13-12 BEACH CHANNEL DRIVE
QUEENS COUNTY
FAR ROCKAWAY, NEW YORK

SITE MANAGEMENT PLAN

NYSDEC Site Number: C241254

Prepared for:
BCD Owner LLC
116 East 27th Street, 11th Floor
New York, New York

Prepared by:
Impact Environmental Engineering and Geology, PLLC
170 Keyland Court
Bohemia, New York 11716

Revisions to Final Approved Site Management Plan:

Revision No.	Date Submitted	Summary of Revision	NYSDSEC Approval Date
001	1/5/24	NYSDEC Edits	2/15/24

JANUARY 2024

CERTIFICATION STATEMENT

I, Xin Yuan, certify that I am currently a NYS registered professional engineer as in defined in 6 NYCRR Part 375 and that this Site Management Plan was prepared in accordance with all applicable statutes and regulations and in substantial conformance with the DER Technical Guidance for Site Investigation and Remediation (DER-10).

_____ P.E.
Xin Yuan, NYS Professional Engineer

____1/4/24_____DATE

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List of Acronyms

AMSL	Above Mean Sea Level	**OER**	Office of Environmental Remediation
AST	Aboveground Storage Tank	**ORP**	Oxidation-Reduction Potential
ASTM	American Society for Testing and Materials	**PPM**	Parts Per Million
AOC	Area of Concern	**PPB**	Parts Per Billion
ASP	Analytical Services Protocol	**PCB**	Poly Chlorinated Biphenyl's
BCP	Brownfield Cleanup Program	**PAH**	Poly Aromatic Hydrocarbons
BGS	Below Grade Surface	**PCE**	Tetrachloroethene
BTEX	Benzene Toluene Ethylbenzene and Xylenes	**PGW**	Protection of Groundwater
BER	Business Environmental Risk	**PID**	Photo Ionization Detector
CPP	Citizen Participation Plan	**PFAS**	Per- and Polyfluoroalkyl Substances
CO	Certificate of Occupancy	**PVC**	Polyvinyl Chloride
CSM	Conceptual Site Model	**QAQC**	Quality Assurance Quality Control
cVOC	Chlorinated Volatile Organic Compound	**QAPP**	Quality Assurance Project Plan
CREC	Controlled Recognized Environmental Condition	**RIWP**	Remedial Investigation Work Plan
CEQR	City Environmental Quality Review	**RCRA**	Resource Conservation and Recovery Act
CAMP	Community Air Monitoring Program	**REC**	Recognized Environmental Condition
CLP	Contract Laboratory Program	**RAO**	Remedial Action Alternative
DER	Division of Environmental Remediation	**RAWP**	Remedial Action Work Plan
DOB	Department of Buildings	**RIR**	Remedial Investigation Report
DNAPL	Dense Non-Aqueous Phase Liquid	**SF**	Square Feet
DUSR	Data Usability Summary Report	**SHWS**	State Hazardous Waste Site
DO	Dissolved Oxygen	**SVOC**	Semi-Volatile Organic Compound
EDR	Environmental Data Resources	**SCO**	Soil Cleanup Objective
EIS	Environmental Impact Statement	**SSDS**	Sub-Slab Depressurization System
ELAP	Environmental Laboratory Accreditation Program	**TAGM**	Technical and Administrative Guidance Memorandum
ESA	Environmental Site Assessment	**TCE**	Trichloroethylene
FWRIA	Fish and Wildlife Risk Impact Analysis	**TCL**	Target Compound List
FBG	Feet Below Grade	**TIC**	Tentatively Identified Compound
AWQS	Ambient Water Quality Standard	**TAL**	Target Analyte List
GPR	Ground Penetrating Radar	**USGS**	United States Geological Survey
GPS	Global Positioning System	**USFWS**	United states Fish and Wildlife Service
HREC	Historical Recognized Environmental Condition	**µg/kg**	Micrograms Per Kilogram
HASP	Health and Safety Plan	**µg/m³**	Micrograms Per Cubic Meter
LLC	Limited Liability Corporation	**USCS**	Unified Soil Classification System
MW	Monitoring Well	**UST**	Underground Storage Tank
MS	Matrix Spike	**USEPA**	United States Environmental Protection Agency
MSD	Matrix Spike Duplicate	**VCP**	Voluntary Cleanup Program
NYSDEC	New York State Department of Environmental Conservation	**VOC**	Volatile Organic Compound
NYC	New York City		
NYCDEP	New York City Department of Environmental Protection		
NYSDOH	New York State Department of Health		
NYCRR	New York Codes Rules and Regulations		
NAPL	Non-Aqueous Phase Liquid		
NYSDOT	New York State Department of Transportation		

EXECUTIVE SUMMARY

The following provides a brief summary of the controls implemented for the Site, as well as the inspections, monitoring, maintenance and reporting activities required by this Site Management Plan:

Site Identification:	**13-12 Beach Channel Drive – Site No. C241254**
Institutional Controls:	The remedial party or site owner must complete and submit to the NYSDEC a periodic certification of institutional and engineering controls in accordance with Part 375-1.8(h)(3) • All ECs must be operated and maintained as specified in this SMP; • All ECs must be inspected at a frequency and in a manner defined in the SMP; • The use of groundwater underlying the property is prohibited without necessary water quality treatment as determined by the NYSDOH or the New York City Department of Health and Mental Hygiene to render it safe for use as drinking water or for industrial purposes, and the user must first notify and obtain written approval to do so from the Department; • Groundwater and other environmental or public health monitoring must be performed as defined in this SMP; • Data and information pertinent to site management must be reported at the frequency and in a manner as defined in this SMP; • All future activities that will disturb remaining contaminated material must be conducted in accordance with this SMP; • Monitoring to assess the performance and effectiveness of the remedy must be performed as defined in this SMP; • Operation, maintenance, monitoring, inspection, and reporting of any mechanical or physical component of the remedy shall be performed as defined in this SMP; • Access to the site must be provided to agents, employees or other representatives of the State of New York with reasonable prior notice to the property owner to assure compliance with the restrictions identified by the Environmental Easement; and • Vegetable gardens and farming on the site are prohibited.

Site Identification:	**13-12 Beach Channel Drive – Site No. C241254**	
	• Any on-Site buildings will be required to have a sub-slab depressurization system, or other acceptable measures, to mitigate the migration of vapors into the building from the subsurface.	
Engineering Controls:	Active Sub-Slab Depressurization System (SSDS)	
Inspections:		
1. SSDS components		Monthly by trained building personnel, annually by QEP/PE
Monitoring:		
1. Groundwater Monitoring		Quarterly for 1 year, bi-annual thereafter
2. SSDS Vacuum Monitoring Points		Annually and upon system restart
Maintenance:		
1. SSDS		As needed, minimum annually
Reporting:		
1. Groundwater Monitoring Data		Within 30 days after sampling event
2. Periodic Review Report		16-months from the date of the COC, and then Annually

Further descriptions of the above requirements are provided in detail in the latter sections of this Site Management Plan.

1.0 INTRODUCTION

1.1 General

This Site Management Plan (SMP) is a required element of the remedial program for the 13-12 Beach Channel Drive site located in Far Rockaway, Queens, New York (hereinafter referred to as the "Site"). See **Figure 1**. The Site is currently in the New York State (NYS) Brownfield Cleanup Program (BCP), Site No. C241254, which is administered by New York State Department of Environmental Conservation (NYSDEC or Department).

BCD Owner, LLC entered into a Brownfield Cleanup Agreement (BCA), Index No. C241254-06-21, on July 14, 2021, with the NYSDEC to remediate the site. A figure showing the site location and boundaries of this Site is provided in **Figure 2**. The boundaries of the Site are more fully described in the metes and bounds site description that is part of the Environmental Easement provided in **Appendix A**.

After completion of the remedial work, some contamination was left at this site, which is hereafter referred to as "remaining contamination." Institutional and Engineering Controls (ICs and ECs) have been incorporated into the site remedy to control exposure to remaining contamination to ensure protection of public health and the environment. An Environmental Easement granted to the NYSDEC and recorded with the Office of the City Register of the City of New York on December 7, 2023, as City Record File Number (CRFN) 2023000323044 requires compliance with this SMP and all ECs and ICs placed on the Site.

This SMP was prepared to manage remaining contamination at the Site, and contamination migrating onto the Site from an off-site source, until the Environmental Easement is extinguished in accordance with ECL Article 71, Title 36. This Plan has been approved by the NYSDEC, and compliance with this Plan is required by the grantor of the Environmental Easement and the grantor's successors and assigns. This SMP may only be revised with the approval of the NYSDEC. It is important to note that:

- This SMP details the site-specific implementation procedures that are required by the Environmental Easement. Failure to properly implement the SMP is a violation of the Environmental Easement, which is grounds for revocation of the Certificate of Completion (COC); and

- Failure to comply with this SMP is also a violation of Environmental Conservation Law, 6 NYCRR Part 375 and the BCA (Index No. C241254-06-21; Site No. C241254) for the site, and thereby subject to applicable penalties.

All reports associated with the Site can be viewed by contacting the NYSDEC or its successor agency managing environmental issues in New York State. A list of contacts for persons involved with the site is provided in **Appendix B** of this SMP.

This SMP was prepared by Impact Environmental Engineering and Geology, PLLC (IEEG), on behalf of BCD Owner LLC, in accordance with the requirements of the NYSDEC's DER-10 ("Technical Guidance for Site Investigation and Remediation"), dated May 2010, and the guidelines provided by the NYSDEC. This SMP addresses the means for implementing the ICs and/or ECs that are required by the Environmental Easement for the Site.

1.2 Revisions and Alterations

Revisions and alterations to this Plan will be proposed in writing to the NYSDEC's project manager. The NYSDEC can also make changes to the SMP or request revisions from the remedial party. Revisions will be necessary upon, but not limited to, the following occurring: a change in media monitoring requirements, upgrades to or shutdown of a remedial system, post-remedial removal of contaminated sediment or soil, or other significant change to the site conditions. All approved alterations must conform with Article 145 Section 7209 of the Education Law regarding the application of professional seals and alterations. For example, any changes to as-built drawings must be stamped by a New York State Professional Engineer. In accordance with the Environmental Easement for the Site, the NYSDEC project manager will provide a notice of any approved changes to the SMP and append these notices to the SMP that is retained in its files.

1.3 Notifications

Notifications will be submitted by the property owner to the NYSDEC, as needed, in accordance with NYSDEC's DER – 10 for the following reasons:

1. 60-day advance notice of any proposed changes in site use that are required under the terms of the BCA, 6 NYCRR Part 375 and/or Environmental Conservation Law.

2. 7-day advance notice of any field activity associated with the remedial program.

3. 15-day advance notice of any proposed ground-intrusive activity pursuant to the Excavation Work Plan. If the ground-intrusive activity qualifies as a change of use as defined in 6 NYCRR Part 375, the above mentioned 60-day advance notice is also required.

4. Notice within 48 hours of any damage or defect to the foundation, structures or EC that reduces or has the potential to reduce the effectiveness of an EC, and likewise, any action to be taken to mitigate the damage or defect.

5. Notice within 48 hours of any non-routine maintenance activities.

6. Verbal notice by noon of the following day of any emergency, such as a fire; flood; or earthquake that reduces or has the potential to reduce the effectiveness of ECs in place at the site, with written confirmation within 7 days that includes a summary of actions taken, or to be taken, and the potential impact to the environment and the public.

7. Follow-up status reports on actions taken to respond to any emergency event requiring ongoing responsive action submitted to the NYSDEC within 45 days describing and documenting actions taken to restore the effectiveness of the ECs.

Any change in the ownership of the Site or the responsibility for implementing this SMP will include the following notifications:

8. At least 60 days prior to the change, the NYSDEC will be notified in writing of the proposed change. This will include a certification that the prospective purchaser/Remedial Party has been provided with a copy of the Brownfield Cleanup Agreement (BCA), and all approved work plans and reports, including this SMP.

9. Within 15 days after the transfer of all or part of the Site, the new owner's name, contact representative, and contact information will be confirmed in writing to the NYSDEC.

Table A below includes contact information for the above notifications. The information on this table will be updated as necessary to provide accurate contact information. A full listing of site-related contact information is provided in **Appendix B**.

Table A: NYSDEC and NYSDOH Notifications*

Name	**Contact Information**	**Required Notification****
Christopher Allan, NYSDEC Project Manager	(718) 482-4065 Christopher.allan@dec.ny.gov	All Notifications
Cris-Sandra Maycock, NYSDEC Project Manager's Supervisor	(718) 482-4679 Cris-sandra.maycock@dec.ny.gov	All Notifications
Kelly Lewandowski, NYSDEC Site Control	(518) 402-9569 Kelly.lewandowski@dec.ny.gov	Notifications 1, 8 and 9
Sarita Wagh	(518) 402-7817 Sarita.wagh@health.ny.gov	Notifications 4, 6, and 7

* Note: Notifications are subject to change and will be updated as necessary.

** Note: Numbers in this column reference the numbered bullets in the notification list in this section.

2.0 SUMMARY OF PREVIOUS INVESTIGATIONS AND REMEDIAL ACTIONS

2.1 Site Location and Description

The Site is located in Far Rockaway, Queens County, New York and is identified as Queens Block 15528 and Lots 5, 6, and 9 (see **Figure 3**). The site is an approximately 0.741-acre area and is bounded by a retail strip mall and residential properties to the north; a retail strip mall followed by Mott Avenue to the south; Redfern Avenue and a newly constructed high-rise mixed-use building to the east; and Beach Channel Drive and several retail and commercial properties to the west (see **Figure 2** – Site Plan with Proposed Redevelopment). The boundaries of the Site are more fully described in **Appendix A** – Environmental Easement.

The owners of the site parcels at the time of issuance of this SMP are:

BCD Owner LLC
116 East 27th Street, 11th Floor New York, NY 10016

Beach Channel Drive Housing Development Funding Corporation (HDFC)
131 West 25th Street, New York, NY 10001

The operators of the site parcels at the time of issuance of this SMP are:

BCD Owner LLC
116 East 27th Street, 11th Floor New York, NY 10016

BCD Shelter Owner LLC
116 East 27th Street, 11th Floor New York, NY 10016

2.2 Physical Setting

2.2.1 Land Use

The Site consists of an active construction site. The Site is zoned C2-4 for commercial use and is currently being redeveloped into an 8-story mixed-use residential and community facility building, which will include a small rear yard and asphalt paved parking lot. The Site is currently unoccupied, aside from said construction activity. Formerly, Lot 5 was occupied by a KFC Restaurant, Lot 6 was occupied by a multi-family dwelling, and Lot 9 was occupied by a car wash and detail facility.

The properties adjoining the Site and in the neighborhood surrounding the Site primarily include commercial and residential properties. The properties immediately south of the Site include commercial properties; the properties immediately north of the Site include commercial and residential properties; the properties immediately east of the Site include residential properties; and the properties to the west of the Site include commercial properties.

2.2.2 Geology

A geotechnical investigation by GEO Design of New York, New York, performed in December 2020 advanced boreholes to a terminal depth of 100 fbg. Bedrock was not encountered during the investigation. The unconsolidated overburden soil was identified as urban fill materials in the top 2-3-feet of section, with native underlying fine to medium grained brown sands and silts. The geotechnical investigation detected a silt/clayey silt material from 33.5 fbg to 42 fbg, underlain by a confining clay layer from 48.5 fbg to 65 fbg. A lower sand unit was identified from 65 fbg to the terminal depth of 100 feet.

Geologic cross sections are shown in **Figure 4a and 4b**. Site-specific boring logs are provided in the RI Report.

2.2.3 Hydrogeology

IEEG conducted a well elevation survey of the monitoring wells on September 28, 2021. This data was used in conjunction with the groundwater well gauging data collected on September 30, 2021, to prepare the sample location plan and groundwater contour map. Based on an existing NAVD88 elevation of 22.85-feet from a recent site survey, the elevation of the water table across the Site ranges from 3.14 feet above mean sea level (amsl) in MW-7i, to 5.47 feet amsl in MW-8s, and is a result of the TOC elevation measurements minus the measured depth to water (DTW) readings. It should be noted that there is an approximate 5.5-foot elevation change between the southern portion and northern portion of the Site, as shown in the site survey. Based on the potentiometric surface map contours, groundwater flow direction is generally to the north.

A groundwater contour map is shown in **Figure 5**. Groundwater elevation data is provided in **Table 1**. Groundwater monitoring well construction logs are provided in **Appendix D**.

2.3 Investigation and Remedial History

The following narrative provides a remedial history timeline and a brief summary of the available project records to document key investigative and remedial milestones for the Site. Full titles for each of the reports referenced below are provided in Section 8.0 - References.

Singer Environmental Group, LTD (SEG) Phase I ESA, November 7, 2018

The Subject Property (**13-12 Beach Channel Drive – Lot 5**) is approximately 10,500 square feet in area and was then-developed with a 1-story commercial building occupied by a KFC restaurant. SEG concluded the following information based on results of the Phase I ESA:

- According to Environmental Data Resources (EDR), a dry cleaner was listed at 21-40 Mott Avenue from 1975 through 2014. According to EDR, this site is listed at a lower elevation than the subject property.
- A commercial building with a sign stating "Cleaners" was located to the east of the subject property. According to EDR, a dry cleaner was listed at 20-88 Mott Avenue from 1986 through 2014. This site is located across the street from the Subject Property.
- The Subject Property is an "E" Designated site with the NYC Department of Planning for Hazardous Materials and Noise.
- Due to the fact that the Subject Property has an E-Designation for Hazardous Materials, in accordance with NYC Office of Environmental Remediation (NYCOER)'s requirements, the following must be performed prior to obtaining a building permit for redevelopment of the Property: 1) preparation of a Phase II Investigation Work Plan, 2) implementation of an NYCOER-approved Phase II Investigation, 3) preparation of a Phase II Investigation/Remedial Investigation report, and 4) preparation of an NYCOER-approved Remedial Action Work Plan.
- While the Noise E-Designation of the Subject Property is not considered a recognized environmental condition, in accordance with NYCOER's requirements, a Noise Remedial Work Plan must be prepared and approved by NYCOER prior to obtaining a building permit for redevelopment of the Property.

Singer Environmental Group, LTD (SEG) review of Environmental Business Consultants (EBC) Phase I ESA, September 18, 2018

SEG concluded the following information based on a review of the EBC Phase I ESA:

- The Subject Property (**13-16 Beach Channel Drive – Lot 6**) is identified by the street address of 13-16 Beach Channel Drive and as Borough 4, Block 15528, Lot 6. The Subject Property was a portion of a larger residential property and developed with a small shed (center) from at least 1895. Between 1924 and 1933, the shed was demolished, and the Subject Property developed with a 3-story building which was utilized as a residence with a small, detached garage adjacent to the east. The garage was demolished in the late-1950's and the building partially converted for commercial use, with an animal hospital present by at least 1962. The animal hospital vacated the building circa 1990, and the building was subsequently occupied by multiple commercial/retail and residential tenants since that time. The Subject Property was developed with a 3-story mixed use (commercial/residential) building with a basement at the time of the EBC Phase I ESA. The building was occupied by World Outreach Evangelical Ministry (basement) and six residential apartments.

- While no physical evidence of an existing underground storage tank (UST) was identified at the Subject Property, one Alteration Repair Application/Limited Alteration Application (ARA/LAA) job was listed for the Subject Property for the installation of a new boiler and conversion from oil to gas. SEG recommended that clarification be made to identify the current heating system of the building, and an opinion be rendered on the former oil tank at the property.

Singer Environmental Group, LTD (SEG) review of Tenen Environmental (Tenen) Phase I ESA, September 21, 2018

SEG concluded the following information based on a review of the Tenen Phase I ESA:

- The Subject Property (**13-24 [Lot 9]** to 13-30 Beach Channel Drive), Tax Block 15528, Lots 9, 12, and 112, is an irregularly shaped parcel on the east side of Beach Channel Drive. The total area of the Subject Property is approximately 17,235 square feet (SF). The Site was then-developed with one-story commercial buildings, and occupied by a car wash, salon, barber, deli, and fast-food restaurant. (Note that only Lot 9 is part of the BCP Site.)
- Lot 9 was then-occupied by a car wash and had historically been identified by Sanborn maps as an "auto laundry." A subgrade oil-water separator was located on the south side of the building.
- The Subject Property was listed on the EDR proprietary E-DESIGNATION database with E-designation E-232 for Air Quality – HVAC fuel limited to natural gas, Window Wall Attenuation and Alternate Ventilation, and Hazardous Materials Phase I and Phase II Testing Protocol.
- Due to the fact that the Subject Property has an E-Designation for Hazardous Materials, in accordance with NYCOER's requirements, the following must be performed prior to obtaining a building permit for redevelopment of the Site: 1) preparation of a Phase II Investigation Work Plan, 2) implementation of an NYCOER-approved Phase II Investigation, 3) preparation of a Phase II Investigation/Remedial Investigation report, and 4) preparation of an NYCOER-approved Remedial Action Work Plan.
- While the Noise and Air E-Designation of the Subject Property is not considered a recognized environmental condition, in accordance with NYCOER's requirements, a Noise and Air Remedial Work Plan must be prepared and approved by NYCOER prior to obtaining a building permit for redevelopment of the Site.

Tenen Environmental, LLC Due Diligence Phase II Environmental Site Investigation (ESI), August 2, 2018

Tenen conducted a Phase II ESI on Lots 6, 9, 12, and 112 on July 23 and 24, 2018. As part of the investigation, one (1) soil boring (SB-1) and one (1) temporary groundwater monitoring well (TW-1) were installed on Lot 6, and one (1) soil boring (SB-2) and one (1) temporary groundwater monitoring well (TW-2) were installed on Lot 9. Category B Deliverables were not obtained for the samples collected by Tenen. Additionally, the portions of the investigation conducted on Lots 12

and 112 are not relevant to this BCP Site or SMP. Tenen concluded the following information based on results of the Phase II ESI:

- Fill material containing sand, gravel, cobbles, brick, coal, and glass fragments was encountered between one and three feet below grade (ft-bg) at the borings SB-1 and SB-2. The fill material was underlain by fine to coarse tan sand with some silt. Groundwater was encountered at approximately 17 ft-bg. The regional groundwater flow direction was estimated to be to the northwest.
- The collected soil samples were analyzed for VOCs (USEPA Method 8260C), SVOCs (USEPA Method 8270D), and metals (USEPA Methods 6010D and 7471B), while groundwater samples were analyzed for VOCs (8260) and SVOCs (8270).
- No VOCs or SVOCs were detected in soil samples collected from 0-2 fbg at concentrations above the applicable NYCRR Part 375 Protection of Groundwater (PGW) or Restricted Residential (RR) Soil Cleanup Objectives (SCOs). Of note, the chlorinated VOC, tetrachloroethylene (PCE), was detected in SB-1 (0-2') but at concentrations below its applicable PGW and RR SCOs.
- The following compounds were detected in soil samples collected at the Site in exceedance of regulatory standards:

	Results (mg/kg)		**Standards (mg/kg)**	
Compound	**SB-1 (0-2')**	**SB-2 (0-2')**	**PGW SCOs**	**RR SCOs**
Lead	**166**	**74.7**	63	400
Mercury	**0.669**	-	0.18	0.81
Zinc	**376**	**205**	109	10,000

Note: Samples not included in the table did not display regulatory exceedances
- = no regulatory exceedance

- The following compounds were detected in groundwater samples collected at the Site in exceedance of NYSDEC Ambient Water Quality Standards (AWQS):

	Results (ug/L)		**Standards (ug/L)**
Compound	**TW-1**	**TW-2**	**NY AWQS**
PCE	**16**	-	5
Benzo(a)anthracene	**0.03**	-	0.002

Note: Samples not included in the table did not display regulatory exceedances
- = no regulatory exceedance

- Tenen concluded that the metals detected in shallow soil samples could be attributed to historic fill, while the PCE in groundwater sample TW-1 was likely attributed to upgradient surrounding property usage.

Impact Environmental Closures (IEC) Partial Remedial Investigation (RI), October/November 2020

IEC performed a Partial RI in October/November 2020, in accordance with an NYCOER-approved Remedial Investigation Work Plan. The purpose of the Partial RI was to provide a baseline for soil, groundwater, and soil vapor conditions on the Site, with a plan to complete the remainder of the Remedial Investigation based on the results and conditions of the Partial RI. The following is a summary of the Partial RI.

Geophysical Survey

- Prior to any sub-surface investigation work, a public 811 utility markout was requested. In addition, a private geophysical survey was performed using ground penetrating radar (GPR) and line-locating tools, in order to pre-clear the proposed sample locations and to determine the presence of any sub-grade utilities or obstructions/anomalies. No such obstructions or anomalies were detected in the scanned locations.

Soil Investigation

- Six (6) soil probes (designated SB-1 through SB-6) were installed by IEC with a Geoprobe. The soil probes were installed to determine the soil conditions across the Site and were installed at depths representative of the excavation depths of the proposed redevelopment. Each soil boring was installed to a terminal depth of 4-feet below grade surface (bgs), and samples were collected from two intervals: the shallow interval from 0-2 feet bgs, and the intermediate interval from 2-4-feet or 4-6-feet bgs.
    - Soil boring SB-1 was installed in the southern corner of the Site, on Lot 5.
    - Soil boring SB-2 was installed in the eastern corner of the Site, on Lot 9.
    - Soil boring SB-3 was installed in the northern corner of the Site, on Lot 9.
    - Soil boring SB-4 was installed in the southwestern corner of the Site, on Lot 5.
    - Soil boring SB-5 was installed along the eastern boundary of the Site, on Lot 6.
    - Soil boring SB-6 was installed in the center of the Site, on Lot 6.

- A total of 12 soil samples were submitted for laboratory analysis. Each soil sample was analyzed for NYCRR Part 375 List VOCs, SVOCs, metals, PCBs, and pesticides.
- The following compounds were detected in soil samples collected at the Site in exceedance of regulatory standards:

	Results (mg/kg)				**Standards (mg/kg)**	
Compound	**SB-1 (0-2')**	**SB-4 (0-2')**	**SB-4 (2-4')**	**SB-5 (0-2')**	**PGW SCOs**	**RR SCOs**
Lead	**168**	**190**	**76.6**	**77.1**	63	400
Mercury	**0.506**	-	-	**0.235**	0.18	0.81
Zinc	-	**200**	-	-	109	10,000
PCE	0.88	-	**3.2**	-	1.3	19

	Results (mg/kg)				Standards (mg/kg)	
Compound	**SB-1 (0-2')**	**SB-4 (0-2')**	**SB-4 (2-4')**	**SB-5 (0-2')**	**PGW SCOs**	**RR SCOs**
Benzo(a)anthracene	-	**6.8**	-	-	1	1
Benzo(a)pyrene	-	**7**	-	-	1	1
Benzo(b)fluoranthene	-	**8.8**	-	-	1	1
Benzo(k)fluoranthene	-	**2.3**	-	-	0.8	3.9
Chrysene	-	**6**	-	-	1	3.9
Dibenzo(a,h)anthracene	-	**0.92**	-	-	0.33	0.33
Indeno(1,2,3 cd)pyrene	-	**4.2**	-	-	0.5	0.5

Note: Samples not included in the table did not display regulatory exceedances
- = no regulatory exceedance

Groundwater Investigation

- During the Partial RI, three (3) permanent and one (1) temporary groundwater monitoring wells designated as MW-1, MW-2, MW-3, and TWP-1 were installed. Estimated groundwater depth was approximately 17-feet bgs. Each well was screened from between 15-25-feet bgs.
    - MW-1 was installed in the southern corner of the Site, on Lot 5.
    - MW-2 was installed in the eastern corner of the Site, on Lot 9.
    - MW-3 was installed in the northern corner of the Site, on Lot 9.
    - TWP-1 was installed in the southwestern corner of the Site, on Lot 5.
- A total of four (4) groundwater samples were submitted for laboratory analysis. Each groundwater sample was analyzed for NYCRR Part 375 List VOCs, SVOCs, metals, PCBs, and pesticides.
- The following compounds were detected in groundwater samples collected at the Site in exceedance of NYSDEC Ambient Water Quality Standards (AWQS):

	Results (ug/L)				Standards (ug/L)
Compound	**MW-1**	**MW-2**	**MW-3**	**TWP-1**	**NY AWQS**
Chloroform	**18**	**15**	-	**9.2**	7
PCE	**62**	**-**	**240**	**52**	5
Manganese (dissolved)	**344.1**	**-**	-	-	300
Benzo(b)fluoranthene	-	**-**	-	**0.03**	0.002
Benzo(k)fluoranthene	-	**-**	-	**0.01**	0.002

Note: Samples not included in the table did not display regulatory exceedances
- = no regulatory exceedance

Soil Vapor Investigation

- As part of the Partial RI, each of the three (3) permanent groundwater monitoring wells were surveyed to determine the approximate groundwater flow direction. The elevations of the installed monitoring wells were surveyed relative to a permanent surface benchmark. The results of the survey indicate that groundwater is flowing towards the north-northwest, see Plate 6.
- Finally, as part of the investigation, six (6) soil vapor probes (designated SV-1 through SV-6) were installed across the Site to determine soil vapor conditions below the proposed building footprint. Soil vapor probes were installed between 3-5-feet bg.
    - SV-1 was installed on the southwestern corner of the Site, on Lot 5.
    - SV-2 was installed in the southeast corner of the Site, on Lot 5.
    - SV-3 was installed in the center of the Site, on Lot 6.
    - SV-4 was installed in the northwestern corner of the Site, on Lot 9.
    - SV-5 was installed in the central north portion of the Site, on Lot 9.
    - SV-6 was installed in the northeastern corner of the Site, on Lot 9.
- A total of six (6) soil vapor samples were submitted for laboratory analysis. Each soil vapor sample was analyzed for USEPA TO-15 List VOCs.
- The following compounds were detected in soil vapor samples collected at the Site in exceedance of regulatory standards:

	Results (ug/m3)						**Standard(ug/m3)**
Compound	**SV-1**	**SV-2**	**SV-3**	**SV-4**	**SV-5**	**SV-6**	**NYSDOH Indoor Air Guidance Values**
PCE	15,800	1,040	129	88.2	113	1,050	30
TCE	-	2.42	-	-	-	-	2

Note: Samples not included in the table did not display regulatory exceedances
- = no regulatory exceedance

Supplementary Soil Investigation

- Based on the results of the soil samples collected during the Partial RI, in particular the detected presence of PCE at elevated concentrations at sample locations SB-1 and SB-4 on the south portion of the property (Lot 5), supplemental confirmatory soil borings were installed at the locations of SB-1 and SB-4 on November 6, 2020. The purpose of these soil borings was to confirm the presence of PCE at these locations, and to vertically delineate the contamination.
- As part of this supplemental sampling event, a representative bottom sample was also collected from an onsite drywell (DW-1), located on Lot 5.

- Each soil boring (designated as SB-1A and SB-4A) was advanced down to a terminal depth of 10-feet bgs. Five (5) samples were collected from each soil boring at two-foot intervals (0-2', 2-4', 4-6', 6-8', and 8-10'). Initially, the 0-2' and 2-4' samples from each location were submitted for laboratory analysis for TCL VOCs. PCE was detected at elevated concentrations in SB-4A at 2-4', thus the SB-4A 4-6' sample was subsequently submitted for analysis to determine if the PCE contamination extended deeper.
- PCE contamination was not detected deeper than 4-feet bgs in SB-1A, and no deeper than 6-feet bgs in SB-4A.
- The following compounds were detected in the supplemental soil samples collected at the Site in exceedance of regulatory standards:

	Results (mg/kg)						Standards (mg/kg)	
Compound	**SB-1A (0-2')**	**SB-1A (2-4')**	**SB-4A (0-2')**	**SB-4A (2-4')**	**SB-4A (4-6')**	**Drywell-1**	**PGW SCOs**	**RR SCOs**
PCE	0.049	0.00055	0.012	**23**	0.0021	0.019	1.3	19

Note: Samples not included in the table did not display regulatory exceedances

- It should be noted that, during the Partial RI, an active drycleaner was observed adjacent to the Site to the south, approximately 20 feet south of SB-1/SB-1A and 40 feet west of SB-4/SB-4A.
- Category B Deliverables were obtained for the sample analysis collected as part of this Partial RI. A Data Usability Summary Report was generated for this data and was included in the final BCP Remedial Investigation Report.

Impact Environmental Closures (IEC) Final Remedial Investigation (RI), September-November 2021

IEC performed a Final RI in September-November 2021, under a NYSDEC-approved Remedial Investigation Work Plan dated September 2021. The purpose of the Final RI was to delineate the contamination found in the previous RI and conduct pilot testing for extraction of soil vapors to evaluate and design an appropriate remediation for the Site (refer to **Plates 4**, **5** and **6** for sample locations, and analytical results maps). The following is a summary of the Final RI.

Soil Investigation

Advancement of two (2) exploratory soil borings in sample locations where elevated PCE was detected to screen and accurately assess the silt/clayey silt material identified during the aforementioned geotechnical investigation. Performance of continuous field screening and collection of soils at the water table and in contact with each transitional or confining layer for laboratory analysis;

- Completion of eight (8) ten-foot step-out soil borings (four [4] surrounding each of the exploratory boreholes) to both vertically and horizontally delineate the presence of PCE

detected in prior soil samples SB-1 and SB-4, and the field screening and laboratory analyses as described below;

- Shallow interval at 0-2 feet bgs
- Intermediate interval at 6-8 feet bgs, or at the depth exhibiting evidence of contamination including odors, staining, or highest PID reading. If no indication of contamination or PID measurement (>20 ppmV) were detected, a sample was collected 1-foot above the groundwater table which is estimated at between 15 and 17 feet bgs.
- Water table interval
- Bottom of depth of contamination (if observed)

- Installation of six (6) soil borings across the Site in areas not previously investigated for the collection and analysis of three (3) depth intervals per boring, for field screening and laboratory analysis of up to 14 soil samples;
    - Shallow interval at 0-2 feet bgs
    - Shallow interval at 6-8 feet bgs, or at the depth of the highest PID reading
    - Interval directly above the groundwater table, approximately 15-17 feet bgs.
- The following targeted compounds were detected in delineation soil samples in exceedance of the applicable PGW and RR SCOs:

	Results (mg/kg)				Standards (mg/kg)	
Compound	**SB-1N (0-2')**	**SB-IE (0-2')**	**SB-IE (6-8')**	**SB-1S (0-2')**	**PGW SCOs**	**RR SCOs**
PCE	**3.9**	**1.5**	**2.2**	**2.6**	1.3	19

	Results (mg/kg)			Standards (mg/kg)	
Compound	**SB-4N (0-2')**	**SB-4N (6-8')**	**SB-4W (6-8')**	**PGW SCOs**	**RR SCOs**
PCE	**1.5**	**3.6**	**5.5**	1.3	19

SSDS Pilot Test

- A sub-slab depressurization pilot test was conducted to evaluate areal extent of influence (Radius of Influence or ROI) for remedial system design and recoverability of soil vapor contaminants. The pilot test results indicated an asymmetrical ROI of greater than 28 feet to the northeast, north and northwest of the extraction well on Lot 6. The ROI was limited to the south by impediments to air flow or channeling. The effluent vapor stream concentrations indicated active remediation would be required with vapor treatment.
- The following soil vapors were detected in the extraction well raw effluent vapor stream;

Pilot Test Effluent Results

Extraction Well	Results (ug/m3)			
	PCE	TCE	Cis-1,2 DCE	Vinyl Chloride
SVE-1 Raw Influent (Blower Effluent)	956	8.43	0.86	-

Groundwater Investigation

- Four (4) single and four (4) nested permanent monitoring wells, for a total of 12 monitoring wells, were installed on the Site. The four (4) single wells were installed to 25 fbg and screened between 15-25 fbg. The four (4) nested wells consisted of two (2) wells screened within the upper water table zone and intermediate transitional zone, respectively. The shallow wells were installed to 32 fbg and screened between 30-32 fbg, while the intermediate wells were installed to 42 fbg and screened between 40-42 fbg. SVOCs and Metals previously detected at the Site were detected in nearly all of the groundwater samples in marginal exceedance of the NYSDEC Ambient Water Quality Standards (AWQS). The wells were located as follows:

  - MW4s/MW-4i: located in the center of the Site, directly downgradient from the active drycleaner.
  - MW-5: located along the central-eastern boundary of the Site.
  - MW-6: located along the central-northern boundary of the Site.
  - MW-7s/MW-7i: located on the south portion of the Site, proximal to the active dry cleaner.
  - MW-8s/MW-8i: located on the south portion of the Site, proximal to the active dry cleaner.
  - MW-9s/MW-9i: located in the southeast corner of the Site, presumed either cross- or downgradient of 20-02 Mott Avenue (a former drycleaning facility with documented impacts to groundwater, NYSDEC BCP Site # C241224).
  - MW-10: located in the location of boring SB-4A in the southwestportion of the Site.
  - MW-11: located along the western-central boundary of the Site.

- The following cVOC compounds were detected in groundwater samples collected at the Site in exceedance of the AWQS:

	Results (ug/L)				Standards (ug/L)
Compound	**MW-4I**	**MW-5**	**MW-7I**	**MW-10**	**NY AWQS**
Chloroform	**8.3**	**28**	20	**12**	7
PCE	**-**	**-**	**16**	**92**	5

Note: Samples not included in the table did not display regulatory exceedances

- = no regulatory exceedance

The following SVOCs were detected in groundwater samples in exceedance of the AWQS:

Compound	Wells	Results (ug/L)	NY AWQS
Benzo(a)anthracene	4s,8s,9s,9i	**0.02 - 0.07 J**	0.002
Benzo(a)pyrene	9s,9i	**0.10 – 0.12**	0.002
Benzo(b)fluoranthene	4s,4i,5,7s,7i,8s,8i,9s,9i,10	**0.02 J – 0.21 ***	0.002
Benzo(k)fluoranthene	9s,9i	**0.01 – 0.07 J**	0.002
Chrysene	8s,9s,9i	**0.01 – 0.08 J**	0.002
Indeno(1,2,3-cd)pyrene	7i,8i,9s,9i,10	**0.01 J – 0.17**	0.002

Note: Samples not included in the table did not display regulatory exceedances

J = Laboratory estimated

* = Analyte was detected in the field blank

The following metals were detected in groundwater samples in exceedance of the AWQS:

Compound	Wells	Results (ug/L)	NY AWQS
Iron (dissolved)	4s,7s,8s,8i,9s,9i	**1140 – 7200**	300
Magnesium (dissolved)	9s,9i	**48300 – 48700**	35000
Manganese (dissolved)	4s,4i,7s,7i,8s,8i,9s,9i	**373.8 – 2686**	300
Sodium (dissolved)	4s,4i,5,6,7s,7i,8s,8i,9s,9i,10	**124000 – 525000**	20000
Chromium (total)	4s,5,7i,8i,9s,9i	**58.78 – 196.9**	50
Arsenic (total)	9s	**27.02**	25
Iron (total)	4s,4i,5,6,7s,7i,8s,8i,9s,9i,10	**348 – 47900**	300
Lead (total)	4s,4i	**57.69 – 128.4**	25
Manganese (total)	4s,4i,7s,7i,8s,8i,9s,9i	**738 – 2566**	300
Sodium (total)	4s,4i,5,6,7s,7i,8s,8i,9s,9i,10	**119000 – 496000**	20000
Thallium (total)	4s,8s,8i	**0.51 – 0.93 J**	0.5

Note: Samples not included in the table did not display regulatory exceedances

J = Laboratory estimated

Soil Vapor Investigation

- Installation of six (6) soil vapor points throughout the Site for the collection of soil vapor samples to further define the extent of cVOCs across the Site and assess the potential for off-site migration in relation to downgradient receptors.
- The following cVOC compounds were detected in soil vapor samples collected at the Site in exceedance of the New York State Department of Health (NYSDOH) Indoor Air Guidance Values:

Targeted Soil Vapors

	Results (ug/m3)				Standard(ug/m3)
Compound	**SV-7**	**SV-9**	**SV-10**	**SV-12**	**NYSDOH Indoor Air Guidance Values**
PCE	271,000	260	1,000	239	30
TCE	1,460	-	-	-	2

Note: Samples not included in the table did not display regulatory exceedances

Based on the results of the Final RI, IEC concluded that remedial action was appropriate to support the proposed site development.

Impact Environmental Closures (IEC) Remedial Action Work Plan (RAWP), April 2022

The summary of the selected remedy is as follows:

1. Demolition of the existing buildings will be completed prior to the remedial action.
2. Mobilization to the Site for the start of the remedial work will involve Site security and construction boundary setups, equipment mobilization, utility mark outs and marking and staking excavation areas.
3. Soil with detected PCE concentrations, including borings SB-1N, SB-1S, SB-4W and SB-4N, which represent the on-Site hot-spot areas and occur on the south and southeastern portion of the Site on Lot 5 (refer to Plate 4). These two areas will be sequestered to prevent future migration of PCE from potential off-site sources to the south.
4. Hot-spot area excavation will be performed on the southern portion of the Site on Lot 5. Two areas identified as SB-1 and SB-4 with concentrations exceeding the RR SCO for PCE will be excavated to 8 fbg, and extend laterally until the referenced standard is achieved via confirmation endpoint samples. An estimated 400 tons (258 cubic yards) of soil is anticipated for off-Site transportation and disposal.
5. Excavation of other areas of soil on the Site that may exceed the RR SCOS for PCE in shallow unsaturated soils will be completed to depth as determined by end point field

screening and six (6) confirmation samples. These areas include excavation of the proposed building and for installation of stormwater conveyance system components. An estimated 400 tons (258 cubic yards) is expected as part of the remedy for on-Site soil removal and 5,400 tons for construction-related excavation. The footings on the eastern portion of the Site are in an area where the soil data indicates PCE concentrations are below the Unrestricted Use SCO as well as the RR SCOs.

6. During soil excavation and intrusive Site work where soil is disturbed, field screening of soil will be performed for indications of contamination by visual means, odor and with a photoionization detector (PID). Appropriate segregation of excavated soil will be evaluated based on the results of the field screening data. Management of excavated materials including temporary stockpiles and segregating in accordance with defined material types will be performed to prevent co-mingling of contaminated material and non-contaminated materials.
7. During soil excavation and intrusive Site work where soil is disturbed through excavation and load out on trucks, air monitoring will be performed. A Community Air Monitoring Program (CAMP) will be implemented for evaluation of particulates and VOCs. A water mist and/or vapor mitigation foam or similar product would be available on the Site and applied during excavation and soil disturbance as required to control particulates and vapor, as necessary.
8. Excavation and removal of soil/fill exceeding the RR SCO for PCE will be completed in phases by an OSHA trained excavation contractor. The remedial excavation will incorporate a total combined footprint area of approximately 1,125 square feet down to “clean sand” expected to be at depths not exceeding 8 fbg. This excavation will encompass the on-Site hot-spot area contaminant mass associated with SB-1 and SB-4. It is estimated that 400 tons (258___ cubic yards) of soil will be removed for off-Site disposal from these excavations.
9. Off-site disposal of material removed from the Site will be performed in accordance with applicable regulations for handling, transport and disposal at permitted facilities.
10. Abandonment of on-Site groundwater monitoring wells will be completed in accordance with the requirements of CP-43 since these wells will be impacted by the Site remediation and redevelopment work.
11. Imported materials for backfill will be in compliance with this plan and in accordance with the lower of 6 NYCRR Part 375 Restricted Residential or Groundwater Protection SCOs as well as other applicable laws and regulations. Areas excavated to terminal depths will be backfilled with a self-compacting virgin stone or equivalent topped with a geotextile fabric and then backfilled with imported material to the elevations required for construction. Gravel, rock or stone, consisting of virgin material from a permitted mine or quarry may be imported without chemical testing provided it contains less than 10% by weight material which would pass through a size 80 sieve. The property owner’s structural engineer will provide compaction requirements for the Site.

12. Once the hot-spot excavation is complete at the Site, soil vapor samples will be collected through temporary soil gas implants for PCE analysis to evaluate the post-excavation conditions. Groundwater and saturated soil at the southern property boundary will be the focus for barrier wall installation based on the existing RI data. The chemical selected for this application is micro-scale activated carbon with contaminant biodegradation enhancers. PCE will adsorb onto colloids formed on the carbon substrate and colonized by contaminant-degrading bacteria. The application of the micro-carbon will provide a continued barrier to inhibit off-site source migration and allow for the existing groundwater onsite to achieve more rapid and complete natural attenuation. Groundwater monitoring would be conducted in order to evaluate and track trends in groundwater quality over time after the installation of the activated carbon barrier. Four (4) existing nested wells (both shallow and intermediate depth), and four (4) proposed new cluster wells (both shallow and intermediate depth) will be utilized to monitor the effectiveness of the remedy (see Plate 14). A minimum of four (4) rounds of sampling over a period of one year is anticipated. Subsequent groundwater monitoring requirements after the initial four rounds will be determined in consultation with the NYSDEC. The proposed in-situ groundwater treatment details and specifications will be provided as a separate Remedial Design Document.
13. As part of building foundation construction, a vapor barrier system and an active SSDS will be installed beneath the building slab to mitigate soil vapor migration into the building. The vapor barrier is an element of construction, and not part of the remedial action. The vapor barrier system will consist of a Stego Industries branded Drago Wrap Vapor Intrusion Barrier 20-mil thick chemical resistant waterproofing membrane for horizontal applications beneath the building slab across the site and for vertical applications, outside the building footprint. Equivalent vapor and waterproofing systems will be evaluated if needed. All welds, seams and penetrations will be properly sealed to prevent preferential pathways for vapor migration. The SSDS will consist of 3-inch diameter sub-slab vapor intake points with vertical risers. The sub-slab intake points will be vented using suction-pit technology to provide even air flow and vacuum beneath the vapor barrier. Each intake point will be valved for individual control. The risers will transition to the first floor where laterals will be installed to four (4) separate risers to the roof where they will be connected in series to a dedicated intake fan on the roof.
14. Remedial activities will be performed at the Site in accordance with this NYSDEC-approved RAWP and the NYSDEC Decision Document. Deviations from the RAWP and Decision Document will be reported to NYSDEC for approval and fully explained in the Final Engineering Report (FER). A final FER will be submitted that describes the remedial activities, certifies that the remedial requirements have been achieved, defines the Site boundaries, and describes all Engineering and Institutional Controls to be implemented at the Site.
15. The establishment of ECs and ICs described in this RAWP require the management in compliance with an approved Site Management Plan (SMP). An Environmental Easement,

that includes the ICs and ECs, will be recorded, and will likely include the following: (1) vegetable gardening and farming; (2) use of groundwater without treatment rendering it safe for the intended use; (3) disturbance of residual contaminated material unless it is conducted in accordance with the SMP; and (4) higher level of land usage without NYSDEC approval. A SMP will be prepared for the long-term management of residual contamination as required, including plans for: 1) ICs and ECs, 2) monitoring, 3) operation and maintenance and 4) reporting.

Impact Environmental Closures (IEC) RAWP Request for Remedy Modification, August 2023

The conclusions included in the Request for Remedy Modification were as follows:

Soils

Based on documentation soil sampling, a Track 2 cleanup using the 6 NYCRR Part 375 RRSCOs was achieved. Pre-excavation soil sampling for targeted CVOCs in four identified soil zones: shallow (0-2 feet), shallow/intermediate (2-8 feet), intermediate (15-17 feet) and intermediate/deep (>37 feet) was conducted. These investigations determined that soil concentrations were not in excess of applicable regulatory cleanup criteria with the exception of two (2) hotspots located in the southern portion of the Site at shallow depth intervals (0-2 and 4-6 feet bgs). The targeted CVOC contamination in the two referenced hotspots was distributed in manner supporting an off-site source from a potential surface release given the close proximity and surface contour adjacent to the southern property boundary and off-site former drycleaner in an area never occupied by a structure.

Soil Vapor

Pre-remedial documentation soil vapor concentrations ranged from non-detectable (ND) to 271,000 ug/m3 for PCE, ND to 1,460 ug/m3 for trichloroethene and ND to 706 ug/m3 for cis-1,2-dichloroethene. Post-remedial soil vapor concentrations from vapor monitoring of the Site footprint at the southwestern portion of the Site and near the property boundary show concentrations ranging from 504 ug/m3 to 16,700 ug/m3 for PCE, ND to 213 ug/m3 for trichloroethene and ND to 190 ug/m3 for cis-1,2-dichloroethene. The distribution of the highest concentrations during pre- and post-remedial sampling were at the southern property boundary, less than 10 feet from the probable off-site source, which decrease substantially in a south to north orientation. The compound distribution supports active remediation from groundwater treatment resulting from the breakdown of the CVOCs by reductive dichlorination and microbial degradation. These processes are consistent with the conceptual model presented in the RAWP.

Groundwater

Two (2) rounds of Site wide pre-remedial groundwater documentation samples were collected and analyzed and three rounds of post-remedial groundwater documentation sampling were performed. Pre-remedial groundwater sample concentrations in excess of the NYSDEC

groundwater cleanup standards were detected in 9 of 16 wells sampled and ranged from 8.3 ug/L (chloroform in MW-4i) to 28 ug/L (chloroform in MW-5) and 16 ug/L (PCE in MW-7i) to 92 ug/L (PCE in MW-10). Post remedial groundwater documentation samples were collected from 14 original wells and 10 replacement wells. Post-remedial groundwater documentation samples in excess of the NYSDEC regulatory cleanup criteria ranged from 7.43 ug/L to 141 ug/L (PCE) to 67.6 ug/L (chloroform). These were detected in 7 of the 10 post-remedial groundwater documentation samples taken in June 2023 from replacement wells screened in the intermediate (10-25 feet) and deep (>40 feet) zones. Distribution of the post remediation documentation groundwater concentrations place the highest concentrations at the southern property boundary in the intermediate/deep screened zones.

Identification of Off-Site Sources of CVOCs

A Phase I Environmental Site Assessment (ESA) prepared by Impact Environmental Closures, Inc. in June 2021 listed 21-40 Mott Avenue, directly to the south and hydraulically upgradient, as an historical dry cleaner from as early as 1975, with several regulatory database listings relating to the historical generation and disposal of chlorinated solvents and F-listed waste (F002 – spent solvent wastes).

Track 2 Remediation Post-Excavation

Track 2 RRSCOs were achieved for 10 of 10 endpoint documentation sampling locations in the southern portion of the Site, and Remedial excavation from 0 to 8 feet bgs at two identified Hot Spots (HS-1 and HS-4) in the southern portion of the Site within this area were Non-Detect (ND) with respect to CVOCs with the exception of sample HS-1SWS which contained Acetone at a concentration of 0.0790 ug/kg, exceeding the most restrictive criteria (NYSDEC NYCRR 6 Unrestricted Use SCO) of 0.05 ug/kg.

SVE System Remedial Modification

The removal of the SVE system as part of the remedial objective is requested based on the results for pre- and post-remedial investigations. The basis of this request is i) contaminant concentration gradient in groundwater and soil vapor that is substantially higher at the upgradient property boundary than at the downgradient boundary, ii) a potential source of the contamination exists at an upgradient location; and, iii) a pathway for the contamination to migrate exists. As such, the Volunteer has evaluated and implemented an effective remedy to address the contamination on-site as well as mitigative measures by the vapor barrier and SSDS system that will be protective of human health and safety for the on-Site building.

2.4 Remedial Action Objectives

The Remedial Action Objectives (RAOs) for the Site as listed in the NYSDEC-issued Decision Document dated April 29, 2022, are as follows:

Groundwater
RAOs for Public Health Protection

- Prevent ingestion of groundwater with contaminant levels exceeding drinking water standards.
- Prevent contact with, or inhalation of, volatiles from contaminated groundwater.

RAOs for Environmental Protection

- Remove the source of ground or surface water contamination.

Soil
RAOs for Public Health Protection

- Prevent ingestion/direct contact with contaminated soil.
- Prevent inhalation of or exposure from contaminants volatilizing from contaminants in soil.

RAOs for Environmental Protection

- Prevent migration of contaminants that would result in groundwater or surface water contamination.

Soil Vapor

RAOs for Public Health Protection

- Mitigate impacts to public health resulting from existing, or the potential for, soil vapor intrusion into buildings at a site.

2.5 Remaining Contamination

2.5.1 Soil

As part of the Remedial Action a total of 315.43 tons of material was excavated from two (2) PCE and SVOC contaminated hotspots (HS-1 and HS-4) on November 2 and 3, 2022, and December 8 and 9, 2022. All material was transported to and disposed of at P Park of Prospect Park, NJ.

During the September 2021 Remedial Investigation, several VOCs, primarily the cVOCs PCE and TCE, were detected in 16 of the 20 shallow 0-2 fbg soil samples, with a minimum concentration of PCE of 0.0003 mg/kg in sample SB-3 (0-2) located in the northwest corner of the Site (on Lot 9), and a maximum concentration of PCE of 3.9 mg/kg in SB-1N (0-2) located in the southeast portion of the Site (on Lot 5). Four (4) of the PCE detections were above the NYSDEC PGW SCOs; SB-1N (0-2) at 3.9 mg/kg, SB-1E (0-2) at 1.5 mg/kg, SB-1S at (0-2) 2.6 mg/kg, and SB-4N (0-2) at 1.5 mg/kg. These four (4) samples were all located on the southern portion of the Site (on Lot 5). TCE was detected in five (5) of the 20 shallow 0-2 fbg soil samples, with a minimum concentration of 0.00012 mg/kg in SB-4S (0-2) and a maximum concentration of 0.00067 mg/kg in SB-1 (0-2). None of the TCE detections were above the NYSDEC PGW SCOs. Finally, cis-1,2-DCE was detected in one (1) of the 20 shallow 0-2 fbg samples, at a concentration of 0.001 mg/kg in SB-1 (0-2), below the NYSDEC PGW SCOs.

Several SVOCs were detected at concentrations above the NYSDEC Part 375 RR Use SCOs in one (1) of the 20 shallow initial and supplemental remedial investigation soil samples, SB-4 (0-2), including; benzo(a)anthracene at 6.8 mg/kg, benzo(a)pyrene at 7.0 mg/kg, benzo(b)fluoranthene at 8.8 mg/kg, benzo(k)fluoranthene at 2.3 mg/kg, chrysene at 6 mg/kg, dibenzo(a,h)anthracene at 0.92 mg/kg, and indeno(1,2,3-cd)pyrene at 4.2 mg/kg. These SVOC compounds are part of the polycyclic aromatic hydrocarbon (PAH) group and are indicative of urban fill material. However, deeper samples collected from the same locations did not display any SVOC exceedances above UUSCOs or PGW standards, indicating that SVOCs are only present in shallow soils, and will be removed as part of the hotspot excavation within the Remedial Action.

No PCBs, organochlorine pesticides, chlorinated herbicides, or heavy metals were detected in the 20 shallow remedial investigation soil samples at concentrations exceeding their respective NYSDEC RR Use SCOs.

Several PFAS, including PFOA and PFOS, were detected in shallow 0-2 fbg soil samples, none of which exceeded the NYSDEC PGW SCOs of 1.1 and 3.7 µg/kg, respectively.

The NYSDEC Part 375 Soil Cleanup Objectives (SCOs) for the Remedial Action were Restricted Residential (RR) SCOs. Based on the results of the Remedial Investigation, two (2) hotspots were identified (HS-1 and HS-4) in which soils exceeded the RR SCOs. As discussed above, these hotspots were excavated as part of the Remedial Action between November 2, 2022, and December 9, 2022. Following excavation of the hotspots, one (1) confirmatory bottom and four (4) confirmatory side wall endpoint samples were collected from each of the excavations. The following samples were collected, along with their respective locations:

- HS-1-EP (bottom endpoint sample)
- HS-1-SWS (south sidewall endpoint sample)
- HS-1-SWW (west sidewall endpoint sample)

- HS-1-SWN (north sidewall endpoint sample)
- HS-1-SWE (east sidewall endpoint sample)
- HS-4-EP (bottom endpoint sample)
- HS-4-SWS (south sidewall endpoint sample)
- HS-4-SWW (west sidewall endpoint sample)
- HS-4-SWN (north sidewall endpoint sample)
- HS-4-SWE (east sidewall endpoint sample)

Each of the ten (10) endpoint samples were sent for laboratory analysis of TCL VOCs +TICs (USEPA Method 8260) at York Analytical Laboratories of Queens, New York (ELAP #10854 and #12058). Aside from the VOC Acetone which was detected in sample HS-1-SWS (and is also a known and typical laboratory contaminant), no VOCs were detected in the samples exceeding the NYSDEC Protection of Groundwater (PGW), Unrestricted Use (UU), or RR SCOs. No demarcation layer was required, and no additional soil sampling was determined to be necessary. The RAWP stated that SVOCs would also be analyzed as part of the endpoint sampling activities, however, due to deeper samples not displaying any SVOC exceedances above regulatory standards, it was deemed unnecessary to analyze for SVOCs in the endpoint samples, which is considered a deviation from the RAWP.

Table 2 and **Figure 6** summarize the results of all soil samples collected at the Site that exceed the UU SCOs and/or the RR SCOs after completion of the Remedial Action.

2.5.2 Groundwater

As part of the NYSDEC-approved Remedial Action, IEEG oversaw the implementation of a permeable reactive barrier consisting of activated carbon (PlumeStop) and Sulfidated-Micro Zero Valent Iron (S-MZVI) in-situ injection program conducted by Regenesis. Between June 14, 2022, and June 17, 2022, twenty-two (22) injection point locations were utilized to deliver the product to the groundwater table. The top of the application was approximately 16 fbg, and the bottom of the application zone was approximately 26 fbg, for a ten-foot treatment zone. The horizontal extent of the injection row was approximately 130-linear feet. Approximately 444 gallons of PlumeStop and 60 gallons of S-MZVI were mixed with approximately 9,143 gallons of water, and, of that mixture, approximately 439 gallons were delivered to each of the 22 injection points.

Following the completion of the above-described injection program, IEEG performed three (3) rounds of post-remedy groundwater sampling. The first round was performed in July 2022 and utilized the pre-existing well network installed as part of the Remedial Investigation. The second round was performed in October 2022 and utilized eight (8) of the pre-existing wells (as several of the other wells had been destroyed during building and foundation demolition work). Finally, a third round was performed in June 2023 and utilized ten (10) newly installed groundwater monitoring wells (as the remainder of the wells associated with the RI had been abandoned in

accordance with NYSDEC CP-43 protocols, prior to the commencement of site redevelopment work).

Based on a review of the most recent round of groundwater sampling (the third round), the following can be deduced from the laboratory data:

The cVOC chloroform was detected in one (1) sample (MW-1(R)) at levels in exceedance of its NYSDEC TOGS Class GA Ambient Water Quality (AWQ) Standards. Furthermore, the cVOC PCE was detected in six (6) of the ten (10) samples in exceedance of its NYSDEC TOGS Class GA AWQ Standard, as shown in the table below:

Sample ID	NYSDEC TOGS Standards and Guidance Values - GA	MW-3R		MW-11R		MW-4R		MW-10R		MW-8R		MW-7iR	
York ID		23F0702-01		23F0702-03		23F0702-04		23F0702-05		23F0773-01		23F0773-02	
Sampling Date		6/12/2023 9:40:00 AM		6/12/2023 11:20:00 AM		6/12/2023 12:00:00 PM		6/12/2023 12:35:00 PM		6/13/2023 9:45:00 AM		6/13/2023 10:30:00 AM	
Client Matrix		Water		Water		Water		Water		Water		Water	
Compound		Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
VOA, 8260 LOW MASTER	ug/L	ug/L		ug/L		ug/L		ug/L		ug/L		ug/L	
Tetrachloroethylene	5	15.200		16.400		7.430		22.200		45.300		141	

The two (2) highest concentrations of PCE, 141 ug/L in MW-7i(R), and 45.3 ug/L in MW-8(R), were both detected in samples collected from the southern boundary of the Property, proximal to the former drycleaning facility adjoining the Site to the south and located along Mott Avenue, and upgradient of the groundwater treatment barrier wall. Based on a review of the laboratory data from the third groundwater sampling event from June 2023, it appears that the source of PCE contamination is migrating on-site from an off-site source, as the concentrations diminish to the north across the Site.

Table 3 and **Figure 7** summarize the results of all samples of groundwater that exceed the SCGs after completion of the Remedial Action.

2.5.5 Soil Vapor

IEEG collected pre- and post-excavation documentation soil vapor samples from soil vapor points between October 2020 and July 2023 to determine if elevated concentrations of contaminants were present in the vadose zone fill material and upper sands and if a SVE system was appropriate for the Site.

The pre-remediation documentation soil vapor sampling investigation included the installation of 12 soil vapor probes (SV-1 through SV-12). Post-remediation documentation soil vapor sampling from four (4) sub-slab vapor monitoring implants (SS-1 through SS-4) and five (5) soil vapor probes installed to investigate the southwestern portion of the Site was conducted. A total of 21 soil vapor samples were collected for laboratory analysis. The soil vapor probes and vapor implants were advanced to provide complete coverage of targeted areas across the Site footprint and

beneath the building in accordance with the RI and Soil Vapor Evaluation Work Plan (SV Work Plan) submitted to the NYSDEC on June 13, 2023.

Soil vapor samples were submitted to Alpha for laboratory analysis of VOCs via EPA Method TO-15. Soil vapor analytical results revealed the presence of elevated concentrations of CVOCs as summarized below.

Vapor Point No.	Target Compound	Result (ug/m3)
SV-1	Tetrachloroethene	15,800
SV-2	Tetrachloroethene	1,040
SV-3	Tetrachloroethene	129
SV-4	No Exceedances	N/A
SV-5	Tetrachloroethene	113
SV-6	Tetrachloroethene	1,050
SV-7	cis-1,2-dichloroethene	706
	Trichloroethene	1,460
	Tetrachloroethene	271,000
SV-8	No Exceedances	N/A
SV-9	Tetrachloroethene	260
SV-10	Tetrachloroethene	1,000
SV-11	No Exceedances	N/A
SV-12	Tetrachloroethene	239

Soil vapor samples collected from the soil vapor probes SV-1 through SV-5 and sub-slab vapor points SS-1 through SS-4 on July 10, 2023, were submitted to Alpha for laboratory analysis of VOCs via EPA Method TO-15. Soil vapor analytical results revealed the presence of elevated concentrations of CVOCs, as summarized below.

Vapor Point No.	Target Compound	Result (ug/m3)
SV-1	Tetrachloroethene	1,740
	Trichloroethene	14.4
SV-2	Tetrachloroethene	10,400
	Trichloroethene	72
SV-3	Tetrachloroethene	16,700
	Trichloroethene	213
	cis-1,2-dichloroethene	190
SV-4	Tetrachloroethene	2,580
	Trichloroethene	15.4
SV-5	Tetrachloroethene	2,400
	Trichloroethene	8.38
SS-1	Tetrachloroethene	1,850
	Trichloroethene	14.6

Vapor Point No.	Target Compound	Result (ug/m3)
SS-2	cis-1,2-dichloroethene	3.16
	Trichloroethene	13.3
	Tetrachloroethene	1,460
SS-3	Tetrachloroethene	504
SS-4	Tetrachloroethene	1,130
	Trichloroethene	11.2
	cis-1,2-dichloroethene	1.5
	Methylene Chloride	3.32
	Carbon Tetrachloride	7.67

Pre-remedial soil vapor concentrations ranged from non-detectable (ND) to 271,000 ug/m3 for PCE, ND to 1,460 ug/m3 for trichloroethene, and ND to 706 ug/m3 for cis-1,2-dichloroethene. Post-remedial soil vapor concentrations from vapor monitoring of the southwestern portion of the Site and near the property boundary show concentrations ranging from 504 ug/m3 to 16,700 ug/m3 for PCE, ND to 213 ug/m3 for trichloroethene, and ND to 190 ug/m3 for cis-1,2-dichloroethene. The distribution of the highest concentrations during pre- and post-remedial sampling were at the southern property boundary, less than 10 feet from the probable off-site source, which decreased substantially in a south to north orientation. The compound distribution supported active remediation from groundwater treatment resulting from the breakdown of the CVOCs by reductive dichlorination and microbial degradation.

Table 4 and **Figure 8** summarize the results of all samples of soil vapor that exceed the SCGs after completion of the Remedial Action.

3.0 INSTITUTIONAL AND ENGINEERING CONTROL PLAN

3.1 General

Since remaining contamination exists at the site, Institutional Controls (ICs) and Engineering Controls (ECs) are required to protect human health and the environment. This IC/EC Plan describes the procedures for the implementation and management of all IC/ECs at the site. The IC/EC Plan is one component of the SMP and is subject to revision by the NYSDEC project manager.

This plan provides:

- A description of all IC/ECs on the site;
- The basic implementation and intended role of each IC/EC;
- A description of the key components of the ICs set forth in the Environmental Easement;
- A description of the controls to be evaluated during each required inspection and periodic review;
- A description of plans and procedures to be followed for implementation of IC/ECs, such as the implementation of the Excavation Work Plan (EWP) (as provided in **Appendix E**) for the proper handling of remaining contamination that may be disturbed during maintenance or redevelopment work on the site; and
- Any other provisions necessary to identify or establish methods for implementing the IC/ECs required by the site remedy, as determined by the NYSDEC project manager.

3.2 Institutional Controls

A series of ICs is required by the Decision Document to: (1) implement, maintain and monitor Engineering Control systems; (2) prevent future exposure to remaining contamination; and (3) limit the use and development of the Site to restricted residential uses only. Adherence to these ICs on the site is required by the Environmental Easement and will be implemented under this SMP. ICs identified in the Environmental Easement may not be discontinued without an amendment to or extinguishment of the Environmental Easement by NYSDEC pursuant to ECL Article 71, Title 36. The IC boundaries are shown on **Figure 2**. These ICs:

- Require the remedial party or site owner to complete and submit to the NYSDEC a periodic certification of IC/ECs in accordance with Part 375- 1.9(h)(3);
- Allow for the use and development of the controlled property for restricted-residential, commercial, and industrial uses as defined in Part 375-1.8(g), although land use is subject to local zoning laws;
- All ECs must be operated and maintained as specified in this SMP;
- All ECs must be inspected at a frequency and in a manner defined in the SMP;

- The use of groundwater underlying the property is prohibited without necessary water quality treatment as determined by the NYSDOH or the New York City Department of Health and Mental Hygiene to render it safe for use as drinking water or for industrial purposes, and the user must first notify and obtain written approval to do so from the Department;
- Groundwater and other environmental or public health monitoring must be performed as defined in this SMP;
- Data and information pertinent to site management must be reported at the frequency and in a manner as defined in this SMP;
- All future activities that will disturb remaining contaminated material must be conducted in accordance with this SMP;
- Monitoring to assess the performance and effectiveness of the remedy must be performed as defined in this SMP;
- Operation, maintenance, monitoring, inspection, and reporting of any mechanical or physical component of the remedy shall be performed as defined in this SMP;
- Access to the site must be provided to agents, employees or other representatives of the State of New York with reasonable prior notice to the property owner to assure compliance with the restrictions identified by the Environmental Easement; and
- Vegetable gardens and farming on the site are prohibited.
- Any on-Site buildings will be required to have a sub-slab depressurization system, or other acceptable measures, to mitigate the migration of vapors into the building from the subsurface.

3.3 Engineering Controls

3.3.1 Sub-Slab Depressurization System

The active SSDS, which is part of the Remedial Action, consists of 14 suction pit venting zones beneath the approximately 19,500 square foot building to mitigate potential soil vapor intrusion into the occupied building from any remaining sources migrating onto the site from off-site sources. The SSDS was designed in accordance with New York City Mechanical Code MC 512 Sub-Slab Exhaust Systems, New York City Local Law 2009/071, USEPA document EPA/625/R-92/016 for the Sub-Slab Depressurization of Large Buildings and Schools, and the NYSDOH October 2006 Guidance for Evaluating Soil Vapor Intrusion in the State of New York. SSDS create depressurized (low vacuum) fields beneath the floor slabs by extracting sub-slab air with in-line fans mounted on the roof of each building which creates the vacuum within the system. The low-vacuum fields create a negative pressure gradient and divert potentially impacted vapors beneath each building

to the atmosphere above the rooftop of the building, thereby reducing the potential for vapor intrusion.

The SSDS includes vertical vapor extraction/collection pits within a continuous gravel envelope laid out beneath the foundation slab across the entire building footprint. The extraction points are connected to transitional header piping on the first floor extending to four risers which have been installed to the roof. The gravel envelope surrounding each extraction point was backfilled with clean, virgin mined ½ inch to ¾ inch gravel (e.g., bluestone) to grade beneath the slab, which acts as a gas-permeable layer. Although not an element of the remedy, a continuous vapor barrier/waterproofing membrane was installed above the gas permeable layer as an element of construction. This system consists of a Stego Industries-branded Drago Wrap Vapor Intrusion Barrier 20-mil thick chemical resistant waterproofing membrane for horizontal applications beneath the building foundation slab and for vertical applications outside the building footprint.

Above-grade components include 3-inch diameter cast iron risers that extend to the roof through chase-way locations and extend at least 3-feet above the roof line. The active SSDS will achieve a pressure differential of at least 0.02 inches of water to provide an adequate safety factor for long-term and seasonal variation. The system consists of in-line radon-style low flow fans fitted to the risers penetrating the roof line and hardwired into the building's electrical system to prevent accidental shut-off and maintain continuous operation. Durable pressure monitoring devices (sensors) have been installed to indicate operational parameters (such as on/off or pressure indicators). The sensors will be wired to a central Sentinel control panel which will visually indicate if any of the four (4) riser sensors have failed and will automatically notify via email IEEG and the responsible parties. The central Sentinel unit will be placed in readily visible, frequently trafficked locations within the structure and monitored regularly. **Figure 9** and **Figure 10** shows the suction-pit SSDS layout and design details. After each building is complete and before building occupancy, initial system start-up testing (SMP Section 4.3.1) will be performed to verify that all components are installed and that the system is operating within the design parameters provided in the RAWP.

Operation of the active SSDSs will not be discontinued without written approval by the NYSDEC and NYSDOH project managers. A proposal to discontinue the SSDSs may be submitted by the Volunteer (BCD Owner LLC or its successors) based on confirmatory data that justifies such request. The SSDSs will remain in-place and operational until permission to discontinue its use is granted in writing by the NYSDEC or NYSDOH project manager.

Procedures for operating and maintaining the SSDS are documented in the Operation and Maintenance Plan (Section 5.0 of this SMP). As-built drawings, signed and sealed by a PE who is licensed and registered in New York State, are included in **Appendix F** – Operations and Maintenance Manual. **Figures 9**, **11**, and **12** show the location of the ECs for the site.

3.3.2 In-Situ Groundwater Treatment

An in-situ permeable reactive barrier (PRB) was installed to impede migration from off-site source(s) and treat the dissolved-phase CVOC contaminant mass observed on the Site at its southern property boundary. The selected PRB application was two-fold and included the application of (PlumeStop and S-MZVI to treat residual chlorinated solvents. PlumeStop is a colloidal form of activated carbon with a surface treatment which reduces its interactions with the soil matrix. This allows it to move through soil pores leaving a coating on the soil matrix as it distributes from the injection point. This provides a very large sorption surface which results in immediate reduction of these contaminants while concentrating contaminants to allow for more efficient and controlled remediation through destructive technologies like S-MZVI. S-MZVI is a concentrated aqueous suspension of sulfidated, colloidal zerovalent iron formulated for compatibility with PlumeStop. When applied to the subsurface it imparts an in-situ chemical reduction (ISCR) mechanism that allows for the destruction of chlorinated ethenes (e.g., PCE, TCE) via abiotic degradation pathways. This mechanism allows for the traditional reduction pathway to be circumvented, minimizing the formation of daughter species such as vinyl chloride. Sulfidation blocks the effects of water on the ZVI particles, allowing the reagent to be effectively focused on the chemical reduction of chlorinated ethenes. As contaminants are degraded to non-toxic and non-sorptive end products, the PlumeStop sorption surface will be regenerated. This allows for further sorption and treatment of contaminants that may diffuse back into the groundwater from the soil matrix over time. Refer to **Figure 12** for Injection Point Location Map.

Between June 14, 2022, and June 17, 2022, twenty-two (22) injection point locations were utilized to deliver the product to the groundwater table. The top of the application was approximately 16 fbg, and the bottom of the application zone was approximately 26 fbg, for a ten-foot treatment zone. The horizontal extent of the injection row was approximately 130clinear feet. Approximately 444cgallons of PlumeStop and 60cgallons of S-MZVI were mixed with approximately 9,143cgallons of water, and, of that mixture, approximately 439 gallons were delivered to each of the 22 injection points.

Procedures for monitoring the in-situ groundwater treatment are documented in the Operation and Maintenance Plan (Section 5.0 of this SMP). As-built drawings, signed and sealed by a PE who is licensed and registered in New York State, are included in **Appendix F** – Operations and Maintenance Manual. **Figures 9**, **11**, and **12** show the location of the ECs for the site.

3.3.3 Criteria for Completion of Remediation/Termination of Remedial Systems

Generally, remedial processes are considered completed when monitoring indicates that the remedy has achieved the remedial action objectives identified by the decision document. The framework for determining when remedial processes are complete is provided in Section 6.4 of NYSDEC DER-10.

As discussed below, the NYSDEC may approve termination of a groundwater monitoring program. When a remedial party receives this approval, the remedial party will decommission all site-related monitoring, injection and recovery wells as per the NYSDEC CP-43 policy.

3.3.3.1 Sub-Slab Depressurization System (SSDS)

The SSDS is a permanent control, and the quality and integrity of this system will be inspected at defined, regular intervals in perpetuity. The SSDS will not be discontinued unless prior written approval is granted by the NYSDEC and the NYSDOH project managers. If monitoring data indicates that the SSDS may no longer be required, a proposal to discontinue the SSDS will be submitted by the remedial party to the NYSDEC and NYSDOH project managers.

3.3.3.2 Groundwater Monitoring Wells

Groundwater monitoring activities to assess activated carbon and S-MZVI applications will continue, as determined by the NYSDEC project manager in consultation with NYSDOH project manager, until residual groundwater concentrations are found to be consistently below ambient water quality standards or the site SCGs, or have become asymptotic at an acceptable level over an extended period. If monitoring data indicates that monitoring may no longer be required, a proposal to discontinue the remedy will be submitted by the remedial party. Monitoring will continue until permission to discontinue is granted in writing by the NYSDEC project manager. If groundwater contaminant levels become asymptotic at a level that is not acceptable to the NYSDEC, additional injections, source removal, treatment and/or control measures will be evaluated.

4.0 OPERATIONS AND MAINTENANCE PLAN

4.1 General

This Operation and Maintenance (O&M) Plan provides a brief description of the measures necessary to operate and maintain the mechanical components of the SSDSs. This O&M Plan:

- Includes procedures for each SSDS start-up and testing;
- Includes the procedures necessary to allow individuals unfamiliar with the Site to operate and maintain the SSDSs; and,
- Will be updated periodically to reflect changes in site conditions or the manner in which the SSDSs are operated and maintained.

Further details regarding the Operation and Maintenance of the sub-slab depressurization system are provided in **Appendix F** - Operation and Maintenance Manual. A copy of this Operation and Maintenance Manual, along with the complete SMP, is to be maintained at the site. This Operation and Maintenance Plan is not to be used as a stand-alone document, but as a component document of this SMP.

4.1.1 Site-Wide Inspection

Site-wide inspections will be performed at a minimum of once per year. These periodic inspections must be conducted when the ground surface is visible (i.e., no snow cover). Site-wide inspections will be performed by a qualified environmental professional as defined in 6 NYCRR Part 375, a Professional Engineer (PE) who is licensed and registered in New York State, or a qualified person who directly reports to a PE who is licensed and registered in New York State. Modification to the frequency or duration of the inspections will require approval from the NYSDEC project manager. Site-wide inspections will also be performed after all severe weather conditions that may affect ECs or monitoring devices. During these inspections, an inspection form will be completed as provided in **Appendix H** – Site Management Forms. The form will compile sufficient information to assess the following:

- Compliance with all ICs, including site usage;
- An evaluation of the condition and continued effectiveness of ECs;
- General site conditions at the time of the inspection;
- Whether stormwater management systems, such as basins and outfalls, are working as designed;
- The site management activities being conducted including, where appropriate, confirmation sampling and a health and safety inspection; and
- Confirm that site records are up to date.

Inspections of all remedial components installed at the site will be conducted. A comprehensive site-wide inspection will be conducted and documented according to the SMP schedule, regardless of the frequency of the Periodic Review Report. The inspections will determine and document the following:

- Whether ECs continue to perform as designed;
- If these controls continue to be protective of human health and the environment;
- Compliance with requirements of this SMP and the Environmental Easement;
- Achievement of remedial performance criteria; and
- If site records are complete and up to date.

Reporting requirements are outlined in Section 6.0 of this Plan.

Inspections will also be performed in the event of an emergency. If an emergency, such as a natural disaster or an unforeseen failure of any of the ECs occurs that reduces or has the potential to reduce the effectiveness of ECs in place at the Site, verbal notice to the NYSDEC project manager must be given by noon of the following day. In addition, an inspection of the Site will be conducted within 5 days of the event to verify the effectiveness of the IC/ECs implemented at the site by a qualified environmental professional (QEP), an P.E., or a qualified person who reports to the QEP/PE, as defined in 6 NYCCR Part 375. Written confirmation must be provided to the NYSDEC project manager within 7 days of the event that includes a summary of actions taken, or to be taken, and the potential impact to the environment and the public. The remedial party will submit follow-up status reports to the NYSDEC within 45 days of the event on actions taken to respond to any emergency event requiring ongoing responsive action describing and documenting actions taken to restore the effectiveness of the ECs.

4.2 SSDS Performance Criteria

The SSDS beneath the building consists of four in-line fans connected to a sub-slab extraction pit network. The inline fans will be RadonAway GX Pro Series model GX3 or approved alternates. The inline fans will be operated in accordance with manufacturer's specifications and recommendations. Competent depressurization will be considered effective when a vacuum of no less than -0.004 inches of water column ("WC) is measured on all vacuum monitoring points located within the building footprint.

4.3 Operation and Maintenance of the SSDS

The following sections provide a description of the O&M of the SSDSs which is based on the NYSDOH Guidance and USEPA guidance document EPA/625/R-92/016 concerning active depressurization of large buildings and schools (June 1994). Manufacturing cutsheets and as-built drawings for the sub-slab portions of the system are provided in **Appendix F**.

4.3.1 System Start-Up and Testing

Prior to initial SSDS start-up, all accessible SSDS components for each SSDS will be inspected. The equipment will be started in accordance with the manufacturer's recommendations. System testing for the initial start-up will be performed as follows:

- Any leaks identified will be properly sealed.
- The fan-malfunction warning device will be tested.
- Airflow rates will be measured through the sample ports with an anemometer meter to document that airflow within the system is consistent with design calculations.
- Vacuum pressure will be measured at the vacuum monitoring points and at each riser/fan to document that vacuum conveyance is consistent with the design calculations.
- The building's heating, ventilation, and air conditioning (HVAC) system is operating under normal conditions.

In addition to the above, post remedial indoor air verification sampling will be performed to verify that the SSDS is functioning effectively in preventing soil vapor intrusion into the building. Post mitigation indoor air sampling is recommended to verify that the sub-slab depressurization system (SSDS) is functioning effectively in preventing the potential for soil vapor intrusion. To be representative of a residential exposure scenario, the post SSDS startup indoor air and background outdoor air samples should be collected for a duration of 24 hours. The (negative) pressure field testing results should indicate that satisfactory depressurization across the entire building slab has been achieved. The indoor-air sampling should be conducted no sooner than 30 days after the SSDS has been deemed operating efficiently and has been operating continuously for 30 days (so as to give it adequate chance to be effective). Additionally, the indoor air analytical sampling may need to be repeated in the next heating season.

The system testing described above will be conducted during the initial system startup for the SSDSs and if, during each SSDS' lifetime, significant changes are made to the system and the system is restarted.

4.3.2 SSDS Inspections

Inspection of the SSDSs will be performed monthly by trained building personnel, and at a minimum annually by the QEP or PE to evaluate whether the systems are operating within design parameters. The annual certification inspection of remedial systems must be conducted by a qualified environmental professional as defined in 6 NYCRR Part 375, a PE who is licensed and registered in New York State, or a qualified person who directly reports to a PE who is licensed

and registered in New York State. Modification to the frequency or sampling requirements will require approval from the NYSDEC project manager. A visual inspection of the complete systems will be conducted during each monitoring event. Unscheduled inspections and/or sampling may take place when a suspected failure of the SSDS has been reported or an emergency occurs that is deemed likely to affect the operation of the system. SSDS components to be monitored include, but are not limited to, the components included in Table [4.3.2] below.

Table [4.3.2] – SSDS Monitoring Requirements and Schedule

SSDS Component	Inspection Parameter	Operating Range	Inspection Schedule
Vacuum Monitoring Points	Vacuum Pressure	-0.004 inches of water column (minimum)	Monthly, Annually*
Vacuum Gauges	Vacuum Pressure	-5 inches of water column	Monthly, Annually*
Exhaust Points	Motor Operation and Air Flow Direction	N/A	Monthly, Annually*
Vent Riser	Vacuum Pressure	-2.0 to -2.5 inches of water column	Monthly, Annually*
Remote Alarm†	Functionality & Integrity	N/A	Monthly, Annually*

*Components will be inspected monthly by trained building personnel and annually by a QEP or PE.
†Remote alarm will provide visual indicators to onsite staff if there is a loss of vacuum in any of the 4 risers, and IEEG and the Remedial Party will be automatically notified via email in those instances.

A complete list of components to be inspected is provided in the Inspection Checklist, provided in **Appendix H** - Site Management Forms. If any equipment readings are not within their specified operation range or any equipment is observed to be malfunctioning or the system is not performing within specifications, then maintenance and repair per the Operation and Maintenance Plan is immediately required.

4.3.3 Routine System Operation and Maintenance

The SSDSs and their in-line fans will operate continuously after the initial system start-up in accordance with appropriate design specifications and parameters, the manufacturer's operation manual, and SMP requirements. The blower assembly and its appurtenances shall be inspected at the interval specified in the manufacturer's operation manual. Routine equipment maintenance may include, but is not limited to, replacing the in-line fans or other parts, replacing vacuum pressure gauges, and testing the remote alarm system. If any technical difficulties or non-optimal operating conditions are encountered with the SSDSs, the property owner and/or building management responsible for each building shall complete any necessary modifications or repairs to the system to bring the system into compliance with appropriate design specifications and

parameters. The remedial party, NYSDEC and NYSDOH shall be notified of any significant modifications or repairs that are planned.

4.3.4 Non-Routine Operation and Maintenance

Non-routine maintenance may also be required during the SSDSs' operation, including the following situations:

- The building's owner or occupants report that the warning device indicates the SSDS is not operating properly;
- The SSDS becomes damaged; or
- The building has undergone renovations that may reduce the effectiveness of the SSDS.

The NYSDEC will be informed within 24 hours upon discovery of SSDS failure. Repairs or adjustments will be made to the system as appropriate and per manufacturer guidelines within 15 days of the equipment failure, or whenever possible (i.e., pending availability of parts). If necessary, the system will be restarted. Activities conducted during non-routine maintenance visits will vary.

5.0 MONITORING AND SAMPLING PLAN

5.1 Groundwater Sampling

Groundwater monitoring will be performed on a quarterly basis for the first year to assess the performance of the remedy, then semi-annually thereafter. Modification to the frequency or sampling requirements will require approval from the NYSDEC project manager.

The network of monitoring wells has been installed to monitor groundwater conditions at the site. The network of on-site wells has been designed to provide site-wide coverage to capture contaminant concentrations both immediately proximal to and further downgradient from the suspected off-site source. The monitoring well network for this site includes the following monitoring wells: MW-3(R), MW-4(R), MW-1(R), MW-1i(R), MW-7i(R), MW-8(R), MW-10(R), MW-10i(R), MW-11(R), and MW-11i(R).

Table [5.1] below summarizes the wells' identification numbers, as well as the purpose, location, depths, diameter, and screened intervals of the wells. As part of the groundwater monitoring, 10 on-site wells all of which are downgradient and side gradient of the suspected contaminant source will be sampled to evaluate the effectiveness of the remedy. The remedial party will measure depth to the water table for each monitoring well in the network before sampling.

Table [5.1] – Monitoring Well Information

Monitoring Well ID	Well Position	Coordinates (longitude/latitude)	Well Diameter (inches)
MW-1(R)	cross-gradient	40°36'19.89"N , 73°45'15.68"W	2
MW-1i(R)	cross-gradient	40°36'19.89"N, 73°45'15.68"W	2
MW-3(R)	downgradient	40°36'21.22"N, 73°45'17.05"W	2
MW-4(R)	downgradient	40°36'20.48"N, 73°45'17.39"W	2
MW-7i(R)	downgradient	40°36'19.71"N, 73°45'16.54"W	2
MW-8(R)	downgradient	40°36'19.70"N, 73°45'16.70"W	2
MW-10(R)	downgradient	40°36'20.06"N, 73°45'16.88"W	2
MW-10i(R)	downgradient	40°36'20.06"N, 73°45'16.88"W	2
MW-11(R)	downgradient	40°36'20.85"N, 73°45'17.28"W	2
MW-11i(R)	downgradient	40°36'20.85"N, 73°45'17.28"W	2

The well placement was determined by the locations of the previous Remedial Investigation monitoring wells (see **Figure 13**), with a combination of standard depth wells (screened across the soil/water interface between 15-25-feet bgs), and intermediate depth wells (screened between 40-45 feet bgs), to evaluate the performance of the remedy on the Site at varying depths. Future sampling events will be performed using low-flow sampling techniques, and the samples collected will be analyzed for TCL VOCs, using USEPA Method 8260.

Monitoring well construction logs are included in **Appendix E** of this document.

If biofouling or silt accumulation occurs in the on-site and/or off-site monitoring wells, the wells will be physically agitated/surged and redeveloped. Additionally, monitoring wells will be properly decommissioned and replaced if an event renders the wells unusable.

Repairs and/or replacement of wells in the monitoring well network will be performed based on assessments of structural integrity and overall performance.

The NYSDEC project manager will be notified prior to any repair or decommissioning of any monitoring well for the purpose of replacement, and the repair or decommissioning and replacement process will be documented in the subsequent Periodic Review Report. Well decommissioning without replacement will be done only with the prior approval of the NYSDEC project manager. Well abandonment will be performed in accordance with NYSDEC's policy guidance document, "CP-43: Groundwater Monitoring Well Decommissioning Procedures." Monitoring wells that are decommissioned because they have been rendered unusable will be

replaced in kind at the nearest available location, unless otherwise approved by the NYSDEC project manager.

The sampling frequency may only be modified with the approval of the NYSDEC project manager. This SMP will be modified to reflect changes in sampling plans approved by the NYSDEC project manager.

Deliverables for the groundwater monitoring program are specified in Section 7.0 – Reporting Requirements.

5.2 Sub-Slab Vapor and Indoor Air Sampling

Soil vapor and indoor air sampling will be performed to assess the performance of the remedy once the building has been completed and "enclosed" to determine the baseline conditions, and then again in the next available heating season, and annually thereafter. Modification to the frequency of sampling requirements will require approval from the NYSDEC project manager.

The network of monitoring points has been designed to provide overall coverage of the onsite building, and to determine the sub-slab vapor conditions present beneath the building.

Soil vapor samples will be collected from each of the eight (8) previously installed vapor monitoring points (VMPs); VMP-1, VMP-2, VMP-3, VMP-4, VMP-5, VMP-6, VMP-7, and VMP-9. Please note, due to the thickness of the mat slab (approximately 60+ inches) VMP-8 was not able to be installed. Each soil vapor sample will be collected in laboratory provided and certified clean 2.7- or 6-liter summa canisters, over a period of 24-hours, and will be analyzed for VOCs using USEPA method TO-15.

Indoor air samples will also be collected simultaneously using summa canisters over a 24-hour period. A minimum of four (4) indoor air samples will be collected from each quadrant of the Site building; IA-1, IA-2, IA-3, and IA-4, and co-located with the sub-slab soil vapor sample locations. Each indoor air sample will also be analyzed for VOCs using USEPA method TO-15. Prior to commencement of the above sampling, a Work Plan will be provided to the Departments/Agencies, along with drawings/maps clearly showing the proposed sampling locations, in accordance with the NYSDOH Final Guidance for Evaluating Soil Vapor Intrusion guidance document.

Deliverables for the soil vapor and indoor air monitoring program are specified in Section 7.0 – Reporting Requirements.

5.3 Monitoring and Sampling Protocols

All sampling activities will be recorded in a field book and associated sampling log as provided in **Appendix I** - Site Management Forms. Other observations (e.g., groundwater monitoring well integrity) will be noted on the sampling log. The sampling log will serve as the inspection form for the monitoring network.

5.4 Site Wide Inspection

Site-wide inspections will be performed monthly, or at a minimum of once per year. These periodic inspections must be conducted when the ground surface is visible (i.e. no snow cover). Site-wide inspections will be performed by a qualified environmental professional as defined in 6 NYCRR Part 375, a Professional Engineer (PE) who is licensed and registered in New York State, or a qualified person who directly reports to a PE who is licensed and registered in New York State (depending on the need to evaluate engineering controls). Modification to the frequency or duration of the inspections will require approval from the NYSDEC project manager. Site-wide inspections will also be performed after all severe weather conditions that may affect ECs or monitoring devices. During these inspections, an inspection form will be completed as provided in **Appendix I** – Site Management Forms. The form will compile sufficient information to assess the following:

- Compliance with all ICs, including site usage;
- An evaluation of the condition and continued effectiveness of ECs;
- General site conditions at the time of the inspection;
- The site management activities being conducted including, where appropriate, confirmation sampling and a health and safety inspection; and
- Confirm that site records are up to date.

Inspections of all remedial components installed at the site will be conducted. A comprehensive site-wide inspection will be conducted and documented according to the SMP schedule, regardless of the frequency of the Periodic Review Report. The inspections will determine and document the following:

- Whether ECs continue to perform as designed;
- If these controls continue to be protective of human health and the environment;
- Compliance with requirements of this SMP and the Environmental Easement;
- Achievement of remedial performance criteria; and
- If site records are complete and up to date.

Reporting requirements are outlined in Section 7.0 of this plan.

Inspections will also be performed in the event of an emergency. If an emergency, such as a natural disaster or an unforeseen failure of any of the ECs occurs that reduces or has the potential to reduce the effectiveness of ECs in place at the site, verbal notice to the NYSDEC project manager must be given by noon of the following day. In addition, an inspection of the site will be conducted within 5 days of the event to verify the effectiveness of the IC/ECs implemented at the site by a qualified environmental professional, as defined in 6 NYCCR Part 375. Written confirmation must be provided to the NYSDEC project manager within 7 days of the event that includes a summary of actions taken, or to be taken, and the potential impact to the environment and the public. The remedial party will submit follow-up status reports to the NYSDEC within 45 days of the event on actions taken to respond to any emergency event requiring ongoing responsive action, describing, and documenting actions taken to restore the effectiveness of the ECs.

6.0 PERIODIC ASSESSMENTS/EVALUATIONS

6.1 Climate Change Vulnerability Assessment

Increases in both the severity and frequency of storms/weather events, an increase in sea level elevations along with accompanying flooding impacts, shifting precipitation patterns and wide temperature fluctuation, resulting from global climactic change and instability, have the potential to significantly impact the performance, effectiveness and protectiveness of a given site and associated remedial systems. Vulnerability assessments provide information so that the site and associated remedial systems are prepared for the impacts of the increasing frequency and intensity of severe storms/weather events and associated flooding.

This section provides a summary of vulnerability assessments that will be conducted for the Site during periodic assessments, and briefly summarizes the vulnerability of the Site and/or engineering controls to severe storms/weather events and associated flooding.

- The Site does not lie in a Federal Emergency Management Agency (FEMA)-designated flood plain. However, approximately 25% of the property lies within a “Zone X” 0.2% Annual Chance Flood Hazard area; therefore, the potential for floods at the Site is low.
- The Site is located at an elevation of between approximately 17 and 25 feet above mean sea level (amsl), and the water table is approximately 17 fbg. The Site slopes approximately 5.5-feet from east to west. Storm water at the Site is directed to storm drains along Beach Channel Drive and Redfern Avenue. Stormwater outside the building footprint is directed to the New York City sewer system. During intense rain events, localized street flooding is possible due to the relatively low permeability of paved areas.
- Site erosion is not expected during severe weather or precipitation events because soil will be covered with vegetation and/or concrete pavers/asphalt.
- The building footprint protects the SSDS from extreme wind conditions and stormwater watershed, although the rooftop SSDS blowers may be susceptible to extreme weather conditions, and any faults in the blowers will be detected by the Sentinel Remote system, and IEEG and the Remedial Party notified of such, as well as the onsite warning lights will be visible. ECs will be inspected after severe weather or other emergency conditions (natural disasters or fires) that are known to have inflicted damage at the site or adjoining properties and repaired, as necessary. The SSDS receive electrical service from Consolidated Edison, Inc. (ConEd). A power loss and/or dips/surges in voltage during a severe weather event, including lightning strikes, may impact the SSDS equipment and operations. The SSDS control panel will shut down the system in the event of a dip or surge in voltage.

Overall, the site ECs are not expected to be vulnerable to the effects of global climate change, including severe weather and flooding events.

6.2 Green Remediation Evaluation

NYSDEC's DER-31 Green Remediation requires that green remediation concepts and techniques be considered during all stages of the remedial program including site management, with the goal of improving the sustainability of the cleanup and summarizing the net environmental benefit of any implemented green technology. This section of the SMP provides a summary of any green remediation evaluations to be completed for the Site during site management and reported in the Periodic Review Report (PRR).

- The on-site engineering control, an active SSDS, is a low-maintenance and low-power usage system. The system produces no waste or significant or treatable emissions, uses no water, and does not utilize any open space. Thus, the system is considered to meet the goal of improving sustainability of the cleanup and provides a net environmental benefit.
- Only annual O&M is required for the SSDS, which will be performed in conjunction with the annual periodic review and Site inspection, minimizing the need for frequent site visits via mass transit.
- The Site area is highly urbanized and there are no green spaces, trees or vegetation present adjacent to the Site; therefore, there is no effect for ecosystems.
- Transportation to and from the Site, use of consumables in relation to visiting the Site in order to conduct system checks and/or collect samples, and shipping samples to a laboratory for analyses have direct and/or inherent energy costs. The schedule and/or means of these periodic activities have been prepared so that these tasks can be accomplished in a manner that does not impact remedy protectiveness but reduces expenditure of energy or resources.

6.2.1 Remedial Systems

Remedial systems will be operated properly considering the current site conditions to conserve materials and resources to the greatest extent possible. Consideration will be given to operating rates and use of reagents and consumables. Spent materials will be sent for recycling, as appropriate.

6.2.2 Frequency of System Checks, Sampling and Other Periodic Activities

Transportation to and from the Site, use of consumables in relation to visiting the Site in order to conduct system checks and/or collect samples, and shipping samples to a laboratory for analyses have direct and/or inherent energy costs. The schedule and/or means of these periodic activities have been prepared so that these tasks can be accomplished in a manner that does not impact remedy protectiveness but reduces expenditure of energy or resources.

All required annual sampling, testing, and inspections will be conducted concurrently, to reduce the frequency of Site visits. Carpooling will be considered during all routine visits.

6.2.3 Metrics and Reporting

As discussed in Section 6.0 and shown in **Appendix H** – Site Management Forms, information on energy usage, solid waste generation, transportation and shipping, water usage and land use and ecosystems will be recorded to facilitate and document consistent implementation of green remediation during site management and to identify corresponding benefits.

6.3 Remedial System Optimization

A Remedial System Optimization (RSO) study will be conducted any time that the NYSDEC project manager or the remedial party requests in writing that an in-depth evaluation of the remedy is needed. An RSO may be appropriate if any of the following occur:

- The remedial actions have not met or are not expected to meet RAOs in the time frame estimated in the Decision Document;
- The management and operation of the remedial system is exceeding the estimated costs;
- The remedial system is not performing as expected or as designed;
- Previously unidentified source material may be suspected;
- Plume shift has potentially occurred;
- Site conditions change due to development, change of use, change in groundwater use, etc.;
- There is an anticipated transfer of the site management to another remedial party or agency; and/or
- A new and applicable remedial technology becomes available.

An RSO will provide a critique of a site's conceptual model, give a summary of past performance, document current cleanup practices, summarize progress made toward the site's cleanup goals, gather additional performance or media specific data and information and provide

recommendations for improvements to enhance the ability of the present system to reach RAOs or to provide a basis for changing the remedial strategy.

The RSO study will focus on overall site cleanup strategy, process optimization and management with the intent of identifying impediments to cleanup and improvements to site operations to increase efficiency, cost effectiveness and remedial time frames. Green remediation technology and principals are to be considered when performing the RSO.

7.0. REPORTING REQUIREMENTS

7.1 Site Management Reports

All site management inspection, maintenance and monitoring events will be recorded on the appropriate site management forms provided in **Appendix H**. These forms are subject to NYSDEC revision. All site management inspection, maintenance, and monitoring events will be conducted by a qualified environmental professional as defined in 6 NYCRR Part 375, a Professional Engineer (PE) who is licensed and registered in New York State, or a qualified person who directly reports to a PE who is licensed and registered in New York State.

All applicable inspection forms and other records, including media sampling data and system maintenance reports, generated for the site during the reporting period will be provided in electronic format to the NYSDEC in accordance with the requirements of Table [6.1] and summarized in the Periodic Review Report.

Table [6.1]: Schedule of Interim Monitoring/Inspection Reports

Task/Report	Reporting Frequency*
SSDS Start-up Verification	Within 30 days of completion of initial starup and prior to building occupancy; within 10 days of any re-start following routine maintenance or unexpected shut down
Groundwater Monitoring Results	Within 30 days of the sampling event
Periodic Review Report	16-months from the date of the COC, and then annually

* The frequency of events will be conducted as specified until otherwise approved by the NYSDEC project manager.

All interim monitoring/inspections reports will include, at a minimum:

- Date of event or reporting period;
- Name, company, and position of person(s) conducting monitoring/inspection activities;
- Description of the activities performed;
- Where appropriate, color photographs or sketches showing the approximate location of any problems or incidents noted (included either on the checklist/form or on an attached sheet);
- Type of samples collected (e.g., sub-slab vapor, indoor air, outdoor air);
- Copies of all field forms completed (e.g., well sampling logs, chain-of-custody documentation);
- Sampling results in comparison to appropriate standards/criteria;
- A figure illustrating sample type and sampling locations;

- Copies of all laboratory data sheets and the required laboratory data deliverables required for all points sampled (to be submitted electronically in the NYSDEC-identified format);
- Any observations, conclusions, or recommendations; and
- A determination as to whether contaminant conditions have changed since the last reporting event.

Routine maintenance event reporting forms will include, at a minimum:

- Date of event;
- Name, company, and position of person(s) conducting maintenance activities;
- Description of maintenance activities performed;
- Any modifications to the system;
- Where appropriate, color photographs or sketches showing the approximate location of any problems or incidents noted (included either on the checklist/form or on an attached sheet); and
- Other documentation such as copies of invoices for maintenance work, receipts for replacement equipment, etc., (attached to the checklist/form).

Non-routine maintenance event reporting forms will include, at a minimum:

- Date of event;
- Name, company, and position of person(s) conducting non-routine maintenance/repair activities;
- Description of non-routine activities performed;
- Where appropriate, color photographs or sketches showing the approximate location of any problems or incidents (included either on the form or on an attached sheet); and
- Other documentation such as copies of invoices for repair work, receipts for replacement equipment, etc. (attached to the checklist/form).

Data will be reported in digital format as determined by the NYSDEC. Currently, data is to be supplied electronically and submitted to the NYSDEC EQuIS™ database in accordance with the requirements found at this link http://www.dec.ny.gov/chemical/62440.html.

7.2 Periodic Review Report

A Periodic Review Report (PRR) will be submitted to the NYSDEC project manager beginning sixteen (16) months after the Certificate of Completion is issued. After submittal of the initial PRR, the next PRR shall be submitted annually to the NYSDEC project manager or at another frequency as may be required by the NYSDEC project manager. In the event that the Site is subdivided into

separate parcels with different ownership, a single PRR will be prepared that addresses the Site described in **Appendix A** - Environmental Easement. The report will be prepared in accordance with NYSDEC's DER-10 and submitted within 30 days of the end of each certification period. Media sampling results will also be incorporated into the Periodic Review Report. The report will include:

- Identification, assessment and certification of all ECs/ICs required by the remedy for the Site.
- Results of the required annual site inspections, fire inspections and severe condition inspections, if applicable.
- Description of any change of use, import of materials, or excavation that occurred during the certifying period.
- All applicable site management forms and other records generated for the Site during the reporting period in the NYSDEC-approved electronic format, if not previously submitted.
- Identification of any wastes generated during the reporting period, along with waste characterization data, manifests, and disposal documentation.
- A summary of any monitoring data and/or information generated during the reporting period, with comments and conclusions.
- Data summary tables and graphical representations of contaminants of concern by media (groundwater, soil vapor, etc.), which include a listing of all compounds analyzed, along with the applicable standards, with all exceedances highlighted. These tables and figures will include a presentation of past data as part of an evaluation of contaminant concentration trends, including but not limited to:
    - Trend monitoring graphs that present groundwater contaminant levels from before the start of the remedy implementation to the most current sampling data;
    - Trend monitoring graphs depicting system influent analytical data on a per event and cumulative basis;
    - O&M data summary tables;
    - A current plume map for sites with remaining groundwater contamination; and
    - A groundwater elevation contour map for each gauging event.
- A site evaluation, which includes the following:
    - The compliance of the remedy with the requirements of the site-specific Remedial Action Work Plan (RAWP), ROD or Decision Document;
    - The operation and the effectiveness of all treatment units, etc., including identification of any needed repairs or modifications;
    - Any new conclusions or observations regarding site contamination based on inspections or data generated by the Monitoring and Sampling Plan for the media being monitored;

  - Recommendations regarding any necessary changes to the remedy and/or Monitoring and Sampling Plan;
  - An evaluation of trends in contaminant levels in the affected media to determine if the remedy continues to be effective in achieving remedial goals as specified by the RAWP, ROD or Decision Document; and
  - The overall performance and effectiveness of the remedy.
- A performance summary for all treatment systems at the Site during the calendar year, including information such as:
  - The number of days the system operated for the reporting period;
  - A description of breakdowns and/or repairs along with an explanation for any significant downtime;
  - A description of the resolution of performance problems;
  - Alarm conditions;
  - Trends in equipment failure; and,
  - Comments, conclusions, and recommendations based on data evaluation. Recommendations must address how receptors would be impacted. Recommendations can include:
    - Proposals to address efficiency and costs such as: instituting remote operation, system changes to decrease maintenance costs and downtime, and system changes to decrease energy use; and
    - Proposals to modify or shut down a treatment system due to remediation completion, system performance or changed conditions. System shutdowns are addressed in Section 6.4 of DER-10.

7.2.1 Certification of Institutional and Engineering Controls

Following the last inspection of the reporting period, a qualified environmental professional as defined in 6 NYCRR Part 375 or Professional Engineer licensed to practice and registered in New York State will prepare, and include in the PRR, the following certification as per the requirements of NYSDEC DER-10:

"*For each institutional or engineering control identified for the site, I certify that all of the following statements are true:*

- *The inspection of the site to confirm the effectiveness of the institutional and engineering controls required by the remedial program was performed under my direction;*
- *The institutional control and/or engineering control employed at this site is unchanged from the date the control was put in place, or last approved by the Department;*
- *Nothing has occurred that would impair the ability of the control to protect the public health and environment;*
- *Nothing has occurred that would constitute a violation or failure to comply with any site management plan for this control;*
- *Access to the site will continue to be provided to the Department to evaluate the remedy, including access to evaluate the continued maintenance of this control;*
- *If a financial assurance mechanism is required under the oversight document for the site, the mechanism remains valid and sufficient for the intended purpose under the document;*
- *Use of the site is compliant with the environmental easement;*
- *The engineering control systems are performing as designed and are effective;*
- *To the best of my knowledge and belief, the work and conclusions described in this certification are in accordance with the requirements of the site remedial program and generally accepted engineering practices; and*
- *The information presented in this report is accurate and complete.*

I certify that all information and statements in this certification form are true. I understand that a false statement made herein is punishable as a Class "A" misdemeanor, pursuant to Section 210.45 of the Penal Law. I, Xin Yuan, of Impact Environmental, Engineering and Geology, PPLC, am certifying as Remedial Party's Designated Site Representative: I have been authorized and designated by all site owners/remedial parties to sign this certification for the site.

I certify that the New York State Education Department has granted a Certificate of Authorization to provide Professional Engineering services to the firm that prepared this Periodic Review Report."

Every five years, the following certifications will be added to the above list:

- *The assumptions made in the qualitative exposure assessment remain valid.*

The signed certification will be included in the Periodic Review Report.

The PRR will be submitted, in electronic format, to the NYSDEC project manager and the NYSDOH project manager. The PRR may also need to be submitted in hard-copy format if requested by the NYSDEC project manager.

7.3 Corrective Measures Work Plan

If any component of the remedy is found to have failed, or if the periodic certification cannot be provided due to the failure of an institutional or engineering control or failure to conduct site management activities, a Corrective Measures Work Plan will be submitted to the NYSDEC project manager for approval. This plan will explain the failure and provide the details and schedule for performing work necessary to correct the failure. Unless an emergency condition exists, no work will be performed pursuant to the Corrective Measures Work Plan until it has been approved by the NYSDEC project manager.

7.4 Remedial System Optimization Report

If an RSO is to be performed (see Section 5.3), upon completion of an RSO, an RSO report must be submitted to the NYSDEC project manager for approval. A general outline for the RSO report is provided in **Appendix J**. The RSO report will document the research/investigation and data gathering that was conducted, evaluate the results and facts obtained, present a revised conceptual site model and present recommendations. RSO recommendations are to be implemented upon approval from the NYSDEC. Additional work plans, design documents, HASPs etc., may still be required to implement the recommendations, based upon the actions that need to be taken. A final engineering report and update to the SMP may also be required.

The RSO report will be submitted, in electronic format, to the NYSDEC project manager and the NYSDOH project manager.

8.0 REFERENCES

1. Singer Environmental Group, LTD (SEG) Phase I ESA, November 7, 2018
2. Singer Environmental Group, LTD (SEG) review of Environmental Business Consultants (EBC) Phase I ESA, September 18, 2018
3. Singer Environmental Group, LTD (SEG) review of Tenen Environmental (Tenen) Phase I ESA, September 21, 2018
4. Tenen Environmental, LLC Due Diligence Phase II Environmental Site Investigation (ESI), August 2, 2018
5. Impact Environmental Closures (IEC) Partial Remedial Investigation (RI), October/November 2020
6. Impact Environmental Engineering and Geology PLLC (IEEG) Remedial Investigation Work Plan, September 10, 2021.
7. IEEG Final Remedial Investigation (RI), September/October 2021.
8. IEEG Remedial Action Work Plan (RAWP), April 2022.
9. NYSDEC Decision Document, April 2022.
10. IEEG Post Remedial Action Soil Vapor and Groundwater Data, June/July 2023.
11. IEEG Request for Remedy Modification, August 2023.
12. NYSDOH, Guidance for Evaluating Soil Vapor Intrusion in the State of New York. October 2006
13. NYSDOH, Updates to Soil Vapor /Indoor Air Decision Matrices. May 2017.
14. New York State Department of Environmental Conservation, Part 375 of Title 6 of the New York Compilation of Codes, Rules, and Regulations, Effective December 14, 2006.
15. New York State Department of Environmental Conservation, Draft DER-10 Technical Guidance for Site Investigation and Remediation, dated May 3, 2010; effective June 18, 2010
16. NYSDEC, 1998. Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations Division of Water Technical and Operational Guidance Series (TOGS) 1.1.1. June 1998 (April 2000 addendum).

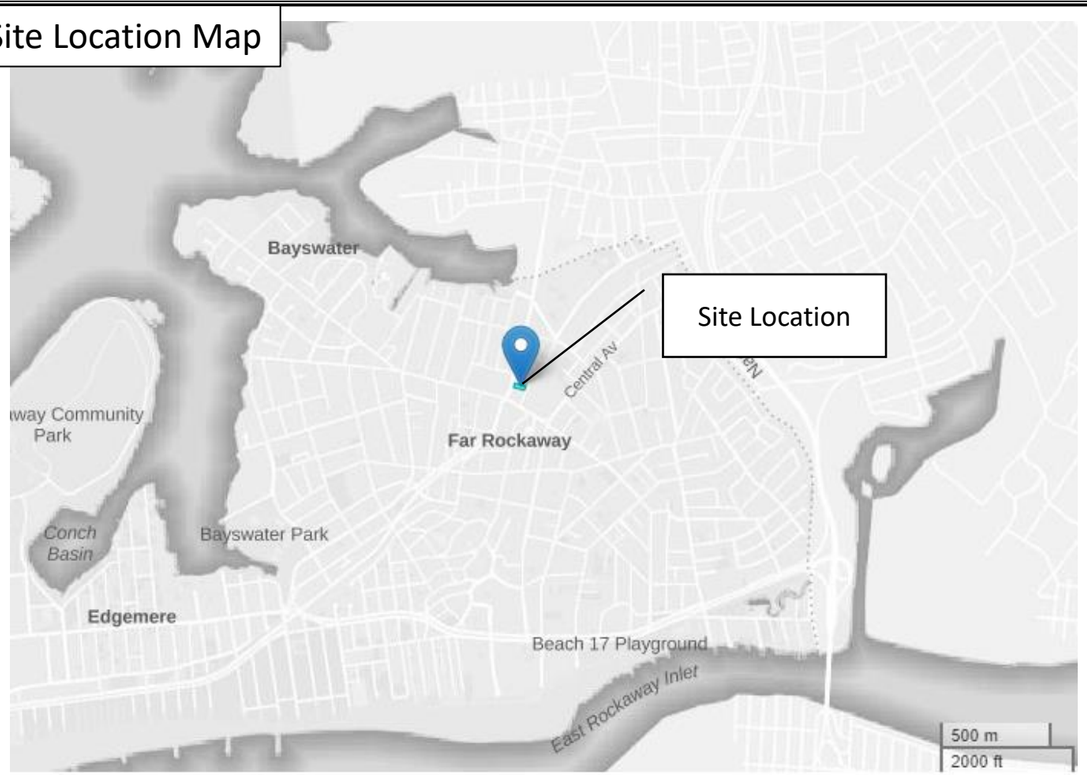
FIGURES

13-12 Beach Channel Drive
Far Rockaway, NY

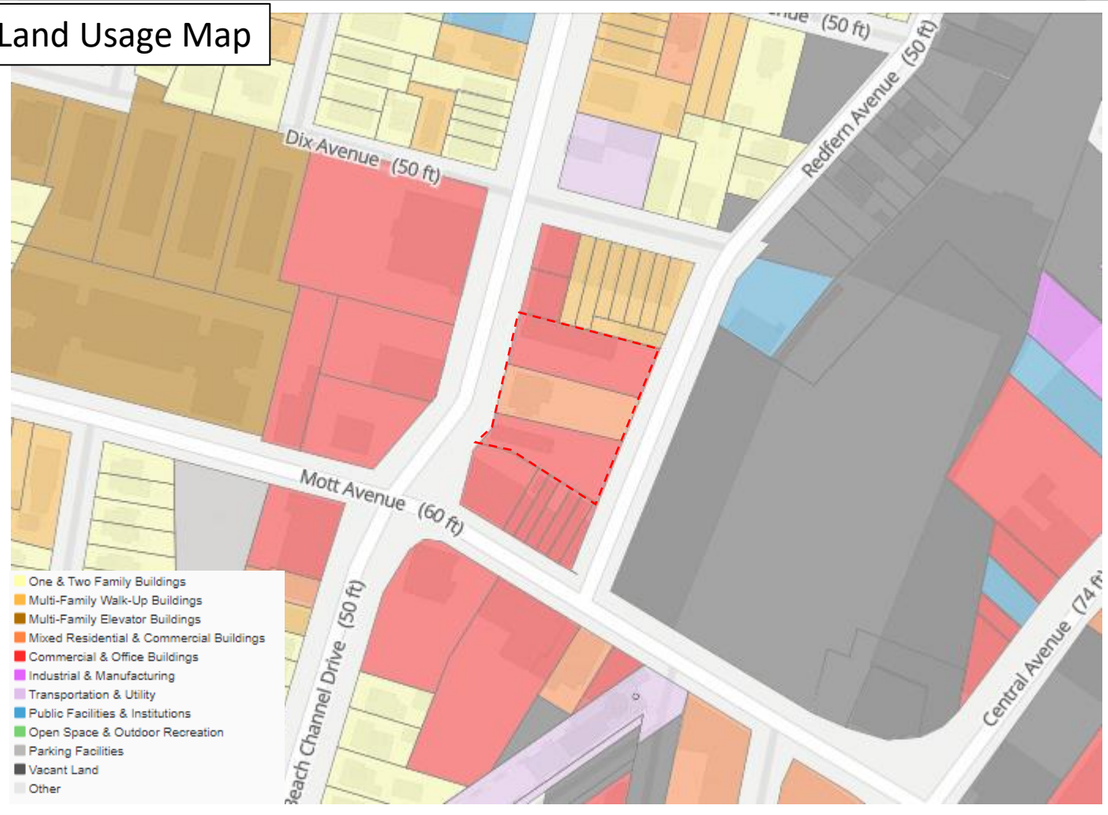
Site Management Plan
NYSDEC BCP #C241254C241254

IMPACT ENVIRONMENTAL
170 Keyland Court
Bohemia, New York 11716
TEL: (631) 268-8800
FAX: (631) 269-1599

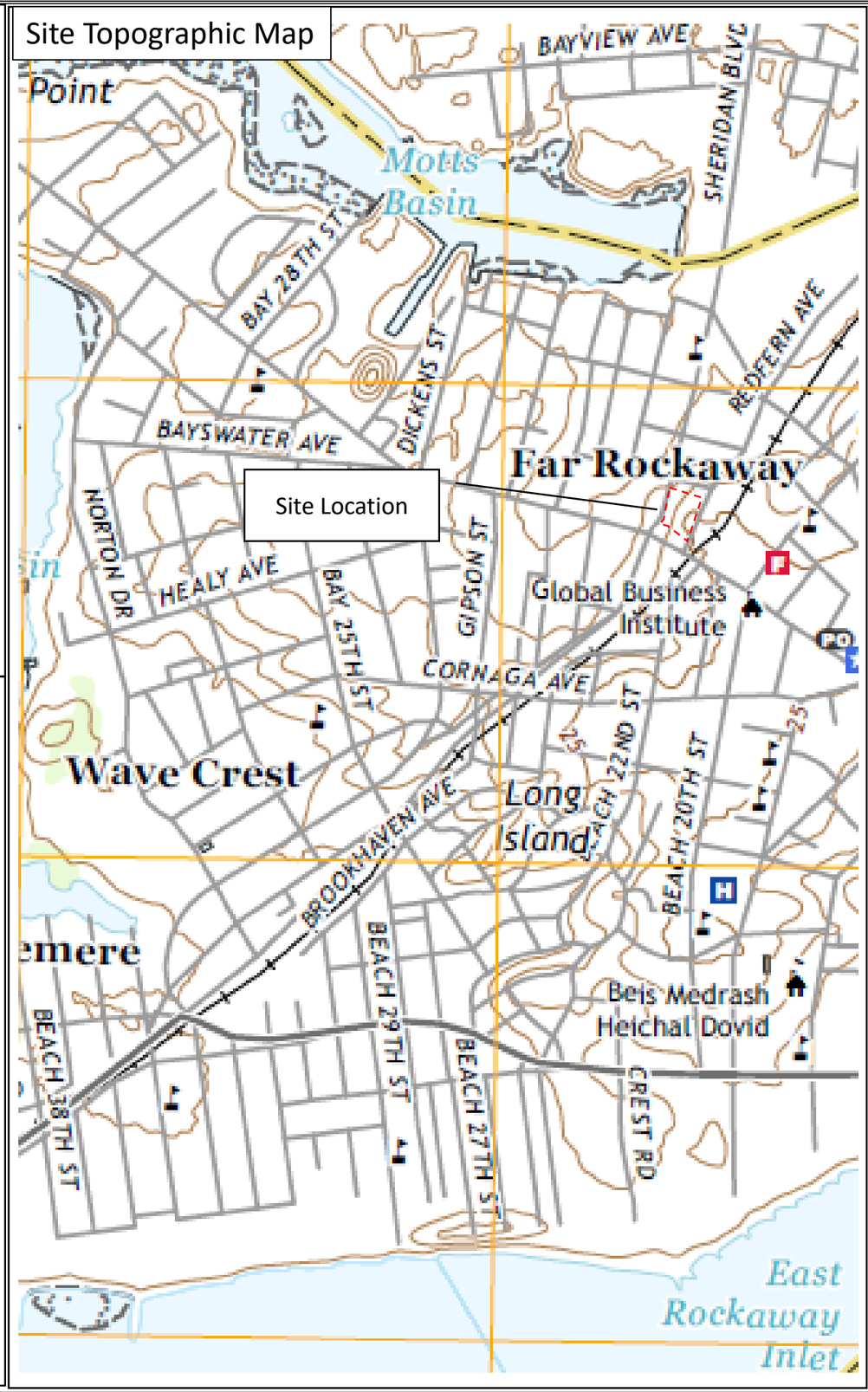
Site Location Map



Land Usage Map



Site Topographic Map



Legend

Site Boundaries

NOTES:

Base maps:

Site Location Map - NYCOER SPEED Map

Land Usage Map – NYC Planning ZoLa Map

Topographic Map - USGS Far Rockaway Quadrangle Topo Map

SITE LOCATION, LAND USAGE, AND TOPOGRPAHIC MAPS

13-16 to 13-30 Beach Channel Drive, Far Rockaway, NY

Figure 1

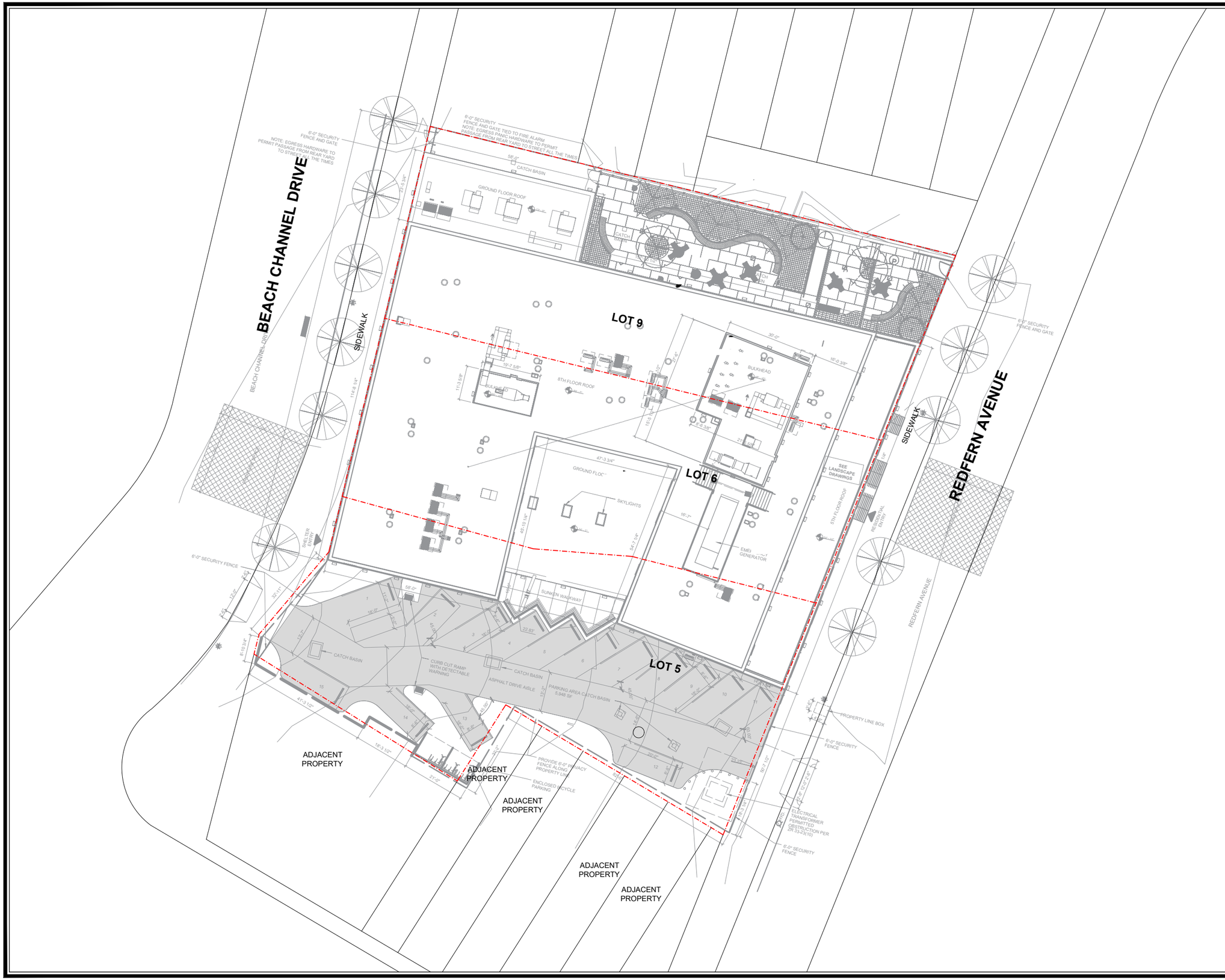
Project #:	15209
Drawn By:	CJC
Checked By:	GMC
Date:	1/7/21
Revisions	

N

Not to scale

IMPACT ENVIRONMENTAL CLOSURES, INC.

170 KEYLAND COURT
BOHEMIA, NEW YORK 11716
TEL (631) 269-8800
FAX (631) 269-1599



LEGEND

- SOIL BORING LOCATION
- APPROXIMATE PROPERTY LINE

PROJECT NORTH

0' 30' 60'

NOTES:

SITE PLAN WITH PROPSOED DEVELOPMENT

13-12 to 13-24
Beach Channel Drive
Queens, New York

Figure No: 02

PROJECT NO.	15209-01
DESIGNED BY:	LR
DRAWN BY:	AB
CHECKED BY:	GMC
DATE:	12/3/2021
SCALE:	1" = 30'
REVISIONS	

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Legend

Property Boundary

NYC TAX MAP

13-12, 13,16, and 13-24 Beach Channel Drive, Far Rockaway, NY

FIGURE 3

Project #:	15209
Drawn By:	CJC
Checked By:	GMC
Date:	9-11-23
Revisions	

Not To Scale

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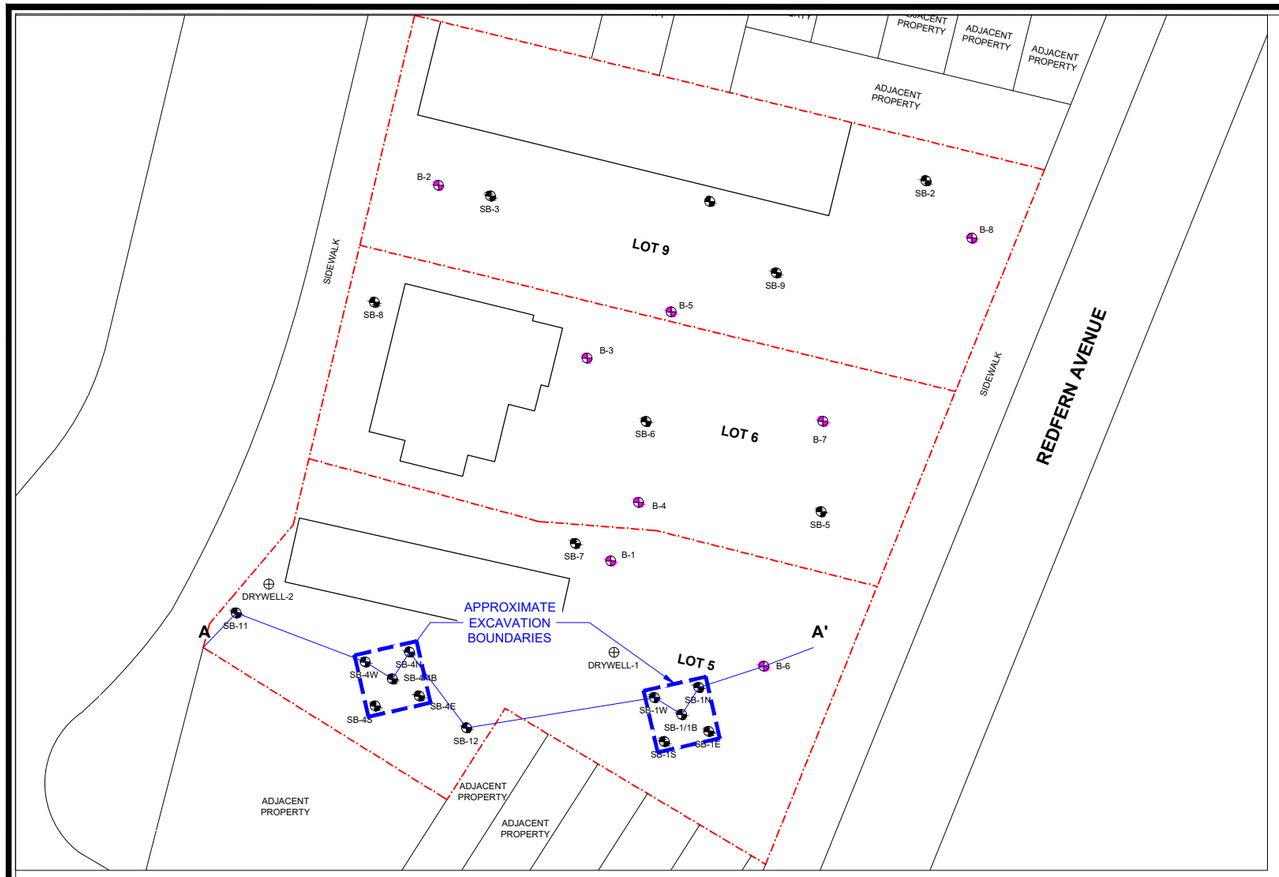


KEY MAP

ASPHALT

RCA

FINE TO COARSE SAND

FINE SAND TO SILT

SILT

CLAY

FILL

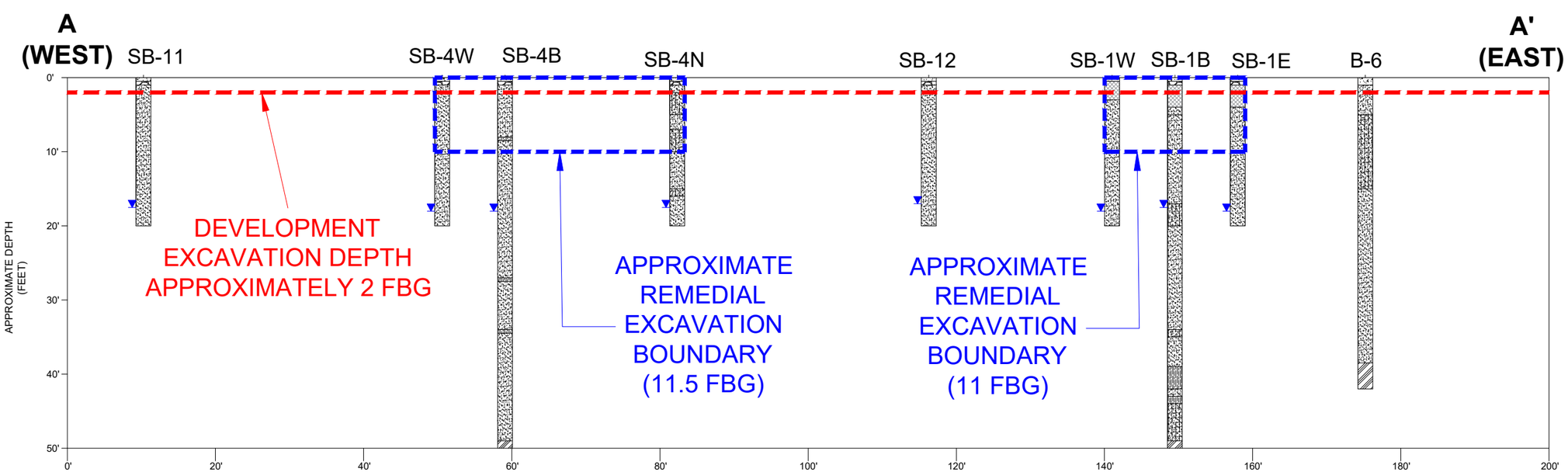
LEGEND

- IEC SOIL BORING LOCATION
- IEC DRYWELL SAMPLE LOCATION
- GEOTECHNICAL SOIL BORING LOCATION
- PROPERTY LINE
- OBSERVED GROUNDWATER INTERFACE

PROJECT NORTH

NOTES:

1. SUBSURFACE STRATIGRAPHY INTERPRETED FROM RECOVERED SOIL SAMPLES AND GEOTECHINCAL INVESTIGATION COMPLETED BY GEODESIGN IN JANUARY 2021. REFER TO BORING LOGS FOR ADDITIONAL INFORMATION.



SUBSURFACE PROFILE
A-A'

SUBSURFACE PROFILE (A-A')

13-12 to 13-24
Beach Channel Drive
Queens, New York

Figure No:04A

PROJECT NO.	15209-01
DESIGNED BY:	LR
DRAWN BY:	LR
CHECKED BY:	GMC
DATE:	10/13/2021
SCALE:	1"=15'
REVISIONS	

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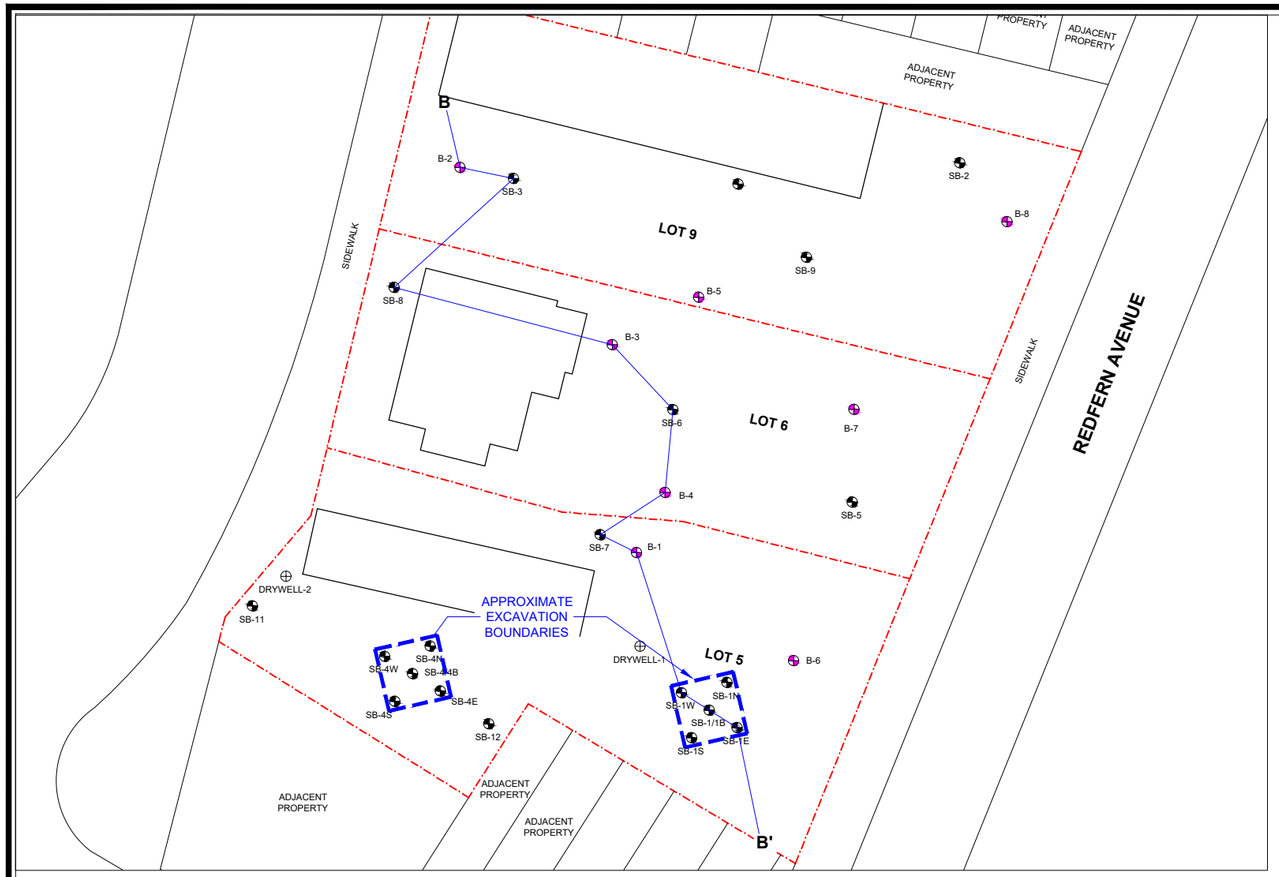


KEY MAP

ASPHALT

RCA

FINE TO COARSE SAND

FINE SAND TO SILT

SILT

CLAY

FILL

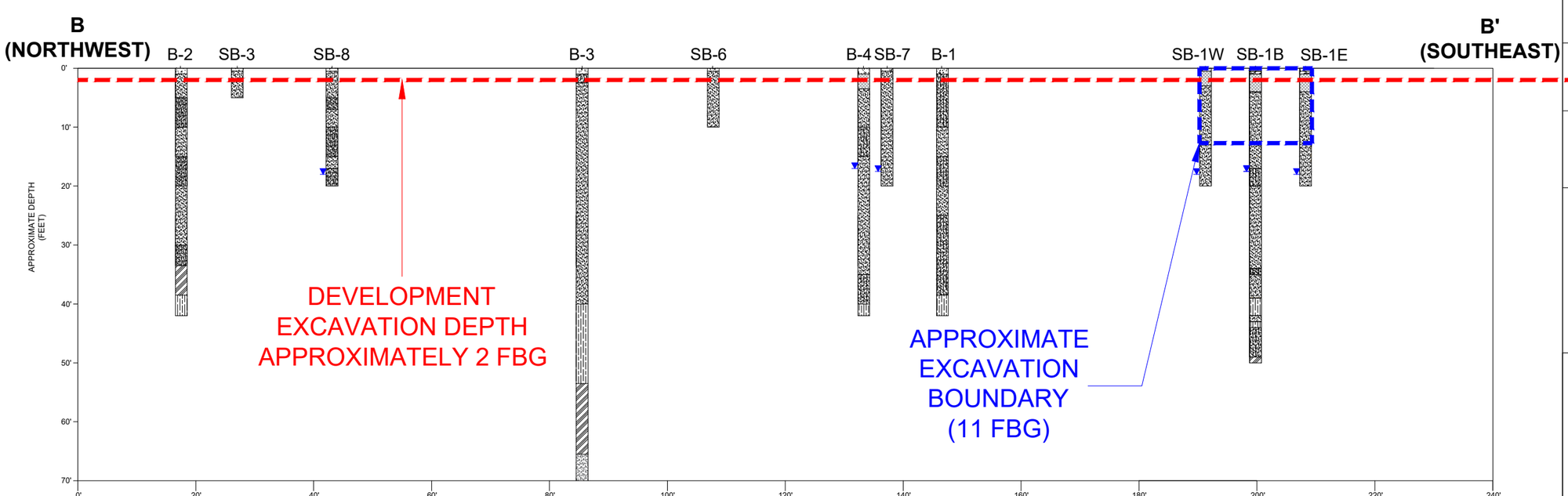
LEGEND

- IEC SOIL BORING LOCATION
- IEC DRYWELL SAMPLE LOCATION
- GEOTECHNICAL SOIL BORING LOCATION
- PROPERTY LINE
- OBSERVED GROUNDWATER INTERFACE

PROJECT NORTH

NOTES:

1. SUBSURFACE STRATIGRAPHY INTERPRETED FROM RECOVERED SOIL SAMPLES AND GEOTECHINCAL INVESTIGATION COMPLETED BY GEODESIGN IN JANUARY 2021. REFER TO BORING LOGS FOR ADDITIONAL INFORMATION.



SUBSURFACE PROFILE B-B'

SUBSURFACE PROFILE (B-B')

13-12 to 13-24
Beach Channel Drive
Queens, New York

Figure No: 04B

PROJECT NO.	15209-01
DESIGNED BY:	LR
DRAWN BY:	LR
CHECKED BY:	GMC
DATE:	10/13/2021
SCALE:	1"=15'
REVISIONS	

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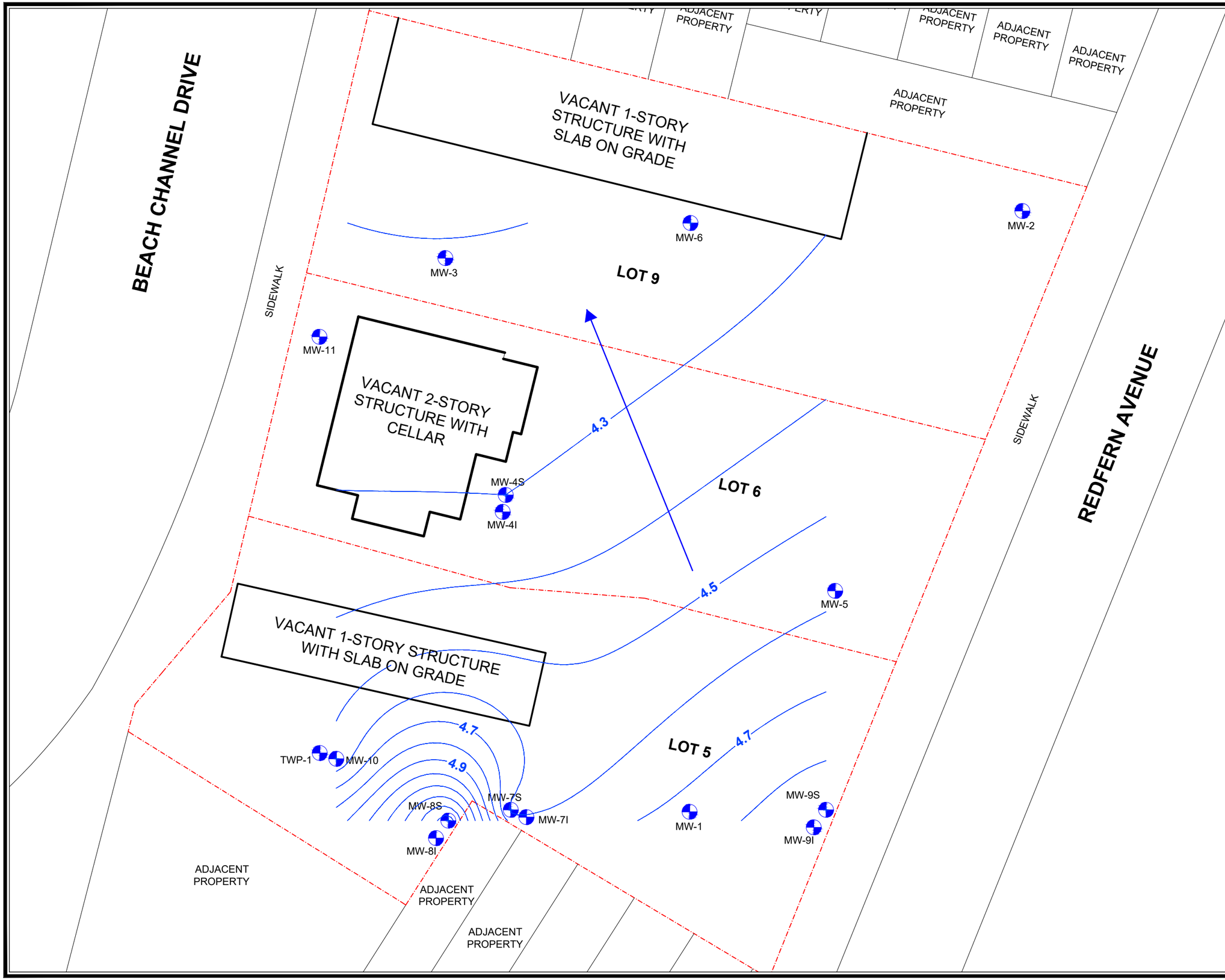

LEGEND

- −4.5— GROUNDWATER CONTOUR ELEVATION
- SOIL SAMPLE LOCATION
- GROUNDWATER SAMPLE LOCATION
- SOIL VAPOR SAMPLE LOCATION
- APPROXIMATE PROPERTY LINE

PROJECT NORTH

0' 25' 50'

INFERRED GROUNDWATER FLOW DIRECTION

NOTES:

1. PREVIOUS GROUNDWATER MONITORING WELLS MW-4S, MW-6, MW-7S, MW-8S, MW-9S AND MW-10 WERE USED TO GENERATE CONTOURS.
2. GROUNDWATER ELEVATIONS ARE BASE ON A SYNOPTIC GROUNDWATER GAUGING ON SEPTEMBER 31, 2021.
3. CONTOUR ELEVATIONS ARE PRESENTED IN FEET ABOVE MEAN SEA LEVEL.

Groundwater Contour Map

13-12 to 13-24
Beach Channel Drive
Queens, New York

Figure No: 05

PROJECT NO.	15209-01
DESIGNED BY:	LR
DRAWN BY:	AB
CHECKED BY:	GMC
DATE:	10/22/2021
SCALE:	SEE SCALE BAR
REVISIONS	

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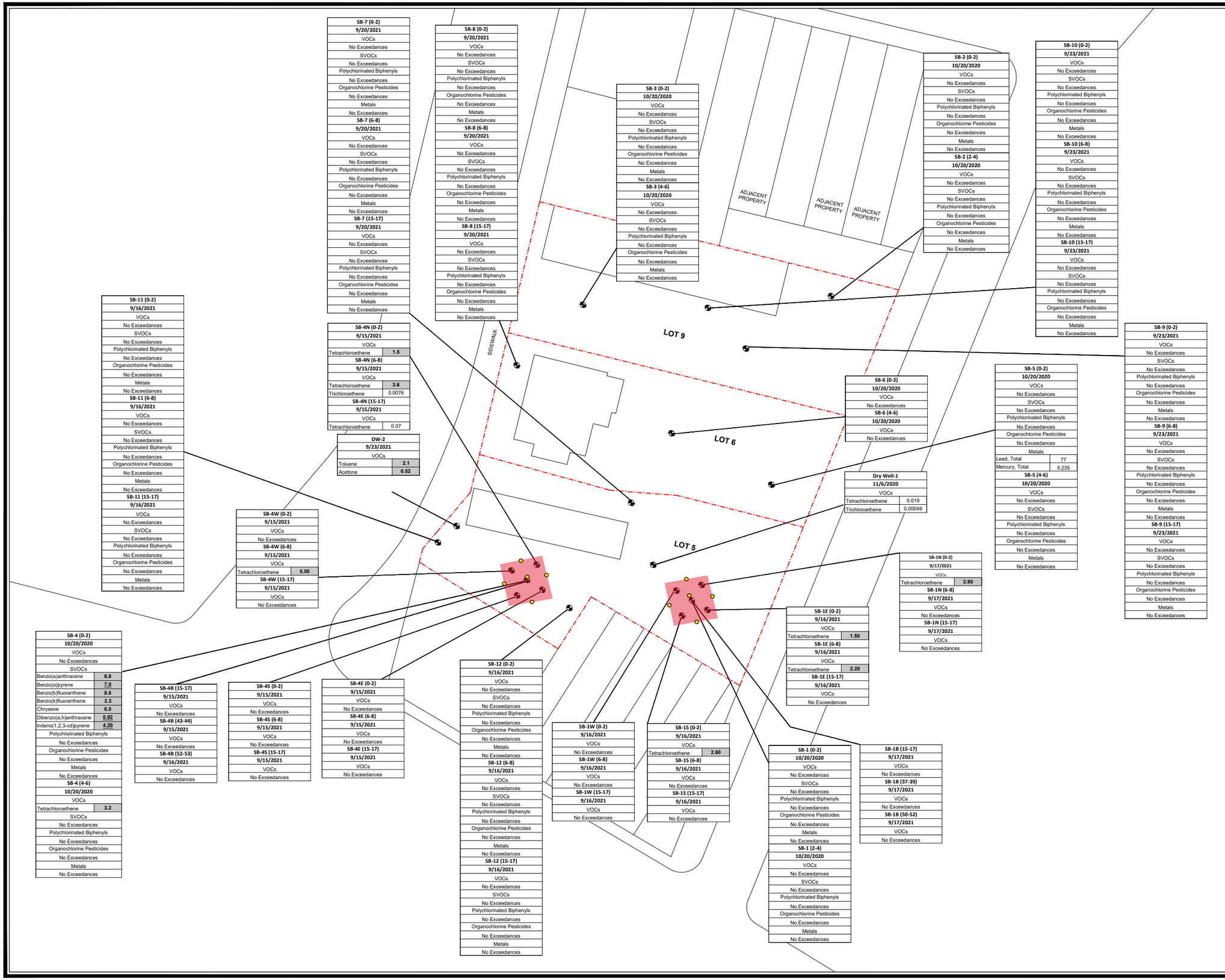

LEGEND

- SOIL SAMPLE LOCATION
- APPROXIMATE PROPERTY LINE
- HOT SPOT EXCAVATION AREAS
- POST EXCAVATION DOCUMENTATION SAMPLES

PROJECT NORTH

0' 50' 100'

NOTES:

1. RESULTS ARE REPORTED IN MILLIGRAMS PER KILOGRAM (MG/KG) OR PARTS PER MILLION (PPM)
2. BOLD & HIGHLIGHTED VALUES INDICATE EXCEEDANCE OF 6 NYCRR PART 375 PROTECTION OF GROUNDWATER SCO.
3. UNDERLINE & HIGHLIGHTED VALUES INDICATE EXCEEDANCE OF 6 NYCRR PART 375 RESTRICTED RESIDENTIAL USE SCO.

SOIL SAMPLE ANALYTICAL RESULTS MAP

13-12 to 13-24
Beach Channel Drive
Queens, New York

Figure 06

PROJECT NO.	15209-01
DESIGNED BY:	LR
DRAWN BY:	AB
CHECKED BY:	GMC
DATE:	01/19/2022
SCALE:	1" = 50'

REVISIONS

IMPACT ENVIRONMENTAL CLOSURES, INC.

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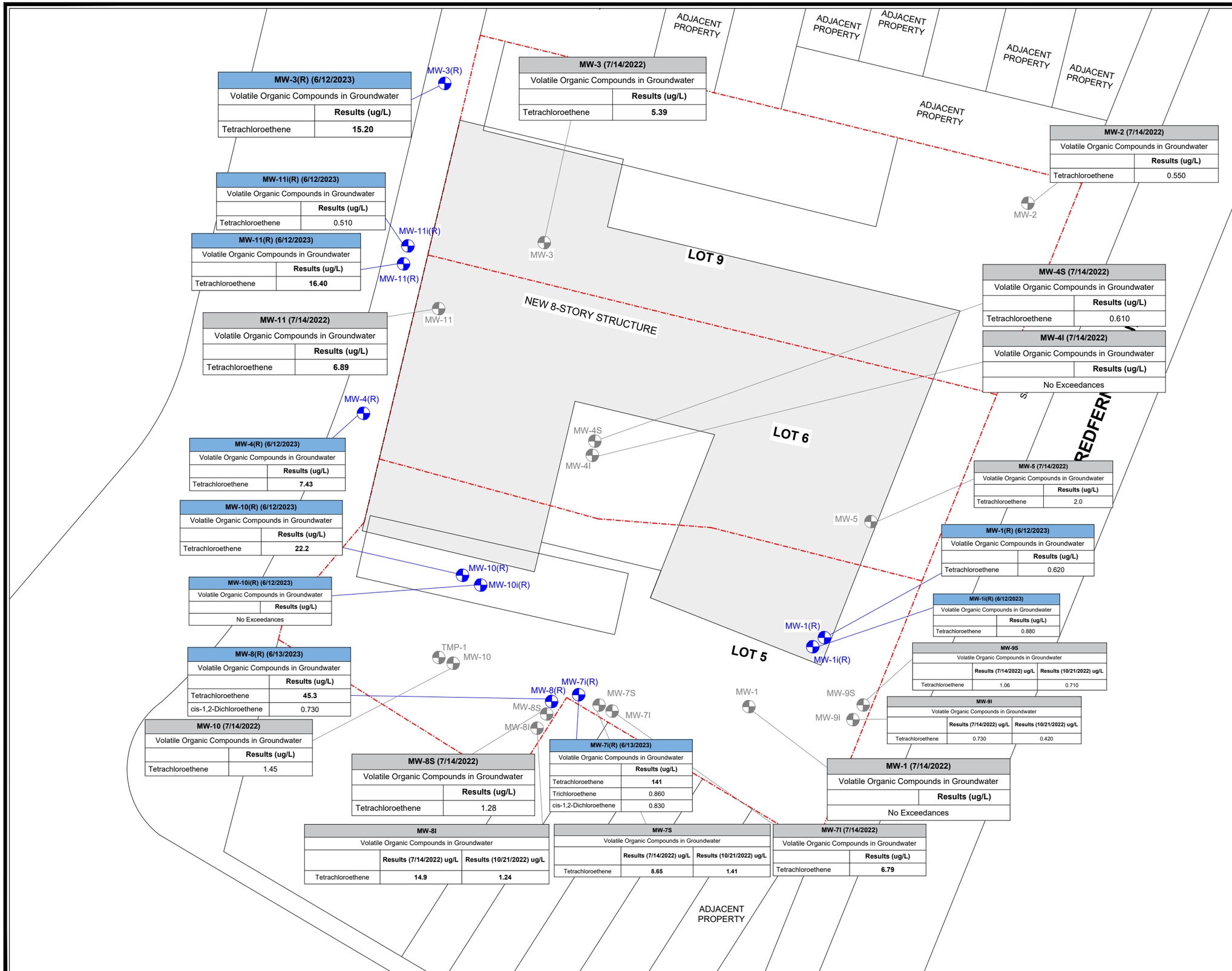

MW-3(R) (6/12/2023)

	Results (ug/L)
Tetrachloroethene	15.20

MW-11i(R) (6/12/2023)

	Results (ug/L)
Tetrachloroethene	0.510

MW-11(R) (6/12/2023)

	Results (ug/L)
Tetrachloroethene	16.40

MW-11 (7/14/2022)

	Results (ug/L)
Tetrachloroethene	6.89

MW-4(R) (6/12/2023)

	Results (ug/L)
Tetrachloroethene	7.43

MW-10(R) (6/12/2023)

	Results (ug/L)
Tetrachloroethene	22.2

MW-10i(R) (6/12/2023)

	Results (ug/L)
No Exceedances	

MW-8(R) (6/13/2023)

	Results (ug/L)
Tetrachloroethene	45.3
cis-1,2-Dichloroethene	0.730

MW-10 (7/14/2022)

	Results (ug/L)
Tetrachloroethene	1.45

MW-8S (7/14/2022)

	Results (ug/L)
Tetrachloroethene	1.28

MW-8I

	Results (7/14/2022) ug/L	Results (10/21/2022) ug/L
Tetrachloroethene	14.9	1.24

MW-7i(R) (6/13/2023)

	Results (ug/L)
Tetrachloroethene	141
Trichloroethene	0.860
cis-1,2-Dichloroethene	0.830

MW-7S

	Results (7/14/2022) ug/L	Results (10/21/2022) ug/L
Tetrachloroethene	8.65	1.41

MW-7I (7/14/2022)

	Results (ug/L)
Tetrachloroethene	6.79

MW-1 (7/14/2022)

	Results (ug/L)
No Exceedances	

MW-9I

	Results (7/14/2022) ug/L	Results (10/21/2022) ug/L
Tetrachloroethene	0.730	0.420

MW-9S

	Results (7/14/2022) ug/L	Results (10/21/2022) ug/L
Tetrachloroethene	1.06	0.710

MW-1i(R) (6/12/2023)

	Results (ug/L)
Tetrachloroethene	0.880

MW-1(R) (6/12/2023)

	Results (ug/L)
Tetrachloroethene	0.620

MW-5 (7/14/2022)

	Results (ug/L)
Tetrachloroethene	2.0

MW-4I (7/14/2022)

	Results (ug/L)
No Exceedances	

MW-4S (7/14/2022)

	Results (ug/L)
Tetrachloroethene	0.610

MW-2 (7/14/2022)

	Results (ug/L)
Tetrachloroethene	0.550

MW-3 (7/14/2022)

	Results (ug/L)
Tetrachloroethene	5.39

LEGEND

- 2022 GROUNDWATER SAMPLES
- 2023 GROUNDWATER SAMPLES
- APPROXIMATE PROPERTY LINE

PROJECT NORTH

0' 30' 60'

NOTES:

PRE AND POST REMEDIAL INJECTION GROUNDWATER CONCENTRATION MAP

13-12 to 13-24
Beach Channel Drive
Queens, New York

Figure No:7

PROJECT NO.	15209-01
DESIGNED BY:	NS
DRAWN BY:	NS
CHECKED BY:	CC
DATE:	8/8/2023
SCALE:	1" = 30'
REVISIONS	

IMPACT ENVIRONMENTAL CLOSURES, INC.

170 KEYLAND COURT
BOHEMIA, NEW YORK 11716
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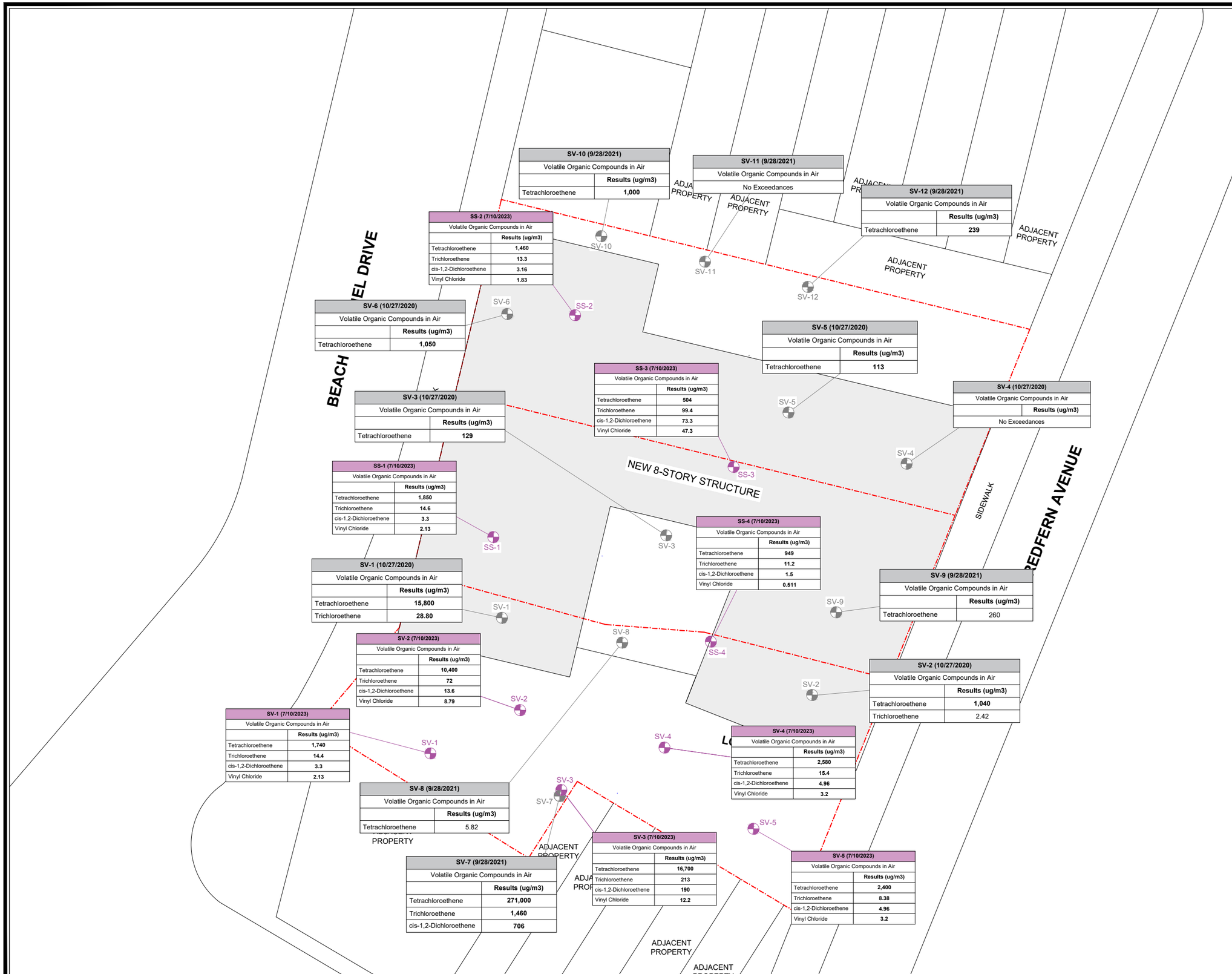

SV-10 (9/28/2021)	
Volatile Organic Compounds in Air	
	Results (ug/m3)
Tetrachloroethene	1,000

SV-11 (9/28/2021)
Volatile Organic Compounds in Air
No Exceedances

SV-12 (9/28/2021)	
Volatile Organic Compounds in Air	
	Results (ug/m3)
Tetrachloroethene	239

SS-2 (7/10/2023)	
Volatile Organic Compounds in Air	
	Results (ug/m3)
Tetrachloroethene	1,460
Trichloroethene	13.3
cis-1,2-Dichloroethene	3.16
Vinyl Chloride	1.83

SV-6 (10/27/2020)	
Volatile Organic Compounds in Air	
	Results (ug/m3)
Tetrachloroethene	1,050

SV-5 (10/27/2020)	
Volatile Organic Compounds in Air	
	Results (ug/m3)
Tetrachloroethene	113

SS-3 (7/10/2023)	
Volatile Organic Compounds in Air	
	Results (ug/m3)
Tetrachloroethene	504
Trichloroethene	99.4
cis-1,2-Dichloroethene	73.3
Vinyl Chloride	47.3

SV-3 (10/27/2020)	
Volatile Organic Compounds in Air	
	Results (ug/m3)
Tetrachloroethene	129

SV-4 (10/27/2020)
Volatile Organic Compounds in Air
Results (ug/m3)
No Exceedances

SS-1 (7/10/2023)	
Volatile Organic Compounds in Air	
	Results (ug/m3)
Tetrachloroethene	1,850
Trichloroethene	14.6
cis-1,2-Dichloroethene	3.3
Vinyl Chloride	2.13

SS-4 (7/10/2023)	
Volatile Organic Compounds in Air	
	Results (ug/m3)
Tetrachloroethene	949
Trichloroethene	11.2
cis-1,2-Dichloroethene	1.5
Vinyl Chloride	0.511

SV-1 (10/27/2020)	
Volatile Organic Compounds in Air	
	Results (ug/m3)
Tetrachloroethene	15,800
Trichloroethene	28.80

SV-9 (9/28/2021)	
Volatile Organic Compounds in Air	
	Results (ug/m3)
Tetrachloroethene	260

SV-2 (7/10/2023)	
Volatile Organic Compounds in Air	
	Results (ug/m3)
Tetrachloroethene	10,400
Trichloroethene	72
cis-1,2-Dichloroethene	13.6
Vinyl Chloride	8.79

SV-2 (10/27/2020)	
Volatile Organic Compounds in Air	
	Results (ug/m3)
Tetrachloroethene	1,040
Trichloroethene	2.42

SV-1 (7/10/2023)	
Volatile Organic Compounds in Air	
	Results (ug/m3)
Tetrachloroethene	1,740
Trichloroethene	14.4
cis-1,2-Dichloroethene	3.3
Vinyl Chloride	2.13

SV-4 (7/10/2023)	
Volatile Organic Compounds in Air	
	Results (ug/m3)
Tetrachloroethene	2,580
Trichloroethene	15.4
cis-1,2-Dichloroethene	4.96
Vinyl Chloride	3.2

SV-8 (9/28/2021)	
Volatile Organic Compounds in Air	
	Results (ug/m3)
Tetrachloroethene	5.82

SV-3 (7/10/2023)	
Volatile Organic Compounds in Air	
	Results (ug/m3)
Tetrachloroethene	16,700
Trichloroethene	213
cis-1,2-Dichloroethene	190
Vinyl Chloride	12.2

SV-7 (9/28/2021)	
Volatile Organic Compounds in Air	
	Results (ug/m3)
Tetrachloroethene	271,000
Trichloroethene	1,460
cis-1,2-Dichloroethene	706

SV-5 (7/10/2023)	
Volatile Organic Compounds in Air	
	Results (ug/m3)
Tetrachloroethene	2,400
Trichloroethene	8.38
cis-1,2-Dichloroethene	4.96
Vinyl Chloride	3.2

LEGEND

- 2020/2021 SOIL VAPOR SAMPLES
- 2023 SOIL VAPOR SAMPLES
- APPROXIMATE PROPERTY LINE

PROJECT NORTH

0' 30' 60'

NOTES:

PRE AND POST REMEDIAL INJECTION SOIL VAPOR CONCENTRATION MAP

13-12 to 13-24
Beach Channel Drive
Queens, New York

Figure No: 8

PROJECT NO.	15209-01
DESIGNED BY:	NS
DRAWN BY:	NS
CHECKED BY:	CC
DATE:	8/8/2023
SCALE:	1" = 30'
REVISIONS	

IMPACT ENVIRONMENTAL CLOSURES, INC.

170 KEYLAND COURT
BOHEMIA, NEW YORK 11716
TEL (631) 269-8800
FAX (631) 269-1599

LEGEND

- APPROXIMATE PROPERTY LINE
- SUB-SLAB DEPRESSURIZATION SUMP (SDS)
- 3" Ø RISER TO ROOF
- VACUUM MONITORING POINT (VMP)
- SSDS OVERHEAD PIPING (1ST FLOOR CEILING)
- 0.5% MIN. SLOPE OF PIPE TOWARD VERTICAL EXTRACTION RISER TO DRAIN CONDENSATE TO SUB-SLAB
- SENTINEL SSDS REMOTE MONITOR (To be installed)
- VACUUM SENSORS LOCATED OVERHEAD ON FIRST FLOOR, CONNECTED TO SENTINEL
- DragoWrap Vapor Barrier Extent

PROJECT NORTH

0' 25' 50'

NOTES:

Base Drawing Source: UAG As-Built Architectural Plans, Ground Floor

VMP-8 was unable to be installed due to thickness of the mat slab

AS-BUILT SUB-SLAB DEPRESSURIZATION SYSTEM LAYOUT - SUB-SLAB, GROUND FLOOR

13-12
Beach Channel Drive
Queens, New York

Figure: 09

PROJECT NO.	15209-01
DESIGNED BY:	LR
DRAWN BY:	AB
CHECKED BY:	CC
DATE:	10/12/2023
SCALE:	1" = 25'
REVISIONS	

STATE OF NEW YORK · XIN YUAN · 096444 · LICENSED PROFESSIONAL ENGINEER

IMPACT ENVIRONMENTAL CLOSURES, INC.

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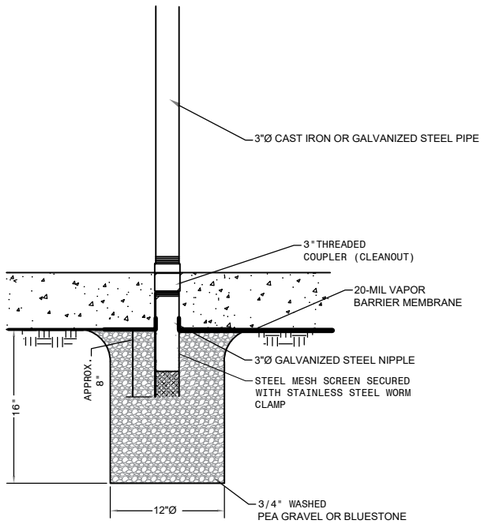
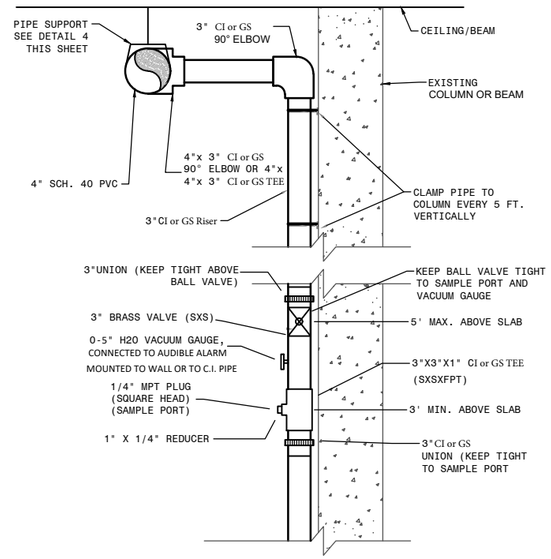
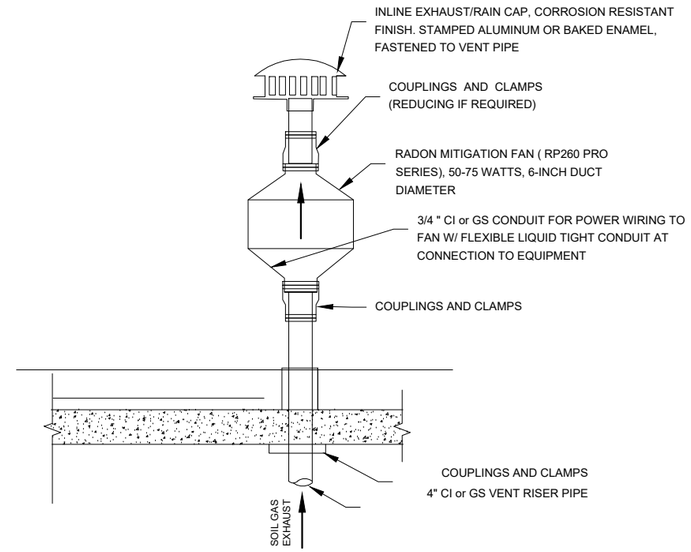


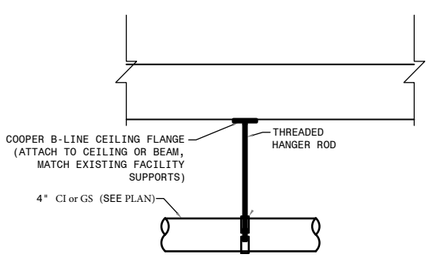
1 TYPICAL SSD EXTRACTION PIT DETAIL
SCALE: N.T.S.



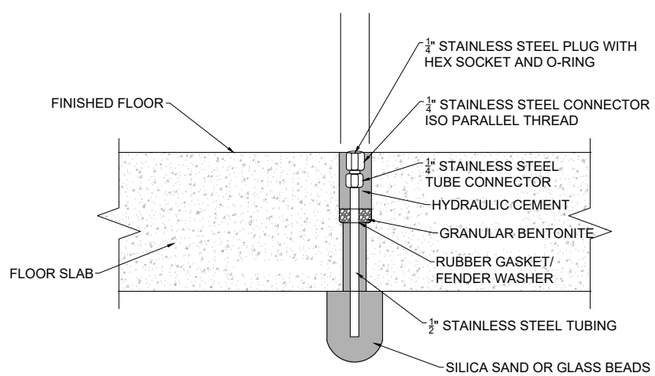
2 TYPICAL EXTRACTION RISER
SCALE: N.T.S.



3 ROOF TOP EQUIPMENT
SCALE: N.T.S.



4 HANGING PIPE SUPPORT
SCALE: N.T.S.



5 VAPOR MONITORING POINT
SCALE: N.T.S.

NOTES:
1. HORIZONTAL PIPING SHALL BE SUPPORTED A MINIMUM OF EVERY 10 FEET.
2. HORIZONTAL PIPING SHALL BE INSTALLED WITH 0.5% SLOPE TO FACILITATE DRAINAGE OF CONDENSATE.

LEGEND

Plot Plan
NTS

SUB-SLAB DEPRESSURIZATION SYSTEM DETAIL

13-12 to 13-24
Beach Channel Drive
Queens, New York

Figure 10

PROJECT NO.	15209-01
DESIGNED BY:	LR
DRAWN BY:	AB
CHECKED BY:	GMC
DATE:	12/3/2021
SCALE:	1" = 20'
REVISIONS	

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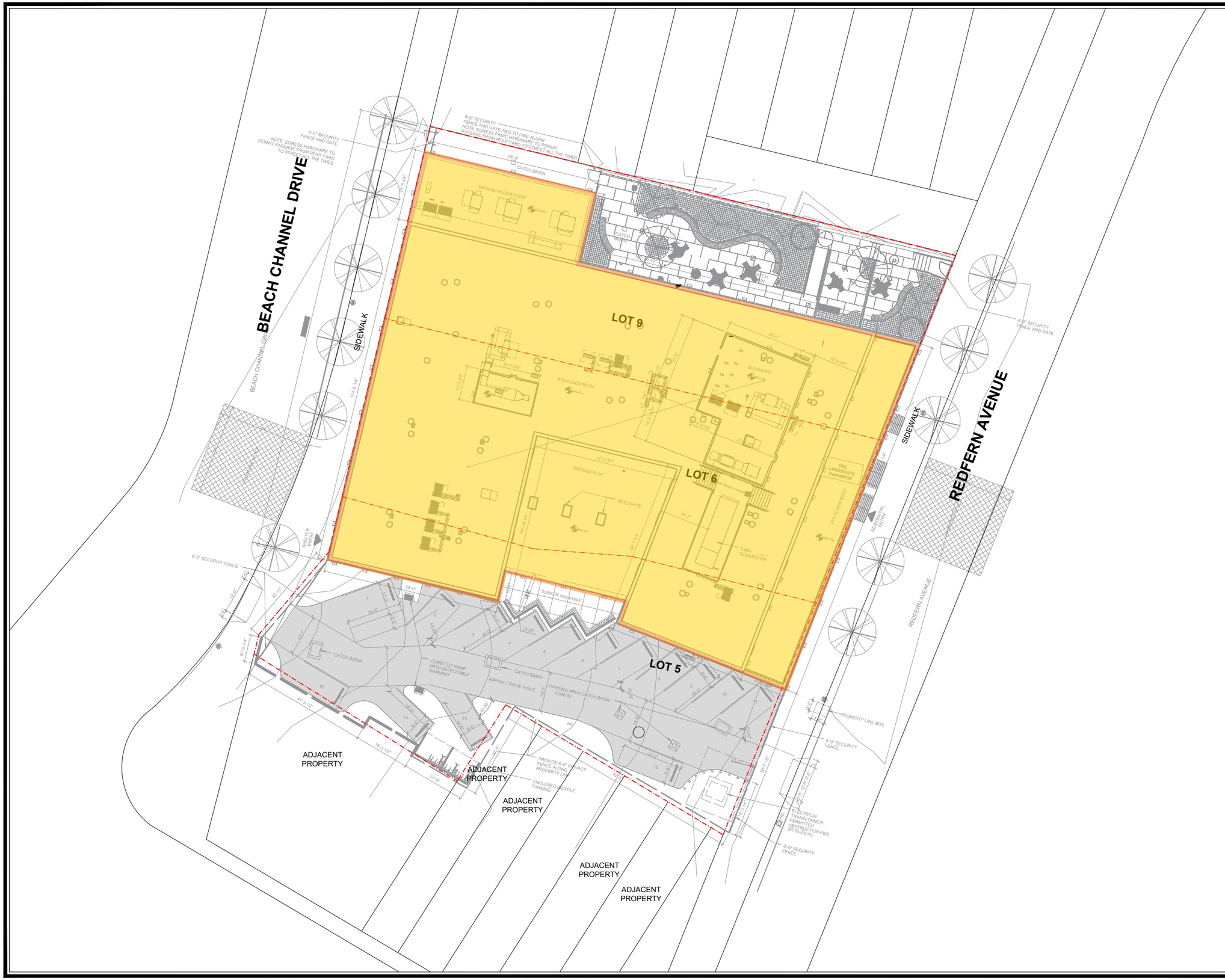

LEGEND

- SOIL BORING LOCATION
- APPROXIMATE PROPERTY LINE
- Vapor Barrier (Drago Wrap 20-mil) Location

PROJECT NORTH

0' 30' 60'

NOTES:

1. SOIL BORINGS SB-1, SB-1A, SB-2, SB-3, SB-4 SB-5 & SB-6, MONITORING WELLS MW-1 TO MW-3 AND SOIL VAPOR POINTS SV-1 TO SV-6 WERE COLLECTED DURING IEC 202 RIR . THE REMAINDER OF THE SAMPLES WERE COLLECTED DURING THE IEC 2021 RIR.
2. MONITORING WELLS WERE SURVEYED BY IEC ON SEPTEMBER 28, 2021.
3. ALL SAMPLE LOCATIONS GPS CAN BE FOUND ON .....

VAPOR BARRIER LOCATION PLAN

13-12 to 13-24
Beach Channel Drive
Queens, New York

Figure No: 11

PROJECT NO.	15209-01
DESIGNED BY:	LR
DRAWN BY:	AB
CHECKED BY:	GMC
DATE:	12/3/2021
SCALE:	1" = 30'
REVISIONS	

IMPACT ENVIRONMENTAL CLOSURES, INC.

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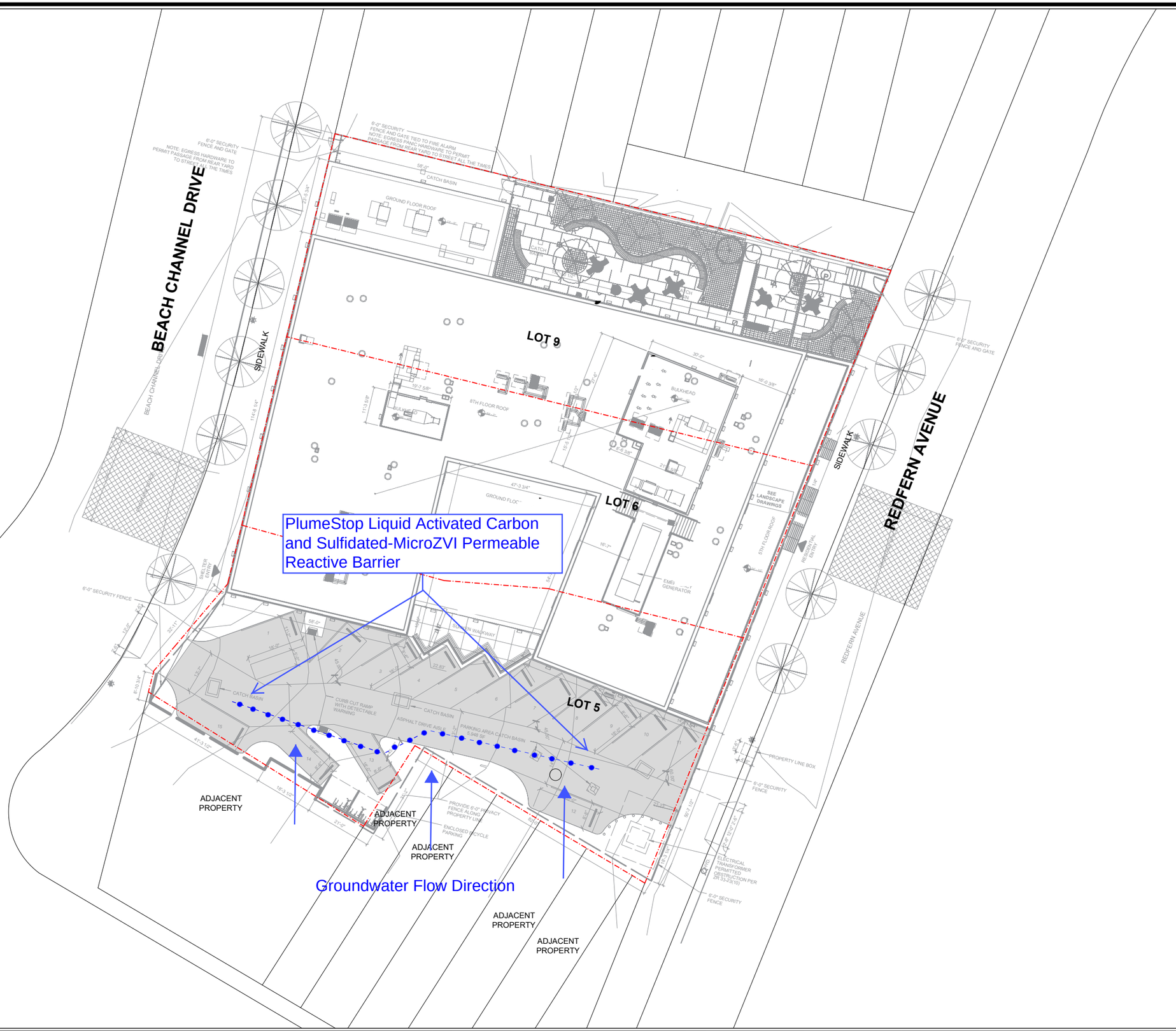


LEGEND

- SOIL BORING LOCATION
- APPROXIMATE PROPERTY LINE
- PRB INJECTION POINT

PROJECT NORTH

0' 30' 60'

NOTES:

PERMEABLE REACTIVE BARRIER LOCATIONS

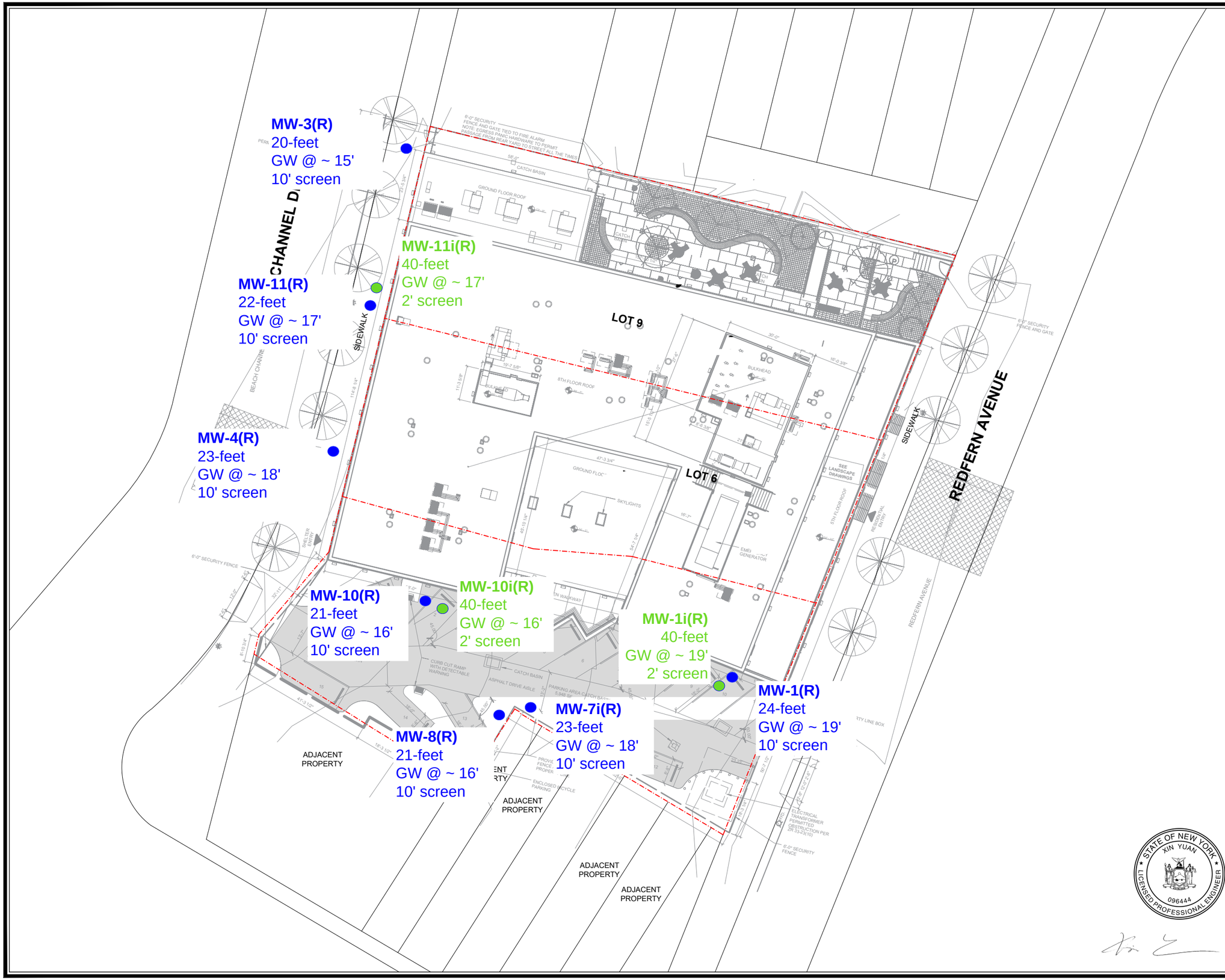
13-12 to 13-24
Beach Channel Drive
Queens, New York

Figure No: 12

PROJECT NO.	15209-01
DESIGNED BY:	LR
DRAWN BY:	AB
CHECKED BY:	GMC
DATE:	12/3/2021
SCALE:	1" = 30'
REVISIONS	

IMPACT ENVIRONMENTAL CLOSURES, INC.

170 KEYLAND COURT
BOHEMIA, NEW YORK 11716
TEL (631) 269-8800
FAX (631) 269-1599



LEGEND

SITE BOUNDARY

PROPOSED WELL LOCATION

PROJECT NORTH

0' 30' 60'

NOTES:

NEW GROUNDWATER MONITORING WELL LOCATIONS

13-12 to 13-24
Beach Channel Drive
Queens, New York

BCP #C241254

Figure 13

PROJECT NO.	15209-01
DESIGNED BY:	LR
DRAWN BY:	AB
CHECKED BY:	GMC
DATE:	12/3/2021
SCALE:	1" = 30'

REVISIONS

STATE OF NEW YORK
XIN YUAN
096444
LICENSED PROFESSIONAL ENGINEER

IMPACT ENVIRONMENTAL CLOSURES, INC.

170 KEYLAND COURT
BOHEMIA, NEW YORK 11716
TEL (631) 269-8800
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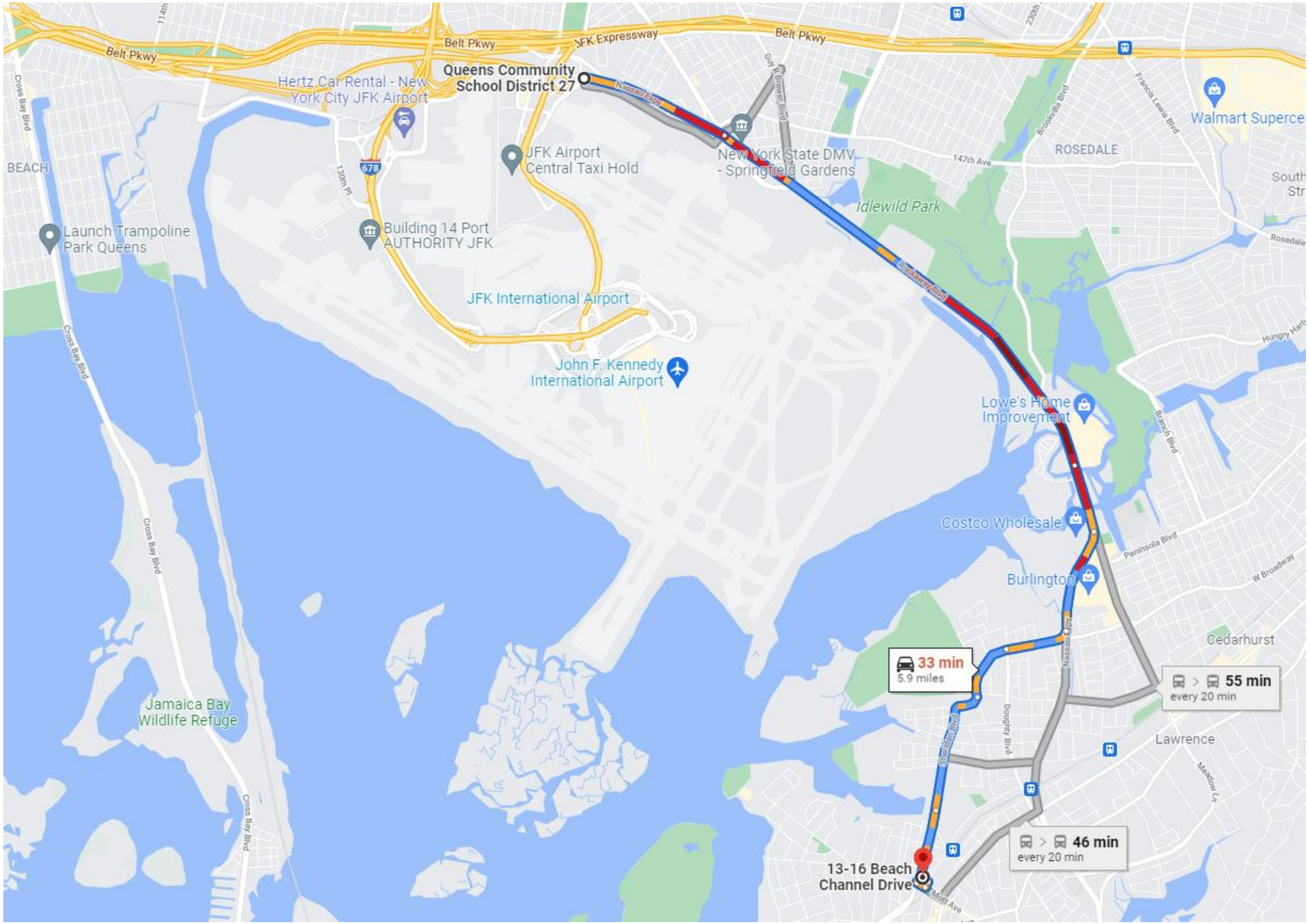

Legend

NOTES:

BASEMAP: Google Maps

Truck Route Transportation Plan

13-12, 13-16, and 13-24 Beach Channel Drive, Far Rockaway, NY

Figure 14

Project #:	
Drawn By:	CJC
Checked By:	KK
Date:	12/15/21
Revisions	

N

Not to scale

IMPACT ENVIRONMENTAL CLOSURES, INC.

170 KEYLAND COURT
BOHEMIA, NEW YORK 11716
TEL (631) 269-8800
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TABLES

13-12 Beach Channel Drive
Far Rockaway, NY

Site Management Plan
NYSDEC BCP #C241254

IMPACT ENVIRONMENTAL
170 Keyland Court
Bohemia, New York 11716
TEL: (631) 268-8800
FAX: (631) 269-1599

Table 1 - Groundwater Gauging Data

13-12, 13-16, and 13-24 Beach Channel Drive, Far Rockaway, NY

Well ID	Date Gauged	DTW	DTP	TOC Elevation	GW Elevation
MW-1	9/30/2021	NA	NA	21.52	NA
MW-2	9/30/2021	NA	NA	16.36	NA
MW-3	9/30/2021	NA	NA	17.10	NA
MW-4s	9/30/2021	18.15	0.00	22.45	4.3
MW-4i	9/30/2021	18.30	0.00	22.58	4.28
MW-5	9/30/2021	NA	NA	23.14	NA
MW-6	9/30/2021	13.41	0.00	17.63	4.22
MW-7s	9/30/2021	16.35	0.00	20.92	4.57
MW-7i	9/30/2021	17.75	0.00	20.89	3.14
MW-8s	9/30/2021	15.08	0.00	20.55	5.47
MW-8i	9/30/2021	NA	NA	20.66	NA
MW-9s	9/30/2021	18.05	0.00	22.93	4.88
MW-9i	9/30/2021	18.19	0.00	22.74	4.55
MW-10	9/30/2021	15.18	0.00	19.70	4.52
MW-11	9/30/2021	NA	NA	18.10	NA

Well elevation survey based on arbitrary bench mark elevation of 22.85 feet taken from ground level NE side of existing building foundation.

NA = Not Accessible

DTW = Depth to Water

DTP = Depth to Product

TOC = Top of Well Casing

Wells MW-1, MW-2 and MW-3 are 2-inch diameter wells installed by Impact

Wells MW-4i, MW-4s, MW-5, MW-6, MW-7i,MW-7s, MW-8i, MW-8s, MW-9i, MW-9s, MW-10 and MW-11 are 2-inch diameter wells installed by Impact.

Table 2a
Hotspot 1 - VOC Analysis Summary
13-16 Beach Channel Drive, Far Rockaway, NY

Sample ID York ID Sampling Date Client Matrix		NYSDEC Part 375 Unrestricted Use Soil Cleanup Objectives	NYSDEC Part 375 Restricted Use Soil Cleanup Objectives - Restricted Residential	NYSDEC Part 375 Restricted Use Soil Cleanup Objectives- Residential	HS-1-SWS 22L0644-01 12/9/2022 7:20:00 AM Soil		HS-1-SWW 22L0644-02 12/9/2022 7:25:00 AM Soil		HS-1-SWN 22L0644-03 12/9/2022 7:30:00 AM Soil		HS-1-SWE 22L0644-04 12/9/2022 7:35:00 AM Soil		HS-1-EP 22L0644-05 12/9/2022 7:40:00 AM Soil		DUP-EP-1 22L0644-06 12/9/2022 7:45:00 AM Soil	
Compound	**CAS Number**				Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
VOA, 8260 MASTER		mg/Kg	mg/Kg	mg/Kg	mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg	
Dilution Factor					1		1		1		1		1		1	
1,1,1,2-Tetrachloroethane	630-20-6	~	~	~	0.00240	U	0.00240	U	0.00240	U	0.00280	U	0.00250	U	0.00300	U
1,1,1-Trichloroethane	71-55-6	0.68	100	100	0.00240	U	0.00240	U	0.00240	U	0.00280	U	0.00250	U	0.00300	U
1,1,2,2-Tetrachloroethane	79-34-5	~	~	~	0.00240	U	0.00240	U	0.00240	U	0.00280	U	0.00250	U	0.00300	U
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	76-13-1	~	~	~	0.00240	U	0.00240	U	0.00240	U	0.00280	U	0.00250	U	0.00300	U
1,1,2-Trichloroethane	79-00-5	~	~	~	0.00240	U	0.00240	U	0.00240	U	0.00280	U	0.00250	U	0.00300	U
1,1-Dichloroethane	75-34-3	0.27	26	19	0.00240	U	0.00240	U	0.00240	U	0.00280	U	0.00250	U	0.00300	U
1,1-Dichloroethylene	75-35-4	0.33	100	100	0.00240	U	0.00240	U	0.00240	U	0.00280	U	0.00250	U	0.00300	U
1,1-Dichloropropylene	563-58-6	~	~	~	0.00240	U	0.00240	U	0.00240	U	0.00280	U	0.00250	U	0.00300	U
1,2,3-Trichlorobenzene	87-61-6	~	~	~	0.00240	U	0.00240	U	0.00240	U	0.00280	U	0.00250	U	0.00300	U
1,2,3-Trichloropropane	96-18-4	~	~	~	0.00240	U	0.00240	U	0.00240	U	0.00280	U	0.00250	U	0.00300	U
1,2,4-Trichlorobenzene	120-82-1	~	~	~	0.00240	U	0.00240	U	0.00240	U	0.00280	U	0.00250	U	0.00300	U
1,2,4-Trimethylbenzene	95-63-6	3.6	52	47	0.00240	U	0.00240	U	0.00240	U	0.00280	U	0.00250	U	0.00300	U
1,2-Dibromo-3-chloropropane	96-12-8	~	~	~	0.00240	U	0.00240	U	0.00240	U	0.00280	U	0.00250	U	0.00300	U
1,2-Dibromoethane	106-93-4	~	~	~	0.00240	U	0.00240	U	0.00240	U	0.00280	U	0.00250	U	0.00300	U
1,2-Dichlorobenzene	95-50-1	1.1	100	100	0.00240	U	0.00240	U	0.00240	U	0.00280	U	0.00250	U	0.00300	U
1,2-Dichloroethane	107-06-2	0.02	3.1	2.3	0.00240	U	0.00240	U	0.00240	U	0.00280	U	0.00250	U	0.00300	U
1,2-Dichloropropane	78-87-5	~	~	~	0.00240	U	0.00240	U	0.00240	U	0.00280	U	0.00250	U	0.00300	U
1,3,5-Trimethylbenzene	108-67-8	8.4	52	47	0.00240	U	0.00240	U	0.00240	U	0.00280	U	0.00250	U	0.00300	U
1,3-Dichlorobenzene	541-73-1	2.4	49	17	0.00240	U	0.00240	U	0.00240	U	0.00280	U	0.00250	U	0.00300	U
1,3-Dichloropropane	142-28-9	~	~	~	0.00240	U	0.00240	U	0.00240	U	0.00280	U	0.00250	U	0.00300	U
1,4-Dichlorobenzene	106-46-7	1.8	13	9.8	0.00240	U	0.00240	U	0.00240	U	0.00280	U	0.00250	U	0.00300	U
1,4-Dioxane	123-91-1	0.1	13	9.8	0.0480	U	0.0480	U	0.0490	U	0.0560	U	0.0490	U	0.0590	U
2,2-Dichloropropane	594-20-7	~	~	~	0.00240	U	0.00240	U	0.00240	U	0.00280	U	0.00250	U	0.00300	U
2-Butanone	78-93-3	0.12	100	100	0.00240	U	0.00240	U	0.00240	U	0.00280	U	0.00250	U	0.00300	U
2-Chlorotoluene	95-49-8	~	~	~	0.00240	U	0.00240	U	0.00240	U	0.00280	U	0.00250	U	0.00300	U
2-Hexanone	591-78-6	~	~	~	0.00240	U	0.00240	U	0.00240	U	0.00280	U	0.00250	U	0.00300	U
4-Chlorotoluene	106-43-4	~	~	~	0.00240	U	0.00240	U	0.00240	U	0.00280	U	0.00250	U	0.00300	U
4-Methyl-2-pentanone	108-10-1	~	~	~	0.00240	U	0.00240	U	0.00240	U	0.00280	U	0.00250	U	0.00300	U
Acetone	67-64-1	0.05	100	100	**0.0790**		0.0130		0.0100		0.0150		0.00550	J	0.00780	J
Acrolein	107-02-8	~	~	~	0.00480	U	0.00480	U	0.00490	U	0.00560	U	0.00490	U	0.00590	U
Acrylonitrile	107-13-1	~	~	~	0.00240	U	0.00240	U	0.00240	U	0.00280	U	0.00250	U	0.00300	U
Benzene	71-43-2	0.06	4.8	2.9	0.00240	U	0.00240	U	0.00240	U	0.00280	U	0.00250	U	0.00300	U
Bromobenzene	108-86-1	~	~	~	0.00240	U	0.00240	U	0.00240	U	0.00280	U	0.00250	U	0.00300	U
Bromochloromethane	74-97-5	~	~	~	0.00240	U	0.00240	U	0.00240	U	0.00280	U	0.00250	U	0.00300	U
Bromodichloromethane	75-27-4	~	~	~	0.00240	U	0.00240	U	0.00240	U	0.00280	U	0.00250	U	0.00300	U
Bromoform	75-25-2	~	~	~	0.00240	U	0.00240	U	0.00240	U	0.00280	U	0.00250	U	0.00300	U
Bromomethane	74-83-9	~	~	~	0.00240	U	0.00240	U	0.00240	U	0.00280	U	0.00250	U	0.00300	U
Carbon disulfide	75-15-0	~	~	~	0.00240	U	0.00240	U	0.00240	U	0.00280	U	0.00250	U	0.00300	U
Carbon tetrachloride	56-23-5	0.76	2.4	1.4	0.00240	U	0.00240	U	0.00240	U	0.00280	U	0.00250	U	0.00300	U
Chlorobenzene	108-90-7	1.1	100	100	0.00240	U	0.00240	U	0.00240	U	0.00280	U	0.00250	U	0.00300	U
Chloroethane	75-00-3	~	~	~	0.00240	U	0.00240	U	0.00240	U	0.00280	U	0.00250	U	0.00300	U
Chloroform	67-66-3	0.37	49	10	0.00240	U	0.00240	U	0.00240	U	0.00280	U	0.00250	U	0.00300	U
Chloromethane	74-87-3	~	~	~	0.00240	U	0.00240	U	0.00240	U	0.00280	U	0.00250	U	0.00300	U
cis-1,2-Dichloroethylene	156-59-2	0.25	100	59	0.00240	U	0.00240	U	0.00240	U	0.00280	U	0.00250	U	0.00300	U
cis-1,3-Dichloropropylene	10061-01-5	~	~	~	0.00240	U	0.00240	U	0.00240	U	0.00280	U	0.00250	U	0.00300	U
Cyclohexane	110-82-7	~	~	~	0.00240	U	0.00240	U	0.00240	U	0.00280	U	0.00250	U	0.00300	U
Dibromochloromethane	124-48-1	~	~	~	0.00240	U	0.00240	U	0.00240	U	0.00280	U	0.00250	U	0.00300	U
Dibromomethane	74-95-3	~	~	~	0.00240	U	0.00240	U	0.00240	U	0.00280	U	0.00250	U	0.00300	U
Dichlorodifluoromethane	75-71-8	~	~	~	0.00240	U	0.00240	U	0.00240	U	0.00280	U	0.00250	U	0.00300	U
Ethyl Benzene	100-41-4	1	41	30	0.00240	U	0.00240	U	0.00240	U	0.00280	U	0.00250	U	0.00300	U
Hexachlorobutadiene	87-68-3	~	~	~	0.00240	U	0.00240	U	0.00240	U	0.00280	U	0.00250	U	0.00300	U
Isopropylbenzene	98-82-8	~	~	~	0.00240	U	0.00240	U	0.00240	U	0.00280	U	0.00250	U	0.00300	U
Methyl acetate	79-20-9	~	~	~	0.00240	U	0.00240	U	0.00240	U	0.00280	U	0.00250	U	0.00300	U
Methyl tert-butyl ether (MTBE)	1634-04-4	0.93	100	62	0.00240	U	0.00240	U	0.00240	U	0.00280	U	0.00250	U	0.00300	U
Methylcyclohexane	108-87-2	~	~	~	0.00240	U	0.00240	U	0.00240	U	0.00280	U	0.00250	U	0.00300	U
Methylene chloride	75-09-2	0.05	100	51	0.00480	U	0.00480	U	0.00950	J	0.00750	J	0.00490	U	0.0120	
n-Butylbenzene	104-51-8	12	100	100	0.00240	U	0.00240	U	0.00240	U	0.00280	U	0.00250	U	0.00300	U
n-Propylbenzene	103-65-1	3.9	100	100	0.00240	U	0.00240	U	0.00240	U	0.00280	U	0.00250	U	0.00300	U
o-Xylene	95-47-6	~	~	~	0.00240	U	0.00240	U	0.00240	U	0.00280	U	0.00250	U	0.00300	U
p- & m- Xylenes	179601-23-1	~	~	~	0.00480	U	0.00480	U	0.00490	U	0.00560	U	0.00490	U	0.00590	U
p-Isopropyltoluene	99-87-6	~	~	~	0.00240	U	0.00240	U	0.00240	U	0.00280	U	0.00250	U	0.00300	U
sec-Butylbenzene	135-98-8	11	100	100	0.00240	U	0.00240	U	0.00240	U	0.00280	U	0.00250	U	0.00300	U
Styrene	100-42-5	~	~	~	0.00240	U	0.00240	U	0.00240	U	0.00280	U	0.00250	U	0.00300	U
tert-Butyl alcohol (TBA)	75-65-0	~	~	~	0.00240	U	0.00240	U	0.00240	U	0.00280	U	0.00250	U	0.00300	U
tert-Butylbenzene	98-06-6	5.9	100	100	0.00240	U	0.00240	U	0.00240	U	0.00280	U	0.00250	U	0.00300	U
Tetrachloroethylene	127-18-4	1.3	19	5.5	0.00610		0.0100		0.00330	J	0.00500	J	0.00250	U	0.00300	U
Toluene	108-88-3	0.7	100	100	0.00240	U	0.00240	U	0.00240	U	0.00280	U	0.00250	U	0.00300	U
trans-1,2-Dichloroethylene	156-60-5	0.19	100	100	0.00240	U	0.00240	U	0.00240	U	0.00280	U	0.00250	U	0.00300	U
trans-1,3-Dichloropropylene	10061-02-6	~	~	~	0.00240	U	0.00240	U	0.00240	U	0.00280	U	0.00250	U	0.00300	U
Trichloroethylene	79-01-6	0.47	21	10	0.00240	U	0.00240	U	0.00240	U	0.00280	U	0.00250	U	0.00300	U
Trichlorofluoromethane	75-69-4	~	~	~	0.00240	U	0.00240	U	0.00240	U	0.00280	U	0.00250	U	0.00300	U
Vinyl acetate	108-05-4	~	~	~	0.00240	U	0.00240	U	0.00240	U	0.00280	U	0.00250	U	0.00300	U
Vinyl Chloride	75-01-4	0.02	0.9	0.21	0.00240	U	0.00240	U	0.00240	U	0.00280	U	0.00250	U	0.00300	U
Xylenes, Total	1330-20-7	0.26	100	100	0.00720	U	0.00730	U	0.00730	U	0.00840	U	0.00740	U	0.00890	U
Volatile Organics, Tentatively Identified Cmpds.					mg/kg		mg/kg		mg/kg		mg/kg		mg/kg		mg/kg	
Dilution Factor					1		1		1		1		1		1	
Tentatively Identified Compounds		~	~	~	0	U	0	U	0	U	0	U	0	U	0	U
Total Solids					%		%		%		%		%		%	
Dilution Factor					1		1		1		1		1		1	
% Solids	solids	~	~	~	94		92.700		93.100		94.400		93.800		95.100	

NOTES:
Any Regulatory Exceedences are color coded by Regulation

Q is the Qualifier Column with definitions as follows:

Table 2a
Hotspot 1 - VOC Analysis Summary
13-16 Beach Channel Drive, Far Rockaway, NY

D=result is from an analysis that required a dilution
J=analyte detected at or above the MDL (method detection limit) but below the RL (Reporting Limit) - data is estimated
U=analyte not detected at or above the level indicated
B=analyte found in the analysis batch blank
E=result is estimated and cannot be accurately reported due to levels encountered or interferences
P=this flag is used for pesticide and PCB (Aroclor) target compounds when there is a % difference for detected concentrations that exceed method dictated limits between the two GC columns used for analysis
NT=this indicates the analyte was not a target for this sample
~=this indicates that no regulatory limit has been established for this analyte

DISCLAIMER:

York Analytical Laboratories, Inc. is providing this information as a convenience to you. York makes no representations or warranties that these data are accurate, complete or represent the latest regulatory authority limits or analytes. York is not responsible for any errors or omissions in these specific regulations. Your use of these data constitute your understanding of these limitations and you agree to hold York harmless from any and all action that may arise from use of said information. As regulations change often, we encourage the user to review the regulatory limits and lists of interest to confirm these data.

Table 2b
Hotspot 4 - VOC Analysis Summary
13-16 Beach Channel Drive, Far Rockaway, NY

Sample ID York ID Sampling Date Client Matrix		NYSDEC Part 375 Restricted Use Soil Cleanup Objectives-Protection of GW	NYSDEC Part 375 Unrestricted Use Soil Cleanup Objectives	NYSDEC Part 375 Restricted Use Soil Cleanup Objectives - Restricted Residential	NYSDEC Part 375 Restricted Use Soil Cleanup Objectives-Residential	HS-4-SWE 22K0171-01 11/2/2022 10:50:00 AM Soil		HS-4-SWN 22K0171-02 11/2/2022 11:00:00 AM Soil		HS-4-SWS 22K0171-03 11/2/2022 10:55:00 AM Soil		HS-4-SWW 22K0171-04 11/2/2022 11:30:00 AM Soil		HS-4-EP 22K0171-05 11/2/2022 11:10:00 AM Soil	
Compound	**CAS Number**					Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
VOA, 8260 MASTER		mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg	
Dilution Factor						1		1		1		1		1	
1,1,1,2-Tetrachloroethane	630-20-6	~	~	~	~	0.00300	U	0.00290	U	0.00290	U	0.00250	U	0.00240	U
1,1,1-Trichloroethane	71-55-6	0.68	0.68	100	100	0.00300	U	0.00290	U	0.00290	U	0.00250	U	0.00240	U
1,1,2,2-Tetrachloroethane	79-34-5	~	~	~	~	0.00300	U	0.00290	U	0.00290	U	0.00250	U	0.00240	U
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	76-13-1	~	~	~	~	0.00300	U	0.00290	U	0.00290	U	0.00250	U	0.00240	U
1,1,2-Trichloroethane	79-00-5	~	~	~	~	0.00300	U	0.00290	U	0.00290	U	0.00250	U	0.00240	U
1,1-Dichloroethane	75-34-3	0.27	0.27	26	19	0.00300	U	0.00290	U	0.00290	U	0.00250	U	0.00240	U
1,1-Dichloroethylene	75-35-4	0.33	0.33	100	100	0.00300	U	0.00290	U	0.00290	U	0.00250	U	0.00240	U
1,1-Dichloropropylene	563-58-6	~	~	~	~	0.00300	U	0.00290	U	0.00290	U	0.00250	U	0.00240	U
1,2,3-Trichlorobenzene	87-61-6	~	~	~	~	0.00300	U	0.00290	U	0.00290	U	0.00250	U	0.00240	U
1,2,3-Trichloropropane	96-18-4	~	~	~	~	0.00300	U	0.00290	U	0.00290	U	0.00250	U	0.00240	U
1,2,4-Trichlorobenzene	120-82-1	~	~	~	~	0.00300	U	0.00290	U	0.00290	U	0.00250	U	0.00240	U
1,2,4-Trimethylbenzene	95-63-6	3.6	3.6	52	47	0.00300	U	0.00290	U	0.00290	U	0.00250	U	0.00240	U
1,2-Dibromo-3-chloropropane	96-12-8	~	~	~	~	0.00300	U	0.00290	U	0.00290	U	0.00250	U	0.00240	U
1,2-Dibromoethane	106-93-4	~	~	~	~	0.00300	U	0.00290	U	0.00290	U	0.00250	U	0.00240	U
1,2-Dichlorobenzene	95-50-1	1.1	1.1	100	100	0.00300	U	0.00290	U	0.00290	U	0.00250	U	0.00240	U
1,2-Dichloroethane	107-06-2	0.02	0.02	3.1	2.3	0.00300	U	0.00340	J	0.00290	U	0.00250	U	0.00240	U
1,2-Dichloropropane	78-87-5	~	~	~	~	0.00300	U	0.00290	U	0.00290	U	0.00250	U	0.00240	U
1,3,5-Trimethylbenzene	108-67-8	8.4	8.4	52	47	0.00300	U	0.00290	U	0.00290	U	0.00250	U	0.00240	U
1,3-Dichlorobenzene	541-73-1	2.4	2.4	49	17	0.00300	U	0.00290	U	0.00290	U	0.00250	U	0.00240	U
1,3-Dichloropropane	142-28-9	~	~	~	~	0.00300	U	0.00290	U	0.00290	U	0.00250	U	0.00240	U
1,4-Dichlorobenzene	106-46-7	1.8	1.8	13	9.8	0.00300	U	0.00290	U	0.00290	U	0.00250	U	0.00240	U
1,4-Dioxane	123-91-1	0.1	0.1	13	9.8	0.0590	U	0.0570	U	0.0590	U	0.0490	U	0.0480	U
2,2-Dichloropropane	594-20-7	~	~	~	~	0.00300	U	0.00290	U	0.00290	U	0.00250	U	0.00240	U
2-Butanone	78-93-3	0.12	0.12	100	100	0.00300	U	0.00290	U	0.00290	U	0.00250	U	0.00240	U
2-Chlorotoluene	95-49-8	~	~	~	~	0.00300	U	0.00290	U	0.00290	U	0.00250	U	0.00240	U
2-Hexanone	591-78-6	~	~	~	~	0.00300	U	0.00290	U	0.00290	U	0.00250	U	0.00240	U
4-Chlorotoluene	106-43-4	~	~	~	~	0.00300	U	0.00290	U	0.00290	U	0.00250	U	0.00240	U
4-Methyl-2-pentanone	108-10-1	~	~	~	~	0.00300	U	0.00290	U	0.00290	U	0.00250	U	0.00240	U
Acetone	67-64-1	0.05	0.05	100	100	0.00590	U	0.00700	J	0.00590	U	0.00490	U	0.00480	U
Acrolein	107-02-8	~	~	~	~	0.00590	U	0.00570	U	0.00590	U	0.00490	U	0.00480	U
Acrylonitrile	107-13-1	~	~	~	~	0.00300	U	0.00290	U	0.00290	U	0.00250	U	0.00240	U
Benzene	71-43-2	0.06	0.06	4.8	2.9	0.00300	U	0.00290	U	0.00290	U	0.00250	U	0.00240	U
Bromobenzene	108-86-1	~	~	~	~	0.00300	U	0.00290	U	0.00290	U	0.00250	U	0.00240	U
Bromochloromethane	74-97-5	~	~	~	~	0.00300	U	0.00290	U	0.00290	U	0.00250	U	0.00240	U
Bromodichloromethane	75-27-4	~	~	~	~	0.00300	U	0.00290	U	0.00290	U	0.00250	U	0.00240	U
Bromoform	75-25-2	~	~	~	~	0.00300	U	0.00290	U	0.00290	U	0.00250	U	0.00240	U
Bromomethane	74-83-9	~	~	~	~	0.00300	U	0.00290	U	0.00290	U	0.00250	U	0.00240	U
Carbon disulfide	75-15-0	~	~	~	~	0.00300	U	0.00290	U	0.00290	U	0.00250	U	0.00240	U
Carbon tetrachloride	56-23-5	0.76	0.76	2.4	1.4	0.00300	U	0.00290	U	0.00290	U	0.00250	U	0.00240	U
Chlorobenzene	108-90-7	1.1	1.1	100	100	0.00300	U	0.00290	U	0.00290	U	0.00250	U	0.00240	U
Chloroethane	75-00-3	~	~	~	~	0.00300	U	0.00290	U	0.00290	U	0.00250	U	0.00240	U
Chloroform	67-66-3	0.37	0.37	49	10	0.00300	U	0.00290	U	0.00290	U	0.00250	U	0.00240	U
Chloromethane	74-87-3	~	~	~	~	0.00300	U	0.00290	U	0.00290	U	0.00250	U	0.00240	U
cis-1,2-Dichloroethylene	156-59-2	0.25	0.25	100	59	0.00300	U	0.00290	U	0.00290	U	0.00250	U	0.00240	U
cis-1,3-Dichloropropylene	10061-01-5	~	~	~	~	0.00300	U	0.00290	U	0.00290	U	0.00250	U	0.00240	U
Cyclohexane	110-82-7	~	~	~	~	0.00300	U	0.00290	U	0.00290	U	0.00250	U	0.00240	U
Dibromochloromethane	124-48-1	~	~	~	~	0.00300	U	0.00290	U	0.00290	U	0.00250	U	0.00240	U
Dibromomethane	74-95-3	~	~	~	~	0.00300	U	0.00290	U	0.00290	U	0.00250	U	0.00240	U
Dichlorodifluoromethane	75-71-8	~	~	~	~	0.00300	U	0.00290	U	0.00290	U	0.00250	U	0.00240	U
Ethyl Benzene	100-41-4	1	1	41	30	0.00300	U	0.00290	U	0.00290	U	0.00250	U	0.00240	U
Hexachlorobutadiene	87-68-3	~	~	~	~	0.00300	U	0.00290	U	0.00290	U	0.00250	U	0.00240	U
Isopropylbenzene	98-82-8	~	~	~	~	0.00300	U	0.00290	U	0.00290	U	0.00250	U	0.00240	U
Methyl acetate	79-20-9	~	~	~	~	0.00300	U	0.00290	U	0.00290	U	0.00250	U	0.00240	U
Methyl tert-butyl ether (MTBE)	1634-04-4	0.93	0.93	100	62	0.00300	U	0.00290	U	0.00290	U	0.00250	U	0.00240	U
Methylcyclohexane	108-87-2	~	~	~	~	0.00300	U	0.00290	U	0.00290	U	0.00250	U	0.00240	U
Methylene chloride	75-09-2	0.05	0.05	100	51	0.00590	U	0.00570	U	0.00590	U	0.00840	J	0.00480	U
n-Butylbenzene	104-51-8	12	12	100	100	0.00300	U	0.00290	U	0.00290	U	0.00250	U	0.00240	U
n-Propylbenzene	103-65-1	3.9	3.9	100	100	0.00300	U	0.00290	U	0.00290	U	0.00250	U	0.00240	U
o-Xylene	95-47-6	~	~	~	~	0.00300	U	0.00290	U	0.00290	U	0.00250	U	0.00240	U
p- & m- Xylenes	179601-23-1	~	~	~	~	0.00590	U	0.00570	U	0.00590	U	0.00490	U	0.00480	U
p-Isopropyltoluene	99-87-6	~	~	~	~	0.00300	U	0.00290	U	0.00290	U	0.00250	U	0.00240	U
sec-Butylbenzene	135-98-8	11	11	100	100	0.00300	U	0.00290	U	0.00290	U	0.00250	U	0.00240	U
Styrene	100-42-5	~	~	~	~	0.00300	U	0.00290	U	0.00290	U	0.00250	U	0.00240	U
tert-Butyl alcohol (TBA)	75-65-0	~	~	~	~	0.00300	U	0.00290	U	0.00290	U	0.00250	U	0.00240	U
tert-Butylbenzene	98-06-6	5.9	5.9	100	100	0.00300	U	0.00290	U	0.00290	U	0.00250	U	0.00240	U
Tetrachloroethylene	127-18-4	1.3	1.3	19	5.5	0.00300	U	0.00290	U	0.00290	U	0.110		0.00240	U
Toluene	108-88-3	0.7	0.7	100	100	0.00300	U	0.00290	U	0.00290	U	0.00250	U	0.00240	U
trans-1,2-Dichloroethylene	156-60-5	0.19	0.19	100	100	0.00300	U	0.00290	U	0.00290	U	0.00250	U	0.00240	U
trans-1,3-Dichloropropylene	10061-02-6	~	~	~	~	0.00300	U	0.00290	U	0.00290	U	0.00250	U	0.00240	U
Trichloroethylene	79-01-6	0.47	0.47	21	10	0.00300	U	0.00290	U	0.00290	U	0.00250	U	0.00240	U
Trichlorofluoromethane	75-69-4	~	~	~	~	0.00300	U	0.00290	U	0.00290	U	0.00250	U	0.00240	U
Vinyl acetate	108-05-4	~	~	~	~	0.00300	U	0.00290	U	0.00290	U	0.00250	U	0.00240	U
Vinyl Chloride	75-01-4	0.02	0.02	0.9	0.21	0.00300	U	0.00290	U	0.00290	U	0.00250	U	0.00240	U
Xylenes, Total	1330-20-7	1.6	0.26	100	100	0.00890	U	0.00860	U	0.00880	U	0.00740	U	0.00720	U
Volatile Organics, Tentatively Identified Cmpds.						mg/kg		mg/kg		mg/kg		mg/kg		mg/kg	
Dilution Factor						1		1		1		1		1	
Tentatively Identified Compounds		~	~	~	~	0	U	0	U	0	U	0	U	0	U
Total Solids						%		%		%		%		%	
Dilution Factor						1		1		1		1		1	
% Solids	solids	~	~	~	~	97.800		97.800		96.900		93.900		98.100	

NOTES:
Any Regulatory Exceedences are color coded by Regulation

Q is the Qualifier Column with definitions as follows:
D=result is from an analysis that required a dilution
J=analyte detected at or above the MDL (method detection limit) but below the RL (Reporting Limit) - data is estimated
U=analyte not detected at or above the level indicated
B=analyte found in the analysis batch blank
E=result is estimated and cannot be accurately reported due to levels encountered or interferences
P=this flag is used for pesticide and PCB (Aroclor) target compounds when there is a % difference for detected concentrations that exceed method dictated limits between the two GC columns used for analysis
NT=this indicates the analyte was not a target for this sample
~=this indicates that no regulatory limit has been established for this analyte

DISCLAIMER:
York Analytical Laboratories, Inc. is providing this information as a convenience to you. York makes no representations or warranties that these data are accurate, complete or represent the latest regulatory authority limits or analytes. York is not responsible for any errors or omissions in these specific regulations. Your use of these data constitute your understanding of these limitations and you agree to hold York harmless from any and all action that may arise from use of said information. As regulations change often, we encourage the user to review the regulatory limits and lists of interest to confirm these data.

Table 3
Groundwater Exceedance Analytical Summary
13-12 Beach Channel Drive, Far Rockaway, NY

Sample ID		NYSDEC TOGS Standards and Guidance Values - GA	MW-3R		MW-11iR		MW-11R		MW-4R		MW-10R		MW-10iR		MW-8R		MW-7iR		MW-1iR		MW-1R	
York ID			23F0702-01		23F0702-02		23F0702-03		23F0702-04		23F0702-05		23F0702-06		23F0773-01		23F0773-02		23F1116-01		23F1116-02	
Sampling Date			6/12/2023 9:40:00 AM		6/12/2023 10:30:00 AM		6/12/2023 11:20:00 AM		6/12/2023 12:00:00 PM		6/12/2023 12:35:00 PM		6/12/2023 1:40:00 PM		6/13/2023 9:45:00 AM		6/13/2023 10:30:00 AM		6/16/2023 8:15:00 AM		6/16/2023 9:15:00 AM	
Client Matrix			Water		Water		Water		Water		Water		Water		Water		Water		Water		Water	
Compound	**CAS Number**		Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
VOA, 8260 LOW MASTER		ug/L	ug/L		ug/L		ug/L		ug/L		ug/L		ug/L		ug/L		ug/L		ug/L		ug/L	
Dilution Factor			1		1		1		1		1		1		1		1		1		1	
1,1,1,2-Tetrachloroethane	630-20-6	5	0.216	U	0.216	U	0.216	U	0.216	U	0.216	U	0.216	U	0.216	U	0.216	U	0.216	U	0.216	U
1,1,1-Trichloroethane	71-55-6	5	0.266	U	0.266	U	0.266	U	0.266	U	0.266	U	0.266	U	0.266	U	0.266	U	0.266	U	0.266	U
1,1,2,2-Tetrachloroethane	79-34-5	5	0.256	U	0.256	U	0.256	U	0.256	U	0.256	U	0.256	U	0.256	U	0.256	U	0.256	U	0.256	U
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	76-13-1	5	0.286	U	0.286	U	0.286	U	0.286	U	0.286	U	0.286	U	0.286	U	0.286	U	0.286	U	0.286	U
1,1,2-Trichloroethane	79-00-5	1	0.249	U	0.249	U	0.249	U	0.249	U	0.249	U	0.249	U	0.249	U	0.249	U	0.249	U	0.249	U
1,1-Dichloroethane	75-34-3	5	0.272	U	0.272	U	0.272	U	0.272	U	0.272	U	0.272	U	0.272	U	0.272	U	0.272	U	0.272	U
1,1-Dichloroethylene	75-35-4	5	0.327	U	0.327	U	0.327	U	0.327	U	0.327	U	0.327	U	0.327	U	0.327	U	0.327	U	0.327	U
1,2,3-Trichlorobenzene	87-61-6	5	0.222	U	0.222	U	0.222	U	0.222	U	0.222	U	0.222	U	0.222	U	0.222	U	0.222	U	0.222	U
1,2,3-Trichloropropane	96-18-4	0.04	**0.273**	U	**0.273**	U	**0.273**	U	**0.273**	U	**0.273**	U	**0.273**	U	**0.273**	U	**0.273**	U	**0.273**	U	**0.273**	U
1,2,4-Trichlorobenzene	120-82-1	5	0.138	U	0.138	U	0.138	U	0.138	U	0.138	U	0.138	U	0.138	U	0.138	U	0.138	U	0.138	U
1,2,4-Trimethylbenzene	95-63-6	5	0.310	U	0.310	U	0.310	U	0.310	U	0.310	U	0.310	U	0.310	U	0.310	U	0.310	U	0.310	U
1,2-Dibromo-3-chloropropane	96-12-8	0.04	**0.432**	U	**0.432**	U	**0.432**	U	**0.432**	U	**0.432**	U	**0.432**	U	**0.432**	U	**0.432**	U	**0.432**	U	**0.432**	U
1,2-Dibromoethane	106-93-4	0.0006	**0.215**	U	**0.215**	U	**0.215**	U	**0.215**	U	**0.215**	U	**0.215**	U	**0.215**	U	**0.215**	U	**0.215**	U	**0.215**	U
1,2-Dichlorobenzene	95-50-1	3	0.270	U	0.270	U	0.270	U	0.270	U	0.270	U	0.270	U	0.270	U	0.270	U	0.270	U	0.270	U
1,2-Dichloroethane	107-06-2	0.6	0.377	U	0.377	U	0.377	U	0.377	U	0.377	U	0.377	U	0.377	U	0.377	U	0.377	U	0.377	U
1,2-Dichloropropane	78-87-5	1	0.327	U	0.327	U	0.327	U	0.327	U	0.327	U	0.327	U	0.327	U	0.327	U	0.327	U	0.327	U
1,3,5-Trimethylbenzene	108-67-8	5	0.347	U	0.347	U	0.347	U	0.347	U	0.347	U	0.347	U	0.347	U	0.347	U	0.347	U	0.347	U
1,3-Dichlorobenzene	541-73-1	3	0.283	U	0.283	U	0.283	U	0.283	U	0.283	U	0.283	U	0.283	U	0.283	U	0.283	U	0.283	U
1,3-Dichloropropane	142-28-9	5	0.260	U	0.260	U	0.260	U	0.260	U	0.260	U	0.260	U	0.260	U	0.260	U	0.260	U	0.260	U
1,4-Dichlorobenzene	106-46-7	3	0.311	U	0.311	U	0.311	U	0.311	U	0.311	U	0.311	U	0.311	U	0.311	U	0.311	U	0.311	U
1,4-Dioxane	123-91-1	0.35	**35.300**	U	**35.300**	U	**35.300**	U	**35.300**	U	**35.300**	U	**35.300**	U	**35.300**	U	**35.300**	U	**35.300**	U	**35.300**	U
2-Butanone	78-93-3	50	0.421	U	0.421	U	0.421	U	0.421	U	0.421	U	0.421	U	0.421	U	0.421	U	0.421	U	0.421	U
2-Hexanone	591-78-6	50	0.320	U	0.320	U	0.320	U	0.320	U	0.320	U	0.320	U	0.320	U	0.320	U	0.320	U	0.320	U
4-Methyl-2-pentanone	108-10-1	~	0.365	U	0.365	U	0.365	U	0.365	U	0.365	U	0.365	U	0.365	U	0.365	U	0.365	U	0.365	U
Acetone	67-64-1	50	1.340	U	1.710	J	1.340	U	1.340	U	1.340	U	1.340	U	1.340	U	1.340	U	1.340	U	1.340	U
Acrolein	107-02-8	~	0.447	U	0.447	U	0.447	U	0.447	U	0.447	U	0.447	U	0.447	U	0.447	U	0.447	U	0.447	U
Acrylonitrile	107-13-1	~	0.422	U	0.422	U	0.422	U	0.422	U	0.422	U	0.422	U	0.422	U	0.422	U	0.422	U	0.422	U
Benzene	71-43-2	1	0.279	U	0.670		0.279	U	0.279	U	0.279	U	0.530		0.279	U	0.279	U	0.279	U	0.279	U
Bromochloromethane	74-97-5	5	0.354	U	0.354	U	0.354	U	0.354	U	0.354	U	0.354	U	0.354	U	0.354	U	0.354	U	0.354	U
Bromodichloromethane	75-27-4	50	0.245	U	0.245	U	0.245	U	0.245	U	0.245	U	0.245	U	0.245	U	0.245	U	0.245	U	4.380	
Bromoform	75-25-2	50	0.163	U	0.163	U	0.163	U	0.163	U	0.163	U	0.163	U	0.163	U	0.163	U	0.163	U	0.163	U
Bromomethane	74-83-9	5	0.119	U	0.119	U	0.119	U	0.119	U	0.119	U	0.119	U	0.119	U	0.119	U	0.119	U	0.119	U
Carbon disulfide	75-15-0	~	0.362	U	0.362	U	0.362	U	0.362	U	0.362	U	0.362	U	0.450	J	0.362	U	0.362	U	0.362	U
Carbon tetrachloride	56-23-5	5	0.204	U	0.204	U	0.204	U	0.204	U	0.204	U	0.204	U	0.204	U	0.204	U	0.204	U	0.204	U
Chlorobenzene	108-90-7	5	0.284	U	0.284	U	0.284	U	0.284	U	0.284	U	0.284	U	0.284	U	0.284	U	0.284	U	0.284	U
Chloroethane	75-00-3	5	0.448	U	0.448	U	0.448	U	0.448	U	0.448	U	0.448	U	0.448	U	0.448	U	0.448	U	0.448	U

Table 3
Groundwater Exceedance Analytical Summary
13-12 Beach Channel Drive, Far Rockaway, NY

Sample ID		NYSDEC TOGS Standards and Guidance Values - GA	MW-3R		MW-11iR		MW-11R		MW-4R		MW-10R		MW-10iR		MW-8R		MW-7iR		MW-1iR		MW-1R	
York ID			23F0702-01		23F0702-02		23F0702-03		23F0702-04		23F0702-05		23F0702-06		23F0773-01		23F0773-02		23F1116-01		23F1116-02	
Sampling Date			6/12/2023 9:40:00 AM		6/12/2023 10:30:00 AM		6/12/2023 11:20:00 AM		6/12/2023 12:00:00 PM		6/12/2023 12:35:00 PM		6/12/2023 1:40:00 PM		6/13/2023 9:45:00 AM		6/13/2023 10:30:00 AM		6/16/2023 8:15:00 AM		6/16/2023 9:15:00 AM	
Client Matrix			Water		Water		Water		Water		Water		Water		Water		Water		Water		Water	
Compound	**CAS Number**		Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Chloroform	67-66-3	7	1.900		3.780		0.380	J	0.970		1.370		2.540		2.620		1.260		3.220		**60.500**	
Chloromethane	74-87-3	5	0.372	U	0.840		0.372	U	0.372	U	0.372	U	0.372	U	0.372	U	0.372	U	0.372	U	0.372	U
cis-1,2-Dichloroethylene	156-59-2	5	0.294	U	0.294	U	0.294	U	0.294	U	0.340	J	0.294	U	0.730		0.830		0.294	U	0.294	U
cis-1,3-Dichloropropylene	10061-01-5	0.4	0.262	U	0.262	U	0.262	U	0.262	U	0.262	U	0.262	U	0.262	U	0.262	U	0.262	U	0.262	U
Cyclohexane	110-82-7	~	0.491	U	0.491	U	0.491	U	0.491	U	0.491	U	0.491	U	0.491	U	0.491	U	0.491	U	0.491	U
Dibromochloromethane	124-48-1	50	0.146	U	0.146	U	0.146	U	0.146	U	0.146	U	0.146	U	0.146	U	0.146	U	0.146	U	0.190	J
Dibromomethane	74-95-3	~	0.203	U	0.203	U	0.203	U	0.203	U	0.203	U	0.203	U	0.203	U	0.203	U	0.203	U	0.203	U
Dichlorodifluoromethane	75-71-8	5	0.451	U	0.451	U	0.451	U	0.451	U	0.451	U	0.451	U	0.451	U	0.451	U	0.451	U	0.451	U
Ethyl Benzene	100-41-4	5	0.290	U	0.290	U	0.290	U	0.290	U	0.290	U	0.290	U	0.290	U	0.290	U	0.290	U	0.290	U
Hexachlorobutadiene	87-68-3	0.5	0.241	U	0.241	U	0.241	U	0.241	U	0.241	U	0.241	U	0.241	U	0.241	U	0.241	U	0.241	U
Isopropylbenzene	98-82-8	5	0.405	U	0.405	U	0.405	U	0.405	U	0.405	U	0.405	U	0.405	U	0.405	U	0.405	U	0.405	U
Methyl acetate	79-20-9	~	0.442	U	0.442	U	0.442	U	0.442	U	0.442	U	0.442	U	0.442	U	0.442	U	0.442	U	0.442	U
Methyl tert-butyl ether (MTBE)	1634-04-4	10	0.244	U	0.244	U	0.244	U	0.244	U	0.244	U	0.270	J	0.244	U	0.244	U	0.244	U	0.244	U
Methylcyclohexane	108-87-2	~	0.477	U	0.477	U	0.477	U	0.477	U	0.477	U	0.477	U	0.477	U	0.477	U	0.477	U	0.477	U
Methylene chloride	75-09-2	5	0.397	U	0.397	U	0.397	U	0.397	U	0.397	U	0.397	U	0.397	U	0.397	U	0.397	U	0.397	U
Naphthalene	91-20-3	10	0.212	U	0.212	U	0.212	U	0.212	U	0.212	U	0.212	U	0.212	U	0.212	U	0.212	U	0.212	U
n-Butylbenzene	104-51-8	5	0.399	U	0.399	U	0.399	U	0.399	U	0.399	U	0.399	U	0.399	U	0.399	U	0.399	U	0.399	U
n-Propylbenzene	103-65-1	5	0.384	U	0.384	U	0.384	U	0.384	U	0.384	U	0.384	U	0.384	U	0.384	U	0.384	U	0.384	U
o-Xylene	95-47-6	5	0.261	U	0.261	U	0.261	U	0.261	U	0.261	U	0.261	U	0.261	U	0.261	U	0.261	U	0.261	U
p- & m- Xylenes	179601-23-1	~	0.578	U	0.578	U	0.578	U	0.578	U	0.578	U	0.578	U	0.578	U	0.578	U	0.578	U	0.578	U
p-Diethylbenzene	105-05-5	~	0.341	U	0.341	U	0.341	U	0.341	U	0.341	U	0.341	U	0.341	U	0.341	U	0.341	U	0.341	U
p-Ethyltoluene	622-96-8	~	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U
p-Isopropyltoluene	99-87-6	5	0.377	U	0.377	U	0.377	U	0.377	U	0.377	U	0.377	U	0.377	U	0.377	U	0.377	U	0.377	U
sec-Butylbenzene	135-98-8	5	0.444	U	0.444	U	0.444	U	0.444	U	0.444	U	0.444	U	0.444	U	0.444	U	0.444	U	0.444	U
Styrene	100-42-5	5	0.255	U	0.255	U	0.255	U	0.255	U	0.255	U	0.255	U	0.255	U	0.255	U	0.255	U	0.255	U
tert-Butyl alcohol (TBA)	75-65-0	~	0.608	U	0.608	U	0.608	U	0.608	U	0.608	U	0.608	U	0.608	U	0.608	U	0.608	U	0.608	U
tert-Butylbenzene	98-06-6	5	0.367	U	0.367	U	0.367	U	0.367	U	0.367	U	0.367	U	0.367	U	0.367	U	0.367	U	0.367	U
Tetrachloroethylene	127-18-4	5	**15.200**		0.510		**16.400**		**7.430**		**22.200**		0.430	J	**45.300**		**141**		0.880		0.620	
Toluene	108-88-3	5	0.346	U	0.346	U	0.346	U	0.346	U	0.346	U	0.346	U	0.346	U	0.346	U	0.346	U	0.346	U
trans-1,2-Dichloroethylene	156-60-5	5	0.279	U	0.279	U	0.279	U	0.279	U	0.279	U	0.279	U	0.279	U	0.279	U	0.279	U	0.279	U
trans-1,3-Dichloropropylene	10061-02-6	0.4	0.229	U	0.229	U	0.229	U	0.229	U	0.229	U	0.229	U	0.229	U	0.229	U	0.229	U	0.229	U
Trichloroethylene	79-01-6	5	0.249	U	0.249	U	0.249	U	0.249	U	0.250	J	0.249	U	0.380	J	0.860		0.249	U	0.249	U
Trichlorofluoromethane	75-69-4	5	0.337	U	0.337	U	0.337	U	0.337	U	0.337	U	0.337	U	0.337	U	0.337	U	0.337	U	0.337	U
Vinyl Chloride	75-01-4	2	0.469	U	0.469	U	0.469	U	0.469	U	0.469	U	0.469	U	0.469	U	0.469	U	0.469	U	0.469	U
Xylenes, Total	1330-20-7	5	0.836	U	0.836	U	0.836	U	0.836	U	0.836	U	0.836	U	0.836	U	0.836	U	0.836	U	0.836	U
Volatile Organics, Tentatively Identified Cmpds.			ug/L		ug/L		ug/L		ug/L		ug/L		ug/L		ug/L		ug/L		ug/L		ug/L	
Dilution Factor			1		1		1		1		1		1		1		1		1		1	
Tentatively Identified Compounds		~	0	U	0	U	0	U	0	U	0	U	0	U	0	U	0	U	0	U	0	U
Methane, Ethane & Ethylene											ug/L		ug/L		ug/L		ug/L		ug/L		ug/L	
Dilution Factor											1		1		1		1		1		1	
Ethane	74-84-0	~	NT		NT		NT		NT		10	U	10	U	10	U	10	U	10	U	10	U
Ethylene (Ethene)	74-85-1	~	NT		NT		NT		NT		10	U	10	U	10	U	10	U	10	U	10	U
Methane	74-82-8	~	NT		NT		NT		NT		10	U	10	U	10	U	10	U	10	U	10	U

Table 3
Groundwater Exceedance Analytical Summary
13-12 Beach Channel Drive, Far Rockaway, NY

Sample ID		NYSDEC TOGS Standards and Guidance Values - GA	MW-3R		MW-11iR		MW-11R		MW-4R		MW-10R		MW-10iR		MW-8R		MW-7iR		MW-1iR		MW-1R	
York ID			23F0702-01		23F0702-02		23F0702-03		23F0702-04		23F0702-05		23F0702-06		23F0773-01		23F0773-02		23F1116-01		23F1116-02	
Sampling Date			6/12/2023 9:40:00 AM		6/12/2023 10:30:00 AM		6/12/2023 11:20:00 AM		6/12/2023 12:00:00 PM		6/12/2023 12:35:00 PM		6/12/2023 1:40:00 PM		6/13/2023 9:45:00 AM		6/13/2023 10:30:00 AM		6/16/2023 8:15:00 AM		6/16/2023 9:15:00 AM	
Client Matrix			Water		Water		Water		Water		Water		Water		Water		Water		Water		Water	
Compound	**CAS Number**		Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Iron by EPA 6010											ug/L		ug/L		ug/L		ug/L		ug/L		ug/L	
Dilution Factor											1		1		1		1		1		1	
Iron	7439-89-6	~	NT		NT		NT		NT		710		17,700		5,020		1,530		794		281	
Iron, Dissolved by EPA 6010											ug/L		ug/L		ug/L		ug/L		ug/L		ug/L	
Dilution Factor											1		1		1		1		1		1	
Iron	7439-89-6	~	NT		NT		NT		NT		608		785		278	U	278	U	279		278	U
Sulfide											ug/L		ug/L		ug/L		ug/L		ug/L		ug/L	
Dilution Factor											1		1		1		1		1		1	
Sulfide	18496-25-8	~	NT		NT		NT		NT		1,000	U	1,000	U	1,000	U	1,000	U	2,400		8,000	
Total Organic Carbon											ug/L		ug/L		ug/L		ug/L		ug/L		ug/L	
Dilution Factor											1		1		1		1		1		1	
Total Organic Carbon (TOC)		~	NT		NT		NT		NT		2,550		1,920		1,310		1,740		1,880		1,020	
Nitrate as N											ug/L		ug/L		ug/L		ug/L		ug/L		ug/L	
Dilution Factor											1		1		1		1		1		1	
Nitrate as N	14797-55-8	~	NT		NT		NT		NT		5,930		1,700		7,650		6,270		3,770		180	
Sulfate as SO4											ug/L		ug/L		ug/L		ug/L		ug/L		ug/L	
Dilution Factor											50		10		1		1		1		1	
Sulfate	14808-79-8	~	NT		NT		NT		NT		311,000	D	258,000	D	38,600		52,700		69,100		4,420	

NOTES:
Any Regulatory Exceedences are color coded by Regulation

Q is the Qualifier Column with definitions as follows:
D=result is from an analysis that required a dilution
J=analyte detected at or above the MDL (method detection limit) but below the RL (Reporting Limit) - data is estimated
U=analyte not detected at or above the level indicated
B=analyte found in the analysis batch blank
E=result is estimated and cannot be accurately reported due to levels encountered or interferences
P=this flag is used for pesticide and PCB (Aroclor) target compounds when there is a % difference for detected concentrations that exceed method dictated limits between the two GC columns used for analysis
NT=this indicates the analyte was not a target for this sample
~=this indicates that no regulatory limit has been established for this analyte

Table 4
Soil Vapor Exceedance Analytical Summary
13-12 Beach Channel Drive, Far Rockaway, NY

LOCATION								SV-1		SV-2		SV-3		DUPLICATE		SV-4		SV-5		SS-1		SS-2		SS-3		SS-4	
SAMPLING DATE								7/10/2023		7/10/2023		7/10/2023		7/10/2023		7/10/2023		7/10/2023		7/10/2023		7/10/2023		7/10/2023		7/10/2023	
LAB SAMPLE ID								L2339274-01		L2339274-02		L2339274-03		L2339274-04		L2339274-05		L2339274-06		L2339274-07		L2339274-08		L2339274-09		L2339274-10	
SAMPLE TYPE								SOIL_VAPOR		SOIL_VAPOR		SOIL_VAPOR		SOIL_VAPOR		SOIL_VAPOR		SOIL_VAPOR		SOIL_VAPOR		SOIL_VAPOR		SOIL_VAPOR		SOIL_VAPOR	
SAMPLE DEPTH (ft.)																											
	NY-IAC-A	NY-IAC-B	NY-IAC-C	NY-SSC-A	NY-SSC-B	NY-SSC-C	Units	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual
Volatile Organics in Air																											
Dichlorodifluoromethane							ug/m3	4.12	U	17	U	23.5	U	30.9	U	6.18	U	6.18	U	12.1		4.7		91.5	U	18.8	
Chloromethane							ug/m3	1.72	U	7.1	U	9.83	U	12.9	U	2.58	U	2.58	U	1.72	U	1.47	U	102		0.413	U
Freon-114							ug/m3	5.82	U	24	U	33.3	U	43.6	U	8.74	U	8.74	U	5.82	U	4.99	U	129	U	1.4	U
Vinyl chloride			0.2			6	ug/m3	2.13	U	8.79	U	12.2	U	16	U	3.2	U	3.2	U	2.13	U	1.83	U	47.3	U	0.511	U
1,3-Butadiene							ug/m3	1.84	U	7.61	U	10.5	U	13.8	U	2.77	U	2.77	U	1.84	U	1.58	U	40.9	U	0.442	U
Bromomethane							ug/m3	3.23	U	13.4	U	18.5	U	24.2	U	4.85	U	4.85	U	3.23	U	2.77	U	71.8	U	0.777	U
Chloroethane							ug/m3	2.2	U	9.08	U	12.6	U	16.5	U	3.3	U	3.3	U	2.2	U	1.88	U	48.8	U	0.528	U
Ethanol							ug/m3	39.2	U	162	U	224	U	294	U	58.8	U	58.8	U	39.2	U	33.5	U	872	U	10	
Vinyl bromide							ug/m3	3.64	U	15	U	20.8	U	27.3	U	5.47	U	5.47	U	3.64	U	3.12	U	80.9	U	0.874	U
Acetone							ug/m3	12.5		40.9	U	247		323		19.5		18.2		74.1		56.3		3520		60.1	
Trichlorofluoromethane							ug/m3	6.69		19.3	U	26.7	U	35.1	U	8.77		7.02	U	112		81.5		104	U	10.5	
Isopropanol							ug/m3	5.11	U	21.1	U	29.3	U	38.3	U	7.67	U	7.67	U	5.11	U	4.38	U	114	U	1.23	U
1,1-Dichloroethene	0.2			6			ug/m3	3.3	U	13.6	U	18.9	U	24.7	U	4.96	U	4.96	U	3.3	U	2.83	U	73.3	U	0.793	U
Tertiary butyl Alcohol							ug/m3	15.6		43.7		287		167		26.3		12.1		38.8		24.1		140	U	16.9	
Methylene chloride		3			100		ug/m3	16.6		29.9	U	41.3	U	54.2	U	14.5		10.8	U	7.23	U	6.18	U	161	U	3.32	
3-Chloropropene							ug/m3	2.61	U	10.8	U	14.9	U	19.5	U	3.91	U	3.91	U	2.61	U	2.23	U	57.9	U	0.626	U
Carbon disulfide							ug/m3	2.59	U	10.7	U	14.8	U	19.4	U	3.89	U	3.89	U	2.59	U	2.22	U	57.6	U	0.666	
Freon-113							ug/m3	6.38	U	26.4	U	36.5	U	47.8	U	9.58	U	9.58	U	6.38	U	5.47	U	142	U	1.53	U
trans-1,2-Dichloroethene							ug/m3	3.3	U	13.6	U	18.9	U	24.7	U	4.96	U	4.96	U	3.3	U	2.83	U	73.3	U	2.06	
1,1-Dichloroethane							ug/m3	3.37	U	13.9	U	19.3	U	25.3	U	5.06	U	5.06	U	3.37	U	2.89	U	74.9	U	0.809	U
Methyl tert butyl ether							ug/m3	3	U	12.4	U	17.2	U	22.5	U	4.51	U	4.51	U	3	U	2.57	U	66.7	U	0.721	U
2-Butanone							ug/m3	6.13	U	25.4	U	35.1	U	46	U	9.2	U	9.2	U	99.4		118		1050		104	
cis-1,2-Dichloroethene	0.2			6			ug/m3	3.3	U	13.6	U	190		130		4.96	U	4.96	U	3.3	U	3.16		73.3	U	1.5	
Ethyl Acetate							ug/m3	7.5	U	31	U	42.9	U	56.2	U	11.2	U	11.2	U	7.5	U	6.41	U	167	U	2.23	
Chloroform							ug/m3	25.8		39.2		547		383		25.2		1260		30		16.9		90.3	U	14.6	
Tetrahydrofuran							ug/m3	6.13	U	25.4	U	35.4		46	U	9.2	U	9.2	U	11.4		6.55		37500		12.7	
1,2-Dichloroethane							ug/m3	3.37	U	13.9	U	19.3	U	25.3	U	5.06	U	5.06	U	3.37	U	2.89	U	74.9	U	0.809	U
n-Hexane							ug/m3	2.94	U	12.1	U	24.6		22	U	4.41	U	4.41	U	7.4		2.52	U	65.2	U	2.1	
1,1,1-Trichloroethane		3			100		ug/m3	4.54	U	18.8	U	26	U	34	U	6.82	U	6.82	U	4.54	U	3.9	U	101	U	2.5	
Benzene							ug/m3	2.66	U	11	U	15.2	U	19.9	U	3.99	U	3.99	U	2.66	U	2.28	U	59.1	U	0.639	U
Carbon tetrachloride	0.2			6			ug/m3	5.24	U	21.6	U	29.9	U	39.3	U	7.86	U	7.86	U	5.24	U	4.49	U	116	U	7.67	
Cyclohexane							ug/m3	2.87	U	11.8	U	16.4	U	21.5	U	4.3	U	4.3	U	2.87	U	2.46	U	63.7	U	0.688	U
1,2-Dichloropropane							ug/m3	3.85	U	15.9	U	22	U	28.8	U	5.78	U	5.78	U	3.85	U	3.3	U	85.5	U	0.924	U
Bromodichloromethane							ug/m3	5.58	U	23	U	31.9	U	41.8	U	8.37	U	12.8		5.58	U	4.78	U	124	U	1.34	U
1,4-Dioxane							ug/m3	3	U	12.4	U	17.2	U	22.5	U	4.5	U	4.5	U	3	U	2.57	U	66.7	U	0.721	U
Trichloroethene	0.2			6			ug/m3	14.4		72		213		134		15.4		8.38		14.6		13.3		99.4	U	11.2	
2,2,4-Trimethylpentane							ug/m3	3.89	U	16.1	U	35.2		29.1	U	5.84	U	5.84	U	3.89	U	3.33	U	86.4	U	0.934	U
Heptane							ug/m3	3.41	U	14.1	U	19.5	U	25.6	U	5.12	U	5.12	U	3.41	U	2.93	U	75.8	U	0.82	U
cis-1,3-Dichloropropene							ug/m3	3.78	U	15.6	U	21.6	U	28.3	U	5.67	U	5.67	U	3.78	U	3.24	U	84	U	0.908	U
4-Methyl-2-pentanone							ug/m3	8.52	U	35.2	U	48.8	U	63.9	U	12.8	U	12.8	U	8.52	U	7.29	U	190	U	2.05	U
trans-1,3-Dichloropropene							ug/m3	3.78	U	15.6	U	21.6	U	28.3	U	5.67	U	5.67	U	3.78	U	3.24	U	84	U	0.908	U
1,1,2-Trichloroethane							ug/m3	4.54	U	18.8	U	26	U	34	U	6.82	U	6.82	U	4.54	U	3.9	U	101	U	1.09	U
Toluene							ug/m3	7.46		13	U	18.4		23.5	U	4.71	U	4.71	U	8.14		2.69	U	69.7	U	1.74	
2-Hexanone							ug/m3	3.41	U	14.1	U	19.5	U	25.6	U	5.12	U	5.12	U	23.3		21.1		75.8	U	17.5	
Dibromochloromethane							ug/m3	7.1	U	29.3	U	40.6	U	53.2	U	10.6	U	10.6	U	7.1	U	6.08	U	158	U	1.7	U
1,2-Dibromoethane							ug/m3	6.4	U	26.4	U	36.6	U	48	U	9.61	U	9.61	U	6.4	U	5.49	U	142	U	1.54	U
Tetrachloroethene		3			100		ug/m3	1740		10400		20800		13000		2580		2400		1850		1460		504		1130	
Chlorobenzene							ug/m3	3.84	U	15.8	U	21.9	U	28.7	U	5.76	U	5.76	U	3.84	U	3.29	U	85.2	U	0.921	U
Ethylbenzene							ug/m3	5.3		14.9	U	20.7	U	27.1	U	5.43	U	5.43	U	3.62	U	3.1	U	80.4	U	0.869	U
p/m-Xylene							ug/m3	24.1		33.9		41.4	U	54.3	U	10.9	U	18.6		7.25	U	6.21	U	161	U	2.18	
Bromoform							ug/m3	8.61	U	35.6	U	49.2	U	64.5	U	12.9	U	12.9	U	8.61	U	7.38	U	191	U	2.07	U
Styrene							ug/m3	3.55	U	14.6	U	20.3	U	26.6	U	5.32	U	5.32	U	3.55	U	3.04	U	78.8	U	0.852	U

Table 4
Soil Vapor Exceedance Analytical Summary
13-12 Beach Channel Drive, Far Rockaway, NY

LOCATION								SV-1		SV-2		SV-3		DUPLICATE		SV-4		SV-5		SS-1		SS-2		SS-3		SS-4	
SAMPLING DATE								7/10/2023		7/10/2023		7/10/2023		7/10/2023		7/10/2023		7/10/2023		7/10/2023		7/10/2023		7/10/2023		7/10/2023	
LAB SAMPLE ID								L2339274-01		L2339274-02		L2339274-03		L2339274-04		L2339274-05		L2339274-06		L2339274-07		L2339274-08		L2339274-09		L2339274-10	
SAMPLE TYPE								SOIL_VAPOR		SOIL_VAPOR		SOIL_VAPOR		SOIL_VAPOR		SOIL_VAPOR		SOIL_VAPOR		SOIL_VAPOR		SOIL_VAPOR		SOIL_VAPOR		SOIL_VAPOR	
SAMPLE DEPTH (ft.)																											
	NY-IAC-A	NY-IAC-B	NY-IAC-C	NY-SSC-A	NY-SSC-B	NY-SSC-C	Units	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual
Volatile Organics in Air																											
1,1,2,2-Tetrachloroethane							ug/m3	5.72	U	23.6	U	32.7	U	42.9	U	8.58	U	8.58	U	5.72	U	4.9	U	127	U	1.37	U
o-Xylene							ug/m3	5.39		17.5		20.7	U	27.1	U	5.43	U	6.43		3.62	U	3.1	U	80.4	U	1.28	
4-Ethyltoluene							ug/m3	4.1	U	39.5		23.4	U	30.7	U	6.15	U	6.15	U	4.1	U	3.51	U	90.9	U	0.983	U
1,3,5-Trimethylbenzene							ug/m3	4.1	U	37.1		23.4	U	30.7	U	6.15	U	6.15	U	4.1	U	3.51	U	90.9	U	0.983	U
1,2,4-Trimethylbenzene							ug/m3	4.1	U	118		23.4	U	30.7	U	6.15	U	6.15	U	4.1	U	3.51	U	90.9	U	2.1	
Benzyl chloride							ug/m3	4.31	U	17.8	U	24.6	U	32.3	U	6.47	U	6.47	U	4.31	U	3.7	U	95.8	U	1.04	U
1,3-Dichlorobenzene							ug/m3	5.01	U	20.7	U	28.6	U	37.5	U	7.52	U	7.52	U	5.01	U	4.29	U	111	U	1.2	U
1,4-Dichlorobenzene							ug/m3	5.01	U	20.7	U	28.6	U	37.5	U	7.52	U	7.52	U	5.01	U	4.29	U	111	U	1.2	U
1,2-Dichlorobenzene							ug/m3	5.01	U	20.7	U	28.6	U	37.5	U	7.52	U	7.52	U	5.01	U	4.29	U	111	U	1.2	U
1,2,4-Trichlorobenzene							ug/m3	6.18	U	25.5	U	35.3	U	46.3	U	9.28	U	9.28	U	6.18	U	5.3	U	137	U	1.48	U
Hexachlorobutadiene							ug/m3	8.89	U	36.7	U	50.8	U	66.6	U	13.3	U	13.3	U	8.89	U	7.62	U	197	U	2.13	U

* Comparison is not performed on parameters with non-numeric criteria.

NY-IAC-A: New York DOH Matrix A Indoor Air Concentrations Criteria per Guidance for Evaluating Soil Vapor Intrusion, October 2006, and updated May 2017.
NY-IAC-B: New York DOH Matrix B Indoor Air Concentrations Criteria per Guidance for Evaluating Soil Vapor Intrusion, October 2006, and updated May 2017.
NY-IAC-C: New York DOH Matrix C Indoor Air Concentrations Criteria per Guidance for Evaluating Soil Vapor Intrusion, October 2006, and updated May 2017.
NY-SSC-A: New York DOH Matrix A Sub-slab Vapor Concentrations Criteria per Guidance for Evaluating Soil Vapor Intrusion, October 2006, and updated May 2017.
NY-SSC-B: New York DOH Matrix B Sub-slab Vapor Concentrations Criteria per Guidance for Evaluating Soil Vapor Intrusion, October 2006, and updated May 2017.
NY-SSC-C: New York DOH Matrix C Sub-slab Vapor Concentrations Criteria per Guidance for Evaluating Soil Vapor Intrusion, October 2006, and updated May 2017.

Table 5
Routine Maintenence Schedule
13-12 Beach Channel Drive, Far Rockaway, NY

SSDS Component	Monitoring Parameter	Operating Range	Monitoring Schedule
SSDS Blower	On or Off	NA	Annual
Magnehelic Gauge	Vacuum at Riser	>0.10 "WC	Annual
Failure Alarm	On or Off	NA	Annual

Table 6: 6 NYCRR Part 375 Soil Cleanup Objectives

Unrestricted Use, Restricted-Residential and Protection of Groundwater

CAS Number	Parameter Name	Parameter ID	NYCRR 375 Unrestricted Use	NYCRR 375 Restricted-Residential	NYCRR 375 Protection of Groundwater
630-20-6	1,1,1,2-Tetrachloroethane	VOC	NA	NA	NA
71-55-6	1,1,1-Trichloroethane	VOC	680	100,000a	680
79-34-5	1,1,2,2-Tetrachloroethane	VOC	NA	NA	600
79-00-5	1,1,2-Trichloroethane	VOC	NA	NA	NA
76-13-1	1,1,2 Trichloro-1,2,2 Trifluoroethane	VOC	NA	NA	NA
75-34-3	1,1-Dichloroethane	VOC	270	26000	270
75-35-4	1,1-Dichloroethene	VOC	330	100,000a	330
96-18-4	1,2,3-Trichloropropane	VOC	NA	NA	340
120-82-1	1,2,4-Trichlorobenzene	VOC	NA	NA	3400
95-63-6	1,2,4-Trimethylbenzene	VOC	3,600	52000	3600
96-12-8	1,2-Dibromo-3-Chloropropane	VOC	NA	NA	NA
106-93-4	1,2-Dibromoethane	VOC	NA	NA	NA
95-50-1	1,2-Dichlorobenzene	VOC	1,100	100,000a	1100
107-06-2	1,2-Dichloroethane	VOC	20c	3100	20f
78-87-5	1,2-Dichloropropane	VOC	NA	NA	NA
108-67-8	1,3,5-Trimethylbenzene	VOC	8,400	52000	8400
541-73-1	1,3-Dichlorobenzene	VOC	2,400	49000	2400
142-28-9	1,3-Dichloropropane	VOC	NA	NA	300
542-75-6	1,3-Dichloropropene(cis and trans)	VOC	NA	NA	NA
106-46-7	1,4-Dichlorobenzene	VOC	1,800	13000	1800
123-91-1	1,4-Dioxane	VOC	100b	13000	100e
78-93-3	2-Butanone	VOC	120	100,000a	120
95-49-8	2-Chlorotoluene	VOC	NA	NA	NA
108-10-1	4-Methyl-2-Pentanone	VOC	NA	NA	1000
67-64-1	Acetone	VOC	50	100,000b	50
107-02-8	Acrolein	VOC	NA	NA	NA
107-13-1	Acrylonitrile	VOC	NA	NA	NA
71-43-2	Benzene	VOC	60	4800	60
74-97-5	Bromochloromethane	VOC	NA	NA	NA
75-27-4	Bromodichloromethane	VOC	NA	NA	NA
75-25-2	Bromoform	VOC	NA	NA	NA
74-83-9	Bromomethane	VOC	NA	NA	NA
75-15-0	Carbon Disulfide	VOC	NA	NA	2700
56-23-5	Carbon Tetrachloride	VOC	760	2400	760
108-90-7	Chlorobenzene	VOC	1,100	100,000a	1100
124-48-1	Chlorodibromomethane	VOC	NA	NA	NA
75-00-3	Chloroethane	VOC	NA	NA	1900
67-66-3	Chloroform	VOC	370	49000	370
74-87-3	Chloromethane	VOC	NA	NA	NA
156-59-2	cis-1,2-Dichloroethene	VOC	250	100,000a	250
74-95-3	Dibromomethane	VOC	NA	NA	NA
75-71-8	Dichlorodifluoromethane	VOC	NA	NA	NA
100-41-4	Ethylbenzene	VOC	1,000	41000	1000
98-82-8	Isopropylbenzene	VOC	NA	NA	2300
79-20-9	Methyl Acetate	VOC	NA	NA	NA
75-09-2	Methylene Chloride	VOC	50	100,000a	50
1634-04-4	Methyl Tert-Butyl Ether	VOC	930	100,000a	930
104-51-8	n-Butylbenzene	VOC	12,000	100,000a	12000
103-65-1	n-Propylbenzene	VOC	3,900	100,000a	3900
99-87-6	p-Isoproplytoluene	VOC	NA	NA	10000
135-98-8	sec-Butylbenzene	VOC	11,000	100,000a	11000
100-42-5	Styrene	VOC	NA	NA	NA
98-06-6	tert-Butylbenzene	VOC	5,900	100,000a	5900
75-65-0	Tertiary Butyl Alcohol	VOC	NA	NA	NA
127-18-4	Tetrachloroethene	VOC	1,300	19000	1300
108-88-3	Toluene	VOC	700	100,000a	700
1330-20-7	Total Xylenes	VOC	260	100,000a	1600
156-60-5	trans-1,2-Dichloroethene	VOC	190	100,000a	190
79-01-6	Trichloroethene	VOC	470	21000	470
75-69-4	Trichlorofluoromethane	VOC	NA	NA	NA
108-05-4	Vinyl Acetate	VOC	NA	NA	NA
75-01-4	Vinyl Chloride	VOC	20	900	20

Table 6: 6 NYCRR Part 375 Soil Cleanup Objectives

Unrestricted Use, Restricted-Residential and Protection of Groundwater

CAS Number	Parameter Name	Parameter ID	NYCRR 375 Unrestricted Use	NYCRR 375 Restricted-Residential	NYCRR 375 Protection of Groundwater
87-68-3	Hexachlorobutadiene	SVOC	NA	NA	NA
92-52-4	1-1- Biphenyl	SVOC	NA	NA	NA
122-66-7	1,2- Diphenylhydrazine	SVOC	NA	NA	NA
95-94-3	1,2,4,5-Tetrachlorobenzene	SVOC		NA	NA
58-90-2	2,3,4,6-Tetrachlorophenol	SVOC		NA	NA
95-95-4	2,4,5-Trichlorophenol	SVOC	NA	NA	100
88-06-2	2,4,6-Trichlorophenol	SVOC	NA	NA	NA
120-83-2	2,4-Dichlorophenol	SVOC	NA	NA	400
105-67-9	2,4-Dimethylphenol	SVOC	NA	NA	NA
51-28-5	2,4-Dinitrophenol	SVOC	NA	NA	200
121-14-2	2,4-Dinitrotoluene	SVOC	NA	NA	NA
606-20-2	2,6-Dinitrotoluene	SVOC	NA	NA	170
91-58-7	2-Chloronaphthalene	SVOC	NA	NA	NA
95-57-8	2-Chlorophenol	SVOC	NA	NA	NA
91-57-6	2-Methylnaphthalene	SVOC	NA	NA	NA
95-48-7	2-Methylphenol	SVOC	330b	100,000a	330e
88-74-4	2-Nitroaniline	SVOC	NA	NA	400
88-75-5	2-Nitrophenol	SVOC	NA	NA	300
91-94-1	3,3-Dichlorobenzidine	SVOC	NA	NA	NA
108-39-4	m-Cresol(s)	SVOC	330b	100,000a	330e
99-09-2	3-Nitroaniline	SVOC	NA	NA	500
534-52-1	4,6-Dinitro-2-methylphenol	SVOC	NA	NA	NA
59-50-7	4-Chloro-3-methylphenol	SVOC	NA	NA	NA
106-47-8	4-Chloroaniline	SVOC	NA	NA	220
106-44-5	4-Methylphenol	SVOC	330b	100,000a	330e
15831-10-4	3+4 Methylphenol	SVOC		100,000a	330e
100-01-6	4-Nitroaniline	SVOC	NA	NA	NA
100-02-7	4-Nitrophenol	SVOC	NA	NA	100
83-32-9	Acenaphthene	SVOC	20,000	100,000a	98000
208-96-8	Acenaphthylene	SVOC	100,000a	100,000a	107000
98-86-2	Acetophenone	SVOC	NA	NA	NA
62-53-3	Aniline	SVOC	NA	100000	330
120-12-7	Anthracene	SVOC	100,000a	100,000a	1,000,000c
1912-24-9	Atrazine	SVOC	NA	NA	NA
100-52-7	Benzaldehyde	SVOC	NA	NA	NA
92-87-5	Benzidine	SVOC	NA	NA	NA
56-55-3	Benzo-a-Anthracene	SVOC	1,000c	1,000f	1,000f
50-32-8	Benzo-a-Pyrene	SVOC	1,000c	1,000f	22000
205-99-2	Benzo-b-Fluoranthene	SVOC	1,000c	1,000f	1700
207-08-9	Benzo-k-Fluoranthene	SVOC	800c	3900	1700
191-24-2	Benzo-g,h,i-Perylene	SVOC	100,000	100,000a	1,000,000c
65-85-0	Benzoic Acid	SVOC	NA	NA	100000
100-51-6	Benzyl Alcohol	SVOC	NA	NA	NA
111-44-4	Bis(2-Chloroethyl)ether	SVOC	NA	NA	NA
108-60-1	Bis(2-Chloroisopropyl)ether	SVOC	NA	NA	NA
117-81-7	Bis(2-Ethylhexyl)Phthalate	SVOC	NA	NA	435000
85-68-7	Butylbenzylphthalate	SVOC	NA	NA	122000
105-60-2	Caprolactam	SVOC	NA	NA	NA
86-74-8	Carbazole	SVOC	NA	NA	NA
218-01-9	Chrysene	SVOC	1,000c	3900	1,000f
75-99-0	Dalapon	SVOC		NA	NA
132-64-9	Dibenzofuran	SVOC	7,000	59000	6200
53-70-3	Dibenzo-a,h-Anthracene	SVOC	330b	330e	1,000,000c
84-66-2	Diethyl Phthalate	SVOC	NA	NA	7100
131-11-3	Dimethyl Phthalate	SVOC	NA	NA	27000
84-74-2	Di-n-Butyl Phthalate	SVOC	NA	NA	8100
25321-14-6	Dinitrotoluene(2,4-/2,6-)	SVOC	NA	NA	NA
117-84-0	Di-n-Octyl Phthalate	SVOC	NA	NA	120000
206-44-0	Fluoranthene	SVOC	100,000	100,000a	1,000,000c
86-73-7	Fluorene	SVOC	30,000	100,000a	386000
118-74-1	Hexachlorobenzene	SVOC	330	1200	3200
77-47-4	Hexachlorocyclopentadiene	SVOC	NA	NA	NA
67-72-1	Hexachloroethane	SVOC	NA	NA	NA
193-39-5	Indeno(1,2,3-cd)Pyrene	SVOC	500c	500f	8200
78-59-1	Isophorone	SVOC	NA	NA	4400
91-20-3	Naphthalene	SVOC	12,000	100,000a	12000
98-95-3	Nitrobenzene	SVOC	NA	15000	170
62-75-9	N-Nitrosodimethylamine	SVOC	NA	NA	NA
621-64-7	N-Nitroso-di-n-Propylamine	SVOC	NA	NA	NA
86-30-6	N-Nitrosodiphenylamine	SVOC	NA	NA	NA
87-86-5	Pentachlorophenol	SVOC	800b	6700	800e
85-01-8	Phenanthrene	SVOC	100,000	100,000a	1,000,000c
108-95-2	Phenol	SVOC	330b	100,000a	330e
129-00-0	Pyrene	SVOC	100000	100,000a	1,000,000c

Table 6: 6 NYCRR Part 375 Soil Cleanup Objectives

Unrestricted Use, Restricted-Residential and Protection of Groundwater

CAS Number	Parameter Name	Parameter ID	NYCRR 375 Unrestricted Use	NYCRR 375 Restricted-Residential	NYCRR 375 Protection of Groundwater
93-76-5	2,4,5-T	HERBICIDE	NA	NA	1900
93-72-1	2,4,5-TP Acid	PESTICIDE	3,800	100,000a	3800
94-75-7	2,4-D	HERBICIDE	NA	NA	500
72-54-8	4,4-DDD	PESTICIDE	3.3b	13000	14000
72-55-9	4,4-DDE	PESTICIDE	3.3b	8900	17000
50-29-3	4,4-DDT	PESTICIDE	3.3b	7900	136000
309-00-2	Aldrin	PESTICIDE	5c	97	190
319-84-6	alpha-BHC	PESTICIDE	20	480	20
5103-71-9	Alpha Chlordane	PESTICIDE	94	4200	2900
12674-11-2	Aroclor 1016	PCB	NA	NA	NA
11104-28-2	Aroclor 1221	PCB	NA	NA	NA
11141-16-5	Aroclor 1232	PCB	NA	NA	NA
53469-21-9	Aroclor 1242	PCB	NA	NA	NA
12672-29-6	Aroclor 1248	PCB	NA	NA	NA
11097-69-1	Aroclor 1254	PCB	NA	NA	NA
11096-82-5	Aroclor 1260	PCB	NA	NA	NA
37324-23-5	Aroclor 1262	PCB		NA	NA
11100-14-4	Aroclor 1268	PCB		NA	NA
319-85-7	beta-BHC	PESTICIDE	36	360	90
57-74-9	Chlordane	PESTICIDE	94	4200	2900
319-86-8	delta-BHC	PESTICIDE	40	100,000a	250
1918-00-9	Dicamba	HERBICIDE	NA	NA	NA
60-57-1	Dieldrin	PESTICIDE	5	200	100
115-29-7	Endosulfan	PESTICIDE	2400	NA	NA
959-98-8	Endosulfan I	PESTICIDE	2,400	24,000i	102000
33213-65-9	Endosulfan II	PESTICIDE	2,400	24,000i	102000
1031-07-8	Endosulfan Sulfate	PESTICIDE	2,400	24,000i	1,000,000c
72-20-8	Endrin	PESTICIDE	14	11000	60
58-89-9	gamma-BHC	PESTICIDE	100	1300	100
5103-74-2	Gamma Chlordane	PESTICIDE	NA	NA	14000
76-44-8	Heptachlor	PESTICIDE	42	2100	380
1024-57-3	Heptachlor Epoxide	PESTICIDE	NA	NA	20
72-43-5	Methoxychlor	PESTICIDE	NA	NA	900000
56-38-2	Parathion	PESTICIDE	NA	NA	1200
1336-36-3	Polychlorinated Biphenyls	PCBs	100	1000	3200
8001-35-2	Toxaphene	PESTICIDE	NA	NA	NA
	Unit		*mg/kg*	*mg/kg*	*mg/kg*
7429-90-5	Aluminum, Al	METAL	NA	NA	NA
7440-36-0	Antimony, Sb	METAL	NA	NA	NA
7440-38-2	Arsenic, As	METAL	13c	16f	16f
7440-39-3	Barium, Ba	METAL	350c	400	820
7440-41-7	Beryllium, Be	METAL	7.2	72	47
7440-42-8	Boron, B	METAL		NA	NA
7440-43-9	Cadmium, Cd	METAL	2.5c	4.3	7.5
7440-47-3	Chromium, Cr	METAL	NA	110	NA
18540-29-9	Chromium, hexavalent	METAL	1b	110	19
16065-83-1	Chromium, trivalent	METAL	30c	180	NA
7440-48-4	Cobalt, Co	METAL	NA	NA	NA
7440-50-8	Copper, Cu	METAL	50	270	1720
57-12-5	Cyanide	METAL	27	27	40
7439-89-6	Iron, Fe	METAL	NA	NA	NA
7439-92-1	Lead, Pb	METAL	63c	400	450
7439-96-5	Manganese, Mn	METAL	1,600c	2,000f	2,000f
7439-97-6	Mercury, Hg	METAL	.18c	.81j	0.73
7440-02-0	Nickel, Ni	METAL	30	310	130
7782-49-2	Selenium, Se	METAL	3.9c	180	4f
7440-22-4	Silver, Ag	METAL	2	180	8.3
7440-31-5	Tin, Sn	METAL		NA	NA
7440-28-0	Thallium, Tl	METAL	NA	NA	NA
7440-62-2	Vanadium, V	METAL	NA	NA	NA
7440-66-6	Zinc, Zn	METAL	109c	10,000d	2480
pH	pH	pH		NA	NA

APPENDICES

13-12 Beach Channel Drive
Far Rockaway, NY

Site Management Plan
NYSDEC BCP #C241254

IMPACT ENVIRONMENTAL
170 Keyland Court
Bohemia, New York 11716
TEL: (631) 268-8800
FAX: (631) 269-1599

Appendix A

13-12 Beach Channel Drive

EASEMENT/Metes and Bounds

IMPACT ENVIRONMENTAL
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Bohemia, New York 11716
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RETURN TO:
SIVE PAGET & RIESEL, P.C.
560 LEXINGTON AVENUE, 15TH FLOOR
NEW YORK, NY 10022
212-421-2150
NDUNCAN@SPRLAW.COM

PROPERTY DATA

Borough	Block	Lot	Unit	Address
QUEENS	15528	5	Entire Lot	13-12 BEACH CHANNEL DRIVE

Property Type: NON-RESIDENTIAL VACANT LAND Easement

Borough	Block	Lot	Unit	Address
QUEENS	15528	6	Entire Lot	13-16 BEACH CHANNEL DRIVE

Property Type: NON-RESIDENTIAL VACANT LAND Easement

☒ Additional Properties on Continuation Page

CROSS REFERENCE DATA

CRFN_____ *or* DocumentID_____ *or* _____ Year_____ Reel____ Page_____ *or* File Number_____

PARTIES

PARTY ONE:
BCD OWNER LLC
C/O: CAMBER PROPERTY GROUP, 116 EAST 27TH STREET, 11TH FLOOR
NEW YORK, NY 10016

☒ Additional Parties Listed on Continuation Page

PARTY TWO:
PEOPLE OF NEW YORK BY DEPT. ENVIRONMENTAL CONSERVA
625 BROADWAY
ALBANY, NY 12233

FEES AND TAXES

Mortgage :		
Mortgage Amount:	$	0.00
Taxable Mortgage Amount:	$	0.00
Exemption:		
TAXES: County (Basic):	$	0.00
City (Additional):	$	0.00
Spec (Additional):	$	0.00
TASF:	$	0.00
MTA:	$	0.00
NYCTA:	$	0.00
Additional MRT:	$	0.00
TOTAL:	$	0.00
Recording Fee:	$	103.00
Affidavit Fee:	$	0.00

Filing Fee:	$	100.00
NYC Real Property Transfer Tax:	$	0.00
NYS Real Estate Transfer Tax:	$	0.00

RECORDED OR FILED IN THE OFFICE OF THE CITY REGISTER OF THE CITY OF NEW YORK
Recorded/Filed 12-11-2023 12:07
City Register File No.(CRFN): **2023000323044**

City Register Official Signature

NYC DEPARTMENT OF FINANCE
OFFICE OF THE CITY REGISTER

2023121100103001001C68C7

Document ID: 2023121100103001 Document Date: 12-07-2023 Preparation Date: 12-11-2023
Document Type: DEVELOPMENT RIGHTS

PROPERTY DATA

Borough	Block	Lot	Unit	Address
QUEENS	15528	9 Entire Lot		13-24 BEACH CHANNEL DRIVE

Property Type: NON-RESIDENTIAL VACANT LAND Easement

PARTIES

PARTY ONE:
BCD SHELTER OWNER LLC
C/O: CAMBER PROPERTY GROUP, 116 EAST 27TH STREET, 11TH FLOOR
NEW YORK, NY 10016

PARTY ONE:
BCD HOUSING DEVELOPMENT FUND CORPORATION
C/O: BOWERY RESIDENTS' COMMITTEE, 131 WEST 25TH STREET, 12TH FLOOR

ENVIRONMENTAL EASEMENT GRANTED PURSUANT TO ARTICLE 71, TITLE 36 OF THE NEW YORK STATE ENVIRONMENTAL CONSERVATION LAW

THIS INDENTURE made this 7th day of December, 2023, between Owner(s), **BCD Housing Development Fund Corporation**, (the "Grantor Fee Owner") having an office at c/o Bowery Residents' Committee, Inc., 131 West 25th Street, 12th Floor, New York, NY 10001, County of New York, State of New York, **BCD Owner LLC**, (the "Grantor Beneficial Owner"), having an office at 116 East 27th Street, 11th Floor, New York, NY 10016, County of New York, State of New York, and **BCD Shelter Owner LLC** (the "Grantor Beneficial Lessee"), having an office at 116 East 27th Street, 11th Floor, New York, NY 10016, County of New York, State of New York (collectively, the "Grantor"), and **The People of the State of New York** (the "Grantee."), acting through their Commissioner of the Department of Environmental Conservation (the "Commissioner", or "NYSDEC" or "Department" as the context requires) with its headquarters located at 625 Broadway, Albany, New York 12233,

WHEREAS, the Legislature of the State of New York has declared that it is in the public interest to encourage the remediation of abandoned and likely contaminated properties ("sites") that threaten the health and vitality of the communities they burden while at the same time ensuring the protection of public health and the environment; and

WHEREAS, the Legislature of the State of New York has declared that it is in the public interest to establish within the Department a statutory environmental remediation program that includes the use of Environmental Easements as an enforceable means of ensuring the performance of operation, maintenance, and/or monitoring requirements and the restriction of future uses of the land, when an environmental remediation project leaves residual contamination at levels that have been determined to be safe for a specific use, but not all uses, or which includes engineered structures that must be maintained or protected against damage to perform properly and be effective, or which requires groundwater use or soil management restrictions; and

WHEREAS, the Legislature of the State of New York has declared that Environmental Easement shall mean an interest in real property, created under and subject to the provisions of Article 71, Title 36 of the New York State Environmental Conservation Law ("ECL") which contains a use restriction and/or a prohibition on the use of land in a manner inconsistent with engineering controls which are intended to ensure the long term effectiveness of a site remedial program or eliminate potential exposure pathways to hazardous waste or petroleum; and

WHEREAS, Grantor Fee Owner, is the owner of the fee interest in the real property located at the address of 13-12, 13-16 and 13-24 Beach Channel Drive in the City of New York, County of Queens and State of New York, known and designated on the tax map of the New York City Department of Finance as tax map parcel number: Block 15528 Lots 5, 6 and 9, being the same as that property conveyed to Grantor by deeds dated as of April 25, 2022 and recorded in the City Register of the City of New York as CRFN #2022000195853; April 25, 2022 and recorded in the City Register of the City of New York as CRFN #2022000195854; and April 25, 2022 and recorded in the City Register of the City of New York as CRFN #2022000195855. The property subject to this Environmental Easement (the "Controlled Property") comprises approximately 0.741 +/- acres, and is hereinafter more fully described in the Land Title Survey dated May 9, 2023

prepared by Saeid Jalilvand (License No. 050236) of Montrose Surveying Co., LLP, which will be attached to the Site Management Plan. The Controlled Property description is set forth in and attached hereto as Schedule A; and

WHEREAS, Grantor Beneficial Owner, is the holder of the beneficial ownership interest in the Controlled Property conveyed to Grantor Beneficial Owner by means of a Declaration of Interest and Nominee Agreement dated April 25, 2022 and recorded in the City Register of the City of New York as CRFN #2022000195866; and

WHEREAS, Grantor Beneficial Lessee, is the holder of a 49-year beneficial master lease interest in the Controlled Property, as memorialized in a Memorandum of Lease dated as of August 31, 2022 and recorded in City Register of the City of New York as CRFN #2022000358518; and

WHEREAS, the Department accepts this Environmental Easement in order to ensure the protection of public health and the environment and to achieve the requirements for remediation established for the Controlled Property until such time as this Environmental Easement is extinguished pursuant to ECL Article 71, Title 36; and

NOW THEREFORE, in consideration of the mutual covenants contained herein and the terms and conditions of Brownfield Cleanup Agreement Index Number: C241254-06-21, Grantor conveys to Grantee a permanent Environmental Easement pursuant to ECL Article 71, Title 36 in, on, over, under, and upon the Controlled Property as more fully described herein ("Environmental Easement").

1. Purposes. Grantor and Grantee acknowledge that the Purposes of this Environmental Easement are: to convey to Grantee real property rights and interests that will run with the land in perpetuity in order to provide an effective and enforceable means of encouraging the reuse and redevelopment of this Controlled Property at a level that has been determined to be safe for a specific use while ensuring the performance of operation, maintenance, and/or monitoring requirements; and to ensure the restriction of future uses of the land that are inconsistent with the above-stated purpose.

2. Institutional and Engineering Controls. The controls and requirements listed in the Department approved Site Management Plan ("SMP") including any and all Department approved amendments to the SMP are incorporated into and made part of this Environmental Easement. These controls and requirements apply to the use of the Controlled Property, run with the land, are binding on the Grantor and the Grantor's successors and assigns, and are enforceable in law or equity against any owner of the Controlled Property, any lessees and any person using the Controlled Property.

A. (1) The Controlled Property may be used for:

Restricted Residential as described in 6 NYCRR Part 375-1.8(g)(2)(ii), Commercial as described in 6 NYCRR Part 375-1.8(g)(2)(iii) and Industrial as described in 6 NYCRR Part 375-1.8(g)(2)(iv)

(2) All Engineering Controls must be operated and maintained as specified in

the Site Management Plan (SMP);

(3) All Engineering Controls must be inspected at a frequency and in a manner defined in the SMP;

(4) The use of groundwater underlying the property is prohibited without necessary water quality treatment as determined by the NYSDOH or the New York City Department of Health and Mental Hygiene to render it safe for use as drinking water or for industrial purposes, and the user must first notify and obtain written approval to do so from the Department;

(5) Groundwater and other environmental or public health monitoring must be performed as defined in the SMP;

(6) Data and information pertinent to Site Management of the Controlled Property must be reported at the frequency and in a manner defined in the SMP;

(7) All future activities on the property that will disturb remaining contaminated material must be conducted in accordance with the SMP;

(8) Monitoring to assess the performance and effectiveness of the remedy must be performed as defined in the SMP;

(9) Operation, maintenance, monitoring, inspection, and reporting of any mechanical or physical components of the remedy shall be performed as defined in the SMP;

(10) Access to the site must be provided to agents, employees or other representatives of the State of New York with reasonable prior notice to the property owner to assure compliance with the restrictions identified by this Environmental Easement.

B. The Controlled Property shall not be used for Residential purposes as defined in 6NYCRR 375-1.8(g)(2)(i), and the above-stated engineering controls may not be discontinued without an amendment or extinguishment of this Environmental Easement.

C. The SMP describes obligations that the Grantor assumes on behalf of Grantor, its successors and assigns. The Grantor's assumption of the obligations contained in the SMP which may include sampling, monitoring, and/or operating a treatment system, and providing certified reports to the NYSDEC, is and remains a fundamental element of the Department's determination that the Controlled Property is safe for a specific use, but not all uses. The SMP may be modified in accordance with the Department's statutory and regulatory authority. The Grantor and all successors and assigns, assume the burden of complying with the SMP and obtaining an up-to-date version of the SMP from:

Site Control Section
Division of Environmental Remediation
NYSDEC
625 Broadway
Albany, New York 12233

Phone: (518) 402-9553

D. Grantor must provide all persons who acquire any interest in the Controlled Property a true and complete copy of the SMP that the Department approves for the Controlled Property and all Department-approved amendments to that SMP.

E. Grantor covenants and agrees that until such time as the Environmental Easement is extinguished in accordance with the requirements of ECL Article 71, Title 36 of the ECL, the property deed and all subsequent instruments of conveyance relating to the Controlled Property shall state in at least fifteen-point bold-faced type:

This property is subject to an Environmental Easement held by the New York State Department of Environmental Conservation pursuant to Title 36 of Article 71 of the Environmental Conservation Law.

F. Grantor covenants and agrees that this Environmental Easement shall be incorporated in full or by reference in any leases, licenses, or other instruments granting a right to use the Controlled Property.

G. Grantor covenants and agrees that it shall, at such time as NYSDEC may require, submit to NYSDEC a written statement by an expert the NYSDEC may find acceptable certifying under penalty of perjury, in such form and manner as the Department may require, that:

(1) the inspection of the site to confirm the effectiveness of the institutional and engineering controls required by the remedial program was performed under the direction of the individual set forth at 6 NYCRR Part 375-1.8(h)(3).

(2) the institutional controls and/or engineering controls employed at such site:

(i) are in-place;

(ii) are unchanged from the previous certification, or that any identified changes to the controls employed were approved by the NYSDEC and that all controls are in the Department-approved format; and

(iii) that nothing has occurred that would impair the ability of such control to protect the public health and environment;

(3) the owner will continue to allow access to such real property to evaluate the continued maintenance of such controls;

(4) nothing has occurred that would constitute a violation or failure to comply with any site management plan for such controls;

(5) the report and all attachments were prepared under the direction of, and reviewed by, the party making the certification;

(6) to the best of his/her knowledge and belief, the work and conclusions described in this certification are in accordance with the requirements of the site remedial program, and generally accepted engineering practices; and

(7) the information presented is accurate and complete.

3. Right to Enter and Inspect. Grantee, its agents, employees, or other representatives of the State may enter and inspect the Controlled Property in a reasonable manner and at reasonable times to assure compliance with the above-stated restrictions.

4. Reserved Grantor's Rights. Grantor reserves for itself, its assigns, representatives, and successors in interest with respect to the Property, all rights as fee owner of the Property, including:

A. Use of the Controlled Property for all purposes not inconsistent with, or limited by the terms of this Environmental Easement;

B. The right to give, sell, assign, or otherwise transfer part or all of the underlying fee interest to the Controlled Property, subject and subordinate to this Environmental Easement;

5. Enforcement

A. This Environmental Easement is enforceable in law or equity in perpetuity by Grantor, Grantee, or any affected local government, as defined in ECL Section 71-3603, against the owner of the Property, any lessees, and any person using the land. Enforcement shall not be defeated because of any subsequent adverse possession, laches, estoppel, or waiver. It is not a defense in any action to enforce this Environmental Easement that: it is not appurtenant to an interest in real property; it is not of a character that has been recognized traditionally at common law; it imposes a negative burden; it imposes affirmative obligations upon the owner of any interest in the burdened property; the benefit does not touch or concern real property; there is no privity of estate or of contract; or it imposes an unreasonable restraint on alienation.

B. If any person violates this Environmental Easement, the Grantee may revoke the Certificate of Completion with respect to the Controlled Property.

C. Grantee shall notify Grantor of a breach or suspected breach of any of the terms of this Environmental Easement. Such notice shall set forth how Grantor can cure such breach or suspected breach and give Grantor a reasonable amount of time from the date of receipt of notice in which to cure. At the expiration of such period of time to cure, or any extensions granted by Grantee, the Grantee shall notify Grantor of any failure to adequately cure the breach or suspected breach, and Grantee may take any other appropriate action reasonably necessary to remedy any breach of this Environmental Easement, including the commencement of any proceedings in accordance with applicable law.

D. The failure of Grantee to enforce any of the terms contained herein shall not be deemed a waiver of any such term nor bar any enforcement rights.

6. Notice. Whenever notice to the Grantee (other than the annual certification) or approval from the Grantee is required, the Party providing such notice or seeking such approval shall identify the Controlled Property by referencing the following information:

County, NYSDEC Site Number, NYSDEC Brownfield Cleanup Agreement, State Assistance Contract or Order Number, and the County tax map number or the Liber and Page or computerized system identification number.

Parties shall address correspondence to:	Site Number: C241254 Office of General Counsel NYSDEC 625 Broadway Albany New York 12233-5500
With a copy to:	Site Control Section Division of Environmental Remediation NYSDEC 625 Broadway Albany, NY 12233

All notices and correspondence shall be delivered by hand, by registered mail or by Certified mail and return receipt requested. The Parties may provide for other means of receiving and communicating notices and responses to requests for approval.

7. Recordation. Grantor shall record this instrument, within thirty (30) days of execution of this instrument by the Commissioner or her/his authorized representative in the office of the recording officer for the county or counties where the Property is situated in the manner prescribed by Article 9 of the Real Property Law.

8. Amendment. Any amendment to this Environmental Easement may only be executed by the Commissioner of the New York State Department of Environmental Conservation or the Commissioner's Designee, and filed with the office of the recording officer for the county or counties where the Property is situated in the manner prescribed by Article 9 of the Real Property Law.

9. Extinguishment. This Environmental Easement may be extinguished only by a release by the Commissioner of the New York State Department of Environmental Conservation, or the Commissioner's Designee, and filed with the office of the recording officer for the county or counties where the Property is situated in the manner prescribed by Article 9 of the Real Property Law.

10. Joint Obligation. If there are two or more parties identified as Grantor herein, the obligations imposed by this instrument upon them shall be joint and several.

11. Consistency with the SMP. To the extent there is any conflict or inconsistency between the terms of this Environmental Easement and the SMP, regarding matters specifically addressed by the SMP, the terms of the SMP will control.

Remainder of Page Intentionally Left Blank

IN WITNESS WHEREOF, Grantor Fee Owner has caused this instrument to be signed in its name.

BCD Housing Development Fund Corporation:

By: Lilia Marini-Calves

Print Name: Lilia Marini-Calves

Title: Authorized Signatory Date: 11/30/2023

Grantor's Acknowledgment

STATE OF NEW YORK)
) ss:
COUNTY OF)

On the 30th day of November, in the year 20 23, before me, the undersigned, personally appeared Lilia Marini-Calves, personally known to me or proved to me on the basis of satisfactory evidence to be the individual(s) whose name is (are) subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their capacity(ies), and that by his/her/their signature(s) on the instrument, the individual(s), or the person upon behalf of which the individual(s) acted, executed the instrument.

Gustavo Lozano
Notary Public - State of New York

GUSTAVO LOZANO
Notary Public, State of New York
No. 01LO6153402
Qualified in Queens County
Term Expires October 2, 2026

IN WITNESS WHEREOF, Grantor Beneficial Owner has caused this instrument to be signed in its name.

BCD Owner LLC:

By: _____

Print Name: Rick Gropper

Title: Authorized Signatory Date: 11/30/2023

Grantor's Acknowledgment

STATE OF NEW YORK)
) ss:
COUNTY OF New York)

On the 30th day of November in the year 2023 before me, the undersigned, personally appeared Rick Gropper, personally known to me or proved to me on the basis of satisfactory evidence to be the individual(s) whose name is (are) subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their capacity(ies), and that by his/her/their signature(s) on the instrument, the individual(s), or the person upon behalf of which the individual(s) acted, executed the instrument.

LaTovia Jones
Notary Public - State of New York

LATOVIA QUINASIA JONES
NOTARY PUBLIC-STATE OF NEW YORK
No. 01JO0002377
Qualified in Queens County
My Commission Expires 03-06-2027

IN WITNESS WHEREOF, Grantor Beneficial Lessee has caused this instrument to be signed in its name.

BCD Shelter Owner LLC:

By: _____

Print Name: Rick Gropper

Title: Authorized signatory Date: 11/30/2023

Grantor's Acknowledgment

STATE OF NEW YORK)
) ss:
COUNTY OF New York)

On the 30th day of November, in the year 20 23 before me, the undersigned, personally appeared Rick Gropper, personally known to me or proved to me on the basis of satisfactory evidence to be the individual(s) whose name is (are) subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their capacity(ies), and that by his/her/their signature(s) on the instrument, the individual(s), or the person upon behalf of which the individual(s) acted, executed the instrument.

_____
Notary Public - State of New York

LATOVIA QUINASIA JONES
NOTARY PUBLIC-STATE OF NEW YORK
No. 01JO0002377
Qualified in Queens County
My Commission Expires 03-06-2027

THIS ENVIRONMENTAL EASEMENT IS HEREBY ACCEPTED BY THE PEOPLE OF THE STATE OF NEW YORK, Acting By and Through the Department of Environmental Conservation as Designee of the Commissioner,

By: _____
Andrew O. Guglielmi, Director
Division of Environmental Remediation

Grantee's Acknowledgment

STATE OF NEW YORK)
) ss:
COUNTY OF ALBANY)

On the 7th day of December, in the year 2023 before me, the undersigned, personally appeared Andrew O. Guglielmi, personally known to me or proved to me on the basis of satisfactory evidence to be the individual(s) whose name is (are) subscribed to the within instrument and acknowledged to me that he/she/ executed the same in his/her/ capacity as Designee of the Commissioner of the State of New York Department of Environmental Conservation, and that by his/her/ signature on the instrument, the individual, or the person upon behalf of which the individual acted, executed the instrument.

_____
Notary Public - State of New York

Cheryl A. Salem
Notary Public State of New York
Registration No. 01SA0002177
Qualified in Albany County
My Commission Expires March 3, 2027

SCHEDULE "A" PROPERTY DESCRIPTION

13-12 Beach Channel Drive Site – C241254

BOROUGH OF QUEENS, BLOCK: 15528, LOTS: 5, 6 & 9

Environmental Easement Area:

ALL that certain plot piece or parcel of land situate lying and being in the Borough and County of Queens, City and State of New York bounded and described as follows:

BEGINNING at a point on the westerly side of Redfern Avenue (60 feet wide), distant 91.14 feet northerly from the corner formed by the intersection of the westerly side of Redfern Avenue with the northerly side of Mott Avenue (60 feet wide) as said Avenues are shown on City Final Maps;

RUNNING THENCE northerly along the westerly side of Redfern Avenue, 204.07 feet Actual (201.98 feet Tax map) to a point;

RUNNING THENCE westerly along a line forming an angle of 82 degrees 23 minutes 15.5 seconds on the southwest with the westerly side of Redfern Avenue, and parallel with the southerly side of Dix Avenue (50 feet wide), 178.01 feet to the easterly side of Beach Channel Drive (80 feet wide);

RUNNING THENCE southerly along the easterly side of Beach Channel Drive, 147.23 feet (147.13 feet Tax map) to a point;

RUNNING THENCE southwesterly continuing along the easterly side of Beach Channel Drive and along a line forming an angle of 207 degrees 06 minutes 52.5 seconds on the southeast with the last-mentioned course, 32.91 feet to a point;

RUNNING THENCE southerly continuing along the easterly side of Beach Channel Drive and along a line forming an angle of 152 degrees 53 minutes 7.5 seconds on the northeast with the last-mentioned course, 8.90 feet Actual (7.89 feet Tax map) to a point;

RUNNING THENCE easterly along a line forming an angle of 107 degrees 03 minutes 13 seconds on the northeast, with the easterly side of Beach Channel Drive, 41.30 feet Actual (41.38 feet Tax map) to a point;

RUNNING THENCE northerly at right angles to the last-mentioned course, 4.00 feet to a point;

RUNNING THENCE easterly at right angles to the last-mentioned course, 18.30 feet Actual (18.33 feet Tax map) to a point;

RUNNING THENCE southerly at right angles to the last-mentioned course, 4.00 feet to a point;

RUNNING THENCE westerly at right angles to the last-mentioned course, 21.00 feet to a point;

RUNNING THENCE northerly at right angles to the last-mentioned course, 31.14 feet Actual (31.17 feet Tax map) to a point being 90 feet north of the northerly side of Mott Avenue;

RUNNING THENCE easterly at right angles to the last-mentioned course and parallel with the northerly side of Mott Avenue and 90 feet north of Mott Avenue, 82.00 feet to the westerly side of Redfern Avenue the point or place of BEGINNING.

THE ABOVE DESCRIBED EASEMENT HAS AN AREA OF 32,263 SQ. FT. OR 0.7407 ACRE.

Legal Description
13-12 Beach Channel Drive – C241254

BOROUGH OF QUEENS, BLOCK: 15228, LOTS: 5, 6 & 9

Environmental Easement Area:

ALL that certain plot piece or parcel of land situate lying and being in the Borough and County of Queens, City and State of New York bounded and described as follows:

BEGINNING at a point on the westerly side of Redfern Avenue (60 feet wide), distant 91.14 feet northerly from the corner formed by the intersection of the westerly side of Redfern Avenue with the northerly side of Mott Avenue (60 feet wide) as said Avenues are shown on City Final Maps;

RUNNING THENCE northerly along the westerly side of Redfern Avenue, 204.07 feet Actual (201.98 feet Tax map) to a point;

RUNNING THENCE westerly along a line forming an angle of 82 degrees 23 minutes 15.5 seconds on the southwest with the westerly side of Redfern Avenue, and parallel with the southerly side of Dix Avenue (50 feet wide), 178.01 feet to the easterly side of Beach Channel Drive (80 feet wide);

RUNNING THENCE southerly along the easterly side of Beach Channel Drive, 147.23 feet (147.13 feet Tax map) to a point;

RUNNING THENCE southwesterly continuing along the easterly side of Beach Channel Drive and along a line forming an angle of 207 degrees 06 minutes 52.5 seconds on the southeast with the last-mentioned course, 32.91 feet to a point;

RUNNING THENCE southerly continuing along the easterly side of Beach Channel Drive and along a line forming an angle of 152 degrees 53 minutes 7.5 seconds on the northeast with the last-mentioned course, 8.90 feet Actual (7.89 feet Tax map) to a point;

RUNNING THENCE easterly along a line forming an angle of 107 degrees 03 minutes 13 seconds on the northeast, with the easterly side of Beach Channel Drive, 41.30 feet Actual (41.38 feet Tax map) to a point;

RUNNING THENCE northerly at right angles to the last-mentioned course, 4.00 feet to a point;

RUNNING THENCE easterly at right angles to the last-mentioned course, 18.30 feet Actual (18.33 feet Tax map) to a point;

RUNNING THENCE southerly at right angles to the last-mentioned course, 4.00 feet to a point;

RUNNING THENCE westerly at right angles to the last-mentioned course, 21.00 feet to a point;

RUNNING THENCE northerly at right angles to the last-mentioned course, 31.14 feet Actual (31.17 feet Tax map) to a point being 90 feet north of the northerly side of Mott Avenue;

RUNNING THENCE easterly at right angles to the last-mentioned course and parallel with the northerly side of Mott Avenue and 90 feet north of Mott Avenue, 82.00 feet to the westerly side of Redfern Avenue the point or place of BEGINNING.

THE ABOVE DESCRIBED EASEMENT HAS AN AREA OF 32,263 SQ. FT. OR 0.7407 ACRE.

Deed (Lot 5 Perimeter Description):
ALL that certain plot, piece or parcel of land, situate, lying and being in the Borough and County of Queens, City and State of New York, bounded and described as follows:

BEGINNING at a point on the Westerly side of Redfern Avenue (60 feet wide), distant 91.14 feet Northerly from the corner formed by the intersection of the Westerly side of Redfern Avenue with the Northerly side of Mott Avenue (60 feet wide) as said Avenues are shown on City Final Maps;

RUNNING THENCE Northerly along the Westerly side of Redfern Avenue, 79.98 feet Actual (77.98 feet Tax map) to a point;

RUNNING THENCE Westerly along a line forming an angle of 81 degrees 59 minutes 14.6 seconds on the Southeast with Westerly side of Redfern Avenue 78.59 feet to a point;

RUNNING THENCE Southwesterly along a line forming an angle of 126 degrees 29 minutes 20 seconds on the Southeast with the last mentioned course, 6.22 feet to a point;

RUNNING THENCE Westerly along a line forming an angle of 126 degrees 29 minutes 20 seconds on the Northwest with the last mentioned course and at right angles to the Easterly side of Beach Channel Drive (80 feet wide), 78.42 feet to the Easterly side of Beach Channel Drive;

RUNNING THENCE Southerly along the Easterly side of Beach Channel Drive, 18.10 feet to a point;

RUNNING THENCE Southwesterly continuing along the Easterly side of Beach Channel Drive and along a line forming an angle of 207 degrees 06 minutes 52.5 seconds on the Southeast with the last mentioned course, 32.91 feet to a point;

RUNNING THENCE Southerly continuing along the Easterly side of Beach Channel Drive and along a line forming an angle of 152 degrees 53 minutes 7.5 seconds on the Northeast with the last mentioned course, 8.90 feet Actual (7.89 feet Tax map) to a point;

RUNNING THENCE Easterly along a line forming an angle of 107 degrees 03 minutes 13 seconds on the Northeast, with the Easterly side of Beach Channel Drive, 41.30 feet Actual (41.38 feet Tax map) to a point;

RUNNING THENCE Northerly at right angles to the last mentioned course, 4.00 feet to a point;

RUNNING THENCE Easterly at right angles to the last mentioned course, 18.30 feet Actual (18.33 feet Tax map) to a point;

RUNNING THENCE Southerly at right angles to the last mentioned course, 4.00 feet to a point;

RUNNING THENCE Westerly at right angles to the last mentioned course, 21.00 feet to a point;

RUNNING THENCE Northerly at right angles to the last mentioned course, 31.14 feet Actual (31.17 feet Tax map) to a point being 90 feet North of the Northerly side of Mott Avenue;

RUNNING THENCE Easterly at right angles to the last mentioned course and parallel with the Northerly side of Mott Avenue and 90 feet North of Mott Avenue, 82.00 to the Westerly side of Redfern Avenue the point or place of BEGINNING.

Area of Lot 5 (Perimeter Description) = 10,939 sq. ft. or 0.2539 acres

Deed (Lot 6):
ALL that certain plot, piece or parcel of land, situate, lying and being in the Fifth Ward of the Borough and County of Queens, City and State of New York, bounded and described as follows:

BEGINNING at a point on the Easterly side of Beach Channel Drive (80 feet wide) distant 181.25 feet Southerly from the corner formed by the intersection of the South side of 50.0 feet, deed (181.34 feet tax map) right of way by the City of New York (Dix Avenue) with the Easterly side of Beach Channel Drive;

RUNNING THENCE Easterly at right angles to the Easterly side of Beach Channel Drive, 168.88 feet, deed (168.79 feet tax map) to the Westerly side of Redfern Avenue (60 feet wide);

THENCE Southerly along the Westerly side of Redfern Avenue (60 feet wide), 57.96 feet;

THENCE Westerly North 67 degrees 31 minutes 00 seconds West on a line forming an interior angle of 98 degrees 00 minutes 44.5 seconds with the Westerly side of Redfern Avenue, 78.70 feet, deed (78.59 feet tax map);

THENCE Southwesterly South 58 degrees 58 minutes 20 seconds West on a line forming an exterior angle of 126 degrees 29 minutes 20 seconds with the preceding course, 6.22 feet;

THENCE Westerly North 67 degrees 31 minutes 00 seconds West on a line forming an interior angle of 126 degrees 29 minutes 20 seconds with the preceding course, 78.42 feet to the Easterly side of Beach Channel Drive;

THENCE Northerly along the Easterly side of Beach Channel Drive 62.40 feet to the point of place of BEGINNING.

Area of Lot 6 = 9,858 sq. ft. or 0.2263 acres

Deed (Lot 9):
ALL that certain plot, piece or parcel of land, situate, lying and being in the Borough and County of Queens, City and State of New York, bounded and described as follows:

BEGINNING at a point on the Easterly side of Beach Channel Drive (80 feet wide) formerly known as Regina Boulevard and formerly known as Sheridan Boulevard distant 114.71 feet, South of the corner formed by the intersection of the Easterly side of Beach Channel Drive with the Southerly side of Dix Place (as open an in use 50 feet wide);

RUNNING THENCE Easterly and parallel with said Southerly side of Dix Place a distance of 178.02 feet to a point;

THENCE Southerly on a line forming an interior angle with the last mentioned course of 82 degrees 23 minutes 5 seconds a distance of 66.07 feet (description) 66.03 feet (actual) to a point;

THENCE Westerly on a line forming an interior angle with the last mentioned course of 98 degrees 00 minutes 45.4 seconds a distance of 169.28 feet to the said Easterly side of Beach Channel Drive;

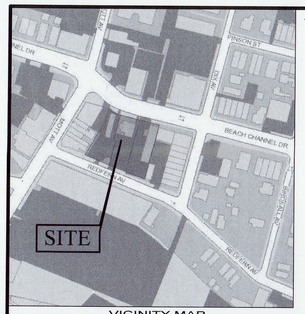
THENCE Northerly along said Easterly side of Beach Channel Drive a distance of 66.73 feet to point of place of BEGINNING.

Area of Lot 9 = 11,466 sq. ft. or 0.2632 acres

TITLE NO.

SURVEY NO. 67248-3

67248-3.DWG



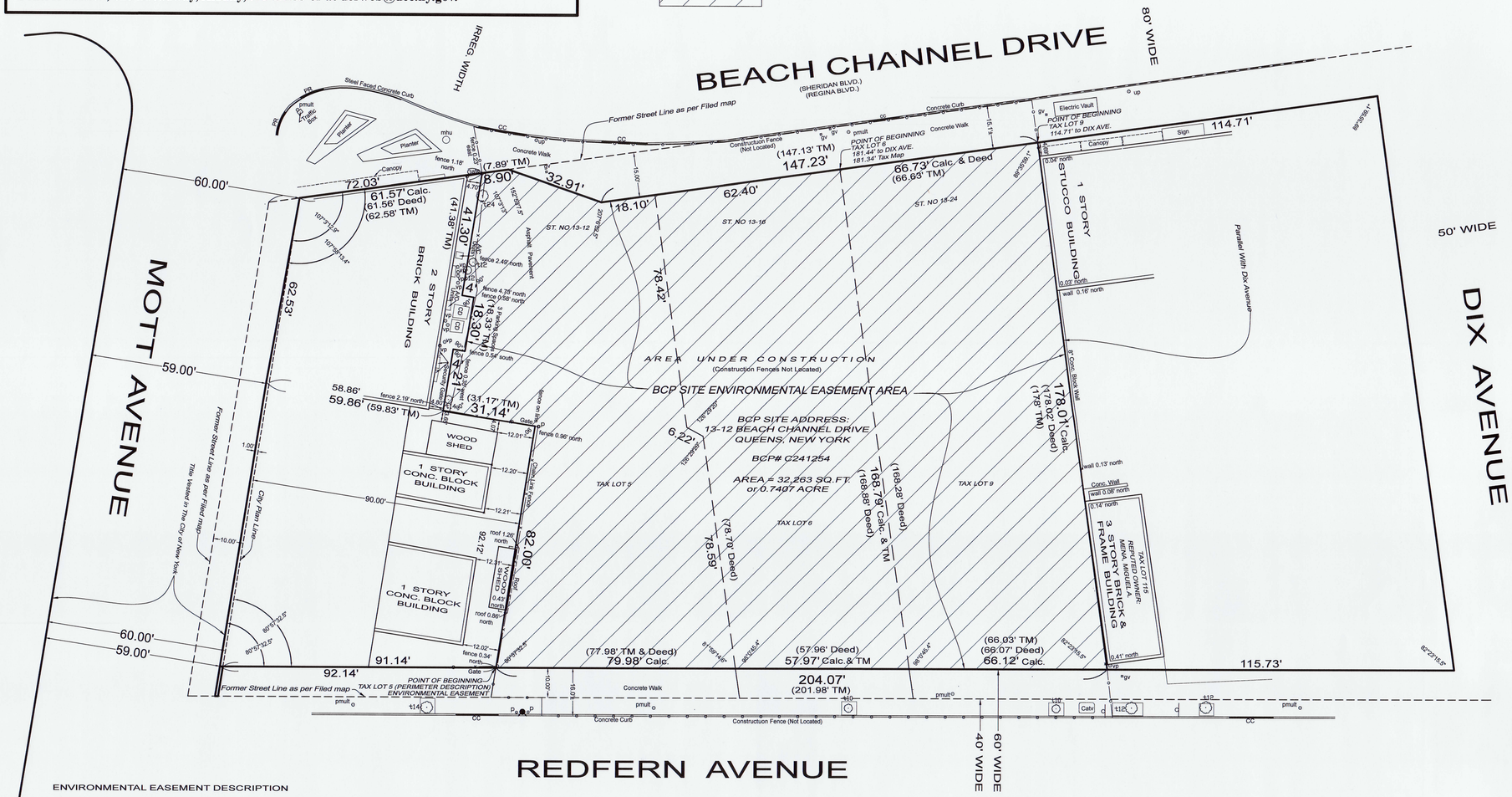
VICINITY MAP
NOT TO SCALE

This property is subject to an environmental easement held by the New York State Department of Environmental Conservation pursuant to Title 36 of Article 71 of the New York Environmental Conservation Law. The engineering and institutional controls for this Easement are set forth in the Site Management Plan ("SMP"). A copy of the SMP must be obtained by any party with an interest in the property. The SMP may be obtained from the New York State Department of Environmental Conservation, Division of Environmental Remediation, Site Control Section, 625 Broadway, Albany, NY 12233 or at derweb@dec.ny.gov.

ENVIRONMENTAL EASEMENT AREA ACCESS

THE DEC OR THEIR AGENT MAY ACCESS THE ENVIRONMENTAL EASEMENT AREA AS SHOWN HEREON THROUGH ANY EXISTING STREET ACCESS OR BUILDING INGRESS/EGRESS ACCESS POINT.

ENVIRONMENTAL EASEMENT BOUNDARY



DEED LEGAL DESCRIPTION

AS TO LOT 5 (Perimeter Deescription):

All that certain plot piece or parcel of land situate lying and being in the Borough and County of Queens, City and State of New York bounded and described as follows:

BEGINNING at a point on the Westerly side of Redfern Avenue (60 feet wide), distant 91.14 feet Northerly from the corner formed by the intersection of the Westerly side of Redfern Avenue with Northerly side of Mott Avenue (60 feet wide) as said Avenues are shown on City Final Maps;

RUNNING THENCE Northerly along the Westerly side of Redfern Avenue, 79.98 feet Actual (77.98 feet Tax map) to a point;

RUNNING THENCE Westerly along a line forming an angle of 81 degrees 59 minutes 14.6 seconds on the Southwest with Westerly side of Redfern Avenue 78.59 feet to a point;

RUNNING THENCE Southwesterly along a line forming an angle of 126 degrees 29 minutes 20 seconds on the Southeast with the last mentioned course, 6.22 feet to a point;

RUNNING THENCE Westerly along a line forming an angle of 126 degrees 29 minutes 20 seconds on the Northwest with the last mentioned course and at right angles to the Easterly side of Beach Channel Drive (80 feet wide), 78.42 feet to the Easterly side Beach Channel Drive;

RUNNING THENCE Southerly along the Easterly side of Beach Channel Drive, 18.10 feet to a point;

RUNNING THENCE Southwesterly continuing along the Easterly side of Beach Channel Drive and along a line forming an angle of 207 degrees 06 minutes 52.5 seconds on the Southeast with the last mentioned course, 32.91 feet to a point;

RUNNING THENCE Southerly continuing along the Easterly side of Beach Channel Drive and along a line forming an angle of 152 degrees 53 minutes 7.5 seconds on the Northeast with the last mentioned course, 8.90 feet Actual (7.89 feet Tax map) to a point;

RUNNING THENCE Easterly along a line forming an angle of 107 degrees 03 minutes 13 seconds on the Northeast, with the Easterly side of Beach Channel Drive, 41.30 feet Actual (41.38 feet Tax map) to a point;

RUNNING THENCE Northerly at right angles to the last mentioned course, 4.00 feet to a point;

RUNNING THENCE Easterly at right angles to the last mentioned course, 18.30 feet Actual (18.33 feet Tax map) to a point;

RUNNING THENCE Southerly at right angles to the last mentioned course, 4.00 feet to a point;

RUNNING THENCE Westerly at right angles to the last mentioned course, 21.00 feet to a point;

RUNNING THENCE Northerly at right angles to the last mentioned course, 31.14 feet Actual (31.17 feet Tax map) to a point being 90 feet North of the Northerly side of Mott Avenue;

RUNNING THENCE Easterly at right angles to the last mentioned course and parallel with the Northerly side of Mott Avenue and 90 feet North of Mott Avenue, 82.00 feet to the Westerly side of Redfern Avenue the point or place of BEGINNING.

Area of Lot 5 (Perimeter Description): 10,939 sq. ft. or 0.2539 acre

AS TO LOT 6:

ALL that certain plot, piece or parcel of land, situate, lying and being in the Fifth Ward of the Borough and County of Queens, City and State of New York, bounded and described as follows:

BEGINNING at a point on the Easterly side of Beach Channel Drive (80 feet wide) distant 181.25 feet Southerly from the corner formed by the intersection of the South side of 50.0 feet, deed (181.34 feet tax map) right of way by the City of New York (Dix Avenue) with the Easterly side of Beach Channel Drive;

RUNNING THENCE Easterly at right angles to the Easterly side of Beach Channel Drive, 168.88 feet, deed (168.79 feet tax map) to the Westerly side of Redfern Avenue (60 feet wide);

THENCE Southerly along the Westerly side of Redfern Avenue (60 feet wide), 57.96 feet;

THENCE Westerly North 67 degrees 31 minutes 00 seconds West on a line forming an interior angle of 98 degrees 00 minutes 44.5 seconds with the Westerly side of Redfern Avenue, 78.70 feet, deed (78.59 feet tax map);

THENCE Southwesterly South 58 degrees 58 minutes 20 seconds West on a line forming an exterior angle of 126 degrees 29 minutes 20 seconds with the preceding course, 6.22 feet;

THENCE Westerly North 67 degrees 31 minutes 00 seconds West on a line forming an interior angle of 126 degrees 29 minutes 20 seconds with the preceding course, 78.42 feet to the Easterly side of Beach Channel Drive;

THENCE Northerly along the Easterly side of Beach Channel Drive 62.40 feet to the point or place of BEGINNING.

Area of Lot 6: 9,858 sq. ft. or 0.2263 acre

AS TO LOT 9:

All that certain plot, piece or parcel of land situate, lying and being in the Borough of Queens, County of Queens, City and State of New York, bounded and described as follows:

BEGINNING at a point on the Easterly side of Beach Channel Drive (80 feet wide) formerly known as Regina Boulevard and formerly known as Sheridan Boulevard distant 114.71 feet, South of the corner formed by the intersection of the Easterly side of Beach Channel Drive with the Southerly side of Dix Place (as open and in use 50 feet wide);

RUNNING THENCE Easterly and parallel with said Southerly side of Dix Place a distance of 178.02 feet to a point;

THENCE Southerly on a line forming an interior angle with the last mentioned course of 82 degrees 23 minutes 5 seconds a distance of 66.07 feet (description) 66.03 feet (actual) to a point;

THENCE Westerly on a line forming an interior angle with the last mentioned course of 98 degrees 00 minutes 45.4 seconds a distance of 169.28 feet to the said Easterly side of Beach Channel Drive;

THENCE Northerly along said Easterly side of Beach Channel Drive a distance of 66.73 feet to point or place of BEGINNING.

Area of Lot 9: 11,466 sq. ft. or 0.2632 acre

ENVIRONMENTAL EASEMENT DESCRIPTION

All that certain plot piece or parcel of land situate lying and being in the Borough and County of Queens, City and State of New York bounded and described as follows:

BEGINNING at a point on the westerly side of Redfern Avenue (60 feet wide), distant 91.14 feet northerly from the corner formed by the intersection of the westerly side of Redfern Avenue with the northerly side of Mott Avenue (60 feet wide) as said Avenues are shown on City Final Maps;

RUNNING THENCE northerly along the westerly side of Redfern Avenue, 204.07 feet Actual (201.98 feet Tax map) to a point;

RUNNING THENCE westerly along a line forming an angle of 82 degrees 23 minutes 15.5 seconds on the southwest with westerly side of Redfern Avenue, and parallel with the southerly side of Dix Avenue (50 feet wide), 178.01 feet to the easterly side of Beach Channel Drive (80 feet wide);

RUNNING THENCE southerly along the easterly side of Beach Channel Drive, 147.23 feet (147.13 feet Tax map) to a point;

RUNNING THENCE southwesterly continuing along the easterly side of Beach Channel Drive and along a line forming an angle of 207 degrees 06 minutes 52.5 seconds on the southeast with the last-mentioned course, 32.91 feet to a point;

RUNNING THENCE southerly continuing along the easterly side of Beach Channel Drive and along a line forming an angle of 152 degrees 53 minutes 7.5 seconds on the northeast with the last-mentioned course, 8.90 feet Actual (7.89 feet Tax map) to a point;

RUNNING THENCE easterly along a line forming an angle of 107 degrees 03 minutes 13 seconds on the northeast, with the easterly side of Beach Channel Drive, 41.30 feet Actual (41.38 feet Tax map) to a point;

RUNNING THENCE northerly at right angles to the last-mentioned course, 4.00 feet to a point;

RUNNING THENCE easterly at right angles to the last-mentioned course, 18.30 feet Actual (18.33 feet Tax map) to a point;

RUNNING THENCE southerly at right angles to the last-mentioned course, 4.00 feet to a point;

RUNNING THENCE westerly at right angles to the last-mentioned course, 21.00 feet to a point;

RUNNING THENCE northerly at right angles to the last-mentioned course, 31.14 feet Actual (31.17 feet Tax map) to a point being 90 feet north of the northerly side of Mott Avenue;

RUNNING THENCE easterly at right angles to the last-mentioned course and parallel with the northerly side of Mott Avenue and 90 feet north of Mott Avenue, 82.00 feet to the westerly side of Redfern Avenue the point or place of BEGINNING.

THE ABOVE DESCRIBED EASEMENT HAS AN AREA OF 32,263 SQ. FT. OR 0.7407 ACRE.

SCHEDULE B ITEMS

5. Declaration of Covenants and Restrictions made by LVS Realty LLC dated 10/22/2018 recorded 10/30/2018 in CRFN 2018000361728.

FLOOD HAZARD NOTE

THE PARCEL SURVEYED IS COMPRISED OF AREAS DESIGNATED AS ZONE X (LESS THAN 0.2% CHANCE OF FLOODING) FEDERAL EMERGENCY MANAGEMENT AGENCY NATIONAL FLOOD INSURANCE PROGRAM FLOOD INSURANCE RATE MAP COMMUNITY PANEL NUMBER 360497 0382 F EFFECTIVE DATE SEPTEMBER 5, 2007

LEGEND

ASPH.....ASPHALT
BK.....BRICK
BSMT....BASEMENT
CC.....CURB CUT
CCR.....CONCRETE CURB ROUND
CD.....CELLAR DOOR
CLF.....CHAIN LINK FENCE
CO.....CATCH BASIN CLEAN OUT
CONC....CONCRETE
CRF.....CHAIN ROPE FENCE
CWA.....CELLAR WINDOW AREA
DR.....DRAIN
EL.....ELEVATION
FAB.....FIRE ALARM BOX
FC.....FILL CAP
FL EL.....FLOOR ELEVATION
GP.....GUARD POLE
GV.....GAS VALVE
IF.....IRON FENCE
INL.....CATCH BASIN INLET ELEVATION
INV.....SEWER INVERT ELEVATION
.....LIGHT POLE
MB.....MAIL BOX
MHU.....UNKNOWN MANHOLE
OF.....OIL FILL
OHW.....OVERHEAD WIRES
P.....POLE
PAVT.....PAVEMENT
PM.....PARKING METER
PMULT...POLE, MULTIPLE USAGE
PEL.....PARAPET ELEVATION
REL.....ROOF ELEVATION
.....MONITORING WELL
PR.....PEDESTRIAN RAMP
RET.....RETAINING
RIM.....RIM ELEVATION SEWER MANHOLE
SFCR.....STEEL FACED CURB ROUND
STY.....STORY
TB.....TOP OF BANK ELEVATION
.....TRAFFIC LIGHT
TEL.....TELEPHONE
TP.....TREE PIT
.....TRAFFIC SIGN
TW.....ELEVATION AT TOP OF WALL
UP.....UTILITY POLE
VU.....VALVE UNKNOWN
VLTU.....VAULT UNKNOWN
VP.....VENT PIPE
WV.....WATER VALVE
12"G.....GAS MAIN WITH SIZE
12"S.....SEWER MAIN WITH SIZE
12"W.....WATER MAIN WITH SIZE
.....CATCH BASIN
E ..ELECTRIC MANHOLE / VAULT
F .....FIRE MANHOLE
G .....GAS MANHOLE
S .....SEWER MANHOLE
T .....TELEPHONE MANHOLE
W .....WATER MANHOLE
ST .....STEAM MANHOLE
STV.....STEAM VALVE
TR .....TRAFFIC VAULT
.....HYDRANT
14 .....TREE WITH SIZE
.....TRAFFIC FLOW

DRAWN: J.R.

ESTABLISHED 1876 * SUCCESSOR TO:

B.G. MEINKHEIM C.S.*C.U. POWELL C.E.,C.S.*L.C.L. SMITH C.S.*NATHAN CAMPBELL C.E.,C.S.*A.U. WHITSON C.E.,C.S.*
WILLIAM L. SAVACOOL C.E.,L.S.,C.S.*A.U. WHITSON INC. C.E.,C.S.*S. WEBER L.S.,C.S.*C. STODOLPH R.A.,L.S.*WHITSON & POWELL INC. P.E.,L.S.,C.S.*KELLER & POWELL P.E.,L.S.,C.S.*LOUIS MONTROSE C.E.,L.S.,C.S.*FRED J. POWELL P.E.,L.S.,C.S.*

20 0 20 40 60
GRAPHIC SCALE – FEET

0 2.4 4.8 7.2 9.6M
1 CM = 2.4 M

REV	DATE	DESCRIPTION	ck

REV	DATE	DESCRIPTION	ck
	05-09-23	ENVIRONMENTAL EASEMENT SURVEY	

UNAUTHORIZED ALTERATION OR ADDITION TO THIS SURVEY IS A VIOLATION OF SECTION 7209 OF THE NEW YORK STATE EDUCATION LAW

ONLY COPIES FROM THE ORIGINAL OF THIS SURVEY MARKED WITH THE ORIGINAL OF THE LAND SURVEYOR'S INKED SEAL, OR HIS EMBOSSED SEAL SHALL BE CONSIDERED TO BE VALID TRUE COPIES

CERTIFICATIONS INDICATED HEREON SHALL RUN ONLY TO THE PERSON FOR WHOM THE SURVEY IS PREPARED, AND TO THE NEXT TIME TO THE TITLE COMPANY, GOVERNMENTAL AGENCY AND LENDING INSTITUTION LISTED HEREON, AND TO THE ASSIGNEES OF THE LENDING INSTITUTION, CERTIFICATIONS ARE NOT TRANSFERABLE TO ADDITIONAL INSTITUTIONS OR SUBSEQUENT OWNERS

MONTROSE
SURVEYING CO., LLP.
CITY & LAND SURVEYORS
116 20 METROPOLITAN AVE • RICHMOND HILL NY 11418-1090 • (718) 849-0600
WWW.MONTROSESURVEYING.COM Email:Info@montrosesurveying.com

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STATE OF NEW YORK · SAEED JALILVAND · 050236 · LICENSED LAND SURVEYOR

CITY OF NEW YORK
COUNTY QUEENS
TAX BLOCK 15528
TAX LOTS 5, 6 & 9

SCALE: 1" = 20'

<u>Exhibit A:</u>

NYC Tax Maps Before and After Lot 5 Merger

FINANCE NEW • YORK
MARTHA E. STARK
COMMISSIONER

NYC Digital Tax Map

Effective Date : 12-09-2008 00:00:41
End Date : 07-21-2021 10:59:55

Queens Block: 15528

Legend

- Streets
- Miscellaneous Text
- Possession Hooks
- Boundary Lines
- Lot Face Possession Hooks
- Regular
- Underwater
- Tax Lot Polygon
- Condo Number
- Tax Block Polygon

Feet
03.57 14 21 28

NYC Finance

NYC Digital Tax Map

Effective Date : 07-21-2021 11:45:03
End Date : Current

Queens Block: 15528

Legend

- Streets
- Miscellaneous Text
- Possession Hooks
- Boundary Lines
- Lot Face Possession Hooks
- Regular
- Underwater
- Tax Lot Polygon
- Condo Number
- Tax Block Polygon

0 5 10 20 30 40 Feet

Appendix B

13-12 Beach Channel Drive

Site Contacts

IMPACT ENVIRONMENTAL
170 Keyland Court
Bohemia, New York 11716
TEL: (631) 268-8800
FAX: (631) 269-1599

APPENDIX B – LIST OF SITE CONTACTS

Name	Phone/Email Address
Site Owner, BCD Owner, LLC	(212) 803-5722 dcarstarphen@brc.org
Qualified Environmental Professional, Greg Mendez-Chicas	(631) 269-8800 Gmendez-chicas@impactenvironmental.com
Professional Engineer, Xin Yuan	(412) 719-2487 xyuan@impactenvironmental.com
NYSDEC DER Project Manager, Christopher Allan	(718) 482-4065 Christopher.allan@dec.ny.gov
NYSDEC DER Project Manager's Supervisor, Cris-Sandra Maycock	(718) 482-4679 Cris-sandra.maycock@dec.ny.gov
NYSDEC Site Control, Kelly Lewandowski	(518) 402-9569 Kelly.lewandowski@dec.ny.gov
NYSDOH Project Manager, Sarita Wagh	(518) 402-7860 Sarita.wagh@health.ny.gov
Remedial Party Attorney, Kevin Rogers	(646) 378-7275 krogers@sprlaw.com

Appendix C

13-12 Beach Channel Drive R

Responsibilities

IMPACT ENVIRONMENTAL
170 Keyland Court
Bohemia, New York 11716
TEL: (631) 268-8800
FAX: (631) 269-1599

Responsibilities

The responsibilities for implementing the Site Management Plan ("SMP") for the 13-12 Beach Channel Drive site (the "site"), number C241254, are divided between the site owner(s) and a Remedial Party, as defined below. The owners are currently listed as:

Beach Channel Drive Housing Development Fund Corporation (HDFC), located at 131 West 25th Street, New York, NY 10001 (contact: muzzy@brc.org) and BCD Owner LLC, located at 116 East 27th Street, New York, NY 10016 (contact: jweisstuch@camberpg.com) (the "owners").

