS-1,3-DICHLOROPROPENE										
		0.376	0.420	0.488	0.467	0.526	0.531	0.543	0.560	0.572	0.498	13.30
66)	TOLUENE										
		0.962	1.131	1.096	1.113	1.140	1.111	1.106	1.120	1.148	1.103	5.03
67)	1,3-DICHLOROPROPANE										
		0.494	0.557	0.589	0.569	0.586	0.578	0.571	0.576	0.584	0.567	5.17
68)	TRANS-1,3-DICHLOROPROPENE										
		0.367	0.382	0.381	0.451	0.479	0.500	0.527	0.543	0.454	15.38
69)	1,1,2-TRICHLOROETHANE										
		0.307	0.346	0.335	0.335	0.324	0.327	0.330	0.335	0.330	3.40
70)	2-HEXANONE										
		0.618	0.704	0.745	0.774	0.715	0.700	0.684	0.668	0.681	0.699	6.44
71)	ETHYL METHACRYLATE										
		0.456	0.467	0.501	0.569	0.587	0.598	0.608	0.619	0.551	11.93
72)	TETRACHLOROETHENE										
		0.292	0.414	0.404	0.398	0.405	0.399	0.397	0.406	0.418	0.393	9.80
73)	DIBROMOCHLOROMETHANE										
		0.332	0.488	0.487	0.517	0.573	0.590	0.616	0.641	0.662	0.545	18.73
74)	1,2-DIBROMOETHANE										
		0.487	0.499	0.534	0.578	0.580	0.579	0.591	0.602	0.556	7.89
75)	OCTANE										
		1.558	1.661	1.603	1.605	1.700	1.664	1.672	1.688	1.725	1.653	3.25
76)	I CHLOROBENZENE-D5	----------	ISTD	----------							
77)	1,1,1,2-TETRACHLOROETHANE										
		0.406	0.417	0.400	0.471	0.478	0.488	0.498	0.511	0.459	9.59
78)	CHLOROBENZENE										
		0.832	0.942	0.937	1.009	1.006	0.974	0.952	0.957	0.974	0.954	5.48
79)	ETHYLBENZENE										
		1.250	1.576	1.564	1.666	1.715	1.649	1.631	1.632	1.666	1.594	8.59
80)	M,P-XYLENE										
		1.319	1.293	1.250	1.345	1.288	1.270	1.257	1.285	1.288	2.46
81)	O-XYLENE										
		0.967	1.234	1.317	1.314	1.380	1.307	1.282	1.268	1.290	1.262	9.31
82)	STYRENE										
		0.673	0.833	0.887	0.911	1.018	0.990	0.985	0.987	1.006	0.921	12.16
83)	NONANE										

Initial Calibration Summary

Job Number: JD70271
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample: V7W109-ICC0109
Lab FileID: 7W02641.D

```
                1.984 1.932 1.946 2.031 1.938 1.900 1.900 1.940   1.946    2.24
 84)  BROMOFORM
                0.371 0.423 0.404 0.555 0.593 0.625 0.670 0.701   0.543   23.50
 85)  1,1,2,2-TETRACHLOROETHANE
          0.868 0.868 0.901 0.914 0.992 0.956 0.932 0.928 0.944   0.923    4.37
 86)  1,2,3-TRICHLOROPROPANE
          0.633 0.727 0.715 0.733 0.801 0.766 0.755 0.754 0.774   0.740    6.44
 87)  4-BROMOFLUOROBENZENE
          0.758 0.774 0.787 0.789 0.819 0.818 0.836 0.834 0.840   0.806    3.72
 88)  ISOPROPYLBENZENE
                0.428 0.441 0.458 0.511 0.479 0.472 0.469 0.474   0.467    5.39
 89)  BROMOBENZENE
          0.643 0.914 0.940 0.922 0.989 0.967 0.949 0.952 0.974   0.917   11.49
 90)  2-CHLOROTOLUENE
                0.373 0.427 0.418 0.442 0.424 0.423 0.425 0.438   0.421    5.00
 91)  N-PROPYLBENZENE
                0.375 0.419 0.491 0.514 0.499 0.495 0.499 0.510   0.475   10.59
 92)  4-ETHYLTOLUENE
          1.096 1.430 1.609 1.643 1.862 1.862 1.804 1.848 1.892   1.672   15.88
 93)  1,3,5-TRIMETHYLBENZENE
          1.169 1.406 1.436 1.539 1.626 1.559 1.537 1.536 1.577   1.487    9.23
 94)  ALPHA-METHYLSTYRENE
                0.589 0.634 0.647 0.787 0.772 0.768 0.768 0.788   0.719   11.28
 95)  TERT-BUTYLBENZENE
                0.333 0.357 0.364 0.385 0.366 0.351 0.343 0.348   0.356    4.49
 96)  1,2,4-TRIMETHYLBENZENE
          1.166 1.441 1.358 1.507 1.639 1.560 1.530 1.492 1.533   1.470    9.38
 97)  BENZYL CHLORIDE
                       0.317 0.356 0.663 0.855 1.054 1.222 1.320   0.827   48.38
           ---- Quadratic regression ----  Coefficient =  0.9997
             Response Ratio = -0.05158 + 0.85998 *A + 0.09423 *A^2

 98)  M-DICHLOROBENZENE
          0.710 0.730 0.771 0.804 0.942 0.951 0.947 0.956 0.974   0.865   12.59
 99)  P-DICHLOROBENZENE
          0.580 0.710 0.783 0.750 0.921 0.935 0.935 0.948 0.968   0.837   16.27
100)  O-DICHLOROBENZENE
                0.747 0.788 0.751 0.916 0.902 0.897 0.887 0.912   0.850    8.76
101)  SEC-BUTYLBENZENE
                0.438 0.439 0.433 0.470 0.445 0.432 0.424 0.435   0.440    3.12
102)  1,2,3-TRIMETHYLBENZENE
          1.279 1.475 1.499 1.525 1.651 1.566 1.523 1.526 1.559   1.511    6.64
103)  P-ISOPROPYLTOLUENE
                0.437 0.467 0.471 0.509 0.487 0.473 0.460 0.464   0.471    4.42
104)  N-BUTYLBENZENE
                0.312 0.336 0.360 0.447 0.451 0.458 0.455 0.467   0.411   15.39
105)  HEXACHLOROETHANE
                0.324 0.300 0.317 0.433 0.467 0.511 0.549 0.577   0.435   25.26
106)  HEXACHLOROBUTADIENE
                0.653 0.693 0.630 0.692 0.674 0.684 0.750 0.841   0.702    9.41
107)  1,2,4-TRICHLOROBENZENE
                       0.377 0.342 0.525 0.576 0.670 0.836 0.988   0.616   38.15
108)  NAPHTHALENE
                       0.971 0.955 1.533 1.628 1.853 2.257 2.682   1.697   37.41
 ----------------------------------------------------------------------------
 (#) = Out of Range  ###  Number of calibration levels exceeded format  ###

           M7W0109.M         Fri Aug 04 15:21:25 2023
```

Initial Calibration Verification

Job Number: JD70271
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample: V7W109-ICV0109
Lab FileID: 7W02647.D

Evaluate Continuing Calibration Report

Data File : C:\msdchem\1\data\7w02647.D Vial: 4
Acq On : 4 Aug 2023 1:26 am Operator: thomash
Sample : icv0109-10 Inst : MS7W
Misc : MS71556,v7w0109,,,,,1 Multiplr: 1.00
MS Integration Params: rteint.p

Method : C:\msdchem\1\methods\M7W0109.M (RTE Integrator)
Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
Last Update : Fri Aug 04 15:12:32 2023
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 60% Max. R.T. Dev 0.33min
Max. RRF Dev : 30% Max. Rel. Area : 140%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)	R.T.
1	I	BROMOCHLOROMETHANE	1.000	1.000	0.0	98	0.00	3.44
2	T	FREON 115	0.000	1.361	0.0	0#	0.00	1.71
3	T	FREON 152A	1.027	1.043	-1.6	101	0.00	1.74
4	T	CHLORODIFLUOROMETHANE	0.439	0.453	-3.2	104	0.00	1.75
5	T	CHLOROTRIFLUOROETHENE	1.865	1.949	-4.5	103	0.00	1.76
6	T	DICHLORODIFLUOROMETHANE	3.873	4.000	-3.3	99	0.00	1.78
7	T	PROPYLENE	2.543	2.469	2.9	101	0.00	1.76
8	T	1-CHLORO-1,1-DIFLUOROETHA	3.003	3.226	-7.4	105	0.00	1.82
9	T	FREON 114	3.004	3.064	-2.0	99	0.00	1.86
10	T	CHLOROMETHANE	0.677	0.679	-0.3	100	0.00	1.83
11	T	VINYL CHLORIDE	1.529	1.545	-1.0	98	0.00	1.89
12	t	1,3-BUTADIENE	1.663	1.704	-2.5	101	0.00	1.94
13	T	N-BUTANE	4.115	4.163	-1.2	101	0.00	1.95
14	T	BROMOMETHANE	1.080	1.078	0.2	99	0.00	2.02
15	T	CHLOROETHANE	0.781	0.816	-4.5	103	0.00	2.07
16	T	DICHLOROFLUOROMETHANE	2.876	2.862	0.5	98	0.00	2.09
17	T	ACETONITRILE	2.701	2.497	7.6	95	0.00	2.17
18	T	ACROLEIN	0.981	0.932	5.0	93	0.00	2.21
19	T	FREON 123	2.748	2.942	-7.1	105	0.00	2.22
20	T	FREON 123A	1.504	1.747	-16.2	109	0.00	2.24
21	T	TRICHLOROFLUOROMETHANE	3.183	3.244	-1.9	99	0.00	2.31
22	T	ISOPROPYL ALCOHOL	5.698	5.688	0.2	100	0.00	2.33
23	T	ACETONE	1.070	0.974	9.0	100	0.00	2.25
24	T	PENTANE	2.887	3.005	-4.1	103	0.00	2.43
25	T	IODOMETHANE	2.838	2.954	-4.1	101	0.00	2.49
26	T	1,1-DICHLOROETHYLENE	1.110	1.203	-8.4	104	0.00	2.52
27	T	CARBON DISULFIDE	2.977	3.341	-12.2	109	0.00	2.66
28	T	ETHANOL	1.470	1.269	13.7	93	0.00	2.10
29	T	BROMOETHENE	1.069	1.164	-8.9	104	0.00	2.18
30	T	ACRYLONITRILE	1.687	1.751	-3.8	99	0.00	2.40
31	T	METHYLENE CHLORIDE	1.034	1.065	-3.0	100	0.00	2.55
32	T	3-CHLOROPROPENE	0.605	0.594	1.8	99	0.00	2.60
33	T	FREON 113	1.823	1.891	-3.7	101	0.00	2.65
34	T	TRANS-1,2-DICHLOROETHENE	1.467	1.574	-7.3	103	0.00	2.90
35	T	TERTIARY BUTYL ALCOHOL	4.033	3.858	4.3	90	0.00	2.54
36	t	METHYL TERTIARY BUTYL ETH	4.464	4.608	-3.2	99	0.00	3.01
37	T	TETRAHYDROFURAN	0.774	0.734	5.2	94	0.00	3.75
38	T	HEXANE	3.825	4.022	-5.2	102	0.00	3.50
39	T	VINYL ACETATE	0.369	0.414	-12.2	107	0.00	3.05
40	T	1,1-DICHLOROETHANE	3.303	3.460	-4.8	100	0.00	2.98
41	T	METHYL ETHYL KETONE	0.825	0.827	-0.2	99	0.00	3.16
42	T	CIS-1,2-DICHLOROETHENE	1.559	1.620	-3.9	100	0.00	3.36

Initial Calibration Verification

Job Number: JD70271
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample: V7W109-ICV0109
Lab FileID: 7W02647.D

43	T	DIISOPROPYL ETHER	1.087	1.107	-1.8	100	0.00	3.51
44	T	ETHYL ACETATE	0.616	0.708	-14.9	109	0.00	3.51
45	T	METHYL ACRYLATE	4.710	5.187	-10.1	102	0.00	3.49
46	T	CHLOROFORM	3.097	3.198	-3.3	100	0.00	3.52
47	T	2,4-DIMETHYLPENTANE	4.559	4.629	-1.5	98	0.00	4.04
48	T	1,1,1-TRICHLOROETHANE	2.896	3.164	-9.3	102	0.00	4.13
49	T	CARBON TETRACHLORIDE	2.797	3.020	-8.0	102	0.00	4.57
50	T	1,2-DICHLOROETHANE	2.654	2.780	-4.7	100	0.00	3.95
51	t	BENZENE	4.720	4.808	-1.9	100	0.00	4.45
52	I	1,4-DIFLUOROBENZENE	1.000	1.000	0.0	99	0.00	4.79
53	T	CYCLOHEXANE	0.413	0.421	-1.9	99	0.00	4.67
54	T	2,3-DIMETHYLPENTANE	0.227	0.223	1.8	98	0.00	4.94
55	T	TRICHLOROETHENE	0.392	0.413	-5.4	101	0.00	5.39
56	T	1,2-DICHLOROPROPANE	0.426	0.441	-3.5	100	0.00	5.15
57	T	DIBROMOMETHANE	0.360	0.350	2.8	99	0.00	5.11
58	T	ETHYL ACRYLATE	1.097	1.228	-11.9	102	0.00	5.27
59	T	BROMODICHLOROMETHANE	0.655	0.676	-3.2	100	0.00	5.34
60	T	2,2,4-TRIMETHYLPENTANE	2.398	2.458	-2.5	100	0.00	5.49
61	T	1,4-DIOXANE	0.235	0.226	3.8	95	0.00	5.41
62	T	HEPTANE	1.175	1.196	-1.8	100	0.00	5.82
63	T	METHYL METHACRYLATE	0.353	0.366	-3.7	99	0.00	5.71
64	T	METHYL ISOBUTYL KETONE	0.490	0.491	-0.2	99	0.00	6.48
65	T	CIS-1,3-DICHLOROPROPENE	0.498	0.579	-16.3	108	0.00	6.36
66	T	TOLUENE	1.103	1.115	-1.1	99	0.00	7.61
67	T	1,3-DICHLOROPROPANE	0.567	0.591	-4.2	101	0.00	7.66
68	T	TRANS-1,3-DICHLOROPROPENE	0.454	0.501	-10.4	103	0.00	7.06
69	T	1,1,2-TRICHLOROETHANE	0.330	0.333	-0.9	101	0.00	7.22
70	T	2-HEXANONE	0.699	0.709	-1.4	100	0.00	8.20
71	T	ETHYL METHACRYLATE	0.551	0.617	-12.0	104	0.00	8.32
72	T	TETRACHLOROETHENE	0.393	0.402	-2.3	100	0.00	9.38
73	T	DIBROMOCHLOROMETHANE	0.545	0.608	-11.6	102	0.00	8.16
74	T	1,2-DIBROMOETHANE	0.556	0.581	-4.5	99	0.00	8.50
75	T	OCTANE	1.653	1.667	-0.8	99	0.00	9.52
76	I	CHLOROBENZENE-D5	1.000	1.000	0.0	99	0.00	10.53
77	T	1,1,1,2-TETRACHLOROETHANE	0.459	0.480	-4.6	99	0.00	10.62
78	T	CHLOROBENZENE	0.954	0.971	-1.8	99	0.00	10.61
79	t	ETHYLBENZENE	1.594	1.658	-4.0	99	0.00	11.50
80	t	M,P-XYLENE	1.288	1.288	0.0	99	0.00	11.93
81	t	O-XYLENE	1.262	1.300	-3.0	98	0.00	12.88
82	T	STYRENE	0.921	0.986	-7.1	98	0.00	12.67
83	T	NONANE	1.946	1.933	0.7	99	0.00	14.00
84	T	BROMOFORM	0.543	0.605	-11.4	101	0.00	11.74
85	T	1,1,2,2-TETRACHLOROETHANE	0.923	0.946	-2.5	98	0.00	12.89
86	T	1,2,3-TRICHLOROPROPANE	0.740	0.752	-1.6	97	0.00	13.18
87	S	4-BROMOFLUOROBENZENE	0.806	0.816	-1.2	99	0.00	13.93
88	T	ISOPROPYLBENZENE	0.467	0.481	-3.0	99	0.00	14.41
89	T	BROMOBENZENE	0.917	0.947	-3.3	97	0.00	14.28
90	T	2-CHLOROTOLUENE	0.421	0.420	0.2	98	0.00	15.43
91	T	N-PROPYLBENZENE	0.475	0.496	-4.4	98	0.00	15.76
92	T	4-ETHYLTOLUENE	1.672	1.850	-10.6	98	0.00	16.14
93	T	1,3,5-TRIMETHYLBENZENE	1.487	1.550	-4.2	98	0.00	16.30
94	T	ALPHA-METHYLSTYRENE	0.719	0.744	-3.5	95	0.00	16.50
95	T	TERT-BUTYLBENZENE	0.356	0.362	-1.7	98	0.00	16.76
96	T	1,2,4-TRIMETHYLBENZENE	1.470	1.580	-7.5	100	0.00	16.77
			True	Calc.	% Drift			
97	T	BENZYL CHLORIDE	10.000	10.012	-0.1	105	0.00	16.85

Initial Calibration Verification

Job Number: JD70271
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample: V7W109-ICV0109
Lab FileID: 7W02647.D

			AvgRF	CCRF	% Dev			
98	T	M-DICHLOROBENZENE	0.865	0.933	-7.9	97	0.00	16.82
99	T	P-DICHLOROBENZENE	0.837	0.930	-11.1	98	0.00	16.91
100	T	O-DICHLOROBENZENE	0.850	0.896	-5.4	98	0.00	17.20
101	T	SEC-BUTYLBENZENE	0.440	0.441	-0.2	98	0.00	17.04
102	T	1,2,3-TRIMETHYLBENZENE	1.511	1.518	-0.5	96	0.00	17.15
103	T	P-ISOPROPYLTOLUENE	0.471	0.488	-3.6	99	0.00	17.22
104	T	N-BUTYLBENZENE	0.411	0.451	-9.7	99	0.00	17.56
105	T	HEXACHLOROETHANE	0.435	0.495	-13.8	105	0.00	17.74
106	T	HEXACHLOROBUTADIENE	0.702	0.672	4.3	99	0.00	18.78
107	T	1,2,4-TRICHLOROBENZENE	0.616	0.566	8.1	97	0.00	18.47
108	T	NAPHTHALENE	1.697	1.630	3.9	99	0.00	18.52

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

7w02641.D M7W0109.M Fri Aug 04 15:21:12 2023

Continuing Calibration Summary

Job Number: JD70271
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample: V7W113-CC0109
Lab FileID: 7W02733.D

Evaluate Continuing Calibration Report

Data File : C:\msdchem\1\data\7w02733.D Vial: 2
Acq On : 9 Aug 2023 11:15 am Operator: thomash
Sample : cc0109-10 Inst : MS7W
Misc : MS71907,v7w0113,,,,,1 Multiplr: 1.00
MS Integration Params: rteint.p

Method : C:\msdchem\1\methods\M7W0109.M (RTE Integrator)
Title : TO15 by GCMS w/DB-1, 30m X 0.25mm ID X 0.5 um
Last Update : Fri Aug 04 15:12:32 2023
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 60% Max. R.T. Dev 0.33min
Max. RRF Dev : 30% Max. Rel. Area : 140%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)	R.T.
1	I	BROMOCHLOROMETHANE	1.000	1.000	0.0	95	0.00	3.45
2	T	FREON 115	0.000	1.088	0.0	0#	0.00	1.71
3	T	FREON 152A	1.027	0.970	5.6	91	0.00	1.74
4	T	CHLORODIFLUOROMETHANE	0.439	0.423	3.6	95	0.00	1.75
5	T	CHLOROTRIFLUOROETHENE	1.865	1.846	1.0	95	0.00	1.76
6	T	DICHLORODIFLUOROMETHANE	3.873	3.731	3.7	90	0.00	1.78
7	T	PROPYLENE	2.543	2.278	10.4	90	0.00	1.76
8	T	1-CHLORO-1,1-DIFLUOROETHA	3.003	2.865	4.6	91	0.00	1.82
9	T	FREON 114	3.004	2.638	12.2	82	0.00	1.86
10	T	CHLOROMETHANE	0.677	0.527	22.2	75	0.00	1.83
11	T	VINYL CHLORIDE	1.529	1.214	20.6	75	0.00	1.89
12	t	1,3-BUTADIENE	1.663	1.338	19.5	77	0.00	1.94
13	T	N-BUTANE	4.115	3.347	18.7	79	0.00	1.95
14	T	BROMOMETHANE	1.080	0.915	15.3	82	0.00	2.02
15	T	CHLOROETHANE	0.781	0.630	19.3	77	0.00	2.07
16	T	DICHLOROFLUOROMETHANE	2.876	2.485	13.6	83	0.00	2.09
17	T	ACETONITRILE	2.701	2.172	19.6	80	0.00	2.17
18	T	ACROLEIN	0.981	0.753	23.2	73	0.00	2.21
19	T	FREON 123	2.748	2.377	13.5	82	0.00	2.23
20	T	FREON 123A	1.504	1.397	7.1	85	0.00	2.25
21	T	TRICHLOROFLUOROMETHANE	3.183	3.161	0.7	94	0.00	2.31
22	T	ISOPROPYL ALCOHOL	5.698	4.764	16.4	82	0.00	2.33
23	T	ACETONE	1.070	0.776	27.5	77	0.00	2.25
24	T	PENTANE	2.887	2.396	17.0	80	0.00	2.43
25	T	IODOMETHANE	2.838	2.699	4.9	89	0.00	2.49
26	T	1,1-DICHLOROETHYLENE	1.110	0.966	13.0	81	0.00	2.52
27	T	CARBON DISULFIDE	2.977	2.444	17.9	77	0.00	2.66
28	T	ETHANOL	1.470	1.094	25.6	78	0.00	2.10
29	T	BROMOETHENE	1.069	0.971	9.2	84	0.00	2.18
30	T	ACRYLONITRILE	1.687	1.403	16.8	77	0.00	2.40
31	T	METHYLENE CHLORIDE	1.034	0.848	18.0	77	0.00	2.56
32	T	3-CHLOROPROPENE	0.605	0.487	19.5	78	0.00	2.60
33	T	FREON 113	1.823	1.634	10.4	84	0.00	2.66
34	T	TRANS-1,2-DICHLOROETHENE	1.467	1.403	4.4	89	0.00	2.90
35	T	TERTIARY BUTYL ALCOHOL	4.033	3.586	11.1	81	0.00	2.54
36	t	METHYL TERTIARY BUTYL ETH	4.464	4.268	4.4	89	0.00	3.02
37	T	TETRAHYDROFURAN	0.774	0.716	7.5	89	0.00	3.75
38	T	HEXANE	3.825	3.387	11.5	83	0.00	3.50
39	T	VINYL ACETATE	0.369	0.395	-7.0	99	0.00	3.05
40	T	1,1-DICHLOROETHANE	3.303	3.099	6.2	87	0.00	2.98
41	T	METHYL ETHYL KETONE	0.825	0.766	7.2	89	0.00	3.16
42	T	CIS-1,2-DICHLOROETHENE	1.559	1.508	3.3	90	0.00	3.37

Continuing Calibration Summary

Job Number: JD70271
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample: V7W113-CC0109
Lab FileID: 7W02733.D

43	T	DIISOPROPYL ETHER	1.087	0.953	12.3	84	0.00	3.51
44	T	ETHYL ACETATE	0.616	0.571	7.3	85	0.00	3.51
45	T	METHYL ACRYLATE	4.710	4.447	5.6	84	0.00	3.50
46	T	CHLOROFORM	3.097	3.064	1.1	93	0.00	3.52
47	T	2,4-DIMETHYLPENTANE	4.559	4.097	10.1	84	0.00	4.05
48	T	1,1,1-TRICHLOROETHANE	2.896	3.028	-4.6	95	0.00	4.13
49	T	CARBON TETRACHLORIDE	2.797	3.039	-8.7	100	0.00	4.57
50	T	1,2-DICHLOROETHANE	2.654	2.604	1.9	91	0.00	3.96
51	t	BENZENE	4.720	4.474	5.2	90	0.00	4.46
52	I	1,4-DIFLUOROBENZENE	1.000	1.000	0.0	94	0.00	4.79
53	T	CYCLOHEXANE	0.413	0.399	3.4	89	0.00	4.68
54	T	2,3-DIMETHYLPENTANE	0.227	0.212	6.6	89	0.00	4.94
55	T	TRICHLOROETHENE	0.392	0.397	-1.3	92	0.00	5.39
56	T	1,2-DICHLOROPROPANE	0.426	0.404	5.2	87	0.00	5.15
57	T	DIBROMOMETHANE	0.360	0.341	5.3	92	0.00	5.11
58	T	ETHYL ACRYLATE	1.097	1.107	-0.9	87	0.00	5.27
59	T	BROMODICHLOROMETHANE	0.655	0.667	-1.8	93	0.00	5.34
60	T	2,2,4-TRIMETHYLPENTANE	2.398	2.179	9.1	84	0.00	5.49
61	T	1,4-DIOXANE	0.235	0.227	3.4	90	0.00	5.42
62	T	HEPTANE	1.175	1.098	6.6	87	0.00	5.82
63	T	METHYL METHACRYLATE	0.353	0.352	0.3	91	0.00	5.71
64	T	METHYL ISOBUTYL KETONE	0.490	0.434	11.4	83	0.00	6.48
65	T	CIS-1,3-DICHLOROPROPENE	0.498	0.523	-5.0	92	0.00	6.36
66	T	TOLUENE	1.103	1.067	3.3	90	0.00	7.61
67	T	1,3-DICHLOROPROPANE	0.567	0.559	1.4	90	0.00	7.66
68	T	TRANS-1,3-DICHLOROPROPENE	0.454	0.478	-5.3	94	0.00	7.06
69	T	1,1,2-TRICHLOROETHANE	0.330	0.318	3.6	92	0.00	7.23
70	T	2-HEXANONE	0.699	0.632	9.6	85	0.00	8.20
71	T	ETHYL METHACRYLATE	0.551	0.584	-6.0	93	0.00	8.32
72	T	TETRACHLOROETHENE	0.393	0.413	-5.1	97	0.00	9.38
73	T	DIBROMOCHLOROMETHANE	0.545	0.609	-11.7	97	0.00	8.15
74	T	1,2-DIBROMOETHANE	0.556	0.589	-5.9	95	0.00	8.51
75	T	OCTANE	1.653	1.548	6.4	87	0.00	9.52
76	I	CHLOROBENZENE-D5	1.000	1.000	0.0	94	0.00	10.53
77	T	1,1,1,2-TETRACHLOROETHANE	0.459	0.496	-8.1	97	0.00	10.62
78	T	CHLOROBENZENE	0.954	0.963	-0.9	93	0.00	10.61
79	t	ETHYLBENZENE	1.594	1.587	0.4	90	0.00	11.50
80	t	M,P-XYLENE	1.288	1.246	3.3	91	0.00	11.93
81	t	O-XYLENE	1.262	1.267	-0.4	91	0.00	12.88
82	T	STYRENE	0.921	0.970	-5.3	92	0.00	12.66
83	T	NONANE	1.946	1.798	7.6	87	0.00	14.00
84	T	BROMOFORM	0.543	0.610	-12.3	97	0.00	11.75
85	T	1,1,2,2-TETRACHLOROETHANE	0.923	0.922	0.1	91	0.00	12.89
86	T	1,2,3-TRICHLOROPROPANE	0.740	0.750	-1.4	92	0.00	13.17
87	S	4-BROMOFLUOROBENZENE	0.806	0.799	0.9	92	0.00	13.93
88	T	ISOPROPYLBENZENE	0.467	0.476	-1.9	93	0.00	14.41
89	T	BROMOBENZENE	0.917	0.937	-2.2	91	0.00	14.28
90	T	2-CHLOROTOLUENE	0.421	0.428	-1.7	95	0.00	15.43
91	T	N-PROPYLBENZENE	0.475	0.495	-4.2	93	0.00	15.76
92	T	4-ETHYLTOLUENE	1.672	1.839	-10.0	93	0.00	16.14
93	T	1,3,5-TRIMETHYLBENZENE	1.487	1.543	-3.8	93	0.00	16.30
94	T	ALPHA-METHYLSTYRENE	0.719	0.759	-5.6	92	0.00	16.50
95	T	TERT-BUTYLBENZENE	0.356	0.356	0.0	91	0.00	16.76
96	T	1,2,4-TRIMETHYLBENZENE	1.470	1.540	-4.8	93	0.00	16.77
		----------	True	Calc.	% Drift	----------		
97	T	BENZYL CHLORIDE	10.000	10.323	-3.2	103	0.00	16.85

Continuing Calibration Summary

Job Number: JD70271
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Sample: V7W113-CC0109
Lab FileID: 7W02733.D

			AvgRF	CCRF	% Dev			
98	T	M-DICHLOROBENZENE	0.865	0.930	-7.5	92	0.00	16.83
99	T	P-DICHLOROBENZENE	0.837	0.930	-11.1	93	0.00	16.91
100	T	O-DICHLOROBENZENE	0.850	0.892	-4.9	93	0.00	17.21
101	T	SEC-BUTYLBENZENE	0.440	0.447	-1.6	94	0.00	17.04
102	T	1,2,3-TRIMETHYLBENZENE	1.511	1.550	-2.6	93	0.00	17.15
103	T	P-ISOPROPYLTOLUENE	0.471	0.484	-2.8	93	0.00	17.22
104	T	N-BUTYLBENZENE	0.411	0.456	-10.9	95	0.00	17.57
105	T	HEXACHLOROETHANE	0.435	0.516	-18.6	104	0.00	17.75
106	T	HEXACHLOROBUTADIENE	0.702	0.699	0.4	97	0.00	18.79
107	T	1,2,4-TRICHLOROBENZENE	0.616	0.639	-3.7	104	0.00	18.48
108	T	NAPHTHALENE	1.697	1.713	-0.9	99	0.00	18.53

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

7w02641.D M7W0109.M Fri Aug 11 10:24:51 2023

Run Sequence Report

Job Number: JD70271
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Run ID: V5W2072	**Method:** TO-15	**Instrument ID:** GCMS5W

Lab Sample ID	Lab File ID	Date/Time Analyzed	Prep QC Batch	Client Sample ID
V5W2072-BFB	5W50500.D	06/09/23 20:42	n/a	BFB Tune
V5W2072-IC2072	5W50501.D	06/09/23 21:21	n/a	Initial cal 0.04
V5W2072-IC2072	5W50502.D	06/09/23 22:00	n/a	Initial cal 0.1
V5W2072-IC2072	5W50503.D	06/09/23 22:39	n/a	Initial cal 0.2
V5W2072-IC2072	5W50504.D	06/09/23 23:17	n/a	Initial cal 0.5
V5W2072-IC2072	5W50506.D	06/10/23 00:36	n/a	Initial cal 5
V5W2072-ICC2072	5W50507.D	06/10/23 01:15	n/a	Initial cal 10
V5W2072-IC2072	5W50508.D	06/10/23 01:53	n/a	Initial cal 20
V5W2072-IC2072	5W50509.D	06/10/23 02:33	n/a	Initial cal 40
V5W2072-IC2072	5W50510.D	06/10/23 03:14	n/a	Initial cal 50
V5W2072-ICV2072	5W50513.D	06/10/23 05:12	n/a	Initial cal verification 10

Run Sequence Report

Job Number: JD70271
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Run ID: V5W2075	**Method:** TO-15	**Instrument ID:** GCMS5W

Lab Sample ID	Lab File ID	Date/Time Analyzed	Prep QC Batch	Client Sample ID
V5W2075-BFB	5W50558.D	06/21/23 12:08	n/a	BFB Tune
V5W2075-CC2072	5W50559.D	06/21/23 12:47	n/a	Continuing cal 10
V5W2075-BS	5W50561.D	06/21/23 16:53	n/a	Blank Spike
V5W2075-BSD	5W50562.D	06/21/23 17:31	n/a	Blank Spike Duplicate
V5W2075-MB	5W50565.D	06/21/23 19:30	n/a	Method Blank
V5W2075-SCC	5W50566.D	06/21/23 20:08	n/a	Summa Cleaning Certification
V5W2075-SCC	5W50567.D	06/21/23 20:48	n/a	Summa Cleaning Certification
V5W2075-SCC	5W50568.D	06/21/23 21:26	n/a	Summa Cleaning Certification
V5W2075-SCC	5W50569.D	06/21/23 22:07	n/a	Summa Cleaning Certification
V5W2075-SCC	5W50570.D	06/21/23 22:45	n/a	Summa Cleaning Certification
V5W2075-SCC	5W50571.D	06/21/23 23:24	n/a	Summa Cleaning Certification
V5W2075-SCC	5W50572.D	06/22/23 00:03	n/a	Summa Cleaning Certification
V5W2075-SCC	5W50573.D	06/22/23 00:43	n/a	Summa Cleaning Certification
V5W2075-SCC	5W50574.D	06/22/23 01:21	n/a	Summa Cleaning Certification
V5W2075-SCC	5W50575.D	06/22/23 02:01	n/a	Summa Cleaning Certification
V5W2075-SCC	5W50576.D	06/22/23 02:39	n/a	Summa Cleaning Certification
V5W2075-SCC	5W50577.D	06/22/23 03:18	n/a	Summa Cleaning Certification
V5W2075-SCC	5W50579.D	06/22/23 04:40	n/a	Summa Cleaning Certification
V5W2075-SCC	5W50580.D	06/22/23 05:20	n/a	Summa Cleaning Certification
V5W2075-SCC	5W50581.D	06/22/23 06:00	n/a	Summa Cleaning Certification
V5W2075-SCC	5W50582.D	06/22/23 06:39	n/a	Summa Cleaning Certification

Run Sequence Report

Job Number: JD70271
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Run ID: V7W109	**Method:** TO-15	**Instrument ID:** GCMS7W

Lab Sample ID	Lab File ID	Date/Time Analyzed	Prep QC Batch	Client Sample ID
V7W109-BFB	7W02634.D	08/03/23 17:45	n/a	BFB Tune
V7W109-IC0109	7W02635.D	08/03/23 18:19	n/a	Initial cal 0.04
V7W109-IC0109	7W02636.D	08/03/23 18:50	n/a	Initial cal 0.1
V7W109-IC0109	7W02637.D	08/03/23 19:25	n/a	Initial cal 0.2
V7W109-IC0109	7W02638.D	08/03/23 20:02	n/a	Initial cal 0.5
V7W109-IC0109	7W02640.D	08/03/23 21:09	n/a	Initial cal 5
V7W109-ICC0109	7W02641.D	08/03/23 21:44	n/a	Initial cal 10
V7W109-IC0109	7W02642.D	08/03/23 22:21	n/a	Initial cal 20
V7W109-IC0109	7W02643.D	08/03/23 23:00	n/a	Initial cal 40
V7W109-IC0109	7W02644.D	08/03/23 23:42	n/a	Initial cal 50
V7W109-ICV0109	7W02647.D	08/04/23 01:26	n/a	Initial cal verification 10

Run Sequence Report

Job Number: JD70271
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA, FL

Run ID: V7W113	**Method:** TO-15	**Instrument ID:** GCMS7W

Lab Sample ID	Lab File ID	Date/Time Analyzed	Prep QC Batch	Client Sample ID
V7W113-BFB	7W02732.D	08/09/23 10:40	n/a	BFB Tune
V7W113-CC0109	7W02733.D	08/09/23 11:15	n/a	Continuing cal 10
V7W113-BS	7W02734.D	08/09/23 11:54	n/a	Blank Spike
V7W113-BSD	7W02735.D	08/09/23 12:29	n/a	Blank Spike Duplicate
V7W113-MB	7W02737.D	08/09/23 13:53	n/a	Method Blank
JD70271-1	7W02740.D	08/09/23 16:03	n/a	CRCA-AMB01-20230731
JD70271-1DUP	7W02741.D	08/09/23 16:43	n/a	Duplicate
JD70271-2	7W02742.D	08/09/23 17:23	n/a	CRCA-AMB02-20230731
JD70271-3	7W02743.D	08/09/23 17:58	n/a	CRCA-VMP01-20230731
JD70271-4	7W02744.D	08/09/23 18:32	n/a	CRCA-VMP02-20230731
JD70271-5	7W02745.D	08/09/23 19:06	n/a	CRCA-VMP03-20230731
JD70271-6	7W02746.D	08/09/23 19:41	n/a	CRCA-VMP04-20230731
V7W113-SCC	7W02753.D	08/10/23 00:13	n/a	Summa Cleaning Certification
V7W113-SCC	7W02754.D	08/10/23 00:53	n/a	Summa Cleaning Certification

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

e-Hardcopy 2.0
Automated Report

Technical Report for

Tetra Tech NUS

KSC-CRCA

112G08970

SGS Job Number: FC8038

Sampling Dates: 07/20/23 - 07/21/23

Report to:

Tetra-Tech, Inc.
661 Andersen Drive Foster Plaza 7
Pittsburgh, PA 15220
amy.thomson@tetratech.com; carrie.stock@tetratech.com;
alex.murphy@tetratech.com
ATTN: Amy Thomson

Total number of pages in report: 53

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable unless noted in the narrative, comments or footnotes.

Norm Farmer
Technical Director

Client Service contact: Andrea Colby 407-425-6700

Certifications: FL(E83510), LA(03051), KS(E-10327), NC(573), NJ(FL002), NY(12022), SC(96038001) DoD ELAP(ANAB L2229), AZ(AZ0806), CA(2937), TX(T104704404), PA(68-03573), VA(460177), AL, AK, AR, CT, IA, KY, MA, MI. MS, ND, NH, NV, OK, OR, IL, UT, VT, WA, WI, WV

This report shall not be reproduced, except in its entirety, without the written approval of SGS.

Test results relate only to samples analyzed.

SGS is the sole authority for authorizing edits or modifications to this document.
Unauthorized modification of this report is strictly prohibited.
Review standard terms at: http://www.sgs.com/en/terms-and-conditions

Please share your ideas about how we can serve you better at:
EHS.US.CustomerCare@sgs.com

Sections: 1 2 3 4 5 6 7

Table of Contents

Section 1: Sample Summary **3**
Section 2: Case Narrative/Conformance Summary **4**
Section 3: Summary of Hits **6**
Section 4: Sample Results **8**
4.1: FC8038-1: CRCA-MW0031-058.0-20230720 9
4.2: FC8038-2: CRCA-MW0006-010.0-20230720 11
4.3: FC8038-3: CRCA-MW0018-058.0-20230720 13
4.4: FC8038-4: CRCA-MW0002-032.5-20230720 15
4.5: FC8038-5: CRCA-MW0013-037.5-20230720 17
4.6: FC8038-6: CRCA-MW0019-058.0-20230720 19
4.7: FC8038-7: CRCA-MW0032-058.0-20230720 21
4.8: FC8038-8: CRCA-ASINFLUENT-20230721 23
4.9: FC8038-9: CRCA-ASEFFLUENT-20230721 27
Section 5: Misc. Forms **31**
5.1: Chain of Custody 32
Section 6: MS Volatiles - QC Data Summaries **34**
6.1: Method Blank Summary 35
6.2: Blank Spike Summary 37
6.3: Matrix Spike/Matrix Spike Duplicate Summary 39
Section 7: MS Semi-volatiles - QC Data Summaries **41**
7.1: Method Blank Summary 42
7.2: Blank Spike Summary 48
7.3: Matrix Spike Summary 50
7.4: Duplicate Summary 52

SGS North America Inc.

Sample Summary

Tetra Tech NUS

Job No: FC8038

KSC-CRCA
Project No: 112G08970

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
FC8038-1	07/20/23	09:30	CSNV	07/21/23	AQ	Ground Water	CRCA-MW0031-058.0-20230720
FC8038-2	07/20/23	10:03	CSNV	07/21/23	AQ	Ground Water	CRCA-MW0006-010.0-20230720
FC8038-3	07/20/23	10:30	CSNV	07/21/23	AQ	Ground Water	CRCA-MW0018-058.0-20230720
FC8038-4	07/20/23	11:00	CSNV	07/21/23	AQ	Ground Water	CRCA-MW0002-032.5-20230720
FC8038-5	07/20/23	11:25	CSNV	07/21/23	AQ	Ground Water	CRCA-MW0013-037.5-20230720
FC8038-6	07/20/23	12:00	CSNV	07/21/23	AQ	Ground Water	CRCA-MW0019-058.0-20230720
FC8038-7	07/20/23	14:30	CSNV	07/21/23	AQ	Ground Water	CRCA-MW0032-058.0-20230720
FC8038-8	07/21/23	12:35	CSNV	07/21/23	AQ	Ground Water	CRCA-ASINFLUENT-20230721
FC8038-9	07/21/23	12:40	CSNV	07/21/23	AQ	Ground Water	CRCA-ASEFFLUENT-20230721

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: Tetra Tech NUS **Job No:** FC8038

Site: KSC-CRCA **Report Date:** 8/22/2023 10:16:57

On 07/21/2023, 9 Sample(s), 0 Trip Blank(s) and 0 Field Blank(s) were received at SGS North America Inc - Orlando. at a maximum corrected temperature of 1.8 C. Samples were intact and chemically preserved, unless noted below. A SGS North America Inc. - Orlando Job Number of FC8038 was assigned to the project.

Laboratory sample ID, client sample ID and dates of sample collection are detailed in the report's Results Summary Section. Specified quality control criteria were achieved for this job except as noted below. For more information, please refer to the analytical results and QC summary pages.

MS Volatiles By Method SW846 8260D

Matrix: AQ **Batch ID:** VN6475

Sample(s) FC7975-21MS, FC7975-21MSD were used as the QC samples indicated.

Sample(s) FC8038-8, FC8038-9 have compound(s) reported with a "B" qualifier, indicating analyte is found in the associated method blank.

Sample(s) FC8038-1, FC8038-3, FC8038-4 have compound(s) reported with a "V" qualifier, indicating analyte is found in the associated method blank.

Blank Spike Recovery(s) for Chloroethane are outside control limits.

Matrix Spike Recovery(s) for Carbon Tetrachloride, Chloroethane, Freon 113, Methyl Bromide, Trichlorofluoromethane are outside control limits. Probable cause is due to matrix interference.

Matrix Spike Duplicate Recovery(s) for 1,2,4-Trichlorobenzene, 1,2-Dibromo-3-chloropropane, 1,3-Dichlorobenzene, Chloroethane, Methyl Bromide are outside control limits. Probable cause is due to matrix interference.

VN6475-MB for Acetone: Suspected laboratory contaminant.

VN6475-MB: Sample was treated with an anti-foaming agent.

FC8038-1 for 1,2,4-Trichlorobenzene: Associated CCV outside control limits low.

FC8038-1 for Acetone: Suspected laboratory contaminant.

FC8038-1 for Carbon Tetrachloride: Associated CCV outside control limits high, sample is ND.

FC8038-1 for Chloroethane: Associated CCV and BS recovery outside control limits high, sample is ND.

FC8038-1: Sample was treated with an anti-foaming agent.

FC8038-3 for 1,2,4-Trichlorobenzene: Associated CCV outside control limits low.

FC8038-3 for Acetone: Suspected laboratory contaminant.

FC8038-3 for Carbon Tetrachloride: Associated CCV outside control limits high, sample is ND.

FC8038-3 for Chloroethane: Associated CCV and BS recovery outside control limits high, sample is ND.

FC8038-3: Sample was treated with an anti-foaming agent.

FC8038-4 for 1,2,4-Trichlorobenzene: Associated CCV outside control limits low.

FC8038-4 for Acetone: Suspected laboratory contaminant.

FC8038-4 for Carbon Tetrachloride: Associated CCV outside control limits high, sample is ND.

FC8038-4 for Chloroethane: Associated CCV and BS recovery outside control limits high, sample is ND.

FC8038-4: Sample was treated with an anti-foaming agent.

FC8038-5 for 1,2,4-Trichlorobenzene: Associated CCV outside control limits low.

FC8038-5 for Carbon Tetrachloride: Associated CCV outside control limits high, sample is ND.

FC8038-5 for Chloroethane: Associated CCV and BS recovery outside control limits high, sample is ND.

FC8038-5: Sample was treated with an anti-foaming agent.

FC8038-6 for 1,2,4-Trichlorobenzene: Associated CCV outside control limits low.

FC8038-6 for Carbon Tetrachloride: Associated CCV outside control limits high, sample is ND.

FC8038-6 for Chloroethane: Associated CCV and BS recovery outside control limits high, sample is ND.

FC8038-6: Sample was treated with an anti-foaming agent.

FC8038-7 for 1,2,4-Trichlorobenzene: Associated CCV outside control limits low.

FC8038-7 for Carbon Tetrachloride: Associated CCV outside control limits high, sample is ND.

FC8038-7 for Chloroethane: Associated CCV and BS recovery outside control limits high, sample is ND.

FC8038-7: Sample was treated with an anti-foaming agent.

FC8038-8 for 1,2,4-Trichlorobenzene: Associated CCV outside control limits low.

FC8038-8 for Carbon Tetrachloride: Associated CCV outside control limits high, sample is ND.

MS Volatiles By Method SW846 8260D

Matrix: AQ **Batch ID:** VN6475

FC8038-8 for Chloroethane: Associated CCV and BS recovery outside control limits high, sample is ND.

FC8038-8: Sample was treated with an anti-foaming agent.

FC8038-9 for 1,2,4-Trichlorobenzene: Associated CCV outside control limits low.

FC8038-9 for Carbon Tetrachloride: Associated CCV outside control limits high, sample is ND.

FC8038-9 for Chloroethane: Associated CCV and BS recovery outside control limits high, sample is ND.

FC8038-9: Sample was treated with an anti-foaming agent.

MS Semi-volatiles By Method EPA 537M QSM5.3 B-15

Matrix: AQ **Batch ID:** OP98324

Sample(s) FC8021-2MS, FC8028-1DUP were used as the QC samples indicated.

Sample(s) FC8038-2, FC8038-8, FC8038-9 have surrogates outside control limits.

FC8038-2 for 13C2-PFTeDA: Outside control limits.

FC8038-2 for 13C2-PFTeDA: Outside control limits.

FC8038-2 for 13C4-PFBA: Outside control limits.

FC8038-2 for 13C8-FOSA: Outside control limits.

FC8038-2 for Perfluorotetradecanoic acid: Associated ID Standard outside control limits.

FC8038-8 for 13C2-PFTeDA: Outside control limits.

FC8038-8 for 13C4-PFBA: Outside control limits.

FC8038-8 for 13C4-PFBA: Outside control limits.

FC8038-8 for 13C8-FOSA: Outside control limits.

FC8038-8 for 13C8-FOSA: Outside control limits.

FC8038-8 for PFOSA: Associated ID Standard outside control limits.

FC8038-9 for 13C2-PFTeDA: Outside control limits.

FC8038-9 for 13C4-PFBA: Outside control limits.

FC8038-9 for 13C4-PFBA: Outside control limits.

FC8038-9 for 13C8-FOSA: Outside control limits.

SGS North America Inc. - Orlando certifies that data reported for samples received, listed on the associated custody chain or analytical task order, were produced to specifications meeting the Quality System precision, accuracy and completeness objectives except as noted. Estimated non-standard method measurement uncertainty data is available on request, based on quality control bias and implicit for standard methods. Acceptable uncertainty requires tested parameter quality control data to meet method criteria. SGS North America Inc.- Orlando is not responsible for data quality assumptions if partial reports are used and recommends that this report be used in its entirety.

Narrative prepared by:

_____

Kim Benham, Client Services *(Signature on File)*

Summary of Hits

Job Number: FC8038
Account: Tetra Tech NUS
Project: KSC-CRCA
Collected: 07/20/23 thru 07/21/23

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	PQL	MDL	Units	Method
FC8038-1	**CRCA-MW0031-058.0-20230720**					
Acetone [a]		10.3 IV	25	10	ug/l	SW846 8260D
FC8038-2	**CRCA-MW0006-010.0-20230720**					
Perfluorobutanoic acid		23.1	0.80	0.20	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid		0.0124	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0227	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.0073 I	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0222	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorononanoic acid		0.0038 I	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorodecanoic acid		0.0041 I	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0091	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
FC8038-3	**CRCA-MW0018-058.0-20230720**					
Acetone [a]		10.9 IV	25	10	ug/l	SW846 8260D
Vinyl Chloride [b]		22.1	1.0	0.41	ug/l	SW846 8260D
FC8038-4	**CRCA-MW0002-032.5-20230720**					
Acetone [a]		11.4 IV	25	10	ug/l	SW846 8260D
trans-1,2-Dichloroethylene [b]		0.30 I	1.0	0.22	ug/l	SW846 8260D
Vinyl Chloride [b]		0.47 I	1.0	0.41	ug/l	SW846 8260D
FC8038-5	**CRCA-MW0013-037.5-20230720**					
Vinyl Chloride [b]		1.5	1.0	0.41	ug/l	SW846 8260D
FC8038-6	**CRCA-MW0019-058.0-20230720**					
No hits reported in this sample.						
FC8038-7	**CRCA-MW0032-058.0-20230720**					
Vinyl Chloride [b]		8.4	1.0	0.41	ug/l	SW846 8260D
FC8038-8	**CRCA-ASINFLUENT-20230721**					
Acetone [b]		42.2 B	25	10	ug/l	SW846 8260D
Vinyl Chloride [b]		2.7	1.0	0.41	ug/l	SW846 8260D
Perfluorobutanoic acid		34.8	1.6	0.40	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid		0.0282	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0216	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15

Summary of Hits

Job Number: FC8038
Account: Tetra Tech NUS
Project: KSC-CRCA
Collected: 07/20/23 thru 07/21/23

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	PQL	MDL	Units	Method
Perfluoroheptanoic acid		0.0092	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0207	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0056 I	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0071 I	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
FC8038-9	**CRCA-ASEFFLUENT-20230721**					
Acetone [b]		53.2 B	25	10	ug/l	SW846 8260D
Perfluorobutanoic acid		28.9	1.6	0.40	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid		0.0261	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0219	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.0083	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0180	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0042 I	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0099	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15

(a) Sample was treated with an anti-foaming agent. Suspected laboratory contaminant.
(b) Sample was treated with an anti-foaming agent.

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID:	CRCA-MW0031-058.0-20230720		
Lab Sample ID:	FC8038-1	**Date Sampled:**	07/20/23
Matrix:	AQ - Ground Water	**Date Received:**	07/21/23
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	KSC-CRCA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	N0125772.D	1	07/24/23 15:42	JL	n/a	n/a	VN6475
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL 4.2 List

CAS No.	Compound	Result	PQL	MDL	Units	Q
67-64-1	Acetone [b]	10.3	25	10	ug/l	IV
71-43-2	Benzene	0.31 U	1.0	0.31	ug/l	
75-27-4	Bromodichloromethane	0.24 U	1.0	0.24	ug/l	
75-25-2	Bromoform	0.41 U	1.0	0.41	ug/l	
78-93-3	2-Butanone (MEK)	2.0 U	5.0	2.0	ug/l	
75-15-0	Carbon Disulfide	0.53 U	2.0	0.53	ug/l	
56-23-5	Carbon Tetrachloride [c]	0.36 U	1.0	0.36	ug/l	
108-90-7	Chlorobenzene	0.20 U	1.0	0.20	ug/l	
75-00-3	Chloroethane [d]	0.67 U	2.0	0.67	ug/l	
67-66-3	Chloroform	0.30 U	1.0	0.30	ug/l	
110-82-7	Cyclohexane	0.39 U	1.0	0.39	ug/l	
124-48-1	Dibromochloromethane	0.28 U	1.0	0.28	ug/l	
96-12-8	1,2-Dibromo-3-chloropropan [e]	1.0 U	5.0	1.0	ug/l	
106-93-4	1,2-Dibromoethane	0.28 U	2.0	0.28	ug/l	
75-71-8	Dichlorodifluoromethane	0.50 U	2.0	0.50	ug/l	
95-50-1	1,2-Dichlorobenzene	0.32 U	1.0	0.32	ug/l	
541-73-1	1,3-Dichlorobenzene	0.22 U	1.0	0.22	ug/l	
106-46-7	1,4-Dichlorobenzene	0.26 U	1.0	0.26	ug/l	
75-34-3	1,1-Dichloroethane	0.34 U	1.0	0.34	ug/l	
107-06-2	1,2-Dichloroethane	0.31 U	1.0	0.31	ug/l	
75-35-4	1,1-Dichloroethylene	0.32 U	1.0	0.32	ug/l	
156-59-2	cis-1,2-Dichloroethylene	0.28 U	1.0	0.28	ug/l	
156-60-5	trans-1,2-Dichloroethylene	0.22 U	1.0	0.22	ug/l	
78-87-5	1,2-Dichloropropane	0.43 U	1.0	0.43	ug/l	
10061-01-5	cis-1,3-Dichloropropene	0.29 U	1.0	0.29	ug/l	
10061-02-6	trans-1,3-Dichloropropene	0.21 U	1.0	0.21	ug/l	
100-41-4	Ethylbenzene	0.36 U	1.0	0.36	ug/l	
76-13-1	Freon 113	0.48 U	1.0	0.48	ug/l	
591-78-6	2-Hexanone	2.0 U	10	2.0	ug/l	
98-82-8	Isopropylbenzene	0.22 U	1.0	0.22	ug/l	
79-20-9	Methyl Acetate	5.0 U	20	5.0	ug/l	
74-83-9	Methyl Bromide [c]	2.0 U	5.0	2.0	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-MW0031-058.0-20230720		
Lab Sample ID:	FC8038-1	**Date Sampled:**	07/20/23
Matrix:	AQ - Ground Water	**Date Received:**	07/21/23
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	KSC-CRCA		

VOA TCL 4.2 List

CAS No.	Compound	Result	PQL	MDL	Units	Q
74-87-3	Methyl Chloride	0.50 U	2.0	0.50	ug/l	
108-87-2	Methylcyclohexane	0.44 U	1.0	0.44	ug/l	
75-09-2	Methylene Chloride	2.0 U	5.0	2.0	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	1.0 U	5.0	1.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	0.23 U	1.0	0.23	ug/l	
100-42-5	Styrene	0.22 U	1.0	0.22	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	0.30 U	1.0	0.30	ug/l	
127-18-4	Tetrachloroethylene	0.22 U	1.0	0.22	ug/l	
108-88-3	Toluene	0.30 U	1.0	0.30	ug/l	
120-82-1	1,2,4-Trichlorobenzene [e]	0.50 U	2.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	0.25 U	1.0	0.25	ug/l	
79-00-5	1,1,2-Trichloroethane	0.47 U	1.0	0.47	ug/l	
79-01-6	Trichloroethylene	0.35 U	1.0	0.35	ug/l	
75-69-4	Trichlorofluoromethane [c]	0.50 U	2.0	0.50	ug/l	
75-01-4	Vinyl Chloride	0.41 U	1.0	0.41	ug/l	
1330-20-7	Xylene (total)	0.72 U	3.0	0.72	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	95%		83-118%
17060-07-0	1,2-Dichloroethane-D4	100%		79-125%
2037-26-5	Toluene-D8	102%		85-112%
460-00-4	4-Bromofluorobenzene	107%		83-118%

(a) Sample was treated with an anti-foaming agent.
(b) Suspected laboratory contaminant.
(c) Associated CCV outside control limits high, sample is ND.
(d) Associated CCV and BS recovery outside control limits high, sample is ND.
(e) Associated CCV outside control limits low.

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-MW0006-010.0-20230720		
Lab Sample ID:	FC8038-2	**Date Sampled:**	07/20/23
Matrix:	AQ - Ground Water	**Date Received:**	07/21/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	KSC-CRCA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3Q80613.D	1	08/15/23 08:38	JL	08/09/23 09:40	OP98324	S3Q1111
Run #2	3Q80763.D	5	08/17/23 06:53	JL	08/09/23 09:40	OP98324	S3Q1113
Run #3	3Q80628.D	50	08/15/23 16:31	JL	08/09/23 09:40	OP98324	S3Q1112

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2	125 ml	1.0 ml
Run #3	125 ml	1.0 ml

CAS No.	Compound	Result	PQL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	23.1 [a]	0.80	0.20	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0124	0.0080	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	0.0227	0.0080	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0073	0.0080	0.0020	ug/l	I
335-67-1	Perfluorooctanoic acid	0.0222	0.0080	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0038	0.0080	0.0020	ug/l	I
335-76-2	Perfluorodecanoic acid	0.0041	0.0080	0.0020	ug/l	I
2058-94-8	Perfluoroundecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid [b]	0.0020 U	0.0080	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS						
375-73-5	Perfluorobutanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0091	0.0080	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA	0.010 U [c]	0.040	0.010	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	0.0040 U	0.016	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0040 U	0.016	0.0040	ug/l	
FLUOROTELOMER SULFONATES						

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-MW0006-010.0-20230720		
Lab Sample ID:	FC8038-2	**Date Sampled:**	07/20/23
Matrix:	AQ - Ground Water	**Date Received:**	07/21/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	KSC-CRCA		

CAS No.	Compound	Result	PQL	MDL	Units	Q
757124-72-4	4:2 Fluorotelomer sulfonate	0.0040 U	0.016	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0040 U	0.016	0.0040	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0040 U	0.016	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES						
13252-13-6	HFPO-DA (GenX)	0.0040 U	0.016	0.0040	ug/l	
919005-14-4	ADONA	0.0040 U	0.016	0.0040	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0040 U	0.016	0.0040	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0040 U	0.016	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Run# 3	Limits
	13C4-PFBA	36% [d]	61%	111%	50-150%
	13C5-PFPeA	56%	65%	111%	50-150%
	13C5-PFHxA	58%	72%	111%	50-150%
	13C4-PFHpA	55%	71%	112%	50-150%
	13C8-PFOA	59%	75%	112%	50-150%
	13C9-PFNA	67%	79%	111%	50-150%
	13C6-PFDA	73%	84%	114%	50-150%
	13C7-PFUnDA	75%	79%	115%	50-150%
	13C2-PFDoDA	65%	69%	113%	50-150%
	13C2-PFTeDA	34% [d]	31% [d]	110%	50-150%
	13C3-PFBS	67%	79%	111%	50-150%
	13C3-PFHxS	59%	74%	109%	50-150%
	13C8-PFOS	67%	81%	111%	50-150%
	13C8-FOSA	42% [d]	57%	120%	50-150%
	d3-MeFOSAA	97%	86%	131%	50-150%
	d5-EtFOSAA	83%	74%	130%	50-150%
	13C2-4:2FTS	58%	63%	105%	50-150%
	13C2-6:2FTS	65%	69%	104%	50-150%
	13C2-8:2FTS	80%	73%	109%	50-150%
	13C3-HFPO-DA	62%	65%	113%	50-150%

(a) Result is from Run# 3
(b) Associated ID Standard outside control limits.
(c) Result is from Run# 2
(d) Outside control limits.

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-MW0018-058.0-20230720		
Lab Sample ID:	FC8038-3	**Date Sampled:**	07/20/23
Matrix:	AQ - Ground Water	**Date Received:**	07/21/23
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	KSC-CRCA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	N0125773.D	1	07/24/23 16:07	JL	n/a	n/a	VN6475
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL 4.2 List

CAS No.	Compound	Result	PQL	MDL	Units	Q
67-64-1	Acetone [b]	10.9	25	10	ug/l	IV
71-43-2	Benzene	0.31 U	1.0	0.31	ug/l	
75-27-4	Bromodichloromethane	0.24 U	1.0	0.24	ug/l	
75-25-2	Bromoform	0.41 U	1.0	0.41	ug/l	
78-93-3	2-Butanone (MEK)	2.0 U	5.0	2.0	ug/l	
75-15-0	Carbon Disulfide	0.53 U	2.0	0.53	ug/l	
56-23-5	Carbon Tetrachloride [c]	0.36 U	1.0	0.36	ug/l	
108-90-7	Chlorobenzene	0.20 U	1.0	0.20	ug/l	
75-00-3	Chloroethane [d]	0.67 U	2.0	0.67	ug/l	
67-66-3	Chloroform	0.30 U	1.0	0.30	ug/l	
110-82-7	Cyclohexane	0.39 U	1.0	0.39	ug/l	
124-48-1	Dibromochloromethane	0.28 U	1.0	0.28	ug/l	
96-12-8	1,2-Dibromo-3-chloropropan [e]	1.0 U	5.0	1.0	ug/l	
106-93-4	1,2-Dibromoethane	0.28 U	2.0	0.28	ug/l	
75-71-8	Dichlorodifluoromethane	0.50 U	2.0	0.50	ug/l	
95-50-1	1,2-Dichlorobenzene	0.32 U	1.0	0.32	ug/l	
541-73-1	1,3-Dichlorobenzene	0.22 U	1.0	0.22	ug/l	
106-46-7	1,4-Dichlorobenzene	0.26 U	1.0	0.26	ug/l	
75-34-3	1,1-Dichloroethane	0.34 U	1.0	0.34	ug/l	
107-06-2	1,2-Dichloroethane	0.31 U	1.0	0.31	ug/l	
75-35-4	1,1-Dichloroethylene	0.32 U	1.0	0.32	ug/l	
156-59-2	cis-1,2-Dichloroethylene	0.28 U	1.0	0.28	ug/l	
156-60-5	trans-1,2-Dichloroethylene	0.22 U	1.0	0.22	ug/l	
78-87-5	1,2-Dichloropropane	0.43 U	1.0	0.43	ug/l	
10061-01-5	cis-1,3-Dichloropropene	0.29 U	1.0	0.29	ug/l	
10061-02-6	trans-1,3-Dichloropropene	0.21 U	1.0	0.21	ug/l	
100-41-4	Ethylbenzene	0.36 U	1.0	0.36	ug/l	
76-13-1	Freon 113	0.48 U	1.0	0.48	ug/l	
591-78-6	2-Hexanone	2.0 U	10	2.0	ug/l	
98-82-8	Isopropylbenzene	0.22 U	1.0	0.22	ug/l	
79-20-9	Methyl Acetate	5.0 U	20	5.0	ug/l	
74-83-9	Methyl Bromide [c]	2.0 U	5.0	2.0	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-MW0018-058.0-20230720		
Lab Sample ID:	FC8038-3	**Date Sampled:**	07/20/23
Matrix:	AQ - Ground Water	**Date Received:**	07/21/23
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	KSC-CRCA		

VOA TCL 4.2 List

CAS No.	Compound	Result	PQL	MDL	Units	Q
74-87-3	Methyl Chloride	0.50 U	2.0	0.50	ug/l	
108-87-2	Methylcyclohexane	0.44 U	1.0	0.44	ug/l	
75-09-2	Methylene Chloride	2.0 U	5.0	2.0	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	1.0 U	5.0	1.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	0.23 U	1.0	0.23	ug/l	
100-42-5	Styrene	0.22 U	1.0	0.22	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	0.30 U	1.0	0.30	ug/l	
127-18-4	Tetrachloroethylene	0.22 U	1.0	0.22	ug/l	
108-88-3	Toluene	0.30 U	1.0	0.30	ug/l	
120-82-1	1,2,4-Trichlorobenzene [e]	0.50 U	2.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	0.25 U	1.0	0.25	ug/l	
79-00-5	1,1,2-Trichloroethane	0.47 U	1.0	0.47	ug/l	
79-01-6	Trichloroethylene	0.35 U	1.0	0.35	ug/l	
75-69-4	Trichlorofluoromethane [c]	0.50 U	2.0	0.50	ug/l	
75-01-4	Vinyl Chloride	22.1	1.0	0.41	ug/l	
1330-20-7	Xylene (total)	0.72 U	3.0	0.72	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	98%		83-118%
17060-07-0	1,2-Dichloroethane-D4	102%		79-125%
2037-26-5	Toluene-D8	102%		85-112%
460-00-4	4-Bromofluorobenzene	106%		83-118%

(a) Sample was treated with an anti-foaming agent.
(b) Suspected laboratory contaminant.
(c) Associated CCV outside control limits high, sample is ND.
(d) Associated CCV and BS recovery outside control limits high, sample is ND.
(e) Associated CCV outside control limits low.

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-MW0002-032.5-20230720		
Lab Sample ID:	FC8038-4	**Date Sampled:**	07/20/23
Matrix:	AQ - Ground Water	**Date Received:**	07/21/23
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	KSC-CRCA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	N0125774.D	1	07/24/23 16:31	JL	n/a	n/a	VN6475
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL 4.2 List

CAS No.	Compound	Result	PQL	MDL	Units	Q
67-64-1	Acetone [b]	11.4	25	10	ug/l	IV
71-43-2	Benzene	0.31 U	1.0	0.31	ug/l	
75-27-4	Bromodichloromethane	0.24 U	1.0	0.24	ug/l	
75-25-2	Bromoform	0.41 U	1.0	0.41	ug/l	
78-93-3	2-Butanone (MEK)	2.0 U	5.0	2.0	ug/l	
75-15-0	Carbon Disulfide	0.53 U	2.0	0.53	ug/l	
56-23-5	Carbon Tetrachloride [c]	0.36 U	1.0	0.36	ug/l	
108-90-7	Chlorobenzene	0.20 U	1.0	0.20	ug/l	
75-00-3	Chloroethane [d]	0.67 U	2.0	0.67	ug/l	
67-66-3	Chloroform	0.30 U	1.0	0.30	ug/l	
110-82-7	Cyclohexane	0.39 U	1.0	0.39	ug/l	
124-48-1	Dibromochloromethane	0.28 U	1.0	0.28	ug/l	
96-12-8	1,2-Dibromo-3-chloropropan [e]	1.0 U	5.0	1.0	ug/l	
106-93-4	1,2-Dibromoethane	0.28 U	2.0	0.28	ug/l	
75-71-8	Dichlorodifluoromethane	0.50 U	2.0	0.50	ug/l	
95-50-1	1,2-Dichlorobenzene	0.32 U	1.0	0.32	ug/l	
541-73-1	1,3-Dichlorobenzene	0.22 U	1.0	0.22	ug/l	
106-46-7	1,4-Dichlorobenzene	0.26 U	1.0	0.26	ug/l	
75-34-3	1,1-Dichloroethane	0.34 U	1.0	0.34	ug/l	
107-06-2	1,2-Dichloroethane	0.31 U	1.0	0.31	ug/l	
75-35-4	1,1-Dichloroethylene	0.32 U	1.0	0.32	ug/l	
156-59-2	cis-1,2-Dichloroethylene	0.28 U	1.0	0.28	ug/l	
156-60-5	trans-1,2-Dichloroethylene	0.30	1.0	0.22	ug/l	I
78-87-5	1,2-Dichloropropane	0.43 U	1.0	0.43	ug/l	
10061-01-5	cis-1,3-Dichloropropene	0.29 U	1.0	0.29	ug/l	
10061-02-6	trans-1,3-Dichloropropene	0.21 U	1.0	0.21	ug/l	
100-41-4	Ethylbenzene	0.36 U	1.0	0.36	ug/l	
76-13-1	Freon 113	0.48 U	1.0	0.48	ug/l	
591-78-6	2-Hexanone	2.0 U	10	2.0	ug/l	
98-82-8	Isopropylbenzene	0.22 U	1.0	0.22	ug/l	
79-20-9	Methyl Acetate	5.0 U	20	5.0	ug/l	
74-83-9	Methyl Bromide [c]	2.0 U	5.0	2.0	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-MW0002-032.5-20230720		
Lab Sample ID:	FC8038-4	**Date Sampled:**	07/20/23
Matrix:	AQ - Ground Water	**Date Received:**	07/21/23
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	KSC-CRCA		

VOA TCL 4.2 List

CAS No.	Compound	Result	PQL	MDL	Units	Q
74-87-3	Methyl Chloride	0.50 U	2.0	0.50	ug/l	
108-87-2	Methylcyclohexane	0.44 U	1.0	0.44	ug/l	
75-09-2	Methylene Chloride	2.0 U	5.0	2.0	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	1.0 U	5.0	1.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	0.23 U	1.0	0.23	ug/l	
100-42-5	Styrene	0.22 U	1.0	0.22	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	0.30 U	1.0	0.30	ug/l	
127-18-4	Tetrachloroethylene	0.22 U	1.0	0.22	ug/l	
108-88-3	Toluene	0.30 U	1.0	0.30	ug/l	
120-82-1	1,2,4-Trichlorobenzene [e]	0.50 U	2.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	0.25 U	1.0	0.25	ug/l	
79-00-5	1,1,2-Trichloroethane	0.47 U	1.0	0.47	ug/l	
79-01-6	Trichloroethylene	0.35 U	1.0	0.35	ug/l	
75-69-4	Trichlorofluoromethane [c]	0.50 U	2.0	0.50	ug/l	
75-01-4	Vinyl Chloride	0.47	1.0	0.41	ug/l	I
1330-20-7	Xylene (total)	0.72 U	3.0	0.72	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	96%		83-118%
17060-07-0	1,2-Dichloroethane-D4	100%		79-125%
2037-26-5	Toluene-D8	102%		85-112%
460-00-4	4-Bromofluorobenzene	108%		83-118%

(a) Sample was treated with an anti-foaming agent.
(b) Suspected laboratory contaminant.
(c) Associated CCV outside control limits high, sample is ND.
(d) Associated CCV and BS recovery outside control limits high, sample is ND.
(e) Associated CCV outside control limits low.

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-MW0013-037.5-20230720		
Lab Sample ID:	FC8038-5	**Date Sampled:**	07/20/23
Matrix:	AQ - Ground Water	**Date Received:**	07/21/23
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	KSC-CRCA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	N0125775.D	1	07/24/23 16:56	JL	n/a	n/a	VN6475
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL 4.2 List

CAS No.	Compound	Result	PQL	MDL	Units	Q
67-64-1	Acetone	10 U	25	10	ug/l	
71-43-2	Benzene	0.31 U	1.0	0.31	ug/l	
75-27-4	Bromodichloromethane	0.24 U	1.0	0.24	ug/l	
75-25-2	Bromoform	0.41 U	1.0	0.41	ug/l	
78-93-3	2-Butanone (MEK)	2.0 U	5.0	2.0	ug/l	
75-15-0	Carbon Disulfide	0.53 U	2.0	0.53	ug/l	
56-23-5	Carbon Tetrachloride [b]	0.36 U	1.0	0.36	ug/l	
108-90-7	Chlorobenzene	0.20 U	1.0	0.20	ug/l	
75-00-3	Chloroethane [c]	0.67 U	2.0	0.67	ug/l	
67-66-3	Chloroform	0.30 U	1.0	0.30	ug/l	
110-82-7	Cyclohexane	0.39 U	1.0	0.39	ug/l	
124-48-1	Dibromochloromethane	0.28 U	1.0	0.28	ug/l	
96-12-8	1,2-Dibromo-3-chloropropan [d]	1.0 U	5.0	1.0	ug/l	
106-93-4	1,2-Dibromoethane	0.28 U	2.0	0.28	ug/l	
75-71-8	Dichlorodifluoromethane	0.50 U	2.0	0.50	ug/l	
95-50-1	1,2-Dichlorobenzene	0.32 U	1.0	0.32	ug/l	
541-73-1	1,3-Dichlorobenzene	0.22 U	1.0	0.22	ug/l	
106-46-7	1,4-Dichlorobenzene	0.26 U	1.0	0.26	ug/l	
75-34-3	1,1-Dichloroethane	0.34 U	1.0	0.34	ug/l	
107-06-2	1,2-Dichloroethane	0.31 U	1.0	0.31	ug/l	
75-35-4	1,1-Dichloroethylene	0.32 U	1.0	0.32	ug/l	
156-59-2	cis-1,2-Dichloroethylene	0.28 U	1.0	0.28	ug/l	
156-60-5	trans-1,2-Dichloroethylene	0.22 U	1.0	0.22	ug/l	
78-87-5	1,2-Dichloropropane	0.43 U	1.0	0.43	ug/l	
10061-01-5	cis-1,3-Dichloropropene	0.29 U	1.0	0.29	ug/l	
10061-02-6	trans-1,3-Dichloropropene	0.21 U	1.0	0.21	ug/l	
100-41-4	Ethylbenzene	0.36 U	1.0	0.36	ug/l	
76-13-1	Freon 113	0.48 U	1.0	0.48	ug/l	
591-78-6	2-Hexanone	2.0 U	10	2.0	ug/l	
98-82-8	Isopropylbenzene	0.22 U	1.0	0.22	ug/l	
79-20-9	Methyl Acetate	5.0 U	20	5.0	ug/l	
74-83-9	Methyl Bromide [b]	2.0 U	5.0	2.0	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-MW0013-037.5-20230720		
Lab Sample ID:	FC8038-5	**Date Sampled:**	07/20/23
Matrix:	AQ - Ground Water	**Date Received:**	07/21/23
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	KSC-CRCA		

VOA TCL 4.2 List

CAS No.	Compound	Result	PQL	MDL	Units	Q
74-87-3	Methyl Chloride	0.50 U	2.0	0.50	ug/l	
108-87-2	Methylcyclohexane	0.44 U	1.0	0.44	ug/l	
75-09-2	Methylene Chloride	2.0 U	5.0	2.0	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	1.0 U	5.0	1.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	0.23 U	1.0	0.23	ug/l	
100-42-5	Styrene	0.22 U	1.0	0.22	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	0.30 U	1.0	0.30	ug/l	
127-18-4	Tetrachloroethylene	0.22 U	1.0	0.22	ug/l	
108-88-3	Toluene	0.30 U	1.0	0.30	ug/l	
120-82-1	1,2,4-Trichlorobenzene [d]	0.50 U	2.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	0.25 U	1.0	0.25	ug/l	
79-00-5	1,1,2-Trichloroethane	0.47 U	1.0	0.47	ug/l	
79-01-6	Trichloroethylene	0.35 U	1.0	0.35	ug/l	
75-69-4	Trichlorofluoromethane [b]	0.50 U	2.0	0.50	ug/l	
75-01-4	Vinyl Chloride	1.5	1.0	0.41	ug/l	
1330-20-7	Xylene (total)	0.72 U	3.0	0.72	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	95%		83-118%
17060-07-0	1,2-Dichloroethane-D4	100%		79-125%
2037-26-5	Toluene-D8	102%		85-112%
460-00-4	4-Bromofluorobenzene	108%		83-118%

(a) Sample was treated with an anti-foaming agent.
(b) Associated CCV outside control limits high, sample is ND.
(c) Associated CCV and BS recovery outside control limits high, sample is ND.
(d) Associated CCV outside control limits low.

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-MW0019-058.0-20230720		
Lab Sample ID:	FC8038-6	**Date Sampled:**	07/20/23
Matrix:	AQ - Ground Water	**Date Received:**	07/21/23
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	KSC-CRCA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	N0125776.D	1	07/24/23 17:21	JL	n/a	n/a	VN6475
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL 4.2 List

CAS No.	Compound	Result	PQL	MDL	Units	Q
67-64-1	Acetone	10 U	25	10	ug/l	
71-43-2	Benzene	0.31 U	1.0	0.31	ug/l	
75-27-4	Bromodichloromethane	0.24 U	1.0	0.24	ug/l	
75-25-2	Bromoform	0.41 U	1.0	0.41	ug/l	
78-93-3	2-Butanone (MEK)	2.0 U	5.0	2.0	ug/l	
75-15-0	Carbon Disulfide	0.53 U	2.0	0.53	ug/l	
56-23-5	Carbon Tetrachloride [b]	0.36 U	1.0	0.36	ug/l	
108-90-7	Chlorobenzene	0.20 U	1.0	0.20	ug/l	
75-00-3	Chloroethane [c]	0.67 U	2.0	0.67	ug/l	
67-66-3	Chloroform	0.30 U	1.0	0.30	ug/l	
110-82-7	Cyclohexane	0.39 U	1.0	0.39	ug/l	
124-48-1	Dibromochloromethane	0.28 U	1.0	0.28	ug/l	
96-12-8	1,2-Dibromo-3-chloropropan [d]	1.0 U	5.0	1.0	ug/l	
106-93-4	1,2-Dibromoethane	0.28 U	2.0	0.28	ug/l	
75-71-8	Dichlorodifluoromethane	0.50 U	2.0	0.50	ug/l	
95-50-1	1,2-Dichlorobenzene	0.32 U	1.0	0.32	ug/l	
541-73-1	1,3-Dichlorobenzene	0.22 U	1.0	0.22	ug/l	
106-46-7	1,4-Dichlorobenzene	0.26 U	1.0	0.26	ug/l	
75-34-3	1,1-Dichloroethane	0.34 U	1.0	0.34	ug/l	
107-06-2	1,2-Dichloroethane	0.31 U	1.0	0.31	ug/l	
75-35-4	1,1-Dichloroethylene	0.32 U	1.0	0.32	ug/l	
156-59-2	cis-1,2-Dichloroethylene	0.28 U	1.0	0.28	ug/l	
156-60-5	trans-1,2-Dichloroethylene	0.22 U	1.0	0.22	ug/l	
78-87-5	1,2-Dichloropropane	0.43 U	1.0	0.43	ug/l	
10061-01-5	cis-1,3-Dichloropropene	0.29 U	1.0	0.29	ug/l	
10061-02-6	trans-1,3-Dichloropropene	0.21 U	1.0	0.21	ug/l	
100-41-4	Ethylbenzene	0.36 U	1.0	0.36	ug/l	
76-13-1	Freon 113	0.48 U	1.0	0.48	ug/l	
591-78-6	2-Hexanone	2.0 U	10	2.0	ug/l	
98-82-8	Isopropylbenzene	0.22 U	1.0	0.22	ug/l	
79-20-9	Methyl Acetate	5.0 U	20	5.0	ug/l	
74-83-9	Methyl Bromide [b]	2.0 U	5.0	2.0	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-MW0019-058.0-20230720		
Lab Sample ID:	FC8038-6	**Date Sampled:**	07/20/23
Matrix:	AQ - Ground Water	**Date Received:**	07/21/23
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	KSC-CRCA		

VOA TCL 4.2 List

CAS No.	Compound	Result	PQL	MDL	Units	Q
74-87-3	Methyl Chloride	0.50 U	2.0	0.50	ug/l	
108-87-2	Methylcyclohexane	0.44 U	1.0	0.44	ug/l	
75-09-2	Methylene Chloride	2.0 U	5.0	2.0	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	1.0 U	5.0	1.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	0.23 U	1.0	0.23	ug/l	
100-42-5	Styrene	0.22 U	1.0	0.22	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	0.30 U	1.0	0.30	ug/l	
127-18-4	Tetrachloroethylene	0.22 U	1.0	0.22	ug/l	
108-88-3	Toluene	0.30 U	1.0	0.30	ug/l	
120-82-1	1,2,4-Trichlorobenzene [d]	0.50 U	2.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	0.25 U	1.0	0.25	ug/l	
79-00-5	1,1,2-Trichloroethane	0.47 U	1.0	0.47	ug/l	
79-01-6	Trichloroethylene	0.35 U	1.0	0.35	ug/l	
75-69-4	Trichlorofluoromethane [b]	0.50 U	2.0	0.50	ug/l	
75-01-4	Vinyl Chloride	0.41 U	1.0	0.41	ug/l	
1330-20-7	Xylene (total)	0.72 U	3.0	0.72	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	98%		83-118%
17060-07-0	1,2-Dichloroethane-D4	101%		79-125%
2037-26-5	Toluene-D8	102%		85-112%
460-00-4	4-Bromofluorobenzene	109%		83-118%

(a) Sample was treated with an anti-foaming agent.
(b) Associated CCV outside control limits high, sample is ND.
(c) Associated CCV and BS recovery outside control limits high, sample is ND.
(d) Associated CCV outside control limits low.

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-MW0032-058.0-20230720		
Lab Sample ID:	FC8038-7	**Date Sampled:**	07/20/23
Matrix:	AQ - Ground Water	**Date Received:**	07/21/23
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	KSC-CRCA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	N0125777.D	1	07/24/23 17:45	JL	n/a	n/a	VN6475
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL 4.2 List

CAS No.	Compound	Result	PQL	MDL	Units	Q
67-64-1	Acetone	10 U	25	10	ug/l	
71-43-2	Benzene	0.31 U	1.0	0.31	ug/l	
75-27-4	Bromodichloromethane	0.24 U	1.0	0.24	ug/l	
75-25-2	Bromoform	0.41 U	1.0	0.41	ug/l	
78-93-3	2-Butanone (MEK)	2.0 U	5.0	2.0	ug/l	
75-15-0	Carbon Disulfide	0.53 U	2.0	0.53	ug/l	
56-23-5	Carbon Tetrachloride [b]	0.36 U	1.0	0.36	ug/l	
108-90-7	Chlorobenzene	0.20 U	1.0	0.20	ug/l	
75-00-3	Chloroethane [c]	0.67 U	2.0	0.67	ug/l	
67-66-3	Chloroform	0.30 U	1.0	0.30	ug/l	
110-82-7	Cyclohexane	0.39 U	1.0	0.39	ug/l	
124-48-1	Dibromochloromethane	0.28 U	1.0	0.28	ug/l	
96-12-8	1,2-Dibromo-3-chloropropan [d]	1.0 U	5.0	1.0	ug/l	
106-93-4	1,2-Dibromoethane	0.28 U	2.0	0.28	ug/l	
75-71-8	Dichlorodifluoromethane	0.50 U	2.0	0.50	ug/l	
95-50-1	1,2-Dichlorobenzene	0.32 U	1.0	0.32	ug/l	
541-73-1	1,3-Dichlorobenzene	0.22 U	1.0	0.22	ug/l	
106-46-7	1,4-Dichlorobenzene	0.26 U	1.0	0.26	ug/l	
75-34-3	1,1-Dichloroethane	0.34 U	1.0	0.34	ug/l	
107-06-2	1,2-Dichloroethane	0.31 U	1.0	0.31	ug/l	
75-35-4	1,1-Dichloroethylene	0.32 U	1.0	0.32	ug/l	
156-59-2	cis-1,2-Dichloroethylene	0.28 U	1.0	0.28	ug/l	
156-60-5	trans-1,2-Dichloroethylene	0.22 U	1.0	0.22	ug/l	
78-87-5	1,2-Dichloropropane	0.43 U	1.0	0.43	ug/l	
10061-01-5	cis-1,3-Dichloropropene	0.29 U	1.0	0.29	ug/l	
10061-02-6	trans-1,3-Dichloropropene	0.21 U	1.0	0.21	ug/l	
100-41-4	Ethylbenzene	0.36 U	1.0	0.36	ug/l	
76-13-1	Freon 113	0.48 U	1.0	0.48	ug/l	
591-78-6	2-Hexanone	2.0 U	10	2.0	ug/l	
98-82-8	Isopropylbenzene	0.22 U	1.0	0.22	ug/l	
79-20-9	Methyl Acetate	5.0 U	20	5.0	ug/l	
74-83-9	Methyl Bromide [b]	2.0 U	5.0	2.0	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-MW0032-058.0-20230720		
Lab Sample ID:	FC8038-7	**Date Sampled:**	07/20/23
Matrix:	AQ - Ground Water	**Date Received:**	07/21/23
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	KSC-CRCA		

VOA TCL 4.2 List

CAS No.	Compound	Result	PQL	MDL	Units	Q
74-87-3	Methyl Chloride	0.50 U	2.0	0.50	ug/l	
108-87-2	Methylcyclohexane	0.44 U	1.0	0.44	ug/l	
75-09-2	Methylene Chloride	2.0 U	5.0	2.0	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	1.0 U	5.0	1.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	0.23 U	1.0	0.23	ug/l	
100-42-5	Styrene	0.22 U	1.0	0.22	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	0.30 U	1.0	0.30	ug/l	
127-18-4	Tetrachloroethylene	0.22 U	1.0	0.22	ug/l	
108-88-3	Toluene	0.30 U	1.0	0.30	ug/l	
120-82-1	1,2,4-Trichlorobenzene [d]	0.50 U	2.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	0.25 U	1.0	0.25	ug/l	
79-00-5	1,1,2-Trichloroethane	0.47 U	1.0	0.47	ug/l	
79-01-6	Trichloroethylene	0.35 U	1.0	0.35	ug/l	
75-69-4	Trichlorofluoromethane [b]	0.50 U	2.0	0.50	ug/l	
75-01-4	Vinyl Chloride	8.4	1.0	0.41	ug/l	
1330-20-7	Xylene (total)	0.72 U	3.0	0.72	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	97%		83-118%
17060-07-0	1,2-Dichloroethane-D4	100%		79-125%
2037-26-5	Toluene-D8	102%		85-112%
460-00-4	4-Bromofluorobenzene	110%		83-118%

(a) Sample was treated with an anti-foaming agent.
(b) Associated CCV outside control limits high, sample is ND.
(c) Associated CCV and BS recovery outside control limits high, sample is ND.
(d) Associated CCV outside control limits low.

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-ASINFLUENT-20230721		
Lab Sample ID:	FC8038-8	**Date Sampled:**	07/21/23
Matrix:	AQ - Ground Water	**Date Received:**	07/21/23
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	KSC-CRCA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	N0125778.D	1	07/24/23 18:10	JL	n/a	n/a	VN6475
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL 4.2 List

CAS No.	Compound	Result	PQL	MDL	Units	Q
67-64-1	Acetone	42.2	25	10	ug/l	B
71-43-2	Benzene	0.31 U	1.0	0.31	ug/l	
75-27-4	Bromodichloromethane	0.24 U	1.0	0.24	ug/l	
75-25-2	Bromoform	0.41 U	1.0	0.41	ug/l	
78-93-3	2-Butanone (MEK)	2.0 U	5.0	2.0	ug/l	
75-15-0	Carbon Disulfide	0.53 U	2.0	0.53	ug/l	
56-23-5	Carbon Tetrachloride [b]	0.36 U	1.0	0.36	ug/l	
108-90-7	Chlorobenzene	0.20 U	1.0	0.20	ug/l	
75-00-3	Chloroethane [c]	0.67 U	2.0	0.67	ug/l	
67-66-3	Chloroform	0.30 U	1.0	0.30	ug/l	
110-82-7	Cyclohexane	0.39 U	1.0	0.39	ug/l	
124-48-1	Dibromochloromethane	0.28 U	1.0	0.28	ug/l	
96-12-8	1,2-Dibromo-3-chloropropan [d]	1.0 U	5.0	1.0	ug/l	
106-93-4	1,2-Dibromoethane	0.28 U	2.0	0.28	ug/l	
75-71-8	Dichlorodifluoromethane	0.50 U	2.0	0.50	ug/l	
95-50-1	1,2-Dichlorobenzene	0.32 U	1.0	0.32	ug/l	
541-73-1	1,3-Dichlorobenzene	0.22 U	1.0	0.22	ug/l	
106-46-7	1,4-Dichlorobenzene	0.26 U	1.0	0.26	ug/l	
75-34-3	1,1-Dichloroethane	0.34 U	1.0	0.34	ug/l	
107-06-2	1,2-Dichloroethane	0.31 U	1.0	0.31	ug/l	
75-35-4	1,1-Dichloroethylene	0.32 U	1.0	0.32	ug/l	
156-59-2	cis-1,2-Dichloroethylene	0.28 U	1.0	0.28	ug/l	
156-60-5	trans-1,2-Dichloroethylene	0.22 U	1.0	0.22	ug/l	
78-87-5	1,2-Dichloropropane	0.43 U	1.0	0.43	ug/l	
10061-01-5	cis-1,3-Dichloropropene	0.29 U	1.0	0.29	ug/l	
10061-02-6	trans-1,3-Dichloropropene	0.21 U	1.0	0.21	ug/l	
100-41-4	Ethylbenzene	0.36 U	1.0	0.36	ug/l	
76-13-1	Freon 113	0.48 U	1.0	0.48	ug/l	
591-78-6	2-Hexanone	2.0 U	10	2.0	ug/l	
98-82-8	Isopropylbenzene	0.22 U	1.0	0.22	ug/l	
79-20-9	Methyl Acetate	5.0 U	20	5.0	ug/l	
74-83-9	Methyl Bromide [b]	2.0 U	5.0	2.0	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-ASINFLUENT-20230721		
Lab Sample ID:	FC8038-8	**Date Sampled:**	07/21/23
Matrix:	AQ - Ground Water	**Date Received:**	07/21/23
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	KSC-CRCA		

VOA TCL 4.2 List

CAS No.	Compound	Result	PQL	MDL	Units	Q
74-87-3	Methyl Chloride	0.50 U	2.0	0.50	ug/l	
108-87-2	Methylcyclohexane	0.44 U	1.0	0.44	ug/l	
75-09-2	Methylene Chloride	2.0 U	5.0	2.0	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	1.0 U	5.0	1.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	0.23 U	1.0	0.23	ug/l	
100-42-5	Styrene	0.22 U	1.0	0.22	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	0.30 U	1.0	0.30	ug/l	
127-18-4	Tetrachloroethylene	0.22 U	1.0	0.22	ug/l	
108-88-3	Toluene	0.30 U	1.0	0.30	ug/l	
120-82-1	1,2,4-Trichlorobenzene [d]	0.50 U	2.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	0.25 U	1.0	0.25	ug/l	
79-00-5	1,1,2-Trichloroethane	0.47 U	1.0	0.47	ug/l	
79-01-6	Trichloroethylene	0.35 U	1.0	0.35	ug/l	
75-69-4	Trichlorofluoromethane [b]	0.50 U	2.0	0.50	ug/l	
75-01-4	Vinyl Chloride	2.7	1.0	0.41	ug/l	
1330-20-7	Xylene (total)	0.72 U	3.0	0.72	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	96%		83-118%
17060-07-0	1,2-Dichloroethane-D4	99%		79-125%
2037-26-5	Toluene-D8	101%		85-112%
460-00-4	4-Bromofluorobenzene	108%		83-118%

(a) Sample was treated with an anti-foaming agent.
(b) Associated CCV outside control limits high, sample is ND.
(c) Associated CCV and BS recovery outside control limits high, sample is ND.
(d) Associated CCV outside control limits low.

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-ASINFLUENT-20230721		
Lab Sample ID:	FC8038-8	**Date Sampled:**	07/21/23
Matrix:	AQ - Ground Water	**Date Received:**	07/21/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	KSC-CRCA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3Q80614.D	1	08/15/23 08:54	JL	08/09/23 09:40	OP98324	S3Q1111
Run #2	3Q80764.D	5	08/17/23 07:08	JL	08/09/23 09:40	OP98324	S3Q1113
Run #3	3Q80629.D	100	08/15/23 16:47	JL	08/09/23 09:40	OP98324	S3Q1112

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2	125 ml	1.0 ml
Run #3	125 ml	1.0 ml

CAS No.	Compound	Result	PQL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	34.8 [a]	1.6	0.40	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0282	0.0080	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	0.0216	0.0080	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0092	0.0080	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	0.0207	0.0080	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0020 U	0.0080	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.010 U [b]	0.040	0.010	ug/l	
PERFLUOROALKYLSULFONIC ACIDS						
375-73-5	Perfluorobutanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0056	0.0080	0.0020	ug/l	I
375-92-8	Perfluoroheptanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0071	0.0080	0.0020	ug/l	I
68259-12-1	Perfluorononanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA [c]	0.010 U [b]	0.040	0.010	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	0.0040 U	0.016	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0040 U	0.016	0.0040	ug/l	
FLUOROTELOMER SULFONATES						

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-ASINFLUENT-20230721		
Lab Sample ID:	FC8038-8	**Date Sampled:**	07/21/23
Matrix:	AQ - Ground Water	**Date Received:**	07/21/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	KSC-CRCA		

CAS No.	Compound	Result	PQL	MDL	Units	Q
757124-72-4	4:2 Fluorotelomer sulfonate	0.0040 U	0.016	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0040 U	0.016	0.0040	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0040 U	0.016	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES						
13252-13-6	HFPO-DA (GenX)	0.0040 U	0.016	0.0040	ug/l	
919005-14-4	ADONA	0.0040 U	0.016	0.0040	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0040 U	0.016	0.0040	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0040 U	0.016	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Run# 3	Limits
	13C4-PFBA	23% [d]	47% [d]	106%	50-150%
	13C5-PFPeA	50%	65%	106%	50-150%
	13C5-PFHxA	54%	74%	105%	50-150%
	13C4-PFHpA	53%	72%	105%	50-150%
	13C8-PFOA	56%	73%	105%	50-150%
	13C9-PFNA	63%	76%	103%	50-150%
	13C6-PFDA	68%	78%	109%	50-150%
	13C7-PFUnDA	69%	75%	106%	50-150%
	13C2-PFDoDA	62%	67%	104%	50-150%
	13C2-PFTeDA	48% [d]	56%	104%	50-150%
	13C3-PFBS	62%	81%	107%	50-150%
	13C3-PFHxS	54%	70%	105%	50-150%
	13C8-PFOS	63%	72%	106%	50-150%
	13C8-FOSA	27% [d]	33% [d]	113%	50-150%
	d3-MeFOSAA	92%	89%	121%	50-150%
	d5-EtFOSAA	86%	76%	124%	50-150%
	13C2-4:2FTS	56%	68%	99%	50-150%
	13C2-6:2FTS	65%	74%	97%	50-150%
	13C2-8:2FTS	78%	74%	104%	50-150%
	13C3-HFPO-DA	63%	67%	104%	50-150%

(a) Result is from Run# 3
(b) Result is from Run# 2
(c) Associated ID Standard outside control limits.
(d) Outside control limits.

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-ASEFFLUENT-20230721		
Lab Sample ID:	FC8038-9	**Date Sampled:**	07/21/23
Matrix:	AQ - Ground Water	**Date Received:**	07/21/23
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	KSC-CRCA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	N0125779.D	1	07/24/23 18:35	JL	n/a	n/a	VN6475
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL 4.2 List

CAS No.	Compound	Result	PQL	MDL	Units	Q
67-64-1	Acetone	53.2	25	10	ug/l	B
71-43-2	Benzene	0.31 U	1.0	0.31	ug/l	
75-27-4	Bromodichloromethane	0.24 U	1.0	0.24	ug/l	
75-25-2	Bromoform	0.41 U	1.0	0.41	ug/l	
78-93-3	2-Butanone (MEK)	2.0 U	5.0	2.0	ug/l	
75-15-0	Carbon Disulfide	0.53 U	2.0	0.53	ug/l	
56-23-5	Carbon Tetrachloride [b]	0.36 U	1.0	0.36	ug/l	
108-90-7	Chlorobenzene	0.20 U	1.0	0.20	ug/l	
75-00-3	Chloroethane [c]	0.67 U	2.0	0.67	ug/l	
67-66-3	Chloroform	0.30 U	1.0	0.30	ug/l	
110-82-7	Cyclohexane	0.39 U	1.0	0.39	ug/l	
124-48-1	Dibromochloromethane	0.28 U	1.0	0.28	ug/l	
96-12-8	1,2-Dibromo-3-chloropropan [d]	1.0 U	5.0	1.0	ug/l	
106-93-4	1,2-Dibromoethane	0.28 U	2.0	0.28	ug/l	
75-71-8	Dichlorodifluoromethane	0.50 U	2.0	0.50	ug/l	
95-50-1	1,2-Dichlorobenzene	0.32 U	1.0	0.32	ug/l	
541-73-1	1,3-Dichlorobenzene	0.22 U	1.0	0.22	ug/l	
106-46-7	1,4-Dichlorobenzene	0.26 U	1.0	0.26	ug/l	
75-34-3	1,1-Dichloroethane	0.34 U	1.0	0.34	ug/l	
107-06-2	1,2-Dichloroethane	0.31 U	1.0	0.31	ug/l	
75-35-4	1,1-Dichloroethylene	0.32 U	1.0	0.32	ug/l	
156-59-2	cis-1,2-Dichloroethylene	0.28 U	1.0	0.28	ug/l	
156-60-5	trans-1,2-Dichloroethylene	0.22 U	1.0	0.22	ug/l	
78-87-5	1,2-Dichloropropane	0.43 U	1.0	0.43	ug/l	
10061-01-5	cis-1,3-Dichloropropene	0.29 U	1.0	0.29	ug/l	
10061-02-6	trans-1,3-Dichloropropene	0.21 U	1.0	0.21	ug/l	
100-41-4	Ethylbenzene	0.36 U	1.0	0.36	ug/l	
76-13-1	Freon 113	0.48 U	1.0	0.48	ug/l	
591-78-6	2-Hexanone	2.0 U	10	2.0	ug/l	
98-82-8	Isopropylbenzene	0.22 U	1.0	0.22	ug/l	
79-20-9	Methyl Acetate	5.0 U	20	5.0	ug/l	
74-83-9	Methyl Bromide [b]	2.0 U	5.0	2.0	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-ASEFFLUENT-20230721		
Lab Sample ID:	FC8038-9	**Date Sampled:**	07/21/23
Matrix:	AQ - Ground Water	**Date Received:**	07/21/23
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	KSC-CRCA		

VOA TCL 4.2 List

CAS No.	Compound	Result	PQL	MDL	Units	Q
74-87-3	Methyl Chloride	0.50 U	2.0	0.50	ug/l	
108-87-2	Methylcyclohexane	0.44 U	1.0	0.44	ug/l	
75-09-2	Methylene Chloride	2.0 U	5.0	2.0	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	1.0 U	5.0	1.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	0.23 U	1.0	0.23	ug/l	
100-42-5	Styrene	0.22 U	1.0	0.22	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	0.30 U	1.0	0.30	ug/l	
127-18-4	Tetrachloroethylene	0.22 U	1.0	0.22	ug/l	
108-88-3	Toluene	0.30 U	1.0	0.30	ug/l	
120-82-1	1,2,4-Trichlorobenzene [d]	0.50 U	2.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	0.25 U	1.0	0.25	ug/l	
79-00-5	1,1,2-Trichloroethane	0.47 U	1.0	0.47	ug/l	
79-01-6	Trichloroethylene	0.35 U	1.0	0.35	ug/l	
75-69-4	Trichlorofluoromethane [b]	0.50 U	2.0	0.50	ug/l	
75-01-4	Vinyl Chloride	0.41 U	1.0	0.41	ug/l	
1330-20-7	Xylene (total)	0.72 U	3.0	0.72	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	96%		83-118%
17060-07-0	1,2-Dichloroethane-D4	100%		79-125%
2037-26-5	Toluene-D8	101%		85-112%
460-00-4	4-Bromofluorobenzene	109%		83-118%

(a) Sample was treated with an anti-foaming agent.
(b) Associated CCV outside control limits high, sample is ND.
(c) Associated CCV and BS recovery outside control limits high, sample is ND.
(d) Associated CCV outside control limits low.

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-ASEFFLUENT-20230721		
Lab Sample ID:	FC8038-9	**Date Sampled:**	07/21/23
Matrix:	AQ - Ground Water	**Date Received:**	07/21/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	KSC-CRCA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3Q80615.D	1	08/15/23 09:10	JL	08/09/23 09:40	OP98324	S3Q1111
Run #2	3Q80765.D	5	08/17/23 07:24	JL	08/09/23 09:40	OP98324	S3Q1113
Run #3	3Q80630.D	100	08/15/23 17:02	JL	08/09/23 09:40	OP98324	S3Q1112

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2	125 ml	1.0 ml
Run #3	125 ml	1.0 ml

CAS No.	Compound	Result	PQL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	28.9 [a]	1.6	0.40	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0261	0.0080	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	0.0219	0.0080	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0083	0.0080	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	0.0180	0.0080	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0020 U	0.0080	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS						
375-73-5	Perfluorobutanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0042	0.0080	0.0020	ug/l	I
375-92-8	Perfluoroheptanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0099	0.0080	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA	0.010 U [b]	0.040	0.010	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	0.0040 U	0.016	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0040 U	0.016	0.0040	ug/l	
FLUOROTELOMER SULFONATES						

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-ASEFFLUENT-20230721		
Lab Sample ID:	FC8038-9	**Date Sampled:**	07/21/23
Matrix:	AQ - Ground Water	**Date Received:**	07/21/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	KSC-CRCA		

CAS No.	Compound	Result	PQL	MDL	Units	Q
757124-72-4	4:2 Fluorotelomer sulfonate	0.0040 U	0.016	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0040 U	0.016	0.0040	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0040 U	0.016	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES						
13252-13-6	HFPO-DA (GenX)	0.0040 U	0.016	0.0040	ug/l	
919005-14-4	ADONA	0.0040 U	0.016	0.0040	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0040 U	0.016	0.0040	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0040 U	0.016	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Run# 3	Limits
	13C4-PFBA	23% [c]	40% [c]	107%	50-150%
	13C5-PFPeA	60%	63%	108%	50-150%
	13C5-PFHxA	67%	75%	108%	50-150%
	13C4-PFHpA	68%	74%	106%	50-150%
	13C8-PFOA	76%	78%	107%	50-150%
	13C9-PFNA	85%	78%	106%	50-150%
	13C6-PFDA	88%	80%	109%	50-150%
	13C7-PFUnDA	87%	74%	111%	50-150%
	13C2-PFDoDA	76%	67%	106%	50-150%
	13C2-PFTeDA	57%	49% [c]	106%	50-150%
	13C3-PFBS	77%	82%	110%	50-150%
	13C3-PFHxS	68%	72%	107%	50-150%
	13C8-PFOS	76%	73%	105%	50-150%
	13C8-FOSA	48% [c]	52%	116%	50-150%
	d3-MeFOSAA	114%	87%	129%	50-150%
	d5-EtFOSAA	99%	80%	122%	50-150%
	13C2-4:2FTS	69%	68%	100%	50-150%
	13C2-6:2FTS	87%	76%	97%	50-150%
	13C2-8:2FTS	97%	72%	103%	50-150%
	13C3-HFPO-DA	77%	73%	106%	50-150%

(a) Result is from Run# 3
(b) Result is from Run# 2
(c) Outside control limits.

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody

FC8038

Tetra Tech, Inc. CHAIN OF CUSTODY NUMBER No. 3693 PAGE 1 OF 1

PROJECT NO: 112G08970	FACILITY: KSC-CRCA	PROJECT MANAGER Chris Neumann	PHONE NUMBER (321) 636-6470	LABORATORY NAME AND CONTACT: SGS – Andrea Colby
SAMPLERS (SIGNATURE) – Chuck Sorden; Natalie Vollc		FIELD OPERATIONS LEADER Chuck Sorden	PHONE NUMBER (321) 591-7580	ADDRESS 4405 Vineland Rd. Ste. C-15
		CARRIER/WAYBILL NUMBER		CITY, STATE Orlando, FL

STANDARD TAT ☒ RUSH TAT ☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

	DATE YEAR 2023	TIME	SAMPLE ID	LOCATION ID	TOP DEPTH (FT)	BOTTOM DEPTH (FT)	MATRIX (GW, SO, SW, SD, QC, ETC.)	COLLECTION METHOD GRAB (G) COMP (C)	No. OF CONTAINERS	CONTAINER TYPE PLASTIC (P) or GLASS (G)										COMMENTS
										G	P									
										PRESERVATIVE USED		HCl/4°C	4°C							
										TYPE OF ANALYSIS		VOCs TCL 42	LL GSM 537 M 38							
1	07/20	0930	CRCA-MW0031-058.0-20230720	MW31	53	63	GW	G	3	X										
2		1003	CRCA-MW0006-010.0-20230720	MW06	5	15			2			X								
3		1030	CRCA-MW0018-058.0-20230720	MW18	53	63			3	X										
4		1100	CRCA-MW0002-032.5-20230720	MW02	30	35													INITIAL ASSESSMENT	
5		1125	CRCA-MW0013-027.5-20230720	MW13	25	30														
6		1200	CRCA-MW0019-058.0-20230720	MW19	53	63													LABEL VERIFICATION	
7	07/20	1430	CRCA-MW0032-058.0-20230720	MW32	53	63	GW	G	3	X										
8	07/21	1235	CRCA-ASINFLUENT-20230721	—	—	—	N		5			X								
9	07/21	1240	CRCA-ASEFFLUENT-20230721	—	—	—	GW	G	5	X		X								

1. RELINQUISHED BY	DATE 07/21/23	TIME 1300	1. RECEIVED BY	7/21/23	DATE 15:00	TIME
2. RELINQUISHED BY	DATE 7/21/23	TIME 1500	2. RECEIVED BY	07/21/23	DATE	TIME 1500
3. RELINQUISHED BY	DATE	TIME	3. RECEIVED BY		DATE	TIME

COMMENTS 2.0 FR#1

DISTRIBUTION: WHITE (ACCOMPANIES SAMPLE) YELLOW (FIELD COPY) PINK (FILE COPY) 4/02R FORM NO. TtNUS-001

FC8038: Chain of Custody
Page 1 of 2

SGS Sample Receipt Summary

Job Number: FC8038 **Client:** TETRA TECH **Project:** 112G08970

Date / Time Received: 7/21/2023 3:00:00 PM **Delivery Method:** COURIER **Airbill #'s:** N/A

Therm ID: IR 1; **Therm CF:** -0.2; **# of Coolers:** 1

Cooler Temps (Raw Measured) °C: Cooler 1: (2.0);

Cooler Temps (Corrected) °C: Cooler 1: (1.8);

Cooler Information	Y	or	N
1. Custody Seals Present	☑		☐
2. Custody Seals Intact	☑		☐
3. Temp criteria achieved	☑		☐
4. Cooler temp verification	IR Gun		
5. Cooler media	Ice (Bag)		

Trip Blank Information	Y	or	N	N/A
1. Trip Blank present / cooler	☐		☑	☐
2. Trip Blank listed on COC	☐		☑	☐

	W	or	S	N/A
3. Type Of TB Received	☐		☐	☑

Sample Information	Y	or	N	N/A
1. Sample labels present on bottles	☑		☐	
2. Samples preserved properly	☑		☐	
3. Sufficient volume/containers recvd for analysis:	☑		☐	
4. Condition of sample	Intact			
5. Sample recvd within HT	☑		☐	
6. Dates/Times/IDs on COC match Sample Label	☑		☐	
7. VOCs have headspace	☐		☑	☐
8. Bottles received for unspecified tests	☐		☑	
9. Compositing instructions clear	☐		☐	☑
10. Voa Soil Kits/Jars received past 48hrs?	☐		☐	☑
11. % Solids Jar received?	☐		☐	☑
12. Residual Chlorine Present?	☐		☐	☑

Misc. Information

Number of Encores: 25-Gram _____ 5-Gram _____ Number of 5035 Field Kits: _____ Number of Lab Filtered Metals: _____

Test Strip Lot #s: pH 0-3 230320 pH 10-12 _____ Other: (Specify) pH 1.0 - 12.0 222221

Residual Chlorine Test Strip Lot #: _____

Comments

SM001
Rev. Date 05/24/17

Technician: SHAYLAP Date: 7/21/2023 3:00:00 PM Reviewer: _____ Date: _____

FC8038: Chain of Custody
Page 2 of 2

MS Volatiles

6

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Job Number: FC8038
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VN6475-MB [a]	N0125767.D	1	07/24/23	JL	n/a	n/a	VN6475

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

FC8038-1, FC8038-3, FC8038-4, FC8038-5, FC8038-6, FC8038-7, FC8038-8, FC8038-9

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone [b]	16.0	25	10	ug/l	J
71-43-2	Benzene	ND	1.0	0.31	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.24	ug/l	
75-25-2	Bromoform	ND	1.0	0.41	ug/l	
78-93-3	2-Butanone (MEK)	ND	5.0	2.0	ug/l	
75-15-0	Carbon Disulfide	ND	2.0	0.53	ug/l	
56-23-5	Carbon Tetrachloride	ND	1.0	0.36	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.20	ug/l	
75-00-3	Chloroethane	ND	2.0	0.67	ug/l	
67-66-3	Chloroform	ND	1.0	0.30	ug/l	
110-82-7	Cyclohexane	ND	1.0	0.39	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.28	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	5.0	1.0	ug/l	
106-93-4	1,2-Dibromoethane	ND	2.0	0.28	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	0.50	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	0.32	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	0.22	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	0.26	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.34	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.31	ug/l	
75-35-4	1,1-Dichloroethylene	ND	1.0	0.32	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	0.28	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	0.22	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.43	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.29	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.21	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.36	ug/l	
76-13-1	Freon 113	ND	1.0	0.48	ug/l	
591-78-6	2-Hexanone	ND	10	2.0	ug/l	
98-82-8	Isopropylbenzene	ND	1.0	0.22	ug/l	
79-20-9	Methyl Acetate	ND	20	5.0	ug/l	
74-83-9	Methyl Bromide	ND	5.0	2.0	ug/l	
74-87-3	Methyl Chloride	ND	2.0	0.50	ug/l	
108-87-2	Methylcyclohexane	ND	1.0	0.44	ug/l	
75-09-2	Methylene Chloride	ND	5.0	2.0	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	5.0	1.0	ug/l	

Method Blank Summary

Job Number: FC8038
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VN6475-MB [a]	N0125767.D	1	07/24/23	JL	n/a	n/a	VN6475

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

FC8038-1, FC8038-3, FC8038-4, FC8038-5, FC8038-6, FC8038-7, FC8038-8, FC8038-9

CAS No.	Compound	Result	RL	MDL	Units	Q
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.23	ug/l	
100-42-5	Styrene	ND	1.0	0.22	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.30	ug/l	
127-18-4	Tetrachloroethylene	ND	1.0	0.22	ug/l	
108-88-3	Toluene	ND	1.0	0.30	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	2.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.25	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.47	ug/l	
79-01-6	Trichloroethylene	ND	1.0	0.35	ug/l	
75-69-4	Trichlorofluoromethane	ND	2.0	0.50	ug/l	
75-01-4	Vinyl Chloride	ND	1.0	0.41	ug/l	
1330-20-7	Xylene (total)	ND	3.0	0.72	ug/l	

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	97%	83-118%
17060-07-0	1,2-Dichloroethane-D4	101%	79-125%
2037-26-5	Toluene-D8	101%	85-112%
460-00-4	4-Bromofluorobenzene	105%	83-118%

(a) Sample was treated with an anti-foaming agent.
(b) Suspected laboratory contaminant.

Blank Spike Summary

Job Number: FC8038
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VN6475-BS	N0125764.D	1	07/24/23	JL	n/a	n/a	VN6475

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

FC8038-1, FC8038-3, FC8038-4, FC8038-5, FC8038-6, FC8038-7, FC8038-8, FC8038-9

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
67-64-1	Acetone	125	148	118	50-147
71-43-2	Benzene	25	26.7	107	81-122
75-27-4	Bromodichloromethane	25	24.8	99	79-123
75-25-2	Bromoform	25	22.8	91	66-123
78-93-3	2-Butanone (MEK)	125	123	98	56-143
75-15-0	Carbon Disulfide	25	29.1	116	66-148
56-23-5	Carbon Tetrachloride	25	33.6	134	76-136
108-90-7	Chlorobenzene	25	23.8	95	82-124
75-00-3	Chloroethane	25	41.7	167*	62-144
67-66-3	Chloroform	25	25.7	103	80-124
110-82-7	Cyclohexane	25	27.7	111	73-138
124-48-1	Dibromochloromethane	25	24.7	99	78-122
96-12-8	1,2-Dibromo-3-chloropropane	25	20.7	83	64-123
106-93-4	1,2-Dibromoethane	25	22.9	92	75-120
75-71-8	Dichlorodifluoromethane	25	26.3	105	42-167
95-50-1	1,2-Dichlorobenzene	25	21.4	86	82-124
541-73-1	1,3-Dichlorobenzene	25	21.8	87	84-125
106-46-7	1,4-Dichlorobenzene	25	22.4	90	78-120
75-34-3	1,1-Dichloroethane	25	25.7	103	81-122
107-06-2	1,2-Dichloroethane	25	26.7	107	75-125
75-35-4	1,1-Dichloroethylene	25	28.2	113	78-137
156-59-2	cis-1,2-Dichloroethylene	25	24.2	97	78-120
156-60-5	trans-1,2-Dichloroethylene	25	27.4	110	76-127
78-87-5	1,2-Dichloropropane	25	26.1	104	76-124
10061-01-5	cis-1,3-Dichloropropene	25	24.3	97	75-118
10061-02-6	trans-1,3-Dichloropropene	25	22.1	88	80-120
100-41-4	Ethylbenzene	25	25.0	100	81-121
76-13-1	Freon 113	25	33.6	134	72-134
591-78-6	2-Hexanone	125	131	105	61-129
98-82-8	Isopropylbenzene	25	23.3	93	83-132
79-20-9	Methyl Acetate	125	123	98	65-126
74-83-9	Methyl Bromide	25	35.5	142	59-143
74-87-3	Methyl Chloride	25	26.7	107	50-159
108-87-2	Methylcyclohexane	25	26.2	105	76-129
75-09-2	Methylene Chloride	25	28.1	112	69-135
108-10-1	4-Methyl-2-pentanone (MIBK)	125	140	112	66-122

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FC8038
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VN6475-BS	N0125764.D	1	07/24/23	JL	n/a	n/a	VN6475

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

FC8038-1, FC8038-3, FC8038-4, FC8038-5, FC8038-6, FC8038-7, FC8038-8, FC8038-9

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
1634-04-4	Methyl Tert Butyl Ether	25	24.5	98	72-117
100-42-5	Styrene	25	21.9	88	78-119
79-34-5	1,1,2,2-Tetrachloroethane	25	23.7	95	72-120
127-18-4	Tetrachloroethylene	25	24.1	96	76-135
108-88-3	Toluene	25	24.7	99	80-120
120-82-1	1,2,4-Trichlorobenzene	25	19.0	76	73-129
71-55-6	1,1,1-Trichloroethane	25	25.9	104	75-130
79-00-5	1,1,2-Trichloroethane	25	24.1	96	76-119
79-01-6	Trichloroethylene	25	24.3	97	81-126
75-69-4	Trichlorofluoromethane	25	36.5	146	71-156
75-01-4	Vinyl Chloride	25	26.5	106	69-159
1330-20-7	Xylene (total)	75	74.7	100	80-126

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	97%	83-118%
17060-07-0	1,2-Dichloroethane-D4	105%	79-125%
2037-26-5	Toluene-D8	100%	85-112%
460-00-4	4-Bromofluorobenzene	100%	83-118%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FC8038
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
FC7975-21MS	N0125786.D	5	07/24/23	JL	n/a	n/a	VN6475
FC7975-21MSD	N0125787.D	5	07/24/23	JL	n/a	n/a	VN6475
FC7975-21	N0125768.D	1	07/24/23	JL	n/a	n/a	VN6475

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

FC8038-1, FC8038-3, FC8038-4, FC8038-5, FC8038-6, FC8038-7, FC8038-8, FC8038-9

CAS No.	Compound	FC7975-21 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
67-64-1	Acetone	25	U	625	478	76	625	440	70	8	50-147/21
71-43-2	Benzene	1.0	U	125	151	121	125	133	106	13	81-122/14
75-27-4	Bromodichloromethane	1.0	U	125	136	109	125	120	96	13	79-123/19
75-25-2	Bromoform	1.0	U	125	105	84	125	93.5	75	12	66-123/21
78-93-3	2-Butanone (MEK)	5.0	U	625	496	79	625	435	70	13	56-143/18
75-15-0	Carbon Disulfide	2.0	U	125	157	126	125	143	114	9	66-148/23
56-23-5	Carbon Tetrachloride	1.0	U	125	174	139*	125	158	126	10	76-136/23
108-90-7	Chlorobenzene	1.0	U	125	130	104	125	117	94	11	82-124/14
75-00-3	Chloroethane	2.0	U	125	262	210*	125	231	185*	13	62-144/20
67-66-3	Chloroform	1.0	U	125	145	116	125	129	103	12	80-124/15
110-82-7	Cyclohexane	1.0	U	125	153	122	125	140	112	9	73-138/18
124-48-1	Dibromochloromethane	1.0	U	125	124	99	125	112	90	10	78-122/19
96-12-8	1,2-Dibromo-3-chloropropane	5.0	U	125	84.5	68	125	74.7	60*	12	64-123/18
106-93-4	1,2-Dibromoethane	2.0	U	125	118	94	125	105	84	12	75-120/13
75-71-8	Dichlorodifluoromethane	2.0	U	125	168	134	125	155	124	8	42-167/19
95-50-1	1,2-Dichlorobenzene	1.0	U	125	117	94	125	104	83	12	82-124/14
541-73-1	1,3-Dichlorobenzene	1.0	U	125	118	94	125	104	83*	13	84-125/14
106-46-7	1,4-Dichlorobenzene	1.0	U	125	121	97	125	109	87	10	78-120/15
75-34-3	1,1-Dichloroethane	1.0	U	125	145	116	125	130	104	11	81-122/15
107-06-2	1,2-Dichloroethane	1.0	U	125	151	121	125	135	108	11	75-125/14
75-35-4	1,1-Dichloroethylene	1.0	U	125	149	119	125	139	111	7	78-137/18
156-59-2	cis-1,2-Dichloroethylene	1.0	U	125	134	107	125	118	94	13	78-120/15
156-60-5	trans-1,2-Dichloroethylene	1.0	U	125	149	119	125	135	108	10	76-127/17
78-87-5	1,2-Dichloropropane	1.0	U	125	149	119	125	131	105	13	76-124/14
10061-01-5	cis-1,3-Dichloropropene	1.0	U	125	123	98	125	109	87	12	75-118/23
10061-02-6	trans-1,3-Dichloropropene	1.0	U	125	112	90	125	102	82	9	80-120/22
100-41-4	Ethylbenzene	1.0	U	125	136	109	125	122	98	11	81-121/14
76-13-1	Freon 113	1.0	U	125	182	146*	125	164	131	10	72-134/20
591-78-6	2-Hexanone	10	U	625	513	82	625	480	77	7	61-129/18
98-82-8	Isopropylbenzene	1.0	U	125	126	101	125	113	90	11	83-132/15
79-20-9	Methyl Acetate	20	U	625	590	94	625	514	82	14	65-126/18
74-83-9	Methyl Bromide	5.0	U	125	205	164*	125	206	165*	0	59-143/19
74-87-3	Methyl Chloride	2.0	U	125	144	115	125	131	105	9	50-159/19
108-87-2	Methylcyclohexane	1.0	U	125	141	113	125	129	103	9	76-129/17
75-09-2	Methylene Chloride	5.0	U	125	153	122	125	139	111	10	69-135/16
108-10-1	4-Methyl-2-pentanone (MIBK)	5.0	U	625	637	102	625	570	91	11	66-122/16

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FC8038
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
FC7975-21MS	N0125786.D	5	07/24/23	JL	n/a	n/a	VN6475
FC7975-21MSD	N0125787.D	5	07/24/23	JL	n/a	n/a	VN6475
FC7975-21	N0125768.D	1	07/24/23	JL	n/a	n/a	VN6475

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

FC8038-1, FC8038-3, FC8038-4, FC8038-5, FC8038-6, FC8038-7, FC8038-8, FC8038-9

CAS No.	Compound	FC7975-21 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
1634-04-4	Methyl Tert Butyl Ether	1.0 U		125	132	106	125	122	98	8	72-117/14
100-42-5	Styrene	1.0 U		125	119	95	125	106	85	12	78-119/23
79-34-5	1,1,2,2-Tetrachloroethane	1.0 U		125	124	99	125	108	86	14	72-120/14
127-18-4	Tetrachloroethylene	1.0 U		125	125	100	125	114	91	9	76-135/16
108-88-3	Toluene	1.0 U		125	133	106	125	120	96	10	80-120/14
120-82-1	1,2,4-Trichlorobenzene	2.0 U		125	92.0	74	125	86.9	70*	6	73-129/20
71-55-6	1,1,1-Trichloroethane	1.0 U		125	142	114	125	129	103	10	75-130/16
79-00-5	1,1,2-Trichloroethane	1.0 U		125	133	106	125	117	94	13	76-119/14
79-01-6	Trichloroethylene	1.0 U		125	136	109	125	122	98	11	81-126/15
75-69-4	Trichlorofluoromethane	2.0 U		125	198	158*	125	174	139	13	71-156/21
75-01-4	Vinyl Chloride	33.0		125	173	112	125	158	100	9	69-159/18
1330-20-7	Xylene (total)	3.0 U		375	407	109	375	366	98	11	80-126/15

CAS No.	Surrogate Recoveries	MS	MSD	FC7975-21	Limits
1868-53-7	Dibromofluoromethane	97%	98%	95%	83-118%
17060-07-0	1,2-Dichloroethane-D4	105%	104%	99%	79-125%
2037-26-5	Toluene-D8	96%	98%	102%	85-112%
460-00-4	4-Bromofluorobenzene	97%	97%	103%	83-118%

* = Outside of Control Limits.

MS Semi-volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Instrument Blank

Job Number: FC8038
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S3Q1111-IBLK	3Q80546.D	1	08/14/23	JL	n/a	n/a	S3Q1111

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC8038-2, FC8038-8, FC8038-9

CAS No.	Compound	Result	RL	MDL	Units	Q
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.0010	ug/l	
2355-31-9	MeFOSAA	ND	0.0080	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0080	0.0020	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	
919005-14-4	ADONA	ND	0.0080	0.0020	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.0080	0.0020	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.0080	0.0020	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	92%	50-150%
	13C5-PFPeA	93%	50-150%
	13C5-PFHxA	90%	50-150%
	13C4-PFHpA	97%	50-150%
	13C8-PFOA	96%	50-150%
	13C9-PFNA	94%	50-150%

Instrument Blank

Job Number: FC8038
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S3Q1111-IBLK	3Q80546.D	1	08/14/23	JL	n/a	n/a	S3Q1111

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC8038-2, FC8038-8, FC8038-9

CAS No.	ID Standard Recoveries		Limits
	13C6-PFDA	90%	50-150%
	13C7-PFUnDA	90%	50-150%
	13C2-PFDoDA	87%	50-150%
	13C2-PFTeDA	89%	50-150%
	13C3-PFBS	87%	50-150%
	13C3-PFHxS	96%	50-150%
	13C8-PFOS	94%	50-150%
	13C8-FOSA	92%	50-150%
	d3-MeFOSAA	108%	50-150%
	d5-EtFOSAA	103%	50-150%
	13C2-4:2FTS	83%	50-150%
	13C2-6:2FTS	90%	50-150%
	13C2-8:2FTS	86%	50-150%

Instrument Blank

Job Number: FC8038
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S3Q1112-IBLK	3Q80620.D	1	08/15/23	JL	n/a	n/a	S3Q1112

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC8038-2, FC8038-8, FC8038-9

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	73%	50-150%
	13C5-PFPeA	72%	50-150%
	13C5-PFHxA	72%	50-150%
	13C4-PFHpA	72%	50-150%
	13C8-PFOA	71%	50-150%
	13C9-PFNA	70%	50-150%
	13C6-PFDA	70%	50-150%
	13C7-PFUnDA	71%	50-150%
	13C2-PFDoDA	71%	50-150%
	13C2-PFTeDA	69%	50-150%
	13C3-PFBS	73%	50-150%
	13C3-PFHxS	72%	50-150%
	13C8-PFOS	69%	50-150%
	13C8-FOSA	77%	50-150%
	d3-MeFOSAA	83%	50-150%
	d5-EtFOSAA	79%	50-150%
	13C2-4:2FTS	67%	50-150%
	13C2-6:2FTS	66%	50-150%
	13C2-8:2FTS	67%	50-150%

Instrument Blank

Job Number: FC8038
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S3Q1113-IBLK	3Q80699.D	1	08/16/23	JL	n/a	n/a	S3Q1113

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC8038-2, FC8038-8, FC8038-9

CAS No.	Compound	Result	RL	MDL	Units	Q
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	75%	50-150%
	13C5-PFPeA	75%	50-150%
	13C5-PFHxA	77%	50-150%
	13C4-PFHpA	77%	50-150%
	13C8-PFOA	78%	50-150%
	13C9-PFNA	78%	50-150%
	13C6-PFDA	79%	50-150%
	13C7-PFUnDA	78%	50-150%
	13C2-PFDoDA	78%	50-150%
	13C2-PFTeDA	77%	50-150%
	13C3-PFBS	76%	50-150%
	13C3-PFHxS	77%	50-150%
	13C8-PFOS	78%	50-150%
	13C8-FOSA	80%	50-150%
	d3-MeFOSAA	81%	50-150%
	d5-EtFOSAA	79%	50-150%
	13C2-4:2FTS	69%	50-150%
	13C2-6:2FTS	72%	50-150%
	13C2-8:2FTS	70%	50-150%

Method Blank Summary

Job Number: FC8038
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP98324-MB	3Q80589.D	1	08/15/23	JL	08/09/23	OP98324	S3Q1111

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC8038-2, FC8038-8, FC8038-9

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	
2355-31-9	MeFOSAA	ND	0.0080	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0080	0.0020	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	
919005-14-4	ADONA	ND	0.0080	0.0020	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.0080	0.0020	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.0080	0.0020	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	112%	50-150%
	13C5-PFPeA	110%	50-150%
	13C5-PFHxA	112%	50-150%
	13C4-PFHpA	109%	50-150%

Method Blank Summary

Job Number: FC8038
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP98324-MB	3Q80589.D	1	08/15/23	JL	08/09/23	OP98324	S3Q1111

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC8038-2, FC8038-8, FC8038-9

CAS No.	ID Standard Recoveries		Limits
	13C8-PFOA	108%	50-150%
	13C9-PFNA	109%	50-150%
	13C6-PFDA	111%	50-150%
	13C7-PFUnDA	115%	50-150%
	13C2-PFDoDA	113%	50-150%
	13C2-PFTeDA	106%	50-150%
	13C3-PFBS	111%	50-150%
	13C3-PFHxS	108%	50-150%
	13C8-PFOS	107%	50-150%
	13C8-FOSA	117%	50-150%
	d3-MeFOSAA	140%	50-150%
	d5-EtFOSAA	137%	50-150%
	13C2-4:2FTS	105%	50-150%
	13C2-6:2FTS	106%	50-150%
	13C2-8:2FTS	110%	50-150%
	13C3-HFPO-DA	112%	50-150%

Blank Spike Summary

Job Number: FC8038
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP98324-BS	3Q80588.D	1	08/15/23	JL	08/09/23	OP98324	S3Q1111

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC8038-2, FC8038-8, FC8038-9

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
375-22-4	Perfluorobutanoic acid	0.08	0.0815	102	73-129
2706-90-3	Perfluoropentanoic acid	0.08	0.0874	109	72-129
307-24-4	Perfluorohexanoic acid	0.08	0.0866	108	72-129
375-85-9	Perfluoroheptanoic acid	0.08	0.0849	106	72-130
335-67-1	Perfluorooctanoic acid	0.08	0.0842	105	71-133
375-95-1	Perfluorononanoic acid	0.08	0.0870	109	69-130
335-76-2	Perfluorodecanoic acid	0.08	0.0851	106	71-129
2058-94-8	Perfluoroundecanoic acid	0.08	0.0810	101	69-133
307-55-1	Perfluorododecanoic acid	0.08	0.0835	104	72-134
72629-94-8	Perfluorotridecanoic acid	0.08	0.0830	104	65-144
376-06-7	Perfluorotetradecanoic acid	0.08	0.0839	105	71-132
375-73-5	Perfluorobutanesulfonic acid	0.08	0.0841	105	72-130
2706-91-4	Perfluoropentanesulfonic acid	0.08	0.0844	106	71-127
355-46-4	Perfluorohexanesulfonic acid	0.08	0.0855	107	68-131
375-92-8	Perfluoroheptanesulfonic acid	0.08	0.0898	112	69-134
1763-23-1	Perfluorooctanesulfonic acid	0.08	0.0855	107	65-140
68259-12-1	Perfluorononanesulfonic acid	0.08	0.0900	113	69-127
335-77-3	Perfluorodecanesulfonic acid	0.08	0.0759	95	53-142
754-91-6	PFOSA	0.08	0.0864	108	67-137
2355-31-9	MeFOSAA	0.08	0.0883	110	65-136
2991-50-6	EtFOSAA	0.08	0.0861	108	61-135
757124-72-4	4:2 Fluorotelomer sulfonate	0.08	0.0899	112	63-143
27619-97-2	6:2 Fluorotelomer sulfonate	0.08	0.0878	110	64-140
39108-34-4	8:2 Fluorotelomer sulfonate	0.08	0.0921	115	67-138
13252-13-6	HFPO-DA (GenX)	0.08	0.0840	105	60-140
919005-14-4	ADONA	0.08	0.0803	100	60-140
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.08	0.0832	104	60-140
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.08	0.0847	106	60-140

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFBA	87%	50-150%
	13C5-PFPeA	85%	50-150%
	13C5-PFHxA	86%	50-150%
	13C4-PFHpA	84%	50-150%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FC8038
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP98324-BS	3Q80588.D	1	08/15/23	JL	08/09/23	OP98324	S3Q1111

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC8038-2, FC8038-8, FC8038-9

CAS No.	ID Standard Recoveries	BSP	Limits
	13C8-PFOA	83%	50-150%
	13C9-PFNA	83%	50-150%
	13C6-PFDA	83%	50-150%
	13C7-PFUnDA	90%	50-150%
	13C2-PFDoDA	82%	50-150%
	13C2-PFTeDA	77%	50-150%
	13C3-PFBS	87%	50-150%
	13C3-PFHxS	84%	50-150%
	13C8-PFOS	81%	50-150%
	13C8-FOSA	82%	50-150%
	d3-MeFOSAA	101%	50-150%
	d5-EtFOSAA	99%	50-150%
	13C2-4:2FTS	90%	50-150%
	13C2-6:2FTS	86%	50-150%
	13C2-8:2FTS	92%	50-150%
	13C3-HFPO-DA	88%	50-150%

* = Outside of Control Limits.

Matrix Spike Summary

Job Number: FC8038
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP98324-MS	3Q80602.D	1	08/15/23	JL	08/09/23	OP98324	S3Q1111
FC8021-2	3Q80601.D	1	08/15/23	JL	08/09/23	OP98324	S3Q1111

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC8038-2, FC8038-8, FC8038-9

CAS No.	Compound	FC8021-2 ug/l	Q	Spike ug/l	MS ug/l	MS %	Limits
375-22-4	Perfluorobutanoic acid	0.016	U	0.16	0.165	103	73-129
2706-90-3	Perfluoropentanoic acid	0.0080	U	0.16	0.181	113	72-129
307-24-4	Perfluorohexanoic acid	0.0080	U	0.16	0.177	111	72-129
375-85-9	Perfluoroheptanoic acid	0.0080	U	0.16	0.174	109	72-130
335-67-1	Perfluorooctanoic acid	0.0080	U	0.16	0.176	110	71-133
375-95-1	Perfluorononanoic acid	0.0080	U	0.16	0.178	111	69-130
335-76-2	Perfluorodecanoic acid	0.0080	U	0.16	0.174	109	71-129
2058-94-8	Perfluoroundecanoic acid	0.0080	U	0.16	0.169	106	69-133
307-55-1	Perfluorododecanoic acid	0.0080	U	0.16	0.176	110	72-134
72629-94-8	Perfluorotridecanoic acid	0.0080	U	0.16	0.180	113	65-144
376-06-7	Perfluorotetradecanoic acid	0.0080	U	0.16	0.174	109	71-132
375-73-5	Perfluorobutanesulfonic acid	0.0080	U	0.16	0.175	109	72-130
2706-91-4	Perfluoropentanesulfonic acid	0.0080	U	0.16	0.176	110	71-127
355-46-4	Perfluorohexanesulfonic acid	0.0080	U	0.16	0.176	110	68-131
375-92-8	Perfluoroheptanesulfonic acid	0.0080	U	0.16	0.191	119	69-134
1763-23-1	Perfluorooctanesulfonic acid	0.0080	U	0.16	0.180	113	65-140
68259-12-1	Perfluorononanesulfonic acid	0.0080	U	0.16	0.175	109	69-127
335-77-3	Perfluorodecanesulfonic acid	0.0080	U	0.16	0.165	103	53-142
754-91-6	PFOSA	0.0080	U	0.16	0.176	110	67-137
2355-31-9	MeFOSAA	0.016	U	0.16	0.184	115	65-136
2991-50-6	EtFOSAA	0.016	U	0.16	0.184	115	61-135
757124-72-4	4:2 Fluorotelomer sulfonate	0.016	U	0.16	0.186	116	63-143
27619-97-2	6:2 Fluorotelomer sulfonate	0.016	U	0.16	0.178	111	64-140
39108-34-4	8:2 Fluorotelomer sulfonate	0.016	U	0.16	0.187	117	67-138
13252-13-6	HFPO-DA (GenX)	0.016	U	0.16	0.174	109	60-140
919005-14-4	ADONA	0.016	U	0.16	0.171	107	60-140
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.016	U	0.16	0.171	107	60-140
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.016	U	0.16	0.179	112	60-140

CAS No.	ID Standard Recoveries	MS	FC8021-2	Limits
	13C4-PFBA	101%	79%	50-150%
	13C5-PFPeA	100%	79%	50-150%
	13C5-PFHxA	102%	81%	50-150%
	13C4-PFHpA	99%	78%	50-150%

* = Outside of Control Limits.

Matrix Spike Summary

Job Number: FC8038
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP98324-MS	3Q80602.D	1	08/15/23	JL	08/09/23	OP98324	S3Q1111
FC8021-2	3Q80601.D	1	08/15/23	JL	08/09/23	OP98324	S3Q1111

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC8038-2, FC8038-8, FC8038-9

CAS No.	ID Standard Recoveries	MS	FC8021-2	Limits
	13C8-PFOA	97%	77%	50-150%
	13C9-PFNA	97%	75%	50-150%
	13C6-PFDA	92%	72%	50-150%
	13C7-PFUnDA	91%	70%	50-150%
	13C2-PFDoDA	84%	67%	50-150%
	13C2-PFTeDA	82%	64%	50-150%
	13C3-PFBS	103%	83%	50-150%
	13C3-PFHxS	97%	76%	50-150%
	13C8-PFOS	90%	70%	50-150%
	13C8-FOSA	101%	81%	50-150%
	d3-MeFOSAA	113%	89%	50-150%
	d5-EtFOSAA	109%	83%	50-150%
	13C2-4:2FTS	107%	76%	50-150%
	13C2-6:2FTS	104%	73%	50-150%
	13C2-8:2FTS	105%	73%	50-150%
	13C3-HFPO-DA	105%		50-150%

* = Outside of Control Limits.

Duplicate Summary

Job Number: FC8038
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP98324-DUP	3Q80607.D	1	08/15/23	JL	08/09/23	OP98324	S3Q1111
FC8028-1	3Q80606.D	1	08/15/23	JL	08/09/23	OP98324	S3Q1111

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC8038-2, FC8038-8, FC8038-9

CAS No.	Compound	FC8028-1 ug/l	Q	DUP ug/l	Q	RPD	Limits
375-22-4	Perfluorobutanoic acid	0.016 U		ND		nc	30
2706-90-3	Perfluoropentanoic acid	0.0025	J	0.0026	J	4	30
307-24-4	Perfluorohexanoic acid	0.0080 U		ND		nc	30
375-85-9	Perfluoroheptanoic acid	0.0080 U		ND		nc	30
335-67-1	Perfluorooctanoic acid	0.0080 U		ND		nc	30
375-95-1	Perfluorononanoic acid	0.0080 U		ND		nc	30
335-76-2	Perfluorodecanoic acid	0.0080 U		ND		nc	30
2058-94-8	Perfluoroundecanoic acid	0.0080 U		ND		nc	30
307-55-1	Perfluorododecanoic acid	0.0080 U		ND		nc	30
72629-94-8	Perfluorotridecanoic acid	0.0080 U		ND		nc	30
376-06-7	Perfluorotetradecanoic acid	0.0080 U		ND		nc	30
375-73-5	Perfluorobutanesulfonic acid	0.0080 U		ND		nc	30
2706-91-4	Perfluoropentanesulfonic acid	0.0080 U		ND		nc	30
355-46-4	Perfluorohexanesulfonic acid	0.0044	J	0.0045	J	2	30
375-92-8	Perfluoroheptanesulfonic acid	0.0080 U		ND		nc	30
1763-23-1	Perfluorooctanesulfonic acid	0.0080 U		ND		nc	30
68259-12-1	Perfluorononanesulfonic acid	0.0080 U		ND		nc	30
335-77-3	Perfluorodecanesulfonic acid	0.0080 U		ND		nc	30
754-91-6	PFOSA	0.0080 U		ND		nc	30
2355-31-9	MeFOSAA	0.016 U		ND		nc	30
2991-50-6	EtFOSAA	0.016 U		ND		nc	30
757124-72-4	4:2 Fluorotelomer sulfonate	0.016 U		ND		nc	30
27619-97-2	6:2 Fluorotelomer sulfonate	0.016 U		ND		nc	30
39108-34-4	8:2 Fluorotelomer sulfonate	0.016 U		ND		nc	30
13252-13-6	HFPO-DA (GenX)	0.016 U		ND		nc	30
919005-14-4	ADONA	0.016 U		ND		nc	30
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.016 U		ND		nc	30
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.016 U		ND		nc	30

CAS No.	ID Standard Recoveries	DUP	FC8028-1	Limits
	13C4-PFBA	79%	102%	50-150%
	13C5-PFPeA	78%	102%	50-150%
	13C5-PFHxA	79%	104%	50-150%
	13C4-PFHpA	72%	98%	50-150%

* = Outside of Control Limits.

Duplicate Summary

Job Number: FC8038
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP98324-DUP	3Q80607.D	1	08/15/23	JL	08/09/23	OP98324	S3Q1111
FC8028-1	3Q80606.D	1	08/15/23	JL	08/09/23	OP98324	S3Q1111

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC8038-2, FC8038-8, FC8038-9

CAS No.	ID Standard Recoveries	DUP	FC8028-1	Limits
	13C8-PFOA	66%	94%	50-150%
	13C9-PFNA	63%	89%	50-150%
	13C6-PFDA	61%	84%	50-150%
	13C7-PFUnDA	63%	84%	50-150%
	13C2-PFDoDA	62%	80%	50-150%
	13C2-PFTeDA	60%	73%	50-150%
	13C3-PFBS	80%	106%	50-150%
	13C3-PFHxS	65%	90%	50-150%
	13C8-PFOS	62%	80%	50-150%
	13C8-FOSA	63%	85%	50-150%
	d3-MeFOSAA	79%	104%	50-150%
	d5-EtFOSAA	76%	100%	50-150%
	13C2-4:2FTS	75%	98%	50-150%
	13C2-6:2FTS	66%	91%	50-150%
	13C2-8:2FTS	61%	88%	50-150%
	13C3-HFPO-DA	81%		50-150%

* = Outside of Control Limits.

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

e-Hardcopy 2.0
Automated Report

Technical Report for

Tetra Tech NUS

KSC-CRCA

112G08970

SGS Job Number: FC9100

Sampling Date: 08/28/23

Report to:

Tetra-Tech, Inc.
661 Andersen Drive Foster Plaza 7
Pittsburgh, PA 15220
amy.thomson@tetratech.com; carrie.stock@tetratech.com;
alex.murphy@tetratech.com
ATTN: Amy Thomson

Total number of pages in report: **31**

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable unless noted in the narrative, comments or footnotes.

Norm Farmer
Technical Director

Client Service contact: Andrea Colby 407-425-6700

Certifications: FL(E83510), LA(03051), KS(E-10327), NC(573), NJ(FL002), NY(12022), SC(96038001) DoD ELAP(ANAB L2229), AZ(AZ0806), CA(2937), TX(T104704404), PA(68-03573), VA(460177), AL, AK, AR, CT, IA, KY, MA, MI. MS, ND, NH, NV, OK, OR, IL, UT, VT, WA, WI, WV

This report shall not be reproduced, except in its entirety, without the written approval of SGS.
Test results relate only to samples analyzed.

SGS is the sole authority for authorizing edits or modifications to this document.
Unauthorized modification of this report is strictly prohibited.
Review standard terms at: http://www.sgs.com/en/terms-and-conditions

Please share your ideas about how we can serve you better at:
EHS.US.CustomerCare@sgs.com

Sections:

1 2 3 4 5 6 7

Table of Contents

Section 1: Sample Summary **3**
Section 2: Case Narrative/Conformance Summary **4**
Section 3: Summary of Hits **6**
Section 4: Sample Results **7**
4.1: FC9100-1: CRCA-ASINFLUENT-20230828 8
4.2: FC9100-2: CRCA-ASEFFLUENT-20230828 12
Section 5: Misc. Forms **16**
5.1: Chain of Custody 17
Section 6: MS Volatiles - QC Data Summaries **18**
6.1: Method Blank Summary 19
6.2: Blank Spike Summary 21
6.3: Matrix Spike/Matrix Spike Duplicate Summary 23
Section 7: MS Semi-volatiles - QC Data Summaries **25**
7.1: Method Blank Summary 26
7.2: Blank Spike/Blank Spike Duplicate Summary 30

SGS North America Inc.

Sample Summary

Tetra Tech NUS

Job No: FC9100

KSC-CRCA
Project No: 112G08970

Sample Number	Collected Date	Time	By	Received	Matrix Code	Matrix Type	Client Sample ID
FC9100-1	08/28/23	11:30	CS	08/28/23	AQ	Ground Water	CRCA-ASINFLUENT-20230828
FC9100-2	08/28/23	11:35	CS	08/28/23	AQ	Ground Water	CRCA-ASEFFLUENT-20230828

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: Tetra Tech NUS **Job No:** FC9100

Site: KSC-CRCA **Report Date:** 9/29/2023 1:53:32 PM

On 08/28/2023, 2 Sample(s), 0 Trip Blank(s) and 0 Field Blank(s) were received at SGS North America Inc - Orlando. at a maximum corrected temperature of 3.6 C. Samples were intact and chemically preserved, unless noted below. A SGS North America Inc. - Orlando Job Number of FC9100 was assigned to the project.

Laboratory sample ID, client sample ID and dates of sample collection are detailed in the report's Results Summary Section. Specified quality control criteria were achieved for this job except as noted below. For more information, please refer to the analytical results and QC summary pages.

MS Volatiles By Method SW846 8260D

Matrix: AQ **Batch ID:** V2O3062

Sample(s) FC9029-3MS, FC9029-3MSD were used as the QC samples indicated.

Matrix Spike Recovery(s) for Bromodichloromethane, Carbon Tetrachloride, Chloroethane, cis-1,3-Dichloropropene are outside control limits. Probable cause is due to matrix interference.

Matrix Spike Duplicate Recovery(s) for 1,2-Dibromo-3-chloropropane, Carbon Tetrachloride, Chloroethane are outside control limits. Probable cause is due to matrix interference.

V2O3062-MB: Sample was treated with an anti-foaming agent.

FC9100-1 for Bromodichloromethane: Associated CCV outside control limits low.

FC9100-1 for Methyl Bromide: Associated CCV outside control limits high, sample is ND.

FC9100-1: Sample was treated with an anti-foaming agent. Sample vial(s) contained bubbles greater than 6mm.

FC9100-2 for Bromodichloromethane: Associated CCV outside control limits low.

FC9100-2 for Methyl Bromide: Associated CCV outside control limits high, sample is ND.

FC9100-2: Sample was treated with an anti-foaming agent.

MS Semi-volatiles By Method EPA 537M QSM5.3 B-15

Matrix: AQ **Batch ID:** OP99176

OP99176-BS: Insufficient sample for MS/MSD.

Sample(s) FC9100-1, FC9100-2 have surrogates outside control limits.

FC9100-1 for 13C3-HFPO-DA: Outside control limits.

FC9100-1 for 13C4-PFBA: Outside control limits.

FC9100-1 for 13C5-PFPeA: Outside control limits.

FC9100-2 for 13C2-4:2FTS: Outside control limits.

FC9100-2 for 13C2-4:2FTS: Outside control limits.

FC9100-2 for 13C2-8:2FTS: Outside control limits.

FC9100-2 for 13C3-HFPO-DA: Outside control limits.

FC9100-2 for 13C3-HFPO-DA: Outside control limits.

FC9100-2 for 13C3-PFBS: Outside control limits.

FC9100-2 for 13C4-PFBA: Outside control limits.

FC9100-2 for 13C4-PFBA: Outside control limits.

FC9100-2 for 13C4-PFHpA: Outside control limits.

FC9100-2 for 13C5-PFHxA: Outside control limits.

FC9100-2 for 13C5-PFHxA: Outside control limits.

FC9100-2 for 13C5-PFPeA: Outside control limits.

FC9100-2 for 13C5-PFPeA: Outside control limits.

FC9100-2 for 13C8-FOSA: Outside control limits.

FC9100-2 for 4:2 Fluorotelomer sulfonate: Associated ID Standard outside control limits.

FC9100-2 for HFPO-DA (GenX): Associated ID Standard outside control limits.

FC9100-2 for Perfluorohexanoic acid: Associated ID Standard outside control limits.

FC9100-2 for Perfluoropentanoic acid: Associated ID Standard outside control limits.

SGS North America Inc. - Orlando certifies that data reported for samples received, listed on the associated custody chain or analytical task order, were produced to specifications meeting the Quality System precision, accuracy and completeness objectives except as noted. Estimated non-standard method measurement uncertainty data is available on request, based on quality control bias and implicit for standard methods. Acceptable uncertainty requires tested parameter quality control data to meet method criteria. SGS North America Inc.- Orlando is not responsible for data quality assumptions if partial reports are used and recommends that this report be used in its entirety.

Narrative prepared by:

_____

Kim Benham, Client Services *(Signature on File)*

Summary of Hits

Job Number: FC9100
Account: Tetra Tech NUS
Project: KSC-CRCA
Collected: 08/28/23

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	PQL	MDL	Units	Method
FC9100-1	**CRCA-ASINFLUENT-20230828**					
Acetone [a]		12.4 I	25	10	ug/l	SW846 8260D
Vinyl Chloride [a]		2.3	1.0	0.41	ug/l	SW846 8260D
Perfluorobutanoic acid		21.8	1.6	0.40	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid		0.0220 I	0.080	0.020	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0168	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.0074 I	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0158	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0048 I	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0068 I	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
FC9100-2	**CRCA-ASEFFLUENT-20230828**					
Acetone [b]		15.2 I	25	10	ug/l	SW846 8260D
Perfluorobutanoic acid		12.1	1.6	0.40	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0208	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorononanoic acid		0.0026 I	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0061 I	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0152	0.0080	0.0020	ug/l	EPA 537M QSM5.3 B-15

(a) Sample was treated with an anti-foaming agent. Sample vial(s) contained bubbles greater than 6mm.
(b) Sample was treated with an anti-foaming agent.

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID:	CRCA-ASINFLUENT-20230828		
Lab Sample ID:	FC9100-1	**Date Sampled:**	08/28/23
Matrix:	AQ - Ground Water	**Date Received:**	08/28/23
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	KSC-CRCA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	2O78486.D	1	08/30/23 12:56	JW	n/a	n/a	V2O3062
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL 4.2 List

CAS No.	Compound	Result	PQL	MDL	Units	Q
67-64-1	Acetone	12.4	25	10	ug/l	I
71-43-2	Benzene	0.31 U	1.0	0.31	ug/l	
75-27-4	Bromodichloromethane [b]	0.24 U	1.0	0.24	ug/l	
75-25-2	Bromoform	0.41 U	1.0	0.41	ug/l	
78-93-3	2-Butanone (MEK)	2.0 U	5.0	2.0	ug/l	
75-15-0	Carbon Disulfide	0.53 U	2.0	0.53	ug/l	
56-23-5	Carbon Tetrachloride [b]	0.36 U	1.0	0.36	ug/l	
108-90-7	Chlorobenzene	0.20 U	1.0	0.20	ug/l	
75-00-3	Chloroethane	0.67 U	2.0	0.67	ug/l	
67-66-3	Chloroform	0.30 U	1.0	0.30	ug/l	
110-82-7	Cyclohexane [b]	0.39 U	1.0	0.39	ug/l	
124-48-1	Dibromochloromethane	0.28 U	1.0	0.28	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	1.0 U	5.0	1.0	ug/l	
106-93-4	1,2-Dibromoethane	0.28 U	2.0	0.28	ug/l	
75-71-8	Dichlorodifluoromethane	0.50 U	2.0	0.50	ug/l	
95-50-1	1,2-Dichlorobenzene	0.32 U	1.0	0.32	ug/l	
541-73-1	1,3-Dichlorobenzene	0.22 U	1.0	0.22	ug/l	
106-46-7	1,4-Dichlorobenzene	0.26 U	1.0	0.26	ug/l	
75-34-3	1,1-Dichloroethane	0.34 U	1.0	0.34	ug/l	
107-06-2	1,2-Dichloroethane	0.31 U	1.0	0.31	ug/l	
75-35-4	1,1-Dichloroethylene	0.32 U	1.0	0.32	ug/l	
156-59-2	cis-1,2-Dichloroethylene	0.28 U	1.0	0.28	ug/l	
156-60-5	trans-1,2-Dichloroethylene	0.22 U	1.0	0.22	ug/l	
78-87-5	1,2-Dichloropropane	0.43 U	1.0	0.43	ug/l	
10061-01-5	cis-1,3-Dichloropropene [b]	0.29 U	1.0	0.29	ug/l	
10061-02-6	trans-1,3-Dichloropropene	0.21 U	1.0	0.21	ug/l	
100-41-4	Ethylbenzene	0.36 U	1.0	0.36	ug/l	
76-13-1	Freon 113	0.48 U	1.0	0.48	ug/l	
591-78-6	2-Hexanone	2.0 U	10	2.0	ug/l	
98-82-8	Isopropylbenzene	0.22 U	1.0	0.22	ug/l	
79-20-9	Methyl Acetate	5.0 U	20	5.0	ug/l	
74-83-9	Methyl Bromide [c]	2.0 U	5.0	2.0	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-ASINFLUENT-20230828		
Lab Sample ID:	FC9100-1	**Date Sampled:**	08/28/23
Matrix:	AQ - Ground Water	**Date Received:**	08/28/23
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	KSC-CRCA		

VOA TCL 4.2 List

CAS No.	Compound	Result	PQL	MDL	Units	Q
74-87-3	Methyl Chloride	0.50 U	2.0	0.50	ug/l	
108-87-2	Methylcyclohexane [b]	0.44 U	1.0	0.44	ug/l	
75-09-2	Methylene Chloride	2.0 U	5.0	2.0	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	1.0 U	5.0	1.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether [b]	0.23 U	1.0	0.23	ug/l	
100-42-5	Styrene	0.22 U	1.0	0.22	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	0.30 U	1.0	0.30	ug/l	
127-18-4	Tetrachloroethylene	0.22 U	1.0	0.22	ug/l	
108-88-3	Toluene	0.30 U	1.0	0.30	ug/l	
120-82-1	1,2,4-Trichlorobenzene	0.50 U	2.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	0.25 U	1.0	0.25	ug/l	
79-00-5	1,1,2-Trichloroethane	0.47 U	1.0	0.47	ug/l	
79-01-6	Trichloroethylene	0.35 U	1.0	0.35	ug/l	
75-69-4	Trichlorofluoromethane	0.50 U	2.0	0.50	ug/l	
75-01-4	Vinyl Chloride	2.3	1.0	0.41	ug/l	
1330-20-7	Xylene (total)	0.72 U	3.0	0.72	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	93%		83-118%
17060-07-0	1,2-Dichloroethane-D4	93%		79-125%
2037-26-5	Toluene-D8	110%		85-112%
460-00-4	4-Bromofluorobenzene	107%		83-118%

(a) Sample was treated with an anti-foaming agent. Sample vial(s) contained bubbles greater than 6mm.
(b) Associated CCV outside control limits low.
(c) Associated CCV outside control limits high, sample is ND.

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-ASINFLUENT-20230828		
Lab Sample ID:	FC9100-1	**Date Sampled:**	08/28/23
Matrix:	AQ - Ground Water	**Date Received:**	08/28/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	KSC-CRCA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5Q20576.D	1	09/27/23 23:25	LR	09/25/23 09:00	OP99176	S5Q323
Run #2	5Q20577.D	10	09/27/23 23:41	LR	09/25/23 09:00	OP99176	S5Q323
Run #3	5Q20578.D	100	09/27/23 23:58	LR	09/25/23 09:00	OP99176	S5Q323

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2	125 ml	1.0 ml
Run #3	125 ml	1.0 ml

CAS No.	Compound	Result	PQL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	21.8 [a]	1.6	0.40	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0220 [b]	0.080	0.020	ug/l	I
307-24-4	Perfluorohexanoic acid	0.0168	0.0080	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0074	0.0080	0.0020	ug/l	I
335-67-1	Perfluorooctanoic acid	0.0158	0.0080	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0020 U	0.0080	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS						
375-73-5	Perfluorobutanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0048	0.0080	0.0020	ug/l	I
375-92-8	Perfluoroheptanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0068	0.0080	0.0020	ug/l	I
68259-12-1	Perfluorononanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA	0.0020 U	0.0080	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	0.0040 U	0.016	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0040 U	0.016	0.0040	ug/l	
FLUOROTELOMER SULFONATES						

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-ASINFLUENT-20230828		
Lab Sample ID:	FC9100-1	**Date Sampled:**	08/28/23
Matrix:	AQ - Ground Water	**Date Received:**	08/28/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	KSC-CRCA		

CAS No.	Compound	Result	PQL	MDL	Units	Q
757124-72-4	4:2 Fluorotelomer sulfonate	0.0040 U	0.016	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0040 U	0.016	0.0040	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0040 U	0.016	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES						
13252-13-6	HFPO-DA (GenX)	0.040 U [b]	0.16	0.040	ug/l	
919005-14-4	ADONA	0.0040 U	0.016	0.0040	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0040 U	0.016	0.0040	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0040 U	0.016	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Run# 3	Limits
	13C4-PFBA	29% [c]	52%	93%	50-150%
	13C5-PFPeA	47% [c]	58%	91%	50-150%
	13C5-PFHxA	57%	64%	92%	50-150%
	13C4-PFHpA	63%	69%	95%	50-150%
	13C8-PFOA	69%	70%	93%	50-150%
	13C9-PFNA	71%	71%	96%	50-150%
	13C6-PFDA	71%	69%	97%	50-150%
	13C7-PFUnDA	63%	61%	99%	50-150%
	13C2-PFDoDA	59%	56%	97%	50-150%
	13C2-PFTeDA	51%	52%	98%	50-150%
	13C3-PFBS	53%	67%	90%	50-150%
	13C3-PFHxS	65%	71%	94%	50-150%
	13C8-PFOS	64%	67%	92%	50-150%
	13C8-FOSA	61%	62%	100%	50-150%
	d3-MeFOSAA	61%	61%	99%	50-150%
	d5-EtFOSAA	63%	64%	97%	50-150%
	13C2-4:2FTS	54%	59%	87%	50-150%
	13C2-6:2FTS	68%	67%	91%	50-150%
	13C2-8:2FTS	64%	60%	91%	50-150%
	13C3-HFPO-DA	49% [c]	64%	78%	50-150%

(a) Result is from Run# 3
(b) Result is from Run# 2
(c) Outside control limits.

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-ASEFFLUENT-20230828		
Lab Sample ID:	FC9100-2	**Date Sampled:**	08/28/23
Matrix:	AQ - Ground Water	**Date Received:**	08/28/23
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	KSC-CRCA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	2O78487.D	1	08/30/23 13:22	JW	n/a	n/a	V2O3062
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL 4.2 List

CAS No.	Compound	Result	PQL	MDL	Units	Q
67-64-1	Acetone	15.2	25	10	ug/l	I
71-43-2	Benzene	0.31 U	1.0	0.31	ug/l	
75-27-4	Bromodichloromethane [b]	0.24 U	1.0	0.24	ug/l	
75-25-2	Bromoform	0.41 U	1.0	0.41	ug/l	
78-93-3	2-Butanone (MEK)	2.0 U	5.0	2.0	ug/l	
75-15-0	Carbon Disulfide	0.53 U	2.0	0.53	ug/l	
56-23-5	Carbon Tetrachloride [b]	0.36 U	1.0	0.36	ug/l	
108-90-7	Chlorobenzene	0.20 U	1.0	0.20	ug/l	
75-00-3	Chloroethane	0.67 U	2.0	0.67	ug/l	
67-66-3	Chloroform	0.30 U	1.0	0.30	ug/l	
110-82-7	Cyclohexane [b]	0.39 U	1.0	0.39	ug/l	
124-48-1	Dibromochloromethane	0.28 U	1.0	0.28	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	1.0 U	5.0	1.0	ug/l	
106-93-4	1,2-Dibromoethane	0.28 U	2.0	0.28	ug/l	
75-71-8	Dichlorodifluoromethane	0.50 U	2.0	0.50	ug/l	
95-50-1	1,2-Dichlorobenzene	0.32 U	1.0	0.32	ug/l	
541-73-1	1,3-Dichlorobenzene	0.22 U	1.0	0.22	ug/l	
106-46-7	1,4-Dichlorobenzene	0.26 U	1.0	0.26	ug/l	
75-34-3	1,1-Dichloroethane	0.34 U	1.0	0.34	ug/l	
107-06-2	1,2-Dichloroethane	0.31 U	1.0	0.31	ug/l	
75-35-4	1,1-Dichloroethylene	0.32 U	1.0	0.32	ug/l	
156-59-2	cis-1,2-Dichloroethylene	0.28 U	1.0	0.28	ug/l	
156-60-5	trans-1,2-Dichloroethylene	0.22 U	1.0	0.22	ug/l	
78-87-5	1,2-Dichloropropane	0.43 U	1.0	0.43	ug/l	
10061-01-5	cis-1,3-Dichloropropene [b]	0.29 U	1.0	0.29	ug/l	
10061-02-6	trans-1,3-Dichloropropene	0.21 U	1.0	0.21	ug/l	
100-41-4	Ethylbenzene	0.36 U	1.0	0.36	ug/l	
76-13-1	Freon 113	0.48 U	1.0	0.48	ug/l	
591-78-6	2-Hexanone	2.0 U	10	2.0	ug/l	
98-82-8	Isopropylbenzene	0.22 U	1.0	0.22	ug/l	
79-20-9	Methyl Acetate	5.0 U	20	5.0	ug/l	
74-83-9	Methyl Bromide [c]	2.0 U	5.0	2.0	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-ASEFFLUENT-20230828		
Lab Sample ID:	FC9100-2	**Date Sampled:**	08/28/23
Matrix:	AQ - Ground Water	**Date Received:**	08/28/23
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	KSC-CRCA		

VOA TCL 4.2 List

CAS No.	Compound	Result	PQL	MDL	Units	Q
74-87-3	Methyl Chloride	0.50 U	2.0	0.50	ug/l	
108-87-2	Methylcyclohexane [b]	0.44 U	1.0	0.44	ug/l	
75-09-2	Methylene Chloride	2.0 U	5.0	2.0	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	1.0 U	5.0	1.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether [b]	0.23 U	1.0	0.23	ug/l	
100-42-5	Styrene	0.22 U	1.0	0.22	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	0.30 U	1.0	0.30	ug/l	
127-18-4	Tetrachloroethylene	0.22 U	1.0	0.22	ug/l	
108-88-3	Toluene	0.30 U	1.0	0.30	ug/l	
120-82-1	1,2,4-Trichlorobenzene	0.50 U	2.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	0.25 U	1.0	0.25	ug/l	
79-00-5	1,1,2-Trichloroethane	0.47 U	1.0	0.47	ug/l	
79-01-6	Trichloroethylene	0.35 U	1.0	0.35	ug/l	
75-69-4	Trichlorofluoromethane	0.50 U	2.0	0.50	ug/l	
75-01-4	Vinyl Chloride	0.41 U	1.0	0.41	ug/l	
1330-20-7	Xylene (total)	0.72 U	3.0	0.72	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	93%		83-118%
17060-07-0	1,2-Dichloroethane-D4	97%		79-125%
2037-26-5	Toluene-D8	110%		85-112%
460-00-4	4-Bromofluorobenzene	105%		83-118%

(a) Sample was treated with an anti-foaming agent.
(b) Associated CCV outside control limits low.
(c) Associated CCV outside control limits high, sample is ND.

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CRCA-ASEFFLUENT-20230828		
Lab Sample ID:	FC9100-2	**Date Sampled:**	08/28/23
Matrix:	AQ - Ground Water	**Date Received:**	08/28/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	KSC-CRCA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5Q20579.D	1	09/28/23 00:14	LR	09/25/23 09:00	OP99176	S5Q323
Run #2	5Q20580.D	10	09/28/23 00:31	LR	09/25/23 09:00	OP99176	S5Q323
Run #3	5Q20581.D	100	09/28/23 00:47	LR	09/25/23 09:00	OP99176	S5Q323

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2	125 ml	1.0 ml
Run #3	125 ml	1.0 ml

CAS No.	Compound	Result	PQL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	12.1 [a]	1.6	0.40	ug/l	
2706-90-3	Perfluoropentanoic acid [b]	0.020 U [c]	0.080	0.020	ug/l	
307-24-4	Perfluorohexanoic acid [b]	0.020 U [c]	0.080	0.020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.020 U [c]	0.080	0.020	ug/l	
335-67-1	Perfluorooctanoic acid	0.0208	0.0080	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0026	0.0080	0.0020	ug/l	I
335-76-2	Perfluorodecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0020 U	0.0080	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS						
375-73-5	Perfluorobutanesulfonic acid	0.020 U [c]	0.080	0.020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.020 U [c]	0.080	0.020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0061	0.0080	0.0020	ug/l	I
375-92-8	Perfluoroheptanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0152	0.0080	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0020 U	0.0080	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA	0.020 U [c]	0.080	0.020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	0.0040 U	0.016	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0040 U	0.016	0.0040	ug/l	
FLUOROTELOMER SULFONATES						

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: CRCA-ASEFFLUENT-20230828
Lab Sample ID: FC9100-2
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: KSC-CRCA

Date Sampled: 08/28/23
Date Received: 08/28/23
Percent Solids: n/a

CAS No.	Compound	Result	PQL	MDL	Units	Q
757124-72-4	4:2 Fluorotelomer sulfonate [b]	0.040 U [c]	0.16	0.040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0040 U	0.016	0.0040	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0040 U	0.016	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES						
13252-13-6	HFPO-DA (GenX) [b]	0.0040 U	0.016	0.0040	ug/l	
919005-14-4	ADONA	0.0040 U	0.016	0.0040	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0040 U	0.016	0.0040	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0040 U	0.016	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Run# 3	Limits
	13C4-PFBA	21% [d]	31% [d]	98%	50-150%
	13C5-PFPeA	35% [d]	42% [d]	98%	50-150%
	13C5-PFHxA	43% [d]	48% [d]	99%	50-150%
	13C4-PFHpA	49% [d]	52%	102%	50-150%
	13C8-PFOA	54%	55%	102%	50-150%
	13C9-PFNA	57%	55%	104%	50-150%
	13C6-PFDA	62%	55%	105%	50-150%
	13C7-PFUnDA	59%	56%	106%	50-150%
	13C2-PFDoDA	56%	54%	105%	50-150%
	13C2-PFTeDA	52%	51%	105%	50-150%
	13C3-PFBS	42% [d]	52%	96%	50-150%
	13C3-PFHxS	53%	59%	100%	50-150%
	13C8-PFOS	57%	63%	101%	50-150%
	13C8-FOSA	49% [d]	51%	107%	50-150%
	d3-MeFOSAA	58%	63%	107%	50-150%
	d5-EtFOSAA	61%	60%	103%	50-150%
	13C2-4:2FTS	42% [d]	45% [d]	92%	50-150%
	13C2-6:2FTS	53%	53%	97%	50-150%
	13C2-8:2FTS	55%	48% [d]	96%	50-150%
	13C3-HFPO-DA	37% [d]	37% [d]	83%	50-150%

(a) Result is from Run# 3
(b) Associated ID Standard outside control limits.
(c) Result is from Run# 2
(d) Outside control limits.

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody

FC9100

Tetra Tech, Inc. CHAIN OF CUSTODY NUMBER No. 3705 PAGE 1 OF 1

PROJECT NO: 112G08970	FACILITY: KSC-CRCA	PROJECT MANAGER Chris Neumann	PHONE NUMBER (321) 636-6470	LABORATORY NAME AND CONTACT: SGS – Andrea Colby
SAMPLERS (SIGNATURE) – Chuck Sorden		FIELD OPERATIONS LEADER Chuck Sorden	PHONE NUMBER (321) 591-7580	ADDRESS 4405 Vineland Rd. Ste. C-15
		CARRIER/WAYBILL NUMBER		CITY, STATE Orlando, FL

STANDARD TAT ☒
RUSH TAT ☐
☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

CONTAINER TYPE PLASTIC (P) or GLASS (G): G P
PRESERVATIVE USED: HCl/4°C 4°C

	DATE YEAR 2023	TIME	SAMPLE ID	LOCATION ID	TOP DEPTH (FT)	BOTTOM DEPTH (FT)	MATRIX (GW, SO, SW, SD, QC, ETC.)	COLLECTION METHOD GRAB (G) COMP (C)	No. OF CONTAINERS	TYPE OF ANALYSIS: V624CTCL 42	LCQSMS537M128	COMMENTS
1	08/28	1130	CRCA-ASINFLUENT-20230828		–	–	GW	G	5	X	X	
2	08/28	1135	CRCA-ASEFFLUENT-20230828		–	–	GW	G	5	X	X	

INITIAL ASSESSMENT SP
LABEL VERIFICATION ZB

	DATE	TIME		DATE	TIME
1. RELINQUISHED BY	08/28/23	1332	1. RECEIVED BY	8/28/23	1333
2. RELINQUISHED BY	DATE	TIME	2. RECEIVED BY	DATE	TIME
3. RELINQUISHED BY	DATE	TIME	3. RECEIVED BY	DATE	TIME

COMMENTS 3.8 FR#1

DISTRIBUTION: WHITE (ACCOMPANIES SAMPLE) YELLOW (FIELD COPY) PINK (FILE COPY) 4/02R
FORM NO. TtNUS-001

FC9100: Chain of Custody
Page 1 of 1

MS Volatiles

6

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Job Number: FC9100
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V2O3062-MB [a]	2O78482.D	1	08/30/23	JW	n/a	n/a	V2O3062

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

FC9100-1, FC9100-2

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	25	10	ug/l	
71-43-2	Benzene	ND	1.0	0.31	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.24	ug/l	
75-25-2	Bromoform	ND	1.0	0.41	ug/l	
78-93-3	2-Butanone (MEK)	ND	5.0	2.0	ug/l	
75-15-0	Carbon Disulfide	ND	2.0	0.53	ug/l	
56-23-5	Carbon Tetrachloride	ND	1.0	0.36	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.20	ug/l	
75-00-3	Chloroethane	ND	2.0	0.67	ug/l	
67-66-3	Chloroform	ND	1.0	0.30	ug/l	
110-82-7	Cyclohexane	ND	1.0	0.39	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.28	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	5.0	1.0	ug/l	
106-93-4	1,2-Dibromoethane	ND	2.0	0.28	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	0.50	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	0.32	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	0.22	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	0.26	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.34	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.31	ug/l	
75-35-4	1,1-Dichloroethylene	ND	1.0	0.32	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	0.28	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	0.22	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.43	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.29	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.21	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.36	ug/l	
76-13-1	Freon 113	ND	1.0	0.48	ug/l	
591-78-6	2-Hexanone	ND	10	2.0	ug/l	
98-82-8	Isopropylbenzene	ND	1.0	0.22	ug/l	
79-20-9	Methyl Acetate	ND	20	5.0	ug/l	
74-83-9	Methyl Bromide	ND	5.0	2.0	ug/l	
74-87-3	Methyl Chloride	ND	2.0	0.50	ug/l	
108-87-2	Methylcyclohexane	ND	1.0	0.44	ug/l	
75-09-2	Methylene Chloride	ND	5.0	2.0	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	5.0	1.0	ug/l	

Method Blank Summary

Job Number: FC9100
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V2O3062-MB [a]	2O78482.D	1	08/30/23	JW	n/a	n/a	V2O3062

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

FC9100-1, FC9100-2

CAS No.	Compound	Result	RL	MDL	Units	Q
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.23	ug/l	
100-42-5	Styrene	ND	1.0	0.22	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.30	ug/l	
127-18-4	Tetrachloroethylene	ND	1.0	0.22	ug/l	
108-88-3	Toluene	ND	1.0	0.30	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	2.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.25	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.47	ug/l	
79-01-6	Trichloroethylene	ND	1.0	0.35	ug/l	
75-69-4	Trichlorofluoromethane	ND	2.0	0.50	ug/l	
75-01-4	Vinyl Chloride	ND	1.0	0.41	ug/l	
1330-20-7	Xylene (total)	ND	3.0	0.72	ug/l	

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	91%	83-118%
17060-07-0	1,2-Dichloroethane-D4	95%	79-125%
2037-26-5	Toluene-D8	109%	85-112%
460-00-4	4-Bromofluorobenzene	105%	83-118%

(a) Sample was treated with an anti-foaming agent.

Blank Spike Summary

Job Number: FC9100
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V2O3062-BS	2O78480.D	1	08/30/23	JW	n/a	n/a	V2O3062

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

FC9100-1, FC9100-2

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
67-64-1	Acetone	125	111	89	50-147
71-43-2	Benzene	25	22.6	90	81-122
75-27-4	Bromodichloromethane	25	20.5	82	79-123
75-25-2	Bromoform	25	21.1	84	66-123
78-93-3	2-Butanone (MEK)	125	115	92	56-143
75-15-0	Carbon Disulfide	25	21.6	86	66-148
56-23-5	Carbon Tetrachloride	25	18.9	76	76-136
108-90-7	Chlorobenzene	25	25.4	102	82-124
75-00-3	Chloroethane	25	19.2	77	62-144
67-66-3	Chloroform	25	22.4	90	80-124
110-82-7	Cyclohexane	25	21.3	85	73-138
124-48-1	Dibromochloromethane	25	24.0	96	78-122
96-12-8	1,2-Dibromo-3-chloropropane	25	23.1	92	64-123
106-93-4	1,2-Dibromoethane	25	25.2	101	75-120
75-71-8	Dichlorodifluoromethane	25	28.7	115	42-167
95-50-1	1,2-Dichlorobenzene	25	26.2	105	82-124
541-73-1	1,3-Dichlorobenzene	25	26.3	105	84-125
106-46-7	1,4-Dichlorobenzene	25	27.4	110	78-120
75-34-3	1,1-Dichloroethane	25	21.1	84	81-122
107-06-2	1,2-Dichloroethane	25	23.1	92	75-125
75-35-4	1,1-Dichloroethylene	25	21.1	84	78-137
156-59-2	cis-1,2-Dichloroethylene	25	21.3	85	78-120
156-60-5	trans-1,2-Dichloroethylene	25	22.3	89	76-127
78-87-5	1,2-Dichloropropane	25	22.1	88	76-124
10061-01-5	cis-1,3-Dichloropropene	25	20.2	81	75-118
10061-02-6	trans-1,3-Dichloropropene	25	23.4	94	80-120
100-41-4	Ethylbenzene	25	26.0	104	81-121
76-13-1	Freon 113	25	25.5	102	72-134
591-78-6	2-Hexanone	125	141	113	61-129
98-82-8	Isopropylbenzene	25	24.1	96	83-132
79-20-9	Methyl Acetate	125	119	95	65-126
74-83-9	Methyl Bromide	25	33.7	135	59-143
74-87-3	Methyl Chloride	25	25.5	102	50-159
108-87-2	Methylcyclohexane	25	21.2	85	76-129
75-09-2	Methylene Chloride	25	22.5	90	69-135
108-10-1	4-Methyl-2-pentanone (MIBK)	125	135	108	66-122

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FC9100
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V2O3062-BS	2O78480.D	1	08/30/23	JW	n/a	n/a	V2O3062

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

FC9100-1, FC9100-2

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
1634-04-4	Methyl Tert Butyl Ether	25	21.6	86	72-117
100-42-5	Styrene	25	24.1	96	78-119
79-34-5	1,1,2,2-Tetrachloroethane	25	27.4	110	72-120
127-18-4	Tetrachloroethylene	25	25.9	104	76-135
108-88-3	Toluene	25	26.0	104	80-120
120-82-1	1,2,4-Trichlorobenzene	25	26.2	105	73-129
71-55-6	1,1,1-Trichloroethane	25	21.0	84	75-130
79-00-5	1,1,2-Trichloroethane	25	26.2	105	76-119
79-01-6	Trichloroethylene	25	21.9	88	81-126
75-69-4	Trichlorofluoromethane	25	26.8	107	71-156
75-01-4	Vinyl Chloride	25	26.9	108	69-159
1330-20-7	Xylene (total)	75	76.0	101	80-126

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	93%	83-118%
17060-07-0	1,2-Dichloroethane-D4	99%	79-125%
2037-26-5	Toluene-D8	109%	85-112%
460-00-4	4-Bromofluorobenzene	102%	83-118%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FC9100
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
FC9029-3MS	2O78504.D	50	08/30/23	JW	n/a	n/a	V2O3062
FC9029-3MSD	2O78505.D	50	08/30/23	JW	n/a	n/a	V2O3062
FC9029-3	2O78484.D	50	08/30/23	JW	n/a	n/a	V2O3062

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

FC9100-1, FC9100-2

CAS No.	Compound	FC9029-3 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
67-64-1	Acetone	ND		6250	5340	85	6250	5570	89	4	50-147/21
71-43-2	Benzene	ND		1250	1100	88	1250	1170	94	6	81-122/14
75-27-4	Bromodichloromethane	ND		1250	938	75*	1250	1010	81	7	79-123/19
75-25-2	Bromoform	ND		1250	901	72	1250	996	80	10	66-123/21
78-93-3	2-Butanone (MEK)	ND		6250	5530	88	6250	5680	91	3	56-143/18
75-15-0	Carbon Disulfide	ND		1250	1000	80	1250	1070	86	7	66-148/23
56-23-5	Carbon Tetrachloride	ND		1250	852	68*	1250	934	75*	9	76-136/23
108-90-7	Chlorobenzene	ND		1250	1180	94	1250	1290	103	9	82-124/14
75-00-3	Chloroethane	ND		1250	ND	0*	1250	ND	0*	nc	62-144/20
67-66-3	Chloroform	ND		1250	1080	86	1250	1160	93	7	80-124/15
110-82-7	Cyclohexane	ND		1250	1030	82	1250	1090	87	6	73-138/18
124-48-1	Dibromochloromethane	ND		1250	1080	86	1250	1140	91	5	78-122/19
96-12-8	1,2-Dibromo-3-chloropropane	2110		1250	3450	107	1250	3670	125*	6	64-123/18
106-93-4	1,2-Dibromoethane	170		1250	1390	98	1250	1470	104	6	75-120/13
75-71-8	Dichlorodifluoromethane	ND		1250	1460	117	1250	1510	121	3	42-167/19
95-50-1	1,2-Dichlorobenzene	ND		1250	1240	99	1250	1350	108	8	82-124/14
541-73-1	1,3-Dichlorobenzene	ND		1250	1220	98	1250	1340	107	9	84-125/14
106-46-7	1,4-Dichlorobenzene	ND		1250	1270	102	1250	1380	110	8	78-120/15
75-34-3	1,1-Dichloroethane	ND		1250	1010	81	1250	1080	86	7	81-122/15
107-06-2	1,2-Dichloroethane	ND		1250	1150	92	1250	1180	94	3	75-125/14
75-35-4	1,1-Dichloroethylene	ND		1250	1030	82	1250	1090	87	6	78-137/18
156-59-2	cis-1,2-Dichloroethylene	ND		1250	1010	81	1250	1090	87	8	78-120/15
156-60-5	trans-1,2-Dichloroethylene	ND		1250	1050	84	1250	1120	90	6	76-127/17
78-87-5	1,2-Dichloropropane	22.9	J	1250	1090	85	1250	1140	89	4	76-124/14
10061-01-5	cis-1,3-Dichloropropene	ND		1250	896	72*	1250	972	78	8	75-118/23
10061-02-6	trans-1,3-Dichloropropene	ND		1250	1040	83	1250	1110	89	7	80-120/22
100-41-4	Ethylbenzene	176		1250	1360	95	1250	1450	102	6	81-121/14
76-13-1	Freon 113	ND		1250	1240	99	1250	1320	106	6	72-134/20
591-78-6	2-Hexanone	ND		6250	6570	105	6250	6980	112	6	61-129/18
98-82-8	Isopropylbenzene	100		1250	1190	87	1250	1300	96	9	83-132/15
79-20-9	Methyl Acetate	ND		6250	5920	95	6250	6220	100	5	65-126/18
74-83-9	Methyl Bromide	ND		1250	1190	95	1250	1440	115	19	59-143/19
74-87-3	Methyl Chloride	ND		1250	1230	98	1250	1300	104	6	50-159/19
108-87-2	Methylcyclohexane	ND		1250	982	79	1250	1060	85	8	76-129/17
75-09-2	Methylene Chloride	ND		1250	1060	85	1250	1120	90	6	69-135/16
108-10-1	4-Methyl-2-pentanone (MIBK)	ND		6250	6480	104	6250	6760	108	4	66-122/16

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FC9100
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
FC9029-3MS	2O78504.D	50	08/30/23	JW	n/a	n/a	V2O3062
FC9029-3MSD	2O78505.D	50	08/30/23	JW	n/a	n/a	V2O3062
FC9029-3	2O78484.D	50	08/30/23	JW	n/a	n/a	V2O3062

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

FC9100-1, FC9100-2

CAS No.	Compound	FC9029-3 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
1634-04-4	Methyl Tert Butyl Ether	ND		1250	1040	83	1250	1100	88	6	72-117/14
100-42-5	Styrene	ND		1250	1170	94	1250	1250	100	7	78-119/23
79-34-5	1,1,2,2-Tetrachloroethane	ND		1250	1330	106	1250	1400	112	5	72-120/14
127-18-4	Tetrachloroethylene	ND		1250	1180	94	1250	1290	103	9	76-135/16
108-88-3	Toluene	ND		1250	1240	99	1250	1320	106	6	80-120/14
120-82-1	1,2,4-Trichlorobenzene	ND		1250	1150	92	1250	1260	101	9	73-129/20
71-55-6	1,1,1-Trichloroethane	ND		1250	988	79	1250	1060	85	7	75-130/16
79-00-5	1,1,2-Trichloroethane	ND		1250	1280	102	1250	1350	108	5	76-119/14
79-01-6	Trichloroethylene	ND		1250	1030	82	1250	1130	90	9	81-126/15
75-69-4	Trichlorofluoromethane	ND		1250	1400	112	1250	1430	114	2	71-156/21
75-01-4	Vinyl Chloride	ND		1250	1340	107	1250	1390	111	4	69-159/18
1330-20-7	Xylene (total)	1990		3750	5270	87	3750	5650	98	7	80-126/15

CAS No.	Surrogate Recoveries	MS	MSD	FC9029-3	Limits
1868-53-7	Dibromofluoromethane	94%	94%	93%	83-118%
17060-07-0	1,2-Dichloroethane-D4	102%	102%	98%	79-125%
2037-26-5	Toluene-D8	108%	109%	109%	85-112%
460-00-4	4-Bromofluorobenzene	101%	104%	103%	83-118%

* = Outside of Control Limits.

MS Semi-volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Instrument Blank

Job Number: FC9100
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S5Q323-IBLK	5Q20546.D	1	09/27/23	LR	n/a	n/a	S5Q323

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC9100-1, FC9100-2

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	
2355-31-9	MeFOSAA	ND	0.0080	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0080	0.0020	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	
919005-14-4	ADONA	ND	0.0080	0.0020	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.0080	0.0020	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.0080	0.0020	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	92%	50-150%
	13C5-PFPeA	92%	50-150%
	13C5-PFHxA	92%	50-150%
	13C4-PFHpA	93%	50-150%

Instrument Blank

Job Number: FC9100
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S5Q323-IBLK	5Q20546.D	1	09/27/23	LR	n/a	n/a	S5Q323

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC9100-1, FC9100-2

CAS No.	ID Standard Recoveries		Limits
	13C8-PFOA	93%	50-150%
	13C9-PFNA	95%	50-150%
	13C6-PFDA	95%	50-150%
	13C7-PFUnDA	94%	50-150%
	13C2-PFDoDA	93%	50-150%
	13C2-PFTeDA	92%	50-150%
	13C3-PFBS	91%	50-150%
	13C3-PFHxS	93%	50-150%
	13C8-PFOS	95%	50-150%
	13C8-FOSA	100%	50-150%
	d3-MeFOSAA	91%	50-150%
	d5-EtFOSAA	93%	50-150%
	13C2-4:2FTS	87%	50-150%
	13C2-6:2FTS	87%	50-150%
	13C2-8:2FTS	86%	50-150%

Method Blank Summary

Job Number: FC9100
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP99176-MB	5Q20570.D	1	09/27/23	LR	09/25/23	OP99176	S5Q323

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC9100-1, FC9100-2

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.016	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0080	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0080	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0080	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0080	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0080	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0080	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0080	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0080	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0080	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0080	0.0020	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0080	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0080	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0080	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0080	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0080	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0080	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0080	0.0020	ug/l	
754-91-6	PFOSA	ND	0.0080	0.0020	ug/l	
2355-31-9	MeFOSAA	ND	0.016	0.0040	ug/l	
2991-50-6	EtFOSAA	ND	0.016	0.0040	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.016	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.016	0.0040	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.016	0.0040	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.016	0.0040	ug/l	
919005-14-4	ADONA	ND	0.016	0.0040	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.016	0.0040	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.016	0.0040	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	95%	50-150%
	13C5-PFPeA	94%	50-150%
	13C5-PFHxA	96%	50-150%
	13C4-PFHpA	96%	50-150%

Method Blank Summary

Job Number: FC9100
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP99176-MB	5Q20570.D	1	09/27/23	LR	09/25/23	OP99176	S5Q323

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC9100-1, FC9100-2

CAS No.	ID Standard Recoveries		Limits
	13C8-PFOA	94%	50-150%
	13C9-PFNA	95%	50-150%
	13C6-PFDA	97%	50-150%
	13C7-PFUnDA	90%	50-150%
	13C2-PFDoDA	83%	50-150%
	13C2-PFTeDA	83%	50-150%
	13C3-PFBS	93%	50-150%
	13C3-PFHxS	93%	50-150%
	13C8-PFOS	88%	50-150%
	13C8-FOSA	85%	50-150%
	d3-MeFOSAA	86%	50-150%
	d5-EtFOSAA	81%	50-150%
	13C2-4:2FTS	89%	50-150%
	13C2-6:2FTS	89%	50-150%
	13C2-8:2FTS	85%	50-150%
	13C3-HFPO-DA	88%	50-150%

Blank Spike/Blank Spike Duplicate Summary

Job Number: FC9100
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP99176-BS [a]	5Q20568.D	1	09/27/23	LR	09/25/23	OP99176	S5Q323
OP99176-BSD	5Q20569.D	1	09/27/23	LR	09/25/23	OP99176	S5Q323

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC9100-1, FC9100-2

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	BSD ug/l	BSD %	RPD	Limits Rec/RPD
375-22-4	Perfluorobutanoic acid	0.16	0.142	89	0.137	86	4	73-129/30
2706-90-3	Perfluoropentanoic acid	0.16	0.144	90	0.140	88	3	72-129/30
307-24-4	Perfluorohexanoic acid	0.16	0.145	91	0.140	88	4	72-129/30
375-85-9	Perfluoroheptanoic acid	0.16	0.142	89	0.138	86	3	72-130/30
335-67-1	Perfluorooctanoic acid	0.16	0.148	93	0.143	89	3	71-133/30
375-95-1	Perfluorononanoic acid	0.16	0.149	93	0.145	91	3	69-130/30
335-76-2	Perfluorodecanoic acid	0.16	0.151	94	0.145	91	4	71-129/30
2058-94-8	Perfluoroundecanoic acid	0.16	0.144	90	0.140	88	3	69-133/30
307-55-1	Perfluorododecanoic acid	0.16	0.144	90	0.141	88	2	72-134/30
72629-94-8	Perfluorotridecanoic acid	0.16	0.146	91	0.145	91	1	65-144/30
376-06-7	Perfluorotetradecanoic acid	0.16	0.147	92	0.146	91	1	71-132/30
375-73-5	Perfluorobutanesulfonic acid	0.16	0.147	92	0.142	89	3	72-130/30
2706-91-4	Perfluoropentanesulfonic acid	0.16	0.151	94	0.144	90	5	71-127/30
355-46-4	Perfluorohexanesulfonic acid	0.16	0.148	93	0.143	89	3	68-131/30
375-92-8	Perfluoroheptanesulfonic acid	0.16	0.148	93	0.146	91	1	69-134/30
1763-23-1	Perfluorooctanesulfonic acid	0.16	0.140	88	0.140	88	0	65-140/30
68259-12-1	Perfluorononanesulfonic acid	0.16	0.138	86	0.139	87	1	69-127/30
335-77-3	Perfluorodecanesulfonic acid	0.16	0.129	81	0.132	83	2	53-142/30
754-91-6	PFOSA	0.16	0.148	93	0.143	89	3	67-137/30
2355-31-9	MeFOSAA	0.16	0.151	94	0.141	88	7	65-136/30
2991-50-6	EtFOSAA	0.16	0.145	91	0.142	89	2	61-135/30
757124-72-4	4:2 Fluorotelomer sulfonate	0.16	0.143	89	0.140	88	2	63-143/30
27619-97-2	6:2 Fluorotelomer sulfonate	0.16	0.148	93	0.147	92	1	64-140/30
39108-34-4	8:2 Fluorotelomer sulfonate	0.16	0.146	91	0.144	90	1	67-138/30
13252-13-6	HFPO-DA (GenX)	0.16	0.138	86	0.143	89	4	60-140/30
919005-14-4	ADONA	0.16	0.161	101	0.151	94	6	60-140/30
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.16	0.131	82	0.126	79	4	60-140/30
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.16	0.133	83	0.132	83	1	60-140/30

CAS No.	ID Standard Recoveries	BSP	BSD	Limits
	13C4-PFBA	98%	96%	50-150%
	13C5-PFPeA	96%	94%	50-150%
	13C5-PFHxA	98%	96%	50-150%
	13C4-PFHpA	98%	97%	50-150%

* = Outside of Control Limits.

Blank Spike/Blank Spike Duplicate Summary

Job Number: FC9100
Account: TTNASA Tetra Tech NUS
Project: KSC-CRCA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP99176-BS [a]	5Q20568.D	1	09/27/23	LR	09/25/23	OP99176	S5Q323
OP99176-BSD	5Q20569.D	1	09/27/23	LR	09/25/23	OP99176	S5Q323

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC9100-1, FC9100-2

CAS No.	ID Standard Recoveries	BSP	BSD	Limits
	13C8-PFOA	94%	94%	50-150%
	13C9-PFNA	92%	92%	50-150%
	13C6-PFDA	92%	92%	50-150%
	13C7-PFUnDA	91%	89%	50-150%
	13C2-PFDoDA	88%	87%	50-150%
	13C2-PFTeDA	86%	90%	50-150%
	13C3-PFBS	95%	94%	50-150%
	13C3-PFHxS	92%	93%	50-150%
	13C8-PFOS	88%	86%	50-150%
	13C8-FOSA	89%	85%	50-150%
	d3-MeFOSAA	90%	86%	50-150%
	d5-EtFOSAA	89%	83%	50-150%
	13C2-4:2FTS	103%	100%	50-150%
	13C2-6:2FTS	97%	97%	50-150%
	13C2-8:2FTS	95%	90%	50-150%
	13C3-HFPO-DA	93%	86%	50-150%

(a) Insufficient sample for MS/MSD.

* = Outside of Control Limits.

Analytical Laboratories of Florida, Inc.

March 30, 2022
Lee Leck
Sample Management Coordinator
TetraTech NUS, Inc.
Project Name: 516S Site, KSC, Fl.

Re: PDF - Analytical Data Package

Analytical Laboratories of Florida, Inc. (ALF) office located at 4125 Alan Shepard Avenue, Cocoa, Florida provided laboratory services for TetraTech NUS, Inc. at the CRCA area of Kennedy Space Center during direct push temporary well sample collection. The site is located at NASA's Kennedy Space Center, Florida complex. The laboratory contact is Dale Schamp at 321-258-1355. The laboratory project name is TT032122. Analysis was performed utilizing EPA8260D methodology. A total of 70 ground water samples were analyzed by Dale Schamp (Chemist) over a period of five days from March 21 – 25, 2022. The project utilized one of two mobile laboratories over the duration of the project. The mobile laboratories are certified (Certification Number E83934 or E831090) by the Florida Department of Health using the guidelines of the national NELAC certification program. TetraTech's Information System's Group (http://isg.ttnus.com) specified the excel spreadsheet format utilized to transport environmental analytical data to TetraTech in an electronic format. ALF's data was submitted to TetraTech under file name EDDNASA.CRCA.032122.total on March 30, 2022.