Solely for the purposes of this document and based upon the facts related to a particular site and the remedial program being carried out, the term Remedial Party ("RP") refers to any of the following: certificate of completion holder, volunteer, applicant, responsible party, and, in the event the New York State Department of Environmental Conservation ("NYSDEC") is carrying out remediation or site management, the NYSDEC and/or an agent acting on its behalf. The RPs are:
BCD Owner LLC, 116 East 27th Street, New York, NY 10016, jweisstuch@camberpg.com
And
BCD Shelter Owner LLC, 116 East 27th Street, New York, NY 10016, jweisstuch@camberpg.com

Nothing on this page shall supersede the provisions of an Environmental Easement, Consent Order, Consent Decree, agreement, or other legally binding document that affects rights and obligations relating to the site.

Site Owner's Responsibilities:

1) The owner shall follow the provisions of the SMP as they relate to future construction and excavation at the site.

2) In accordance with a periodic time frame determined by the NYSDEC, the owner shall periodically certify, in writing, that all Institutional Controls set forth in an Environmental Easement remain in place and continue to be complied with. The owner shall provide a written certification to the RP, upon the RP's request, in order to allow the RP to include the certification in the site's Periodic Review Report (PRR) certification to the NYSDEC.

3) In the event the site is delisted, the owner remains bound by the Environmental Easement and shall submit, upon request by the NYSDEC, a written certification that the Environmental Easement is still in place and has been complied with.

4) The owner shall grant access to the site to the RP and the NYSDEC and its agents for the purposes of performing activities required under the SMP and assuring compliance with the SMP.

5) The owner is responsible for assuring the security of the remedial components located on its property to the best of its ability. If damage to the remedial components or vandalism is evident, the owner shall notify the site's RPs and the NYSDEC in accordance with the timeframes indicated in Section 1.3 -Notifications.

6) If some action or inaction by the owner adversely impacts the site, the owner must notify the site's RPs and the NYSDEC in accordance with the time frame indicated in Section 1.3 - Notifications and coordinate the performance of necessary corrective actions with the RP.

7) The owner must notify the RP and the NYSDEC of any change in ownership of the site property (identifying the tax map numbers in any correspondence) and provide contact information for the new owner of the site property. 6 NYCRR Part contains notification requirements applicable to any construction or activity changes and changes in ownership. Among the notification requirements is the following: Sixty days prior written notification must be made to the NYSDEC. Notification is to be submitted to the NYSDEC Division of Environmental Remediation's Site Control Section. Notification requirements for a change in use are detailed in Section 1.3 of the SMP. A change of use includes, but is not limited to, any activity that may increase direct human or environmental exposure (e.g., day care, school or park). A 60-Day Advance Notification Form and Instructions are found at http://www.dec.ny.gov/chemical/76250.html.

8) The owner will maintain fences, conduct landscaping, and maintain driveways and parking spaces on behalf of the RP. The RP remains ultimately responsible for maintaining the engineering controls.

9) Until such time as the NYSDEC deems the vapor mitigation system unnecessary, the owner shall operate the system, pay for the utilities for the system's operation, and report any maintenance issues to the RP and the NYSDEC.

11) In accordance with the tenant notification law, within 15 days of receipt, the owner must supply a copy of any vapor intrusion data, that is produced with respect to structures and that exceeds NYSDOH or OSHA guidelines on the site, whether produced by the NYSDEC, RP, or owner, to the tenants on the property. The owner must otherwise comply with the tenant and occupant notification provisions of Environmental Conservation Law Article 27, Title 24.

Remedial Party Responsibilities

1) The RP must follow the SMP provisions regarding any construction and/or excavation it undertakes at the site.

2) The RP shall report to the NYSDEC all activities required for remediation, operation, maintenance, monitoring, and reporting. Such reporting includes, but is not limited to, periodic review reports and certifications, electronic data deliverables, corrective action work plans and reports, and updated SMPs.

3) Before accessing the site property to undertake a specific activity, the RPs shall provide the owners advance notification that shall include an explanation of the work expected to be completed. The RP shall provide to (i) the owner, upon the owner's request, (ii) the NYSDEC, and (iii) other entities, if required by the SMP, a copy of any data generated during the site visit and/or any final report produced.

4) If the NYSDEC determines that an update of the SMP is necessary, the RP shall update the SMP and obtain final approval from the NYSDEC. Within 5 business days after NYSDEC approval, the RP shall submit a copy of the approved SMP to the owner(s).

5) The RP shall notify the NYSDEC and the owner of any changes in RP ownership and/or control and of any changes in the party/entity responsible for the operation, maintenance, and monitoring of and reporting with respect to any remedial system (Engineering Controls). The RP shall provide contact information for the new party/entity. Such activity constitutes a Change of Use pursuant to 375-1.11(d) and requires 60-days prior notice to the NYSDEC. A 60-Day Advance Notification Form and Instructions are found at http://www.dec.ny.gov/chemical/76250.html .

6) The RP shall notify the NYSDEC of any damage to or modification of the systems as required under Section 1.3 - Notifications of the SMP.

7) The RP is responsible for the proper maintenance of any installed vapor intrusion mitigation systems associated with the site, as required in Appendix G (Operation, Monitoring and Maintenance Manual) of the SMP.

8) Prior to a change in use that impacts the remedial system or requirements and/or responsibilities for implementing the SMP, the RP shall submit to the NYSDEC for approval an amended SMP.

9) Any change in use, change in ownership, change in site classification (*e.g.*, delisting), reduction or expansion of remediation, and other significant changes related to the site may result in a change in responsibilities and, therefore, necessitate an update to the SMP and/or updated

legal documents. The RP shall contact the NYSDEC project manager to discuss the need to update such documents.

Change in RP ownership and/or control and/or site ownership does not affect the RP's obligations with respect to the site unless a legally binding document executed by the NYSDEC releases the RP of its obligations.

Future site owners and RPs and their successors and assigns are required to carry out the activities set forth above.

Appendix D

13-12 Beach Channel Drive

ll po t o te i l

pe i i tions n n l sis

IMPACT ENVIRONMENTAL
170 Keyland Court
Bohemia, New York 11716
TEL: (631) 268-8800
FAX: (631) 269-1599

Tilcon New York Inc.
9 Entin Road
Parsippany, NJ 07054

T 973-366-7741
www.tilconny.com

November 28, 2023

Impact Environmental
170 Keyland Ct, Bohemia, NY 11716
Bohemia, NY 11716

Attn: CHRISTOPHER CONNOLLY
Re: 13-16 Beach Channel Drive

Dear Mr. CONNOLLY;

As it is produced by our Mt Hope ASTM#57 is manufactured to meet New York State Department of Transportation (NYSDOT) and ASTM requirements. Mount Hope source appears on the NJDOT Qualified Products List, which is available at:

www.state.nj.us/transportation/eng/materials/qualified/QPLDB.shtm

Mount Hope quarry supplies 100% virgin granite (gneiss) that is quarried and processed to finished sizes. Material shipped from our Mount Hope facility is clean and free of contaminants prior to loading. Our Mount Hope Quarry source (#8-32R) was approved by the NYSDOT under test 20AR093 and the letter to this effect is attached.

Attached, please find the gradation, Clean Fill Certification, and third-party test results confirming source quality characteristics.

If you have any questions or require additional information, please contact me at leslie.dalessandro@tilconny.com

Very truly yours,
TILCON NEW YORK, INC.

Leslie Dalessandro

Leslie Dalessandro
Quality Control Department

NEW YORK STATE DEPARTMENT OF TRANSPORTATION MATERIALS BUREAU
COARSE AGGREGATE ANALYSIS FOR 703-02 PHYSICAL REQUIREMENTS

Source
8-32R
Tilcon New York, Inc.
Mount Hope, NJ

Sample/Test
Sample Date: 10/28/2020
Test No.: 20AR093
LRN: SM20071474
Smpl ID: tapritch20BP122256

Test results represent this sample only. They may not be appropriate for designing mixes. When designing mixes, follow procedures in appropriate Materials Method.

Material meets specifications for §703-02, Coarse Aggregate. Consult pavement friction requirements for intended use.

Run	Specific Gravity	
1	Bulk SSD	2.684
1	Bulk	2.672
1	Apparent	2.705
1	Absorption (%)	0.5

Run	10 Cycle MgSO4

*Max Loss ≤ 18% on #2 stone.**

Uncompacted Voids	
Avg. Uncompacted Voids (%)	50.22

25 Cycle 3% Brine Freeze Thaw	
Loss #2 (%)	
Loss #1 (%)	

*Max loss ≤ 20% on #2 stone.**

Acid Insoluble Residue Results

>20% indicates high residue.

Crush Count

*Min 75% crushed for #2 stone, 85% for #1 stone.**

LA Abrasion

Max loss ≤ 35% or 45%. Spec applies to RR ballast classification only.*

In accordance with Materials Method 29, only aggregate sources with a current and accepted biennial test and Geologic Source Report will appear on the NYSDOT Approved List

*For detailed specifications, see https://www.dot.ny.gov/main/business-center/engineering/specifications

NEW YORK STATE DEPARTMENT OF TRANSPORTATION MATERIALS BUREAU
COARSE AGGREGATE ANALYSIS FOR 703-02 PHYSICAL REQUIREMENTS

Source
8-32R
Tilcon New York, Inc.
Mount Hope, NJ

Sample/Test
Sample Date: 10/28/2020
Test No.: 20AR093
LRN: SM20071474
Smpl ID: tapritch20BP122256

Petrographic Results*	
Stone Size No.	1
Noncarbonate (%)	100.0
Deleterious Material	None

Rock Type Description	%
Granite & granite gneiss	93.3
Gneiss (granitic, pink)	3.5
Gneiss (amphibolite)	3.2

Petrographic Results*	
Stone Size No.	2
Noncarbonate (%)	100.0
Deleterious Material	Within Limit

Rock Type Description	%
Granite & granite gneiss	93.6
Gneiss (granitic, pink)	3.5
Gneiss (amphibolite)	2.3
Deleterious (undifferentiated)	0.6

Source Confirmation	
Stone Size No.	1
Source Confirmation	Matches Reference
Stone Size No.	2
Source Confirmation	Matches Reference

In accordance with Materials Method 29, only aggregate sources with a current and accepted biennial test and Geologic Source Report will appear on the NYSDOT Approved List

*For detailed specifications, see https://www.dot.ny.gov/main/business-center/engineering/specifications

Client: Tilcon New York Inc.
Project: Mount Hope Quality Control 2023
Project Code: 221548
Subject: Laboratory Tests of Fine and Coarse Aggregate Samples (Mount Hope Quality Quarry)

Advance Testing Co., Inc received four (4) aggregate samples on November 7, 2022. The Source of all aggregates was Mount Hope Quarry. At the client's request, the samples were tested for the following properties:

- Specific Gravities: ASTM C128
- Resistance to Degradation (Los Angeles Abrasion): ASTM C131
- Magnesium Sulfate Soundness: ASTM C88
- Sand Equivalent Value: ASTM D2419
- Uncompacted Void Content for Fine Aggregates: AASHTO T304 Method A

Client: Tilcon New York Inc.
Project: Mount Hope Quality Control 2022
Project Code: 210003
Subject: Laboratory Tests of Fine and Coarse Aggregate Samples (Mount Hope Quality Quarry)

Type of Test	Washed Sand	Screenings	#8 Stone	#57 Stone
Sand Equivalent Value, %	91	67	Not Applicable	Not Applicable
Specific Gravity				
• **Bulk**	2.682	2.699	2.619	2.721
• **Bulk-SSD**	2.700	2.709	2.645	2.727
• **Apparent**	2.731	2.725	2.689	2.739
Water Absorption, SSD, %	0.67	0.36	0.99	0.24
L.A. Abrasion, % Loss	Not Applicable	Not Applicable	34.4	28.7
Soundness, % Loss (5 Cycle Magnesium Sulfate)	2.22	3.85	5.89	0.62
Uncompacted Void Content, %	47.0	49.4		Not Applicable
Rock Type	Granite			

Sincerely,

Emily J. Rodriguez

Emily J. Rodriguez
Laboratory Manager
Advance Testing Company, Inc.

Gradation Test Report

Plant 060_00418-Mt. Hope Quarry
Product 3/4"-ASTM 57
Specification ASTM 57

574509396

Sample Information

Sample No 574509396
Date Sampled 11/07/2023 13:38
Sampled By Jarryd Megargel
Type Production
Method Load-out Face

Split Sample ☐
Resample ☐

Gradation Results

Date Completed 11/07/2023 13:38
Tested By Jarryd Megargel

Unit	Moist Mass	Dry Mass	Wash Mass	Moisture %	Wash Loss %	Procedure
lb		23.20				

Sieve	Mass Retained	Cum Mass Retained	Ind % Retained	% Retained	% Passing	Target	Specification	Comment
1" (25mm)	0.00	0.00	0	0	100	100-100\100	95-100	
3/4" (19mm)	1.95	1.95	8	8	92			
1/2" (12.5mm)	13.90	15.85	60	68	32	31-69\50	25-60	
3/8" (9.5mm)	6.30	22.15	27	95	5			
#4 (4.75mm)	0.90	23.05	4	99	1	0-7\3	0-10	
#8 (2.36mm)	0.00	23.05	0	99	1		0-5	
Pan	0.15	23.20	0.6	100.0	0.0			

EnviroVision Consultants, Inc.
20-21 Wagaraw Road – Bldg. 35E, Fair Lawn, NJ 07410
PH (973) 636-9145 FAX (973) 636-9144
Email: envirovision@optonline.net

This report is the confidential property of the Client, and information contained may not be published or reproduced without our written permission.

Client:	Tilcon New York, Inc.				
Project:	Mt. Hope Quarry, Mt. Hope, New Jersey				
Subject:	Laboratory Testing of Coarse Aggregates for NYSDEC-SCO				
Job No.:	21-057	**Report Number:**	23-R-112	**Date:**	04/12/2023

We present herewith the laboratory test results of one coarse aggregate sample dropped off at our lab on March 31, 2023. The sample was collected by a representative of Tilcon New York Inc.

As requested, the sample was analyzed for the U.S. EPA Target Compound List (TCL)+30/Target Analyte List (TAL) parameters, pH, Extractable Petroleum Hydrocarbons (EPH), and Hexavalent Chromium. The analyses were performed by Aqua Pro-Tech Laboratories (APL) (NYDOH Lab ID No. 11634) in Fairfield, New Jersey. The test results are summarized in the attached preliminary APL laboratory analytical report. The test results were compared to the New York Soil Clean-up Objectives, NYSDEC December 14, 2006, Subpart 375-6.8 (Residential, Restrictive Residential, Unrestricted, and Commercial). The copies of the sample chain-of-custody forms from APL and Envirovision, the preliminary APL laboratory analytical results and NYSDEC-Soil Clean-up Objective Comparison Tables are attached.

Review of the laboratory data and comparison of the sample test results to the New York Soil Clean-up Objectives (Residential, Restrictive Residential, Unrestricted, and Commercial) indicates the coarse aggregate sample **meet** the New York Soil Clean-up Objectives.

If there are any questions or if we can be of further assistance in this matter, please contact us.

Very truly yours,

ENVIROVISION CONSULTANS, INC.

P. K Khaitan

Prakash Khaitan
Vice President

Attachments:

(1) Laboratory Summary Report, APL and Enviro Sample Chain-of-Custody Forms, NYSDEC-Soil Clean-up Objective Comparison Tables and APL Analytical Results

E-mailed to: Ms. Cindy LaFleur, clafleur@tilconny.com

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SAMPLE CHAIN OF CUSTODY

CLIENT:	TILCON NY, Inc	DATE:	3-31-23
ADDRESS:		JOB NO.	
CONTACT:		TEL. #:	
PROJECT:	Mt. Hope Quarry NJ	PROJECT LAB ID #:	23L075

SAMPLE NUMBER	SAMPLING DATE	SAMPLING TIME	SAMPLE TYPE	NO. OF BOTTLES	ANALYSES REQUESTED
23L075	3/28/23	8:30am	GRAB	1 bag	NY/NJ Clean Fill

Comments:

PRESERVATIVE	
Cooled at 4°C?	✓
HCl	
HNO_3	
H_2SO_4	
NaOH	
$Na_2S_2O_3$	
Other	

pH Meter No.:	Reading	T°C	Time	Analyst
pH				
pH Dup:				

Sampled By: Daniel Soares

RELINQUISHED BY:	RECEIVED BY:	DATE AND TIME:
Dallas Boris	[signature]	3-31-23 2:00pm

Work Order 23D0062										
Lab: Aqua Pro-Tech Laboratories										
Client: EnviroVision Consultants, Inc. - Mt Hope NJ			NY Soil Clean-up Objectives							
		Lab ID:	NYSDEC	NYSDEC	NYSDEC	NYSDEC	**23D0062-01**			
		Client ID:	Soil Clean-up	Soil Clean-up	Soil Clean-up	Soil Clean-up	**23L075**			
		Date Sampled:	Unrestricted	Residential	Restricted	Commercial	**03/28/2023 08:30**			
		Matrix:	Use		Residential		**Soil**			
CAS#	**Compound**	**Type**								
Extractable Petroleum Hydrocarbons Category 2 (mg/kg)							Result	Qualifier	MDL	RL
NJDEP-EPH2	Total EPH	TRG					10.1	U	10.1	20.2
General Chemistry (%)							Result	Qualifier		ZERO
PERSOL	Percent Solids	TRG					**98.9**			
General Chemistry (°C)							Result	Qualifier		RL
	Temp at time of pH, °C	TRG					**22.6**			1.00
General Chemistry (mg/kg)							Result	Qualifier		RL
18540-29-9	Chromium, Hexavalent	TRG	1	22	110	400	0.391	U		0.391
57-12-5	Cyanide	TRG	27	27	27	27	0.261	U		0.261
General Chemistry (mV)							Result	Qualifier		RL
	Redox Potential	TRG					**90.0**			-1000
General Chemistry (pH Units)							Result	Qualifier		RL
	pH	TRG					**9.08**			0.0100
PCBs (mg/kg)							Result	Qualifier	MDL	RL
12674-11-2	Aroclor-1016	TRG					0.00448	U	0.00448	0.0334
11104-28-2	Aroclor-1221	TRG					0.0088	U	0.0088	0.0334
11141-16-5	Aroclor-1232	TRG					0.0112	U	0.0112	0.0334
53469-21-9	Aroclor-1242	TRG					0.00656	U	0.00656	0.0334
12672-29-6	Aroclor-1248	TRG					0.00686	U	0.00686	0.0334
11097-69-1	Aroclor-1254	TRG					0.00539	U	0.00539	0.0334
11096-82-5	Aroclor-1260	TRG					0.00418	U	0.00418	0.0334
37324-23-5	Aroclor-1262	TRG					0.00898	U	0.00898	0.0334
11100-14-4	Aroclor-1268	TRG					0.00404	U	0.00404	0.0334
1336-36-3	Total PCBs	TRG	0.1	1	1	1	0.00312	U	0.00312	0.0334
Pesticides (mg/kg)							Result	Qualifier	MDL	RL
72-54-8	4,4'-DDD	TRG	0.0033	2.6	13	92	0.000602	U	0.000602	0.00132
72-55-9	4,4'-DDE	TRG	0.0033	1.8	8.9	62	0.000719	U	0.000719	0.00132
50-29-3	4,4'-DDT	TRG	0.0033	1.7	7.9	47	0.000929	U	0.000929	0.00132
309-00-2	Aldrin	TRG	0.005	0.019	0.097	0.68	0.000623	U	0.000623	0.00132
319-84-6	alpha-BHC	TRG	0.02	0.097	0.48	3.4	0.000391	U	0.000391	0.00132
319-85-7	beta-BHC	TRG	0.036	0.072	0.36	3	0.000628	U	0.000628	0.00132
57-74-9	Chlordane	TRG					0.000585	U	0.000585	0.00132
319-86-8	delta-BHC	TRG	0.04	100	100	500	0.000611	U	0.000611	0.00132
60-57-1	Dieldrin	TRG	0.005	0.039	0.2	1.4	0.000688	U	0.000688	0.00132
959-98-8	Endosulfan I	TRG	2.4	4.8	24	200	0.000621	U	0.000621	0.00132
33213-65-9	Endosulfan II	TRG	2.4	4.8	24	200	0.000598	U	0.000598	0.00132
1031-07-8	Endosulfan sulfate	TRG	2.4	4.8	24	200	0.000495	U	0.000495	0.00132
115-29-7	Endosulfans, Total (alpha and beta)	TRG					0.000598	U	0.000598	0.00132
72-20-8	Endrin	TRG	0.014	2.2	11	89	0.000454	U	0.000454	0.00132
7421-93-4	Endrin aldehyde	TRG					0.000524	U	0.000524	0.00132
53494-70-5	Endrin ketone	TRG					0.000463	U	0.000463	0.00132
58-89-9	gamma-BHC (Lindane)	TRG	0.1	0.28	1.3	9.2	0.000417	U	0.000417	0.00132
76-44-8	Heptachlor	TRG	0.042	0.42	2.1	15	0.000352	U	0.000352	0.00132
1024-57-3	Heptachlor Epoxide	TRG					0.000664	U	0.000664	0.00132
72-43-5	Methoxychlor	TRG					0.000385	U	0.000385	0.00132
8001-35-2	Toxaphene	TRG					0.0634	U	0.0634	0.0668
Semivolatile Organics - GC/MS (mg/kg)							Result	Qualifier	MDL	RL
95-94-3	1,2,4,5-Tetrachlorobenzene	TRG					0.0204	U	0.0204	0.135
122-66-7	1,2-Diphenylhydrazine	TRG					0.0147	U	0.0147	0.135
123-91-1	1,4-Dioxane	TRG	0.1	9.8	13	130	0.0038	U	0.0038	0.0337
58-90-2	2,3,4,6-Tetrachlorophenol	TRG					0.0207	U	0.0207	0.135
95-95-4	2,4,5-Trichlorophenol	TRG					0.0183	U	0.0183	0.135
88-06-2	2,4,6-Trichlorophenol	TRG					0.00843	U	0.00843	0.135
120-83-2	2,4-Dichlorophenol	TRG					0.0136	U	0.0136	0.135
105-67-9	2,4-Dimethylphenol	TRG					0.0133	U	0.0133	0.135
51-28-5	2,4-Dinitrophenol	TRG					0.0194	U	0.0194	0.675
121-14-2	2,4-Dinitrotoluene	TRG					0.0144	U	0.0144	0.135
606-20-2	2,6-Dinitrotoluene	TRG					0.0322	U	0.0322	0.135
91-58-7	2-Chloronaphthalene	TRG					0.0155	U	0.0155	0.135
95-57-8	2-Chlorophenol	TRG					0.0178	U	0.0178	0.135
91-57-6	2-Methylnaphthalene	TRG					0.0323	U	0.0323	0.202
95-48-7	2-Methylphenol	TRG	0.33	100	100	500	0.0266	U	0.0266	0.135
88-74-4	2-Nitroaniline	TRG					0.0108	U	0.0108	0.135
88-75-5	2-Nitrophenol	TRG					0.015	U	0.015	0.135
91-94-1	3,3'-Dichlorobenzidine	TRG					0.0142	U	0.0142	0.135

Work Order 23D0062										
Lab: Aqua Pro-Tech Laboratories										
Client: EnviroVision Consultants, Inc. - Mt Hope NJ			NY Soil Clean-up Objectives							
		Lab ID:	NYSDEC	NYSDEC	NYSDEC	NYSDEC	**23D0062-01**			
		Client ID:	Soil Clean-up	Soil Clean-up	Soil Clean-up	Soil Clean-up	**23L075**			
		Date Sampled:	Unrestricted	Residential	Restricted	Commercial	**03/28/2023 08:30**			
		Matrix:	Use		Residential		**Soil**			
CAS#	**Compound**	**Type**								
65794-96-9	3+4-Methylphenol	TRG	0.33	34	100	500	0.0247	U	0.0247	0.135
99-09-2	3-Nitroaniline	TRG					0.025	U	0.025	0.135
534-52-1	4,6-Dinitro-2-methylphenol	TRG					0.0254	U	0.0254	0.337
101-55-3	4-Bromophenyl-phenyl ether	TRG					0.0192	U	0.0192	0.135
59-50-7	4-Chloro-3-methylphenol	TRG					0.0212	U	0.0212	0.135
106-47-8	4-Chloroaniline	TRG					0.00471	U	0.00471	0.135
7005-72-3	4-Chlorophenyl phenyl ether	TRG					0.00727	U	0.00727	0.135
100-01-6	4-Nitroaniline	TRG					0.0674	U	0.0674	0.135
100-02-7	4-Nitrophenol	TRG					0.00862	U	0.00862	0.135
83-32-9	Acenaphthene	TRG	20	100	100	500	0.00768	U	0.00768	0.135
208-96-8	Acenaphthylene	TRG	100	100	100	500	0.00468	U	0.00468	0.135
98-86-2	Acetophenone	TRG					0.0134	U	0.0134	0.135
120-12-7	Anthracene	TRG	100	100	100	500	0.0195	U	0.0195	0.135
1912-24-9	Atrazine	TRG					0.0126	U	0.0126	0.135
100-52-7	Benzaldehyde	TRG					0.0414	U	0.0414	0.135
92-87-5	Benzidine	TRG					0.308	U	0.308	0.337
56-55-3	Benzo(a)anthracene	TRG	1	1	1	5.6	0.0136	U	0.0136	0.135
50-32-8	Benzo(a)pyrene	TRG	1	1	1	1	0.0235	U	0.0235	0.135
205-99-2	Benzo(b)fluoranthene	TRG	1	1	1	5.6	0.0189	U	0.0189	0.135
191-24-2	Benzo(g,h,i)perylene	TRG	100	100	100	500	0.0109	U	0.0109	0.135
207-08-9	Benzo(k)fluoranthene	TRG	0.8	1	3.9	56	0.0155	U	0.0155	0.135
92-52-4	Biphenyl	TRG					0.0118	U	0.0118	0.135
111-91-1	bis(2-chloroethoxy)methane	TRG					0.0186	U	0.0186	0.135
111-44-4	bis(2-chloroethyl)ether	TRG					0.0148	U	0.0148	0.135
108-60-1	bis(2-chloroisopropyl)ether	TRG					0.0485	U	0.0485	0.135
117-81-7	bis(2-ethylhexyl)phthalate	TRG					0.0269	U	0.0269	0.135
85-68-7	Butylbenzylphthalate	TRG					0.0122	U	0.0122	0.135
105-60-2	Caprolactam	TRG					0.0174	U	0.0174	0.135
86-74-8	Carbazole	TRG					0.0259	U	0.0259	0.337
218-01-9	Chrysene	TRG	1	1	3.9	56	0.00923	U	0.00923	0.135
53-70-3	Dibenzo(a,h)anthracene	TRG	0.33	0.33	0.33	0.56	0.0134	U	0.0134	0.135
132-64-9	Dibenzofuran	TRG	7	14	59	350	0.00802	U	0.00802	0.135
84-66-2	Diethylphthalate	TRG					0.0261	U	0.0261	0.135
131-11-3	Dimethylphthalate	TRG					0.00836	U	0.00836	0.135
84-74-2	Di-n-butylphthalate	TRG					0.055	U	0.055	0.135
117-84-0	Di-n-octylphthalate	TRG					0.0276	U	0.0276	0.135
206-44-0	Fluoranthene	TRG	100	100	100	500	0.0126	U	0.0126	0.135
86-73-7	Fluorene	TRG	30	100	100	500	0.0112	U	0.0112	0.135
118-74-1	Hexachlorobenzene	TRG	0.33	0.33	1.2	6	0.0176	U	0.0176	0.135
87-68-3	Hexachlorobutadiene	TRG					0.0646	U	0.0646	0.135
77-47-4	Hexachlorocyclopentadiene	TRG					0.0561	U	0.0561	0.337
67-72-1	Hexachloroethane	TRG					0.0148	U	0.0148	0.135
193-39-5	Indeno(1,2,3-cd)pyrene	TRG	0.5	0.5	0.5	5.6	0.0145	U	0.0145	0.135
78-59-1	Isophorone	TRG					0.00882	U	0.00882	0.135
91-20-3	Naphthalene	TRG	12	100	100	500	0.00997	U	0.00997	0.135
98-95-3	Nitrobenzene	TRG					0.0229	U	0.0229	0.135
62-75-9	n-Nitroso-dimethylamine	TRG					0.0479	U	0.0479	0.135
621-64-7	n-Nitroso-di-n-propylamine	TRG					0.00721	U	0.00721	0.135
86-30-6	n-Nitrosodiphenylamine	TRG					0.0287	U	0.0287	0.135
87-86-5	Pentachlorophenol	TRG	0.8	2.4	6.7	6.7	0.0185	U	0.0185	0.337
85-01-8	Phenanthrene	TRG	100	100	100	500	0.0177	U	0.0177	0.135
108-95-2	Phenol	TRG	0.33	100	100	500	0.0109	U	0.0109	0.135
129-00-0	Pyrene	TRG	100	100	100	500	0.0099	U	0.0099	0.135
031158-91-5	Hexadecanoic acid, 1,1-dimethylethyl es	TIC					**16.7**	J		
000123-95-5	Octadecanoic acid, butyl ester	TIC					**15.4**	J		
NA	Tentatively Identified Compounds	TIC Total					**32.1**	J		
Total Metals (mg/kg)							Result	Qualifier		RL
7429-90-5	Aluminum	TRG					**3640**			2.43
7440-36-0	Antimony	TRG					1.22	U		1.22
7440-38-2	Arsenic	TRG	13	16	16	16	1.22	U		1.22
7440-39-3	Barium	TRG	350	350	400	400	**19.1**			0.486
7440-41-7	Beryllium	TRG	7.2	14	72	590	**0.582**			0.0243
7440-43-9	Cadmium	TRG	2.5	2.5	4.3	9.3	0.243	U		0.243
7440-70-2	Calcium	TRG					**6520**			24.3
7440-47-3	Chromium	TRG					**6.37**			0.243

Work Order 23D0062										
Lab: Aqua Pro-Tech Laboratories										
Client: EnviroVision Consultants, Inc. - Mt Hope NJ			NY Soil Clean-up Objectives							
		Lab ID:	NYSDEC	NYSDEC	NYSDEC	NYSDEC	**23D0062-01**			
		Client ID:	Soil Clean-up	Soil Clean-up	Soil Clean-up	Soil Clean-up	**23L075**			
		Date Sampled:	Unrestricted	Residential	Restricted	Commercial	**03/28/2023 08:30**			
		Matrix:	Use		Residential		**Soil**			
CAS#	**Compound**	**Type**								
7440-48-4	Cobalt	TRG					**4.60**			0.195
7440-50-8	Copper	TRG	50	270	270	270	**17.8**			0.243
7439-89-6	Iron	TRG					**18300**			4.86
7439-92-1	Lead	TRG	63	400	400	1,000	**1.62**			1.22
7439-95-4	Magnesium	TRG					**3190**			48.6
7439-96-5	Manganese	TRG	1600	2,000	2,000	10,000	**110**			0.243
7439-97-6	Mercury	TRG	0.18	0.81	0.81	2.8	**0.00684**			0.0202
7440-02-0	Nickel	TRG	30	140	310	310	**5.18**			0.122
7440-09-7	Potassium	TRG					**1920**			97.3
7782-49-2	Selenium	TRG	3.9	36	180	1,500	1.22	U		1.22
7440-22-4	Silver	TRG	2	36	180	1,500	0.146	U		0.146
7440-23-5	Sodium	TRG					**343**			48.6
7440-28-0	Thallium	TRG					1.22	U		1.22
7440-62-2	Vanadium	TRG					**12.8**			0.486
7440-66-6	Zinc	TRG	109	2200	10,000	10,000	**13.2**			0.730
Volatile Organics - GC/MS (mg/kg)							Result	Qualifier	MDL	RL
71-55-6	1,1,1-Trichloroethane	TRG	0.68	100	100	500	0.000259	U	0.000259	0.00177
79-34-5	1,1,2,2-Tetrachloroethane	TRG					0.000245	U	0.000245	0.00177
76-13-1	1,1,2-Trichloro-1,2,2 Trifluoroethane	TRG					0.00076	U	0.00076	0.00177
79-00-5	1,1,2-Trichloroethane	TRG					0.000299	U	0.000299	0.00177
75-34-3	1,1-Dichloroethane	TRG	0.27	19	26	240	0.000259	U	0.000259	0.00177
75-35-4	1,1-Dichloroethene	TRG	0.33	100	100	500	0.000328	U	0.000328	0.00177
87-61-6	1,2,3-Trichlorobenzene	TRG					0.000383	U	0.000383	0.00177
120-82-1	1,2,4-Trichlorobenzene	TRG					0.000473	U	0.000473	0.00177
95-63-6	1,2,4-Trimethylbenzene	TRG	3.6	47	52	190	0.000245	U	0.000245	0.00177
96-12-8	1,2-Dibromo-3-chloropropane	TRG					0.000433	U	0.000433	0.00444
106-93-4	1,2-Dibromoethane	TRG					0.000224	U	0.000224	0.00177
95-50-1	1,2-Dichlorobenzene	TRG	1.1	100	100	500	0.000313	U	0.000313	0.00177
107-06-2	1,2-Dichloroethane	TRG	0.02	2.3	3.1	30	0.00025	U	0.00025	0.00177
78-87-5	1,2-Dichloropropane	TRG					0.000291	U	0.000291	0.00177
108-67-8	1,3,5-Trimethylbenzene	TRG	8.4	47	52	190	0.000279	U	0.000279	0.00177
541-73-1	1,3-Dichlorobenzene	TRG	2.4	17	49	280	0.00013	U	0.00013	0.00177
106-46-7	1,4-Dichlorobenzene	TRG	1.8	9.8	13	130	0.000256	U	0.000256	0.00177
78-93-3	2-Butanone	TRG	0.12	100	100	500	0.000289	U	0.000289	0.00887
591-78-6	2-Hexanone	TRG					0.000166	U	0.000166	0.00177
99-87-6	4-Isopropyltoluene	TRG					0.000313	U	0.000313	0.00177
108-10-1	4-Methyl-2-pentanone	TRG					0.000222	U	0.000222	0.00177
67-64-1	Acetone	TRG	0.05	100	100	500	0.000538	U	0.000538	0.0444
107-02-8	Acrolein	TRG					0.000958	U	0.000958	0.00177
107-13-1	Acrylonitrile	TRG					0.000414	U	0.000414	0.00177
71-43-2	Benzene	TRG	0.06	2.9	4.8	44	0.000161	U	0.000161	0.00177
74-97-5	Bromochloromethane	TRG					0.000327	U	0.000327	0.00177
75-27-4	Bromodichloromethane	TRG					0.000223	U	0.000223	0.00177
75-25-2	Bromoform	TRG					0.000311	U	0.000311	0.00177
74-83-9	Bromomethane	TRG					0.000512	U	0.000512	0.00177
75-15-0	Carbon disulfide	TRG					0.000255	U	0.000255	0.00177
56-23-5	Carbon Tetrachloride	TRG	0.76	1.4	2.4	22	0.000267	U	0.000267	0.00177
108-90-7	Chlorobenzene	TRG	1.1	100	100	500	0.000257	U	0.000257	0.00177
124-48-1	Chlorodibromomethane	TRG					0.000218	U	0.000218	0.00177
75-00-3	Chloroethane	TRG					0.000303	U	0.000303	0.00177
67-66-3	Chloroform	TRG	0.37	10	49	350	0.000298	U	0.000298	0.00177
74-87-3	Chloromethane	TRG					0.000683	U	0.000683	0.00177
156-59-2	cis-1,2-Dichloroethene	TRG	0.25	59	100	500	0.0000858	U	0.0000858	0.00177
10061-01-5	cis-1,3-Dichloropropene	TRG					0.000225	U	0.000225	0.00177
110-82-7	Cyclohexane	TRG					0.000393	U	0.000393	0.00177
75-71-8	Dichlorodifluoromethane	TRG					0.000599	U	0.000599	0.00177
100-41-4	EthylBenzene	TRG	1	30	41	390	0.00024	U	0.00024	0.00177
98-82-8	Isopropylbenzene	TRG					0.000279	U	0.000279	0.00177
179601-23-1	m+p-Xylenes	TRG					0.000448	U	0.000448	0.00355
79-20-9	Methyl Acetate	TRG					0.000235	U	0.000235	0.00177
1634-04-4	Methyl tert-Butyl Ether	TRG	0.93	62	100	500	0.0003	U	0.0003	0.00177
108-87-2	Methylcyclohexane	TRG					0.000286	U	0.000286	0.00177
75-09-2	Methylene Chloride	TRG	0.05	51	100	500	0.000533	U	0.000533	0.00444
104-51-8	n-Butylbenzene	TRG	12	100	100	500	0.000365	U	0.000365	0.00177
103-65-1	n-Propylbenzene	TRG	3.9	100	100	500	0.000241	U	0.000241	0.00177

Work Order 23D0062										
Lab: Aqua Pro-Tech Laboratories										
Client: EnviroVision Consultants, Inc. - Mt Hope NJ			NY Soil Clean-up Objectives							
		Lab ID:	NYSDEC	NYSDEC	NYSDEC	NYSDEC	**23D0062-01**			
		Client ID:	Soil Clean-up	Soil Clean-up	Soil Clean-up	Soil Clean-up	**23L075**			
		Date Sampled:	Unrestricted	Residential	Restricted	Commercial	**03/28/2023 08:30**			
		Matrix:	Use		Residential		**Soil**			
CAS#	**Compound**	**Type**								
95-47-6	o-Xylene	TRG					0.000228	U	0.000228	0.00177
135-98-8	sec-Butylbenzene	TRG	11	100	100	500	0.00023	U	0.00023	0.00177
100-42-5	Styrene	TRG					0.000254	U	0.000254	0.00177
75-65-0	tert-Butyl alcohol	TRG					0.00373	U	0.00373	0.0177
98-06-6	tert-Butylbenzene	TRG	5.9	100	100	500	0.000284	U	0.000284	0.00177
127-18-4	Tetrachloroethene	TRG	1.3	5.5	19	150	0.000176	U	0.000176	0.00177
108-88-3	Toluene	TRG	0.7	100	100	500	0.000143	U	0.000143	0.00177
1330-20-7	Total Xylenes	TRG	0.26	100	100	500	0.000228	U	0.000228	0.00177
156-60-5	trans-1,2-Dichloroethene	TRG	0.19	100	100	500	0.00024	U	0.00024	0.00177
10061-02-6	trans-1,3-Dichloropropene	TRG					0.000339	U	0.000339	0.00177
79-01-6	Trichloroethene	TRG	0.47	10	21	200	0.000261	U	0.000261	0.00177
75-69-4	Trichlorofluoromethane	TRG					0.000204	U	0.000204	0.00177
75-01-4	Vinyl chloride	TRG	0.02	0.21	0.9	13	0.000337	U	0.000337	0.00177
NA	Tentatively Identified Compounds	TIC Total					0.00	J		

Main Footnotes:

Standards listed are based upon APL's interpretation of the published documents.

APL assumes no liability for the interpretation and/or accuracy of the standards.

Qualifiers:

U - Indicates compound analyzed for but not detected

J - Indicates estimated value for TICs and all results when detected below the RL

D - Indicates result is based on a dilution

E - Concentration exceeds highest calibration standard

B - Indicates compound found in associated blank

H - Indicates a Hold Time violation

P - Indicates a Greater than 25% diff. between 2 GC columns.

Key:

- Reporting Limit exceeds Reg Standard
- Value Exceeded One or More of the Criteria
- Detected in Sample
- E Qualified, may require Dilution

Specific Footnotes:

All regulatory values are from the New York DEC December 14, 2006 Table 375-6.8 Restricted and Unrestricted use Soil Clean-up Objectives.

ANALYTICAL RESULTS

STANDARD DELIVERABLES FORMAT

APL WORK ORDER NUMBER: 23D0062

EnviroVision Consultants, Inc.

Project: Mt Hope NJ

Brian Wood
Laboratory Director

All Results meet the requirements of the National Environmental Laboratory Accreditation Conference and/or State specific certifications as applicable.

Report Date: Apr 11, 2023

1275 Bloomfield Ave., Bldg. 6, Fairfield, New Jersey 07004
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NELAC National Environmental Laboratory Accreditation Conference
NJDEP #07010 / NYDOH #11634

APL
AQUA PRO-TECH LABORATORIES
Certified Environmental Testing

Analytical Results Summary

Mt Hope NJ

Client:	**EnviroVision Consultants, Inc.**	**Contact:**	**Prakash Khaitan**
APL Order ID:	**23D0062**	**Received:**	04/03/23 16:28

Sample ID/Analysis	Method	Prepared	Analyzed	Result	Qual	MDL	RL	Units
23D0062-01 (Soil)	23L075			Collected:	03/28/23 08:30			
General Chemistry								
Percent Solids	Gravimetric	04/03/23 18:26	04/04/23 11:12	**98.9**				**%**
Temp at time of pH, °C	SM 2550 B	04/04/23 15:46	04/04/23 15:46	**22.6**		**1.00**	**1.00**	**°C**
Redox Potential	SM 2580 (mod)	04/04/23 12:00	04/04/23 14:30	**90.0**		**-1000**	**-1000**	**mV**
Chromium, Hexavalent	SW 846 7196A	04/05/23 09:45	04/05/23 13:30	ND	U	0.207	0.391	mg/kg dry
Cyanide	SW 846 9014	04/05/23 11:03	04/05/23 14:45	ND	U	0.0939	0.261	mg/kg dry
pH	SW 846 9045D	04/04/23 12:00	04/04/23 14:30	**9.08**		**0.0100**	**0.0100**	**pH Units**
23D0062-01 (Soil)	23L075			Collected:	03/28/23 08:30			
Total Metals								
Aluminum	SW 846 6010D	04/04/23 09:43	04/10/23 10:38	**3640**		**0.144**	**2.43**	**mg/kg dry**
Antimony	SW 846 6010D	04/04/23 09:43	04/10/23 10:38	ND	U	0.132	1.22	mg/kg dry
Arsenic	SW 846 6010D	04/04/23 09:43	04/10/23 10:38	ND	U	0.0867	1.22	mg/kg dry
Barium	SW 846 6010D	04/04/23 09:43	04/10/23 10:38	**19.1**		**0.0368**	**0.486**	**mg/kg dry**
Beryllium	SW 846 6010D	04/04/23 09:43	04/10/23 10:38	**0.582**		**0.00282**	**0.0243**	**mg/kg dry**
Cadmium	SW 846 6010D	04/04/23 09:43	04/10/23 10:38	ND	U	0.0474	0.243	mg/kg dry
Calcium	SW 846 6010D	04/04/23 09:43	04/10/23 10:38	**6520**		**2.74**	**24.3**	**mg/kg dry**
Chromium	SW 846 6010D	04/04/23 09:43	04/10/23 10:38	**6.37**		**0.0275**	**0.243**	**mg/kg dry**
Cobalt	SW 846 6010D	04/04/23 09:43	04/10/23 10:38	**4.60**		**0.0249**	**0.195**	**mg/kg dry**
Copper	SW 846 6010D	04/04/23 09:43	04/10/23 10:38	**17.8**		**0.0680**	**0.243**	**mg/kg dry**
Iron	SW 846 6010D	04/04/23 09:43	04/10/23 10:38	**18300**		**0.689**	**4.86**	**mg/kg dry**
Lead	SW 846 6010D	04/04/23 09:43	04/10/23 10:38	**1.62**		**0.101**	**1.22**	**mg/kg dry**
Magnesium	SW 846 6010D	04/04/23 09:43	04/10/23 10:38	**3190**		**8.59**	**48.6**	**mg/kg dry**
Manganese	SW 846 6010D	04/04/23 09:43	04/10/23 10:38	**110**		**0.0303**	**0.243**	**mg/kg dry**
Nickel	SW 846 6010D	04/04/23 09:43	04/10/23 10:38	**5.18**		**0.0214**	**0.122**	**mg/kg dry**
Potassium	SW 846 6010D	04/04/23 09:43	04/10/23 10:38	**1920**		**28.9**	**97.3**	**mg/kg dry**
Selenium	SW 846 6010D	04/04/23 09:43	04/10/23 10:38	ND	U	0.233	1.22	mg/kg dry
Silver	SW 846 6010D	04/04/23 09:43	04/10/23 10:38	ND	U	0.0414	0.146	mg/kg dry
Sodium	SW 846 6010D	04/04/23 09:43	04/10/23 10:38	**343**		**4.64**	**48.6**	**mg/kg dry**
Thallium	SW 846 6010D	04/04/23 09:43	04/10/23 10:38	ND	U	0.0818	1.22	mg/kg dry
Vanadium	SW 846 6010D	04/04/23 09:43	04/10/23 10:38	**12.8**		**0.0559**	**0.486**	**mg/kg dry**
Zinc	SW 846 6010D	04/04/23 09:43	04/10/23 10:38	**13.2**		**0.0743**	**0.730**	**mg/kg dry**
Mercury	SW 846 7473	04/06/23 09:45	04/06/23 10:15	**0.00684**		**0.00506**	**0.0202**	**mg/kg dry**
23D0062-01 (Soil)	23L075			Collected:	03/28/23 08:30			
EPH Category 2 Extractable Petroleum Hydrocarbons Category 2								
Total EPH	NJDEP-EPH-CAT2	04/04/23 06:51	04/04/23 20:34	ND	U	10.1	20.2	mg/kg dry

FootNotes

RL - Reporting limit
MDL - Minimum detection limit
ND, U - Indicates compound analyzed for but not detected
J - Indicates estimated value

B - Indicates compound found in associated blank
E - Concentration exceeds highest calibration standard
D - Indicates result is based on a dilution
P - Greater than 25% diff. between 2 GC columns.
H - Indicates a Hold Time violation
D1 - Sample was Decanted (Dissolved)

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Certified Environmental Testing

Analytical Results Summary

Mt Hope NJ

Client:	**EnviroVision Consultants, Inc.**	**Contact:**	**Prakash Khaitan**
APL Order ID:	**23D0062**	**Received:**	04/03/23 16:28

Sample ID/Analysis	Method	Prepared	Analyzed	Result	Qual	MDL	RL	Units
23D0062-01 (Soil)	23L075			Collected:	03/28/23 08:30			
BNA+25 Semivolatile Organics - GC/MS								
1,2,4,5-Tetrachlorobenzene	SW 846 8270E	04/04/23 15:11	04/06/23 17:33	ND	U	0.0204	0.135	mg/kg dry
1,2-Diphenylhydrazine	SW 846 8270E	04/04/23 15:11	04/06/23 17:33	ND	U	0.0147	0.135	mg/kg dry
1,4-Dioxane	SW 846 8270E	04/04/23 15:11	04/06/23 17:33	ND	U	0.00380	0.0337	mg/kg dry
2,3,4,6-Tetrachlorophenol	SW 846 8270E	04/04/23 15:11	04/06/23 17:33	ND	U	0.0207	0.135	mg/kg dry
2,4,5-Trichlorophenol	SW 846 8270E	04/04/23 15:11	04/06/23 17:33	ND	U	0.0183	0.135	mg/kg dry
2,4,6-Trichlorophenol	SW 846 8270E	04/04/23 15:11	04/06/23 17:33	ND	U	0.00843	0.135	mg/kg dry
2,4-Dichlorophenol	SW 846 8270E	04/04/23 15:11	04/06/23 17:33	ND	U	0.0136	0.135	mg/kg dry
2,4-Dimethylphenol	SW 846 8270E	04/04/23 15:11	04/06/23 17:33	ND	U	0.0133	0.135	mg/kg dry
2,4-Dinitrophenol	SW 846 8270E	04/04/23 15:11	04/06/23 17:33	ND	U	0.0194	0.675	mg/kg dry
2,4-Dinitrotoluene	SW 846 8270E	04/04/23 15:11	04/06/23 17:33	ND	U	0.0144	0.135	mg/kg dry
2,6-Dinitrotoluene	SW 846 8270E	04/04/23 15:11	04/06/23 17:33	ND	U	0.0322	0.135	mg/kg dry
2-Chloronaphthalene	SW 846 8270E	04/04/23 15:11	04/06/23 17:33	ND	U	0.0155	0.135	mg/kg dry
2-Chlorophenol	SW 846 8270E	04/04/23 15:11	04/06/23 17:33	ND	U	0.0178	0.135	mg/kg dry
2-Methylnaphthalene	SW 846 8270E	04/04/23 15:11	04/06/23 17:33	ND	U	0.0323	0.202	mg/kg dry
2-Methylphenol	SW 846 8270E	04/04/23 15:11	04/06/23 17:33	ND	U	0.0266	0.135	mg/kg dry
2-Nitroaniline	SW 846 8270E	04/04/23 15:11	04/06/23 17:33	ND	U	0.0108	0.135	mg/kg dry
2-Nitrophenol	SW 846 8270E	04/04/23 15:11	04/06/23 17:33	ND	U	0.0150	0.135	mg/kg dry
3,3'-Dichlorobenzidine	SW 846 8270E	04/04/23 15:11	04/06/23 17:33	ND	U	0.0142	0.135	mg/kg dry
3+4-Methylphenol	SW 846 8270E	04/04/23 15:11	04/06/23 17:33	ND	U	0.0247	0.135	mg/kg dry
3-Nitroaniline	SW 846 8270E	04/04/23 15:11	04/06/23 17:33	ND	U	0.0250	0.135	mg/kg dry
4,6-Dinitro-2-methylphenol	SW 846 8270E	04/04/23 15:11	04/06/23 17:33	ND	U	0.0254	0.337	mg/kg dry
4-Bromophenyl-phenyl ether	SW 846 8270E	04/04/23 15:11	04/06/23 17:33	ND	U	0.0192	0.135	mg/kg dry
4-Chloro-3-methylphenol	SW 846 8270E	04/04/23 15:11	04/06/23 17:33	ND	U	0.0212	0.135	mg/kg dry
4-Chloroaniline	SW 846 8270E	04/04/23 15:11	04/06/23 17:33	ND	U	0.00471	0.135	mg/kg dry
4-Chlorophenyl phenyl ether	SW 846 8270E	04/04/23 15:11	04/06/23 17:33	ND	U	0.00727	0.135	mg/kg dry
4-Nitroaniline	SW 846 8270E	04/04/23 15:11	04/06/23 17:33	ND	U	0.0674	0.135	mg/kg dry
4-Nitrophenol	SW 846 8270E	04/04/23 15:11	04/06/23 17:33	ND	U	0.00862	0.135	mg/kg dry
Acenaphthene	SW 846 8270E	04/04/23 15:11	04/06/23 17:33	ND	U	0.00768	0.135	mg/kg dry
Acenaphthylene	SW 846 8270E	04/04/23 15:11	04/06/23 17:33	ND	U	0.00468	0.135	mg/kg dry
Acetophenone	SW 846 8270E	04/04/23 15:11	04/06/23 17:33	ND	U	0.0134	0.135	mg/kg dry
Anthracene	SW 846 8270E	04/04/23 15:11	04/06/23 17:33	ND	U	0.0195	0.135	mg/kg dry
Atrazine	SW 846 8270E	04/04/23 15:11	04/06/23 17:33	ND	U	0.0126	0.135	mg/kg dry
Benzaldehyde	SW 846 8270E	04/04/23 15:11	04/06/23 17:33	ND	U	0.0414	0.135	mg/kg dry
Benzidine	SW 846 8270E	04/04/23 15:11	04/06/23 17:33	ND	U	0.308	0.337	mg/kg dry
Benzo(a)anthracene	SW 846 8270E	04/04/23 15:11	04/06/23 17:33	ND	U	0.0136	0.135	mg/kg dry
Benzo(a)pyrene	SW 846 8270E	04/04/23 15:11	04/06/23 17:33	ND	U	0.0235	0.135	mg/kg dry
Benzo(b)fluoranthene	SW 846 8270E	04/04/23 15:11	04/06/23 17:33	ND	U	0.0189	0.135	mg/kg dry
Benzo(g,h,i)perylene	SW 846 8270E	04/04/23 15:11	04/06/23 17:33	ND	U	0.0109	0.135	mg/kg dry

FootNotes

RL - Reporting limit
MDL - Minimum detection limit
ND, U - Indicates compound analyzed for but not detected
J - Indicates estimated value

B - Indicates compound found in associated blank
E - Concentration exceeds highest calibration standard
D - Indicates result is based on a dilution
P - Greater than 25% diff. between 2 GC columns.
H - Indicates a Hold Time violation
D1 - Sample was Decanted (Dissolved)

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Analytical Results Summary

Mt Hope NJ

Client:	**EnviroVision Consultants, Inc.**	**Contact:**	**Prakash Khaitan**
APL Order ID:	**23D0062**	**Received:**	04/03/23 16:28

Sample ID/Analysis	Method	Prepared	Analyzed	Result	Qual	MDL	RL	Units
23D0062-01 (Soil)	23L075			Collected:	03/28/23 08:30			
BNA+25 Semivolatile Organics - GC/MS								
Benzo(k)fluoranthene	SW 846 8270E	04/04/23 15:11	04/06/23 17:33	ND	U	0.0155	0.135	mg/kg dry
Biphenyl	SW 846 8270E	04/04/23 15:11	04/06/23 17:33	ND	U	0.0118	0.135	mg/kg dry
bis(2-chloroethoxy)methane	SW 846 8270E	04/04/23 15:11	04/06/23 17:33	ND	U	0.0186	0.135	mg/kg dry
bis(2-chloroethyl)ether	SW 846 8270E	04/04/23 15:11	04/06/23 17:33	ND	U	0.0148	0.135	mg/kg dry
bis(2-chloroisopropyl)ether	SW 846 8270E	04/04/23 15:11	04/06/23 17:33	ND	U	0.0485	0.135	mg/kg dry
bis(2-ethylhexyl)phthalate	SW 846 8270E	04/04/23 15:11	04/06/23 17:33	ND	U	0.0269	0.135	mg/kg dry
Butylbenzylphthalate	SW 846 8270E	04/04/23 15:11	04/06/23 17:33	ND	U	0.0122	0.135	mg/kg dry
Caprolactam	SW 846 8270E	04/04/23 15:11	04/06/23 17:33	ND	U	0.0174	0.135	mg/kg dry
Carbazole	SW 846 8270E	04/04/23 15:11	04/06/23 17:33	ND	U	0.0259	0.337	mg/kg dry
Chrysene	SW 846 8270E	04/04/23 15:11	04/06/23 17:33	ND	U	0.00923	0.135	mg/kg dry
Dibenzo(a,h)anthracene	SW 846 8270E	04/04/23 15:11	04/06/23 17:33	ND	U	0.0134	0.135	mg/kg dry
Dibenzofuran	SW 846 8270E	04/04/23 15:11	04/06/23 17:33	ND	U	0.00802	0.135	mg/kg dry
Diethylphthalate	SW 846 8270E	04/04/23 15:11	04/06/23 17:33	ND	U	0.0261	0.135	mg/kg dry
Dimethylphthalate	SW 846 8270E	04/04/23 15:11	04/06/23 17:33	ND	U	0.00836	0.135	mg/kg dry
Di-n-butylphthalate	SW 846 8270E	04/04/23 15:11	04/06/23 17:33	ND	U	0.0550	0.135	mg/kg dry
Di-n-octylphthalate	SW 846 8270E	04/04/23 15:11	04/06/23 17:33	ND	U	0.0276	0.135	mg/kg dry
Fluoranthene	SW 846 8270E	04/04/23 15:11	04/06/23 17:33	ND	U	0.0126	0.135	mg/kg dry
Fluorene	SW 846 8270E	04/04/23 15:11	04/06/23 17:33	ND	U	0.0112	0.135	mg/kg dry
Hexachlorobenzene	SW 846 8270E	04/04/23 15:11	04/06/23 17:33	ND	U	0.0176	0.135	mg/kg dry
Hexachlorobutadiene	SW 846 8270E	04/04/23 15:11	04/06/23 17:33	ND	U	0.0646	0.135	mg/kg dry
Hexachlorocyclopentadiene	SW 846 8270E	04/04/23 15:11	04/06/23 17:33	ND	U	0.0561	0.337	mg/kg dry
Hexachloroethane	SW 846 8270E	04/04/23 15:11	04/06/23 17:33	ND	U	0.0148	0.135	mg/kg dry
Indeno(1,2,3-cd)pyrene	SW 846 8270E	04/04/23 15:11	04/06/23 17:33	ND	U	0.0145	0.135	mg/kg dry
Isophorone	SW 846 8270E	04/04/23 15:11	04/06/23 17:33	ND	U	0.00882	0.135	mg/kg dry
Naphthalene	SW 846 8270E	04/04/23 15:11	04/06/23 17:33	ND	U	0.00997	0.135	mg/kg dry
Nitrobenzene	SW 846 8270E	04/04/23 15:11	04/06/23 17:33	ND	U	0.0229	0.135	mg/kg dry
n-Nitroso-dimethylamine	SW 846 8270E	04/04/23 15:11	04/06/23 17:33	ND	U	0.0479	0.135	mg/kg dry
n-Nitroso-di-n-propylamine	SW 846 8270E	04/04/23 15:11	04/06/23 17:33	ND	U	0.00721	0.135	mg/kg dry
n-Nitrosodiphenylamine	SW 846 8270E	04/04/23 15:11	04/06/23 17:33	ND	U	0.0287	0.135	mg/kg dry
Pentachlorophenol	SW 846 8270E	04/04/23 15:11	04/06/23 17:33	ND	U	0.0185	0.337	mg/kg dry
Phenanthrene	SW 846 8270E	04/04/23 15:11	04/06/23 17:33	ND	U	0.0177	0.135	mg/kg dry
Phenol	SW 846 8270E	04/04/23 15:11	04/06/23 17:33	ND	U	0.0109	0.135	mg/kg dry
Pyrene	SW 846 8270E	04/04/23 15:11	04/06/23 17:33	ND	U	0.00990	0.135	mg/kg dry
BNA+25 Semivolatile Organics - GC/MS TIC								
Hexadecanoic acid, 1,1-dimethylethyl est	SW 846 8270E	04/04/23 15:11	04/06/23 17:33	**16.7**	**J**			**mg/kg dry**
Octadecanoic acid, butyl ester	SW 846 8270E	04/04/23 15:11	04/06/23 17:33	**15.4**	**J, B**			**mg/kg dry**

FootNotes

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B - Indicates compound found in associated blank
E - Concentration exceeds highest calibration standard
D - Indicates result is based on a dilution
P - Greater than 25% diff. between 2 GC columns.
H - Indicates a Hold Time violation
D1 - Sample was Decanted (Dissolved)

AQUA PRO-TECH LABORATORIES
Certified Environmental Testing

Analytical Results Summary

Mt Hope NJ

Client:	**EnviroVision Consultants, Inc.**	**Contact:**	**Prakash Khaitan**
APL Order ID:	**23D0062**	**Received:**	04/03/23 16:28

Sample ID/Analysis	Method	Prepared	Analyzed	Result	Qual	MDL	RL	Units
23D0062-01 (Soil)	23L075			Collected:	03/28/23 08:30			
Pesticides								
4,4'-DDD	SW 846 8081B	04/06/23 15:15	04/07/23 19:51	ND	U	0.000602	0.00132	mg/kg dry
4,4'-DDE	SW 846 8081B	04/06/23 15:15	04/07/23 19:51	ND	U	0.000719	0.00132	mg/kg dry
4,4'-DDT	SW 846 8081B	04/06/23 15:15	04/07/23 19:51	ND	U	0.000929	0.00132	mg/kg dry
Aldrin	SW 846 8081B	04/06/23 15:15	04/07/23 19:51	ND	U	0.000623	0.00132	mg/kg dry
alpha-BHC	SW 846 8081B	04/06/23 15:15	04/07/23 19:51	ND	U	0.000391	0.00132	mg/kg dry
beta-BHC	SW 846 8081B	04/06/23 15:15	04/07/23 19:51	ND	U	0.000628	0.00132	mg/kg dry
Chlordane	SW 846 8081B	04/06/23 15:15	04/07/23 19:51	ND	U	0.000585	0.00132	mg/kg dry
delta-BHC	SW 846 8081B	04/06/23 15:15	04/07/23 19:51	ND	U	0.000611	0.00132	mg/kg dry
Dieldrin	SW 846 8081B	04/06/23 15:15	04/07/23 19:51	ND	U	0.000688	0.00132	mg/kg dry
Endosulfan I	SW 846 8081B	04/06/23 15:15	04/07/23 19:51	ND	U	0.000621	0.00132	mg/kg dry
Endosulfan II	SW 846 8081B	04/06/23 15:15	04/07/23 19:51	ND	U	0.000598	0.00132	mg/kg dry
Endosulfan sulfate	SW 846 8081B	04/06/23 15:15	04/07/23 19:51	ND	U	0.000495	0.00132	mg/kg dry
Endosulfans, Total (alpha and beta)	SW 846 8081B	04/06/23 15:15	04/07/23 19:51	ND	U	0.000598	0.00132	mg/kg dry
Endrin	SW 846 8081B	04/06/23 15:15	04/07/23 19:51	ND	U	0.000454	0.00132	mg/kg dry
Endrin aldehyde	SW 846 8081B	04/06/23 15:15	04/07/23 19:51	ND	U	0.000524	0.00132	mg/kg dry
Endrin ketone	SW 846 8081B	04/06/23 15:15	04/07/23 19:51	ND	U	0.000463	0.00132	mg/kg dry
gamma-BHC (Lindane)	SW 846 8081B	04/06/23 15:15	04/07/23 19:51	ND	U	0.000417	0.00132	mg/kg dry
Heptachlor	SW 846 8081B	04/06/23 15:15	04/07/23 19:51	ND	U	0.000352	0.00132	mg/kg dry
Heptachlor Epoxide	SW 846 8081B	04/06/23 15:15	04/07/23 19:51	ND	U	0.000664	0.00132	mg/kg dry
Methoxychlor	SW 846 8081B	04/06/23 15:15	04/07/23 19:51	ND	U	0.000385	0.00132	mg/kg dry
Toxaphene	SW 846 8081B	04/06/23 15:15	04/07/23 19:51	ND	U	0.0634	0.0668	mg/kg dry
23D0062-01 (Soil)	23L075			Collected:	03/28/23 08:30			
PCBs								
Aroclor-1016	SW 846 8082A	04/04/23 10:49	04/08/23 11:15	ND	U	0.00448	0.0334	mg/kg dry
Aroclor-1221	SW 846 8082A	04/04/23 10:49	04/08/23 11:15	ND	U	0.00880	0.0334	mg/kg dry
Aroclor-1232	SW 846 8082A	04/04/23 10:49	04/08/23 11:15	ND	U	0.0112	0.0334	mg/kg dry
Aroclor-1242	SW 846 8082A	04/04/23 10:49	04/08/23 11:15	ND	U	0.00656	0.0334	mg/kg dry
Aroclor-1248	SW 846 8082A	04/04/23 10:49	04/08/23 11:15	ND	U	0.00686	0.0334	mg/kg dry
Aroclor-1254	SW 846 8082A	04/04/23 10:49	04/08/23 11:15	ND	U	0.00539	0.0334	mg/kg dry
Aroclor-1260	SW 846 8082A	04/04/23 10:49	04/08/23 11:15	ND	U	0.00418	0.0334	mg/kg dry
Aroclor-1262	SW 846 8082A	04/04/23 10:49	04/08/23 11:15	ND	U	0.00898	0.0334	mg/kg dry
Aroclor-1268	SW 846 8082A	04/04/23 10:49	04/08/23 11:15	ND	U	0.00404	0.0334	mg/kg dry
Total PCBs	SW 846 8082A	04/04/23 10:49	04/08/23 11:15	ND	U	0.00312	0.0334	mg/kg dry
23D0062-01 (Soil)	23L075			Collected:	03/28/23 08:30			

FootNotes

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B - Indicates compound found in associated blank
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H - Indicates a Hold Time violation
D1 - Sample was Decanted (Dissolved)

APL
AQUA PRO-TECH LABORATORIES
Certified Environmental Testing

Analytical Results Summary

Mt Hope NJ

Client:	**EnviroVision Consultants, Inc.**	**Contact:**	**Prakash Khaitan**
APL Order ID:	**23D0062**	**Received:**	04/03/23 16:28

Sample ID/Analysis	Method	Prepared	Analyzed	Result	Qual	MDL	RL	Units
23D0062-01 (Soil)	23L075			Collected:		03/28/23 08:30		
VO+15 Volatile Organics - GC/MS								
1,1,1-Trichloroethane	SW 846 8260D	04/05/23 01:01	04/05/23 01:01	ND	U	0.000259	0.00177	mg/kg dry
1,1,2,2-Tetrachloroethane	SW 846 8260D	04/05/23 01:01	04/05/23 01:01	ND	U	0.000245	0.00177	mg/kg dry
1,1,2-Trichloro-1,2,2 Trifluoroethane	SW 846 8260D	04/05/23 01:01	04/05/23 01:01	ND	U	0.000760	0.00177	mg/kg dry
1,1,2-Trichloroethane	SW 846 8260D	04/05/23 01:01	04/05/23 01:01	ND	U	0.000299	0.00177	mg/kg dry
1,1-Dichloroethane	SW 846 8260D	04/05/23 01:01	04/05/23 01:01	ND	U	0.000259	0.00177	mg/kg dry
1,1-Dichloroethene	SW 846 8260D	04/05/23 01:01	04/05/23 01:01	ND	U	0.000328	0.00177	mg/kg dry
1,2,3-Trichlorobenzene	SW 846 8260D	04/05/23 01:01	04/05/23 01:01	ND	U	0.000383	0.00177	mg/kg dry
1,2,4-Trichlorobenzene	SW 846 8260D	04/05/23 01:01	04/05/23 01:01	ND	U	0.000473	0.00177	mg/kg dry
1,2,4-Trimethylbenzene	SW 846 8260D	04/05/23 01:01	04/05/23 01:01	ND	U	0.000245	0.00177	mg/kg dry
1,2-Dibromo-3-chloropropane	SW 846 8260D	04/05/23 01:01	04/05/23 01:01	ND	U	0.000433	0.00444	mg/kg dry
1,2-Dibromoethane	SW 846 8260D	04/05/23 01:01	04/05/23 01:01	ND	U	0.000224	0.00177	mg/kg dry
1,2-Dichlorobenzene	SW 846 8260D	04/05/23 01:01	04/05/23 01:01	ND	U	0.000313	0.00177	mg/kg dry
1,2-Dichloroethane	SW 846 8260D	04/05/23 01:01	04/05/23 01:01	ND	U	0.000250	0.00177	mg/kg dry
1,2-Dichloropropane	SW 846 8260D	04/05/23 01:01	04/05/23 01:01	ND	U	0.000291	0.00177	mg/kg dry
1,3,5-Trimethylbenzene	SW 846 8260D	04/05/23 01:01	04/05/23 01:01	ND	U	0.000279	0.00177	mg/kg dry
1,3-Dichlorobenzene	SW 846 8260D	04/05/23 01:01	04/05/23 01:01	ND	U	0.000130	0.00177	mg/kg dry
1,4-Dichlorobenzene	SW 846 8260D	04/05/23 01:01	04/05/23 01:01	ND	U	0.000256	0.00177	mg/kg dry
2-Butanone	SW 846 8260D	04/05/23 01:01	04/05/23 01:01	ND	U	0.000289	0.00887	mg/kg dry
2-Hexanone	SW 846 8260D	04/05/23 01:01	04/05/23 01:01	ND	U	0.000166	0.00177	mg/kg dry
4-Isopropyltoluene	SW 846 8260D	04/05/23 01:01	04/05/23 01:01	ND	U	0.000313	0.00177	mg/kg dry
4-Methyl-2-pentanone	SW 846 8260D	04/05/23 01:01	04/05/23 01:01	ND	U	0.000222	0.00177	mg/kg dry
Acetone	SW 846 8260D	04/05/23 01:01	04/05/23 01:01	ND	U	0.000538	0.0444	mg/kg dry
Acrolein	SW 846 8260D	04/05/23 01:01	04/05/23 01:01	ND	U	0.000958	0.00177	mg/kg dry
Acrylonitrile	SW 846 8260D	04/05/23 01:01	04/05/23 01:01	ND	U	0.000414	0.00177	mg/kg dry
Benzene	SW 846 8260D	04/05/23 01:01	04/05/23 01:01	ND	U	0.000161	0.00177	mg/kg dry
Bromochloromethane	SW 846 8260D	04/05/23 01:01	04/05/23 01:01	ND	U	0.000327	0.00177	mg/kg dry
Bromodichloromethane	SW 846 8260D	04/05/23 01:01	04/05/23 01:01	ND	U	0.000223	0.00177	mg/kg dry
Bromoform	SW 846 8260D	04/05/23 01:01	04/05/23 01:01	ND	U	0.000311	0.00177	mg/kg dry
Bromomethane	SW 846 8260D	04/05/23 01:01	04/05/23 01:01	ND	U	0.000512	0.00177	mg/kg dry
Carbon disulfide	SW 846 8260D	04/05/23 01:01	04/05/23 01:01	ND	U	0.000255	0.00177	mg/kg dry
Carbon Tetrachloride	SW 846 8260D	04/05/23 01:01	04/05/23 01:01	ND	U	0.000267	0.00177	mg/kg dry
Chlorobenzene	SW 846 8260D	04/05/23 01:01	04/05/23 01:01	ND	U	0.000257	0.00177	mg/kg dry
Chlorodibromomethane	SW 846 8260D	04/05/23 01:01	04/05/23 01:01	ND	U	0.000218	0.00177	mg/kg dry
Chloroethane	SW 846 8260D	04/05/23 01:01	04/05/23 01:01	ND	U	0.000303	0.00177	mg/kg dry
Chloroform	SW 846 8260D	04/05/23 01:01	04/05/23 01:01	ND	U	0.000298	0.00177	mg/kg dry
Chloromethane	SW 846 8260D	04/05/23 01:01	04/05/23 01:01	ND	U	0.000683	0.00177	mg/kg dry
cis-1,2-Dichloroethene	SW 846 8260D	04/05/23 01:01	04/05/23 01:01	ND	U	0.0000858	0.00177	mg/kg dry

FootNotes

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D - Indicates result is based on a dilution
P - Greater than 25% diff. between 2 GC columns.
H - Indicates a Hold Time violation
D1 - Sample was Decanted (Dissolved)

AQUA PRO-TECH LABORATORIES
Certified Environmental Testing

Analytical Results Summary

Mt Hope NJ

Client:	**EnviroVision Consultants, Inc.**	**Contact:**	**Prakash Khaitan**
APL Order ID:	**23D0062**	**Received:**	04/03/23 16:28

Sample ID/Analysis	Method	Prepared	Analyzed	Result	Qual	MDL	RL	Units
23D0062-01 (Soil)	23L075			Collected:	03/28/23 08:30			
VO+15 Volatile Organics - GC/MS								
cis-1,3-Dichloropropene	SW 846 8260D	04/05/23 01:01	04/05/23 01:01	ND	U	0.000225	0.00177	mg/kg dry
Cyclohexane	SW 846 8260D	04/05/23 01:01	04/05/23 01:01	ND	U	0.000393	0.00177	mg/kg dry
Dichlorodifluoromethane	SW 846 8260D	04/05/23 01:01	04/05/23 01:01	ND	U	0.000599	0.00177	mg/kg dry
EthylBenzene	SW 846 8260D	04/05/23 01:01	04/05/23 01:01	ND	U	0.000240	0.00177	mg/kg dry
Isopropylbenzene	SW 846 8260D	04/05/23 01:01	04/05/23 01:01	ND	U	0.000279	0.00177	mg/kg dry
m+p-Xylenes	SW 846 8260D	04/05/23 01:01	04/05/23 01:01	ND	U	0.000448	0.00355	mg/kg dry
Methyl Acetate	SW 846 8260D	04/05/23 01:01	04/05/23 01:01	ND	U	0.000235	0.00177	mg/kg dry
Methyl tert-Butyl Ether	SW 846 8260D	04/05/23 01:01	04/05/23 01:01	ND	U	0.000300	0.00177	mg/kg dry
Methylcyclohexane	SW 846 8260D	04/05/23 01:01	04/05/23 01:01	ND	U	0.000286	0.00177	mg/kg dry
Methylene Chloride	SW 846 8260D	04/05/23 01:01	04/05/23 01:01	ND	U	0.000533	0.00444	mg/kg dry
n-Butylbenzene	SW 846 8260D	04/05/23 01:01	04/05/23 01:01	ND	U	0.000365	0.00177	mg/kg dry
n-Propylbenzene	SW 846 8260D	04/05/23 01:01	04/05/23 01:01	ND	U	0.000241	0.00177	mg/kg dry
o-Xylene	SW 846 8260D	04/05/23 01:01	04/05/23 01:01	ND	U	0.000228	0.00177	mg/kg dry
sec-Butylbenzene	SW 846 8260D	04/05/23 01:01	04/05/23 01:01	ND	U	0.000230	0.00177	mg/kg dry
Styrene	SW 846 8260D	04/05/23 01:01	04/05/23 01:01	ND	U	0.000254	0.00177	mg/kg dry
tert-Butyl alcohol	SW 846 8260D	04/05/23 01:01	04/05/23 01:01	ND	U	0.00373	0.0177	mg/kg dry
tert-Butylbenzene	SW 846 8260D	04/05/23 01:01	04/05/23 01:01	ND	U	0.000284	0.00177	mg/kg dry
Tetrachloroethene	SW 846 8260D	04/05/23 01:01	04/05/23 01:01	ND	U	0.000176	0.00177	mg/kg dry
Toluene	SW 846 8260D	04/05/23 01:01	04/05/23 01:01	ND	U	0.000143	0.00177	mg/kg dry
Total Xylenes	SW 846 8260D	04/05/23 01:01	04/05/23 01:01	ND	U	0.000228	0.00177	mg/kg dry
trans-1,2-Dichloroethene	SW 846 8260D	04/05/23 01:01	04/05/23 01:01	ND	U	0.000240	0.00177	mg/kg dry
trans-1,3-Dichloropropene	SW 846 8260D	04/05/23 01:01	04/05/23 01:01	ND	U	0.000339	0.00177	mg/kg dry
Trichloroethene	SW 846 8260D	04/05/23 01:01	04/05/23 01:01	ND	U	0.000261	0.00177	mg/kg dry
Trichlorofluoromethane	SW 846 8260D	04/05/23 01:01	04/05/23 01:01	ND	U	0.000204	0.00177	mg/kg dry
Vinyl chloride	SW 846 8260D	04/05/23 01:01	04/05/23 01:01	ND	U	0.000337	0.00177	mg/kg dry
VO+15 Volatile Organics - GC/MS TIC								
Tentatively Identified Compounds	SW 846 8260D	04/05/23 01:01	04/05/23 01:01	0.00	U			mg/kg dry

FootNotes

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D1 - Sample was Decanted (Dissolved)

APL 23D0062

AQUA PRO-TECH LABORATORIES

www.aquaprotechlabs.com

TEL: 973-227-0422
FAX: 973-227-2813

CHAIN OF CUSTODY

Page 1 of 1

...nt:	Envirovision Consultants Inc.	Send Report To:	PK
...ss:	20-21 Wagaraw Road, Bldg 35E	Address:	Same
	Fair Lawn, NJ 07410		
Phone:	973-636-9145	Phone:	973-568-0061
E-Mail:	pk@envirovisionconsultants.com	Send Invoice To:	PK
Project Name:	Mt. Hope, NJ	Address:	Same
Project Manager:	Prakash Khaitan	Sampling Location:	Mt. Hope, NJ
Project or PO #:	23L075	Sampled By:	D. S.

Turn-Around Time
- [X] APL Standard 2 Weeks
- [ ] Rush (Choose One Below)
- [ ] 1 Day [ ] 2 Days [ ] 3 Days
- [ ] 1 Week [ ] Other (Specify Below)

Date and Time Required: _____
**May Need Lab Approval

Report / Electronic Format
- [ ] Results Only / NY ASP-A
- [X] Reduced: NJ DEP
- [ ] Full: NJ DEP / NY ASP-B
- [ ] State Forms/E2 Reporting
- [✓] Excel Summary
- [ ] EqUIS
- [ ] EnviroData
- [ ] Hazsite EDD

PWSID # _____ SRP# _____

Contamination Level
- [ ] Low
- [ ] Medium
- [ ] High

Comments/Special Instructions:

+ NY List

Cooler Temp: 3.4

APL Order # (APL Will Provide): 23D0062

Matrix Abbreviations:
DW - Drinking Water; GW - Groundwater; WW - Wastewater; SW - Surface Water; L - Lake; Pool SPA; S - Soil; SD - Solid; SL - Sludge; C - Concrete; W - Wipes; O - Oil; PC - Paint Chips

ANALYSIS REQUESTED

Sample #	Sample Source: Field ID	Collect Date	Collect Time	Matrix	Sample Type: Grab	Sample Type: Comp	No. of Bottles	Preservative	TAL/TCL +30 (SRS)	EPH	pH	Cr +6							
-01	23L075	3-28-23	8:30	S	✓		4		✓	✓	✓	✓							

RELINQUISHED BY:	Print: Prakash Khaitan	Sign: [signature]	RECEIVED BY:	Print: Rose Nap	Sign: [signature]	Date: 4-3-23 Time: 1628
RELINQUISHED BY:	Print:	Sign	RECEIVED BY:	Print:	Sign:	Date: Time:
RELINQUISHED BY:	Print:	Sign:	RECEIVED BY:	Print:	Sign:	Date: Time:

CERTIFICATIONS: NELAP (National Environmental Accreditation Program) NJDEP #07310 PADEP #68-02903 NYDOH #11634

By signing this Chain of Custody Agreement, customer expressly agrees to pay APL for all charges reasonably incurred in connection with analysis and reporting for these samples

Submittal Review Sheet
Project #: FAB210009
Project Name: Beach Channel Drive

URBAN ATELIER GROUP

0 General Contractor

Received

RECEIVED
09/15/2022
URBAN ATELIER GROUP

Review

This Submittal has been reviewed for general conformance to the Contract Documents and coordination with contiguous work.

Date : 09/20/2022
Submittal # : 312000-09-01
Reviewed By : Javier Angel | Urban Atelier Group

This review does not relieve the Subcontractor of their responsibility to UAG to make the work conform to the requirements of the contract documents. The Subcontractor also remains responsible to UAG for all dimensions, correct fabrication and accurate fit with the work of other trades. The contents of this Submittal are subject to approval by the Architect.

1 Architect

2 Geotechnical Engineer

GEO **GEODesign, Inc. P.C.**

Project Name	**Submittal Desc.**
Beach Channel Drive	3/4" Stone
Project No.	**Submittal ID**
3887-009	312000-09-01

☐ **CONFORMS** ☑ **CONFORMS AS NOTED**
☐ **REVISE & RESUBMIT** ☐ **RECORD ONLY**

This review is only for general conformance with the design concept of the project and general compliance with the information given in the Contract Documents. Corrections or comments made c the shop drawings during this review do not relieve contractor from compliance with the requirements of the plans and specifications. Approval of a specific item shall not include approval of an assembly of which the item is a component. Contractor is reponsible for: dimensions to be confirmed and correlated at the job site; information that pertains solely to the fabrication processes or to the means, methods, techniques, sequences and procedures of construction; coordination of his or her Work with that of all other trades; and for performing all work in a safe and satisfactory manner. Actions shown above shall not indicate nor imply any approval of changes in time or changes in costs.

Reviewed By ESG **Date** 10/10/2022

TRIDENT GENERAL CONTRACTING LLC.

1160 Commerce Ave
Bronx, NY, 10462

Project
1901-00 – 1312 Beach Channel Drive,
Far Rockaway, NY, 11691

SPEC Section 033000
Cast in place concrete
9.15.2022

312000-008.00- ¾" Crushed Stone

Prepared by:
Joe Bennett
Project Manager
TRIDENT GENERAL CONTRACTING LLC.
1160 Commerce Ave
Bronx, NY, 10462

Sent to:

Thomas Flanagan tflanagan@uag.nyc
Javier Angel jangel@uag.nyc

Adam Mohammed amohammed@uag.nyc

3/4 Crushed Drain Stone - NYS SPEC #2

Product Information

Javelin Quarry – Slate Hill NY

NYS SPEC #2 Stone

Source # 10770

Stone Type – Argillite / Greywacke

Pictures of product

3348 Route 208, Campbell Hall, NY 10916
Phone: 845-496-1600 Fax: 845-496-1398
12960 Commerce Lake Drive, A14, Fort Myers, FL 33913
42 Day Farm Road, West Stockbridge, MA 01266
1813 State Route 7, Harpursville, NY 13787

Client:	**Aden Brook Farm**	**Project:**	2022 Quality Control
Item:	3/4" Stone	**Project Number:**	220041
Source:	Aden Brook	**Lab Number:**	22-0036B
Date Sampled:	1/17/2022	**Sampled By:**	Client
Date Tested:	1/19/2022	**Tested By:**	Sean Curry

GRADATION (SIEVE ANALYSIS) OF SOIL OR AGGREGATE

Test Method(s): ASTM D422, C136, C117; AASHTO T88, T27, T11

Lab Number	Sample Type	Sampling Location	Specification
22-0036B	3/4" Stone	Stockpile	NYSDOT 703-02 #2 Stone

Sieve Size		%	%	Spec. %
mm	Inches	Retained	Passing	Pass
50.0 mm	2"	0.0	100.0	
37.5 mm	1 1/2"	0.0	100.0	100
25.0 mm	1"	0.0	100.0	90-100
19.0 mm	3/4"	36.6	63.4	
12.5 mm	1/2"	52.3	11.1	0-15
9.5 mm	3/8"	8.6	2.5	
6.3 mm	1/4"	1.6	0.9	
4.75 mm	#4	0.1	0.8	
3.18 mm	1/8"	0.1	0.7	
Pan		0.7		

Comments: **Test results comply with specification**

Emily J. Rodriguez

Report Reviewed By:

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The results in this report relate only to the items inspected or tested.

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3348 Route 208, Campbell Hall, NY 10916
Phone: 845-496-1600 Fax: 845-496-1398
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1813 State Route 7, Harpursville, NY 13787

Client:	Aden Aggregates	**Project:**	2022 Quality Control
Material:		**Project Number:**	220041
Source:	Aden Aggregates	**Lab Number:**	22-0658A
Location:	Stockpile	**Item Number:**	NYSDOT 703-2
Sampled:	5/31/2022	**Sampled By:**	Client
Tested:	6/3/2022	**Tested By:**	David Lingenfelter and Samanatha Jackson

Report of Resistance to Degradation (Los Angeles Abrasion)

Test Method: ASTM C131

Table of Gradings and Weights (g) of Test Samples

Sieve Size, mm (in.)		Grading Designation (ASTM C131, AASHTO T96)				Grading Designation ASTM C535		
Passing	Retained On	A	B	C	D	1	2	3
75.0 (3)	63.0 (2 1/2)					2500+/-50		
63.0 (2 1/2)	50.0 (2)					2500+/-50		
50.0 (2)	37.5 (1 1/2)					5000+/-50	5000+/-50	
37.5 (1 1/2)	25.0 (1)	1250+/-25					5000+/-25	5000+/-25
25.0 (1)	19 (3/4)	1250+/-25						5000+/-25
19.0 (3/4)	12.5 (1/2)	1250+/-10	2500+/-10					
12.5 (1/2)	9.5 (3/8)	1250+/-10	2500+/-10					
9.5 (3/8)	6.3 (1/4)			2500+/-10				
6.3 (1/4)	4.75 (#4)			2500+/-10				
4.75 (#4)	2.35 (#8)				5000+/-10			
Total (g):		5000+/-10	5000+/-10	5000+/-10	5000+/-10	10000+/-100	10000+/-75	1000+/-50

Test Method Used:	ASTM C131
Original Sample Grading (see chart above):	B
Starting Oven-Dry Sample Weight, A (g):	4990
Final +1.70mm Sample Weight, B (g):	3563
LA Abrasion (% Loss): (A - B)/A * 100	**28.6**
Specification:	35% maximum

Comments: Test result complies with specification

Emily J. Rodriguez

Report Reviewed By:

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Client:	Aden Aggregates	**Project:**	2022 Quality Control
Material:	#2	**Project Number:**	220041
Source:	Aden Aggregates	**Lab Number:**	22-0398A
Location:	Stockpile	**Specification:**	No Specification
Date Sampled:	4/13/2022	**Sampled By:**	Client
Date Tested:	4/27/2022	**Tested By:**	Samantha Jackson

Report of 4 Cycle Magnesium Sulfate Soundness Test

Test Method: NYSDOT GTM-21

Test Sample Gradation			Test Sample					
Sieve Size	Original Grading	Weighing Factor	Original Weight	Basket Number	Final Weight	Weight Loss	Percent Wt. Loss	Wgtd. Avg. Corr. % Loss
1 - 1/2in (25 - 12.5mm)	61.7	0.658	610.7	8-19B	546.8	63.9	10.5%	6.89%
1/2 - 1/4in (12.5-6.3mm)	32	0.342	303.4	8-19I	296.2	7.2	2.4%	0.81%
Total	93.7	1.000						**7.7%**

Sample Composition: grey crushed stone

Principal Form of Degradation:

X	Splitting	X	Cracking
	Crumbling	X	Flaking
	Disintegration		Chipping

Specification:

Comments:

Report Reviewed By: Emily J. Rodriguez

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42 Day Farm Road, West Stockbridge, MA 01266

Client:	Aden Aggregates	**Project:**	2022 Quality Control
Material:	Crushed Agg	**Project Number:**	220041
Source:	Slate Hill	**Lab Number:**	22-0724A
Location:	Stockpile	**Item Number:**	No Specification
Date Sampled:	6/15/2022	**Sampled By:**	Client
Date Tested:	6/17/2022	**Tested By:**	Michael Lancellotti

SPECIFIC GRAVITY AND ABSORPTION OF COARSE AGGREGATE

Test Method: ASTM C127

Trial #	Bulk Specific Gravity	Bulk Specific Gravity SSD	Apparent Specific Gravity	Absorption %
	Gb	Gs	Ga	A
1	2.703	2.732	2.785	1.10
2	2.702	2.733	2.787	1.13
3	2.696	2.732	2.798	1.36
Average	2.700	2.732	2.790	1.19

Specification(s):

Notes:

Comments:

Report Reviewed By: Emily J. Rodriguez

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Advance Testing

Since 1984

CONSTRUCTION MATERIALS TESTING & INSPECTION SERVICES

Petrographic Examination of Aggregate

Prepared for: Aden Aggregates

Prepared by: Advance Testing Company, Inc.

June 15, 2022

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Microscopic Analysis: 22-0651 (Samples 1-3) 5

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Microscopic Analysis: 22-0651 (Sample 4) 7

X-Ray Diffraction (XRD) Analysis 8

Greywacke 8

Iron-Stained Greywacke 8

Argillite 9

Sample Background and Preparation

The sample being investigated is aggregate from Aden Aggregates. Petrographic analysis was performed according to ASTM C 295. Four large pieces were provided for analysis. Each piece was labelled and thin sections were fabricated from each specimen.

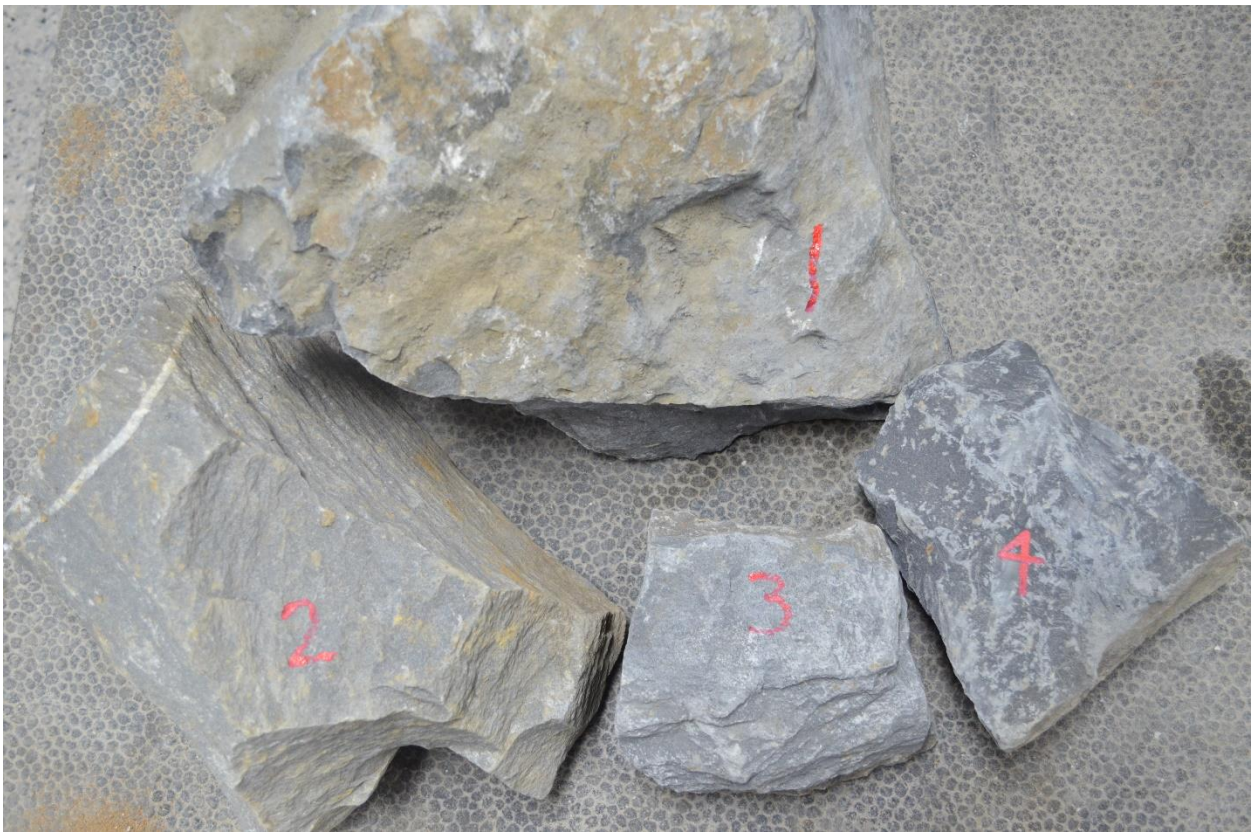


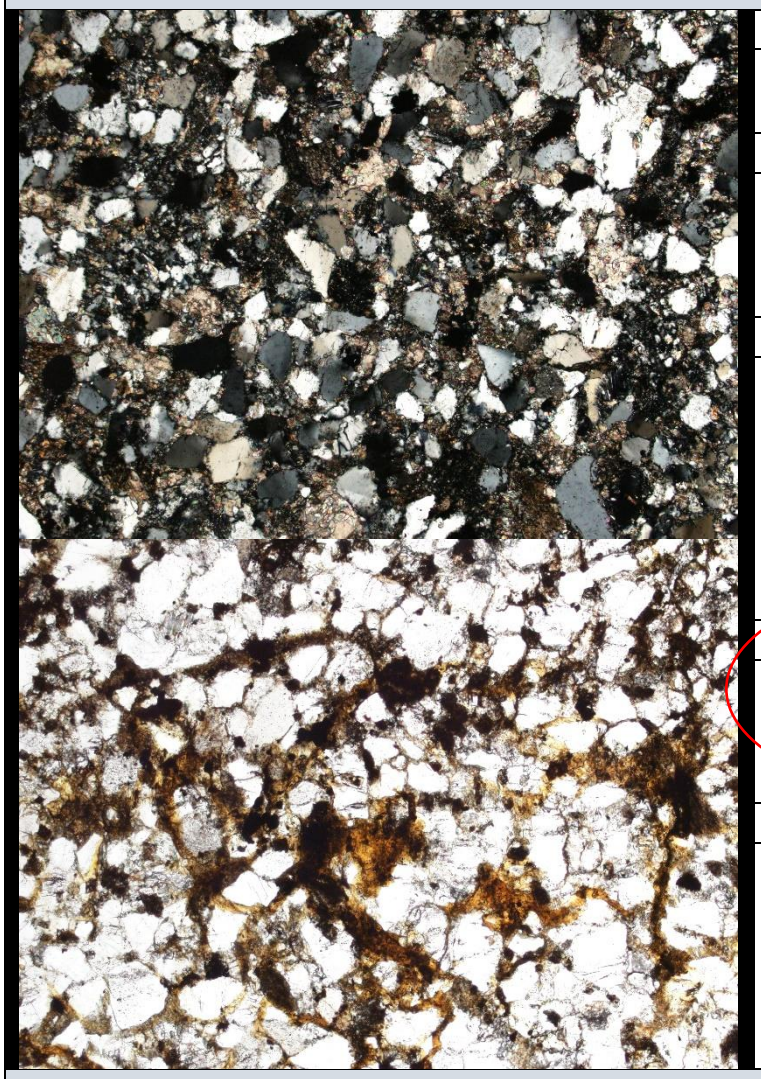
Figure 1: Photograph of provided samples labeled 1 – 4.

Macroscopic Analysis: 22-0651 (Samples 1-3)

Rock Type	Observations	
Greywacke	Main Coloration:	Moderate grey with some reddish-grey iron stained areas.
	Shape:	Angular.
	Grain/Crystal Size:	Fine to medium grained.
	Comments:	Mild reaction with the addition of dilute hydrochloric acid.

Figure 2: Stereoscope image of the surface of the greywacke sample. Note: Iron staining towards the bottom of the photo.

Microscopic Analysis: 22-0651 (Samples 1-3)



Type:
Greywacke
Description:
Greywacke is a poorly sorted sedimentary rock with greater than 15% matrix.
Minerals Observed:
- Quartz - Feldspar - Calcite - Clay Minerals - Opaque Minerals
Deleterious Materials:
Greywacke has the potential to cause alkali-silica reaction (ASR) in concrete.
Comments:
The iron staining observed is likely due to hematite that was found in small quantities (< 0.5 %) with XRD analysis.

Figure 3: Micrograph of greywacke (top) XPL, 50X magnification and a micrograph of iron stained greywacke (bottom) PPL, 50X magnification.

Typically, ASR can be problematic when the material is used as an aggregate in concrete mix.

It is recommended that additional information be provided to verify/support that the proposed material ASR will not negatively impact the structure when used as a sub-base.
-GEODesign

Macroscopic Analysis: 22-0651 (Sample 4)

Rock Type	Observations	
Argillite	Main Coloration:	Moderate to dark grey.
	Shape:	Angular.
	Grain/Crystal Size:	Fine-grained.
	Comments:	The sample is slightly fissile but does not split along bedding planes as readily as shale. Specimen also includes a thin layer of sandstone.

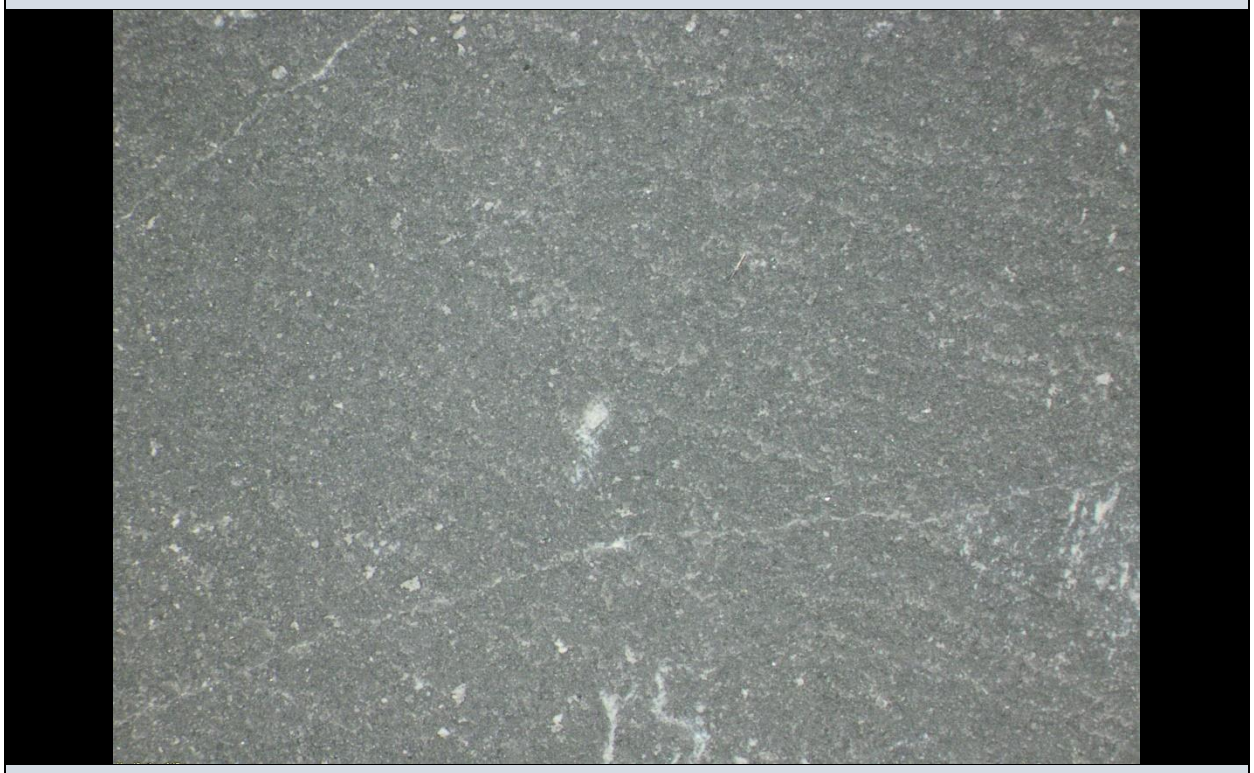
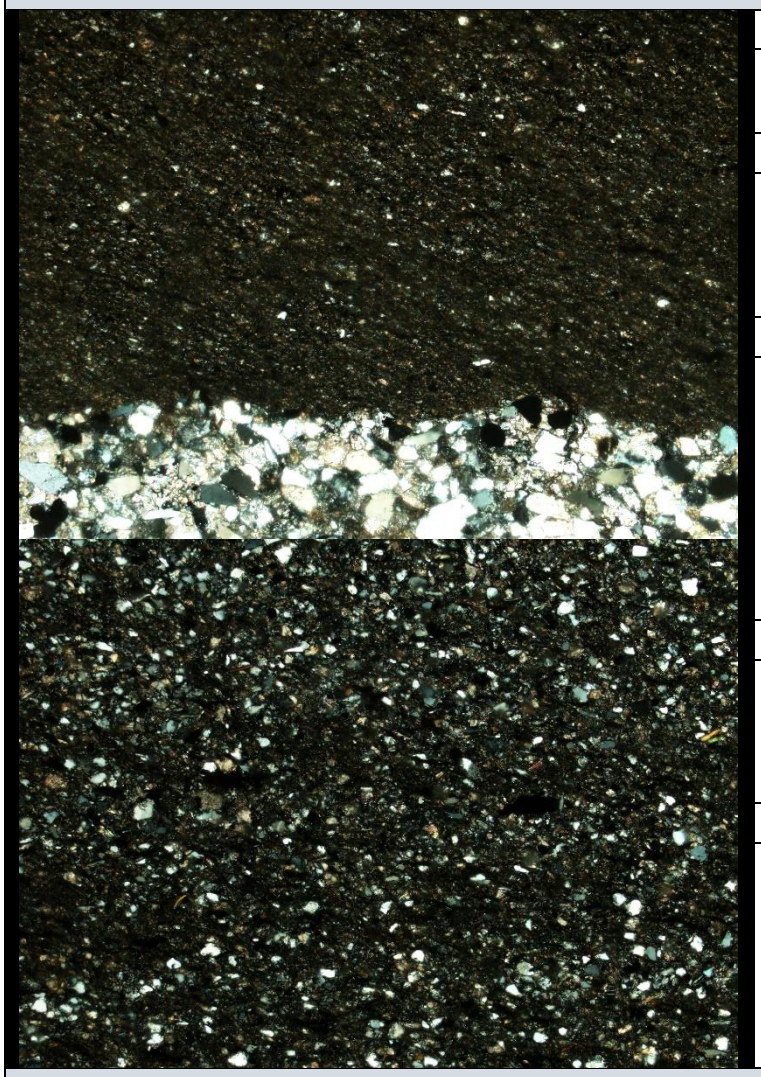


Figure 4: Stereoscope image of the surface of the argillite sample.

Microscopic Analysis: 22-0651 (Sample 4)



Type:
Argillite
Description:
A sedimentary rock, Argillite is a compact, indurated mudstone that is less fissile than a typical shale.
Minerals Observed:
- Quartz - Plagioclase - Clay Minerals - Calcite - Opaque Minerals
Deleterious Materials:
None observed.
Comments:
None.

Figure 5: Micrographs of argillite. Note: The sample contained a thin layer of greywacke sandstone (top) XPL, 50X magnification.

X-Ray Diffraction (XRD) Analysis

Greywacke

Mineral Name	Chemical Formula	Percent (%)
Quartz	SiO_2	51.9
Albite	$Na(AlSi_3O_8)$	9.5
Sillimanite	$Al_2(SiO_4)O$	5.6
Calcite	$CaCO_3$	4.7
Oligoclase	$(Na,Ca)[Al(Si,Al)Si_2O_8]$	4.4
Celadonite	$K(MgFe^{3+})(Si_4O_{10})(OH)_2$	4.1
Celsian	$Ba(Al_2Si_2O_8)$	2.7
Chamosite	$(Fe^{2+},Mg,Al,Fe^{3+})_6(Si,Al)_4O_{10}(OH,O)_8$	2.1
Cordierite	$(Mg,Fe)_2Al_3(AlSi_5O_{18})$	1.7
Laumontite	$CaAl_2Si_4O_{12} \cdot 4H_2O$	1.5
Fluorocannilloite	$CaCa_2(Mg_4Al)(Si_5Al_3)O_{22}F_2$	1.3
Calcio-olivine	Ca_2SiO_4	0.8
Montmorillonite15A	$(Na,Ca)_{0.33}(Al,Mg)_2(Si_4O_{10})(OH)_2 \cdot nH_2O$	0.7
Kyanite	$Al_2(SiO_4)O$	0.7
Halloysite-10A	$Al_2(Si_2O_5)(OH)_4$	0.7
Cinnabar	HgS	0.7
Stilbite	$(Na, Ca, K)_{6-7}[Al_{8-9}Si_{27-28}O_{27}] \cdot nH_2O$	0.6
Chabazite	$(Ca0.5,Na,K)_4[Al_4Si_8O_{24}]$•12H2O	0.6
Other*	N/A	5.7

*Table 1: *Identified mineral species that are less than 0.5%.*

Iron-Stained Greywacke

Mineral Name	Chemical Formula	Percent (%)
Quartz	SiO_2	68.4
Albite	$Na(AlSi_3O_8)$	13.7
Muscovite	$KAl_2(AlSi_3O_{10})(OH)_2$	6.4
Illite	$K_{0.65}Al_{2.0}[Al_{0.65}Si_{3.35}O_{10}](OH)_2$	2.9
Chamosite	$(Fe^{2+},Mg,Al,Fe^{3+})_6(Si,Al)_4O_{10}(OH,O)_8$	2.3
Orthoclase	$K(AlSi_3O_8)$	1.9
Oligoclase	$(Na,Ca)[Al(Si,Al)Si_2O_8]$	0.9
Chalcanthite	CuSO4 · 5H2O	0.6
Other*	N/A	2.8

*Table 2: *Identified mineral species that are less than 0.5%.*

Argillite

Mineral Name	Chemical Formula	Percent (%)
Quartz	SiO_2	36.8
Chamosite	$(Fe^{2+},Mg,Al,Fe^{3+})_6(Si,Al)_4O_{10}(OH,O)_8$	9.7
Celadonite	$K(MgFe^{3+})(Si_4O_{10})(OH)_2$	8.4
Albite	$Na(AlSi_3O_8)$	5.9
Muscovite	$KAl_2(AlSi_3O_{10})(OH)_2$	4.6
Oligoclase	$(Na,Ca)[Al(Si,Al)Si_2O_8]$	4.0
Sillimanite	$Al_2(SiO_4)O$	3.6
Andalusite	$Al_2(SiO_4)O$	3.1
Almandine	$Fe^{2+}{}_3Al_2(SiO_4)_3$	2.9
Halloysite-10A	$Al_2(Si_2O_5)(OH)_4$	2.7
Barroisite	$\{CaNa\}\{Mg_3Al_2\}(AlSi_7O_{22})(OH)_2$	2.6
Laumontite	$CaAl_2Si_4O_{12} \cdot 4H_2O$	2.0
Ferri-clinoholmquistite	-	1.9
Annite	$KFe^{2+}{}_3(AlSi_3O_{10})(OH)_2$	1.8
Calcite	$CaCO_3$	1.7
Celsian	$Ba(Al_2Si_2O_8)$	1.4
Titanite	$CaTi(SiO_4)O$	1.3
Dickite	$Al_2(Si_2O_5)(OH)_4$	1.2
Montmorillonite15A	$(Na,Ca)_{0.33}(Al,Mg)_2(Si_4O_{10})(OH)_2 \cdot nH_2O$	0.8
Fluorocannilloite	$CaCa_2(Mg_4Al)(Si_5Al_3)O_{22}F_2$	0.7
Other*	N/A	3.1

*Table 3: *Identified mineral species that are less than 0.5%.*

Impact Materials Jersey City Facility Crushed Stone Report

Supplemental Laboratory Testing on Material Stockpiled at Impact Materials Jersey City Facility

Submitted by:
Impact Materials
1000 Page Ave,
Lyndhurst, NJ

IMPACT MATERIALS 1000 Page Avenue| Lyndhurst| NJ | 07071 | 201.268.5686

November 22, 2023

Chris Connolly
Impact Environmental Closures
170 Keyland Ct,
Bohemia, NY 11716

RE: Impact Materials Jersey City
34 Caven Point Ave, Jersey City, NJ
Bluestone Fill at IMJC Intended for 13-16 Beach Channel, Queens, NY

Mr. Connolly:

This letter was prepared to report the environmental and geotechnical quality of the bluestone products manufactured at the Impact Materials Jersey City (IMJC) facility located at 34 Caven Point Ave, Jersey City, NJ. The product is proposed as backfill at 13-16 Beach Channel, Queens, NY.

IRRC uses a thorough process to ensure the quality of the products it manufactures. This includes vetting sources used to manufacture our products and performing requisite certified third-party analytical testing on representative samples.

This specific product was made by crushing and screening virgin bedrock sourced from construction projects in the New York City area to a ¾" clean aggregate and inspected for quality control. Geotechnical analysis was conducted periodically. The product is continually inspected for visual and olfactory signs of contamination as well as PID screenings. The product is free of solid waste materials. Post processing, it was stored in surge piles for additional quality control analysis. Grab samples were secured from random locations within the stockpile. Samples were secured for volatile organic analysis using Encore © sampling kits. The balance of the discreet sample was secured into glass jars for semivolatile, metal, PCB, pesticide, herbicide and total extractable petroleum hydrocarbon analysis. Once analytical results were received and verified to New York Codes, Rules and Regulations ("NYCRR") Part 375 Restricted Residential Use Soil Cleanup Objectives, the product was combined into a larger finished stockpile.

The results of the finished stockpile sampling are presented below in Table 1. All results are below NYCRR Part 375 Restricted Residential Use Soil Cleanup Objectives. For a more in-depth examination of the sampling results, please see the attached summary table and Laboratory Report complete with a signed Chain of Custody for the most recent sampling. Proposed product will be delivered by trucks in compliance with applicable laws and regulations and will enter the site at designated locations.

Sincerely,

IMPACT ENVIRONMENTAL

Jeff Bogoian
IRRC QA/QC Engineer

Bluestone Analysis
Location: 34 Caven Point Ave, Jersey City, NJ

CAS Number	Parameter Name	Parameter ID	NYCRR 375 Unrestricted Use	NYCRR 375 Restricted-Residential	NYCRR 375 Protection of Groundwater	IMJC 1A (GRAB)	RL	Q	MDL	IMJC 1B (GRAB)	RL	Q	MDL	IMJC 1C (GRAB)	RL	Q	MDL	IMJC 2A (GRAB)	RL	Q	MDL	IMJC 2B (GRAB)	RL	Q	MDL	IMJC 2C (GRAB)	RL	Q	MDL
	Sample ID	Depth																											
	Date																												
	Unit		ug/kg	ug/kg	ug/kg	ug/kg	ug/kg		ug/kg	ug/kg	ug/kg		ug/kg	ug/kg	ug/kg		ug/kg	ug/kg	ug/kg		ug/kg	ug/kg	ug/kg		ug/kg	ug/kg	ug/kg		ug/kg
630-20-6	1,1,1,2-Tetrachloroethane	VOC	NA	NA	NA	< 5.1	5.1	U	1	< 4.7	4.7	U	0.93	< 4.8	4.8	U	0.95	< 4.6	4.6	U	0.91	< 4.7	4.7	U	0.93	< 5.0	5	U	1
71-55-6	1,1,1-Trichloroethane	VOC	680	100,000a	680	< 5.1	5.1	U	0.51	< 4.7	4.7	U	0.47	< 4.8	4.8	U	0.48	< 4.6	4.6	U	0.46	< 4.7	4.7	U	0.47	< 5.0	5	U	0.5
79-34-5	1,1,2,2-Tetrachloroethane	VOC	NA	NA	600	< 5.1	5.1	U	1	< 4.7	4.7	U	0.93	< 4.8	4.8	U	0.95	< 4.6	4.6	U	0.91	< 4.7	4.7	U	0.93	< 5.0	5	U	1
79-00-5	1,1,2-Trichloroethane	VOC	NA	NA	NA	< 5.1	5.1	U	1	< 4.7	4.7	U	0.93	< 4.8	4.8	U	0.95	< 4.6	4.6	U	0.91	< 4.7	4.7	U	0.93	< 5.0	5	U	1
76-13-1	1,1,2 Trichloro-1,2,2 Trifluoroethane	VOC	NA	NA	NA	< 5.1	5.1	U	0.51	< 4.7	4.7	U	0.47	< 4.8	4.8	U	0.48	< 4.6	4.6	U	0.46	< 4.7	4.7	U	0.47	< 5.0	5	U	0.5
75-34-3	1,1-Dichloroethane	VOC	270	26000	270	< 5.1	5.1	U	1	< 4.7	4.7	U	0.93	< 4.8	4.8	U	0.95	< 4.6	4.6	U	0.91	< 4.7	4.7	U	0.93	< 5.0	5	U	1
75-35-4	1,1-Dichloroethene	VOC	330	100,000a	330	< 5.1	5.1	U	0.51	< 4.7	4.7	U	0.47	< 4.8	4.8	U	0.48	< 4.6	4.6	U	0.46	< 4.7	4.7	U	0.47	< 5.0	5	U	0.5
120-82-1	1,2,4-Trichlorobenzene	VOC	NA	NA	3400	< 5.1	5.1	U	1	< 4.7	4.7	U	0.93	< 4.8	4.8	U	0.95	< 4.6	4.6	U	0.91	< 4.7	4.7	U	0.93	< 5.0	5	U	1
95-63-6	1,2,4-Trimethylbenzene	VOC	3600	52000	3600	< 5.1	5.1	U	0.51	< 4.7	4.7	U	0.47	< 4.8	4.8	U	0.48	< 4.6	4.6	U	0.46	< 4.7	4.7	U	0.47	< 5.0	5	U	0.5
96-12-8	1,2-Dibromo-3-Chloropropane	VOC	NA	NA	NA	< 5.0	5	U	1	< 4.7	4.7	U	0.93	< 4.8	4.8	U	0.95	< 4.6	4.6	U	0.91	< 4.7	4.7	U	0.93	< 5.0	5	U	1
106-93-4	1,2-Dibromoethane	VOC	NA	NA	NA	< 4.5	4.5	U	0.51	< 4.2	4.2	U	0.47	< 4.3	4.3	U	0.48	< 4.1	4.1	U	0.46	< 4.2	4.2	U	0.47	< 4.5	4.5	U	0.5
95-50-1	1,2-Dichlorobenzene	VOC	1100	100,000a	1100	< 5.1	5.1	U	0.51	< 4.7	4.7	U	0.47	< 4.8	4.8	U	0.48	< 4.6	4.6	U	0.46	< 4.7	4.7	U	0.47	< 5.0	5	U	0.5
107-06-2	1,2-Dichloroethane	VOC	20c	3100	20f	< 5.0	5	U	0.51	< 4.7	4.7	U	0.47	< 4.8	4.8	U	0.48	< 4.6	4.6	U	0.46	< 4.7	4.7	U	0.47	< 5.0	5	U	0.5
78-87-5	1,2-Dichloropropane	VOC	NA	NA	NA	< 5.0	5	U	1	< 4.7	4.7	U	0.93	< 4.8	4.8	U	0.95	< 4.6	4.6	U	0.91	< 4.7	4.7	U	0.93	< 5.0	5	U	1
108-67-8	1,3,5-Trimethylbenzene	VOC	8400	52000	8400	< 5.1	5.1	U	0.51	< 4.7	4.7	U	0.47	< 4.8	4.8	U	0.48	< 4.6	4.6	U	0.46	< 4.7	4.7	U	0.47	< 5.0	5	U	0.5
541-73-1	1,3-Dichlorobenzene	VOC	2400	49000	2400	< 5.1	5.1	U	0.51	< 4.7	4.7	U	0.47	< 4.8	4.8	U	0.48	< 4.6	4.6	U	0.46	< 4.7	4.7	U	0.47	< 5.0	5	U	0.5
106-46-7	1,4-Dichlorobenzene	VOC	1800	13000	1800	< 5.1	5.1	U	0.51	< 4.7	4.7	U	0.47	< 4.8	4.8	U	0.48	< 4.6	4.6	U	0.46	< 4.7	4.7	U	0.47	< 5.0	5	U	0.5
123-91-1	1,4-Dioxane	VOC	100b	13000	100e	< 76	76	U	40	< 70	70	U	37	< 71	71	U	38	< 68	68	U	36	< 70	70	U	37	< 75	75	U	40
78-93-3	2-Butanone	VOC	120	100,000a	120	< 30	30	U	5.1	< 28	28	U	4.7	< 29	29	U	4.8	< 27	27	U	4.6	< 28	28	U	4.7	< 30	30	U	5
108-10-1	4-Methyl-2-Pentanone	VOC	NA	NA	1000	< 25	25	U	5.1	< 23	23	U	4.7	< 24	24	U	4.8	< 23	23	U	4.6	< 23	23	U	4.7	< 25	25	U	5
67-64-1	Acetone	VOC	50	100,000b	50	< 51	51	U	5.1	< 47	47	U	4.7	< 48	48	U	4.8	< 46	46	U	4.6	< 47	47	U	4.7	< 50	50	U	5
107-02-8	Acrolein	VOC	NA	NA	NA	< 25	25	U	2.5	< 23	23	U	2.3	< 24	24	U	2.4	< 23	23	U	2.3	< 23	23	U	2.3	< 25	25	U	2.5
107-13-1	Acrylonitrile	VOC	NA	NA	NA	< 10	10	U	0.51	< 9.3	9.3	U	0.47	< 9.5	9.5	U	0.48	< 9.1	9.1	U	0.46	< 9.3	9.3	U	0.47	< 10	10	U	0.5
71-43-2	Benzene	VOC	60	4800	60	< 5.0	5	U	0.51	< 4.7	4.7	U	0.47	< 4.8	4.8	U	0.48	< 4.6	4.6	U	0.46	< 4.7	4.7	U	0.47	< 5.0	5	U	0.5
74-97-5	Bromochloromethane	VOC	NA	NA	NA	< 5.1	5.1	U	0.51	< 4.7	4.7	U	0.47	< 4.8	4.8	U	0.48	< 4.6	4.6	U	0.46	< 4.7	4.7	U	0.47	< 5.0	5	U	0.5
75-27-4	Bromodichloromethane	VOC	NA	NA	NA	< 5.0	5	U	1	< 4.7	4.7	U	0.93	< 4.8	4.8	U	0.95	< 4.6	4.6	U	0.91	< 4.7	4.7	U	0.93	< 5.0	5	U	1
75-25-2	Bromoform	VOC	NA	NA	NA	< 5.1	5.1	U	1	< 4.7	4.7	U	0.93	< 4.8	4.8	U	0.95	< 4.6	4.6	U	0.91	< 4.7	4.7	U	0.93	< 5.0	5	U	1
74-83-9	Bromomethane	VOC	NA	NA	NA	< 5.1	5.1	U	2	< 4.7	4.7	U	1.9	< 4.8	4.8	U	1.9	< 4.6	4.6	U	1.8	< 4.7	4.7	U	1.9	< 5.0	5	U	2
75-15-0	Carbon Disulfide	VOC	NA	NA	2700	< 5.1	5.1	U	1	< 4.7	4.7	U	0.93	< 4.8	4.8	U	0.95	< 4.6	4.6	U	0.91	< 4.7	4.7	U	0.93	< 5.0	5	U	1
56-23-5	Carbon Tetrachloride	VOC	760	2400	760	< 5.0	5	U	1	< 4.7	4.7	U	0.93	< 4.8	4.8	U	0.95	< 4.6	4.6	U	0.91	< 4.7	4.7	U	0.93	< 5.0	5	U	1
108-90-7	Chlorobenzene	VOC	1100	100,000a	1100	< 5.1	5.1	U	0.51	< 4.7	4.7	U	0.47	< 4.8	4.8	U	0.48	< 4.6	4.6	U	0.46	< 4.7	4.7	U	0.47	< 5.0	5	U	0.5
124-48-1	Chlorodibromomethane	VOC	NA	NA	NA	< 5.0	5	U	1	< 4.7	4.7	U	0.93	< 4.8	4.8	U	0.95	< 4.6	4.6	U	0.91	< 4.7	4.7	U	0.93	< 5.0	5	U	1
75-00-3	Chloroethane	VOC	NA	NA	1900	< 5.1	5.1	U	0.51	< 4.7	4.7	U	0.47	< 4.8	4.8	U	0.48	< 4.6	4.6	U	0.46	< 4.7	4.7	U	0.47	< 5.0	5	U	0.5
67-66-3	Chloroform	VOC	370	49000	370	< 5.1	5.1	U	0.51	< 4.7	4.7	U	0.47	< 4.8	4.8	U	0.48	< 4.6	4.6	U	0.46	< 4.7	4.7	U	0.47	< 5.0	5	U	0.5
74-87-3	Chloromethane	VOC	NA	NA	NA	< 5.1	5.1	U	1	< 4.7	4.7	U	0.93	< 4.8	4.8	U	0.95	< 4.6	4.6	U	0.91	< 4.7	4.7	U	0.93	< 5.0	5	U	1
156-59-2	cis-1,2-Dichloroethene	VOC	250	100,000a	250	< 5.1	5.1	U	0.51	< 4.7	4.7	U	0.47	< 4.8	4.8	U	0.48	< 4.6	4.6	U	0.46	< 4.7	4.7	U	0.47	< 5.0	5	U	0.5
75-71-8	Dichlorodifluoromethane	VOC	NA	NA	NA	< 5.1	5.1	U	0.51	< 4.7	4.7	U	0.47	< 4.8	4.8	U	0.48	< 4.6	4.6	U	0.46	< 4.7	4.7	U	0.47	< 5.0	5	U	0.5
100-41-4	Ethylbenzene	VOC	1000	41000	1000	< 5.1	5.1	U	0.51	< 4.7	4.7	U	0.47	< 4.8	4.8	U	0.48	< 4.6	4.6	U	0.46	< 4.7	4.7	U	0.47	< 5.0	5	U	0.5
98-82-8	Isopropylbenzene	VOC	NA	NA	2300	< 5.1	5.1	U	0.51	< 4.7	4.7	U	0.47	< 4.8	4.8	U	0.48	< 4.6	4.6	U	0.46	< 4.7	4.7	U	0.47	< 5.0	5	U	0.5
79-20-9	Methyl Acetate	VOC	NA	NA	NA	< 10	10	U	10	< 9.3	9.3	U	9.3	< 9.5	9.5	U	9.5	< 9.1	9.1	U	9.1	< 9.3	9.3	U	9.3	< 10	10	U	10
75-09-2	Methylene Chloride	VOC	50	100,000a	50	< 5.1	5.1	U	5.1	< 4.7	4.7	U	4.7	< 4.8	4.8	U	4.8	< 4.6	4.6	U	4.6	< 4.7	4.7	U	4.7	< 5.0	5	U	5
1634-04-4	Methyl Tert-Butyl Ether	VOC	930	100,000a	930	< 10	10	U	1	< 9.3	9.3	U	0.93	< 9.5	9.5	U	0.95	< 9.1	9.1	U	0.91	< 9.3	9.3	U	0.93	< 10	10	U	1
104-51-8	n-Butylbenzene	VOC	12000	100,000a	12000	< 5.1	5.1	U	0.51	< 4.7	4.7	U	0.47	< 4.8	4.8	U	0.48	< 4.6	4.6	U	0.46	< 4.7	4.7	U	0.47	< 5.0	5	U	0.5
103-65-1	n-Propylbenzene	VOC	3900	100,000a	3900	< 5.1	5.1	U	1	< 4.7	4.7	U	0.93	< 4.8	4.8	U	0.95	< 4.6	4.6	U	0.91	< 4.7	4.7	U	0.93	< 5.0	5	U	1
99-87-6	p-Isoproplytoluene	VOC	NA	NA	10000	< 5.1	5.1	U	0.51	< 4.7	4.7	U	0.47	< 4.8	4.8	U	0.48	< 4.6	4.6	U	0.46	< 4.7	4.7	U	0.47	< 5.0	5	U	0.5
135-98-8	sec-Butylbenzene	VOC	11000	100,000a	11000	< 5.1	5.1	U	0.51	< 4.7	4.7	U	0.47	< 4.8	4.8	U	0.48	< 4.6	4.6	U	0.46	< 4.7	4.7	U	0.47	< 5.0	5	U	0.5
100-42-5	Styrene	VOC	NA	NA	NA	< 5.1	5.1	U	0.51	< 4.7	4.7	U	0.47	< 4.8	4.8	U	0.48	< 4.6	4.6	U	0.46	< 4.7	4.7	U	0.47	< 5.0	5	U	0.5
98-06-6	tert-Butylbenzene	VOC	5900	100,000a	5900	< 5.1	5.1	U	0.51	< 4.7	4.7	U	0.47	< 4.8	4.8	U	0.48	< 4.6	4.6	U	0.46	< 4.7	4.7	U	0.47	< 5.0	5	U	0.5
75-65-0	Tertiary Butyl Alcohol	VOC	NA	NA	NA	< 100	100	U	20	< 93	93	U	19	< 95	95	U	19	< 91	91	U	18	< 93	93	U	19	< 100	100	U	20
127-18-4	Tetrachloroethene	VOC	1300	19000	1300	< 5.0	5	U	1	< 4.7	4.7	U	0.93	< 4.8	4.8	U	0.95	< 4.6	4.6	U	0.91	< 4.7	4.7	U	0.93	< 5.0	5	U	1
108-88-3	Toluene	VOC	700	100,000a	700	< 5.1	5.1	U	0.51	< 4.7	4.7	U	0.47	< 4.8	4.8	U	0.48	< 4.6	4.6	U	0.46	< 4.7	4.7	U	0.47	< 5.0	5	U	0.5
1330-20-7	Total Xylenes	VOC	260	100,000a	1600	< 5.1	5.1	U	5.1	< 4.7	4.7	U	4.7	< 4.8	4.8	U	4.8	< 4.6	4.6	U	4.6	< 4.7	4.7	U	4.7	< 5.0	5	U	5
156-60-5	trans-1,2-Dichloroethene	VOC	190	100,000a	190	< 5.1	5.1	U	0.51	< 4.7	4.7	U	0.47	< 4.8	4.8	U	0.48	< 4.6	4.6	U	0.46	< 4.7	4.7	U	0.47	< 5.0	5	U	0.5
79-01-6	Trichloroethene	VOC	470	21000	470	< 5.1	5.1	U	0.51	< 4.7	4.7	U	0.47	< 4.8	4.8	U	0.48	< 4.6	4.6	U	0.46	< 4.7	4.7	U	0.47	< 5.0	5	U	0.5
75-69-4	Trichlorofluoromethane	VOC	NA	NA	NA	< 5.1	5.1	U	1	< 4.7	4.7	U	0.93	< 4.8	4.8	U	0.95	< 4.6	4.6	U	0.91	< 4.7	4.7	U	0.93	< 5.0	5	U	1
108-05-4	Vinyl Acetate	VOC	NA	NA	NA	< 51	51	U	51	< 47	47	U	47	< 48	48	U	48	< 46	46	U	46	< 47	47	U	47	< 50	50	U	50
75-01-4	Vinyl Chloride	VOC	20	900	20	< 5.0	5	U	0.51	< 4.7	4.7	U	0.47	< 4.8	4.8	U	0.48	< 4.6	4.6	U	0.46	< 4.7	4.7	U	0.47	< 5.0	5	U	0.5

Bluestone Analysis
Location: 34 Caven Point Ave, Jersey City, NJ

CAS Number	Parameter Name	Parameter ID	NYCRR 375 Unrestricted Use	NYCRR 375 Restricted-Residential	NYCRR 375 Protection of Groundwater	IMJC 3A (GRAB)	RL	Q	MDL	IMJC 3B (GRAB)	RL	Q	MDL	IMJC 3C (GRAB)	RL	Q	MDL	IMJC 4A (GRAB)	RL	Q	MDL	IMJC 4B (GRAB)	RL	Q	MDL	IMJC 5A (GRAB)	RL	Q	MDL	IMJC 5B (GRAB)	RL	Q	MDL
	Sample ID	Depth																															
	Date																																
	Unit		ug/kg	ug/kg	ug/kg	ug/kg	ug/kg		ug/kg	ug/kg	ug/kg		ug/kg	ug/kg	ug/kg		ug/kg	ug/kg	ug/kg		ug/kg	ug/kg	ug/kg		ug/kg	ug/kg	ug/kg		ug/kg	ug/kg	ug/kg		ug/kg
630-20-6	1,1,1,2-Tetrachloroethane	VOC	NA	NA	NA	< 4.9	4.9	U	0.97	< 5.1	5.1	U	1	< 5.3	5.3	U	1.1	< 1.9	1.9	U	0.37	< 2.2	2.2	U	0.43	< 2.1	2.1	U	0.41	< 2.2	2.2	U	0.43
71-55-6	1,1,1-Trichloroethane	VOC	680	100,000a	680	< 4.9	4.9	U	0.49	< 5.1	5.1	U	0.51	< 5.3	5.3	U	0.53	< 1.9	1.9	U	0.19	< 2.2	2.2	U	0.22	< 2.1	2.1	U	0.21	< 2.2	2.2	U	0.22
79-34-5	1,1,2,2-Tetrachloroethane	VOC	NA	NA	600	< 4.9	4.9	U	0.97	< 5.1	5.1	U	1	< 5.3	5.3	U	1.1	< 1.9	1.9	U	0.37	< 2.2	2.2	U	0.43	< 2.1	2.1	U	0.41	< 2.2	2.2	U	0.43
79-00-5	1,1,2-Trichloroethane	VOC	NA	NA	NA	< 4.9	4.9	U	0.97	< 5.1	5.1	U	1	< 5.3	5.3	U	1.1	< 1.9	1.9	U	0.37	< 2.2	2.2	U	0.43	< 2.1	2.1	U	0.41	< 2.2	2.2	U	0.43
76-13-1	1,1,2 Trichloro-1,2,2 Trifluoroethane	VOC	NA	NA	NA	< 4.9	4.9	U	0.49	< 5.1	5.1	U	0.51	< 5.3	5.3	U	0.53	< 1.9	1.9	U	0.19	< 2.2	2.2	U	0.22	< 2.1	2.1	U	0.21	< 2.2	2.2	U	0.22
75-34-3	1,1-Dichloroethane	VOC	270	26000	270	< 4.9	4.9	U	0.97	< 5.1	5.1	U	1	< 5.3	5.3	U	1.1	< 1.9	1.9	U	0.37	< 2.2	2.2	U	0.43	< 2.1	2.1	U	0.41	< 2.2	2.2	U	0.43
75-35-4	1,1-Dichloroethene	VOC	330	100,000a	330	< 4.9	4.9	U	0.49	< 5.1	5.1	U	0.51	< 5.3	5.3	U	0.53	< 1.9	1.9	U	0.19	< 2.2	2.2	U	0.22	< 2.1	2.1	U	0.21	< 2.2	2.2	U	0.22
120-82-1	1,2,4-Trichlorobenzene	VOC	NA	NA	3400	< 4.9	4.9	U	0.97	< 5.1	5.1	U	1	< 5.3	5.3	U	1.1	< 1.9	1.9	U	0.37	< 2.2	2.2	U	0.43	< 2.1	2.1	U	0.41	< 2.2	2.2	U	0.43
95-63-6	1,2,4-Trimethylbenzene	VOC	3600	52000	3600	< 4.9	4.9	U	0.49	< 5.1	5.1	U	0.51	< 5.3	5.3	U	0.53	< 1.9	1.9	U	0.19	< 2.2	2.2	U	0.22	< 2.1	2.1	U	0.21	< 2.2	2.2	U	0.22
96-12-8	1,2-Dibromo-3-Chloropropane	VOC	NA	NA	NA	< 4.9	4.9	U	0.97	< 5.0	5	U	1	< 5.0	5	U	1.1	< 1.9	1.9	U	0.37	< 2.2	2.2	U	0.43	< 2.1	2.1	U	0.41	< 2.2	2.2	U	0.43
106-93-4	1,2-Dibromoethane	VOC	NA	NA	NA	< 4.4	4.4	U	0.49	< 4.5	4.5	U	0.51	< 4.8	4.8	U	0.53	< 1.7	1.7	U	0.19	< 1.9	1.9	U	0.22	< 1.8	1.8	U	0.21	< 1.9	1.9	U	0.22
95-50-1	1,2-Dichlorobenzene	VOC	1100	100,000a	1100	< 4.9	4.9	U	0.49	< 5.1	5.1	U	0.51	< 5.3	5.3	U	0.53	< 1.9	1.9	U	0.19	< 2.2	2.2	U	0.22	< 2.1	2.1	U	0.21	< 2.2	2.2	U	0.22
107-06-2	1,2-Dichloroethane	VOC	20c	3100	20f	< 4.9	4.9	U	0.49	< 5.0	5	U	0.51	< 5.0	5	U	0.53	< 1.9	1.9	U	0.19	< 2.2	2.2	U	0.22	< 2.1	2.1	U	0.21	< 2.2	2.2	U	0.22
78-87-5	1,2-Dichloropropane	VOC	NA	NA	NA	< 4.9	4.9	U	0.97	< 5.0	5	U	1	< 5.0	5	U	1.1	< 1.9	1.9	U	0.37	< 2.2	2.2	U	0.43	< 2.1	2.1	U	0.41	< 2.2	2.2	U	0.43
108-67-8	1,3,5-Trimethylbenzene	VOC	8400	52000	8400	< 4.9	4.9	U	0.49	< 5.1	5.1	U	0.51	< 5.3	5.3	U	0.53	< 1.9	1.9	U	0.19	< 2.2	2.2	U	0.22	< 2.1	2.1	U	0.21	< 2.2	2.2	U	0.22
541-73-1	1,3-Dichlorobenzene	VOC	2400	49000	2400	< 4.9	4.9	U	0.49	< 5.1	5.1	U	0.51	< 5.3	5.3	U	0.53	< 1.9	1.9	U	0.19	< 2.2	2.2	U	0.22	< 2.1	2.1	U	0.21	< 2.2	2.2	U	0.22
106-46-7	1,4-Dichlorobenzene	VOC	1800	13000	1800	< 4.9	4.9	U	0.49	< 5.1	5.1	U	0.51	< 5.3	5.3	U	0.53	< 1.9	1.9	U	0.19	< 2.2	2.2	U	0.22	< 2.1	2.1	U	0.21	< 2.2	2.2	U	0.22
123-91-1	1,4-Dioxane	VOC	100b	13000	100e	< 73	73	U	39	< 76	76	U	40	< 80	80	U	42	< 28	28	U	15	< 32	32	U	17	< 31	31	U	16	< 32	32	U	17
78-93-3	2-Butanone	VOC	120	100,000a	120	< 29	29	U	4.9	< 30	30	U	5.1	< 32	32	U	5.3	< 11	11	U	1.9	< 13	13	U	2.2	< 12	12	U	2.1	< 13	13	U	2.2
108-10-1	4-Methyl-2-Pentanone	VOC	NA	NA	1000	< 24	24	U	4.9	< 25	25	U	5.1	< 27	27	U	5.3	< 9.3	9.3	U	1.9	< 11	11	U	2.2	< 10	10	U	2.1	< 11	11	U	2.2
67-64-1	Acetone	VOC	50	100,000b	50	< 49	49	U	4.9	< 51	51	U	5.1	< 53	53	U	5.3	< 19	19	U	1.9	< 22	22	U	2.2	< 21	21	U	2.1	< 22	22	U	2.2
107-02-8	Acrolein	VOC	NA	NA	NA	< 24	24	U	2.4	< 25	25	U	2.5	< 27	27	U	2.7	< 9.3	9.3	U	0.93	< 11	11	U	1.1	< 10	10	U	1	< 11	11	U	1.1
107-13-1	Acrylonitrile	VOC	NA	NA	NA	< 9.7	9.7	U	0.49	< 10	10	U	0.51	< 11	11	U	0.53	< 3.7	3.7	U	0.19	< 4.3	4.3	U	0.22	< 4.1	4.1	U	0.21	< 4.3	4.3	U	0.22
71-43-2	Benzene	VOC	60	4800	60	< 4.9	4.9	U	0.49	< 5.0	5	U	0.51	< 5.0	5	U	0.53	< 1.9	1.9	U	0.19	< 2.2	2.2	U	0.22	< 2.1	2.1	U	0.21	< 2.2	2.2	U	0.22
74-97-5	Bromochloromethane	VOC	NA	NA	NA	< 4.9	4.9	U	0.49	< 5.1	5.1	U	0.51	< 5.3	5.3	U	0.53	< 1.9	1.9	U	0.19	< 2.2	2.2	U	0.22	< 2.1	2.1	U	0.21	< 2.2	2.2	U	0.22
75-27-4	Bromodichloromethane	VOC	NA	NA	NA	< 4.9	4.9	U	0.97	< 5.0	5	U	1	< 5.0	5	U	1.1	< 1.9	1.9	U	0.37	< 2.2	2.2	U	0.43	< 2.1	2.1	U	0.41	< 2.2	2.2	U	0.43
75-25-2	Bromoform	VOC	NA	NA	NA	< 4.9	4.9	U	0.97	< 5.1	5.1	U	1	< 5.3	5.3	U	1.1	< 1.9	1.9	U	0.37	< 2.2	2.2	U	0.43	< 2.1	2.1	U	0.41	< 2.2	2.2	U	0.43
74-83-9	Bromomethane	VOC	NA	NA	NA	< 4.9	4.9	U	1.9	< 5.1	5.1	U	2	< 5.3	5.3	U	2.1	< 1.9	1.9	U	0.74	< 2.2	2.2	U	0.86	< 2.1	2.1	U	0.82	< 2.2	2.2	U	0.86
75-15-0	Carbon Disulfide	VOC	NA	NA	2700	< 4.9	4.9	U	0.97	< 5.1	5.1	U	1	< 5.3	5.3	U	1.1	< 1.9	1.9	U	0.37	< 2.2	2.2	U	0.43	< 2.1	2.1	U	0.41	< 2.2	2.2	U	0.43
56-23-5	Carbon Tetrachloride	VOC	760	2400	760	< 4.9	4.9	U	0.97	< 5.0	5	U	1	< 5.0	5	U	1.1	< 1.9	1.9	U	0.37	< 2.2	2.2	U	0.43	< 2.1	2.1	U	0.41	< 2.2	2.2	U	0.43
108-90-7	Chlorobenzene	VOC	1100	100,000a	1100	< 4.9	4.9	U	0.49	< 5.1	5.1	U	0.51	< 5.3	5.3	U	0.53	< 1.9	1.9	U	0.19	< 2.2	2.2	U	0.22	< 2.1	2.1	U	0.21	< 2.2	2.2	U	0.22
124-48-1	Chlorodibromomethane	VOC	NA	NA	NA	< 4.9	4.9	U	0.97	< 5.0	5	U	1	< 5.0	5	U	1.1	< 1.9	1.9	U	0.37	< 2.2	2.2	U	0.43	< 2.1	2.1	U	0.41	< 2.2	2.2	U	0.43
75-00-3	Chloroethane	VOC	NA	NA	1900	< 4.9	4.9	U	0.49	< 5.1	5.1	U	0.51	< 5.3	5.3	U	0.53	< 1.9	1.9	U	0.19	< 2.2	2.2	U	0.22	< 2.1	2.1	U	0.21	< 2.2	2.2	U	0.22
67-66-3	Chloroform	VOC	370	49000	370	< 4.9	4.9	U	0.49	< 5.1	5.1	U	0.51	< 5.3	5.3	U	0.53	< 1.9	1.9	U	0.19	< 2.2	2.2	U	0.22	< 2.1	2.1	U	0.21	< 2.2	2.2	U	0.22
74-87-3	Chloromethane	VOC	NA	NA	NA	< 4.9	4.9	U	0.97	< 5.1	5.1	U	1	< 5.3	5.3	U	1.1	< 1.9	1.9	U	0.37	< 2.2	2.2	U	0.43	< 2.1	2.1	U	0.41	< 2.2	2.2	U	0.43
156-59-2	cis-1,2-Dichloroethene	VOC	250	100,000a	250	< 4.9	4.9	U	0.49	< 5.1	5.1	U	0.51	< 5.3	5.3	U	0.53	< 1.9	1.9	U	0.19	< 2.2	2.2	U	0.22	< 2.1	2.1	U	0.21	< 2.2	2.2	U	0.22
75-71-8	Dichlorodifluoromethane	VOC	NA	NA	NA	< 4.9	4.9	U	0.49	< 5.1	5.1	U	0.51	< 5.3	5.3	U	0.53	< 1.9	1.9	U	0.19	< 2.2	2.2	U	0.22	< 2.1	2.1	U	0.21	< 2.2	2.2	U	0.22
100-41-4	Ethylbenzene	VOC	1000	41000	1000	< 4.9	4.9	U	0.49	< 5.1	5.1	U	0.51	< 5.3	5.3	U	0.53	< 1.9	1.9	U	0.19	< 2.2	2.2	U	0.22	< 2.1	2.1	U	0.21	< 2.2	2.2	U	0.22
98-82-8	Isopropylbenzene	VOC	NA	NA	2300	< 4.9	4.9	U	0.49	< 5.1	5.1	U	0.51	< 5.3	5.3	U	0.53	< 1.9	1.9	U	0.19	< 2.2	2.2	U	0.22	< 2.1	2.1	U	0.21	< 2.2	2.2	U	0.22
79-20-9	Methyl Acetate	VOC	NA	NA	NA	< 9.7	9.7	U	9.7	< 10	10	U	10	< 11	11	U	11	< 3.7	3.7	U	3.7	< 4.3	4.3	U	4.3	< 4.1	4.1	U	4.1	< 4.3	4.3	U	4.3
75-09-2	Methylene Chloride	VOC	50	100,000a	50	< 4.9	4.9	U	4.9	< 5.1	5.1	U	5.1	< 5.3	5.3	U	5.3	< 1.9	1.9	U	1.9	< 2.2	2.2	U	2.2	< 2.1	2.1	U	2.1	< 2.2	2.2	U	2.2
1634-04-4	Methyl Tert-Butyl Ether	VOC	930	100,000a	930	< 9.7	9.7	U	0.97	< 10	10	U	1	< 11	11	U	1.1	< 3.7	3.7	U	0.37	< 4.3	4.3	U	0.43	< 4.1	4.1	U	0.41	< 4.3	4.3	U	0.43
104-51-8	n-Butylbenzene	VOC	12000	100,000a	12000	< 4.9	4.9	U	0.49	< 5.1	5.1	U	0.51	< 5.3	5.3	U	0.53	< 1.9	1.9	U	0.19	< 2.2	2.2	U	0.22	< 2.1	2.1	U	0.21	< 2.2	2.2	U	0.22
103-65-1	n-Propylbenzene	VOC	3900	100,000a	3900	< 4.9	4.9	U	0.97	< 5.1	5.1	U	1	< 5.3	5.3	U	1.1	< 1.9	1.9	U	0.37	< 2.2	2.2	U	0.43	< 2.1	2.1	U	0.41	< 2.2	2.2	U	0.43
99-87-6	p-Isoproplytoluene	VOC	NA	NA	10000	< 4.9	4.9	U	0.49	< 5.1	5.1	U	0.51	< 5.3	5.3	U	0.53	< 1.9	1.9	U	0.19	< 2.2	2.2	U	0.22	< 2.1	2.1	U	0.21	< 2.2	2.2	U	0.22
135-98-8	sec-Butylbenzene	VOC	11000	100,000a	11000	< 4.9	4.9	U	0.49	< 5.1	5.1	U	0.51	< 5.3	5.3	U	0.53	< 1.9	1.9	U	0.19	< 2.2	2.2	U	0.22	< 2.1	2.1	U	0.21	< 2.2	2.2	U	0.22
100-42-5	Styrene	VOC	NA	NA	NA	< 4.9	4.9	U	0.49	< 5.1	5.1	U	0.51	< 5.3	5.3	U	0.53	< 1.9	1.9	U	0.19	< 2.2	2.2	U	0.22	< 2.1	2.1	U	0.21	< 2.2	2.2	U	0.22
98-06-6	tert-Butylbenzene	VOC	5900	100,000a	5900	< 4.9	4.9	U	0.49	< 5.1	5.1	U	0.51	< 5.3	5.3	U	0.53	< 1.9	1.9	U	0.19	< 2.2	2.2	U	0.22	< 2.1	2.1	U	0.21	< 2.2	2.2	U	0.22
75-65-0	Tertiary Butyl Alcohol	VOC	NA	NA	NA	< 97	97	U	19	< 100	100	U	20	< 110	110	U	21	< 37	37	U	7.4	< 43	43	U	8.6	< 41	41	U	8.2	< 43	43	U	8.6
127-18-4	Tetrachloroethene	VOC	1300	19000	1300	< 4.9	4.9	U	0.97	< 5.0	5	U	1	< 5.0	5	U	1.1	< 1.9	1.9	U	0.37	< 2.2	2.2	U	0.43	< 2.1	2.1	U	0.41	< 2.2	2.2	U	0.43
108-88-3	Toluene	VOC	700	100,000a	700	< 4.9	4.9	U	0.49	< 5.1	5.1	U	0.51	< 5.3	5.3	U	0.53	< 1.9	1.9	U	0.19	< 2.2	2.2	U	0.22	< 2.1	2.1	U	0.21	< 2.2	2.2	U	0.22
1330-20-7	Total Xylenes	VOC	260	100,000a	1600	< 4.9	4.9	U	4.9	< 5.1	5.1	U	5.1	< 5.3	5.3	U	5.3	< 1.9	1.9	U	1.9	< 2.2	2.2	U	2.2	< 2.1	2.1	U	2.1	< 2.2	2.2	U	2.2
156-60-5	trans-1,2-Dichloroethene	VOC	190	100,000a	190	< 4.9	4.9	U	0.49	< 5.1	5.1	U	0.51	< 5.3	5.3	U	0.53	< 1.9	1.9	U	0.19	< 2.2	2.2	U	0.22	< 2.1	2.1	U	0.21	< 2.2	2.2	U	0.22
79-01-6	Trichloroethene	VOC	470	21000	470	< 4.9	4.9	U	0.49	< 5.1	5.1	U	0.51	< 5.3	5.3	U	0.53	< 1.9	1.9	U	0.19	< 2.2	2.2	U	0.22	< 2.1	2.1	U	0.21	< 2.2	2.2	U	0.22
75-69-4	Trichlorofluoromethane	VOC	NA	NA	NA	< 4.9	4.9	U	0.97	< 5.1	5.1	U	1	< 5.3	5.3	U	1.1	< 1.9	1.9	U	0.37	< 2.2	2.2	U	0.43	< 2.1	2.1	U	0.41	< 2.2	2.2	U	0.43
108-05-4	Vinyl Acetate	VOC	NA	NA	NA	< 49	49	U	49	< 51	51	U	51	< 53	53	U	53	< 19	19	U	19	< 22	22	U	22	< 21	21	U	21	< 22	22	U	22
75-01-4	Vinyl Chloride	VOC	20	900	20	< 4.9	4.9	U	0.49	< 5.0	5	U	0.51	< 5.0	5	U	0.53	< 1.9	1.9	U	0.19	< 2.2	2.2	U	0.22	< 2.1	2.1	U	0.21	< 2.2	2.2	U	0.22

Bluestone Analysis
Location: 34 Caven Point Ave, Jersey City, NJ

CAS Number	Parameter Name	Parameter ID	NYCRR 375 Unrestricted Use	NYCRR 375 Restricted-Residential	NYCRR 375 Protection of Groundwater	IMJC 6A (GRAB)	RL	Q	MDL	IMJC 6B (GRAB)	RL	Q	MDL	IMJC 7A (GRAB)	RL	Q	MDL	IMJC 7B (GRAB)	RL	Q	MDL
	Sample ID	Depth																			
	Date																				
	Unit		*ug/kg*	*ug/kg*	*ug/kg*	*ug/kg*	*ug/kg*		*ug/kg*	*ug/kg*	*ug/kg*		*ug/kg*	*ug/kg*	*ug/kg*		*ug/kg*	*ug/kg*	*ug/kg*		*ug/kg*
630-20-6	1,1,1,2-Tetrachloroethane	VOC	NA	NA	NA	< 2.9	2.9	U	0.57	< 2.7	2.7	U	0.54	< 2.3	2.3	U	0.46	< 3.3	3.3	U	0.65
71-55-6	1,1,1-Trichloroethane	VOC	680	100,000a	680	< 2.9	2.9	U	0.29	< 2.7	2.7	U	0.27	< 2.3	2.3	U	0.23	< 3.3	3.3	U	0.33
79-34-5	1,1,2,2-Tetrachloroethane	VOC	NA	NA	600	< 2.9	2.9	U	0.57	< 2.7	2.7	U	0.54	< 2.3	2.3	U	0.46	< 3.3	3.3	U	0.65
79-00-5	1,1,2-Trichloroethane	VOC	NA	NA	NA	< 2.9	2.9	U	0.57	< 2.7	2.7	U	0.54	< 2.3	2.3	U	0.46	< 3.3	3.3	U	0.65
76-13-1	1,1,2 Trichloro-1,2,2 Trifluoroethane	VOC	NA	NA	NA	< 2.9	2.9	U	0.29	< 2.7	2.7	U	0.27	< 2.3	2.3	U	0.23	< 3.3	3.3	U	0.33
75-34-3	1,1-Dichloroethane	VOC	270	26000	270	< 2.9	2.9	U	0.57	< 2.7	2.7	U	0.54	< 2.3	2.3	U	0.46	< 3.3	3.3	U	0.65
75-35-4	1,1-Dichloroethene	VOC	330	100,000a	330	< 2.9	2.9	U	0.29	< 2.7	2.7	U	0.27	< 2.3	2.3	U	0.23	< 3.3	3.3	U	0.33
120-82-1	1,2,4-Trichlorobenzene	VOC	NA	NA	3400	< 2.9	2.9	U	0.57	< 2.7	2.7	U	0.54	< 2.3	2.3	U	0.46	< 3.3	3.3	U	0.65
95-63-6	1,2,4-Trimethylbenzene	VOC	3600	52000	3600	< 2.9	2.9	U	0.29	< 2.7	2.7	U	0.27	< 2.3	2.3	U	0.23	< 3.3	3.3	U	0.33
96-12-8	1,2-Dibromo-3-Chloropropane	VOC	NA	NA	NA	< 2.9	2.9	U	0.57	< 2.7	2.7	U	0.54	< 2.3	2.3	U	0.46	< 3.3	3.3	U	0.65
106-93-4	1,2-Dibromoethane	VOC	NA	NA	NA	< 2.6	2.6	U	0.29	< 2.4	2.4	U	0.27	< 2.1	2.1	U	0.23	< 2.9	2.9	U	0.33
95-50-1	1,2-Dichlorobenzene	VOC	1100	100,000a	1100	< 2.9	2.9	U	0.29	< 2.7	2.7	U	0.27	< 2.3	2.3	U	0.23	< 3.3	3.3	U	0.33
107-06-2	1,2-Dichloroethane	VOC	20c	3100	20f	< 2.9	2.9	U	0.29	< 2.7	2.7	U	0.27	< 2.3	2.3	U	0.23	< 3.3	3.3	U	0.33
78-87-5	1,2-Dichloropropane	VOC	NA	NA	NA	< 2.9	2.9	U	0.57	< 2.7	2.7	U	0.54	< 2.3	2.3	U	0.46	< 3.3	3.3	U	0.65
108-67-8	1,3,5-Trimethylbenzene	VOC	8400	52000	8400	< 2.9	2.9	U	0.29	< 2.7	2.7	U	0.27	< 2.3	2.3	U	0.23	< 3.3	3.3	U	0.33
541-73-1	1,3-Dichlorobenzene	VOC	2400	49000	2400	< 2.9	2.9	U	0.29	< 2.7	2.7	U	0.27	< 2.3	2.3	U	0.23	< 3.3	3.3	U	0.33
106-46-7	1,4-Dichlorobenzene	VOC	1800	13000	1800	< 2.9	2.9	U	0.29	< 2.7	2.7	U	0.27	< 2.3	2.3	U	0.23	< 3.3	3.3	U	0.33
123-91-1	1,4-Dioxane	VOC	100b	13000	100e	< 43	43	U	23	< 41	41	U	22	< 35	35	U	18	< 49	49	U	26
78-93-3	2-Butanone	VOC	120	100,000a	120	< 17	17	U	2.9	< 16	16	U	2.7	< 14	14	U	2.3	< 20	20	U	3.3
108-10-1	4-Methyl-2-Pentanone	VOC	NA	NA	1000	< 14	14	U	2.9	< 14	14	U	2.7	< 12	12	U	2.3	< 16	16	U	3.3
67-64-1	Acetone	VOC	50	100,000b	50	< 29	29	U	2.9	< 27	27	U	2.7	< 23	23	U	2.3	< 33	33	U	3.3
107-02-8	Acrolein	VOC	NA	NA	NA	< 14	14	U	1.4	< 14	14	U	1.4	< 12	12	U	1.2	< 16	16	U	1.6
107-13-1	Acrylonitrile	VOC	NA	NA	NA	< 5.7	5.7	U	0.29	< 5.4	5.4	U	0.27	< 4.6	4.6	U	0.23	< 6.5	6.5	U	0.33
71-43-2	Benzene	VOC	60	4800	60	< 2.9	2.9	U	0.29	< 2.7	2.7	U	0.27	< 2.3	2.3	U	0.23	< 3.3	3.3	U	0.33
74-97-5	Bromochloromethane	VOC	NA	NA	NA	< 2.9	2.9	U	0.29	< 2.7	2.7	U	0.27	< 2.3	2.3	U	0.23	< 3.3	3.3	U	0.33
75-27-4	Bromodichloromethane	VOC	NA	NA	NA	< 2.9	2.9	U	0.57	< 2.7	2.7	U	0.54	< 2.3	2.3	U	0.46	< 3.3	3.3	U	0.65
75-25-2	Bromoform	VOC	NA	NA	NA	< 2.9	2.9	U	0.57	< 2.7	2.7	U	0.54	< 2.3	2.3	U	0.46	< 3.3	3.3	U	0.65
74-83-9	Bromomethane	VOC	NA	NA	NA	< 2.9	2.9	U	1.1	< 2.7	2.7	U	1.1	< 2.3	2.3	U	0.92	< 3.3	3.3	U	1.3
75-15-0	Carbon Disulfide	VOC	NA	NA	2700	< 2.9	2.9	U	0.57	< 2.7	2.7	U	0.54	< 2.3	2.3	U	0.46	< 3.3	3.3	U	0.65
56-23-5	Carbon Tetrachloride	VOC	760	2400	760	< 2.9	2.9	U	0.57	< 2.7	2.7	U	0.54	< 2.3	2.3	U	0.46	< 3.3	3.3	U	0.65
108-90-7	Chlorobenzene	VOC	1100	100,000a	1100	< 2.9	2.9	U	0.29	< 2.7	2.7	U	0.27	< 2.3	2.3	U	0.23	< 3.3	3.3	U	0.33
124-48-1	Chlorodibromomethane	VOC	NA	NA	NA	< 2.9	2.9	U	0.57	< 2.7	2.7	U	0.54	< 2.3	2.3	U	0.46	< 3.3	3.3	U	0.65
75-00-3	Chloroethane	VOC	NA	NA	1900	< 2.9	2.9	U	0.29	< 2.7	2.7	U	0.27	< 2.3	2.3	U	0.23	< 3.3	3.3	U	0.33
67-66-3	Chloroform	VOC	370	49000	370	< 2.9	2.9	U	0.29	< 2.7	2.7	U	0.27	< 2.3	2.3	U	0.23	< 3.3	3.3	U	0.33
74-87-3	Chloromethane	VOC	NA	NA	NA	< 2.9	2.9	U	0.57	< 2.7	2.7	U	0.54	< 2.3	2.3	U	0.46	< 3.3	3.3	U	0.65
156-59-2	cis-1,2-Dichloroethene	VOC	250	100,000a	250	< 2.9	2.9	U	0.29	< 2.7	2.7	U	0.27	< 2.3	2.3	U	0.23	< 3.3	3.3	U	0.33
75-71-8	Dichlorodifluoromethane	VOC	NA	NA	NA	< 2.9	2.9	U	0.29	< 2.7	2.7	U	0.27	< 2.3	2.3	U	0.23	< 3.3	3.3	U	0.33
100-41-4	Ethylbenzene	VOC	1000	41000	1000	< 2.9	2.9	U	0.29	< 2.7	2.7	U	0.27	< 2.3	2.3	U	0.23	< 3.3	3.3	U	0.33
98-82-8	Isopropylbenzene	VOC	NA	NA	2300	< 2.9	2.9	U	0.29	< 2.7	2.7	U	0.27	< 2.3	2.3	U	0.23	< 3.3	3.3	U	0.33
79-20-9	Methyl Acetate	VOC	NA	NA	NA	< 5.7	5.7	U	5.7	< 5.4	5.4	U	5.4	< 4.6	4.6	U	4.6	< 6.5	6.5	U	6.5
75-09-2	Methylene Chloride	VOC	50	100,000a	50	< 2.9	2.9	U	2.9	< 2.7	2.7	U	2.7	< 2.3	2.3	U	2.3	< 3.3	3.3	U	3.3
1634-04-4	Methyl Tert-Butyl Ether	VOC	930	100,000a	930	< 5.7	5.7	U	0.57	< 5.4	5.4	U	0.54	< 4.6	4.6	U	0.46	< 6.5	6.5	U	0.65
104-51-8	n-Butylbenzene	VOC	12000	100,000a	12000	< 2.9	2.9	U	0.29	< 2.7	2.7	U	0.27	< 2.3	2.3	U	0.23	< 3.3	3.3	U	0.33
103-65-1	n-Propylbenzene	VOC	3900	100,000a	3900	< 2.9	2.9	U	0.57	< 2.7	2.7	U	0.54	< 2.3	2.3	U	0.46	< 3.3	3.3	U	0.65
99-87-6	p-Isoproplytoluene	VOC	NA	NA	10000	< 2.9	2.9	U	0.29	< 2.7	2.7	U	0.27	< 2.3	2.3	U	0.23	< 3.3	3.3	U	0.33
135-98-8	sec-Butylbenzene	VOC	11000	100,000a	11000	< 2.9	2.9	U	0.29	< 2.7	2.7	U	0.27	< 2.3	2.3	U	0.23	< 3.3	3.3	U	0.33
100-42-5	Styrene	VOC	NA	NA	NA	< 2.9	2.9	U	0.29	< 2.7	2.7	U	0.27	< 2.3	2.3	U	0.23	< 3.3	3.3	U	0.33
98-06-6	tert-Butylbenzene	VOC	5900	100,000a	5900	< 2.9	2.9	U	0.29	< 2.7	2.7	U	0.27	< 2.3	2.3	U	0.23	< 3.3	3.3	U	0.33
75-65-0	Tertiary Butyl Alcohol	VOC	NA	NA	NA	< 57	57	U	11	< 54	54	U	11	< 46	46	U	9.2	< 65	65	U	13
127-18-4	Tetrachloroethene	VOC	1300	19000	1300	< 2.9	2.9	U	0.57	< 2.7	2.7	U	0.54	< 2.3	2.3	U	0.46	< 3.3	3.3	U	0.65
108-88-3	Toluene	VOC	700	100,000a	700	< 2.9	2.9	U	0.29	< 2.7	2.7	U	0.27	< 2.3	2.3	U	0.23	< 3.3	3.3	U	0.33
1330-20-7	Total Xylenes	VOC	260	100,000a	1600	< 2.9	2.9	U	2.9	< 2.7	2.7	U	2.7	< 2.3	2.3	U	2.3	< 3.3	3.3	U	3.3
156-60-5	trans-1,2-Dichloroethene	VOC	190	100,000a	190	< 2.9	2.9	U	0.29	< 2.7	2.7	U	0.27	< 2.3	2.3	U	0.23	< 3.3	3.3	U	0.33
79-01-6	Trichloroethene	VOC	470	21000	470	< 2.9	2.9	U	0.29	< 2.7	2.7	U	0.27	< 2.3	2.3	U	0.23	< 3.3	3.3	U	0.33
75-69-4	Trichlorofluoromethane	VOC	NA	NA	NA	< 2.9	2.9	U	0.57	< 2.7	2.7	U	0.54	< 2.3	2.3	U	0.46	< 3.3	3.3	U	0.65
108-05-4	Vinyl Acetate	VOC	NA	NA	NA	< 29	29	U	29	< 27	27	U	27	< 23	23	U	23	< 33	33	U	33
75-01-4	Vinyl Chloride	VOC	20	900	20	< 2.9	2.9	U	0.29	< 2.7	2.7	U	0.27	< 2.3	2.3	U	0.23	< 3.3	3.3	U	0.33

Bluestone Analysis
Location: 34 Caven Point Ave, Jersey City, NJ

CAS Number	Parameter Name	Parameter ID	NYCRR 375 Unrestricted Use	NYCRR 375 Restricted-Residential	NYCRR 375 Protection of Groundwater	IMJC COMP-1	RL	Q	MDL	IMJC COMP-2	RL	Q	MDL	IMJC COMP-3	RL	Q	MDL	IMJC COMP-4	RL	Q	MDL	IMJC COMP-5	RL	Q	MDL	IMJC COMP-6	RL	Q	MDL	IMJC COMP-7	RL	Q	MDL
	Sample ID	Depth																															
	Date																																
	Unit		ug/kg	ug/kg	ug/kg	ug/kg	ug/kg		ug/kg	ug/kg	ug/kg		ug/kg	ug/kg	ug/kg		ug/kg	ug/kg	ug/kg		ug/kg	ug/kg	ug/kg		ug/kg	ug/kg	ug/kg		ug/kg	ug/kg	ug/kg		ug/kg
87-68-3	Hexachlorobutadiene	SVOC	NA	NA	NA	< 230	230	U	120	< 230	230	U	120	< 240	240	U	120	< 250	250	U	130	< 260	260	U	140	< 260	260	U	140	< 260	260	U	140
92-52-4	1-1- Biphenyl	SVOC	NA	NA	NA	< 230	230	U	100	< 230	230	U	100	< 240	240	U	100	< 250	250	U	110	< 260	260	U	120	< 260	260	U	120	< 260	260	U	110
122-66-7	1,2- Diphenylhydrazine	SVOC	NA	NA	NA	< 330	330	U	330	< 330	330	U	330	< 340	340	U	340	< 360	360	U	360	< 380	380	U	380	< 380	380	U	380	< 370	370	U	370
95-94-3	1,2,4,5-Tetrachlorobenzene	SVOC	NA	NA	NA	< 230	230	U	120	< 230	230	U	120	< 240	240	U	120	< 250	250	U	130	< 260	260	U	130	< 260	260	U	130	< 260	260	U	130
58-90-2	2,3,4,6-Tetrachlorophenol	SVOC	NA	NA	NA	< 230	230	U	160	< 230	230	U	150	< 240	240	U	160	< 250	250	U	170	< 260	260	U	180	< 260	260	U	180	< 260	260	U	180
95-95-4	2,4,5-Trichlorophenol	SVOC	NA	NA	100	< 230	230	U	180	< 230	230	U	180	< 240	240	U	180	< 250	250	U	200	< 260	260	U	210	< 260	260	U	210	< 260	260	U	210
88-06-2	2,4,6-Trichlorophenol	SVOC	NA	NA	NA	< 130	130	U	110	< 130	130	U	100	< 130	130	U	110	< 140	140	U	120	< 150	150	U	120	< 150	150	U	120	< 150	150	U	120
102-83-2	2,4-Dichlorophenol	SVOC	NA	NA	400	< 130	130	U	120	< 130	130	U	120	< 130	130	U	120	< 140	140	U	130	< 150	150	U	130	< 150	150	U	130	< 150	150	U	130
105-67-9	2,4-Dimethylphenol	SVOC	NA	NA	NA	< 230	230	U	83	< 230	230	U	81	< 240	240	U	83	< 250	250	U	89	< 260	260	U	93	< 260	260	U	93	< 260	260	U	93
51-28-5	2,4-Dinitrophenol	SVOC	NA	NA	200	< 230	230	U	230	< 230	230	U	230	< 240	240	U	240	< 250	250	U	250	< 260	260	U	260	< 260	260	U	260	< 260	260	U	260
121-14-2	2,4-Dinitrotoluene	SVOC	NA	NA	NA	< 130	130	U	130	< 130	130	U	130	< 130	130	U	130	< 140	140	U	140	< 150	150	U	150	< 150	150	U	150	< 150	150	U	150
606-20-2	2,6-Dinitrotoluene	SVOC	NA	NA	170	< 130	130	U	110	< 130	130	U	100	< 130	130	U	110	< 140	140	U	110	< 150	150	U	120	< 150	150	U	120	< 150	150	U	120
91-58-7	2-Chloronaphthalene	SVOC	NA	NA	NA	< 230	230	U	95	< 230	230	U	93	< 240	240	U	95	< 250	250	U	100	< 260	260	U	110	< 260	260	U	110	< 260	260	U	110
95-57-8	2-Chlorophenol	SVOC	NA	NA	NA	< 230	230	U	95	< 230	230	U	93	< 240	240	U	95	< 250	250	U	100	< 260	260	U	110	< 260	260	U	110	< 260	260	U	110
91-57-6	2-Methylnaphthalene	SVOC	NA	NA	NA	< 230	230	U	99	< 230	230	U	98	< 240	240	U	100	< 250	250	U	110	< 260	260	U	110	< 260	260	U	110	< 260	260	U	110
95-48-7	2-Methylphenol	SVOC	330b	100,000a	330e	< 230	230	U	160	< 230	230	U	150	< 240	240	U	160	< 250	250	U	170	< 260	260	U	180	< 260	260	U	180	< 260	260	U	180
88-74-4	2-Nitroaniline	SVOC	NA	NA	400	< 300	300	U	230	< 300	300	U	230	< 300	300	U	240	< 300	300	U	250	< 300	300	U	260	< 300	300	U	260	< 300	300	U	260
88-75-5	2-Nitrophenol	SVOC	NA	NA	300	< 230	230	U	210	< 230	230	U	210	< 240	240	U	210	< 250	250	U	230	< 260	260	U	240	< 260	260	U	240	< 260	260	U	240
91-94-1	3,3-Dichlorobenzidine	SVOC	NA	NA	NA	< 130	130	U	130	< 130	130	U	130	< 130	130	U	130	< 140	140	U	140	< 150	150	U	150	< 150	150	U	150	< 150	150	U	150
99-09-2	3-Nitroaniline	SVOC	NA	NA	500	< 670	670	U	230	< 660	660	U	230	< 670	670	U	240	< 720	720	U	250	< 750	750	U	260	< 750	750	U	260	< 750	750	U	260
534-52-1	4,6-Dinitro-2-methylphenol	SVOC	NA	NA	NA	< 230	230	U	230	< 230	230	U	230	< 240	240	U	240	< 250	250	U	250	< 260	260	U	260	< 260	260	U	260	< 260	260	U	260
59-50-7	4-Chloro-3-methylphenol	SVOC	NA	NA	NA	< 230	230	U	120	< 230	230	U	120	< 240	240	U	120	< 250	250	U	130	< 260	260	U	130	< 260	260	U	130	< 260	260	U	130
106-47-8	4-Chloroaniline	SVOC	NA	NA	220	< 670	670	U	160	< 660	660	U	150	< 670	670	U	160	< 720	720	U	170	< 750	750	U	180	< 750	750	U	180	< 750	750	U	170
15831-10-4	3+4 Methylphenol	SVOC	NA	100,000a	330e	< 230	230	U	130	< 230	230	U	130	< 240	240	U	130	< 250	250	U	140	< 260	260	U	150	< 260	260	U	150	< 260	260	U	150
100-01-6	4-Nitroaniline	SVOC	NA	NA	NA	< 330	330	U	110	< 330	330	U	110	< 340	340	U	110	< 360	360	U	120	< 380	380	U	130	< 380	380	U	130	< 370	370	U	130
100-02-7	4-Nitrophenol	SVOC	NA	NA	100	< 330	330	U	150	< 330	330	U	150	< 340	340	U	150	< 360	360	U	160	< 380	380	U	170	< 380	380	U	170	< 370	370	U	170
83-32-9	Acenaphthene	SVOC	20000	100,000a	98000	< 230	230	U	100	< 230	230	U	100	< 240	240	U	100	< 250	250	U	110	< 260	260	U	110	< 260	260	U	110	< 260	260	U	110
208-96-8	Acenaphthylene	SVOC	100,000a	100,000a	107000	< 130	130	U	93	< 130	130	U	92	< 130	130	U	94	< 140	140	U	100	< 150	150	U	110	< 150	150	U	110	< 150	150	U	100
98-86-2	Acetophenone	SVOC	NA	NA	NA	< 230	230	U	100	< 230	230	U	100	< 240	240	U	100	< 250	250	U	110	< 260	260	U	120	< 260	260	U	120	< 260	260	U	120
62-53-3	Aniline	SVOC	NA	100000	330	< 330	330	U	330	< 330	330	U	330	< 340	340	U	340	< 360	360	U	360	< 380	380	U	380	< 380	380	U	380	< 370	370	U	370
120-12-7	Anthracene	SVOC	100,000a	100,000a	1,000,000c	140	230	J	110	< 230	230	U	110	< 240	240	U	110	< 250	250	U	120	< 260	260	U	120	< 260	260	U	120	< 260	260	U	120
1912-24-9	Atrazine	SVOC	NA	NA	NA	< 130	130	U	100	< 130	130	U	98	< 130	130	U	100	< 140	140	U	110	< 150	150	U	110	< 150	150	U	110	< 150	150	U	110
100-52-7	Benzaldehyde	SVOC	NA	NA	NA	< 230	230	U	99	< 230	230	U	97	< 240	240	U	99	< 250	250	U	110	< 260	260	U	110	< 260	260	U	110	< 260	260	U	110
92-87-5	Benzidine	SVOC	NA	NA	NA	< 230	230	U	130	< 230	230	U	130	< 240	240	U	130	< 250	250	U	140	< 260	260	U	150	< 260	260	U	150	< 260	260	U	150
56-55-3	Benzo-a-Anthracene	SVOC	1,000c	1,000f	1,000f	190	230	J	110	110	230	J	110	< 240	240	U	110	160	250	J	120	150	260	J	130	200	260	J	130	170	260	J	130
50-32-8	Benzo-a-Pyrene	SVOC	1,000c	1,000f	22000	170	130		110	< 130	130	U	110	< 130	130	U	110	210	140		120	170	150		120	210	150		120	190	150		120
205-99-2	Benzo-b-Fluoranthene	SVOC	1,000c	1,000f	1700	< 230	230	U	110	< 230	230	U	110	< 240	240	U	110	170	250	J	120	< 260	260	U	130	180	260	J	130	150	260	J	130
207-08-9	Benzo-k-Fluoranthene	SVOC	800c	3900	1700	120	230	J	110	< 230	230	U	110	< 240	240	U	110	130	250	J	120	< 260	260	U	120	150	260	J	130	150	260	J	120
191-24-2	Benzo-g,h,i-Perylene	SVOC	100000	100,000a	1,000,000c	< 230	230	U	110	< 230	230	U	110	< 240	240	U	110	< 250	250	U	120	< 260	260	U	120	150	260	J	120	130	260	J	120
65-85-0	Benzoic Acid	SVOC	NA	NA	100000	< 330	330	U	230	< 330	330	U	230	< 340	340	U	240	< 360	360	U	250	< 380	380	U	260	< 380	380	U	260	< 370	370	U	260
100-51-6	Benzyl Alcohol	SVOC	NA	NA	NA	< 330	330	U	330	< 330	330	U	330	< 340	340	U	340	< 360	360	U	360	< 380	380	U	380	< 380	380	U	380	< 370	370	U	370
111-44-4	Bis(2-Chloroethyl)ether	SVOC	NA	NA	NA	< 130	130	U	90	< 130	130	U	88	< 130	130	U	91	< 140	140	U	97	< 150	150	U	100	< 150	150	U	100	< 150	150	U	100
108-60-1	Bis(2-Chloroisopropyl)ether	SVOC	NA	NA	NA	< 230	230	U	92	< 230	230	U	90	< 240	240	U	93	< 140	140	U	97	< 150	150	U	100	< 150	150	U	100	< 150	150	U	100
117-81-7	Bis(2-Ethylhexyl)Phthalate	SVOC	NA	NA	435000	< 230	230	U	96	< 230	230	U	94	< 240	240	U	97	< 250	250	U	100	< 260	260	U	110	< 260	260	U	110	< 260	260	U	110
85-68-7	Butylbenzylphthalate	SVOC	NA	NA	122000	< 230	230	U	86	< 230	230	U	85	< 240	240	U	87	< 250	250	U	93	< 260	260	U	97	< 260	260	U	97	< 260	260	U	97
105-60-2	Caprolactam	SVOC	NA	NA	NA	< 230	230	U	230	< 230	230	U	230	< 240	240	U	240	< 250	250	U	250	< 260	260	U	260	< 260	260	U	260	< 260	260	U	260
86-74-8	Carbazole	SVOC	NA	NA	NA	< 170	170	U	130	< 160	160	U	130	< 170	170	U	130	< 180	180	U	140	< 190	190	U	150	< 190	190	U	150	< 190	190	U	150
218-01-9	Chrysene	SVOC	1,000c	3900	1,000f	190	230	J	110	< 230	230	U	110	< 240	240	U	110	170	250	J	120	160	260	J	130	200	260	J	130	160	260	J	130
75-99-0	Dalapon	SVOC	NA	NA	NA	< 120	120	U	120	< 120	120	U	120	< 130	130	U	130	< 140	140	U	140	< 140	140	U	140	< 140	140	U	140	< 140	140	U	140
132-64-9	Dibenzofuran	SVOC	7000	59000	6200	< 230	230	U	97	< 230	230	U	96	< 240	240	U	98	< 250	250	U	110	< 260	260	U	110	< 260	260	U	110	< 260	260	U	110
53-70-3	Dibenzo-a,h-Anthracene	SVOC	330b	330e	1,000,000c	< 130	130	U	110	< 130	130	U	110	< 130	130	U	110	< 140	140	U	120	< 150	150	U	120	< 150	150	U	120	< 150	150	U	120
84-66-2	Diethyl Phthalate	SVOC	NA	NA	7100	< 230	230	U	110	< 230	230	U	100	< 240	240	U	110	< 250	250	U	110	< 260	260	U	120	< 260	260	U	120	< 260	260	U	120
131-11-3	Dimethyl Phthalate	SVOC	NA	NA	27000	< 230	230	U	100	< 230	230	U	100	< 240	240	U	100	< 250	250	U	110	< 260	260	U	120	< 260	260	U	120	< 260	260	U	120
84-74-2	Di-n-Butyl Phthalate	SVOC	NA	NA	8100	< 230	230	U	89	< 230	230	U	87	< 240	240	U	89	< 250	250	U	96	< 260	260	U	100	< 260	260	U	100	< 260	260	U	100
117-84-0	Di-n-Octyl Phthalate	SVOC	NA	NA	120000	< 230	230	U	86	< 230	230	U	85	< 240	240	U	87	< 250	250	U	93	< 260	260	U	97	< 260	260	U	97	< 260	260	U	97
206-44-0	Fluoranthene	SVOC	100000	100,000a	1,000,000c	410	230		110	220	230	J	110	< 240	240	U	110	320	250		120	300	260		120	420	260		120	340	260		120
86-73-7	Fluorene	SVOC	30000	100,000a	386000	< 230	230	U	110	< 230	230	U	110	< 240	240	U	110	< 250	250	U	120	< 260	260	U	120	< 260	260	U	120	< 260	260	U	120
118-74-1	Hexachlorobenzene	SVOC	330	1200	3200	< 130	130	U	97	< 130	130	U	96	< 130	130	U	98	< 140	140	U	110	< 150	150	U	110	< 150	150	U	110	< 150	150	U	110
77-47-4	Hexachlorocyclopentadiene	SVOC	NA	NA	NA	< 230	230	U	100	< 230	230	U	100	< 240	240	U	100	< 250	250	U	110	< 260	260	U	120	< 260	260	U	120	< 260	260	U	110
67-72-1	Hexachloroethane	SVOC	NA	NA	NA	< 130	130	U	100	< 130	130	U	98	< 130	130	U	100	< 140	140	U	110	< 150	150	U	110	< 150	150	U	110	< 150	150	U	110
193-39-5	Indeno(1,2,3-cd)Pyrene	SVOC	500c	500f	8200	< 230	230	U	110	< 230	230	U	110	< 240	240	U	110	150	250	J	120	< 260	260	U	120	170	260	J	130	150	260	J	120
78-59-1	Isophorone	SVOC	NA	NA	4400	< 130	130	U	93	< 130	130	U	92	< 130	130	U	94	< 140	140	U	100	< 150	150	U	110	< 150	150	U	110	< 150	150	U	100
91-20-3	Naphthalene	SVOC	12000	100,000a	12000	< 230	230	U	96	< 230	230	U	94	< 240	240	U	97	< 250	250	U	100	< 260	260	U	110	< 260	260	U	110	< 260	260	U	110
98-95-3	Nitrobenzene	SVOC	NA	15000	170	< 130	130	U	120	< 130	130	U	110	< 130	130	U	120	< 140	140	U	130	< 150	150	U	130	< 150	150	U	130	< 150	150	U	130
62-75-9	N-Nitrosodimethylamine	SVOC	NA	NA	NA	< 230	230	U	94	< 230	230	U	92	< 240	240	U	95	< 250	250	U	100	< 260	260	U	110	< 260	260	U	110	< 260	260	U	110
621-64-7	N-Nitroso-di-n-Propylamine	SVOC	NA	NA	NA	< 130	130	U	110	< 130	130	U	110	< 130	130	U	110	< 140	140	U	120	< 150	150	U	120	< 150	150	U	120	< 150	150	U	120
86-30-6	N-Nitrosodiphenylamine	SVOC	NA	NA	NA	< 130	130	U	130	< 130	130	U	130	< 130	130	U	130	< 140	140	U	140	< 150	150	U	140	< 150	150	U	140	< 150	150	U	140
87-86-5	Pentachlorophenol	SVOC	800b	6700	800e	< 230	230	U	130	< 230	230	U	120	< 240	240	U	130	< 250	250	U	140	< 260	260	U	140	< 260	260	U	140	< 260	260	U	140
85-01-8	Phenanthrene	SVOC	100000	100,000a	1,000,000c	580	130		95	270	130		94	< 130	130	U	96	200	140		100	200	150		110	360	150		110	200	150		110
108-95-2	Phenol	SVOC	330b	100,000a	330e	< 230	230	U	110	< 230	230	U	100	< 240	240	U	110	< 250	250	U	120	< 260	260	U	120	< 260	260	U	120	< 260	260	U	120
129-00-0	Pyrene	SVOC	100000	100,000a	1,000,000c	520	230		110	270	230		110	120	240	J	120	260	250		120	260	260	J	130	330	260		130	300	260		130
93-76-5	2,4,5-T	HERBICIDE	NA	NA	1900	< 120	120	U	120	< 120	120	U	120	< 130	130	U	130	< 140	140	U	140	< 140	140	U	140	< 140	140	U	140	< 140	140	U	140
93-72-1	2,4,5-TP Acid	PESTICIDE	3800	100,000a	3800	< 120	120	U	120	< 120	120	U	120	< 130	130	U	130	< 140	140	U	140	< 140	140	U	140	< 140	140	U	140	< 140	140	U	140
94-75-7	2,4-D	HERBICIDE	NA	NA	500	< 250	250	U	250	< 250	250	U	250	< 250	250	U	250	< 280	280	U	280	< 290	290	U	290	< 280	280	U	280	< 280	280	U	280
72-54-8	4,4-DDD	PESTICIDE	3.3b	13000	14000	< 2.0	2	U	2	< 2.0	2	U	2	< 2.0	2	U	2	< 2.2	2.2	U	2.2	< 2.3	2.3	U	2.3	< 2.2	2.2	U	2.2	< 2.2	2.2	U	2.2
72-55-9	4,4-DDE	PESTICIDE	3.3b	8900	17000	< 2.0	2	U	2	< 2.0	2	U	2	< 2.0	2	U	2	< 2.2	2.2	U	2.2	< 2.3	2.3	U	2.3	< 2.2	2.2	U	2.2	< 2.2	2.2	U	2.2
50-29-3	4,4-DDT	PESTICIDE	3.3b	7900	136000	< 2.0	2	U	2	< 3.0	3	U	3	< 2.0	2	U	2	< 2.2	2.2	U	2.2	< 2.3	2.3	U	2.3	< 3.0	3	U	3	2.9	2.2		2.2
309-00-2	Aldrin	PESTICIDE	5c	97	190	< 3.3	3.3	U	3.3	< 3.3	3.3	U	3.3	< 3.4	3.4	U	3.4	< 3.6	3.6	U	3.6	< 3.8	3.8	U	3.8	< 3.7	3.7	U	3.7	< 3.7	3.7	U	3.7

Bluestone Analysis
Location: 34 Caven Point Ave, Jersey City, NJ

CAS Number	Parameter Name	Parameter ID	NYCRR 375 Unrestricted Use	NYCRR 375 Restricted-Residential	NYCRR 375 Protection of Groundwater	IMJC COMP-1	RL	Q	MDL	IMJC COMP-2	RL	Q	MDL	IMJC COMP-3	RL	Q	MDL	IMJC COMP-4	RL	Q	MDL	IMJC COMP-5	RL	Q	MDL	IMJC COMP-6	RL	Q	MDL	IMJC COMP-7	RL	Q	MDL
	Sample ID	Depth																															
	Date																																
	Unit		ug/kg	ug/kg	ug/kg	ug/kg	ug/kg		ug/kg	ug/kg	ug/kg		ug/kg	ug/kg	ug/kg		ug/kg	ug/kg	ug/kg		ug/kg	ug/kg	ug/kg		ug/kg	ug/kg	ug/kg		ug/kg	ug/kg	ug/kg		ug/kg
319-84-6	alpha-BHC	PESTICIDE	20	480	20	< 1.3	1.3	U	1.3	< 1.3	1.3	U	1.3	< 1.4	1.4	U	1.4	< 1.4	1.4	U	1.4	< 1.5	1.5	U	1.5	< 1.5	1.5	U	1.5	< 1.5	1.5	U	1.5
5103-71-9	Alpha Chlordane	PESTICIDE	94	4200	2900	< 3.3	3.3	U	3.3	< 3.3	3.3	U	3.3	< 3.4	3.4	U	3.4	17	3.6		3.6	13	3.8		3.8	20	3.7		3.7	12	3.7		3.7
12674-11-2	Aroclor 1016	PCB	NA	NA	NA	< 66	66	U	66	< 66	66	U	66	< 68	68	U	68	< 72	72	U	72	< 77	77	U	77	< 74	74	U	74	< 73	73	U	73
11104-28-2	Aroclor 1221	PCB	NA	NA	NA	< 66	66	U	66	< 66	66	U	66	< 68	68	U	68	< 72	72	U	72	< 77	77	U	77	< 74	74	U	74	< 73	73	U	73
11141-16-5	Aroclor 1232	PCB	NA	NA	NA	< 66	66	U	66	< 66	66	U	66	< 68	68	U	68	< 72	72	U	72	< 77	77	U	77	< 74	74	U	74	< 73	73	U	73
53469-21-9	Aroclor 1242	PCB	NA	NA	NA	< 66	66	U	66	< 66	66	U	66	< 68	68	U	68	< 72	72	U	72	< 77	77	U	77	< 74	74	U	74	< 73	73	U	73
12672-29-6	Aroclor 1248	PCB	NA	NA	NA	< 66	66	U	66	< 66	66	U	66	< 68	68	U	68	< 72	72	U	72	< 77	77	U	77	< 74	74	U	74	< 73	73	U	73
11097-69-1	Aroclor 1254	PCB	NA	NA	NA	< 66	66	U	66	< 66	66	U	66	< 68	68	U	68	< 72	72	U	72	< 77	77	U	77	< 74	74	U	74	< 73	73	U	73
11096-82-5	Aroclor 1260	PCB	NA	NA	NA	< 66	66	U	66	< 66	66	U	66	< 68	68	U	68	< 72	72	U	72	< 77	77	U	77	< 74	74	U	74	< 73	73	U	73
37324-23-5	Aroclor 1262	PCB	NA	NA	NA	< 66	66	U	66	< 66	66	U	66	< 68	68	U	68	< 72	72	U	72	< 77	77	U	77	< 74	74	U	74	< 73	73	U	73
11100-14-4	Aroclor 1268	PCB	NA	NA	NA	< 66	66	U	66	< 66	66	U	66	< 68	68	U	68	< 72	72	U	72	< 77	77	U	77	< 74	74	U	74	< 73	73	U	73
319-85-7	beta-BHC	PESTICIDE	36	360	90	< 1.3	1.3	U	1.3	< 1.3	1.3	U	1.3	< 1.4	1.4	U	1.4	< 1.4	1.4	U	1.4	< 1.5	1.5	U	1.5	< 1.5	1.5	U	1.5	< 1.5	1.5	U	1.5
57-74-9	Chlordane	PESTICIDE	94	4200	2900	< 33	33	U	33	< 33	33	U	33	< 34	34	U	34	82	36		36	73	38		38	91	37		37	55	37		37
319-86-8	delta-BHC	PESTICIDE	40	100,000a	250	< 6.6	6.6	U	6.6	< 6.6	6.6	U	6.6	< 6.8	6.8	U	6.8	< 7.2	7.2	U	7.2	< 7.7	7.7	U	7.7	< 7.4	7.4	U	7.4	< 7.3	7.3	U	7.3
1918-00-9	Dicamba	HERBICIDE	NA	NA	NA	< 120	120	U	120	< 120	120	U	120	< 130	130	U	130	< 140	140	U	140	< 140	140	U	140	< 140	140	U	140	< 140	140	U	140
60-57-1	Dieldrin	PESTICIDE	5	200	100	< 1.3	1.3	U	1.3	< 1.3	1.3	U	1.3	< 1.4	1.4	U	1.4	< 1.4	1.4	U	1.4	< 1.5	1.5	U	1.5	< 1.5	1.5	U	1.5	< 1.5	1.5	U	1.5
115-29-7	Endosulfan	PESTICIDE	2400	NA	NA	< 6.6	6.6	U	6.6	< 6.6	6.6	U	6.6	< 6.8	6.8	U	6.8	< 7.2	7.2	U	7.2	< 7.7	7.7	U	7.7	< 7.4	7.4	U	7.4	< 7.3	7.3	U	7.3
959-98-8	Endosulfan I	PESTICIDE	2400	24,000i	102000	< 6.6	6.6	U	6.6	< 6.6	6.6	U	6.6	< 6.8	6.8	U	6.8	< 7.2	7.2	U	7.2	< 7.7	7.7	U	7.7	< 7.4	7.4	U	7.4	< 7.3	7.3	U	7.3
33213-65-9	Endosulfan II	PESTICIDE	2400	24,000i	102000	< 6.6	6.6	U	6.6	< 6.6	6.6	U	6.6	< 6.8	6.8	U	6.8	< 7.2	7.2	U	7.2	< 7.7	7.7	U	7.7	< 7.4	7.4	U	7.4	< 7.3	7.3	U	7.3
1031-07-8	Endosulfan Sulfate	PESTICIDE	2400	24,000i	1,000,000c	< 6.6	6.6	U	6.6	< 6.6	6.6	U	6.6	< 6.8	6.8	U	6.8	< 7.2	7.2	U	7.2	< 7.7	7.7	U	7.7	< 7.4	7.4	U	7.4	< 7.3	7.3	U	7.3
72-20-8	Endrin	PESTICIDE	14	11000	60	< 6.6	6.6	U	6.6	< 6.6	6.6	U	6.6	< 6.8	6.8	U	6.8	< 7.2	7.2	U	7.2	< 7.7	7.7	U	7.7	< 7.4	7.4	U	7.4	< 7.3	7.3	U	7.3
58-89-9	gamma-BHC	PESTICIDE	100	1300	100	< 1.3	1.3	U	1.3	< 1.3	1.3	U	1.3	< 1.4	1.4	U	1.4	< 1.4	1.4	U	1.4	< 1.5	1.5	U	1.5	< 1.5	1.5	U	1.5	< 1.5	1.5	U	1.5
5103-74-2	Gamma Chlordane	PESTICIDE	NA	NA	14000	< 3.3	3.3	U	3.3	< 3.3	3.3	U	3.3	< 3.4	3.4	U	3.4	11	3.6		3.6	9.2	3.8		3.8	14	3.7		3.7	7.3	3.7		3.7
76-44-8	Heptachlor	PESTICIDE	42	2100	380	< 6.6	6.6	U	6.6	< 6.6	6.6	U	6.6	< 6.8	6.8	U	6.8	< 7.2	7.2	U	7.2	< 7.7	7.7	U	7.7	< 7.4	7.4	U	7.4	< 7.3	7.3	U	7.3
1024-57-3	Heptachlor Epoxide	PESTICIDE	NA	NA	20	< 6.6	6.6	U	6.6	< 6.6	6.6	U	6.6	< 6.8	6.8	U	6.8	< 7.2	7.2	U	7.2	< 7.7	7.7	U	7.7	< 7.4	7.4	U	7.4	< 7.3	7.3	U	7.3
72-43-5	Methoxychlor	PESTICIDE	NA	NA	900000	< 33	33	U	33	< 33	33	U	33	< 34	34	U	34	< 36	36	U	36	< 38	38	U	38	< 37	37	U	37	< 37	37	U	37
56-38-2	Parathion	PESTICIDE	NA	NA	1200	< 330	330	U	130	< 330	330	U	130	< 340	340	U	130	< 360	360	U	140	< 380	380	U	150	< 380	380	U	150	< 370	370	U	150
1336-36-3	Polychlorinated Biphenyls	PCBs	100	1000	3200	ND				ND				ND				ND				ND				ND				ND			
8001-35-2	Toxaphene	PESTICIDE	NA	NA	NA	< 130	130	U	130	< 130	130	U	130	< 140	140	U	140	< 140	140	U	140	< 150	150	U	150	< 150	150	U	150	< 150	150	U	150
	Unit		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg		mg/kg	mg/kg	mg/kg		mg/kg	mg/kg	mg/kg		mg/kg	mg/kg	mg/kg		mg/kg	mg/kg	mg/kg		mg/kg	mg/kg	mg/kg		mg/kg	mg/kg	mg/kg		mg/kg
7429-90-5	Aluminum, Al	METAL	NA	NA	NA	16600	30		5.9	15900	34		6.7	18000	34		6.9	17600	37		7.4	17200	34		6.8	14900	37		7.5	14500	34		6.8
7440-36-0	Antimony, Sb	METAL	NA	NA	NA	< 3.0	3	U	3	< 3.4	3.4	U	3.4	< 3.4	3.4	U	3.4	< 3.7	3.7	U	3.7	< 3.4	3.4	U	3.4	< 3.7	3.7	U	3.7	< 3.4	3.4	U	3.4
7440-38-2	Arsenic, As	METAL	13c	16f	16f	< 0.59	0.59	U	0.59	< 0.67	0.67	U	0.67	< 0.69	0.69	U	0.69	1.85	0.74		0.74	2.62	0.68		0.68	1.62	0.75		0.75	2.63	0.68		0.68
7440-39-3	Barium, Ba	METAL	350c	400	820	201	0.6		0.3	206	0.7		0.34	222	0.7		0.34	148	0.7		0.37	131	0.7		0.34	150	0.7		0.37	368	0.7		0.34
7440-41-7	Beryllium, Be	METAL	7.2	72	47	0.41	0.24		0.12	0.41	0.27		0.13	0.46	0.28		0.14	0.45	0.3		0.15	0.51	0.27		0.14	0.46	0.3		0.15	0.46	0.27		0.14
7440-43-9	Cadmium, Cd	METAL	2.5c	4.3	7.5	1.94	0.3		0.3	1.93	0.34		0.34	2.09	0.34		0.34	< 0.37	0.37	U	0.37	0.4	0.34		0.34	< 0.37	0.37	U	0.37	0.38	0.34		0.34
7440-47-3	Chromium, Cr	METAL	NA	110	NA	33.7	0.3		0.3	34.8	0.34		0.34	40.7	0.34		0.34	48.3	0.37		0.37	69.4	0.34		0.34	46.1	0.37		0.37	43.2	0.34		0.34
18540-29-9	Chromium, hexavalent	METAL	1b	110	19	< 0.35	0.35	U	0.35	< 0.38	0.38	U	0.38	< 0.38	0.38	U	0.38	< 0.40	0.4	U	0.4	< 0.44	0.44	U	0.44	< 0.43	0.43	U	0.43	< 0.42	0.42	U	0.42
16065-83-1	Chromium, trivalent	METAL	30c	180	NA	33.7	0.3		0.3	34.8	0.34		0.34	40.7	0.34		0.34	48.3	0.37		0.37	69.4	0.34		0.34	46.1	0.37		0.37	43.2	0.34		0.34
7440-48-4	Cobalt, Co	METAL	NA	NA	NA	20.3	0.3		0.3	20.2	0.34		0.34	22	0.34		0.34	18.7	0.37		0.37	17.6	0.34		0.34	19.5	0.37		0.37	18.2	0.34		0.34
7440-50-8	Copper, Cu	METAL	50	270	1720	48.8	0.6		0.3	37	0.7		0.34	44.9	0.7		0.34	57	0.7		0.37	52.4	0.7		0.34	59	0.7		0.37	46.2	0.7		0.34
57-12-5	Cyanide	METAL	27	27	40	< 0.51	0.51	U	0.253	< 0.51	0.51	U	0.253	< 0.51	0.51	U	0.255	< 0.56	0.56	U	0.278	< 0.58	0.58	U	0.291	< 0.57	0.57	U	0.284	< 0.57	0.57	U	0.284
7439-89-6	Iron, Fe	METAL	NA	NA	NA	32400	30		30	30800	34		34	35600	34		34	30200	37		37	30600	34		34	28200	37		37	30000	34		34
7439-92-1	Lead, Pb	METAL	63c	400	450	10.2	0.6		0.3	10.2	0.7		0.34	13.2	0.7		0.34	23.3	0.7		0.37	56.6	0.7		0.34	27.9	0.7		0.37	27	0.7		0.34
7439-96-5	Manganese, Mn	METAL	1,600c	2,000f	2,000f	341	3		3	235	3.4		3.4	308	3.4		3.4	326	3.7		3.7	349	3.4		3.4	327	3.7		3.7	302	3.4		3.4
7439-97-6	Mercury, Hg	METAL	.18c	.81j	0.73	< 0.02	0.02	U	0.01	< 0.03	0.03	U	0.02	< 0.03	0.03	U	0.02	0.03	0.03	J	0.02	< 0.03	0.03	U	0.02	0.03	0.03	J	0.02	0.04	0.03		0.02
7440-02-0	Nickel, Ni	METAL	30	310	130	30.4	0.3		0.3	30.8	0.34		0.34	36.8	0.34		0.34	47.1	0.37		0.37	39.7	0.34		0.34	57.2	0.37		0.37	41.2	0.34		0.34
7782-49-2	Selenium, Se	METAL	3.9c	180	4f	< 1.2	1.2	U	1	< 1.3	1.3	U	1.1	< 1.4	1.4	U	1.2	< 1.5	1.5	U	1.3	< 1.4	1.4	U	1.2	< 1.5	1.5	U	1.3	< 1.4	1.4	U	1.2
7440-22-4	Silver, Ag	METAL	2	180	8.3	< 0.30	0.3	U	0.3	< 0.34	0.34	U	0.34	< 0.34	0.34	U	0.34	< 0.37	0.37	U	0.37	< 0.34	0.34	U	0.34	< 0.37	0.37	U	0.37	< 0.34	0.34	U	0.34
7440-28-0	Thallium, Tl	METAL	NA	NA	NA	< 1.2	1.2	U	1.2	< 1.3	1.3	U	1.3	< 1.4	1.4	U	1.4	< 1.5	1.5	U	1.5	< 1.4	1.4	U	1.4	< 1.5	1.5	U	1.5	< 1.4	1.4	U	1.4
7440-62-2	Vanadium, V	METAL	NA	NA	NA	52.2	0.3		0.3	56.3	0.34		0.34	57.7	0.34		0.34	51.3	0.37		0.37	57.9	0.34		0.34	53.9	0.37		0.37	52.5	0.34		0.34
7440-66-6	Zinc, Zn	METAL	109c	10,000d	2480	107	0.6		0.3	81.9	0.7		0.34	89.5	0.7		0.34	80.7	0.7		0.37	101	0.7		0.34	103	0.7		0.37	79	0.7		0.34
			ng/g	ng/g	ng/g	ng/g	ng/g		ng/g	ng/g	ng/g		ng/g	ng/g	ng/g		ng/g	ng/g	ng/g		ng/g	ng/g	ng/g		ng/g	ng/g	ng/g		ng/g	ng/g	ng/g		ng/g
39108-34-4	1H,1H,2H,2H-Perfluorodecanesulfonic acid	PFAS	NA	NA	NA	< 0.250	0.25	U	0.0256	< 0.248	0.248	U	0.0254	< 0.249	0.249	U	0.0255	< 0.259	0.259	U	0.0265	< 0.266	0.266	U	0.0272	< 0.263	0.263	U	0.0269	< 0.276	0.276	U	0.0283
27619-97-2	1H,1H,2H,2H-Perfluorooctanesulfonic acid	PFAS	NA	NA	NA	< 0.250	0.25	U	0.0661	< 0.248	0.248	U	0.0654	< 0.249	0.249	U	0.0658	< 0.259	0.259	U	0.0684	< 0.266	0.266	U	0.0702	< 0.263	0.263	U	0.0694	< 0.276	0.276	U	0.073
2991-50-6	NEtFOSAA	PFAS	NA	NA	NA	< 0.250	0.25	U	0.104	< 0.248	0.248	U	0.103	< 0.249	0.249	U	0.104	< 0.259	0.259	U	0.108	< 0.266	0.266	U	0.111	< 0.263	0.263	U	0.11	< 0.276	0.276	U	0.115
2355-31-9	NMeFOSAA	PFAS	NA	NA	NA	< 0.250	0.25	U	0.105	< 0.248	0.248	U	0.103	< 0.249	0.249	U	0.104	< 0.259	0.259	U	0.108	< 0.266	0.266	U	0.111	< 0.263	0.263	U	0.11	< 0.276	0.276	U	0.115
335-77-3	Perfluoro-1-decanesulfonic acid (PFDS)	PFAS	NA	NA	NA	< 0.250	0.25	U	0.0513	< 0.248	0.248	U	0.0507	< 0.249	0.249	U	0.051	< 0.259	0.259	U	0.0531	< 0.266	0.266	U	0.0545	< 0.263	0.263	U	0.0539	< 0.276	0.276	U	0.0566
375-92-8	Perfluoro-1-heptanesulfonic acid (PFHpS)	PFAS	NA	NA	NA	< 0.250	0.25	U	0.0494	< 0.248	0.248	U	0.0489	< 0.249	0.249	U	0.0491	< 0.259	0.259	U	0.0511	< 0.266	0.266	U	0.0524	< 0.263	0.263	U	0.0519	< 0.276	0.276	U	0.0545
754-91-6	Perfluoro-1-octanesulfonamide (FOSA)	PFAS	NA	NA	NA	< 0.250	0.25	U	0.0468	< 0.248	0.248	U	0.0463	< 0.249	0.249	U	0.0465	< 0.259	0.259	U	0.0484	< 0.266	0.266	U	0.0497	< 0.263	0.263	U	0.0491	< 0.276	0.276	U	0.0516
375-73-5	Perfluorobutanesulfonic acid (PFBS)	PFAS	NA	NA	NA	< 0.250	0.25	U	0.2	< 0.248	0.248	U	0.198	< 0.249	0.249	U	0.199	< 0.259	0.259	U	0.207	< 0.266	0.266	U	0.213	< 0.263	0.263	U	0.21	< 0.276	0.276	U	0.221
335-76-2	Perfluorodecanoic acid (PFDA)	PFAS	NA	NA	NA	< 0.250	0.25	U	0.0513	< 0.248	0.248	U	0.0507	< 0.249	0.249	U	0.051	< 0.259	0.259	U	0.0531	< 0.266	0.266	U	0.0545	< 0.263	0.263	U	0.0539	< 0.276	0.276	U	0.0566
307-55-1	Perfluorododecanoic acid (PFDoA)	PFAS	NA	NA	NA	< 0.250	0.25	U	0.0751	< 0.248	0.248	U	0.0743	< 0.249	0.249	U	0.0747	< 0.259	0.259	U	0.0778	< 0.266	0.266	U	0.0798	< 0.263	0.263	U	0.0789	< 0.276	0.276	U	0.0829
375-85-9	Perfluoroheptanoic acid (PFHpA)	PFAS	NA	NA	NA	< 0.250	0.25	U	0.0456	< 0.248	0.248	U	0.0451	< 0.249	0.249	U	0.0453	< 0.259	0.259	U	0.0472	< 0.266	0.266	U	0.0484	< 0.263	0.263	U	0.0479	< 0.276	0.276	U	0.0503
355-46-4	Perfluorohexanesulfonic Acid (PFHxS)	PFAS	NA	NA	NA	< 0.250	0.25	U	0.0311	< 0.248	0.248	U	0.0307	0.704	0.249		0.0309	< 0.259	0.259	U	0.0321	< 0.266	0.266	U	0.033	< 0.263	0.263	U	0.0326	< 0.276	0.276	U	0.0343
307-24-4	Perfluorohexanoic acid (PFHxA)	PFAS	NA	NA	NA	< 0.250	0.25	U	0.066	< 0.248	0.248	U	0.0653	< 0.249	0.249	U	0.0657	< 0.259	0.259	U	0.0683	< 0.266	0.266	U	0.0701	< 0.263	0.263	U	0.0693	< 0.276	0.276	U	0.0728
375-22-4	Perfluoro-n-butanoic acid (PFBA)	PFAS	NA	NA	NA	< 0.250	0.25	U	0.183	< 0.248	0.248	U	0.181	< 0.249	0.249	U	0.182	< 0.259	0.259	U	0.189	< 0.266	0.266	U	0.194	< 0.263	0.263	U	0.192	< 0.276	0.276	U	0.202
375-95-1	Perfluorononanoic acid (PFNA)	PFAS	NA	NA	NA	< 0.250	0.25	U	0.0599	< 0.248	0.248	U	0.0593	< 0.249	0.249	U	0.0596	< 0.259	0.259	U	0.062	< 0.266	0.266	U	0.0636	< 0.263	0.263	U	0.0629	< 0.276	0.276	U	0.0661
1763-23-1	Perfluorooctanesulfonic Acid (PFOS)	PFAS	NA	NA	NA	< 0.250	0.25	U	0.0439	< 0.248	0.248	U	0.0434	< 0.249	0.249	U	0.0436	< 0.259	0.259	U	0.0454	< 0.266	0.266	U	0.0466	< 0.263	0.263	U	0.0461	< 0.276	0.276	U	0.0484
335-67-1	Perfluorooctanoic acid (PFOA)	PFAS	NA	NA	NA	< 0.250	0.25	U	0.0774	< 0.248	0.248	U	0.0765	< 0.249	0.249	U	0.0769	< 0.259	0.259	U	0.08	< 0.266	0.266	U	0.0821	< 0.263	0.263	U	0.0812	< 0.276	0.276	U	0.0853
2706-90-3	Perfluoropentanoic acid (PFPeA)	PFAS	NA	NA	NA	< 0.250	0.25	U	0.0921	< 0.248	0.248	U	0.0911	< 0.249	0.249	U	0.0916	< 0.259	0.259	U	0.0953	< 0.266	0.266	U	0.0978	< 0.263	0.263	U	0.0967	< 0.276	0.276	U	0.102
376-06-7	Perfluorotetradecanoic acid (PFTA)	PFAS	NA	NA	NA	< 0.250	0.25	U	0.0748	< 0.248	0.248	U	0.074	< 0.249	0.249	U	0.0744	< 0.259	0.259	U	0.0774	< 0.266	0.266	U	0.0795	< 0.263	0.263	U	0.0786	< 0.276	0.276	U	0.0826
72629-94-8	Perfluorotridecanoic acid (PFTrDA)	PFAS	NA	NA	NA	< 0.250	0.25	U	0.0436	< 0.248	0.248	U	0.0431	< 0.249	0.249	U	0.0433	< 0.259	0.259	U	0.0451	< 0.266	0.266	U	0.0463	< 0.263	0.263	U	0.0458	< 0.276	0.276	U	0.0481
2058-94-8	Perfluoroundecanoic acid (PFUnA)	PFAS	NA	NA	NA	< 0.250	0.25	U	0.117	< 0.248	0.248	U	0.115	< 0.249	0.249	U	0.116	< 0.259	0.259	U	0.121	< 0.266	0.266	U	0.124	< 0.263	0.263	U	0.122	< 0.276	0.276	U	0.129

Notes: Shaded values indicate an exceedance of NYCRR Part 375 SCO's

SOR TESTING LABORATORIES, INC.

98 Sand Park Road - Cedar Grove, NJ 07009
Tel.: (973) 239-6001 Fax: (973) 239-8380 http://www.sorlabs.com

PARTICLE SIZE DISTRIBUTION TEST REPORT

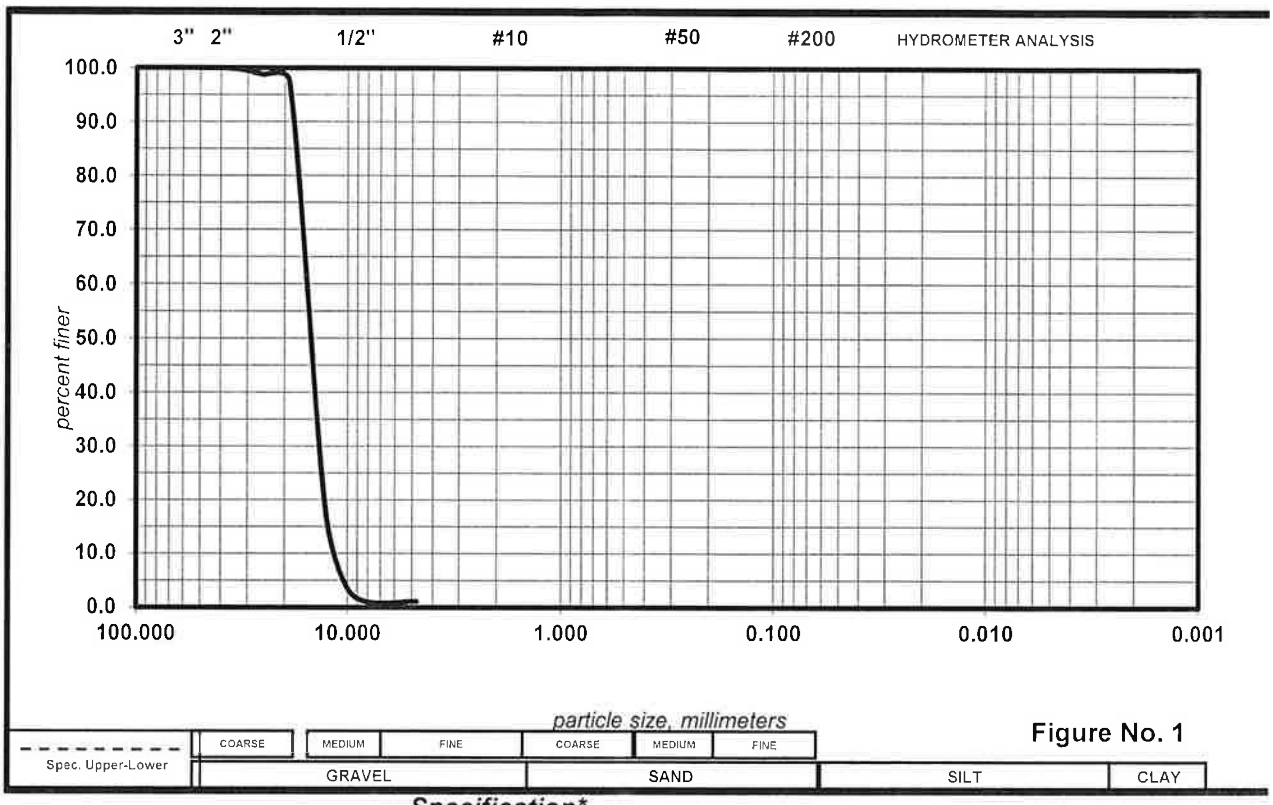


Figure No. 1

Sieve Size	% Finer	Specification* Min.(%)	Specification* Max.(%)
4" (102 mm)			
2 1/2" (63 mm)			
2" (50 mm)			
1 1/2" (38.1 mm)	100.0		
1" (25 mm)	98.7		
3/4" (19 mm)	97.6		
5/8" (16 mm)			
1/2" (12.5 mm)	17.4		
3/8" (9.5 mm)	2.4		
5/16" (8 mm)			
1/4" (6.3 mm)			
#4 (4.75 mm)	1.2		
#6 (3.35 mm)			
#8 (2.36 mm)			
#10 (2 mm)			
#14 (1.4 mm)			
#16 (1.18 mm)			
#20 (850 µm)			
#30 (600 µm)			
#40 (425 µm)			
#50 (300 µm)			
#60 (250 µm)			
#100 (150 µm)			
#200 (75 µm)			
-			

Sample Identification

Sample No.: S-1 (3/4")
Lab No.: A23-015-01
Source/Location: IMJC
Description:
Black cf GRAVEL

sample description in accordance with Burmister System

LL : **PL :** **PI :**

As received Moisture Content: %

Classification:
USCS: [GP]
AASHTO:

Remarks:
Sample received in lab on February 10, 2023

Client: Impact Materials
Project: IMJC
Location:
Date: 14-Feb-23
Job No.: 22-48 **Report No.:** 23-133

PHOENIX
Environmental Laboratories, Inc.

Tuesday, July 19, 2022

Attn: Mr. Jeff Bogoian
Impact Materials
170 Keyland Court
Bohemia NY 11716

Project ID: IMJC
SDG ID: GCL69739
Sample ID#s: CL69739 - CL69750

This laboratory is in compliance with the NELAC requirements of procedures used except where indicated.

This report contains results for the parameters tested, under the sampling conditions described on the Chain Of Custody, as received by the laboratory. This report is incomplete unless all pages indicated in the pagination at the bottom of the page are included.

All soils, solids and sludges are reported on a dry weight basis unless otherwise noted in the sample comments.

A scanned version of the COC form accompanies the analytical report and is an exact duplicate of the original.

If you are the client above and have any questions concerning this testing, please do not hesitate to contact Phoenix Client Services at ext.200. The contents of this report cannot be discussed with anyone other than the client listed above without their written consent.

Sincerely yours,

Phyllis Shiller
Laboratory Director

NELAC - #NY11301
CT Lab Registration #PH-0618
MA Lab Registration #M-CT007
ME Lab Registration #CT-007
NH Lab Registration #213693-A,B
NJ Lab Registration #CT-003
NY Lab Registration #11301
PA Lab Registration #68-03530
RI Lab Registration #63
UT Lab Registration #CT00007
VT Lab Registration #VT11301

587 East Middle Turnpike, P.O. Box 370, Manchester, CT 06040
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PHOENIX
Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

ACCREDITED IN ACCORDANCE WITH nelac
NY # 11301

SDG Comments

July 19, 2022

SDG I.D.: GCL69739

Any compound that is not detected above the MDL/LOD is reported as ND on the report and is reported in the electronic deliverables (EDD) as <RL or U at the RL per state and EPA guidance.

Version 1: Analysis results minus forms.

Version 2: Complete report with QC and forms.

CL69748 - Client provided soil jar for volatile analysis. Phoenix prepared sample per method 5035.

CL69749 - Client provided soil jar for volatile analysis. Phoenix prepared sample per method 5035.

CL69750 - Client provided soil jar for volatile analysis. Phoenix prepared sample per method 5035.

PHOENIX
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ACCREDITED IN ACCORDANCE WITH nelac
NY # 11301

Sample Id Cross Reference

July 19, 2022

SDG I.D.: GCL69739

Project ID: IMJC

Client Id	Lab Id	Matrix
IMJC 1A (GRAB)	CL69739	SOIL
IMJC 1B (GRAB)	CL69740	SOIL
IMJC 1C (GRAB)	CL69741	SOIL
IMJC 2A (GRAB)	CL69742	SOIL
IMJC 2B (GRAB)	CL69743	SOIL
IMJC 2C (GRAB)	CL69744	SOIL
IMJC 3A (GRAB)	CL69745	SOIL
IMJC 3B (GRAB)	CL69746	SOIL
IMJC 3C (GRAB)	CL69747	SOIL
IMJC COMP-1	CL69748	SOIL
IMJC COMP-2	CL69749	SOIL
IMJC COMP-3	CL69750	SOIL

PHOENIX
Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

ACCREDITED IN ACCORDANCE WITH nelac NY # 11301

Analysis Report

July 19, 2022

FOR: Attn: Mr. Jeff Bogoian
Impact Materials
170 Keyland Court
Bohemia NY 11716

Sample Information		Custody Information		Date	Time
Matrix:	SOIL	Collected by:		07/05/22	8:00
Location Code:	IMPACTJB-IM	Received by:	SW	07/05/22	15:48
Rush Request:	72 Hour	Analyzed by:	see "By" below		
P.O.#:					

Laboratory Data

SDG ID: GCL69739
Phoenix ID: CL69739

Project ID: IMJC
Client ID: IMJC 1A (GRAB)

Parameter	Result	RL/ PQL	LOD/ MDL	Units	Dilution	Date/Time	By	Reference
Volatiles								
1,2,4-Trimethylbenzene	ND	5.1	0.51	ug/Kg	1	07/06/22	JLI	SW8260C
1,3,5-Trimethylbenzene	ND	5.1	0.51	ug/Kg	1	07/06/22	JLI	SW8260C
1,3-Dichlorobenzene	ND	5.1	0.51	ug/Kg	1	07/06/22	JLI	SW8260C
Naphthalene	ND	5.1	1.0	ug/Kg	1	07/06/22	JLI	SW8260C
n-Butylbenzene	ND	5.1	0.51	ug/Kg	1	07/06/22	JLI	SW8260C
n-Propylbenzene	ND	5.1	1.0	ug/Kg	1	07/06/22	JLI	SW8260C
p-Isopropyltoluene	ND	5.1	0.51	ug/Kg	1	07/06/22	JLI	SW8260C
sec-Butylbenzene	ND	5.1	0.51	ug/Kg	1	07/06/22	JLI	SW8260C
tert-Butylbenzene	ND	5.1	0.51	ug/Kg	1	07/06/22	JLI	SW8260C
QA/QC Surrogates								
% 1,2-dichlorobenzene-d4	96			%	1	07/06/22	JLI	70 - 130 %
% Bromofluorobenzene	101			%	1	07/06/22	JLI	70 - 130 %
% Dibromofluoromethane	97			%	1	07/06/22	JLI	70 - 130 %
% Toluene-d8	96			%	1	07/06/22	JLI	70 - 130 %
1,4-dioxane								
1,4-dioxane	ND	76	40	ug/kg	1	07/06/22	JLI	SW8260C
Volatiles								
1,1,1,2-Tetrachloroethane	ND	5.1	1.0	ug/Kg	1	07/06/22	JLI	SW8260C
1,1,1-Trichloroethane	ND	5.1	0.51	ug/Kg	1	07/06/22	JLI	SW8260C
1,1,2,2-Tetrachloroethane	ND	5.1	1.0	ug/Kg	1	07/06/22	JLI	SW8260C
1,1,2-Trichloroethane	ND	5.1	1.0	ug/Kg	1	07/06/22	JLI	SW8260C
1,1-Dichloroethane	ND	5.1	1.0	ug/Kg	1	07/06/22	JLI	SW8260C
1,1-Dichloroethene	ND	5.1	0.51	ug/Kg	1	07/06/22	JLI	SW8260C
1,2,3-Trichlorobenzene	ND	5.1	1.0	ug/Kg	1	07/06/22	JLI	SW8260C

Project ID: IMJC

Client ID: IMJC 1A (GRAB)

Phoenix I.D.: CL69739

Parameter	Result	RL/ PQL	LOD/ MDL	Units	Dilution	Date/Time	By	Reference
1,2,4-Trichlorobenzene	ND	5.1	1.0	ug/Kg	1	07/06/22	JLI	SW8260C
1,2-Dibromo-3-chloropropane	ND	5.0	1.0	ug/Kg	1	07/06/22	JLI	SW8260C
1,2-Dibromoethane	ND	4.5	0.51	ug/Kg	1	07/06/22	JLI	SW8260C
1,2-Dichlorobenzene	ND	5.1	0.51	ug/Kg	1	07/06/22	JLI	SW8260C
1,2-Dichloroethane	ND	5.0	0.51	ug/Kg	1	07/06/22	JLI	SW8260C
1,2-Dichloropropane	ND	5.0	1.0	ug/Kg	1	07/06/22	JLI	SW8260C
1,3-Dichlorobenzene	ND	5.1	0.51	ug/Kg	1	07/06/22	JLI	SW8260C
1,4-Dichlorobenzene	ND	5.1	0.51	ug/Kg	1	07/06/22	JLI	SW8260C
2-Hexanone	ND	25	5.1	ug/Kg	1	07/06/22	JLI	SW8260C
4-Methyl-2-pentanone	ND	25	5.1	ug/Kg	1	07/06/22	JLI	SW8260C
Acetone	ND	51	5.1	ug/Kg	1	07/06/22	JLI	SW8260C
Acrolein	ND	25	2.5	ug/Kg	1	07/06/22	JLI	SW8260C
Acrylonitrile	ND	10	0.51	ug/Kg	1	07/06/22	JLI	SW8260C
Benzene	ND	5.0	0.51	ug/Kg	1	07/06/22	JLI	SW8260C
Bromochloromethane	ND	5.1	0.51	ug/Kg	1	07/06/22	JLI	SW8260C
Bromodichloromethane	ND	5.0	1.0	ug/Kg	1	07/06/22	JLI	SW8260C
Bromoform	ND	5.1	1.0	ug/Kg	1	07/06/22	JLI	SW8260C
Bromomethane	ND	5.1	2.0	ug/Kg	1	07/06/22	JLI	SW8260C
Carbon Disulfide	ND	5.1	1.0	ug/Kg	1	07/06/22	JLI	SW8260C
Carbon tetrachloride	ND	5.0	1.0	ug/Kg	1	07/06/22	JLI	SW8260C
Chlorobenzene	ND	5.1	0.51	ug/Kg	1	07/06/22	JLI	SW8260C
Chloroethane	ND	5.1	0.51	ug/Kg	1	07/06/22	JLI	SW8260C
Chloroform	ND	5.1	0.51	ug/Kg	1	07/06/22	JLI	SW8260C
Chloromethane	ND	5.1	1.0	ug/Kg	1	07/06/22	JLI	SW8260C
cis-1,2-Dichloroethene	ND	5.1	0.51	ug/Kg	1	07/06/22	JLI	SW8260C
cis-1,3-Dichloropropene	ND	5.0	0.51	ug/Kg	1	07/06/22	JLI	SW8260C
Cyclohexane	ND	5.1	1.0	ug/Kg	1	07/06/22	JLI	SW8260C
Dibromochloromethane	ND	5.0	1.0	ug/Kg	1	07/06/22	JLI	SW8260C
Dichlorodifluoromethane	ND	5.1	0.51	ug/Kg	1	07/06/22	JLI	SW8260C
Ethylbenzene	ND	5.1	0.51	ug/Kg	1	07/06/22	JLI	SW8260C
Isopropylbenzene	ND	5.1	0.51	ug/Kg	1	07/06/22	JLI	SW8260C
m&p-Xylene	ND	5.1	1.0	ug/Kg	1	07/06/22	JLI	SW8260C
Methyl ethyl ketone	ND	30	5.1	ug/Kg	1	07/06/22	JLI	SW8260C
Methyl t-butyl ether (MTBE)	ND	10	1.0	ug/Kg	1	07/06/22	JLI	SW8260C
Methylacetate	ND	10	10	ug/Kg	1	07/06/22	JLI	SW8260C
Methylcyclohexane	ND	5.1	1.0	ug/Kg	1	07/06/22	JLI	SW8260C
Methylene chloride	ND	5.1	5.1	ug/Kg	1	07/06/22	JLI	SW8260C
o-Xylene	ND	5.1	1.0	ug/Kg	1	07/06/22	JLI	SW8260C
Styrene	ND	5.1	0.51	ug/Kg	1	07/06/22	JLI	SW8260C
tert-butyl alcohol	ND	100	20	ug/Kg	1	07/06/22	JLI	SW8260C
Tetrachloroethene	ND	5.0	1.0	ug/Kg	1	07/06/22	JLI	SW8260C
Toluene	ND	5.1	0.51	ug/Kg	1	07/06/22	JLI	SW8260C
Total Xylenes	ND	5.1	5.1	ug/Kg	1	07/06/22	JLI	SW8260C
trans-1,2-Dichloroethene	ND	5.1	0.51	ug/Kg	1	07/06/22	JLI	SW8260C
trans-1,3-Dichloropropene	ND	5.0	0.51	ug/Kg	1	07/06/22	JLI	SW8260C
Trichloroethene	ND	5.1	0.51	ug/Kg	1	07/06/22	JLI	SW8260C
Trichlorofluoromethane	ND	5.1	1.0	ug/Kg	1	07/06/22	JLI	SW8260C
Trichlorotrifluoroethane	ND	5.1	0.51	ug/Kg	1	07/06/22	JLI	SW8260C
Vinyl chloride	ND	5.0	0.51	ug/Kg	1	07/06/22	JLI	SW8260C

Project ID: IMJC

Client ID: IMJC 1A (GRAB)

Phoenix I.D.: CL69739

Parameter	Result	RL/ PQL	LOD/ MDL	Units	Dilution	Date/Time	By	Reference
QA/QC Surrogates								
% 1,2-dichlorobenzene-d4	96			%	1	07/06/22	JLI	70 - 130 %
% Bromofluorobenzene	101			%	1	07/06/22	JLI	70 - 130 %
% Dibromofluoromethane	97			%	1	07/06/22	JLI	70 - 130 %
% Toluene-d8	96			%	1	07/06/22	JLI	70 - 130 %
Vinyl Acetate	ND	51	51	ug/Kg	1	07/06/22	JLI	SW8260C

RL/PQL=Reporting/Practical Quantitation Level (Equivalent to NELAC LOQ, Limit of Quantitation) ND=Not Detected BRL=Below Reporting Level L=Biased Low LOD=Limit of Detection MDL=Method Detection Limit1
QA/QC Surrogates: Surrogates are compounds (preceeded with a %) added by the lab to determine analysis efficiency. Surrogate results(%) listed in the report are not "detected" compounds.

Comments:

Results are reported on an ``as received`` basis, and are not corrected for dry weight.

Volatile Comment:
To achieve client's objectives, where the lowest calibration standard or LOD justifies lowering the RL/PQL, the RL/PQL of some compounds have been lowered to meet criteria.

All soils, solids and sludges are reported on a dry weight basis unless otherwise noted in the sample comments.

If you are the client above and have any questions concerning this testing, please do not hesitate to contact Phoenix Client Services at ext.200.
The contents of this report cannot be discussed with anyone other than the client listed above without their written consent.

Phyllis Shiller, Laboratory Director
July 19, 2022
Reviewed and Released by: Rashmi Makol, Project Manager

PHOENIX
Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

ACCREDITED IN ACCORDANCE WITH nelac NY # 11301

Analysis Report

July 19, 2022

FOR: Attn: Mr. Jeff Bogoian
Impact Materials
170 Keyland Court
Bohemia NY 11716

Sample Information		Custody Information		Date	Time
Matrix:	SOIL	Collected by:		07/05/22	8:05
Location Code:	IMPACTJB-IM	Received by:	SW	07/05/22	15:48
Rush Request:	72 Hour	Analyzed by:	see "By" below		
P.O.#:					

Laboratory Data

SDG ID: GCL69739
Phoenix ID: CL69740

Project ID: IMJC
Client ID: IMJC 1B (GRAB)

Parameter	Result	RL/ PQL	LOD/ MDL	Units	Dilution	Date/Time	By	Reference
Volatiles								
1,2,4-Trimethylbenzene	ND	4.7	0.47	ug/Kg	1	07/06/22	JLI	SW8260C
1,3,5-Trimethylbenzene	ND	4.7	0.47	ug/Kg	1	07/06/22	JLI	SW8260C
1,3-Dichlorobenzene	ND	4.7	0.47	ug/Kg	1	07/06/22	JLI	SW8260C
Naphthalene	ND	4.7	0.93	ug/Kg	1	07/06/22	JLI	SW8260C
n-Butylbenzene	ND	4.7	0.47	ug/Kg	1	07/06/22	JLI	SW8260C
n-Propylbenzene	ND	4.7	0.93	ug/Kg	1	07/06/22	JLI	SW8260C
p-Isopropyltoluene	ND	4.7	0.47	ug/Kg	1	07/06/22	JLI	SW8260C
sec-Butylbenzene	ND	4.7	0.47	ug/Kg	1	07/06/22	JLI	SW8260C
tert-Butylbenzene	ND	4.7	0.47	ug/Kg	1	07/06/22	JLI	SW8260C
QA/QC Surrogates								
% 1,2-dichlorobenzene-d4	95			%	1	07/06/22	JLI	70 - 130 %
% Bromofluorobenzene	102			%	1	07/06/22	JLI	70 - 130 %
% Dibromofluoromethane	102			%	1	07/06/22	JLI	70 - 130 %
% Toluene-d8	96			%	1	07/06/22	JLI	70 - 130 %
1,4-dioxane								
1,4-dioxane	ND	70	37	ug/kg	1	07/06/22	JLI	SW8260C
Volatiles								
1,1,1,2-Tetrachloroethane	ND	4.7	0.93	ug/Kg	1	07/06/22	JLI	SW8260C
1,1,1-Trichloroethane	ND	4.7	0.47	ug/Kg	1	07/06/22	JLI	SW8260C
1,1,2,2-Tetrachloroethane	ND	4.7	0.93	ug/Kg	1	07/06/22	JLI	SW8260C
1,1,2-Trichloroethane	ND	4.7	0.93	ug/Kg	1	07/06/22	JLI	SW8260C
1,1-Dichloroethane	ND	4.7	0.93	ug/Kg	1	07/06/22	JLI	SW8260C
1,1-Dichloroethene	ND	4.7	0.47	ug/Kg	1	07/06/22	JLI	SW8260C
1,2,3-Trichlorobenzene	ND	4.7	0.93	ug/Kg	1	07/06/22	JLI	SW8260C

Project ID: IMJC

Client ID: IMJC 1B (GRAB)

Phoenix I.D.: CL69740

Parameter	Result	RL/ PQL	LOD/ MDL	Units	Dilution	Date/Time	By	Reference
1,2,4-Trichlorobenzene	ND	4.7	0.93	ug/Kg	1	07/06/22	JLI	SW8260C
1,2-Dibromo-3-chloropropane	ND	4.7	0.93	ug/Kg	1	07/06/22	JLI	SW8260C
1,2-Dibromoethane	ND	4.2	0.47	ug/Kg	1	07/06/22	JLI	SW8260C
1,2-Dichlorobenzene	ND	4.7	0.47	ug/Kg	1	07/06/22	JLI	SW8260C
1,2-Dichloroethane	ND	4.7	0.47	ug/Kg	1	07/06/22	JLI	SW8260C
1,2-Dichloropropane	ND	4.7	0.93	ug/Kg	1	07/06/22	JLI	SW8260C
1,3-Dichlorobenzene	ND	4.7	0.47	ug/Kg	1	07/06/22	JLI	SW8260C
1,4-Dichlorobenzene	ND	4.7	0.47	ug/Kg	1	07/06/22	JLI	SW8260C
2-Hexanone	ND	23	4.7	ug/Kg	1	07/06/22	JLI	SW8260C
4-Methyl-2-pentanone	ND	23	4.7	ug/Kg	1	07/06/22	JLI	SW8260C
Acetone	ND	47	4.7	ug/Kg	1	07/06/22	JLI	SW8260C
Acrolein	ND	23	2.3	ug/Kg	1	07/06/22	JLI	SW8260C
Acrylonitrile	ND	9.3	0.47	ug/Kg	1	07/06/22	JLI	SW8260C
Benzene	ND	4.7	0.47	ug/Kg	1	07/06/22	JLI	SW8260C
Bromochloromethane	ND	4.7	0.47	ug/Kg	1	07/06/22	JLI	SW8260C
Bromodichloromethane	ND	4.7	0.93	ug/Kg	1	07/06/22	JLI	SW8260C
Bromoform	ND	4.7	0.93	ug/Kg	1	07/06/22	JLI	SW8260C
Bromomethane	ND	4.7	1.9	ug/Kg	1	07/06/22	JLI	SW8260C
Carbon Disulfide	ND	4.7	0.93	ug/Kg	1	07/06/22	JLI	SW8260C
Carbon tetrachloride	ND	4.7	0.93	ug/Kg	1	07/06/22	JLI	SW8260C
Chlorobenzene	ND	4.7	0.47	ug/Kg	1	07/06/22	JLI	SW8260C
Chloroethane	ND	4.7	0.47	ug/Kg	1	07/06/22	JLI	SW8260C
Chloroform	ND	4.7	0.47	ug/Kg	1	07/06/22	JLI	SW8260C
Chloromethane	ND	4.7	0.93	ug/Kg	1	07/06/22	JLI	SW8260C
cis-1,2-Dichloroethene	ND	4.7	0.47	ug/Kg	1	07/06/22	JLI	SW8260C
cis-1,3-Dichloropropene	ND	4.7	0.47	ug/Kg	1	07/06/22	JLI	SW8260C
Cyclohexane	ND	4.7	0.93	ug/Kg	1	07/06/22	JLI	SW8260C
Dibromochloromethane	ND	4.7	0.93	ug/Kg	1	07/06/22	JLI	SW8260C
Dichlorodifluoromethane	ND	4.7	0.47	ug/Kg	1	07/06/22	JLI	SW8260C
Ethylbenzene	ND	4.7	0.47	ug/Kg	1	07/06/22	JLI	SW8260C
Isopropylbenzene	ND	4.7	0.47	ug/Kg	1	07/06/22	JLI	SW8260C
m&p-Xylene	ND	4.7	0.93	ug/Kg	1	07/06/22	JLI	SW8260C
Methyl ethyl ketone	ND	28	4.7	ug/Kg	1	07/06/22	JLI	SW8260C
Methyl t-butyl ether (MTBE)	ND	9.3	0.93	ug/Kg	1	07/06/22	JLI	SW8260C
Methylacetate	ND	9.3	9.3	ug/Kg	1	07/06/22	JLI	SW8260C
Methylcyclohexane	ND	4.7	0.93	ug/Kg	1	07/06/22	JLI	SW8260C
Methylene chloride	ND	4.7	4.7	ug/Kg	1	07/06/22	JLI	SW8260C
o-Xylene	ND	4.7	0.93	ug/Kg	1	07/06/22	JLI	SW8260C
Styrene	ND	4.7	0.47	ug/Kg	1	07/06/22	JLI	SW8260C
tert-butyl alcohol	ND	93	19	ug/Kg	1	07/06/22	JLI	SW8260C
Tetrachloroethene	ND	4.7	0.93	ug/Kg	1	07/06/22	JLI	SW8260C
Toluene	ND	4.7	0.47	ug/Kg	1	07/06/22	JLI	SW8260C
Total Xylenes	ND	4.7	4.7	ug/Kg	1	07/06/22	JLI	SW8260C
trans-1,2-Dichloroethene	ND	4.7	0.47	ug/Kg	1	07/06/22	JLI	SW8260C
trans-1,3-Dichloropropene	ND	4.7	0.47	ug/Kg	1	07/06/22	JLI	SW8260C
Trichloroethene	ND	4.7	0.47	ug/Kg	1	07/06/22	JLI	SW8260C
Trichlorofluoromethane	ND	4.7	0.93	ug/Kg	1	07/06/22	JLI	SW8260C
Trichlorotrifluoroethane	ND	4.7	0.47	ug/Kg	1	07/06/22	JLI	SW8260C
Vinyl chloride	ND	4.7	0.47	ug/Kg	1	07/06/22	JLI	SW8260C

Project ID: IMJC

Client ID: IMJC 1B (GRAB)

Phoenix I.D.: CL69740

Parameter	Result	RL/ PQL	LOD/ MDL	Units	Dilution	Date/Time	By	Reference
QA/QC Surrogates								
% 1,2-dichlorobenzene-d4	95			%	1	07/06/22	JLI	70 - 130 %
% Bromofluorobenzene	102			%	1	07/06/22	JLI	70 - 130 %
% Dibromofluoromethane	102			%	1	07/06/22	JLI	70 - 130 %
% Toluene-d8	96			%	1	07/06/22	JLI	70 - 130 %
Vinyl Acetate	ND	47	47	ug/Kg	1	07/06/22	JLI	SW8260C

RL/PQL=Reporting/Practical Quantitation Level (Equivalent to NELAC LOQ, Limit of Quantitation) ND=Not Detected BRL=Below Reporting Level L=Biased Low LOD=Limit of Detection MDL=Method Detection Limit1
QA/QC Surrogates: Surrogates are compounds (preceeded with a %) added by the lab to determine analysis efficiency. Surrogate results(%) listed in the report are not "detected" compounds.

Comments:

Results are reported on an ``as received`` basis, and are not corrected for dry weight.

All soils, solids and sludges are reported on a dry weight basis unless otherwise noted in the sample comments.

If you are the client above and have any questions concerning this testing, please do not hesitate to contact Phoenix Client Services at ext.200.
The contents of this report cannot be discussed with anyone other than the client listed above without their written consent.

Phyllis Shiller, Laboratory Director

July 19, 2022

Reviewed and Released by: Rashmi Makol, Project Manager

PHOENIX
Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

ACCREDITED IN ACCORDANCE WITH nelac NY # 11301

Analysis Report

July 19, 2022

FOR: Attn: Mr. Jeff Bogoian
Impact Materials
170 Keyland Court
Bohemia NY 11716

Sample Information		Custody Information		Date	Time
Matrix:	SOIL	Collected by:		07/05/22	8:30
Location Code:	IMPACTJB-IM	Received by:	SW	07/05/22	15:48
Rush Request:	72 Hour	Analyzed by:	see "By" below		
P.O.#:					

Laboratory Data

SDG ID: GCL69739
Phoenix ID: CL69741

Project ID: IMJC
Client ID: IMJC 1C (GRAB)

Parameter	Result	RL/ PQL	LOD/ MDL	Units	Dilution	Date/Time	By	Reference
Volatiles								
1,2,4-Trimethylbenzene	ND	4.8	0.48	ug/Kg	1	07/06/22	JLI	SW8260C
1,3,5-Trimethylbenzene	ND	4.8	0.48	ug/Kg	1	07/06/22	JLI	SW8260C
1,3-Dichlorobenzene	ND	4.8	0.48	ug/Kg	1	07/06/22	JLI	SW8260C
Naphthalene	ND	4.8	0.95	ug/Kg	1	07/06/22	JLI	SW8260C
n-Butylbenzene	ND	4.8	0.48	ug/Kg	1	07/06/22	JLI	SW8260C
n-Propylbenzene	ND	4.8	0.95	ug/Kg	1	07/06/22	JLI	SW8260C
p-Isopropyltoluene	ND	4.8	0.48	ug/Kg	1	07/06/22	JLI	SW8260C
sec-Butylbenzene	ND	4.8	0.48	ug/Kg	1	07/06/22	JLI	SW8260C
tert-Butylbenzene	ND	4.8	0.48	ug/Kg	1	07/06/22	JLI	SW8260C
QA/QC Surrogates								
% 1,2-dichlorobenzene-d4	98			%	1	07/06/22	JLI	70 - 130 %
% Bromofluorobenzene	101			%	1	07/06/22	JLI	70 - 130 %
% Dibromofluoromethane	103			%	1	07/06/22	JLI	70 - 130 %
% Toluene-d8	96			%	1	07/06/22	JLI	70 - 130 %
1,4-dioxane								
1,4-dioxane	ND	71	38	ug/kg	1	07/06/22	JLI	SW8260C
Volatiles								
1,1,1,2-Tetrachloroethane	ND	4.8	0.95	ug/Kg	1	07/06/22	JLI	SW8260C
1,1,1-Trichloroethane	ND	4.8	0.48	ug/Kg	1	07/06/22	JLI	SW8260C
1,1,2,2-Tetrachloroethane	ND	4.8	0.95	ug/Kg	1	07/06/22	JLI	SW8260C
1,1,2-Trichloroethane	ND	4.8	0.95	ug/Kg	1	07/06/22	JLI	SW8260C
1,1-Dichloroethane	ND	4.8	0.95	ug/Kg	1	07/06/22	JLI	SW8260C
1,1-Dichloroethene	ND	4.8	0.48	ug/Kg	1	07/06/22	JLI	SW8260C
1,2,3-Trichlorobenzene	ND	4.8	0.95	ug/Kg	1	07/06/22	JLI	SW8260C

Project ID: IMJC

Client ID: IMJC 1C (GRAB)

Phoenix I.D.: CL69741

Parameter	Result	RL/ PQL	LOD/ MDL	Units	Dilution	Date/Time	By	Reference
1,2,4-Trichlorobenzene	ND	4.8	0.95	ug/Kg	1	07/06/22	JLI	SW8260C
1,2-Dibromo-3-chloropropane	ND	4.8	0.95	ug/Kg	1	07/06/22	JLI	SW8260C
1,2-Dibromoethane	ND	4.3	0.48	ug/Kg	1	07/06/22	JLI	SW8260C
1,2-Dichlorobenzene	ND	4.8	0.48	ug/Kg	1	07/06/22	JLI	SW8260C
1,2-Dichloroethane	ND	4.8	0.48	ug/Kg	1	07/06/22	JLI	SW8260C
1,2-Dichloropropane	ND	4.8	0.95	ug/Kg	1	07/06/22	JLI	SW8260C
1,3-Dichlorobenzene	ND	4.8	0.48	ug/Kg	1	07/06/22	JLI	SW8260C
1,4-Dichlorobenzene	ND	4.8	0.48	ug/Kg	1	07/06/22	JLI	SW8260C
2-Hexanone	ND	24	4.8	ug/Kg	1	07/06/22	JLI	SW8260C
4-Methyl-2-pentanone	ND	24	4.8	ug/Kg	1	07/06/22	JLI	SW8260C
Acetone	ND	48	4.8	ug/Kg	1	07/06/22	JLI	SW8260C
Acrolein	ND	24	2.4	ug/Kg	1	07/06/22	JLI	SW8260C
Acrylonitrile	ND	9.5	0.48	ug/Kg	1	07/06/22	JLI	SW8260C
Benzene	ND	4.8	0.48	ug/Kg	1	07/06/22	JLI	SW8260C
Bromochloromethane	ND	4.8	0.48	ug/Kg	1	07/06/22	JLI	SW8260C
Bromodichloromethane	ND	4.8	0.95	ug/Kg	1	07/06/22	JLI	SW8260C
Bromoform	ND	4.8	0.95	ug/Kg	1	07/06/22	JLI	SW8260C
Bromomethane	ND	4.8	1.9	ug/Kg	1	07/06/22	JLI	SW8260C
Carbon Disulfide	ND	4.8	0.95	ug/Kg	1	07/06/22	JLI	SW8260C
Carbon tetrachloride	ND	4.8	0.95	ug/Kg	1	07/06/22	JLI	SW8260C
Chlorobenzene	ND	4.8	0.48	ug/Kg	1	07/06/22	JLI	SW8260C
Chloroethane	ND	4.8	0.48	ug/Kg	1	07/06/22	JLI	SW8260C
Chloroform	ND	4.8	0.48	ug/Kg	1	07/06/22	JLI	SW8260C
Chloromethane	ND	4.8	0.95	ug/Kg	1	07/06/22	JLI	SW8260C
cis-1,2-Dichloroethene	ND	4.8	0.48	ug/Kg	1	07/06/22	JLI	SW8260C
cis-1,3-Dichloropropene	ND	4.8	0.48	ug/Kg	1	07/06/22	JLI	SW8260C
Cyclohexane	ND	4.8	0.95	ug/Kg	1	07/06/22	JLI	SW8260C
Dibromochloromethane	ND	4.8	0.95	ug/Kg	1	07/06/22	JLI	SW8260C
Dichlorodifluoromethane	ND	4.8	0.48	ug/Kg	1	07/06/22	JLI	SW8260C
Ethylbenzene	ND	4.8	0.48	ug/Kg	1	07/06/22	JLI	SW8260C
Isopropylbenzene	ND	4.8	0.48	ug/Kg	1	07/06/22	JLI	SW8260C
m&p-Xylene	ND	4.8	0.95	ug/Kg	1	07/06/22	JLI	SW8260C
Methyl ethyl ketone	ND	29	4.8	ug/Kg	1	07/06/22	JLI	SW8260C
Methyl t-butyl ether (MTBE)	ND	9.5	0.95	ug/Kg	1	07/06/22	JLI	SW8260C
Methylacetate	ND	9.5	9.5	ug/Kg	1	07/06/22	JLI	SW8260C
Methylcyclohexane	ND	4.8	0.95	ug/Kg	1	07/06/22	JLI	SW8260C
Methylene chloride	ND	4.8	4.8	ug/Kg	1	07/06/22	JLI	SW8260C
o-Xylene	ND	4.8	0.95	ug/Kg	1	07/06/22	JLI	SW8260C
Styrene	ND	4.8	0.48	ug/Kg	1	07/06/22	JLI	SW8260C
tert-butyl alcohol	ND	95	19	ug/Kg	1	07/06/22	JLI	SW8260C
Tetrachloroethene	ND	4.8	0.95	ug/Kg	1	07/06/22	JLI	SW8260C
Toluene	ND	4.8	0.48	ug/Kg	1	07/06/22	JLI	SW8260C
Total Xylenes	ND	4.8	4.8	ug/Kg	1	07/06/22	JLI	SW8260C
trans-1,2-Dichloroethene	ND	4.8	0.48	ug/Kg	1	07/06/22	JLI	SW8260C
trans-1,3-Dichloropropene	ND	4.8	0.48	ug/Kg	1	07/06/22	JLI	SW8260C
Trichloroethene	ND	4.8	0.48	ug/Kg	1	07/06/22	JLI	SW8260C
Trichlorofluoromethane	ND	4.8	0.95	ug/Kg	1	07/06/22	JLI	SW8260C
Trichlorotrifluoroethane	ND	4.8	0.48	ug/Kg	1	07/06/22	JLI	SW8260C
Vinyl chloride	ND	4.8	0.48	ug/Kg	1	07/06/22	JLI	SW8260C

Project ID: IMJC

Client ID: IMJC 1C (GRAB)

Phoenix I.D.: CL69741

Parameter	Result	RL/ PQL	LOD/ MDL	Units	Dilution	Date/Time	By	Reference
QA/QC Surrogates								
% 1,2-dichlorobenzene-d4	98			%	1	07/06/22	JLI	70 - 130 %
% Bromofluorobenzene	101			%	1	07/06/22	JLI	70 - 130 %
% Dibromofluoromethane	103			%	1	07/06/22	JLI	70 - 130 %
% Toluene-d8	96			%	1	07/06/22	JLI	70 - 130 %
Vinyl Acetate	ND	48	48	ug/Kg	1	07/06/22	JLI	SW8260C

RL/PQL=Reporting/Practical Quantitation Level (Equivalent to NELAC LOQ, Limit of Quantitation) ND=Not Detected BRL=Below Reporting Level L=Biased Low LOD=Limit of Detection MDL=Method Detection Limit1
QA/QC Surrogates: Surrogates are compounds (preceeded with a %) added by the lab to determine analysis efficiency. Surrogate results(%) listed in the report are not "detected" compounds.

Comments:

Results are reported on an ``as received`` basis, and are not corrected for dry weight.

All soils, solids and sludges are reported on a dry weight basis unless otherwise noted in the sample comments.

If you are the client above and have any questions concerning this testing, please do not hesitate to contact Phoenix Client Services at ext.200.
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Phyllis Shiller, Laboratory Director

July 19, 2022

Reviewed and Released by: Rashmi Makol, Project Manager

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Tel. (860) 645-1102 Fax (860) 645-0823

ACCREDITED IN ACCORDANCE WITH nelac NY # 11301

Analysis Report

July 19, 2022

FOR: Attn: Mr. Jeff Bogoian
Impact Materials
170 Keyland Court
Bohemia NY 11716

Sample Information		Custody Information		Date	Time
Matrix:	SOIL	Collected by:		07/05/22	8:10
Location Code:	IMPACTJB-IM	Received by:	SW	07/05/22	15:48
Rush Request:	72 Hour	Analyzed by:	see "By" below		
P.O.#:					

Laboratory Data

SDG ID: GCL69739
Phoenix ID: CL69742

Project ID: IMJC
Client ID: IMJC 2A (GRAB)

Parameter	Result	RL/ PQL	LOD/ MDL	Units	Dilution	Date/Time	By	Reference
Volatiles								
1,2,4-Trimethylbenzene	ND	4.6	0.46	ug/Kg	1	07/06/22	JLI	SW8260C
1,3,5-Trimethylbenzene	ND	4.6	0.46	ug/Kg	1	07/06/22	JLI	SW8260C
1,3-Dichlorobenzene	ND	4.6	0.46	ug/Kg	1	07/06/22	JLI	SW8260C
Naphthalene	ND	4.6	0.91	ug/Kg	1	07/06/22	JLI	SW8260C
n-Butylbenzene	ND	4.6	0.46	ug/Kg	1	07/06/22	JLI	SW8260C
n-Propylbenzene	ND	4.6	0.91	ug/Kg	1	07/06/22	JLI	SW8260C
p-Isopropyltoluene	ND	4.6	0.46	ug/Kg	1	07/06/22	JLI	SW8260C
sec-Butylbenzene	ND	4.6	0.46	ug/Kg	1	07/06/22	JLI	SW8260C
tert-Butylbenzene	ND	4.6	0.46	ug/Kg	1	07/06/22	JLI	SW8260C
QA/QC Surrogates								
% 1,2-dichlorobenzene-d4	98			%	1	07/06/22	JLI	70 - 130 %
% Bromofluorobenzene	101			%	1	07/06/22	JLI	70 - 130 %
% Dibromofluoromethane	95			%	1	07/06/22	JLI	70 - 130 %
% Toluene-d8	96			%	1	07/06/22	JLI	70 - 130 %
1,4-dioxane								
1,4-dioxane	ND	68	36	ug/kg	1	07/06/22	JLI	SW8260C
Volatiles								
1,1,1,2-Tetrachloroethane	ND	4.6	0.91	ug/Kg	1	07/06/22	JLI	SW8260C
1,1,1-Trichloroethane	ND	4.6	0.46	ug/Kg	1	07/06/22	JLI	SW8260C
1,1,2,2-Tetrachloroethane	ND	4.6	0.91	ug/Kg	1	07/06/22	JLI	SW8260C
1,1,2-Trichloroethane	ND	4.6	0.91	ug/Kg	1	07/06/22	JLI	SW8260C
1,1-Dichloroethane	ND	4.6	0.91	ug/Kg	1	07/06/22	JLI	SW8260C
1,1-Dichloroethene	ND	4.6	0.46	ug/Kg	1	07/06/22	JLI	SW8260C
1,2,3-Trichlorobenzene	ND	4.6	0.91	ug/Kg	1	07/06/22	JLI	SW8260C

Project ID: IMJC

Client ID: IMJC 2A (GRAB)

Phoenix I.D.: CL69742

Parameter	Result	RL/ PQL	LOD/ MDL	Units	Dilution	Date/Time	By	Reference
1,2,4-Trichlorobenzene	ND	4.6	0.91	ug/Kg	1	07/06/22	JLI	SW8260C
1,2-Dibromo-3-chloropropane	ND	4.6	0.91	ug/Kg	1	07/06/22	JLI	SW8260C
1,2-Dibromoethane	ND	4.1	0.46	ug/Kg	1	07/06/22	JLI	SW8260C
1,2-Dichlorobenzene	ND	4.6	0.46	ug/Kg	1	07/06/22	JLI	SW8260C
1,2-Dichloroethane	ND	4.6	0.46	ug/Kg	1	07/06/22	JLI	SW8260C
1,2-Dichloropropane	ND	4.6	0.91	ug/Kg	1	07/06/22	JLI	SW8260C
1,3-Dichlorobenzene	ND	4.6	0.46	ug/Kg	1	07/06/22	JLI	SW8260C
1,4-Dichlorobenzene	ND	4.6	0.46	ug/Kg	1	07/06/22	JLI	SW8260C
2-Hexanone	ND	23	4.6	ug/Kg	1	07/06/22	JLI	SW8260C
4-Methyl-2-pentanone	ND	23	4.6	ug/Kg	1	07/06/22	JLI	SW8260C
Acetone	ND	46	4.6	ug/Kg	1	07/06/22	JLI	SW8260C
Acrolein	ND	23	2.3	ug/Kg	1	07/06/22	JLI	SW8260C
Acrylonitrile	ND	9.1	0.46	ug/Kg	1	07/06/22	JLI	SW8260C
Benzene	ND	4.6	0.46	ug/Kg	1	07/06/22	JLI	SW8260C
Bromochloromethane	ND	4.6	0.46	ug/Kg	1	07/06/22	JLI	SW8260C
Bromodichloromethane	ND	4.6	0.91	ug/Kg	1	07/06/22	JLI	SW8260C
Bromoform	ND	4.6	0.91	ug/Kg	1	07/06/22	JLI	SW8260C
Bromomethane	ND	4.6	1.8	ug/Kg	1	07/06/22	JLI	SW8260C
Carbon Disulfide	ND	4.6	0.91	ug/Kg	1	07/06/22	JLI	SW8260C
Carbon tetrachloride	ND	4.6	0.91	ug/Kg	1	07/06/22	JLI	SW8260C
Chlorobenzene	ND	4.6	0.46	ug/Kg	1	07/06/22	JLI	SW8260C
Chloroethane	ND	4.6	0.46	ug/Kg	1	07/06/22	JLI	SW8260C
Chloroform	ND	4.6	0.46	ug/Kg	1	07/06/22	JLI	SW8260C
Chloromethane	ND	4.6	0.91	ug/Kg	1	07/06/22	JLI	SW8260C
cis-1,2-Dichloroethene	ND	4.6	0.46	ug/Kg	1	07/06/22	JLI	SW8260C
cis-1,3-Dichloropropene	ND	4.6	0.46	ug/Kg	1	07/06/22	JLI	SW8260C
Cyclohexane	ND	4.6	0.91	ug/Kg	1	07/06/22	JLI	SW8260C
Dibromochloromethane	ND	4.6	0.91	ug/Kg	1	07/06/22	JLI	SW8260C
Dichlorodifluoromethane	ND	4.6	0.46	ug/Kg	1	07/06/22	JLI	SW8260C
Ethylbenzene	ND	4.6	0.46	ug/Kg	1	07/06/22	JLI	SW8260C
Isopropylbenzene	ND	4.6	0.46	ug/Kg	1	07/06/22	JLI	SW8260C
m&p-Xylene	ND	4.6	0.91	ug/Kg	1	07/06/22	JLI	SW8260C
Methyl ethyl ketone	ND	27	4.6	ug/Kg	1	07/06/22	JLI	SW8260C
Methyl t-butyl ether (MTBE)	ND	9.1	0.91	ug/Kg	1	07/06/22	JLI	SW8260C
Methylacetate	ND	9.1	9.1	ug/Kg	1	07/06/22	JLI	SW8260C
Methylcyclohexane	ND	4.6	0.91	ug/Kg	1	07/06/22	JLI	SW8260C
Methylene chloride	ND	4.6	4.6	ug/Kg	1	07/06/22	JLI	SW8260C
o-Xylene	ND	4.6	0.91	ug/Kg	1	07/06/22	JLI	SW8260C
Styrene	ND	4.6	0.46	ug/Kg	1	07/06/22	JLI	SW8260C
tert-butyl alcohol	ND	91	18	ug/Kg	1	07/06/22	JLI	SW8260C
Tetrachloroethene	ND	4.6	0.91	ug/Kg	1	07/06/22	JLI	SW8260C
Toluene	ND	4.6	0.46	ug/Kg	1	07/06/22	JLI	SW8260C
Total Xylenes	ND	4.6	4.6	ug/Kg	1	07/06/22	JLI	SW8260C
trans-1,2-Dichloroethene	ND	4.6	0.46	ug/Kg	1	07/06/22	JLI	SW8260C
trans-1,3-Dichloropropene	ND	4.6	0.46	ug/Kg	1	07/06/22	JLI	SW8260C
Trichloroethene	ND	4.6	0.46	ug/Kg	1	07/06/22	JLI	SW8260C
Trichlorofluoromethane	ND	4.6	0.91	ug/Kg	1	07/06/22	JLI	SW8260C
Trichlorotrifluoroethane	ND	4.6	0.46	ug/Kg	1	07/06/22	JLI	SW8260C
Vinyl chloride	ND	4.6	0.46	ug/Kg	1	07/06/22	JLI	SW8260C

Project ID: IMJC

Client ID: IMJC 2A (GRAB)

Phoenix I.D.: CL69742

Parameter	Result	RL/ PQL	LOD/ MDL	Units	Dilution	Date/Time	By	Reference
QA/QC Surrogates								
% 1,2-dichlorobenzene-d4	98			%	1	07/06/22	JLI	70 - 130 %
% Bromofluorobenzene	101			%	1	07/06/22	JLI	70 - 130 %
% Dibromofluoromethane	95			%	1	07/06/22	JLI	70 - 130 %
% Toluene-d8	96			%	1	07/06/22	JLI	70 - 130 %
Vinyl Acetate	ND	46	46	ug/Kg	1	07/06/22	JLI	SW8260C

RL/PQL=Reporting/Practical Quantitation Level (Equivalent to NELAC LOQ, Limit of Quantitation) ND=Not Detected BRL=Below Reporting Level L=Biased Low LOD=Limit of Detection MDL=Method Detection Limit1
QA/QC Surrogates: Surrogates are compounds (preceeded with a %) added by the lab to determine analysis efficiency. Surrogate results(%) listed in the report are not "detected" compounds.

Comments:

Results are reported on an ``as received`` basis, and are not corrected for dry weight.

All soils, solids and sludges are reported on a dry weight basis unless otherwise noted in the sample comments.

If you are the client above and have any questions concerning this testing, please do not hesitate to contact Phoenix Client Services at ext.200.
The contents of this report cannot be discussed with anyone other than the client listed above without their written consent.

Phyllis Shiller, Laboratory Director

July 19, 2022

Reviewed and Released by: Rashmi Makol, Project Manager

PHOENIX
Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

ACCREDITED IN ACCORDANCE WITH nelac NY # 11301

Analysis Report

July 19, 2022

FOR: Attn: Mr. Jeff Bogoian
Impact Materials
170 Keyland Court
Bohemia NY 11716

Sample Information		Custody Information		Date	Time
Matrix:	SOIL	Collected by:		07/05/22	8:15
Location Code:	IMPACTJB-IM	Received by:	SW	07/05/22	15:48
Rush Request:	72 Hour	Analyzed by:	see "By" below		
P.O.#:					

Laboratory Data

SDG ID: GCL69739
Phoenix ID: CL69743

Project ID: IMJC
Client ID: IMJC 2B (GRAB)

Parameter	Result	RL/ PQL	LOD/ MDL	Units	Dilution	Date/Time	By	Reference
Volatiles								
1,2,4-Trimethylbenzene	ND	4.7	0.47	ug/Kg	1	07/06/22	JLI	SW8260C
1,3,5-Trimethylbenzene	ND	4.7	0.47	ug/Kg	1	07/06/22	JLI	SW8260C
1,3-Dichlorobenzene	ND	4.7	0.47	ug/Kg	1	07/06/22	JLI	SW8260C
Naphthalene	ND	4.7	0.93	ug/Kg	1	07/06/22	JLI	SW8260C
n-Butylbenzene	ND	4.7	0.47	ug/Kg	1	07/06/22	JLI	SW8260C
n-Propylbenzene	ND	4.7	0.93	ug/Kg	1	07/06/22	JLI	SW8260C
p-Isopropyltoluene	ND	4.7	0.47	ug/Kg	1	07/06/22	JLI	SW8260C
sec-Butylbenzene	ND	4.7	0.47	ug/Kg	1	07/06/22	JLI	SW8260C
tert-Butylbenzene	ND	4.7	0.47	ug/Kg	1	07/06/22	JLI	SW8260C
QA/QC Surrogates								
% 1,2-dichlorobenzene-d4	97			%	1	07/06/22	JLI	70 - 130 %
% Bromofluorobenzene	100			%	1	07/06/22	JLI	70 - 130 %
% Dibromofluoromethane	100			%	1	07/06/22	JLI	70 - 130 %
% Toluene-d8	96			%	1	07/06/22	JLI	70 - 130 %
1,4-dioxane								
1,4-dioxane	ND	70	37	ug/kg	1	07/06/22	JLI	SW8260C
Volatiles								
1,1,1,2-Tetrachloroethane	ND	4.7	0.93	ug/Kg	1	07/06/22	JLI	SW8260C
1,1,1-Trichloroethane	ND	4.7	0.47	ug/Kg	1	07/06/22	JLI	SW8260C
1,1,2,2-Tetrachloroethane	ND	4.7	0.93	ug/Kg	1	07/06/22	JLI	SW8260C
1,1,2-Trichloroethane	ND	4.7	0.93	ug/Kg	1	07/06/22	JLI	SW8260C
1,1-Dichloroethane	ND	4.7	0.93	ug/Kg	1	07/06/22	JLI	SW8260C
1,1-Dichloroethene	ND	4.7	0.47	ug/Kg	1	07/06/22	JLI	SW8260C
1,2,3-Trichlorobenzene	ND	4.7	0.93	ug/Kg	1	07/06/22	JLI	SW8260C

Project ID: IMJC

Client ID: IMJC 2B (GRAB)

Phoenix I.D.: CL69743

Parameter	Result	RL/ PQL	LOD/ MDL	Units	Dilution	Date/Time	By	Reference
1,2,4-Trichlorobenzene	ND	4.7	0.93	ug/Kg	1	07/06/22	JLI	SW8260C
1,2-Dibromo-3-chloropropane	ND	4.7	0.93	ug/Kg	1	07/06/22	JLI	SW8260C
1,2-Dibromoethane	ND	4.2	0.47	ug/Kg	1	07/06/22	JLI	SW8260C
1,2-Dichlorobenzene	ND	4.7	0.47	ug/Kg	1	07/06/22	JLI	SW8260C
1,2-Dichloroethane	ND	4.7	0.47	ug/Kg	1	07/06/22	JLI	SW8260C
1,2-Dichloropropane	ND	4.7	0.93	ug/Kg	1	07/06/22	JLI	SW8260C
1,3-Dichlorobenzene	ND	4.7	0.47	ug/Kg	1	07/06/22	JLI	SW8260C
1,4-Dichlorobenzene	ND	4.7	0.47	ug/Kg	1	07/06/22	JLI	SW8260C
2-Hexanone	ND	23	4.7	ug/Kg	1	07/06/22	JLI	SW8260C
4-Methyl-2-pentanone	ND	23	4.7	ug/Kg	1	07/06/22	JLI	SW8260C
Acetone	ND	47	4.7	ug/Kg	1	07/06/22	JLI	SW8260C
Acrolein	ND	23	2.3	ug/Kg	1	07/06/22	JLI	SW8260C
Acrylonitrile	ND	9.3	0.47	ug/Kg	1	07/06/22	JLI	SW8260C
Benzene	ND	4.7	0.47	ug/Kg	1	07/06/22	JLI	SW8260C
Bromochloromethane	ND	4.7	0.47	ug/Kg	1	07/06/22	JLI	SW8260C
Bromodichloromethane	ND	4.7	0.93	ug/Kg	1	07/06/22	JLI	SW8260C
Bromoform	ND	4.7	0.93	ug/Kg	1	07/06/22	JLI	SW8260C
Bromomethane	ND	4.7	1.9	ug/Kg	1	07/06/22	JLI	SW8260C
Carbon Disulfide	ND	4.7	0.93	ug/Kg	1	07/06/22	JLI	SW8260C
Carbon tetrachloride	ND	4.7	0.93	ug/Kg	1	07/06/22	JLI	SW8260C
Chlorobenzene	ND	4.7	0.47	ug/Kg	1	07/06/22	JLI	SW8260C
Chloroethane	ND	4.7	0.47	ug/Kg	1	07/06/22	JLI	SW8260C
Chloroform	ND	4.7	0.47	ug/Kg	1	07/06/22	JLI	SW8260C
Chloromethane	ND	4.7	0.93	ug/Kg	1	07/06/22	JLI	SW8260C
cis-1,2-Dichloroethene	ND	4.7	0.47	ug/Kg	1	07/06/22	JLI	SW8260C
cis-1,3-Dichloropropene	ND	4.7	0.47	ug/Kg	1	07/06/22	JLI	SW8260C
Cyclohexane	ND	4.7	0.93	ug/Kg	1	07/06/22	JLI	SW8260C
Dibromochloromethane	ND	4.7	0.93	ug/Kg	1	07/06/22	JLI	SW8260C
Dichlorodifluoromethane	ND	4.7	0.47	ug/Kg	1	07/06/22	JLI	SW8260C
Ethylbenzene	ND	4.7	0.47	ug/Kg	1	07/06/22	JLI	SW8260C
Isopropylbenzene	ND	4.7	0.47	ug/Kg	1	07/06/22	JLI	SW8260C
m&p-Xylene	ND	4.7	0.93	ug/Kg	1	07/06/22	JLI	SW8260C
Methyl ethyl ketone	ND	28	4.7	ug/Kg	1	07/06/22	JLI	SW8260C
Methyl t-butyl ether (MTBE)	ND	9.3	0.93	ug/Kg	1	07/06/22	JLI	SW8260C
Methylacetate	ND	9.3	9.3	ug/Kg	1	07/06/22	JLI	SW8260C
Methylcyclohexane	ND	4.7	0.93	ug/Kg	1	07/06/22	JLI	SW8260C
Methylene chloride	ND	4.7	4.7	ug/Kg	1	07/06/22	JLI	SW8260C
o-Xylene	ND	4.7	0.93	ug/Kg	1	07/06/22	JLI	SW8260C
Styrene	ND	4.7	0.47	ug/Kg	1	07/06/22	JLI	SW8260C
tert-butyl alcohol	ND	93	19	ug/Kg	1	07/06/22	JLI	SW8260C
Tetrachloroethene	ND	4.7	0.93	ug/Kg	1	07/06/22	JLI	SW8260C
Toluene	ND	4.7	0.47	ug/Kg	1	07/06/22	JLI	SW8260C
Total Xylenes	ND	4.7	4.7	ug/Kg	1	07/06/22	JLI	SW8260C
trans-1,2-Dichloroethene	ND	4.7	0.47	ug/Kg	1	07/06/22	JLI	SW8260C
trans-1,3-Dichloropropene	ND	4.7	0.47	ug/Kg	1	07/06/22	JLI	SW8260C
Trichloroethene	ND	4.7	0.47	ug/Kg	1	07/06/22	JLI	SW8260C
Trichlorofluoromethane	ND	4.7	0.93	ug/Kg	1	07/06/22	JLI	SW8260C
Trichlorotrifluoroethane	ND	4.7	0.47	ug/Kg	1	07/06/22	JLI	SW8260C
Vinyl chloride	ND	4.7	0.47	ug/Kg	1	07/06/22	JLI	SW8260C

Project ID: IMJC

Client ID: IMJC 2B (GRAB)

Phoenix I.D.: CL69743

Parameter	Result	RL/ PQL	LOD/ MDL	Units	Dilution	Date/Time	By	Reference
QA/QC Surrogates								
% 1,2-dichlorobenzene-d4	97			%	1	07/06/22	JLI	70 - 130 %
% Bromofluorobenzene	100			%	1	07/06/22	JLI	70 - 130 %
% Dibromofluoromethane	100			%	1	07/06/22	JLI	70 - 130 %
% Toluene-d8	96			%	1	07/06/22	JLI	70 - 130 %
Vinyl Acetate	ND	47	47	ug/Kg	1	07/06/22	JLI	SW8260C

RL/PQL=Reporting/Practical Quantitation Level (Equivalent to NELAC LOQ, Limit of Quantitation) ND=Not Detected BRL=Below Reporting Level L=Biased Low LOD=Limit of Detection MDL=Method Detection Limit1
QA/QC Surrogates: Surrogates are compounds (preceeded with a %) added by the lab to determine analysis efficiency. Surrogate results(%) listed in the report are not "detected" compounds.

Comments:

Results are reported on an ``as received`` basis, and are not corrected for dry weight.

All soils, solids and sludges are reported on a dry weight basis unless otherwise noted in the sample comments.

If you are the client above and have any questions concerning this testing, please do not hesitate to contact Phoenix Client Services at ext.200.
The contents of this report cannot be discussed with anyone other than the client listed above without their written consent.

Phyllis Shiller, Laboratory Director

July 19, 2022

Reviewed and Released by: Rashmi Makol, Project Manager

PHOENIX
Environmental Laboratories, Inc.
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Tel. (860) 645-1102 Fax (860) 645-0823

ACCREDITED IN ACCORDANCE WITH nelac NY # 11301

Analysis Report

July 19, 2022

FOR: Attn: Mr. Jeff Bogoian
Impact Materials
170 Keyland Court
Bohemia NY 11716

Sample Information		Custody Information		Date	Time
Matrix:	SOIL	Collected by:		07/05/22	8:40
Location Code:	IMPACTJB-IM	Received by:	SW	07/05/22	15:48
Rush Request:	72 Hour	Analyzed by:	see "By" below		
P.O.#:					

Laboratory Data

SDG ID: GCL69739
Phoenix ID: CL69744

Project ID: IMJC
Client ID: IMJC 2C (GRAB)

Parameter	Result	RL/ PQL	LOD/ MDL	Units	Dilution	Date/Time	By	Reference
Volatiles								
1,2,4-Trimethylbenzene	ND	5.0	0.50	ug/Kg	1	07/06/22	JLI	SW8260C
1,3,5-Trimethylbenzene	ND	5.0	0.50	ug/Kg	1	07/06/22	JLI	SW8260C
1,3-Dichlorobenzene	ND	5.0	0.50	ug/Kg	1	07/06/22	JLI	SW8260C
Naphthalene	ND	5.0	1.0	ug/Kg	1	07/06/22	JLI	SW8260C
n-Butylbenzene	ND	5.0	0.50	ug/Kg	1	07/06/22	JLI	SW8260C
n-Propylbenzene	ND	5.0	1.0	ug/Kg	1	07/06/22	JLI	SW8260C
p-Isopropyltoluene	ND	5.0	0.50	ug/Kg	1	07/06/22	JLI	SW8260C
sec-Butylbenzene	ND	5.0	0.50	ug/Kg	1	07/06/22	JLI	SW8260C
tert-Butylbenzene	ND	5.0	0.50	ug/Kg	1	07/06/22	JLI	SW8260C
QA/QC Surrogates								
% 1,2-dichlorobenzene-d4	97			%	1	07/06/22	JLI	70 - 130 %
% Bromofluorobenzene	101			%	1	07/06/22	JLI	70 - 130 %
% Dibromofluoromethane	100			%	1	07/06/22	JLI	70 - 130 %
% Toluene-d8	97			%	1	07/06/22	JLI	70 - 130 %
1,4-dioxane								
1,4-dioxane	ND	75	40	ug/kg	1	07/06/22	JLI	SW8260C
Volatiles								
1,1,1,2-Tetrachloroethane	ND	5.0	1.0	ug/Kg	1	07/06/22	JLI	SW8260C
1,1,1-Trichloroethane	ND	5.0	0.50	ug/Kg	1	07/06/22	JLI	SW8260C
1,1,2,2-Tetrachloroethane	ND	5.0	1.0	ug/Kg	1	07/06/22	JLI	SW8260C
1,1,2-Trichloroethane	ND	5.0	1.0	ug/Kg	1	07/06/22	JLI	SW8260C
1,1-Dichloroethane	ND	5.0	1.0	ug/Kg	1	07/06/22	JLI	SW8260C
1,1-Dichloroethene	ND	5.0	0.50	ug/Kg	1	07/06/22	JLI	SW8260C
1,2,3-Trichlorobenzene	ND	5.0	1.0	ug/Kg	1	07/06/22	JLI	SW8260C

Project ID: IMJC

Client ID: IMJC 2C (GRAB)

Phoenix I.D.: CL69744

Parameter	Result	RL/ PQL	LOD/ MDL	Units	Dilution	Date/Time	By	Reference
1,2,4-Trichlorobenzene	ND	5.0	1.0	ug/Kg	1	07/06/22	JLI	SW8260C
1,2-Dibromo-3-chloropropane	ND	5.0	1.0	ug/Kg	1	07/06/22	JLI	SW8260C
1,2-Dibromoethane	ND	4.5	0.50	ug/Kg	1	07/06/22	JLI	SW8260C
1,2-Dichlorobenzene	ND	5.0	0.50	ug/Kg	1	07/06/22	JLI	SW8260C
1,2-Dichloroethane	ND	5.0	0.50	ug/Kg	1	07/06/22	JLI	SW8260C
1,2-Dichloropropane	ND	5.0	1.0	ug/Kg	1	07/06/22	JLI	SW8260C
1,3-Dichlorobenzene	ND	5.0	0.50	ug/Kg	1	07/06/22	JLI	SW8260C
1,4-Dichlorobenzene	ND	5.0	0.50	ug/Kg	1	07/06/22	JLI	SW8260C
2-Hexanone	ND	25	5.0	ug/Kg	1	07/06/22	JLI	SW8260C
4-Methyl-2-pentanone	ND	25	5.0	ug/Kg	1	07/06/22	JLI	SW8260C
Acetone	ND	50	5.0	ug/Kg	1	07/06/22	JLI	SW8260C
Acrolein	ND	25	2.5	ug/Kg	1	07/06/22	JLI	SW8260C
Acrylonitrile	ND	10	0.50	ug/Kg	1	07/06/22	JLI	SW8260C
Benzene	ND	5.0	0.50	ug/Kg	1	07/06/22	JLI	SW8260C
Bromochloromethane	ND	5.0	0.50	ug/Kg	1	07/06/22	JLI	SW8260C
Bromodichloromethane	ND	5.0	1.0	ug/Kg	1	07/06/22	JLI	SW8260C
Bromoform	ND	5.0	1.0	ug/Kg	1	07/06/22	JLI	SW8260C
Bromomethane	ND	5.0	2.0	ug/Kg	1	07/06/22	JLI	SW8260C
Carbon Disulfide	ND	5.0	1.0	ug/Kg	1	07/06/22	JLI	SW8260C
Carbon tetrachloride	ND	5.0	1.0	ug/Kg	1	07/06/22	JLI	SW8260C
Chlorobenzene	ND	5.0	0.50	ug/Kg	1	07/06/22	JLI	SW8260C
Chloroethane	ND	5.0	0.50	ug/Kg	1	07/06/22	JLI	SW8260C
Chloroform	ND	5.0	0.50	ug/Kg	1	07/06/22	JLI	SW8260C
Chloromethane	ND	5.0	1.0	ug/Kg	1	07/06/22	JLI	SW8260C
cis-1,2-Dichloroethene	ND	5.0	0.50	ug/Kg	1	07/06/22	JLI	SW8260C
cis-1,3-Dichloropropene	ND	5.0	0.50	ug/Kg	1	07/06/22	JLI	SW8260C
Cyclohexane	ND	5.0	1.0	ug/Kg	1	07/06/22	JLI	SW8260C
Dibromochloromethane	ND	5.0	1.0	ug/Kg	1	07/06/22	JLI	SW8260C
Dichlorodifluoromethane	ND	5.0	0.50	ug/Kg	1	07/06/22	JLI	SW8260C
Ethylbenzene	ND	5.0	0.50	ug/Kg	1	07/06/22	JLI	SW8260C
Isopropylbenzene	ND	5.0	0.50	ug/Kg	1	07/06/22	JLI	SW8260C
m&p-Xylene	ND	5.0	1.0	ug/Kg	1	07/06/22	JLI	SW8260C
Methyl ethyl ketone	ND	30	5.0	ug/Kg	1	07/06/22	JLI	SW8260C
Methyl t-butyl ether (MTBE)	ND	10	1.0	ug/Kg	1	07/06/22	JLI	SW8260C
Methylacetate	ND	10	10	ug/Kg	1	07/06/22	JLI	SW8260C
Methylcyclohexane	ND	5.0	1.0	ug/Kg	1	07/06/22	JLI	SW8260C
Methylene chloride	ND	5.0	5.0	ug/Kg	1	07/06/22	JLI	SW8260C
o-Xylene	ND	5.0	1.0	ug/Kg	1	07/06/22	JLI	SW8260C
Styrene	ND	5.0	0.50	ug/Kg	1	07/06/22	JLI	SW8260C
tert-butyl alcohol	ND	100	20	ug/Kg	1	07/06/22	JLI	SW8260C
Tetrachloroethene	ND	5.0	1.0	ug/Kg	1	07/06/22	JLI	SW8260C
Toluene	ND	5.0	0.50	ug/Kg	1	07/06/22	JLI	SW8260C
Total Xylenes	ND	5.0	5.0	ug/Kg	1	07/06/22	JLI	SW8260C
trans-1,2-Dichloroethene	ND	5.0	0.50	ug/Kg	1	07/06/22	JLI	SW8260C
trans-1,3-Dichloropropene	ND	5.0	0.50	ug/Kg	1	07/06/22	JLI	SW8260C
Trichloroethene	ND	5.0	0.50	ug/Kg	1	07/06/22	JLI	SW8260C
Trichlorofluoromethane	ND	5.0	1.0	ug/Kg	1	07/06/22	JLI	SW8260C
Trichlorotrifluoroethane	ND	5.0	0.50	ug/Kg	1	07/06/22	JLI	SW8260C
Vinyl chloride	ND	5.0	0.50	ug/Kg	1	07/06/22	JLI	SW8260C

Project ID: IMJC

Client ID: IMJC 2C (GRAB)

Phoenix I.D.: CL69744

Parameter	Result	RL/ PQL	LOD/ MDL	Units	Dilution	Date/Time	By	Reference
QA/QC Surrogates								
% 1,2-dichlorobenzene-d4	97			%	1	07/06/22	JLI	70 - 130 %
% Bromofluorobenzene	101			%	1	07/06/22	JLI	70 - 130 %
% Dibromofluoromethane	100			%	1	07/06/22	JLI	70 - 130 %
% Toluene-d8	97			%	1	07/06/22	JLI	70 - 130 %
Vinyl Acetate	ND	50	50	ug/Kg	1	07/06/22	JLI	SW8260C

RL/PQL=Reporting/Practical Quantitation Level (Equivalent to NELAC LOQ, Limit of Quantitation) ND=Not Detected BRL=Below Reporting Level L=Biased Low LOD=Limit of Detection MDL=Method Detection Limit1
QA/QC Surrogates: Surrogates are compounds (preceeded with a %) added by the lab to determine analysis efficiency. Surrogate results(%) listed in the report are not "detected" compounds.

Comments:

Results are reported on an ``as received`` basis, and are not corrected for dry weight.

All soils, solids and sludges are reported on a dry weight basis unless otherwise noted in the sample comments.

If you are the client above and have any questions concerning this testing, please do not hesitate to contact Phoenix Client Services at ext.200.
The contents of this report cannot be discussed with anyone other than the client listed above without their written consent.

Phyllis Shiller, Laboratory Director

July 19, 2022

Reviewed and Released by: Rashmi Makol, Project Manager

PHOENIX
Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

ACCREDITED IN ACCORDANCE WITH nelac NY # 11301

Analysis Report

July 19, 2022

FOR: Attn: Mr. Jeff Bogoian
Impact Materials
170 Keyland Court
Bohemia NY 11716

Sample Information		Custody Information		Date	Time
Matrix:	SOIL	Collected by:		07/05/22	8:20
Location Code:	IMPACTJB-IM	Received by:	SW	07/05/22	15:48
Rush Request:	72 Hour	Analyzed by:	see "By" below		
P.O.#:					

Laboratory Data

SDG ID: GCL69739
Phoenix ID: CL69745

Project ID: IMJC
Client ID: IMJC 3A (GRAB)

Parameter	Result	RL/ PQL	LOD/ MDL	Units	Dilution	Date/Time	By	Reference
Volatiles								
1,2,4-Trimethylbenzene	ND	4.9	0.49	ug/Kg	1	07/06/22	JLI	SW8260C
1,3,5-Trimethylbenzene	ND	4.9	0.49	ug/Kg	1	07/06/22	JLI	SW8260C
1,3-Dichlorobenzene	ND	4.9	0.49	ug/Kg	1	07/06/22	JLI	SW8260C
Naphthalene	ND	4.9	0.97	ug/Kg	1	07/06/22	JLI	SW8260C
n-Butylbenzene	ND	4.9	0.49	ug/Kg	1	07/06/22	JLI	SW8260C
n-Propylbenzene	ND	4.9	0.97	ug/Kg	1	07/06/22	JLI	SW8260C
p-Isopropyltoluene	ND	4.9	0.49	ug/Kg	1	07/06/22	JLI	SW8260C
sec-Butylbenzene	ND	4.9	0.49	ug/Kg	1	07/06/22	JLI	SW8260C
tert-Butylbenzene	ND	4.9	0.49	ug/Kg	1	07/06/22	JLI	SW8260C
QA/QC Surrogates								
% 1,2-dichlorobenzene-d4	98			%	1	07/06/22	JLI	70 - 130 %
% Bromofluorobenzene	100			%	1	07/06/22	JLI	70 - 130 %
% Dibromofluoromethane	99			%	1	07/06/22	JLI	70 - 130 %
% Toluene-d8	96			%	1	07/06/22	JLI	70 - 130 %
1,4-dioxane								
1,4-dioxane	ND	73	39	ug/kg	1	07/06/22	JLI	SW8260C
Volatiles								
1,1,1,2-Tetrachloroethane	ND	4.9	0.97	ug/Kg	1	07/06/22	JLI	SW8260C
1,1,1-Trichloroethane	ND	4.9	0.49	ug/Kg	1	07/06/22	JLI	SW8260C
1,1,2,2-Tetrachloroethane	ND	4.9	0.97	ug/Kg	1	07/06/22	JLI	SW8260C
1,1,2-Trichloroethane	ND	4.9	0.97	ug/Kg	1	07/06/22	JLI	SW8260C
1,1-Dichloroethane	ND	4.9	0.97	ug/Kg	1	07/06/22	JLI	SW8260C
1,1-Dichloroethene	ND	4.9	0.49	ug/Kg	1	07/06/22	JLI	SW8260C
1,2,3-Trichlorobenzene	ND	4.9	0.97	ug/Kg	1	07/06/22	JLI	SW8260C

Project ID: IMJC

Client ID: IMJC 3A (GRAB)

Phoenix I.D.: CL69745

Parameter	Result	RL/ PQL	LOD/ MDL	Units	Dilution	Date/Time	By	Reference
1,2,4-Trichlorobenzene	ND	4.9	0.97	ug/Kg	1	07/06/22	JLI	SW8260C
1,2-Dibromo-3-chloropropane	ND	4.9	0.97	ug/Kg	1	07/06/22	JLI	SW8260C
1,2-Dibromoethane	ND	4.4	0.49	ug/Kg	1	07/06/22	JLI	SW8260C
1,2-Dichlorobenzene	ND	4.9	0.49	ug/Kg	1	07/06/22	JLI	SW8260C
1,2-Dichloroethane	ND	4.9	0.49	ug/Kg	1	07/06/22	JLI	SW8260C
1,2-Dichloropropane	ND	4.9	0.97	ug/Kg	1	07/06/22	JLI	SW8260C
1,3-Dichlorobenzene	ND	4.9	0.49	ug/Kg	1	07/06/22	JLI	SW8260C
1,4-Dichlorobenzene	ND	4.9	0.49	ug/Kg	1	07/06/22	JLI	SW8260C
2-Hexanone	ND	24	4.9	ug/Kg	1	07/06/22	JLI	SW8260C
4-Methyl-2-pentanone	ND	24	4.9	ug/Kg	1	07/06/22	JLI	SW8260C
Acetone	ND	49	4.9	ug/Kg	1	07/06/22	JLI	SW8260C
Acrolein	ND	24	2.4	ug/Kg	1	07/06/22	JLI	SW8260C
Acrylonitrile	ND	9.7	0.49	ug/Kg	1	07/06/22	JLI	SW8260C
Benzene	ND	4.9	0.49	ug/Kg	1	07/06/22	JLI	SW8260C
Bromochloromethane	ND	4.9	0.49	ug/Kg	1	07/06/22	JLI	SW8260C
Bromodichloromethane	ND	4.9	0.97	ug/Kg	1	07/06/22	JLI	SW8260C
Bromoform	ND	4.9	0.97	ug/Kg	1	07/06/22	JLI	SW8260C
Bromomethane	ND	4.9	1.9	ug/Kg	1	07/06/22	JLI	SW8260C
Carbon Disulfide	ND	4.9	0.97	ug/Kg	1	07/06/22	JLI	SW8260C
Carbon tetrachloride	ND	4.9	0.97	ug/Kg	1	07/06/22	JLI	SW8260C
Chlorobenzene	ND	4.9	0.49	ug/Kg	1	07/06/22	JLI	SW8260C
Chloroethane	ND	4.9	0.49	ug/Kg	1	07/06/22	JLI	SW8260C
Chloroform	ND	4.9	0.49	ug/Kg	1	07/06/22	JLI	SW8260C
Chloromethane	ND	4.9	0.97	ug/Kg	1	07/06/22	JLI	SW8260C
cis-1,2-Dichloroethene	ND	4.9	0.49	ug/Kg	1	07/06/22	JLI	SW8260C
cis-1,3-Dichloropropene	ND	4.9	0.49	ug/Kg	1	07/06/22	JLI	SW8260C
Cyclohexane	ND	4.9	0.97	ug/Kg	1	07/06/22	JLI	SW8260C
Dibromochloromethane	ND	4.9	0.97	ug/Kg	1	07/06/22	JLI	SW8260C
Dichlorodifluoromethane	ND	4.9	0.49	ug/Kg	1	07/06/22	JLI	SW8260C
Ethylbenzene	ND	4.9	0.49	ug/Kg	1	07/06/22	JLI	SW8260C
Isopropylbenzene	ND	4.9	0.49	ug/Kg	1	07/06/22	JLI	SW8260C
m&p-Xylene	ND	4.9	0.97	ug/Kg	1	07/06/22	JLI	SW8260C
Methyl ethyl ketone	ND	29	4.9	ug/Kg	1	07/06/22	JLI	SW8260C
Methyl t-butyl ether (MTBE)	ND	9.7	0.97	ug/Kg	1	07/06/22	JLI	SW8260C
Methylacetate	ND	9.7	9.7	ug/Kg	1	07/06/22	JLI	SW8260C
Methylcyclohexane	ND	4.9	0.97	ug/Kg	1	07/06/22	JLI	SW8260C
Methylene chloride	ND	4.9	4.9	ug/Kg	1	07/06/22	JLI	SW8260C
o-Xylene	ND	4.9	0.97	ug/Kg	1	07/06/22	JLI	SW8260C
Styrene	ND	4.9	0.49	ug/Kg	1	07/06/22	JLI	SW8260C
tert-butyl alcohol	ND	97	19	ug/Kg	1	07/06/22	JLI	SW8260C
Tetrachloroethene	ND	4.9	0.97	ug/Kg	1	07/06/22	JLI	SW8260C
Toluene	ND	4.9	0.49	ug/Kg	1	07/06/22	JLI	SW8260C
Total Xylenes	ND	4.9	4.9	ug/Kg	1	07/06/22	JLI	SW8260C
trans-1,2-Dichloroethene	ND	4.9	0.49	ug/Kg	1	07/06/22	JLI	SW8260C
trans-1,3-Dichloropropene	ND	4.9	0.49	ug/Kg	1	07/06/22	JLI	SW8260C
Trichloroethene	ND	4.9	0.49	ug/Kg	1	07/06/22	JLI	SW8260C
Trichlorofluoromethane	ND	4.9	0.97	ug/Kg	1	07/06/22	JLI	SW8260C
Trichlorotrifluoroethane	ND	4.9	0.49	ug/Kg	1	07/06/22	JLI	SW8260C
Vinyl chloride	ND	4.9	0.49	ug/Kg	1	07/06/22	JLI	SW8260C

Project ID: IMJC

Client ID: IMJC 3A (GRAB)

Phoenix I.D.: CL69745

Parameter	Result	RL/ PQL	LOD/ MDL	Units	Dilution	Date/Time	By	Reference
QA/QC Surrogates								
% 1,2-dichlorobenzene-d4	98			%	1	07/06/22	JLI	70 - 130 %
% Bromofluorobenzene	100			%	1	07/06/22	JLI	70 - 130 %
% Dibromofluoromethane	99			%	1	07/06/22	JLI	70 - 130 %
% Toluene-d8	96			%	1	07/06/22	JLI	70 - 130 %
Vinyl Acetate	ND	49	49	ug/Kg	1	07/06/22	JLI	SW8260C

RL/PQL=Reporting/Practical Quantitation Level (Equivalent to NELAC LOQ, Limit of Quantitation) ND=Not Detected BRL=Below Reporting Level L=Biased Low LOD=Limit of Detection MDL=Method Detection Limit1
QA/QC Surrogates: Surrogates are compounds (preceeded with a %) added by the lab to determine analysis efficiency. Surrogate results(%) listed in the report are not "detected" compounds.

Comments:

Results are reported on an ``as received`` basis, and are not corrected for dry weight.

All soils, solids and sludges are reported on a dry weight basis unless otherwise noted in the sample comments.

If you are the client above and have any questions concerning this testing, please do not hesitate to contact Phoenix Client Services at ext.200.
The contents of this report cannot be discussed with anyone other than the client listed above without their written consent.

Phyllis Shiller, Laboratory Director

July 19, 2022

Reviewed and Released by: Rashmi Makol, Project Manager

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Tel. (860) 645-1102 Fax (860) 645-0823

ACCREDITED IN ACCORDANCE WITH nelac NY # 11301

Analysis Report

July 19, 2022

FOR: Attn: Mr. Jeff Bogoian
Impact Materials
170 Keyland Court
Bohemia NY 11716

Sample Information		Custody Information		Date	Time
Matrix:	SOIL	Collected by:		07/05/22	8:25
Location Code:	IMPACTJB-IM	Received by:	SW	07/05/22	15:48
Rush Request:	72 Hour	Analyzed by:	see "By" below		
P.O.#:					

Laboratory Data

SDG ID: GCL69739
Phoenix ID: CL69746

Project ID: IMJC
Client ID: IMJC 3B (GRAB)

Parameter	Result	RL/ PQL	LOD/ MDL	Units	Dilution	Date/Time	By	Reference
Volatiles								
1,2,4-Trimethylbenzene	ND	5.1	0.51	ug/Kg	1	07/06/22	JLI	SW8260C
1,3,5-Trimethylbenzene	ND	5.1	0.51	ug/Kg	1	07/06/22	JLI	SW8260C
1,3-Dichlorobenzene	ND	5.1	0.51	ug/Kg	1	07/06/22	JLI	SW8260C
Naphthalene	ND	5.1	1.0	ug/Kg	1	07/06/22	JLI	SW8260C
n-Butylbenzene	ND	5.1	0.51	ug/Kg	1	07/06/22	JLI	SW8260C
n-Propylbenzene	ND	5.1	1.0	ug/Kg	1	07/06/22	JLI	SW8260C
p-Isopropyltoluene	ND	5.1	0.51	ug/Kg	1	07/06/22	JLI	SW8260C
sec-Butylbenzene	ND	5.1	0.51	ug/Kg	1	07/06/22	JLI	SW8260C
tert-Butylbenzene	ND	5.1	0.51	ug/Kg	1	07/06/22	JLI	SW8260C
QA/QC Surrogates								
% 1,2-dichlorobenzene-d4	97			%	1	07/06/22	JLI	70 - 130 %
% Bromofluorobenzene	100			%	1	07/06/22	JLI	70 - 130 %
% Dibromofluoromethane	94			%	1	07/06/22	JLI	70 - 130 %
% Toluene-d8	97			%	1	07/06/22	JLI	70 - 130 %
1,4-dioxane								
1,4-dioxane	ND	76	40	ug/kg	1	07/06/22	JLI	SW8260C
Volatiles								
1,1,1,2-Tetrachloroethane	ND	5.1	1.0	ug/Kg	1	07/06/22	JLI	SW8260C
1,1,1-Trichloroethane	ND	5.1	0.51	ug/Kg	1	07/06/22	JLI	SW8260C
1,1,2,2-Tetrachloroethane	ND	5.1	1.0	ug/Kg	1	07/06/22	JLI	SW8260C
1,1,2-Trichloroethane	ND	5.1	1.0	ug/Kg	1	07/06/22	JLI	SW8260C
1,1-Dichloroethane	ND	5.1	1.0	ug/Kg	1	07/06/22	JLI	SW8260C
1,1-Dichloroethene	ND	5.1	0.51	ug/Kg	1	07/06/22	JLI	SW8260C
1,2,3-Trichlorobenzene	ND	5.1	1.0	ug/Kg	1	07/06/22	JLI	SW8260C

Project ID: IMJC

Client ID: IMJC 3B (GRAB)

Phoenix I.D.: CL69746

Parameter	Result	RL/ PQL	LOD/ MDL	Units	Dilution	Date/Time	By	Reference
1,2,4-Trichlorobenzene	ND	5.1	1.0	ug/Kg	1	07/06/22	JLI	SW8260C
1,2-Dibromo-3-chloropropane	ND	5.0	1.0	ug/Kg	1	07/06/22	JLI	SW8260C
1,2-Dibromoethane	ND	4.5	0.51	ug/Kg	1	07/06/22	JLI	SW8260C
1,2-Dichlorobenzene	ND	5.1	0.51	ug/Kg	1	07/06/22	JLI	SW8260C
1,2-Dichloroethane	ND	5.0	0.51	ug/Kg	1	07/06/22	JLI	SW8260C
1,2-Dichloropropane	ND	5.0	1.0	ug/Kg	1	07/06/22	JLI	SW8260C
1,3-Dichlorobenzene	ND	5.1	0.51	ug/Kg	1	07/06/22	JLI	SW8260C
1,4-Dichlorobenzene	ND	5.1	0.51	ug/Kg	1	07/06/22	JLI	SW8260C
2-Hexanone	ND	25	5.1	ug/Kg	1	07/06/22	JLI	SW8260C
4-Methyl-2-pentanone	ND	25	5.1	ug/Kg	1	07/06/22	JLI	SW8260C
Acetone	ND	51	5.1	ug/Kg	1	07/06/22	JLI	SW8260C
Acrolein	ND	25	2.5	ug/Kg	1	07/06/22	JLI	SW8260C
Acrylonitrile	ND	10	0.51	ug/Kg	1	07/06/22	JLI	SW8260C
Benzene	ND	5.0	0.51	ug/Kg	1	07/06/22	JLI	SW8260C
Bromochloromethane	ND	5.1	0.51	ug/Kg	1	07/06/22	JLI	SW8260C
Bromodichloromethane	ND	5.0	1.0	ug/Kg	1	07/06/22	JLI	SW8260C
Bromoform	ND	5.1	1.0	ug/Kg	1	07/06/22	JLI	SW8260C
Bromomethane	ND	5.1	2.0	ug/Kg	1	07/06/22	JLI	SW8260C
Carbon Disulfide	ND	5.1	1.0	ug/Kg	1	07/06/22	JLI	SW8260C
Carbon tetrachloride	ND	5.0	1.0	ug/Kg	1	07/06/22	JLI	SW8260C
Chlorobenzene	ND	5.1	0.51	ug/Kg	1	07/06/22	JLI	SW8260C
Chloroethane	ND	5.1	0.51	ug/Kg	1	07/06/22	JLI	SW8260C
Chloroform	ND	5.1	0.51	ug/Kg	1	07/06/22	JLI	SW8260C
Chloromethane	ND	5.1	1.0	ug/Kg	1	07/06/22	JLI	SW8260C
cis-1,2-Dichloroethene	ND	5.1	0.51	ug/Kg	1	07/06/22	JLI	SW8260C
cis-1,3-Dichloropropene	ND	5.0	0.51	ug/Kg	1	07/06/22	JLI	SW8260C
Cyclohexane	ND	5.1	1.0	ug/Kg	1	07/06/22	JLI	SW8260C
Dibromochloromethane	ND	5.0	1.0	ug/Kg	1	07/06/22	JLI	SW8260C
Dichlorodifluoromethane	ND	5.1	0.51	ug/Kg	1	07/06/22	JLI	SW8260C
Ethylbenzene	ND	5.1	0.51	ug/Kg	1	07/06/22	JLI	SW8260C
Isopropylbenzene	ND	5.1	0.51	ug/Kg	1	07/06/22	JLI	SW8260C
m&p-Xylene	ND	5.1	1.0	ug/Kg	1	07/06/22	JLI	SW8260C
Methyl ethyl ketone	ND	30	5.1	ug/Kg	1	07/06/22	JLI	SW8260C
Methyl t-butyl ether (MTBE)	ND	10	1.0	ug/Kg	1	07/06/22	JLI	SW8260C
Methylacetate	ND	10	10	ug/Kg	1	07/06/22	JLI	SW8260C
Methylcyclohexane	ND	5.1	1.0	ug/Kg	1	07/06/22	JLI	SW8260C
Methylene chloride	ND	5.1	5.1	ug/Kg	1	07/06/22	JLI	SW8260C
o-Xylene	ND	5.1	1.0	ug/Kg	1	07/06/22	JLI	SW8260C
Styrene	ND	5.1	0.51	ug/Kg	1	07/06/22	JLI	SW8260C
tert-butyl alcohol	ND	100	20	ug/Kg	1	07/06/22	JLI	SW8260C
Tetrachloroethene	ND	5.0	1.0	ug/Kg	1	07/06/22	JLI	SW8260C
Toluene	ND	5.1	0.51	ug/Kg	1	07/06/22	JLI	SW8260C
Total Xylenes	ND	5.1	5.1	ug/Kg	1	07/06/22	JLI	SW8260C
trans-1,2-Dichloroethene	ND	5.1	0.51	ug/Kg	1	07/06/22	JLI	SW8260C
trans-1,3-Dichloropropene	ND	5.0	0.51	ug/Kg	1	07/06/22	JLI	SW8260C
Trichloroethene	ND	5.1	0.51	ug/Kg	1	07/06/22	JLI	SW8260C
Trichlorofluoromethane	ND	5.1	1.0	ug/Kg	1	07/06/22	JLI	SW8260C
Trichlorotrifluoroethane	ND	5.1	0.51	ug/Kg	1	07/06/22	JLI	SW8260C
Vinyl chloride	ND	5.0	0.51	ug/Kg	1	07/06/22	JLI	SW8260C

Project ID: IMJC

Client ID: IMJC 3B (GRAB)

Phoenix I.D.: CL69746

Parameter	Result	RL/ PQL	LOD/ MDL	Units	Dilution	Date/Time	By	Reference
QA/QC Surrogates								
% 1,2-dichlorobenzene-d4	97			%	1	07/06/22	JLI	70 - 130 %
% Bromofluorobenzene	100			%	1	07/06/22	JLI	70 - 130 %
% Dibromofluoromethane	94			%	1	07/06/22	JLI	70 - 130 %
% Toluene-d8	97			%	1	07/06/22	JLI	70 - 130 %
Vinyl Acetate	ND	51	51	ug/Kg	1	07/06/22	JLI	SW8260C

RL/PQL=Reporting/Practical Quantitation Level (Equivalent to NELAC LOQ, Limit of Quantitation) ND=Not Detected BRL=Below Reporting Level L=Biased Low LOD=Limit of Detection MDL=Method Detection Limit1
QA/QC Surrogates: Surrogates are compounds (preceeded with a %) added by the lab to determine analysis efficiency. Surrogate results(%) listed in the report are not "detected" compounds.

Comments:

Results are reported on an ``as received`` basis, and are not corrected for dry weight.

Volatile Comment:
To achieve client's objectives, where the lowest calibration standard or LOD justifies lowering the RL/PQL, the RL/PQL of some compounds have been lowered to meet criteria.

All soils, solids and sludges are reported on a dry weight basis unless otherwise noted in the sample comments.

If you are the client above and have any questions concerning this testing, please do not hesitate to contact Phoenix Client Services at ext.200.
The contents of this report cannot be discussed with anyone other than the client listed above without their written consent.

Phyllis Shiller, Laboratory Director
July 19, 2022
Reviewed and Released by: Rashmi Makol, Project Manager

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ACCREDITED IN ACCORDANCE WITH nelac NY # 11301

Analysis Report

July 19, 2022

FOR: Attn: Mr. Jeff Bogoian
Impact Materials
170 Keyland Court
Bohemia NY 11716

Sample Information		Custody Information		Date	Time
Matrix:	SOIL	Collected by:		07/05/22	8:35
Location Code:	IMPACTJB-IM	Received by:	SW	07/05/22	15:48
Rush Request:	72 Hour	Analyzed by:	see "By" below		
P.O.#:					

Laboratory Data

SDG ID: GCL69739
Phoenix ID: CL69747

Project ID: IMJC
Client ID: IMJC 3C (GRAB)

Parameter	Result	RL/ PQL	LOD/ MDL	Units	Dilution	Date/Time	By	Reference
Volatiles								
1,2,4-Trimethylbenzene	ND	5.3	0.53	ug/Kg	1	07/06/22	JLI	SW8260C
1,3,5-Trimethylbenzene	ND	5.3	0.53	ug/Kg	1	07/06/22	JLI	SW8260C
1,3-Dichlorobenzene	ND	5.3	0.53	ug/Kg	1	07/06/22	JLI	SW8260C
Naphthalene	ND	5.3	1.1	ug/Kg	1	07/06/22	JLI	SW8260C
n-Butylbenzene	ND	5.3	0.53	ug/Kg	1	07/06/22	JLI	SW8260C
n-Propylbenzene	ND	5.3	1.1	ug/Kg	1	07/06/22	JLI	SW8260C
p-Isopropyltoluene	ND	5.3	0.53	ug/Kg	1	07/06/22	JLI	SW8260C
sec-Butylbenzene	ND	5.3	0.53	ug/Kg	1	07/06/22	JLI	SW8260C
tert-Butylbenzene	ND	5.3	0.53	ug/Kg	1	07/06/22	JLI	SW8260C
QA/QC Surrogates								
% 1,2-dichlorobenzene-d4	97			%	1	07/06/22	JLI	70 - 130 %
% Bromofluorobenzene	100			%	1	07/06/22	JLI	70 - 130 %
% Dibromofluoromethane	97			%	1	07/06/22	JLI	70 - 130 %
% Toluene-d8	97			%	1	07/06/22	JLI	70 - 130 %
1,4-dioxane								
1,4-dioxane	ND	80	42	ug/kg	1	07/06/22	JLI	SW8260C
Volatiles								
1,1,1,2-Tetrachloroethane	ND	5.3	1.1	ug/Kg	1	07/06/22	JLI	SW8260C
1,1,1-Trichloroethane	ND	5.3	0.53	ug/Kg	1	07/06/22	JLI	SW8260C
1,1,2,2-Tetrachloroethane	ND	5.3	1.1	ug/Kg	1	07/06/22	JLI	SW8260C
1,1,2-Trichloroethane	ND	5.3	1.1	ug/Kg	1	07/06/22	JLI	SW8260C
1,1-Dichloroethane	ND	5.3	1.1	ug/Kg	1	07/06/22	JLI	SW8260C
1,1-Dichloroethene	ND	5.3	0.53	ug/Kg	1	07/06/22	JLI	SW8260C
1,2,3-Trichlorobenzene	ND	5.3	1.1	ug/Kg	1	07/06/22	JLI	SW8260C

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Client ID: IMJC 3C (GRAB)

Phoenix I.D.: CL69747

Parameter	Result	RL/ PQL	LOD/ MDL	Units	Dilution	Date/Time	By	Reference
1,2,4-Trichlorobenzene	ND	5.3	1.1	ug/Kg	1	07/06/22	JLI	SW8260C
1,2-Dibromo-3-chloropropane	ND	5.0	1.1	ug/Kg	1	07/06/22	JLI	SW8260C
1,2-Dibromoethane	ND	4.8	0.53	ug/Kg	1	07/06/22	JLI	SW8260C
1,2-Dichlorobenzene	ND	5.3	0.53	ug/Kg	1	07/06/22	JLI	SW8260C
1,2-Dichloroethane	ND	5.0	0.53	ug/Kg	1	07/06/22	JLI	SW8260C
1,2-Dichloropropane	ND	5.0	1.1	ug/Kg	1	07/06/22	JLI	SW8260C
1,3-Dichlorobenzene	ND	5.3	0.53	ug/Kg	1	07/06/22	JLI	SW8260C
1,4-Dichlorobenzene	ND	5.3	0.53	ug/Kg	1	07/06/22	JLI	SW8260C
2-Hexanone	ND	27	5.3	ug/Kg	1	07/06/22	JLI	SW8260C
4-Methyl-2-pentanone	ND	27	5.3	ug/Kg	1	07/06/22	JLI	SW8260C
Acetone	ND	53	5.3	ug/Kg	1	07/06/22	JLI	SW8260C
Acrolein	ND	27	2.7	ug/Kg	1	07/06/22	JLI	SW8260C
Acrylonitrile	ND	11	0.53	ug/Kg	1	07/06/22	JLI	SW8260C
Benzene	ND	5.0	0.53	ug/Kg	1	07/06/22	JLI	SW8260C
Bromochloromethane	ND	5.3	0.53	ug/Kg	1	07/06/22	JLI	SW8260C
Bromodichloromethane	ND	5.0	1.1	ug/Kg	1	07/06/22	JLI	SW8260C
Bromoform	ND	5.3	1.1	ug/Kg	1	07/06/22	JLI	SW8260C
Bromomethane	ND	5.3	2.1	ug/Kg	1	07/06/22	JLI	SW8260C
Carbon Disulfide	ND	5.3	1.1	ug/Kg	1	07/06/22	JLI	SW8260C
Carbon tetrachloride	ND	5.0	1.1	ug/Kg	1	07/06/22	JLI	SW8260C
Chlorobenzene	ND	5.3	0.53	ug/Kg	1	07/06/22	JLI	SW8260C
Chloroethane	ND	5.3	0.53	ug/Kg	1	07/06/22	JLI	SW8260C
Chloroform	ND	5.3	0.53	ug/Kg	1	07/06/22	JLI	SW8260C
Chloromethane	ND	5.3	1.1	ug/Kg	1	07/06/22	JLI	SW8260C
cis-1,2-Dichloroethene	ND	5.3	0.53	ug/Kg	1	07/06/22	JLI	SW8260C
cis-1,3-Dichloropropene	ND	5.0	0.53	ug/Kg	1	07/06/22	JLI	SW8260C
Cyclohexane	ND	5.3	1.1	ug/Kg	1	07/06/22	JLI	SW8260C
Dibromochloromethane	ND	5.0	1.1	ug/Kg	1	07/06/22	JLI	SW8260C
Dichlorodifluoromethane	ND	5.3	0.53	ug/Kg	1	07/06/22	JLI	SW8260C
Ethylbenzene	ND	5.3	0.53	ug/Kg	1	07/06/22	JLI	SW8260C
Isopropylbenzene	ND	5.3	0.53	ug/Kg	1	07/06/22	JLI	SW8260C
m&p-Xylene	ND	5.3	1.1	ug/Kg	1	07/06/22	JLI	SW8260C
Methyl ethyl ketone	ND	32	5.3	ug/Kg	1	07/06/22	JLI	SW8260C
Methyl t-butyl ether (MTBE)	ND	11	1.1	ug/Kg	1	07/06/22	JLI	SW8260C
Methylacetate	ND	11	11	ug/Kg	1	07/06/22	JLI	SW8260C
Methylcyclohexane	ND	5.3	1.1	ug/Kg	1	07/06/22	JLI	SW8260C
Methylene chloride	ND	5.3	5.3	ug/Kg	1	07/06/22	JLI	SW8260C
o-Xylene	ND	5.3	1.1	ug/Kg	1	07/06/22	JLI	SW8260C
Styrene	ND	5.3	0.53	ug/Kg	1	07/06/22	JLI	SW8260C
tert-butyl alcohol	ND	110	21	ug/Kg	1	07/06/22	JLI	SW8260C
Tetrachloroethene	ND	5.0	1.1	ug/Kg	1	07/06/22	JLI	SW8260C
Toluene	ND	5.3	0.53	ug/Kg	1	07/06/22	JLI	SW8260C
Total Xylenes	ND	5.3	5.3	ug/Kg	1	07/06/22	JLI	SW8260C
trans-1,2-Dichloroethene	ND	5.3	0.53	ug/Kg	1	07/06/22	JLI	SW8260C
trans-1,3-Dichloropropene	ND	5.0	0.53	ug/Kg	1	07/06/22	JLI	SW8260C
Trichloroethene	ND	5.3	0.53	ug/Kg	1	07/06/22	JLI	SW8260C
Trichlorofluoromethane	ND	5.3	1.1	ug/Kg	1	07/06/22	JLI	SW8260C
Trichlorotrifluoroethane	ND	5.3	0.53	ug/Kg	1	07/06/22	JLI	SW8260C
Vinyl chloride	ND	5.0	0.53	ug/Kg	1	07/06/22	JLI	SW8260C

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Client ID: IMJC 3C (GRAB)

Phoenix I.D.: CL69747

Parameter	Result	RL/ PQL	LOD/ MDL	Units	Dilution	Date/Time	By	Reference
QA/QC Surrogates								
% 1,2-dichlorobenzene-d4	97			%	1	07/06/22	JLI	70 - 130 %
% Bromofluorobenzene	100			%	1	07/06/22	JLI	70 - 130 %
% Dibromofluoromethane	97			%	1	07/06/22	JLI	70 - 130 %
% Toluene-d8	97			%	1	07/06/22	JLI	70 - 130 %
Vinyl Acetate	ND	53	53	ug/Kg	1	07/06/22	JLI	SW8260C

RL/PQL=Reporting/Practical Quantitation Level (Equivalent to NELAC LOQ, Limit of Quantitation) ND=Not Detected BRL=Below Reporting Level L=Biased Low LOD=Limit of Detection MDL=Method Detection Limit1
QA/QC Surrogates: Surrogates are compounds (preceeded with a %) added by the lab to determine analysis efficiency. Surrogate results(%) listed in the report are not "detected" compounds.

Comments:

Results are reported on an ``as received`` basis, and are not corrected for dry weight.

Volatile Comment:
To achieve client's objectives, where the lowest calibration standard or LOD justifies lowering the RL/PQL, the RL/PQL of some compounds have been lowered to meet criteria.

All soils, solids and sludges are reported on a dry weight basis unless otherwise noted in the sample comments.

If you are the client above and have any questions concerning this testing, please do not hesitate to contact Phoenix Client Services at ext.200.
The contents of this report cannot be discussed with anyone other than the client listed above without their written consent.