TetraTech/NUS' Project Manager is Alex Murphy out of the Merritt Island, Florida office. The Prime Contact's subcontract number is S118189. The mobile laboratory was utilized to perform laboratory analysis to delineate volatile organic contamination in the groundwater at various NASA sites. The contaminants of concern included vinyl chloride,1,1-DCE, cis/trans-1,2-DCE, Freon 113, and trichloroethene . The sample analysis load was expected to be up to 25 samples per day.

ALF performed the sample extraction with a Teledyne Stratum sample concentrator utilizing a purge and trap technique. The EPA 5030 method was used as a guideline for this procedure. The process involved is done by purging a gas (UHP helium) through a known sample volume (10 ml – undiluted) at a constant flow rate and specific time. This process transfers the contaminants of concern (COC) from the liquid matrix (groundwater) onto the trap. The trap is then heated to 250C releasing the compounds from the trap into the GC/MS system. An electronic value inside the Stratum sample concentrator is electronically moved from the load position to the inject position to transfer the COCs to the GC/MS. ALF's GC/MS system consists of a Stratum PTC hooked up to an Agilent 6890 (or Model

Analytical Laboratories of Florida, Inc.

7890) Gas Chromatograph in series with an Agilent 5973 (or Model 5975C) MS detector. The COCs are separated by the gradual increase of temperature of GC oven from 45C to 200C and the column's internal coating. ALF's column of choice is a J&W DB-VRX 20 meter, 0.18mm ID, 1um df. This setup closely follows the requirements of EPA Method 8260D for identification and quantification.

The target compound list had a very wide range of project specific detection limit requirements between 1 and 100 ppb to meet the Florida GCTLs. The lab settled on a method detection level for all compounds of 1 ppb. This detection level allowed the compounds to be analyzed in the scan sensitivity mode only.

The compounds are identified by two ways: retention time and ion spectrum. Simply under repetitive flow rates and consistent oven variation of temperatures a compound will pass through a detector at the same time for unknown samples and known calibration standards. The time, after the start of a run, the compound passes through a detector to give a peak type response is known as the retention time. This is how any Gas Chromatograph with a detector identifies a compound. The MS detector has the additional power of compound ion spectrums which occur when the compounds are bombarded with electrons as they pass into the detector which causes the compounds to fragment. Each COC fragments differently from all other compounds thus this is an additional aid in identifying compounds. In the SIM mode, the detector looks for specific compound fragments which increase detector sensitivity.

The compounds are quantified by comparing area responses of unknown sample concentrations to known calibration standards. The greater the peak area response the greater the concentration of the COC present.

Dale Schamp was the designated Field Chemist for this project. Each day on the Field Activity Form (FAF), the sample analyst would document the sample field description, matrix, sample's date and collection time for each sample received. The FAF also recorded the date and time the sample was received by the mobile laboratory. The FAF was also used to record the sample analysis time and volume utilized to perform the analysis. The GC/MS system is linear to 300 ppb for the COCs. Mr. Schamp may have utilized one or two SRI GC systems to determine the sample size which was required to run the sample on the GC/MS. This sample pre-screening process prevented the field chemist from doing multiple runs due to high COC concentrations in the groundwater sample which in turn allowed him to get the final data to the contractor quicker.

4125 Alan Shepard Avenue, Cocoa, Florida 32926
E mail: mobilealf@cs.com
Cell phone: 321–258-1355

Analytical Laboratories of Florida, Inc.

Quality Assurance (QA) is an important part of sample analysis. QA is utilized to aid in the measurement of the data quality generated. The FDEP and EPA methods require the mobile laboratory run: a calibration curve, laboratory duplicates, laboratory matrix spikes, daily instrument tune checks, daily method blanks, internal standards, surrogate standards and calibration check standards. Other than the initial calibration standards curves and tune checks, this information can be found in the Excel Data Summary Tables provided and/or the overall Project EDD table required by TetraTech.

Once the sample's analysis was completed, the chemist entered the data into an Excel Data Summary Table spreadsheet. ALF analyzed 5 sample(s) for matrix spike analysis to determine whether the samples themselves cause interferences with the data generation. Project requirements specify 5 % while ALF's frequency was 7.1 % (5/70). ALF analyzed 5 sample duplicate(s) to check analysis reproducibility. This is also required at a frequency of 5% while ALF did this at a rate of 7.1 % (5/70).

The following information is attached or included in the electronic deliverables:

1. TetraTech EDD Data Summary Tables which includes QC data
2. Field Activities Forms
3. A Copy of this Project Summary

The data generated has been reviewed and submitted under TetraTech's EDD format and the data has been reviewed by TetraTech personnel for errors. I can be reached at 321-258-1355, if you have any follow-up questions.

Sincerely,
ANALYTICAL LABORATORIES OF FLORIDA, INC.

Dale Schamp
Chemist

4125 Alan Shepard Avenue, Cocoa, Florida 32926
E mail: mobilealf@cs.com
Cell phone: 321–258-1355

ANALYTICAL LABORATORIES OF FLORIDA

FIELD ACTIVITIES FORM

Project Name: CRCA ALF Project: TT032122

Address: KSC, FL.

PROJECT NOTES:

Method: EPA8260D; Target Compounds: Vinyl chloride, cis/trans-12,DCE, and TCE. Lab#1/GC#5

03/07/22 Activities:

Method (soil/water) Blank(s): All responses < 5% of Lowest reported Reg Limit

Cal(water/soil)Curve(s): fn: 030722DRY5F.M

Cal(water/soil)Curve(s): All standards ion ratios are within 30% of mid level standard. All compound Response Factor ratios are > 0.1 or >0.2

Cal(water/soil)Curve(s): Second Source expected % Recovery met +/- 30 % of expected response (ng)

Lowest Concen level: Recalibrated Detection level standard meet +/- 30 % expected response (10ng level)

Cal(water)Curve(s): Blank passed tune acceptance criteria of EPA 8260C Section 11.3.1

0901 Run BFB Dynamic hardware tune ; Refrigerator # 10 temp < -15C ; Ambient temp 66 F. JG Finneran C# D0376-40 Lot# 843021075UVF

0908 Run method blank in (fn: 030722blk1.d) 10 ml H20. All analyte responses equal to or < 50% of lowest quantitation calibration standard.

0910 to 1145 Calibrate GC#5

03/21/22 Activities:

0800 Arrive at badging station.

0836 Run BFB Dynamic hardware tune ; Refrigerator # 10 temp < -15C ; Ambient temp 58 F. JG Finneran C# 340024-2895 Lot# 793921167V40C

0858 Run method blank in (fn: 032122blk1.d) 10 ml H20. All analyte responses equal to or < 50% of lowest quantitation calibration standard.

0917 Run 10ml H20 with 100ng spike (fn: 032122ccv1.d). All compound responses between within 20 % expected response and ion ratios within 30% expected ratio.

0918 Rec 1 GWs from CS. FN: CRCA-DPT0261@18' (0915)/Lab ID: TT032122-W001

0924 Remove 10 ml GW sample W-001 from VOA vial W-001C-1. Add int/surr stds. Load onto PT-1. FN: CRCA-DPT0261@18' / Lab ID: TT032122-W-001. 0934 Inject.

0934 Rec 1 GWs from CS. FN: CRCA-DPT0261@23' (0930)/Lab ID: TT032122-W002

0942 Remove 10 ml GW sample W-001 from VOA vial W-001C-2. Add 100NG,int/surr stds. Load onto PT-1. FN: CRCA-DPT0261@18' / Lab ID: TT032122-W-001MS. 0952 Inject.

0950 Rec 1 GWs from CS. FN: CRCA-DPT0261@28' (0945)/Lab ID: TT032122-W003

1000 Remove 10 ml GW sample W-002 from VOA vial W-002C-1. Add int/surr stds. Load onto PT-1. FN: CRCA-DPT0261@23' / Lab ID: TT032122-W-002. 1010 Inject.

1010 Rec 1 GWs from CS. FN: CRCA-DPT0261@33' (1005)/Lab ID: TT032122-W004

1017 Remove 10 ml GW sample W-003 from VOA vial W-003C-1. Add int/surr stds. Load onto PT-1. FN: CRCA-DPT0261@28' / Lab ID: TT032122-W-003. 1027 Inject.

1030 Rec 1 GWs from CS. FN: CRCA-DPT0261@38' (1025)/Lab ID: TT032122-W005

1034 Remove 10 ml GW sample W-004 from VOA vial W-004C-1. Add int/surr stds. Load onto PT-1. FN: CRCA-DPT0261@33' / Lab ID: TT032122-W-004. 1044 Inject.

1052 Remove 10 ml GW sample W-005 from VOA vial W-005C-1. Add int/surr stds. Load onto PT-1. FN: CRCA-DPT0261@38' / Lab ID: TT032122-W-005. 1102 Inject.

1054 Rec 1 GWs from CS. FN: CRCA-DPT0261@43' (1050)/Lab ID: TT032122-W006

1110 Remove 10 ml GW sample W-005 from VOA vial W-005C-2. Add int/surr stds. Load onto PT-1. FN: CRCA-DPT0261@38' / Lab ID: TT032122-W-005DUP. 1120 Inject.

1137 Run 10ml H20 with 100ng spike (fn: 032122ccv2.d). All compound responses between within 20 % expected response and ion ratios within 30% expected ratio.

1144 Rec 1 GWs from CS. FN: CRCA-DPT0262@18' (1140)/Lab ID: TT032122-W007

1155 Run method blank in (fn: 032122blk2.d) 10 ml H20. All analyte responses equal to or < 50% of lowest quantitation calibration standard.

1200 Rec 1 GWs from CS. FN: CRCA-DPT0262@23' (1155)/Lab ID: TT032122-W008

1202 Remove 10 ml GW sample W-006 from VOA vial W-006C-1. Add int/surr stds. Load onto PT-1. FN: CRCA-DPT0261@43' / Lab ID: TT032122-W-006. 1212 Inject.

1219 Remove 10 ml GW sample W-006 from VOA vial W-006C-2. Add 100NG,int/surr stds. Load onto PT-1. FN: CRCA-DPT0261@43' / Lab ID: TT032122-W-006MS. 1229 Inject.

1237 Remove 10 ml GW sample W-007 from VOA vial W-007C-1. Add int/surr stds. Load onto PT-1. FN: CRCA-DPT0262@18' / Lab ID: TT032122-W-007. 1247 Inject.

1243 Rec 1 GWs from CS. FN: CRCA-DPT0262@28' (1245)/Lab ID: TT032122-W009

1254 Remove 10 ml GW sample W-008 from VOA vial W-008C-1. Add int/surr stds. Load onto PT-1. FN: CRCA-DPT0262@23' / Lab ID: TT032122-W-008. 1304 Inject.

1308 Rec 1 GWs from CS. FN: CRCA-DPT0262@33' (1305)/Lab ID: TT032122-W010

1312 Remove 10 ml GW sample W-009 from VOA vial W-009C-1. Add int/surr stds. Load onto PT-1. FN: CRCA-DPT0262@28' / Lab ID: TT032122-W-009. 1322 Inject.

1329 Remove 10 ml GW sample W-010 from VOA vial W-010C-1. Add int/surr stds. Load onto PT-1. FN: CRCA-DPT0262@33' / Lab ID: TT032122-W-010. 1339 Inject.

1330 Rec 1 GWs from CS. FN: CRCA-DPT0262@38' (1325)/Lab ID: TT032122-W011

1346 Remove 10 ml GW sample W-011 from VOA vial W-011C-1. Add int/surr stds. Load onto PT-1. FN: CRCA-DPT0262@38' / Lab ID: TT032122-W-011. 1356 Inject.

1348 Rec 1 GWs from CS. FN: CRCA-DPT0262@43' (1345)/Lab ID: TT032122-W012

1404 Remove 10 ml GW sample W-012 from VOA vial W-012C-1. Add int/surr stds. Load onto PT-1. FN: CRCA-DPT0262@43' / Lab ID: TT032122-W-012. 1414 Inject.

1421 Remove 10 ml GW sample W-012 from VOA vial W-012C-2. Add int/surr stds. Load onto PT-1. FN: CRCA-DPT0262@43' / Lab ID: TT032122-W-012DUP. 1431 Inject.

1435 Rec 1 GWs from CS. FN: CRCA-DPT0263@18' (1430)/Lab ID: TT032122-W013

1440 Remove 10 ml GW sample W-013 from VOA vial W-013C-1. Add int/surr stds. Load onto PT-1. FN: CRCA-DPT0263@18' / Lab ID: TT032122-W-013. 1450 Inject.

1448 Rec 1 GWs from CS. FN: CRCA-DPT0263@23' (1445)/Lab ID: TT032122-W014

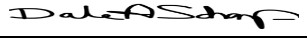
1457 Remove 10 ml GW sample W-014 from VOA vial W-014C-1. Add int/surr stds. Load onto PT-1. FN: CRCA-DPT0263@23' / Lab ID: TT032122-W-014. 1507 Inject.

Sampler / Company On-site: Chuck Sorden - TetraTech

Delays: _____

Weather: _____

Date: 3/7,21-22/2022 Page 1 of 4

Signature: 

Important phone calls / Changes:

ANALYTICAL LABORATORIES OF FLORIDA

FIELD ACTIVITIES FORM

Project Name: CRCA ALF Project: TT032122

Address: KSC, FL.

PROJECT NOTES:

Method: EPA8260D; Target Compounds: Vinyl chloride, cis/trans-12,DCE, and TCE. Lab#1/GC#5

03/21/22 Activities:

1503 Rec 1 GWs from CS. FN: CRCA-DPT0263@28' (1500)/Lab ID: TT032122-W015

1515 Remove 10 ml GW sample W-015 from VOA vial W-015C-1. Add int/surr stds. Load onto PT-1. FN: CRCA-DPT0263@28' / Lab ID: TT032122-W-015. 1525 Inject.

1525 Rec 1 GWs from CS. FN: CRCA-DPT0263@33' (1520)/Lab ID: TT032122-W016

1532 Remove 10 ml GW sample W-016 from VOA vial W-016C-1. Add int/surr stds. Load onto PT-1. FN: CRCA-DPT0263@33' / Lab ID: TT032122-W-016. 1542 Inject.

1543 Rec 1 GWs from CS. FN: CRCA-DPT0263@38' (1540)/Lab ID: TT032122-W017

1550 Remove 10 ml GW sample W-017 from VOA vial W-017C-1. Add int/surr stds. Load onto PT-1. FN: CRCA-DPT0263@38' / Lab ID: TT032122-W-017. 1600 Inject.

1603 Rec 1 GWs from CS. FN: CRCA-DPT0263@43' (1600)/Lab ID: TT032122-W018

1609 Remove 10 ml GW sample W-018 from VOA vial W-018C-1. Add int/surr stds. Load onto PT-1. FN: CRCA-DPT0263@43' / Lab ID: TT032122-W-018. 1619 Inject.

1625 Rec 1 GWs from CS. FN: CRCA-DPT0263@48' (1620)/Lab ID: TT032122-W019

1628 Remove 10 ml GW sample W-019 from VOA vial W-019C-1. Add int/surr stds. Load onto PT-1. FN: CRCA-DPT0263@48' / Lab ID: TT032122-W-019. 1638 Inject.

03/22/22 Activities:

0824 Run BFB Dynamic hardware tune ; Refrigerator # 10 temp < -15C ; Ambient temp 65 F. JG Finneran C# 340024-2895 Lot# 793921167V40C

0849 Run method blank in (fn: 032222blk1.d) 10 ml H20. All analyte responses equal to or < 50% of lowest quantitation calibration standard.

0904 Rec 2 GWs from CS. Temp = 66F. FN: CRCA-DPT0264@38' (0825)/Lab ID: TT032122-W020 ; @ 43' (0855)/W21

0910 Calibrate GC#5 (FN:032222dry4.M)

0933 Rec 1 GWs from CS. FN: CRCA-DPT0264@48' (0925)/Lab ID: TT032122-W022

1016 Rec 2 GWs from CS. Temp = 61F. FN: CRCA-DPT0264@52' (0950)/Lab ID: TT032122-W023; @ 57' (1015)/W24

1043 Rec 1 GWs from CS. FN: CRCA-DPT0264@62' (1035)/Lab ID: TT032122-W025

1119 Remove 10 ml GW sample W-020 from VOA vial W-020C-1. Add int/surr stds. Load onto PT-1. FN: CRCA-DPT0264@38' / Lab ID: TT032122-W-020. 1129 Inject.

1137 Remove 10 ml GW sample W-021 from VOA vial W-021C-1. Add int/surr stds. Load onto PT-1. FN: CRCA-DPT0264@43' / Lab ID: TT032122-W-021. 1147 Inject.

1155 Remove 10 ml GW sample W-021 from VOA vial W-021C-2. Add int/surr stds. Load onto PT-1. FN: CRCA-DPT0264@43' / Lab ID: TT032122-W-021dup. 1205 Inject.

1212 Remove 10 ml GW sample W-022 from VOA vial W-022C-1. Add int/surr stds. Load onto PT-1. FN: CRCA-DPT0264@48' / Lab ID: TT032122-W-022. 1222 Inject.

1230 Remove 10 ml GW sample W-023 from VOA vial W-023C-1. Add int/surr stds. Load onto PT-1. FN: CRCA-DPT0264@52' / Lab ID: TT032122-W-023. 1240 Inject.

1247 Remove 10 ml GW sample W-024 from VOA vial W-024C-1. Add int/surr stds. Load onto PT-1. FN: CRCA-DPT0264@57' / Lab ID: TT032122-W-024. 1257 Inject.

1305 Remove 10 ml GW sample W-025 from VOA vial W-025C-1. Add int/surr stds. Load onto PT-1. FN: CRCA-DPT0264@62' / Lab ID: TT032122-W-025. 1315 Inject.

1341 Remove 10 ml GW sample W-025 from VOA vial W-025C-2. Add 100ng,int/surr stds. Load onto PT-1. FN: CRCA-DPT0264@62' / Lab ID: TT032122-W-025ms. 1351 Inject.

1355 Rec 1 GWs from CS. FN: CRCA-DPT0265@38' (1345)/Lab ID: TT032122-W026

1400 Remove 10 ml GW sample W-026 from VOA vial W-026C-1. Add int/surr stds. Load onto PT-1. FN: CRCA-DPT0265@38' / Lab ID: TT032122-W-026. 1410 Inject.

1434 Rec 2 GWs from CS. Temp= 79F. FN: CRCA-DPT0265@43' (1410)/Lab ID: TT032122-W027; @ 48' (1430)/W28

1443 Remove 10 ml GW sample W-027 from VOA vial W-027C-1. Add int/surr stds. Load onto PT-1. FN: CRCA-DPT0265@43' / Lab ID: TT032122-W-027. 1453 Inject.

1502 Remove 10 ml GW sample W-028 from VOA vial W-028C-1. Add int/surr stds. Load onto PT-1. FN: CRCA-DPT0265@48' / Lab ID: TT032122-W-028. 1512 Inject.

1537 Rec 2 GWs from CS. Temp= 64F. FN: CRCA-DPT0265@52' (1455)/Lab ID: TT032122-W029; @ 57' (1530)/W30

1542 Remove 10 ml GW sample W-029 from VOA vial W-029C-1. Add int/surr stds. Load onto PT-1. FN: CRCA-DPT0265@52' / Lab ID: TT032122-W-029. 1552 Inject.

1559 Remove 10 ml GW sample W-030 from VOA vial W-030C-1. Add int/surr stds. Load onto PT-1. FN: CRCA-DPT0265@57' / Lab ID: TT032122-W-030. 1609 Inject.

1606 Rec 1 GWs from CS. FN: CRCA-DPT0265@62' (1555)/Lab ID: TT032122-W031

1617 Remove 10 ml GW sample W-031 from VOA vial W-031C-1. Add int/surr stds. Load onto PT-1. FN: CRCA-DPT0265@62' / Lab ID: TT032122-W-031. 1627 Inject.

03/23/22 Activities:

0814 Run BFB Dynamic hardware tune ; Refrigerator # 10 temp < -15C ; Ambient temp 71 F. JG Finneran C# 340024-2895 Lot# 793921167V40C

0818 Run method blank in (fn: 032322blk1.d) 10 ml H20. All analyte responses equal to or < 50% of lowest quantitation calibration standard.

0822 Rec 2 GWs from CS. Temp - 72F. FN: CRCA-DPT266@38' (0755)/Lab ID: TT032122-W032; @ 43' (0815)/W33

0855 Run 10ml H20 with 100ng spike (fn: 032322ccv1.d). All compound responses between within 20 % expected response and ion ratios within 30% expected ratio.

0902 Remove 10 ml GW sample W-032 from VOA vial W-032C-1. Add int/surr stds. Load onto PT-1. FN: CRCA-DPT0266@38' / Lab ID: TT032122-W-032. 0912 Inject.

0905 Rec 2 GWs from CS. Temp - 74F. FN: CRCA-DPT266@48' (0835)/Lab ID: TT032122-W034; @ 52' (0855)/W35

0920 Remove 10 ml GW sample W-032 from VOA vial W-032C-2. Add 100ng,int/surr stds. Load onto PT-1. FN: CRCA-DPT0266@38' / Lab ID: TT032122-W-032ms. 0930 Inject.

0925 Rec 1 GWs from CS. FN: CRCA-DPT266@57' (0920)/Lab ID: TT032122-W036

0937 Remove 10 ml GW sample W-033 from VOA vial W-033C-1. Add int/surr stds. Load onto PT-1. FN: CRCA-DPT0266@43' / Lab ID: TT032122-W-033. 0947 Inject.

0954 Remove 10 ml GW sample W-034 from VOA vial W-034C-1. Add int/surr stds. Load onto PT-1. FN: CRCA-DPT0266@48' / Lab ID: TT032122-W-034. 1004 Inject.

1012 Remove 10 ml GW sample W-035 from VOA vial W-035C-1. Add int/surr stds. Load onto PT-1. FN: CRCA-DPT0266@52' / Lab ID: TT032122-W-035. 1022 Inject.

1030 Remove 10 ml GW sample W-036 from VOA vial W-036C-1. Add int/surr stds. Load onto PT-1. FN: CRCA-DPT0266@57' / Lab ID: TT032122-W-036. 1040 Inject.

Sampler / Company On-site: Chuck Sorden - TetraTech

Delays: _____

Weather: _____

Date: 3/21-23/2022 Page 2 of 4

Signature: _____

Important phone calls / Changes:

ANALYTICAL LABORATORIES OF FLORIDA

FIELD ACTIVITIES FORM

Project Name: CRCA ALF Project: TT032122

Address: KSC, FL.

PROJECT NOTES:

Method: EPA8260D; Target Compounds: Vinyl chloride, cis/trans-12,DCE, and TCE. Lab#1/GC#5

03/23/22 Activities:

1047 Remove 10 ml GW sample W-036 from VOA vial W-036C-2. Add int/surr stds. Load onto PT-1. FN: CRCA-DPT0266@57' / Lab ID: TT032122-W-036dup. 1057 Inject.
1107 Rec 2 GWs from CS. Temp=77F. FN: CRCA-DPT0267@38' (1045)/Lab ID: TT032122-W037; @ 43' (1100)/W38
1114 Run 10ml H20 with 100ng spike (fn: 032322ccv2.d). All compound responses between within 20 % expected response and ion ratios within 30% expected ratio.
1133 Run method blank in (fn: 032322blk2.d) 10 ml H20. All analyte responses equal to or < 50% of lowest quantitation calibration standard.
1141 Remove 10 ml GW sample W-037 from VOA vial W-037C-1. Add int/surr stds. Load onto PT-1. FN: CRCA-DPT0267@38' / Lab ID: TT032122-W-037. 1151 Inject.
1154 Rec 2 GWs from CS. Temp=76F. FN: CRCA-DPT0267@48' (1120)/Lab ID: TT032122-W039; @ 52' (1150)/W40
1158 Remove 10 ml GW sample W-037 from VOA vial W-037C-2. Add int/surr stds. Load onto PT-1. FN: CRCA-DPT0267@38' / Lab ID: TT032122-W-037dup. 1208 Inject.
1215 Remove 10 ml GW sample W-038 from VOA vial W-038C-1. Add int/surr stds. Load onto PT-1. FN: CRCA-DPT0267@43' / Lab ID: TT032122-W-038. 1225 Inject.
1220 Rec 1 GWs from CS. FN: CRCA-DPT0267@57' (1215)/Lab ID: TT032122-W041
1223 Remove 10 ml GW sample W-039 from VOA vial W-039C-1. Add int/surr stds. Load onto PT-1. FN: CRCA-DPT0267@48' / Lab ID: TT032122-W-039. 1233 Inject.
1251 Remove 10 ml GW sample W-040 from VOA vial W-040C-1. Add int/surr stds. Load onto PT-1. FN: CRCA-DPT0267@52' / Lab ID: TT032122-W-040. 1301 Inject.
1312 Remove 10 ml GW sample W-041 from VOA vial W-041C-1. Add int/surr stds. Load onto PT-1. FN: CRCA-DPT0267@57' / Lab ID: TT032122-W-041. 1322 Inject.
1400 Rec 2 GWs from CS. Temp = 80F. FN: CRCA-DPT0268@38' (1405)/Lab ID: TT032122-W042; @ 43'(1425)/W43
1432 Remove 10 ml GW sample W-042 from VOA vial W-042C-1. Add int/surr stds. Load onto PT-1. FN: CRCA-DPT0268@38' / Lab ID: TT032122-W-042. 1442 Inject.
1449 Remove 10 ml GW sample W-043 from VOA vial W-043C-1. Add int/surr stds. Load onto PT-1. FN: CRCA-DPT0268@43' / Lab ID: TT032122-W-043. 1459 Inject.
1518 Rec 2 GWs from CS. Temp = 80F. FN: CRCA-DPT0268@48' (1445)/Lab ID: TT032122-W044; @ 52'(1510)/W45
1520 Remove 10 ml GW sample W-044 from VOA vial W-044C-1. Add int/surr stds. Load onto PT-1. FN: CRCA-DPT0268@48' / Lab ID: TT032122-W-044. 1530 Inject.
1536 Remove 10 ml GW sample W-045 from VOA vial W-045C-1. Add int/surr stds. Load onto PT-1. FN: CRCA-DPT0268@52' / Lab ID: TT032122-W-045. 1546 Inject.
1545 Rec 1 GWs from CS. FN: CRCA-DPT0268@57' (1535)/Lab ID: TT032122-W046
1556 Remove 10 ml GW sample W-046 from VOA vial W-046C-1. Add int/surr stds. Load onto PT-1. FN: CRCA-DPT0268@57' / Lab ID: TT032122-W-046. 1606 Inject.

03/24/22 Activities:

0816 Rec 2 GWs from CS. Temp=78F. FN: CRCA-DPT0269@38' (0745)/Lab ID: TT032122-W047; @ 43' (0805)/W48
0821 Run BFB Dynamic hardware tune ; Refrigerator # 10 temp < -15C ; Ambient temp 68 F. JG Finneran C# 340024-2895 Lot# 793921167V40C
0829 Run method blank in (fn: 032422blk1.d) 10 ml H20. All analyte responses equal to or < 50% of lowest quantitation calibration standard.
0847 Run 10ml H20 with 100ng spike (fn: 032422ccv1.d). All compound responses between within 20 % expected response and ion ratios within 30% expected ratio.
0854 Rec 2 GWs from CS. Temp=79F. FN: CRCA-DPT0266@48' (0825)/Lab ID: TT032122-W049; @ 52' (0850)/W50
0854 Remove 10 ml GW sample W-047 from VOA vial W-047C-1. Add int/surr stds. Load onto PT-1. FN: CRCA-DPT0269@38' / Lab ID: TT032122-W-047. 0904 Inject.
0912 Remove 10 ml GW sample W-047 from VOA vial W-047C-2. Add 100NG,int/surr stds. Load onto PT-1. FN: CRCA-DPT0269@38' / Lab ID: TT032122-W-047MS. 0922 Inject.
0929 Remove 10 ml GW sample W-049 from VOA vial W-049C-1. Add int/surr stds. Load onto PT-1. FN: CRCA-DPT0269@48' / Lab ID: TT032122-W-049. 0939 Inject.
0944 Rec 1 GWs from CS. FN: CRCA-DPT0266@57' (0940)/Lab ID: TT032122-W051
0946 Remove 10 ml GW sample W-048 from VOA vial W-048C-1. Add int/surr stds. Load onto PT-1. FN: CRCA-DPT0269@43' / Lab ID: TT032122-W-048. 0956 Inject.
1003 Remove 10 ml GW sample W-050 from VOA vial W-050C-1. Add int/surr stds. Load onto PT-1. FN: CRCA-DPT0269@52' / Lab ID: TT032122-W-050. 1013 Inject.
1020 Remove 10 ml GW sample W-051 from VOA vial W-051C-1. Add int/surr stds. Load onto PT-1. FN: CRCA-DPT0269@57' / Lab ID: TT032122-W-051. 1030 Inject.
1038 Remove 10 ml GW sample W-049 from VOA vial W-049C-2. Add int/surr stds. Load onto PT-1. FN: CRCA-DPT0269@48' / Lab ID: TT032122-W-049DUP. 1048 Inject.
1042 Rec 2 GWs from CS. Temp= 78F. FN: CRCA-DPT0270@38' (1020)/Lab ID: TT032122-W052; @ 43' (1040)/W53
1059 Remove 10 ml GW sample W-052 from VOA vial W-052C-1. Add int/surr stds. Load onto PT-1. FN: CRCA-DPT0270@38' / Lab ID: TT032122-W-052. 1109 Inject.
1116 Run 10ml H20 with 100ng spike (fn: 032422ccv2.d). All compound responses between within 20 % expected response and ion ratios within 30% expected ratio.
1130 Rec 2 GWs from CS. Temp= 79F. FN: CRCA-DPT0270@48' (1100)/Lab ID: TT032122-W054; @ 52' (1125)/W55
1144 Run method blank in (fn: 032422blk2.d) 10 ml H20. All analyte responses equal to or < 50% of lowest quantitation calibration standard.
1152 Remove 10 ml GW sample W-053 from VOA vial W-053C-1. Add int/surr stds. Load onto PT-1. FN: CRCA-DPT0270@43' / Lab ID: TT032122-W-053. 1202 Inject.
1154 Rec 1 GWs from CS. FN: CRCA-DPT0270@57' (1150)/Lab ID: TT032122-W056
1209 Remove 10 ml GW sample W-054 from VOA vial W-054C-1. Add int/surr stds. Load onto PT-1. FN: CRCA-DPT0270@48' / Lab ID: TT032122-W-054. 1219 Inject.
1227 Remove 10 ml GW sample W-055 from VOA vial W-055C-1. Add int/surr stds. Load onto PT-1. FN: CRCA-DPT0270@52' / Lab ID: TT032122-W-055. 1237 Inject.
1245 Remove 10 ml GW sample W-056 from VOA vial W-056C-1. Add int/surr stds. Load onto PT-1. FN: CRCA-DPT0270@57' / Lab ID: TT032122-W-056. 1255 Inject.
1303 Rec 1 GWs from CS. FN: CRCA-DPT0271@38' (1300)/Lab ID: TT032122-W057
1309 Remove 10 ml GW sample W-057 from VOA vial W-057C-1. Add int/surr stds. Load onto PT-1. FN: CRCA-DPT0271@38' / Lab ID: TT032122-W-057. 1319 Inject.
1531 Rec 1 GWs from CS. FN: CRCA-DPT0272@43' (1530)/Lab ID: TT032122-W058
1533 Remove 10 ml GW sample W-058 from VOA vial W-058C-1. Add int/surr stds. Load onto PT-1. FN: CRCA-DPT0272@43' / Lab ID: TT032122-W-058. 1543 Inject.
1555 Rec 1 GWs from CS. FN: CRCA-DPT0272@48' (1550)/Lab ID: TT032122-W059
1603 Remove 10 ml GW sample W-059 from VOA vial W-059C-1. Add int/surr stds. Load onto PT-1. FN: CRCA-DPT0272@48' / Lab ID: TT032122-W-059. 1613 Inject.

Sampler / Company On-site: Chuck Sorden - TetraTech

Delays: _____

Weather: _____

Date: 3/23-24/2022 Page 3 of 4

Signature: _____

Important phone calls / Changes:

ANALYTICAL LABORATORIES OF FLORIDA

FIELD ACTIVITIES FORM

Project Name: CRCA ALF Project: TT032122

Address: KSC, FL.

PROJECT NOTES:

Method: EPA8260D; Target Compounds: Vinyl chloride, cis/trans-12,DCE, and TCE. Lab#1/GC#5

03/25/22 Activities:

0830 Rec 2 GWs from CS. Temp= 78F. FN: CRCA-DPT0272@52' (0800)/Lab ID: TT032122-W060; @ 57' (0825)/W61

0836 Run BFB Dynamic hardware tune ; Refrigerator # 10 temp < -15C ; Ambient temp 62 F. JG Finneran C# 340024-2895 Lot# 793921167V40C

0838 Run method blank in (fn: 032522blk1.d) 10 ml H20. All analyte responses equal to or < 50% of lowest quantitation calibration standard.

0855 Run 10ml H20 with 100ng spike (fn: 032522ccv1.d). All compound responses between within 20 % expected response and ion ratios within 30% expected ratio.

0903 Remove 10 ml GW sample W-060 from VOA vial W-060C-1. Add int/surr stds. Load onto PT-1. FN: CRCA-DPT0272@52' / Lab ID: TT032122-W-060. 0913 Inject.

0921 Remove 10 ml GW sample W-060 from VOA vial W-060C-2. Add 100ng,int/surr stds. Load onto PT-1. FN: CRCA-DPT0272@52' / Lab ID: TT032122-W-060ms. 0931 Inject.

0938 Remove 10 ml GW sample W-061 from VOA vial W-061C-1. Add int/surr stds. Load onto PT-1. FN: CRCA-DPT0272@57' / Lab ID: TT032122-W-061. 0948 Inject.

0955 Remove 10 ml GW sample W-061 from VOA vial W-061C-2. Add int/surr stds. Load onto PT-1. FN: CRCA-DPT0272@57' / Lab ID: TT032122-W-061dup. 1005 Inject.

1036 Rec 2 GWs from CS. Temp= 80F. FN: CRCA-DPT0273@43' (1015)/Lab ID: TT032122-W062; @ 48' (1030)/W63

1038 Remove 10 ml GW sample W-062 from VOA vial W-062C-1. Add int/surr stds. Load onto PT-1. FN: CRCA-DPT0273@43' / Lab ID: TT032122-W-062. 1048 Inject.

1056 Remove 10 ml GW sample W-063 from VOA vial W-063C-1. Add int/surr stds. Load onto PT-1. FN: CRCA-DPT0273@48' / Lab ID: TT032122-W-063. 1106 Inject.

1124 Rec 2 GWs from CS. Temp= 81F. FN: CRCA-DPT0273@52' (1100)/Lab ID: TT032122-W064; @ 57' (1125)/W65

1127 Remove 10 ml GW sample W-064 from VOA vial W-064C-1. Add int/surr stds. Load onto PT-1. FN: CRCA-DPT0273@52' / Lab ID: TT032122-W-064. 1137 Inject.

1145 Remove 10 ml GW sample W-065 from VOA vial W-065C-1. Add int/surr stds. Load onto PT-1. FN: CRCA-DPT0273@57' / Lab ID: TT032122-W-065. 1155 Inject.

1256 Rec 1 GW from CS. FN: CRCA-DPT0274@43' (1255)/Lab ID: TT032122-W066

1257 Remove 10 ml GW sample W-066 from VOA vial W-066C-1. Add int/surr stds. Load onto PT-1. FN: CRCA-DPT0274@43' / Lab ID: TT032122-W-066. 1307 Inject.

1318 Rec 1 GW from CS. FN: CRCA-DPT0274@48' (1315)/Lab ID: TT032122-W067

1322 Remove 10 ml GW sample W-066 from VOA vial W-066C-2. Add int/surr stds. Load onto PT-1. FN: CRCA-DPT0274@43' / Lab ID: TT032122-W-066dup. 1332 Inject.

1340 Remove 10 ml GW sample W-067 from VOA vial W-067C-1. Add int/surr stds. Load onto PT-1. FN: CRCA-DPT0274@48' / Lab ID: TT032122-W-067. 1350 Inject.

1342 Rec 1 GW from CS. FN: CRCA-DPT0274@52' (1340)/Lab ID: TT032122-W068

1357 Remove 10 ml GW sample W-068 from VOA vial W-068C-1. Add int/surr stds. Load onto PT-1. FN: CRCA-DPT0274@52' / Lab ID: TT032122-W-068. 1407 Inject.

1410 Rec 1 GW from CS. FN: CRCA-DPT0274@57' (1405)/Lab ID: TT032122-W069

1414 Remove 10 ml GW sample W-069 from VOA vial W-069C-1. Add int/surr stds. Load onto PT-1. FN: CRCA-DPT0274@57' / Lab ID: TT032122-W-069. 1424 Inject.

1443 Rec 1 GW from CS. FN: CRCA-DPT0274@38' (1440)/Lab ID: TT032122-W070

1445 Remove 10 ml GW sample W-070 from VOA vial W-070C-1. Add int/surr stds. Load onto PT-1. FN: CRCA-DPT0274@38' / Lab ID: TT032122-W-070. 1455 Inject.

1530 Discard samples in IDW drum.

&

Sampler / Company On-site: Chuck Sorden - TetraTech

Delays:

Weather:

Date: 3/25/2022 Page 4 of 4

Signature:

Important phone calls / Changes:

sample_no	matrix	sample_date	sample_time	top_depth	bottom_depth	lab_id	laboratory	result_type	analysis_date	run_number	sdg	parameter	cas_no	analysis_m	prep_method	lab_result	lab_qual	units	reporting_limit	dil_factor	pct_moist	comments
032122BLK1	GW	01/01/1900	00:00	-9999	-9999	032122BLK1	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/21/2022	1	TT032122	VINYL CHLORIDE	75-01-4	8260D	5030	1	U	UG/L	1	1	100	
032122BLK1	GW	01/01/1900	00:00	-9999	-9999	032122BLK1	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/21/2022	1	TT032122	TRANS-1,2-DICHLOROETHENE	156-60-5	8260D	5030	1	U	UG/L	1	1	100	
032122BLK1	GW	01/01/1900	00:00	-9999	-9999	032122BLK1	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/21/2022	1	TT032122	CIS-1,2-DICHLOROETHENE	156-59-2	8260D	5030	1	U	UG/L	1	1	100	
032122BLK1	GW	01/01/1900	00:00	-9999	-9999	032122BLK1	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/21/2022	1	TT032122	TRICHLOROETHENE	79-01-6	8260D	5030	1	U	UG/L	1	1	100	
032122BLK1	GW	01/01/1900	00:00	-9999	-9999	032122BLK1	ANALYTICAL LABORATORIES OF FLORIDA, INC.	SUR	03/21/2022	1	TT032122	d8-TOLUENE	2037-26-5	8260D	5030	96.8		%	1	1	100	
032122CCV1	GW	01/01/1900	00:00	-9999	-9999	032122CCV1	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/21/2022	1	TT032122	VINYL CHLORIDE	75-01-4	8260D	5030	100.4		%	1	1	100	
032122CCV1	GW	01/01/1900	00:00	-9999	-9999	032122CCV1	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/21/2022	1	TT032122	TRANS-1,2-DICHLOROETHENE	156-60-5	8260D	5030	96.6		%	1	1	100	
032122CCV1	GW	01/01/1900	00:00	-9999	-9999	032122CCV1	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/21/2022	1	TT032122	CIS-1,2-DICHLOROETHENE	156-59-2	8260D	5030	97.0		%	1	1	100	
032122CCV1	GW	01/01/1900	00:00	-9999	-9999	032122CCV1	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/21/2022	1	TT032122	TRICHLOROETHENE	79-01-6	8260D	5030	93.3		%	1	1	100	
032122CCV1	GW	01/01/1900	00:00	-9999	-9999	032122CCV1	ANALYTICAL LABORATORIES OF FLORIDA, INC.	SUR	03/21/2022	1	TT032122	d8-TOLUENE	2037-26-5	8260D	5030	98.9		%	1	1	100	
CRCA-DPT0261-018.0-20220321	GW	03/21/2022	09:15	16	20	TT032122-W001	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/21/2022	1	TT032122	VINYL CHLORIDE	75-01-4	8260D	5030	1	U	UG/L	1	1	100	
CRCA-DPT0261-018.0-20220321	GW	03/21/2022	09:15	16	20	TT032122-W001	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/21/2022	1	TT032122	TRANS-1,2-DICHLOROETHENE	156-60-5	8260D	5030	1	U	UG/L	1	1	100	
CRCA-DPT0261-018.0-20220321	GW	03/21/2022	09:15	16	20	TT032122-W001	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/21/2022	1	TT032122	CIS-1,2-DICHLOROETHENE	156-59-2	8260D	5030	1	U	UG/L	1	1	100	
CRCA-DPT0261-018.0-20220321	GW	03/21/2022	09:15	16	20	TT032122-W001	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/21/2022	1	TT032122	TRICHLOROETHENE	79-01-6	8260D	5030	1	U	UG/L	1	1	100	
CRCA-DPT0261-018.0-20220321	GW	03/21/2022	09:15	16	20	TT032122-W001	ANALYTICAL LABORATORIES OF FLORIDA, INC.	SUR	03/21/2022	1	TT032122	d8-TOLUENE	2037-26-5	8260D	5030	96.3		%	1	1	100	
CRCA-DPT0261-018.0-20220321	GW	03/21/2022	09:15	16	20	TT032122-W001MS	ANALYTICAL LABORATORIES OF FLORIDA, INC.	SPK	03/21/2022	1	TT032122	VINYL CHLORIDE	75-01-4	8260D	5030	100.6		%	1	1	100	
CRCA-DPT0261-018.0-20220321	GW	03/21/2022	09:15	16	20	TT032122-W001MS	ANALYTICAL LABORATORIES OF FLORIDA, INC.	SPK	03/21/2022	1	TT032122	TRANS-1,2-DICHLOROETHENE	156-60-5	8260D	5030	101.7		%	1	1	100	
CRCA-DPT0261-018.0-20220321	GW	03/21/2022	09:15	16	20	TT032122-W001MS	ANALYTICAL LABORATORIES OF FLORIDA, INC.	SPK	03/21/2022	1	TT032122	CIS-1,2-DICHLOROETHENE	156-59-2	8260D	5030	98.7		%	1	1	100	
CRCA-DPT0261-018.0-20220321	GW	03/21/2022	09:15	16	20	TT032122-W001MS	ANALYTICAL LABORATORIES OF FLORIDA, INC.	SPK	03/21/2022	1	TT032122	TRICHLOROETHENE	79-01-6	8260D	5030	102.1		%	1	1	100	
CRCA-DPT0261-018.0-20220321	GW	03/21/2022	09:15	16	20	TT032122-W001MS	ANALYTICAL LABORATORIES OF FLORIDA, INC.	SUR	03/21/2022	1	TT032122	d8-TOLUENE	2037-26-5	8260D	5030	97.3		%	1	1	100	
CRCA-DPT0261-023.0-20220321	GW	03/21/2022	09:30	21	25	TT032122-W002	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/21/2022	1	TT032122	VINYL CHLORIDE	75-01-4	8260D	5030	1	U	UG/L	1	1	100	
CRCA-DPT0261-023.0-20220321	GW	03/21/2022	09:30	21	25	TT032122-W002	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/21/2022	1	TT032122	TRANS-1,2-DICHLOROETHENE	156-60-5	8260D	5030	1	U	UG/L	1	1	100	
CRCA-DPT0261-023.0-20220321	GW	03/21/2022	09:30	21	25	TT032122-W002	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/21/2022	1	TT032122	CIS-1,2-DICHLOROETHENE	156-59-2	8260D	5030	1	U	UG/L	1	1	100	
CRCA-DPT0261-023.0-20220321	GW	03/21/2022	09:30	21	25	TT032122-W002	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/21/2022	1	TT032122	TRICHLOROETHENE	79-01-6	8260D	5030	1	U	UG/L	1	1	100	
CRCA-DPT0261-023.0-20220321	GW	03/21/2022	09:30	21	25	TT032122-W002	ANALYTICAL LABORATORIES OF FLORIDA, INC.	SUR	03/21/2022	1	TT032122	d8-TOLUENE	2037-26-5	8260D	5030	92.5		%	1	1	100	
CRCA-DPT0261-028.0-20220321	GW	03/21/2022	09:45	26	30	TT032122-W003	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/21/2022	1	TT032122	VINYL CHLORIDE	75-01-4	8260D	5030	1	U	UG/L	1	1	100	
CRCA-DPT0261-028.0-20220321	GW	03/21/2022	09:45	26	30	TT032122-W003	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/21/2022	1	TT032122	TRANS-1,2-DICHLOROETHENE	156-60-5	8260D	5030	1	U	UG/L	1	1	100	
CRCA-DPT0261-028.0-20220321	GW	03/21/2022	09:45	26	30	TT032122-W003	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/21/2022	1	TT032122	CIS-1,2-DICHLOROETHENE	156-59-2	8260D	5030	1	U	UG/L	1	1	100	
CRCA-DPT0261-028.0-20220321	GW	03/21/2022	09:45	26	30	TT032122-W003	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/21/2022	1	TT032122	TRICHLOROETHENE	79-01-6	8260D	5030	1	U	UG/L	1	1	100	
CRCA-DPT0261-028.0-20220321	GW	03/21/2022	09:45	26	30	TT032122-W003	ANALYTICAL LABORATORIES OF FLORIDA, INC.	SUR	03/21/2022	1	TT032122	d8-TOLUENE	2037-26-5	8260D	5030	98.0		%	1	1	100	
CRCA-DPT0261-033.0-20220321	GW	03/21/2022	10:05	31	35	TT032122-W004	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/21/2022	1	TT032122	VINYL CHLORIDE	75-01-4	8260D	5030	1	U	UG/L	1	1	100	
CRCA-DPT0261-033.0-20220321	GW	03/21/2022	10:05	31	35	TT032122-W004	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/21/2022	1	TT032122	TRANS-1,2-DICHLOROETHENE	156-60-5	8260D	5030	1	U	UG/L	1	1	100	
CRCA-DPT0261-033.0-20220321	GW	03/21/2022	10:05	31	35	TT032122-W004	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/21/2022	1	TT032122	CIS-1,2-DICHLOROETHENE	156-59-2	8260D	5030	1	U	UG/L	1	1	100	
CRCA-DPT0261-033.0-20220321	GW	03/21/2022	10:05	31	35	TT032122-W004	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/21/2022	1	TT032122	TRICHLOROETHENE	79-01-6	8260D	5030	1	U	UG/L	1	1	100	
CRCA-DPT0261-033.0-20220321	GW	03/21/2022	10:05	31	35	TT032122-W004	ANALYTICAL LABORATORIES OF FLORIDA, INC.	SUR	03/21/2022	1	TT032122	d8-TOLUENE	2037-26-5	8260D	5030	97.5		%	1	1	100	
CRCA-DPT0261-038.0-20220321	GW	03/21/2022	10:25	36	40	TT032122-W005	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/21/2022	1	TT032122	VINYL CHLORIDE	75-01-4	8260D	5030	1	U	UG/L	1	1	100	
CRCA-DPT0261-038.0-20220321	GW	03/21/2022	10:25	36	40	TT032122-W005	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/21/2022	1	TT032122	TRANS-1,2-DICHLOROETHENE	156-60-5	8260D	5030	1	U	UG/L	1	1	100	
CRCA-DPT0261-038.0-20220321	GW	03/21/2022	10:25	36	40	TT032122-W005	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/21/2022	1	TT032122	CIS-1,2-DICHLOROETHENE	156-59-2	8260D	5030	1	U	UG/L	1	1	100	
CRCA-DPT0261-038.0-20220321	GW	03/21/2022	10:25	36	40	TT032122-W005	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/21/2022	1	TT032122	TRICHLOROETHENE	79-01-6	8260D	5030	1	U	UG/L	1	1	100	
CRCA-DPT0261-038.0-20220321	GW	03/21/2022	10:25	36	40	TT032122-W005	ANALYTICAL LABORATORIES OF FLORIDA, INC.	SUR	03/21/2022	1	TT032122	d8-TOLUENE	2037-26-5	8260D	5030	98.0		%	1	1	100	
CRCA-DPT0261-038.0-20220321	GW	03/21/2022	10:25	36	40	TT032122-W005DUP	ANALYTICAL LABORATORIES OF FLORIDA, INC.	DUP	03/21/2022	2	TT032122	VINYL CHLORIDE	75-01-4	8260D	5030	1	U	UG/L	1	1	100	
CRCA-DPT0261-038.0-20220321	GW	03/21/2022	10:25	36	40	TT032122-W005DUP	ANALYTICAL LABORATORIES OF FLORIDA, INC.	DUP	03/21/2022	2	TT032122	TRANS-1,2-DICHLOROETHENE	156-60-5	8260D	5030	1	U	UG/L	1	1	100	
CRCA-DPT0261-038.0-20220321	GW	03/21/2022	10:25	36	40	TT032122-W005DUP	ANALYTICAL LABORATORIES OF FLORIDA, INC.	DUP	03/21/2022	2	TT032122	CIS-1,2-DICHLOROETHENE	156-59-2	8260D	5030	1	U	UG/L	1	1	100	
CRCA-DPT0261-038.0-20220321	GW	03/21/2022	10:25	36	40	TT032122-W005DUP	ANALYTICAL LABORATORIES OF FLORIDA, INC.	DUP	03/21/2022	2	TT032122	TRICHLOROETHENE	79-01-6	8260D	5030	1	U	UG/L	1	1	100	
CRCA-DPT0261-038.0-20220321	GW	03/21/2022	10:25	36	40	TT032122-W005DUP	ANALYTICAL LABORATORIES OF FLORIDA, INC.	SUR	03/21/2022	2	TT032122	d8-TOLUENE	2037-26-5	8260D	5030	98.3		%	1	1	100	
CRCA-DPT0261-043.0-20220321	GW	03/21/2022	10:50	41	45	TT032122-W006	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/21/2022	1	TT032122	VINYL CHLORIDE	75-01-4	8260D	5030	1	U	UG/L	1	1	100	
CRCA-DPT0261-043.0-20220321	GW	03/21/2022	10:50	41	45	TT032122-W006	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/21/2022	1	TT032122	TRANS-1,2-DICHLOROETHENE	156-60-5	8260D	5030	1	U	UG/L	1	1	100	
CRCA-DPT0261-043.0-20220321	GW	03/21/2022	10:50	41	45	TT032122-W006	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/21/2022	1	TT032122	CIS-1,2-DICHLOROETHENE	156-59-2	8260D	5030	1	U	UG/L	1	1	100	
CRCA-DPT0261-043.0-20220321	GW	03/21/2022	10:50	41	45	TT032122-W006	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/21/2022	1	TT032122	TRICHLOROETHENE	79-01-6	8260D	5030	1	U	UG/L	1	1	100	
CRCA-DPT0261-043.0-20220321	GW	03/21/2022	10:50	41	45	TT032122-W006	ANALYTICAL LABORATORIES OF FLORIDA, INC.	SUR	03/21/2022	1	TT032122	d8-TOLUENE	2037-26-5	8260D	5030	97.6		%	1	1	100	
CRCA-DPT0262-018.0-20220321	GW	03/21/2022	11:40	16	20	TT032122-W007	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/21/2022	1	TT032122	VINYL CHLORIDE	75-01-4	8260D	5030	1	U	UG/L	1	1	100	
CRCA-DPT0262-018.0-20220321	GW	03/21/2022	11:40	16	20	TT032122-W007	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/21/2022	1	TT032122	TRANS-1,2-DICHLOROETHENE	156-60-5	8260D	5030	1	U	UG/L	1	1	100	
CRCA-DPT0262-018.0-20220321	GW	03/21/2022	11:40	16	20	TT032122-W007	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/21/2022	1	TT032122	CIS-1,2-DICHLOROETHENE	156-59-2	8260D	5030	1	U	UG/L	1	1	100	
CRCA-DPT0262-018.0-20220321	GW	03/21/2022	11:40	16	20	TT032122-W007	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/21/2022	1	TT032122	TRICHLOROETHENE	79-01-6	8260D	5030	1	U	UG/L	1	1	100	
CRCA-DPT0262-018.0-20220321	GW	03/21/2022	11:40	16	20	TT032122-W007	ANALYTICAL LABORATORIES OF FLORIDA, INC.	SUR	03/21/2022	1	TT032122	d8-TOLUENE	2037-26-5	8260D	5030	96.4		%	1	1	100	
CRCA-DPT0262-023.0-20220321	GW	03/21/2022	11:55	21	25	TT032122-W008	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/21/2022	1	TT032122	VINYL CHLORIDE	75-01-4	8260D	5030	1	U	UG/L	1	1	100	
CRCA-DPT0262-023.0-20220321	GW	03/21/2022	11:55	21	25	TT032122-W008	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/21/2022	1	TT032122	TRANS-1,2-DICHLOROETHENE	156-60-5	8260D	5030	1	U	UG/L	1	1	100	
CRCA-DPT0262-023.0-20220321	GW	03/21/2022	11:55	21	25	TT032122-W008	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/21/2022	1	TT032122	CIS-1,2-DICHLOROETHENE	156-59-2	8260D	5030	1	U	UG/L	1	1	100	
CRCA-DPT0262-023.0-20220321	GW	03/21/2022	11:55	21	25	TT032122-W008	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/21/2022	1	TT032122	TRICHLOROETHENE	79-01-6	8260D	5030	1	U	UG/L	1	1	100	
CRCA-DPT0262-023.0-20220321	GW	03/21/2022	11:55	21	25	TT032122-W008	ANALYTICAL LABORATORIES OF FLORIDA, INC.	SUR	03/21/2022	1	TT032122	d8-TOLUENE	2037-26-5	8260D	5030	98.0		%	1	1	100	
CRCA-DPT0262-028.0-20220321	GW	03/21/2022	12:45	26	30	TT032122-W009	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/21/2022	1	TT032122	VINYL CHLORIDE	75-01-4	8260D	5030	1	U	UG/L	1	1	100	
CRCA-DPT0262-028.0-20220321	GW	03/21/2022	12:45	26	30	TT032122-W009	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/21/2022	1	TT032122	TRANS-1,2-DICHLOROETHENE	156-60-5	8260D	5030	1	U	UG/L	1	1	100	
CRCA-DPT0262-028.0-20220321	GW	03/21/2022	12:45	26	30	TT032122-W009	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/21/2022	1	TT032122	CIS-1,2-DICHLOROETHENE	156-59-2	8260D	5030	1	U	UG/L	1	1	100	
CRCA-DPT0262-028.0-20220321	GW	03/21/2022	12:45	26	30	TT032122-W009	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/21/2022	1	TT032122	TRICHLOROETHENE	79-01-6	8260D	5030	1	U	UG/L	1	1	100	
CRCA-DPT0262-028.0-20220321	GW	03/21/2022	12:45	26	30	TT032122-W009	ANALYTICAL LABORATORIES OF FLORIDA, INC.	SUR	03/21/2022	1	TT032122	d8-TOLUENE	2037-26-5	8260D	5030	96.1		%	1	1	100	
CRCA-DPT0262-033.0-20220321	GW	03/21/2022	13:05	31	35	TT032122-W010	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/21/2022	1	TT032122	VINYL CHLORIDE	75-01-4	8260D	5030	1	U	UG/L	1	1	100	
CRCA-DPT0262-033.0-20220321	GW	03/21/2022	13:05	31	35	TT032122-W010	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/21/2022	1	TT032122	TRANS-1,2-DICHLOROETHENE	156-60-5	8260D	5030	1	U	UG/L	1	1	100	
CRCA-DPT0262-033.0-20220321	GW	03/21/2022	13:05	31	35	TT032122-W010	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/21/2022	1	TT032122	CIS-1,2-DICHLOROETHENE	156-59-2	8260D	5030	1	U	UG/L	1	1	100	
CRCA-DPT0262-033.0-20220321	GW	03/21/2022	13:05	31	35	TT032122-W010	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/21/2022	1	TT032122	TRICHLOROETHENE	79-01-6	8260D	5030	1	U	UG/L	1	1	100	
CRCA-DPT0262-033.0-20220321	GW	03/21/2022	13:05	31	35	TT032122-W010	ANALYTICAL LABORATORIES OF FLORIDA, INC.	SUR	03/21/2022	1	TT032122	d8-TOLUENE	2037-26-5	8260D	5030	98.0		%	1	1	100	
CRCA-DPT0262-038.0-20220321	GW	03/21/2022	13:25	36	40	TT032122-W011	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/21/2022	1	TT032122	VINYL CHLORIDE	75-01-4	8260D	5030	1	U	UG/L	1	1	100	
CRCA-DPT0262-038.0-20220321	GW	03/21/2022	13:25	36	40	TT032122-W011	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/21/2022	1	TT032122	TRANS-1,2-DICHLOROETHENE	156-60-5	8260D	5030	1	U	UG/L	1	1	100	
CRCA-DPT0262-038.0-20220321	GW	03/21/2022	13:25	36	40	TT032122-W011	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/21/2022	1	TT032122	CIS-1,2-DICHLOROETHENE	156-59-2	8260D	5030	1	U	UG/L	1	1	100	
CRCA-DPT0262-038.0-20220321	GW	03/21/2022	13:25	36	40	TT032122-W011	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/21/2022	1	TT032122	TRICHLOROETHENE	79-01-6	8260D	5030	1	U	UG/L	1	1	100	
CRCA-DPT0262-038.0-20220321	GW	03/21/2022	13:25	36	40	TT032122-W011	ANALYTICAL LABORATORIES OF FLORIDA, INC.	SUR	03/21/2022	1	TT032122	d8-TOLUENE	2037-26-5	8260D	5030	98.6		%	1	1	100	
CRCA-DPT0262-043.0-20220321	GW	03/21/2022	13:45	41	45	TT032122-W012	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/21/2022	1	TT032122	VINYL CHLORIDE	75-01-4	8260D	5030	1	U	UG/L	1	1	100	
CRCA-DPT0262-043.0-20220321	GW	03/21/2022	13:45	41	45	TT032122-W012	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/21/2022	1	TT032122	TRANS-1,2-DICHLOROETHENE	156-60-5	8260D	5030	1	U	UG/L	1	1	100	
CRCA-DPT0262-043.0-20220321	GW	03/21/2022	13:45	41	45	TT032122-W012	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/21/2022	1	TT032122	CIS-1,2-DICHLOROETHENE	156-59-2	8260D	5030	1	U	UG/L	1	1	100	
CRCA-DPT0262-043.0-20220321	GW	03/21/2022	13:45	41	45	TT032122-W012	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/21/2022	1	TT032122	TRICHLOROETHENE	79-01-6	8260D	5030	1	U	UG/L	1	1	100	
CRCA-DPT0262-043.0-20220321	GW	03/21/2022	13:45	41	45	TT032122-W012	ANALYTICAL LABORATORIES OF FLORIDA, INC.	SUR	03/21/2022	1	TT032122	d8-TOLUENE	2037-26-5	8260D	5030	97.9		%	1	1	100	
CRCA-DPT0263-018.0-20220321	GW	03/21/2022	14:30	16	20	TT032122-W013	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/21/2022	1	TT032122	VINYL CHLORIDE	75-01-4	8260D	5030	2		UG/L	1	1	100	
CRCA-DPT0263-018.0-20220321	GW	03/21/2022	14:30	16	20	TT032122-W013	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/21/2022	1	TT032122	TRANS-1,2-DICHLOROETHENE	156-60-5	8260D	5030	1	U	UG/L	1	1	100	
CRCA-DPT0263-018.0-20220321	GW	03/21/2022	14:30	16	20	TT032122-W013	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/21/2022	1	TT032122	CIS-1,2-DICHLOROETHENE	156-59-2	8260D	5030	1	U	UG/L	1	1	100	
CRCA-DPT0263-018.0-20220321	GW	03/21/2022	14:30	16	20	TT032122-W013	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/21/2022	1	TT032122	TRICHLOROETHENE	79-01-6	8260D	5030	1	U	UG/L	1	1	100	
CRCA-DPT0263-018.0-20220321	GW	03/21/2022	14:30	16	20	TT032122-W013	ANALYTICAL LABORATORIES OF FLORIDA, INC.	SUR	03/21/2022	1	TT032122	d8-TOLUENE	2037-26-5	8260D	5030	96.8		%	1	1	100	
CRCA-DPT0263-023.0-20220321	GW	03/21/2022	14:45	21	25	TT032122-W014	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/21/2022	1	TT032122	VINYL CHLORIDE	75-01-4	8260D	5030	1	U	UG/L	1	1	100	
CRCA-DPT0263-023.0-20220321	GW	03/21/2022	14:45	21	25	TT032122-W014	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/21/2022	1	TT032122	TRANS-1,2-DICHLOROETHENE	156-60-5	8260D	5030	1	U	UG/L	1	1	100	
CRCA-DPT0263-023.0-20220321	GW	03/21/2022	14:45	21	25	TT032122-W014	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/21/2022	1	TT032122	CIS-1,2-DICHLOROETHENE	156-59-2	8260D	5030	1	U	UG/L	1	1	100	
CRCA-DPT0263-023.0-20220321	GW	03/21/2022	14:45	21	25	TT032122-W014	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/21/2022	1	TT032122	TRICHLOROETHENE	79-01-6	8260D	5030	1	U	UG/L	1	1	100	
CRCA-DPT0263-023.0-20220321	GW	03/21/2022	14:45	21	25	TT032122-W014	ANALYTICAL LABORATORIES OF FLORIDA, INC.	SUR	03/21/2022	1	TT032122	d8-TOLUENE	2037-26-5	8260D	5030	95.4		%	1	1	100	
CRCA-DPT0263-028.0-20220321	GW	03/21/2022	15:00	26	30	TT032122-W015	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/21/2022	1	TT032122	VINYL CHLORIDE	75-01-4	8260D	5030	1	U	UG/L	1	1	100	
CRCA-DPT0263-028.0-20220321	GW	03/21/2022	15:00	26	30	TT032122-W015	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/21/2022	1	TT032122	TRANS-1,2-DICHLOROETHENE	156-60-5	8260D	5030	1	U	UG/L	1	1	100	
CRCA-DPT0263-028.0-20220321	GW	03/21/2022	15:00	26	30	TT032122-W015	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/21/2022	1	TT032122	CIS-1,2-DICHLOROETHENE	156-59-2	8260D	5030	1	U	UG/L	1	1	100	
CRCA-DPT0263-028.0-20220321	GW	03/21/2022	15:00	26	30	TT032122-W015	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/21/2022	1	TT032122	TRICHLOROETHENE	79-01-6	8260D	5030	1	U	UG/L	1	1	100	
CRCA-DPT0263-028.0-20220321	GW	03/21/2022	15:00	26	30	TT032122-W015	ANALYTICAL LABORATORIES OF FLORIDA, INC.	SUR	03/21/2022	1	TT032122	d8-TOLUENE	2037-26-5	8260D	5030	96.1		%	1	1	100	
CRCA-DPT0263-033.0-20220321	GW	03/21/2022	15:20	31	35	TT032122-W016	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/21/2022	1	TT032122	VINYL CHLORIDE	75-01-4	8260D	5030	1	U	UG/L	1	1	100	
CRCA-DPT0263-033.0-20220321	GW	03/21/2022	15:20	31	35	TT032122-W016	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/21/2022	1	TT032122	TRANS-1,2-DICHLOROETHENE	156-60-5	8260D	5030	1

CRCA-DPT0263-033.0-20220321	GW	03/21/2022	15:20	31	35	TT032122-W016	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/21/2022	1	TT032122	CIS-1,2-DICHLOROETHENE	156-59-2	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0263-033.0-20220321	GW	03/21/2022	15:20	31	35	TT032122-W016	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/21/2022	1	TT032122	TRICHLOROETHENE	79-01-6	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0263-033.0-20220321	GW	03/21/2022	15:20	31	35	TT032122-W016	ANALYTICAL LABORATORIES OF FLORIDA, INC.	SUR	03/21/2022	1	TT032122	d8-TOLUENE	2037-26-5	8260D	5030	96.7		%	1	1	100
CRCA-DPT0263-038.0-20220321	GW	03/21/2022	15:40	36	40	TT032122-W017	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/21/2022	1	TT032122	VINYL CHLORIDE	75-01-4	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0263-038.0-20220321	GW	03/21/2022	15:40	36	40	TT032122-W017	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/21/2022	1	TT032122	TRANS-1,2-DICHLOROETHENE	156-60-5	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0263-038.0-20220321	GW	03/21/2022	15:40	36	40	TT032122-W017	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/21/2022	1	TT032122	CIS-1,2-DICHLOROETHENE	156-59-2	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0263-038.0-20220321	GW	03/21/2022	15:40	36	40	TT032122-W017	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/21/2022	1	TT032122	TRICHLOROETHENE	79-01-6	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0263-038.0-20220321	GW	03/21/2022	15:40	36	40	TT032122-W017	ANALYTICAL LABORATORIES OF FLORIDA, INC.	SUR	03/21/2022	1	TT032122	d8-TOLUENE	2037-26-5	8260D	5030	97.2		%	1	1	100
CRCA-DPT0263-043.0-20220321	GW	03/21/2022	16:00	41	45	TT032122-W018	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/21/2022	1	TT032122	VINYL CHLORIDE	75-01-4	8260D	5030	1		UG/L	1	1	100
CRCA-DPT0263-043.0-20220321	GW	03/21/2022	16:00	41	45	TT032122-W018	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/21/2022	1	TT032122	TRANS-1,2-DICHLOROETHENE	156-60-5	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0263-043.0-20220321	GW	03/21/2022	16:00	41	45	TT032122-W018	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/21/2022	1	TT032122	CIS-1,2-DICHLOROETHENE	156-59-2	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0263-043.0-20220321	GW	03/21/2022	16:00	41	45	TT032122-W018	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/21/2022	1	TT032122	TRICHLOROETHENE	79-01-6	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0263-043.0-20220321	GW	03/21/2022	16:00	41	45	TT032122-W018	ANALYTICAL LABORATORIES OF FLORIDA, INC.	SUR	03/21/2022	1	TT032122	d8-TOLUENE	2037-26-5	8260D	5030	96.9		%	1	1	100
CRCA-DPT0263-048.0-20220321	GW	03/21/2022	16:20	46	50	TT032122-W019	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/21/2022	1	TT032122	VINYL CHLORIDE	75-01-4	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0263-048.0-20220321	GW	03/21/2022	16:20	46	50	TT032122-W019	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/21/2022	1	TT032122	TRANS-1,2-DICHLOROETHENE	156-60-5	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0263-048.0-20220321	GW	03/21/2022	16:20	46	50	TT032122-W019	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/21/2022	1	TT032122	CIS-1,2-DICHLOROETHENE	156-59-2	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0263-048.0-20220321	GW	03/21/2022	16:20	46	50	TT032122-W019	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/21/2022	1	TT032122	TRICHLOROETHENE	79-01-6	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0263-048.0-20220321	GW	03/21/2022	16:20	46	50	TT032122-W019	ANALYTICAL LABORATORIES OF FLORIDA, INC.	SUR	03/21/2022	1	TT032122	d8-TOLUENE	2037-26-5	8260D	5030	94.3		%	1	1	100
032222BLK1	GW	01/01/1900	00:00	-9999	-9999	032222BLK1	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/22/2022	1	TT032122	VINYL CHLORIDE	75-01-4	8260D	5030	1	U	UG/L	1	1	100
032222BLK1	GW	01/01/1900	00:00	-9999	-9999	032222BLK1	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/22/2022	1	TT032122	TRANS-1,2-DICHLOROETHENE	156-60-5	8260D	5030	1	U	UG/L	1	1	100
032222BLK1	GW	01/01/1900	00:00	-9999	-9999	032222BLK1	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/22/2022	1	TT032122	CIS-1,2-DICHLOROETHENE	156-59-2	8260D	5030	1	U	UG/L	1	1	100
032222BLK1	GW	01/01/1900	00:00	-9999	-9999	032222BLK1	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/22/2022	1	TT032122	TRICHLOROETHENE	79-01-6	8260D	5030	1	U	UG/L	1	1	100
032222BLK1	GW	01/01/1900	00:00	-9999	-9999	032222BLK1	ANALYTICAL LABORATORIES OF FLORIDA, INC.	SUR	03/22/2022	1	TT032122	d8-TOLUENE	2037-26-5	8260D	5030	109.1		%	1	1	100
032222CCV1	GW	01/01/1900	00:00	-9999	-9999	032222CCV1	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/22/2022	1	TT032122	VINYL CHLORIDE	75-01-4	8260D	5030	77.3		%	1	1	100
032222CCV1	GW	01/01/1900	00:00	-9999	-9999	032222CCV1	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/22/2022	1	TT032122	TRANS-1,2-DICHLOROETHENE	156-60-5	8260D	5030	90.1		%	1	1	100
032222CCV1	GW	01/01/1900	00:00	-9999	-9999	032222CCV1	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/22/2022	1	TT032122	CIS-1,2-DICHLOROETHENE	156-59-2	8260D	5030	93.7		%	1	1	100
032222CCV1	GW	01/01/1900	00:00	-9999	-9999	032222CCV1	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/22/2022	1	TT032122	TRICHLOROETHENE	79-01-6	8260D	5030	99.7		%	1	1	100
032222CCV1	GW	01/01/1900	00:00	-9999	-9999	032222CCV1	ANALYTICAL LABORATORIES OF FLORIDA, INC.	SUR	03/22/2022	1	TT032122	d8-TOLUENE	2037-26-5	8260D	5030	99.3		%	1	1	100
CRCA-DPT0264-038.0-20220322	GW	03/22/2022	08:25	36	40	TT032122-W020	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/22/2022	1	TT032122	VINYL CHLORIDE	75-01-4	8260D	5030	3		UG/L	1	1	100
CRCA-DPT0264-038.0-20220322	GW	03/22/2022	08:25	36	40	TT032122-W020	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/22/2022	1	TT032122	TRANS-1,2-DICHLOROETHENE	156-60-5	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0264-038.0-20220322	GW	03/22/2022	08:25	36	40	TT032122-W020	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/22/2022	1	TT032122	CIS-1,2-DICHLOROETHENE	156-59-2	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0264-038.0-20220322	GW	03/22/2022	08:25	36	40	TT032122-W020	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/22/2022	1	TT032122	TRICHLOROETHENE	79-01-6	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0264-038.0-20220322	GW	03/22/2022	08:25	36	40	TT032122-W020	ANALYTICAL LABORATORIES OF FLORIDA, INC.	SUR	03/22/2022	1	TT032122	d8-TOLUENE	2037-26-5	8260D	5030	97.5		%	1	1	100
CRCA-DPT0264-043.0-20220322	GW	03/22/2022	08:55	41	45	TT032122-W021	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/22/2022	1	TT032122	VINYL CHLORIDE	75-01-4	8260D	5030	4		UG/L	1	1	100
CRCA-DPT0264-043.0-20220322	GW	03/22/2022	08:55	41	45	TT032122-W021	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/22/2022	1	TT032122	TRANS-1,2-DICHLOROETHENE	156-60-5	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0264-043.0-20220322	GW	03/22/2022	08:55	41	45	TT032122-W021	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/22/2022	1	TT032122	CIS-1,2-DICHLOROETHENE	156-59-2	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0264-043.0-20220322	GW	03/22/2022	08:55	41	45	TT032122-W021	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/22/2022	1	TT032122	TRICHLOROETHENE	79-01-6	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0264-043.0-20220322	GW	03/22/2022	08:55	41	45	TT032122-W021	ANALYTICAL LABORATORIES OF FLORIDA, INC.	SUR	03/22/2022	1	TT032122	d8-TOLUENE	2037-26-5	8260D	5030	96.3		%	1	1	100
CRCA-DPT0264-043.0-20220322	GW	03/22/2022	08:55	41	45	TT032122-W021DUP	ANALYTICAL LABORATORIES OF FLORIDA, INC.	DUP	03/22/2022	2	TT032122	VINYL CHLORIDE	75-01-4	8260D	5030	5		UG/L	1	1	100
CRCA-DPT0264-043.0-20220322	GW	03/22/2022	08:55	41	45	TT032122-W021DUP	ANALYTICAL LABORATORIES OF FLORIDA, INC.	DUP	03/22/2022	2	TT032122	TRANS-1,2-DICHLOROETHENE	156-60-5	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0264-043.0-20220322	GW	03/22/2022	08:55	41	45	TT032122-W021DUP	ANALYTICAL LABORATORIES OF FLORIDA, INC.	DUP	03/22/2022	2	TT032122	CIS-1,2-DICHLOROETHENE	156-59-2	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0264-043.0-20220322	GW	03/22/2022	08:55	41	45	TT032122-W021DUP	ANALYTICAL LABORATORIES OF FLORIDA, INC.	DUP	03/22/2022	2	TT032122	TRICHLOROETHENE	79-01-6	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0264-043.0-20220322	GW	03/22/2022	08:55	41	45	TT032122-W021DUP	ANALYTICAL LABORATORIES OF FLORIDA, INC.	SUR	03/22/2022	2	TT032122	d8-TOLUENE	2037-26-5	8260D	5030	96.9		%	1	1	100
CRCA-DPT0264-048.0-20220322	GW	03/22/2022	09:25	46	50	TT032122-W022	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/22/2022	1	TT032122	VINYL CHLORIDE	75-01-4	8260D	5030	1		UG/L	1	1	100
CRCA-DPT0264-048.0-20220322	GW	03/22/2022	09:25	46	50	TT032122-W022	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/22/2022	1	TT032122	TRANS-1,2-DICHLOROETHENE	156-60-5	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0264-048.0-20220322	GW	03/22/2022	09:25	46	50	TT032122-W022	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/22/2022	1	TT032122	CIS-1,2-DICHLOROETHENE	156-59-2	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0264-048.0-20220322	GW	03/22/2022	09:25	46	50	TT032122-W022	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/22/2022	1	TT032122	TRICHLOROETHENE	79-01-6	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0264-048.0-20220322	GW	03/22/2022	09:25	46	50	TT032122-W022	ANALYTICAL LABORATORIES OF FLORIDA, INC.	SUR	03/22/2022	1	TT032122	d8-TOLUENE	2037-26-5	8260D	5030	96.5		%	1	1	100
CRCA-DPT0264-052.0-20220322	GW	03/22/2022	09:50	50	54	TT032122-W023	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/22/2022	1	TT032122	VINYL CHLORIDE	75-01-4	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0264-052.0-20220322	GW	03/22/2022	09:50	50	54	TT032122-W023	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/22/2022	1	TT032122	TRANS-1,2-DICHLOROETHENE	156-60-5	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0264-052.0-20220322	GW	03/22/2022	09:50	50	54	TT032122-W023	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/22/2022	1	TT032122	CIS-1,2-DICHLOROETHENE	156-59-2	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0264-052.0-20220322	GW	03/22/2022	09:50	50	54	TT032122-W023	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/22/2022	1	TT032122	TRICHLOROETHENE	79-01-6	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0264-052.0-20220322	GW	03/22/2022	09:50	50	54	TT032122-W023	ANALYTICAL LABORATORIES OF FLORIDA, INC.	SUR	03/22/2022	1	TT032122	d8-TOLUENE	2037-26-5	8260D	5030	96.2		%	1	1	100
CRCA-DPT0264-057.0-20220322	GW	03/22/2022	10:15	55	59	TT032122-W024	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/22/2022	1	TT032122	VINYL CHLORIDE	75-01-4	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0264-057.0-20220322	GW	03/22/2022	10:15	55	59	TT032122-W024	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/22/2022	1	TT032122	TRANS-1,2-DICHLOROETHENE	156-60-5	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0264-057.0-20220322	GW	03/22/2022	10:15	55	59	TT032122-W024	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/22/2022	1	TT032122	CIS-1,2-DICHLOROETHENE	156-59-2	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0264-057.0-20220322	GW	03/22/2022	10:15	55	59	TT032122-W024	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/22/2022	1	TT032122	TRICHLOROETHENE	79-01-6	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0264-057.0-20220322	GW	03/22/2022	10:15	55	59	TT032122-W024	ANALYTICAL LABORATORIES OF FLORIDA, INC.	SUR	03/22/2022	1	TT032122	d8-TOLUENE	2037-26-5	8260D	5030	98.8		%	1	1	100
CRCA-DPT0264-062.0-20220322	GW	03/22/2022	10:35	60	64	TT032122-W025	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/22/2022	1	TT032122	VINYL CHLORIDE	75-01-4	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0264-062.0-20220322	GW	03/22/2022	10:35	60	64	TT032122-W025	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/22/2022	1	TT032122	TRANS-1,2-DICHLOROETHENE	156-60-5	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0264-062.0-20220322	GW	03/22/2022	10:35	60	64	TT032122-W025	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/22/2022	1	TT032122	CIS-1,2-DICHLOROETHENE	156-59-2	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0264-062.0-20220322	GW	03/22/2022	10:35	60	64	TT032122-W025	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/22/2022	1	TT032122	TRICHLOROETHENE	79-01-6	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0264-062.0-20220322	GW	03/22/2022	10:35	60	64	TT032122-W025	ANALYTICAL LABORATORIES OF FLORIDA, INC.	SUR	03/22/2022	1	TT032122	d8-TOLUENE	2037-26-5	8260D	5030	98.3		%	1	1	100
CRCA-DPT0264-062.0-20220322	GW	03/22/2022	10:35	60	64	TT032122-W025MS	ANALYTICAL LABORATORIES OF FLORIDA, INC.	SPK	03/22/2022	1	TT032122	VINYL CHLORIDE	75-01-4	8260D	5030	89.5		%	1	1	100
CRCA-DPT0264-062.0-20220322	GW	03/22/2022	10:35	60	64	TT032122-W025MS	ANALYTICAL LABORATORIES OF FLORIDA, INC.	SPK	03/22/2022	1	TT032122	TRANS-1,2-DICHLOROETHENE	156-60-5	8260D	5030	100.1		%	1	1	100
CRCA-DPT0264-062.0-20220322	GW	03/22/2022	10:35	60	64	TT032122-W025MS	ANALYTICAL LABORATORIES OF FLORIDA, INC.	SPK	03/22/2022	1	TT032122	CIS-1,2-DICHLOROETHENE	156-59-2	8260D	5030	109.2		%	1	1	100
CRCA-DPT0264-062.0-20220322	GW	03/22/2022	10:35	60	64	TT032122-W025MS	ANALYTICAL LABORATORIES OF FLORIDA, INC.	SPK	03/22/2022	1	TT032122	TRICHLOROETHENE	79-01-6	8260D	5030	101.0		%	1	1	100
CRCA-DPT0264-062.0-20220322	GW	03/22/2022	10:35	60	64	TT032122-W025MS	ANALYTICAL LABORATORIES OF FLORIDA, INC.	SUR	03/22/2022	1	TT032122	d8-TOLUENE	2037-26-5	8260D	5030	107.4		%	1	1	100
CRCA-DPT0265-038.0-20220322	GW	03/22/2022	13:45	36	40	TT032122-W026	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/22/2022	1	TT032122	VINYL CHLORIDE	75-01-4	8260D	5030	2		UG/L	1	1	100
CRCA-DPT0265-038.0-20220322	GW	03/22/2022	13:45	36	40	TT032122-W026	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/22/2022	1	TT032122	TRANS-1,2-DICHLOROETHENE	156-60-5	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0265-038.0-20220322	GW	03/22/2022	13:45	36	40	TT032122-W026	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/22/2022	1	TT032122	CIS-1,2-DICHLOROETHENE	156-59-2	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0265-038.0-20220322	GW	03/22/2022	13:45	36	40	TT032122-W026	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/22/2022	1	TT032122	TRICHLOROETHENE	79-01-6	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0265-038.0-20220322	GW	03/22/2022	13:45	36	40	TT032122-W026	ANALYTICAL LABORATORIES OF FLORIDA, INC.	SUR	03/22/2022	1	TT032122	d8-TOLUENE	2037-26-5	8260D	5030	108.7		%	1	1	100
CRCA-DPT0265-043.0-20220322	GW	03/22/2022	14:10	41	45	TT032122-W027	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/22/2022	1	TT032122	VINYL CHLORIDE	75-01-4	8260D	5030	2		UG/L	1	1	100
CRCA-DPT0265-043.0-20220322	GW	03/22/2022	14:10	41	45	TT032122-W027	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/22/2022	1	TT032122	TRANS-1,2-DICHLOROETHENE	156-60-5	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0265-043.0-20220322	GW	03/22/2022	14:10	41	45	TT032122-W027	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/22/2022	1	TT032122	CIS-1,2-DICHLOROETHENE	156-59-2	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0265-043.0-20220322	GW	03/22/2022	14:10	41	45	TT032122-W027	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/22/2022	1	TT032122	TRICHLOROETHENE	79-01-6	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0265-043.0-20220322	GW	03/22/2022	14:10	41	45	TT032122-W027	ANALYTICAL LABORATORIES OF FLORIDA, INC.	SUR	03/22/2022	1	TT032122	d8-TOLUENE	2037-26-5	8260D	5030	106.8		%	1	1	100
CRCA-DPT0265-048.0-20220322	GW	03/22/2022	14:30	46	50	TT032122-W028	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/22/2022	1	TT032122	VINYL CHLORIDE	75-01-4	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0265-048.0-20220322	GW	03/22/2022	14:30	46	50	TT032122-W028	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/22/2022	1	TT032122	TRANS-1,2-DICHLOROETHENE	156-60-5	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0265-048.0-20220322	GW	03/22/2022	14:30	46	50	TT032122-W028	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/22/2022	1	TT032122	CIS-1,2-DICHLOROETHENE	156-59-2	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0265-048.0-20220322	GW	03/22/2022	14:30	46	50	TT032122-W028	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/22/2022	1	TT032122	TRICHLOROETHENE	79-01-6	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0265-048.0-20220322	GW	03/22/2022	14:30	46	50	TT032122-W028	ANALYTICAL LABORATORIES OF FLORIDA, INC.	SUR	03/22/2022	1	TT032122	d8-TOLUENE	2037-26-5	8260D	5030	108.8		%	1	1	100
CRCA-DPT0265-052.0-20220322	GW	03/22/2022	14:55	50	54	TT032122-W029	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/22/2022	1	TT032122	VINYL CHLORIDE	75-01-4	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0265-052.0-20220322	GW	03/22/2022	14:55	50	54	TT032122-W029	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/22/2022	1	TT032122	TRANS-1,2-DICHLOROETHENE	156-60-5	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0265-052.0-20220322	GW	03/22/2022	14:55	50	54	TT032122-W029	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/22/2022	1	TT032122	CIS-1,2-DICHLOROETHENE	156-59-2	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0265-052.0-20220322	GW	03/22/2022	14:55	50	54	TT032122-W029	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/22/2022	1	TT032122	TRICHLOROETHENE	79-01-6	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0265-052.0-20220322	GW	03/22/2022	14:55	50	54	TT032122-W029	ANALYTICAL LABORATORIES OF FLORIDA, INC.	SUR	03/22/2022	1	TT032122	d8-TOLUENE	2037-26-5	8260D	5030	109.4		%	1	1	100
CRCA-DPT0265-057.0-20220322	GW	03/22/2022	15:30	55	59	TT032122-W030	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/22/2022	1	TT032122	VINYL CHLORIDE	75-01-4	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0265-057.0-20220322	GW	03/22/2022	15:30	55	59	TT032122-W030	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/22/2022	1	TT032122	TRANS-1,2-DICHLOROETHENE	156-60-5	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0265-057.0-20220322	GW	03/22/2022	15:30	55	59	TT032122-W030	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/22/2022	1	TT032122	CIS-1,2-DICHLOROETHENE	156-59-2	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0265-057.0-20220322	GW	03/22/2022	15:30	55	59	TT032122-W030	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/22/2022	1	TT032122	TRICHLOROETHENE	79-01-6	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0265-057.0-20220322	GW	03/22/2022	15:30	55	59	TT032122-W030	ANALYTICAL LABORATORIES OF FLORIDA, INC.	SUR	03/22/2022	1	TT032122	d8-TOLUENE	2037-26-5	8260D	5030	110.0		%	1	1	100
CRCA-DPT0265-062.0-20220322	GW	03/22/2022	15:55	60	64	TT032122-W031	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/22/2022	1	TT032122	VINYL CHLORIDE	75-01-4	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0265-062.0-20220322	GW	03/22/2022	15:55	60	64	TT032122-W031	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/22/2022	1	TT032122	TRANS-1,2-DICHLOROETHENE	156-60-5	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0265-062.0-20220322	GW	03/22/2022	15:55	60	64	TT032122-W031	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/22/2022	1	TT032122	CIS-1,2-DICHLOROETHENE	156-59-2	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0265-062.0-20220322	GW	03/22/2022	15:55	60	64	TT032122-W031	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/22/2022	1	TT032122	TRICHLOROETHENE	79-01-6	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0265-062.0-20220322	GW	03/22/2022	15:55	60	64	TT032122-W031	ANALYTICAL LABORATORIES OF FLORIDA, INC.	SUR	03/22/2022	1	TT032122	d8-TOLUENE	2037-26-5	8260D	5030	107.7		%	1	1	100