Phyllis Shiller, Laboratory Director
July 19, 2022
Reviewed and Released by: Rashmi Makol, Project Manager

PHOENIX

Environmental Laboratories, Inc.
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Analysis Report

July 19, 2022

FOR: Attn: Mr. Jeff Bogoian
Impact Materials
170 Keyland Court
Bohemia NY 11716

Sample Information		Custody Information		Date	Time
Matrix:	SOIL	Collected by:		07/05/22	9:00
Location Code:	IMPACTJB-IM	Received by:	SW	07/05/22	15:48
Rush Request:	72 Hour	Analyzed by:	see "By" below		
P.O.#:					

Laboratory Data

SDG ID: GCL69739
Phoenix ID: CL69748

Project ID: IMJC
Client ID: IMJC COMP-1

Parameter	Result	RL/ PQL	LOD/ MDL	Units	Dilution	Date/Time	By	Reference	
Silver	ND	0.30	0.30	mg/Kg	1	07/06/22	EK	SW6010D	
Aluminum	16600	30	5.9	mg/Kg	10	07/06/22	EK	SW6010D	
Arsenic	ND	0.59	0.59	mg/Kg	1	07/06/22	EK	SW6010D	
Barium	201	0.6	0.30	mg/Kg	1	07/06/22	EK	SW6010D	
Beryllium	0.41	0.24	0.12	mg/Kg	1	07/06/22	EK	SW6010D	
Calcium	7380	3.0	2.7	mg/Kg	1	07/06/22	EK	SW6010D	
Cadmium	1.94	0.30	0.30	mg/Kg	1	07/06/22	EK	SW6010D	
Cobalt	20.3	0.30	0.30	mg/Kg	1	07/06/22	EK	SW6010D	
Chromium	33.7	0.30	0.30	mg/Kg	1	07/06/22	EK	SW6010D	
Copper	48.8	0.6	0.30	mg/kg	1	07/06/22	EK	SW6010D	
Iron	32400	30	30	mg/Kg	10	07/06/22	EK	SW6010D	
Mercury	ND	0.02	0.01	mg/Kg	2	07/06/22	IE	SW7471B	
Potassium	11200	59	23	mg/Kg	10	07/06/22	EK	SW6010D	
Magnesium	9120	30	30	mg/Kg	10	07/06/22	EK	SW6010D	
Manganese	341	3.0	3.0	mg/Kg	10	07/06/22	EK	SW6010D	
Sodium	349	6	2.6	mg/Kg	1	07/06/22	EK	SW6010D	
Nickel	30.4	0.30	0.30	mg/Kg	1	07/06/22	EK	SW6010D	
Lead	10.2	0.6	0.30	mg/Kg	1	07/06/22	EK	SW6010D	
Antimony	ND	3.0	3.0	mg/Kg	1	07/06/22	EK	SW6010D	
Selenium	ND	1.2	1.0	mg/Kg	1	07/06/22	EK	SW6010D	
Thallium	ND	1.2	1.2	mg/Kg	1	07/06/22	EK	SW6010D	
Trivalent Chromium	33.7	0.30	0.30	mg/kg	1	07/06/22		CALC 6010-7196	
Vanadium	52.2	0.30	0.30	mg/Kg	1	07/06/22	EK	SW6010D	
Zinc	107	0.6	0.30	mg/Kg	1	07/06/22	EK	SW6010D	
Percent Solid	99			%		07/05/22	K	SW846-%Solid	
Chromium, Hex. (SW3060 digestion)	ND	0.35	0.35	mg/Kg	1	07/06/22	BJA	SW7196A	
pH at 25C - Soil	8.37	1.00	1.00	pH Units	1	07/05/22 21:22	MW	SW846 9045D	1
Redox Potential	167			mV	1	07/05/22	MW	SM2580B-09	1

Ver 1

Project ID: IMJC
Client ID: IMJC COMP-1

Phoenix I.D.: CL69748

Parameter	Result	RL/ PQL	LOD/ MDL	Units	Dilution	Date/Time	By	Reference	
Total Cyanide (SW9010C Distill.)	ND	0.51	0.253	mg/Kg	1	07/06/22	CL/DK	SW9012B	
Soil Extraction for PCB	Completed					07/05/22	O	SW3545A	
Soil Extraction for Pesticide	Completed					07/05/22	O/MO	SW3545A	
Mercury Digestion	Completed					07/06/22	AB/KL	SW7471B	
Soil Extraction for Herbicide	Completed					07/05/22	M/E	SW3546	
Soil Extraction for SVOA	Completed					07/05/22	B/L	SW3546	
Total Metals Digest	Completed					07/05/22	M/AG	SW3050B	
PFAS (21)	Completed					07/12/22	***	EPA 537m	C
PFAS (21)									
1H,1H,2H,2H-Perfluorodecanesulfonic acid	ND	0.250	0.0256	ng/g	1	07/14/22	***	EPA 537m	C
1H,1H,2H,2H-Perfluorooctanesulfonic acid	ND	0.250	0.0661	ng/g	1	07/14/22	***	EPA 537m	C
NEtFOSAA	ND	0.250	0.104	ng/g	1	07/14/22	***	EPA 537m	C
NMeFOSAA	ND	0.250	0.105	ng/g	1	07/14/22	***	EPA 537m	C
Perfluoro-1-decanesulfonic acid (PFDS)	ND	0.250	0.0513	ng/g	1	07/14/22	***	EPA 537m	C
Perfluoro-1-heptanesulfonic acid (PFHpS)	ND	0.250	0.0494	ng/g	1	07/14/22	***	EPA 537m	C
Perfluoro-1-octanesulfonamide (FOSA)	ND	0.250	0.0468	ng/g	1	07/14/22	***	EPA 537m	C
Perfluorobutanesulfonic acid (PFBS)	ND	0.250	0.200	ng/g	1	07/14/22	***	EPA 537m	C
Perfluorodecanoic acid (PFDA)	ND	0.250	0.0513	ng/g	1	07/14/22	***	EPA 537m	C
Perfluorododecanoic acid (PFDoA)	ND	0.250	0.0751	ng/g	1	07/14/22	***	EPA 537m	C
Perfluoroheptanoic acid (PFHpA)	ND	0.250	0.0456	ng/g	1	07/14/22	***	EPA 537m	C
Perfluorohexanesulfonic Acid (PFHxS)	ND	0.250	0.0311	ng/g	1	07/14/22	***	EPA 537m	C
Perfluorohexanoic acid (PFHxA)	ND	0.250	0.0660	ng/g	1	07/14/22	***	EPA 537m	C
Perfluoro-n-butanoic acid (PFBA)	ND	0.250	0.183	ng/g	1	07/14/22	***	EPA 537m	C
Perfluorononanoic acid (PFNA)	ND	0.250	0.0599	ng/g	1	07/14/22	***	EPA 537m	C
Perfluorooctanesulfonic Acid (PFOS)	ND	0.250	0.0439	ng/g	1	07/14/22	***	EPA 537m	C
Perfluorooctanoic acid (PFOA)	ND	0.250	0.0774	ng/g	1	07/14/22	***	EPA 537m	C
Perfluoropentanoic acid (PFPeA)	ND	0.250	0.0921	ng/g	1	07/14/22	***	EPA 537m	C
Perfluorotetradecanoic acid (PFTA)	ND	0.250	0.0748	ng/g	1	07/14/22	***	EPA 537m	C
Perfluorotridecanoic acid (PFTrDA)	ND	0.250	0.0436	ng/g	1	07/14/22	***	EPA 537m	C
Perfluoroundecanoic acid (PFUnA)	ND	0.250	0.117	ng/g	1	07/14/22	***	EPA 537m	C
QA/QC Surrogates									
% d3-N-MeFOSAA	65.2			%	1	07/14/22	***	25 - 150 %	C
% d5-NEtFOSA	65.8			%	1	07/14/22	***	25 - 150 %	C
% M2-6:2FTS	75.6			%	1	07/14/22	***	25 - 200 %	C
% M2-8:2FTS	98.3			%	1	07/14/22	***	25 - 200 %	C
% M2PFTeDA	68.3			%	1	07/14/22	***	10 - 150 %	C
% M3PFBS	62.5			%	1	07/14/22	***	25 - 150 %	C
% M3PFHxS	84.7			%	1	07/14/22	***	25 - 150 %	C
% M4PFHpA	82.9			%	1	07/14/22	***	25 - 150 %	C
% M5PFHxA	78.0			%	1	07/14/22	***	25 - 150 %	C
% M5PFPeA	73.9			%	1	07/14/22	***	25 - 150 %	C
% M6PFDA	68.8			%	1	07/14/22	***	25 - 150 %	C
% M7PFUdA	62.5			%	1	07/14/22	***	25 - 150 %	C
% M8FOSA	52.1			%	1	07/14/22	***	10 - 150 %	C
% M8PFOA	85.4			%	1	07/14/22	***	25 - 150 %	C
% M8PFOS	66.5			%	1	07/14/22	***	25 - 150 %	C
% M9PFNA	81.4			%	1	07/14/22	***	25 - 150 %	C
% MPFBA	73.9			%	1	07/14/22	***	25 - 150 %	C

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Phoenix I.D.: CL69748

Parameter	Result	RL/ PQL	LOD/ MDL	Units	Dilution	Date/Time	By	Reference	
% MPFDoA	58.0			%	1	07/14/22	***	25 - 150 %	C
Chlorinated Herbicides									
2,4,5-T	ND	120	120	ug/Kg	10	07/07/22	JRB	SW8151A	
2,4,5-TP (Silvex)	ND	120	120	ug/Kg	10	07/07/22	JRB	SW8151A	
2,4-D	ND	250	250	ug/Kg	10	07/07/22	JRB	SW8151A	
2,4-DB	ND	2500	2500	ug/Kg	10	07/07/22	JRB	SW8151A	
Dalapon	ND	120	120	ug/Kg	10	07/07/22	JRB	SW8151A	
Dicamba	ND	120	120	ug/Kg	10	07/07/22	JRB	SW8151A	
Dichloroprop	ND	250	250	ug/Kg	10	07/07/22	JRB	SW8151A	
Dinoseb	ND	250	250	ug/Kg	10	07/07/22	JRB	SW8151A	
QA/QC Surrogates									
% DCAA	95			%	10	07/07/22	JRB	30 - 150 %	
% DCAA (Confirmation)	85			%	10	07/07/22	JRB	30 - 150 %	
Polychlorinated Biphenyls									
PCB-1016	ND	66	66	ug/Kg	2	07/06/22	SC	SW8082A	
PCB-1221	ND	66	66	ug/Kg	2	07/06/22	SC	SW8082A	
PCB-1232	ND	66	66	ug/Kg	2	07/06/22	SC	SW8082A	
PCB-1242	ND	66	66	ug/Kg	2	07/06/22	SC	SW8082A	
PCB-1248	ND	66	66	ug/Kg	2	07/06/22	SC	SW8082A	
PCB-1254	ND	66	66	ug/Kg	2	07/06/22	SC	SW8082A	
PCB-1260	ND	66	66	ug/Kg	2	07/06/22	SC	SW8082A	
PCB-1262	ND	66	66	ug/Kg	2	07/06/22	SC	SW8082A	
PCB-1268	ND	66	66	ug/Kg	2	07/06/22	SC	SW8082A	
QA/QC Surrogates									
% DCBP	78			%	2	07/06/22	SC	30 - 150 %	
% DCBP (Confirmation)	78			%	2	07/06/22	SC	30 - 150 %	
% TCMX	63			%	2	07/06/22	SC	30 - 150 %	
% TCMX (Confirmation)	65			%	2	07/06/22	SC	30 - 150 %	
Pesticides - Soil									
4,4' -DDD	ND	2.0	2.0	ug/Kg	2	07/06/22	AW	SW8081B	
4,4' -DDE	ND	2.0	2.0	ug/Kg	2	07/06/22	AW	SW8081B	
4,4' -DDT	ND	2.0	2.0	ug/Kg	2	07/06/22	AW	SW8081B	
a-BHC	ND	1.3	1.3	ug/Kg	2	07/06/22	AW	SW8081B	
a-Chlordane	ND	3.3	3.3	ug/Kg	2	07/06/22	AW	SW8081B	
Alachlor	ND	3.3	3.3	ug/Kg	2	07/06/22	AW	SW8081B	
Aldrin	ND	3.3	3.3	ug/Kg	2	07/06/22	AW	SW8081B	
b-BHC	ND	1.3	1.3	ug/Kg	2	07/06/22	AW	SW8081B	
Chlordane	ND	33	33	ug/Kg	2	07/06/22	AW	SW8081B	
d-BHC	ND	6.6	6.6	ug/Kg	2	07/06/22	AW	SW8081B	
Dieldrin	ND	1.3	1.3	ug/Kg	2	07/06/22	AW	SW8081B	
Endosulfan I	ND	6.6	6.6	ug/Kg	2	07/06/22	AW	SW8081B	
Endosulfan II	ND	6.6	6.6	ug/Kg	2	07/06/22	AW	SW8081B	
Endosulfan sulfate	ND	6.6	6.6	ug/Kg	2	07/06/22	AW	SW8081B	
Endrin	ND	6.6	6.6	ug/Kg	2	07/06/22	AW	SW8081B	
Endrin aldehyde	ND	6.6	6.6	ug/Kg	2	07/06/22	AW	SW8081B	
Endrin ketone	ND	6.6	6.6	ug/Kg	2	07/06/22	AW	SW8081B	
g-BHC	ND	1.3	1.3	ug/Kg	2	07/06/22	AW	SW8081B	

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Parameter	Result		RL/ PQL	LOD/ MDL	Units	Dilution	Date/Time	By	Reference
g-Chlordane	ND		3.3	3.3	ug/Kg	2	07/06/22	AW	SW8081B
Heptachlor	ND		6.6	6.6	ug/Kg	2	07/06/22	AW	SW8081B
Heptachlor epoxide	ND		6.6	6.6	ug/Kg	2	07/06/22	AW	SW8081B
Methoxychlor	ND		33	33	ug/Kg	2	07/06/22	AW	SW8081B
Toxaphene	ND		130	130	ug/Kg	2	07/06/22	AW	SW8081B
QA/QC Surrogates									
% DCBP	86				%	2	07/06/22	AW	30 - 150 %
% DCBP (Confirmation)	89				%	2	07/06/22	AW	30 - 150 %
% TCMX	68				%	2	07/06/22	AW	30 - 150 %
% TCMX (Confirmation)	61				%	2	07/06/22	AW	30 - 150 %
Volatiles									
1,2,4-Trimethylbenzene	ND	L	5.1	0.51	ug/Kg	1	07/06/22	JLI	SW8260C
1,3,5-Trimethylbenzene	ND	L	5.1	0.51	ug/Kg	1	07/06/22	JLI	SW8260C
1,3-Dichlorobenzene	ND	L	5.1	0.51	ug/Kg	1	07/06/22	JLI	SW8260C
Naphthalene	ND	L	5.1	1.0	ug/Kg	1	07/06/22	JLI	SW8260C
n-Butylbenzene	ND	L	5.1	0.51	ug/Kg	1	07/06/22	JLI	SW8260C
n-Propylbenzene	ND	L	5.1	1.0	ug/Kg	1	07/06/22	JLI	SW8260C
p-Isopropyltoluene	ND	L	5.1	0.51	ug/Kg	1	07/06/22	JLI	SW8260C
sec-Butylbenzene	ND	L	5.1	0.51	ug/Kg	1	07/06/22	JLI	SW8260C
tert-Butylbenzene	ND	L	5.1	0.51	ug/Kg	1	07/06/22	JLI	SW8260C
QA/QC Surrogates									
% 1,2-dichlorobenzene-d4	97				%	1	07/06/22	JLI	70 - 130 %
% Bromofluorobenzene	99				%	1	07/06/22	JLI	70 - 130 %
% Dibromofluoromethane	97				%	1	07/06/22	JLI	70 - 130 %
% Toluene-d8	95				%	1	07/06/22	JLI	70 - 130 %
1,4-dioxane									
1,4-dioxane	ND	L	76	40	ug/kg	1	07/06/22	JLI	SW8260C
Volatiles									
1,1,1,2-Tetrachloroethane	ND	L	5.1	1.0	ug/Kg	1	07/06/22	JLI	SW8260C
1,1,1-Trichloroethane	ND	L	5.1	0.51	ug/Kg	1	07/06/22	JLI	SW8260C
1,1,2,2-Tetrachloroethane	ND	L	5.1	1.0	ug/Kg	1	07/06/22	JLI	SW8260C
1,1,2-Trichloroethane	ND	L	5.1	1.0	ug/Kg	1	07/06/22	JLI	SW8260C
1,1-Dichloroethane	ND	L	5.1	1.0	ug/Kg	1	07/06/22	JLI	SW8260C
1,1-Dichloroethene	ND	L	5.1	0.51	ug/Kg	1	07/06/22	JLI	SW8260C
1,2,3-Trichlorobenzene	ND	L	5.1	1.0	ug/Kg	1	07/06/22	JLI	SW8260C
1,2,4-Trichlorobenzene	ND	L	5.1	1.0	ug/Kg	1	07/06/22	JLI	SW8260C
1,2-Dibromo-3-chloropropane	ND	L	5.0	1.0	ug/Kg	1	07/06/22	JLI	SW8260C
1,2-Dibromoethane	ND	L	4.5	0.51	ug/Kg	1	07/06/22	JLI	SW8260C
1,2-Dichlorobenzene	ND	L	5.1	0.51	ug/Kg	1	07/06/22	JLI	SW8260C
1,2-Dichloroethane	ND	L	5.0	0.51	ug/Kg	1	07/06/22	JLI	SW8260C
1,2-Dichloropropane	ND	L	5.0	1.0	ug/Kg	1	07/06/22	JLI	SW8260C
1,3-Dichlorobenzene	ND	L	5.1	0.51	ug/Kg	1	07/06/22	JLI	SW8260C
1,4-Dichlorobenzene	ND	L	5.1	0.51	ug/Kg	1	07/06/22	JLI	SW8260C
2-Hexanone	ND	L	25	5.1	ug/Kg	1	07/06/22	JLI	SW8260C
4-Methyl-2-pentanone	ND	L	25	5.1	ug/Kg	1	07/06/22	JLI	SW8260C
Acetone	ND	L	51	5.1	ug/Kg	1	07/06/22	JLI	SW8260C
Acrolein	ND	L	25	2.5	ug/Kg	1	07/06/22	JLI	SW8260C

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Parameter	Result		RL/ PQL	LOD/ MDL	Units	Dilution	Date/Time	By	Reference
Acrylonitrile	ND	L	10	0.51	ug/Kg	1	07/06/22	JLI	SW8260C
Benzene	ND	L	5.0	0.51	ug/Kg	1	07/06/22	JLI	SW8260C
Bromochloromethane	ND	L	5.1	0.51	ug/Kg	1	07/06/22	JLI	SW8260C
Bromodichloromethane	ND	L	5.0	1.0	ug/Kg	1	07/06/22	JLI	SW8260C
Bromoform	ND	L	5.1	1.0	ug/Kg	1	07/06/22	JLI	SW8260C
Bromomethane	ND	L	5.1	2.0	ug/Kg	1	07/06/22	JLI	SW8260C
Carbon Disulfide	ND	L	5.1	1.0	ug/Kg	1	07/06/22	JLI	SW8260C
Carbon tetrachloride	ND	L	5.0	1.0	ug/Kg	1	07/06/22	JLI	SW8260C
Chlorobenzene	ND	L	5.1	0.51	ug/Kg	1	07/06/22	JLI	SW8260C
Chloroethane	ND	L	5.1	0.51	ug/Kg	1	07/06/22	JLI	SW8260C
Chloroform	ND	L	5.1	0.51	ug/Kg	1	07/06/22	JLI	SW8260C
Chloromethane	ND	L	5.1	1.0	ug/Kg	1	07/06/22	JLI	SW8260C
cis-1,2-Dichloroethene	ND	L	5.1	0.51	ug/Kg	1	07/06/22	JLI	SW8260C
cis-1,3-Dichloropropene	ND	L	5.0	0.51	ug/Kg	1	07/06/22	JLI	SW8260C
Cyclohexane	ND	L	5.1	1.0	ug/Kg	1	07/06/22	JLI	SW8260C
Dibromochloromethane	ND	L	5.0	1.0	ug/Kg	1	07/06/22	JLI	SW8260C
Dichlorodifluoromethane	ND	L	5.1	0.51	ug/Kg	1	07/06/22	JLI	SW8260C
Ethylbenzene	ND	L	5.1	0.51	ug/Kg	1	07/06/22	JLI	SW8260C
Isopropylbenzene	ND	L	5.1	0.51	ug/Kg	1	07/06/22	JLI	SW8260C
m&p-Xylene	ND	L	5.1	1.0	ug/Kg	1	07/06/22	JLI	SW8260C
Methyl ethyl ketone	ND	L	30	5.1	ug/Kg	1	07/06/22	JLI	SW8260C
Methyl t-butyl ether (MTBE)	ND	L	10	1.0	ug/Kg	1	07/06/22	JLI	SW8260C
Methylacetate	ND	L	10	10	ug/Kg	1	07/06/22	JLI	SW8260C
Methylcyclohexane	ND	L	5.1	1.0	ug/Kg	1	07/06/22	JLI	SW8260C
Methylene chloride	ND	L	5.1	5.1	ug/Kg	1	07/06/22	JLI	SW8260C
o-Xylene	ND	L	5.1	1.0	ug/Kg	1	07/06/22	JLI	SW8260C
Styrene	ND	L	5.1	0.51	ug/Kg	1	07/06/22	JLI	SW8260C
tert-butyl alcohol	ND	L	100	20	ug/Kg	1	07/06/22	JLI	SW8260C
Tetrachloroethene	ND	L	5.0	1.0	ug/Kg	1	07/06/22	JLI	SW8260C
Toluene	ND	L	5.1	0.51	ug/Kg	1	07/06/22	JLI	SW8260C
Total Xylenes	ND		5.1	5.1	ug/Kg	1	07/06/22	JLI	SW8260C
trans-1,2-Dichloroethene	ND	L	5.1	0.51	ug/Kg	1	07/06/22	JLI	SW8260C
trans-1,3-Dichloropropene	ND	L	5.0	0.51	ug/Kg	1	07/06/22	JLI	SW8260C
Trichloroethene	ND	L	5.1	0.51	ug/Kg	1	07/06/22	JLI	SW8260C
Trichlorofluoromethane	ND	L	5.1	1.0	ug/Kg	1	07/06/22	JLI	SW8260C
Trichlorotrifluoroethane	ND	L	5.1	0.51	ug/Kg	1	07/06/22	JLI	SW8260C
Vinyl chloride	ND	L	5.0	0.51	ug/Kg	1	07/06/22	JLI	SW8260C
QA/QC Surrogates									
% 1,2-dichlorobenzene-d4	97				%	1	07/06/22	JLI	70 - 130 %
% Bromofluorobenzene	99				%	1	07/06/22	JLI	70 - 130 %
% Dibromofluoromethane	97				%	1	07/06/22	JLI	70 - 130 %
% Toluene-d8	95				%	1	07/06/22	JLI	70 - 130 %
Vinyl Acetate	ND	L	51	51	ug/Kg	1	07/06/22	JLI	SW8260C

Semivolatiles

1,1-Biphenyl	ND		230	100	ug/Kg	1	07/06/22	WB	SW8270D
1,2,4,5-Tetrachlorobenzene	ND		230	120	ug/Kg	1	07/06/22	WB	SW8270D
1,2-Diphenylhydrazine	ND		330	330	ug/Kg	1	07/06/22	WB	SW8270D
2,2'-Oxybis(1-Chloropropane)	ND		230	93	ug/Kg	1	07/06/22	WB	SW8270D

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Parameter	Result		RL/ PQL	LOD/ MDL	Units	Dilution	Date/Time	By	Reference	
2,3,4,6-tetrachlorophenol	ND		230	160	ug/Kg	1	07/06/22	WB	SW8270D	
2,4,5-Trichlorophenol	ND		230	180	ug/Kg	1	07/06/22	WB	SW8270D	
2,4,6-Trichlorophenol	ND		130	110	ug/Kg	1	07/06/22	WB	SW8270D	
2,4-Dichlorophenol	ND		130	120	ug/Kg	1	07/06/22	WB	SW8270D	
2,4-Dimethylphenol	ND		230	83	ug/Kg	1	07/06/22	WB	SW8270D	
2,4-Dinitrophenol	ND		230	230	ug/Kg	1	07/06/22	WB	SW8270D	
2,4-Dinitrotoluene	ND		130	130	ug/Kg	1	07/06/22	WB	SW8270D	
2,6-Dinitrotoluene	ND		130	110	ug/Kg	1	07/06/22	WB	SW8270D	
2-Chloronaphthalene	ND		230	95	ug/Kg	1	07/06/22	WB	SW8270D	
2-Chlorophenol	ND		230	95	ug/Kg	1	07/06/22	WB	SW8270D	
2-Methylnaphthalene	ND		230	99	ug/Kg	1	07/06/22	WB	SW8270D	
2-Methylphenol (o-cresol)	ND		230	160	ug/Kg	1	07/06/22	WB	SW8270D	
2-Nitroaniline	ND		300	230	ug/Kg	1	07/06/22	WB	SW8270D	
2-Nitrophenol	ND		230	210	ug/Kg	1	07/06/22	WB	SW8270D	
3&4-Methylphenol (m&p-cresol)	ND		230	130	ug/Kg	1	07/06/22	WB	SW8270D	1
3,3'-Dichlorobenzidine	ND		130	130	ug/Kg	1	07/06/22	WB	SW8270D	
3-Nitroaniline	ND		670	230	ug/Kg	1	07/06/22	WB	SW8270D	
4,6-Dinitro-2-methylphenol	ND		230	230	ug/Kg	1	07/06/22	WB	SW8270D	
4-Bromophenyl phenyl ether	ND		230	98	ug/Kg	1	07/06/22	WB	SW8270D	
4-Chloro-3-methylphenol	ND		230	120	ug/Kg	1	07/06/22	WB	SW8270D	
4-Chloroaniline	ND		670	160	ug/Kg	1	07/06/22	WB	SW8270D	
4-Chlorophenyl phenyl ether	ND		230	110	ug/Kg	1	07/06/22	WB	SW8270D	
4-Nitroaniline	ND		330	110	ug/Kg	1	07/06/22	WB	SW8270D	
4-Nitrophenol	ND		330	150	ug/Kg	1	07/06/22	WB	SW8270D	
Acenaphthene	ND		230	100	ug/Kg	1	07/06/22	WB	SW8270D	
Acenaphthylene	ND		130	93	ug/Kg	1	07/06/22	WB	SW8270D	
Acetophenone	ND		230	100	ug/Kg	1	07/06/22	WB	SW8270D	
Anthracene	140	J	230	110	ug/Kg	1	07/06/22	WB	SW8270D	
Atrazine	ND		130	100	ug/Kg	1	07/06/22	WB	SW8270D	
Benz(a)anthracene	190	J	230	110	ug/Kg	1	07/06/22	WB	SW8270D	
Benzaldehyde	ND		230	99	ug/Kg	1	07/06/22	WB	SW8270D	
Benzidine	ND		230	130	ug/Kg	1	07/06/22	WB	SW8270D	
Benzo(a)pyrene	170		130	110	ug/Kg	1	07/06/22	WB	SW8270D	
Benzo(b)fluoranthene	ND		230	110	ug/Kg	1	07/06/22	WB	SW8270D	
Benzo(ghi)perylene	ND		230	110	ug/Kg	1	07/06/22	WB	SW8270D	
Benzo(k)fluoranthene	120	J	230	110	ug/Kg	1	07/06/22	WB	SW8270D	
Benzyl Alcohol	ND		330	330	ug/Kg	1	07/06/22	WB	SW8270D	
Benzyl butyl phthalate	ND		230	86	ug/Kg	1	07/06/22	WB	SW8270D	
Bis(2-chloroethoxy)methane	ND		230	92	ug/Kg	1	07/06/22	WB	SW8270D	
Bis(2-chloroethyl)ether	ND		130	90	ug/Kg	1	07/06/22	WB	SW8270D	
Bis(2-ethylhexyl)phthalate	ND		230	96	ug/Kg	1	07/06/22	WB	SW8270D	
Caprolactam	ND		230	230	ug/Kg	1	07/06/22	WB	SW8270D	
Carbazole	ND		170	130	ug/Kg	1	07/06/22	WB	SW8270D	
Chrysene	190	J	230	110	ug/Kg	1	07/06/22	WB	SW8270D	
Dibenz(a,h)anthracene	ND		130	110	ug/Kg	1	07/06/22	WB	SW8270D	
Dibenzofuran	ND		230	97	ug/Kg	1	07/06/22	WB	SW8270D	
Diethyl phthalate	ND		230	110	ug/Kg	1	07/06/22	WB	SW8270D	
Dimethylphthalate	ND		230	100	ug/Kg	1	07/06/22	WB	SW8270D	
Di-n-butylphthalate	ND		230	89	ug/Kg	1	07/06/22	WB	SW8270D	

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Parameter	Result	RL/ PQL	LOD/ MDL	Units	Dilution	Date/Time	By	Reference
Di-n-octylphthalate	ND	230	86	ug/Kg	1	07/06/22	WB	SW8270D
Fluoranthene	410	230	110	ug/Kg	1	07/06/22	WB	SW8270D
Fluorene	ND	230	110	ug/Kg	1	07/06/22	WB	SW8270D
Hexachlorobenzene	ND	130	97	ug/Kg	1	07/06/22	WB	SW8270D
Hexachlorobutadiene	ND	230	120	ug/Kg	1	07/06/22	WB	SW8270D
Hexachlorocyclopentadiene	ND	230	100	ug/Kg	1	07/06/22	WB	SW8270D
Hexachloroethane	ND	130	100	ug/Kg	1	07/06/22	WB	SW8270D
Indeno(1,2,3-cd)pyrene	ND	230	110	ug/Kg	1	07/06/22	WB	SW8270D
Isophorone	ND	130	93	ug/Kg	1	07/06/22	WB	SW8270D
Naphthalene	ND	230	96	ug/Kg	1	07/06/22	WB	SW8270D
Nitrobenzene	ND	130	120	ug/Kg	1	07/06/22	WB	SW8270D
N-Nitrosodimethylamine	ND	230	94	ug/Kg	1	07/06/22	WB	SW8270D
N-Nitrosodi-n-propylamine	ND	130	110	ug/Kg	1	07/06/22	WB	SW8270D
N-Nitrosodiphenylamine	ND	130	130	ug/Kg	1	07/06/22	WB	SW8270D
Pentachlorophenol	ND	230	130	ug/Kg	1	07/06/22	WB	SW8270D
Phenanthrene	580	130	95	ug/Kg	1	07/06/22	WB	SW8270D
Phenol	ND	230	110	ug/Kg	1	07/06/22	WB	SW8270D
Pyrene	520	230	110	ug/Kg	1	07/06/22	WB	SW8270D
QA/QC Surrogates								
% 2,4,6-Tribromophenol	79			%	1	07/06/22	WB	30 - 130 %
% 2-Fluorobiphenyl	69			%	1	07/06/22	WB	30 - 130 %
% 2-Fluorophenol	67			%	1	07/06/22	WB	30 - 130 %
% Nitrobenzene-d5	67			%	1	07/06/22	WB	30 - 130 %
% Phenol-d5	71			%	1	07/06/22	WB	30 - 130 %
% Terphenyl-d14	77			%	1	07/06/22	WB	30 - 130 %
Aniline	ND	330	330	ug/Kg	1	07/06/22	WB	SW8270D
Benzoic Acid	ND	330	230	ug/Kg	1	07/06/22	WB	SW8270D
Parathion	ND	330	130	ug/Kg	1	07/06/22	WB	SW8270D

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Parameter	Result	RL/ PQL	LOD/ MDL	Units	Dilution	Date/Time	By	Reference

1 = This parameter is not certified by the primary accrediting authority (NY NELAC) for this matrix. NY NELAC does not offer certification for all parameters at this time.
C = This parameter is subcontracted.

RL/PQL=Reporting/Practical Quantitation Level (Equivalent to NELAC LOQ, Limit of Quantitation) ND=Not Detected BRL=Below Reporting Level L=Biased Low J=Estimated Below RL LOD=Limit of Detection MDL=Method Detection Limit1
QA/QC Surrogates: Surrogates are compounds (preceeded with a %) added by the lab to determine analysis efficiency. Surrogate results(%) listed in the report are not "detected" compounds.

Comments:

Volatile Comment:
L flag signifies that this sample was not collected in accordance with EPA method 5035. NELAC requires the laboratory to qualify the volatile soil data as biased low.

*See attached

Per 1.4.6 of EPA method 8270D, 1,2-Diphenylhydrazine is unstable and readily converts to Azobenzene. Azobenzene is used for the calibration of 1,2-Diphenylhydrazine.

The regulatory hold time for pH is immediately. This pH was performed in the laboratory and may be considered outside of hold-time.

Semi-Volatile Comment:
To achieve client's objectives, where the lowest calibration standard or LOD justifies lowering the RL/PQL, the RL/PQL of some compounds have been lowered to meet criteria.

Hexavalent Chromium:
This sample is in a reducing state.

All soils, solids and sludges are reported on a dry weight basis unless otherwise noted in the sample comments.

PFAS (21) (EPA 537m), PFOA/PFOS - Soil Extraction (EPA 537m) were analyzed by NY certified lab #12058.

If you are the client above and have any questions concerning this testing, please do not hesitate to contact Phoenix Client Services at ext.200.
The contents of this report cannot be discussed with anyone other than the client listed above without their written consent.

Phyllis Shiller, Laboratory Director
July 19, 2022
Reviewed and Released by: Rashmi Makol, Project Manager

PHOENIX

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

ACCREDITED IN ACCORDANCE WITH nelac
NY # 11301

Analysis Report

July 19, 2022

FOR: Attn: Mr. Jeff Bogoian
Impact Materials
170 Keyland Court
Bohemia NY 11716

Sample Information		Custody Information		Date	Time
Matrix:	SOIL	Collected by:		07/05/22	9:05
Location Code:	IMPACTJB-IM	Received by:	SW	07/05/22	15:48
Rush Request:	72 Hour	Analyzed by:	see "By" below		
P.O.#:					

Laboratory Data

SDG ID: GCL69739
Phoenix ID: CL69749

Project ID: IMJC
Client ID: IMJC COMP-2

Parameter	Result	RL/ PQL	LOD/ MDL	Units	Dilution	Date/Time	By	Reference	
Silver	ND	0.34	0.34	mg/Kg	1	07/06/22	EK	SW6010D	
Aluminum	15900	34	6.7	mg/Kg	10	07/06/22	EK	SW6010D	
Arsenic	ND	0.67	0.67	mg/Kg	1	07/06/22	EK	SW6010D	
Barium	206	0.7	0.34	mg/Kg	1	07/06/22	EK	SW6010D	
Beryllium	0.41	0.27	0.13	mg/Kg	1	07/06/22	EK	SW6010D	
Calcium	4220	3.4	3.1	mg/Kg	1	07/06/22	EK	SW6010D	
Cadmium	1.93	0.34	0.34	mg/Kg	1	07/06/22	EK	SW6010D	
Cobalt	20.2	0.34	0.34	mg/Kg	1	07/06/22	EK	SW6010D	
Chromium	34.8	0.34	0.34	mg/Kg	1	07/06/22	EK	SW6010D	
Copper	37.0	0.7	0.34	mg/kg	1	07/06/22	EK	SW6010D	
Iron	30800	34	34	mg/Kg	10	07/06/22	EK	SW6010D	
Mercury	ND	0.03	0.02	mg/Kg	2	07/06/22	IE	SW7471B	
Potassium	10400	67	26	mg/Kg	10	07/06/22	EK	SW6010D	
Magnesium	8620	34	34	mg/Kg	10	07/06/22	EK	SW6010D	
Manganese	235	3.4	3.4	mg/Kg	10	07/06/22	EK	SW6010D	
Sodium	421	7	2.9	mg/Kg	1	07/06/22	EK	SW6010D	
Nickel	30.8	0.34	0.34	mg/Kg	1	07/06/22	EK	SW6010D	
Lead	10.2	0.7	0.34	mg/Kg	1	07/06/22	EK	SW6010D	
Antimony	ND	3.4	3.4	mg/Kg	1	07/06/22	EK	SW6010D	
Selenium	ND	1.3	1.1	mg/Kg	1	07/06/22	EK	SW6010D	
Thallium	ND	1.3	1.3	mg/Kg	1	07/06/22	EK	SW6010D	
Trivalent Chromium	34.8	0.34	0.34	mg/kg	1	07/06/22		CALC 6010-7196	
Vanadium	56.3	0.34	0.34	mg/Kg	1	07/06/22	EK	SW6010D	
Zinc	81.9	0.7	0.34	mg/Kg	1	07/06/22	EK	SW6010D	
Percent Solid	99			%		07/05/22	K	SW846-%Solid	
Chromium, Hex. (SW3060 digestion)	ND	0.38	0.38	mg/Kg	1	07/06/22	BJA	SW7196A	
pH at 25C - Soil	8.32	1.00	1.00	pH Units	1	07/05/22 21:22	MW	SW846 9045D	1
Redox Potential	174			mV	1	07/05/22	MW	SM2580B-09	1

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Parameter	Result	RL/ PQL	LOD/ MDL	Units	Dilution	Date/Time	By	Reference	
Total Cyanide (SW9010C Distill.)	ND	0.51	0.253	mg/Kg	1	07/06/22	CL/DK	SW9012B	
Soil Extraction for PCB	Completed					07/05/22	O	SW3545A	
Soil Extraction for Pesticide	Completed					07/05/22	O/MO	SW3545A	
Mercury Digestion	Completed					07/06/22	AB/KL	SW7471B	
Soil Extraction for Herbicide	Completed					07/05/22	M/E	SW3546	
Soil Extraction for SVOA	Completed					07/05/22	B/L	SW3546	
Total Metals Digest	Completed					07/05/22	M/AG	SW3050B	
PFAS (21)	Completed					07/12/22	***	EPA 537m	C
PFAS (21)									
1H,1H,2H,2H-Perfluorodecanesulfonic acid	ND	0.248	0.0254	ng/g	1	07/14/22	***	EPA 537m	C
1H,1H,2H,2H-Perfluorooctanesulfonic acid	ND	0.248	0.0654	ng/g	1	07/14/22	***	EPA 537m	C
NEtFOSAA	ND	0.248	0.103	ng/g	1	07/14/22	***	EPA 537m	C
NMeFOSAA	ND	0.248	0.103	ng/g	1	07/14/22	***	EPA 537m	C
Perfluoro-1-decanesulfonic acid (PFDS)	ND	0.248	0.0507	ng/g	1	07/14/22	***	EPA 537m	C
Perfluoro-1-heptanesulfonic acid (PFHpS)	ND	0.248	0.0489	ng/g	1	07/14/22	***	EPA 537m	C
Perfluoro-1-octanesulfonamide (FOSA)	ND	0.248	0.0463	ng/g	1	07/14/22	***	EPA 537m	C
Perfluorobutanesulfonic acid (PFBS)	ND	0.248	0.198	ng/g	1	07/14/22	***	EPA 537m	C
Perfluorodecanoic acid (PFDA)	ND	0.248	0.0507	ng/g	1	07/14/22	***	EPA 537m	C
Perfluorododecanoic acid (PFDoA)	ND	0.248	0.0743	ng/g	1	07/14/22	***	EPA 537m	C
Perfluoroheptanoic acid (PFHpA)	ND	0.248	0.0451	ng/g	1	07/14/22	***	EPA 537m	C
Perfluorohexanesulfonic Acid (PFHxS)	ND	0.248	0.0307	ng/g	1	07/14/22	***	EPA 537m	C
Perfluorohexanoic acid (PFHxA)	ND	0.248	0.0653	ng/g	1	07/14/22	***	EPA 537m	C
Perfluoro-n-butanoic acid (PFBA)	ND	0.248	0.181	ng/g	1	07/14/22	***	EPA 537m	C
Perfluorononanoic acid (PFNA)	ND	0.248	0.0593	ng/g	1	07/14/22	***	EPA 537m	C
Perfluorooctanesulfonic Acid (PFOS)	ND	0.248	0.0434	ng/g	1	07/14/22	***	EPA 537m	C
Perfluorooctanoic acid (PFOA)	ND	0.248	0.0765	ng/g	1	07/14/22	***	EPA 537m	C
Perfluoropentanoic acid (PFPeA)	ND	0.248	0.0911	ng/g	1	07/14/22	***	EPA 537m	C
Perfluorotetradecanoic acid (PFTA)	ND	0.248	0.0740	ng/g	1	07/14/22	***	EPA 537m	C
Perfluorotridecanoic acid (PFTrDA)	ND	0.248	0.0431	ng/g	1	07/14/22	***	EPA 537m	C
Perfluoroundecanoic acid (PFUnA)	ND	0.248	0.115	ng/g	1	07/14/22	***	EPA 537m	C
QA/QC Surrogates									
% d3-N-MeFOSAA	64.5			%	1	07/14/22	***	25 - 150 %	C
% d5-NEtFOSA	61.2			%	1	07/14/22	***	25 - 150 %	C
% M2-6:2FTS	72.5			%	1	07/14/22	***	25 - 200 %	C
% M2-8:2FTS	96.4			%	1	07/14/22	***	25 - 200 %	C
% M2PFTeDA	64.0			%	1	07/14/22	***	10 - 150 %	C
% M3PFBS	68.3			%	1	07/14/22	***	25 - 150 %	C
% M3PFHxS	83.7			%	1	07/14/22	***	25 - 150 %	C
% M4PFHpA	83.4			%	1	07/14/22	***	25 - 150 %	C
% M5PFHxA	78.9			%	1	07/14/22	***	25 - 150 %	C
% M5PFPeA	78.9			%	1	07/14/22	***	25 - 150 %	C
% M6PFDA	62.1			%	1	07/14/22	***	25 - 150 %	C
% M7PFUdA	51.4			%	1	07/14/22	***	25 - 150 %	C
% M8FOSA	49.8			%	1	07/14/22	***	10 - 150 %	C
% M8PFOA	88.5			%	1	07/14/22	***	25 - 150 %	C
% M8PFOS	79.3			%	1	07/14/22	***	25 - 150 %	C
% M9PFNA	87.8			%	1	07/14/22	***	25 - 150 %	C
% MPFBA	75.2			%	1	07/14/22	***	25 - 150 %	C

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% MPFDoA	45.4			%	1	07/14/22	***	25 - 150 %	C
Chlorinated Herbicides									
2,4,5-T	ND	120	120	ug/Kg	10	07/07/22	JRB	SW8151A	
2,4,5-TP (Silvex)	ND	120	120	ug/Kg	10	07/07/22	JRB	SW8151A	
2,4-D	ND	250	250	ug/Kg	10	07/07/22	JRB	SW8151A	
2,4-DB	ND	2500	2500	ug/Kg	10	07/07/22	JRB	SW8151A	
Dalapon	ND	120	120	ug/Kg	10	07/07/22	JRB	SW8151A	
Dicamba	ND	120	120	ug/Kg	10	07/07/22	JRB	SW8151A	
Dichloroprop	ND	250	250	ug/Kg	10	07/07/22	JRB	SW8151A	
Dinoseb	ND	250	250	ug/Kg	10	07/07/22	JRB	SW8151A	
QA/QC Surrogates									
% DCAA	106			%	10	07/07/22	JRB	30 - 150 %	
% DCAA (Confirmation)	83			%	10	07/07/22	JRB	30 - 150 %	
Polychlorinated Biphenyls									
PCB-1016	ND	66	66	ug/Kg	2	07/06/22	SC	SW8082A	
PCB-1221	ND	66	66	ug/Kg	2	07/06/22	SC	SW8082A	
PCB-1232	ND	66	66	ug/Kg	2	07/06/22	SC	SW8082A	
PCB-1242	ND	66	66	ug/Kg	2	07/06/22	SC	SW8082A	
PCB-1248	ND	66	66	ug/Kg	2	07/06/22	SC	SW8082A	
PCB-1254	ND	66	66	ug/Kg	2	07/06/22	SC	SW8082A	
PCB-1260	ND	66	66	ug/Kg	2	07/06/22	SC	SW8082A	
PCB-1262	ND	66	66	ug/Kg	2	07/06/22	SC	SW8082A	
PCB-1268	ND	66	66	ug/Kg	2	07/06/22	SC	SW8082A	
QA/QC Surrogates									
% DCBP	79			%	2	07/06/22	SC	30 - 150 %	
% DCBP (Confirmation)	76			%	2	07/06/22	SC	30 - 150 %	
% TCMX	65			%	2	07/06/22	SC	30 - 150 %	
% TCMX (Confirmation)	64			%	2	07/06/22	SC	30 - 150 %	
Pesticides - Soil									
4,4' -DDD	ND	2.0	2.0	ug/Kg	2	07/06/22	AW	SW8081B	
4,4' -DDE	ND	2.0	2.0	ug/Kg	2	07/06/22	AW	SW8081B	
4,4' -DDT	ND	3.0	3.0	ug/Kg	2	07/06/22	AW	SW8081B	
a-BHC	ND	1.3	1.3	ug/Kg	2	07/06/22	AW	SW8081B	
a-Chlordane	ND	3.3	3.3	ug/Kg	2	07/06/22	AW	SW8081B	
Alachlor	ND	3.3	3.3	ug/Kg	2	07/06/22	AW	SW8081B	
Aldrin	ND	3.3	3.3	ug/Kg	2	07/06/22	AW	SW8081B	
b-BHC	ND	1.3	1.3	ug/Kg	2	07/06/22	AW	SW8081B	
Chlordane	ND	33	33	ug/Kg	2	07/06/22	AW	SW8081B	
d-BHC	ND	6.6	6.6	ug/Kg	2	07/06/22	AW	SW8081B	
Dieldrin	ND	1.3	1.3	ug/Kg	2	07/06/22	AW	SW8081B	
Endosulfan I	ND	6.6	6.6	ug/Kg	2	07/06/22	AW	SW8081B	
Endosulfan II	ND	6.6	6.6	ug/Kg	2	07/06/22	AW	SW8081B	
Endosulfan sulfate	ND	6.6	6.6	ug/Kg	2	07/06/22	AW	SW8081B	
Endrin	ND	6.6	6.6	ug/Kg	2	07/06/22	AW	SW8081B	
Endrin aldehyde	ND	6.6	6.6	ug/Kg	2	07/06/22	AW	SW8081B	
Endrin ketone	ND	6.6	6.6	ug/Kg	2	07/06/22	AW	SW8081B	
g-BHC	ND	1.3	1.3	ug/Kg	2	07/06/22	AW	SW8081B	

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g-Chlordane	ND		3.3	3.3	ug/Kg	2	07/06/22	AW	SW8081B
Heptachlor	ND		6.6	6.6	ug/Kg	2	07/06/22	AW	SW8081B
Heptachlor epoxide	ND		6.6	6.6	ug/Kg	2	07/06/22	AW	SW8081B
Methoxychlor	ND		33	33	ug/Kg	2	07/06/22	AW	SW8081B
Toxaphene	ND		130	130	ug/Kg	2	07/06/22	AW	SW8081B
QA/QC Surrogates									
% DCBP	89				%	2	07/06/22	AW	30 - 150 %
% DCBP (Confirmation)	92				%	2	07/06/22	AW	30 - 150 %
% TCMX	63				%	2	07/06/22	AW	30 - 150 %
% TCMX (Confirmation)	62				%	2	07/06/22	AW	30 - 150 %
Volatiles									
1,2,4-Trimethylbenzene	ND	L	5.1	0.51	ug/Kg	1	07/06/22	JLI	SW8260C
1,3,5-Trimethylbenzene	ND	L	5.1	0.51	ug/Kg	1	07/06/22	JLI	SW8260C
1,3-Dichlorobenzene	ND	L	5.1	0.51	ug/Kg	1	07/06/22	JLI	SW8260C
Naphthalene	ND	L	5.1	1.0	ug/Kg	1	07/06/22	JLI	SW8260C
n-Butylbenzene	ND	L	5.1	0.51	ug/Kg	1	07/06/22	JLI	SW8260C
n-Propylbenzene	ND	L	5.1	1.0	ug/Kg	1	07/06/22	JLI	SW8260C
p-Isopropyltoluene	ND	L	5.1	0.51	ug/Kg	1	07/06/22	JLI	SW8260C
sec-Butylbenzene	ND	L	5.1	0.51	ug/Kg	1	07/06/22	JLI	SW8260C
tert-Butylbenzene	ND	L	5.1	0.51	ug/Kg	1	07/06/22	JLI	SW8260C
QA/QC Surrogates									
% 1,2-dichlorobenzene-d4	95				%	1	07/06/22	JLI	70 - 130 %
% Bromofluorobenzene	99				%	1	07/06/22	JLI	70 - 130 %
% Dibromofluoromethane	97				%	1	07/06/22	JLI	70 - 130 %
% Toluene-d8	97				%	1	07/06/22	JLI	70 - 130 %
1,4-dioxane									
1,4-dioxane	ND	L	77	41	ug/kg	1	07/06/22	JLI	SW8260C
Volatiles									
1,1,1,2-Tetrachloroethane	ND	L	5.1	1.0	ug/Kg	1	07/06/22	JLI	SW8260C
1,1,1-Trichloroethane	ND	L	5.1	0.51	ug/Kg	1	07/06/22	JLI	SW8260C
1,1,2,2-Tetrachloroethane	ND	L	5.1	1.0	ug/Kg	1	07/06/22	JLI	SW8260C
1,1,2-Trichloroethane	ND	L	5.1	1.0	ug/Kg	1	07/06/22	JLI	SW8260C
1,1-Dichloroethane	ND	L	5.1	1.0	ug/Kg	1	07/06/22	JLI	SW8260C
1,1-Dichloroethene	ND	L	5.1	0.51	ug/Kg	1	07/06/22	JLI	SW8260C
1,2,3-Trichlorobenzene	ND	L	5.1	1.0	ug/Kg	1	07/06/22	JLI	SW8260C
1,2,4-Trichlorobenzene	ND	L	5.1	1.0	ug/Kg	1	07/06/22	JLI	SW8260C
1,2-Dibromo-3-chloropropane	ND	L	5.0	1.0	ug/Kg	1	07/06/22	JLI	SW8260C
1,2-Dibromoethane	ND	L	4.6	0.51	ug/Kg	1	07/06/22	JLI	SW8260C
1,2-Dichlorobenzene	ND	L	5.1	0.51	ug/Kg	1	07/06/22	JLI	SW8260C
1,2-Dichloroethane	ND	L	5.0	0.51	ug/Kg	1	07/06/22	JLI	SW8260C
1,2-Dichloropropane	ND	L	5.0	1.0	ug/Kg	1	07/06/22	JLI	SW8260C
1,3-Dichlorobenzene	ND	L	5.1	0.51	ug/Kg	1	07/06/22	JLI	SW8260C
1,4-Dichlorobenzene	ND	L	5.1	0.51	ug/Kg	1	07/06/22	JLI	SW8260C
2-Hexanone	ND	L	26	5.1	ug/Kg	1	07/06/22	JLI	SW8260C
4-Methyl-2-pentanone	ND	L	26	5.1	ug/Kg	1	07/06/22	JLI	SW8260C
Acetone	ND	L	51	5.1	ug/Kg	1	07/06/22	JLI	SW8260C
Acrolein	ND	L	26	2.6	ug/Kg	1	07/06/22	JLI	SW8260C

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Acrylonitrile	ND	L	10	0.51	ug/Kg	1	07/06/22	JLI	SW8260C
Benzene	ND	L	5.0	0.51	ug/Kg	1	07/06/22	JLI	SW8260C
Bromochloromethane	ND	L	5.1	0.51	ug/Kg	1	07/06/22	JLI	SW8260C
Bromodichloromethane	ND	L	5.0	1.0	ug/Kg	1	07/06/22	JLI	SW8260C
Bromoform	ND	L	5.1	1.0	ug/Kg	1	07/06/22	JLI	SW8260C
Bromomethane	ND	L	5.1	2.0	ug/Kg	1	07/06/22	JLI	SW8260C
Carbon Disulfide	ND	L	5.1	1.0	ug/Kg	1	07/06/22	JLI	SW8260C
Carbon tetrachloride	ND	L	5.0	1.0	ug/Kg	1	07/06/22	JLI	SW8260C
Chlorobenzene	ND	L	5.1	0.51	ug/Kg	1	07/06/22	JLI	SW8260C
Chloroethane	ND	L	5.1	0.51	ug/Kg	1	07/06/22	JLI	SW8260C
Chloroform	ND	L	5.1	0.51	ug/Kg	1	07/06/22	JLI	SW8260C
Chloromethane	ND	L	5.1	1.0	ug/Kg	1	07/06/22	JLI	SW8260C
cis-1,2-Dichloroethene	ND	L	5.1	0.51	ug/Kg	1	07/06/22	JLI	SW8260C
cis-1,3-Dichloropropene	ND	L	5.0	0.51	ug/Kg	1	07/06/22	JLI	SW8260C
Cyclohexane	ND	L	5.1	1.0	ug/Kg	1	07/06/22	JLI	SW8260C
Dibromochloromethane	ND	L	5.0	1.0	ug/Kg	1	07/06/22	JLI	SW8260C
Dichlorodifluoromethane	ND	L	5.1	0.51	ug/Kg	1	07/06/22	JLI	SW8260C
Ethylbenzene	ND	L	5.1	0.51	ug/Kg	1	07/06/22	JLI	SW8260C
Isopropylbenzene	ND	L	5.1	0.51	ug/Kg	1	07/06/22	JLI	SW8260C
m&p-Xylene	ND	L	5.1	1.0	ug/Kg	1	07/06/22	JLI	SW8260C
Methyl ethyl ketone	ND	L	31	5.1	ug/Kg	1	07/06/22	JLI	SW8260C
Methyl t-butyl ether (MTBE)	ND	L	10	1.0	ug/Kg	1	07/06/22	JLI	SW8260C
Methylacetate	ND	L	10	10	ug/Kg	1	07/06/22	JLI	SW8260C
Methylcyclohexane	ND	L	5.1	1.0	ug/Kg	1	07/06/22	JLI	SW8260C
Methylene chloride	ND	L	5.1	5.1	ug/Kg	1	07/06/22	JLI	SW8260C
o-Xylene	ND	L	5.1	1.0	ug/Kg	1	07/06/22	JLI	SW8260C
Styrene	ND	L	5.1	0.51	ug/Kg	1	07/06/22	JLI	SW8260C
tert-butyl alcohol	ND	L	100	20	ug/Kg	1	07/06/22	JLI	SW8260C
Tetrachloroethene	ND	L	5.0	1.0	ug/Kg	1	07/06/22	JLI	SW8260C
Toluene	ND	L	5.1	0.51	ug/Kg	1	07/06/22	JLI	SW8260C
Total Xylenes	ND		5.1	5.1	ug/Kg	1	07/06/22	JLI	SW8260C
trans-1,2-Dichloroethene	ND	L	5.1	0.51	ug/Kg	1	07/06/22	JLI	SW8260C
trans-1,3-Dichloropropene	ND	L	5.0	0.51	ug/Kg	1	07/06/22	JLI	SW8260C
Trichloroethene	ND	L	5.1	0.51	ug/Kg	1	07/06/22	JLI	SW8260C
Trichlorofluoromethane	ND	L	5.1	1.0	ug/Kg	1	07/06/22	JLI	SW8260C
Trichlorotrifluoroethane	ND	L	5.1	0.51	ug/Kg	1	07/06/22	JLI	SW8260C
Vinyl chloride	ND	L	5.0	0.51	ug/Kg	1	07/06/22	JLI	SW8260C
QA/QC Surrogates									
% 1,2-dichlorobenzene-d4	95				%	1	07/06/22	JLI	70 - 130 %
% Bromofluorobenzene	99				%	1	07/06/22	JLI	70 - 130 %
% Dibromofluoromethane	97				%	1	07/06/22	JLI	70 - 130 %
% Toluene-d8	97				%	1	07/06/22	JLI	70 - 130 %
Vinyl Acetate	ND	L	51	51	ug/Kg	1	07/06/22	JLI	SW8260C

Semivolatiles

1,1-Biphenyl	ND		230	100	ug/Kg	1	07/06/22	WB	SW8270D
1,2,4,5-Tetrachlorobenzene	ND		230	120	ug/Kg	1	07/06/22	WB	SW8270D
1,2-Diphenylhydrazine	ND		330	330	ug/Kg	1	07/06/22	WB	SW8270D
2,2'-Oxybis(1-Chloropropane)	ND		230	91	ug/Kg	1	07/06/22	WB	SW8270D

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Parameter	Result		RL/ PQL	LOD/ MDL	Units	Dilution	Date/Time	By	Reference	
2,3,4,6-tetrachlorophenol	ND		230	150	ug/Kg	1	07/06/22	WB	SW8270D	
2,4,5-Trichlorophenol	ND		230	180	ug/Kg	1	07/06/22	WB	SW8270D	
2,4,6-Trichlorophenol	ND		130	100	ug/Kg	1	07/06/22	WB	SW8270D	
2,4-Dichlorophenol	ND		130	120	ug/Kg	1	07/06/22	WB	SW8270D	
2,4-Dimethylphenol	ND		230	81	ug/Kg	1	07/06/22	WB	SW8270D	
2,4-Dinitrophenol	ND		230	230	ug/Kg	1	07/06/22	WB	SW8270D	
2,4-Dinitrotoluene	ND		130	130	ug/Kg	1	07/06/22	WB	SW8270D	
2,6-Dinitrotoluene	ND		130	100	ug/Kg	1	07/06/22	WB	SW8270D	
2-Chloronaphthalene	ND		230	93	ug/Kg	1	07/06/22	WB	SW8270D	
2-Chlorophenol	ND		230	93	ug/Kg	1	07/06/22	WB	SW8270D	
2-Methylnaphthalene	ND		230	98	ug/Kg	1	07/06/22	WB	SW8270D	
2-Methylphenol (o-cresol)	ND		230	150	ug/Kg	1	07/06/22	WB	SW8270D	
2-Nitroaniline	ND		300	230	ug/Kg	1	07/06/22	WB	SW8270D	
2-Nitrophenol	ND		230	210	ug/Kg	1	07/06/22	WB	SW8270D	
3&4-Methylphenol (m&p-cresol)	ND		230	130	ug/Kg	1	07/06/22	WB	SW8270D	1
3,3'-Dichlorobenzidine	ND		130	130	ug/Kg	1	07/06/22	WB	SW8270D	
3-Nitroaniline	ND		660	230	ug/Kg	1	07/06/22	WB	SW8270D	
4,6-Dinitro-2-methylphenol	ND		230	230	ug/Kg	1	07/06/22	WB	SW8270D	
4-Bromophenyl phenyl ether	ND		230	96	ug/Kg	1	07/06/22	WB	SW8270D	
4-Chloro-3-methylphenol	ND		230	120	ug/Kg	1	07/06/22	WB	SW8270D	
4-Chloroaniline	ND		660	150	ug/Kg	1	07/06/22	WB	SW8270D	
4-Chlorophenyl phenyl ether	ND		230	110	ug/Kg	1	07/06/22	WB	SW8270D	
4-Nitroaniline	ND		330	110	ug/Kg	1	07/06/22	WB	SW8270D	
4-Nitrophenol	ND		330	150	ug/Kg	1	07/06/22	WB	SW8270D	
Acenaphthene	ND		230	100	ug/Kg	1	07/06/22	WB	SW8270D	
Acenaphthylene	ND		130	92	ug/Kg	1	07/06/22	WB	SW8270D	
Acetophenone	ND		230	100	ug/Kg	1	07/06/22	WB	SW8270D	
Anthracene	ND		230	110	ug/Kg	1	07/06/22	WB	SW8270D	
Atrazine	ND		130	98	ug/Kg	1	07/06/22	WB	SW8270D	
Benz(a)anthracene	110	J	230	110	ug/Kg	1	07/06/22	WB	SW8270D	
Benzaldehyde	ND		230	97	ug/Kg	1	07/06/22	WB	SW8270D	
Benzidine	ND		230	130	ug/Kg	1	07/06/22	WB	SW8270D	
Benzo(a)pyrene	ND		130	110	ug/Kg	1	07/06/22	WB	SW8270D	
Benzo(b)fluoranthene	ND		230	110	ug/Kg	1	07/06/22	WB	SW8270D	
Benzo(ghi)perylene	ND		230	110	ug/Kg	1	07/06/22	WB	SW8270D	
Benzo(k)fluoranthene	ND		230	110	ug/Kg	1	07/06/22	WB	SW8270D	
Benzyl Alcohol	ND		330	330	ug/Kg	1	07/06/22	WB	SW8270D	
Benzyl butyl phthalate	ND		230	85	ug/Kg	1	07/06/22	WB	SW8270D	
Bis(2-chloroethoxy)methane	ND		230	90	ug/Kg	1	07/06/22	WB	SW8270D	
Bis(2-chloroethyl)ether	ND		130	88	ug/Kg	1	07/06/22	WB	SW8270D	
Bis(2-ethylhexyl)phthalate	ND		230	94	ug/Kg	1	07/06/22	WB	SW8270D	
Caprolactam	ND		230	230	ug/Kg	1	07/06/22	WB	SW8270D	
Carbazole	ND		160	130	ug/Kg	1	07/06/22	WB	SW8270D	
Chrysene	ND		230	110	ug/Kg	1	07/06/22	WB	SW8270D	
Dibenz(a,h)anthracene	ND		130	110	ug/Kg	1	07/06/22	WB	SW8270D	
Dibenzofuran	ND		230	96	ug/Kg	1	07/06/22	WB	SW8270D	
Diethyl phthalate	ND		230	100	ug/Kg	1	07/06/22	WB	SW8270D	
Dimethylphthalate	ND		230	100	ug/Kg	1	07/06/22	WB	SW8270D	
Di-n-butylphthalate	ND		230	87	ug/Kg	1	07/06/22	WB	SW8270D	

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Parameter	Result		RL/ PQL	LOD/ MDL	Units	Dilution	Date/Time	By	Reference
Di-n-octylphthalate	ND		230	85	ug/Kg	1	07/06/22	WB	SW8270D
Fluoranthene	220	J	230	110	ug/Kg	1	07/06/22	WB	SW8270D
Fluorene	ND		230	110	ug/Kg	1	07/06/22	WB	SW8270D
Hexachlorobenzene	ND		130	96	ug/Kg	1	07/06/22	WB	SW8270D
Hexachlorobutadiene	ND		230	120	ug/Kg	1	07/06/22	WB	SW8270D
Hexachlorocyclopentadiene	ND		230	100	ug/Kg	1	07/06/22	WB	SW8270D
Hexachloroethane	ND		130	98	ug/Kg	1	07/06/22	WB	SW8270D
Indeno(1,2,3-cd)pyrene	ND		230	110	ug/Kg	1	07/06/22	WB	SW8270D
Isophorone	ND		130	92	ug/Kg	1	07/06/22	WB	SW8270D
Naphthalene	ND		230	94	ug/Kg	1	07/06/22	WB	SW8270D
Nitrobenzene	ND		130	110	ug/Kg	1	07/06/22	WB	SW8270D
N-Nitrosodimethylamine	ND		230	92	ug/Kg	1	07/06/22	WB	SW8270D
N-Nitrosodi-n-propylamine	ND		130	110	ug/Kg	1	07/06/22	WB	SW8270D
N-Nitrosodiphenylamine	ND		130	130	ug/Kg	1	07/06/22	WB	SW8270D
Pentachlorophenol	ND		230	120	ug/Kg	1	07/06/22	WB	SW8270D
Phenanthrene	270		130	94	ug/Kg	1	07/06/22	WB	SW8270D
Phenol	ND		230	100	ug/Kg	1	07/06/22	WB	SW8270D
Pyrene	270		230	110	ug/Kg	1	07/06/22	WB	SW8270D
QA/QC Surrogates									
% 2,4,6-Tribromophenol	80				%	1	07/06/22	WB	30 - 130 %
% 2-Fluorobiphenyl	71				%	1	07/06/22	WB	30 - 130 %
% 2-Fluorophenol	67				%	1	07/06/22	WB	30 - 130 %
% Nitrobenzene-d5	67				%	1	07/06/22	WB	30 - 130 %
% Phenol-d5	71				%	1	07/06/22	WB	30 - 130 %
% Terphenyl-d14	77				%	1	07/06/22	WB	30 - 130 %
Aniline	ND		330	330	ug/Kg	1	07/06/22	WB	SW8270D
Benzoic Acid	ND		330	230	ug/Kg	1	07/06/22	WB	SW8270D
Parathion	ND		330	130	ug/Kg	1	07/06/22	WB	SW8270D

Project ID: IMJC
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Phoenix I.D.: CL69749

Parameter	Result	RL/ PQL	LOD/ MDL	Units	Dilution	Date/Time	By	Reference

1 = This parameter is not certified by the primary accrediting authority (NY NELAC) for this matrix. NY NELAC does not offer certification for all parameters at this time.
C = This parameter is subcontracted.

RL/PQL=Reporting/Practical Quantitation Level (Equivalent to NELAC LOQ, Limit of Quantitation) ND=Not Detected BRL=Below Reporting Level L=Biased Low J=Estimated Below RL LOD=Limit of Detection MDL=Method Detection Limit1
QA/QC Surrogates: Surrogates are compounds (preceeded with a %) added by the lab to determine analysis efficiency. Surrogate results(%) listed in the report are not "detected" compounds.

Comments:

Volatile Comment:
L flag signifies that this sample was not collected in accordance with EPA method 5035. NELAC requires the laboratory to qualify the volatile soil data as biased low.

*See attached

Per 1.4.6 of EPA method 8270D, 1,2-Diphenylhydrazine is unstable and readily converts to Azobenzene. Azobenzene is used for the calibration of 1,2-Diphenylhydrazine.

The regulatory hold time for pH is immediately. This pH was performed in the laboratory and may be considered outside of hold-time.

Semi-Volatile Comment:
To achieve client's objectives, where the lowest calibration standard or LOD justifies lowering the RL/PQL, the RL/PQL of some compounds have been lowered to meet criteria.

Hexavalent Chromium:
This sample is in a reducing state.

All soils, solids and sludges are reported on a dry weight basis unless otherwise noted in the sample comments.

PFAS (21) (EPA 537m), PFOA/PFOS - Soil Extraction (EPA 537m) were analyzed by NY certified lab #12058.

If you are the client above and have any questions concerning this testing, please do not hesitate to contact Phoenix Client Services at ext.200.
The contents of this report cannot be discussed with anyone other than the client listed above without their written consent.

Phyllis Shiller, Laboratory Director
July 19, 2022
Reviewed and Released by: Rashmi Makol, Project Manager

PHOENIX
Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

ACCREDITED IN ACCORDANCE WITH nelac NY # 11301

Analysis Report

July 19, 2022

FOR: Attn: Mr. Jeff Bogoian
Impact Materials
170 Keyland Court
Bohemia NY 11716

Sample Information		Custody Information		Date	Time
Matrix:	SOIL	Collected by:		07/05/22	9:10
Location Code:	IMPACTJB-IM	Received by:	SW	07/05/22	15:48
Rush Request:	72 Hour	Analyzed by:	see "By" below		
P.O.#:					

Laboratory Data

SDG ID: GCL69739
Phoenix ID: CL69750

Project ID: IMJC
Client ID: IMJC COMP-3

Parameter	Result	RL/ PQL	LOD/ MDL	Units	Dilution	Date/Time	By	Reference	
Silver	ND	0.34	0.34	mg/Kg	1	07/06/22	EK	SW6010D	
Aluminum	18000	34	6.9	mg/Kg	10	07/06/22	EK	SW6010D	
Arsenic	ND	0.69	0.69	mg/Kg	1	07/06/22	EK	SW6010D	
Barium	222	0.7	0.34	mg/Kg	1	07/06/22	EK	SW6010D	
Beryllium	0.46	0.28	0.14	mg/Kg	1	07/06/22	EK	SW6010D	
Calcium	5190	3.4	3.2	mg/Kg	1	07/06/22	EK	SW6010D	
Cadmium	2.09	0.34	0.34	mg/Kg	1	07/06/22	EK	SW6010D	
Cobalt	22.0	0.34	0.34	mg/Kg	1	07/06/22	EK	SW6010D	
Chromium	40.7	0.34	0.34	mg/Kg	1	07/06/22	EK	SW6010D	
Copper	44.9	0.7	0.34	mg/kg	1	07/06/22	EK	SW6010D	
Iron	35600	34	34	mg/Kg	10	07/06/22	EK	SW6010D	
Mercury	ND	0.03	0.02	mg/Kg	2	07/06/22	IE	SW7471B	
Potassium	12000	69	27	mg/Kg	10	07/06/22	EK	SW6010D	
Magnesium	10200	34	34	mg/Kg	10	07/06/22	EK	SW6010D	
Manganese	308	3.4	3.4	mg/Kg	10	07/06/22	EK	SW6010D	
Sodium	425	7	3.0	mg/Kg	1	07/06/22	EK	SW6010D	
Nickel	36.8	0.34	0.34	mg/Kg	1	07/06/22	EK	SW6010D	
Lead	13.2	0.7	0.34	mg/Kg	1	07/06/22	EK	SW6010D	
Antimony	ND	3.4	3.4	mg/Kg	1	07/06/22	EK	SW6010D	
Selenium	ND	1.4	1.2	mg/Kg	1	07/06/22	EK	SW6010D	
Thallium	ND	1.4	1.4	mg/Kg	1	07/06/22	EK	SW6010D	
Trivalent Chromium	40.7	0.34	0.34	mg/kg	1	07/06/22		CALC 6010-7196	
Vanadium	57.7	0.34	0.34	mg/Kg	1	07/06/22	EK	SW6010D	
Zinc	89.5	0.7	0.34	mg/Kg	1	07/06/22	EK	SW6010D	
Percent Solid	98			%		07/05/22	K	SW846-%Solid	
Chromium, Hex. (SW3060 digestion)	ND	0.38	0.38	mg/Kg	1	07/06/22	BJA	SW7196A	
pH at 25C - Soil	8.42	1.00	1.00	pH Units	1	07/05/22 21:22	MW	SW846 9045D	1
Redox Potential	177			mV	1	07/05/22	MW	SM2580B-09	1

Ver 1

Project ID: IMJC
Client ID: IMJC COMP-3

Phoenix I.D.: CL69750

Parameter	Result	RL/ PQL	LOD/ MDL	Units	Dilution	Date/Time	By	Reference	
Total Cyanide (SW9010C Distill.)	ND	0.51	0.255	mg/Kg	1	07/06/22	CL/DK	SW9012B	
Soil Extraction for PCB	Completed					07/05/22	O	SW3545A	
Soil Extraction for Pesticide	Completed					07/05/22	O/MO	SW3545A	
Mercury Digestion	Completed					07/06/22	AB/KL	SW7471B	
Soil Extraction for Herbicide	Completed					07/05/22	M/E	SW3546	
Soil Extraction for SVOA	Completed					07/05/22	B/L	SW3546	
Total Metals Digest	Completed					07/05/22	M/AG	SW3050B	
PFAS (21)	Completed					07/12/22	***	EPA 537m	C
PFAS (21)									
1H,1H,2H,2H-Perfluorodecanesulfonic acid	ND	0.249	0.0255	ng/g	1	07/14/22	***	EPA 537m	C
1H,1H,2H,2H-Perfluorooctanesulfonic acid	ND	0.249	0.0658	ng/g	1	07/14/22	***	EPA 537m	C
NEtFOSAA	ND	0.249	0.104	ng/g	1	07/14/22	***	EPA 537m	C
NMeFOSAA	ND	0.249	0.104	ng/g	1	07/14/22	***	EPA 537m	C
Perfluoro-1-decanesulfonic acid (PFDS)	ND	0.249	0.0510	ng/g	1	07/14/22	***	EPA 537m	C
Perfluoro-1-heptanesulfonic acid (PFHpS)	ND	0.249	0.0491	ng/g	1	07/14/22	***	EPA 537m	C
Perfluoro-1-octanesulfonamide (FOSA)	ND	0.249	0.0465	ng/g	1	07/14/22	***	EPA 537m	C
Perfluorobutanesulfonic acid (PFBS)	ND	0.249	0.199	ng/g	1	07/14/22	***	EPA 537m	C
Perfluorodecanoic acid (PFDA)	ND	0.249	0.0510	ng/g	1	07/14/22	***	EPA 537m	C
Perfluorododecanoic acid (PFDoA)	ND	0.249	0.0747	ng/g	1	07/14/22	***	EPA 537m	C
Perfluoroheptanoic acid (PFHpA)	ND	0.249	0.0453	ng/g	1	07/14/22	***	EPA 537m	C
Perfluorohexanesulfonic Acid (PFHxS)	0.704	0.249	0.0309	ng/g	1	07/14/22	***	EPA 537m	C
Perfluorohexanoic acid (PFHxA)	ND	0.249	0.0657	ng/g	1	07/14/22	***	EPA 537m	C
Perfluoro-n-butanoic acid (PFBA)	ND	0.249	0.182	ng/g	1	07/14/22	***	EPA 537m	C
Perfluorononanoic acid (PFNA)	ND	0.249	0.0596	ng/g	1	07/14/22	***	EPA 537m	C
Perfluorooctanesulfonic Acid (PFOS)	ND	0.249	0.0436	ng/g	1	07/14/22	***	EPA 537m	C
Perfluorooctanoic acid (PFOA)	ND	0.249	0.0769	ng/g	1	07/14/22	***	EPA 537m	C
Perfluoropentanoic acid (PFPeA)	ND	0.249	0.0916	ng/g	1	07/14/22	***	EPA 537m	C
Perfluorotetradecanoic acid (PFTA)	ND	0.249	0.0744	ng/g	1	07/14/22	***	EPA 537m	C
Perfluorotridecanoic acid (PFTrDA)	ND	0.249	0.0433	ng/g	1	07/14/22	***	EPA 537m	C
Perfluoroundecanoic acid (PFUnA)	ND	0.249	0.116	ng/g	1	07/14/22	***	EPA 537m	C
QA/QC Surrogates									
% d3-N-MeFOSAA	51.5			%	1	07/14/22	***	25 - 150 %	C
% d5-NEtFOSA	47.3			%	1	07/14/22	***	25 - 150 %	C
% M2-6:2FTS	71.6			%	1	07/14/22	***	25 - 200 %	C
% M2-8:2FTS	80.2			%	1	07/14/22	***	25 - 200 %	C
% M2PFTeDA	65.2			%	1	07/14/22	***	10 - 150 %	C
% M3PFBS	67.2			%	1	07/14/22	***	25 - 150 %	C
% M3PFHxS	74.5			%	1	07/14/22	***	25 - 150 %	C
% M4PFHpA	87.3			%	1	07/14/22	***	25 - 150 %	C
% M5PFHxA	79.1			%	1	07/14/22	***	25 - 150 %	C
% M5PFPeA	76.9			%	1	07/14/22	***	25 - 150 %	C
% M6PFDA	54.7			%	1	07/14/22	***	25 - 150 %	C
% M7PFUdA	48.7			%	1	07/14/22	***	25 - 150 %	C
% M8FOSA	46.3			%	1	07/14/22	***	10 - 150 %	C
% M8PFOA	95.3			%	1	07/14/22	***	25 - 150 %	C
% M8PFOS	54.4			%	1	07/14/22	***	25 - 150 %	C
% M9PFNA	73.4			%	1	07/14/22	***	25 - 150 %	C
% MPFBA	75.0			%	1	07/14/22	***	25 - 150 %	C

Project ID: IMJC
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Phoenix I.D.: CL69750

Parameter	Result	RL/ PQL	LOD/ MDL	Units	Dilution	Date/Time	By	Reference	
% MPFDoA	46.2			%	1	07/14/22	***	25 - 150 %	C
Chlorinated Herbicides									
2,4,5-T	ND	130	130	ug/Kg	10	07/07/22	JRB	SW8151A	
2,4,5-TP (Silvex)	ND	130	130	ug/Kg	10	07/07/22	JRB	SW8151A	
2,4-D	ND	250	250	ug/Kg	10	07/07/22	JRB	SW8151A	
2,4-DB	ND	2500	2500	ug/Kg	10	07/07/22	JRB	SW8151A	
Dalapon	ND	130	130	ug/Kg	10	07/07/22	JRB	SW8151A	
Dicamba	ND	130	130	ug/Kg	10	07/07/22	JRB	SW8151A	
Dichloroprop	ND	250	250	ug/Kg	10	07/07/22	JRB	SW8151A	
Dinoseb	ND	250	250	ug/Kg	10	07/07/22	JRB	SW8151A	
QA/QC Surrogates									
% DCAA	121			%	10	07/07/22	JRB	30 - 150 %	
% DCAA (Confirmation)	95			%	10	07/07/22	JRB	30 - 150 %	
Polychlorinated Biphenyls									
PCB-1016	ND	68	68	ug/Kg	2	07/06/22	SC	SW8082A	
PCB-1221	ND	68	68	ug/Kg	2	07/06/22	SC	SW8082A	
PCB-1232	ND	68	68	ug/Kg	2	07/06/22	SC	SW8082A	
PCB-1242	ND	68	68	ug/Kg	2	07/06/22	SC	SW8082A	
PCB-1248	ND	68	68	ug/Kg	2	07/06/22	SC	SW8082A	
PCB-1254	ND	68	68	ug/Kg	2	07/06/22	SC	SW8082A	
PCB-1260	ND	68	68	ug/Kg	2	07/06/22	SC	SW8082A	
PCB-1262	ND	68	68	ug/Kg	2	07/06/22	SC	SW8082A	
PCB-1268	ND	68	68	ug/Kg	2	07/06/22	SC	SW8082A	
QA/QC Surrogates									
% DCBP	79			%	2	07/06/22	SC	30 - 150 %	
% DCBP (Confirmation)	79			%	2	07/06/22	SC	30 - 150 %	
% TCMX	76			%	2	07/06/22	SC	30 - 150 %	
% TCMX (Confirmation)	74			%	2	07/06/22	SC	30 - 150 %	
Pesticides - Soil									
4,4' -DDD	ND	2.0	2.0	ug/Kg	2	07/06/22	AW	SW8081B	
4,4' -DDE	ND	2.0	2.0	ug/Kg	2	07/06/22	AW	SW8081B	
4,4' -DDT	ND	2.0	2.0	ug/Kg	2	07/06/22	AW	SW8081B	
a-BHC	ND	1.4	1.4	ug/Kg	2	07/06/22	AW	SW8081B	
a-Chlordane	ND	3.4	3.4	ug/Kg	2	07/06/22	AW	SW8081B	
Alachlor	ND	3.4	3.4	ug/Kg	2	07/06/22	AW	SW8081B	
Aldrin	ND	3.4	3.4	ug/Kg	2	07/06/22	AW	SW8081B	
b-BHC	ND	1.4	1.4	ug/Kg	2	07/06/22	AW	SW8081B	
Chlordane	ND	34	34	ug/Kg	2	07/06/22	AW	SW8081B	
d-BHC	ND	6.8	6.8	ug/Kg	2	07/06/22	AW	SW8081B	
Dieldrin	ND	1.4	1.4	ug/Kg	2	07/06/22	AW	SW8081B	
Endosulfan I	ND	6.8	6.8	ug/Kg	2	07/06/22	AW	SW8081B	
Endosulfan II	ND	6.8	6.8	ug/Kg	2	07/06/22	AW	SW8081B	
Endosulfan sulfate	ND	6.8	6.8	ug/Kg	2	07/06/22	AW	SW8081B	
Endrin	ND	6.8	6.8	ug/Kg	2	07/06/22	AW	SW8081B	
Endrin aldehyde	ND	6.8	6.8	ug/Kg	2	07/06/22	AW	SW8081B	
Endrin ketone	ND	6.8	6.8	ug/Kg	2	07/06/22	AW	SW8081B	
g-BHC	ND	1.4	1.4	ug/Kg	2	07/06/22	AW	SW8081B	

Project ID: IMJC
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Phoenix I.D.: CL69750

Parameter	Result		RL/ PQL	LOD/ MDL	Units	Dilution	Date/Time	By	Reference
g-Chlordane	ND		3.4	3.4	ug/Kg	2	07/06/22	AW	SW8081B
Heptachlor	ND		6.8	6.8	ug/Kg	2	07/06/22	AW	SW8081B
Heptachlor epoxide	ND		6.8	6.8	ug/Kg	2	07/06/22	AW	SW8081B
Methoxychlor	ND		34	34	ug/Kg	2	07/06/22	AW	SW8081B
Toxaphene	ND		140	140	ug/Kg	2	07/06/22	AW	SW8081B
QA/QC Surrogates									
% DCBP	78				%	2	07/06/22	AW	30 - 150 %
% DCBP (Confirmation)	77				%	2	07/06/22	AW	30 - 150 %
% TCMX	61				%	2	07/06/22	AW	30 - 150 %
% TCMX (Confirmation)	57				%	2	07/06/22	AW	30 - 150 %
Volatiles									
1,2,4-Trimethylbenzene	ND	L	5.1	0.51	ug/Kg	1	07/06/22	JLI	SW8260C
1,3,5-Trimethylbenzene	ND	L	5.1	0.51	ug/Kg	1	07/06/22	JLI	SW8260C
1,3-Dichlorobenzene	ND	L	5.1	0.51	ug/Kg	1	07/06/22	JLI	SW8260C
Naphthalene	ND	L	5.1	1.0	ug/Kg	1	07/06/22	JLI	SW8260C
n-Butylbenzene	ND	L	5.1	0.51	ug/Kg	1	07/06/22	JLI	SW8260C
n-Propylbenzene	ND	L	5.1	1.0	ug/Kg	1	07/06/22	JLI	SW8260C
p-Isopropyltoluene	ND	L	5.1	0.51	ug/Kg	1	07/06/22	JLI	SW8260C
sec-Butylbenzene	ND	L	5.1	0.51	ug/Kg	1	07/06/22	JLI	SW8260C
tert-Butylbenzene	ND	L	5.1	0.51	ug/Kg	1	07/06/22	JLI	SW8260C
QA/QC Surrogates									
% 1,2-dichlorobenzene-d4	96				%	1	07/06/22	JLI	70 - 130 %
% Bromofluorobenzene	99				%	1	07/06/22	JLI	70 - 130 %
% Dibromofluoromethane	94				%	1	07/06/22	JLI	70 - 130 %
% Toluene-d8	95				%	1	07/06/22	JLI	70 - 130 %
1,4-dioxane									
1,4-dioxane	ND	L	76	40	ug/kg	1	07/06/22	JLI	SW8260C
Volatiles									
1,1,1,2-Tetrachloroethane	ND	L	5.1	1.0	ug/Kg	1	07/06/22	JLI	SW8260C
1,1,1-Trichloroethane	ND	L	5.1	0.51	ug/Kg	1	07/06/22	JLI	SW8260C
1,1,2,2-Tetrachloroethane	ND	L	5.1	1.0	ug/Kg	1	07/06/22	JLI	SW8260C
1,1,2-Trichloroethane	ND	L	5.1	1.0	ug/Kg	1	07/06/22	JLI	SW8260C
1,1-Dichloroethane	ND	L	5.1	1.0	ug/Kg	1	07/06/22	JLI	SW8260C
1,1-Dichloroethene	ND	L	5.1	0.51	ug/Kg	1	07/06/22	JLI	SW8260C
1,2,3-Trichlorobenzene	ND	L	5.1	1.0	ug/Kg	1	07/06/22	JLI	SW8260C
1,2,4-Trichlorobenzene	ND	L	5.1	1.0	ug/Kg	1	07/06/22	JLI	SW8260C
1,2-Dibromo-3-chloropropane	ND	L	5.0	1.0	ug/Kg	1	07/06/22	JLI	SW8260C
1,2-Dibromoethane	ND	L	4.5	0.51	ug/Kg	1	07/06/22	JLI	SW8260C
1,2-Dichlorobenzene	ND	L	5.1	0.51	ug/Kg	1	07/06/22	JLI	SW8260C
1,2-Dichloroethane	ND	L	5.0	0.51	ug/Kg	1	07/06/22	JLI	SW8260C
1,2-Dichloropropane	ND	L	5.0	1.0	ug/Kg	1	07/06/22	JLI	SW8260C
1,3-Dichlorobenzene	ND	L	5.1	0.51	ug/Kg	1	07/06/22	JLI	SW8260C
1,4-Dichlorobenzene	ND	L	5.1	0.51	ug/Kg	1	07/06/22	JLI	SW8260C
2-Hexanone	ND	L	25	5.1	ug/Kg	1	07/06/22	JLI	SW8260C
4-Methyl-2-pentanone	ND	L	25	5.1	ug/Kg	1	07/06/22	JLI	SW8260C
Acetone	ND	L	51	5.1	ug/Kg	1	07/06/22	JLI	SW8260C
Acrolein	ND	L	25	2.5	ug/Kg	1	07/06/22	JLI	SW8260C

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Parameter	Result		RL/ PQL	LOD/ MDL	Units	Dilution	Date/Time	By	Reference
Acrylonitrile	ND	L	10	0.51	ug/Kg	1	07/06/22	JLI	SW8260C
Benzene	ND	L	5.0	0.51	ug/Kg	1	07/06/22	JLI	SW8260C
Bromochloromethane	ND	L	5.1	0.51	ug/Kg	1	07/06/22	JLI	SW8260C
Bromodichloromethane	ND	L	5.0	1.0	ug/Kg	1	07/06/22	JLI	SW8260C
Bromoform	ND	L	5.1	1.0	ug/Kg	1	07/06/22	JLI	SW8260C
Bromomethane	ND	L	5.1	2.0	ug/Kg	1	07/06/22	JLI	SW8260C
Carbon Disulfide	ND	L	5.1	1.0	ug/Kg	1	07/06/22	JLI	SW8260C
Carbon tetrachloride	ND	L	5.0	1.0	ug/Kg	1	07/06/22	JLI	SW8260C
Chlorobenzene	ND	L	5.1	0.51	ug/Kg	1	07/06/22	JLI	SW8260C
Chloroethane	ND	L	5.1	0.51	ug/Kg	1	07/06/22	JLI	SW8260C
Chloroform	ND	L	5.1	0.51	ug/Kg	1	07/06/22	JLI	SW8260C
Chloromethane	ND	L	5.1	1.0	ug/Kg	1	07/06/22	JLI	SW8260C
cis-1,2-Dichloroethene	ND	L	5.1	0.51	ug/Kg	1	07/06/22	JLI	SW8260C
cis-1,3-Dichloropropene	ND	L	5.0	0.51	ug/Kg	1	07/06/22	JLI	SW8260C
Cyclohexane	ND	L	5.1	1.0	ug/Kg	1	07/06/22	JLI	SW8260C
Dibromochloromethane	ND	L	5.0	1.0	ug/Kg	1	07/06/22	JLI	SW8260C
Dichlorodifluoromethane	ND	L	5.1	0.51	ug/Kg	1	07/06/22	JLI	SW8260C
Ethylbenzene	ND	L	5.1	0.51	ug/Kg	1	07/06/22	JLI	SW8260C
Isopropylbenzene	ND	L	5.1	0.51	ug/Kg	1	07/06/22	JLI	SW8260C
m&p-Xylene	ND	L	5.1	1.0	ug/Kg	1	07/06/22	JLI	SW8260C
Methyl ethyl ketone	ND	L	30	5.1	ug/Kg	1	07/06/22	JLI	SW8260C
Methyl t-butyl ether (MTBE)	ND	L	10	1.0	ug/Kg	1	07/06/22	JLI	SW8260C
Methylacetate	ND	L	10	10	ug/Kg	1	07/06/22	JLI	SW8260C
Methylcyclohexane	ND	L	5.1	1.0	ug/Kg	1	07/06/22	JLI	SW8260C
Methylene chloride	ND	L	5.1	5.1	ug/Kg	1	07/06/22	JLI	SW8260C
o-Xylene	ND	L	5.1	1.0	ug/Kg	1	07/06/22	JLI	SW8260C
Styrene	ND	L	5.1	0.51	ug/Kg	1	07/06/22	JLI	SW8260C
tert-butyl alcohol	ND	L	100	20	ug/Kg	1	07/06/22	JLI	SW8260C
Tetrachloroethene	ND	L	5.0	1.0	ug/Kg	1	07/06/22	JLI	SW8260C
Toluene	ND	L	5.1	0.51	ug/Kg	1	07/06/22	JLI	SW8260C
Total Xylenes	ND		5.1	5.1	ug/Kg	1	07/06/22	JLI	SW8260C
trans-1,2-Dichloroethene	ND	L	5.1	0.51	ug/Kg	1	07/06/22	JLI	SW8260C
trans-1,3-Dichloropropene	ND	L	5.0	0.51	ug/Kg	1	07/06/22	JLI	SW8260C
Trichloroethene	ND	L	5.1	0.51	ug/Kg	1	07/06/22	JLI	SW8260C
Trichlorofluoromethane	ND	L	5.1	1.0	ug/Kg	1	07/06/22	JLI	SW8260C
Trichlorotrifluoroethane	ND	L	5.1	0.51	ug/Kg	1	07/06/22	JLI	SW8260C
Vinyl chloride	ND	L	5.0	0.51	ug/Kg	1	07/06/22	JLI	SW8260C
QA/QC Surrogates									
% 1,2-dichlorobenzene-d4	96				%	1	07/06/22	JLI	70 - 130 %
% Bromofluorobenzene	99				%	1	07/06/22	JLI	70 - 130 %
% Dibromofluoromethane	94				%	1	07/06/22	JLI	70 - 130 %
% Toluene-d8	95				%	1	07/06/22	JLI	70 - 130 %
Vinyl Acetate	ND	L	51	51	ug/Kg	1	07/06/22	JLI	SW8260C

Semivolatiles

1,1-Biphenyl	ND		240	100	ug/Kg	1	07/06/22	WB	SW8270D
1,2,4,5-Tetrachlorobenzene	ND		240	120	ug/Kg	1	07/06/22	WB	SW8270D
1,2-Diphenylhydrazine	ND		340	340	ug/Kg	1	07/06/22	WB	SW8270D
2,2'-Oxybis(1-Chloropropane)	ND		240	93	ug/Kg	1	07/06/22	WB	SW8270D

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Parameter	Result	RL/ PQL	LOD/ MDL	Units	Dilution	Date/Time	By	Reference	
2,3,4,6-tetrachlorophenol	ND	240	160	ug/Kg	1	07/06/22	WB	SW8270D	
2,4,5-Trichlorophenol	ND	240	180	ug/Kg	1	07/06/22	WB	SW8270D	
2,4,6-Trichlorophenol	ND	130	110	ug/Kg	1	07/06/22	WB	SW8270D	
2,4-Dichlorophenol	ND	130	120	ug/Kg	1	07/06/22	WB	SW8270D	
2,4-Dimethylphenol	ND	240	83	ug/Kg	1	07/06/22	WB	SW8270D	
2,4-Dinitrophenol	ND	240	240	ug/Kg	1	07/06/22	WB	SW8270D	
2,4-Dinitrotoluene	ND	130	130	ug/Kg	1	07/06/22	WB	SW8270D	
2,6-Dinitrotoluene	ND	130	110	ug/Kg	1	07/06/22	WB	SW8270D	
2-Chloronaphthalene	ND	240	95	ug/Kg	1	07/06/22	WB	SW8270D	
2-Chlorophenol	ND	240	95	ug/Kg	1	07/06/22	WB	SW8270D	
2-Methylnaphthalene	ND	240	100	ug/Kg	1	07/06/22	WB	SW8270D	
2-Methylphenol (o-cresol)	ND	240	160	ug/Kg	1	07/06/22	WB	SW8270D	
2-Nitroaniline	ND	300	240	ug/Kg	1	07/06/22	WB	SW8270D	
2-Nitrophenol	ND	240	210	ug/Kg	1	07/06/22	WB	SW8270D	
3&4-Methylphenol (m&p-cresol)	ND	240	130	ug/Kg	1	07/06/22	WB	SW8270D	1
3,3'-Dichlorobenzidine	ND	130	130	ug/Kg	1	07/06/22	WB	SW8270D	
3-Nitroaniline	ND	670	240	ug/Kg	1	07/06/22	WB	SW8270D	
4,6-Dinitro-2-methylphenol	ND	240	240	ug/Kg	1	07/06/22	WB	SW8270D	
4-Bromophenyl phenyl ether	ND	240	99	ug/Kg	1	07/06/22	WB	SW8270D	
4-Chloro-3-methylphenol	ND	240	120	ug/Kg	1	07/06/22	WB	SW8270D	
4-Chloroaniline	ND	670	160	ug/Kg	1	07/06/22	WB	SW8270D	
4-Chlorophenyl phenyl ether	ND	240	110	ug/Kg	1	07/06/22	WB	SW8270D	
4-Nitroaniline	ND	340	110	ug/Kg	1	07/06/22	WB	SW8270D	
4-Nitrophenol	ND	340	150	ug/Kg	1	07/06/22	WB	SW8270D	
Acenaphthene	ND	240	100	ug/Kg	1	07/06/22	WB	SW8270D	
Acenaphthylene	ND	130	94	ug/Kg	1	07/06/22	WB	SW8270D	
Acetophenone	ND	240	100	ug/Kg	1	07/06/22	WB	SW8270D	
Anthracene	ND	240	110	ug/Kg	1	07/06/22	WB	SW8270D	
Atrazine	ND	130	100	ug/Kg	1	07/06/22	WB	SW8270D	
Benz(a)anthracene	ND	240	110	ug/Kg	1	07/06/22	WB	SW8270D	
Benzaldehyde	ND	240	99	ug/Kg	1	07/06/22	WB	SW8270D	
Benzidine	ND	240	130	ug/Kg	1	07/06/22	WB	SW8270D	
Benzo(a)pyrene	ND	130	110	ug/Kg	1	07/06/22	WB	SW8270D	
Benzo(b)fluoranthene	ND	240	110	ug/Kg	1	07/06/22	WB	SW8270D	
Benzo(ghi)perylene	ND	240	110	ug/Kg	1	07/06/22	WB	SW8270D	
Benzo(k)fluoranthene	ND	240	110	ug/Kg	1	07/06/22	WB	SW8270D	
Benzyl Alcohol	ND	340	340	ug/Kg	1	07/06/22	WB	SW8270D	
Benzyl butyl phthalate	ND	240	87	ug/Kg	1	07/06/22	WB	SW8270D	
Bis(2-chloroethoxy)methane	ND	240	93	ug/Kg	1	07/06/22	WB	SW8270D	
Bis(2-chloroethyl)ether	ND	130	91	ug/Kg	1	07/06/22	WB	SW8270D	
Bis(2-ethylhexyl)phthalate	ND	240	97	ug/Kg	1	07/06/22	WB	SW8270D	
Caprolactam	ND	240	240	ug/Kg	1	07/06/22	WB	SW8270D	
Carbazole	ND	170	130	ug/Kg	1	07/06/22	WB	SW8270D	
Chrysene	ND	240	110	ug/Kg	1	07/06/22	WB	SW8270D	
Dibenz(a,h)anthracene	ND	130	110	ug/Kg	1	07/06/22	WB	SW8270D	
Dibenzofuran	ND	240	98	ug/Kg	1	07/06/22	WB	SW8270D	
Diethyl phthalate	ND	240	110	ug/Kg	1	07/06/22	WB	SW8270D	
Dimethylphthalate	ND	240	100	ug/Kg	1	07/06/22	WB	SW8270D	
Di-n-butylphthalate	ND	240	89	ug/Kg	1	07/06/22	WB	SW8270D	

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Parameter	Result		RL/ PQL	LOD/ MDL	Units	Dilution	Date/Time	By	Reference
Di-n-octylphthalate	ND		240	87	ug/Kg	1	07/06/22	WB	SW8270D
Fluoranthene	ND		240	110	ug/Kg	1	07/06/22	WB	SW8270D
Fluorene	ND		240	110	ug/Kg	1	07/06/22	WB	SW8270D
Hexachlorobenzene	ND		130	98	ug/Kg	1	07/06/22	WB	SW8270D
Hexachlorobutadiene	ND		240	120	ug/Kg	1	07/06/22	WB	SW8270D
Hexachlorocyclopentadiene	ND		240	100	ug/Kg	1	07/06/22	WB	SW8270D
Hexachloroethane	ND		130	100	ug/Kg	1	07/06/22	WB	SW8270D
Indeno(1,2,3-cd)pyrene	ND		240	110	ug/Kg	1	07/06/22	WB	SW8270D
Isophorone	ND		130	94	ug/Kg	1	07/06/22	WB	SW8270D
Naphthalene	ND		240	97	ug/Kg	1	07/06/22	WB	SW8270D
Nitrobenzene	ND		130	120	ug/Kg	1	07/06/22	WB	SW8270D
N-Nitrosodimethylamine	ND		240	95	ug/Kg	1	07/06/22	WB	SW8270D
N-Nitrosodi-n-propylamine	ND		130	110	ug/Kg	1	07/06/22	WB	SW8270D
N-Nitrosodiphenylamine	ND		130	130	ug/Kg	1	07/06/22	WB	SW8270D
Pentachlorophenol	ND		240	130	ug/Kg	1	07/06/22	WB	SW8270D
Phenanthrene	ND		130	96	ug/Kg	1	07/06/22	WB	SW8270D
Phenol	ND		240	110	ug/Kg	1	07/06/22	WB	SW8270D
Pyrene	120	J	240	120	ug/Kg	1	07/06/22	WB	SW8270D
QA/QC Surrogates									
% 2,4,6-Tribromophenol	57				%	1	07/06/22	WB	30 - 130 %
% 2-Fluorobiphenyl	52				%	1	07/06/22	WB	30 - 130 %
% 2-Fluorophenol	52				%	1	07/06/22	WB	30 - 130 %
% Nitrobenzene-d5	52				%	1	07/06/22	WB	30 - 130 %
% Phenol-d5	53				%	1	07/06/22	WB	30 - 130 %
% Terphenyl-d14	56				%	1	07/06/22	WB	30 - 130 %
Aniline	ND		340	340	ug/Kg	1	07/06/22	WB	SW8270D
Benzoic Acid	ND		340	240	ug/Kg	1	07/06/22	WB	SW8270D
Parathion	ND		340	130	ug/Kg	1	07/06/22	WB	SW8270D

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Parameter	Result	RL/ PQL	LOD/ MDL	Units	Dilution	Date/Time	By	Reference

1 = This parameter is not certified by the primary accrediting authority (NY NELAC) for this matrix. NY NELAC does not offer certification for all parameters at this time.
C = This parameter is subcontracted.

RL/PQL=Reporting/Practical Quantitation Level (Equivalent to NELAC LOQ, Limit of Quantitation) ND=Not Detected BRL=Below Reporting Level L=Biased Low J=Estimated Below RL LOD=Limit of Detection MDL=Method Detection Limit1
QA/QC Surrogates: Surrogates are compounds (preceeded with a %) added by the lab to determine analysis efficiency. Surrogate results(%) listed in the report are not "detected" compounds.

Comments:

Volatile Comment:
L flag signifies that this sample was not collected in accordance with EPA method 5035. NELAC requires the laboratory to qualify the volatile soil data as biased low.

*See attached

Per 1.4.6 of EPA method 8270D, 1,2-Diphenylhydrazine is unstable and readily converts to Azobenzene. Azobenzene is used for the calibration of 1,2-Diphenylhydrazine.

The regulatory hold time for pH is immediately. This pH was performed in the laboratory and may be considered outside of hold-time.

Semi-Volatile Comment:
To achieve client's objectives, where the lowest calibration standard or LOD justifies lowering the RL/PQL, the RL/PQL of some compounds have been lowered to meet criteria.

Hexavalent Chromium:
This sample is in a reducing state.

All soils, solids and sludges are reported on a dry weight basis unless otherwise noted in the sample comments.

PFAS (21) (EPA 537m), PFOA/PFOS - Soil Extraction (EPA 537m) were analyzed by NY certified lab #12058.

If you are the client above and have any questions concerning this testing, please do not hesitate to contact Phoenix Client Services at ext.200.
The contents of this report cannot be discussed with anyone other than the client listed above without their written consent.

Phyllis Shiller, Laboratory Director
July 19, 2022
Reviewed and Released by: Rashmi Makol, Project Manager

PHOENIX

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

ACCREDITED IN ACCORDANCE WITH nelac NY # 11301

QA/QC Report

July 19, 2022

QA/QC Data

SDG I.D.: GCL69739

Parameter	Blank	Blk RL	Sample Result	Dup Result	Dup RPD	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits	
QA/QC Batch 631732 (mg/kg), QC Sample No: CL69748 40X (CL69748, CL69749, CL69750)														
Chromium, Hexavalent - Soil														
Chromium, Hexavalent	BRL	0.40	<0.35	<0.40	NC	107						90 - 110	30	
Chromium, Hexavalent (Ins)						101			102			90 - 110	30	
Chromium, Hexavalent (Sol)						101			<10			90 - 110	30	m
Comment:														
The QC sample is in a reducing state, acceptance criteria are not applicable for samples in a reducing state. The soluble spike was analyzed twice with similar recoveries.														
QA/QC Batch 631727 (mg/kg), QC Sample No: CL67741 2X (CL69748, CL69749, CL69750)														
Mercury - Soil	BRL	0.03	<0.03	<0.03	NC	118	118	0.0	94.2	89.1	5.6	70 - 130	30	
Comment:														
Additional Mercury criteria: LCS acceptance range for waters is 80-120% and for soils is 70-130%.														
QA/QC Batch 631624 (mg/kg), QC Sample No: CL68951 (CL69748, CL69749, CL69750)														
ICP Metals - Soil														
Aluminum	BRL	10	8510	8920	4.70	79.0	85.9	8.4	NC			75 - 125	30	
Antimony	BRL	3.3	<3.8	<3.5	NC	86.0	91.6	6.3	90.4			75 - 125	30	
Arsenic	BRL	0.67	7.81	6.44	19.2	88.6	97.8	9.9	102			75 - 125	30	
Barium	BRL	0.33	88.6	87.9	0.80	94.6	103	8.5	111			75 - 125	30	
Beryllium	BRL	0.27	0.60	0.59	NC	104	112	7.4	101			75 - 125	30	
Cadmium	BRL	0.33	1.45	1.52	NC	95.8	103	7.2	102			75 - 125	30	
Calcium	BRL	5.0	13400	6930	63.6	92.5	96.2	3.9	NC			75 - 125	30	r
Chromium	BRL	0.33	43.2	42.0	2.80	97.0	102	5.0	115			75 - 125	30	
Cobalt	BRL	0.33	7.13	8.18	13.7	96.3	101	4.8	105			75 - 125	30	
Copper	BRL	0.67	33.5	38.6	14.1	84.1	93.9	11.0	>130			75 - 125	30	m
Iron	BRL	5.0	17700	20400	14.2	76.5	81.2	6.0	NC			75 - 125	30	
Lead	BRL	0.33	51.9	70.8	30.8	90.2	97.1	7.4	128			75 - 125	30	m,r
Magnesium	BRL	5.0	2590	2570	0.80	92.6	99.4	7.1	NC			75 - 125	30	
Manganese	BRL	0.33	273	339	21.6	95.9	94.6	1.4	129			75 - 125	30	m
Nickel	BRL	0.33	16.7	18.1	8.00	95.4	101	5.7	116			75 - 125	30	
Potassium	BRL	5.0	1380	1560	12.2	82.3	89.7	8.6	>130			75 - 125	30	m
Selenium	BRL	1.3	<1.5	<1.4	NC	85.1	90.2	5.8	90.4			75 - 125	30	
Silver	BRL	0.33	0.48	<0.35	NC	82.9	89.3	7.4	95.9			75 - 125	30	
Sodium	BRL	5.0	171	136	22.8	75.7	83.8	10.2	119			75 - 125	30	
Thallium	BRL	3.0	<3.4	<3.2	NC	92.8	99.2	6.7	97.7			75 - 125	30	
Vanadium	BRL	0.33	25.4	28.7	12.2	89.0	95.7	7.3	119			75 - 125	30	
Zinc	BRL	0.67	68.4	69.8	2.00	88.7	96.7	8.6	126			75 - 125	30	m

m = This parameter is outside laboratory MS/MSD specified recovery limits.
r = This parameter is outside laboratory RPD specified recovery limits.

PHOENIX
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587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

ACCREDITED IN ACCORDANCE WITH nelac NY # 11301

QA/QC Report

July 19, 2022

QA/QC Data

SDG I.D.: GCL69739

Parameter	Blank	Blk RL	Sample Result	Dup Result	Dup RPD	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits
QA/QC Batch 631652 (mg/Kg), QC Sample No: CL68287 50X (CL69748, CL69749, CL69750)													
Total Cyanide (SW9010C Distill.)	BRL	0.50	<0.51	<0.51	NC	86.7			105			80 - 120	30
QA/QC Batch 631709 (PH), QC Sample No: CL69224 (CL69748, CL69749, CL69750)													
pH			7.66	7.63	0.40	100						85 - 115	20

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QA/QC Report

July 19, 2022

QA/QC Data

SDG I.D.: GCL69739

QA/QC Batch 633461 (ng/L), QC Sample No: CL69748 (CL69748, CL69749, CL69750)

PFOA & PFOS

Parameter	Blank	Blk RL	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits
1H,1H,2H,2H-Perfluorodecanesulfo	ND	0.246	88.0			81.8			50 - 200	
1H,1H,2H,2H-Perfluorooctanesulfo	ND	0.246	129			159			50 - 200	
NEtFOSAA	ND	0.246	101			112			50 - 130	
NMeFOSAA	ND	0.246	120			113			50 - 130	
Perfluoro-1-decanesulfonic acid (P	ND	0.246	70.2			74.9			50 - 130	
Perfluoro-1-heptanesulfonic acid (P	ND	0.246	99.4			112			50 - 130	
Perfluoro-1-octanesulfonamide (FO	ND	0.246	110			111			50 - 130	
Perfluorobutanesulfonic Acid (PFB	ND	0.246	115			115			50 - 130	
Perfluorodecanoic Acid (PFDA)	ND	0.246	126			111			50 - 130	
Perfluorododecanoic Acid (PFDoA)	ND	0.246	107			108			50 - 130	
Perfluoroheptanoic Acid (PFHpA)	ND	0.246	97.6			89.7			50 - 130	
Perfluorohexanesulfonic Acid (PFH	ND	0.246	105			94.7			50 - 130	
Perfluorohexanoic Acid (PFHxA)	ND	0.246	106			111			50 - 130	
Perfluoro-n-butanoic acid (PFBA)	ND	0.246	112			104			50 - 130	
Perfluorononanoic Acid (PFNA)	ND	0.246	108			102			50 - 130	
Perfluorooctanesulfonic Acid (PFO	ND	0.246	92.6			109			50 - 130	
Perfluorooctanoic Acid (PFOA)	ND	0.246	95.8			95.2			50 - 130	
Perfluoropentanoic acid (PFPeA)	ND	0.246	109			105			50 - 130	
Perfluorotetradecanoic Acid (PFTA	ND	0.246	99.0			95.2			50 - 130	
Perfluorotridecanoic Acid (PFTrDA)	ND	0.246	93.2			124			50 - 130	
Perfluoroundecanoic Acid (PFUnA)	ND	0.246	110			101			50 - 130	
% d3-N-MeFOSAA	73.4	0.0493	66.4			57.0			25 - 150	
% d5-NEtFOSA	68.3	0.0493	83.1			68.4			25 - 150	
% M2-6:2FTS	71.7	0.0493	88.6			77.0			25 - 200	
% M2-8:2FTS	112	0.0493	118			106			25 - 200	
% M2PFTEDA	72.3	0.0493	74.8			68.8			10 - 150	
% M3PFBS	63.8	0.0493	66.7			65.1			25 - 150	
% M3PFHxS	76.8	0.0493	78.9			87.1			25 - 150	
% M4PFHpA	82.7	0.0493	85.9			87.5			25 - 150	
% M5PFHxA	75.4	0.0493	79.8			78.1			25 - 150	
% M5PFPEA	74.6	0.0493	77.4			79.3			25 - 150	
% M6PFDA	73.3	0.0493	68.4			71.5			25 - 150	
% M7PFUDA	67.2	0.0493	68.5			61.6			25 - 150	
% M8FOSA	60.5	0.0493	61.3			57.3			10 - 150	
% M8PFOA	90.5	0.0493	90.4			85.7			25 - 150	
% M8PFOS	85.9	0.0493	88.0			73.6			25 - 150	
% M9PFNA	67.1	0.0493	79.2			76.8			25 - 150	
% MPFBA	71.5	0.0493	74.1			74.4			25 - 150	
% MPFDOA	62.3	0.0493	72.6			60.7			25 - 150	

Comment:

Sample CL69748 was not used for MS due to insufficient volume.

QA/QC Data

SDG I.D.: GCL69739

Parameter	Blank	Blk RL	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits	
QA/QC Batch 631697 (ug/Kg), QC Sample No: CL69798 10X (CL69748, CL69749, CL69750)											
Chlorinated Herbicides - Soil											
2,4,5-T	ND	130	70	68	2.9	59	60	1.7	40 - 140	30	
2,4,5-TP (Silvex)	ND	130	68	64	6.1	49	45	8.5	40 - 140	30	
2,4-D	ND	250	67	67	0.0	40	43	7.2	40 - 140	30	
2,4-DB	ND	2500	62	51	19.5	71	62	13.5	40 - 140	30	
Dalapon	ND	130	53	45	16.3	37	36	2.7	40 - 140	30	
Dicamba	ND	130	97	93	4.2	58	64	9.8	40 - 140	30	
Dichloroprop	ND	130	58	45	25.2	30	17	55.3	40 - 140	30	m,r
Dinoseb	ND	130	75	65	14.3	75	69	8.3	40 - 140	30	
% DCAA (Surrogate Rec)	97	%	94	88	6.6	81	77	5.1	30 - 150	30	
% DCAA (Surrogate Rec) (Confirm	89	%	86	85	1.2	70	72	2.8	30 - 150	30	
QA/QC Batch 631641 (ug/Kg), QC Sample No: CL69748 2X (CL69748, CL69749, CL69750)											
Polychlorinated Biphenyls - Soil											
PCB-1016	ND	33	81	74	9.0	84	88	4.7	40 - 140	30	
PCB-1221	ND	33							40 - 140	30	
PCB-1232	ND	33							40 - 140	30	
PCB-1242	ND	33							40 - 140	30	
PCB-1248	ND	33							40 - 140	30	
PCB-1254	ND	33							40 - 140	30	
PCB-1260	ND	33	89	84	5.8	97	100	3.0	40 - 140	30	
PCB-1262	ND	33							40 - 140	30	
PCB-1268	ND	33							40 - 140	30	
% DCBP (Surrogate Rec)	73	%	95	89	6.5	95	98	3.1	30 - 150	30	
% DCBP (Surrogate Rec) (Confirm	72	%	95	89	6.5	95	99	4.1	30 - 150	30	
% TCMX (Surrogate Rec)	63	%	89	83	7.0	80	87	8.4	30 - 150	30	
% TCMX (Surrogate Rec) (Confirm	65	%	88	81	8.3	79	86	8.5	30 - 150	30	
QA/QC Batch 631642 (ug/Kg), QC Sample No: CL69748 2X (CL69748, CL69749, CL69750)											
Pesticides - Soil											
4,4' -DDD	ND	1.7	81	75	7.7	85	91	6.8	40 - 140	30	
4,4' -DDE	ND	1.7	76	73	4.0	90	93	3.3	40 - 140	30	
4,4' -DDT	ND	1.7	81	75	7.7	90	99	9.5	40 - 140	30	
a-BHC	ND	1.0	77	75	2.6	76	76	0.0	40 - 140	30	
a-Chlordane	ND	3.3	72	69	4.3	78	84	7.4	40 - 140	30	
Alachlor	ND	3.3	NA	NA	NC	NA	NA	NC	40 - 140	30	
Aldrin	ND	1.0	74	73	1.4	76	77	1.3	40 - 140	30	
b-BHC	ND	1.0	74	72	2.7	84	86	2.4	40 - 140	30	
Chlordane	ND	33	72	70	2.8	85	88	3.5	40 - 140	30	
d-BHC	ND	3.3	55	54	1.8	62	65	4.7	40 - 140	30	
Dieldrin	ND	1.0	75	73	2.7	84	85	1.2	40 - 140	30	
Endosulfan I	ND	3.3	69	70	1.4	81	78	3.8	40 - 140	30	
Endosulfan II	ND	3.3	84	82	2.4	86	97	12.0	40 - 140	30	
Endosulfan sulfate	ND	3.3	71	68	4.3	77	80	3.8	40 - 140	30	
Endrin	ND	3.3	85	81	4.8	96	99	3.1	40 - 140	30	
Endrin aldehyde	ND	3.3	68	67	1.5	77	87	12.2	40 - 140	30	
Endrin ketone	ND	3.3	77	73	5.3	80	82	2.5	40 - 140	30	
g-BHC	ND	1.0	78	77	1.3	79	80	1.3	40 - 140	30	
g-Chlordane	ND	3.3	72	70	2.8	85	88	3.5	40 - 140	30	
Heptachlor	ND	3.3	72	72	0.0	74	75	1.3	40 - 140	30	
Heptachlor epoxide	ND	3.3	73	71	2.8	79	81	2.5	40 - 140	30	
Methoxychlor	ND	3.3	76	73	4.0	81	85	4.8	40 - 140	30	

QA/QC Data

SDG I.D.: GCL69739

Parameter	Blank	Blk RL	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits	
Toxaphene	ND	130	NA	NA	NC	NA	NA	NC	40 - 140	30	
% DCBP	75	%	83	79	4.9	81	85	4.8	30 - 150	30	
% DCBP (Confirmation)	78	%	87	82	5.9	86	91	5.6	30 - 150	30	
% TCMX	68	%	74	72	2.7	68	69	1.5	30 - 150	30	
% TCMX (Confirmation)	65	%	71	69	2.9	64	65	1.6	30 - 150	30	
QA/QC Batch 631675 (ug/kg), QC Sample No: CL69848 (CL69748, CL69749, CL69750)											
Semivolatiles - Soil											
1,1-Biphenyl	ND	230	78	71	9.4	74	70	5.6	30 - 130	30	
1,2,4,5-Tetrachlorobenzene	ND	230	71	70	1.4	74	72	2.7	30 - 130	30	
1,2-Diphenylhydrazine	ND	230	86	78	9.8	78	76	2.6	30 - 130	30	
2,2'-Oxybis(1-Chloropropane)	ND	230	49	54	9.7	62	60	3.3	30 - 130	30	
2,3,4,6-tetrachlorophenol	ND	230	92	88	4.4	87	86	1.2	30 - 130	30	
2,4,5-Trichlorophenol	ND	230	96	90	6.5	88	88	0.0	30 - 130	30	
2,4,6-Trichlorophenol	ND	130	92	86	6.7	87	85	2.3	30 - 130	30	
2,4-Dichlorophenol	ND	130	84	82	2.4	85	85	0.0	30 - 130	30	
2,4-Dimethylphenol	ND	230	86	83	3.6	83	83	0.0	30 - 130	30	
2,4-Dinitrophenol	ND	230	44	33	28.6	105	103	1.9	20 - 160	30	
2,4-Dinitrotoluene	ND	130	104	103	1.0	103	103	0.0	30 - 130	30	
2,6-Dinitrotoluene	ND	130	100	99	1.0	97	98	1.0	30 - 130	30	
2-Chloronaphthalene	ND	230	83	77	7.5	79	75	5.2	30 - 130	30	
2-Chlorophenol	ND	230	64	70	9.0	78	78	0.0	30 - 130	30	
2-Methylnaphthalene	ND	230	74	71	4.1	75	74	1.3	30 - 130	30	
2-Methylphenol (o-cresol)	ND	230	71	71	0.0	76	76	0.0	30 - 130	30	
2-Nitroaniline	ND	330	117	109	7.1	103	111	7.5	30 - 130	30	
2-Nitrophenol	ND	230	80	82	2.5	90	87	3.4	30 - 130	30	
3&4-Methylphenol (m&p-cresol)	ND	230	80	79	1.3	82	83	1.2	20 - 160	30	
3,3'-Dichlorobenzidine	ND	130	87	86	1.2	89	90	1.1	30 - 130	30	
3-Nitroaniline	ND	330	103	104	1.0	94	105	11.1	30 - 130	30	
4,6-Dinitro-2-methylphenol	ND	230	62	44	34.0	99	98	1.0	30 - 130	30	r
4-Bromophenyl phenyl ether	ND	230	89	85	4.6	83	82	1.2	30 - 130	30	
4-Chloro-3-methylphenol	ND	230	90	88	2.2	87	89	2.3	30 - 130	30	
4-Chloroaniline	ND	230	69	72	4.3	64	74	14.5	30 - 130	30	
4-Chlorophenyl phenyl ether	ND	230	89	82	8.2	81	79	2.5	30 - 130	30	
4-Nitroaniline	ND	230	95	91	4.3	89	90	1.1	30 - 130	30	
4-Nitrophenol	ND	230	105	93	12.1	96	95	1.0	20 - 160	30	
Acenaphthene	ND	230	85	78	8.6	79	76	3.9	30 - 130	30	
Acenaphthylene	ND	130	78	73	6.6	73	71	2.8	30 - 130	30	
Acetophenone	ND	230	60	62	3.3	69	68	1.5	30 - 130	30	
Aniline	ND	330	42	55	26.8	54	58	7.1	20 - 160	30	
Anthracene	ND	230	90	82	9.3	80	78	2.5	30 - 130	30	
Atrazine	ND	130	85	79	7.3	72	72	0.0	30 - 130	30	
Benz(a)anthracene	ND	230	90	82	9.3	81	78	3.8	30 - 130	30	
Benzaldehyde	ND	230	27	38	33.8	86	94	8.9	20 - 160	30	r
Benzidine	ND	330	45	56	21.8	20	25	22.2	20 - 160	30	
Benzo(a)pyrene	ND	130	90	83	8.1	80	78	2.5	30 - 130	30	
Benzo(b)fluoranthene	ND	160	94	85	10.1	83	80	3.7	30 - 130	30	
Benzo(ghi)perylene	ND	230	95	84	12.3	80	78	2.5	30 - 130	30	
Benzo(k)fluoranthene	ND	230	88	82	7.1	80	76	5.1	30 - 130	30	
Benzoic Acid	ND	670	14	14	0.0	114	78	37.5	20 - 160	30	l,r
Benzyl Alcohol	ND	230	64	66	3.1	72	73	1.4	20 - 160	30	
Benzyl butyl phthalate	ND	230	100	93	7.3	91	88	3.4	30 - 130	30	
Bis(2-chloroethoxy)methane	ND	230	75	72	4.1	77	74	4.0	30 - 130	30	

QA/QC Data

SDG I.D.: GCL69739

Parameter	Blank	Blk RL	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits
Bis(2-chloroethyl)ether	ND	130	49	55	11.5	64	64	0.0	30 - 130	30
Bis(2-ethylhexyl)phthalate	ND	230	101	93	8.2	92	88	4.4	30 - 130	30
Caprolactam	ND	230	84	82	2.4	82	85	3.6	20 - 160	30
Carbazole	ND	230	87	80	8.4	77	76	1.3	30 - 130	30
Chrysene	ND	230	91	83	9.2	82	79	3.7	30 - 130	30
Dibenz(a,h)anthracene	ND	130	97	88	9.7	85	83	2.4	30 - 130	30
Dibenzofuran	ND	230	84	76	10.0	77	74	4.0	30 - 130	30
Diethyl phthalate	ND	230	92	85	7.9	83	81	2.4	30 - 130	30
Dimethylphthalate	ND	230	89	83	7.0	82	80	2.5	30 - 130	30
Di-n-butylphthalate	ND	670	98	88	10.8	87	83	4.7	30 - 130	30
Di-n-octylphthalate	ND	230	95	88	7.7	90	86	4.5	30 - 130	30
Fluoranthene	ND	230	92	84	9.1	86	82	4.8	30 - 130	30
Fluorene	ND	230	89	81	9.4	81	78	3.8	30 - 130	30
Hexachlorobenzene	ND	130	85	80	6.1	76	76	0.0	30 - 130	30
Hexachlorobutadiene	ND	230	57	63	10.0	73	68	7.1	30 - 130	30
Hexachlorocyclopentadiene	ND	230	59	64	8.1	70	65	7.4	20 - 160	30
Hexachloroethane	ND	130	42	52	21.3	66	63	4.7	20 - 160	30
Indeno(1,2,3-cd)pyrene	ND	230	106	94	12.0	90	89	1.1	30 - 130	30
Isophorone	ND	130	69	66	4.4	70	68	2.9	30 - 130	30
Naphthalene	ND	230	65	65	0.0	73	70	4.2	30 - 130	30
Nitrobenzene	ND	130	65	69	6.0	76	76	0.0	30 - 130	30
N-Nitrosodimethylamine	ND	230	39	48	20.7	63	61	3.2	20 - 160	30
N-Nitrosodi-n-propylamine	ND	130	69	68	1.5	74	72	2.7	30 - 130	30
N-Nitrosodiphenylamine	ND	130	86	80	7.2	77	75	2.6	30 - 130	30
Parathion	ND	330	93	88	5.5	87	87	0.0	30 - 130	30
Pentachlorophenol	ND	230	103	97	6.0	107	107	0.0	20 - 160	30
Phenanthrene	ND	130	88	79	10.8	80	77	3.8	30 - 130	30
Phenol	ND	230	74	74	0.0	80	79	1.3	20 - 160	30
Pyrene	ND	230	95	85	11.1	87	83	4.7	30 - 130	30
% 2,4,6-Tribromophenol	70	%	87	79	9.6	79	77	2.6	30 - 130	30
% 2-Fluorobiphenyl	66	%	74	68	8.5	70	67	4.4	30 - 130	30
% 2-Fluorophenol	64	%	54	62	13.8	71	72	1.4	30 - 130	30
% Nitrobenzene-d5	64	%	59	64	8.1	70	70	0.0	30 - 130	30
% Phenol-d5	67	%	68	67	1.5	72	72	0.0	30 - 130	30
% Terphenyl-d14	73	%	86	78	9.8	77	73	5.3	30 - 130	30

Comment:

The laboratory criteria of 30-130% is different than the NJKDQP general criteria of 70-130%. The NJKDQP criteria for problem compounds is 20-160%.

QA/QC Batch 631775 (ug/kg), QC Sample No: CL69737 (CL69739, CL69740, CL69741, CL69742, CL69743, CL69744, CL69745, CL69746, CL69747, CL69748, CL69749, CL69750)

Volatiles - Soil (Low Level)

1,1,1,2-Tetrachloroethane	ND	5.0	99	94	5.2				70 - 130	30
1,1,1-Trichloroethane	ND	5.0	100	93	7.3				70 - 130	30
1,1,2,2-Tetrachloroethane	ND	3.0	96	94	2.1				70 - 130	30
1,1,2-Trichloroethane	ND	5.0	101	98	3.0				70 - 130	30
1,1-Dichloroethane	ND	5.0	107	108	0.9				70 - 130	30
1,1-Dichloroethene	ND	5.0	101	92	9.3				70 - 130	30
1,2,3-Trichlorobenzene	ND	5.0	102	98	4.0				70 - 130	30
1,2,4-Trichlorobenzene	ND	5.0	98	96	2.1				70 - 130	30
1,2,4-Trimethylbenzene	ND	1.0	98	96	2.1				70 - 130	30
1,2-Dibromo-3-chloropropane	ND	5.0	96	93	3.2				70 - 130	30
1,2-Dibromoethane	ND	5.0	101	97	4.0				70 - 130	30

QA/QC Data

SDG I.D.: GCL69739

Parameter	Blank	Blk RL	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits
1,2-Dichlorobenzene	ND	5.0	97	97	0.0				70 - 130	30
1,2-Dichloroethane	ND	5.0	97	95	2.1				70 - 130	30
1,2-Dichloropropane	ND	5.0	100	99	1.0				70 - 130	30
1,3,5-Trimethylbenzene	ND	1.0	99	97	2.0				70 - 130	30
1,3-Dichlorobenzene	ND	5.0	95	94	1.1				70 - 130	30
1,4-Dichlorobenzene	ND	5.0	97	95	2.1				70 - 130	30
1,4-dioxane	ND	100	100	92	8.3				40 - 160	30
2-Hexanone	ND	25	96	91	5.3				70 - 130	30
4-Methyl-2-pentanone	ND	25	97	95	2.1				70 - 130	30
Acetone	ND	10	100	88	12.8				70 - 130	30
Acrolein	ND	25	97	87	10.9				70 - 130	30
Acrylonitrile	ND	5.0	97	105	7.9				70 - 130	30
Benzene	ND	1.0	101	99	2.0				70 - 130	30
Bromochloromethane	ND	5.0	101	93	8.2				70 - 130	30
Bromodichloromethane	ND	5.0	98	96	2.1				70 - 130	30
Bromoform	ND	5.0	94	90	4.3				70 - 130	30
Bromomethane	ND	5.0	97	90	7.5				70 - 130	30
Carbon Disulfide	ND	5.0	93	86	7.8				70 - 130	30
Carbon tetrachloride	ND	5.0	94	91	3.2				70 - 130	30
Chlorobenzene	ND	5.0	98	94	4.2				70 - 130	30
Chloroethane	ND	5.0	106	97	8.9				70 - 130	30
Chloroform	ND	5.0	97	91	6.4				70 - 130	30
Chloromethane	ND	5.0	97	87	10.9				70 - 130	30
cis-1,2-Dichloroethene	ND	5.0	101	96	5.1				70 - 130	30
cis-1,3-Dichloropropene	ND	5.0	100	99	1.0				70 - 130	30
Cyclohexane	ND	5.0	102	95	7.1				70 - 130	30
Dibromochloromethane	ND	3.0	100	96	4.1				70 - 130	30
Dichlorodifluoromethane	ND	5.0	93	85	9.0				70 - 130	30
Ethylbenzene	ND	1.0	99	96	3.1				70 - 130	30
Isopropylbenzene	ND	1.0	103	100	3.0				70 - 130	30
m&p-Xylene	ND	2.0	100	96	4.1				70 - 130	30
Methyl ethyl ketone	ND	5.0	99	92	7.3				70 - 130	30
Methyl t-butyl ether (MTBE)	ND	1.0	99	92	7.3				70 - 130	30
Methylacetate	ND	5.0	97	88	9.7				70 - 130	30
Methylcyclohexane	ND	5.0	101	98	3.0				70 - 130	30
Methylene chloride	ND	5.0	91	84	8.0				70 - 130	30
Naphthalene	ND	5.0	104	102	1.9				70 - 130	30
n-Butylbenzene	ND	1.0	102	99	3.0				70 - 130	30
n-Propylbenzene	ND	1.0	100	97	3.0				70 - 130	30
o-Xylene	ND	2.0	98	96	2.1				70 - 130	30
p-Isopropyltoluene	ND	1.0	101	99	2.0				70 - 130	30
sec-Butylbenzene	ND	1.0	99	97	2.0				70 - 130	30
Styrene	ND	5.0	100	98	2.0				70 - 130	30
tert-butyl alcohol	ND	100	93	88	5.5				70 - 130	30
tert-Butylbenzene	ND	1.0	100	99	1.0				70 - 130	30
Tetrachloroethene	ND	5.0	99	98	1.0				70 - 130	30
Toluene	ND	1.0	101	99	2.0				70 - 130	30
trans-1,2-Dichloroethene	ND	5.0	100	92	8.3				70 - 130	30
trans-1,3-Dichloropropene	ND	5.0	100	98	2.0				70 - 130	30
Trichloroethene	ND	5.0	99	98	1.0				70 - 130	30
Trichlorofluoromethane	ND	5.0	101	92	9.3				70 - 130	30
Trichlorotrifluoroethane	ND	5.0	93	83	11.4				70 - 130	30
Vinyl Acetate	ND	5.0	105	94	11.1				70 - 130	30

QA/QC Data

SDG I.D.: GCL69739

Parameter	Blank	Blk RL	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits
Vinyl chloride	ND	5.0	103	95	8.1				70 - 130	30
% 1,2-dichlorobenzene-d4	95	%	99	100	1.0				70 - 130	30
% Bromofluorobenzene	97	%	101	101	0.0				70 - 130	30
% Dibromofluoromethane	97	%	95	95	0.0				70 - 130	30
% Toluene-d8	95	%	99	101	2.0				70 - 130	30

Comment:

The Low Level MS/MSD are not reported for this batch.

Additional 8260 criteria: 10% of LCS/LCSD compounds can be outside of acceptance criteria as long as recovery is 40-160%.

l = This parameter is outside laboratory LCS/LCSD specified recovery limits.
m = This parameter is outside laboratory MS/MSD specified recovery limits.
r = This parameter is outside laboratory RPD specified recovery limits.

If there are any questions regarding this data, please call Phoenix Client Services at extension 200.

RPD - Relative Percent Difference
LCS - Laboratory Control Sample
LCSD - Laboratory Control Sample Duplicate
MS - Matrix Spike
MS Dup - Matrix Spike Duplicate
NC - No Criteria
Intf - Interference

Phyllis Shiller, Laboratory Director
July 19, 2022

Tuesday, July 19, 2022

Criteria: NJ: IGWSS, RC

State: NJ

Sample Criteria Exceedances Report

GCL69739 - IMPACTJB-IM

SampNo	Acode	Phoenix Analyte	Criteria	Result	RL	Criteria	RL Criteria	Analysis Units
CL69748	AL-SMDP	Aluminum	NJ / Impact To Ground Water / Soil Screen Levels	16600	30	6000	3900	mg/Kg
CL69748	MN-SM	Manganese	NJ / Impact To Ground Water / Soil Screen Levels	341	3.0	65	42	mg/Kg
CL69749	AL-SMDP	Aluminum	NJ / Impact To Ground Water / Soil Screen Levels	15900	34	6000	3900	mg/Kg
CL69749	MN-SM	Manganese	NJ / Impact To Ground Water / Soil Screen Levels	235	3.4	65	42	mg/Kg
CL69750	AL-SMDP	Aluminum	NJ / Impact To Ground Water / Soil Screen Levels	18000	34	6000	3900	mg/Kg
CL69750	CD-SM	Cadmium	NJ / Impact To Ground Water / Soil Screen Levels	2.09	0.34	2	1	mg/Kg
CL69750	MN-SM	Manganese	NJ / Impact To Ground Water / Soil Screen Levels	308	3.4	65	42	mg/Kg

Phoenix Laboratories does not assume responsibility for the data contained in this exceedance report. It is provided as an additional tool to identify requested criteria exceedences. All efforts are made to ensure the accuracy of the data (obtained from appropriate agencies). A lack of exceedence information does not necessarily suggest conformance to the criteria. It is ultimately the site professional's responsibility to determine appropriate compliance.

DATA OF KNOWN QUALITY CONFORMANCE/NON-CONFORMANCE SUMMARY QUESTIONNAIRE

Laboratory Name: Phoenix Environmental Labs, Inc. **Client:** Impact Materials

Project Location: IMJC **Project Number:**

Laboratory Sample ID(s): CL69739, CL69740, CL69741, CL69742, CL69743, CL69744, CL69745, CL69746, CL69747, CL69748, CL69749, CL69750

Sampling Date(s): 7/5/2022

DKQP Methods Used

☐ 1311/1312	☑ 6010	☐ 6020	☐ 7000	☑ 7196	☑ 7470/7471	☑ 8081	☐ EPH
☑ 8082	☑ 8151	☑ 8260	☑ 8270	☐ ETPH	☑ 9010/9012	☐ VPH	☐ TO15

1.	For each analytical method referenced in this laboratory report package, were all specified QA/QC performance criteria followed, including the requirement to explain any criteria falling outside of acceptable guidelines, as specified in the NJDEP Data of Known Quality performance standards?	☑ Yes ☐ No
1a.	Were the method specified handling, preservation, and holding time requirements met?	☑ Yes ☐ No
1b.	EPH Method: Was the EPH method conducted without significant modifications (see Section 11.3 of respective DKQ methods)	☐ Yes ☐ No ☑ NA
2.	Were all samples received by the laboratory in a condition consistent with that described on the associated chain-of-custody document(s)?	☑ Yes ☐ No
3.	Were samples received at an appropriate temperature (4±2° C)?	☐ Yes ☑ No ☐ NA
4.	Were all QA/QC performance criteria specified in the NJDEP DKQP standards achieved?	☐ Yes ☑ No
5a.	Were reporting limits specified or referenced on the chain-of-custody or communicated to the laboratory prior to sample receipt?	☑ Yes ☐ No
5b.	Were these reporting limits met?	☑ Yes ☐ No ☐ NA
6.	For each analytical method referenced in this laboratory report package, were results reported for all constituents identified in the method-specific analyte lists presented in the DKQP documents and/or site-specific QAPP?	☑ Yes ☐ No
7.	Are project-specific matrix spikes and/or laboratory duplicates included in this data set?	☑ Yes ☐ No

Note: For all questions to which the response was "No" (with the exception of question #7), additional information should be provided in an attached narrative. If the answer to question #1, #1A, or #1B is "No", the data package does not meet the requirements for "Data of Known Quality."

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete.

Date: Tuesday, July 19, 2022

Authorized Signature: Rashmi Makol

Printed Name: Rashmi Makol

Position: Project Manager

Apr 2014

PHOENIX

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587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
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ACCREDITED IN ACCORDANCE WITH nelac NY # 11301

NJDKQP Certification Report

July 19, 2022

SDG I.D.: GCL69739

SDG Comments

Temperature above 6C:
The samples were received in a cooler with ice packs. The samples were delivered to the Laboratory within a short period of time after sample collection. Therefore no significant bias is suspected.

Cyanide Narration

Were all QA/QC performance criteria specified in the analytical method achieved? Yes.

Instrument:

LACHAT 07/06/22-1 Catherine Lundigan, Dan Kinney, Chemist 07/06/22

CL69748 , CL69749 , CL69750

The samples were distilled in accordance with the method.
The initial calibration met criteria.

The calibration check standards (ICV,CCV) were within 15% of true value and were analyzed at a frequencey of one per ten samples.
The continuing calibration blanks (ICB,CCB) had concentrations less than the reporting level.

The method blank, laboratory control sample (LCS), and matrix spike were distilled with the samples.

QC (Batch Specific):

Batch 631652 (CL68287)

CL69748, CL69749, CL69750

All LCS recoveries were within 80 - 120 with the following exceptions: None.

Herbicide Narration

Were all QA/QC performance criteria specified in the analytical method achieved? Yes.

Instrument:

AU-ECD2 07/07/22-1 Jeff Bucko, Chemist 07/07/22

CL69748 (10X), CL69749 (10X), CL69750 (10X)

The initial calibration (HRB702AI) RSD for the compound list was less than 20% except for the following compounds: None.
The initial calibration (HRB702BI) RSD for the compound list was less than 20% except for the following compounds: None.
The continuing calibration %D for the compound list was less than 15% except for the following compounds:
Samples: CL69748, CL69749, CL69750
Preceding CC 707B003 - None.
Succeeding CC 707B015 - Dichloroprop (7) -31%L (15%)

QC (Batch Specific):

Batch 631697 (CL69798)

CL69748, CL69749, CL69750

All LCS recoveries were within 40 - 140 with the following exceptions: None.
All LCSD recoveries were within 40 - 140 with the following exceptions: None.
All LCS/LCSD RPDs were less than 30% with the following exceptions: None.

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NJDKQP Certification Report

July 19, 2022

SDG I.D.: GCL69739

Soil Hex Chromium Narration

Were all QA/QC performance criteria specified in the analytical method achieved? Yes.

Instrument:

BECKMAN DU720 07/06/22-1 Blake Antil, Chemist 07/06/22

CL69748 , CL69749 , CL69750

The initial calibration met criteria, the calibration `r` > 0.995

Three LCS solutions were evaluated and reported:
The hexavalent Chromium LCS does not require digestion and is used as a continuing calibration standard.
The insoluble and soluble spikes (LCS) monitor the performance of the extraction.
The insoluble and soluble matrix spikes monitor the effect of matrix on the recoveries of hexavalent chromium.
Some matrix spike recoveries may be outside of the acceptance criteria of 75-125, however the corresponding LCSs are within control. No further action is required, but a sample matrix bias is suspected.

QC (Batch Specific):

Batch 631732 (CL69748)

CL69748, CL69749, CL69750

All LCS recoveries were within 90 - 110 with the following exceptions: None.
The QC sample is in a reducing state, acceptance criteria are not applicable for samples in a reducing state. The soluble spike was analyzed twice with similar recoveries.

Mercury Narration

Were all QA/QC performance criteria specified in the analytical method achieved? Yes.

Instrument:

MERLIN 07/06/22 16:14 Ian Enders, Chemist 07/06/22

CL69748, CL69749, CL69750

The method preparation blank, ICB, and CCBs contain all of the acids and reagents as the samples.
The initial calibration met all criteria including a standard run at or below the reporting level.
All calibration verification standards (ICV, CCV) met criteria.
All calibration blank verification standards (ICB, CCB) met criteria.
The matrix spike sample is used to identify spectral interference for each batch of samples, if within 85-115%, no interference is observed and no further action is taken.
The following Initial Calibration Verification (ICV) compounds did not meet criteria: None.
The following Continuing Calibration Verification (CCV) compounds did not meet criteria: None.

QC (Batch Specific):

Batch 631727 (CL67741)

CL69748, CL69749, CL69750

All LCS recoveries were within 70 - 130 with the following exceptions: None.
All LCSD recoveries were within 70 - 130 with the following exceptions: None.
All LCS/LCSD RPDs were less than 30% with the following exceptions: None.
Additional Mercury criteria: LCS acceptance range for waters is 80-120% and for soils is 70-130%.

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Certification Report

July 19, 2022

SDG I.D.: GCL69739

ICP Metals Narration

Were all QA/QC performance criteria specified in the analytical method achieved? No.

QC Batch 631624 (Samples: CL69748, CL69749, CL69750): -----

The Sample/Duplicate RPD exceeds the method criteria for one or more analytes, therefore there may be variability in the reported result. (Calcium, Lead)

Instrument:

ARCOS-2 07/06/22 10:29 Emily Kolominskaya, Chemist 07/06/22

CL69748, CL69749, CL69750

The linear range is defined daily by the calibration range.
The following Initial Calibration Verification (ICV) compounds did not meet criteria: None.
The following Continuing Calibration Verification (CCV) compounds did not meet criteria: None.
The following ICP Interference Check (ICSAB) compounds did not meet criteria: None.

QC (Batch Specific):

Batch 631624 (CL68951)

CL69748, CL69749, CL69750

All LCS recoveries were within 75 - 125 with the following exceptions: None.
All LCSD recoveries were within 75 - 125 with the following exceptions: None.
All LCS/LCSD RPDs were less than 30% with the following exceptions: None.

PCB Narration

Were all QA/QC performance criteria specified in the analytical method achieved? Yes.

Instrument:

AU-ECD24 07/06/22-1 Saadia Chudary, Chemist 07/06/22

CL69748 (2X), CL69749 (2X)

The initial calibration (PC629AI) RSD for the compound list was less than 20% except for the following compounds: None.
The initial calibration (PC629BI) RSD for the compound list was less than 20% except for the following compounds: None.
The continuing calibration %D for the compound list was less than 15% except for the following compounds:None.

AU-ECD8 07/06/22-1 Saadia Chudary, Chemist 07/06/22

CL69750 (2X)

The initial calibration (PC331AI) RSD for the compound list was less than 20% except for the following compounds: None.
The initial calibration (PC331BI) RSD for the compound list was less than 20% except for the following compounds: None.
The continuing calibration %D for the compound list was less than 15% except for the following compounds:None.

QC (Batch Specific):

Batch 631641 (CL69748)

CL69748, CL69749, CL69750

All LCS recoveries were within 40 - 140 with the following exceptions: None.
All LCSD recoveries were within 40 - 140 with the following exceptions: None.
All LCS/LCSD RPDs were less than 30% with the following exceptions: None.

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NJDKQP Certification Report

July 19, 2022

SDG I.D.: GCL69739

PEST Narration

Were all QA/QC performance criteria specified in the analytical method achieved? Yes.

Instrument:

AU-ECD6 07/06/22-1 Adam Werner, Chemist 07/06/22

CL69748 (2X), CL69749 (2X), CL69750 (2X)

The initial calibration (PS0614AI) RSD for the compound list was less than 20% except for the following compounds: None.
The initial calibration (PS0614BI) RSD for the compound list was less than 20% except for the following compounds: None.
The Endrin and DDT breakdown does not exceed 15% except for the following compounds:None.
The Endrin and DDT breakdown does not exceed the maximum of 20% except for the following compounds:None.
The continuing calibration %D for the compound list was less than 20% except for the following compounds:
Samples: CL69749, CL69750
Preceding CC 706B031 - Endrin 25%H (20%)
Succeeding CC 706B045 - None.

QC (Batch Specific):

Batch 631642 (CL69748)

CL69748, CL69749, CL69750

All LCS recoveries were within 40 - 140 with the following exceptions: None.
All LCSD recoveries were within 40 - 140 with the following exceptions: None.
All LCS/LCSD RPDs were less than 30% with the following exceptions: None.

SVOA Narration

Were all QA/QC performance criteria specified in the analytical method achieved? No.

QC Batch 631675 (Samples: CL69748, CL69749, CL69750): -----

One or more analytes is below the method criteria. A low bias for these analytes is possible. (Benzoic Acid)

The LCS/LCSD RPD exceeds the method criteria for one or more analytes, but these analytes were not reported in the sample(s) so no variability is suspected. (4,6-Dinitro-2-methylphenol, Benzaldehyde)

Instrument:

CHEM36 07/05/22-1 Matt Richard, Chemist 07/05/22

CL69748 (1X), CL69749 (1X), CL69750 (1X)

Initial Calibration Evaluation (CHEM36/36_SPLIT_0630):
100% of target compounds met criteria.
The following compounds had %RSDs >20%: None.
The following compounds did not meet recommended response factors: % 2,4,6-Tribromophenol 0.049 (0.05), 2-Nitrophenol 0.046 (0.1), Hexachlorobenzene 0.081 (0.1)
The following compounds did not meet a minimum response factors: % 2,4,6-Tribromophenol 0.049 (0.05), 2-Nitrophenol 0.046 (0.05)

Continuing Calibration Verification (CHEM36/0705_03-36_SPLIT_0630):
Internal standard areas were within 50 to 200% of the initial calibration with the following exceptions: None.
100% of target compounds met criteria.
The following compounds did not meet % deviation criteria: None.
The following compounds did not meet maximum % deviations: None.

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NJDKQP Certification Report

July 19, 2022

SDG I.D.: GCL69739

SVOA Narration

The following compounds did not meet recommended response factors: 2-Nitrophenol 0.049 (0.1), Hexachlorobenzene 0.079 (0.1)
The following compounds did not meet minimum response factors: None.

QC (Batch Specific):

Batch 631675 (CL69848)

CL69748, CL69749, CL69750

All LCS recoveries were within 30 - 130 with the following exceptions: Benzoic Acid(14%)
All LCSD recoveries were within 30 - 130 with the following exceptions: Benzoic Acid(14%)
All LCS/LCSD RPDs were less than 30% with the following exceptions: 4,6-Dinitro-2-methylphenol(34.0%), Benzaldehyde(33.8%)
The laboratory criteria of 30-130% is different than the NJKDQP general criteria of 70-130%. The NJKDQP criteria for problem compounds is 20-160%.

VOA Narration

Were all QA/QC performance criteria specified in the analytical method achieved? Yes.

Instrument:

CHEM18 07/05/22-2 Jane Li, Chemist 07/05/22

CL69739 (1X), CL69740 (1X), CL69741 (1X), CL69742 (1X), CL69743 (1X), CL69744 (1X), CL69745 (1X), CL69746 (1X), CL69747 (1X), CL69748 (1X), CL69749 (1X), CL69750 (1X)

Initial Calibration Evaluation (CHEM18/VT-M070322):
100% of target compounds met criteria.
The following compounds had %RSDs >20%: None.
The following compounds did not meet Table 4 recommended minimum response factors: None.
The following compounds did not meet the minimum response factor of 0.05: None.

Continuing Calibration Verification (CHEM18/0705_36-VT-M070322):
Internal standard areas were within 50 to 200% of the initial calibration with the following exceptions: None.
100% of target compounds met criteria.
The following compounds did not meet % deviation criteria: None.
The following compounds did not meet maximum % deviations: None.
The following compounds did not meet Table 4 recommended minimum response factors: None.

QC (Batch Specific):

Batch 631775 (CL69737) CHEM18 7/5/2022-2

CL69739(1X), CL69740(1X), CL69741(1X), CL69742(1X), CL69743(1X), CL69744(1X), CL69745(1X), CL69746(1X), CL69747(1X), CL69748(1X), CL69749(1X), CL69750(1X)

All LCS recoveries were within 70 - 130 with the following exceptions: None.
All LCSD recoveries were within 70 - 130 with the following exceptions: None.
All LCS/LCSD RPDs were less than 30% with the following exceptions: None.
The Low Level MS/MSD are not reported for this batch.
Additional 8260 criteria: 10% of LCS/LCSD compounds can be outside of acceptance criteria as long as recovery is 40-160%.

Cooler: ~~Yes~~ ☐ No ☐
Coolant: IPK ☐ ICE ☐ No ☐
Temp 11.1 °C Pg of

PHOENIX Environmental Laboratories, Inc.

NY/NJ CHAIN OF CUSTODY RECORD

587 East Middle Turnpike, P.O. Box 370, Manchester, CT 06040
Email: info@phoenixlabs.com Fax (860) 645-0823
Client Services (860) 645-8726

Contact Options:
☐ Fax:
☐ Phone:
☐ Email:

Customer: Impact Materials
Address: 1000 Page Ave
Lyndhurst, NJ

Project: IMJC
Report to: Jbogoian@impactenvironmental.com
Invoice to: BWalsh@impactenvironmental.com
QUOTE # :

Project P.O:

This section MUST be completed with Bottle Quantities.

Client Sample - Information - Identification

Sampler's Signature _____ Date: _____

Matrix Code:
DW=Drinking Water GW=Ground Water SW=Surface Water WW=Waste Water
RW=Raw Water SE=Sediment SL=Sludge S=Soil SD=Solid W=Wipe
OIL=Oil B=Bulk L=Liquid

Analysis Request

PHOENIX USE ONLY SAMPLE #	Customer Sample Identification	Sample Matrix	Date Sampled	Time Sampled	Impact Package A	VOCs	PFAS/PFOS								GL Amber 8 oz. w/H3PO4	Soil VOA Vials [1] methanol [2] H2O	GL Soil container (8)oz	GL Soil container ( )oz	40 ml VOA Vial [ ] As is [ ] HCl	GL Amber 1000ml [ ] As is [ ] H2SO4	PL As is [ ] 250ml [ ] 500ml [ ] 1000ml	PL H2SO4 [ ] 250ml [ ] 500ml	PL NAOH 250ml	PL HNO3 250ml	Bacteria Bottle w/thio	PFAS Container
69739	IMJC 1A (GRAB)	S	7/5/2022	8:00 AM		X										x										
69740	IMJC 1B (GRAB)	S	7/5/2022	8:05 AM		X										x										
69741	IMJC 1C (GRAB)	S	7/5/2022	8:30 AM		X										x										
69742	IMJC 2A (GRAB)	S	7/5/2022	8:10 AM		X										x										
69743	IMJC 2B (GRAB)	S	7/5/2022	8:15 AM		X										x										
69744	IMJC 2C (GRAB)	S	7/5/2022	8:40 AM		X										x										
69745	IMJC 3A (GRAB)	S	7/5/2022	8:20 AM		X										x										
69746	IMJC 3B (GRAB)	S	7/5/2022	8:25 AM		X										x										
69747	IMJC 3C (GRAB)	S	7/5/2022	8:35 AM		X										x										
69748	IMJC COMP-1	S	7/5/2022	9:00 AM	X		X										2								1	
69749	IMJC COMP-2	S	7/5/2022	9:05 AM	X		X										2								1	
69750	IMJC COMP-3	S	7/5/2022	9:10 AM	X		X										2								1	

Relinquished by:	Accepted by:	Date:	Time:
Client	[signature]	7-5-22	15:48

Comments, Special Requirements or Regulations:

Turnaround:
☐ 1 Day*
☐ 2 Days*
☐ 3 Days*
☐ 5 Days
☐ 10 Days
☐ Other
* SURCHARGE APPLIES

NJ
☐ SRS Ingestion - Dermal Res. Criteria
☐ SRS Inhalation Res. Criteria
☐ SRS Migration to GW

What State were samples collected? _____

NY
☐ TOGS GW
☐ CP-51 SOIL
☐ 375SCO Unrestricted Soil
☐ 375SCO Residential Soil
☐ 375SCO Residential Restricted Soil
☐ 375SCO Commercial Soil
☐ 375SCO Industrial Soil
☐ Subpart 5 DW

Data Format
☐ Phoenix Std Report
☐ Excel
☐ PDF
☐ GIS/Key
☐ EQuIS
☐ NJ Hazsite EDD
☐ NY EZ EDD (ASP)
☐ Other _____

Data Package
☐ NJ Reduced Deliv. *
☐ NY Enhanced (ASP B) *
☐ Other

GCL 69739

Shannon Wilhelm

From: Michael Lapman
Sent: Tuesday, July 5, 2022 4:12 PM
To: Shannon Wilhelm
Subject: FW: Impact
Attachments: 20220705150124.pdf

Impact—IM:

VOAs and Package A – 3-Day Rush TAT. PFAs—7-Day Standard TAT, the NY-21 List.

Compare to:

1. NJ new Residential inhalation soil standard
2. NJ new Residential ingestion-dermal soil standard
3. NJIGWs

Thank you!

Regards,
Michael Lapman
Phoenix Environmental Laboratories, Inc.
587 East Middle Turnpike
Manchester, CT 06040
Direct Line: 917.449.0850
Laboratory: 860.812.0086
www.phoenixlabs.com

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From: Shannon Wilhelm <shannon@phoenixlabs.com>
Date: Tuesday, July 5, 2022 at 4:03 PM
To: Michael Lapman <michael@phoenixlabs.com>
Subject: Impact

Shannon Wilhelm
Client Services Representative
Phoenix Environmental Laboratories
587 East Middle Turnpike
Manchester CT 06040

Technical Report

prepared for:

Phoenix Environmental Laboratories, Inc.
P.O. Box 370, 587 East Middle Turnpike
Manchester CT, 06040
Attention: Helen Geoghegan

Report Date: 07/18/2022
Client Project ID: GCL69739
York Project (SDG) No.: 22G0348

CT Cert. No. PH-0723 New Jersey Cert. No. CT005 and NY037 New York Cert. Nos. 10854 and 12058 PA Cert. No. 68-04440

120 RESEARCH DRIVE STRATFORD, CT 06615 ■ 132-02 89th AVENUE RICHMOND HILL, NY 11418
www.YORKLAB.com (203) 325-1371 FAX (203) 357-0166 ClientServices@yorklab.com

Report Date: 07/18/2022
Client Project ID: GCL69739
York Project (SDG) No.: 22G0348

Phoenix Environmental Laboratories, Inc.
P.O. Box 370, 587 East Middle Turnpike
Manchester CT, 06040
Attention: Helen Geoghegan

Purpose and Results

This report contains the analytical data for the sample(s) identified on the attached chain-of-custody received in our laboratory on July 08, 2022 and listed below. The project was identified as your project: **GCL69739**.

The analyses were conducted utilizing appropriate EPA, Standard Methods, and ASTM methods as detailed in the data summary tables.

All samples were received in proper condition meeting the customary acceptance requirements for environmental samples except those indicated under the Sample and Analysis Qualifiers section of this report.

All analyses met the method and laboratory standard operating procedure requirements except as indicated by any data flags, the meaning of which are explained in the Sample and Data Qualifiers Relating to This Work Order section of this report and case narrative if applicable.

The results of the analyses, which are all reported on dry weight basis (soils) unless otherwise noted, are detailed in the following pages.

Please contact Client Services at 203.325.1371 with any questions regarding this report.

York Sample ID	Client Sample ID	Matrix	Date Collected	Date Received
22G0348-01	IMJC COMP-1	Soil	07/05/2022	07/08/2022
22G0348-02	IMJC COMP-2	Soil	07/05/2022	07/08/2022
22G0348-03	IMJC COMP-3	Soil	07/05/2022	07/08/2022

General Notes for York Project (SDG) No.: 22G0348

1. The RLs and MDLs (Reporting Limit and Method Detection Limit respectively) reported are adjusted for any dilution necessary due to the levels of target and/or non-target analytes and matrix interference. The RL(REPORTING LIMIT) is based upon the lowest standard utilized for the calibration where applicable.
2. Samples are retained for a period of thirty days after submittal of report, unless other arrangements are made.
3. York's liability for the above data is limited to the dollar value paid to York for the referenced project.
4. This report shall not be reproduced without the written approval of York Analytical Laboratories, Inc.
5. All analyses conducted met method or Laboratory SOP requirements. See the Sample and Data Qualifiers Section for further information.
6. It is noted that no analyses reported herein were subcontracted to another laboratory, unless noted in the report.
7. This report reflects results that relate only to the samples submitted on the attached chain-of-custody form(s) received by York.
8. Analyses conducted at York Analytical Laboratories, Inc. Stratford, CT are indicated by NY Cert. No. 10854; those conducted at York Analytical Laboratories, Inc., Richmond Hill, NY are indicated by NY Cert. No. 12058.

Approved By: Cassie L. Mosher

Date: 07/18/2022

Cassie L. Mosher
Laboratory Manager

Sample Information

Client Sample ID: **IMJC COMP-1** **York Sample ID:** **22G0348-01**

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
22G0348	GCL69739	Soil	July 5, 2022 9:00 am	07/08/2022

PFAS by EPA 537 m **Log-in Notes:** **Sample Notes:**

Sample Prepared by Method: SPE PFAS Extraction-Soil-EPA 537m

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
375-73-5	* Perfluorobutanesulfonic acid (PFBS)	ND		ug/kg dry	0.250	1	EPA 537m Certifications:	07/12/2022 12:42	07/14/2022 16:28	WEL
307-24-4	* Perfluorohexanoic acid (PFHxA)	ND		ug/kg dry	0.250	1	EPA 537m Certifications:	07/12/2022 12:42	07/14/2022 16:28	WEL
375-85-9	* Perfluoroheptanoic acid (PFHpA)	ND		ug/kg dry	0.250	1	EPA 537m Certifications:	07/12/2022 12:42	07/14/2022 16:28	WEL
355-46-4	* Perfluorohexanesulfonic acid (PFHxS)	ND		ug/kg dry	0.250	1	EPA 537m Certifications:	07/12/2022 12:42	07/14/2022 16:28	WEL
335-67-1	* Perfluorooctanoic acid (PFOA)	ND		ug/kg dry	0.250	1	EPA 537m Certifications:	07/12/2022 12:42	07/14/2022 16:28	WEL
1763-23-1	* Perfluorooctanesulfonic acid (PFOS)	ND		ug/kg dry	0.250	1	EPA 537m Certifications:	07/12/2022 12:42	07/14/2022 16:28	WEL
375-95-1	* Perfluorononanoic acid (PFNA)	ND		ug/kg dry	0.250	1	EPA 537m Certifications:	07/12/2022 12:42	07/14/2022 16:28	WEL
335-76-2	* Perfluorodecanoic acid (PFDA)	ND		ug/kg dry	0.250	1	EPA 537m Certifications:	07/12/2022 12:42	07/14/2022 16:28	WEL
2058-94-8	* Perfluoroundecanoic acid (PFUnA)	ND		ug/kg dry	0.250	1	EPA 537m Certifications:	07/12/2022 12:42	07/14/2022 16:28	WEL
307-55-1	* Perfluorododecanoic acid (PFDoA)	ND		ug/kg dry	0.250	1	EPA 537m Certifications:	07/12/2022 12:42	07/14/2022 16:28	WEL
72629-94-8	* Perfluorotridecanoic acid (PFTrDA)	ND		ug/kg dry	0.250	1	EPA 537m Certifications:	07/12/2022 12:42	07/14/2022 16:28	WEL
376-06-7	* Perfluorotetradecanoic acid (PFTA)	ND		ug/kg dry	0.250	1	EPA 537m Certifications:	07/12/2022 12:42	07/14/2022 16:28	WEL
2355-31-9	* N-MeFOSAA	ND		ug/kg dry	0.250	1	EPA 537m Certifications:	07/12/2022 12:42	07/14/2022 16:28	WEL
2991-50-6	* N-EtFOSAA	ND		ug/kg dry	0.250	1	EPA 537m Certifications:	07/12/2022 12:42	07/14/2022 16:28	WEL
2706-90-3	* Perfluoropentanoic acid (PFPeA)	ND		ug/kg dry	0.250	1	EPA 537m Certifications:	07/12/2022 12:42	07/14/2022 16:28	WEL
754-91-6	* Perfluoro-1-octanesulfonamide (FOSA)	ND		ug/kg dry	0.250	1	EPA 537m Certifications:	07/12/2022 12:42	07/14/2022 16:28	WEL
375-92-8	* Perfluoro-1-heptanesulfonic acid (PFHpS)	ND		ug/kg dry	0.250	1	EPA 537m Certifications:	07/12/2022 12:42	07/14/2022 16:28	WEL
335-77-3	* Perfluoro-1-decanesulfonic acid (PFDS)	ND		ug/kg dry	0.250	1	EPA 537m Certifications:	07/12/2022 12:42	07/14/2022 16:28	WEL
27619-97-2	* 1H,1H,2H,2H-Perfluorooctanesulfonic acid (6:2 FTS)	ND		ug/kg dry	0.250	1	EPA 537m Certifications:	07/12/2022 12:42	07/14/2022 16:28	WEL
39108-34-4	* 1H,1H,2H,2H-Perfluorodecanesulfonic acid (8:2 FTS)	ND		ug/kg dry	0.250	1	EPA 537m Certifications:	07/12/2022 12:42	07/14/2022 16:28	WEL
375-22-4	* Perfluoro-n-butanoic acid (PFBA)	ND		ug/kg dry	0.250	1	EPA 537m Certifications:	07/12/2022 12:42	07/14/2022 16:28	WEL

Surrogate Recoveries	Result	Acceptance Range
Surrogate: M3PFBS	*62.5 %*	*25-150*

Sample Information

Client Sample ID: IMJC COMP-1 **York Sample ID:** 22G0348-01

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
22G0348	GCL69739	Soil	July 5, 2022 9:00 am	07/08/2022

PFAS by EPA 537 m **Log-in Notes:** **Sample Notes:**

Sample Prepared by Method: SPE PFAS Extraction-Soil-EPA 537m

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
	Surrogate: M5PFHxA	*78.0 %*			*25-150*					
	Surrogate: M4PFHpA	*82.9 %*			*25-150*					
	Surrogate: M3PFHxS	*84.7 %*			*25-150*					
	Surrogate: Perfluoro-n-[13C8]octanoic acid (M8PFOA)	*85.4 %*			*25-150*					
	Surrogate: M6PFDA	*68.8 %*			*25-150*					
	Surrogate: M7PFUdA	*62.5 %*			*25-150*					
	Surrogate: Perfluoro-n-[1,2-13C2]dodecanoic acid (MPFDoA)	*58.0 %*			*25-150*					
	Surrogate: M2PFTeDA	*68.3 %*			*10-150*					
	Surrogate: Perfluoro-n-[13C4]butanoic acid (MPFBA)	*73.9 %*			*25-150*					
	Surrogate: Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)	*66.5 %*			*25-150*					
	Surrogate: Perfluoro-n-[13C5]pentanoic acid (M5PFPeA)	*73.9 %*			*25-150*					
	Surrogate: Perfluoro-1-[13C8]octanesulfonamide (M8FOSA)	*52.1 %*			*10-150*					
	Surrogate: d3-N-MeFOSAA	*65.2 %*			*25-150*					
	Surrogate: d5-N-EtFOSAA	*65.8 %*			*25-150*					
	Surrogate: M2-6:2 FTS	*75.6 %*			*25-200*					
	Surrogate: M2-8:2 FTS	*98.3 %*			*25-200*					
	Surrogate: M9PFNA	*81.4 %*			*25-150*					

Total Solids **Log-in Notes:** **Sample Notes:**

Sample Prepared by Method: % Solids Prep

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
solids	*** % Solids**	**99.2**		%	0.100	1	SM 2540G Certifications: CTDOH	07/12/2022 14:23	07/12/2022 16:32	YR

Sample Information

Client Sample ID: IMJC COMP-2 **York Sample ID:** 22G0348-02

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
22G0348	GCL69739	Soil	July 5, 2022 9:05 am	07/08/2022

PFAS by EPA 537 m **Log-in Notes:** **Sample Notes:**

Sample Information

Client Sample ID: **IMJC COMP-2** **York Sample ID:** **22G0348-02**

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
22G0348	GCL69739	Soil	July 5, 2022 9:05 am	07/08/2022

Sample Prepared by Method: SPE PFAS Extraction-Soil-EPA 537m

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
375-73-5	* Perfluorobutanesulfonic acid (PFBS)	ND		ug/kg dry	0.248	1	EPA 537m Certifications:	07/12/2022 12:42	07/14/2022 16:41	WEL
307-24-4	* Perfluorohexanoic acid (PFHxA)	ND		ug/kg dry	0.248	1	EPA 537m Certifications:	07/12/2022 12:42	07/14/2022 16:41	WEL
375-85-9	* Perfluoroheptanoic acid (PFHpA)	ND		ug/kg dry	0.248	1	EPA 537m Certifications:	07/12/2022 12:42	07/14/2022 16:41	WEL
355-46-4	* Perfluorohexanesulfonic acid (PFHxS)	ND		ug/kg dry	0.248	1	EPA 537m Certifications:	07/12/2022 12:42	07/14/2022 16:41	WEL
335-67-1	* Perfluorooctanoic acid (PFOA)	ND		ug/kg dry	0.248	1	EPA 537m Certifications:	07/12/2022 12:42	07/14/2022 16:41	WEL
1763-23-1	* Perfluorooctanesulfonic acid (PFOS)	ND		ug/kg dry	0.248	1	EPA 537m Certifications:	07/12/2022 12:42	07/14/2022 16:41	WEL
375-95-1	* Perfluorononanoic acid (PFNA)	ND		ug/kg dry	0.248	1	EPA 537m Certifications:	07/12/2022 12:42	07/14/2022 16:41	WEL
335-76-2	* Perfluorodecanoic acid (PFDA)	ND		ug/kg dry	0.248	1	EPA 537m Certifications:	07/12/2022 12:42	07/14/2022 16:41	WEL
2058-94-8	* Perfluoroundecanoic acid (PFUnA)	ND		ug/kg dry	0.248	1	EPA 537m Certifications:	07/12/2022 12:42	07/14/2022 16:41	WEL
307-55-1	* Perfluorododecanoic acid (PFDoA)	ND		ug/kg dry	0.248	1	EPA 537m Certifications:	07/12/2022 12:42	07/14/2022 16:41	WEL
72629-94-8	* Perfluorotridecanoic acid (PFTrDA)	ND		ug/kg dry	0.248	1	EPA 537m Certifications:	07/12/2022 12:42	07/14/2022 16:41	WEL
376-06-7	* Perfluorotetradecanoic acid (PFTA)	ND		ug/kg dry	0.248	1	EPA 537m Certifications:	07/12/2022 12:42	07/14/2022 16:41	WEL
2355-31-9	* N-MeFOSAA	ND		ug/kg dry	0.248	1	EPA 537m Certifications:	07/12/2022 12:42	07/14/2022 16:41	WEL
2991-50-6	* N-EtFOSAA	ND		ug/kg dry	0.248	1	EPA 537m Certifications:	07/12/2022 12:42	07/14/2022 16:41	WEL
2706-90-3	* Perfluoropentanoic acid (PFPeA)	ND		ug/kg dry	0.248	1	EPA 537m Certifications:	07/12/2022 12:42	07/14/2022 16:41	WEL
754-91-6	* Perfluoro-1-octanesulfonamide (FOSA)	ND		ug/kg dry	0.248	1	EPA 537m Certifications:	07/12/2022 12:42	07/14/2022 16:41	WEL
375-92-8	* Perfluoro-1-heptanesulfonic acid (PFHpS)	ND		ug/kg dry	0.248	1	EPA 537m Certifications:	07/12/2022 12:42	07/14/2022 16:41	WEL
335-77-3	* Perfluoro-1-decanesulfonic acid (PFDS)	ND		ug/kg dry	0.248	1	EPA 537m Certifications:	07/12/2022 12:42	07/14/2022 16:41	WEL
27619-97-2	* 1H,1H,2H,2H-Perfluorooctanesulfonic acid (6:2 FTS)	ND		ug/kg dry	0.248	1	EPA 537m Certifications:	07/12/2022 12:42	07/14/2022 16:41	WEL
39108-34-4	* 1H,1H,2H,2H-Perfluorodecanesulfonic acid (8:2 FTS)	ND		ug/kg dry	0.248	1	EPA 537m Certifications:	07/12/2022 12:42	07/14/2022 16:41	WEL
375-22-4	* Perfluoro-n-butanoic acid (PFBA)	ND		ug/kg dry	0.248	1	EPA 537m Certifications:	07/12/2022 12:42	07/14/2022 16:41	WEL

Surrogate Recoveries	Result	Acceptance Range
Surrogate: M3PFBS	*68.3 %*	*25-150*
Surrogate: M5PFHxA	*78.9 %*	*25-150*
Surrogate: M4PFHpA	*83.4 %*	*25-150*

Sample Information

Client Sample ID: IMJC COMP-2 **York Sample ID:** 22G0348-02

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
22G0348	GCL69739	Soil	July 5, 2022 9:05 am	07/08/2022

PFAS by EPA 537 m **Log-in Notes:** **Sample Notes:**

Sample Prepared by Method: SPE PFAS Extraction-Soil-EPA 537m

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
	Surrogate: M3PFHxS	*83.7 %*		*25-150*						
	Surrogate: Perfluoro-n-[13C8]octanoic acid (M8PFOA)	*88.5 %*		*25-150*						
	Surrogate: M6PFDA	*62.1 %*		*25-150*						
	Surrogate: M7PFUdA	*51.4 %*		*25-150*						
	Surrogate: Perfluoro-n-[1,2-13C2]dodecanoic acid (MPFDoA)	*45.4 %*		*25-150*						
	Surrogate: M2PFTeDA	*64.0 %*		*10-150*						
	Surrogate: Perfluoro-n-[13C4]butanoic acid (MPFBA)	*75.2 %*		*25-150*						
	Surrogate: Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)	*79.3 %*		*25-150*						
	Surrogate: Perfluoro-n-[13C5]pentanoic acid (M5PFPeA)	*78.9 %*		*25-150*						
	Surrogate: Perfluoro-1-[13C8]octanesulfonamide (M8FOSA)	*49.8 %*		*10-150*						
	Surrogate: d3-N-MeFOSAA	*64.5 %*		*25-150*						
	Surrogate: d5-N-EtFOSAA	*61.2 %*		*25-150*						
	Surrogate: M2-6:2 FTS	*72.5 %*		*25-200*						
	Surrogate: M2-8:2 FTS	*96.4 %*		*25-200*						
	Surrogate: M9PFNA	*87.8 %*		*25-150*						

Total Solids **Log-in Notes:** **Sample Notes:**

Sample Prepared by Method: % Solids Prep

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
solids	*** % Solids**	**99.6**		%	0.100	1	SM 2540G	07/12/2022 14:23	07/12/2022 16:32	YR
							Certifications: CTDOH			

Sample Information

Client Sample ID: IMJC COMP-3 **York Sample ID:** 22G0348-03

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
22G0348	GCL69739	Soil	July 5, 2022 9:10 am	07/08/2022

PFAS by EPA 537 m **Log-in Notes:** **Sample Notes:**

Sample Prepared by Method: SPE PFAS Extraction-Soil-EPA 537m

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst

Sample Information

Client Sample ID: IMJC COMP-3 **York Sample ID:** 22G0348-03

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
22G0348	GCL69739	Soil	July 5, 2022 9:10 am	07/08/2022

PFAS by EPA 537 m **Log-in Notes:** **Sample Notes:**

Sample Prepared by Method: SPE PFAS Extraction-Soil-EPA 537m

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
375-73-5	* Perfluorobutanesulfonic acid (PFBS)	ND		ug/kg dry	0.249	1	EPA 537m Certifications:	07/12/2022 12:42	07/14/2022 17:07	WEL
307-24-4	* Perfluorohexanoic acid (PFHxA)	ND		ug/kg dry	0.249	1	EPA 537m Certifications:	07/12/2022 12:42	07/14/2022 17:07	WEL
375-85-9	* Perfluoroheptanoic acid (PFHpA)	ND		ug/kg dry	0.249	1	EPA 537m Certifications:	07/12/2022 12:42	07/14/2022 17:07	WEL
355-46-4	*** Perfluorohexanesulfonic acid (PFHxS)**	**0.704**		ug/kg dry	0.249	1	EPA 537m Certifications:	07/12/2022 12:42	07/14/2022 17:07	WEL
335-67-1	* Perfluorooctanoic acid (PFOA)	ND		ug/kg dry	0.249	1	EPA 537m Certifications:	07/12/2022 12:42	07/14/2022 17:07	WEL
1763-23-1	* Perfluorooctanesulfonic acid (PFOS)	ND		ug/kg dry	0.249	1	EPA 537m Certifications:	07/12/2022 12:42	07/14/2022 17:07	WEL
375-95-1	* Perfluorononanoic acid (PFNA)	ND		ug/kg dry	0.249	1	EPA 537m Certifications:	07/12/2022 12:42	07/14/2022 17:07	WEL
335-76-2	* Perfluorodecanoic acid (PFDA)	ND		ug/kg dry	0.249	1	EPA 537m Certifications:	07/12/2022 12:42	07/14/2022 17:07	WEL
2058-94-8	* Perfluoroundecanoic acid (PFUnA)	ND		ug/kg dry	0.249	1	EPA 537m Certifications:	07/12/2022 12:42	07/14/2022 17:07	WEL
307-55-1	* Perfluorododecanoic acid (PFDoA)	ND		ug/kg dry	0.249	1	EPA 537m Certifications:	07/12/2022 12:42	07/14/2022 17:07	WEL
72629-94-8	* Perfluorotridecanoic acid (PFTrDA)	ND		ug/kg dry	0.249	1	EPA 537m Certifications:	07/12/2022 12:42	07/14/2022 17:07	WEL
376-06-7	* Perfluorotetradecanoic acid (PFTA)	ND		ug/kg dry	0.249	1	EPA 537m Certifications:	07/12/2022 12:42	07/14/2022 17:07	WEL
2355-31-9	* N-MeFOSAA	ND		ug/kg dry	0.249	1	EPA 537m Certifications:	07/12/2022 12:42	07/14/2022 17:07	WEL
2991-50-6	* N-EtFOSAA	ND		ug/kg dry	0.249	1	EPA 537m Certifications:	07/12/2022 12:42	07/14/2022 17:07	WEL
2706-90-3	* Perfluoropentanoic acid (PFPeA)	ND		ug/kg dry	0.249	1	EPA 537m Certifications:	07/12/2022 12:42	07/14/2022 17:07	WEL
754-91-6	* Perfluoro-1-octanesulfonamide (FOSA)	ND		ug/kg dry	0.249	1	EPA 537m Certifications:	07/12/2022 12:42	07/14/2022 17:07	WEL
375-92-8	* Perfluoro-1-heptanesulfonic acid (PFHpS)	ND		ug/kg dry	0.249	1	EPA 537m Certifications:	07/12/2022 12:42	07/14/2022 17:07	WEL
335-77-3	* Perfluoro-1-decanesulfonic acid (PFDS)	ND		ug/kg dry	0.249	1	EPA 537m Certifications:	07/12/2022 12:42	07/14/2022 17:07	WEL
27619-97-2	* 1H,1H,2H,2H-Perfluorooctanesulfonic acid (6:2 FTS)	ND		ug/kg dry	0.249	1	EPA 537m Certifications:	07/12/2022 12:42	07/14/2022 17:07	WEL
39108-34-4	* 1H,1H,2H,2H-Perfluorodecanesulfonic acid (8:2 FTS)	ND		ug/kg dry	0.249	1	EPA 537m Certifications:	07/12/2022 12:42	07/14/2022 17:07	WEL
375-22-4	* Perfluoro-n-butanoic acid (PFBA)	ND		ug/kg dry	0.249	1	EPA 537m Certifications:	07/12/2022 12:42	07/14/2022 17:07	WEL

Surrogate Recoveries	Result	Acceptance Range
Surrogate: M3PFBS	*67.2 %*	*25-150*

Sample Information

Client Sample ID: **IMJC COMP-3** **York Sample ID:** **22G0348-03**

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
22G0348	GCL69739	Soil	July 5, 2022 9:10 am	07/08/2022

PFAS by EPA 537 m

Log-in Notes: **Sample Notes:**

Sample Prepared by Method: SPE PFAS Extraction-Soil-EPA 537m

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
	Surrogate: M5PFHxA	*79.1 %*		*25-150*						
	Surrogate: M4PFHpA	*87.3 %*		*25-150*						
	Surrogate: M3PFHxS	*74.5 %*		*25-150*						
	Surrogate: Perfluoro-n-[13C8]octanoic acid (M8PFOA)	*95.3 %*		*25-150*						
	Surrogate: M6PFDA	*54.7 %*		*25-150*						
	Surrogate: M7PFUdA	*48.7 %*		*25-150*						
	Surrogate: Perfluoro-n-[1,2-13C2]dodecanoic acid (MPFDoA)	*46.2 %*		*25-150*						
	Surrogate: M2PFTeDA	*65.2 %*		*10-150*						
	Surrogate: Perfluoro-n-[13C4]butanoic acid (MPFBA)	*75.0 %*		*25-150*						
	Surrogate: Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)	*54.4 %*		*25-150*						
	Surrogate: Perfluoro-n-[13C5]pentanoic acid (M5PFPeA)	*76.9 %*		*25-150*						
	Surrogate: Perfluoro-1-[13C8]octanesulfonamide (M8FOSA)	*46.3 %*		*10-150*						
	Surrogate: d3-N-MeFOSAA	*51.5 %*		*25-150*						
	Surrogate: d5-N-EtFOSAA	*47.3 %*		*25-150*						
	Surrogate: M2-6:2 FTS	*71.6 %*		*25-200*						
	Surrogate: M2-8:2 FTS	*80.2 %*		*25-200*						
	Surrogate: M9PFNA	*73.4 %*		*25-150*						

Total Solids

Log-in Notes: **Sample Notes:**

Sample Prepared by Method: % Solids Prep

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
solids	*** % Solids**	**99.8**		%	0.100	1	SM 2540G Certifications: CTDOH	07/12/2022 14:23	07/12/2022 16:32	YR

Analytical Batch Summary

Batch ID: BG20572 **Preparation Method:** SPE PFAS Extraction-Soil-EPA 537m **Prepared By:** ESJ

YORK Sample ID	Client Sample ID	Preparation Date
22G0348-01	IMJC COMP-1	07/12/22
22G0348-02	IMJC COMP-2	07/12/22
22G0348-03	IMJC COMP-3	07/12/22
BG20572-BLK1	Blank	07/12/22
BG20572-BS1	LCS	07/12/22
BG20572-MS1	Matrix Spike	07/12/22
BG20572-MSD1	Matrix Spike Dup	07/12/22

Batch ID: BG20605 **Preparation Method:** % Solids Prep **Prepared By:** YR

YORK Sample ID	Client Sample ID	Preparation Date
22G0348-01	IMJC COMP-1	07/12/22
22G0348-02	IMJC COMP-2	07/12/22
22G0348-03	IMJC COMP-3	07/12/22
BG20605-DUP1	Duplicate	07/12/22

PFAS Target compounds by LC/MS-MS - Quality Control Data

York Analytical Laboratories, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source* Result	%REC	%REC Limits	Flag	RPD	RPD Limit	Flag
Batch BG20572 - SPE PFAS Extraction-Soil-EPA 537m											
Blank (BG20572-BLK1)								Prepared: 07/12/2022 Analyzed: 07/14/2022			
Perfluorobutanesulfonic acid (PFBS)	ND	0.246	ug/kg wet								
Perfluorohexanoic acid (PFHxA)	ND	0.246	"								
Perfluoroheptanoic acid (PFHpA)	ND	0.246	"								
Perfluorohexanesulfonic acid (PFHxS)	ND	0.246	"								
Perfluorooctanoic acid (PFOA)	ND	0.246	"								
Perfluorooctanesulfonic acid (PFOS)	ND	0.246	"								
Perfluorononanoic acid (PFNA)	ND	0.246	"								
Perfluorodecanoic acid (PFDA)	ND	0.246	"								
Perfluoroundecanoic acid (PFUnA)	ND	0.246	"								
Perfluorododecanoic acid (PFDoA)	ND	0.246	"								
Perfluorotridecanoic acid (PFTrDA)	ND	0.246	"								
Perfluorotetradecanoic acid (PFTA)	ND	0.246	"								
N-MeFOSAA	ND	0.246	"								
N-EtFOSAA	ND	0.246	"								
Perfluoropentanoic acid (PFPeA)	ND	0.246	"								
Perfluoro-1-octanesulfonamide (FOSA)	ND	0.246	"								
Perfluoro-1-heptanesulfonic acid (PFHpS)	ND	0.246	"								
Perfluoro-1-decanesulfonic acid (PFDS)	ND	0.246	"								
1H,1H,2H,2H-Perfluorooctanesulfonic acid (6:2 FTS)	ND	0.246	"								
1H,1H,2H,2H-Perfluorodecanesulfonic acid (8:2 FTS)	ND	0.246	"								
Perfluoro-n-butanoic acid (PFBA)	ND	0.246	"								
Surrogate: M3PFBS	*2.92*		*"*	*4.58*		*63.8*	*25-150*				
Surrogate: M5PFHxA	*3.72*		*"*	*4.93*		*75.4*	*25-150*				
Surrogate: M4PFHpA	*4.08*		*"*	*4.93*		*82.7*	*25-150*				
Surrogate: M3PFHxS	*3.58*		*"*	*4.66*		*76.8*	*25-150*				
Surrogate: Perfluoro-n-[13C8]octanoic acid (M8PFOA)	*4.46*		*"*	*4.93*		*90.5*	*25-150*				
Surrogate: M6PFDA	*3.61*		*"*	*4.93*		*73.3*	*25-150*				
Surrogate: M7PFUdA	*3.31*		*"*	*4.93*		*67.2*	*25-150*				
Surrogate: Perfluoro-n-[1,2-13C2]dodecanoic acid (MPFDoA)	*3.07*		*"*	*4.93*		*62.3*	*25-150*				
Surrogate: M2PFTeDA	*3.57*		*"*	*4.93*		*72.3*	*10-150*				
Surrogate: Perfluoro-n-[13C4]butanoic acid (MPFBA)	*3.52*		*"*	*4.93*		*71.5*	*25-150*				
Surrogate: Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)	*4.05*		*"*	*4.72*		*85.9*	*25-150*				
Surrogate: Perfluoro-n-[13C5]pentanoic acid (M5PFPeA)	*3.68*		*"*	*4.93*		*74.6*	*25-150*				
Surrogate: Perfluoro-1-[13C8]octanesulfonamide (M8FOSA)	*2.98*		*"*	*4.93*		*60.5*	*10-150*				
Surrogate: d3-N-MeFOSAA	*3.62*		*"*	*4.93*		*73.4*	*25-150*				
Surrogate: d5-N-EtFOSAA	*3.37*		*"*	*4.93*		*68.3*	*25-150*				
Surrogate: M2-6:2 FTS	*3.35*		*"*	*4.68*		*71.7*	*25-200*				
Surrogate: M2-8:2 FTS	*5.28*		*"*	*4.72*		*112*	*25-200*				
Surrogate: M9PFNA	*3.31*		*"*	*4.93*		*67.1*	*25-150*				

PFAS Target compounds by LC/MS-MS - Quality Control Data

York Analytical Laboratories, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source* Result	%REC	%REC Limits	Flag	RPD	RPD Limit	Flag
Batch BG20572 - SPE PFAS Extraction-Soil-EPA 537m											
LCS (BG20572-BS1)							Prepared: 07/12/2022 Analyzed: 07/14/2022				
Perfluorobutanesulfonic acid (PFBS)	5.00	0.246	ug/kg wet	4.35		115	50-130				
Perfluorohexanoic acid (PFHxA)	5.22	0.246	"	4.92		106	50-130				
Perfluoroheptanoic acid (PFHpA)	4.80	0.246	"	4.92		97.6	50-130				
Perfluorohexanesulfonic acid (PFHxS)	4.68	0.246	"	4.47		105	50-130				
Perfluorooctanoic acid (PFOA)	4.71	0.246	"	4.92		95.8	50-130				
Perfluorooctanesulfonic acid (PFOS)	4.21	0.246	"	4.55		92.6	50-130				
Perfluorononanoic acid (PFNA)	5.32	0.246	"	4.92		108	50-130				
Perfluorodecanoic acid (PFDA)	6.19	0.246	"	4.92		126	50-130				
Perfluoroundecanoic acid (PFUnA)	5.43	0.246	"	4.92		110	50-130				
Perfluorododecanoic acid (PFDoA)	5.24	0.246	"	4.92		107	50-130				
Perfluorotridecanoic acid (PFTrDA)	4.58	0.246	"	4.92		93.2	50-130				
Perfluorotetradecanoic acid (PFTA)	4.87	0.246	"	4.92		99.0	50-130				
N-MeFOSAA	5.92	0.246	"	4.92		120	50-130				
N-EtFOSAA	4.99	0.246	"	4.92		101	50-130				
Perfluoropentanoic acid (PFPeA)	5.36	0.246	"	4.92		109	50-130				
Perfluoro-1-octanesulfonamide (FOSA)	5.41	0.246	"	4.92		110	50-130				
Perfluoro-1-heptanesulfonic acid (PFHpS)	4.67	0.246	"	4.70		99.4	50-130				
Perfluoro-1-decanesulfonic acid (PFDS)	3.33	0.246	"	4.74		70.2	50-130				
1H,1H,2H,2H-Perfluorooctanesulfonic acid (6:2 FTS)	6.03	0.246	"	4.67		129	50-200				
1H,1H,2H,2H-Perfluorodecanesulfonic acid (8:2 FTS)	4.15	0.246	"	4.72		88.0	50-200				
Perfluoro-n-butanoic acid (PFBA)	5.51	0.246	"	4.92		112	50-130				
Surrogate: M3PFBS	*3.05*		*"*	*4.57*		*66.7*	*25-150*				
Surrogate: M5PFHxA	*3.92*		*"*	*4.92*		*79.8*	*25-150*				
Surrogate: M4PFHpA	*4.22*		*"*	*4.92*		*85.9*	*25-150*				
Surrogate: M3PFHxS	*3.67*		*"*	*4.65*		*78.9*	*25-150*				
Surrogate: Perfluoro-n-[13C8]octanoic acid (M8PFOA)	*4.44*		*"*	*4.92*		*90.4*	*25-150*				
Surrogate: M6PFDA	*3.36*		*"*	*4.92*		*68.4*	*25-150*				
Surrogate: M7PFUdA	*3.37*		*"*	*4.92*		*68.5*	*25-150*				
Surrogate: Perfluoro-n-[1,2-13C2]dodecanoic acid (MPFDoA)	*3.57*		*"*	*4.92*		*72.6*	*25-150*				
Surrogate: M2PFTeDA	*3.68*		*"*	*4.92*		*74.8*	*10-150*				
Surrogate: Perfluoro-n-[13C4]butanoic acid (MPFBA)	*3.64*		*"*	*4.92*		*74.1*	*25-150*				
Surrogate: Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)	*4.14*		*"*	*4.71*		*88.0*	*25-150*				
Surrogate: Perfluoro-n-[13C5]pentanoic acid (M5PFPeA)	*3.81*		*"*	*4.92*		*77.4*	*25-150*				
Surrogate: Perfluoro-1-[13C8]octanesulfonamide (M8FOSA)	*3.01*		*"*	*4.92*		*61.3*	*10-150*				
Surrogate: d3-N-MeFOSAA	*3.26*		*"*	*4.92*		*66.4*	*25-150*				
Surrogate: d5-N-EtFOSAA	*4.09*		*"*	*4.92*		*83.1*	*25-150*				
Surrogate: M2-6:2 FTS	*4.13*		*"*	*4.67*		*88.6*	*25-200*				
Surrogate: M2-8:2 FTS	*5.57*		*"*	*4.71*		*118*	*25-200*				
Surrogate: M9PFNA	*3.89*		*"*	*4.92*		*79.2*	*25-150*				

PFAS Target compounds by LC/MS-MS - Quality Control Data

York Analytical Laboratories, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source* Result	%REC	%REC Limits	Flag	RPD	RPD Limit	Flag
Batch BG20572 - SPE PFAS Extraction-Soil-EPA 537m											
Matrix Spike (BG20572-MS1)	*Source sample: 22G0336-05 (Matrix Spike)						Prepared: 07/12/2022 Analyzed: 07/14/2022				
Perfluorobutanesulfonic acid (PFBS)	5.12	0.252	ug/kg dry	4.47	ND	115	25-150				
Perfluorohexanoic acid (PFHxA)	5.59	0.252	"	5.05	ND	111	25-150				
Perfluoroheptanoic acid (PFHpA)	4.53	0.252	"	5.05	ND	89.7	25-150				
Perfluorohexanesulfonic acid (PFHxS)	4.35	0.252	"	4.59	ND	94.7	25-150				
Perfluorooctanoic acid (PFOA)	4.80	0.252	"	5.05	ND	95.2	25-150				
Perfluorooctanesulfonic acid (PFOS)	5.10	0.252	"	4.67	ND	109	25-150				
Perfluorononanoic acid (PFNA)	5.14	0.252	"	5.05	ND	102	25-150				
Perfluorodecanoic acid (PFDA)	5.59	0.252	"	5.05	ND	111	25-150				
Perfluoroundecanoic acid (PFUnA)	5.08	0.252	"	5.05	ND	101	25-150				
Perfluorododecanoic acid (PFDoA)	5.45	0.252	"	5.05	ND	108	25-150				
Perfluorotridecanoic acid (PFTrDA)	6.32	0.252	"	5.05	0.0591	124	25-150				
Perfluorotetradecanoic acid (PFTA)	4.80	0.252	"	5.05	ND	95.2	25-150				
N-MeFOSAA	5.69	0.252	"	5.05	ND	113	25-150				
N-EtFOSAA	5.66	0.252	"	5.05	ND	112	25-150				
Perfluoropentanoic acid (PFPeA)	5.29	0.252	"	5.05	ND	105	25-150				
Perfluoro-1-octanesulfonamide (FOSA)	5.62	0.252	"	5.05	ND	111	25-150				
Perfluoro-1-heptanesulfonic acid (PFHpS)	5.42	0.252	"	4.82	ND	112	25-150				
Perfluoro-1-decanesulfonic acid (PFDS)	3.65	0.252	"	4.87	ND	74.9	25-150				
1H,1H,2H,2H-Perfluorooctanesulfonic acid (6:2 FTS)	7.62	0.252	"	4.79	ND	159	25-200				
1H,1H,2H,2H-Perfluorodecanesulfonic acid (8:2 FTS)	3.96	0.252	"	4.84	ND	81.8	25-200				
Perfluoro-n-butanoic acid (PFBA)	5.25	0.252	"	5.05	ND	104	25-150				
Surrogate: M3PFBS	*3.05*		*"*	*4.69*		*65.1*	*25-150*				
Surrogate: M5PFHxA	*3.94*		*"*	*5.05*		*78.1*	*25-150*				
Surrogate: M4PFHpA	*4.41*		*"*	*5.05*		*87.5*	*25-150*				
Surrogate: M3PFHxS	*4.16*		*"*	*4.77*		*87.1*	*25-150*				
Surrogate: Perfluoro-n-[13C8]octanoic acid (M8PFOA)	*4.33*		*"*	*5.05*		*85.7*	*25-150*				
Surrogate: M6PFDA	*3.61*		*"*	*5.05*		*71.5*	*25-150*				
Surrogate: M7PFUdA	*3.11*		*"*	*5.05*		*61.6*	*25-150*				
Surrogate: Perfluoro-n-[1,2-13C2]dodecanoic acid (MPFDoA)	*3.06*		*"*	*5.05*		*60.7*	*25-150*				
Surrogate: M2PFTeDA	*3.47*		*"*	*5.05*		*68.8*	*10-150*				
Surrogate: Perfluoro-n-[13C4]butanoic acid (MPFBA)	*3.75*		*"*	*5.05*		*74.4*	*25-150*				
Surrogate: Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)	*3.55*		*"*	*4.83*		*73.6*	*25-150*				
Surrogate: Perfluoro-n-[13C5]pentanoic acid (M5PFPeA)	*4.00*		*"*	*5.05*		*79.3*	*25-150*				
Surrogate: Perfluoro-1-[13C8]octanesulfonamide (M8FOSA)	*2.89*		*"*	*5.05*		*57.3*	*10-150*				
Surrogate: d3-N-MeFOSAA	*2.88*		*"*	*5.05*		*57.0*	*25-150*				
Surrogate: d5-N-EtFOSAA	*3.45*		*"*	*5.05*		*68.4*	*25-150*				
Surrogate: M2-6:2 FTS	*3.69*		*"*	*4.79*		*77.0*	*25-200*				
Surrogate: M2-8:2 FTS	*5.14*		*"*	*4.83*		*106*	*25-200*				
Surrogate: M9PFNA	*3.87*		*"*	*5.05*		*76.8*	*25-150*				

PFAS Target compounds by LC/MS-MS - Quality Control Data

York Analytical Laboratories, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source* Result	%REC	%REC Limits	Flag	RPD	RPD Limit	Flag
Batch BG20572 - SPE PFAS Extraction-Soil-EPA 537m											
Matrix Spike Dup (BG20572-MSD1)	*Source sample: 22G0336-05 (Matrix Spike Dup)							Prepared: 07/12/2022 Analyzed: 07/14/2022			
Perfluorobutanesulfonic acid (PFBS)	5.09	0.251	ug/kg dry	4.45	ND	114	25-150		0.641	35	
Perfluorohexanoic acid (PFHxA)	5.33	0.251	"	5.02	ND	106	25-150		4.76	35	
Perfluoroheptanoic acid (PFHpA)	4.55	0.251	"	5.02	ND	90.6	25-150		0.544	35	
Perfluorohexanesulfonic acid (PFHxS)	4.53	0.251	"	4.57	ND	99.2	25-150		4.20	35	
Perfluorooctanoic acid (PFOA)	5.20	0.251	"	5.02	ND	104	25-150		7.95	35	
Perfluorooctanesulfonic acid (PFOS)	4.56	0.251	"	4.65	ND	98.1	25-150		11.1	35	
Perfluorononanoic acid (PFNA)	4.80	0.251	"	5.02	ND	95.5	25-150		7.00	35	
Perfluorodecanoic acid (PFDA)	5.58	0.251	"	5.02	ND	111	25-150		0.297	35	
Perfluoroundecanoic acid (PFUnA)	5.02	0.251	"	5.02	ND	99.8	25-150		1.20	35	
Perfluorododecanoic acid (PFDoA)	5.74	0.251	"	5.02	ND	114	25-150		5.19	35	
Perfluorotridecanoic acid (PFTrDA)	7.81	0.251	"	5.02	0.0591	154	25-150	High Bias	21.1	35	
Perfluorotetradecanoic acid (PFTA)	4.71	0.251	"	5.02	ND	93.8	25-150		1.92	35	
N-MeFOSAA	5.72	0.251	"	5.02	ND	114	25-150		0.440	35	
N-EtFOSAA	4.52	0.251	"	5.02	ND	90.0	25-150		22.5	35	
Perfluoropentanoic acid (PFPeA)	5.28	0.251	"	5.02	ND	105	25-150		0.125	35	
Perfluoro-1-octanesulfonamide (FOSA)	6.07	0.251	"	5.02	ND	121	25-150		7.81	35	
Perfluoro-1-heptanesulfonic acid (PFHpS)	5.05	0.251	"	4.80	ND	105	25-150		6.95	35	
Perfluoro-1-decanesulfonic acid (PFDS)	3.06	0.251	"	4.85	ND	63.2	25-150		17.5	35	
1H,1H,2H,2H-Perfluorooctanesulfonic acid (6:2 FTS)	4.61	0.251	"	4.77	ND	96.6	25-200		49.2	35	Non-dir.
1H,1H,2H,2H-Perfluorodecanesulfonic acid (8:2 FTS)	3.86	0.251	"	4.82	ND	80.1	25-200		2.52	35	
Perfluoro-n-butanoic acid (PFBA)	5.26	0.251	"	5.02	ND	105	25-150		0.141	35	
Surrogate: M3PFBS	*3.01*		*"*	*4.67*		*64.6*	*25-150*				
Surrogate: M5PFHxA	*3.86*		*"*	*5.02*		*76.9*	*25-150*				
Surrogate: M4PFHpA	*4.09*		*"*	*5.02*		*81.5*	*25-150*				
Surrogate: M3PFHxS	*3.82*		*"*	*4.75*		*80.4*	*25-150*				
Surrogate: Perfluoro-n-[13C8]octanoic acid (M8PFOA)	*4.13*		*"*	*5.02*		*82.3*	*25-150*				
Surrogate: M6PFDA	*3.24*		*"*	*5.02*		*64.6*	*25-150*				
Surrogate: M7PFUdA	*2.81*		*"*	*5.02*		*55.9*	*25-150*				
Surrogate: Perfluoro-n-[1,2-13C2]dodecanoic acid (MPFDoA)	*2.58*		*"*	*5.02*		*51.4*	*25-150*				
Surrogate: M2PFTeDA	*3.41*		*"*	*5.02*		*67.9*	*10-150*				
Surrogate: Perfluoro-n-[13C4]butanoic acid (MPFBA)	*3.83*		*"*	*5.02*		*76.2*	*25-150*				
Surrogate: Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)	*3.81*		*"*	*4.81*		*79.2*	*25-150*				
Surrogate: Perfluoro-n-[13C5]pentanoic acid (M5PFPeA)	*3.83*		*"*	*5.02*		*76.2*	*25-150*				
Surrogate: Perfluoro-1-[13C8]octanesulfonamide (M8FOSA)	*2.40*		*"*	*5.02*		*47.9*	*10-150*				
Surrogate: d3-N-MeFOSAA	*2.75*		*"*	*5.02*		*54.6*	*25-150*				
Surrogate: d5-N-EtFOSAA	*3.83*		*"*	*5.02*		*76.3*	*25-150*				
Surrogate: M2-6:2 FTS	*4.16*		*"*	*4.77*		*87.3*	*25-200*				
Surrogate: M2-8:2 FTS	*4.55*		*"*	*4.81*		*94.5*	*25-200*				
Surrogate: M9PFNA	*3.80*		*"*	*5.02*		*75.7*	*25-150*				

Miscellaneous Physical Parameters - Quality Control Data

York Analytical Laboratories, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source* Result	%REC	%REC Limits	Flag	RPD	RPD Limit	Flag
Batch BG20605 - % Solids Prep											
Duplicate (BG20605-DUP1)	*Source sample: 22G0336-05 (Duplicate)							Prepared & Analyzed: 07/12/2022			
% Solids	98.1	0.100	%		97.8				0.311	20	

Sample and Data Qualifiers Relating to This Work Order

QR-02	The RPD result exceeded the QC control limits; however, both percent recoveries were acceptable. Sample results for the QC batch were accepted based on percent recoveries and completeness of QC data.
PFAS-MSH	The recovery for this matrix spike compound was above control limits possibly due to matrix effects or non-homogenieity of the sample verses the native sample

Definitions and Other Explanations

*	Analyte is not certified or the state of the samples origination does not offer certification for the Analyte.
ND	NOT DETECTED - the analyte is not detected at the Reported to level (LOQ/RL or LOD/MDL)
RL	REPORTING LIMIT - the minimum reportable value based upon the lowest point in the analyte calibration curve.
LOQ	LIMIT OF QUANTITATION - the minimum concentration of a target analyte that can be reported within a specified degree of confidence. This is the lowest point in an analyte calibration curve that has been subjected to all steps of the processing/analysis and verified to meet defined criteria. This is based upon NELAC 2009 Standards and applies to all analyses.
LOD	LIMIT OF DETECTION - a verified estimate of the minimum concentration of a substance in a given matrix that an analytical process can reliably detect. This is based upon NELAC 2009 Standards and applies to all analyses conducted under the auspices of EPA SW-846.
MDL	METHOD DETECTION LIMIT - a statistically derived estimate of the minimum amount of a substance an analytical system can reliably detect with a 99% confidence that the concentration of the substance is greater than zero. This is based upon 40 CFR Part 136 Appendix B and applies only to EPA 600 and 200 series methods.
Reported to	This indicates that the data for a particular analysis is reported to either the LOD/MDL, or the LOQ/RL. In cases where the "Reported to" is located above the LOD/MDL, any value between this and the LOQ represents an estimated value which is "J" flagged accordingly. This applies to volatile and semi-volatile target compounds only.
NR	Not reported
RPD	Relative Percent Difference
Wet	The data has been reported on an as-received (wet weight) basis
Low Bias	Low Bias flag indicates that the recovery of the flagged analyte is below the laboratory or regulatory lower control limit. The data user should take note that this analyte may be biased low but should evaluate multiple lines of evidence including the LCS and site-specific MS/MSD data to draw bias conclusions. In cases where no site-specific MS/MSD was requested, only the LCS data can be used to evaluate such bias.
High Bias	High Bias flag indicates that the recovery of the flagged analyte is above the laboratory or regulatory upper control limit. The data user should take note that this analyte may be biased high but should evaluate multiple lines of evidence including the LCS and site-specific MS/MSD data to draw bias conclusions. In cases where no site-specific MS/MSD was requested, only the LCS data can be used to evaluate such bias.
Non-Dir.	Non-dir. flag (Non-Directional Bias) indicates that the Relative Percent Difference (RPD) (a measure of precision) among the MS and MSD data is outside the laboratory or regulatory control limit. This alerts the data user where the MS and MSD are from site-specific samples that the RPD is high due to either non-homogeneous distribution of target analyte between the MS/MSD or indicates poor reproducibility for other reasons.

If EPA SW-846 method 8270 is included herein it is noted that the target compound N-nitrosodiphenylamine (NDPA) decomposes in the gas chromatographic inlet and cannot be separated from diphenylamine (DPA). These results could actually represent 100% DPA, 100% NDPA or some combination of the two. For this reason, York reports the combined result for n-nitrosodiphenylamine and diphenylamine for either of these compounds as a combined concentration as Diphenylamine.

If Total PCBs are detected and the target aroclors reported are "Not detected", the Total PCB value is reported due to the presence of either or both Aroclors 1262 and 1268 which are non-target aroclors for some regulatory lists.

2-chloroethylvinyl ether readily breaks down under acidic conditions. Samples that are acid preserved, including standards will exhibit breakdown. The data user should take note.

Certification for pH is no longer offered by NYDOH ELAP.

Semi-Volatile and Volatile analyses are reported down to the LOD/MDL, with values between the LOD/MDL and the LOQ being "J" flagged as estimated results.

For analyses by EPA SW-846-8270D, the Limit of Quantitation (LOQ) reported for benzidine is based upon the lowest standard used for calibration and is not a verified LOQ due to this compound's propensity for oxidative losses during extraction/concentration procedures and non-reproducible chromatographic performance.

22G0348

Cooler: Yes ☐ No ☐
Coolant: IPK ☐ ICE ☐ No ☐

Temp 2.1 °C Pg of

PHOENIX Environmental Laboratories, Inc.

CHAIN OF CUSTODY RECORD

Page 1 of 1

587 East Middle Turnpike, P.O. Box 370, Manchester, CT 06040
Email: info@phoenixlabs.com Fax (860) 645-0823
Client Services (860) 645-8726

Contact Options:
☐ Fax: 860-645-0823
☐ Phone: 800-827-5426
☐ Email: HelenG@PhoenixLabs.com

Customer: York Analytical Laboratories
Address: 120 Research Drive
Stratford, CT
(203) 325-1371

Project #: GCL69739
Report to: HelenG@PhoenixLabs.com / Helen Geoghegan
Invoice to: AccountsPayable@PhoenixLabs.com
Quote# :

Project P.O: GCL69739

This section MUST be completed with Bottle Quantities.

Client Sample - Information - Identification

Sampler's Signature _____ Date: _____

Matrix Code:
DW=Drinking Water **GW**=Ground Water **SW**=Surface Water **WW**=Waste Water
RW=Raw Water **SE**=Sediment **SL**=Sludge **S**=Soil **SD**=Solid **W**=Wipe
OIL=Oil **B**=Bulk **L**=Liquid

Analysis Request

	Phoenix Sample ID	Sample Matrix	Date Sampled	Time Sampled	PFAS (21) E537 modified	8oz HDPE Plastic As Is
	IMJC COMP-1	SOIL	7/5/2022	9:00 AM	x	1
	IMJC COMP-2	SOIL	7/5/2022	9:05 AM	x	1
	IMJC COMP-3	SOIL	7/5/2022	9:10 AM	x	1

Relinquished by:	Accepted by:	Date:	Time:
[signature]	[signature]	7.7.22	0715
[signature]	[signature]	7.8.22	1550

Turnaround:
☐ 1 Day
☐ 2 Days
☐ 3 Days
☐ 5 Days
☐ 10 Days
☒ Standard
☐ Other_____

Report Type:
☒ Standard PDF
☐ Full Data Package
☐ NJ Reduced Deliverable
☐ NJ Full Deliverable
☒ NY ASP B

EDD Format:
☐ Excel
☐ GIS/Key
☐ EQuIS
☐ NJ Hazsite EDD
☐ NY EZ EDD (ASP)
☐ Other:_____

State Criteria:
NJ: Impact to GW Soil Screening
NJ: Res. Criteria Remediation

What State were samples collected?
~~NJ~~ NY

Comments, Special Requirements or Regulations:

Please send notice as soon as possible not exceeding 24 hours of obtaining valid data, of the results of all drinking water samples that exceed any EPA or Department-established maximum contaminant level, maximum residual disinfectant level or reportable concentration.

Please notify Phoenix Environmental Laboratories, Inc. immediately and prior to conducting analysis if certification not held for the analyses requested.

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Technical Report

prepared for:

Phoenix Environmental Laboratories, Inc.
P.O. Box 370, 587 East Middle Turnpike
Manchester CT, 06040
Attention: Helen Geoghegan

Report Date: 07/19/2022
Client Project ID: GCL69739
York Project (SDG) No.: 22G0348

Report Date: 07/19/2022
Client Project ID: GCL69739
York Project (SDG) No.: 22G0348

Phoenix Environmental Laboratories, Inc.
P.O. Box 370, 587 East Middle Turnpike
Manchester CT, 06040
Attention: Helen Geoghegan

Purpose and Results

This report contains the analytical data for the sample(s) identified on the attached chain-of-custody received in our laboratory on July 08, 2022 and listed below. The project was identified as your project: **GCL69739**.

The analyses were conducted utilizing appropriate EPA, Standard Methods, and ASTM methods as detailed in the data summary tables.

All samples were received in proper condition meeting the customary acceptance requirements for environmental samples except those indicated under the Sample and Analysis Qualifiers section of this report.

All analyses met the method and laboratory standard operating procedure requirements except as indicated by any data flags, the meaning of which are explained in the Sample and Data Qualifiers Relating to This Work Order section of this report and case narrative if applicable.

The results of the analyses, which are all reported on dry weight basis (soils) unless otherwise noted, are detailed in the following pages.

Please contact Client Services at 203.325.1371 with any questions regarding this report.

York Sample ID	Client Sample ID	Matrix	Date Collected	Date Received
22G0348-01	IMJC COMP-1	Soil	07/05/2022	07/08/2022
22G0348-02	IMJC COMP-2	Soil	07/05/2022	07/08/2022
22G0348-03	IMJC COMP-3	Soil	07/05/2022	07/08/2022

General Notes for York Project (SDG) No.: 22G0348

1. The RLs and MDLs (Reporting Limit and Method Detection Limit respectively) reported are adjusted for any dilution necessary due to the levels of target and/or non-target analytes and matrix interference. The RL(REPORTING LIMIT) is based upon the lowest standard utilized for the calibration where applicable.
2. Samples are retained for a period of thirty days after submittal of report, unless other arrangements are made.
3. York's liability for the above data is limited to the dollar value paid to York for the referenced project.
4. This report shall not be reproduced without the written approval of York Analytical Laboratories, Inc.
5. All analyses conducted met method or Laboratory SOP requirements. See the Sample and Data Qualifiers Section for further information.
6. It is noted that no analyses reported herein were subcontracted to another laboratory, unless noted in the report.
7. This report reflects results that relate only to the samples submitted on the attached chain-of-custody form(s) received by York.
8. Analyses conducted at York Analytical Laboratories, Inc. Stratford, CT are indicated by NY Cert. No. 10854; those conducted at York Analytical Laboratories, Inc., Richmond Hill, NY are indicated by NY Cert. No. 12058.

Approved By: Cassie L. Mosher **Date:** 07/19/2022

Cassie L. Mosher
Laboratory Manager

Sample Information

Client Sample ID: **IMJC COMP-1** **York Sample ID:** **22G0348-01**

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
22G0348	GCL69739	Soil	July 5, 2022 9:00 am	07/08/2022

PFAS by EPA 537 m **Log-in Notes:** **Sample Notes:**

Sample Prepared by Method: SPE PFAS Extraction-Soil-EPA 537m

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
375-73-5	* Perfluorobutanesulfonic acid (PFBS)	ND		ug/kg dry	0.250	1	EPA 537m Certifications:	07/12/2022 12:42	07/14/2022 16:28	WEL
307-24-4	* Perfluorohexanoic acid (PFHxA)	ND		ug/kg dry	0.250	1	EPA 537m Certifications:	07/12/2022 12:42	07/14/2022 16:28	WEL
375-85-9	* Perfluoroheptanoic acid (PFHpA)	ND		ug/kg dry	0.250	1	EPA 537m Certifications:	07/12/2022 12:42	07/14/2022 16:28	WEL
355-46-4	* Perfluorohexanesulfonic acid (PFHxS)	ND		ug/kg dry	0.250	1	EPA 537m Certifications:	07/12/2022 12:42	07/14/2022 16:28	WEL
335-67-1	* Perfluorooctanoic acid (PFOA)	ND		ug/kg dry	0.250	1	EPA 537m Certifications:	07/12/2022 12:42	07/14/2022 16:28	WEL
1763-23-1	* Perfluorooctanesulfonic acid (PFOS)	ND		ug/kg dry	0.250	1	EPA 537m Certifications:	07/12/2022 12:42	07/14/2022 16:28	WEL
375-95-1	* Perfluorononanoic acid (PFNA)	ND		ug/kg dry	0.250	1	EPA 537m Certifications:	07/12/2022 12:42	07/14/2022 16:28	WEL
335-76-2	* Perfluorodecanoic acid (PFDA)	ND		ug/kg dry	0.250	1	EPA 537m Certifications:	07/12/2022 12:42	07/14/2022 16:28	WEL
2058-94-8	* Perfluoroundecanoic acid (PFUnA)	ND		ug/kg dry	0.250	1	EPA 537m Certifications:	07/12/2022 12:42	07/14/2022 16:28	WEL
307-55-1	* Perfluorododecanoic acid (PFDoA)	ND		ug/kg dry	0.250	1	EPA 537m Certifications:	07/12/2022 12:42	07/14/2022 16:28	WEL
72629-94-8	* Perfluorotridecanoic acid (PFTrDA)	ND		ug/kg dry	0.250	1	EPA 537m Certifications:	07/12/2022 12:42	07/14/2022 16:28	WEL
376-06-7	* Perfluorotetradecanoic acid (PFTA)	ND		ug/kg dry	0.250	1	EPA 537m Certifications:	07/12/2022 12:42	07/14/2022 16:28	WEL
2355-31-9	* N-MeFOSAA	ND		ug/kg dry	0.250	1	EPA 537m Certifications:	07/12/2022 12:42	07/14/2022 16:28	WEL
2991-50-6	* N-EtFOSAA	ND		ug/kg dry	0.250	1	EPA 537m Certifications:	07/12/2022 12:42	07/14/2022 16:28	WEL
2706-90-3	* Perfluoropentanoic acid (PFPeA)	ND		ug/kg dry	0.250	1	EPA 537m Certifications:	07/12/2022 12:42	07/14/2022 16:28	WEL
754-91-6	* Perfluoro-1-octanesulfonamide (FOSA)	ND		ug/kg dry	0.250	1	EPA 537m Certifications:	07/12/2022 12:42	07/14/2022 16:28	WEL
375-92-8	* Perfluoro-1-heptanesulfonic acid (PFHpS)	ND		ug/kg dry	0.250	1	EPA 537m Certifications:	07/12/2022 12:42	07/14/2022 16:28	WEL
335-77-3	* Perfluoro-1-decanesulfonic acid (PFDS)	ND		ug/kg dry	0.250	1	EPA 537m Certifications:	07/12/2022 12:42	07/14/2022 16:28	WEL
27619-97-2	* 1H,1H,2H,2H-Perfluorooctanesulfonic acid (6:2 FTS)	ND		ug/kg dry	0.250	1	EPA 537m Certifications:	07/12/2022 12:42	07/14/2022 16:28	WEL
39108-34-4	* 1H,1H,2H,2H-Perfluorodecanesulfonic acid (8:2 FTS)	ND		ug/kg dry	0.250	1	EPA 537m Certifications:	07/12/2022 12:42	07/14/2022 16:28	WEL
375-22-4	* Perfluoro-n-butanoic acid (PFBA)	ND		ug/kg dry	0.250	1	EPA 537m Certifications:	07/12/2022 12:42	07/14/2022 16:28	WEL

Surrogate Recoveries	Result	Acceptance Range
Surrogate: M3PFBS	*62.5 %*	*25-150*

Sample Information

Client Sample ID: IMJC COMP-1 **York Sample ID:** 22G0348-01

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
22G0348	GCL69739	Soil	July 5, 2022 9:00 am	07/08/2022

PFAS by EPA 537 m

Log-in Notes: **Sample Notes:**

Sample Prepared by Method: SPE PFAS Extraction-Soil-EPA 537m

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
	Surrogate: M5PFHxA	*78.0 %*		*25-150*						
	Surrogate: M4PFHpA	*82.9 %*		*25-150*						
	Surrogate: M3PFHxS	*84.7 %*		*25-150*						
	Surrogate: Perfluoro-n-[13C8]octanoic aci	*85.4 %*		*25-150*						
	Surrogate: M6PFDA	*68.8 %*		*25-150*						
	Surrogate: M7PFUdA	*62.5 %*		*25-150*						
	Surrogate: Perfluoro-n-[1,2-13C2]dodecan	*58.0 %*		*25-150*						
	Surrogate: M2PFTeDA	*68.3 %*		*10-150*						
	Surrogate: Perfluoro-n-[13C4]butanoic aci	*73.9 %*		*25-150*						
	Surrogate: Perfluoro-1-[13C8]octanesulfon	*66.5 %*		*25-150*						
	Surrogate: Perfluoro-n-[13C5]pentanoic ac	*73.9 %*		*25-150*						
	Surrogate: Perfluoro-1-[13C8]octanesulfon	*52.1 %*		*10-150*						
	Surrogate: d3-N-MeFOSAA	*65.2 %*		*25-150*						
	Surrogate: d5-N-EtFOSAA	*65.8 %*		*25-150*						
	Surrogate: M2-6:2 FTS	*75.6 %*		*25-200*						
	Surrogate: M2-8:2 FTS	*98.3 %*		*25-200*						
	Surrogate: M9PFNA	*81.4 %*		*25-150*						

Total Solids

Log-in Notes: **Sample Notes:**

Sample Prepared by Method: % Solids Prep

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
solids	*** % Solids**	**99.2**		%	0.100	1	SM 2540G	07/12/2022 14:23	07/12/2022 16:32	YR
						Certifications:	CTDOH			

Sample Information

Client Sample ID: IMJC COMP-2 **York Sample ID:** 22G0348-02

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
22G0348	GCL69739	Soil	July 5, 2022 9:05 am	07/08/2022

PFAS by EPA 537 m

Log-in Notes: **Sample Notes:**

Sample Prepared by Method: SPE PFAS Extraction-Soil-EPA 537m

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
375-73-5	* Perfluorobutanesulfonic acid (PFBS)	ND		ug/kg dry	0.248	1	EPA 537m	07/12/2022 12:42	07/14/2022 16:41	WEL
						Certifications:				
307-24-4	* Perfluorohexanoic acid (PFHxA)	ND		ug/kg dry	0.248	1	EPA 537m	07/12/2022 12:42	07/14/2022 16:41	WEL
						Certifications:				

Sample Information

Client Sample ID: IMJC COMP-2 **York Sample ID:** 22G0348-02

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
22G0348	GCL69739	Soil	July 5, 2022 9:05 am	07/08/2022

PFAS by EPA 537 m

Log-in Notes: **Sample Notes:**

Sample Prepared by Method: SPE PFAS Extraction-Soil-EPA 537m

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
375-85-9	* Perfluoroheptanoic acid (PFHpA)	ND		ug/kg dry	0.248	1	EPA 537m Certifications:	07/12/2022 12:42	07/14/2022 16:41	WEL
355-46-4	* Perfluorohexanesulfonic acid (PFHxS)	ND		ug/kg dry	0.248	1	EPA 537m Certifications:	07/12/2022 12:42	07/14/2022 16:41	WEL
335-67-1	* Perfluorooctanoic acid (PFOA)	ND		ug/kg dry	0.248	1	EPA 537m Certifications:	07/12/2022 12:42	07/14/2022 16:41	WEL
1763-23-1	* Perfluorooctanesulfonic acid (PFOS)	ND		ug/kg dry	0.248	1	EPA 537m Certifications:	07/12/2022 12:42	07/14/2022 16:41	WEL
375-95-1	* Perfluorononanoic acid (PFNA)	ND		ug/kg dry	0.248	1	EPA 537m Certifications:	07/12/2022 12:42	07/14/2022 16:41	WEL
335-76-2	* Perfluorodecanoic acid (PFDA)	ND		ug/kg dry	0.248	1	EPA 537m Certifications:	07/12/2022 12:42	07/14/2022 16:41	WEL
2058-94-8	* Perfluoroundecanoic acid (PFUnA)	ND		ug/kg dry	0.248	1	EPA 537m Certifications:	07/12/2022 12:42	07/14/2022 16:41	WEL
307-55-1	* Perfluorododecanoic acid (PFDoA)	ND		ug/kg dry	0.248	1	EPA 537m Certifications:	07/12/2022 12:42	07/14/2022 16:41	WEL
72629-94-8	* Perfluorotridecanoic acid (PFTrDA)	ND		ug/kg dry	0.248	1	EPA 537m Certifications:	07/12/2022 12:42	07/14/2022 16:41	WEL
376-06-7	* Perfluorotetradecanoic acid (PFTA)	ND		ug/kg dry	0.248	1	EPA 537m Certifications:	07/12/2022 12:42	07/14/2022 16:41	WEL
2355-31-9	* N-MeFOSAA	ND		ug/kg dry	0.248	1	EPA 537m Certifications:	07/12/2022 12:42	07/14/2022 16:41	WEL
2991-50-6	* N-EtFOSAA	ND		ug/kg dry	0.248	1	EPA 537m Certifications:	07/12/2022 12:42	07/14/2022 16:41	WEL
2706-90-3	* Perfluoropentanoic acid (PFPeA)	ND		ug/kg dry	0.248	1	EPA 537m Certifications:	07/12/2022 12:42	07/14/2022 16:41	WEL
754-91-6	* Perfluoro-1-octanesulfonamide (FOSA)	ND		ug/kg dry	0.248	1	EPA 537m Certifications:	07/12/2022 12:42	07/14/2022 16:41	WEL
375-92-8	* Perfluoro-1-heptanesulfonic acid (PFHpS)	ND		ug/kg dry	0.248	1	EPA 537m Certifications:	07/12/2022 12:42	07/14/2022 16:41	WEL
335-77-3	* Perfluoro-1-decanesulfonic acid (PFDS)	ND		ug/kg dry	0.248	1	EPA 537m Certifications:	07/12/2022 12:42	07/14/2022 16:41	WEL
27619-97-2	* 1H,1H,2H,2H-Perfluorooctanesulfonic acid (6:2 FTS)	ND		ug/kg dry	0.248	1	EPA 537m Certifications:	07/12/2022 12:42	07/14/2022 16:41	WEL
39108-34-4	* 1H,1H,2H,2H-Perfluorodecanesulfonic acid (8:2 FTS)	ND		ug/kg dry	0.248	1	EPA 537m Certifications:	07/12/2022 12:42	07/14/2022 16:41	WEL
375-22-4	* Perfluoro-n-butanoic acid (PFBA)	ND		ug/kg dry	0.248	1	EPA 537m Certifications:	07/12/2022 12:42	07/14/2022 16:41	WEL

Surrogate Recoveries	Result	Acceptance Range
Surrogate: M3PFBS	*68.3 %*	*25-150*
Surrogate: M5PFHxA	*78.9 %*	*25-150*
Surrogate: M4PFHpA	*83.4 %*	*25-150*
Surrogate: M3PFHxS	*83.7 %*	*25-150*
Surrogate: Perfluoro-n-[13C8]octanoic acid	*88.5 %*	*25-150*

Sample Information

Client Sample ID: IMJC COMP-2 **York Sample ID:** 22G0348-02

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
22G0348	GCL69739	Soil	July 5, 2022 9:05 am	07/08/2022

PFAS by EPA 537 m

Log-in Notes: **Sample Notes:**

Sample Prepared by Method: SPE PFAS Extraction-Soil-EPA 537m

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
	Surrogate: M6PFDA	*62.1 %*		*25-150*						
	Surrogate: M7PFUdA	*51.4 %*		*25-150*						
	Surrogate: Perfluoro-n-[1,2-13C2]dodecan	*45.4 %*		*25-150*						
	Surrogate: M2PFTeDA	*64.0 %*		*10-150*						
	Surrogate: Perfluoro-n-[13C4]butanoic aci	*75.2 %*		*25-150*						
	Surrogate: Perfluoro-1-[13C8]octanesulfon	*79.3 %*		*25-150*						
	Surrogate: Perfluoro-n-[13C5]pentanoic ac	*78.9 %*		*25-150*						
	Surrogate: Perfluoro-1-[13C8]octanesulfon	*49.8 %*		*10-150*						
	Surrogate: d3-N-MeFOSAA	*64.5 %*		*25-150*						
	Surrogate: d5-N-EtFOSAA	*61.2 %*		*25-150*						
	Surrogate: M2-6:2 FTS	*72.5 %*		*25-200*						
	Surrogate: M2-8:2 FTS	*96.4 %*		*25-200*						
	Surrogate: M9PFNA	*87.8 %*		*25-150*						

Total Solids

Log-in Notes: **Sample Notes:**

Sample Prepared by Method: % Solids Prep

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
solids	*** % Solids**	**99.6**		%	0.100	1	SM 2540G	07/12/2022 14:23	07/12/2022 16:32	YR
						Certifications:	CTDOH			

Sample Information

Client Sample ID: IMJC COMP-3 **York Sample ID:** 22G0348-03

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
22G0348	GCL69739	Soil	July 5, 2022 9:10 am	07/08/2022

PFAS by EPA 537 m

Log-in Notes: **Sample Notes:**

Sample Prepared by Method: SPE PFAS Extraction-Soil-EPA 537m

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
375-73-5	* Perfluorobutanesulfonic acid (PFBS)	ND		ug/kg dry	0.249	1	EPA 537m	07/12/2022 12:42	07/14/2022 17:07	WEL
						Certifications:				
307-24-4	* Perfluorohexanoic acid (PFHxA)	ND		ug/kg dry	0.249	1	EPA 537m	07/12/2022 12:42	07/14/2022 17:07	WEL
						Certifications:				
375-85-9	* Perfluoroheptanoic acid (PFHpA)	ND		ug/kg dry	0.249	1	EPA 537m	07/12/2022 12:42	07/14/2022 17:07	WEL
						Certifications:				
355-46-4	*** Perfluorohexanesulfonic acid (PFHxS)**	**0.704**		ug/kg dry	0.249	1	EPA 537m	07/12/2022 12:42	07/14/2022 17:07	WEL
						Certifications:				

Sample Information

Client Sample ID: IMJC COMP-3 **York Sample ID:** 22G0348-03

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
22G0348	GCL69739	Soil	July 5, 2022 9:10 am	07/08/2022

PFAS by EPA 537 m

Log-in Notes: **Sample Notes:**

Sample Prepared by Method: SPE PFAS Extraction-Soil-EPA 537m

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
335-67-1	* Perfluorooctanoic acid (PFOA)	ND		ug/kg dry	0.249	1	EPA 537m	07/12/2022 12:42	07/14/2022 17:07	WEL
						Certifications:				
1763-23-1	* Perfluorooctanesulfonic acid (PFOS)	ND		ug/kg dry	0.249	1	EPA 537m	07/12/2022 12:42	07/14/2022 17:07	WEL
						Certifications:				
375-95-1	* Perfluorononanoic acid (PFNA)	ND		ug/kg dry	0.249	1	EPA 537m	07/12/2022 12:42	07/14/2022 17:07	WEL
						Certifications:				
335-76-2	* Perfluorodecanoic acid (PFDA)	ND		ug/kg dry	0.249	1	EPA 537m	07/12/2022 12:42	07/14/2022 17:07	WEL
						Certifications:				
2058-94-8	* Perfluoroundecanoic acid (PFUnA)	ND		ug/kg dry	0.249	1	EPA 537m	07/12/2022 12:42	07/14/2022 17:07	WEL
						Certifications:				
307-55-1	* Perfluorododecanoic acid (PFDoA)	ND		ug/kg dry	0.249	1	EPA 537m	07/12/2022 12:42	07/14/2022 17:07	WEL
						Certifications:				
72629-94-8	* Perfluorotridecanoic acid (PFTrDA)	ND		ug/kg dry	0.249	1	EPA 537m	07/12/2022 12:42	07/14/2022 17:07	WEL
						Certifications:				
376-06-7	* Perfluorotetradecanoic acid (PFTA)	ND		ug/kg dry	0.249	1	EPA 537m	07/12/2022 12:42	07/14/2022 17:07	WEL
						Certifications:				
2355-31-9	* N-MeFOSAA	ND		ug/kg dry	0.249	1	EPA 537m	07/12/2022 12:42	07/14/2022 17:07	WEL
						Certifications:				
2991-50-6	* N-EtFOSAA	ND		ug/kg dry	0.249	1	EPA 537m	07/12/2022 12:42	07/14/2022 17:07	WEL
						Certifications:				
2706-90-3	* Perfluoropentanoic acid (PFPeA)	ND		ug/kg dry	0.249	1	EPA 537m	07/12/2022 12:42	07/14/2022 17:07	WEL
						Certifications:				
754-91-6	* Perfluoro-1-octanesulfonamide (FOSA)	ND		ug/kg dry	0.249	1	EPA 537m	07/12/2022 12:42	07/14/2022 17:07	WEL
						Certifications:				
375-92-8	* Perfluoro-1-heptanesulfonic acid (PFHpS)	ND		ug/kg dry	0.249	1	EPA 537m	07/12/2022 12:42	07/14/2022 17:07	WEL
						Certifications:				
335-77-3	* Perfluoro-1-decanesulfonic acid (PFDS)	ND		ug/kg dry	0.249	1	EPA 537m	07/12/2022 12:42	07/14/2022 17:07	WEL
						Certifications:				
27619-97-2	* 1H,1H,2H,2H-Perfluorooctanesulfonic acid (6:2 FTS)	ND		ug/kg dry	0.249	1	EPA 537m	07/12/2022 12:42	07/14/2022 17:07	WEL
						Certifications:				
39108-34-4	* 1H,1H,2H,2H-Perfluorodecanesulfonic acid (8:2 FTS)	ND		ug/kg dry	0.249	1	EPA 537m	07/12/2022 12:42	07/14/2022 17:07	WEL
						Certifications:				
375-22-4	* Perfluoro-n-butanoic acid (PFBA)	ND		ug/kg dry	0.249	1	EPA 537m	07/12/2022 12:42	07/14/2022 17:07	WEL
						Certifications:				

Surrogate Recoveries	Result	Acceptance Range
Surrogate: M3PFBS	*67.2 %*	*25-150*
Surrogate: M5PFHxA	*79.1 %*	*25-150*
Surrogate: M4PFHpA	*87.3 %*	*25-150*
Surrogate: M3PFHxS	*74.5 %*	*25-150*
Surrogate: Perfluoro-n-[13C8]octanoic acid	*95.3 %*	*25-150*
Surrogate: M6PFDA	*54.7 %*	*25-150*
Surrogate: M7PFUdA	*48.7 %*	*25-150*
Surrogate: Perfluoro-n-[1,2-13C2]dodecanoic	*46.2 %*	*25-150*
Surrogate: M2PFTeDA	*65.2 %*	*10-150*

Sample Information

Client Sample ID: **IMJC COMP-3** **York Sample ID:** **22G0348-03**

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
22G0348	GCL69739	Soil	July 5, 2022 9:10 am	07/08/2022

PFAS by EPA 537 m

Log-in Notes: **Sample Notes:**

Sample Prepared by Method: SPE PFAS Extraction-Soil-EPA 537m

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
	Surrogate: Perfluoro-n-[13C4]butanoic aci	*75.0 %*		*25-150*						
	Surrogate: Perfluoro-1-[13C8]octanesulfon	*54.4 %*		*25-150*						
	Surrogate: Perfluoro-n-[13C5]pentanoic ac	*76.9 %*		*25-150*						
	Surrogate: Perfluoro-1-[13C8]octanesulfon	*46.3 %*		*10-150*						
	Surrogate: d3-N-MeFOSAA	*51.5 %*		*25-150*						
	Surrogate: d5-N-EtFOSAA	*47.3 %*		*25-150*						
	Surrogate: M2-6:2 FTS	*71.6 %*		*25-200*						
	Surrogate: M2-8:2 FTS	*80.2 %*		*25-200*						
	Surrogate: M9PFNA	*73.4 %*		*25-150*						

Total Solids

Log-in Notes: **Sample Notes:**

Sample Prepared by Method: % Solids Prep

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
solids	*** % Solids**	**99.8**		%	0.100	1	SM 2540G	07/12/2022 14:23	07/12/2022 16:32	YR
						Certifications:	CTDOH			

CASE NARRATIVE

York Project/SDG No.: 22G0348
Client: Phoenix Environmental Laboratories, Inc.
Client Project ID: GCL69739
Prepared for: Helen Geoghegan

Introduction

This Case Narrative applies only to the samples submitted to our laboratory on **07/08/2022 15:50** as detailed on the chain-of-custody form.

The 3 sample(s) were received intact in a custody-sealed cooler(s), unless otherwise noted.
Upon receipt, cooler temperature(s) was determined using a NIST traceable digital infrared thermometer. The cooler temperature was acceptable (≤ 6°C) and documented as:

Cooler	Temp C°
Default Cooler	**2.1**

Chain-of-custody was maintained from receipt through analysis in the laboratory.

Methodology

All preparation and analyses were conducted according to the appropriate EPA methods detailed in the report.

Client Sample Information and Non-Conformances

Laboratory ID	Sample Name	Matrix
22G0348-01	IMJC COMP-1	Soil
22G0348-02	IMJC COMP-2	Soil
22G0348-03	IMJC COMP-3	Soil

Any additional Client Sample Non-conformances are detailed in the proceeding Case Narrative Non-Conformance Summary tables.

No other problems were encountered during analysis.

QC Sample Non-Conformances

Any QC sample Non-conformances (SCV, CCV, BS, BSD, SRM, PS, MS, MSD, DUP) are detailed in the proceeding Case Narrative Non-Conformance Summary tables.

No other problems were encountered during analysis.

York Project/SDG no.: 22G0348 Statement

We certify that these data are in compliance with SOP requirements both technically and for completeness for other than the conditions stated above. Release of the data contained in the hard copy report and any electronic data deliverables has been authorized by the Laboratory Manager as verified by the signature on this laboratory report.

Approved by: *Cassie Mosher*
Laboratory Manager

Date: 07/19/2022

York Analytical Laboratories, Inc.

Formulae Used for Sample Calculations

1. **Volatile Organics (Water-ug/L or Soil-ug/Kg)**

Soils/Waters

$$Cx = \frac{(Ax)(IS)(DF)}{(Ais)(RRF)(V)(\%\ solids)}$$

Medium Level Soils

$$Cx = \frac{(Ax)(IS)(VT)(1000)(DF)}{(Ais)(RRF)(VA)(V)(\%\ solids)}$$

2. **Semi-Volatiles (Water-ug/L or Soil-ug/Kg)**

$$Cx = \frac{(Ax)(IS)(VE)(DF)}{(Ais)(RRF)(Volume\ injected,\ uL)(V)(\%\ solids)}$$

3. **Pesticides/PCB, DRO, EPH, CTETPH (Water-ug/L or Soil-ug/Kg)**

$$Cx = \frac{(Ax)(VE)(DF)}{(CF)(Volume\ injected,\ uL)(V)(\%\ solids)}$$

4. **Inorganics (Water or Soil-ug/mL)**

$$Cx = \frac{(Conc.)(VE)}{(V)(\%\ solids/100)}$$

WHERE:

Cx = concentration of analyte as ug/L or ug/kg
Ax = Area of the characteristic ion for the compound to be measured, counts
Ais = Area of the characteristic ion for the specific internal standard, counts
IS = Concentration of the internal standard spiking mixture, ng
RRF = Mean relative response factor from the initial calibration
DF = Dilution factor calculated as described in section 2. If no dilution is performed, DF= 1
V = Volume for liquids in mL, weight for soils/solids in grams
VA = volume of MeOH aliquot for medium level soils
VE = final volume of concentrated extract or digestate
VT = volume of MeOH for volatiles medium level soils
CF = calibration factor for external calibration used in GC pest/pcb
Cis = Concentration of the internal standard spiking mixture, ppbv

Case Narrative Non-Conformance Summary

Laboratory:	York Analytical Laboratories, Inc.	Client:	
Project:		Lab Project No:	
Laboratory Sample ID(s):	-01 - -03	Sampling Date(s):	07/05/2022 - 07/05/2022
Review Date(s):	-	Laboratory Reviewer(s):	

QC Sample Nonconformances

Batch ID: Y2F2836 **Affected Samples:** **See Batch Summary**

QC Sample ID	Analyte - CAS No.	Result	Type of QC Nonconformance	%REC	%REC Limits	Bias	RPD	RPD Limit	Bias	Notes
Y2F2836-SCV1	Perfluoro-1-heptanesulfonic acid (PFHpS) - 375-92-8	6.27 ng/mL	Secondary Cal Check	132	70-130	High Bias				

Batch ID: Y2G1435 **Affected Samples:** **See Batch Summary**

QC Sample ID	Analyte - CAS No.	Result	Type of QC Nonconformance	%REC	%REC Limits	Bias	RPD	RPD Limit	Bias	Notes
Y2G1435-CCV1	Surrogate: M2-8:2 FTS	6.87 ng/mL	Surrogate	143	70-130	High Bias				
Y2G1435-CCV2	Surrogate: M2-8:2 FTS	6.60 ng/mL	Surrogate	137	70-130	High Bias				
Y2G1435-CCV3	Surrogate: M2-8:2 FTS	6.37 ng/mL	Surrogate	133	70-130	High Bias				
Y2G1435-CCV6	1H,1H,2H,2H-Perfluorooctan esulfonic acid (6:2 FTS) - 27619-97-2	5.77 ng/mL	Calibration Check	132	70-130	High Bias				

No Sample Nonconformances Found

Notes: Other nonconformances, if any, are detailed in the Data Quality Assessment worksheets.

For multiple surrogate analyses such as semi-volatiles, volatiles, etc, single surrogate excursions do not necessarily indicate a bias in the sample. Samples with multiple surrogate excursions may exhibit a bias in the results.

Definitions:
LCS - Laboratory Control Sample
LCS dup - Laboratory Control Sample Duplicate
MS - Matrix Spike
MSD - Matrix Spike Duplicate
BS - Blank Spike also called LCS
BSD - Blank Spike Duplicate also called LCS dup
SRM - Standard Reference Material
DUP - Duplicate

QC DATA QUALIFIERS

LabID	Analysis	Analyte	Qualifier	Definition
Y2G1435-CCV6	PFAS by EPA 537 m	1H,1H,2H,2H-Perfluorooctanesulfonic acid (6:2 FTS)	PF-CCV-H	The CCV recovery was slightly above acceptable limits for the qualified compound. However, sample results are not biased high because results are corrected for isotope recovery.
Y2G1435-CCV3	PFAS by EPA 537 m	M2-8:2 FTS	PFSu-H	The isotopically labeled surrogate recovered above lab control limits due to a matrix effect. Isotope Dilution was applied.
Y2G1435-CCV2	PFAS by EPA 537 m	M2-8:2 FTS	PFSu-H	The isotopically labeled surrogate recovered above lab control limits due to a matrix effect. Isotope Dilution was applied.
Y2G1435-CCV1	PFAS by EPA 537 m	M2-8:2 FTS	PFSu-H	The isotopically labeled surrogate recovered above lab control limits due to a matrix effect. Isotope Dilution was applied.

Analytical Batch Summary

Batch ID: BG20572 **Preparation Method:** SPE PFAS Extraction-Soil-EPA 537m **Prepared By:** ESJ

YORK Sample ID	Client Sample ID	Preparation Date
22G0348-01	IMJC COMP-1	07/12/22
22G0348-02	IMJC COMP-2	07/12/22
22G0348-03	IMJC COMP-3	07/12/22
BG20572-BLK1	Blank	07/12/22
BG20572-BS1	LCS	07/12/22

Batch ID: BG20605 **Preparation Method:** % Solids Prep **Prepared By:** YR

YORK Sample ID	Client Sample ID	Preparation Date
22G0348-01	IMJC COMP-1	07/12/22
22G0348-02	IMJC COMP-2	07/12/22
22G0348-03	IMJC COMP-3	07/12/22

PFAS Target compounds by LC/MS-MS - Quality Control Data

York Analytical Laboratories, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source* Result	%REC	%REC Limits	Flag	RPD	RPD Limit	Flag
Batch BG20572 - SPE PFAS Extraction-Soil-EPA 537m											
Blank (BG20572-BLK1)								Prepared: 07/12/2022 Analyzed: 07/14/2022			
Perfluorobutanesulfonic acid (PFBS)	ND	0.246	ug/kg wet								
Perfluorohexanoic acid (PFHxA)	ND	0.246	"								
Perfluoroheptanoic acid (PFHpA)	ND	0.246	"								
Perfluorohexanesulfonic acid (PFHxS)	ND	0.246	"								
Perfluorooctanoic acid (PFOA)	ND	0.246	"								
Perfluorooctanesulfonic acid (PFOS)	ND	0.246	"								
Perfluorononanoic acid (PFNA)	ND	0.246	"								
Perfluorodecanoic acid (PFDA)	ND	0.246	"								
Perfluoroundecanoic acid (PFUnA)	ND	0.246	"								
Perfluorododecanoic acid (PFDoA)	ND	0.246	"								
Perfluorotridecanoic acid (PFTrDA)	ND	0.246	"								
Perfluorotetradecanoic acid (PFTA)	ND	0.246	"								
N-MeFOSAA	ND	0.246	"								
N-EtFOSAA	ND	0.246	"								
Perfluoropentanoic acid (PFPeA)	ND	0.246	"								
Perfluoro-1-octanesulfonamide (FOSA)	ND	0.246	"								
Perfluoro-1-heptanesulfonic acid (PFHpS)	ND	0.246	"								
Perfluoro-1-decanesulfonic acid (PFDS)	ND	0.246	"								
1H,1H,2H,2H-Perfluorooctanesulfonic acid (6:2 FTS)	ND	0.246	"								
1H,1H,2H,2H-Perfluorodecanesulfonic acid (8:2 FTS)	ND	0.246	"								
Perfluoro-n-butanoic acid (PFBA)	ND	0.246	"								
Surrogate: M3PFBS	*2.92*		*"*	*4.58*		*63.8*	*25-150*				
Surrogate: M5PFHxA	*3.72*		*"*	*4.93*		*75.4*	*25-150*				
Surrogate: M4PFHpA	*4.08*		*"*	*4.93*		*82.7*	*25-150*				
Surrogate: M3PFHxS	*3.58*		*"*	*4.66*		*76.8*	*25-150*				
Surrogate: Perfluoro-n-[13C8]octanoic acid (M8PFOA)	*4.46*		*"*	*4.93*		*90.5*	*25-150*				
Surrogate: M6PFDA	*3.61*		*"*	*4.93*		*73.3*	*25-150*				
Surrogate: M7PFUdA	*3.31*		*"*	*4.93*		*67.2*	*25-150*				
Surrogate: Perfluoro-n-[1,2-13C2]dodecanoic acid (MPFDoA)	*3.07*		*"*	*4.93*		*62.3*	*25-150*				
Surrogate: M2PFTeDA	*3.57*		*"*	*4.93*		*72.3*	*10-150*				
Surrogate: Perfluoro-n-[13C4]butanoic acid (MPFBA)	*3.52*		*"*	*4.93*		*71.5*	*25-150*				
Surrogate: Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)	*4.05*		*"*	*4.72*		*85.9*	*25-150*				
Surrogate: Perfluoro-n-[13C5]pentanoic acid (M5PFPeA)	*3.68*		*"*	*4.93*		*74.6*	*25-150*				
Surrogate: Perfluoro-1-[13C8]octanesulfonamide (M8FOSA)	*2.98*		*"*	*4.93*		*60.5*	*10-150*				
Surrogate: d3-N-MeFOSAA	*3.62*		*"*	*4.93*		*73.4*	*25-150*				
Surrogate: d5-N-EtFOSAA	*3.37*		*"*	*4.93*		*68.3*	*25-150*				
Surrogate: M2-6:2 FTS	*3.35*		*"*	*4.68*		*71.7*	*25-200*				
Surrogate: M2-8:2 FTS	*5.28*		*"*	*4.72*		*112*	*25-200*				
Surrogate: M9PFNA	*3.31*		*"*	*4.93*		*67.1*	*25-150*				

PFAS Target compounds by LC/MS-MS - Quality Control Data

York Analytical Laboratories, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source* Result	%REC	%REC Limits	Flag	RPD	RPD Limit	Flag
Batch BG20572 - SPE PFAS Extraction-Soil-EPA 537m											
LCS (BG20572-BS1)							Prepared: 07/12/2022 Analyzed: 07/14/2022				
Perfluorobutanesulfonic acid (PFBS)	5.00	0.246	ug/kg wet	4.35		115	50-130				
Perfluorohexanoic acid (PFHxA)	5.22	0.246	"	4.92		106	50-130				
Perfluoroheptanoic acid (PFHpA)	4.80	0.246	"	4.92		97.6	50-130				
Perfluorohexanesulfonic acid (PFHxS)	4.68	0.246	"	4.47		105	50-130				
Perfluorooctanoic acid (PFOA)	4.71	0.246	"	4.92		95.8	50-130				
Perfluorooctanesulfonic acid (PFOS)	4.21	0.246	"	4.55		92.6	50-130				
Perfluorononanoic acid (PFNA)	5.32	0.246	"	4.92		108	50-130				
Perfluorodecanoic acid (PFDA)	6.19	0.246	"	4.92		126	50-130				
Perfluoroundecanoic acid (PFUnA)	5.43	0.246	"	4.92		110	50-130				
Perfluorododecanoic acid (PFDoA)	5.24	0.246	"	4.92		107	50-130				
Perfluorotridecanoic acid (PFTrDA)	4.58	0.246	"	4.92		93.2	50-130				
Perfluorotetradecanoic acid (PFTA)	4.87	0.246	"	4.92		99.0	50-130				
N-MeFOSAA	5.92	0.246	"	4.92		120	50-130				
N-EtFOSAA	4.99	0.246	"	4.92		101	50-130				
Perfluoropentanoic acid (PFPeA)	5.36	0.246	"	4.92		109	50-130				
Perfluoro-1-octanesulfonamide (FOSA)	5.41	0.246	"	4.92		110	50-130				
Perfluoro-1-heptanesulfonic acid (PFHpS)	4.67	0.246	"	4.70		99.4	50-130				
Perfluoro-1-decanesulfonic acid (PFDS)	3.33	0.246	"	4.74		70.2	50-130				
1H,1H,2H,2H-Perfluorooctanesulfonic acid (6:2 FTS)	6.03	0.246	"	4.67		129	50-200				
1H,1H,2H,2H-Perfluorodecanesulfonic acid (8:2 FTS)	4.15	0.246	"	4.72		88.0	50-200				
Perfluoro-n-butanoic acid (PFBA)	5.51	0.246	"	4.92		112	50-130				
Surrogate: M3PFBS	*3.05*		*"*	*4.57*		*66.7*	*25-150*				
Surrogate: M5PFHxA	*3.92*		*"*	*4.92*		*79.8*	*25-150*				
Surrogate: M4PFHpA	*4.22*		*"*	*4.92*		*85.9*	*25-150*				
Surrogate: M3PFHxS	*3.67*		*"*	*4.65*		*78.9*	*25-150*				
Surrogate: Perfluoro-n-[13C8]octanoic acid (M8PFOA)	*4.44*		*"*	*4.92*		*90.4*	*25-150*				
Surrogate: M6PFDA	*3.36*		*"*	*4.92*		*68.4*	*25-150*				
Surrogate: M7PFUdA	*3.37*		*"*	*4.92*		*68.5*	*25-150*				
Surrogate: Perfluoro-n-[1,2-13C2]dodecanoic acid (MPFDoA)	*3.57*		*"*	*4.92*		*72.6*	*25-150*				
Surrogate: M2PFTeDA	*3.68*		*"*	*4.92*		*74.8*	*10-150*				
Surrogate: Perfluoro-n-[13C4]butanoic acid (MPFBA)	*3.64*		*"*	*4.92*		*74.1*	*25-150*				
Surrogate: Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)	*4.14*		*"*	*4.71*		*88.0*	*25-150*				
Surrogate: Perfluoro-n-[13C5]pentanoic acid (M5PFPeA)	*3.81*		*"*	*4.92*		*77.4*	*25-150*				
Surrogate: Perfluoro-1-[13C8]octanesulfonamide (M8FOSA)	*3.01*		*"*	*4.92*		*61.3*	*10-150*				
Surrogate: d3-N-MeFOSAA	*3.26*		*"*	*4.92*		*66.4*	*25-150*				
Surrogate: d5-N-EtFOSAA	*4.09*		*"*	*4.92*		*83.1*	*25-150*				
Surrogate: M2-6:2 FTS	*4.13*		*"*	*4.67*		*88.6*	*25-200*				
Surrogate: M2-8:2 FTS	*5.57*		*"*	*4.71*		*118*	*25-200*				
Surrogate: M9PFNA	*3.89*		*"*	*4.92*		*79.2*	*25-150*				

Sample and Data Qualifiers Relating to This Work Order

Definitions and Other Explanations

*	Analyte is not certified or the state of the samples origination does not offer certification for the Analyte.
ND	NOT DETECTED - the analyte is not detected at the Reported to level (LOQ/RL or LOD/MDL)
RL	REPORTING LIMIT - the minimum reportable value based upon the lowest point in the analyte calibration curve.
LOQ	LIMIT OF QUANTITATION - the minimum concentration of a target analyte that can be reported within a specified degree of confidence. This is the lowest point in an analyte calibration curve that has been subjected to all steps of the processing/analysis and verified to meet defined criteria. This is based upon NELAC 2009 Standards and applies to all analyses.
LOD	LIMIT OF DETECTION - a verified estimate of the minimum concentration of a substance in a given matrix that an analytical process can reliably detect. This is based upon NELAC 2009 Standards and applies to all analyses conducted under the auspices of EPA SW-846.
MDL	METHOD DETECTION LIMIT - a statistically derived estimate of the minimum amount of a substance an analytical system can reliably detect with a 99% confidence that the concentration of the substance is greater than zero. This is based upon 40 CFR Part 136 Appendix B and applies only to EPA 600 and 200 series methods.
Reported to	This indicates that the data for a particular analysis is reported to either the LOD/MDL, or the LOQ/RL. In cases where the "Reported to" is located above the LOD/MDL, any value between this and the LOQ represents an estimated value which is "J" flagged accordingly. This applies to volatile and semi-volatile target compounds only.
NR	Not reported
RPD	Relative Percent Difference
Wet	The data has been reported on an as-received (wet weight) basis
Low Bias	Low Bias flag indicates that the recovery of the flagged analyte is below the laboratory or regulatory lower control limit. The data user should take note that this analyte may be biased low but should evaluate multiple lines of evidence including the LCS and site-specific MS/MSD data to draw bias conclusions. In cases where no site-specific MS/MSD was requested, only the LCS data can be used to evaluate such bias.
High Bias	High Bias flag indicates that the recovery of the flagged analyte is above the laboratory or regulatory upper control limit. The data user should take note that this analyte may be biased high but should evaluate multiple lines of evidence including the LCS and site-specific MS/MSD data to draw bias conclusions. In cases where no site-specific MS/MSD was requested, only the LCS data can be used to evaluate such bias.
Non-Dir.	Non-dir. flag (Non-Directional Bias) indicates that the Relative Percent Difference (RPD) (a measure of precision) among the MS and MSD data is outside the laboratory or regulatory control limit. This alerts the data user where the MS and MSD are from site-specific samples that the RPD is high due to either non-homogeneous distribution of target analyte between the MS/MSD or indicates poor reproducibility for other reasons.

If EPA SW-846 method 8270 is included herein it is noted that the target compound N-nitrosodiphenylamine (NDPA) decomposes in the gas chromatographic inlet and cannot be separated from diphenylamine (DPA). These results could actually represent 100% DPA, 100% NDPA or some combination of the two. For this reason, York reports the combined result for n-nitrosodiphenylamine and diphenylamine for either of these compounds as a combined concentration as Diphenylamine.

If Total PCBs are detected and the target aroclors reported are "Not detected", the Total PCB value is reported due to the presence of either or both Aroclors 1262 and 1268 which are non-target aroclors for some regulatory lists.

2-chloroethylvinyl ether readily breaks down under acidic conditions. Samples that are acid preserved, including standards will exhibit breakdown. The data user should take note.

Certification for pH is no longer offered by NYDOH ELAP.

Semi-Volatile and Volatile analyses are reported down to the LOD/MDL, with values between the LOD/MDL and the LOQ being "J" flagged as estimated results.

For analyses by EPA SW-846-8270D, the Limit of Quantitation (LOQ) reported for benzidine is based upon the lowest standard used for calibration and is not a verified LOQ due to this compound's propensity for oxidative losses during extraction/concentration procedures and non-reproducible chromatographic performance.

Laboratory Chain-of-Custody Record

York Project (SDG) No.: 22G0348

Samples Received: 07/08/2022 15:50 **By:** Jack Storm **Logged In:** 07/08/2022 16:28 **By:** Kristina M. Blocker

Sample Conditions:

- [x] Custody Seals
- [x] Containers Intact
- [x] COC/Labels Agree
- [x] Preservation Confirmed
- [x] Cooler Temperature Confirmed
- [x] COC Complete
- [x] Chain of Custody Form Received
- [x] Appropriate Sample Volumes Received
- [x] Appropriate Sample Containers Submitted
- [x] Samples Submitted within Holding Times
- [ ] Corrective Action Form Required

Preparation Chain-of-Custody

Sample ID	Reason Prep	Prep Start Date	Prep End Date	Prep Analyst
22G0348-01	% Solids Prep	07/12/2022 14:23	07/12/2022 14:23	Yamilex Ramos
22G0348-02	% Solids Prep	07/12/2022 14:23	07/12/2022 14:23	Yamilex Ramos
22G0348-03	% Solids Prep	07/12/2022 14:23	07/12/2022 14:23	Yamilex Ramos
22G0348-01	SPE PFAS Extraction-Soil-EPA 537m	07/12/2022 12:42	07/12/2022 12:42	Elisa James
22G0348-02	SPE PFAS Extraction-Soil-EPA 537m	07/12/2022 12:42	07/12/2022 12:42	Elisa James
22G0348-03	SPE PFAS Extraction-Soil-EPA 537m	07/12/2022 12:42	07/12/2022 12:42	Elisa James

Analysis Chain-of-Custody

Sample ID	Reason Analysis	Analysis Start Date	Analysis End Date	Analyst
22G0348-01	PFAS by EPA 537 m	07/12/2022 12:42	07/14/2022 16:28	Wenjun Liang
22G0348-02	PFAS by EPA 537 m	07/12/2022 12:42	07/14/2022 16:41	Wenjun Liang
22G0348-03	PFAS by EPA 537 m	07/12/2022 12:42	07/14/2022 17:07	Wenjun Liang
22G0348-01	Total Solids	07/12/2022 14:23	07/12/2022 16:32	Yamilex Ramos
22G0348-02	Total Solids	07/12/2022 14:23	07/12/2022 16:32	Yamilex Ramos
22G0348-03	Total Solids	07/12/2022 14:23	07/12/2022 16:32	Yamilex Ramos

22G0348

Cooler: Yes ☐ No ☐
Coolant: IPK ☐ ICE ☐ No ☐

Temp 2.1 °C Pg of

PHOENIX Environmental Laboratories, Inc.

CHAIN OF CUSTODY RECORD

Page 1 of 1

587 East Middle Turnpike, P.O. Box 370, Manchester, CT 06040
Email: info@phoenixlabs.com Fax (860) 645-0823
Client Services (860) 645-8726

Contact Options:
☐ Fax: 860-645-0823
☐ Phone: 800-827-5426
☐ Email: HelenG@PhoenixLabs.com

Customer: York Analytical Laboratories
Address: 120 Research Drive
Stratford, CT
(203) 325-1371

Project #: GCL69739
Report to: HelenG@PhoenixLabs.com / Helen Geoghegan
Invoice to: AccountsPayable@PhoenixLabs.com
Quote# :

Project P.O: GCL69739

This section MUST be completed with Bottle Quantities.

Client Sample - Information - Identification

Sampler's Signature _____ Date: _____

Matrix Code:
DW=Drinking Water **GW**=Ground Water **SW**=Surface Water **WW**=Waste Water
RW=Raw Water **SE**=Sediment **SL**=Sludge **S**=Soil **SD**=Solid **W**=Wipe
OIL=Oil **B**=Bulk **L**=Liquid

Analysis Request

Phoenix Sample ID	Sample Matrix	Date Sampled	Time Sampled	PFAS (21) E537 modified	8oz HDPE Plastic As Is
IMJC COMP-1	SOIL	7/5/2022	9:00 AM	x	1
IMJC COMP-2	SOIL	7/5/2022	9:05 AM	x	1
IMJC COMP-3	SOIL	7/5/2022	9:10 AM	x	1

Relinquished by:	Accepted by:	Date:	Time:
[signature]	[signature]	7-7-22	0715
[signature]	[signature]	7-8-22	1550

Comments, Special Requirements or Regulations:

Please send notice as soon as possible not exceeding 24 hours of obtaining valid data, of the results of all drinking water samples that exceed any EPA or Department-established maximum contaminant level, maximum residual disinfectant level or reportable concentration.

Please notify Phoenix Environmental Laboratories, Inc. immediately and prior to conducting analysis if certification is not held for the analyses requested.

Turnaround:
☐ 1 Day
☐ 2 Days
☐ 3 Days
☐ 5 Days
☐ 10 Days
☒ Standard
☐ Other_____

Report Type:
☒ Standard PDF
☐ Full Data Package
☐ NJ Reduced Deliverable
☐ NJ Full Deliverable
☒ NY ASP B

EDD Format:
☐ Excel
☐ GIS/Key
☐ EQuIS
☐ NJ Hazsite EDD
☐ NY EZ EDD (ASP)
☐ Other:_____

State Criteria:
NJ: Impact to GW Soil Screening
NJ: Res. Criteria Remediation

What State were samples collected?
~~NJ~~ NY

York Analytical Laboratories, Inc.

SDG: 22G0348

CLASS: PFAS

METHOD: EPA 537m

DATA PACKAGE COVER PAGE

EPA 537m

Laboratory:	York Analytical Laboratories, Inc.	SDG:	22G0348
Client:	Phoenix Environmental Laboratories, Inc.	Project:	GCL69739

Client Sample Id:	Lab Sample Id:
IMJC COMP-1	22G0348-01
IMJC COMP-2	22G0348-02
IMJC COMP-3	22G0348-03

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed in the project narrative. Release of the data contained in this hardcopy data package and in computer-readable data submitted on diskette has been authorized by the Laboratory Manager or the Manager's designee, as verified by the

Signature: Cassie L Mosher

Name: Cassie L. Mosher

Date: 7/19/2022

Title: Laboratory Manager

FORM II **SURROGATE STANDARD RECOVERY AND RT SUMMARY**

EPA 537m

Laboratory:	York Analytical Laboratories, Inc.	SDG:	22G0348
Client:	Phoenix Environmental Laboratories, Inc.	Project:	GCL69739
Sequence:	Y2G1435	Instrument:	QQQ3
		Calibration:	YF20026

Surrogate Compound	Spike Level ng/mL	% Recovery	Recovery Limits	RT	Calibration Mean RT	RT Diff	RT Diff Limit	Q
Calibration Check (Y2G1435-CCV1)			Lab File ID: QQQ302664.d		Analyzed: 07/14/22 11:21			
M3PFBS	4.66	82.1	70 - 130	4.708133	4.679481	0.0287	+/-1.00	
M5PFHxA	5.00	93.2	70 - 130	5.334883	5.266833	0.0680	+/-1.00	
M4PFHpA	5.00	92.3	70 - 130	5.82975	5.726771	0.1030	+/-1.00	
M3PFHxS	4.74	103	70 - 130	5.879433	5.769276	0.1102	+/-1.00	
Perfluoro-n-[13C8]octanoic acid (M8PFOA)	5.00	105	70 - 130	6.165583	6.034226	0.1314	+/-1.00	
M6PFDA	5.00	101	70 - 130	6.709784	6.546357	0.1634	+/-1.00	
M7PFUdA	5.00	99.1	70 - 130	6.977366	6.80826	0.1691	+/-1.00	
Perfluoro-n-[1,2-13C2]dodecanoic acid (MPFDoA)	5.00	92.1	70 - 130	7.2788	7.097238	0.1816	+/-1.00	
M2PFTeDA	5.00	99.6	70 - 130	8.015883	7.799488	0.2164	+/-1.00	
Perfluoro-n-[13C4]butanoic acid (MPFBA)	5.00	85.0	70 - 130	1.09255	1.043695	0.0489	+/-1.00	
Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)	4.79	103	70 - 130	6.458367	6.306764	0.1516	+/-1.00	
Perfluoro-n-[13C5]pentanoic acid (M5PFPeA)	5.00	90.0	70 - 130	4.09485	4.06983	0.0250	+/-1.00	
Perfluoro-1-[13C8]octanesulfonamide (M8FOSA)	5.00	89.5	70 - 130	7.19075	6.987315	0.2034	+/-1.00	
d3-N-MeFOSAA	5.00	92.5	70 - 130	6.8261	6.656476	0.1696	+/-1.00	
d5-N-EtFOSAA	5.00	107	70 - 130	6.9684	6.794502	0.1739	+/-1.00	
M2-6:2 FTS	4.76	92.1	70 - 130	6.147583	6.020345	0.1272	+/-1.00	
M2-8:2 FTS	4.80	143	70 - 130	6.70085	6.541057	0.1598	+/-1.00	*
M9PFNA	5.00	97.8	70 - 130	6.44245	6.296869	0.1456	+/-1.00	

FORM II **SURROGATE STANDARD RECOVERY AND RT SUMMARY**

EPA 537m

Laboratory:	York Analytical Laboratories, Inc.	SDG:	22G0348
Client:	Phoenix Environmental Laboratories, Inc.	Project:	GCL69739
Sequence:	Y2G1435	Instrument:	QQQ3
		Calibration:	YF20026

Surrogate Compound	Spike Level ng/mL	% Recovery	Recovery Limits	RT	Calibration Mean RT	RT Diff	RT Diff Limit	Q
Calibration Check (Y2G1435-CCV2)			Lab File ID: QQQ302670.d		Analyzed: 07/14/22 12:47			
M3PFBS	4.66	81.4	70 - 130	4.708133	4.679481	0.0287	+/-1.00	
M5PFHxA	5.00	90.6	70 - 130	5.309817	5.266833	0.0430	+/-1.00	
M4PFHpA	5.00	105	70 - 130	5.796216	5.726771	0.0694	+/-1.00	
M3PFHxS	4.74	96.9	70 - 130	5.845917	5.769276	0.0766	+/-1.00	
Perfluoro-n-[13C8]octanoic acid (M8PFOA)	5.00	102	70 - 130	6.122983	6.034226	0.0888	+/-1.00	
M6PFDA	5.00	99.4	70 - 130	6.659167	6.546357	0.1128	+/-1.00	
M7PFUdA	5.00	103	70 - 130	6.927033	6.80826	0.1188	+/-1.00	
Perfluoro-n-[1,2-13C2]dodecanoic acid (MPFDoA)	5.00	95.6	70 - 130	7.236817	7.097238	0.1396	+/-1.00	
M2PFTeDA	5.00	106	70 - 130	7.98245	7.799488	0.1830	+/-1.00	
Perfluoro-n-[13C4]butanoic acid (MPFBA)	5.00	86.1	70 - 130	1.0425	1.043695	-0.0012	+/-1.00	
Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)	4.79	95.1	70 - 130	6.40765	6.306764	0.1009	+/-1.00	
Perfluoro-n-[13C5]pentanoic acid (M5PFPeA)	5.00	91.8	70 - 130	4.078166	4.06983	0.0083	+/-1.00	
Perfluoro-1-[13C8]octanesulfonamide (M8FOSA)	5.00	96.4	70 - 130	7.14825	6.987315	0.1609	+/-1.00	
d3-N-MeFOSAA	5.00	91.8	70 - 130	6.775717	6.656476	0.1192	+/-1.00	
d5-N-EtFOSAA	5.00	118	70 - 130	6.91805	6.794502	0.1235	+/-1.00	
M2-6:2 FTS	4.76	79.2	70 - 130	6.1056	6.020345	0.0853	+/-1.00	
M2-8:2 FTS	4.80	137	70 - 130	6.650267	6.541057	0.1092	+/-1.00	*
M9PFNA	5.00	101	70 - 130	6.39175	6.296869	0.0949	+/-1.00	

FORM II **SURROGATE STANDARD RECOVERY AND RT SUMMARY**

EPA 537m

Laboratory:	York Analytical Laboratories, Inc.	SDG:	22G0348
Client:	Phoenix Environmental Laboratories, Inc.	Project:	GCL69739
Sequence:	Y2G1435	Instrument:	QQQ3
		Calibration:	YF20026

Surrogate Compound	Spike Level ug/kg wet	% Recovery	Recovery Limits	RT	Calibration Mean RT	RT Diff	RT Diff Limit	Q
Blank (BG20572-BLK1)			Lab File ID: QQQ302671.d		Analyzed: 07/14/22 13:00			
M3PFBS	4.58	63.8	25 - 150	4.691433	4.679481	0.0120	+/-1.00	
M5PFHxA	4.93	75.4	25 - 150	5.318167	5.266833	0.0513	+/-1.00	
M4PFHpA	4.93	82.7	25 - 150	5.812984	5.726771	0.0862	+/-1.00	
M3PFHxS	4.66	76.8	25 - 150	5.854283	5.769276	0.0850	+/-1.00	
Perfluoro-n-[13C8]octanoic acid (M8PFOA)	4.93	90.5	25 - 150	6.139783	6.034226	0.1056	+/-1.00	
M6PFDA	4.93	73.3	25 - 150	6.684367	6.546357	0.1380	+/-1.00	
M7PFUdA	4.93	67.2	25 - 150	6.9606	6.80826	0.1523	+/-1.00	
Perfluoro-n-[1,2-13C2]dodecanoic acid (MPFDoA)	4.93	62.3	25 - 150	7.270417	7.097238	0.1732	+/-1.00	
M2PFTeDA	4.93	72.3	10 - 150	8.02425	7.799488	0.2248	+/-1.00	
Perfluoro-n-[13C4]butanoic acid (MPFBA)	4.93	71.5	25 - 150	1.025833	1.043695	-0.0179	+/-1.00	
Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)	4.72	85.9	25 - 150	6.424467	6.306764	0.1177	+/-1.00	
Perfluoro-n-[13C5]pentanoic acid (M5PFPeA)	4.93	74.6	25 - 150	4.05315	4.06983	-0.0167	+/-1.00	
Perfluoro-1-[13C8]octanesulfonamide (M8FOSA)	4.93	60.5	10 - 150	7.173567	6.987315	0.1863	+/-1.00	
d3-N-MeFOSAA	4.93	73.4	25 - 150	6.8009	6.656476	0.1444	+/-1.00	
d5-N-EtFOSAA	4.93	68.3	25 - 150	6.943233	6.794502	0.1487	+/-1.00	
M2-6:2 FTS	4.68	71.7	25 - 200	6.122383	6.020345	0.1020	+/-1.00	
M2-8:2 FTS	4.72	112	25 - 200	6.675467	6.541057	0.1344	+/-1.00	
M9PFNA	4.93	67.1	25 - 150	6.416983	6.296869	0.1201	+/-1.00	

FORM II **SURROGATE STANDARD RECOVERY AND RT SUMMARY**

EPA 537m

Laboratory:	York Analytical Laboratories, Inc.	SDG:	22G0348
Client:	Phoenix Environmental Laboratories, Inc.	Project:	GCL69739
Sequence:	Y2G1435	Instrument:	QQQ3
		Calibration:	YF20026

Surrogate Compound	Spike Level ug/kg wet	% Recovery	Recovery Limits	RT	Calibration Mean RT	RT Diff	RT Diff Limit	Q
LCS (BG20572-BS1)			Lab File ID: QQQ302672.d		Analyzed: 07/14/22 13:14			
M3PFBS	4.57	66.7	25 - 150	4.671933	4.679481	-0.0075	+/-1.00	
M5PFHxA	4.92	79.8	25 - 150	5.309817	5.266833	0.0430	+/-1.00	
M4PFHpA	4.92	85.9	25 - 150	5.8046	5.726771	0.0778	+/-1.00	
M3PFHxS	4.65	78.9	25 - 150	5.854283	5.769276	0.0850	+/-1.00	
Perfluoro-n-[13C8]octanoic acid (M8PFOA)	4.92	90.4	25 - 150	6.139783	6.034226	0.1056	+/-1.00	
M6PFDA	4.92	68.4	25 - 150	6.684367	6.546357	0.1380	+/-1.00	
M7PFUdA	4.92	68.5	25 - 150	6.9606	6.80826	0.1523	+/-1.00	
Perfluoro-n-[1,2-13C2]dodecanoic acid (MPFDoA)	4.92	72.6	25 - 150	7.2788	7.097238	0.1816	+/-1.00	
M2PFTeDA	4.92	74.8	10 - 150	8.032617	7.799488	0.2331	+/-1.00	
Perfluoro-n-[13C4]butanoic acid (MPFBA)	4.92	74.1	25 - 150	0.9507667	1.043695	-0.0929	+/-1.00	
Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)	4.71	88.0	25 - 150	6.424467	6.306764	0.1177	+/-1.00	
Perfluoro-n-[13C5]pentanoic acid (M5PFPeA)	4.92	77.4	25 - 150	4.01145	4.06983	-0.0584	+/-1.00	
Perfluoro-1-[13C8]octanesulfonamide (M8FOSA)	4.92	61.3	10 - 150	7.173567	6.987315	0.1863	+/-1.00	
d3-N-MeFOSAA	4.92	66.4	25 - 150	6.8009	6.656476	0.1444	+/-1.00	
d5-N-EtFOSAA	4.92	83.1	25 - 150	6.951617	6.794502	0.1571	+/-1.00	
M2-6:2 FTS	4.67	88.6	25 - 200	6.122383	6.020345	0.1020	+/-1.00	
M2-8:2 FTS	4.71	118	25 - 200	6.675467	6.541057	0.1344	+/-1.00	
M9PFNA	4.92	79.2	25 - 150	6.416983	6.296869	0.1201	+/-1.00	

FORM II **SURROGATE STANDARD RECOVERY AND RT SUMMARY**

EPA 537m

Laboratory:	York Analytical Laboratories, Inc.	SDG:	22G0348
Client:	Phoenix Environmental Laboratories, Inc.	Project:	GCL69739
Sequence:	Y2G1435	Instrument:	QQQ3
		Calibration:	YF20026

Surrogate Compound	Spike Level ng/mL	% Recovery	Recovery Limits	RT	Calibration Mean RT	RT Diff	RT Diff Limit	Q
Calibration Check (Y2G1435-CCV3)			Lab File ID: QQQ302678.d		Analyzed: 07/14/22 14:31			
M3PFBS	4.66	79.0	70 - 130	4.671933	4.679481	-0.0075	+/-1.00	
M5PFHxA	5.00	94.8	70 - 130	5.309817	5.266833	0.0430	+/-1.00	
M4PFHpA	5.00	103	70 - 130	5.8046	5.726771	0.0778	+/-1.00	
M3PFHxS	4.74	92.1	70 - 130	5.854283	5.769276	0.0850	+/-1.00	
Perfluoro-n-[13C8]octanoic acid (M8PFOA)	5.00	107	70 - 130	6.139783	6.034226	0.1056	+/-1.00	
M6PFDA	5.00	101	70 - 130	6.675967	6.546357	0.1296	+/-1.00	
M7PFUdA	5.00	102	70 - 130	6.9606	6.80826	0.1523	+/-1.00	
Perfluoro-n-[1,2-13C2]dodecanoic acid (MPFDoA)	5.00	98.9	70 - 130	7.270417	7.097238	0.1732	+/-1.00	
M2PFTeDA	5.00	110	70 - 130	8.041017	7.799488	0.2415	+/-1.00	
Perfluoro-n-[13C4]butanoic acid (MPFBA)	5.00	90.2	70 - 130	1.025833	1.043695	-0.0179	+/-1.00	
Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)	4.79	104	70 - 130	6.424467	6.306764	0.1177	+/-1.00	
Perfluoro-n-[13C5]pentanoic acid (M5PFPeA)	5.00	92.3	70 - 130	4.036467	4.06983	-0.0334	+/-1.00	
Perfluoro-1-[13C8]octanesulfonamide (M8FOSA)	5.00	103	70 - 130	7.173567	6.987315	0.1863	+/-1.00	
d3-N-MeFOSAA	5.00	74.2	70 - 130	6.8009	6.656476	0.1444	+/-1.00	
d5-N-EtFOSAA	5.00	91.1	70 - 130	6.943233	6.794502	0.1487	+/-1.00	
M2-6:2 FTS	4.76	107	70 - 130	6.122383	6.020345	0.1020	+/-1.00	
M2-8:2 FTS	4.80	133	70 - 130	6.675467	6.541057	0.1344	+/-1.00	*
M9PFNA	5.00	97.1	70 - 130	6.416983	6.296869	0.1201	+/-1.00	

FORM II **SURROGATE STANDARD RECOVERY AND RT SUMMARY**

EPA 537m

Laboratory:	York Analytical Laboratories, Inc.	SDG:	22G0348
Client:	Phoenix Environmental Laboratories, Inc.	Project:	GCL69739
Sequence:	Y2G1435	Instrument:	QQQ3
		Calibration:	YF20026

Surrogate Compound	Spike Level ug/kg dry	% Recovery	Recovery Limits	RT	Calibration Mean RT	RT Diff	RT Diff Limit	Q
IMJC COMP-1 (22G0348-01)			Lab File ID: QQQ302687.d		Analyzed: 07/14/22 16:28			
M3PFBS	4.65	62.5	25 - 150	4.680267	4.679481	0.0008	+/-1.00	
M5PFHxA	5.01	78.0	25 - 150	5.309817	5.266833	0.0430	+/-1.00	
M4PFHpA	5.01	82.9	25 - 150	5.8046	5.726771	0.0778	+/-1.00	
M3PFHxS	4.74	84.7	25 - 150	5.854283	5.769276	0.0850	+/-1.00	
Perfluoro-n-[13C8]octanoic acid (M8PFOA)	5.01	85.4	25 - 150	6.139783	6.034226	0.1056	+/-1.00	
M6PFDA	5.01	68.8	25 - 150	6.675967	6.546357	0.1296	+/-1.00	
M7PFUdA	5.01	62.5	25 - 150	6.9606	6.80826	0.1523	+/-1.00	
Perfluoro-n-[1,2-13C2]dodecanoic acid (MPFDoA)	5.01	58.0	25 - 150	7.270417	7.097238	0.1732	+/-1.00	
M2PFTeDA	5.01	68.3	10 - 150	8.032617	7.799488	0.2331	+/-1.00	
Perfluoro-n-[13C4]butanoic acid (MPFBA)	5.01	73.9	25 - 150	1.00915	1.043695	-0.0345	+/-1.00	
Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)	4.79	66.5	25 - 150	6.424467	6.306764	0.1177	+/-1.00	
Perfluoro-n-[13C5]pentanoic acid (M5PFPeA)	5.01	73.9	25 - 150	4.05315	4.06983	-0.0167	+/-1.00	
Perfluoro-1-[13C8]octanesulfonamide (M8FOSA)	5.01	52.1	10 - 150	7.173567	6.987315	0.1863	+/-1.00	
d3-N-MeFOSAA	5.01	65.2	25 - 150	6.8009	6.656476	0.1444	+/-1.00	
d5-N-EtFOSAA	5.01	65.8	25 - 150	6.943233	6.794502	0.1487	+/-1.00	
M2-6:2 FTS	4.75	75.6	25 - 200	6.113983	6.020345	0.0936	+/-1.00	
M2-8:2 FTS	4.80	98.3	25 - 200	6.675467	6.541057	0.1344	+/-1.00	
M9PFNA	5.01	81.4	25 - 150	6.408566	6.296869	0.1117	+/-1.00	

FORM II **SURROGATE STANDARD RECOVERY AND RT SUMMARY**

EPA 537m

Laboratory:	York Analytical Laboratories, Inc.	SDG:	22G0348
Client:	Phoenix Environmental Laboratories, Inc.	Project:	GCL69739
Sequence:	Y2G1435	Instrument:	QQQ3
		Calibration:	YF20026

Surrogate Compound	Spike Level ug/kg dry	% Recovery	Recovery Limits	RT	Calibration Mean RT	RT Diff	RT Diff Limit	Q
IMJC COMP-2 (22G0348-02)			Lab File ID: QQQ302688.d		Analyzed: 07/14/22 16:41			
M3PFBS	4.60	68.3	25 - 150	4.691433	4.679481	0.0120	+/-1.00	
M5PFHxA	4.96	78.9	25 - 150	5.318167	5.266833	0.0513	+/-1.00	
M4PFHpA	4.96	83.4	25 - 150	5.8046	5.726771	0.0778	+/-1.00	
M3PFHxS	4.69	83.7	25 - 150	5.854283	5.769276	0.0850	+/-1.00	
Perfluoro-n-[13C8]octanoic acid (M8PFOA)	4.96	88.5	25 - 150	6.131383	6.034226	0.0972	+/-1.00	
M6PFDA	4.96	62.1	25 - 150	6.667567	6.546357	0.1212	+/-1.00	
M7PFUdA	4.96	51.4	25 - 150	6.943817	6.80826	0.1356	+/-1.00	
Perfluoro-n-[1,2-13C2]dodecanoic acid (MPFDoA)	4.96	45.4	25 - 150	7.253617	7.097238	0.1564	+/-1.00	
M2PFTeDA	4.96	64.0	10 - 150	8.007533	7.799488	0.2080	+/-1.00	
Perfluoro-n-[13C4]butanoic acid (MPFBA)	4.96	75.2	25 - 150	0.9841334	1.043695	-0.0596	+/-1.00	
Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)	4.74	79.3	25 - 150	6.416067	6.306764	0.1093	+/-1.00	
Perfluoro-n-[13C5]pentanoic acid (M5PFPeA)	4.96	78.9	25 - 150	4.05315	4.06983	-0.0167	+/-1.00	
Perfluoro-1-[13C8]octanesulfonamide (M8FOSA)	4.96	49.8	10 - 150	7.156783	6.987315	0.1695	+/-1.00	
d3-N-MeFOSAA	4.96	64.5	25 - 150	6.784117	6.656476	0.1276	+/-1.00	
d5-N-EtFOSAA	4.96	61.2	25 - 150	6.92645	6.794502	0.1319	+/-1.00	
M2-6:2 FTS	4.70	72.5	25 - 200	6.113983	6.020345	0.0936	+/-1.00	
M2-8:2 FTS	4.75	96.4	25 - 200	6.658667	6.541057	0.1176	+/-1.00	
M9PFNA	4.96	87.8	25 - 150	6.400167	6.296869	0.1033	+/-1.00	

FORM II **SURROGATE STANDARD RECOVERY AND RT SUMMARY**

EPA 537m

Laboratory:	York Analytical Laboratories, Inc.	SDG:	22G0348
Client:	Phoenix Environmental Laboratories, Inc.	Project:	GCL69739
Sequence:	Y2G1435	Instrument:	QQQ3
		Calibration:	YF20026

Surrogate Compound	Spike Level ng/mL	% Recovery	Recovery Limits	RT	Calibration Mean RT	RT Diff	RT Diff Limit	Q
Calibration Check (Y2G1435-CCV4)			Lab File ID: QQQ302689.d		Analyzed: 07/14/22 16:54			
M3PFBS	4.66	80.1	70 - 130	4.680267	4.679481	0.0008	+/-1.00	
M5PFHxA	5.00	95.6	70 - 130	5.318167	5.266833	0.0513	+/-1.00	
M4PFHpA	5.00	105	70 - 130	5.821367	5.726771	0.0946	+/-1.00	
M3PFHxS	4.74	97.6	70 - 130	5.87105	5.769276	0.1018	+/-1.00	
Perfluoro-n-[13C8]octanoic acid (M8PFOA)	5.00	112	70 - 130	6.157166	6.034226	0.1229	+/-1.00	
M6PFDA	5.00	100	70 - 130	6.701383	6.546357	0.1550	+/-1.00	
M7PFUdA	5.00	98.0	70 - 130	6.985767	6.80826	0.1775	+/-1.00	
Perfluoro-n-[1,2-13C2]dodecanoic acid (MPFDoA)	5.00	93.8	70 - 130	7.304	7.097238	0.2068	+/-1.00	
M2PFTeDA	5.00	112	70 - 130	8.07445	7.799488	0.2750	+/-1.00	
Perfluoro-n-[13C4]butanoic acid (MPFBA)	5.00	88.9	70 - 130	1.034167	1.043695	-0.0095	+/-1.00	
Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)	4.79	103	70 - 130	6.441566	6.306764	0.1348	+/-1.00	
Perfluoro-n-[13C5]pentanoic acid (M5PFPeA)	5.00	93.1	70 - 130	4.044816	4.06983	-0.0250	+/-1.00	
Perfluoro-1-[13C8]octanesulfonamide (M8FOSA)	5.00	87.2	70 - 130	7.207533	6.987315	0.2202	+/-1.00	
d3-N-MeFOSAA	5.00	92.4	70 - 130	6.8261	6.656476	0.1696	+/-1.00	
d5-N-EtFOSAA	5.00	94.7	70 - 130	6.9684	6.794502	0.1739	+/-1.00	
M2-6:2 FTS	4.76	92.3	70 - 130	6.130784	6.020345	0.1104	+/-1.00	
M2-8:2 FTS	4.80	124	70 - 130	6.69245	6.541057	0.1514	+/-1.00	
M9PFNA	5.00	91.4	70 - 130	6.4338	6.296869	0.1369	+/-1.00	

FORM II **SURROGATE STANDARD RECOVERY AND RT SUMMARY**

EPA 537m

Laboratory:	York Analytical Laboratories, Inc.	SDG:	22G0348
Client:	Phoenix Environmental Laboratories, Inc.	Project:	GCL69739
Sequence:	Y2G1435	Instrument:	QQQ3
		Calibration:	YF20026

Surrogate Compound	Spike Level ug/kg dry	% Recovery	Recovery Limits	RT	Calibration Mean RT	RT Diff	RT Diff Limit	Q
IMJC COMP-3 (22G0348-03)			Lab File ID: QQQ302690.d		Analyzed: 07/14/22 17:07			
M3PFBS	4.63	67.2	25 - 150	4.680267	4.679481	0.0008	+/-1.00	
M5PFHxA	4.98	79.1	25 - 150	5.318167	5.266833	0.0513	+/-1.00	
M4PFHpA	4.98	87.3	25 - 150	5.821367	5.726771	0.0946	+/-1.00	
M3PFHxS	4.71	74.5	25 - 150	5.87105	5.769276	0.1018	+/-1.00	
Perfluoro-n-[13C8]octanoic acid (M8PFOA)	4.98	95.3	25 - 150	6.157166	6.034226	0.1229	+/-1.00	
M6PFDA	4.98	54.7	25 - 150	6.709784	6.546357	0.1634	+/-1.00	
M7PFUdA	4.98	48.7	25 - 150	6.99415	6.80826	0.1859	+/-1.00	
Perfluoro-n-[1,2-13C2]dodecanoic acid (MPFDoA)	4.98	46.2	25 - 150	7.3124	7.097238	0.2152	+/-1.00	
M2PFTeDA	4.98	65.2	10 - 150	8.0828	7.799488	0.2833	+/-1.00	
Perfluoro-n-[13C4]butanoic acid (MPFBA)	4.98	75.0	25 - 150	1.017483	1.043695	-0.0262	+/-1.00	
Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)	4.77	54.4	25 - 150	6.449966	6.306764	0.1432	+/-1.00	
Perfluoro-n-[13C5]pentanoic acid (M5PFPeA)	4.98	76.9	25 - 150	4.044816	4.06983	-0.0250	+/-1.00	
Perfluoro-1-[13C8]octanesulfonamide (M8FOSA)	4.98	46.3	10 - 150	7.215933	6.987315	0.2286	+/-1.00	
d3-N-MeFOSAA	4.98	51.5	25 - 150	6.834483	6.656476	0.1780	+/-1.00	
d5-N-EtFOSAA	4.98	47.3	25 - 150	6.976783	6.794502	0.1823	+/-1.00	
M2-6:2 FTS	4.73	71.6	25 - 200	6.139184	6.020345	0.1188	+/-1.00	
M2-8:2 FTS	4.77	80.2	25 - 200	6.70085	6.541057	0.1598	+/-1.00	
M9PFNA	4.98	73.4	25 - 150	6.4338	6.296869	0.1369	+/-1.00	

FORM II **SURROGATE STANDARD RECOVERY AND RT SUMMARY**

EPA 537m

Laboratory:	York Analytical Laboratories, Inc.	SDG:	22G0348
Client:	Phoenix Environmental Laboratories, Inc.	Project:	GCL69739
Sequence:	Y2G1435	Instrument:	QQQ3
		Calibration:	YF20026

Surrogate Compound	Spike Level ng/mL	% Recovery	Recovery Limits	RT	Calibration Mean RT	RT Diff	RT Diff Limit	Q
Calibration Check (Y2G1435-CCV5)			Lab File ID: QQQ302699.d		Analyzed: 07/14/22 19:04			
M3PFBS	4.66	82.8	70 - 130	4.680267	4.679481	0.0008	+/-1.00	
M5PFHxA	5.00	94.1	70 - 130	5.318167	5.266833	0.0513	+/-1.00	
M4PFHpA	5.00	95.3	70 - 130	5.821367	5.726771	0.0946	+/-1.00	
M3PFHxS	4.74	93.0	70 - 130	5.87105	5.769276	0.1018	+/-1.00	
Perfluoro-n-[13C8]octanoic acid (M8PFOA)	5.00	116	70 - 130	6.148183	6.034226	0.1140	+/-1.00	
M6PFDA	5.00	98.1	70 - 130	6.701383	6.546357	0.1550	+/-1.00	
M7PFUdA	5.00	104	70 - 130	6.985767	6.80826	0.1775	+/-1.00	
Perfluoro-n-[1,2-13C2]dodecanoic acid (MPFDoA)	5.00	99.4	70 - 130	7.304	7.097238	0.2068	+/-1.00	
M2PFTeDA	5.00	115	70 - 130	8.07445	7.799488	0.2750	+/-1.00	
Perfluoro-n-[13C4]butanoic acid (MPFBA)	5.00	92.4	70 - 130	1.034167	1.043695	-0.0095	+/-1.00	
Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)	4.79	102	70 - 130	6.441566	6.306764	0.1348	+/-1.00	
Perfluoro-n-[13C5]pentanoic acid (M5PFPeA)	5.00	92.4	70 - 130	4.044816	4.06983	-0.0250	+/-1.00	
Perfluoro-1-[13C8]octanesulfonamide (M8FOSA)	5.00	88.3	70 - 130	7.207533	6.987315	0.2202	+/-1.00	
d3-N-MeFOSAA	5.00	83.7	70 - 130	6.826083	6.656476	0.1696	+/-1.00	
d5-N-EtFOSAA	5.00	93.0	70 - 130	6.9684	6.794502	0.1739	+/-1.00	
M2-6:2 FTS	4.76	88.2	70 - 130	6.130784	6.020345	0.1104	+/-1.00	
M2-8:2 FTS	4.80	124	70 - 130	6.69245	6.541057	0.1514	+/-1.00	
M9PFNA	5.00	99.5	70 - 130	6.4338	6.296869	0.1369	+/-1.00	

FORM II **SURROGATE STANDARD RECOVERY AND RT SUMMARY**

EPA 537m

Laboratory:	York Analytical Laboratories, Inc.	SDG:	22G0348
Client:	Phoenix Environmental Laboratories, Inc.	Project:	GCL69739
Sequence:	Y2G1435	Instrument:	QQQ3
		Calibration:	YF20026

Surrogate Compound	Spike Level ng/mL	% Recovery	Recovery Limits	RT	Calibration Mean RT	RT Diff	RT Diff Limit	Q
Calibration Check (Y2G1435-CCV6)			Lab File ID: QQQ302707.d		Analyzed: 07/14/22 20:48			
M3PFBS	4.66	78.7	70 - 130	4.716467	4.679481	0.0370	+/-1.00	
M5PFHxA	5.00	90.9	70 - 130	5.326533	5.266833	0.0597	+/-1.00	
M4PFHpA	5.00	97.5	70 - 130	5.812984	5.726771	0.0862	+/-1.00	
M3PFHxS	4.74	92.3	70 - 130	5.862667	5.769276	0.0934	+/-1.00	
Perfluoro-n-[13C8]octanoic acid (M8PFOA)	5.00	107	70 - 130	6.148183	6.034226	0.1140	+/-1.00	
M6PFDA	5.00	102	70 - 130	6.684367	6.546357	0.1380	+/-1.00	
M7PFUdA	5.00	104	70 - 130	6.9606	6.80826	0.1523	+/-1.00	
Perfluoro-n-[1,2-13C2]dodecanoic acid (MPFDoA)	5.00	104	70 - 130	7.270417	7.097238	0.1732	+/-1.00	
M2PFTeDA	5.00	114	70 - 130	8.02425	7.799488	0.2248	+/-1.00	
Perfluoro-n-[13C4]butanoic acid (MPFBA)	5.00	88.0	70 - 130	1.0425	1.043695	-0.0012	+/-1.00	
Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)	4.79	87.1	70 - 130	6.424467	6.306764	0.1177	+/-1.00	
Perfluoro-n-[13C5]pentanoic acid (M5PFPeA)	5.00	93.4	70 - 130	4.09485	4.06983	0.0250	+/-1.00	
Perfluoro-1-[13C8]octanesulfonamide (M8FOSA)	5.00	96.2	70 - 130	7.181967	6.987315	0.1947	+/-1.00	
d3-N-MeFOSAA	5.00	92.6	70 - 130	6.8093	6.656476	0.1528	+/-1.00	
d5-N-EtFOSAA	5.00	85.3	70 - 130	6.943233	6.794502	0.1487	+/-1.00	
M2-6:2 FTS	4.76	112	70 - 130	6.122383	6.020345	0.1020	+/-1.00	
M2-8:2 FTS	4.80	117	70 - 130	6.675467	6.541057	0.1344	+/-1.00	
M9PFNA	5.00	102	70 - 130	6.416983	6.296869	0.1201	+/-1.00	

FORM III

LCS / LCS DUPLICATE RECOVERY

EPA 537m

Laboratory:	York Analytical Laboratories, Inc.	SDG:	22G0348
Client:	Phoenix Environmental Laboratories, Inc.	Project:	GCL69739
Matrix:	Soil		
Batch:	BG20572	Laboratory ID:	BG20572-BS1
Preparation:	SPE PFAS Extraction-Soil-EPA 537m	Initial/Final:	2.034 g / 2 mL

COMPOUND	SPIKE ADDED (ug/kg wet)	LCS CONCENTRATION (ug/kg wet)	LCS % REC. #	QC LIMITS REC.
1H,1H,2H,2H-Perfluorodecanesulfonic acid (8:2 FTS)	4.72	4.15	88.0	50 - 200
1H,1H,2H,2H-Perfluorooctanesulfonic acid (6:2 FTS)	4.67	6.03	129	50 - 200
N-EtFOSAA	4.92	4.99	101	50 - 130
N-MeFOSAA	4.92	5.92	120	50 - 130
Perfluoro-1-decanesulfonic acid (PFDS)	4.74	3.33	70.2	50 - 130
Perfluoro-1-heptanesulfonic acid (PFHpS)	4.70	4.67	99.4	50 - 130
Perfluoro-1-octanesulfonamide (FOSA)	4.92	5.41	110	50 - 130
Perfluorobutanesulfonic acid (PFBS)	4.35	5.00	115	50 - 130
Perfluorodecanoic acid (PFDA)	4.92	6.19	126	50 - 130
Perfluorododecanoic acid (PFDoA)	4.92	5.24	107	50 - 130
Perfluoroheptanoic acid (PFHpA)	4.92	4.80	97.6	50 - 130
Perfluorohexanesulfonic acid (PFHxS)	4.47	4.68	105	50 - 130
Perfluorohexanoic acid (PFHxA)	4.92	5.22	106	50 - 130
Perfluoro-n-butanoic acid (PFBA)	4.92	5.51	112	50 - 130
Perfluorononanoic acid (PFNA)	4.92	5.32	108	50 - 130
Perfluorooctanesulfonic acid (PFOS)	4.55	4.21	92.6	50 - 130
Perfluorooctanoic acid (PFOA)	4.92	4.71	95.8	50 - 130
Perfluoropentanoic acid (PFPeA)	4.92	5.36	109	50 - 130
Perfluorotetradecanoic acid (PFTA)	4.92	4.87	99.0	50 - 130
Perfluorotridecanoic acid (PFTrDA)	4.92	4.58	93.2	50 - 130
Perfluoroundecanoic acid (PFUnA)	4.92	5.43	110	50 - 130

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

FORM IV

PREPARATION BATCH SUMMARY

EPA 537m

Laboratory: York Analytical Laboratories, Inc. SDG: 22G0348

Client: Phoenix Environmental Laboratories, Inc. Project: GCL69739

Batch: BG20572 Batch Matrix: Soil Preparation: SPE PFAS Extraction-Soil-EPA 537m

SAMPLE NAME	LAB SAMPLE ID	LAB FILE ID	DATE PREPARED	OBSERVATIONS
IMJC COMP-1	22G0348-01	QQQ302687.d	07/12/22 12:42	
IMJC COMP-2	22G0348-02	QQQ302688.d	07/12/22 12:42	
IMJC COMP-3	22G0348-03	QQQ302690.d	07/12/22 12:42	
Blank	BG20572-BLK1	QQQ302671.d	07/12/22 12:42	
LCS	BG20572-BS1	QQQ302672.d	07/12/22 12:42	

FORM I

METHOD BLANK DATA SHEET

EPA 537m

Laboratory:	York Analytical Laboratories, Inc.			SDG:	22G0348
Client:	Phoenix Environmental Laboratories, Inc.			Project:	GCL69739
Matrix:	Soil	Laboratory ID:	BG20572-BLK1	File ID:	QQQ302671.d
Prepared:	07/12/22 12:42	Preparation:	SPE PFAS Extraction-Soil-EPA	Initial/Final:	2.0285 g / 2 mL
Analyzed:	07/14/22 13:00	Instrument:	QQQ3		
Batch:	BG20572	Sequence:	Y2G1435	Calibration:	YF20026

CAS NO.	COMPOUND	CONC. (ug/kg wet)	Q
39108-34-4	1H,1H,2H,2H-Perfluorodecanesulfonic acid (8:2 FTS)	0.246	U
27619-97-2	1H,1H,2H,2H-Perfluorooctanesulfonic acid (6:2 FTS)	0.246	U
2991-50-6	N-EtFOSAA	0.246	U
2355-31-9	N-MeFOSAA	0.246	U
335-77-3	Perfluoro-1-decanesulfonic acid (PFDS)	0.246	U
375-92-8	Perfluoro-1-heptanesulfonic acid (PFHpS)	0.246	U
754-91-6	Perfluoro-1-octanesulfonamide (FOSA)	0.246	U
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.246	U
335-76-2	Perfluorodecanoic acid (PFDA)	0.246	U
307-55-1	Perfluorododecanoic acid (PFDoA)	0.246	U
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.246	U
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	0.246	U
307-24-4	Perfluorohexanoic acid (PFHxA)	0.246	U
375-22-4	Perfluoro-n-butanoic acid (PFBA)	0.246	U
375-95-1	Perfluorononanoic acid (PFNA)	0.246	U
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.246	U
335-67-1	Perfluorooctanoic acid (PFOA)	0.246	U
2706-90-3	Perfluoropentanoic acid (PFPeA)	0.246	U
376-06-7	Perfluorotetradecanoic acid (PFTA)	0.246	U
72629-94-8	Perfluorotridecanoic acid (PFTrDA)	0.246	J
2058-94-8	Perfluoroundecanoic acid (PFUnA)	0.246	U

SYSTEM MONITORING COMPOUND	ADDED (ug/kg wet)	CONC (ug/kg wet)	% REC	QC LIMITS	Q
d3-N-MeFOSAA	4.93	3.62	73.4	25 - 150	
d5-N-EtFOSAA	4.93	3.37	68.3	25 - 150	
M2-6:2 FTS	4.68	3.35	71.7	25 - 200	
M2-8:2 FTS	4.72	5.28	112	25 - 200	
M2PFTeDA	4.93	3.57	72.3	10 - 150	
M3PFBS	4.58	2.92	63.8	25 - 150	
M3PFHxS	4.66	3.58	76.8	25 - 150	
M4PFHpA	4.93	4.08	82.7	25 - 150	

FORM I

METHOD BLANK DATA SHEET

EPA 537m

Laboratory:	York Analytical Laboratories, Inc.			SDG:	22G0348
Client:	Phoenix Environmental Laboratories, Inc.			Project:	GCL69739
Matrix:	Soil	Laboratory ID:	BG20572-BLK1	File ID:	QQQ302671.d
Prepared:	07/12/22 12:42	Preparation:	SPE PFAS Extraction-Soil-EPA	Initial/Final:	2.0285 g / 2 mL
Analyzed:	07/14/22 13:00	Instrument:	QQQ3		
Batch:	BG20572	Sequence:	Y2G1435	Calibration:	YF20026

SYSTEM MONITORING COMPOUND	ADDED (ug/kg wet)	CONC (ug/kg wet)	% REC	QC LIMITS	Q
M5PFHxA	4.93	3.72	75.4	25 - 150	
M6PFDA	4.93	3.61	73.3	25 - 150	
M7PFUdA	4.93	3.31	67.2	25 - 150	
M9PFNA	4.93	3.31	67.1	25 - 150	
Perfluoro-1-[13C8]octanesulfonamide (M8FOSA)	4.93	2.98	60.5	10 - 150	
Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)	4.72	4.05	85.9	25 - 150	
Perfluoro-n-[1,2-13C2]dodecanoic acid (MPFDoA)	4.93	3.07	62.3	25 - 150	
Perfluoro-n-[13C4]butanoic acid (MPFBA)	4.93	3.52	71.5	25 - 150	
Perfluoro-n-[13C5]pentanoic acid (M5PFPeA)	4.93	3.68	74.6	25 - 150	
Perfluoro-n-[13C8]octanoic acid (M8PFOA)	4.93	4.46	90.5	25 - 150	

INTERNAL STANDARD	AREA	RT	REF AREA	REF RT	Q
MPFOA	136503.8	6.140083	142217.4	6.123283	

FORM V

ANALYSIS BATCH (SEQUENCE) SUMMARY

EPA 537m

Laboratory:	York Analytical Laboratories, Inc.	SDG:	22G0348
Client:	Phoenix Environmental Laboratories, Inc.	Project:	GCL69739
Sequence:	Y2F2836	Instrument:	QQQ3
		Calibration:	YF20026

Sample Name	Lab Sample ID	Lab File ID	Analysis Date/Time
Cal Standard	Y2F2836-CAL1	QQQ302187.d	06/27/22 18:18
Cal Standard	Y2F2836-CAL2	QQQ302188.d	06/27/22 18:31
Cal Standard	Y2F2836-CAL3	QQQ302189.d	06/27/22 18:44
Cal Standard	Y2F2836-CAL4	QQQ302190.d	06/27/22 18:57
Cal Standard	Y2F2836-CAL5	QQQ302191.d	06/27/22 19:10
Cal Standard	Y2F2836-CAL6	QQQ302192.d	06/27/22 19:23
Cal Standard	Y2F2836-CAL7	QQQ302193.d	06/27/22 19:36
Secondary Cal Check	Y2F2836-SCV1	QQQ302194.d	06/27/22 19:49

FORM V

ANALYSIS BATCH (SEQUENCE) SUMMARY

EPA 537m

Laboratory: York Analytical Laboratories, Inc.
SDG: 22G0348
Client: Phoenix Environmental Laboratories, Inc.
Project: GCL69739
Sequence: Y2G1435
Instrument: QQQ3
Calibration: YF20026

Sample Name	Lab Sample ID	Lab File ID	Analysis Date/Time
Calibration Check	Y2G1435-CCV1	QQQ302664.d	07/14/22 11:21
Calibration Check	Y2G1435-CCV2	QQQ302670.d	07/14/22 12:47
Blank	BG20572-BLK1	QQQ302671.d	07/14/22 13:00
LCS	BG20572-BS1	QQQ302672.d	07/14/22 13:14
Calibration Check	Y2G1435-CCV3	QQQ302678.d	07/14/22 14:31
IMJC COMP-1	22G0348-01	QQQ302687.d	07/14/22 16:28
IMJC COMP-2	22G0348-02	QQQ302688.d	07/14/22 16:41
Calibration Check	Y2G1435-CCV4	QQQ302689.d	07/14/22 16:54
IMJC COMP-3	22G0348-03	QQQ302690.d	07/14/22 17:07
Calibration Check	Y2G1435-CCV5	QQQ302699.d	07/14/22 19:04
Calibration Check	Y2G1435-CCV6	QQQ302707.d	07/14/22 20:48

FORM VIII

INTERNAL STANDARD AREA AND RT SUMMARY

EPA 537m

Laboratory:	York Analytical Laboratories, Inc.	SDG:	22G0348
Client:	Phoenix Environmental Laboratories, Inc.	Project:	GCL69739
Sequence:	Y2F2836	Instrument:	QQQ3
		Calibration:	YF20026

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
Cal Standard (Y2F2836-CAL1)			Lab File ID: QQQ302187.d			Analyzed: 06/27/22 18:18			
MPFOA	120130.3	6.030933	118102.2	6.039333	102	50 - 200	-0.0084	+/-0.33	
Cal Standard (Y2F2836-CAL2)			Lab File ID: QQQ302188.d			Analyzed: 06/27/22 18:31			
MPFOA	114471.2	6.022533	118102.2	6.039333	97	50 - 200	-0.0168	+/-0.33	
Cal Standard (Y2F2836-CAL3)			Lab File ID: QQQ302189.d			Analyzed: 06/27/22 18:44			
MPFOA	123247.1	6.039333	118102.2	6.039333	104	50 - 200	0.0000	+/-0.33	
Cal Standard (Y2F2836-CAL4)			Lab File ID: QQQ302190.d			Analyzed: 06/27/22 18:57			
MPFOA	122282	6.039317	118102.2	6.039333	104	50 - 200	0.0000	+/-0.33	
Cal Standard (Y2F2836-CAL5)			Lab File ID: QQQ302191.d			Analyzed: 06/27/22 19:10			
MPFOA	118102.2	6.039333	118102.2	6.039333	100	50 - 200	0.0000	+/-0.33	
Cal Standard (Y2F2836-CAL6)			Lab File ID: QQQ302192.d			Analyzed: 06/27/22 19:23			
MPFOA	114236.2	6.039317	118102.2	6.039333	97	50 - 200	0.0000	+/-0.33	
Cal Standard (Y2F2836-CAL7)			Lab File ID: QQQ302193.d			Analyzed: 06/27/22 19:36			
MPFOA	105856.9	6.039317	118102.2	6.039333	90	50 - 200	0.0000	+/-0.33	
Secondary Cal Check (Y2F2836-SCV1)			Lab File ID: QQQ302194.d			Analyzed: 06/27/22 19:49			
MPFOA	124329.8	6.030917	118102.2	6.039333	105	50 - 200	-0.0084	+/-0.33	

FORM VIII

INTERNAL STANDARD AREA AND RT SUMMARY

EPA 537m

Laboratory:	York Analytical Laboratories, Inc.	SDG:	22G0348
Client:	Phoenix Environmental Laboratories, Inc.	Project:	GCL69739
Sequence:	Y2G1435	Instrument:	QQQ3
		Calibration:	YF20026

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
Calibration Check (Y2G1435-CCV1)			Lab File ID: QQQ302664.d			Analyzed: 07/14/22 11:21			
MPFOA	147724.2	6.165833				50 - 200		+/-0.33	
Calibration Check (Y2G1435-CCV2)			Lab File ID: QQQ302670.d			Analyzed: 07/14/22 12:47			
MPFOA	142217.4	6.123283	147724.2	6.165833	96	50 - 200	-0.0426	+/-0.33	
Blank (BG20572-BLK1)			Lab File ID: QQQ302671.d			Analyzed: 07/14/22 13:00			
MPFOA	136503.8	6.140083	142217.4	6.123283	96	50 - 200	0.0168	+/-0.33	
LCS (BG20572-BS1)			Lab File ID: QQQ302672.d			Analyzed: 07/14/22 13:14			
MPFOA	137393	6.140083	142217.4	6.123283	97	50 - 200	0.0168	+/-0.33	
Calibration Check (Y2G1435-CCV3)			Lab File ID: QQQ302678.d			Analyzed: 07/14/22 14:31			
MPFOA	141548.9	6.140083	142217.4	6.123283	100	50 - 200	0.0168	+/-0.33	
IMJC COMP-1 (22G0348-01)			Lab File ID: QQQ302687.d			Analyzed: 07/14/22 16:28			
MPFOA	141077.9	6.131683	141548.9	6.140083	100	50 - 200	-0.0084	+/-0.33	
IMJC COMP-2 (22G0348-02)			Lab File ID: QQQ302688.d			Analyzed: 07/14/22 16:41			
MPFOA	134157.1	6.131683	141548.9	6.140083	95	50 - 200	-0.0084	+/-0.33	
Calibration Check (Y2G1435-CCV4)			Lab File ID: QQQ302689.d			Analyzed: 07/14/22 16:54			
MPFOA	135573.3	6.157434	141548.9	6.140083	96	50 - 200	0.0174	+/-0.33	
IMJC COMP-3 (22G0348-03)			Lab File ID: QQQ302690.d			Analyzed: 07/14/22 17:07			
MPFOA	131784.5	6.157434	135573.3	6.157434	97	50 - 200	0.0000	+/-0.33	
Calibration Check (Y2G1435-CCV5)			Lab File ID: QQQ302699.d			Analyzed: 07/14/22 19:04			
MPFOA	133433.6	6.148483	135573.3	6.157434	98	50 - 200	-0.0090	+/-0.33	
Calibration Check (Y2G1435-CCV6)			Lab File ID: QQQ302707.d			Analyzed: 07/14/22 20:48			
MPFOA	137534.2	6.140083	133433.6	6.148483	103	50 - 200	-0.0084	+/-0.33	

HOLDING TIME SUMMARY

EPA 537m

Laboratory: York Analytical Laboratories, Inc. SDG: 22G0348

Client: Phoenix Environmental Laboratories, Inc. Project: GCL69739

Sample Name	Date Collected	Date Received	Date Prepared	Days to Prep	Max Days to Prep	Date Analyzed	Days to Analysis	Max Days to Analysis	Q
IMJC COMP-1	07/05/22 09:00	07/08/22 15:50	07/12/22 12:42	7.15	14.00	07/14/22 16:28	2.16	28.00	
IMJC COMP-2	07/05/22 09:05	07/08/22 15:50	07/12/22 12:42	7.15	14.00	07/14/22 16:41	2.17	28.00	
IMJC COMP-3	07/05/22 09:10	07/08/22 15:50	07/12/22 12:42	7.15	14.00	07/14/22 17:07	2.18	28.00	

METHOD DETECTION AND REPORTING LIMITS

EPA 537m

Laboratory: York Analytical Laboratories, Inc. **SDG:** 22G0348

Client: Phoenix Environmental Laboratories, Inc. **Project:** GCL69739

Matrix: Water **Instrument:** QQQ3

Analyte	LOD	LOQ	Units
1H,1H,2H,2H-Perfluorodecanesulfonic acid (8:2 FTS)	0.399	2.00	ng/L
	0.0256	0.250	ug/kg
1H,1H,2H,2H-Perfluorooctanesulfonic acid (6:2 FTS)	0.492	5.00	ng/L
	0.0660	0.250	ug/kg
N-EtFOSAA	0.557	2.00	ng/L
	0.104	0.250	ug/kg
N-MeFOSAA	0.529	2.00	ng/L
	0.104	0.250	ug/kg
Perfluoro-1-decanesulfonic acid (PFDS)	0.574	2.00	ng/L
	0.0512	0.250	ug/kg
Perfluoro-1-heptanesulfonic acid (PFHpS)	0.415	2.00	ng/L
	0.0493	0.250	ug/kg
Perfluoro-1-octanesulfonamide (FOSA)	0.296	2.00	ng/L
	0.0467	0.250	ug/kg
Perfluorobutanesulfonic acid (PFBS)	0.294	2.00	ng/L
	0.200	0.250	ug/kg
Perfluorodecanoic acid (PFDA)	0.524	2.00	ng/L
	0.0512	0.250	ug/kg
Perfluorododecanoic acid (PFDoA)	0.777	2.00	ng/L
	0.0750	0.250	ug/kg
Perfluoroheptanoic acid (PFHpA)	0.635	2.00	ng/L
	0.0455	0.250	ug/kg
Perfluorohexanesulfonic acid (PFHxS)	0.281	2.00	ng/L
	0.0310	0.250	ug/kg
Perfluorohexanoic acid (PFHxA)	0.471	2.00	ng/L
	0.0659	0.250	ug/kg
Perfluoro-n-butanoic acid (PFBA)	1.63	2.00	ng/L
	0.183	0.250	ug/kg
Perfluorononanoic acid (PFNA)	0.574	2.00	ng/L
	0.0598	0.250	ug/kg
Perfluorooctanesulfonic acid (PFOS)	0.292	2.00	ng/L

METHOD DETECTION AND REPORTING LIMITS

EPA 537m

Laboratory: York Analytical Laboratories, Inc. **SDG:** 22G0348

Client: Phoenix Environmental Laboratories, Inc. **Project:** GCL69739

Matrix: Soil **Instrument:** QQQ3

Analyte	LOD	LOQ	Units
Perfluorooctanesulfonic acid (PFOS)	0.0438	0.250	ug/kg
Perfluorooctanoic acid (PFOA)	0.531	2.00	ng/L
	0.0772	0.250	ug/kg
Perfluoropentanoic acid (PFPeA)	0.452	2.00	ng/L
	0.0919	0.250	ug/kg
Perfluorotetradecanoic acid (PFTA)	0.531	2.00	ng/L
	0.0747	0.250	ug/kg
Perfluorotridecanoic acid (PFTrDA)	0.0435	0.250	ug/kg
	1.37	2.00	ng/L
Perfluoroundecanoic acid (PFUnA)	0.657	2.00	ng/L
	0.116	0.250	ug/kg

FORM I

ORGANIC ANALYSIS DATA SHEET

EPA 537m

IMJC COMP-1

Laboratory:	York Analytical Laboratories, Inc.		SDG:	22G0348	
Client:	Phoenix Environmental Laboratories, Inc.		Project:	GCL69739	
Matrix:	Soil	Laboratory ID:	22G0348-01	File ID:	QQQ302687.d
Sampled:	07/05/22 09:00	Prepared:	07/12/22 12:42	Analyzed:	07/14/22 16:28
Solids:	99.25	Preparation:	SPE PFAS Extraction-Soil-E	Initial/Final:	2.0112 g / 2 mL
Batch:	BG20572	Sequence:	Y2G1435	Calibration:	YF20026
Instrument:	QQQ3				

CAS NO.	COMPOUND	DILUTION	CONC. (ug/kg dry)	Q
375-73-5	Perfluorobutanesulfonic acid (PFBS)	1	0.250	U
307-24-4	Perfluorohexanoic acid (PFHxA)	1	0.250	U
375-85-9	Perfluoroheptanoic acid (PFHpA)	1	0.250	U
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	1	0.250	U
335-67-1	Perfluorooctanoic acid (PFOA)	1	0.250	U
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	1	0.250	U
375-95-1	Perfluorononanoic acid (PFNA)	1	0.250	U
335-76-2	Perfluorodecanoic acid (PFDA)	1	0.250	U
2058-94-8	Perfluoroundecanoic acid (PFUnA)	1	0.250	U
307-55-1	Perfluorododecanoic acid (PFDoA)	1	0.250	U
72629-94-8	Perfluorotridecanoic acid (PFTrDA)	1	0.250	U
376-06-7	Perfluorotetradecanoic acid (PFTA)	1	0.250	U
2355-31-9	N-MeFOSAA	1	0.250	U
2991-50-6	N-EtFOSAA	1	0.250	U
2706-90-3	Perfluoropentanoic acid (PFPeA)	1	0.250	U
754-91-6	Perfluoro-1-octanesulfonamide (FOSA)	1	0.250	U
375-92-8	Perfluoro-1-heptanesulfonic acid (PFHpS)	1	0.250	U
335-77-3	Perfluoro-1-decanesulfonic acid (PFDS)	1	0.250	U
27619-97-2	1H,1H,2H,2H-Perfluorooctanesulfonic acid (6:2 FTS)	1	0.250	U
39108-34-4	1H,1H,2H,2H-Perfluorodecanesulfonic acid (8:2 FTS)	1	0.250	U
375-22-4	Perfluoro-n-butanoic acid (PFBA)	1	0.250	U

SYSTEM MONITORING COMPOUND	ADDED (ug/kg dry)	CONC (ug/kg dry)	% REC	QC LIMITS	Q
M3PFBS	4.65	2.91	62.5	25 - 150	
M5PFHxA	5.01	3.91	78.0	25 - 150	
M4PFHpA	5.01	4.15	82.9	25 - 150	
M3PFHxS	4.74	4.02	84.7	25 - 150	
Perfluoro-n-[13C8]octanoic acid (M8PFOA)	5.01	4.28	85.4	25 - 150	
M6PFDA	5.01	3.45	68.8	25 - 150	
M7PFUdA	5.01	3.13	62.5	25 - 150	
Perfluoro-n-[1,2-13C2]dodecanoic acid (MPFDoA)	5.01	2.91	58.0	25 - 150	
M2PFTeDA	5.01	3.42	68.3	10 - 150	
Perfluoro-n-[13C4]butanoic acid (MPFBA)	5.01	3.70	73.9	25 - 150	
Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)	4.79	3.19	66.5	25 - 150	
Perfluoro-n-[13C5]pentanoic acid (M5PFPeA)	5.01	3.70	73.9	25 - 150	
Perfluoro-1-[13C8]octanesulfonamide (M8FOSA)	5.01	2.61	52.1	10 - 150	
d3-N-MeFOSAA	5.01	3.26	65.2	25 - 150	
d5-N-EtFOSAA	5.01	3.30	65.8	25 - 150	
M2-6:2 FTS	4.75	3.60	75.6	25 - 200	
M2-8:2 FTS	4.80	4.72	98.3	25 - 200	
M9PFNA	5.01	4.08	81.4	25 - 150	

FORM I

ORGANIC ANALYSIS DATA SHEET

EPA 537m

IMJC COMP-1

Laboratory:	York Analytical Laboratories, Inc.			SDG:	22G0348
Client:	Phoenix Environmental Laboratories, Inc.			Project:	GCL69739
Matrix:	Soil	Laboratory ID:	22G0348-01	File ID:	QQQ302687.d
Sampled:	07/05/22 09:00	Prepared:	07/12/22 12:42	Analyzed:	07/14/22 16:28
Solids:	99.25	Preparation:	SPE PFAS Extraction-Soil-E	Initial/Final:	2.0112 g / 2 mL
Batch:	BG20572	Sequence:	Y2G1435	Calibration:	YF20026	Instrument:	QQQ3

INTERNAL STANDARD	AREA	RT	REF AREA	REF RT	Q
MPFOA	141077.9	6.131683	141548.9	6.140083	

* Values outside of QC limits

Quantitation Results Report (Not Reviewed)

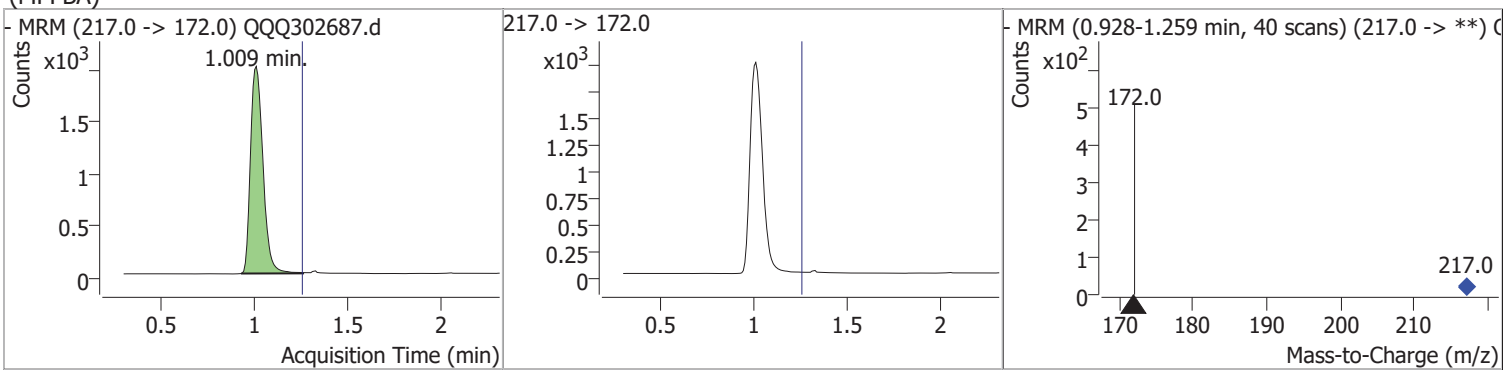
Data File	QQQ302687.d	Operator	
Acq. Method	PFAS 24_IDA ACQ_QQQ3A.m	Acq. Date-Time	7/14/2022 4:28:42 PM
Sample Name	22G0348-01	Instrument	QQQ3
Vial		Multiplier	1.00
DA Method File	PFAS_24_IDA_QUANT_QQQ3_062722.m	Comment	
Tune File		Tune Date	
Batch Name	2022-07-14-IDA.batch.bin	Last Calib Update	6/27/2022 4:24:30 PM
Ref Library			

Compound	RT	QIon	Resp.	Conc.	Units		Dev(Min)
Internal Standards							
MPFOA	6.132	417.0 -> 372.0	141078	10.0000	ng/ml		-0.298
System Monitoring Compounds							
Perfluoro-n-[13C4]butanoic acid (MPFBA)	1.009	217.0 -> 172.0	9212	3.6941	ng/ml		-0.300
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 36.94%			
Perfluoro-n-[13C54]pentanoic acid (M5PFPeA)	4.053	268.0 -> 223.0	7648	3.6930	ng/ml		-0.534
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 36.93%			
M3PFBS	4.680	302.0 -> 79.9	3141	2.9033	ng/ml		-0.483
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 29.03%			
M2-4-2FTS	5.267	329.0 -> 309.0	2860	3.9786	ng/ml	#	-0.424
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 39.79%			
M5PFHxA	5.310	318.0 -> 273.0	15841	3.8990	ng/ml		-0.414
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 38.99%			
M4PFHpA	5.805	367.0 -> 322.0	8752	4.1438	ng/ml		-0.339
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 41.44%			
M3PFHxS	5.854	402.0 -> 80.0	3648	4.0074	ng/ml		-0.323
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 40.07%			
M2-6-2FTS	6.114	429.0 -> 409.0	2464	3.5889	ng/ml	#	-0.306
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 35.89%			
Perfluoro-n-[13C8]octanoic acid (M8PFOA)	6.140	421.0 -> 376.0	14854	4.2687	ng/ml		-0.290
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 42.69%			
Perfluoro-n-[13C9]nonanoic acid (M9PFNA)	6.409	472.0 -> 427.0	16978	4.0713	ng/ml	#	-0.271
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 40.71%			
Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)	6.424	507.0 -> 80.0	2963	3.1816	ng/ml		-0.264
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 31.82%			
M2-8-2FTS	6.675	529.0 -> 509.0	2823	4.7103	ng/ml	#	-0.243
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 47.10%			
M6PFDA	6.676	519.0 -> 473.9	15865	3.4424	ng/ml		-0.246
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 34.42%			
d3-N-MeFOSAA	6.801	573.0 -> 418.8	5272	3.2582	ng/ml		-0.229
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 32.58%			
Perfluoro-1-[13C8]octanesulfonamide (M8FOSA)	7.174	506.0 -> 78.0	5437	2.6061	ng/ml		0.055
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 26.06%			
d5-N-EtFOSAA	6.943	589.0 -> 418.8	4711	3.2898	ng/ml		-0.221
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 32.90%			
M7PFUdA	6.961	570.0 -> 525.0	18969	3.1250	ng/ml		-0.212
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 31.25%			
Perfluoro-n-[1,2-13C2]dodecanoic acid (MPFDoA)	7.270	615.0 -> 570.0	20193	2.8994	ng/ml		-0.178
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 28.99%			
M2PFTeDA	8.033	715.0 -> 670.0	19886	3.4155	ng/ml		-0.068
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 34.15%			
Target Compounds							**QValue**

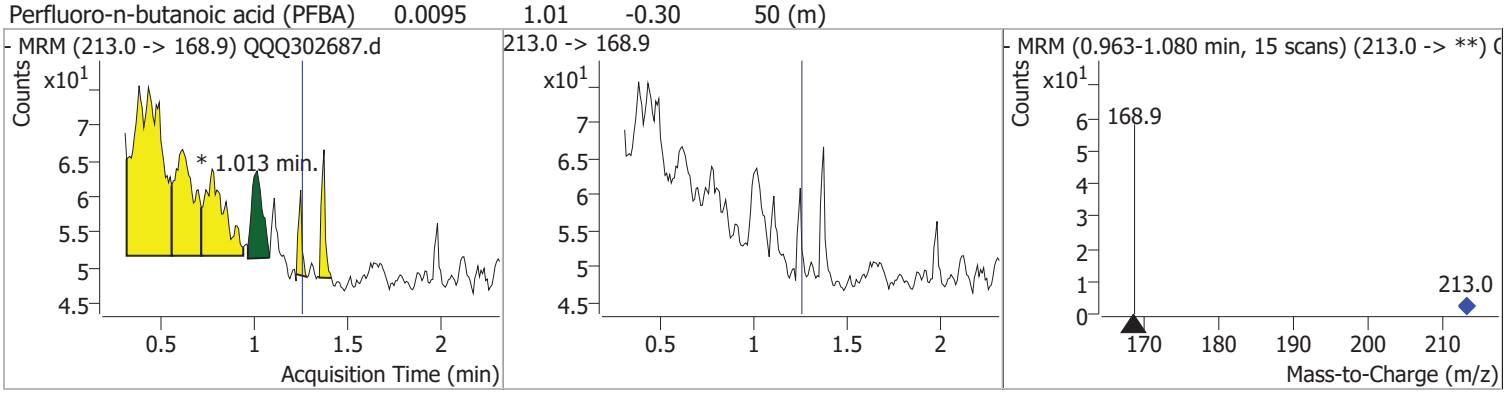
Compound	RT	QIon	Resp.	Conc.	Units		Dev(Min)
Perfluoro-n-butanoic acid (PFBA)	1.013	213.0 -> 168.9	50	0.0095	ng/ml	m	100
Perfluoro-n-pentanoic acid (PFPeA)	4.385	263.0 -> 219.0	17	0.0043	ng/ml		100
Perfluorobutanesulfonic acid (PFBS)	4.987	298.9 -> 79.9	19	0.0081	ng/ml	#	1
1H,1H,2H,2H-perfluoro-1-hexanesulfonate (4 2FTS)	5.470	327.0 -> 307.0	2	0.0015	ng/ml	#	1
Perfluorohexanoic acid (PFHxA)	5.336	313.0 -> 268.9	127	0.0144	ng/ml	#	90
Perfluoro-1-pentanesulfonate (L-PFPeS)	5.570	348.9 -> 79.9	5	0.0028	ng/ml	#	1
Perfluoroheptanoic acid (PFHpA)	5.872	363.0 -> 318.8	8	0.0007	ng/ml		59
Perfluorohexanesulfonic acid (PFHxS)	5.948	398.9 -> 79.9	18	0.0092	ng/ml	#	80
1H,1H,2H,2H-perfluoro-1-octanesulfonate (6 2FTS)	6.957	427.0 -> 407.0	52	0.0473	ng/ml	#	10
Perfluorooctanoic acid (PFOA)	6.132	413.0 -> 368.8	653	0.0554	ng/ml	#	87
Perfluoro-1-heptanesulfonate (L-PFHpS)	5.819	448.9 -> 80.0	12	0.0079	ng/ml	#	1
Perfluorononanoic acid (PFNA)	6.367	463.0 -> 418.8	21	0.0017	ng/ml		65
Perfluorooctanesulfonic acid (PFOS)	6.341	498.9 -> 79.9	14	0.0081	ng/ml	#	1
1H,1H,2H,2H-perfluoro-1-decanesulfonate (8 2FTS)	6.718	527.0 -> 507.0	3	0.0022	ng/ml		10
Perfluorononanesulfonate (L-PFNS)	6.675	548.9 -> 79.9	46	0.0277	ng/ml	#	71
Perfluorodecanoic acid (PFDA)	6.609	513.0 -> 468.8	17	0.0016	ng/ml		65
N-MeFOSAA	6.810	570.0 -> 418.9	32	0.0095	ng/ml	#	63
Perfluoro-1-octanesulfonamide (FOSA)	6.771	497.9 -> 78.0	1	0.0003	ng/ml	#	1
Perfluoro-1-decanesulfonate (L-PFDS)	6.800	598.9 -> 98.9	19	0.0102	ng/ml		100
N-EtFOSAA	6.944	584.0 -> 418.8	45	0.0159	ng/ml	#	18
Perfluoroundecanoic acid (PFUnA)	6.877	563.0 -> 519.0	84	0.0073	ng/ml	#	11
Perfluorododecanoic acid (PFDoA)	7.229	613.0 -> 568.8	11	0.0010	ng/ml		72
Perfluorotridecanoic acid (PFTrDA)	7.379	663.0 -> 618.8	18	0.0309	ng/ml		100
Perfluorotetradecanoic acid (PFTA)	7.270	713.0 -> 669.0	250	0.0180	ng/ml	#	83

(#) = Qualifier Out of Range; (m) = Manual Integration; (+) = Area Summed; (*) = Surrogate Percent Recovery Out of Range; (d): Zeroed Peak

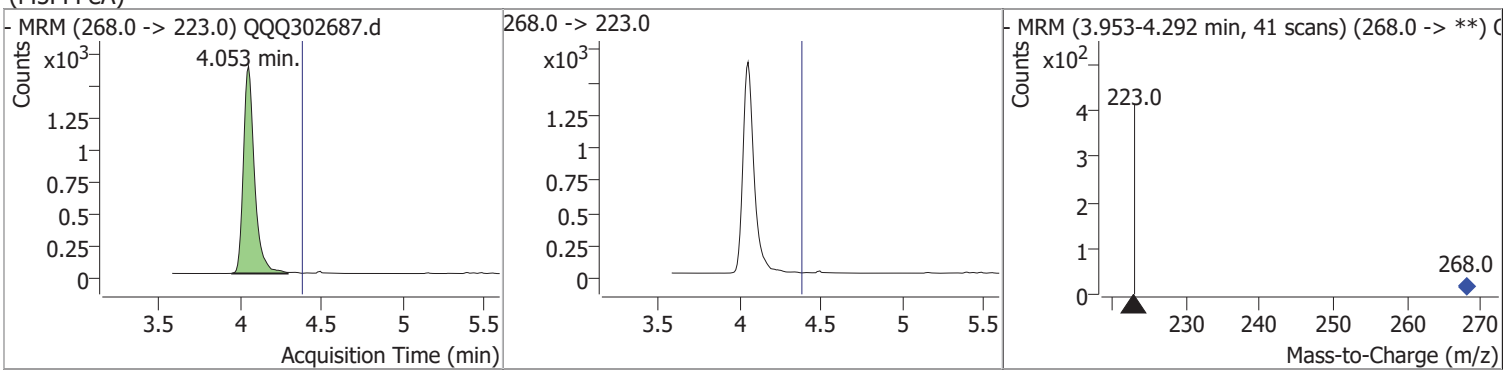
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-n-[13C4]butanoic acid (MPFBA)	3.6941	1.01	-0.30	9212				



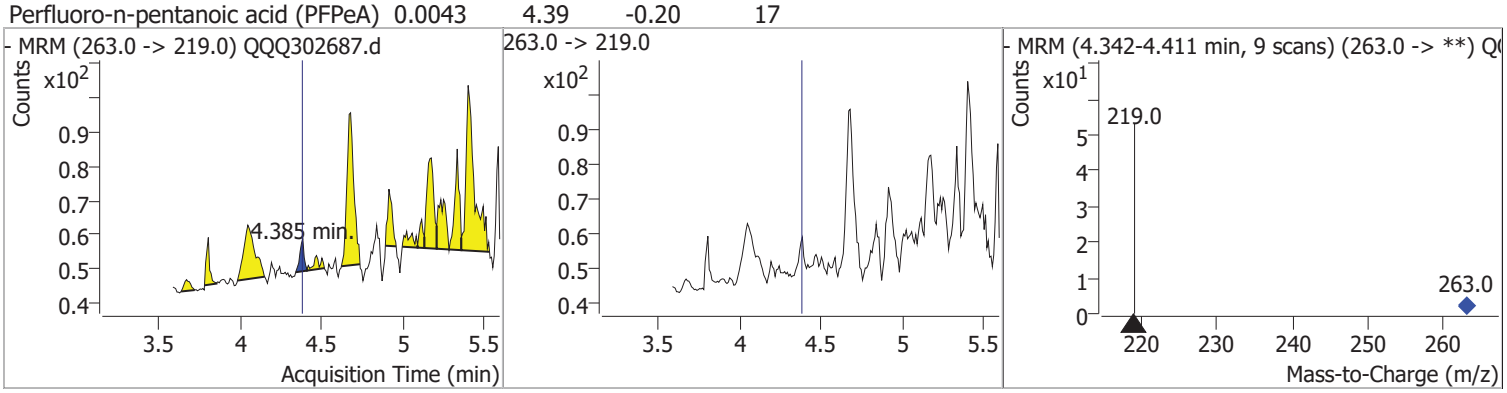
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-n-butanoic acid (PFBA)	0.0095	1.01	-0.30	50 (m)				



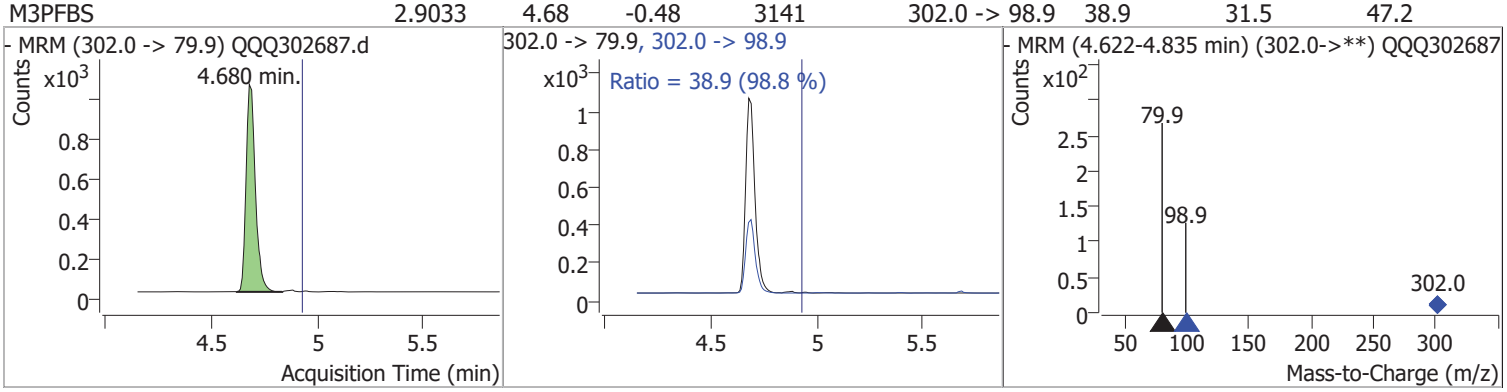
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-n-[13C54]pentanoic acid (M5PFPeA)	3.6930	4.05	-0.53	7648				



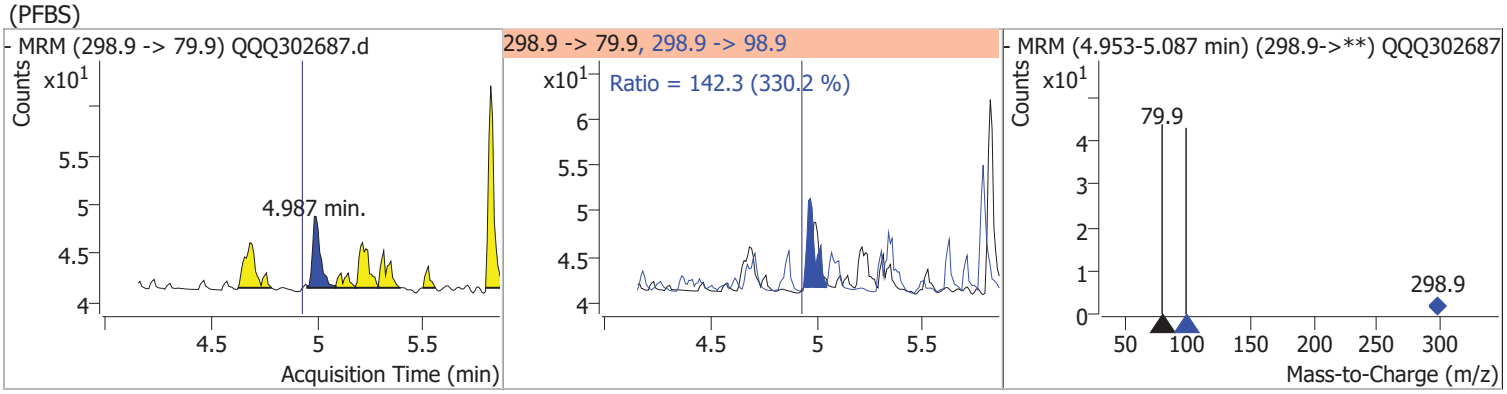
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-n-pentanoic acid (PFPeA)	0.0043	4.39	-0.20	17				



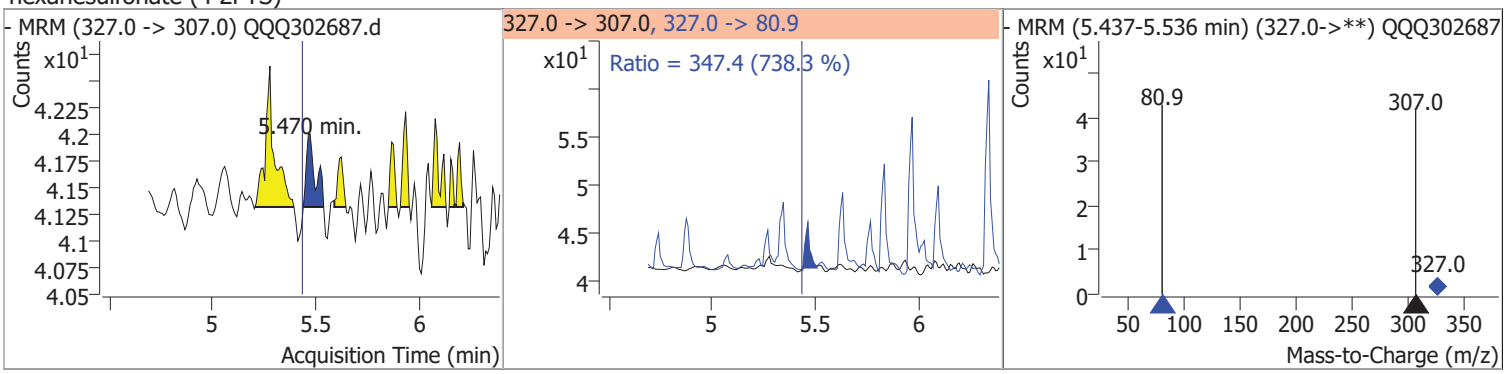
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M3PFBS	2.9033	4.68	-0.48	3141	302.0 -> 98.9	38.9	31.5	47.2



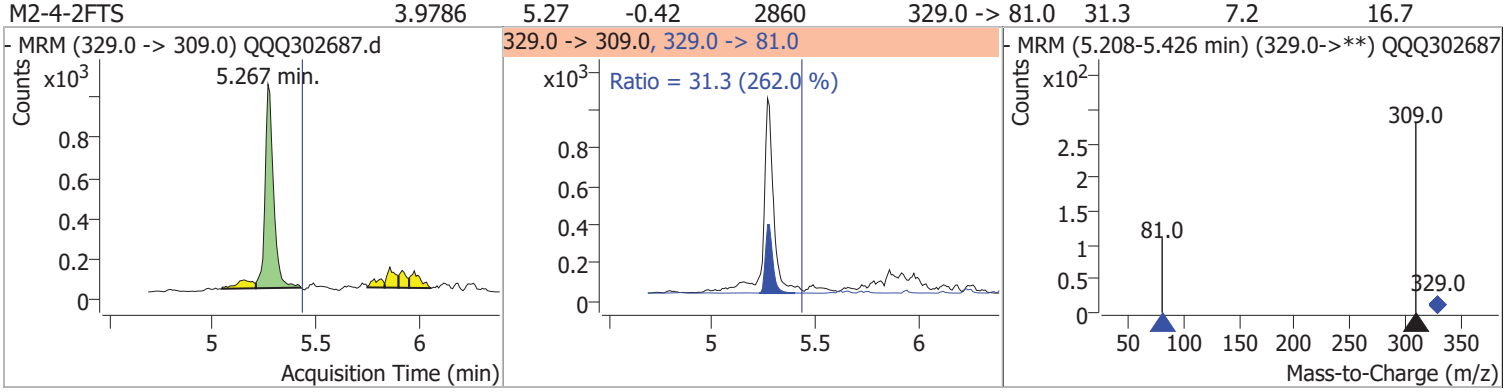
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorobutanesulfonic acid (PFBS)	0.0081	4.99	-0.18	19	298.9 -> 98.9	142.3	34.5	51.7



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
1H,1H,2H,2H-perfluoro-1-hexanesulfonate (4 2FTS)	0.0015	5.47	-0.22	2	327.0 -> 80.9	347.4	28.2	65.9

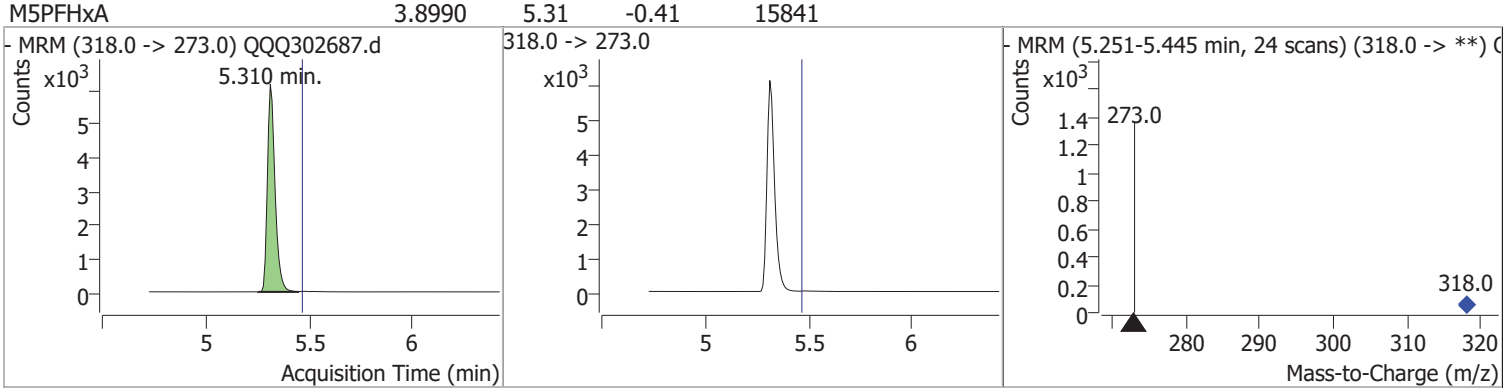


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M2-4-2FTS	3.9786	5.27	-0.42	2860	329.0 -> 81.0	31.3	7.2	16.7