032322BLK1	GW	01/01/1900	00:00	-9999	-9999	032322BLK1	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/23/2022	1	TT032122	VINYL CHLORIDE	75-01-4	8260D	5030	1	U	UG/L	1	1	100
032322BLK1	GW	01/01/1900	00:00	-9999	-9999	032322BLK1	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/23/2022	1	TT032122	TRANS-1,2-DICHLOROETHENE	156-60-5	8260D	5030	1	U	UG/L	1	1	100
032322BLK1	GW	01/01/1900	00:00	-9999	-9999	032322BLK1	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/23/2022	1	TT032122	CIS-1,2-DICHLOROETHENE	156-59-2	8260D	5030	1	U	UG/L	1	1	100
032322BLK1	GW	01/01/1900	00:00	-9999	-9999	032322BLK1	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/23/2022	1	TT032122	TRICHLOROETHENE	79-01-6	8260D	5030	1	U	UG/L	1	1	100
032322BLK1	GW	01/01/1900	00:00	-9999	-9999	032322BLK1	ANALYTICAL LABORATORIES OF FLORIDA, INC.	SUR	03/23/2022	1	TT032122	d8-TOLUENE	2037-26-5	8260D	5030	98.6		%	1	1	100
032322CCV1	GW	01/01/1900	00:00	-9999	-9999	032322CCV1	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/23/2022	1	TT032122	VINYL CHLORIDE	75-01-4	8260D	5030	86.3		%	1	1	100
032322CCV1	GW	01/01/1900	00:00	-9999	-9999	032322CCV1	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/23/2022	1	TT032122	TRANS-1,2-DICHLOROETHENE	156-60-5	8260D	5030	93.6		%	1	1	100
032322CCV1	GW	01/01/1900	00:00	-9999	-9999	032322CCV1	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/23/2022	1	TT032122	CIS-1,2-DICHLOROETHENE	156-59-2	8260D	5030	102.7		%	1	1	100
032322CCV1	GW	01/01/1900	00:00	-9999	-9999	032322CCV1	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/23/2022	1	TT032122	TRICHLOROETHENE	79-01-6	8260D	5030	95.2		%	1	1	100
032322CCV1	GW	01/01/1900	00:00	-9999	-9999	032322CCV1	ANALYTICAL LABORATORIES OF FLORIDA, INC.	SUR	03/23/2022	1	TT032122	d8-TOLUENE	2037-26-5	8260D	5030	110.9		%	1	1	100
CRCA-DPT0266-038.0-20220323	GW	03/23/2022	07:55	36	40	TT032122-W032	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/23/2022	1	TT032122	VINYL CHLORIDE	75-01-4	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0266-038.0-20220323	GW	03/23/2022	07:55	36	40	TT032122-W032	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/23/2022	1	TT032122	TRANS-1,2-DICHLOROETHENE	156-60-5	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0266-038.0-20220323	GW	03/23/2022	07:55	36	40	TT032122-W032	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/23/2022	1	TT032122	CIS-1,2-DICHLOROETHENE	156-59-2	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0266-038.0-20220323	GW	03/23/2022	07:55	36	40	TT032122-W032	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/23/2022	1	TT032122	TRICHLOROETHENE	79-01-6	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0266-038.0-20220323	GW	03/23/2022	07:55	36	40	TT032122-W032	ANALYTICAL LABORATORIES OF FLORIDA, INC.	SUR	03/23/2022	1	TT032122	d8-TOLUENE	2037-26-5	8260D	5030	109.9		%	1	1	100
CRCA-DPT0266-038.0-20220323	GW	03/23/2022	07:55	36	40	TT032122-W032MS	ANALYTICAL LABORATORIES OF FLORIDA, INC.	SPK	03/23/2022	1	TT032122	VINYL CHLORIDE	75-01-4	8260D	5030	80.9		%	1	1	100
CRCA-DPT0266-038.0-20220323	GW	03/23/2022	07:55	36	40	TT032122-W032MS	ANALYTICAL LABORATORIES OF FLORIDA, INC.	SPK	03/23/2022	1	TT032122	TRANS-1,2-DICHLOROETHENE	156-60-5	8260D	5030	83.7		%	1	1	100
CRCA-DPT0266-038.0-20220323	GW	03/23/2022	07:55	36	40	TT032122-W032MS	ANALYTICAL LABORATORIES OF FLORIDA, INC.	SPK	03/23/2022	1	TT032122	CIS-1,2-DICHLOROETHENE	156-59-2	8260D	5030	86.8		%	1	1	100
CRCA-DPT0266-038.0-20220323	GW	03/23/2022	07:55	36	40	TT032122-W032MS	ANALYTICAL LABORATORIES OF FLORIDA, INC.	SPK	03/23/2022	1	TT032122	TRICHLOROETHENE	79-01-6	8260D	5030	91.2		%	1	1	100
CRCA-DPT0266-038.0-20220323	GW	03/23/2022	07:55	36	40	TT032122-W032MS	ANALYTICAL LABORATORIES OF FLORIDA, INC.	SUR	03/23/2022	1	TT032122	d8-TOLUENE	2037-26-5	8260D	5030	101.2		%	1	1	100
CRCA-DPT0266-043.0-20220323	GW	03/23/2022	08:15	41	45	TT032122-W033	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/23/2022	1	TT032122	VINYL CHLORIDE	75-01-4	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0266-043.0-20220323	GW	03/23/2022	08:15	41	45	TT032122-W033	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/23/2022	1	TT032122	TRANS-1,2-DICHLOROETHENE	156-60-5	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0266-043.0-20220323	GW	03/23/2022	08:15	41	45	TT032122-W033	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/23/2022	1	TT032122	CIS-1,2-DICHLOROETHENE	156-59-2	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0266-043.0-20220323	GW	03/23/2022	08:15	41	45	TT032122-W033	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/23/2022	1	TT032122	TRICHLOROETHENE	79-01-6	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0266-043.0-20220323	GW	03/23/2022	08:15	41	45	TT032122-W033	ANALYTICAL LABORATORIES OF FLORIDA, INC.	SUR	03/23/2022	1	TT032122	d8-TOLUENE	2037-26-5	8260D	5030	109.5		%	1	1	100
CRCA-DPT0266-048.0-20220323	GW	03/23/2022	08:35	46	50	TT032122-W034	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/23/2022	1	TT032122	VINYL CHLORIDE	75-01-4	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0266-048.0-20220323	GW	03/23/2022	08:35	46	50	TT032122-W034	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/23/2022	1	TT032122	TRANS-1,2-DICHLOROETHENE	156-60-5	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0266-048.0-20220323	GW	03/23/2022	08:35	46	50	TT032122-W034	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/23/2022	1	TT032122	CIS-1,2-DICHLOROETHENE	156-59-2	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0266-048.0-20220323	GW	03/23/2022	08:35	46	50	TT032122-W034	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/23/2022	1	TT032122	TRICHLOROETHENE	79-01-6	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0266-048.0-20220323	GW	03/23/2022	08:35	46	50	TT032122-W034	ANALYTICAL LABORATORIES OF FLORIDA, INC.	SUR	03/23/2022	1	TT032122	d8-TOLUENE	2037-26-5	8260D	5030	107.4		%	1	1	100
CRCA-DPT0266-052.0-20220323	GW	03/23/2022	08:55	50	54	TT032122-W035	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/23/2022	1	TT032122	VINYL CHLORIDE	75-01-4	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0266-052.0-20220323	GW	03/23/2022	08:55	50	54	TT032122-W035	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/23/2022	1	TT032122	TRANS-1,2-DICHLOROETHENE	156-60-5	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0266-052.0-20220323	GW	03/23/2022	08:55	50	54	TT032122-W035	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/23/2022	1	TT032122	CIS-1,2-DICHLOROETHENE	156-59-2	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0266-052.0-20220323	GW	03/23/2022	08:55	50	54	TT032122-W035	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/23/2022	1	TT032122	TRICHLOROETHENE	79-01-6	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0266-052.0-20220323	GW	03/23/2022	08:55	50	54	TT032122-W035	ANALYTICAL LABORATORIES OF FLORIDA, INC.	SUR	03/23/2022	1	TT032122	d8-TOLUENE	2037-26-5	8260D	5030	107.0		%	1	1	100
CRCA-DPT0266-057.0-20220323	GW	03/23/2022	09:20	55	59	TT032122-W036	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/23/2022	1	TT032122	VINYL CHLORIDE	75-01-4	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0266-057.0-20220323	GW	03/23/2022	09:20	55	59	TT032122-W036	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/23/2022	1	TT032122	TRANS-1,2-DICHLOROETHENE	156-60-5	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0266-057.0-20220323	GW	03/23/2022	09:20	55	59	TT032122-W036	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/23/2022	1	TT032122	CIS-1,2-DICHLOROETHENE	156-59-2	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0266-057.0-20220323	GW	03/23/2022	09:20	55	59	TT032122-W036	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/23/2022	1	TT032122	TRICHLOROETHENE	79-01-6	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0266-057.0-20220323	GW	03/23/2022	09:20	55	59	TT032122-W036	ANALYTICAL LABORATORIES OF FLORIDA, INC.	SUR	03/23/2022	1	TT032122	d8-TOLUENE	2037-26-5	8260D	5030	108.5		%	1	1	100
CRCA-DPT0267-038.0-20220323	GW	03/23/2022	10:45	36	40	TT032122-W037	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/23/2022	1	TT032122	VINYL CHLORIDE	75-01-4	8260D	5030	2		UG/L	1	1	100
CRCA-DPT0267-038.0-20220323	GW	03/23/2022	10:45	36	40	TT032122-W037	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/23/2022	1	TT032122	TRANS-1,2-DICHLOROETHENE	156-60-5	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0267-038.0-20220323	GW	03/23/2022	10:45	36	40	TT032122-W037	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/23/2022	1	TT032122	CIS-1,2-DICHLOROETHENE	156-59-2	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0267-038.0-20220323	GW	03/23/2022	10:45	36	40	TT032122-W037	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/23/2022	1	TT032122	TRICHLOROETHENE	79-01-6	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0267-038.0-20220323	GW	03/23/2022	10:45	36	40	TT032122-W037	ANALYTICAL LABORATORIES OF FLORIDA, INC.	SUR	03/23/2022	1	TT032122	d8-TOLUENE	2037-26-5	8260D	5030	108.5		%	1	1	100
CRCA-DPT0267-038.0-20220323	GW	03/23/2022	10:45	36	40	TT032122-W037DUP	ANALYTICAL LABORATORIES OF FLORIDA, INC.	DUP	03/23/2022	2	TT032122	VINYL CHLORIDE	75-01-4	8260D	5030	2		UG/L	1	1	100
CRCA-DPT0267-038.0-20220323	GW	03/23/2022	10:45	36	40	TT032122-W037DUP	ANALYTICAL LABORATORIES OF FLORIDA, INC.	DUP	03/23/2022	2	TT032122	TRANS-1,2-DICHLOROETHENE	156-60-5	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0267-038.0-20220323	GW	03/23/2022	10:45	36	40	TT032122-W037DUP	ANALYTICAL LABORATORIES OF FLORIDA, INC.	DUP	03/23/2022	2	TT032122	CIS-1,2-DICHLOROETHENE	156-59-2	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0267-038.0-20220323	GW	03/23/2022	10:45	36	40	TT032122-W037DUP	ANALYTICAL LABORATORIES OF FLORIDA, INC.	DUP	03/23/2022	2	TT032122	TRICHLOROETHENE	79-01-6	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0267-043.0-20220323	GW	03/23/2022	11:00	41	45	TT032122-W038	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/23/2022	1	TT032122	VINYL CHLORIDE	75-01-4	8260D	5030	47		UG/L	1	1	100
CRCA-DPT0267-043.0-20220323	GW	03/23/2022	11:00	41	45	TT032122-W038	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/23/2022	1	TT032122	TRANS-1,2-DICHLOROETHENE	156-60-5	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0267-043.0-20220323	GW	03/23/2022	11:00	41	45	TT032122-W038	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/23/2022	1	TT032122	CIS-1,2-DICHLOROETHENE	156-59-2	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0267-043.0-20220323	GW	03/23/2022	11:00	41	45	TT032122-W038	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/23/2022	1	TT032122	TRICHLOROETHENE	79-01-6	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0267-043.0-20220323	GW	03/23/2022	11:00	41	45	TT032122-W038	ANALYTICAL LABORATORIES OF FLORIDA, INC.	SUR	03/23/2022	1	TT032122	d8-TOLUENE	2037-26-5	8260D	5030	107.1		%	1	1	100
CRCA-DPT0267-048.0-20220323	GW	03/23/2022	11:20	46	50	TT032122-W039	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/23/2022	1	TT032122	VINYL CHLORIDE	75-01-4	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0267-048.0-20220323	GW	03/23/2022	11:20	46	50	TT032122-W039	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/23/2022	1	TT032122	TRANS-1,2-DICHLOROETHENE	156-60-5	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0267-048.0-20220323	GW	03/23/2022	11:20	46	50	TT032122-W039	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/23/2022	1	TT032122	CIS-1,2-DICHLOROETHENE	156-59-2	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0267-048.0-20220323	GW	03/23/2022	11:20	46	50	TT032122-W039	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/23/2022	1	TT032122	TRICHLOROETHENE	79-01-6	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0267-048.0-20220323	GW	03/23/2022	11:20	46	50	TT032122-W039	ANALYTICAL LABORATORIES OF FLORIDA, INC.	SUR	03/23/2022	1	TT032122	d8-TOLUENE	2037-26-5	8260D	5030	100.6		%	1	1	100
CRCA-DPT0267-052.0-20220323	GW	03/23/2022	11:50	50	54	TT032122-W040	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/23/2022	1	TT032122	VINYL CHLORIDE	75-01-4	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0267-052.0-20220323	GW	03/23/2022	11:50	50	54	TT032122-W040	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/23/2022	1	TT032122	TRANS-1,2-DICHLOROETHENE	156-60-5	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0267-052.0-20220323	GW	03/23/2022	11:50	50	54	TT032122-W040	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/23/2022	1	TT032122	CIS-1,2-DICHLOROETHENE	156-59-2	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0267-052.0-20220323	GW	03/23/2022	11:50	50	54	TT032122-W040	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/23/2022	1	TT032122	TRICHLOROETHENE	79-01-6	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0267-052.0-20220323	GW	03/23/2022	11:50	50	54	TT032122-W040	ANALYTICAL LABORATORIES OF FLORIDA, INC.	SUR	03/23/2022	1	TT032122	d8-TOLUENE	2037-26-5	8260D	5030	97.6		%	1	1	100
CRCA-DPT0267-057.0-20220323	GW	03/23/2022	12:15	55	59	TT032122-W041	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/23/2022	1	TT032122	VINYL CHLORIDE	75-01-4	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0267-057.0-20220323	GW	03/23/2022	12:15	55	59	TT032122-W041	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/23/2022	1	TT032122	TRANS-1,2-DICHLOROETHENE	156-60-5	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0267-057.0-20220323	GW	03/23/2022	12:15	55	59	TT032122-W041	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/23/2022	1	TT032122	CIS-1,2-DICHLOROETHENE	156-59-2	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0267-057.0-20220323	GW	03/23/2022	12:15	55	59	TT032122-W041	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/23/2022	1	TT032122	TRICHLOROETHENE	79-01-6	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0267-057.0-20220323	GW	03/23/2022	12:15	55	59	TT032122-W041	ANALYTICAL LABORATORIES OF FLORIDA, INC.	SUR	03/23/2022	1	TT032122	d8-TOLUENE	2037-26-5	8260D	5030	107.3		%	1	1	100
CRCA-DPT0268-038.0-20220323	GW	03/23/2022	14:05	36	40	TT032122-W042	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/23/2022	1	TT032122	VINYL CHLORIDE	75-01-4	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0268-038.0-20220323	GW	03/23/2022	14:05	36	40	TT032122-W042	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/23/2022	1	TT032122	TRANS-1,2-DICHLOROETHENE	156-60-5	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0268-038.0-20220323	GW	03/23/2022	14:05	36	40	TT032122-W042	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/23/2022	1	TT032122	CIS-1,2-DICHLOROETHENE	156-59-2	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0268-038.0-20220323	GW	03/23/2022	14:05	36	40	TT032122-W042	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/23/2022	1	TT032122	TRICHLOROETHENE	79-01-6	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0268-038.0-20220323	GW	03/23/2022	14:05	36	40	TT032122-W042	ANALYTICAL LABORATORIES OF FLORIDA, INC.	SUR	03/23/2022	1	TT032122	d8-TOLUENE	2037-26-5	8260D	5030	106.8		%	1	1	100
CRCA-DPT0268-043.0-20220323	GW	03/23/2022	14:25	41	45	TT032122-W043	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/23/2022	1	TT032122	VINYL CHLORIDE	75-01-4	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0268-043.0-20220323	GW	03/23/2022	14:25	41	45	TT032122-W043	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/23/2022	1	TT032122	TRANS-1,2-DICHLOROETHENE	156-60-5	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0268-043.0-20220323	GW	03/23/2022	14:25	41	45	TT032122-W043	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/23/2022	1	TT032122	CIS-1,2-DICHLOROETHENE	156-59-2	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0268-043.0-20220323	GW	03/23/2022	14:25	41	45	TT032122-W043	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/23/2022	1	TT032122	TRICHLOROETHENE	79-01-6	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0268-043.0-20220323	GW	03/23/2022	14:25	41	45	TT032122-W043	ANALYTICAL LABORATORIES OF FLORIDA, INC.	SUR	03/23/2022	1	TT032122	d8-TOLUENE	2037-26-5	8260D	5030	107.0		%	1	1	100
CRCA-DPT0268-048.0-20220323	GW	03/23/2022	14:45	46	50	TT032122-W044	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/23/2022	1	TT032122	VINYL CHLORIDE	75-01-4	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0268-048.0-20220323	GW	03/23/2022	14:45	46	50	TT032122-W044	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/23/2022	1	TT032122	TRANS-1,2-DICHLOROETHENE	156-60-5	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0268-048.0-20220323	GW	03/23/2022	14:45	46	50	TT032122-W044	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/23/2022	1	TT032122	CIS-1,2-DICHLOROETHENE	156-59-2	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0268-048.0-20220323	GW	03/23/2022	14:45	46	50	TT032122-W044	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/23/2022	1	TT032122	TRICHLOROETHENE	79-01-6	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0268-048.0-20220323	GW	03/23/2022	14:45	46	50	TT032122-W044	ANALYTICAL LABORATORIES OF FLORIDA, INC.	SUR	03/23/2022	1	TT032122	d8-TOLUENE	2037-26-5	8260D	5030	105.7		%	1	1	100
CRCA-DPT0268-052.0-20220323	GW	03/23/2022	15:10	50	54	TT032122-W045	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/23/2022	1	TT032122	VINYL CHLORIDE	75-01-4	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0268-052.0-20220323	GW	03/23/2022	15:10	50	54	TT032122-W045	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/23/2022	1	TT032122	TRANS-1,2-DICHLOROETHENE	156-60-5	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0268-052.0-20220323	GW	03/23/2022	15:10	50	54	TT032122-W045	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/23/2022	1	TT032122	CIS-1,2-DICHLOROETHENE	156-59-2	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0268-052.0-20220323	GW	03/23/2022	15:10	50	54	TT032122-W045	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/23/2022	1	TT032122	TRICHLOROETHENE	79-01-6	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0268-052.0-20220323	GW	03/23/2022	15:10	50	54	TT032122-W045	ANALYTICAL LABORATORIES OF FLORIDA, INC.	SUR	03/23/2022	1	TT032122	d8-TOLUENE	2037-26-5	8260D	5030	98.0		%	1	1	100
CRCA-DPT0268-057.0-20220323	GW	03/23/2022	15:35	55	59	TT032122-W046	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/23/2022	1	TT032122	VINYL CHLORIDE	75-01-4	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0268-057.0-20220323	GW	03/23/2022	15:35	55	59	TT032122-W046	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/23/2022	1	TT032122	TRANS-1,2-DICHLOROETHENE	156-60-5	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0268-057.0-20220323	GW	03/23/2022	15:35	55	59	TT032122-W046	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/23/2022	1	TT032122	CIS-1,2-DICHLOROETHENE	156-59-2	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0268-057.0-20220323	GW	03/23/2022	15:35	55	59	TT032122-W046	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/23/2022	1	TT032122	TRICHLOROETHENE	79-01-6	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0268-057.0-20220323	GW	03/23/2022	15:35	55	59	TT032122-W046	ANALYTICAL LABORATORIES OF FLORIDA, INC.	SUR	03/23/2022	1	TT032122	d8-TOLUENE	2037-26-5	8260D	5030	106.3		%	1	1	100
032422BLK1	GW	01/01/1900	00:00	-9999	-9999	032422BLK1	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/24/2022	1	TT032122	VINYL CHLORIDE	75-01-4	8260D	5030	1	U	UG/L	1	1	100
032422BLK1	GW	01/01/1900	00:00	-9999	-9999	032422BLK1	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/24/2022	1	TT032122	TRANS-1,2-DICHLOROETHENE	156-60-5	8260D	5030	1	U	UG/L	1	1	100
032422BLK1	GW	01/01/1900	00:00	-9999	-9999	032422BLK1	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/24/2022	1	TT032122	CIS-1,2-DICHLOROETHENE	156-59-2	8260D	5030	1	U	UG/L	1	1	100

032422BLK1	GW	01/01/1900	00:00	-9999	-9999	032422BLK1	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/24/2022	1	TT032122	TRICHLOROETHENE	79-01-6	8260D	5030	1	U	UG/L	1	1	100
032422BLK1	GW	01/01/1900	00:00	-9999	-9999	032422BLK1	ANALYTICAL LABORATORIES OF FLORIDA, INC.	SUR	03/24/2022	1	TT032122	d8-TOLUENE	2037-26-5	8260D	5030	99.6		%	1	1	100
032422CCV1	GW	01/01/1900	00:00	-9999	-9999	032422CCV1	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/24/2022	1	TT032122	VINYL CHLORIDE	75-01-4	8260D	5030	83.7		%	1	1	100
032422CCV1	GW	01/01/1900	00:00	-9999	-9999	032422CCV1	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/24/2022	1	TT032122	TRANS-1,2-DICHLOROETHENE	156-60-5	8260D	5030	91.5		%	1	1	100
032422CCV1	GW	01/01/1900	00:00	-9999	-9999	032422CCV1	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/24/2022	1	TT032122	CIS-1,2-DICHLOROETHENE	156-59-2	8260D	5030	100.4		%	1	1	100
032422CCV1	GW	01/01/1900	00:00	-9999	-9999	032422CCV1	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/24/2022	1	TT032122	TRICHLOROETHENE	79-01-6	8260D	5030	96.4		%	1	1	100
032422CCV1	GW	01/01/1900	00:00	-9999	-9999	032422CCV1	ANALYTICAL LABORATORIES OF FLORIDA, INC.	SUR	03/24/2022	1	TT032122	d8-TOLUENE	2037-26-5	8260D	5030	107.4		%	1	1	100
CRCA-DPT0269-038.0-20220324	GW	03/24/2022	07:45	36	40	TT032122-W047	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/24/2022	1	TT032122	VINYL CHLORIDE	75-01-4	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0269-038.0-20220324	GW	03/24/2022	07:45	36	40	TT032122-W047	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/24/2022	1	TT032122	TRANS-1,2-DICHLOROETHENE	156-60-5	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0269-038.0-20220324	GW	03/24/2022	07:45	36	40	TT032122-W047	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/24/2022	1	TT032122	CIS-1,2-DICHLOROETHENE	156-59-2	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0269-038.0-20220324	GW	03/24/2022	07:45	36	40	TT032122-W047	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/24/2022	1	TT032122	TRICHLOROETHENE	79-01-6	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0269-038.0-20220324	GW	03/24/2022	07:45	36	40	TT032122-W047	ANALYTICAL LABORATORIES OF FLORIDA, INC.	SUR	03/24/2022	1	TT032122	d8-TOLUENE	2037-26-5	8260D	5030	109.8		%	1	1	100
CRCA-DPT0269-038.0-20220324	GW	03/24/2022	07:45	36	40	TT032122-W047MS	ANALYTICAL LABORATORIES OF FLORIDA, INC.	SPK	03/24/2022	1	TT032122	VINYL CHLORIDE	75-01-4	8260D	5030	82.0		%	1	1	100
CRCA-DPT0269-038.0-20220324	GW	03/24/2022	07:45	36	40	TT032122-W047MS	ANALYTICAL LABORATORIES OF FLORIDA, INC.	SPK	03/24/2022	1	TT032122	TRANS-1,2-DICHLOROETHENE	156-60-5	8260D	5030	89.5		%	1	1	100
CRCA-DPT0269-038.0-20220324	GW	03/24/2022	07:45	36	40	TT032122-W047MS	ANALYTICAL LABORATORIES OF FLORIDA, INC.	SPK	03/24/2022	1	TT032122	CIS-1,2-DICHLOROETHENE	156-59-2	8260D	5030	98.9		%	1	1	100
CRCA-DPT0269-038.0-20220324	GW	03/24/2022	07:45	36	40	TT032122-W047MS	ANALYTICAL LABORATORIES OF FLORIDA, INC.	SPK	03/24/2022	1	TT032122	TRICHLOROETHENE	79-01-6	8260D	5030	94.1		%	1	1	100
CRCA-DPT0269-038.0-20220324	GW	03/24/2022	07:45	36	40	TT032122-W047MS	ANALYTICAL LABORATORIES OF FLORIDA, INC.	SUR	03/24/2022	1	TT032122	d8-TOLUENE	2037-26-5	8260D	5030	110.2		%	1	1	100
CRCA-DPT0269-043.0-20220324	GW	03/24/2022	08:05	41	45	TT032122-W048	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/24/2022	1	TT032122	VINYL CHLORIDE	75-01-4	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0269-043.0-20220324	GW	03/24/2022	08:05	41	45	TT032122-W048	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/24/2022	1	TT032122	TRANS-1,2-DICHLOROETHENE	156-60-5	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0269-043.0-20220324	GW	03/24/2022	08:05	41	45	TT032122-W048	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/24/2022	1	TT032122	CIS-1,2-DICHLOROETHENE	156-59-2	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0269-043.0-20220324	GW	03/24/2022	08:05	41	45	TT032122-W048	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/24/2022	1	TT032122	TRICHLOROETHENE	79-01-6	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0269-043.0-20220324	GW	03/24/2022	08:05	41	45	TT032122-W048	ANALYTICAL LABORATORIES OF FLORIDA, INC.	SUR	03/24/2022	1	TT032122	d8-TOLUENE	2037-26-5	8260D	5030	108.5		%	1	1	100
CRCA-DPT0269-048.0-20220324	GW	03/24/2022	08:25	46	50	TT032122-W049	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/24/2022	1	TT032122	VINYL CHLORIDE	75-01-4	8260D	5030	9		UG/L	1	1	100
CRCA-DPT0269-048.0-20220324	GW	03/24/2022	08:25	46	50	TT032122-W049	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/24/2022	1	TT032122	TRANS-1,2-DICHLOROETHENE	156-60-5	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0269-048.0-20220324	GW	03/24/2022	08:25	46	50	TT032122-W049	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/24/2022	1	TT032122	CIS-1,2-DICHLOROETHENE	156-59-2	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0269-048.0-20220324	GW	03/24/2022	08:25	46	50	TT032122-W049	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/24/2022	1	TT032122	TRICHLOROETHENE	79-01-6	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0269-048.0-20220324	GW	03/24/2022	08:25	46	50	TT032122-W049	ANALYTICAL LABORATORIES OF FLORIDA, INC.	SUR	03/24/2022	1	TT032122	d8-TOLUENE	2037-26-5	8260D	5030	110.4		%	1	1	100
CRCA-DPT0269-048.0-20220324	GW	03/24/2022	08:25	46	50	TT032122-W049DUP	ANALYTICAL LABORATORIES OF FLORIDA, INC.	DUP	03/24/2022	2	TT032122	VINYL CHLORIDE	75-01-4	8260D	5030	9		UG/L	1	1	100
CRCA-DPT0269-048.0-20220324	GW	03/24/2022	08:25	46	50	TT032122-W049DUP	ANALYTICAL LABORATORIES OF FLORIDA, INC.	DUP	03/24/2022	2	TT032122	TRANS-1,2-DICHLOROETHENE	156-60-5	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0269-048.0-20220324	GW	03/24/2022	08:25	46	50	TT032122-W049DUP	ANALYTICAL LABORATORIES OF FLORIDA, INC.	DUP	03/24/2022	2	TT032122	CIS-1,2-DICHLOROETHENE	156-59-2	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0269-048.0-20220324	GW	03/24/2022	08:25	46	50	TT032122-W049DUP	ANALYTICAL LABORATORIES OF FLORIDA, INC.	DUP	03/24/2022	2	TT032122	TRICHLOROETHENE	79-01-6	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0269-048.0-20220324	GW	03/24/2022	08:25	46	50	TT032122-W049DUP	ANALYTICAL LABORATORIES OF FLORIDA, INC.	SUR	03/24/2022	2	TT032122	d8-TOLUENE	2037-26-5	8260D	5030	109.5		%	1	1	100
CRCA-DPT0269-052.0-20220324	GW	03/24/2022	08:50	50	54	TT032122-W050	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/24/2022	1	TT032122	VINYL CHLORIDE	75-01-4	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0269-052.0-20220324	GW	03/24/2022	08:50	50	54	TT032122-W050	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/24/2022	1	TT032122	TRANS-1,2-DICHLOROETHENE	156-60-5	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0269-052.0-20220324	GW	03/24/2022	08:50	50	54	TT032122-W050	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/24/2022	1	TT032122	CIS-1,2-DICHLOROETHENE	156-59-2	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0269-052.0-20220324	GW	03/24/2022	08:50	50	54	TT032122-W050	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/24/2022	1	TT032122	TRICHLOROETHENE	79-01-6	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0269-052.0-20220324	GW	03/24/2022	08:50	50	54	TT032122-W050	ANALYTICAL LABORATORIES OF FLORIDA, INC.	SUR	03/24/2022	1	TT032122	d8-TOLUENE	2037-26-5	8260D	5030	110.3		%	1	1	100
CRCA-DPT0269-057.0-20220324	GW	03/24/2022	09:40	55	59	TT032122-W051	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/24/2022	1	TT032122	VINYL CHLORIDE	75-01-4	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0269-057.0-20220324	GW	03/24/2022	09:40	55	59	TT032122-W051	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/24/2022	1	TT032122	TRANS-1,2-DICHLOROETHENE	156-60-5	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0269-057.0-20220324	GW	03/24/2022	09:40	55	59	TT032122-W051	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/24/2022	1	TT032122	CIS-1,2-DICHLOROETHENE	156-59-2	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0269-057.0-20220324	GW	03/24/2022	09:40	55	59	TT032122-W051	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/24/2022	1	TT032122	TRICHLOROETHENE	79-01-6	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0269-057.0-20220324	GW	03/24/2022	09:40	55	59	TT032122-W051	ANALYTICAL LABORATORIES OF FLORIDA, INC.	SUR	03/24/2022	1	TT032122	d8-TOLUENE	2037-26-5	8260D	5030	106.8		%	1	1	100
CRCA-DPT0270-038.0-20220324	GW	03/24/2022	10:20	36	40	TT032122-W052	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/24/2022	1	TT032122	VINYL CHLORIDE	75-01-4	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0270-038.0-20220324	GW	03/24/2022	10:20	36	40	TT032122-W052	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/24/2022	1	TT032122	TRANS-1,2-DICHLOROETHENE	156-60-5	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0270-038.0-20220324	GW	03/24/2022	10:20	36	40	TT032122-W052	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/24/2022	1	TT032122	CIS-1,2-DICHLOROETHENE	156-59-2	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0270-038.0-20220324	GW	03/24/2022	10:20	36	40	TT032122-W052	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/24/2022	1	TT032122	TRICHLOROETHENE	79-01-6	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0270-038.0-20220324	GW	03/24/2022	10:20	36	40	TT032122-W052	ANALYTICAL LABORATORIES OF FLORIDA, INC.	SUR	03/24/2022	1	TT032122	d8-TOLUENE	2037-26-5	8260D	5030	110.4		%	1	1	100
CRCA-DPT0270-043.0-20220324	GW	03/24/2022	10:40	41	45	TT032122-W053	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/24/2022	1	TT032122	VINYL CHLORIDE	75-01-4	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0270-043.0-20220324	GW	03/24/2022	10:40	41	45	TT032122-W053	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/24/2022	1	TT032122	TRANS-1,2-DICHLOROETHENE	156-60-5	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0270-043.0-20220324	GW	03/24/2022	10:40	41	45	TT032122-W053	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/24/2022	1	TT032122	CIS-1,2-DICHLOROETHENE	156-59-2	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0270-043.0-20220324	GW	03/24/2022	10:40	41	45	TT032122-W053	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/24/2022	1	TT032122	TRICHLOROETHENE	79-01-6	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0270-043.0-20220324	GW	03/24/2022	10:40	41	45	TT032122-W053	ANALYTICAL LABORATORIES OF FLORIDA, INC.	SUR	03/24/2022	1	TT032122	d8-TOLUENE	2037-26-5	8260D	5030	109.4		%	1	1	100
CRCA-DPT0270-048.0-20220324	GW	03/24/2022	11:00	46	50	TT032122-W054	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/24/2022	1	TT032122	VINYL CHLORIDE	75-01-4	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0270-048.0-20220324	GW	03/24/2022	11:00	46	50	TT032122-W054	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/24/2022	1	TT032122	TRANS-1,2-DICHLOROETHENE	156-60-5	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0270-048.0-20220324	GW	03/24/2022	11:00	46	50	TT032122-W054	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/24/2022	1	TT032122	CIS-1,2-DICHLOROETHENE	156-59-2	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0270-048.0-20220324	GW	03/24/2022	11:00	46	50	TT032122-W054	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/24/2022	1	TT032122	TRICHLOROETHENE	79-01-6	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0270-048.0-20220324	GW	03/24/2022	11:00	46	50	TT032122-W054	ANALYTICAL LABORATORIES OF FLORIDA, INC.	SUR	03/24/2022	1	TT032122	d8-TOLUENE	2037-26-5	8260D	5030	111.3		%	1	1	100
CRCA-DPT0270-052.0-20220324	GW	03/24/2022	11:25	52	54	TT032122-W055	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/24/2022	1	TT032122	VINYL CHLORIDE	75-01-4	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0270-052.0-20220324	GW	03/24/2022	11:25	52	54	TT032122-W055	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/24/2022	1	TT032122	TRANS-1,2-DICHLOROETHENE	156-60-5	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0270-052.0-20220324	GW	03/24/2022	11:25	52	54	TT032122-W055	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/24/2022	1	TT032122	CIS-1,2-DICHLOROETHENE	156-59-2	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0270-052.0-20220324	GW	03/24/2022	11:25	52	54	TT032122-W055	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/24/2022	1	TT032122	TRICHLOROETHENE	79-01-6	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0270-052.0-20220324	GW	03/24/2022	11:25	52	54	TT032122-W055	ANALYTICAL LABORATORIES OF FLORIDA, INC.	SUR	03/24/2022	1	TT032122	d8-TOLUENE	2037-26-5	8260D	5030	108.3		%	1	1	100
CRCA-DPT0270-057.0-20220324	GW	03/24/2022	11:50	55	59	TT032122-W056	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/24/2022	1	TT032122	VINYL CHLORIDE	75-01-4	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0270-057.0-20220324	GW	03/24/2022	11:50	55	59	TT032122-W056	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/24/2022	1	TT032122	TRANS-1,2-DICHLOROETHENE	156-60-5	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0270-057.0-20220324	GW	03/24/2022	11:50	55	59	TT032122-W056	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/24/2022	1	TT032122	CIS-1,2-DICHLOROETHENE	156-59-2	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0270-057.0-20220324	GW	03/24/2022	11:50	55	59	TT032122-W056	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/24/2022	1	TT032122	TRICHLOROETHENE	79-01-6	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0270-057.0-20220324	GW	03/24/2022	11:50	55	59	TT032122-W056	ANALYTICAL LABORATORIES OF FLORIDA, INC.	SUR	03/24/2022	1	TT032122	d8-TOLUENE	2037-26-5	8260D	5030	107.7		%	1	1	100
CRCA-DPT0271-038.0-20220324	GW	03/24/2022	13:00	36	40	TT032122-W057	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/24/2022	1	TT032122	VINYL CHLORIDE	75-01-4	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0271-038.0-20220324	GW	03/24/2022	13:00	36	40	TT032122-W057	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/24/2022	1	TT032122	TRANS-1,2-DICHLOROETHENE	156-60-5	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0271-038.0-20220324	GW	03/24/2022	13:00	36	40	TT032122-W057	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/24/2022	1	TT032122	CIS-1,2-DICHLOROETHENE	156-59-2	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0271-038.0-20220324	GW	03/24/2022	13:00	36	40	TT032122-W057	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/24/2022	1	TT032122	TRICHLOROETHENE	79-01-6	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0271-038.0-20220324	GW	03/24/2022	13:00	36	40	TT032122-W057	ANALYTICAL LABORATORIES OF FLORIDA, INC.	SUR	03/24/2022	1	TT032122	d8-TOLUENE	2037-26-5	8260D	5030	107.2		%	1	1	100
CRCA-DPT0272-043.0-20220324	GW	03/24/2022	15:30	41	45	TT032122-W058	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/24/2022	1	TT032122	VINYL CHLORIDE	75-01-4	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0272-043.0-20220324	GW	03/24/2022	15:30	41	45	TT032122-W058	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/24/2022	1	TT032122	TRANS-1,2-DICHLOROETHENE	156-60-5	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0272-043.0-20220324	GW	03/24/2022	15:30	41	45	TT032122-W058	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/24/2022	1	TT032122	CIS-1,2-DICHLOROETHENE	156-59-2	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0272-043.0-20220324	GW	03/24/2022	15:30	41	45	TT032122-W058	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/24/2022	1	TT032122	TRICHLOROETHENE	79-01-6	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0272-043.0-20220324	GW	03/24/2022	15:30	41	45	TT032122-W058	ANALYTICAL LABORATORIES OF FLORIDA, INC.	SUR	03/24/2022	1	TT032122	d8-TOLUENE	2037-26-5	8260D	5030	104.0		%	1	1	100
CRCA-DPT0272-048.0-20220324	GW	03/24/2022	15:50	46	50	TT032122-W059	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/24/2022	1	TT032122	VINYL CHLORIDE	75-01-4	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0272-048.0-20220324	GW	03/24/2022	15:50	46	50	TT032122-W059	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/24/2022	1	TT032122	TRANS-1,2-DICHLOROETHENE	156-60-5	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0272-048.0-20220324	GW	03/24/2022	15:50	46	50	TT032122-W059	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/24/2022	1	TT032122	CIS-1,2-DICHLOROETHENE	156-59-2	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0272-048.0-20220324	GW	03/24/2022	15:50	46	50	TT032122-W059	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/24/2022	1	TT032122	TRICHLOROETHENE	79-01-6	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0272-048.0-20220324	GW	03/24/2022	15:50	46	50	TT032122-W059	ANALYTICAL LABORATORIES OF FLORIDA, INC.	SUR	03/24/2022	1	TT032122	d8-TOLUENE	2037-26-5	8260D	5030	106.4		%	1	1	100
032522BLK1	GW	01/01/1900	00:00	-9999	-9999	032522BLK1	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/25/2022	1	TT032122	VINYL CHLORIDE	75-01-4	8260D	5030	1	U	UG/L	1	1	100
032522BLK1	GW	01/01/1900	00:00	-9999	-9999	032522BLK1	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/25/2022	1	TT032122	TRANS-1,2-DICHLOROETHENE	156-60-5	8260D	5030	1	U	UG/L	1	1	100
032522BLK1	GW	01/01/1900	00:00	-9999	-9999	032522BLK1	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/25/2022	1	TT032122	CIS-1,2-DICHLOROETHENE	156-59-2	8260D	5030	1	U	UG/L	1	1	100
032522BLK1	GW	01/01/1900	00:00	-9999	-9999	032522BLK1	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/25/2022	1	TT032122	TRICHLOROETHENE	79-01-6	8260D	5030	1	U	UG/L	1	1	100
032522BLK1	GW	01/01/1900	00:00	-9999	-9999	032522BLK1	ANALYTICAL LABORATORIES OF FLORIDA, INC.	SUR	03/25/2022	1	TT032122	d8-TOLUENE	2037-26-5	8260D	5030	106.1		%	1	1	100
032522CCV1	GW	01/01/1900	00:00	-9999	-9999	032522CCV1	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/25/2022	1	TT032122	VINYL CHLORIDE	75-01-4	8260D	5030	107.9		%	1	1	100
032522CCV1	GW	01/01/1900	00:00	-9999	-9999	032522CCV1	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/25/2022	1	TT032122	TRANS-1,2-DICHLOROETHENE	156-60-5	8260D	5030	112.5		%	1	1	100
032522CCV1	GW	01/01/1900	00:00	-9999	-9999	032522CCV1	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/25/2022	1	TT032122	CIS-1,2-DICHLOROETHENE	156-59-2	8260D	5030	115.1		%	1	1	100
032522CCV1	GW	01/01/1900	00:00	-9999	-9999	032522CCV1	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/25/2022	1	TT032122	TRICHLOROETHENE	79-01-6	8260D	5030	114.5		%	1	1	100
032522CCV1	GW	01/01/1900	00:00	-9999	-9999	032522CCV1	ANALYTICAL LABORATORIES OF FLORIDA, INC.	SUR	03/25/2022	1	TT032122	d8-TOLUENE	2037-26-5	8260D	5030	109.7		%	1	1	100
CRCA-DPT0272-052.0-20220325	GW	03/25/2022	08:00	50	54	TT032122-W060	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/25/2022	1	TT032122	VINYL CHLORIDE	75-01-4	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0272-052.0-20220325	GW	03/25/2022	08:00	50	54	TT032122-W060	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/25/2022	1	TT032122	TRANS-1,2-DICHLOROETHENE	156-60-5	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0272-052.0-20220325	GW	03/25/2022	08:00	50	54	TT032122-W060	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/25/2022	1	TT032122	CIS-1,2-DICHLOROETHENE	156-59-2	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0272-052.0-20220325	GW	03/25/2022	08:00	50	54	TT032122-W060	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/25/2022	1	TT032122	TRICHLOROETHENE	79-01-6	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0272-052.0-20220325	GW	03/25/2022	08:00	50	54	TT032122-W060	ANALYTICAL LABORATORIES OF FLORIDA, INC.	SUR	03/25/2022	1	TT032122	d8-TOLUENE	2037-26-5	8260D	5030	106.9		%	1	1	100
CRCA-DPT0272-052.0-20220325	GW	03/25/2022	08:00	50	54	TT032122-W060MS	ANALYTICAL LABORATORIES OF FLORIDA, INC.	SPK	03/25/2022	1	TT032122	VINYL CHLORIDE	75-01-4	8260D	5030	103.2		%	1	1	100

CRCA-DPT0272-052.0-20220325	GW	03/25/2022	08:00	50	54	TT032122-W060MS	ANALYTICAL LABORATORIES OF FLORIDA, INC.	SPK	03/25/2022	1	TT032122	TRANS-1,2-DICHLOROETHENE	156-60-5	8260D	5030	114.5		%	1	1	100
CRCA-DPT0272-052.0-20220325	GW	03/25/2022	08:00	50	54	TT032122-W060MS	ANALYTICAL LABORATORIES OF FLORIDA, INC.	SPK	03/25/2022	1	TT032122	CIS-1,2-DICHLOROETHENE	156-59-2	8260D	5030	112.3		%	1	1	100
CRCA-DPT0272-052.0-20220325	GW	03/25/2022	08:00	50	54	TT032122-W060MS	ANALYTICAL LABORATORIES OF FLORIDA, INC.	SPK	03/25/2022	1	TT032122	TRICHLOROETHENE	79-01-6	8260D	5030	108.1		%	1	1	100
CRCA-DPT0272-052.0-20220325	GW	03/25/2022	08:00	50	54	TT032122-W060MS	ANALYTICAL LABORATORIES OF FLORIDA, INC.	SUR	03/25/2022	1	TT032122	d8-TOLUENE	2037-26-5	8260D	5030	109.9		%	1	1	100
CRCA-DPT0272-057.0-20220325	GW	03/25/2022	08:25	55	59	TT032122-W061	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/25/2022	1	TT032122	VINYL CHLORIDE	75-01-4	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0272-057.0-20220325	GW	03/25/2022	08:25	55	59	TT032122-W061	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/25/2022	1	TT032122	TRANS-1,2-DICHLOROETHENE	156-60-5	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0272-057.0-20220325	GW	03/25/2022	08:25	55	59	TT032122-W061	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/25/2022	1	TT032122	CIS-1,2-DICHLOROETHENE	156-59-2	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0272-057.0-20220325	GW	03/25/2022	08:25	55	59	TT032122-W061	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/25/2022	1	TT032122	TRICHLOROETHENE	79-01-6	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0272-057.0-20220325	GW	03/25/2022	08:25	55	59	TT032122-W061	ANALYTICAL LABORATORIES OF FLORIDA, INC.	SUR	03/25/2022	1	TT032122	d8-TOLUENE	2037-26-5	8260D	5030	109.0		%	1	1	100
CRCA-DPT0273-043.0-20220325	GW	03/25/2022	10:15	41	45	TT032122-W062	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/25/2022	1	TT032122	VINYL CHLORIDE	75-01-4	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0273-043.0-20220325	GW	03/25/2022	10:15	41	45	TT032122-W062	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/25/2022	1	TT032122	TRANS-1,2-DICHLOROETHENE	156-60-5	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0273-043.0-20220325	GW	03/25/2022	10:15	41	45	TT032122-W062	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/25/2022	1	TT032122	CIS-1,2-DICHLOROETHENE	156-59-2	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0273-043.0-20220325	GW	03/25/2022	10:15	41	45	TT032122-W062	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/25/2022	1	TT032122	TRICHLOROETHENE	79-01-6	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0273-043.0-20220325	GW	03/25/2022	10:15	41	45	TT032122-W062	ANALYTICAL LABORATORIES OF FLORIDA, INC.	SUR	03/25/2022	1	TT032122	d8-TOLUENE	2037-26-5	8260D	5030	106.8		%	1	1	100
CRCA-DPT0273-048.0-20220325	GW	03/25/2022	10:35	46	50	TT032122-W063	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/25/2022	1	TT032122	VINYL CHLORIDE	75-01-4	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0273-048.0-20220325	GW	03/25/2022	10:35	46	50	TT032122-W063	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/25/2022	1	TT032122	TRANS-1,2-DICHLOROETHENE	156-60-5	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0273-048.0-20220325	GW	03/25/2022	10:35	46	50	TT032122-W063	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/25/2022	1	TT032122	CIS-1,2-DICHLOROETHENE	156-59-2	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0273-048.0-20220325	GW	03/25/2022	10:35	46	50	TT032122-W063	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/25/2022	1	TT032122	TRICHLOROETHENE	79-01-6	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0273-048.0-20220325	GW	03/25/2022	10:35	46	50	TT032122-W063	ANALYTICAL LABORATORIES OF FLORIDA, INC.	SUR	03/25/2022	1	TT032122	d8-TOLUENE	2037-26-5	8260D	5030	108.2		%	1	1	100
CRCA-DPT0273-052.0-20220325	GW	03/25/2022	11:00	50	54	TT032122-W064	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/25/2022	1	TT032122	VINYL CHLORIDE	75-01-4	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0273-052.0-20220325	GW	03/25/2022	11:00	50	54	TT032122-W064	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/25/2022	1	TT032122	TRANS-1,2-DICHLOROETHENE	156-60-5	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0273-052.0-20220325	GW	03/25/2022	11:00	50	54	TT032122-W064	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/25/2022	1	TT032122	CIS-1,2-DICHLOROETHENE	156-59-2	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0273-052.0-20220325	GW	03/25/2022	11:00	50	54	TT032122-W064	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/25/2022	1	TT032122	TRICHLOROETHENE	79-01-6	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0273-052.0-20220325	GW	03/25/2022	11:00	50	54	TT032122-W064	ANALYTICAL LABORATORIES OF FLORIDA, INC.	SUR	03/25/2022	1	TT032122	d8-TOLUENE	2037-26-5	8260D	5030	107.0		%	1	1	100
CRCA-DPT0273-057.0-20220325	GW	03/25/2022	11:25	55	59	TT032122-W065	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/25/2022	1	TT032122	VINYL CHLORIDE	75-01-4	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0273-057.0-20220325	GW	03/25/2022	11:25	55	59	TT032122-W065	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/25/2022	1	TT032122	TRANS-1,2-DICHLOROETHENE	156-60-5	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0273-057.0-20220325	GW	03/25/2022	11:25	55	59	TT032122-W065	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/25/2022	1	TT032122	CIS-1,2-DICHLOROETHENE	156-59-2	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0273-057.0-20220325	GW	03/25/2022	11:25	55	59	TT032122-W065	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/25/2022	1	TT032122	TRICHLOROETHENE	79-01-6	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0273-057.0-20220325	GW	03/25/2022	11:25	55	59	TT032122-W065	ANALYTICAL LABORATORIES OF FLORIDA, INC.	SUR	03/25/2022	1	TT032122	d8-TOLUENE	2037-26-5	8260D	5030	108.7		%	1	1	100
CRCA-DPT0274-043.0-20220325	GW	03/25/2022	12:55	41	45	TT032122-W066	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/25/2022	1	TT032122	VINYL CHLORIDE	75-01-4	8260D	5030	1		UG/L	1	1	100
CRCA-DPT0274-043.0-20220325	GW	03/25/2022	12:55	41	45	TT032122-W066	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/25/2022	1	TT032122	TRANS-1,2-DICHLOROETHENE	156-60-5	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0274-043.0-20220325	GW	03/25/2022	12:55	41	45	TT032122-W066	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/25/2022	1	TT032122	CIS-1,2-DICHLOROETHENE	156-59-2	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0274-043.0-20220325	GW	03/25/2022	12:55	41	45	TT032122-W066	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/25/2022	1	TT032122	TRICHLOROETHENE	79-01-6	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0274-043.0-20220325	GW	03/25/2022	12:55	41	45	TT032122-W066	ANALYTICAL LABORATORIES OF FLORIDA, INC.	SUR	03/25/2022	1	TT032122	d8-TOLUENE	2037-26-5	8260D	5030	107.5		%	1	1	100
CRCA-DPT0274-043.0-20220325	GW	03/25/2022	12:55	41	45	TT032122-W066DUP	ANALYTICAL LABORATORIES OF FLORIDA, INC.	DUP	03/25/2022	2	TT032122	VINYL CHLORIDE	75-01-4	8260D	5030	1		UG/L	1	1	100
CRCA-DPT0274-043.0-20220325	GW	03/25/2022	12:55	41	45	TT032122-W066DUP	ANALYTICAL LABORATORIES OF FLORIDA, INC.	DUP	03/25/2022	2	TT032122	TRANS-1,2-DICHLOROETHENE	156-60-5	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0274-043.0-20220325	GW	03/25/2022	12:55	41	45	TT032122-W066DUP	ANALYTICAL LABORATORIES OF FLORIDA, INC.	DUP	03/25/2022	2	TT032122	CIS-1,2-DICHLOROETHENE	156-59-2	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0274-043.0-20220325	GW	03/25/2022	12:55	41	45	TT032122-W066DUP	ANALYTICAL LABORATORIES OF FLORIDA, INC.	DUP	03/25/2022	2	TT032122	TRICHLOROETHENE	79-01-6	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0274-043.0-20220325	GW	03/25/2022	12:55	41	45	TT032122-W066DUP	ANALYTICAL LABORATORIES OF FLORIDA, INC.	SUR	03/25/2022	2	TT032122	d8-TOLUENE	2037-26-5	8260D	5030	107.0		%	1	1	100
CRCA-DPT0274-048.0-20220325	GW	03/25/2022	13:15	46	50	TT032122-W067	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/25/2022	1	TT032122	VINYL CHLORIDE	75-01-4	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0274-048.0-20220325	GW	03/25/2022	13:15	46	50	TT032122-W067	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/25/2022	1	TT032122	TRANS-1,2-DICHLOROETHENE	156-60-5	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0274-048.0-20220325	GW	03/25/2022	13:15	46	50	TT032122-W067	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/25/2022	1	TT032122	CIS-1,2-DICHLOROETHENE	156-59-2	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0274-048.0-20220325	GW	03/25/2022	13:15	46	50	TT032122-W067	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/25/2022	1	TT032122	TRICHLOROETHENE	79-01-6	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0274-048.0-20220325	GW	03/25/2022	13:15	46	50	TT032122-W067	ANALYTICAL LABORATORIES OF FLORIDA, INC.	SUR	03/25/2022	1	TT032122	d8-TOLUENE	2037-26-5	8260D	5030	100.4		%	1	1	100
CRCA-DPT0274-052.0-20220325	GW	03/25/2022	13:40	50	54	TT032122-W068	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/25/2022	1	TT032122	VINYL CHLORIDE	75-01-4	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0274-052.0-20220325	GW	03/25/2022	13:40	50	54	TT032122-W068	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/25/2022	1	TT032122	TRANS-1,2-DICHLOROETHENE	156-60-5	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0274-052.0-20220325	GW	03/25/2022	13:40	50	54	TT032122-W068	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/25/2022	1	TT032122	CIS-1,2-DICHLOROETHENE	156-59-2	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0274-052.0-20220325	GW	03/25/2022	13:40	50	54	TT032122-W068	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/25/2022	1	TT032122	TRICHLOROETHENE	79-01-6	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0274-052.0-20220325	GW	03/25/2022	13:40	50	54	TT032122-W068	ANALYTICAL LABORATORIES OF FLORIDA, INC.	SUR	03/25/2022	1	TT032122	d8-TOLUENE	2037-26-5	8260D	5030	98.4		%	1	1	100
CRCA-DPT0274-057.0-20220325	GW	03/25/2022	14:05	55	59	TT032122-W069	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/25/2022	1	TT032122	VINYL CHLORIDE	75-01-4	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0274-057.0-20220325	GW	03/25/2022	14:05	55	59	TT032122-W069	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/25/2022	1	TT032122	TRANS-1,2-DICHLOROETHENE	156-60-5	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0274-057.0-20220325	GW	03/25/2022	14:05	55	59	TT032122-W069	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/25/2022	1	TT032122	CIS-1,2-DICHLOROETHENE	156-59-2	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0274-057.0-20220325	GW	03/25/2022	14:05	55	59	TT032122-W069	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/25/2022	1	TT032122	TRICHLOROETHENE	79-01-6	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0274-057.0-20220325	GW	03/25/2022	14:05	55	59	TT032122-W069	ANALYTICAL LABORATORIES OF FLORIDA, INC.	SUR	03/25/2022	1	TT032122	d8-TOLUENE	2037-26-5	8260D	5030	98.1		%	1	1	100
CRCA-DPT0274-038.0-20220325	GW	03/25/2022	14:40	36	40	TT032122-W070	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/25/2022	1	TT032122	VINYL CHLORIDE	75-01-4	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0274-038.0-20220325	GW	03/25/2022	14:40	36	40	TT032122-W070	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/25/2022	1	TT032122	TRANS-1,2-DICHLOROETHENE	156-60-5	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0274-038.0-20220325	GW	03/25/2022	14:40	36	40	TT032122-W070	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/25/2022	1	TT032122	CIS-1,2-DICHLOROETHENE	156-59-2	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0274-038.0-20220325	GW	03/25/2022	14:40	36	40	TT032122-W070	ANALYTICAL LABORATORIES OF FLORIDA, INC.	TRG	03/25/2022	1	TT032122	TRICHLOROETHENE	79-01-6	8260D	5030	1	U	UG/L	1	1	100
CRCA-DPT0274-038.0-20220325	GW	03/25/2022	14:40	36	40	TT032122-W070	ANALYTICAL LABORATORIES OF FLORIDA, INC.	SUR	03/25/2022	1	TT032122	d8-TOLUENE	2037-26-5	8260D	5030	98.2		%	1	1	100

APPENDIX C

MONTHLY OM&M BALANCING FORMS

Date	time	vapor				water																					
						Extraction wells												EQ				AS pump				Bag filters			
						1				2				3												Influent		Effluent	
		PID AS outlet	Blower Pressure	After Damper Pressure	AS Differential Pressure	Totalizer	Pressure	Flow Rate	Flow Rate	Totalizer	Pressure	Flow Rate	Flow Rate	Totalizer	Pressure	Flow Rate	Flow Rate	Totalizer	Pressure	Flow Rate	Flow Rate	Totalizer	Pressure	Flow Rate	Flow Rate	First Filter	Second Filter	First Filter	Second Filter
		ppmv	in wc	in wc	in wc	gal	psi	sec	gpm	gal	psi	sec	gpm	gal	psi	sec	gpm	gal	psi	sec	gpm	gal	psi	sec	gpm	psi	psi	psi	psi
2019/07/22	7:30	0	0	0	0	0	0	6000	0.01	0	0	6000	0.01	0	0	6000	0.01	-	0	6000	0.01	0	0	6000	0.01	0	0	0	0
2019/07/23	7:30	0	21	21	20	2,630	24	8.5	7.06	2,630	30	8.5	7.06	2,630	30	8.5	7.06	7,890	30	2	30.00	7,780	36	1.75	34.29	1	1	6	6
2019/07/29	15:30	0	21	20.5	20	5,141	24	8.5	7.06	4,731	26	8.5	7.06	5,387	28	8.5	7.06	14,458	30	2	30.00	14,503	38	1.8	33.33	1	0	20	20
2019/08/09	7:00	0	21	20	20	11,818	25	8.5	7.06	11,489	28	8.5	7.06	11,908	28	8.5	7.06	41,705	30	2	30.00	42,009	34	1.9	31.58	1	1	20	20
2019/08/13	14:30	0	21	20	20	24,866	24	8.5	7.06	24,542	28	8.5	7.06	24,808	28	8.5	7.06	80,193	30	2	30.00	80,890	34	1.7	35.29	1	1	20	20
2019/08/16	14:00	0	21	20	20	48,461	25	8.4	7.14	47,890	28	8.5	7.06	47,568	30	8.8	6.82	149,193	28	1.94	30.93	150,828	40	1.7	35.29	1	1	20	20
2019/08/19	9:30	0	21	20	20	77,322	25	8.4	7.14	76,455	28	8.1	7.41	75,413	28	8.6	6.98	233,626	30	2.07	28.99	235,658	40	1.7	35.29	1	1	20	20
2019/08/26	12:00	0	21	19	20	149,348	25	8.3	7.23	147,613	30	8.5	7.06	145,534	28	8.7	6.90	445,076	28	2.1	28.57	448,205	40	1.7	35.29	1	1	21	21
2019/09/11	11:30	0	21	16	20	222,768	25	8.8	6.82	219,938	28	8.8	6.82	217,486	30	8.8	6.82	664,091	30	2.2	27.27	665,511	40	1.7	35.29	1	1	22	22
2019/10/03	12:30	0	21	16	20	393,268	25	8.8	6.82	392,264	28	8.6	6.98	387,647	29	8.7	6.90	1,201,258	28	2.2	27.27	1,175,082	39	1.7	35.29	1	1	22	24
2019/11/07	10:45	0	21	16	20	726,973	25	8.6	6.98	733,624	30	8.6	6.98	713,331	26	8.5	7.06	2,334,155	28	2.1	28.57	2,253,219	38	1.5	40.00	1	1	22	25
2019/12/10	7:30	0	21	16	20	959,017	25	8.8	6.82	1,001,969	28	8.7	6.90	989,308	27	8.5	7.06	3,416,384	28	1.8	33.33	3,103,418	38	1.5	40.00	1	1	30	30
2020/01/14	8:00	0	21	21	21	1,060,912	25	8.65	6.94	1,115,779	28	8.4	7.14	1,103,493	27	8.7	6.90	3,959,892	28	1.5	40.00	3,460,705	38	1.3	46.15	1	1	30	35
2020/02/13	12:00	0	21	21	21	1,198,882	25	8.7	6.90	1,350,492	28	8.8	6.82	1,336,679	27	8.6	6.98	5,114,020	28	1.3	46.15	4,127,819	38	1.6	37.50	1	1	25	30
2020/04/09	14:30	0	21	21	21	1,695,616	24	8.75	6.86	1,836,189	29	8.8	6.82	1,837,863	27	8.78	6.83	8,203,623	28	1.2	50.00	5,791,342	35	1.3	46.15	1	1	30	30
2020/05/14	7:30	0	21	20	20	2,095,090	24	8.7	6.90	2,226,678	28	8.7	6.90	2,227,509	27	8.7	6.90	8,325,468	28	1.8	33.33	6,504,740	35	1.5	40.00	1	1	30	30
2020/06/04	15:15	0	20	20	20	2,224,488	24	8.7	6.90	2,352,477	30	8.5	7.06	2,252,151	30	9.5	6.32	51,412	28	2.5	24.00	49,758	35	1.8	33.33	1	1	20	20
2020/07/13	7:30	0	20	20	20	2,513,663	24	8.6	6.98	2,628,965	28	8.5	7.06	2,334,764	32	8.7	6.90	717,428	28	1.8	33.33	674,891	35	1.7	35.29	1	1	25	22
2020/08/11	13:30	0	20	20	20	2,802,838	25	8.6	6.98	2,905,452	28	8.5	7.06	2,417,377	32	8.7	6.90	1,383,444	28	1.9	31.58	1,300,025	35	1.5	40.00	1	1	20	20
2020/09/15	17:00	0	20	20	20	3,010,147	25	8.8	6.82	3,098,691	28	8.6	6.98	2,573,860	25	8.7	6.90	2,022,664	28	2.2	27.27	1,861,104	38	1.8	33.33	2	1	25	25
2020/10/21	14:00	0	20	20	20	3,258,940	25	8.8	6.82	3,330,570	29	8.6	6.98	2,761,631	22	8.7	6.90	2,789,727	28	2.2	27.27	2,534,399	38	1.9	31.58	2	1	25	25
2020/11/23	9:00	0	20	20	20	3,572,540	24	8.8	6.82	3,625,583	32	8.6	6.98	2,995,119	38	8.7	6.90	3,666,572	28	2	30.00	3,427,715	38	1.7	35.29	1	1	25	25
2020/12/15	13:00	0	20	20	20	3,776,198	22	8.5	7.06	3,819,990	28	8.6	6.98	3,148,850	26	8.6	6.98	4,247,200	20	2	30.00	4,034,244	35	1.7	35.29	1	1	25	25
2021/01/18	15:00	0	20	20	20	4,085,132	24	8.5	7.06	4,128,186	24	8.5	7.06	3,453,454	28	8.5	7.06	5,453,518	26	2.1	28.57	5,031,544	32	1.5	40.00	1	1	25	25
2021/02/16	16:00	0	20	20	20	4,313,428	30	8.5	7.06	4,337,220	34	8.5	7.06	3,686,863	28	8.5	7.06	6,239,511	26	2	30.00	5,734,532	36	1.7	35.29	1	1	25	25
2021/03/14	15:00	0	20	20	20	4,571,305	28	8.5	7.06	4,583,369	32	8.5	7.06	3,961,882	28	8.6	6.98	7,076,134	26	2	30.00	6,564,836	34	1.7	35.29	1	1	25	25
2021/04/17	18:00	0	20	20	20	4,829,182	26	8.6	6.98	4,829,519	32	8.6	6.98	4,236,902	28	8.5	7.06	7,912,757	26	2.1	28.57	7,395,140	40	1.6	37.50	1	1	25	25
2021/05/18	14:00	0	20	20	20	5,087,060	26	8.6	6.98	5,075,669	32	8.6	6.98	4,511,922	30	8.6	6.98	8,749,381	26	2	30.00	8,225,445	32	1.7	35.29	1	1	25	25
2021/06/14	15:00	0	20	20	20	5,370,063	24	8.6	6.98	5,217,417	34	8.4	7.14	4,831,905	30	8.6	6.98	9,532,960	26	2	30.00	9,023,440	34	1.6	37.50	1	1	25	25
2021/07/30	13:00	0	20	20	20	5,653,066	22	8.7	6.90	5,359,166	34	8.4	7.14	5,151,888	30	8.6	6.98	10,316,540	26	2	30.00	9,821,436	30	1.6	37.50	1	1	25	25
2021/08/19	13:00	0	20	20	20	5,734,800	24	8.7	6.90	5,444,533	33	8.4	7.14	5,237,244	28	8.8	6.82	10,577,807	26	2	30.00	10,095,354	30	1.6	37.50	1	1	25	25
2021/09/10	13:00	0	20	20	20	5,836,143	23	8.7	6.90	5,540,599	32	8.4	7.14	5,341,477	28	8.8	6.82	10,884,923	26	2	30.00	10,126,755	30	1.6	37.50	1	1	25	25
2021/10/07	13:00	0	21	20	20	5,937,475	20	8.7	6.90	5,636,662	30	8.4	7.14	5,445,500	26	8.5	7.06	11,191,999	26	2	30.00	10,158,410	30	1.6	37.50	1	1	25	25
2021/11/10	13:00	0	21	20	20	6,200,701	22	8.7	6.90	5,921,416	30	8.4	7.14	5,740,049	26	8.5	7.06	12,184,957	26	2	30.00	10,326,804	30	1.6	37.50	1	1	25	25
2021/12/12	13:00	0	21	20	20	6,463,926	21	8.7	6.90	6,206,171	30	8.4	7.14	6,034,597	26	8.5	7.06	13,177,915	26	2	30.00	10,495,197	30	1.6	37.50	1	1	25	25
2022/01/21	13:00	0	21	20	20	6,727,152	21	8.7	6.90	6,490,925	30	8.4	7.14	6,329,146	26	8.5	7.06	14,170,872	26	2	30.00	10,663,591	30	1.6	37.50	1	1	25	25
2022/02/25	13:00	0	21	20	20	6,990,377	21	8.7	6.90	6,775,680	30	8.4	7.14	6,623,694	26	8.5	7.06	15,163,830	26	2	30.00	10,663,591	30	1.6	37.50	1	1	25	25
2022/03/28	13:00	0	21	20	20	7,253,603	20	8.7	6.90	7,060,434	30	8.4	7.14	6,918,243	26	8.5	7.06	16,156,788	26	2	30.00	10,663,591	30	1.6	37.50	1	1	25	25
2022/04/25	13:00	0	21	20	20	7,504,238	20	8.7	6.90	7,295,903	34	8.4	7.14	7,173,128	26	8.5	7.06	17,128,129	26	2	30.00	10,663,591	30	1.6	37.50	1	1	25	25
2022/05/19	13:00	0	20	20	20	7,858,524	22	8.7	6.90	7,546,649	32	8.4	7.14	7,441,635	26	8.5	7.06	17,539,308	26	2	30.00	10,831,984	30	1.6	37.50	1	1	25	25
2022/06/20	13:00	0	20	20	20	8,212,809	21	8.7	6.90	7,797,396	32	8.4	7.14	7,710,143	26	8.5	7.06	17,950,487	26	2	30.00	11,000,378	30	1.6	37.50	1	1	25	25
2022/07/25	13:00	0	20	20	20	8,212,809	24	8.7	6.90	8,048,142	30	8.4	7.14	7,978,650	26	8.5	7.06	18,361,666	26	2	30.00	11,168,771	30	1.6	37.50	1	1	25	25
2022/08/22	13:00	0	20	20	20	8,497,576	24	8.7	6.90	8,332,909	30	8.4	7.14	8,263,417	26	8.5	7.06	19,215,967	26	2	30.00	12,023,072	30	1.6	37.50	1	1	25	25
2022/09/19	13:00	0	20	20	20	8,782,540	24	8.7	6.90	8,617,873	30	8.4	7.14	8,548,381	26	8.5	7.06	20,070,859	26	2	30.00	12,877,964	30	1.6	37.50	1	1	25	25
2022/10/24	13:00	0	20	20	20	9,138,040	24	8.7	6.90	8,973,373	30	8.4	7.14	8,903,881	26	8.5	7.06	21,137,359	26	2	30.00	13,944,464	30	1.6	37.50	1	1	25	25
2022/11/21	13:00	0	20.0	20.0	20.0	9,200,987	24.0	8.7	6.90	9,256,614	30.0	8.4	7.14	9,187,122	26.0	8.5	7.06	21,987,082	26.0	2	30.00	14,794,187	30.0	1.6	37.50	1.0	1.0	25.0	25.0
2022/12/18	14:00	0	20.0	20.0	20.0	9,209,964	24.0	8.5	7.06	9,368,431	20.0	8.5	7.06	9,200,543	22.0	8.5	7.06	23,006,519	22.0	2	30.00	14,812,693	25.0	1.6	37.50	1.0	1.0	25.0	25.0
2023/01/31	12:00	0	20.0	20.0	20.0	9,243,144	18.0	8.5	7.06	9,512,393	20.0	8.5	7.06	9,255,531	22.0	8.5	7.06	24,686,742	22.0	2	30.00	14,943,153	25.0	1.6	37.50	1.0	1.0	25.0	25.0
2023/02/21	12:00	0	20.0	20.0	20.0	9,387,823	18.0	8.5	7.06	9,752,847	20.0	8.5	7.06	9,446,309	22.0	8.5	7.06	25,262,653	22.0	2	30.00	15,497,452	25.0	1.6	37.50	1.0	1.0	25.0	25.0
2023/03/20	12:00	0	20.0	20.0	20.0	9,532,503	18.0	8.5	7.06	9,993,300	20.0	8.5	7.06	9,637,087	22.0	8.5	7.06	25,838,564	22.0	2	30.00	16,051,751	25.0	1.6	37.50	1.0	1.0	25.0	25.0
2023/04/18	12:00	0	20.0	20.0	20.0	9,677,182	18.0	8.5	7.06	10,233,754	20.0	8.5	7.06	9,827,866	22.0	8.5	7.06	26,414,476	22.0	2	30.00	16,606,050	25.0	1.6	37.50	1.0	1.0	25.0	25.0
2023/05/22	12:00	0	20.0	20.0	20.0	9,821,862	18.0	8.5	7.06	10,474,207	20.0	8.5	7.06	10,018,644	22.0	8.5	7.06	26,990,387	22.0	2	30.00	17,160,349	25.0	1.6	37.50	1.0	1.0	25.0	25.0
2023/06/20	12:00	0	20.0	20.0	20.0	9,966,541	18.0	8.5	7.06	10,714,661	20.0	8.5	7.06	10,209,422	22.0	8.5	7.06	27,566,298	22.0	2	30.00	17,714,648	25.0	1.6	37.50	1.0	1.0	25.0	25.0
2023/07/18	12:00	0	20.0	20.0	20.0	10,111,220	18.0	8.5	7.06	10,955,115	20.0	8.5	7.06	10,400,200	22.0	8.5	7.06	28,142,209	22.0	2	30.00	18,268,947	25.0	1.6	37.50	1.0	1.0	25.0	25.0
2023/08/21	12:00	0	20.0	20.0	20.0	10,255,900	18.0	8.5	7.06	11,195,568	20.0	8.5	7.06	10,590,978	22.0	8.5	7.06	28,718,120	22.0	2	30.00	18,823,246	25.0	1.6	37.50	1.0	1.0	25.0	25.0
2023/09/30	12:00	0	20.0	20.0	20.0	10,368,516	18.0	8.5	7.06	11,428,104	20.0	8.5	7.06	10,766,137	22.0	8.5	7.06	29,238,430	22.0	2	30.00	19,360,971	25.0	1.6	37.50	1.0	1.0	25.0	25.0

Notes:
AS - Air Sparge
gal - Gallon
gpm - Gallons per minute
PID - Photoionization detector
PPMV- Parts per million volume
psi- Pounds per square inch
sec- Second
in wc - Inches of water column

Date	time	water																									
		Injection wells																									
		1				2				3				4				5				6				7			
		Totalizer	Pressure	Flow Rate	Flow Rate	Totalizer	Pressure	Flow Rate	Flow Rate	Totalizer	Pressure	Flow Rate	Flow Rate	Totalizer	Pressure	Flow Rate	Flow Rate	Totalizer	Pressure	Flow Rate	Flow Rate	Totalizer	Pressure	Flow Rate	Flow Rate	Totalizer	Pressure	Flow Rate	Flow Rate
		gal	psi	sec	gpm	gal	psi	sec	gpm	gal	psi	sec	gpm	gal	psi	sec	gpm	gal	psi	sec	gpm	gal	psi	sec	gpm	gal	psi	sec	gpm
2019/07/22	7:30	0	0	6000	0.01	0	0	6000	0.01	0	0	6000	0.01	0	0	6000	0.01	0	0	6000	0.01	0	0	6000	0.01	0	0	6000	0.01
2019/07/23	7:30	0	0	6000	0.01	0	0	6000	0.01	0	0	6000	0.01	0	0	6000	0.01	0	0	6000	0.01	0	0	6000	0.01	0	0	6000	0.01
2019/07/29	15:30	1,512	4	6.7	8.96	215	16	6.7	8.96	1,667	7	6	10.00	146	12	6000	0.01	1,627	4	7.5	8.00	158	17	120	0.50	1,860	8	5.5	10.91
2019/08/09	7:00	6,660	5	6.7	8.96	4,383	4	6.7	8.96	8,078	9	6	10.00	239	14	6000	0.01	7,940	8	7.5	8.00	763	10	90	0.67	6,805	4	5.5	10.91
2019/08/13	14:30	11,568	5	9	6.67	11,743	5	8	7.50	15,861	9	14	4.29	271	12	6000	0.01	15,278	6	9	6.67	6,792	6	5.5	10.91	12,464	6	5.5	10.91
2019/08/16	14:00	20,959	4	8.7	6.90	25,117	2	7.95	7.55	29,482	10	73	0.82	349	16	6000	0.01	28,427	4	8	7.50	17,635	5	10.2	5.88	22,421	3	11.2	5.36
2019/08/19	9:30	35,166	4	10	6.00	40,841	3	10	6.00	45,402	4	9	6.67	384	12	6000	0.01	43,870	4	9.3	6.45	31,453	5	10	6.00	34,514	2	12	5.00
2019/08/26	12:00	58,754	8	28	2.14	85,434	1	9	6.67	91,377	6	8.2	7.32	1,931	8	16.5	3.64	87,113	2	10	6.00	70,767	4	10	6.00	61,888	0	18	3.33
2019/09/11	11:30	77,208	2	8	7.50	126,812	2	8	7.50	130,518	18	6000	0.01	34,521	12	35	1.71	130,227	6	8	7.50	110,247	7	9	6.67	79,524	10	6000	0.01
2019/10/03	12:30	175,336	11	7	8.57	229,376	6	7	8.57	226,980	18	7	8.57	82,125	12	20	3.00	194,059	8	8	7.50	204,488	8	30	2.00	85,522	10	8	7.50
2019/11/07	10:45	276,686	10	6	10.00	411,749	10	7	8.57	320,324	4	10	6.00	224,094	12	9	6.67	227,644	11	6000	0.01	343,320	11	6000	0.01	266,542	8	10	6.00
2019/12/10	7:30	459,922	13	7	8.57	540,057	14	6	10.00	418,838	6	10	6.00	353,212	18	14.5	4.14	227,644	14	6000	0.01	343,320	18	6000	0.01	349,620	16	8	7.50
2020/01/14	8:00	538,417	10	6	10.00	604,893	11	8	7.50	432,723	6	6000	0.01	410,284	12	9	6.67	227,644	14	6000	0.01	343,320	18	6000	0.01	376,022	16	6000	0.01
2020/02/13	12:00	670,951	4	8	7.50	653,339	6	8	7.50	501,872	4	14	4.29	514,298	6	10	6.00	309,684	4	10	6.00	445,348	5	10	6.00	407,270	4	10	6.00
2020/04/09	14:30	995,473	18	12	5.00	842,375	18	12	5.00	755,959	8	12	5.00	755,696	12	8	7.50	537,835	9	8	7.50	705,275	9	10	6.00	473,490	4	10	6.00
2020/05/14	7:30	1,197,975	14	8	7.50	1,036,584	14	8	7.50	999,789	8	10	6.00	954,789	12	10	6.00	737,432	8	8	7.50	897,650	10	10	6.00	490,057	8	10	6.00
2020/06/04	15:15	1,263,415	14	8	7.50	1,085,565	12	9	6.67	1,056,257	10	8.5	7.06	1,002,399	15	10	6.00	782,046	12	21	2.86	9,500,258	16	18	3.33	491,265	14	600	0.10
2020/07/13	7:30	1,416,442	14	9	6.67	1,198,162	15	10	6.00	1,191,676	12	9	6.67	1,110,185	16	11	5.45	886,853	8	12	5.00	10,332,517	9	12	5.00	491,265	18	6000	0.01
2020/08/11	13:30	1,569,469	18	10	6.00	1,310,759	20	15	4.00	1,327,092	22	12	5.00	1,217,971	23	12	5.00	991,660	22	15	4.00	11,164,777	18	16	3.75	491,265	20	6000	0.01
2020/09/15	17:00	1,693,722	18	10	6.00	1,410,661	17	12	5.00	1,456,169	17	12	5.00	1,311,059	20	12	5.00	1,092,682	18	11	5.45	11,252,780	18	10	6.00	491,266	20	6000	0.01
2020/10/21	14:00	1,842,827	16	10	6.00	1,530,536	17	10	6.00	1,611,062	15	10	6.00	1,422,772	19	11	5.45	1,213,903	17	10	6.00	11,358,345	14	12	5.00	491,266	18	6000	0.01
2020/11/23	9:00	2,033,467	20	8	7.50	1,692,785	19	8	7.50	1,832,982	16	6	10.00	1,574,801	23	10	6.00	1,369,336	22	10	6.00	1,504,488	24	28	2.14	568,379	20	12	5.00
2020/12/15	13:00	2,167,914	20	8	7.50	1,806,250	19	8	7.50	1,981,572	16	6	10.00	1,669,804	23	10	6.00	1,467,588	22	10	6.00	1,597,536	23	28	2.14	631,547	20	12	5.00
2021/01/18	15:00	2,395,119	20	8	7.50	1,989,448	20	8	7.50	2,201,105	16	6	10.00	1,838,177	20	10	6.00	1,623,849	18	12	5.00	1,752,367	22	20	3.00	739,835	18	15	4.00
2021/02/16	16:00	2,547,099	24	8	7.50	2,116,668	22	8	7.50	2,321,242	22	8	7.50	1,970,773	24	11	5.45	1,734,758	22	7	8.57	1,851,611	20	18	3.33	815,827	16	10	6.00
2021/03/14	15:00	2,702,510	22	8	7.50	2,263,474	19	8	7.50	2,454,419	18	7	8.57	2,123,962	22	12	5.00	1,865,719	20	11	5.45	1,974,125	22	21	2.86	907,984	18	15	4.00
2021/04/17	18:00	2,857,921	24	8	7.50	2,410,281	18	8	7.50	2,587,596	16	8	7.50	2,277,151	22	13	4.62	1,996,680	18	9	6.67	2,096,639	22	21	2.86	1,000,141	18	15	4.00
2021/05/18	14:00	3,013,332	20	8	7.50	2,557,088	18	8	7.50	2,720,774	19	7	8.57	2,430,340	20	10	6.00	2,127,641	19	10	6.00	2,219,154	21	20	3.00	1,092,298	18	16	3.75
2021/06/14	15:00	3,169,404	18	8	7.50	2,686,066	16	8	7.50	2,859,036	18	10	6.00	2,534,003	18	10	6.00	2,252,315	18	12	5.00	2,342,927	18	18	3.33	1,184,712	14	16	3.75
2021/06/14	15:30	1,512	4	6.7	8.96	215	16	6.7	8.96	1,667	7	6	10.00	146	12	6000	0.01	1,627	4	7.5	8.00	158	17	120	0.50	1,860	8	5.5	10.91
2021/07/30	13:00	3,325,476	16	8	7.50	2,815,044	14	8	7.50	2,997,299	16	10	6.00	2,637,667	18	10	6.00	2,376,990	18	12	5.00	2,466,700	14	14	4.29	1,277,126	12	14	4.29
2021/08/19	13:00	3,383,684	16	8	7.50	2,861,678	12	8	7.50	3,044,345	18	10	6.00	2,686,656	18	10	6.00	2,420,537	18	12	5.00	2,506,067	14	14	4.29	1,308,783	12	14	4.29
2021/09/10	13:00	3,445,536	16	8	7.50	2,916,393	12	8	7.50	3,099,258	18	10	6.00	2,744,523	18	10	6.00	2,473,568	18	12	5.00	2,555,555	14	14	4.29	1,343,452	12	14	4.29
2021/10/07	13:00	3,507,367	16	8	7.50	2,971,116	12	8	7.50	3,154,116	18	10	6.00	2,802,489	18	10	6.00	2,526,589	18	12	5.00	2,604,503	14	14	4.29	1,378,100	15	12	5.00
2021/11/10	13:00	3,691,744	16	8	7.50	3,110,545	12	8	7.50	3,354,093	18	10	6.00	2,977,295	18	10	6.00	2,658,526	18	12	5.00	2,750,587	14	14	4.29	1,477,152	15	12	5.00
2021/12/12	13:00	3,876,121	16	8	7.50	3,249,975	12	8	7.50	3,554,070	18	10	6.00	3,152,101	18	10	6.00	2,790,464	18	12	5.00	2,896,671	14	14	4.29	1,576,204	15	12	5.00
2022/01/21	13:00	4,060,498	16	8	7.50	3,389,404	12	8	7.50	3,754,046	18	10	6.00	3,326,907	18	10	6.00	2,922,401	18	12	5.00	3,042,756	14	14	4.29	1,675,257	15	12	5.00
2022/02/25	13:00	4,244,875	16	8	7.50	3,528,834	12	8	7.50	3,954,023	18	10	6.00	3,501,713	18	10	6.00	3,054,339	18	12	5.00	3,188,840	14	14	4.29	1,774,309	15	12	5.00
2022/03/28	13:00	4,429,252	16	8	7.50	3,668,263	12	8	7.50	4,154,000	18	10	6.00	3,676,519	18	10	6.00	3,186,276	18	12	5.00	3,334,924	14	14	4.29	1,873,361	15	12	5.00
2022/04/25	13:00	4,595,569	16	8	7.50	3,801,730	12	8	7.50	4,358,449	18	10	6.00	3,856,246	18	10	6.00	3,316,138	18	12	5.00	3,465,129	14	14	4.29	1,956,897	15	12	5.00
2022/05/19	13:00	4,758,163	16	8	7.50	3,930,431	12	8	7.50	4,463,912	18	10	6.00	4,045,008	18	10	6.00	3,483,976	18	12	5.00	3,578,943	14	14	4.29	2,031,882	15	12	5.00
2022/06/20	13:00	4,920,758	16	8	7.50	4,059,132	12	8	7.50	4,569,375	18	10	6.00	4,233,770	18	10	6.00	3,651,813	18	12	5.00	3,692,756	14	14	4.29	2,106,867	15	12	5.00
2022/07/25	13:00	5,083,352	16	8	7.50	4,187,833	12	8	7.50	4,674,838	18	10	6.00	4,422,532	18	10	6.00	3,819,651	18	12	5.00	3,806,570	14	14	4.29	2,181,852	15	12	5.00
2022/08/22	13:00	5,182,689	16	8	7.50	4,292,016	12	8	7.50	4,780,301	18	10	6.00	4,554,981	18	10	6.00	3,936,678	18	12	5.00	3,961,897	14	14	4.29	2,300,504	15	12	5.00
2022/09/19	13:00	5,282,095	16	8	7.50	4,396,271	12	8	7.50	4,885,764	18	10	6.00	4,687,522	18	10	6.00	4,053,786	18	12	5.00	4,117,331	14	14	4.29	2,419,239	15	12	5.00
2022/10/24	13:00	5,406,106	16	8	7.50	4,526,331	12	8	7.50	4,991,227	18	10	6.00	4,852,870	18	10	6.00	4,199,881	18	12	5.00	4,311,240	14	14	4.29	2,567,364	15	12	5.00
2022/11/21	13:00	5,504,911	16.0	8	7.50	4,629,955	12.0	8	7.50	5,096,690	18.0	10	6.00	4,984,610	18.0	10	6.00	4,316,281	18.0	12	5.00	4,465,735	14.0	14	4.29	2,685,381	15.0	12	5.00
2022/12/18	14:00	5,693,978	16.0	8	7.50	4,683,928	12.0	8	7.50	5,202,153	18.0	10	6.00	5,118,959	18.0	10	6.00	4,410,363	18.0	12	5.00	4,455,090	14.0	14	4.29	2,630,690	15.0	12	5.00
2023/01/31	12:00	5,883,045	12.0	8	7.50	4,737,901	12.0	8	7.50	5,307,616	18.0	10	6.00	5,253,307	18.0	10	6.00	4,504,444	18.0	12	5.00	4,444,444	15.0	10	6.00	2,575,999	15.0	12	5.00
2023/02/21	12:00	5,982,508	12.0	8	7.50	4,866,602	12.0	8	7.50	5,404,156	18.0	10	6.00	5,363,450	18.0	10	6.00	4,592,122	18.0	12	5.00	4,546,947	15.0	10	6.00	2,646,179	15.0	12	5.00
2023/03/20	12:00	6,081,971	12.0	8	7.50	4,970,785	12.0	8	7.50	5,500,695	18.0	10	6.00	5,473,592	18.0	10	6.00	4,679,800	18.0	12	5.00	4,649,451	15.0	10	6.00	2,716,359	15.0	12	5.00
2023/04/18	12:00	6,181,435	12.0	8	7.50	5,075,040	12.0	8	7.50	5,597,235	18.0	10	6.00	5,583,735	18.0	10	6.00	4,767,477	18.0	12	5.00	4,751,954	15.0	10	6.00	2,786,539	15.0	12	5.00
2023/05/22	12:00	6,280,898	12.0	8	7.50	5,205,100	12.0	8	7.50	5,693,774	18.0	10	6.00	5,693,877	18.0	10	6.00	4,855,155	18.0	12	5.00	4,854,458	15.0	10	6.00	2,856,719	15.0	12	5.00
2023/06/20	12:00	6,380,361	15.0	9	6.67	5,308,724	12.0	10	6.00	5,790,314	18.0	10	6.00	5,804,020	18.0	10	6.00	4,942,833	18.0	12	5.00	4,956,961	15.0	10	6.00	2,926,899	15.0	12	5.00
2023/07/18	12:00	6,479,824	15.0	9	6.67	5,362,697	12.0	10	6.00	5,886,854	18.0	10	6.00	5,914,163	18.0	10	6.00	5,030,511	18.0	12	5.00	5,059,464	15.0	10	6.00	2,997,079	15.0	12	5.00
2023/08/21	12:00	6,579,287	15.0	9	6.67	5,416,670	12.0	10	6.00	5,983,393	18.0	10	6.00	6,024,305	18.0	10	6.00	5,118,189	18.0	12	5.00	5,161,968	15.0	10	6.00	3,067,259	15.0	12	5.00
2023/09/30	12:00	6,694,928	15.0	9	6.67	5,416,898	12.0	10	6.00	6,073,746	18.0	10	6.00	6,090,092	18.0	10	6.00	5,251,777	18.0	12	5.00	5,239,508	15.0	10	6.00	3,121,848	15.0	12	5.00

Notes:
AS - Air Sparge
gal - Gallon
gpm - Gallons per minute
PID - Photoionization detector
PPMV- Parts per million volume
psi- Pounds per square inch
sec- Second
in wc - Inches of water column

Date	time	Calculated values					Notes:			
		Total Totalizer Input	Total EQ totalizer	Total AS totalizer	Flow meter extraction rate	Avg extraction rate	Bag filters replaced	Air Stripper trays cleaned	Grease points NOT APPLICPALE	
		gal	gal	gal	gpm	gpm	date	date	date	
2019/07/22	7:30	0	0	0	0.03		07/22/19	07/22/19	na	
2019/07/23	7:30	7,890	7,890	7,780	21.18	5.48	na	na	na	
2019/07/29	15:30	15,259	14,458	14,503	21.18	0.81	na	na	na	
2019/08/09	7:00	35,215	41,705	42,009	21.18	1.30	na	na	na	
2019/08/13	14:30	74,216	80,193	80,890	21.18	6.28	08/12/19	na	na	
2019/08/16	14:00	143,919	149,193	150,828	21.02	16.25	na	na	na	took effluent bag filters and took them from series to parallel
2019/08/19	9:30	229,190	233,626	235,658	21.53	21.05	na	na	na	
2019/08/26	12:00	442,495	445,076	448,205	21.18	20.85	na	na	na	
2019/09/11	11:30	660,192	664,091	665,511	20.45	9.46	09/11/19	09/11/19	na	monthly om as cleaned
2019/10/03	12:30	1,173,179	1,201,258	1,175,082	20.69	16.16	10/01/19	10/01/19	na	monthly om as cleaned, cleaned all ij flow meters and removed selionds guts.
2019/11/07	10:45	2,173,928	2,334,155	2,253,219	21.01	19.90	11/04/19	11/04/19	na	monthly om as cleaned
2019/12/10	7:30	2,950,294	3,416,384	3,103,418	20.77	16.40	12/09/19	12/09/19	na	monthly om as cleaned
2020/01/14	8:00	3,280,184	3,959,892	3,460,705	20.98	6.54			na	
2020/02/13	12:00	3,886,053	5,114,020	4,127,819	20.69	13.95	02/11/20	02/11/20	na	all ij flow meters were cleaned in jan
2020/04/09	14:30	5,369,668	8,203,623	5,791,342	20.51	18.36	04/06/20	04/06/20	na	
2020/05/14	7:30	6,549,277	8,325,468	6,504,740	20.69	23.60	05/13/20	05/13/20	na	EQ tank and AS totalizers are not counting need further review
2020/06/04	15:15	6,829,116	8,376,880	6,554,498	20.27	9.11	06/04/20	06/04/20	na	ft301 &ft501 replaced 2jun20
2020/07/13	7:30	7,477,392	9,042,896	7,179,631	20.93	11.64	07/13/20	07/13/20	na	monthly om
2020/08/11	13:30	8,125,667	9,708,912	7,804,765	20.93	15.39	08/11/20	08/11/20	na	monthly om
2020/09/15	17:00	8,682,698	10,348,132	8,365,844	20.69	11.01	09/15/20	09/15/20	na	monthly om as cleaned
2020/10/21	14:00	9,351,141	11,115,195	9,039,139	20.69	12.94	10/19/20	10/19/20	na	monthly om as cleaned
2020/11/23	9:00	10,193,242	11,992,040	9,932,455	20.69	17.83	11/06/20	11/06/20	na	monthly om as cleaned
2020/12/15	13:00	10,745,038	12,572,668	10,538,984	21.01	17.29	12/15/20	12/15/20	na	monthly om as cleaned, floats cleaned, meters cleaned
2021/01/18	15:00	11,666,772	13,778,986	11,536,284	21.18	18.78	01/18/21	01/18/21	na	monthly om as cleaned, floats cleaned, meters cleaned
2021/02/16	16:00	12,337,511	14,564,979	12,239,272	21.18	16.04	02/16/21	02/16/21	na	monthly om as cleaned, floats cleaned, meters cleaned
2021/03/14	15:00	13,116,556	15,401,602	13,069,576	21.09	20.84	03/14/21	03/14/21	na	monthly om as cleaned, floats cleaned, meters cleaned
2021/04/17	18:00	13,895,603	16,238,225	13,899,880	21.01	15.85	04/17/21	04/17/21	na	monthly om as cleaned, floats cleaned, meters cleaned
2021/05/18	14:00	14,674,651	17,074,849	14,730,185	20.93	17.55	05/18/21	05/18/21	na	monthly om as cleaned, floats cleaned, meters cleaned
2021/06/14	15:00	15,419,385	17,858,428	15,528,180	21.10	19.13	06/14/21	06/14/21	na	monthly om as cleaned, floats cleaned, meters cleaned
2021/07/30	13:00	16,164,120	18,642,008	16,326,176	21.02	11.26	07/30/21	07/30/21	na	monthly om as cleaned, floats cleaned, meters cleaned
2021/08/19	13:00	16,416,577	18,903,275	16,600,094	20.86	8.77	08/19/21	08/19/21	na	monthly om as cleaned, floats cleaned, meters cleaned
2021/09/10	13:00	16,718,219	19,210,391	16,631,495	20.86	9.52	09/10/21	09/10/21	na	monthly om as cleaned, floats cleaned, meters cleaned
2021/10/07	13:00	17,019,637	19,517,467	16,663,150	21.10	7.75	10/07/21	10/07/21	na	monthly om as cleaned, floats cleaned, meters cleaned; September the blower motor was damaged and replaced system
2021/11/10	13:00	17,862,166	20,510,425	16,831,544	21.10	17.21	11/10/21	11/10/21	na	monthly om as cleaned, floats cleaned, meters cleaned
2021/12/12	13:00	18,704,694	21,503,383	16,999,937	21.10	18.28	12/12/21	12/12/21	na	monthly om as cleaned, floats cleaned, meters cleaned
2022/01/21	13:00	19,547,223	22,496,340	17,168,331	21.10	14.63	01/21/22	01/21/22	na	monthly om as cleaned, floats cleaned, meters cleaned
2022/02/25	13:00	20,389,751	23,489,298	17,168,331	21.10	16.72	02/25/22	02/25/22	na	monthly om as cleaned, floats cleaned, meters cleaned
2022/03/28	13:00	21,232,280	24,482,256	17,168,331	21.10	18.87	03/28/22	03/28/22	na	monthly om as cleaned, floats cleaned, meters cleaned
2022/04/25	13:00	21,973,269	25,453,597	17,168,331	21.10	18.38	04/25/22	04/25/22	na	monthly om as cleaned, floats cleaned, meters cleaned
2022/05/19	13:00	22,846,808	25,864,776	17,336,724	21.10	25.28	05/19/22	05/19/22	na	monthly om as cleaned, floats cleaned, meters cleaned
2022/06/20	13:00	23,720,347	26,275,955	17,505,118	21.10	18.96	06/20/22	06/20/22	na	monthly om as cleaned, floats cleaned, meters cleaned
2022/07/25	13:00	24,239,601	26,687,134	17,673,511	21.10	10.30	07/25/22	07/25/22	na	monthly om as cleaned, floats cleaned, meters cleaned
2022/08/22	13:00	25,093,902	27,541,435	18,527,812	21.10	21.19	08/22/22	08/22/22	na	monthly om as cleaned, floats cleaned, meters cleaned
2022/09/19	13:00	25,948,794	28,396,327	19,382,704	21.10	21.20	09/19/22	09/19/22	na	monthly om as cleaned, floats cleaned, meters cleaned
2022/10/24	13:00	27,015,294	29,462,827	20,449,204	21.10	21.16	10/24/22	10/24/22	na	monthly om as cleaned, floats cleaned, meters cleaned
2022/11/21	13:00	27,644,723	30,312,550	21,298,927	21.10	15.61	11/21/22	11/21/22	na	monthly om as cleaned, floats cleaned, meters cleaned
2022/12/18	14:00	27,778,938	31,331,987	21,317,433	21.18	3.45	12/18/22	12/18/22	na	monthly om as cleaned, floats cleaned, meters cleaned
2023/01/31	12:00	28,011,068	33,012,210	21,447,893	21.18	3.67	01/31/23	01/31/23	na	monthly om as cleaned, floats cleaned, meters cleaned
2023/02/21	12:00	28,586,979	33,588,121	22,002,192	21.18	19.04	02/21/23	02/21/23	na	monthly om as cleaned, floats cleaned, meters cleaned
2023/03/20	12:00	29,162,890	34,164,032	22,556,491	21.18	14.81	03/20/23	03/20/23	na	monthly om as cleaned, floats cleaned, meters cleaned
2023/04/18	12:00	29,738,802	34,739,944	23,110,790	21.18	13.79	04/18/23	04/18/23	na	monthly om as cleaned, floats cleaned, meters cleaned
2023/05/22	12:00	30,314,713	35,315,855	23,665,089	21.18	11.76	05/22/23	05/22/23	na	monthly om as cleaned, floats cleaned, meters cleaned
2023/06/20	12:00	30,890,624	35,891,766	24,219,388	21.18	13.79	06/20/23	06/20/23	na	monthly om as cleaned, floats cleaned, meters cleaned
2023/07/18	12:00	31,466,535	36,467,677	24,773,687	21.18	14.28	07/18/23	07/18/23	na	monthly om as cleaned, floats cleaned, meters cleaned
2023/08/21	12:00	32,042,446	37,043,588	25,327,986	21.18	11.76	08/21/23	08/21/23	na	monthly om as cleaned, floats cleaned, meters cleaned
2023/09/30	12:00	32,562,756	37,563,898	25,865,711	21.18	9.03	09/30/23	09/30/23	na	monthly om as cleaned, floats cleaned, meters cleaned

Notes:
AS - Air Sparge
gal - Gallon
gpm - Gallons per minute
PID - Photoionization detector
PPMV- Parts per million volume
psi- Pounds per square inch
sec- Second
in wc - Inches of water column

APPENDIX D

SAMPLING FIELD NOTES AND LOG SHEETS

Tetra Tech, Inc. / FDEP Groundwater Sampling Sheet

SITE NAME: **Component Refurbishment & Chemical Analysis Facility (CRCA)**	SITE LOCATION: **Kennedy Space Center (KSC), FL**	
LOCATION ID: MW0002	SAMPLE ID: **CRCA-MW0002-032.5-20230125** Sample depth (ddd.d)=[bottom of screen (feet bls)-Top depth] x 0.5-bottom of screen (feet bls)	DATE: **01/25/2023**

PURGING DATA

STATIC DEPTH TO WATER (feet btoc): 3.99	CASING HEIGHT (feet als): NA	STATIC DEPTH TO WATER (feet bls) = DTW (btoc) - Casing Height (feet als): NA	WELL SCREEN INTERVAL DEPTH (feet bls): **30 to 35**

WELL DIAMETER (inches): 1	TUBING DIAMETER (inches): **3/16**	PURGE PUMP TYPE OR BAILER: **Peristaltic Pump**	TOP DEPTH = top of screen or depth to water which ever is greatest (feet bls): **30**	BOTTOM DEPTH (feet bls): **35**

WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable)

_____Liters.

EQUIPMENT VOLUME PURGE: 1 EQUIPMENT VOL. = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable)

0.405 Liters. = 0.005 + (0.005 X 45.0) + 0.175

INITIAL PUMP OR TUBING DEPTH IN WELL (feet): 32.5	FINAL PUMP OR TUBING DEPTH IN WELL (feet): 32.5	PURGING INITIATED AT: 1540	PURGING ENDED AT: 1604	TOTAL VOLUME PURGED (Liters): 4.8

TIME	VOLUME PURGED (Liters)	CUMUL. VOLUME PURGED (Liters)	PURGE RATE (mlpm)	DEPTH TO WATER (feet)	pH (standard units)	TEMP. (°C)	COND. (µS/cm)	DISSOLVED OXYGEN (mg/L)	TURBIDITY (NTUs)	ORP (mV)	COLOR (describe)
1550	2.0	2.0	200.0	4.05	6.50	25.8	835.0	0.09	2.85	-102.5	Clear
1555	1.0	3.0	|	4.05	6.50	25.8	835.0	0.07	1.95	-105.0	|
1600	1.0	4.0	|	4.05	6.50	25.9	833.0	0.06	1.89	-109.0	|
1604	0.8	4.8	200.0	4.05	6.51	26.0	835.0	0.05	1.83	-111.0	Clear
1605	Sample	Collected									

WELL CAPACITY (Liters Per Foot): **0.75"** = 0.076; **1"** = 0.15; **1.25"** = 0.23; **2"** = 0.61; **3"** = 1.40; **4"** = 2.46; **5"** = 3.86; **6"** = 5.57; **12"** = 22.26
TUBING INSIDE DIA. CAPACITY (Liters/Ft.): **1/8"** = 0.002; **3/16"** = 0.005; **1/4"** = 0.0098; **5/16"** = 0.015; **3/8"** = 0.023; **1/2"** = 0.038; **5/8"** = 0.09

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION: Robert Siegel / Tetra Tech	SAMPLER(S) SIGNATURES:	SAMPLING INITIATED AT: 1605	SAMPLING ENDED AT: 1615

PUMP OR TUBING DEPTH IN WELL (feet): 32.5	SAMPLE PUMP FLOW RATE (mL per minute): 175.0	TUBING MATERIAL CODE: HDPE+S

FIELD DECONTAMINATION: **(Y)** N	FIELD-FILTERED: Y **(N)** FILTER SIZE: ____ µm Filtration Equipment Type: _____	DUPLICATE: Y **(N)**

SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION			INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	FINAL pH		
1	3	CG	40 mL	HCl/4°C	N/A	<2	8260TCL42	APP
2	3	CG	40 mL	Ice	N/A	See above	8260TCL42	APP

REMARKS: after sample total depth check 35.0 ft toc sump purge clear to clear 0.20 gal

MATERIAL CODES: **AG** = Amber Glass; **CG** = Clear Glass; **PE** = Polyethylene; **PP** = Polypropylene; **S** = Silicone; **T** = Teflon; **O** = Other (Specify)

SAMPLING/PURGING EQUIPMENT CODES: **APP** = After Peristaltic Pump; **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **PP =** Peristaltic Pump **RFPP** = Reverse Flow Peristaltic Pump; **SM** = Straw Method (Tubing Gravity Drain); **VT** = Vacuum Trap; **O** = Other (Specify)

Tetra Tech, Inc. / FDEP Groundwater Sampling Sheet

SITE NAME: **Component Refurbishment & Chemical Analysis Facility (CRCA)**	SITE LOCATION: **Kennedy Space Center (KSC), FL**	
LOCATION ID: MW0013	SAMPLE ID: **CRCA-MW0013-027.5-20230126** Sample depth (ddd.d)=[bottom of screen (feet bls)-Top depth] x 0.5-bottom of screen (feet bls)	DATE: **01/26/2023**

PURGING DATA

STATIC DEPTH TO WATER (feet btoc): 5.45	CASING HEIGHT (feet als): NA	STATIC DEPTH TO WATER (feet bls) = DTW (btoc) - Casing Height (feet als): NA	WELL SCREEN INTERVAL DEPTH (feet bls): **25 to 30**

WELL DIAMETER (inches): 1	TUBING DIAMETER (inches): **3/16**	PURGE PUMP TYPE OR BAILER: **Peristaltic Pump**	TOP DEPTH = top of screen or depth to water which ever is greatest (feet bls): **25**	BOTTOM DEPTH (feet bls): **30**

WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable)

_____Liters.

EQUIPMENT VOLUME PURGE: 1 EQUIPMENT VOL. = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable)

0.38 Liters. = 0.005 + (0.005 X 40.0) + 0.175

INITIAL PUMP OR TUBING DEPTH IN WELL (feet): 27.5	FINAL PUMP OR TUBING DEPTH IN WELL (feet): 27.5	PURGING INITIATED AT: 1000	PURGING ENDED AT: 1024	TOTAL VOLUME PURGED (Liters): 7.2

TIME	VOLUME PURGED (Liters)	CUMUL. VOLUME PURGED (Liters)	PURGE RATE (mlpm)	DEPTH TO WATER (feet)	pH (standard units)	TEMP. (°C)	COND. (µS/cm)	DISSOLVED OXYGEN (mg/L)	TURBIDITY (NTUs)	ORP (mV)	COLOR (describe)
1010	3.0	3.0	300.0	5.74	6.30	23.0	963.0	0.21	4,13	-85.0	Clear
1015	1.5	4.5	|	5.74	6.31	23.1	952.0	0.15	1.75	-91.1	|
1020	1.5	6.0	|	5.74	6.31	23.1	953.0	0.13	1.65	-94.5	|
1024	1.2	7.2	300.0	5.74	6.31	23.1	952.0	0.12	1.55	-95.6	clear
1025	Sample	Col									

WELL CAPACITY (Liters Per Foot): **0.75"** = 0.076; **1"** = 0.15; **1.25"** = 0.23; **2"** = 0.61; **3"** = 1.40; **4"** = 2.46; **5"** = 3.86; **6"** = 5.57; **12"** = 22.26
TUBING INSIDE DIA. CAPACITY (Liters/Ft.): **1/8"** = 0.002; **3/16"** = 0.005; **1/4"** = 0.0098; **5/16"** = 0.015; **3/8"** = 0.023; **1/2"** = 0.038; **5/8"** = 0.09

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION: Robert Siegel / Tetra Tech	SAMPLER(S) SIGNATURES:	SAMPLING INITIATED AT: 1025	SAMPLING ENDED AT:1035
PUMP OR TUBING DEPTH IN WELL (feet): 27.5	SAMPLE PUMP FLOW RATE (mL per minute): 150.0	TUBING MATERIAL CODE:T+S	
FIELD DECONTAMINATION: **(Y)** N	FIELD-FILTERED: Y **(N)** FILTER SIZE: ____ µm Filtration Equipment Type: _____	DUPLICATE: Y **(N)**	

SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION			INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	FINAL pH		
1	3	CG	40 mL	HCl/4°C	N/A	<2	8260TCL42	APP
1	3	CG	40 mL	ice	N/A	See above	8260TCL42	APP

REMARKS: after sample total depth check 30.20 ft toc sump purge clear to clear 0.20 gal

MATERIAL CODES: **AG** = Amber Glass; **CG** = Clear Glass; **PE** = Polyethylene; **PP** = Polypropylene; **S** = Silicone; **T** = Teflon; **O** = Other (Specify)

SAMPLING/PURGING EQUIPMENT CODES: **APP** = After Peristaltic Pump; **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **PP =** Peristaltic Pump **RFPP** = Reverse Flow Peristaltic Pump; **SM** = Straw Method (Tubing Gravity Drain); **VT** = Vacuum Trap; **O** = Other (Specify)

Tetra Tech, Inc. / FDEP Groundwater Sampling Sheet

SITE NAME: **Component Refurbishment & Chemical Analysis Facility (CRCA)**	SITE LOCATION: **Kennedy Space Center (KSC), FL**	
LOCATION ID: MW0018	SAMPLE ID: **CRCA-MW0018-058.0-20230125** Sample depth (ddd.d)=[bottom of screen (feet bls)-Top depth] x 0.5-bottom of screen (feet bls)	DATE: **01/25/2023**

PURGING DATA

STATIC DEPTH TO WATER (feet btoc): 4.07	CASING HEIGHT (feet als): NA	STATIC DEPTH TO WATER (feet bls) = DTW (btoc) - Casing Height (feet als): NA	WELL SCREEN INTERVAL DEPTH (feet bls): **53 to 63**

WELL DIAMETER (inches): 1	TUBING DIAMETER (inches): **3/16**	PURGE PUMP TYPE OR BAILER: **Peristaltic Pump**	TOP DEPTH = top of screen or depth to water which ever is greatest (feet bls): **53**	BOTTOM DEPTH (feet bls): **63**

WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable)

_____Liters.

EQUIPMENT VOLUME PURGE: 1 EQUIPMENT VOL. = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable)

0.53 Liters. = 0.005 + (0.005 X 70.0) + 0.175

INITIAL PUMP OR TUBING DEPTH IN WELL (feet): 58.0	FINAL PUMP OR TUBING DEPTH IN WELL (feet): 58.0	PURGING INITIATED AT: 1445	PURGING ENDED AT: 1509	TOTAL VOLUME PURGED (Liters): 7.2

TIME	VOLUME PURGED (Liters)	CUMUL. VOLUME PURGED (Liters)	PURGE RATE (mlpm)	DEPTH TO WATER (feet)	pH (standard units)	TEMP. (°C)	COND. (µS/cm)	DISSOLVED OXYGEN (mg/L)	TURBIDITY (NTUs)	ORP (mV)	COLOR (describe)
1455	3.0	3.0	300.0	5.05	6.77	25.7	997.0	0.08	9.32	-99.0	Clear
1500	1.5	4.5	|	5.05	6.77	25.7	995.0	0.08	2.50	-104.0	|
1505	1.5	6.0	|	5.05	6.78	25.7	995.0	0.06	1.61	-107.0	|
1509	1.2	7.2	300.0	5.05	6.78	25.7	1000.0	0.06	1.12	-108.5	Clear
1510	Sample	Collected									

WELL CAPACITY (Liters Per Foot): **0.75"** = 0.076; **1"** = 0.15; **1.25"** = 0.23; **2"** = 0.61; **3"** = 1.40; **4"** = 2.46; **5"** = 3.86; **6"** = 5.57; **12"** = 22.26
TUBING INSIDE DIA. CAPACITY (Liters/Ft.): **1/8"** = 0.002; **3/16"** = 0.005; **1/4"** = 0.0098; **5/16"** = 0.015; **3/8"** = 0.023; **1/2"** = 0.038; **5/8"** = 0.09

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION: Robert Siegel / Tetra Tech	SAMPLER(S) SIGNATURES:	SAMPLING INITIATED AT: 1510	SAMPLING ENDED AT: 1520
PUMP OR TUBING DEPTH IN WELL (feet): 58.0	SAMPLE PUMP FLOW RATE (mL per minute): 275.0	TUBING MATERIAL CODE: HDPE+S	
FIELD DECONTAMINATION: **(Y)** N	FIELD-FILTERED: Y **(N)** FILTER SIZE: ____ µm Filtration Equipment Type: _____	DUPLICATE: Y **(N)**	

SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION			INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	FINAL pH		
1	3	CG	40 mL	HCl/4°C	N/A	<2	8260TCL42	APP
2	3	CG	40 ml	Ice	N/A	See above	8260TCL42	APP

REMARKS: after sample total depth check 63.50 ft toc sump purge clear to clear 0.30 gal

MATERIAL CODES: **AG** = Amber Glass; **CG** = Clear Glass; **PE** = Polyethylene; **PP** = Polypropylene; **S** = Silicone; **T** = Teflon; **O** = Other (Specify)

SAMPLING/PURGING EQUIPMENT CODES: **APP** = After Peristaltic Pump; **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **PP =** Peristaltic Pump **RFPP** = Reverse Flow Peristaltic Pump; **SM** = Straw Method (Tubing Gravity Drain); **VT** = Vacuum Trap; **O** = Other (Specify)

Tetra Tech, Inc. / FDEP Groundwater Sampling Sheet

SITE NAME: **Component Refurbishment & Chemical Analysis Facility (CRCA)**	SITE LOCATION: **Kennedy Space Center (KSC), FL**	
LOCATION ID: MW0019	SAMPLE ID: **CRCA-MW0019-058.0-20230125** Sample depth (ddd.d)=[bottom of screen (feet bls)-Top depth] x 0.5-bottom of screen (feet bls)	DATE: **01/25/2023**

PURGING DATA

STATIC DEPTH TO WATER (feet btoc): 5.35	CASING HEIGHT (feet als): NA	STATIC DEPTH TO WATER (feet bls) = DTW (btoc) - Casing Height (feet als): NA	WELL SCREEN INTERVAL DEPTH (feet bls): **53 to 63**	
WELL DIAMETER (inches): 1	TUBING DIAMETER (inches): **3/16**	PURGE PUMP TYPE OR BAILER: **Peristaltic Pump**	TOP DEPTH = top of screen or depth to water which ever is greatest (feet bls): **53**	BOTTOM DEPTH (feet bls): **63**

WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable)

_____Liters.

EQUIPMENT VOLUME PURGE: 1 EQUIPMENT VOL. = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable)

0.85 Liters. (0.005 x 75) + 0.475 = 0.85

INITIAL PUMP OR TUBING DEPTH IN WELL (feet): 58.0	FINAL PUMP OR TUBING DEPTH IN WELL (feet): 58.0	PURGING INITIATED AT: 1240	PURGING ENDED AT: 1309	TOTAL VOLUME PURGED (Liters): 7.25

TIME	VOLUME PURGED (Liters)	CUMUL. VOLUME PURGED (Liters)	PURGE RATE (mlpm)	DEPTH TO WATER (feet)	pH (standard units)	TEMP. (°C)	COND. (µS/cm)	DISSOLVED OXYGEN (mg/L)	TURBIDITY (NTUs)	ORP (mV)	COLOR (describe)
1250	2.50	2.50	250.0	6.10	6.57	22.8	797.0	0.15	66.5	-1.5.5	Cloudy
1255	1.25	3.75	|	6.10	6.57	22.9	798.0	0.13	30.0	-110.0	Clear
1300	1.25	5.00	|	6.10	6.58	22.9	800.0	0.12	18.5	-111.9	|
1305	1.25	6.25	|	6.10	6.58	22.9	800.0	0.11	17.3	-112.5	|
1309	1.00	7.25	250.0	6.10	6.58	22.9	800.0	0.11	16.0	-112.5	Clear
1310	Sample	Collected									

WELL CAPACITY (Liters Per Foot): **0.75"** = 0.076; **1"** = 0.15; **1.25"** = 0.23; **2"** = 0.61; **3"** = 1.40; **4"** = 2.46; **5"** = 3.86; **6"** = 5.57; **12"** = 22.26
TUBING INSIDE DIA. CAPACITY (Liters/Ft.): **1/8"** = 0.002; **3/16"** = 0.005; **1/4"** = 0.0098; **5/16"** = 0.015; **3/8"** = 0.023; **1/2"** = 0.038; **5/8"** = 0.09

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION: Robert Siegel / Tetra Tech	SAMPLER(S) SIGNATURES:	SAMPLING INITIATED AT: 1310	SAMPLING ENDED AT: 1320
PUMP OR TUBING DEPTH IN WELL (feet): 58.0	SAMPLE PUMP FLOW RATE (mL per minute): 225.0	TUBING MATERIAL CODE: T+S	
FIELD DECONTAMINATION: **(Y)** N	FIELD-FILTERED: Y **(N)** FILTER SIZE: ____ µm Filtration Equipment Type: _____	DUPLICATE: Y **(N)**	

SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION			INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	FINAL pH		
1	3	CG	40 mL	HCl/4°C	N/A	<2	8260TCL42	APP
1	3	CG	40 mL	Ice	N/A	<2	8260TCL42	APP

REMARKS: after sample total depth check 63.20 ft toc sump purge black to fouled 0.10 gal

MATERIAL CODES: **AG** = Amber Glass; **CG** = Clear Glass; **PE** = Polyethylene; **PP** = Polypropylene; **S** = Silicone; **T** = Teflon; **O** = Other (Specify)

SAMPLING/PURGING EQUIPMENT CODES: **APP** = After Peristaltic Pump; **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **PP =** Peristaltic Pump **RFPP** = Reverse Flow Peristaltic Pump; **SM** = Straw Method (Tubing Gravity Drain); **VT** = Vacuum Trap; **O** = Other (Specify)

Tetra Tech, Inc. / FDEP Groundwater Sampling Sheet

SITE NAME: **Component Refurbishment & Chemical Analysis Facility (CRCA)**	SITE LOCATION: **Kennedy Space Center (KSC), FL**	
LOCATION ID: MW0031	SAMPLE ID: **CRCA-MW0031-058.0-20230124** Sample depth (ddd.d)=[bottom of screen (feet bls)-Top depth] x 0.5-bottom of screen (feet bls)	DATE: **01/24/2023**

PURGING DATA

STATIC DEPTH TO WATER (feet btoc): 5.09	CASING HEIGHT (feet als): NA	STATIC DEPTH TO WATER (feet bls) = DTW (btoc) - Casing Height (feet als): NA	WELL SCREEN INTERVAL DEPTH (feet bls): **53 to 63**

WELL DIAMETER (inches): 1	TUBING DIAMETER (inches): **3/16**	PURGE PUMP TYPE OR BAILER: **Peristaltic Pump**	TOP DEPTH = top of screen or depth to water which ever is greatest (feet bls): **53**	BOTTOM DEPTH (feet bls): **63**

WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable)

_____Liters.

EQUIPMENT VOLUME PURGE: 1 EQUIPMENT VOL. = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable)

0.53 Liters. 0.005 + (0.005 X 70.0) + 0.175

INITIAL PUMP OR TUBING DEPTH IN WELL (feet): 58	FINAL PUMP OR TUBING DEPTH IN WELL (feet): 58.0	PURGING INITIATED AT: 1425	PURGING ENDED AT: 1449	TOTAL VOLUME PURGED (Liters): 7.2

TIME	VOLUME PURGED (Liters)	CUMUL. VOLUME PURGED (Liters)	PURGE RATE (mlpm)	DEPTH TO WATER (feet)	pH (standard units)	TEMP. (°C)	COND. (µS/cm)	DISSOLVED OXYGEN (mg/L)	TURBIDITY (NTUs)	ORP (mV)	COLOR (describe)
1435	3.0	3.0	300.0	5.15	6.58	24.9	825.0	0.90	0.26	-35.2	Clear
1440	1.5	4.5	|	5.15	6.62	25.0	823.0	0.90	0.00	-43.0	|
1445	1.5	6.0	|	5.15	6.64	25.0	823.0	1.07	0.00	-48.0	|
1449	1.2	7.2	300.0	5.15	6.65	25.0	822.0	0.90	0.00	-49.5	|
1450	Sample	Collected									clear

WELL CAPACITY (Liters Per Foot): **0.75"** = 0.076; **1"** = 0.15; **1.25"** = 0.23; **2"** = 0.61; **3"** = 1.40; **4"** = 2.46; **5"** = 3.86; **6"** = 5.57; **12"** = 22.26
TUBING INSIDE DIA. CAPACITY (Liters/Ft.): **1/8"** = 0.002; **3/16"** = 0.005; **1/4"** = 0.0098; **5/16"** = 0.015; **3/8"** = 0.023; **1/2"** = 0.038; **5/8"** = 0.09

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION: Robert Siegel / Tetra Tech	SAMPLER(S) SIGNATURES:	SAMPLING INITIATED AT: 1450	SAMPLING ENDED AT: 1455
PUMP OR TUBING DEPTH IN WELL (feet): 58.0	SAMPLE PUMP FLOW RATE (mL per minute): 275.0	TUBING MATERIAL CODE: HDPE+S	
FIELD DECONTAMINATION: **(Y)** N	FIELD-FILTERED: Y **(N)** FILTER SIZE: ____ µm Filtration Equipment Type: _____	DUPLICATE: Y **(N)**	

SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION			INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	FINAL pH		
1	3	CG	40 mL	HCl/4°C	N/A	<2	8260TCL42	APP

REMARKS: after sample total depth check 63.80 ft toc sump purge black to clear 0.20 gal

MATERIAL CODES: **AG** = Amber Glass; **CG** = Clear Glass; **PE** = Polyethylene; **PP** = Polypropylene; **S** = Silicone; **T** = Teflon; **O** = Other (Specify)

SAMPLING/PURGING EQUIPMENT CODES: **APP** = After Peristaltic Pump; **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **PP =** Peristaltic Pump **RFPP** = Reverse Flow Peristaltic Pump; **SM** = Straw Method (Tubing Gravity Drain); **VT** = Vacuum Trap; **O** = Other (Specify)

Tetra Tech, Inc. / FDEP Groundwater Sampling Sheet

SITE NAME: **Component Refurbishment & Chemical Analysis Facility (CRCA)**	SITE LOCATION: **Kennedy Space Center (KSC), FL**	
LOCATION ID: MW0032	SAMPLE ID: **CRCA-MW0032-058.0-20230124** Sample depth (ddd.d)=[bottom of screen (feet bls)-Top depth] x 0.5-bottom of screen (feet bls)	DATE: **01/24/2023**

PURGING DATA

STATIC DEPTH TO WATER (feet btoc): 3.11	CASING HEIGHT (feet als): NA	STATIC DEPTH TO WATER (feet bls) = DTW (btoc) - Casing Height (feet als): NA	WELL SCREEN INTERVAL DEPTH (feet bls): **53 to 63**

WELL DIAMETER (inches): 1	TUBING DIAMETER (inches): **3/16**	PURGE PUMP TYPE OR BAILER: **Peristaltic Pump**	TOP DEPTH = top of screen or depth to water which ever is greatest (feet bls): **53**	BOTTOM DEPTH (feet bls): **63**

WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable)

_____Liters.

EQUIPMENT VOLUME PURGE: 1 EQUIPMENT VOL. = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable)

0.85 Liters. (0.005 x 65) + 0.475 = 0.85

INITIAL PUMP OR TUBING DEPTH IN WELL (feet): 58	FINAL PUMP OR TUBING DEPTH IN WELL (feet): 58.0	PURGING INITIATED AT: 1550	PURGING ENDED AT: 1614	TOTAL VOLUME PURGED (Liters): 7.2

TIME	VOLUME PURGED (Liters)	CUMUL. VOLUME PURGED (Liters)	PURGE RATE (mlpm)	DEPTH TO WATER (feet)	pH (standard units)	TEMP. (°C)	COND. (µS/cm)	DISSOLVED OXYGEN (mg/L)	TURBIDITY (NTUs)	ORP (mV)	COLOR (describe)
1600	3.0	3.0	300.0	3.50	6.46	22.2	1300.0	0.18	6.21	-27.2	Clear
1605	1.5	4.5	|	3.50	6.46	22.3	1315.0	0.16	2.84	-34.0	|
1610	1.5	6.0	|	3.50	6.47	22.3	1340.0	0.15	0.87	-40.5	|
1614	1.2	7.2	300.0	3.50	6.47	22.3	1350.0	0.14	0.77	-44.5	Clear
1615	sample	collected									

WELL CAPACITY (Liters Per Foot): **0.75"** = 0.076; **1"** = 0.15; **1.25"** = 0.23; **2"** = 0.61; **3"** = 1.40; **4"** = 2.46; **5"** = 3.86; **6"** = 5.57; **12"** = 22.26
TUBING INSIDE DIA. CAPACITY (Liters/Ft.): **1/8"** = 0.002; **3/16"** = 0.005; **1/4"** = 0.0098; **5/16"** = 0.015; **3/8"** = 0.023; **1/2"** = 0.038; **5/8"** = 0.09

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION: Robert Siegel / Tetra Tech	SAMPLER(S) SIGNATURES:	SAMPLING INITIATED AT: 1615	SAMPLING ENDED AT: 1620
PUMP OR TUBING DEPTH IN WELL (feet): 58.0	SAMPLE PUMP FLOW RATE (mL per minute): 275.0	TUBING MATERIAL CODE: HDPE+S	
FIELD DECONTAMINATION: **(Y)** N	FIELD-FILTERED: Y **(N)** FILTER SIZE: ____ µm Filtration Equipment Type: _____	DUPLICATE: Y **(N)**	

SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION			INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	FINAL pH		
1	3	CG	40 mL	HCl/4°C	N/A	<2	8260TCL42	APP

REMARKS: hose to short to reach bottom of well replaced before sampling/purge started.
after sample total depth check 65.8 ft toc sump purge black fouled to clear 0.50 gal

MATERIAL CODES: **AG** = Amber Glass; **CG** = Clear Glass; **PE** = Polyethylene; **PP** = Polypropylene; **S** = Silicone; **T** = Teflon; **O** = Other (Specify)

SAMPLING/PURGING EQUIPMENT CODES: **APP** = After Peristaltic Pump; **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **PP =** Peristaltic Pump **RFPP** = Reverse Flow Peristaltic Pump; **SM** = Straw Method (Tubing Gravity Drain); **VT** = Vacuum Trap; **O** = Other (Specify)

Tetra Tech, Inc.

GROUNDWATER LEVEL MEASUREMENT SHEET

Project Name: NASA - CRCA
Project No.: 112G08970
Location: Kennedy Space Center, Florida
Personnel: Rob Siegel
Weather Conditions: Clear
Measuring Device: Heron Skinny Dipper
Tidally Influenced: Yes ___ No _X_
Remarks:

Well or Piezometer Number	Date	Time	Top of Casing Elevation (feet)*	Screened Interval (feet bls)	Water Level Indicator Reading (feet)*	Thickness of Free Product (feet)*	Groundwater Elevation (feet)*	Comments
MW0001	1/25/2023	815	6.11	5-15	3.89	None	2.22	
MW0002	1/25/2023	|	6.14	30-35	3.99	None	2.15	
MW0003	1/25/2023	|	6.99	5-15	4.82	None	2.17	
MW0004	1/25/2023	|	6.30	5-15	4.05	None	2.25	
MW0005	1/25/2023	|	6.69	5-15	4.60	None	2.09	
MW0005A	1/25/2023	|	6.55	5-10	4.36	None	2.19	
MW0005B	1/25/2023	|	6.69	12-17	4.55	None	2.14	
MW0005C	1/25/2023	|	6.85	2-7	4.61	None	2.24	
MW0006	1/25/2023	|	6.58	5-15	4.35	None	2.23	
MW0007	1/25/2023	|	6.54	5-15	4.37	None	2.17	
MW0008	1/25/2023	|	7.36	5-15	5.02	None	2.34	
MW0009	1/25/2023	|	6.84	5-15	4.56	None	2.28	
MW0010	1/25/2023	|	6.66	5-15	4.49	None	2.17	
MW0011	1/25/2023	|	7.40	5-10	4.87	None	2.53	
MW0012	1/25/2023	|	7.07	25-30	4.93	None	2.14	
MW0013	1/25/2023	|	7.46	25-30	5.43	None	2.03	
MW0014	1/25/2023	|	6.86	5-10	4.78	None	2.08	
MW0015	1/25/2023	|	6.82	25-30	4.79	None	2.03	
MW0016	1/25/2023	|	6.18	5-10	4.05	None	2.13	
MW0017	1/25/2023	|	6.16	25-30	4.07	None	2.09	
MW0018	1/25/2023	|	7.05	53-63	4.84	None	2.21	
MW0019	1/25/2023	|	7.13	53-63	5.35	None	1.78	
MW0020	1/25/2023	|	7.27	53-63	5.34	None	1.93	
MW0021	1/25/2023	|	7.54	30-40	5.54	None	2.00	
MW0022	1/25/2023	|	6.44	30-40	4.23	None	2.21	
MW0023	1/25/2023	|	6.50	53-63	4.27	None	2.23	
MW0024	1/25/2023	|	6.22	53-63	4.08	None	2.14	
MW0025	1/25/2023	|	6.91	53-63	4.92	None	1.99	
MW0026	1/25/2023	|	4.45	5-15	2.53	None	1.92	
MW0027	1/25/2023	|	4.33	30-40	2.58	None	1.75	
MW0028	1/25/2023	|	4.34	53-63	2.55	None	1.79	
MW0029	1/25/2023	|	4.79	30-40	3.03	None	1.76	
MW0030	1/25/2023	|	4.77	53-63	3.12	None	1.65	
MW0031	1/25/2023	|	6.92	53-63	5.09	None	1.83	
MW0032	1/25/2023	1130	4.70	53-63	3.11	None	1.59	

* All measurements to the nearest 0.01 foot

TETRA TECH

INSTRUMENT CALIBRATION LOGSHEET

PROJECT NAME : KSC-NASA CRCA

SITE NAME: CRCA

PROJECT NO.: 112G08970

INSTRUMENT NAME/MODEL YSI ProQ Muti meter /

MANUFACTURER: YSI / LaMotte

SERIAL NUMBER: 21D101766 / Me14842

Date of Calibration (mm/dd/yr)	Person Performing Calibration (Name)		pH (S.U.)			Cond. (µS/cm)	D.O. (mg/L)	Temp. ºC	ORP (mV)	Salinity (%)	Turbidity (0) (NTUs)	Turbidity (10) (NTUs)	Calibration Standard Lot # / Expiration Date
1/24/2023	RSS ccv/cal/icv AM	*Pre*	3.95	6.85	9.85	1485	9.21	19.4	240	NA	0	8.95	*Lot #1GF009*
		Post	X	X	X	1414	X	X	X	NA	0	10	*Exp. Date:06/23*
1/24/2023	RSS ccv PM	*Pre*	X	X	X	X	X	X	X	NA	X	X	*Lot #1GF484*
		Post	3.95	7.00	9.85	1430.00	9.12	20.10	245.00	NA	0.15	10.05	*Exp. Date:06/23*
1/25/2023	RSS ccv AM PM	*Pre*	3.95	7.00	9.85	1430.00	9.12	20.10	245.00	NA	0.15	10.05	*Lot #1GF482*
		Post	4.05	7.00	9.95	1480.00	8.93	20.80	250.00	NA	0.00	10.05	*Exp. Date:06/23*
1/26/2023	RSS ccv AM PM	*Pre*	4.05	7.00	9.95	1480.00	8.93	20.80	250.00	NA	0	10.05	*Lot # 6151*
		Post	3.95	7.00	10.00	1500.00	9.30	19.00	245.00	NA	0.05	9.85	*Exp. Date: 2/23*
		Pre											*Lot # 4801*
		Post											*Exp. Date:11/24*
		Pre											*Lot # 21380129*
		Post											*Exp. Date: 4/23*
		Pre											*Lot # 21380129*
		Post											*Exp. Date: 1/23*
		Pre											
		Post											
		Pre											
		Post											
		Pre											
		Post											

′ LaMotte 2020e ntu only

Remarks
pH = 4
pH = 7
pH = 10
Conductivity = 1413 µS/cm
ORP = 240 mV
Turb.=0 NTU
Turb.=10 NTU

Location KSC NASA Date 1-24-23

Project / Client CACA

212 lg Pk 0/1652 / 112 90 8970

some Clouds 0 To 5 mph 75°

Robert Siegel

1245 IT

1300 write 6234 cal checks
set up for Sampling

1410 setup start MW 31 ref
leg
Ice Sample store water
decon Close lids on outside
wells End MW 31

1515 setup start MW 32

1620 Ice Sample store water
decon End MW ~~30~~ 32
Close lids on out side wells
Store Equipment / Supplies in
system containers

1730 offsite 6236 / 180 Hotel Rubles

Location KSC NASA Date 1 24 23

Project / Client CRCA

2122 P6 01652 / 112 0897D

Some Clouds OTC Cmpk 56°

Robert Siegel

OBRTT

0730 onsite gen setup check
sample Cooler Triplicate Safety
review with Chucks locate
mol open wells

915 meet with Dan F gen
review Test System restart

930 return To well locates

1100 All well located and Opened
meet Charles review updates with
Chuck S

1115 offsite TT 6207 ice pickup

1130 PV2 pick up Equipment
Supplies 6213

1200 TT 1215 CC24 6222
pick up supplies Host

Note in the Rain

Location KSC NASA Date 1 25 23 75

Project / Client CRCA

212 ip 01652 / 112 60 8970

Some Clouds 0 To 5 mph 70°

Robert Siegel

0545 Cal Checks

0615 ~~Bob SFT~~ 6261 Cal Checks pH 10.0 POL

0700 onsite system running pre-checks review Tuma sample supplies review with Chucks

0815 start water levels

1130 End water levels meet site ref for access To mw 13

1145 setup start mw 13 ref lg

1225 Ice Sample store water decon End mw 13 meet site Rep setup Start mw 19 ref Lg

1325 Ice Sample store water decon Noted/~~Photod~~ Photo of mw 13 bubbles review with Chuck

Rate in the Rain

Location KSC NABA Date 1.25.23

Project / Client CRCA

212 ig 86 01652 / 112 50897O

some Clouds OT. C mph 85°

Robert Siegel

1400 offsite 6289 POL
urpres sample bottles

1420 onsite 6300 ReIce Samples
setup Start MW 18 ref lvg

1520 Ice Sample store water
decon End MW 18 setup
Start MW 2 ref lvg

1620 Ice Sample store water
decon End MW 2 store
equipment supplies in
system building

1645 offsite TT 6301

1730 Hotel 6326

Location KSC NASA Date 1-26-23 '77

Project / Client CRCA

2129 01 08970 1652 / 12 60 8970

cloudy 0 wind 61°

Robert Stegall

0600 Cal Checks

0630 TT 6341 pol signage for samples

0715 onsite 6366 ice samples meet onsite Rep Charles review locations gen setup SOW

0815 setup at AMB 7
Reg FC 1282 Nestings on 0 pin
Can A1844

0825 - 30.0 Hg Start Sample

0825 setup at AMB 2
Reg FC 1294 Floatings on 0
830 - 30.0 Hg
Tank A831

0835 offsite COCs at CC 34

0920 onsite 6391
AMB 2 @ -28.0 Hg
AMB 7 @ -28.0 Hg

Rite in the Rain

78

Location KSC NASA Date 1·26·23

Project / Client CRCA

212 ; 96 01652/112608970

Cloudy 0 to 5 mph 63°

Robert Siegel

0935	Setup	Start Sample at MW13 ref log		
1035	Ice	Sample store water		
	decon	End MW13		
	Store gen	Load Sample cooler		
1045	offsite 6392			
1055	at Gate	Blocked Transporter		
1105	meet Lab	with samples		
1115	TT 6396			
1130	onsite 640	meet Chambers gen check		
1135	Break			
1245	onsite	check	Tanks	
	AMB 2		-17.0 Hg	
	AMB 7		-17.0 Hg	

Location KSC NASA Date 1-26-23 79

Project / Client CRCA

312ig Pb 01652 / 12608970

Some Clouds 0 To 5 mph 65°

Robert Siegen 6 15

1315 Setup Reg FC1250
on Pin 0
Tank A347

1320 START -30.0 in Hg Floating

1405 VMP 2 @ -15.0 Hg 8 hr stops 1615

1420 End VMP 2 @ -11.0 1625

1435 Setup START VMP 3
0.0 Pin Reg FC1241 -30.0
Tank MO48

1500 Setup START VMP 4
0.0 Pin Reg FC1248
Tank A279

1505 VMP 3 @ -19.0 in Hg

1535 STOP VMP 3 AT -6.0 in Hg

1550 VMP 4 @ -14.0

1600 STOP VMP 4 @ -10.0

Rite in the Rain

Location KSC NASA Date 1-26-23

Project / Client CRCA

212.9 Pb 0/652 / 112 608970

	Clear 0 To 5 mph 65°				
	Robert Siegel				
1615	Stop	AMB 01	@ -7.0 "Hg		
1620	Stop	AMB 02	@ -6.0 "Hg		
1625	Setup	Start	VMP-02 @		
	-30.0	Reg	FC1236		
	Tank	A467			
1655	VMP 02	@	-19.0 "Hg		
1700	load	Sample	Equipment -		
	Supplies	To	Store offsite		
1725	Stop	VMP 02	@ -7.0		
	Box and	Complete	COC and		
	Samples	send	COC To	Chuck S	
1745	offsite	TT 6426	store at	FOL	CCF
1810	onsite	CRCA	load	TT	Orlando
	supplies				
1820	offsite	6430	1945	End	Day

Location KSC NASA Date 2.8.23

Project / Client CRCA

212 ft PL 01652 / 1260890

Clear Owned TT°
Robert Siegert
0915 TT
1030 onsite POC T534 prob. y
symptoms
1045 onsite CRCA gen review T54
set up VTP 3 meet Site Rep gen Rev
Tank A1066
Reg FC1250 / on Fin 0
1125 Start -29.0 Hg
1200 Tank at -16.0 in Hg
1225 Stop at -7.0 in Hg
complete COC date pack
sample update review w/ Tech Checks
1300 off site IT Folds
1445 Break

Tetra Tech, Inc. FDEP Groundwater Sampling Sheet

Site Name:	Component Refurbishment & Chemical Analysis Facility	Site Location:	Kennedy Space Center (KSC), Florida
Location ID:	MW0031	Sample ID:	CRCA-MW0031-058.0-20230720
Date:	7/20/2023		

Sample depth (ddd.d) = [bottom of screen (feet bls) - top depth] x 0.5-bottom of screen (feet bls)

PURGING DATA

Static Depth to Water (ft bls)	1.43	Casing Height (ft als)	NA	Static Depth to Water (ft bls) = DTW -Casing Height:	1.43	Well Screen Interval Depth (ft bls):	53 to 63
Well Diameter (in)		Tubing Diameter (in)	0.19	Purge Pump Type or Bailer:	APP	Top Depth: 53	Bottom Depth: 63

Well Volume Purge: 1 Well Volume = (Total Well Depth - Static Depth to Water) X Well Capacity

Liters 53 - 1.43 X

Equipment Volume Purge: 1 Equipment Vol. = Pump volume + (Tubing Capacity X Tubing Length) + Flow Cell Volume

0.785 Liters + 0.005 X 62 + 0.475

Initial Pump or Tubing Depth in Well (feet):	58	Final Pump or Tubing Depth in Well (feet):	58	Purging Initiated At:	9:14
Purging Ended At:	9:26	Total Vol. Purged (Liters):	2.4		

Time	Volume Purged (Liters)	Cumul. Volume Purged (Liters)	Purge Rate (mlpm)	Depth to Water (feet)	pH (standard units)	Temp (°C)	Conductivity (µS/cm)	Dissolved Oxygen (mg/L)	Turbidity (NTUs)	ORP (mV)	Color (describe)
9:20	1.8	1.8	300	1.54	6.98	26.3	471	0.48	34.60	-104.1	None
9:22	0.2	2	100	1.52	6.95	26.5	485	0.40	20.80	-103.9	-
9:24	0.2	2.2	100	1.51	6.93	26.6	485	0.37	16.20	-103.7	-
9:26	0.2	2.4	100	1.51	6.92	26.6	485	0.36	16.00	-103.9	-

Well Capacity (Liters Pet Foot): 0.75" = 0.076; **1"** = 0.15; **2"** = 0.61; **3"** = 1.40; **4"** = 2.46; **5"** = 3.86; **6"** = 5.57; **12"** = 22.26

Tubing Inside Dia. Capacity (Liters/ft.): **1/8"** = 0.002; **3/16"** = 0.005; **1/4"** = 0.0098; **5/16"** = 0.015; **3/8"** = 0.023; **1/2"** = 0.038; **5/8"** = 0.09

Sampling Data

Sampled by (Print) / Affiliation	Natalie Volk /Tetra Tech	Sampler(s) Signatures:		Sampling Initiated At:	9:30
Sampling Ended At:	9:35				
Tubing Material Code:	HDPE				
Pump or Tubing Depth in Well (feet):	58	Sample Pump Flow Rate (mL per minute):	100	Duplicate: Y N	Field Decontamination: Y N
Field Filtered: Y N		Filter Size (µm):		Filtration Equipment Type:	

Sample Container Specification				Sample Preservation (including Wet Ice)			Intended Analysis and/or Method	Sampling Equipment Code
Sample ID Code	# Containers	Material Code	Volume	Preservative Used (Including Wet Ice)	Total Volume Added in Field (mL)	Final pH		
1	3	CG	40 mL	HCl	-	<2	V8260TCL42	APP

Remarks:

Stabilization Criteria: pH: + 0.2 units Temperature: + 0.2 oC Specific Conductance: + 5% Dissolved Oxygen: all readings < 20% saturation (see Table FS 2200-2); optionally, + 0.2 mg/L or + 10% (whichever is greater) Turbidity: all readings < 20 NTU; optionally + 5 NTU or + 10% (whichever is greater)

Material Codes: AG = Amber Glass; CG = Clear Glass; PE = Polyethylene; PP = Polypropylene; S = Silicone; T = Teflon; O = Other (Specify)

Sampling /Purging Equipment Codes: APP = After Peristaltic Pump; B = Bailer; BP = Bladder Pump; ESP = Electric Submersible Pump; PP = Peristaltic Pump; RFPP = Reverse Flow Peristaltic Pump; SM = Straw Method (tubing Gravity Drain); VT = Vacuum Trap; O = Other (Specify)

Tetra Tech, Inc. FDEP Groundwater Sampling Sheet

Site Name: Component Refurbishment & Chemical Analysis Facility		Site Location: Kennedy Space Center (KSC), Florida	
Location ID: MW0032	Sample ID: CRCA-MW0032-058.0-20230720		Date: 7/20/2023

Sample depth (ddd.d) = [bottom of screen (feet bls) - top depth] x 0.5-bottom of screen (feet bls)

PURGING DATA

Static Depth to Water (ft bls): 1.62	Casing Height (ft als): NA	Static Depth to Water (ft bls) = DTW -Casing Height: 1.62		Well Screen Interval Depth (ft bls): 53 to 63	
Well Diameter (in)	Tubing Diameter (in): 0.19	Purge Pump Type or Bailer: APP	Top Depth: 53	Bottom Depth: 63	

Well Volume Purge: 1 Well Volume = (Total Well Depth - Static Depth to Water) X Well Capacity

Liters 53 - 1.62 X

Equipment Volume Purge: 1 Equipment Vol. = Pump volume + (Tubing Capacity X Tubing Length) + Flow Cell Volume

0.775 Liters + 0.005 X 60 + 0.475

Initial Pump or Tubing Depth in Well (feet): 58	Final Pump or Tubing Depth in Well (feet): 58	Purging Initiated At: 14:06	Purging Ended At: 14:28	Total Vol. Purged (Liters): 3.8	

Time	Volume Purged (Liters)	Cumul. Volume Purged (Liters)	Purge Rate (mlpm)	Depth to Water (feet)	pH (standard units)	Temp (°C)	Conductivity (µS/cm)	Dissolved Oxygen (mg/L)	Turbidity (NTUs)	ORP (mV)	Color (describe)
14:22	3.2	3.2	200	1.91	6.42	25.9	1482	0.25	29.20	-78.0	None
14:24	0.2	3.4	100	1.91	6.42	25.8	1485	0.22	30.00	-77.5	-
14:26	0.2	3.6	100	1.91	6.42	25.8	1482	0.22	31.00	-77.4	-
14:28	0.2	3.8	100	1.91	6.41	25.7	1482	0.21	30.00	-77.3	-

Well Capacity (Liters Pet Foot): 0.75" = 0.076; **1"** = 0.15; **2"** = 0.61; **3"** = 1.40; **4"** = 2.46; **5"** = 3.86; **6"** = 5.57; **12"** = 22.26

Tubing Inside Dia. Capacity (Liters/ft.): **1/8"** = 0.002; **3/16"** = 0.005; **1/4"** = 0.0098; **5/16"** = 0.015; **3/8"** = 0.023; **1/2"** = 0.038; **5/8"** = 0.09

Sampling Data

Sampled by (Print) / Affiliation: Natalie Volk /Tetra Tech	Sampler(s) Signatures:	Sampling Initiated At: 14:30	Sampling Ended At: 14:30
		Tubing Material Code: HDPE	
Pump or Tubing Depth in Well (feet): 58	Sample Pump Flow Rate (mL per minute): 100	Duplicate: Y N	Field Decontamination: Y N
Field Filtered: Y N	Filter Size (µm):	Filtration Equipment Type:	

Sample Container Specification				Sample Preservation (including Wet Ice)			Intended Analysis and/or Method	Sampling Equipment Code
Sample ID Code	# Containers	Material Code	Volume	Preservative Used (Including Wet Ice)	Total Volume Added in Field (mL)	Final pH		
1	3	CG	40 mL	HCl	-	<2	V8260TCL42	APP

Remarks: historically turbid, could not get below 20 NTU using low flow methods

Stabilization Criteria: pH: + 0.2 units Temperature: + 0.2 oC Specific Conductance: + 5% Dissolved Oxygen: all readings < 20% saturation (see Table FS 2200-2); optionally, + 0.2 mg/L or + 10% (whichever is greater) Turbidity: all readings < 20 NTU; optionally + 5 NTU or + 10% (whichever is greater)

Material Codes: AG = Amber Glass; CG = Clear Glass; PE = Polyethylene; PP = Polypropylene; S = Silicone; T = Teflon; O = Other (Specify)

Sampling /Purging Equipment Codes: APP = After Peristaltic Pump; B = Bailer; BP = Bladder Pump; ESP = Electric Submersible Pump; PP = Peristaltic Pump; RFPP = Reverse Flow Peristaltic Pump; SM = Straw Method (tubing Gravity Drain); VT = Vacuum Trap; O = Other (Specify)

Tetra Tech, Inc. FDEP Groundwater Sampling Sheet

Site Name:	Component Refurbishment & Chemical Analysis Facility	Site Location:	Kennedy Space Center (KSC), Florida
Location ID:	MW0019	Sample ID:	CRCA-MW0019-058.0-20230720
Date:	7/20/2023		

Sample depth (ddd.d) = [bottom of screen (feet bls) - top depth] x 0.5-bottom of screen (feet bls)

PURGING DATA

Static Depth to Water (ft bls)	3.67	Casing Height (ft als)		Static Depth to Water (ft bls) = DTW -Casing Height:	3.67
Well Screen Interval Depth (ft bls):	53 to 63				
Well Diameter (in)	1	Tubing Diameter (in)	0.19	Purge Pump Type or Bailer:	APP
Top Depth:	53	Bottom Depth:	63		

Well Volume Purge: 1 Well Volume = (Total Well Depth - Static Depth to Water) X Well Capacity

8.8995 Liters 53 - 3.67 X 0.15

Equipment Volume Purge: 1 Equipment Vol. = Pump volume + (Tubing Capacity X Tubing Length) + Flow Cell Volume

0.8 Liters + 0.005 X 65 + 0.475

Initial Pump or Tubing Depth in Well (feet):	58	Final Pump or Tubing Depth in Well (feet):	58	Purging Initiated At:	11:48
Purging Ended At:	11:58	Total Vol. Purged (Liters):	3		

Time	Volume Purged (Liters)	Cumul. Volume Purged (Liters)	Purge Rate (mlpm)	Depth to Water (feet)	pH (standard units)	Temp (°C)	Conductivity (µS/cm)	Dissolved Oxygen (mg/L)	Turbidity (NTUs)	ORP (mV)	Color (describe)
11:54	1.8	1.8	300	4.40	6.67	23.2	857	0.20	20.70	-108.1	none
11:56	0.6	2.4	300	4.40	6.64	23.2	857	0.13	15.70	-104.6	-
11:58	0.6	3	300	4.40	6.63	23.2	857	0.13	13.70	-103.5	-

Well Capacity (Liters Pet Foot): 0.75" = 0.076; **1"** = 0.15; **2"** = 0.61; **3"** = 1.40; **4"** = 2.46; **5"** = 3.86; **6"** = 5.57; **12"** = 22.26

Tubing Inside Dia. Capacity (Liters/ft.): **1/8"** = 0.002; **3/16"** = 0.005; **1/4"** = 0.0098; **5/16"** = 0.015; **3/8"** = 0.023; **1/2"** = 0.038; **5/8"** = 0.09

Sampling Data

Sampled by (Print) / Affiliation		Sampler(s) Signatures:		Sampling Initiated At:	12:00
Sampling Ended At:	12:05				
Natalie Volk	/Tetra Tech			Tubing Material Code:	HDPE
Pump or Tubing Depth in Well (feet):	58	Sample Pump Flow Rate (mL per minute):	300	Duplicate: Y	N
Field Decontamination: Y	N				

Field Filtered: Y N Filter Size (µm): Filtration Equipment Type:

Sample Container Specification				Sample Preservation (including Wet Ice)			Intended Analysis and/or Method	Sampling Equipment Code
Sample ID Code	# Containers	Material Code	Volume	Preservative Used (Including Wet Ice)	Total Volume Added in Field (mL)	Final pH		
1	3	CG	40 mL	HCl	-	<2	V8260TCL42	APP

Remarks:

Stabilization Criteria: pH: + 0.2 units Temperature: + 0.2 oC Specific Conductance: + 5% Dissolved Oxygen: all readings < 20% saturation (see Table FS 2200-2); optionally, + 0.2 mg/L or + 10% (whichever is greater) Turbidity: all readings < 20 NTU; optionally + 5 NTU or + 10% (whichever is greater)

Material Codes: AG = Amber Glass; CG = Clear Glass; PE = Polyethylene; PP = Polypropylene; S = Silicone; T = Teflon; O = Other (Specify)

Sampling /Purging Equipment Codes: APP = After Peristaltic Pump; B = Bailer; BP = Bladder Pump; ESP = Electric Submersible Pump; PP = Peristaltic Pump RFPP = Reverse Flow Peristaltic Pump; SM = Straw Method (tubing Gravity Drain); VT = Vacuum Trap; O = Other (Specify)

Tetra Tech, Inc. FDEP Groundwater Sampling Sheet

Site Name:	Component Refurbishment & Chemical Analysis Facility	Site Location:	Kennedy Space Center (KSC), Florida
Location ID:	MW0018	Sample ID:	CRCA-MW0018-058.0-20230720
Date:	7/20/2023		

Sample depth (ddd.d) = [bottom of screen (feet bls) - top depth] x 0.5-bottom of screen (feet bls)

PURGING DATA

Static Depth to Water (ft bls)	3.35	Casing Height (ft als)	NA	Static Depth to Water (ft bls) = DTW -Casing Height:	3.35	Well Screen Interval Depth (ft bls):	53 to 63
Well Diameter (in)	1	Tubing Diameter (in)	0.19	Purge Pump Type or Bailer:	APP	Top Depth: 53	Bottom Depth: 63

Well Volume Purge: 1 Well Volume = (Total Well Depth - Static Depth to Water) X Well Capacity

8.9475 Liters = 53 - 3.35 X 0.15

Equipment Volume Purge: 1 Equipment Vol. = Pump volume + (Tubing Capacity X Tubing Length) + Flow Cell Volume

0.785 Liters = + 0.005 X 62 + 0.475

Initial Pump or Tubing Depth in Well (feet):	58	Final Pump or Tubing Depth in Well (feet):	58	Purging Initiated At:	10:14
Purging Ended At:	10:28	Total Vol. Purged (Liters):	4.2		

Time	Volume Purged (Liters)	Cumul. Volume Purged (Liters)	Purge Rate (mlpm)	Depth to Water (feet)	pH (standard units)	Temp (°C)	Conductivity (µS/cm)	Dissolved Oxygen (mg/L)	Turbidity (NTUs)	ORP (mV)	Color (describe)
10:24	3	3	300	3.38	6.62	28.2	1166	0.16	8.14	-125.9	None
10:26	0.6	3.6	300	3.38	6.63	28.0	1169	0.16	9.27	-125.5	-
10:28	0.6	4.2	300	3.39	6.65	28.2	1170	0.15	10.70	-125.2	-

Well Capacity (Liters Pet Foot): 0.75" = 0.076; **1"** = 0.15; **2"** = 0.61; **3"** = 1.40; **4"** = 2.46; **5"** = 3.86; **6"** = 5.57; **12"** = 22.26

Tubing Inside Dia. Capacity (Liters/ft.): **1/8"** = 0.002; **3/16"** = 0.005; **1/4"** = 0.0098; **5/16"** = 0.015; **3/8"** = 0.023; **1/2"** = 0.038; **5/8"** = 0.09

Sampling Data

Sampled by (Print) / Affiliation	Sampler(s) Signatures:	Sampling Initiated At: 10:30	Sampling Ended At: 10:35
Natalie Volk /Tetra Tech		Tubing Material Code:	HDPE
Pump or Tubing Depth in Well (feet): 58	Sample Pump Flow Rate (mL per minute): 300	Duplicate: Y (N)	Field Decontamination: Y N

Field Filtered: Y (N) Filter Size (µm): Filtration Equipment Type:

Sample Container Specification				Sample Preservation (including Wet Ice)				
Sample ID Code	# Containers	Material Code	Volume	Preservative Used (Including Wet Ice)	Total Volume Added in Field (mL)	Final pH	Intended Analysis and/or Method	Sampling Equipment Code
1	3	CG	40 mL	HCl	-	<2	V8260TCL42	APP

Remarks:

Stabilization Criteria: pH: + 0.2 units Temperature: + 0.2 oC Specific Conductance: + 5% Dissolved Oxygen: all readings < 20% saturation (see Table FS 2200-2); optionally, + 0.2 mg/L or + 10% (whichever is greater) Turbidity: all readings < 20 NTU; optionally + 5 NTU or + 10% (whichever is greater)

Material Codes: AG = Amber Glass; CG = Clear Glass; PE = Polyethylene; PP = Polypropylene; S = Silicone; T = Teflon; O = Other (Specify)

Sampling /Purging Equipment Codes: APP = After Peristaltic Pump; B = Bailer; BP = Bladder Pump; ESP = Electric Submersible Pump; PP = Peristaltic Pump; RFPP = Reverse Flow Peristaltic Pump; SM = Straw Method (tubing Gravity Drain); VT = Vacuum Trap; O = Other (Specify)

Tetra Tech, Inc. FDEP Groundwater Sampling Sheet

Site Name:	Component Refurbishment & Chemical Analysis Facility	Site Location:	Kennedy Space Center (KSC), Florida
Location ID:	MW0013	Sample ID:	CRCA-MW0013-027.0-20230720
Date:	7/20/2023		

Sample depth (ddd.d) = [bottom of screen (feet bls) - top depth] x 0.5-bottom of screen (feet bls)

PURGING DATA

Static Depth to Water (ft bls)	3.81	Casing Height (ft als)	NA	Static Depth to Water (ft bls) = DTW -Casing Height:	3.81	Well Screen Interval Depth (ft bls):	25 to 30
Well Diameter (in)	1	Tubing Diameter (in)	0.19	Purge Pump Type or Bailer:	APP	Top Depth: 25	Bottom Depth: 30

Well Volume Purge: 1 Well Volume = (Total Well Depth - Static Depth to Water) X Well Capacity

3.9285 Liters = 25 - 3.81 X 0.15

Equipment Volume Purge: 1 Equipment Vol. = Pump volume + (Tubing Capacity X Tubing Length) + Flow Cell Volume

0.65 Liters = + 0.005 X 35 + 0.475

Initial Pump or Tubing Depth in Well (feet):	27.5	Final Pump or Tubing Depth in Well (feet):	27.5	Purging Initiated At:	11:12	Purging Ended At:	11:22
Total Vol. Purged (Liters):	3						

Time	Volume Purged (Liters)	Cumul. Volume Purged (Liters)	Purge Rate (mlpm)	Depth to Water (feet)	pH (standard units)	Temp (°C)	Conductivity (µS/cm)	Dissolved Oxygen (mg/L)	Turbidity (NTUs)	ORP (mV)	Color (describe)
11:18	1.8	1.8	300	4.27	6.30	23.2	973	0.16	4.99	-64.4	None
11:20	0.6	2.4	300	4.27	6.22	23.2	971	0.17	4.87	-65.0	-
11:22	0.6	3	300	4.27	6.18	23.1	970	0.15	5.79	-65.6	-

Well Capacity (Liters Pet Foot): 0.75" = 0.076; **1"** = 0.15; **2"** = 0.61; **3"** = 1.40; **4"** = 2.46; **5"** = 3.86; **6"** = 5.57; **12"** = 22.26

Tubing Inside Dia. Capacity (Liters/ft.): **1/8"** = 0.002; **3/16"** = 0.005; **1/4"** = 0.0098; **5/16"** = 0.015; **3/8"** = 0.023; **1/2"** = 0.038; **5/8"** = 0.09

Sampling Data

Sampled by (Print) / Affiliation	Sampler(s) Signatures:	Sampling Initiated At: 11:25	Sampling Ended At: 11:30
Natalie Volk /Tetra Tech		Tubing Material Code:	HDPE
Pump or Tubing Depth in Well (feet): 27.5	Sample Pump Flow Rate (mL per minute): 300	Duplicate: Y (N)	Field Decontamination: (Y) N
Field Filtered: Y (N)	Filter Size (µm):	Filtration Equipment Type:	

Sample Container Specification				Sample Preservation (including Wet Ice)			Intended Analysis and/or Method	Sampling Equipment Code
Sample ID Code	# Containers	Material Code	Volume	Preservative Used (Including Wet Ice)	Total Volume Added in Field (mL)	Final pH		
1	3	CG	40 mL	HCl	-	<2	V8260TCL42	APP

Remarks:

Stabilization Criteria: pH: + 0.2 units Temperature: + 0.2 oC Specific Conductance: + 5% Dissolved Oxygen: all readings < 20% saturation (see Table FS 2200-2); optionally, + 0.2 mg/L or + 10% (whichever is greater) Turbidity: all readings < 20 NTU; optionally + 5 NTU or + 10% (whichever is greater)

Material Codes: AG = Amber Glass; CG = Clear Glass; PE = Polyethylene; PP = Polypropylene; S = Silicone; T = Teflon; O = Other (Specify)

Sampling /Purging Equipment Codes: APP = After Peristaltic Pump; B = Bailer; BP = Bladder Pump; ESP = Electric Submersible Pump; PP = Peristaltic Pump; RFPP = Reverse Flow Peristaltic Pump; SM = Straw Method (tubing Gravity Drain); VT = Vacuum Trap; O = Other (Specify)

Tetra Tech, Inc. FDEP Groundwater Sampling Sheet

Site Name:	Component Refurbishment & Chemical Analysis Facility	Site Location:	Kennedy Space Center (KSC), Florida
Location ID:	MW0002	Sample ID:	CRCA-MW0002-032.5-20230720
Date:	7/20/2023		

Sample depth (ddd.d) = [bottom of screen (feet bls) - top depth] x 0.5-bottom of screen (feet bls)

PURGING DATA

Static Depth to Water (ft bls)	2.31	Casing Height (ft als)	NA	Static Depth to Water (ft bls) = DTW -Casing Height:	2.31	Well Screen Interval Depth (ft bls):	30 to 35
Well Diameter (in)	1	Tubing Diameter (in)	0.19	Purge Pump Type or Bailer:	APP	Top Depth: 30	Bottom Depth: 35

Well Volume Purge: 1 Well Volume = (Total Well Depth - Static Depth to Water) X Well Capacity

4.9035 Liters = (30 - 2.31) X 0.15

Equipment Volume Purge: 1 Equipment Vol. = Pump volume + (Tubing Capacity X Tubing Length) + Flow Cell Volume

0.675 Liters = + 0.005 X 40 + 0.475

Initial Pump or Tubing Depth in Well (feet):	32.5	Final Pump or Tubing Depth in Well (feet):	32.5	Purging Initiated At:	10:40
Purging Ended At:	10:57	Total Vol. Purged (Liters):	5.1		

Time	Volume Purged (Liters)	Cumul. Volume Purged (Liters)	Purge Rate (mlpm)	Depth to Water (feet)	pH (standard units)	Temp (°C)	Conductivity (µS/cm)	Dissolved Oxygen (mg/L)	Turbidity (NTUs)	ORP (mV)	Color (describe)
10:53	3.9	3.9	300	2.40	6.55	28.0	923	0.11	8.57	-93.8	None
10:55	0.6	4.5	300	2.40	6.55	27.9	921	0.11	8.26	-93.4	-
10:57	0.6	5.1	300	2.40	6.55	27.8	919	0.11	8.61	-93.2	-

Well Capacity (Liters Pet Foot): 0.75" = 0.076; **1"** = 0.15; **2"** = 0.61; **3"** = 1.40; **4"** = 2.46; **5"** = 3.86; **6"** = 5.57; **12"** = 22.26

Tubing Inside Dia. Capacity (Liters/ft.): **1/8"** = 0.002; **3/16"** = 0.005; **1/4"** = 0.0098; **5/16"** = 0.015; **3/8"** = 0.023; **1/2"** = 0.038; **5/8"** = 0.09

Sampling Data

Sampled by (Print) / Affiliation	Sampler(s) Signatures:	Sampling Initiated At: 11:00	Sampling Ended At: 11:05
Natalie Volk /Tetra Tech		Tubing Material Code: HDPE	
Pump or Tubing Depth in Well (feet): 32.5	Sample Pump Flow Rate (mL per minute): 300	Duplicate: Y (N)	Field Decontamination: (Y) N
Field Filtered: Y (N)	Filter Size (µm):	Filtration Equipment Type:	

Sample Container Specification				Sample Preservation (including Wet Ice)			Intended Analysis and/or Method	Sampling Equipment Code
Sample ID Code	# Containers	Material Code	Volume	Preservative Used (Including Wet Ice)	Total Volume Added in Field (mL)	Final pH		
1	3	CG	40 mL	HCl	-	<2	V8260TCL42	APP

Remarks:

Stabilization Criteria: pH: + 0.2 units Temperature: + 0.2 oC Specific Conductance: + 5% Dissolved Oxygen: all readings < 20% saturation (see Table FS 2200-2); optionally, + 0.2 mg/L or + 10% (whichever is greater) Turbidity: all readings < 20 NTU; optionally + 5 NTU or + 10% (whichever is greater)

Material Codes: AG = Amber Glass; CG = Clear Glass; PE = Polyethylene; PP = Polypropylene; S = Silicone; T = Teflon; O = Other (Specify)

Sampling /Purging Equipment Codes: APP = After Peristaltic Pump; B = Bailer; BP = Bladder Pump; ESP = Electric Submersible Pump; PP = Peristaltic Pump; RFPP = Reverse Flow Peristaltic Pump; SM = Straw Method (tubing Gravity Drain); VT = Vacuum Trap; O = Other (Specify)

TETRA TECH

INSTRUMENT CALIBRATION LOGSHEET

PROJECT NAME : Component Refurbishment and Chem. Analysis Facility (CRCA)

SITE NAME: CRCA

PROJECT NO.: 112G08970

INSTRUMENT NAME/MODEL: YSI, ProQuatro. /. LaMotte 2020t

MANUFACTURER: YSI. / LaMotte

SERIAL NUMBER: **YSI # 21D101770 LaMotte s#26** 26850

Date of Calibration (mm/dd/yr)	Person Performing Calibration (Name)	pH (S.U.)				Cond. (µS/cm)	D.O. (mg/L)	Temp. ºC	ORP (mV)	Salinity (%)	Turbidity (0) (NTUs)	Turbidity (10) (NTUs)	Calibration Standard Lot # / Expiration Date	Remarks
		Pre 08:00	*7.18*	*4.13*	9.88	1396	9.39	19.7	177.3	NA	0	8	*Lot # CO923A*	
7/20/2023	NAV	*Post*	*NA*	*NA*	NA	NA	NA	NA	230.6	NA	NA		*Exp. Date: 03/09/25*	pH = 4
		Pre								NA			*Lot # H1622B*	
		Post								NA			*Exp. Date: 08/16/2024*	pH = 7
		Pre								NA			*Lot # G1122C*	
		Post								NA			*Exp. Date: 01/11/2024*	pH = 10
													Lot # 8199	
													Exp. Date: 10/27	Conductivity = 1413 µS/cm
													Lot # 21K100461	
													Exp. Date:	ORP = 223 mV
													Lot #	
													Exp. Date:	NTU=0
													Lot #	
													Exp. Date:	NTU=10
		Pre												
		Post												

Tetra Tech, Inc.

GROUNDWATER LEVEL MEASUREMENT SHEET

Project Name: NASA - CRCA
Project No.: 112G08970
Location: Kennedy Space Center, Florida
Personnel: NV/CS
Weather Conditions: Hot, cloudy
Measuring Device: Heron Skinny Dipper
Tidally Influenced: Yes ___ No _X_
Remarks:

Well or Piezometer Number	Date	Time	Top of Casing Elevation (feet)*	Screened Interval (feet bls)	Water Level Indicator Reading (feet)*	Thickness of Free Product (feet)*	Groundwater Elevation (feet)*	Comments
MW0001	7/28/2023	13:17	6.11	5-15	1.66	None	4.45	
MW0002	7/28/2023	13:17	6.14	30-35	1.66	None	4.48	
MW0003	7/28/2023	13:12	6.99	5-15	2.67	None	4.32	
MW0004	7/28/2023	13:15	6.30	5-15	1.84	None	4.46	
MW0005	7/28/2023	13:19	6.69	5-15	2.37	None	4.32	
MW0005A	7/28/2023	13:19	6.55	5-10	*0.15	None	*	*Unmeasurable water at top of well
MW0005B	7/28/2023	13:20	6.69	12-17	2.34	None	4.35	
MW0005C	7/28/2023	13:18	6.85	2-7	2.12	None	4.73	
MW0006	7/28/2023	13:21	6.58	5-15	2.16	None	4.42	
MW0007	7/28/2023	13:22	6.54	5-15	2.16	None	4.38	
MW0008	7/28/2023	13:47	7.36	5-15	3.02	None	4.34	
MW0009	7/28/2023	13:20	6.84	5-15	2.30	None	4.54	
MW0010	7/28/2023	13:30	6.66	5-15	2.28	None	4.38	
MW0011	7/28/2023	13:14	7.40	5-10	2.79	None	4.61	
MW0012	7/28/2023	13:13	7.07	25-30	2.75	None	4.32	
MW0013	7/28/2023	13:45	7.46	25-30	3.38	None	4.08	
MW0014	7/28/2023	13:27	6.86	5-10	2.58	None	4.28	
MW0015	7/28/2023	13:27	6.82	25-30	2.66	None	4.16	
MW0016	7/28/2023	13:23	6.18	5-10	1.80	None	4.38	
MW0017	7/28/2023	13:23	6.16	25-30	1.79	None	4.37	
MW0018	7/28/2023	13:13	7.05	53-63	2.68	None	4.37	
MW0019	7/28/2023	13:50	7.13	53-63	3.18	None	3.95	
MW0020	7/28/2023	13:09	7.27	53-63	3.26	None	4.01	
MW0021	7/28/2023	13:08	7.54	30-40	3.46	None	4.08	
MW0022	7/28/2023	13:10	6.44	30-40	2.08	None	4.36	
MW0023	7/28/2023	13:10	6.50	53-63	2.17	None	4.33	
MW0024	7/28/2023	13:24	6.22	53-63	1.84	None	4.38	
MW0025	7/28/2023	13:26	6.91	53-63	2.84	None	4.07	
MW0026	7/28/2023	13:03	4.45	5-15	0.44	None	4.01	
MW0027	7/28/2023	13:04	4.33	30-40	0.52	None	3.81	
MW0028	7/28/2023	13:03	4.34	53-63	0.60	None	3.74	
MW0029	7/28/2023	13:05	4.79	30-40	0.98	None	3.81	
MW0030	7/28/2023	13:06	4.77	53-63	1.09	None	3.68	
MW0031	7/28/2023	13:28	6.92	53-63	3.02	None	3.90	
MW0032	7/28/2023	12:34	4.70	53-63	1.42	None	3.28	

* All measurements to the nearest 0.01 foot

07/20/2023 **CRCA** **112G08970**

Personnel:	Chuck Sorden	(CS)	Geologist	Tt
	Natalie Volk	(NV)	Engineer	Tt
Weather:	Sunny – 83 degrees F			
PPE:	Level D			

Objective: Begin CRCA July 2023 Performance Monitoring Sampling Event

0700: CS/NV at CHP; calibration/daily prep (See calibration sheets)
0730: Arrive at CRCA to begin air samples; however, system is off; CS calling Dan Forester (DF)
0810: System Operation resumed; CS/NV resume calibration
0914: Begin Purging CRCA-MW0031
0926: Purging Complete
0930: Sample Collected CRCA-MW0031-058.0-20230720 V8260TCL42
0942: Begin Purging CRCA-MW0006
1000: Purging Complete on MW0006
1003: Sample Collected CRCA-MW0006-010.0-20230720 LCQSM537MI28
1014: Begin Purging CRCA-MW0018
1028: Purging Complete on MW0018
1030: Sample Collected CRCA-MW0018-058.0-20230720 V8260TCL42
1040: Begin Purging CRCA-MW0002
1057: Purging Complete on MW0002
1100: Sample Collected CRCA-MW0002-032.5-20230720 V8260TCL42
1112: Begin purging CRCA-MW0013
1122: Purging complete on MW0013
1125: Sample Collected CRCA-MW0013-027.5-20230720 V8260TCL42
1148: Begin purging CRCA-MW0019
1158: Purging Complete on MW0019
1200: Sample Collected CRCA-MW0019-058.0-20230720 V8260TCL42

- Managing IDW then running to Home Depot to get tools to access MW0032

1330: Back on site at MW0032; clearing path to it
1355: Path accessible; begin moving sampling equipment to well
1406: Begin Purging CRCA-MW0032
1428: Purging Complete on MW0032
1430: Sample Collected CRCA-MW0032-058.0-20230720 V8260TCL42

- Sampling Complete for day

1600: Site secured; Tt offsite

Tetra Tech, Inc.

DPT GROUNDWATER SAMPLE LOG SHEET

Project Site Name: Components Refurbishment and Chem. Analysis Facility (CRCA)
Project No.: 112G08970
Date: 03/21/2022
Sample ID: CRCA-DPT0261
Location: S
Sampled By: Chuck Sorden

DPT SAMPLING DATA

LOCATION ID	LOCATION	DATE	TIME	DEPTH	ODOR	COLOR	COMMENTS
CRCA-DPT0261	S	03/21/2022	0915	18'	Organic	Brown	
CRCA-DPT0261	S	03/21/2022	0930	23'	None	Gray	
CRCA-DPT0261	S	03/21/2022	0945	28'	None	Gray	
CRCA-DPT0261	S	03/21/2022	1005	33'	None	Gray	
CRCA-DPT0261	S	03/21/2022	1025	38'	None	Gray	
CRCA-DPT0261	S	03/21/2022	1050	43'	None	Gray	

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
8260 VOCs	None	2 40 mL vials delivered to mobile lab	X

OBSERVATIONS / NOTES

All intervals purged a minimum of five (5) screen volumes (1.5 L) prior to sample collection.
Hand auger five feet to clear utilities
Borehole abandoned via pressure grouting through boring rods
Rig, Rods, and associated tooling decon'd with pressurized steam

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Tetra Tech, Inc.

DPT GROUNDWATER SAMPLE LOG SHEET

Project Site Name: Components Refurbishment and Chem. Analysis Facility (CRCA)
Project No.: 112G08970
Date: 03/21/2022
Sample ID: CRCA-DPT0262
Location: R
Sampled By: Chuck Sorden

DPT SAMPLING DATA

LOCATION ID	LOCATION	DATE	TIME	DEPTH	ODOR	COLOR	COMMENTS
CRCA-DPT0262	R	03/21/2022	1140	18'	Organic	Brown	
CRCA-DPT0262	R	03/21/2022	1155	23'	None	Gray	
CRCA-DPT0262	R	03/21/2022	1245	28'	None	Gray	
CRCA-DPT0262	R	03/21/2022	1305	33'	None	Gray	
CRCA-DPT0262	R	03/21/2022	1325	38'	None	Gray	
CRCA-DPT0262	R	03/21/2022	1345	43'	None	Gray	

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
8260 VOCs	None	2 40 mL vials delivered to mobile lab	X

OBSERVATIONS / NOTES

All intervals purged a minimum of five (5) screen volumes (1.5 L) prior to sample collection.
Hand auger five feet to clear utilities
Borehole abandoned via pressure grouting through boring rods
Rig, Rods, and associated tooling decon'd with pressurized steam

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Tetra Tech, Inc.

DPT GROUNDWATER SAMPLE LOG SHEET

Project Site Name: Components Refurbishment and Chem. Analysis Facility (CRCA)
Project No.: 112G08970
Date: 03/21/2022
Sample ID: CRCA-DPT0263
Location: T
Sampled By: Chuck Sorden

DPT SAMPLING DATA

LOCATION ID	LOCATION	DATE	TIME	DEPTH	ODOR	COLOR	COMMENTS
CRCA-DPT0263	T	03/21/2022	1430	18'	Organic	Brown	
CRCA-DPT0263	T	03/21/2022	1445	23'	None	Gray	
CRCA-DPT0263	T	03/21/2022	1500	28'	None	Gray	
CRCA-DPT0263	T	03/21/2022	1520	33'	None	Gray	
CRCA-DPT0263	T	03/21/2022	1540	38'	None	Gray	
CRCA-DPT0263	T	03/21/2022	1600	43'	None	Gray	

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
8260 VOCs	None	2 40 mL vials delivered to mobile lab	X

OBSERVATIONS / NOTES

All intervals purged a minimum of five (5) screen volumes (1.5 L) prior to sample collection.
Hand auger five feet to clear utilities
Borehole abandoned via pressure grouting through boring rods
Rig, Rods, and associated tooling decon'd with pressurized steam

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Tetra Tech, Inc.

DPT GROUNDWATER SAMPLE LOG SHEET

Project Site Name: Components Refurbishment and Chem. Analysis Facility (CRCA)
Project No.: 112G08970
Date: 03/22/2022
Sample ID: CRCA-DPT0264
Location: H
Sampled By: Chuck Sorden

DPT SAMPLING DATA

LOCATION ID	LOCATION	DATE	TIME	DEPTH	ODOR	COLOR	COMMENTS
CRCA-DPT0264	H	03/22/2022	0825	38'	None	Gray	
CRCA-DPT0264	H	03/22/2022	0855	43'	None	Gray	
CRCA-DPT0264	H	03/22/2022	0925	48'	None	Gray	
CRCA-DPT0264	H	03/22/2022	0950	52'	None	Gray	
CRCA-DPT0264	H	03/22/2022	1015	57'	None	Gray	
CRCA-DPT0264	H	03/22/2022	1035	62'	None	Gray	

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
8260 VOCs	None	2 40 mL vials delivered to mobile lab	X

OBSERVATIONS / NOTES

All intervals purged a minimum of five (5) screen volumes (1.5 L) prior to sample collection.
Hand auger five feet to clear utilities
Borehole abandoned via pressure grouting through boring rods
Rig, Rods, and associated tooling decon'd with pressurized steam

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Tetra Tech, Inc.

DPT GROUNDWATER SAMPLE LOG SHEET

Project Site Name: Components Refurbishment and Chem. Analysis Facility (CRCA)
Project No.: 112G08970
Date: 03/22/2022
Sample ID: CRCA-DPT0265
Location: I
Sampled By: Chuck Sorden

DPT SAMPLING DATA

LOCATION ID	LOCATION	DATE	TIME	DEPTH	ODOR	COLOR	COMMENTS
CRCA-DPT0265	I	03/22/2022	1300	8'	None	Gray	PFAS Sample
CRCA-DPT0265	I	03/22/2022	1330	23'	None	Gray	PFAS Sample
CRCA-DPT0265	I	03/22/2022	1345	38'	None	Gray	
CRCA-DPT0265	I	03/22/2022	1410	43'	None	Gray	PFAS Sample
CRCA-DPT0265	I	03/22/2022	1430	48'	None	Gray	
CRCA-DPT0265	I	03/22/2022	1455	52'	None	Gray	
CRCA-DPT0265	I	03/22/2022	1530	57'	None	Gray	PFAS Sample
CRCA-DPT0265	I	03/22/2022	1555	62'	None	Gray	

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
8260 VOCs	None	2 40 mL vials delivered to mobile lab	X
PFAS QSM Table B-15	None	2 250 mL HDPE Bottles shipped to Pace Labs	X

OBSERVATIONS / NOTES

All intervals purged a minimum of five (5) screen volumes (1.5 L) prior to sample collection.
Hand auger five feet to clear utilities
Borehole abandoned via pressure grouting through boring rods
Rig, Rods, and associated tooling decon'd with pressurized steam

Circle if Applicable:

MS/MSD	Duplicate ID No.:
YES	CRCA-FD-20220322-01 - DUP of CRCA-DPT0265-023.0

Tetra Tech, Inc.

DPT GROUNDWATER SAMPLE LOG SHEET

Project Site Name: Components Refurbishment and Chem. Analysis Facility (CRCA)
Project No.: 112G08970
Date: 03/23/2022
Sample ID: CRCA-DPT0266
Location: J
Sampled By: Chuck Sorden

DPT SAMPLING DATA

LOCATION ID	LOCATION	DATE	TIME	DEPTH	ODOR	COLOR	COMMENTS
CRCA-DPT0266	J	03/23/2022	0755	38'	None	Gray	
CRCA-DPT0266	J	03/23/2022	0815	43'	None	Gray	
CRCA-DPT0266	J	03/23/2022	0835	48'	None	Gray	
CRCA-DPT0266	J	03/23/2022	0855	52'	None	Gray	
CRCA-DPT0266	J	03/23/2022	0920	57'	None	Gray	

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
8260 VOCs	None	2 40 mL vials delivered to mobile lab	X

OBSERVATIONS / NOTES

All intervals purged a minimum of five (5) screen volumes (1.5 L) prior to sample collection.
Hand auger five feet to clear utilities
Borehole abandoned via pressure grouting through boring rods
Rig, Rods, and associated tooling decon'd with pressurized steam

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Tetra Tech, Inc.

DPT GROUNDWATER SAMPLE LOG SHEET

Project Site Name: Components Refurbishment and Chem. Analysis Facility (CRCA)
Project No.: 112G08970
Date: 03/23/2022
Sample ID: CRCA-DPT0267
Location: G
Sampled By: Chuck Sorden

DPT SAMPLING DATA

LOCATION ID	LOCATION	DATE	TIME	DEPTH	ODOR	COLOR	COMMENTS
CRCA-DPT0267	G	03/23/2022	1045	38'	None	Gray	
CRCA-DPT0267	G	03/23/2022	1100	43'	None	Gray	
CRCA-DPT0267	G	03/23/2022	1120	48'	None	Gray	
CRCA-DPT0267	G	03/23/2022	1150	52'	None	Gray	
CRCA-DPT0267	G	03/23/2022	1215	57'	None	Gray	

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
8260 VOCs	None	2 40 mL vials delivered to mobile lab	X

OBSERVATIONS / NOTES

All intervals purged a minimum of five (5) screen volumes (1.5 L) prior to sample collection.
Hand auger five feet to clear utilities
Borehole abandoned via pressure grouting through boring rods
Rig, Rods, and associated tooling decon'd with pressurized steam

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Tetra Tech, Inc.

DPT GROUNDWATER SAMPLE LOG SHEET

Project Site Name: Components Refurbishment and Chem. Analysis Facility (CRCA)
Project No.: 112G08970
Date: 03/23/2022
Sample ID: CRCA-DPT0268
Location: F
Sampled By: Chuck Sorden

DPT SAMPLING DATA

LOCATION ID	LOCATION	DATE	TIME	DEPTH	ODOR	COLOR	COMMENTS
CRCA-DPT0268	F	03/23/2022	1405	38'	None	Gray	
CRCA-DPT0268	F	03/23/2022	1425	43'	None	Gray	
CRCA-DPT0268	F	03/23/2022	1445	48'	None	Gray	
CRCA-DPT0268	F	03/23/2022	1510	52'	None	Gray	
CRCA-DPT0268	F	03/23/2022	1535	57'	None	Gray	

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
8260 VOCs	None	2 40 mL vials delivered to mobile lab	X

OBSERVATIONS / NOTES

All intervals purged a minimum of five (5) screen volumes (1.5 L) prior to sample collection.
Hand auger five feet to clear utilities
Borehole abandoned via pressure grouting through boring rods
Rig, Rods, and associated tooling decon'd with pressurized steam

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Tetra Tech, Inc.

DPT GROUNDWATER SAMPLE LOG SHEET

Project Site Name: Components Refurbishment and Chem. Analysis Facility (CRCA)
Project No.: 112G08970
Date: 03/24/2022
Sample ID: CRCA-DPT0269
Location: A
Sampled By: Chuck Sorden

DPT SAMPLING DATA

LOCATION ID	LOCATION	DATE	TIME	DEPTH	ODOR	COLOR	COMMENTS
CRCA-DPT0269	A	03/24/2022	0745	38'	None	Gray	
CRCA-DPT0269	A	03/24/2022	0805	43'	None	Gray	
CRCA-DPT0269	A	03/24/2022	0825	48'	None	Gray	
CRCA-DPT0269	A	03/24/2022	0850	52'	None	Gray	
CRCA-DPT0269	A	03/24/2022	0940	57'	None	Gray	

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
8260 VOCs	None	2 40 mL vials delivered to mobile lab	X

OBSERVATIONS / NOTES

All intervals purged a minimum of five (5) screen volumes (1.5 L) prior to sample collection.
Hand auger five feet to clear utilities
Borehole abandoned via pressure grouting through boring rods
Rig, Rods, and associated tooling decon'd with pressurized steam

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Tetra Tech, Inc.

DPT GROUNDWATER SAMPLE LOG SHEET

Project Site Name: Components Refurbishment and Chem. Analysis Facility (CRCA)
Project No.: 112G08970
Date: 03/24/2022
Sample ID: CRCA-DPT0270
Location: B
Sampled By: Chuck Sorden

DPT SAMPLING DATA

LOCATION ID	LOCATION	DATE	TIME	DEPTH	ODOR	COLOR	COMMENTS
CRCA-DPT0270	B	03/24/2022	1020	38'	None	Gray	
CRCA-DPT0270	B	03/24/2022	1040	43'	None	Gray	
CRCA-DPT0270	B	03/24/2022	1100	48'	None	Gray	
CRCA-DPT0270	B	03/24/2022	1125	52'	None	Gray	
CRCA-DPT0270	B	03/24/2022	1150	57'	None	Gray	

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
8260 VOCs	None	2 40 mL vials delivered to mobile lab	X

OBSERVATIONS / NOTES

All intervals purged a minimum of five (5) screen volumes (1.5 L) prior to sample collection.
Hand auger five feet to clear utilities
Borehole abandoned via pressure grouting through boring rods
Rig, Rods, and associated tooling decon'd with pressurized steam

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Tetra Tech, Inc.

DPT GROUNDWATER SAMPLE LOG SHEET

Project Site Name: Components Refurbishment and Chem. Analysis Facility (CRCA)
Project No.: 112G08970
Date: 03/24/2022
Sample ID: CRCA-DPT0271
Location: C
Sampled By: Chuck Sorden

DPT SAMPLING DATA

LOCATION ID	LOCATION	DATE	TIME	DEPTH	ODOR	COLOR	COMMENTS
CRCA-DPT0271	C	03/24/2022	1300	38'	None	Gray	

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
8260 VOCs	None	2 40 mL vials delivered to mobile lab	X

OBSERVATIONS / NOTES

All intervals purged a minimum of five (5) screen volumes (1.5 L) prior to sample collection.
Hand auger five feet to clear utilities
Borehole abandoned via pressure grouting through boring rods
Rig, Rods, and associated tooling decon'd with pressurized steam

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Tetra Tech, Inc.

DPT GROUNDWATER SAMPLE LOG SHEET

Project Site Name: Components Refurbishment and Chem. Analysis Facility (CRCA)
Project No.: 112G08970
Date: 03/24/2022 and 03/25/2022
Sample ID: CRCA-DPT0272
Location: U
Sampled By: Chuck Sorden

DPT SAMPLING DATA

LOCATION ID	LOCATION	DATE	TIME	DEPTH	ODOR	COLOR	COMMENTS
CRCA-DPT0272	U	03/24/2022	1530	43'	None	Gray	
CRCA-DPT0272	U	03/24/2022	1550	48'	None	Gray	
CRCA-DPT0272	U	03/25/2022	0800	52'	None	Gray	
CRCA-DPT0272	U	03/25/2022	0825	57'	None	Gray	

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
8260 VOCs	None	2 40 mL vials delivered to mobile lab	X

OBSERVATIONS / NOTES

All intervals purged a minimum of five (5) screen volumes (1.5 L) prior to sample collection.
Hand auger five feet to clear utilities
Borehole abandoned via pressure grouting through boring rods
Rig, Rods, and associated tooling decon'd with pressurized steam

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Tetra Tech, Inc.

DPT GROUNDWATER SAMPLE LOG SHEET

Project Site Name: Components Refurbishment and Chem. Analysis Facility (CRCA)
Project No.: 112G08970
Date: 03/24/2022 and 03/25/2022
Sample ID: CRCA-DPT0273
Location: D
Sampled By: Chuck Sorden

DPT SAMPLING DATA

LOCATION ID	LOCATION	DATE	TIME	DEPTH	ODOR	COLOR	COMMENTS
CRCA-DPT0273	D	03/24/2022	1015	43'	None	Gray	
CRCA-DPT0273	D	03/24/2022	1035	48'	None	Gray	
CRCA-DPT0273	D	03/25/2022	1100	52'	None	Gray	
CRCA-DPT0273	D	03/25/2022	1125	57'	None	Gray	

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
8260 VOCs	None	2 40 mL vials delivered to mobile lab	X

OBSERVATIONS / NOTES

All intervals purged a minimum of five (5) screen volumes (1.5 L) prior to sample collection.
Hand auger five feet to clear utilities
Borehole abandoned via pressure grouting through boring rods
Rig, Rods, and associated tooling decon'd with pressurized steam

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Tetra Tech, Inc.