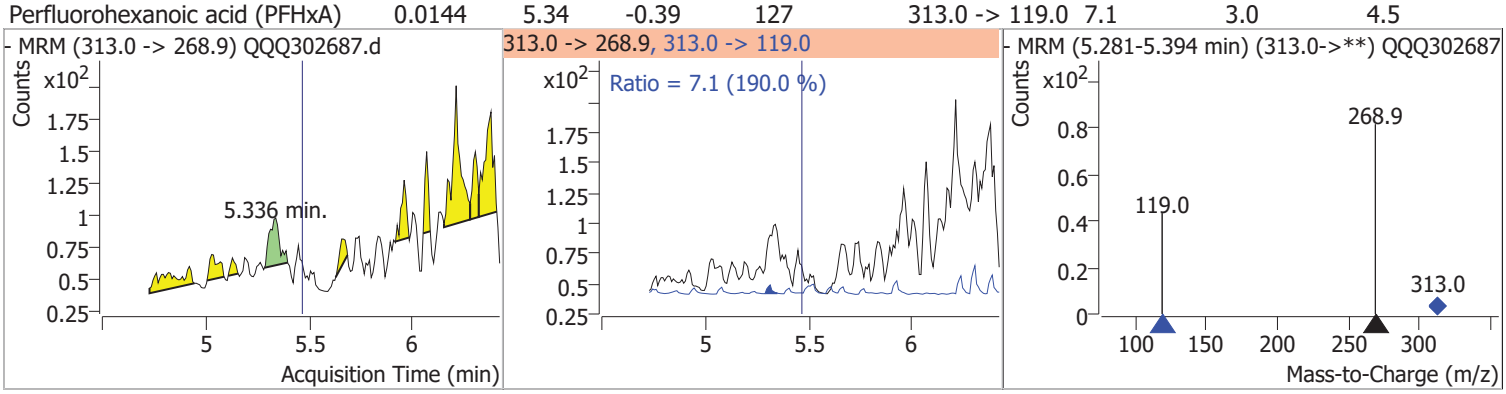


Quantitation Results Report (Not Reviewed)

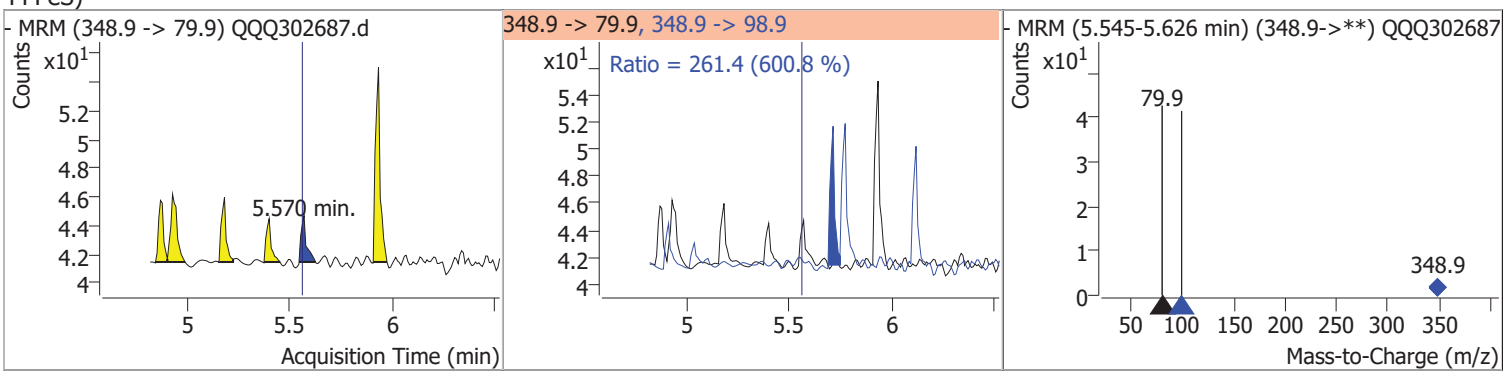
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M5PFHxA	3.8990	5.31	-0.41	15841				



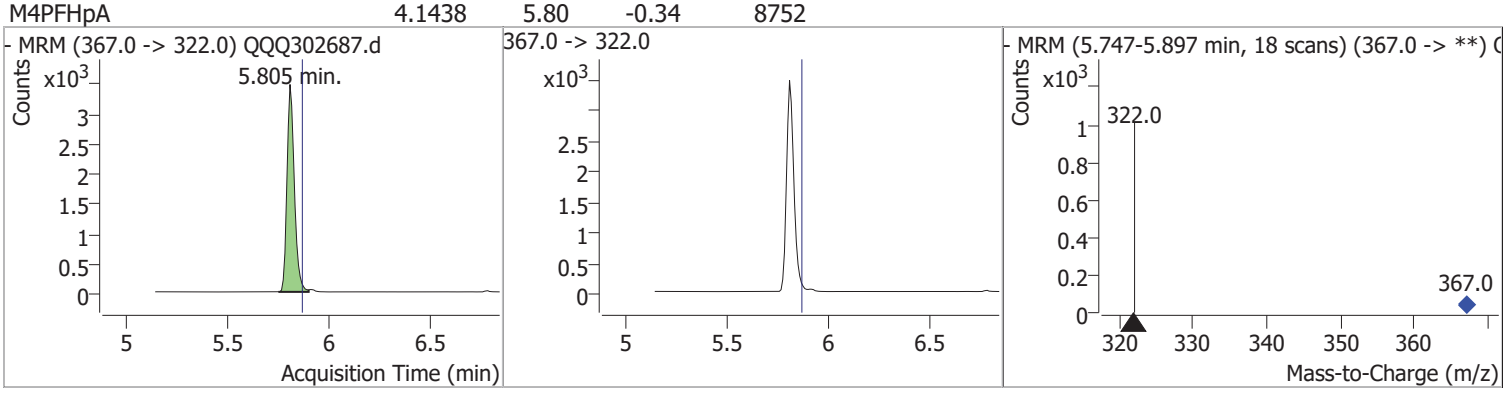
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorohexanoic acid (PFHxA)	0.0144	5.34	-0.39	127	313.0 -> 119.0	7.1	3.0	4.5



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-1-pentanesulfonate (L-PFPeS)	0.0028	5.57	-0.26	5	348.9 -> 98.9	261.4	34.8	52.2

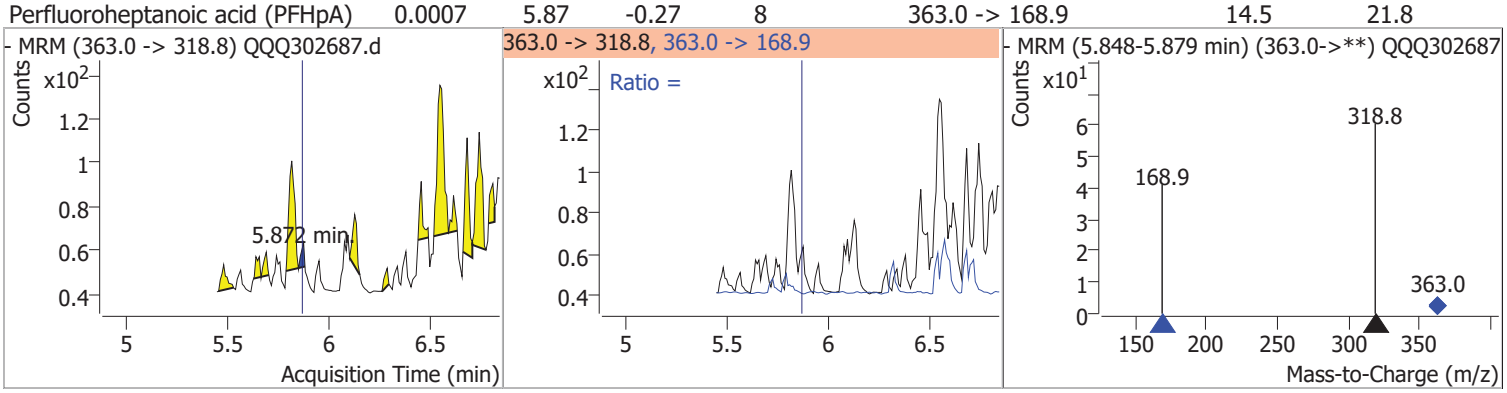


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M4PFHpA	4.1438	5.80	-0.34	8752				

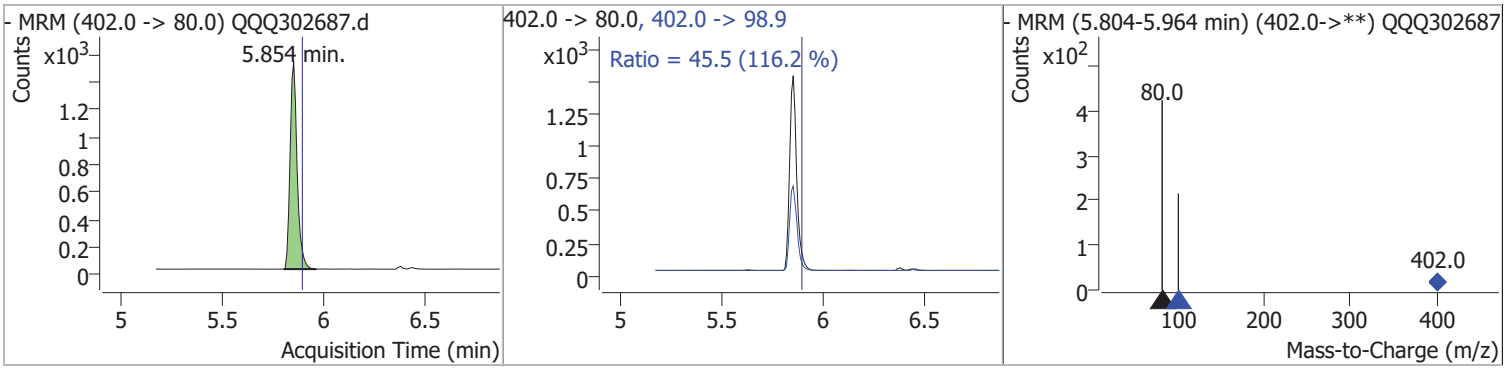


Quantitation Results Report (Not Reviewed)

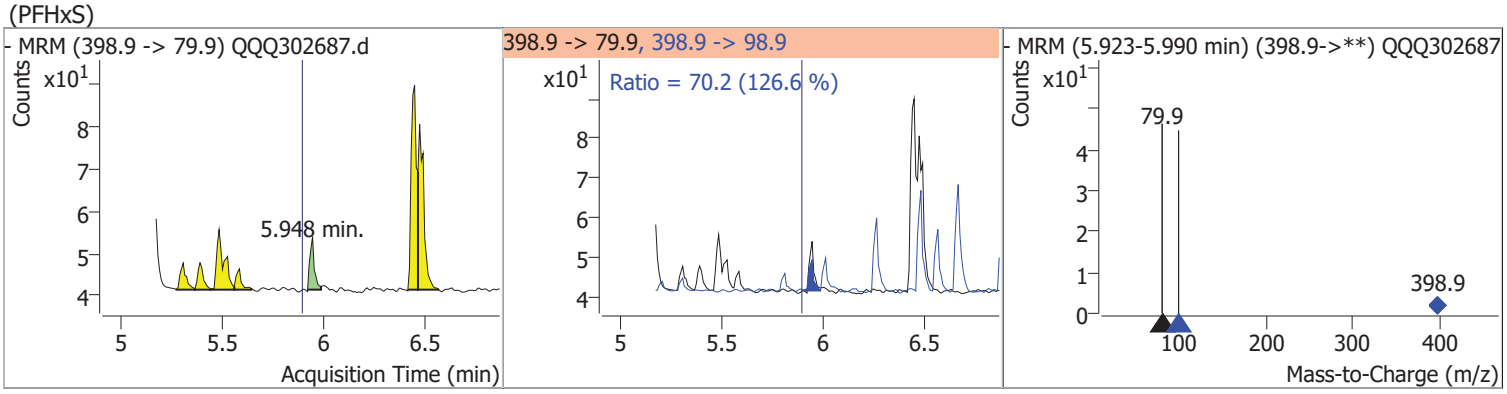
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoroheptanoic acid (PFHpA)	0.0007	5.87	-0.27	8	363.0 -> 168.9		14.5	21.8



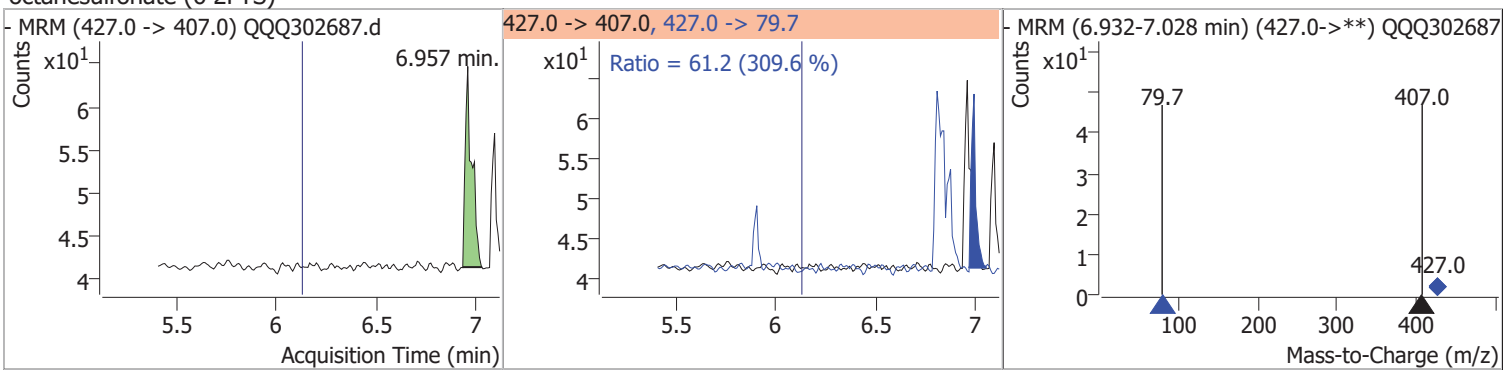
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M3PFHxS	4.0074	5.85	-0.32	3648	402.0 -> 98.9	45.5	31.3	47.0



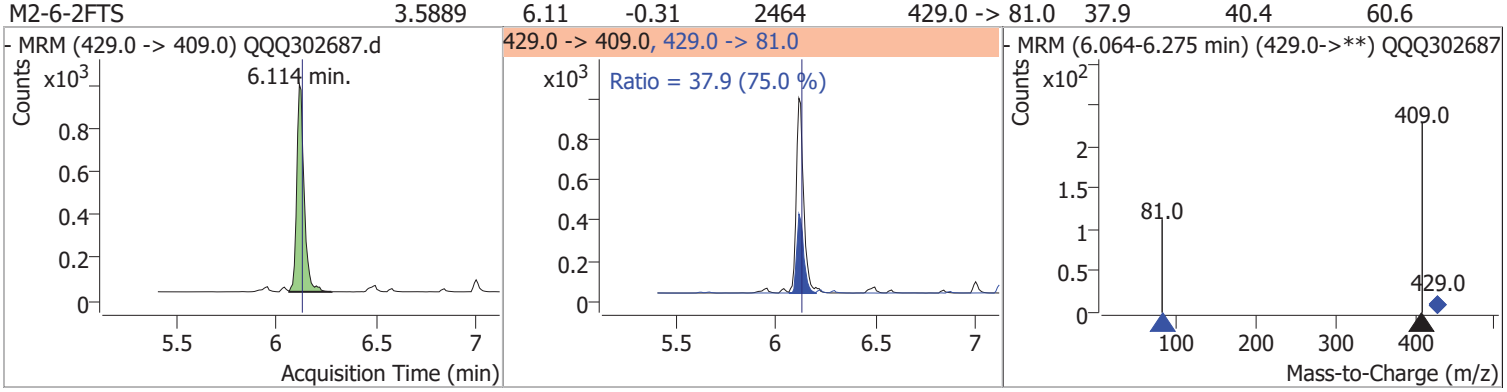
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorohexanesulfonic acid (PFHxS)	0.0092	5.95	-0.23	18	398.9 -> 98.9	70.2	44.4	66.5



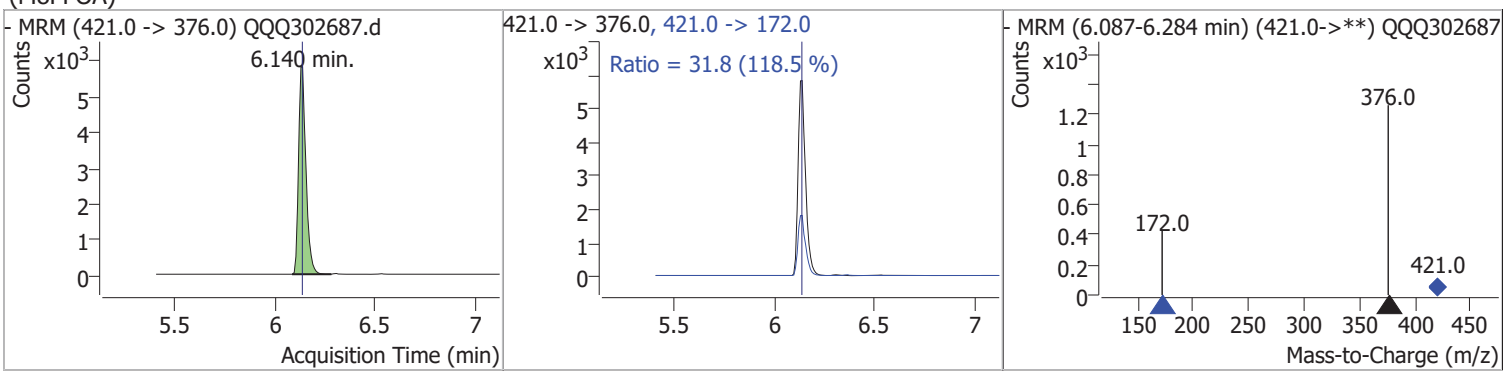
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
1H,1H,2H,2H-perfluoro-1-octanesulfonate (6 2FTS)	0.0473	6.96	0.54	52	427.0 -> 79.7	61.2	15.8	23.7



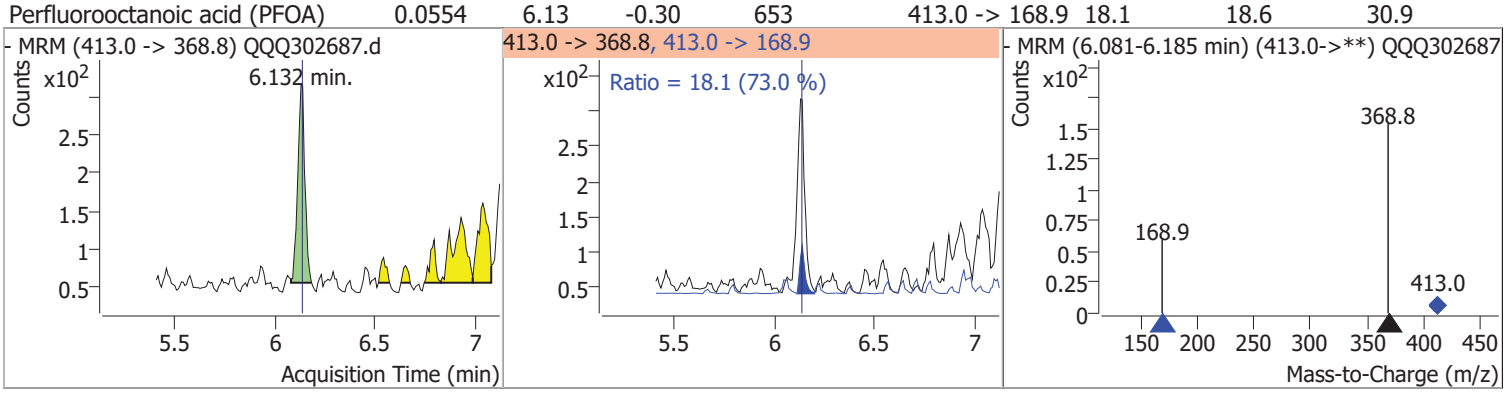
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M2-6-2FTS	3.5889	6.11	-0.31	2464	429.0 -> 81.0	37.9	40.4	60.6



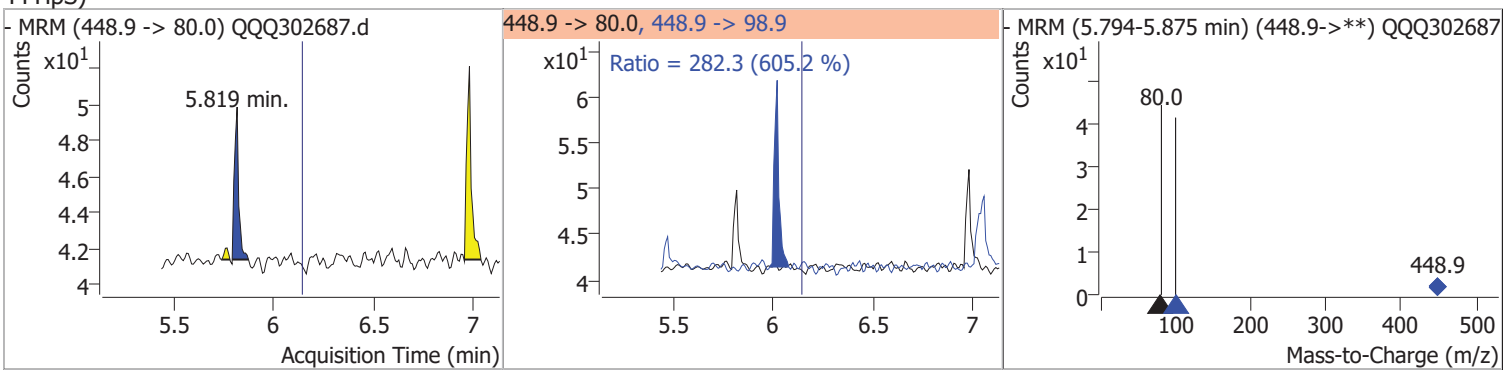
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-n-[13C8]octanoic acid (M8PFOA)	4.2687	6.14	-0.29	14854	421.0 -> 172.0	31.8	21.5	32.2



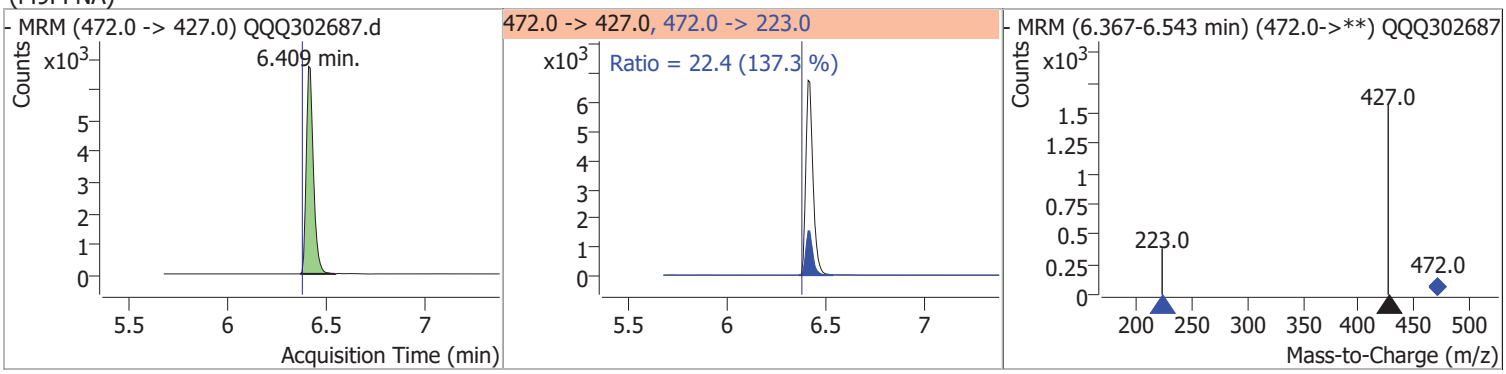
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorooctanoic acid (PFOA)	0.0554	6.13	-0.30	653	413.0 -> 168.9	18.1	18.6	30.9



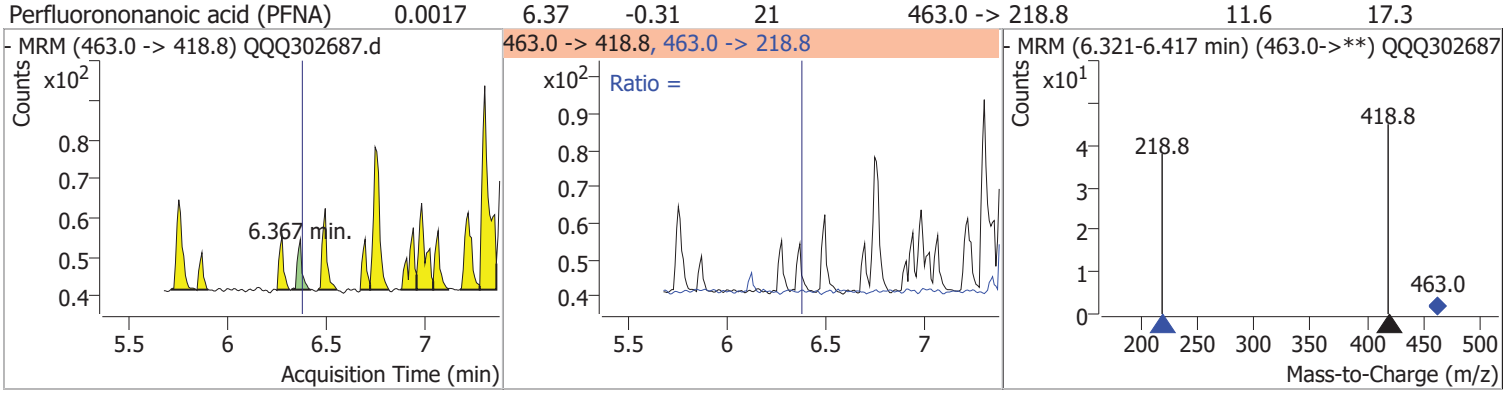
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-1-heptanesulfonate (L-PFHpS)	0.0079	5.82	-0.62	12	448.9 -> 98.9	282.3	37.3	56.0



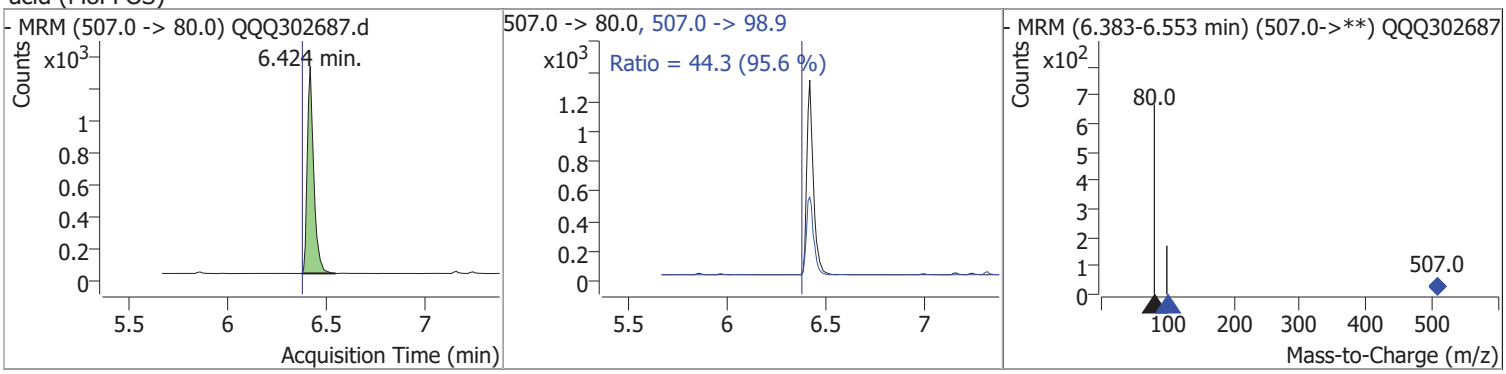
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-n-[13C9]nonanoic acid (M9PFNA)	4.0713	6.41	-0.27	16978	472.0 -> 223.0	22.4	13.1	19.6



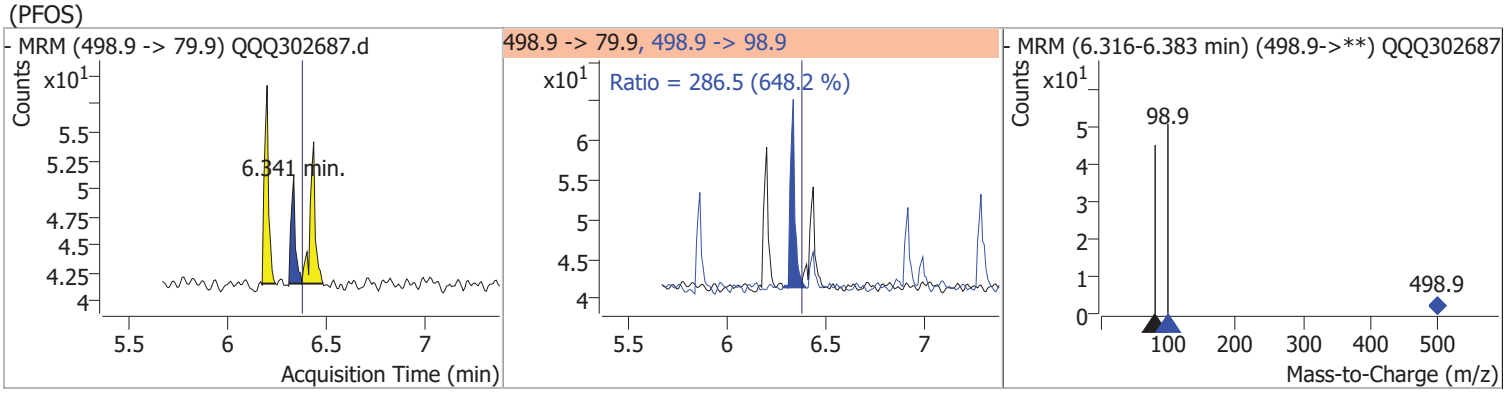
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorononanoic acid (PFNA)	0.0017	6.37	-0.31	21	463.0 -> 218.8		11.6	17.3



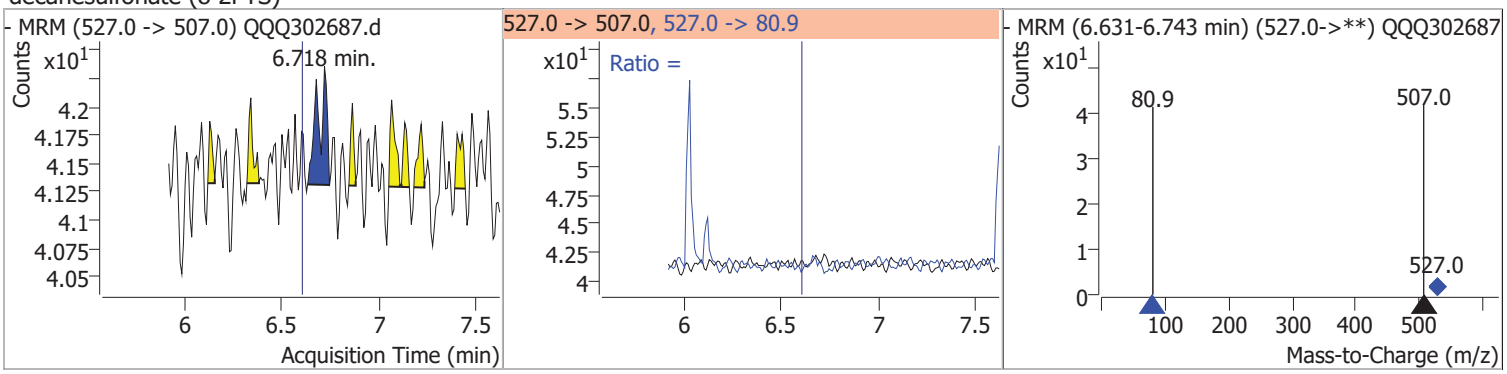
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)	3.1816	6.42	-0.26	2963	507.0 -> 98.9	44.3	37.1	55.6



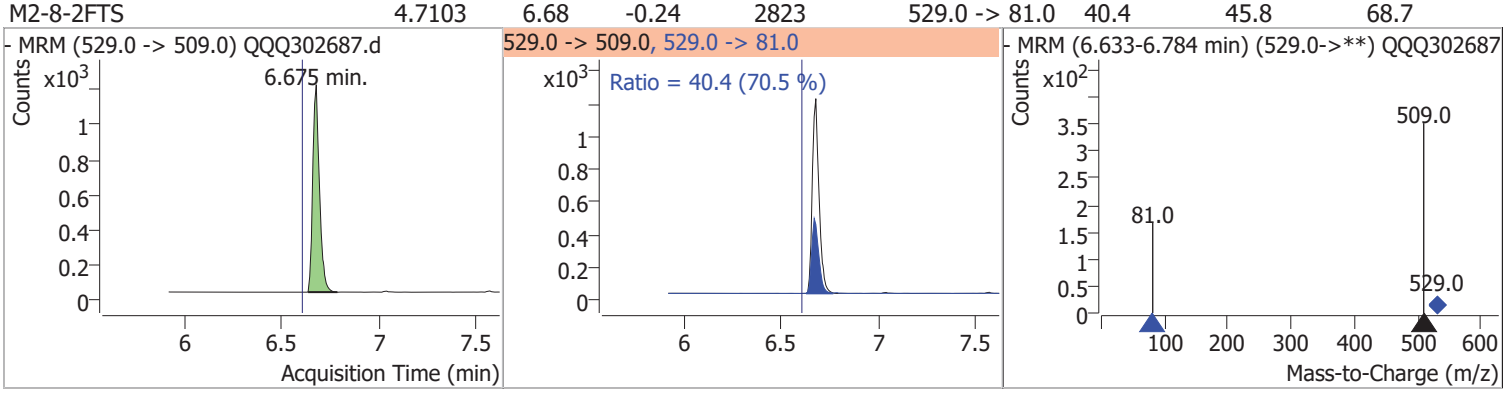
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorooctanesulfonic acid (PFOS)	0.0081	6.34	-0.35	14	498.9 -> 98.9	286.5	35.4	53.0



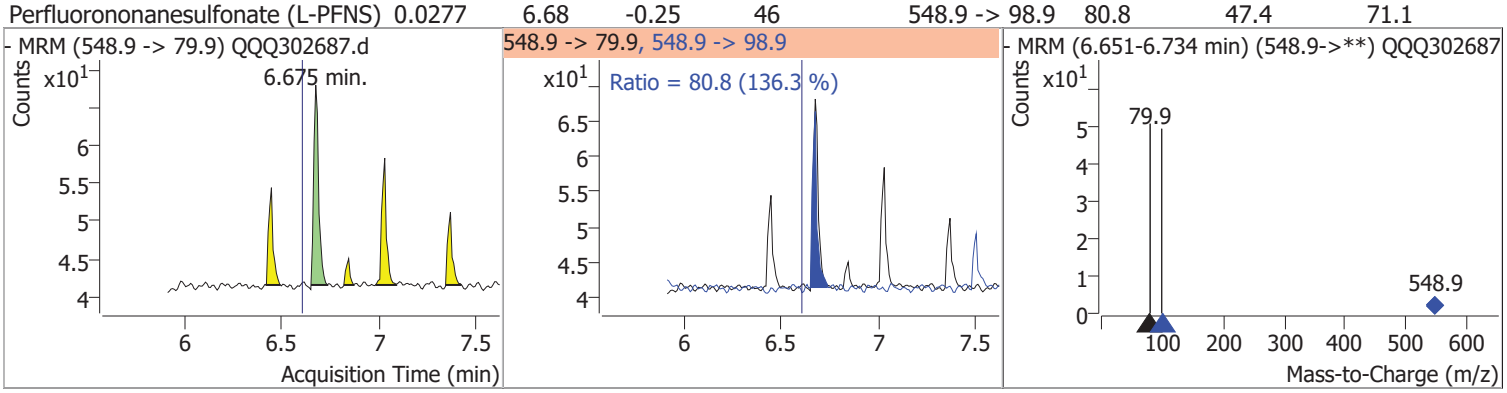
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
1H,1H,2H,2H-perfluoro-1-decanesulfonate (8 2FTS)	0.0022	6.72	-0.20	3	527.0 -> 80.9		63.1	94.6



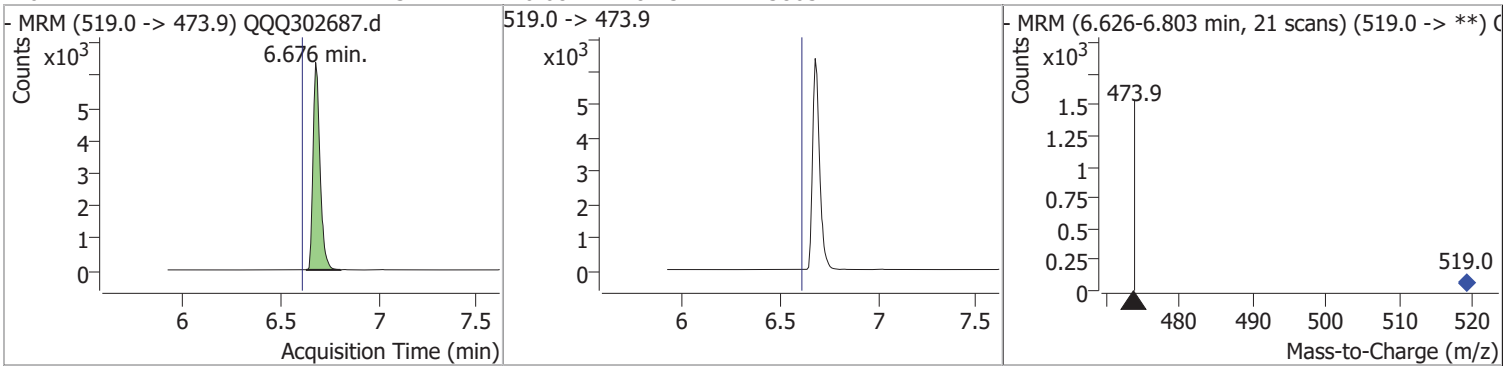
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M2-8-2FTS	4.7103	6.68	-0.24	2823	529.0 -> 81.0	40.4	45.8	68.7



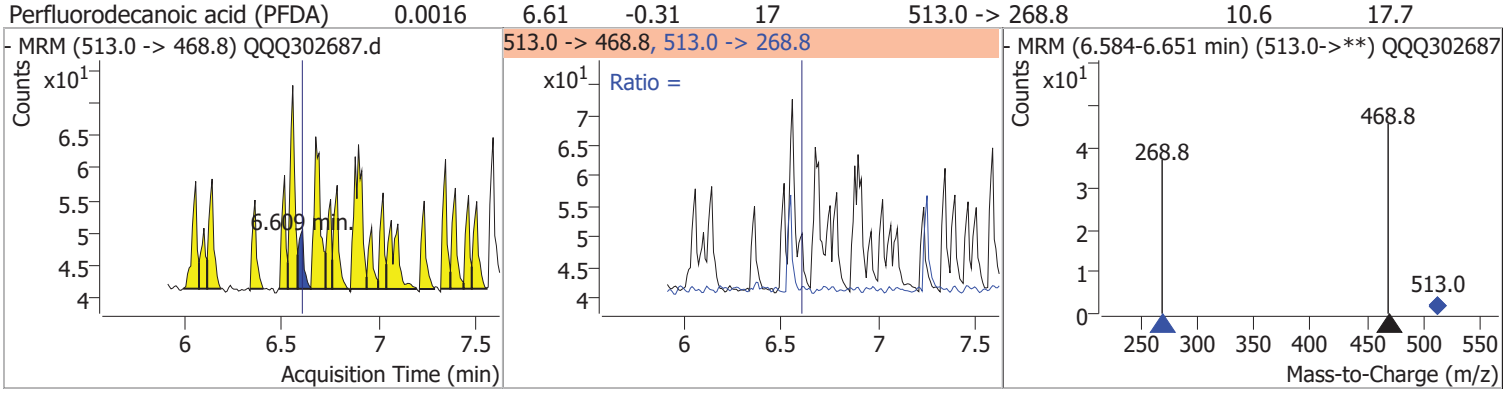
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorononanesulfonate (L-PFNS)	0.0277	6.68	-0.25	46	548.9 -> 98.9	80.8	47.4	71.1



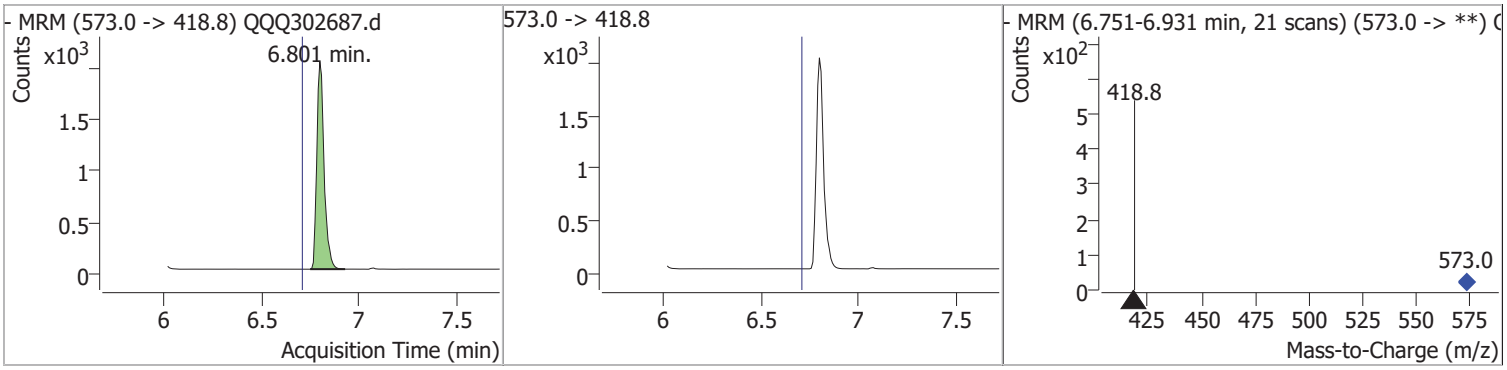
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M6PFDA	3.4424	6.68	-0.25	15865				



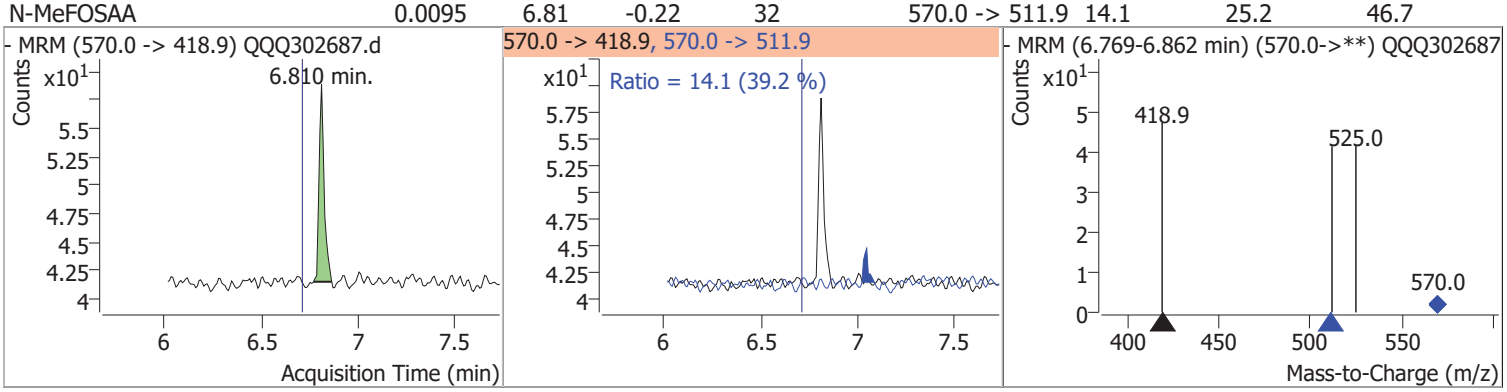
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorodecanoic acid (PFDA)	0.0016	6.61	-0.31	17	513.0 -> 268.8		10.6	17.7



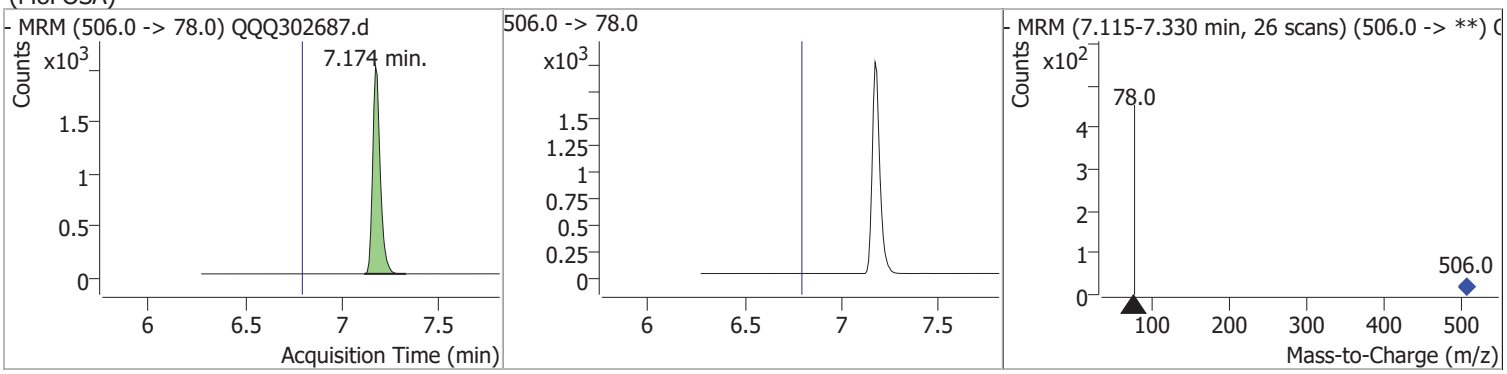
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
d3-N-MeFOSAA	3.2582	6.80	-0.23	5272				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
N-MeFOSAA	0.0095	6.81	-0.22	32	570.0 -> 511.9	14.1	25.2	46.7

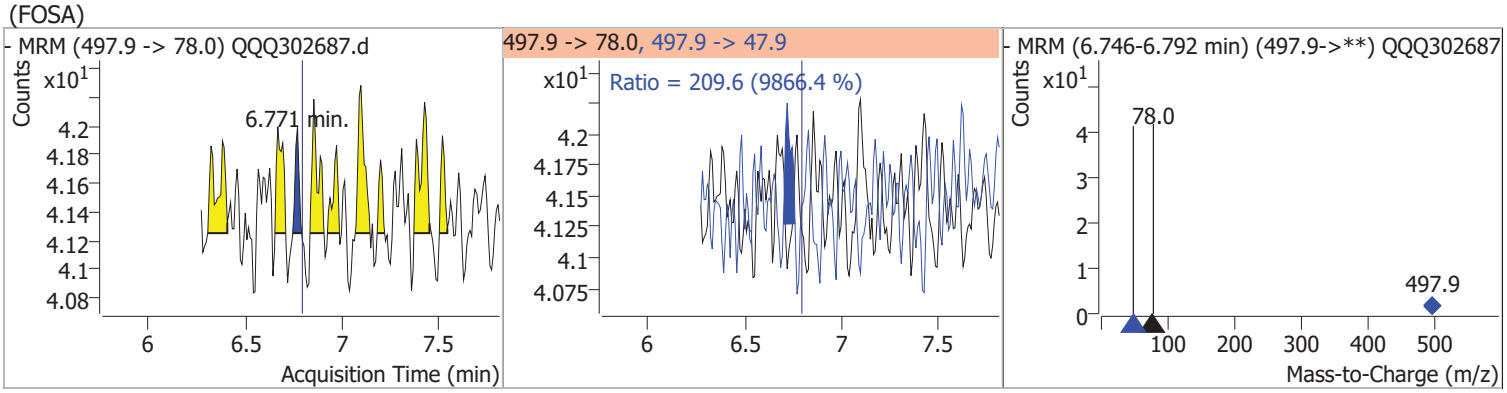


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-1-[13C8]octanesulfonamide (M8FOSA)	2.6061	7.17	0.05	5437				

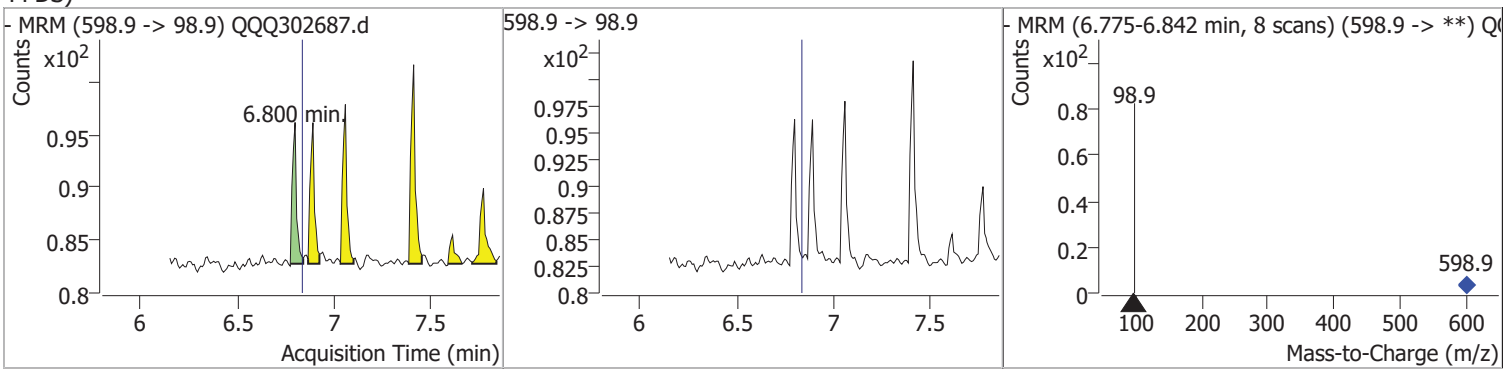


Quantitation Results Report (Not Reviewed)

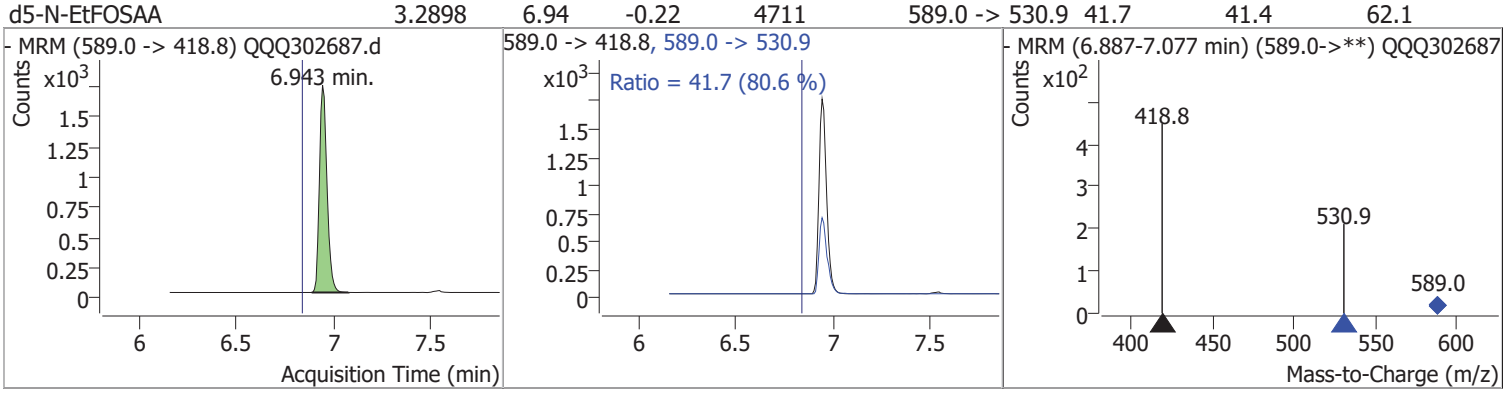
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-1-octanesulfonamide (FOSA)	0.0003	6.77	-0.35	1	497.9 -> 47.9	209.6	1.7	2.5



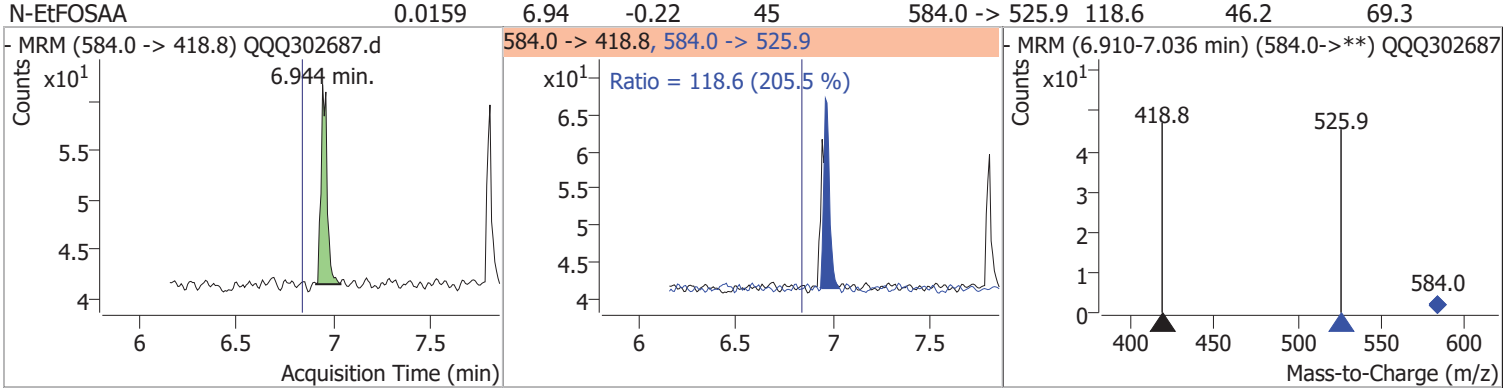
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-1-decanesulfonate (L-PFDS)	0.0102	6.80	-0.36	19				



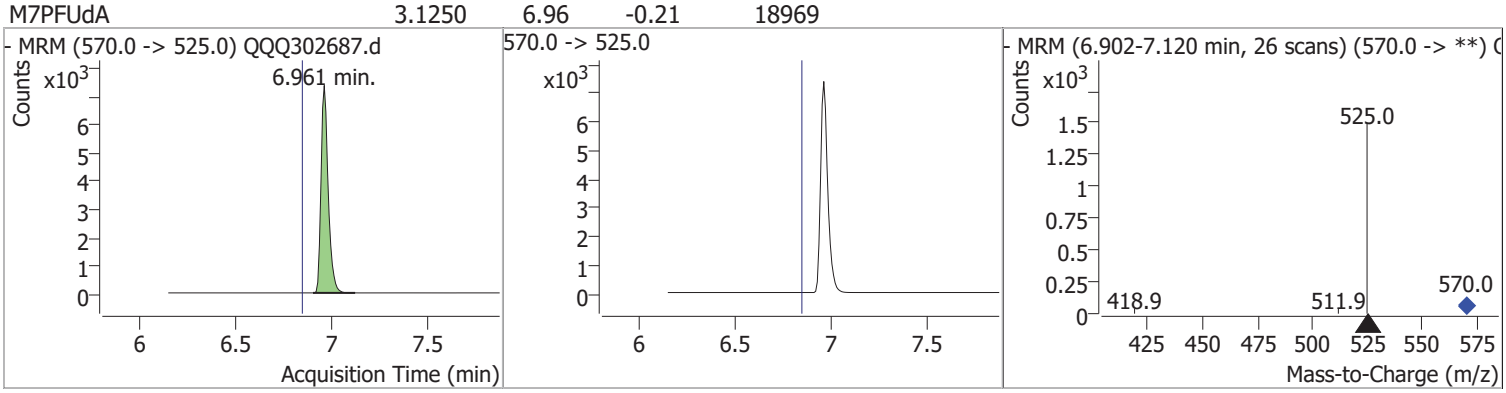
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
d5-N-EtFOSAA	3.2898	6.94	-0.22	4711	589.0 -> 530.9	41.7	41.4	62.1



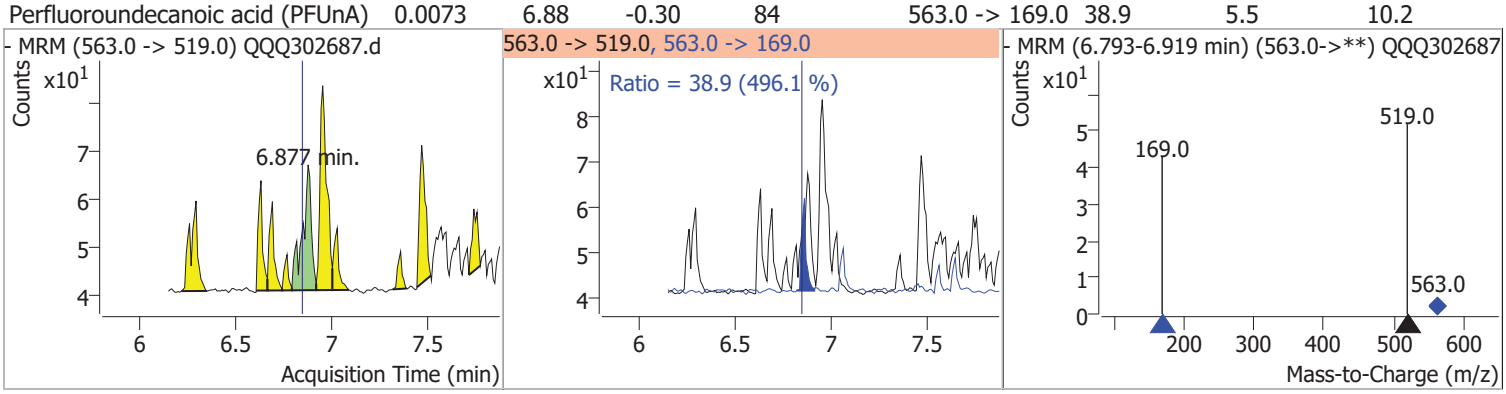
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
N-EtFOSAA	0.0159	6.94	-0.22	45	584.0 -> 525.9	118.6	46.2	69.3



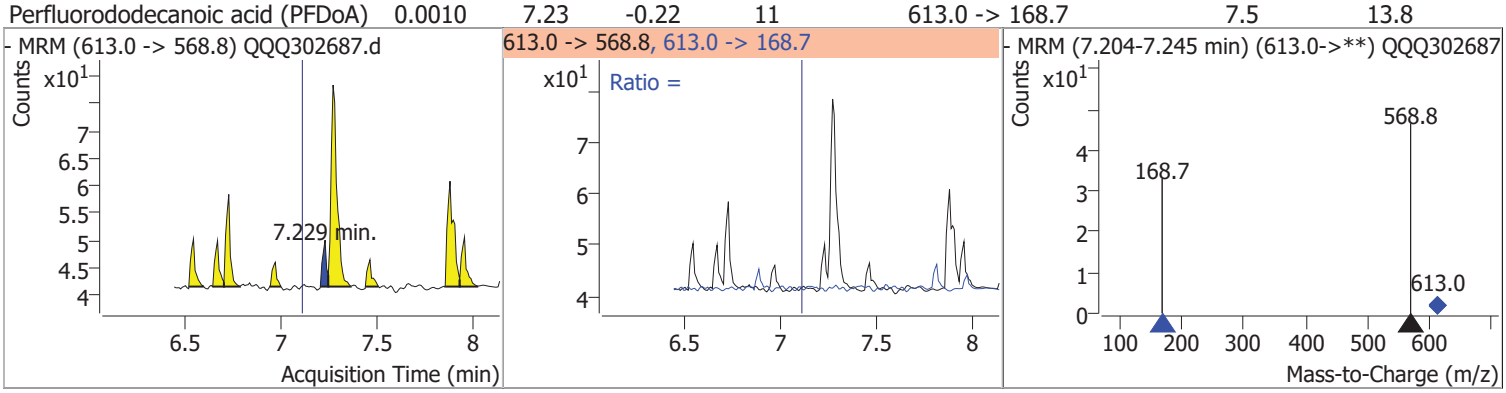
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M7PFUdA	3.1250	6.96	-0.21	18969				



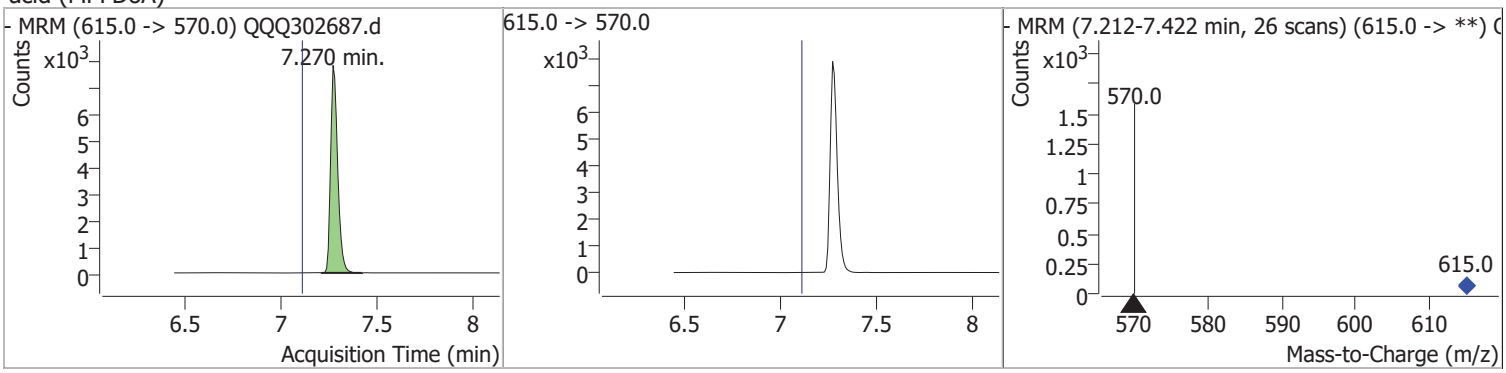
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoroundecanoic acid (PFUnA)	0.0073	6.88	-0.30	84	563.0 -> 169.0	38.9	5.5	10.2



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorododecanoic acid (PFDoA)	0.0010	7.23	-0.22	11	613.0 -> 168.7		7.5	13.8

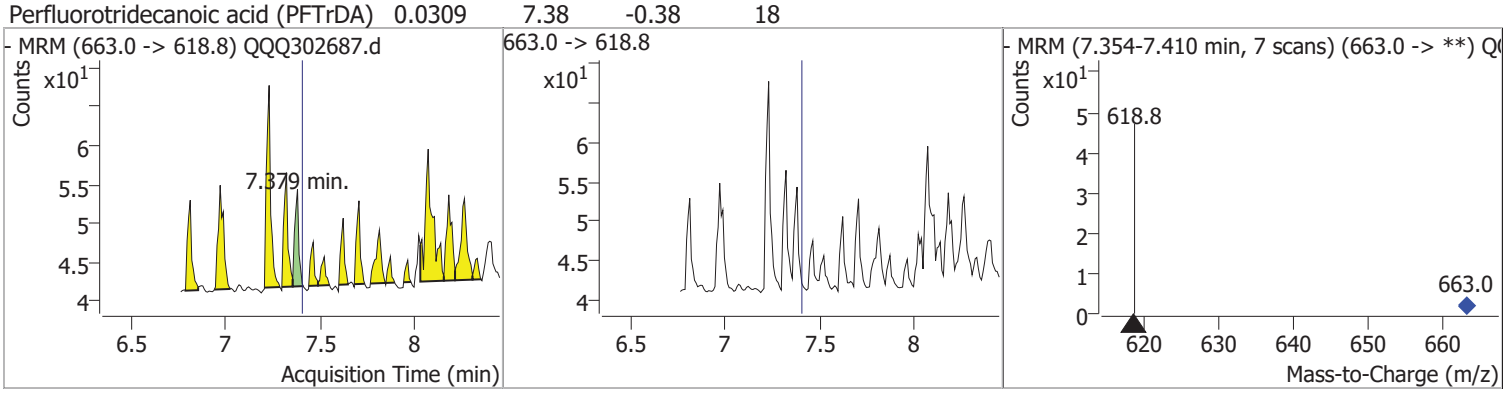


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-n-[1,2-13C2]dodecanoic acid (MPFDoA)	2.8994	7.27	-0.18	20193				

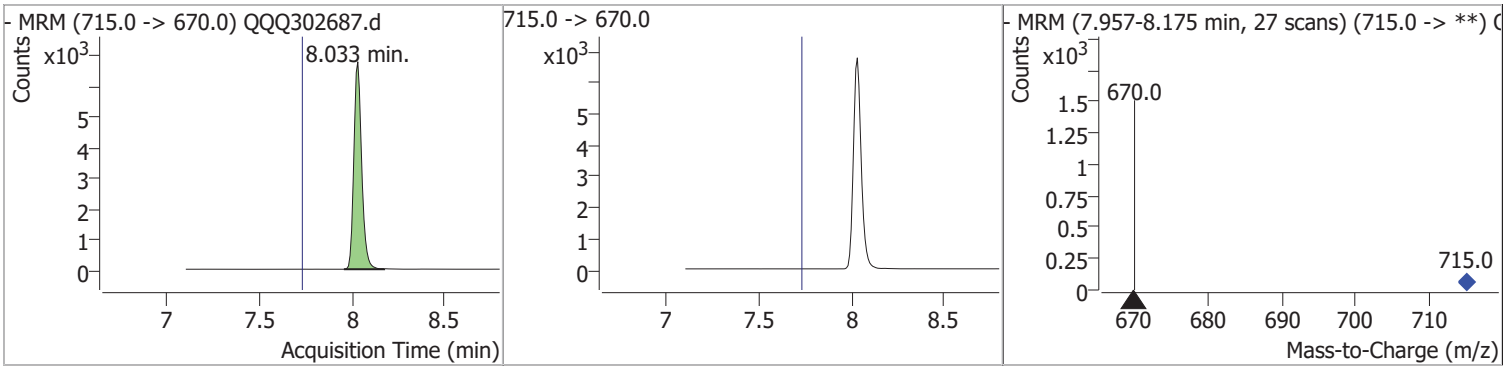


Quantitation Results Report (Not Reviewed)

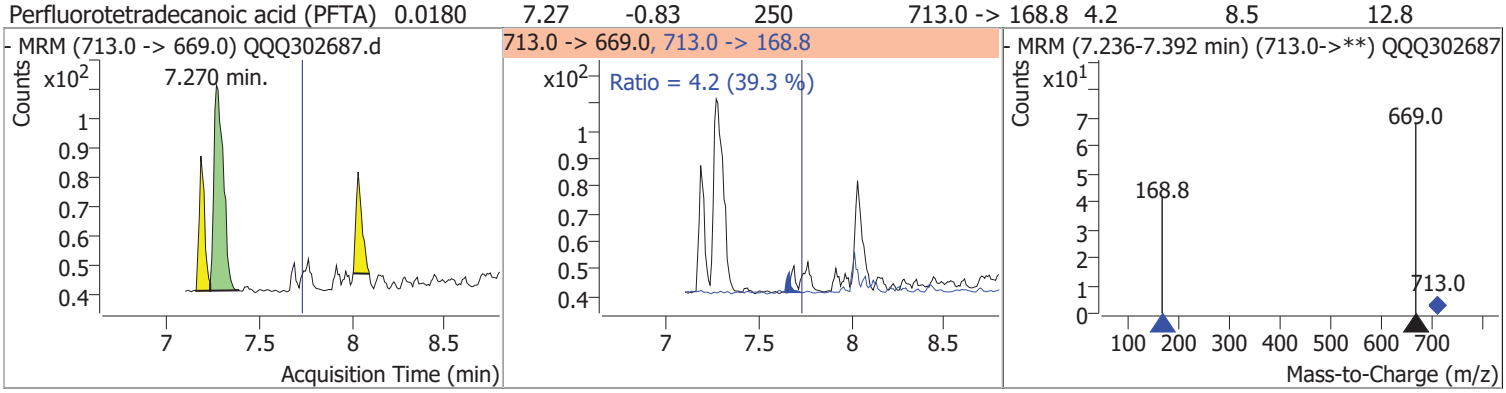
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorotridecanoic acid (PFTrDA)	0.0309	7.38	-0.38	18				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M2PFTeDA	3.4155	8.03	-0.07	19886				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorotetradecanoic acid (PFTA)	0.0180	7.27	-0.83	250	713.0 -> 168.8	4.2	8.5	12.8



FORM I

ORGANIC ANALYSIS DATA SHEET

EPA 537m

IMJC COMP-2

Laboratory:	York Analytical Laboratories, Inc.			SDG:	22G0348
Client:	Phoenix Environmental Laboratories, Inc.			Project:	GCL69739
Matrix:	Soil	Laboratory ID:	22G0348-02	File ID:	QQQ302688.d
Sampled:	07/05/22 09:05	Prepared:	07/12/22 12:42	Analyzed:	07/14/22 16:41
Solids:	99.65	Preparation:	SPE PFAS Extraction-Soil-E	Initial/Final:	2.025 g / 2 mL
Batch:	BG20572	Sequence:	Y2G1435	Calibration:	YF20026
Instrument:	QQQ3				

CAS NO.	COMPOUND	DILUTION	CONC. (ug/kg dry)	Q
375-73-5	Perfluorobutanesulfonic acid (PFBS)	1	0.248	U
307-24-4	Perfluorohexanoic acid (PFHxA)	1	0.248	U
375-85-9	Perfluoroheptanoic acid (PFHpA)	1	0.248	U
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	1	0.248	U
335-67-1	Perfluorooctanoic acid (PFOA)	1	0.248	U
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	1	0.248	U
375-95-1	Perfluorononanoic acid (PFNA)	1	0.248	U
335-76-2	Perfluorodecanoic acid (PFDA)	1	0.248	U
2058-94-8	Perfluoroundecanoic acid (PFUnA)	1	0.248	U
307-55-1	Perfluorododecanoic acid (PFDoA)	1	0.248	U
72629-94-8	Perfluorotridecanoic acid (PFTrDA)	1	0.248	U
376-06-7	Perfluorotetradecanoic acid (PFTA)	1	0.248	U
2355-31-9	N-MeFOSAA	1	0.248	U
2991-50-6	N-EtFOSAA	1	0.248	U
2706-90-3	Perfluoropentanoic acid (PFPeA)	1	0.248	U
754-91-6	Perfluoro-1-octanesulfonamide (FOSA)	1	0.248	U
375-92-8	Perfluoro-1-heptanesulfonic acid (PFHpS)	1	0.248	U
335-77-3	Perfluoro-1-decanesulfonic acid (PFDS)	1	0.248	U
27619-97-2	1H,1H,2H,2H-Perfluorooctanesulfonic acid (6:2 FTS)	1	0.248	U
39108-34-4	1H,1H,2H,2H-Perfluorodecanesulfonic acid (8:2 FTS)	1	0.248	U
375-22-4	Perfluoro-n-butanoic acid (PFBA)	1	0.248	U

SYSTEM MONITORING COMPOUND	ADDED (ug/kg dry)	CONC (ug/kg dry)	% REC	QC LIMITS	Q
M3PFBS	4.60	3.15	68.3	25 - 150	
M5PFHxA	4.96	3.91	78.9	25 - 150	
M4PFHpA	4.96	4.13	83.4	25 - 150	
M3PFHxS	4.69	3.93	83.7	25 - 150	
Perfluoro-n-[13C8]octanoic acid (M8PFOA)	4.96	4.39	88.5	25 - 150	
M6PFDA	4.96	3.08	62.1	25 - 150	
M7PFUdA	4.96	2.55	51.4	25 - 150	
Perfluoro-n-[1,2-13C2]dodecanoic acid (MPFDoA)	4.96	2.25	45.4	25 - 150	
M2PFTeDA	4.96	3.17	64.0	10 - 150	
Perfluoro-n-[13C4]butanoic acid (MPFBA)	4.96	3.73	75.2	25 - 150	
Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)	4.74	3.76	79.3	25 - 150	
Perfluoro-n-[13C5]pentanoic acid (M5PFPeA)	4.96	3.91	78.9	25 - 150	
Perfluoro-1-[13C8]octanesulfonamide (M8FOSA)	4.96	2.47	49.8	10 - 150	
d3-N-MeFOSAA	4.96	3.19	64.5	25 - 150	
d5-N-EtFOSAA	4.96	3.03	61.2	25 - 150	
M2-6:2 FTS	4.70	3.41	72.5	25 - 200	
M2-8:2 FTS	4.75	4.58	96.4	25 - 200	
M9PFNA	4.96	4.35	87.8	25 - 150	

FORM I

ORGANIC ANALYSIS DATA SHEET

EPA 537m

IMJC COMP-2

Laboratory:	York Analytical Laboratories, Inc.			SDG:	22G0348
Client:	Phoenix Environmental Laboratories, Inc.			Project:	GCL69739
Matrix:	Soil	Laboratory ID:	22G0348-02	File ID:	QQQ302688.d
Sampled:	07/05/22 09:05	Prepared:	07/12/22 12:42	Analyzed:	07/14/22 16:41
Solids:	99.65	Preparation:	SPE PFAS Extraction-Soil-E	Initial/Final:	2.025 g / 2 mL
Batch:	BG20572	Sequence:	Y2G1435	Calibration:	YF20026	Instrument:	QQQ3

INTERNAL STANDARD	AREA	RT	REF AREA	REF RT	Q
MPFOA	134157.1	6.131683	141548.9	6.140083	

* Values outside of QC limits

Quantitation Results Report (Not Reviewed)

Agilent | Trusted Answers

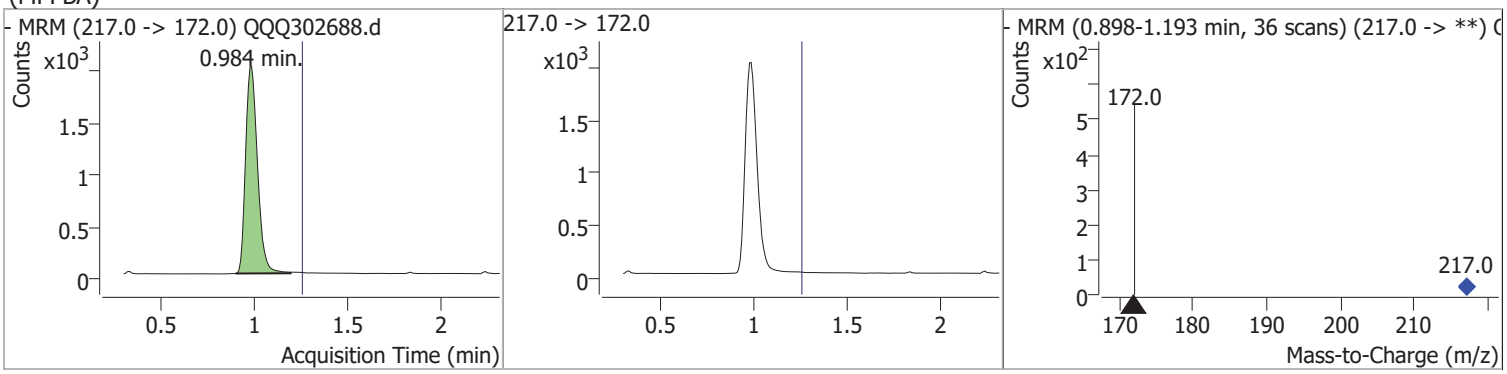
Data File	QQQ302688.d	Operator	
Acq. Method	PFAS 24_IDA ACQ_QQQ3A.m	Acq. Date-Time	7/14/2022 4:41:37 PM
Sample Name	22G0348-02	Instrument	QQQ3
Vial		Multiplier	1.00
DA Method File	PFAS_24_IDA_QUANT_QQQ3_062722.m	Comment	
Tune File		Tune Date	
Batch Name	2022-07-14-IDA.batch.bin	Last Calib Update	6/27/2022 4:24:30 PM
Ref Library			

Compound	RT	QIon	Resp.	Conc.	Units		Dev(Min)
Internal Standards							
MPFOA	6.132	417.0 -> 372.0	134157	10.0000	ng/ml		-0.298
System Monitoring Compounds							
Perfluoro-n-[13C4]butanoic acid (MPFBA)	0.984	217.0 -> 172.0	8930	3.7621	ng/ml		-0.325
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 37.62%			
Perfluoro-n-[13C54]pentanoic acid (M5PFPeA)	4.053	268.0 -> 223.0	7787	3.9432	ng/ml		-0.534
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 39.43%			
M3PFBS	4.691	302.0 -> 79.9	3263	3.1736	ng/ml		-0.472
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 31.74%			
M2-4-2FTS	5.275	329.0 -> 309.0	2301	3.3707	ng/ml	#	-0.415
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 33.71%			
M5PFHxA	5.318	318.0 -> 273.0	15248	3.9448	ng/ml		-0.406
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 39.45%			
M4PFHpA	5.805	367.0 -> 322.0	8378	4.1700	ng/ml		-0.339
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 41.70%			
M3PFHxS	5.854	402.0 -> 80.0	3429	3.9613	ng/ml	#	-0.323
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 39.61%			
M2-6-2FTS	6.114	429.0 -> 409.0	2252	3.4421	ng/ml		-0.306
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 34.42%			
Perfluoro-n-[13C8]octanoic acid (M8PFOA)	6.131	421.0 -> 376.0	14677	4.4270	ng/ml		-0.299
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 44.27%			
Perfluoro-n-[13C9]nonanoic acid (M9PFNA)	6.400	472.0 -> 427.0	17441	4.3920	ng/ml		-0.280
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 43.92%			
Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)	6.416	507.0 -> 80.0	3365	3.7960	ng/ml	#	-0.272
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 37.96%			
M2-8-2FTS	6.659	529.0 -> 509.0	2632	4.6173	ng/ml		-0.259
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 46.17%			
M6PFDA	6.668	519.0 -> 473.9	13593	3.1044	ng/ml		-0.254
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 31.04%			
d3-N-MeFOSAA	6.784	573.0 -> 418.8	4959	3.2229	ng/ml		-0.246
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 32.23%			
Perfluoro-1-[13C8]octanesulfonamide (M8FOSA)	7.157	506.0 -> 78.0	4938	2.4911	ng/ml		0.038
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 24.91%		*	
d5-N-EtFOSAA	6.926	589.0 -> 418.8	4165	3.0604	ng/ml	#	-0.238
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 30.60%			
M7PFUdA	6.944	570.0 -> 525.0	14860	2.5716	ng/ml		-0.229
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 25.72%			
Perfluoro-n-[1,2-13C2]dodecanoic acid (MPFDoA)	7.254	615.0 -> 570.0	14993	2.2702	ng/ml		-0.194
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 22.70%		*	
M2PFTeDA	8.008	715.0 -> 670.0	17708	3.2021	ng/ml		-0.093
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 32.02%			
Target Compounds							**QValue**

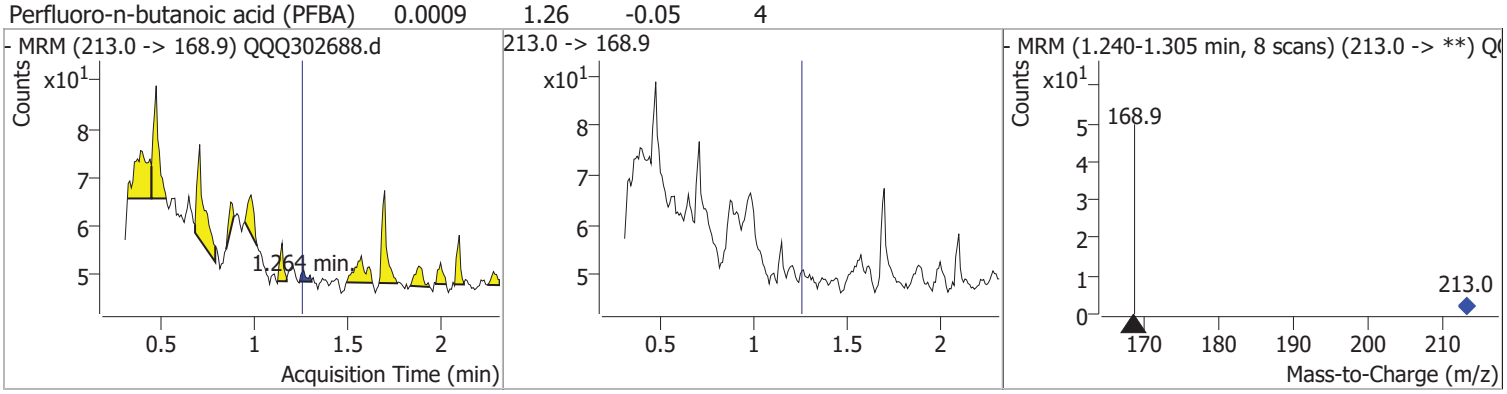
Compound	RT	QIon	Resp.	Conc.	Units		Dev(Min)
Perfluoro-n-butanoic acid (PFBA)	1.264	213.0 -> 168.9	4	0.0009	ng/ml		100
Perfluoro-n-pentanoic acid (PFPeA)	4.385	263.0 -> 219.0	24	0.0066	ng/ml		100
Perfluorobutanesulfonic acid (PFBS)	5.087	298.9 -> 79.9	5	0.0021	ng/ml	#	23
1H,1H,2H,2H-perfluoro-1-hexanesulfonate (4 2FTS)	5.537	327.0 -> 307.0	2	0.0016	ng/ml	#	1
Perfluorohexanoic acid (PFHxA)	5.319	313.0 -> 268.9	237	0.0284	ng/ml	#	94
Perfluoro-1-pentanesulfonate (L-PFPeS)	5.494	348.9 -> 79.9	5	0.0029	ng/ml		32
Perfluoroheptanoic acid (PFHpA)	5.796	363.0 -> 318.8	147	0.0131	ng/ml	#	71
Perfluorohexanesulfonic acid (PFHxS)	6.276	398.9 -> 79.9	57	0.0302	ng/ml		85
1H,1H,2H,2H-perfluoro-1-octanesulfonate (6 2FTS)	6.485	427.0 -> 407.0	11	0.0101	ng/ml	#	70
Perfluorooctanoic acid (PFOA)	6.132	413.0 -> 368.8	861	0.0768	ng/ml	#m	67
Perfluoro-1-heptanesulfonate (L-PFHpS)	6.199	448.9 -> 80.0	10	0.0071	ng/ml	#	1
Perfluorononanoic acid (PFNA)	6.392	463.0 -> 418.8	33	0.0029	ng/ml		65
Perfluorooctanesulfonic acid (PFOS)	6.417	498.9 -> 79.9	29	0.0183	ng/ml		98
1H,1H,2H,2H-perfluoro-1-decanesulfonate (8 2FTS)	6.667	527.0 -> 507.0	37	0.0250	ng/ml	#	70
Perfluorononanesulfonate (L-PFNS)	7.189	548.9 -> 79.9	9	0.0054	ng/ml		21
Perfluorodecanoic acid (PFDA)	6.668	513.0 -> 468.8	55	0.0052	ng/ml	#	31
N-MeFOSAA	6.902	570.0 -> 418.9	16	0.0050	ng/ml	#	56
Perfluoro-1-octanesulfonamide (FOSA)	6.838	497.9 -> 78.0	2	0.0009	ng/ml	#	1
Perfluoro-1-decanesulfonate (L-PFDS)	6.767	598.9 -> 98.9	19	0.0110	ng/ml		100
N-EtFOSAA	6.792	584.0 -> 418.8	31	0.0118	ng/ml	#	25
Perfluoroundecanoic acid (PFUnA)	6.886	563.0 -> 519.0	18	0.0016	ng/ml		78
Perfluorododecanoic acid (PFDoA)	7.136	613.0 -> 568.8	34	0.0035	ng/ml	#	81
Perfluorotridecanoic acid (PFTrDA)	7.312	663.0 -> 618.8	17	0.0299	ng/ml		100
Perfluorotetradecanoic acid (PFTA)	7.757	713.0 -> 669.0	15	0.0011	ng/ml		72

(#) = Qualifier Out of Range; (m) = Manual Integration; (+) = Area Summed; (*) = Surrogate Percent Recovery Out of Range; (d): Zeroed Peak

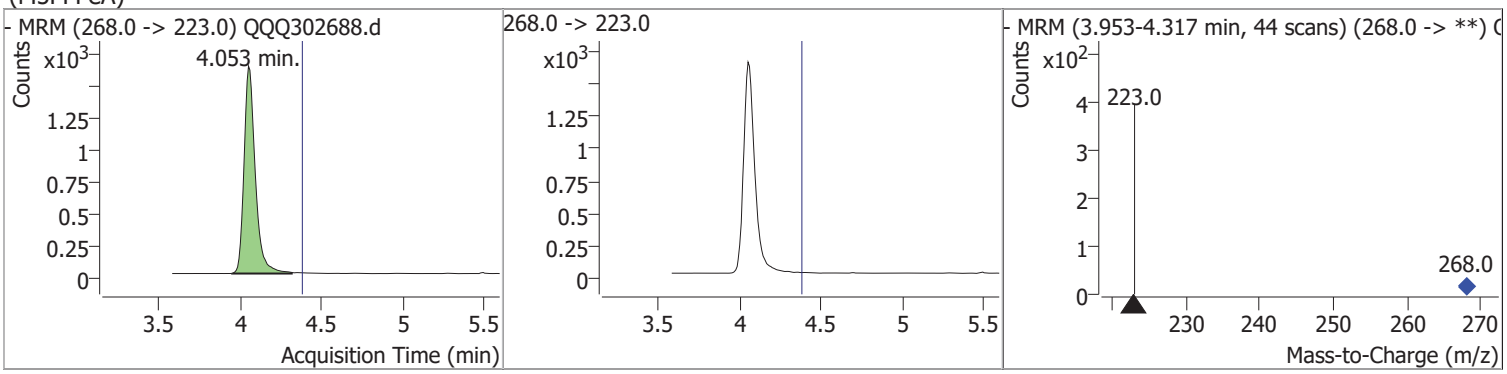
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-n-[13C4]butanoic acid (MPFBA)	3.7621	0.98	-0.32	8930				



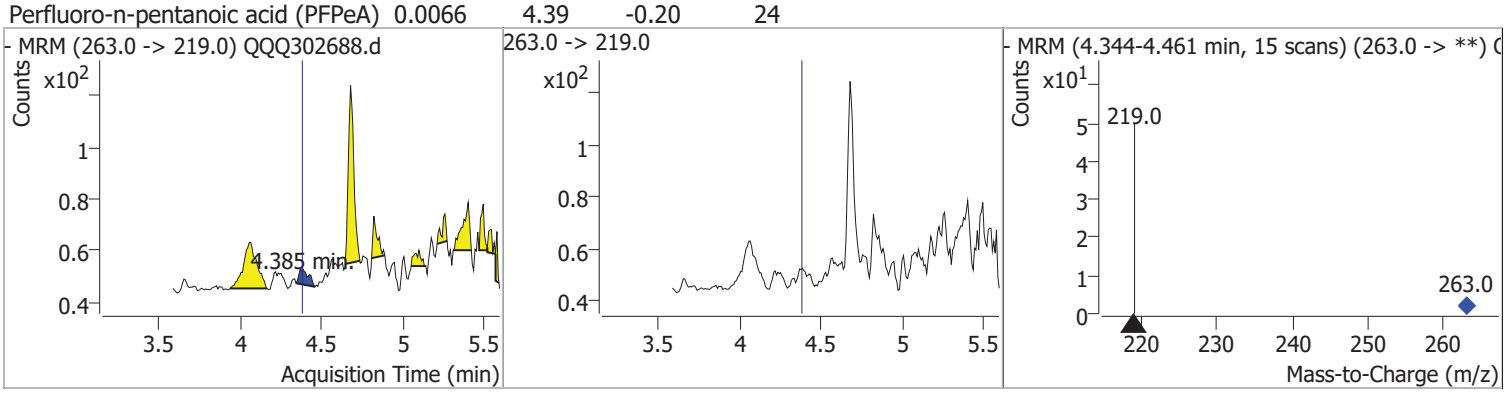
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-n-butanoic acid (PFBA)	0.0009	1.26	-0.05	4				



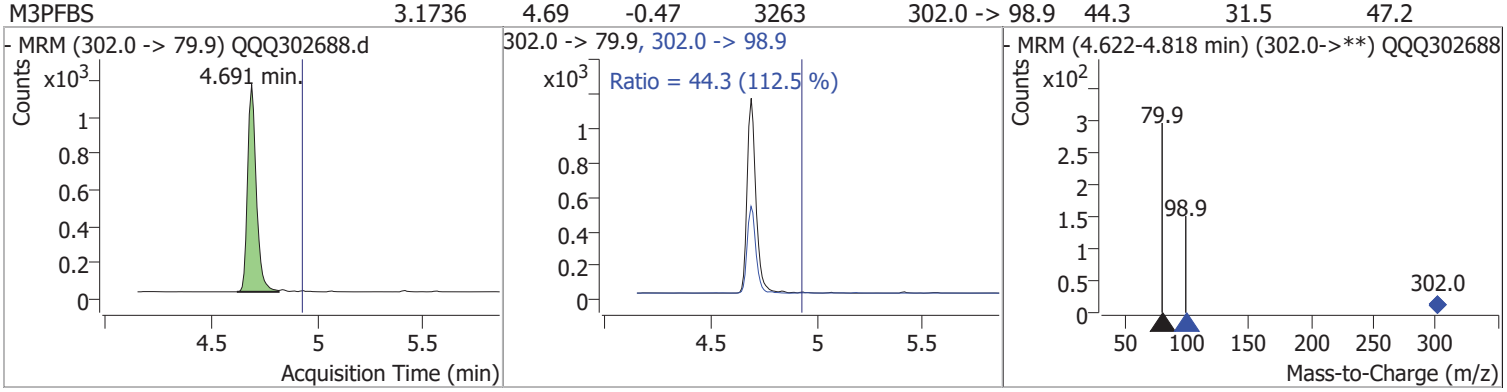
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-n-[13C54]pentanoic acid (M5PFPeA)	3.9432	4.05	-0.53	7787				



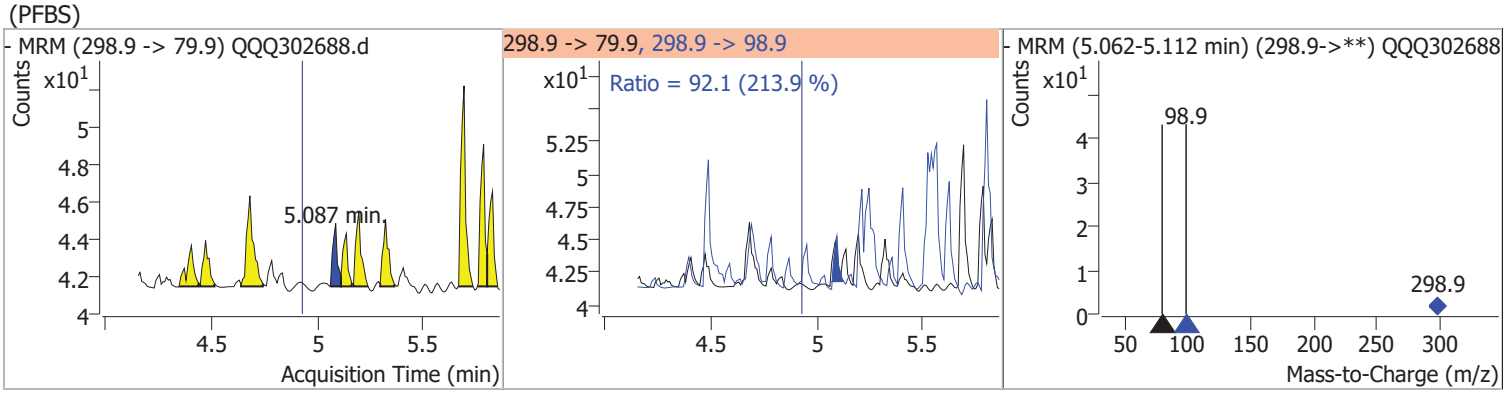
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-n-pentanoic acid (PFPeA)	0.0066	4.39	-0.20	24				



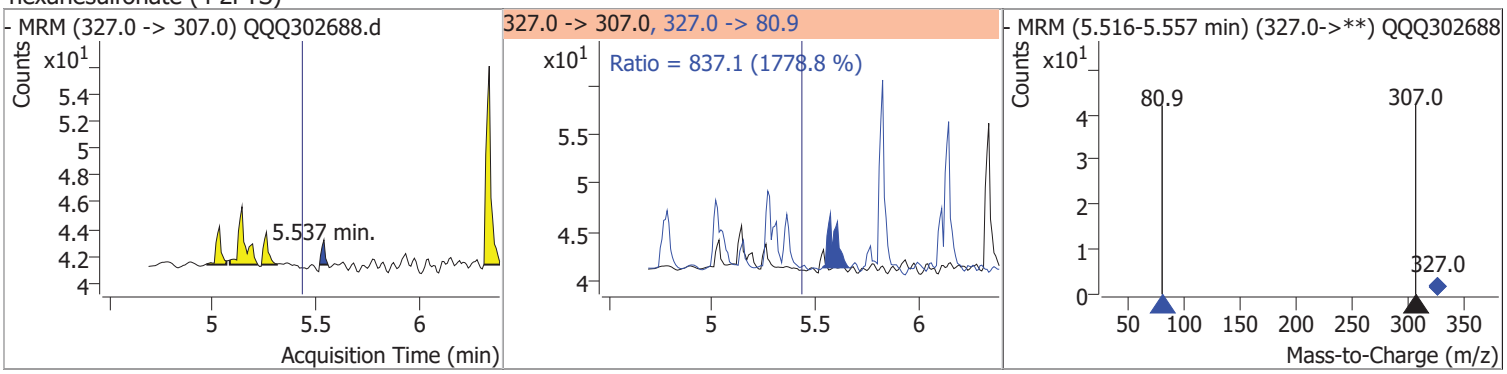
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M3PFBS	3.1736	4.69	-0.47	3263	302.0 -> 98.9	44.3	31.5	47.2



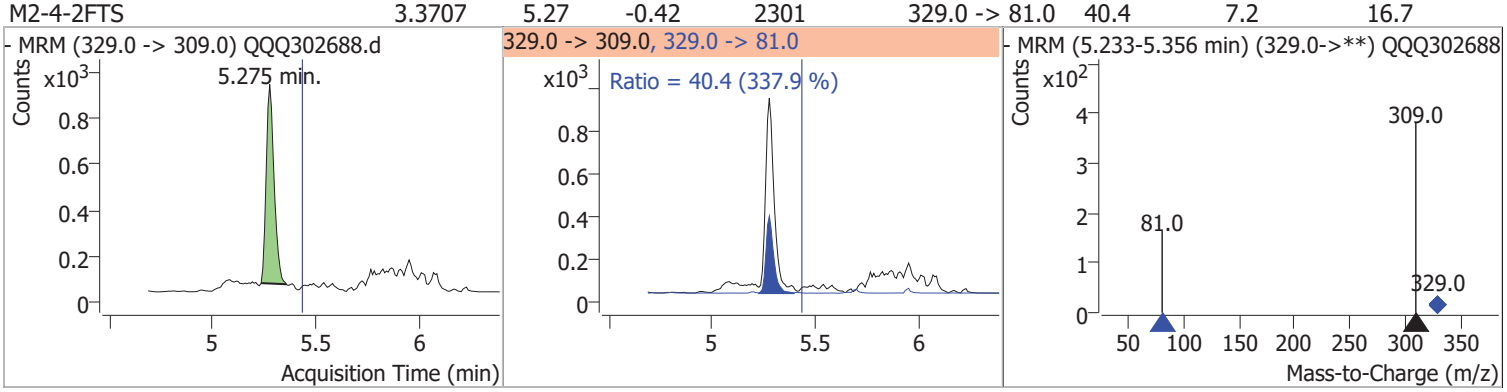
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorobutanesulfonic acid (PFBS)	0.0021	5.09	-0.08	5	298.9 -> 98.9	92.1	34.5	51.7



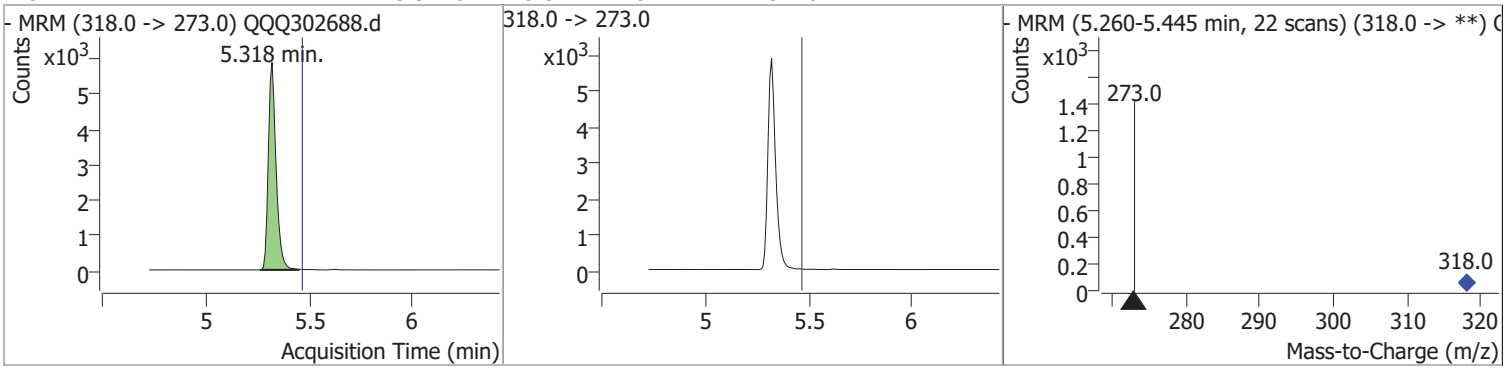
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
1H,1H,2H,2H-perfluoro-1-hexanesulfonate (4 2FTS)	0.0016	5.54	-0.15	2	327.0 -> 80.9	837.1	28.2	65.9



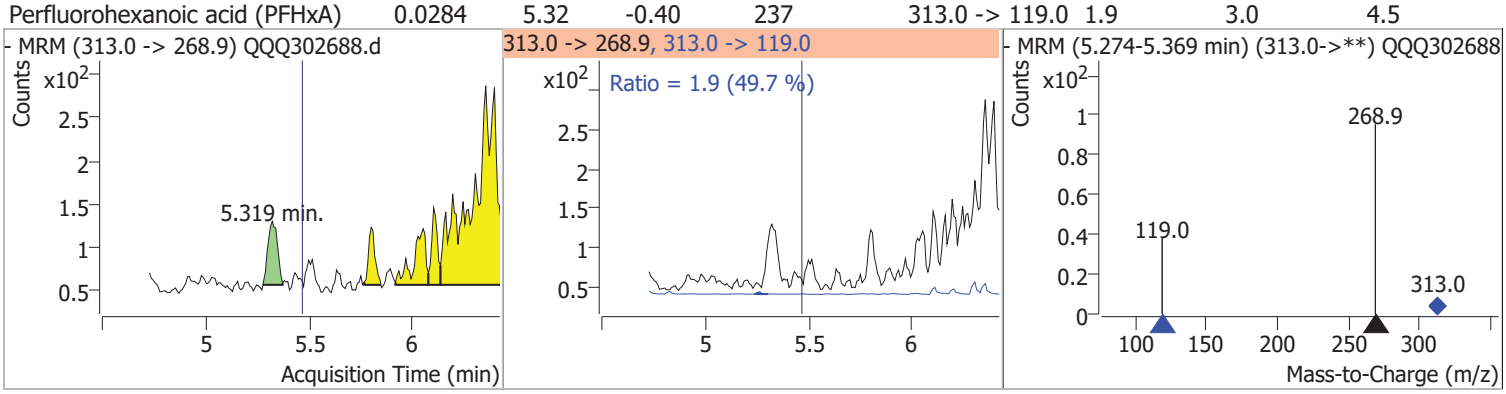
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M2-4-2FTS	3.3707	5.27	-0.42	2301	329.0 -> 81.0	40.4	7.2	16.7



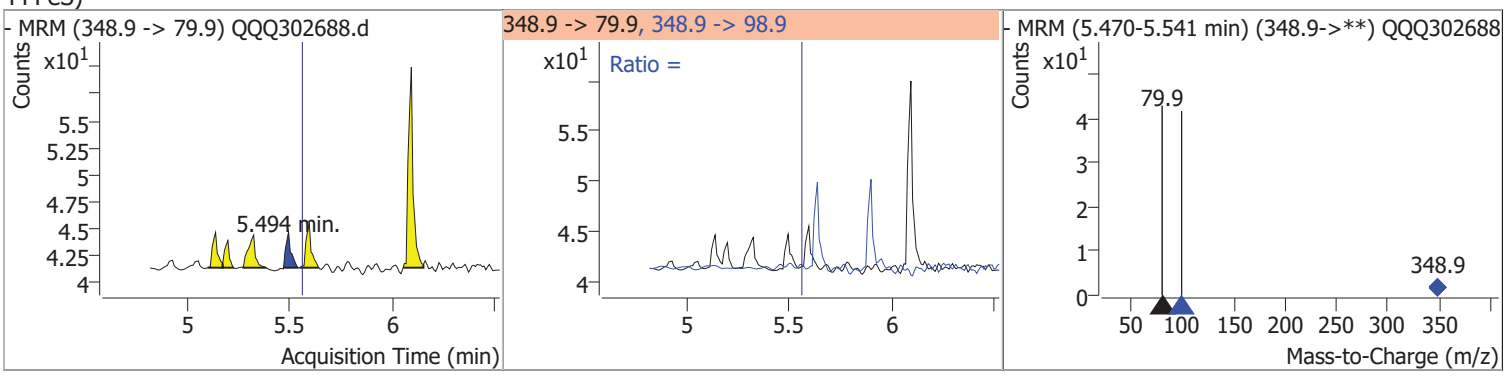
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M5PFHxA	3.9448	5.32	-0.41	15248				



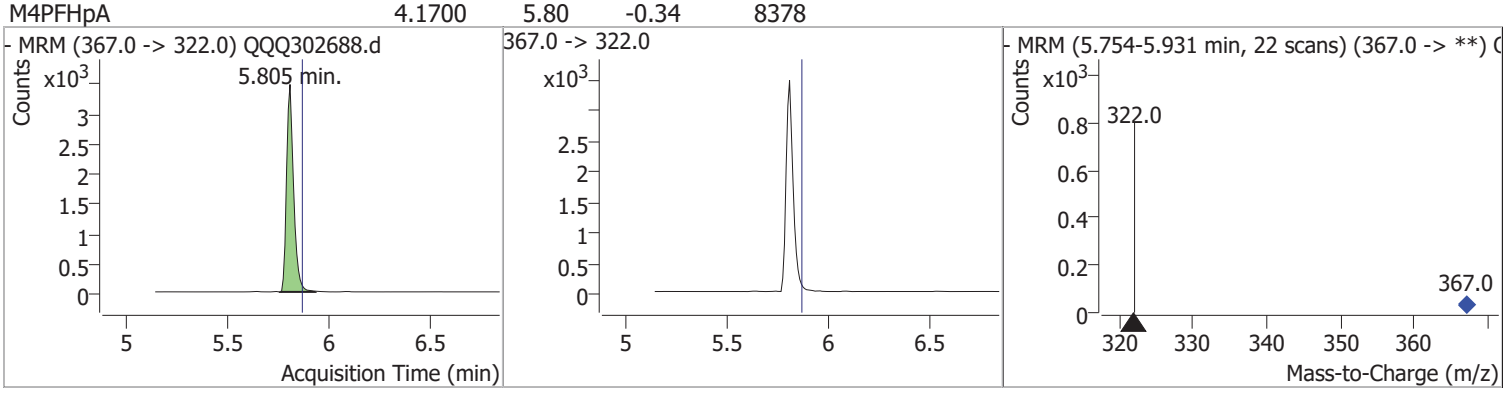
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorohexanoic acid (PFHxA)	0.0284	5.32	-0.40	237	313.0 -> 119.0	1.9	3.0	4.5



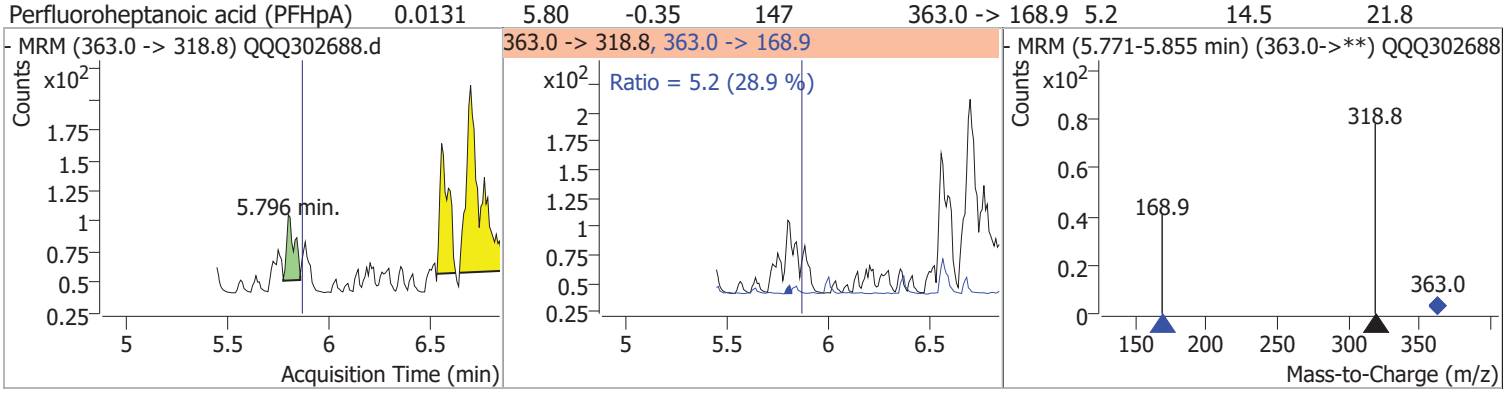
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-1-pentanesulfonate (L-PFPeS)	0.0029	5.49	-0.33	5	348.9 -> 98.9		34.8	52.2



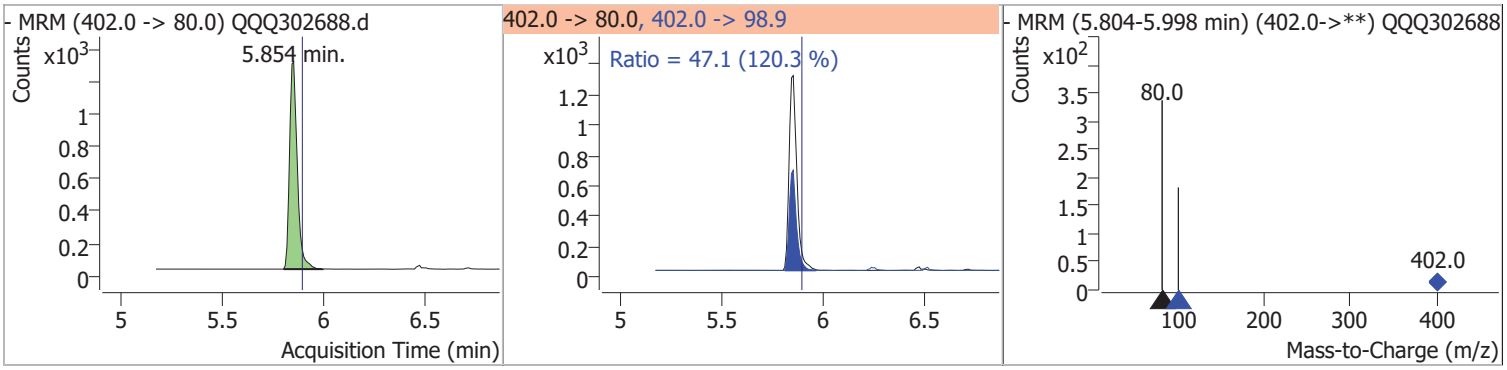
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M4PFHpA	4.1700	5.80	-0.34	8378				



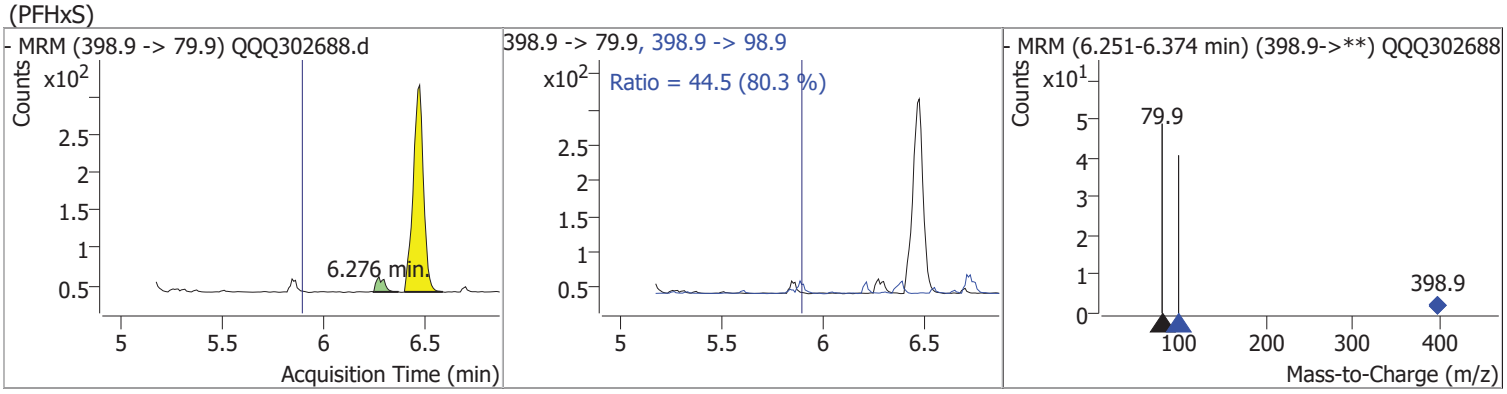
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoroheptanoic acid (PFHpA)	0.0131	5.80	-0.35	147	363.0 -> 168.9	5.2	14.5	21.8



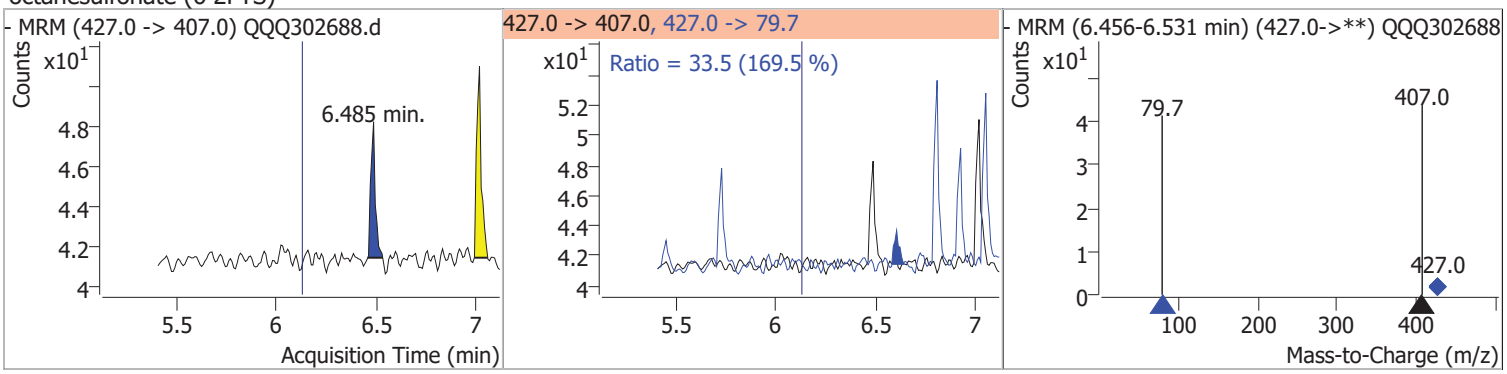
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M3PFHxS	3.9613	5.85	-0.32	3429	402.0 -> 98.9	47.1	31.3	47.0



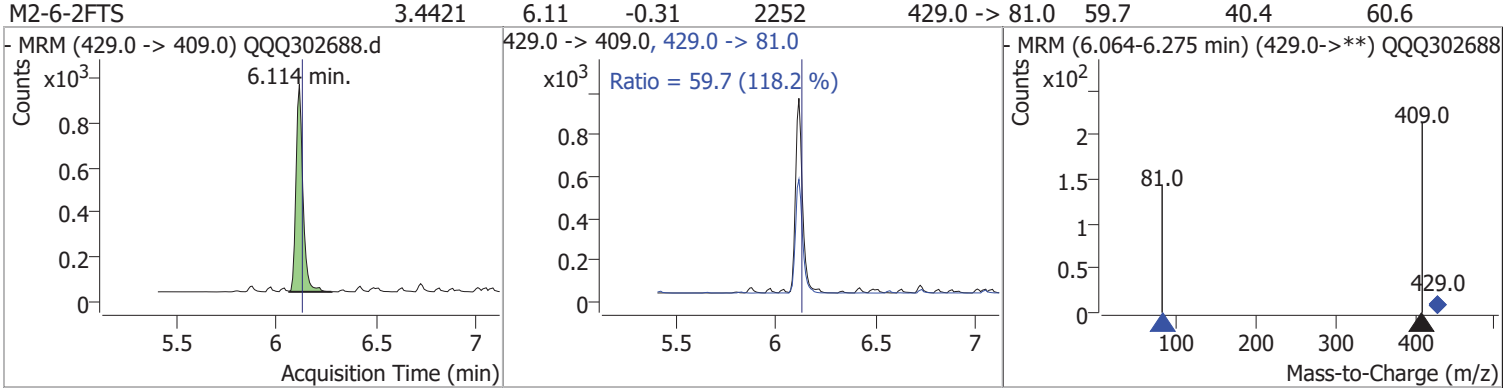
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorohexanesulfonic acid (PFHxS)	0.0302	6.28	0.10	57	398.9 -> 98.9	44.5	44.4	66.5



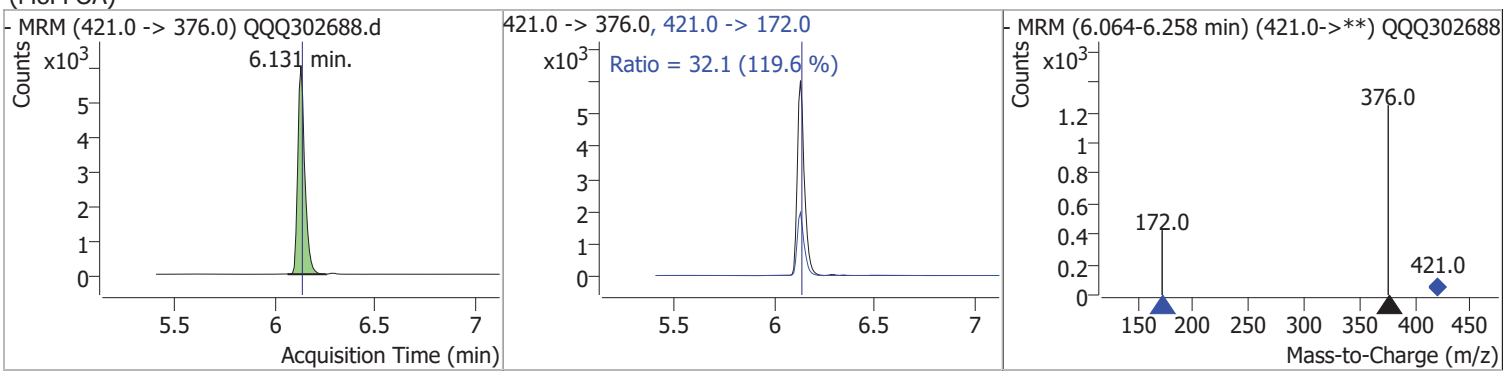
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
1H,1H,2H,2H-perfluoro-1-octanesulfonate (6 2FTS)	0.0101	6.49	0.07	11	427.0 -> 79.7	33.5	15.8	23.7



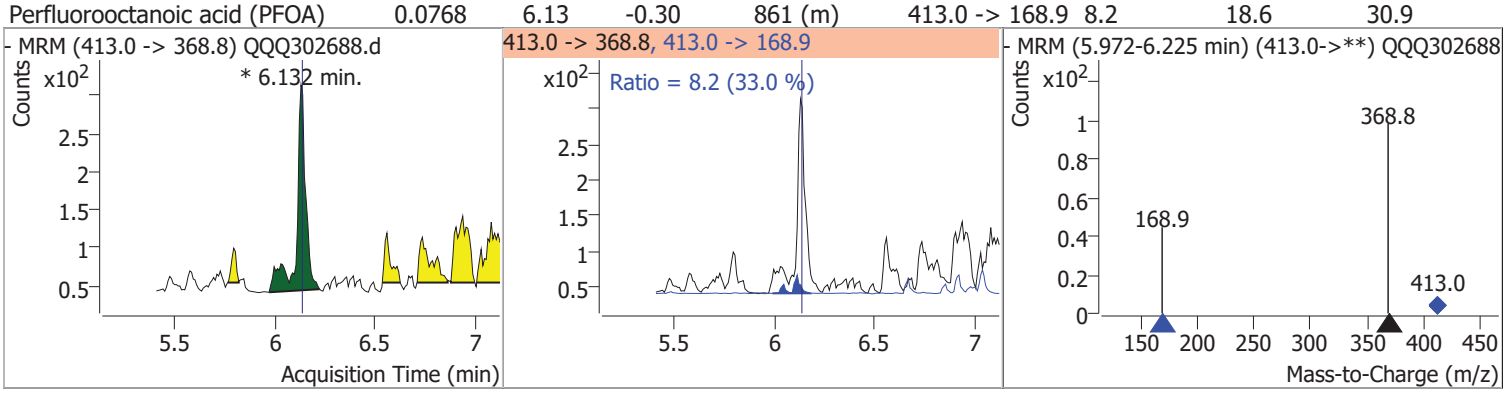
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M2-6-2FTS	3.4421	6.11	-0.31	2252	429.0 -> 81.0	59.7	40.4	60.6



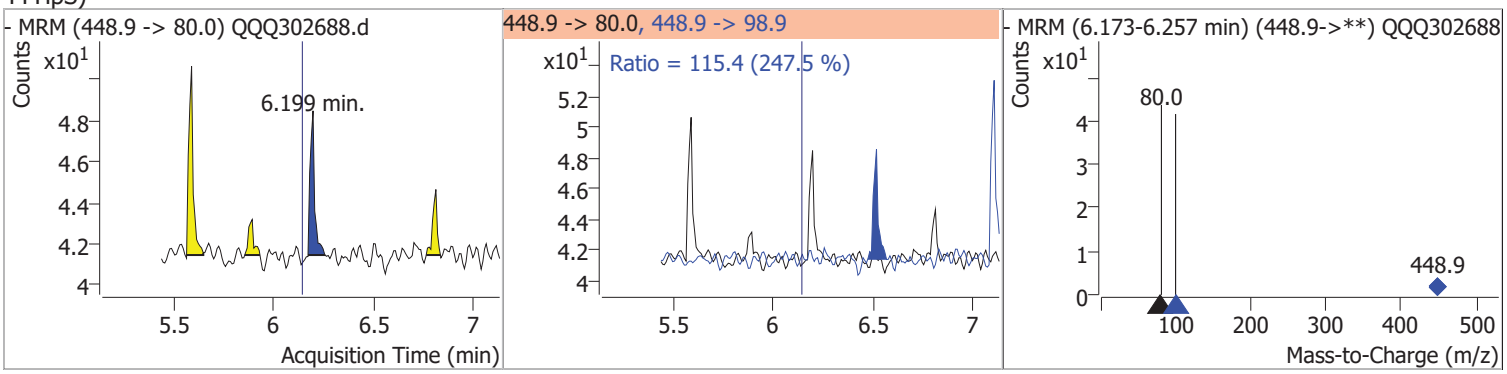
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-n-[13C8]octanoic acid (M8PFOA)	4.4270	6.13	-0.30	14677	421.0 -> 172.0	32.1	21.5	32.2



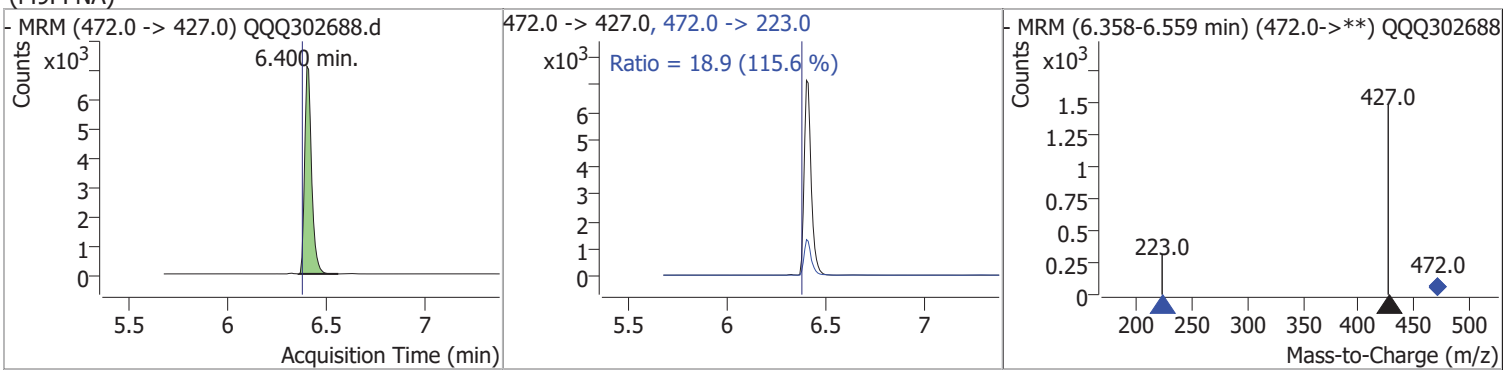
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorooctanoic acid (PFOA)	0.0768	6.13	-0.30	861 (m)	413.0 -> 168.9	8.2	18.6	30.9



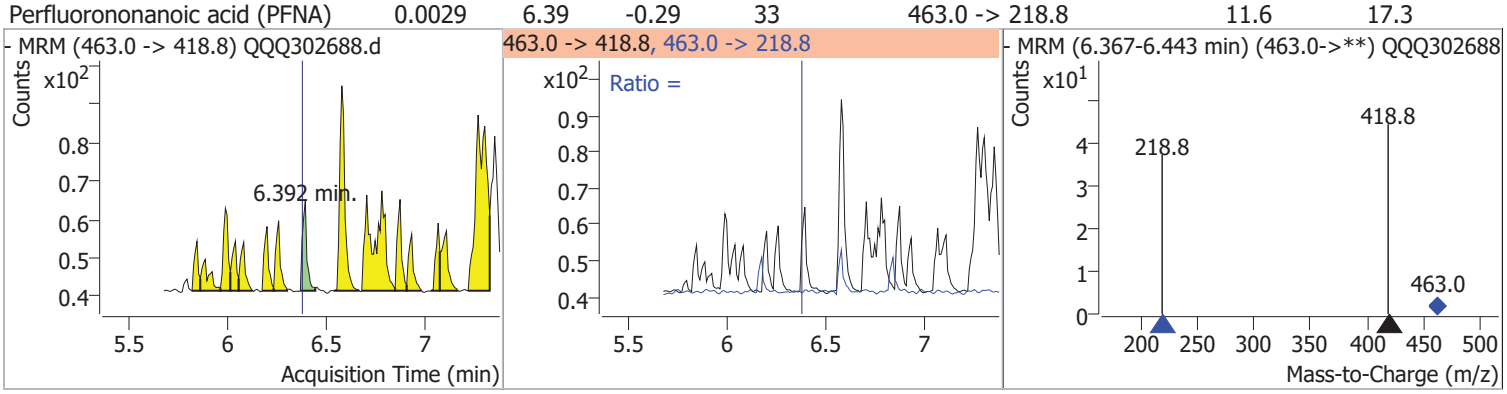
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-1-heptanesulfonate (L-PFHpS)	0.0071	6.20	-0.24	10	448.9 -> 98.9	115.4	37.3	56.0



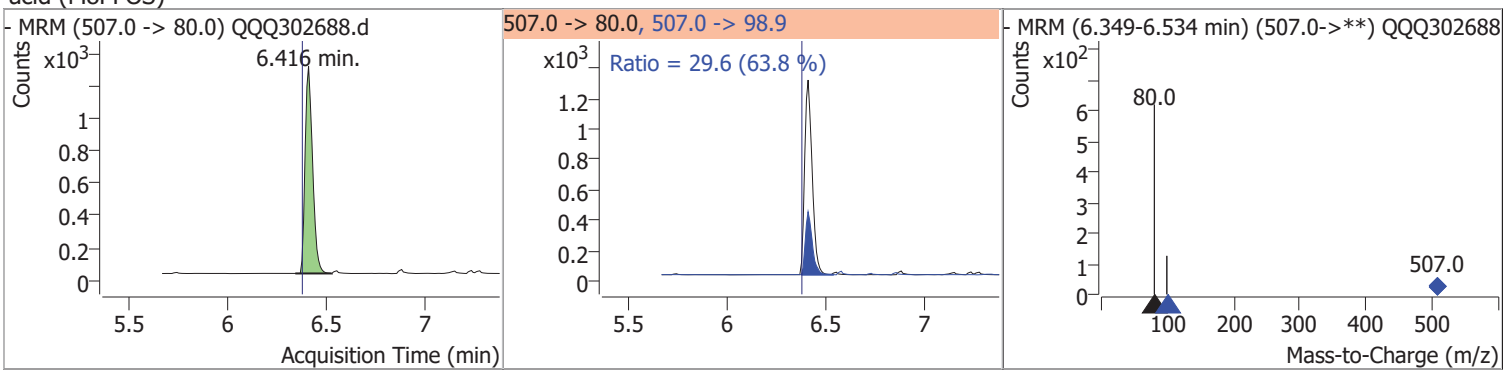
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-n-[13C9]nonanoic acid (M9PFNA)	4.3920	6.40	-0.28	17441	472.0 -> 223.0	18.9	13.1	19.6



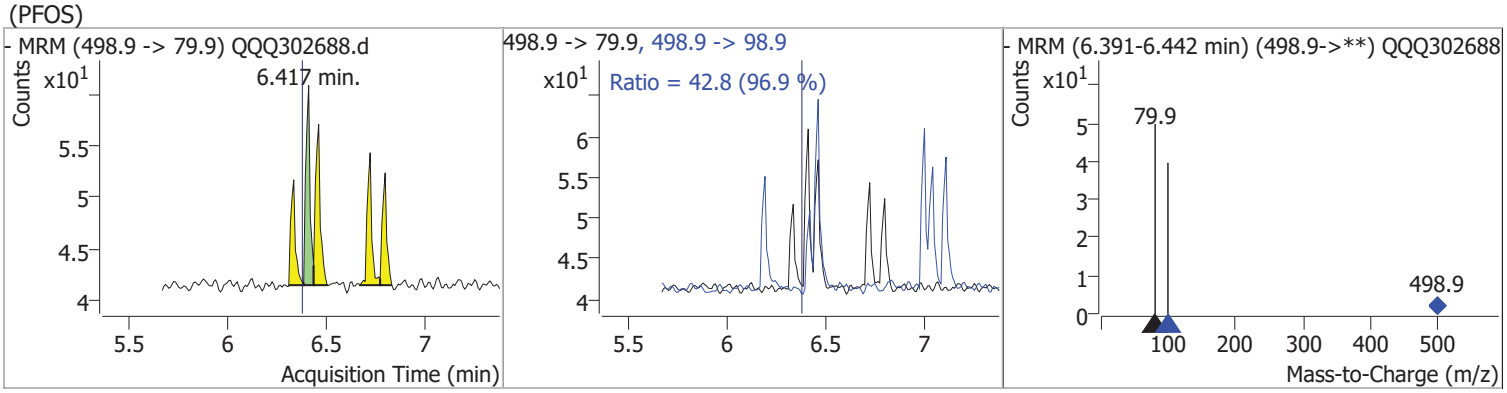
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorononanoic acid (PFNA)	0.0029	6.39	-0.29	33	463.0 -> 218.8		11.6	17.3



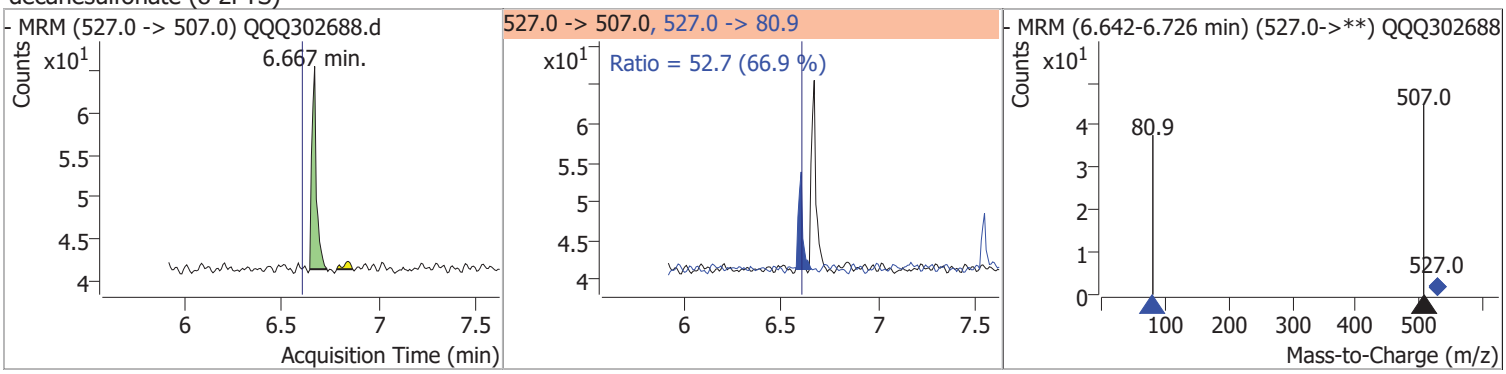
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)	3.7960	6.42	-0.27	3365	507.0 -> 98.9	29.6	37.1	55.6



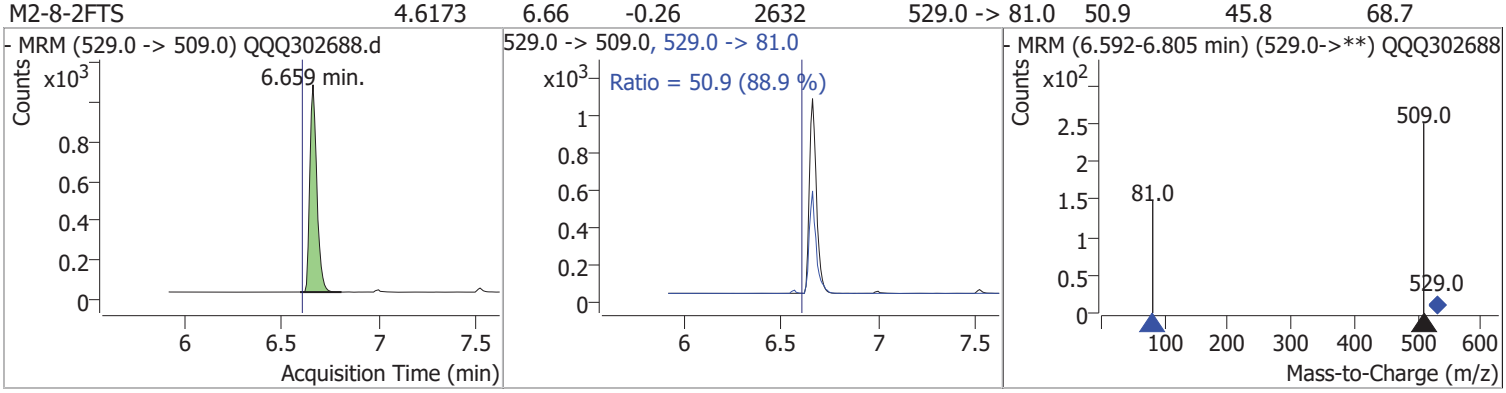
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorooctanesulfonic acid (PFOS)	0.0183	6.42	-0.27	29	498.9 -> 98.9	42.8	35.4	53.0



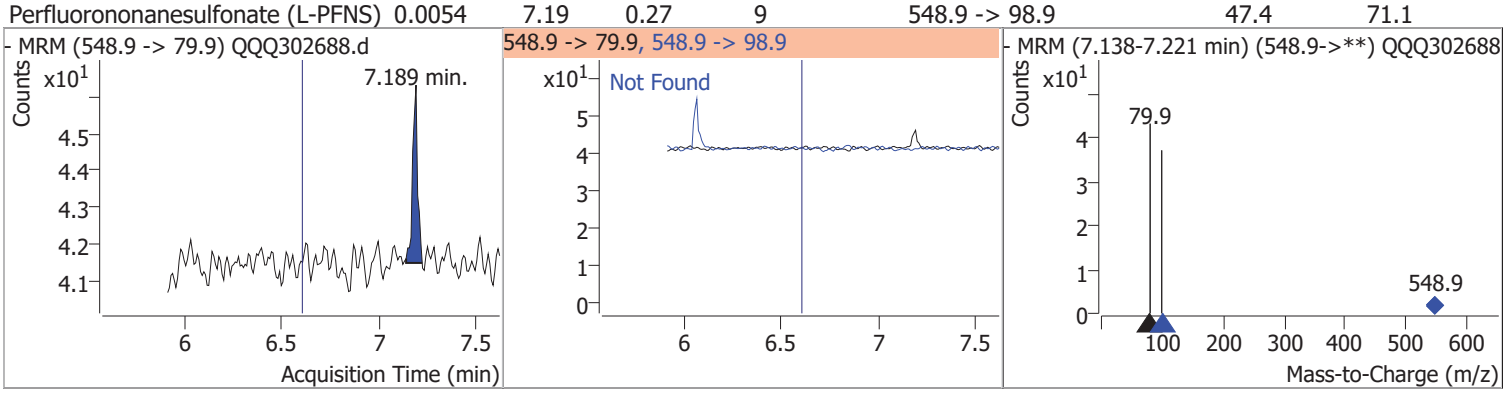
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
1H,1H,2H,2H-perfluoro-1-decanesulfonate (8 2FTS)	0.0250	6.67	-0.25	37	527.0 -> 80.9	52.7	63.1	94.6



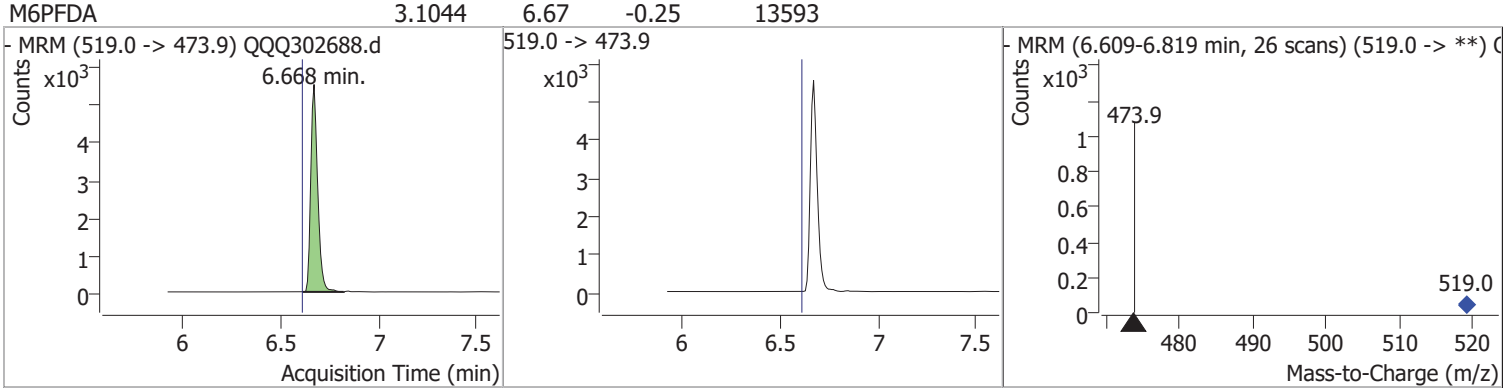
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M2-8-2FTS	4.6173	6.66	-0.26	2632	529.0 -> 81.0	50.9	45.8	68.7



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorononanesulfonate (L-PFNS)	0.0054	7.19	0.27	9	548.9 -> 98.9		47.4	71.1

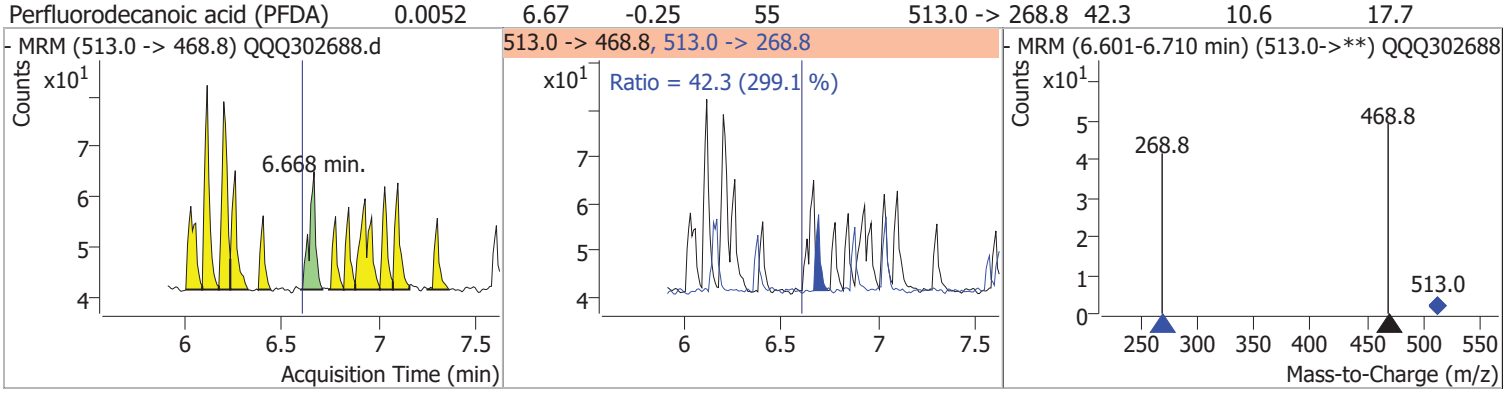


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M6PFDA	3.1044	6.67	-0.25	13593				

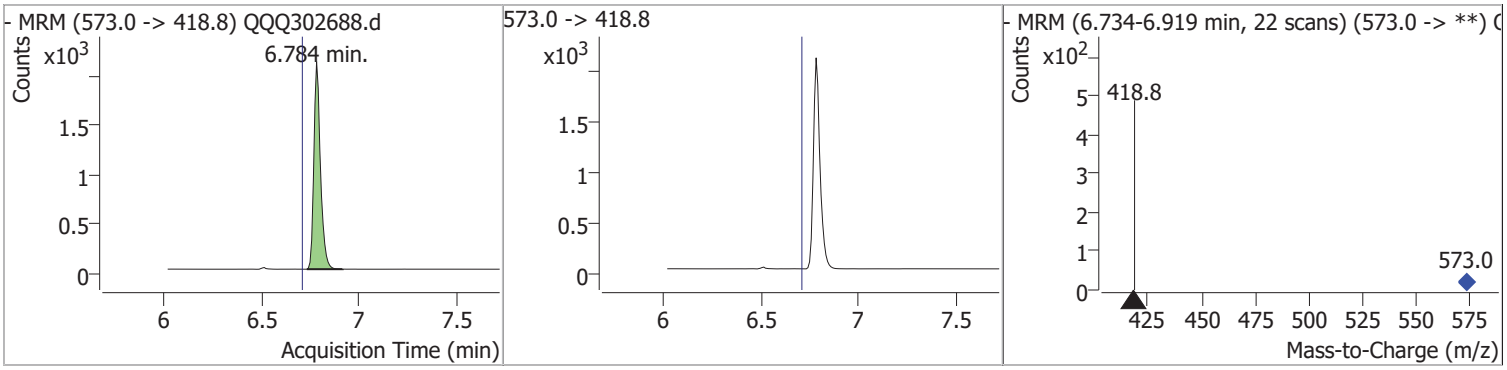


Quantitation Results Report (Not Reviewed)

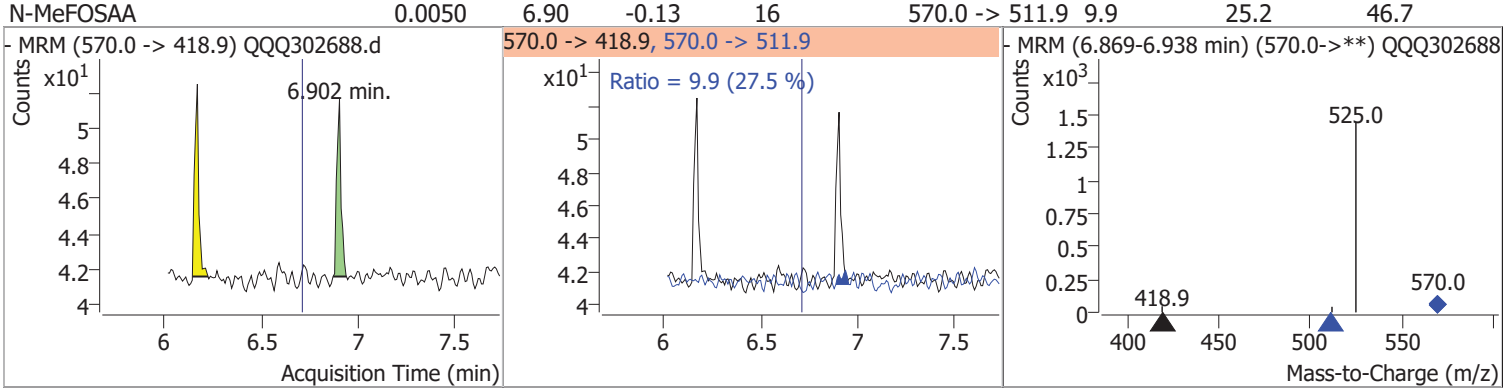
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorodecanoic acid (PFDA)	0.0052	6.67	-0.25	55	513.0 -> 268.8	42.3	10.6	17.7



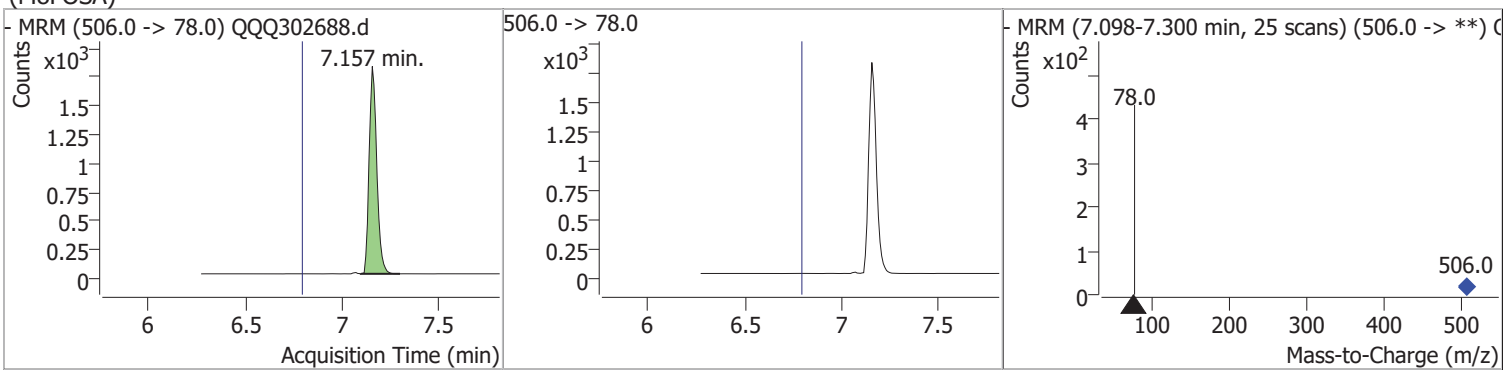
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
d3-N-MeFOSAA	3.2229	6.78	-0.25	4959				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
N-MeFOSAA	0.0050	6.90	-0.13	16	570.0 -> 511.9	9.9	25.2	46.7

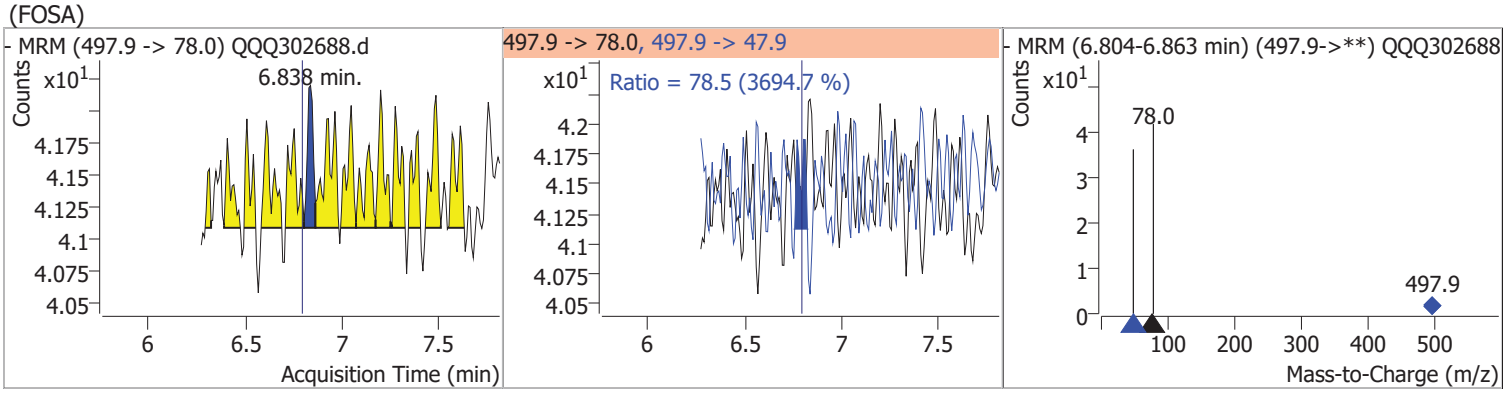


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-1-[13C8]octanesulfonamide (M8FOSA)	2.4911	7.16	0.04	4938				

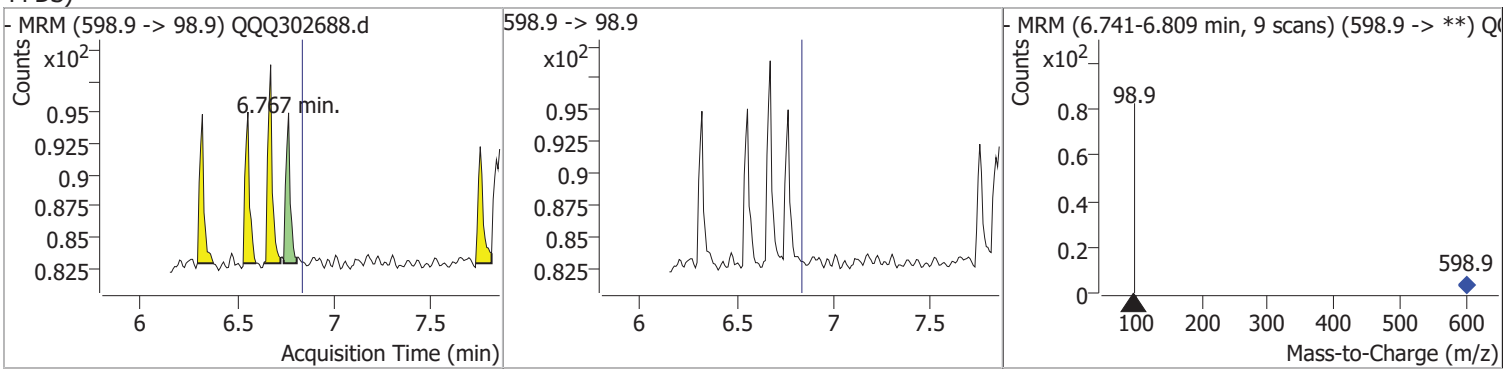


Quantitation Results Report (Not Reviewed)

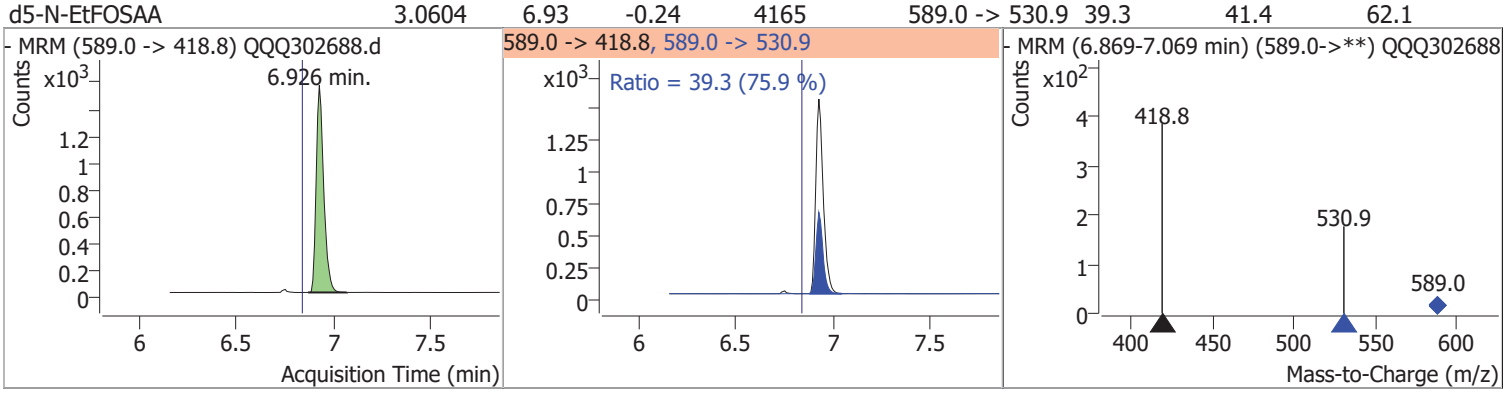
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-1-octanesulfonamide (FOSA)	0.0009	6.84	-0.28	2	497.9 -> 47.9	78.5	1.7	2.5



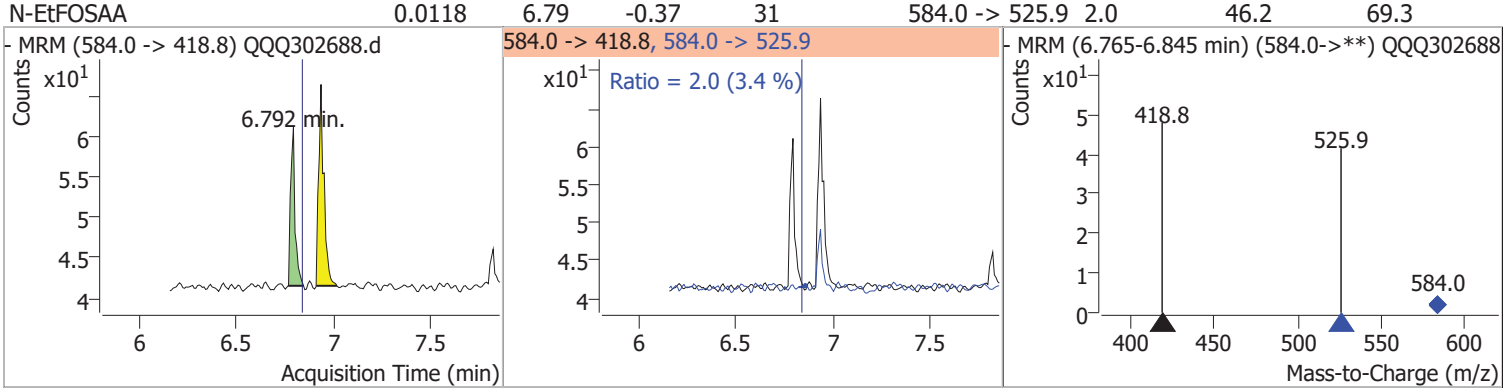
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-1-decanesulfonate (L-PFDS)	0.0110	6.77	-0.40	19				



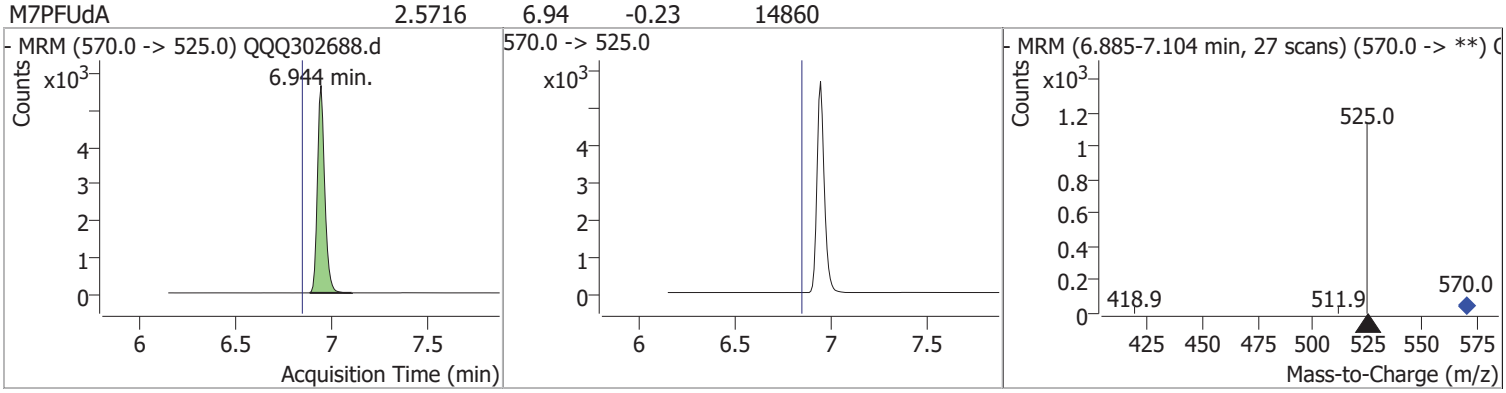
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
d5-N-EtFOSAA	3.0604	6.93	-0.24	4165	589.0 -> 530.9	39.3	41.4	62.1



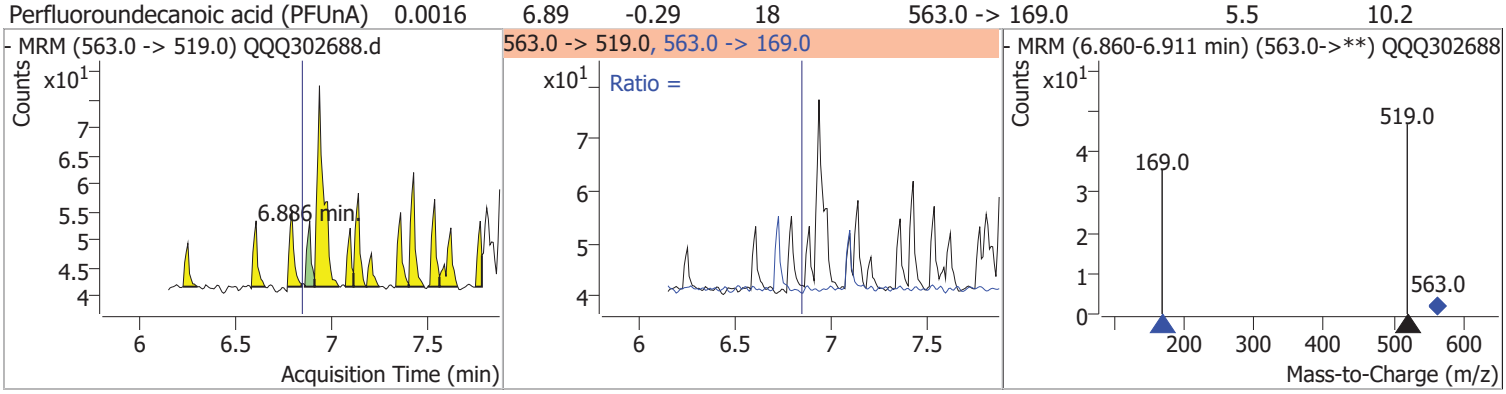
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
N-EtFOSAA	0.0118	6.79	-0.37	31	584.0 -> 525.9	2.0	46.2	69.3



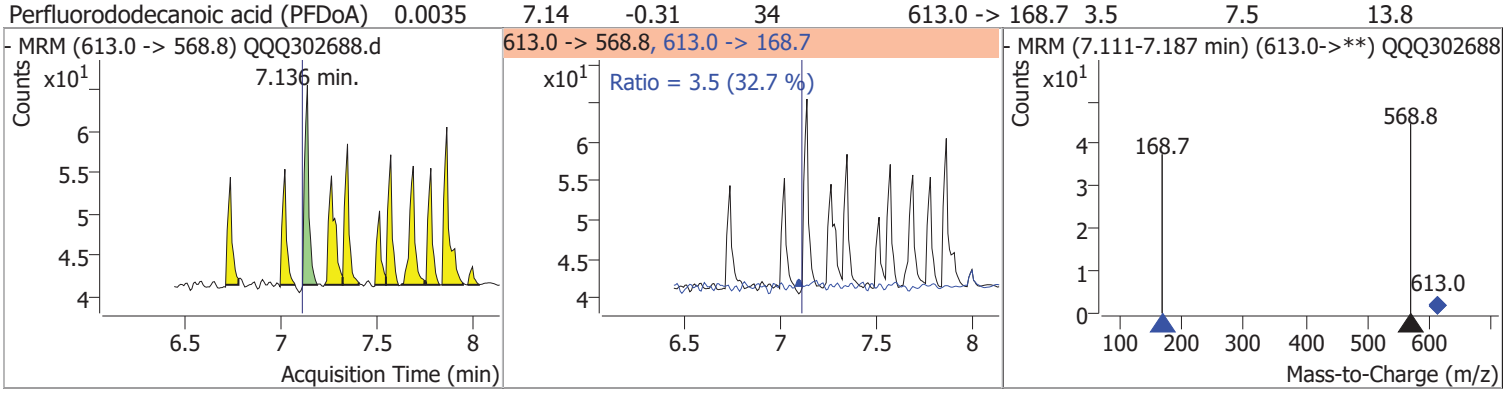
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M7PFUdA	2.5716	6.94	-0.23	14860				



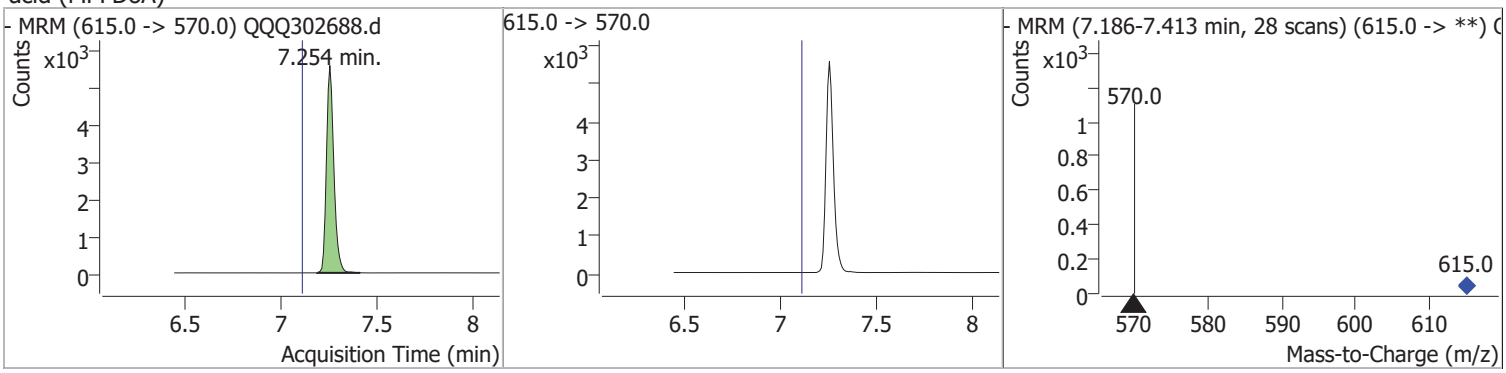
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoroundecanoic acid (PFUnA)	0.0016	6.89	-0.29	18	563.0 -> 169.0		5.5	10.2



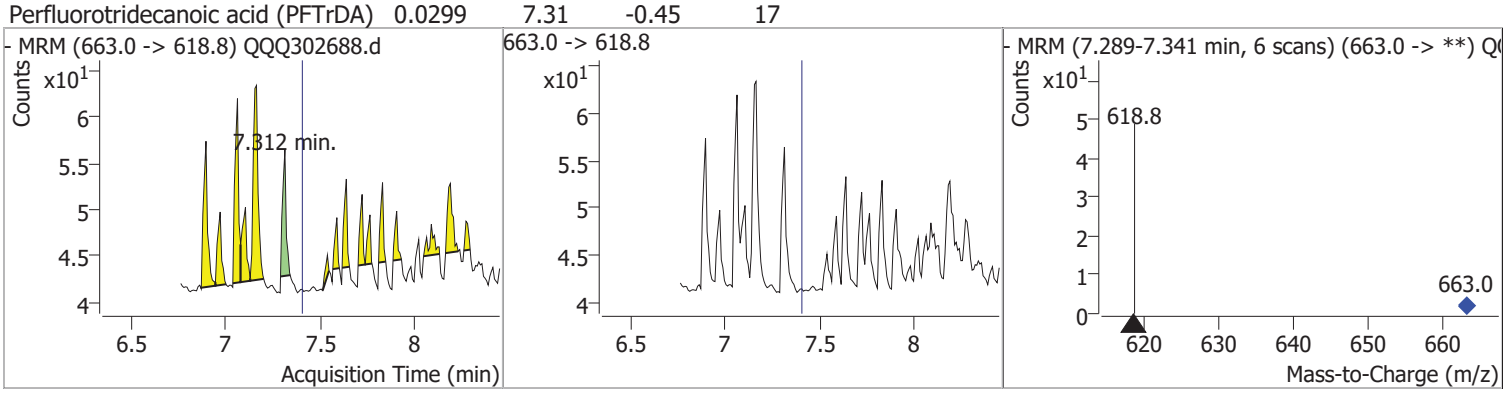
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorododecanoic acid (PFDoA)	0.0035	7.14	-0.31	34	613.0 -> 168.7	3.5	7.5	13.8



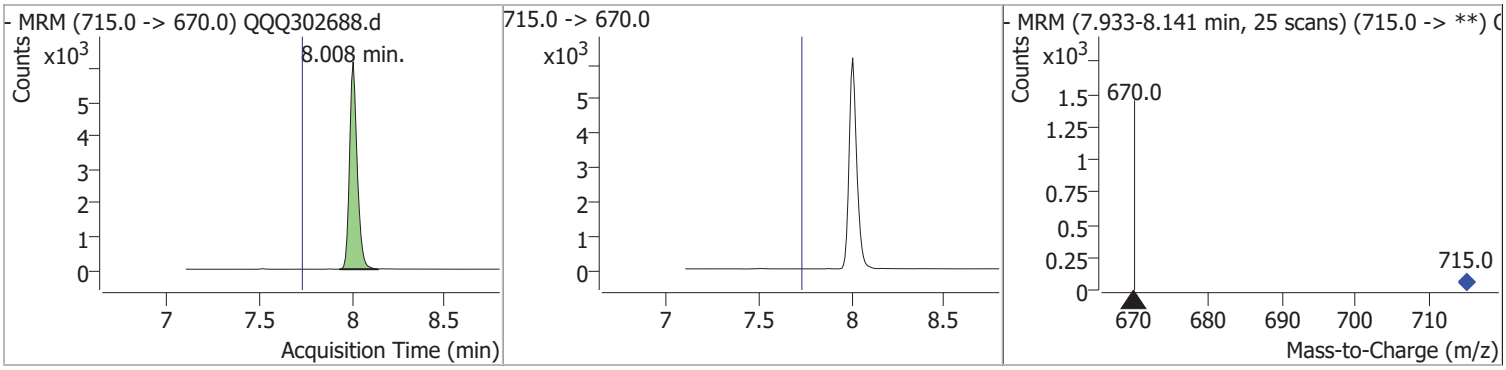
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-n-[1,2-13C2]dodecanoic acid (MPFDoA)	2.2702	7.25	-0.19	14993				



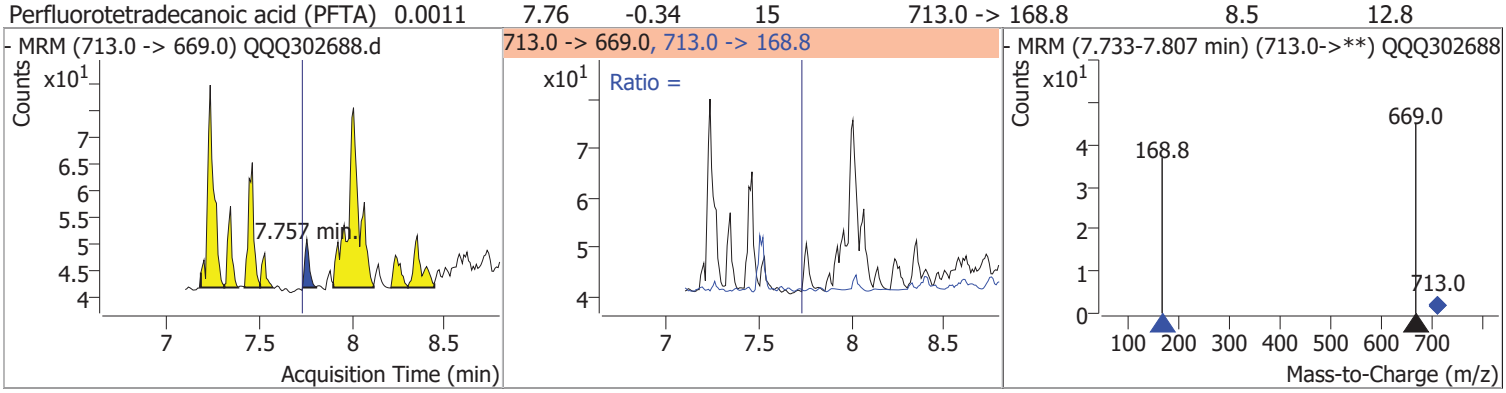
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorotridecanoic acid (PFTrDA)	0.0299	7.31	-0.45	17				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M2PFTeDA	3.2021	8.01	-0.09	17708				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorotetradecanoic acid (PFTA)	0.0011	7.76	-0.34	15	713.0 -> 168.8		8.5	12.8



FORM I

ORGANIC ANALYSIS DATA SHEET

EPA 537m

IMJC COMP-3

Laboratory:	York Analytical Laboratories, Inc.		SDG:	22G0348	
Client:	Phoenix Environmental Laboratories, Inc.		Project:	GCL69739	
Matrix:	Soil	Laboratory ID:	22G0348-03	File ID:	QQQ302690.d
Sampled:	07/05/22 09:10	Prepared:	07/12/22 12:42	Analyzed:	07/14/22 17:07
Solids:	99.83	Preparation:	SPE PFAS Extraction-Soil-E	Initial/Final:	2.011 g / 2 mL
Batch:	BG20572	Sequence:	Y2G1435	Calibration:	YF20026
Instrument:	QQQ3				

CAS NO.	COMPOUND	DILUTION	CONC. (ug/kg dry)	Q
375-73-5	Perfluorobutanesulfonic acid (PFBS)	1	0.249	U
307-24-4	Perfluorohexanoic acid (PFHxA)	1	0.249	U
375-85-9	Perfluoroheptanoic acid (PFHpA)	1	0.249	U
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	1	0.704	
335-67-1	Perfluorooctanoic acid (PFOA)	1	0.249	U
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	1	0.249	U
375-95-1	Perfluorononanoic acid (PFNA)	1	0.249	U
335-76-2	Perfluorodecanoic acid (PFDA)	1	0.249	U
2058-94-8	Perfluoroundecanoic acid (PFUnA)	1	0.249	U
307-55-1	Perfluorododecanoic acid (PFDoA)	1	0.249	U
72629-94-8	Perfluorotridecanoic acid (PFTrDA)	1	0.249	U
376-06-7	Perfluorotetradecanoic acid (PFTA)	1	0.249	U
2355-31-9	N-MeFOSAA	1	0.249	U
2991-50-6	N-EtFOSAA	1	0.249	U
2706-90-3	Perfluoropentanoic acid (PFPeA)	1	0.249	U
754-91-6	Perfluoro-1-octanesulfonamide (FOSA)	1	0.249	U
375-92-8	Perfluoro-1-heptanesulfonic acid (PFHpS)	1	0.249	U
335-77-3	Perfluoro-1-decanesulfonic acid (PFDS)	1	0.249	U
27619-97-2	1H,1H,2H,2H-Perfluorooctanesulfonic acid (6:2 FTS)	1	0.249	U
39108-34-4	1H,1H,2H,2H-Perfluorodecanesulfonic acid (8:2 FTS)	1	0.249	U
375-22-4	Perfluoro-n-butanoic acid (PFBA)	1	0.249	U

SYSTEM MONITORING COMPOUND	ADDED (ug/kg dry)	CONC (ug/kg dry)	% REC	QC LIMITS	Q
M3PFBS	4.63	3.11	67.2	25 - 150	
M5PFHxA	4.98	3.94	79.1	25 - 150	
M4PFHpA	4.98	4.35	87.3	25 - 150	
M3PFHxS	4.71	3.51	74.5	25 - 150	
Perfluoro-n-[13C8]octanoic acid (M8PFOA)	4.98	4.75	95.3	25 - 150	
M6PFDA	4.98	2.72	54.7	25 - 150	
M7PFUdA	4.98	2.43	48.7	25 - 150	
Perfluoro-n-[1,2-13C2]dodecanoic acid (MPFDoA)	4.98	2.30	46.2	25 - 150	
M2PFTeDA	4.98	3.25	65.2	10 - 150	
Perfluoro-n-[13C4]butanoic acid (MPFBA)	4.98	3.74	75.0	25 - 150	
Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)	4.77	2.59	54.4	25 - 150	
Perfluoro-n-[13C5]pentanoic acid (M5PFPeA)	4.98	3.83	76.9	25 - 150	
Perfluoro-1-[13C8]octanesulfonamide (M8FOSA)	4.98	2.31	46.3	10 - 150	
d3-N-MeFOSAA	4.98	2.56	51.5	25 - 150	
d5-N-EtFOSAA	4.98	2.36	47.3	25 - 150	
M2-6:2 FTS	4.73	3.39	71.6	25 - 200	
M2-8:2 FTS	4.77	3.83	80.2	25 - 200	
M9PFNA	4.98	3.65	73.4	25 - 150	

FORM I

ORGANIC ANALYSIS DATA SHEET

EPA 537m

IMJC COMP-3

Laboratory:	York Analytical Laboratories, Inc.			SDG:	22G0348
Client:	Phoenix Environmental Laboratories, Inc.			Project:	GCL69739
Matrix:	Soil	Laboratory ID:	22G0348-03	File ID:	QQQ302690.d
Sampled:	07/05/22 09:10	Prepared:	07/12/22 12:42	Analyzed:	07/14/22 17:07
Solids:	99.83	Preparation:	SPE PFAS Extraction-Soil-E	Initial/Final:	2.011 g / 2 mL
Batch:	BG20572	Sequence:	Y2G1435	Calibration:	YF20026	Instrument:	QQQ3

INTERNAL STANDARD	AREA	RT	REF AREA	REF RT	Q
MPFOA	131784.5	6.157434	135573.3	6.157434	

* Values outside of QC limits

Quantitation Results Report (Not Reviewed)

Agilent | Trusted Answers

Data File	QQQ302690.d	Operator	
Acq. Method	PFAS 24_IDA ACQ_QQQ3A.m	Acq. Date-Time	7/14/2022 5:07:45 PM
Sample Name	22G0348-03	Instrument	QQQ3
Vial		Multiplier	1.00
DA Method File	PFAS_24_IDA_QUANT_QQQ3_062722.m	Comment	
Tune File		Tune Date	
Batch Name	2022-07-14-IDA.batch.bin	Last Calib Update	6/27/2022 4:24:30 PM
Ref Library			

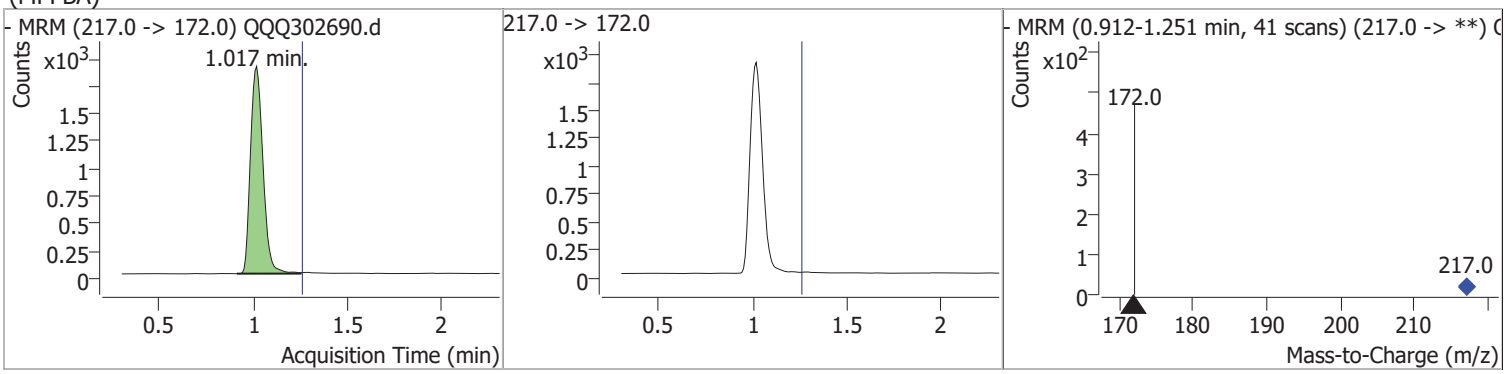
Compound	RT	QIon	Resp.	Conc.	Units		Dev(Min)
Internal Standards							
MPFOA	6.157	417.0 -> 372.0	131784	10.0000	ng/ml		-0.273
System Monitoring Compounds							
Perfluoro-n-[13C4]butanoic acid (MPFBA)	1.017	217.0 -> 172.0	8747	3.7519	ng/ml		-0.292
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 37.52%			
Perfluoro-n-[13C54]pentanoic acid (M5PFPeA)	4.045	268.0 -> 223.0	7446	3.8427	ng/ml		-0.542
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 38.43%			
M3PFBS	4.680	302.0 -> 79.9	3155	3.1237	ng/ml		-0.483
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 31.24%			
M2-4-2FTS	5.283	329.0 -> 309.0	2369	3.5314	ng/ml	#	-0.407
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 35.31%			
M5PFHxA	5.318	318.0 -> 273.0	15016	3.9542	ng/ml		-0.406
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 39.54%			
M4PFHpA	5.821	367.0 -> 322.0	8629	4.3638	ng/ml		-0.323
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 43.64%			
M3PFHxS	5.871	402.0 -> 80.0	2996	3.5253	ng/ml	#	-0.306
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 35.25%			
M2-6-2FTS	6.139	429.0 -> 409.0	2186	3.3992	ng/ml		-0.281
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 33.99%			
Perfluoro-n-[13C8]octanoic acid (M8PFOA)	6.157	421.0 -> 376.0	15583	4.7660	ng/ml	#	-0.273
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 47.66%			
Perfluoro-n-[13C9]nonanoic acid (M9PFNA)	6.434	472.0 -> 427.0	14265	3.6681	ng/ml		-0.246
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 36.68%			
Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)	6.450	507.0 -> 80.0	2263	2.6039	ng/ml	#	-0.238
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 26.04%			
M2-8-2FTS	6.701	529.0 -> 509.0	2150	3.8400	ng/ml		-0.217
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 38.40%			
M6PFDA	6.710	519.0 -> 473.9	11742	2.7329	ng/ml		-0.212
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 27.33%			
d3-N-MeFOSAA	6.834	573.0 -> 418.8	3886	2.5742	ng/ml		-0.196
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 25.74%			
Perfluoro-1-[13C8]octanesulfonamide (M8FOSA)	7.216	506.0 -> 78.0	4507	2.3174	ng/ml		0.097
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 23.17%		*	
d5-N-EtFOSAA	6.977	589.0 -> 418.8	3156	2.3663	ng/ml		-0.187
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 23.66%		*	
M7PFUdA	6.994	570.0 -> 525.0	13835	2.4367	ng/ml		-0.179
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 24.37%		*	
Perfluoro-n-[1,2-13C2]dodecanoic acid (MPFDoA)	7.312	615.0 -> 570.0	14984	2.3093	ng/ml		-0.136
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 23.09%		*	
M2PFTeDA	8.083	715.0 -> 670.0	17703	3.2578	ng/ml		-0.018
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 32.58%			
Target Compounds							**QValue**

Quantitation Results Report (Not Reviewed)

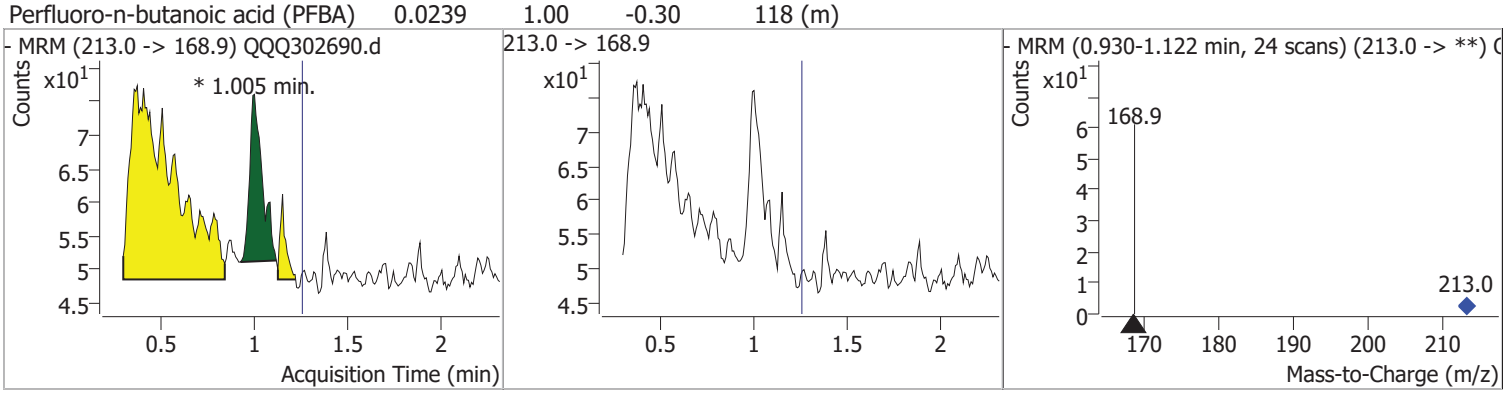
Compound	RT	QIon	Resp.	Conc.	Units		Dev(Min)
Perfluoro-n-butanoic acid (PFBA)	1.005	213.0 -> 168.9	118	0.0239	ng/ml	m	100
Perfluoro-n-pentanoic acid (PFPeA)	4.394	263.0 -> 219.0	8	0.0021	ng/ml		100
Perfluorobutanesulfonic acid (PFBS)	4.953	298.9 -> 79.9	1	0.0006	ng/ml	#	1
1H,1H,2H,2H-perfluoro-1-hexanesulfonate (4 2FTS)	5.251	327.0 -> 307.0	4	0.0032	ng/ml	#	1
Perfluorohexanoic acid (PFHxA)	5.429	313.0 -> 268.9	29	0.0035	ng/ml	#	1
Perfluoro-1-pentanesulfonate (L-PFPeS)	5.763	348.9 -> 79.9	30	0.0166	ng/ml		93
Perfluoroheptanoic acid (PFHpA)	5.897	363.0 -> 318.8	19	0.0017	ng/ml	#	1
Perfluorohexanesulfonic acid (PFHxS)	6.512	398.9 -> 79.9	970	0.5265	ng/ml	#	29
1H,1H,2H,2H-perfluoro-1-octanesulfonate (6 2FTS)	5.744	427.0 -> 407.0	16	0.0160	ng/ml		57
Perfluorooctanoic acid (PFOA)	6.166	413.0 -> 368.8	600	0.0545	ng/ml	#	71
Perfluoro-1-heptanesulfonate (L-PFHpS)	6.940	448.9 -> 80.0	18	0.0131	ng/ml		30
Perfluorononanoic acid (PFNA)	6.400	463.0 -> 418.8	81	0.0072	ng/ml		65
Perfluorooctanesulfonic acid (PFOS)	6.383	498.9 -> 79.9	22	0.0144	ng/ml	#	1
1H,1H,2H,2H-perfluoro-1-decanesulfonate (8 2FTS)	7.155	527.0 -> 507.0	2	0.0016	ng/ml		90
Perfluorononanesulfonate (L-PFNS)	6.398	548.9 -> 79.9	22	0.0142	ng/ml		98
Perfluorodecanoic acid (PFDA)	6.592	513.0 -> 468.8	12	0.0012	ng/ml		65
N-MeFOSAA	6.843	570.0 -> 418.9	51	0.0166	ng/ml		39
Perfluoro-1-octanesulfonamide (FOSA)	6.821	497.9 -> 78.0	1	0.0004	ng/ml		94
Perfluoro-1-decanesulfonate (L-PFDS)	6.976	598.9 -> 98.9	24	0.0138	ng/ml		100
N-EtFOSAA	6.969	584.0 -> 418.8	65	0.0246	ng/ml	#	51
Perfluoroundecanoic acid (PFUnA)	6.869	563.0 -> 519.0	17	0.0016	ng/ml		78
Perfluorododecanoic acid (PFDoA)	7.111	613.0 -> 568.8	24	0.0025	ng/ml	#	1
Perfluorotridecanoic acid (PFTrDA)	7.581	663.0 -> 618.8	17	0.0302	ng/ml		100
Perfluorotetradecanoic acid (PFTA)	7.907	713.0 -> 669.0	43	0.0033	ng/ml	#	93

(#) = Qualifier Out of Range; (m) = Manual Integration; (+) = Area Summed; (*) = Surrogate Percent Recovery Out of Range; (d): Zeroed Peak

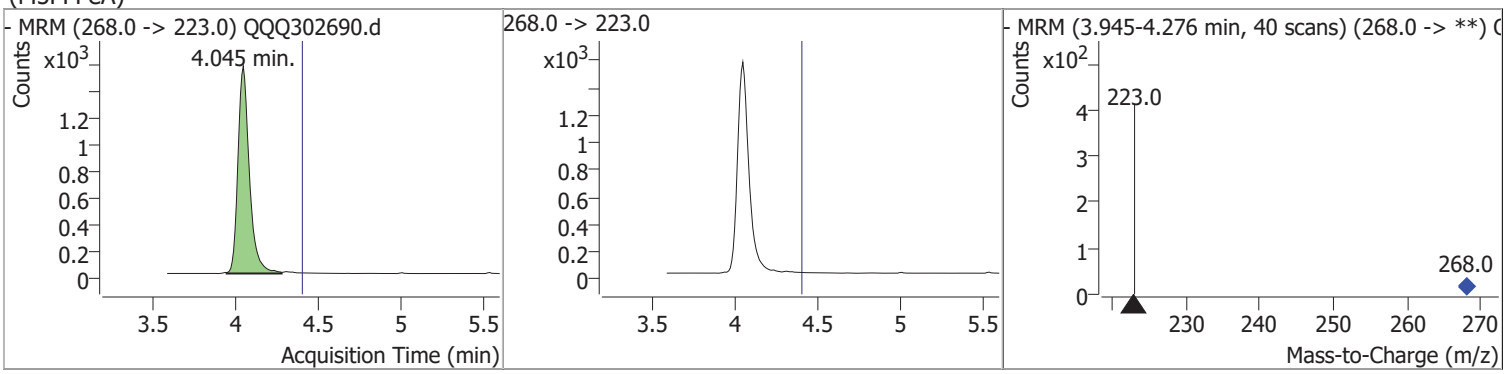
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-n-[13C4]butanoic acid (MPFBA)	3.7519	1.02	-0.29	8747				



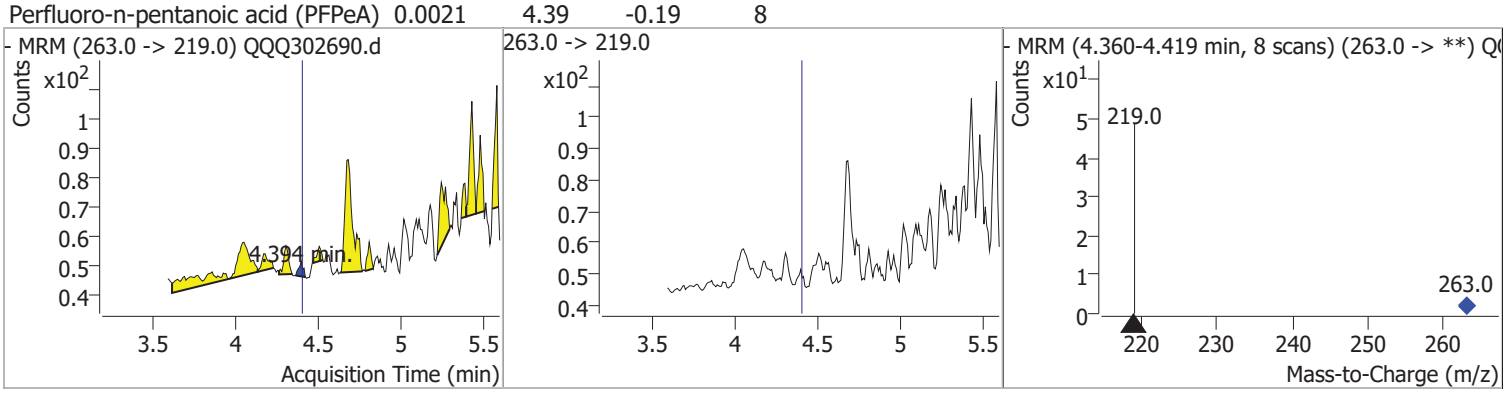
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-n-butanoic acid (PFBA)	0.0239	1.00	-0.30	118 (m)				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-n-[13C54]pentanoic acid (M5PFPeA)	3.8427	4.04	-0.54	7446				

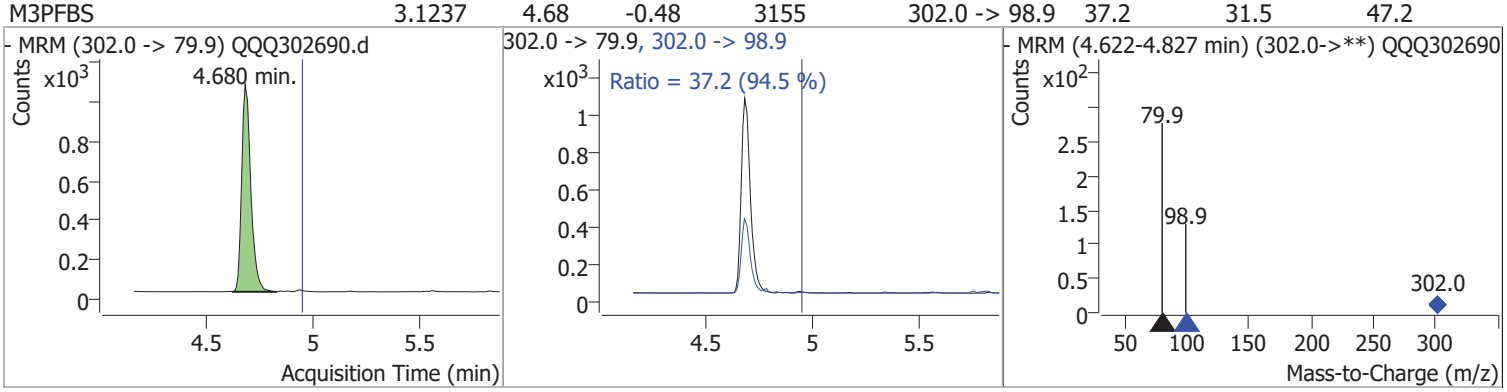


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-n-pentanoic acid (PFPeA)	0.0021	4.39	-0.19	8				

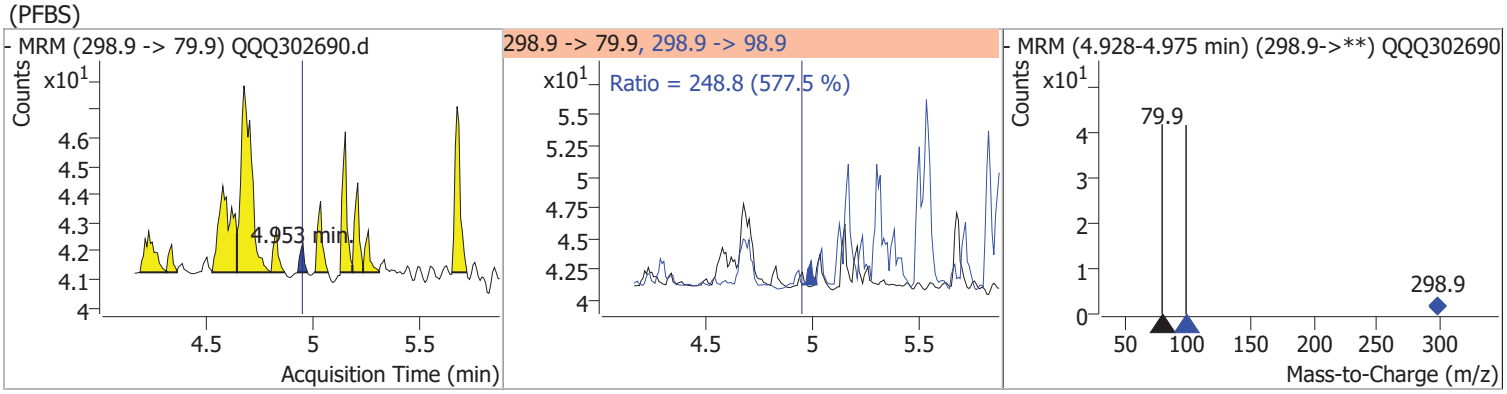


Quantitation Results Report (Not Reviewed)

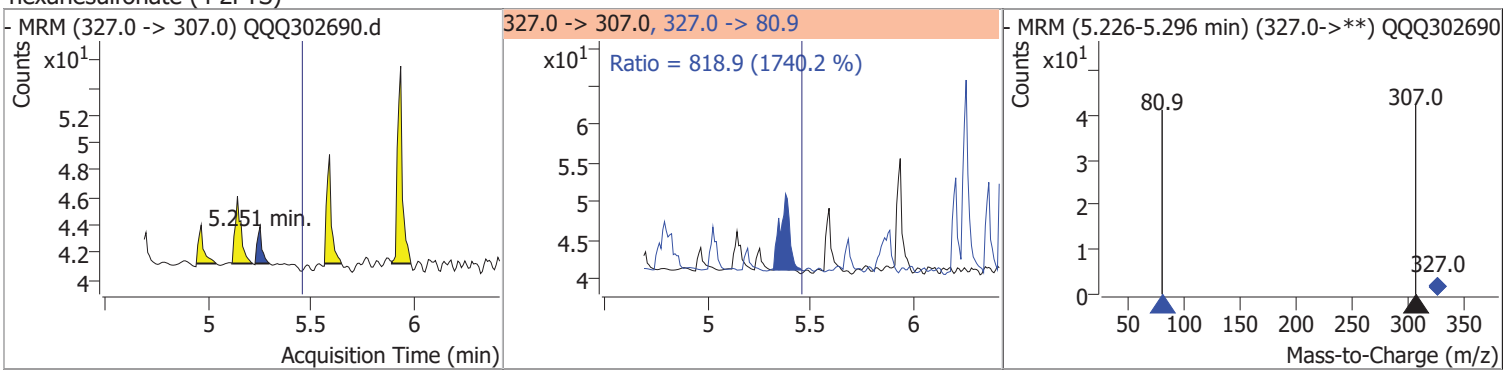
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M3PFBS	3.1237	4.68	-0.48	3155	302.0 -> 98.9	37.2	31.5	47.2



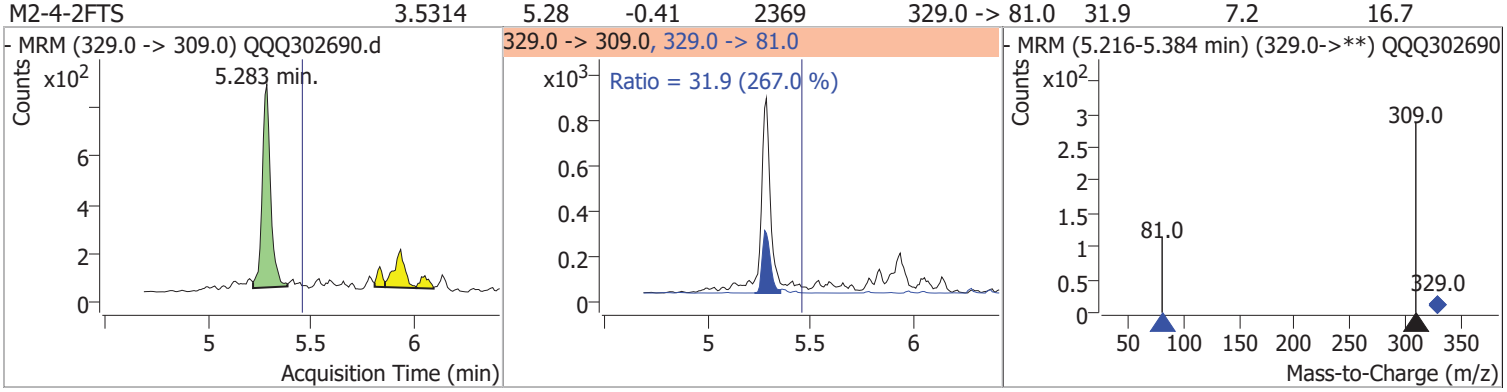
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorobutanesulfonic acid (PFBS)	0.0006	4.95	-0.21	1	298.9 -> 98.9	248.8	34.5	51.7



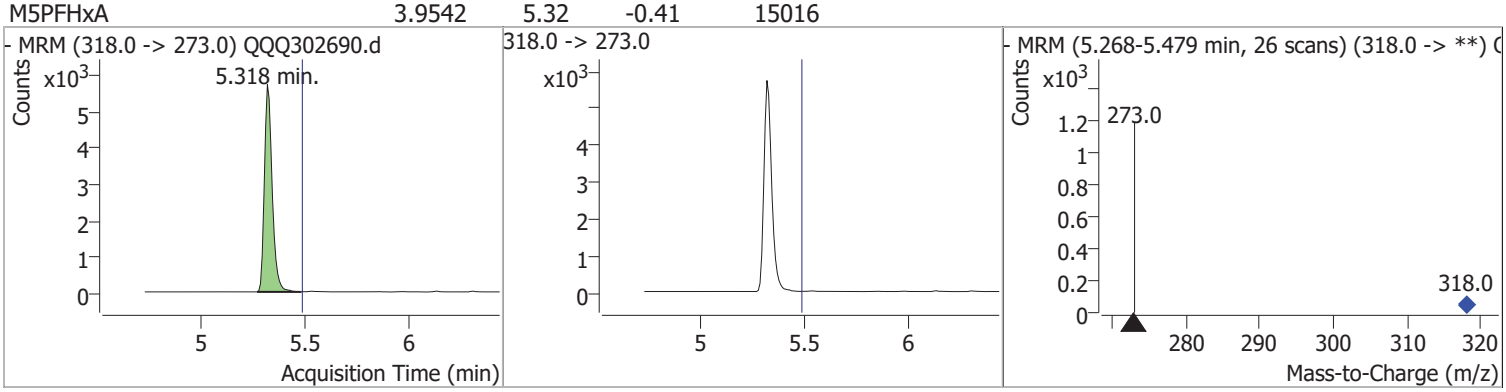
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
1H,1H,2H,2H-perfluoro-1-hexanesulfonate (4 2FTS)	0.0032	5.25	-0.44	4	327.0 -> 80.9	818.9	28.2	65.9



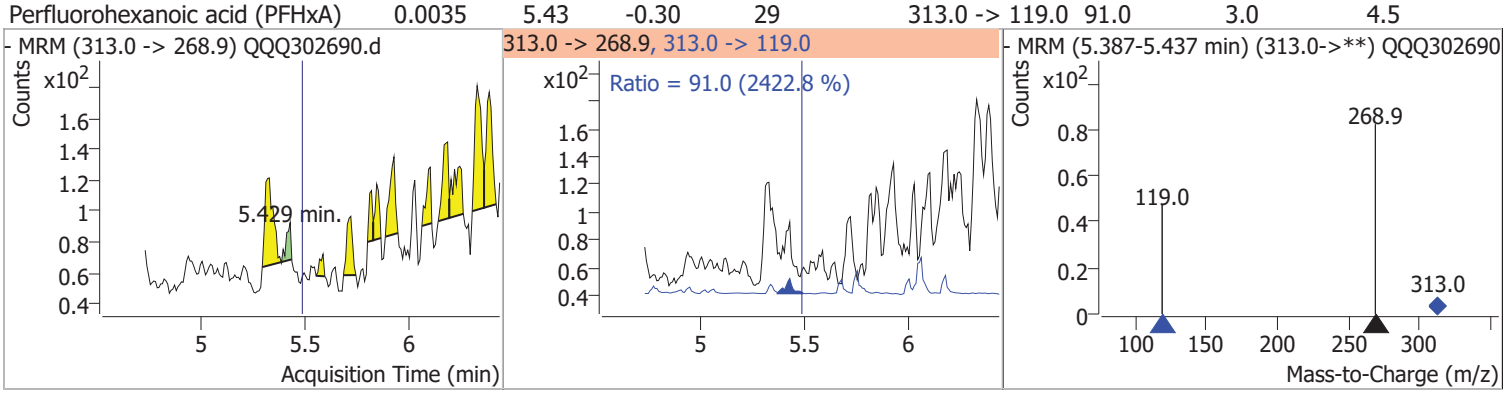
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M2-4-2FTS	3.5314	5.28	-0.41	2369	329.0 -> 81.0	31.9	7.2	16.7



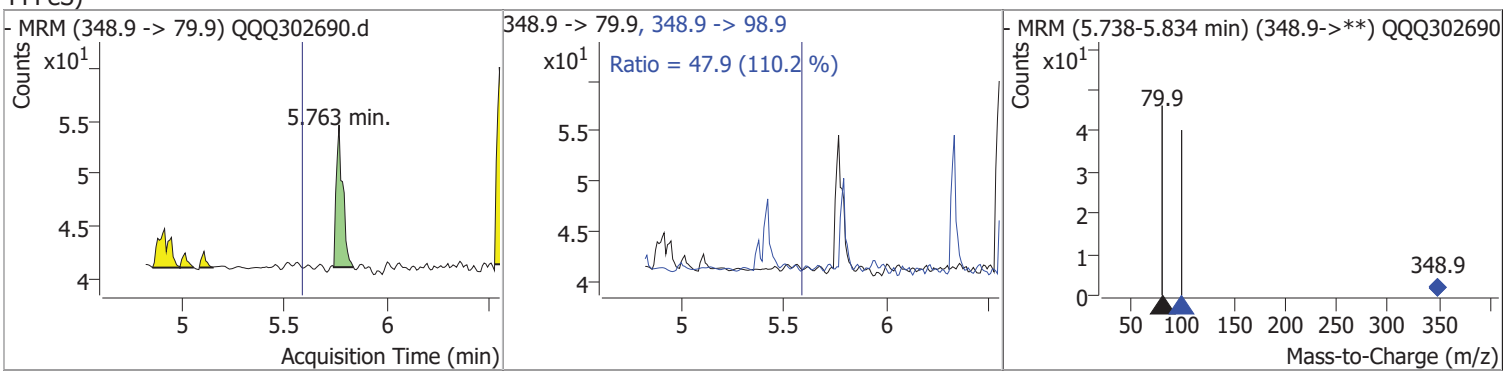
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M5PFHxA	3.9542	5.32	-0.41	15016				



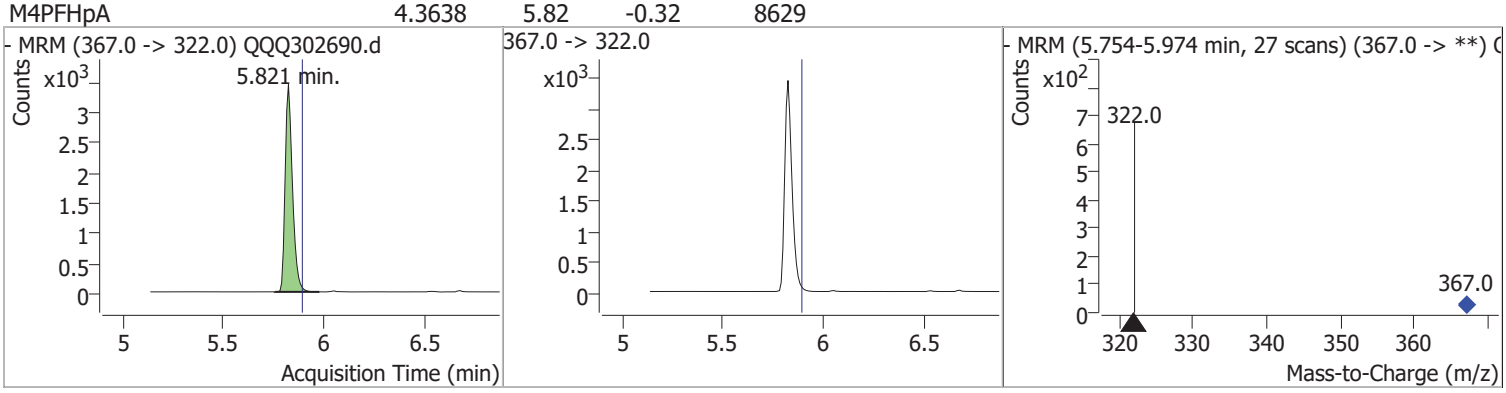
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorohexanoic acid (PFHxA)	0.0035	5.43	-0.30	29	313.0 -> 119.0	91.0	3.0	4.5



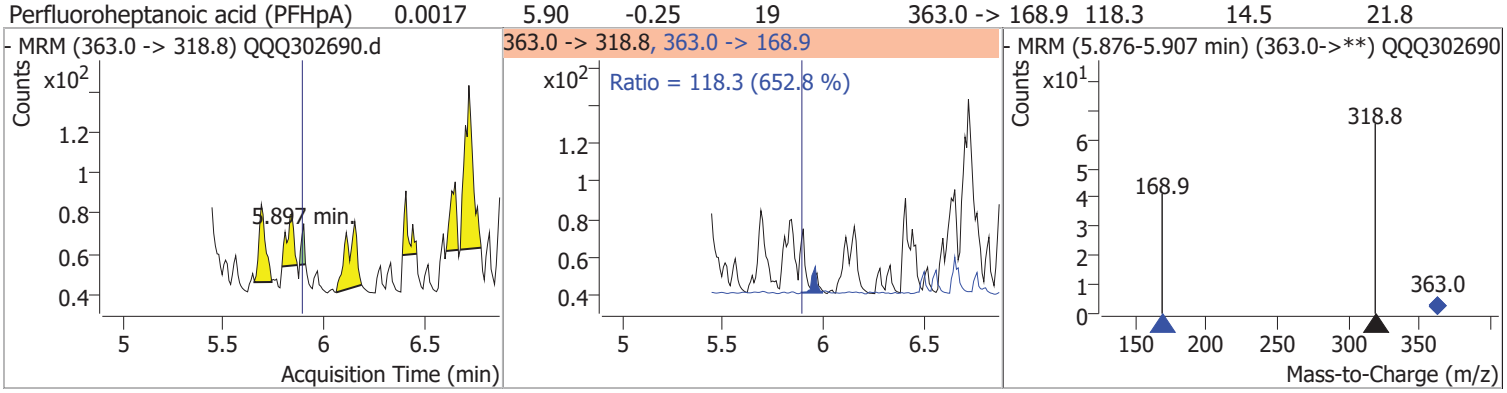
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-1-pentanesulfonate (L-PFPeS)	0.0166	5.76	-0.06	30	348.9 -> 98.9	47.9	34.8	52.2



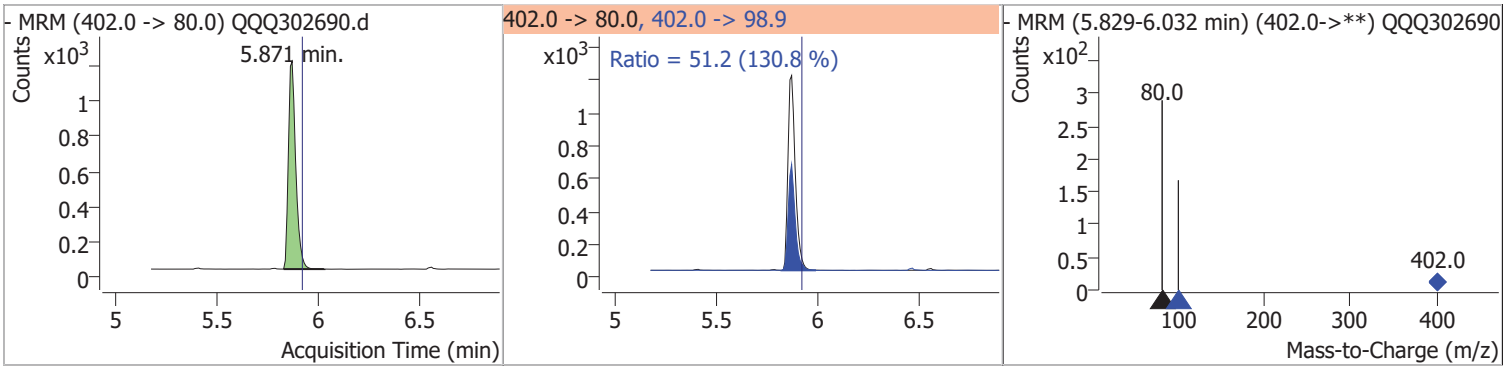
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M4PFHpA	4.3638	5.82	-0.32	8629				



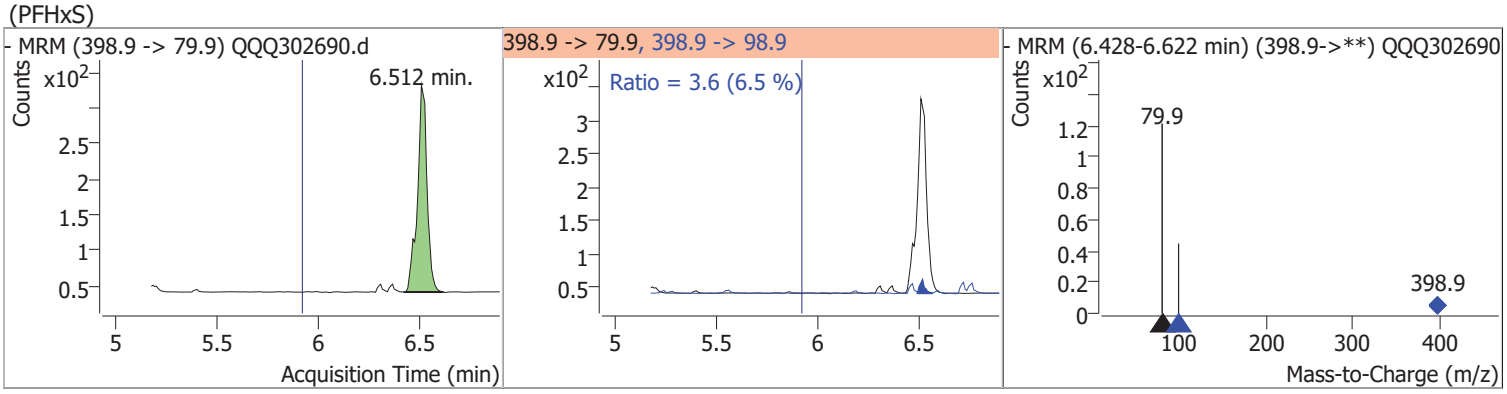
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoroheptanoic acid (PFHpA)	0.0017	5.90	-0.25	19	363.0 -> 168.9	118.3	14.5	21.8



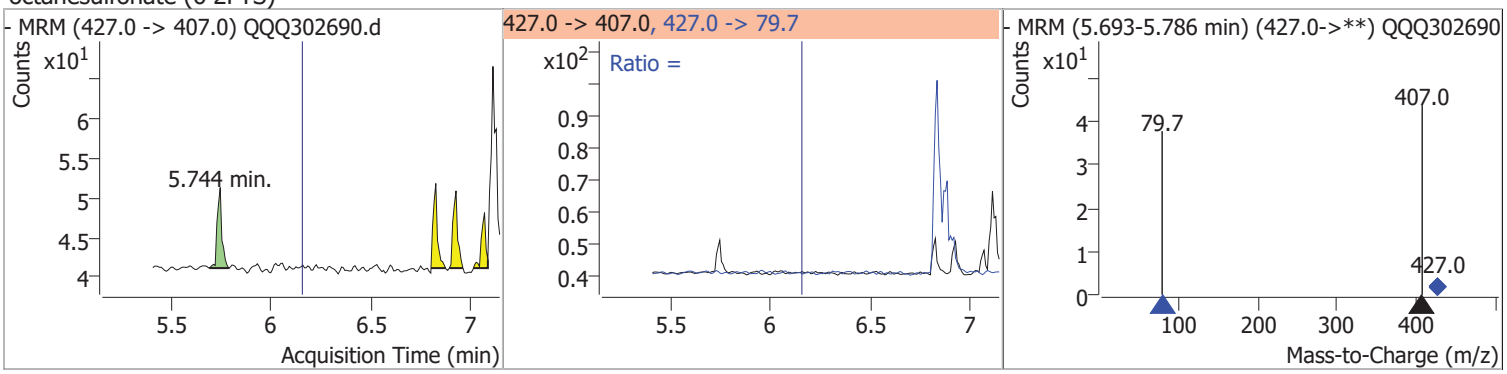
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M3PFHxS	3.5253	5.87	-0.31	2996	402.0 -> 98.9	51.2	31.3	47.0



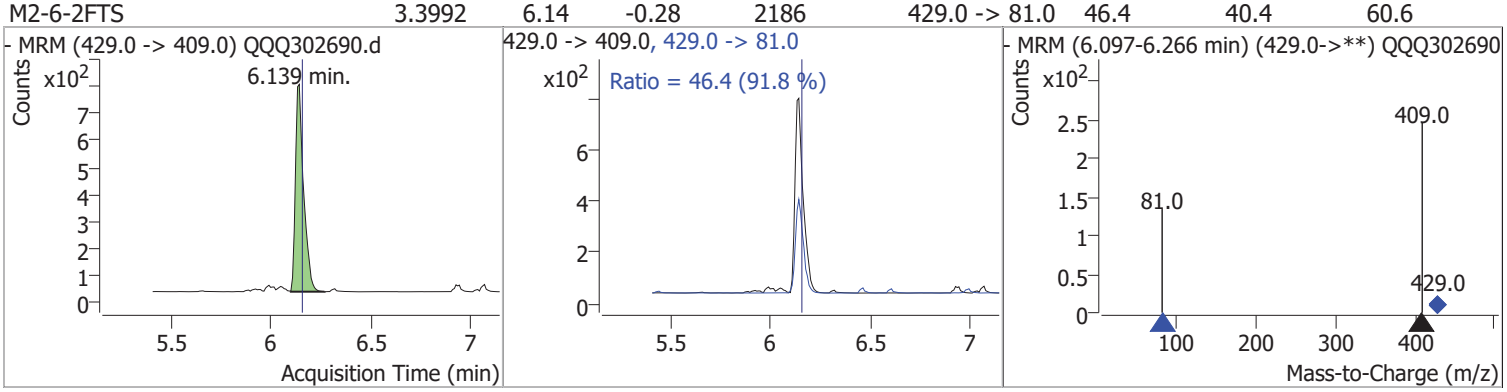
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorohexanesulfonic acid (PFHxS)	0.5265	6.51	0.33	970	398.9 -> 98.9	3.6	44.4	66.5



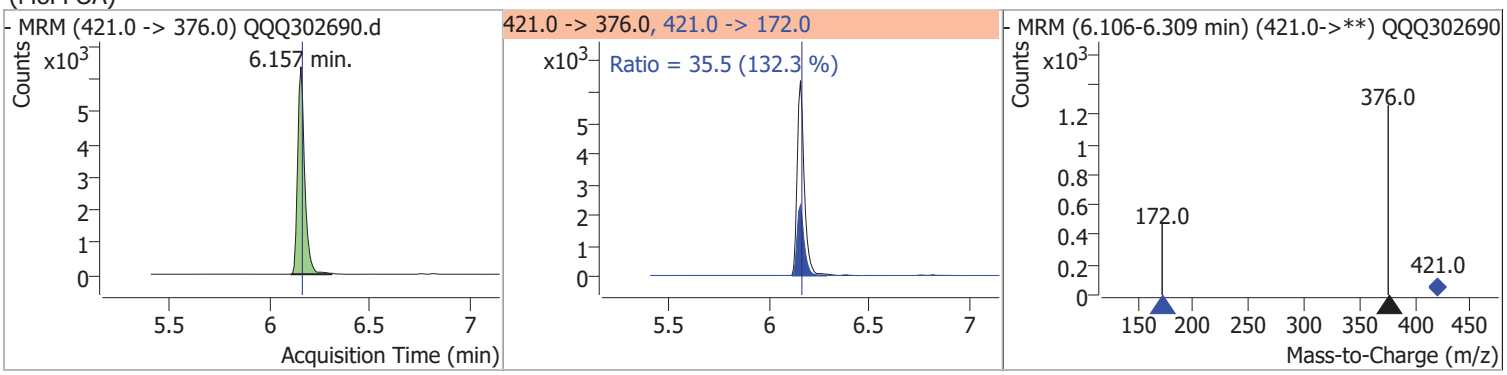
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
1H,1H,2H,2H-perfluoro-1-octanesulfonate (6 2FTS)	0.0160	5.74	-0.68	16	427.0 -> 79.7		15.8	23.7



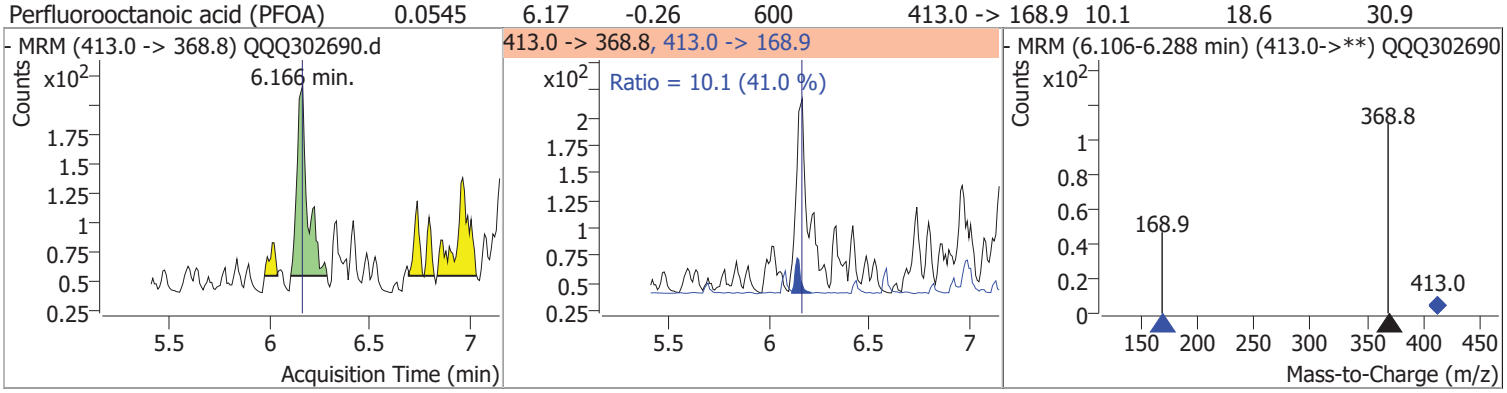
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M2-6-2FTS	3.3992	6.14	-0.28	2186	429.0 -> 81.0	46.4	40.4	60.6



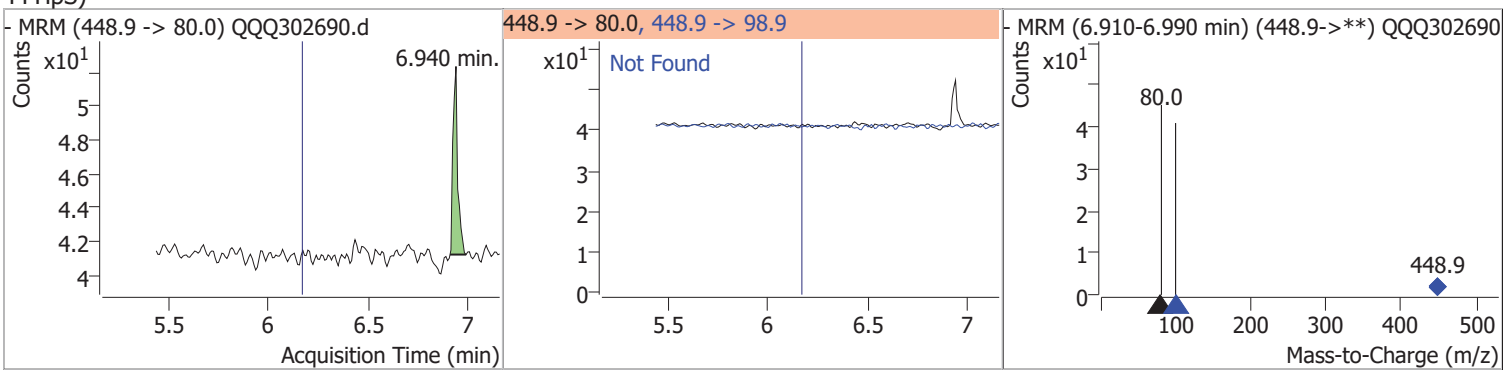
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-n-[13C8]octanoic acid (M8PFOA)	4.7660	6.16	-0.27	15583	421.0 -> 172.0	35.5	21.5	32.2



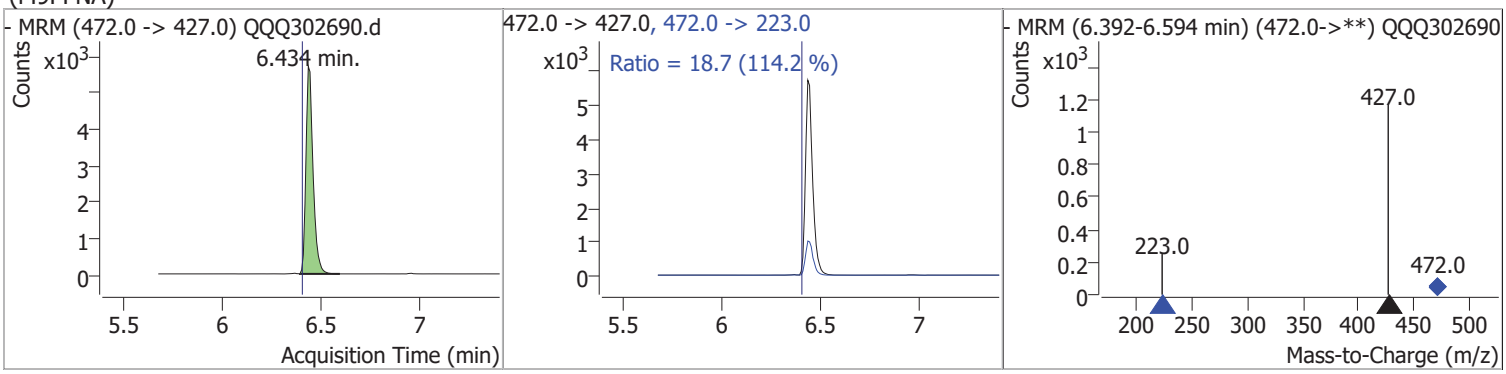
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorooctanoic acid (PFOA)	0.0545	6.17	-0.26	600	413.0 -> 168.9	10.1	18.6	30.9



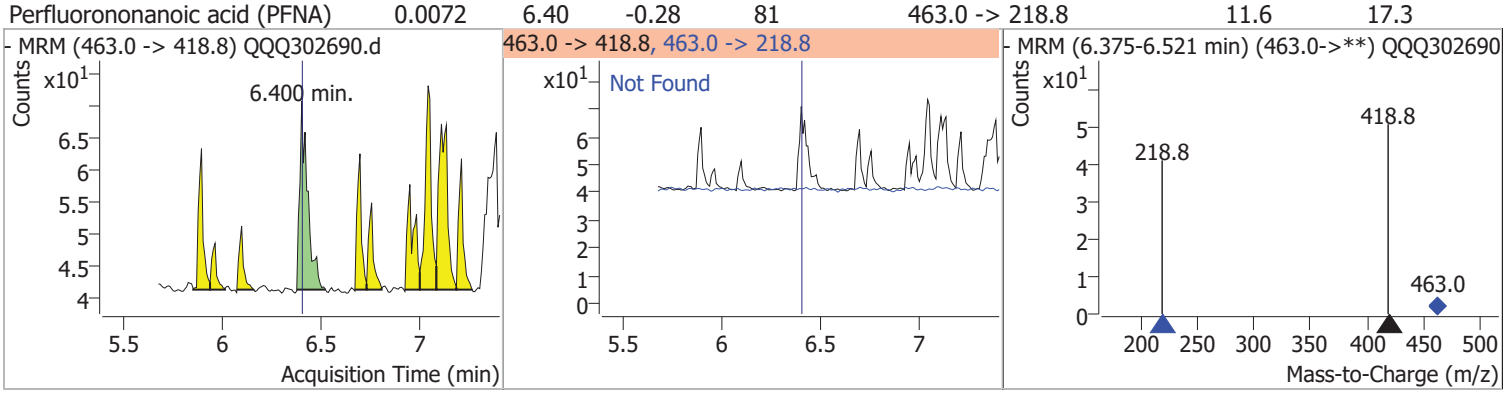
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-1-heptanesulfonate (L-PFHpS)	0.0131	6.94	0.50	18	448.9 -> 98.9		37.3	56.0



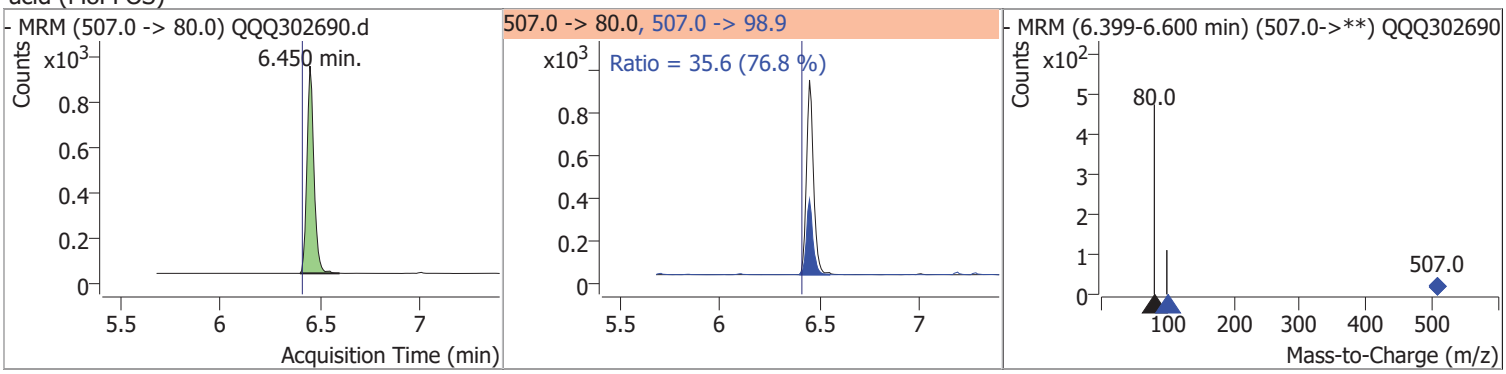
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-n-[13C9]nonanoic acid (M9PFNA)	3.6681	6.43	-0.25	14265	472.0 -> 223.0	18.7	13.1	19.6



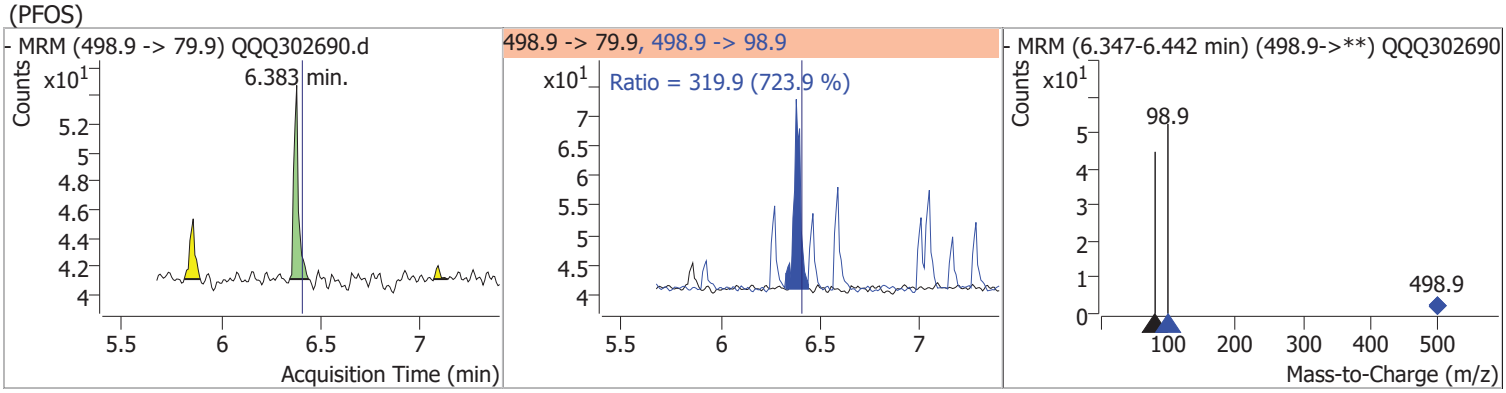
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorononanoic acid (PFNA)	0.0072	6.40	-0.28	81	463.0 -> 218.8		11.6	17.3



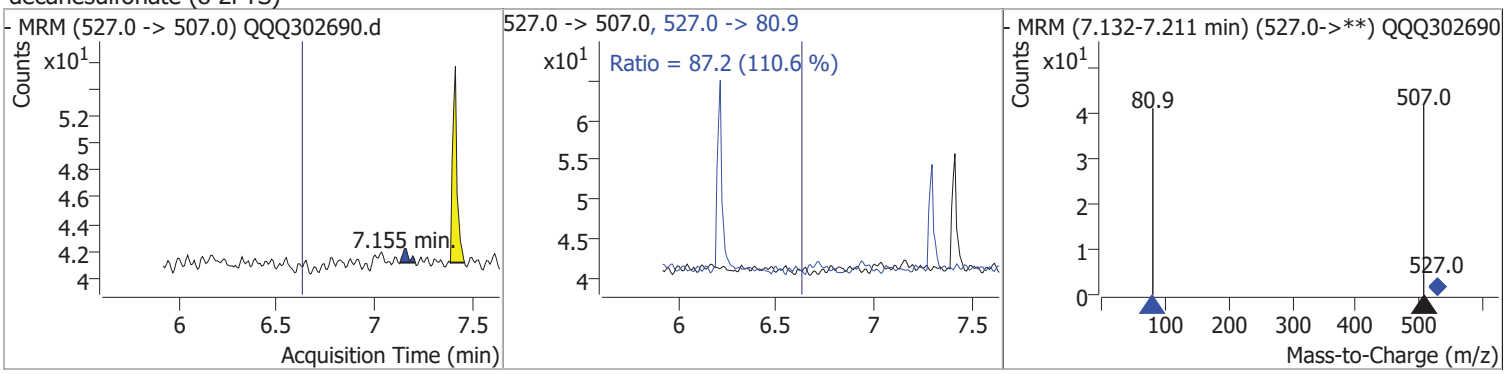
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)	2.6039	6.45	-0.24	2263	507.0 -> 98.9	35.6	37.1	55.6



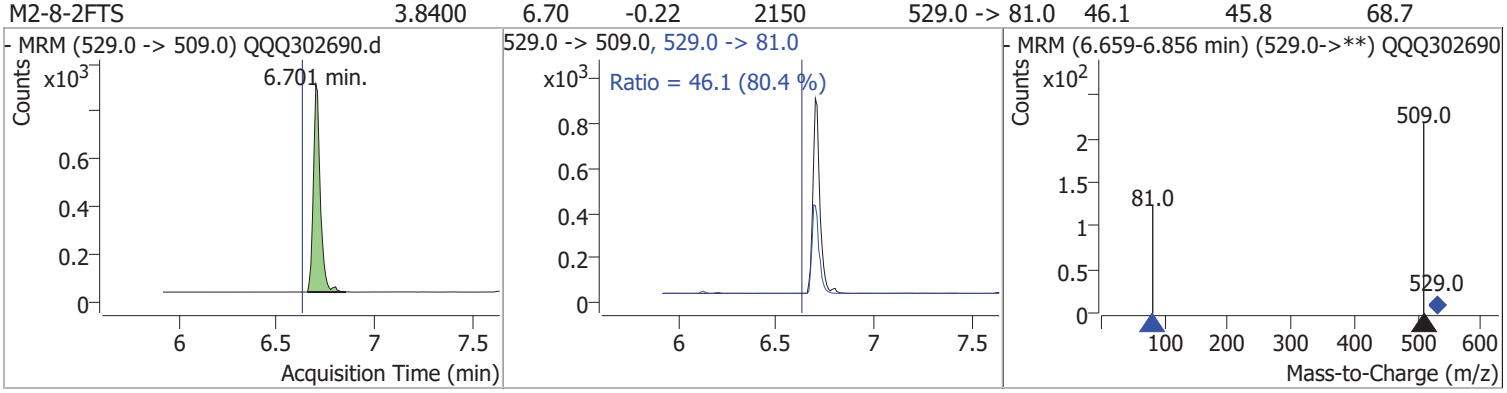
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorooctanesulfonic acid (PFOS)	0.0144	6.38	-0.31	22	498.9 -> 98.9	319.9	35.4	53.0



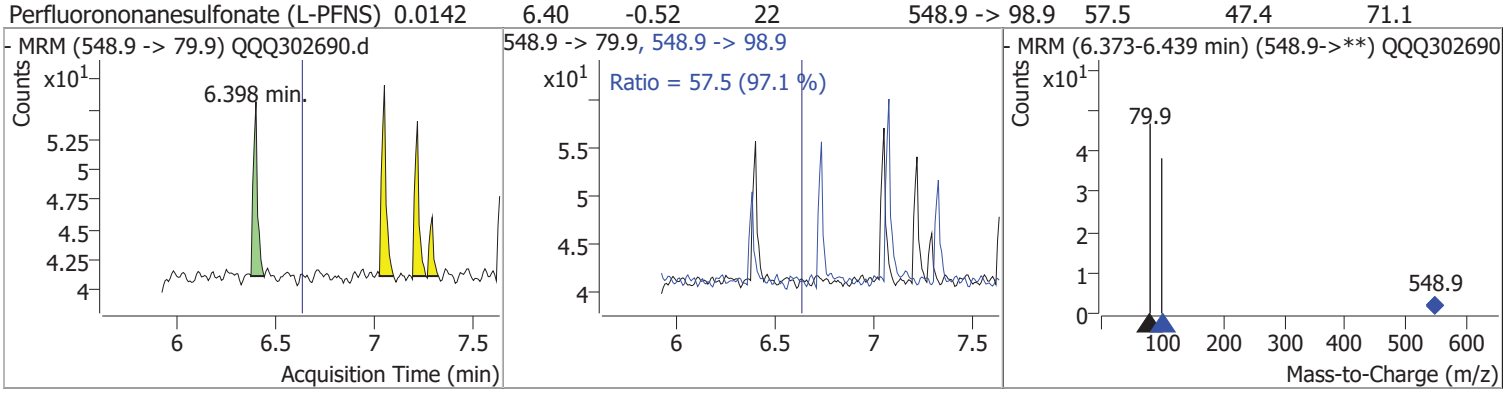
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
1H,1H,2H,2H-perfluoro-1-decanesulfonate (8 2FTS)	0.0016	7.16	0.24	2	527.0 -> 80.9	87.2	63.1	94.6



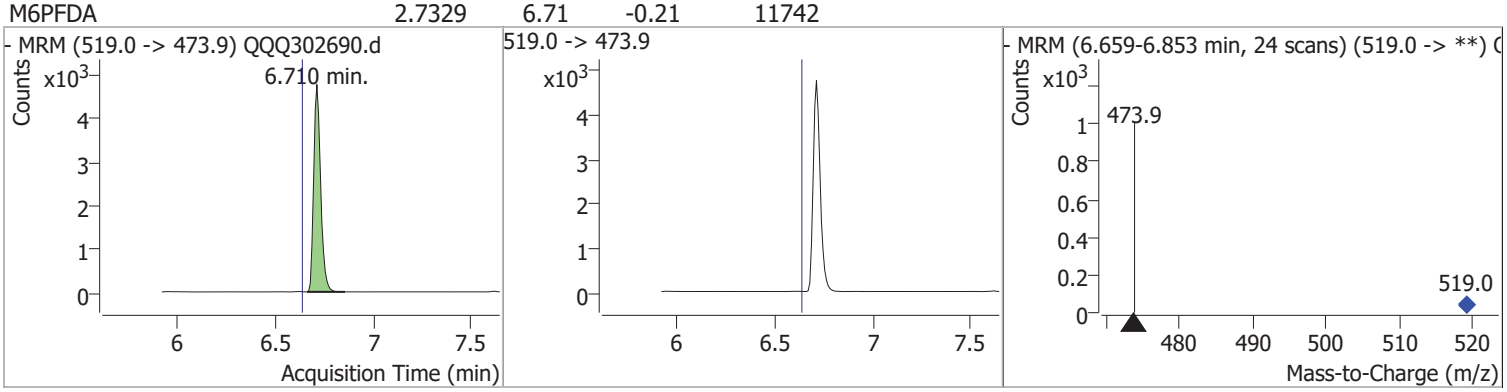
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M2-8-2FTS	3.8400	6.70	-0.22	2150	529.0 -> 81.0	46.1	45.8	68.7



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorononanesulfonate (L-PFNS)	0.0142	6.40	-0.52	22	548.9 -> 98.9	57.5	47.4	71.1

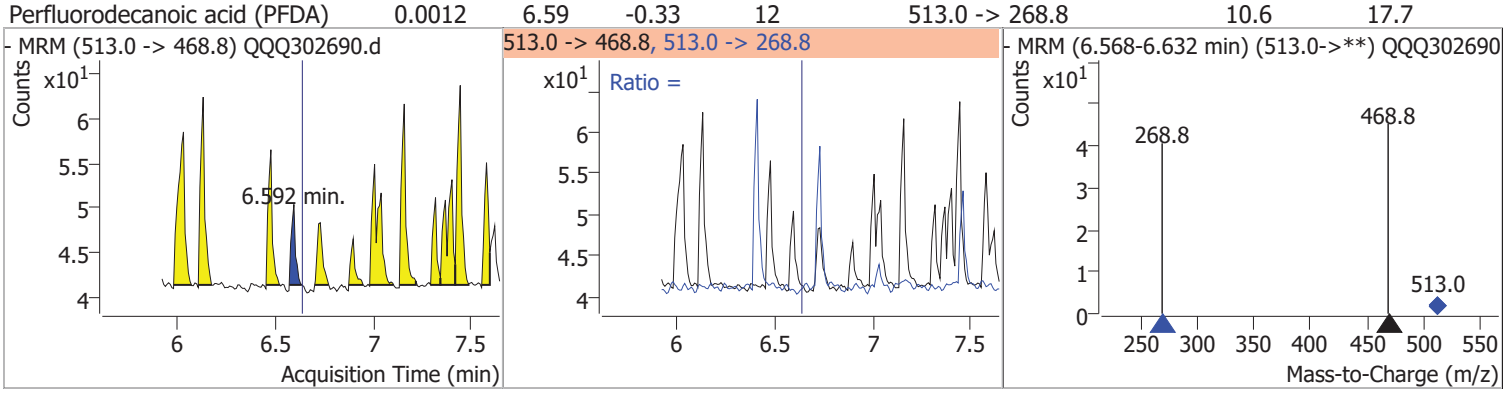


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M6PFDA	2.7329	6.71	-0.21	11742				

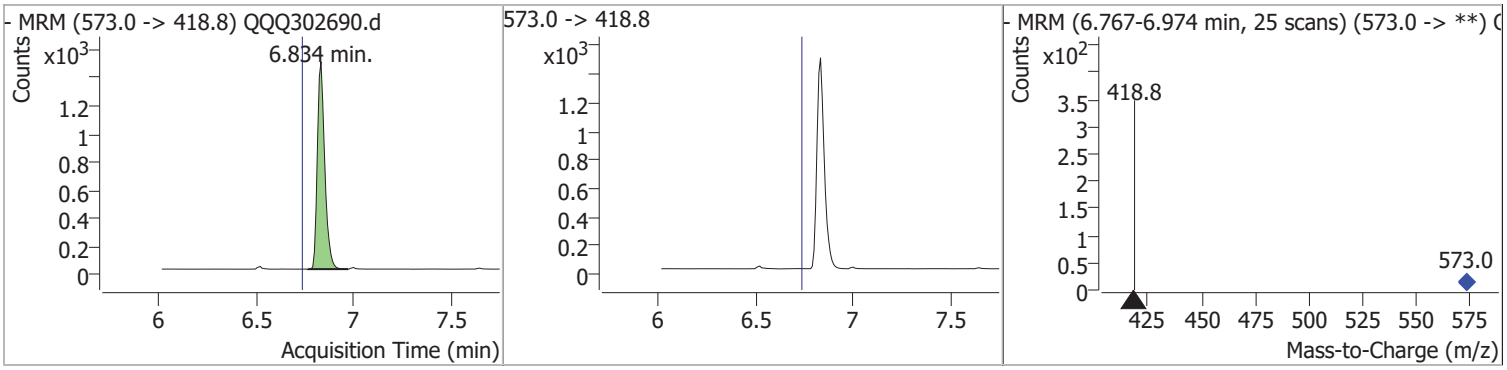


Quantitation Results Report (Not Reviewed)

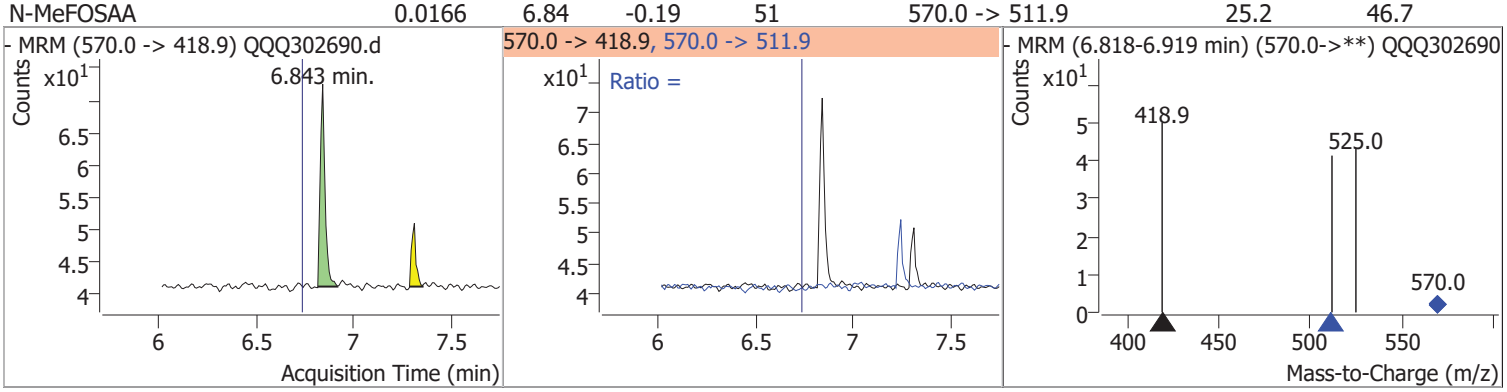
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorodecanoic acid (PFDA)	0.0012	6.59	-0.33	12	513.0 -> 268.8		10.6	17.7



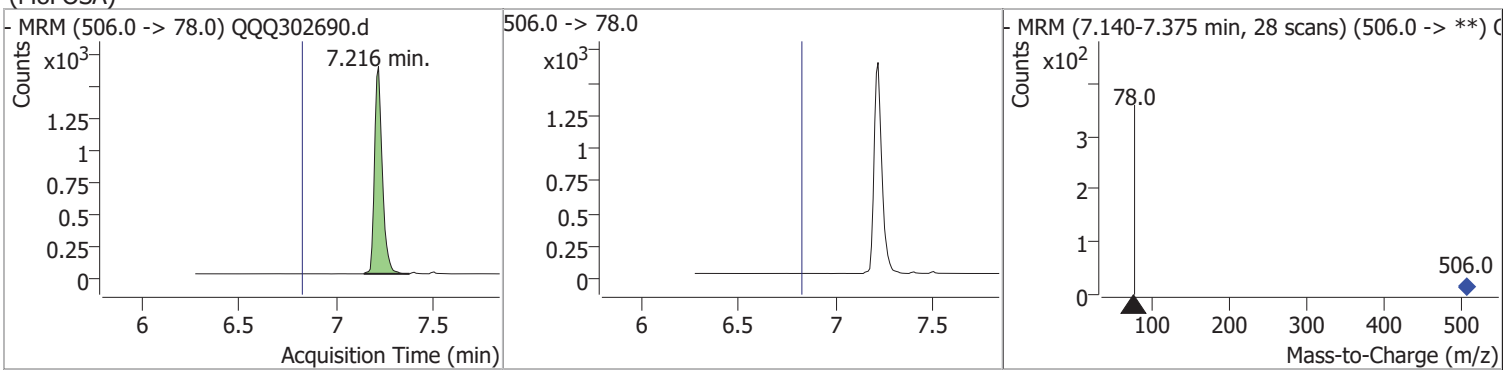
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
d3-N-MeFOSAA	2.5742	6.83	-0.20	3886				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
N-MeFOSAA	0.0166	6.84	-0.19	51	570.0 -> 511.9		25.2	46.7

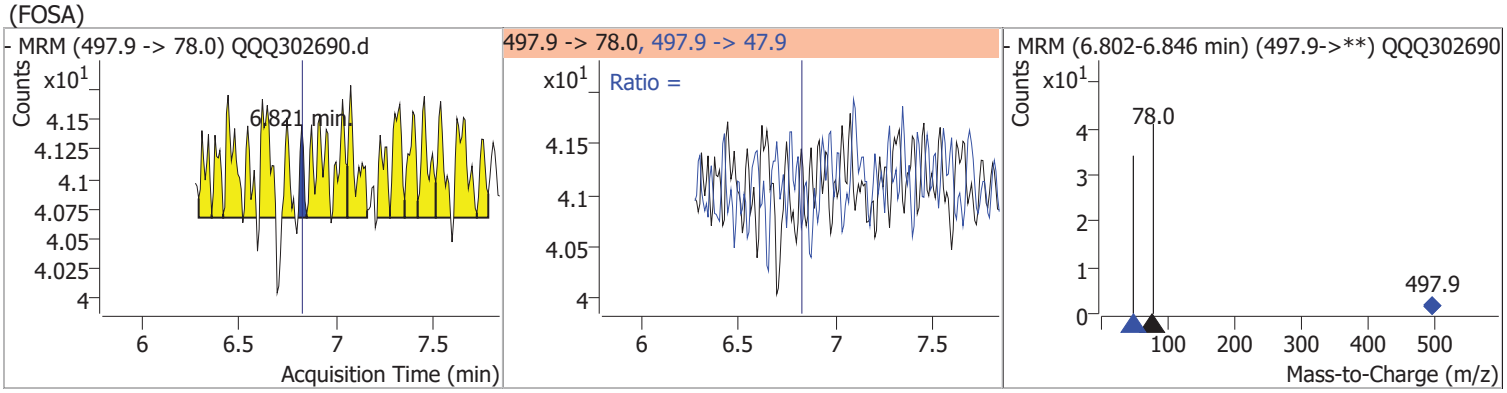


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-1-[13C8]octanesulfonamide (M8FOSA)	2.3174	7.22	0.10	4507				

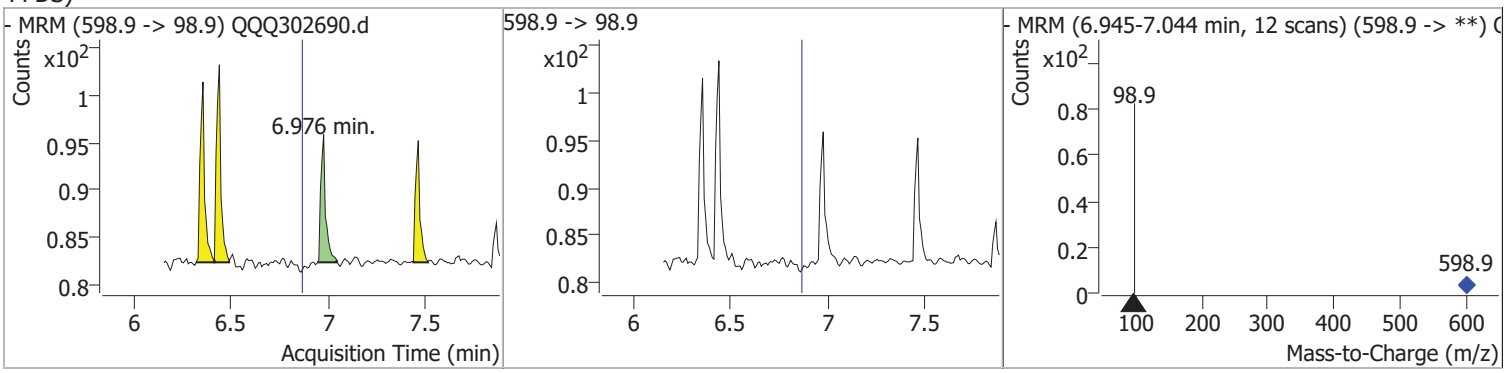


Quantitation Results Report (Not Reviewed)

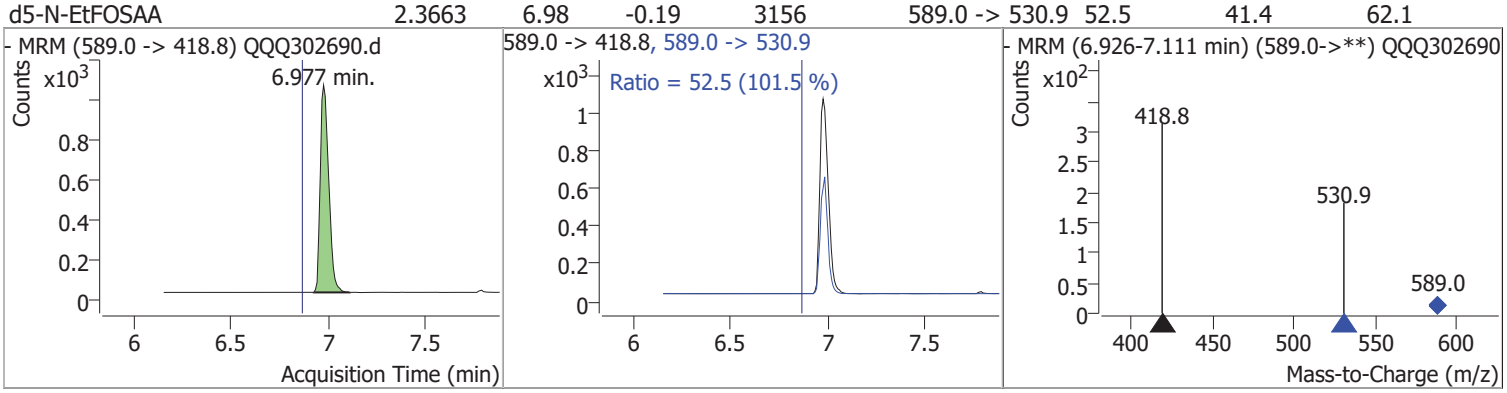
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-1-octanesulfonamide (FOSA)	0.0004	6.82	-0.30	1	497.9 -> 47.9		1.7	2.5



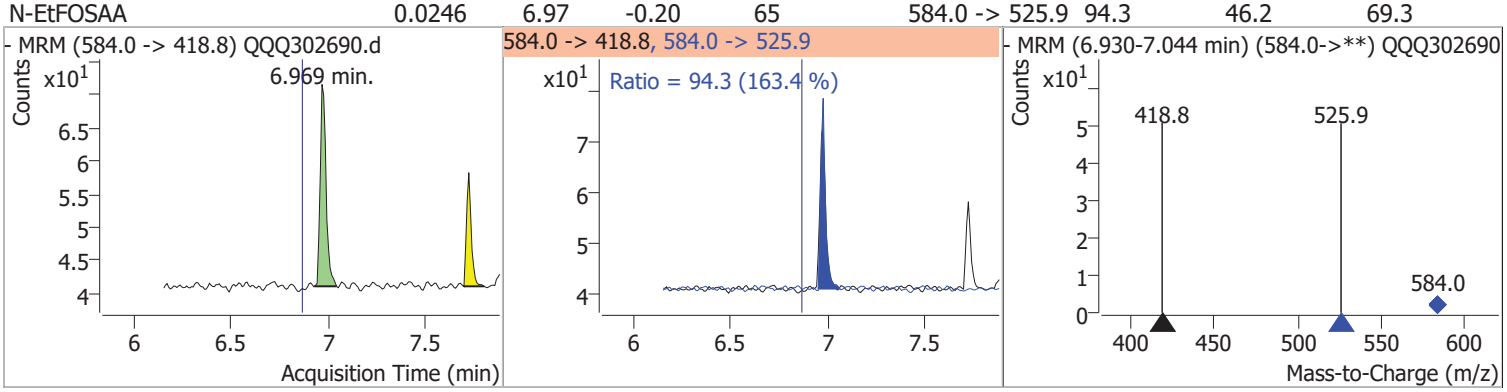
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-1-decanesulfonate (L-PFDS)	0.0138	6.98	-0.19	24				



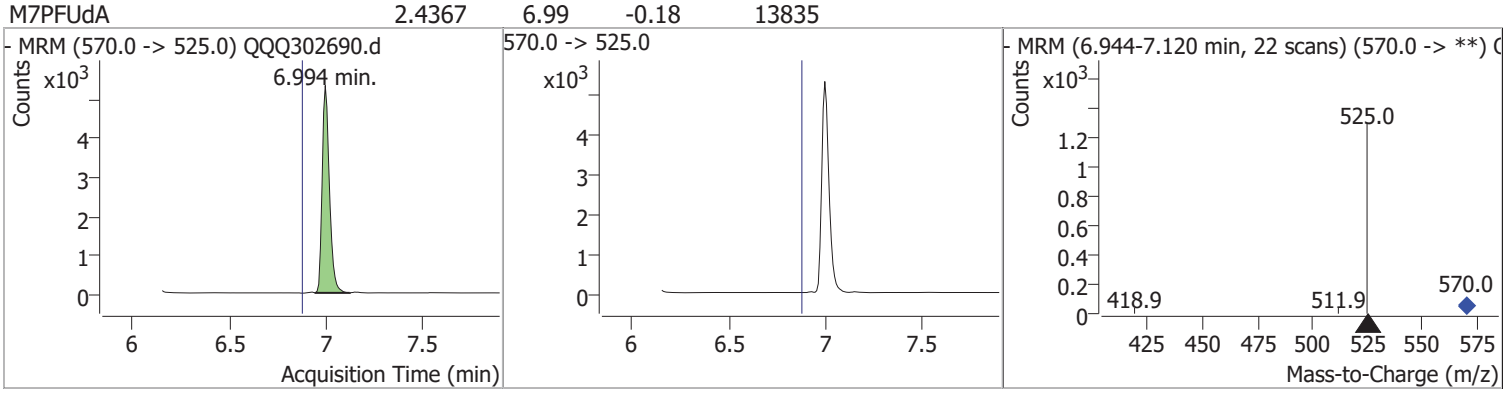
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
d5-N-EtFOSAA	2.3663	6.98	-0.19	3156	589.0 -> 530.9	52.5	41.4	62.1



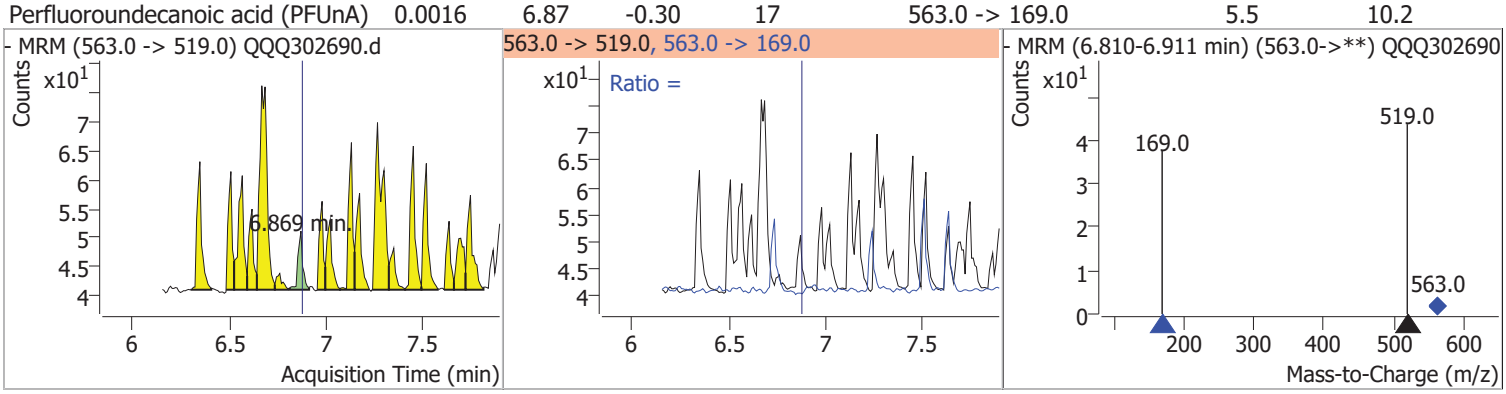
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
N-EtFOSAA	0.0246	6.97	-0.20	65	584.0 -> 525.9	94.3	46.2	69.3



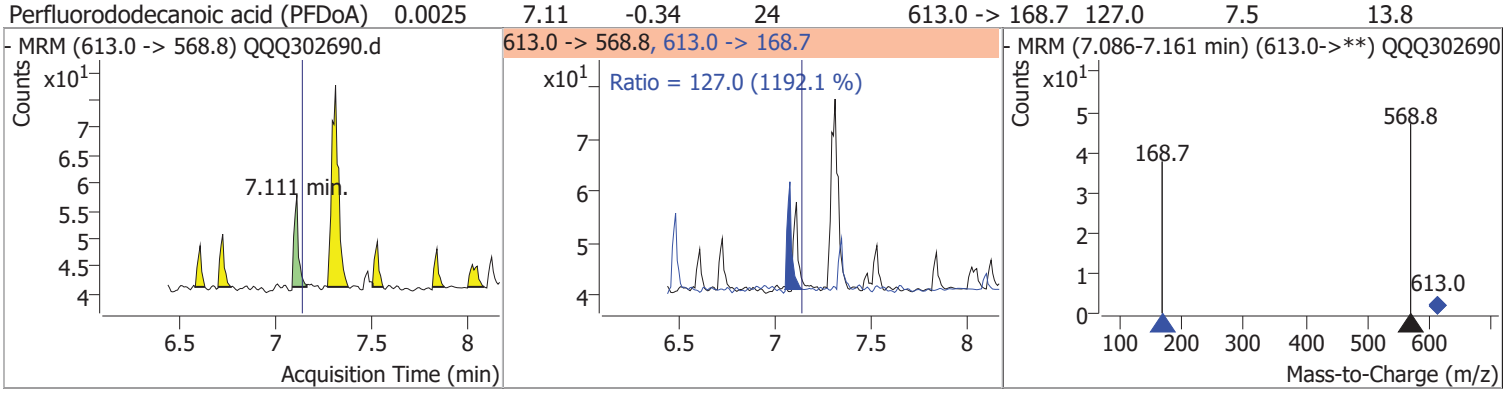
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M7PFUdA	2.4367	6.99	-0.18	13835				



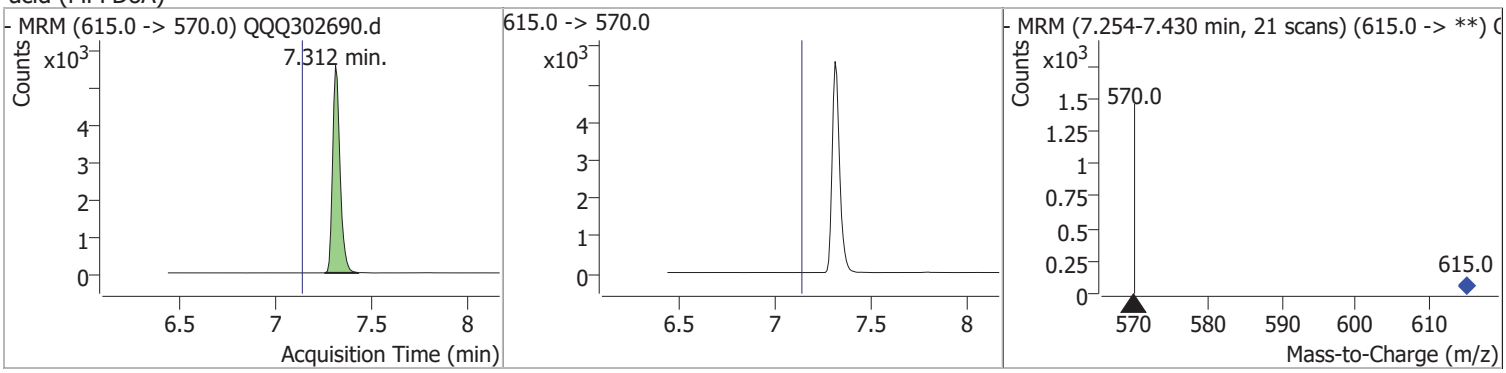
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoroundecanoic acid (PFUnA)	0.0016	6.87	-0.30	17	563.0 -> 169.0		5.5	10.2



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorododecanoic acid (PFDoA)	0.0025	7.11	-0.34	24	613.0 -> 168.7	127.0	7.5	13.8

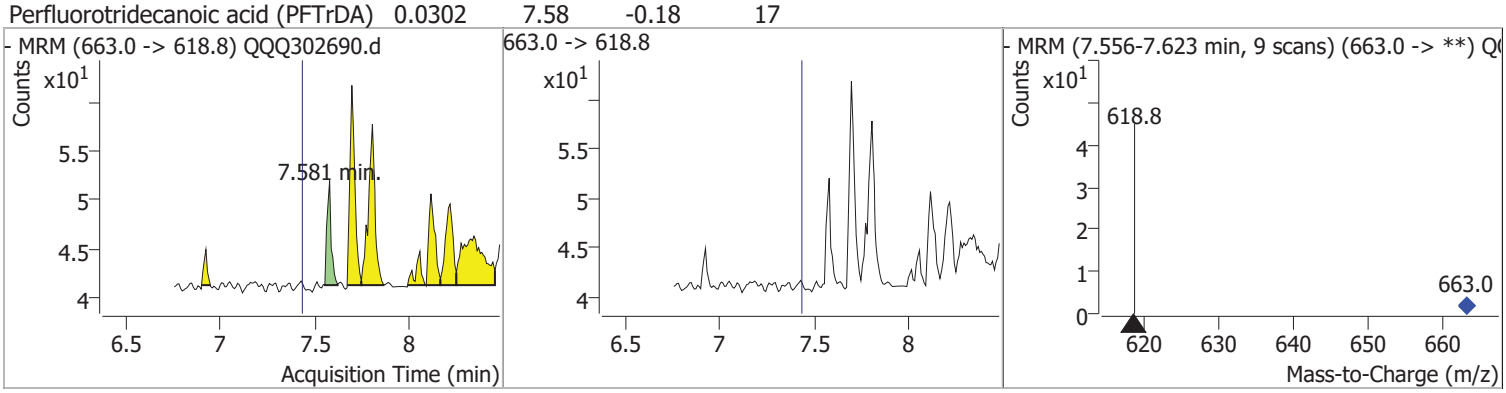


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-n-[1,2-13C2]dodecanoic acid (MPFDoA)	2.3093	7.31	-0.14	14984				

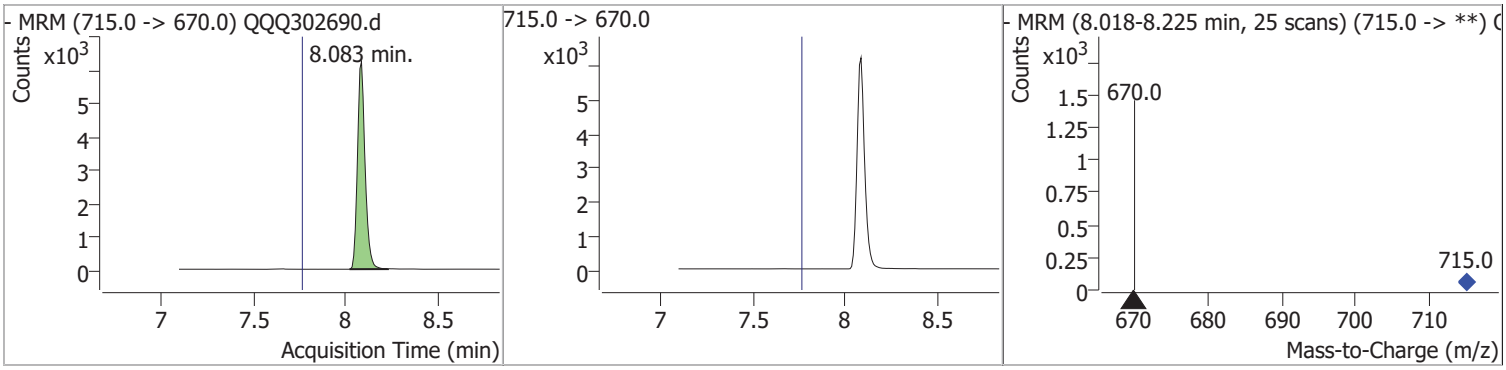


Quantitation Results Report (Not Reviewed)

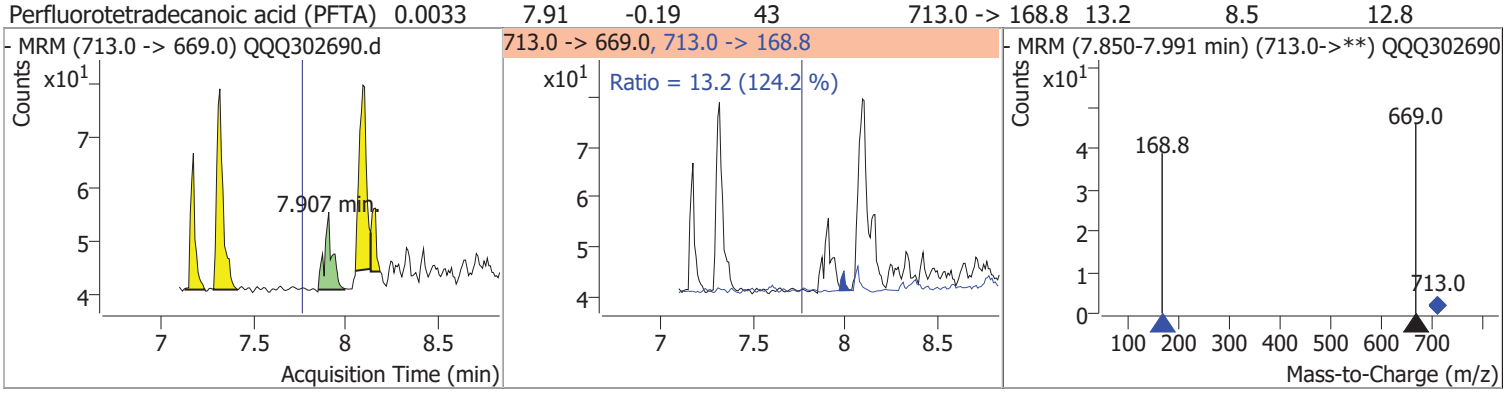
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorotridecanoic acid (PFTrDA)	0.0302	7.58	-0.18	17				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M2PFTeDA	3.2578	8.08	-0.02	17703				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorotetradecanoic acid (PFTA)	0.0033	7.91	-0.19	43	713.0 -> 168.8	13.2	8.5	12.8



FORM VI

INITIAL CALIBRATION DATA

EPA 537m

Laboratory: York Analytical Laboratories, Inc.

Client: Phoenix Environmental Laboratories, Inc.

Calibration: YF20026

SDG: 22G0348

Project: GCL69739

Instrument: QQQ3

Calibration Date: 06/28/22 15:42

Compound	Level 01		Level 02		Level 03		Level 04		Level 05		Level 06	
	ng/mL	RF	ng/mL	RF	ng/mL	RF	ng/mL	RF	ng/mL	RF	ng/mL	RF
1H,1H,2H,2H-Perfluorodecan esulfonic acid (8:2 FTS)	0.202	0.114455	0.405	0.1030595	0.81	9.718099E-02	2.02	0.1163726	4.05	0.1151171	8.1	9.452081E-02
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	0.219	4.033698E-02	0.438	7.502475E-02	0.875	6.487647E-02	2.19	8.570417E-02	4.38	9.416301E-02	8.75	8.635148E-02
d3-N-MeFOSAA	0.25	0.1183186	0.5	9.306914E-02	1	0.1243772	2.5	0.1083403	5	0.1078228	10	0.1185722
d5-N-EtFOSAA	0.25	9.761688E-02	0.5	3.384603E-02	1	9.137757E-02	2.5	0.1199835	5	0.1092671	10	0.1147971
M2-6:2 FTS	0.238	8.532539E-02	0.476	0.0600026	0.951	3.840956E-02	2.38	5.820174E-02	4.76	4.930845E-02	9.51	4.442148E-02
M2-8:2 FTS	0.24	6.681818E-02	0.48	3.614377E-02	0.96	6.035726E-02	2.4	0.0410046	4.8	3.886979E-02	9.6	4.395071E-02
M2PFTeDA	0.25	0.409809	0.5	0.3610435	1	0.3184911	2.5	0.3669315	5	0.3931771	10	0.4064486
M3PFBS	0.233	0.0847913	0.466	8.091169E-02	0.932	6.992606E-02	2.33	6.685142E-02	4.66	7.414799E-02	9.32	6.741671E-02
M3PFHxS	0.237	9.070138E-02	0.474	8.824871E-02	0.948	8.163145E-02	2.37	0.0657842	4.74	7.171669E-02	9.48	6.489344E-02
M4PFHpA	0.25	0.2177267	0.5	0.182811	1	0.160397	2.5	0.1723869	5	0.1761324	10	0.1810347
M5PFHxA	0.25	0.2935885	0.5	0.3035273	1	0.2702403	2.5	0.2657734	5	0.2820267	10	0.2910597
M6PFDA	0.25	0.4126057	0.5	0.3086266	1	0.2994486	2.5	0.3176262	5	0.3315777	10	0.3094645
M7PFUdA	0.25	0.3773319	0.5	0.4209951	1	0.3693722	2.5	0.3922514	5	0.3822037	10	0.4051982
M9PFNA	0.25	0.2692139	0.5	0.2500461	1	0.345641	2.5	0.3071711	5	0.284022	10	0.2865212
N-EtFOSAA	0.25	0.2112137	0.5	0.2137446	1	0.2066938	2.5	0.2365128	5	0.2310985	10	0.2053881
N-MeFOSAA	0.25	0.2049282	0.5	0.172906	1	0.2067609	2.5	0.2291422	5	0.2504136	10	0.2554452
Perfluoro-1-[13C8]octanesulfonamide (M8FOSA)	0.25	0.1755768	0.5	0.1734682	1	0.1047661	2.5	0.1294297	5	0.1348224	10	0.1323509
Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)	0.24	8.376762E-02	0.479	0.112665	0.958	6.457927E-02	2.4	7.568097E-02	4.79	6.779118E-02	9.58	6.414063E-02
Perfluoro-1-decanesulfonic acid (PFDS)	0.241	0.1604328	0.482	0.147079	0.965	6.714814E-02	2.41	0.1263921	4.82	0.1328941	9.65	0.1190352
Perfluoro-1-heptanesulfonic acid (PFHpS)	0.249	0.1603271	0.498	0.1115086	0.995	0.1043782	2.49	0.1167733	4.98	0.1064651	9.95	0.10909
Perfluoro-1-octanesulfonamid e (FOSA)	0.25	0.1510182	0.5	0.1765854	1	0.1725474	2.5	0.2118437	5	0.1881587	10	0.1923919
Perfluorobutanesulfonic acid (PFBS)	0.221	0.1311992	0.442	0.1304129	0.885	0.1629547	2.21	0.1775484	4.42	0.156278	8.85	0.1579025
Perfluorodecanoic acid (PFDA)	0.25	0.7261795	0.5	0.7157124	1	0.8029155	2.5	0.801102	5	0.8349113	10	0.8728004
Perfluorododecanoic acid (PFDoA)	0.25	0.7051117	0.5	0.5407047	1	0.6450236	2.5	0.7555954	5	0.8040339	10	0.7853796
Perfluoroheptanoic acid (PFHpA)	0.25	0.5564984	0.5	0.6375329	1	0.7243641	2.5	0.7393553	5	0.786703	10	0.8241795
Perfluorohexanesulfonic acid (PFHxS)	0.228	0.1195581	0.455	0.1349416	0.91	0.1382354	2.28	0.1209149	4.55	0.1517743	9.1	0.1306814

FORM VI

INITIAL CALIBRATION DATA

EPA 537m

Laboratory: York Analytical Laboratories, Inc.

Client: Phoenix Environmental Laboratories, Inc.

Calibration: YF20026

SDG: 22G0348

Project: GCL69739

Instrument: QQQ3

Calibration Date: 06/28/22 15:42

Compound	Level 01		Level 02		Level 03		Level 04		Level 05		Level 06	
	ng/mL	RF	ng/mL	RF	ng/mL	RF	ng/mL	RF	ng/mL	RF	ng/mL	RF
Perfluorohexanoic acid (PFHxA)	0.25	0.4044392	0.5	0.4982677	1	0.5412954	2.5	0.6181377	5	0.6293226	10	0.6249708
Perfluoro-n-[1,2-13C2]dodecanoic acid (MPFDoA)	0.25	0.4044622	0.5	0.562473	1	0.4279974	2.5	0.4605486	5	0.4984947	10	0.5432161
Perfluoro-n-[13C4]butanoic acid (MPFBA)	0.25	0.1738345	0.5	0.1625375	1	0.1533328	2.5	0.1585188	5	0.1621676	10	0.1648731
Perfluoro-n-[13C5]pentanoic acid (M5PFPeA)	0.25	0.153203	0.5	0.1435528	1	0.1375219	2.5	0.1395787	5	0.1464331	10	0.1439074
Perfluoro-n-[13C8]octanoic acid (M8PFOA)	0.25	0.2635526	0.5	0.2514935	1	0.2752614	2.5	0.2762998	5	0.2579716	10	0.2519411
Perfluoro-n-butanoic acid (PFBA)	0.25	0.26598	0.5	0.2945836	1	0.3258273	2.5	0.3546141	5	0.3531543	10	0.3678574
Perfluorononanoic acid (PFNA)	0.24	0.7020655	0.48	0.7403328	0.96	0.823035	2.4	0.8865543	4.8	0.8533165	9.6	0.8548851
Perfluorooctanesulfonic acid (PFOS)	0.231	0.1662929	0.462	7.964464E-02	0.925	6.640069E-02	2.31	0.1304485	4.62	0.1266009	9.25	0.1213505
Perfluorooctanoic acid (PFOA)	0.25	0.6183003	0.5	0.6828783	1	0.7246891	2.5	0.8300914	5	0.8502192	10	0.8293378
Perfluoropentanoic acid (PFPeA)	0.25	0.2239713	0.5	0.2449346	1	0.2645192	2.5	0.2765615	5	0.2849832	10	0.294066
Perfluorotetradecanoic acid (PFTA)	0.25	0.86729	0.5	0.8263025	1	0.9194529	2.5	1.105348	5	1.051494	10	1.146342
Perfluorotridecanoic acid (PFTrDA)	0.25	0.0180848	0.5	5.607007E-02	1	7.170729E-02	2.5	4.882194E-02	5	4.398739E-02	10	4.671027E-02
Perfluoroundecanoic acid (PFUnA)	0.25	0.6217243	0.5	0.6511407	1	0.7223779	2.5	0.7990056	5	0.7931076	10	0.813057

FORM VI **INITIAL CALIBRATION DATA (Continued)**

EPA 537m

Laboratory: York Analytical Laboratories, Inc.
SDG: 22G0348
Client: Phoenix Environmental Laboratories, Inc.
Project: GCL69739
Calibration: YF20026
Instrument: QQQ3
Calibration Date: 06/28/22 15:42

Compound	Level 07		Level 08		Level 09		Level 10		Level 11		Level 12	
	ng/mL	RF	ng/mL	RF	ng/mL	RF	ng/mL	RF	ng/mL	RF	ng/mL	RF
1H,1H,2H,2H-Perfluorodecan esulfonic acid (8:2 FTS)	16.2	9.687263E-02										
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	17.5	9.732864E-02										
d3-N-MeFOSAA	20	0.1277338										
d5-N-EtFOSAA	20	0.1109828										
M2-6:2 FTS	19	3.904423E-02										
M2-8:2 FTS	19.2	0.0420529										
M2PFTeDA	20	0.4489349										
M3PFBS	18.6	7.120868E-02										
M3PFHxS	19	6.216361E-02										
M4PFHpA	20	0.1816916										
M5PFHxA	20	0.3096329										
M6PFDA	20	0.3280841										
M7PFUdA	20	0.4275605										
M9PFNA	20	0.3151848										
N-EtFOSAA	20	0.2155617										
N-MeFOSAA	20	0.2731492										
Perfluoro-1-[13C8]octanesulfonamide (M8FOSA)	20	0.1526224										
Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)	19.2	6.623501E-02										
Perfluoro-1-decanesulfonic acid (PFDS)	19.3	0.123197										
Perfluoro-1-heptanesulfonic acid (PFHpS)	19.9	0.1133597										
Perfluoro-1-octanesulfonamid e (FOSA)	20	0.2174763										
Perfluorobutanesulfonic acid (PFBS)	17.7	0.1647865										
Perfluorodecanoic acid (PFDA)	20	0.8985716										
Perfluorododecanoic acid (PFDoA)	20	0.8617667										
Perfluoroheptanoic acid (PFHpA)	20	0.8668995										
Perfluorohexanesulfonic acid (PFHxS)	18.2	0.1470736										

FORM VI **INITIAL CALIBRATION DATA (Continued)**

EPA 537m

Laboratory: York Analytical Laboratories, Inc.
SDG: 22G0348
Client: Phoenix Environmental Laboratories, Inc.
Project: GCL69739
Calibration: YF20026
Instrument: QQQ3
Calibration Date: 06/28/22 15:42

Compound	Level 07		Level 08		Level 09		Level 10		Level 11		Level 12	
	ng/mL	RF	ng/mL	RF	ng/mL	RF	ng/mL	RF	ng/mL	RF	ng/mL	RF
Perfluorohexanoic acid (PFHxA)	20	0.6671011										
Perfluoro-n-[1,2-13C2]dodecanoic acid (MPFDoA)	20	0.5675095										
Perfluoro-n-[13C4]butanoic acid (MPFBA)	20	0.1813013										
Perfluoro-n-[13C5]pentanoic acid (M5PFPeA)	20	0.1620433										
Perfluoro-n-[13C8]octanoic acid (M8PFOA)	20	0.2730882										
Perfluoro-n-butanoic acid (PFBA)	20	0.4056321										
Perfluorononanoic acid (PFNA)	19.2	0.9197927										
Perfluorooctanesulfonic acid (PFOS)	18.5	0.1292828										
Perfluorooctanoic acid (PFOA)	20	0.9229502										
Perfluoropentanoic acid (PFPeA)	20	0.3252719										
Perfluorotetradecanoic acid (PFTA)	20	1.247539										
Perfluorotridecanoic acid (PFTrDA)	20	4.873485E-02										
Perfluoroundecanoic acid (PFUnA)	20	0.835894										

FORM VI

INITIAL CALIBRATION DATA (Continued)

EPA 537m

Laboratory: York Analytical Laboratories, Inc.
SDG: 22G0348
Client: Phoenix Environmental Laboratories, Inc.
Project: GCL69739
Calibration: YF20026
Instrument: QQQ3
Calibration Date: 06/28/22 15:42

Compound	Mean RF	RF RSD	Mean RT	RT RSD	Linear r	Quad COD	LIMIT	Q
1H,1H,2H,2H-Perfluorodecanesulfonic acid (8:2 FTS)	0.1053684	9.17615	6.541307	0.148907		0.9969779	0.99	
1H,1H,2H,2H-Perfluorooctanesulfonic acid (6:2 FTS)	7.768364E-02	25.54526	6.023093	0.1520274		0.9988929	0.99	
d3-N-MeFOSAA	0.1140334	10.40158	6.656476	0.1844949		0.9998139	0.99	
d5-N-EtFOSAA	9.683871E-02	30.433	6.794502	9.296955E-02		0.9991714	0.99	
M2-6:2 FTS	5.353049E-02	30.63825	6.020345	0.1509745		0.998399	0.99	
M2-8:2 FTS	4.702817E-02	24.93175	6.541057	0.1484096		0.9982855	0.99	
M2PFTeDA	0.3864051	10.84685	7.799488	0.1693138		0.999929	0.99	
M3PFBS	7.360769E-02	9.313736	4.679481	0.1401231		0.9991921	0.99	
M3PFHxS	7.501993E-02	15.66522	5.769276	0.0984285		0.9993352	0.99	
M4PFHpA	0.18174	9.716871	5.726771	0.1093197		0.999909	0.99	
M5PFHxA	0.2879784	5.661276	5.266833	0.1092654		0.9999661	0.99	
M6PFDA	0.3296333	11.61409	6.546357	0.1459445		0.9994937	0.99	
M7PFUdA	0.3964161	5.608777	6.80826	0.1663852		0.9999437	0.99	
M9PFNA	0.2939714	10.74888	6.296869	0.1264126		0.999494	0.99	
N-EtFOSAA	0.2171733	5.533547	6.798381	0.198491		0.9986918	0.99	
N-MeFOSAA	0.227535	15.34307	6.660455	0.1890236		0.9998472	0.99	
Perfluoro-1-[13C8]octanesulfonamide (M8FOSA)	0.1432909	17.81037	6.987315	0.1461211		0.9994483	0.99	
Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)	7.640853E-02	22.90263	6.306764	0.1540608		0.9988023	0.99	
Perfluoro-1-decanesulfonic acid (PFDS)	0.1251683	23.50315	6.807312	0.1666491		0.9984316	0.99	
Perfluoro-1-heptanesulfonic acid (PFHpS)	0.1174146	16.50139	6.058669	0.1091062		0.9997776	0.99	
Perfluoro-1-octanesulfonamide (FOSA)	0.1871459	12.31756	6.989095	0.1381036		0.9994628	0.99	
Perfluorobutanesulfonic acid (PFBS)	0.1544403	11.3585	4.680914	0.1461637		0.999585	0.99	
Perfluorodecanoic acid (PFDA)	0.8074561	8.521922	6.546738	0.1461761		0.9999044	0.99	
Perfluorododecanoic acid (PFDoA)	0.7282308	14.8551	7.096178	0.1801803		0.9996957	0.99	
Perfluoroheptanoic acid (PFHpA)	0.7336475	14.67056	5.729367	8.667505E-02		0.999894	0.99	
Perfluorohexanesulfonic acid (PFHxS)	0.1347399	9.052452	5.769676	0.1017834		0.9978574	0.99	
Perfluorohexanoic acid (PFHxA)	0.5690764	16.30549	5.267969	0.1101541		0.9998599	0.99	
Perfluoro-n-[1,2-13C2]dodecanoic acid (MPFDoA)	0.4949574	13.30499	7.097238	0.1688238		0.9996307	0.99	
Perfluoro-n-[13C4]butanoic acid (MPFBA)	0.1652237	5.7187	1.043695	0.5518327		0.9999403	0.99	

FORM VI

INITIAL CALIBRATION DATA (Continued)

EPA 537m

Laboratory:	York Analytical Laboratories, Inc.	SDG:	22G0348
Client:	Phoenix Environmental Laboratories, Inc.	Project:	GCL69739
Calibration:	YF20026	Instrument:	QQQ3
		Calibration Date:	06/28/22 15:42

Compound	Mean RF	RF RSD	Mean RT	RT RSD	Linear r	Quad COD	LIMIT	Q
Perfluoro-n-[13C5]pentanoic acid (M5PFPeA)	0.1466057	5.776899	4.06983	0.1191313		0.9997159	0.99	
Perfluoro-n-[13C8]octanoic acid (M8PFOA)	0.2642297	4.084018	6.034226	0.1104847		0.9995028	0.99	
Perfluoro-n-butanoic acid (PFBA)	0.3382355	13.86252	1.046672	0.6506655		0.9999592	0.99	
Perfluorononanoic acid (PFNA)	0.8257117	9.47833	6.295933	0.1304491		0.9998388	0.99	
Perfluorooctanesulfonic acid (PFOS)	0.1171459	28.79718	6.307286	0.1337863		0.998979	0.99	
Perfluorooctanoic acid (PFOA)	0.7797809	13.74707	6.037076	0.1323992		0.9996627	0.99	
Perfluoropentanoic acid (PFPeA)	0.2734725	12.12254	4.068045	0.1550629		0.9999698	0.99	
Perfluorotetradecanoic acid (PFTA)	1.023396	15.28842	7.797338	0.2092765		0.9998486	0.99	
Perfluorotridecanoic acid (PFTrDA)	4.773095E-02	33.57088	7.390262	1.180464		0.9987012	0.99	
Perfluoroundecanoic acid (PFUnA)	0.7480439	11.26132	6.806281	0.1567068		0.9999452	0.99	

Quantitation Results Report (Not Reviewed)

Agilent | Trusted Answers

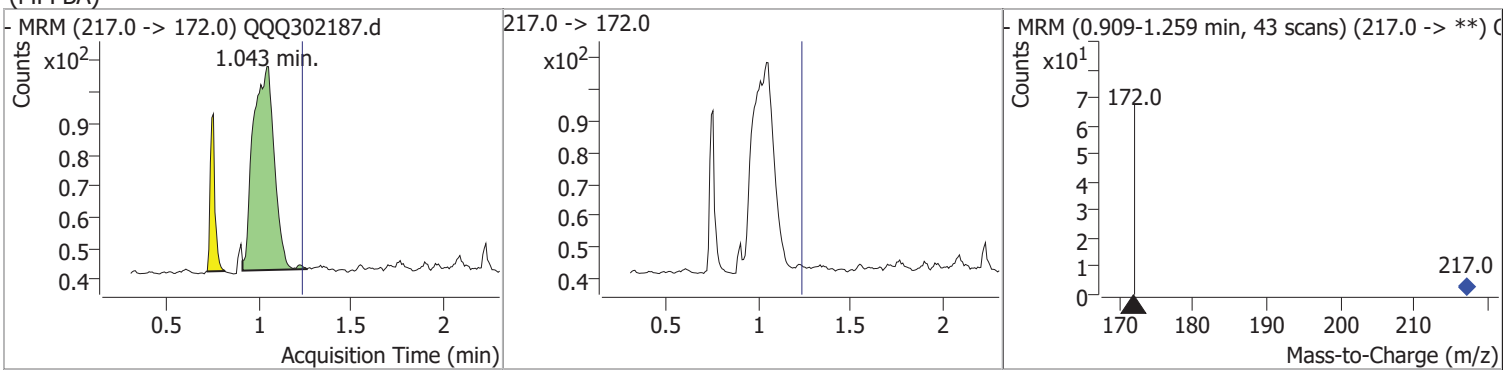
Data File	QQQ302187.d	Operator	
Acq. Method	PFAS 24_IDA ACQ_QQQ3A.m	Acq. Date-Time	6/27/2022 6:18:34 PM
Sample Name	SEQ-CAL1	Instrument	QQQ3
Vial		Multiplier	1.00
DA Method File	PFAS_24_IDA_QUANT_QQQ3_062722.m	Comment	0.25
Tune File		Tune Date	
Batch Name	2022-06-27-IDA-ICAL2.batch.bin	Last Calib Update	6/27/2022 4:24:30 PM
Ref Library			

Compound	RT	QIon	Resp.	Conc.	Units		Dev(Min)
Internal Standards							
MPFOA	6.031	417.0 -> 372.0	120130	10.0000	ng/ml		-0.399
System Monitoring Compounds							
Perfluoro-n-[13C4]butanoic acid (MPFBA)	1.043	217.0 -> 172.0	522	0.2575	ng/ml		-0.267
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 2.57%		*	
Perfluoro-n-[13C54]pentanoic acid (M5PFPeA)	4.061	268.0 -> 223.0	460	0.2711	ng/ml		-0.526
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 2.71%		*	
M3PFBS	4.680	302.0 -> 79.9	237	0.2556	ng/ml	#	-0.483
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 2.56%		*	
M2-4-2FTS	5.225	329.0 -> 309.0	121	0.1992	ng/ml	#m	-0.465
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 1.99%		*	
M5PFHxA	5.268	318.0 -> 273.0	882	0.2647	ng/ml		-0.456
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 2.65%		*	
M4PFHpA	5.721	367.0 -> 322.0	654	0.3785	ng/ml		-0.423
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 3.79%		*	
M3PFHxS	5.762	402.0 -> 80.0	258	0.3348	ng/ml		-0.415
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 3.35%		*	
M2-6-2FTS	6.005	429.0 -> 409.0	244	0.3998	ng/ml	#	-0.415
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 4.00%		*	
Perfluoro-n-[13C8]octanoic acid (M8PFOA)	6.031	421.0 -> 376.0	792	0.2803	ng/ml	#	-0.399
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 2.80%		*	
Perfluoro-n-[13C9]nonanoic acid (M9PFNA)	6.291	472.0 -> 427.0	809	0.2314	ng/ml	#	-0.389
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 2.31%		*	
Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)	6.298	507.0 -> 80.0	242	0.3061	ng/ml	#	-0.390
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 3.06%		*	
M2-8-2FTS	6.533	529.0 -> 509.0	193	0.3774	ng/ml		-0.385
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 3.77%		*	
M6PFDA	6.533	519.0 -> 473.9	1239	0.3186	ng/ml		-0.389
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 3.19%		*	
d3-N-MeFOSAA	6.632	573.0 -> 418.8	355	0.2593	ng/ml		-0.398
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 2.59%		*	
Perfluoro-1-[13C8]octanesulfonamide (M8FOSA)	6.980	506.0 -> 78.0	527	0.3017	ng/ml		-0.139
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 3.02%		*	
d5-N-EtFOSAA	6.792	589.0 -> 418.8	293	0.2427	ng/ml		-0.372
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 2.43%		*	
M7PFUdA	6.793	570.0 -> 525.0	1133	0.2180	ng/ml		-0.380
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 2.18%		*	
Perfluoro-n-[1,2-13C2]dodecanoic acid (MPFDoA)	7.093	615.0 -> 570.0	1215	0.2073	ng/ml		-0.355
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 2.07%		*	
M2PFTeDA	7.790	715.0 -> 670.0	1231	0.2526	ng/ml		-0.311
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 2.53%		*	
Target Compounds							**QValue**

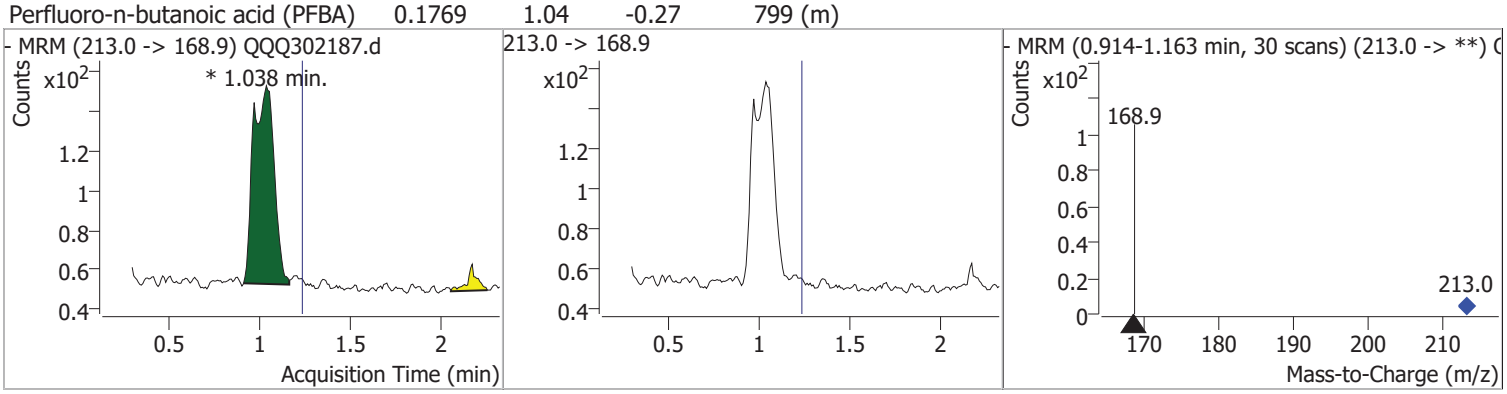
Compound	RT	QIon	Resp.	Conc.	Units		Dev(Min)
Perfluoro-n-butanoic acid (PFBA)	1.038	213.0 -> 168.9	799	0.1769	ng/ml	m	100
Perfluoro-n-pentanoic acid (PFPeA)	4.057	263.0 -> 219.0	673	0.2015	ng/ml		100
Perfluorobutanesulfonic acid (PFBS)	4.683	298.9 -> 79.9	348	0.1717	ng/ml	m	91
1H,1H,2H,2H-perfluoro-1-hexanesulfonate (4 2FTS)	5.234	327.0 -> 307.0	275	0.2418	ng/ml	#	68
Perfluorohexanoic acid (PFHxA)	5.269	313.0 -> 268.9	1215	0.1621	ng/ml	#	83
Perfluoro-1-pentanesulfonate (L-PFPeS)	5.383	348.9 -> 79.9	292	0.1781	ng/ml		92
Perfluoroheptanoic acid (PFHpA)	5.729	363.0 -> 318.8	1671	0.1660	ng/ml		96
Perfluorohexanesulfonic acid (PFHxS)	5.763	398.9 -> 79.9	327	0.1952	ng/ml	m	91
1H,1H,2H,2H-perfluoro-1-octanesulfonate (6 2FTS)	6.030	427.0 -> 407.0	106	0.1130	ng/ml	#	37
Perfluorooctanoic acid (PFOA)	6.031	413.0 -> 368.8	1857	0.1848	ng/ml		88
Perfluoro-1-heptanesulfonate (L-PFHpS)	6.055	448.9 -> 80.0	480	0.3738	ng/ml	#	65
Perfluorononanoic acid (PFNA)	6.291	463.0 -> 418.8	2024	0.1970	ng/ml		95
Perfluorooctanesulfonic acid (PFOS)	6.307	498.9 -> 79.9	461	0.3230	ng/ml	#m	61
1H,1H,2H,2H-perfluoro-1-decanesulfonate (8 2FTS)	6.533	527.0 -> 507.0	278	0.2116	ng/ml	#	68
Perfluorononanesulfonate (L-PFNS)	6.541	548.9 -> 79.9	241	0.1705	ng/ml	#	62
Perfluorodecanoic acid (PFDA)	6.534	513.0 -> 468.8	2181	0.2311	ng/ml		96
N-MeFOSAA	6.650	570.0 -> 418.9	615	0.2188	ng/ml		91
Perfluoro-1-octanesulfonamide (FOSA)	6.981	497.9 -> 78.0	454	0.1912	ng/ml	#	94
Perfluoro-1-decanesulfonate (L-PFDS)	6.792	598.9 -> 98.9	464	0.2965	ng/ml	m	100
N-EtFOSAA	6.784	584.0 -> 418.8	634	0.2653	ng/ml	#	81
Perfluoroundecanoic acid (PFUnA)	6.793	563.0 -> 519.0	1867	0.1899	ng/ml	#	91
Perfluorododecanoic acid (PFDoA)	7.085	613.0 -> 568.8	2118	0.2399	ng/ml	#	83
Perfluorotridecanoic acid (PFTrDA)	7.195	663.0 -> 618.8	54	0.1070	ng/ml		100
Perfluorotetradecanoic acid (PFTA)	7.782	713.0 -> 669.0	2605	0.2198	ng/ml		99

(#) = Qualifier Out of Range; (m) = Manual Integration; (+) = Area Summed; (*) = Surrogate Percent Recovery Out of Range; (d): Zeroed Peak

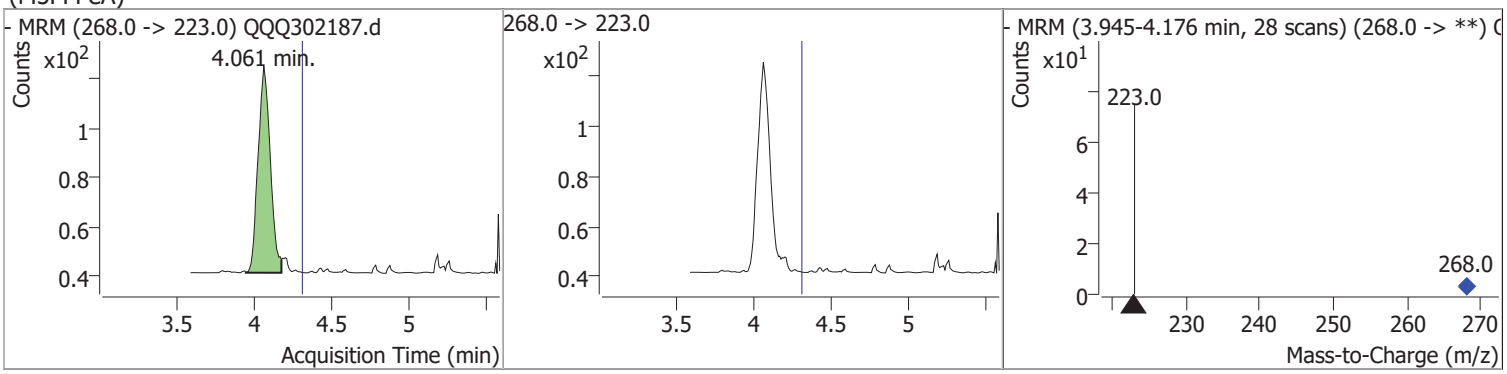
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-n-[13C4]butanoic acid (MPFBA)	0.2575	1.04	-0.27	522				



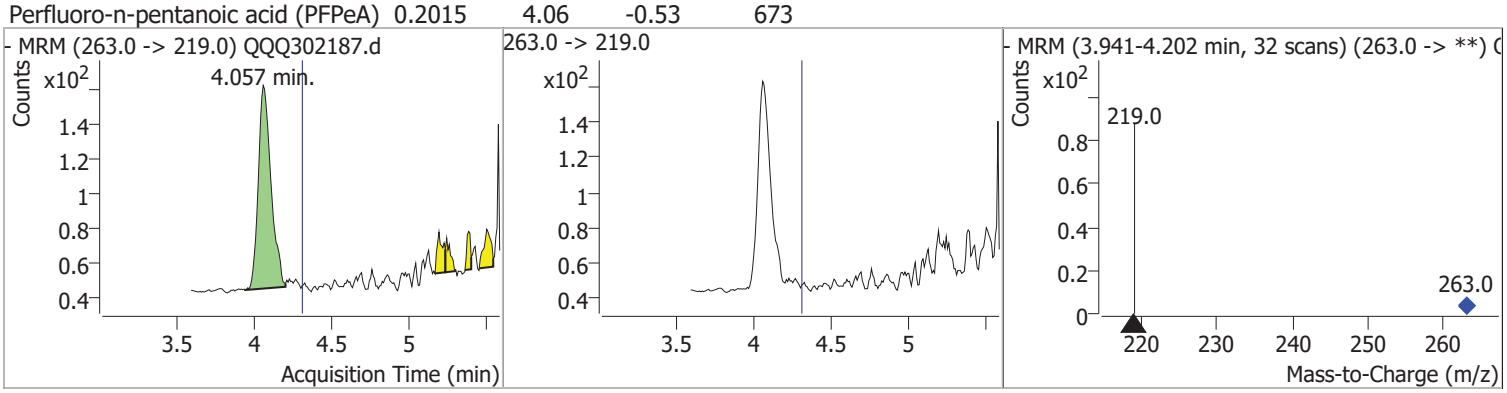
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-n-butanoic acid (PFBA)	0.1769	1.04	-0.27	799 (m)				



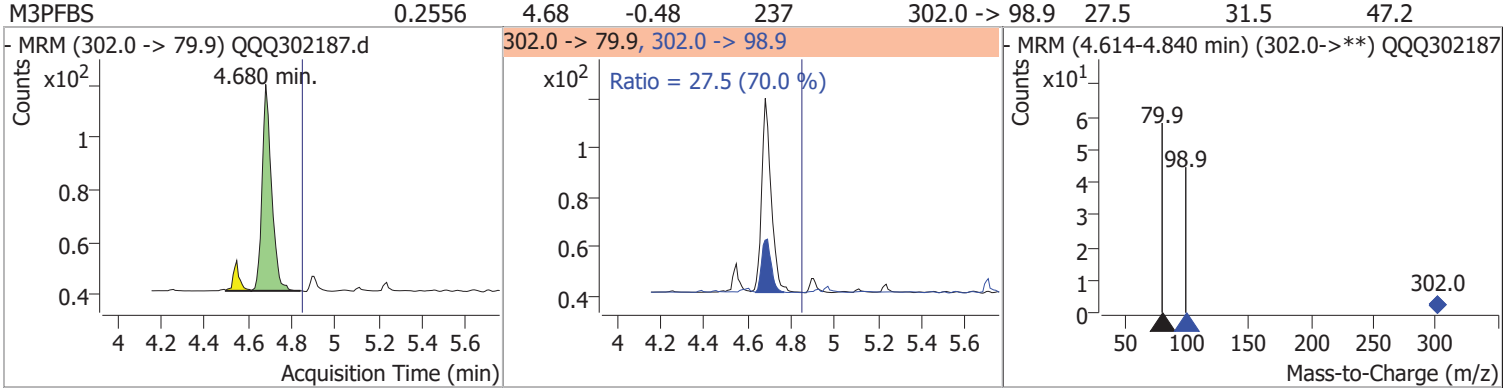
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-n-[13C54]pentanoic acid (M5PFPeA)	0.2711	4.06	-0.53	460				



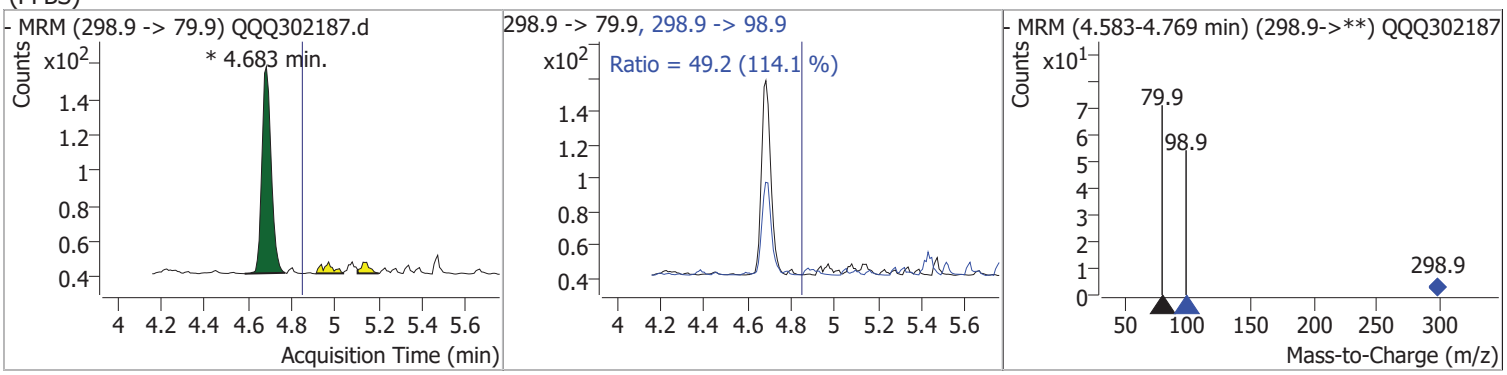
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-n-pentanoic acid (PFPeA)	0.2015	4.06	-0.53	673				



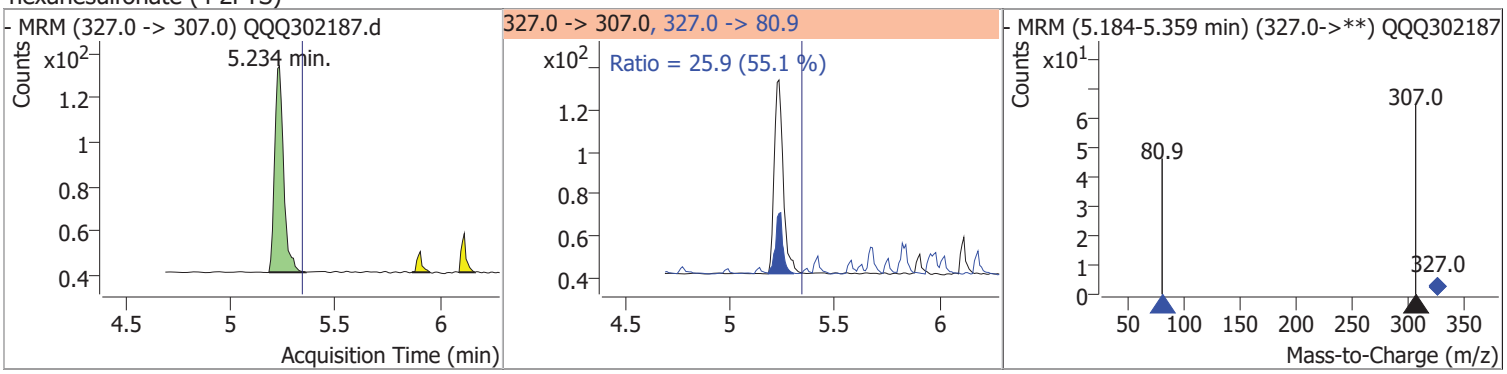
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M3PFBS	0.2556	4.68	-0.48	237	302.0 -> 98.9	27.5	31.5	47.2



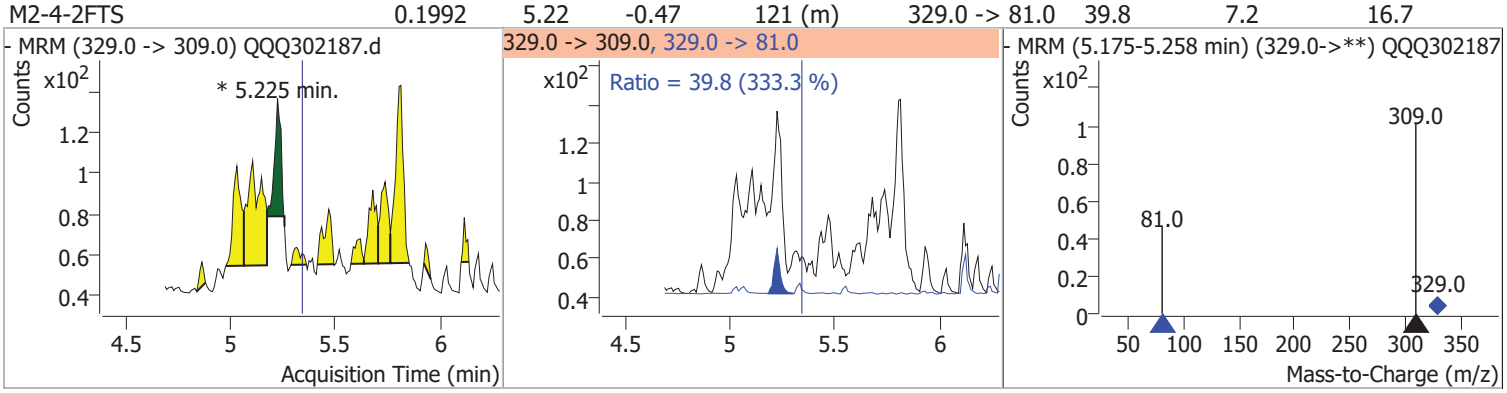
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorobutanesulfonic acid (PFBS)	0.1717	4.68	-0.48	348 (m)	298.9 -> 98.9	49.2	34.5	51.7



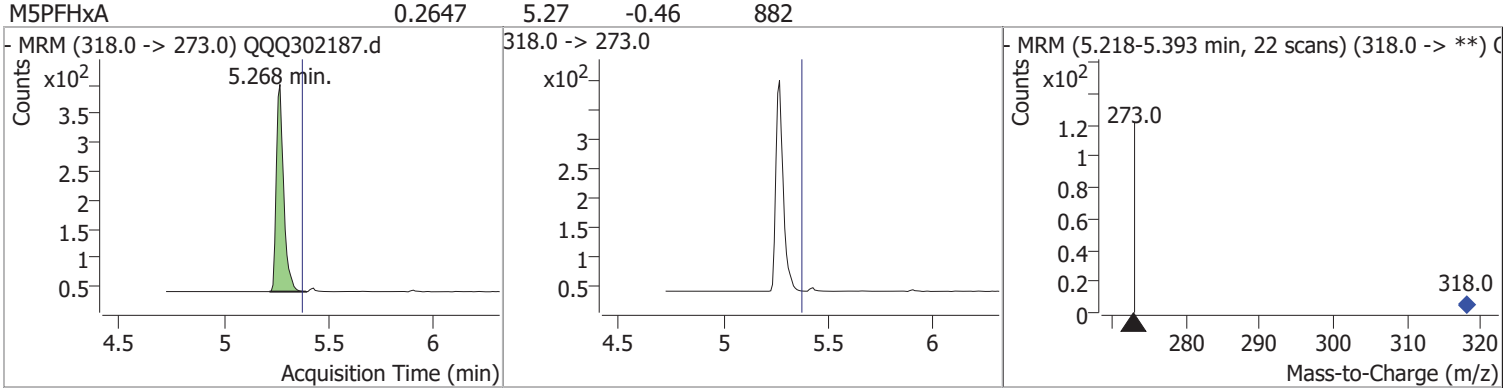
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
1H,1H,2H,2H-perfluoro-1-hexanesulfonate (4 2FTS)	0.2418	5.23	-0.46	275	327.0 -> 80.9	25.9	28.2	65.9



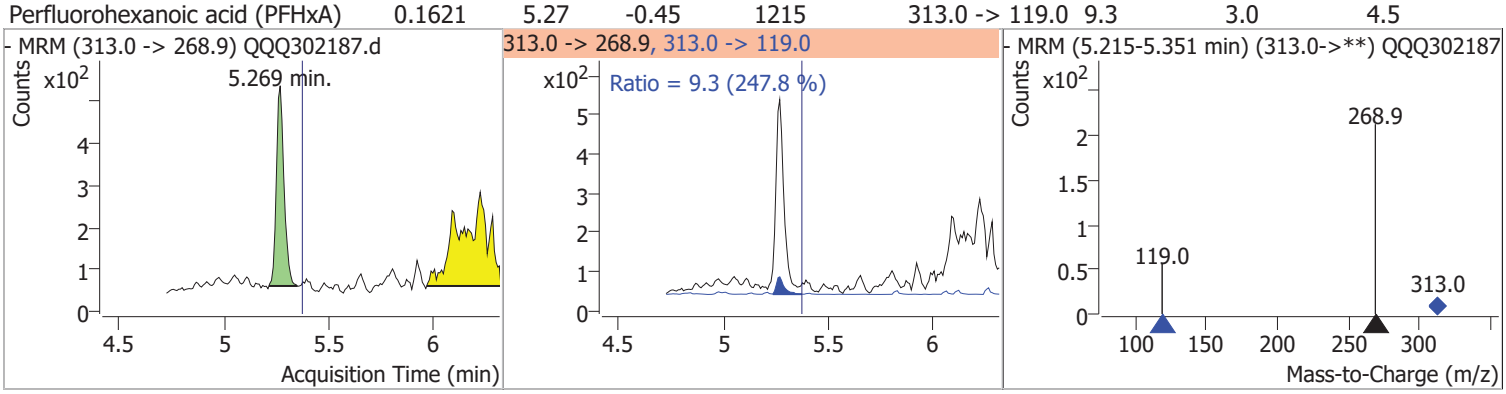
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M2-4-2FTS	0.1992	5.22	-0.47	121 (m)	329.0 -> 81.0	39.8	7.2	16.7



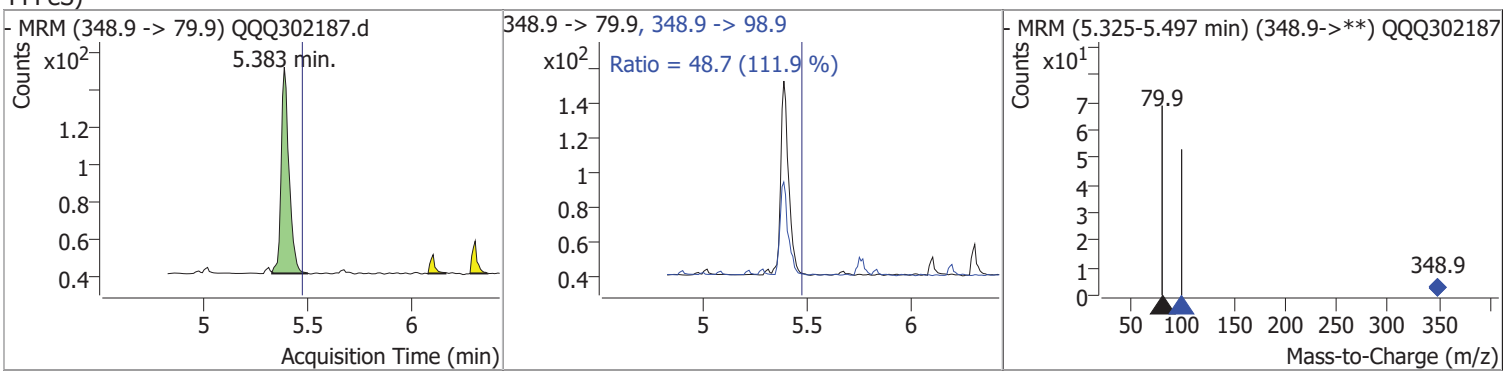
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M5PFHxA	0.2647	5.27	-0.46	882				



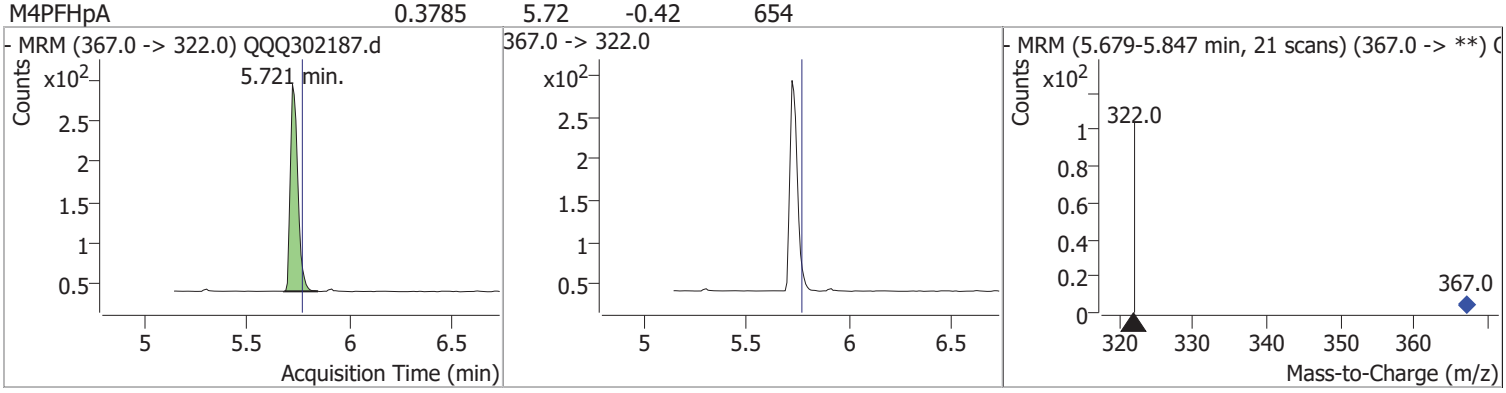
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorohexanoic acid (PFHxA)	0.1621	5.27	-0.45	1215	313.0 -> 119.0	9.3	3.0	4.5



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-1-pentanesulfonate (L-PFPeS)	0.1781	5.38	-0.44	292	348.9 -> 98.9	48.7	34.8	52.2

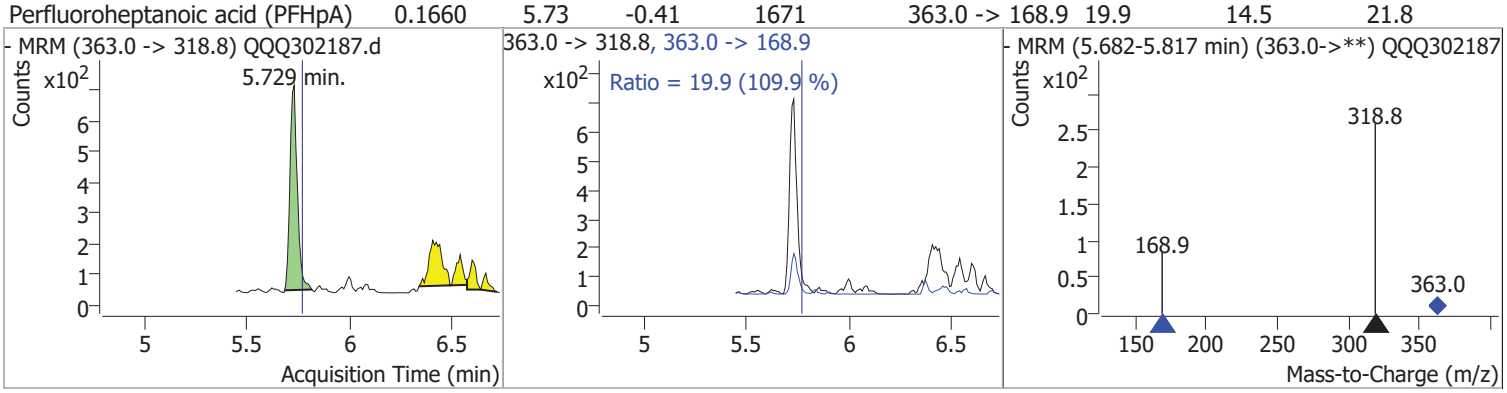


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M4PFHpA	0.3785	5.72	-0.42	654				

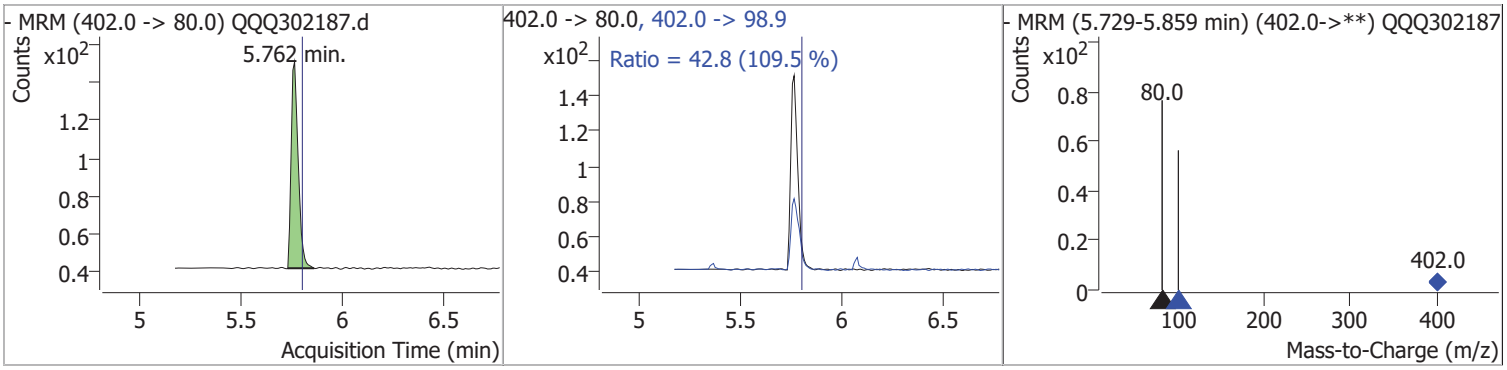


Quantitation Results Report (Not Reviewed)

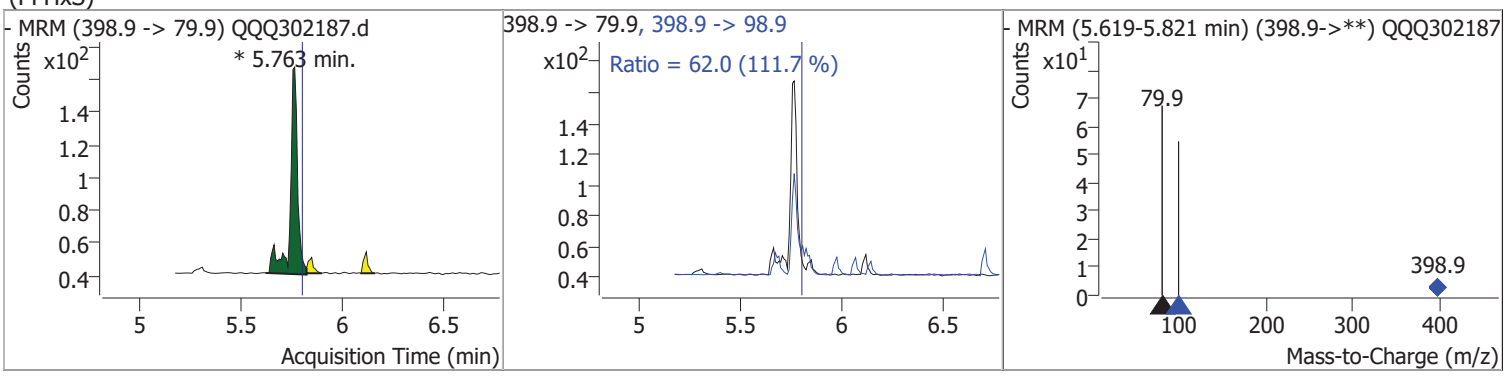
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoroheptanoic acid (PFHpA)	0.1660	5.73	-0.41	1671	363.0 -> 168.9	19.9	14.5	21.8



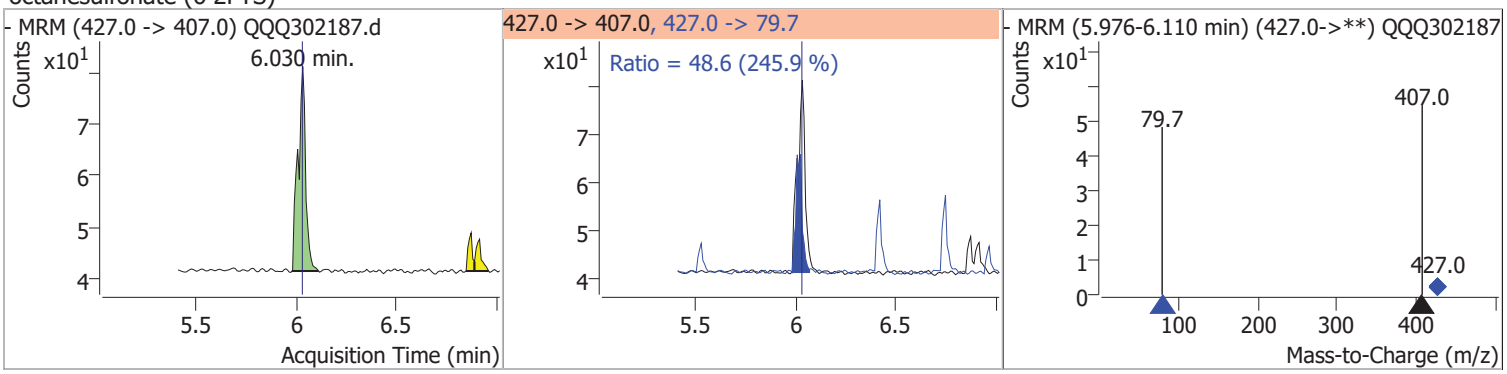
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M3PFHxS	0.3348	5.76	-0.41	258	402.0 -> 98.9	42.8	31.3	47.0



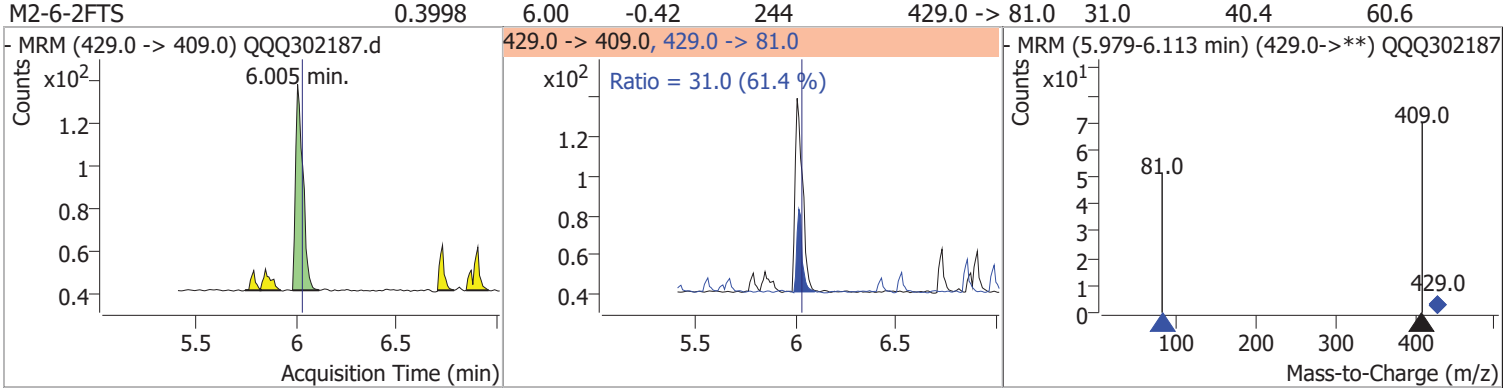
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorohexanesulfonic acid (PFHxS)	0.1952	5.76	-0.41	327 (m)	398.9 -> 98.9	62.0	44.4	66.5



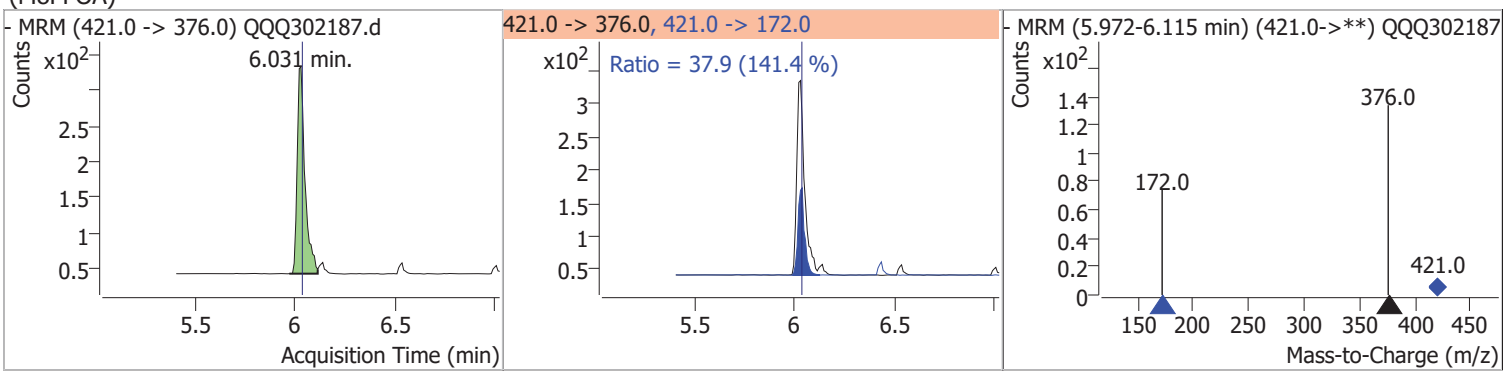
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
1H,1H,2H,2H-perfluoro-1-octanesulfonate (6 2FTS)	0.1130	6.03	-0.39	106	427.0 -> 79.7	48.6	15.8	23.7



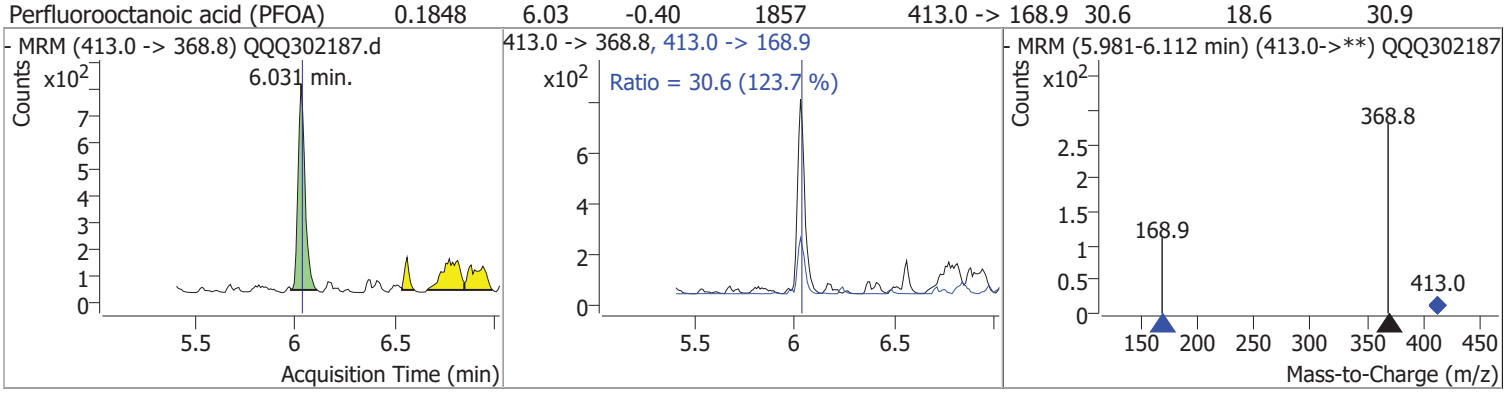
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M2-6-2FTS	0.3998	6.00	-0.42	244	429.0 -> 81.0	31.0	40.4	60.6



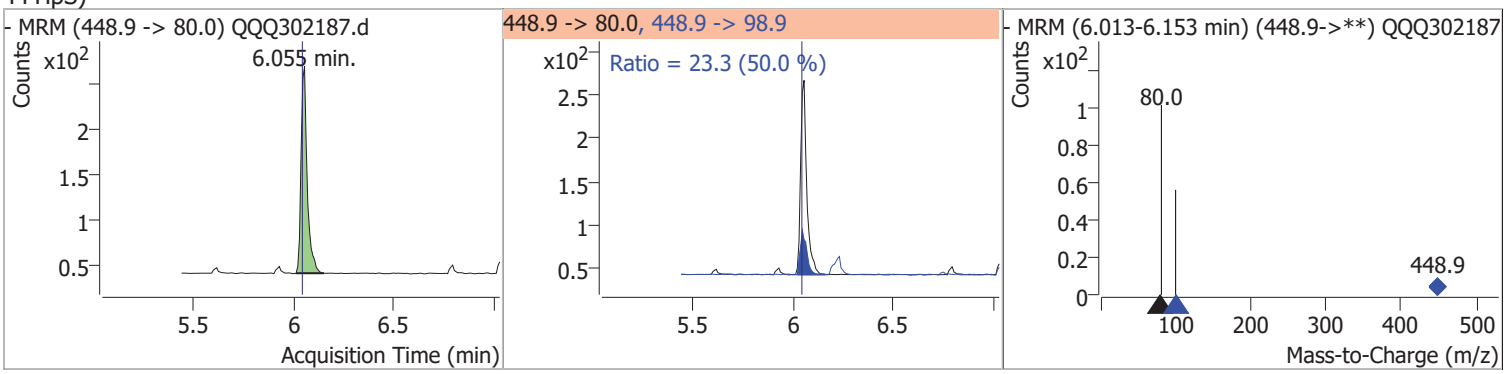
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-n-[13C8]octanoic acid (M8PFOA)	0.2803	6.03	-0.40	792	421.0 -> 172.0	37.9	21.5	32.2



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorooctanoic acid (PFOA)	0.1848	6.03	-0.40	1857	413.0 -> 168.9	30.6	18.6	30.9

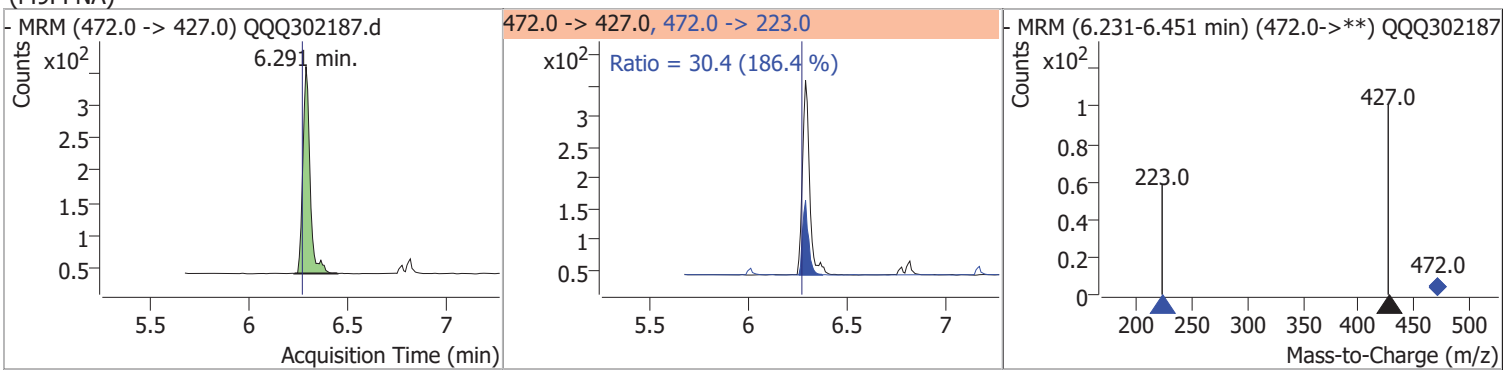


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-1-heptanesulfonate (L-PFHpS)	0.3738	6.06	-0.38	480	448.9 -> 98.9	23.3	37.3	56.0

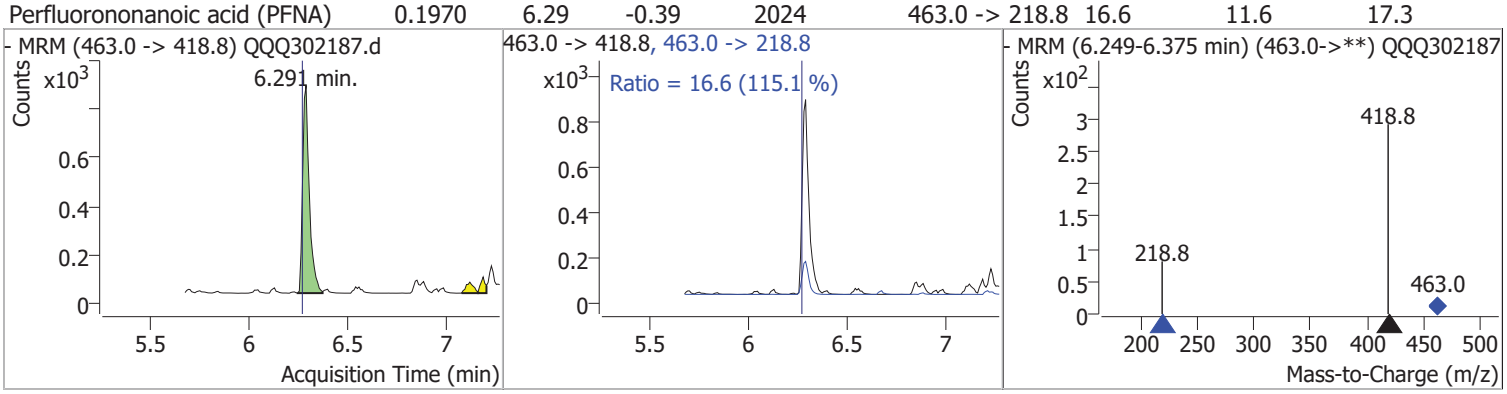


Quantitation Results Report (Not Reviewed)

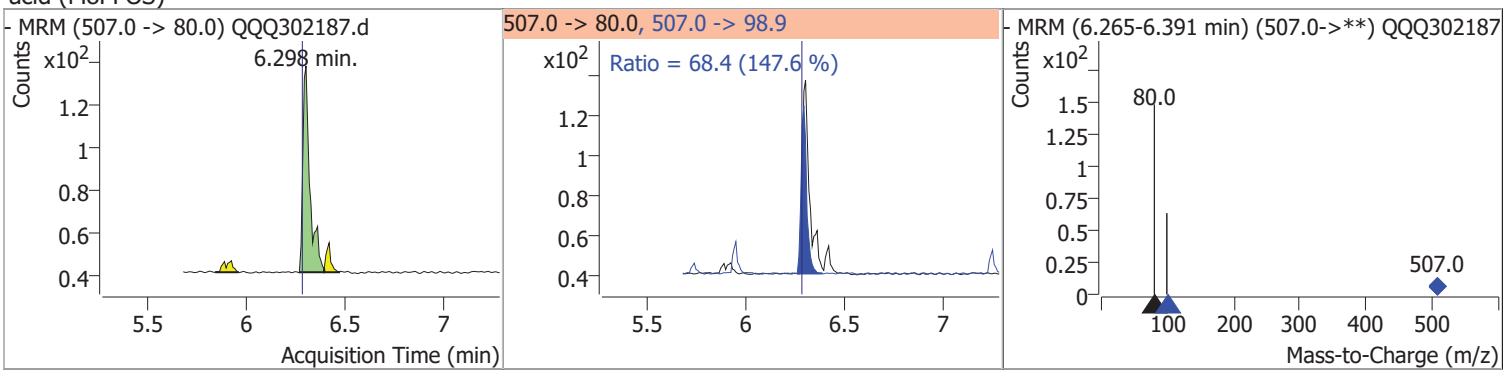
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-n-[13C9]nonanoic acid (M9PFNA)	0.2314	6.29	-0.39	809	472.0 -> 223.0	30.4	13.1	19.6



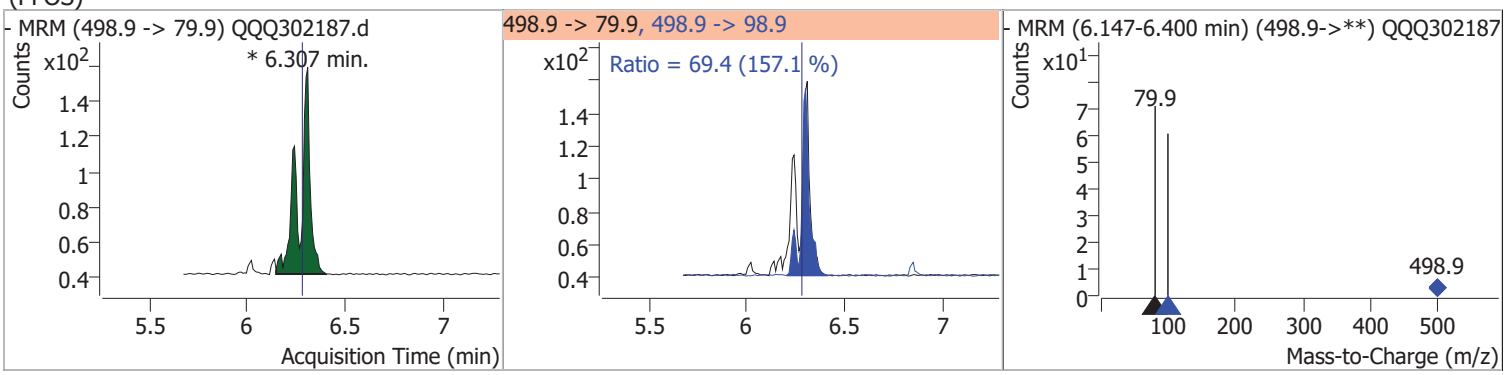
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorononanoic acid (PFNA)	0.1970	6.29	-0.39	2024	463.0 -> 218.8	16.6	11.6	17.3



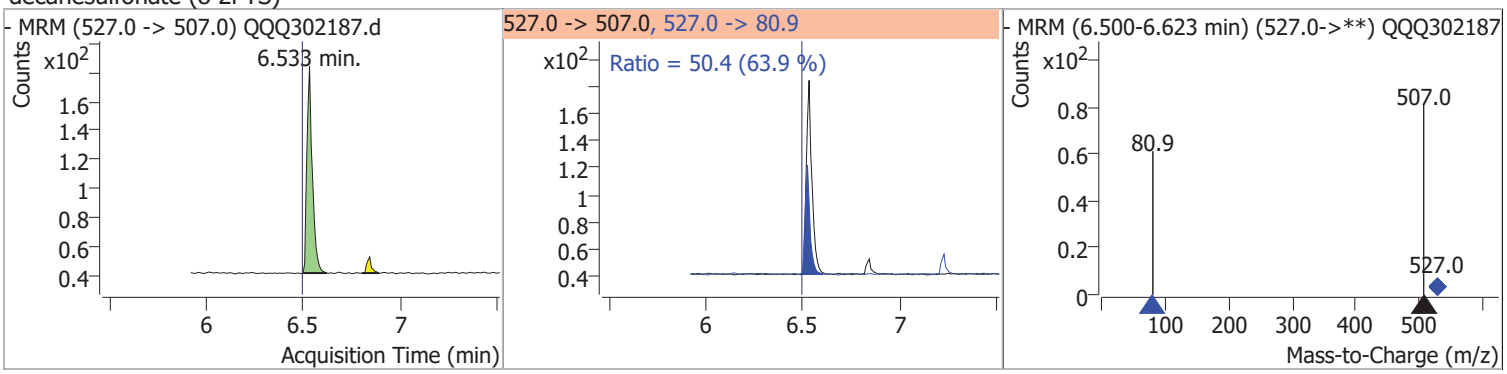
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)	0.3061	6.30	-0.39	242	507.0 -> 98.9	68.4	37.1	55.6



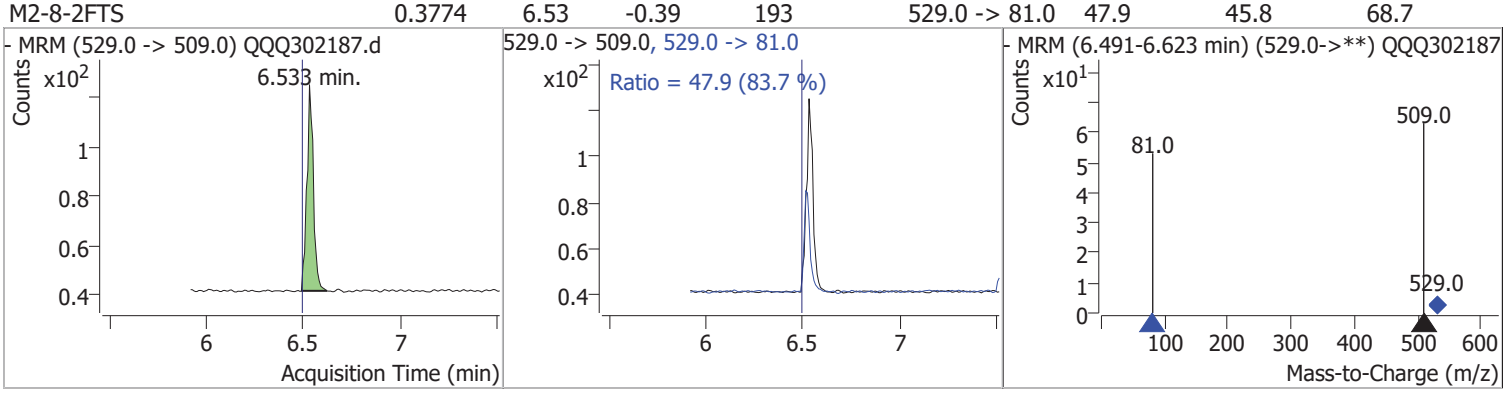
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorooctanesulfonic acid (PFOS)	0.3230	6.31	-0.38	461 (m)	498.9 -> 98.9	69.4	35.4	53.0



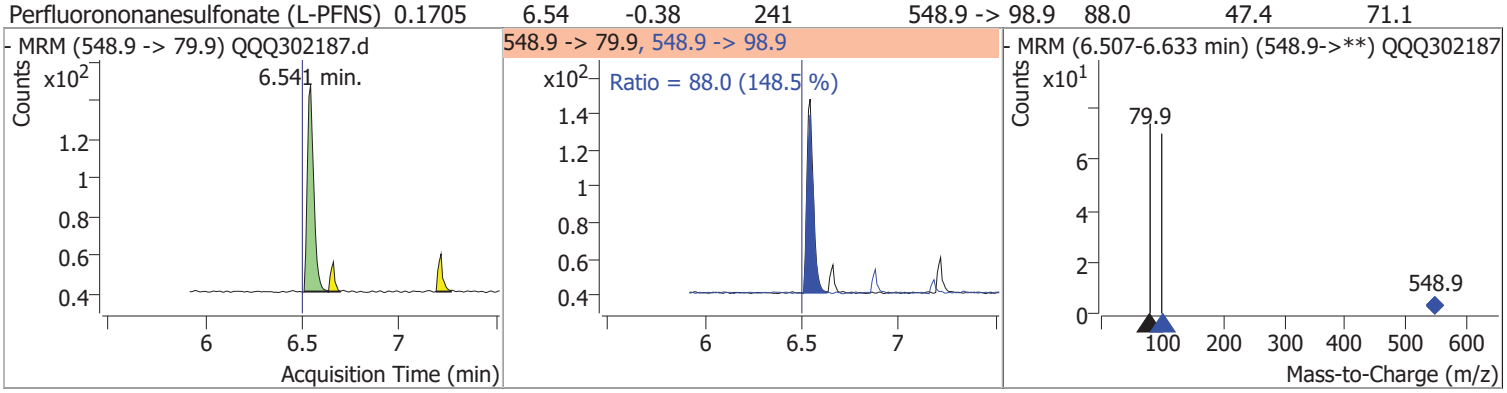
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
1H,1H,2H,2H-perfluoro-1-decanesulfonate (8 2FTS)	0.2116	6.53	-0.39	278	527.0 -> 80.9	50.4	63.1	94.6



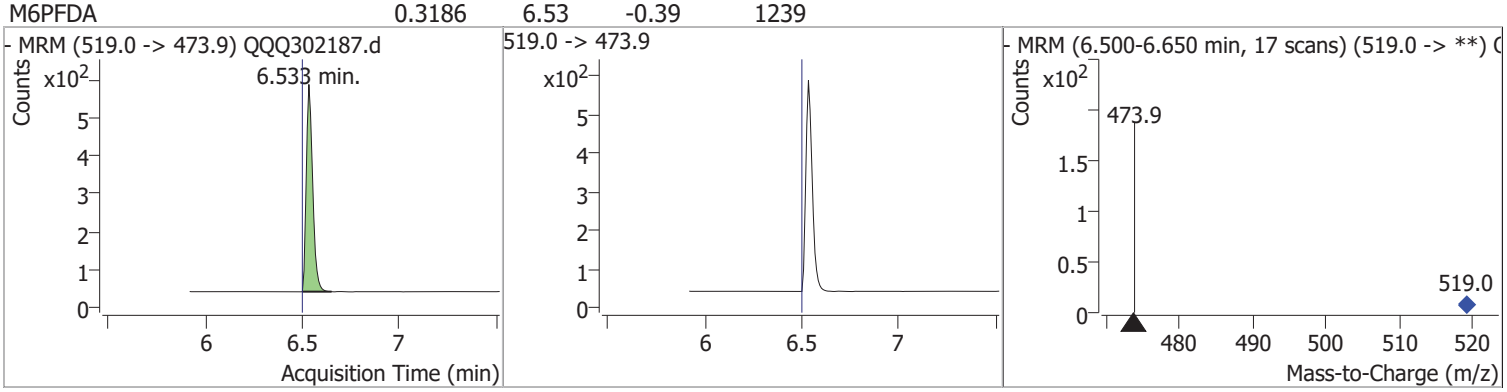
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M2-8-2FTS	0.3774	6.53	-0.39	193	529.0 -> 81.0	47.9	45.8	68.7



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorononanesulfonate (L-PFNS)	0.1705	6.54	-0.38	241	548.9 -> 98.9	88.0	47.4	71.1

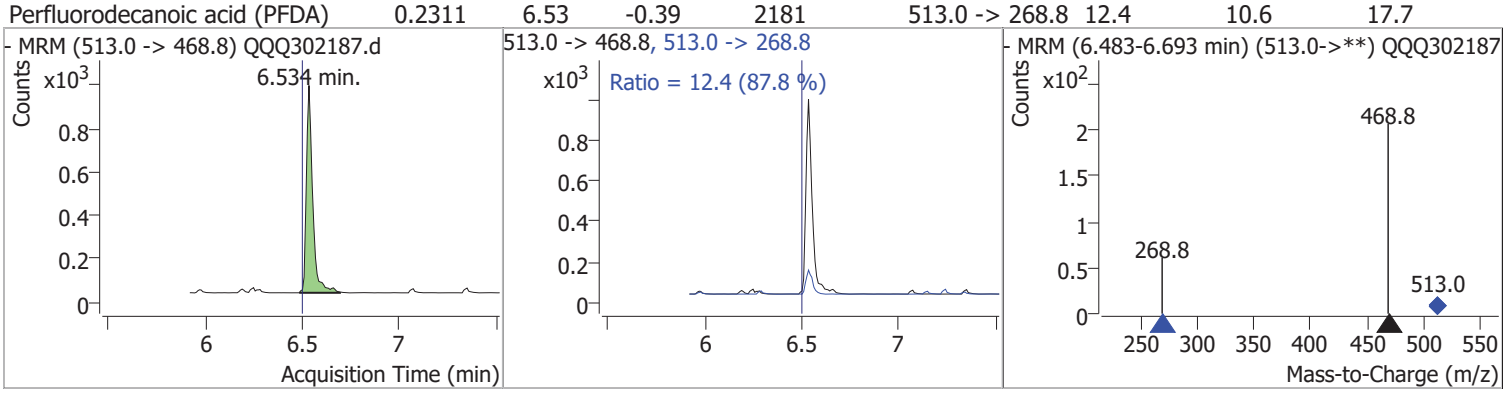


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M6PFDA	0.3186	6.53	-0.39	1239				

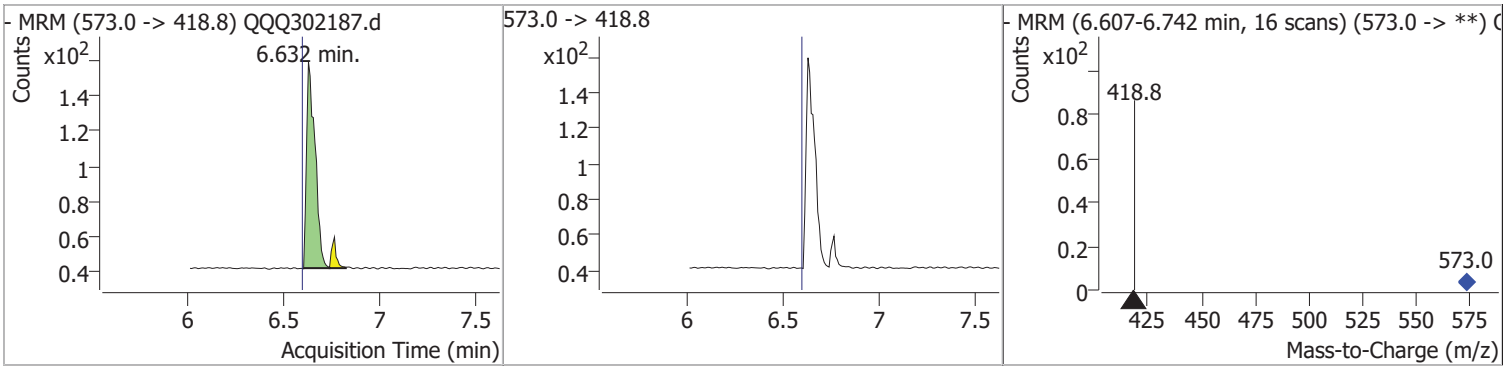


Quantitation Results Report (Not Reviewed)

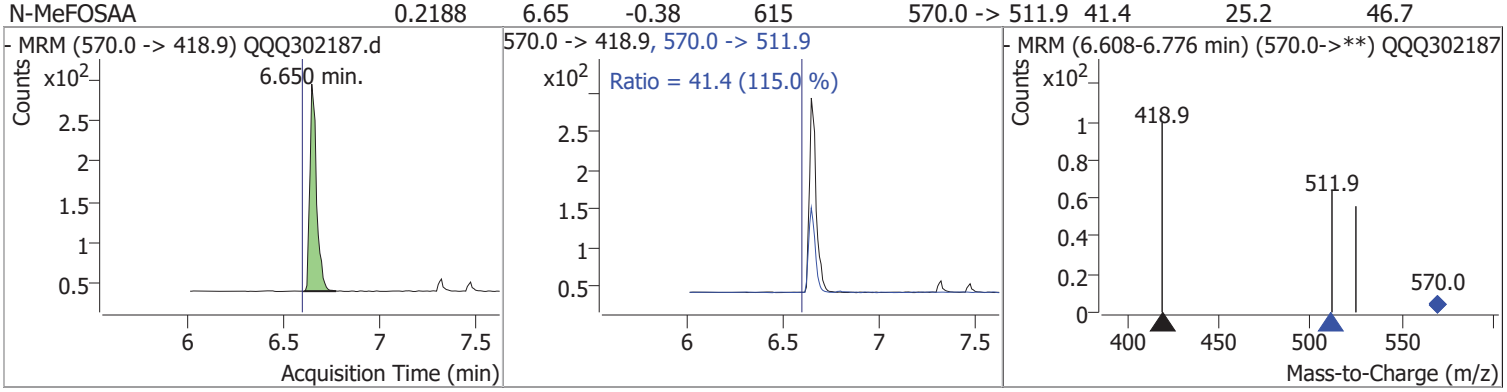
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorodecanoic acid (PFDA)	0.2311	6.53	-0.39	2181	513.0 -> 268.8	12.4	10.6	17.7



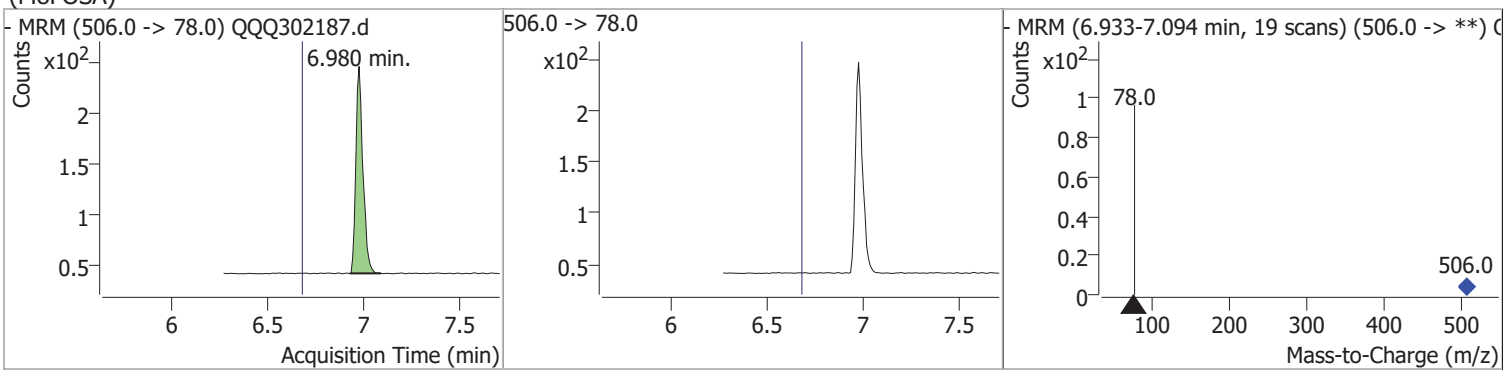
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
d3-N-MeFOSAA	0.2593	6.63	-0.40	355				



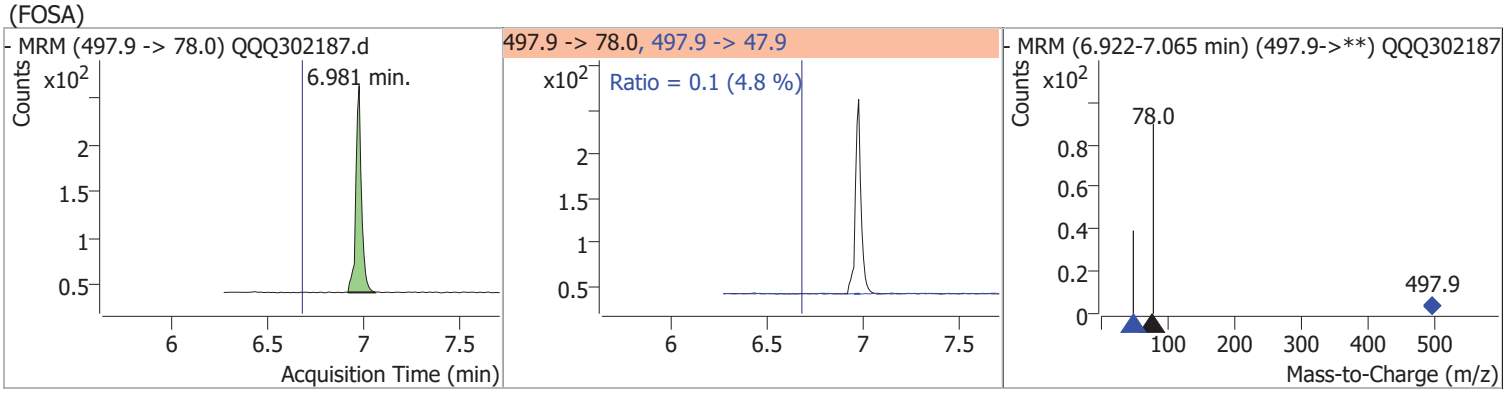
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
N-MeFOSAA	0.2188	6.65	-0.38	615	570.0 -> 511.9	41.4	25.2	46.7



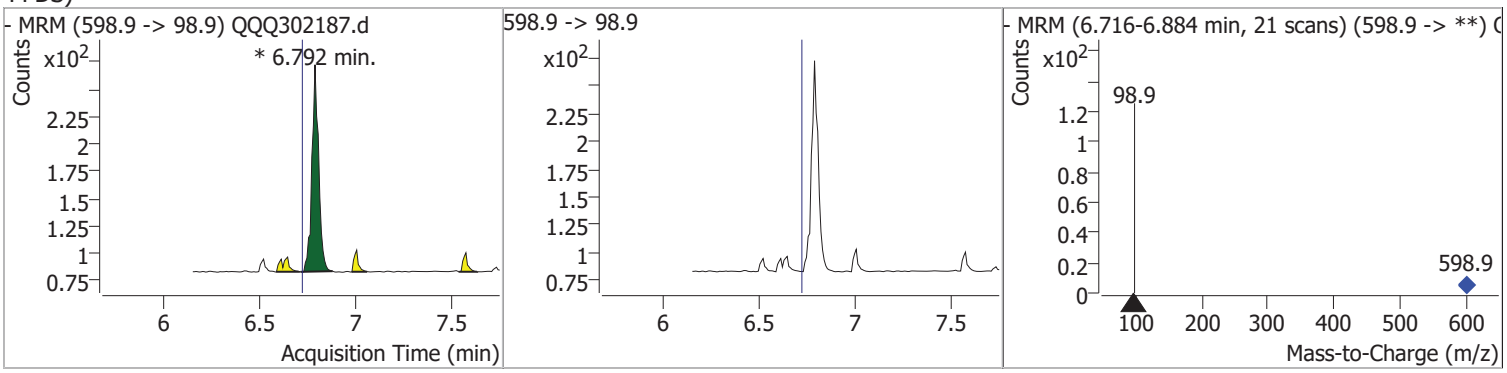
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-1-[13C8]octanesulfonamide (M8FOSA)	0.3017	6.98	-0.14	527				



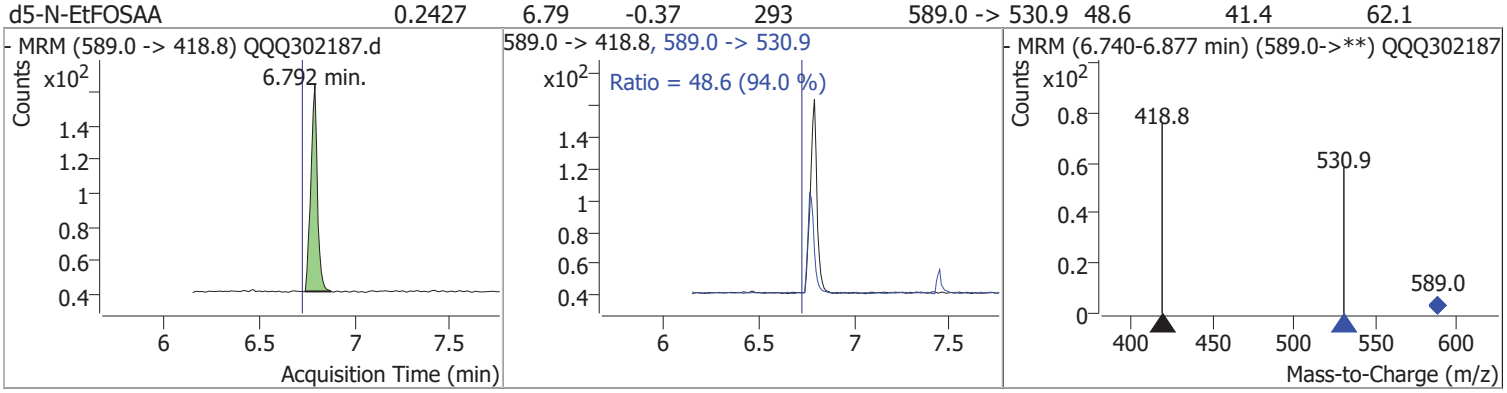
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-1-octanesulfonamide (FOSA)	0.1912	6.98	-0.14	454	497.9 -> 47.9	0.1	1.7	2.5



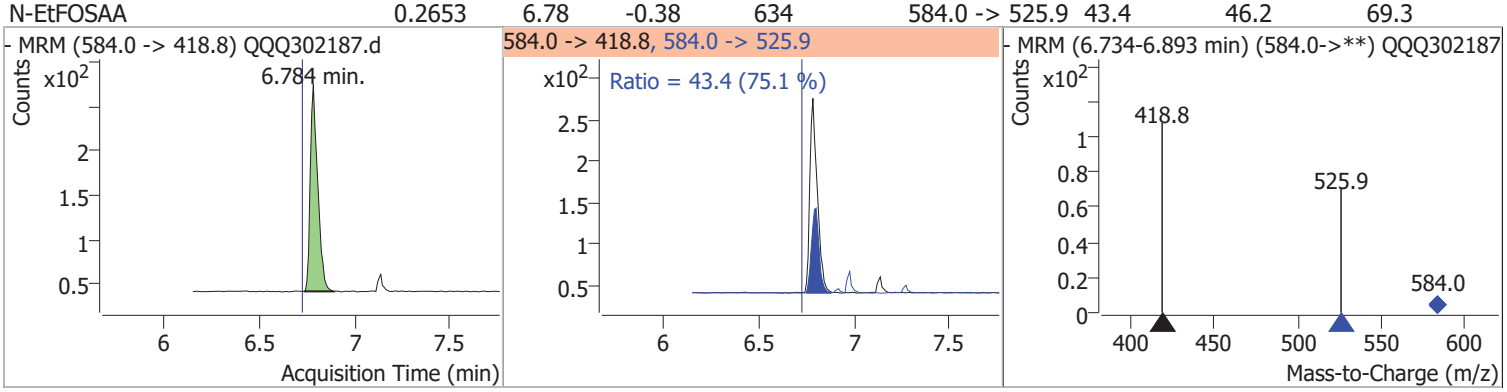
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-1-decanesulfonate (L-PFDS)	0.2965	6.79	-0.37	464 (m)				



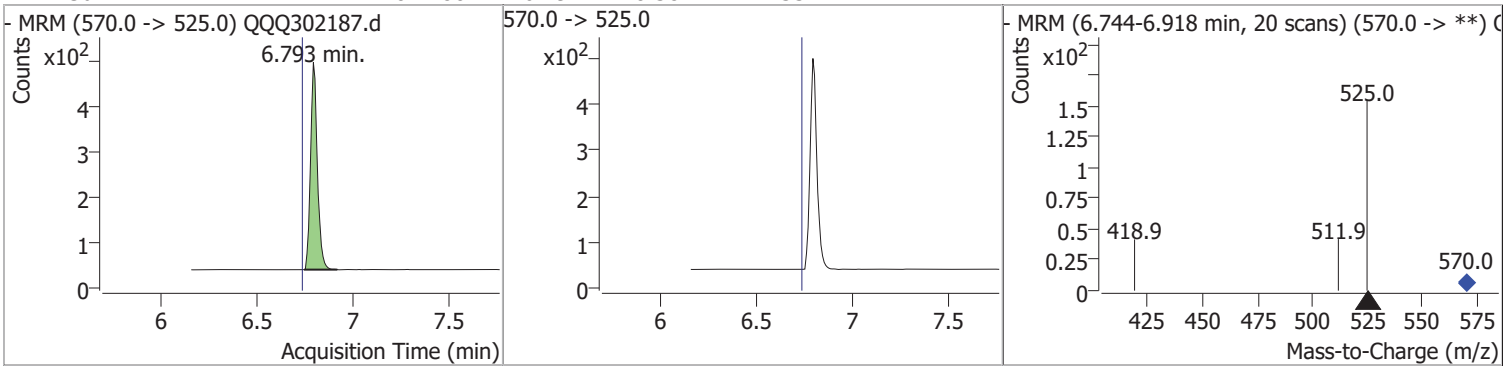
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
d5-N-EtFOSAA	0.2427	6.79	-0.37	293	589.0 -> 530.9	48.6	41.4	62.1



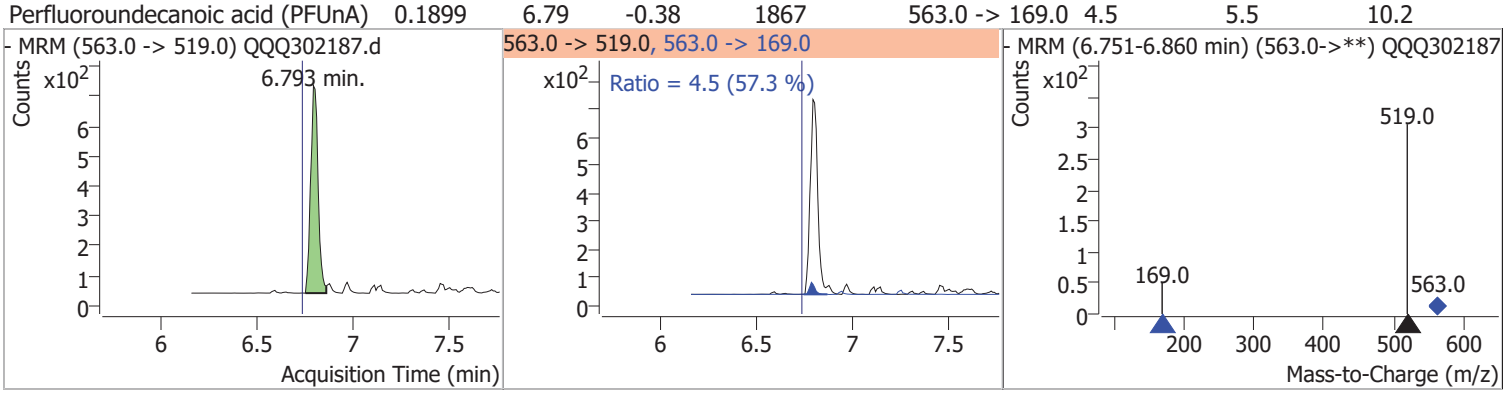
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
N-EtFOSAA	0.2653	6.78	-0.38	634	584.0 -> 525.9	43.4	46.2	69.3



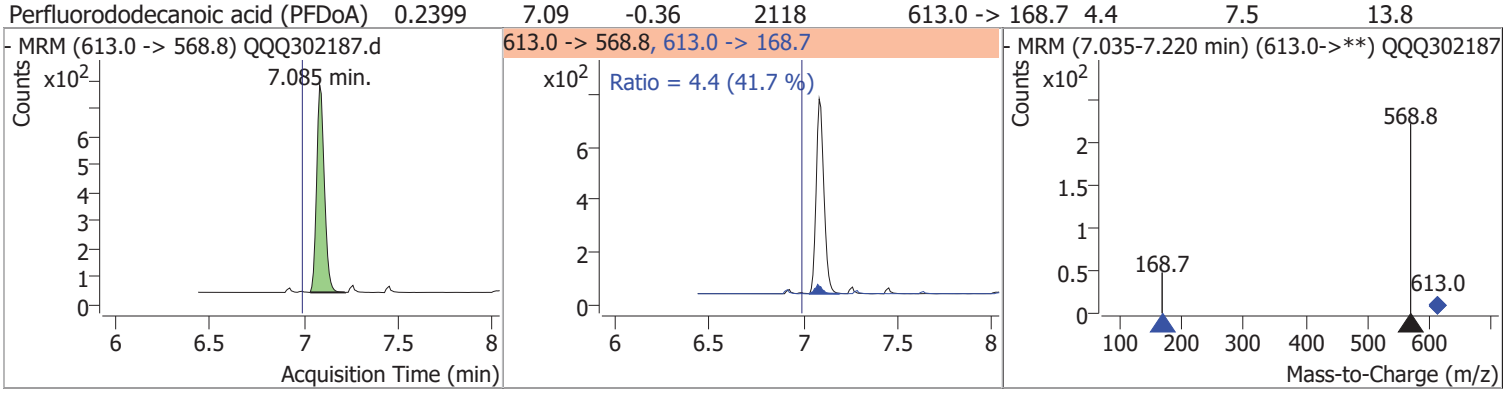
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M7PFUdA	0.2180	6.79	-0.38	1133				



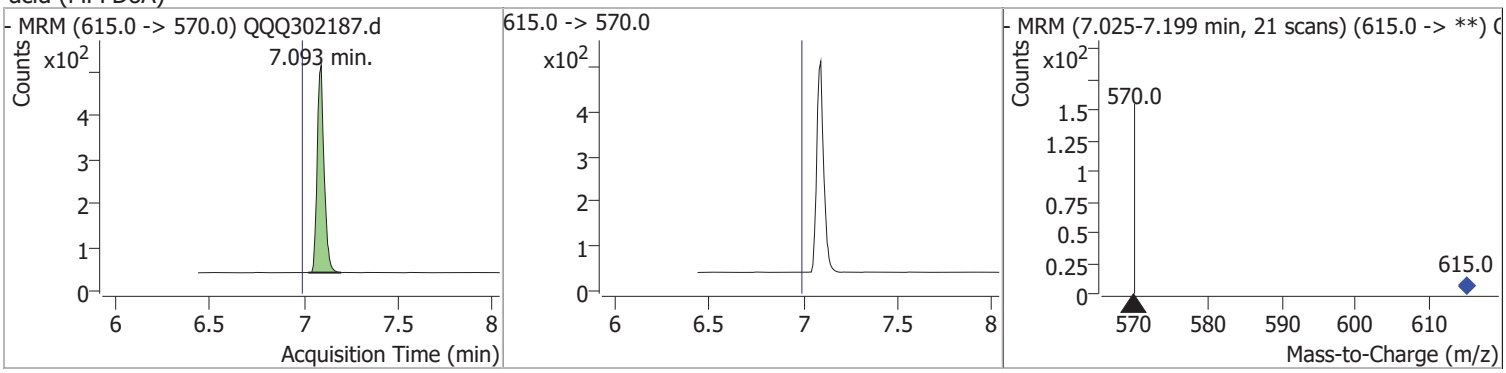
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoroundecanoic acid (PFUnA)	0.1899	6.79	-0.38	1867	563.0 -> 169.0	4.5	5.5	10.2



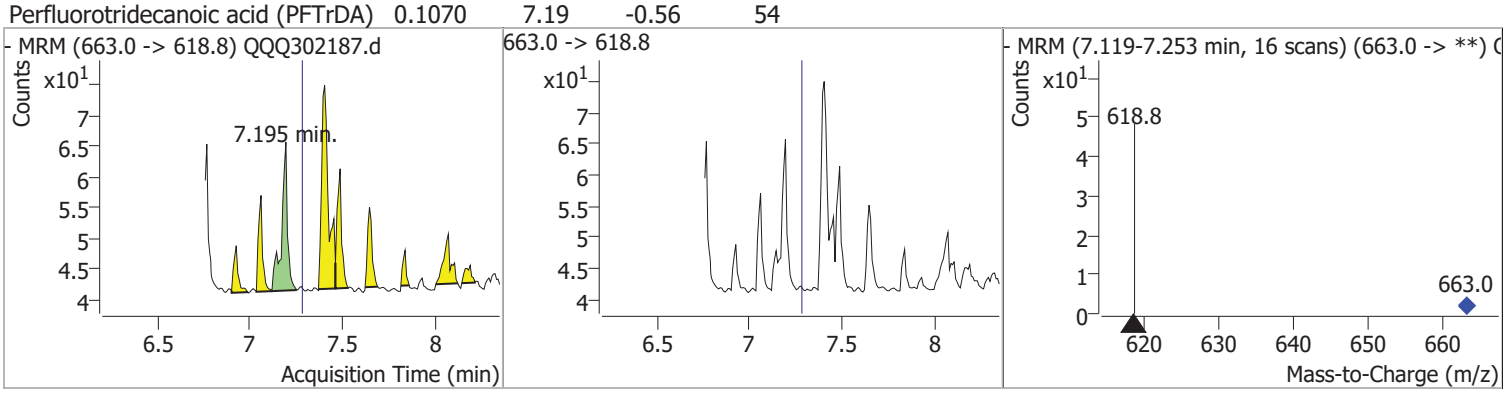
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorododecanoic acid (PFDoA)	0.2399	7.09	-0.36	2118	613.0 -> 168.7	4.4	7.5	13.8



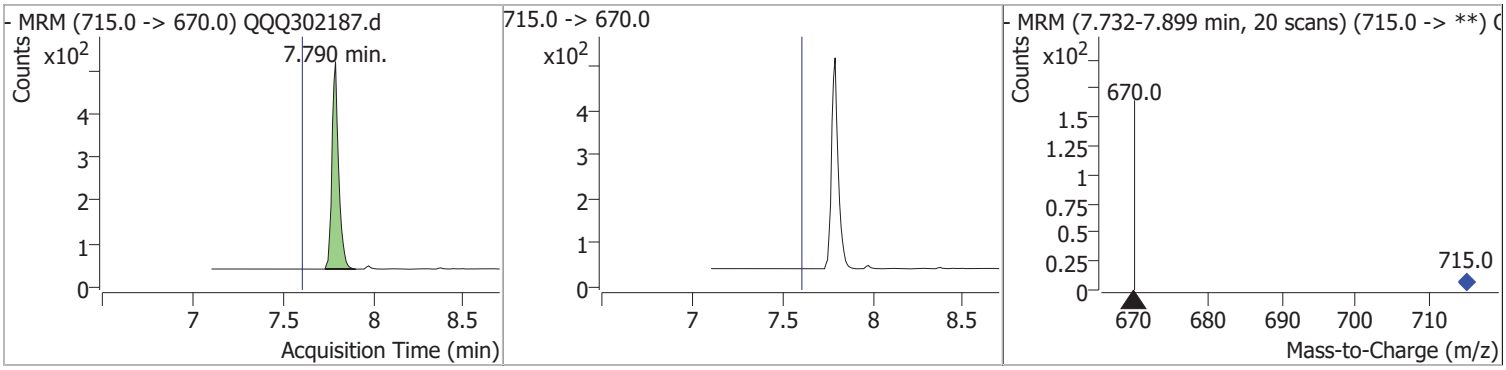
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-n-[1,2-13C2]dodecanoic acid (MPFDoA)	0.2073	7.09	-0.35	1215				



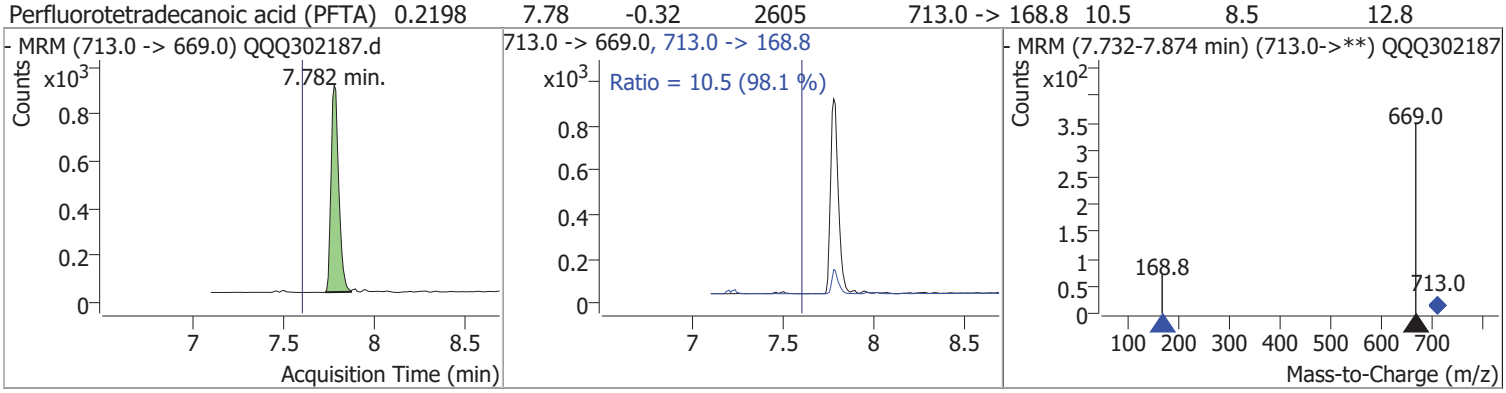
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorotridecanoic acid (PFTrDA)	0.1070	7.19	-0.56	54				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M2PFTeDA	0.2526	7.79	-0.31	1231				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorotetradecanoic acid (PFTA)	0.2198	7.78	-0.32	2605	713.0 -> 168.8	10.5	8.5	12.8



Quantitation Results Report (Not Reviewed)

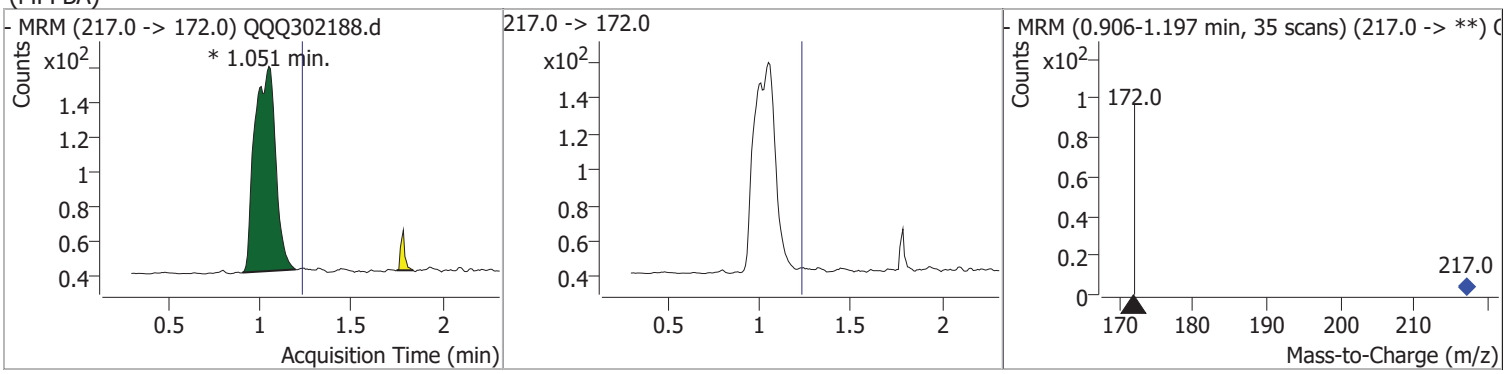
Data File	QQQ302188.d	Operator	
Acq. Method	PFAS 24_IDA ACQ_QQQ3A.m	Acq. Date-Time	6/27/2022 6:31:29 PM
Sample Name	SEQ-CAL2	Instrument	QQQ3
Vial		Multiplier	1.00
DA Method File	PFAS_24_IDA_QUANT_QQQ3_062722.m	Comment	0.5
Tune File		Tune Date	
Batch Name	2022-06-27-IDA-ICAL2.batch.bin	Last Calib Update	6/27/2022 4:24:30 PM
Ref Library			

Compound	RT	QIon	Resp.	Conc.	Units		Dev(Min)
Internal Standards							
MPFOA	6.023	417.0 -> 372.0	114471	10.0000	ng/ml		-0.407
System Monitoring Compounds							
Perfluoro-n-[13C4]butanoic acid (MPFBA)	1.051	217.0 -> 172.0	930	0.4800	ng/ml	m	-0.258
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 4.80%		*	
Perfluoro-n-[13C54]pentanoic acid (M5PFPeA)	4.070	268.0 -> 223.0	822	0.5066	ng/ml		-0.517
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 5.07%		*	
M3PFBS	4.680	302.0 -> 79.9	432	0.4881	ng/ml		-0.483
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 4.88%		*	
M2-4-2FTS	5.225	329.0 -> 309.0	363	0.6274	ng/ml	#m	-0.465
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 6.27%		*	
M5PFHxA	5.268	318.0 -> 273.0	1737	0.5458	ng/ml		-0.456
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 5.46%		*	
M4PFHpA	5.721	367.0 -> 322.0	1046	0.6338	ng/ml		-0.423
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 6.34%		*	
M3PFHxS	5.762	402.0 -> 80.0	479	0.6513	ng/ml		-0.415
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 6.51%		*	
M2-6-2FTS	6.013	429.0 -> 409.0	327	0.5636	ng/ml	#	-0.407
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 5.64%		*	
Perfluoro-n-[13C8]octanoic acid (M8PFOA)	6.022	421.0 -> 376.0	1439	0.5333	ng/ml	#	-0.408
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 5.33%		*	
Perfluoro-n-[13C9]nonanoic acid (M9PFNA)	6.282	472.0 -> 427.0	1431	0.4295	ng/ml		-0.398
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 4.29%		*	
Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)	6.290	507.0 -> 80.0	618	0.8209	ng/ml	#	-0.398
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 8.21%		*	
M2-8-2FTS	6.524	529.0 -> 509.0	199	0.4083	ng/ml		-0.394
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 4.08%		*	
M6PFDA	6.533	519.0 -> 473.9	1766	0.4764	ng/ml		-0.389
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 4.76%		*	
d3-N-MeFOSAA	6.649	573.0 -> 418.8	533	0.4078	ng/ml		-0.381
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 4.08%		*	
Perfluoro-1-[13C8]octanesulfonamide (M8FOSA)	6.972	506.0 -> 78.0	993	0.5948	ng/ml		-0.147
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 5.95%		*	
d5-N-EtFOSAA	6.784	589.0 -> 418.8	194	0.1684	ng/ml	#	-0.380
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 1.68%		*	
M7PFUdA	6.793	570.0 -> 525.0	2410	0.4867	ng/ml		-0.380
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 4.87%		*	
Perfluoro-n-[1,2-13C2]dodecanoic acid (MPFDoA)	7.077	615.0 -> 570.0	3219	0.5757	ng/ml		-0.371
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 5.76%		*	
M2PFTeDA	7.782	715.0 -> 670.0	2066	0.4446	ng/ml		-0.319
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 4.45%		*	
Target Compounds							**QValue**

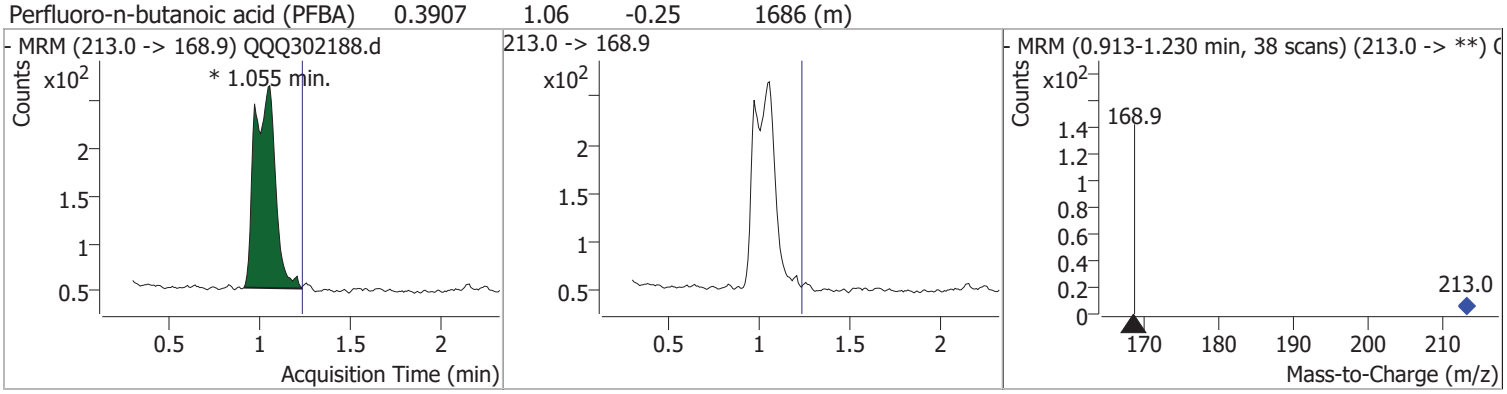
Compound	RT	QIon	Resp.	Conc.	Units		Dev(Min)
Perfluoro-n-butanoic acid (PFBA)	1.055	213.0 -> 168.9	1686	0.3907	ng/ml	m	100
Perfluoro-n-pentanoic acid (PFPeA)	4.066	263.0 -> 219.0	1402	0.4395	ng/ml		100
Perfluorobutanesulfonic acid (PFBS)	4.683	298.9 -> 79.9	660	0.3411	ng/ml		99
1H,1H,2H,2H-perfluoro-1-hexanesulfonate (4 2FTS)	5.225	327.0 -> 307.0	464	0.4265	ng/ml		95
Perfluorohexanoic acid (PFHxA)	5.269	313.0 -> 268.9	2852	0.3987	ng/ml		100
Perfluoro-1-pentanesulfonate (L-PFPeS)	5.383	348.9 -> 79.9	661	0.4218	ng/ml	#	77
Perfluoroheptanoic acid (PFHpA)	5.721	363.0 -> 318.8	3649	0.3801	ng/ml		99
Perfluorohexanesulfonic acid (PFHxS)	5.762	398.9 -> 79.9	703	0.4392	ng/ml	m	94
1H,1H,2H,2H-perfluoro-1-octanesulfonate (6 2FTS)	6.005	427.0 -> 407.0	376	0.4193	ng/ml	#	64
Perfluorooctanoic acid (PFOA)	6.023	413.0 -> 368.8	3908	0.4076	ng/ml		95
Perfluoro-1-heptanesulfonate (L-PFHpS)	6.047	448.9 -> 80.0	636	0.5194	ng/ml	#	84
Perfluorononanoic acid (PFNA)	6.283	463.0 -> 418.8	4068	0.4150	ng/ml		100
Perfluorooctanesulfonic acid (PFOS)	6.290	498.9 -> 79.9	421	0.3094	ng/ml	#m	29
1H,1H,2H,2H-perfluoro-1-decanesulfonate (8 2FTS)	6.525	527.0 -> 507.0	478	0.3827	ng/ml	#	60
Perfluorononanesulfonate (L-PFNS)	6.541	548.9 -> 79.9	462	0.3434	ng/ml	#	74
Perfluorodecanoic acid (PFDA)	6.534	513.0 -> 468.8	4096	0.4547	ng/ml	#	85
N-MeFOSAA	6.641	570.0 -> 418.9	990	0.3688	ng/ml		84
Perfluoro-1-octanesulfonamide (FOSA)	6.972	497.9 -> 78.0	1011	0.4458	ng/ml		94
Perfluoro-1-decanesulfonate (L-PFDS)	6.792	598.9 -> 98.9	812	0.5439	ng/ml		100
N-EtFOSAA	6.776	584.0 -> 418.8	1223	0.5365	ng/ml	#	69
Perfluoroundecanoic acid (PFUnA)	6.793	563.0 -> 519.0	3727	0.3975	ng/ml		99
Perfluorododecanoic acid (PFDoA)	7.077	613.0 -> 568.8	3095	0.3674	ng/ml		98
Perfluorotridecanoic acid (PFTrDA)	7.405	663.0 -> 618.8	321	0.6572	ng/ml	m	100
Perfluorotetradecanoic acid (PFTA)	7.773	713.0 -> 669.0	4729	0.4176	ng/ml		100

(#) = Qualifier Out of Range; (m) = Manual Integration; (+) = Area Summed; (*) = Surrogate Percent Recovery Out of Range; (d): Zeroed Peak

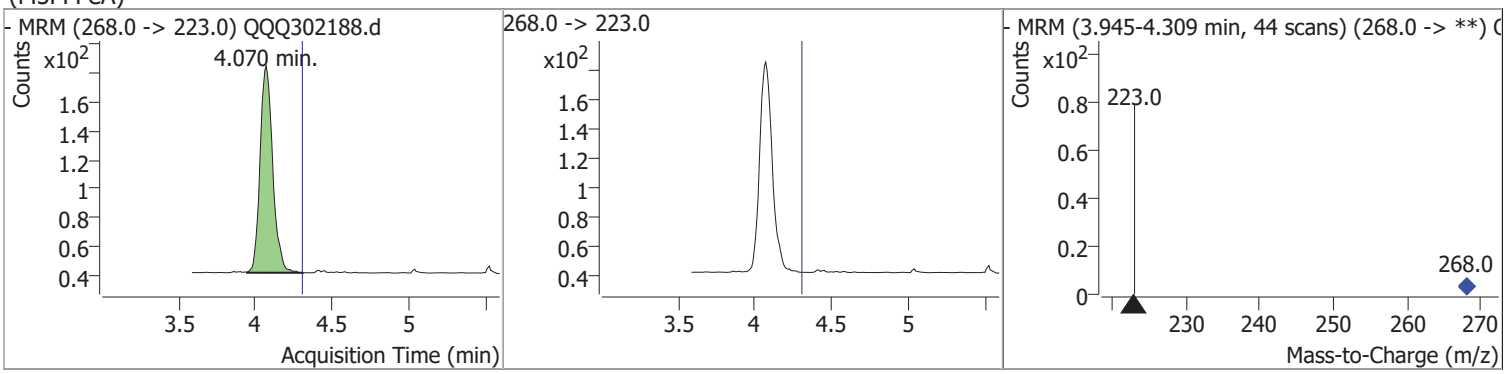
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-n-[13C4]butanoic acid (MPFBA)	0.4800	1.05	-0.26	930 (m)				



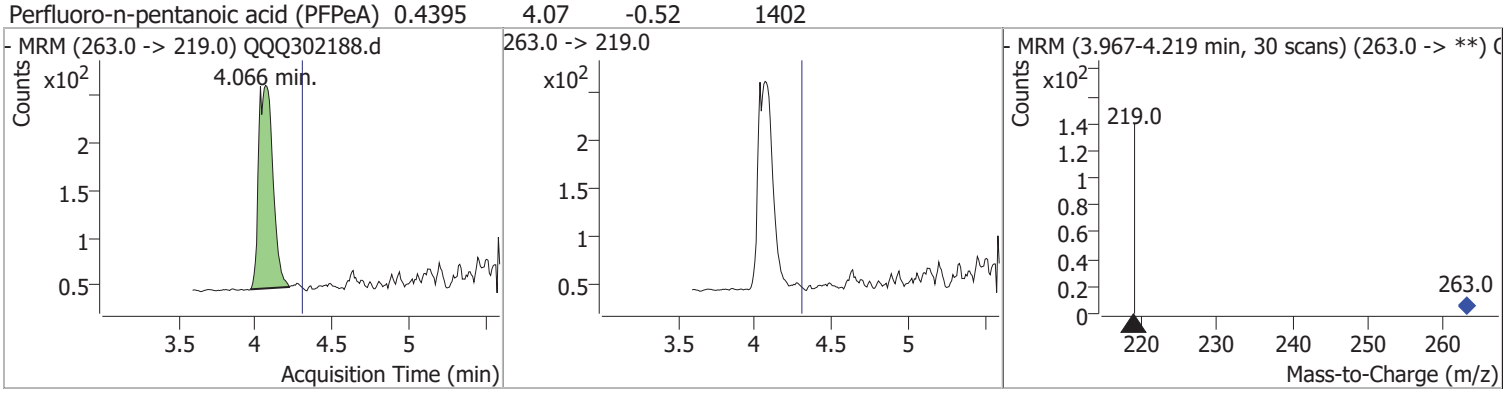
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-n-butanoic acid (PFBA)	0.3907	1.06	-0.25	1686 (m)				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-n-[13C54]pentanoic acid (M5PFPeA)	0.5066	4.07	-0.52	822				

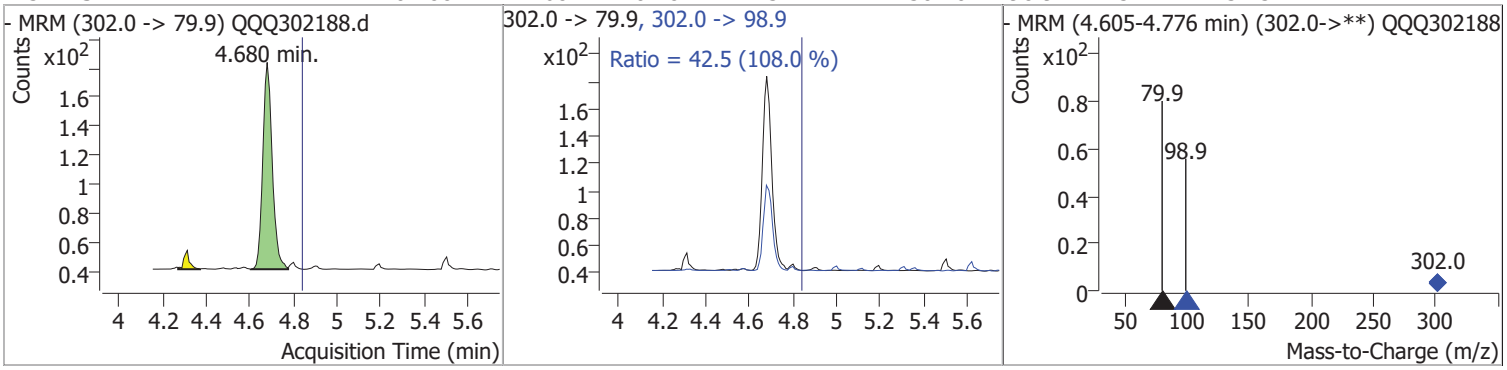


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-n-pentanoic acid (PFPeA)	0.4395	4.07	-0.52	1402				

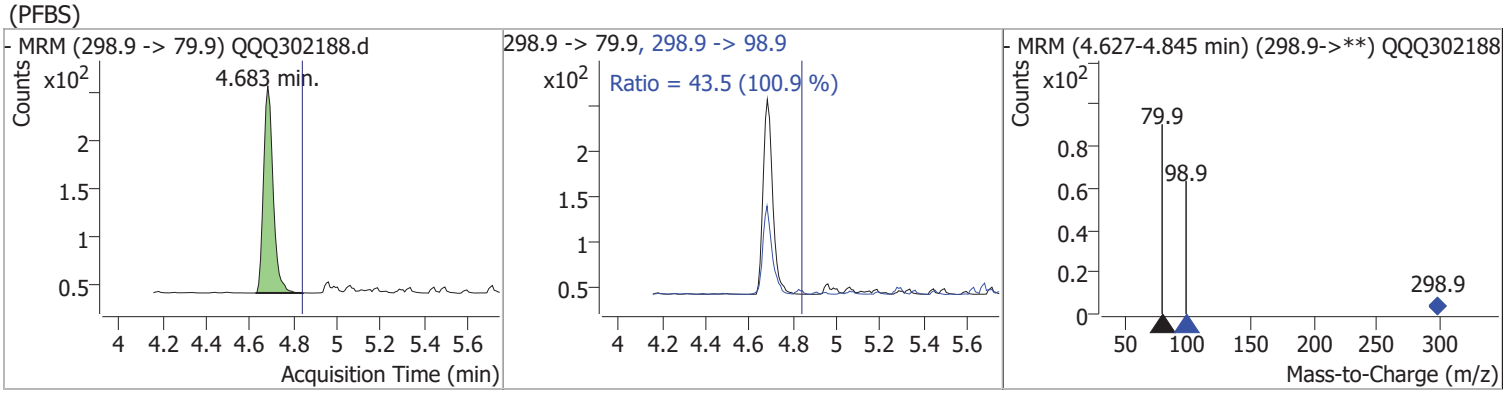


Quantitation Results Report (Not Reviewed)

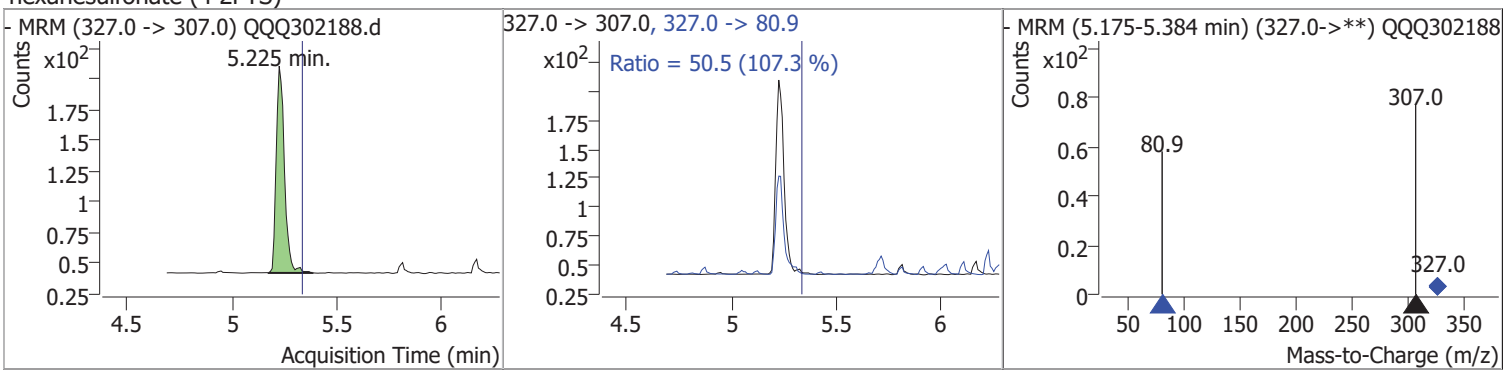
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M3PFBS	0.4881	4.68	-0.48	432	302.0 -> 98.9	42.5	31.5	47.2



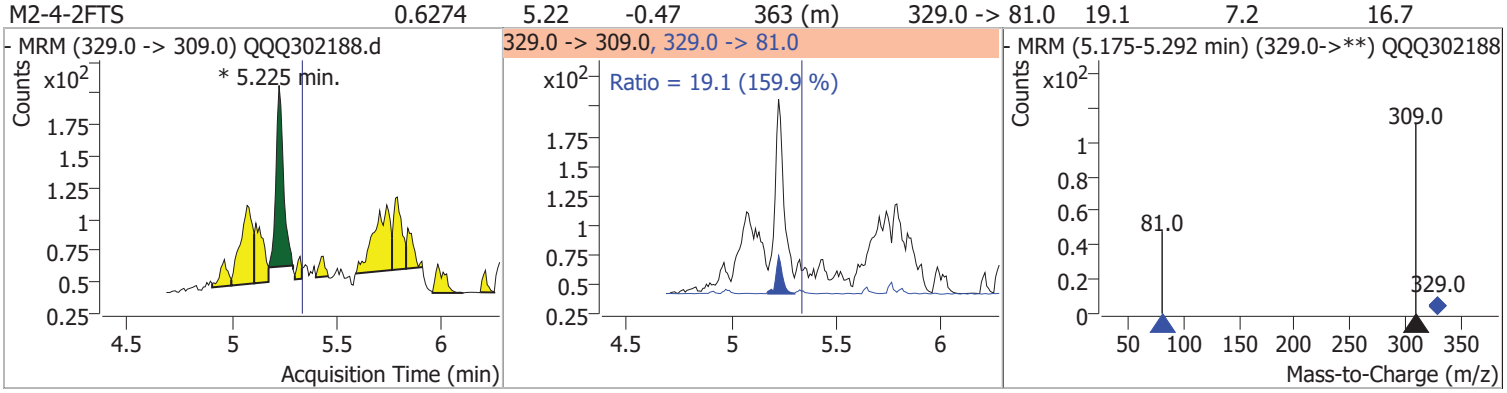
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorobutanesulfonic acid (PFBS)	0.3411	4.68	-0.48	660	298.9 -> 98.9	43.5	34.5	51.7



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
1H,1H,2H,2H-perfluoro-1-hexanesulfonate (4 2FTS)	0.4265	5.23	-0.46	464	327.0 -> 80.9	50.5	28.2	65.9

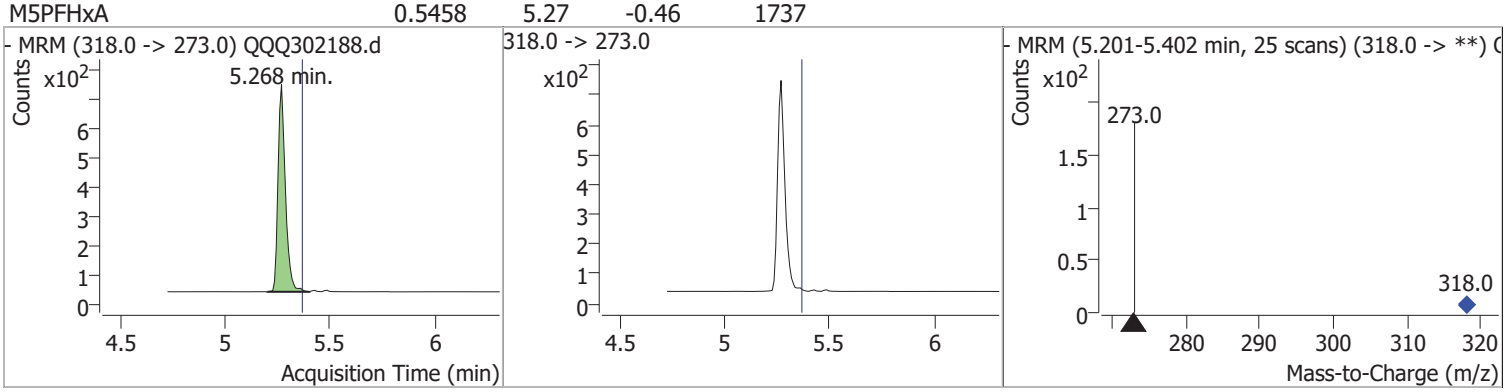


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M2-4-2FTS	0.6274	5.22	-0.47	363 (m)	329.0 -> 81.0	19.1	7.2	16.7

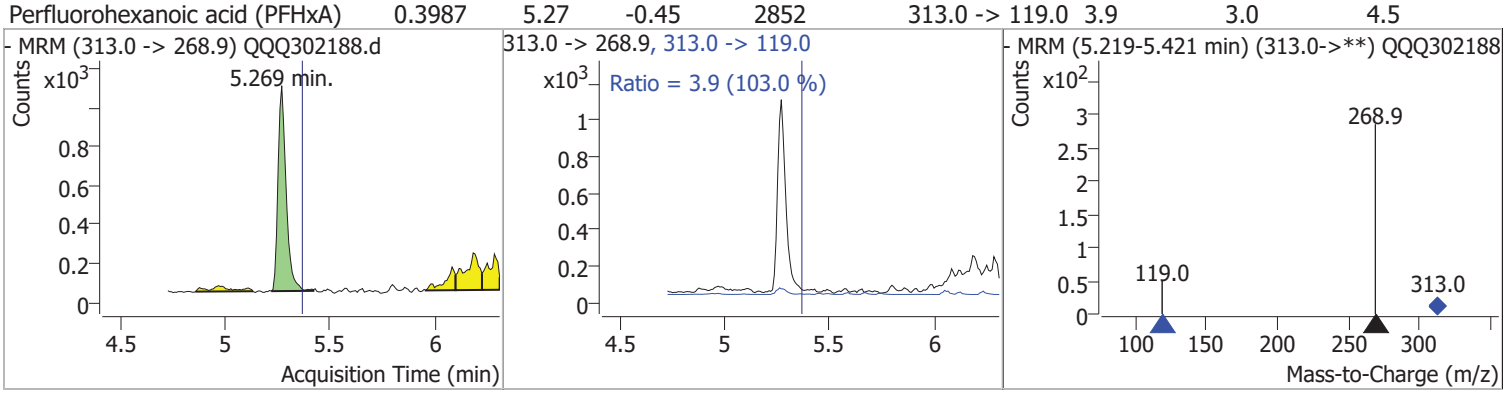


Quantitation Results Report (Not Reviewed)

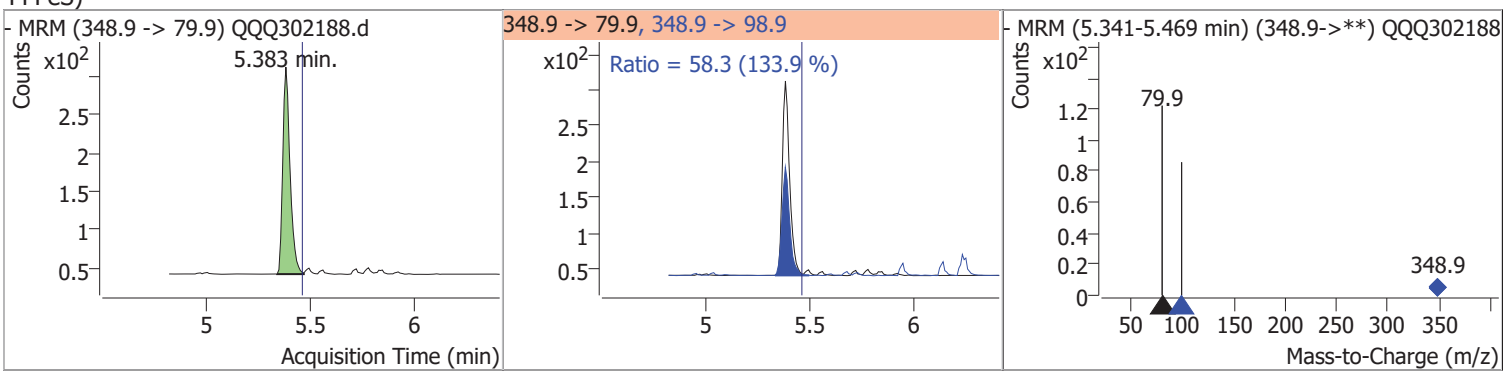
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M5PFHxA	0.5458	5.27	-0.46	1737				



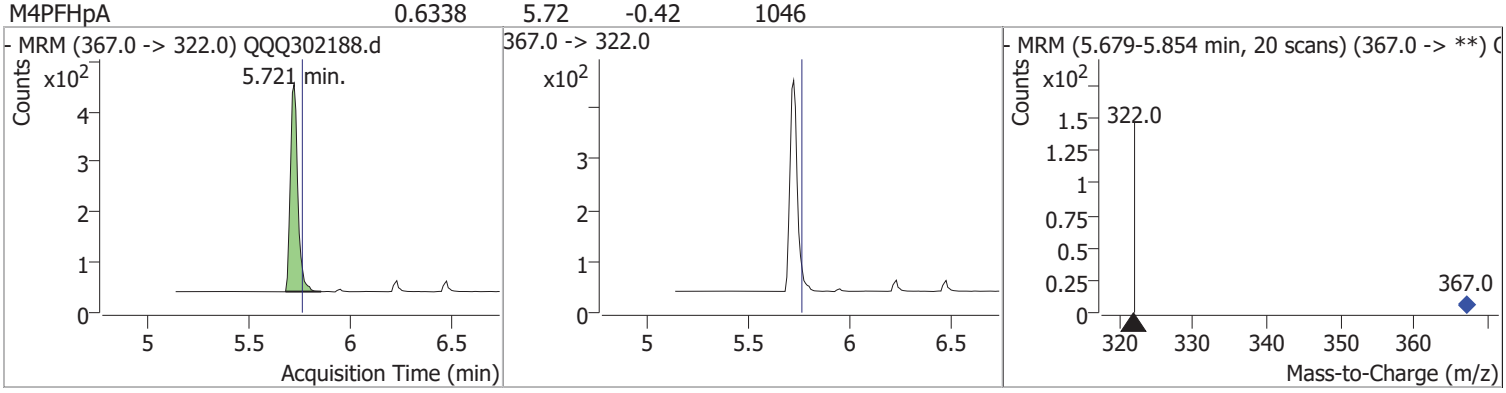
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorohexanoic acid (PFHxA)	0.3987	5.27	-0.45	2852	313.0 -> 119.0	3.9	3.0	4.5



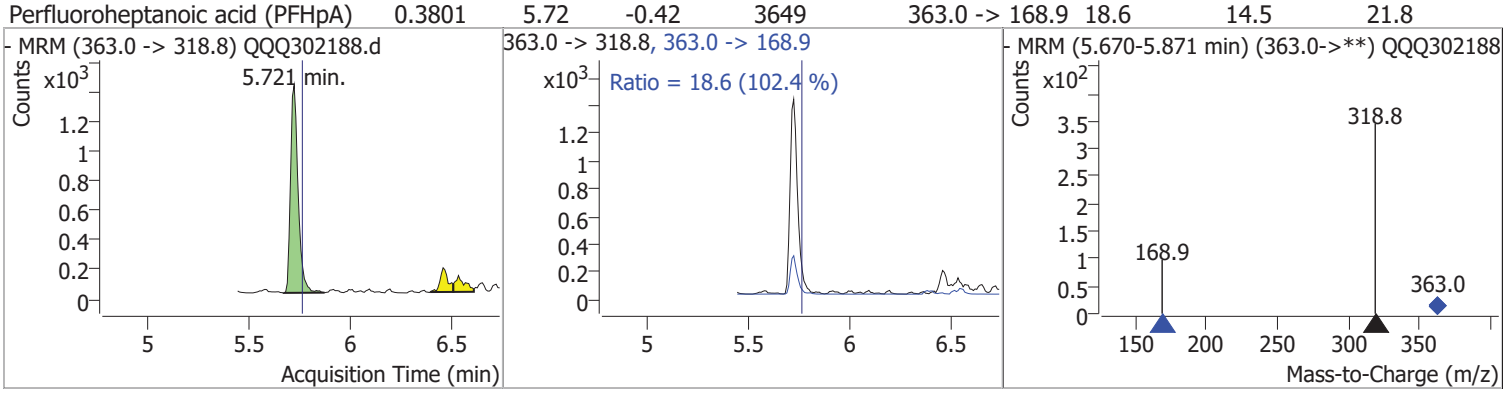
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-1-pentanesulfonate (L-PFPeS)	0.4218	5.38	-0.44	661	348.9 -> 98.9	58.3	34.8	52.2



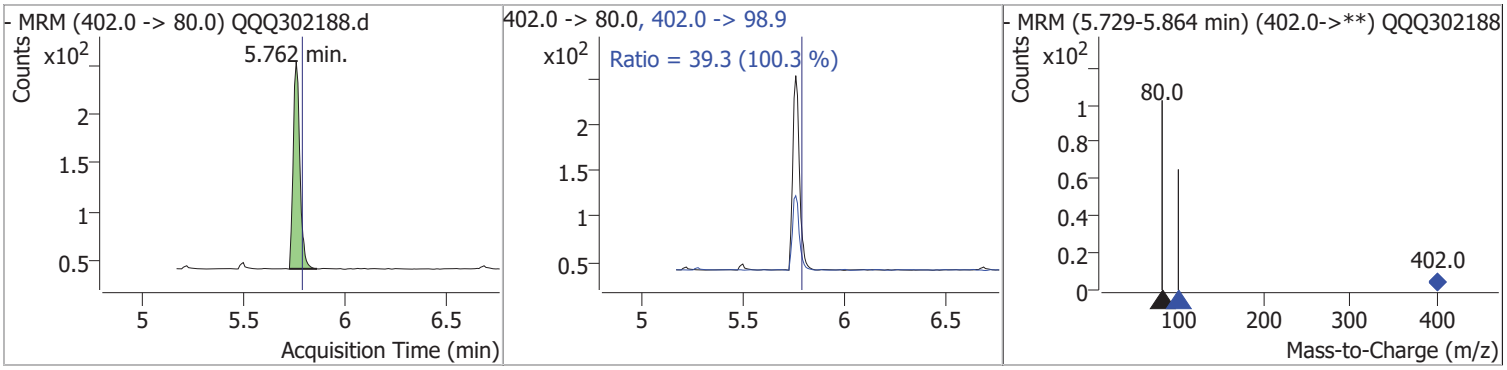
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M4PFHpA	0.6338	5.72	-0.42	1046				



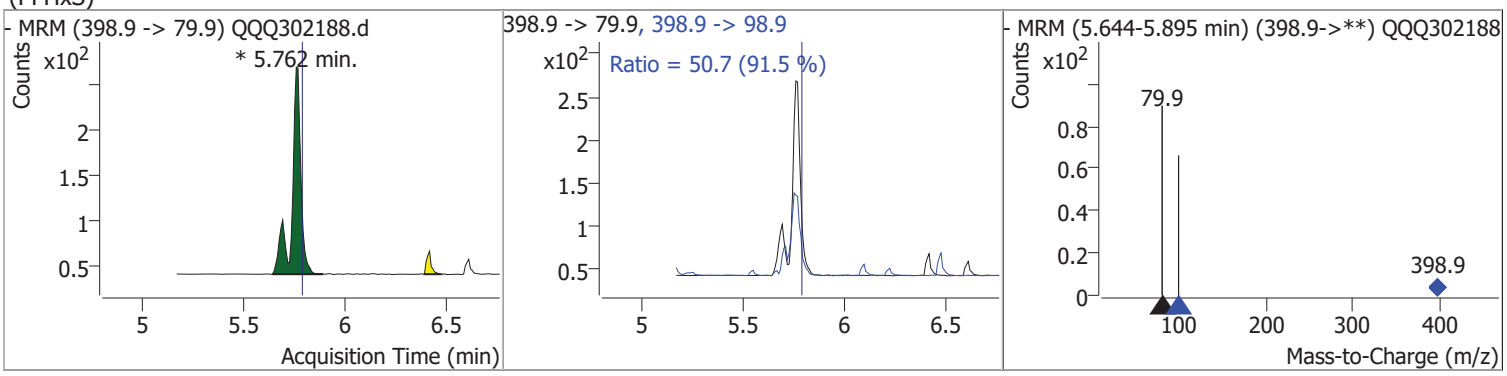
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoroheptanoic acid (PFHpA)	0.3801	5.72	-0.42	3649	363.0 -> 168.9	18.6	14.5	21.8



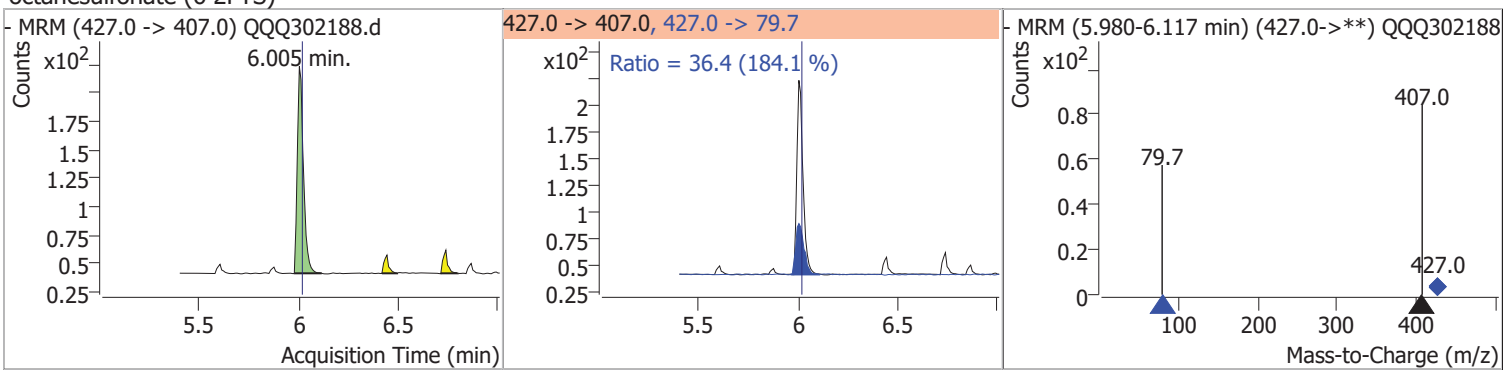
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M3PFHxS	0.6513	5.76	-0.41	479	402.0 -> 98.9	39.3	31.3	47.0



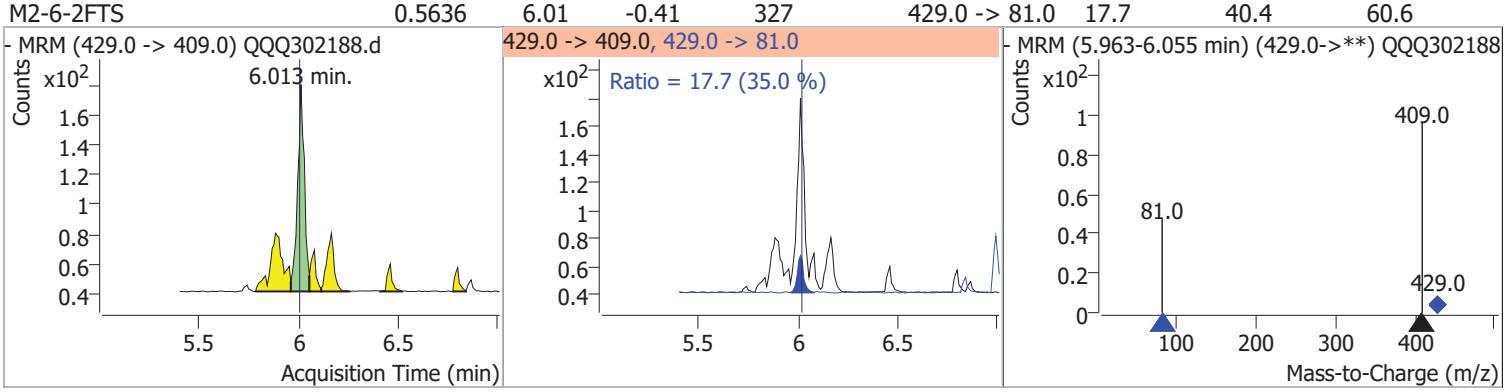
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorohexanesulfonic acid (PFHxS)	0.4392	5.76	-0.41	703 (m)	398.9 -> 98.9	50.7	44.4	66.5



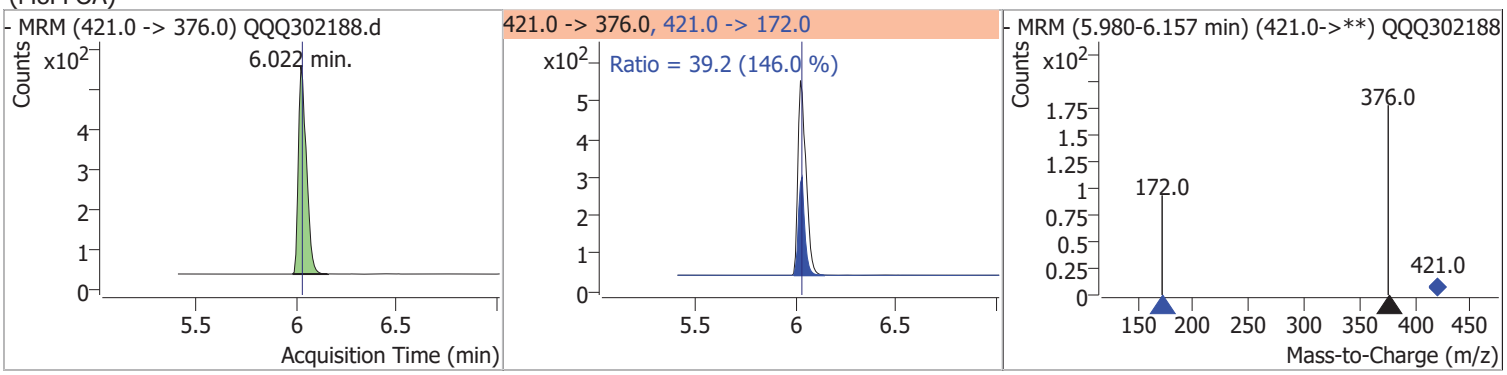
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
1H,1H,2H,2H-perfluoro-1-octanesulfonate (6 2FTS)	0.4193	6.00	-0.42	376	427.0 -> 79.7	36.4	15.8	23.7



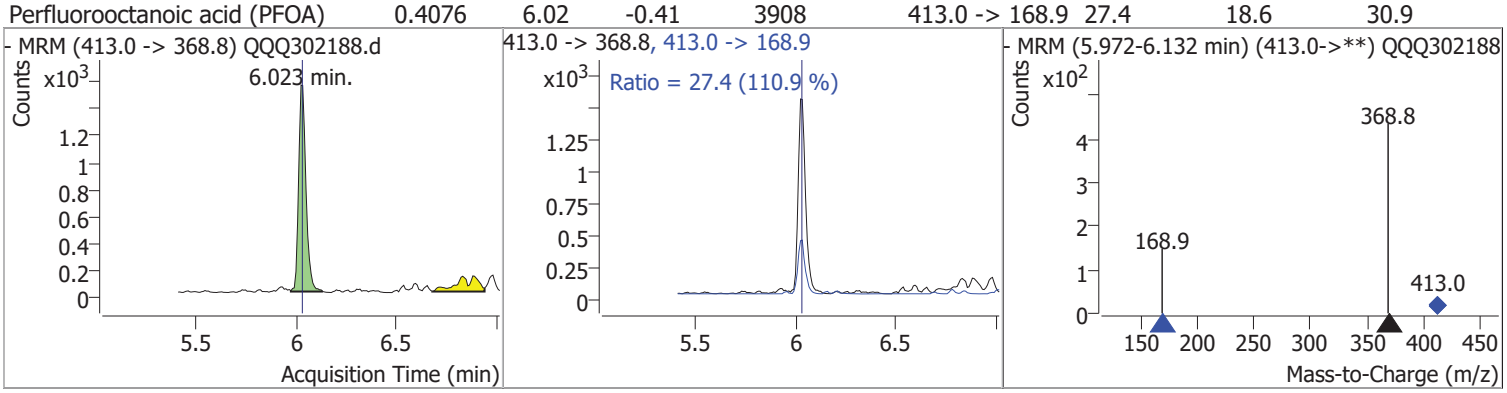
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M2-6-2FTS	0.5636	6.01	-0.41	327	429.0 -> 81.0	17.7	40.4	60.6



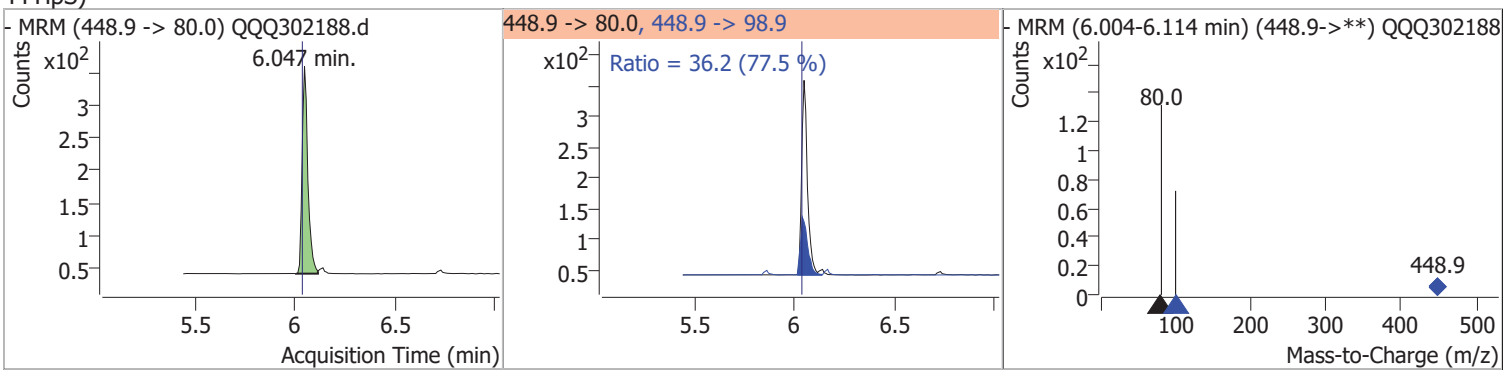
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-n-[13C8]octanoic acid (M8PFOA)	0.5333	6.02	-0.41	1439	421.0 -> 172.0	39.2	21.5	32.2



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorooctanoic acid (PFOA)	0.4076	6.02	-0.41	3908	413.0 -> 168.9	27.4	18.6	30.9

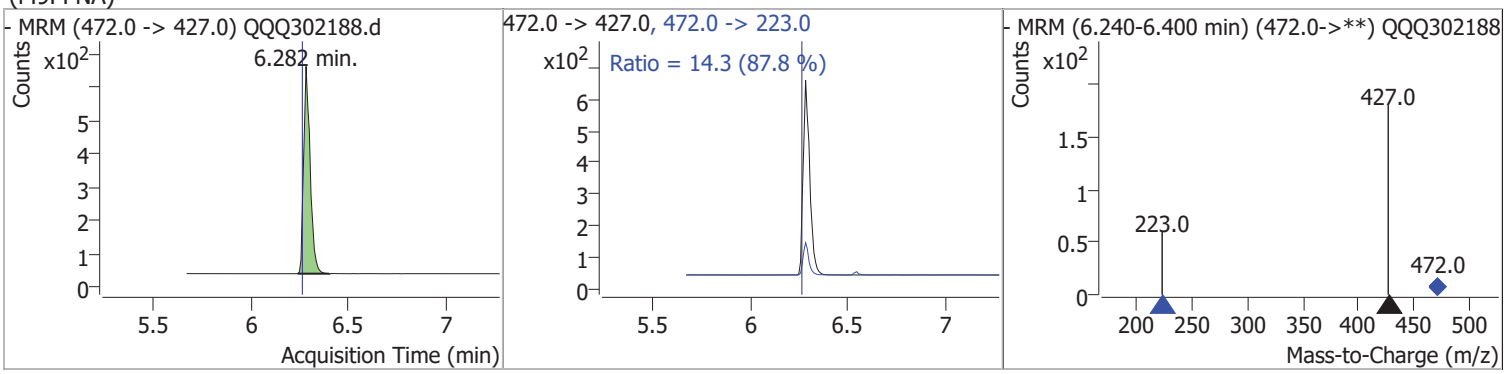


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-1-heptanesulfonate (L-PFHpS)	0.5194	6.05	-0.39	636	448.9 -> 98.9	36.2	37.3	56.0

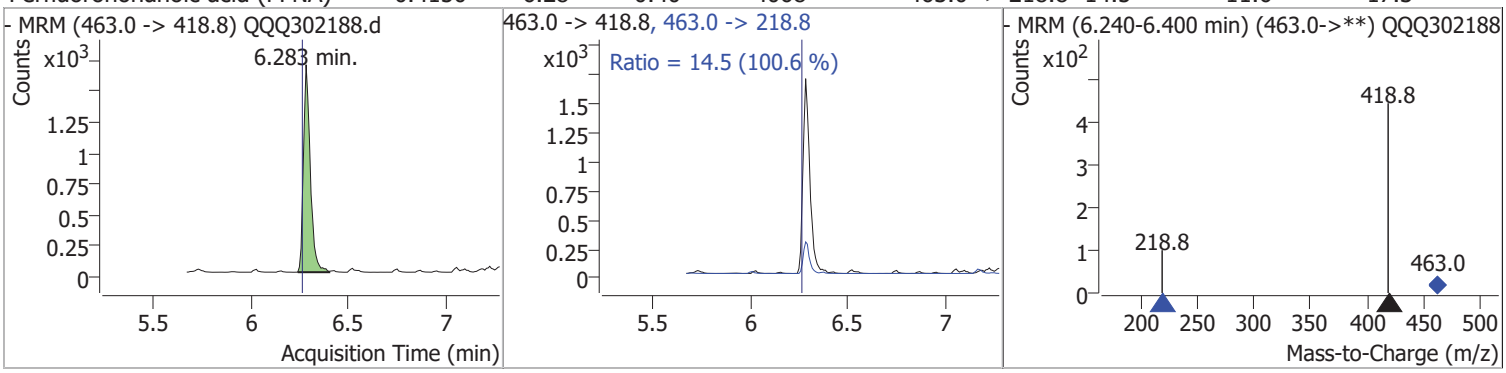


Quantitation Results Report (Not Reviewed)

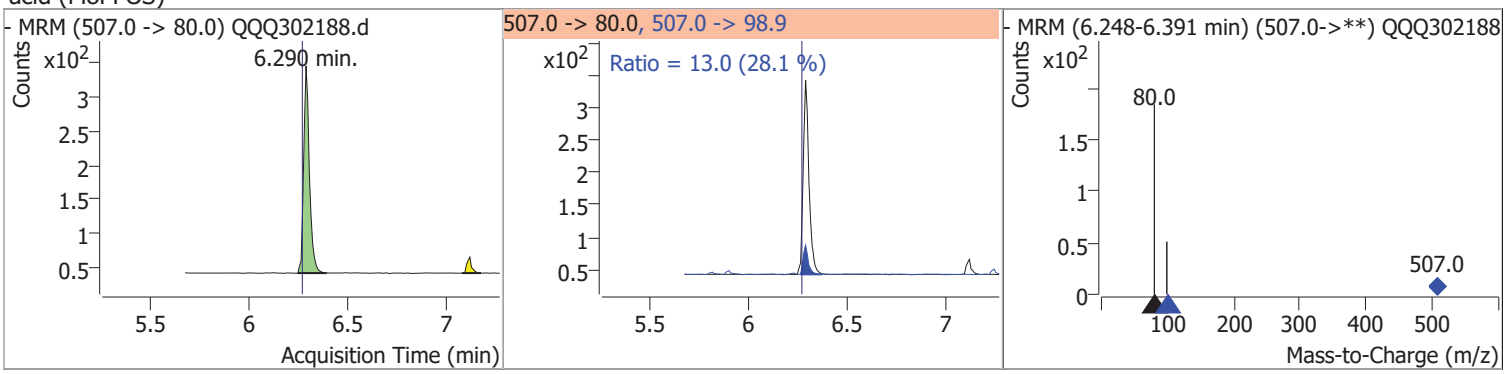
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-n-[13C9]nonanoic acid (M9PFNA)	0.4295	6.28	-0.40	1431	472.0 -> 223.0	14.3	13.1	19.6



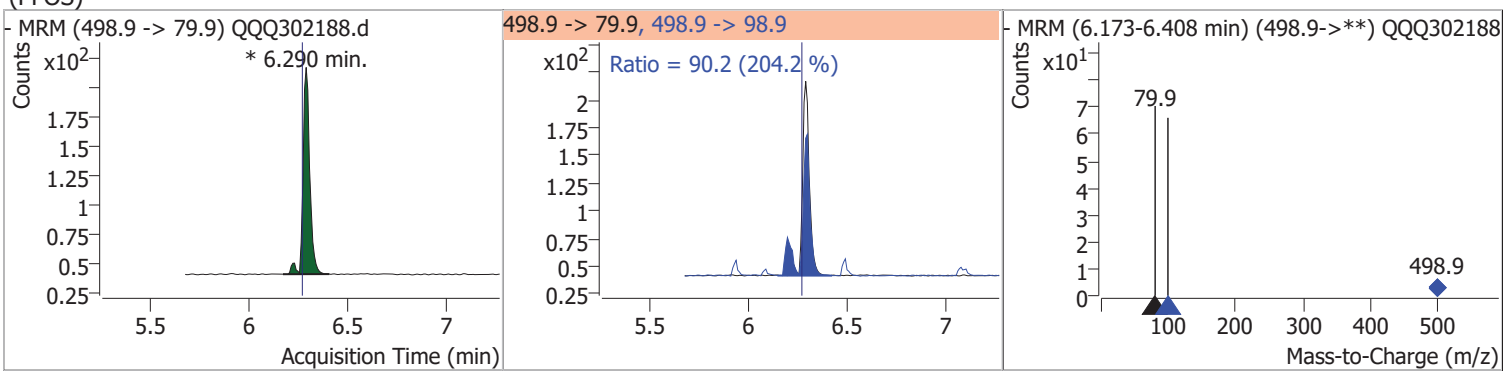
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorononanoic acid (PFNA)	0.4150	6.28	-0.40	4068	463.0 -> 218.8	14.5	11.6	17.3



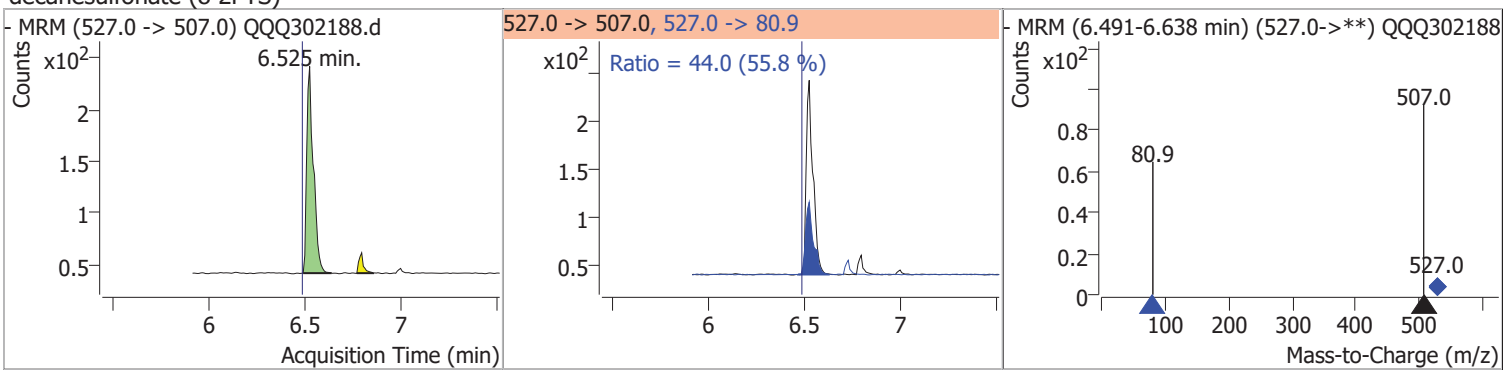
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)	0.8209	6.29	-0.40	618	507.0 -> 98.9	13.0	37.1	55.6



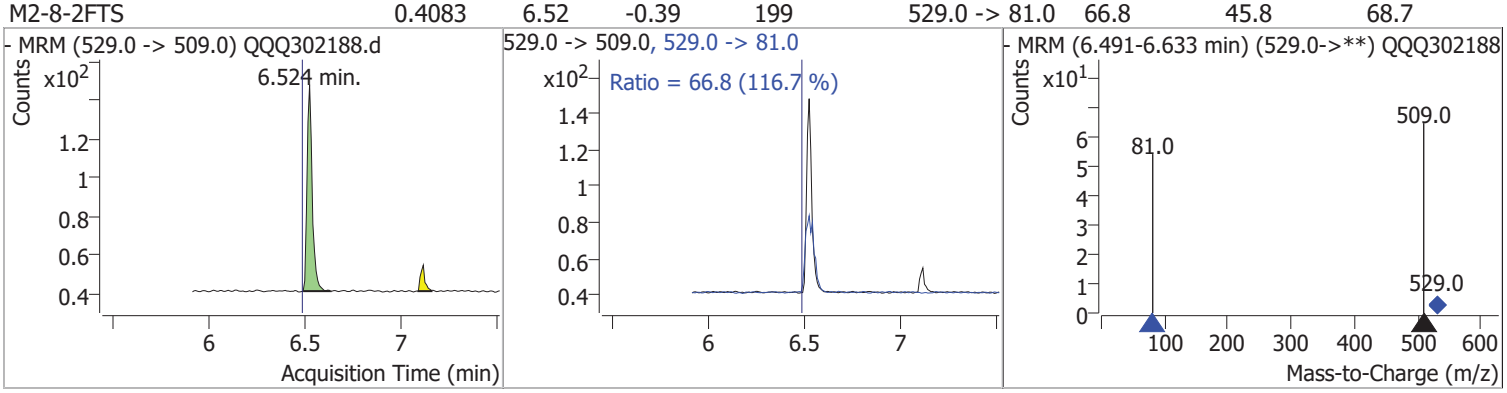
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorooctanesulfonic acid (PFOS)	0.3094	6.29	-0.40	421 (m)	498.9 -> 98.9	90.2	35.4	53.0



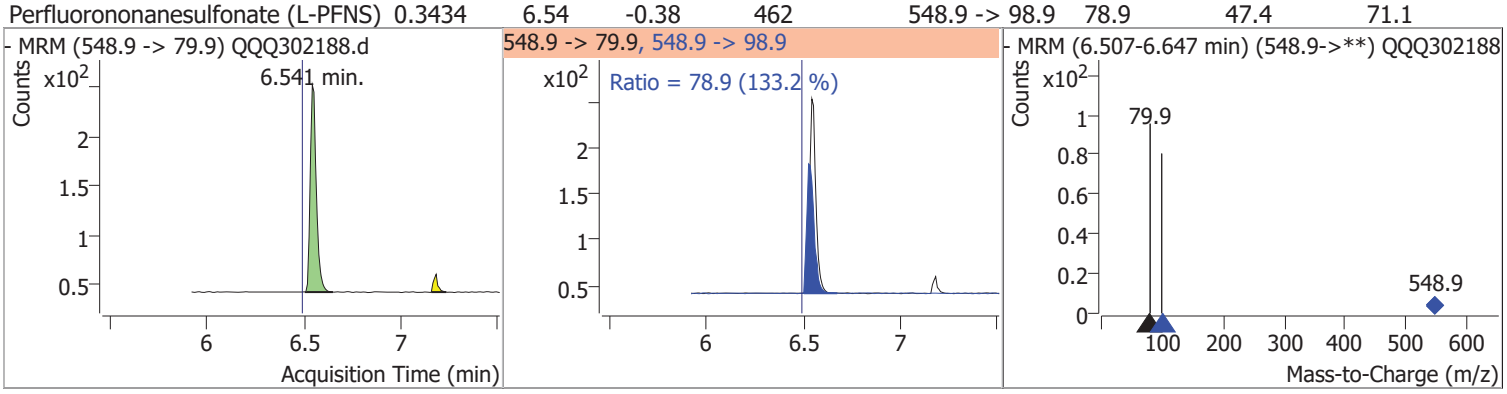
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
1H,1H,2H,2H-perfluoro-1-decanesulfonate (8 2FTS)	0.3827	6.52	-0.39	478	527.0 -> 80.9	44.0	63.1	94.6



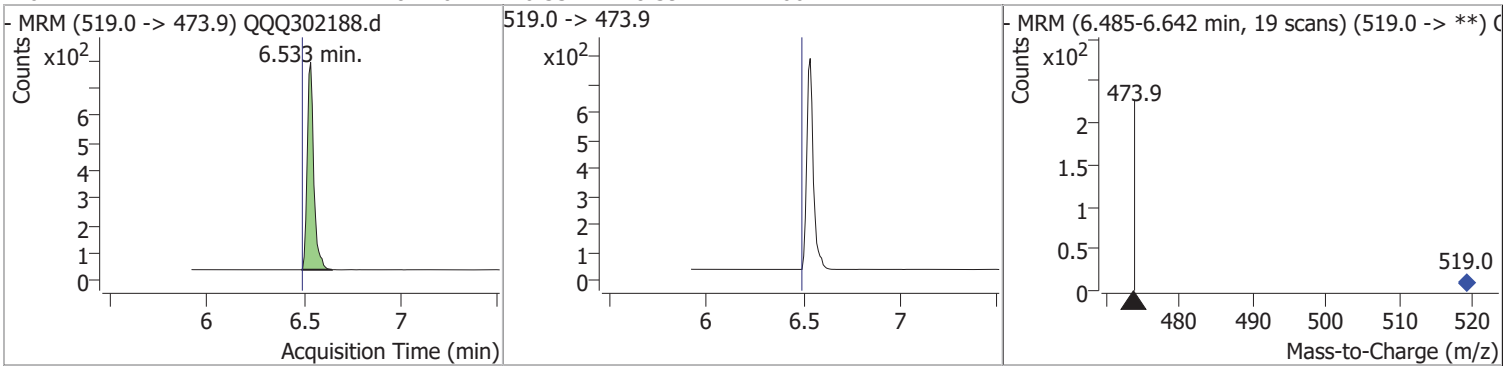
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M2-8-2FTS	0.4083	6.52	-0.39	199	529.0 -> 81.0	66.8	45.8	68.7



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorononanesulfonate (L-PFNS)	0.3434	6.54	-0.38	462	548.9 -> 98.9	78.9	47.4	71.1

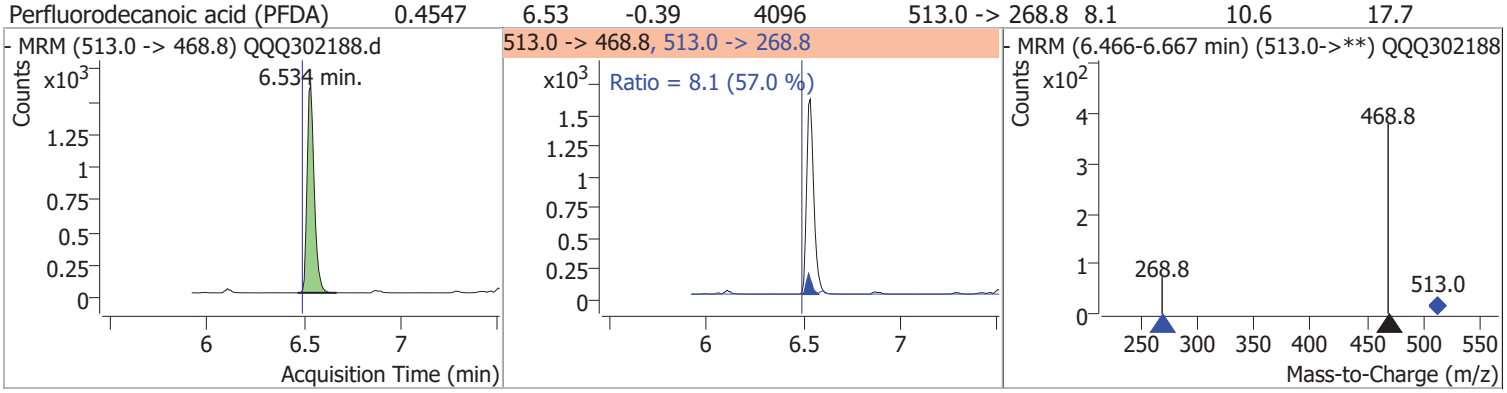


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M6PFDA	0.4764	6.53	-0.39	1766				

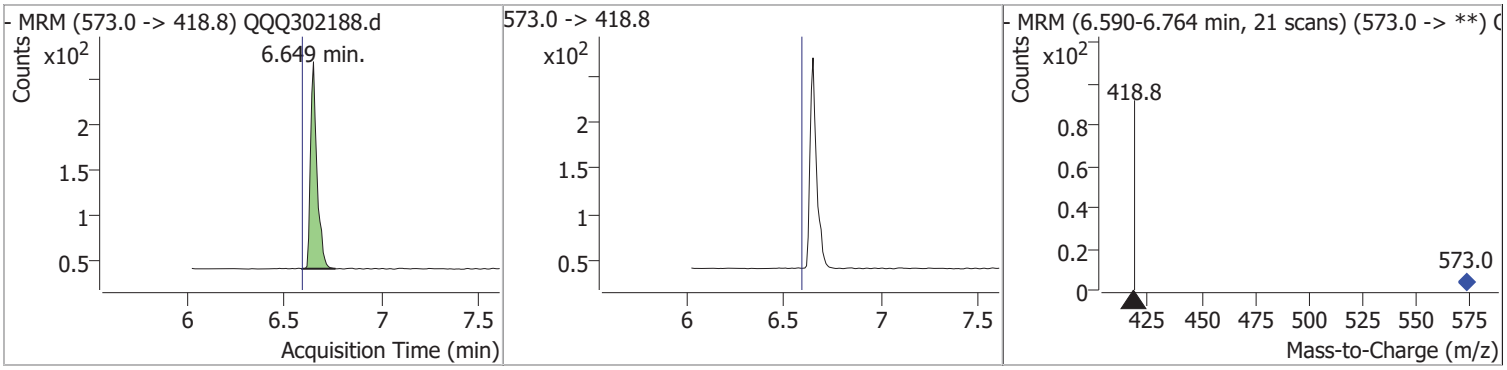


Quantitation Results Report (Not Reviewed)

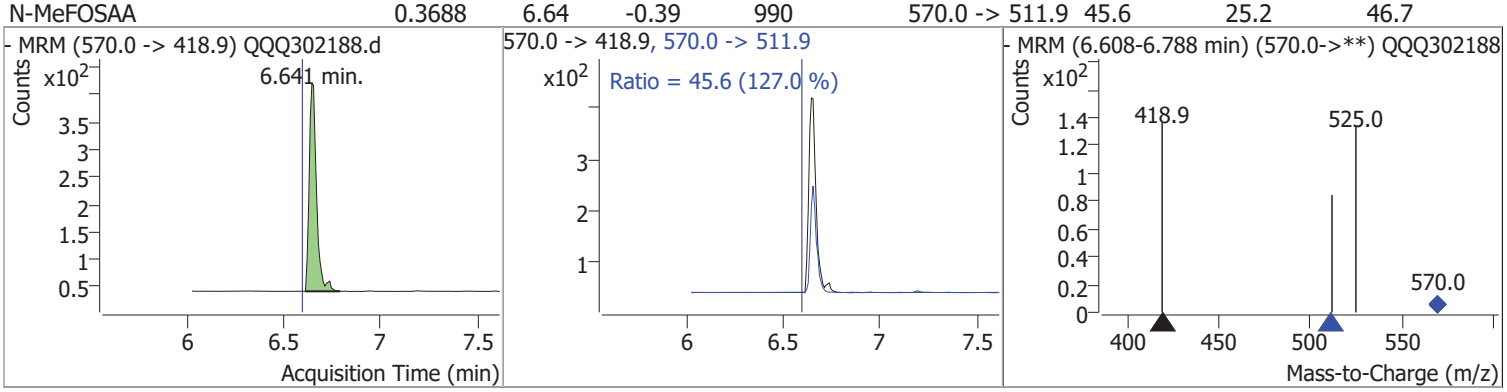
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorodecanoic acid (PFDA)	0.4547	6.53	-0.39	4096	513.0 -> 268.8	8.1	10.6	17.7



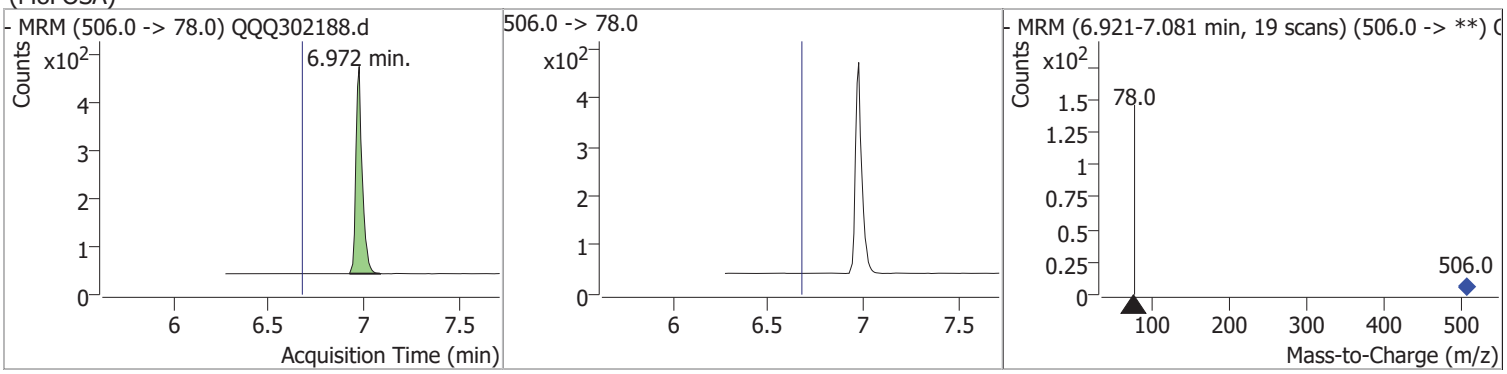
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
d3-N-MeFOSAA	0.4078	6.65	-0.38	533				



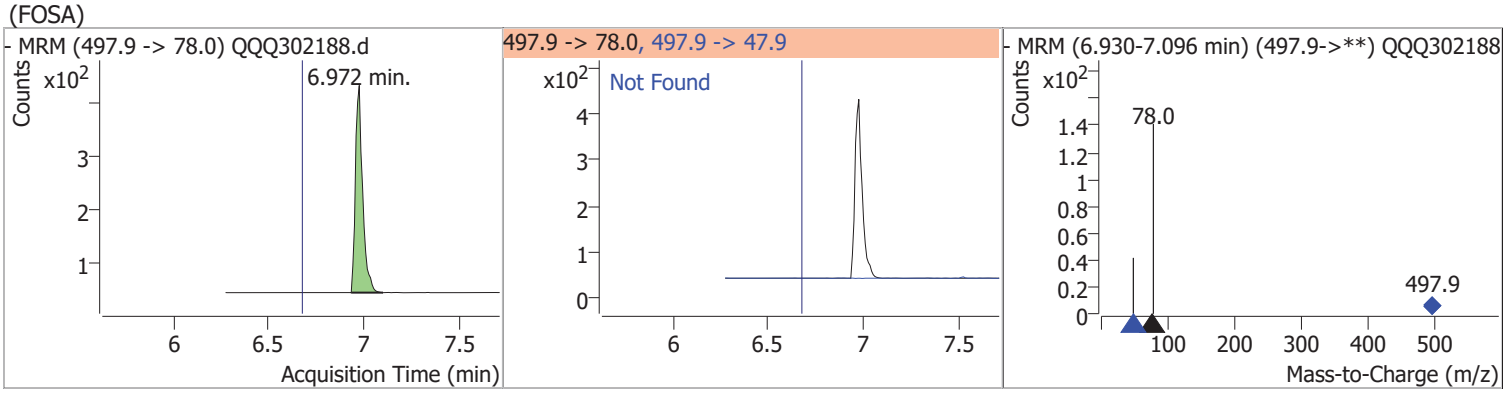
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
N-MeFOSAA	0.3688	6.64	-0.39	990	570.0 -> 511.9	45.6	25.2	46.7



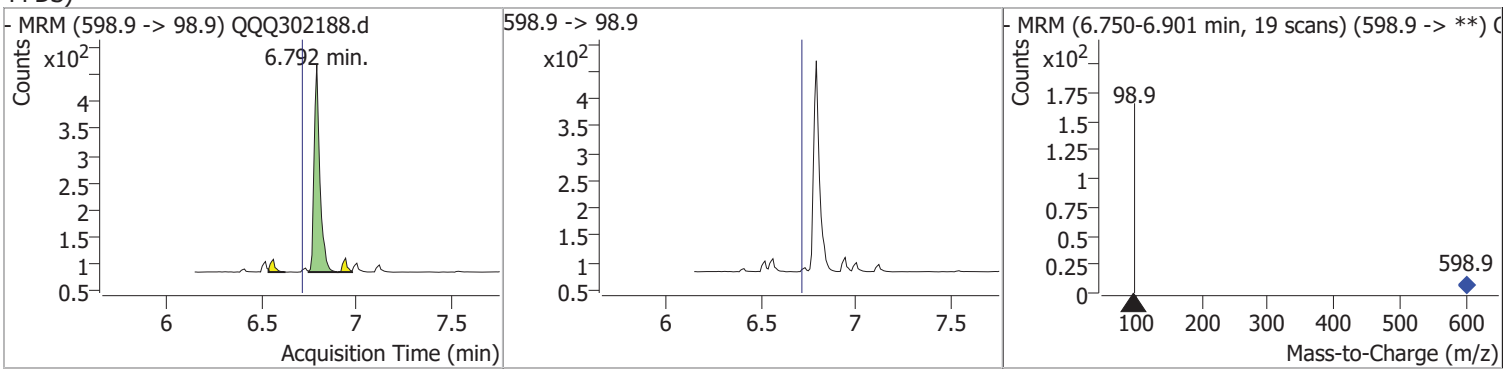
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-1-[13C8]octanesulfonamide (M8FOSA)	0.5948	6.97	-0.15	993				



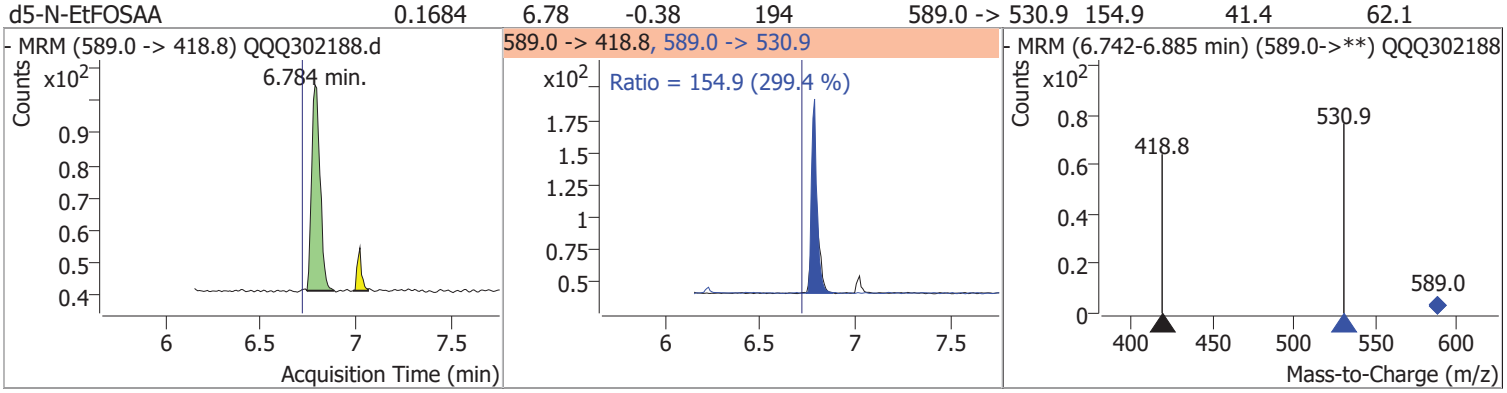
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-1-octanesulfonamide (FOSA)	0.4458	6.97	-0.15	1011	497.9 -> 47.9		1.7	2.5



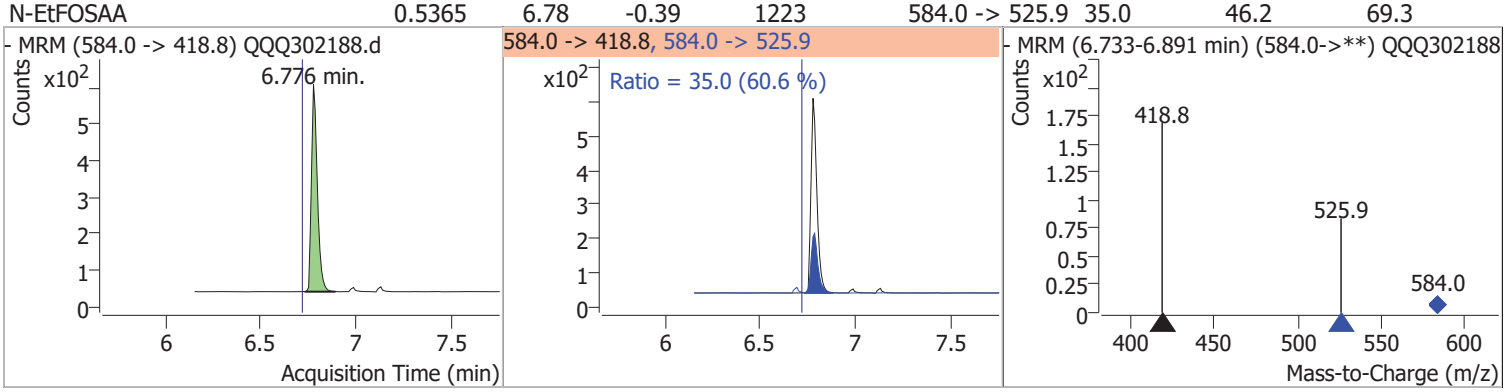
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-1-decanesulfonate (L-PFDS)	0.5439	6.79	-0.37	812				



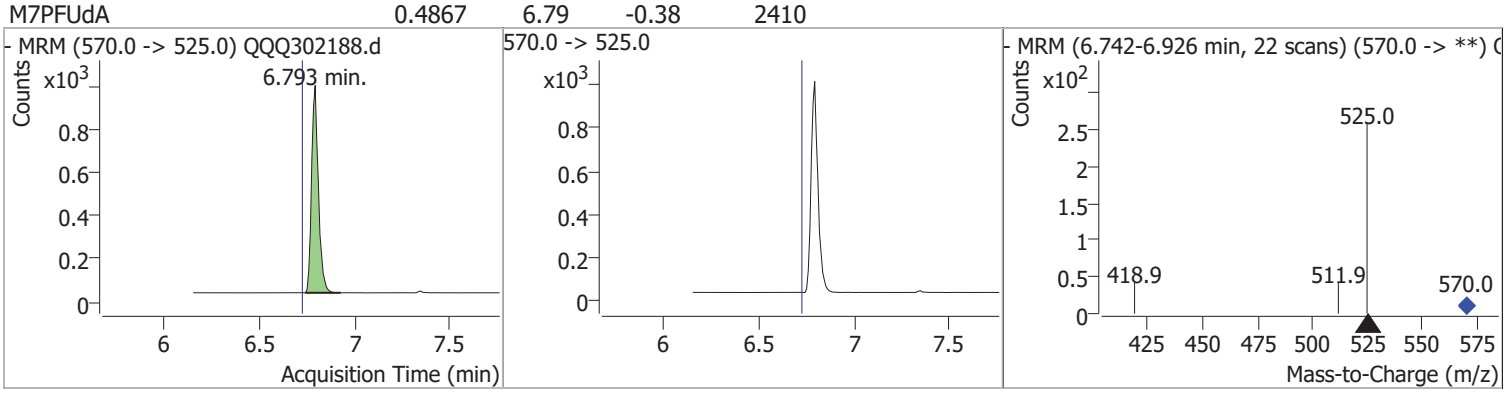
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
d5-N-EtFOSAA	0.1684	6.78	-0.38	194	589.0 -> 530.9	154.9	41.4	62.1



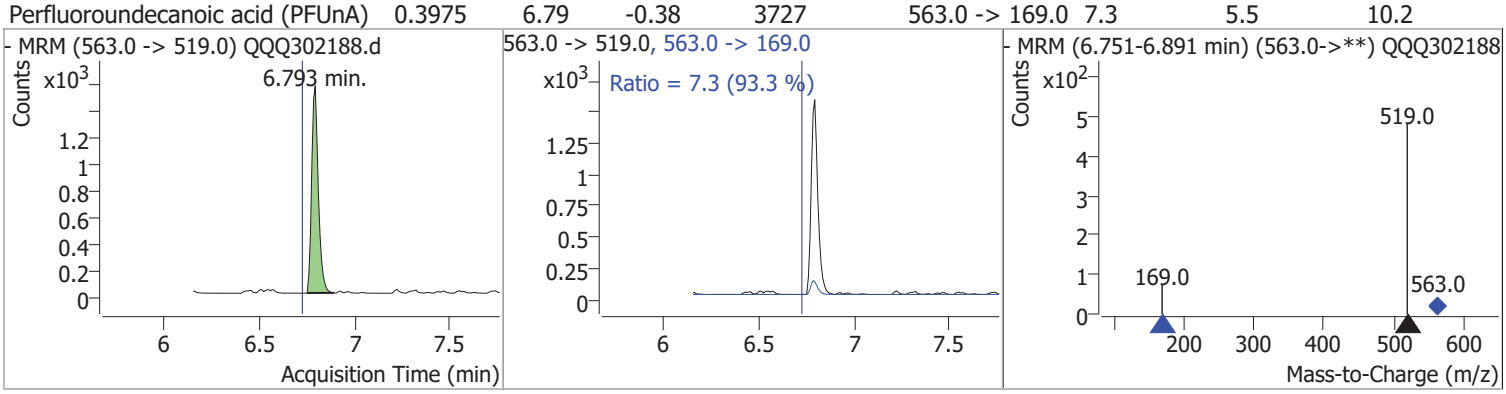
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
N-EtFOSAA	0.5365	6.78	-0.39	1223	584.0 -> 525.9	35.0	46.2	69.3



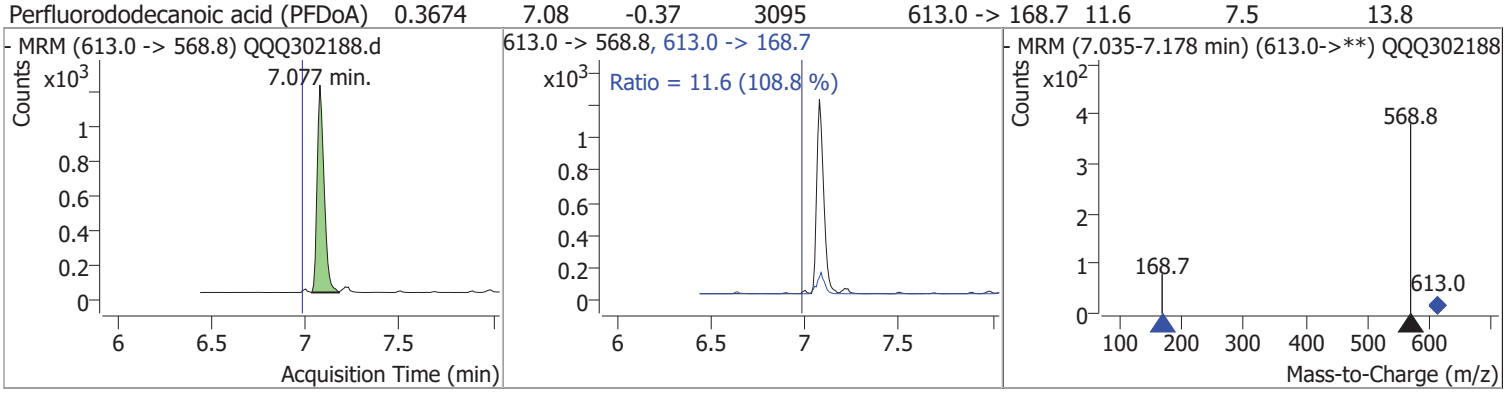
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M7PFUdA	0.4867	6.79	-0.38	2410				



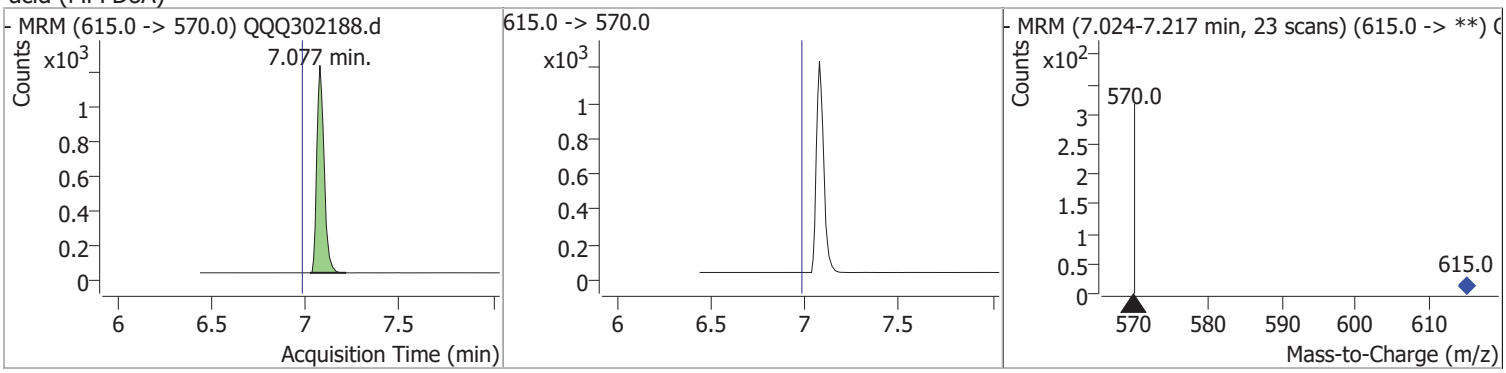
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoroundecanoic acid (PFUnA)	0.3975	6.79	-0.38	3727	563.0 -> 169.0	7.3	5.5	10.2



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorododecanoic acid (PFDoA)	0.3674	7.08	-0.37	3095	613.0 -> 168.7	11.6	7.5	13.8

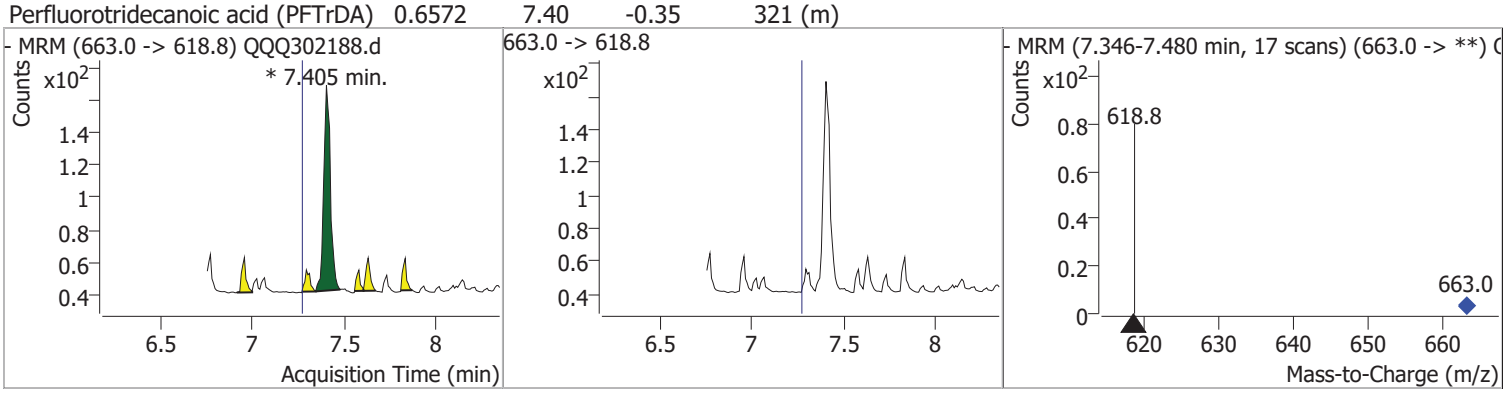


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-n-[1,2-13C2]dodecanoic acid (MPFDoA)	0.5757	7.08	-0.37	3219				

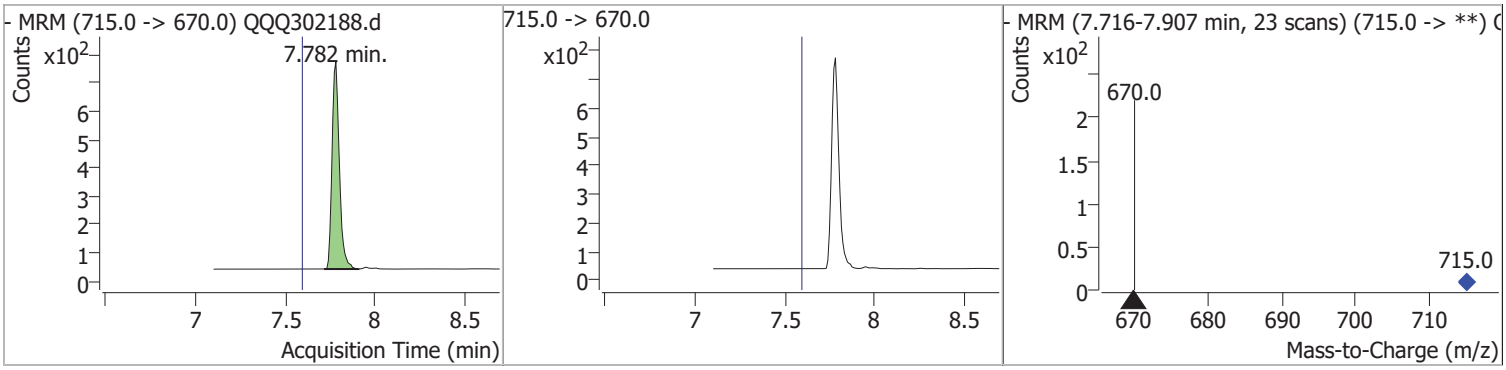


Quantitation Results Report (Not Reviewed)

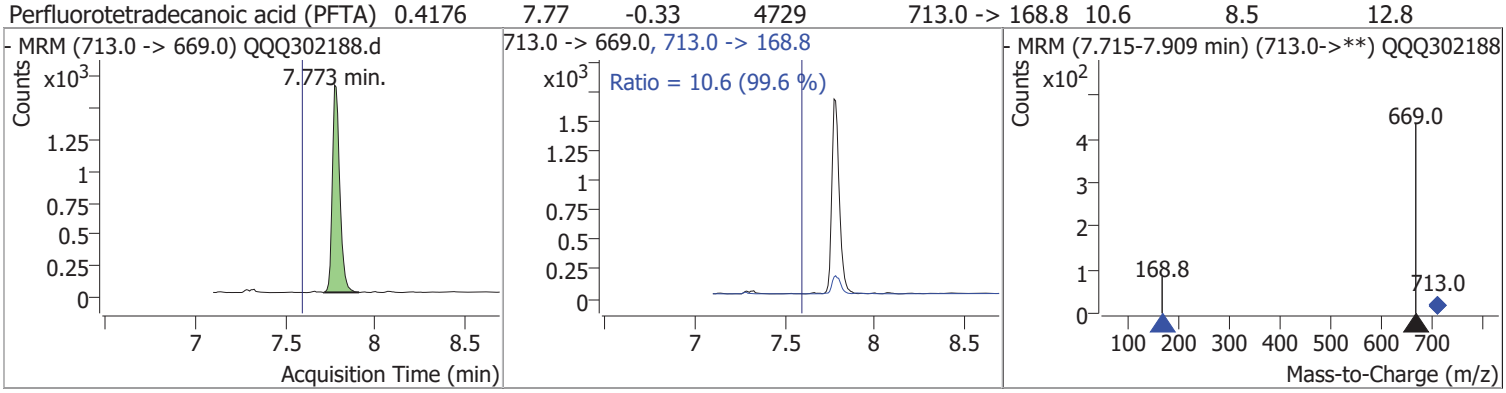
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorotridecanoic acid (PFTrDA)	0.6572	7.40	-0.35	321 (m)				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M2PFTeDA	0.4446	7.78	-0.32	2066				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorotetradecanoic acid (PFTA)	0.4176	7.77	-0.33	4729	713.0 -> 168.8	10.6	8.5	12.8



Quantitation Results Report (Not Reviewed)

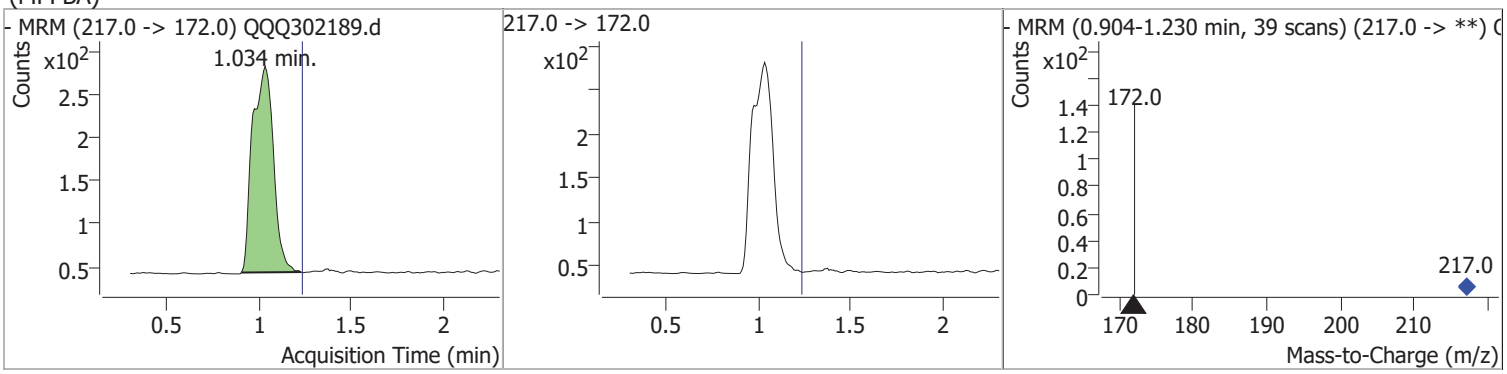
Data File	QQQ302189.d	Operator	
Acq. Method	PFAS 24_IDA ACQ_QQQ3A.m	Acq. Date-Time	6/27/2022 6:44:24 PM
Sample Name	SEQ-CAL3	Instrument	QQQ3
Vial		Multiplier	1.00
DA Method File	PFAS_24_IDA_QUANT_QQQ3_062722.m	Comment	1
Tune File		Tune Date	
Batch Name	2022-06-27-IDA-ICAL2.batch.bin	Last Calib Update	6/27/2022 4:24:30 PM
Ref Library			

Compound	RT	QIon	Resp.	Conc.	Units		Dev(Min)
Internal Standards							
MPFOA	6.039	417.0 -> 372.0	123247	10.0000	ng/ml		-0.391
System Monitoring Compounds							
Perfluoro-n-[13C4]butanoic acid (MPFBA)	1.034	217.0 -> 172.0	1890	0.9005	ng/ml		-0.275
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 9.00%		*	
Perfluoro-n-[13C54]pentanoic acid (M5PFPeA)	4.078	268.0 -> 223.0	1695	0.9657	ng/ml		-0.509
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 9.66%		*	
M3PFBS	4.691	302.0 -> 79.9	803	0.8445	ng/ml		-0.472
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 8.45%		*	
M2-4-2FTS	5.233	329.0 -> 309.0	875	1.4002	ng/ml	#m	-0.457
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 14.00%		*	
M5PFHxA	5.268	318.0 -> 273.0	3331	0.9675	ng/ml		-0.456
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 9.67%		*	
M4PFHpA	5.721	367.0 -> 322.0	1977	1.1066	ng/ml		-0.423
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 11.07%		*	
M3PFHxS	5.770	402.0 -> 80.0	954	1.2039	ng/ml		-0.407
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 12.04%		*	
M2-6-2FTS	6.022	429.0 -> 409.0	450	0.7222	ng/ml		-0.398
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 7.22%		*	
Perfluoro-n-[13C8]octanoic acid (M8PFOA)	6.031	421.0 -> 376.0	3393	1.1584	ng/ml	#	-0.399
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 11.58%		*	
Perfluoro-n-[13C9]nonanoic acid (M9PFNA)	6.299	472.0 -> 427.0	4260	1.1835	ng/ml	#	-0.381
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 11.84%		*	
Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)	6.307	507.0 -> 80.0	762	0.9409	ng/ml	#	-0.381
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 9.41%		*	
M2-8-2FTS	6.541	529.0 -> 509.0	714	1.3637	ng/ml	#	-0.377
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 13.64%		*	
M6PFDA	6.550	519.0 -> 473.9	3691	0.9232	ng/ml		-0.372
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 9.23%		*	
d3-N-MeFOSAA	6.658	573.0 -> 418.8	1533	1.0886	ng/ml		-0.372
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 10.89%		*	
Perfluoro-1-[13C8]octanesulfonamide (M8FOSA)	6.980	506.0 -> 78.0	1291	0.7179	ng/ml		-0.139
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 7.18%		*	
d5-N-EtFOSAA	6.792	589.0 -> 418.8	1126	0.9070	ng/ml		-0.372
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 9.07%		*	
M7PFUdA	6.809	570.0 -> 525.0	4552	0.8547	ng/ml		-0.364
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 8.55%		*	
Perfluoro-n-[1,2-13C2]dodecanoic acid (MPFDoA)	7.093	615.0 -> 570.0	5275	0.8749	ng/ml		-0.355
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 8.75%		*	
M2PFTeDA	7.790	715.0 -> 670.0	3925	0.7830	ng/ml		-0.311
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 7.83%		*	
Target Compounds							**QValue**

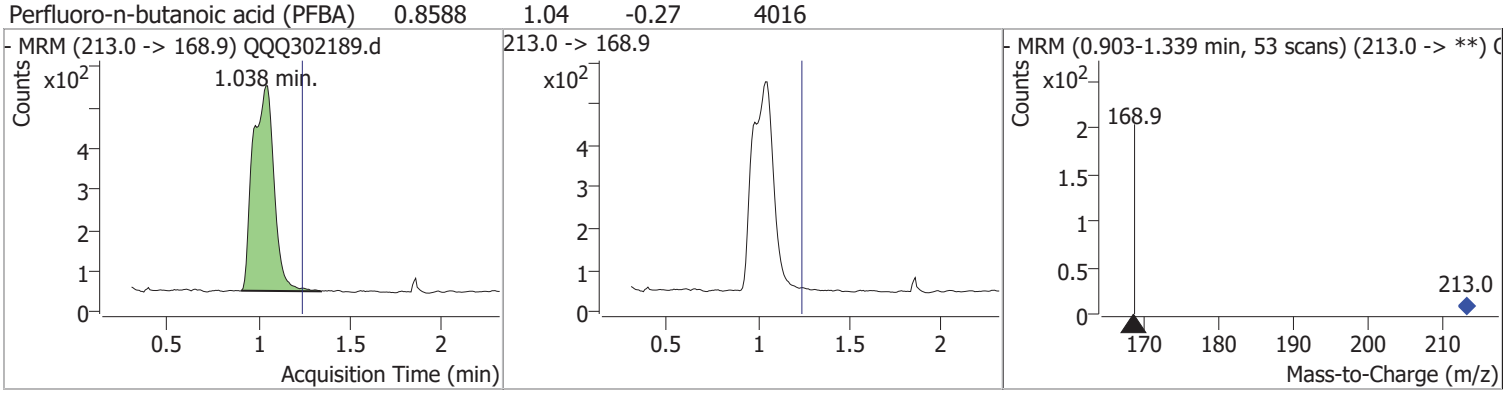
Compound	RT	QIon	Resp.	Conc.	Units		Dev(Min)
Perfluoro-n-butanoic acid (PFBA)	1.038	213.0 -> 168.9	4016	0.8588	ng/ml		100
Perfluoro-n-pentanoic acid (PFPeA)	4.074	263.0 -> 219.0	3260	0.9434	ng/ml		100
Perfluorobutanesulfonic acid (PFBS)	4.693	298.9 -> 79.9	1777	0.8516	ng/ml		96
1H,1H,2H,2H-perfluoro-1-hexanesulfonate (4 2FTS)	5.234	327.0 -> 307.0	1080	0.9198	ng/ml		88
Perfluorohexanoic acid (PFHxA)	5.269	313.0 -> 268.9	6671	0.8634	ng/ml		99
Perfluoro-1-pentanesulfonate (L-PFPeS)	5.383	348.9 -> 79.9	1677	0.9881	ng/ml		97
Perfluoroheptanoic acid (PFHpA)	5.729	363.0 -> 318.8	8928	0.8618	ng/ml		100
Perfluorohexanesulfonic acid (PFHxS)	5.771	398.9 -> 79.9	1550	0.8983	ng/ml	#m	70
1H,1H,2H,2H-perfluoro-1-octanesulfonate (6 2FTS)	6.022	427.0 -> 407.0	700	0.7228	ng/ml	#	25
Perfluorooctanoic acid (PFOA)	6.039	413.0 -> 368.8	8932	0.8623	ng/ml		88
Perfluoro-1-heptanesulfonate (L-PFHpS)	6.055	448.9 -> 80.0	1280	0.9682	ng/ml	#	83
Perfluorononanoic acid (PFNA)	6.291	463.0 -> 418.8	9738	0.9205	ng/ml		98
Perfluorooctanesulfonic acid (PFOS)	6.307	498.9 -> 79.9	757	0.5159	ng/ml	#m	10
1H,1H,2H,2H-perfluoro-1-decanesulfonate (8 2FTS)	6.541	527.0 -> 507.0	970	0.7244	ng/ml	#	76
Perfluorononanesulfonate (L-PFNS)	6.549	548.9 -> 79.9	890	0.6149	ng/ml	#	38
Perfluorodecanoic acid (PFDA)	6.550	513.0 -> 468.8	9896	1.0156	ng/ml		99
N-MeFOSAA	6.658	570.0 -> 418.9	2548	0.8788	ng/ml		98
Perfluoro-1-octanesulfonamide (FOSA)	6.989	497.9 -> 78.0	2127	0.8674	ng/ml	#	97
Perfluoro-1-decanesulfonate (L-PFDS)	6.817	598.9 -> 98.9	799	0.4971	ng/ml		100
N-EtFOSAA	6.801	584.0 -> 418.8	2547	1.0363	ng/ml		97
Perfluoroundecanoic acid (PFUnA)	6.802	563.0 -> 519.0	8903	0.8809	ng/ml	#	89
Perfluorododecanoic acid (PFDoA)	7.094	613.0 -> 568.8	7950	0.8715	ng/ml	#	90
Perfluorotridecanoic acid (PFTrDA)	7.413	663.0 -> 618.8	884	1.6533	ng/ml		100
Perfluorotetradecanoic acid (PFTA)	7.790	713.0 -> 669.0	11332	0.9226	ng/ml		98

(#) = Qualifier Out of Range; (m) = Manual Integration; (+) = Area Summed; (*) = Surrogate Percent Recovery Out of Range; (d): Zeroed Peak

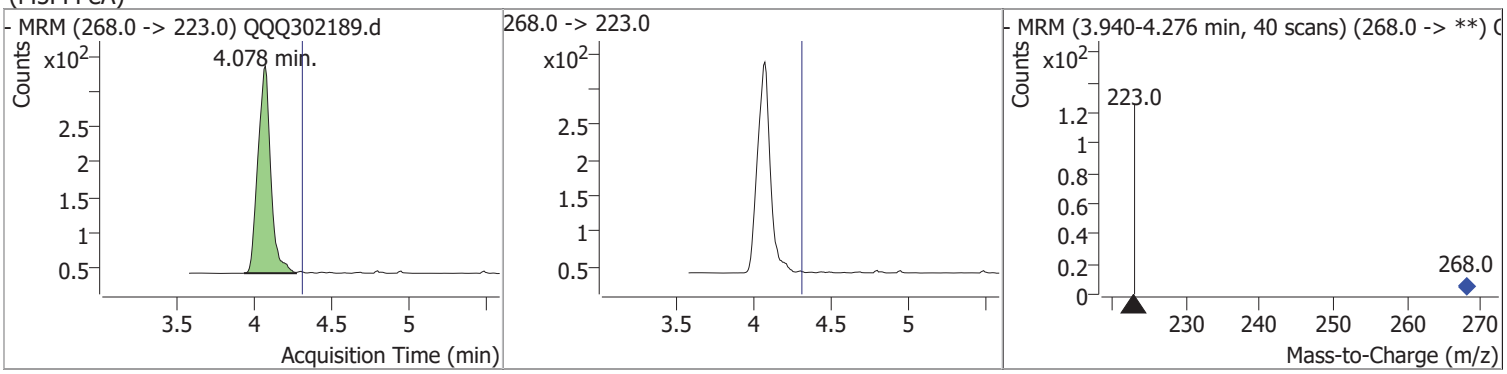
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-n-[13C4]butanoic acid (MPFBA)	0.9005	1.03	-0.27	1890				



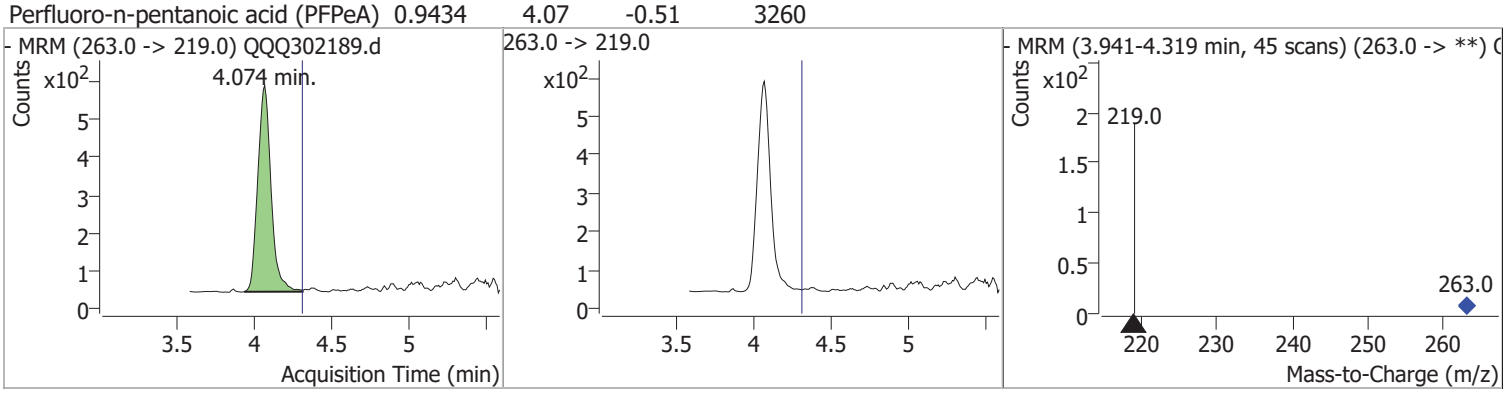
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-n-butanoic acid (PFBA)	0.8588	1.04	-0.27	4016				



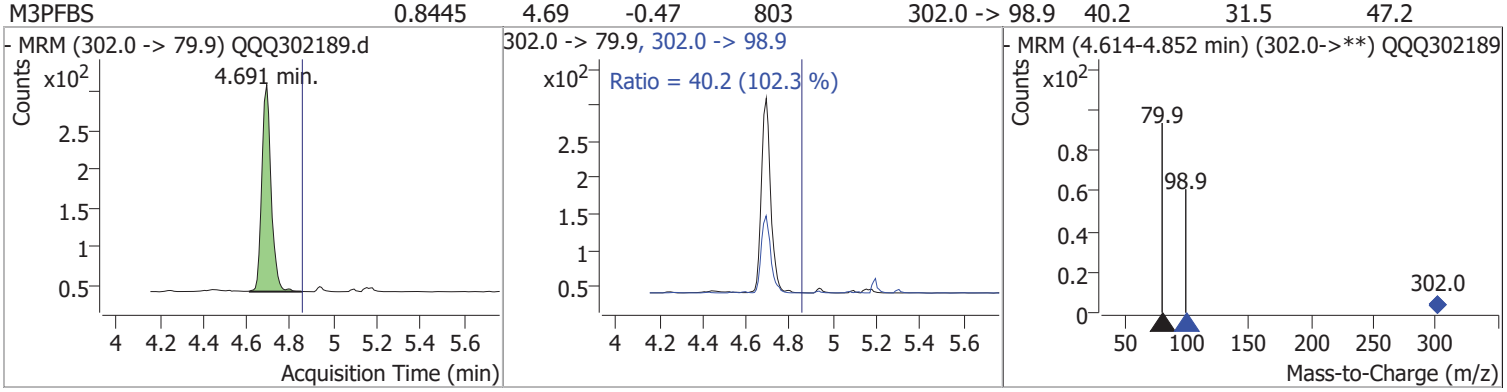
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-n-[13C54]pentanoic acid (M5PFPeA)	0.9657	4.08	-0.51	1695				



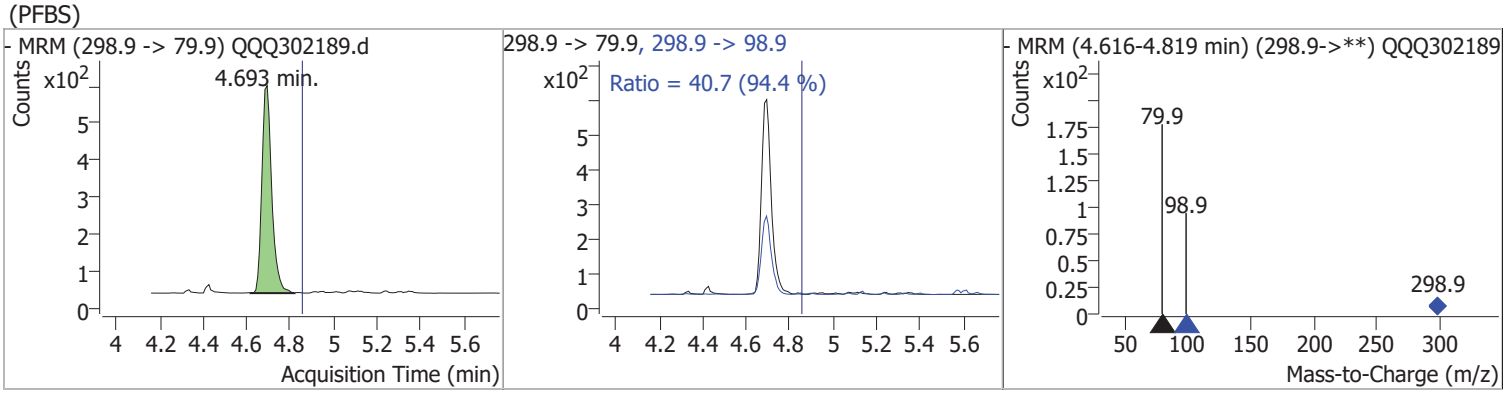
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-n-pentanoic acid (PFPeA)	0.9434	4.07	-0.51	3260				



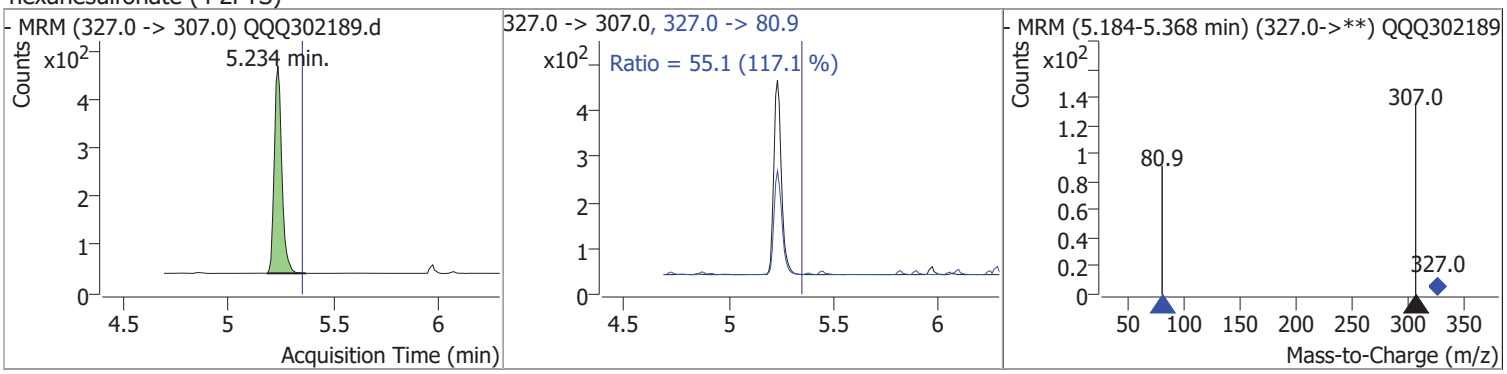
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M3PFBS	0.8445	4.69	-0.47	803	302.0 -> 98.9	40.2	31.5	47.2



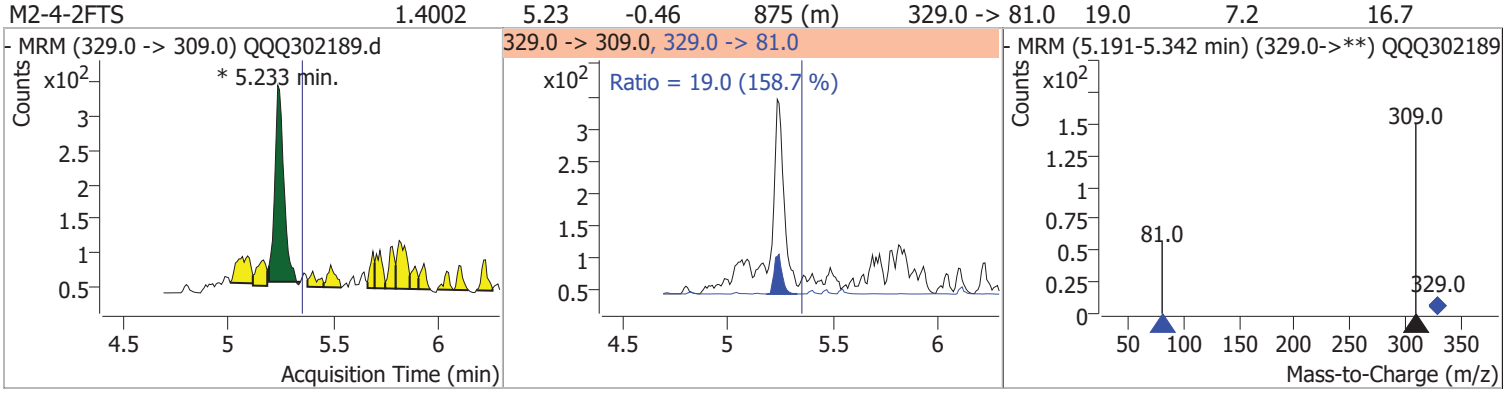
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorobutanesulfonic acid (PFBS)	0.8516	4.69	-0.47	1777	298.9 -> 98.9	40.7	34.5	51.7



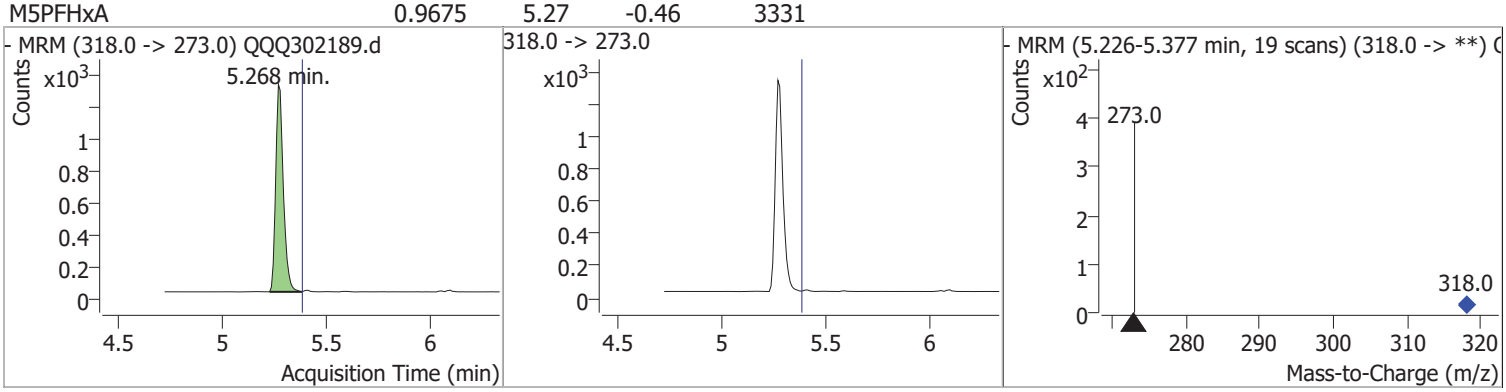
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
1H,1H,2H,2H-perfluoro-1-hexanesulfonate (4 2FTS)	0.9198	5.23	-0.46	1080	327.0 -> 80.9	55.1	28.2	65.9



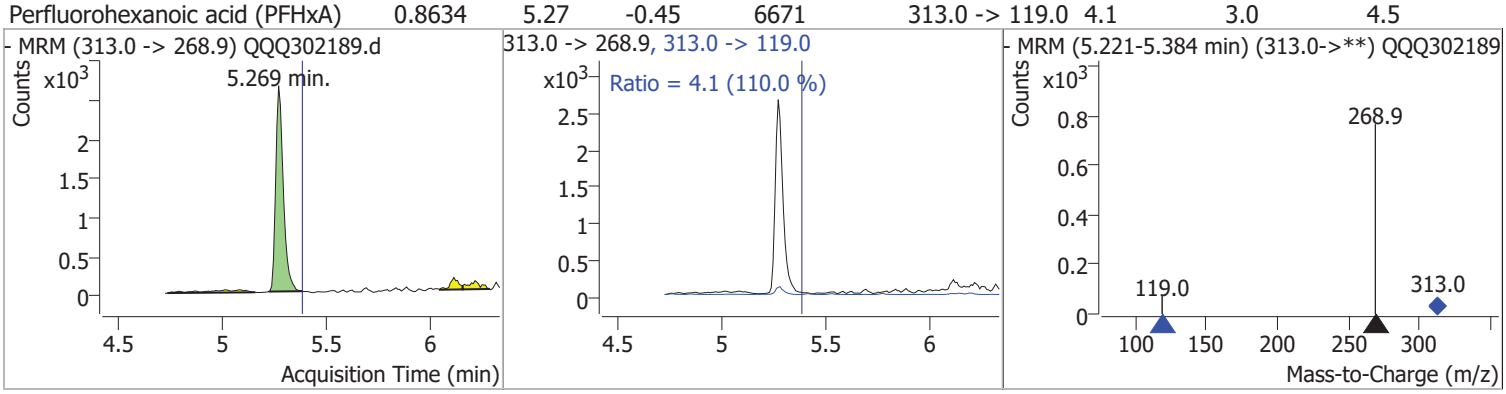
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M2-4-2FTS	1.4002	5.23	-0.46	875 (m)	329.0 -> 81.0	19.0	7.2	16.7



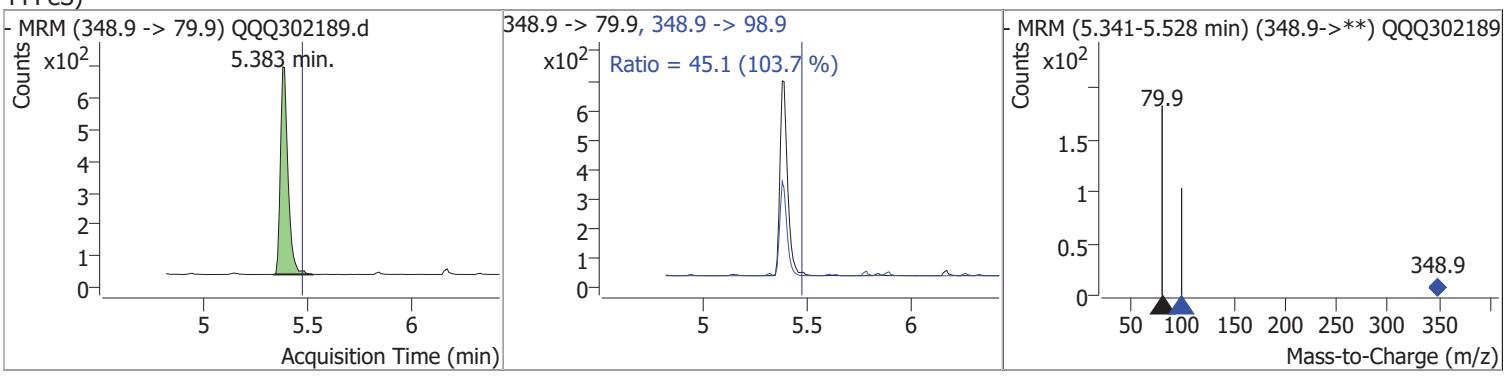
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M5PFHxA	0.9675	5.27	-0.46	3331				



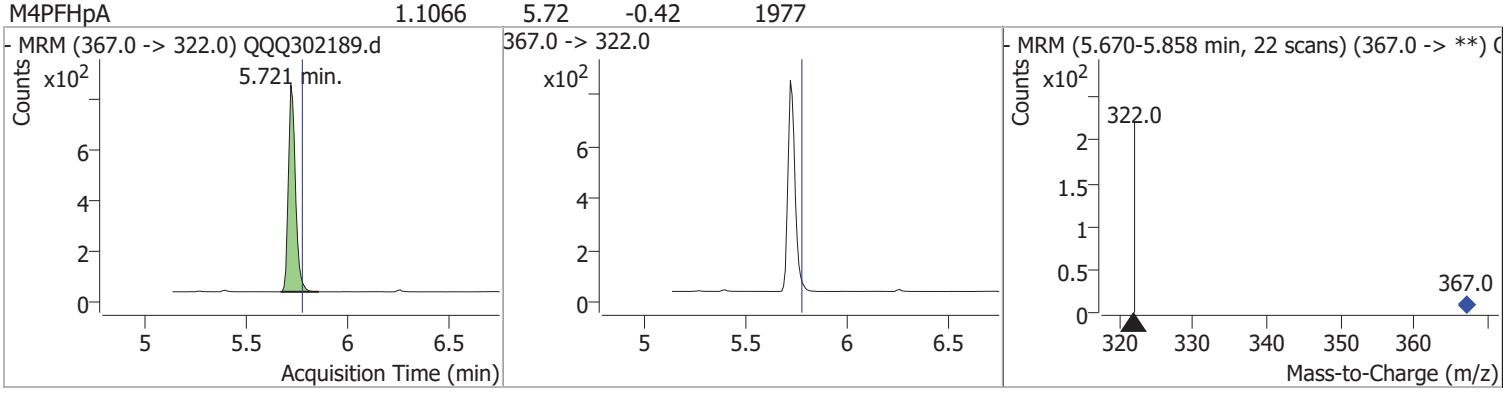
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorohexanoic acid (PFHxA)	0.8634	5.27	-0.45	6671	313.0 -> 119.0	4.1	3.0	4.5



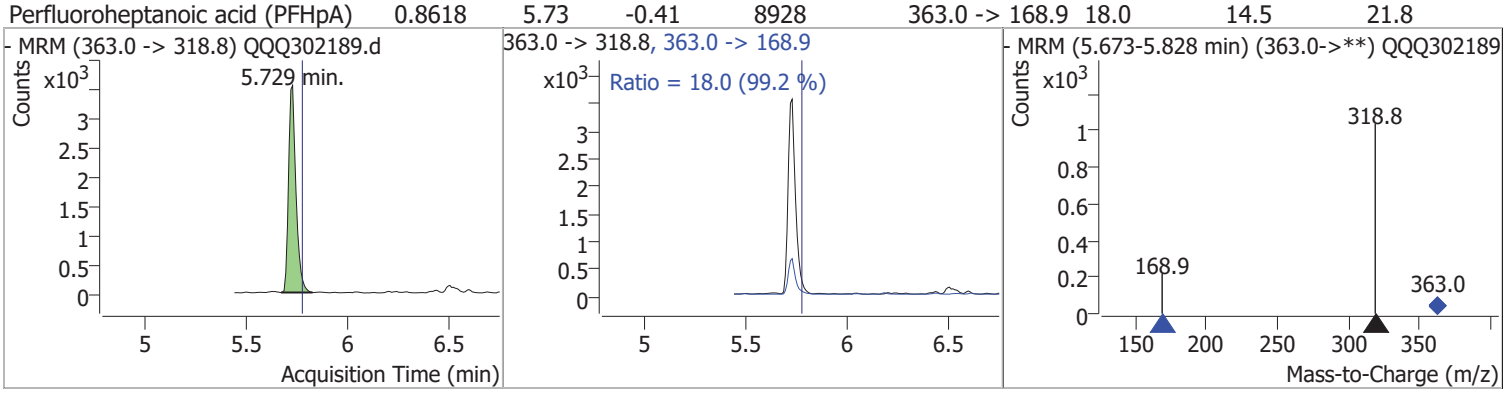
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-1-pentanesulfonate (L-PFPeS)	0.9881	5.38	-0.44	1677	348.9 -> 98.9	45.1	34.8	52.2



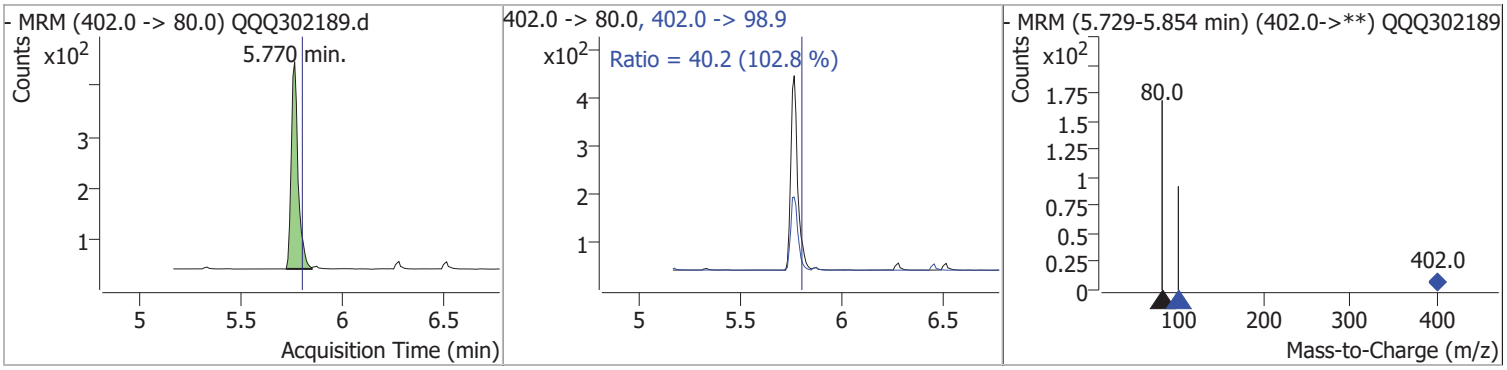
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M4PFHpA	1.1066	5.72	-0.42	1977				



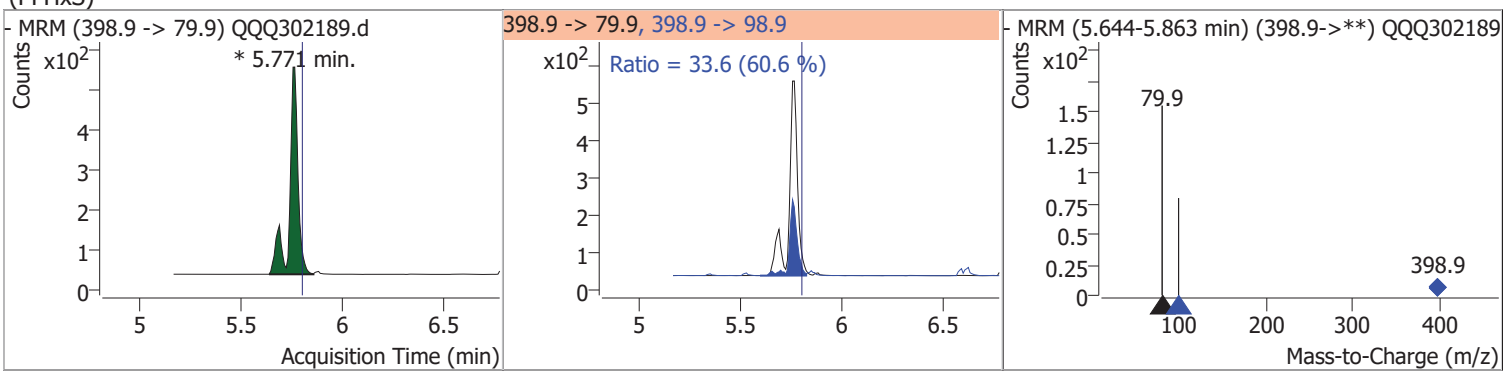
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoroheptanoic acid (PFHpA)	0.8618	5.73	-0.41	8928	363.0 -> 168.9	18.0	14.5	21.8



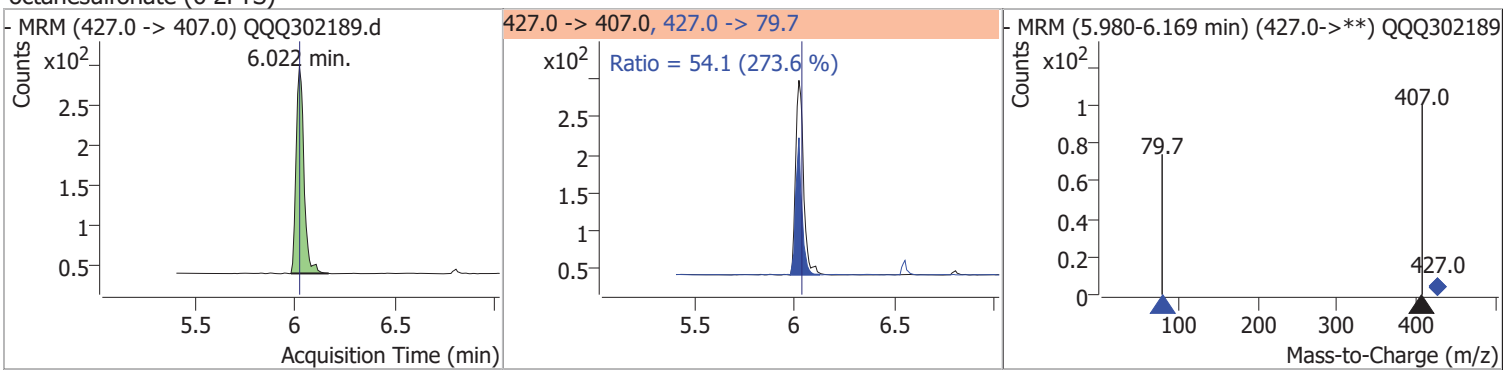
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M3PFHxS	1.2039	5.77	-0.41	954	402.0 -> 98.9	40.2	31.3	47.0



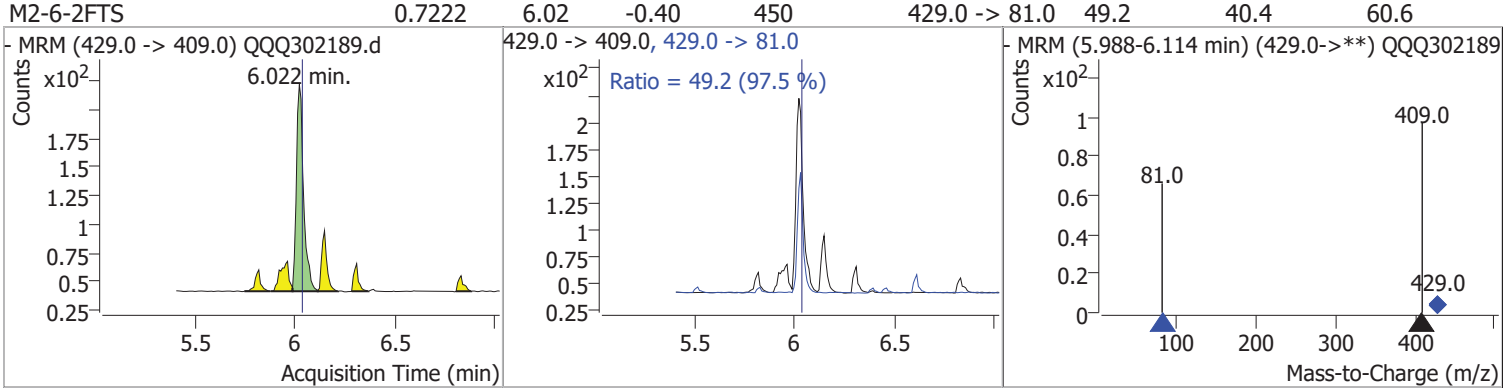
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorohexanesulfonic acid (PFHxS)	0.8983	5.77	-0.41	1550 (m)	398.9 -> 98.9	33.6	44.4	66.5



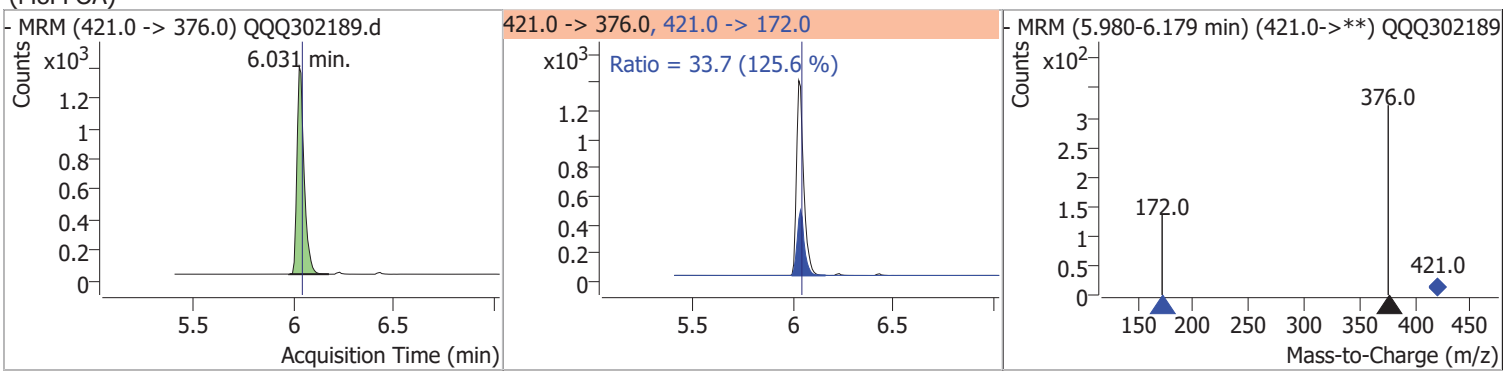
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
1H,1H,2H,2H-perfluoro-1-octanesulfonate (6 2FTS)	0.7228	6.02	-0.40	700	427.0 -> 79.7	54.1	15.8	23.7



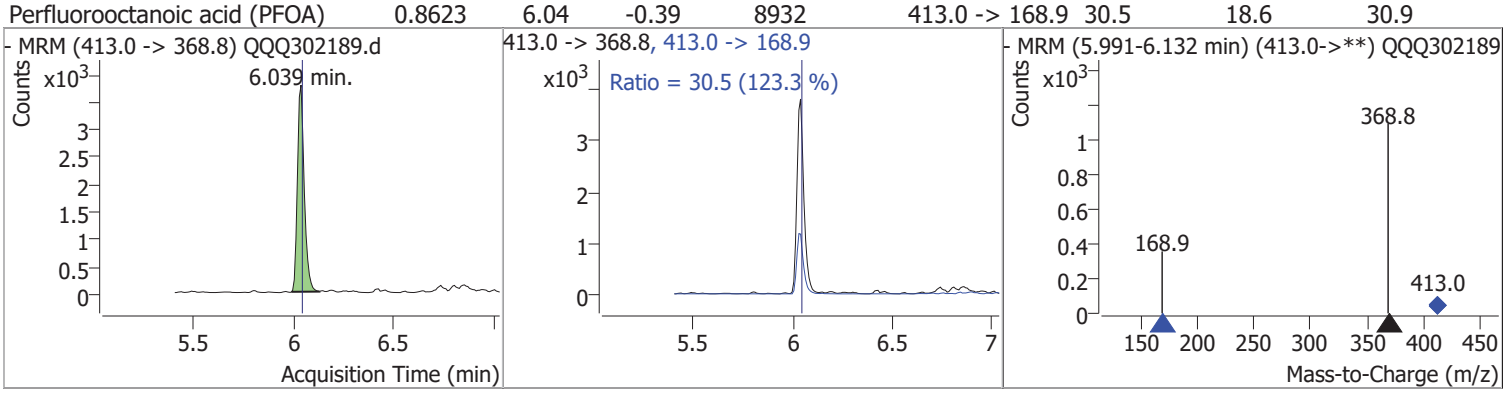
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M2-6-2FTS	0.7222	6.02	-0.40	450	429.0 -> 81.0	49.2	40.4	60.6



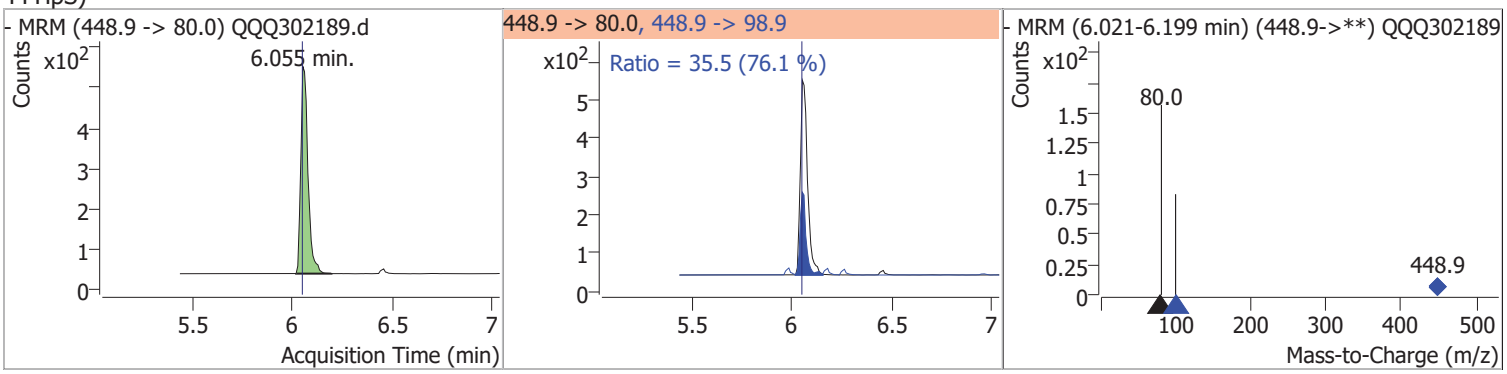
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-n-[13C8]octanoic acid (M8PFOA)	1.1584	6.03	-0.40	3393	421.0 -> 172.0	33.7	21.5	32.2



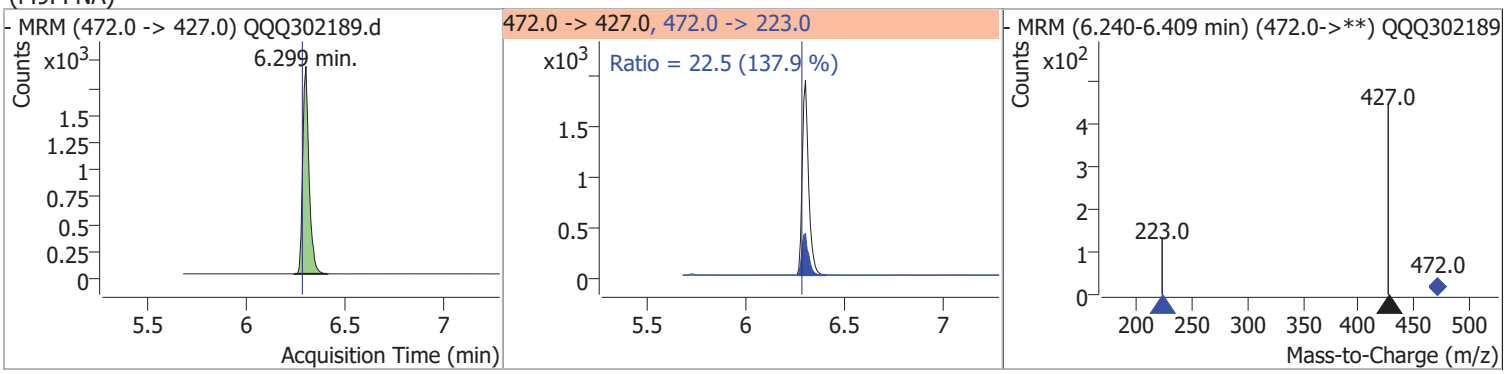
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorooctanoic acid (PFOA)	0.8623	6.04	-0.39	8932	413.0 -> 168.9	30.5	18.6	30.9



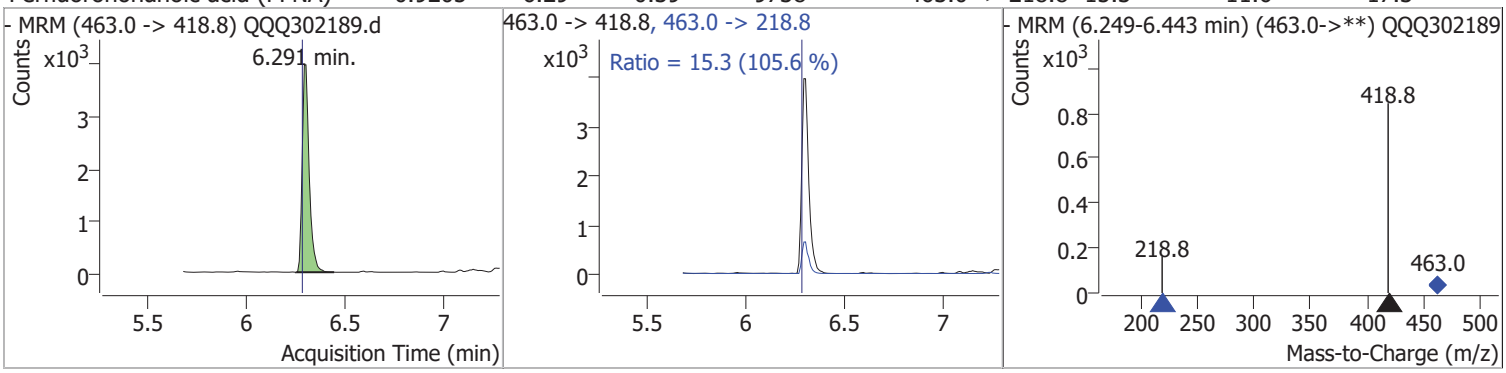
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-1-heptanesulfonate (L-PFHpS)	0.9682	6.06	-0.38	1280	448.9 -> 98.9	35.5	37.3	56.0



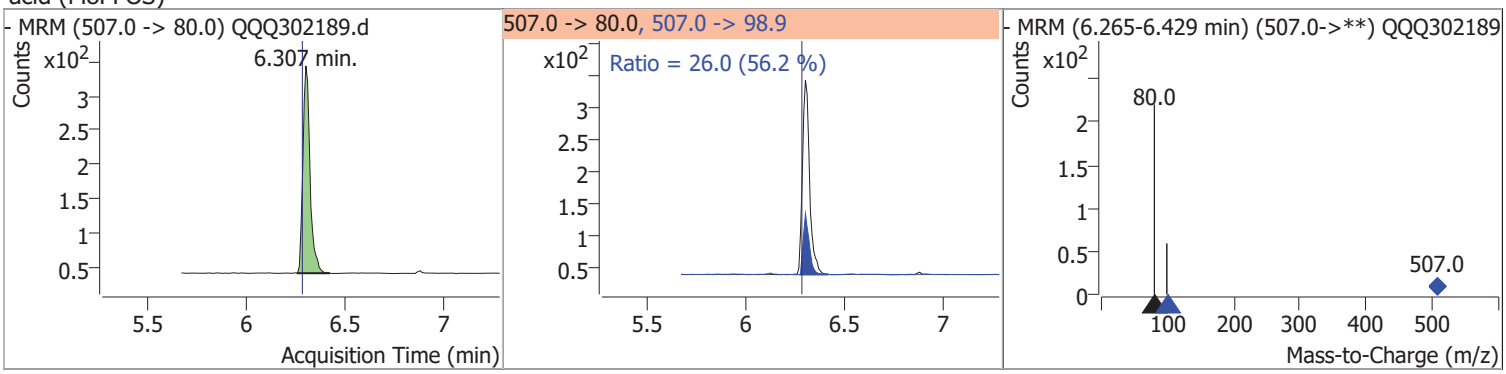
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-n-[13C9]nonanoic acid (M9PFNA)	1.1835	6.30	-0.38	4260	472.0 -> 223.0	22.5	13.1	19.6



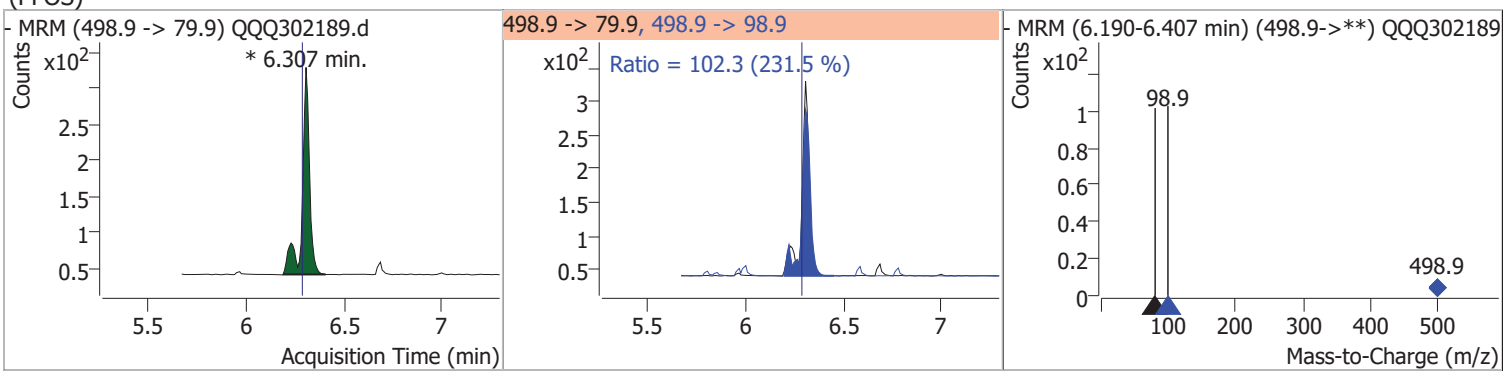
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorononanoic acid (PFNA)	0.9205	6.29	-0.39	9738	463.0 -> 218.8	15.3	11.6	17.3



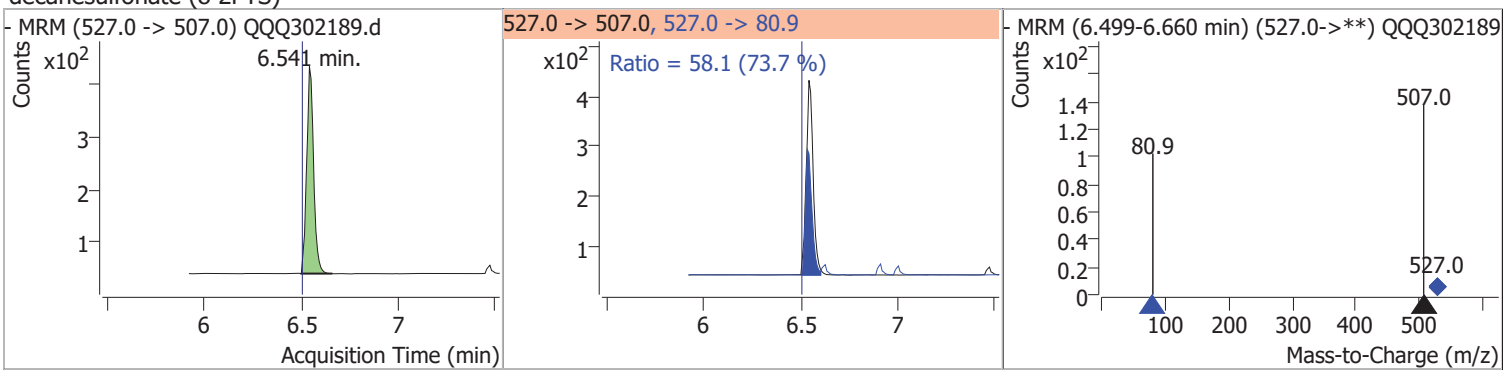
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)	0.9409	6.31	-0.38	762	507.0 -> 98.9	26.0	37.1	55.6



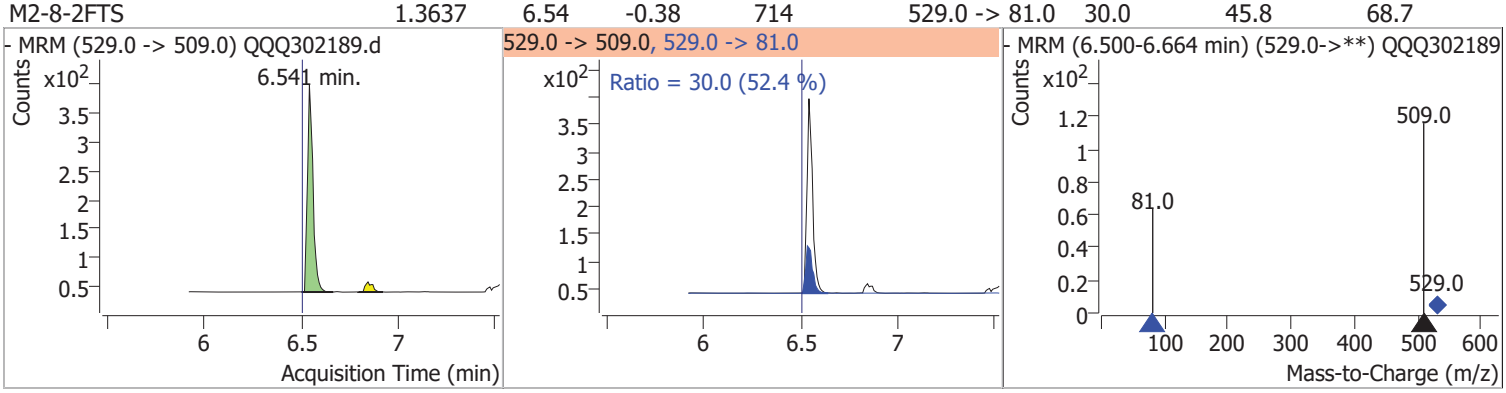
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorooctanesulfonic acid (PFOS)	0.5159	6.31	-0.38	757 (m)	498.9 -> 98.9	102.3	35.4	53.0



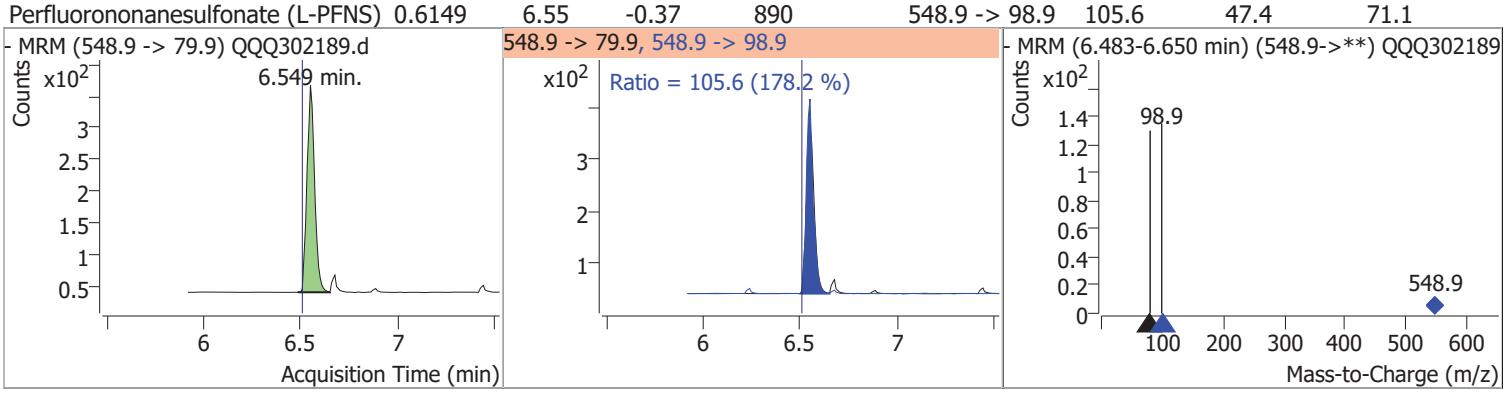
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
1H,1H,2H,2H-perfluoro-1-decanesulfonate (8 2FTS)	0.7244	6.54	-0.38	970	527.0 -> 80.9	58.1	63.1	94.6



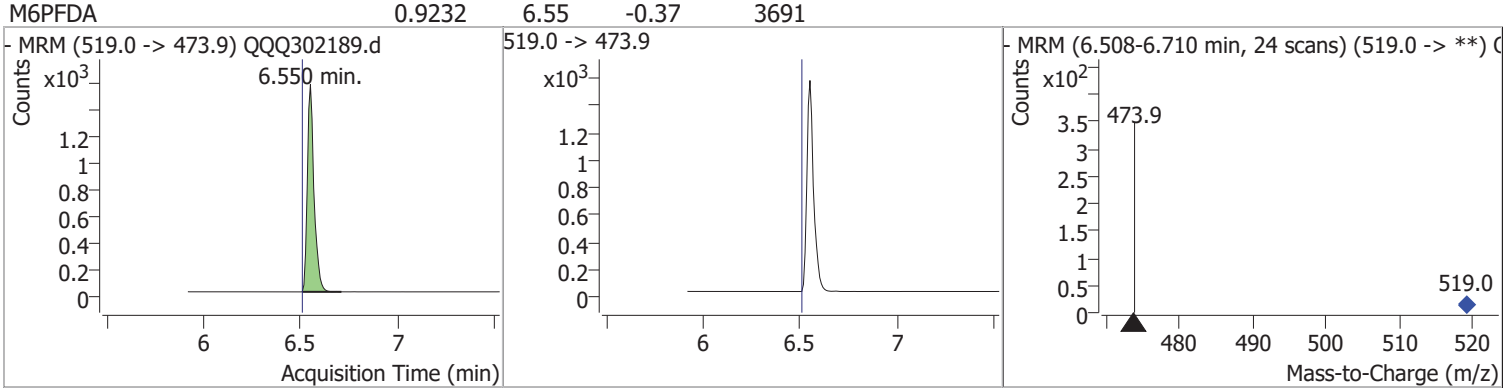
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M2-8-2FTS	1.3637	6.54	-0.38	714	529.0 -> 81.0	30.0	45.8	68.7



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorononanesulfonate (L-PFNS)	0.6149	6.55	-0.37	890	548.9 -> 98.9	105.6	47.4	71.1

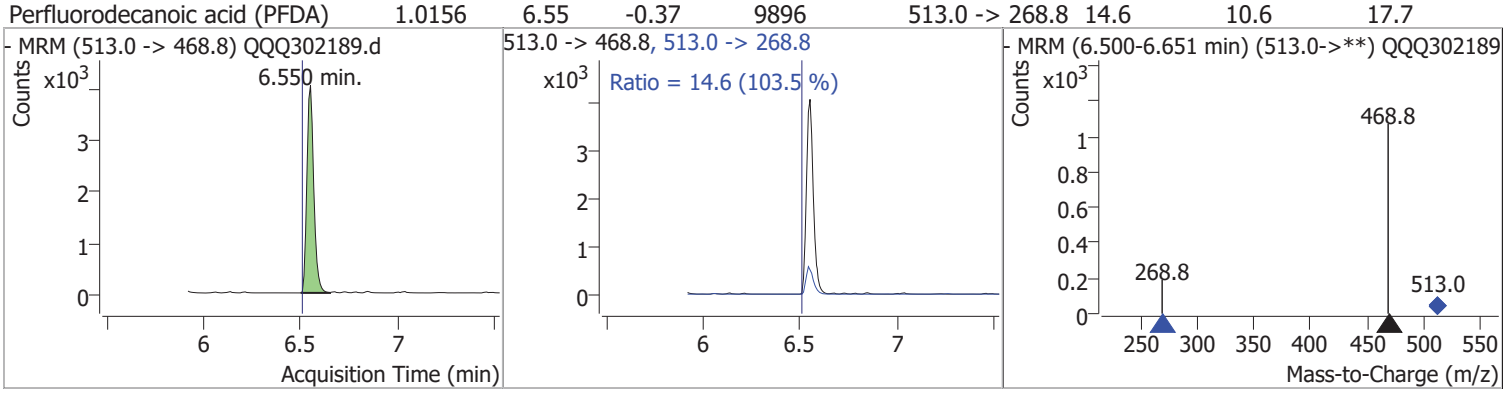


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M6PFDA	0.9232	6.55	-0.37	3691				

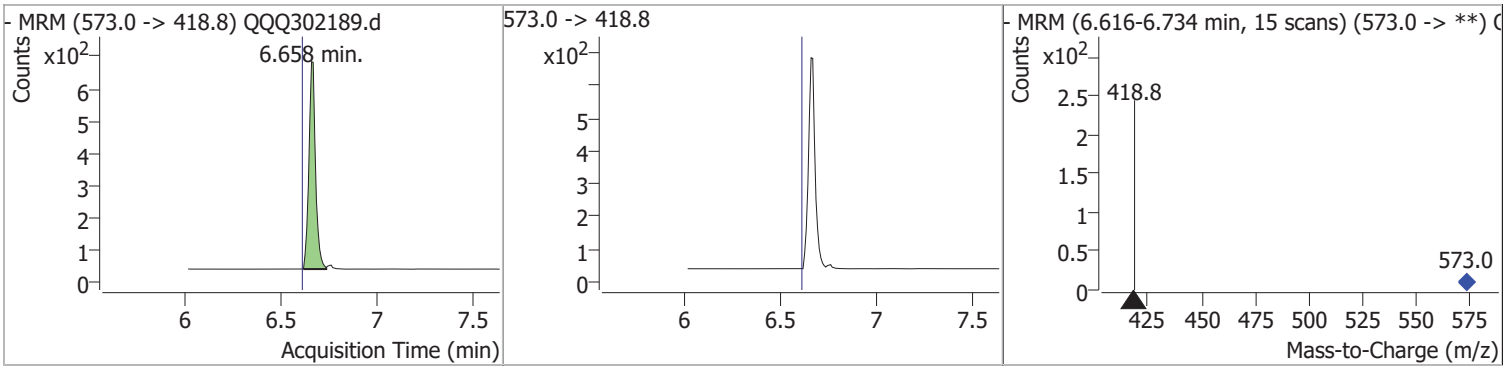


Quantitation Results Report (Not Reviewed)

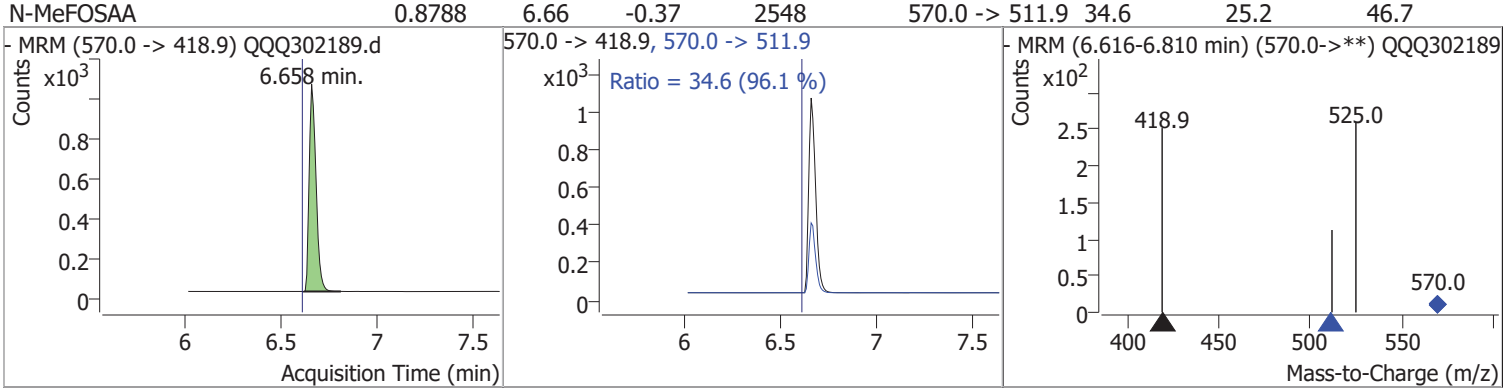
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorodecanoic acid (PFDA)	1.0156	6.55	-0.37	9896	513.0 -> 268.8	14.6	10.6	17.7



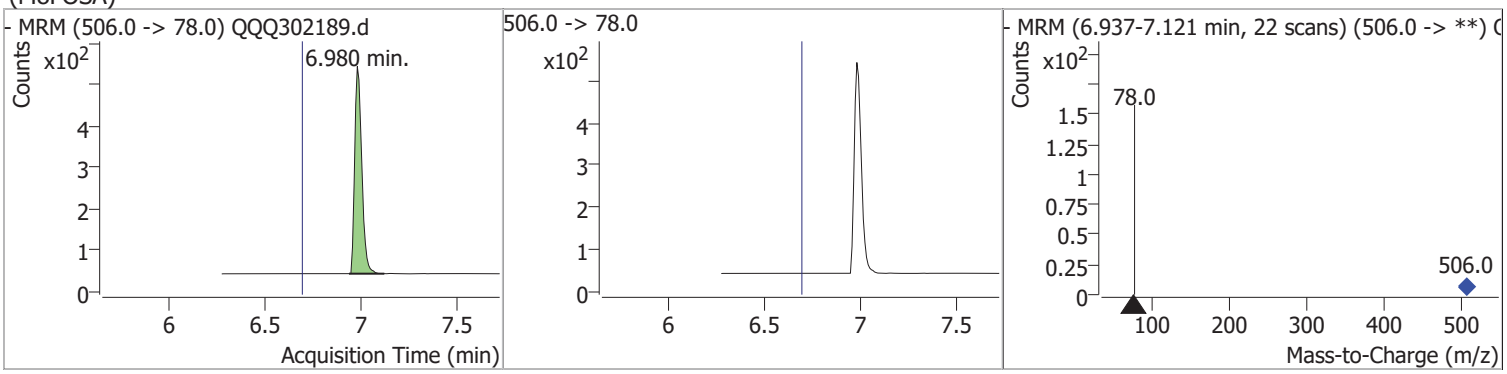
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
d3-N-MeFOSAA	1.0886	6.66	-0.37	1533				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
N-MeFOSAA	0.8788	6.66	-0.37	2548	570.0 -> 511.9	34.6	25.2	46.7

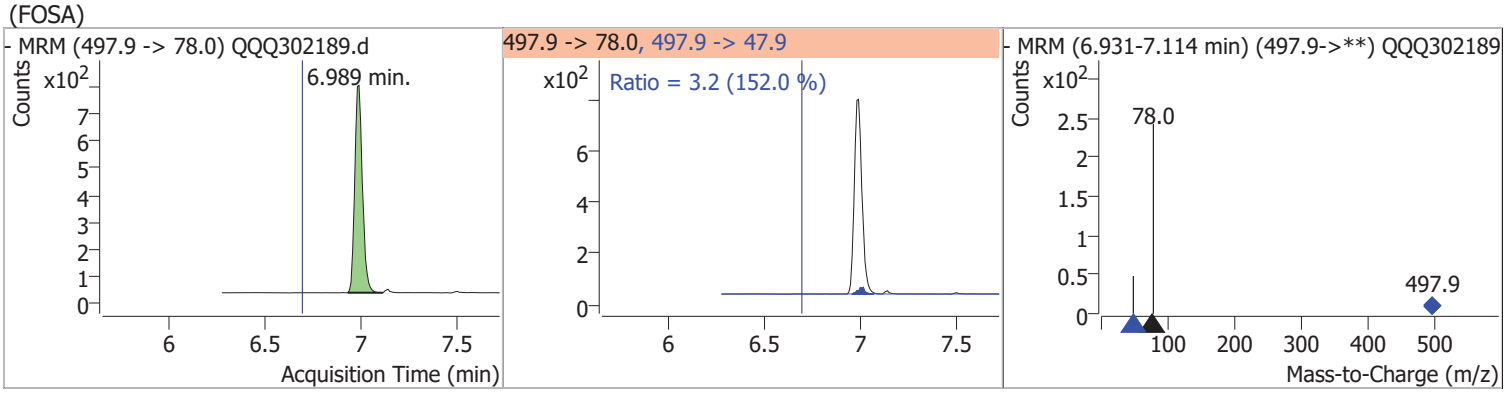


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-1-[13C8]octanesulfonamide (M8FOSA)	0.7179	6.98	-0.14	1291				

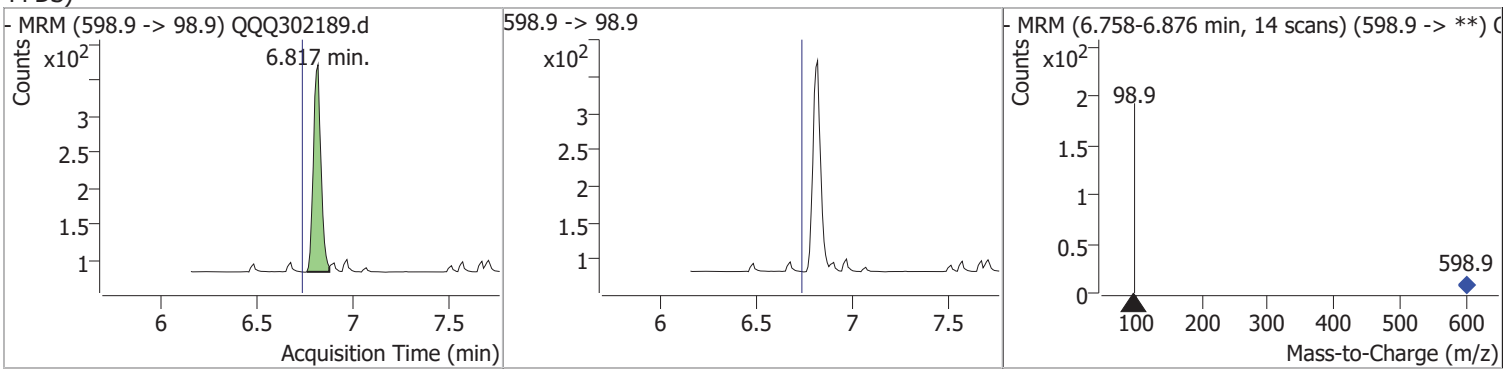


Quantitation Results Report (Not Reviewed)

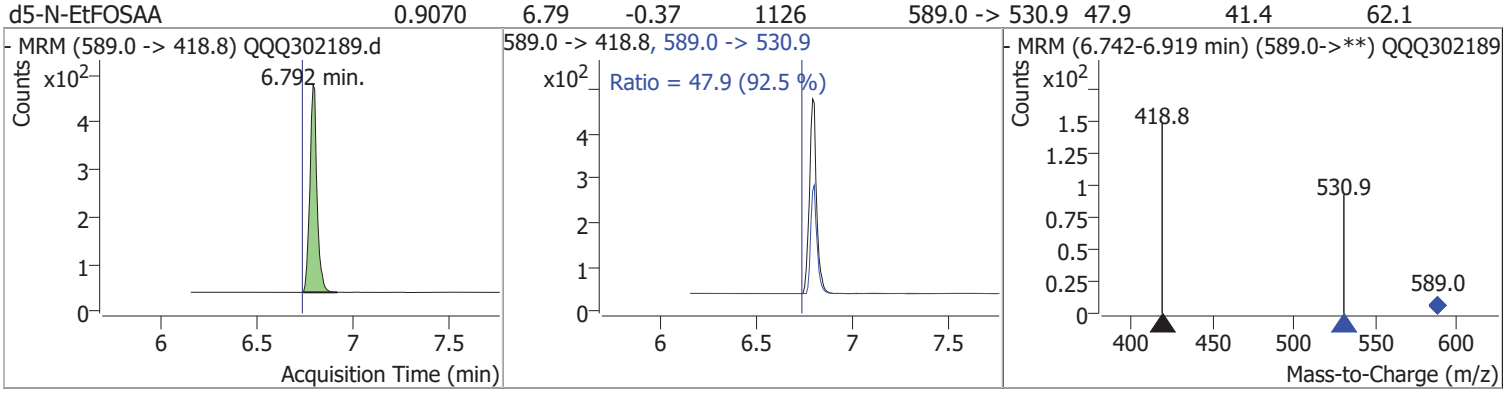
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-1-octanesulfonamide (FOSA)	0.8674	6.99	-0.13	2127	497.9 -> 47.9	3.2	1.7	2.5



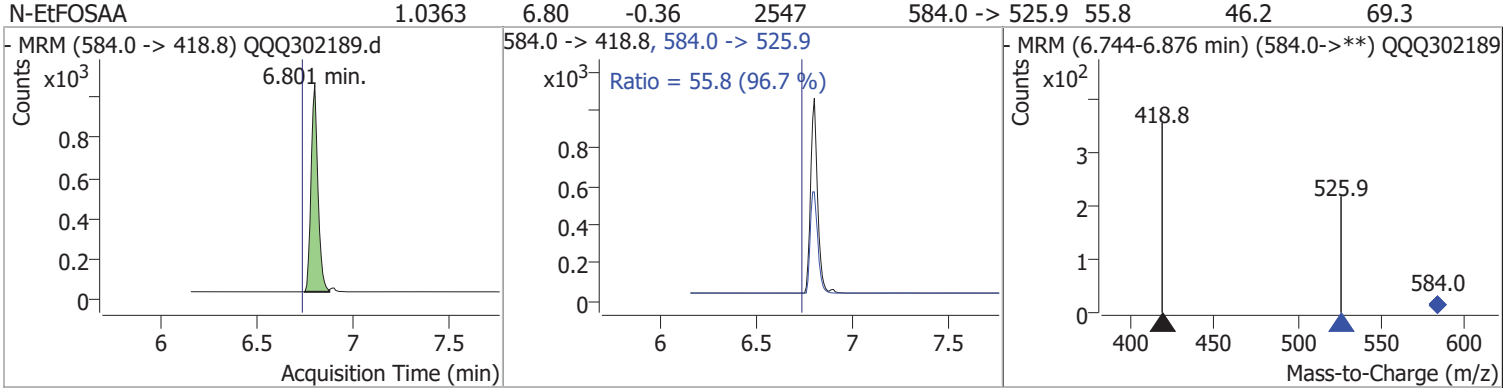
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-1-decanesulfonate (L-PFDS)	0.4971	6.82	-0.35	799				



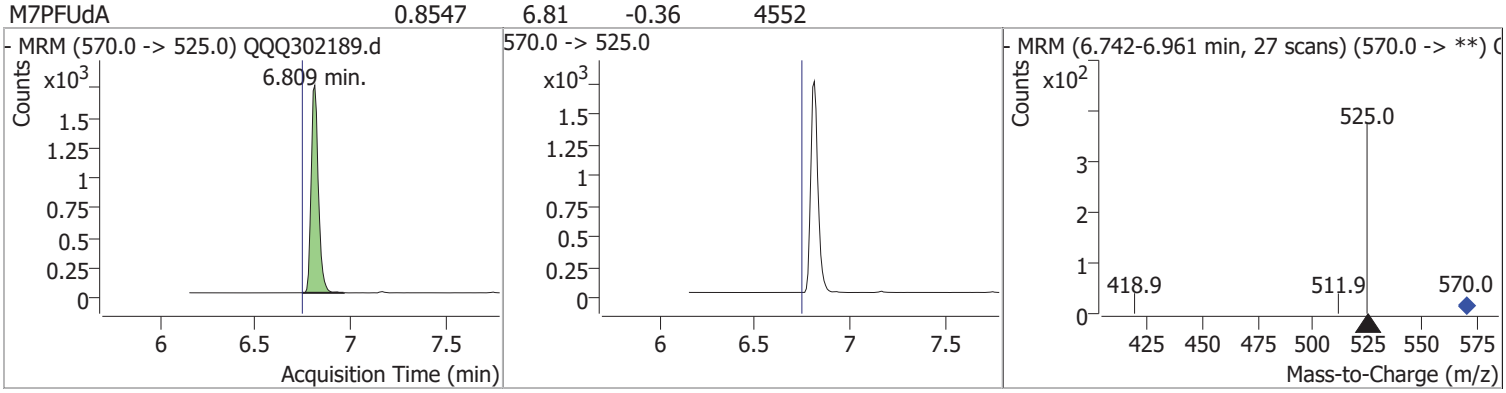
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
d5-N-EtFOSAA	0.9070	6.79	-0.37	1126	589.0 -> 530.9	47.9	41.4	62.1



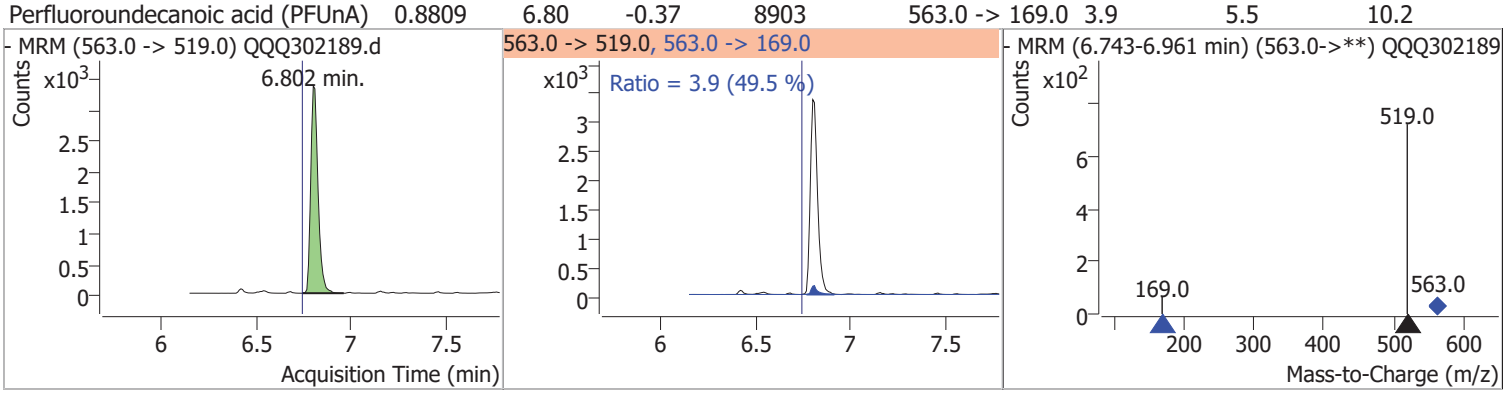
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
N-EtFOSAA	1.0363	6.80	-0.36	2547	584.0 -> 525.9	55.8	46.2	69.3



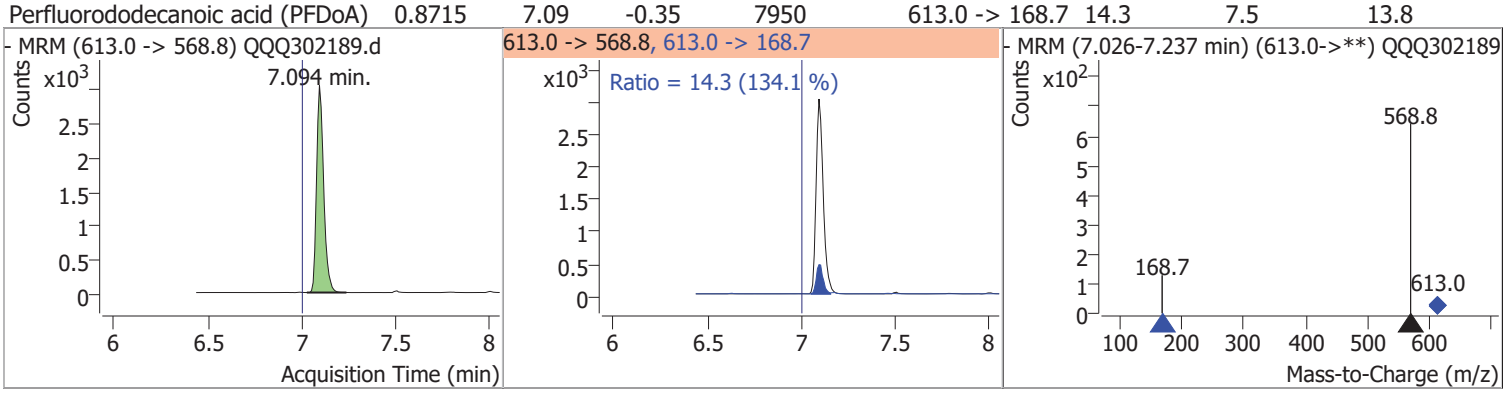
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M7PFUdA	0.8547	6.81	-0.36	4552				



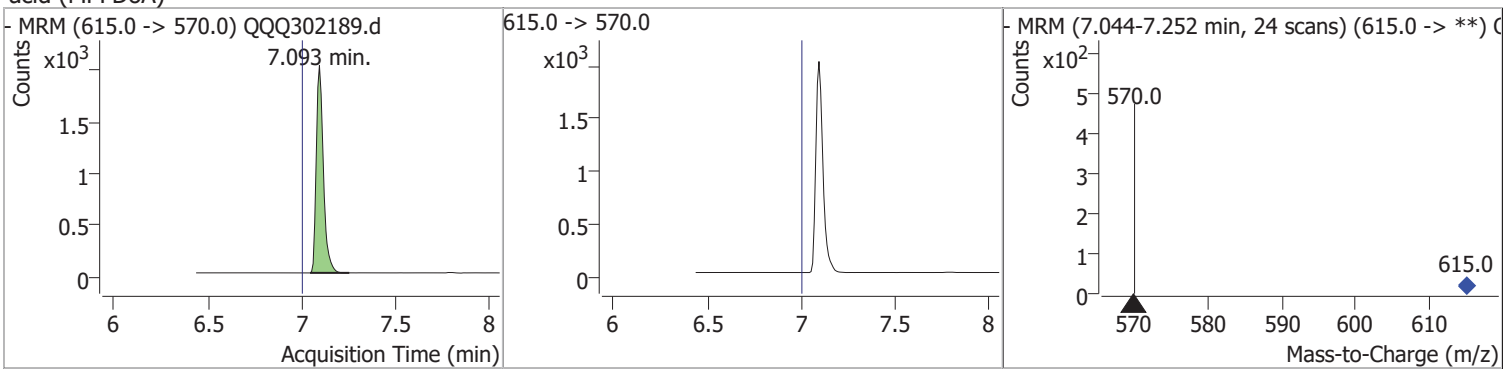
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoroundecanoic acid (PFUnA)	0.8809	6.80	-0.37	8903	563.0 -> 169.0	3.9	5.5	10.2



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorododecanoic acid (PFDoA)	0.8715	7.09	-0.35	7950	613.0 -> 168.7	14.3	7.5	13.8

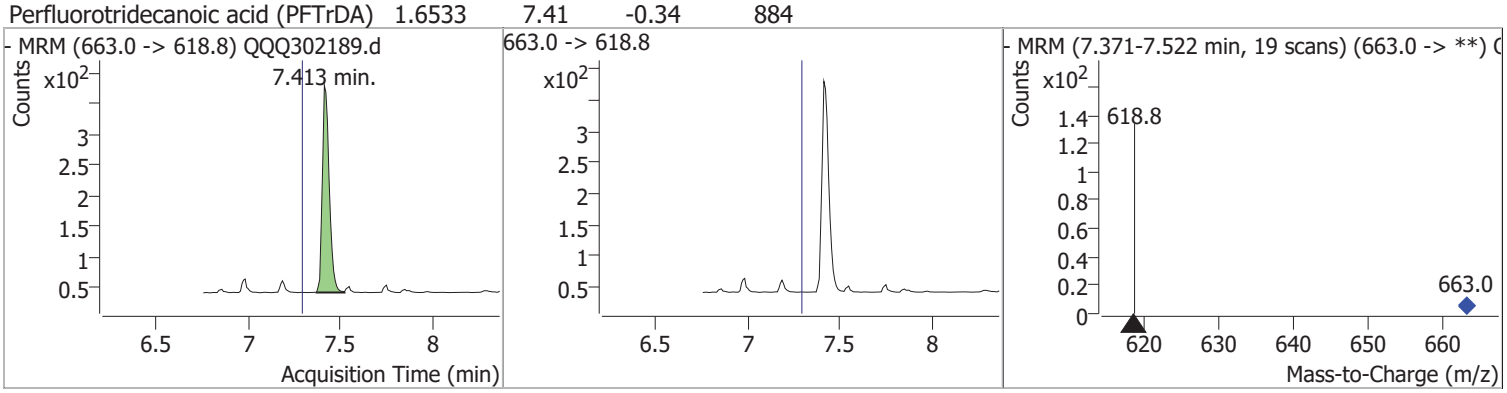


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-n-[1,2-13C2]dodecanoic acid (MPFDoA)	0.8749	7.09	-0.35	5275				

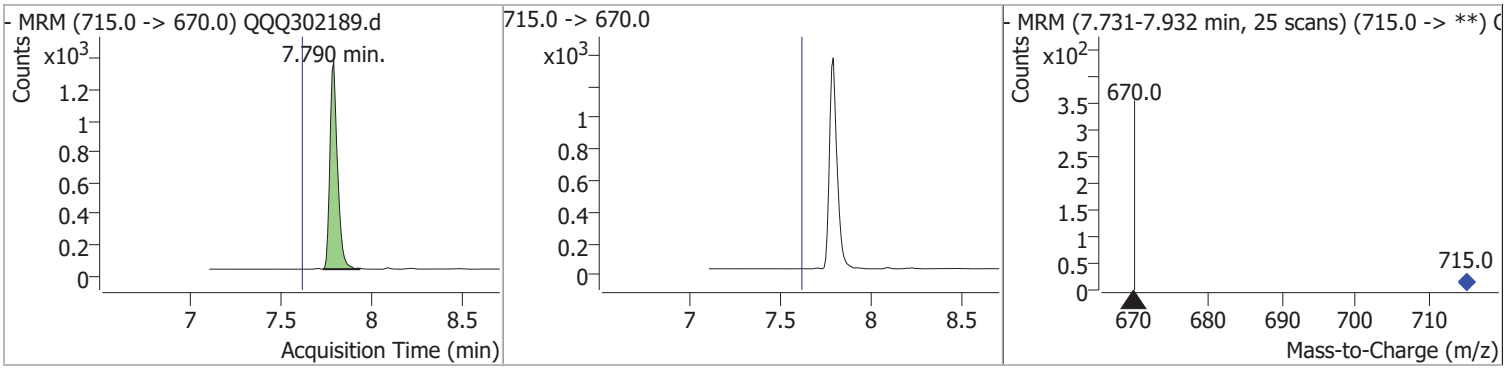


Quantitation Results Report (Not Reviewed)

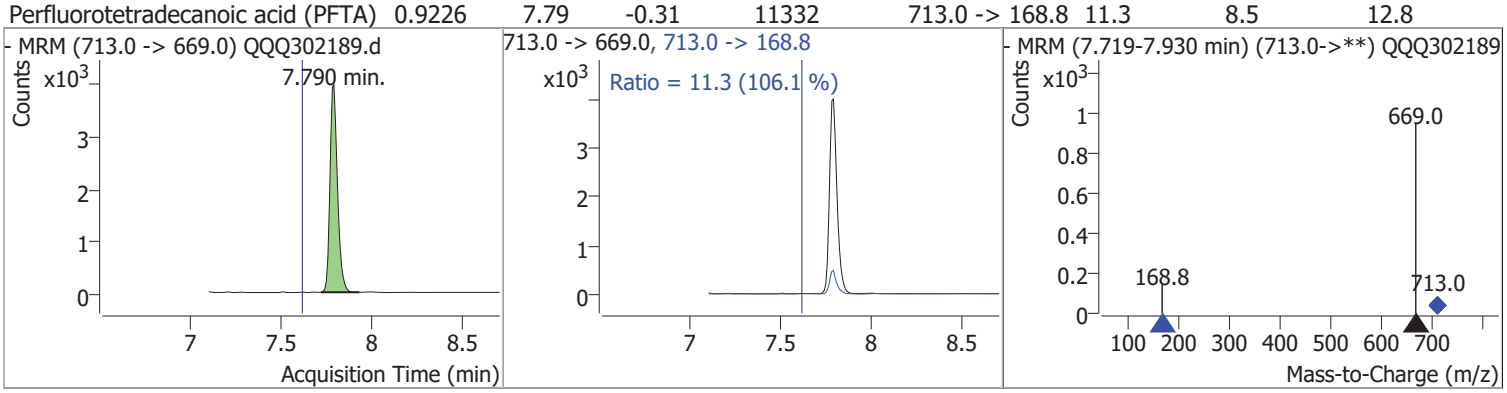
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorotridecanoic acid (PFTrDA)	1.6533	7.41	-0.34	884				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M2PFTeDA	0.7830	7.79	-0.31	3925				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorotetradecanoic acid (PFTA)	0.9226	7.79	-0.31	11332	713.0 -> 168.8	11.3	8.5	12.8



Quantitation Results Report (Not Reviewed)

Agilent | Trusted Answers

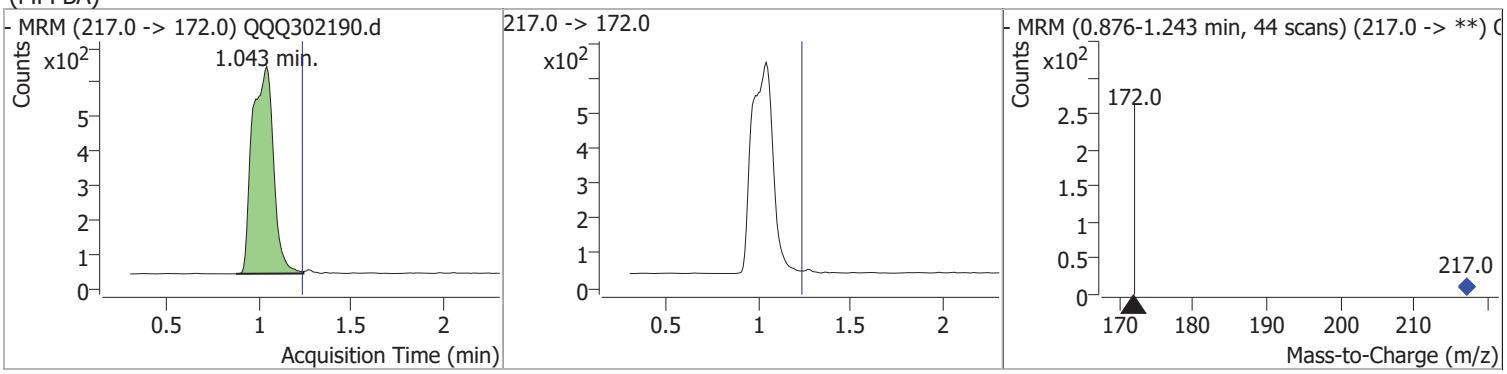
Data File	QQQ302190.d	Operator	
Acq. Method	PFAS 24_IDA ACQ_QQQ3A.m	Acq. Date-Time	6/27/2022 6:57:19 PM
Sample Name	SEQ-CAL4	Instrument	QQQ3
Vial		Multiplier	1.00
DA Method File	PFAS_24_IDA_QUANT_QQQ3_062722.m	Comment	2.5
Tune File		Tune Date	
Batch Name	2022-06-27-IDA-ICAL2.batch.bin	Last Calib Update	6/27/2022 4:24:30 PM
Ref Library			

Compound	RT	QIon	Resp.	Conc.	Units		Dev(Min)
Internal Standards							
MPFOA	6.039	417.0 -> 372.0	122282	10.0000	ng/ml		-0.391
System Monitoring Compounds							
Perfluoro-n-[13C4]butanoic acid (MPFBA)	1.043	217.0 -> 172.0	4846	2.2842	ng/ml		-0.267
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 22.84%		*	
Perfluoro-n-[13C54]pentanoic acid (M5PFPeA)	4.070	268.0 -> 223.0	4267	2.4110	ng/ml		-0.517
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 24.11%		*	
M3PFBS	4.680	302.0 -> 79.9	1905	2.0256	ng/ml		-0.483
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 20.26%		*	
M2-4-2FTS	5.233	329.0 -> 309.0	1730	2.7834	ng/ml	#	-0.457
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 27.83%			
M5PFHxA	5.276	318.0 -> 273.0	8125	2.3445	ng/ml		-0.448
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 23.45%		*	
M4PFHpA	5.738	367.0 -> 322.0	5270	2.9162	ng/ml		-0.406
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 29.16%			
M3PFHxS	5.779	402.0 -> 80.0	1906	2.4214	ng/ml		-0.398
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 24.21%		*	
M2-6-2FTS	6.022	429.0 -> 409.0	1694	2.8162	ng/ml	#	-0.398
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 28.16%			
Perfluoro-n-[13C8]octanoic acid (M8PFOA)	6.039	421.0 -> 376.0	8447	2.8481	ng/ml		-0.391
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 28.48%			
Perfluoro-n-[13C9]nonanoic acid (M9PFNA)	6.299	472.0 -> 427.0	9390	2.6138	ng/ml		-0.381
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 26.14%			
Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)	6.307	507.0 -> 80.0	2221	2.7537	ng/ml		-0.381
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 27.54%			
M2-8-2FTS	6.541	529.0 -> 509.0	1203	2.3161	ng/ml		-0.377
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 23.16%		*	
M6PFDA	6.550	519.0 -> 473.9	9710	2.4377	ng/ml		-0.372
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 24.38%		*	
d3-N-MeFOSAA	6.658	573.0 -> 418.8	3312	2.3653	ng/ml		-0.372
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 23.65%		*	
Perfluoro-1-[13C8]octanesulfonamide (M8FOSA)	6.989	506.0 -> 78.0	3957	2.1945	ng/ml		-0.131
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 21.95%		*	
d5-N-EtFOSAA	6.792	589.0 -> 418.8	3668	2.9581	ng/ml	#	-0.372
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 29.58%			
M7PFUdA	6.809	570.0 -> 525.0	11991	2.2754	ng/ml		-0.364
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 22.75%		*	
Perfluoro-n-[1,2-13C2]dodecanoic acid (MPFDoA)	7.093	615.0 -> 570.0	14079	2.3382	ng/ml		-0.355
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 23.38%		*	
M2PFTeDA	7.798	715.0 -> 670.0	11217	2.2371	ng/ml		-0.303
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 22.37%		*	
Target Compounds							**QValue**

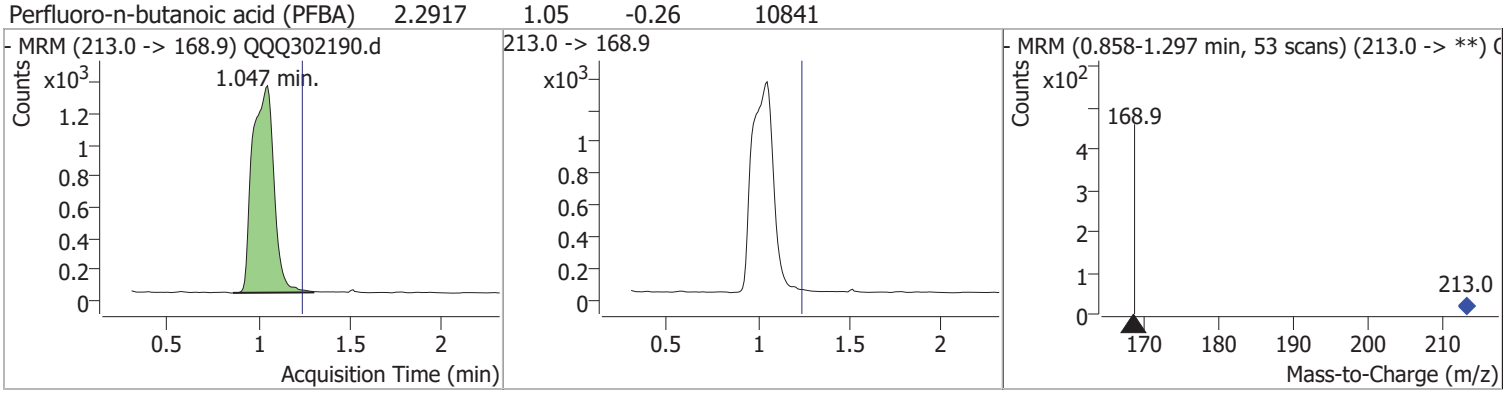
Compound	RT	QIon	Resp.	Conc.	Units		Dev(Min)
Perfluoro-n-butanoic acid (PFBA)	1.047	213.0 -> 168.9	10841	2.2917	ng/ml		100
Perfluoro-n-pentanoic acid (PFPeA)	4.074	263.0 -> 219.0	8455	2.4225	ng/ml		100
Perfluorobutanesulfonic acid (PFBS)	4.683	298.9 -> 79.9	4798	2.3039	ng/ml		92
1H,1H,2H,2H-perfluoro-1-hexanesulfonate (4 2FTS)	5.234	327.0 -> 307.0	3049	2.5842	ng/ml		100
Perfluorohexanoic acid (PFHxA)	5.278	313.0 -> 268.9	18897	2.4372	ng/ml		99
Perfluoro-1-pentanesulfonate (L-PFPeS)	5.392	348.9 -> 79.9	4156	2.4372	ng/ml		94
Perfluoroheptanoic acid (PFHpA)	5.738	363.0 -> 318.8	22602	2.1858	ng/ml	#	91
Perfluorohexanesulfonic acid (PFHxS)	5.779	398.9 -> 79.9	3371	1.9603	ng/ml	m	94
1H,1H,2H,2H-perfluoro-1-octanesulfonate (6 2FTS)	6.030	427.0 -> 407.0	2295	2.3616	ng/ml	#	85
Perfluorooctanoic acid (PFOA)	6.048	413.0 -> 368.8	25376	2.4407	ng/ml		97
Perfluoro-1-heptanesulfonate (L-PFHpS)	6.063	448.9 -> 80.0	3556	2.6761	ng/ml	#	70
Perfluorononanoic acid (PFNA)	6.300	463.0 -> 418.8	26018	2.4612	ng/ml		99
Perfluorooctanesulfonic acid (PFOS)	6.307	498.9 -> 79.9	3685	2.5028	ng/ml	m	98
1H,1H,2H,2H-perfluoro-1-decanesulfonate (8 2FTS)	6.541	527.0 -> 507.0	2875	2.1994	ng/ml		83
Perfluorononanesulfonate (L-PFNS)	6.549	548.9 -> 79.9	3673	2.5610	ng/ml		90
Perfluorodecanoic acid (PFDA)	6.550	513.0 -> 468.8	24490	2.5037	ng/ml		93
N-MeFOSAA	6.658	570.0 -> 418.9	7005	2.4095	ng/ml		97
Perfluoro-1-octanesulfonamide (FOSA)	6.989	497.9 -> 78.0	6476	2.6147	ng/ml	#	98
Perfluoro-1-decanesulfonate (L-PFDS)	6.809	598.9 -> 98.9	3725	2.3418	ng/ml		100
N-EtFOSAA	6.801	584.0 -> 418.8	7230	2.9502	ng/ml		96
Perfluoroundecanoic acid (PFUnA)	6.810	563.0 -> 519.0	24426	2.4254	ng/ml		98
Perfluorododecanoic acid (PFDoA)	7.094	613.0 -> 568.8	23099	2.5043	ng/ml		97
Perfluorotridecanoic acid (PFTrDA)	7.413	663.0 -> 618.8	1493	2.7634	ng/ml		100
Perfluorotetradecanoic acid (PFTA)	7.799	713.0 -> 669.0	33791	2.7028	ng/ml		98

(#) = Qualifier Out of Range; (m) = Manual Integration; (+) = Area Summed; (*) = Surrogate Percent Recovery Out of Range; (d): Zeroed Peak

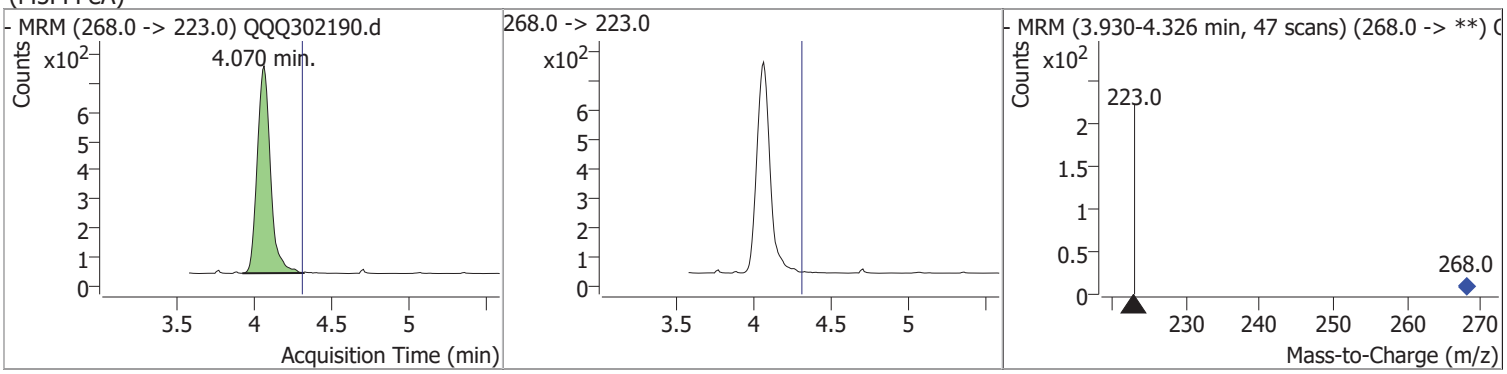
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-n-[13C4]butanoic acid (MPFBA)	2.2842	1.04	-0.27	4846				



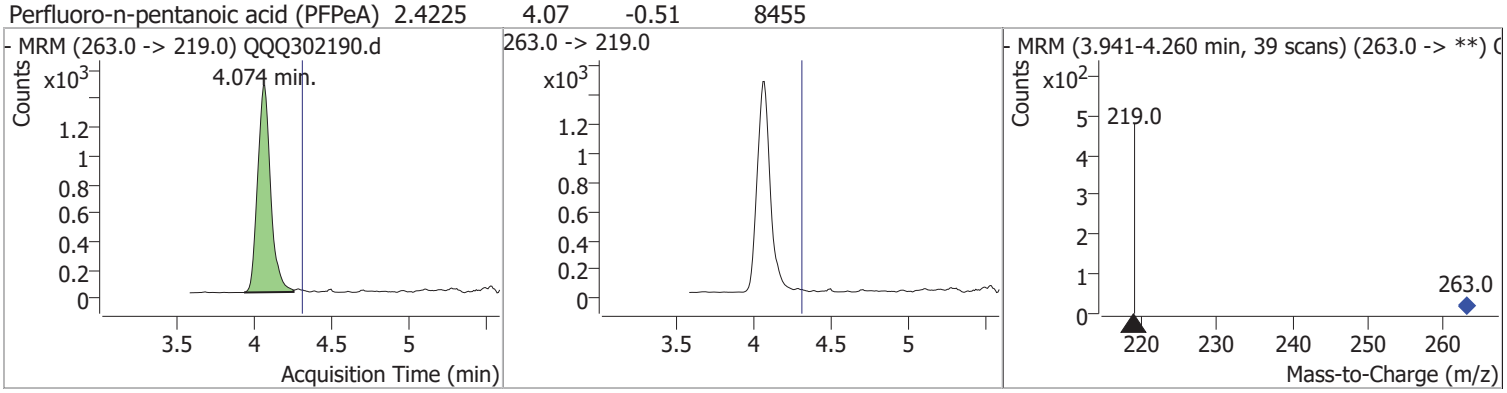
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-n-butanoic acid (PFBA)	2.2917	1.05	-0.26	10841				



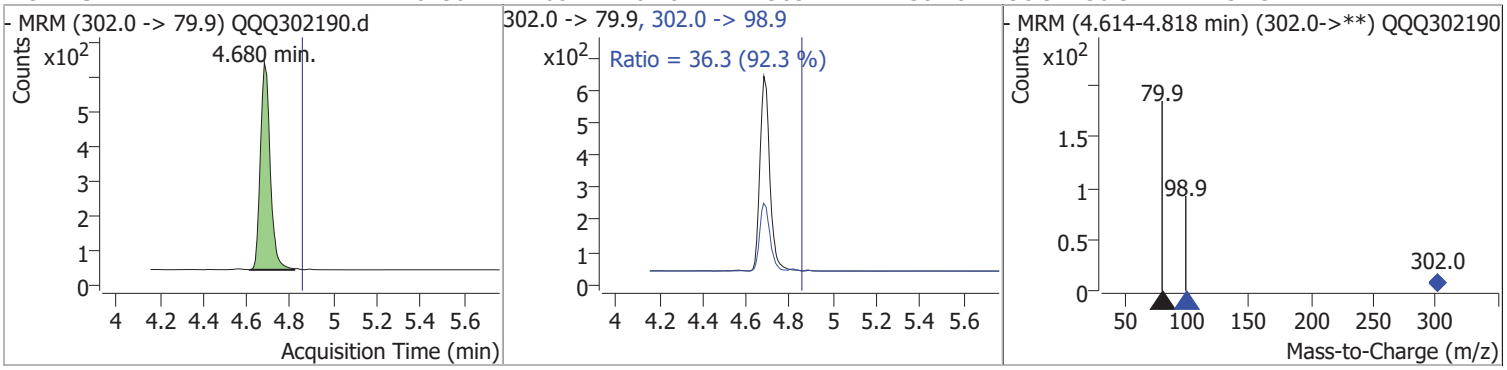
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-n-[13C54]pentanoic acid (M5PFPeA)	2.4110	4.07	-0.52	4267				



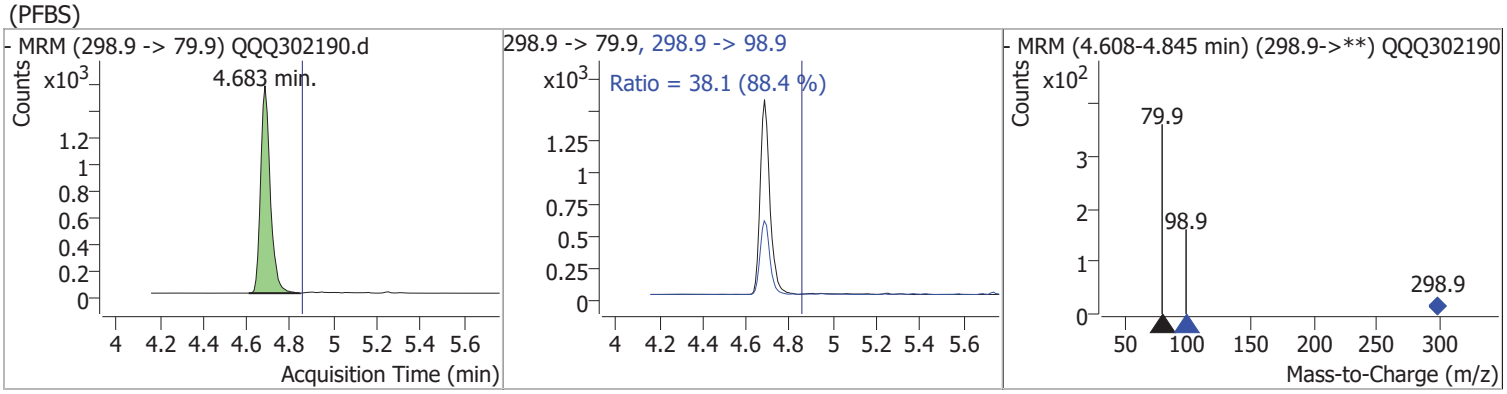
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-n-pentanoic acid (PFPeA)	2.4225	4.07	-0.51	8455				



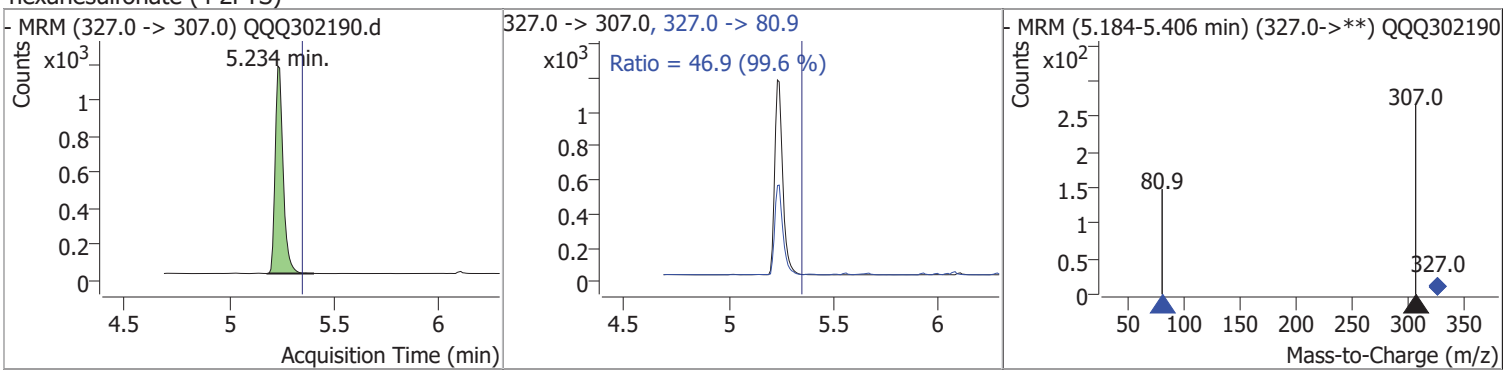
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M3PFBS	2.0256	4.68	-0.48	1905	302.0 -> 98.9	36.3	31.5	47.2



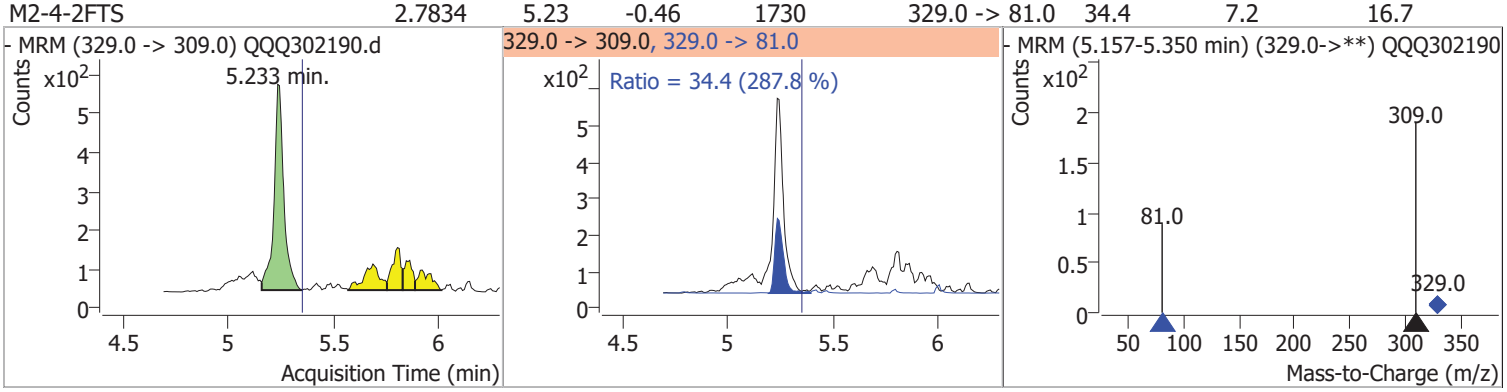
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorobutanesulfonic acid (PFBS)	2.3039	4.68	-0.48	4798	298.9 -> 98.9	38.1	34.5	51.7



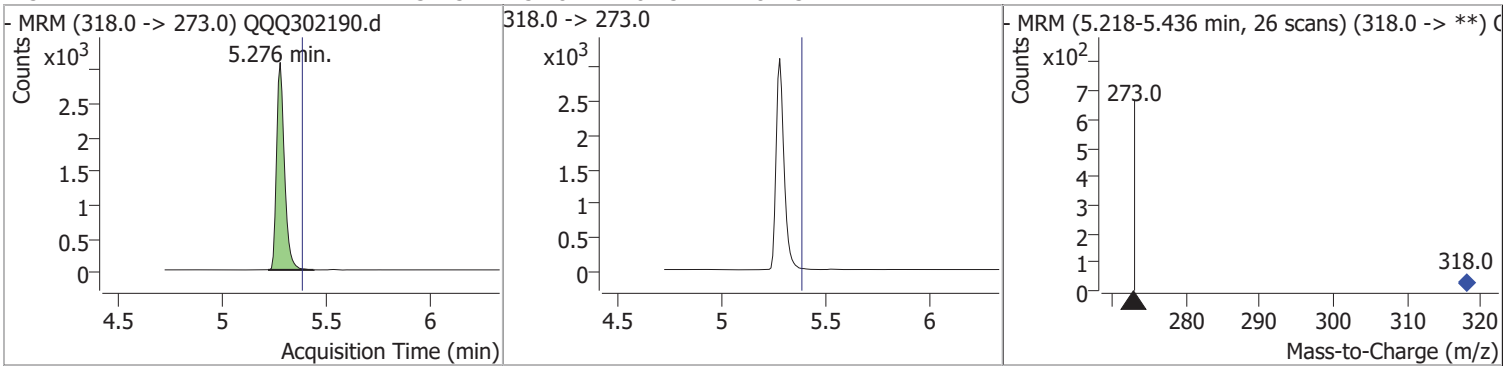
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
1H,1H,2H,2H-perfluoro-1-hexanesulfonate (4 2FTS)	2.5842	5.23	-0.46	3049	327.0 -> 80.9	46.9	28.2	65.9



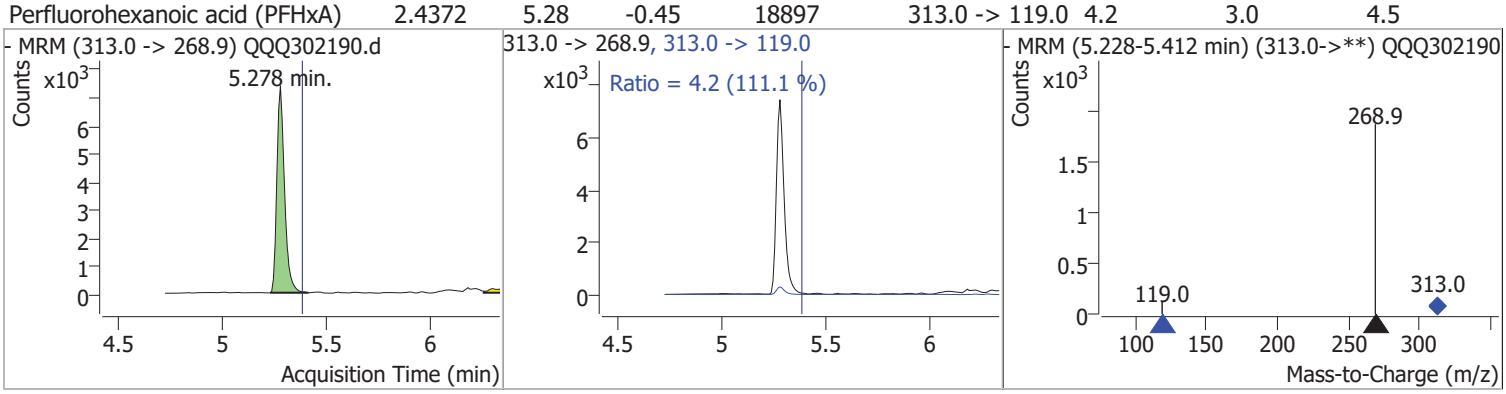
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M2-4-2FTS	2.7834	5.23	-0.46	1730	329.0 -> 81.0	34.4	7.2	16.7



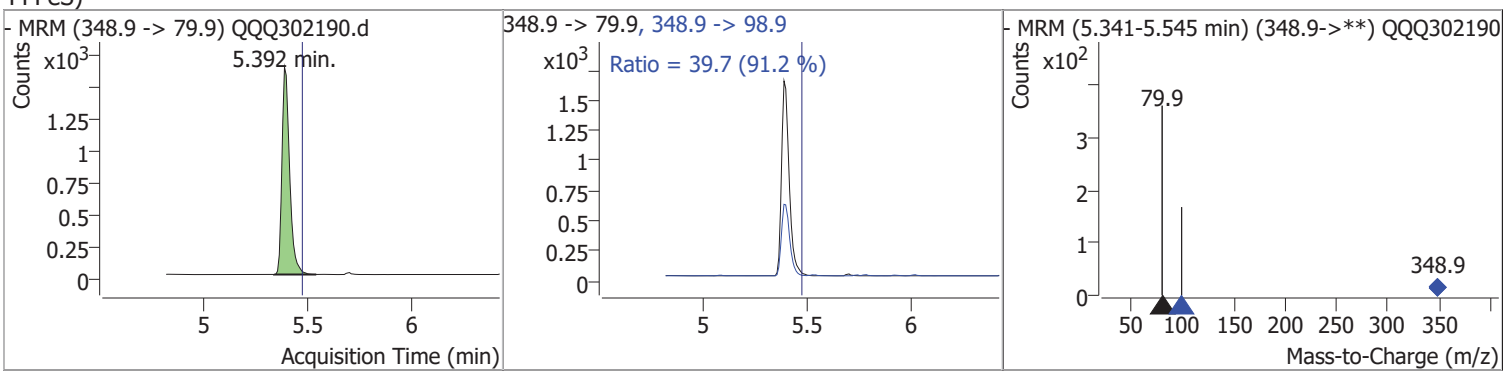
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M5PFHxA	2.3445	5.28	-0.45	8125				



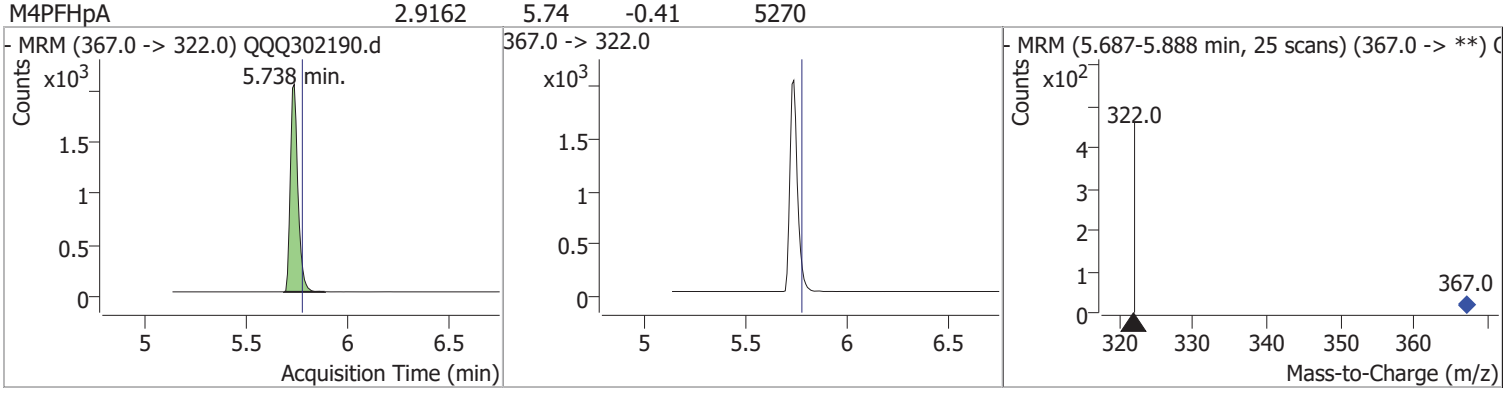
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorohexanoic acid (PFHxA)	2.4372	5.28	-0.45	18897	313.0 -> 119.0	4.2	3.0	4.5



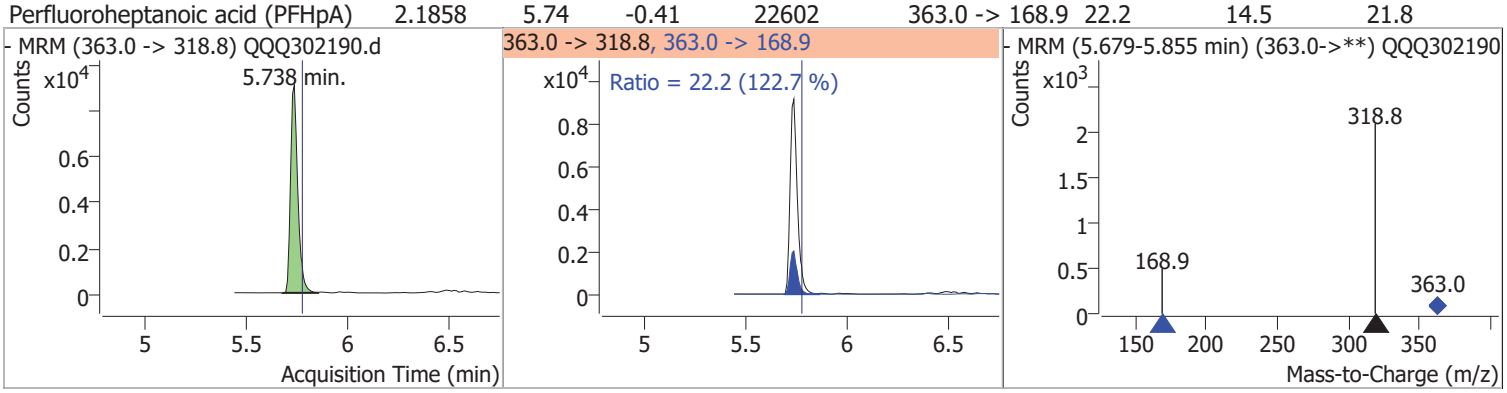
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-1-pentanesulfonate (L-PFPeS)	2.4372	5.39	-0.43	4156	348.9 -> 98.9	39.7	34.8	52.2



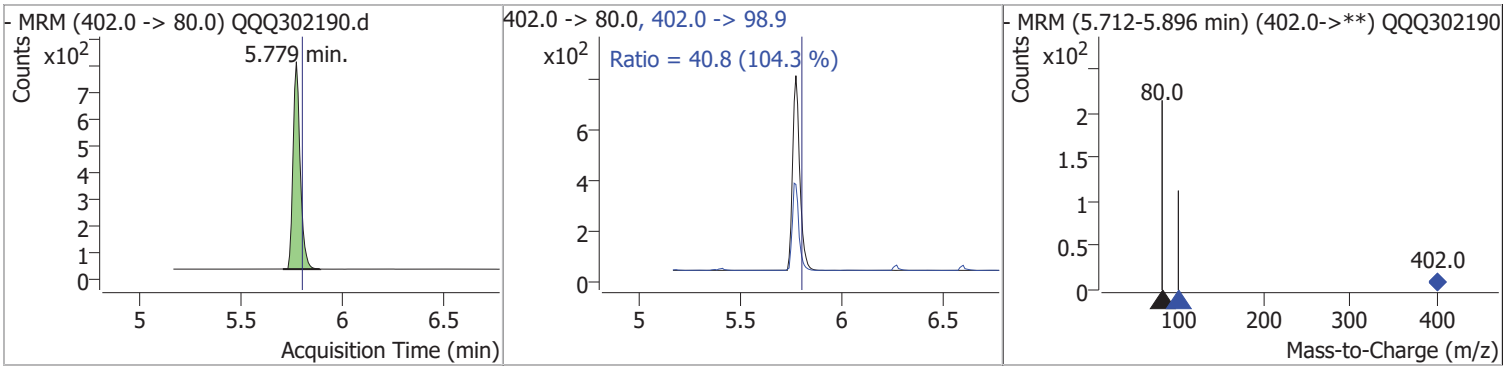
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M4PFHpA	2.9162	5.74	-0.41	5270				



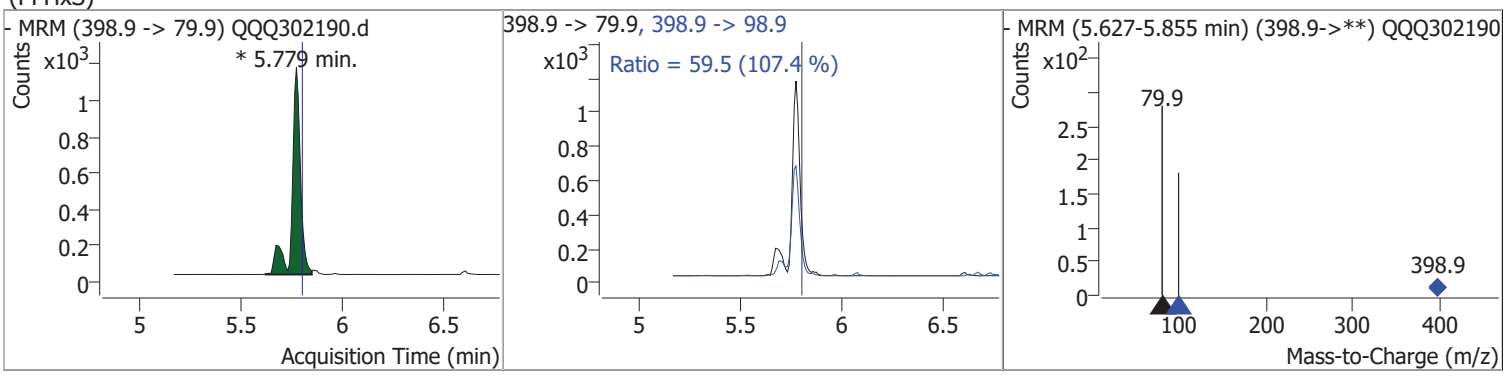
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoroheptanoic acid (PFHpA)	2.1858	5.74	-0.41	22602	363.0 -> 168.9	22.2	14.5	21.8



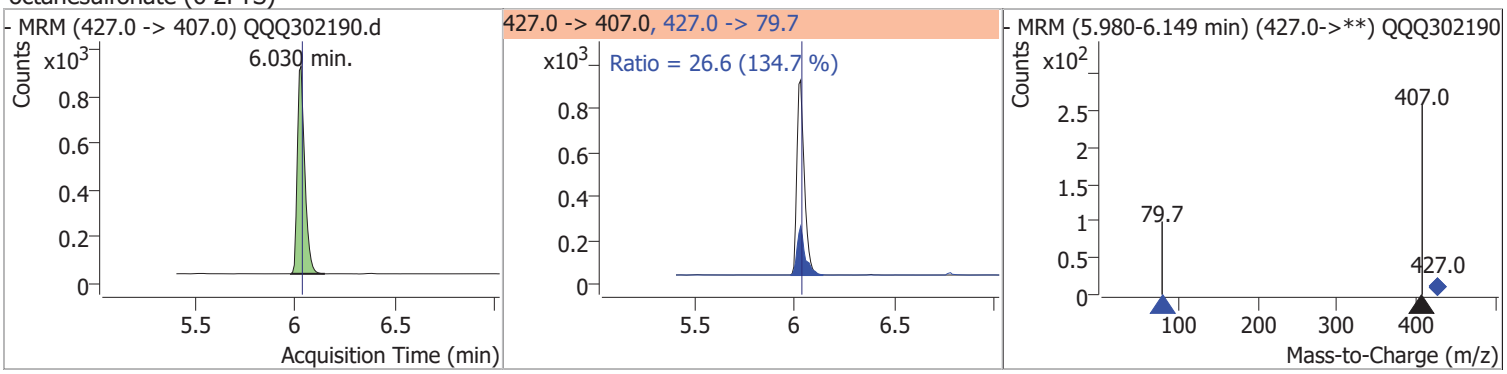
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M3PFHxS	2.4214	5.78	-0.40	1906	402.0 -> 98.9	40.8	31.3	47.0



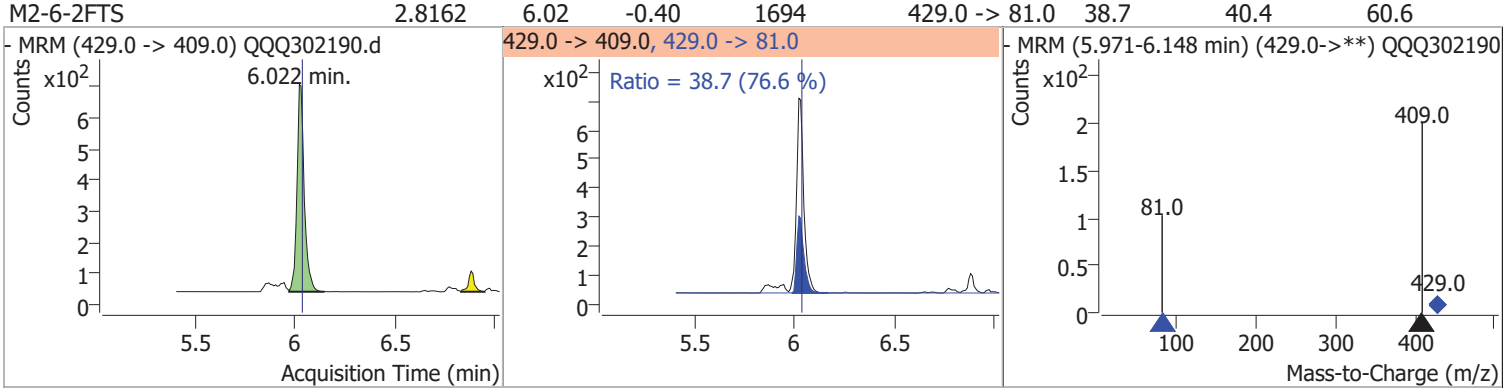
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorohexanesulfonic acid (PFHxS)	1.9603	5.78	-0.40	3371 (m)	398.9 -> 98.9	59.5	44.4	66.5



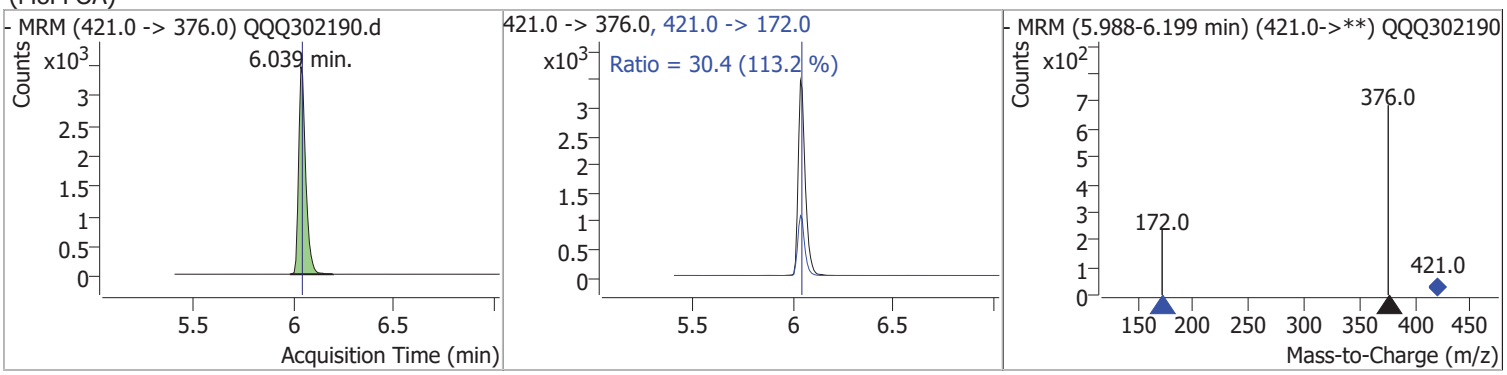
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
1H,1H,2H,2H-perfluoro-1-octanesulfonate (6 2FTS)	2.3616	6.03	-0.39	2295	427.0 -> 79.7	26.6	15.8	23.7



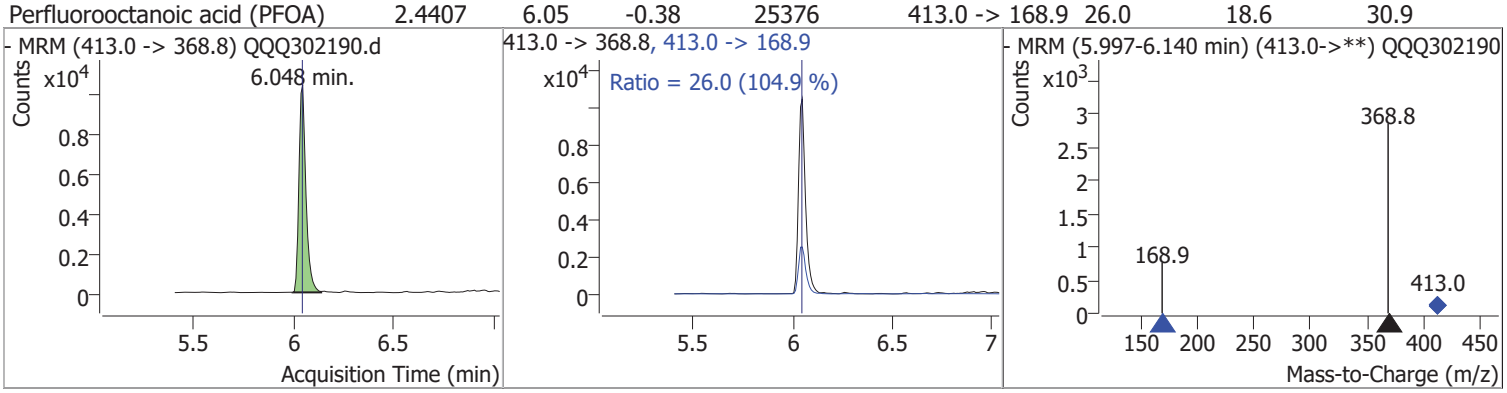
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M2-6-2FTS	2.8162	6.02	-0.40	1694	429.0 -> 81.0	38.7	40.4	60.6



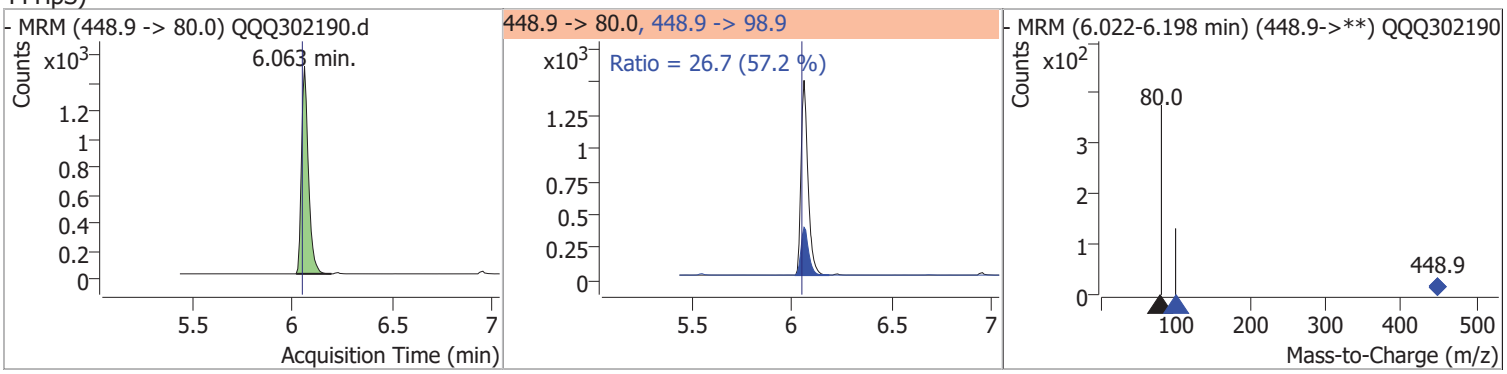
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-n-[13C8]octanoic acid (M8PFOA)	2.8481	6.04	-0.39	8447	421.0 -> 172.0	30.4	21.5	32.2



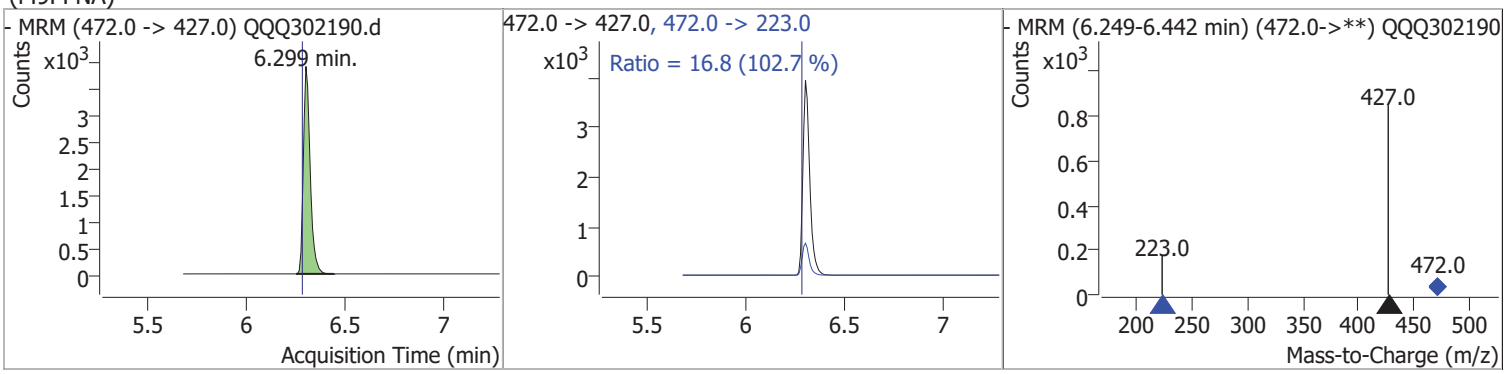
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorooctanoic acid (PFOA)	2.4407	6.05	-0.38	25376	413.0 -> 168.9	26.0	18.6	30.9



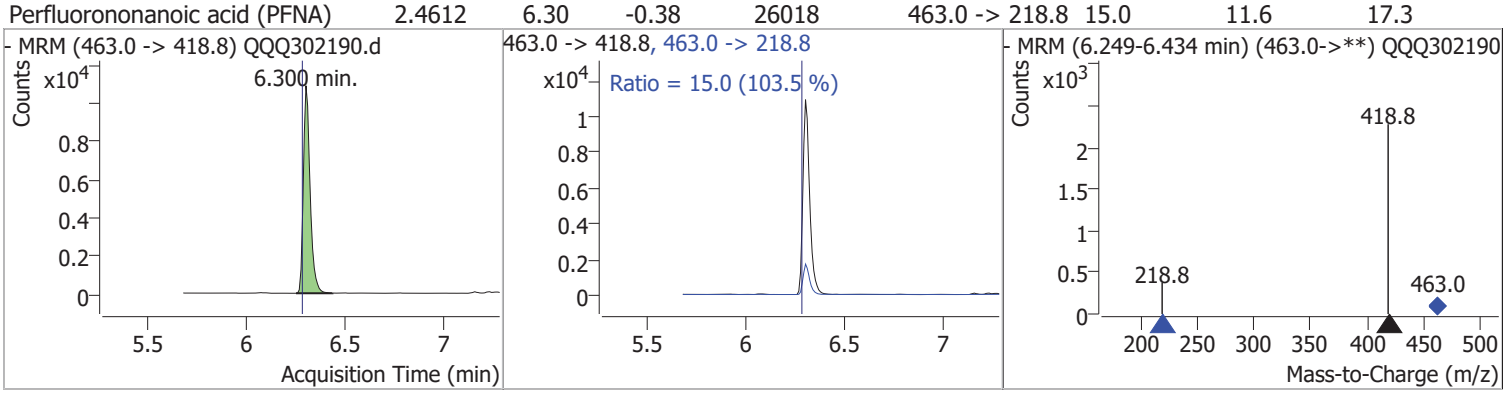
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-1-heptanesulfonate (L-PFHpS)	2.6761	6.06	-0.37	3556	448.9 -> 98.9	26.7	37.3	56.0



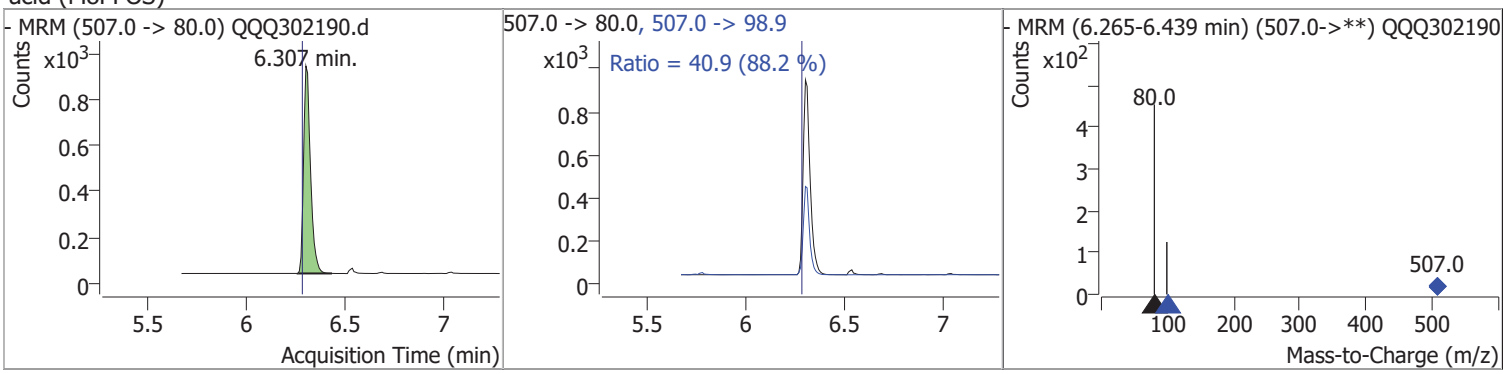
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-n-[13C9]nonanoic acid (M9PFNA)	2.6138	6.30	-0.38	9390	472.0 -> 223.0	16.8	13.1	19.6



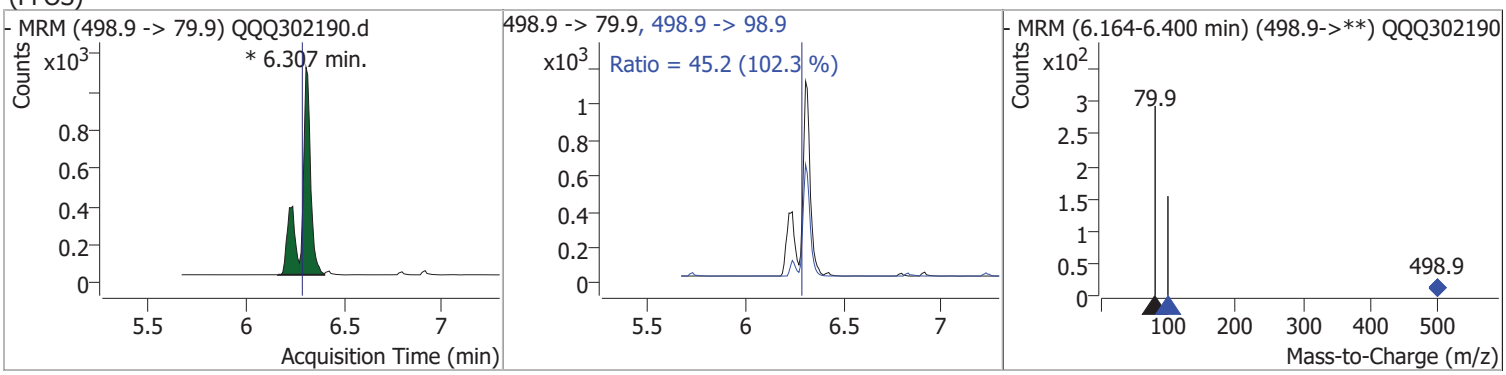
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorononanoic acid (PFNA)	2.4612	6.30	-0.38	26018	463.0 -> 218.8	15.0	11.6	17.3



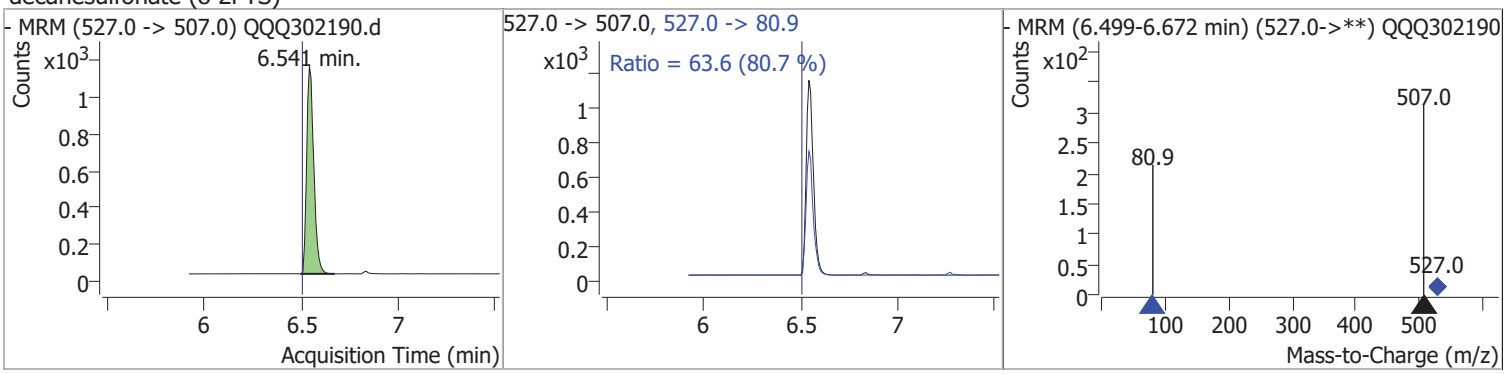
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)	2.7537	6.31	-0.38	2221	507.0 -> 98.9	40.9	37.1	55.6



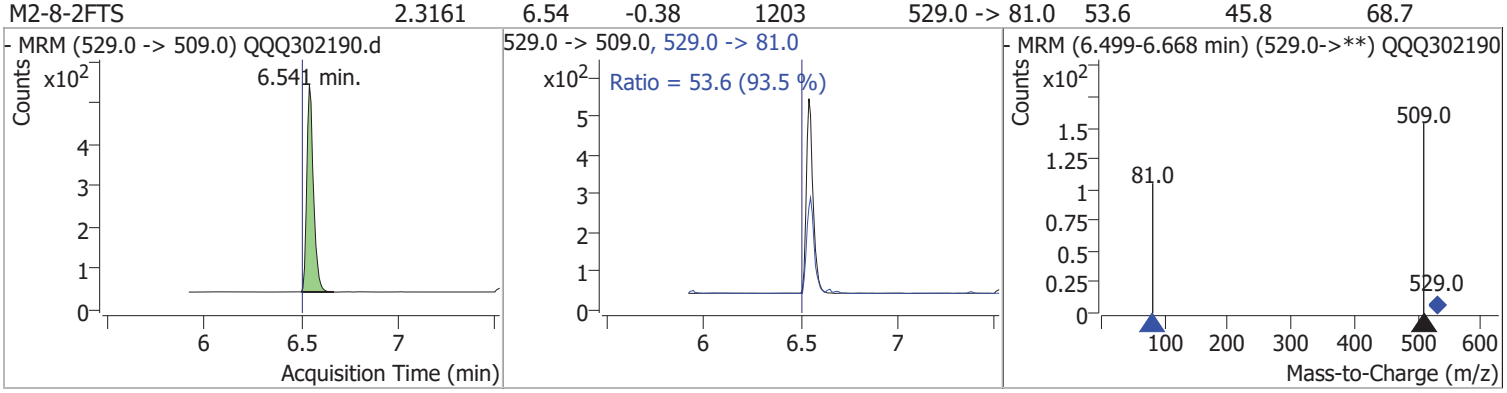
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorooctanesulfonic acid (PFOS)	2.5028	6.31	-0.38	3685 (m)	498.9 -> 98.9	45.2	35.4	53.0



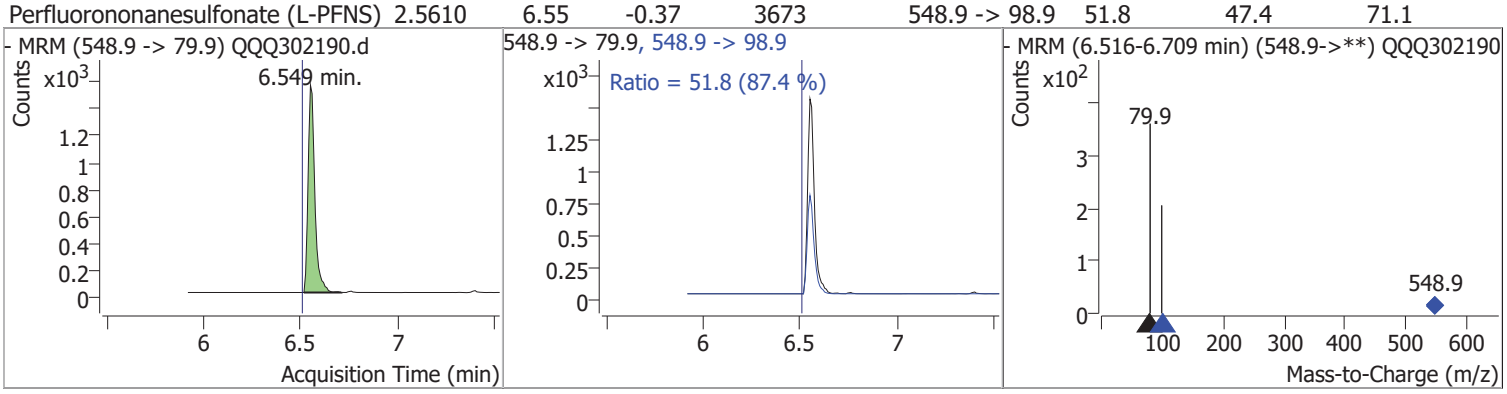
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
1H,1H,2H,2H-perfluoro-1-decanesulfonate (8 2FTS)	2.1994	6.54	-0.38	2875	527.0 -> 80.9	63.6	63.1	94.6



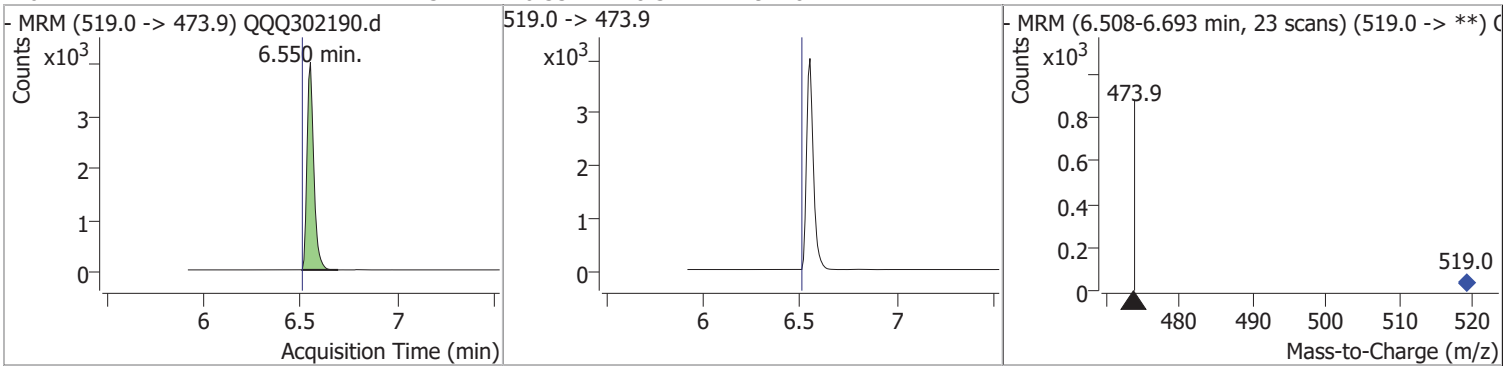
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M2-8-2FTS	2.3161	6.54	-0.38	1203	529.0 -> 81.0	53.6	45.8	68.7



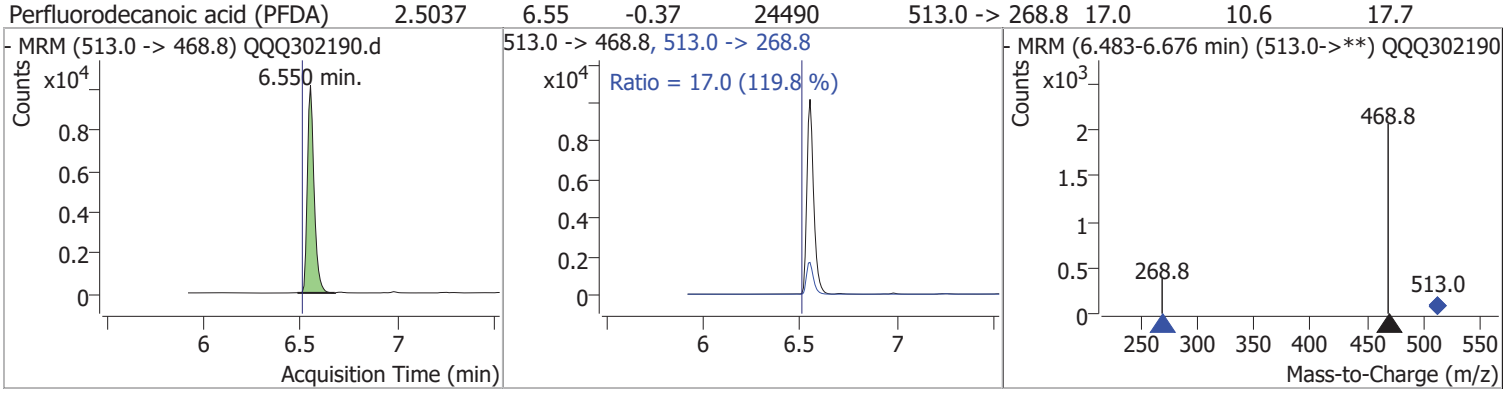
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorononanesulfonate (L-PFNS)	2.5610	6.55	-0.37	3673	548.9 -> 98.9	51.8	47.4	71.1



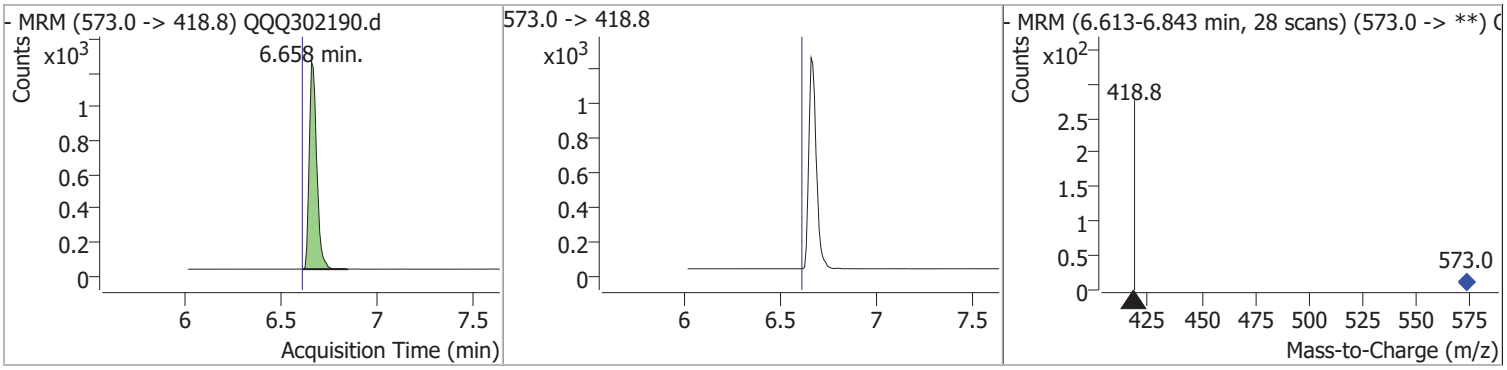
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M6PFDA	2.4377	6.55	-0.37	9710				



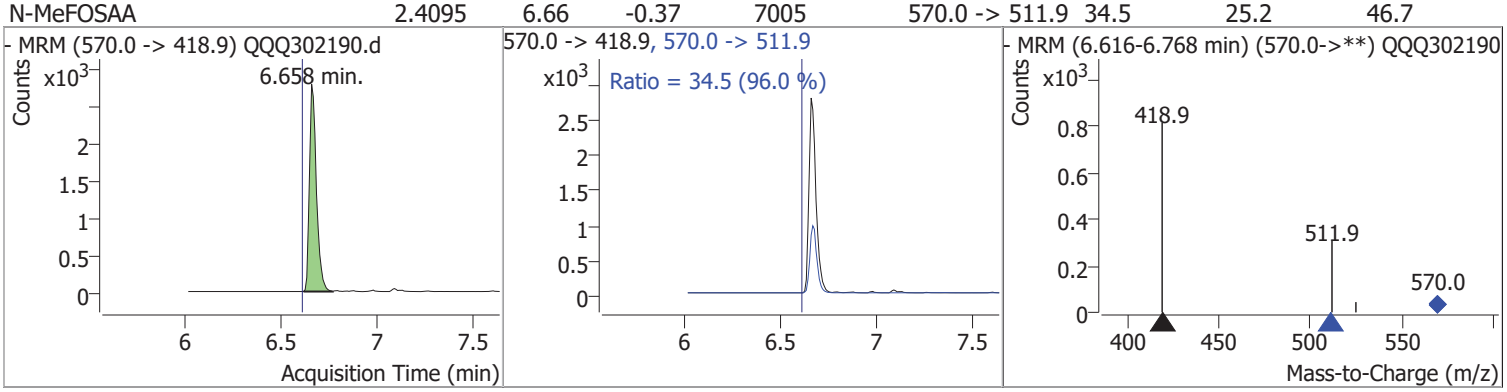
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorodecanoic acid (PFDA)	2.5037	6.55	-0.37	24490	513.0 -> 268.8	17.0	10.6	17.7



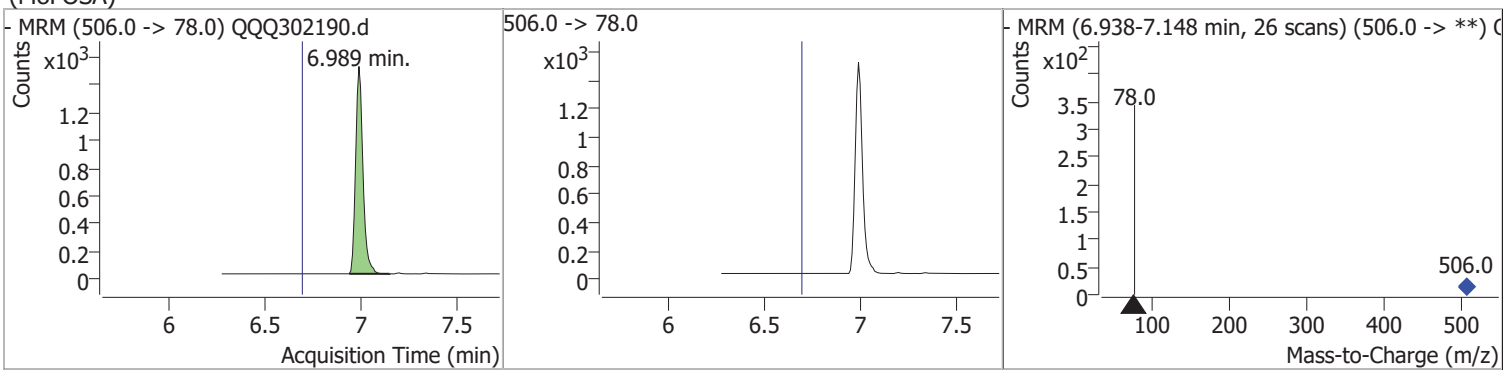
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
d3-N-MeFOSAA	2.3653	6.66	-0.37	3312				



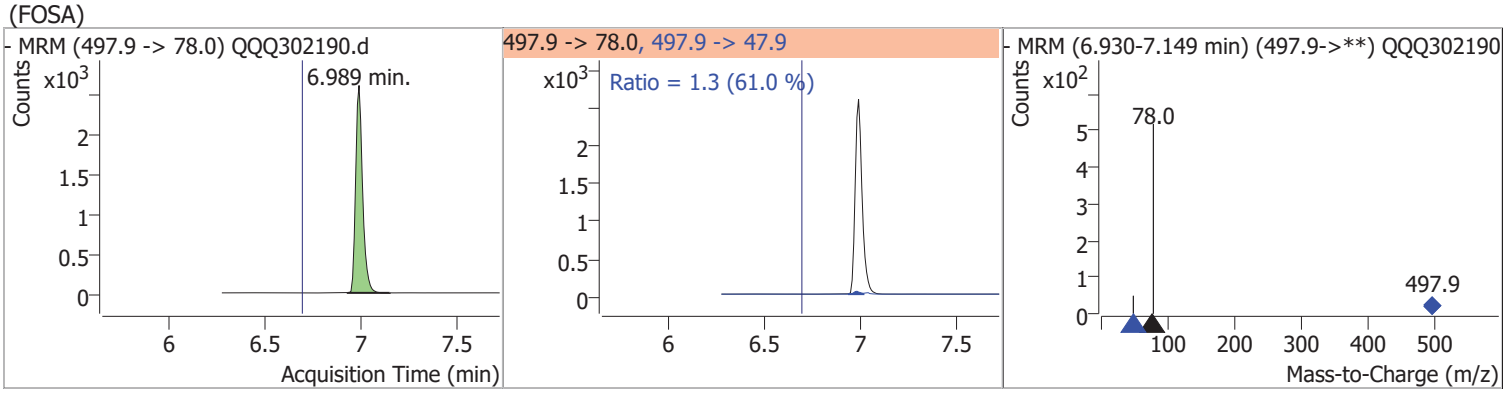
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
N-MeFOSAA	2.4095	6.66	-0.37	7005	570.0 -> 511.9	34.5	25.2	46.7



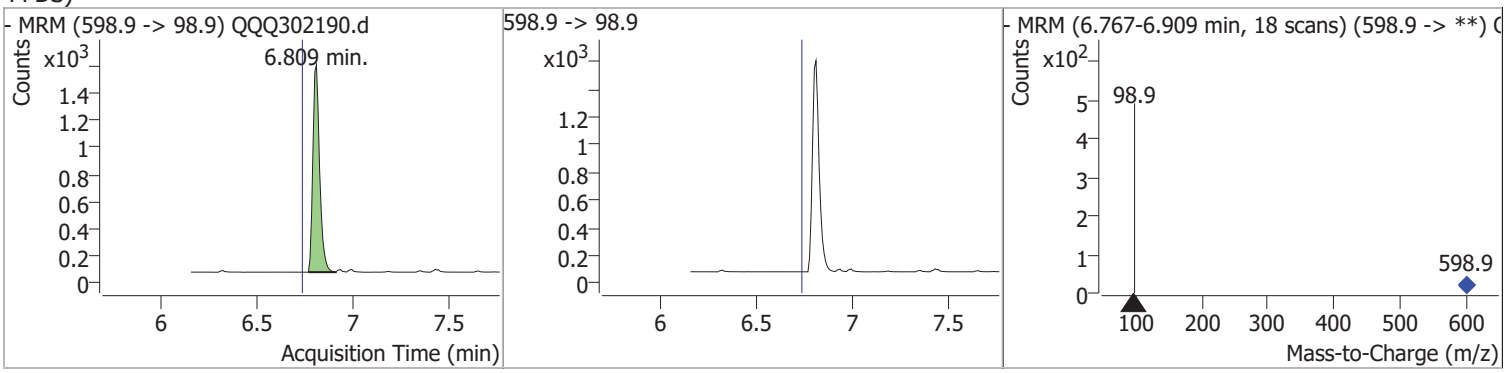
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-1-[13C8]octanesulfonamide (M8FOSA)	2.1945	6.99	-0.13	3957				