DPT GROUNDWATER SAMPLE LOG SHEET

Project Site Name: Components Refurbishment and Chem. Analysis Facility (CRCA)
Project No.: 112G08970
Date: 03/25/2022
Sample ID: CRCA-DPT0274
Location: V
Sampled By: Chuck Sorden

DPT SAMPLING DATA

LOCATION ID	LOCATION	DATE	TIME	DEPTH	ODOR	COLOR	COMMENTS
CRCA-DPT0274	V	03/25/2022	1440	38'	None	Gray	
CRCA-DPT0274	V	03/25/2022	1255	43'	None	Gray	
CRCA-DPT0274	V	03/25/2022	1315	48'	None	Gray	
CRCA-DPT0274	V	03/25/2022	1340	52'	None	Gray	
CRCA-DPT0274	V	03/25/2022	1405	57'	None	Gray	

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
8260 VOCs	None	2 40 mL vials delivered to mobile lab	X

OBSERVATIONS / NOTES

All intervals purged a minimum of five (5) screen volumes (1.5 L) prior to sample collection.
Hand auger five feet to clear utilities
Borehole abandoned via pressure grouting through boring rods
Rig, Rods, and associated tooling decon'd with pressurized steam

Circle if Applicable:

MS/MSD	Duplicate ID No.:

03/21/2022 **CRCA** **112G08970**

Personnel:	Chuck Sorden	(CS)	Geologist	Tt
	Chris Phelps	(CP)	Driller	GPI
	Keith Olson	(KO)	Tech	GPI

Weather: Sunny – 57 degrees F
PPE: Level D
Health and Safety (HAS): Topics – SSHASP; PPE; IDW
Objective: Begin DPT GW

0700: TT/GPI at Badging
0710: Depart for CRCA
0720: Arrive at CRCA; HAS Meeting; daily prep
0740: issue with rig; no hammer; appears shop technician put hoses backwards; CH calling geoprobe to confirm.
0800: CH confirmed with Geoprobe. Swapping lines
0835: Repair complete
0840: Set up on CRCA-DPT0261 (Location S); hand clear 5'
0855: Drilling Commenced

0915:	Sample Collected	CRCA-DPT0261-018.0-20220321	(S)	Brown; Organic Odor
0930:	Sample Collected	CRCA-DPT0261-023.0-20220321	(S)	Gray; No Odor
0945:	Sample Collected	CRCA-DPT0261-028.0-20220321	(S)	Gray; No Odor
1005:	Sample Collected	CRCA-DPT0261-033.0-20220321	(S)	Gray; No Odor

- Poor producing formation

1025:	Sample Collected	CRCA-DPT0261-038.0-20220321	(S)	Gray; No Odor

- Poor producing formation

1050:	Sample Collected	CRCA-DPT0261-043.0-20220321	(S)	Gray; No Odor

1105: CRCA-DPT0261 pressure grouted 45' to surface through rods
1115: Rig, rods, and tooling decon'd with steam
1120: Set up on CRCA-DPT0262 (Location R); hand clear 5'
1125: Drilling Commenced

1140:	Sample Collected	CRCA-DPT0262-018.0-20220321	(R)	Brown; Organic Odor
1155:	Sample Collected	CRCA-DPT0262-023.0-20220321	(R)	Gray; No Odor

- EDS taking lunch

1225: Drilling resumed

1245:	Sample Collected	CRCA-DPT0262-028.0-20220321	(R)	Gray; No Odor
1305:	Sample Collected	CRCA-DPT0262-033.0-20220321	(R)	Gray; No Odor
1325:	Sample Collected	CRCA-DPT0262-038.0-20220321	(R)	Gray; No Odor

- Poor producing formation

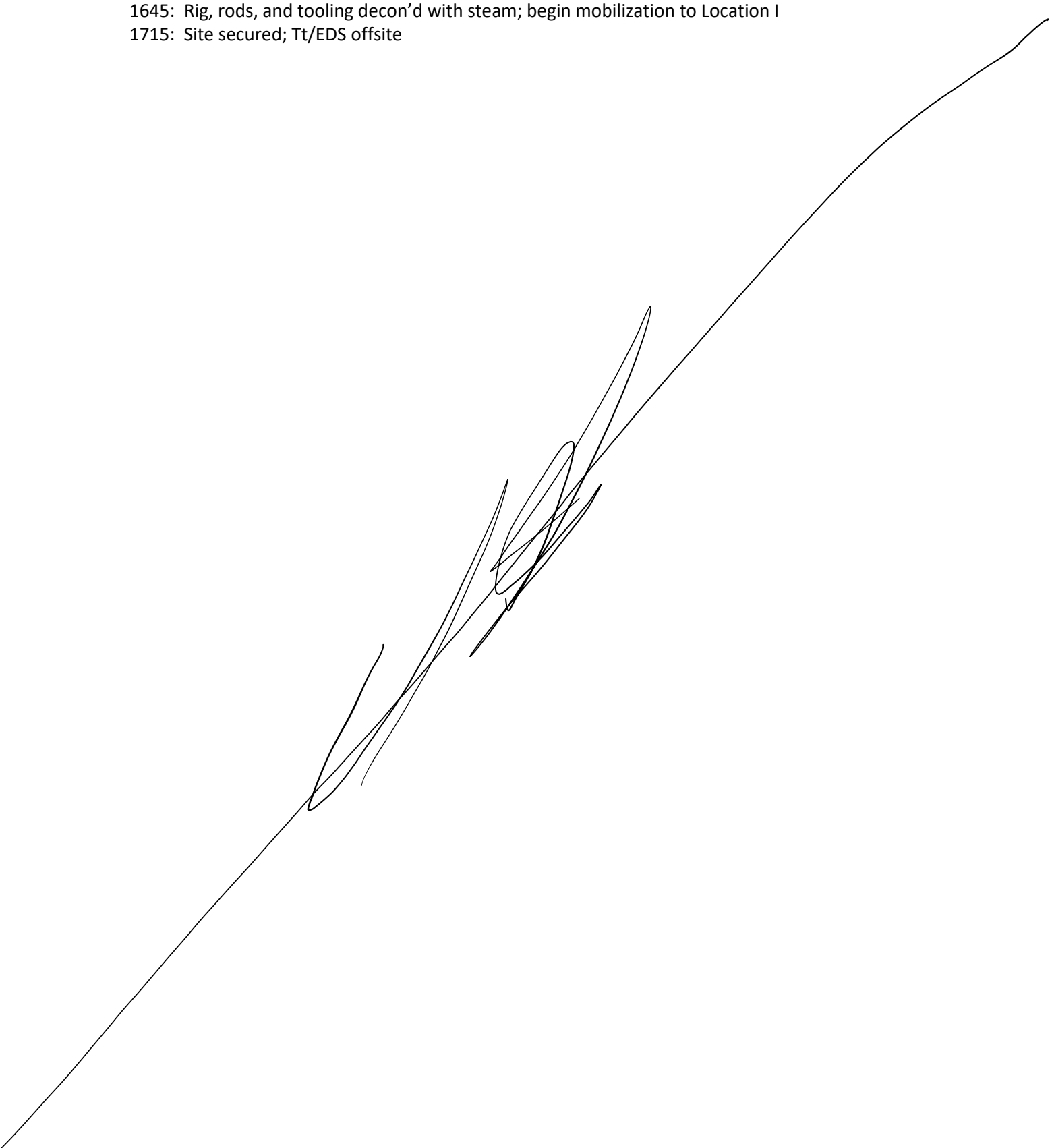
1345:	Sample Collected	CRCA-DPT0262-043.0-20220321	(R)	Gray; No Odor

1355: CRCA-DPT0262 pressure grouted 45' to surface through rods
1405: Rig, rods, and tooling decon'd with steam
1410: Set up on CRCA-DPT0263 (Location T); hand clear 5'
1415: Drilling Commenced

1430:	Sample Collected	CRCA-DPT0263-018.0-20220321	(T)	Brown; Organic Odor
1445:	Sample Collected	CRCA-DPT0263-023.0-20220321	(T)	Gray; No Odor
1500:	Sample Collected	CRCA-DPT0263-028.0-20220321	(T)	Gray; No Odor
1520:	Sample Collected	CRCA-DPT0263-033.0-20220321	(T)	Gray; No Odor

1540:	Sample Collected	CRCA-DPT0263-038.0-20220321	(T)	Gray; No Odor
1600:	Sample Collected	CRCA-DPT0263-043.0-20220321	(T)	Gray; No Odor
1620:	Sample Collected	CRCA-DPT0263-048.0-20220321	(T)	Gray; No Odor

1630: CRCA-DPT0263 pressure grouted 50’ to surface through rods
1645: Rig, rods, and tooling decon’d with steam; begin mobilization to Location I
1715: Site secured; Tt/EDS offsite



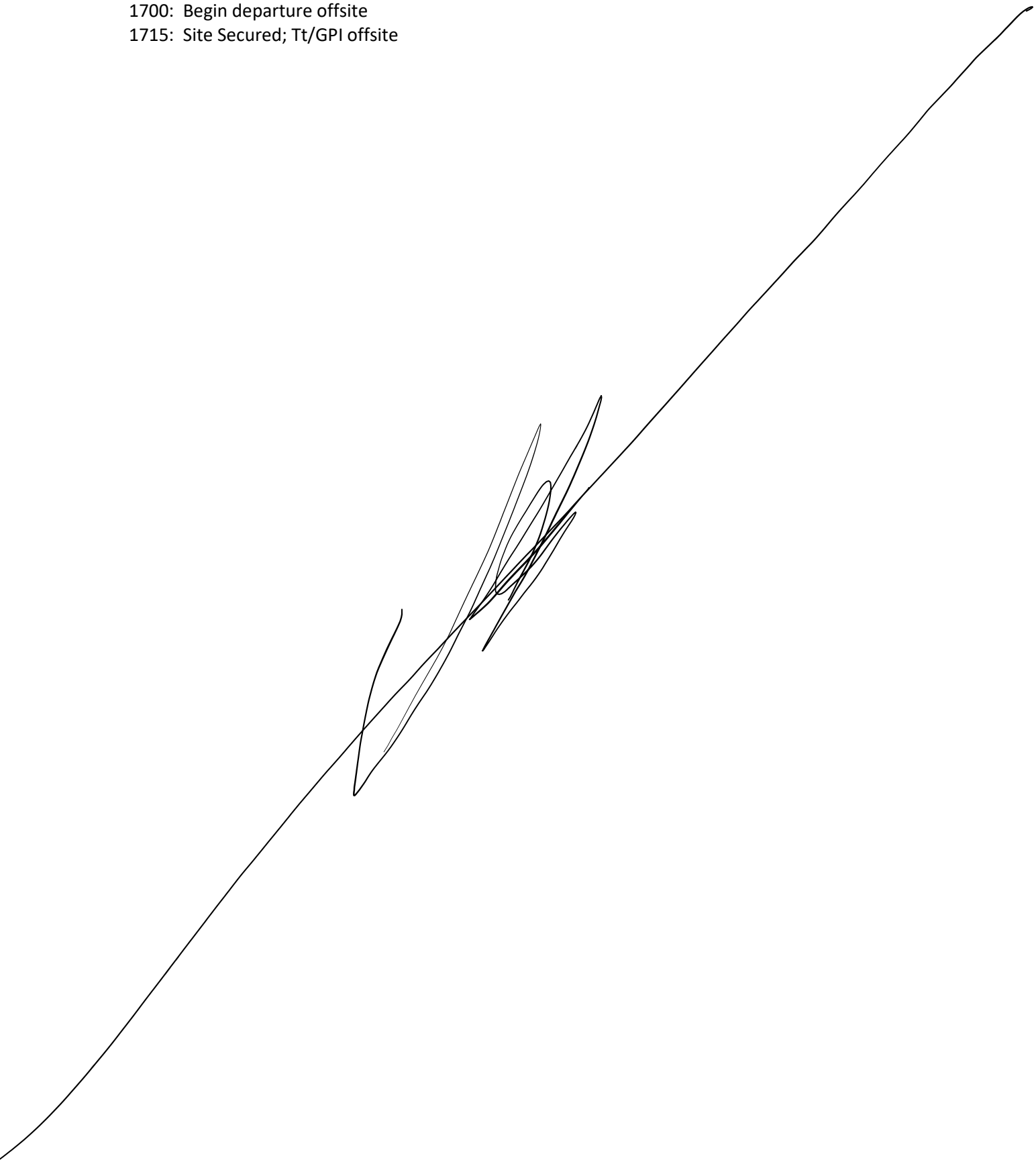
03/22/2022 **CRCA** **112G08970**

Personnel:	Chuck Sorden	(CS)	Geologist	Tt
	Chris Phelps	(CP)	Driller	GPI
	Keith Olson	(KO)	Tech	GPI

Weather: Sunny – 57 degrees F
PPE: Level D
Health and Safety (HAS): Topics – Insects/Wildlife; PPE; hydration
Objective: Continue DPT GW

0650: Tt/EDS on site; HAS Meeting; daily prep
0710: Begin mobilizing all tooling/equipment to CRCA-DPT0264 (Location H)
0740: Unable to bring all vehicles/decon to work area due to heavy mud and the potential for getting vehicles stuck. Setting up staging area approximately 0.5mile away from H.
0755: Rig arrives at location H (CRCA-DPT0264); hand clear 5'
0805: Drilling Commenced
0825: Sample Collected CRCA-DPT0264-038.0-20220322 (H) Gray; No Odor
- Poor Producing Formation
0855: Sample Collected CRCA-DPT0264-043.0-20220322 (H) Gray; No Odor
- Poor Producing Formation
0925: Sample Collected CRCA-DPT0264-048.0-20220322 (H) Gray; No Odor
- Poor Producing Formation
0950: Sample Collected CRCA-DPT0264-052.0-20220322 (H) Gray; No Odor
- Poor Producing Formation
1015: Sample Collected CRCA-DPT0264-057.0-20220322 (H) Gray; No Odor
1035: Sample Collected CRCA-DPT0264-062.0-20220322 (H) Gray; No Odor
1045: CRCA-DPT0264 pressure grouted 64' to surface through rods; mob back to decon area
1110: Rig, rods, and tooling decon'd with steam
1115: Sample Collected CRCA-EB-20220322-01 – Collected from decon'd screen
- EDS taking lunch while down at decon by their truck
1145: Mobilizing to CRCA-DPT0265 (Location I); collected PFAS samples from 8', 23', 43', and 57'
1200: Arrive at Location I; hand clear 5'
1205: Drilling Commenced
1300: Sample Collected CRCA-DPT0265-008.0-2020322 (I) Clear; Organic Odor
- Extremely poor producing formation. Would barely make any water.
1330: Sample Collected CRCA-DPT0265-023.0-20220322 (I) Gray; No Odor
- MS/MSD Collected
0000: Sample Collected CRCA-FD-20220322-01 – DUP of CRCA-DPT0265-023.0
1345: Sample Collected CRCA-DPT0265-038.0-20220322 (I) Gray; No Odor
1410: Sample Collected CRCA-DPT0265-043.0-20220322 (I) Gray; No Odor
1430: Sample Collected CRCA-DPT0265-048.0-20220322 (I) Gray; No Odor
- Poor Producing Formation
1455: Sample Collected CRCA-DPT0265-052.0-20220322 (I) Gray; No Odor
- Poor Producing Formation
1530: Sample Collected CRCA-DPT0265-057.0-20220322 (I) Gray; No Odor
1535: Sample Collected CRCA-FB-20220322-01 – Collected in Sampling Area
1555: Sample Collected CRCA-DPT0265-062.0-20220322 (I) Gray; No Odor
1605: CRCA-DPT0265 pressure grouted 64' to surface through rods; mob to decon area

1620: Arrive at Decon
1635: Rig, rods, and tooling Decon'd with steam. Begin mobilizing to CRCA-DPT0266 (Location J)
1650: Arrive at Location J; hand clear 5'
1700: Begin departure offsite
1715: Site Secured; Tt/GPI offsite



03/23/2022 **CRCA** **112G08970**

Personnel:	Chuck Sorden	(CS)	Geologist	Tt
	Chris Phelps	(CP)	Driller	GPI
	Keith Olson	(KO)	Tech	GPI

Weather: Sunny – 73 degrees F
PPE: Level D
Health and Safety (HAS): Topics – Insects/Wildlife; PPE; hydration
Objective: Continue DPT GW

0645: Tt/EDS on site; HAS meeting; Daily Prep
0700: EDS getting water for decon
0715: EDS back on site; mob to location J
0735: Arrive at CRCA-DPT0266 (Location J)
0740: Drilling Commenced

0755:	Sample Collected	CRCA-DPT0266-038.0-20220323	(J)	Gray; No Odor
0815:	Sample Collected	CRCA-DPT0266-043.0-20220323	(J)	Gray; No Odor
0835:	Sample Collected	CRCA-DPT0266-048.0-20220323	(J)	Gray; No Odor

- Poor producing formation

0855:	Sample Collected	CRCA-DPT0266-052.0-20220323	(J)	Gray; No Odor
0920:	Sample Collected	CRCA-DPT0266-057.0-20220323	(J)	Gray; No Odor

0930: CRCA-DPT0266 pressure grouted 59' to surface through rods; mob back to Decon area
0940: Arrive at Decon;
0955: Rig, rods, and tooling decon'd with steam; depart for location G
1015: Arrive at CRCA-DPT0267 (Location G); hand clear 5'
1030: Drilling Commenced

1045:	Sample Collected	CRCA-DPT0267-038.0-20220323	(G)	Gray; No Odor
1100:	Sample Collected	CRCA-DPT0267-043.0-20220323	(G)	Gray; No Odor

- Poor Producing Formation

1120:	Sample Collected	CRCA-DPT0267-048.0-20220323	(G)	Gray; No Odor
1150:	Sample Collected	CRCA-DPT0267-052.0-20220323	(G)	Gray; No Odor
1215:	Sample Collected	CRCA-DPT0267-057.0-20220323	(G)	Gray; No Odor

1225: CRCA-DPT0267 pressure grouted 59' to surface through rods; mobilize to decon area
1240: at Decon; GPI taking lunch
1310: Deconning
1325: Rig, rods, and tooling decon'd with steam; begin mob to Location F
1340: Arrive at CRCA-DPT0268 (Location F); hand clear 5'
1350: Drilling Commenced

1405:	Sample Collected	CRCA-DPT0268-038.0-20220323	(F)	Gray; No Odor

- Poor producing formation

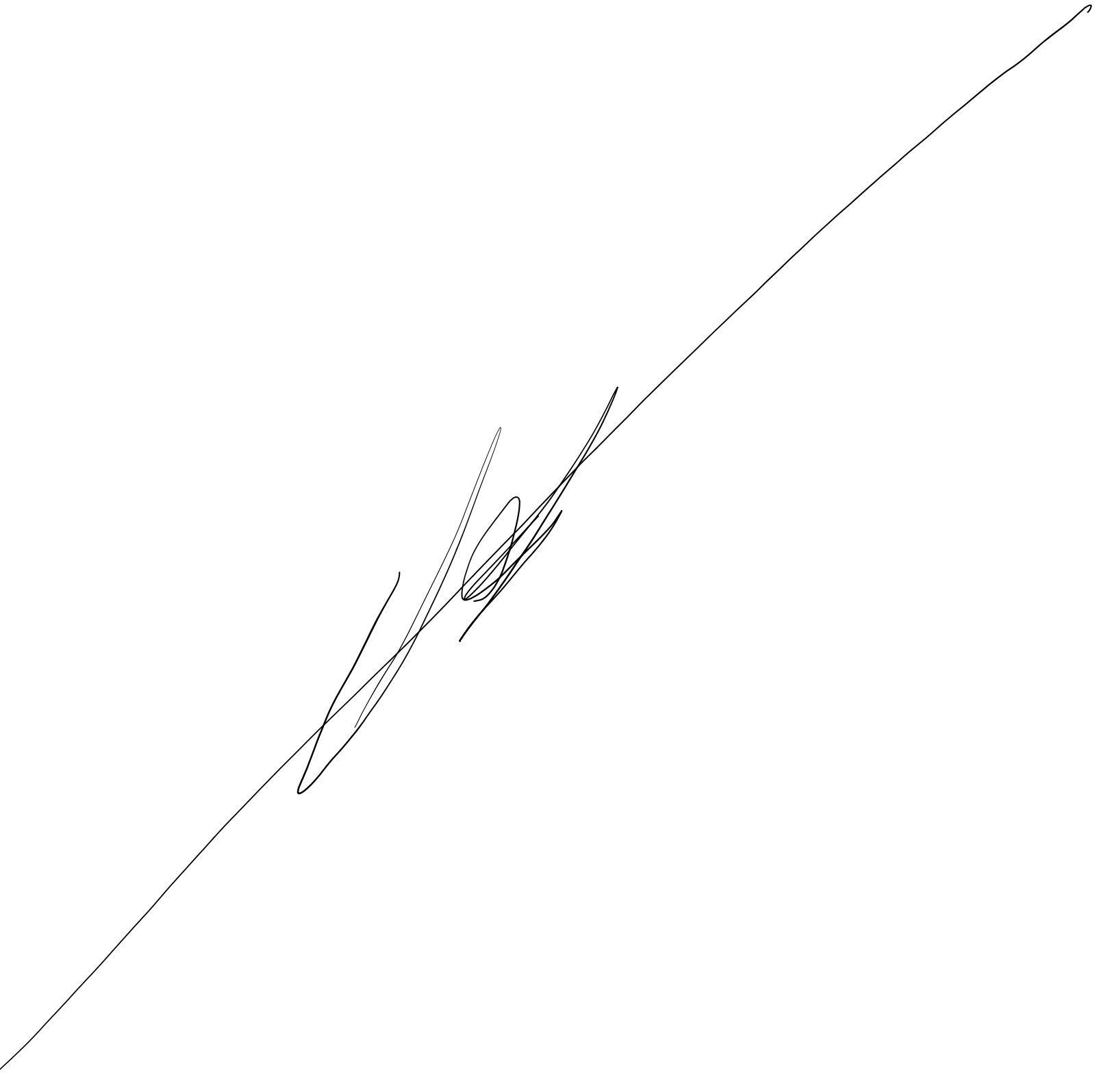
1425:	Sample Collected	CRCA-DPT0268-043.0-20220323	(F)	Gray; No Odor

- Poor producing formation

1445:	Sample Collected	CRCA-DPT0268-048.0-20220323	(F)	Gray; No Odor
1510:	Sample Collected	CRCA-DPT0268-052.0-20220323	(F)	Gray; No Odor
1535:	Sample Collected	CRCA-DPT0268-057.0-20220323	(F)	Gray; No Odor

1545: CRCA-DPT0268 pressure grouted 59' to surface through rods; mob to decon
1600: Arrive at Decon
1610: Rig, rods, and tooling decon'd with steam; begin mob back to trailer to relocate to west side of road

1620: Arrive at Schwartz Road and Kennedy Parkway; loading up rig on trailer to go to location A
1630: Depart for substation to access Location A
1635: Arrive at substation; unloading rig
1645: Mob rig to Location A
1705: Set up on CRCA-DPT0269 (Location A); preparing for potential severe weather
1715: Site secured; Tt/GPI offsite

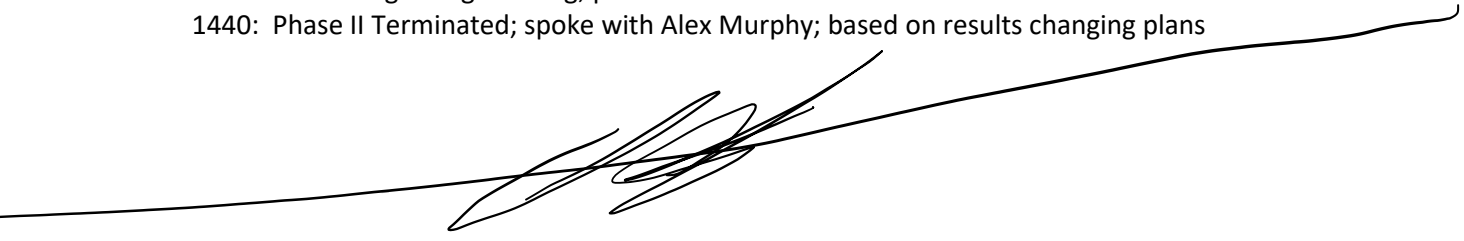


03/24/2022 **CRCA** **112G08970**

Personnel:	Chuck Sorden	(CS)	Geologist	Tt
	Chris Phelps	(CP)	Driller	GPI
	Keith Olson	(KO)	Tech	GPI

Weather: Sunny – 73 degrees F
PPE: Level D
Health and Safety (HAS): Topics – Insects/Wildlife; PPE; inclement weather
Objective: Continue DPT GW

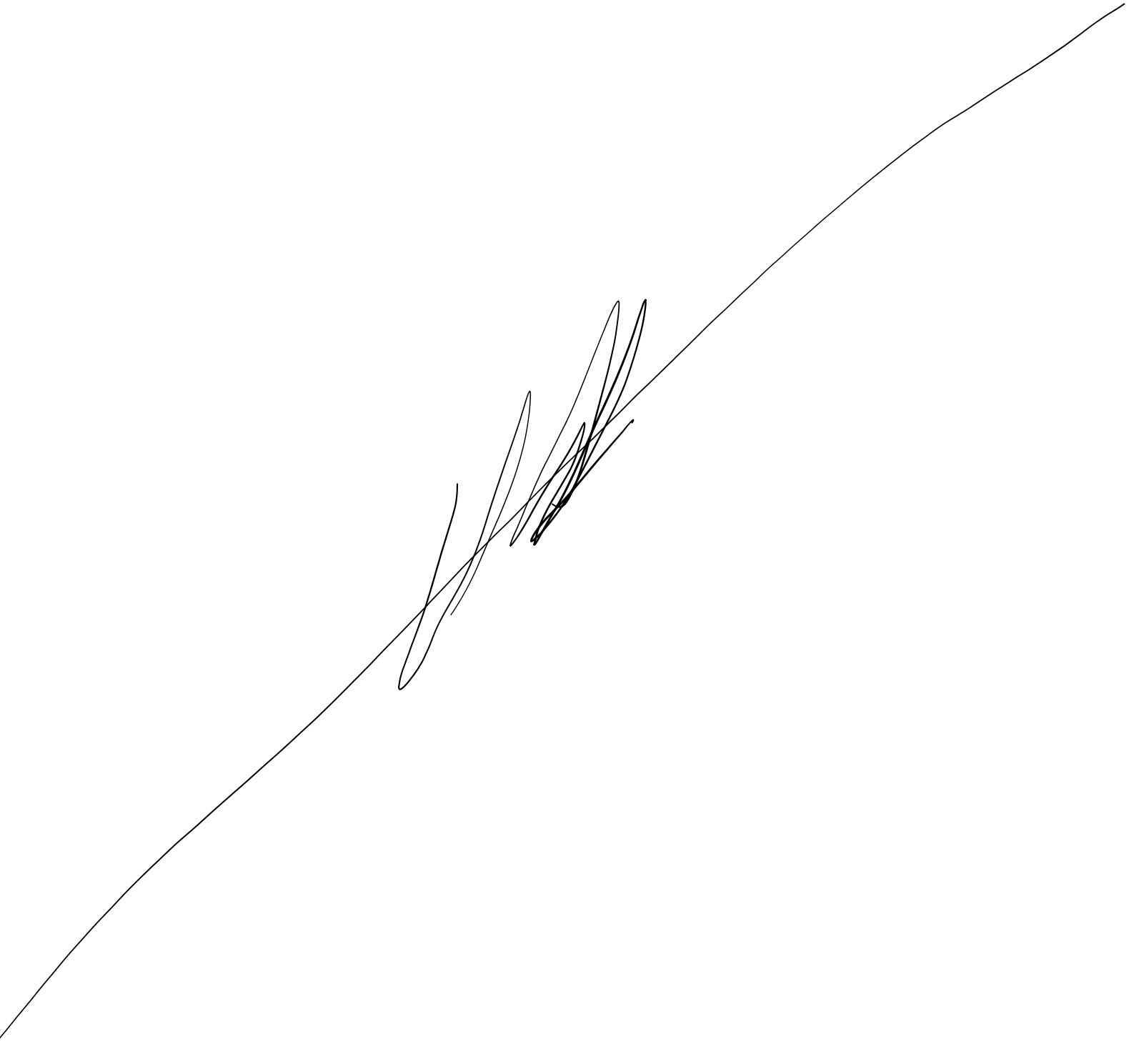
0645: Tt/EDS arrive at substation; HAS Meeting; daily prep; potential for severe weather today.
0715: Arrive at CRCA-DPT0269 (Location A); hand clear 5'
0725: Drilling commenced
0745: Sample Collected CRCA-DPT0269-038.0-20220324 (A) Gray; No Odor
- Poor producing formation
0805: Sample Collected CRCA-DPT0269-043.0-20220324 (A) Gray; No Odor
- Poor producing formation
0825: Sample Collected CRCA-DPT0269-048.0-20220324 (A) Gray; No Odor
- Poor producing formation
0850: Sample Collected CRCA-DPT0269-052.0-20220324 (A) Gray; No Odor
- Poor producing formation
0900: Drive head coming loose; CP/KO retightening bolts
0920: repair complete; drilling resumed
0940: Sample Collected CRCA-DPT0269-057.0-20220324 (A) Gray; No Odor
- Poor producing formation
0950: CRCA-DPT0269 pressure grouted 59' to surface through rods; KO deconning
1000: Set up on CRCA-DPT0270 (Location B); hand clear 5'
1005: Drilling Commenced
1020: Sample Collected CRCA-DPT0270-038.0-20220324 (B) Gray; No Odor
- Poor producing formation
1040: Sample Collected CRCA-DPT0270-043.0-20220324 (B) Gray; No Odor
- Poor producing formation
1100: Sample Collected CRCA-DPT0270-048.0-20220324 (B) Gray; No Odor
- Poor producing formation
1125: Sample Collected CRCA-DPT0270-052.0-20220324 (B) Gray; No Odor
- Poor producing formation
1150: Sample Collected CRCA-DPT0270-057.0-20220324 (B) Gray; No Odor
1200: CRCA-DPT0270 pressure grouted 59' to surface through rods
1215: Rig, rods, and tooling decon'd with steam
1220: Set up on CRCA-DPT0271 (Location C); hand clear 5'
1230: EDS taking a quick lunch
1245: Drilling Commenced
1300: Sample Collected CRCA-DPT0271-038.0-20220324 (C) Gray; No Odor
- Poor producing formation
1300: Phase II lightning warning; personnel secured in vehicles.
1440: Phase II Terminated; spoke with Alex Murphy; based on results changing plans



1450: CRCA-DPT0271 pressure Grouted 40’ to surface through rods; KO deconning
1505: Set up on CRCA-DPT0272 (Approximately 50’ west of CRCA-DPT0269 [Location A]; hand clear 5’
1515: Drilling Commenced; intervals changed; starting with 43’ sample
1530: Sample Collected CRCA-DPT0272-043.0-20220324 (U) Gray; No Odor
1550: Sample Collected CRCA-DPT0272-048.0-20220324 (U) Gray; No Odor

- Back in Phase II; personnel secured in vehicles

1630: Drilling terminated for the day; inclement weather approaching and need to make sure drillers truck can exit job site
1645: Both vehicles stuck; getting rig to push out
1715: Vehicles un-stuck and in safe place; site secured; Tt/EDS offsite



03/25/2022 **CRCA** **112G08970**

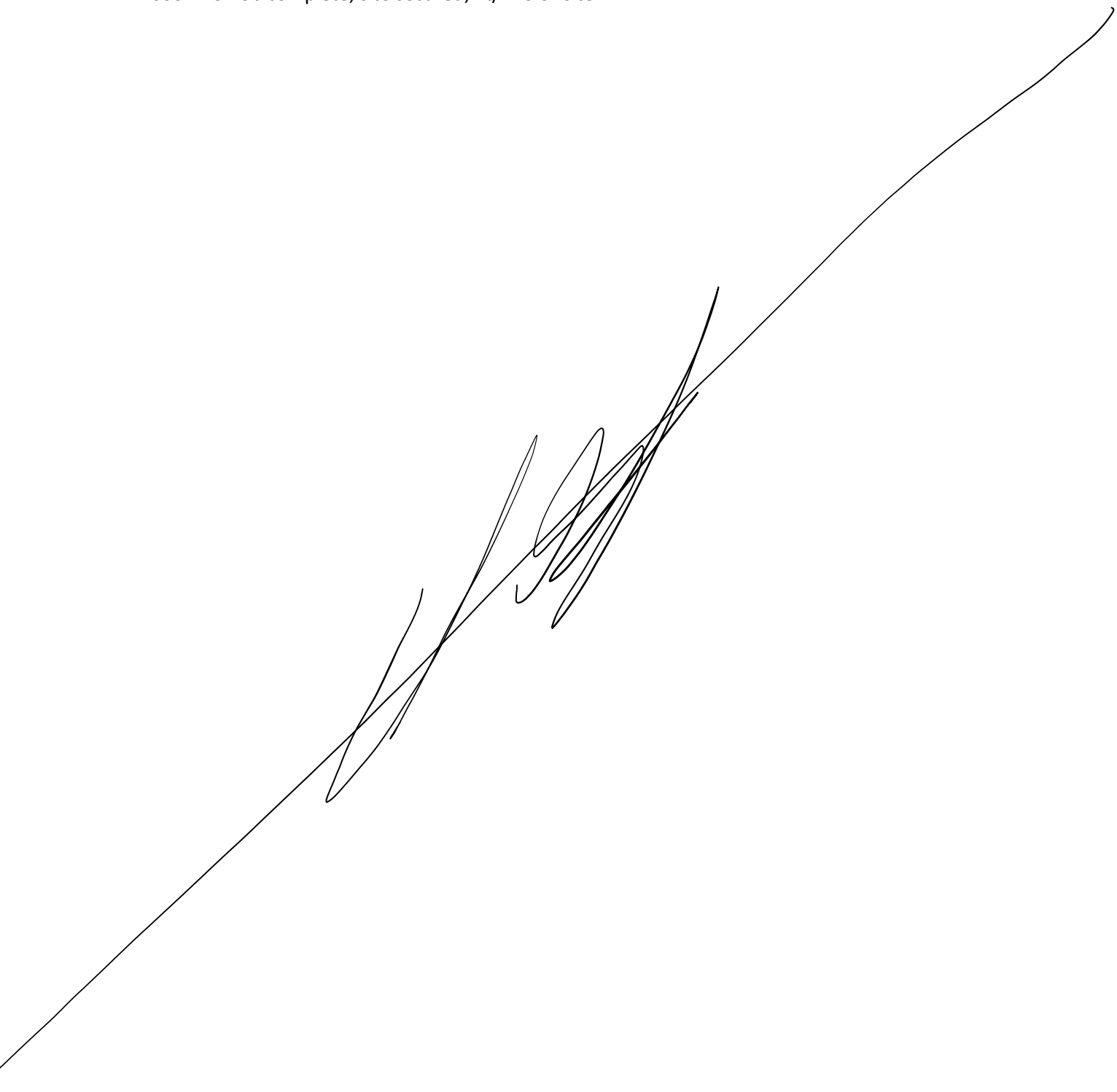
Personnel:	Chuck Sorden	(CS)	Geologist	Tt
	Chris Phelps	(CP)	Driller	GPI
	Keith Olson	(KO)	Tech	GPI

Weather: Sunny – 73 degrees F
PPE: Level D
Health and Safety (HAS): Topics – Insects/Wildlife; PPE; inclement weather
Objective: Continue DPT GW

0645: EDS/Tt on site; HAS meeting; daily prep; assessing access
0730: Arrive at location U (CRCA-DPT0272)
0740: Drilling resumed
0800: Sample Collected CRCA-DPT0272-052.0-20220325 (U) Gray; No Odor
- Poor producing formation
0825: Sample Collected CRCA-DPT0272-057.0-20220325 (U) Gray; No Odor
- Poor producing formation
0835: CRCA-DPT0272 pressure grouted 59' to surface through rods; mobilizing decon trailer out of area
0850: truck stuck; using rig to pull out truck and trailer
0900: truck and trailer stuck again… getting rig to pull truck and trailer out of the muddy area up to dry land at substation to decon
0920: Arrive at substation
0930: Rods, and tooling decon'd with steam; depart for site
0950: Arrive at CRCA-DPT0273 (Location D); hand clear 5'
1000: Drilling Commenced
1015: Sample Collected CRCA-DPT0273-043.0-20220325 (D) Gray; No Odor
1035: Sample Collected CRCA-DPT0273-048.0-20220325 (D) Gray; No Odor
- Poor producing formation
1100: Sample Collected CRCA-DPT0273-052.0-20220325 (D) Gray; No Odor
- Poor producing formation
1125: Sample Collected CRCA-DPT0273-057.0-20220325 (D) Gray; No Odor
- Poor producing formation
1135: CRCA-DPT0273 pressure grouted 59' to surface through rods; due to the muddy conditions getting to and from decon; CS has instructed EDS to bucket wash the rods in alconox and use fresh screens. EDS has enough screens to make it through both holes; Depart for Location V which is 100' N of Location A
1145: Arrive at location A; going to decon area at substation to get water and drop off IDW
1200: At decon; EDS taking quick lunch break after swapping water
1215: Depart for location V
1225: Arrive at CRCA-DPT0274 (Location V[100' N of location A]); hand clear 5'
1235: Drilling Commenced
1255: Sample Collected CRCA-DPT0274-043.0-20220325 (V) Gray; No Odor
- Poor producing formation
1315: Sample Collected CRCA-DPT0274-048.0-20220325 (V) Gray; No Odor
- Poor producing formation
1340: Sample Collected CRCA-DPT0274-052.0-20220325 (V) Gray; No Odor
- Poor producing formation

1405: Sample Collected CRCA-DPT0274-057.0-20220325 (V) Gray; No Odor
- Poor producing formation

1415: CRCA-DPT0274 pressure grouted 59’ to surface through rods – Spoke with Alex Murphy (AM); based on results from DPT0274 with a vinyl hit of 1ug/L we will need to collect a 38’ sample from DPT0274; moving north 5’ to avoid pressure grouting influence; hand clear 5’
1420: Drilling Commenced
1440: Sample Collected CRCA-DPT0274-038.0-20220325 (V) Gray; No Odor
1450: CRCA-DPT0274 pressure grouted 40’ to surface through rods; begin Demob
1500: Arrive at substation; begin demob
1600: Demob complete; site secured; Tt/EDS offsite



Tetra Tech, Inc.

DPT GROUNDWATER SAMPLE LOG SHEET

Project Site Name: Components Refurbishment and Chem. Analysis Facility (CRCA)
Project No.: 112G08970
Date: 12/19/2022
Sample ID: CRCA-DPT0275
Location: D
Sampled By: Cory O'Brien

DPT SAMPLING DATA

LOCATION ID	LOCATION	DATE	TIME	DEPTH	ODOR	COLOR	COMMENTS
CRCA-DPT0275	D	12/19/2022	1120	8'	None	Brown	PFAS Only
CRCA-DPT0275	D	12/19/2022	1130	18'	None	Brown	VOC Only
CRCA-DPT0275	D	12/19/2022	1145	23'	None	Brown	VOC and PFAS
CRCA-DPT0275	D	12/19/2022	1205	28'	None	Light brown	VOC Only
CRCA-DPT0275	D	12/19/2022	1220	33'	None	Light brown	VOC and PFAS
CRCA-DPT0275	D	12/19/2022	1240	38'	None	Gray	VOC Only
CRCA-DPT0275	D	12/19/2022	1300	43'	None	Gray	VOC and PFAS
CRCA-DPT0275	D	12/19/2022	1320	48'	None	Gray	VOC Only
CRCA-DPT0275	D	12/19/2022	1340	53'	None	Gray	VOC Only
CRCA-DPT0275	D	12/19/2022	1430	58'	None	Gray	VOC and PFAS

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
V8260TCL42/V8260TCL42, VMS+UNPR	HCL/4°C	40 mL vials delivered to SGS Courier	X
LCQSM537MI28	None	125 mL HDPE Bottles Delivered to SGS	X

OBSERVATIONS / NOTES

All intervals purged a minimum of five (5) screen volumes (1.5 L) prior to sample collection.
Hand auger five feet to clear utilities
Borehole abandoned via pressure grouting through boring rods
Rig, Rods, and associated tooling decon'd with pressurized steam

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Tetra Tech, Inc.

DPT GROUNDWATER SAMPLE LOG SHEET

Project Site Name: Components Refurbishment and Chem. Analysis Facility (CRCA)
Project No.: 112G08970
Date: 12/19/2022
Sample ID: CRCA-DPT0276
Location: E
Sampled By: Cory O'Brien

DPT SAMPLING DATA

LOCATION ID	LOCATION	DATE	TIME	DEPTH	ODOR	COLOR	COMMENTS
CRCA-DPT0276	E	12/19/2022	**1520**	8'	**Organic**	**Brown**	PFAS Only
CRCA-DPT0276	E	12/19/2022	1533	18'	None	Gray	VOC Only
CRCA-DPT0276	E	12/19/2022	1545	23'	None	Gray	VOC and PFAS
CRCA-DPT0276	E	12/19/2022	1600	28'	None	Gray	VOC Only
CRCA-DPT0276	E	12/19/2022	1620	33'	None	Gray	PFAS
CRCA-DPT0276	E	12/19/2022	1655	38'	None	Gray	VOC and PFAS
CRCA-DPT0276	E	12/19/2022	1715	43'	None	Gray	PFAS
CRCA-DPT0276	E	12/19/2022	1740	48'	None	Gray	VOC and PFAS
CRCA-DPT0276	E	12/20/2022	0750	53'	None	Gray	VOC Only
CRCA-DPT0276	E	12/20/2022	0810	58'	None	Gray	VOC and PFAS

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
V8260TCL42/V8260TCL42, VMS+UNPR	**HCL/4°C**	**40 mL vials delivered to SGS Courier**	**X**
LCQSM537MI28	**None**	**125 mL HDPE Bottles Delivered to SGS**	**X**

OBSERVATIONS / NOTES

All intervals purged a minimum of five (5) screen volumes (1.5 L) prior to sample collection.
Hand auger five feet to clear utilities
Borehole abandoned via pressure grouting through boring rods
Rig, Rods, and associated tooling decon'd with pressurized steam

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Tetra Tech, Inc.

DPT GROUNDWATER SAMPLE LOG SHEET

Project Site Name: Components Refurbishment and Chem. Analysis Facility (CRCA) **Sample ID:** CRCA-DPT0277
Project No.: 112G08970 **Location:** F
Date: 12/20/2022 **Sampled By:** Cory O'Brien

DPT SAMPLING DATA

LOCATION ID	LOCATION	DATE	TIME	DEPTH	ODOR	COLOR	COMMENTS
CRCA-DPT0277	F	12/20/2022	0925	8'	None	Gray	PFAS Only
CRCA-DPT0277	F	12/20/2022	0935	18'	None	Gray	VOC Only
CRCA-DPT0277	F	12/20/2022	0955	23'	None	Gray	VOC and PFAS
CRCA-DPT0277	F	12/20/2022	1015	28'	None	Gray	VOC Only
CRCA-DPT0277	F	12/20/2022	1050	33'	None	Gray	VOC and PFAS
CRCA-DPT0277	F	12/20/2022	1120	38'	None	Gray	VOC Only
CRCA-DPT0277	F	12/20/2022	1140	43'	None	Gray	VOC and PFAS
CRCA-DPT0277	F	12/20/2022	1205	48'	None	Gray	VOC Only
CRCA-DPT0277	F	12/20/2022	1245	53'	None	Gray	VOC Only
CRCA-DPT0277	F	12/20/2022	1310	58'	None	Gray	VOC and PFAS

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
V8260TCL42/V8260TCL42, VMS+UNPR	HCL/4°C	40 mL vials delivered to SGS Courier	X
LCQSM537MI28	None	125 mL HDPE Bottles Delivered to SGS	X

OBSERVATIONS / NOTES

All intervals purged a minimum of five (5) screen volumes (1.5 L) prior to sample collection.
Hand auger five feet to clear utilities
Borehole abandoned via pressure grouting through boring rods
Rig, Rods, and associated tooling decon'd with pressurized steam

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Tetra Tech, Inc.

DPT GROUNDWATER SAMPLE LOG SHEET

Project Site Name: Components Refurbishment and Chem. Analysis Facility (CRCA) **Sample ID:** CRCA-DPT0278
Project No.: 112G08970 **Location:** G
Date: 12/20/2022 **Sampled By:** Cory O'Brien

DPT SAMPLING DATA

LOCATION ID	LOCATION	DATE	TIME	DEPTH	ODOR	COLOR	COMMENTS
CRCA-DPT0278	G	12/20/2022	1425	8'	None	Gray	PFAS Only
CRCA-DPT0278	G	12/20/2022	1435	18'	None	Gray	VOC Only
CRCA-DPT0278	G	12/20/2022	1450	23'	None	Gray	VOC and PFAS
CRCA-DPT0278	G	12/20/2022	1510	28'	None	Gray	VOC Only
CRCA-DPT0278	G	12/20/2022	1530	33'	None	Gray	VOC and PFAS
CRCA-DPT0278	G	12/20/2022	1550	38'	None	Gray	VOC Only
CRCA-DPT0278	G	12/20/2022	1615	43'	None	Gray	VOC and PFAS
CRCA-DPT0278	G	12/20/2022	1635	48'	None	Gray	VOC Only
CRCA-DPT0278	G	12/20/2022	1700	53'	None	Gray	VOC Only
CRCA-DPT0278	G	12/20/2022	1730	58'	None	Gray	VOC and PFAS

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
V8260TCL42/V8260TCL42, VMS+UNPR	HCL/4°C	40 mL vials delivered to SGS Courier	X
LCQSM537MI28	None	125 mL HDPE Bottles Delivered to SGS	X

OBSERVATIONS / NOTES

All intervals purged a minimum of five (5) screen volumes (1.5 L) prior to sample collection.
Hand auger five feet to clear utilities
Borehole abandoned via pressure grouting through boring rods
Rig, Rods, and associated tooling decon'd with pressurized steam

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Date: 12-19-2022

Personnel: Cory O'Brien (Tetra Tech)
Christian (GPI)
Donald (GPI)

Weather: Sunny

PPE: level D (PFAS compliant)

Health and Safety Topics: Working near drill rig, close quarters, driving off road.

Objective: DPT Groundwater Sampling

0730: Tetra Tech arrives on site
0845: Drillers arrive on site Cory and Christian go to scout the proposed locations.
0900: Rig, rods, and tooling decon with pressurized steam and Alconox.
1000: Drive to location D with the rig and Decon trailer. Decon equipment and check with PID.
1100: set up on location D and start DPT
1120: Sample CRCA-DPT0275-008.0-20221219 collected for PFAS
1130: Sample CRCA-DPT0275-018.0-20221219 collected for VOC
1145: Sample CRCA-DPT0275-023.0-20221219 collected for VOC and PFAS
1205: Sample CRCA-DPT0275-028.0-20221219 collected for VOC
1220: Sample CRCA-DPT0275-033.0-20221219 collected for VOC and PFAS
1240: Sample CRCA-DPT0275-038.0-20221219 collected for VOC
1300: Sample CRCA-DPT0275-043.0-20221219 collected for VOC and PFAS
1320: Sample CRCA-DPT0275-048.0-20221219 collected for VOC
1340: Sample CRCA-DPT0275-053.0-20221219 collected for VOC
1430: Sample CRCA-DPT0275-058.0-20221219 collected for VOC and PFAS
1435: Rig, rods, and tooling decon with pressurized steam and Alconox.
1450: Crew moves to Location E.
1520: Sample CRCA-DPT0276-008.0-20221219 collected for PFAS
1533: Sample CRCA-DPT0276-018.0-20221219 collected for VOC
1545: Sample CRCA-DPT0276-023.0-20221219 collected for VOC
1600: Sample CRCA-DPT0276-028.0-20221219 collected for VOC
1620: Sample CRCA-DPT0276-033.0-20221219 collected for VOC and PFAS
1655: Sample CRCA-DPT0276-038.0-20221219 collected for VOC
1715: Sample CRCA-DPT0276-043.0-20221219 collected for VOC and PFAS
1740: Sample CRCA-DPT0276-048.0-20221219 collected for VOC
1750: Equipment and job site secure all crew off site.

Date: 12/20/2022

Weather: Overcast

Personnel: Cory O'Brien (TT)

Natalie F. (TT)

Christian (GPI)

Donald (GPI)

Health and Safety: Working along, review HASP and Note Marshaling locations at site.

PPE: Level D (PFAS compliant)

Objective: Groundwater sampling for PFAS

Equipment:

0645: Tetra Tech and GPI arrive on site hold health and safety meeting and prep for today's activities.

0700: Crew starts to set up equipment at Location E to finish sampling

0750: Sample CRCA-DPT0276-053.0-20221220 collected for VOC

0810: Sample CRCA-DPT0276-058.0-20221220 collected for VOC and PFAS

0815: Rig, rods, and tooling decon with pressurized steam and Alconox.

0900: Move to DPT0277 (F) GPI hand clear using hand auger

0925: Sample CRCA-DPT0277-008.0-20221220 collected for PFAS

0935: Sample CRCA-DPT0277-018.0-20221220 collected for VOC

0955: Sample CRCA-DPT0277-023.0-20221220 collected for VOC and PFAS

1015: Sample CRCA-DPT0277-028.0-20221220 collected for VOC

1050: Sample CRCA-DPT0277-033.0-20221220 collected for VOC and PFAS

1120: Sample CRCA-DPT0277-038.0-20221220 collected for VOC

1140: Sample CRCA-DPT0277-043.0-20221220 collected for VOC and PFAS

1205: Sample CRCA-DPT0277-048.0-20221220 collected for VOC

1245: Sample CRCA-DPT0277-053.0-20221220 collected for VOC

1310: Sample CRCA-DPT0277-058.0-20221220 collected for VOC and PFAS

1315: Rig, rods, and tooling decon with pressurized steam and Alconox.

1400: Crew moves equipment to location G

1425: Sample CRCA-DPT0278-008.0-20221220 collected for PFAS

1435: Sample CRCA-DPT0278-018.0-20221220 collected for VOC

1450: Sample CRCA-DPT0278-023.0-20221220 collected for VOC and PFAS

1510: Sample CRCA-DPT0278-028.0-20221220 collected for VOC

1530: Sample CRCA-DPT0278-033.0-20221220 collected for VOC and PFAS

1550: Sample CRCA-DPT0278-038.0-20221220 collected for VOC

1615: Sample CRCA-DPT0278-043.0-20221220 collected for VOC and PFAS

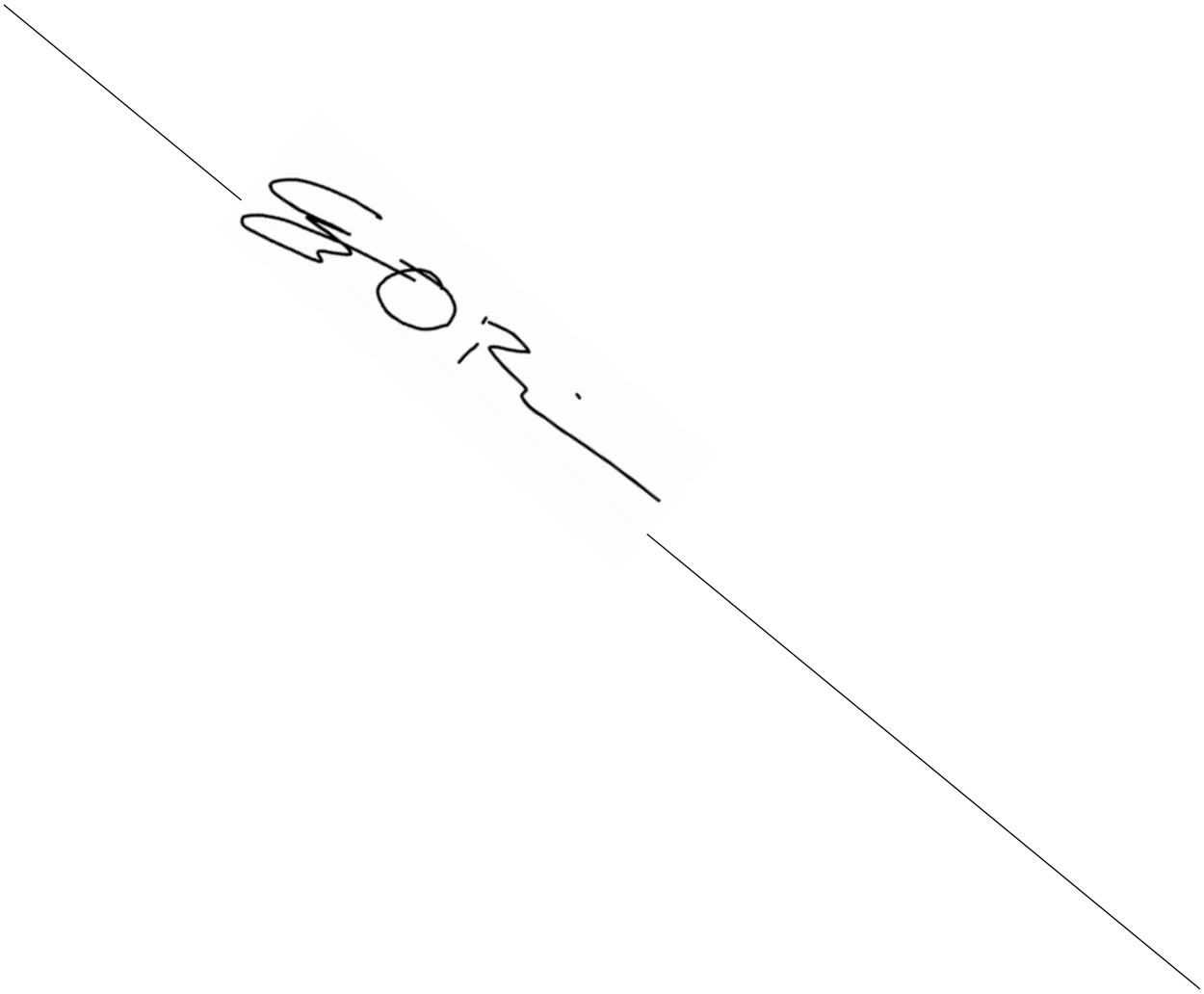
1635: Sample CRCA-DPT0278-048.0-20221220 collected for VOC

1700: Sample CRCA-DPT0278-053.0-20221220 collected for VOC

1730: Sample CRCA-DPT0278-058.0-20221220 collected for VOC and PFAS

1735: Crew packs up equipment and moves tractor next to the air sparge trailer rig, rods, and tooling decon with pressurized steam and Alconox.

1845: All crew off site.



Tetra Tech, Inc.

DPT GROUNDWATER SAMPLE LOG SHEET

Project Site Name: Components Refurbishment and Chem. Analysis Facility (CRCA)
Project No.: 112G08970
Date: 05/01/2023 and 05/02/2023
Sample ID: CRCA-DPT0280
Location: D
Sampled By: Chuck Sorden

DPT SAMPLING DATA

LOCATION ID	LOCATION	DATE	TIME	DEPTH	ODOR	COLOR	COMMENTS
CRCA-DPT0280	D	05/01/2023	1645	8'	Organic	Brown	PFAS/VOC
CRCA-DPT0280	D	05/01/2023	1720	13'	Organic	Brown	VOC Only
CRCA-DPT0280	D	05/02/2023	0715	18'	None	Gray	PFAS/VOC
CRCA-DPT0280	D	05/02/2023	1740	23'	None	Gray	VOC Only
CRCA-DPT0280	D	05/02/2023	0810	28'	None	Gray	PFAS/VOC
CRCA-DPT0280	D	05/02/2023	0840	33'	None	Gray	VOC Only
CRCA-DPT0280	D	05/02/2023	0900	38'	None	Gray	PFAS/VOC
CRCA-DPT0280	D	05/02/2023	0930	43'	None	Gray	VOC Only
CRCA-DPT0280	D	05/03/2023	1010	48'	None	Gray	PFAS/VOC
CRCA-DPT0280	D	05/04/2023	1050	53'	None	Gray	VOC Only
CRCA-DPT0280	D	05/05/2023	1125	57'	None	Gray	PFAS/VOC

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
V8260TCL42/V8260TCL42, VMS+UNPR	HCL/4°C	6 40 mL vials delivered to SGS Courier	X
LCQSM537MI28	None	2 125 mL HDPE Bottles Delivered to SGS	X

OBSERVATIONS / NOTES

All intervals purged a minimum of five (5) screen volumes (1.5 L) prior to sample collection.
Hand auger five feet to clear utilities
Borehole abandoned via pressure grouting through boring rods
Rig, Rods, and associated tooling decon'd with pressurized steam

Circle if Applicable:

MS/MSD	Duplicate ID No.:
YES	

Tetra Tech, Inc.

DPT GROUNDWATER SAMPLE LOG SHEET

Project Site Name: Components Refurbishment and Chem. Analysis Facility (CRCA)
Project No.: 112G08970
Date: 05/03/2023 and 05/04/2023

Sample ID: CRCA-DPT0285
Location: H
Sampled By: Chuck Sorden

DPT SAMPLING DATA

LOCATION ID	LOCATION	DATE	TIME	DEPTH	ODOR	COLOR	COMMENTS
CRCA-DPT0285	H	05/03/2023	1505	8'	Organic	Brown	VOC Only
CRCA-DPT0285	H	05/03/2023	1515	13'	Organic	Brown	VOC Only
CRCA-DPT0285	H	05/03/2023	1530	18'	None	Gray	VOC Only
CRCA-DPT0285	H	05/03/2023	1550	23'	None	Gray	VOC Only
CRCA-DPT0285	H	05/03/2023	1610	28'	None	Gray	VOC Only
CRCA-DPT0285	H	05/03/2023	1640	48'	None	Gray	PFAS Only
CRCA-DPT0285	H	05/04/2023	0745	57'	None	Gray	PFAS Only

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
V8260TCL42/V8260TCL42, VMS+UNPR	HCL/4°C	6 40 mL vials delivered to SGS Courier	X
LCQSM537MI28	None	2 125 mL HDPE Bottles Delivered to SGS	X

OBSERVATIONS / NOTES

All intervals purged a minimum of five (5) screen volumes (1.5 L) prior to sample collection.
Hand auger five feet to clear utilities
Borehole abandoned via pressure grouting through boring rods
Rig, Rods, and associated tooling decon'd with Alconox/pressurized steam

Circle if Applicable:

MS/MSD	Duplicate ID No.:
NO	

Tetra Tech, Inc.

DPT GROUNDWATER SAMPLE LOG SHEET

Project Site Name: Components Refurbishment and Chem. Analysis Facility (CRCA)
Project No.: 112G08970
Date: 05/04/2023
Sample ID: CRCA-DPT0286
Location: I
Sampled By: Chuck Sorden

DPT SAMPLING DATA

LOCATION ID	LOCATION	DATE	TIME	DEPTH	ODOR	COLOR	COMMENTS
CRCA-DPT0286	I	05/04/2023	0845	8'	Organic	Brown	VOC Only
CRCA-DPT0286	I	05/04/2023	0900	13'	Organic	Brown	VOC Only
CRCA-DPT0286	I	05/04/2023	0915	18'	None	Gray	VOC Only
CRCA-DPT0286	I	05/04/2023	0935	23'	None	Gray	VOC Only
CRCA-DPT0286	I	05/04/2023	0955	28'	None	Gray	VOC Only
CRCA-DPT0286	I	05/04/2023	1020	48'	None	Gray	PFAS Only
CRCA-DPT0286	I	05/04/2023	1055	57'	None	Gray	PFAS Only

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
V8260TCL42/V8260TCL42, VMS+UNPR	HCL/4°C	6 40 mL vials delivered to SGS Courier	X
LCQSM537MI28	None	2 125 mL HDPE Bottles Delivered to SGS	X

OBSERVATIONS / NOTES

All intervals purged a minimum of five (5) screen volumes (1.5 L) prior to sample collection.
Hand auger five feet to clear utilities
Borehole abandoned via pressure grouting through boring rods
Rig, Rods, and associated tooling decon'd with Alconox/pressurized steam

Circle if Applicable:

MS/MSD	Duplicate ID No.:
NO	

05/01/2023 **CRCA** **112G08970**

Personnel:	Chuck Sorden	(CS)	Geologist	Tt
	Mickey Ritter	(MR)	Driller	GPI
	Blake Handibode	(BH)	Tech	GPI

Weather: Sunny – 70 degrees F
PPE: Level D
Health and Safety (HAS): Topics – SSHASP; PPE; IDW
Objective: Begin DPT GW

0815: Tt on base; gathering equipment and supplies; CS Spoke with MR; GPI at Badging; MR will need fingerprints collected prior to base entry.
0900: CS meets with Jeff McDowell (JMD) and Alfredo George (AG) of KSC Utility Locators to clear the 11 proposed locations at CRCA
0955: Utility Locate Complete; Locators offsite; CS still awaiting GPI to arrive
1140: GPI on site; HAS Meeting; unloading equipment and materials. Daily prep
1215: Conducting pre-work decon on rods. CS will collect a blank off of a screen.
1235: Sample Collected CRCA-EB-20230501-01 EPA 573 PFAS
– Blank collected by pouring PFAS free water over decon'd screen
1245: Set up on CRCA-DPT0279 (Location C); hand clear 5.'
1300: Drilling Commenced
1320: Sample Collected CRCA-DPT0279-008.0-20230501 (C) Gray; No Odor
- PFAS Only Analysis
1325: Sample Collected CRCA-FB
-20230501-01 EPA 537 PFAS
- Sample Collected in vicinity of sampling area at location C.
1340: Sample Collected CRCA-DPT0279-018.0-20230501 (C) Gray; No Odor
- PFAS Only Analysis
1400: Sample Collected CRCA-DPT0279-028.0-20230501 (C) Gray; No Odor
- PFAS Only Analysis
1420: Sample Collected CRCA-DPT0279-038.0-20230501 (C) Gray; No Odor
- PFAS Only analysis
1450: Sample Collected CRCA-DPT0279-048.0-20230501 (C) Gray; No Odor
- PFAS Only Analysis; poor producing formation
1520: Sample Collected CRCA-DPT0279-057.0-20230501 (C) Gray; No Odor
0000: Sample Collected CRCA-FD-20230501-01 – DUP of CRCA-DPT0279-057.0
1535: CRCA-DPT0279 pressure grouted 59' to surface through rods; mobilizing to decon area
1550: Arrive at decon area; begin unloading rods to decon
1605: Rig, rods, and tooling decon'd with Alconox/pressurized steam
1615: Set up on CRCA-DPT0280 (Location D); hand clear 5.'
1625: Drilling Commenced
1645: Sample Collected CRCA-DPT0280-008.0-20230501 (D) Brown; Org Odor
- PFAS/VOC Analysis
- MS/MSD Collected for PFAS Only
1720; Sample Collected CRCA-DPT0280-013.0-20230501 (D) Brown; Org Odor
- Site Secured; Tt/GPI offsite.

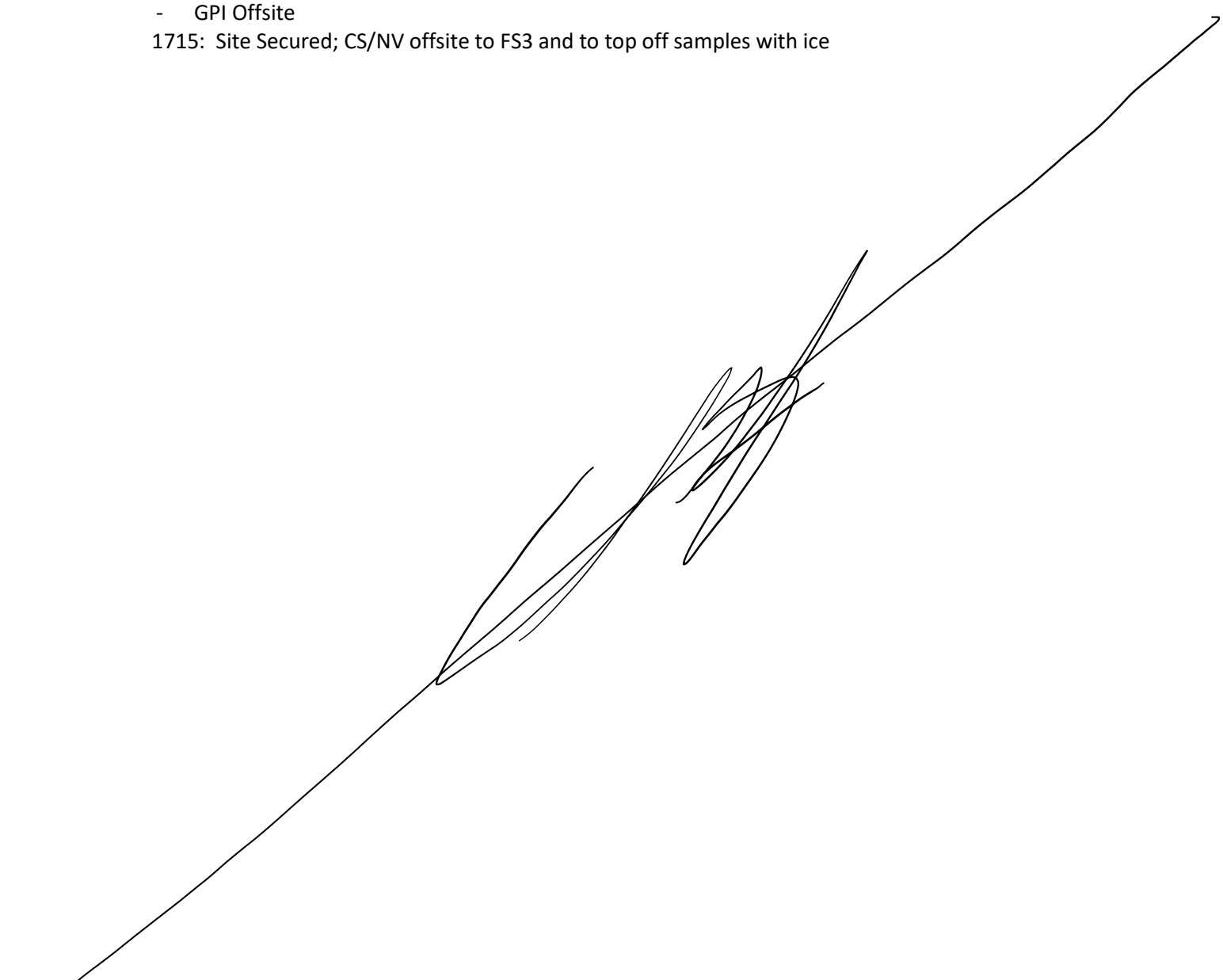
05/02/2023 **CRCA** **112G08970**

Personnel:	Chuck Sorden	(CS)	Geologist	Tt
	Mickey Ritter	(MR)	Driller	GPI
	Blake Handibode	(BH)	Tech	GPI
	Natalie Volk	(NV)	Engineer	Tt

Weather: Sunny – 70 degrees F
PPE: Level D
Health and Safety (HAS): Topics – SSHASP; PPE; IDW
Objective: Begin DPT GW

0645: GPI on site
0700: Tt on site; HAS meeting; daily prep
0715: Sample Collected CRCA-DPT0280-018.0-20230502 (D) Gray; No Odor
- PFAS/VOC Analysis
0740: Sample Collected CRCA-DPT0280-023.0-20230502 (D) Gray; No Odor
- VOC Analysis Only
0810: Sample Collected CRCA-DPT0280-028.0-20230502 (D) Gray; No Odor
- PFAS/VOC Analysis
0840: Sample Collected CRCA-DPT0280-033.0-20230502 (D) Gray; No Odor
- VOC Analysis Only
0900: Sample Collected CRCA-DPT0280-038.0-20230502 (D) Gray; No Odor
- PFAS/VOC analysis
0930: Sample Collected CRCA-DPT0280-043.0-20230502 (D) Gray; No Odor
- VOC Analysis Only
1010: Sample Collected CRCA-DPT0280-048.0-290230502 (D) Gray; No Odor
- PFAS/VOC Analysis; very poor producing formation
1050: Sample Collected CRCA-DPT0280-053.0-20230502 (D) Gray; No Odor
- VOC Analysis Only
1125: Sample Collected CRCA-DPT0280-057.0-20230502(D) Gray; No Odor
1140: CRCA-DPT0280 pressure grouted 59' to surface through rods; mobilizing to decon area
1145: Arrive at decon area; unloading rods and screens; using a pressure washer foam cannon (Purchased by Tt) to apply Alconox to the sampling equipment
1205: Rig, rods, and tooling decon'd with Alconox/pressurized steam
1210: Sample Collected CRCA-EB-20230502-01 – Collected by pouring PFAS free water over decon'd screen
1215: Set up on CRCA-DPT0281 (Location F); hand clear 5' for Utility clearances
1235: Sample Collected CRCA-DPT0281-008.0-20230502 (F) Brown; Org Odor
- PFAS Analysis Only
1300: Sample Collected CRCA-DPT0281-018.0-20230502 (F) Brown; Org Odor
0000: Sample Collected CRCA-FD-20230502-01 – DUP off CRCA-DPT0281-018.0
1320: Sample Collected CRCA-DPT0281-028.0-20230502 (F) Gray; No odor
- MS/MSD Collected for PFAS Only Analysis
1350: Sample Collected CRCA-DPT0281-038.0-20230502 (F) Gray; No Odor
- PFAS Analysis Only
1420: Sample Collected CRCA-DPT0281-048.0-20230502 (F) Gray; No Odor
1425: Sample Collected CRCA-FB-20230502-01 – Collected in the vicinity of the sampling area at DPT0281 (F)

1445: Sample Collected CRCA-DPT0281-057.0-20230502 (F) Gray; No Odor
1500: CRCA-DPT0281 pressure grouted 59' to surface through rods
1520: Rig, rods, and tooling decon'd with Alconox/steam; Tt offsite to deliver samples to SGS Courier at KSC Badging
1530: Samples relinquished; depart for site
1540: On site at CRCA; Set up on CRCA-DPT0282 (Location E); hand clear 5.'
1545: Drilling Commenced
1600: Sample Collected CRCA-DPT0282-008.0-20230502 (E) Brown; Org Odor
- PFAS Only Analysis
0000: Sample Collected CRCA-FD-20230502-02 – DUP of CRCA-DPT0282-008.0
1620: Sample Collected CRCA-DPT0282-018.0-20230502 (E) Brown; Org Odor
PFAS Analysis Only
1640: Sample Collected CRCA-DPT0282-028.0-20230502 (E) Gray; No Odor
- PFAS Analysis Only
0000: Sample Collected CRCA-FD-20230502-03 – DUP of CRCA-DPT0282-028.0
- PFAS Only Analysis
1700: Sample Collected CRCA-DPT0282-038.0-20230502 (E) Gray; No Odor
- GPI Offsite
1715: Site Secured; CS/NV offsite to FS3 and to top off samples with ice



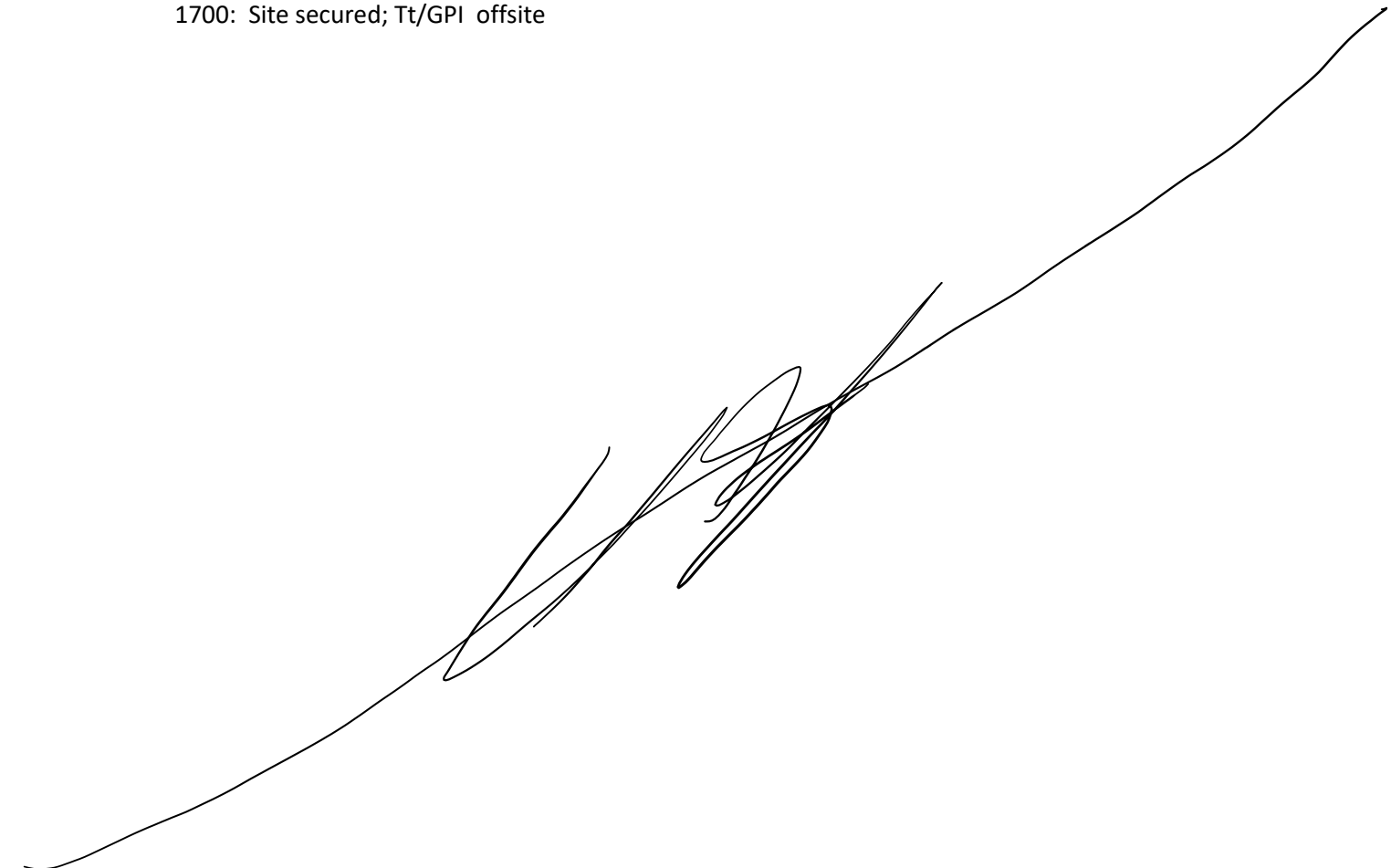
05/03/2023 **CRCA** **112G08970**

Personnel:	Chuck Sorden	(CS)	Geologist	Tt
	Mickey Ritter	(MR)	Driller	GPI
	Blake Handibode	(BH)	Tech	GPI

Weather: Sunny – 70 degrees F
PPE: Level D
Health and Safety (HAS): Topics – SSHASP; PPE; IDW
Objective: Begin DPT GW

0645: Tt/GPI on site; HAS Meeting daily prep; resuming drilling on CRCA-DPT0282; drilling down to collect the 48' sample
0705: Drilling Commenced
0730: Sample Collected CRCA-DPT0282-048.0-20230503 (E) Gray; No Odor
- PFAS Only Analysis
0805: Sample Collected CRCA-DPT0282-057.0-20230503 (E) Gray; No Odor
- PFAS Only Analysis; very poor producing formation
0820: CRCA-DPT0282 pressure grouted 59' to surface through rods
0835: Rig, rods, and tooling decon'd with Alconox/pressurized steam
0835: Sample Collected CRCA-EB-20230503-01 – Sample Collected by pouring PFAS free water over decon'd screen
0840: Set up on CRCA-DPT0283 (Location G); hand clear 5.'
0845: Drilling Commenced
0900: Sample Collected CRCA-DPT0283-008.0-20230503 (G) Brown; Org Odor
- PFAS Only Analysis
0920: Sample Collected CRCA-DPT0283-018.0-20230503 (G) Gray; No Odor
- PFAS Only Analysis
0000: Sample Collected CRCA-FD-20230503-01 – DUP of CRCA-DPT0283-018.0
0935: Sample Collected CRCA-DPT0283-028.0-20230503 (G) Gray; No Odor
- PFAS Only analysis
0955: Sample Collected CRCA-DPT0283-038.0-20230503 (G) Gray; No Odor
- PFAS Only Analysis
1015: Sample Collected CRCA-DPT0283-048.0-20230503 (G) Gray; No Odor
- PFAS Only Analysis
1045: Sample Collected CRCA-DPT0283-057.0-20230503 (G) Gray; No Odor
- PFAS Only Analysis
1100: CRCA-DPT0283 pressure grouted 59' to surface through rods
1115: Rig, rods, tooling decon'd with Alconox/pressurized steam
1120: Set up on CRCA-DPT0284 (Location J); hand clear 5.'
1130: Drilling Commenced
1145: Sample Collected CRCA-DPT0284-008.0-20230503 (J) Brown; Org Odor
- PFAS Only Analysis
1205: Sample Collected CRCA-DPT0284-018.0-20230503 (J) Brown; Org Odor
- PFAS Only Analysis
1235: Sample Collected CRCA-DPT0284-028.0-20230503 (J) Gray; No Odor
- PFAS Only Analysis
1255: Sample Collected CRCA-DPT0284-038.0-20230503 (J) Gray; No Odor
- PFAS Only Analysis

0000: Sample Collected CRCA-FD-20230503-02 – DUP of CRCA-DPT0284-038.0
1320: Sample Collected CRCA-FB-20230503-01 – Collected in the vicinity of the sampling area at DPT0284 (Location J)
1325: Sample Collected CRCA-DPT0284-048.0-20230503 (J) Gray; No Odor
- PFAS Only Analysis
1355: Sample Collected CRCA-DPT0284-057.0-20230503 (J) Gray; No Odor
- PFAS Only Analysis
1410: CRCA-DPT0284 pressure grouted 59' to surface through rods
1425: Rig, rods, and tooling decon'd with Alconox/pressurized steam
1430: Sample Collected CRCA-EB-2023050232-02 – Collected by pouring PFAS free water over decon'd screen
1435: CS Offsite to meet SGS Courier; Setting up on CRCA-DPT0286 (Location H); hand clear 5.'
1455: CS on site; drilling Commenced
1505: Sample Collected CRCA-DPT0285-008.0-20230503 (H) Brown; Org Odor
- VOC Analysis Only
1515: Sample Collected CRCA-DPT0285-013.0-20230503 (H) Brown; Org Odor
- VOC Analysis Only
1530: Sample Collected CRCA-DPT0285-018.0-20230503 (H) Gray; No Odor
- VOC Analysis Only
1550: Sample Collected CRCA-DPT0285-023.0-20230503 (H) Gray; No Odor
- VOC Analysis Only
1610: Sample Collected CRCA-DPT0285-028.0-20230503 (H) Gray; No Odor
- VOC Analysis Only
1640: Sample Collected CRCA-DPT0285-048.0-20230503 (H) Gray; No Odor
- PFAS Analysis Only
1700: Site secured; Tt/GPI offsite



05/04/2023 **CRCA** **112G08970**

Personnel:	Chuck Sorden	(CS)	Geologist	Tt
	Mickey Ritter	(MR)	Driller	GPI
	Blake Handibode	(BH)	Tech	GPI

Weather: Sunny – 63 degrees F
PPE: Level D
Health and Safety (HAS): Topics – Heat Stress; IDW; PPE
Objective: Continue DPT GW

0650: Tt/GPI on site; HAS Meeting; daily prep
0705: Drilling resumed on CRCA-DPT0285; drilling down to collect 57' sample
0730: Sample Collected CRCA-FB-20230504-01 – Collected in vicinity of sampling area at CRCA-DPT0285 (Location H)
0745: Sample Collected CRCA-DPT0285-057.0-20230504 (H) Gray; No Odor
0800: CRCA-DPT0285 pressure grouted 59' to surface through rods
0815: Rig, rods, and tooling decon'd with Alconox/pressurized steam
0825: Set up on CRCA-DPT0286 (Location I); hand clear 5.'
0830: Drilling Commenced
0845: Sample Collected CRCA-DPT0286-008.0-20230504 (I) Brown; Org Odor
- VOC Analysis Only
0900: Sample Collected CRCA-DPT0286-013.0-20230504 (I) Brown; Org Odor
- VOC Analysis Only
0915: Sample Collected CRCA-DPT0286-018.0-20230504 (I) Gray; No Odor
- VOC Analysis Only
0935: Sample Collected CRCA-DPT0286-023.0-20230504 (I) Gray; No Odor
- VOC Analysis Only
0955: Sample Collected CRCA-DPT0286-028.0-20230504 (I) Gray; No Odor
- VOC Analysis Only
1020: Sample Collected CRCA-DPT0286-048.0-20230504 (I) Gray; No Odor
- PFAS Analysis Only
1055: Sample Collected CRCA-DPT0286-057.0-20230504 (I) Gray; No Odor
- PFAS Analysis Only; poor producing formation
1110: CRCA-DPT0286 pressure grouted 59' to surface through rods
1125: Rig, rods, and tooling decon'd with Alconox/pressurized steam\
1130: Sample Collected CRCA-EB-20230504-01 – Collected by pouring PFAS free water over decon'd screen
- Begin mobilizing to CRCA-DPT0287 (Location K)
1200: Arrive at CRCA-DPT0287; hand clear 5.'
1215: Drilling Commenced
1230: Sample Collected CRCA-DPT0287-008.0-20230504 (K) Brown; Org Odor
- PFAS Analysis Only
1245: Sample Collected CRCA-DPT0287-018.0-20230504 (K) Gray; No Odor
- MS/MSD Collected for PFAS Analysis Only
1305: Sample Collected CRCA-DPT0287-028.0-20230504 (K) Gray; No Odor
- PFAS Analysis Only
1325: Sample Collected CRCA-DPT0287-038.0-20230504 (K) Gray; No Odor
- PFAS Analysis Only

1355: Sample Collected CRCA-DPT0287-048.0-20230504 (K) Gray; No Odor
- PFAS Analysis Only; poor producing formation

1420: Sample Collected CRCA-DPT0287-057.0-20230504 (K) Gray; No Odor
- PFAS Analysis Only

1435: CRCA-DPT0287 pressure grouted 59' to surface through rods
1450: Rig, rods, and tooling decon'd with Alconox/pressurized steam
1455: Sample Collected CRCA-EB-20230504-02 – Sample Collected by pouring PFAS free water over decon'd screen
- Begin mobilizing to CRCA-DPT0288 (Location A); Location is on shoulder of south bound Kennedy Parkway; CS setting up right shoulder closure for maintenance of traffic (MOT).

1530: Right shoulder south bound Kennedy Parkway Closed per FDOT Standard Plans FY2023; GPI moving rig into cones
1545: Set up on CRCA-DPT0288 (Location A); hand clear 5.'
1555: Drilling Commenced
1610: Sample Collected CRCA-DPT0288-008.0-20230504 (A) Brown; Org Odor
0000: Sample Collected CRCA-FD-20230504-01 – DUP of CRCA-DPT0288-008.0
- PFAS Analysis Only

1625: Sample Collected CRCA-DPT0288-018.0-20230504 (A) Gray; No Odor
- PFAS Analysis Only

1645: Sample Collected CRCA-DPT0288-028.0-20230504 (A) Gray; No Odor
- CS beginning to remove shoulder closure; GPI loading up rig to take it off the side of the road.

1700: Right shoulder south bound Kennedy Parkway closure has been removed; GPI offsite
1715: Site Secured; CS offsite

05/05/2023 **CRCA** **112G08970**

Personnel:	Chuck Sorden	(CS)	Geologist	Tt
	Mickey Ritter	(MR)	Driller	GPI
	Blake Handibode	(BH)	Tech	GPI

Weather: Sunny – 69 degrees F
PPE: Level D
Health and Safety (HAS): Topics – Heat Stress; IDW; PPE
Objective: Complete DPT GW

0645: Tt/CS on site; begin setting up right shoulder south bound Kennedy Parkway Closure
0700: Shoulder closure set up; GPI mobilizing rig back to hole
0720: Drilling resumed on CRCA-DPT0288
0740: Sample Collected CRCA-DPT0288-038.0-20230505 (A) Gray; No Odor
- PFAS Analysis Only
0800: Sample Collected CRCA-DPT0288-048.0-20230505 (A) Gray; No Odor
- PFAS Analysis Only
0820: Sample Collected CRCA-DPT0288-057.0-20230505 (A) Gray; No Odor
- PFAS Analysis Only
0835: CRCA-DPT0288 pressure grouted 59' to surface through rods; GPI getting water for decon
0850: GPI on site with water for decon; begin decon process
0900: Rig, rods, and tooling decon'd with Alconox/pressurized steam; set up on CRCA-DPT0289 (location B); hand clear 5.'
0905: Drilling Commenced
0920: Sample Collected CRCA-DPT0289-008.0-20230505 (B) Brown; Org Odor
- PFAS Analysis Only
0935: Sample Collected CRCA-DPT0289-018.0-20230505 (B) Gray; No odor
- PFAS Analysis Only
0955: Sample Collected CRCA-DPT0289-028.0-20230505 (B) Gray; No Odor
- PFAS Analysis Only
1000: Sample Collected CRCA-FB-20230505-01 – Collected in vicinity of sampling area at CRCA-DPT0289 (Location B)
- GPI offsite to run to the store.
1025: GPI on site; drilling resumed
1045: Sample Collected CRCA-DPT0289-038.0-20230505 (B) Gray; No Odor
- PFAS Analysis Only
1105: Sample Collected CRCA-DPT0289-048.0-20230505 (B) Gray; No Odor
- PFAS Analysis Only
0000: Sample Collected CRCA-FD-20230505-01 – DUP of CRCA-DPT0289-048.0
- PFAS Analysis Only
1135: Sample Collected CRCA-DPT0289-057.0-20230505 (B) Gray; No Odor
- PFAS Analysis Only
1150: CRCA-DPT0289 pressure grouted 59' to surface through rods
1200: Rig, rods, and tooling decon'd with Alconox/pressurized steam; CRCA 202305 DPT GW Sampling Event is complete; begin Demob
1215: GPI offsite; CS moving decon pit back to CRCA and removing MOT
1245: Right shoulder closure, Southbound Kennedy Parkway removed; CS Departs for POL to store MOT supplies

APPENDIX E

MONITORING WELL INSTALLATION DOCUMENTATION

01/08/2024 **CRCA** **112G08970**

Personnel:	Chuck Sorden	(CS)	Geologist	Tt
	Jared Link	(JL)	Driller	GPI
	Jason Bergeron	(JB)	Driller Tech	GPI
	Blake Handibode	(BH)	Driller Tech	GPI
Weather:	Cloudy 59 degrees F			
PPE:	Level D			

Health and Safety (HAS): Topics – SSHASP; PPE; IDW

Objective: Begin CRCA January 2024 MW Installation

0800: Tt on KSC; gathering equipment and supplies
0845: GPI at Badging
0910: Badges issued for JL/JB; however, BH needs fingerprinting; CS leading JL/JB in tractor trailer with equipment and box truck to entrance of work area on Schwartz Rd. West. NOTE: Access to Schwartz Rd. West is closed due to utility work and must be accessed via Roberts Rd. CS confirmed access with KSC BOSS representative on site that access isn't an issue.
0930: Tt/JL/JB arrive at Schwartz Rd. W.; brief HAS meeting; unloading equipment and materials
1000: Equipment unloaded; begin mobilizing rig and tooling to CRCA-MW0035
1030: Arrive at CRCA-MW0035; CS taking JB to badging to pick up flatbed/pipe trailer while BH is getting fingerprinted
1100: CS back on site with JL; JB/BH getting water for drilling
1115: Full GPI crew on site; HAS Meeting signoff; begin mobilizing flatbed and pipe trailer to MW0035
1130: Truck/Trailer stuck in mud from recent heavy rains
1150: Truck is un-stuck. Disconnecting pipe trailer from truck and using skid steer to move it to work area
1210: Pipe trailer and water truck at CRCA-MW0035; GPI departing site for lunch
1230: GPI successfully offsite after truck got stuck again
1320: GPI returning to site from Schwartz Rd. W
1340: GPI back on site after lunch after truck got stuck again
1350: Drilling Commenced on CRCA-MW0035; pulling core from 5' BLS to the proposed terminal depth for the MW of 60'. Setting well screen at the proposed depths of 50' to 60'; using 4" casing to set well.
1500: Lithologic Coring Complete on CRCA-MW0035; begin setting well screen 50' to 60'; Lithology is as follows:

- 0-5'; hand clear; fill material
- 5'-8': Soft Brown SAND – FINE TO VERY FINE; little to some shell; little silt
- 8'-12.5': Soft Light Gray/Light Brown SAND – FINE TO VERY FINE; some shell fragments grading into
- 12.5'-24': Soft Gray SAND – FINE TO VERY FINE; trace to little shell fragments and silt grading int
- 24'-30': Soft Gray SHELL FRAGMENTS; little sand – fine to very fine; trace silt
- 30'-35': SAND – FINE TO VERY FINE; little silt; trace to little shell fragments (Small)
- 35'-37': SAND – MEDIUM TO VERY FINE AND COARSE TO VERY COARSE GRAINED SHELL FRAGMENTS; trace to little silt; hard contact to
- 37'-50': Light Gray/White SHELL fragments interbedded with moderately cemented lithified calcareous shell pieces "Coquina" that is fractured from drilling; hard contact to
- 50'-51': SAND – FINE TO VERY FINE; little to some shell fragments; little silt; little calcareous clay; gradational contact to
- 51'-53': Gray SAND – Fine to very fine; little to some silt; little shell and clay; sticky/ moderately firm with clay in thin lenses and throughout

- 53’-60’: SAND – FINE TO VERY FINE; little to some silt, clay, and shell in various quantities interbedded and throughout; dense in areas; sticky to firm

1525: Well set; begin grouting borehole; installation specifics below:

CRCA-MW0035	
Screen	50’-60’
20/30 Silica Sand	60’-49’ (2 Bags)
30/65 Silica Sand	49’-47’ (0.5 Bag)
Portland Cement	To surface

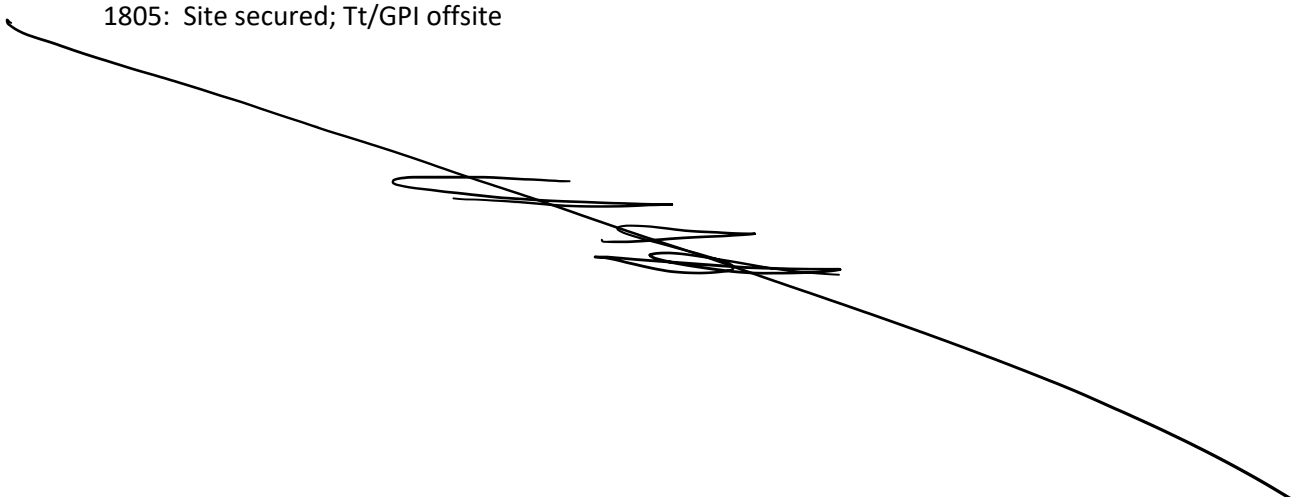
1545: Installation Complete on MW0035
1555: Drilling Commenced on CRCA-MW0034; previously hand cleared 5’; proposed screened interval is 40’ to 50’
1615: Begin setting well
1625: Well set; begin grouting borehole; installation specifics below:

CRCA-MW0034	
Screen	40’-50’
20/30 Silica Sand	50’-39’ (2 Bags)
30/65 Silica Sand	39’-37’ (0.5 Bag)
Portland Cement	To surface

1635: Installation Complete
1640: Drilling Commenced on CRCA-MW0033; previously hand cleared 5’; proposed screened interval is 30’ to 40’
1700: Begin setting well 30’ to 40’
1720: Well set; begin grouting borehole; installation specifics below:

CRCA-MW0033	
Screen	30’-40’
20/30 Silica Sand	54’-29’ (2 Bags)
30/65 Silica Sand	29’-27’ (0.5 Bag)
Portland Cement	To surface

1730: Installation Complete; begin mobilizing back to Schwartz Rd. W. After GPI removes broken water line going to sonic head.
1805: Site secured; Tt/GPI offsite



01/09/2024 **CRCA** **112G08970**

Personnel:	Chuck Sorden	(CS)	Geologist	Tt
	Jared Link	(JL)	Driller	GPI
	Jason Bergeron	(JB)	Driller Tech	GPI
	Blake Handibode	(BH)	Driller Tech	GPI

Weather: Cloudy 70 degrees F; high chance of severe weather this afternoon

PPE: Level D

Health and Safety (HAS): Topics – Inclement weather; offroad driving

Objective: Continue CRCA January 2024 MW Installation

0730: Tt on Site; GPI should be on site at approximately 0830-0900 after returning from Central Hydraulic in Cocoa, FL with a new sonic head hose

0930: GPI on site; HAS meeting; daily prep; installing new hose

0955: Set up on CRCA-MW0038; hand clear 5'

1005: Drilling Commenced on CRCA-MW0038; pulling core from 5' BLS to the proposed terminal depth for the MW of 60'. Setting well screen at the proposed depths of 50' to 60'; using 4" casing to set well.

1020: Recovered 5' of 10' from the 5' to 15' core after it fell out of the core barrel and was re-drilled to pick it up. Only 5' from an unknown position was recovered. CS will not log the section but will photograph the core. Lithology is as follows:

- 0'-15': NO RECOVERY
- 15'-20': Gray/light gray Coarse to Very Coarse-Grained SHELL Fragments; little to some sand – fine to very fine; angular; moderate to moderate well sorting
- 20'-25': Gray/Brown SAND – FINE TO VERY FINE; trace to little silt and shell grading into
- 25'-27': Gray SAND – FINE TO VERY FINE; little shell and silt; little to some shell from 26.5-27 grading into
- 27'-31': Gray/light Gray brown SHELL fragments; trace to little sand – fine to very fine; grading into
- 31'-32': Coarse to V. Coarse-grained SHELL fragments and SAND with little granule sized shell
- 32'-40': SAND – FINE TO VERY FINE; little to some cobble sized pieces of coquina; trace small shell fragments in sand
- 40'-42': Gray SAND – FINE TO VERY FINE; little to some silt; trace to little shell
- 42'-44': Gray SAND – FINE TO VERY FINE; little to some silt; little sub rounded to sub angular granule to pebble sized pieces of coquina
- 44'-46': Gray Calcareous SAND – FINE TO VERY FINE AND COQUINA FRAGMENTS; 45 to 46 the coquina was likely intact and fractured through drilling
- 46'-49.5': SHELL Fragments; trace sand – fine to very fine; 0.25' bed of rounded coquina pebbles at approximately 47.5
- 49.5'-52': SHELL; some silt and sand – very fine; little clay; sticky and soft
- 52'-58.5': SHELL; some sand – very fine, silt, and clay; dense and relatively dry in areas; firm; clay quantities vary
- 58.5'-60': SAND – FINE TO VERY FINE; some clay; little shell; dense and firm, sticky

1130: GPI begin setting MW0038

1145: Well set; installation specifics continued to next page. GPI grouting well after lunch

1205: GPI offsite for lunch and to get water for drilling

CRCA-MW0038	
Screen	50’-60’
20/30 Silica Sand	60’-49’ (2 Bags)
30/65 Silica Sand	49’-47’ (0.5 Bag)
Portland Cement	To surface

1315: GPI on site; Begin grouting borehole at CRCA-MW0038
1340: Installation complete on CRCA-MW0038
1350: Drilling Commenced on CRCA-MW0037; previously hand cleared 5’ setting well screen 40’ to 50’ BLS
1420: Setting well screen 40’ to 50’ BLS
1440: Well set; grouting borehole. Installation specifics below:

CRCA-MW0037	
Screen	40’-50’
20/30 Silica Sand	50’-39’ (2 Bags)
30/65 Silica Sand	39’-37’ (0.5 Bag)
Portland Cement	To surface

1455: Installation Complete on CRCA-MW0037
1505: Drilling commenced on CRCA-MW0036; previously hand cleared 5’; setting well screen 30’ to 40’
1520: Begin setting well screen 30’ to 40’
1535: Well set; grouting borehole. Installation specifics below:

CRCA-MW0036	
Screen	30’-40’
20/30 Silica Sand	54’-29’ (2 Bags)
30/65 Silica Sand	29’-27’ (0.5 Bag)
Portland Cement	To surface

1545: Installation complete; begin mobilizing rig and equipment south to Schwartz Rd. W
1610: Site Conditions deteriorating rapidly; Drill rig is currently towing out flat bed truck across rough black mucky portion south of the MW area
1650: All equipment and materials have been moved to the entrance to Schwartz Rd. W. Loading equipment on to trailer in preparation for movement to MW0042-MW0044 cluster
1730: Equipment loaded and secured; site secured; Tt/GPI offsite

01/10/2024 **CRCA** **112G08970**

Personnel:	Chuck Sorden	(CS)	Geologist	Tt
	Jared Link	(JL)	Driller	GPI
	Jason Bergeron	(JB)	Driller Tech	GPI
	Blake Handibode	(BH)	Driller Tech	GPI

Weather: Cloudy 70 degrees F; high chance of severe weather this afternoon

PPE: Level D

Health and Safety (HAS): Topics – Inclement weather; offroad driving

Objective: Continue CRCA January 2024 MW Installation

0700: Tt on site

0710: GPI on site; HAS Meeting; daily prep; begin mobilizing equipment and materials to CRCA area to install MWs 42-44

0750: Arrive at CRCA; unloading equipment and materials and mobilizing to MW0042-44 cluster

0820: Set up on CRCA-MW0044, the southernmost well in the cluster; hand clear 5'

0830: Drilling Commenced on CRCA-MW0044; pulling core from 5' BLS to the proposed terminal depth for the MW of 60'. Setting well screen at the proposed depths of 50' to 60'; using 4" casing to set well. Lithology is as follows:

- 5'-6.5': Dark Gray SAND – FINE TO VERY FINE; little silt and organics
- 6.5'-8': Dark Brown/Black SAND – FINE TO VERY FINE; portions lightly cemented "Hardpan"; little to some silt and organics
- 8'-9': Reddish Brown SAND – FINE TO VERY FINE; little silt
- 9'-13': Light Brown SAND – FINE TO VERY FINE; little silt; trace to little shell
- 13'-14.5': Light Gray/White SHELL; trace to little sand – fine to very fine and silt; trace lithified shell "coquina"
- 14.5'-22.5': SAND – FINE TO VERY FINE; little to some shell; little silt
- 22.5'-28': SAND – FINE TO VERY FINE; trace to little shell and silt
- 28'-30': SHELL; little sand – fine to very fine and silt
- 30'-35': Gray SAND – FINE TO VERY FINE; little to some silt; little shell
- 35'-38': Gray SHELL; little sand – fine to very fine and silt
- 38'-40': Light Gray "Coquina" pieces (likely intact in-situ) and Calcareous SAND – FINE TO VERY FINE; little silt
- 40'-43': Gray SAND – FINE TO VERY FINE; trace granule sized shell fragments
- 43'-46: Gray SAND AND SHELL – VERY COARSE TO FINE; shell fragments coarse to small pebble sized; well sorted; trace rounded to sub rounded pieces of coquina; trace silt
- 46'-55': Pebble to V. Coarse sized Gray SHELL Fragments; trace to little sand – fine to very fine and silt; trace rounded to sub rounded pieces of coquina
- 55'-57': SAND – MEDIUM TO VERY FINE AND COARSE TO V. COARSE SHELL
- 57'-58': SHELL; little sand – medium to very fine; trace silt
- 58'-60'SHELL; little to some sand – fine to very fine, silt and clay; sticky and firm; dense; clay in beds and throughout. Thin clay bed at 48.5'

1010: Core Complete; begin setting well 50' to 60'

1035: Well set; grouting borehole. Installation specifics continued to the following page:

CRCA-MW0044	
Screen	50’-60’
20/30 Silica Sand	60’-49’ (2 Bags)
30/65 Silica Sand	49’-47’ (0.5 Bag)
Portland Cement	To surface

1050: Installation Complete on MW0044
1100: Drilling Commenced on CRCA-MW0043 to the north of MW0044; previously hand cleared 5’; setting well screen 40’ to 50’
1120: Setting well screen 40’ to 50’
1135: Well set; grouting borehole. Installation specifics below:

CRCA-MW0043	
Screen	40’-50’
20/30 Silica Sand	50’-39’ (2 Bags)
30/65 Silica Sand	39’-37’ (0.5 Bag)
Portland Cement	To surface

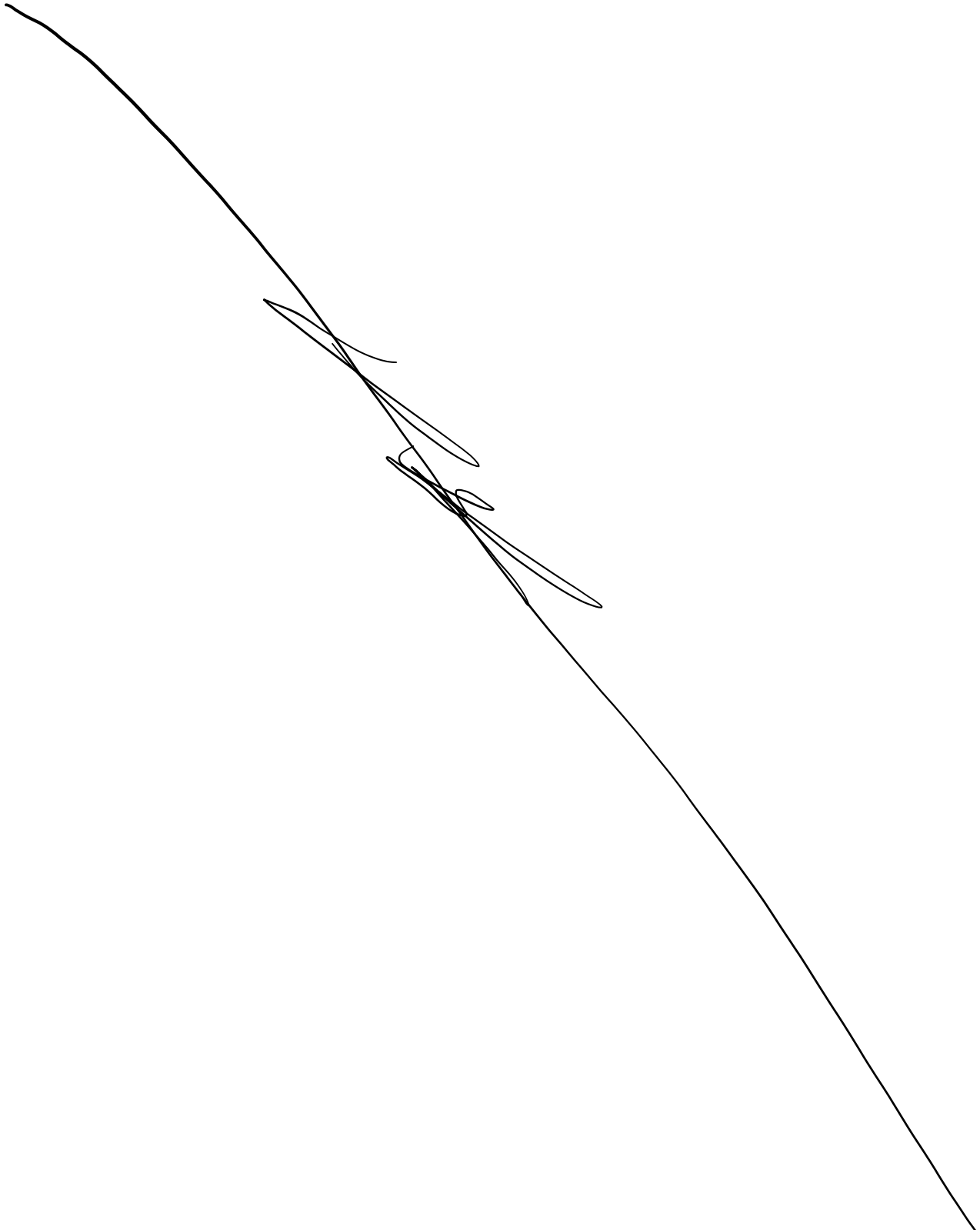
1145: Installation Complete on CRCA-MW0043; GPI taking lunch
1230: GPI on site; new crew Mickey Ritter (MR) and Zack Kurpiewski (ZK) with GPI are on site to assist in laying pads and developing wells
1240: Drilling commenced on CRCA-MW0042; previously hand cleared 5’; setting well screen 30’ to 40’
1300: Setting well 30’ to 40’
1315: Well set; grouting borehole. Installation specifics below:

CRCA-MW0042	
Screen	30’-40’
20/30 Silica Sand	54’-29’ (2 Bags)
30/65 Silica Sand	29’-27’ (0.5 Bag)
Portland Cement	To surface

1335: Installation Complete on CRCA-MW0042; MW Installation complete at CRCA less pads and development. GPI moving equipment off of the railroad tracks area at CRCA
1400: Arrive at CRCA; loading equipment and tooling onto tractor trailer, then will begin laying pads at the wells on Schwartz Rd. W.
1430: Departing for Schwartz Rd. W to pad and develop wells
1500: Arrive at CRCA-MW0033-35 Cluster; laying pads
1545: Pad Installation complete at the MW0033-35 Cluster
- Begin Development on CRCA-MW0035
- MR/JB Installing Surface completions at the CRCA-MW0036-MW0038 Cluster

1600: Chris Adkison and Ryan O’Meara on site
1615: Development complete on CRCA-MW0035; approximately 25 gallons pumped from the well from Gray to clear
1615: Begin Development on CRCA-MW0034

1645: Development complete on CRCA-MW0034; approximately 20 gallons pumped from the well from gray to clear; Pads installed at MWs 36-38; will develop tomorrow
1645: Begin development on CRCA-MW0033
1710: Development complete on CRCA-MW0033; Mobilizing out of the area
1745: Site Secured; GPI offsite; CS managing IDW at CRCA Treatment Facility
1830: CS offsite



01/11/2024 **CRCA** **112G08970**

Personnel:	Chuck Sorden	(CS)	Geologist	Tt
	Mickey Ritter	(MR)	Driller	GPI
	Zack Kerpiewski	(ZK)	Driller Tech	GPI

Weather: Cloudy 70 degrees F; high chance of severe weather this afternoon

PPE: Level D

Health and Safety (HAS): Topics – Inclement weather; offroad driving

Objective: Complete CRCA January 2024 MW Installation

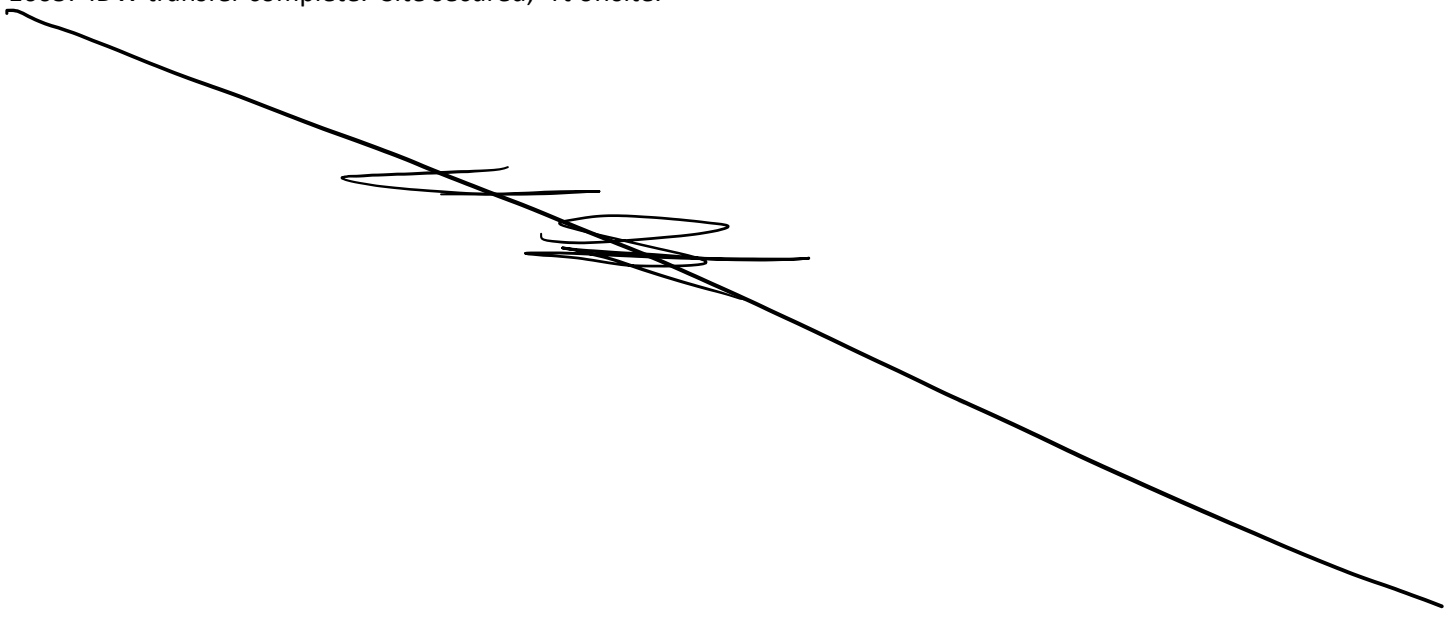
0700: Tt/GPI on site; HAS meeting; setting up for the day
0735: Arrive at MW42-44 cluster; installing surface completions and developing wells
0750: Begin Development on MW0044
0820: Development complete on MW0044; Approximately 20 gallons pumped from dark gray to clear
0825: Begin Development on CRCA-MW0042; surface completion installed at CRCA-MW0044
0855: Development complete on CRCA-MW0044; approximately 20 gallons pumped from white gray to clear

- Surface completion installed on MW0043

0900: Begin development on CRCA-MW0043
0930: Development complete on MW0043; approximately 25 gallons pumped from gray to clear

- Surface completions installed on all wells. CS/MR/ZK load up to develop MWs 36-38

1000: Stuck behind a SpaceX Heavy Haul going east on Schwartz
1040: Arrive at MW 36-38 cluster
1050: Begin development on MW0038
1120: Development complete on MW0038; approximately 25 gallons pumped from dark gray to clear
1120: Begin Development on CRCA-MW0037
1150: Development Complete on CRCA-MW0037; approximately 20 gallons pumped from gray to clear
1150: Begin development on CRCA-MW0036
1220: Development complete on CRCA-MW0036; CRCA 202401 MW Installation is complete. Begin Demob
1230: GPI offsite; CS Managing IDW
1305: CS Departs KSC for Home Depot to get new pump to transfer IDW
1420: CS on site at CRCA with new pumps; begin transferring IDW into the CRCA system and replacing the old IDW transfer pump
1605: IDW transfer complete. Site secured; Tt offsite.