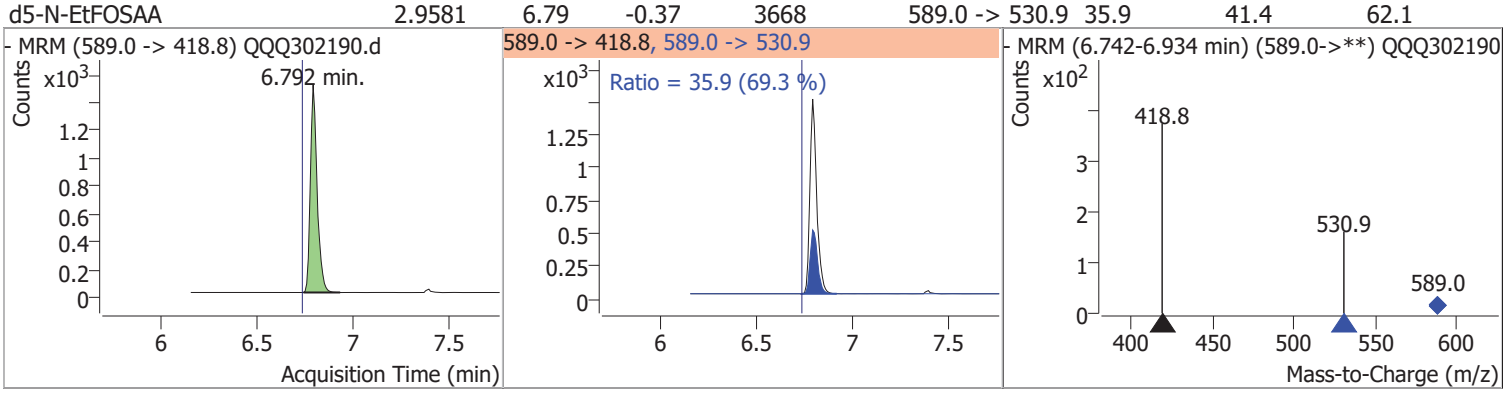
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-1-octanesulfonamide (FOSA)	2.6147	6.99	-0.13	6476	497.9 -> 47.9	1.3	1.7	2.5



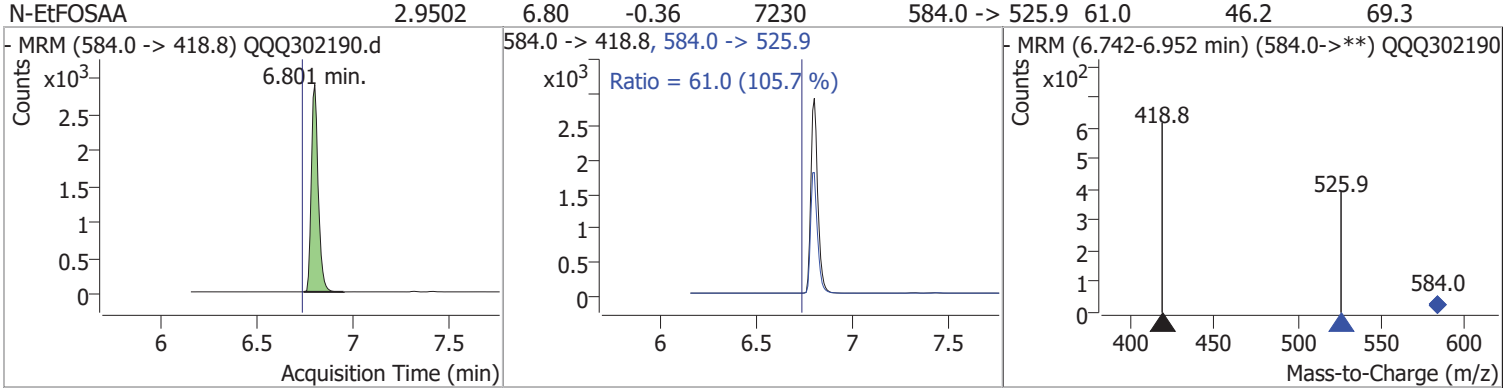
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-1-decanesulfonate (L-PFDS)	2.3418	6.81	-0.35	3725				



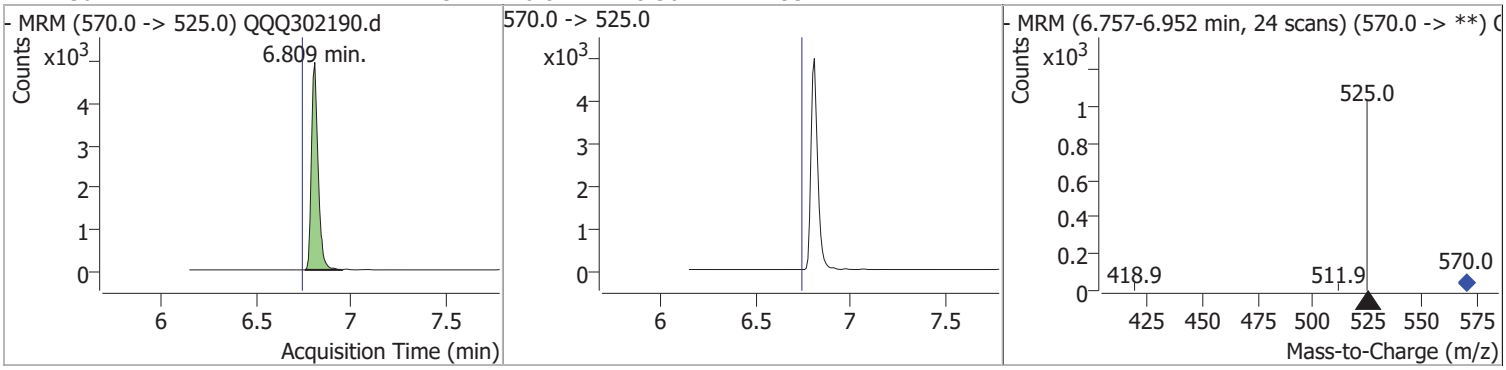
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
d5-N-EtFOSAA	2.9581	6.79	-0.37	3668	589.0 -> 530.9	35.9	41.4	62.1



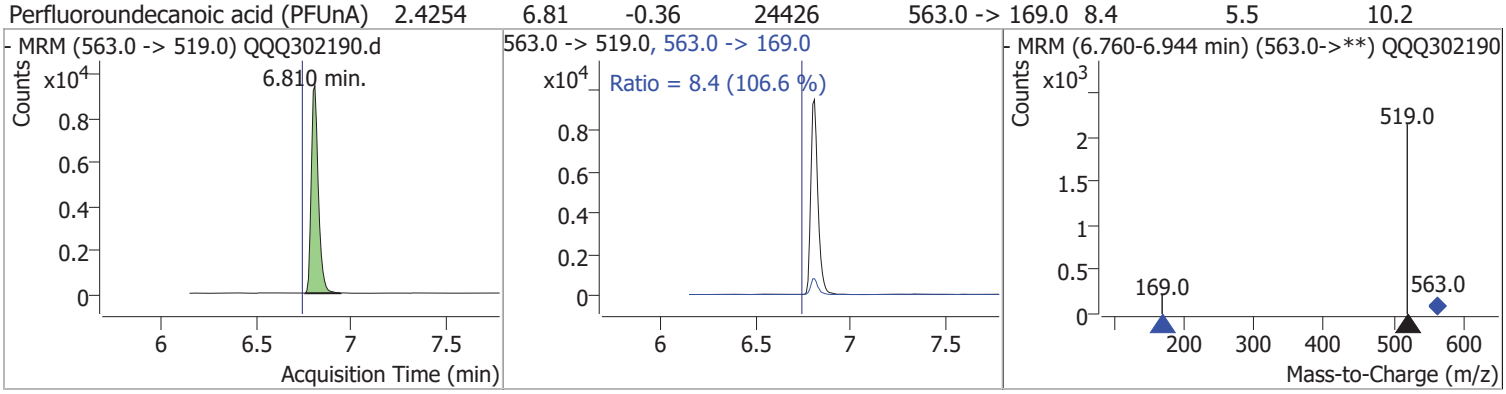
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
N-EtFOSAA	2.9502	6.80	-0.36	7230	584.0 -> 525.9	61.0	46.2	69.3



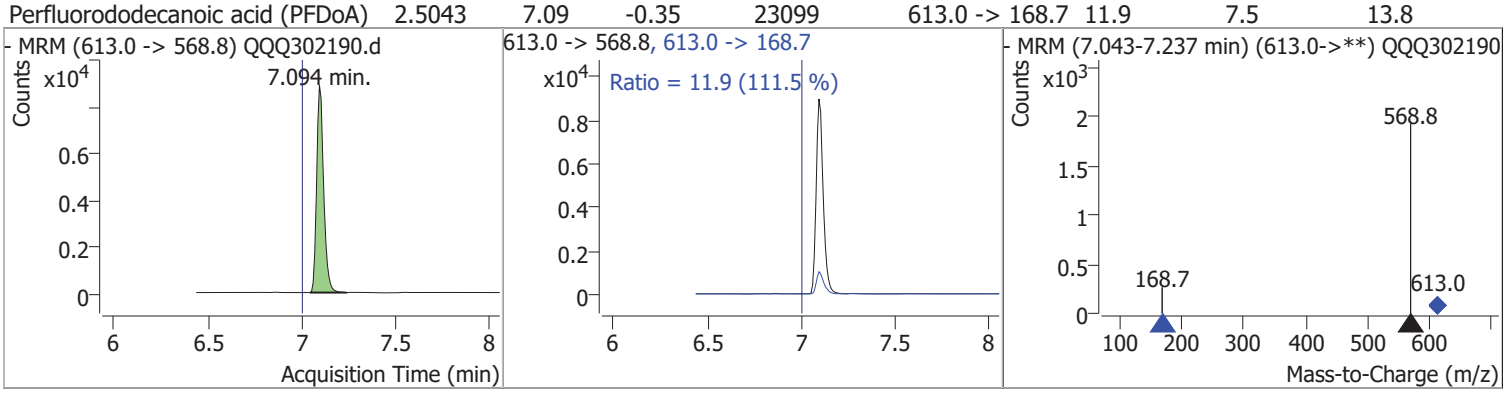
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M7PFUdA	2.2754	6.81	-0.36	11991				



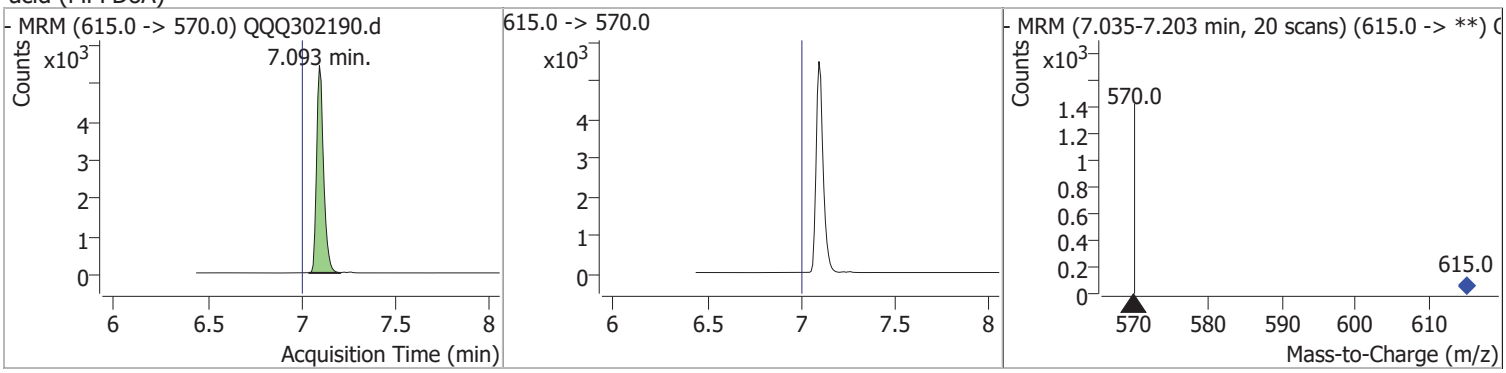
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoroundecanoic acid (PFUnA)	2.4254	6.81	-0.36	24426	563.0 -> 169.0	8.4	5.5	10.2



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorododecanoic acid (PFDoA)	2.5043	7.09	-0.35	23099	613.0 -> 168.7	11.9	7.5	13.8

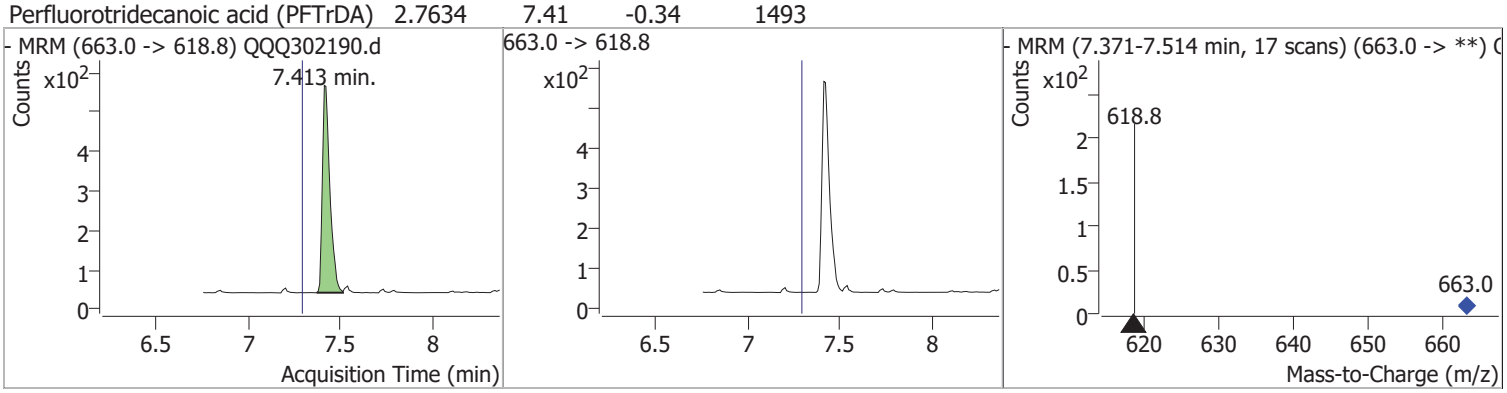


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-n-[1,2-13C2]dodecanoic acid (MPFDoA)	2.3382	7.09	-0.35	14079				

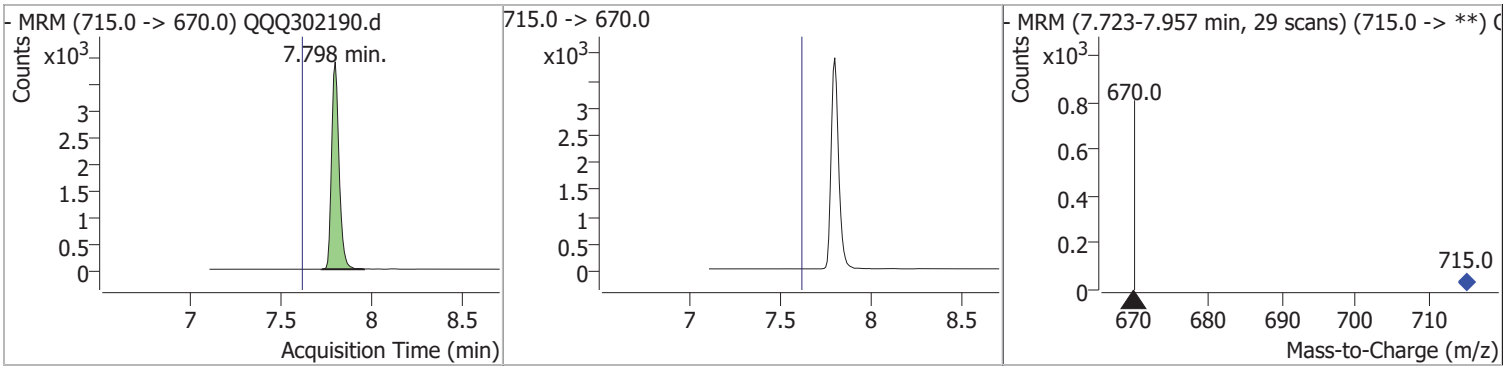


Quantitation Results Report (Not Reviewed)

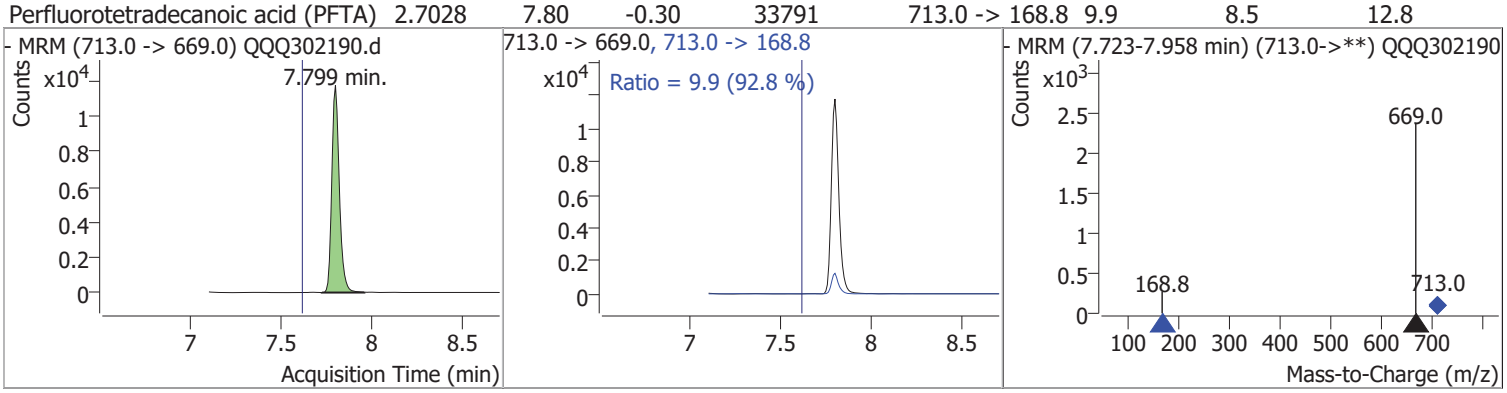
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorotridecanoic acid (PFTrDA)	2.7634	7.41	-0.34	1493				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M2PFTeDA	2.2371	7.80	-0.30	11217				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorotetradecanoic acid (PFTA)	2.7028	7.80	-0.30	33791	713.0 -> 168.8	9.9	8.5	12.8



Quantitation Results Report (Not Reviewed)

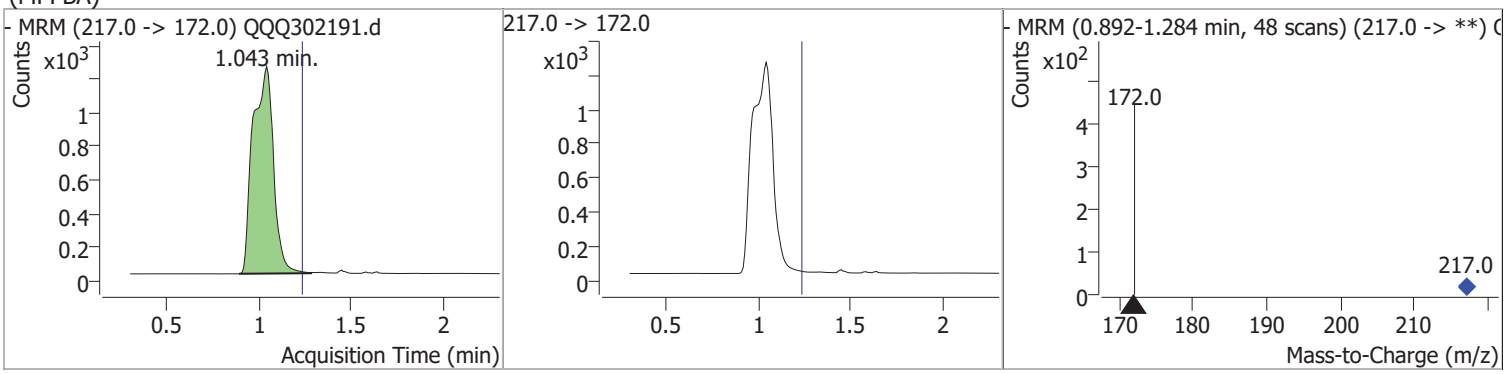
Data File	QQQ302191.d	Operator	
Acq. Method	PFAS 24_IDA ACQ_QQQ3A.m	Acq. Date-Time	6/27/2022 7:10:14 PM
Sample Name	SEQ-CAL5	Instrument	QQQ3
Vial		Multiplier	1.00
DA Method File	PFAS_24_IDA_QUANT_QQQ3_062722.m	Comment	5
Tune File		Tune Date	
Batch Name	2022-06-27-IDA-ICAL2.batch.bin	Last Calib Update	6/27/2022 4:24:30 PM
Ref Library			

Compound	RT	QIon	Resp.	Conc.	Units		Dev(Min)
Internal Standards							
MPFOA	6.039	417.0 -> 372.0	118102	10.0000	ng/ml		-0.391
System Monitoring Compounds							
Perfluoro-n-[13C4]butanoic acid (MPFBA)	1.043	217.0 -> 172.0	9576	4.5368	ng/ml		-0.267
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 45.37%			
Perfluoro-n-[13C54]pentanoic acid (M5PFPeA)	4.070	268.0 -> 223.0	8647	4.9215	ng/ml		-0.517
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 49.21%			
M3PFBS	4.680	302.0 -> 79.9	4081	4.5272	ng/ml		-0.483
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 45.27%			
M2-4-2FTS	5.225	329.0 -> 309.0	2699	4.4803	ng/ml	#	-0.465
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 44.80%			
M5PFHxA	5.268	318.0 -> 273.0	16654	4.8492	ng/ml		-0.456
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 48.49%			
M4PFHpA	5.729	367.0 -> 322.0	10401	5.7833	ng/ml		-0.415
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 57.83%			
M3PFHxS	5.770	402.0 -> 80.0	4015	5.2587	ng/ml		-0.407
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 52.59%			
M2-6-2FTS	6.030	429.0 -> 409.0	2772	4.9105	ng/ml	#	-0.390
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 49.10%			
Perfluoro-n-[13C8]octanoic acid (M8PFOA)	6.039	421.0 -> 376.0	15234	5.1741	ng/ml		-0.391
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 51.74%			
Perfluoro-n-[13C9]nonanoic acid (M9PFNA)	6.299	472.0 -> 427.0	16772	4.7898	ng/ml	#	-0.381
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 47.90%			
Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)	6.315	507.0 -> 80.0	3835	4.9049	ng/ml	#	-0.373
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 49.05%			
M2-8-2FTS	6.549	529.0 -> 509.0	2203	4.3911	ng/ml		-0.369
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 43.91%			
M6PFDA	6.550	519.0 -> 473.9	19580	5.0519	ng/ml		-0.372
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 50.52%			
d3-N-MeFOSAA	6.666	573.0 -> 418.8	6367	4.6887	ng/ml		-0.364
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 46.89%			
Perfluoro-1-[13C8]octanesulfonamide (M8FOSA)	6.997	506.0 -> 78.0	7961	4.5000	ng/ml		-0.122
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 45.00%			
d5-N-EtFOSAA	6.801	589.0 -> 418.8	6452	5.3475	ng/ml	#	-0.363
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 53.47%			
M7PFUdA	6.818	570.0 -> 525.0	22570	4.4529	ng/ml		-0.355
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 44.53%			
Perfluoro-n-[1,2-13C2]dodecanoic acid (MPFDoA)	7.102	615.0 -> 570.0	29437	5.0019	ng/ml		-0.346
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 50.02%			
M2PFTeDA	7.807	715.0 -> 670.0	23218	4.7294	ng/ml		-0.294
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 47.29%			
Target Compounds							**QValue**

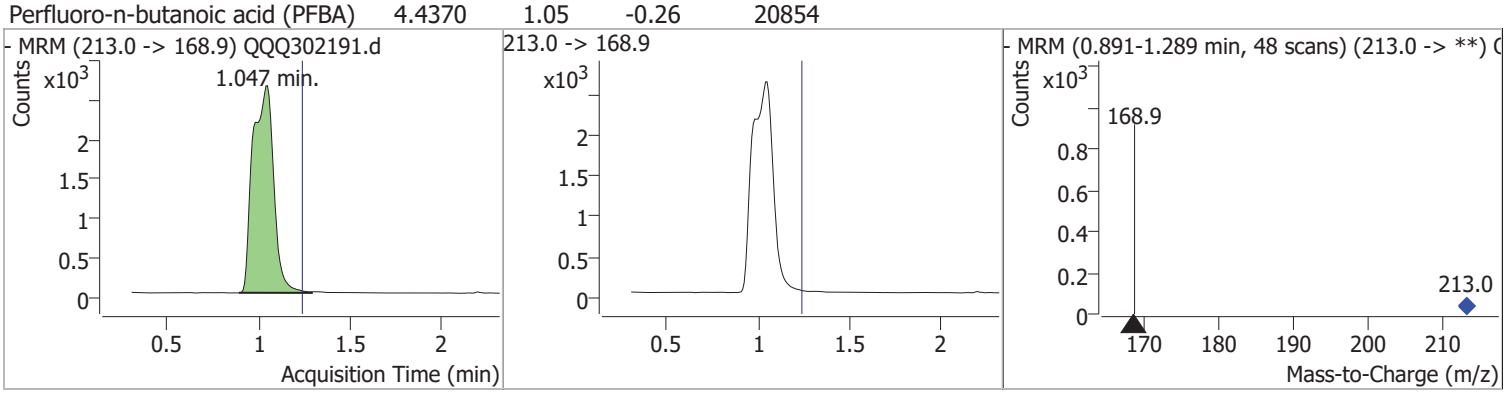
Compound	RT	QIon	Resp.	Conc.	Units		Dev(Min)
Perfluoro-n-butanoic acid (PFBA)	1.047	213.0 -> 168.9	20854	4.4370	ng/ml		100
Perfluoro-n-pentanoic acid (PFPeA)	4.066	263.0 -> 219.0	16829	4.8519	ng/ml		100
Perfluorobutanesulfonic acid (PFBS)	4.675	298.9 -> 79.9	8158	4.0288	ng/ml		97
1H,1H,2H,2H-perfluoro-1-hexanesulfonate (4 2FTS)	5.225	327.0 -> 307.0	5390	4.6596	ng/ml		100
Perfluorohexanoic acid (PFHxA)	5.269	313.0 -> 268.9	37162	4.8778	ng/ml		100
Perfluoro-1-pentanesulfonate (L-PFPeS)	5.383	348.9 -> 79.9	7447	4.4423	ng/ml		98
Perfluoroheptanoic acid (PFHpA)	5.729	363.0 -> 318.8	46456	4.6015	ng/ml		100
Perfluorohexanesulfonic acid (PFHxS)	5.771	398.9 -> 79.9	8156	4.8548	ng/ml	m	88
1H,1H,2H,2H-perfluoro-1-octanesulfonate (6 2FTS)	6.030	427.0 -> 407.0	4871	5.0896	ng/ml	#	86
Perfluorooctanoic acid (PFOA)	6.039	413.0 -> 368.8	50206	4.9111	ng/ml		98
Perfluoro-1-heptanesulfonate (L-PFHpS)	6.063	448.9 -> 80.0	6262	4.8035	ng/ml		95
Perfluorononanoic acid (PFNA)	6.300	463.0 -> 418.8	48374	4.6897	ng/ml		100
Perfluorooctanesulfonic acid (PFOS)	6.316	498.9 -> 79.9	6908	4.7960	ng/ml	m	99
1H,1H,2H,2H-perfluoro-1-decanesulfonate (8 2FTS)	6.550	527.0 -> 507.0	5506	4.4772	ng/ml	#	80
Perfluorononanesulfonate (L-PFNS)	6.558	548.9 -> 79.9	6659	4.8120	ng/ml		86
Perfluorodecanoic acid (PFDA)	6.550	513.0 -> 468.8	49302	5.1143	ng/ml		98
N-MeFOSAA	6.666	570.0 -> 418.9	14787	5.1693	ng/ml		82
Perfluoro-1-octanesulfonamide (FOSA)	6.998	497.9 -> 78.0	11111	4.5539	ng/ml		99
Perfluoro-1-decanesulfonate (L-PFDS)	6.809	598.9 -> 98.9	7565	4.9397	ng/ml		100
N-EtFOSAA	6.809	584.0 -> 418.8	13647	5.7254	ng/ml		96
Perfluoroundecanoic acid (PFUnA)	6.810	563.0 -> 519.0	46834	4.7838	ng/ml		99
Perfluorododecanoic acid (PFDoA)	7.102	613.0 -> 568.8	47479	5.1712	ng/ml		97
Perfluorotridecanoic acid (PFTrDA)	7.430	663.0 -> 618.8	2598	4.8190	ng/ml		100
Perfluorotetradecanoic acid (PFTA)	7.807	713.0 -> 669.0	62092	4.9816	ng/ml		99

(#) = Qualifier Out of Range; (m) = Manual Integration; (+) = Area Summed; (*) = Surrogate Percent Recovery Out of Range; (d): Zeroed Peak

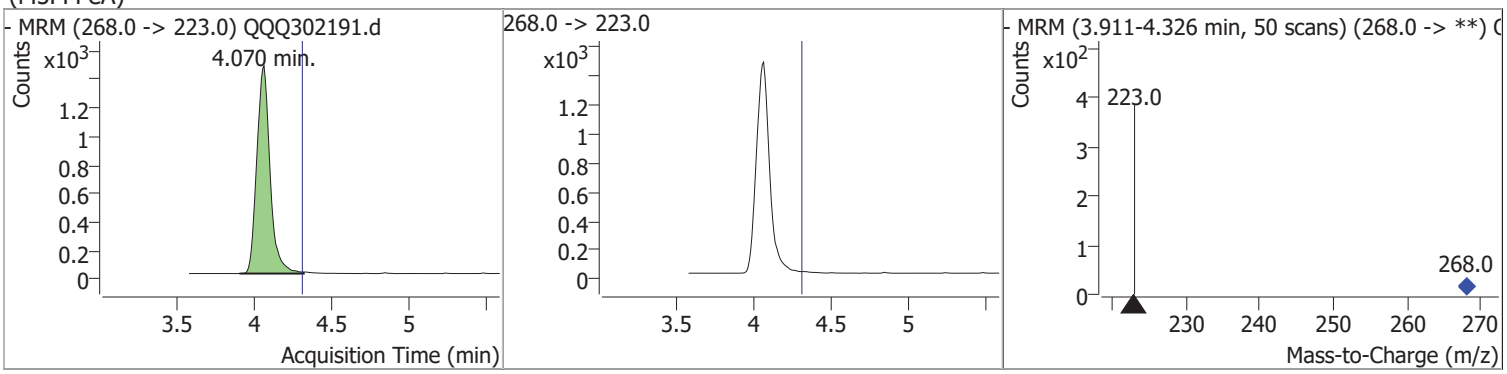
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-n-[13C4]butanoic acid (MPFBA)	4.5368	1.04	-0.27	9576				



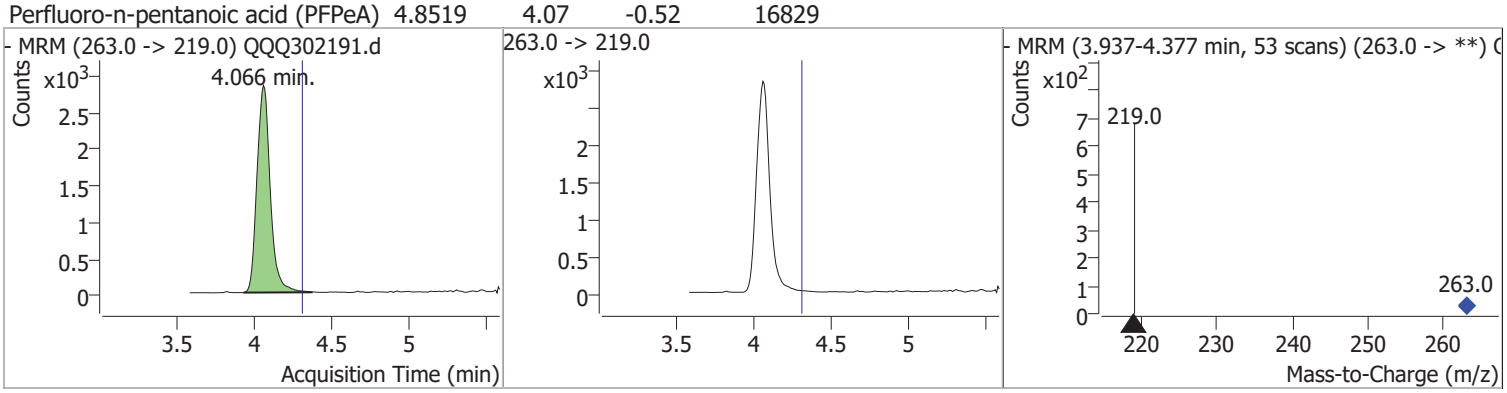
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-n-butanoic acid (PFBA)	4.4370	1.05	-0.26	20854				



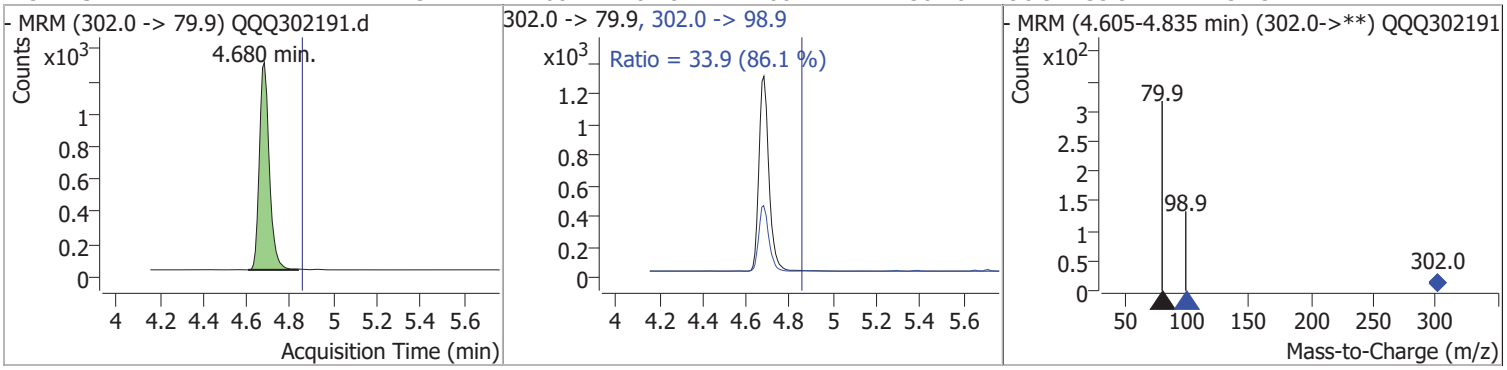
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-n-[13C54]pentanoic acid (M5PFPeA)	4.9215	4.07	-0.52	8647				



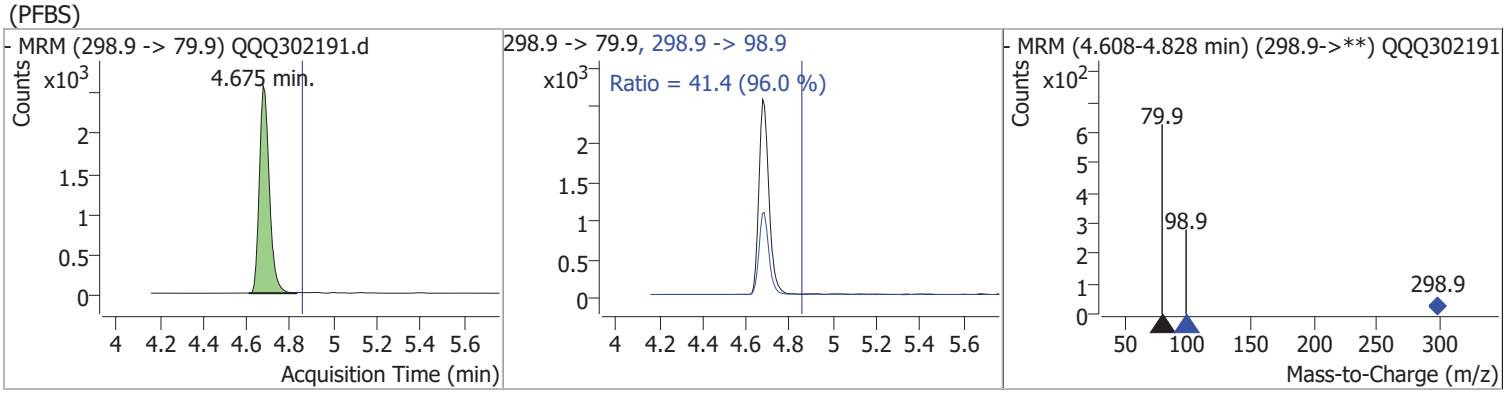
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-n-pentanoic acid (PFPeA)	4.8519	4.07	-0.52	16829				



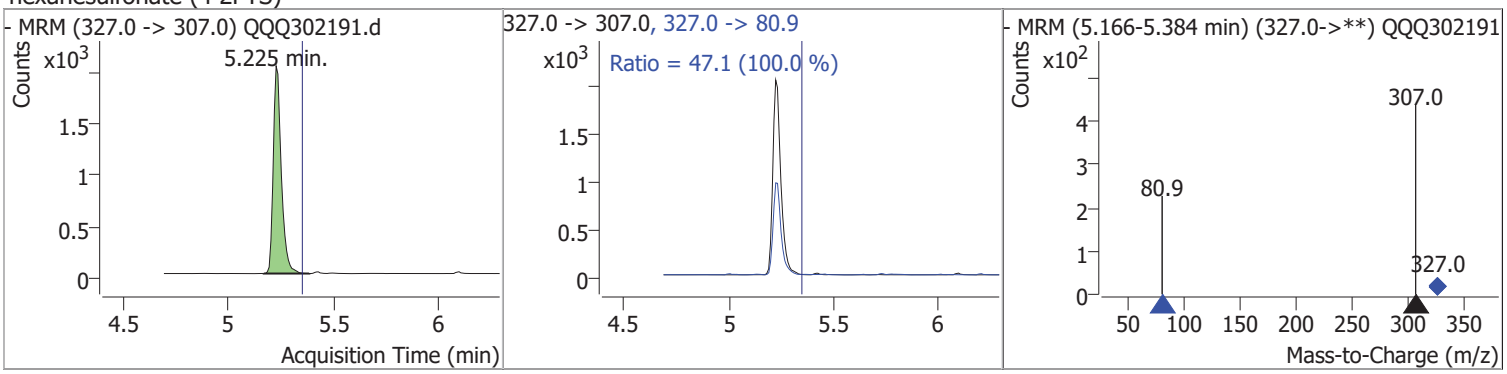
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M3PFBS	4.5272	4.68	-0.48	4081	302.0 -> 98.9	33.9	31.5	47.2



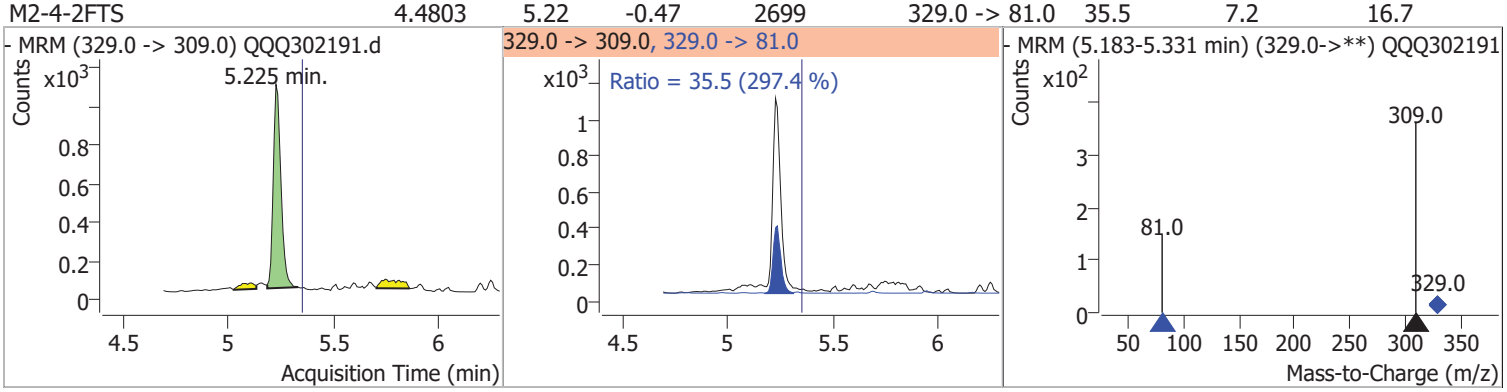
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorobutanesulfonic acid (PFBS)	4.0288	4.67	-0.49	8158	298.9 -> 98.9	41.4	34.5	51.7



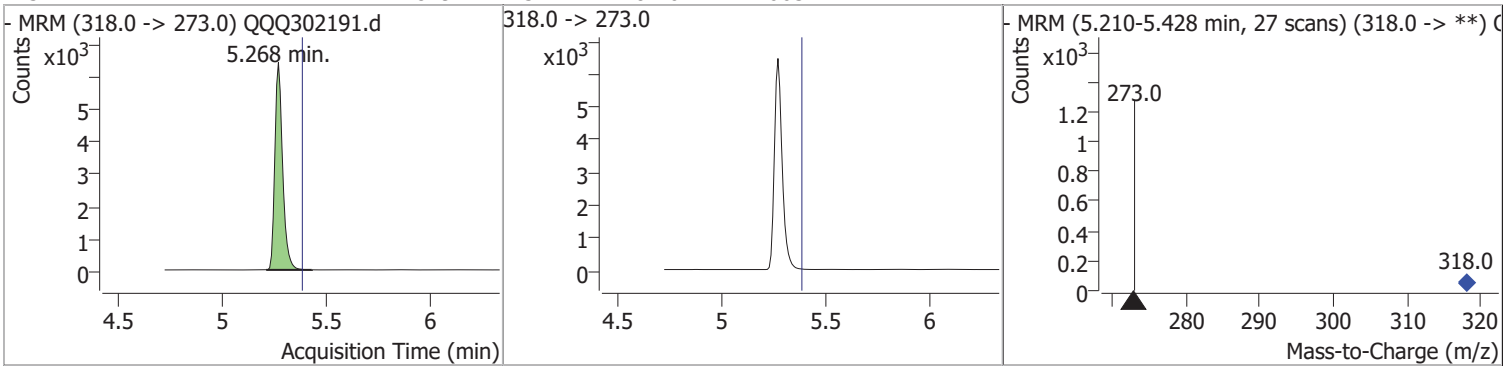
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
1H,1H,2H,2H-perfluoro-1-hexanesulfonate (4 2FTS)	4.6596	5.23	-0.46	5390	327.0 -> 80.9	47.1	28.2	65.9



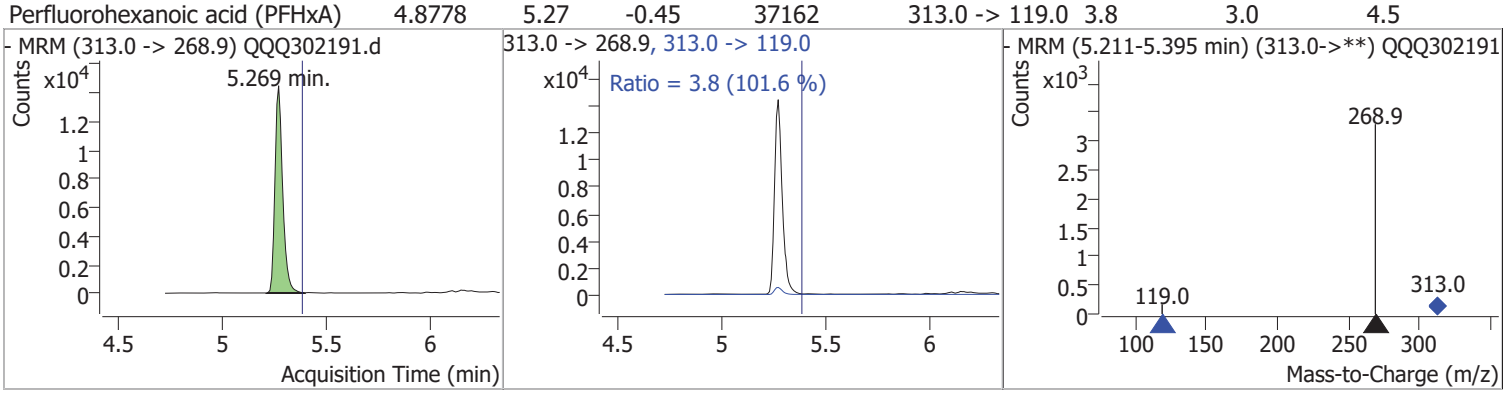
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M2-4-2FTS	4.4803	5.22	-0.47	2699	329.0 -> 81.0	35.5	7.2	16.7



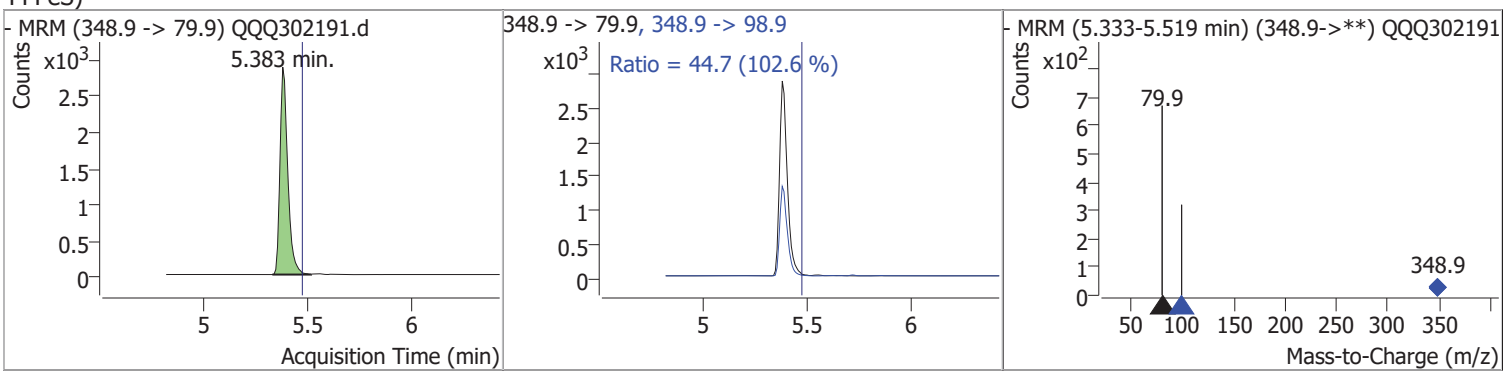
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M5PFHxA	4.8492	5.27	-0.46	16654				



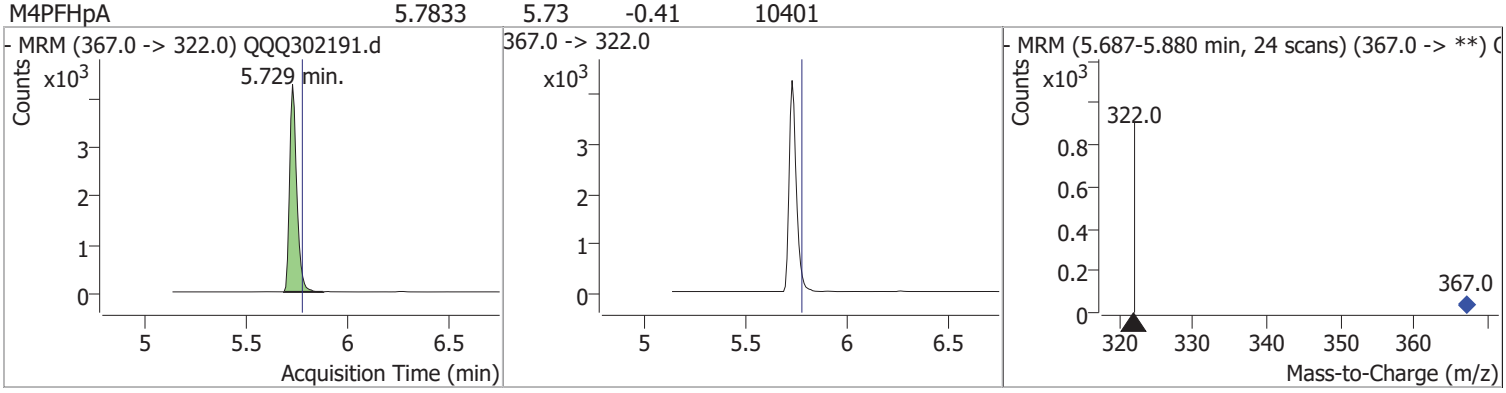
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorohexanoic acid (PFHxA)	4.8778	5.27	-0.45	37162	313.0 -> 119.0	3.8	3.0	4.5



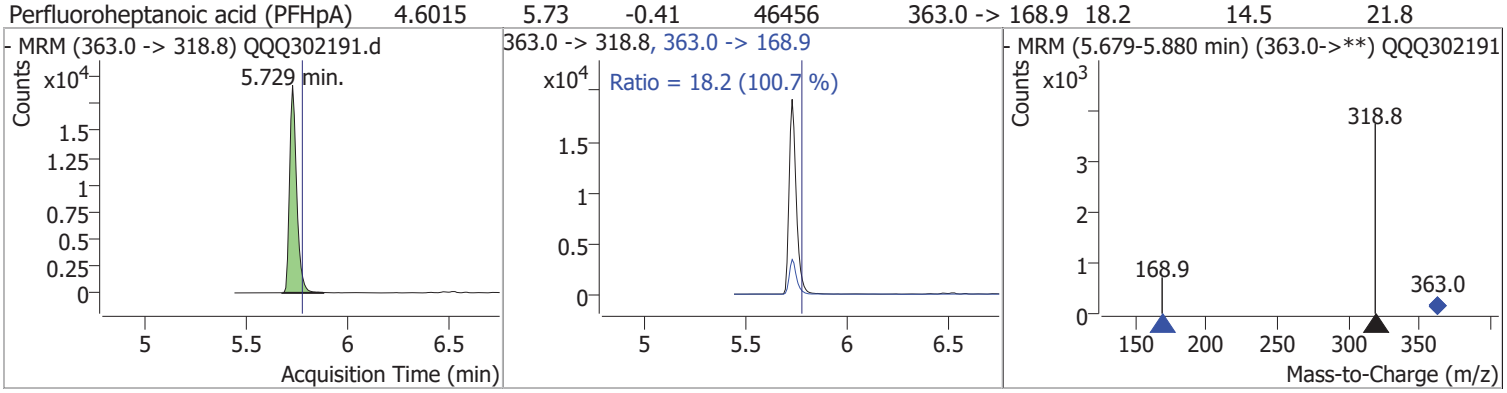
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-1-pentanesulfonate (L-PFPeS)	4.4423	5.38	-0.44	7447	348.9 -> 98.9	44.7	34.8	52.2



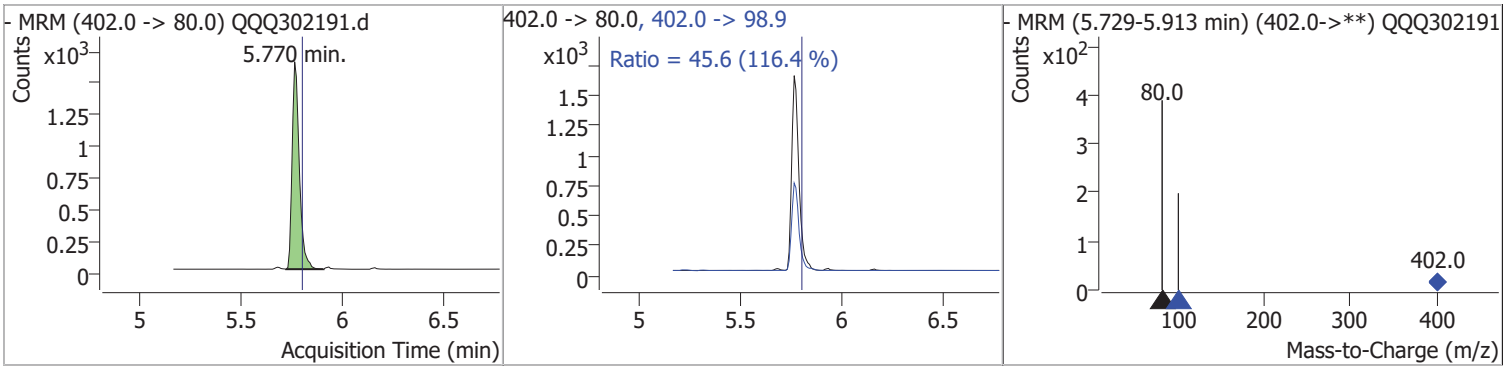
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M4PFHpA	5.7833	5.73	-0.41	10401				



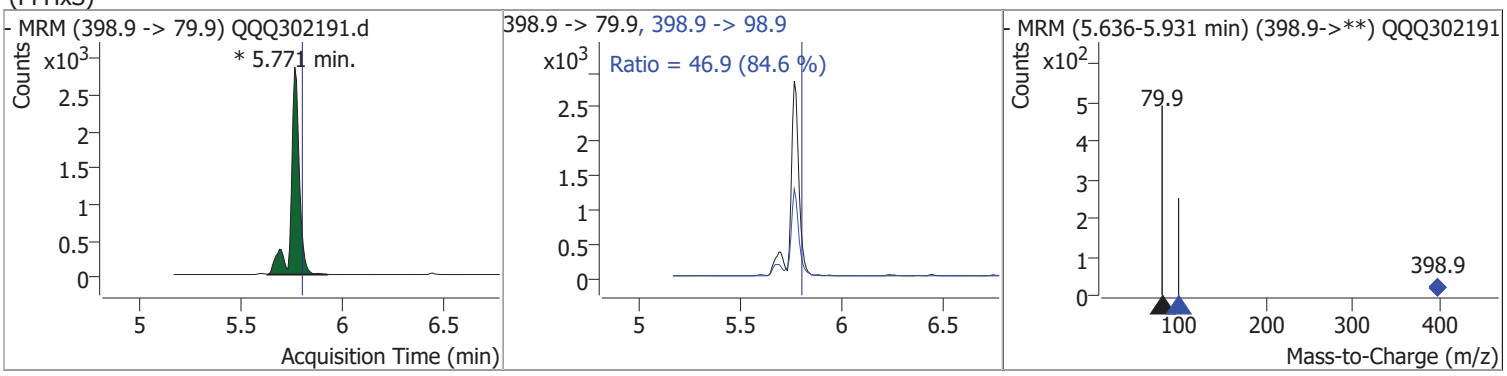
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoroheptanoic acid (PFHpA)	4.6015	5.73	-0.41	46456	363.0 -> 168.9	18.2	14.5	21.8



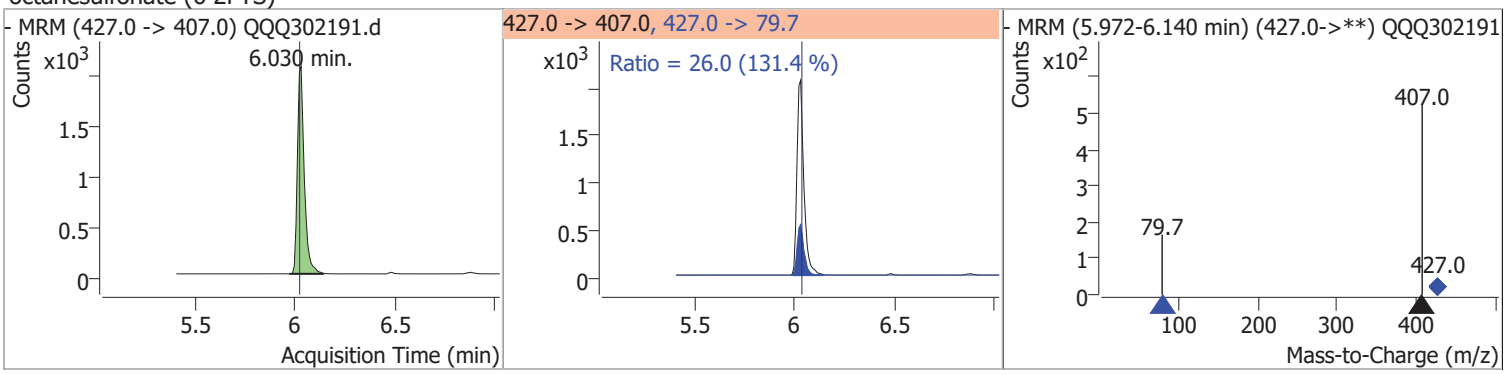
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M3PFHxS	5.2587	5.77	-0.41	4015	402.0 -> 98.9	45.6	31.3	47.0



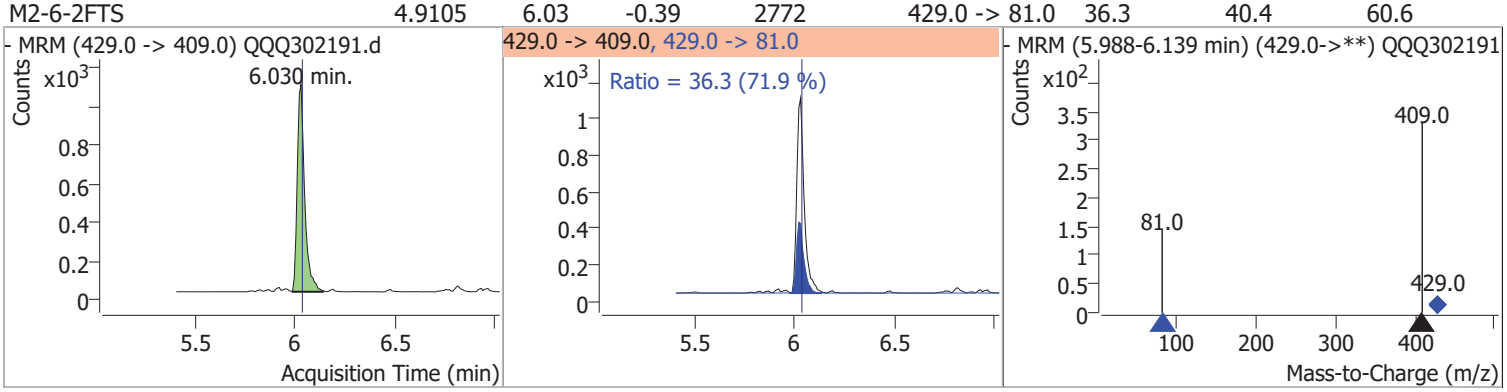
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorohexanesulfonic acid (PFHxS)	4.8548	5.77	-0.41	8156 (m)	398.9 -> 98.9	46.9	44.4	66.5



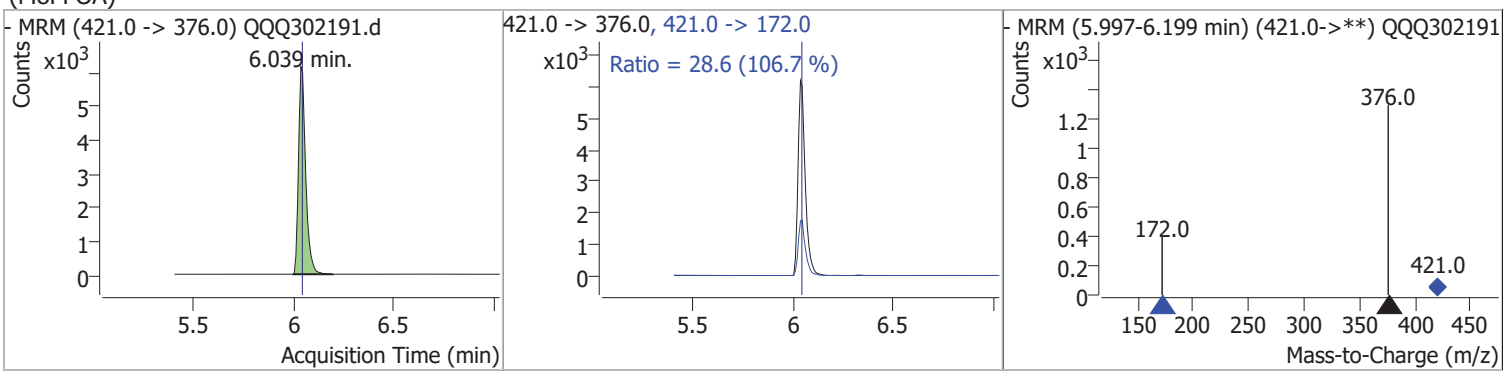
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
1H,1H,2H,2H-perfluoro-1-octanesulfonate (6 2FTS)	5.0896	6.03	-0.39	4871	427.0 -> 79.7	26.0	15.8	23.7



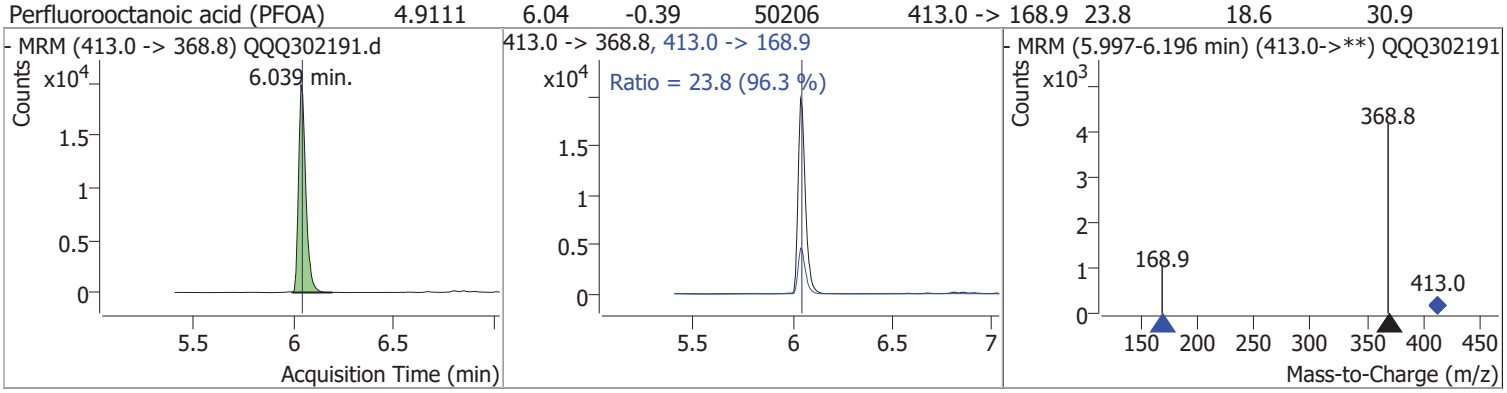
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M2-6-2FTS	4.9105	6.03	-0.39	2772	429.0 -> 81.0	36.3	40.4	60.6



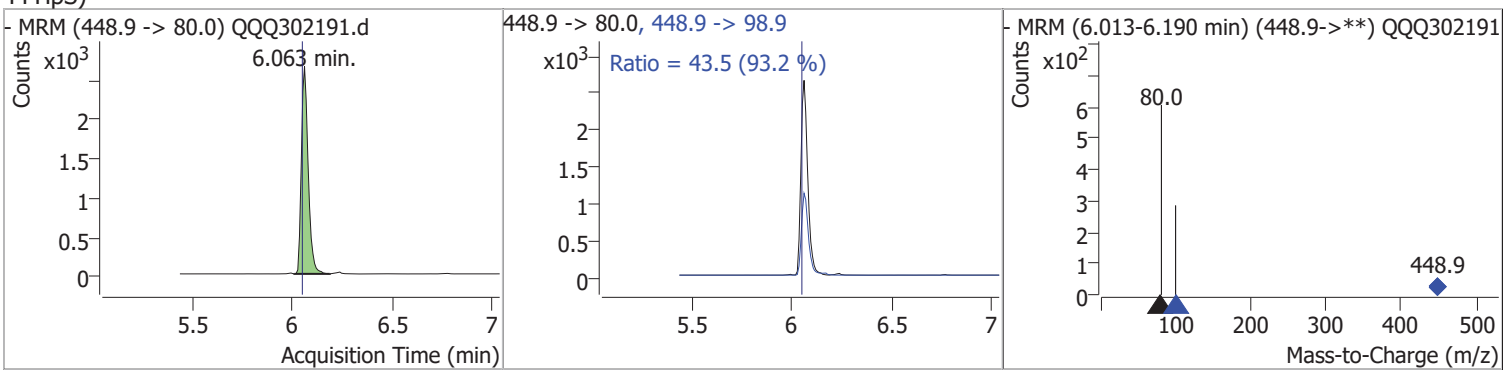
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-n-[13C8]octanoic acid (M8PFOA)	5.1741	6.04	-0.39	15234	421.0 -> 172.0	28.6	21.5	32.2



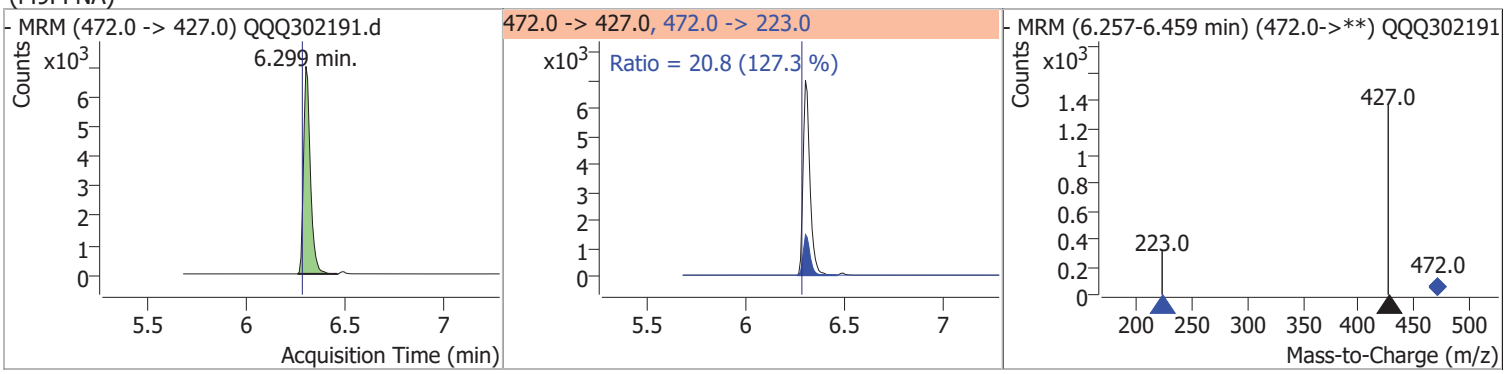
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorooctanoic acid (PFOA)	4.9111	6.04	-0.39	50206	413.0 -> 168.9	23.8	18.6	30.9



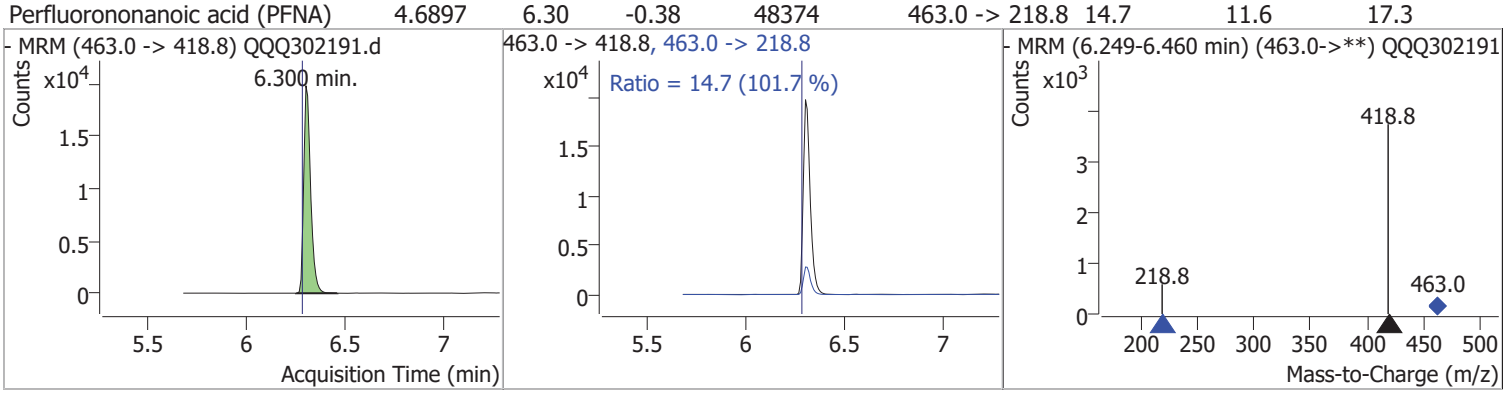
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-1-heptanesulfonate (L-PFHpS)	4.8035	6.06	-0.37	6262	448.9 -> 98.9	43.5	37.3	56.0



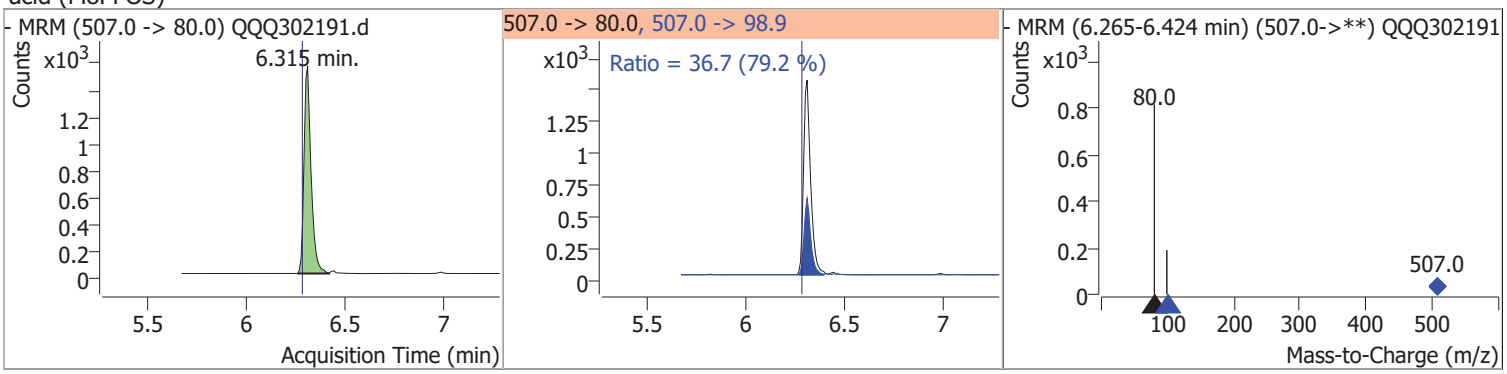
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-n-[13C9]nonanoic acid (M9PFNA)	4.7898	6.30	-0.38	16772	472.0 -> 223.0	20.8	13.1	19.6



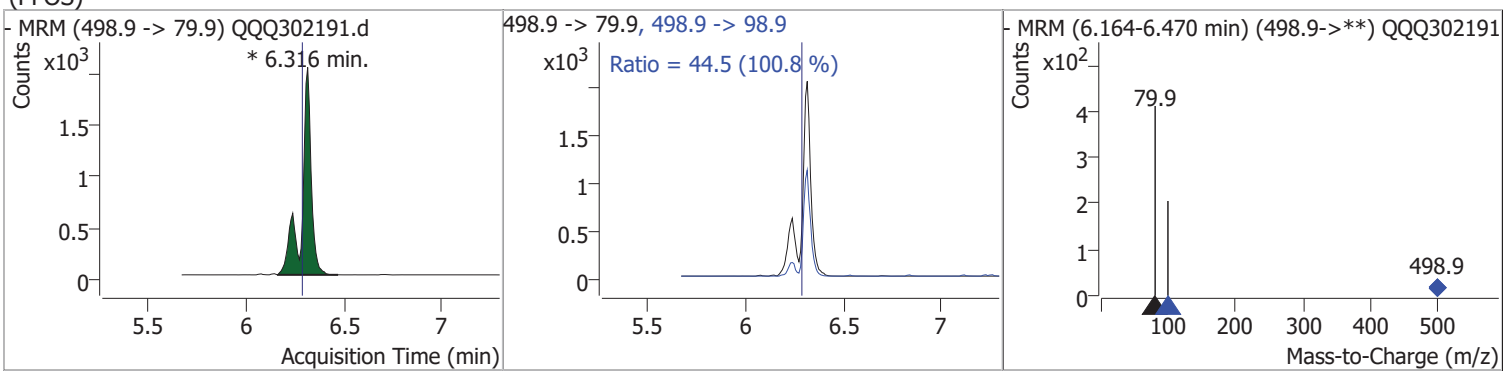
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorononanoic acid (PFNA)	4.6897	6.30	-0.38	48374	463.0 -> 218.8	14.7	11.6	17.3



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)	4.9049	6.32	-0.37	3835	507.0 -> 98.9	36.7	37.1	55.6

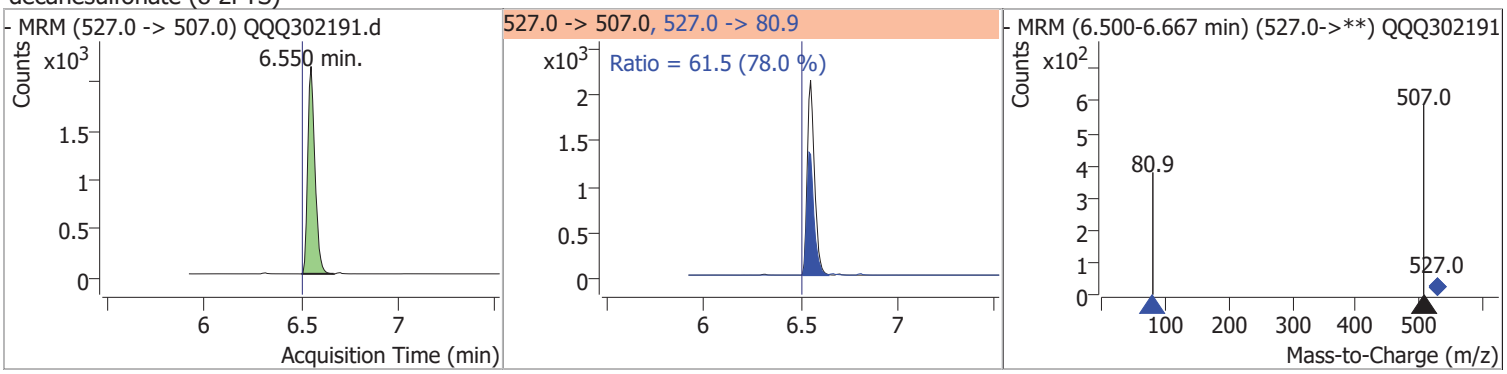


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorooctanesulfonic acid (PFOS)	4.7960	6.32	-0.37	6908 (m)	498.9 -> 98.9	44.5	35.4	53.0

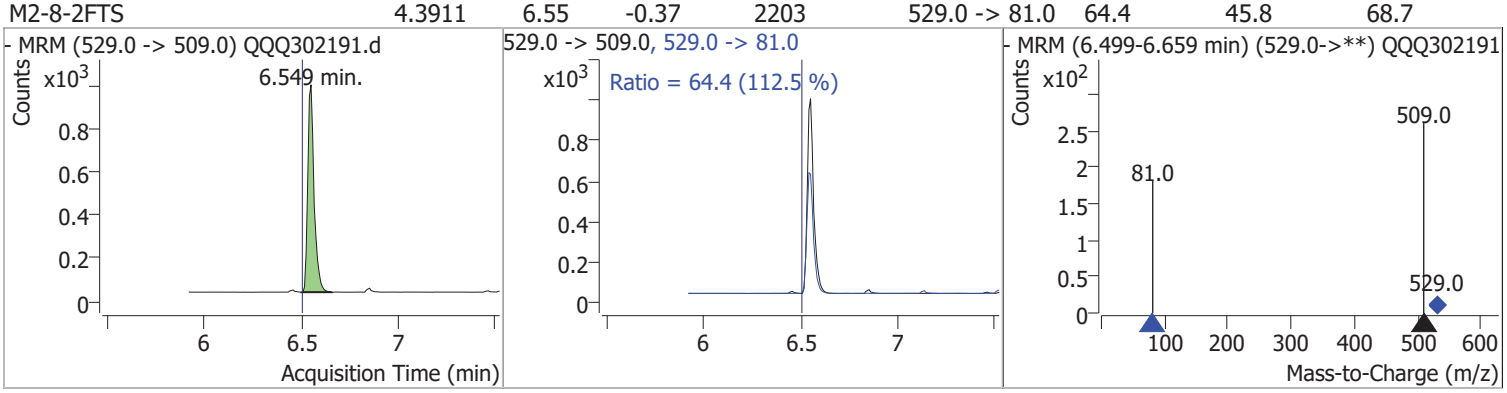


Quantitation Results Report (Not Reviewed)

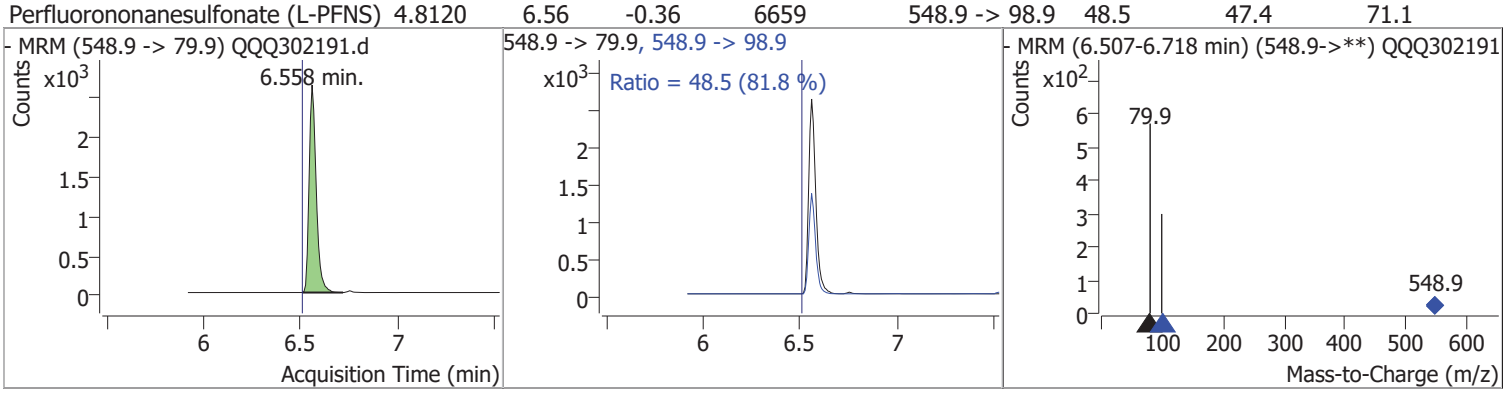
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
1H,1H,2H,2H-perfluoro-1-decanesulfonate (8 2FTS)	4.4772	6.55	-0.37	5506	527.0 -> 80.9	61.5	63.1	94.6



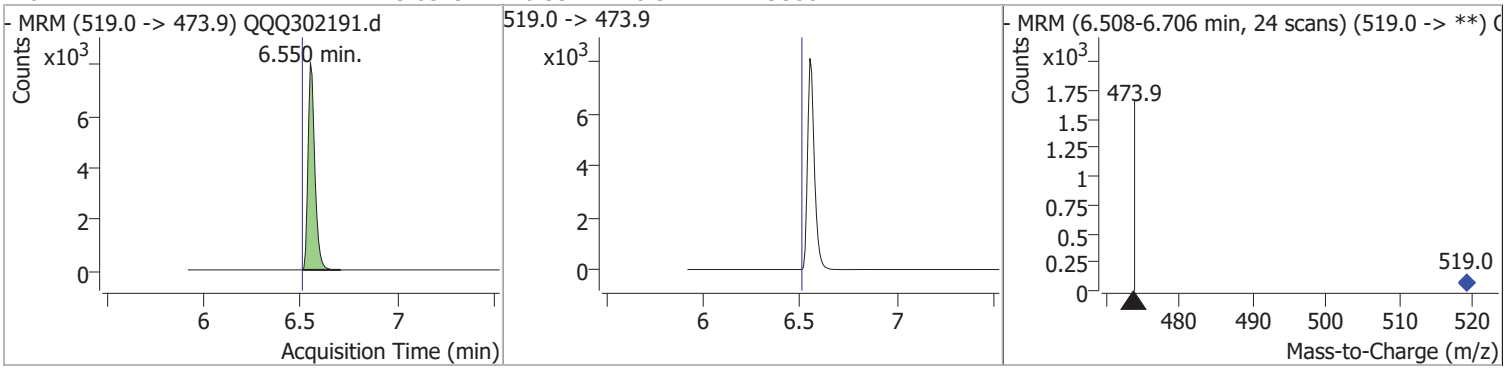
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M2-8-2FTS	4.3911	6.55	-0.37	2203	529.0 -> 81.0	64.4	45.8	68.7



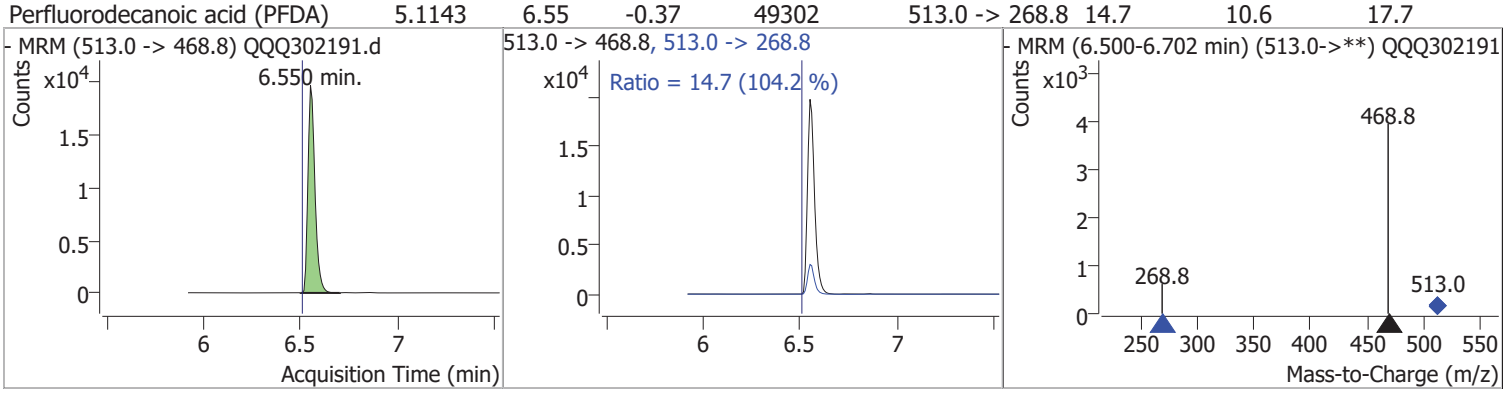
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorononanesulfonate (L-PFNS)	4.8120	6.56	-0.36	6659	548.9 -> 98.9	48.5	47.4	71.1



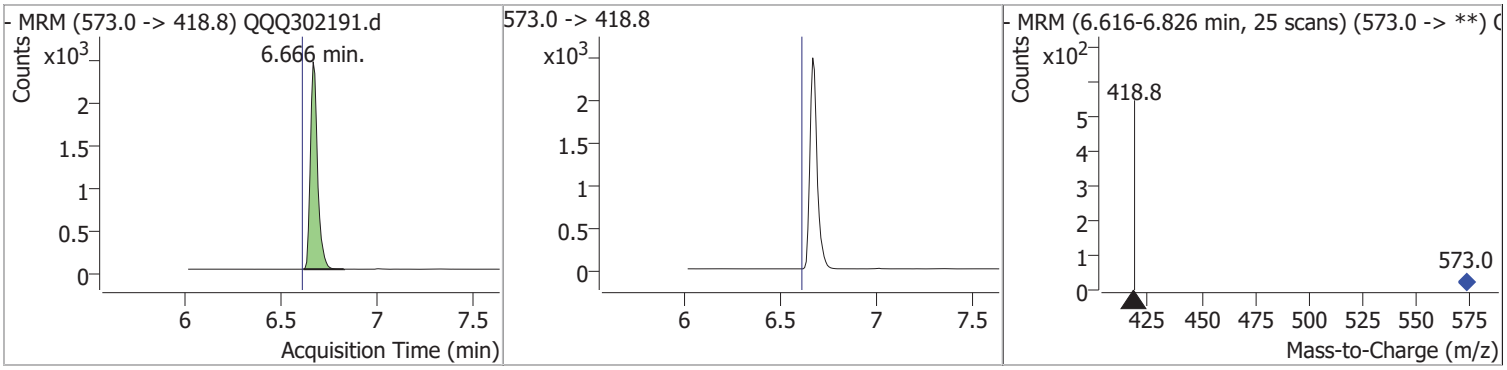
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M6PFDA	5.0519	6.55	-0.37	19580				



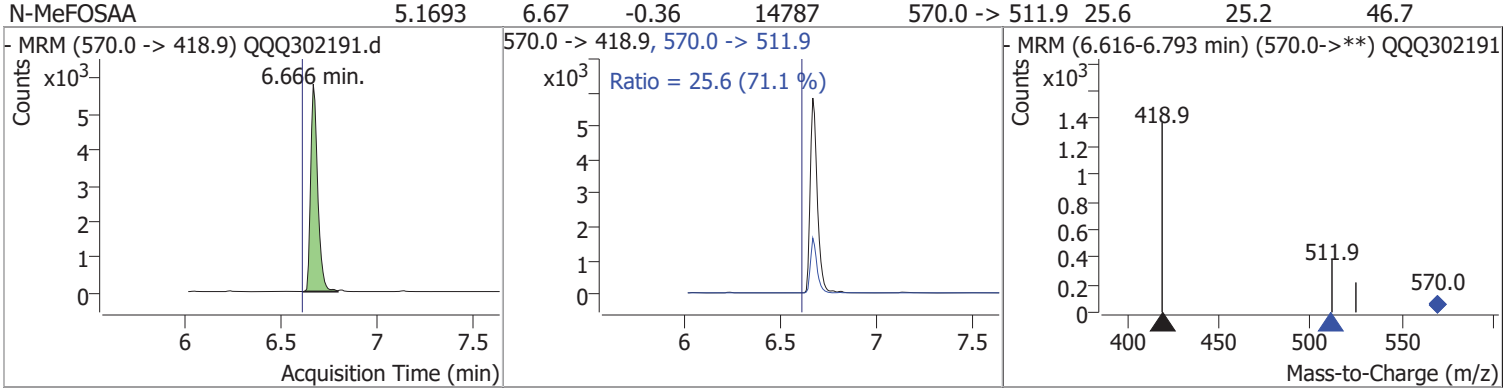
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorodecanoic acid (PFDA)	5.1143	6.55	-0.37	49302	513.0 -> 268.8	14.7	10.6	17.7



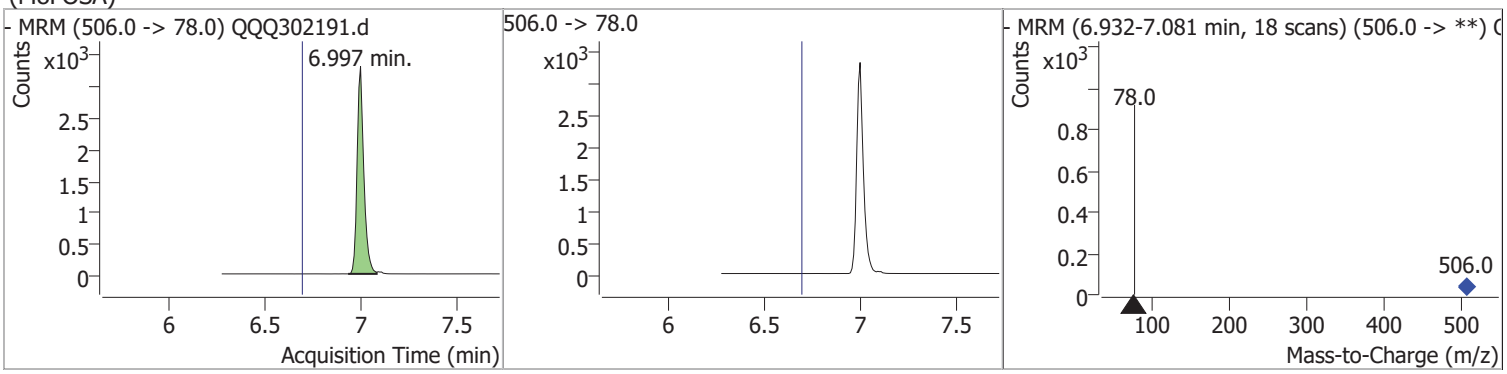
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
d3-N-MeFOSAA	4.6887	6.67	-0.36	6367				



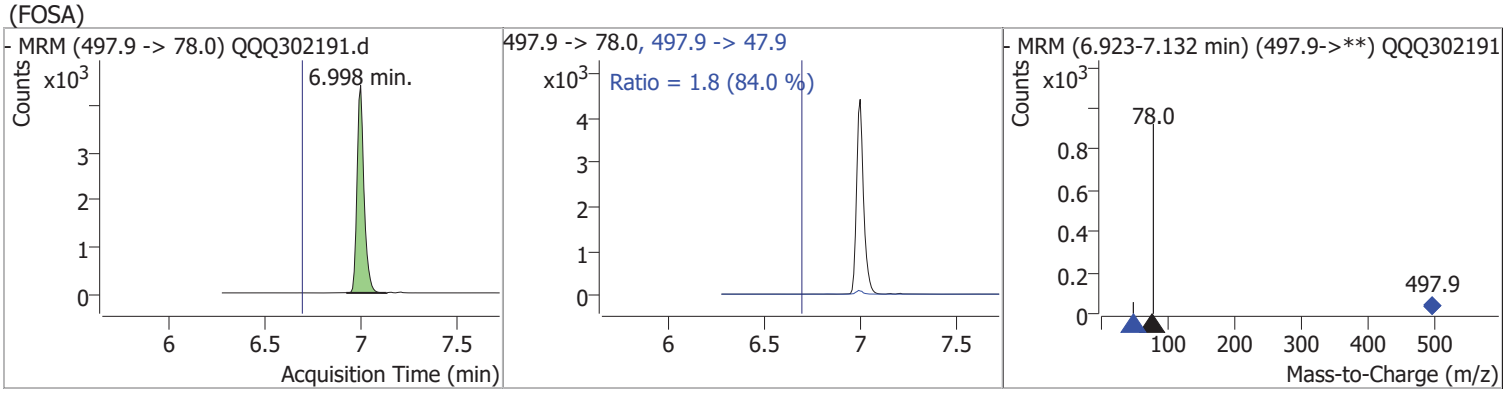
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
N-MeFOSAA	5.1693	6.67	-0.36	14787	570.0 -> 511.9	25.6	25.2	46.7



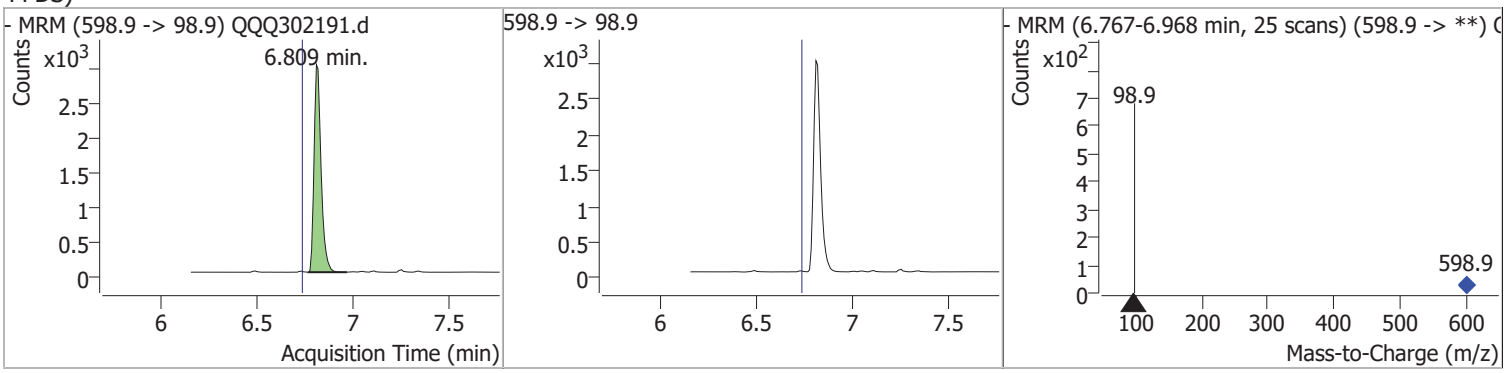
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-1-[13C8]octanesulfonamide (M8FOSA)	4.5000	7.00	-0.12	7961				



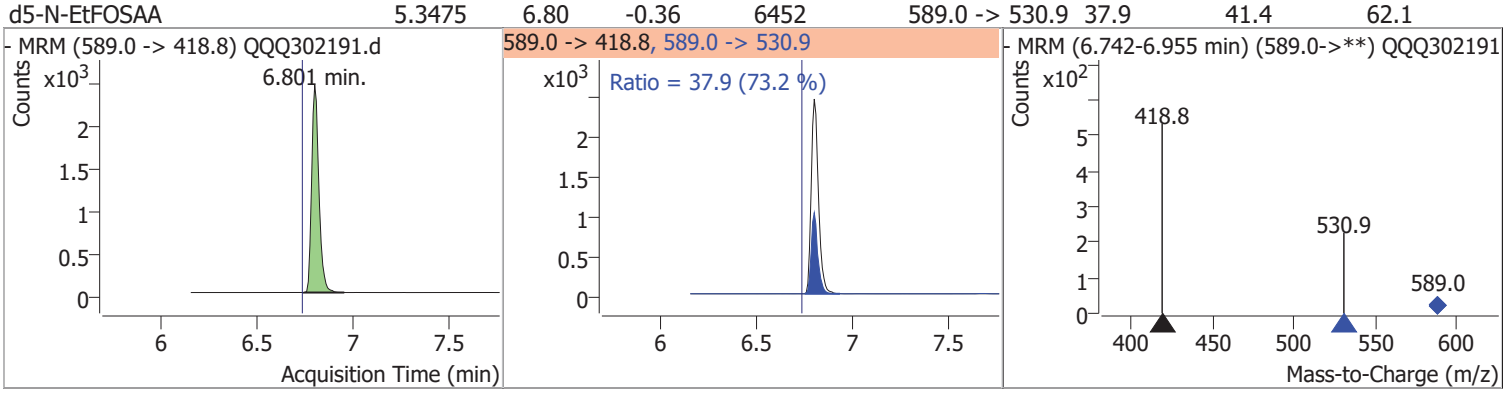
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-1-octanesulfonamide (FOSA)	4.5539	7.00	-0.12	11111	497.9 -> 47.9	1.8	1.7	2.5



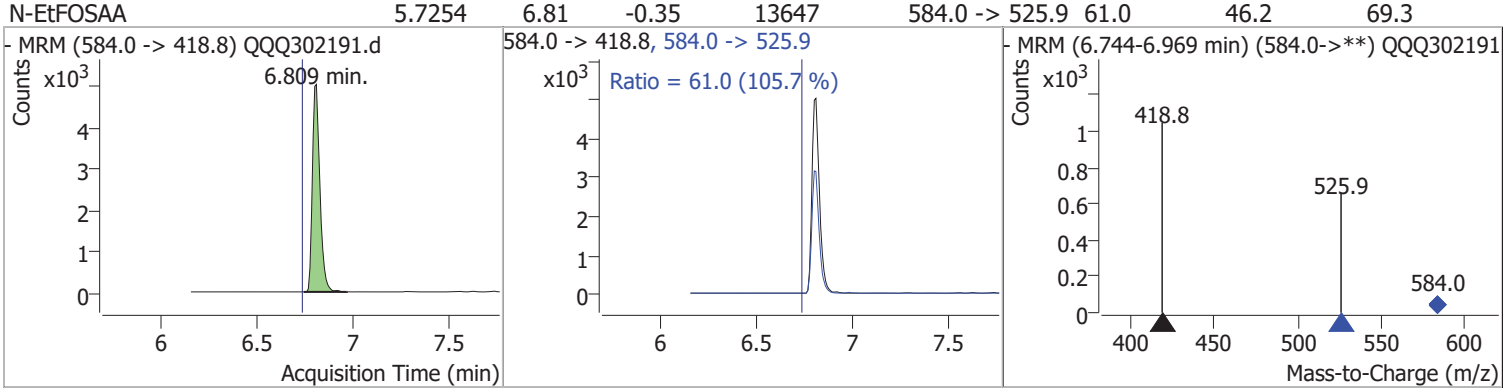
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-1-decanesulfonate (L-PFDS)	4.9397	6.81	-0.35	7565				



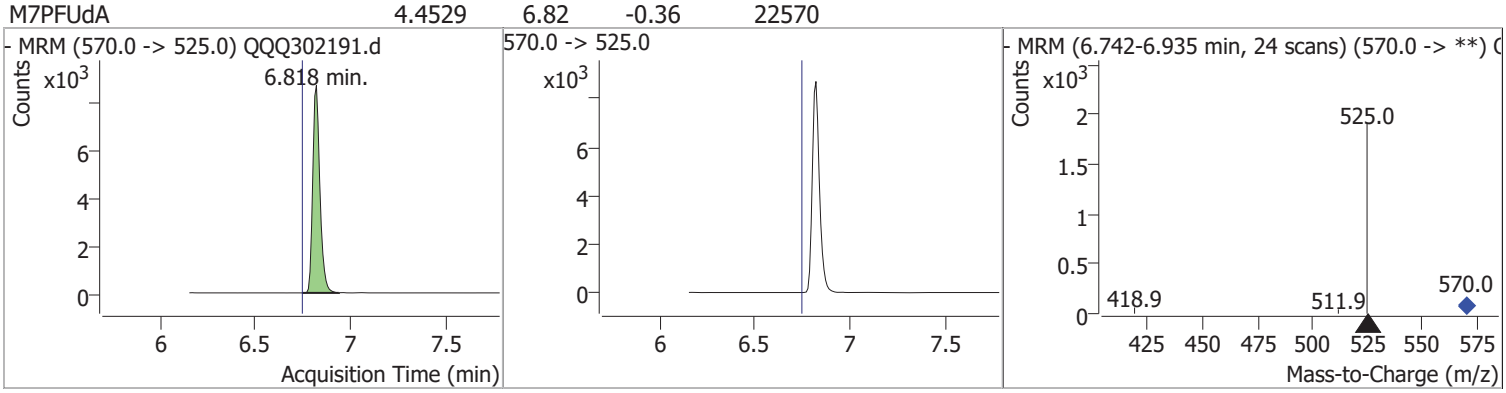
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
d5-N-EtFOSAA	5.3475	6.80	-0.36	6452	589.0 -> 530.9	37.9	41.4	62.1



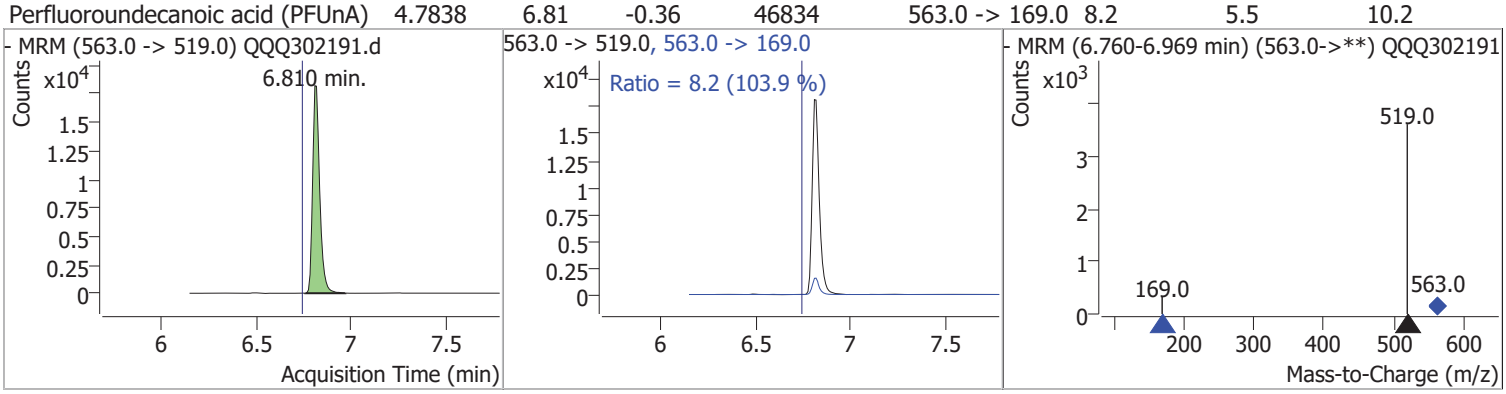
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
N-EtFOSAA	5.7254	6.81	-0.35	13647	584.0 -> 525.9	61.0	46.2	69.3



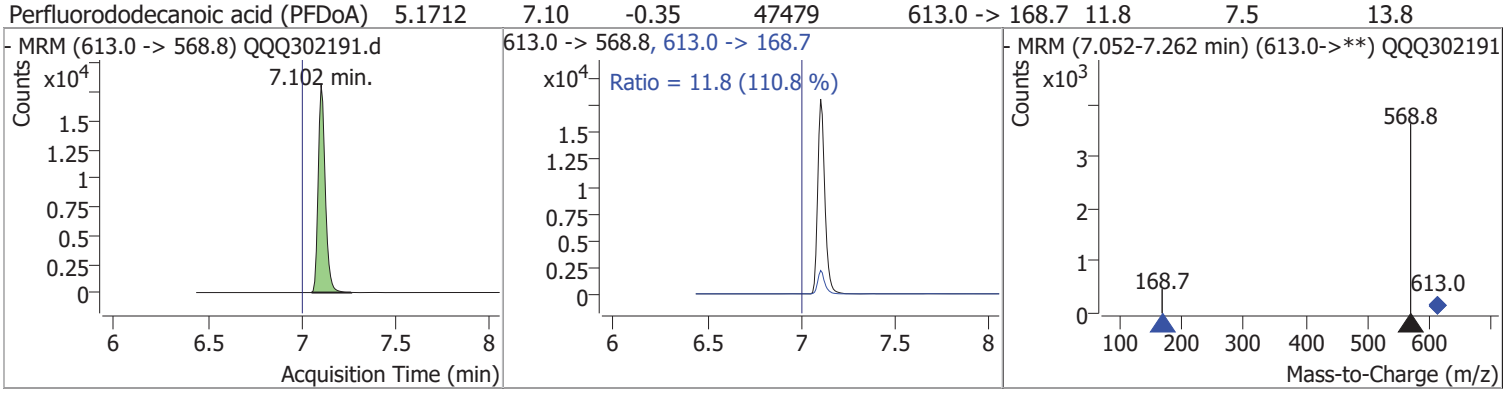
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M7PFUdA	4.4529	6.82	-0.36	22570				



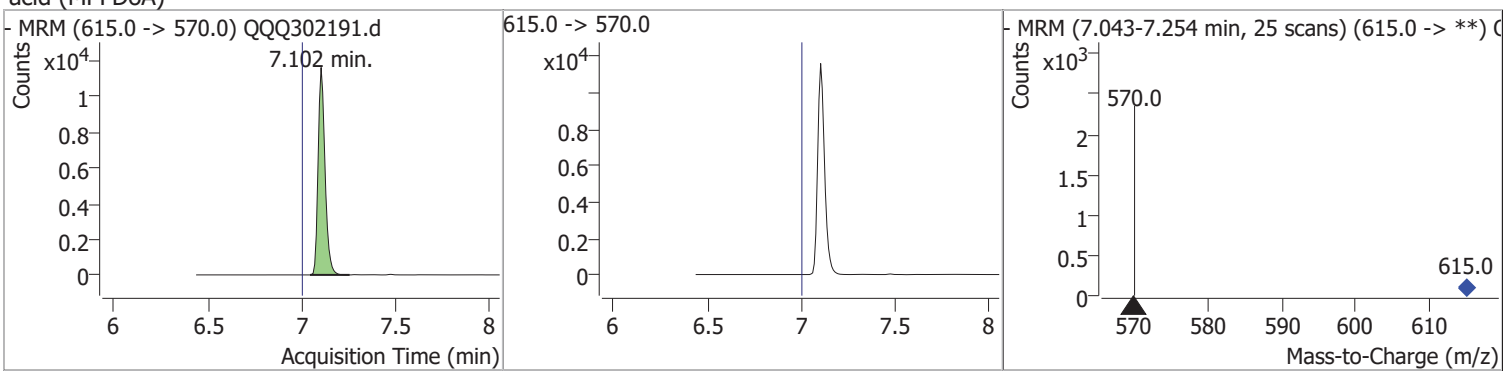
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoroundecanoic acid (PFUnA)	4.7838	6.81	-0.36	46834	563.0 -> 169.0	8.2	5.5	10.2



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorododecanoic acid (PFDoA)	5.1712	7.10	-0.35	47479	613.0 -> 168.7	11.8	7.5	13.8

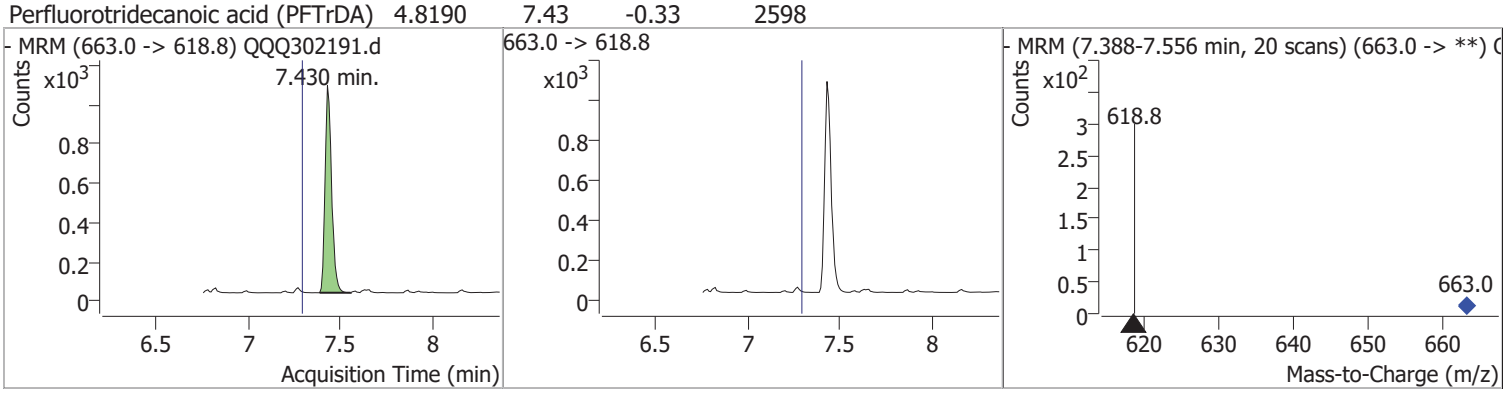


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-n-[1,2-13C2]dodecanoic acid (MPFDoA)	5.0019	7.10	-0.35	29437				

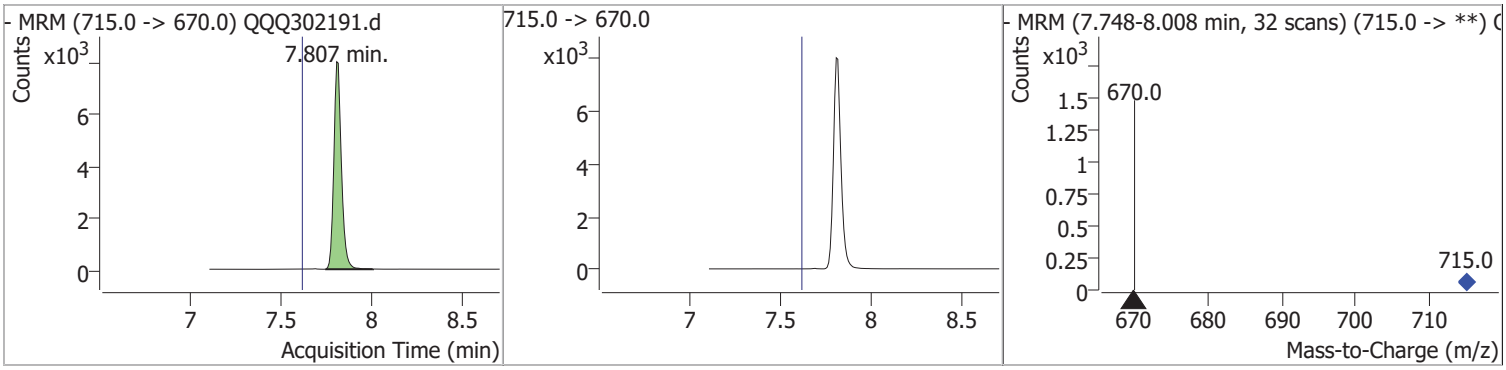


Quantitation Results Report (Not Reviewed)

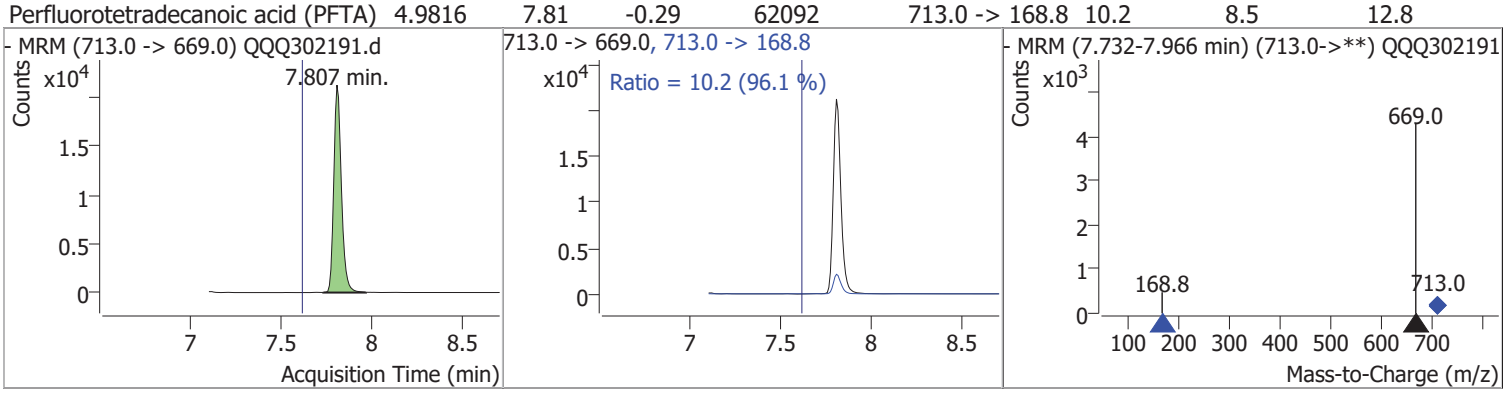
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorotridecanoic acid (PFTrDA)	4.8190	7.43	-0.33	2598				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M2PFTeDA	4.7294	7.81	-0.29	23218				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorotetradecanoic acid (PFTA)	4.9816	7.81	-0.29	62092	713.0 -> 168.8	10.2	8.5	12.8



Quantitation Results Report (Not Reviewed)

Agilent | Trusted Answers

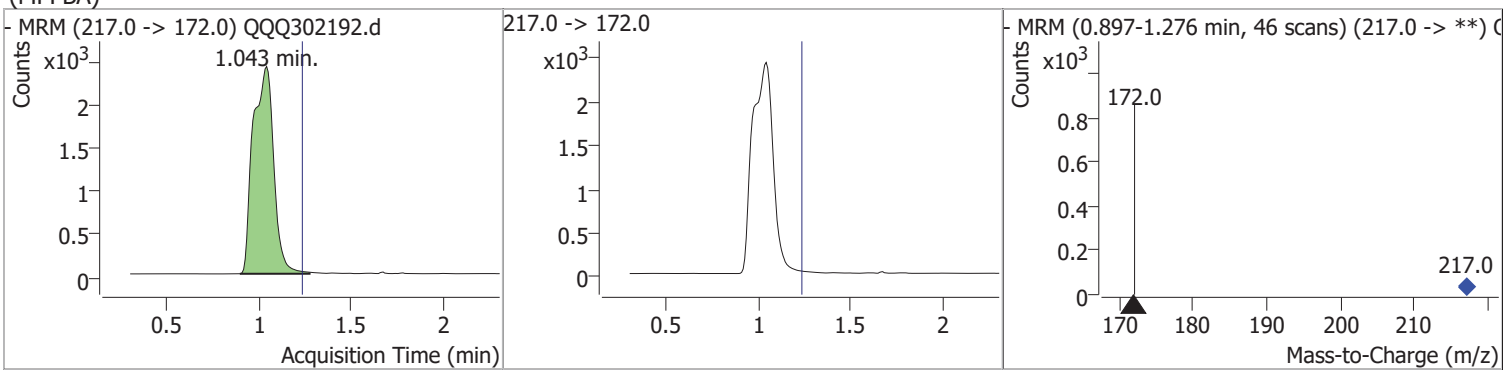
Data File	QQQ302192.d	Operator	
Acq. Method	PFAS 24_IDA ACQ_QQQ3A.m	Acq. Date-Time	6/27/2022 7:23:09 PM
Sample Name	SEQ-CAL6	Instrument	QQQ3
Vial		Multiplier	1.00
DA Method File	PFAS_24_IDA_QUANT_QQQ3_062722.m	Comment	10
Tune File		Tune Date	
Batch Name	2022-06-27-IDA-ICAL2.batch.bin	Last Calib Update	6/27/2022 4:24:30 PM
Ref Library			

Compound	RT	QIon	Resp.	Conc.	Units		Dev(Min)
Internal Standards							
MPFOA	6.039	417.0 -> 372.0	114236	10.0000	ng/ml		-0.391
System Monitoring Compounds							
Perfluoro-n-[13C4]butanoic acid (MPFBA)	1.043	217.0 -> 172.0	18834	8.7462	ng/ml		-0.267
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 87.46%			
Perfluoro-n-[13C54]pentanoic acid (M5PFPeA)	4.070	268.0 -> 223.0	16439	9.2418	ng/ml		-0.517
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 92.42%			
M3PFBS	4.672	302.0 -> 79.9	7178	8.3276	ng/ml		-0.491
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 83.28%			
M2-4-2FTS	5.225	329.0 -> 309.0	4951	8.4284	ng/ml	#	-0.465
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 84.28%			
M5PFHxA	5.260	318.0 -> 273.0	33250	9.5523	ng/ml		-0.464
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 95.52%			
M4PFHpA	5.729	367.0 -> 322.0	20681	11.2549	ng/ml		-0.415
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 112.55%			
M3PFHxS	5.770	402.0 -> 80.0	7028	9.4615	ng/ml	#	-0.407
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 94.61%			
M2-6-2FTS	6.022	429.0 -> 409.0	4826	9.4296	ng/ml	#	-0.398
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 94.30%			
Perfluoro-n-[13C8]octanoic acid (M8PFOA)	6.039	421.0 -> 376.0	28781	9.6093	ng/ml		-0.391
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 96.09%			
Perfluoro-n-[13C9]nonanoic acid (M9PFNA)	6.299	472.0 -> 427.0	32731	9.4792	ng/ml	#	-0.381
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 94.79%			
Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)	6.315	507.0 -> 80.0	7019	9.2140	ng/ml		-0.373
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 92.14%			
M2-8-2FTS	6.549	529.0 -> 509.0	4820	9.9302	ng/ml		-0.369
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 99.30%			
M6PFDA	6.550	519.0 -> 473.9	35352	9.3178	ng/ml		-0.372
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 93.18%			
d3-N-MeFOSAA	6.666	573.0 -> 418.8	13545	10.2124	ng/ml		-0.364
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 102.12%			
Perfluoro-1-[13C8]octanesulfonamide (M8FOSA)	6.997	506.0 -> 78.0	15119	8.5947	ng/ml		-0.122
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 85.95%			
d5-N-EtFOSAA	6.800	589.0 -> 418.8	13114	11.0400	ng/ml	#	-0.364
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 110.40%			
M7PFUdA	6.818	570.0 -> 525.0	46288	9.5353	ng/ml		-0.355
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 95.35%			
Perfluoro-n-[1,2-13C2]dodecanoic acid (MPFDoA)	7.111	615.0 -> 570.0	62055	10.6355	ng/ml		-0.337
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 106.36%			
M2PFTeDA	7.815	715.0 -> 670.0	46431	9.5297	ng/ml		-0.286
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 95.30%			
Target Compounds							**QValue**

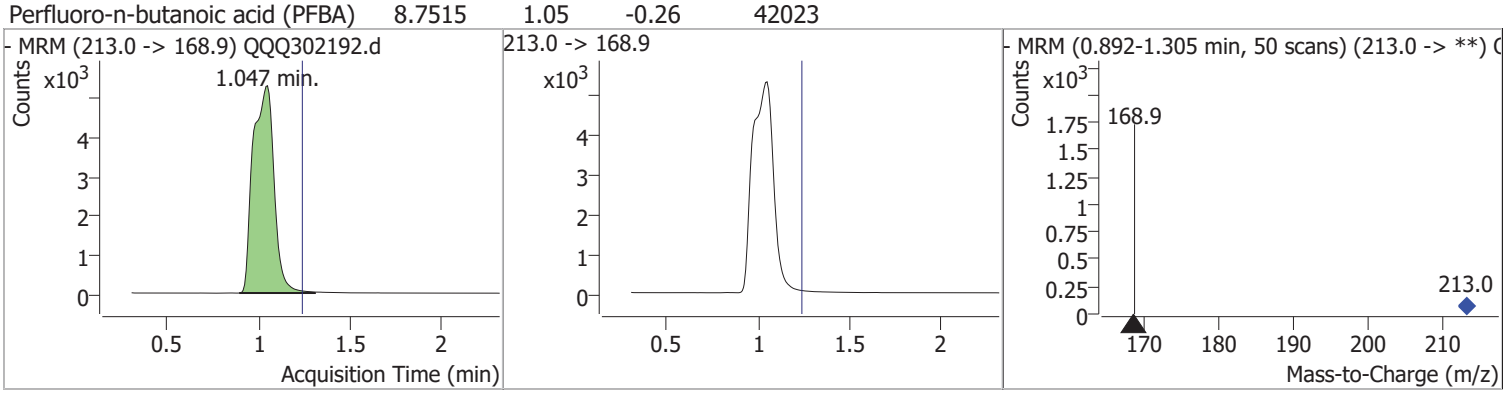
Compound	RT	QIon	Resp.	Conc.	Units		Dev(Min)
Perfluoro-n-butanoic acid (PFBA)	1.047	213.0 -> 168.9	42023	8.7515	ng/ml		100
Perfluoro-n-pentanoic acid (PFPeA)	4.066	263.0 -> 219.0	33593	9.5013	ng/ml		100
Perfluorobutanesulfonic acid (PFBS)	4.675	298.9 -> 79.9	15964	8.0263	ng/ml		95
1H,1H,2H,2H-perfluoro-1-hexanesulfonate (4 2FTS)	5.225	327.0 -> 307.0	10749	9.2955	ng/ml		97
Perfluorohexanoic acid (PFHxA)	5.261	313.0 -> 268.9	71394	9.3916	ng/ml		99
Perfluoro-1-pentanesulfonate (L-PFPeS)	5.383	348.9 -> 79.9	14801	8.7946	ng/ml		98
Perfluoroheptanoic acid (PFHpA)	5.729	363.0 -> 318.8	94151	9.4377	ng/ml		100
Perfluorohexanesulfonic acid (PFHxS)	5.771	398.9 -> 79.9	13585	8.2504	ng/ml	m	95
1H,1H,2H,2H-perfluoro-1-octanesulfonate (6 2FTS)	6.022	427.0 -> 407.0	8631	9.0694	ng/ml	#	85
Perfluorooctanoic acid (PFOA)	6.039	413.0 -> 368.8	94740	9.2890	ng/ml		98
Perfluoro-1-heptanesulfonate (L-PFHpS)	6.063	448.9 -> 80.0	12400	9.5061	ng/ml		100
Perfluorononanoic acid (PFNA)	6.300	463.0 -> 418.8	93752	9.2069	ng/ml		100
Perfluorooctanesulfonic acid (PFOS)	6.307	498.9 -> 79.9	12823	8.9943	ng/ml	#m	83
1H,1H,2H,2H-perfluoro-1-decanesulfonate (8 2FTS)	6.550	527.0 -> 507.0	8746	7.6311	ng/ml		93
Perfluorononanesulfonate (L-PFNS)	6.558	548.9 -> 79.9	12949	9.7001	ng/ml		89
Perfluorodecanoic acid (PFDA)	6.550	513.0 -> 468.8	99705	10.2851	ng/ml		99
N-MeFOSAA	6.675	570.0 -> 418.9	29181	10.2029	ng/ml		96
Perfluoro-1-octanesulfonamide (FOSA)	6.997	497.9 -> 78.0	21978	8.9202	ng/ml	#	99
Perfluoro-1-decanesulfonate (L-PFDS)	6.817	598.9 -> 98.9	13122	8.8998	ng/ml		100
N-EtFOSAA	6.809	584.0 -> 418.8	23463	10.0679	ng/ml		94
Perfluoroundecanoic acid (PFUnA)	6.818	563.0 -> 519.0	92881	9.6779	ng/ml		99
Perfluorododecanoic acid (PFDoA)	7.111	613.0 -> 568.8	89719	9.6246	ng/ml		97
Perfluorotridecanoic acid (PFTrDA)	7.438	663.0 -> 618.8	5336	9.5302	ng/ml		100
Perfluorotetradecanoic acid (PFTA)	7.815	713.0 -> 669.0	130954	10.1436	ng/ml		98

(#) = Qualifier Out of Range; (m) = Manual Integration; (+) = Area Summed; (*) = Surrogate Percent Recovery Out of Range; (d): Zeroed Peak

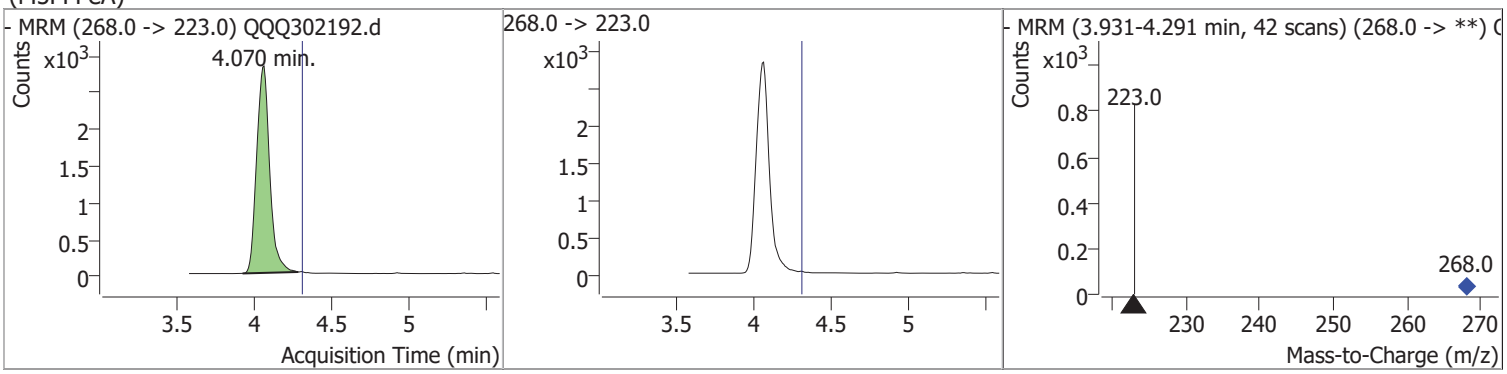
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-n-[13C4]butanoic acid (MPFBA)	8.7462	1.04	-0.27	18834				



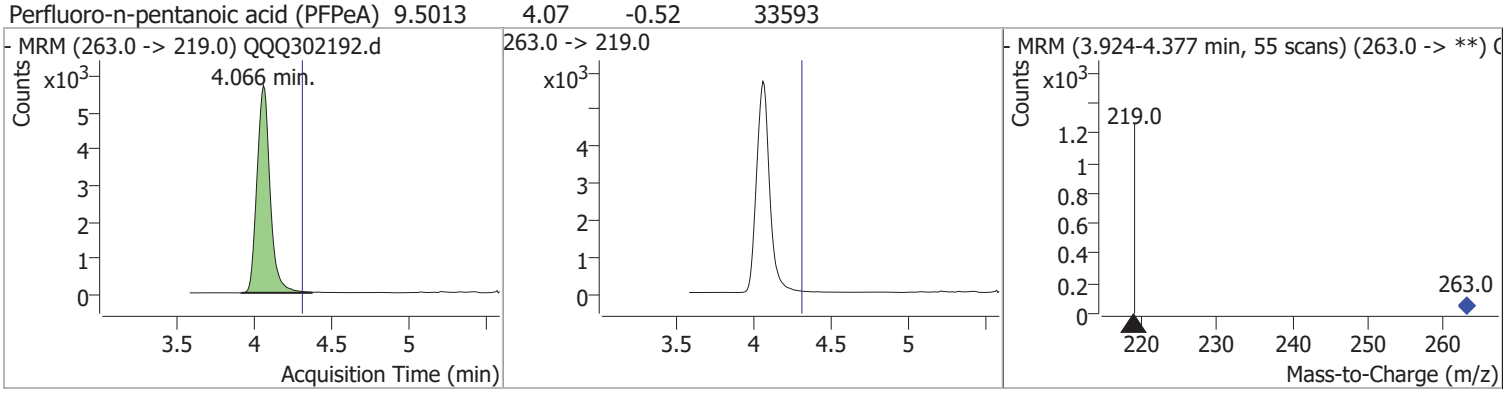
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-n-butanoic acid (PFBA)	8.7515	1.05	-0.26	42023				



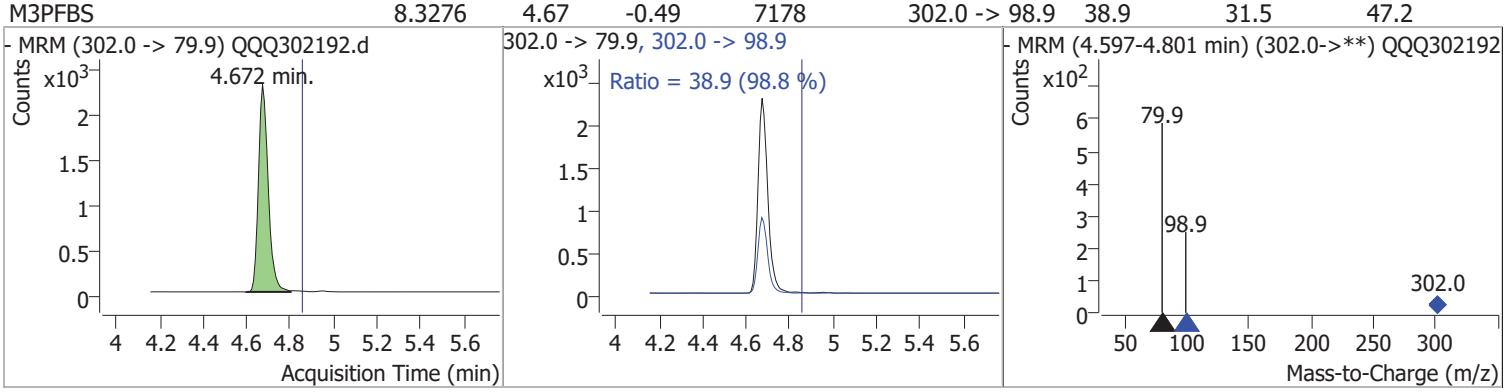
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-n-[13C54]pentanoic acid (M5PFPeA)	9.2418	4.07	-0.52	16439				



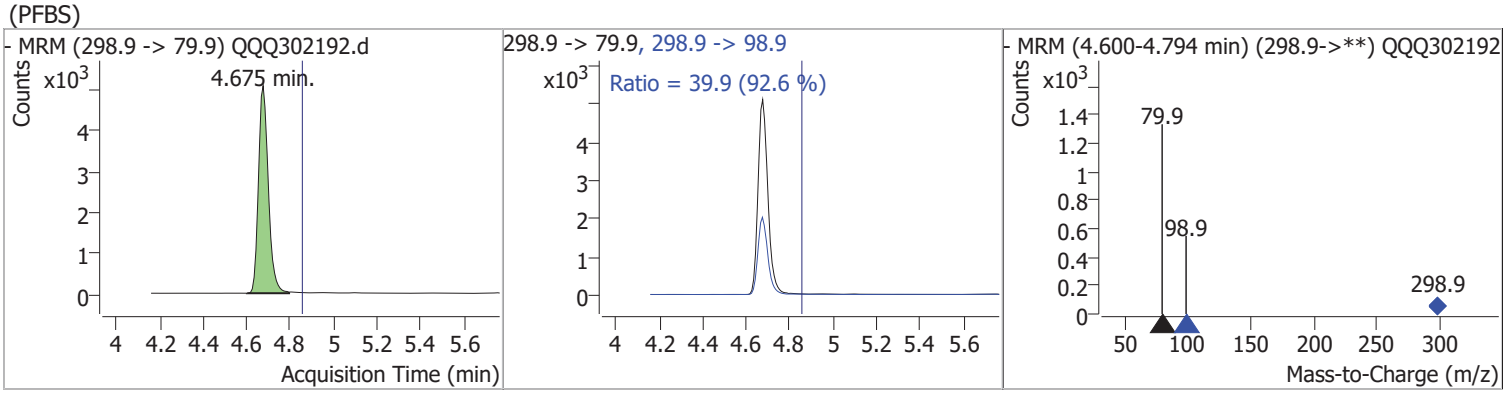
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-n-pentanoic acid (PFPeA)	9.5013	4.07	-0.52	33593				



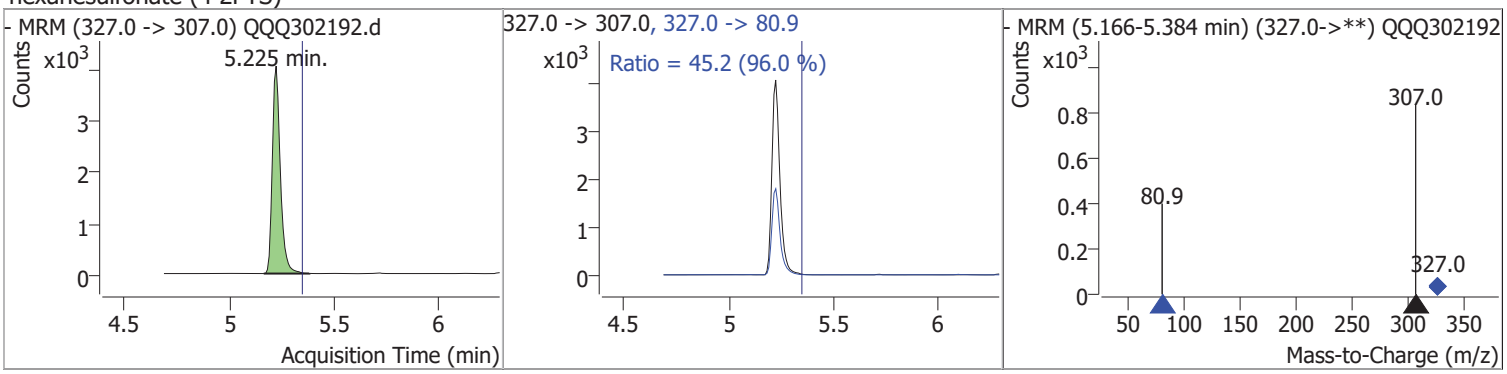
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M3PFBS	8.3276	4.67	-0.49	7178	302.0 -> 98.9	38.9	31.5	47.2



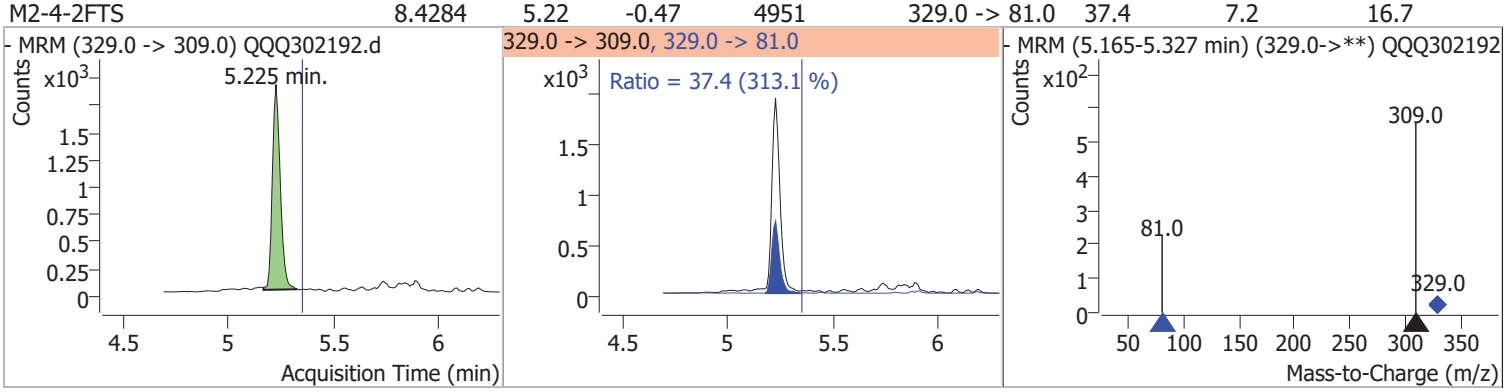
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorobutanesulfonic acid (PFBS)	8.0263	4.67	-0.49	15964	298.9 -> 98.9	39.9	34.5	51.7



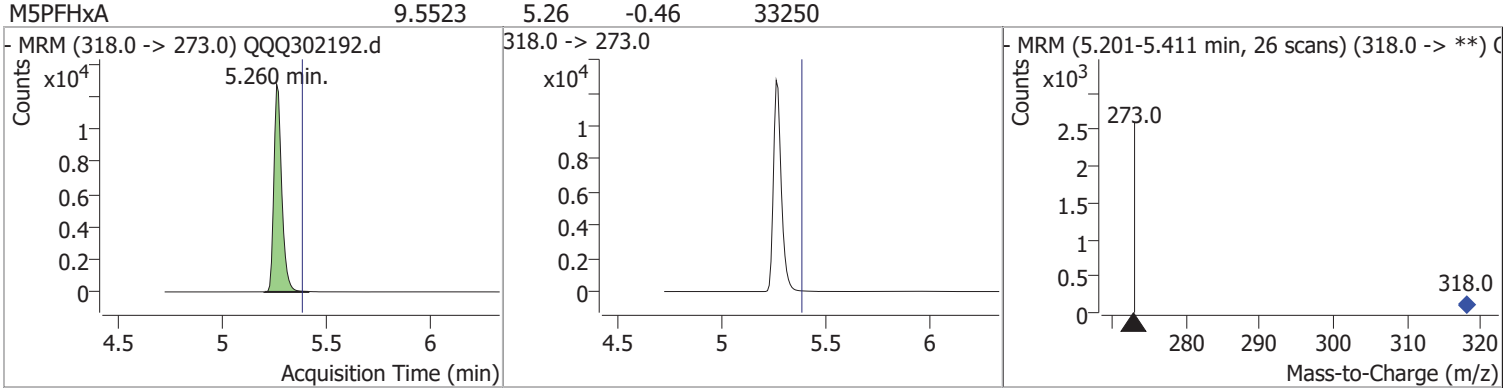
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
1H,1H,2H,2H-perfluoro-1-hexanesulfonate (4 2FTS)	9.2955	5.23	-0.46	10749	327.0 -> 80.9	45.2	28.2	65.9



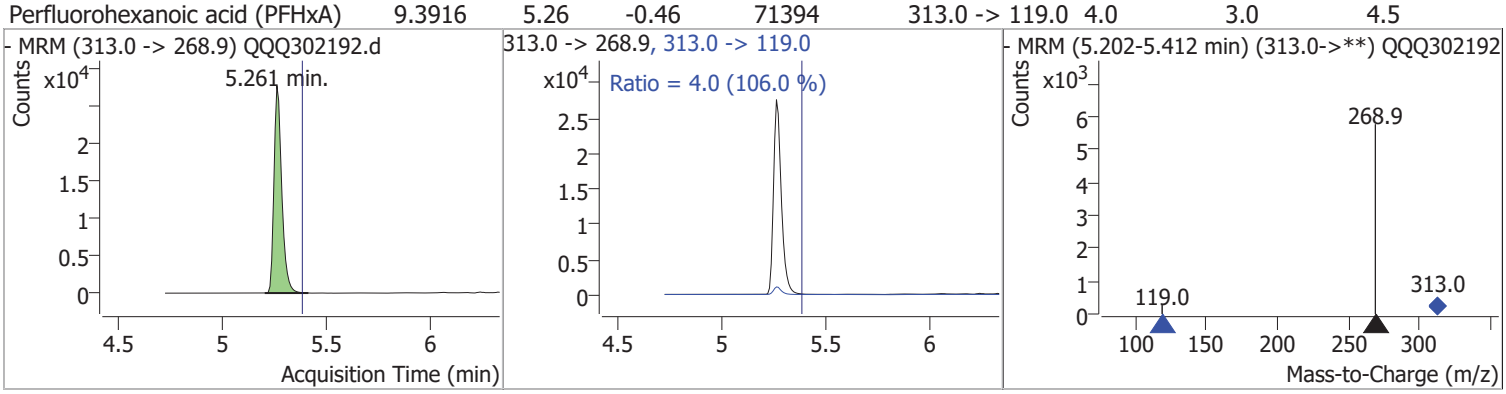
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M2-4-2FTS	8.4284	5.22	-0.47	4951	329.0 -> 81.0	37.4	7.2	16.7



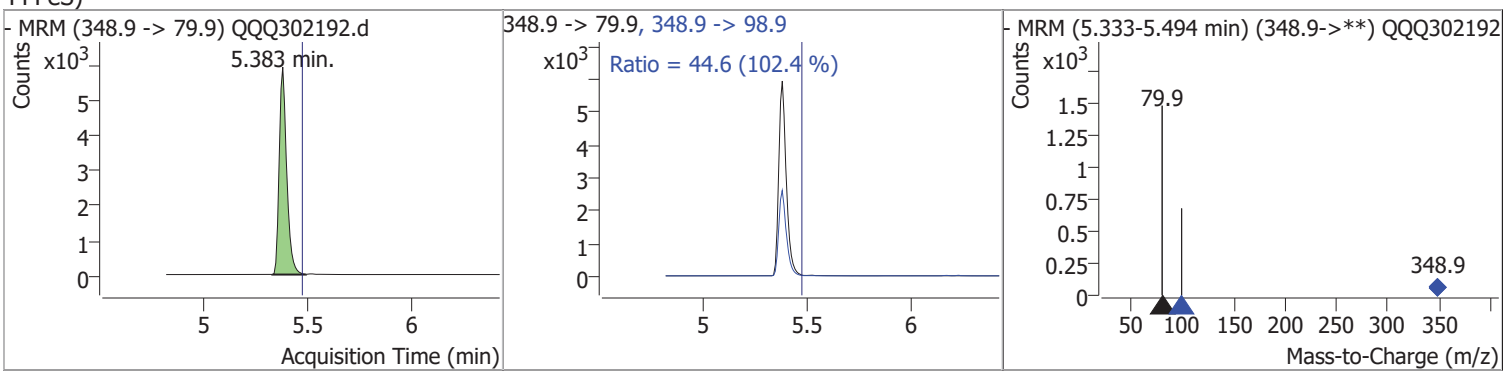
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M5PFHxA	9.5523	5.26	-0.46	33250				



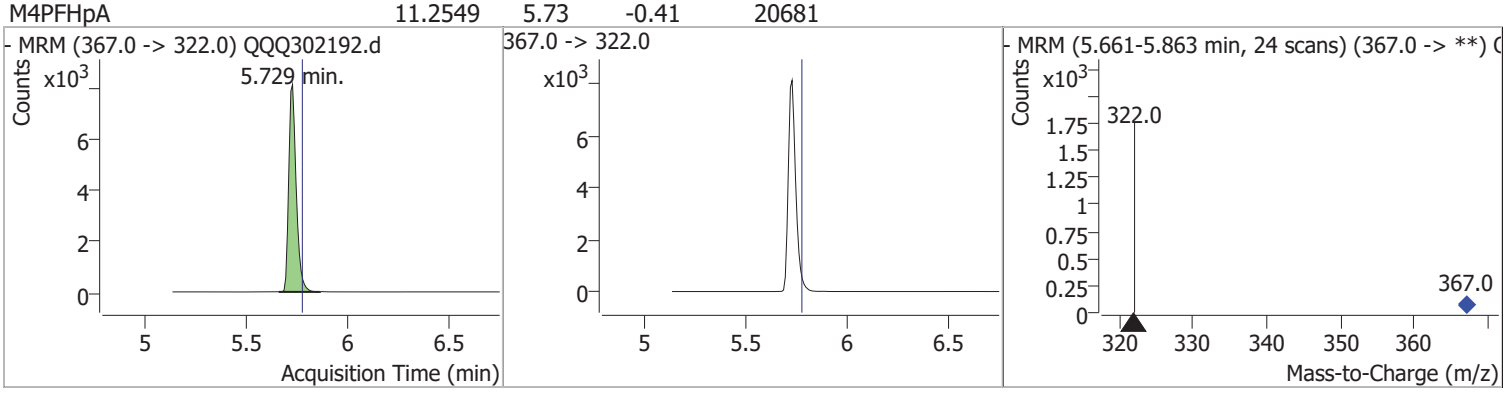
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorohexanoic acid (PFHxA)	9.3916	5.26	-0.46	71394	313.0 -> 119.0	4.0	3.0	4.5



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-1-pentanesulfonate (L-PFPeS)	8.7946	5.38	-0.44	14801	348.9 -> 98.9	44.6	34.8	52.2

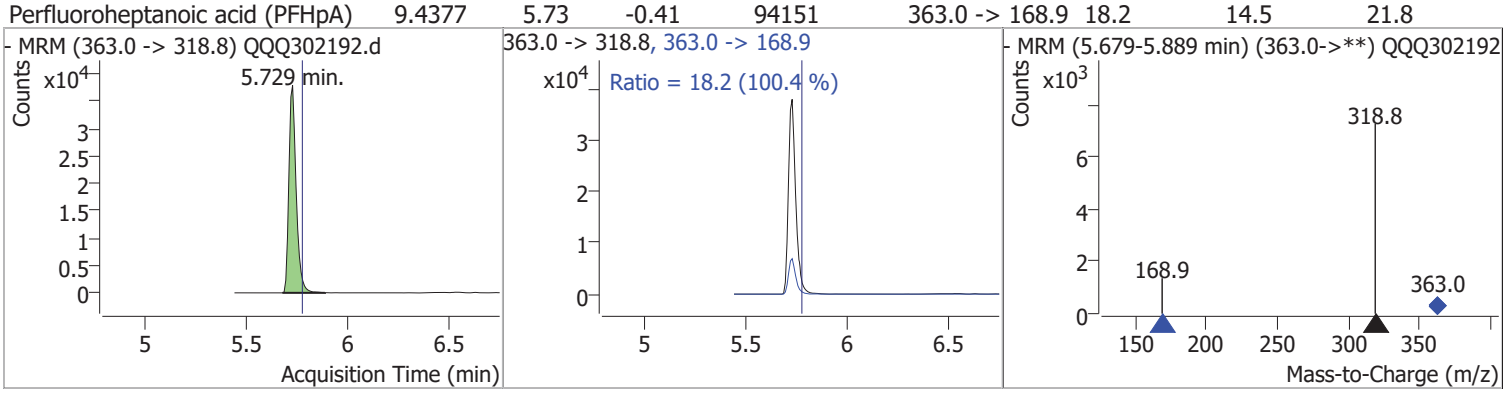


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M4PFHpA	11.2549	5.73	-0.41	20681				

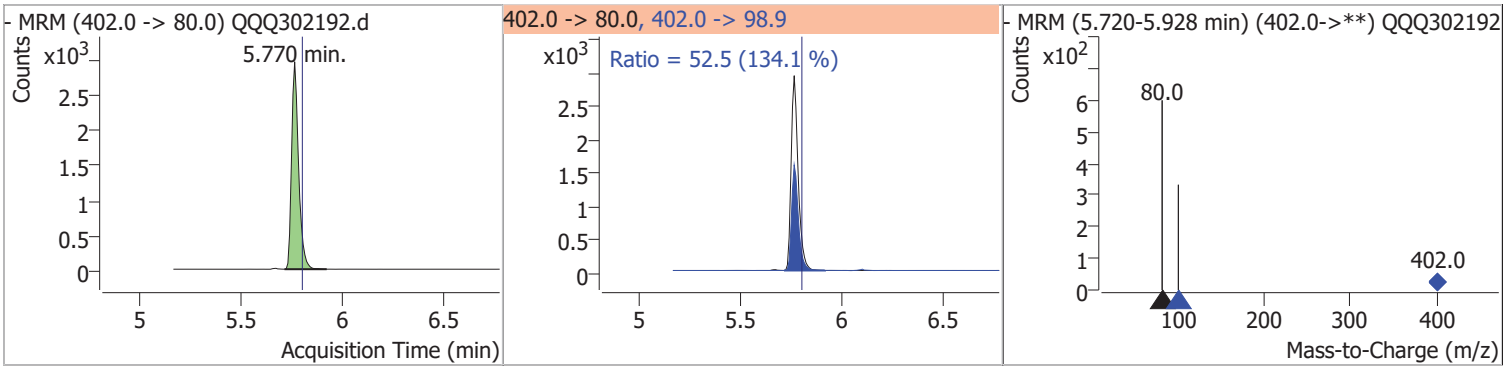


Quantitation Results Report (Not Reviewed)

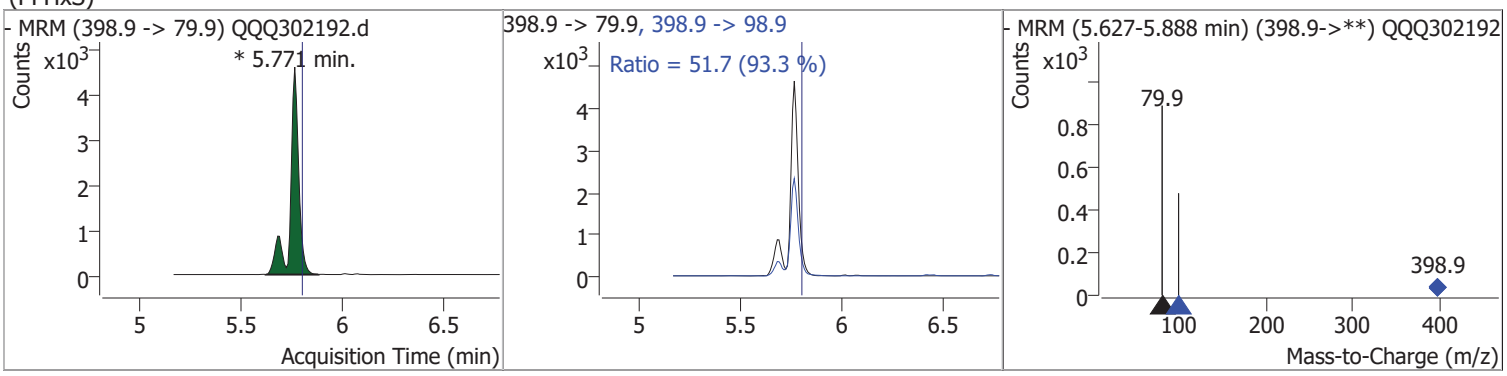
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoroheptanoic acid (PFHpA)	9.4377	5.73	-0.41	94151	363.0 -> 168.9	18.2	14.5	21.8



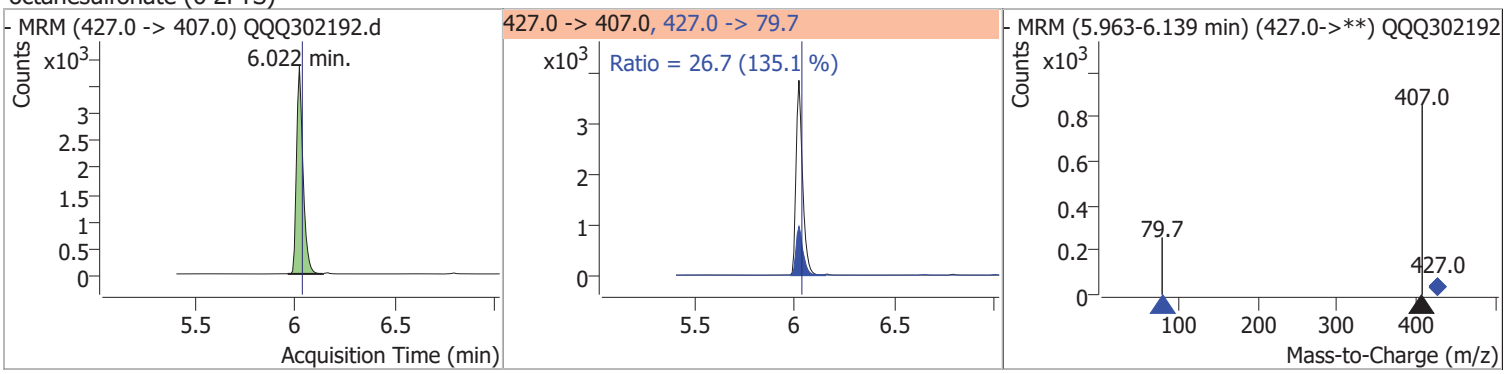
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M3PFHxS	9.4615	5.77	-0.41	7028	402.0 -> 98.9	52.5	31.3	47.0



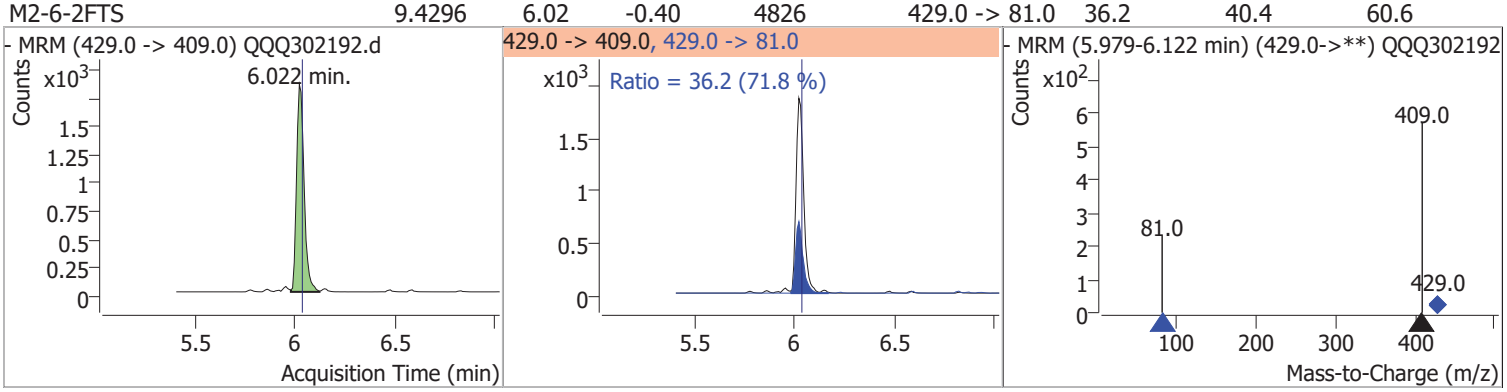
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorohexanesulfonic acid (PFHxS)	8.2504	5.77	-0.41	13585 (m)	398.9 -> 98.9	51.7	44.4	66.5



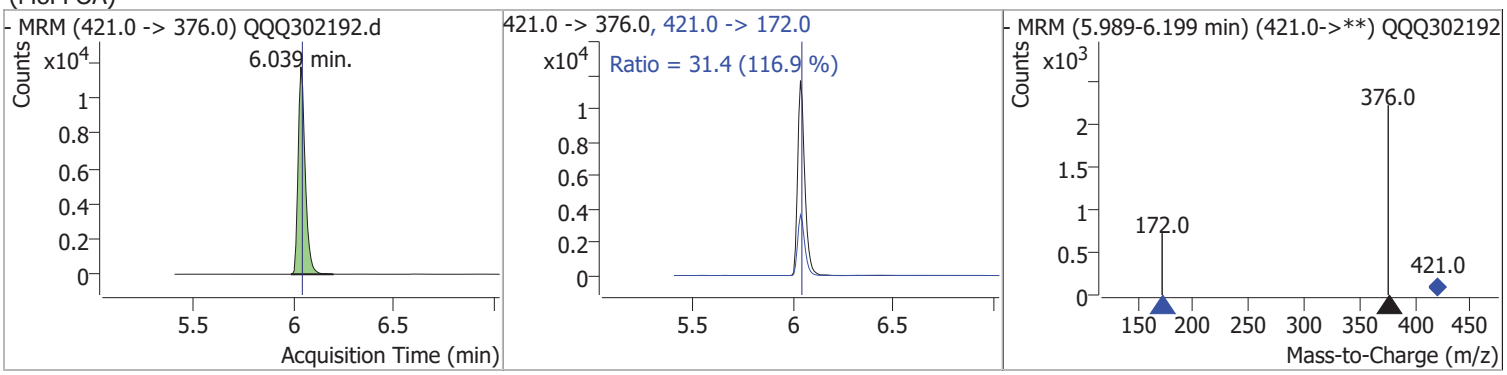
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
1H,1H,2H,2H-perfluoro-1-octanesulfonate (6 2FTS)	9.0694	6.02	-0.40	8631	427.0 -> 79.7	26.7	15.8	23.7



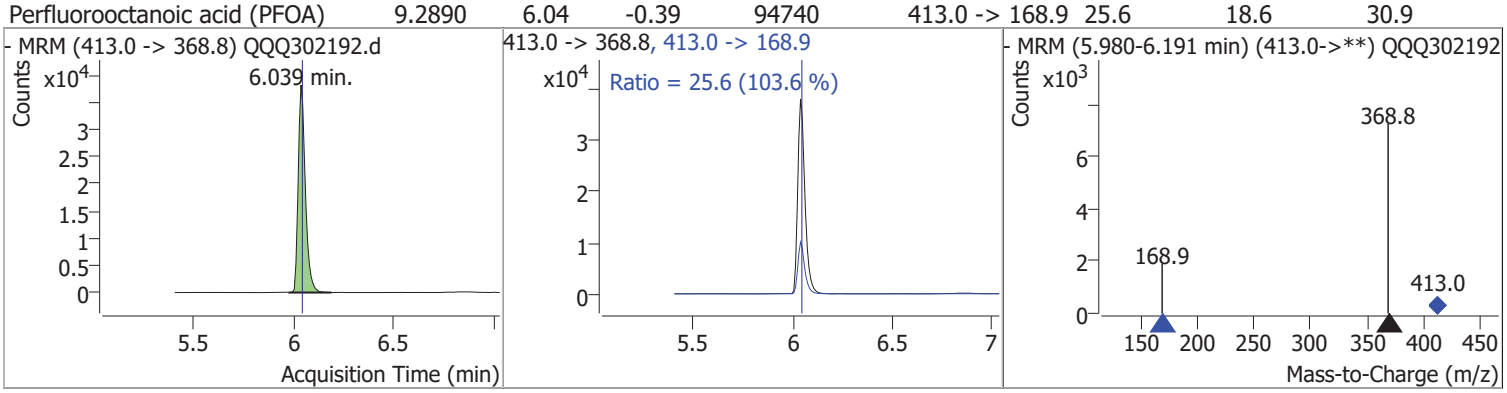
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M2-6-2FTS	9.4296	6.02	-0.40	4826	429.0 -> 81.0	36.2	40.4	60.6



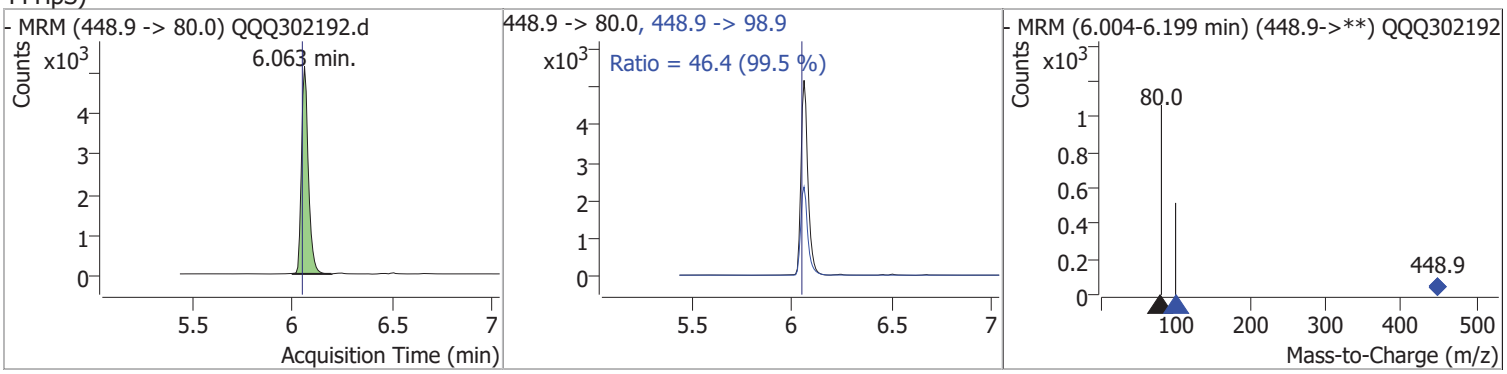
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-n-[13C8]octanoic acid (M8PFOA)	9.6093	6.04	-0.39	28781	421.0 -> 172.0	31.4	21.5	32.2



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorooctanoic acid (PFOA)	9.2890	6.04	-0.39	94740	413.0 -> 168.9	25.6	18.6	30.9

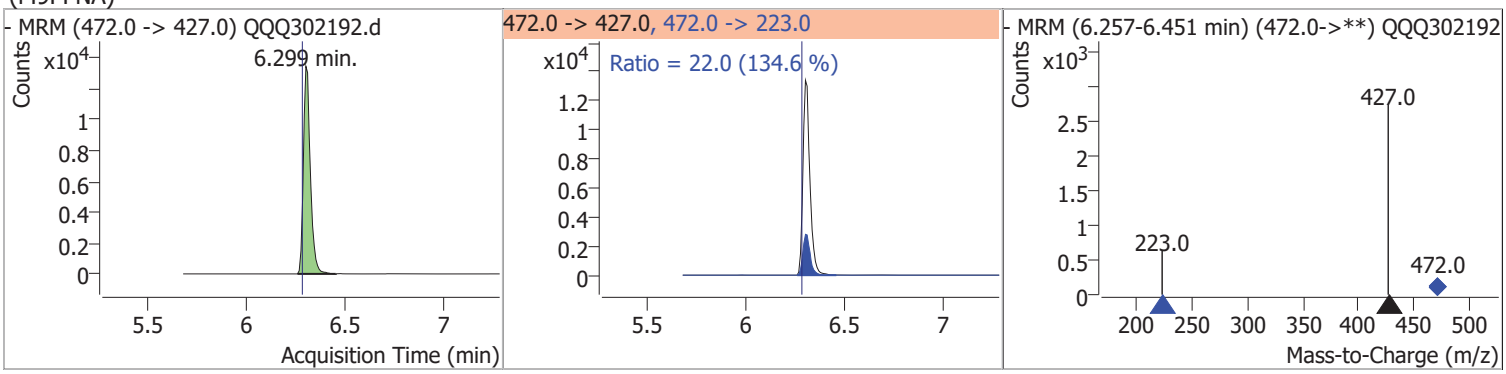


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-1-heptanesulfonate (L-PFHpS)	9.5061	6.06	-0.37	12400	448.9 -> 98.9	46.4	37.3	56.0

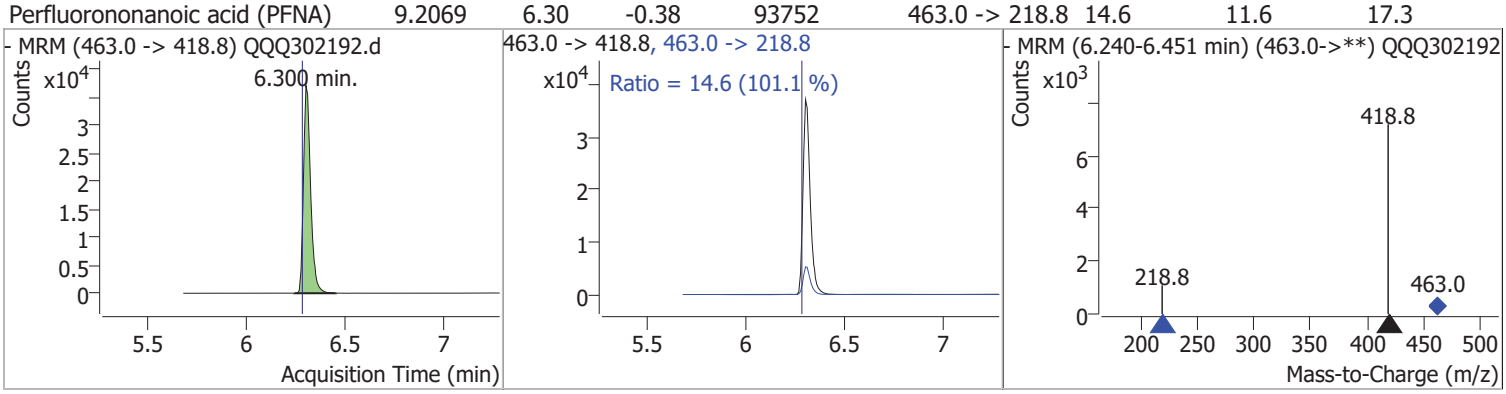


Quantitation Results Report (Not Reviewed)

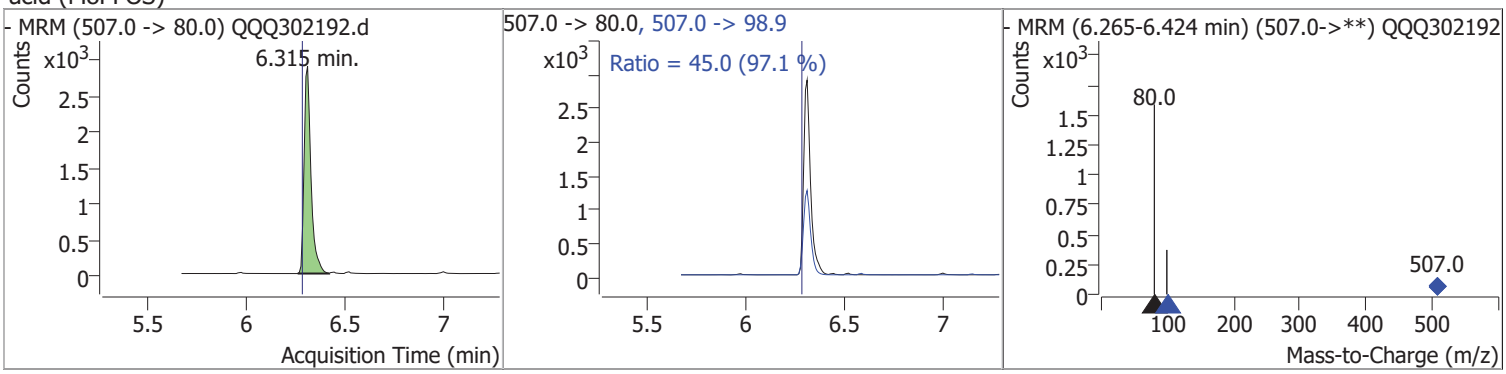
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-n-[13C9]nonanoic acid (M9PFNA)	9.4792	6.30	-0.38	32731	472.0 -> 223.0	22.0	13.1	19.6



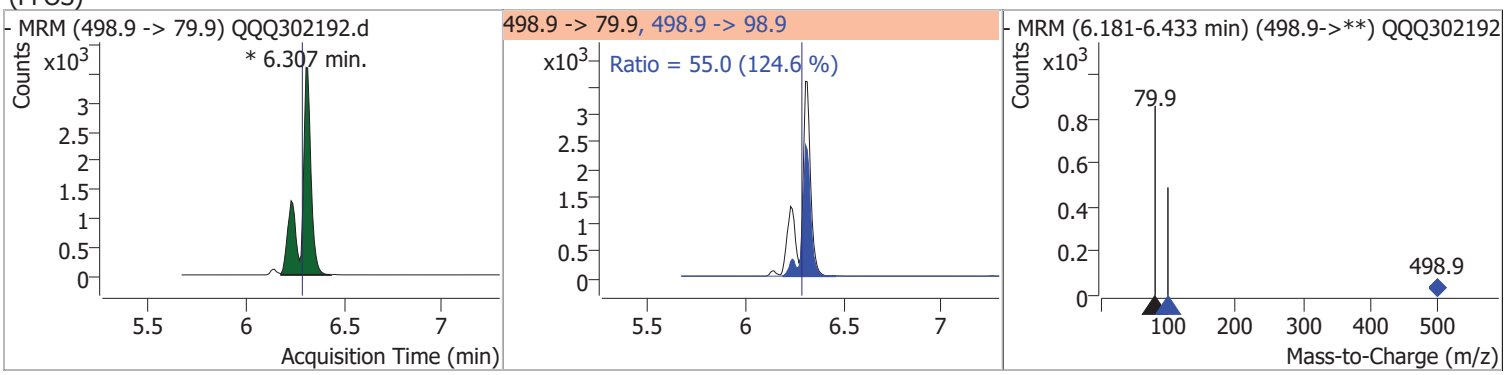
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorononanoic acid (PFNA)	9.2069	6.30	-0.38	93752	463.0 -> 218.8	14.6	11.6	17.3



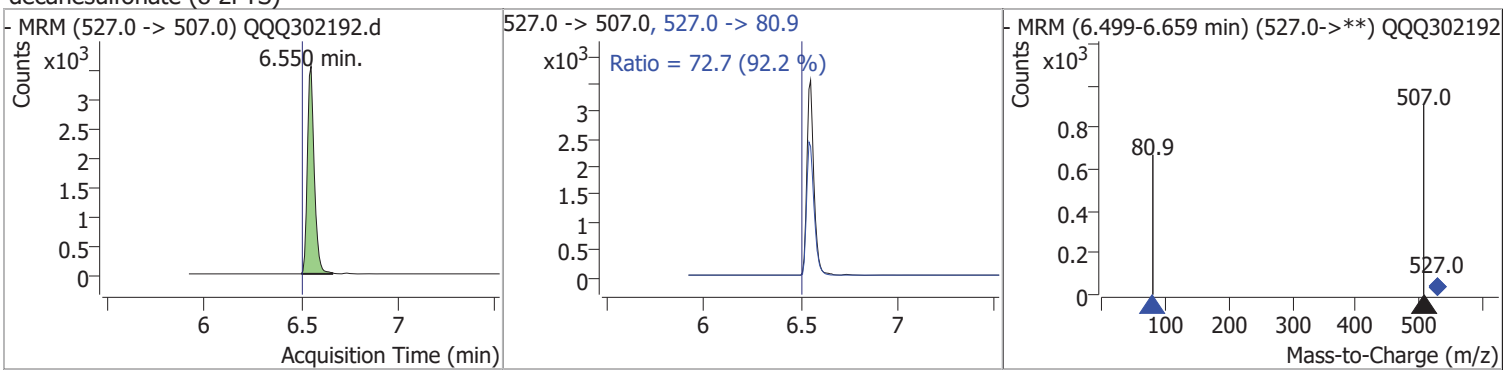
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)	9.2140	6.32	-0.37	7019	507.0 -> 98.9	45.0	37.1	55.6



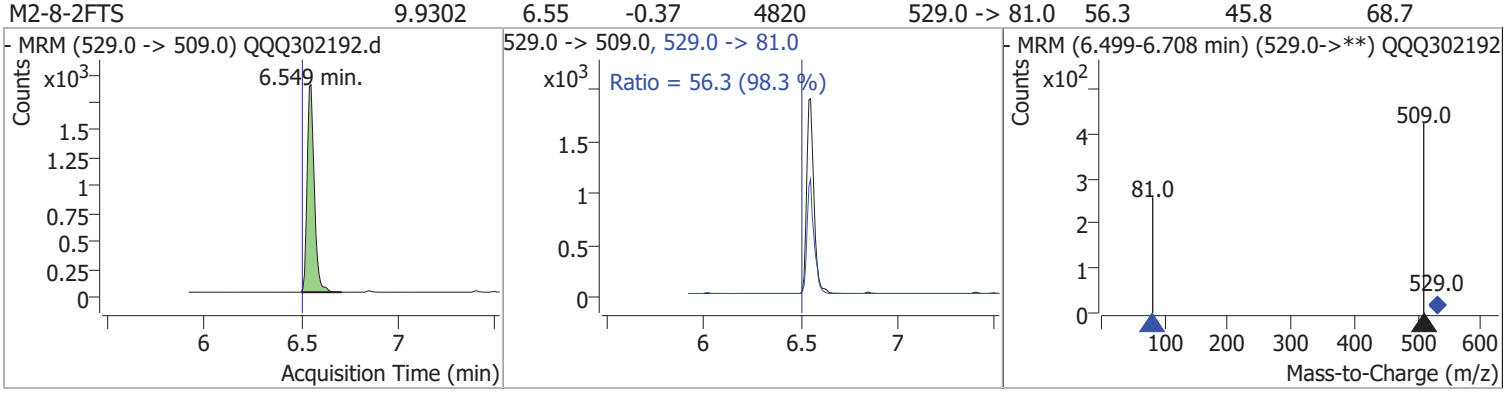
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorooctanesulfonic acid (PFOS)	8.9943	6.31	-0.38	12823 (m)	498.9 -> 98.9	55.0	35.4	53.0



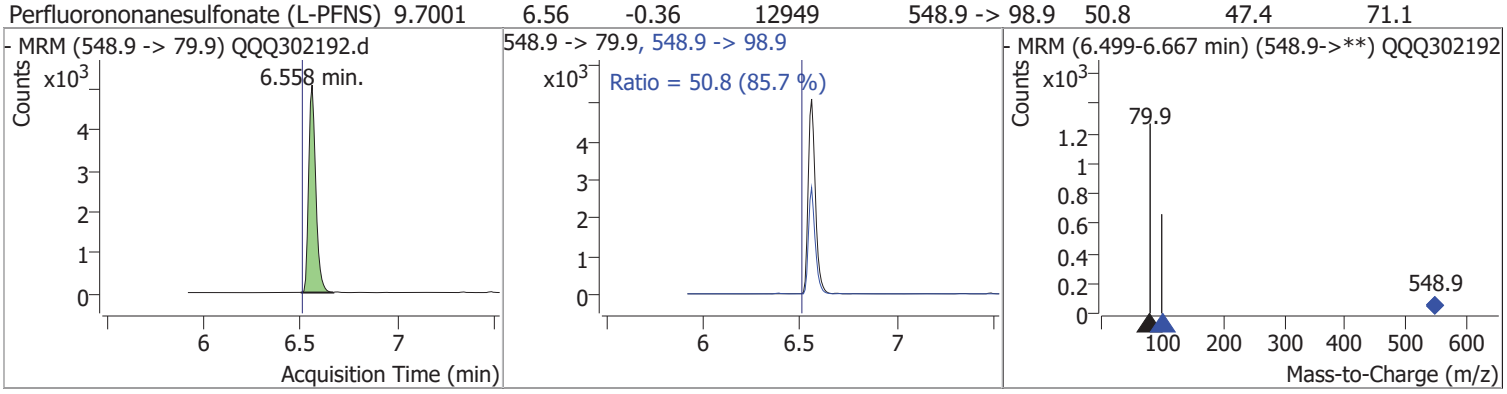
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
1H,1H,2H,2H-perfluoro-1-decanesulfonate (8 2FTS)	7.6311	6.55	-0.37	8746	527.0 -> 80.9	72.7	63.1	94.6



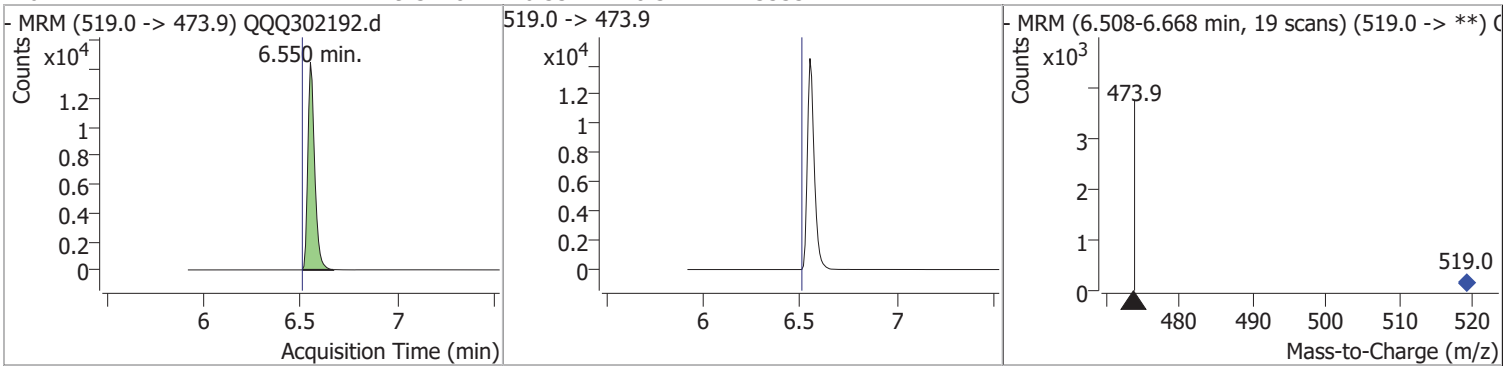
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M2-8-2FTS	9.9302	6.55	-0.37	4820	529.0 -> 81.0	56.3	45.8	68.7



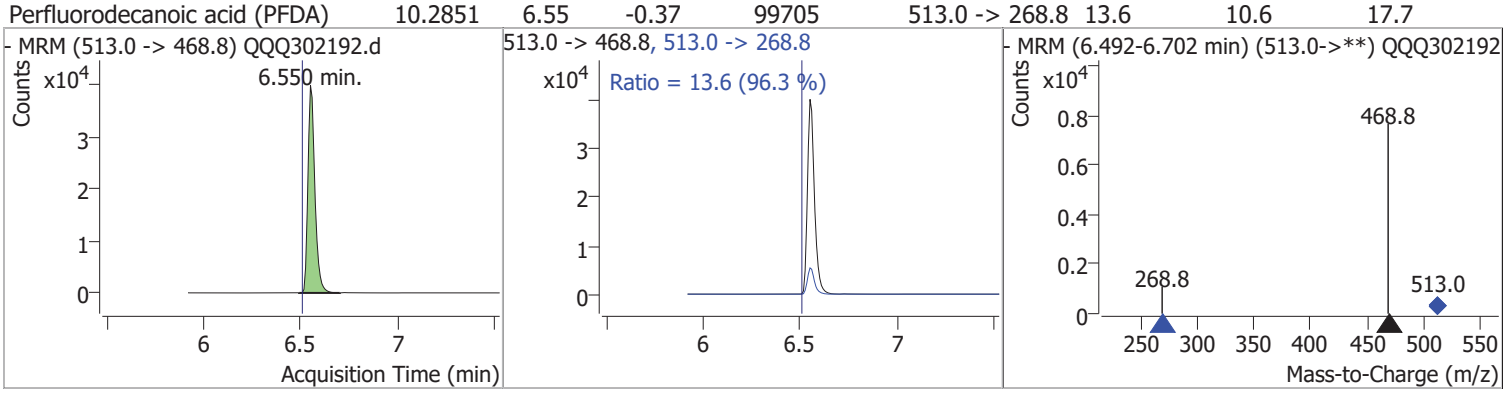
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorononanesulfonate (L-PFNS)	9.7001	6.56	-0.36	12949	548.9 -> 98.9	50.8	47.4	71.1



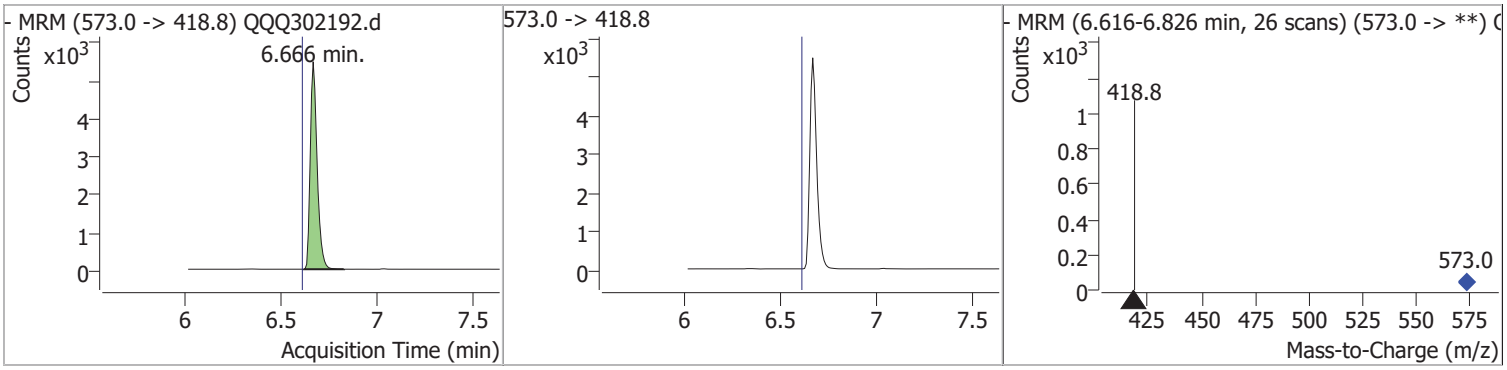
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M6PFDA	9.3178	6.55	-0.37	35352				



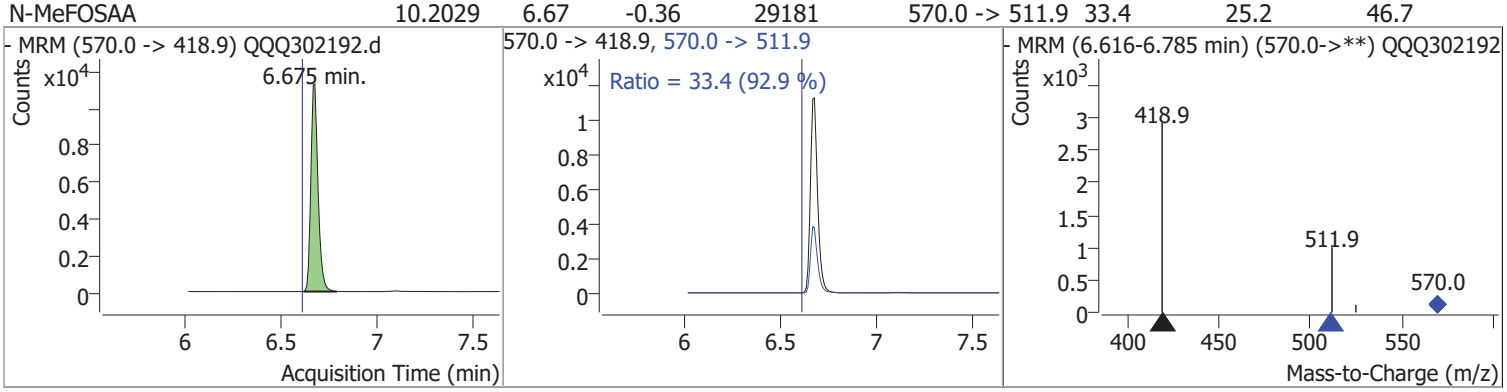
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorodecanoic acid (PFDA)	10.2851	6.55	-0.37	99705	513.0 -> 268.8	13.6	10.6	17.7



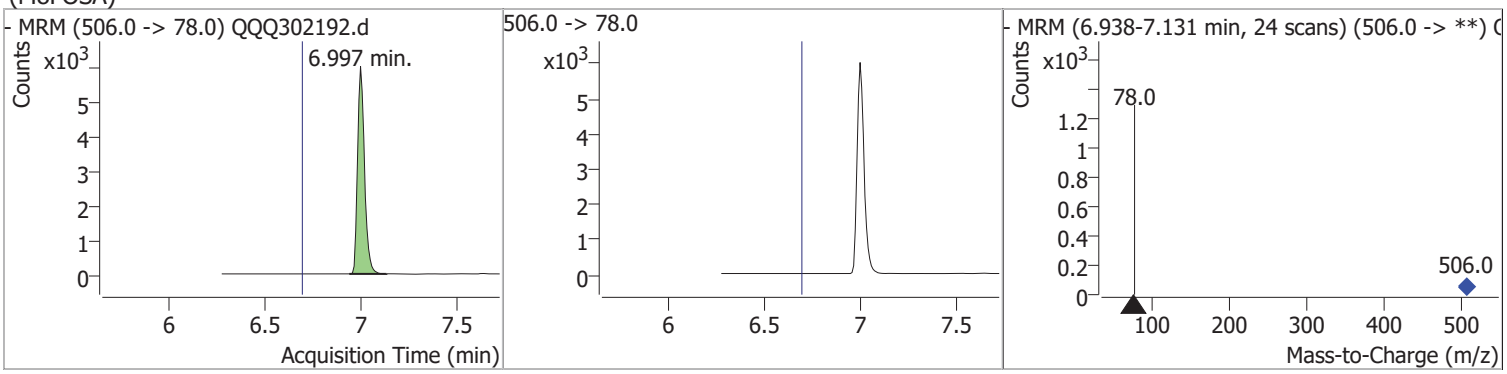
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
d3-N-MeFOSAA	10.2124	6.67	-0.36	13545				



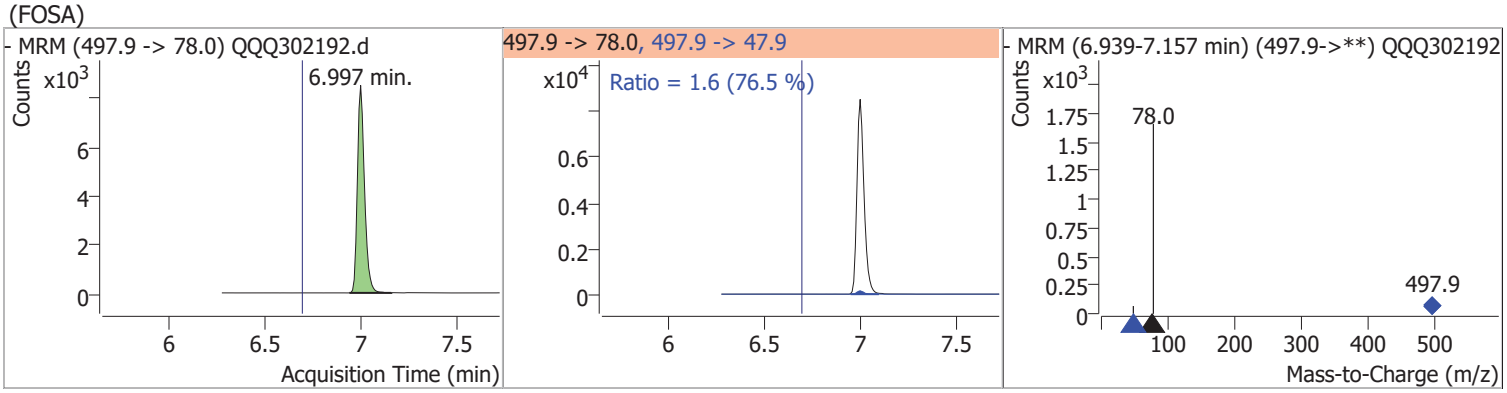
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
N-MeFOSAA	10.2029	6.67	-0.36	29181	570.0 -> 511.9	33.4	25.2	46.7



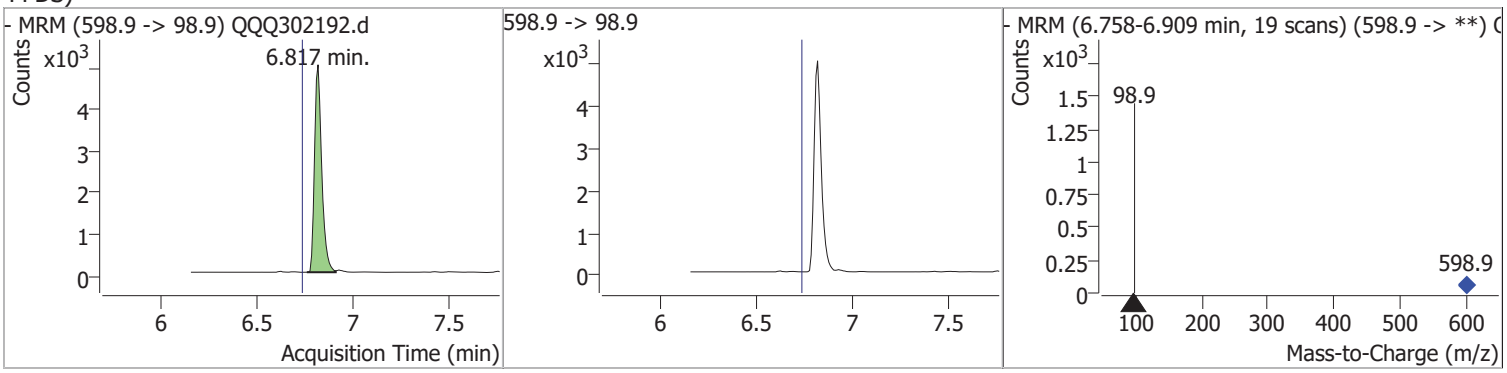
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-1-[13C8]octanesulfonamide (M8FOSA)	8.5947	7.00	-0.12	15119				



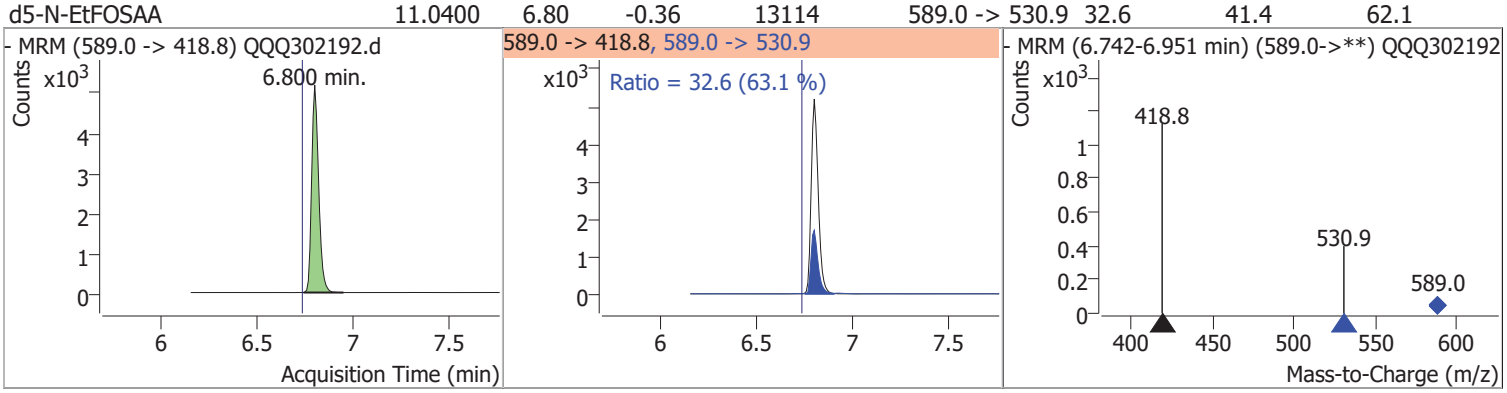
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-1-octanesulfonamide (FOSA)	8.9202	7.00	-0.12	21978	497.9 -> 47.9	1.6	1.7	2.5



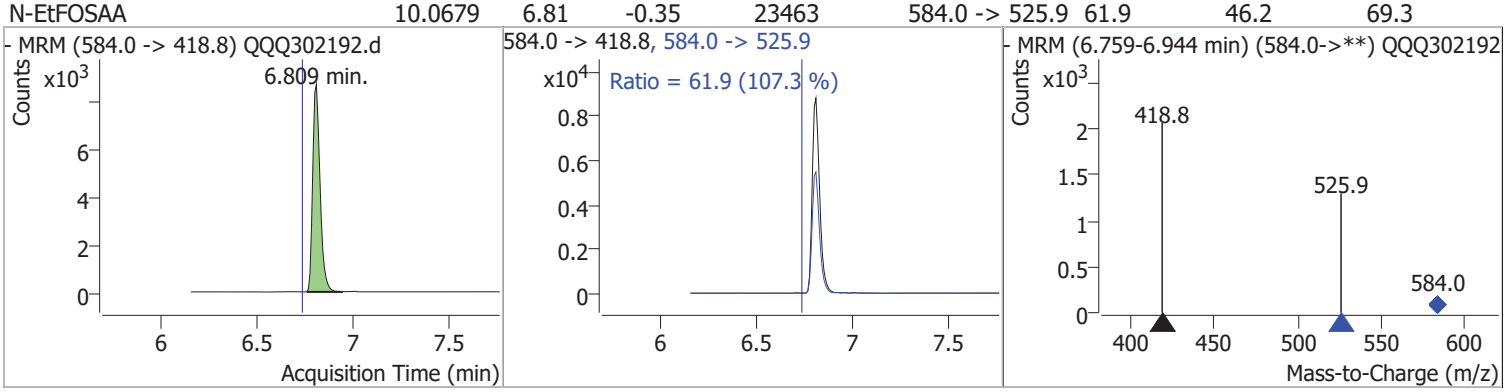
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-1-decanesulfonate (L-PFDS)	8.8998	6.82	-0.35	13122				



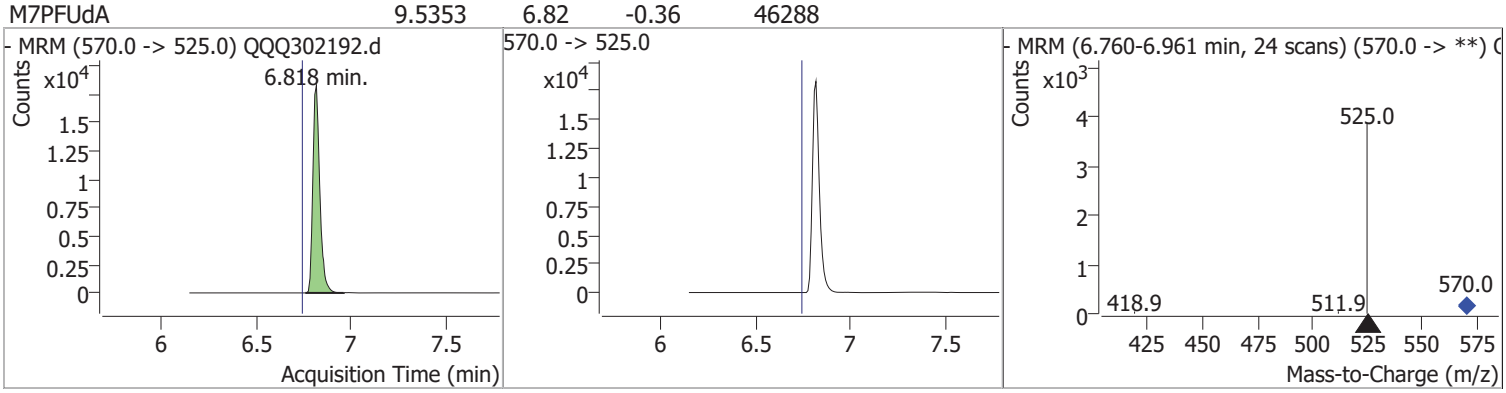
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
d5-N-EtFOSAA	11.0400	6.80	-0.36	13114	589.0 -> 530.9	32.6	41.4	62.1



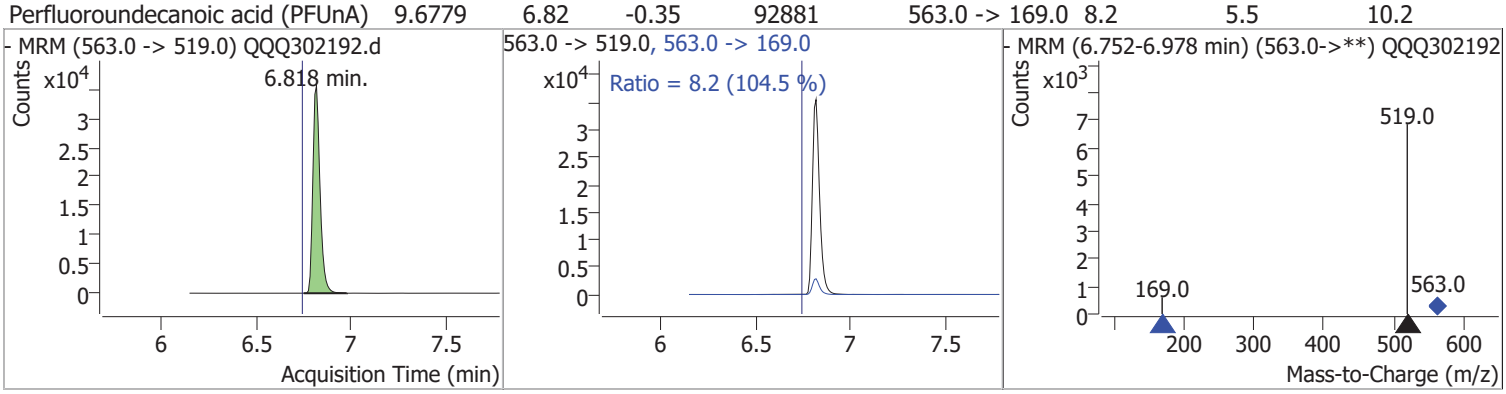
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
N-EtFOSAA	10.0679	6.81	-0.35	23463	584.0 -> 525.9	61.9	46.2	69.3



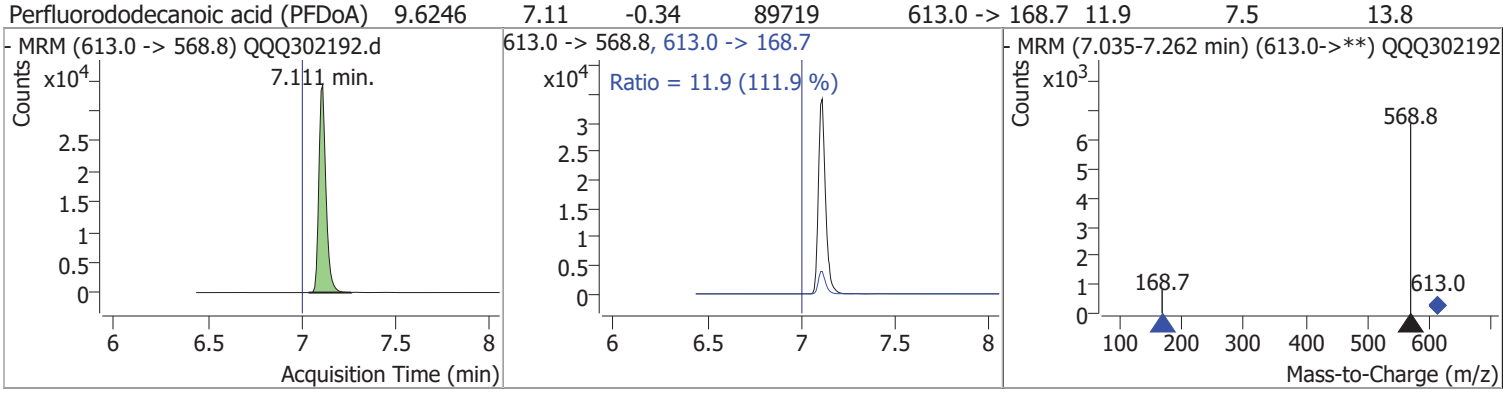
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M7PFUdA	9.5353	6.82	-0.36	46288				



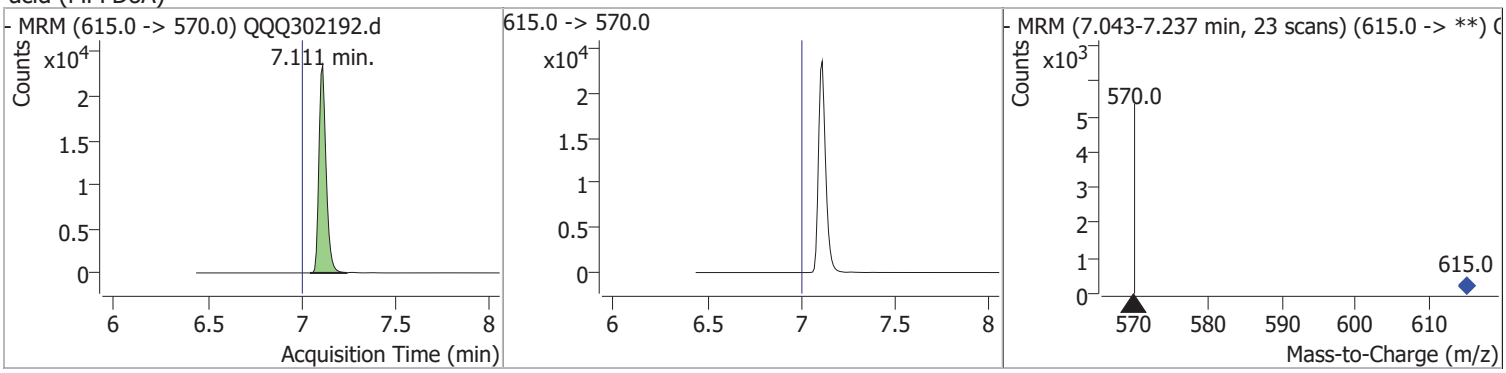
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoroundecanoic acid (PFUnA)	9.6779	6.82	-0.35	92881	563.0 -> 169.0	8.2	5.5	10.2



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorododecanoic acid (PFDoA)	9.6246	7.11	-0.34	89719	613.0 -> 168.7	11.9	7.5	13.8

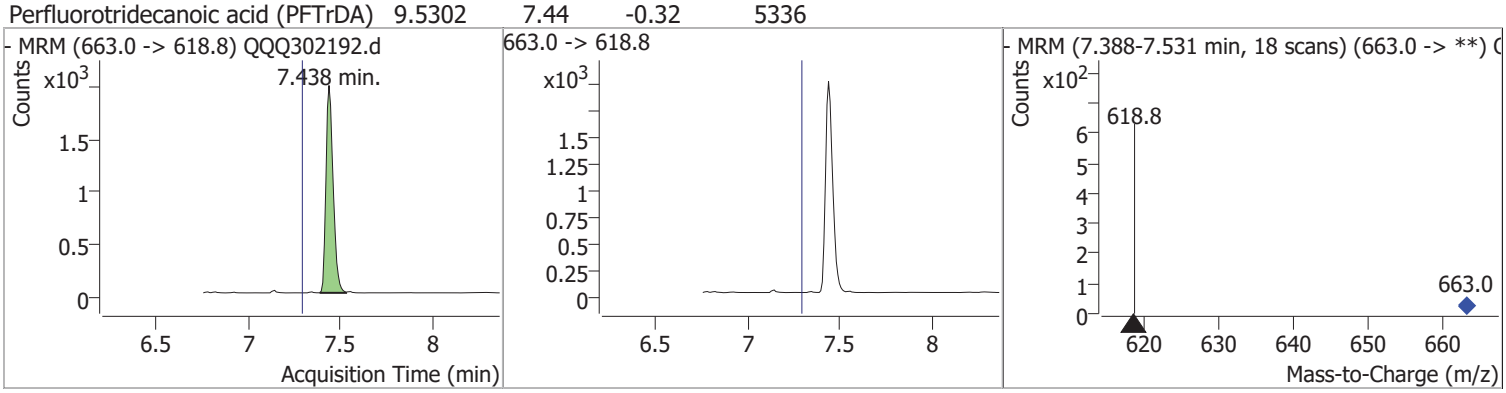


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-n-[1,2-13C2]dodecanoic acid (MPFDoA)	10.6355	7.11	-0.34	62055				

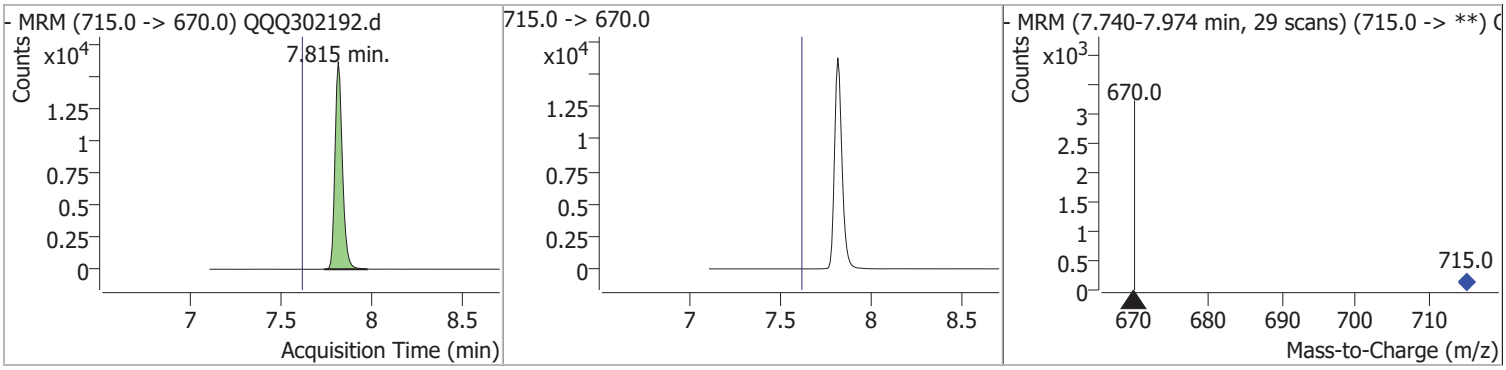


Quantitation Results Report (Not Reviewed)

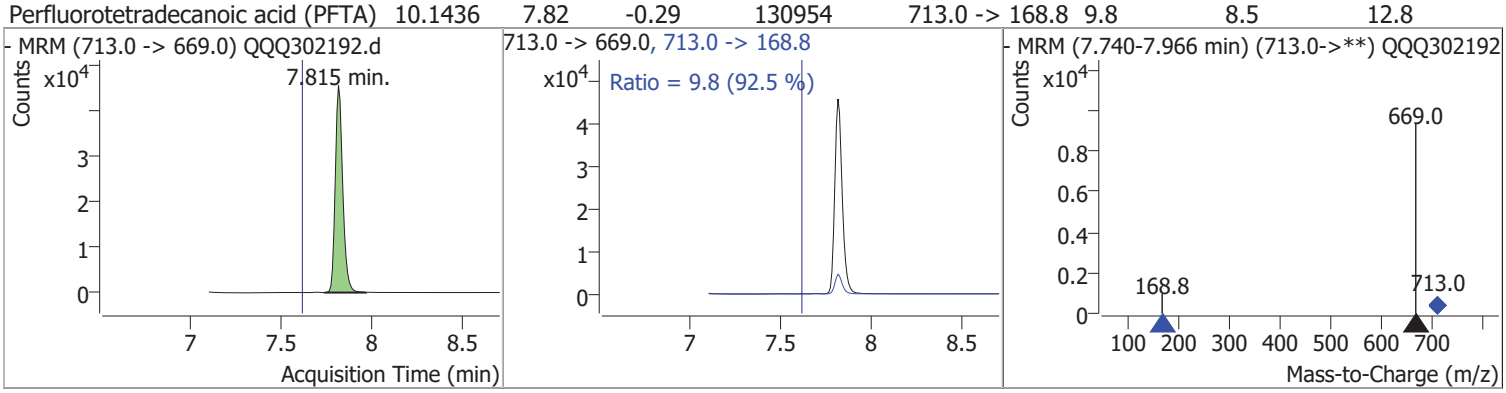
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorotridecanoic acid (PFTrDA)	9.5302	7.44	-0.32	5336				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M2PFTeDA	9.5297	7.82	-0.29	46431				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorotetradecanoic acid (PFTA)	10.1436	7.82	-0.29	130954	713.0 -> 168.8	9.8	8.5	12.8



Quantitation Results Report (Not Reviewed)

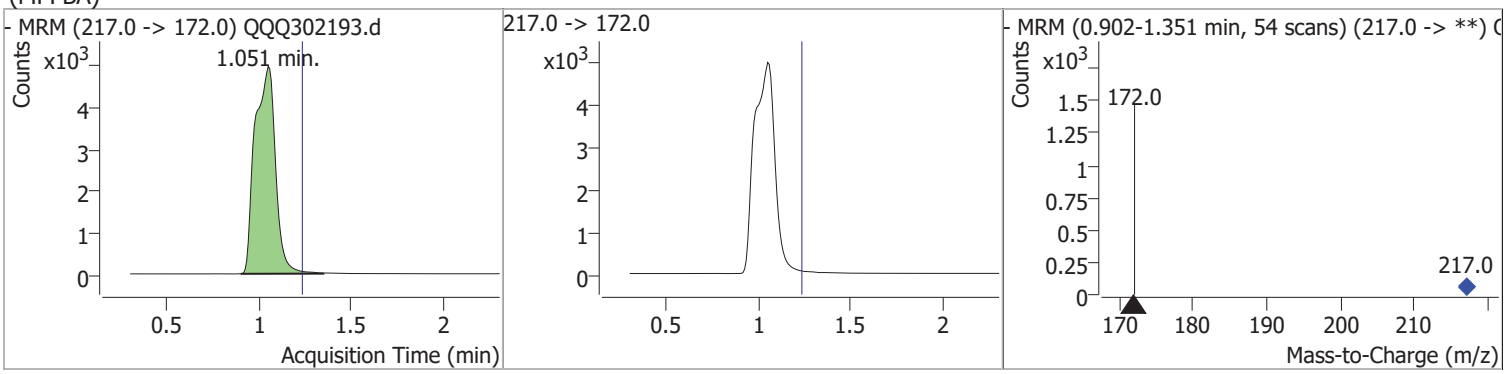
Data File	QQQ302193.d	Operator	
Acq. Method	PFAS 24_IDA ACQ_QQQ3A.m	Acq. Date-Time	6/27/2022 7:36:08 PM
Sample Name	SEQ-CAL7	Instrument	QQQ3
Vial		Multiplier	1.00
DA Method File	PFAS_24_IDA_QUANT_QQQ3_062722.m	Comment	20
Tune File		Tune Date	
Batch Name	2022-06-27-IDA-ICAL2.batch.bin	Last Calib Update	6/27/2022 4:24:30 PM
Ref Library			

Compound	RT	QIon	Resp.	Conc.	Units		Dev(Min)
Internal Standards							
MPFOA	6.039	417.0 -> 372.0	105857	10.0000	ng/ml		-0.391
System Monitoring Compounds							
Perfluoro-n-[13C4]butanoic acid (MPFBA)	1.051	217.0 -> 172.0	38384	17.3843	ng/ml		-0.258
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 173.84%		*	
Perfluoro-n-[13C54]pentanoic acid (M5PFPeA)	4.070	268.0 -> 223.0	34307	18.9219	ng/ml		-0.517
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 189.22%		*	
M3PFBS	4.672	302.0 -> 79.9	14021	18.0913	ng/ml		-0.491
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 180.91%		*	
M2-4-2FTS	5.225	329.0 -> 309.0	9088	16.4272	ng/ml	#	-0.465
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 164.27%		*	
M5PFHxA	5.260	318.0 -> 273.0	65554	18.6717	ng/ml		-0.464
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 186.72%		*	
M4PFHpA	5.729	367.0 -> 322.0	38467	20.6897	ng/ml		-0.415
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 206.90%		*	
M3PFHxS	5.770	402.0 -> 80.0	12503	17.9542	ng/ml	#	-0.407
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 179.54%		*	
M2-6-2FTS	6.030	429.0 -> 409.0	7853	19.4397	ng/ml		-0.390
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 194.40%		*	
Perfluoro-n-[13C8]octanoic acid (M8PFOA)	6.039	421.0 -> 376.0	57817	18.8883	ng/ml		-0.391
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 188.88%		*	
Perfluoro-n-[13C9]nonanoic acid (M9PFNA)	6.308	472.0 -> 427.0	66729	19.9971	ng/ml		-0.372
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 199.97%		*	
Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)	6.315	507.0 -> 80.0	13462	18.7665	ng/ml		-0.373
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 187.67%		*	
M2-8-2FTS	6.549	529.0 -> 509.0	8547	19.0027	ng/ml		-0.369
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 190.03%		*	
M6PFDA	6.558	519.0 -> 473.9	69460	19.2256	ng/ml		-0.364
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 192.26%		*	
d3-N-MeFOSAA	6.666	573.0 -> 418.8	27043	21.5737	ng/ml		-0.364
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 215.74%		*	
Perfluoro-1-[13C8]octanesulfonamide (M8FOSA)	6.997	506.0 -> 78.0	32312	18.5888	ng/ml		-0.122
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 185.89%		*	
d5-N-EtFOSAA	6.801	589.0 -> 418.8	23497	20.7300	ng/ml		-0.363
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 207.30%		*	
M7PFUdA	6.818	570.0 -> 525.0	90520	20.5664	ng/ml		-0.355
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 205.66%		*	
Perfluoro-n-[1,2-13C2]dodecanoic acid (MPFDoA)	7.111	615.0 -> 570.0	120150	21.2469	ng/ml		-0.337
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 212.47%		*	
M2PFTeDA	7.815	715.0 -> 670.0	95046	19.9510	ng/ml		-0.286
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 199.51%		*	
Target Compounds							**QValue**

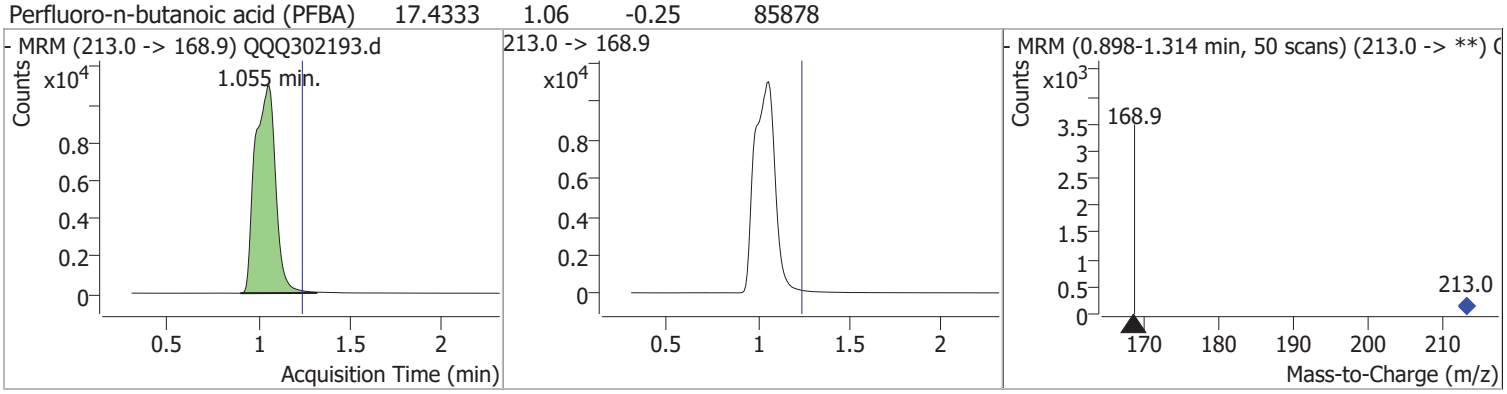
Compound	RT	QIon	Resp.	Conc.	Units		Dev(Min)
Perfluoro-n-butanoic acid (PFBA)	1.055	213.0 -> 168.9	85878	17.4333	ng/ml		100
Perfluoro-n-pentanoic acid (PFPeA)	4.074	263.0 -> 219.0	68865	19.0266	ng/ml		100
Perfluorobutanesulfonic acid (PFBS)	4.675	298.9 -> 79.9	30876	16.2436	ng/ml		94
1H,1H,2H,2H-perfluoro-1-hexanesulfonate (4 2FTS)	5.225	327.0 -> 307.0	19865	17.5307	ng/ml		99
Perfluorohexanoic acid (PFHxA)	5.261	313.0 -> 268.9	141234	18.8417	ng/ml		100
Perfluoro-1-pentanesulfonate (L-PFPeS)	5.383	348.9 -> 79.9	28436	17.0506	ng/ml		99
Perfluoroheptanoic acid (PFHpA)	5.729	363.0 -> 318.8	183535	19.0536	ng/ml		99
Perfluorohexanesulfonic acid (PFHxS)	5.771	398.9 -> 79.9	28335	17.9026	ng/ml	m	92
1H,1H,2H,2H-perfluoro-1-octanesulfonate (6 2FTS)	6.022	427.0 -> 407.0	18030	19.1249	ng/ml		97
Perfluorooctanoic acid (PFOA)	6.039	413.0 -> 368.8	195401	19.3250	ng/ml		98
Perfluoro-1-heptanesulfonate (L-PFHpS)	6.063	448.9 -> 80.0	23880	18.5640	ng/ml		98
Perfluorononanoic acid (PFNA)	6.308	463.0 -> 418.8	186944	18.9823	ng/ml		100
Perfluorooctanesulfonic acid (PFOS)	6.316	498.9 -> 79.9	25318	18.2474	ng/ml	m	97
1H,1H,2H,2H-perfluoro-1-decanesulfonate (8 2FTS)	6.550	527.0 -> 507.0	16613	17.8268	ng/ml	#	76
Perfluorononanesulfonate (L-PFNS)	6.558	548.9 -> 79.9	22218	18.0405	ng/ml		85
Perfluorodecanoic acid (PFDA)	6.559	513.0 -> 468.8	190240	19.7906	ng/ml		100
N-MeFOSAA	6.675	570.0 -> 418.9	57829	20.4621	ng/ml		96
Perfluoro-1-octanesulfonamide (FOSA)	6.997	497.9 -> 78.0	46043	18.4651	ng/ml		99
Perfluoro-1-decanesulfonate (L-PFDS)	6.817	598.9 -> 98.9	25170	18.6373	ng/ml		100
N-EtFOSAA	6.809	584.0 -> 418.8	45637	20.5981	ng/ml		100
Perfluoroundecanoic acid (PFUnA)	6.818	563.0 -> 519.0	176970	19.3887	ng/ml		98
Perfluorododecanoic acid (PFDoA)	7.111	613.0 -> 568.8	182448	19.1757	ng/ml		97
Perfluorotridecanoic acid (PFTrDA)	7.438	663.0 -> 618.8	10318	17.7535	ng/ml		100
Perfluorotetradecanoic acid (PFTA)	7.815	713.0 -> 669.0	264121	19.6757	ng/ml		97

(#) = Qualifier Out of Range; (m) = Manual Integration; (+) = Area Summed; (*) = Surrogate Percent Recovery Out of Range; (d): Zeroed Peak

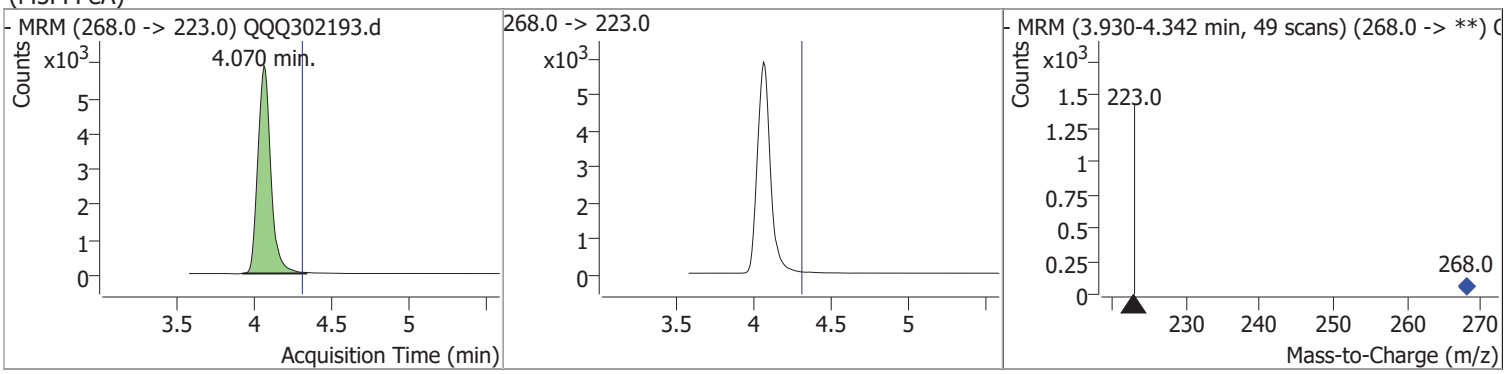
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-n-[13C4]butanoic acid (MPFBA)	17.3843	1.05	-0.26	38384				



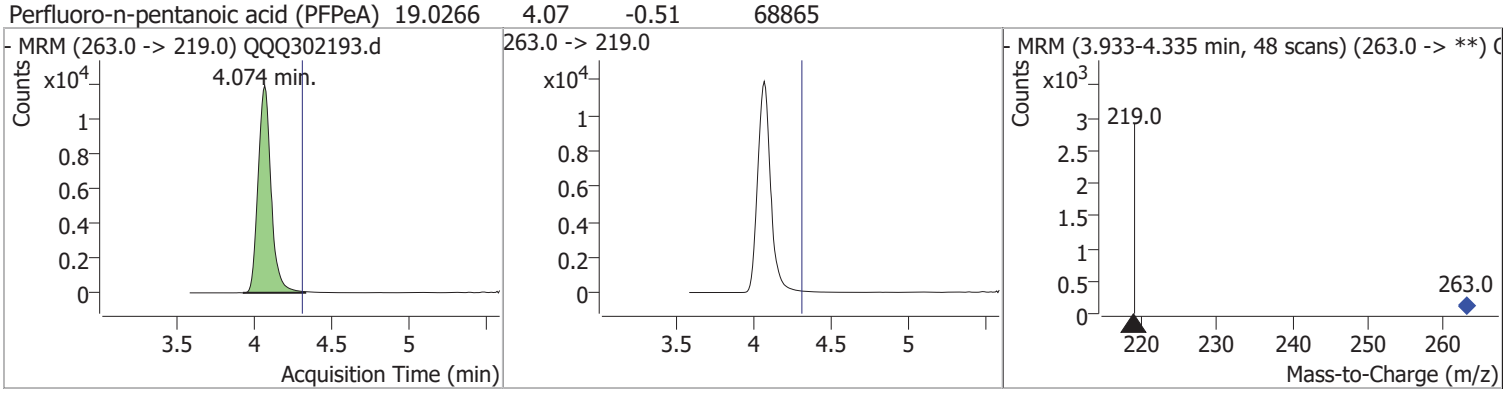
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-n-butanoic acid (PFBA)	17.4333	1.06	-0.25	85878				



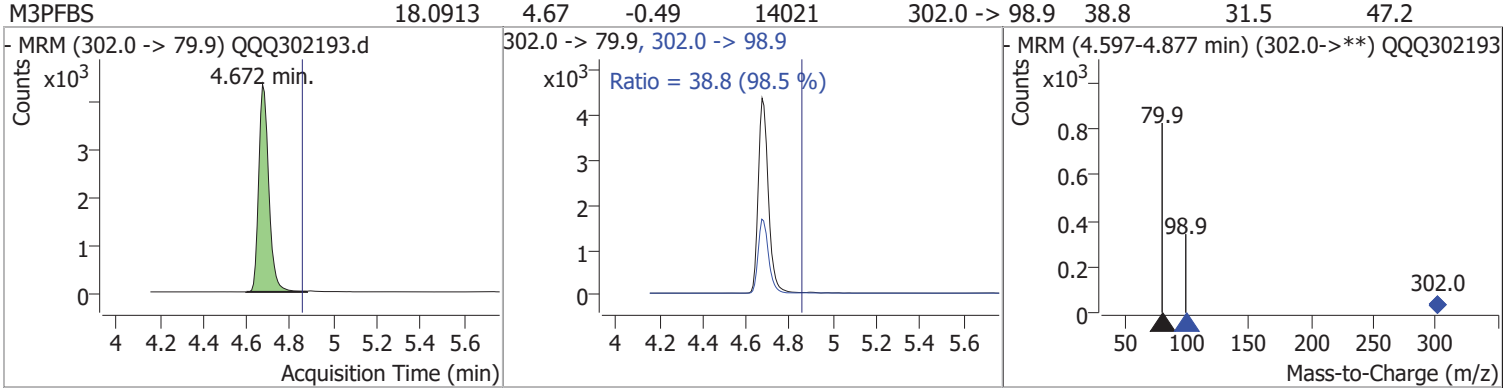
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-n-[13C54]pentanoic acid (M5PFPeA)	18.9219	4.07	-0.52	34307				



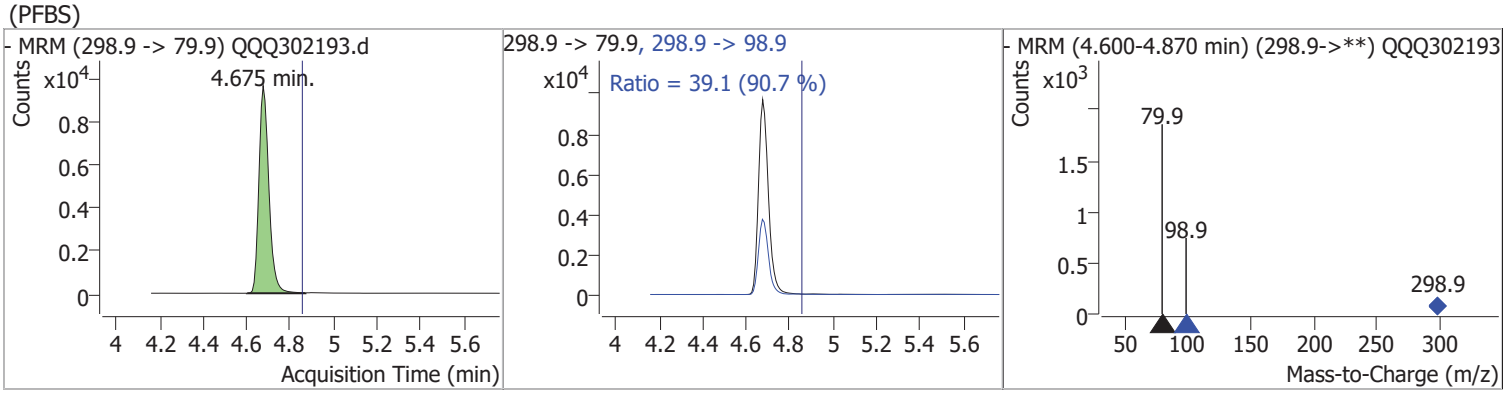
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-n-pentanoic acid (PFPeA)	19.0266	4.07	-0.51	68865				



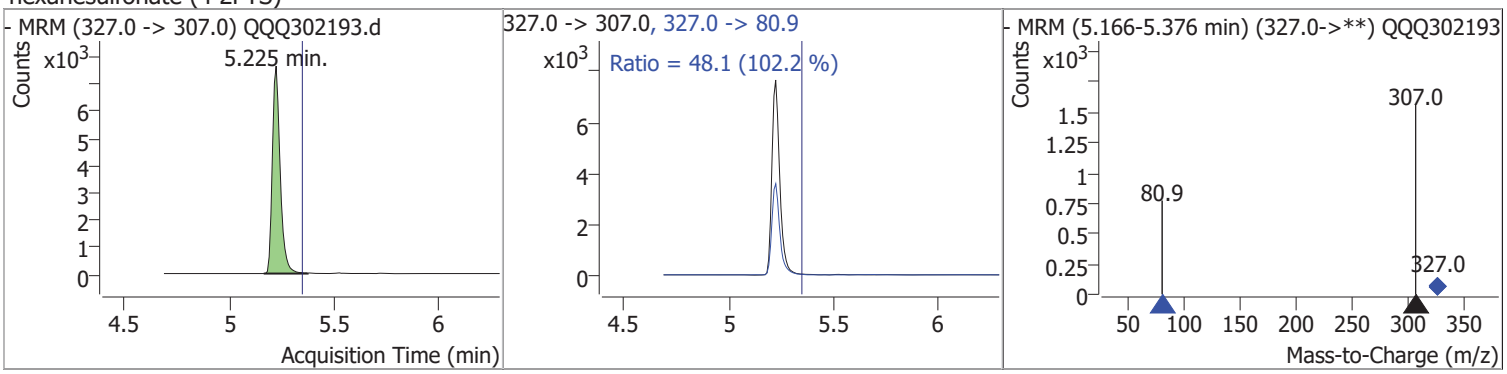
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M3PFBS	18.0913	4.67	-0.49	14021	302.0 -> 98.9	38.8	31.5	47.2



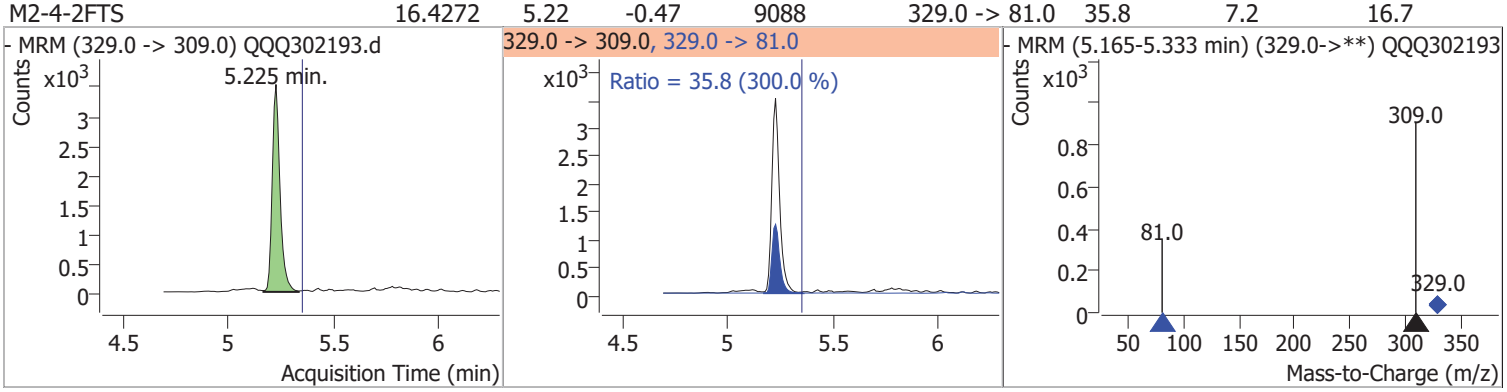
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorobutanesulfonic acid (PFBS)	16.2436	4.67	-0.49	30876	298.9 -> 98.9	39.1	34.5	51.7



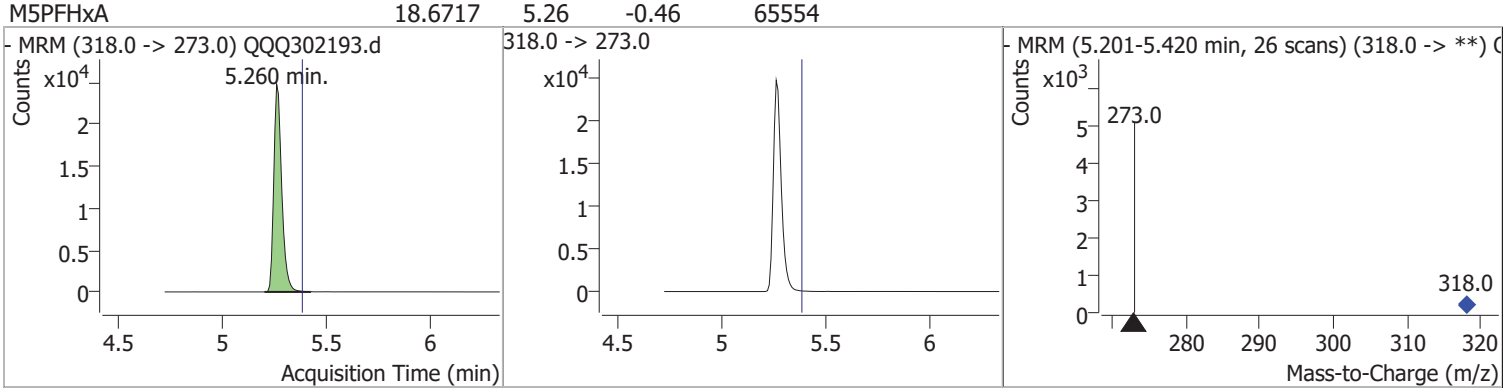
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
1H,1H,2H,2H-perfluoro-1-hexanesulfonate (4 2FTS)	17.5307	5.23	-0.46	19865	327.0 -> 80.9	48.1	28.2	65.9



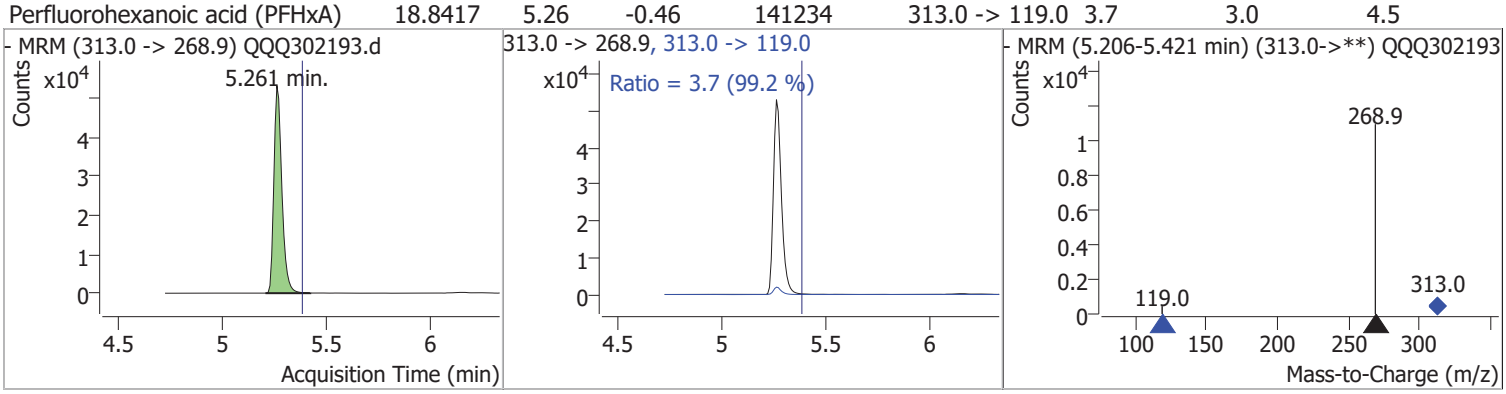
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M2-4-2FTS	16.4272	5.22	-0.47	9088	329.0 -> 81.0	35.8	7.2	16.7



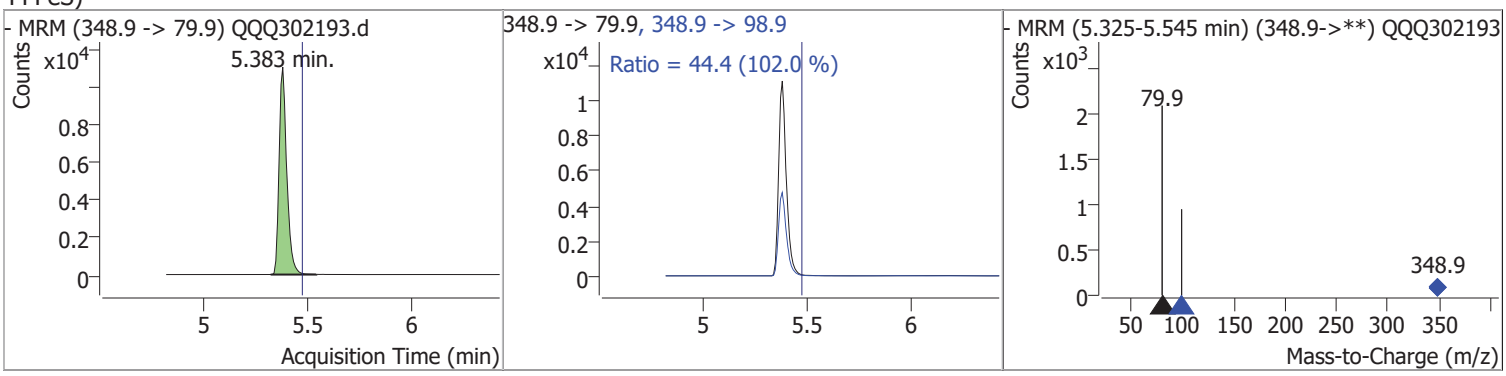
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M5PFHxA	18.6717	5.26	-0.46	65554				



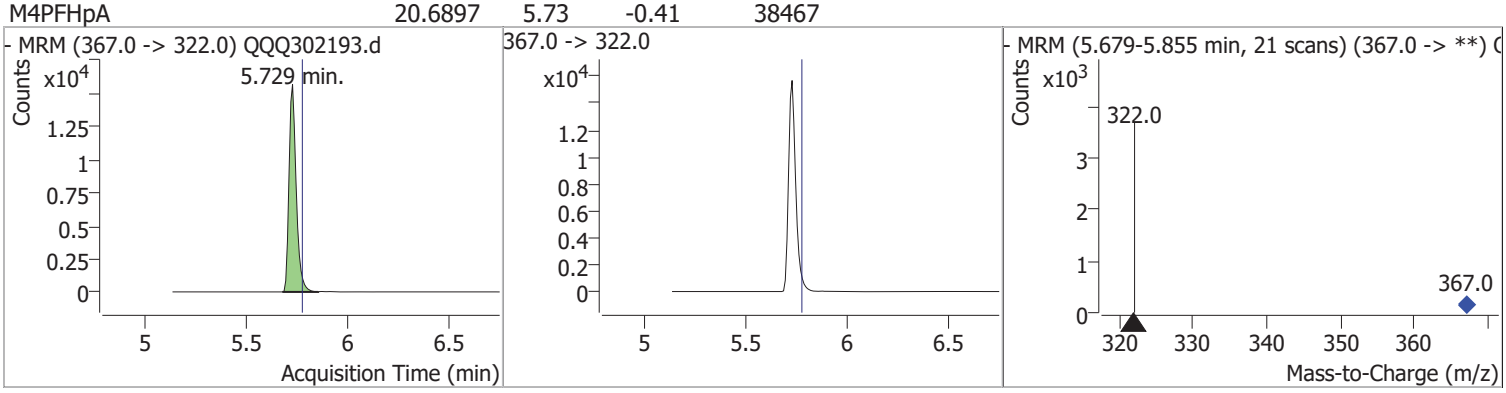
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorohexanoic acid (PFHxA)	18.8417	5.26	-0.46	141234	313.0 -> 119.0	3.7	3.0	4.5



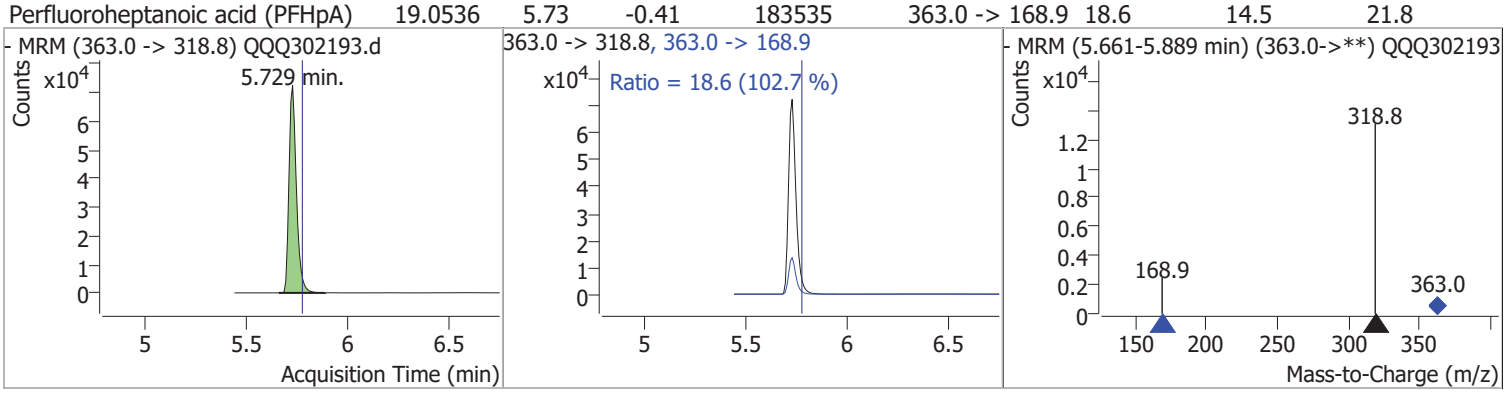
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-1-pentanesulfonate (L-PFPeS)	17.0506	5.38	-0.44	28436	348.9 -> 98.9	44.4	34.8	52.2



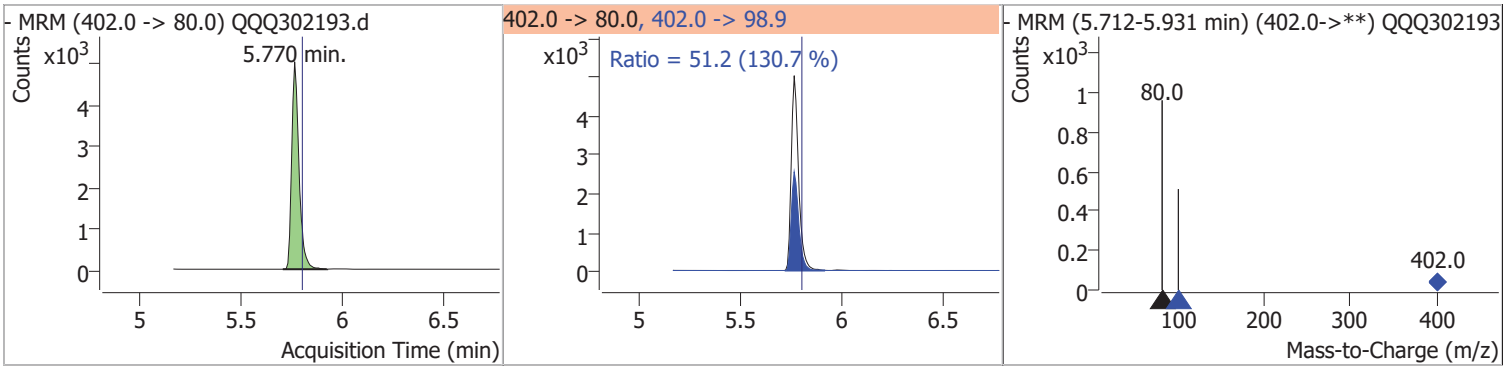
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M4PFHpA	20.6897	5.73	-0.41	38467				



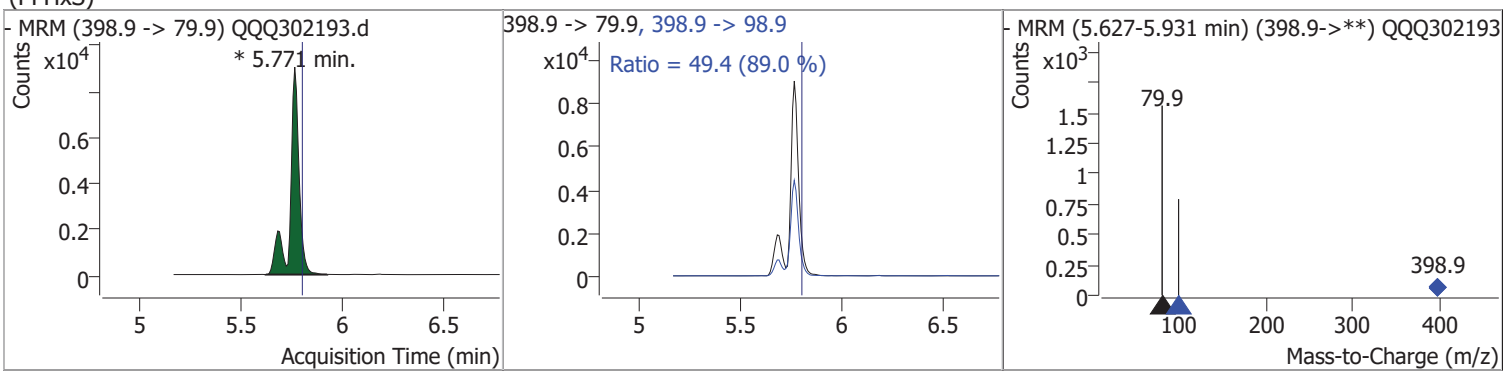
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoroheptanoic acid (PFHpA)	19.0536	5.73	-0.41	183535	363.0 -> 168.9	18.6	14.5	21.8



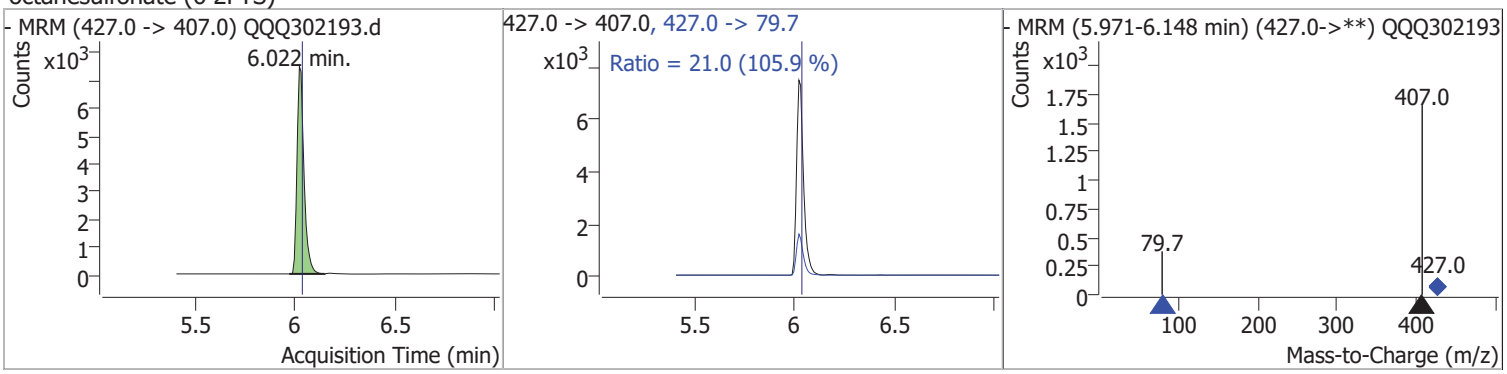
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M3PFHxS	17.9542	5.77	-0.41	12503	402.0 -> 98.9	51.2	31.3	47.0



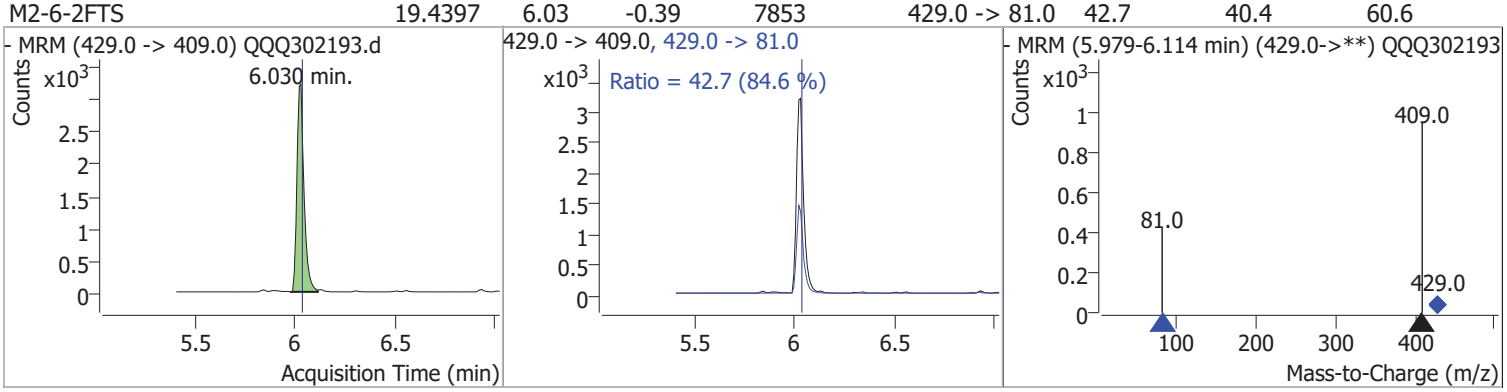
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorohexanesulfonic acid (PFHxS)	17.9026	5.77	-0.41	28335 (m)	398.9 -> 98.9	49.4	44.4	66.5



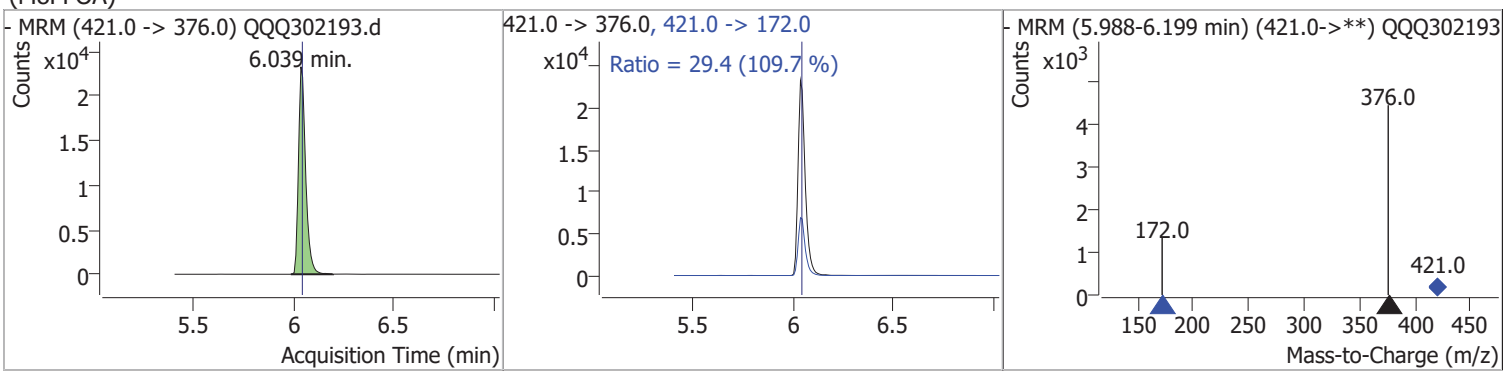
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
1H,1H,2H,2H-perfluoro-1-octanesulfonate (6 2FTS)	19.1249	6.02	-0.40	18030	427.0 -> 79.7	21.0	15.8	23.7



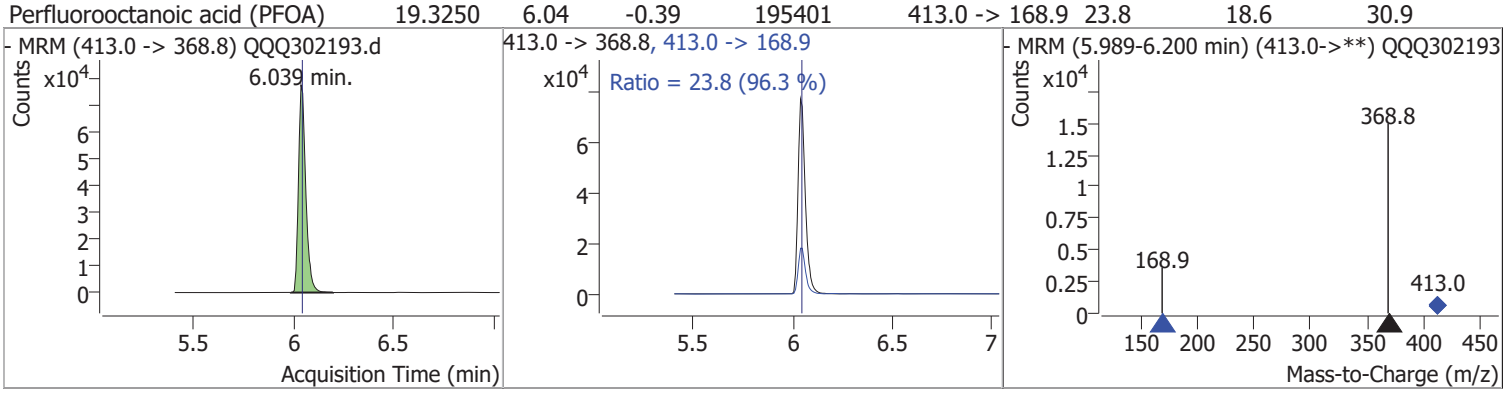
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M2-6-2FTS	19.4397	6.03	-0.39	7853	429.0 -> 81.0	42.7	40.4	60.6



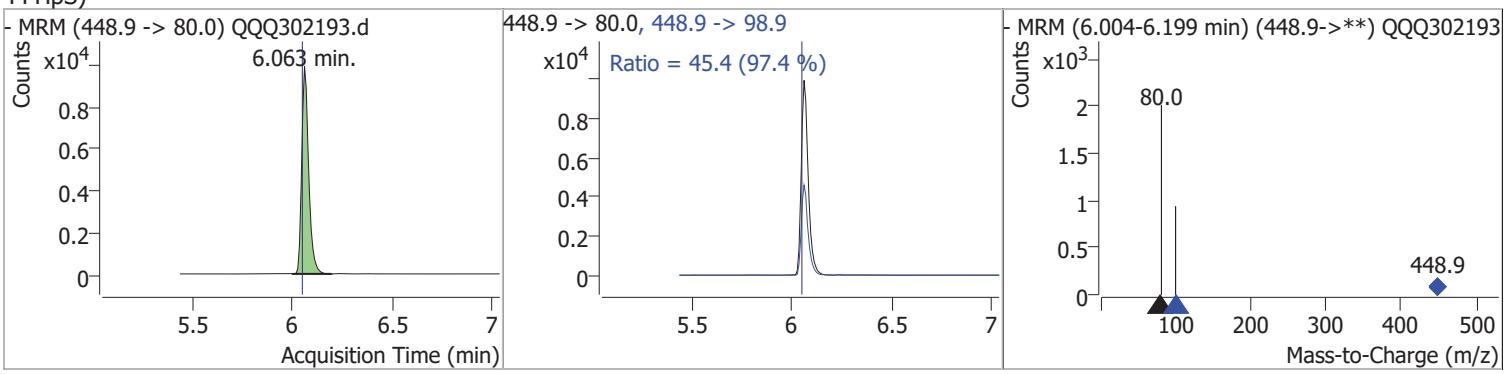
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-n-[13C8]octanoic acid (M8PFOA)	18.8883	6.04	-0.39	57817	421.0 -> 172.0	29.4	21.5	32.2



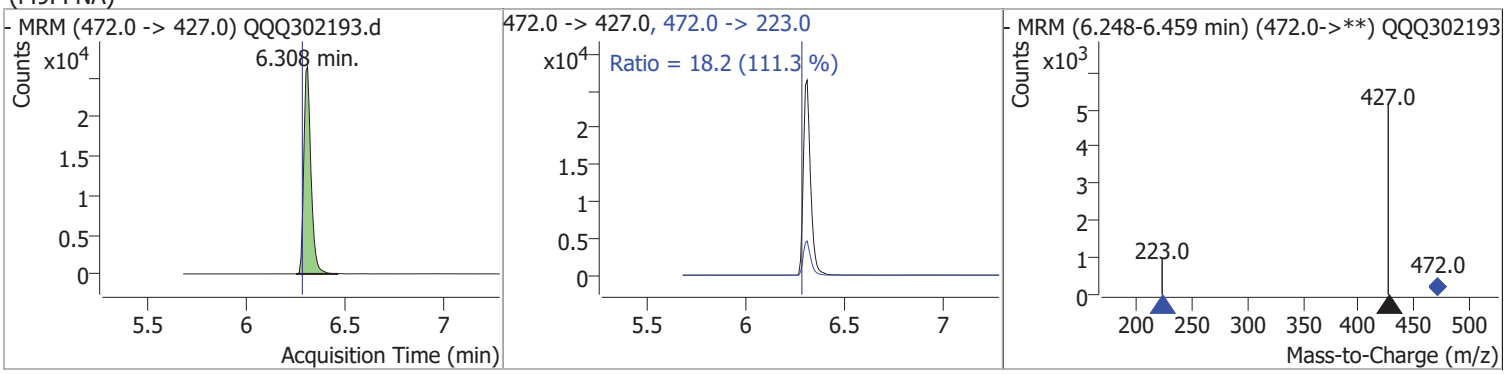
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorooctanoic acid (PFOA)	19.3250	6.04	-0.39	195401	413.0 -> 168.9	23.8	18.6	30.9



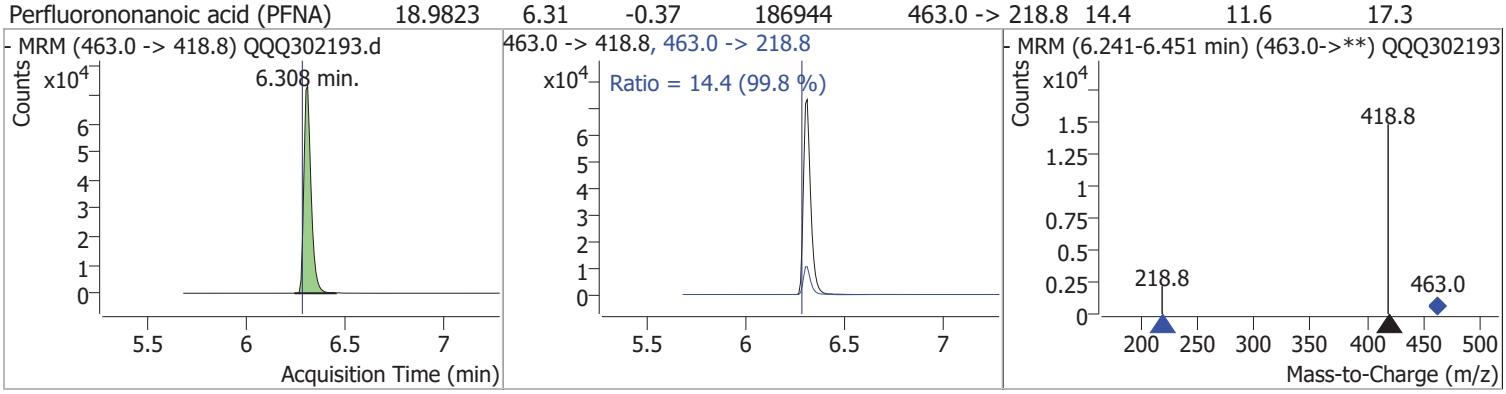
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-1-heptanesulfonate (L-PFHpS)	18.5640	6.06	-0.37	23880	448.9 -> 98.9	45.4	37.3	56.0



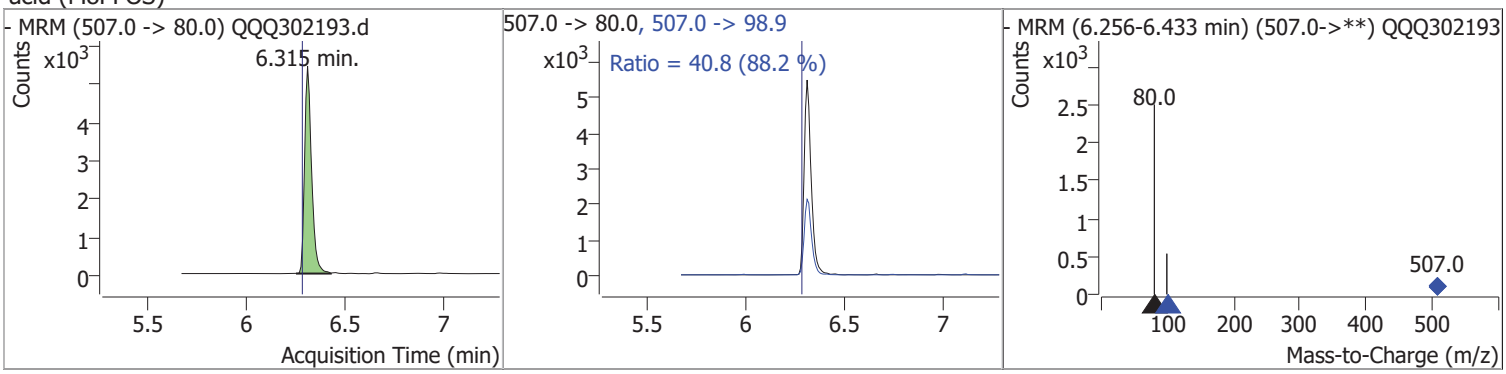
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-n-[13C9]nonanoic acid (M9PFNA)	19.9971	6.31	-0.37	66729	472.0 -> 223.0	18.2	13.1	19.6



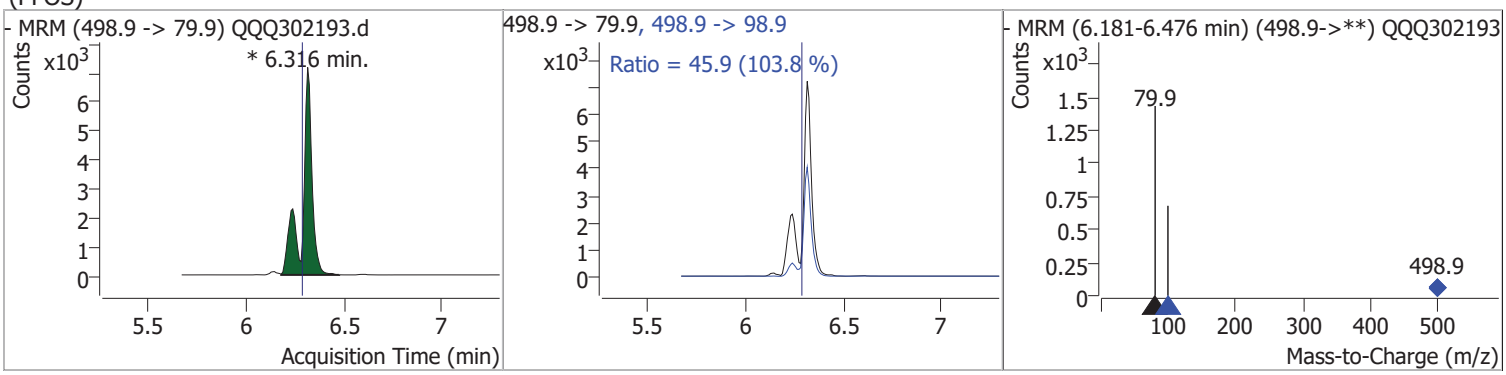
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorononanoic acid (PFNA)	18.9823	6.31	-0.37	186944	463.0 -> 218.8	14.4	11.6	17.3



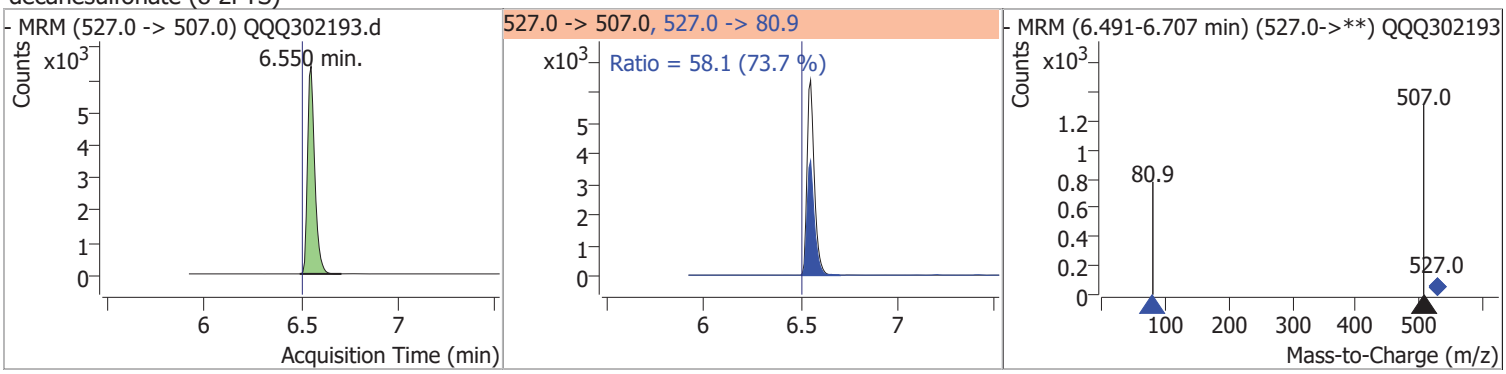
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)	18.7665	6.32	-0.37	13462	507.0 -> 98.9	40.8	37.1	55.6



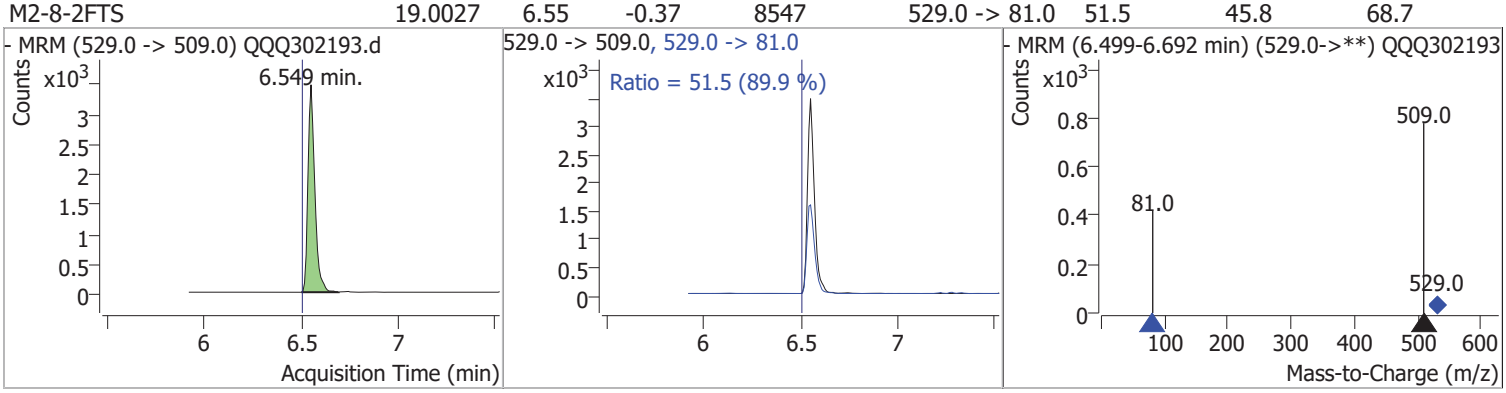
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorooctanesulfonic acid (PFOS)	18.2474	6.32	-0.37	25318 (m)	498.9 -> 98.9	45.9	35.4	53.0



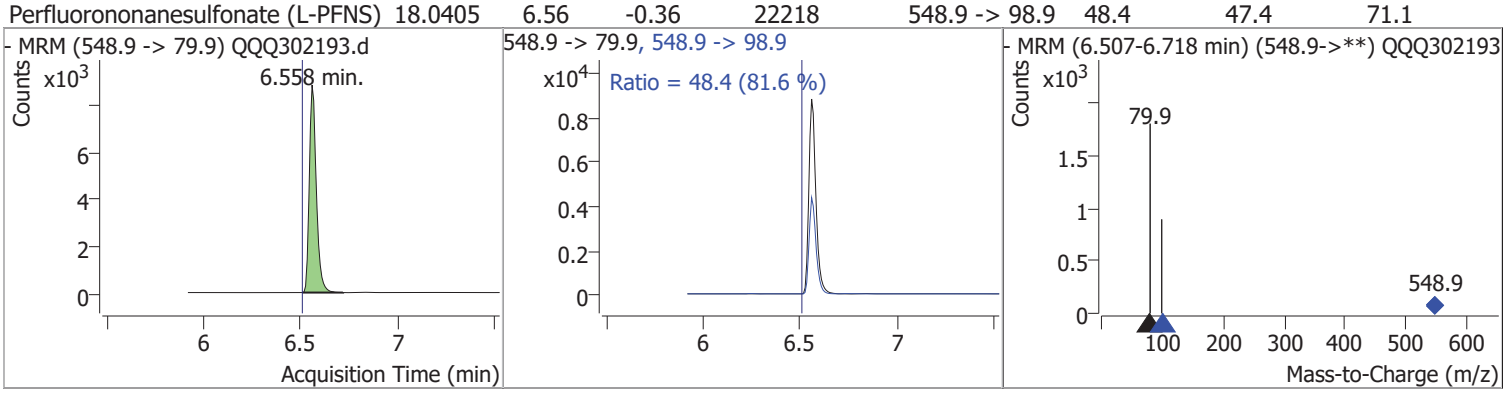
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
1H,1H,2H,2H-perfluoro-1-decanesulfonate (8 2FTS)	17.8268	6.55	-0.37	16613	527.0 -> 80.9	58.1	63.1	94.6



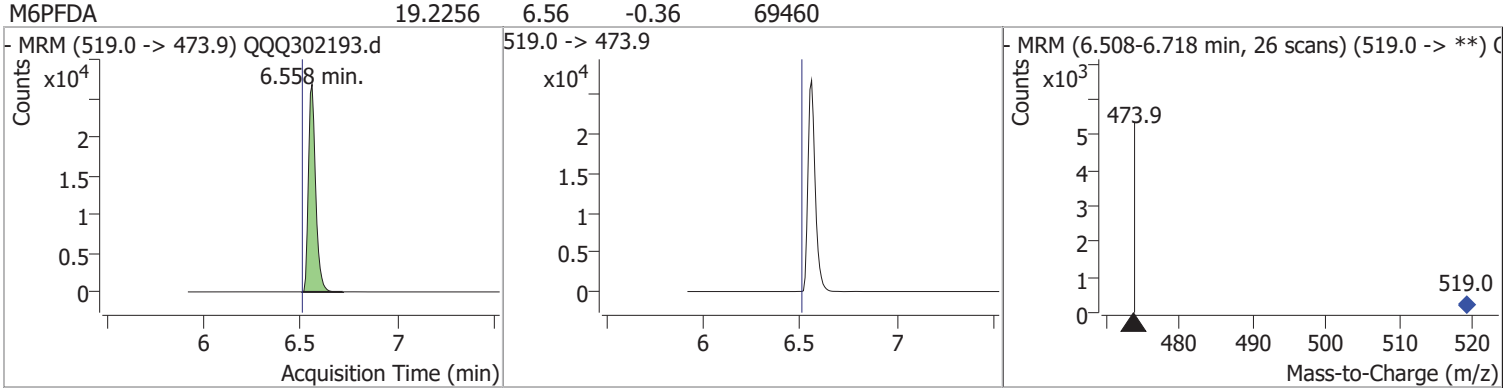
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M2-8-2FTS	19.0027	6.55	-0.37	8547	529.0 -> 81.0	51.5	45.8	68.7



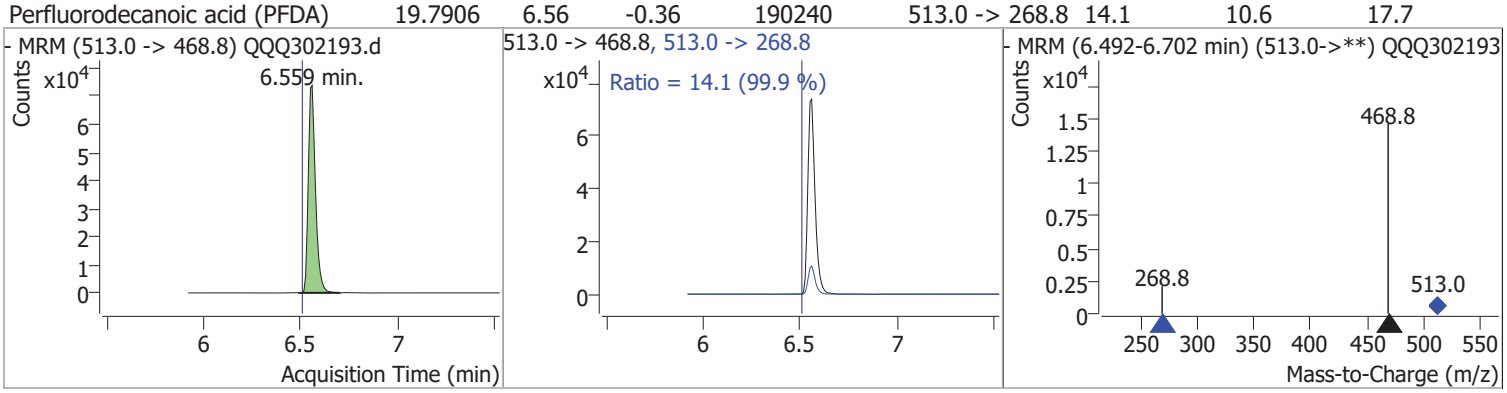
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorononanesulfonate (L-PFNS)	18.0405	6.56	-0.36	22218	548.9 -> 98.9	48.4	47.4	71.1



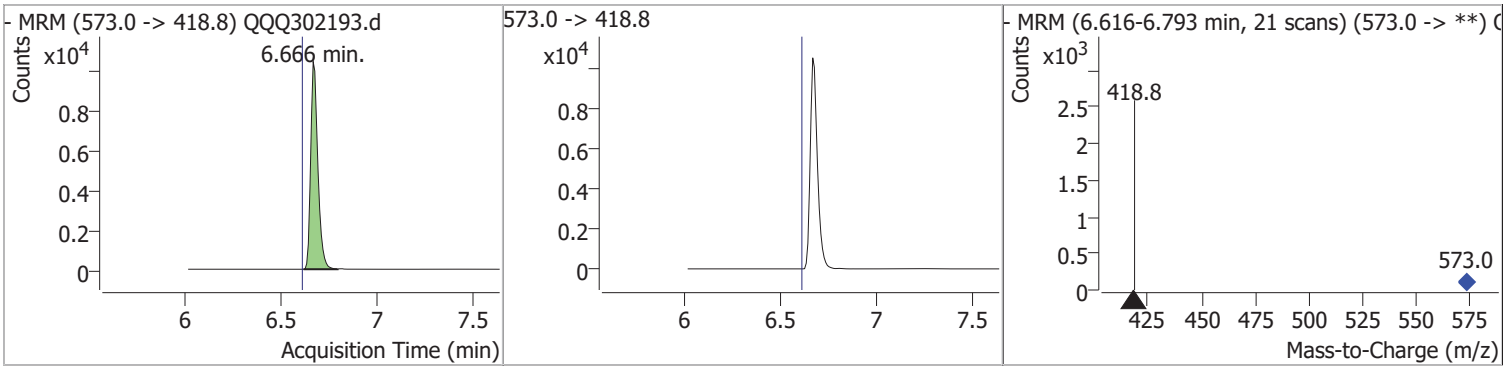
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M6PFDA	19.2256	6.56	-0.36	69460				



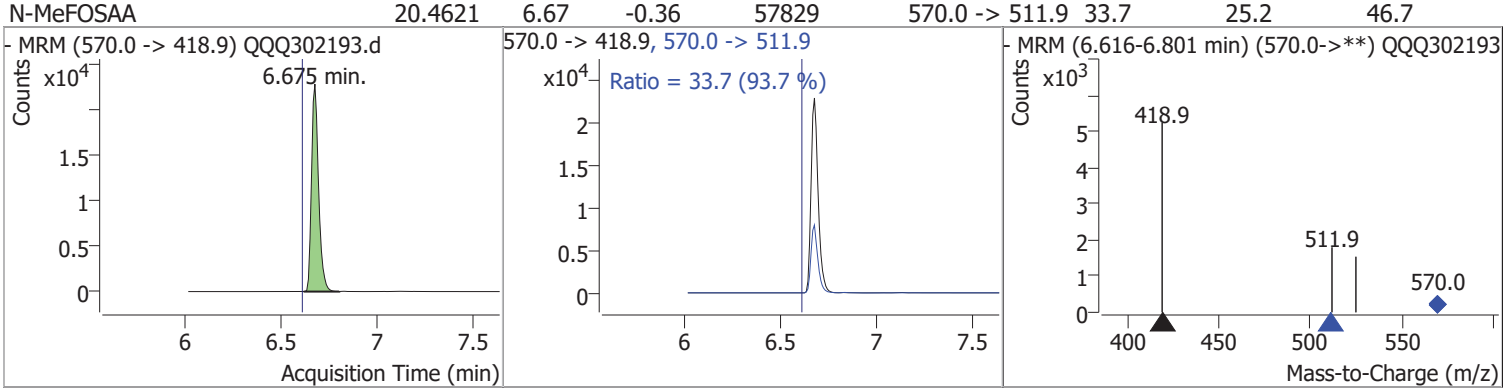
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorodecanoic acid (PFDA)	19.7906	6.56	-0.36	190240	513.0 -> 268.8	14.1	10.6	17.7



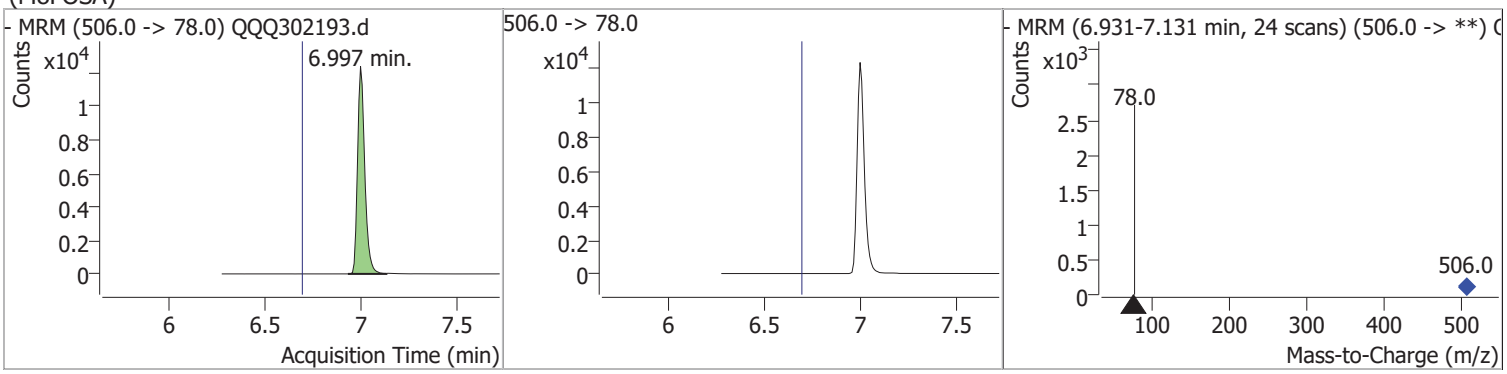
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
d3-N-MeFOSAA	21.5737	6.67	-0.36	27043				



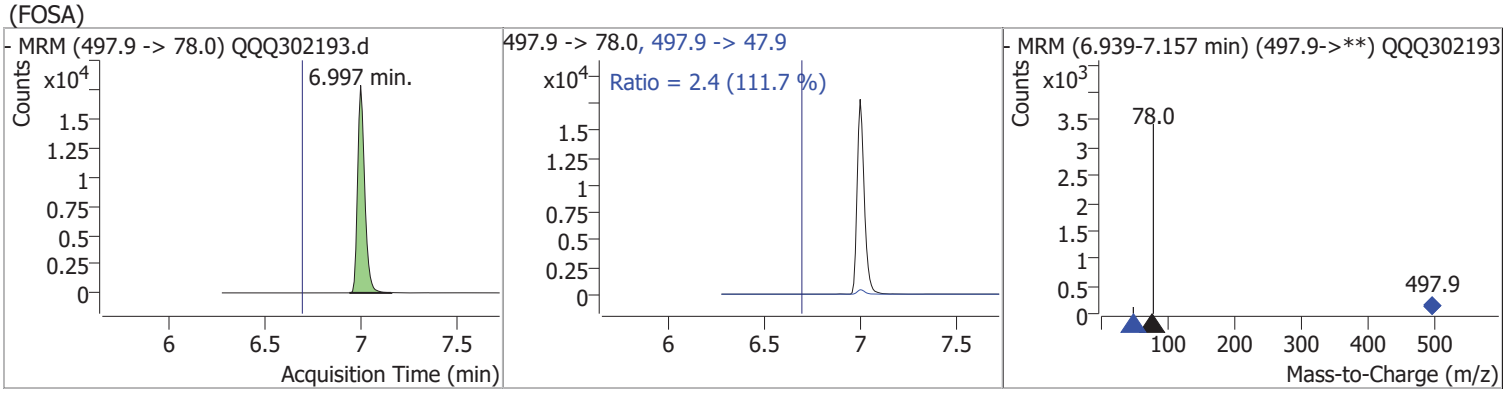
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
N-MeFOSAA	20.4621	6.67	-0.36	57829	570.0 -> 511.9	33.7	25.2	46.7



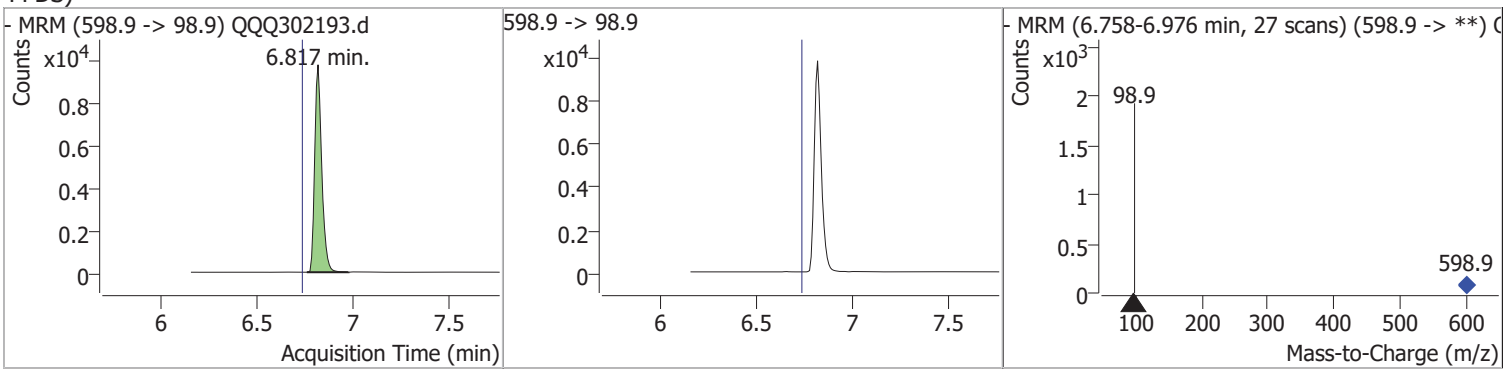
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-1-[13C8]octanesulfonamide (M8FOSA)	18.5888	7.00	-0.12	32312				



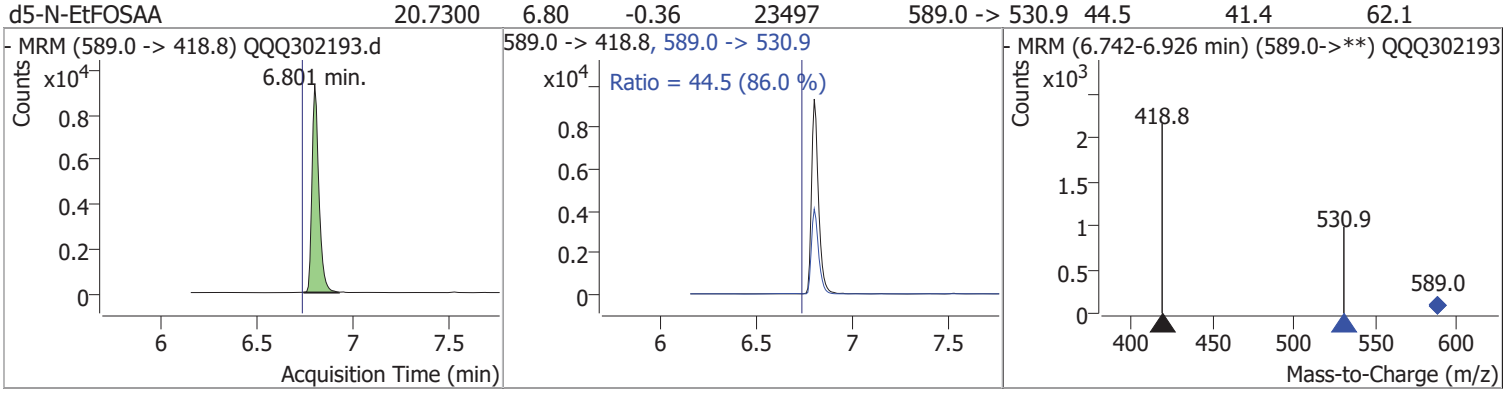
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-1-octanesulfonamide (FOSA)	18.4651	7.00	-0.12	46043	497.9 -> 47.9	2.4	1.7	2.5



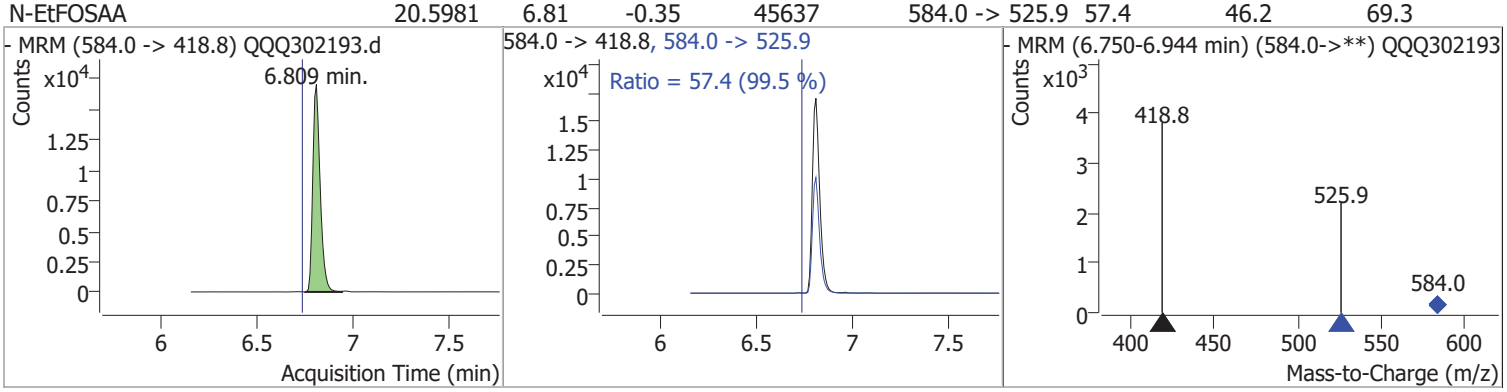
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-1-decanesulfonate (L-PFDS)	18.6373	6.82	-0.35	25170				



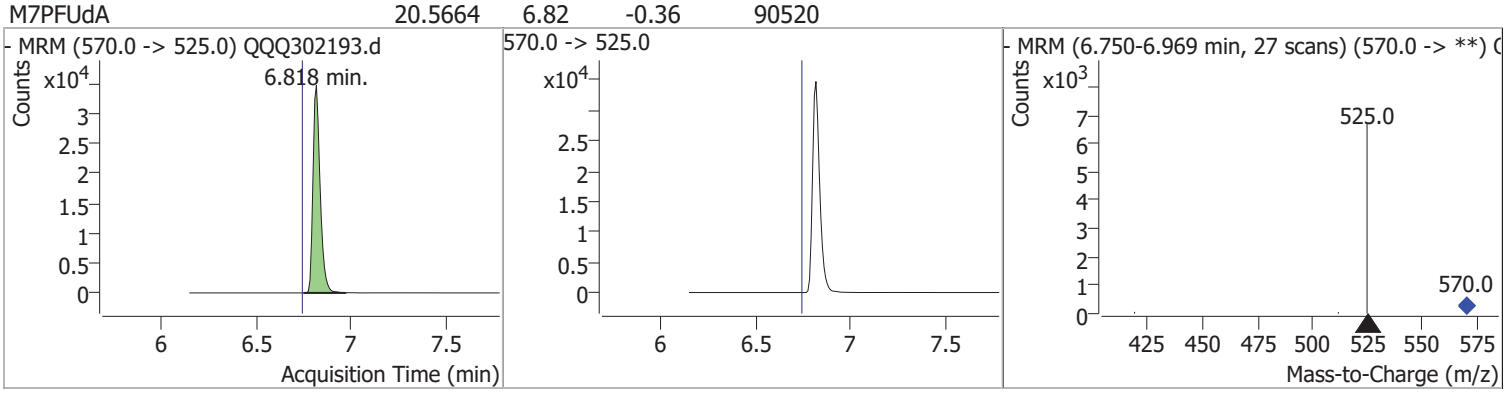
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
d5-N-EtFOSAA	20.7300	6.80	-0.36	23497	589.0 -> 530.9	44.5	41.4	62.1



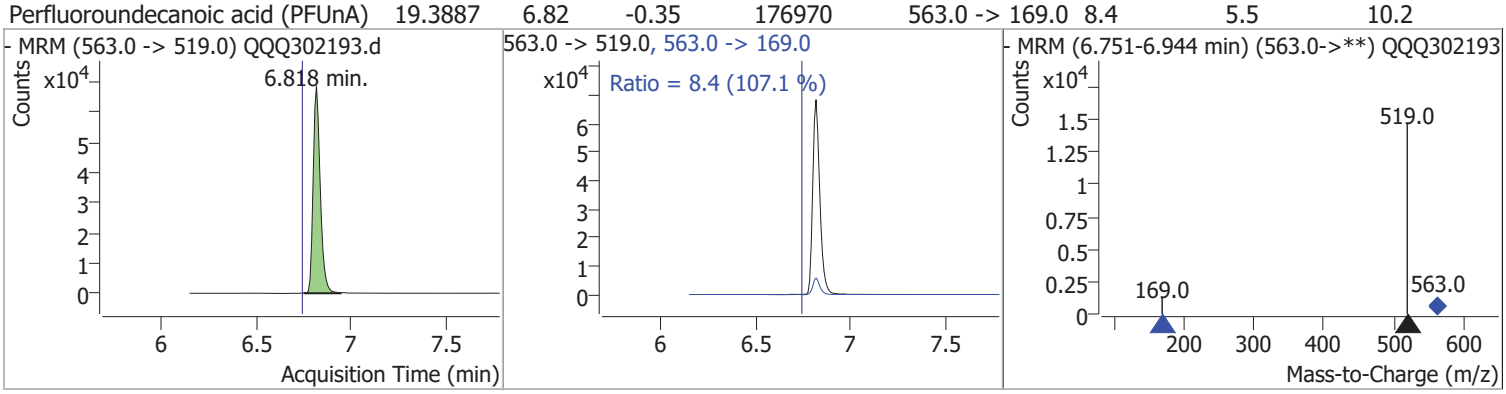
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
N-EtFOSAA	20.5981	6.81	-0.35	45637	584.0 -> 525.9	57.4	46.2	69.3



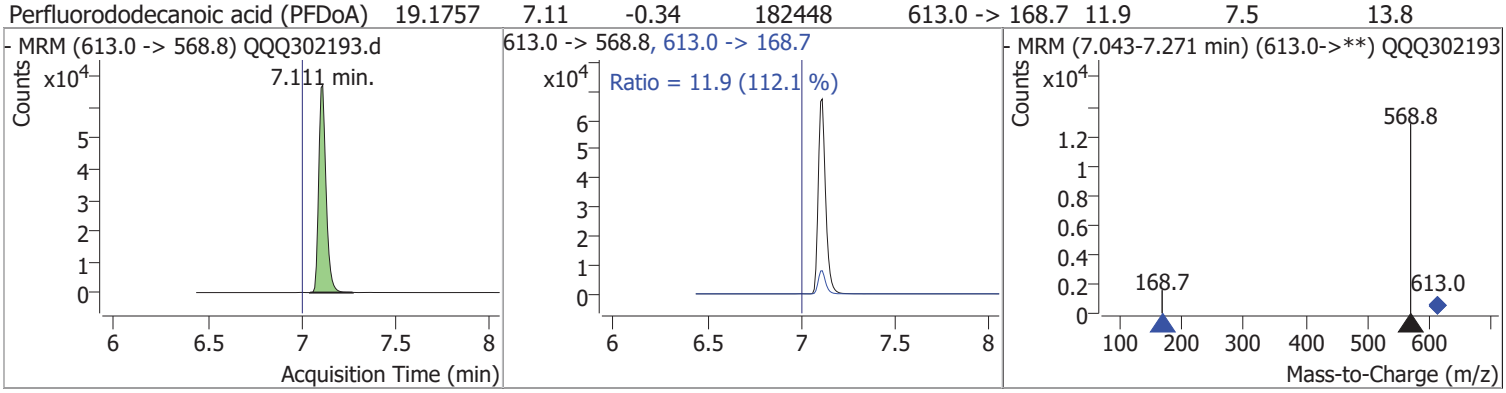
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M7PFUdA	20.5664	6.82	-0.36	90520				



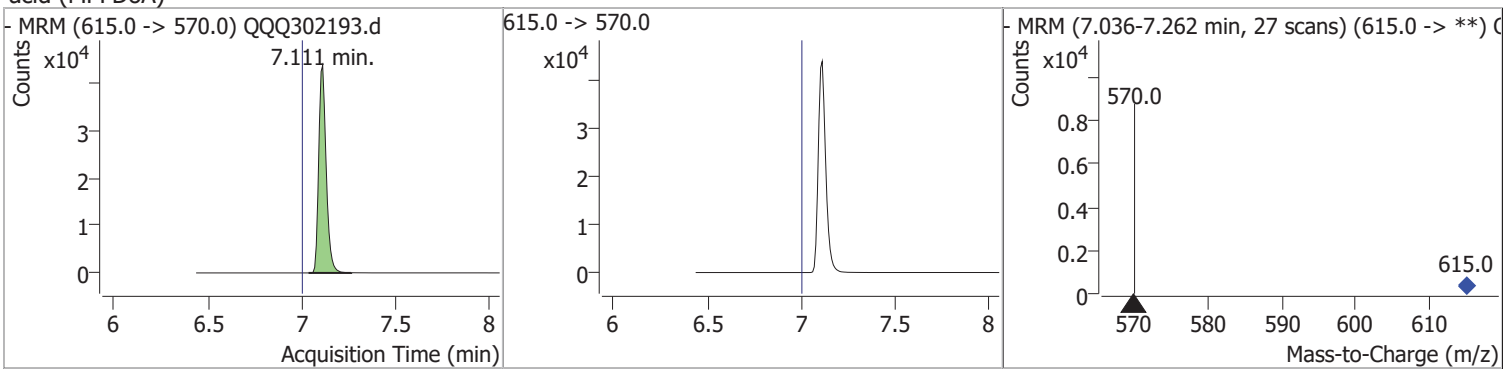
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoroundecanoic acid (PFUnA)	19.3887	6.82	-0.35	176970	563.0 -> 169.0	8.4	5.5	10.2



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorododecanoic acid (PFDoA)	19.1757	7.11	-0.34	182448	613.0 -> 168.7	11.9	7.5	13.8

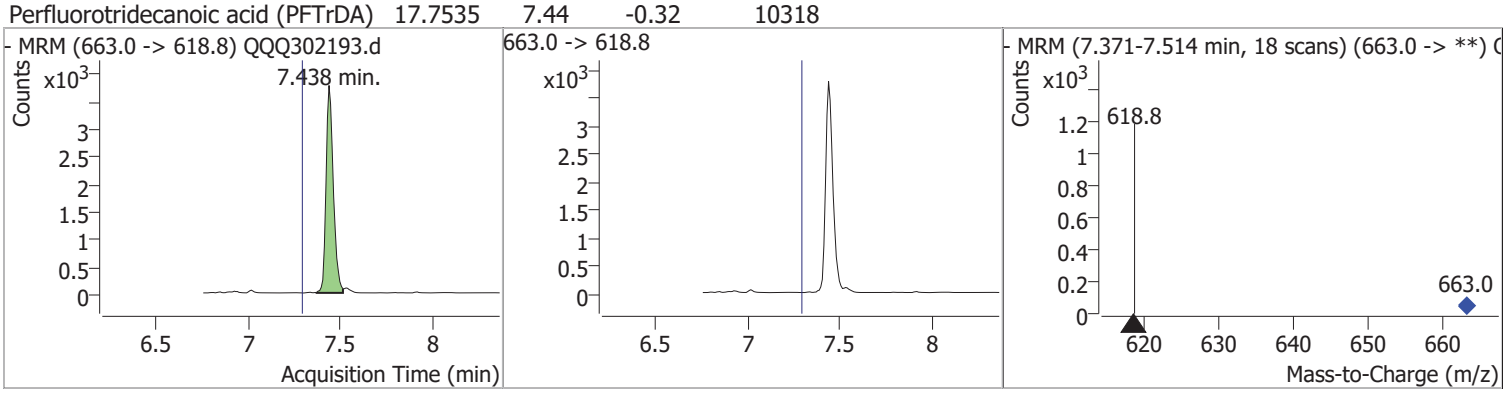


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-n-[1,2-13C2]dodecanoic acid (MPFDoA)	21.2469	7.11	-0.34	120150				

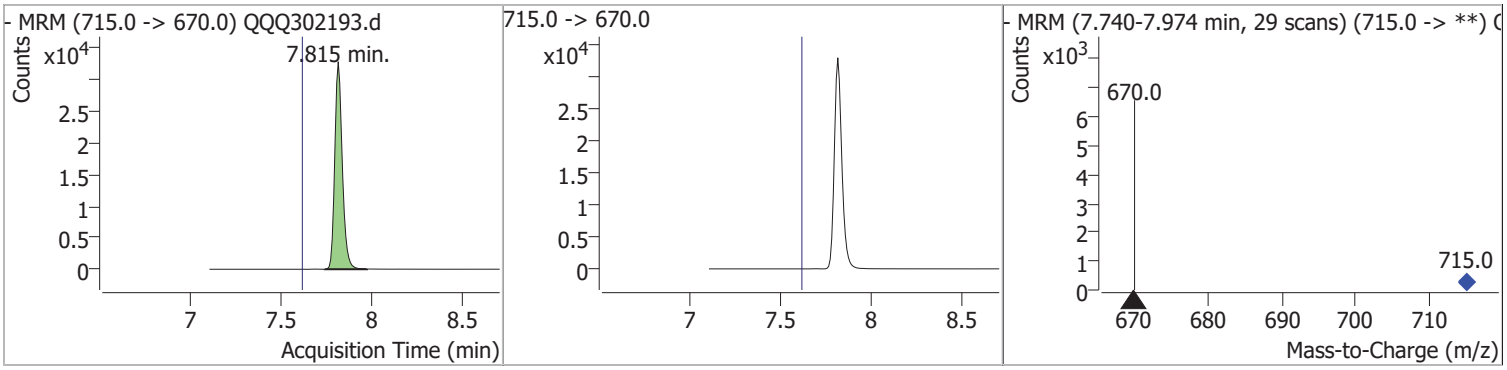


Quantitation Results Report (Not Reviewed)

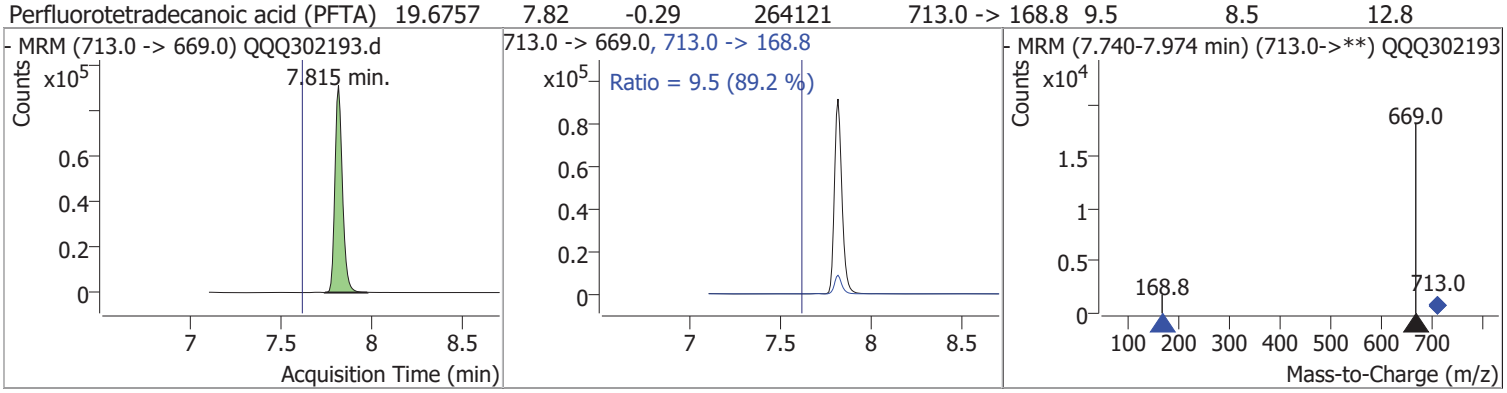
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorotridecanoic acid (PFTrDA)	17.7535	7.44	-0.32	10318				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M2PFTeDA	19.9510	7.82	-0.29	95046				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorotetradecanoic acid (PFTA)	19.6757	7.82	-0.29	264121	713.0 -> 168.8	9.5	8.5	12.8



SECOND-SOURCE CALIBRATION VERIFICATION

EPA 537m

Laboratory: York Analytical Laboratories, Inc.
SDG: 22G0348
Client: Phoenix Environmental Laboratories, Inc.
Project: GCL69739
Calibration: YF20026
Laboratory ID: Y2F2836-SCV1
Sequence: Y2F2836
Standard ID: Y22A230

ANALYTE	EXPECTED (ng/mL)	FOUND (ng/mL)	% DIFF	QC LIMIT
Perfluorobutanesulfonic acid (PFBS)	4.44	4.53	2.1	30.00
Perfluorohexanoic acid (PFHxA)	5.00	5.30	6.0	30.00
Perfluoroheptanoic acid (PFHpA)	5.00	5.17	3.5	30.00
Perfluorohexanesulfonic acid (PFHxS)	4.57	4.90	7.2	30.00
Perfluorooctanoic acid (PFOA)	5.00	5.41	8.2	30.00
Perfluorooctanesulfonic acid (PFOS)	4.64	4.72	1.8	30.00
Perfluorononanoic acid (PFNA)	5.00	5.30	6.1	30.00
Perfluorodecanoic acid (PFDA)	5.00	5.63	12.6	30.00
Perfluoroundecanoic acid (PFUnA)	5.00	5.35	7.0	30.00
Perfluorododecanoic acid (PFDoA)	5.00	5.75	14.9	30.00
Perfluorotridecanoic acid (PFTrDA)	5.00	4.81	-3.7	30.00
Perfluorotetradecanoic acid (PFTA)	5.00	5.69	13.9	30.00
N-MeFOSAA	5.00	4.61	-7.8	30.00
N-EtFOSAA	5.00	5.03	0.6	30.00
Perfluoropentanoic acid (PFPeA)	5.00	5.29	5.8	30.00
Perfluoro-1-octanesulfonamide (FOSA)	5.00	5.06	1.2	30.00
Perfluoro-1-heptanesulfonic acid (PFHpS)	4.76	6.27	31.8 *	30.00
Perfluoro-1-decanesulfonic acid (PFDS)	4.82	5.60	16.1	30.00
1H,1H,2H,2H-Perfluorooctanesulfonic acid (6:2 FTS)	4.76	5.77	21.1	30.00
1H,1H,2H,2H-Perfluorodecanesulfonic acid (8:2 FTS)	4.80	4.92	2.5	30.00
Perfluoro-n-butanoic acid (PFBA)	5.00	4.84	-3.2	30.00

* Values outside of QC limits

Quantitation Results Report (Not Reviewed)

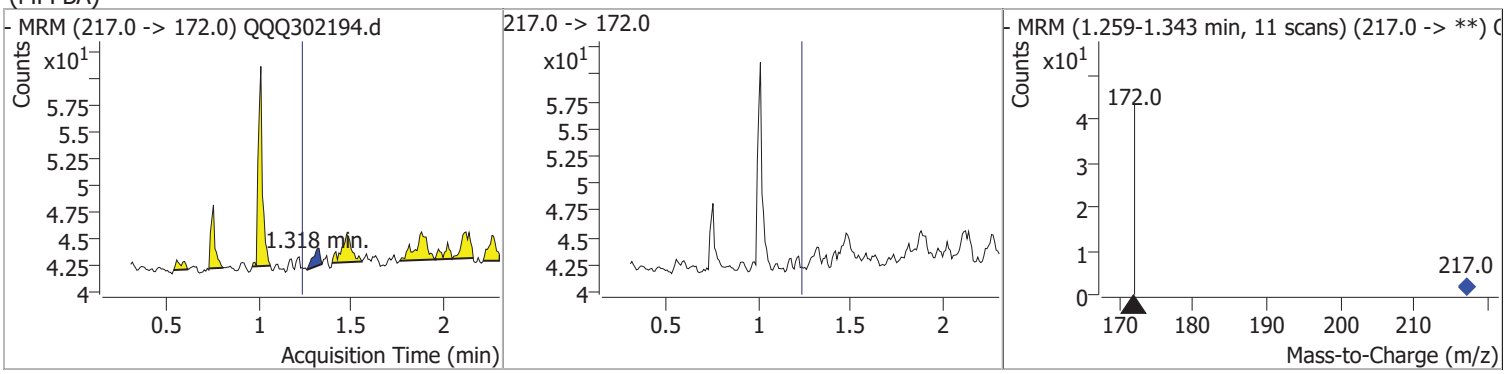
Data File	QQQ302194.d	Operator	
Acq. Method	PFAS 24_IDA ACQ_QQQ3A.m	Acq. Date-Time	6/27/2022 7:49:04 PM
Sample Name	SEQ-SCV1	Instrument	QQQ3
Vial		Multiplier	1.00
DA Method File	PFAS_24_IDA_QUANT_QQQ3_062722.m	Comment	5
Tune File		Tune Date	
Batch Name	2022-06-27-IDA-ICAL2.batch.bin	Last Calib Update	6/27/2022 4:24:30 PM
Ref Library			

Compound	RT	QIon	Resp.	Conc.	Units		Dev(Min)
Internal Standards							
MPFOA	6.031	417.0 -> 372.0	124330	10.0000	ng/ml		-0.399
System Monitoring Compounds							
Perfluoro-n-[13C4]butanoic acid (MPFBA)	1.318	217.0 -> 172.0	4	0.0021	ng/ml		0.009
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 0.02%		*	
Perfluoro-n-[13C54]pentanoic acid (M5PFPeA)	4.334	268.0 -> 223.0	1	0.0008	ng/ml		-0.253
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 0.01%		*	
M3PFBS	4.801	302.0 -> 79.9	8	0.0085	ng/ml	#	-0.362
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 0.08%		*	
M2-4-2FTS	5.358	329.0 -> 309.0	31	0.0494	ng/ml		-0.332
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 0.49%		*	
M5PFHxA	5.268	318.0 -> 273.0	14	0.0040	ng/ml		-0.456
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 0.04%		*	
M4PFHpA	5.788	367.0 -> 322.0	10	0.0054	ng/ml		-0.356
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 0.05%		*	
M3PFHxS	0.000		0	N.D.			
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = NA%			
M2-6-2FTS	6.013	429.0 -> 409.0	178	0.2811	ng/ml		-0.407
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 2.81%		*	
Perfluoro-n-[13C8]octanoic acid (M8PFOA)	6.191	421.0 -> 376.0	28	0.0096	ng/ml		-0.239
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 0.10%		*	
Perfluoro-n-[13C9]nonanoic acid (M9PFNA)	0.000		0	N.D.			
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = NA%			
Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)	6.946	507.0 -> 80.0	11	0.0133	ng/ml		0.258
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 0.13%		*	
M2-8-2FTS	6.533	529.0 -> 509.0	319	0.6036	ng/ml	#	-0.385
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 6.04%		*	
M6PFDA	0.000		0	N.D.			
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = NA%			
d3-N-MeFOSAA	7.247	573.0 -> 418.8	15	0.0103	ng/ml		0.217
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 0.10%		*	
Perfluoro-1-[13C8]octanesulfonamide (M8FOSA)	0.000		0	N.D.			
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = NA%			
d5-N-EtFOSAA	6.784	589.0 -> 418.8	39	0.0309	ng/ml		-0.380
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 0.31%		*	
M7PFUdA	6.708	570.0 -> 525.0	48	0.0089	ng/ml		-0.465
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 0.09%		*	
Perfluoro-n-[1,2-13C2]dodecanoic acid (MPFDoA)	7.085	615.0 -> 570.0	77	0.0128	ng/ml		-0.363
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 0.13%		*	
M2PFTeDA	7.790	715.0 -> 670.0	136	0.0270	ng/ml		-0.311
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 0.27%		*	
Target Compounds							**QValue**

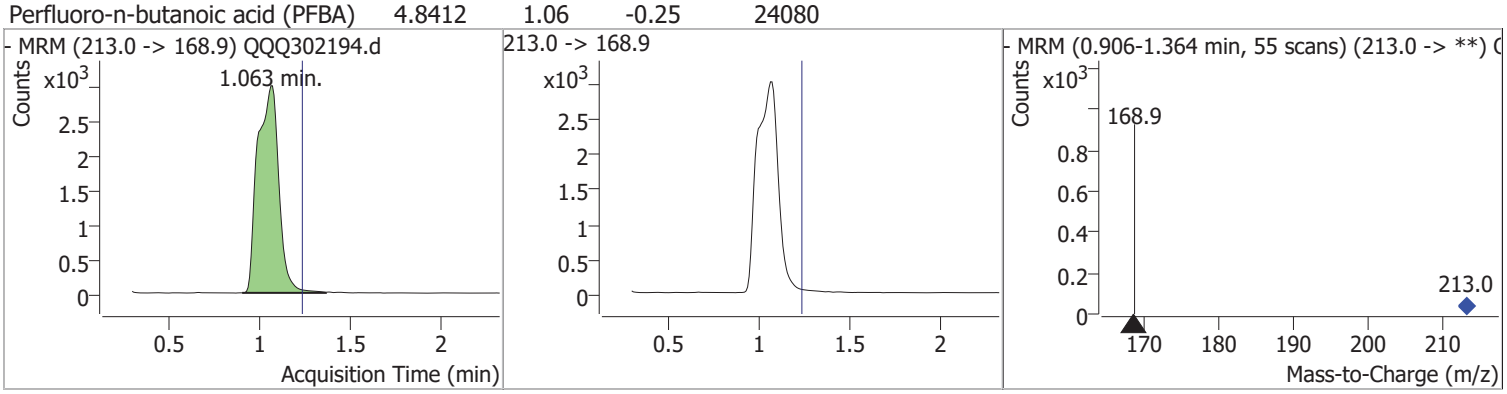
Compound	RT	QIon	Resp.	Conc.	Units		Dev(Min)
Perfluoro-n-butanoic acid (PFBA)	1.063	213.0 -> 168.9	24080	4.8412	ng/ml		100
Perfluoro-n-pentanoic acid (PFPeA)	4.107	263.0 -> 219.0	19420	5.2917	ng/ml		100
Perfluorobutanesulfonic acid (PFBS)	4.693	298.9 -> 79.9	9686	4.5349	ng/ml		95
1H,1H,2H,2H-perfluoro-1-hexanesulfonate (4 2FTS)	5.234	327.0 -> 307.0	6093	4.9914	ng/ml		99
Perfluorohexanoic acid (PFHxA)	5.269	313.0 -> 268.9	42640	5.3008	ng/ml		99
Perfluoro-1-pentanesulfonate (L-PFPeS)	5.383	348.9 -> 79.9	8762	4.9434	ng/ml		98
Perfluoroheptanoic acid (PFHpA)	5.721	363.0 -> 318.8	55124	5.1734	ng/ml		99
Perfluorohexanesulfonic acid (PFHxS)	5.771	398.9 -> 79.9	8668	4.9004	ng/ml	m	87
1H,1H,2H,2H-perfluoro-1-octanesulfonate (6 2FTS)	6.013	427.0 -> 407.0	5838	5.7667	ng/ml		95
Perfluorooctanoic acid (PFOA)	6.031	413.0 -> 368.8	58438	5.4106	ng/ml		98
Perfluoro-1-heptanesulfonate (L-PFHpS)	6.055	448.9 -> 80.0	8703	6.2740	ng/ml		96
Perfluorononanoic acid (PFNA)	6.291	463.0 -> 418.8	57759	5.3043	ng/ml		99
Perfluorooctanesulfonic acid (PFOS)	6.299	498.9 -> 79.9	7160	4.7239	ng/ml	m	95
1H,1H,2H,2H-perfluoro-1-decanesulfonate (8 2FTS)	6.533	527.0 -> 507.0	6338	4.9204	ng/ml		88
Perfluorononanesulfonate (L-PFNS)	6.541	548.9 -> 79.9	7449	5.1147	ng/ml		86
Perfluorodecanoic acid (PFDA)	6.542	513.0 -> 468.8	57383	5.6320	ng/ml		99
N-MeFOSAA	6.658	570.0 -> 418.9	13827	4.6086	ng/ml	m	92
Perfluoro-1-octanesulfonamide (FOSA)	6.981	497.9 -> 78.0	13067	5.0615	ng/ml		99
Perfluoro-1-decanesulfonate (L-PFDS)	6.792	598.9 -> 98.9	9014	5.5952	ng/ml		100
N-EtFOSAA	6.792	584.0 -> 418.8	12596	5.0285	ng/ml	#m	80
Perfluoroundecanoic acid (PFUnA)	6.793	563.0 -> 519.0	55209	5.3484	ng/ml		98
Perfluorododecanoic acid (PFDoA)	7.085	613.0 -> 568.8	55892	5.7458	ng/ml		99
Perfluorotridecanoic acid (PFTrDA)	7.413	663.0 -> 618.8	2731	4.8134	ng/ml		100
Perfluorotetradecanoic acid (PFTA)	7.782	713.0 -> 669.0	75450	5.6944	ng/ml		98

(#) = Qualifier Out of Range; (m) = Manual Integration; (+) = Area Summed; (*) = Surrogate Percent Recovery Out of Range; (d): Zeroed Peak

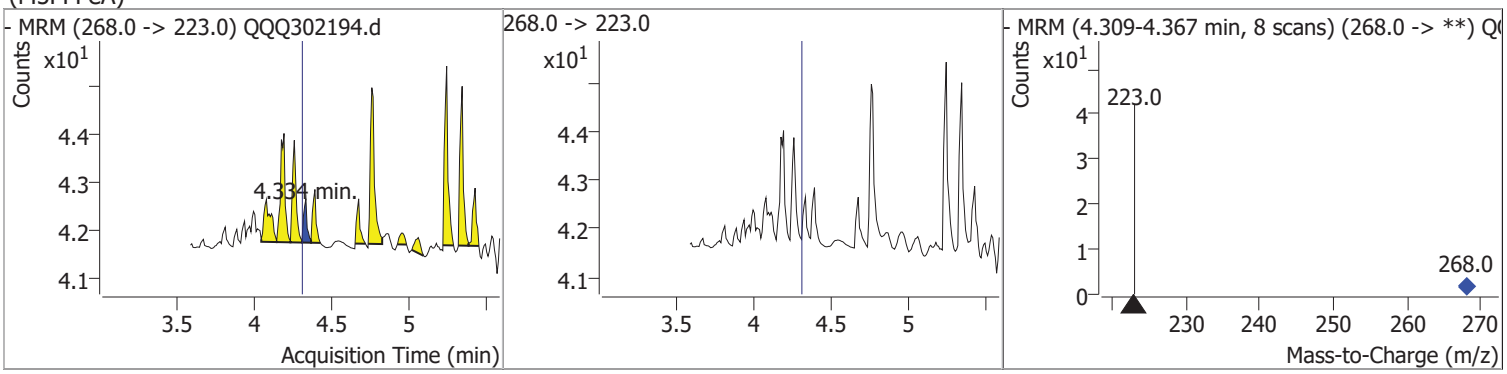
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-n-[13C4]butanoic acid (MPFBA)	0.0021	1.32	0.01	4				



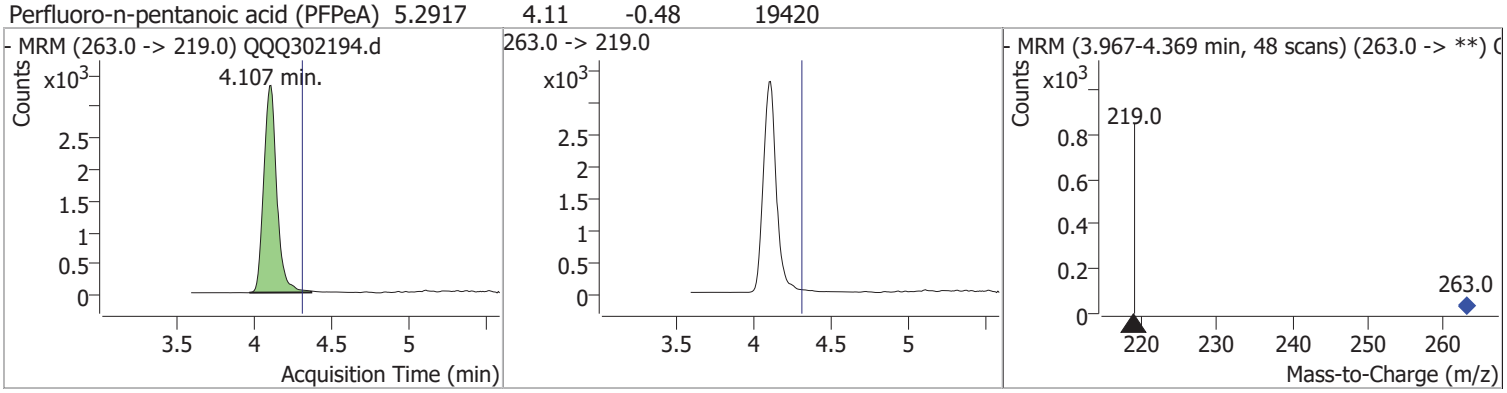
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-n-butanoic acid (PFBA)	4.8412	1.06	-0.25	24080				



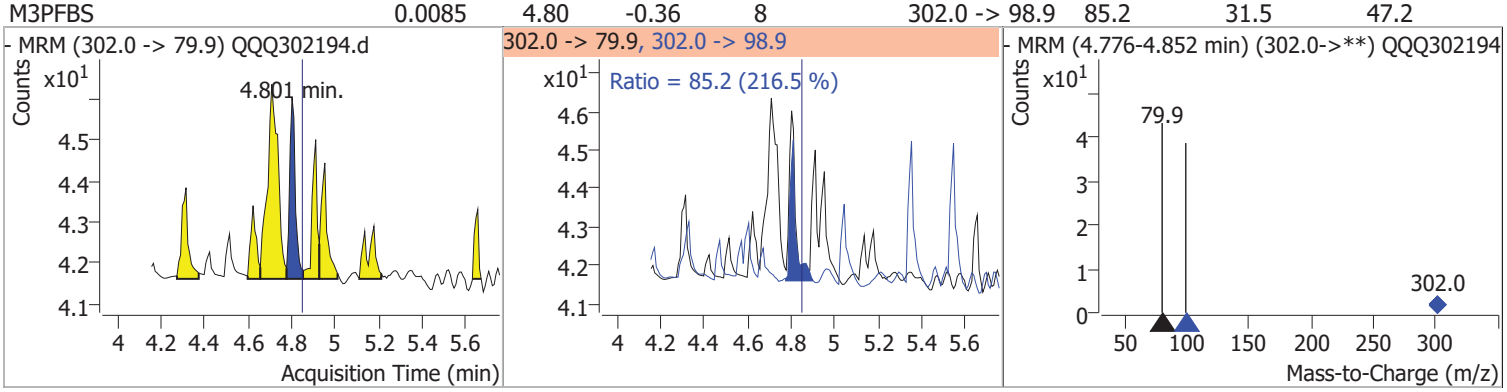
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-n-[13C54]pentanoic acid (M5PFPeA)	0.0008	4.33	-0.25	1				



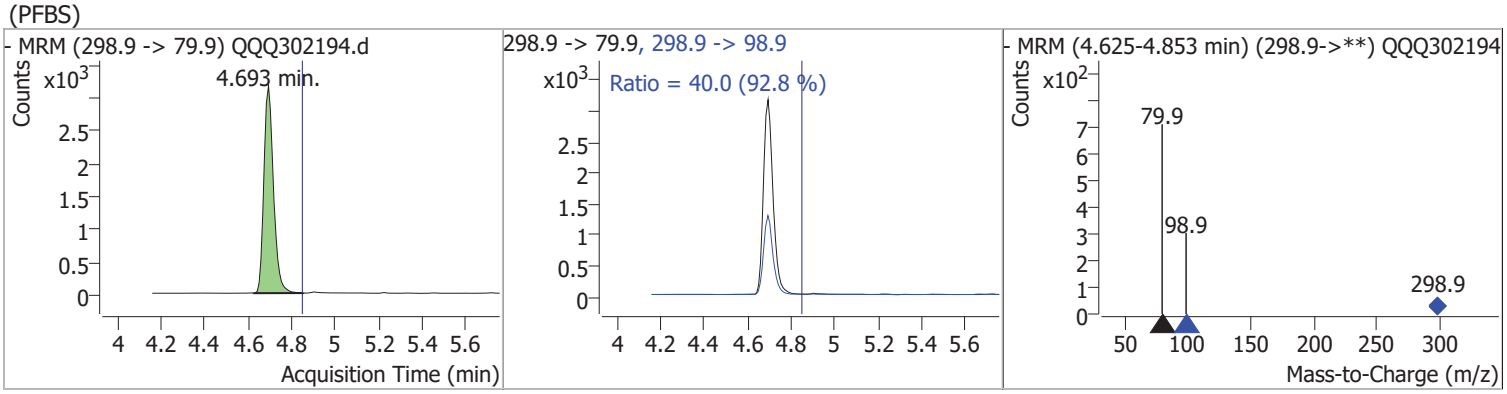
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-n-pentanoic acid (PFPeA)	5.2917	4.11	-0.48	19420				



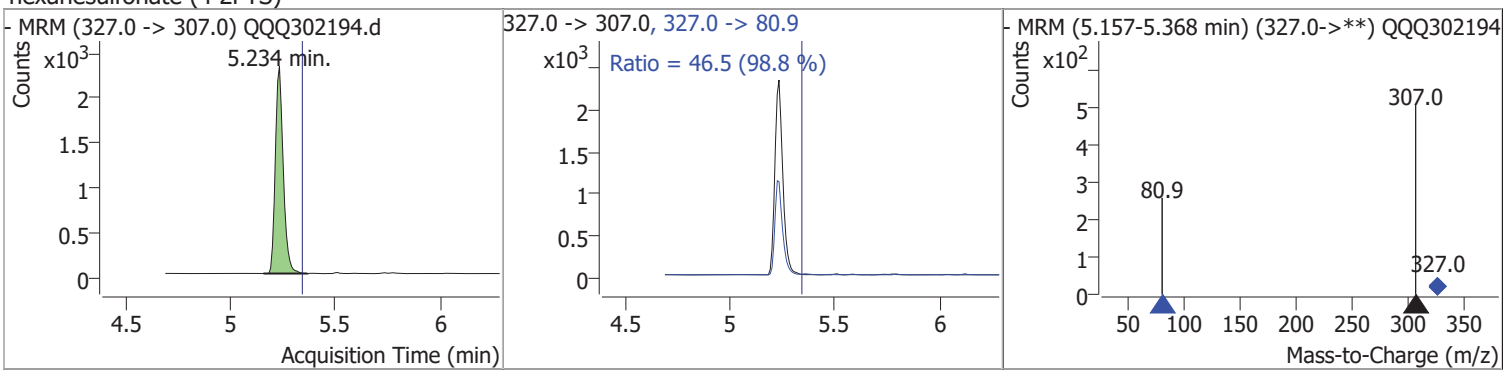
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M3PFBS	0.0085	4.80	-0.36	8	302.0 -> 98.9	85.2	31.5	47.2



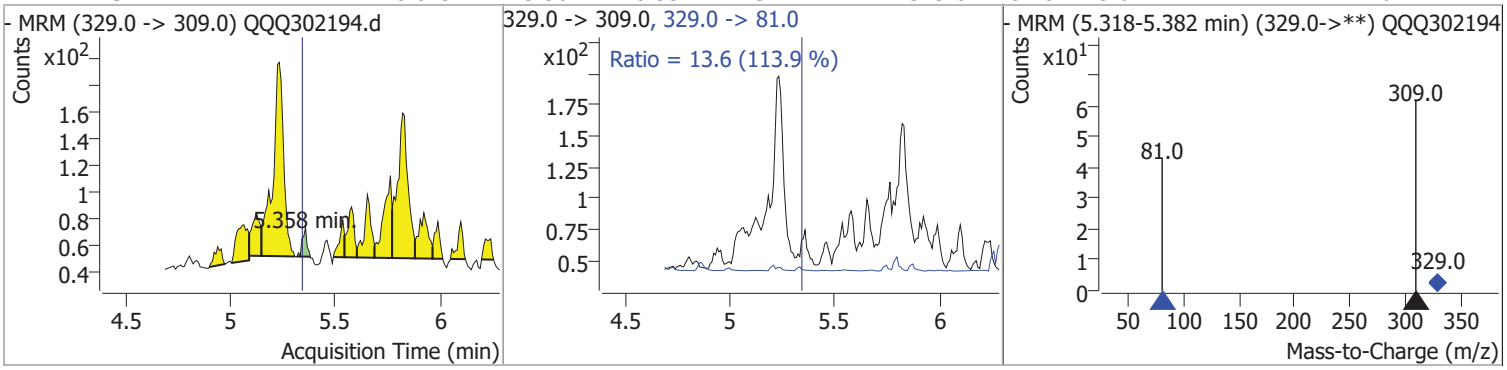
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorobutanesulfonic acid (PFBS)	4.5349	4.69	-0.47	9686	298.9 -> 98.9	40.0	34.5	51.7



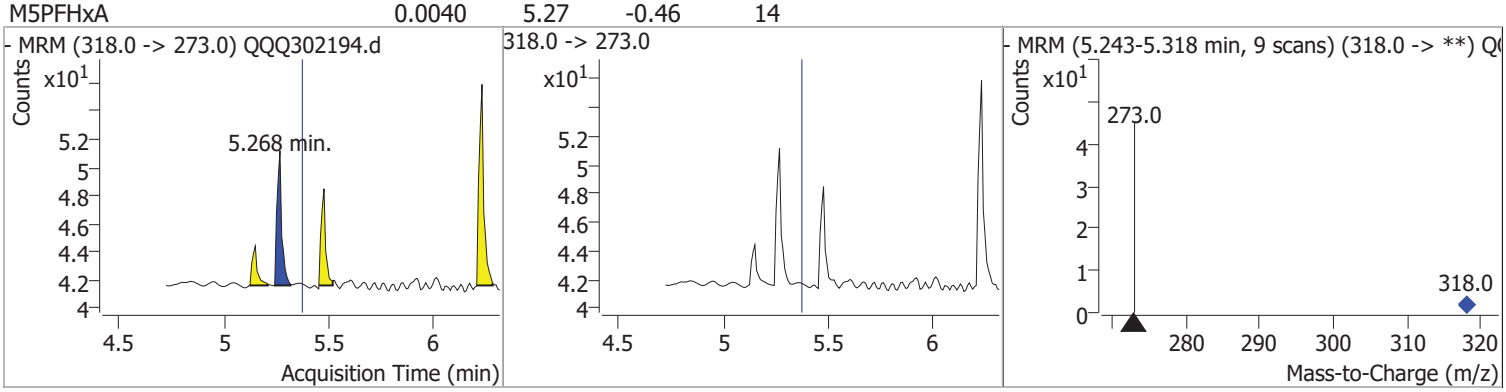
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
1H,1H,2H,2H-perfluoro-1-hexanesulfonate (4 2FTS)	4.9914	5.23	-0.46	6093	327.0 -> 80.9	46.5	28.2	65.9



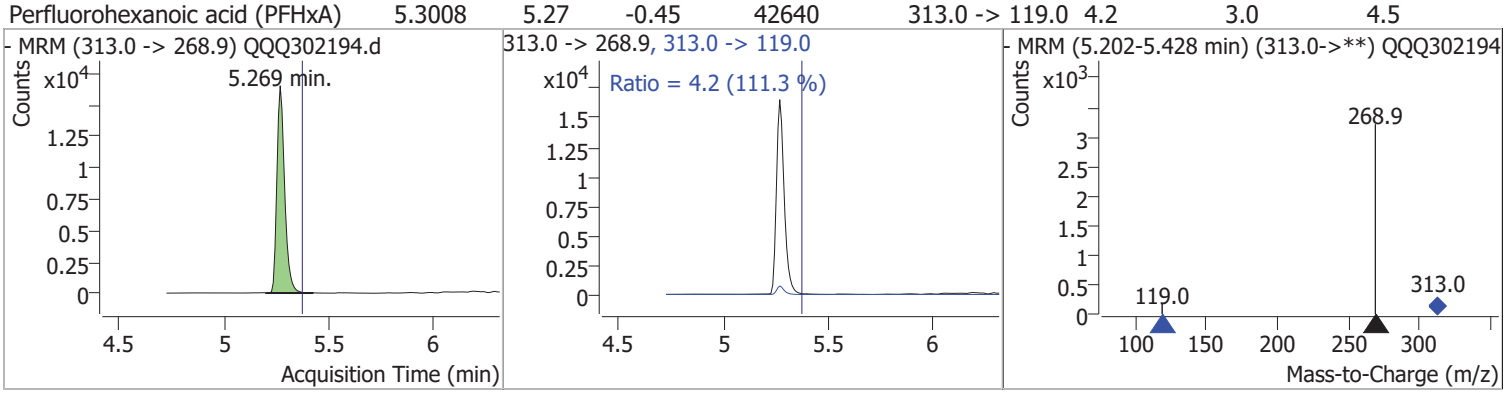
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M2-4-2FTS	0.0494	5.36	-0.33	31	329.0 -> 81.0	13.6	7.2	16.7



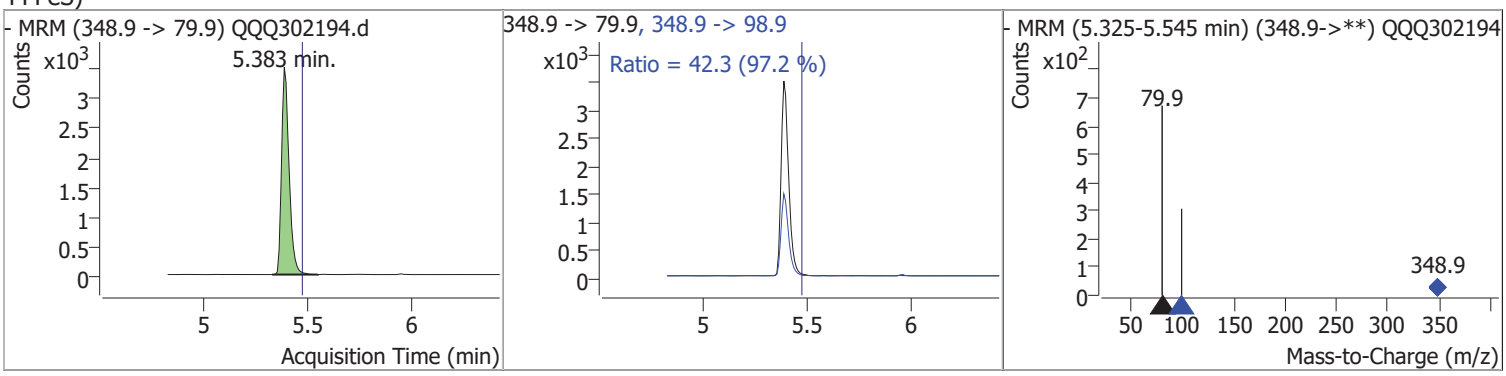
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M5PFHxA	0.0040	5.27	-0.46	14				



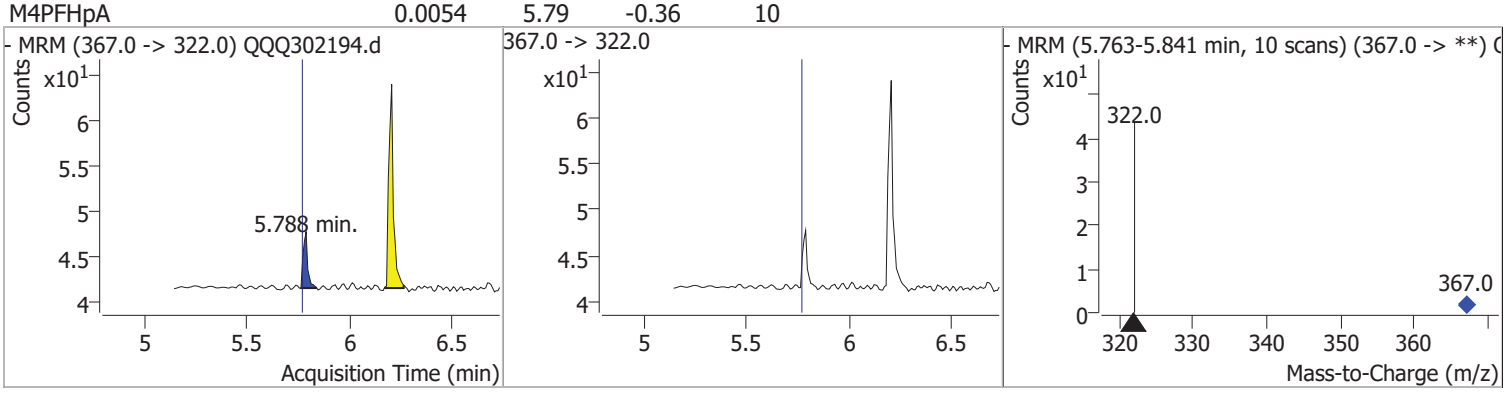
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorohexanoic acid (PFHxA)	5.3008	5.27	-0.45	42640	313.0 -> 119.0	4.2	3.0	4.5



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-1-pentanesulfonate (L-PFPeS)	4.9434	5.38	-0.44	8762	348.9 -> 98.9	42.3	34.8	52.2

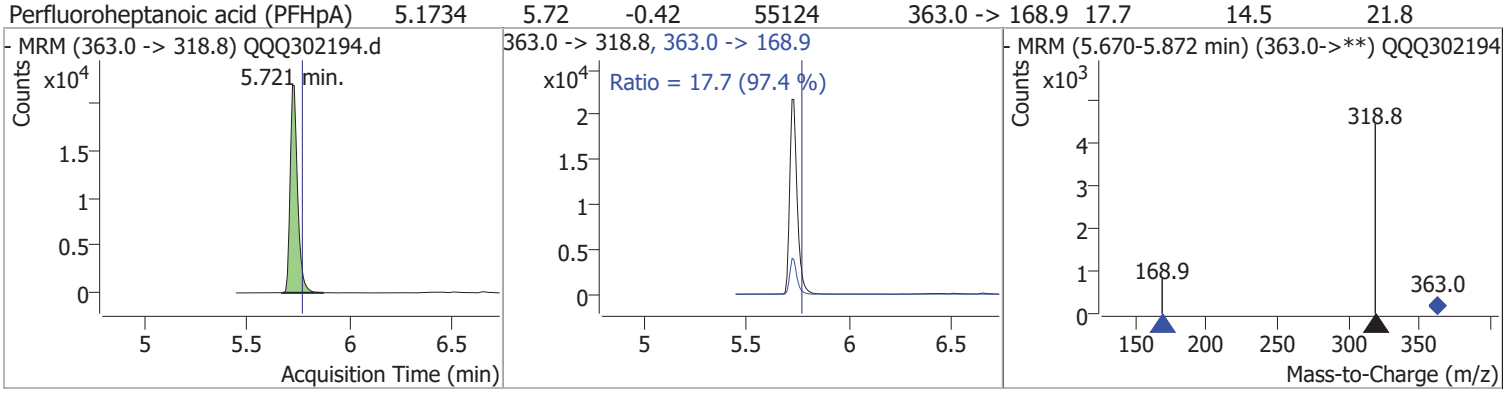


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M4PFHpA	0.0054	5.79	-0.36	10				

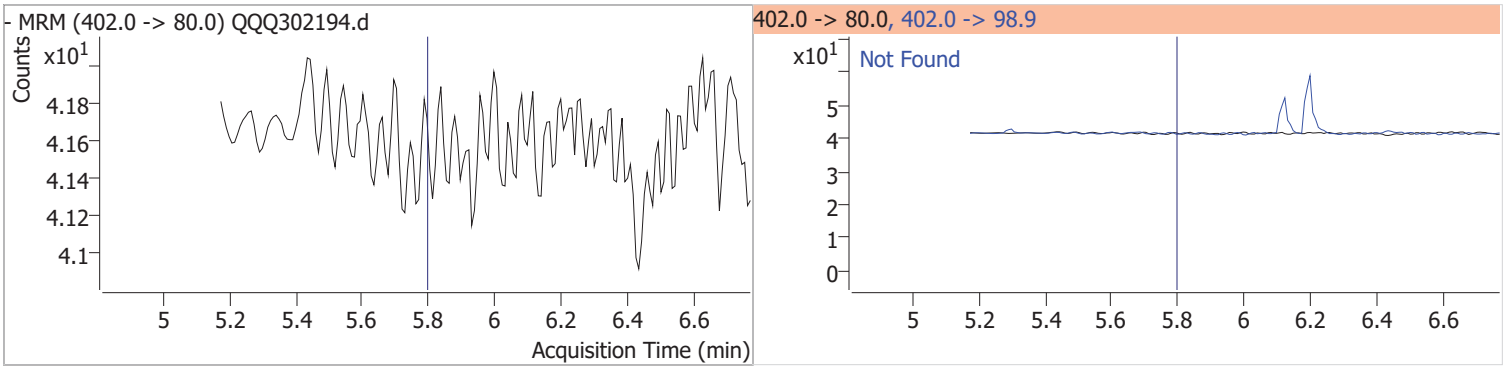


Quantitation Results Report (Not Reviewed)

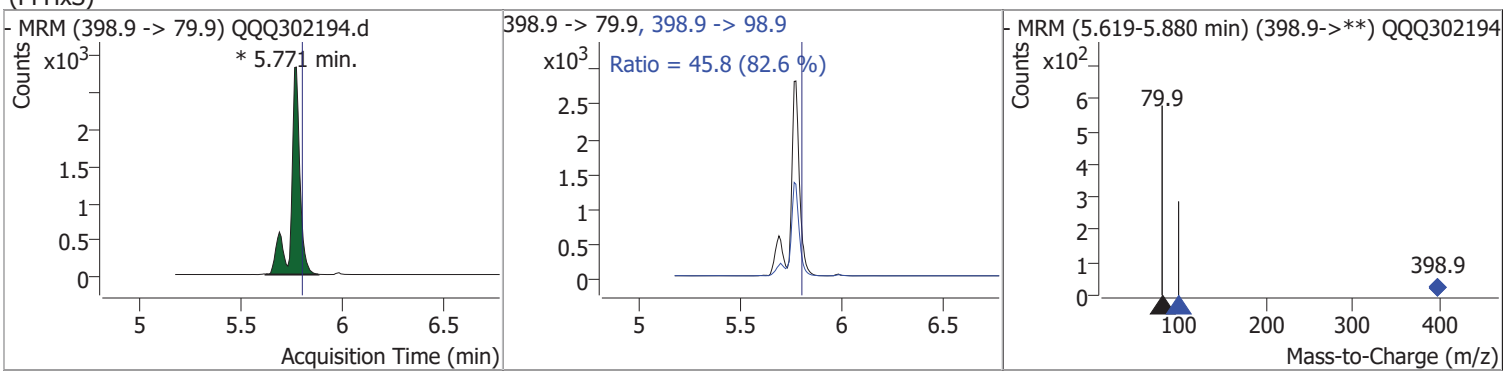
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoroheptanoic acid (PFHpA)	5.1734	5.72	-0.42	55124	363.0 -> 168.9	17.7	14.5	21.8



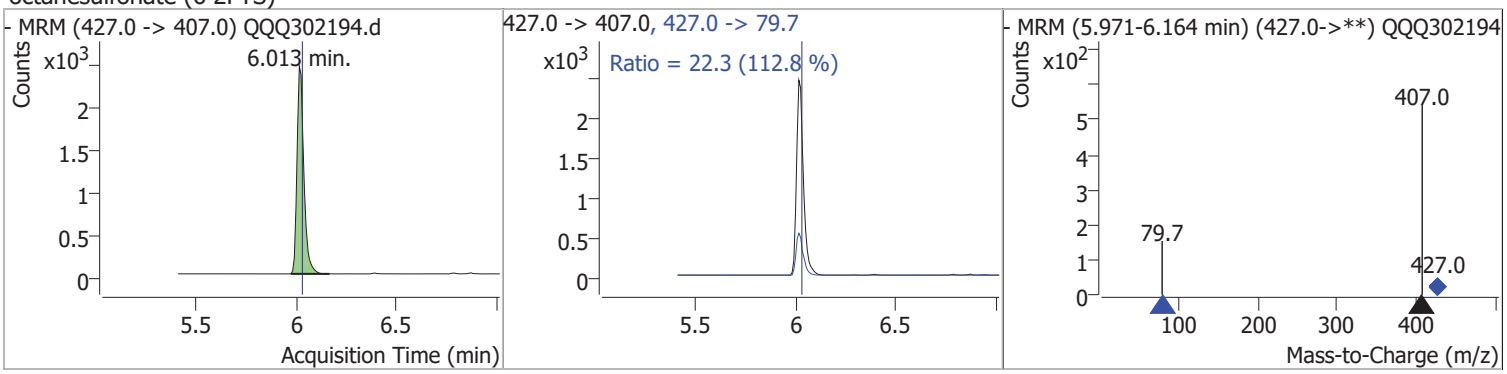
Compound	Conc.	Exp RT	QIon	Exp Ratio
M3PFHxS	N.D.	6.18	402.0 -> 98.9	39.1



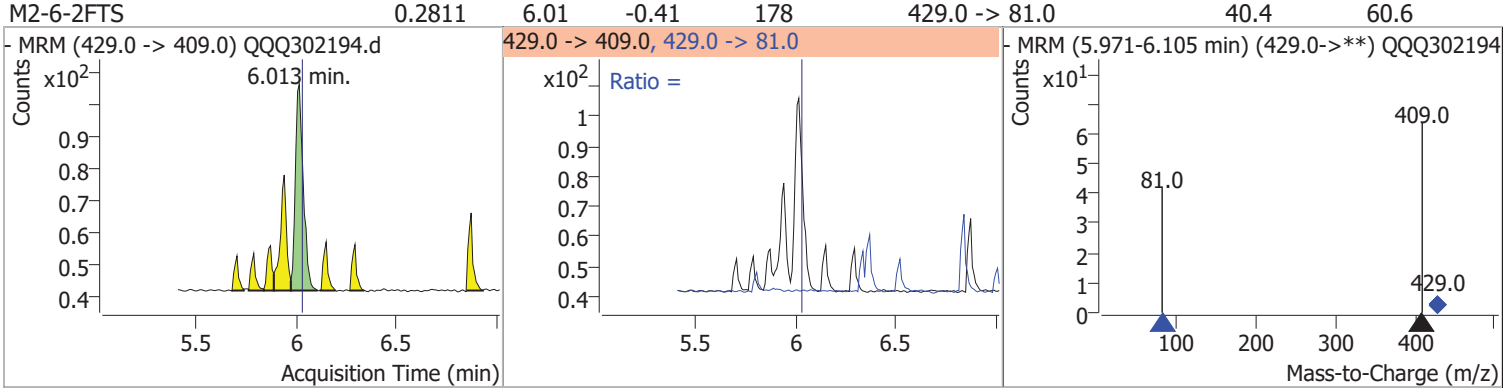
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorohexanesulfonic acid (PFHxS)	4.9004	5.77	-0.41	8668 (m)	398.9 -> 98.9	45.8	44.4	66.5



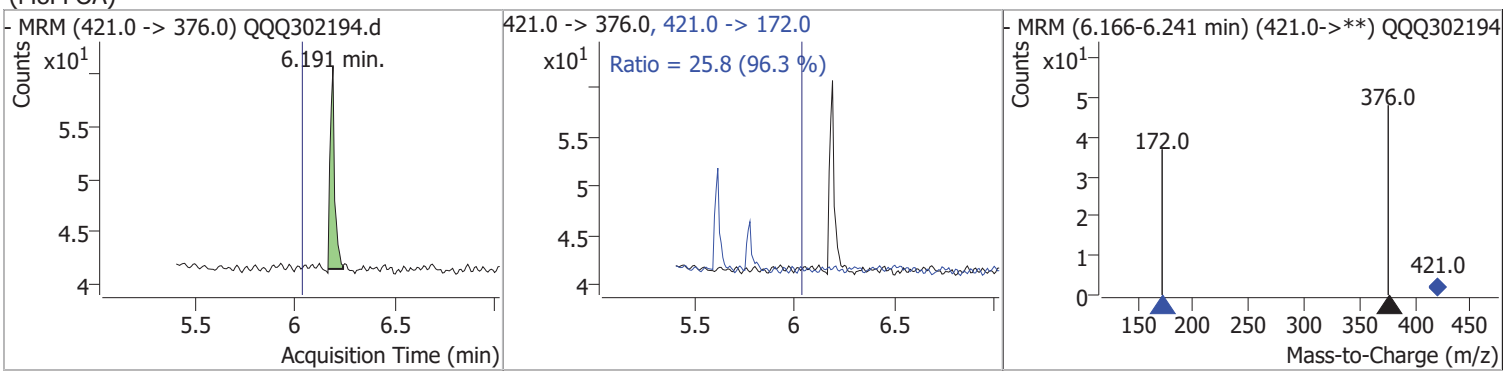
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
1H,1H,2H,2H-perfluoro-1-octanesulfonate (6 2FTS)	5.7667	6.01	-0.41	5838	427.0 -> 79.7	22.3	15.8	23.7



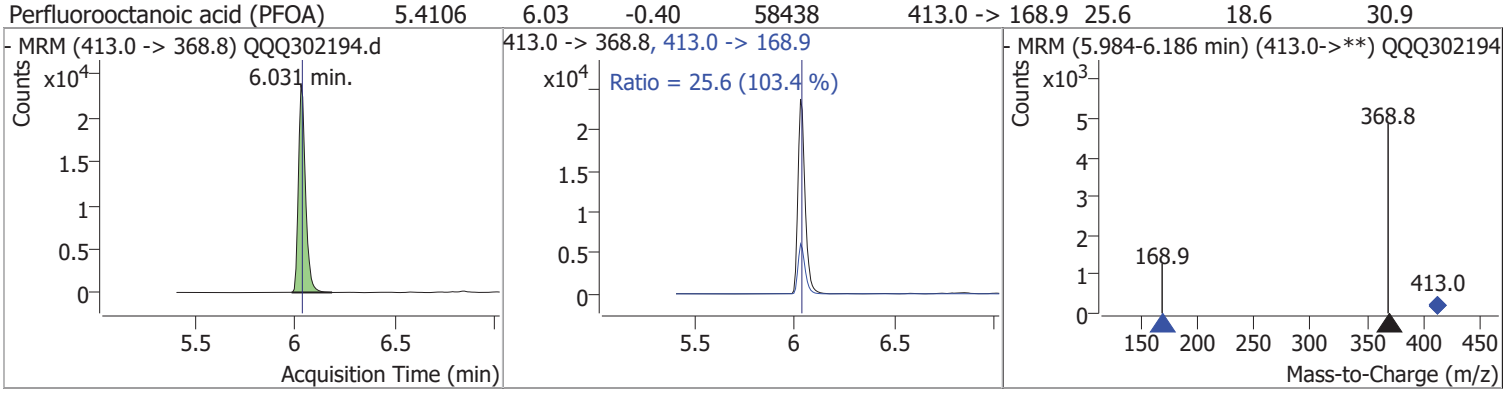
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M2-6-2FTS	0.2811	6.01	-0.41	178	429.0 -> 81.0		40.4	60.6



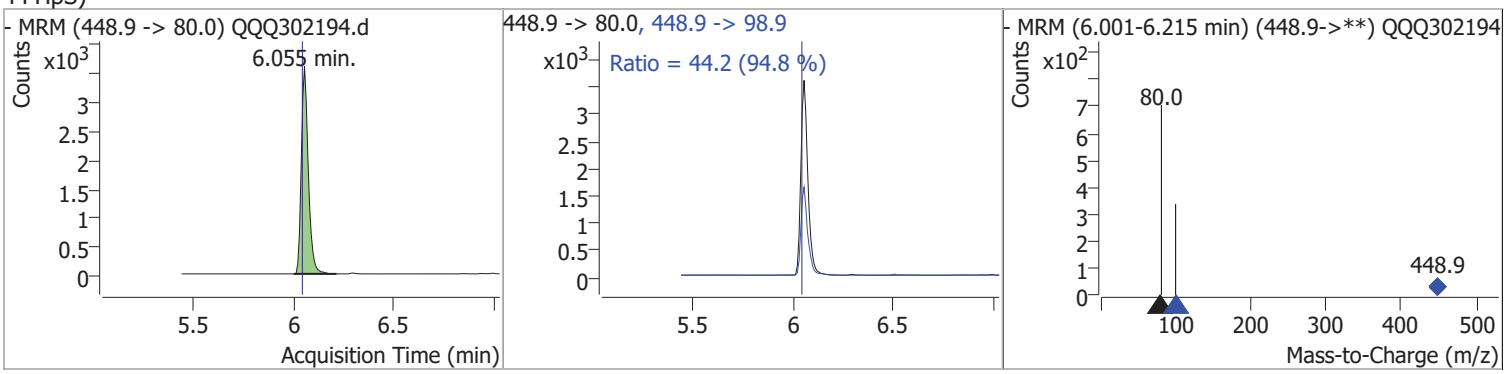
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-n-[13C8]octanoic acid (M8PFOA)	0.0096	6.19	-0.24	28	421.0 -> 172.0	25.8	21.5	32.2



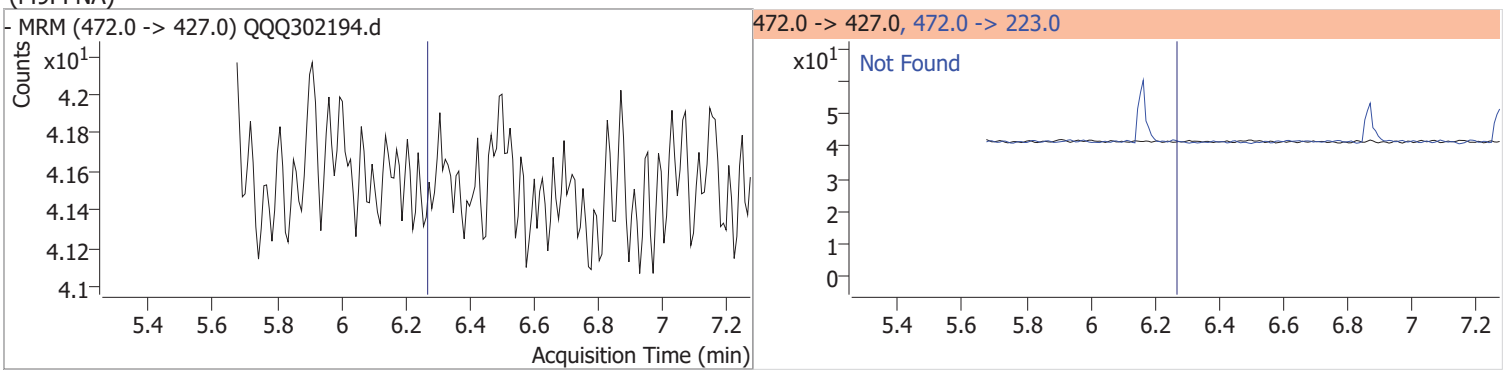
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorooctanoic acid (PFOA)	5.4106	6.03	-0.40	58438	413.0 -> 168.9	25.6	18.6	30.9



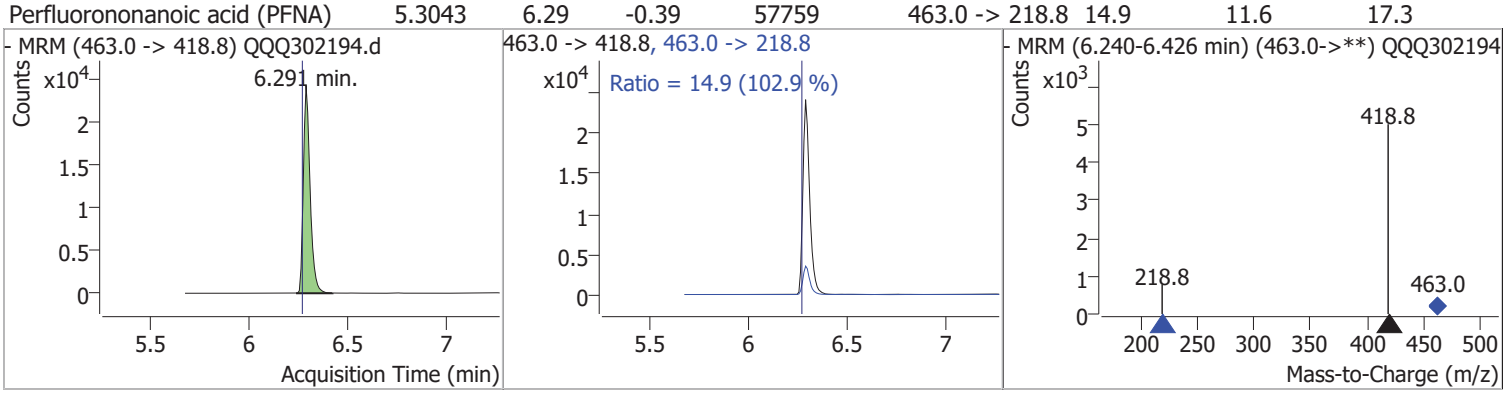
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-1-heptanesulfonate (L-PFHpS)	6.2740	6.06	-0.38	8703	448.9 -> 98.9	44.2	37.3	56.0



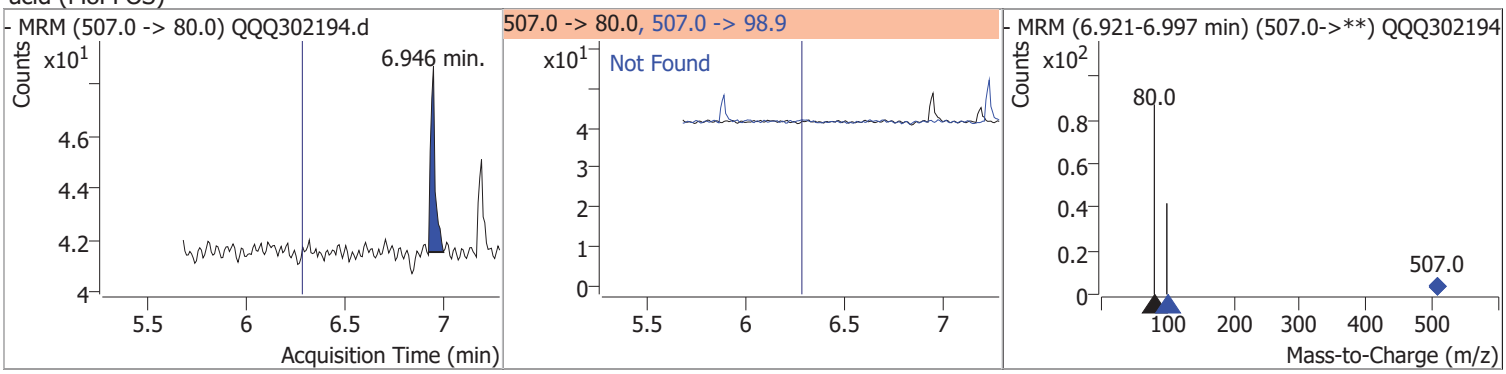
Compound	Conc.	Exp RT	QIon	Exp Ratio
Perfluoro-n-[13C9]nonanoic acid (M9PFNA)	N.D.	6.68	472.0 -> 223.0	16.3



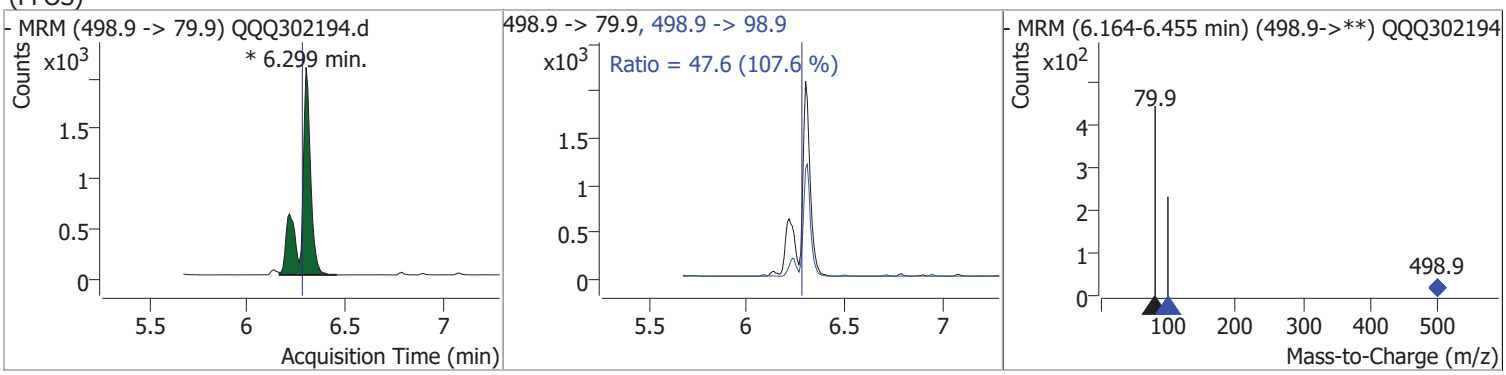
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorononanoic acid (PFNA)	5.3043	6.29	-0.39	57759	463.0 -> 218.8	14.9	11.6	17.3



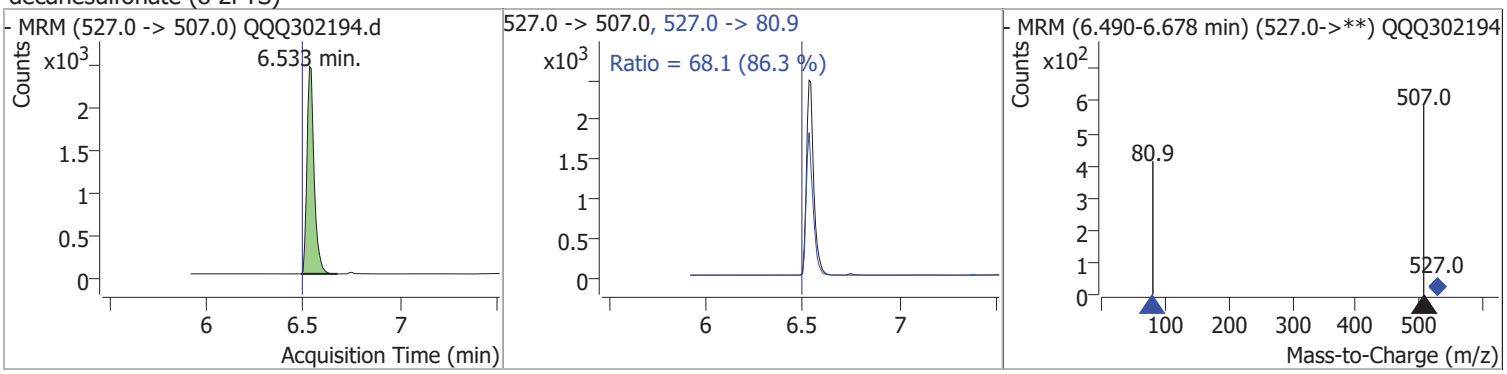
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)	0.0133	6.95	0.26	11	507.0 -> 98.9		37.1	55.6



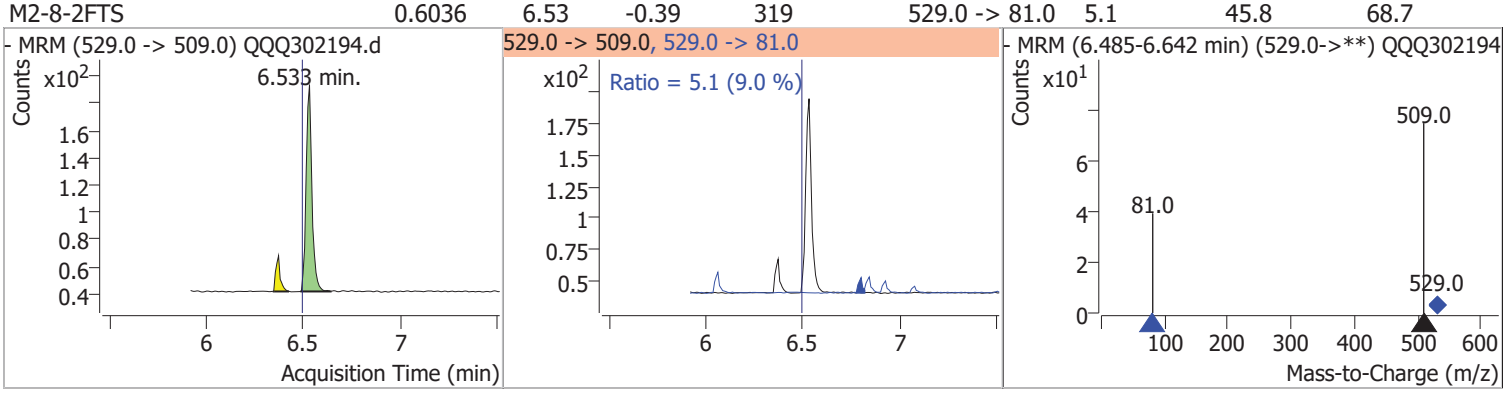
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorooctanesulfonic acid (PFOS)	4.7239	6.30	-0.39	7160 (m)	498.9 -> 98.9	47.6	35.4	53.0



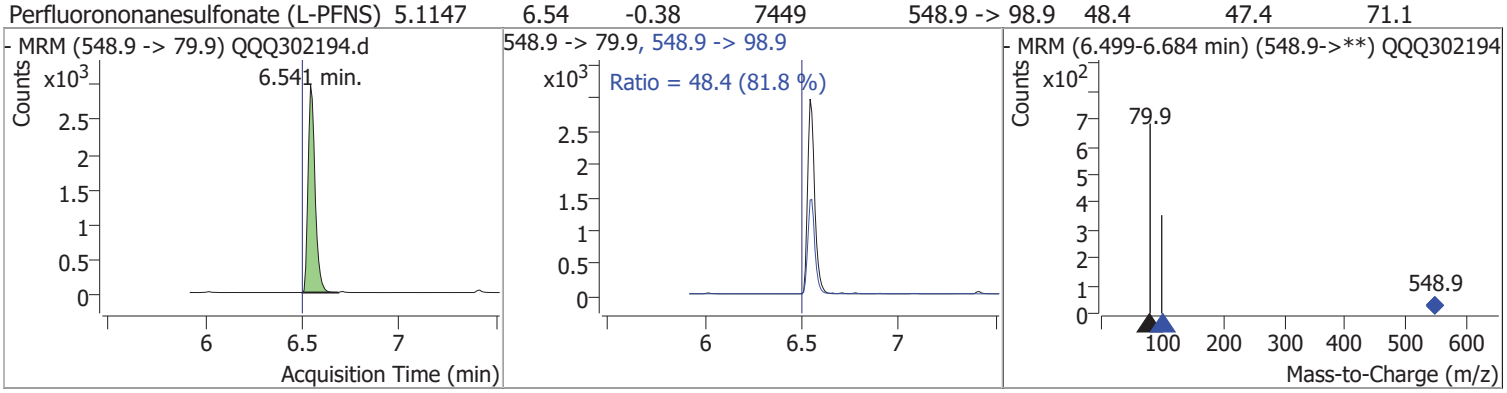
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
1H,1H,2H,2H-perfluoro-1-decanesulfonate (8 2FTS)	4.9204	6.53	-0.39	6338	527.0 -> 80.9	68.1	63.1	94.6



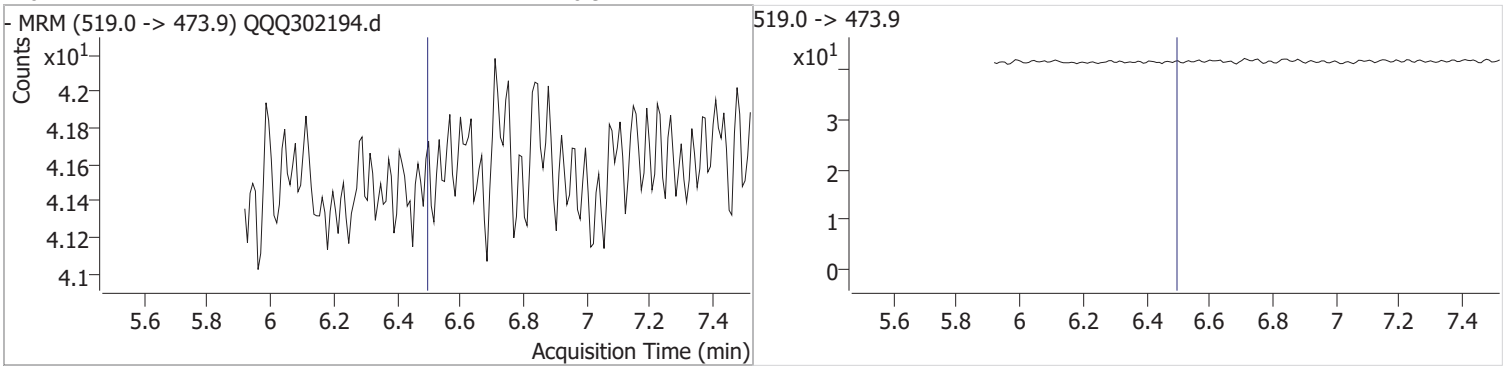
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M2-8-2FTS	0.6036	6.53	-0.39	319	529.0 -> 81.0	5.1	45.8	68.7



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorononanesulfonate (L-PFNS)	5.1147	6.54	-0.38	7449	548.9 -> 98.9	48.4	47.4	71.1

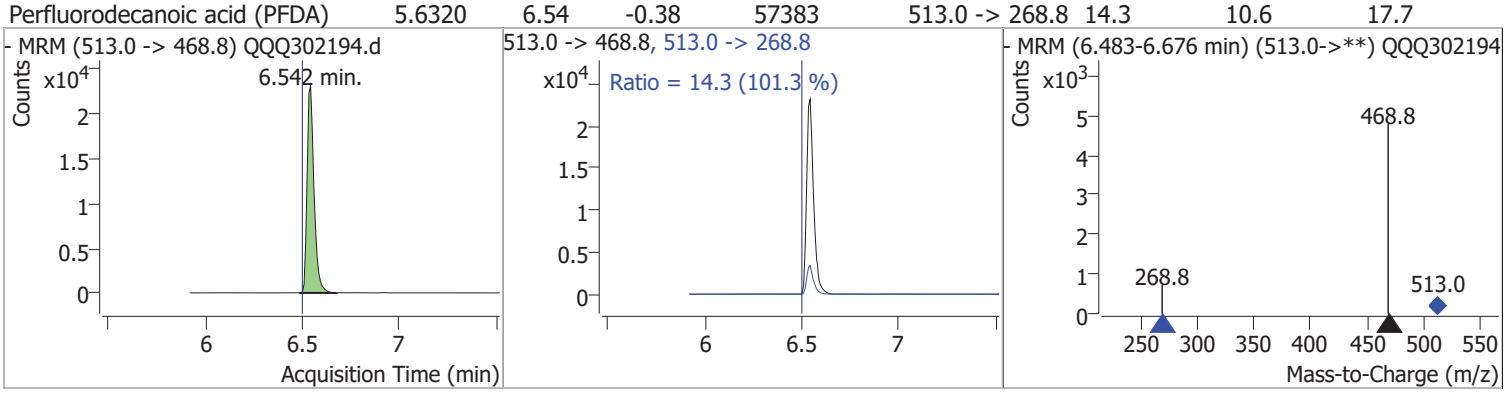


Compound	Conc.	Exp RT	QIon	Exp Ratio
M6PFDA	N.D.	6.92		

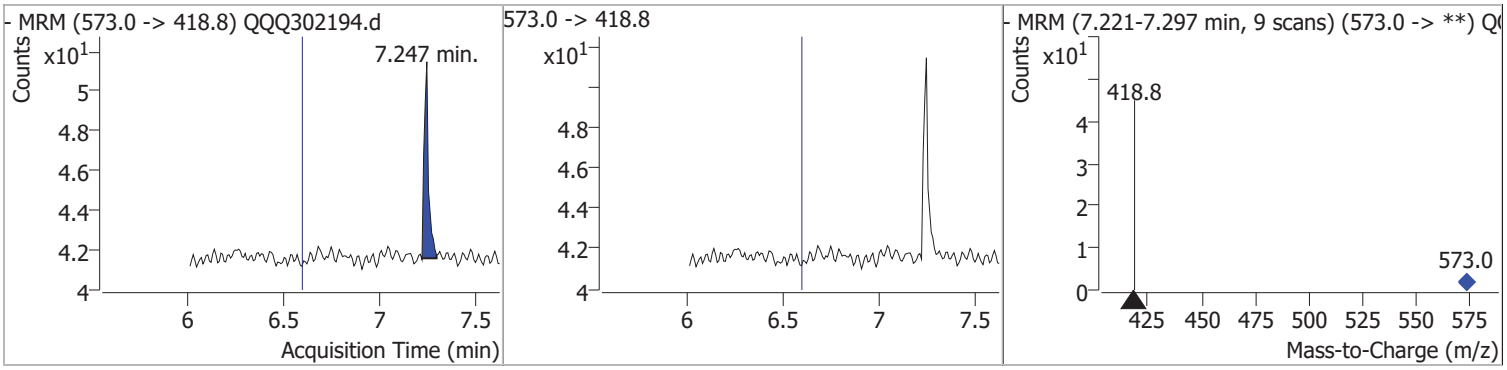


Quantitation Results Report (Not Reviewed)

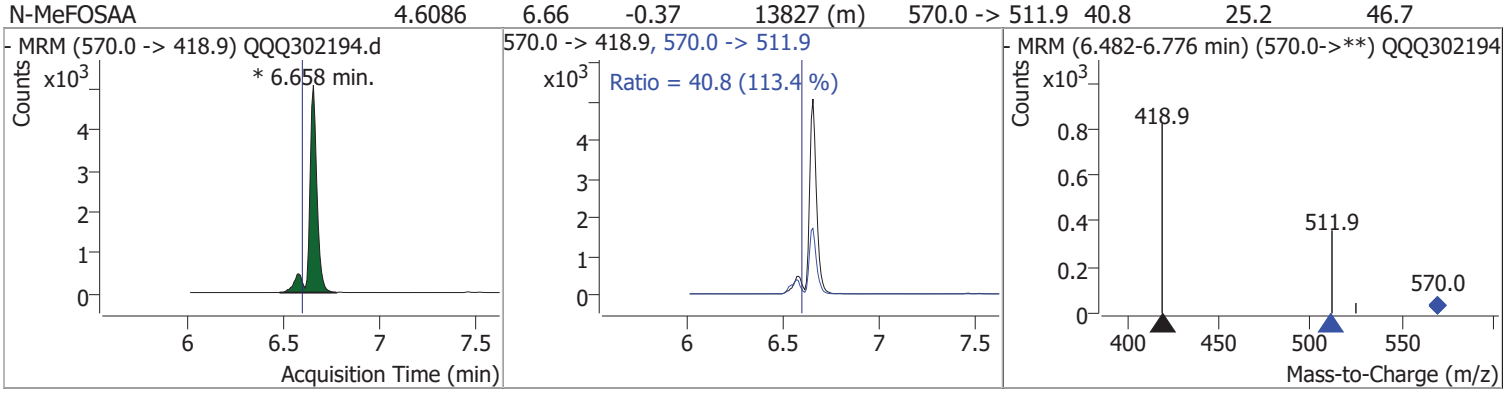
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorodecanoic acid (PFDA)	5.6320	6.54	-0.38	57383	513.0 -> 268.8	14.3	10.6	17.7



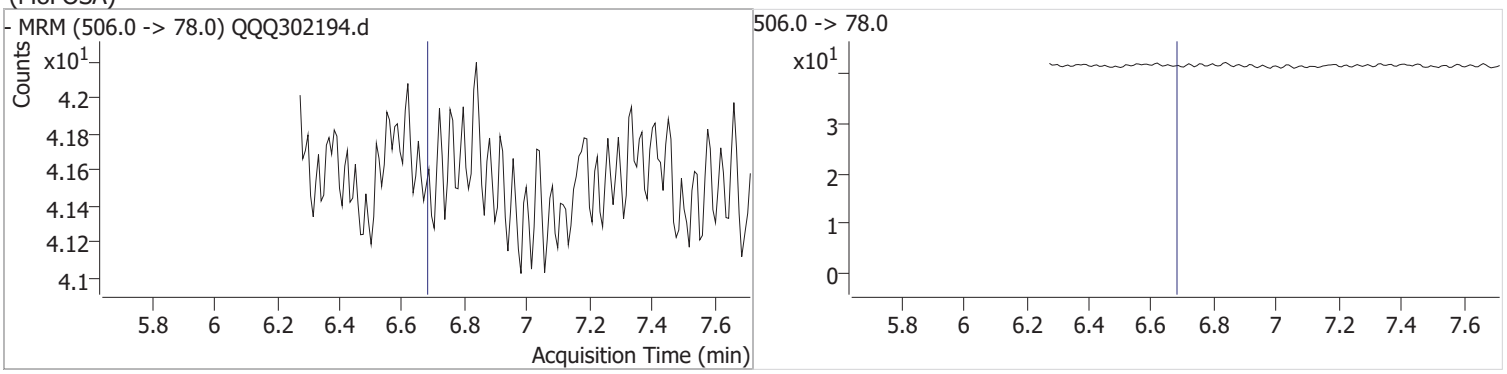
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
d3-N-MeFOSAA	0.0103	7.25	0.22	15				



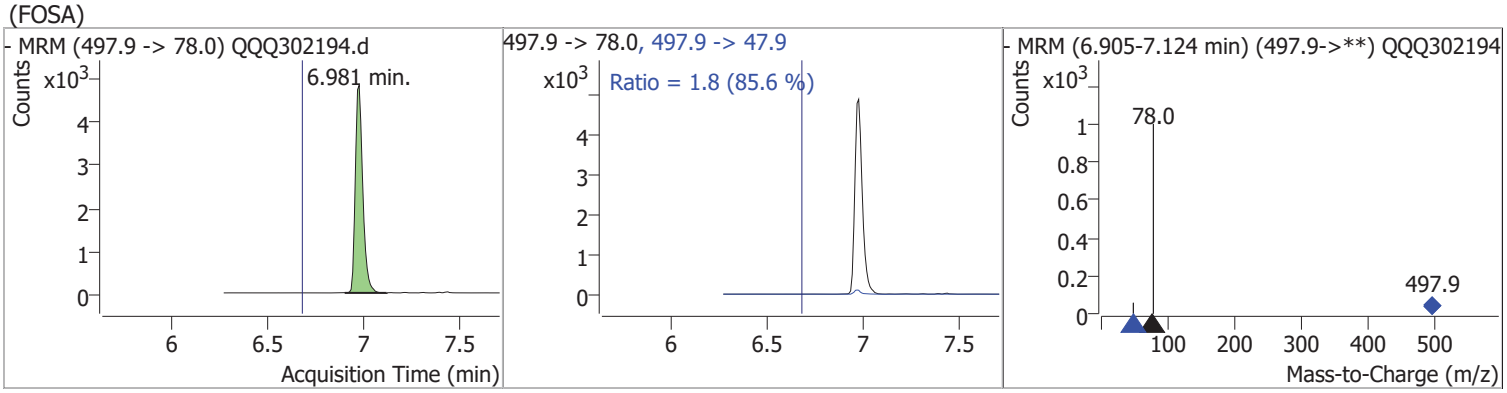
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
N-MeFOSAA	4.6086	6.66	-0.37	13827 (m)	570.0 -> 511.9	40.8	25.2	46.7



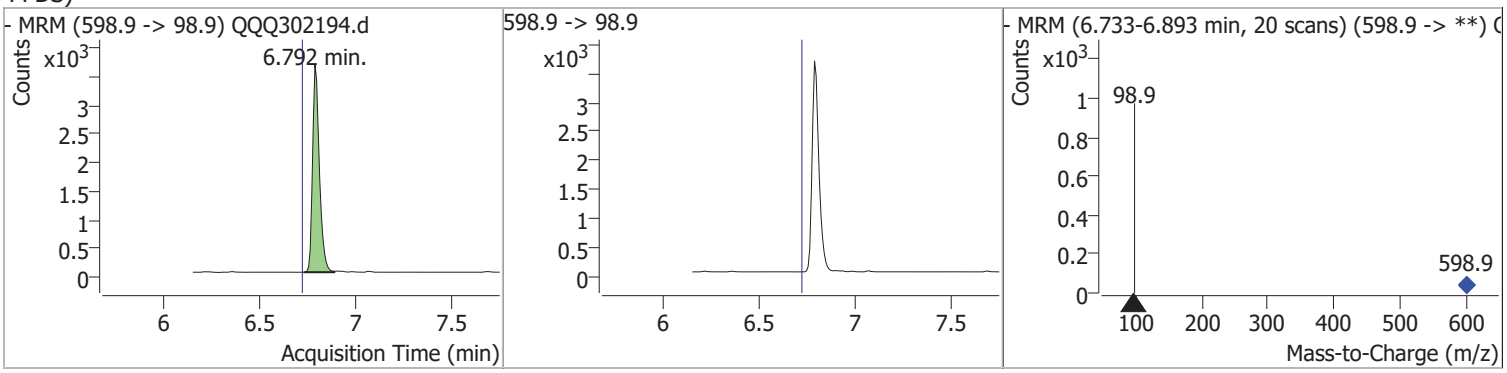
Compound	Conc.	Exp RT	QIon	Exp Ratio
Perfluoro-1-[13C8]octanesulfonamide (M8FOSA)	N.D.	7.12		



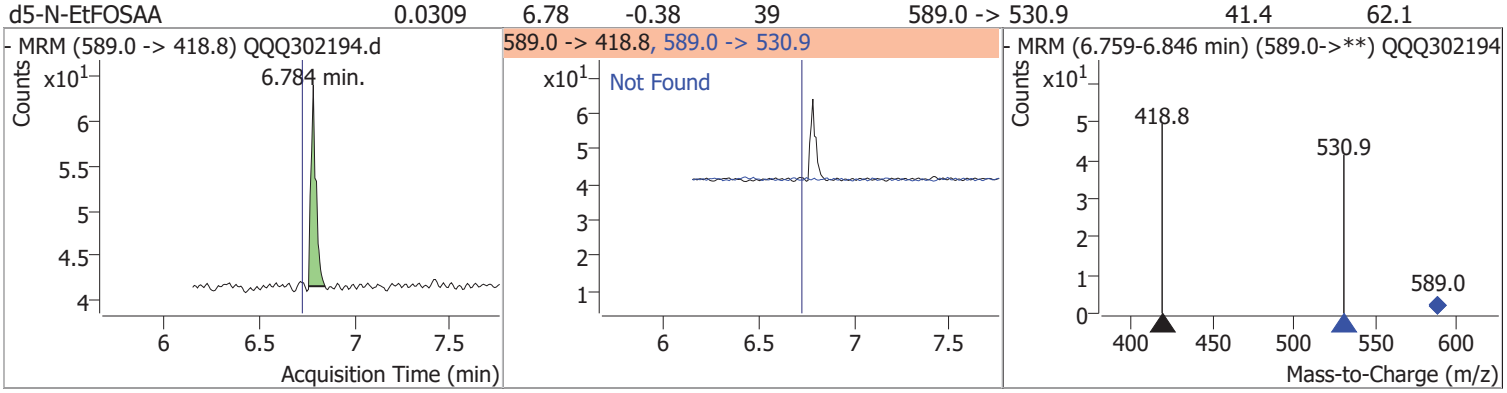
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-1-octanesulfonamide (FOSA)	5.0615	6.98	-0.14	13067	497.9 -> 47.9	1.8	1.7	2.5



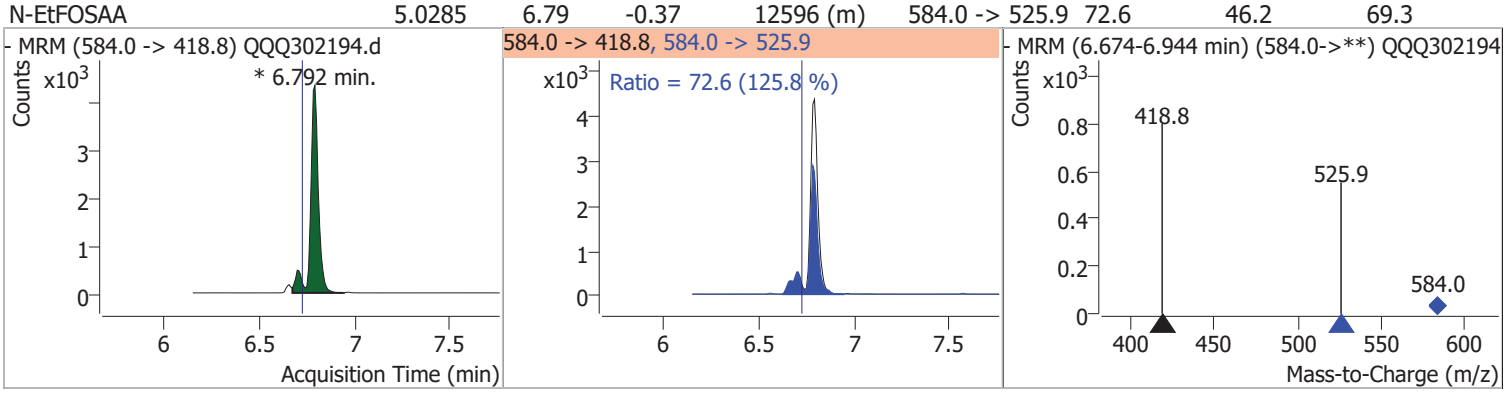
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-1-decanesulfonate (L-PFDS)	5.5952	6.79	-0.37	9014				



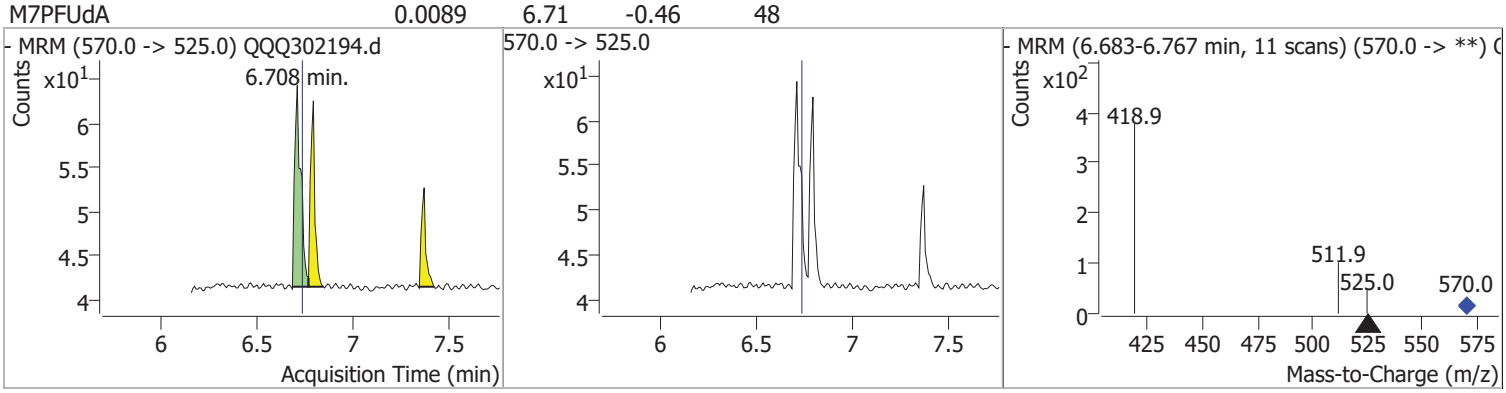
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
d5-N-EtFOSAA	0.0309	6.78	-0.38	39	589.0 -> 530.9		41.4	62.1



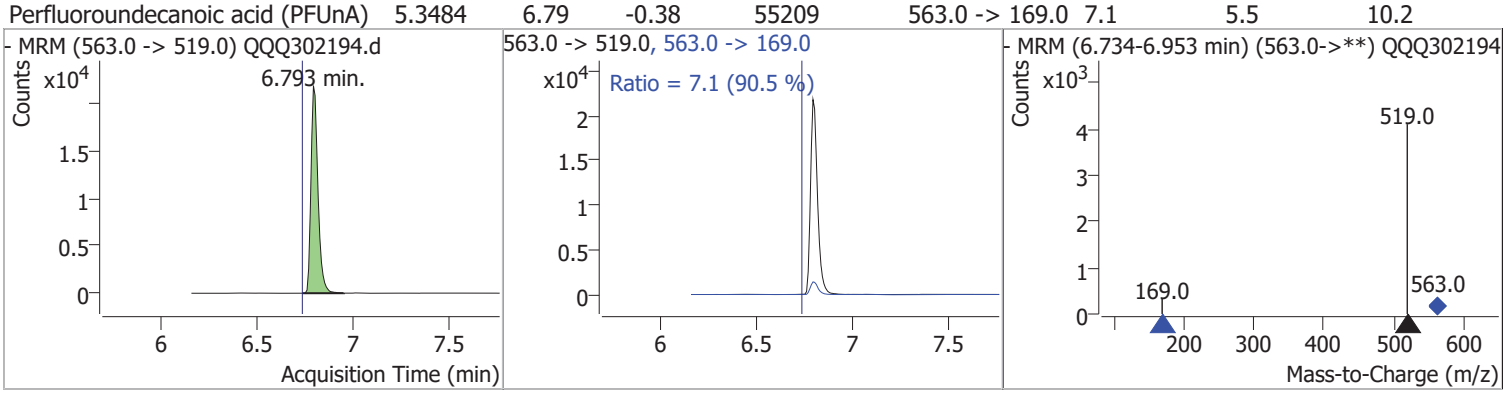
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
N-EtFOSAA	5.0285	6.79	-0.37	12596 (m)	584.0 -> 525.9	72.6	46.2	69.3



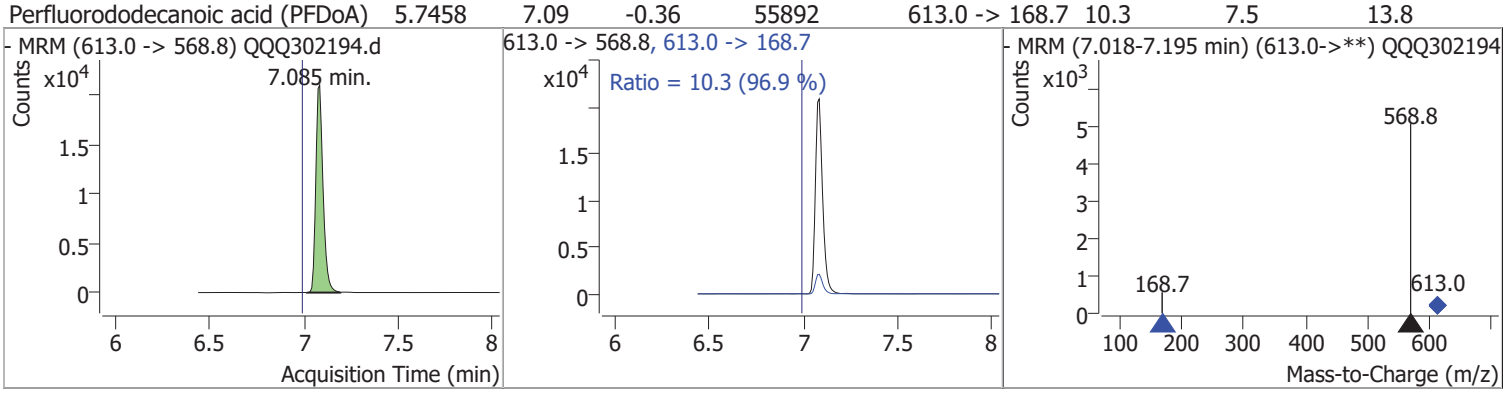
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M7PFUdA	0.0089	6.71	-0.46	48				



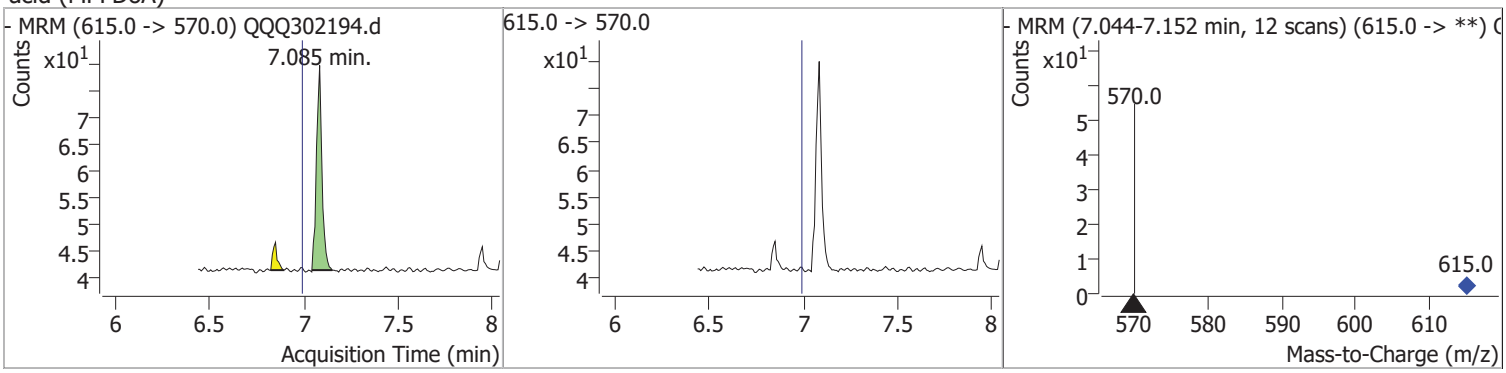
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoroundecanoic acid (PFUnA)	5.3484	6.79	-0.38	55209	563.0 -> 169.0	7.1	5.5	10.2



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorododecanoic acid (PFDoA)	5.7458	7.09	-0.36	55892	613.0 -> 168.7	10.3	7.5	13.8

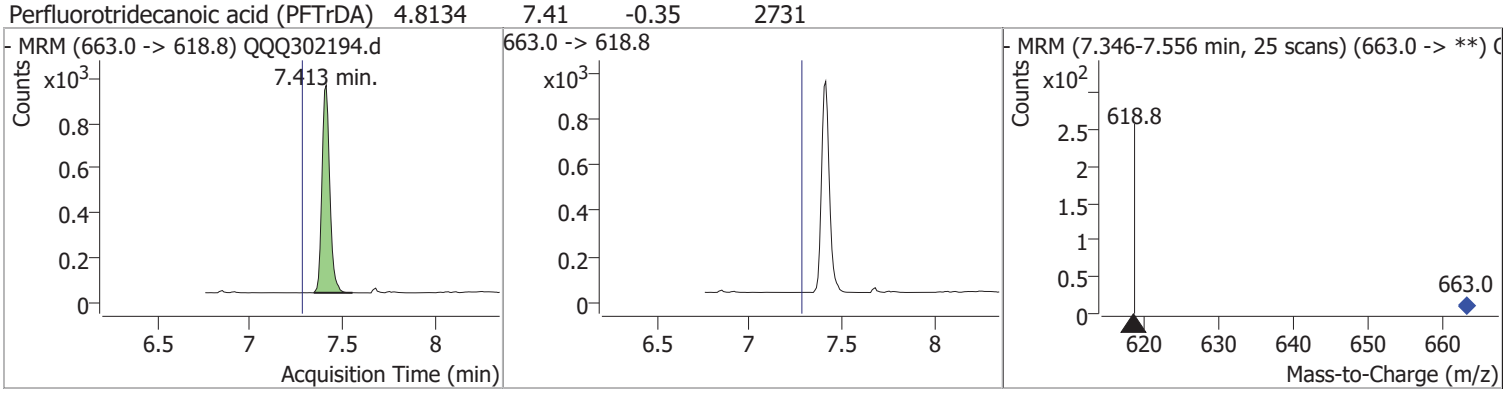


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-n-[1,2-13C2]dodecanoic acid (MPFDoA)	0.0128	7.09	-0.36	77				

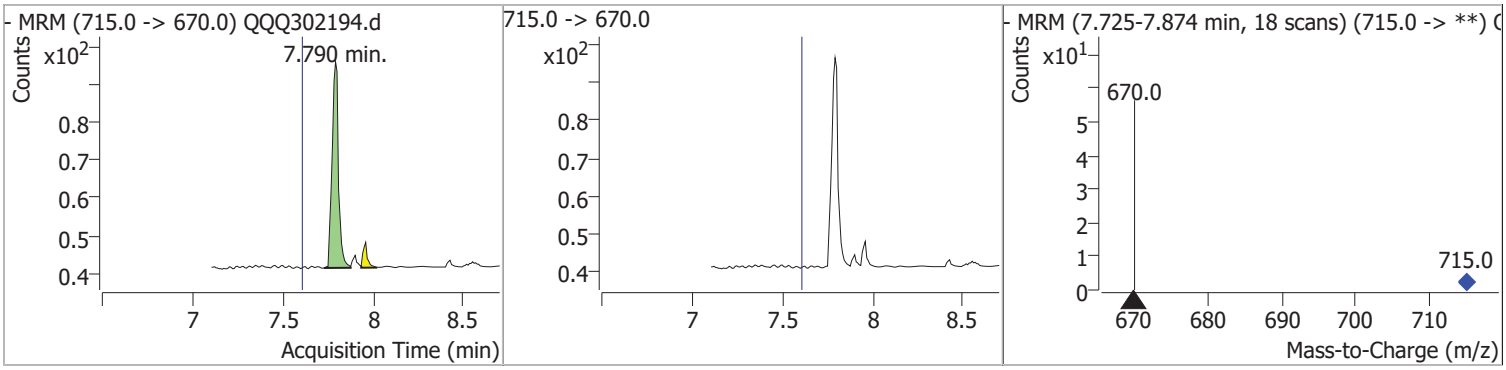


Quantitation Results Report (Not Reviewed)

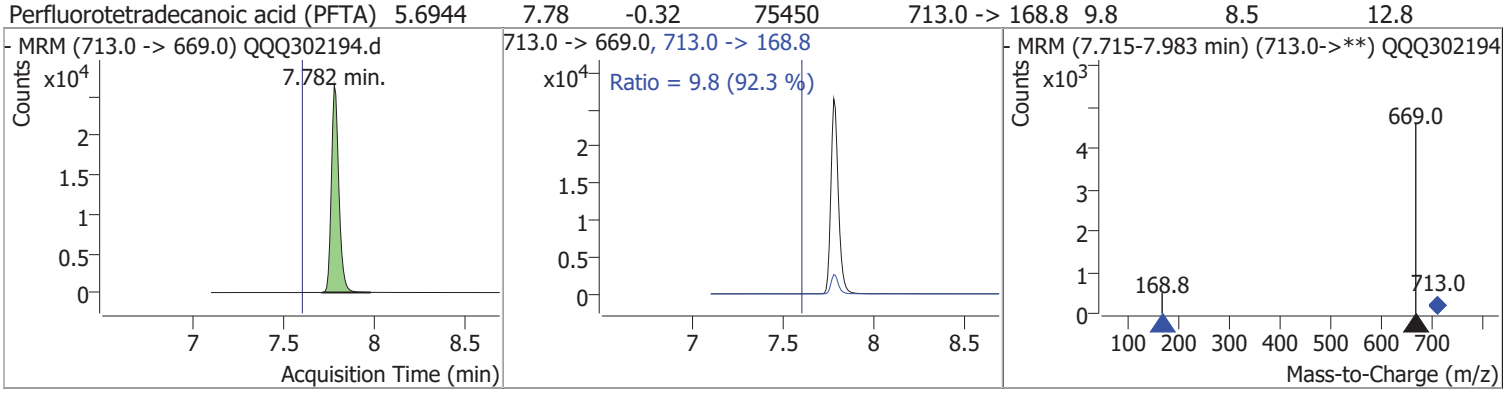
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorotridecanoic acid (PFTrDA)	4.8134	7.41	-0.35	2731				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M2PFTeDA	0.0270	7.79	-0.31	136				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorotetradecanoic acid (PFTA)	5.6944	7.78	-0.32	75450	713.0 -> 168.8	9.8	8.5	12.8



FORM VII

CONTINUING CALIBRATION CHECK

EPA 537m

Laboratory:	York Analytical Laboratories, Inc.	SDG:	22G0348
Client:	Phoenix Environmental Laboratories, Inc.	Project:	GCL69739
Instrument ID:	QQQ3	Calibration:	YF20026
Lab File ID:	QQQ302664.d	Calibration Date:	06/28/22 15:42
Sequence:	Y2G1435	Injection Date:	07/14/22
Lab Sample ID:	Y2G1435-CCV1	Injection Time:	11:21

		CONC. (ng/mL)		RESPONSE FACTOR			% DIFF / DRIFT	
COMPOUND	TYPE	STD	CCV	ICAL	CCV	MIN (#)	CCV	LIMIT (#)
1H,1H,2H,2H-Perfluorodecanesulfonic acid (8:2 FTS)	A	4.05	5.13	0.1053684	0.1307883		26.5	30
1H,1H,2H,2H-Perfluorooctanesulfonic acid (6:2 FTS)	A	4.38	5.26	7.768364E-02	9.739147E-02		20.0	30
N-EtFOSAA	A	5.00	5.81	0.2171733	0.2343992		16.1	30
N-MeFOSAA	A	5.00	5.15	0.227535	0.2495786		3.1	30
Perfluoro-1-decanesulfonic acid (PFDS)	A	4.82	3.97	0.1251683	0.1069051		-17.7	30
Perfluoro-1-heptanesulfonic acid (PFHpS)	A	4.98	5.30	0.1174146	0.1179754		6.5	30
Perfluoro-1-octanesulfonamide (FOSA)	A	5.00	4.89	0.1871459	0.2028507		-2.1	30
Perfluorobutanesulfonic acid (PFBS)	A	4.42	3.69	0.1544403	0.1429603		-16.5	30
Perfluorodecanoic acid (PFDA)	A	5.00	5.08	0.8074561	0.8284739		1.5	30
Perfluorododecanoic acid (PFDoA)	A	5.00	4.98	0.7282308	0.772137		-0.5	30
Perfluoroheptanoic acid (PFHpA)	A	5.00	4.32	0.7336475	0.7378744		-13.6	30
Perfluorohexanesulfonic acid (PFHxS)	A	4.55	3.93	0.1347399	0.1225672		-13.5	30
Perfluorohexanoic acid (PFHxA)	A	5.00	4.42	0.5690764	0.5686853		-11.6	30
Perfluoro-n-butanoic acid (PFBA)	A	5.00	4.25	0.3382355	0.3373059		-15.0	30
Perfluorononanoic acid (PFNA)	A	4.80	4.48	0.8257117	0.8137466		-6.7	30
Perfluorooctanesulfonic acid (PFOS)	A	4.62	4.66	0.1171459	0.1227866		0.8	30
Perfluorooctanoic acid (PFOA)	A	5.00	4.47	0.7797809	0.7721914		-10.5	30
Perfluoropentanoic acid (PFPeA)	A	5.00	4.54	0.2734725	0.2659464		-9.1	30
Perfluorotetradecanoic acid (PFTA)	A	5.00	4.74	1.023396	0.9973698		-5.2	30
Perfluorotridecanoic acid (PFTrDA)	A	5.00	4.79	4.773095E-02	0.0437171		-4.2	30
Perfluoroundecanoic acid (PFUnA)	A	5.00	4.57	0.7480439	0.7569316		-8.6	30

Column to be used to flag Response Factor and %Diff/Drift values with an asterisk

* Values outside of QC limits

Quantitation Results Report (Not Reviewed)

Agilent | Trusted Answers

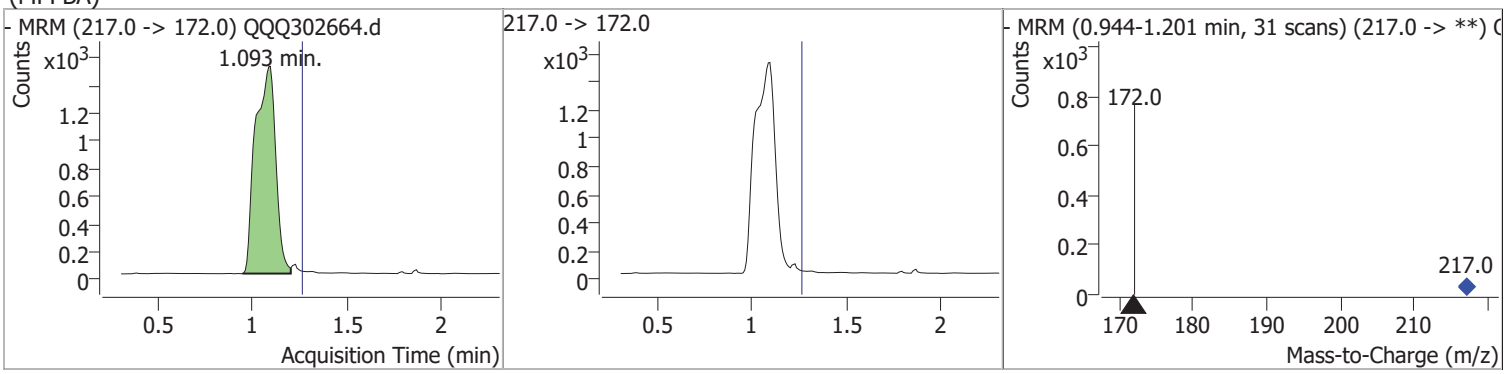
Data File	QQQ302664.d	Operator	
Acq. Method	PFAS 24_IDA ACQ_QQQ3A.m	Acq. Date-Time	7/14/2022 11:21:41 AM
Sample Name	SEQ-CCV1	Instrument	QQQ3
Vial		Multiplier	1.00
DA Method File	PFAS_24_IDA_QUANT_QQQ3_062722.m	Comment	5
Tune File		Tune Date	
Batch Name	2022-07-14-IDA.batch.bin	Last Calib Update	6/27/2022 4:24:30 PM
Ref Library			

Compound	RT	QIon	Resp.	Conc.	Units		Dev(Min)
Internal Standards							
MPFOA	6.166	417.0 -> 372.0	147724	10.0000	ng/ml		-0.264
System Monitoring Compounds							
Perfluoro-n-[13C4]butanoic acid (MPFBA)	1.093	217.0 -> 172.0	11184	4.2519	ng/ml		-0.216
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 42.52%			
Perfluoro-n-[13C54]pentanoic acid (M5PFPeA)	4.095	268.0 -> 223.0	9848	4.5017	ng/ml		-0.492
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 45.02%			
M3PFBS	4.708	302.0 -> 79.9	4324	3.8269	ng/ml		-0.455
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 38.27%			
M2-4-2FTS	5.292	329.0 -> 309.0	3492	4.6336	ng/ml	#	-0.398
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 46.34%			
M5PFHxA	5.335	318.0 -> 273.0	19971	4.6580	ng/ml		-0.389
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 46.58%			
M4PFHpA	5.830	367.0 -> 322.0	10255	4.6144	ng/ml		-0.314
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 46.14%			
M3PFHxS	5.879	402.0 -> 80.0	4677	4.8999	ng/ml		-0.298
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 49.00%			
M2-6-2FTS	6.148	429.0 -> 409.0	3119	4.3855	ng/ml		-0.272
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 43.85%			
Perfluoro-n-[13C8]octanoic acid (M8PFOA)	6.166	421.0 -> 376.0	19308	5.2391	ng/ml		-0.264
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 52.39%			
Perfluoro-n-[13C9]nonanoic acid (M9PFNA)	6.442	472.0 -> 427.0	21423	4.8893	ng/ml	#	-0.238
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 48.89%			
Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)	6.458	507.0 -> 80.0	4848	4.9571	ng/ml		-0.230
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 49.57%			
M2-8-2FTS	6.701	529.0 -> 509.0	4313	6.8717	ng/ml	#	-0.217
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 68.72%			
M6PFDA	6.710	519.0 -> 473.9	24462	5.0460	ng/ml		-0.212
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 50.46%			
d3-N-MeFOSAA	6.826	573.0 -> 418.8	7852	4.6232	ng/ml		-0.204
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 46.23%			
Perfluoro-1-[13C8]octanesulfonamide (M8FOSA)	7.191	506.0 -> 78.0	9906	4.4769	ng/ml		0.072
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 44.77%			
d5-N-EtFOSAA	6.968	589.0 -> 418.8	8100	5.3665	ng/ml		-0.196
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 53.66%			
M7PFUdA	6.977	570.0 -> 525.0	31396	4.9571	ng/ml		-0.196
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 49.57%			
Perfluoro-n-[1,2-13C2]dodecanoic acid (MPFDoA)	7.279	615.0 -> 570.0	33837	4.6047	ng/ml		-0.169
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 46.05%			
M2PFTeDA	8.016	715.0 -> 670.0	30618	4.9795	ng/ml		-0.085
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 49.79%			
Target Compounds							**QValue**

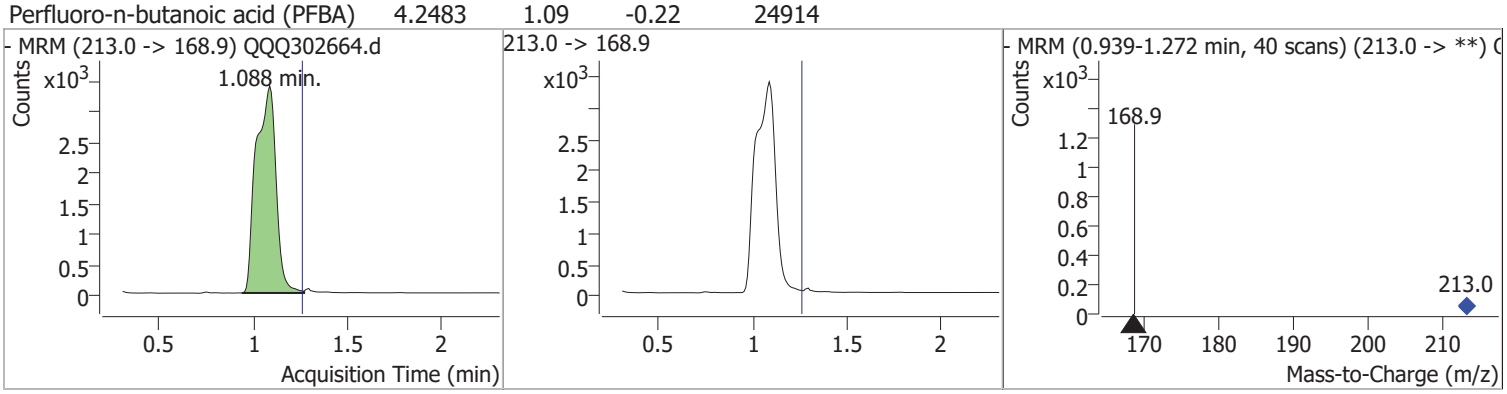
Compound	RT	QIon	Resp.	Conc.	Units		Dev(Min)
Perfluoro-n-butanoic acid (PFBA)	1.088	213.0 -> 168.9	24914	4.2483	ng/ml		100
Perfluoro-n-pentanoic acid (PFPeA)	4.099	263.0 -> 219.0	19643	4.5440	ng/ml		100
Perfluorobutanesulfonic acid (PFBS)	4.701	298.9 -> 79.9	9334	3.6903	ng/ml		92
1H,1H,2H,2H-perfluoro-1-hexanesulfonate (4 2FTS)	5.292	327.0 -> 307.0	6996	4.8293	ng/ml		97
Perfluorohexanoic acid (PFHxA)	5.328	313.0 -> 268.9	42004	4.4219	ng/ml		99
Perfluoro-1-pentanesulfonate (L-PFPeS)	5.461	348.9 -> 79.9	8554	4.0922	ng/ml		98
Perfluoroheptanoic acid (PFHpA)	5.830	363.0 -> 318.8	54501	4.3213	ng/ml		97
Perfluorohexanesulfonic acid (PFHxS)	5.880	398.9 -> 79.9	8238	3.9347	ng/ml	m	92
1H,1H,2H,2H-perfluoro-1-octanesulfonate (6 2FTS)	6.148	427.0 -> 407.0	6302	5.2578	ng/ml		98
Perfluorooctanoic acid (PFOA)	6.166	413.0 -> 368.8	57036	4.4745	ng/ml		100
Perfluoro-1-heptanesulfonate (L-PFHpS)	6.190	448.9 -> 80.0	8679	5.3034	ng/ml	#	82
Perfluorononanoic acid (PFNA)	6.443	463.0 -> 418.8	57701	4.4766	ng/ml		99
Perfluorooctanesulfonic acid (PFOS)	6.459	498.9 -> 79.9	8380	4.6551	ng/ml	m	99
1H,1H,2H,2H-perfluoro-1-decanesulfonate (8 2FTS)	6.701	527.0 -> 507.0	7825	5.1252	ng/ml		87
Perfluorononanesulfonate (L-PFNS)	6.709	548.9 -> 79.9	7211	4.1648	ng/ml		97
Perfluorodecanoic acid (PFDA)	6.702	513.0 -> 468.8	61193	5.0763	ng/ml		100
N-MeFOSAA	6.827	570.0 -> 418.9	18434	5.1526	ng/ml		97
Perfluoro-1-octanesulfonamide (FOSA)	7.191	497.9 -> 78.0	14983	4.8928	ng/ml	#	98
Perfluoro-1-decanesulfonate (L-PFDS)	6.976	598.9 -> 98.9	7612	3.9691	ng/ml		100
N-EtFOSAA	6.969	584.0 -> 418.8	17313	5.8060	ng/ml		90
Perfluoroundecanoic acid (PFUnA)	6.978	563.0 -> 519.0	55909	4.5683	ng/ml		100
Perfluorododecanoic acid (PFDoA)	7.287	613.0 -> 568.8	57032	4.9768	ng/ml		99
Perfluorotridecanoic acid (PFTrDA)	7.631	663.0 -> 618.8	3229	4.7915	ng/ml		100
Perfluorotetradecanoic acid (PFTA)	8.016	713.0 -> 669.0	73668	4.7408	ng/ml		98

(#) = Qualifier Out of Range; (m) = Manual Integration; (+) = Area Summed; (*) = Surrogate Percent Recovery Out of Range; (d): Zeroed Peak

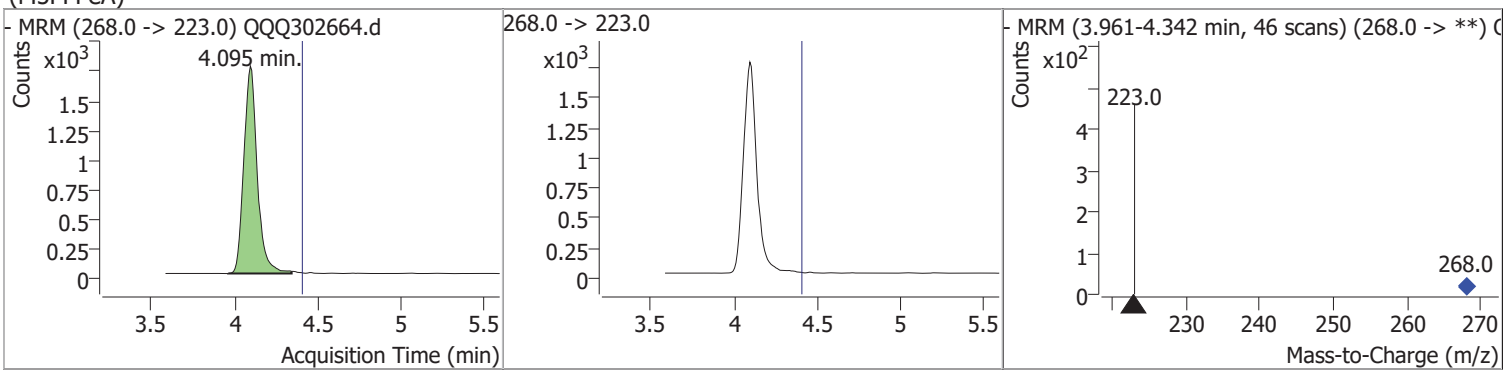
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-n-[13C4]butanoic acid (MPFBA)	4.2519	1.09	-0.22	11184				



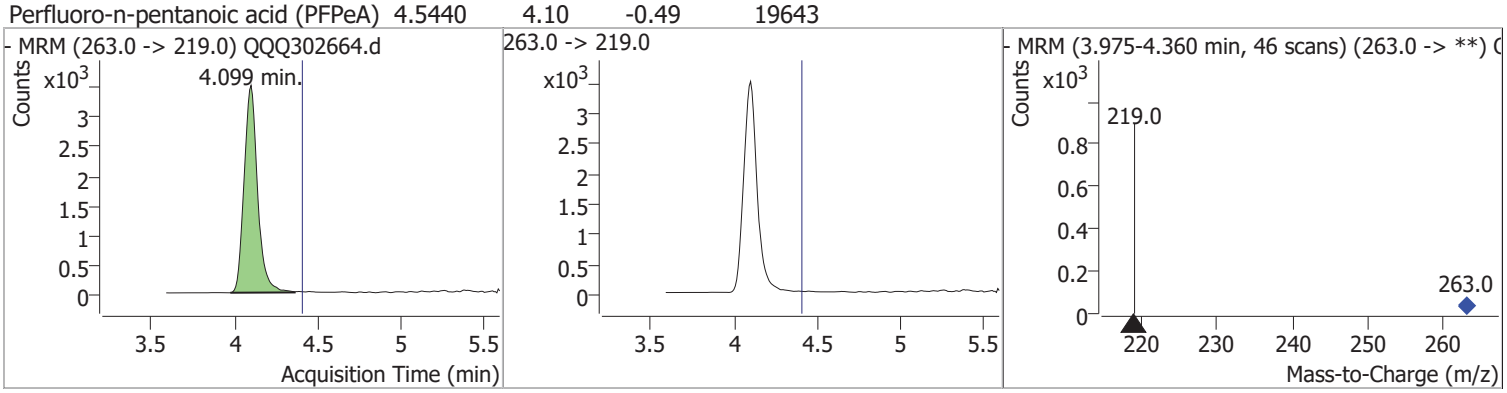
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-n-butanoic acid (PFBA)	4.2483	1.09	-0.22	24914				



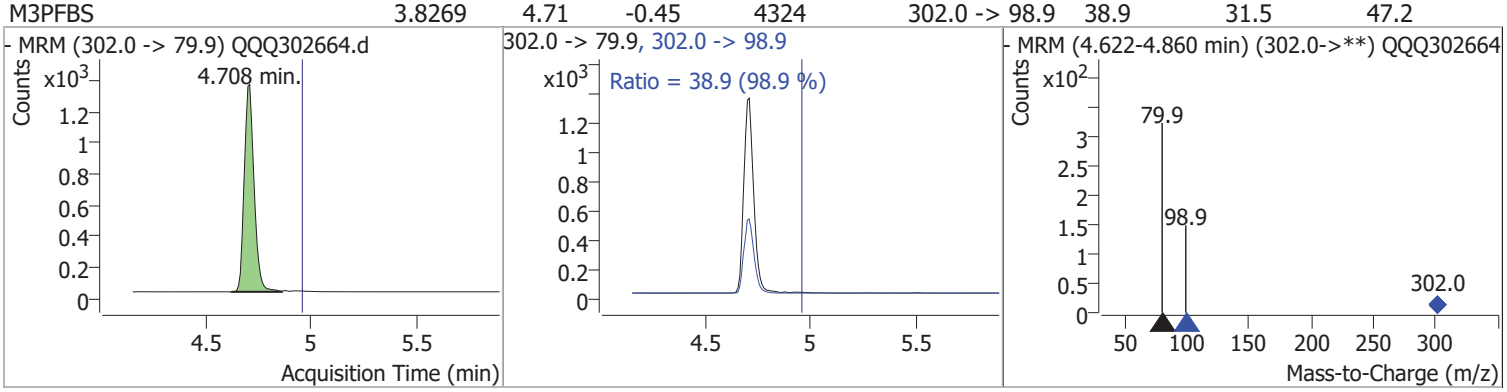
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-n-[13C54]pentanoic acid (M5PFPeA)	4.5017	4.09	-0.49	9848				



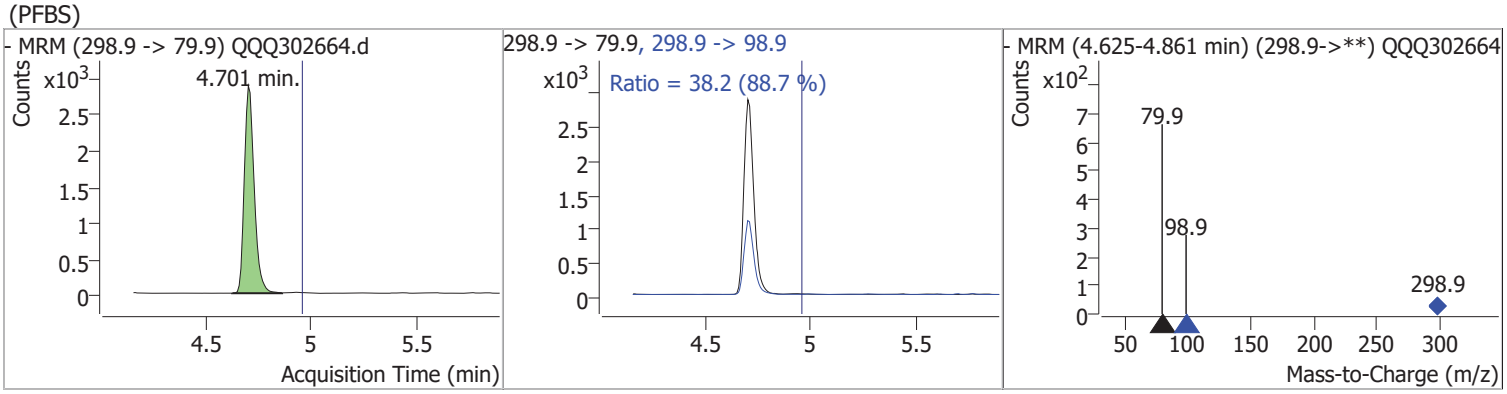
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-n-pentanoic acid (PFPeA)	4.5440	4.10	-0.49	19643				



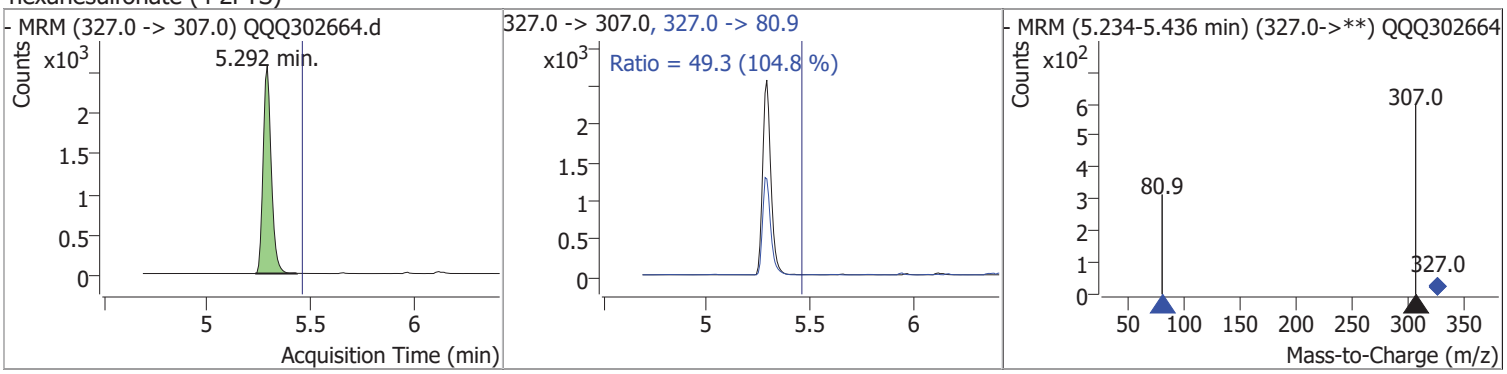
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M3PFBS	3.8269	4.71	-0.45	4324	302.0 -> 98.9	38.9	31.5	47.2



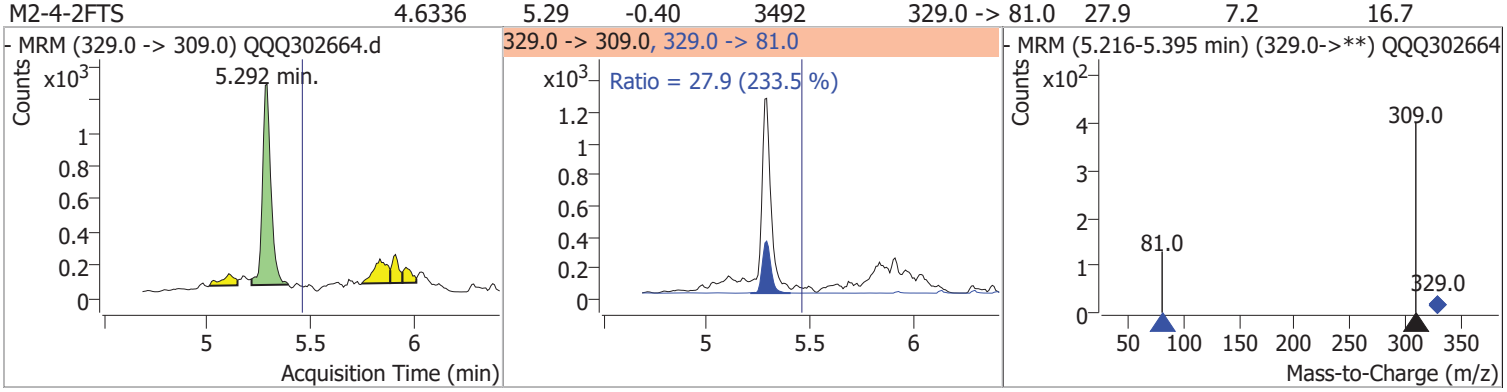
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorobutanesulfonic acid (PFBS)	3.6903	4.70	-0.46	9334	298.9 -> 98.9	38.2	34.5	51.7



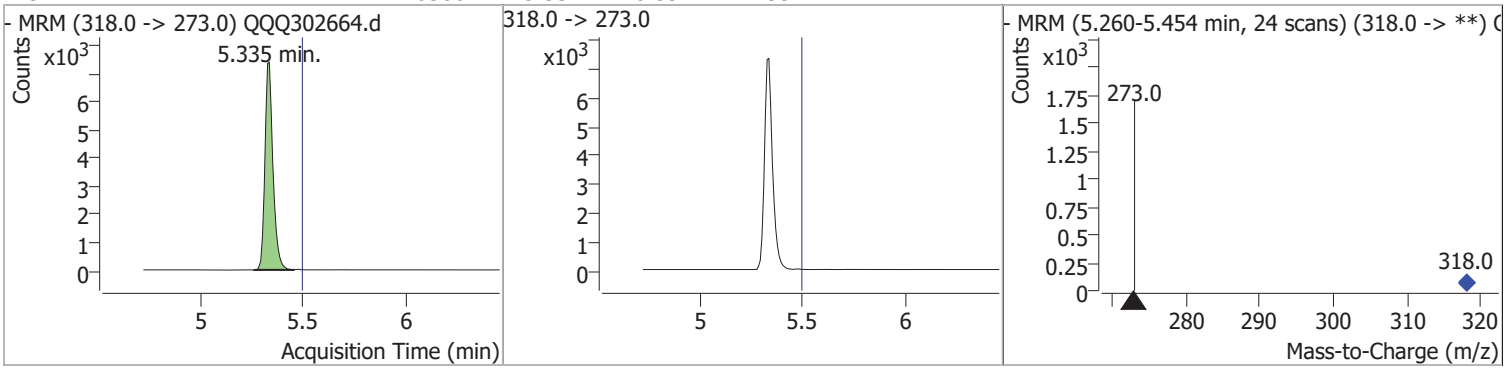
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
1H,1H,2H,2H-perfluoro-1-hexanesulfonate (4 2FTS)	4.8293	5.29	-0.40	6996	327.0 -> 80.9	49.3	28.2	65.9



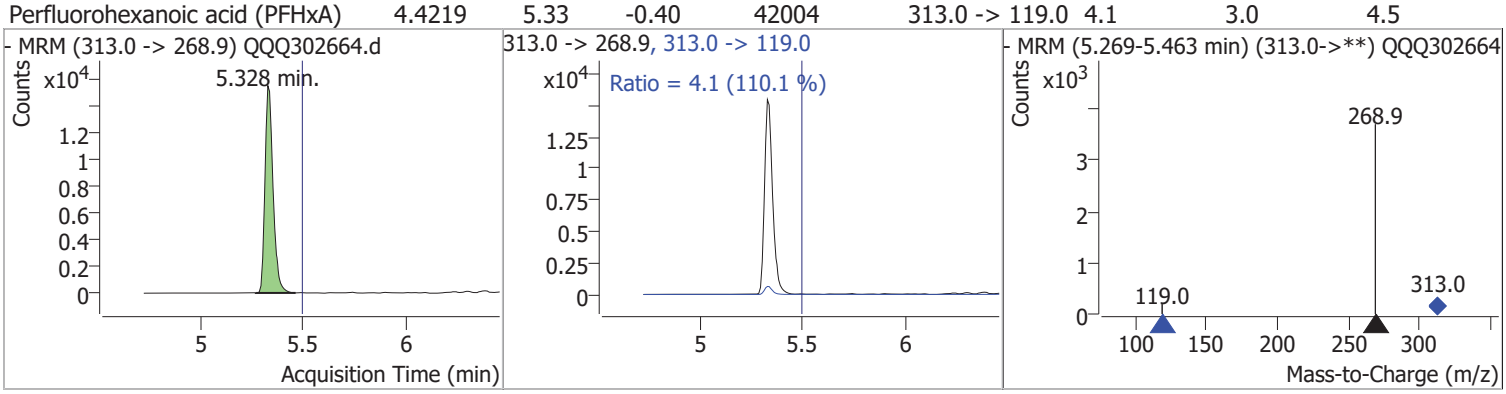
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M2-4-2FTS	4.6336	5.29	-0.40	3492	329.0 -> 81.0	27.9	7.2	16.7



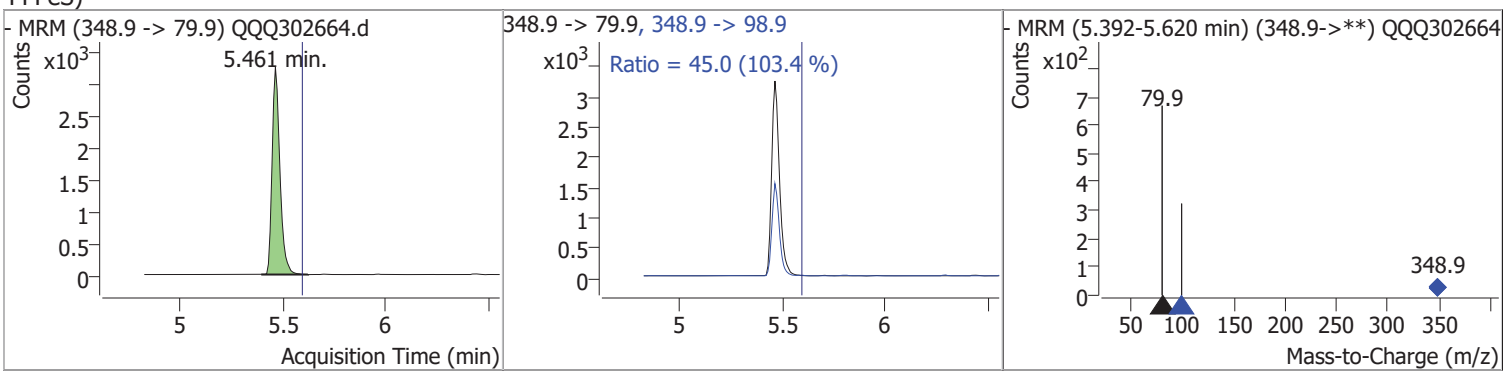
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M5PFHxA	4.6580	5.33	-0.39	19971				



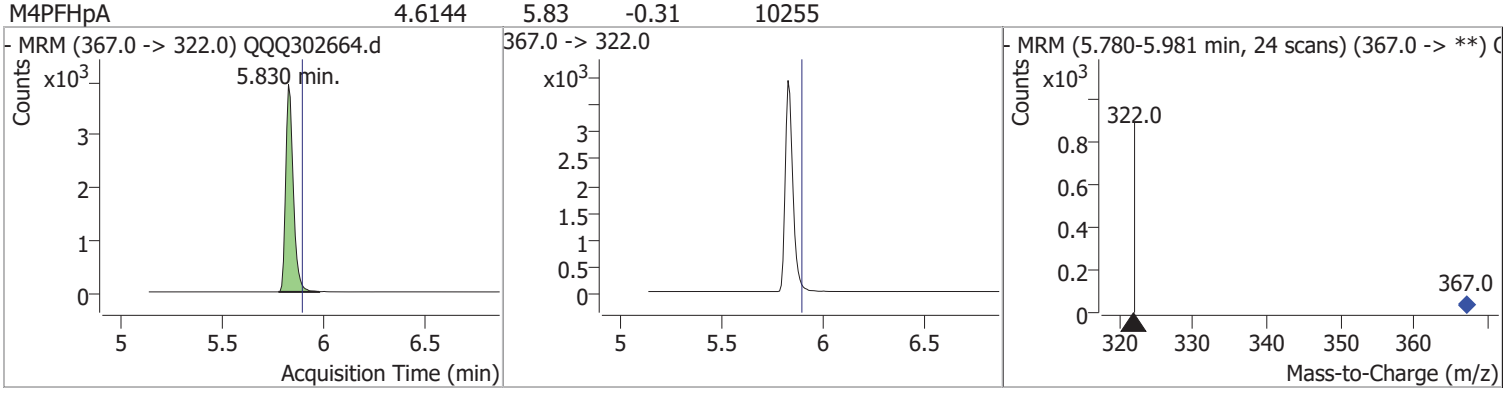
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorohexanoic acid (PFHxA)	4.4219	5.33	-0.40	42004	313.0 -> 119.0	4.1	3.0	4.5



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-1-pentanesulfonate (L-PFPeS)	4.0922	5.46	-0.36	8554	348.9 -> 98.9	45.0	34.8	52.2

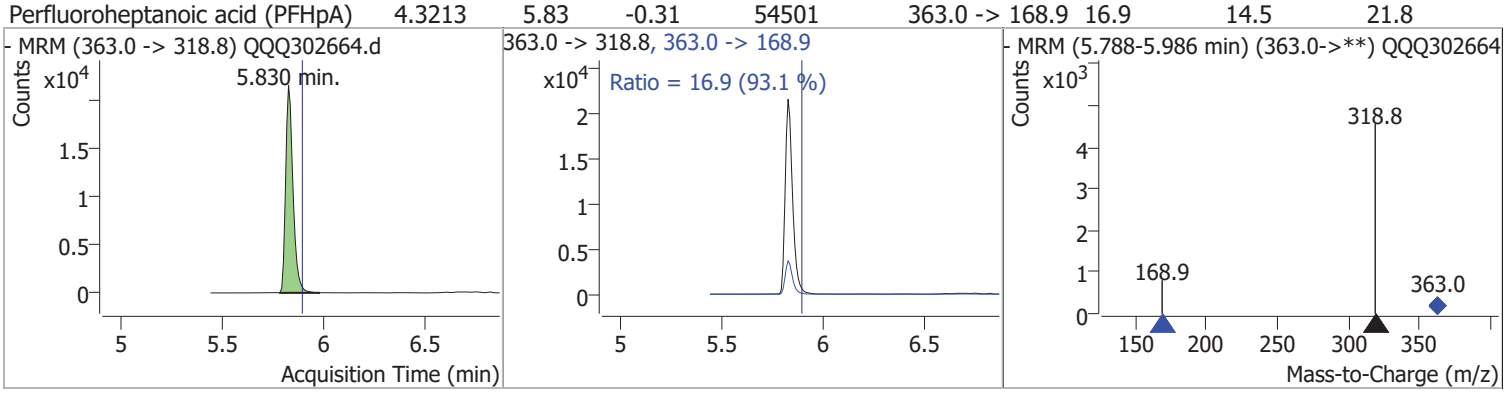


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M4PFHpA	4.6144	5.83	-0.31	10255				

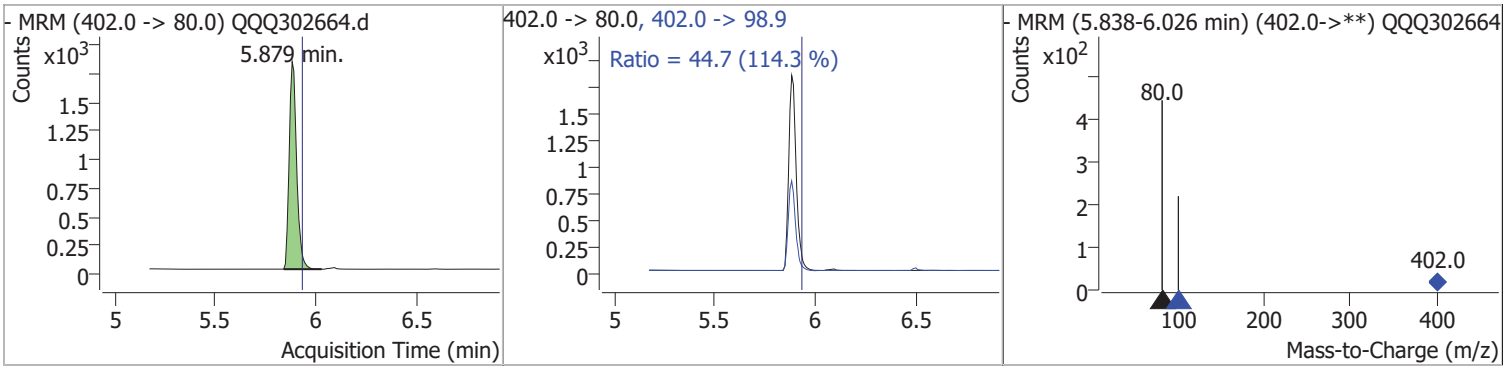


Quantitation Results Report (Not Reviewed)

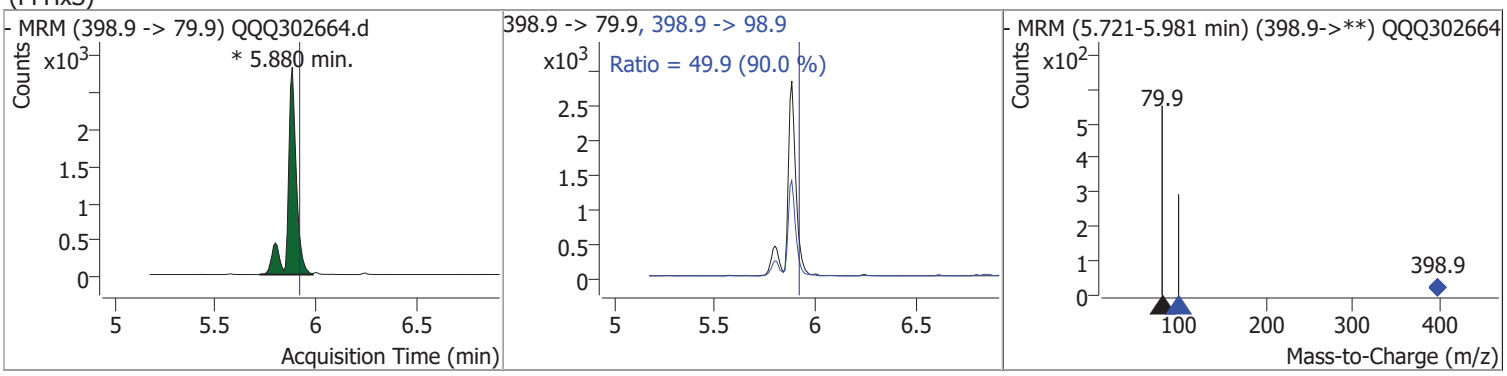
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoroheptanoic acid (PFHpA)	4.3213	5.83	-0.31	54501	363.0 -> 168.9	16.9	14.5	21.8



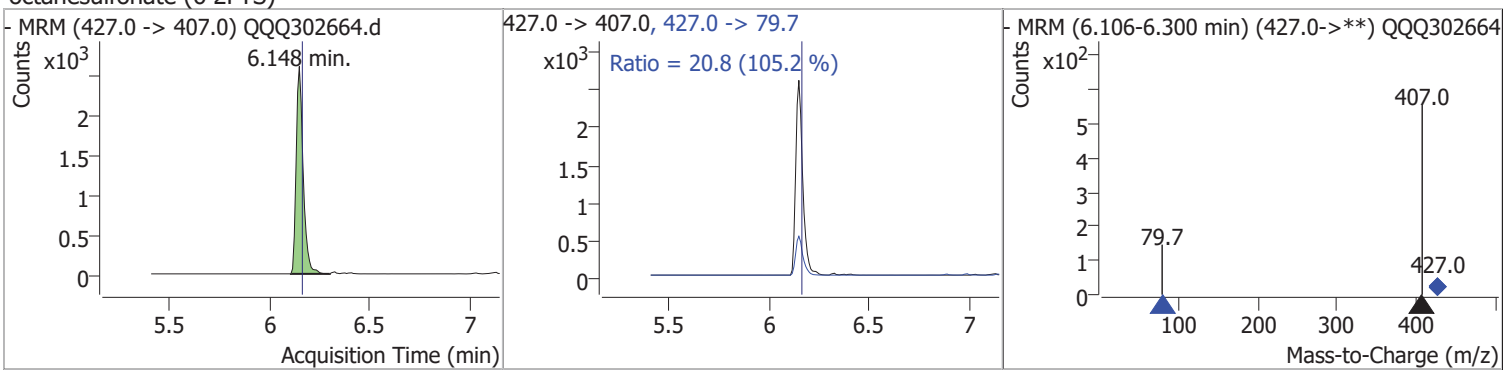
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M3PFHxS	4.8999	5.88	-0.30	4677	402.0 -> 98.9	44.7	31.3	47.0



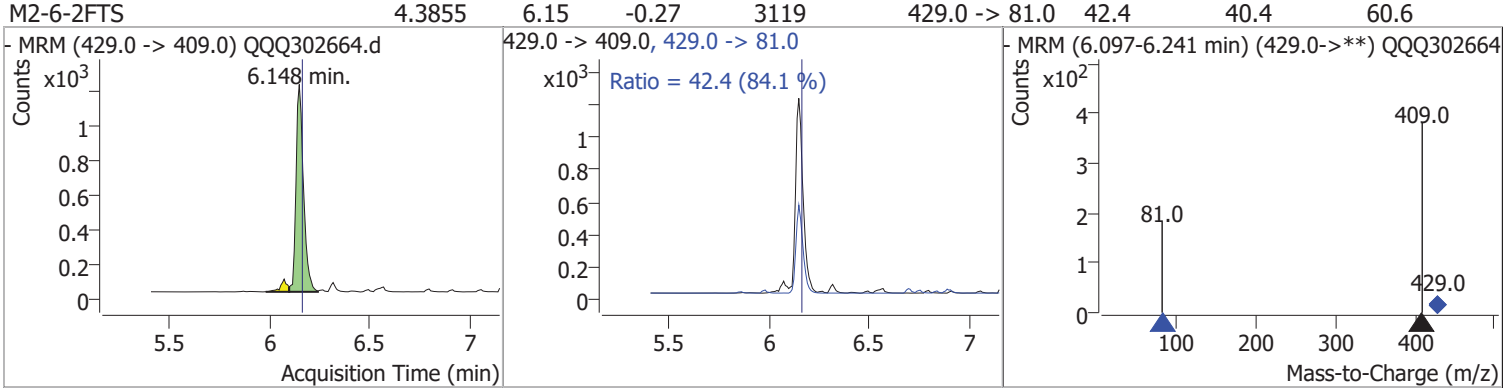
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorohexanesulfonic acid (PFHxS)	3.9347	5.88	-0.30	8238 (m)	398.9 -> 98.9	49.9	44.4	66.5



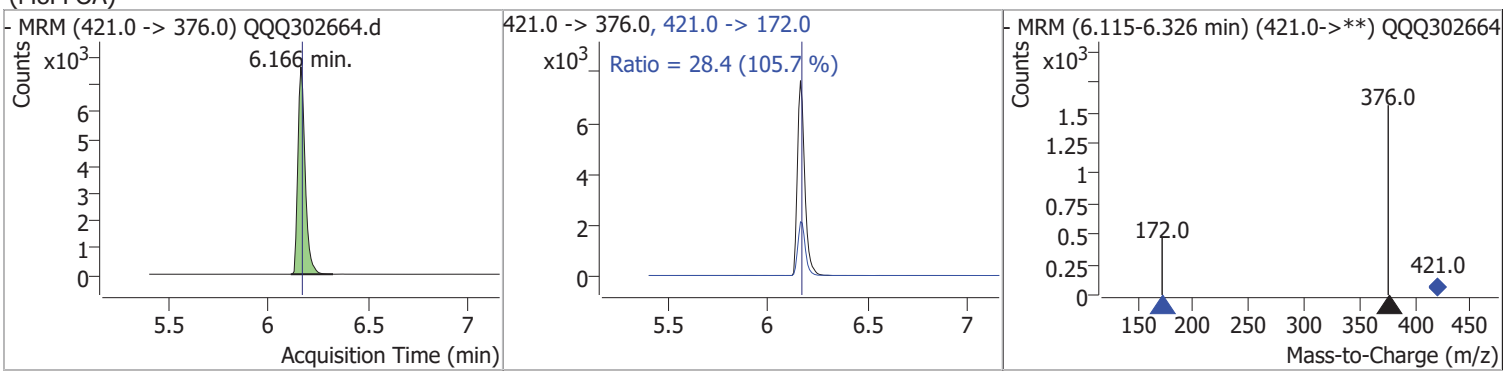
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
1H,1H,2H,2H-perfluoro-1-octanesulfonate (6 2FTS)	5.2578	6.15	-0.27	6302	427.0 -> 79.7	20.8	15.8	23.7



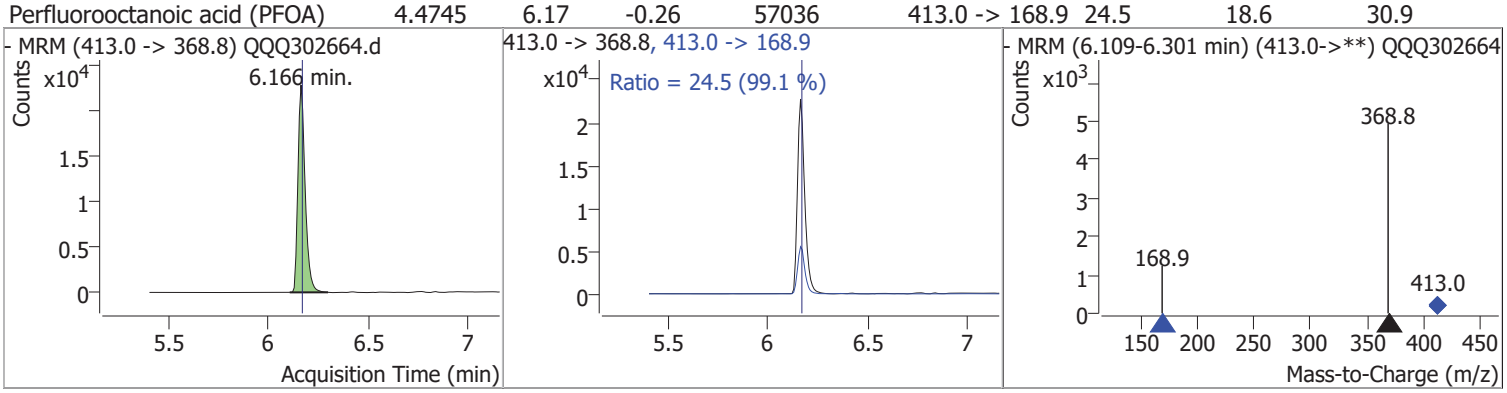
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M2-6-2FTS	4.3855	6.15	-0.27	3119	429.0 -> 81.0	42.4	40.4	60.6



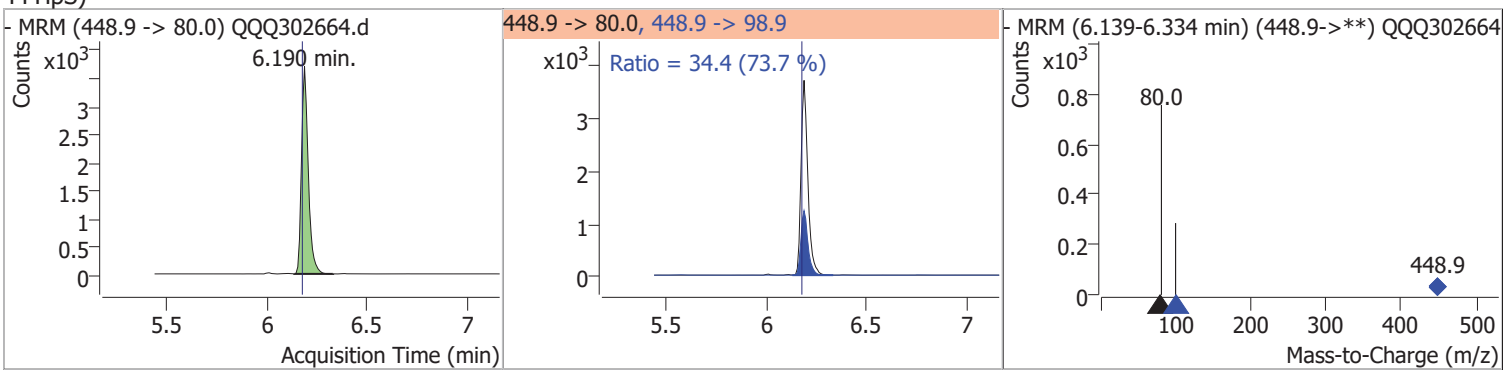
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-n-[13C8]octanoic acid (M8PFOA)	5.2391	6.17	-0.26	19308	421.0 -> 172.0	28.4	21.5	32.2



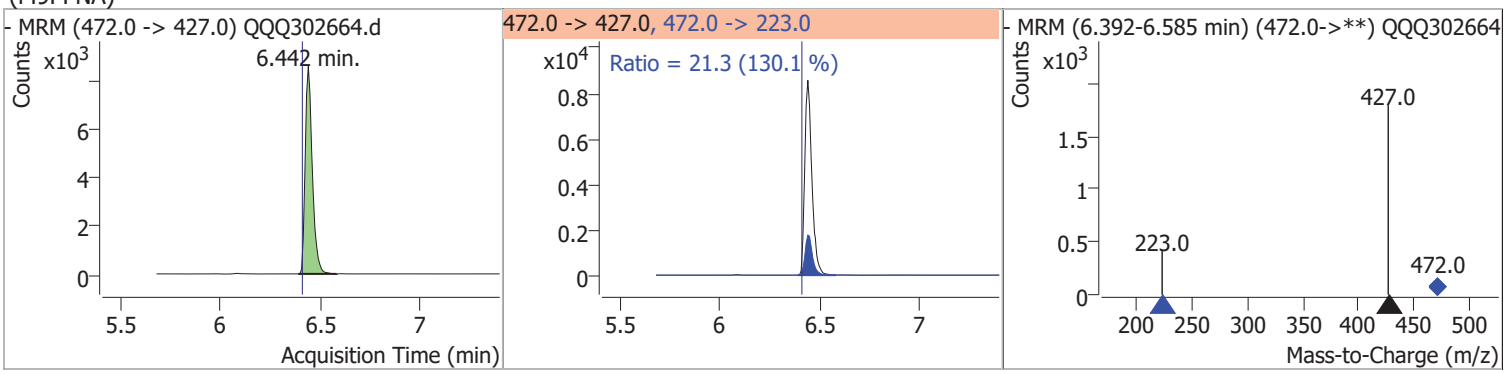
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorooctanoic acid (PFOA)	4.4745	6.17	-0.26	57036	413.0 -> 168.9	24.5	18.6	30.9



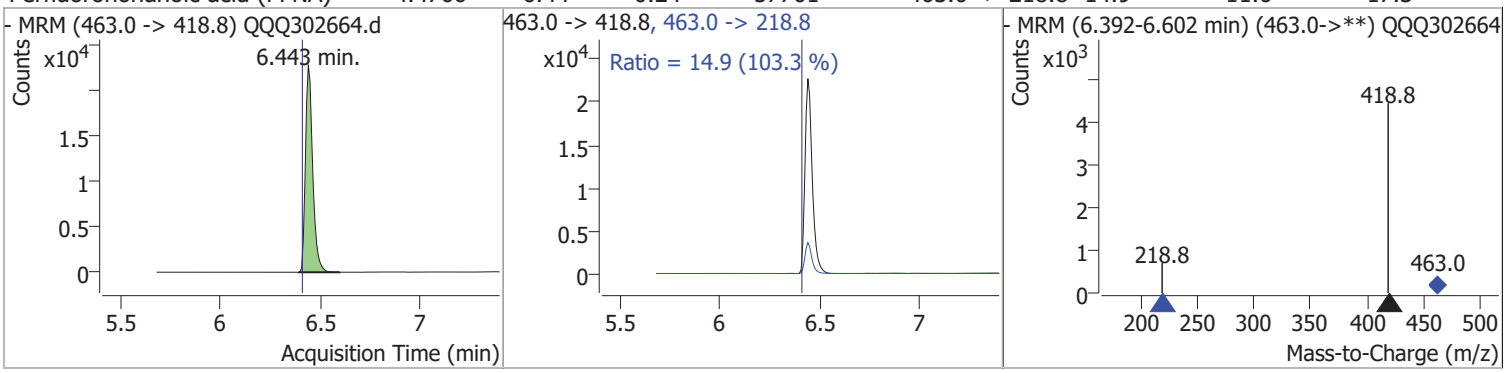
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-1-heptanesulfonate (L-PFHpS)	5.3034	6.19	-0.25	8679	448.9 -> 98.9	34.4	37.3	56.0



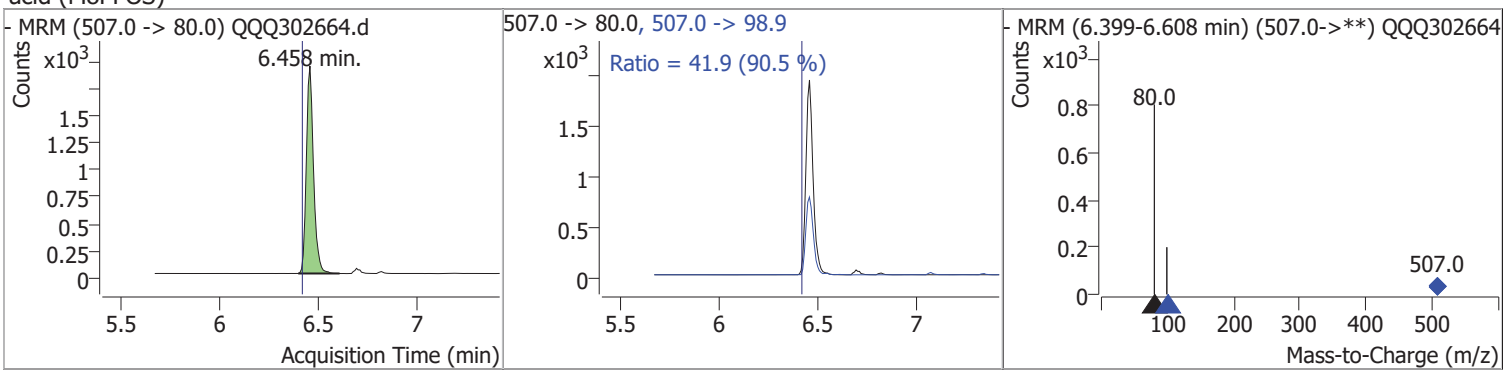
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-n-[13C9]nonanoic acid (M9PFNA)	4.8893	6.44	-0.24	21423	472.0 -> 223.0	21.3	13.1	19.6



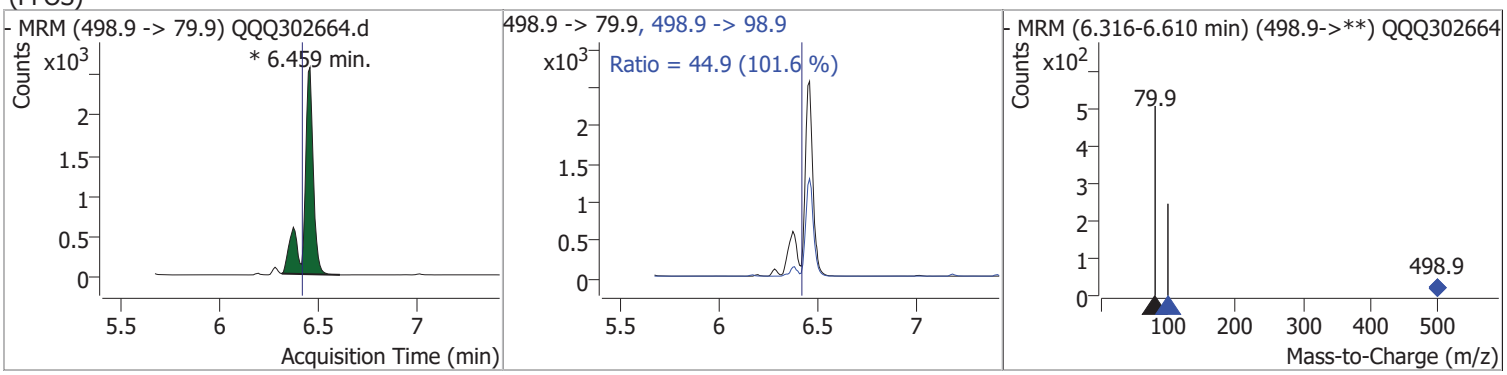
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorononanoic acid (PFNA)	4.4766	6.44	-0.24	57701	463.0 -> 218.8	14.9	11.6	17.3



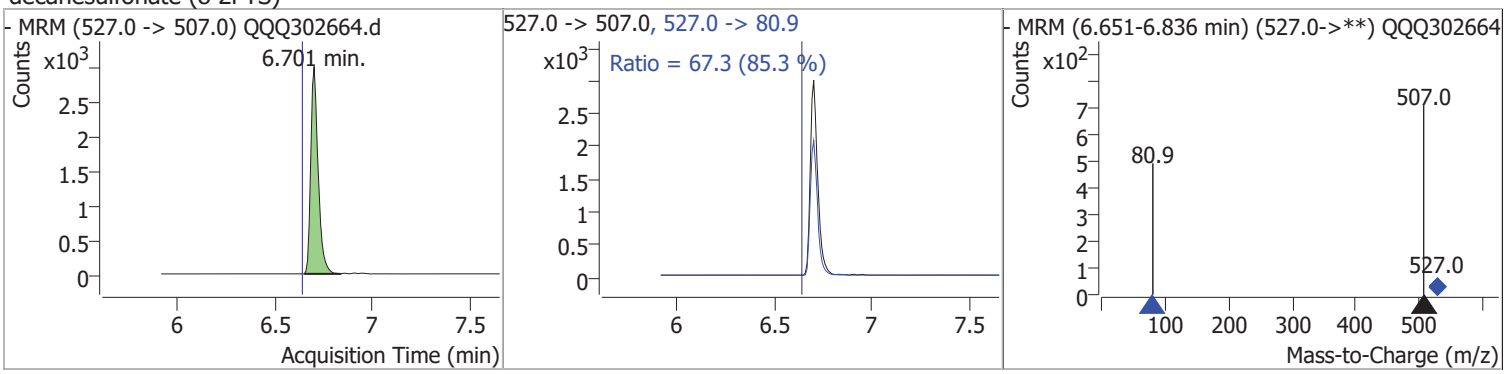
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)	4.9571	6.46	-0.23	4848	507.0 -> 98.9	41.9	37.1	55.6



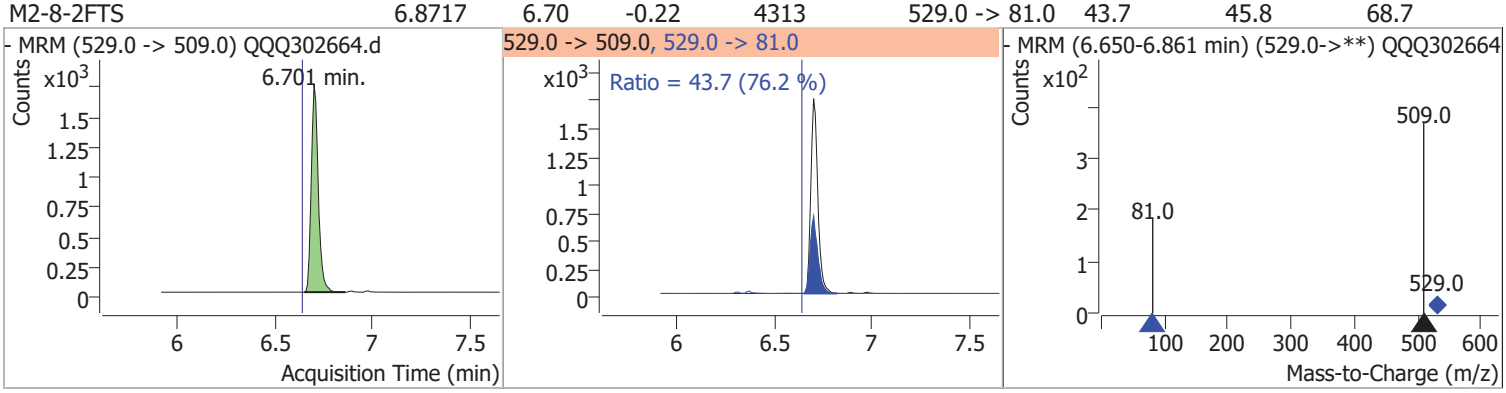
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorooctanesulfonic acid (PFOS)	4.6551	6.46	-0.23	8380 (m)	498.9 -> 98.9	44.9	35.4	53.0



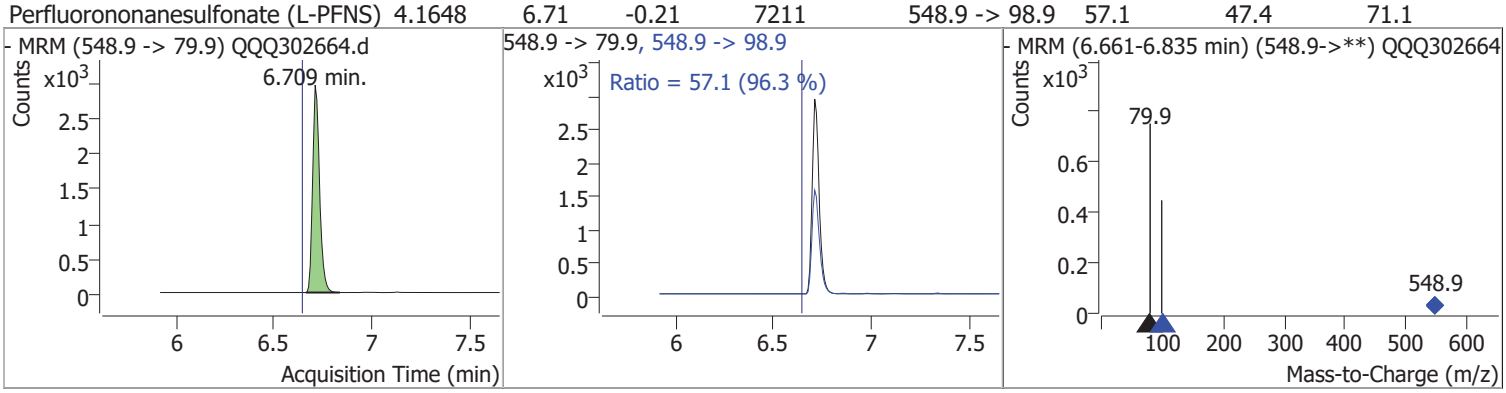
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
1H,1H,2H,2H-perfluoro-1-decanesulfonate (8 2FTS)	5.1252	6.70	-0.22	7825	527.0 -> 80.9	67.3	63.1	94.6



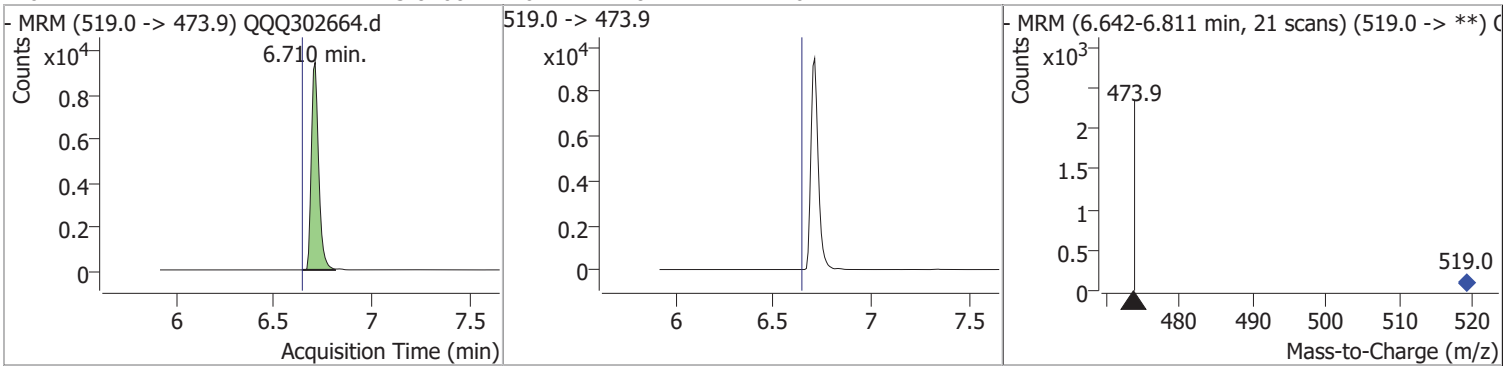
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M2-8-2FTS	6.8717	6.70	-0.22	4313	529.0 -> 81.0	43.7	45.8	68.7



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorononanesulfonate (L-PFNS)	4.1648	6.71	-0.21	7211	548.9 -> 98.9	57.1	47.4	71.1

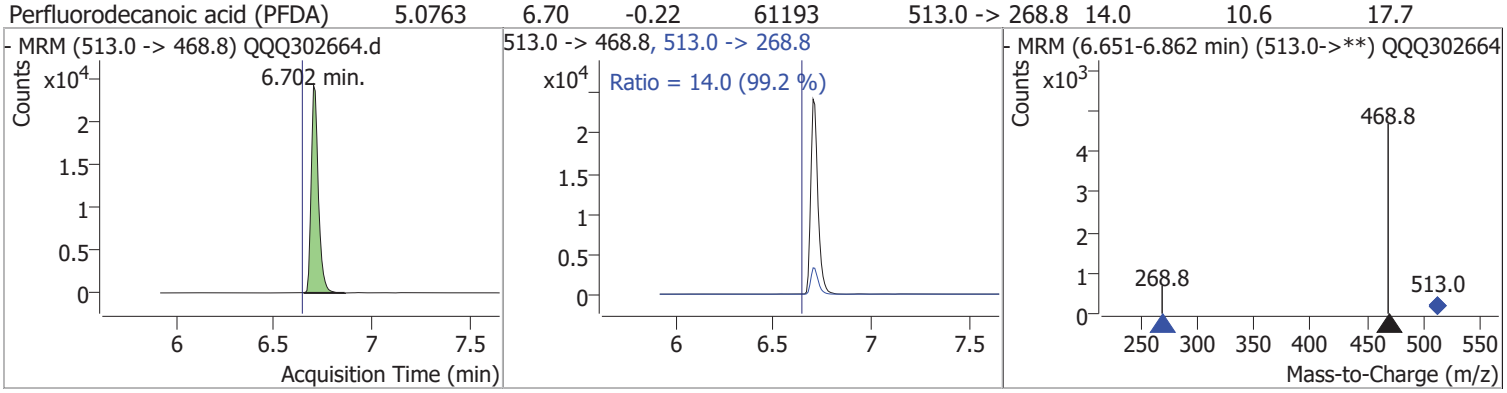


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M6PFDA	5.0460	6.71	-0.21	24462				

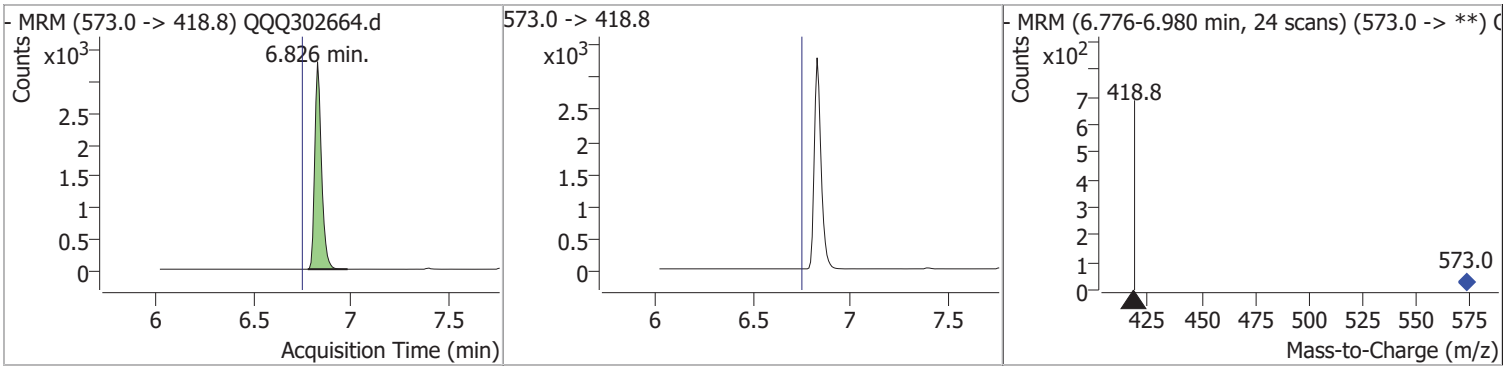


Quantitation Results Report (Not Reviewed)

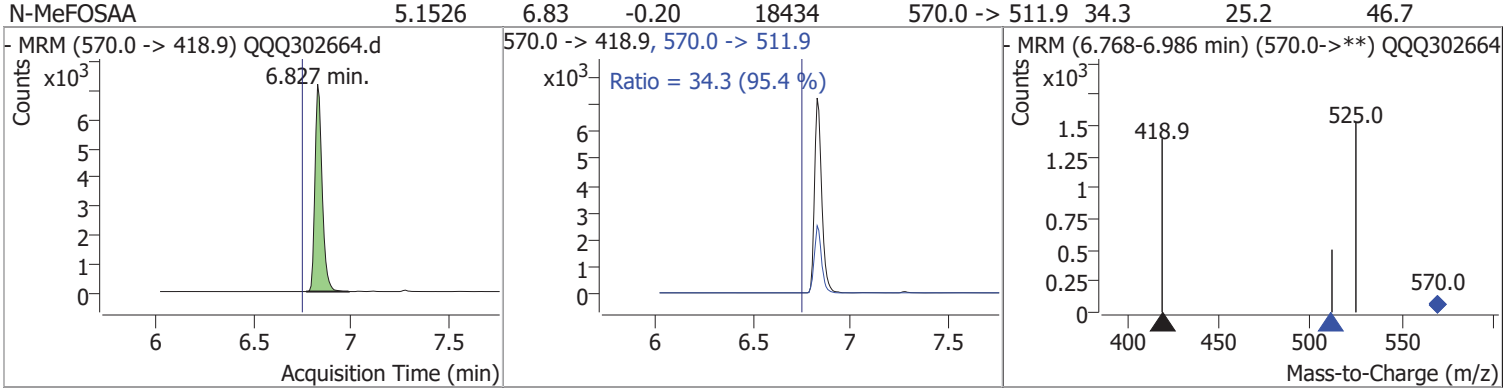
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorodecanoic acid (PFDA)	5.0763	6.70	-0.22	61193	513.0 -> 268.8	14.0	10.6	17.7



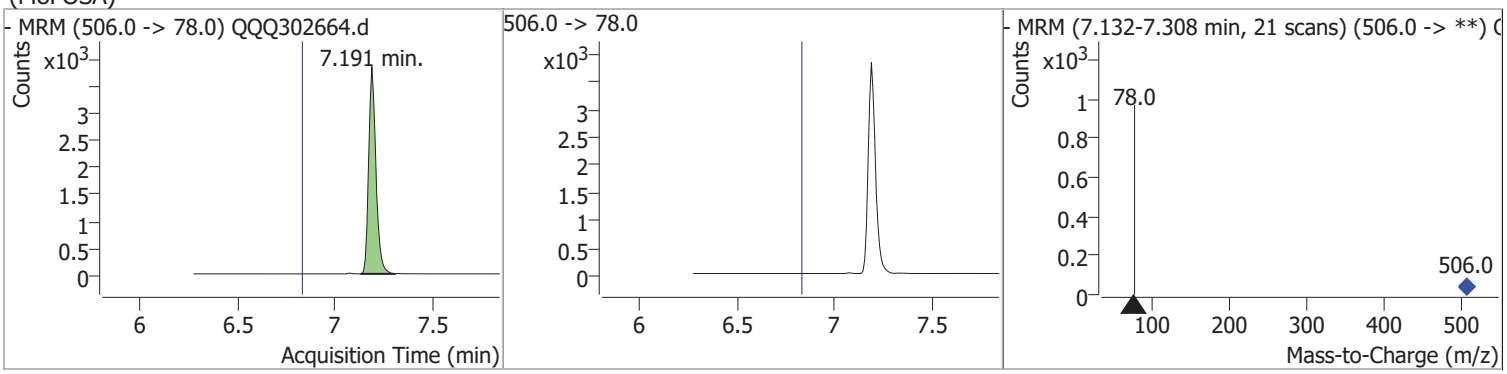
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
d3-N-MeFOSAA	4.6232	6.83	-0.20	7852				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
N-MeFOSAA	5.1526	6.83	-0.20	18434	570.0 -> 511.9	34.3	25.2	46.7

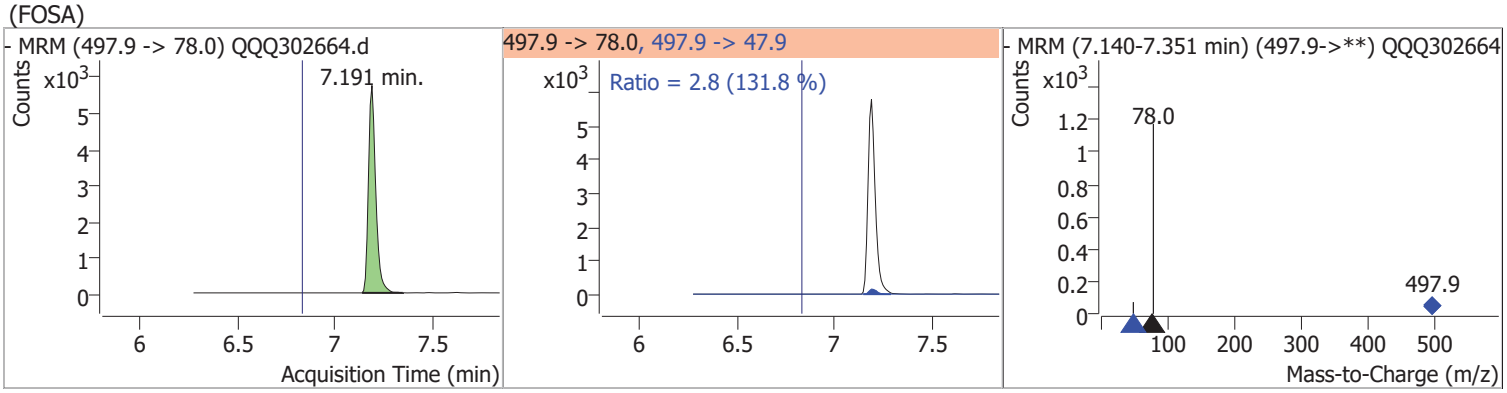


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-1-[13C8]octanesulfonamide (M8FOSA)	4.4769	7.19	0.07	9906				

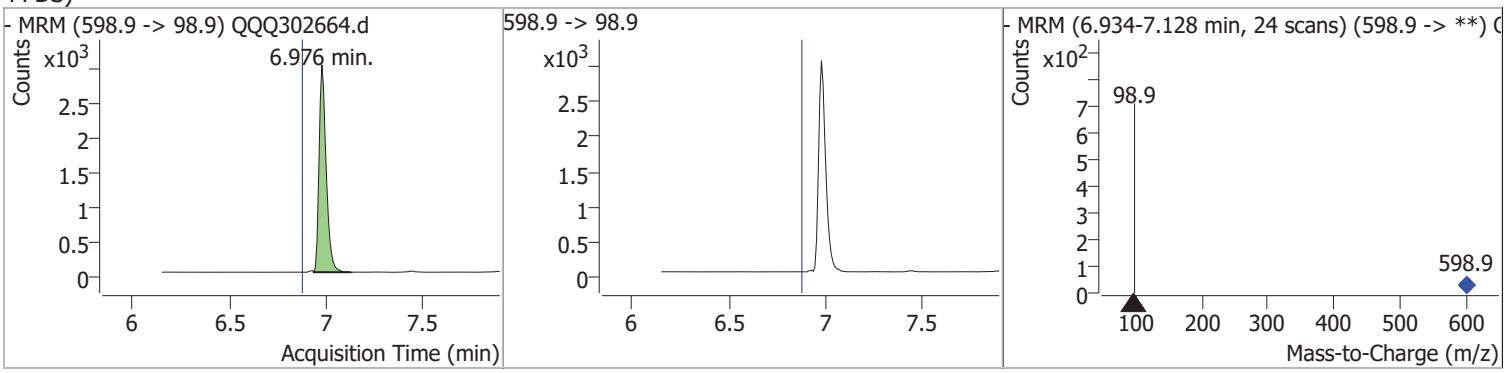


Quantitation Results Report (Not Reviewed)

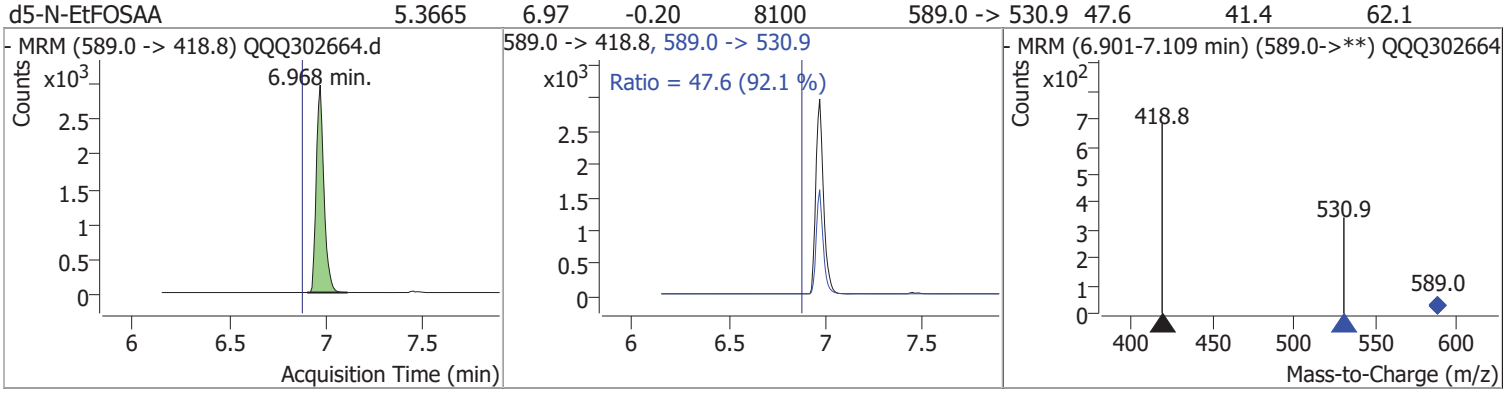
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-1-octanesulfonamide (FOSA)	4.8928	7.19	0.07	14983	497.9 -> 47.9	2.8	1.7	2.5



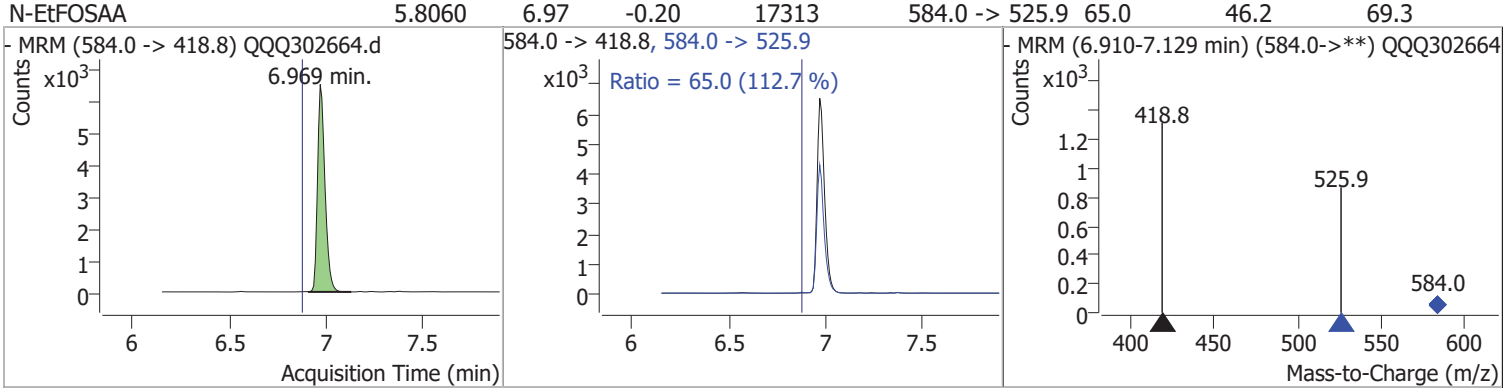
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-1-decanesulfonate (L-PFDS)	3.9691	6.98	-0.19	7612				



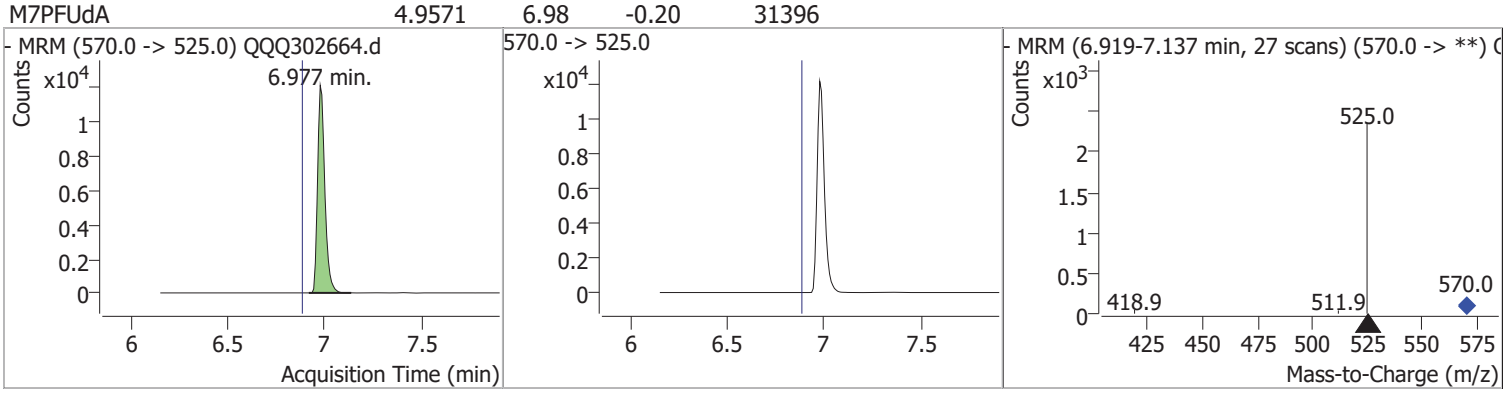
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
d5-N-EtFOSAA	5.3665	6.97	-0.20	8100	589.0 -> 530.9	47.6	41.4	62.1



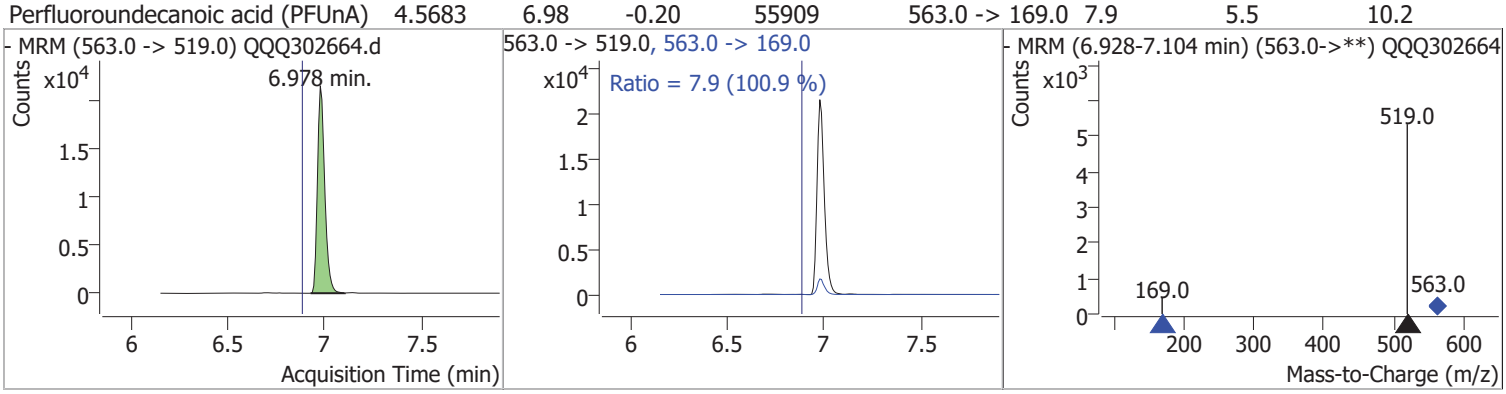
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
N-EtFOSAA	5.8060	6.97	-0.20	17313	584.0 -> 525.9	65.0	46.2	69.3



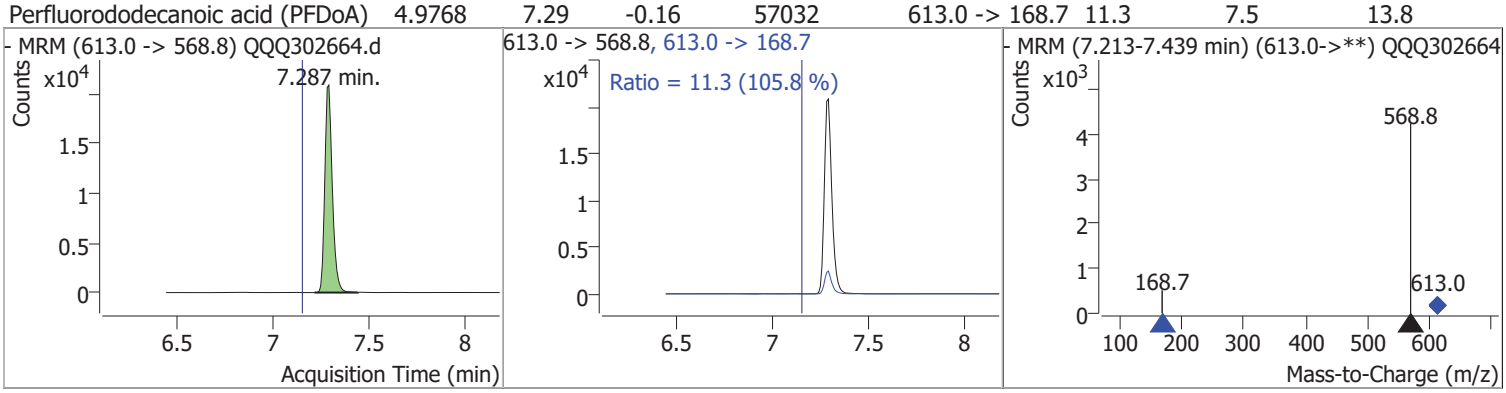
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M7PFUdA	4.9571	6.98	-0.20	31396				



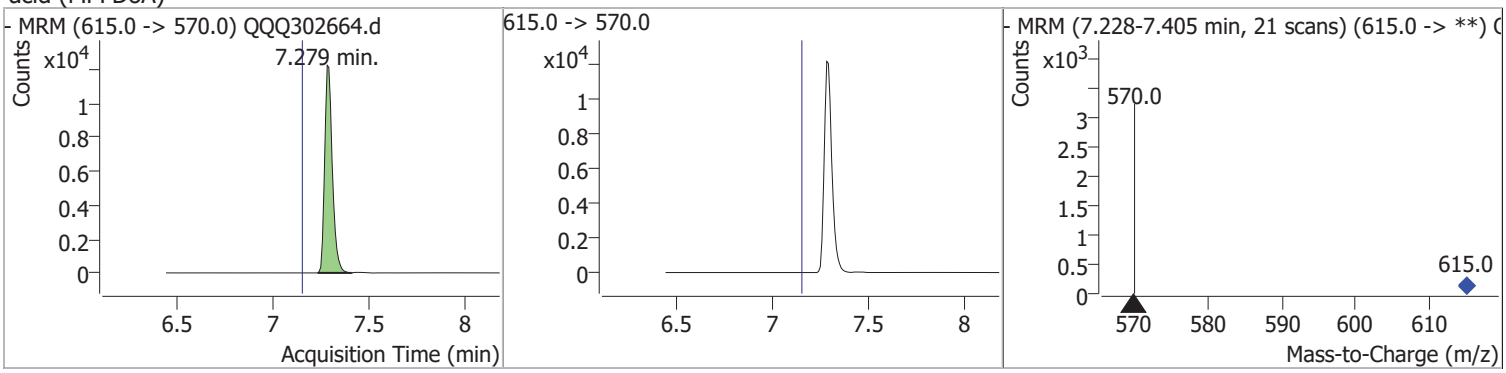
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoroundecanoic acid (PFUnA)	4.5683	6.98	-0.20	55909	563.0 -> 169.0	7.9	5.5	10.2



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorododecanoic acid (PFDoA)	4.9768	7.29	-0.16	57032	613.0 -> 168.7	11.3	7.5	13.8

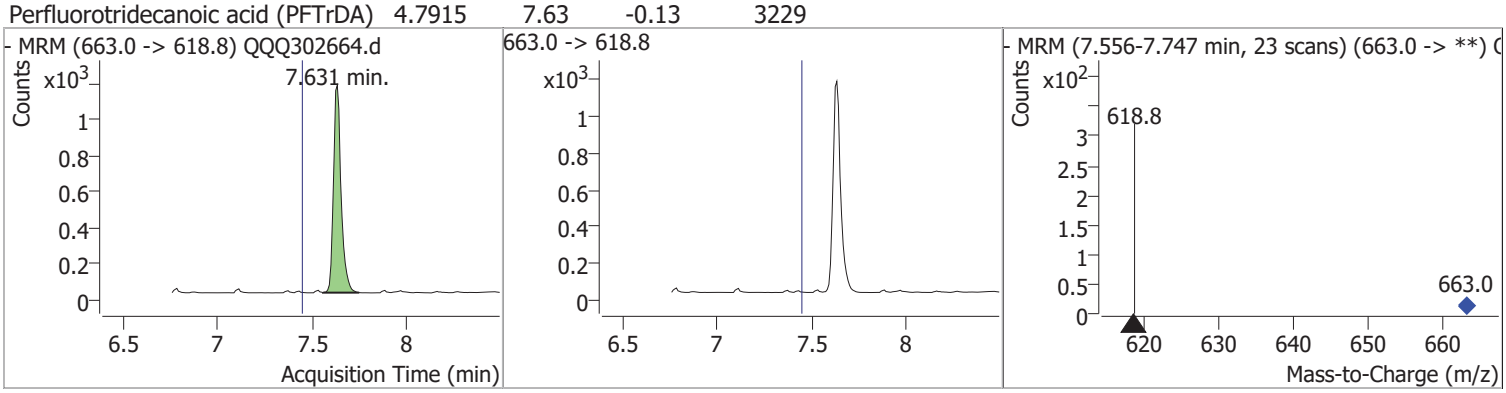


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-n-[1,2-13C2]dodecanoic acid (MPFDoA)	4.6047	7.28	-0.17	33837				

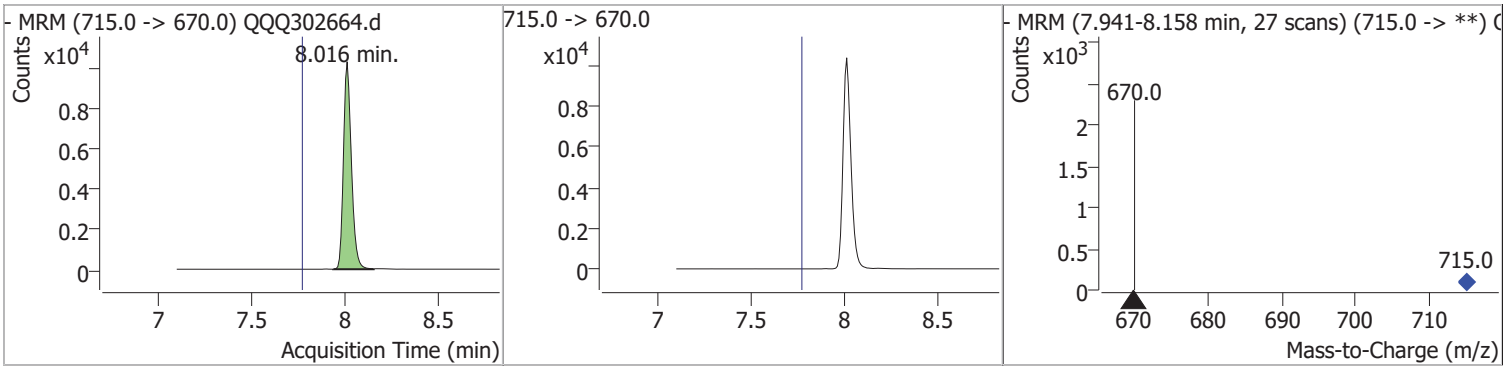


Quantitation Results Report (Not Reviewed)

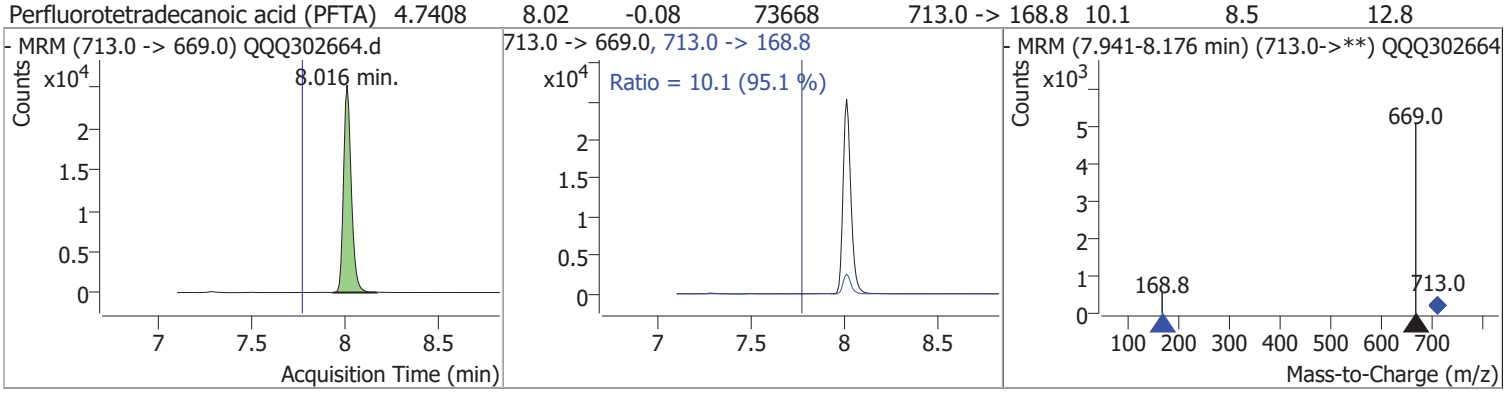
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorotridecanoic acid (PFTrDA)	4.7915	7.63	-0.13	3229				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M2PFTeDA	4.9795	8.02	-0.09	30618				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorotetradecanoic acid (PFTA)	4.7408	8.02	-0.08	73668	713.0 -> 168.8	10.1	8.5	12.8



FORM VII

CONTINUING CALIBRATION CHECK

EPA 537m

Laboratory:	York Analytical Laboratories, Inc.	SDG:	22G0348
Client:	Phoenix Environmental Laboratories, Inc.	Project:	GCL69739
Instrument ID:	QQQ3	Calibration:	YF20026
Lab File ID:	QQQ302670.d	Calibration Date:	06/28/22 15:42
Sequence:	Y2G1435	Injection Date:	07/14/22
Lab Sample ID:	Y2G1435-CCV2	Injection Time:	12:47

		CONC. (ng/mL)		RESPONSE FACTOR			% DIFF / DRIFT	
COMPOUND	TYPE	STD	CCV	ICAL	CCV	MIN (#)	CCV	LIMIT (#)
1H,1H,2H,2H-Perfluorodecanesulfonic acid (8:2 FTS)	A	4.05	4.59	0.1053684	0.1179775		13.5	30
1H,1H,2H,2H-Perfluorooctanesulfonic acid (6:2 FTS)	A	4.38	5.20	7.768364E-02	9.635367E-02		18.8	30
N-EtFOSAA	A	5.00	5.24	0.2171733	0.211085		4.7	30
N-MeFOSAA	A	5.00	4.74	0.227535	0.229044		-5.2	30
Perfluoro-1-decanesulfonic acid (PFDS)	A	4.82	4.02	0.1251683	0.1083567		-16.5	30
Perfluoro-1-heptanesulfonic acid (PFHpS)	A	4.98	4.88	0.1174146	0.1082271		-2.0	30
Perfluoro-1-octanesulfonamide (FOSA)	A	5.00	4.41	0.1871459	0.1818201		-11.9	30
Perfluorobutanesulfonic acid (PFBS)	A	4.42	3.64	0.1544403	0.1410532		-17.6	30
Perfluorodecanoic acid (PFDA)	A	5.00	4.93	0.8074561	0.8029221		-1.5	30
Perfluorododecanoic acid (PFDoA)	A	5.00	4.97	0.7282308	0.7708521		-0.6	30
Perfluoroheptanoic acid (PFHpA)	A	5.00	4.30	0.7336475	0.7345759		-14.0	30
Perfluorohexanesulfonic acid (PFHxS)	A	4.55	4.09	0.1347399	0.1274617		-10.1	30
Perfluorohexanoic acid (PFHxA)	A	5.00	4.55	0.5690764	0.5850733		-9.1	30
Perfluoro-n-butanoic acid (PFBA)	A	5.00	4.20	0.3382355	0.3333152		-16.0	30
Perfluorononanoic acid (PFNA)	A	4.80	4.54	0.8257117	0.8252903		-5.4	30
Perfluorooctanesulfonic acid (PFOS)	A	4.62	4.47	0.1171459	0.117694		-3.3	30
Perfluorooctanoic acid (PFOA)	A	5.00	4.49	0.7797809	0.7744037		-10.3	30
Perfluoropentanoic acid (PFPeA)	A	5.00	4.54	0.2734725	0.26541		-9.3	30
Perfluorotetradecanoic acid (PFTA)	A	5.00	4.89	1.023396	1.031726		-2.1	30
Perfluorotridecanoic acid (PFTrDA)	A	5.00	5.05	4.773095E-02	0.0462351		0.9	30
Perfluoroundecanoic acid (PFUnA)	A	5.00	4.75	0.7480439	0.786679		-5.1	30

Column to be used to flag Response Factor and %Diff/Drift values with an asterisk

* Values outside of QC limits

Quantitation Results Report (Not Reviewed)

Agilent | Trusted Answers

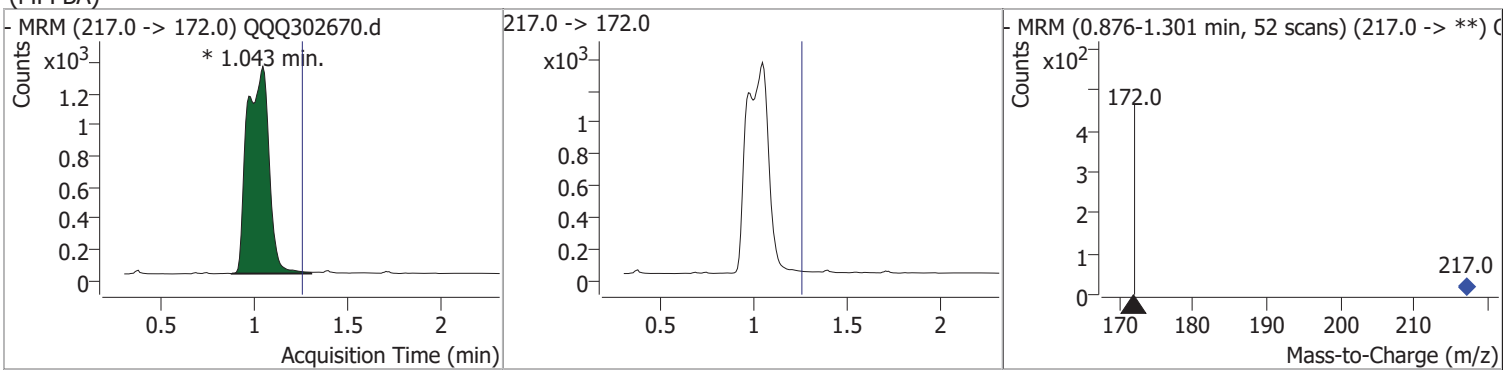
Data File	QQQ302670.d	Operator	
Acq. Method	PFAS 24_IDA ACQ_QQQ3A.m	Acq. Date-Time	7/14/2022 12:47:41 PM
Sample Name	SEQ-CCV2	Instrument	QQQ3
Vial		Multiplier	1.00
DA Method File	PFAS_24_IDA_QUANT_QQQ3_062722.m	Comment	5
Tune File		Tune Date	
Batch Name	2022-07-14-IDA.batch.bin	Last Calib Update	6/27/2022 4:24:30 PM
Ref Library			

Compound	RT	QIon	Resp.	Conc.	Units		Dev(Min)
Internal Standards							
MPFOA	6.123	417.0 -> 372.0	142217	10.0000	ng/ml		-0.307
System Monitoring Compounds							
Perfluoro-n-[13C4]butanoic acid (MPFBA)	1.043	217.0 -> 172.0	10909	4.3049	ng/ml	m	-0.267
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 43.05%			
Perfluoro-n-[13C54]pentanoic acid (M5PFPeA)	4.078	268.0 -> 223.0	9677	4.5900	ng/ml		-0.509
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 45.90%			
M3PFBS	4.708	302.0 -> 79.9	4127	3.7935	ng/ml		-0.455
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 37.93%			
M2-4-2FTS	5.275	329.0 -> 309.0	3910	5.3797	ng/ml	#	-0.415
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 53.80%			
M5PFHxA	5.310	318.0 -> 273.0	18680	4.5314	ng/ml		-0.414
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 45.31%			
M4PFHpA	5.796	367.0 -> 322.0	11313	5.2524	ng/ml		-0.348
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 52.52%			
M3PFHxS	5.846	402.0 -> 80.0	4219	4.5937	ng/ml		-0.331
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 45.94%			
M2-6-2FTS	6.106	429.0 -> 409.0	2602	3.7682	ng/ml		-0.314
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 37.68%			
Perfluoro-n-[13C8]octanoic acid (M8PFOA)	6.123	421.0 -> 376.0	18098	5.1087	ng/ml	#	-0.307
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 51.09%			
Perfluoro-n-[13C9]nonanoic acid (M9PFNA)	6.392	472.0 -> 427.0	21406	5.0709	ng/ml		-0.288
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 50.71%			
Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)	6.408	507.0 -> 80.0	4288	4.5574	ng/ml		-0.280
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 45.57%			
M2-8-2FTS	6.650	529.0 -> 509.0	3988	6.5991	ng/ml	#	-0.268
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 65.99%			
M6PFDA	6.659	519.0 -> 473.9	23192	4.9703	ng/ml		-0.263
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 49.70%			
d3-N-MeFOSAA	6.776	573.0 -> 418.8	7504	4.5900	ng/ml		-0.254
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 45.90%			
Perfluoro-1-[13C8]octanesulfonamide (M8FOSA)	7.148	506.0 -> 78.0	10295	4.8217	ng/ml		0.029
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 48.22%			
d5-N-EtFOSAA	6.918	589.0 -> 418.8	8605	5.9118	ng/ml	#	-0.246
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 59.12%			
M7PFUdA	6.927	570.0 -> 525.0	31282	5.1320	ng/ml		-0.246
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 51.32%			
Perfluoro-n-[1,2-13C2]dodecanoic acid (MPFDoA)	7.237	615.0 -> 570.0	33829	4.7783	ng/ml		-0.211
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 47.78%			
M2PFTeDA	7.982	715.0 -> 670.0	31555	5.3208	ng/ml		-0.119
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 53.21%			
Target Compounds							**QValue**

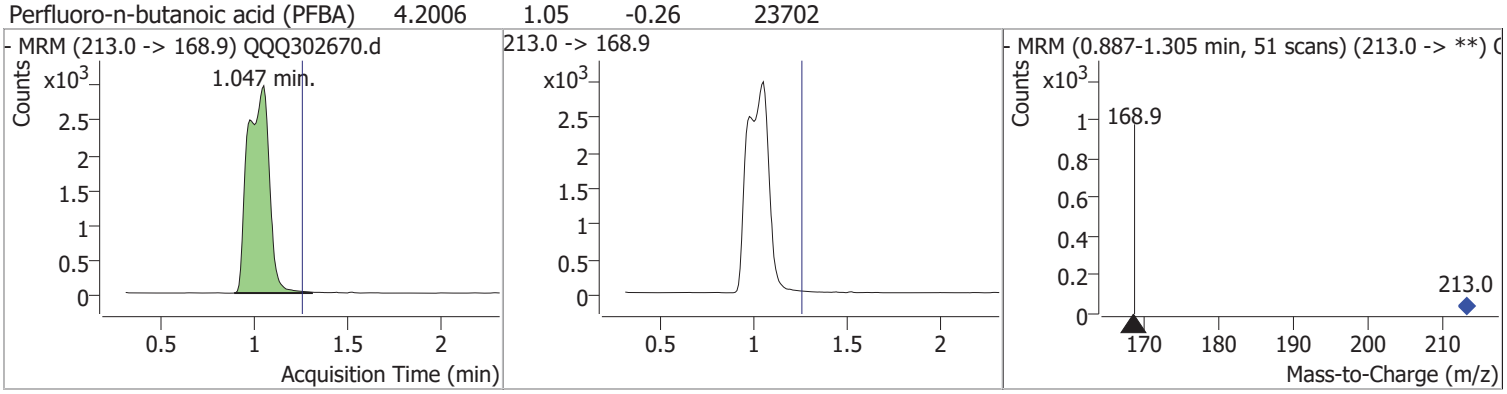
Compound	RT	QIon	Resp.	Conc.	Units		Dev(Min)
Perfluoro-n-butanoic acid (PFBA)	1.047	213.0 -> 168.9	23702	4.2006	ng/ml		100
Perfluoro-n-pentanoic acid (PFPeA)	4.082	263.0 -> 219.0	18873	4.5353	ng/ml		100
Perfluorobutanesulfonic acid (PFBS)	4.701	298.9 -> 79.9	8867	3.6418	ng/ml		96
1H,1H,2H,2H-perfluoro-1-hexanesulfonate (4 2FTS)	5.267	327.0 -> 307.0	6509	4.6723	ng/ml		100
Perfluorohexanoic acid (PFHxA)	5.311	313.0 -> 268.9	41604	4.5454	ng/ml		99
Perfluoro-1-pentanesulfonate (L-PFPeS)	5.435	348.9 -> 79.9	8619	4.2757	ng/ml		94
Perfluoroheptanoic acid (PFHpA)	5.796	363.0 -> 318.8	52235	4.3023	ng/ml		100
Perfluorohexanesulfonic acid (PFHxS)	5.846	398.9 -> 79.9	8248	4.0894	ng/ml	m	96
1H,1H,2H,2H-perfluoro-1-octanesulfonate (6 2FTS)	6.106	427.0 -> 407.0	6002	5.2038	ng/ml		93
Perfluorooctanoic acid (PFOA)	6.123	413.0 -> 368.8	55067	4.4869	ng/ml		97
Perfluoro-1-heptanesulfonate (L-PFHpS)	6.147	448.9 -> 80.0	7665	4.8803	ng/ml		97
Perfluorononanoic acid (PFNA)	6.392	463.0 -> 418.8	56338	4.5388	ng/ml		97
Perfluorooctanesulfonic acid (PFOS)	6.408	498.9 -> 79.9	7733	4.4667	ng/ml	m	92
1H,1H,2H,2H-perfluoro-1-decanesulfonate (8 2FTS)	6.651	527.0 -> 507.0	6795	4.5947	ng/ml		91
Perfluorononanesulfonate (L-PFNS)	6.667	548.9 -> 79.9	7473	4.4839	ng/ml	#	82
Perfluorodecanoic acid (PFDA)	6.660	513.0 -> 468.8	57095	4.9255	ng/ml		98
N-MeFOSAA	6.776	570.0 -> 418.9	16287	4.7417	ng/ml		94
Perfluoro-1-octanesulfonamide (FOSA)	7.149	497.9 -> 78.0	12929	4.4070	ng/ml		99
Perfluoro-1-decanesulfonate (L-PFDS)	6.934	598.9 -> 98.9	7428	4.0233	ng/ml		100
N-EtFOSAA	6.927	584.0 -> 418.8	15010	5.2360	ng/ml		97
Perfluoroundecanoic acid (PFUnA)	6.927	563.0 -> 519.0	55940	4.7455	ng/ml		100
Perfluorododecanoic acid (PFDoA)	7.237	613.0 -> 568.8	54814	4.9690	ng/ml		96
Perfluorotridecanoic acid (PFTrDA)	7.598	663.0 -> 618.8	3288	5.0472	ng/ml		100
Perfluorotetradecanoic acid (PFTA)	7.983	713.0 -> 669.0	73365	4.8938	ng/ml		98

(#) = Qualifier Out of Range; (m) = Manual Integration; (+) = Area Summed; (*) = Surrogate Percent Recovery Out of Range; (d): Zeroed Peak

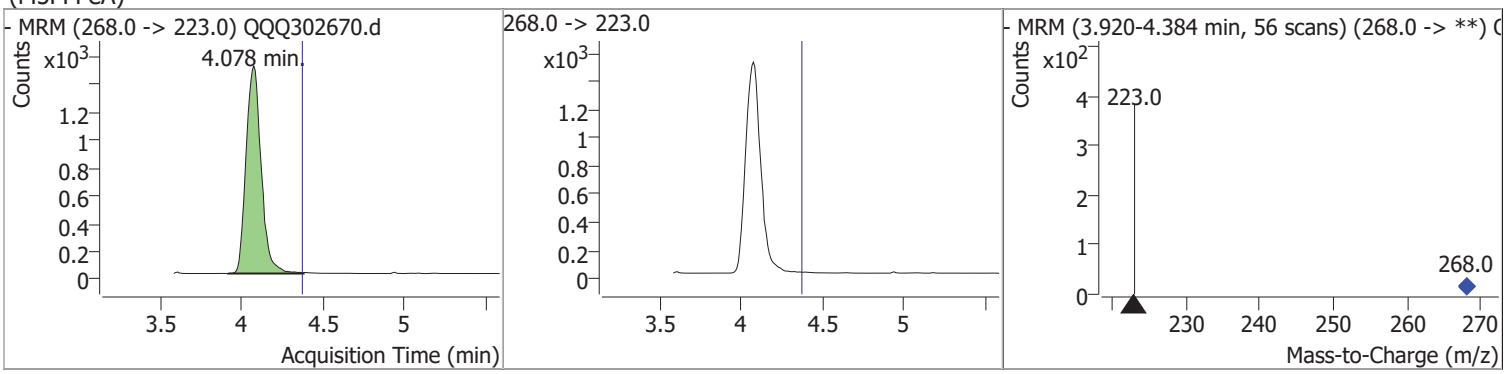
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-n-[13C4]butanoic acid (MPFBA)	4.3049	1.04	-0.27	10909 (m)				



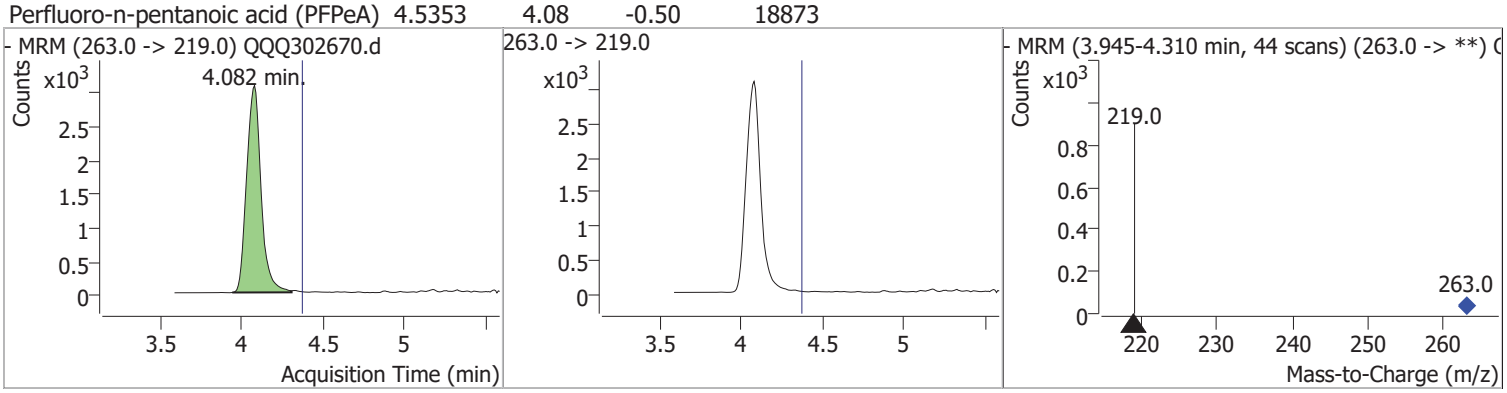
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-n-butanoic acid (PFBA)	4.2006	1.05	-0.26	23702				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-n-[13C54]pentanoic acid (M5PFPeA)	4.5900	4.08	-0.51	9677				

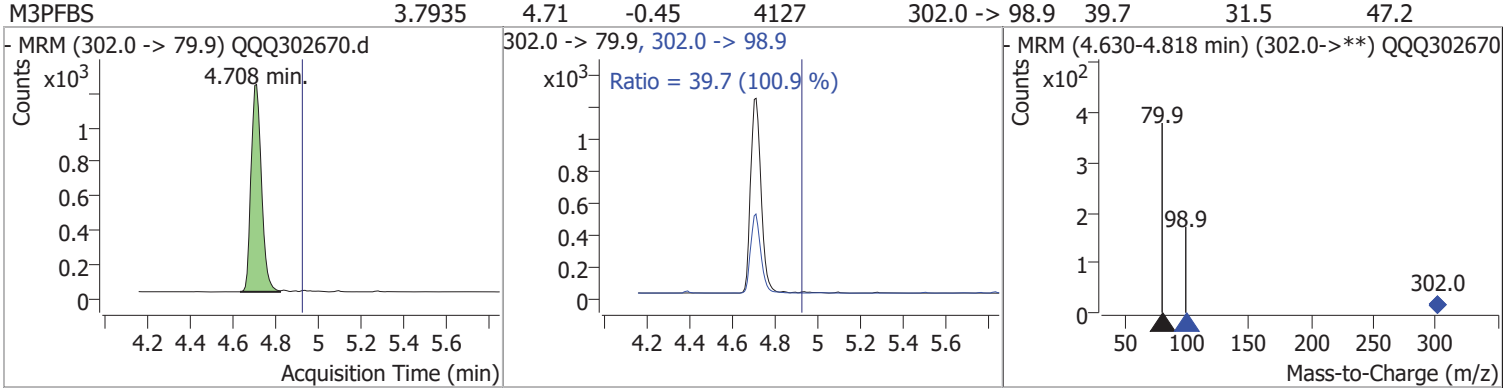


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-n-pentanoic acid (PFPeA)	4.5353	4.08	-0.50	18873				

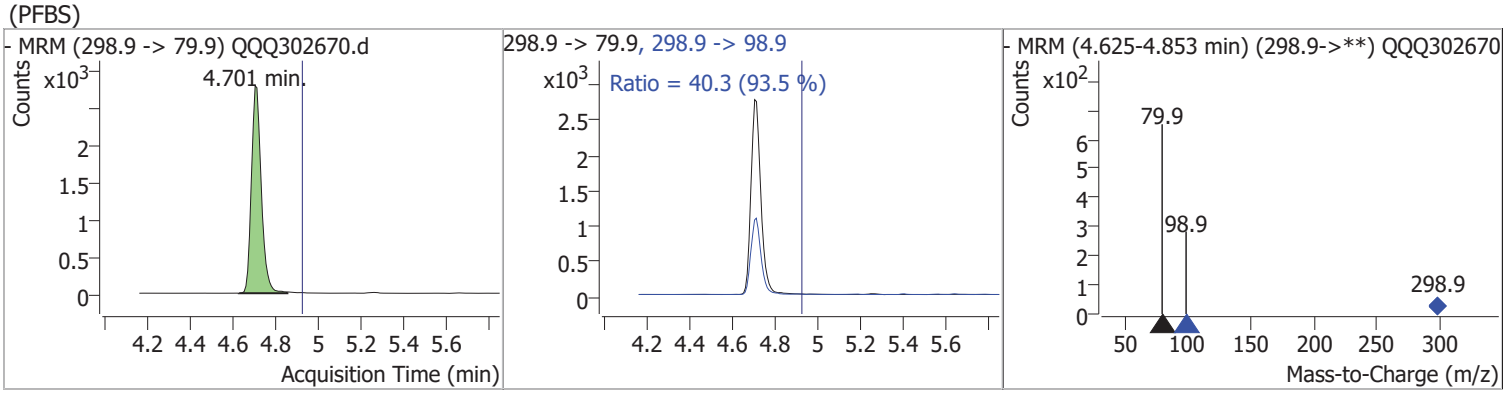


Quantitation Results Report (Not Reviewed)

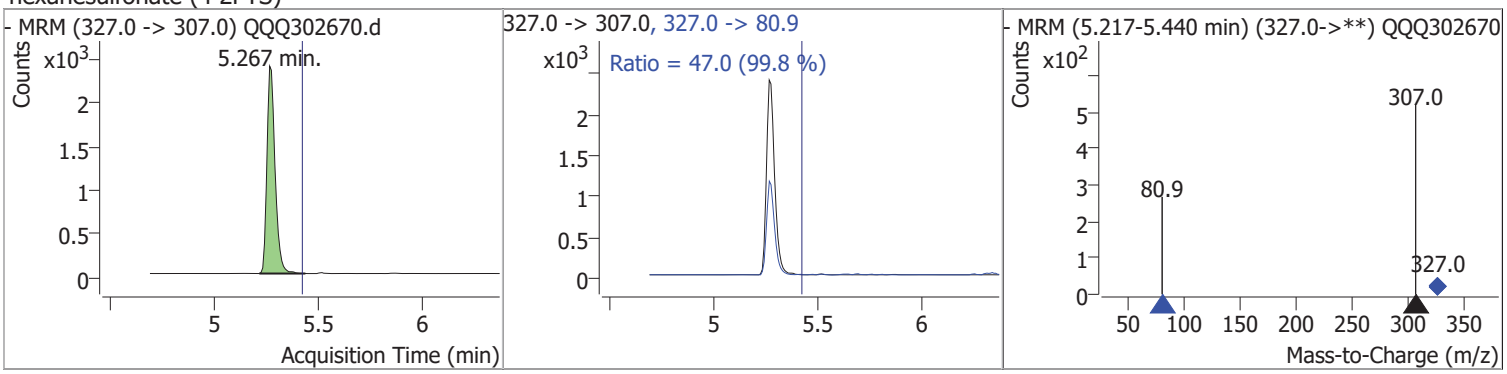
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M3PFBS	3.7935	4.71	-0.45	4127	302.0 -> 98.9	39.7	31.5	47.2



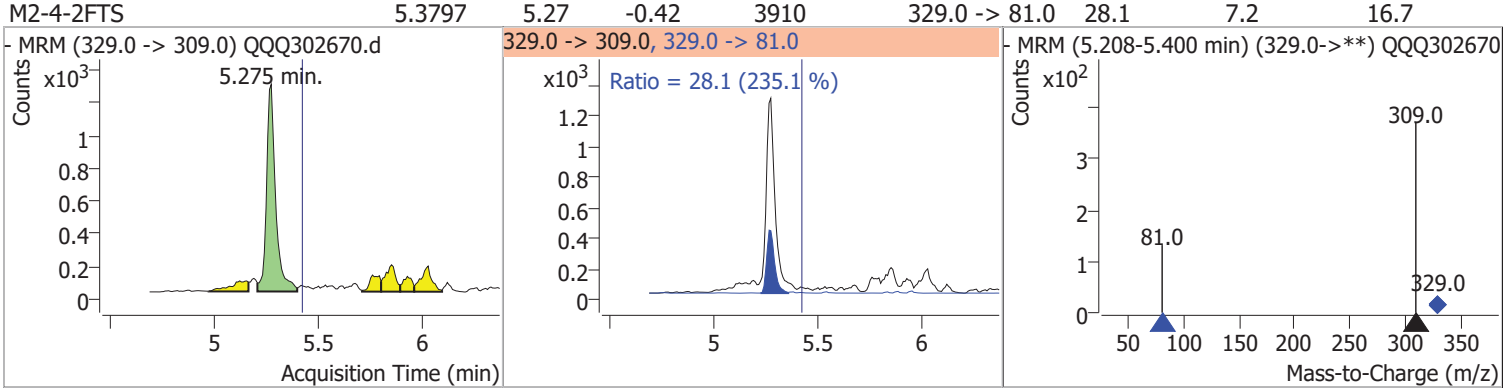
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorobutanesulfonic acid (PFBS)	3.6418	4.70	-0.46	8867	298.9 -> 98.9	40.3	34.5	51.7



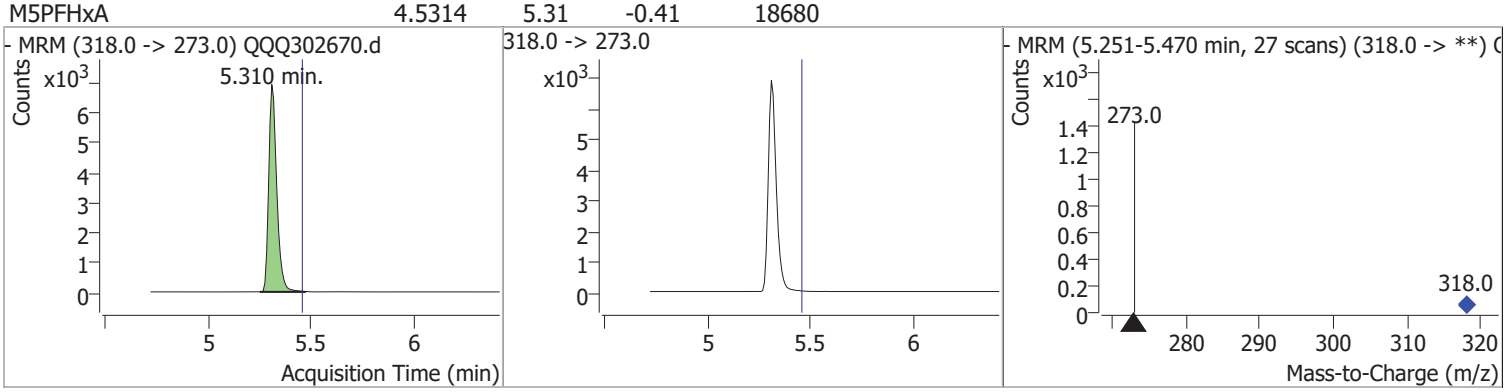
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
1H,1H,2H,2H-perfluoro-1-hexanesulfonate (4 2FTS)	4.6723	5.27	-0.42	6509	327.0 -> 80.9	47.0	28.2	65.9



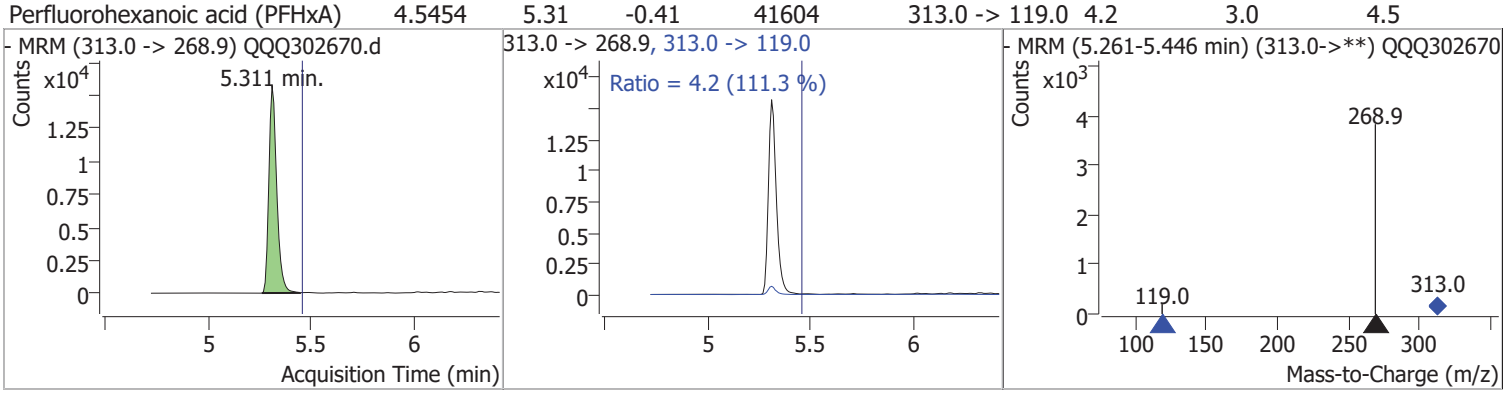
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M2-4-2FTS	5.3797	5.27	-0.42	3910	329.0 -> 81.0	28.1	7.2	16.7



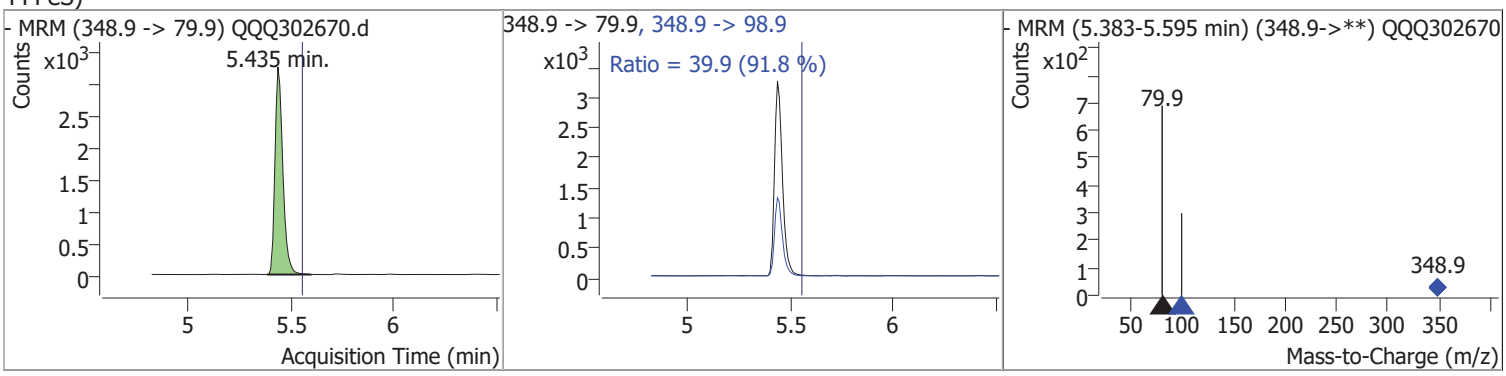
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M5PFHxA	4.5314	5.31	-0.41	18680				



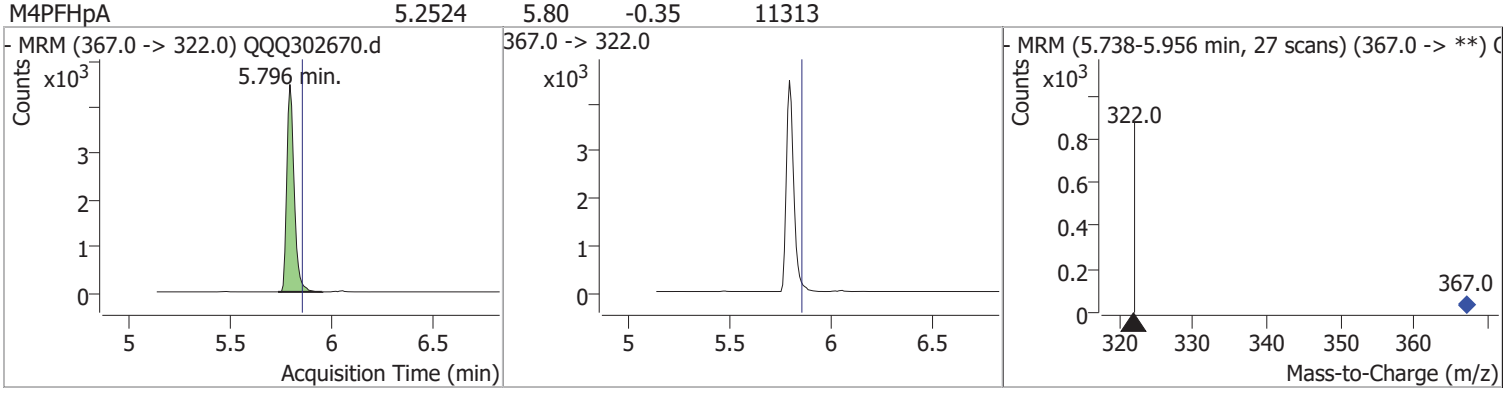
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorohexanoic acid (PFHxA)	4.5454	5.31	-0.41	41604	313.0 -> 119.0	4.2	3.0	4.5



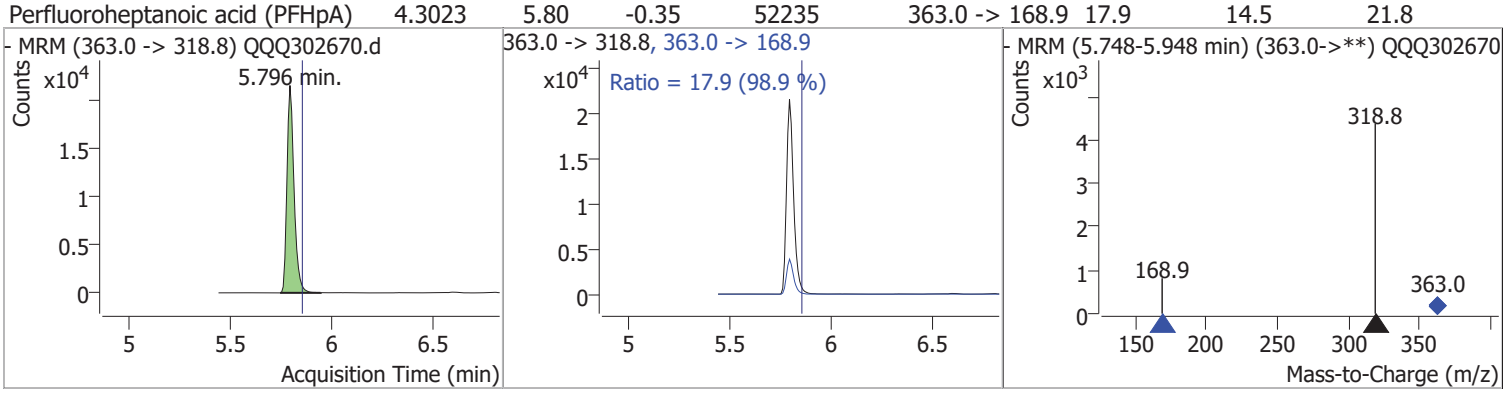
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-1-pentanesulfonate (L-PFPeS)	4.2757	5.44	-0.39	8619	348.9 -> 98.9	39.9	34.8	52.2



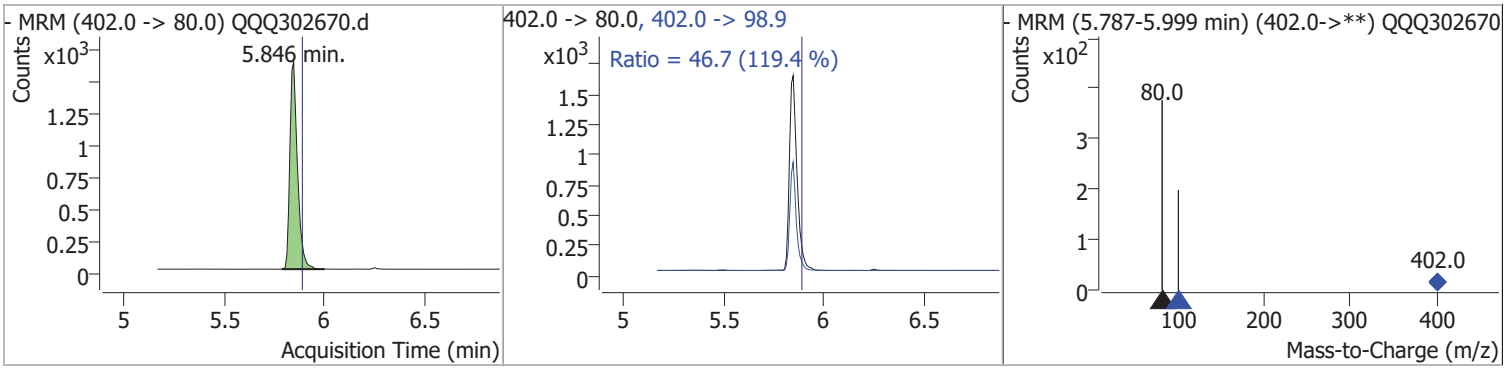
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M4PFHpA	5.2524	5.80	-0.35	11313				



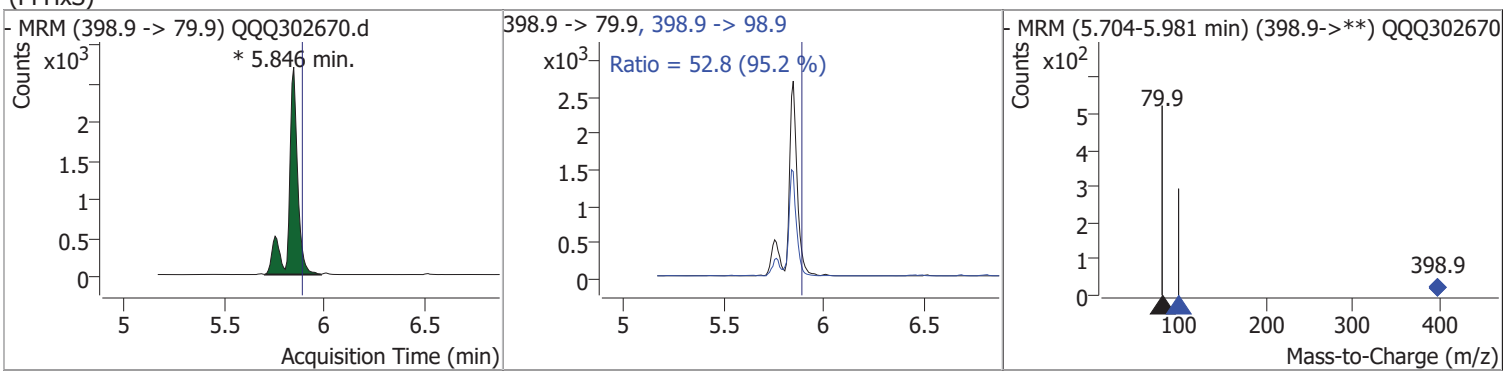
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoroheptanoic acid (PFHpA)	4.3023	5.80	-0.35	52235	363.0 -> 168.9	17.9	14.5	21.8



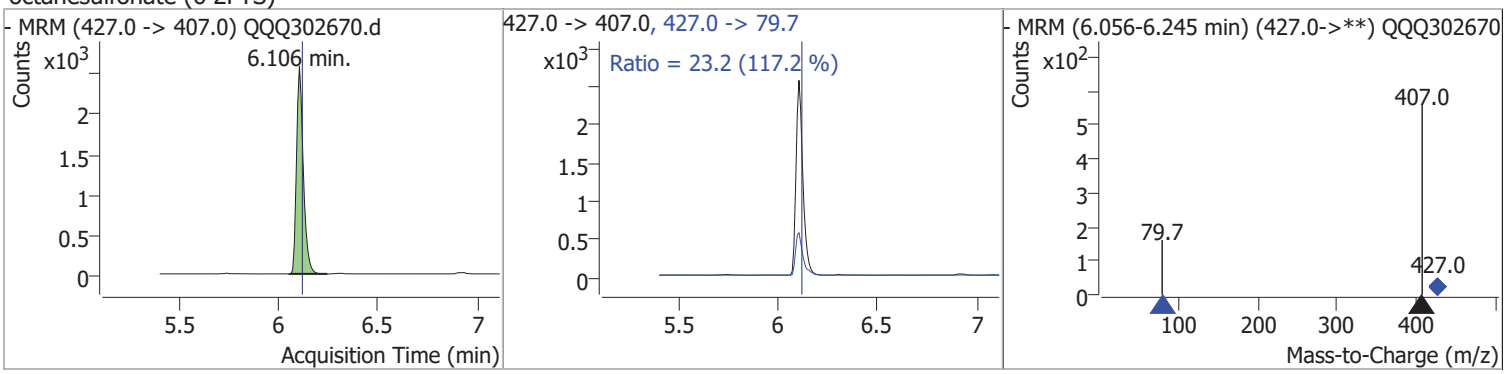
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M3PFHxS	4.5937	5.85	-0.33	4219	402.0 -> 98.9	46.7	31.3	47.0



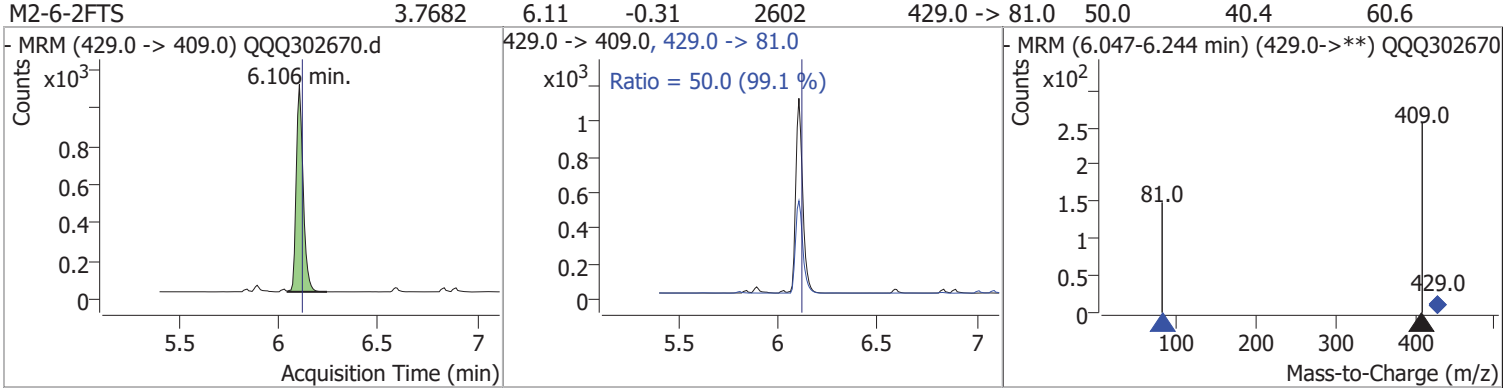
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorohexanesulfonic acid (PFHxS)	4.0894	5.85	-0.33	8248 (m)	398.9 -> 98.9	52.8	44.4	66.5



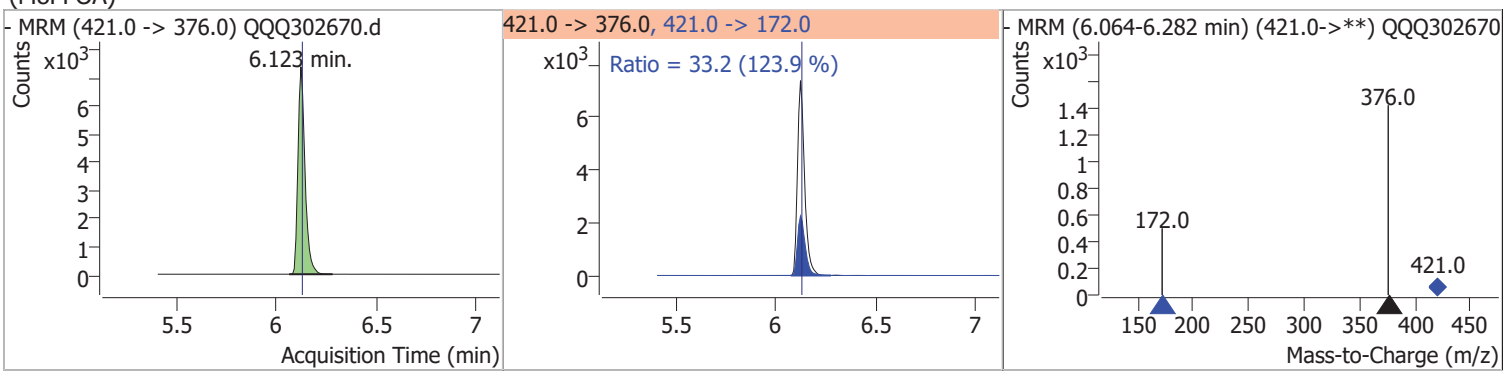
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
1H,1H,2H,2H-perfluoro-1-octanesulfonate (6 2FTS)	5.2038	6.11	-0.31	6002	427.0 -> 79.7	23.2	15.8	23.7



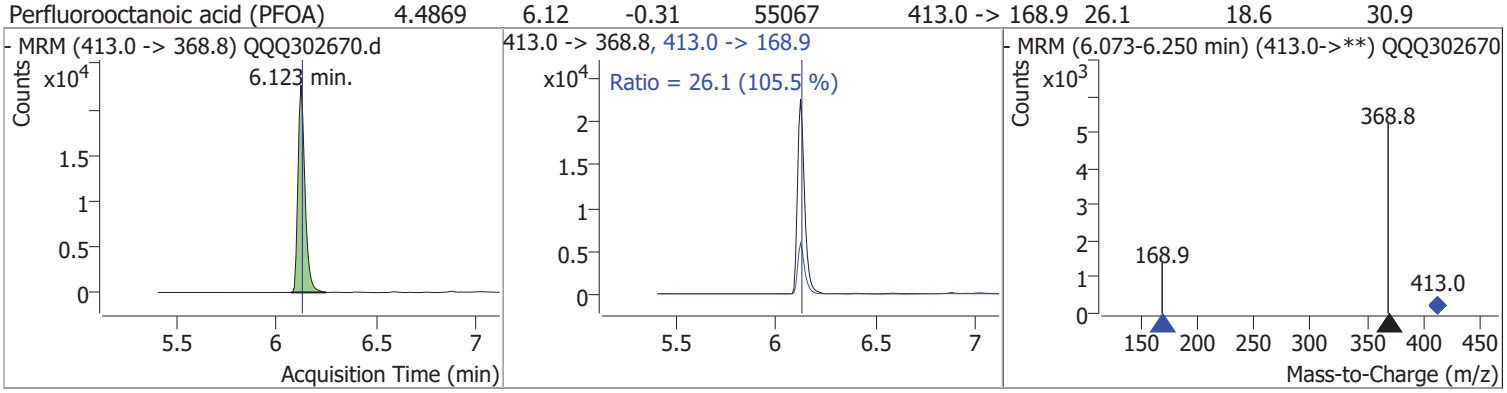
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M2-6-2FTS	3.7682	6.11	-0.31	2602	429.0 -> 81.0	50.0	40.4	60.6



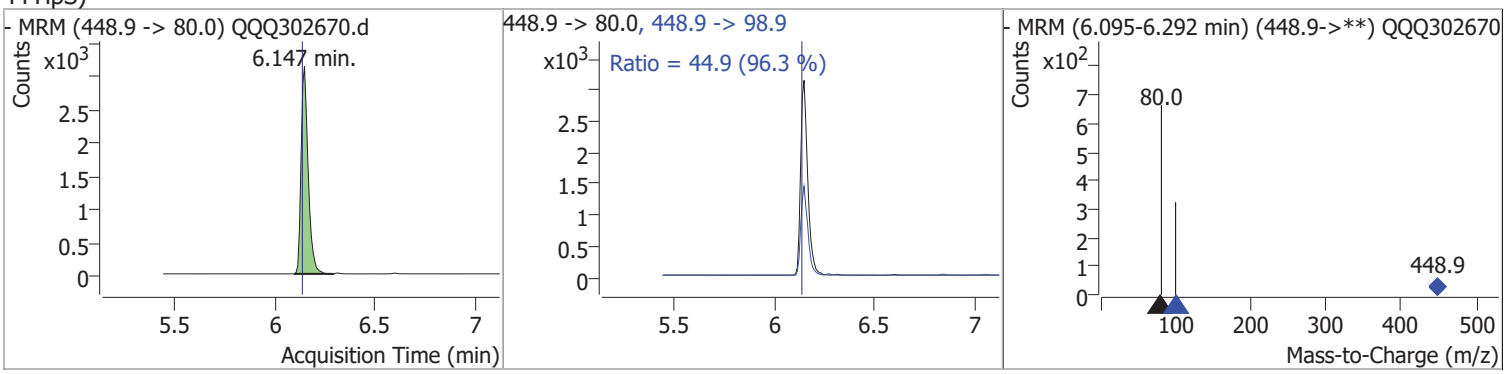
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-n-[13C8]octanoic acid (M8PFOA)	5.1087	6.12	-0.31	18098	421.0 -> 172.0	33.2	21.5	32.2



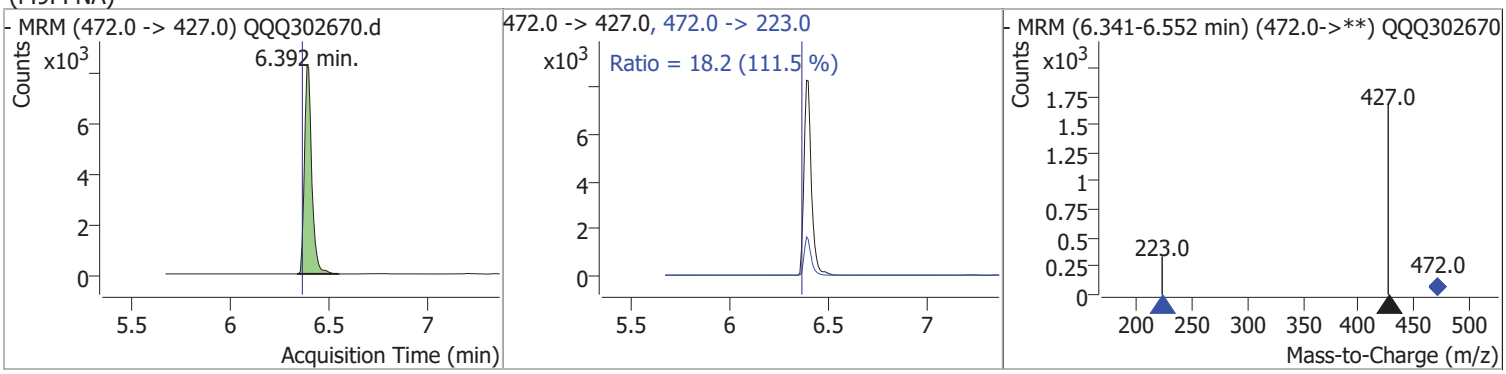
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorooctanoic acid (PFOA)	4.4869	6.12	-0.31	55067	413.0 -> 168.9	26.1	18.6	30.9



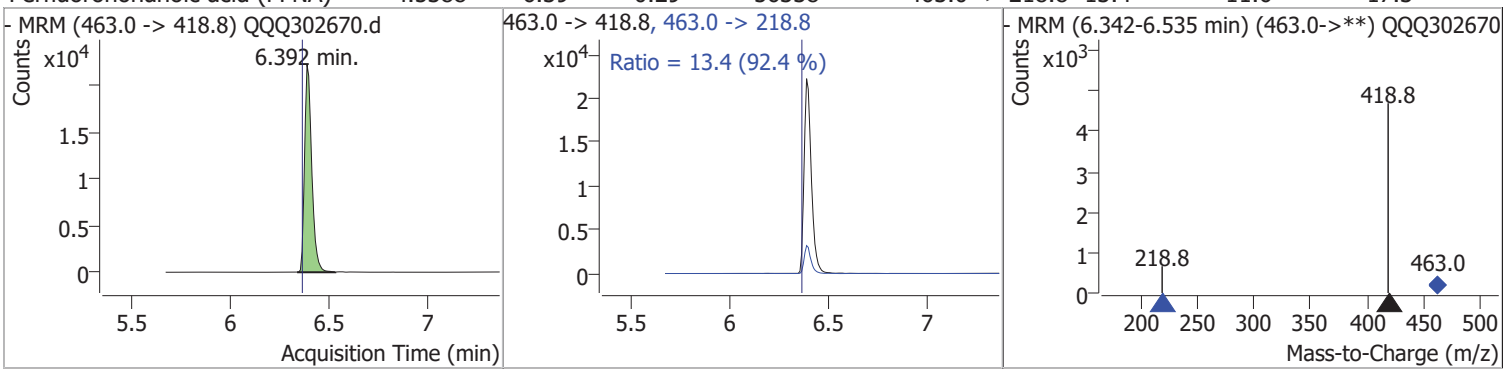
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-1-heptanesulfonate (L-PFHpS)	4.8803	6.15	-0.29	7665	448.9 -> 98.9	44.9	37.3	56.0



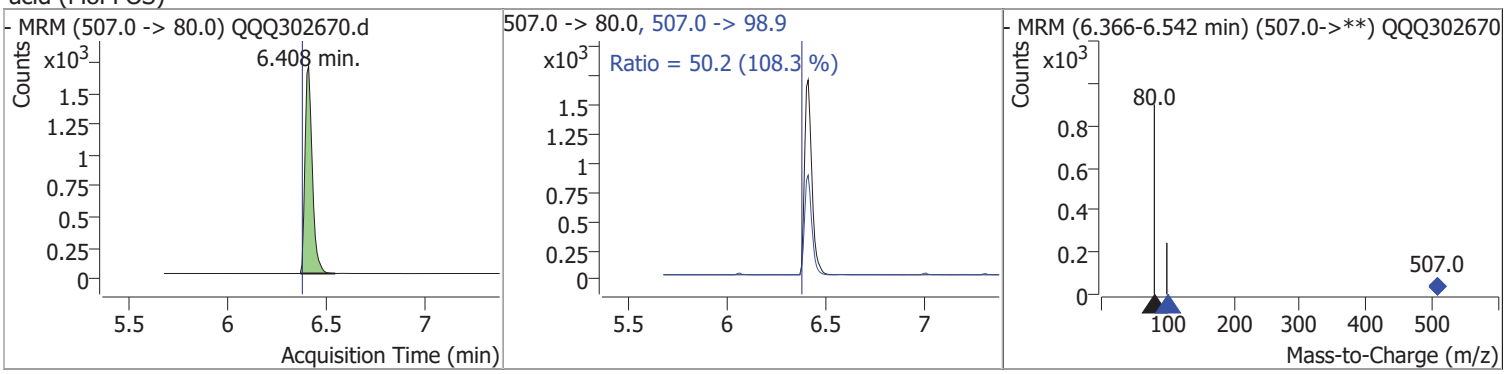
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-n-[13C9]nonanoic acid (M9PFNA)	5.0709	6.39	-0.29	21406	472.0 -> 223.0	18.2	13.1	19.6



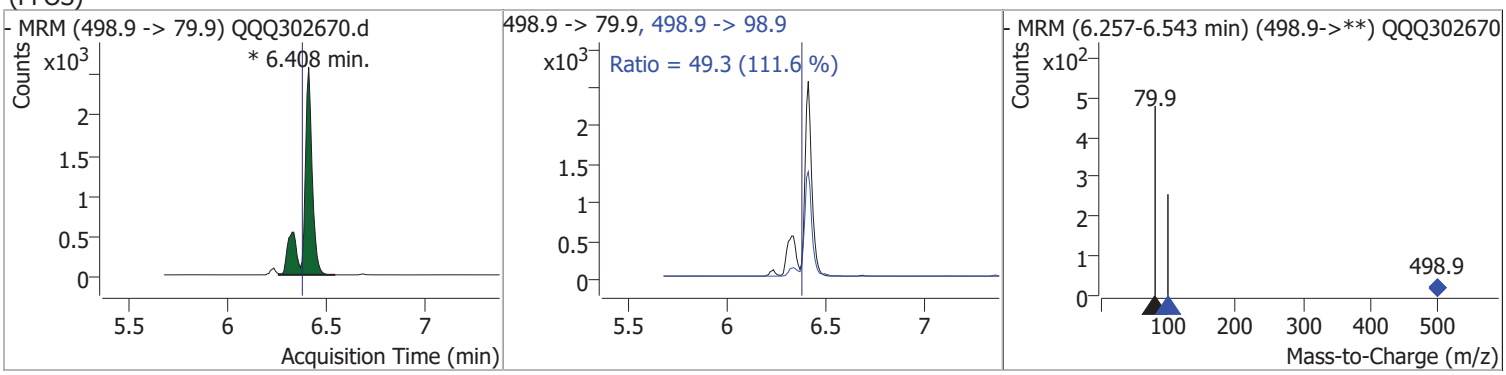
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorononanoic acid (PFNA)	4.5388	6.39	-0.29	56338	463.0 -> 218.8	13.4	11.6	17.3



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)	4.5574	6.41	-0.28	4288	507.0 -> 98.9	50.2	37.1	55.6

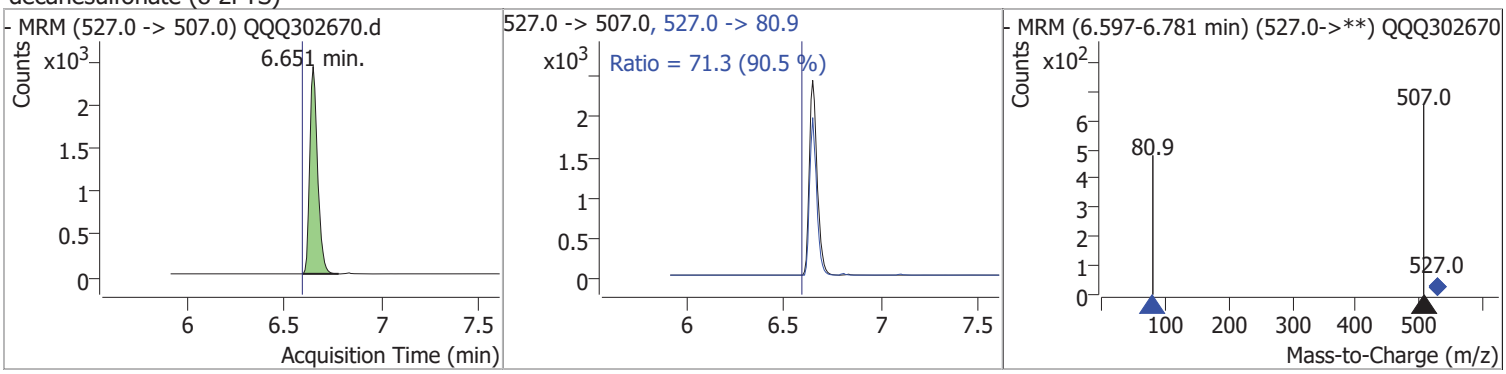


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorooctanesulfonic acid (PFOS)	4.4667	6.41	-0.28	7733 (m)	498.9 -> 98.9	49.3	35.4	53.0

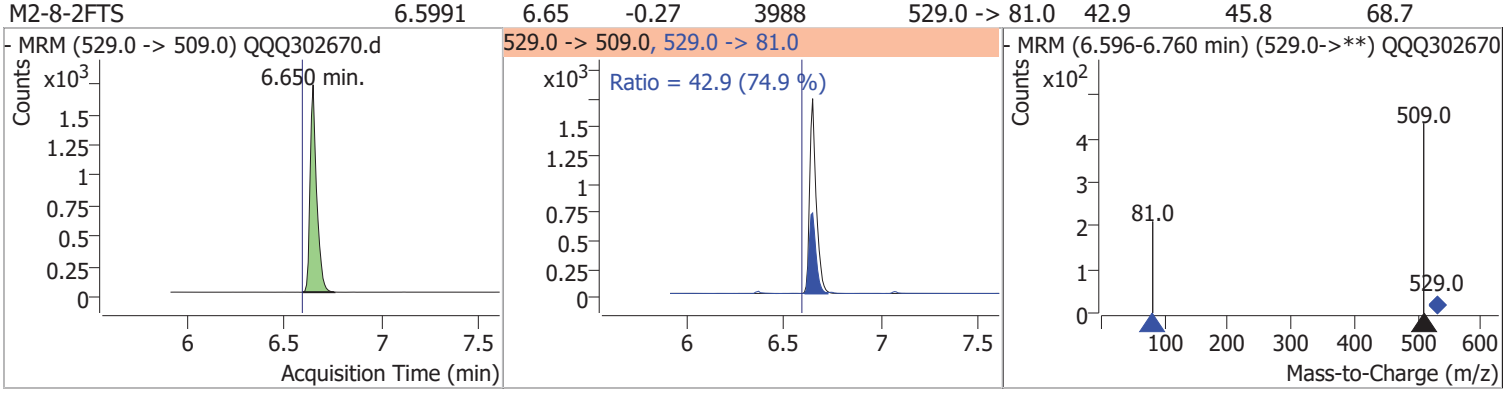


Quantitation Results Report (Not Reviewed)

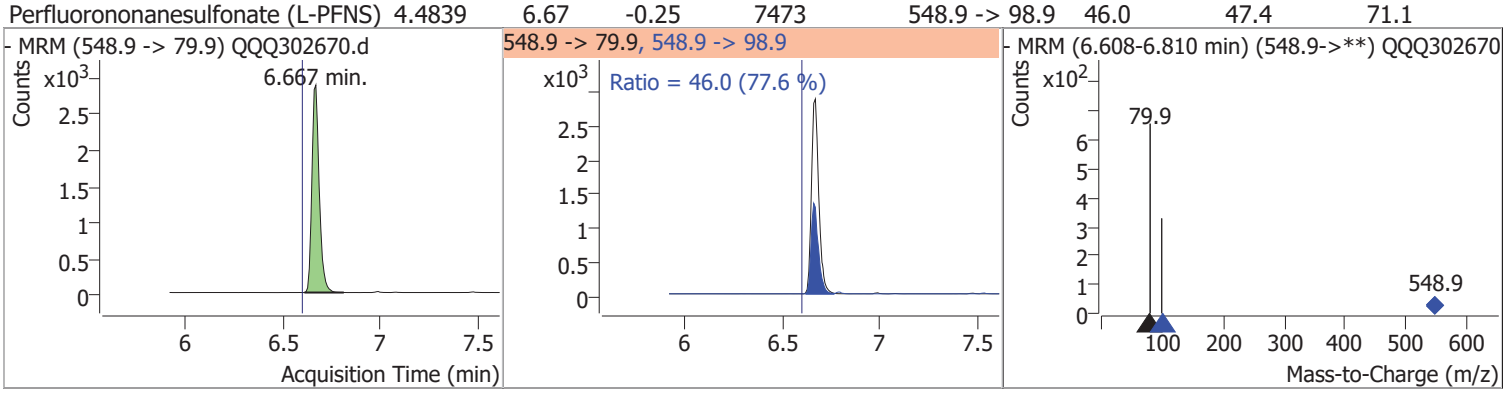
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
1H,1H,2H,2H-perfluoro-1-decanesulfonate (8 2FTS)	4.5947	6.65	-0.27	6795	527.0 -> 80.9	71.3	63.1	94.6



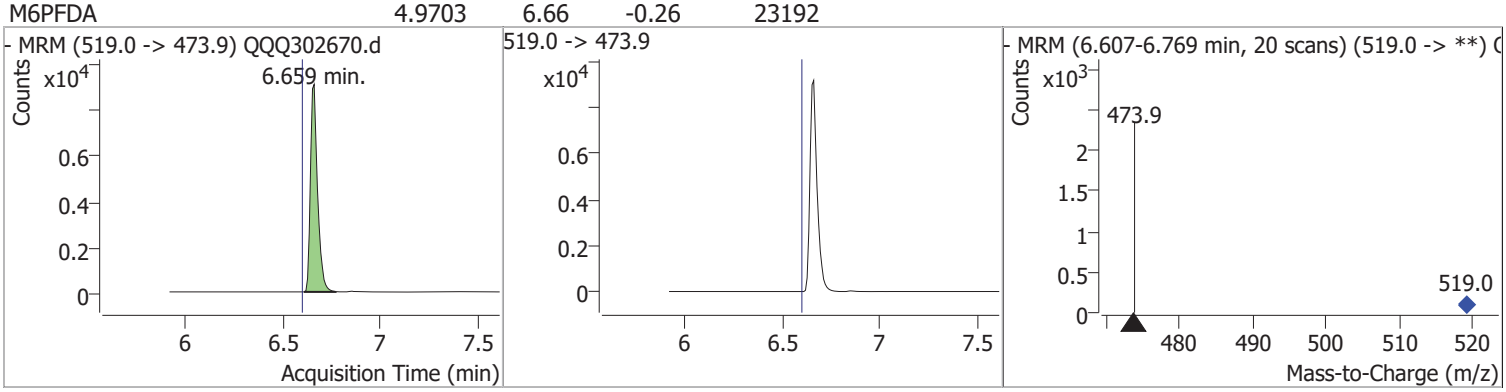
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M2-8-2FTS	6.5991	6.65	-0.27	3988	529.0 -> 81.0	42.9	45.8	68.7



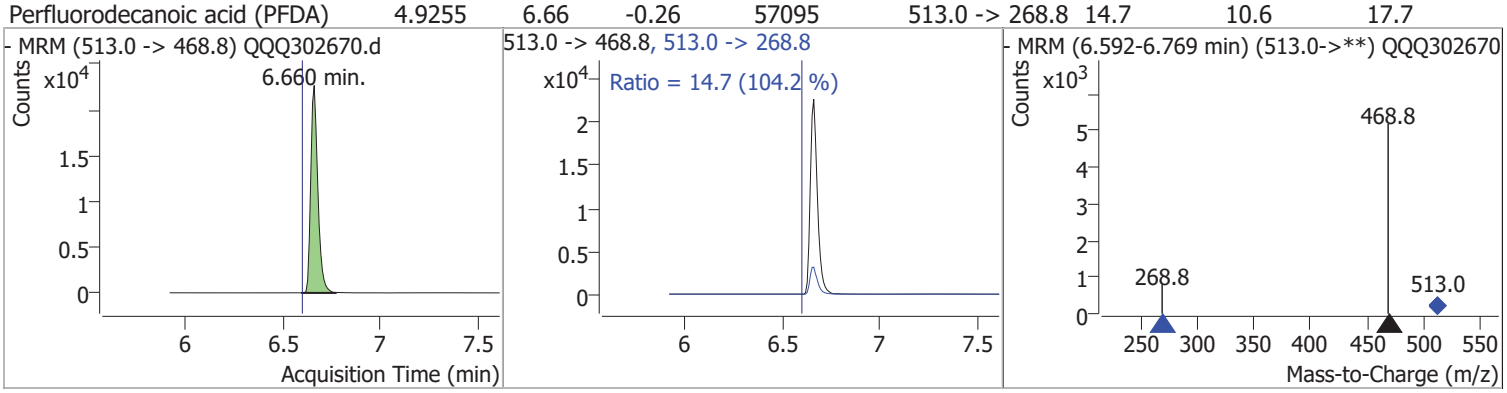
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorononanesulfonate (L-PFNS)	4.4839	6.67	-0.25	7473	548.9 -> 98.9	46.0	47.4	71.1



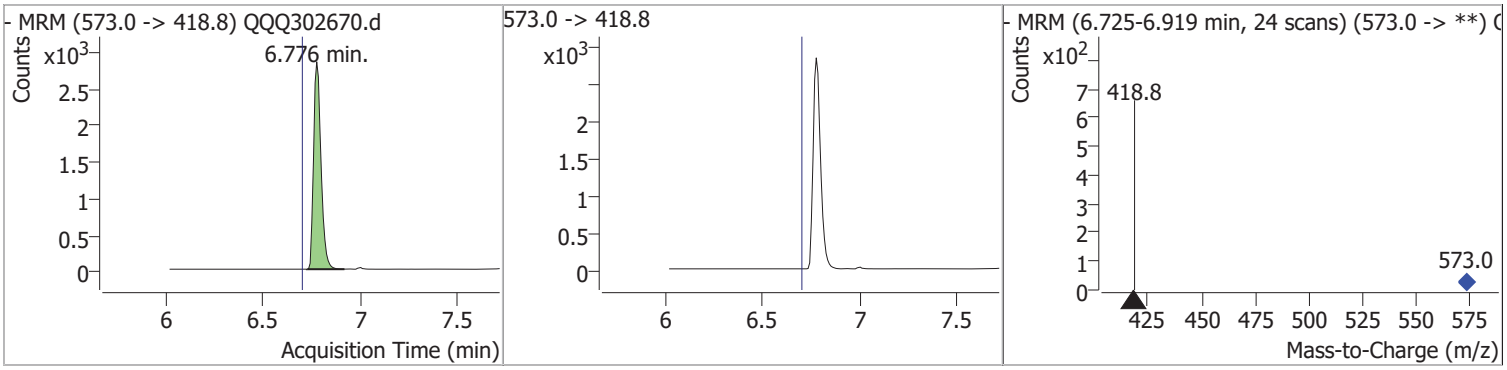
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M6PFDA	4.9703	6.66	-0.26	23192				



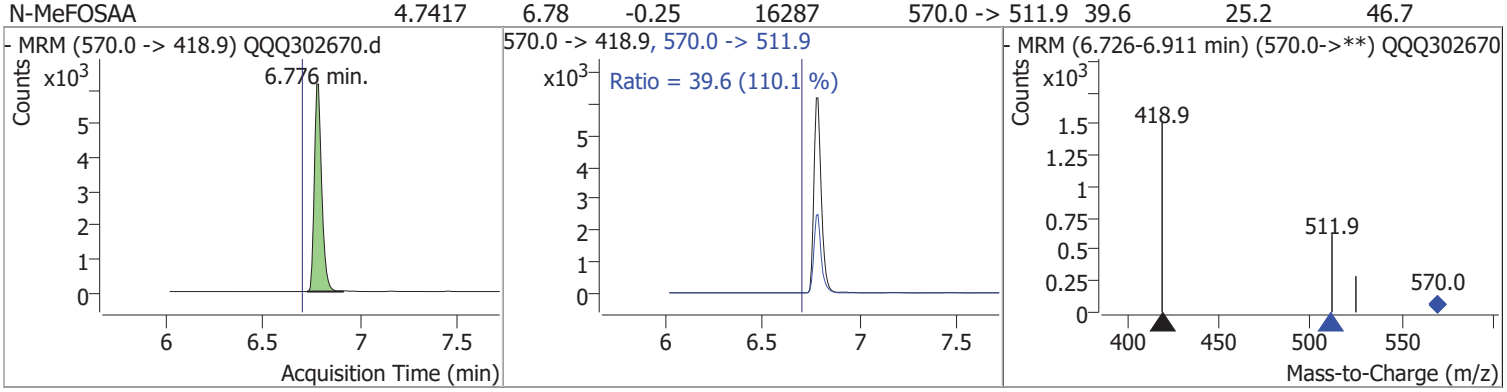
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorodecanoic acid (PFDA)	4.9255	6.66	-0.26	57095	513.0 -> 268.8	14.7	10.6	17.7



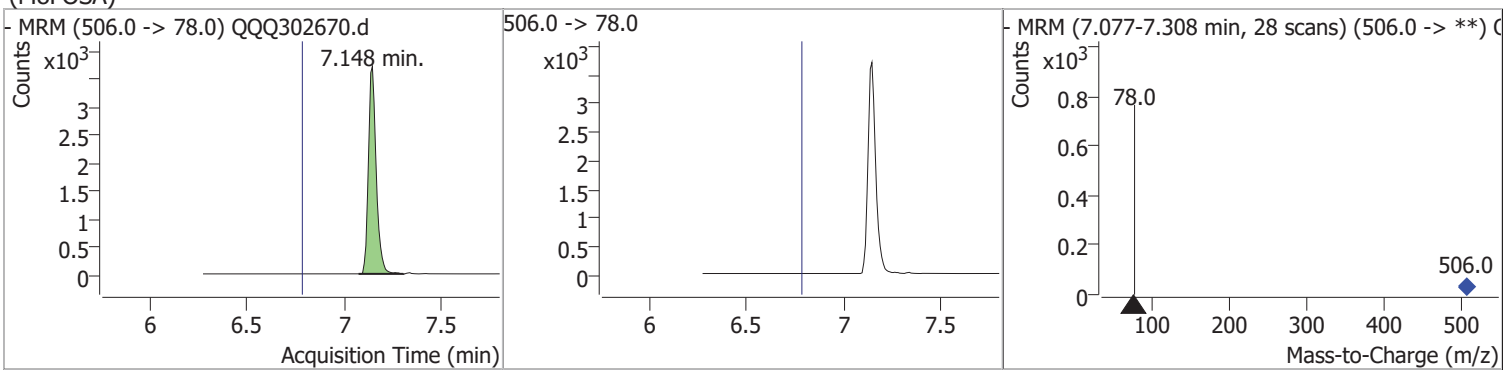
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
d3-N-MeFOSAA	4.5900	6.78	-0.25	7504				



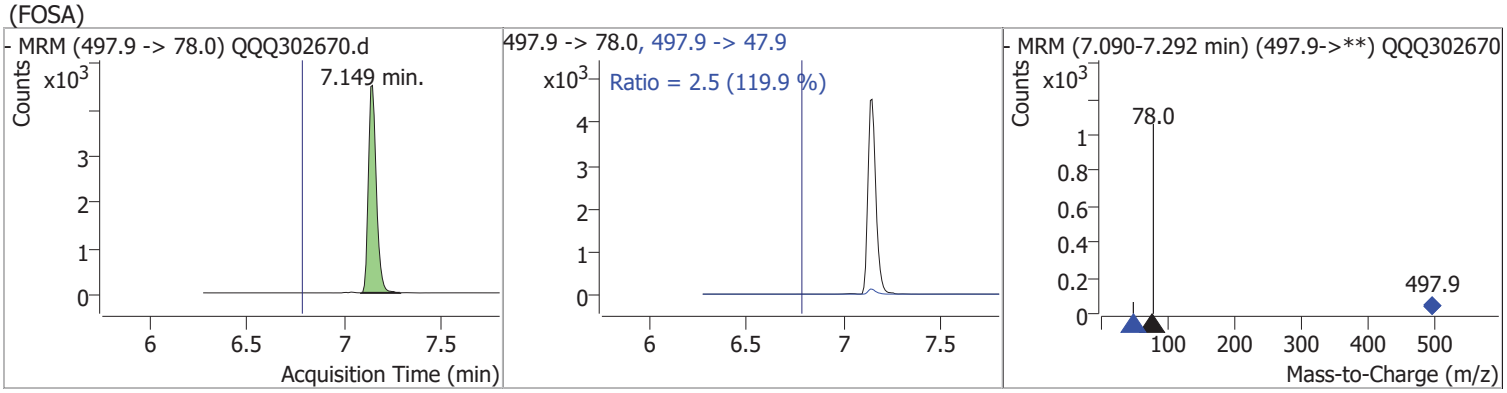
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
N-MeFOSAA	4.7417	6.78	-0.25	16287	570.0 -> 511.9	39.6	25.2	46.7



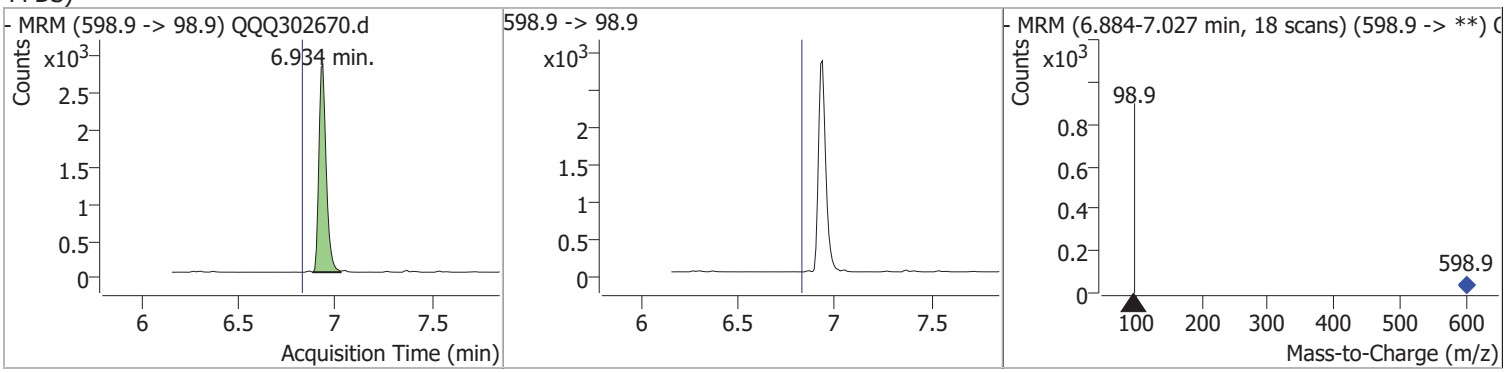
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-1-[13C8]octanesulfonamide (M8FOSA)	4.8217	7.15	0.03	10295				



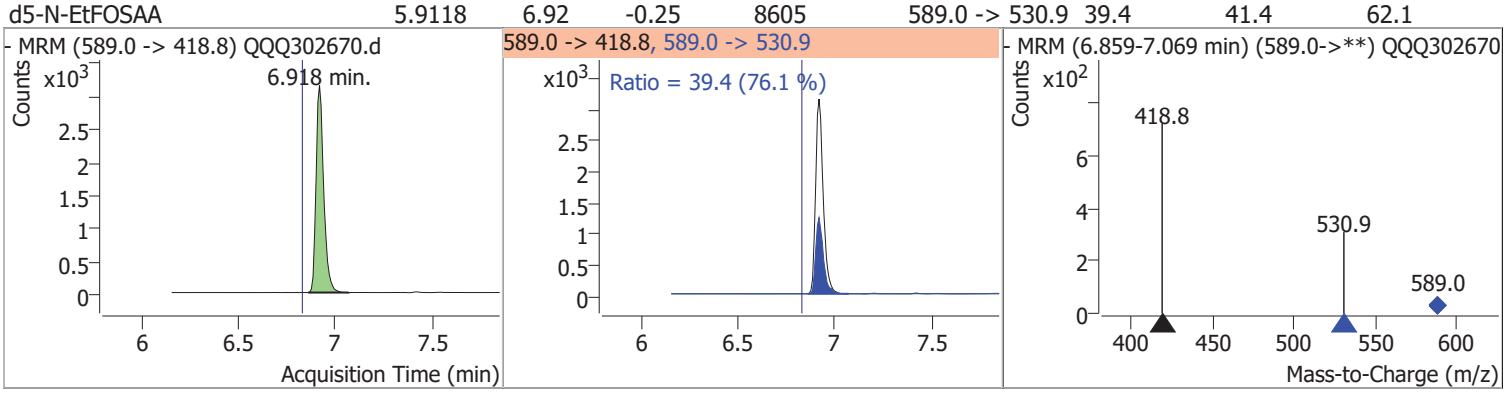
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-1-octanesulfonamide (FOSA)	4.4070	7.15	0.03	12929	497.9 -> 47.9	2.5	1.7	2.5



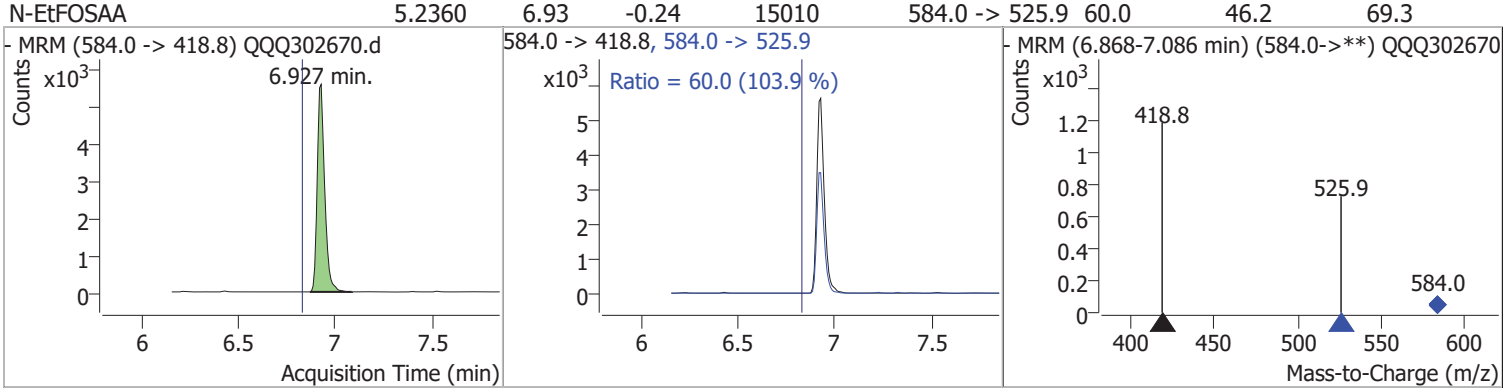
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-1-decanesulfonate (L-PFDS)	4.0233	6.93	-0.23	7428				



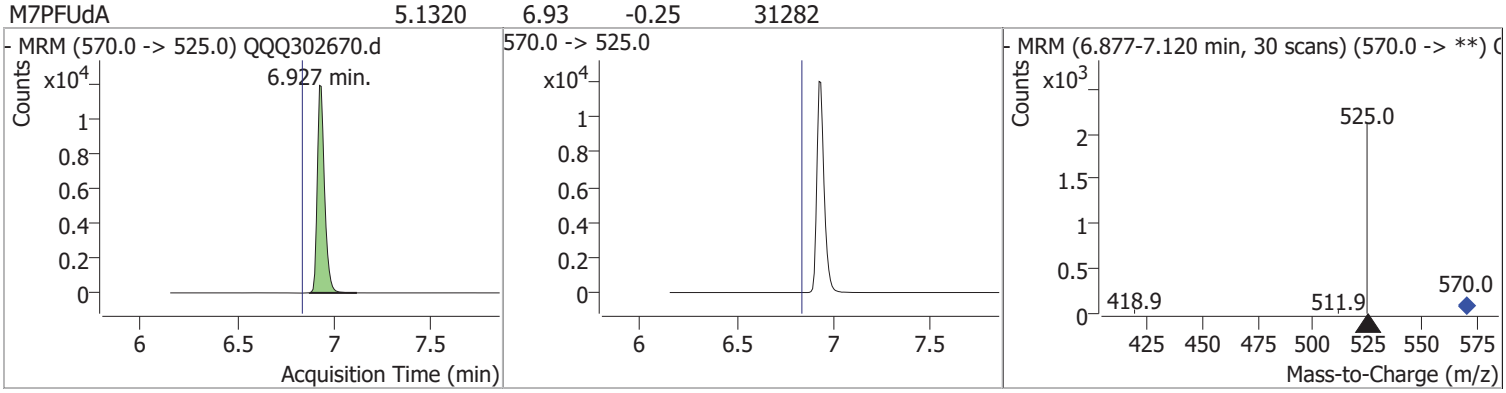
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
d5-N-EtFOSAA	5.9118	6.92	-0.25	8605	589.0 -> 530.9	39.4	41.4	62.1



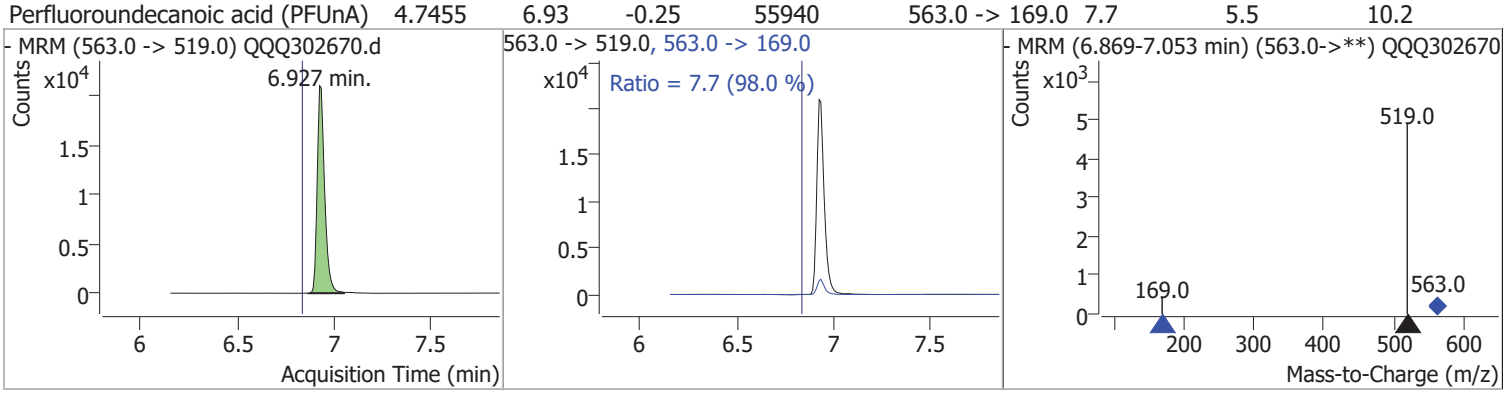
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
N-EtFOSAA	5.2360	6.93	-0.24	15010	584.0 -> 525.9	60.0	46.2	69.3



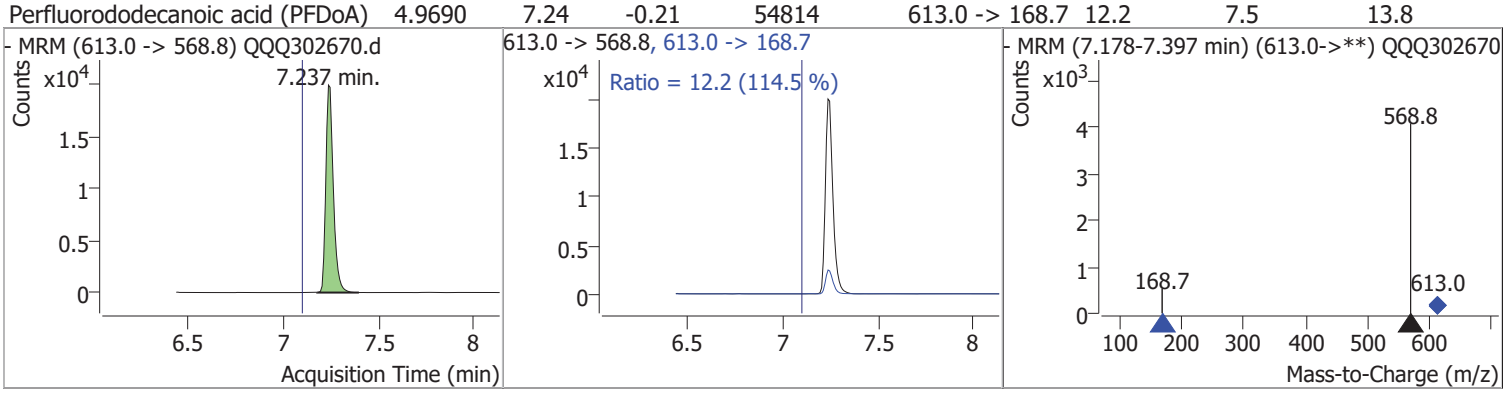
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M7PFUdA	5.1320	6.93	-0.25	31282				



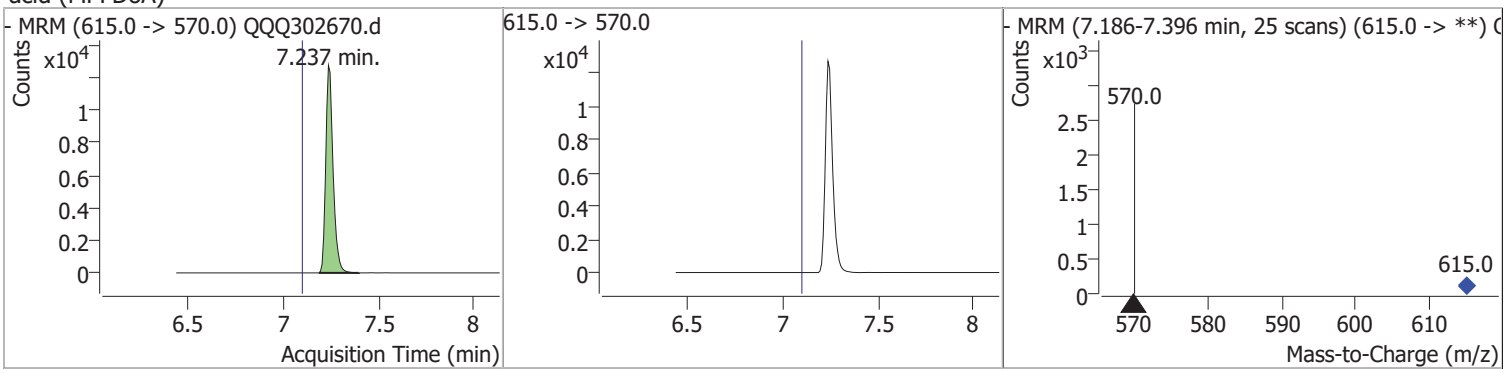
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoroundecanoic acid (PFUnA)	4.7455	6.93	-0.25	55940	563.0 -> 169.0	7.7	5.5	10.2



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorododecanoic acid (PFDoA)	4.9690	7.24	-0.21	54814	613.0 -> 168.7	12.2	7.5	13.8

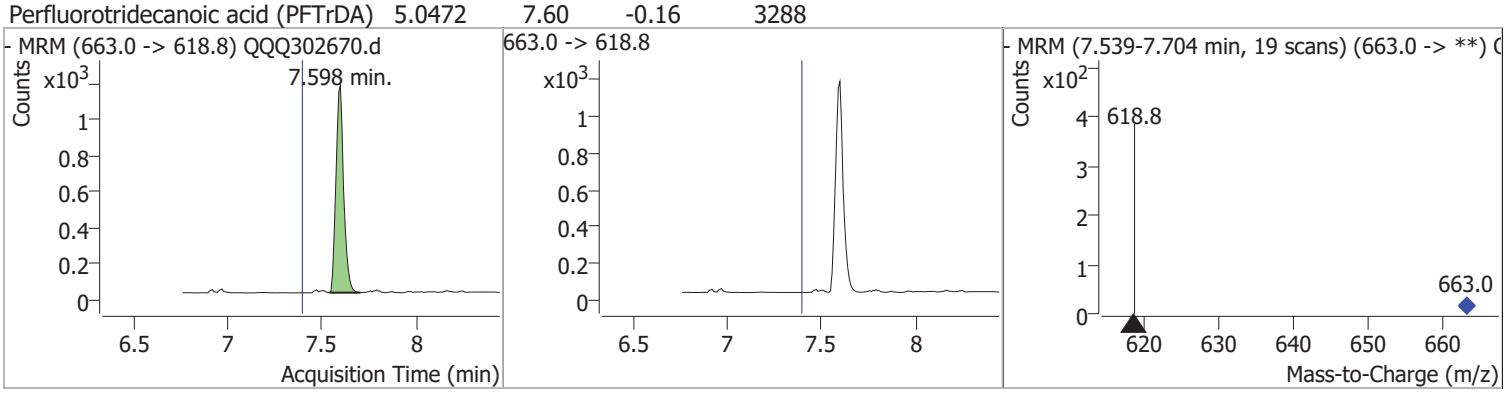


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-n-[1,2-13C2]dodecanoic acid (MPFDoA)	4.7783	7.24	-0.21	33829				

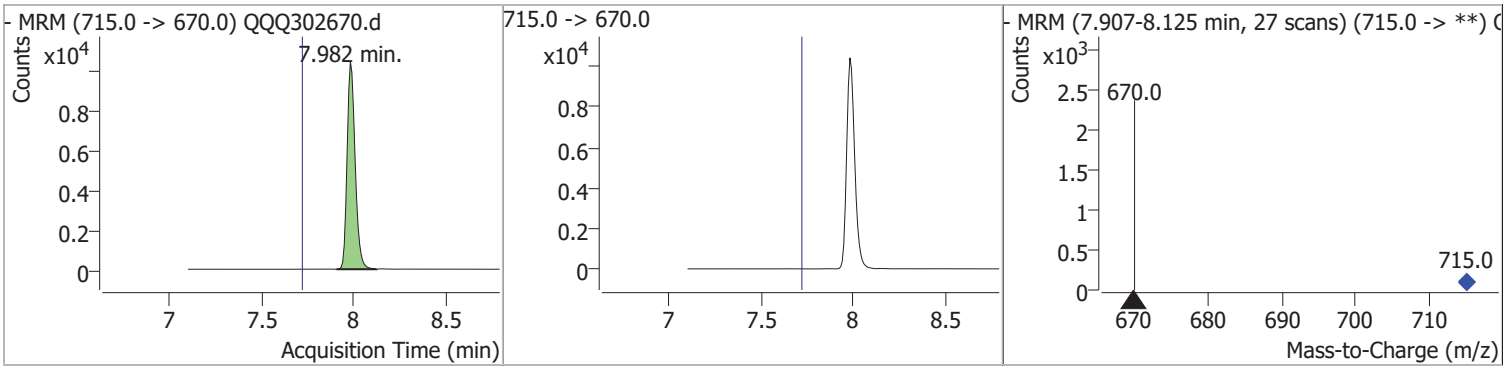


Quantitation Results Report (Not Reviewed)

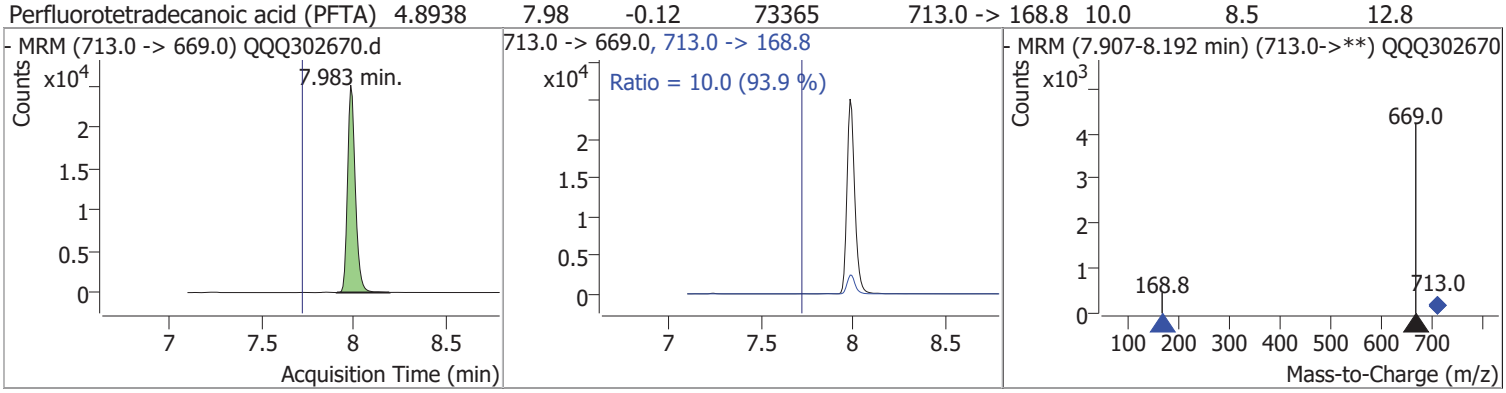
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorotridecanoic acid (PFTrDA)	5.0472	7.60	-0.16	3288				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M2PFTeDA	5.3208	7.98	-0.12	31555				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorotetradecanoic acid (PFTA)	4.8938	7.98	-0.12	73365	713.0 -> 168.8	10.0	8.5	12.8



FORM VII

CONTINUING CALIBRATION CHECK

EPA 537m

Laboratory:	York Analytical Laboratories, Inc.	SDG:	22G0348
Client:	Phoenix Environmental Laboratories, Inc.	Project:	GCL69739
Instrument ID:	QQQ3	Calibration:	YF20026
Lab File ID:	QQQ302678.d	Calibration Date:	06/28/22 15:42
Sequence:	Y2G1435	Injection Date:	07/14/22
Lab Sample ID:	Y2G1435-CCV3	Injection Time:	14:31

		CONC. (ng/mL)		RESPONSE FACTOR			% DIFF / DRIFT	
COMPOUND	TYPE	STD	CCV	ICAL	CCV	MIN (#)	CCV	LIMIT (#)
1H,1H,2H,2H-Perfluorodecanesulfonic acid (8:2 FTS)	A	4.05	4.91	0.1053684	0.1255037		21.1	30
1H,1H,2H,2H-Perfluorooctanesulfonic acid (6:2 FTS)	A	4.38	5.03	7.768364E-02	9.297742E-02		14.8	30
N-EtFOSAA	A	5.00	5.11	0.2171733	0.2060366		2.2	30
N-MeFOSAA	A	5.00	4.78	0.227535	0.2310614		-4.4	30
Perfluoro-1-decanesulfonic acid (PFDS)	A	4.82	4.75	0.1251683	0.1278437		-1.4	30
Perfluoro-1-heptanesulfonic acid (PFHpS)	A	4.98	4.94	0.1174146	0.1095118		-0.9	30
Perfluoro-1-octanesulfonamide (FOSA)	A	5.00	4.62	0.1871459	0.1911891		-7.5	30
Perfluorobutanesulfonic acid (PFBS)	A	4.42	3.67	0.1544403	0.1421746		-17.0	30
Perfluorodecanoic acid (PFDA)	A	5.00	5.04	0.8074561	0.8223189		0.8	30
Perfluorododecanoic acid (PFDoA)	A	5.00	4.90	0.7282308	0.7598824		-2.0	30
Perfluoroheptanoic acid (PFHpA)	A	5.00	4.51	0.7336475	0.7713924		-9.7	30
Perfluorohexanesulfonic acid (PFHxS)	A	4.55	4.37	0.1347399	0.1362092		-4.1	30
Perfluorohexanoic acid (PFHxA)	A	5.00	4.61	0.5690764	0.5930225		-7.9	30
Perfluoro-n-butanoic acid (PFBA)	A	5.00	4.37	0.3382355	0.3475756		-12.6	30
Perfluorononanoic acid (PFNA)	A	4.80	5.08	0.8257117	0.9264151		5.9	30
Perfluorooctanesulfonic acid (PFOS)	A	4.62	5.13	0.1171459	0.1358031		11.1	30
Perfluorooctanoic acid (PFOA)	A	5.00	4.84	0.7797809	0.837074		-3.2	30
Perfluoropentanoic acid (PFPeA)	A	5.00	4.56	0.2734725	0.267195		-8.7	30
Perfluorotetradecanoic acid (PFTA)	A	5.00	4.93	1.023396	1.039064		-1.5	30
Perfluorotridecanoic acid (PFTrDA)	A	5.00	4.84	4.773095E-02	4.419889E-02		-3.2	30
Perfluoroundecanoic acid (PFUnA)	A	5.00	4.80	0.7480439	0.7961574		-4.0	30

Column to be used to flag Response Factor and %Diff/Drift values with an asterisk

* Values outside of QC limits

Quantitation Results Report (Not Reviewed)

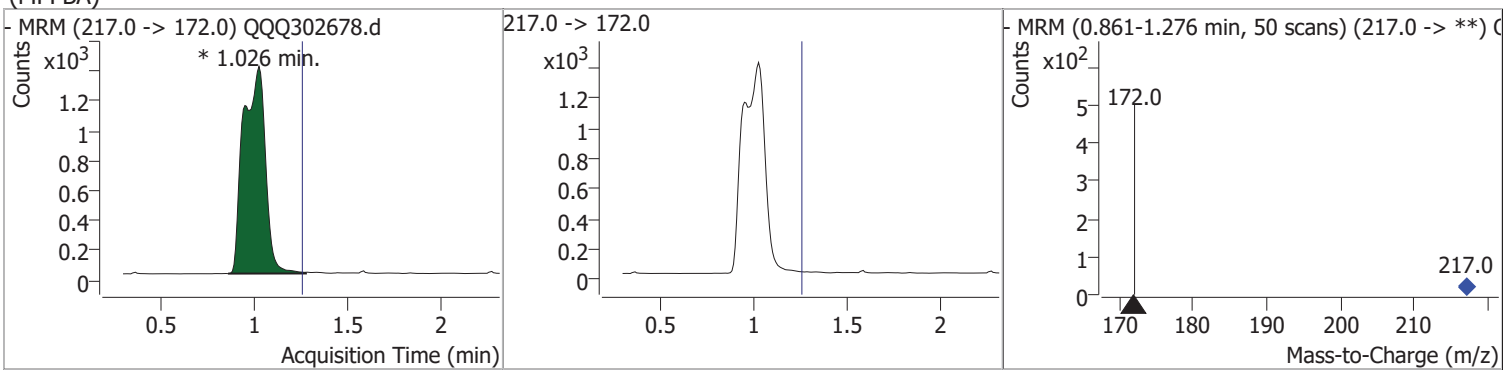
Data File	QQQ302678.d	Operator	
Acq. Method	PFAS 24_IDA ACQ_QQQ3A.m	Acq. Date-Time	7/14/2022 2:31:41 PM
Sample Name	SEQ-CCV3	Instrument	QQQ3
Vial		Multiplier	1.00
DA Method File	PFAS_24_IDA_QUANT_QQQ3_062722.m	Comment	5
Tune File		Tune Date	
Batch Name	2022-07-14-IDA.batch.bin	Last Calib Update	6/27/2022 4:24:30 PM
Ref Library			

Compound	RT	QIon	Resp.	Conc.	Units		Dev(Min)
Internal Standards							
MPFOA	6.140	417.0 -> 372.0	141549	10.0000	ng/ml		-0.290
System Monitoring Compounds							
Perfluoro-n-[13C4]butanoic acid (MPFBA)	1.026	217.0 -> 172.0	11401	4.5082	ng/ml	m	-0.283
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 45.08%			
Perfluoro-n-[13C54]pentanoic acid (M5PFPeA)	4.036	268.0 -> 223.0	9682	4.6130	ng/ml		-0.551
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 46.13%			
M3PFBS	4.672	302.0 -> 79.9	3987	3.6813	ng/ml		-0.491
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 36.81%			
M2-4-2FTS	5.267	329.0 -> 309.0	3131	4.3383	ng/ml	#	-0.424
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 43.38%			
M5PFHxA	5.310	318.0 -> 273.0	19495	4.7412	ng/ml		-0.414
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 47.41%			
M4PFHpA	5.805	367.0 -> 322.0	11036	5.1533	ng/ml		-0.339
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 51.53%			
M3PFHxS	5.854	402.0 -> 80.0	3988	4.3642	ng/ml	#	-0.323
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 43.64%			
M2-6-2FTS	6.122	429.0 -> 409.0	3449	5.1122	ng/ml	#	-0.298
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 51.12%			
Perfluoro-n-[13C8]octanoic acid (M8PFOA)	6.140	421.0 -> 376.0	18838	5.3289	ng/ml		-0.290
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 53.29%			
Perfluoro-n-[13C9]nonanoic acid (M9PFNA)	6.417	472.0 -> 427.0	20372	4.8530	ng/ml	#	-0.263
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 48.53%			
Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)	6.424	507.0 -> 80.0	4677	4.9907	ng/ml		-0.264
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 49.91%			
M2-8-2FTS	6.675	529.0 -> 509.0	3832	6.3717	ng/ml	#	-0.243
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 63.72%			
M6PFDA	6.676	519.0 -> 473.9	23449	5.0480	ng/ml		-0.246
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 50.48%			
d3-N-MeFOSAA	6.801	573.0 -> 418.8	6031	3.7118	ng/ml		-0.229
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 37.12%			
Perfluoro-1-[13C8]octanesulfonamide (M8FOSA)	7.174	506.0 -> 78.0	10944	5.1388	ng/ml		0.055
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 51.39%			
d5-N-EtFOSAA	6.943	589.0 -> 418.8	6574	4.5569	ng/ml		-0.221
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 45.57%			
M7PFUdA	6.961	570.0 -> 525.0	30811	5.0781	ng/ml		-0.212
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 50.78%			
Perfluoro-n-[1,2-13C2]dodecanoic acid (MPFDoA)	7.270	615.0 -> 570.0	34860	4.9436	ng/ml		-0.178
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 49.44%			
M2PFTeDA	8.041	715.0 -> 670.0	32395	5.4833	ng/ml		-0.060
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 54.83%			
Target Compounds							**QValue**

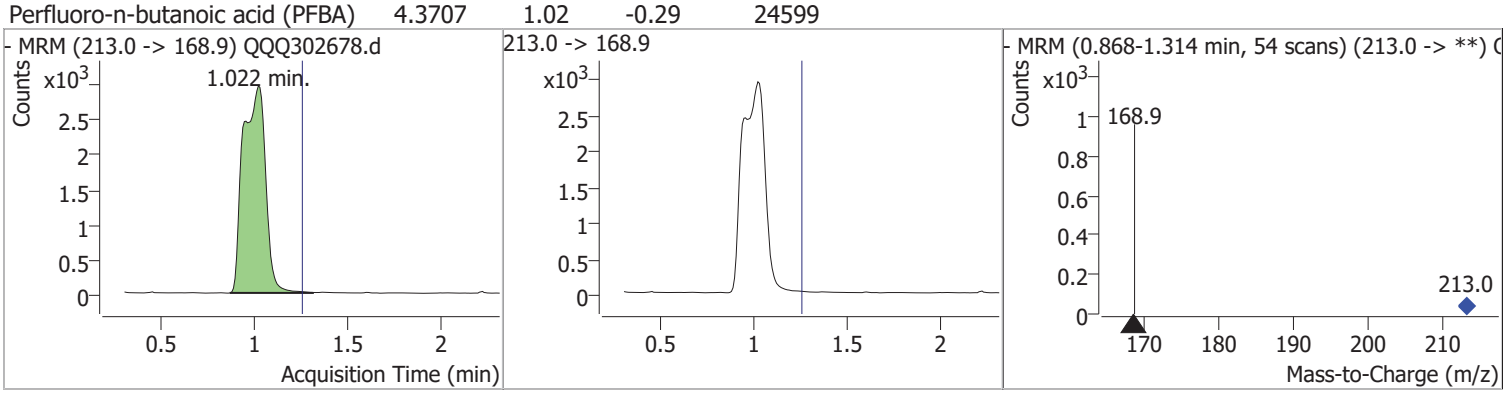
Compound	RT	QIon	Resp.	Conc.	Units		Dev(Min)
Perfluoro-n-butanoic acid (PFBA)	1.022	213.0 -> 168.9	24599	4.3707	ng/ml		100
Perfluoro-n-pentanoic acid (PFPeA)	4.041	263.0 -> 219.0	18911	4.5643	ng/ml		100
Perfluorobutanesulfonic acid (PFBS)	4.675	298.9 -> 79.9	8895	3.6703	ng/ml		97
1H,1H,2H,2H-perfluoro-1-hexanesulfonate (4 2FTS)	5.267	327.0 -> 307.0	6584	4.7462	ng/ml		99
Perfluorohexanoic acid (PFHxA)	5.311	313.0 -> 268.9	41971	4.6053	ng/ml		99
Perfluoro-1-pentanesulfonate (L-PFPeS)	5.435	348.9 -> 79.9	8328	4.1554	ng/ml		98
Perfluoroheptanoic acid (PFHpA)	5.805	363.0 -> 318.8	54595	4.5137	ng/ml		100
Perfluorohexanesulfonic acid (PFHxS)	5.855	398.9 -> 79.9	8773	4.3653	ng/ml	m	88
1H,1H,2H,2H-perfluoro-1-octanesulfonate (6 2FTS)	6.123	427.0 -> 407.0	5764	5.0277	ng/ml		95
Perfluorooctanoic acid (PFOA)	6.140	413.0 -> 368.8	59243	4.8378	ng/ml		96
Perfluoro-1-heptanesulfonate (L-PFHpS)	6.157	448.9 -> 80.0	7720	4.9362	ng/ml		90
Perfluorononanoic acid (PFNA)	6.417	463.0 -> 418.8	62944	5.0824	ng/ml		95
Perfluorooctanesulfonic acid (PFOS)	6.425	498.9 -> 79.9	8881	5.1349	ng/ml	m	92
1H,1H,2H,2H-perfluoro-1-decanesulfonate (8 2FTS)	6.667	527.0 -> 507.0	7195	4.9055	ng/ml	#	80
Perfluorononanesulfonate (L-PFNS)	6.684	548.9 -> 79.9	7253	4.3722	ng/ml		87
Perfluorodecanoic acid (PFDA)	6.676	513.0 -> 468.8	58199	5.0400	ng/ml		98
N-MeFOSAA	6.801	570.0 -> 418.9	16353	4.7821	ng/ml		95
Perfluoro-1-octanesulfonamide (FOSA)	7.174	497.9 -> 78.0	13531	4.6240	ng/ml		100
Perfluoro-1-decanesulfonate (L-PFDS)	6.960	598.9 -> 98.9	8722	4.7509	ng/ml		100
N-EtFOSAA	6.952	584.0 -> 418.8	14582	5.1123	ng/ml		89
Perfluoroundecanoic acid (PFUnA)	6.961	563.0 -> 519.0	56348	4.8019	ng/ml		100
Perfluorododecanoic acid (PFDoA)	7.271	613.0 -> 568.8	53780	4.9020	ng/ml		98
Perfluorotridecanoic acid (PFTrDA)	7.640	663.0 -> 618.8	3128	4.8405	ng/ml		100
Perfluorotetradecanoic acid (PFTA)	8.041	713.0 -> 669.0	73539	4.9264	ng/ml		98

(#) = Qualifier Out of Range; (m) = Manual Integration; (+) = Area Summed; (*) = Surrogate Percent Recovery Out of Range; (d): Zeroed Peak

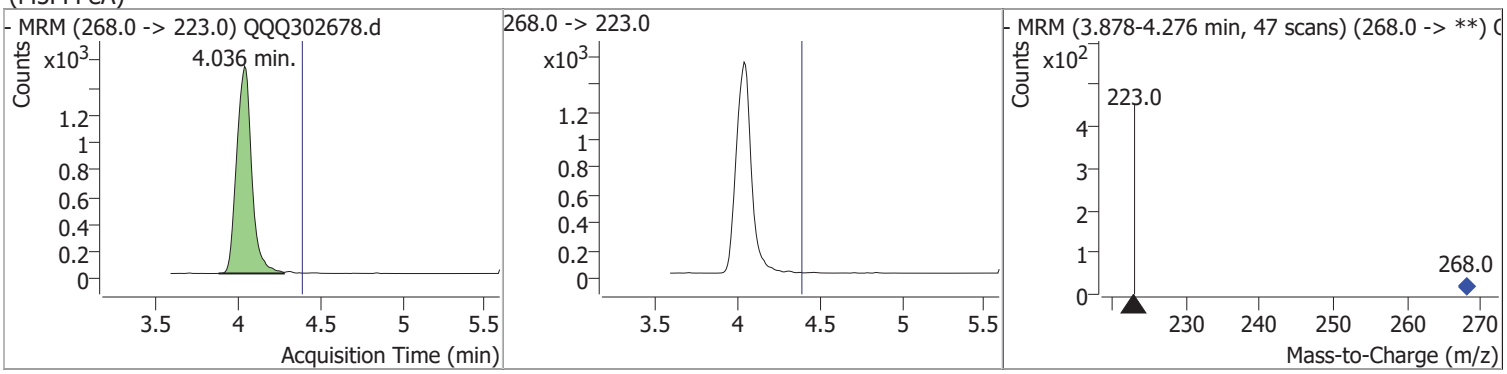
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-n-[13C4]butanoic acid (MPFBA)	4.5082	1.03	-0.28	11401 (m)				



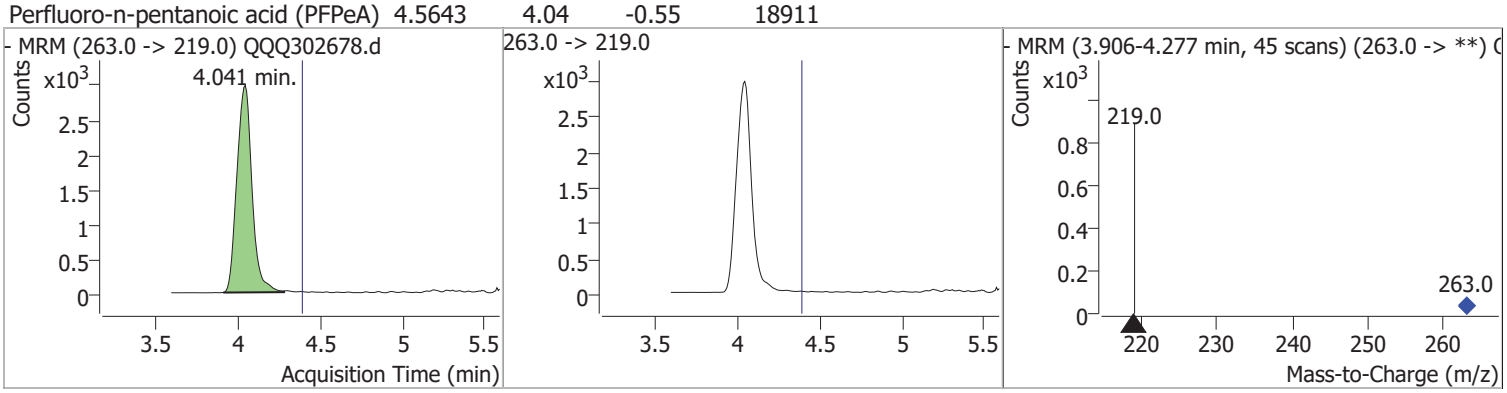
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-n-butanoic acid (PFBA)	4.3707	1.02	-0.29	24599				



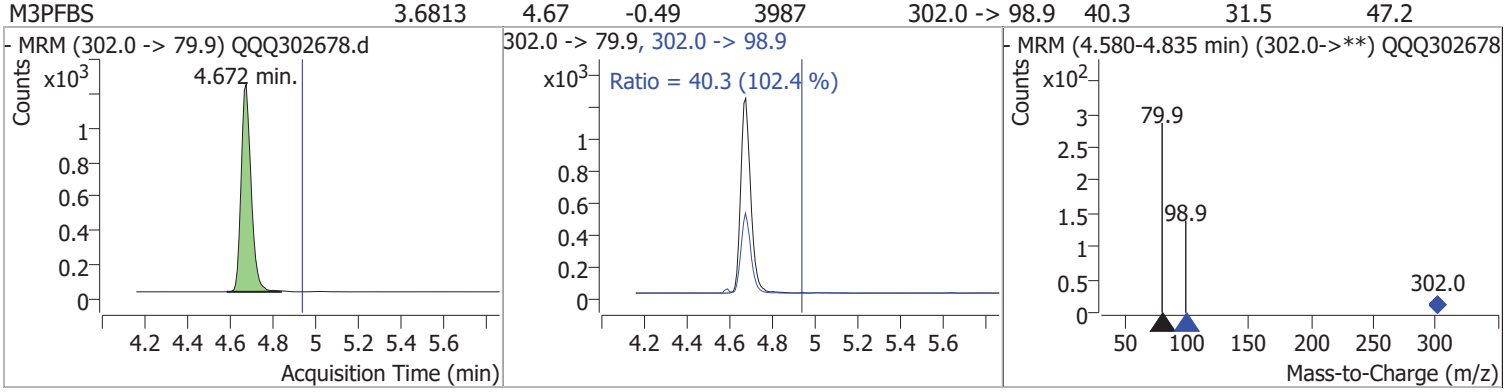
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-n-[13C54]pentanoic acid (M5PFPeA)	4.6130	4.04	-0.55	9682				



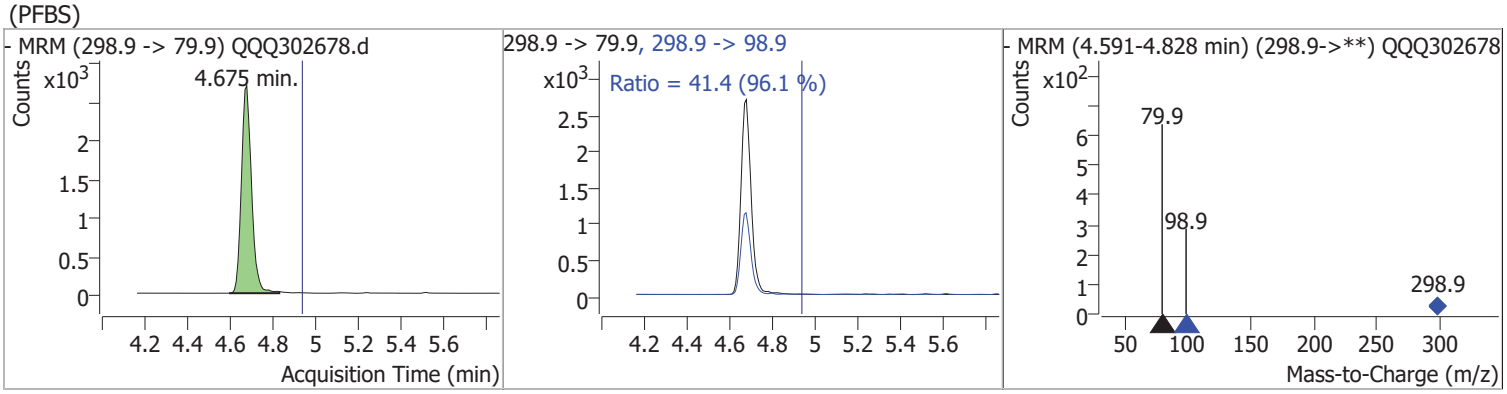
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-n-pentanoic acid (PFPeA)	4.5643	4.04	-0.55	18911				



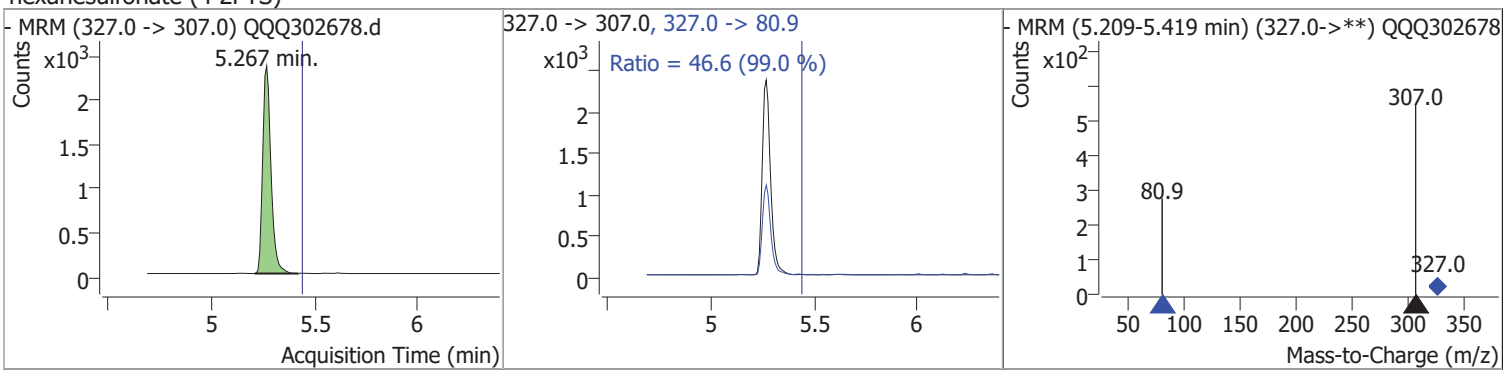
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M3PFBS	3.6813	4.67	-0.49	3987	302.0 -> 98.9	40.3	31.5	47.2



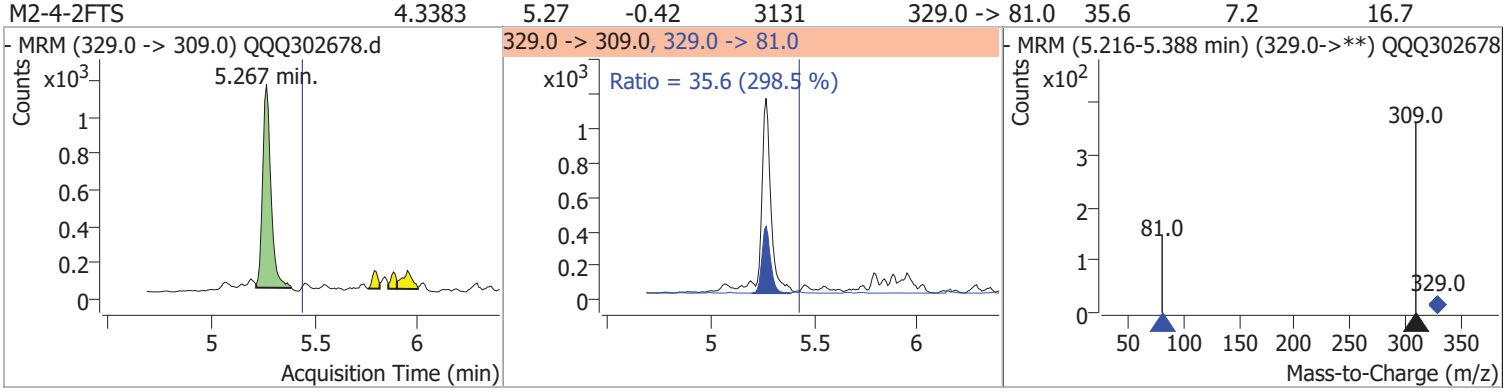
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorobutanesulfonic acid (PFBS)	3.6703	4.67	-0.49	8895	298.9 -> 98.9	41.4	34.5	51.7



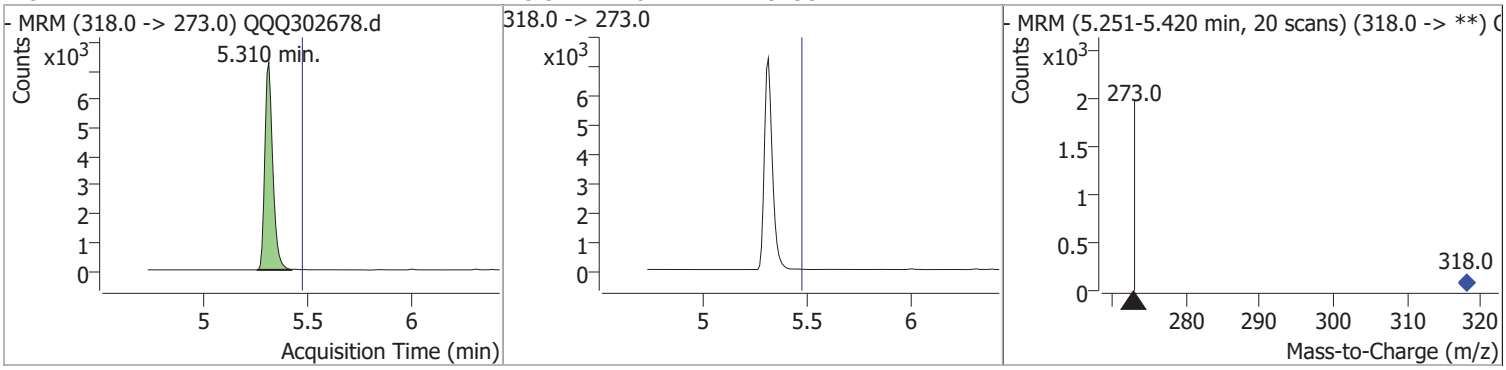
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
1H,1H,2H,2H-perfluoro-1-hexanesulfonate (4 2FTS)	4.7462	5.27	-0.42	6584	327.0 -> 80.9	46.6	28.2	65.9



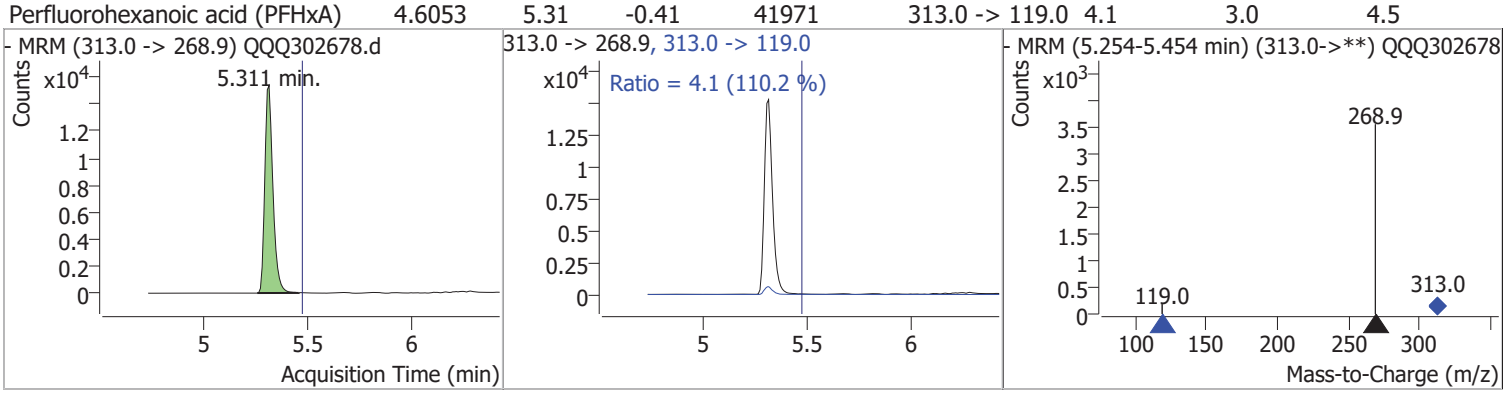
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M2-4-2FTS	4.3383	5.27	-0.42	3131	329.0 -> 81.0	35.6	7.2	16.7



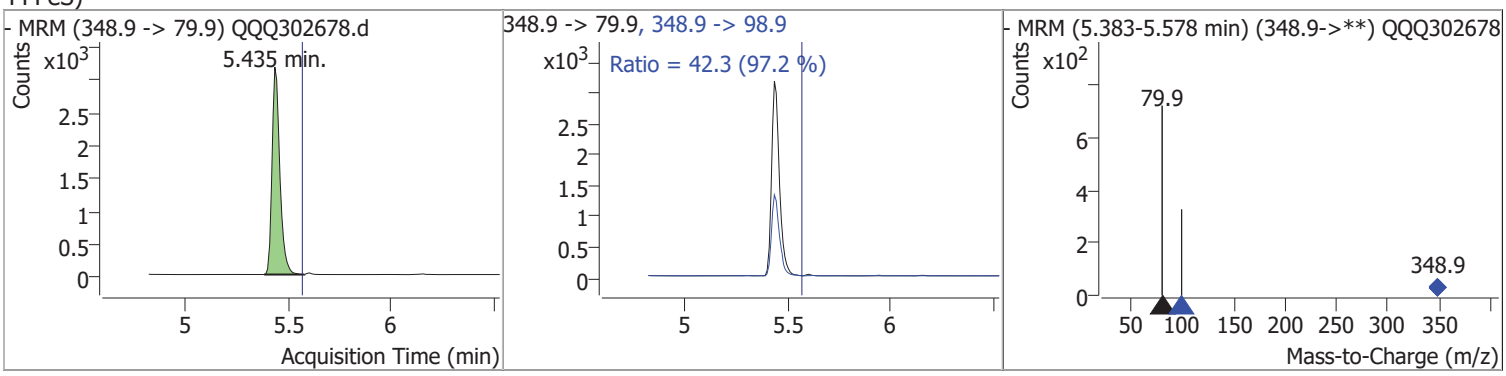
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M5PFHxA	4.7412	5.31	-0.41	19495				



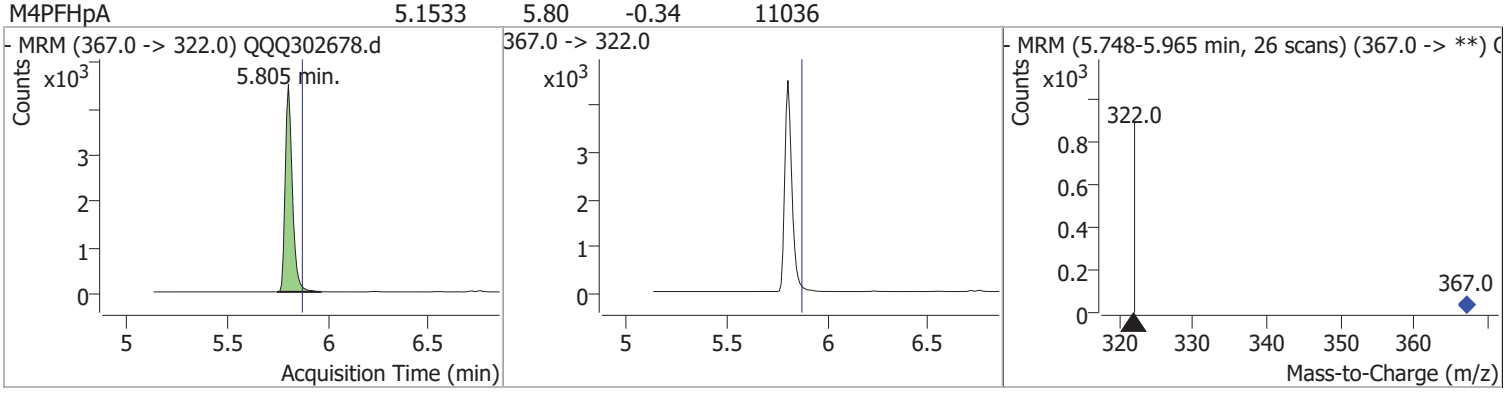
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorohexanoic acid (PFHxA)	4.6053	5.31	-0.41	41971	313.0 -> 119.0	4.1	3.0	4.5



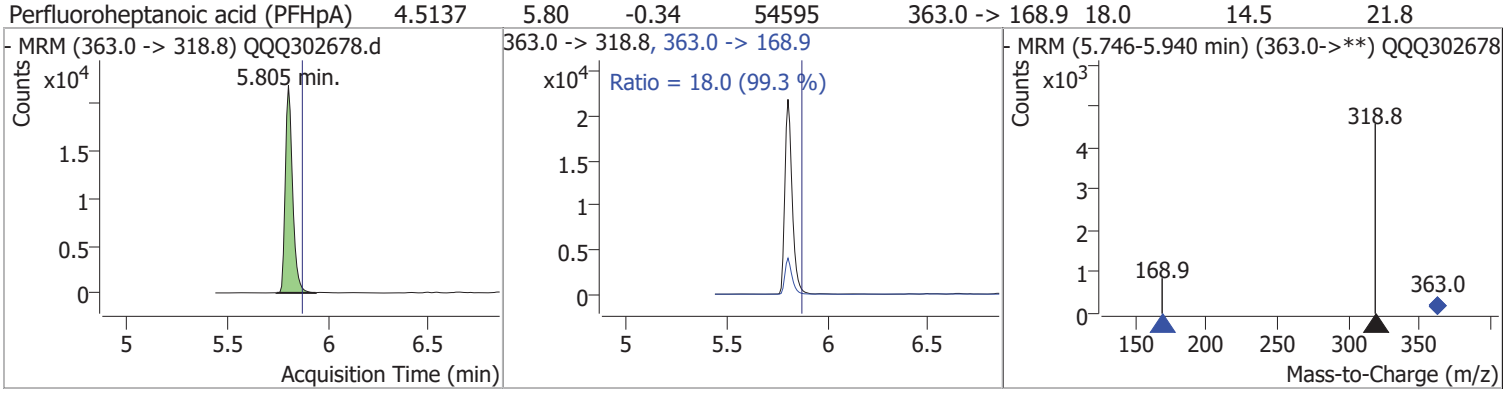
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-1-pentanesulfonate (L-PFPeS)	4.1554	5.44	-0.39	8328	348.9 -> 98.9	42.3	34.8	52.2



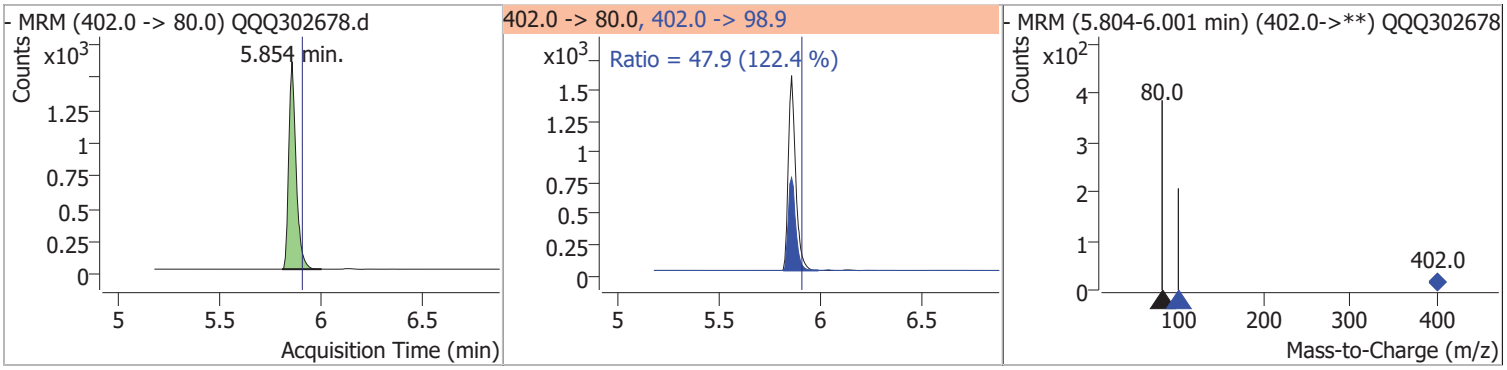
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M4PFHpA	5.1533	5.80	-0.34	11036				



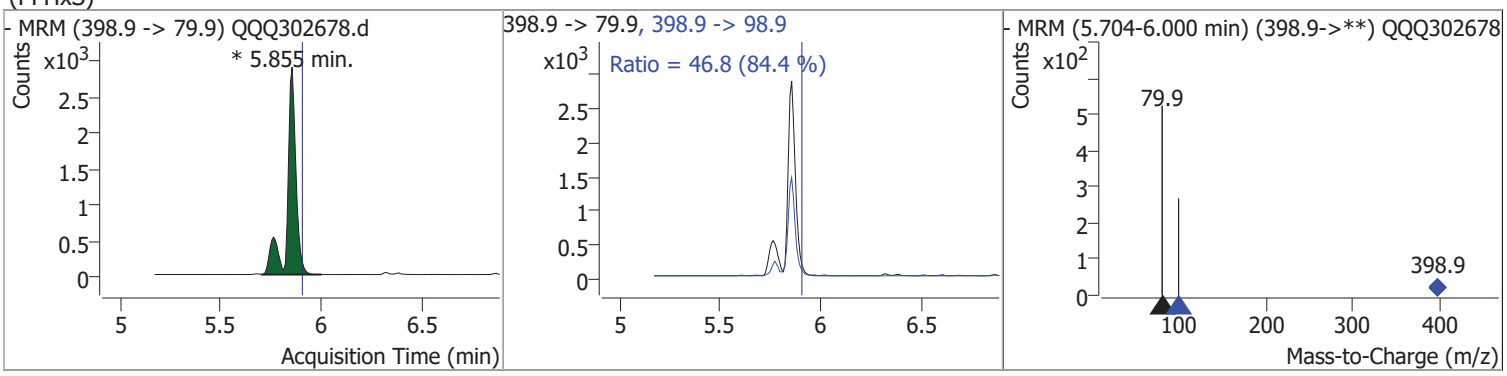
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoroheptanoic acid (PFHpA)	4.5137	5.80	-0.34	54595	363.0 -> 168.9	18.0	14.5	21.8



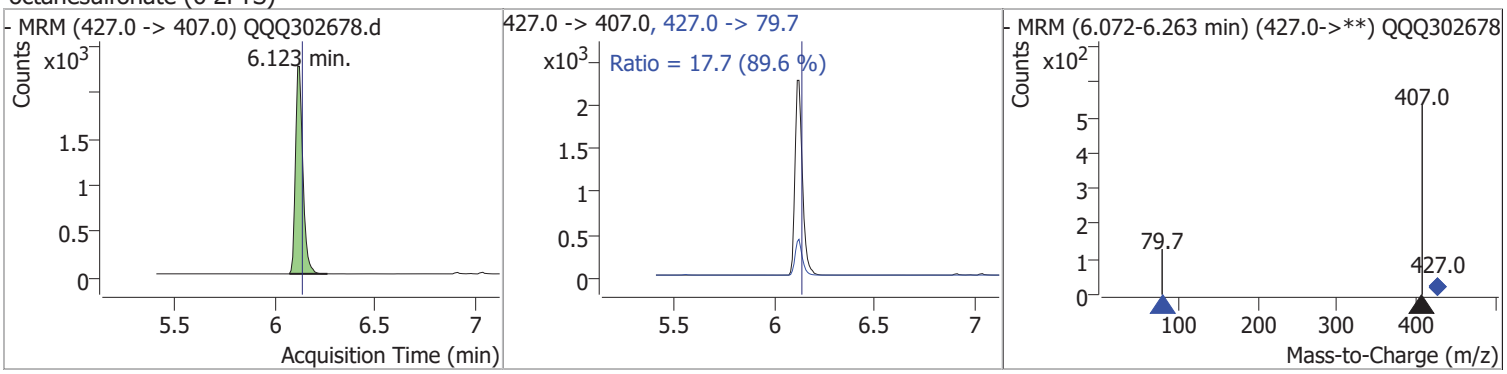
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M3PFHxS	4.3642	5.85	-0.32	3988	402.0 -> 98.9	47.9	31.3	47.0



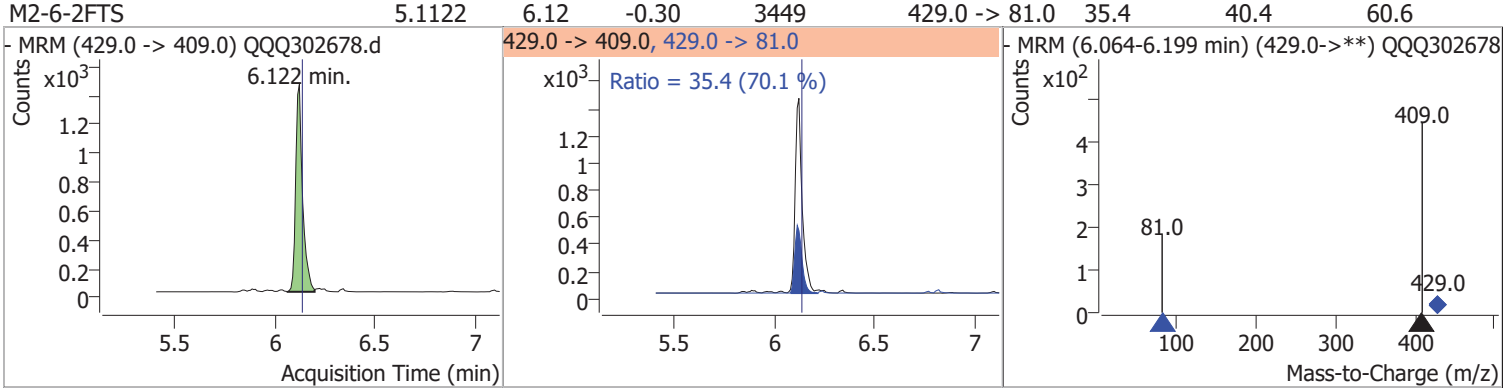
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorohexanesulfonic acid (PFHxS)	4.3653	5.85	-0.32	8773 (m)	398.9 -> 98.9	46.8	44.4	66.5



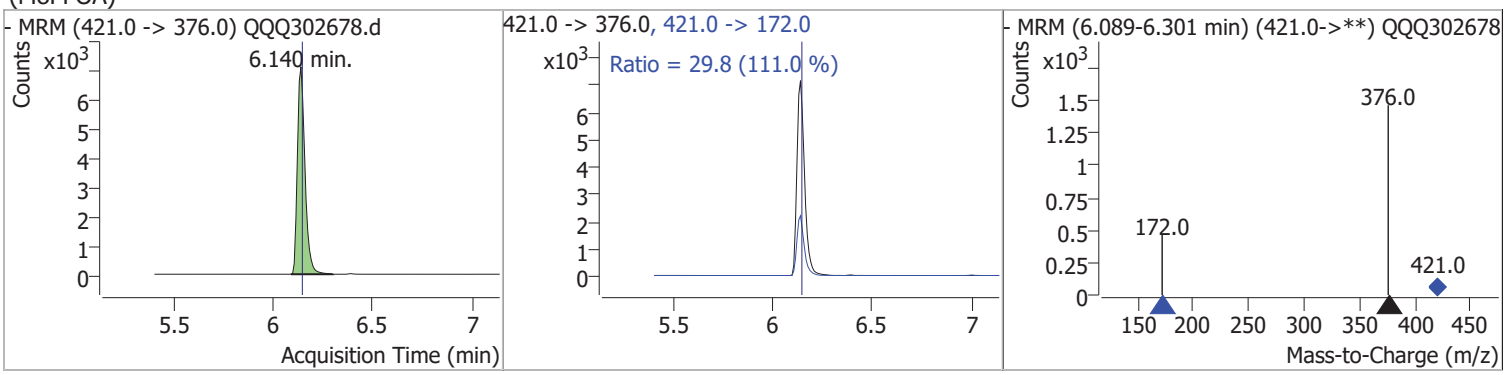
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
1H,1H,2H,2H-perfluoro-1-octanesulfonate (6 2FTS)	5.0277	6.12	-0.30	5764	427.0 -> 79.7	17.7	15.8	23.7



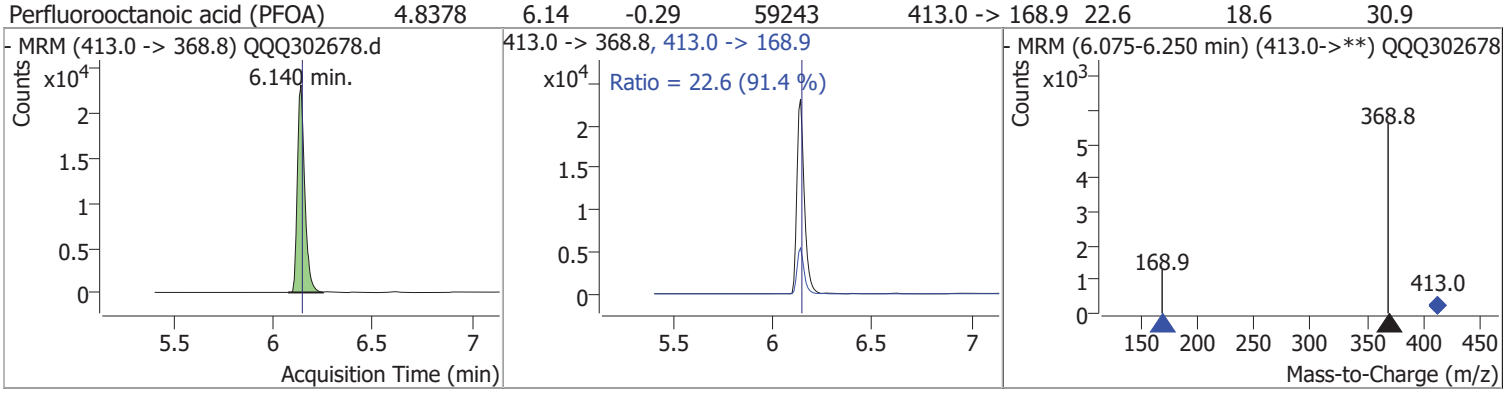
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M2-6-2FTS	5.1122	6.12	-0.30	3449	429.0 -> 81.0	35.4	40.4	60.6



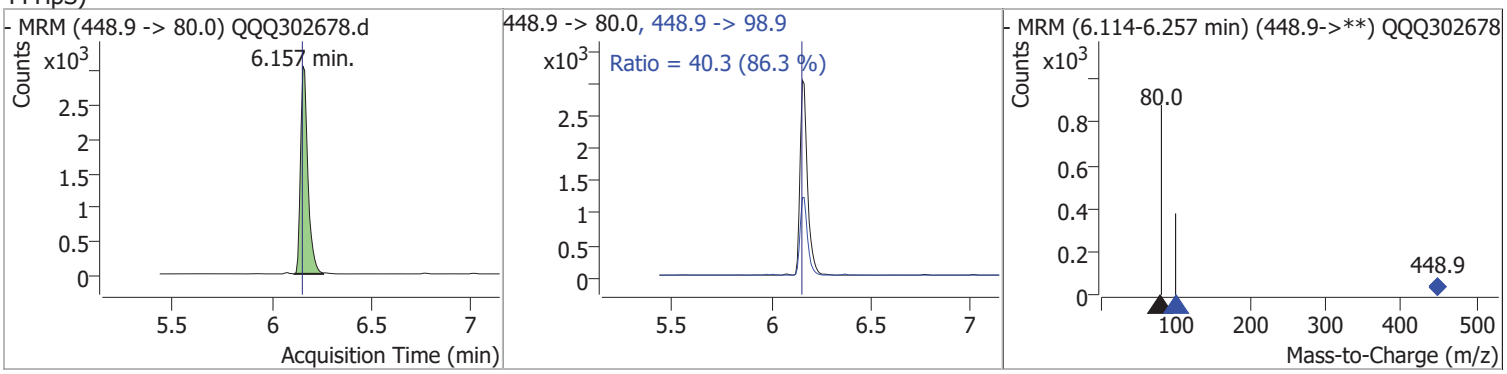
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-n-[13C8]octanoic acid (M8PFOA)	5.3289	6.14	-0.29	18838	421.0 -> 172.0	29.8	21.5	32.2



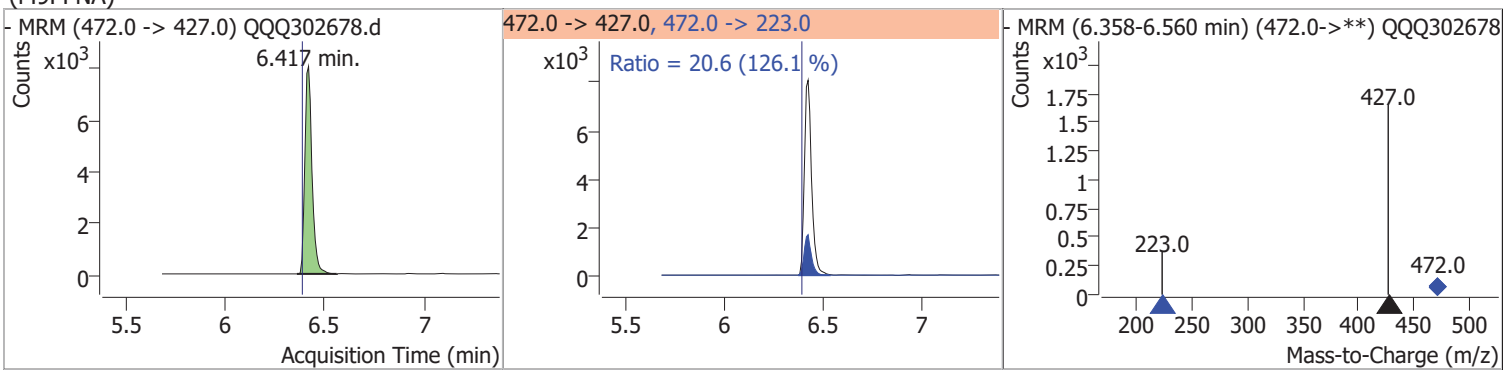
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorooctanoic acid (PFOA)	4.8378	6.14	-0.29	59243	413.0 -> 168.9	22.6	18.6	30.9