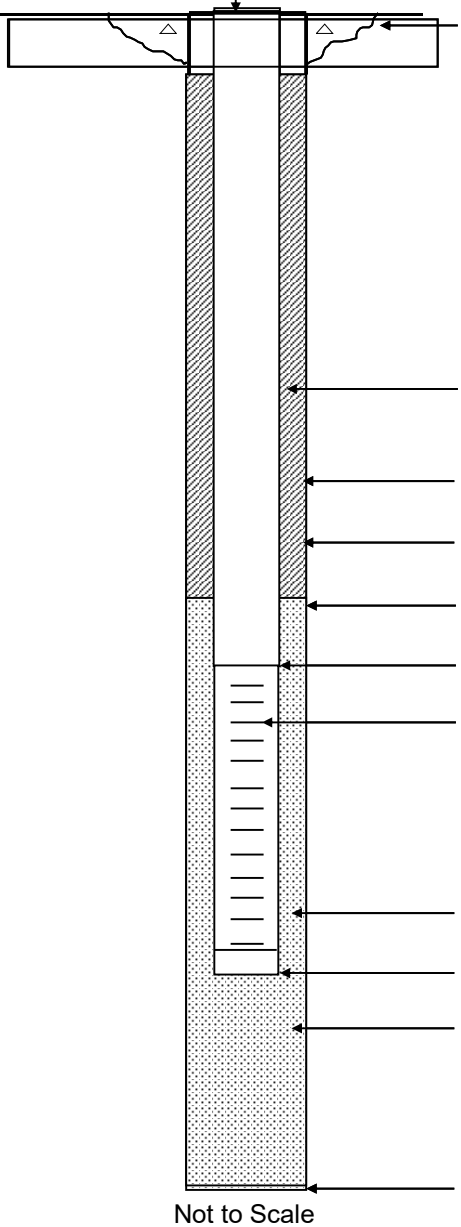


Tetra Tech, Inc.

WELL No.: CRCA-MW0033

MONITORING WELL SHEET

PROJECT:	KSC-CRCA	DRILLING Co.:	Drill Pro, LLC.	BORING No.:	CRCA-MW0033
PROJECT No.:	112G08970	DRILLER:	Jared Link	DATE COMPLETED:	01/10/24
SITE:	KSC-CRCA	DRILLING METHOD:	Rotosonic	LATITUDE:	
ENG/GEO:	Chuck Sorden	DEV. METHOD:	Pump	LONGITUDE:	



Elevation of Top of Casing: /

Length of Riser (ft): N/A - Flush Mount

Type of Surface Casing: 8" cast aluminum manhole

Type of Surface Seal: 2'x2'x4" Concrete pad

Type of Riser: Sch. 40 PVC

Borehole Diameter (in): 4

Type of Backfill: Portland/Bentonite Slurry

Elevation / Depth of Seal (ft bls): / 27.0

Type of Seal: 30/65 Silica Sand

Elevation / Depth of Top of Filter Pack (ft bls): / 29.0

Elevation / Depth of Top of Screen (ft bls): / 30.0

Type of Screen: Sch. 40 PVC

Slot Size x Length: 0.010" x 1"

Type of Filter Pack: 20/30 Silica Sand

Elevation / Depth of Bottom of Screen (ft bls): / 40.0

Elevation / Depth of Bottom of (ft bls):
Filter Pack: / 40.0

Type of Backfill Below Well:
Native Soil

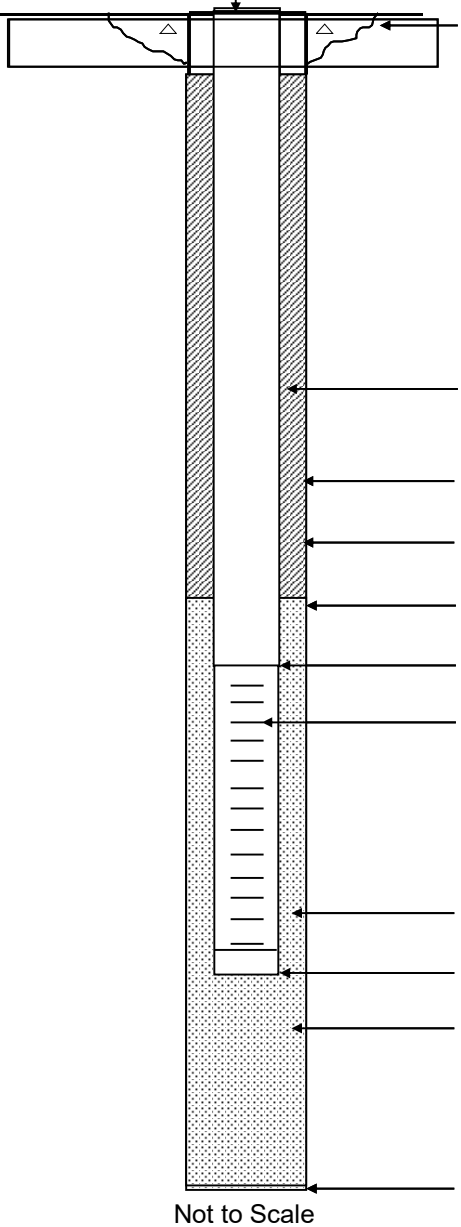
Elevation / Total Depth of Borehole (ft bls): / 40.0

Tetra Tech, Inc.

WELL No.: CRCA-MW0034

MONITORING WELL SHEET

PROJECT:	KSC-CRCA	DRILLING Co.:	Drill Pro, LLC.	BORING No.:	CRCA-MW0034
PROJECT No.:	112G08970	DRILLER:	Jared Link	DATE COMPLETED:	01/10/24
SITE:	KSC-CRCA	DRILLING METHOD:	Rotosonic	LATITUDE:	
ENG/GEO:	Chuck Sorden	DEV. METHOD:	Pump	LONGITUDE:	



Elevation of Top of Casing: /

Length of Riser (ft): N/A - Flush Mount

Type of Surface Casing: N/A - Flush Mount

Type of Surface Seal: 2'x2'x4" Concrete pad

Type of Riser: Sch. 40 PVC

Borehole Diameter (in): 4

Type of Backfill: Portland/Bentonite Slurry

Elevation / Depth of Seal (ft bls): / 37.0

Type of Seal: 30/65 Silica Sand

Elevation / Depth of Top of Filter Pack (ft bls): / 39.0

Elevation / Depth of Top of Screen (ft bls): / 40.0

Type of Screen: Sch. 40 PVC

Slot Size x Length: 0.010" x 1"

Type of Filter Pack: 20/30 Silica Sand

Elevation / Depth of Bottom of Screen (ft bls): / 50.0

Elevation / Depth of Bottom of (ft bls):
Filter Pack: / 50.0

Type of Backfill Below Well:
Native Soil

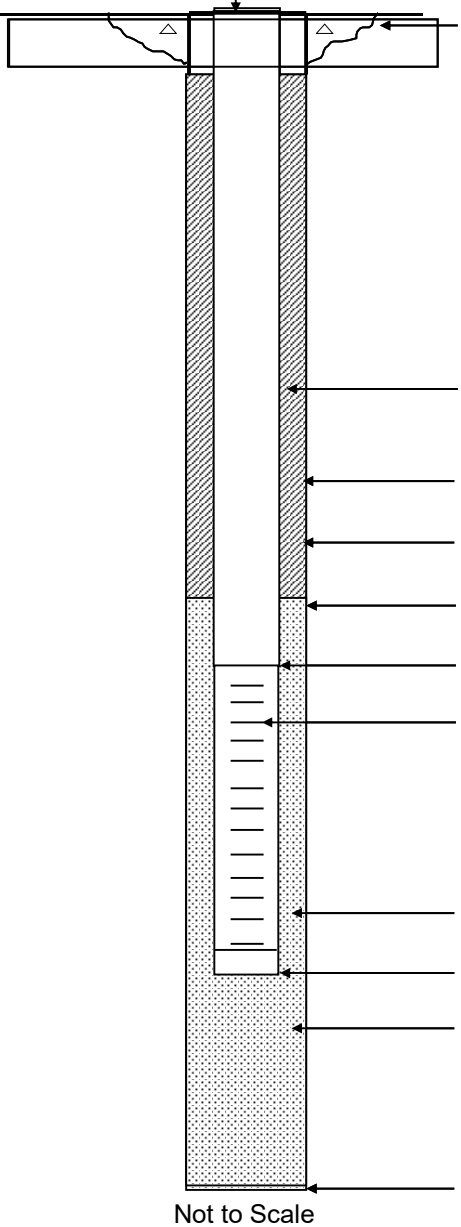
Elevation / Total Depth of Borehole (ft bls): / 50.0

Tetra Tech, Inc.

WELL No.: CRCA-MW0035

MONITORING WELL SHEET

PROJECT:	KSC-CRCA	DRILLING Co.:	Drill Pro, LLC.	BORING No.:	CRCA-MW0035
PROJECT No.:	112G08970	DRILLER:	Jared Link	DATE COMPLETED:	01/10/24
SITE:	KSC-CRCA	DRILLING METHOD:	Rotosonic	LATITUDE:	
ENG/GEO:	Chuck Sorden	DEV. METHOD:	Pump	LONGITUDE:	



Elevation of Top of Casing: /

Length of Riser (ft): N/A - Flush Mount

Type of Surface Casing: N/A - Flush Mount

Type of Surface Seal: 2'x2'x4" Concrete pad

Type of Riser: Sch. 40 PVC

Borehole Diameter (in): 4

Type of Backfill: Portland/Bentonite Slurry

Elevation / Depth of Seal (ft bls): / 47.0

Type of Seal: 30/65 Silica Sand

Elevation / Depth of Top of Filter Pack (ft bls): / 49.0

Elevation / Depth of Top of Screen (ft bls): / 50.0

Type of Screen: Sch. 40 PVC

Slot Size x Length: 0.010" x 1"

Type of Filter Pack: 20/30 Silica Sand

Elevation / Depth of Bottom of Screen (ft bls): / 60.0

Elevation / Depth of Bottom of (ft bls):
Filter Pack: / 60.0

Type of Backfill Below Well:
Native Soil

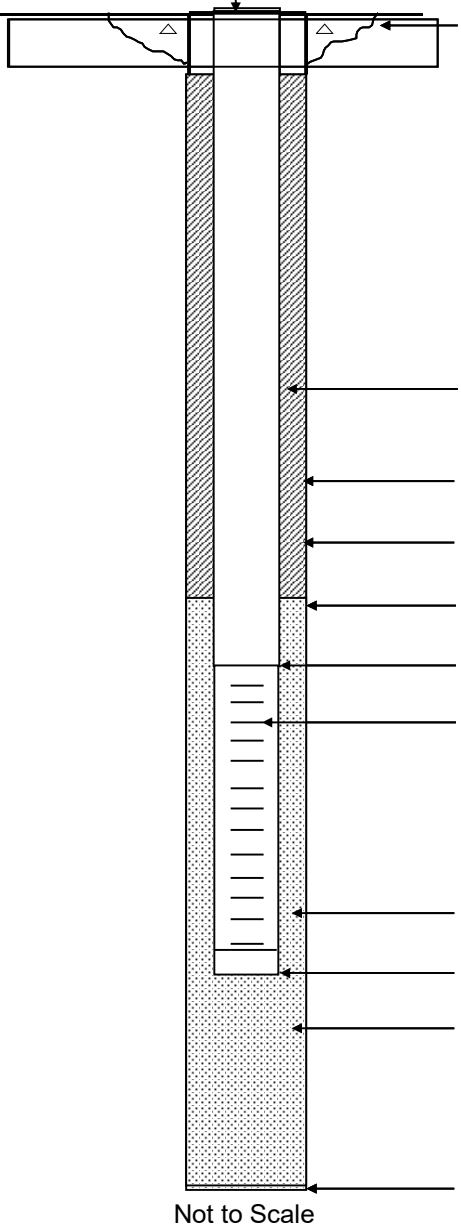
Elevation / Total Depth of Borehole (ft bls): / 60.0

Tetra Tech, Inc.

WELL No.: CRCA-MW0036

MONITORING WELL SHEET

PROJECT:	KSC-CRCA	DRILLING Co.:	Drill Pro, LLC.	BORING No.:	CRCA-MW0036
PROJECT No.:	112G08970	DRILLER:	Jared Link	DATE COMPLETED:	01/10/24
SITE:	KSC-CRCA	DRILLING METHOD:	Rotosonic	LATITUDE:	
ENG/GEO:	Chuck Sorden	DEV. METHOD:	Pump	LONGITUDE:	



Not to Scale

Ground Elevation =

Datum:

Elevation of Top of Casing: /

Length of Riser (ft): N/A - Flush Mount

Type of Surface Casing: 8" cast aluminum manhole

Type of Surface Seal: 2'x2'x4" Concrete pad

Type of Riser: Sch. 40 PVC

Borehole Diameter (in): 4

Type of Backfill: Portland/Bentonite Slurry

Elevation / Depth of Seal (ft bls): / 27.0

Type of Seal: 30/65 Silica Sand

Elevation / Depth of Top of Filter Pack (ft bls): / 29.0

Elevation / Depth of Top of Screen (ft bls): / 30.0

Type of Screen: Sch. 40 PVC

Slot Size x Length: 0.010" x 1"

Type of Filter Pack: 20/30 Silica Sand

Elevation / Depth of Bottom of Screen (ft bls): / 40.0

Elevation / Depth of Bottom of (ft bls):
Filter Pack: / 40.0

Type of Backfill Below Well:
Native Soil

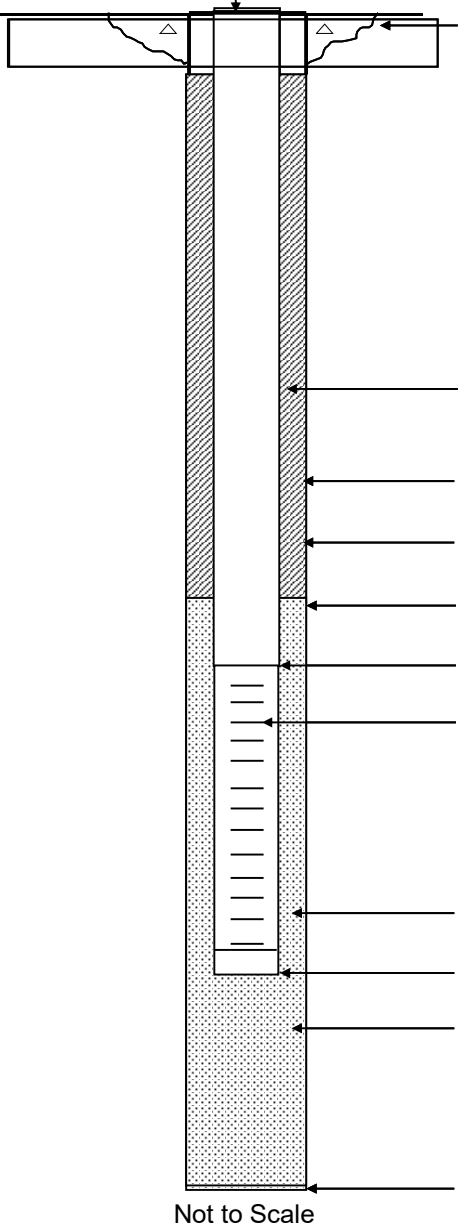
Elevation / Total Depth of Borehole (ft bls): / 40.0

Tetra Tech, Inc.

WELL No.: CRCA-MW0037

MONITORING WELL SHEET

PROJECT:	KSC-CRCA	DRILLING Co.:	Drill Pro, LLC.	BORING No.:	CRCA-MW0037
PROJECT No.:	112G08970	DRILLER:	Jared Link	DATE COMPLETED:	01/10/24
SITE:	KSC-CRCA	DRILLING METHOD:	Rotosonic	LATITUDE:	
ENG/GEO:	Chuck Sorden	DEV. METHOD:	Pump	LONGITUDE:	



Not to Scale

Ground Elevation =

Datum:

Elevation of Top of Casing: /

Length of Riser (ft): N/A - Flush Mount

Type of Surface Casing: N/A - Flush Mount

Type of Surface Seal: 2'x2'x4" Concrete pad

Type of Riser: Sch. 40 PVC

Borehole Diameter (in): 4

Type of Backfill: Portland/Bentonite Slurry

Elevation / Depth of Seal (ft bls): / 37.0

Type of Seal: 30/65 Silica Sand

Elevation / Depth of Top of Filter Pack (ft bls): / 39.0

Elevation / Depth of Top of Screen (ft bls): / 40.0

Type of Screen: Sch. 40 PVC

Slot Size x Length: 0.010" x 1"

Type of Filter Pack: 20/30 Silica Sand

Elevation / Depth of Bottom of Screen (ft bls): / 50.0

Elevation / Depth of Bottom of (ft bls):
Filter Pack: / 50.0

Type of Backfill Below Well:
Native Soil

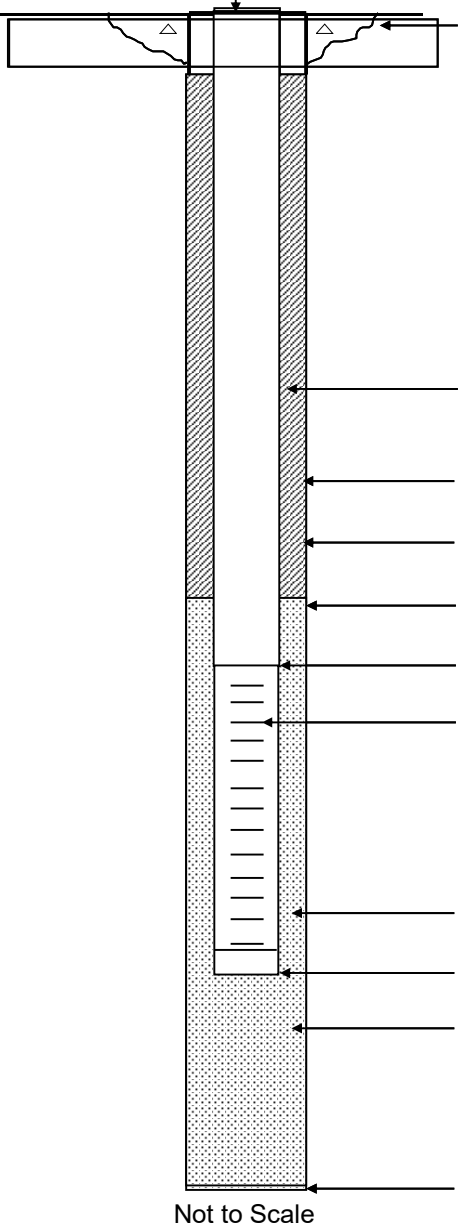
Elevation / Total Depth of Borehole (ft bls): / 50.0

Tetra Tech, Inc.

WELL No.: CRCA-MW0038

MONITORING WELL SHEET

PROJECT:	KSC-CRCA	DRILLING Co.:	Drill Pro, LLC.	BORING No.:	CRCA-MW0038
PROJECT No.:	112G08970	DRILLER:	Jared Link	DATE COMPLETED:	01/10/24
SITE:	KSC-CRCA	DRILLING METHOD:	Rotosonic	LATITUDE:	
ENG/GEO:	Chuck Sorden	DEV. METHOD:	Pump	LONGITUDE:	



Elevation of Top of Casing: /

Length of Riser (ft): N/A - Flush Mount

Type of Surface Casing: N/A - Flush Mount

Type of Surface Seal: 2'x2'x4" Concrete pad

Type of Riser: Sch. 40 PVC

Borehole Diameter (in): 4

Type of Backfill: Portland/Bentonite Slurry

Elevation / Depth of Seal (ft bls): / 47.0

Type of Seal: 30/65 Silica Sand

Elevation / Depth of Top of Filter Pack (ft bls): / 49.0

Elevation / Depth of Top of Screen (ft bls): / 50.0

Type of Screen: Sch. 40 PVC

Slot Size x Length: 0.010" x 1"

Type of Filter Pack: 20/30 Silica Sand

Elevation / Depth of Bottom of Screen (ft bls): / 60.0

Elevation / Depth of Bottom of (ft bls):
Filter Pack: / 60.0

Type of Backfill Below Well:
Native Soil

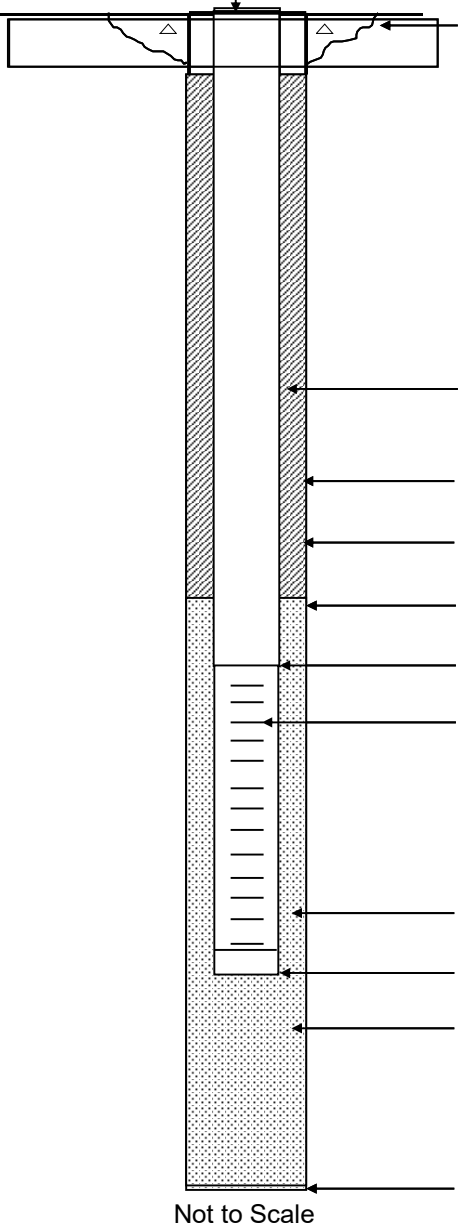
Elevation / Total Depth of Borehole (ft bls): / 60.0

Tetra Tech, Inc.

WELL No.: CRCA-MW0042

MONITORING WELL SHEET

PROJECT:	KSC-CRCA	DRILLING Co.:	Drill Pro, LLC.	BORING No.:	CRCA-MW0042
PROJECT No.:	112G08970	DRILLER:	Jared Link	DATE COMPLETED:	01/11/24
SITE:	KSC-CRCA	DRILLING METHOD:	Rotosonic	LATITUDE:	
ENG/GEO:	Chuck Sorden	DEV. METHOD:	Pump	LONGITUDE:	



Elevation of Top of Casing: /

Length of Riser (ft): N/A - Flush Mount

Type of Surface Casing: 8" cast aluminum manhole

Type of Surface Seal: 2'x2'x4" Concrete pad

Type of Riser: Sch. 40 PVC

Borehole Diameter (in): 4

Type of Backfill: Portland/Bentonite Slurry

Elevation / Depth of Seal (ft bls): / 27.0

Type of Seal: 30/65 Silica Sand

Elevation / Depth of Top of Filter Pack (ft bls): / 29.0

Elevation / Depth of Top of Screen (ft bls): / 30.0

Type of Screen: Sch. 40 PVC

Slot Size x Length: 0.010" x 1"

Type of Filter Pack: 20/30 Silica Sand

Elevation / Depth of Bottom of Screen (ft bls): / 40.0

Elevation / Depth of Bottom of (ft bls):
Filter Pack: / 40.0

Type of Backfill Below Well:
Native Soil

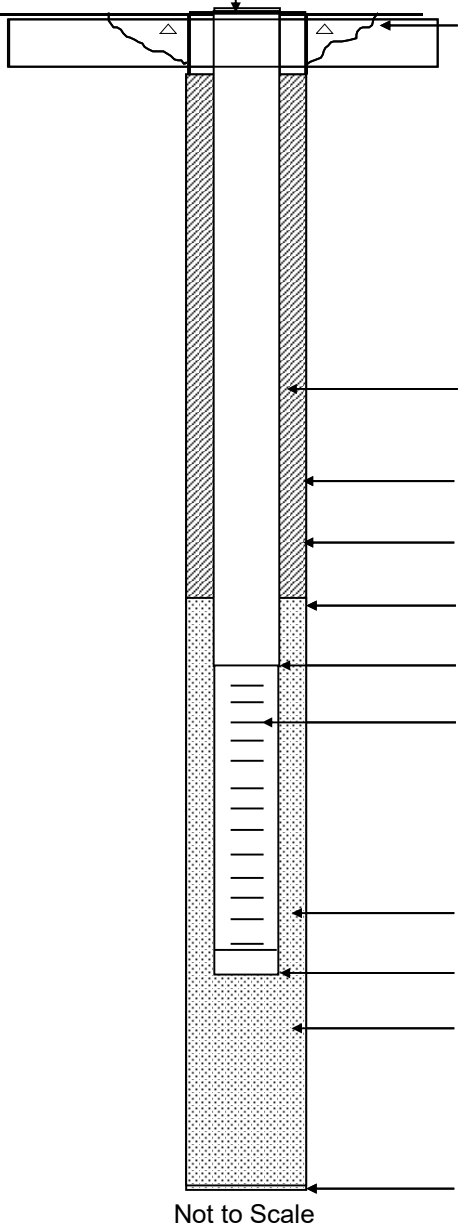
Elevation / Total Depth of Borehole (ft bls): / 40.0

Tetra Tech, Inc.

WELL No.: CRCA-MW0043

MONITORING WELL SHEET

PROJECT:	KSC-CRCA	DRILLING Co.:	Drill Pro, LLC.	BORING No.:	CRCA-MW0043
PROJECT No.:	112G08970	DRILLER:	Jared Link	DATE COMPLETED:	01/11/24
SITE:	KSC-CRCA	DRILLING METHOD:	Rotosonic	LATITUDE:	
ENG/GEO:	Chuck Sorden	DEV. METHOD:	Pump	LONGITUDE:	



Ground Elevation =

Datum:

Not to Scale

Elevation of Top of Casing: /

Length of Riser (ft): N/A - Flush Mount

Type of Surface Casing: N/A - Flush Mount

Type of Surface Seal: 2'x2'x4" Concrete pad

Type of Riser: Sch. 40 PVC

Borehole Diameter (in): 4

Type of Backfill: Portland/Bentonite Slurry

Elevation / Depth of Seal (ft bls): / 37.0

Type of Seal: 30/65 Silica Sand

Elevation / Depth of Top of Filter Pack (ft bls): / 39.0

Elevation / Depth of Top of Screen (ft bls): / 40.0

Type of Screen: Sch. 40 PVC

Slot Size x Length: 0.010" x 1"

Type of Filter Pack: 20/30 Silica Sand

Elevation / Depth of Bottom of Screen (ft bls): / 50.0

Elevation / Depth of Bottom of (ft bls):
Filter Pack: / 50.0

Type of Backfill Below Well:
Native Soil

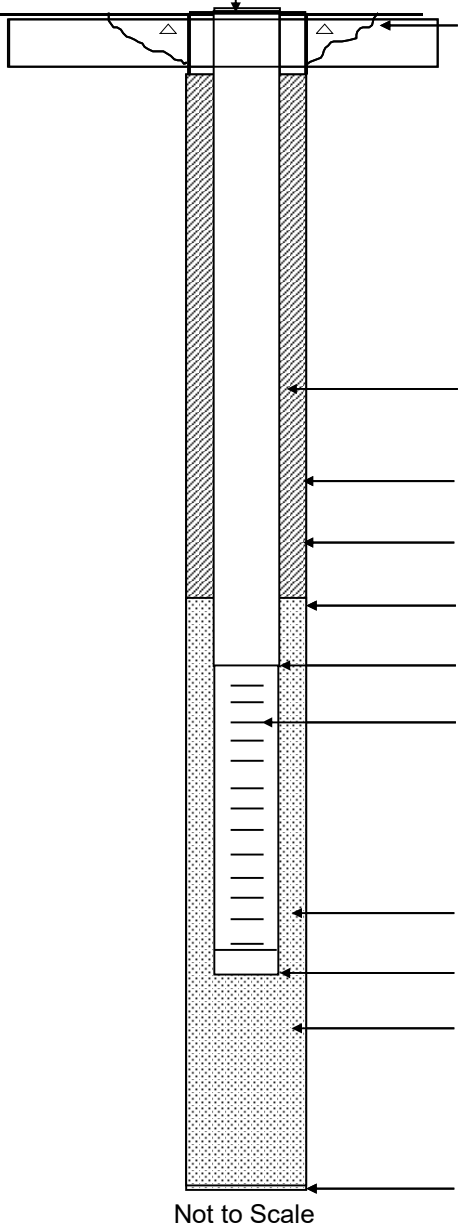
Elevation / Total Depth of Borehole (ft bls): / 50.0

Tetra Tech, Inc.

WELL No.: CRCA-MW0044

MONITORING WELL SHEET

PROJECT:	KSC-CRCA	DRILLING Co.:	Drill Pro, LLC.	BORING No.:	CRCA-MW0044
PROJECT No.:	112G08970	DRILLER:	Jared Link	DATE COMPLETED:	01/11/24
SITE:	KSC-CRCA	DRILLING METHOD:	Rotosonic	LATITUDE:	
ENG/GEO:	Chuck Sorden	DEV. METHOD:	Pump	LONGITUDE:	



Ground Elevation =

Datum:

Not to Scale

Elevation of Top of Casing: /

Length of Riser (ft): N/A - Flush Mount

Type of Surface Casing: N/A - Flush Mount

Type of Surface Seal: 2'x2'x4" Concrete pad

Type of Riser: Sch. 40 PVC

Borehole Diameter (in): 4

Type of Backfill: Portland/Bentonite Slurry

Elevation / Depth of Seal (ft bls): / 47.0

Type of Seal: 30/65 Silica Sand

Elevation / Depth of Top of Filter Pack (ft bls): / 49.0

Elevation / Depth of Top of Screen (ft bls): / 50.0

Type of Screen: Sch. 40 PVC

Slot Size x Length: 0.010" x 1"

Type of Filter Pack: 20/30 Silica Sand

Elevation / Depth of Bottom of Screen (ft bls): / 60.0

Elevation / Depth of Bottom of (ft bls):
Filter Pack: / 60.0

Type of Backfill Below Well:
Native Soil

Elevation / Total Depth of Borehole (ft bls): / 60.0

Tetra Tech, Inc.

BORING LOG

PROJECT NAME: KSC-CRCA
PROJECT NUMBER: 112G08970
DRILLING COMPANY: Groundwater Protection, Inc
DRILLING RIG: Geoprobe Sonic

BORING No.: CRCA-MW0035
DATE: 1/8/2024
GEOLOGIST: Chuck Sorden
DRILLER: Jared Link

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	0.5												
	1.0												
	1.5												
	2.0												
	2.5		0/5										
	3.0												
	3.5												
	4.0												
	4.5												
	5.0			0.0-5.0	NA	NA	Fill Material. Hand cleared						
	5.5												
	6.0												
	6.5												
	7.0												
	7.5		5/5										
	8.0			5.0-8.0	Soft	Brown	SAND - FINE TO VERY FINE; little to some shell; little silt	SP					
	8.5												
	9.0												
	9.5												
	10.0												
	10.5												
	11.0												
	11.5												
	12.0												
	12.5			8.0-12.5	Soft	Lt Gray/ Brown	SAND - FINE TO VERY FINE; some shell fragments	SW/ SP					

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0

Remarks: F = Fine; V = Very; trace = 0-10 % of total sample; little = 11-20 % of total sample; some = 21-35 % of total sample; And = 36-50 % of total sample; All caps = greater than 50 % of total sample; C = Coarse

Converted to Well: Yes X No ____ Well I.D. #: CRCA-MW0035

Tetra Tech, Inc.

BORING LOG

PROJECT NAME: KSC-CRCA
PROJECT NUMBER: 112G08970
DRILLING COMPANY: Groundwater Protection, Inc
DRILLING RIG: Geoprobe Sonic

BORING No.: CRCA-MW0035
DATE: 1/8/2024
GEOLOGIST: Chuck Sorden
DRILLER: Jared Link

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	PID/FID Reading (ppm): Sampler BZ	PID/FID Reading (ppm): Borehole**	PID/FID Reading (ppm): Driller BZ**
	13.0		10/10	12.5-24.0									
	13.5												
	14.0												
	14.5												
	15.0												
	15.5												
	16.0												
	16.5												
	17.0												
	17.5												
	18.0												
	18.5												
	19.0												
	19.5												
	20.0												
	20.5												
	21.0												
	21.5												
	22.0												
	22.5												
	23.0												
	23.5												
	24.0				Soft	Gray	SAND - FINE TO VERY FINE; trace to little shell and silt	SP					
	24.5												
	25.0		10/10										

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0

Remarks: F = Fine; V = Very; trace = 0-10 % of total sample; little = 11-20 % of total sample; some = 21-35 % of total sample; And = 36-50 % of total sample; All caps = greater than 50 % of total sample; C = Coarse

Converted to Well: Yes X No _____ Well I.D. #: CRCA-MW0035

Tetra Tech, Inc.

BORING LOG

PROJECT NAME: KSC-CRCA
PROJECT NUMBER: 112G08970
DRILLING COMPANY: Groundwater Protection, Inc
DRILLING RIG: Geoprobe Sonic

BORING No.: CRCA-MW0035
DATE: 1/8/2024
GEOLOGIST: Chuck Sorden
DRILLER: Jared Link

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	25.5												
	26.0												
	26.5												
	27.0												
	27.5												
	28.0												
	28.5												
	29.0												
	29.5												
	30.0			24.0-30.0	Soft	Gray	SHELL; little sand - fine to very fine; trace silt	GW	shell fragmented				
	30.5												
	31.0												
	31.5												
	32.0												
	32.5												
	33.0												
	33.5												
	34.0												
	34.5												
	35.0		10/10	30.0-35.0	Soft	Gray	SAND - FINE TO VERY FINE; little silt; trace to little shell	SP/ SM					
	35.5												
	36.0												
	36.5												
	37.0			35.0-37.0	Soft	Gray	SAND - MED.-V. F. & COARSE - V. COARSE GRAINED SHELL		trace to little silt				
	37.5												

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0

Remarks: F = Fine; V = Very; trace = 0-10 % of total sample; little = 11-20 % of total sample; some = 21-35 % of total sample; And = 36-50 % of total sample; All caps = greater than 50 % of total sample; C = Coarse

Converted to Well: Yes X No ____ Well I.D. #: CRCA-MW0035

Tetra Tech, Inc.

BORING LOG

PROJECT NAME: KSC-CRCA
PROJECT NUMBER: 112G08970
DRILLING COMPANY: Groundwater Protection, Inc
DRILLING RIG: Geoprobe Sonic

BORING No.: CRCA-MW0035
DATE: 1/8/2024
GEOLOGIST: Chuck Sorden
DRILLER: Jared Link

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	PID/FID Reading (ppm): Sampler BZ	PID/FID Reading (ppm): Borehole**	PID/FID Reading (ppm): Driller BZ**
	38.0		10/10	37.0-50.0									
	38.5												
	39.0												
	39.5												
	40.0												
	40.5												
	41.0												
	41.5												
	42.0												
	42.5												
	43.0												
	43.5												
	44.0												
	44.5												
	45.0												
	45.5												
	46.0												
	46.5												
	47.0												
	47.5												
	48.0												
	48.5												
	49.0												
	49.5						SHELL fragments interbedded with moderately cemented calcareous shell fragmens "coquina".						
	50.0				Stiff/rock	Lt. Gray/ White			Fractured from drilling				

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0

Remarks: F = Fine; V = Very; trace = 0-10 % of total sample; little = 11-20 % of total sample; some = 21-35 % of total sample; And = 36-50 % of total sample; All caps = greater than 50 % of total sample; C = Coarse

Converted to Well: Yes X No _____ Well I.D. #: CRCA-MW0035

Tetra Tech, Inc.

BORING LOG

PROJECT NAME: KSC-CRCA
PROJECT NUMBER: 112G08970
DRILLING COMPANY: Groundwater Protection, Inc
DRILLING RIG: Geoprobe Sonic

BORING No.: CRCA-MW0035
DATE: 1/8/2024
GEOLOGIST: Chuck Sorden
DRILLER: Jared Link

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	50.5												
	51.0			50.0-51.0	Soft	Gray/ White	SAND - FINE TO VERY FINE; little to some shell fragments; little silt and calcareous clay	SM					
	51.5												
	52.0												
	52.5												
	53.0			51.0-53.0	Soft	Gray	SAND - FINE TO VERY FINE; little to some silt; little shell & clay	SM/ SC	sticky. Moderately firm				
	53.5												
	54.0												
	54.5												
	55.0		10/10										
	55.5												
	56.0												
	56.5												
	57.0												
	57.5												
	58.0												
	58.5												
	59.0												
	59.5						SAND - FINE TO VERY FINE; little to some silt, clay and shell in beds and throughout	SM	dense in areas, sticky to firm				
	60.0			53.0-60.0	Soft	Gray							
	60.5						**BORING TERMINATED 60' TD**						
	61.0												
	61.5												
	62.0												
	62.5												

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0

Remarks: F = Fine; V = Very; trace = 0-10 % of total sample; little = 11-20 % of total sample; some = 21-35 % of total sample; And = 36-50 % of total sample; All caps = greater than 50 % of total sample; C = Coarse

Converted to Well: Yes X No _____ Well I.D. #: CRCA-MW0035

Tetra Tech, Inc.

BORING LOG

PROJECT NAME: KSC-CRCA
PROJECT NUMBER: 112G08970
DRILLING COMPANY: Groundwater Protection, Inc
DRILLING RIG: Geoprobe Sonic

BORING No.: CRCA-MW0038
DATE: 1/9/2024
GEOLOGIST: Chuck Sorden
DRILLER: Jared Link

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	PID/FID Reading (ppm): Sampler BZ	PID/FID Reading (ppm): Borehole**	PID/FID Reading (ppm): Driller BZ**
	0.5												
	1.0												
	1.5												
	2.0												
	2.5		0/5										
	3.0												
	3.5												
	4.0												
	4.5												
	5.0												
	5.5												
	6.0												
	6.5												
	7.0												
	7.5		0/5										
	8.0												
	8.5												
	9.0												
	9.5												
	10.0												
	10.5												
	11.0												
	11.5												
	12.0												
	12.5												

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0

Remarks: F = Fine; V = Very; trace = 0-10 % of total sample; little = 11-20 % of total sample; some = 21-35 % of total sample; And = 36-50 % of total sample; All caps = greater than 50 % of total sample; C = Coarse

Converted to Well: Yes X No _____ Well I.D. #: CRCA-MW0038

Tetra Tech, Inc.

BORING LOG

PROJECT NAME: KSC-CRCA
PROJECT NUMBER: 112G08970
DRILLING COMPANY: Groundwater Protection, Inc
DRILLING RIG: Geoprobe Sonic

BORING No.: CRCA-MW0038
DATE: 1/9/2024
GEOLOGIST: Chuck Sorden
DRILLER: Jared Link

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	13.0												
	13.5												
	14.0												
	14.5												
	15.0		5/10	0.0-15.0	NA	NA	NO RECOVERY	NA					
	15.5												
	16.0												
	16.5												
	17.0												
	17.5												
	18.0												
	18.5												
	19.0												
	19.5												
	20.0			15.0-20.0	Soft	Gray/ Lt. Gray	SHELL - C-VC; little to some sand - fine to very fine	SW/ SP	angular shell; moderate sorting				
	20.5												
	21.0												
	21.5												
	22.0												
	22.5												
	23.0												
	23.5												
	24.0												
	24.5												
	25.0		10/10	20.0-25.0	Soft	Gray/ Brown	SAND - FINE TO VERY FINE; trace to little silt and shell	SP					

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0

Remarks: F = Fine; V = Very; trace = 0-10 % of total sample; little = 11-20 % of total sample; some = 21-35 % of total sample; And = 36-50 % of total sample; All caps = greater than 50 % of total sample; C = Coarse

Converted to Well: Yes X No ____ Well I.D. #: CRCA-MW0038

Tetra Tech, Inc.

BORING LOG

PROJECT NAME: KSC-CRCA
PROJECT NUMBER: 112G08970
DRILLING COMPANY: Groundwater Protection, Inc
DRILLING RIG: Geoprobe Sonic

BORING No.: CRCA-MW0038
DATE: 1/9/2024
GEOLOGIST: Chuck Sorden
DRILLER: Jared Link

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	25.5												
	26.0												
	26.5												
	27.0			25.0-27.0	Soft	Gray	SAND - FINE TO VERY FINE; little shell and silt	SP	Fining upward. Some shell 26.5				
	27.5												
	28.0												
	28.5												
	29.0												
	29.5												
	30.0												
	30.5												
	31.0			27.0-31.0	Soft	Gray/ Lt. Gray	SHELL - C-VC; trace to little sand - fine to very fine	SW					
	31.5												
	32.0			31.0-32.0	Soft	Gray	SHELL - C-VC AND SAND - MED-VF; little granule sized shell	SW	shell angular and fragmented				
	32.5												
	33.0												
	33.5												
	34.0												
	34.5												
	35.0		10/10										
	35.5												
	36.0												
	36.5												
	37.0												
	37.5												

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0

Remarks: F = Fine; V = Very; trace = 0-10 % of total sample; little = 11-20 % of total sample; some = 21-35 % of total sample; And = 36-50 % of total sample; All caps = greater than 50 % of total sample; C = Coarse

Converted to Well: Yes X No ____ Well I.D. #: CRCA-MW0038

Tetra Tech, Inc.

BORING LOG

PROJECT NAME: KSC-CRCA
PROJECT NUMBER: 112G08970
DRILLING COMPANY: Groundwater Protection, Inc
DRILLING RIG: Geoprobe Sonic

BORING No.: CRCA-MW0038
DATE: 1/9/2024
GEOLOGIST: Chuck Sorden
DRILLER: Jared Link

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	38.0												
	38.5												
	39.0												
	39.5												
	40.0			32.0-40.0	Soft to Firm	Gray/ White	SAND - FINE TO VERY FINE; little to some cobble sized pieced of "coquina"; trace shell fragments in sand	SW/ SP?					
	40.5												
	41.0												
	41.5												
	42.0			40.0-42.0	Soft	Gray	SAND - FINE TO VERY FINE; little to some silt; trace to little	SM					
	42.5												
	43.0												
	43.5												
	44.0			42.0-44.0	Soft	Gray	SAND - FINE TO VERY FINE; little to some silt; little sub-rounded to sub-angular granule to pebble sized "coquina"	SP/ SM	"Coquina" fragments mechanically weathered				
	44.5												
	45.0		10/10										
	45.5												
	46.0			44.0-46.0	Firm	Gray/ White	Calcareous SAND - F-VF AND "COQUINA"		coquina fractured from drilling				
	46.5												
	47.0												
	47.5												
	48.0												
	48.5												
	49.0												
	49.5			46.0-49.5	Soft	Gray	SHELL fragments; trace sand - fine to very fine	GW	0.25' bed of rounded coquina pebbles 47.5'				
	50.0												

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0

Remarks: F = Fine; V = Very; trace = 0-10 % of total sample; little = 11-20 % of total sample; some = 21-35 % of total sample; And = 36-50 % of total sample; All caps = greater than 50 % of total sample; C = Coarse

Converted to Well: Yes X No _____ Well I.D. #: CRCA-MW0038

Tetra Tech, Inc.

BORING LOG

PROJECT NAME: KSC-CRCA
PROJECT NUMBER: 112G08970
DRILLING COMPANY: Groundwater Protection, Inc
DRILLING RIG: Geoprobe Sonic

BORING No.: CRCA-MW0038
DATE: 1/9/2024
GEOLOGIST: Chuck Sorden
DRILLER: Jared Link

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	PID/FID Reading (ppm): Sampler BZ	PID/FID Reading (ppm): Borehole**	PID/FID Reading (ppm): Driller BZ**
	50.5												
	51.0												
	51.5												
	52.0			49.5-52.0	Soft	Gray	SHELL; some sand - very fine and silt; little clay	SM/ SC					
	52.5												
	53.0												
	53.5												
	54.0												
	54.5												
	55.0		10/10										
	55.5												
	56.0												
	56.5												
	57.0												
	57.5												
	58.0												
	58.5			52.0-58.5	Firm	Gray	SHELL; some sand - very fine, silt, and clay in beds and throughout. Dense and relativey dry in areas	SM/ SC					
	59.0												
	59.5												
	60.0			58.5-60.0	Firm	Gray	SAND - FINE TO VERY FINE; some clay; little shell	SC	dense and firm. Sticky				
	60.5						**BORING TERMINATED 60' TD**						
	61.0												
	61.5												
	62.0												
	62.5												

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0

Remarks: F = Fine; V = Very; trace = 0-10 % of total sample; little = 11-20 % of total sample; some = 21-35 % of total sample; And = 36-50 % of total sample; All caps = greater than 50 % of total sample; C = Coarse

Converted to Well: Yes X No _____ Well I.D. #: CRCA-MW0038

Tetra Tech, Inc.

BORING LOG

PROJECT NAME: KSC-CRCA
PROJECT NUMBER: 112G08970
DRILLING COMPANY: Groundwater Protection, Inc
DRILLING RIG: Geoprobe Sonic

BORING No.: CRCA-MW0044
DATE: 1/10/2024
GEOLOGIST: Chuck Sorden
DRILLER: Jared Link

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	PID/FID Reading (ppm): Sampler BZ	PID/FID Reading (ppm): Borehole**	PID/FID Reading (ppm): Driller BZ**
	0.5												
	1.0												
	1.5												
	2.0												
	2.5		0/5										
	3.0												
	3.5												
	4.0												
	4.5												
	5.0			0.0-5.0	NA	NA	HAND CLEAR; NO RECOVERY						
	5.5												
	6.0												
	6.5			5.0-6.5	Soft	Dark Gray	SAND - FINE TO VERY FINE; little silt and organics	SP					
	7.0												
	7.5		5/5										
	8.0			6.5-8.0	Firm	Dark Brn/	SAND - F-VF; little-some silt & organics "Hardpan"	SM	portions lightly cemented				
	8.5												
	9.0			8.0-9.0	Soft	Reddish Brown	SAND - FINE TO VERY FINE; little silt	SP					
	9.5												
	10.0												
	10.5												
	11.0												
	11.5												
	12.0												
	12.5												

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0

Remarks: F = Fine; V = Very; trace = 0-10 % of total sample; little = 11-20 % of total sample; some = 21-35 % of total sample; And = 36-50 % of total sample; All caps = greater than 50 % of total sample; C = Coarse

Converted to Well: Yes X No _____ Well I.D. #: CRCA-MW0044

Tetra Tech, Inc.

BORING LOG

PROJECT NAME: KSC-CRCA
PROJECT NUMBER: 112G08970
DRILLING COMPANY: Groundwater Protection, Inc
DRILLING RIG: Geoprobe Sonic

BORING No.: CRCA-MW0044
DATE: 1/10/2024
GEOLOGIST: Chuck Sorden
DRILLER: Jared Link

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	13.0			9.0-13.0	Soft	Light Brown	SAND - FINE TO VERY FINE; little silt;	SP					
	13.5												
	14.0												
	14.5			13.0-14.5	Soft	Lt. Gray/ White	SHELL; trace to little sand - fine to very fine and silt	SW	trace "coquina" fragments				
	15.0		10/10										
	15.5												
	16.0												
	16.5												
	17.0												
	17.5												
	18.0												
	18.5												
	19.0												
	19.5												
	20.0												
	20.5												
	21.0												
	21.5												
	22.0												
	22.5			14.5-22.5	Soft	Gray	SAND - FINE TO VERY FINE; little to some shell; little silt	SW/ SP					
	23.0												
	23.5												
	24.0												
	24.5												
	25.0		10/10										

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0

Remarks: F = Fine; V = Very; trace = 0-10 % of total sample; little = 11-20 % of total sample; some = 21-35 % of total sample; And = 36-50 % of total sample; All caps = greater than 50 % of total sample; C = Coarse

Converted to Well: Yes X No Well I.D. #: CRCA-MW0044

Tetra Tech, Inc.

BORING LOG

PROJECT NAME: KSC-CRCA
PROJECT NUMBER: 112G08970
DRILLING COMPANY: Groundwater Protection, Inc
DRILLING RIG: Geoprobe Sonic

BORING No.: CRCA-MW0044
DATE: 1/10/2024
GEOLOGIST: Chuck Sorden
DRILLER: Jared Link

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	PID/FID Reading (ppm): Sampler BZ	PID/FID Reading (ppm): Borehole**	PID/FID Reading (ppm): Driller BZ**
	25.5												
	26.0												
	26.5												
	27.0												
	27.5												
	28.0			22.5-28.0	Soft	Gray	SAND - FINE TO VERY FINE; trace to little shell and silt	SP					
	28.5												
	29.0												
	29.5												
	30.0			28.0-30.0	Soft	Gray	SHELL; little sand - fine to very fine and silt	GW					
	30.5												
	31.0												
	31.5												
	32.0												
	32.5												
	33.0												
	33.5												
	34.0												
	34.5												
	35.0		10/10	30.0-35.0	Soft	Gray	SAND - FINE TO VERY FINE; little to some silt; little shell	SP/ SM					
	35.5												
	36.0												
	36.5												
	37.0												
	37.5												

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0

Remarks: F = Fine; V = Very; trace = 0-10 % of total sample; little = 11-20 % of total sample; some = 21-35 % of total sample; And = 36-50 % of total sample; All caps = greater than 50 % of total sample; C = Coarse

Converted to Well: Yes X No ____ Well I.D. #: CRCA-MW0044

Tetra Tech, Inc.

BORING LOG

PROJECT NAME: KSC-CRCA
PROJECT NUMBER: 112G08970
DRILLING COMPANY: Groundwater Protection, Inc
DRILLING RIG: Geoprobe Sonic

BORING No.: CRCA-MW0044
DATE: 1/10/2024
GEOLOGIST: Chuck Sorden
DRILLER: Jared Link

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	38.0			35.0-38.0	Soft	Gray	SHELL; little sand - fine to very fine and silt	GW					
	38.5												
	39.0												
	39.5												
	40.0			38.0-40.0	Firm	Light Gray	Lithified Calcareous fine sand and shell "COQUINA'" fragments AND SAND - F-VF; little silt	SP	Coquina pieces likely whole in				
	40.5												
	41.0												
	41.5												
	42.0												
	42.5												
	43.0			40.0-43.0	Soft	Gray	SAND - FINE TO VERY FINE; trace SHELL - granule sized	SP					
	43.5												
	44.0												
	44.5												
	45.0												
	45.5												
	46.0			43.0-46.0	Soft	Gray	SHELL AND SAND - V.C. - F.; shell coarse to small pebble sized; trace rounded to sub-rounded pieces of "coquina"; trace silt	SW					
	46.5												
	47.0												
	47.5												
	48.0												
	48.5												
	49.0												
	49.5												
	50.0												

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0

Remarks: F = Fine; V = Very; trace = 0-10 % of total sample; little = 11-20 % of total sample; some = 21-35 % of total sample; And = 36-50 % of total sample; All caps = greater than 50 % of total sample; C = Coarse

Converted to Well: Yes X No _____ Well I.D. #: CRCA-MW0044

Tetra Tech, Inc.

BORING LOG

PROJECT NAME: KSC-CRCA
PROJECT NUMBER: 112G08970
DRILLING COMPANY: Groundwater Protection, Inc
DRILLING RIG: Geoprobe Sonic

BORING No.: CRCA-MW0044
DATE: 1/10/2024
GEOLOGIST: Chuck Sorden
DRILLER: Jared Link

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	50.5												
	51.0												
	51.5												
	52.0												
	52.5												
	53.0												
	53.5												
	54.0												
	54.5												
	55.0		10/10	46.0-55.0	Soft	Gray	SHELL - PEBBLE -V.C.; trace to little sand - f.-v.f. and silt	SW	trace weathered "coquina"				
	55.5												
	56.0												
	56.5												
	57.0			55.0-57.0	Soft	Gray	SAND - MEDIUM TO VERY FINE AND SHELL - C.-V.C.	SW					
	57.5												
	58.0			57.0-58.0	Soft	Gray	SHELL; little sand - medium to very fine; trace silt	SW					
	58.5												
	59.0												
	59.5												
	60.0			58.0-60.0	Firm/ Dense	Gray	SHELL; little to some sand - fine to very fine, silt and clay	GM/ GC	Sticky. Clay in beds and throughought				
	60.5						**BORING TERMINATED 60' TD**						
	61.0												
	61.5												
	62.0												
	62.5												

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0

Remarks: F = Fine; V = Very; trace = 0-10 % of total sample; little = 11-20 % of total sample; some = 21-35 % of total sample; And = 36-50 % of total sample; All caps = greater than 50 % of total sample; C = Coarse

Converted to Well: Yes X No _____ Well I.D. #: CRCA-MW0044

Permit Request: 21009 (Status: Pending) Rev 0

IMPORTANT : By accepting this permit, you are agreeing to abide by the following procedures. Failure to do so may result in safety risks, work stoppages, and other financial consequences.

	Timeframe	Responsibility	Procedure
1	Permit Submission	**Requestor**	Contact KSC permit office with contractor contact information. If not known at time of permit submission, requestor is responsible to contact KSC Permit Office with actual contractor contact once work is awarded / known.
2	No earlier than 21 days – no later than 72 hours before work start	**Contractor**	**Call Sunshine 811 at 800-432-4770 or 811 (cell).** *Create an account and request at www.online811.com* **811 Location (nearest Intersections):** .5MI South of Saturn Cswy, along Kennedy Pkwy Obtain your sunshine 811 ticket number and copy that ticket number to this Permit (below in signature section)
3	No earlier than 21 days – no later than 72 hours before work start	**Contractor**	**After contacting 811,** Call KSC Utility Locator to schedule utility locate and approve this Permit. Primary: **321-749-4840** Alternate: **321-529-4796**
4	Day of utility Locate	**Contractor**	Meet with KSC Utility Locator with a copy of this permit for approval. **Once signed, you will be authorized to begin work.** The Excavator shall maintain a copy of the EPI signed/ approved permit on site at all times. This Permit will be **immediately suspended** should digging begin prior to approval from the KSC Utility Locator. **Excavation or heavy equipment use is prohibited during utility locating.**

Continue on next page

	Timeframe	Responsibility	Procedure
5	After locate Before work start If work is delayed If scope of work changes	**Contractor**	**If the scope of work for the original Utility Locate/EPR is changed** or the completion date needs to be extended, you are required to call KSC Permit Office 321-867-2406. **If digging does not begin within 21 days from the time of utility locate (permit approval), this permit shall be suspended** and work will not be permitted until a new 811 locate and KSC utility locate is performed. **Excavator is responsible to maintain the paint markings. Failure to do so will result in this permit being suspended** and work will not be permitted until a new 811 locate and KSC utility locate is performed.
6	At the start of work – During work before backfill	**Contractor**	**You must hand dig within 24 inches** in either direction of all Locator paint markings. **You must hand dig within 36 inches** of building walls or overhangs. Do **not remove or disturb concrete thrust blocks.** When excavating soil at location known to contain buried water or sewer lines, **do not remove any buried concrete without prior NASA POC approval.** **Contact the KSC Survey for utility survey prior to backfilling or directional drilling of all new utilities.** **Primary: 321-288-3031 Alternate: 321-749-2474** Failure to contact KSC Survey prior to backfill may result in additional excavating to expose buried utilities for survey.
7	End of work	**Requestor / Contractor**	Contact KSC Permit Office 321-867-2406 to close permit.

Safety and Contact Information

Accidental Gas Main damage **** EVACUATE THE AREA!***	Call: **321-867-7911** (cell) or 911 (landline only) Call: Work Control Center 321-861-5050
Accidental Utility line damage (excluding Gas main damage)	**Work Control Center (Duty Office)** 321-861-5050
Questions regarding your Utility Locate/Excavation Permit Request, such as approving, revising the time or scope of work, updating any information within this permit.	**KSC Permit Office** Phone: 321-867-2406 Email: KSC-BOSS-DIGPERMIT@mail.nasa.gov
Questions regarding your Utility Locate/Surveying, such as utilities markings and area surveying.	**KSC Survey Office Supervisor** Phone: 321-861-7945 Email: david.j.irwin@nasa.gov
Questions regarding Florida City Gas owned natural gas utilities not including: emergencies, gas leaks, and locate requests.	**Florida City Gas** Phone: 786-459-3655 Email: FSmalley@aglresources.com
Questions regarding environmental-related issues, comments stated within KSC Environmental Review (below).	**KSC Environmental** Phone: 321-867-8430

Permit Request: 21009 (Status: Pending) Rev 0

Permit Scope of Work / Justification
This is a permit request for environmental DPT groundwater sampling at the Components Refurbishment and Chemical Analysis facility [Solid Waste Management Unit (SWMU) 041], along Kennedy Parkway. Groundwater sampling will consist of utilizing a direct push technology drill rig to extract groundwater for field sampling. The area in which sampling will occur is shown in the attached figure.

Requestor Contact Information	
Submitter Name, Company*	Alex Murphy, Tetra Tech
Submitter Email Address	Alex.Murphy@tetratech.com
Submitter Phone: 321.292.0842 Fax:	

Contractor / Excavator Contact Information	
Contractor / Excavator Name, Company	Tetra Tech
Contractor Contact Email Address	Alex.Murphy@tetratech.com
Contractor Contact Phone* 321.292.0842	

NASA Technical / Project Contact Information	
NASA POC Name	Chris Adkison
NASA POC Email Address	christopher.d.adkison@nasa.gov
NASA POC Phone	(321) 427-6997

Permit Request Info
Permit Start Date: 11/17/2022 **Permit Expiration Date:** 5/21/2023

Facility Info
Facility ID: K6-1696 **Name:** COMPONENT REFURBISHMENT and CHEMICAL ANALYSIS FACILITY **Secondary Location:**

Additional Forms and Identifying Numbers	
Work Order Number:	**Environmental Check List Completed:** No

Reviews			
Reviewed By:	**Date:**	**Results:**	**Comments:**
Locator	11/18/2022	Agree	The points on the east right of way of Kennedy Parkway force the entire permit to fall under CAT B.
Environmental	11/18/2022	Agree	Abide by requirements stipulated in REC #11854 issued on 07/07/2022.
Master Planner	11/18/2022	Agree	RS
Final	11/18/2022	Agree	AL

Permit Request: 21009 (Status: Pending) Rev 0

Sunshine 811 Call Ticket Number	
Ticket Number	347200547

Approved by: Jeff McDowell 5/1/23 11 locations

Approved by: Alfredo George 12-15-2022

Excavation Restriction

Notes: Located 6 vertical DOT points

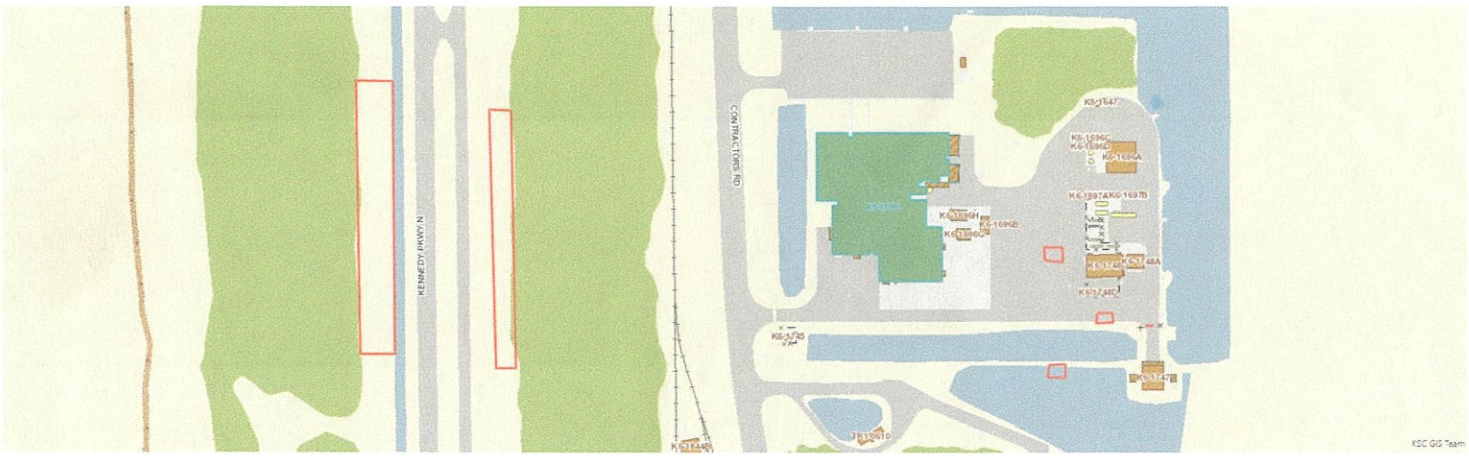
[ ] ENTIRE LOCATED AREA TO BE HAND EXCAVATED ONLY!

Locator's Signature: _____

Reason for Hand Excavation:

Permit Request: 21009 (Status: Pending) Rev 0

Map of Permitted Area of Work



The permitted area of work is displayed as the outlined shapes on the above map. It is the permit-holder's responsibility to ensure digging operations are contained within the permitted area of work. Failure to stay with permitted area of work will result in permit suspension and work stoppage.
If the scope of the project changes and the permitted area of work needs to be modified, it is the permit holder's responsibility to notify the excavation permit administrator to discuss the changes and impact.

Assigned Category Codes	
Category B	Permit-holders are required to validate dig status daily prior to digging, online at extapps.ksc.nasa.gov/epr using this permit number.* No excavating is permitted prior to and after launch, landing or test while Cat B restriction is at no-dig status. *Backup validation (only if website is unavailable) by calling the Spaceport Integration Center at 321-861-5050.

WELL COMPLETION LOG

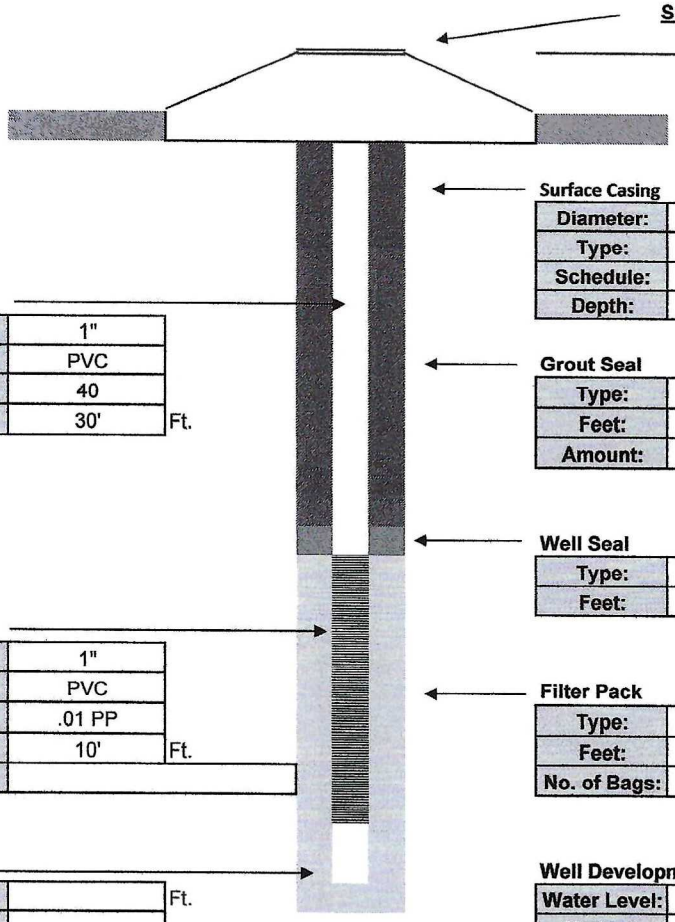
Water Mgmt. Dist.:
Permit Number:

Work Order: 124013
Type of Well: Monitor
Well Number: MW 33
Method Used: Sonic
Borehole Diaz. 4"

Site Information:
Name: SWMU 41
Address:
C,S,Z:
S/T/R:

Client / Consultant Information
Consultant: Tetra Tech
Field Rep: Chuck Sorden

Well Diameter	Well Type	Well Depth	Screen Length	Casing Length	Bags Grout	Sand Bags/Weight	Filter Type	Well Seal
1"	PVC	40'	10'	30'	1	2 / 50 lbs.	20/30	30/65
40 ←	Schedule	Slot Size: →	.01 PP		27'	← Feet →	11'	2'



Surface Casing

Diameter:	
Type:	
Schedule:	
Depth:	

Intermediate Casing

Diameter:	
Type:	
Schedule:	
Depth:	

Well Casing

Diameter:	1"
Type:	PVC
Schedule:	40
Length:	30' Ft.

Grout Seal

Type:	I / II PORTLAND
Feet:	27'
Amount:	1 Bags

Well Seal

Type:	30/65
Feet:	2'

Well Screen

Diameter:	1"
Type:	PVC
Slot:	.01 PP
Length:	10' Ft.
Note:	

Filter Pack

Type:	20/30
Feet:	11'
No. of Bags:	2 / 50 lbs.

Sump

Length:	Ft.
Type:	

Well Development

Water Level:	4'		
Method:	Honda		
Start:	Milky	Finish:	Clear
Time:	.5 Hr		
GPM:	0.5		

Contractor Information

Contractor #:	9311
Completion:	1/10/2024
Driller:	Jared Link
Lead Hand:	Jason Bergeron
3rd Man:	Blake Handibode
Drill Rig:	SR 4

Company:	Drillpro LLC d/b/a Groundwater Protection
Address:	2300 Silver Star Road
C,S,Z:	Orlando, Florida 32804-3310
Phone/FAX:	(407) 426-7885 / (407) 426-7586

WELL COMPLETION LOG

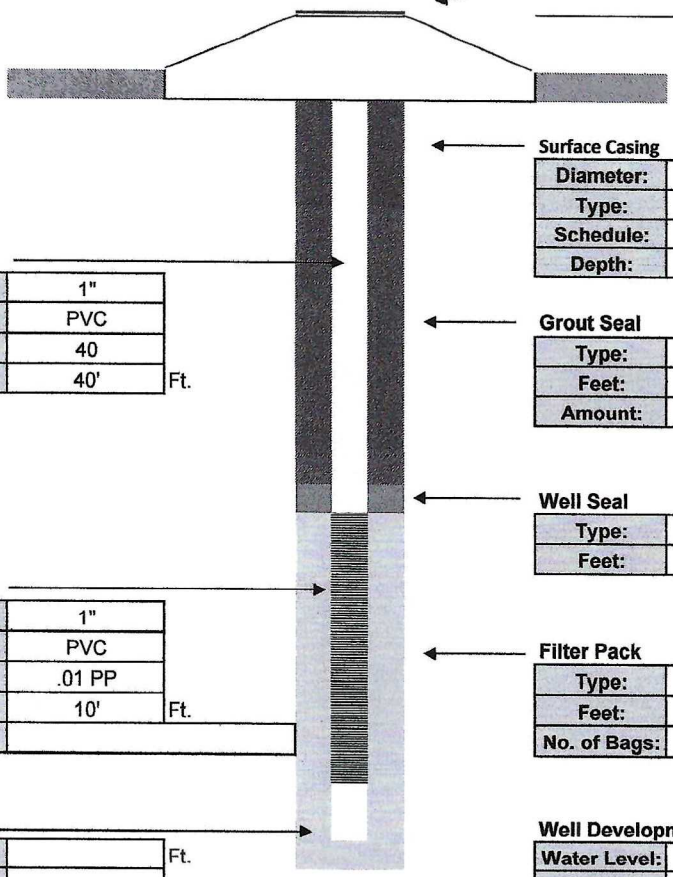
Water Mgmt. Dist.:
Permit Number:

Work Order: 124013
Type of Well: Monitor
Well Number: MW 34
Method Used: Sonic
Borehole Diaz. 4"

Site Information:
Name: SWMU 41
Address:
C,S,Z:
S/T/R:

Client / Consultant Information
Consultant: Tetra Tech
Field Rep: Chuck Sorden

Well Diameter	Well Type	Well Depth	Screen Length	Casing Length	Bags Grout	Sand Bags/Weight	Filter Type	Well Seal
1"	PVC	50'	10'	40'	1	2 / 50 lbs.	20/30	30/65
40	Schedule	Slot Size:	.01 PP		37'	Feet	11'	2'



Surface Casing

Diameter:	
Type:	
Schedule:	
Depth:	

Intermediate Casing

Diameter:	
Type:	
Schedule:	
Depth:	

Well Casing

Diameter:	1"
Type:	PVC
Schedule:	40
Length:	40' Ft.

Grout Seal

Type:	I / II PORTLAND
Feet:	37'
Amount:	1 Bags

Well Seal

Type:	30/65
Feet:	2'

Well Screen

Diameter:	1"
Type:	PVC
Slot:	.01 PP
Length:	10' Ft.
Note:	

Filter Pack

Type:	20/30
Feet:	11'
No. of Bags:	2 / 50 lbs.

Sump

Length:	Ft.
Type:	

Well Development

Water Level:	4'		
Method:	Honda		
Start:	Milky	Finish:	Clear
Time:	.5 Hr		
GPM:	0.5		

Contractor Information

Contractor #:	9311
Completion:	1/10/2024
Driller:	Jared Link
Lead Hand:	Jason Bergeron
3rd Man:	Blake Handibode
Drill Rig:	SR 4

Company:	Drillpro LLC d/b/a Groundwater Protection
Address:	2300 Silver Star Road
C,S,Z:	Orlando, Florida 32804-3310
Phone/FAX:	(407) 426-7885 / (407) 426-7586

WELL COMPLETION LOG

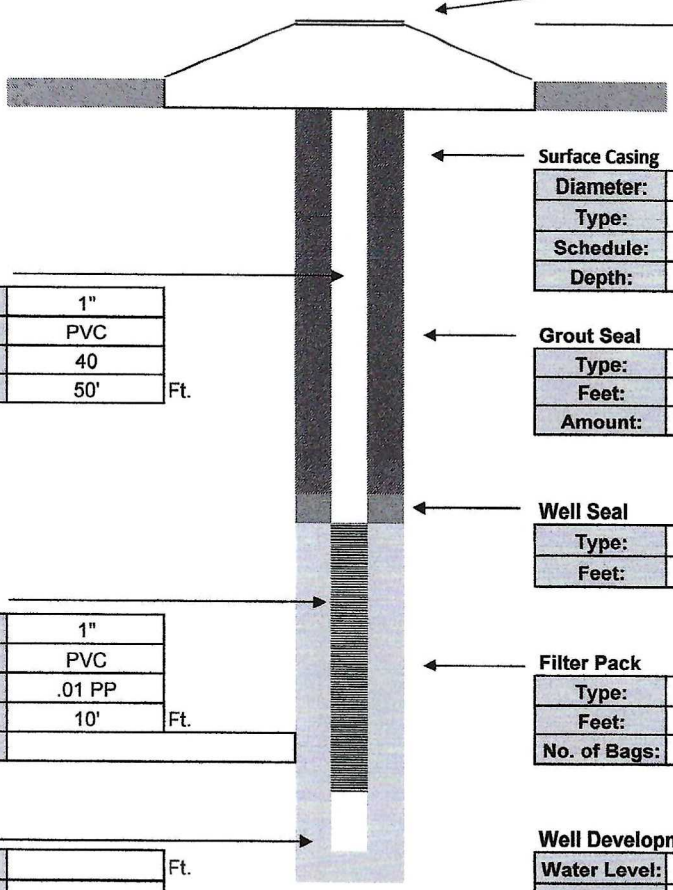
Water Mgmt. Dist.:
Permit Number:

Work Order: 124013
Type of Well: Monitor
Well Number: MW 35
Method Used: Sonic
Borehole Diaz. 4"

Site Information:
Name: SWMU 41
Address:
C,S,Z:
S/T/R:

Client / Consultant Information
Consultant: Tetra Tech
Field Rep: Chuck Sorden

Well Diameter	Well Type	Well Depth	Screen Length	Casing Length	Bags Grout	Sand Bags/Weight	Filter Type	Well Seal
1"	PVC	60'	10'	50'	2	2 / 50 lbs.	20/30	30/65
40 ←	Schedule	Slot Size: →	.01 PP		47'	← Feet →	11'	2'



Surface Casing

Diameter:	
Type:	
Schedule:	
Depth:	

Intermediate Casing

Diameter:	
Type:	
Schedule:	
Depth:	

Well Casing

Diameter:	1"
Type:	PVC
Schedule:	40
Length:	50' Ft.

Grout Seal

Type:	I / II PORTLAND
Feet:	47'
Amount:	2 Bags

Well Seal

Type:	30/65
Feet:	2'

Well Screen

Diameter:	1"
Type:	PVC
Slot:	.01 PP
Length:	10' Ft.
Note:	

Filter Pack

Type:	20/30
Feet:	11'
No. of Bags:	2 / 50 lbs.

Sump

Length:	Ft.
Type:	

Well Development

Water Level:	4'		
Method:	Honda		
Start:	Milky	Finish:	Clear
Time:	.5 Hr		
GPM:	0.5		

Contractor Information

Contractor #:	9311
Completion:	1/10/2024
Driller:	Jared Link
Lead Hand:	Jason Bergeron
3rd Man:	Blake Handibode
Drill Rig:	SR 4

Company:	Drillpro LLC d/b/a Groundwater Protection
Address:	2300 Silver Star Road
C,S,Z:	Orlando, Florida 32804-3310
Phone/FAX:	(407) 426-7885 / (407) 426-7586

WELL COMPLETION LOG

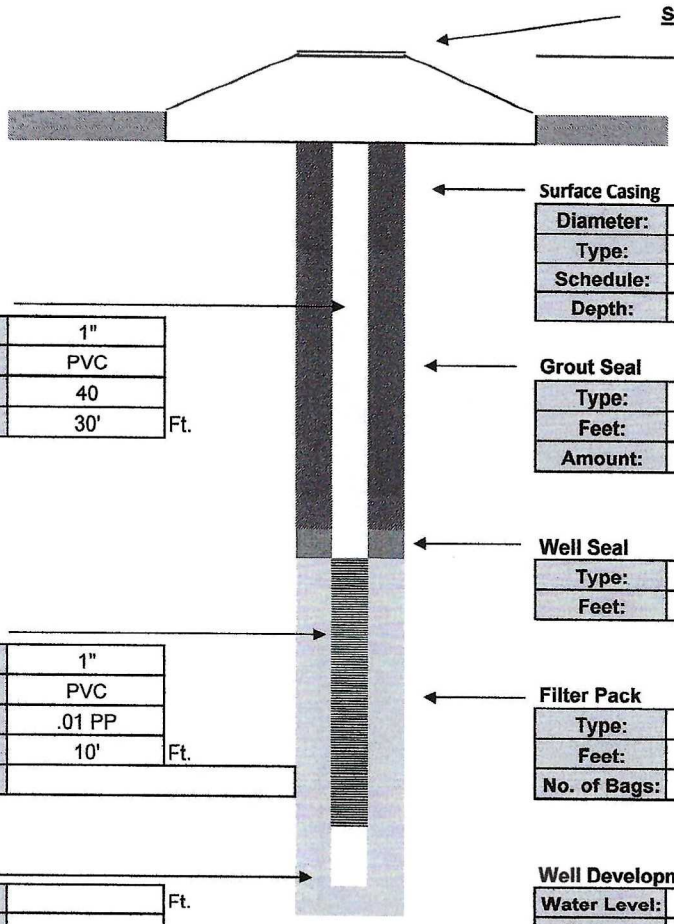
Water Mgmt. Dist.:
Permit Number:

Work Order: 124013
Type of Well: Monitor
Well Number: MW 36
Method Used: Sonic
Borehole Diaz. 4"

Site Information:
Name: SWMU 41
Address:
C,S,Z:
S/T/R:

Client / Consultant Information
Consultant: Tetra Tech
Field Rep: Chuck Sorden

Well Diameter	Well Type	Well Depth	Screen Length	Casing Length	Bags Grout	Sand Bags/Weight	Filter Type	Well Seal
1"	PVC	40'	10'	30'	1	2 / 50 lbs.	20/30	30/65
40 ←	Schedule	Slot Size: →	.01 PP		27'	← Feet →	11'	2'



Well Development

Water Level:	4'		
Method:	Honda		
Start:	Milky	Finish:	Clear
Time:	.5 Hr		
GPM:	0.5		

Contractor Information

Contractor #:	9311
Completion:	1/10/2024
Driller:	Jared Link
Lead Hand:	Jason Bergeron
3rd Man:	Blake Handibode
Drill Rig:	SR 4

Company:	Drillpro LLC d/b/a Groundwater Protection
Address:	2300 Silver Star Road
C,S,Z:	Orlando, Florida 32804-3310
Phone/FAX:	(407) 426-7885 / (407) 426-7586

WELL COMPLETION LOG

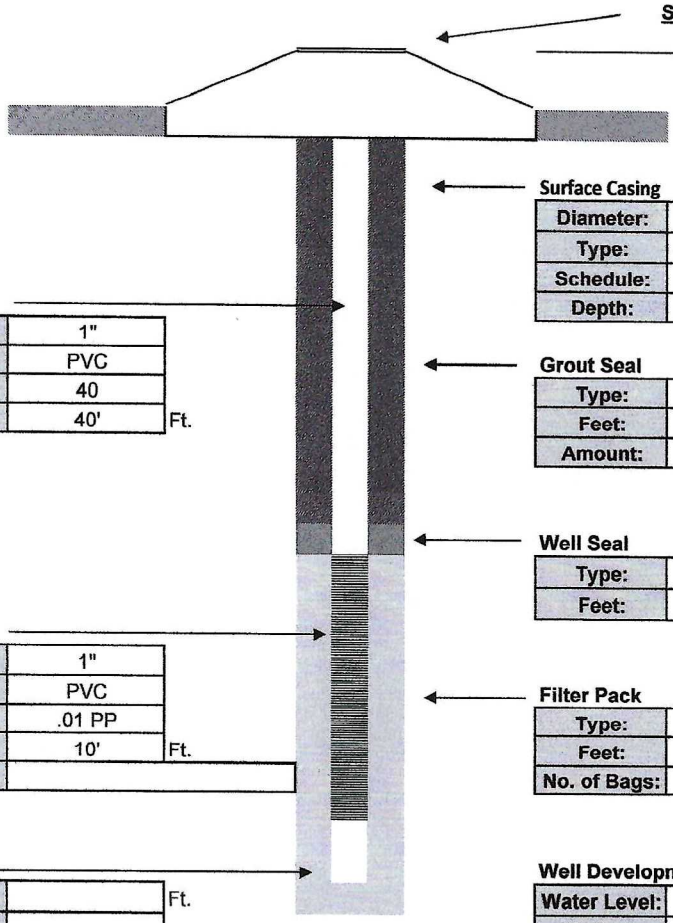
Water Mgmt. Dist.:
Permit Number:

Work Order: 124013
Type of Well: Monitor
Well Number: MW 37
Method Used: Sonic
Borehole Diaz. 4"

Site Information:
Name: SWMU 41
Address:
C,S,Z:
S/T/R:

Client / Consultant Information
Consultant: Tetra Tech
Field Rep: Chuck Sorden

Well Diameter	Well Type	Well Depth	Screen Length	Casing Length	Bags Grout	Sand Bags/Weight	Filter Type	Well Seal
1"	PVC	50'	10'	40'	1	2 / 50 lbs.	20/30	30/65
40 ←	Schedule	Slot Size: →	.01 PP		37'	← Feet →	11'	2'



Surface Casing

Diameter:	
Type:	
Schedule:	
Depth:	

Intermediate Casing

Diameter:	
Type:	
Schedule:	
Depth:	

Well Casing

Diameter:	1"
Type:	PVC
Schedule:	40
Length:	40' Ft.

Grout Seal

Type:	I / II PORTLAND
Feet:	37'
Amount:	1 Bags

Well Seal

Type:	30/65
Feet:	2'

Well Screen

Diameter:	1"
Type:	PVC
Slot:	.01 PP
Length:	10' Ft.
Note:	

Filter Pack

Type:	20/30
Feet:	11'
No. of Bags:	2 / 50 lbs.

Sump

Length:	Ft.
Type:	

Well Development

Water Level:	4'		
Method:	Honda		
Start:	Milky	Finish:	Clear
Time:	.5 Hr		
GPM:	0.5		

Contractor Information

Contractor #:	9311
Completion:	1/10/2024
Driller:	Jared Link
Lead Hand:	Jason Bergeron
3rd Man:	Blake Handibode
Drill Rig:	SR 4

Company:	Drillpro LLC d/b/a Groundwater Protection
Address:	2300 Silver Star Road
C,S,Z:	Orlando, Florida 32804-3310
Phone/FAX:	(407) 426-7885 / (407) 426-7586

WELL COMPLETION LOG

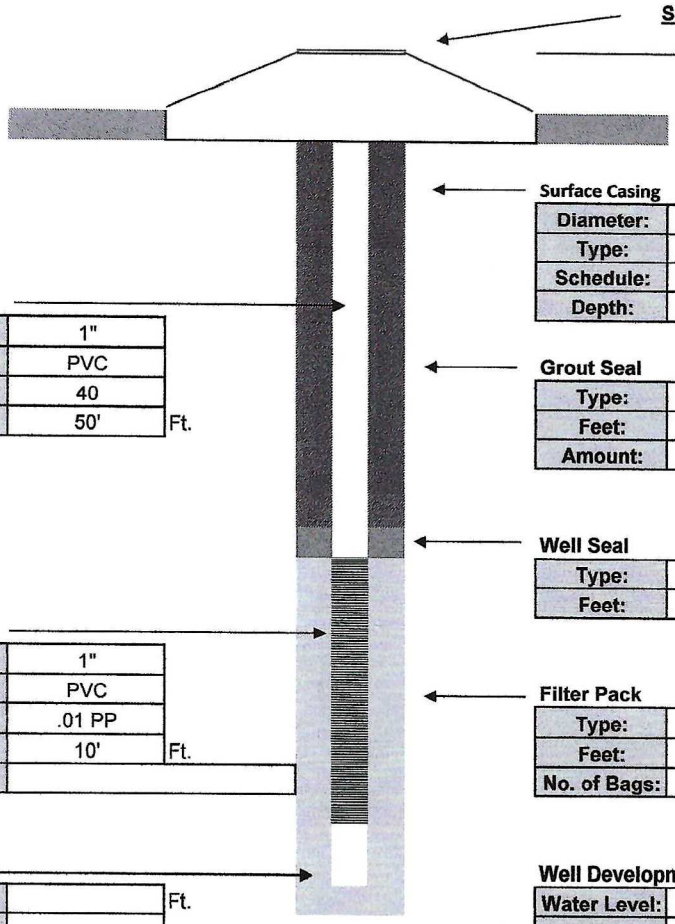
Water Mgmt. Dist.:
Permit Number:

Work Order: 124013
Type of Well: Monitor
Well Number: MW 38
Method Used: Sonic
Borehole Diaz. 4"

Site Information:
Name: SWMU 41
Address:
C,S,Z:
S/T/R:

Client / Consultant Information
Consultant: Tetra Tech
Field Rep: Chuck Sorden

Well Diameter	Well Type	Well Depth	Screen Length	Casing Length	Bags Grout	Sand Bags/Weight	Filter Type	Well Seal
1"	PVC	60'	10'	50'	2	2 / 50 lbs.	20/30	30/65
40 ←	Schedule	Slot Size: →	.01 PP		47'	← Feet →	11'	2'



Surface Casing		Intermediate Casing	
Diameter:		Diameter:	
Type:		Type:	
Schedule:		Schedule:	
Depth:		Depth:	

Well Casing	
Diameter:	1"
Type:	PVC
Schedule:	40
Length:	50' Ft.

Grout Seal	
Type:	I / II PORTLAND
Feet:	47'
Amount:	2 Bags

Well Seal	
Type:	30/65
Feet:	2'

Well Screen	
Diameter:	1"
Type:	PVC
Slot:	.01 PP
Length:	10' Ft.
Note:	

Filter Pack	
Type:	20/30
Feet:	11'
No. of Bags:	2 / 50 lbs.

Sump	
Length:	Ft.
Type:	

Well Development			
Water Level:	4'		
Method:	Honda		
Start:	Milky	Finish:	Clear
Time:	.5 Hr		
GPM:	0.5		

Contractor Information

Contractor #:	9311
Completion:	1/10/2024
Driller:	Jared Link
Lead Hand:	Jason Bergeron
3rd Man:	Blake Handibode
Drill Rig:	SR 4

Company:	Drillpro LLC d/b/a Groundwater Protection
Address:	2300 Silver Star Road
C,S,Z:	Orlando, Florida 32804-3310
Phone/FAX:	(407) 426-7885 / (407) 426-7586

WELL COMPLETION LOG

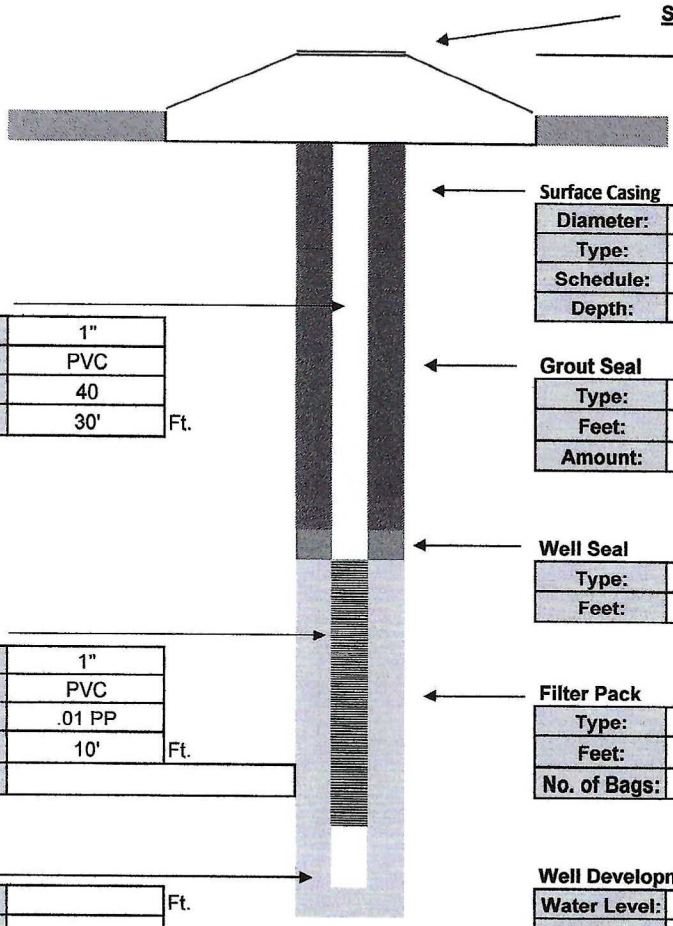
Water Mgmt. Dist.:
Permit Number:

Work Order: 124013
Type of Well: Monitor
Well Number: MW 42
Method Used: Sonic
Borehole Diaz. 4"

Site Information:
Name: SWMU 41
Address:
C,S,Z:
S/T/R:

Client / Consultant Information
Consultant: Tetra Tech
Field Rep: Chuck Sorden

Well Diameter	Well Type	Well Depth	Screen Length	Casing Length	Bags Grout	Sand Bags/Weight	Filter Type	Well Seal
1"	PVC	40'	10'	30'	1	2 / 50 lbs.	20/30	30/65
40 ←	Schedule	Slot Size: →	.01 PP		27'	← Feet →	11'	2'



Surface Casing		Intermediate Casing	
Diameter:		Diameter:	
Type:		Type:	
Schedule:		Schedule:	
Depth:		Depth:	

Well Casing	
Diameter:	1"
Type:	PVC
Schedule:	40
Length:	30' Ft.

Grout Seal	
Type:	I / II PORTLAND
Feet:	27'
Amount:	1 Bags

Well Seal	
Type:	30/65
Feet:	2'

Well Screen	
Diameter:	1"
Type:	PVC
Slot:	.01 PP
Length:	10' Ft.
Note:	

Filter Pack	
Type:	20/30
Feet:	11'
No. of Bags:	2 / 50 lbs.

Sump	
Length:	Ft.
Type:	

Well Development			
Water Level:	4'		
Method:	Honda		
Start:	Milky	Finish:	Clear
Time:	.5 Hr		
GPM:	0.5		

Contractor Information

Contractor #:	9311
Completion:	1/10/2024
Driller:	Jared Link
Lead Hand:	Jason Bergeron
3rd Man:	Blake Handibode
Drill Rig:	SR 4

Company:	Drillpro LLC d/b/a Groundwater Protection
Address:	2300 Silver Star Road
C,S,Z:	Orlando, Florida 32804-3310
Phone/FAX:	(407) 426-7885 / (407) 426-7586

WELL COMPLETION LOG

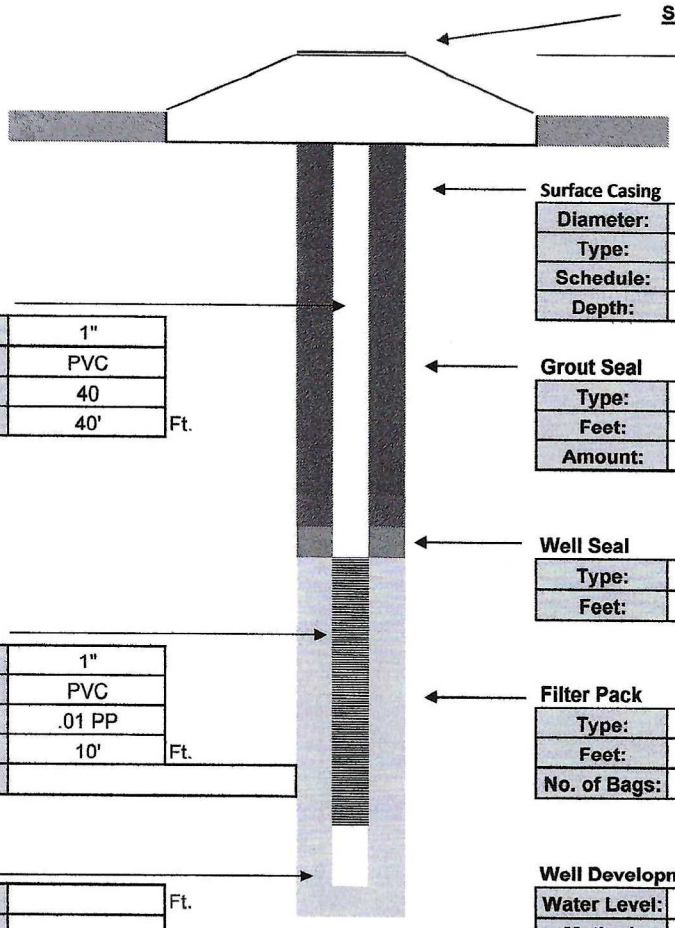
Water Mgmt. Dist.:
Permit Number:

Work Order: 124013
Type of Well: Monitor
Well Number: MW 43
Method Used: Sonic
Borehole Diaz. 4"

Site Information:
Name: SWMU 41
Address:
C,S,Z:
S/T/R:

Client / Consultant Information
Consultant: Tetra Tech
Field Rep: Chuck Sorden

Well Diameter	Well Type	Well Depth	Screen Length	Casing Length	Bags Grout	Sand Bags/Weight	Filter Type	Well Seal
1"	PVC	50'	10'	40'	1	2 / 50 lbs.	20/30	30/65
40 ←	Schedule	Slot Size: →	.01 PP		37'	← Feet →	11'	2'



Surface Casing

Diameter:	
Type:	
Schedule:	
Depth:	

Intermediate Casing

Diameter:	
Type:	
Schedule:	
Depth:	

Well Casing

Diameter:	1"
Type:	PVC
Schedule:	40
Length:	40' Ft.

Grout Seal

Type:	I / II PORTLAND
Feet:	37'
Amount:	1 Bags

Well Seal

Type:	30/65
Feet:	2'

Well Screen

Diameter:	1"
Type:	PVC
Slot:	.01 PP
Length:	10' Ft.
Note:	

Filter Pack

Type:	20/30
Feet:	11'
No. of Bags:	2 / 50 lbs.

Sump

Length:	Ft.
Type:	

Well Development

Water Level:	4'		
Method:	Honda		
Start:	Milky	Finish:	Clear
Time:	.5 Hr		
GPM:	0.5		

Contractor Information

Contractor #:	9311
Completion:	1/10/2024
Driller:	Jared Link
Lead Hand:	Jason Bergeron
3rd Man:	Blake Handibode
Drill Rig:	SR 4

Company:	Drillpro LLC d/b/a Groundwater Protection
Address:	2300 Silver Star Road
C,S,Z:	Orlando, Florida 32804-3310
Phone/FAX:	(407) 426-7885 / (407) 426-7586

WELL COMPLETION LOG

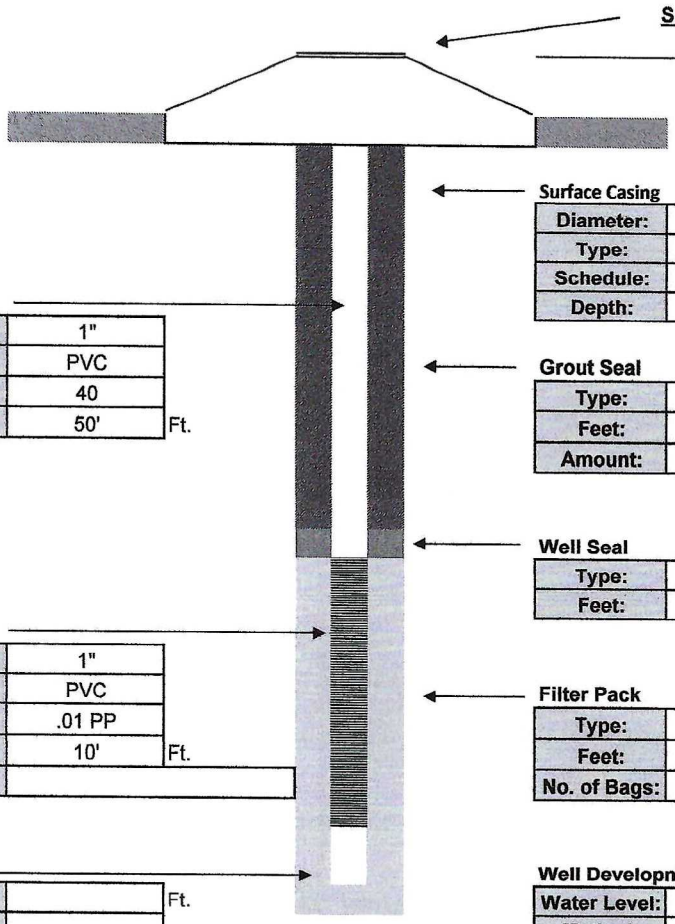
Water Mgmt. Dist.:
Permit Number:

Work Order: 124013
Type of Well: Monitor
Well Number: MW 44
Method Used: Sonic
Borehole Diaz. 4"

Site Information:
Name: SWMU 41
Address:
C,S,Z:
S/T/R:

Client / Consultant Information
Consultant: Tetra Tech
Field Rep: Chuck Sorden

Well Diameter	Well Type	Well Depth	Screen Length	Casing Length	Bags Grout	Sand Bags/Weight	Filter Type	Well Seal
1"	PVC	60'	10'	50'	2	2 / 50 lbs.	20/30	30/65
40 ←	Schedule	Slot Size: →	.01 PP		47'	← Feet →	11'	2'



Surface Casing

Diameter:	
Type:	
Schedule:	
Depth:	

Intermediate Casing

Diameter:	
Type:	
Schedule:	
Depth:	

Well Casing

Diameter:	1"
Type:	PVC
Schedule:	40
Length:	50' Ft.

Grout Seal

Type:	I / II PORTLAND
Feet:	47'
Amount:	2 Bags

Well Seal

Type:	30/65
Feet:	2'

Well Screen

Diameter:	1"
Type:	PVC
Slot:	.01 PP
Length:	10' Ft.
Note:	

Filter Pack

Type:	20/30
Feet:	11'
No. of Bags:	2 / 50 lbs.

Sump

Length:	Ft.
Type:	

Well Development

Water Level:	4'		
Method:	Honda		
Start:	Milky	Finish:	Clear
Time:	.5 Hr		
GPM:	0.5		

Contractor Information

Contractor #:	9311
Completion:	1/10/2024
Driller:	Jared Link
Lead Hand:	Jason Bergeron
3rd Man:	Blake Handibode
Drill Rig:	SR 4

Company:	Drillpro LLC d/b/a Groundwater Protection
Address:	2300 Silver Star Road
C,S,Z:	Orlando, Florida 32804-3310
Phone/FAX:	(407) 426-7885 / (407) 426-7586

STATE OF FLORIDA PERMIT APPLICATION TO CONSTRUCT, REPAIR, MODIFY, OR ABANDON A WELL

- [ ] Southwest
- [ ] Northwest
- [ ] St. Johns River
- [ ] South Florida
- [ ] Suwannee River
- [ ] DEP
- [x] Delegated Authority (If Applicable) **Brevard DOH**

PLEASE, FILL OUT ALL APPLICABLE FIELDS
(*Denotes Required Fields Where Applicable)

The water well contractor is responsible for completing this form and forwarding the permit application to the appropriate delegated authority where applicable.

Permit No:	**MW-213415-1**
Florida Unique ID	
Permit Stipulations Required (See Attached)	
MW-9	
62-524 Quad No. **3706NE**	Delineation No.
CUP/WUP Application No.	

ABOVE THIS LINE FOR OFFICIAL USE ONLY

1. **United States Of America** (*Owner, Legal Name if Corporation) **1849 Nw C St Rm 5665** (*Address) **Washington** (*City) **DC** (*State) **20240** (*Zip) **3216366470** (*Telephone Number)
2. **Off of Kennedy Pkwy North, KSC, FL 32815** (*Well Location – Address, Road Name or Number, City)
3. **22-37-18-00-*-** (*Parcel ID No. (PIN) or Alternate Key (Circle One)) Lot Block Unit
4. **18** (*Section or Land Grant) **22S** (*Township) **37E** (*Range) **Brevard** (*County) Subdivision — Check if 62-524: Yes **X** No
5. **James P Hinst** (*Water Well Contractor) **9311** (*License Number) **4074267885** (*Telephone Number) **jim@drillprollc.com** (E-mail Address)
6. **2300 Silver Star Rd** (*Water Well Contractor's Address) **Orlando** (City) **FL** (State) **32804-3310** (ZIP)

7. *Type of Work: **X** Construction ____ Repair ____ Modification ____ Abandonment ____ (*Reason for Repair, Modification, or Abandonment)
8. *Number of Proposed Wells **9**
9. *Specify Intended Use(s) of Well(s):

____ Domestic
____ Bottled Water Supply
____ Public Water Supply (Limited Use/DOH)
____ Public Water Supply (Community orNon-Community/DEP)
____ Class I Injection
____ Landscape Irrigation
____ Recreation Area Irrigation
____ Agricultural Irrigation
____ Livestock
____ Nursery Irrigation
____ Commercial/Industrial
____ Golf Course Irrigation
____ Site Investigation
X Monitoring
____ Test
____ Earth-Coupled Geothermal
____ HVAC Supply
____ HVAC Return

Class V Injection: ____ Recharge ____ Commercial/Industrial Disposal ____ Aquifer Storage and Recovery ____ Drainage

Remediation: ____ Recovery ____ Air Sparge ____ Other (Describe)

Other (Describe) _____ (Note: Not all types of wells are permitted by a given permitting authority)

Date Stamp
Confirmation# **867457**
Date: **01/05/2024**
Official Use Only

10. *Distance from Septic System if ≤ 200 ft. _____ 11. Facility Description **Undefined - Reserved For Future Use** 12. Estimated Start Date **01/08/2024**
13. *Estimated Well Depth **60** ft. *Estimated Casing Depth **50** ft. *Primary Casing Diameter **1** in. Open Hole: From _____ To _____ ft.
14. Estimated Screen Interval: From **50** To **60** ft.
15. *Primary Casing Material: ____ Black Steel ____ Galvanized **X** PVC ____ Stainless Steel ____ Not Cased ____ Other: _____
16. Secondary Casing: ____ Telescope Casing ____ Liner ____ Surface Casing Diameter ____ in.
17. Secondary Casing Material: ____ Black Steel ____ Galvanized ____ PVC ____ Stainless Steel ____ Other _____
18. *Method of Construction, Repair, or Abandonment: ____ Auger ____ Cable Tool ____ Jetted ____ Rotary **X** Sonic ____ Combination (Two or More Methods) ____ Hand Driven (Well Point, Sand Point) ____ Hydraulic Point (Direct Push) ____ Horizontal Drilling ____ Plugged by Approved Method ____ Other (Describe) _____
19. Proposed Grouting Interval for the Primary, Secondary, and Additional Casing:

From **0**	To **50**	Seal Material (	____ Bentonite	____ Neat Cement	**X** Other	**Cement with Bentonite, < 5% by weight**)
From ____	To ____	Seal Material (	____ Bentonite	____ Neat Cement	____ Other	____)
From ____	To ____	Seal Material (	____ Bentonite	____ Neat Cement	____ Other	____)
From ____	To ____	Seal Material (	____ Bentonite	____ Neat Cement	____ Other	____)

20. Indicate total number of existing wells on site _____ List number of existing unused wells on site _____
21. *Is this well or any existing well or water withdrawal on the owner's contiguous property covered under a Consumptive/Water Use Permit (CUP/WUP) or CUP/WUP Application? ____ Yes **X** No If Yes, complete the following: CUP/WUP No. _____ District Well ID No. **553983**
22. Latitude **283429.97** Longitude **803921.49**
23. Data Obtained From: ____ GPS **X** Map ____ Survey Datum: ____ NAD 27 **X** NAD 83 ____ WGS 84

I hereby certify that I will comply with the applicable rules of Title 40, Florida Administration Code, and that a water use permit or artificial recharge permit, if needed, has been or will be obtained prior to commencement of well construction. I further certify that information provided in this application is accurate and that I will obtain necessary approval from other federal, state, or local governments, if applicable, I agree to provide a well completion report to the District within 30 days after completion of the construction, repair, modification, or abandonment authorized by this permit, or the permit expiration, whichever occurs first.

James P Hinst (*Signature of Contractor) **9311** (*License No.)

I certify that I am the owner of the property, that the information provided is accurate, and that I am aware of my responsibilities under Chapter 373, Florida Statutes, to maintain or properly abandon this well; or, I certify that I am the agent for the owner, that the information provided is accurate, and that I have informed the owner of his responsibilities as stated above. Owner consents to allowing personnel of this WMD or Delegated Authority access to the well site during the construction, repair, modification, or abandonment authorized by this permit.

James P Hinst (*Signature of Owner or Agent) **01/05/2024** (*Date)

BELOW THIS LINE – FOR OFFICIAL USE ONLY

Approval Granted By *Kayla Davis* Issue Date **01/05/2024** Expiration Date **01/04/2025** Hydrologist Approval _____ initials

Fee Received $ **100** Receipt No. **109905** Check No. **OnLine-75593662-867457**

THIS PERMIT IS NOT VALID UNTIL PROPERLY SIGNED BY AUTHORIZED OFFICER OR REPRESENTATIVE OF THE WMD OR DELEGATED AUTHORITY. THE PERMIT SHALL BE AVAILABLE AT THE WELL SITE DURING ALL CONSTRUCTION, MODIFICATION, OR ABANDONMENT ACTIVITIES.

Payment Receipt Confirmation

Your payment was successfully processed.

Receipt Contact Information

Contact Name Brevard County Department of Health

Transaction Summary

Description	*Receipt Confirmation* **Amount**
WMD Permit	$100.00
Total Amount Paid	$100.00

Customer Information

Customer Name	James Hinst	**Receipt Date**	1/5/2024
Company Name	Drillpro dba Groundwater Protection	**Receipt Time**	09:21:20 AM EST
Local Reference ID	WWC 867457		

Payment Information

Payment Type	Credit Card	**Credit Card Number**	******8374
Credit Card Type	MAST	**Order ID**	75593662
		Name on Credit Card	James Hinst

Billing Information

Billing Address	2300 Silver Star Rd	**Phone Number**	4074267885
Billing City, State	Orlando, FL	**This receipt has been emailed to the address below.**	
Billing Zip/Postal C...	32804-3310	**Email Address**	jim@drillprollc.com
Country	US		

STATE OF FLORIDA WELL COMPLETION REPORT

[ ] Southwest
[ ] Northwest
[ ] St. Johns River
[ ] South Florida
[ ] Suwannee River
[ ] DEP
[x] Delegated Authority (If Applicable) **Brevard DOH**

PLEASE, FILL OUT ALL APPLICABLE FIELDS
(*Denotes Required Fields Where Applicable)

Date Stamp

Confirmation# 875578

Date:02/02/2024

Official Use Only

1. *Permit Number MW-213415-1 *CUP/WUP Number _____ *DID Number 553983 62-524 Delineation No. _____

2. *Number of permitted wells constructed, repaired, or abandoned 9 *Number of permitted wells not constructed, repaired, or abandoned 0

3. *Owner's Name United States Of America 4.*Completion Date 01/10/2024 5. Florida Unique ID _____

6. Off of Kennedy Pkwy N, KSC, FL 32815
*Well Location – Address, Road Name or Number, City, ZIP

7. *County Brevard *Section 18 Land Grant _____ *Township 22S *Range 37E

8. Latitude 283429.6986 Longitude 803921.4128

9. Data Obtained From: ___GPS _X_Map ___Survey Datum: ___NAD 27 _X_NAD 83 ___WGS 84

10. *Type of Work: _X_Construction ___Repair ___Modification ___Abandonment Reason: _____

11. *Specify Intended Use(s) of Well(s):

___Domestic
___Bottled Water Supply
___Public Water Supply (Limited Use/DOH)
___Public Water Supply (Community or Non-Community/DEP)
___Class I Injection
___Landscape Irrigation
___Recreation Area Irrigation
___Agricultural Irrigation
___Livestock
___Nursery Irrigation
___Commercial/Industrial
___Golf Course Irrigation
___Site Investigation
_X_Monitoring
___Test
___Earth-Coupled Geothermal
___HVAC Supply
___HVAC Return

Class V Injection: ___Recharge ___Commercial/Industrial Disposal ___Aquifer Storage and Recovery ___Drainage
Remediation: ___Recovery ___Air Sparge ___Other (Describe) _____
___Other (Describe) _____

12. *Drill Method: ___Auger ___Cable Tool ___Rotary ___Combination (Two or More Methods) ___Jetted _X_Sonic
___Horizontal Drilling ___Hydraulic Point (Direct Push) ___Other _____

13. *Measured Static Water Level 4 ft. Measured Pumping Water Level 4 ft. After 1 Hours at 1 GPM

14. *Measuring Point (Describe) 1 Which is .4 ft. ___Above _X_Below Land Surface *Flowing: ___Yes _X_No

15. *Casing Material: ___Black Steel ___Galvanized _X_PVC ___Stainless Steel ___Not Cased ___Other _____

16. *Total Well Depth 40 ft. Cased Depth 30 ft. *Open Hole: From ___To___ft. *Screen: From 30 To 40 ft. Slot Size .01

17. *Abandonment: ___Other(Explain _____)
From ___ft. To___ft. No. of Bags___ Seal Material (Check One): ___Neat Cement ___Bentonite ___Other _____
From ___ft. To___ft. No. of Bags___ Seal Material (Check One): ___Neat Cement ___Bentonite ___Other _____
From ___ft. To___ft. No. of Bags___ Seal Material (Check One): ___Neat Cement ___Bentonite ___Other _____
From ___ft. To___ft. No. of Bags___ Seal Material (Check One): ___Neat Cement ___Bentonite ___Other _____
From ___ft. To___ft. No. of Bags___ Seal Material (Check One): ___Neat Cement ___Bentonite ___Other _____

18. *Surface Casing Diameter and Depth:
Dia ___in. From ___ft. To___ft. No. of Bags___ Seal Material (Check One): ___Neat Cement ___Bentonite ___Other _____
Dia ___in. From ___ft. To___ft. No. of Bags___ Seal Material (Check One): ___Neat Cement ___Bentonite ___Other _____

19. *Primary Casing Diameter and Depth:

Dia 1 in. From 0 ft. To 27 ft. No. of Bags 1 Seal Material (Check One): ___Neat Cement ___Bentonite _X_Other Cement with Bentonite, < 5% by weight
Dia 1 in. From 27 ft. To 30 ft. No. of Bags 2 Seal Material (Check One): ___Neat Cement ___Bentonite _X_Other Sand
Dia ___in. From ___ft. To___ft. No. of Bags___ Seal Material (Check One): ___Neat Cement ___Bentonite ___Other _____
Dia ___in. From ___ft. To___ft. No. of Bags___ Seal Material (Check One): ___Neat Cement ___Bentonite ___Other _____
Dia ___in. From ___ft. To___ft. No. of Bags___ Seal Material (Check One): ___Neat Cement ___Bentonite ___Other _____

20. *Liner Casing Diameter and Depth:
Dia ___in. From ___ft. To___ft. No. of Bags___ Seal Material (Check One): ___Neat Cement ___Bentonite ___Other _____
Dia ___in. From ___ft. To___ft. No. of Bags___ Seal Material (Check One): ___Neat Cement ___Bentonite ___Other _____
Dia ___in. From ___ft. To___ft. No. of Bags___ Seal Material (Check One): ___Neat Cement ___Bentonite ___Other _____

21. *Telescope Casing Diameter and Depth:
Dia ___in. From ___ft. To___ft. No. of Bags___ Seal Material (Check One): ___Neat Cement ___Bentonite ___Other _____
Dia ___in. From ___ft. To___ft. No. of Bags___ Seal Material (Check One): ___Neat Cement ___Bentonite ___Other _____
Dia ___in. From ___ft. To___ft. No. of Bags___ Seal Material (Check One): ___Neat Cement ___Bentonite ___Other _____

22. Pump Type (If known):
___Centrifugal ___Jet ___Submersible ___Turbine
Horsepower _____ Pump Capacity (GPM) _____
Pump Depth ___ft. Intake Depth ___ft.

23. Chemical Analysis (When Required):
Iron _____ppm Sulfate _____ppm Chloride _____ppm
___Laboratory Test ___Field Test Kit

24. Water Well Contractor:
*Contractor Name James P Hinst *License Number 9311 E-mail Address jim@drillprollc.com
*Contractor's Signature **James P Hinst** (I certify that the information provided in this report is accurate and true.) *Driller's Name (Print or Type) Jared Link

*Permit No. MW-213415-1

SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT
2379 BROAD STREET, BROOKSVILLE, FL 34604-6899
PHONE: (352) 796-7211 or (800) 423-1476
WWW.SWFWMD.STATE.FL.US

ST. JOHNS RIVER WATER MANAGEMENT DISTRICT
4049 REID STREET, PALATKA, FL 32178-1429
PHONE: (386) 329-4500
WWW.SJRWMD.COM

NORTHWEST FLORIDA WATER MANAGEMENT DISTRICT
152 WATER MANAGEMENT DR., HAVANA, FL 32333-4712
(U.S. Highway 90, 10 miles west of Tallahassee)
PHONE: (850) 539-5999
WWW.NWFWMD.STATE.FL.US

SOUTH FLORIDA WATER MANAGEMENT DISTRICT
P.O. BOX 24680
3301 GUN CLUB ROAD
WEST PLAM BEACH, FL 33416-4680
PHONE: (561) 686-8800
WWW.SFWMD.GOV

SUWANNEE RIVER WATER MANAGEMENT DISTRICT
9225 CR 49
LIVE OAK, FL 32060
PHONE: (386) 362-1001 or (800) 226-1066 (Florida only)
WWW.MYSUWANNEERIVER.COM

***DRILL CUTTINGS LOG** (Examine cuttings every 20 ft. or at formation changes. Note cavities and depth to producing zone. Grain Size: F=Fine, M=Medium, and C=Coarse)

From	To	Color	Grain Size (F, M, C)	Material
0 ft.	10 ft.	Gray	N/A	Sand
10 ft.	25 ft.	Green	Silt	Sand
25 ft.	40 ft.	Green	N/A	Sand with Shell
ft.	ft.			
ft.	ft.			
ft.	ft.			
ft.	ft.			
ft.	ft.			
ft.	ft.			
ft.	ft.			
ft.	ft.			
ft.	ft.			
ft.	ft.			
ft.	ft.			
ft.	ft.			
ft.	ft.			
ft.	ft.			
ft.	ft.			
ft.	ft.			
ft.	ft.			
ft.	ft.			
ft.	ft.			
ft.	ft.			
ft.	ft.			
ft.	ft.			
ft.	ft.			
ft.	ft.			
ft.	ft.			
ft.	ft.			

Comments:
GP WO 124013
CRCA MW 0033

STATE OF FLORIDA WELL COMPLETION REPORT

PLEASE, FILL OUT ALL APPLICABLE FIELDS
(*Denotes Required Fields Where Applicable)

- [ ] Southwest
- [ ] Northwest
- [ ] St. Johns River
- [ ] South Florida
- [ ] Suwannee River
- [ ] DEP
- [x] Delegated Authority (If Applicable) **Brevard DOH**

Date Stamp

Confirmation# 875590

Date:02/02/2024

Official Use Only

1. *Permit Number MW-213415-1 *CUP/WUP Number _____ *DID Number 555358 62-524 Delineation No. _____
2. *Number of permitted wells constructed, repaired, or abandoned 9 *Number of permitted wells not constructed, repaired, or abandoned 0
3. *Owner's Name United States Of America 4.*Completion Date 01/10/2024 5. Florida Unique ID _____
6. Off of Kennedy Pkwy N, KSC, FL 32815
   *Well Location – Address, Road Name or Number, City, ZIP
7. *County Brevard *Section 18 Land Grant _____ *Township 22S *Range 37E
8. Latitude 283429.8216 Longitude 803921.379
9. Data Obtained From: ___GPS _X_Map ___Survey Datum: ___NAD 27 _X_NAD 83 ___WGS 84

10. *Type of Work: _X_Construction ___Repair ___Modification ___Abandonment Reason: _____
11. *Specify Intended Use(s) of Well(s):

___Domestic
___Bottled Water Supply
___Public Water Supply (Limited Use/DOH)
___Public Water Supply (Community or Non-Community/DEP)
___Class I Injection
___Landscape Irrigation
___Recreation Area Irrigation
___Agricultural Irrigation
___Livestock
___Nursery Irrigation
___Commercial/Industrial
___Golf Course Irrigation
___Site Investigation
_X_Monitoring
___Test
___Earth-Coupled Geothermal
___HVAC Supply
___HVAC Return

Class V Injection: ___Recharge ___Commercial/Industrial Disposal ___Aquifer Storage and Recovery ___Drainage
Remediation: ___Recovery ___Air Sparge ___Other (Describe) _____
___Other (Describe) _____

12. *Drill Method: ___Auger ___Cable Tool ___Rotary ___Combination (Two or More Methods) ___Jetted _X_Sonic
    ___Horizontal Drilling ___Hydraulic Point (Direct Push) ___Other _____
13. *Measured Static Water Level 4 ft. Measured Pumping Water Level 4 ft. After 1 Hours at 1 GPM
14. *Measuring Point (Describe) ground surface Which is .4 ft. ___Above _X_Below Land Surface *Flowing: ___Yes _X_No
15. *Casing Material: ___Black Steel ___Galvanized _X_PVC ___Stainless Steel ___Not Cased ___Other _____
16. *Total Well Depth 50 ft. Cased Depth 40 ft. *Open Hole: From ___To ___ft. *Screen: From 40 To 50 ft. Slot Size .01

17. *Abandonment: Other(Explain _____)
    From ___ft. To ___ft. No. of Bags ___ Seal Material (Check One): ___Neat Cement ___Bentonite ___Other ___
    From ___ft. To ___ft. No. of Bags ___ Seal Material (Check One): ___Neat Cement ___Bentonite ___Other ___
    From ___ft. To ___ft. No. of Bags ___ Seal Material (Check One): ___Neat Cement ___Bentonite ___Other ___
    From ___ft. To ___ft. No. of Bags ___ Seal Material (Check One): ___Neat Cement ___Bentonite ___Other ___
    From ___ft. To ___ft. No. of Bags ___ Seal Material (Check One): ___Neat Cement ___Bentonite ___Other ___
18. *Surface Casing Diameter and Depth:
    Dia ___in. From ___ft. To ___ft. No. of Bags ___ Seal Material (Check One): ___Neat Cement ___Bentonite ___Other ___
    Dia ___in. From ___ft. To ___ft. No. of Bags ___ Seal Material (Check One): ___Neat Cement ___Bentonite ___Other ___
19. *Primary Casing Diameter and Depth:

Dia	1 in.	From	0 ft.	To	37 ft.	No. of Bags	1	Seal Material (Check One): ___Neat Cement ___Bentonite	X Other Cement with Bentonite, < 5% by weight
Dia	1 in.	From	37 ft.	To	40 ft.	No. of Bags	2	Seal Material (Check One): ___Neat Cement ___Bentonite	X Other Sand
Dia	___in.	From	___ft.	To	___ft.	No. of Bags	___	Seal Material (Check One): ___Neat Cement ___Bentonite	___Other ___
Dia	___in.	From	___ft.	To	___ft.	No. of Bags	___	Seal Material (Check One): ___Neat Cement ___Bentonite	___Other ___
Dia	___in.	From	___ft.	To	___ft.	No. of Bags	___	Seal Material (Check One): ___Neat Cement ___Bentonite	___Other ___

20. *Liner Casing Diameter and Depth:
    Dia ___in. From ___ft. To ___ft. No. of Bags ___ Seal Material (Check One): ___Neat Cement ___Bentonite ___Other ___
    Dia ___in. From ___ft. To ___ft. No. of Bags ___ Seal Material (Check One): ___Neat Cement ___Bentonite ___Other ___
    Dia ___in. From ___ft. To ___ft. No. of Bags ___ Seal Material (Check One): ___Neat Cement ___Bentonite ___Other ___
21. *Telescope Casing Diameter and Depth:
    Dia ___in. From ___ft. To ___ft. No. of Bags ___ Seal Material (Check One): ___Neat Cement ___Bentonite ___Other ___
    Dia ___in. From ___ft. To ___ft. No. of Bags ___ Seal Material (Check One): ___Neat Cement ___Bentonite ___Other ___
    Dia ___in. From ___ft. To ___ft. No. of Bags ___ Seal Material (Check One): ___Neat Cement ___Bentonite ___Other ___

22. Pump Type (If known):
    ___Centrifugal ___Jet ___Submersible ___Turbine
    Horsepower ___ Pump Capacity (GPM) ___
    Pump Depth ___ft. Intake Depth ___ft.
23. Chemical Analysis (When Required):
    Iron ___ppm Sulfate ___ppm Chloride ___ppm
    ___Laboratory Test ___Field Test Kit
24. Water Well Contractor:
    *Contractor Name James P Hinst *License Number 9311 E-mail Address jim@drillprollc.com
    *Contractor's Signature James P Hinst (I certify that the information provided in this report is accurate and true.)
    *Driller's Name (Print or Type) Jared Link

*Permit No. MW-213415-1

SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT
2379 BROAD STREET, BROOKSVILLE, FL 34604-6899
PHONE: (352) 796-7211 or (800) 423-1476
WWW.SWFWMD.STATE.FL.US

ST. JOHNS RIVER WATER MANAGEMENT DISTRICT
4049 REID STREET, PALATKA, FL 32178-1429
PHONE: (386) 329-4500
WWW.SJRWMD.COM

NORTHWEST FLORIDA WATER MANAGEMENT DISTRICT
152 WATER MANAGEMENT DR., HAVANA, FL 32333-4712
(U.S. Highway 90, 10 miles west of Tallahassee)
PHONE: (850) 539-5999
WWW.NWFWMD.STATE.FL.US

SOUTH FLORIDA WATER MANAGEMENT DISTRICT
P.O. BOX 24680
3301 GUN CLUB ROAD
WEST PLAM BEACH, FL 33416-4680
PHONE: (561) 686-8800
WWW.SFWMD.GOV

SUWANNEE RIVER WATER MANAGEMENT DISTRICT
9225 CR 49
LIVE OAK, FL 32060
PHONE: (386) 362-1001 or (800) 226-1066 (Florida only)
WWW.MYSUWANNEERIVER.COM

***DRILL CUTTINGS LOG** (Examine cuttings every 20 ft. or at formation changes. Note cavities and depth to producing zone. Grain Size: F=Fine, M=Medium, and C=Coarse)

From	0 ft.	To	10 ft.	Color	Gray	Grain Size (F, M, C)	N/A	Material	Sand
From	10 ft.	To	25 ft.	Color	Green	Grain Size (F, M, C)	Silt	Material	Sand
From	25 ft.	To	50 ft.	Color	Green	Grain Size (F, M, C)	N/A	Material	Sand with Shell
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	

Comments:
GP WO 124013
CRCA MW 0034

STATE OF FLORIDA WELL COMPLETION REPORT

PLEASE, FILL OUT ALL APPLICABLE FIELDS
(*Denotes Required Fields Where Applicable)

- [ ] Southwest
- [ ] Northwest
- [ ] St. Johns River
- [ ] South Florida
- [ ] Suwannee River
- [ ] DEP
- [x] Delegated Authority (If Applicable) **Brevard DOH**

Date Stamp

Confirmation# 875593

Date:02/02/2024

Official Use Only

1. *Permit Number MW-213415-1 *CUP/WUP Number _____ *DID Number 555359 62-524 Delineation No. _____
2. *Number of permitted wells constructed, repaired, or abandoned 9 *Number of permitted wells not constructed, repaired, or abandoned 0
3. *Owner's Name United States Of America 4.*Completion Date 01/10/2024 5. Florida Unique ID _____
6. Off of Kennedy Pkwy N, KSC, FL 32815
   *Well Location – Address, Road Name or Number, City, ZIP
7. *County Brevard *Section 18 Land Grant _____ *Township 22S *Range 37E
8. Latitude 283429.9318 Longitude 803921.3742
9. Data Obtained From: ___GPS _X_ Map ___Survey Datum: ___NAD 27 _X_ NAD 83 ___WGS 84

10. *Type of Work: _X_ Construction ___Repair ___Modification ___Abandonment Reason: _____
11. *Specify Intended Use(s) of Well(s):

___Domestic
___Bottled Water Supply
___Public Water Supply (Limited Use/DOH)
___Public Water Supply (Community or Non-Community/DEP)
___Class I Injection
___Landscape Irrigation
___Recreation Area Irrigation
___Agricultural Irrigation
___Livestock
___Nursery Irrigation
___Commercial/Industrial
___Golf Course Irrigation
___Site Investigation
_X_ Monitoring
___Test
___Earth-Coupled Geothermal
___HVAC Supply
___HVAC Return

Class V Injection: ___Recharge ___Commercial/Industrial Disposal ___Aquifer Storage and Recovery ___Drainage
Remediation: ___Recovery ___Air Sparge ___Other (Describe) _____
___Other (Describe) _____

12. *Drill Method: ___Auger ___Cable Tool ___Rotary ___Combination (Two or More Methods) ___Jetted _X_ Sonic
    ___Horizontal Drilling ___Hydraulic Point (Direct Push) ___Other _____
13. *Measured Static Water Level 4 ft. Measured Pumping Water Level 4 ft. After 1 Hours at 1 GPM
14. *Measuring Point (Describe) ground surface Which is .4 ft. ___Above _X_ Below Land Surface *Flowing: ___Yes _X_ No
15. *Casing Material: ___Black Steel ___Galvanized _X_ PVC ___Stainless Steel ___Not Cased ___Other _____
16. *Total Well Depth 60 ft. Cased Depth 50 ft. *Open Hole: From ___To___ft. *Screen: From 50 To 60 ft. Slot Size .01

17. *Abandonment: Other(Explain _____)
    From ___ft. To___ft. No. of Bags___ Seal Material (Check One):___Neat Cement ___Bentonite ___Other___
    From ___ft. To___ft. No. of Bags___ Seal Material (Check One):___Neat Cement ___Bentonite ___Other___
    From ___ft. To___ft. No. of Bags___ Seal Material (Check One):___Neat Cement ___Bentonite ___Other___
    From ___ft. To___ft. No. of Bags___ Seal Material (Check One):___Neat Cement ___Bentonite ___Other___
    From ___ft. To___ft. No. of Bags___ Seal Material (Check One):___Neat Cement ___Bentonite ___Other___
18. *Surface Casing Diameter and Depth:
    Dia ___in. From ___ft. To___ft. No. of Bags___ Seal Material (Check One):___Neat Cement ___Bentonite ___Other___
    Dia ___in. From ___ft. To___ft. No. of Bags___ Seal Material (Check One):___Neat Cement ___Bentonite ___Other___
19. *Primary Casing Diameter and Depth:
    Dia 1 in. From 0 ft. To 47 ft. No. of Bags 2 Seal Material (Check One):___Neat Cement ___Bentonite _X_ Other Cement with Bentonite, < 5% by weight
    Dia 1 in. From 47 ft. To 50 ft. No. of Bags 2 Seal Material (Check One):___Neat Cement ___Bentonite _X_ Other Sand
    Dia ___in. From ___ft. To___ft. No. of Bags___ Seal Material (Check One):___Neat Cement ___Bentonite ___Other___
    Dia ___in. From ___ft. To___ft. No. of Bags___ Seal Material (Check One):___Neat Cement ___Bentonite ___Other___
    Dia ___in. From ___ft. To___ft. No. of Bags___ Seal Material (Check One):___Neat Cement ___Bentonite ___Other___
20. *Liner Casing Diameter and Depth:
    Dia ___in. From ___ft. To___ft. No. of Bags___ Seal Material (Check One):___Neat Cement ___Bentonite ___Other___
    Dia ___in. From ___ft. To___ft. No. of Bags___ Seal Material (Check One):___Neat Cement ___Bentonite ___Other___
    Dia ___in. From ___ft. To___ft. No. of Bags___ Seal Material (Check One):___Neat Cement ___Bentonite ___Other___
21. *Telescope Casing Diameter and Depth:
    Dia ___in. From ___ft. To___ft. No. of Bags___ Seal Material (Check One):___Neat Cement ___Bentonite ___Other___
    Dia ___in. From ___ft. To___ft. No. of Bags___ Seal Material (Check One):___Neat Cement ___Bentonite ___Other___
    Dia ___in. From ___ft. To___ft. No. of Bags___ Seal Material (Check One):___Neat Cement ___Bentonite ___Other___

22. Pump Type (If known):
    ___Centrifugal ___Jet ___Submersible ___Turbine
    Horsepower ___ Pump Capacity (GPM) ___
    Pump Depth ___ft. Intake Depth ___ft.

23. Chemical Analysis (When Required):
    Iron ___ppm Sulfate ___ppm Chloride ___ppm
    ___Laboratory Test ___Field Test Kit

24. Water Well Contractor:
    *Contractor Name James P Hinst *License Number 9311 E-mail Address jim@drillprollc.com
    *Contractor's Signature **James P Hinst** (I certify that the information provided in this report is accurate and true.) *Driller's Name (Print or Type) Jared Link

*Permit No. MW-213415-1

SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT
2379 BROAD STREET, BROOKSVILLE, FL 34604-6899
PHONE: (352) 796-7211 or (800) 423-1476
WWW.SWFWMD.STATE.FL.US

ST. JOHNS RIVER WATER MANAGEMENT DISTRICT
4049 REID STREET, PALATKA, FL 32178-1429
PHONE: (386) 329-4500
WWW.SJRWMD.COM

NORTHWEST FLORIDA WATER MANAGEMENT DISTRICT
152 WATER MANAGEMENT DR., HAVANA, FL 32333-4712
(U.S. Highway 90, 10 miles west of Tallahassee)
PHONE: (850) 539-5999
WWW.NWFWMD.STATE.FL.US

SOUTH FLORIDA WATER MANAGEMENT DISTRICT
P.O. BOX 24680
3301 GUN CLUB ROAD
WEST PLAM BEACH, FL 33416-4680
PHONE: (561) 686-8800
WWW.SFWMD.GOV

SUWANNEE RIVER WATER MANAGEMENT DISTRICT
9225 CR 49
LIVE OAK, FL 32060
PHONE: (386) 362-1001 or (800) 226-1066 (Florida only)
WWW.MYSUWANNEERIVER.COM

***DRILL CUTTINGS LOG** (Examine cuttings every 20 ft. or at formation changes. Note cavities and depth to producing zone. Grain Size: F=Fine, M=Medium, and C=Coarse)

From	0 ft.	To	10 ft.	Color	Gray	Grain Size (F, M, C)	N/A	Material	Sand
From	10 ft.	To	25 ft.	Color	Green	Grain Size (F, M, C)	Silt	Material	Sand
From	25 ft.	To	50 ft.	Color	Green	Grain Size (F, M, C)	N/A	Material	Sand with Shell
From	50 ft.	To	60 ft.	Color	Green	Grain Size (F, M, C)	Silt	Material	Sand
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	

Comments:
GP WO 124013
CRCA MW 0035

STATE OF FLORIDA WELL COMPLETION REPORT

PLEASE, FILL OUT ALL APPLICABLE FIELDS
(*Denotes Required Fields Where Applicable)

- [ ] Southwest
- [ ] Northwest
- [ ] St. Johns River
- [ ] South Florida
- [ ] Suwannee River
- [ ] DEP
- [x] Delegated Authority (If Applicable) **Brevard DOH**

Date Stamp

Confirmation# 875595

Date:02/02/2024

Official Use Only

1. *Permit Number MW-213415-1 *CUP/WUP Number _____ *DID Number 555360 62-524 Delineation No. _____
2. *Number of permitted wells constructed, repaired, or abandoned 9 *Number of permitted wells not constructed, repaired, or abandoned 0
3. *Owner's Name United States Of America 4.*Completion Date 01/10/2024 5. Florida Unique ID _____
6. Off of Kennedy Pkwy N, KSC, FL 32815
   *Well Location – Address, Road Name or Number, City, ZIP
7. *County Brevard *Section 18 Land Grant _____ *Township 22S *Range 37E
8. Latitude 283427.2691 Longitude 803921.379
9. Data Obtained From: ___GPS _X_ Map ___Survey Datum: ___NAD 27 _X_ NAD 83 ___WGS 84
10. *Type of Work: _X_ Construction ___Repair ___Modification ___Abandonment Reason: _____
11. *Specify Intended Use(s) of Well(s):

___Domestic
___Bottled Water Supply
___Public Water Supply (Limited Use/DOH)
___Public Water Supply (Community or Non-Community/DEP)
___Class I Injection
___Landscape Irrigation
___Recreation Area Irrigation
___Agricultural Irrigation
___Livestock
___Nursery Irrigation
___Commercial/Industrial
___Golf Course Irrigation
___Site Investigation
_X_ Monitoring
___Test
___Earth-Coupled Geothermal
___HVAC Supply
___HVAC Return

Class V Injection: ___Recharge ___Commercial/Industrial Disposal ___Aquifer Storage and Recovery ___Drainage
Remediation: ___Recovery ___Air Sparge ___Other (Describe) _____
___Other (Describe) _____

12. *Drill Method: ___Auger ___Cable Tool ___Rotary ___Combination (Two or More Methods) ___Jetted _X_ Sonic
    ___Horizontal Drilling ___Hydraulic Point (Direct Push) ___Other _____
13. *Measured Static Water Level 4 ft. Measured Pumping Water Level 4 ft. After 1 Hours at 1 GPM
14. *Measuring Point (Describe) Ground Surface Which is .4 ft. ___Above _X_ Below Land Surface *Flowing: ___Yes _X_ No
15. *Casing Material: ___Black Steel ___Galvanized _X_ PVC ___Stainless Steel ___Not Cased ___Other _____
16. *Total Well Depth 40 ft. Cased Depth 30 ft. *Open Hole: From ___To___ft. *Screen: From 30 To 40 ft. Slot Size .01
17. *Abandonment: ___ Other(Explain _____)
    From ___ft. To ___ft. No. of Bags___ Seal Material (Check One): ___Neat Cement ___Bentonite ___Other _____
    From ___ft. To ___ft. No. of Bags___ Seal Material (Check One): ___Neat Cement ___Bentonite ___Other _____
    From ___ft. To ___ft. No. of Bags___ Seal Material (Check One): ___Neat Cement ___Bentonite ___Other _____
    From ___ft. To ___ft. No. of Bags___ Seal Material (Check One): ___Neat Cement ___Bentonite ___Other _____
    From ___ft. To ___ft. No. of Bags___ Seal Material (Check One): ___Neat Cement ___Bentonite ___Other _____
18. *Surface Casing Diameter and Depth:
    Dia ___in. From ___ft. To ___ft. No. of Bags___ Seal Material (Check One): ___Neat Cement ___Bentonite ___Other _____
    Dia ___in. From ___ft. To ___ft. No. of Bags___ Seal Material (Check One): ___Neat Cement ___Bentonite ___Other _____
19. *Primary Casing Diameter and Depth:

Dia 1 in.	From 0 ft.	To 27 ft.	No. of Bags 1	Seal Material (Check One):	___Neat Cement	___Bentonite	_X_ Other	Cement with Bentonite, < 5% by weight
Dia 1 in.	From 27 ft.	To 30 ft.	No. of Bags 2	Seal Material (Check One):	___Neat Cement	___Bentonite	_X_ Other	Sand
Dia ___in.	From ___ft.	To ___ft.	No. of Bags___	Seal Material (Check One):	___Neat Cement	___Bentonite	___Other	
Dia ___in.	From ___ft.	To ___ft.	No. of Bags___	Seal Material (Check One):	___Neat Cement	___Bentonite	___Other	
Dia ___in.	From ___ft.	To ___ft.	No. of Bags___	Seal Material (Check One):	___Neat Cement	___Bentonite	___Other	

20. *Liner Casing Diameter and Depth:
    Dia ___in. From ___ft. To ___ft. No. of Bags___ Seal Material (Check One): ___Neat Cement ___Bentonite ___Other _____
    Dia ___in. From ___ft. To ___ft. No. of Bags___ Seal Material (Check One): ___Neat Cement ___Bentonite ___Other _____
    Dia ___in. From ___ft. To ___ft. No. of Bags___ Seal Material (Check One): ___Neat Cement ___Bentonite ___Other _____
21. *Telescope Casing Diameter and Depth:
    Dia ___in. From ___ft. To ___ft. No. of Bags___ Seal Material (Check One): ___Neat Cement ___Bentonite ___Other _____
    Dia ___in. From ___ft. To ___ft. No. of Bags___ Seal Material (Check One): ___Neat Cement ___Bentonite ___Other _____
    Dia ___in. From ___ft. To ___ft. No. of Bags___ Seal Material (Check One): ___Neat Cement ___Bentonite ___Other _____
22. Pump Type (If known):
    ___Centrifugal ___Jet ___Submersible ___Turbine
    Horsepower _____ Pump Capacity (GPM) _____
    Pump Depth ___ft. Intake Depth ___ft.
23. Chemical Analysis (When Required):
    Iron _____ppm Sulfate _____ppm Chloride _____ppm
    ___Laboratory Test ___Field Test Kit
24. Water Well Contractor:
    *Contractor Name James P Hinst *License Number 9311 E-mail Address jim@drillprollc.com
    *Contractor's Signature **James P Hinst** (I certify that the information provided in this report is accurate and true.) *Driller's Name (Print or Type) Jared Link

*Permit No. MW-213415-1

SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT
2379 BROAD STREET, BROOKSVILLE, FL 34604-6899
PHONE: (352) 796-7211 or (800) 423-1476
WWW.SWFWMD.STATE.FL.US

ST. JOHNS RIVER WATER MANAGEMENT DISTRICT
4049 REID STREET, PALATKA, FL 32178-1429
PHONE: (386) 329-4500
WWW.SJRWMD.COM

NORTHWEST FLORIDA WATER MANAGEMENT DISTRICT
152 WATER MANAGEMENT DR., HAVANA, FL 32333-4712
(U.S. Highway 90, 10 miles west of Tallahassee)
PHONE: (850) 539-5999
WWW.NWFWMD.STATE.FL.US

SOUTH FLORIDA WATER MANAGEMENT DISTRICT
P.O. BOX 24680
3301 GUN CLUB ROAD
WEST PLAM BEACH, FL 33416-4680
PHONE: (561) 686-8800
WWW.SFWMD.GOV

SUWANNEE RIVER WATER MANAGEMENT DISTRICT
9225 CR 49
LIVE OAK, FL 32060
PHONE: (386) 362-1001 or (800) 226-1066 (Florida only)
WWW.MYSUWANNEERIVER.COM

***DRILL CUTTINGS LOG** (Examine cuttings every 20 ft. or at formation changes. Note cavities and depth to producing zone. Grain Size: F=Fine, M=Medium, and C=Coarse)

From	0	ft.	To	10	ft.	Color	Gray	Grain Size (F, M, C)	N/A	Material	Sand
From	10	ft.	To	25	ft.	Color	Green	Grain Size (F, M, C)	Silt	Material	Sand
From	25	ft.	To	40	ft.	Color	Green	Grain Size (F, M, C)	N/A	Material	Sand with Shell
From		ft.	To		ft.	Color		Grain Size (F, M, C)		Material	
From		ft.	To		ft.	Color		Grain Size (F, M, C)		Material	
From		ft.	To		ft.	Color		Grain Size (F, M, C)		Material	
From		ft.	To		ft.	Color		Grain Size (F, M, C)		Material	
From		ft.	To		ft.	Color		Grain Size (F, M, C)		Material	
From		ft.	To		ft.	Color		Grain Size (F, M, C)		Material	
From		ft.	To		ft.	Color		Grain Size (F, M, C)		Material	
From		ft.	To		ft.	Color		Grain Size (F, M, C)		Material	
From		ft.	To		ft.	Color		Grain Size (F, M, C)		Material	
From		ft.	To		ft.	Color		Grain Size (F, M, C)		Material	
From		ft.	To		ft.	Color		Grain Size (F, M, C)		Material	
From		ft.	To		ft.	Color		Grain Size (F, M, C)		Material	
From		ft.	To		ft.	Color		Grain Size (F, M, C)		Material	
From		ft.	To		ft.	Color		Grain Size (F, M, C)		Material	
From		ft.	To		ft.	Color		Grain Size (F, M, C)		Material	
From		ft.	To		ft.	Color		Grain Size (F, M, C)		Material	
From		ft.	To		ft.	Color		Grain Size (F, M, C)		Material	
From		ft.	To		ft.	Color		Grain Size (F, M, C)		Material	
From		ft.	To		ft.	Color		Grain Size (F, M, C)		Material	
From		ft.	To		ft.	Color		Grain Size (F, M, C)		Material	
From		ft.	To		ft.	Color		Grain Size (F, M, C)		Material	
From		ft.	To		ft.	Color		Grain Size (F, M, C)		Material	
From		ft.	To		ft.	Color		Grain Size (F, M, C)		Material	
From		ft.	To		ft.	Color		Grain Size (F, M, C)		Material	
From		ft.	To		ft.	Color		Grain Size (F, M, C)		Material	
From		ft.	To		ft.	Color		Grain Size (F, M, C)		Material	
From		ft.	To		ft.	Color		Grain Size (F, M, C)		Material	

Comments:
GP WO 124013
CRCA MW 0036

STATE OF FLORIDA WELL COMPLETION REPORT

- [ ] Southwest
- [ ] Northwest
- [ ] St. Johns River
- [ ] South Florida
- [ ] Suwannee River
- [ ] DEP
- [x] Delegated Authority (If Applicable) **Brevard DOH**

PLEASE, FILL OUT ALL APPLICABLE FIELDS
(*Denotes Required Fields Where Applicable)

Date Stamp

Confirmation# 875598

Date:02/02/2024

Official Use Only

1. *Permit Number MW-213415-1 *CUP/WUP Number _____ *DID Number 555361 62-524 Delineation No. _____
2. *Number of permitted wells constructed, repaired, or abandoned 9 *Number of permitted wells not constructed, repaired, or abandoned 0
3. *Owner's Name United States Of America 4.*Completion Date 01/10/2024 5. Florida Unique ID _____
6. Off of Kennedy Pkwy N, KSC, FL 32815
   *Well Location – Address, Road Name or Number, City, ZIP
7. *County Brevard *Section 18 Land Grant _____ *Township 22S *Range 37E
8. Latitude 283427.3243 Longitude 803921.3162
9. Data Obtained From: ___ GPS __X__ Map ___ Survey Datum: ___ NAD 27 ___ NAD 83 __X__ WGS 84

10. *Type of Work: __X__ Construction ___ Repair ___ Modification ___ Abandonment Reason: _____
11. *Specify Intended Use(s) of Well(s):

___ Domestic	___ Landscape Irrigation	___ Agricultural Irrigation	___ Site Investigation
___ Bottled Water Supply	___ Recreation Area Irrigation	___ Livestock	__X__ Monitoring
___ Public Water Supply (Limited Use/DOH)		___ Nursery Irrigation	___ Test
___ Public Water Supply (Community or Non-Community/DEP)		___ Commercial/Industrial	___ Earth-Coupled Geothermal
___ Class I Injection		___ Golf Course Irrigation	___ HVAC Supply
			___ HVAC Return

Class V Injection: ___ Recharge ___ Commercial/Industrial Disposal ___ Aquifer Storage and Recovery ___ Drainage
Remediation: ___ Recovery ___ Air Sparge ___ Other (Describe) _____
___ Other (Describe) _____

12. *Drill Method: ___ Auger ___ Cable Tool ___ Rotary ___ Combination (Two or More Methods) ___ Jetted __X__ Sonic
    ___ Horizontal Drilling ___ Hydraulic Point (Direct Push) ___ Other _____
13. *Measured Static Water Level 4 ft. Measured Pumping Water Level 4 ft. After 1 Hours at 1 GPM
14. *Measuring Point (Describe) ground surface Which is .4 ft. ___ Above __X__ Below Land Surface *Flowing: ___ Yes __X__ No
15. *Casing Material: ___ Black Steel ___ Galvanized __X__ PVC ___ Stainless Steel ___ Not Cased ___ Other _____
16. *Total Well Depth 50 ft. Cased Depth 40 ft. *Open Hole: From ___ To ___ ft. *Screen: From 40 To 50 ft. Slot Size .01

17. *Abandonment: Other(Explain _____)
    From ___ ft. To ___ ft. No. of Bags ___ Seal Material (Check One): ___ Neat Cement ___ Bentonite ___ Other _____
    From ___ ft. To ___ ft. No. of Bags ___ Seal Material (Check One): ___ Neat Cement ___ Bentonite ___ Other _____
    From ___ ft. To ___ ft. No. of Bags ___ Seal Material (Check One): ___ Neat Cement ___ Bentonite ___ Other _____
    From ___ ft. To ___ ft. No. of Bags ___ Seal Material (Check One): ___ Neat Cement ___ Bentonite ___ Other _____
    From ___ ft. To ___ ft. No. of Bags ___ Seal Material (Check One): ___ Neat Cement ___ Bentonite ___ Other _____
18. *Surface Casing Diameter and Depth:
    Dia ___ in. From ___ ft. To ___ ft. No. of Bags ___ Seal Material (Check One): ___ Neat Cement ___ Bentonite ___ Other _____
    Dia ___ in. From ___ ft. To ___ ft. No. of Bags ___ Seal Material (Check One): ___ Neat Cement ___ Bentonite ___ Other _____
19. *Primary Casing Diameter and Depth:
    Dia 1 in. From 0 ft. To 37 ft. No. of Bags 1 Seal Material (Check One): ___ Neat Cement ___ Bentonite __X__ Other Cement with Bentonite, < 5% by weight
    Dia 1 in. From 37 ft. To 40 ft. No. of Bags 2 Seal Material (Check One): ___ Neat Cement ___ Bentonite __X__ Other Sand
    Dia ___ in. From ___ ft. To ___ ft. No. of Bags ___ Seal Material (Check One): ___ Neat Cement ___ Bentonite ___ Other _____
    Dia ___ in. From ___ ft. To ___ ft. No. of Bags ___ Seal Material (Check One): ___ Neat Cement ___ Bentonite ___ Other _____
    Dia ___ in. From ___ ft. To ___ ft. No. of Bags ___ Seal Material (Check One): ___ Neat Cement ___ Bentonite ___ Other _____
20. *Liner Casing Diameter and Depth:
    Dia ___ in. From ___ ft. To ___ ft. No. of Bags ___ Seal Material (Check One): ___ Neat Cement ___ Bentonite ___ Other _____
    Dia ___ in. From ___ ft. To ___ ft. No. of Bags ___ Seal Material (Check One): ___ Neat Cement ___ Bentonite ___ Other _____
    Dia ___ in. From ___ ft. To ___ ft. No. of Bags ___ Seal Material (Check One): ___ Neat Cement ___ Bentonite ___ Other _____
21. *Telescope Casing Diameter and Depth:
    Dia ___ in. From ___ ft. To ___ ft. No. of Bags ___ Seal Material (Check One): ___ Neat Cement ___ Bentonite ___ Other _____
    Dia ___ in. From ___ ft. To ___ ft. No. of Bags ___ Seal Material (Check One): ___ Neat Cement ___ Bentonite ___ Other _____
    Dia ___ in. From ___ ft. To ___ ft. No. of Bags ___ Seal Material (Check One): ___ Neat Cement ___ Bentonite ___ Other _____

22. Pump Type (If known):
    ___ Centrifugal ___ Jet ___ Submersible ___ Turbine
    Horsepower _____ Pump Capacity (GPM) _____
    Pump Depth ___ ft. Intake Depth ___ ft.

23. Chemical Analysis (When Required):
    Iron _____ ppm Sulfate _____ ppm Chloride _____ ppm
    ___ Laboratory Test ___ Field Test Kit

24. Water Well Contractor:
    *Contractor Name James P Hinst *License Number 9311 E-mail Address jim@drillprollc.com
    *Contractor's Signature **James P Hinst** (I certify that the information provided in this report is accurate and true.) *Driller's Name (Print or Type) Jared Link

*Permit No. MW-213415-1

SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT
2379 BROAD STREET, BROOKSVILLE, FL 34604-6899
PHONE: (352) 796-7211 or (800) 423-1476
WWW.SWFWMD.STATE.FL.US

ST. JOHNS RIVER WATER MANAGEMENT DISTRICT
4049 REID STREET, PALATKA, FL 32178-1429
PHONE: (386) 329-4500
WWW.SJRWMD.COM

NORTHWEST FLORIDA WATER MANAGEMENT DISTRICT
152 WATER MANAGEMENT DR., HAVANA, FL 32333-4712
(U.S. Highway 90, 10 miles west of Tallahassee)
PHONE: (850) 539-5999
WWW.NWFWMD.STATE.FL.US

SOUTH FLORIDA WATER MANAGEMENT DISTRICT
P.O. BOX 24680
3301 GUN CLUB ROAD
WEST PLAM BEACH, FL 33416-4680
PHONE: (561) 686-8800
WWW.SFWMD.GOV

SUWANNEE RIVER WATER MANAGEMENT DISTRICT
9225 CR 49
LIVE OAK, FL 32060
PHONE: (386) 362-1001 or (800) 226-1066 (Florida only)
WWW.MYSUWANNEERIVER.COM

***DRILL CUTTINGS LOG** (Examine cuttings every 20 ft. or at formation changes. Note cavities and depth to producing zone. Grain Size: F=Fine, M=Medium, and C=Coarse)

From	To	Color	Grain Size (F, M, C)	Material
0 ft.	10 ft.	Gray	N/A	Sand
10 ft.	25 ft.	Green	Silt	Sand
25 ft.	50 ft.	Green	N/A	Sand with Shell
ft.	ft.			
ft.	ft.			
ft.	ft.			
ft.	ft.			
ft.	ft.			
ft.	ft.			
ft.	ft.			
ft.	ft.			
ft.	ft.			
ft.	ft.			
ft.	ft.			
ft.	ft.			
ft.	ft.			
ft.	ft.			
ft.	ft.			
ft.	ft.			
ft.	ft.			
ft.	ft.			
ft.	ft.			
ft.	ft.			
ft.	ft.			
ft.	ft.			
ft.	ft.			
ft.	ft.			
ft.	ft.			
ft.	ft.			

Comments:
GP WO 124013
CRCA MW 0037

STATE OF FLORIDA WELL COMPLETION REPORT

PLEASE, FILL OUT ALL APPLICABLE FIELDS
(*Denotes Required Fields Where Applicable)

- [ ] Southwest
- [ ] Northwest
- [ ] St. Johns River
- [ ] South Florida
- [ ] Suwannee River
- [ ] DEP
- [x] Delegated Authority (If Applicable) **Brevard DOH**

Date Stamp

Confirmation# 875599

Date:02/02/2024

Official Use Only

1. *Permit Number MW-213415-1 *CUP/WUP Number _____ *DID Number 555362 62-524 Delineation No. _____
2. *Number of permitted wells constructed, repaired, or abandoned 9 *Number of permitted wells not constructed, repaired, or abandoned 0
3. *Owner's Name United States Of America 4.*Completion Date 01/10/2024 5. Florida Unique ID _____
6. Off of Kennedy Pkwy N, KSC, FL 32815
   *Well Location – Address, Road Name or Number, City, ZIP
7. *County Brevard *Section 18 Land Grant _____ *Township 22S *Range 37E
8. Latitude 283427.7779 Longitude 803921.1907
9. Data Obtained From: ___GPS _X_Map ___Survey Datum: ___NAD 27 ___NAD 83 _X_WGS 84
10. *Type of Work: _X_Construction ___Repair ___Modification ___Abandonment Reason: _____
11. *Specify Intended Use(s) of Well(s):

___Domestic
___Bottled Water Supply
___Public Water Supply (Limited Use/DOH)
___Public Water Supply (Community or Non-Community/DEP)
___Class I Injection
___Landscape Irrigation
___Recreation Area Irrigation
___Agricultural Irrigation
___Livestock
___Nursery Irrigation
___Commercial/Industrial
___Golf Course Irrigation
___Site Investigation
_X_Monitoring
___Test
___Earth-Coupled Geothermal
___HVAC Supply
___HVAC Return

Class V Injection: ___Recharge ___Commercial/Industrial Disposal ___Aquifer Storage and Recovery ___Drainage
Remediation: ___Recovery ___Air Sparge ___Other (Describe) _____
___Other (Describe) _____

12. *Drill Method: ___Auger ___Cable Tool ___Rotary ___Combination (Two or More Methods) ___Jetted _X_Sonic
    ___Horizontal Drilling ___Hydraulic Point (Direct Push) ___Other _____
13. *Measured Static Water Level 4 ft. Measured Pumping Water Level 4 ft. After 1 Hours at 1 GPM
14. *Measuring Point (Describe) ground surface Which is .4 ft. ___Above _X_Below Land Surface *Flowing: ___Yes _X_No
15. *Casing Material: ___Black Steel ___Galvanized _X_PVC ___Stainless Steel ___Not Cased ___Other _____
16. *Total Well Depth 60 ft. Cased Depth 50 ft. *Open Hole: From ___To___ft. *Screen: From 50 To 60 ft. Slot Size .01
17. *Abandonment: ___Other(Explain _____)
    From ___ft. To ___ft. No. of Bags___ Seal Material (Check One): ___Neat Cement ___Bentonite ___Other _____
    From ___ft. To ___ft. No. of Bags___ Seal Material (Check One): ___Neat Cement ___Bentonite ___Other _____
    From ___ft. To ___ft. No. of Bags___ Seal Material (Check One): ___Neat Cement ___Bentonite ___Other _____
    From ___ft. To ___ft. No. of Bags___ Seal Material (Check One): ___Neat Cement ___Bentonite ___Other _____
    From ___ft. To ___ft. No. of Bags___ Seal Material (Check One): ___Neat Cement ___Bentonite ___Other _____
18. *Surface Casing Diameter and Depth:
    Dia ___in. From ___ft. To ___ft. No. of Bags___ Seal Material (Check One): ___Neat Cement ___Bentonite ___Other _____
    Dia ___in. From ___ft. To ___ft. No. of Bags___ Seal Material (Check One): ___Neat Cement ___Bentonite ___Other _____
19. *Primary Casing Diameter and Depth:

Dia 1 in.	From 0 ft.	To 47 ft.	No. of Bags 2	Seal Material (Check One):	___Neat Cement	___Bentonite	_X_Other	Cement with Bentonite, < 5% by weight
Dia 1 in.	From 47 ft.	To 50 ft.	No. of Bags 2	Seal Material (Check One):	___Neat Cement	___Bentonite	_X_Other	Sand
Dia ___in.	From ___ft.	To ___ft.	No. of Bags___	Seal Material (Check One):	___Neat Cement	___Bentonite	___Other	
Dia ___in.	From ___ft.	To ___ft.	No. of Bags___	Seal Material (Check One):	___Neat Cement	___Bentonite	___Other	
Dia ___in.	From ___ft.	To ___ft.	No. of Bags___	Seal Material (Check One):	___Neat Cement	___Bentonite	___Other	

20. *Liner Casing Diameter and Depth:
    Dia ___in. From ___ft. To ___ft. No. of Bags___ Seal Material (Check One): ___Neat Cement ___Bentonite ___Other _____
    Dia ___in. From ___ft. To ___ft. No. of Bags___ Seal Material (Check One): ___Neat Cement ___Bentonite ___Other _____
    Dia ___in. From ___ft. To ___ft. No. of Bags___ Seal Material (Check One): ___Neat Cement ___Bentonite ___Other _____
21. *Telescope Casing Diameter and Depth:
    Dia ___in. From ___ft. To ___ft. No. of Bags___ Seal Material (Check One): ___Neat Cement ___Bentonite ___Other _____
    Dia ___in. From ___ft. To ___ft. No. of Bags___ Seal Material (Check One): ___Neat Cement ___Bentonite ___Other _____
    Dia ___in. From ___ft. To ___ft. No. of Bags___ Seal Material (Check One): ___Neat Cement ___Bentonite ___Other _____
22. Pump Type (If known):
    ___Centrifugal ___Jet ___Submersible ___Turbine
    Horsepower _____ Pump Capacity (GPM) _____
    Pump Depth ___ft. Intake Depth ___ft.
23. Chemical Analysis (When Required):
    Iron _____ppm Sulfate _____ppm Chloride _____ppm
    ___Laboratory Test ___Field Test Kit
24. Water Well Contractor:
    *Contractor Name James P Hinst *License Number 9311 E-mail Address jim@drillprollc.com
    *Contractor's Signature **James P Hinst** (I certify that the information provided in this report is accurate and true.) *Driller's Name (Print or Type) Jared Link

*Permit No. MW-213415-1

SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT
2379 BROAD STREET, BROOKSVILLE, FL 34604-6899
PHONE: (352) 796-7211 or (800) 423-1476
WWW.SWFWMD.STATE.FL.US

ST. JOHNS RIVER WATER MANAGEMENT DISTRICT
4049 REID STREET, PALATKA, FL 32178-1429
PHONE: (386) 329-4500
WWW.SJRWMD.COM

NORTHWEST FLORIDA WATER MANAGEMENT DISTRICT
152 WATER MANAGEMENT DR., HAVANA, FL 32333-4712
(U.S. Highway 90, 10 miles west of Tallahassee)
PHONE: (850) 539-5999
WWW.NWFWMD.STATE.FL.US

SOUTH FLORIDA WATER MANAGEMENT DISTRICT
P.O. BOX 24680
3301 GUN CLUB ROAD
WEST PLAM BEACH, FL 33416-4680
PHONE: (561) 686-8800
WWW.SFWMD.GOV

SUWANNEE RIVER WATER MANAGEMENT DISTRICT
9225 CR 49
LIVE OAK, FL 32060
PHONE: (386) 362-1001 or (800) 226-1066 (Florida only)
WWW.MYSUWANNEERIVER.COM

***DRILL CUTTINGS LOG** (Examine cuttings every 20 ft. or at formation changes. Note cavities and depth to producing zone. Grain Size: F=Fine, M=Medium, and C=Coarse)

From	0	ft.	To	10	ft.	Color	Gray	Grain Size (F, M, C)	N/A	Material	Sand
From	10	ft.	To	25	ft.	Color	Green	Grain Size (F, M, C)	Silt	Material	Sand
From	25	ft.	To	50	ft.	Color	Green	Grain Size (F, M, C)	N/A	Material	Sand with Shell
From	50	ft.	To	60	ft.	Color	Green	Grain Size (F, M, C)	Silt	Material	Sand
From		ft.	To		ft.	Color		Grain Size (F, M, C)		Material	
From		ft.	To		ft.	Color		Grain Size (F, M, C)		Material	
From		ft.	To		ft.	Color		Grain Size (F, M, C)		Material	
From		ft.	To		ft.	Color		Grain Size (F, M, C)		Material	
From		ft.	To		ft.	Color		Grain Size (F, M, C)		Material	
From		ft.	To		ft.	Color		Grain Size (F, M, C)		Material	
From		ft.	To		ft.	Color		Grain Size (F, M, C)		Material	
From		ft.	To		ft.	Color		Grain Size (F, M, C)		Material	
From		ft.	To		ft.	Color		Grain Size (F, M, C)		Material	
From		ft.	To		ft.	Color		Grain Size (F, M, C)		Material	
From		ft.	To		ft.	Color		Grain Size (F, M, C)		Material	
From		ft.	To		ft.	Color		Grain Size (F, M, C)		Material	
From		ft.	To		ft.	Color		Grain Size (F, M, C)		Material	
From		ft.	To		ft.	Color		Grain Size (F, M, C)		Material	
From		ft.	To		ft.	Color		Grain Size (F, M, C)		Material	
From		ft.	To		ft.	Color		Grain Size (F, M, C)		Material	
From		ft.	To		ft.	Color		Grain Size (F, M, C)		Material	
From		ft.	To		ft.	Color		Grain Size (F, M, C)		Material	
From		ft.	To		ft.	Color		Grain Size (F, M, C)		Material	
From		ft.	To		ft.	Color		Grain Size (F, M, C)		Material	
From		ft.	To		ft.	Color		Grain Size (F, M, C)		Material	
From		ft.	To		ft.	Color		Grain Size (F, M, C)		Material	
From		ft.	To		ft.	Color		Grain Size (F, M, C)		Material	
From		ft.	To		ft.	Color		Grain Size (F, M, C)		Material	
From		ft.	To		ft.	Color		Grain Size (F, M, C)		Material	
From		ft.	To		ft.	Color		Grain Size (F, M, C)		Material	
From		ft.	To		ft.	Color		Grain Size (F, M, C)		Material	
From		ft.	To		ft.	Color		Grain Size (F, M, C)		Material	

Comments:
GP WO 124013
CRCA MW 0038

STATE OF FLORIDA WELL COMPLETION REPORT

[ ] Southwest
[ ] Northwest
[ ] St. Johns River
[ ] South Florida
[ ] Suwannee River
[ ] DEP
[X] Delegated Authority (If Applicable) **Brevard DOH**

PLEASE, FILL OUT ALL APPLICABLE FIELDS
(*Denotes Required Fields Where Applicable)

Date Stamp

Confirmation# 875606

Date:02/02/2024

Official Use Only

1. *Permit Number MW-213415-1 *CUP/WUP Number _____ *DID Number 555364 62-524 Delineation No. _____
2. *Number of permitted wells constructed, repaired, or abandoned 9 *Number of permitted wells not constructed, repaired, or abandoned 0
3. *Owner's Name United States Of America 4.*Completion Date 01/10/2024 5. Florida Unique ID _____
6. Off of Kennedy Pkwy N, KSC, FL 32815
   *Well Location – Address, Road Name or Number, City, ZIP
7. *County Brevard *Section 18 Land Grant _____ *Township 22S *Range 37E
8. Latitude 283429.8004 Longitude 803914.7695
9. Data Obtained From: ___GPS [X] Map ___Survey Datum: ___NAD 27 [X] NAD 83 ___WGS 84

10. *Type of Work: [X] Construction ___Repair ___Modification ___Abandonment Reason: _____
11. *Specify Intended Use(s) of Well(s):

___Domestic
___Bottled Water Supply
___Public Water Supply (Limited Use/DOH)
___Public Water Supply (Community or Non-Community/DEP)
___Class I Injection
___Landscape Irrigation
___Recreation Area Irrigation
___Agricultural Irrigation
___Livestock
___Nursery Irrigation
___Commercial/Industrial
___Golf Course Irrigation
___Site Investigation
[X] Monitoring
___Test
___Earth-Coupled Geothermal
___HVAC Supply
___HVAC Return

Class V Injection: ___Recharge ___Commercial/Industrial Disposal ___Aquifer Storage and Recovery ___Drainage
Remediation: ___Recovery ___Air Sparge ___Other (Describe) _____
___Other (Describe) _____

12. *Drill Method: ___Auger ___Cable Tool ___Rotary ___Combination (Two or More Methods) ___Jetted [X] Sonic
    ___Horizontal Drilling ___Hydraulic Point (Direct Push) ___Other _____
13. *Measured Static Water Level 4 ft. Measured Pumping Water Level 4 ft. After 1 Hours at 1 GPM
14. *Measuring Point (Describe) Ground Surface Which is .4 ft. ___Above [X] Below Land Surface *Flowing: ___Yes [X] No
15. *Casing Material: ___Black Steel ___Galvanized [X] PVC ___Stainless Steel ___Not Cased ___Other _____
16. *Total Well Depth 40 ft. Cased Depth 30 ft. *Open Hole: From ___To___ft. *Screen: From 30 To 40 ft. Slot Size .01

17. *Abandonment: ___Other(Explain _____)
    From ___ft. To ___ft. No. of Bags___ Seal Material (Check One):___Neat Cement ___Bentonite ___Other_____
    From ___ft. To ___ft. No. of Bags___ Seal Material (Check One):___Neat Cement ___Bentonite ___Other_____
    From ___ft. To ___ft. No. of Bags___ Seal Material (Check One):___Neat Cement ___Bentonite ___Other_____
    From ___ft. To ___ft. No. of Bags___ Seal Material (Check One):___Neat Cement ___Bentonite ___Other_____
    From ___ft. To ___ft. No. of Bags___ Seal Material (Check One):___Neat Cement ___Bentonite ___Other_____
18. *Surface Casing Diameter and Depth:
    Dia ___in. From ___ft. To ___ft. No. of Bags___ Seal Material (Check One):___Neat Cement ___Bentonite ___Other_____
    Dia ___in. From ___ft. To ___ft. No. of Bags___ Seal Material (Check One):___Neat Cement ___Bentonite ___Other_____
19. *Primary Casing Diameter and Depth:

Dia 1 in.	From 0 ft.	To 27 ft.	No. of Bags 1	Seal Material (Check One):	___Neat Cement	___Bentonite	[X] Other	Cement with Bentonite, < 5% by weight
Dia 1 in.	From 27 ft.	To 30 ft.	No. of Bags 2	Seal Material (Check One):	___Neat Cement	___Bentonite	[X] Other	Sand
Dia ___in.	From ___ft.	To ___ft.	No. of Bags___	Seal Material (Check One):	___Neat Cement	___Bentonite	___Other	
Dia ___in.	From ___ft.	To ___ft.	No. of Bags___	Seal Material (Check One):	___Neat Cement	___Bentonite	___Other	
Dia ___in.	From ___ft.	To ___ft.	No. of Bags___	Seal Material (Check One):	___Neat Cement	___Bentonite	___Other	

20. *Liner Casing Diameter and Depth:
    Dia ___in. From ___ft. To ___ft. No. of Bags___ Seal Material (Check One):___Neat Cement ___Bentonite ___Other_____
    Dia ___in. From ___ft. To ___ft. No. of Bags___ Seal Material (Check One):___Neat Cement ___Bentonite ___Other_____
    Dia ___in. From ___ft. To ___ft. No. of Bags___ Seal Material (Check One):___Neat Cement ___Bentonite ___Other_____
21. *Telescope Casing Diameter and Depth:
    Dia ___in. From ___ft. To ___ft. No. of Bags___ Seal Material (Check One):___Neat Cement ___Bentonite ___Other_____
    Dia ___in. From ___ft. To ___ft. No. of Bags___ Seal Material (Check One):___Neat Cement ___Bentonite ___Other_____
    Dia ___in. From ___ft. To ___ft. No. of Bags___ Seal Material (Check One):___Neat Cement ___Bentonite ___Other_____

22. Pump Type (If known):
    ___Centrifugal ___Jet ___Submersible ___Turbine
    Horsepower _____ Pump Capacity (GPM) _____
    Pump Depth ___ft. Intake Depth ___ft.
23. Chemical Analysis (When Required):
    Iron _____ppm Sulfate _____ppm Chloride _____ppm
    ___Laboratory Test ___Field Test Kit
24. Water Well Contractor:
    *Contractor Name James P Hinst *License Number 9311 E-mail Address jim@drillprollc.com
    *Contractor's Signature **James P Hinst** (I certify that the information provided in this report is accurate and true.) *Driller's Name (Print or Type) Jared Link

*Permit No. MW-213415-1

SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT
2379 BROAD STREET, BROOKSVILLE, FL 34604-6899
PHONE: (352) 796-7211 or (800) 423-1476
WWW.SWFWMD.STATE.FL.US

ST. JOHNS RIVER WATER MANAGEMENT DISTRICT
4049 REID STREET, PALATKA, FL 32178-1429
PHONE: (386) 329-4500
WWW.SJRWMD.COM

NORTHWEST FLORIDA WATER MANAGEMENT DISTRICT
152 WATER MANAGEMENT DR., HAVANA, FL 32333-4712
(U.S. Highway 90, 10 miles west of Tallahassee)
PHONE: (850) 539-5999
WWW.NWFWMD.STATE.FL.US

SOUTH FLORIDA WATER MANAGEMENT DISTRICT
P.O. BOX 24680
3301 GUN CLUB ROAD
WEST PLAM BEACH, FL 33416-4680
PHONE: (561) 686-8800
WWW.SFWMD.GOV

SUWANNEE RIVER WATER MANAGEMENT DISTRICT
9225 CR 49
LIVE OAK, FL 32060
PHONE: (386) 362-1001 or (800) 226-1066 (Florida only)
WWW.MYSUWANNEERIVER.COM

***DRILL CUTTINGS LOG** (Examine cuttings every 20 ft. or at formation changes. Note cavities and depth to producing zone. Grain Size: F=Fine, M=Medium, and C=Coarse)

From	0 ft.	To	10 ft.	Color	Gray	Grain Size (F, M, C)	N/A	Material	Sand
From	10 ft.	To	25 ft.	Color	Green	Grain Size (F, M, C)	Silt	Material	Sand
From	25 ft.	To	40 ft.	Color	Green	Grain Size (F, M, C)	N/A	Material	Sand with Shell
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	

Comments:
GP WO 124013
CRCA MW 0042

STATE OF FLORIDA WELL COMPLETION REPORT

- [ ] Southwest
- [ ] Northwest
- [ ] St. Johns River
- [ ] South Florida
- [ ] Suwannee River
- [ ] DEP
- [x] Delegated Authority (If Applicable) **Brevard DOH**

PLEASE, FILL OUT ALL APPLICABLE FIELDS
(*Denotes Required Fields Where Applicable)

Date Stamp

Confirmation# 875607

Date:02/02/2024

Official Use Only

1. *Permit Number MW-213415-1 *CUP/WUP Number _____ *DID Number 555365 62-524 Delineation No. _____
2. *Number of permitted wells constructed, repaired, or abandoned 9 *Number of permitted wells not constructed, repaired, or abandoned 0
3. *Owner's Name United States Of America 4.*Completion Date 01/10/2024 5. Florida Unique ID _____
6. Off of Kennedy Pkwy N, KSC, FL 32815
   *Well Location – Address, Road Name or Number, City, ZIP
7. *County Brevard *Section 18 Land Grant _____ *Township 22S *Range 37E
8. Latitude 283429.8725 Longitude 803914.7936
9. Data Obtained From: ____GPS __X__Map ____Survey Datum: ____NAD 27 __X__NAD 83 ____WGS 84

10. *Type of Work: __X__Construction ____Repair ____Modification ____Abandonment Reason: _____
11. *Specify Intended Use(s) of Well(s):

____Domestic	____Landscape Irrigation	____Agricultural Irrigation	____Site Investigation
____Bottled Water Supply	____Recreation Area Irrigation	____Livestock	__X__Monitoring
____Public Water Supply (Limited Use/DOH)		____Nursery Irrigation	____Test
____Public Water Supply (Community or Non-Community/DEP)		____Commercial/Industrial	____Earth-Coupled Geothermal
____Class I Injection		____Golf Course Irrigation	____HVAC Supply
			____HVAC Return

Class V Injection: ____Recharge ____Commercial/Industrial Disposal ____Aquifer Storage and Recovery ____Drainage
Remediation: ____Recovery ____Air Sparge ____Other (Describe) _____
____Other (Describe) _____

12. *Drill Method: ____Auger ____Cable Tool ____Rotary ____Combination (Two or More Methods) ____Jetted __X__Sonic
    ____Horizontal Drilling ____Hydraulic Point (Direct Push) ____Other _____
13. *Measured Static Water Level 4 ft. Measured Pumping Water Level 4 ft. After 1 Hours at 1 GPM
14. *Measuring Point (Describe) ground surface Which is .4 ft. ____Above __X__Below Land Surface *Flowing: ____Yes __X__No
15. *Casing Material: ____Black Steel ____Galvanized __X__PVC ____Stainless Steel ____Not Cased ____Other _____
16. *Total Well Depth 50 ft. Cased Depth 40 ft. *Open Hole: From ____To____ft. *Screen: From 40 To 50 ft. Slot Size .01

17. *Abandonment: ____Other(Explain _____)
    From ____ft. To____ft. No. of Bags____ Seal Material (Check One):____Neat Cement ____Bentonite ____Other_____
    From ____ft. To____ft. No. of Bags____ Seal Material (Check One):____Neat Cement ____Bentonite ____Other_____
    From ____ft. To____ft. No. of Bags____ Seal Material (Check One):____Neat Cement ____Bentonite ____Other_____
    From ____ft. To____ft. No. of Bags____ Seal Material (Check One):____Neat Cement ____Bentonite ____Other_____
    From ____ft. To____ft. No. of Bags____ Seal Material (Check One):____Neat Cement ____Bentonite ____Other_____
18. *Surface Casing Diameter and Depth:
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One):____Neat Cement ____Bentonite ____Other_____
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One):____Neat Cement ____Bentonite ____Other_____
19. *Primary Casing Diameter and Depth:

Dia 1 in.	From 0 ft.	To 37 ft.	No. of Bags 1	Seal Material (Check One):	____Neat Cement	____Bentonite	X Other Cement with Bentonite, < 5% by weight
Dia 1 in.	From 37 ft.	To 40 ft.	No. of Bags 2	Seal Material (Check One):	____Neat Cement	____Bentonite	X Other Sand
Dia ____in.	From ____ft.	To____ft.	No. of Bags____	Seal Material (Check One):	____Neat Cement	____Bentonite	____Other_____
Dia ____in.	From ____ft.	To____ft.	No. of Bags____	Seal Material (Check One):	____Neat Cement	____Bentonite	____Other_____
Dia ____in.	From ____ft.	To____ft.	No. of Bags____	Seal Material (Check One):	____Neat Cement	____Bentonite	____Other_____

20. *Liner Casing Diameter and Depth:
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One):____Neat Cement ____Bentonite ____Other_____
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One):____Neat Cement ____Bentonite ____Other_____
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One):____Neat Cement ____Bentonite ____Other_____
21. *Telescope Casing Diameter and Depth:
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One):____Neat Cement ____Bentonite ____Other_____
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One):____Neat Cement ____Bentonite ____Other_____
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One):____Neat Cement ____Bentonite ____Other_____

22. Pump Type (If known):
    ____Centrifugal ____Jet ____Submersible ____Turbine
    Horsepower _____ Pump Capacity (GPM) _____
    Pump Depth ____ft. Intake Depth____ft.
23. Chemical Analysis (When Required):
    Iron _____ppm Sulfate_____ppm Chloride_____ppm
    ____Laboratory Test ____Field Test Kit
24. Water Well Contractor:
    *Contractor Name James P Hinst *License Number 9311 E-mail Address jim@drillprollc.com
    *Contractor's Signature James P Hinst (I certify that the information provided in this report is accurate and true.)
    *Driller's Name (Print or Type) Jared Link

*Permit No. MW-213415-1

SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT
2379 BROAD STREET, BROOKSVILLE, FL 34604-6899
PHONE: (352) 796-7211 or (800) 423-1476
WWW.SWFWMD.STATE.FL.US

ST. JOHNS RIVER WATER MANAGEMENT DISTRICT
4049 REID STREET, PALATKA, FL 32178-1429
PHONE: (386) 329-4500
WWW.SJRWMD.COM

NORTHWEST FLORIDA WATER MANAGEMENT DISTRICT
152 WATER MANAGEMENT DR., HAVANA, FL 32333-4712
(U.S. Highway 90, 10 miles west of Tallahassee)
PHONE: (850) 539-5999
WWW.NWFWMD.STATE.FL.US

SOUTH FLORIDA WATER MANAGEMENT DISTRICT
P.O. BOX 24680
3301 GUN CLUB ROAD
WEST PLAM BEACH, FL 33416-4680
PHONE: (561) 686-8800
WWW.SFWMD.GOV

SUWANNEE RIVER WATER MANAGEMENT DISTRICT
9225 CR 49
LIVE OAK, FL 32060
PHONE: (386) 362-1001 or (800) 226-1066 (Florida only)
WWW.MYSUWANNEERIVER.COM

***DRILL CUTTINGS LOG** (Examine cuttings every 20 ft. or at formation changes. Note cavities and depth to producing zone. Grain Size: F=Fine, M=Medium, and C=Coarse)

From	To	Color	Grain Size (F, M, C)	Material
0 ft.	10 ft.	Gray	N/A	Sand
10 ft.	25 ft.	Green	Silt	Sand
25 ft.	50 ft.	Green	N/A	Sand with Shell
ft.	ft.			
ft.	ft.			
ft.	ft.			
ft.	ft.			
ft.	ft.			
ft.	ft.			
ft.	ft.			
ft.	ft.			
ft.	ft.			
ft.	ft.			
ft.	ft.			
ft.	ft.			
ft.	ft.			
ft.	ft.			
ft.	ft.			
ft.	ft.			
ft.	ft.			
ft.	ft.			
ft.	ft.			
ft.	ft.			
ft.	ft.			
ft.	ft.			
ft.	ft.			
ft.	ft.			
ft.	ft.			
ft.	ft.			
ft.	ft.			

Comments:
GP WO 124013
CRCA MW 0043

STATE OF FLORIDA WELL COMPLETION REPORT

PLEASE, FILL OUT ALL APPLICABLE FIELDS
(*Denotes Required Fields Where Applicable)

- [ ] Southwest
- [ ] Northwest
- [ ] St. Johns River
- [ ] South Florida
- [ ] Suwannee River
- [ ] DEP
- [x] Delegated Authority (If Applicable) **Brevard DOH**

Date Stamp

Confirmation# 875608

Date:02/02/2024

Official Use Only

1. *Permit Number MW-213415-1 *CUP/WUP Number _____ *DID Number 555366 62-524 Delineation No. _____
2. *Number of permitted wells constructed, repaired, or abandoned 9 *Number of permitted wells not constructed, repaired, or abandoned 0
3. *Owner's Name United States Of America 4.*Completion Date 01/10/2024 5. Florida Unique ID _____
6. Off of Kennedy Pkwy N, KSC, FL 32815
   *Well Location – Address, Road Name or Number, City, ZIP
7. *County Brevard *Section 18 Land Grant _____ *Township 22S *Range 37E
8. Latitude 283429.9318 Longitude 803914.8178
9. Data Obtained From: ___GPS _X_Map ___Survey Datum: ___NAD 27 ___NAD 83 _X_WGS 84
10. *Type of Work: _X_Construction ___Repair ___Modification ___Abandonment Reason: _____
11. *Specify Intended Use(s) of Well(s):

___Domestic
___Bottled Water Supply
___Public Water Supply (Limited Use/DOH)
___Public Water Supply (Community or Non-Community/DEP)
___Class I Injection
___Landscape Irrigation
___Recreation Area Irrigation
___Agricultural Irrigation
___Livestock
___Nursery Irrigation
___Commercial/Industrial
___Golf Course Irrigation
___Site Investigation
_X_Monitoring
___Test
___Earth-Coupled Geothermal
___HVAC Supply
___HVAC Return

Class V Injection: ___Recharge ___Commercial/Industrial Disposal ___Aquifer Storage and Recovery ___Drainage
Remediation: ___Recovery ___Air Sparge ___Other (Describe) _____
___Other (Describe) _____

12. *Drill Method: ___Auger ___Cable Tool ___Rotary ___Combination (Two or More Methods) ___Jetted _X_Sonic
    ___Horizontal Drilling ___Hydraulic Point (Direct Push) ___Other _____
13. *Measured Static Water Level 4 ft. Measured Pumping Water Level 4 ft. After 1 Hours at 1 GPM
14. *Measuring Point (Describe) ground surface Which is .4 ft. ___Above _X_Below Land Surface *Flowing: ___Yes _X_No
15. *Casing Material: ___Black Steel ___Galvanized _X_PVC ___Stainless Steel ___Not Cased ___Other _____
16. *Total Well Depth 60 ft. Cased Depth 50 ft. *Open Hole: From ___ To ___ ft. *Screen: From 50 To 60 ft. Slot Size .01
17. *Abandonment: ___ Other(Explain _____)

From ___ ft.	To ___ ft.	No. of Bags ___	Seal Material (Check One):	___Neat Cement	___Bentonite	___Other
From ___ ft.	To ___ ft.	No. of Bags ___	Seal Material (Check One):	___Neat Cement	___Bentonite	___Other
From ___ ft.	To ___ ft.	No. of Bags ___	Seal Material (Check One):	___Neat Cement	___Bentonite	___Other
From ___ ft.	To ___ ft.	No. of Bags ___	Seal Material (Check One):	___Neat Cement	___Bentonite	___Other
From ___ ft.	To ___ ft.	No. of Bags ___	Seal Material (Check One):	___Neat Cement	___Bentonite	___Other

18. *Surface Casing Diameter and Depth:

Dia ___ in. From ___ ft.	To ___ ft.	No. of Bags ___	Seal Material (Check One):	___Neat Cement	___Bentonite	___Other
Dia ___ in. From ___ ft.	To ___ ft.	No. of Bags ___	Seal Material (Check One):	___Neat Cement	___Bentonite	___Other

19. *Primary Casing Diameter and Depth:

Dia 1 in. From 0 ft.	To 47 ft.	No. of Bags 2	Seal Material (Check One):	___Neat Cement	___Bentonite	_X_Other Cement with Bentonite, < 5% by weight
Dia 1 in. From 47 ft.	To 50 ft.	No. of Bags 2	Seal Material (Check One):	___Neat Cement	___Bentonite	_X_Other Sand
Dia ___ in. From ___ ft.	To ___ ft.	No. of Bags ___	Seal Material (Check One):	___Neat Cement	___Bentonite	___Other
Dia ___ in. From ___ ft.	To ___ ft.	No. of Bags ___	Seal Material (Check One):	___Neat Cement	___Bentonite	___Other
Dia ___ in. From ___ ft.	To ___ ft.	No. of Bags ___	Seal Material (Check One):	___Neat Cement	___Bentonite	___Other

20. *Liner Casing Diameter and Depth:

Dia ___ in. From ___ ft.	To ___ ft.	No. of Bags ___	Seal Material (Check One):	___Neat Cement	___Bentonite	___Other
Dia ___ in. From ___ ft.	To ___ ft.	No. of Bags ___	Seal Material (Check One):	___Neat Cement	___Bentonite	___Other
Dia ___ in. From ___ ft.	To ___ ft.	No. of Bags ___	Seal Material (Check One):	___Neat Cement	___Bentonite	___Other

21. *Telescope Casing Diameter and Depth:

Dia ___ in. From ___ ft.	To ___ ft.	No. of Bags ___	Seal Material (Check One):	___Neat Cement	___Bentonite	___Other
Dia ___ in. From ___ ft.	To ___ ft.	No. of Bags ___	Seal Material (Check One):	___Neat Cement	___Bentonite	___Other
Dia ___ in. From ___ ft.	To ___ ft.	No. of Bags ___	Seal Material (Check One):	___Neat Cement	___Bentonite	___Other

22. Pump Type (If known):
___Centrifugal ___Jet ___Submersible ___Turbine
Horsepower _____ Pump Capacity (GPM) _____
Pump Depth ___ ft. Intake Depth ___ ft.

23. Chemical Analysis (When Required):
Iron _____ ppm Sulfate _____ ppm Chloride _____ ppm
___Laboratory Test ___Field Test Kit

24. Water Well Contractor:
*Contractor Name James P Hinst *License Number 9311 E-mail Address jim@drillprollc.com
*Contractor's Signature **James P Hinst** (I certify that the information provided in this report is accurate and true.) *Driller's Name (Print or Type) Jared Link

*Permit No. MW-213415-1

SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT
2379 BROAD STREET, BROOKSVILLE, FL 34604-6899
PHONE: (352) 796-7211 or (800) 423-1476
WWW.SWFWMD.STATE.FL.US

ST. JOHNS RIVER WATER MANAGEMENT DISTRICT
4049 REID STREET, PALATKA, FL 32178-1429
PHONE: (386) 329-4500
WWW.SJRWMD.COM

NORTHWEST FLORIDA WATER MANAGEMENT DISTRICT
152 WATER MANAGEMENT DR., HAVANA, FL 32333-4712
(U.S. Highway 90, 10 miles west of Tallahassee)
PHONE: (850) 539-5999
WWW.NWFWMD.STATE.FL.US

SOUTH FLORIDA WATER MANAGEMENT DISTRICT
P.O. BOX 24680
3301 GUN CLUB ROAD
WEST PLAM BEACH, FL 33416-4680
PHONE: (561) 686-8800
WWW.SFWMD.GOV

SUWANNEE RIVER WATER MANAGEMENT DISTRICT
9225 CR 49
LIVE OAK, FL 32060
PHONE: (386) 362-1001 or (800) 226-1066 (Florida only)
WWW.MYSUWANNEERIVER.COM

***DRILL CUTTINGS LOG** (Examine cuttings every 20 ft. or at formation changes. Note cavities and depth to producing zone. Grain Size: F=Fine, M=Medium, and C=Coarse)

From	To	Color	Grain Size (F, M, C)	Material
0 ft.	10 ft.	Gray	N/A	Sand
10 ft.	25 ft.	Green	Silt	Sand
25 ft.	50 ft.	Green	N/A	Sand with Shell
50 ft.	60 ft.	Green	Silt	Sand
ft.	ft.			
ft.	ft.			
ft.	ft.			
ft.	ft.			
ft.	ft.			
ft.	ft.			
ft.	ft.			
ft.	ft.			
ft.	ft.			
ft.	ft.			
ft.	ft.			
ft.	ft.			
ft.	ft.			
ft.	ft.			
ft.	ft.			
ft.	ft.			
ft.	ft.			
ft.	ft.			
ft.	ft.			
ft.	ft.			
ft.	ft.			
ft.	ft.			
ft.	ft.			
ft.	ft.			
ft.	ft.			

Comments:
GP WO 124013
CRCA MW 0044