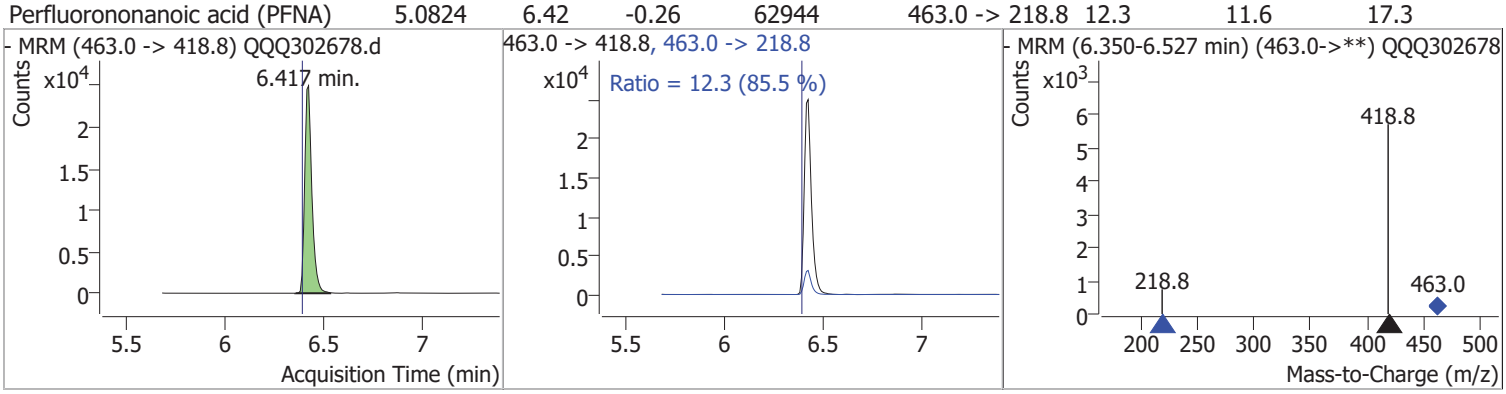
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-1-heptanesulfonate (L-PFHpS)	4.9362	6.16	-0.28	7720	448.9 -> 98.9	40.3	37.3	56.0



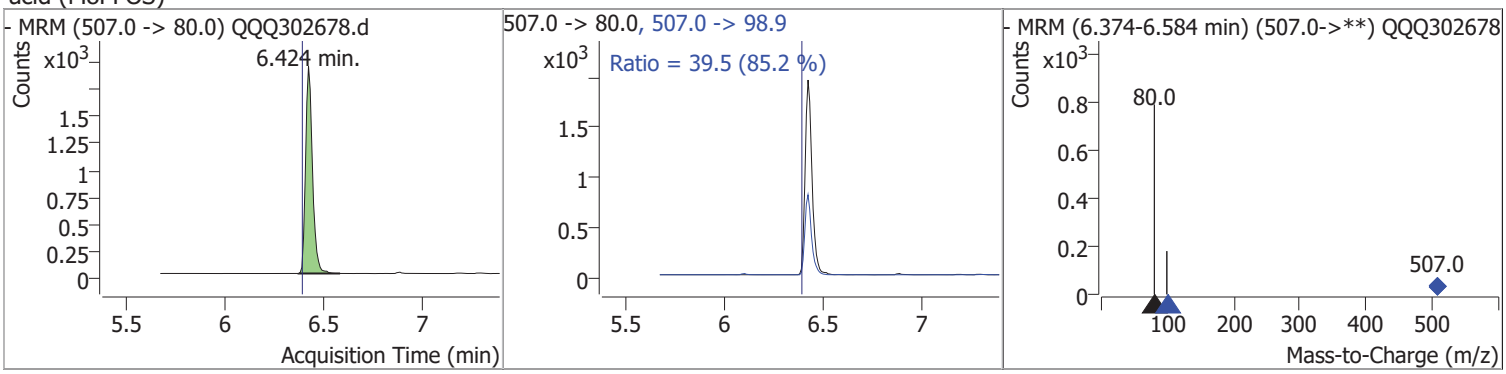
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-n-[13C9]nonanoic acid (M9PFNA)	4.8530	6.42	-0.26	20372	472.0 -> 223.0	20.6	13.1	19.6



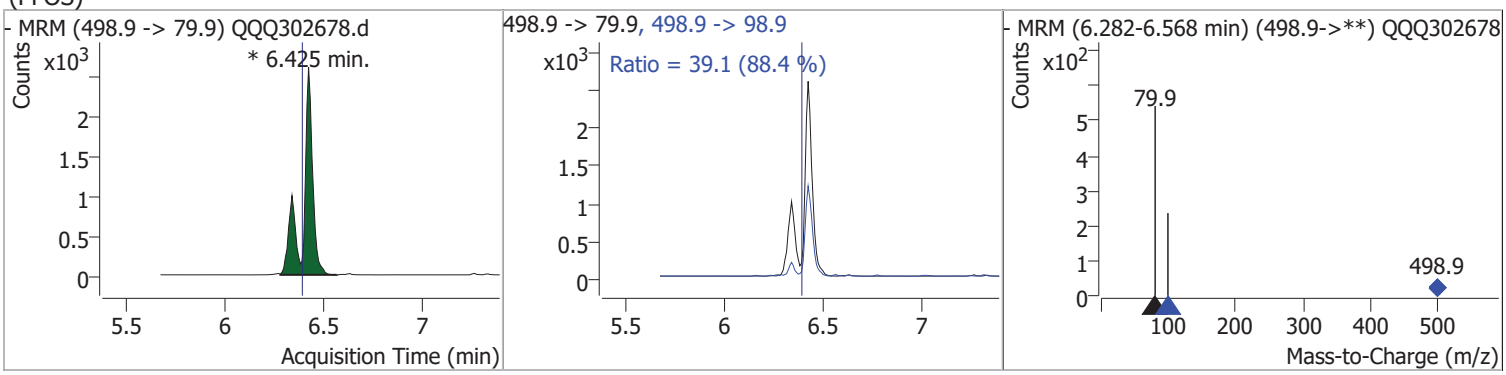
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorononanoic acid (PFNA)	5.0824	6.42	-0.26	62944	463.0 -> 218.8	12.3	11.6	17.3



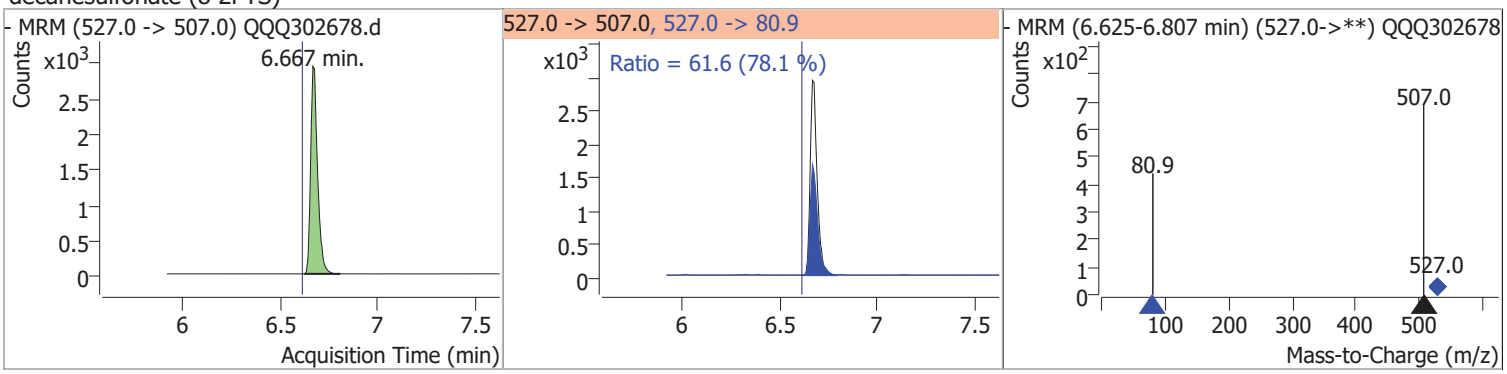
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)	4.9907	6.42	-0.26	4677	507.0 -> 98.9	39.5	37.1	55.6



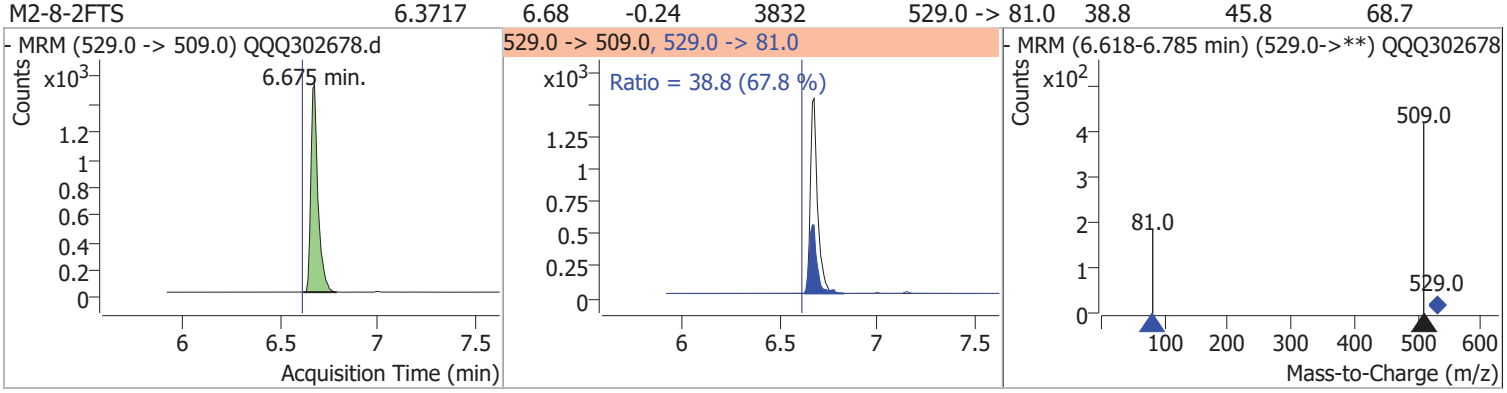
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorooctanesulfonic acid (PFOS)	5.1349	6.43	-0.26	8881 (m)	498.9 -> 98.9	39.1	35.4	53.0



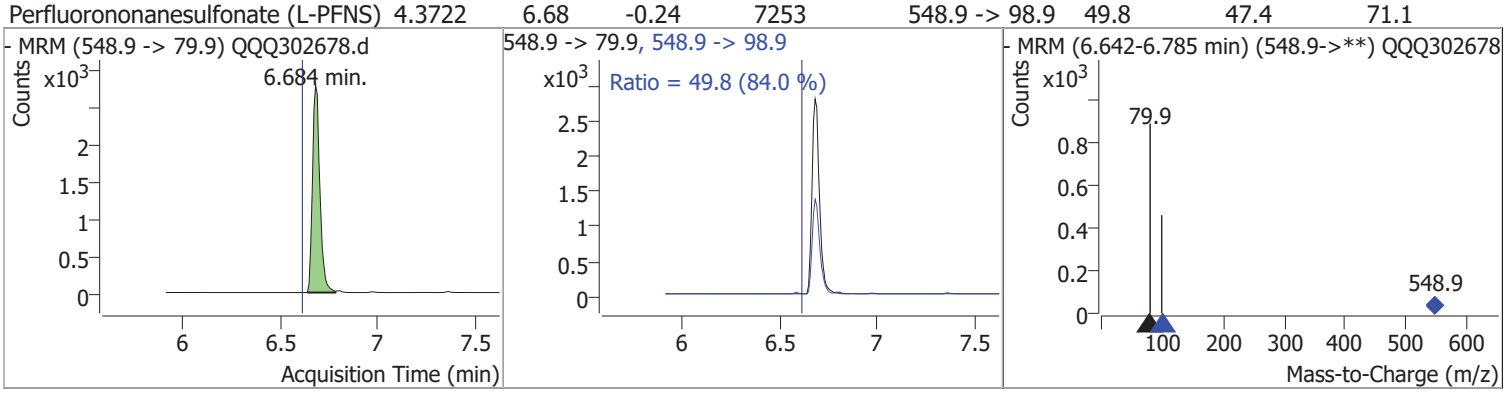
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
1H,1H,2H,2H-perfluoro-1-decanesulfonate (8 2FTS)	4.9055	6.67	-0.25	7195	527.0 -> 80.9	61.6	63.1	94.6



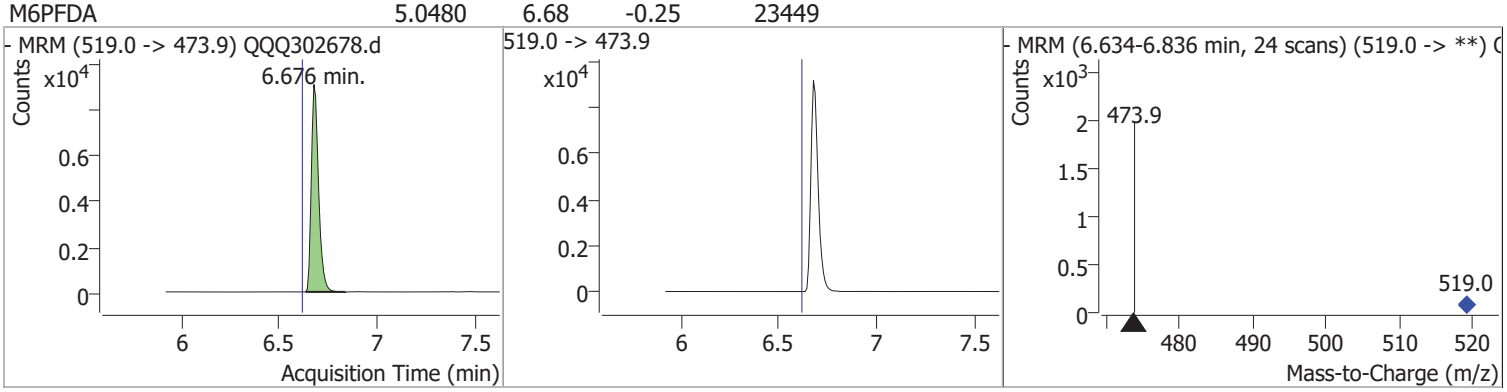
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M2-8-2FTS	6.3717	6.68	-0.24	3832	529.0 -> 81.0	38.8	45.8	68.7



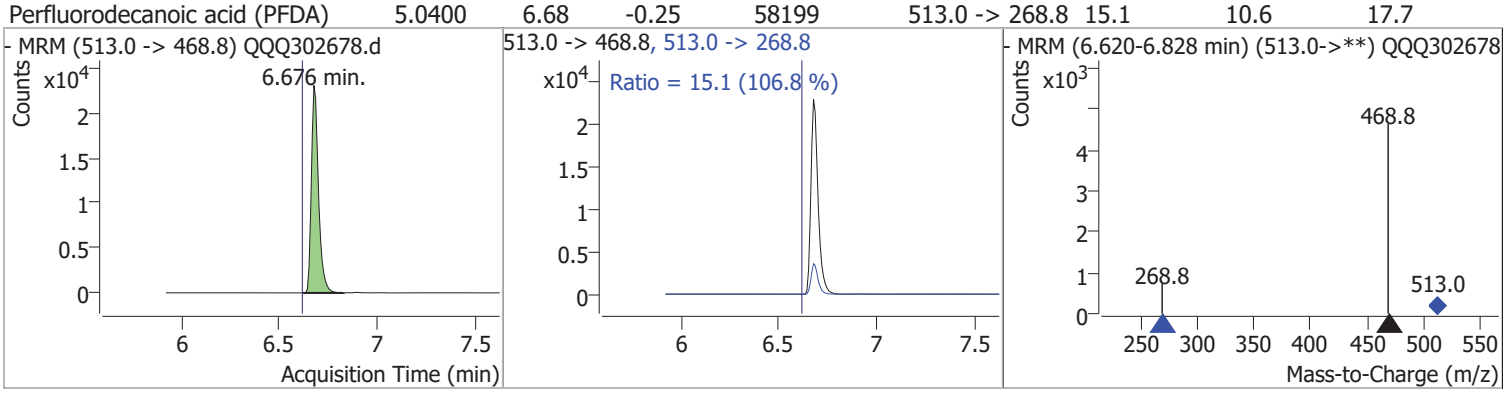
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorononanesulfonate (L-PFNS)	4.3722	6.68	-0.24	7253	548.9 -> 98.9	49.8	47.4	71.1



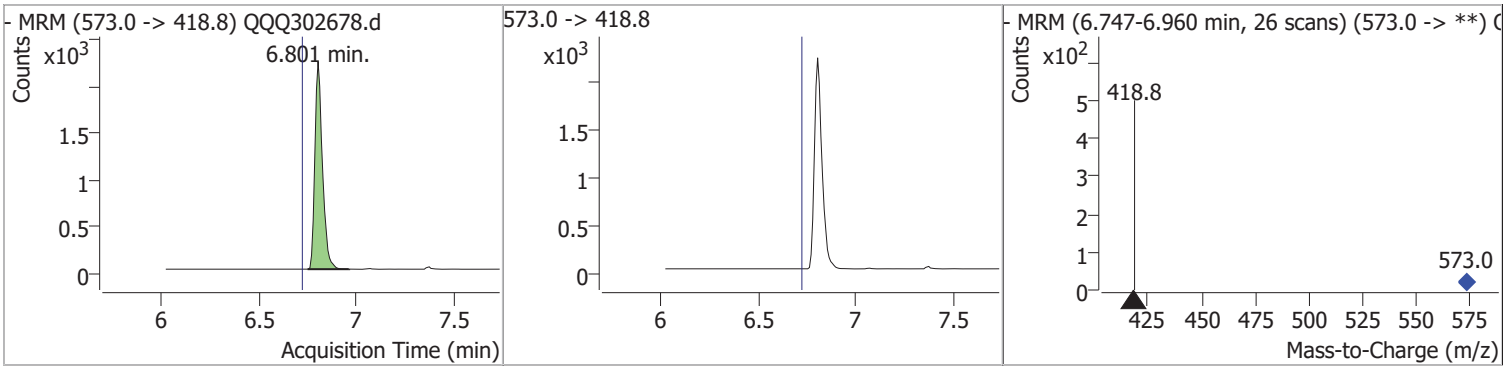
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M6PFDA	5.0480	6.68	-0.25	23449				



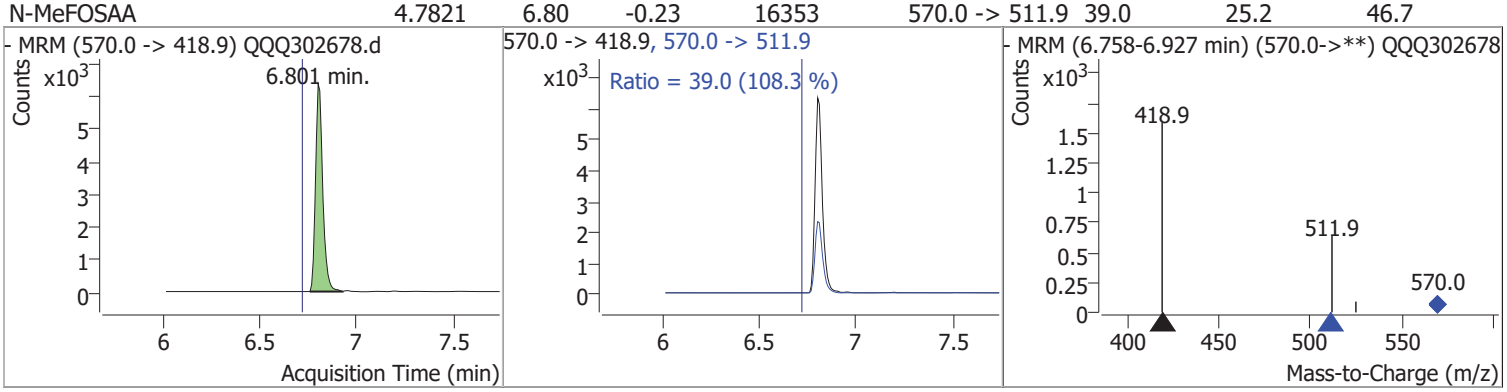
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorodecanoic acid (PFDA)	5.0400	6.68	-0.25	58199	513.0 -> 268.8	15.1	10.6	17.7



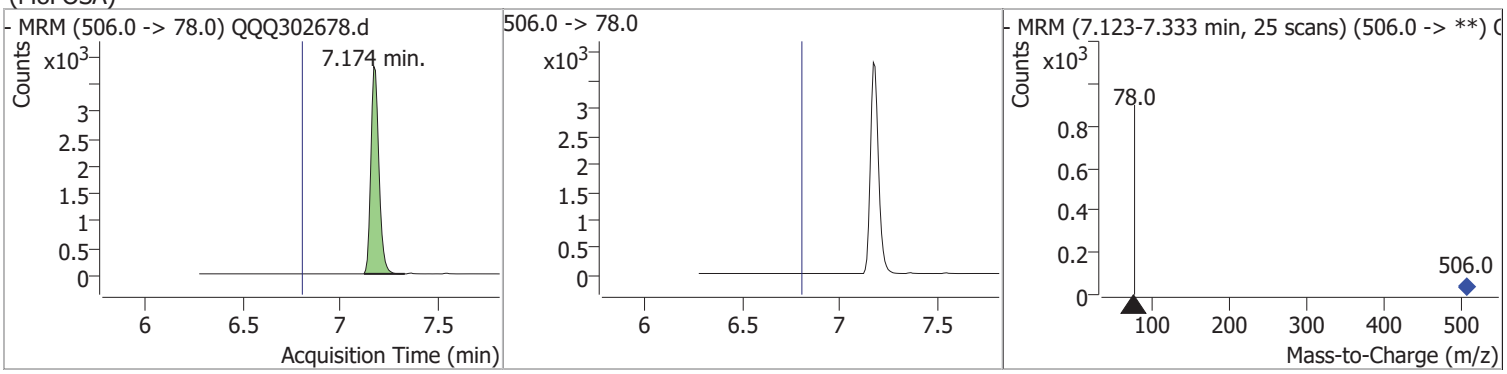
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
d3-N-MeFOSAA	3.7118	6.80	-0.23	6031				



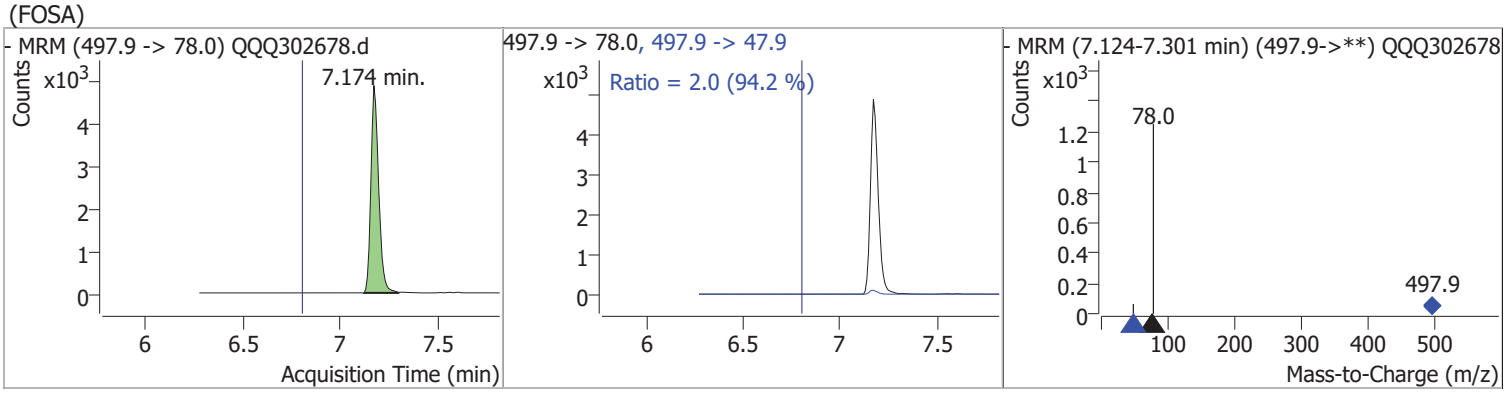
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
N-MeFOSAA	4.7821	6.80	-0.23	16353	570.0 -> 511.9	39.0	25.2	46.7



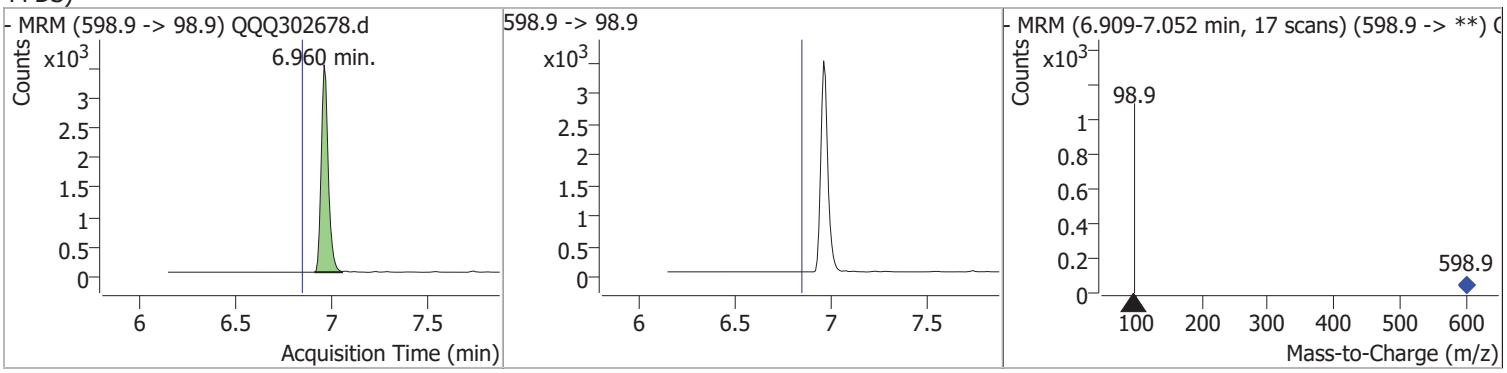
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-1-[13C8]octanesulfonamide (M8FOSA)	5.1388	7.17	0.05	10944				



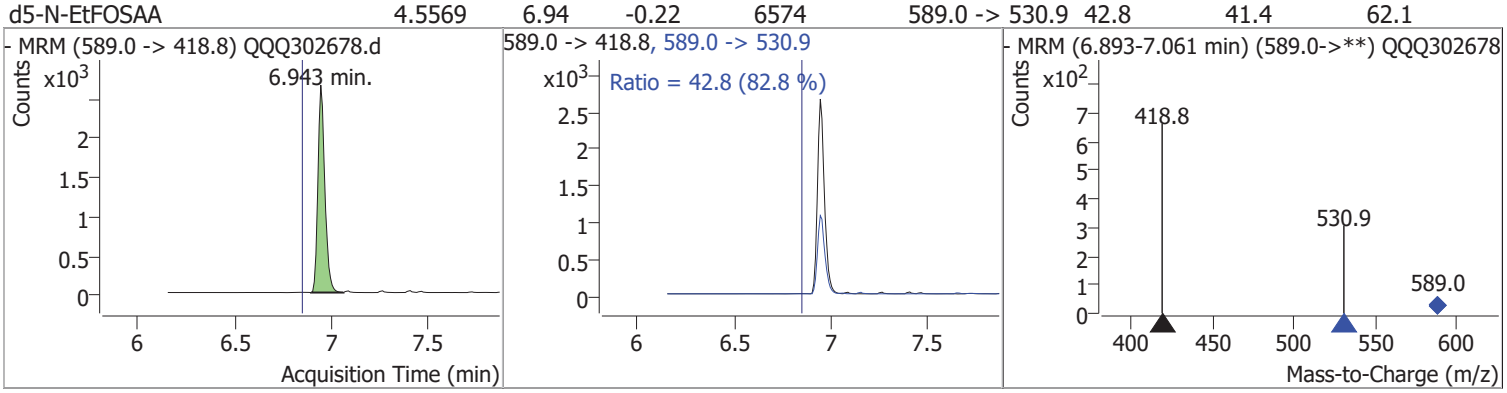
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-1-octanesulfonamide (FOSA)	4.6240	7.17	0.06	13531	497.9 -> 47.9	2.0	1.7	2.5



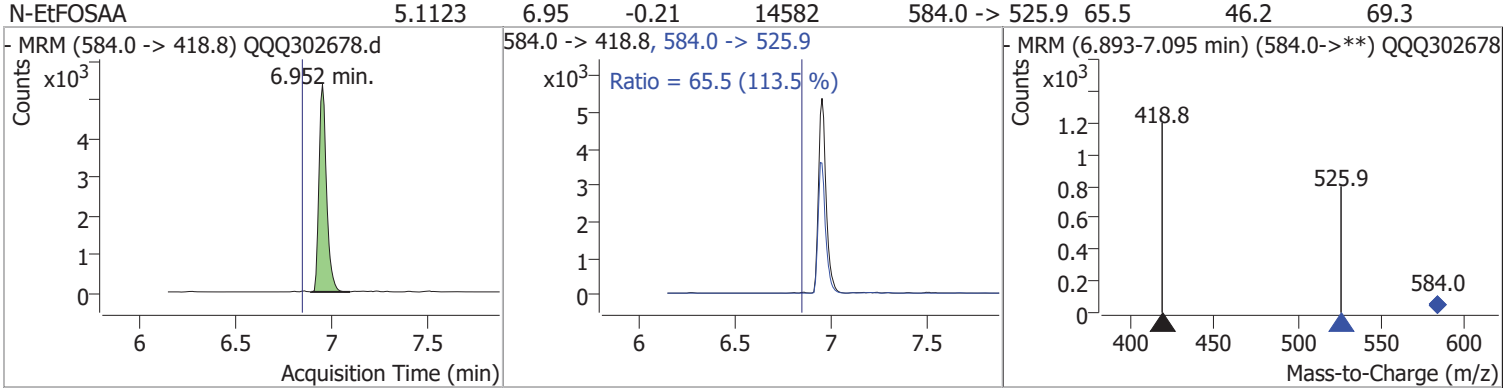
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-1-decanesulfonate (L-PFDS)	4.7509	6.96	-0.20	8722				



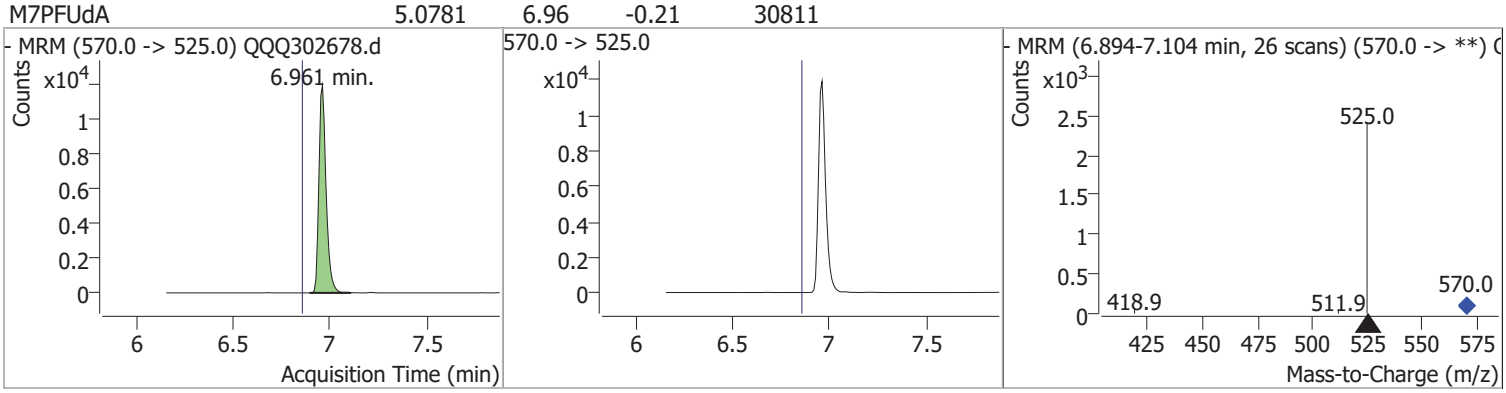
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
d5-N-EtFOSAA	4.5569	6.94	-0.22	6574	589.0 -> 530.9	42.8	41.4	62.1



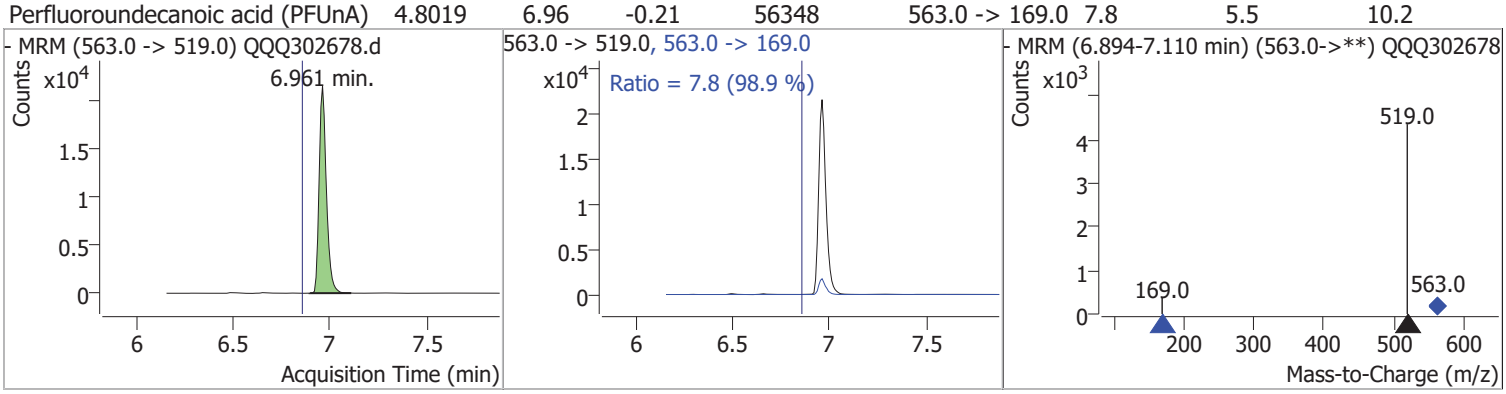
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
N-EtFOSAA	5.1123	6.95	-0.21	14582	584.0 -> 525.9	65.5	46.2	69.3



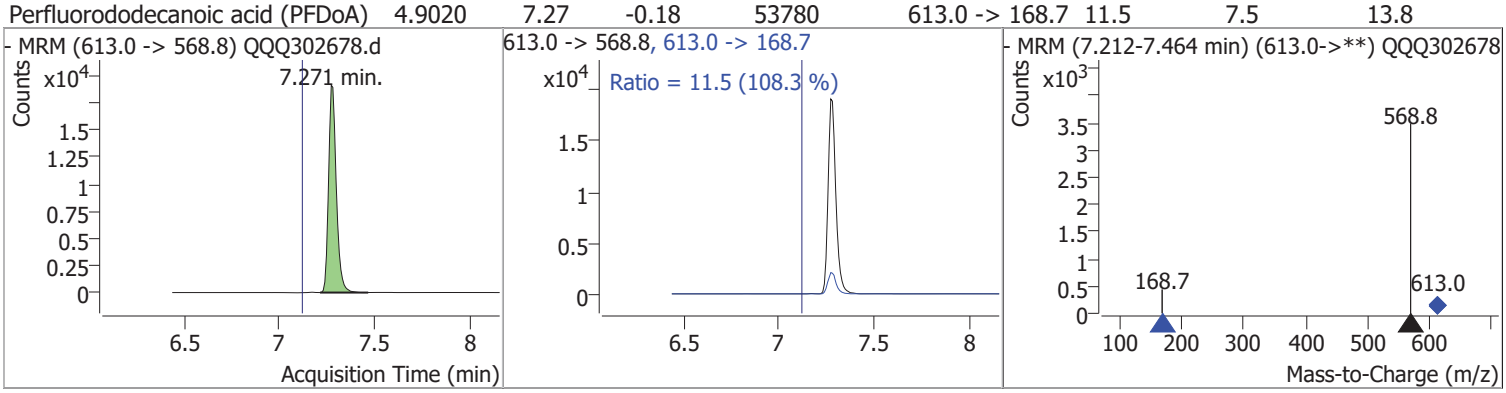
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M7PFUdA	5.0781	6.96	-0.21	30811				



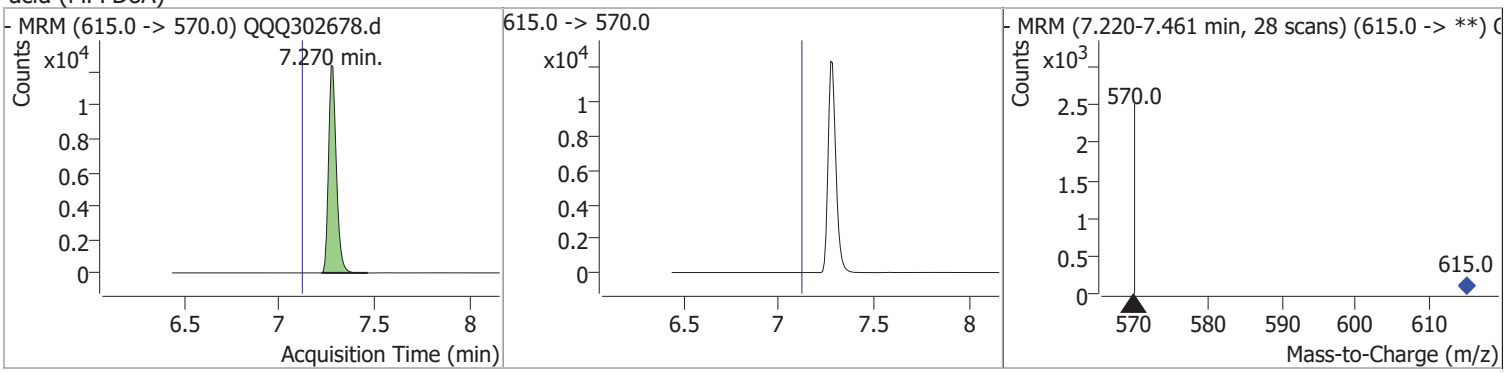
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoroundecanoic acid (PFUnA)	4.8019	6.96	-0.21	56348	563.0 -> 169.0	7.8	5.5	10.2



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorododecanoic acid (PFDoA)	4.9020	7.27	-0.18	53780	613.0 -> 168.7	11.5	7.5	13.8

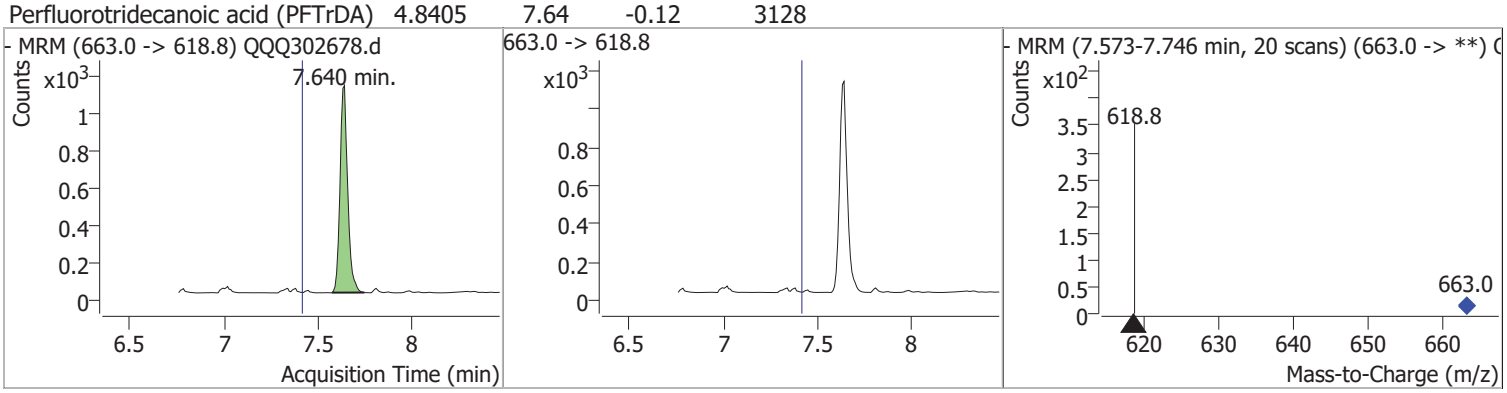


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-n-[1,2-13C2]dodecanoic acid (MPFDoA)	4.9436	7.27	-0.18	34860				

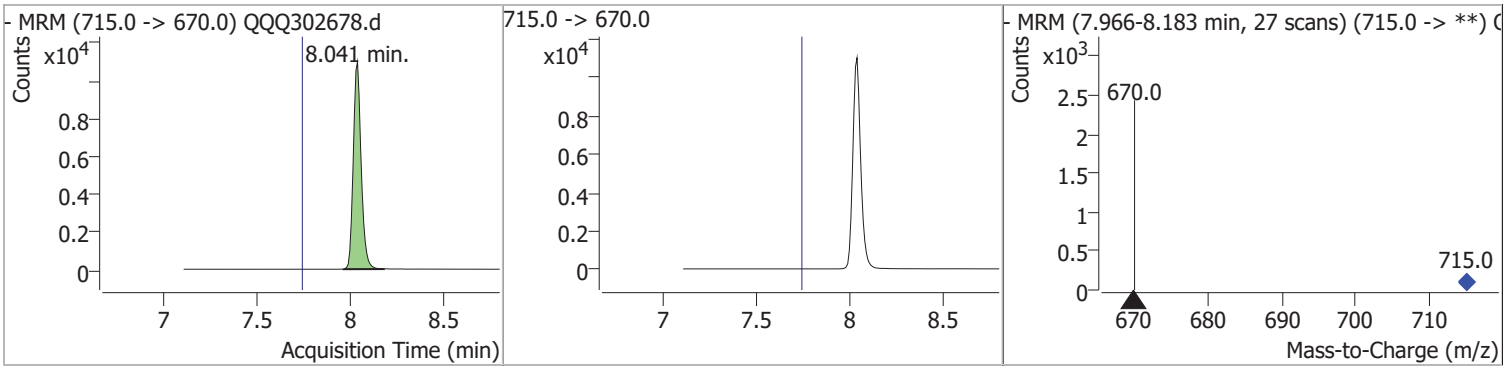


Quantitation Results Report (Not Reviewed)

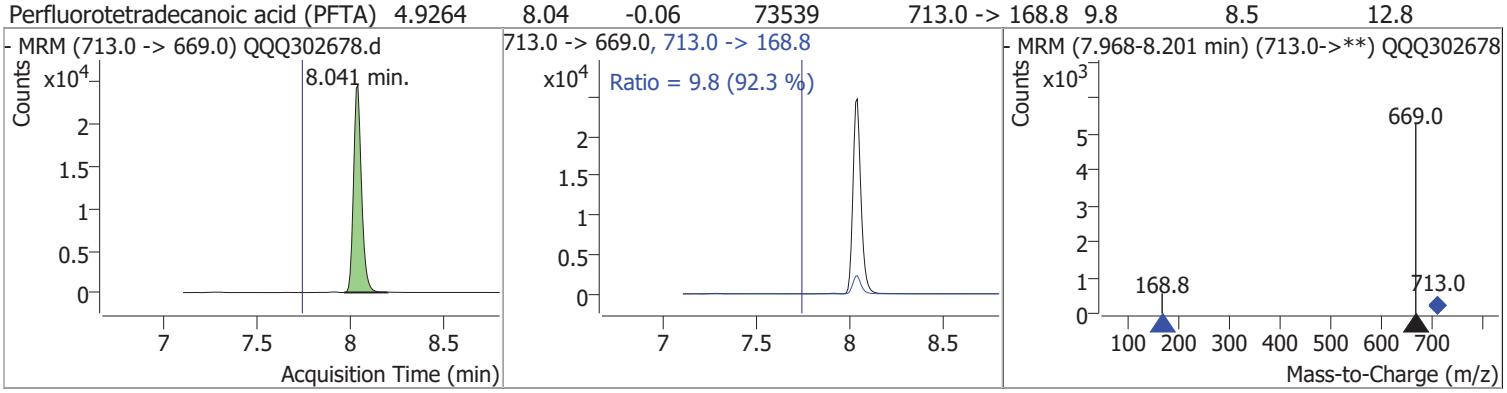
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorotridecanoic acid (PFTrDA)	4.8405	7.64	-0.12	3128				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M2PFTeDA	5.4833	8.04	-0.06	32395				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorotetradecanoic acid (PFTA)	4.9264	8.04	-0.06	73539	713.0 -> 168.8	9.8	8.5	12.8



FORM VII

CONTINUING CALIBRATION CHECK

EPA 537m

Laboratory:	York Analytical Laboratories, Inc.	SDG:	22G0348
Client:	Phoenix Environmental Laboratories, Inc.	Project:	GCL69739
Instrument ID:	QQQ3	Calibration:	YF20026
Lab File ID:	QQQ302689.d	Calibration Date:	06/28/22 15:42
Sequence:	Y2G1435	Injection Date:	07/14/22
Lab Sample ID:	Y2G1435-CCV4	Injection Time:	16:54

		CONC. (ng/mL)		RESPONSE FACTOR			% DIFF / DRIFT	
COMPOUND	TYPE	STD	CCV	ICAL	CCV	MIN (#)	CCV	LIMIT (#)
1H,1H,2H,2H-Perfluorodecanesulfonic acid (8:2 FTS)	A	4.05	4.11	0.1053684	0.1061785		1.5	30
1H,1H,2H,2H-Perfluorooctanesulfonic acid (6:2 FTS)	A	4.38	4.89	7.768364E-02	9.032661E-02		11.6	30
N-EtFOSAA	A	5.00	5.00	0.2171733	0.2014931		0.02	30
N-MeFOSAA	A	5.00	4.87	0.227535	0.2352897		-2.7	30
Perfluoro-1-decanesulfonic acid (PFDS)	A	4.82	4.48	0.1251683	0.1206386		-7.0	30
Perfluoro-1-heptanesulfonic acid (PFHpS)	A	4.98	4.76	0.1174146	0.1053738		-4.5	30
Perfluoro-1-octanesulfonamide (FOSA)	A	5.00	4.91	0.1871459	0.2035208		-1.8	30
Perfluorobutanesulfonic acid (PFBS)	A	4.42	3.70	0.1544403	0.143464		-16.2	30
Perfluorodecanoic acid (PFDA)	A	5.00	5.01	0.8074561	0.8176693		0.3	30
Perfluorododecanoic acid (PFDoA)	A	5.00	5.32	0.7282308	0.828464		6.4	30
Perfluoroheptanoic acid (PFHpA)	A	5.00	4.56	0.7336475	0.7798564		-8.8	30
Perfluorohexanesulfonic acid (PFHxS)	A	4.55	3.91	0.1347399	0.1217613		-14.1	30
Perfluorohexanoic acid (PFHxA)	A	5.00	4.66	0.5690764	0.6008518		-6.7	30
Perfluoro-n-butanoic acid (PFBA)	A	5.00	4.34	0.3382355	0.3447847		-13.3	30
Perfluorononanoic acid (PFNA)	A	4.80	4.25	0.8257117	0.7722354		-11.4	30
Perfluorooctanesulfonic acid (PFOS)	A	4.62	4.56	0.1171459	0.1203066		-1.2	30
Perfluorooctanoic acid (PFOA)	A	5.00	4.87	0.7797809	0.8420367		-2.7	30
Perfluoropentanoic acid (PFPeA)	A	5.00	4.58	0.2734725	0.2679911		-8.5	30
Perfluorotetradecanoic acid (PFTA)	A	5.00	4.94	1.023396	1.042501		-1.2	30
Perfluorotridecanoic acid (PFTrDA)	A	5.00	4.76	4.773095E-02	4.336615E-02		-4.9	30
Perfluoroundecanoic acid (PFUnA)	A	5.00	4.74	0.7480439	0.7850895		-5.3	30

Column to be used to flag Response Factor and %Diff/Drift values with an asterisk

* Values outside of QC limits

Quantitation Results Report (Not Reviewed)

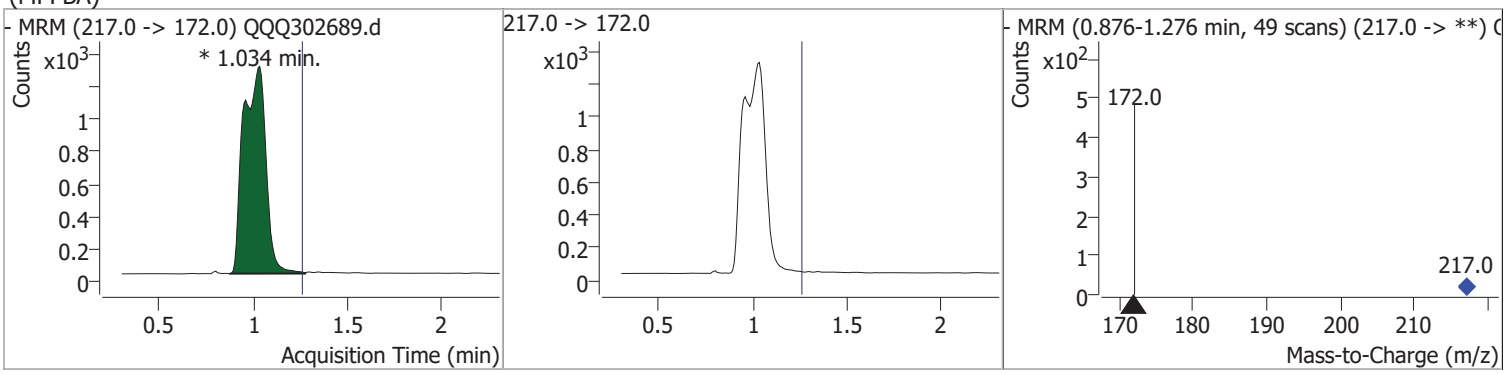
Data File	QQQ302689.d	Operator	
Acq. Method	PFAS 24_IDA ACQ_QQQ3A.m	Acq. Date-Time	7/14/2022 4:54:33 PM
Sample Name	SEQ-CCV4	Instrument	QQQ3
Vial		Multiplier	1.00
DA Method File	PFAS_24_IDA_QUANT_QQQ3_062722.m	Comment	5
Tune File		Tune Date	
Batch Name	2022-07-14-IDA.batch.bin	Last Calib Update	6/27/2022 4:24:30 PM
Ref Library			

Compound	RT	QIon	Resp.	Conc.	Units		Dev(Min)
Internal Standards							
MPFOA	6.157	417.0 -> 372.0	135573	10.0000	ng/ml		-0.273
System Monitoring Compounds							
Perfluoro-n-[13C4]butanoic acid (MPFBA)	1.034	217.0 -> 172.0	10760	4.4461	ng/ml	m	-0.275
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 44.46%			
Perfluoro-n-[13C54]pentanoic acid (M5PFPeA)	4.045	268.0 -> 223.0	9365	4.6566	ng/ml		-0.542
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 46.57%			
M3PFBS	4.680	302.0 -> 79.9	3870	3.7308	ng/ml		-0.483
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 37.31%			
M2-4-2FTS	5.275	329.0 -> 309.0	3032	4.3862	ng/ml	#	-0.415
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 43.86%			
M5PFHxA	5.318	318.0 -> 273.0	18833	4.7804	ng/ml		-0.406
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 47.80%			
M4PFHpA	5.821	367.0 -> 322.0	10781	5.2508	ng/ml		-0.323
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 52.51%			
M3PFHxS	5.871	402.0 -> 80.0	4053	4.6284	ng/ml	#	-0.306
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 46.28%			
M2-6-2FTS	6.131	429.0 -> 409.0	2867	4.3925	ng/ml		-0.289
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 43.93%			
Perfluoro-n-[13C8]octanoic acid (M8PFOA)	6.157	421.0 -> 376.0	18960	5.5834	ng/ml		-0.273
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 55.83%			
Perfluoro-n-[13C9]nonanoic acid (M9PFNA)	6.434	472.0 -> 427.0	18345	4.5681	ng/ml		-0.246
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 45.68%			
Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)	6.442	507.0 -> 80.0	4429	4.9349	ng/ml		-0.246
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 49.35%			
M2-8-2FTS	6.692	529.0 -> 509.0	3441	5.9737	ng/ml		-0.226
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 59.74%			
M6PFDA	6.701	519.0 -> 473.9	22286	5.0097	ng/ml		-0.221
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 50.10%			
d3-N-MeFOSAA	6.826	573.0 -> 418.8	7199	4.6187	ng/ml		-0.204
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 46.19%			
Perfluoro-1-[13C8]octanesulfonamide (M8FOSA)	7.208	506.0 -> 78.0	8848	4.3607	ng/ml		0.089
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 43.61%			
d5-N-EtFOSAA	6.968	589.0 -> 418.8	6545	4.7340	ng/ml		-0.196
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 47.34%			
M7PFUdA	6.986	570.0 -> 525.0	28494	4.9015	ng/ml		-0.187
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 49.02%			
Perfluoro-n-[1,2-13C2]dodecanoic acid (MPFDoA)	7.304	615.0 -> 570.0	31628	4.6881	ng/ml		-0.144
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 46.88%			
M2PFTeDA	8.074	715.0 -> 670.0	31745	5.6064	ng/ml		-0.027
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 56.06%			
Target Compounds							**QValue**

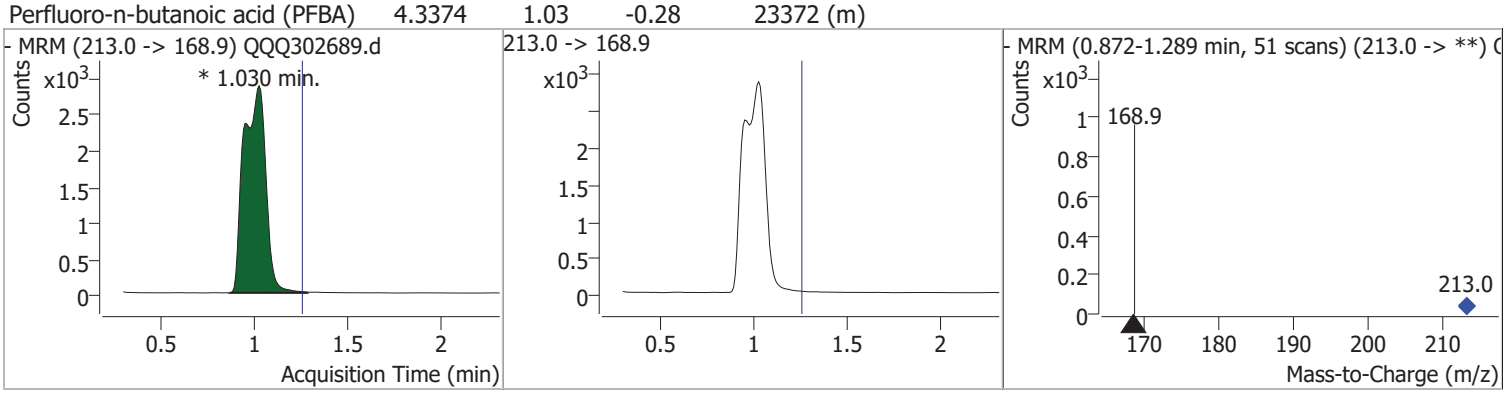
Compound	RT	QIon	Resp.	Conc.	Units		Dev(Min)
Perfluoro-n-butanoic acid (PFBA)	1.030	213.0 -> 168.9	23372	4.3374	ng/ml	m	100
Perfluoro-n-pentanoic acid (PFPeA)	4.041	263.0 -> 219.0	18166	4.5772	ng/ml		100
Perfluorobutanesulfonic acid (PFBS)	4.683	298.9 -> 79.9	8597	3.7031	ng/ml		95
1H,1H,2H,2H-perfluoro-1-hexanesulfonate (4 2FTS)	5.276	327.0 -> 307.0	5938	4.4772	ng/ml		97
Perfluorohexanoic acid (PFHxA)	5.319	313.0 -> 268.9	40730	4.6641	ng/ml		100
Perfluoro-1-pentanesulfonate (L-PFPeS)	5.452	348.9 -> 79.9	8199	4.2674	ng/ml		96
Perfluoroheptanoic acid (PFHpA)	5.822	363.0 -> 318.8	52864	4.5622	ng/ml		99
Perfluorohexanesulfonic acid (PFHxS)	5.871	398.9 -> 79.9	7511	3.9092	ng/ml	m	97
1H,1H,2H,2H-perfluoro-1-octanesulfonate (6 2FTS)	6.131	427.0 -> 407.0	5364	4.8891	ng/ml		96
Perfluorooctanoic acid (PFOA)	6.158	413.0 -> 368.8	57079	4.8655	ng/ml		98
Perfluoro-1-heptanesulfonate (L-PFHpS)	6.182	448.9 -> 80.0	7114	4.7559	ng/ml		90
Perfluorononanoic acid (PFNA)	6.434	463.0 -> 418.8	50253	4.2526	ng/ml	#	93
Perfluorooctanesulfonic acid (PFOS)	6.442	498.9 -> 79.9	7535	4.5634	ng/ml	m	89
1H,1H,2H,2H-perfluoro-1-decanesulfonate (8 2FTS)	6.693	527.0 -> 507.0	5830	4.1122	ng/ml		94
Perfluorononanesulfonate (L-PFNS)	6.709	548.9 -> 79.9	5820	3.6620	ng/ml		97
Perfluorodecanoic acid (PFDA)	6.702	513.0 -> 468.8	55427	5.0126	ng/ml		96
N-MeFOSAA	6.827	570.0 -> 418.9	15950	4.8669	ng/ml		94
Perfluoro-1-octanesulfonamide (FOSA)	7.200	497.9 -> 78.0	13796	4.9082	ng/ml		99
Perfluoro-1-decanesulfonate (L-PFDS)	6.985	598.9 -> 98.9	7883	4.4817	ng/ml		100
N-EtFOSAA	6.977	584.0 -> 418.8	13659	5.0010	ng/ml	#	79
Perfluoroundecanoic acid (PFUnA)	6.986	563.0 -> 519.0	53219	4.7360	ng/ml		99
Perfluorododecanoic acid (PFDoA)	7.304	613.0 -> 568.8	56159	5.3195	ng/ml		98
Perfluorotridecanoic acid (PFTrDA)	7.665	663.0 -> 618.8	2940	4.7557	ng/ml		100
Perfluorotetradecanoic acid (PFTA)	8.075	713.0 -> 669.0	70668	4.9417	ng/ml		99

(#) = Qualifier Out of Range; (m) = Manual Integration; (+) = Area Summed; (*) = Surrogate Percent Recovery Out of Range; (d): Zeroed Peak

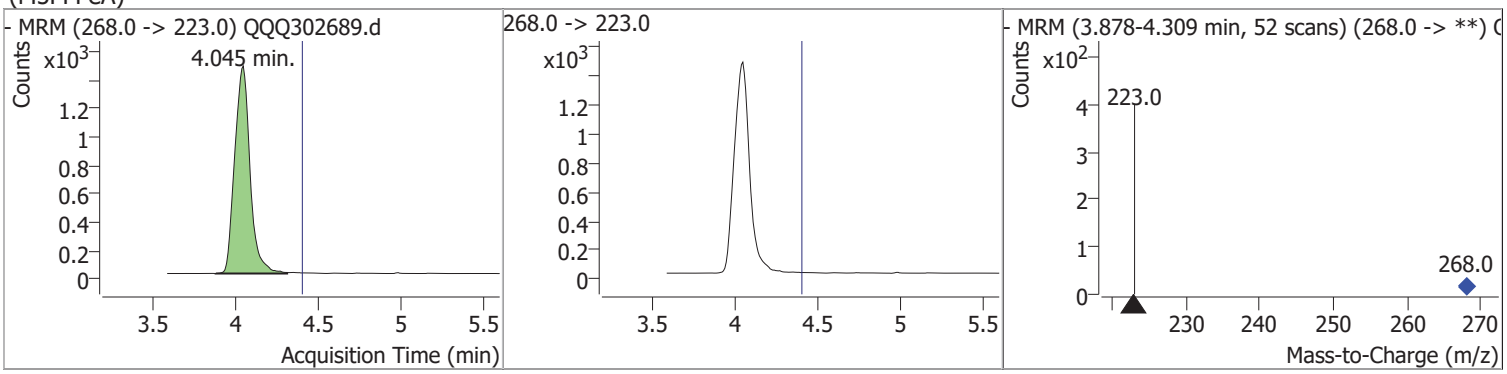
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-n-[13C4]butanoic acid (MPFBA)	4.4461	1.03	-0.27	10760 (m)				



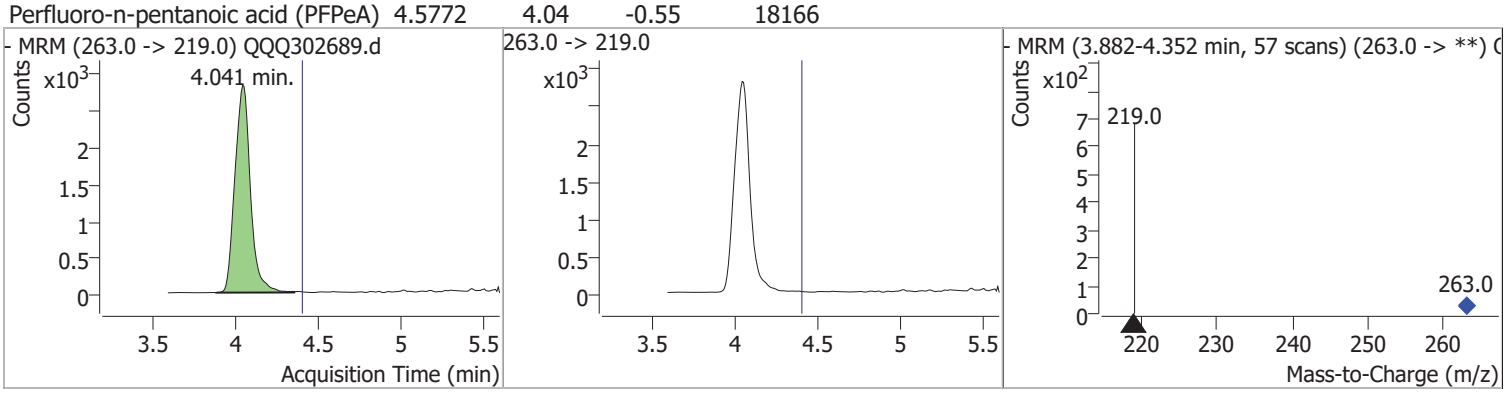
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-n-butanoic acid (PFBA)	4.3374	1.03	-0.28	23372 (m)				



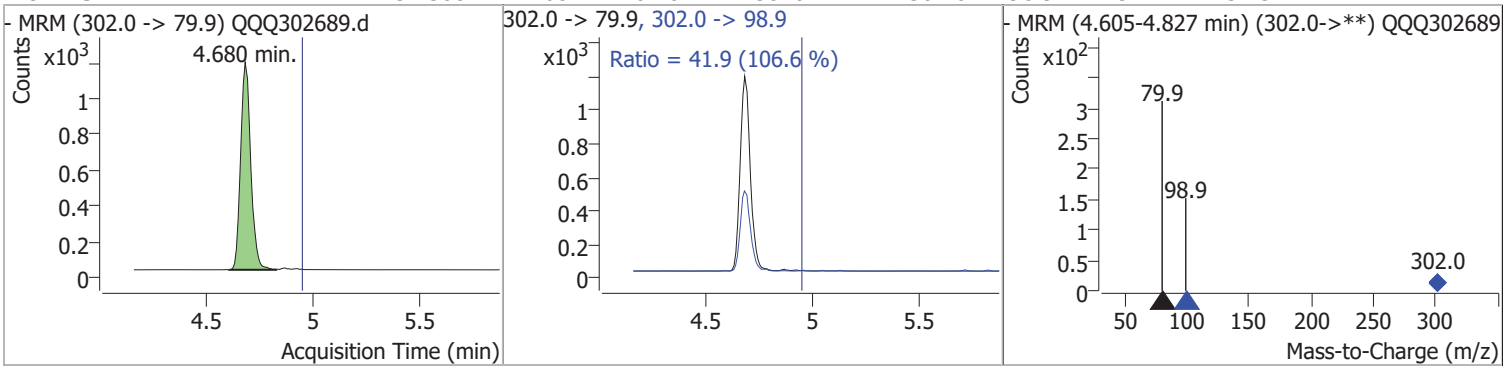
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-n-[13C54]pentanoic acid (M5PFPeA)	4.6566	4.04	-0.54	9365				



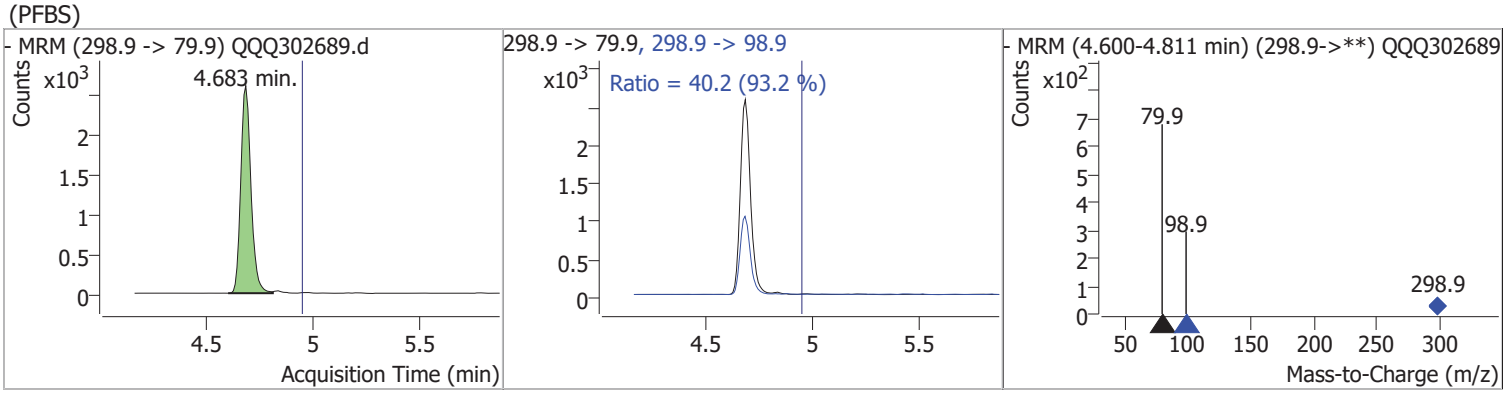
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-n-pentanoic acid (PFPeA)	4.5772	4.04	-0.55	18166				



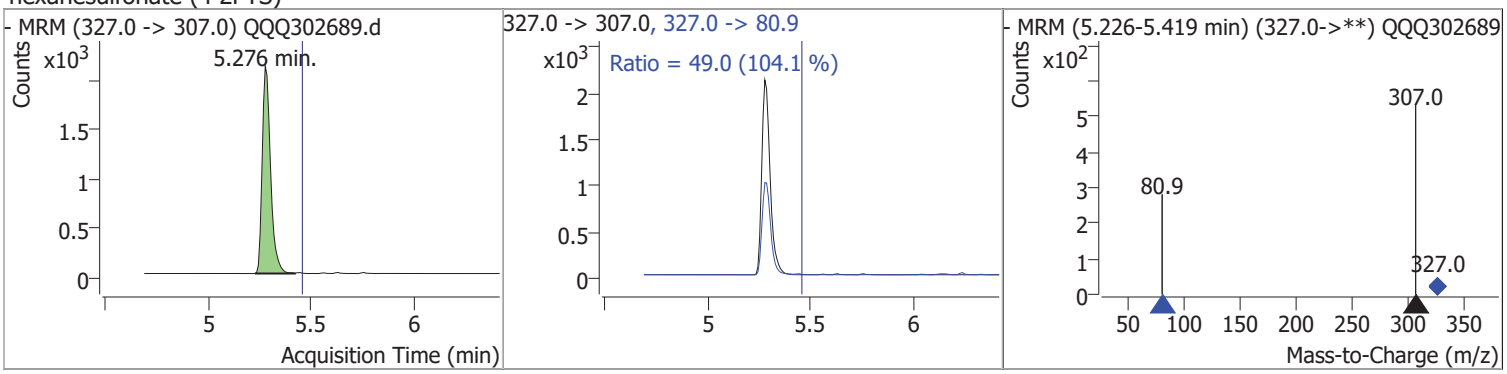
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M3PFBS	3.7308	4.68	-0.48	3870	302.0 -> 98.9	41.9	31.5	47.2



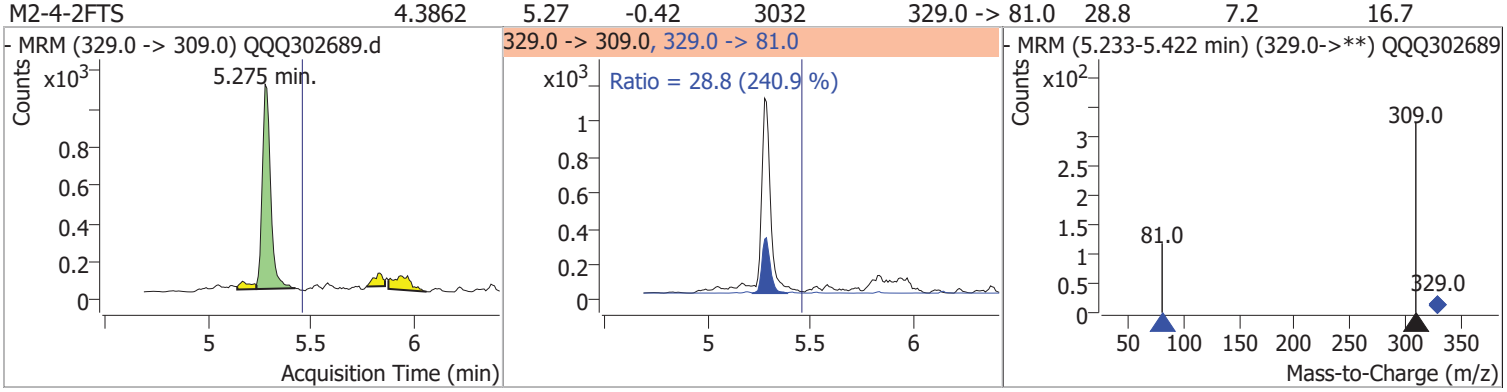
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorobutanesulfonic acid (PFBS)	3.7031	4.68	-0.48	8597	298.9 -> 98.9	40.2	34.5	51.7



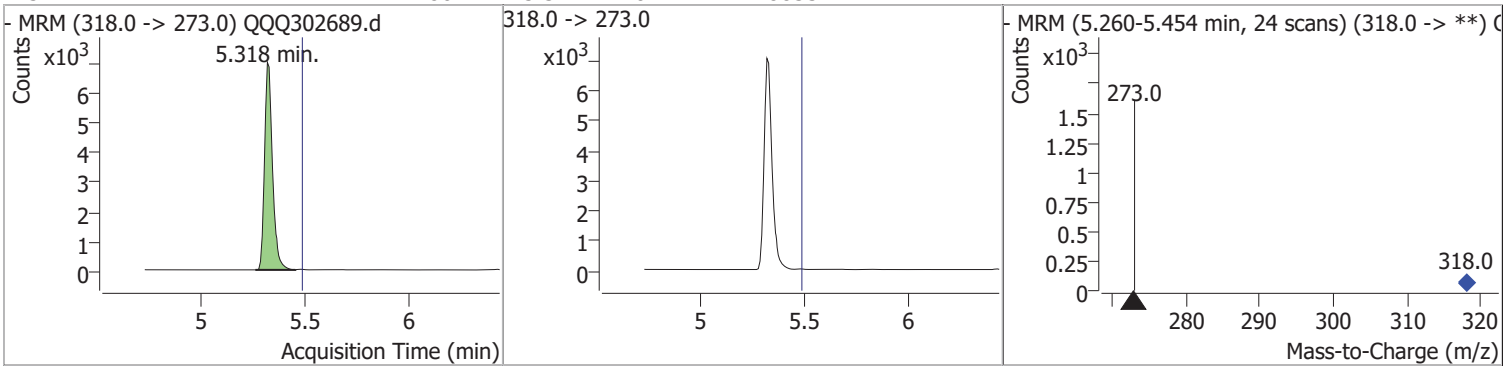
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
1H,1H,2H,2H-perfluoro-1-hexanesulfonate (4 2FTS)	4.4772	5.28	-0.41	5938	327.0 -> 80.9	49.0	28.2	65.9



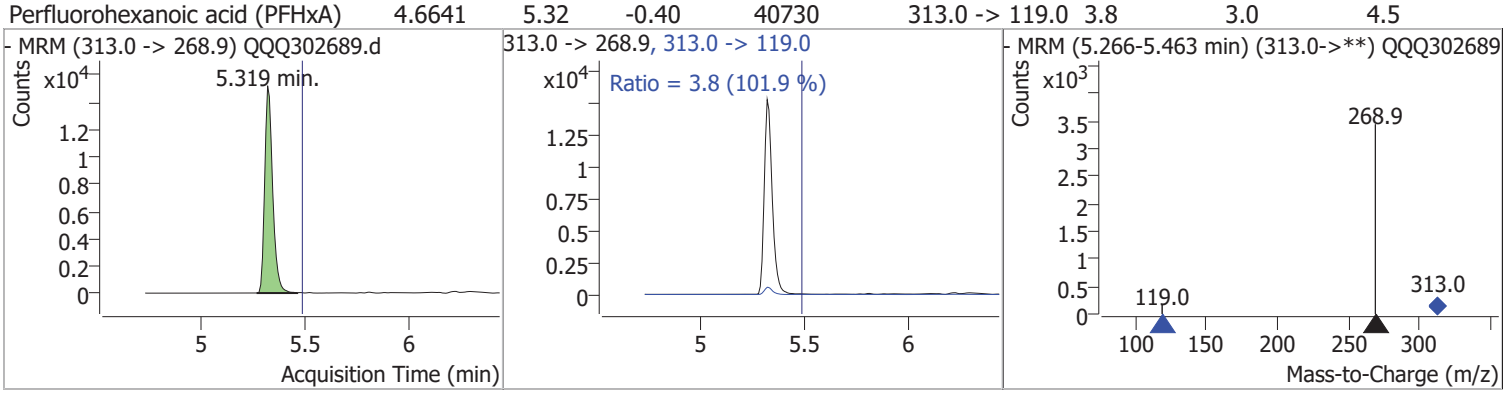
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M2-4-2FTS	4.3862	5.27	-0.42	3032	329.0 -> 81.0	28.8	7.2	16.7



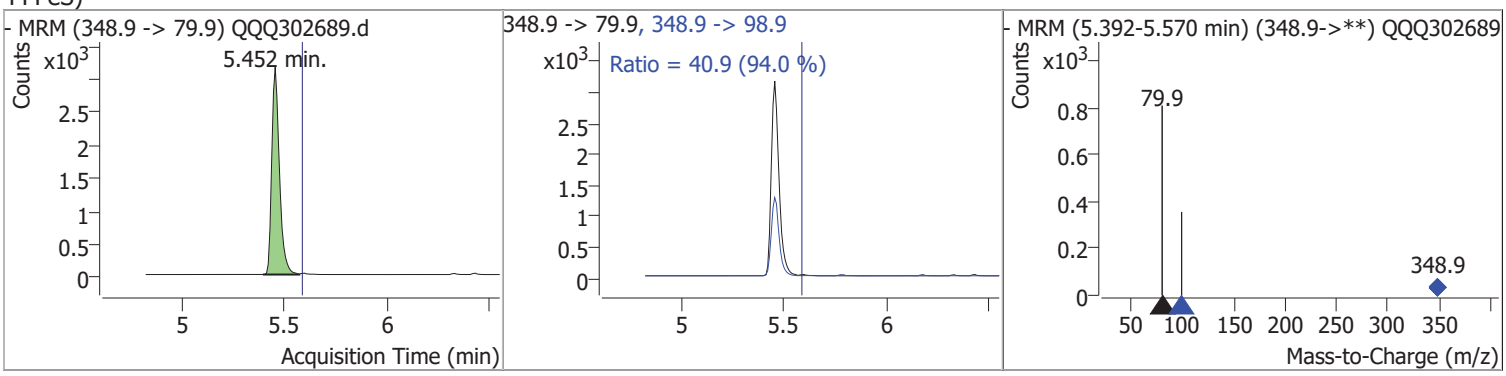
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M5PFHxA	4.7804	5.32	-0.41	18833				



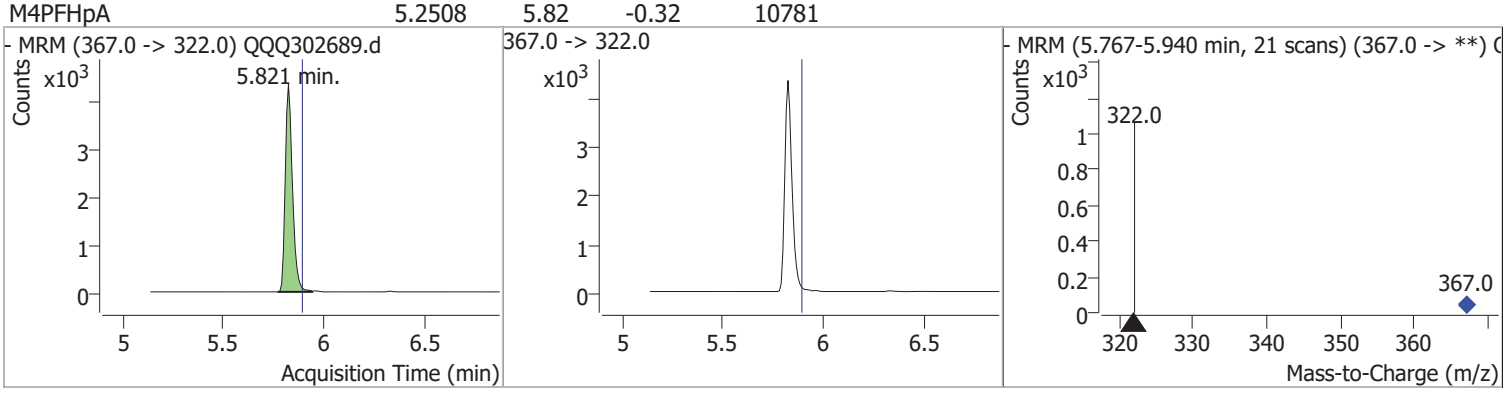
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorohexanoic acid (PFHxA)	4.6641	5.32	-0.40	40730	313.0 -> 119.0	3.8	3.0	4.5



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-1-pentanesulfonate (L-PFPeS)	4.2674	5.45	-0.37	8199	348.9 -> 98.9	40.9	34.8	52.2

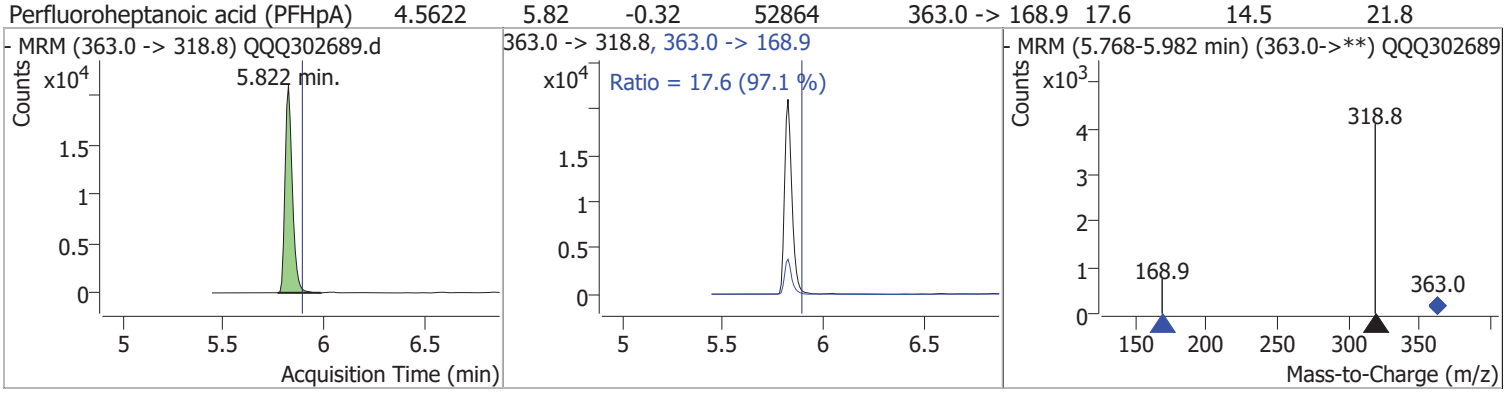


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M4PFHpA	5.2508	5.82	-0.32	10781				

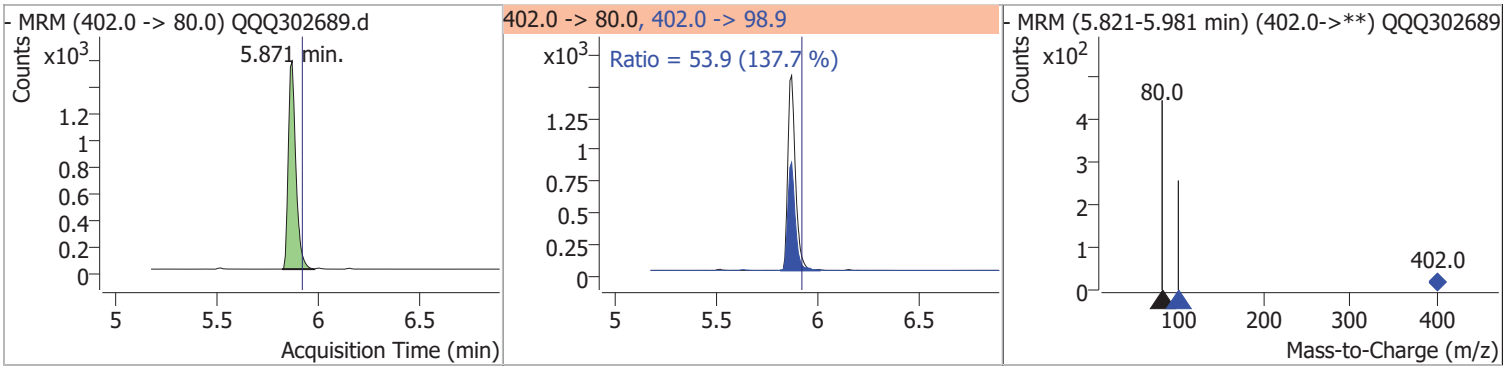


Quantitation Results Report (Not Reviewed)

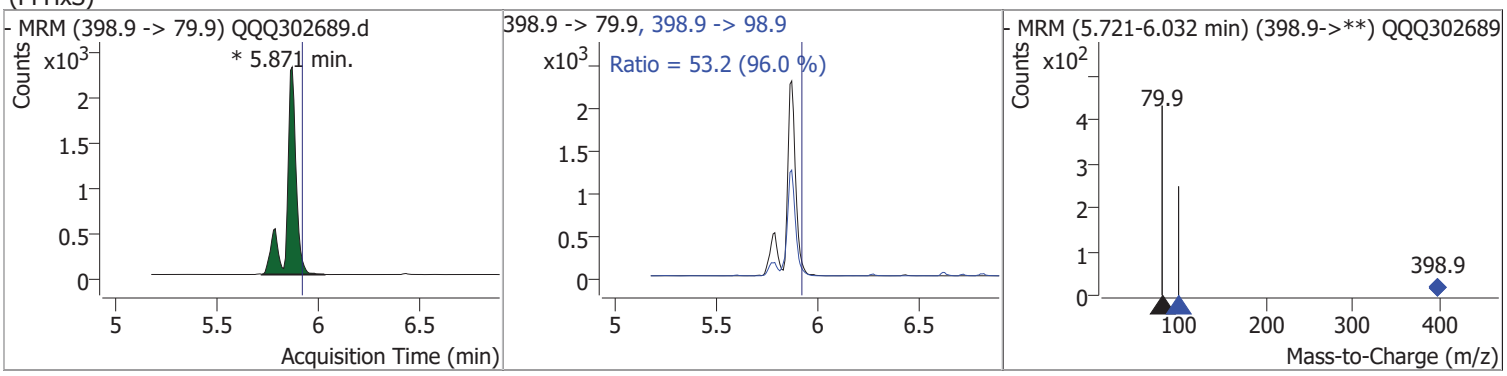
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoroheptanoic acid (PFHpA)	4.5622	5.82	-0.32	52864	363.0 -> 168.9	17.6	14.5	21.8



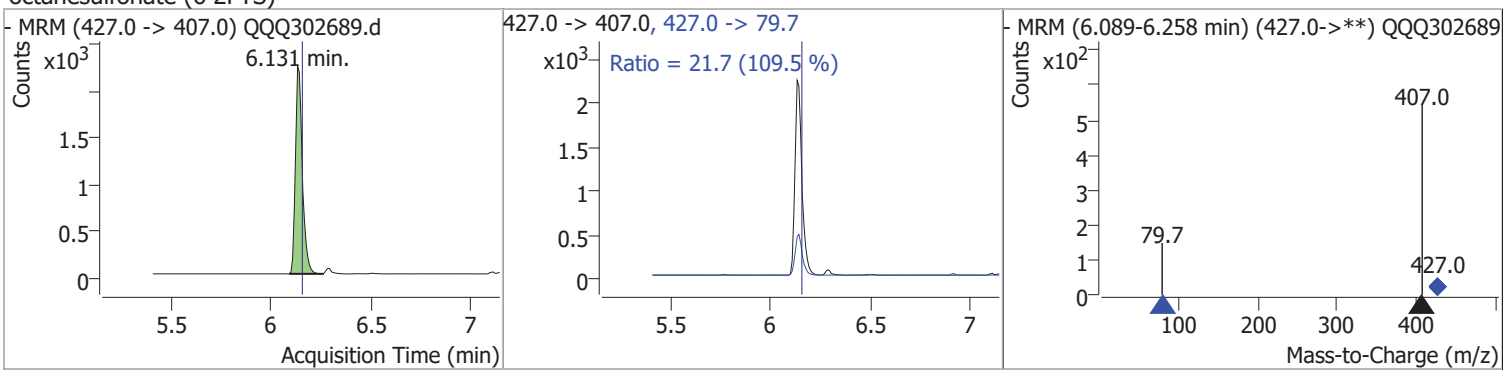
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M3PFHxS	4.6284	5.87	-0.31	4053	402.0 -> 98.9	53.9	31.3	47.0



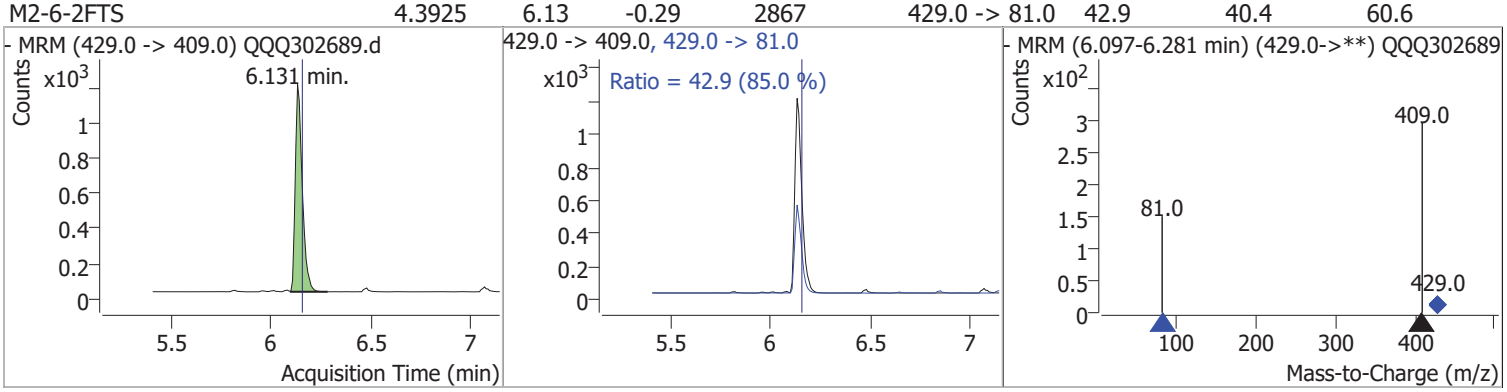
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorohexanesulfonic acid (PFHxS)	3.9092	5.87	-0.31	7511 (m)	398.9 -> 98.9	53.2	44.4	66.5



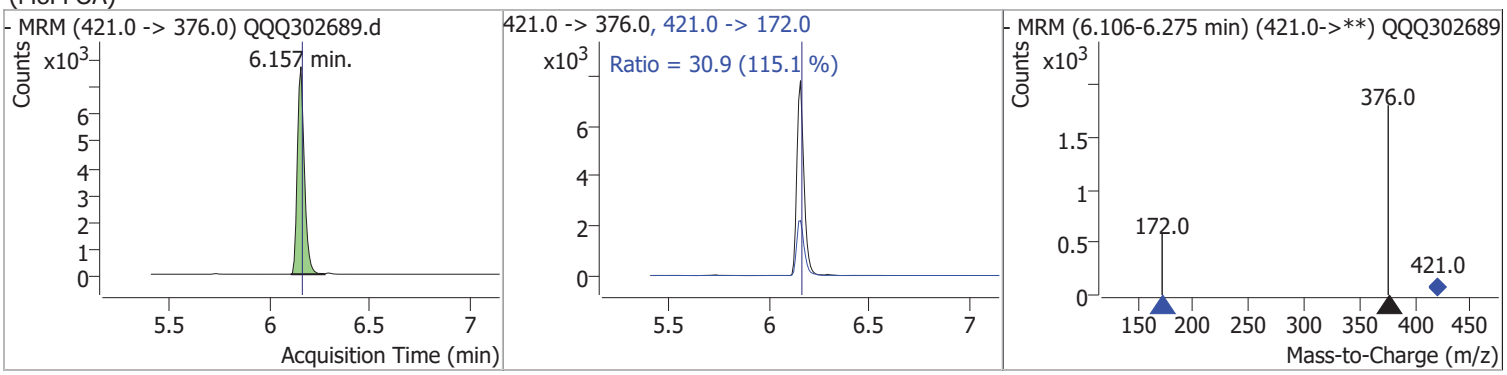
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
1H,1H,2H,2H-perfluoro-1-octanesulfonate (6 2FTS)	4.8891	6.13	-0.29	5364	427.0 -> 79.7	21.7	15.8	23.7



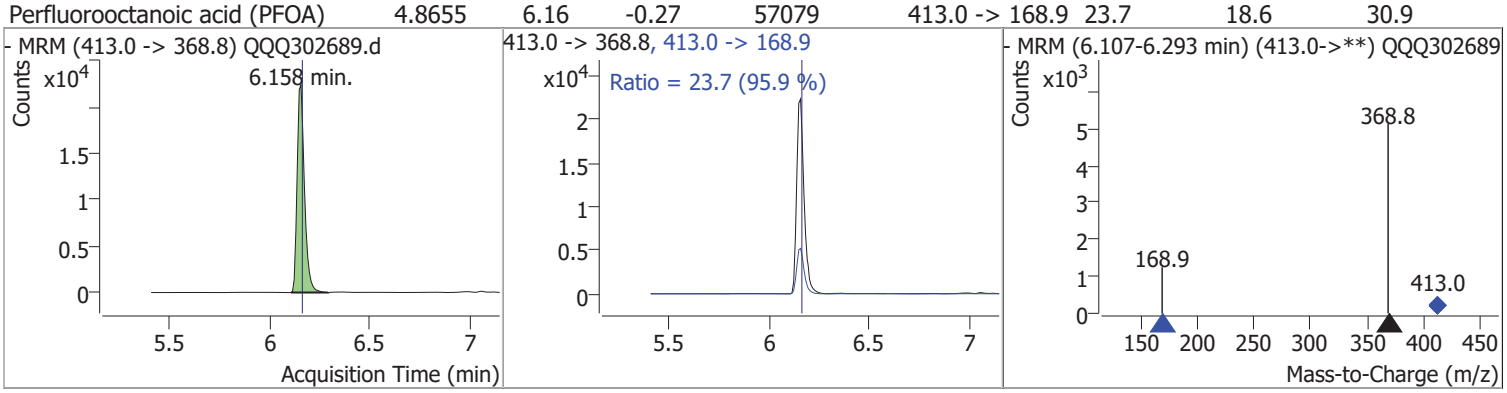
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M2-6-2FTS	4.3925	6.13	-0.29	2867	429.0 -> 81.0	42.9	40.4	60.6



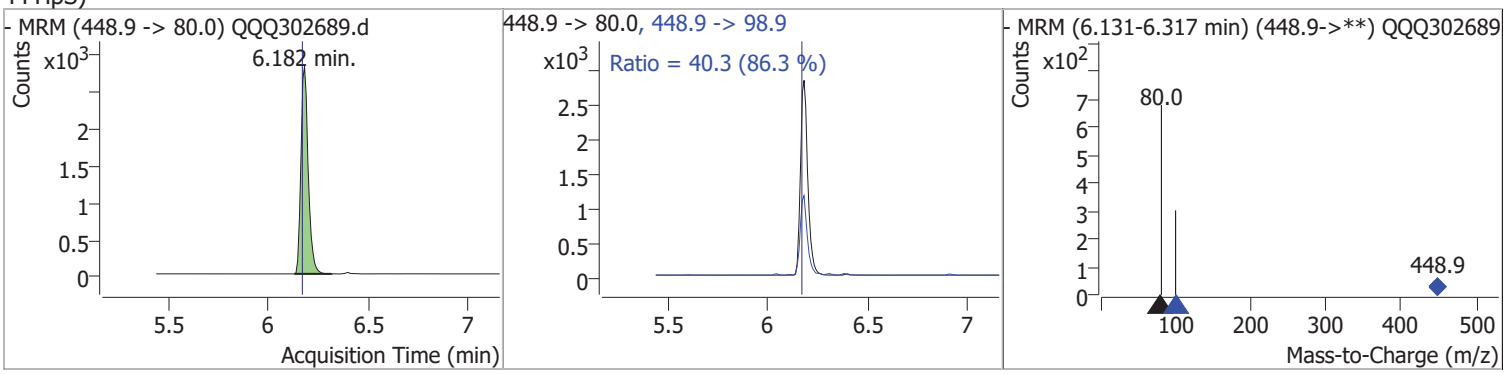
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-n-[13C8]octanoic acid (M8PFOA)	5.5834	6.16	-0.27	18960	421.0 -> 172.0	30.9	21.5	32.2



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorooctanoic acid (PFOA)	4.8655	6.16	-0.27	57079	413.0 -> 168.9	23.7	18.6	30.9

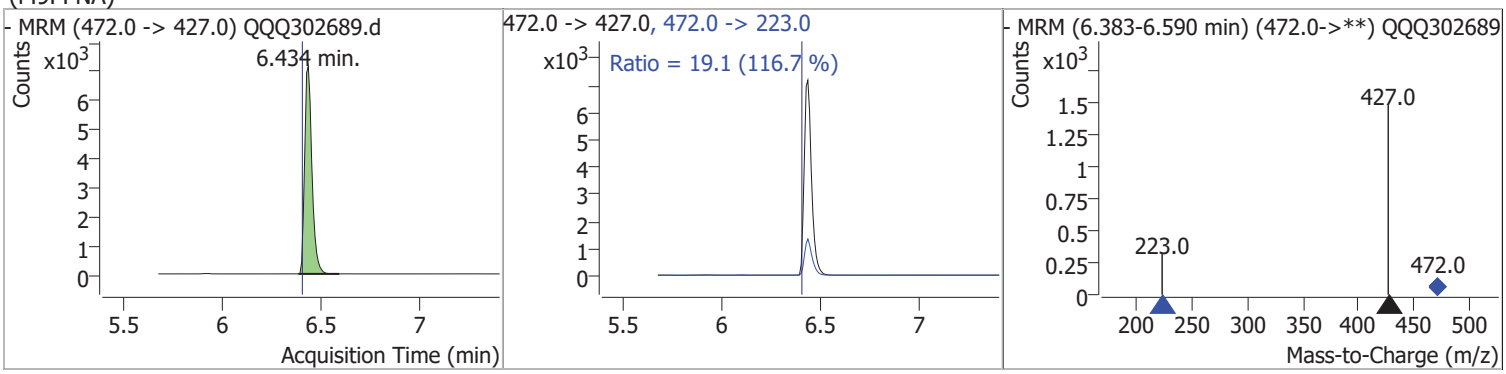


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-1-heptanesulfonate (L-PFHpS)	4.7559	6.18	-0.26	7114	448.9 -> 98.9	40.3	37.3	56.0

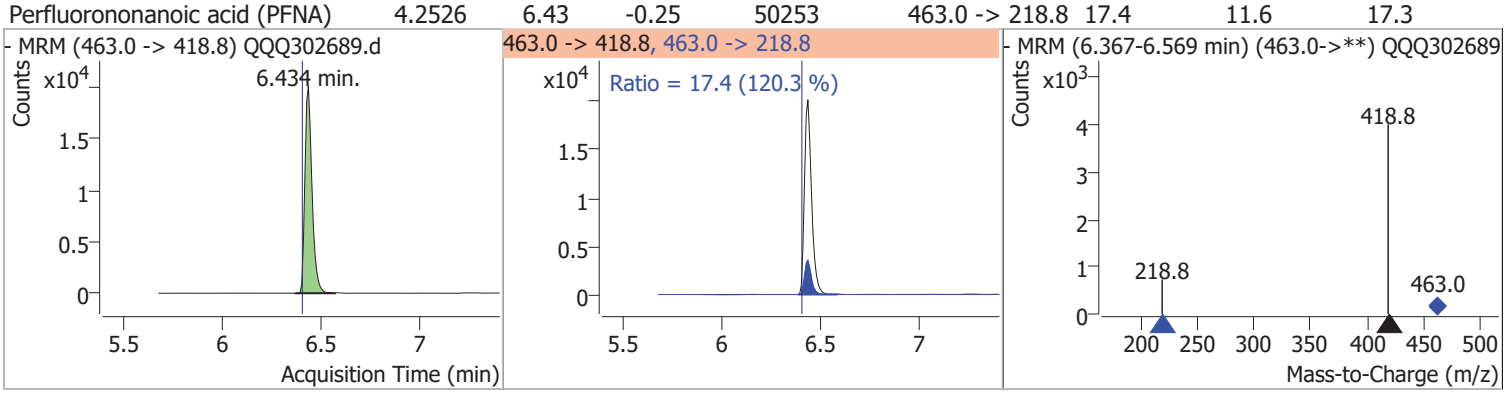


Quantitation Results Report (Not Reviewed)

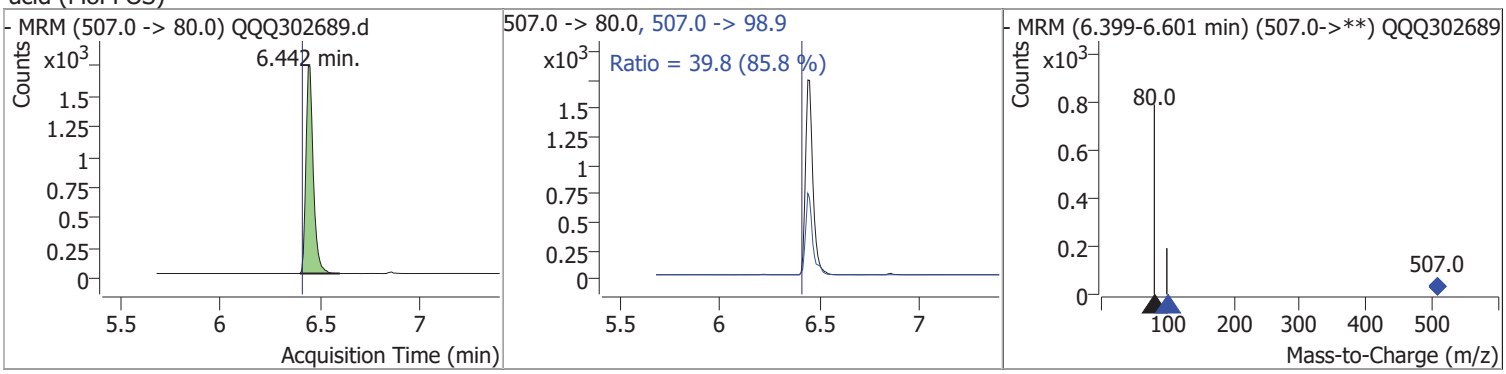
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-n-[13C9]nonanoic acid (M9PFNA)	4.5681	6.43	-0.25	18345	472.0 -> 223.0	19.1	13.1	19.6



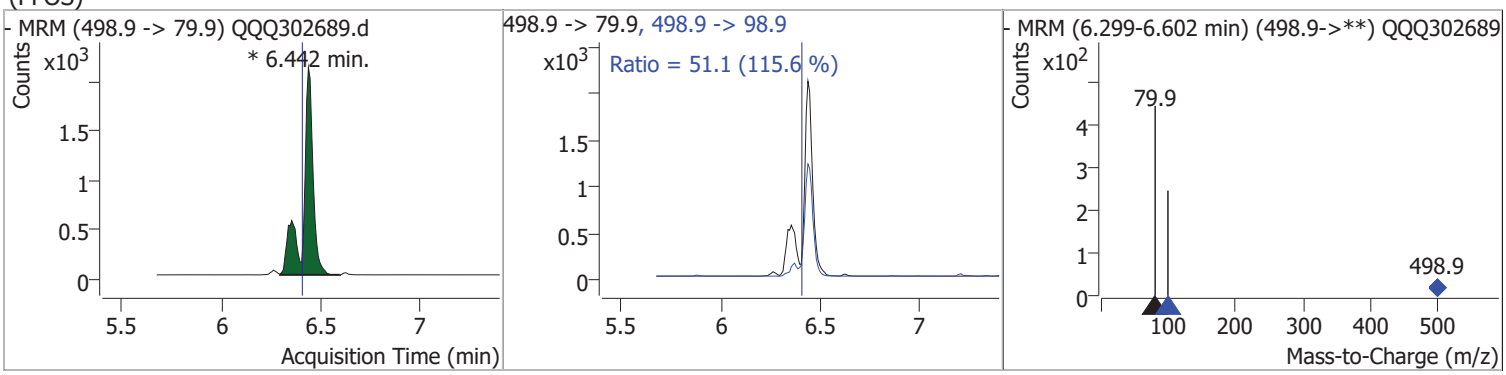
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorononanoic acid (PFNA)	4.2526	6.43	-0.25	50253	463.0 -> 218.8	17.4	11.6	17.3



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)	4.9349	6.44	-0.25	4429	507.0 -> 98.9	39.8	37.1	55.6



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorooctanesulfonic acid (PFOS)	4.5634	6.44	-0.25	7535 (m)	498.9 -> 98.9	51.1	35.4	53.0



Quantitation Results Report (Not Reviewed)

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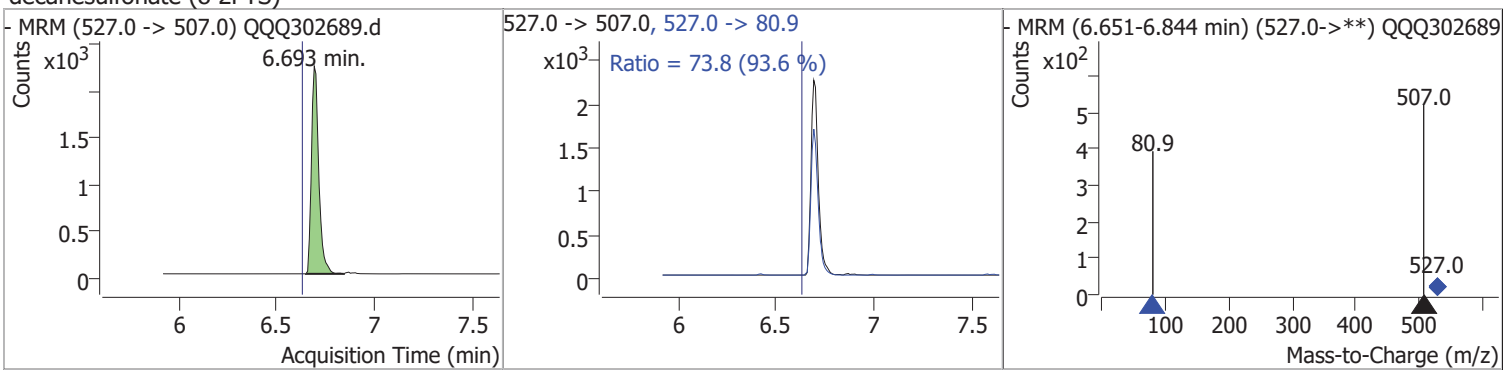
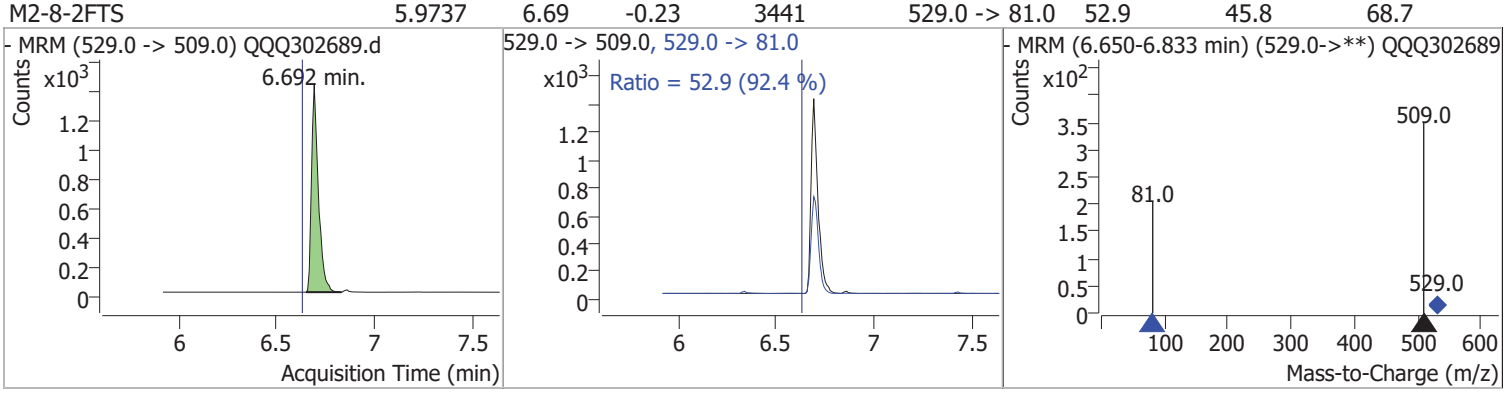
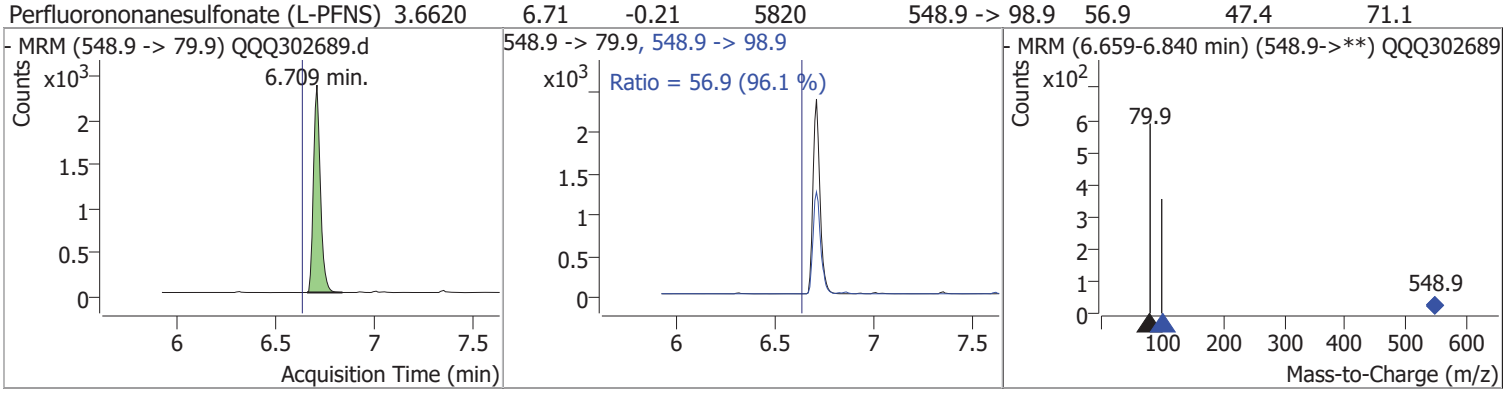
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
1H,1H,2H,2H-perfluoro-1-decanesulfonate (8 2FTS)	4.1122	6.69	-0.23	5830	527.0 -> 80.9	73.8	63.1	94.6



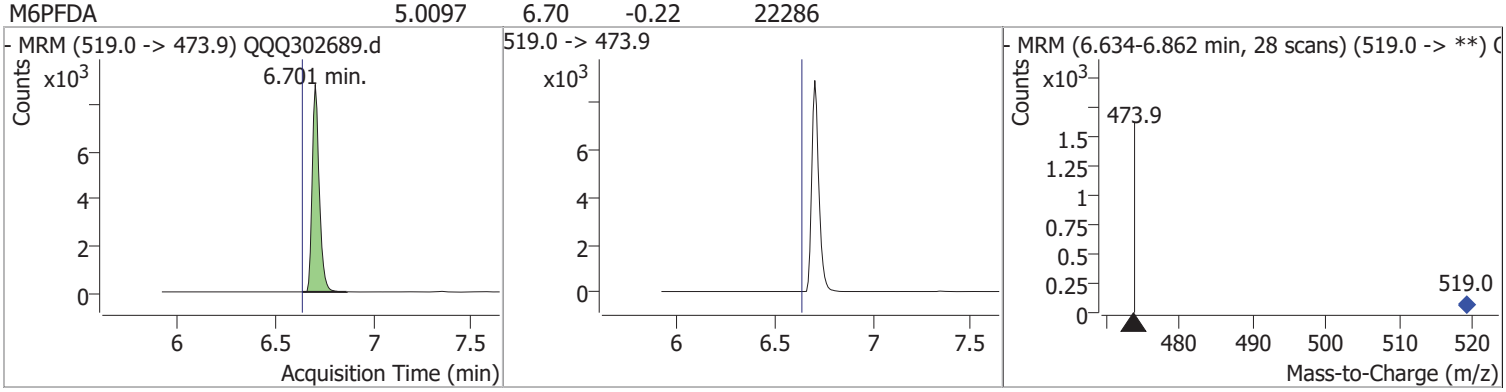
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M2-8-2FTS	5.9737	6.69	-0.23	3441	529.0 -> 81.0	52.9	45.8	68.7



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorononanesulfonate (L-PFNS)	3.6620	6.71	-0.21	5820	548.9 -> 98.9	56.9	47.4	71.1

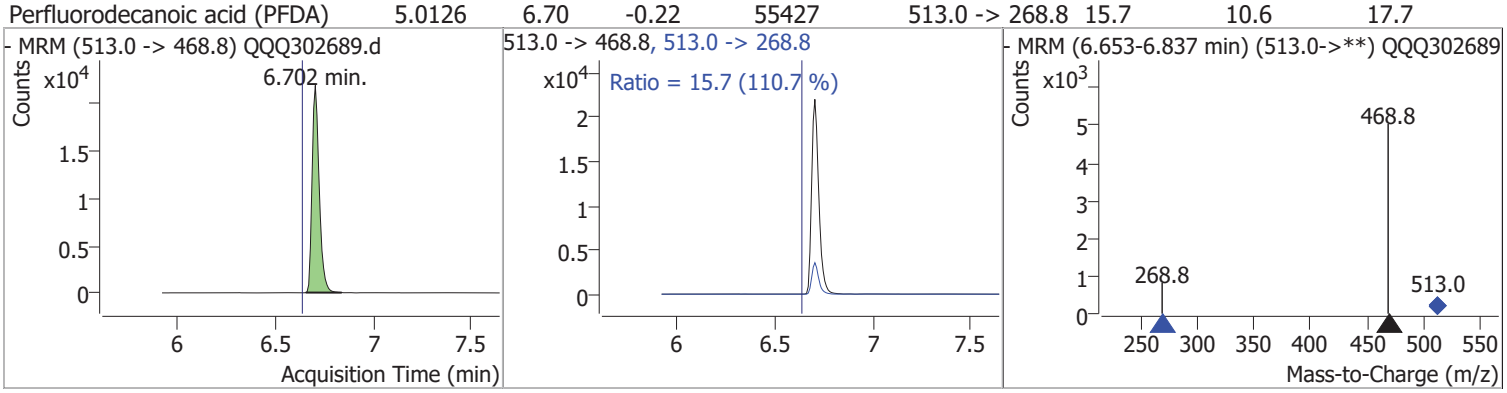


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M6PFDA	5.0097	6.70	-0.22	22286				

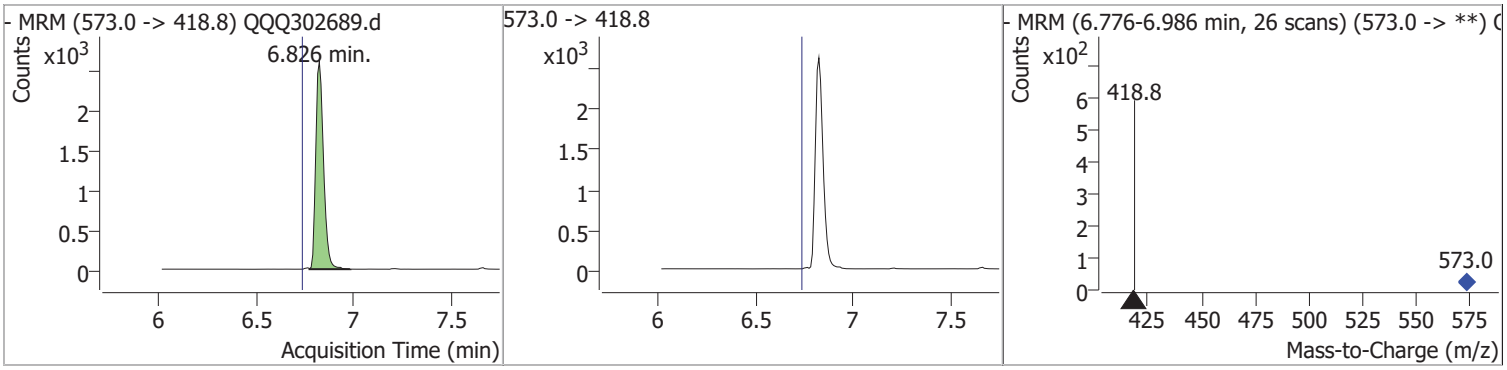


Quantitation Results Report (Not Reviewed)

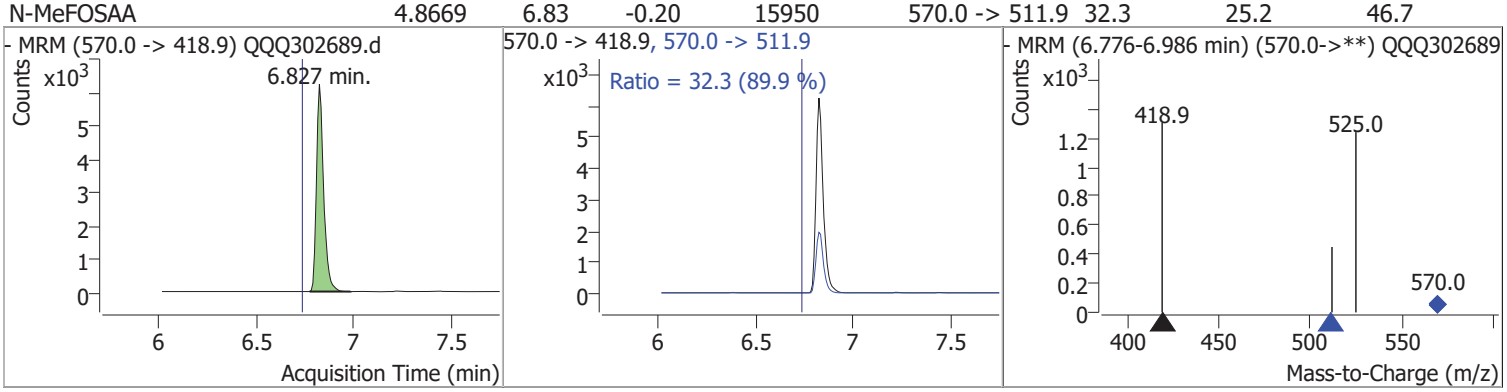
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorodecanoic acid (PFDA)	5.0126	6.70	-0.22	55427	513.0 -> 268.8	15.7	10.6	17.7



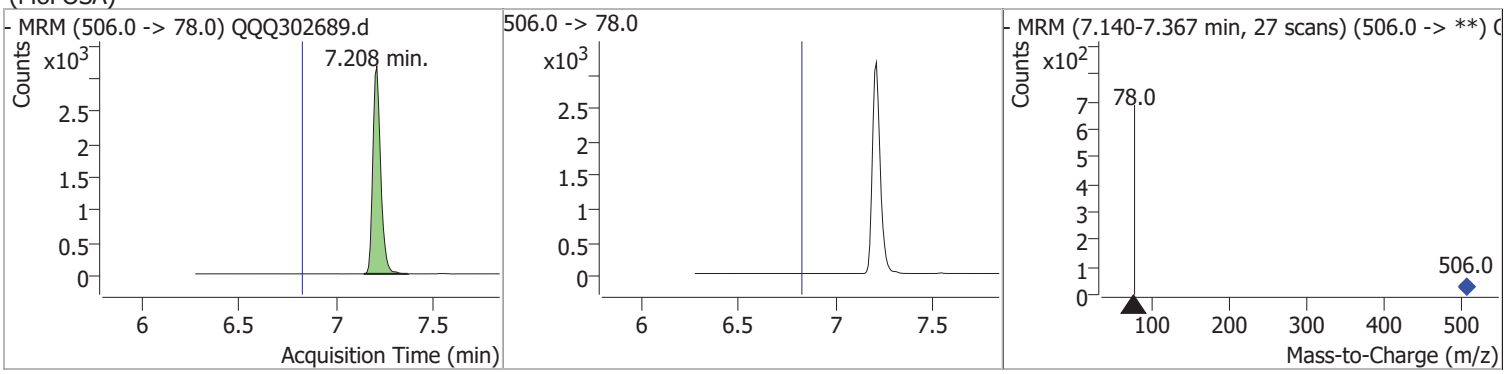
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
d3-N-MeFOSAA	4.6187	6.83	-0.20	7199				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
N-MeFOSAA	4.8669	6.83	-0.20	15950	570.0 -> 511.9	32.3	25.2	46.7

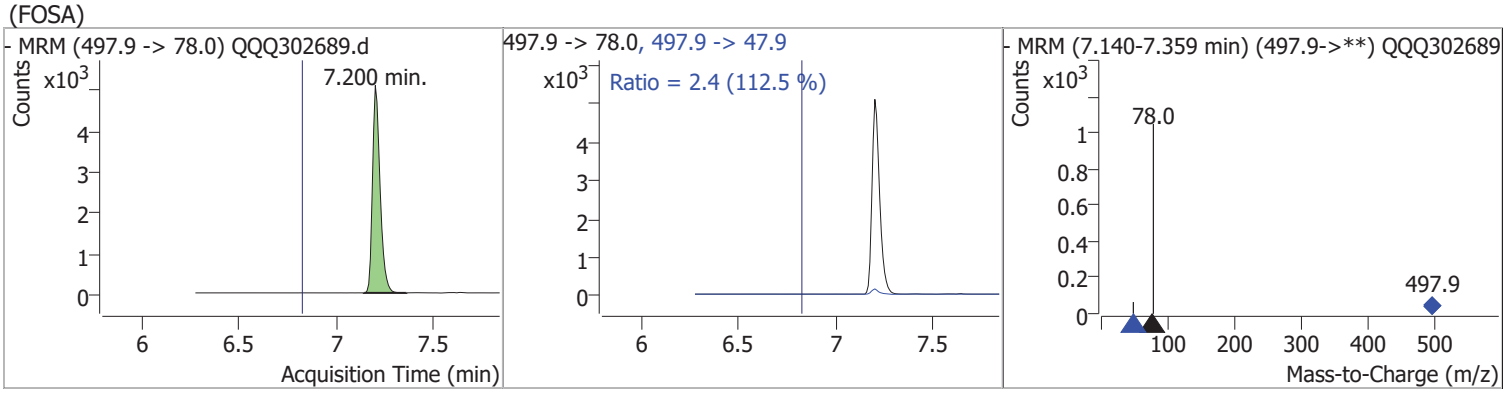


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-1-[13C8]octanesulfonamide (M8FOSA)	4.3607	7.21	0.09	8848				

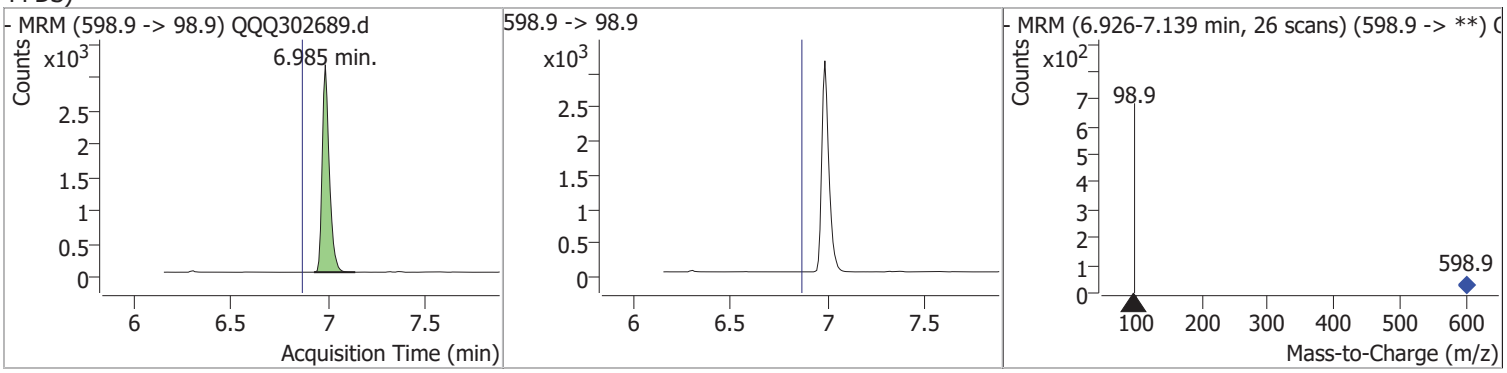


Quantitation Results Report (Not Reviewed)

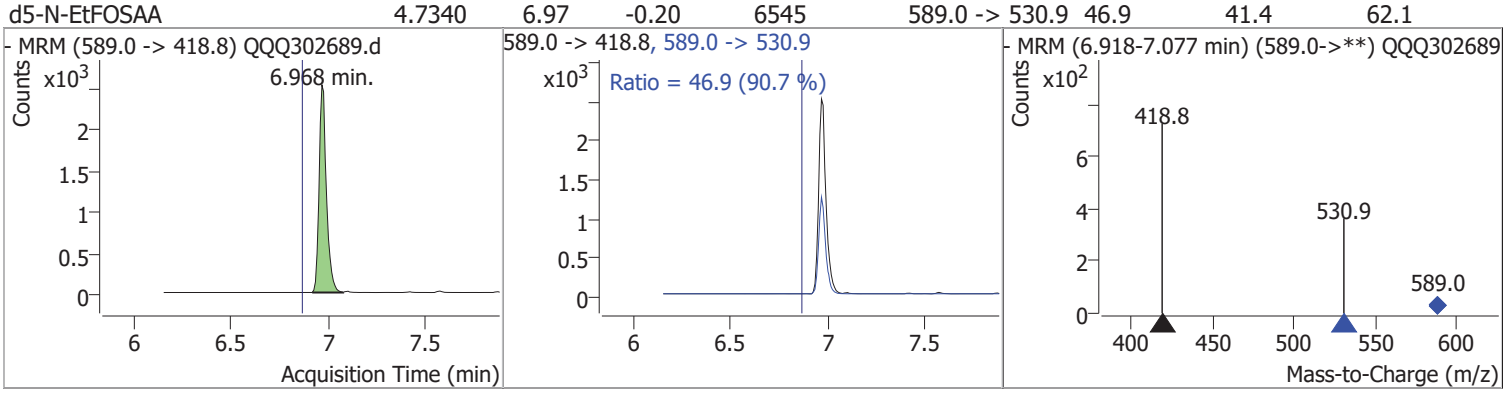
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-1-octanesulfonamide (FOSA)	4.9082	7.20	0.08	13796	497.9 -> 47.9	2.4	1.7	2.5



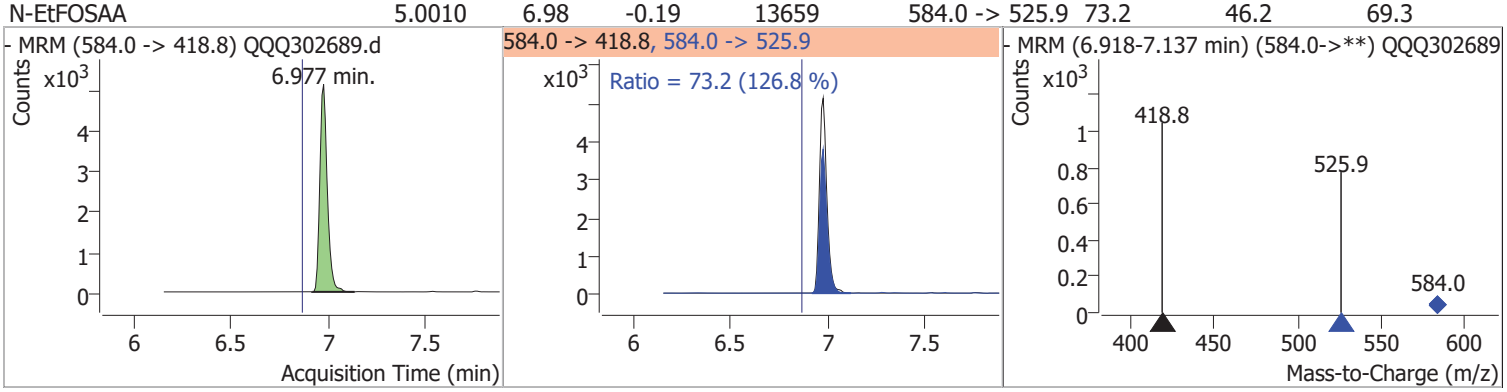
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-1-decanesulfonate (L-PFDS)	4.4817	6.98	-0.18	7883				



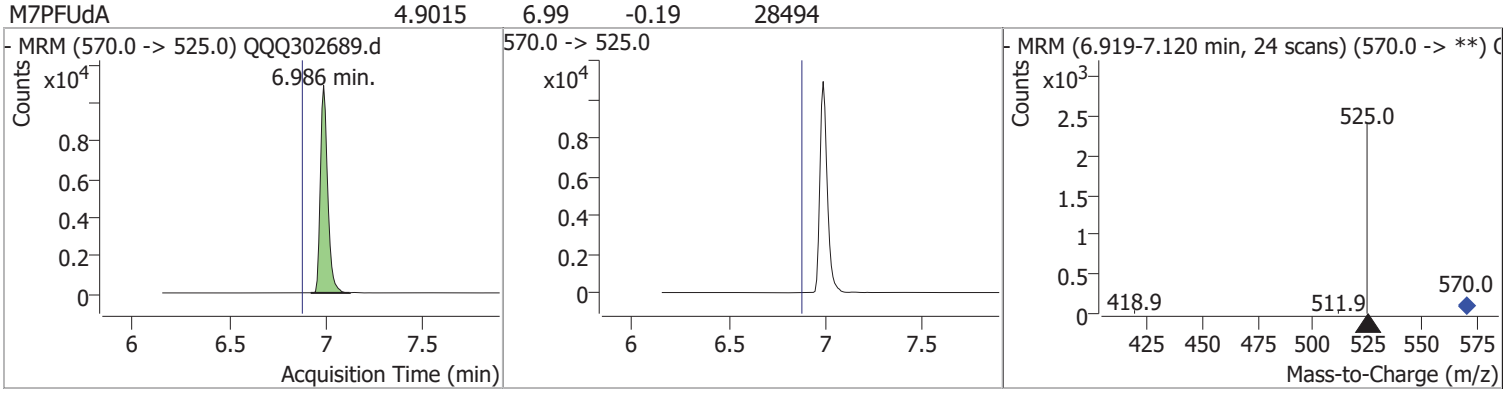
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
d5-N-EtFOSAA	4.7340	6.97	-0.20	6545	589.0 -> 530.9	46.9	41.4	62.1



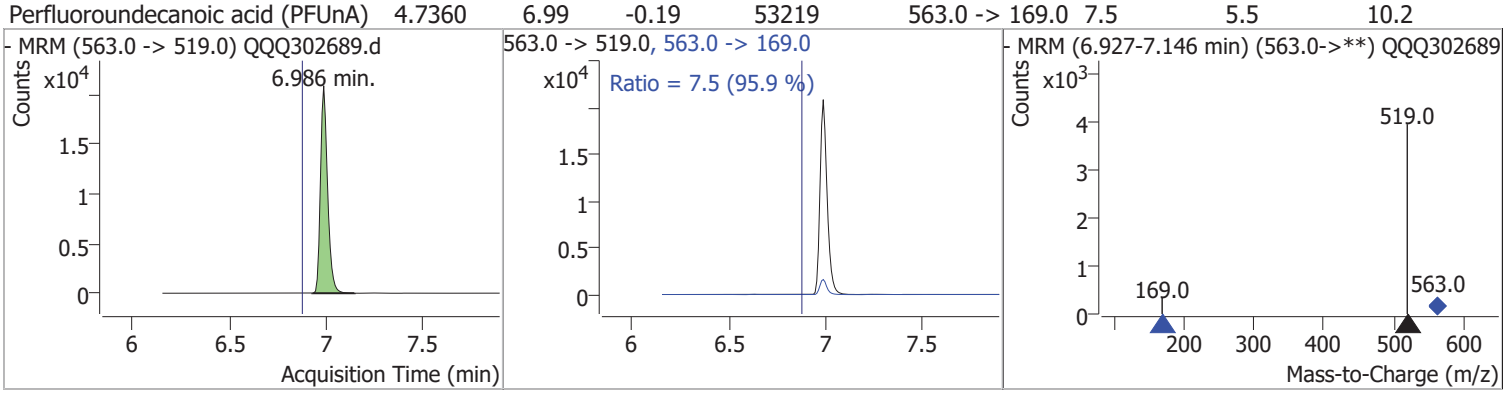
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
N-EtFOSAA	5.0010	6.98	-0.19	13659	584.0 -> 525.9	73.2	46.2	69.3



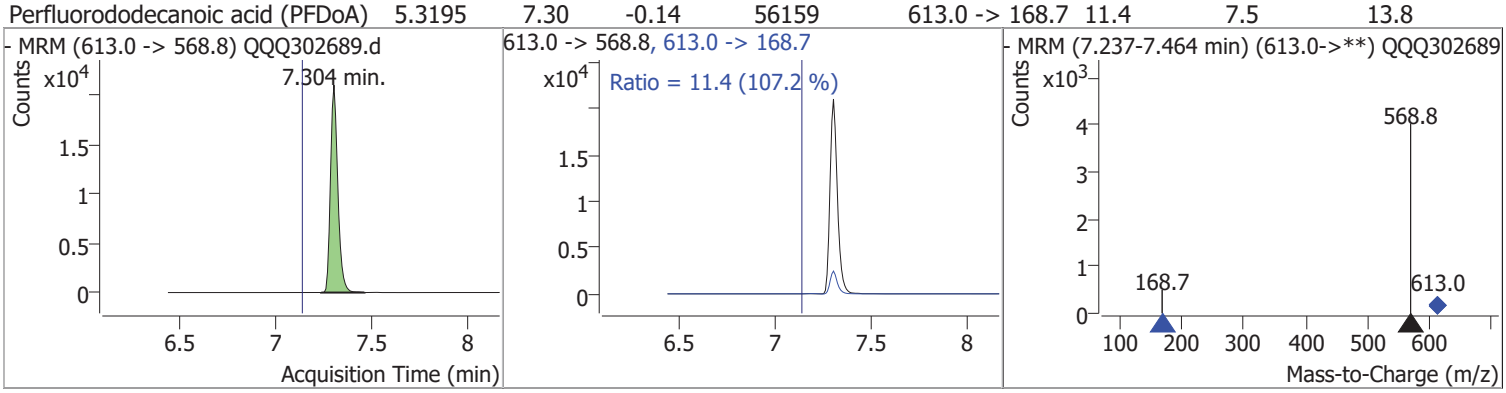
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M7PFUdA	4.9015	6.99	-0.19	28494				



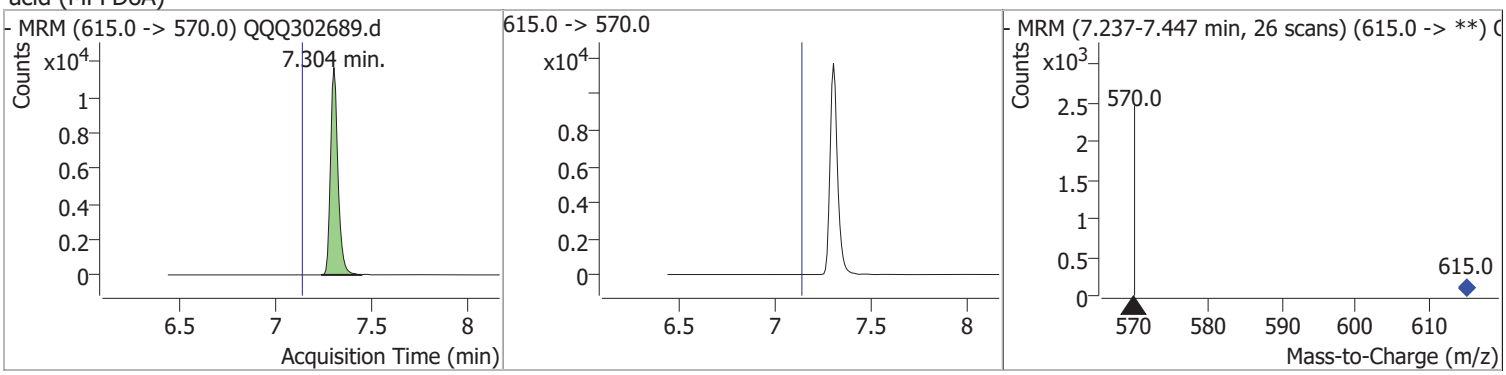
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoroundecanoic acid (PFUnA)	4.7360	6.99	-0.19	53219	563.0 -> 169.0	7.5	5.5	10.2



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorododecanoic acid (PFDoA)	5.3195	7.30	-0.14	56159	613.0 -> 168.7	11.4	7.5	13.8

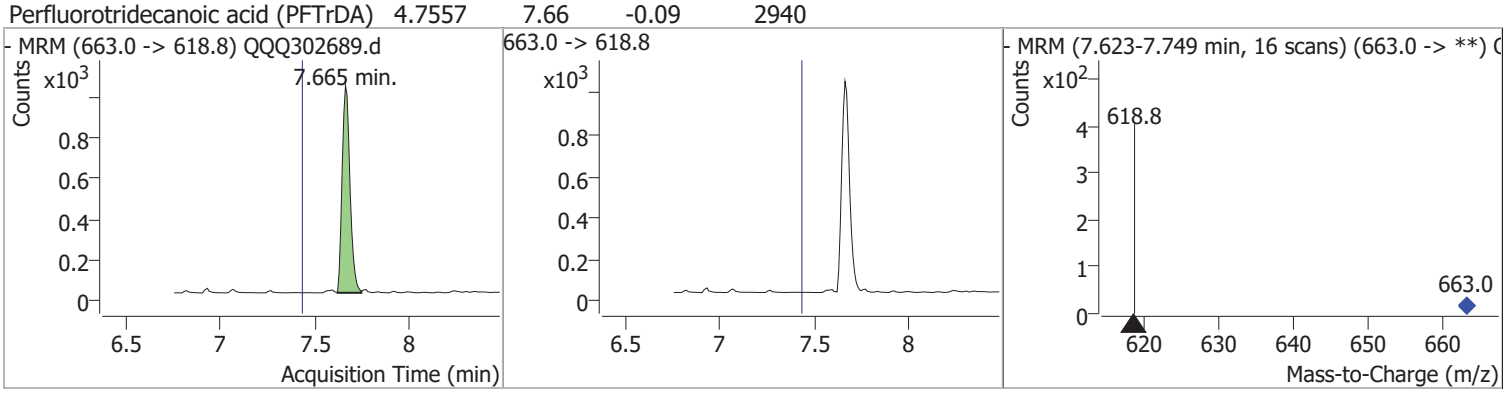


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-n-[1,2-13C2]dodecanoic acid (MPFDoA)	4.6881	7.30	-0.14	31628				

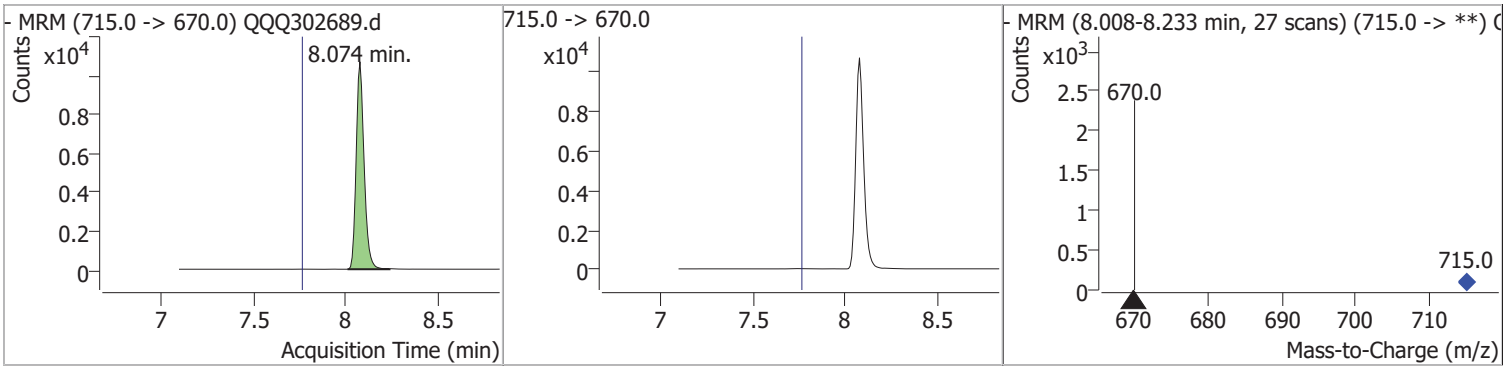


Quantitation Results Report (Not Reviewed)

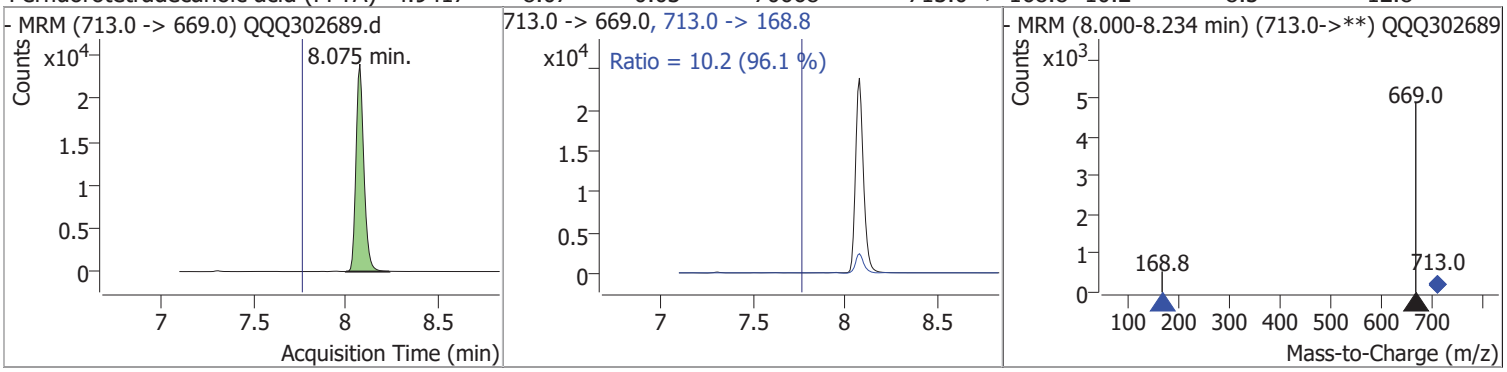
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorotridecanoic acid (PFTrDA)	4.7557	7.66	-0.09	2940				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M2PFTeDA	5.6064	8.07	-0.03	31745				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorotetradecanoic acid (PFTA)	4.9417	8.07	-0.03	70668	713.0 -> 168.8	10.2	8.5	12.8



FORM VII

CONTINUING CALIBRATION CHECK

EPA 537m

Laboratory:	York Analytical Laboratories, Inc.	SDG:	22G0348
Client:	Phoenix Environmental Laboratories, Inc.	Project:	GCL69739
Instrument ID:	QQQ3	Calibration:	YF20026
Lab File ID:	QQQ302699.d	Calibration Date:	06/28/22 15:42
Sequence:	Y2G1435	Injection Date:	07/14/22
Lab Sample ID:	Y2G1435-CCV5	Injection Time:	19:04

		CONC. (ng/mL)		RESPONSE FACTOR			% DIFF / DRIFT	
COMPOUND	TYPE	STD	CCV	ICAL	CCV	MIN (#)	CCV	LIMIT (#)
1H,1H,2H,2H-Perfluorodecanesulfonic acid (8:2 FTS)	A	4.05	4.59	0.1053684	0.1178944		13.4	30
1H,1H,2H,2H-Perfluorooctanesulfonic acid (6:2 FTS)	A	4.38	4.38	7.768364E-02	8.056005E-02		-0.08	30
N-EtFOSAA	A	5.00	5.02	0.2171733	0.2020651		0.3	30
N-MeFOSAA	A	5.00	4.85	0.227535	0.2343209		-3.1	30
Perfluoro-1-decanesulfonic acid (PFDS)	A	4.82	4.53	0.1251683	0.1219406		-6.0	30
Perfluoro-1-heptanesulfonic acid (PFHpS)	A	4.98	5.38	0.1174146	0.1198452		8.1	30
Perfluoro-1-octanesulfonamide (FOSA)	A	5.00	4.66	0.1871459	0.1925563		-6.9	30
Perfluorobutanesulfonic acid (PFBS)	A	4.42	3.56	0.1544403	0.1379039		-19.4	30
Perfluorodecanoic acid (PFDA)	A	5.00	5.20	0.8074561	0.8489922		3.9	30
Perfluorododecanoic acid (PFDoA)	A	5.00	5.11	0.7282308	0.794182		2.2	30
Perfluoroheptanoic acid (PFHpA)	A	5.00	4.38	0.7336475	0.7481774		-12.4	30
Perfluorohexanesulfonic acid (PFHxS)	A	4.55	4.21	0.1347399	0.1313324		-7.4	30
Perfluorohexanoic acid (PFHxA)	A	5.00	4.69	0.5690764	0.6038722		-6.3	30
Perfluoro-n-butanoic acid (PFBA)	A	5.00	4.49	0.3382355	0.3580038		-10.1	30
Perfluorononanoic acid (PFNA)	A	4.80	4.91	0.8257117	0.8936483		2.2	30
Perfluorooctanesulfonic acid (PFOS)	A	4.62	4.32	0.1171459	0.1136365		-6.6	30
Perfluorooctanoic acid (PFOA)	A	5.00	4.92	0.7797809	0.8515339		-1.6	30
Perfluoropentanoic acid (PFPeA)	A	5.00	4.63	0.2734725	0.2711581		-7.4	30
Perfluorotetradecanoic acid (PFTA)	A	5.00	4.94	1.023396	1.043078		-1.1	30
Perfluorotridecanoic acid (PFTrDA)	A	5.00	4.66	4.773095E-02	4.240551E-02		-6.9	30
Perfluoroundecanoic acid (PFUnA)	A	5.00	4.79	0.7480439	0.7947286		-4.1	30

Column to be used to flag Response Factor and %Diff/Drift values with an asterisk

* Values outside of QC limits

Quantitation Results Report (Not Reviewed)

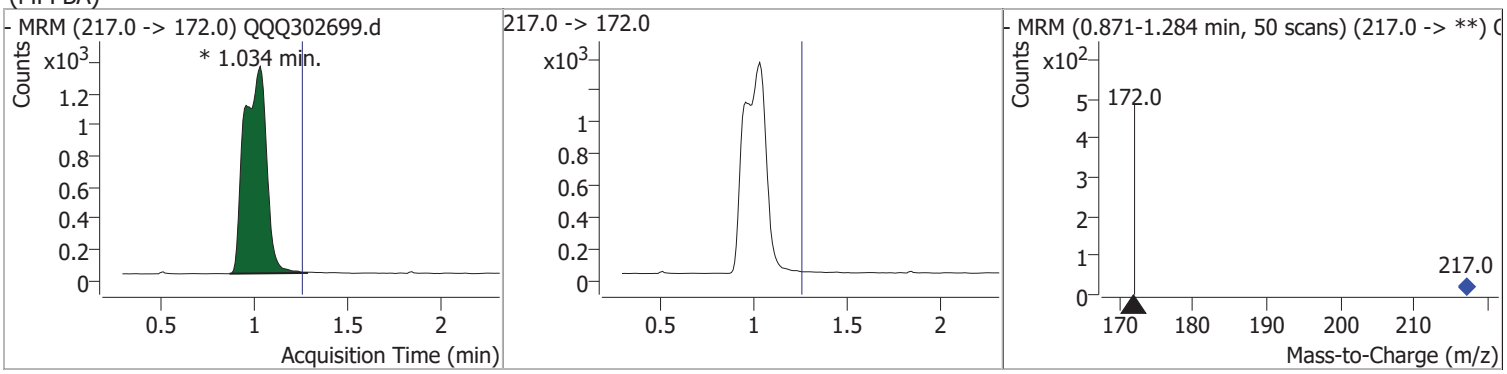
Data File	QQQ302699.d	Operator	
Acq. Method	PFAS 24_IDA ACQ_QQQ3A.m	Acq. Date-Time	7/14/2022 7:04:22 PM
Sample Name	SEQ-CCV5	Instrument	QQQ3
Vial		Multiplier	1.00
DA Method File	PFAS_24_IDA_QUANT_QQQ3_062722.m	Comment	5
Tune File		Tune Date	
Batch Name	2022-07-14-IDA.batch.bin	Last Calib Update	6/27/2022 4:24:30 PM
Ref Library			

Compound	RT	QIon	Resp.	Conc.	Units		Dev(Min)
Internal Standards							
MPFOA	6.148	417.0 -> 372.0	133434	10.0000	ng/ml		-0.282
System Monitoring Compounds							
Perfluoro-n-[13C4]butanoic acid (MPFBA)	1.034	217.0 -> 172.0	11025	4.6183	ng/ml	m	-0.275
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 46.18%			
Perfluoro-n-[13C54]pentanoic acid (M5PFPeA)	4.045	268.0 -> 223.0	9137	4.6178	ng/ml		-0.542
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 46.18%			
M3PFBS	4.680	302.0 -> 79.9	3936	3.8567	ng/ml		-0.483
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 38.57%			
M2-4-2FTS	5.275	329.0 -> 309.0	3056	4.4906	ng/ml	#	-0.415
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 44.91%			
M5PFHxA	5.318	318.0 -> 273.0	18232	4.7056	ng/ml		-0.406
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 47.06%			
M4PFHpA	5.821	367.0 -> 322.0	9580	4.7647	ng/ml		-0.323
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 47.65%			
M3PFHxS	5.871	402.0 -> 80.0	3796	4.4067	ng/ml		-0.306
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 44.07%			
M2-6-2FTS	6.131	429.0 -> 409.0	2705	4.1994	ng/ml	#	-0.289
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 41.99%			
Perfluoro-n-[13C8]octanoic acid (M8PFOA)	6.148	421.0 -> 376.0	19399	5.7903	ng/ml		-0.282
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 57.90%			
Perfluoro-n-[13C9]nonanoic acid (M9PFNA)	6.434	472.0 -> 427.0	19688	4.9728	ng/ml		-0.246
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 49.73%			
Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)	6.442	507.0 -> 80.0	4323	4.8942	ng/ml	#	-0.246
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 48.94%			
M2-8-2FTS	6.692	529.0 -> 509.0	3377	5.9562	ng/ml	#	-0.226
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 59.56%			
M6PFDA	6.701	519.0 -> 473.9	21460	4.9028	ng/ml		-0.221
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 49.03%			
d3-N-MeFOSAA	6.826	573.0 -> 418.8	6414	4.1845	ng/ml		-0.204
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 41.84%			
Perfluoro-1-[13C8]octanesulfonamide (M8FOSA)	7.208	506.0 -> 78.0	8815	4.4126	ng/ml		0.089
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 44.13%			
d5-N-EtFOSAA	6.968	589.0 -> 418.8	6325	4.6496	ng/ml		-0.196
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 46.50%			
M7PFUdA	6.986	570.0 -> 525.0	29638	5.1829	ng/ml		-0.187
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 51.83%			
Perfluoro-n-[1,2-13C2]dodecanoic acid (MPFDoA)	7.304	615.0 -> 570.0	33053	4.9718	ng/ml		-0.144
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 49.72%			
M2PFTeDA	8.074	715.0 -> 670.0	31932	5.7262	ng/ml		-0.027
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 57.26%			
Target Compounds							**QValue**

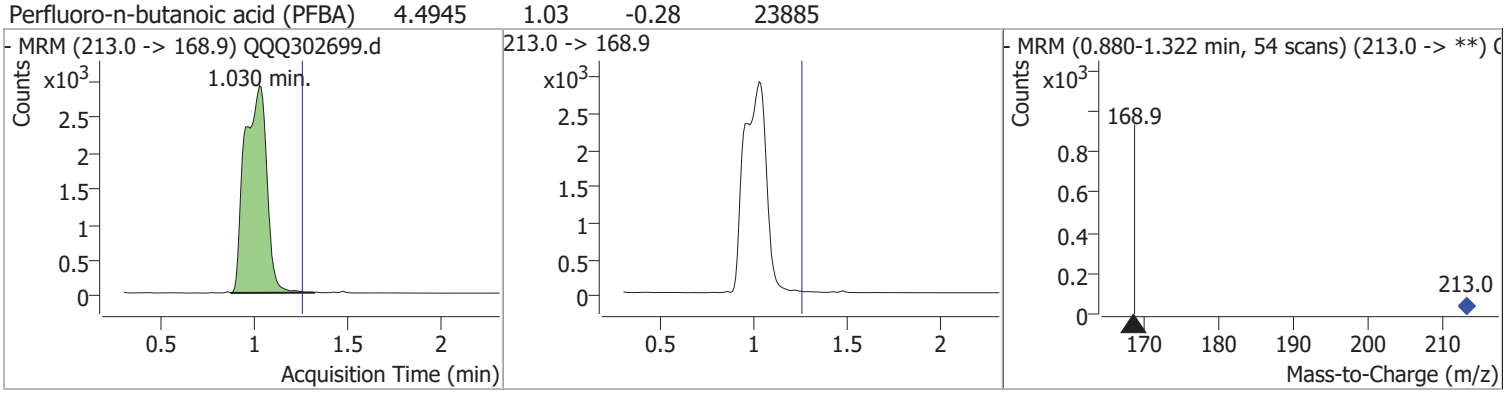
Compound	RT	QIon	Resp.	Conc.	Units		Dev(Min)
Perfluoro-n-butanoic acid (PFBA)	1.030	213.0 -> 168.9	23885	4.4945	ng/ml		100
Perfluoro-n-pentanoic acid (PFPeA)	4.049	263.0 -> 219.0	18091	4.6285	ng/ml		100
Perfluorobutanesulfonic acid (PFBS)	4.683	298.9 -> 79.9	8133	3.5616	ng/ml		100
1H,1H,2H,2H-perfluoro-1-hexanesulfonate (4 2FTS)	5.276	327.0 -> 307.0	6544	4.9946	ng/ml		95
Perfluorohexanoic acid (PFHxA)	5.319	313.0 -> 268.9	40288	4.6868	ng/ml		99
Perfluoro-1-pentanesulfonate (L-PFPeS)	5.452	348.9 -> 79.9	8540	4.5068	ng/ml		96
Perfluoroheptanoic acid (PFHpA)	5.822	363.0 -> 318.8	49916	4.3805	ng/ml		98
Perfluorohexanesulfonic acid (PFHxS)	5.863	398.9 -> 79.9	7973	4.2115	ng/ml	m	92
1H,1H,2H,2H-perfluoro-1-octanesulfonate (6 2FTS)	6.131	427.0 -> 407.0	4708	4.3763	ng/ml		94
Perfluorooctanoic acid (PFOA)	6.149	413.0 -> 368.8	56812	4.9185	ng/ml		98
Perfluoro-1-heptanesulfonate (L-PFHpS)	6.173	448.9 -> 80.0	7964	5.3843	ng/ml	#	85
Perfluorononanoic acid (PFNA)	6.434	463.0 -> 418.8	57237	4.9065	ng/ml		96
Perfluorooctanesulfonic acid (PFOS)	6.442	498.9 -> 79.9	7005	4.3164	ng/ml	#m	73
1H,1H,2H,2H-perfluoro-1-decanesulfonate (8 2FTS)	6.693	527.0 -> 507.0	6371	4.5913	ng/ml		88
Perfluorononanesulfonate (L-PFNS)	6.709	548.9 -> 79.9	6717	4.2952	ng/ml		99
Perfluorodecanoic acid (PFDA)	6.702	513.0 -> 468.8	56642	5.1972	ng/ml		97
N-MeFOSAA	6.827	570.0 -> 418.9	15633	4.8475	ng/ml		94
Perfluoro-1-octanesulfonamide (FOSA)	7.208	497.9 -> 78.0	12847	4.6556	ng/ml	#	97
Perfluoro-1-decanesulfonate (L-PFDS)	6.985	598.9 -> 98.9	7843	4.5303	ng/ml		100
N-EtFOSAA	6.977	584.0 -> 418.8	13481	5.0150	ng/ml		89
Perfluoroundecanoic acid (PFUnA)	6.986	563.0 -> 519.0	53022	4.7934	ng/ml		98
Perfluorododecanoic acid (PFDoA)	7.304	613.0 -> 568.8	52985	5.1113	ng/ml		95
Perfluorotridecanoic acid (PFTrDA)	7.665	663.0 -> 618.8	2829	4.6575	ng/ml		100
Perfluorotetradecanoic acid (PFTA)	8.067	713.0 -> 669.0	69591	4.9442	ng/ml		99

(#) = Qualifier Out of Range; (m) = Manual Integration; (+) = Area Summed; (*) = Surrogate Percent Recovery Out of Range; (d): Zeroed Peak

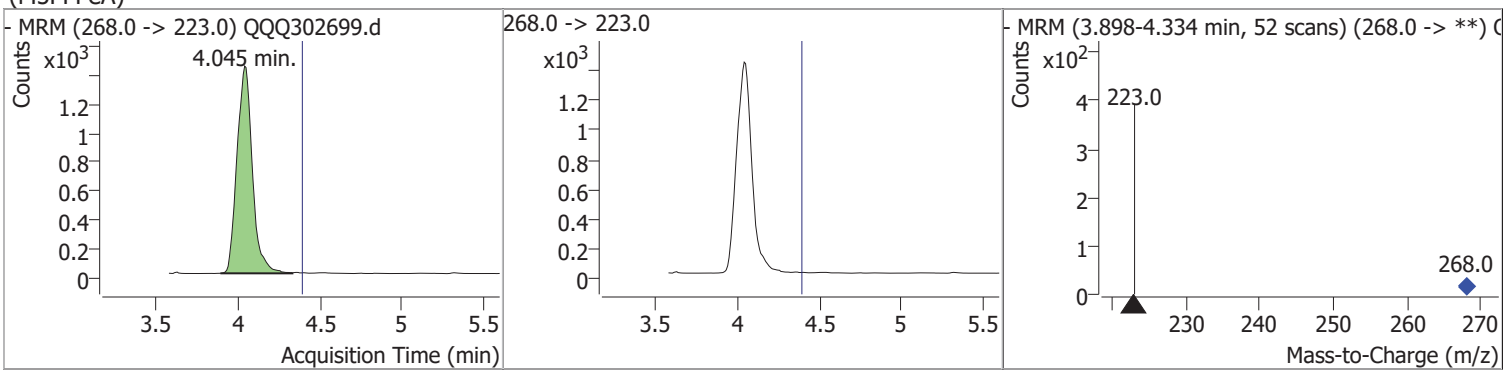
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-n-[13C4]butanoic acid (MPFBA)	4.6183	1.03	-0.27	11025 (m)				



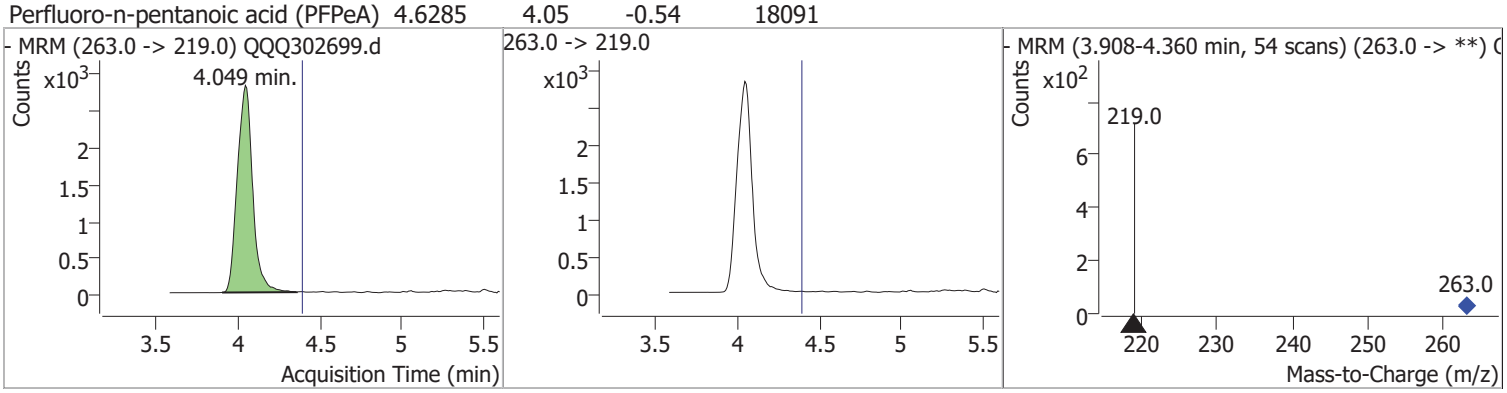
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-n-butanoic acid (PFBA)	4.4945	1.03	-0.28	23885				



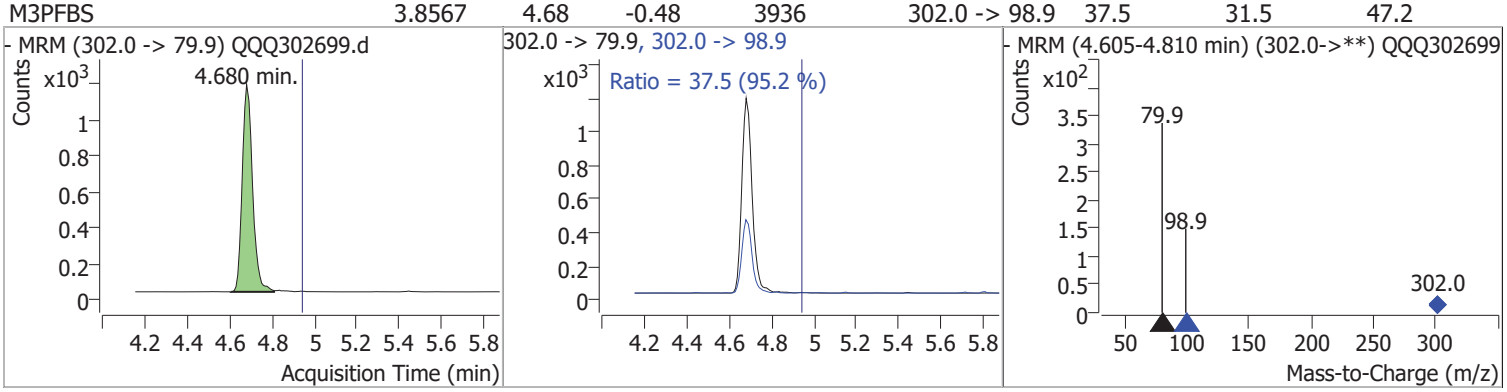
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-n-[13C54]pentanoic acid (M5PFPeA)	4.6178	4.04	-0.54	9137				



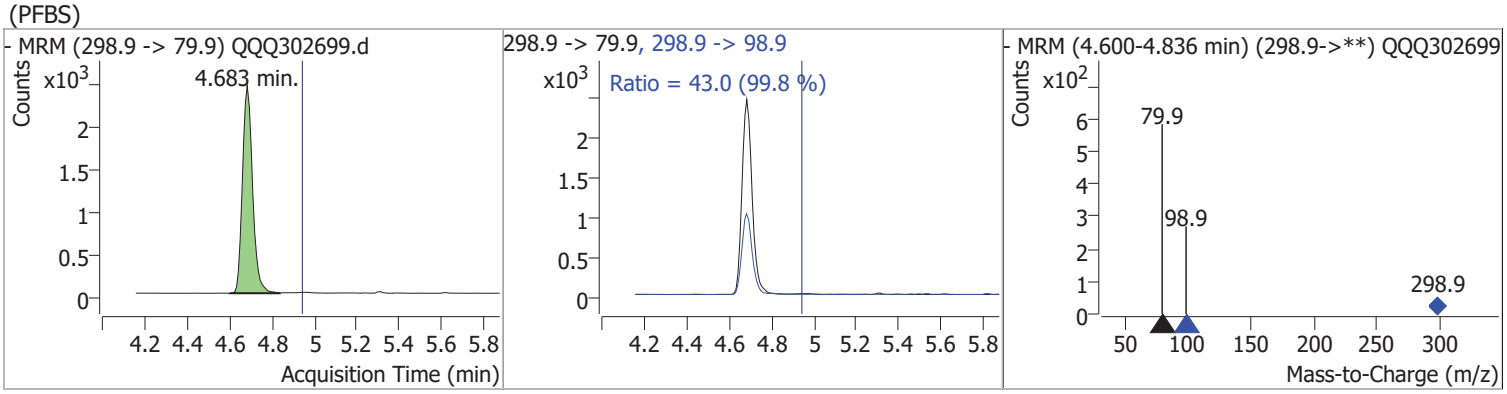
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-n-pentanoic acid (PFPeA)	4.6285	4.05	-0.54	18091				



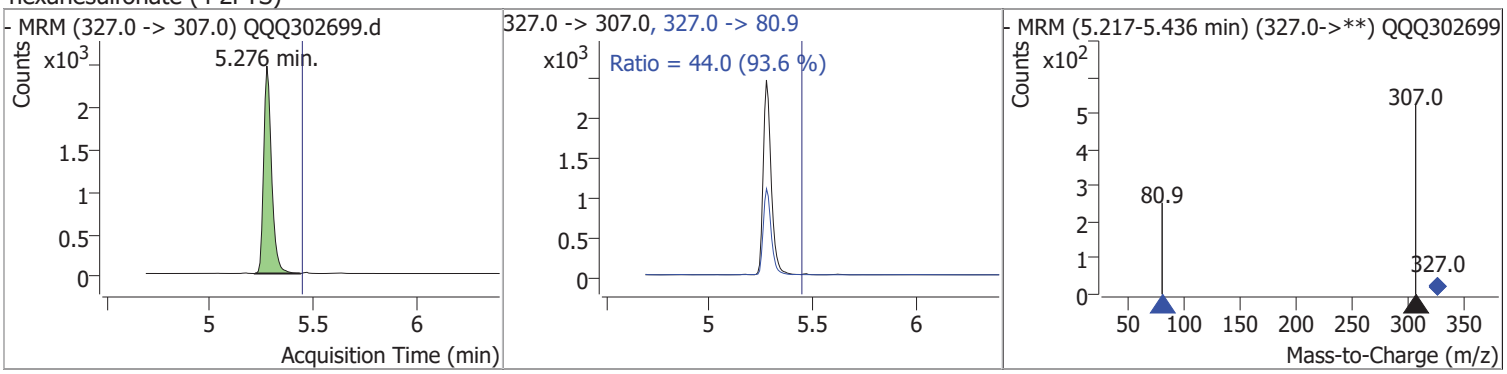
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M3PFBS	3.8567	4.68	-0.48	3936	302.0 -> 98.9	37.5	31.5	47.2



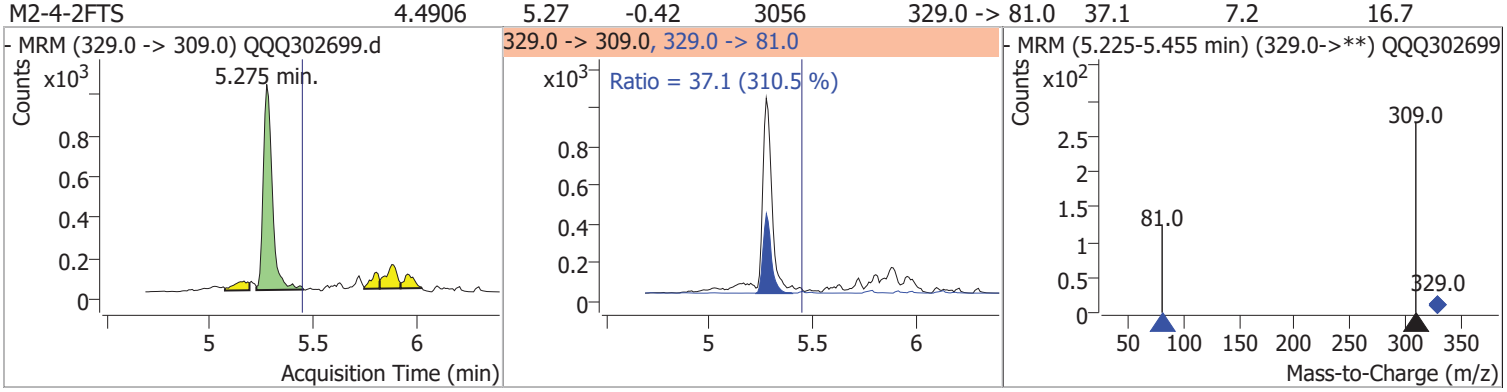
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorobutanesulfonic acid (PFBS)	3.5616	4.68	-0.48	8133	298.9 -> 98.9	43.0	34.5	51.7



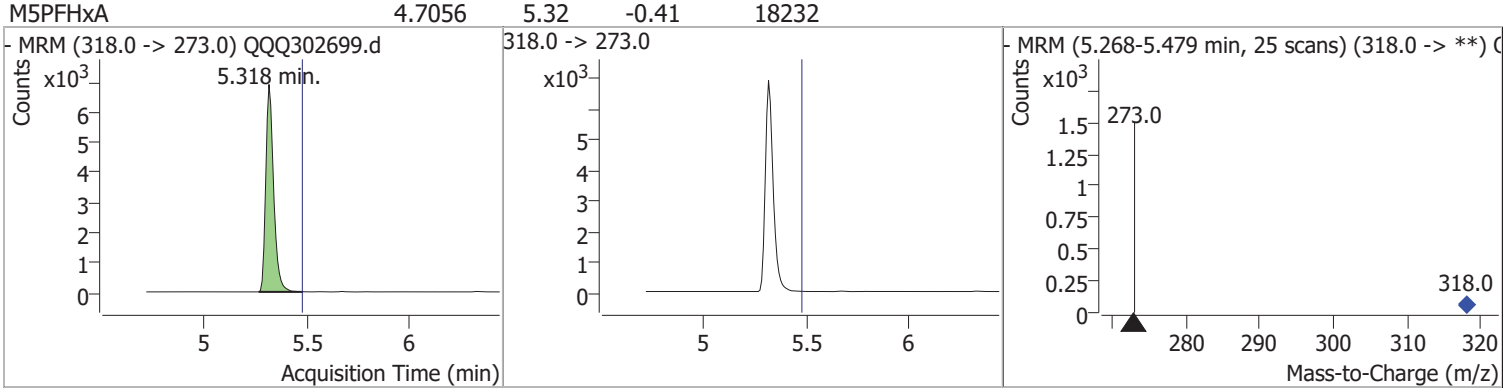
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
1H,1H,2H,2H-perfluoro-1-hexanesulfonate (4 2FTS)	4.9946	5.28	-0.41	6544	327.0 -> 80.9	44.0	28.2	65.9



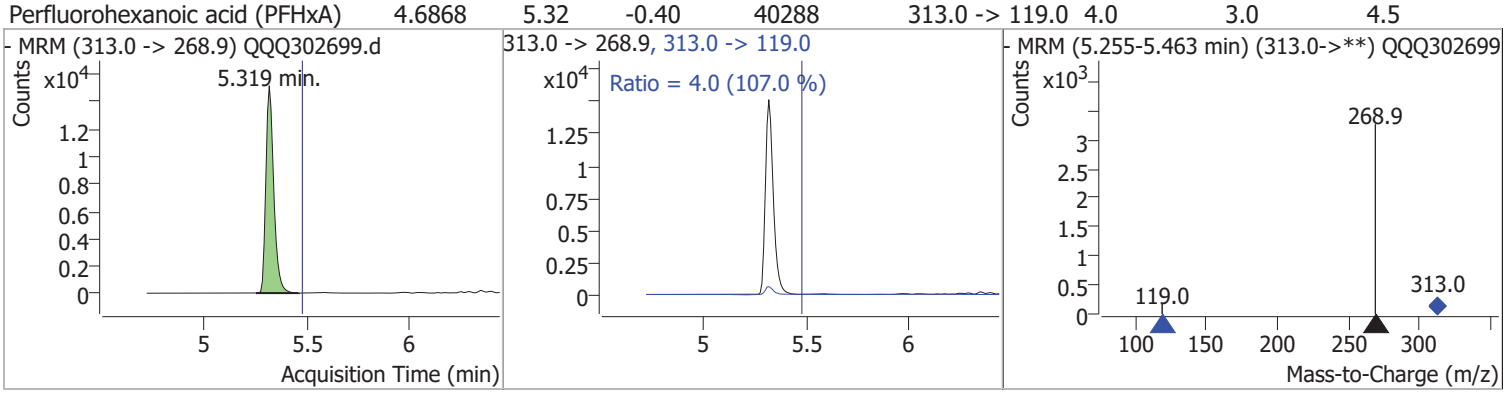
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M2-4-2FTS	4.4906	5.27	-0.42	3056	329.0 -> 81.0	37.1	7.2	16.7



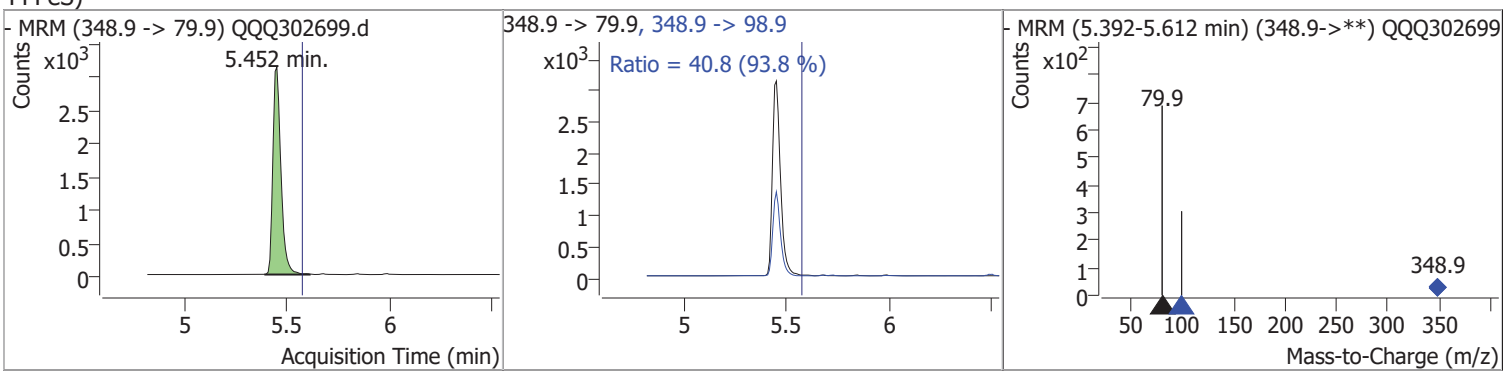
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M5PFHxA	4.7056	5.32	-0.41	18232				



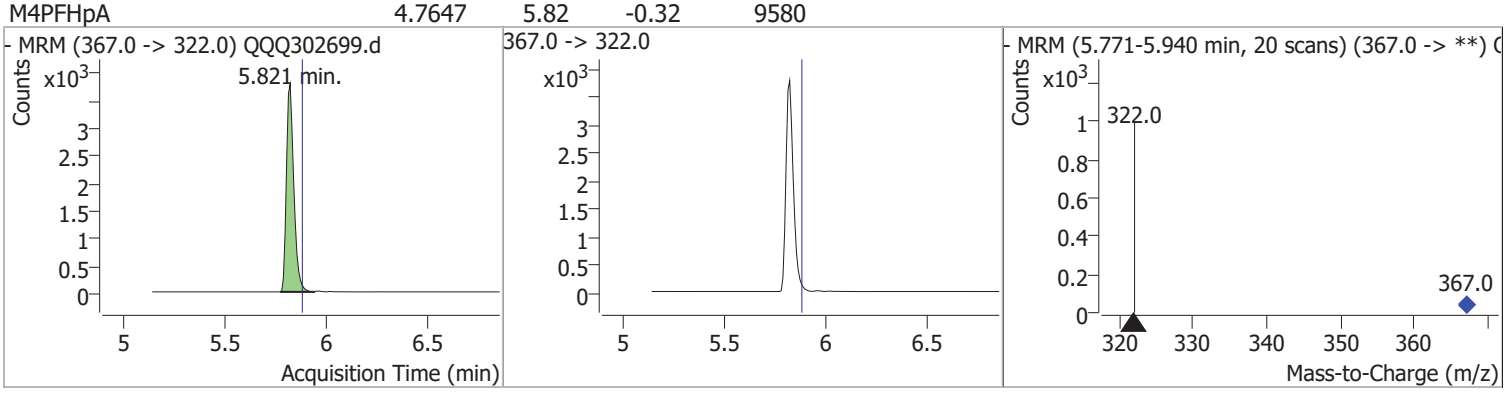
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorohexanoic acid (PFHxA)	4.6868	5.32	-0.40	40288	313.0 -> 119.0	4.0	3.0	4.5



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-1-pentanesulfonate (L-PFPeS)	4.5068	5.45	-0.37	8540	348.9 -> 98.9	40.8	34.8	52.2

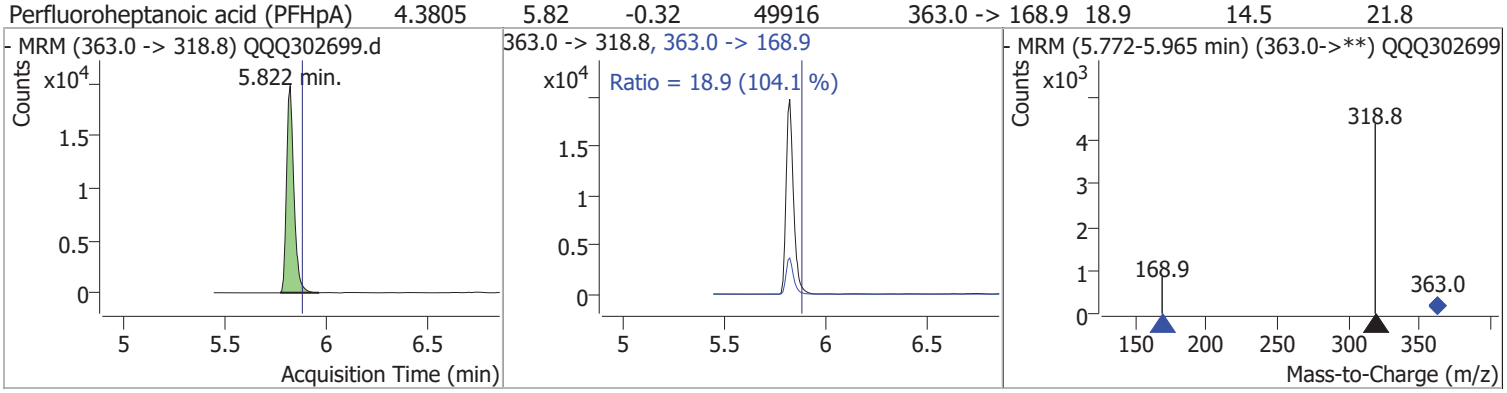


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M4PFHpA	4.7647	5.82	-0.32	9580				

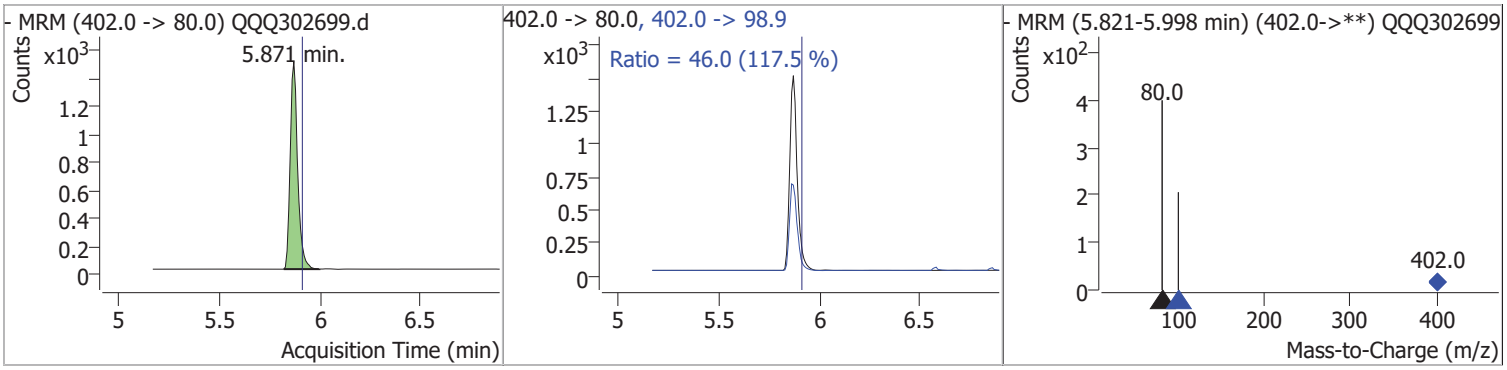


Quantitation Results Report (Not Reviewed)

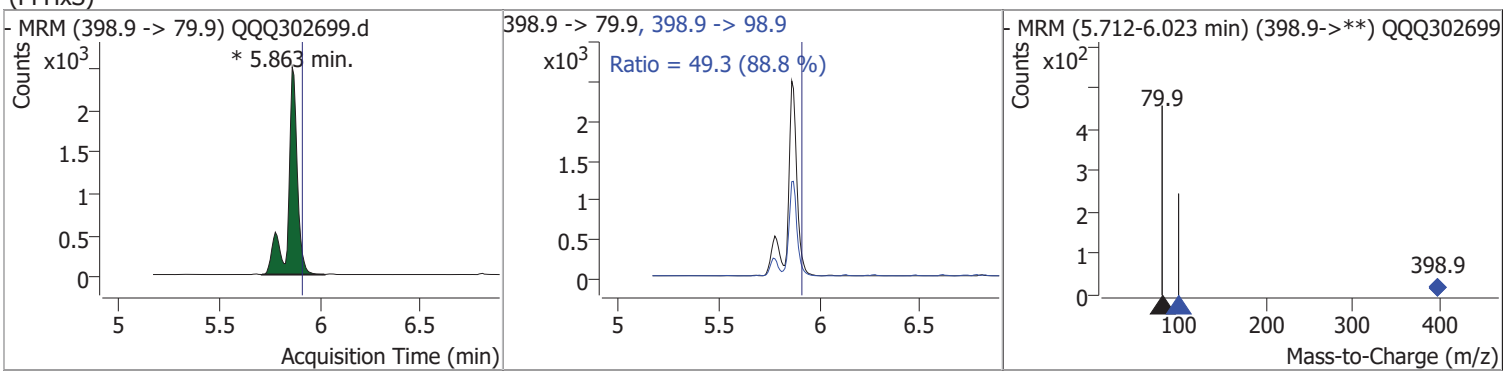
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoroheptanoic acid (PFHpA)	4.3805	5.82	-0.32	49916	363.0 -> 168.9	18.9	14.5	21.8



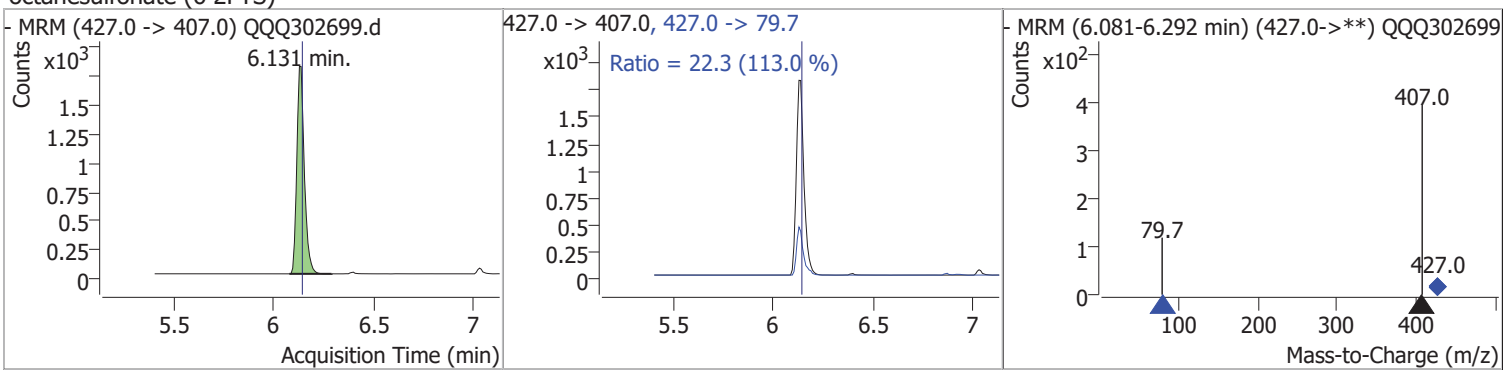
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M3PFHxS	4.4067	5.87	-0.31	3796	402.0 -> 98.9	46.0	31.3	47.0



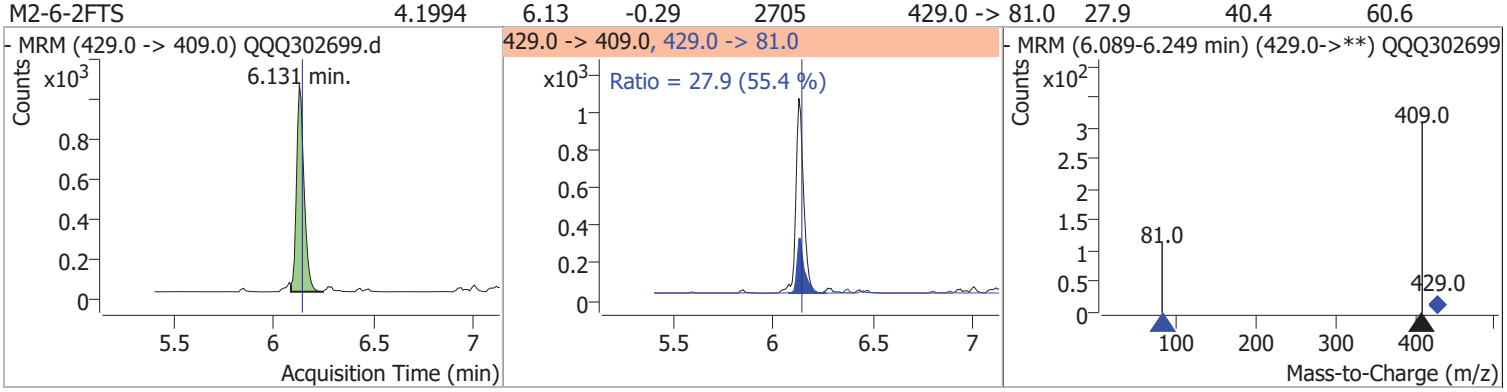
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorohexanesulfonic acid (PFHxS)	4.2115	5.86	-0.31	7973 (m)	398.9 -> 98.9	49.3	44.4	66.5



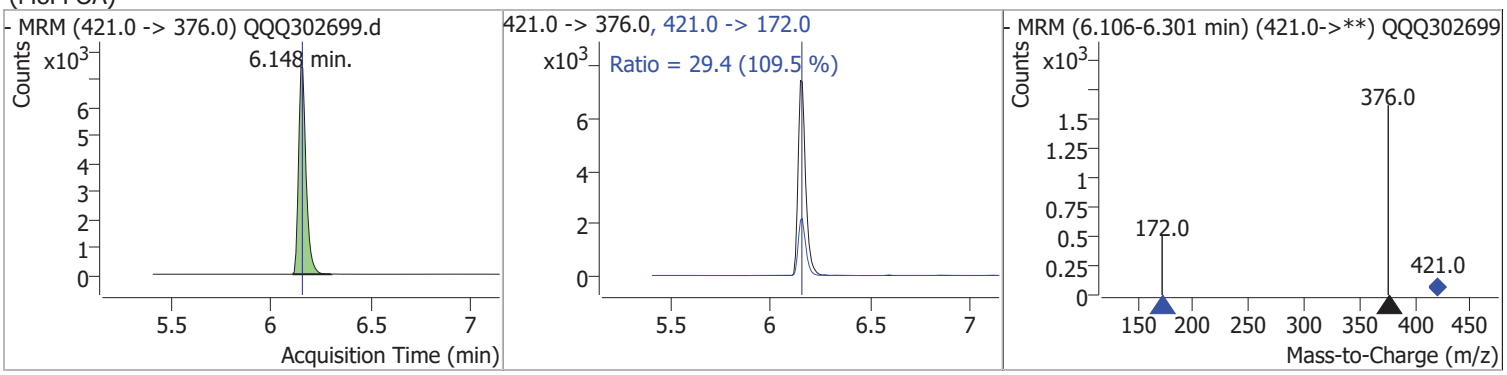
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
1H,1H,2H,2H-perfluoro-1-octanesulfonate (6 2FTS)	4.3763	6.13	-0.29	4708	427.0 -> 79.7	22.3	15.8	23.7



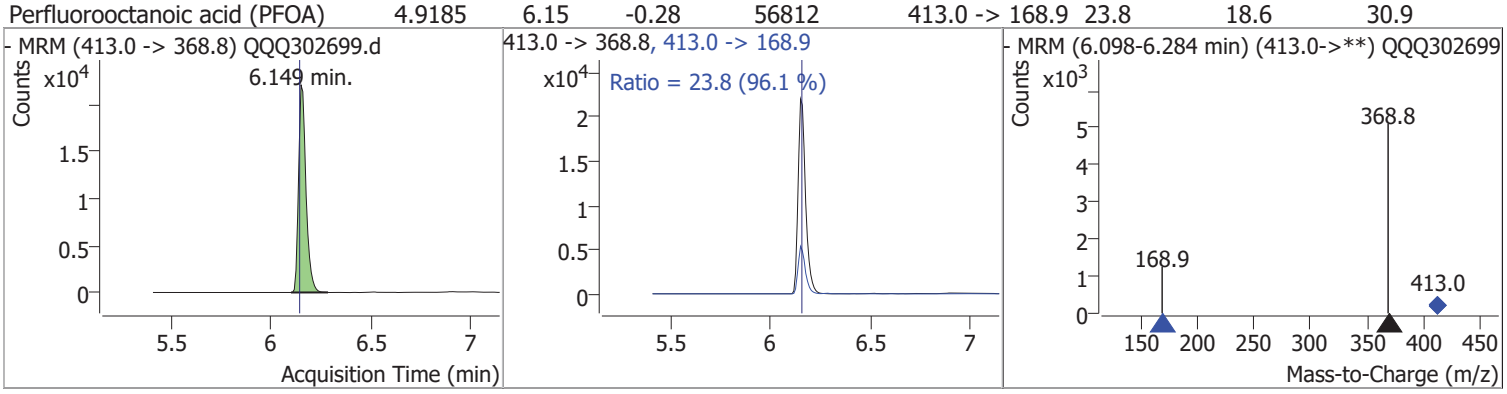
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M2-6-2FTS	4.1994	6.13	-0.29	2705	429.0 -> 81.0	27.9	40.4	60.6



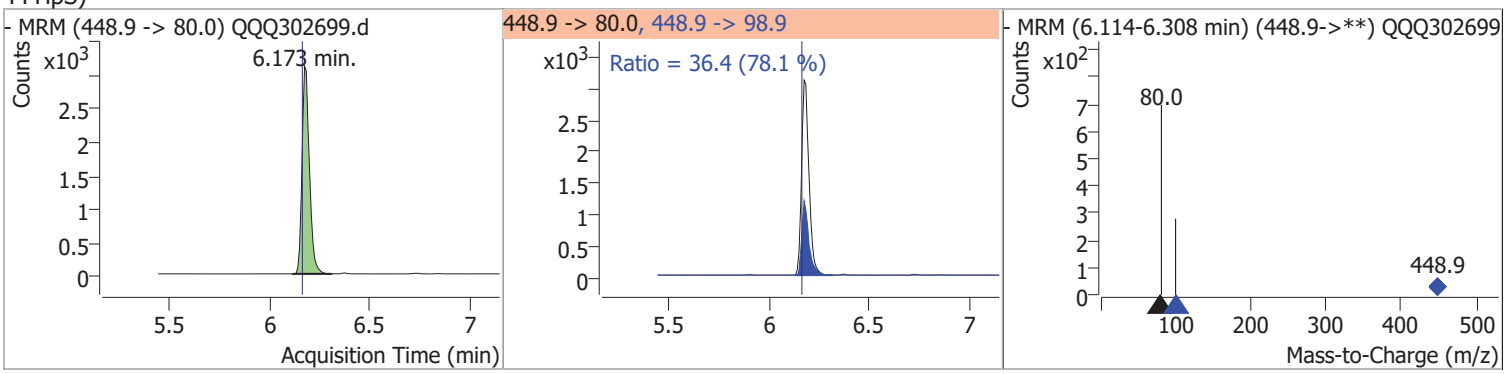
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-n-[13C8]octanoic acid (M8PFOA)	5.7903	6.15	-0.28	19399	421.0 -> 172.0	29.4	21.5	32.2



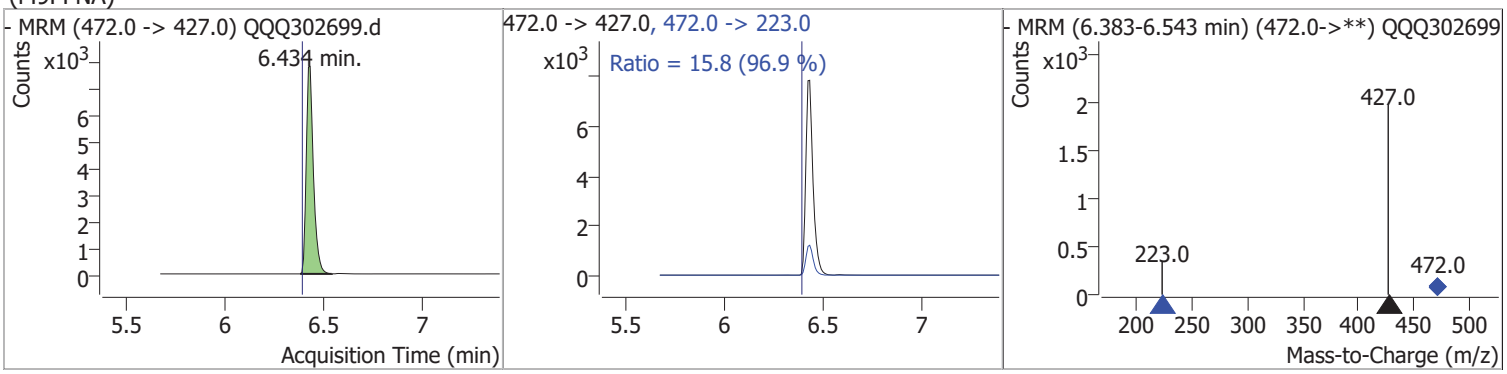
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorooctanoic acid (PFOA)	4.9185	6.15	-0.28	56812	413.0 -> 168.9	23.8	18.6	30.9



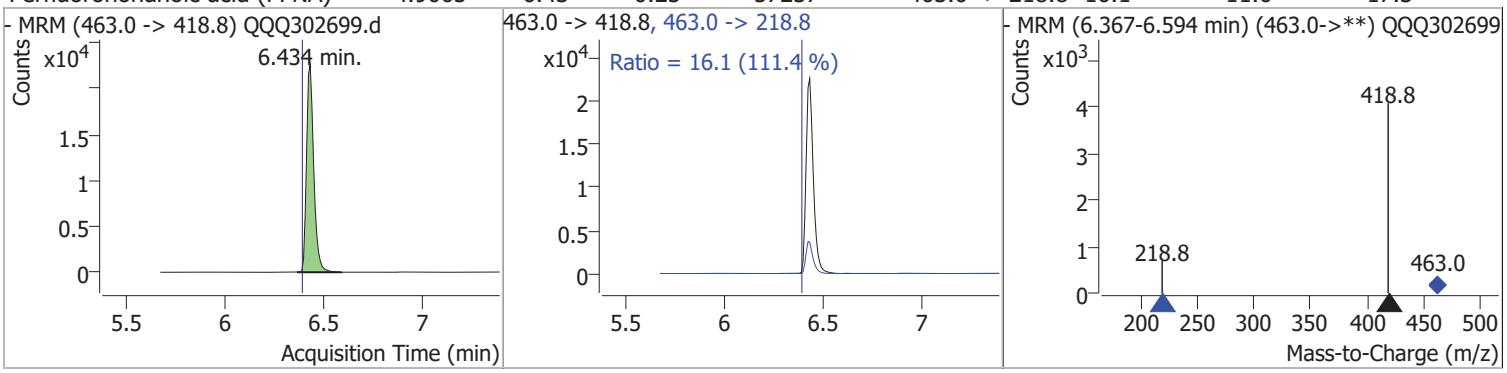
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-1-heptanesulfonate (L-PFHpS)	5.3843	6.17	-0.26	7964	448.9 -> 98.9	36.4	37.3	56.0



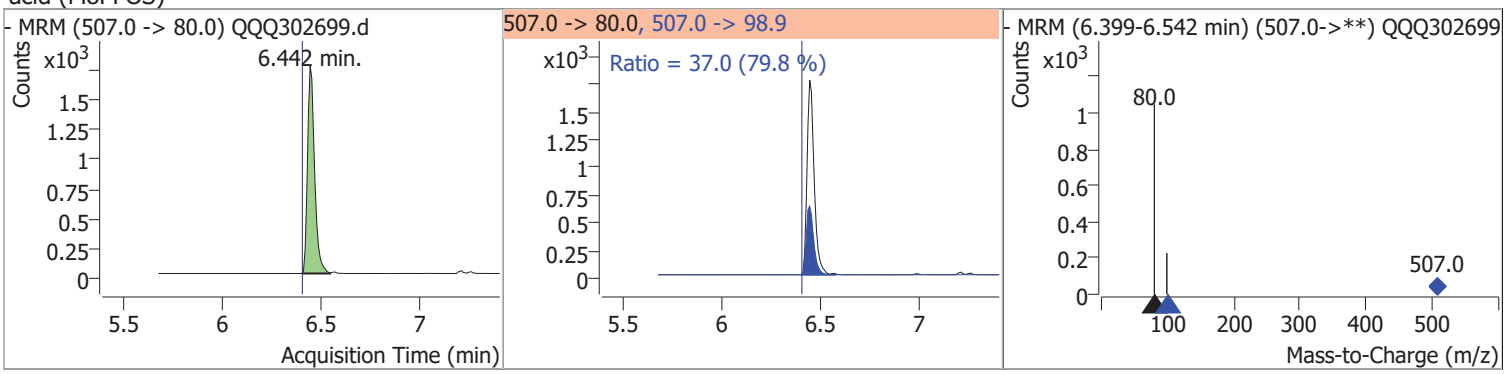
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-n-[13C9]nonanoic acid (M9PFNA)	4.9728	6.43	-0.25	19688	472.0 -> 223.0	15.8	13.1	19.6



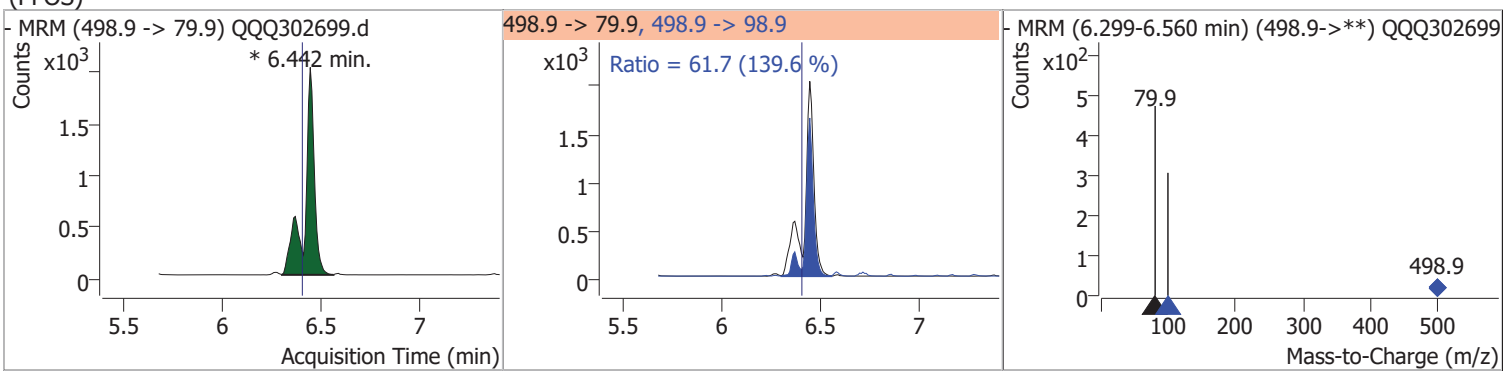
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorononanoic acid (PFNA)	4.9065	6.43	-0.25	57237	463.0 -> 218.8	16.1	11.6	17.3



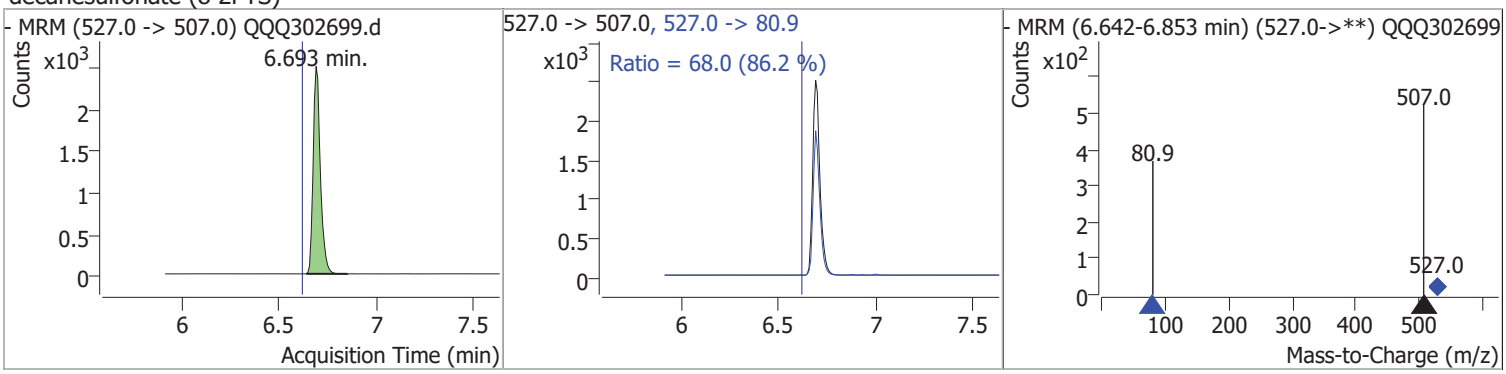
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)	4.8942	6.44	-0.25	4323	507.0 -> 98.9	37.0	37.1	55.6



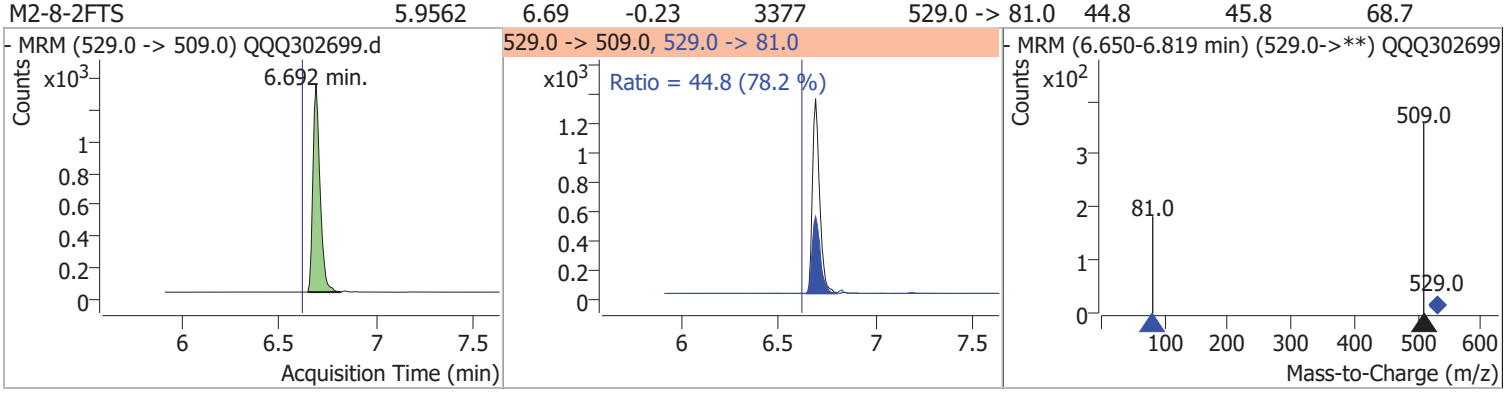
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorooctanesulfonic acid (PFOS)	4.3164	6.44	-0.25	7005 (m)	498.9 -> 98.9	61.7	35.4	53.0



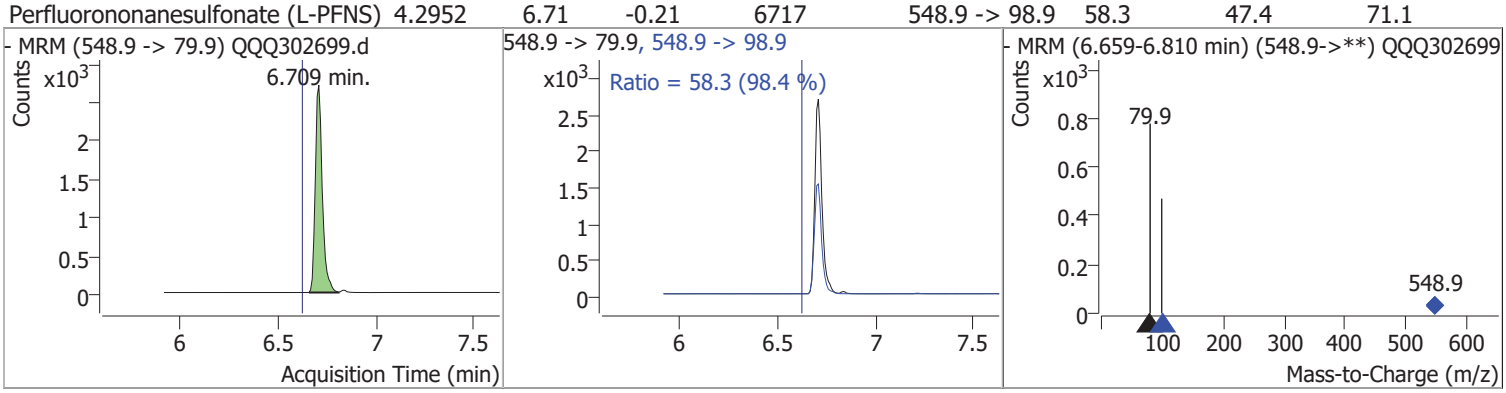
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
1H,1H,2H,2H-perfluoro-1-decanesulfonate (8 2FTS)	4.5913	6.69	-0.23	6371	527.0 -> 80.9	68.0	63.1	94.6



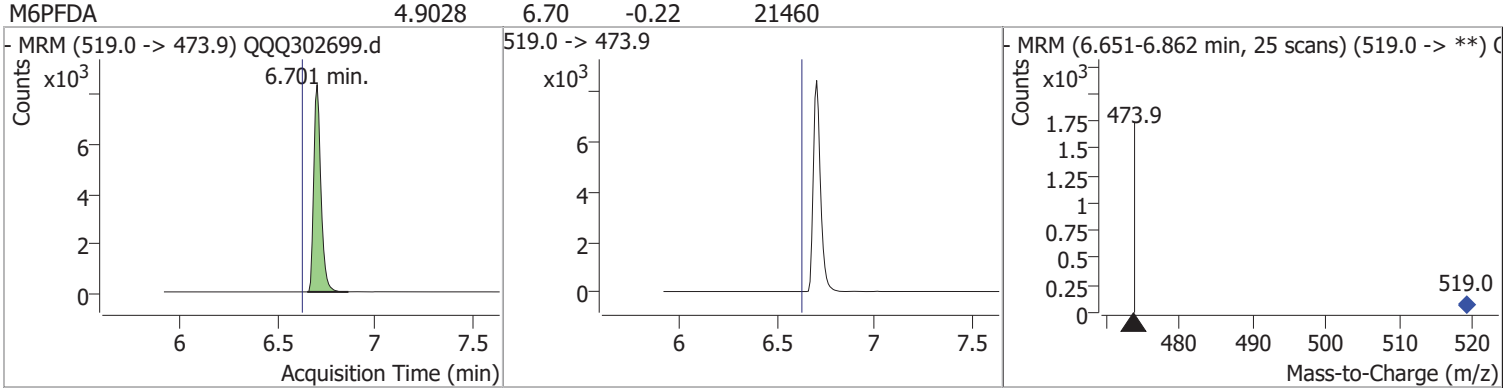
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M2-8-2FTS	5.9562	6.69	-0.23	3377	529.0 -> 81.0	44.8	45.8	68.7



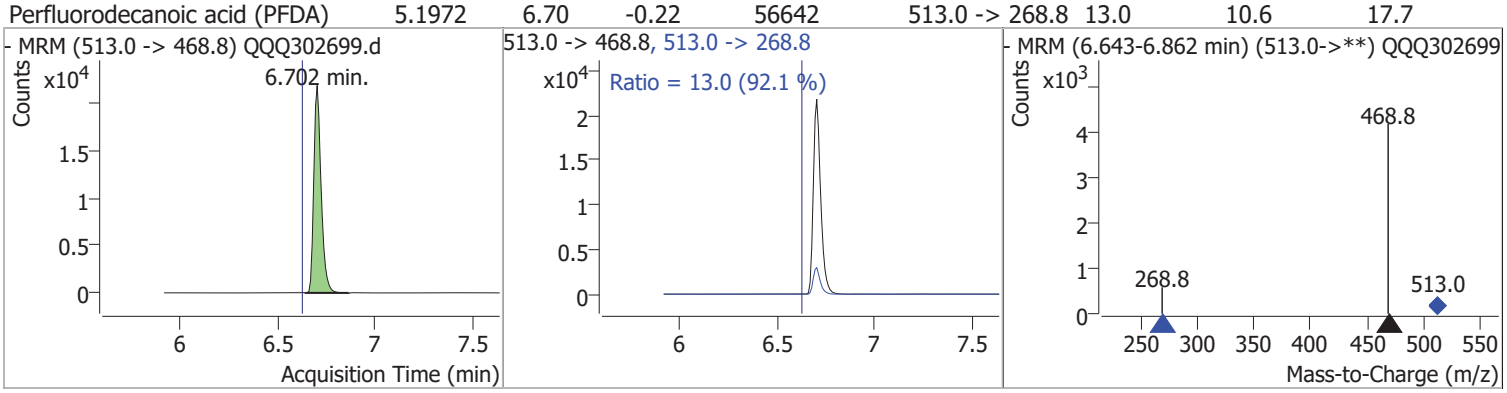
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorononanesulfonate (L-PFNS)	4.2952	6.71	-0.21	6717	548.9 -> 98.9	58.3	47.4	71.1



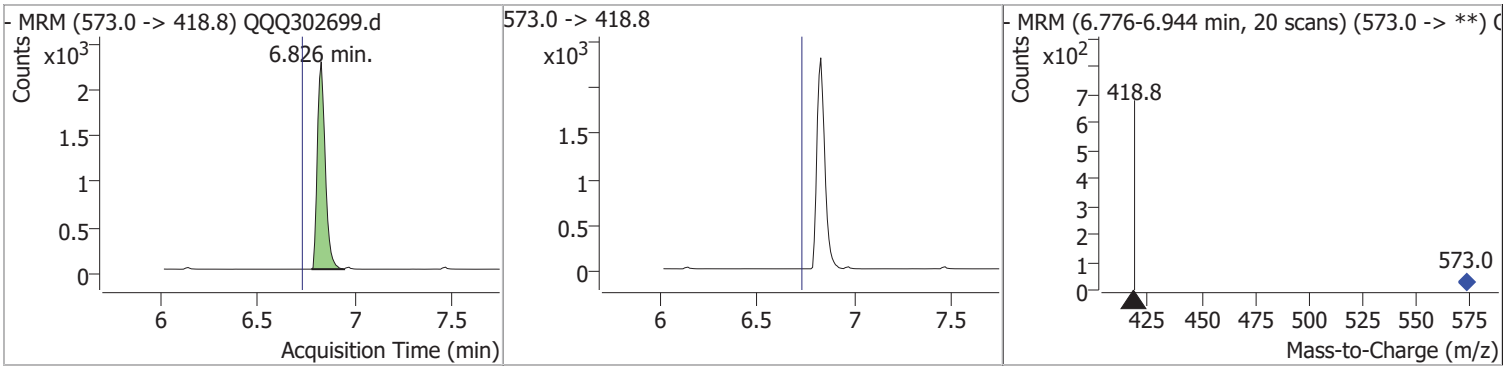
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M6PFDA	4.9028	6.70	-0.22	21460				



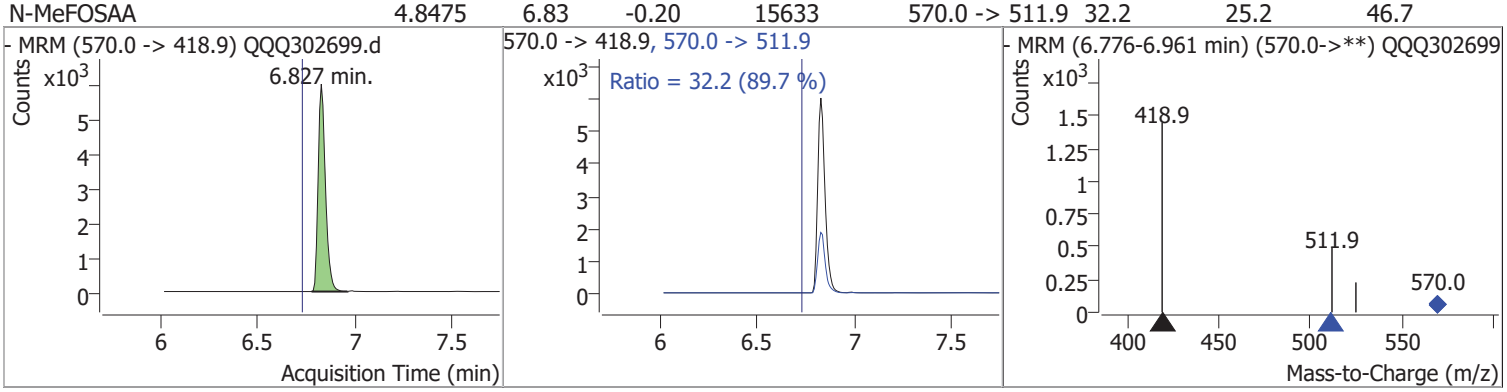
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorodecanoic acid (PFDA)	5.1972	6.70	-0.22	56642	513.0 -> 268.8	13.0	10.6	17.7



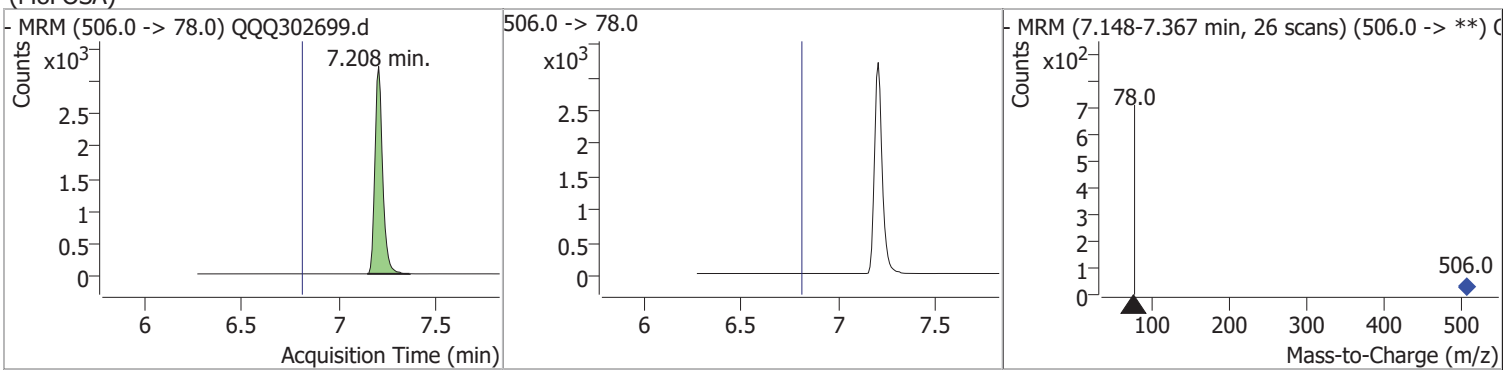
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
d3-N-MeFOSAA	4.1845	6.83	-0.20	6414				



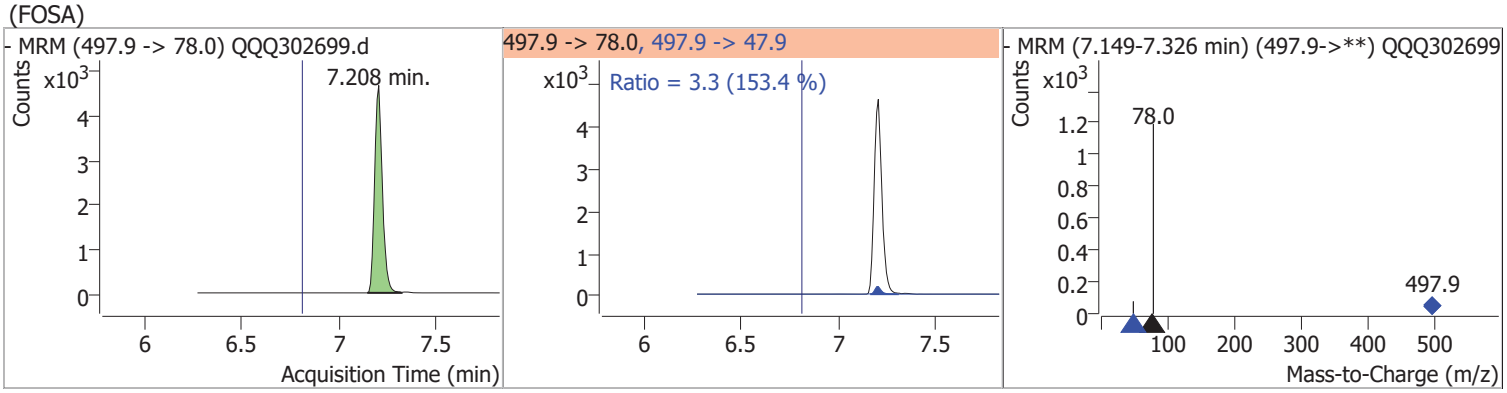
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
N-MeFOSAA	4.8475	6.83	-0.20	15633	570.0 -> 511.9	32.2	25.2	46.7



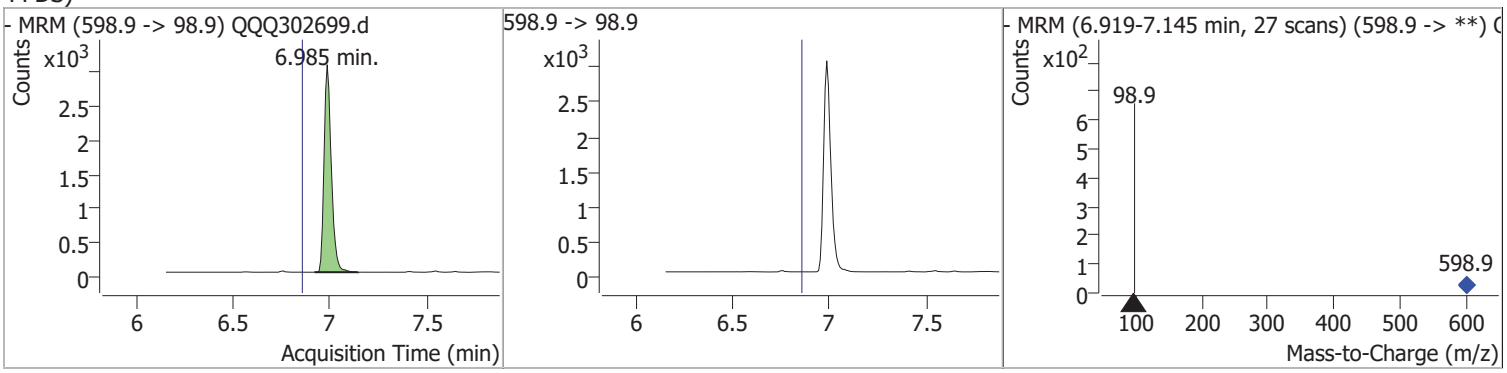
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-1-[13C8]octanesulfonamide (M8FOSA)	4.4126	7.21	0.09	8815				



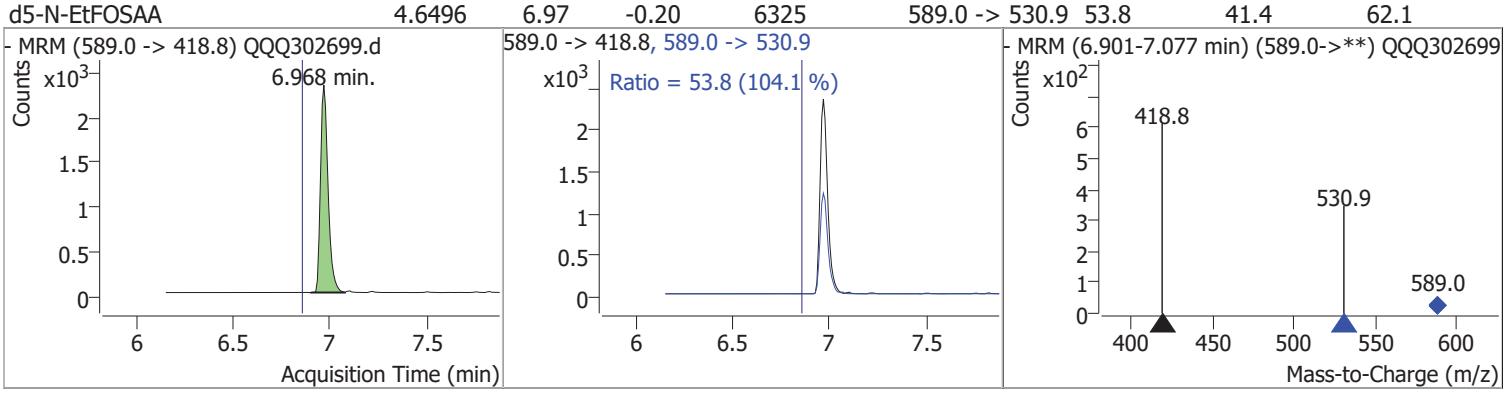
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-1-octanesulfonamide (FOSA)	4.6556	7.21	0.09	12847	497.9 -> 47.9	3.3	1.7	2.5



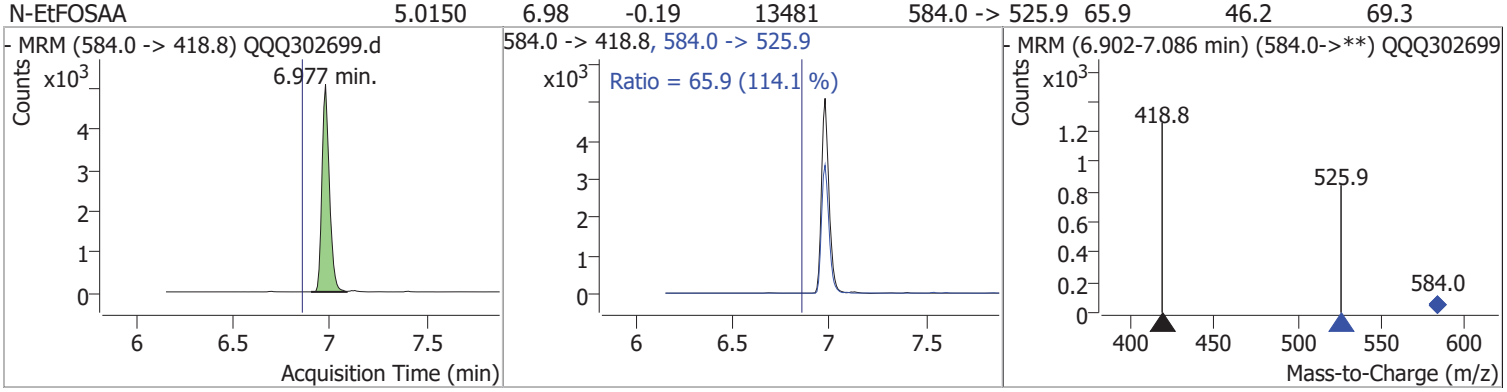
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-1-decanesulfonate (L-PFDS)	4.5303	6.98	-0.18	7843				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
d5-N-EtFOSAA	4.6496	6.97	-0.20	6325	589.0 -> 530.9	53.8	41.4	62.1

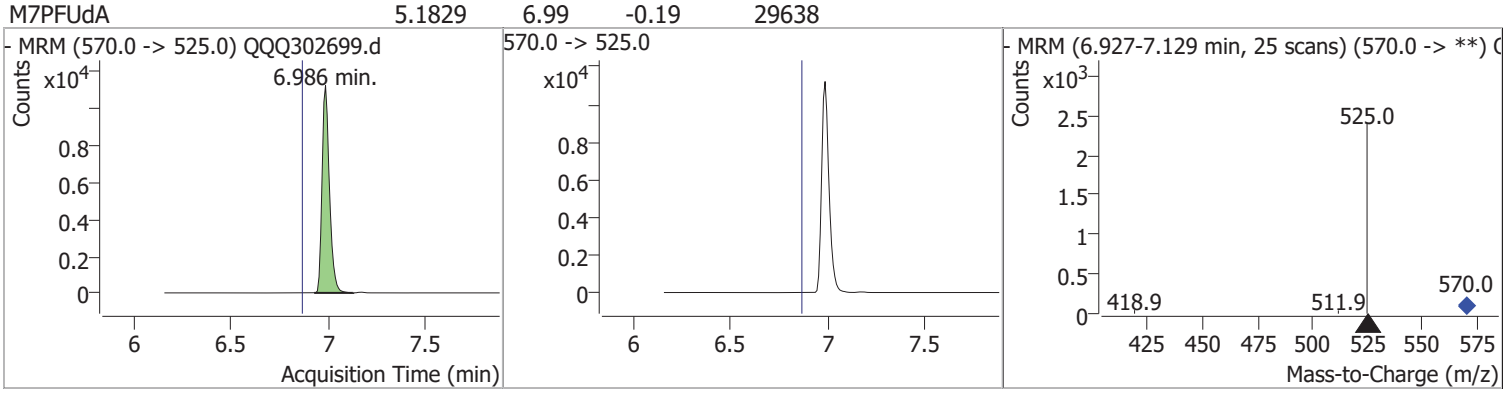


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
N-EtFOSAA	5.0150	6.98	-0.19	13481	584.0 -> 525.9	65.9	46.2	69.3

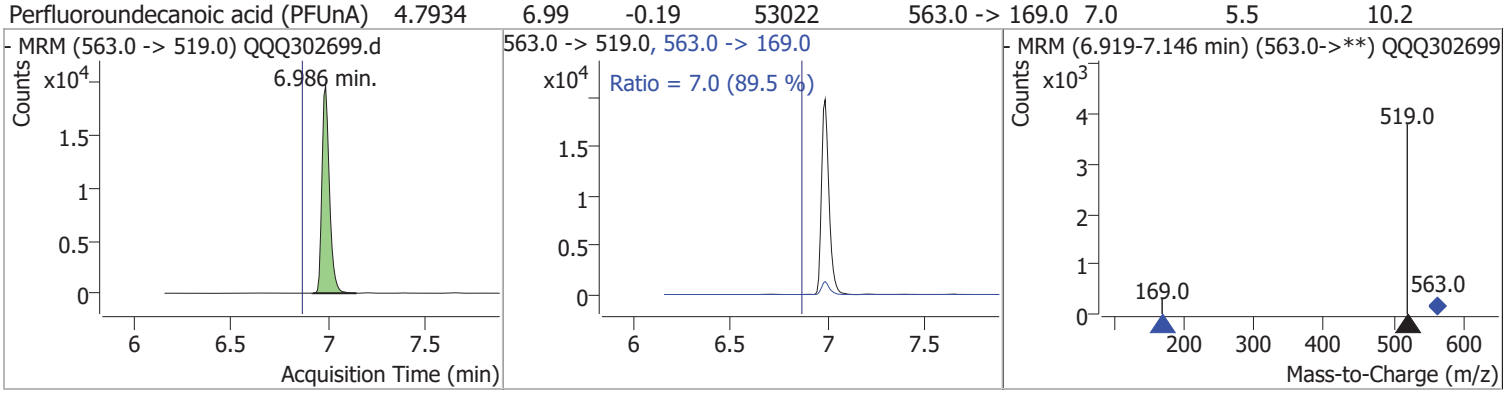


Quantitation Results Report (Not Reviewed)

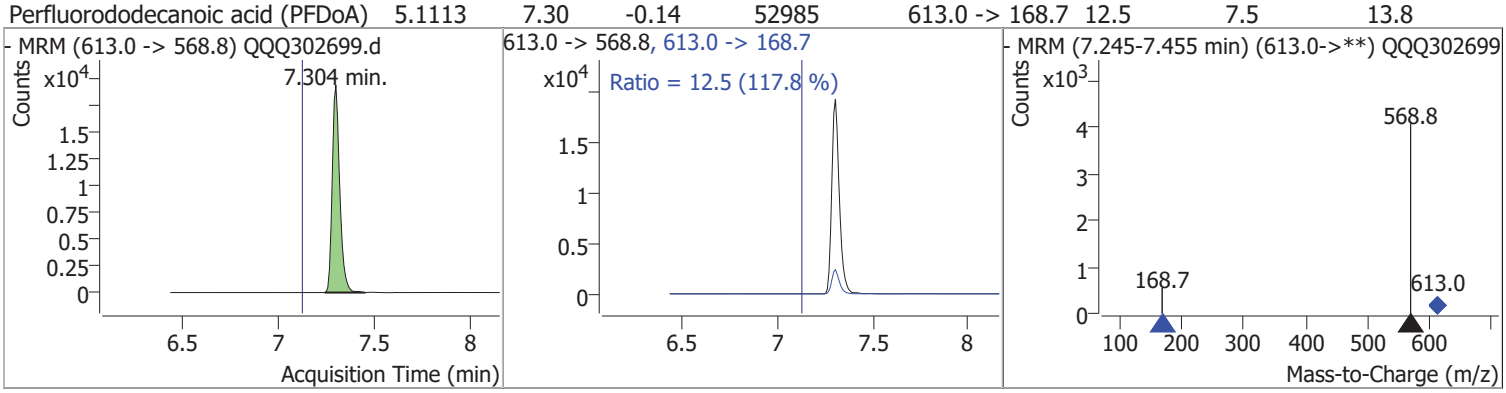
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M7PFUdA	5.1829	6.99	-0.19	29638				



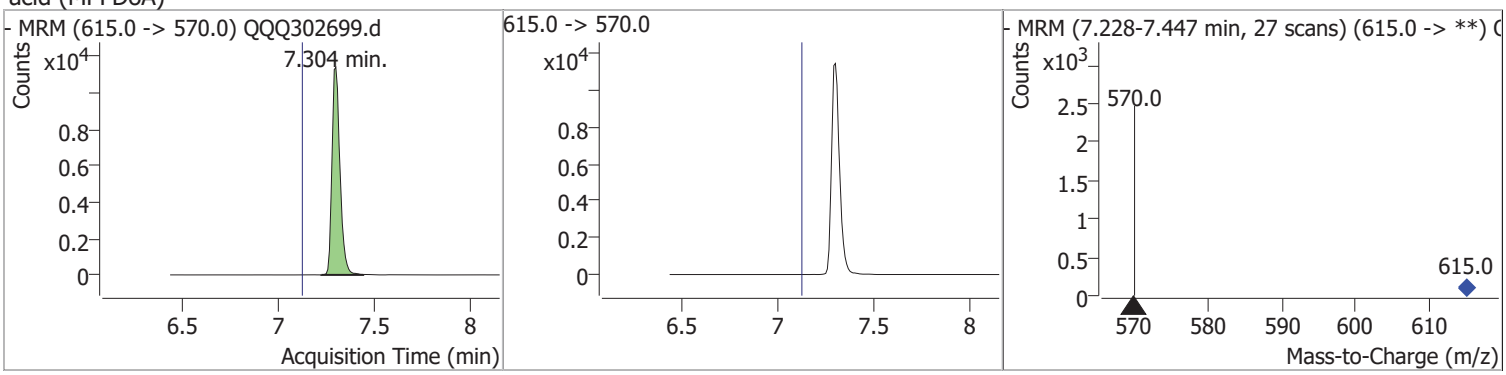
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoroundecanoic acid (PFUnA)	4.7934	6.99	-0.19	53022	563.0 -> 169.0	7.0	5.5	10.2



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorododecanoic acid (PFDoA)	5.1113	7.30	-0.14	52985	613.0 -> 168.7	12.5	7.5	13.8

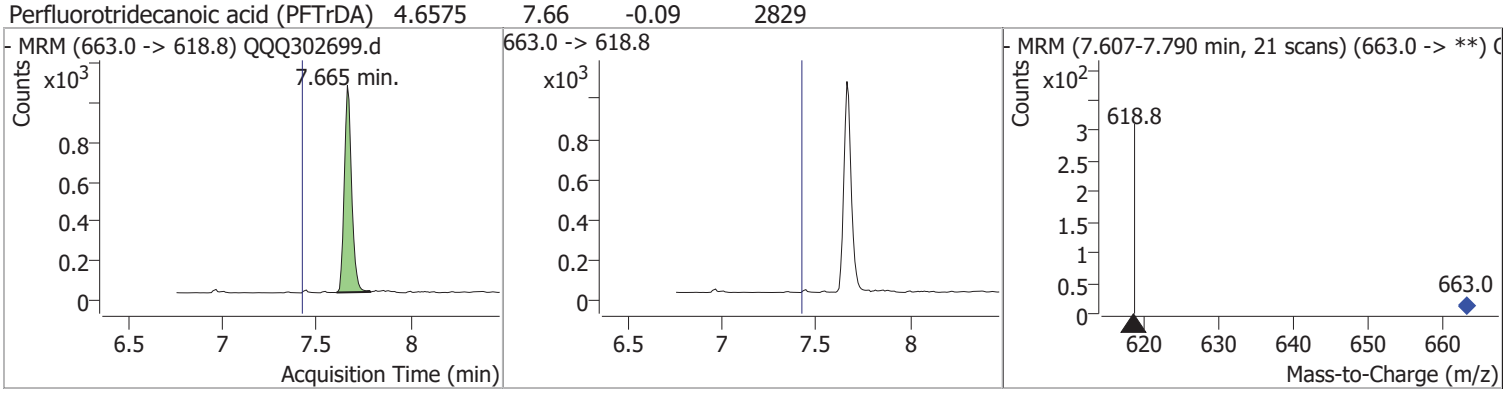


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-n-[1,2-13C2]dodecanoic acid (MPFDoA)	4.9718	7.30	-0.14	33053				

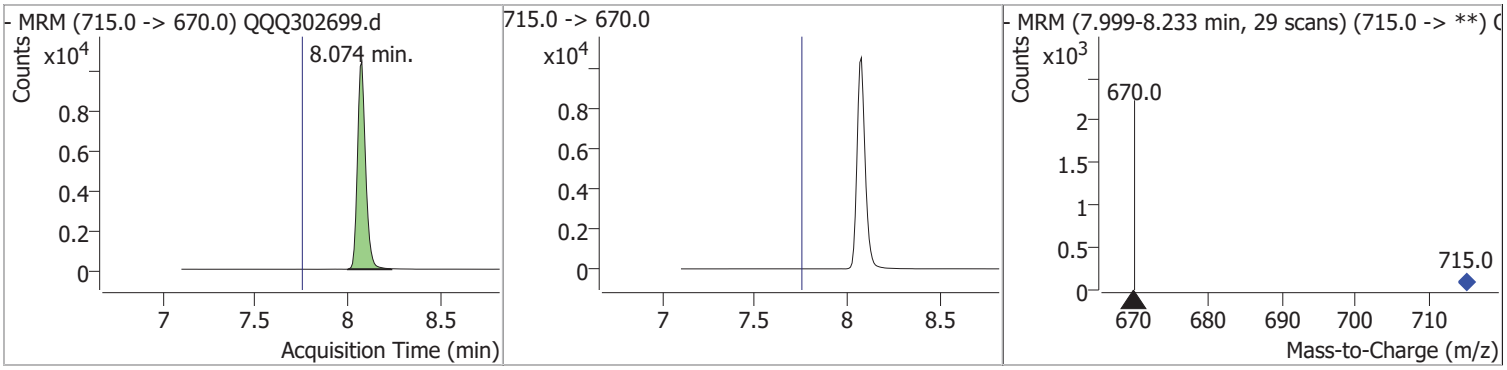


Quantitation Results Report (Not Reviewed)

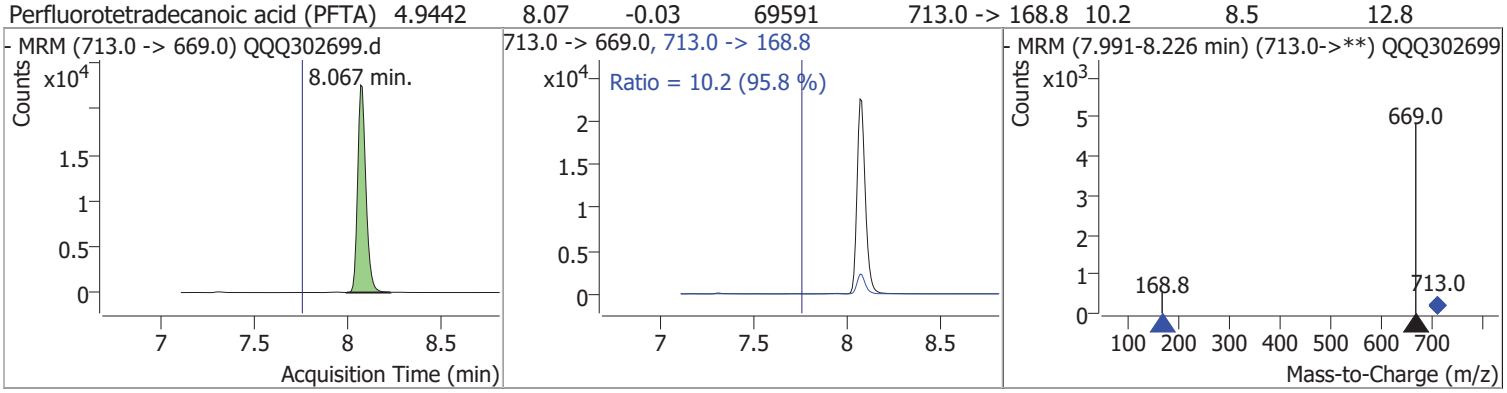
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorotridecanoic acid (PFTrDA)	4.6575	7.66	-0.09	2829				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M2PFTeDA	5.7262	8.07	-0.03	31932				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorotetradecanoic acid (PFTA)	4.9442	8.07	-0.03	69591	713.0 -> 168.8	10.2	8.5	12.8



FORM VII

CONTINUING CALIBRATION CHECK

EPA 537m

Laboratory:	York Analytical Laboratories, Inc.	SDG:	22G0348
Client:	Phoenix Environmental Laboratories, Inc.	Project:	GCL69739
Instrument ID:	QQQ3	Calibration:	YF20026
Lab File ID:	QQQ302707.d	Calibration Date:	06/28/22 15:42
Sequence:	Y2G1435	Injection Date:	07/14/22
Lab Sample ID:	Y2G1435-CCV6	Injection Time:	20:48

		CONC. (ng/mL)		RESPONSE FACTOR			% DIFF / DRIFT	
COMPOUND	TYPE	STD	CCV	ICAL	CCV	MIN (#)	CCV	LIMIT (#)
1H,1H,2H,2H-Perfluorodecanesulfonic acid (8:2 FTS)	A	4.05	4.86	0.1053684	0.1243779		20.0	30
1H,1H,2H,2H-Perfluorooctanesulfonic acid (6:2 FTS)	A	4.38	5.77	7.768364E-02	0.1072873		31.8	30 *
N-EtFOSAA	A	5.00	5.09	0.2171733	0.2049698		1.7	30
N-MeFOSAA	A	5.00	5.00	0.227535	0.2419753		0.01	30
Perfluoro-1-decanesulfonic acid (PFDS)	A	4.82	4.78	0.1251683	0.1287067		-0.8	30
Perfluoro-1-heptanesulfonic acid (PFHpS)	A	4.98	4.97	0.1174146	0.1103875		-0.1	30
Perfluoro-1-octanesulfonamide (FOSA)	A	5.00	5.00	0.1871459	0.2073311		-0.09	30
Perfluorobutanesulfonic acid (PFBS)	A	4.42	3.60	0.1544403	0.1395961		-18.4	30
Perfluorodecanoic acid (PFDA)	A	5.00	4.91	0.8074561	0.8004816		-1.8	30
Perfluorododecanoic acid (PFDoA)	A	5.00	4.97	0.7282308	0.7702363		-0.7	30
Perfluoroheptanoic acid (PFHpA)	A	5.00	4.32	0.7336475	0.737856		-13.6	30
Perfluorohexanesulfonic acid (PFHxS)	A	4.55	3.82	0.1347399	0.1190739		-16.0	30
Perfluorohexanoic acid (PFHxA)	A	5.00	4.73	0.5690764	0.6089671		-5.5	30
Perfluoro-n-butanoic acid (PFBA)	A	5.00	4.27	0.3382355	0.3392153		-14.6	30
Perfluorononanoic acid (PFNA)	A	4.80	4.99	0.8257117	0.909837		4.0	30
Perfluorooctanesulfonic acid (PFOS)	A	4.62	4.19	0.1171459	0.1101651		-9.4	30
Perfluorooctanoic acid (PFOA)	A	5.00	4.83	0.7797809	0.8354947		-3.4	30
Perfluoropentanoic acid (PFPeA)	A	5.00	4.68	0.2734725	0.2741859		-6.4	30
Perfluorotetradecanoic acid (PFTA)	A	5.00	4.99	1.023396	1.053264		-0.2	30
Perfluorotridecanoic acid (PFTrDA)	A	5.00	4.99	4.773095E-02	4.567629E-02		-0.2	30
Perfluoroundecanoic acid (PFUnA)	A	5.00	5.04	0.7480439	0.8364397		0.8	30

Column to be used to flag Response Factor and %Diff/Drift values with an asterisk

* Values outside of QC limits

Quantitation Results Report (Not Reviewed)

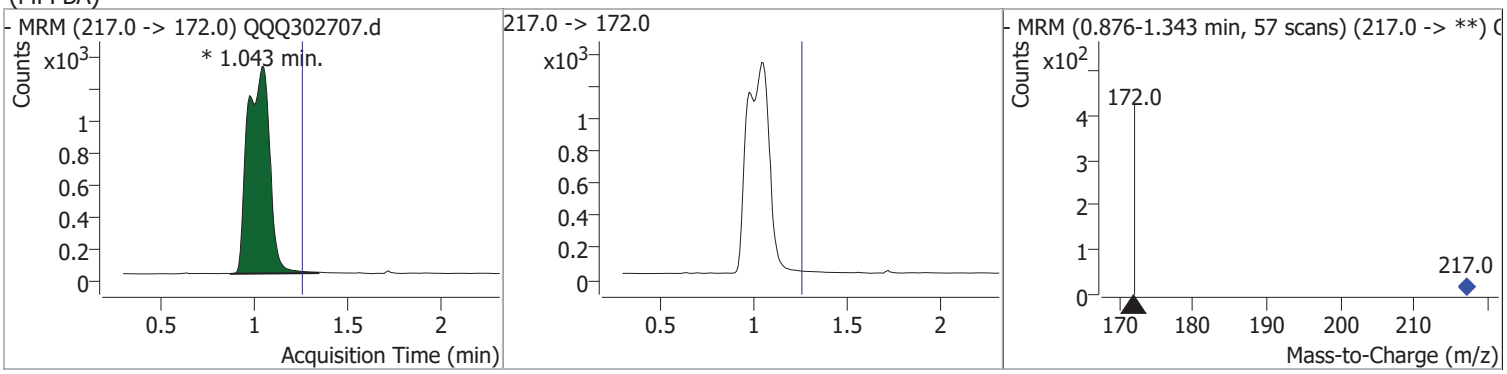
Data File	QQQ302707.d	Operator	
Acq. Method	PFAS 24_IDA ACQ_QQQ3A.m	Acq. Date-Time	7/14/2022 8:48:21 PM
Sample Name	SEQ-CCV6	Instrument	QQQ3
Vial		Multiplier	1.00
DA Method File	PFAS_24_IDA_QUANT_QQQ3_062722.m	Comment	5
Tune File		Tune Date	
Batch Name	2022-07-14-IDA.batch.bin	Last Calib Update	6/27/2022 4:24:30 PM
Ref Library			

Compound	RT	QIon	Resp.	Conc.	Units		Dev(Min)
Internal Standards							
MPFOA	6.140	417.0 -> 372.0	137534	10.0000	ng/ml		-0.290
System Monitoring Compounds							
Perfluoro-n-[13C4]butanoic acid (MPFBA)	1.043	217.0 -> 172.0	10798	4.4008	ng/ml	m	-0.267
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 44.01%			
Perfluoro-n-[13C54]pentanoic acid (M5PFPeA)	4.095	268.0 -> 223.0	9533	4.6718	ng/ml		-0.492
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 46.72%			
M3PFBS	4.716	302.0 -> 79.9	3862	3.6694	ng/ml		-0.447
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 36.69%			
M2-4-2FTS	5.283	329.0 -> 309.0	3217	4.5850	ng/ml	#	-0.407
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 45.85%			
M5PFHxA	5.327	318.0 -> 273.0	18118	4.5442	ng/ml		-0.397
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 45.44%			
M4PFHpA	5.813	367.0 -> 322.0	10113	4.8745	ng/ml		-0.331
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 48.75%			
M3PFHxS	5.863	402.0 -> 80.0	3885	4.3753	ng/ml		-0.314
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 43.75%			
M2-6-2FTS	6.122	429.0 -> 409.0	3482	5.3280	ng/ml	#	-0.298
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 53.28%			
Perfluoro-n-[13C8]octanoic acid (M8PFOA)	6.148	421.0 -> 376.0	18357	5.3434	ng/ml		-0.282
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 53.43%			
Perfluoro-n-[13C9]nonanoic acid (M9PFNA)	6.417	472.0 -> 427.0	20913	5.1217	ng/ml	#	-0.263
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 51.22%			
Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)	6.424	507.0 -> 80.0	3795	4.1736	ng/ml	#	-0.264
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 41.74%			
M2-8-2FTS	6.675	529.0 -> 509.0	3275	5.6036	ng/ml		-0.243
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 56.04%			
M6PFDA	6.684	519.0 -> 473.9	22985	5.0920	ng/ml		-0.238
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 50.92%			
d3-N-MeFOSAA	6.809	573.0 -> 418.8	7320	4.6290	ng/ml		-0.221
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 46.29%			
Perfluoro-1-[13C8]octanesulfonamide (M8FOSA)	7.182	506.0 -> 78.0	9935	4.8120	ng/ml		0.063
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 48.12%			
d5-N-EtFOSAA	6.943	589.0 -> 418.8	5974	4.2657	ng/ml		-0.221
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 42.66%			
M7PFUdA	6.961	570.0 -> 525.0	30598	5.1914	ng/ml		-0.212
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 51.91%			
Perfluoro-n-[1,2-13C2]dodecanoic acid (MPFDoA)	7.270	615.0 -> 570.0	35777	5.2154	ng/ml		-0.178
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 52.15%			
M2PFTeDA	8.024	715.0 -> 670.0	32683	5.6873	ng/ml		-0.077
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 56.87%			
Target Compounds							**QValue**

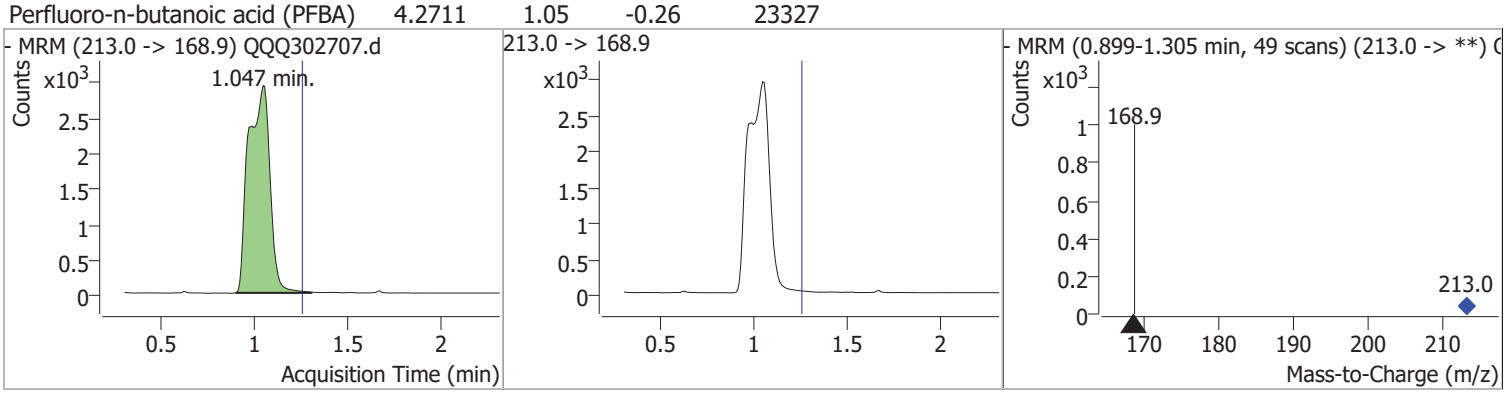
Compound	RT	QIon	Resp.	Conc.	Units		Dev(Min)
Perfluoro-n-butanoic acid (PFBA)	1.047	213.0 -> 168.9	23327	4.2711	ng/ml		100
Perfluoro-n-pentanoic acid (PFPeA)	4.099	263.0 -> 219.0	18855	4.6775	ng/ml		100
Perfluorobutanesulfonic acid (PFBS)	4.710	298.9 -> 79.9	8486	3.6047	ng/ml		100
1H,1H,2H,2H-perfluoro-1-hexanesulfonate (4 2FTS)	5.284	327.0 -> 307.0	6012	4.4691	ng/ml		97
Perfluorohexanoic acid (PFHxA)	5.328	313.0 -> 268.9	41877	4.7251	ng/ml		100
Perfluoro-1-pentanesulfonate (L-PFPeS)	5.452	348.9 -> 79.9	8864	4.5371	ng/ml		91
Perfluoroheptanoic acid (PFHpA)	5.813	363.0 -> 318.8	50740	4.3212	ng/ml		96
Perfluorohexanesulfonic acid (PFHxS)	5.863	398.9 -> 79.9	7451	3.8242	ng/ml	m	99
1H,1H,2H,2H-perfluoro-1-octanesulfonate (6 2FTS)	6.123	427.0 -> 407.0	6463	5.7712	ng/ml		97
Perfluorooctanoic acid (PFOA)	6.140	413.0 -> 368.8	57455	4.8289	ng/ml		98
Perfluoro-1-heptanesulfonate (L-PFHpS)	6.165	448.9 -> 80.0	7561	4.9743	ng/ml		88
Perfluorononanoic acid (PFNA)	6.417	463.0 -> 418.8	60064	4.9934	ng/ml		100
Perfluorooctanesulfonic acid (PFOS)	6.425	498.9 -> 79.9	7000	4.1875	ng/ml	#m	86
1H,1H,2H,2H-perfluoro-1-decanesulfonate (8 2FTS)	6.684	527.0 -> 507.0	6928	4.8589	ng/ml	#	67
Perfluorononanesulfonate (L-PFNS)	6.692	548.9 -> 79.9	7199	4.4668	ng/ml		88
Perfluorodecanoic acid (PFDA)	6.685	513.0 -> 468.8	55047	4.9110	ng/ml		98
N-MeFOSAA	6.810	570.0 -> 418.9	16640	5.0007	ng/ml		95
Perfluoro-1-octanesulfonamide (FOSA)	7.183	497.9 -> 78.0	14258	4.9957	ng/ml	#	98
Perfluoro-1-decanesulfonate (L-PFDS)	6.960	598.9 -> 98.9	8532	4.7831	ng/ml		100
N-EtFOSAA	6.952	584.0 -> 418.8	14095	5.0862	ng/ml		89
Perfluoroundecanoic acid (PFUnA)	6.961	563.0 -> 519.0	57520	5.0416	ng/ml		100
Perfluorododecanoic acid (PFDoA)	7.271	613.0 -> 568.8	52967	4.9652	ng/ml		96
Perfluorotridecanoic acid (PFTrDA)	7.631	663.0 -> 618.8	3141	4.9906	ng/ml		100
Perfluorotetradecanoic acid (PFTA)	8.025	713.0 -> 669.0	72430	4.9894	ng/ml		100

(#) = Qualifier Out of Range; (m) = Manual Integration; (+) = Area Summed; (*) = Surrogate Percent Recovery Out of Range; (d): Zeroed Peak

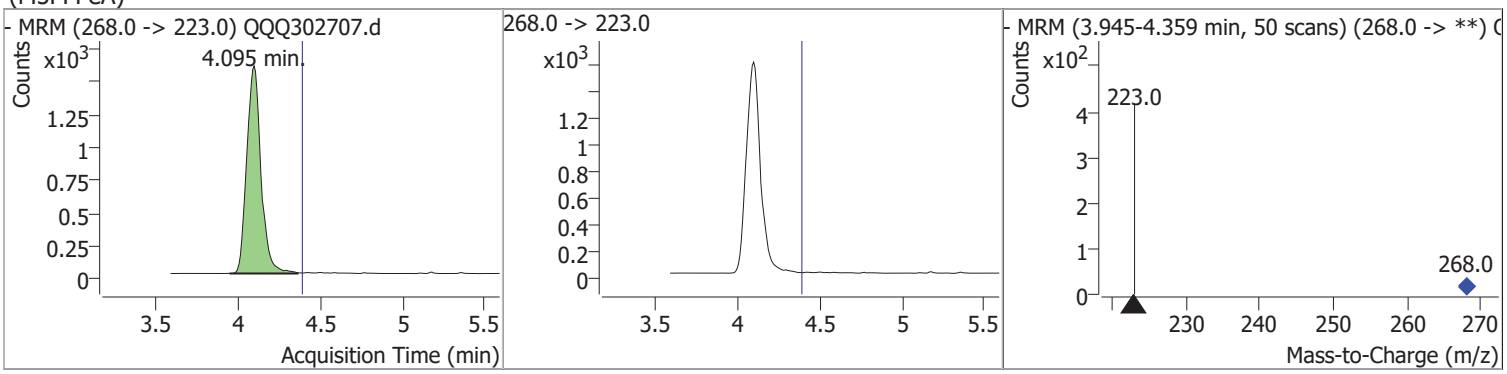
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-n-[13C4]butanoic acid (MPFBA)	4.4008	1.04	-0.27	10798 (m)				



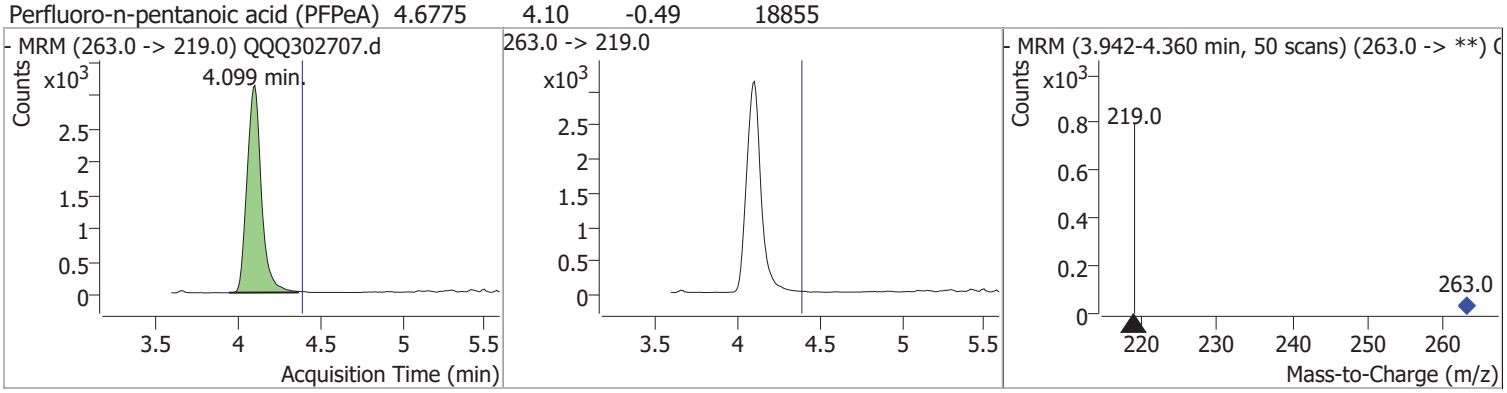
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-n-butanoic acid (PFBA)	4.2711	1.05	-0.26	23327				



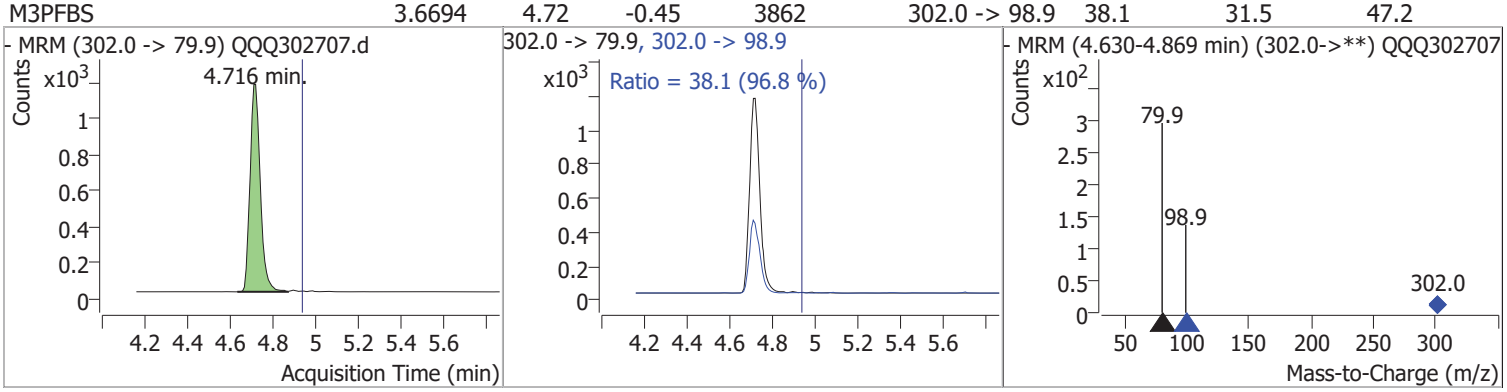
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-n-[13C54]pentanoic acid (M5PFPeA)	4.6718	4.09	-0.49	9533				



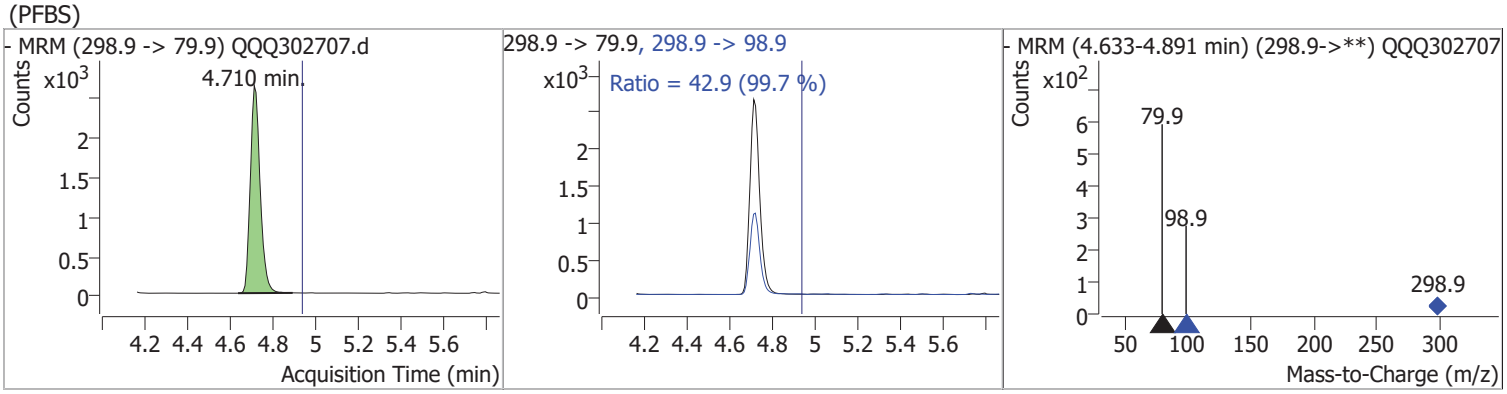
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-n-pentanoic acid (PFPeA)	4.6775	4.10	-0.49	18855				



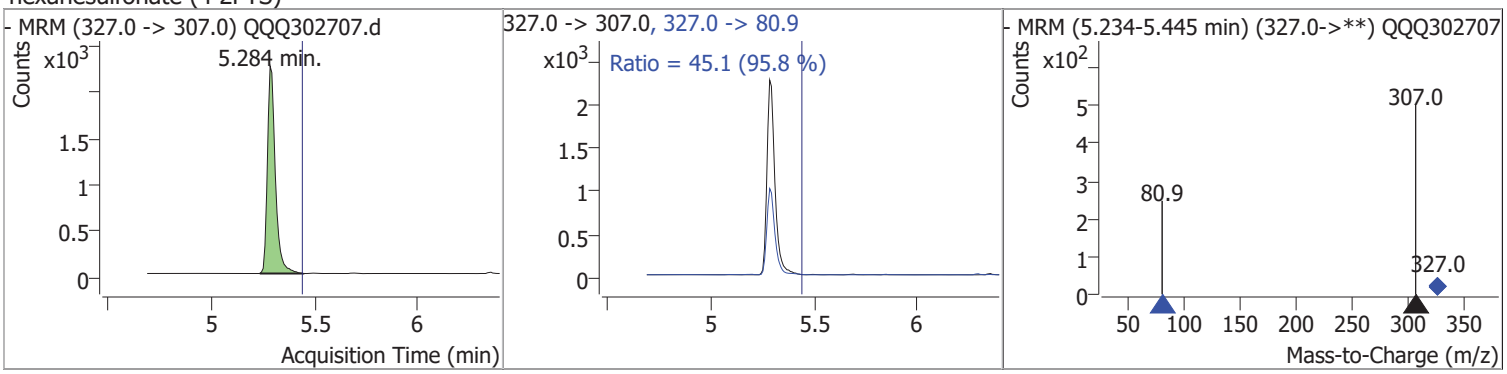
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M3PFBS	3.6694	4.72	-0.45	3862	302.0 -> 98.9	38.1	31.5	47.2



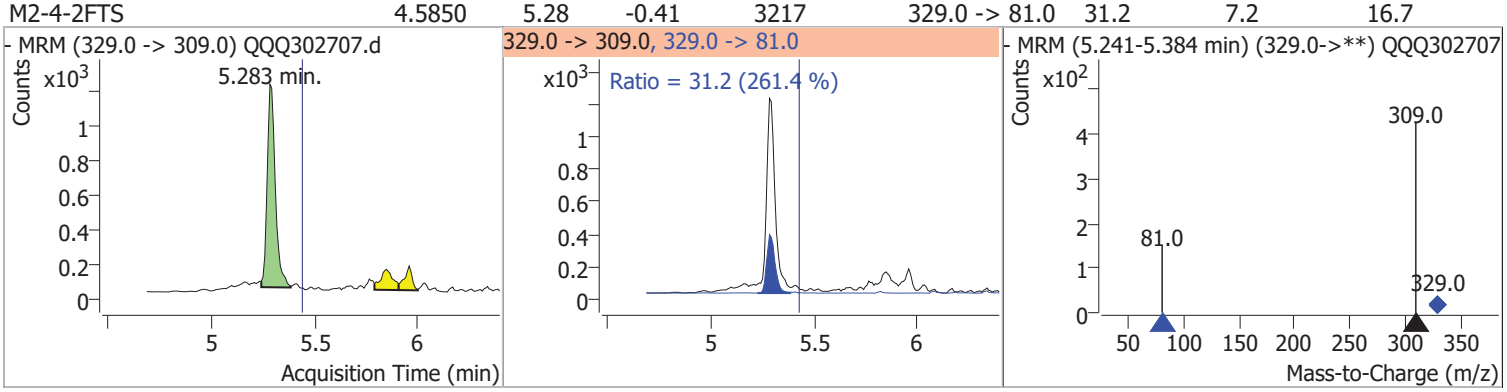
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorobutanesulfonic acid (PFBS)	3.6047	4.71	-0.45	8486	298.9 -> 98.9	42.9	34.5	51.7



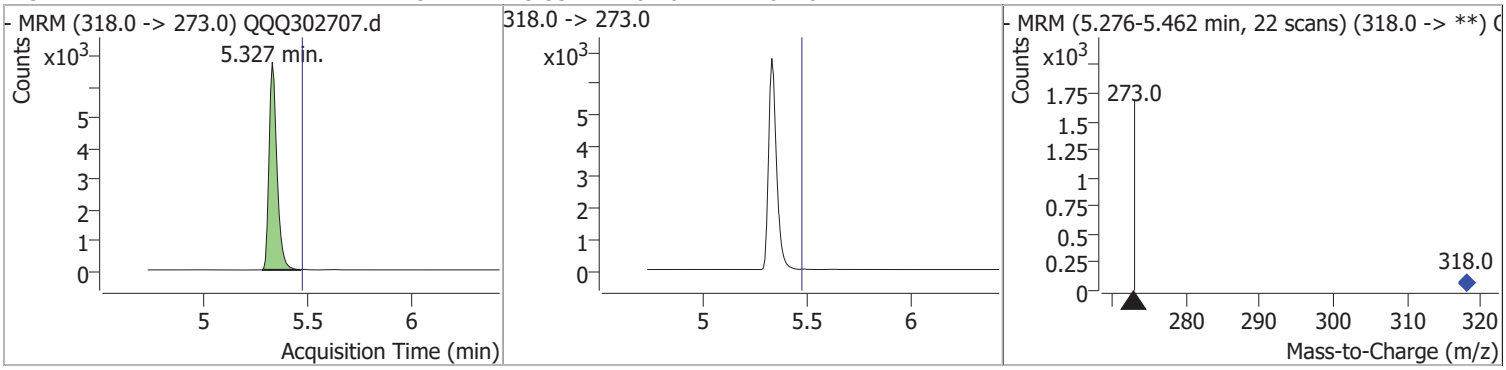
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
1H,1H,2H,2H-perfluoro-1-hexanesulfonate (4 2FTS)	4.4691	5.28	-0.41	6012	327.0 -> 80.9	45.1	28.2	65.9



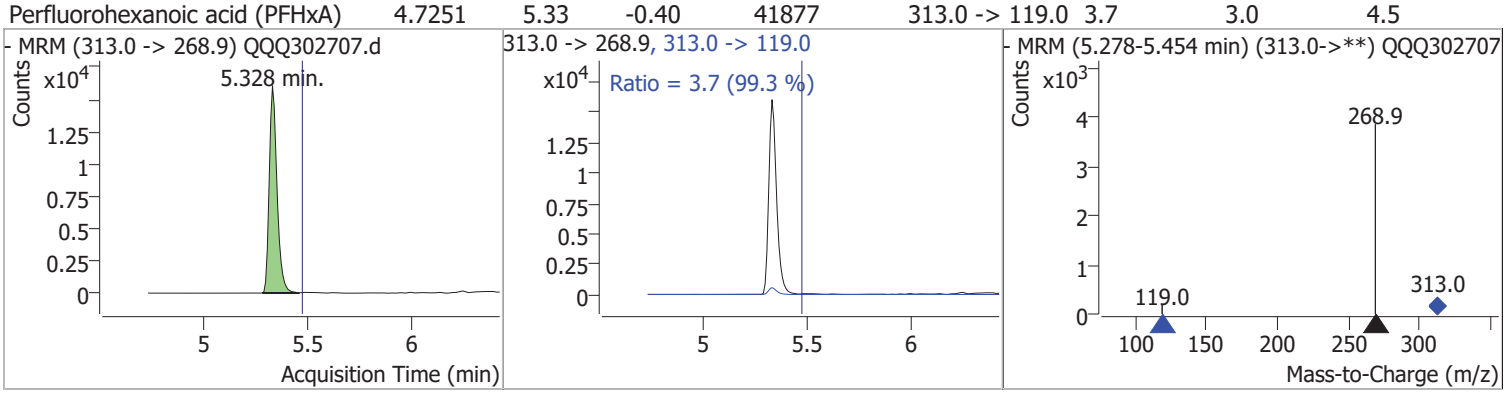
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M2-4-2FTS	4.5850	5.28	-0.41	3217	329.0 -> 81.0	31.2	7.2	16.7



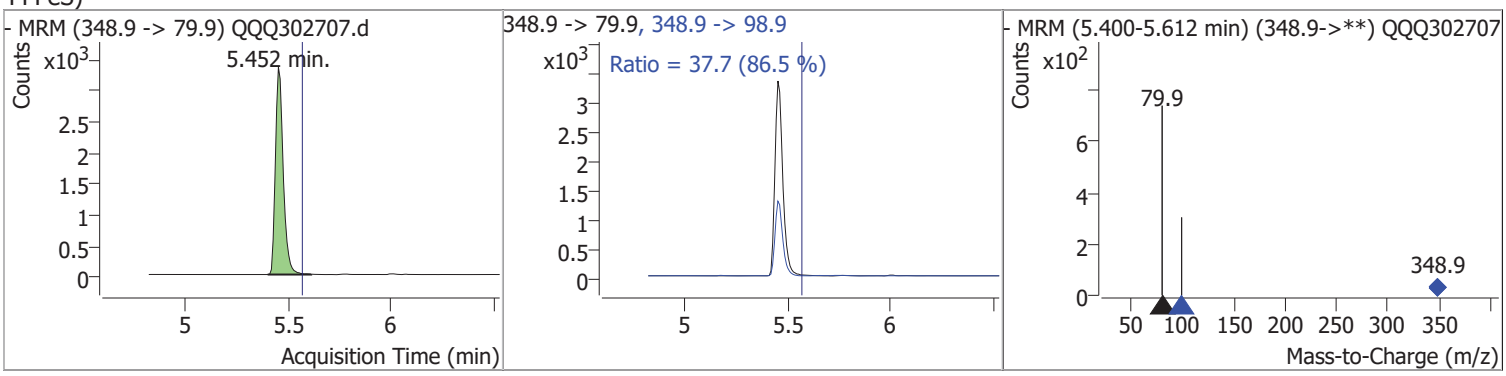
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M5PFHxA	4.5442	5.33	-0.40	18118				



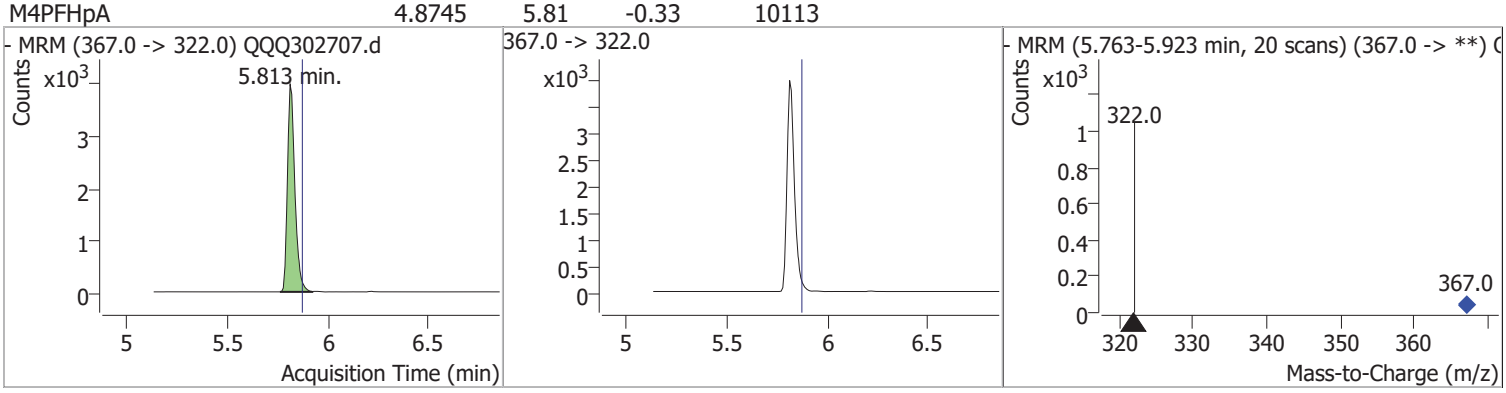
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorohexanoic acid (PFHxA)	4.7251	5.33	-0.40	41877	313.0 -> 119.0	3.7	3.0	4.5



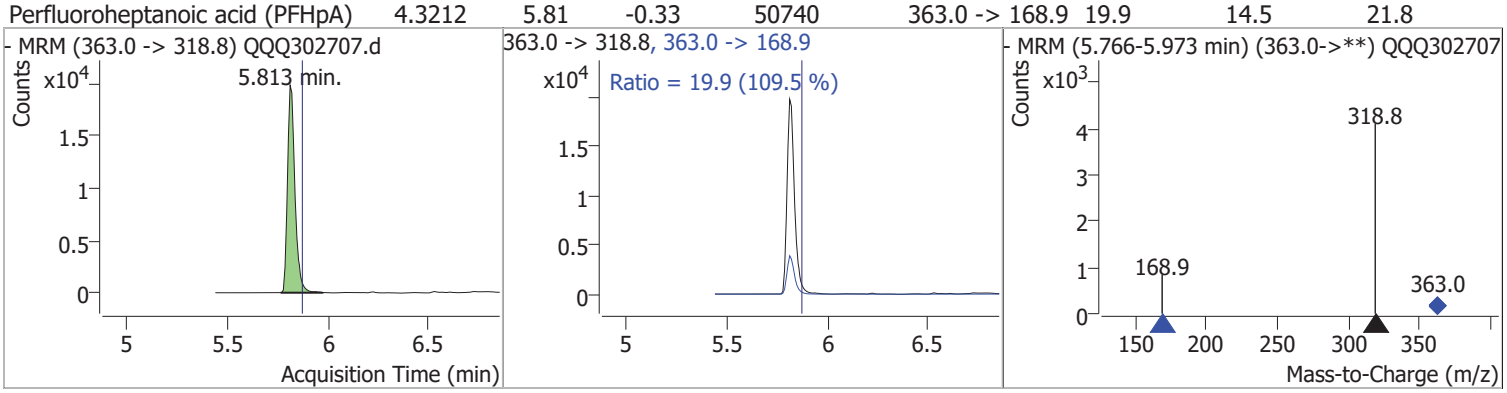
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-1-pentanesulfonate (L-PFPeS)	4.5371	5.45	-0.37	8864	348.9 -> 98.9	37.7	34.8	52.2



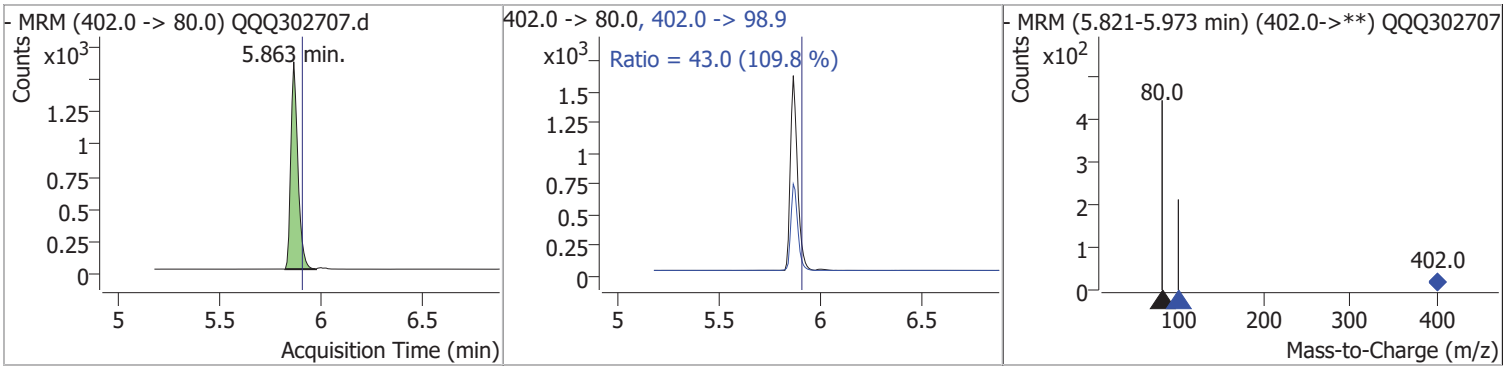
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M4PFHpA	4.8745	5.81	-0.33	10113				



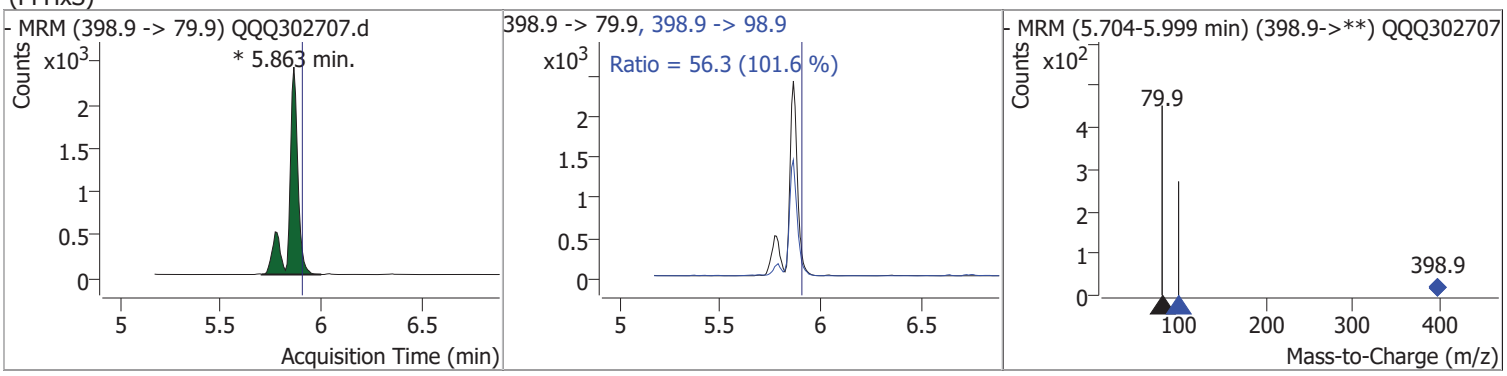
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoroheptanoic acid (PFHpA)	4.3212	5.81	-0.33	50740	363.0 -> 168.9	19.9	14.5	21.8



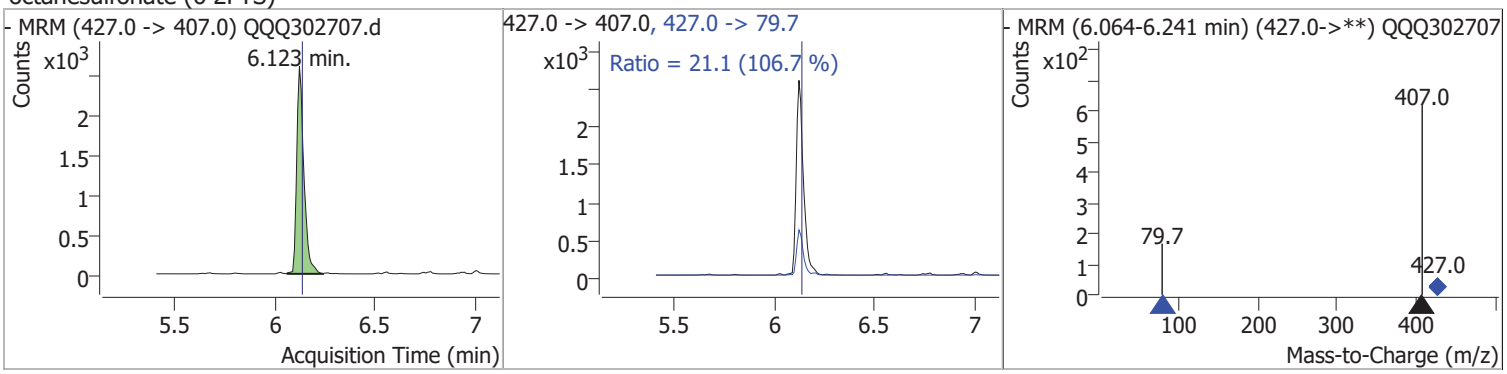
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M3PFHxS	4.3753	5.86	-0.31	3885	402.0 -> 98.9	43.0	31.3	47.0



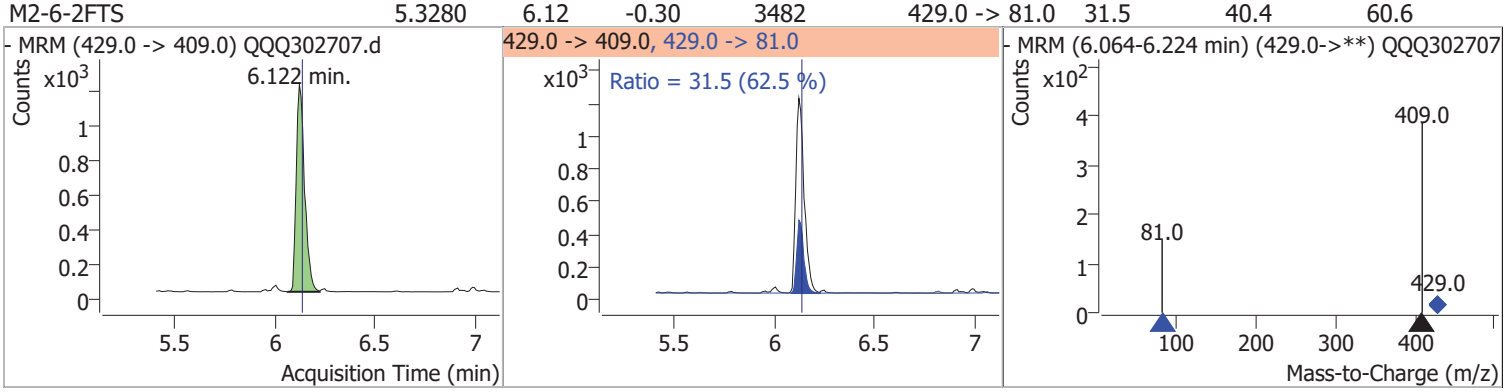
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorohexanesulfonic acid (PFHxS)	3.8242	5.86	-0.31	7451 (m)	398.9 -> 98.9	56.3	44.4	66.5



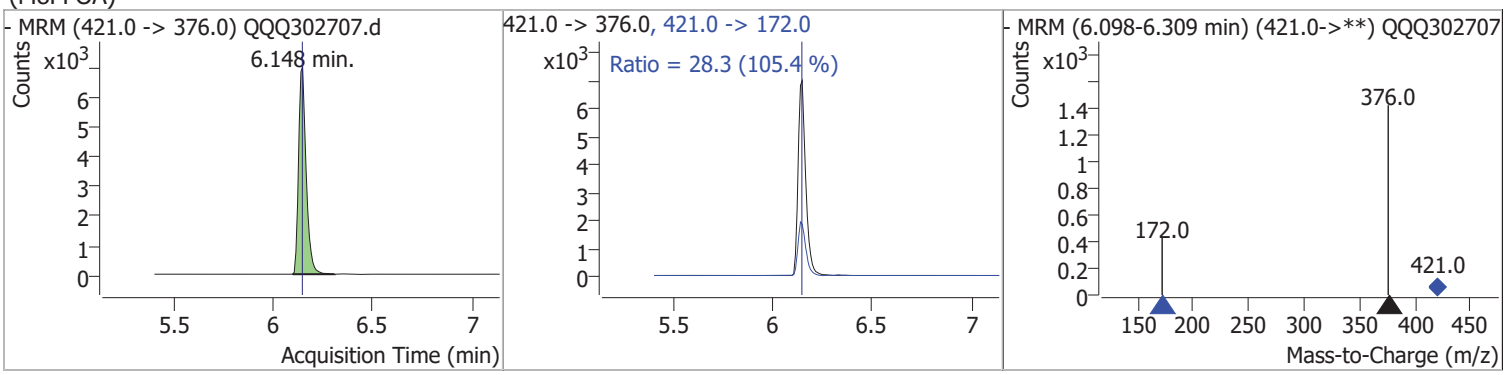
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
1H,1H,2H,2H-perfluoro-1-octanesulfonate (6 2FTS)	5.7712	6.12	-0.30	6463	427.0 -> 79.7	21.1	15.8	23.7



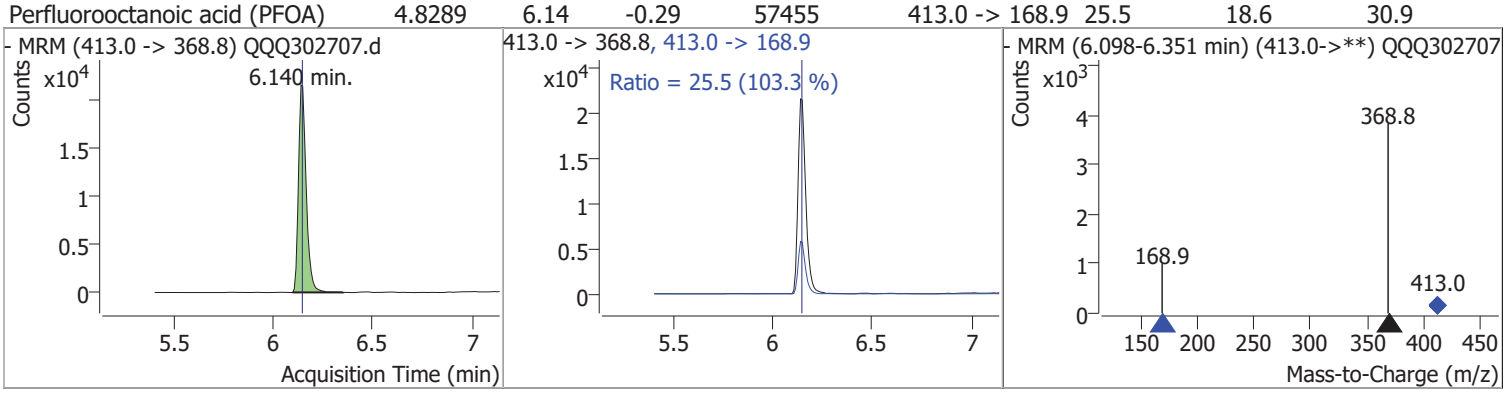
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M2-6-2FTS	5.3280	6.12	-0.30	3482	429.0 -> 81.0	31.5	40.4	60.6



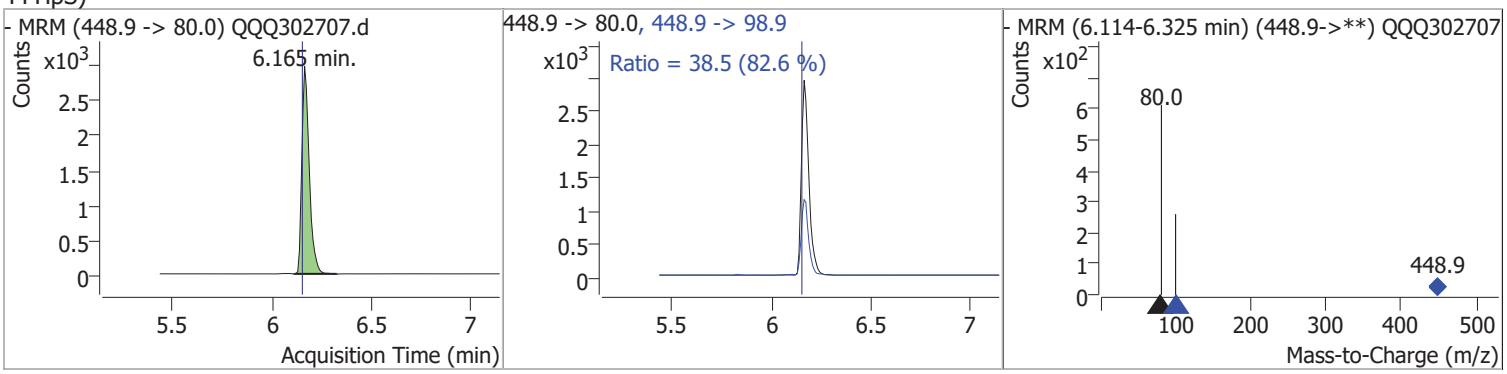
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-n-[13C8]octanoic acid (M8PFOA)	5.3434	6.15	-0.28	18357	421.0 -> 172.0	28.3	21.5	32.2



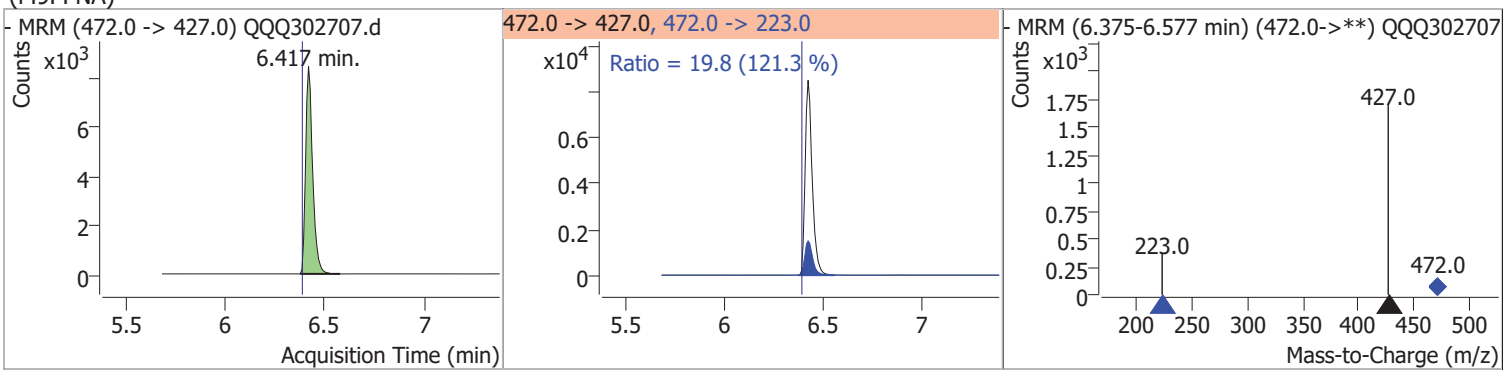
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorooctanoic acid (PFOA)	4.8289	6.14	-0.29	57455	413.0 -> 168.9	25.5	18.6	30.9



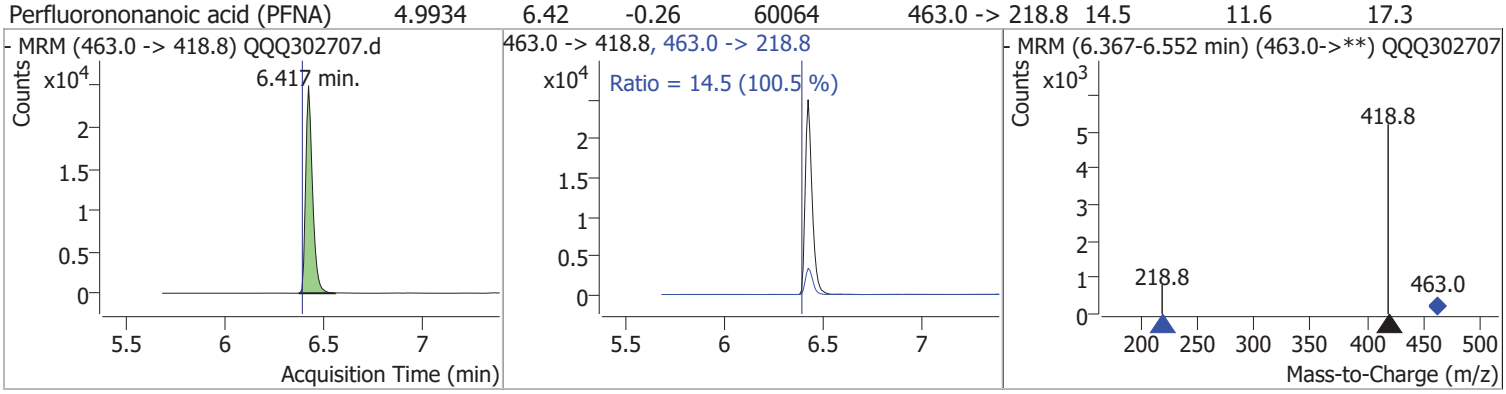
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-1-heptanesulfonate (L-PFHpS)	4.9743	6.16	-0.27	7561	448.9 -> 98.9	38.5	37.3	56.0



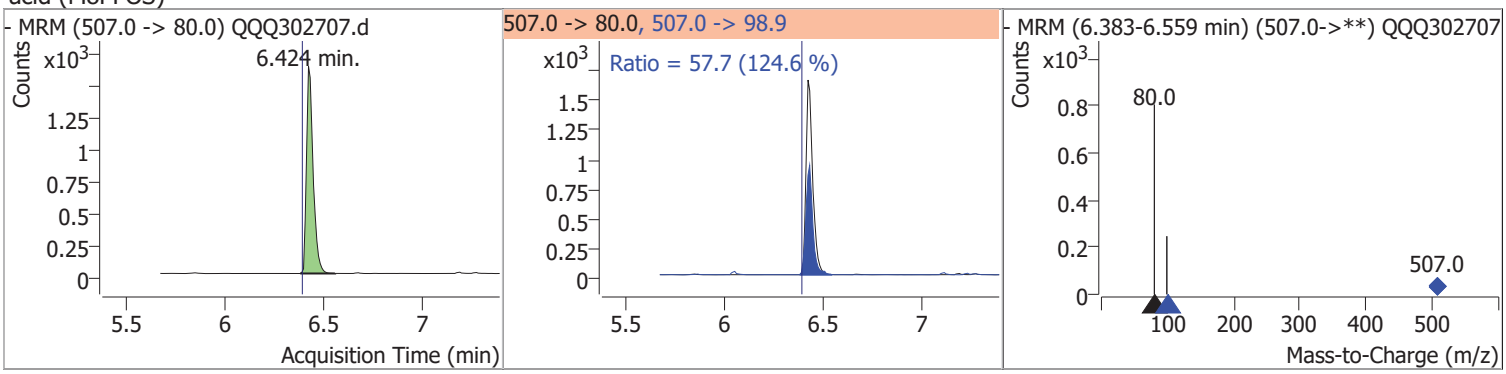
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-n-[13C9]nonanoic acid (M9PFNA)	5.1217	6.42	-0.26	20913	472.0 -> 223.0	19.8	13.1	19.6



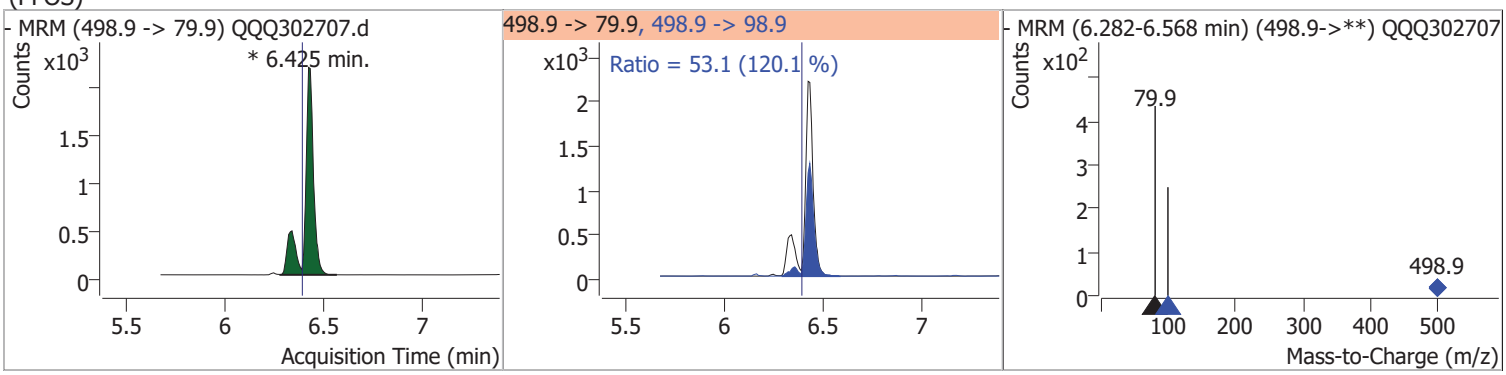
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorononanoic acid (PFNA)	4.9934	6.42	-0.26	60064	463.0 -> 218.8	14.5	11.6	17.3



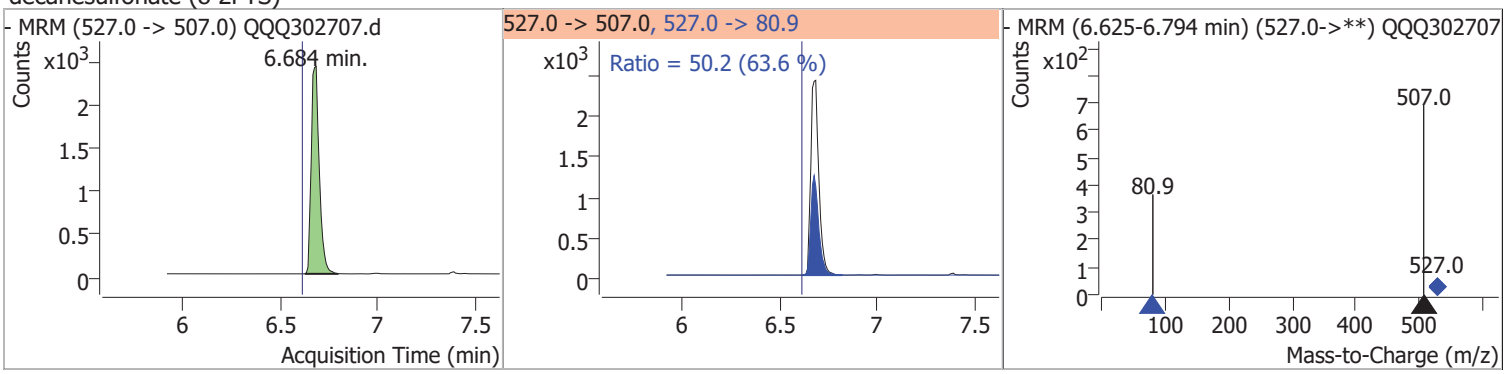
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)	4.1736	6.42	-0.26	3795	507.0 -> 98.9	57.7	37.1	55.6



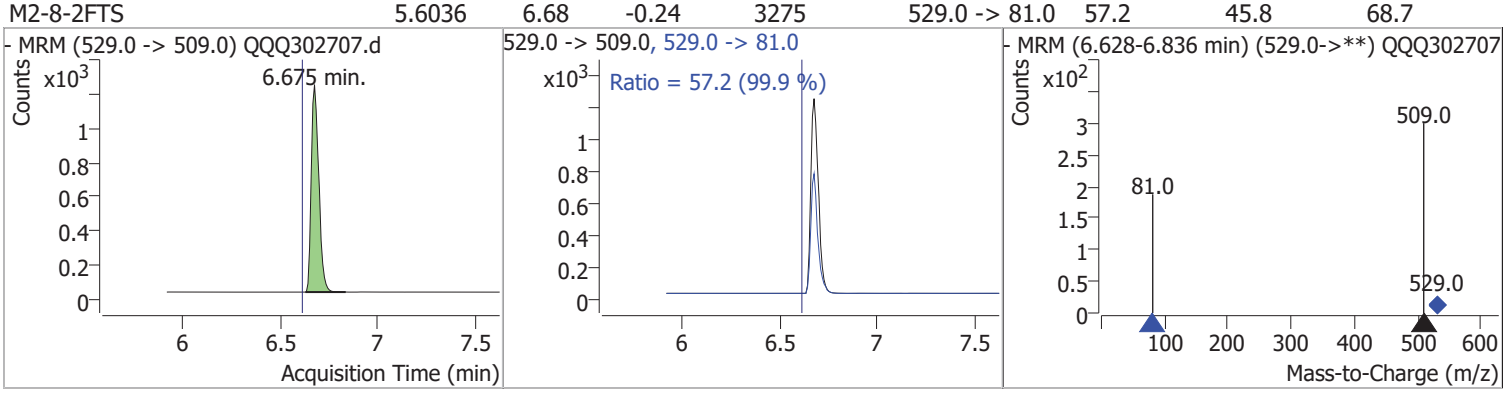
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorooctanesulfonic acid (PFOS)	4.1875	6.43	-0.26	7000 (m)	498.9 -> 98.9	53.1	35.4	53.0



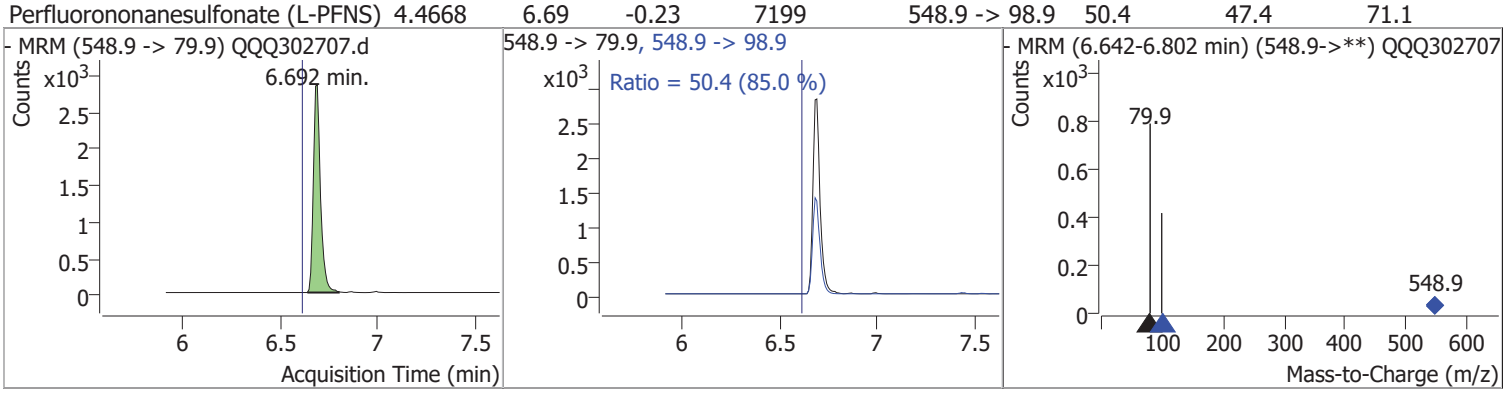
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
1H,1H,2H,2H-perfluoro-1-decanesulfonate (8 2FTS)	4.8589	6.68	-0.23	6928	527.0 -> 80.9	50.2	63.1	94.6



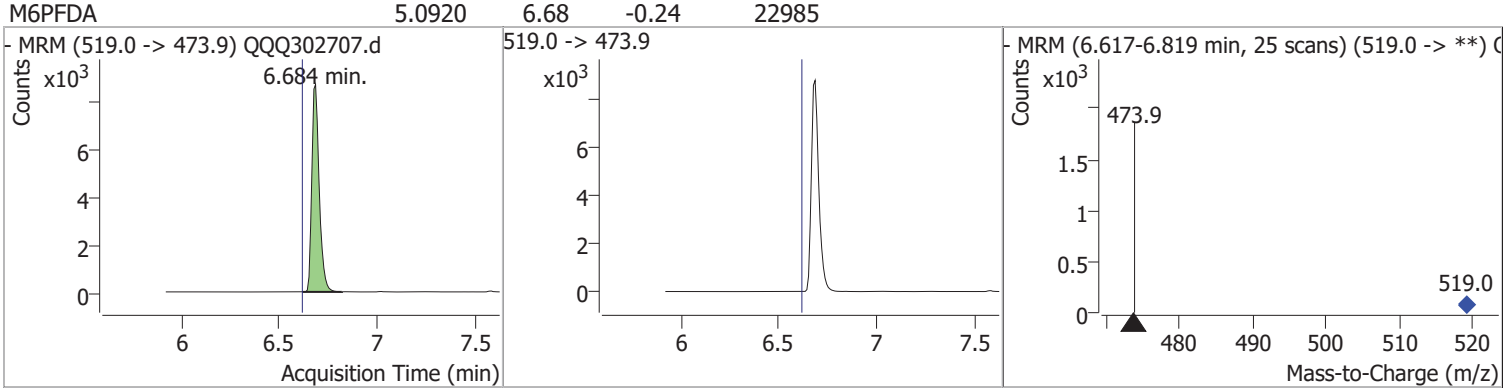
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M2-8-2FTS	5.6036	6.68	-0.24	3275	529.0 -> 81.0	57.2	45.8	68.7



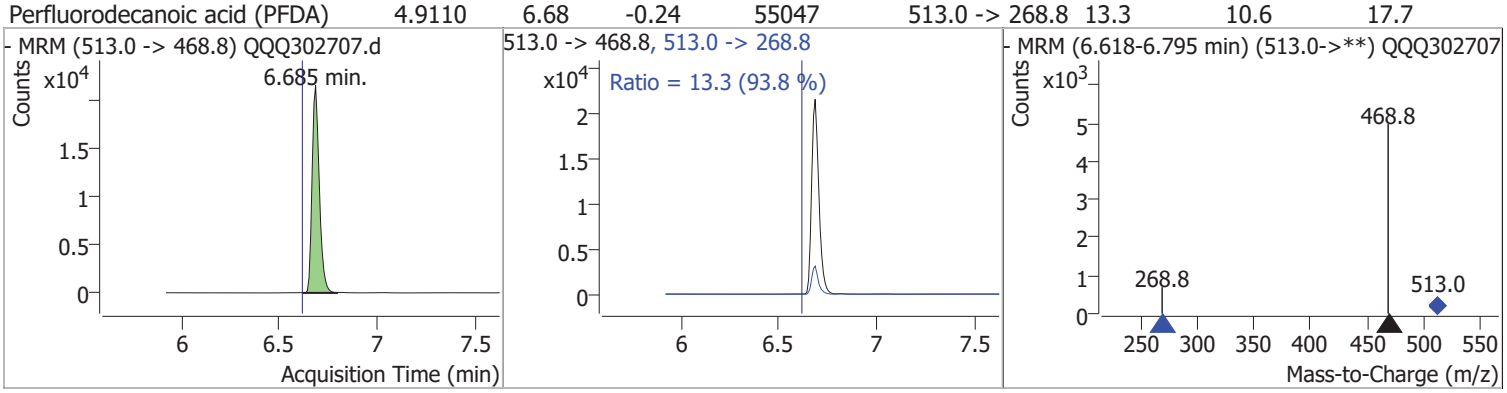
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorononanesulfonate (L-PFNS)	4.4668	6.69	-0.23	7199	548.9 -> 98.9	50.4	47.4	71.1



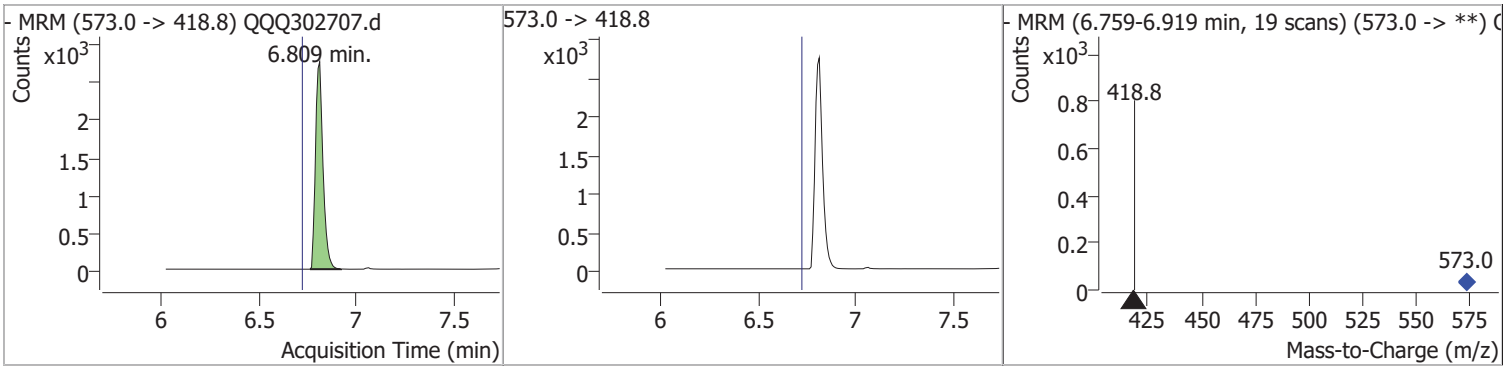
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M6PFDA	5.0920	6.68	-0.24	22985				



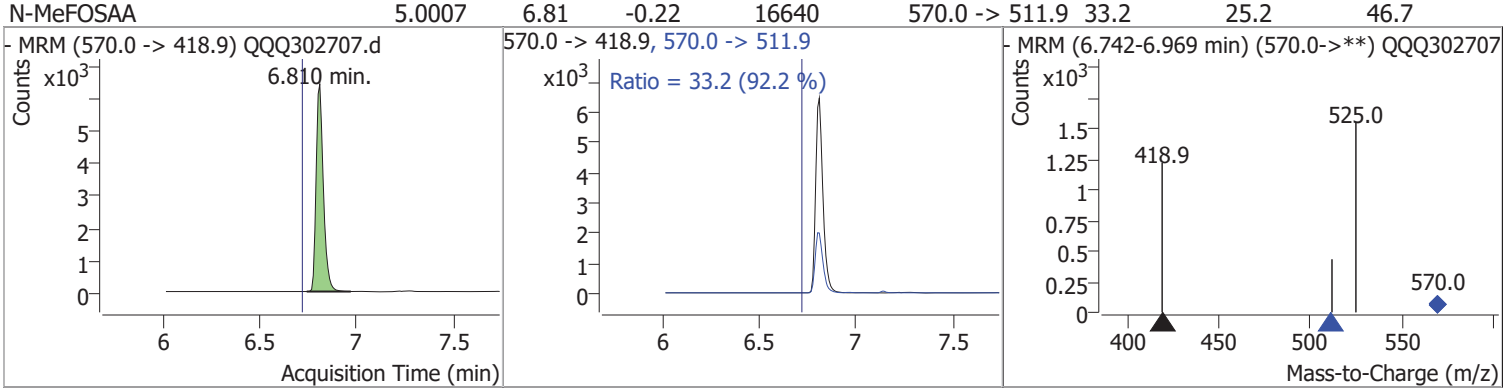
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorodecanoic acid (PFDA)	4.9110	6.68	-0.24	55047	513.0 -> 268.8	13.3	10.6	17.7



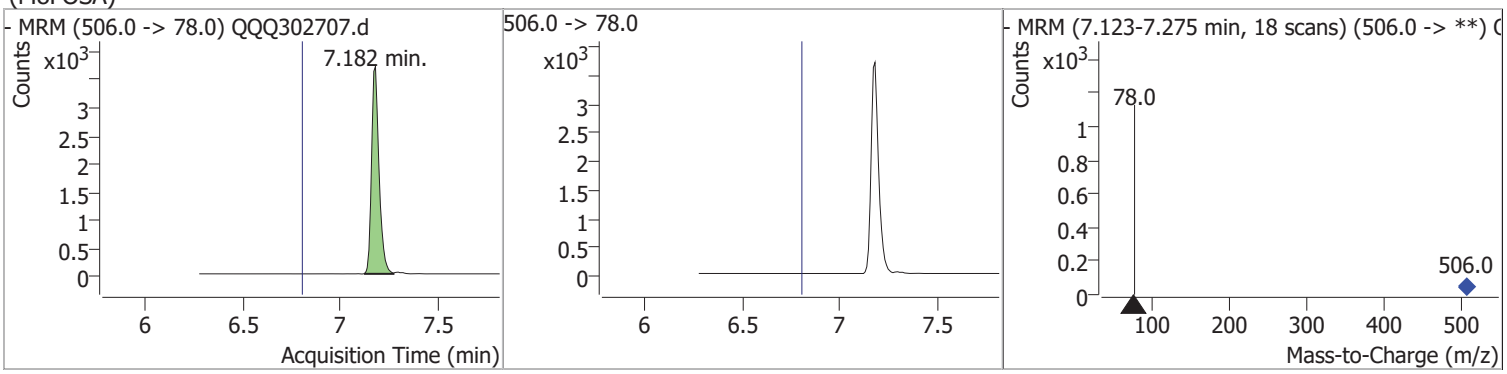
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
d3-N-MeFOSAA	4.6290	6.81	-0.22	7320				



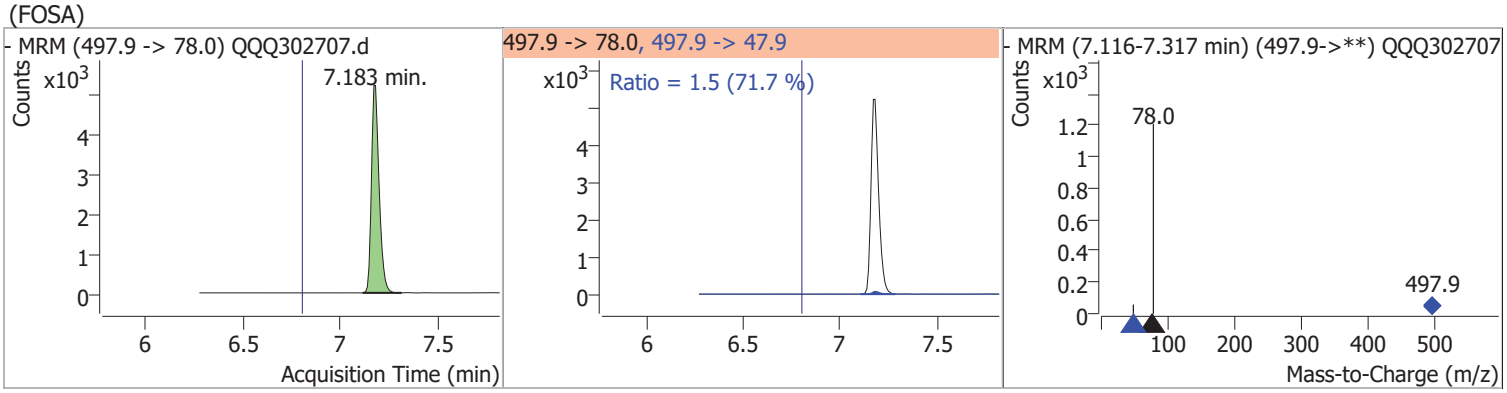
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
N-MeFOSAA	5.0007	6.81	-0.22	16640	570.0 -> 511.9	33.2	25.2	46.7



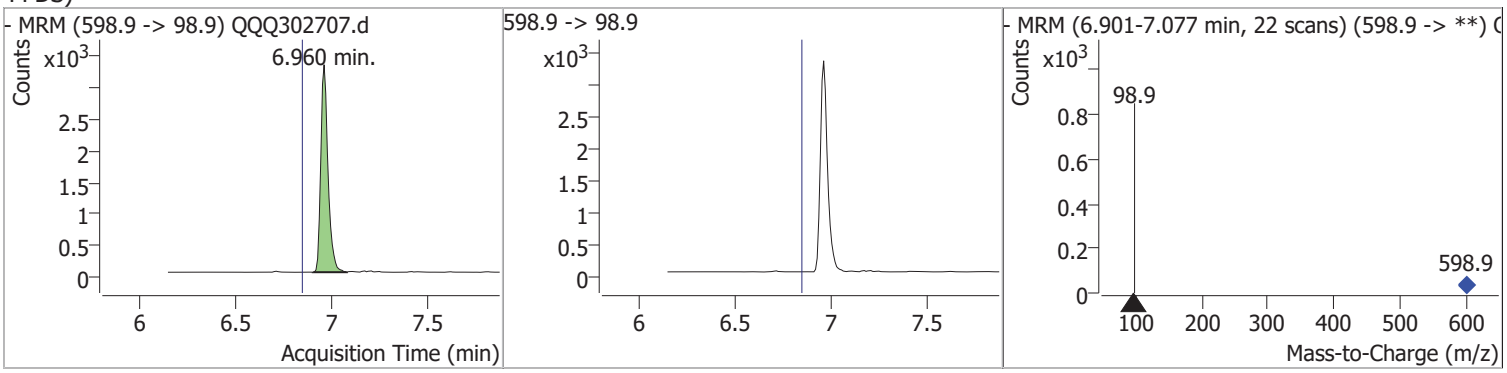
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-1-[13C8]octanesulfonamide (M8FOSA)	4.8120	7.18	0.06	9935				



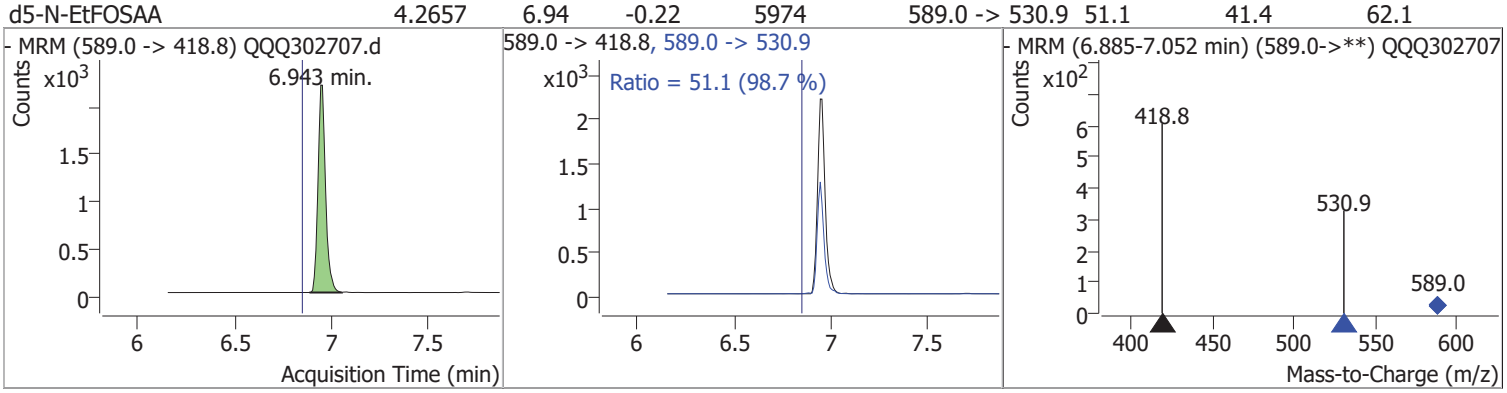
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-1-octanesulfonamide (FOSA)	4.9957	7.18	0.06	14258	497.9 -> 47.9	1.5	1.7	2.5



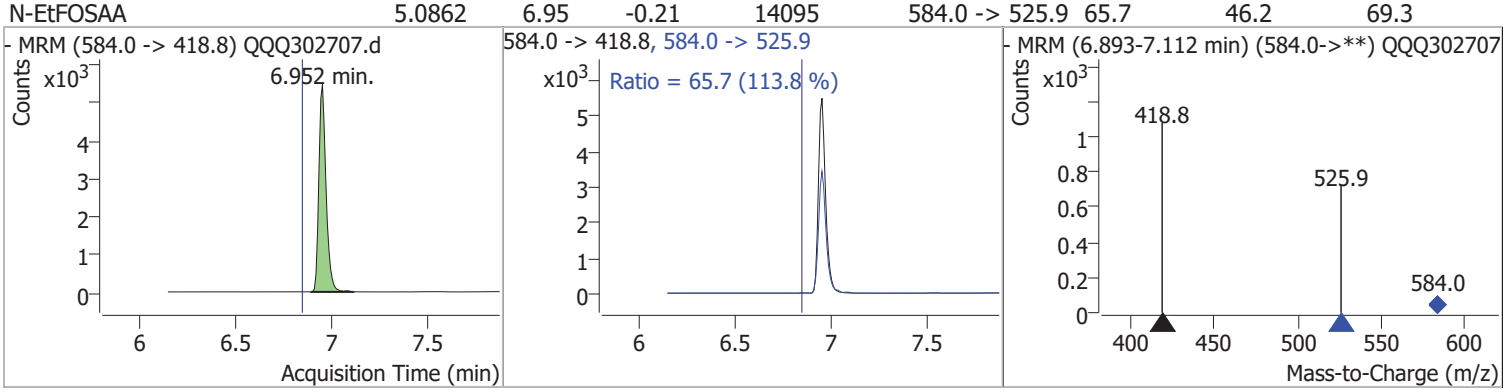
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-1-decanesulfonate (L-PFDS)	4.7831	6.96	-0.20	8532				



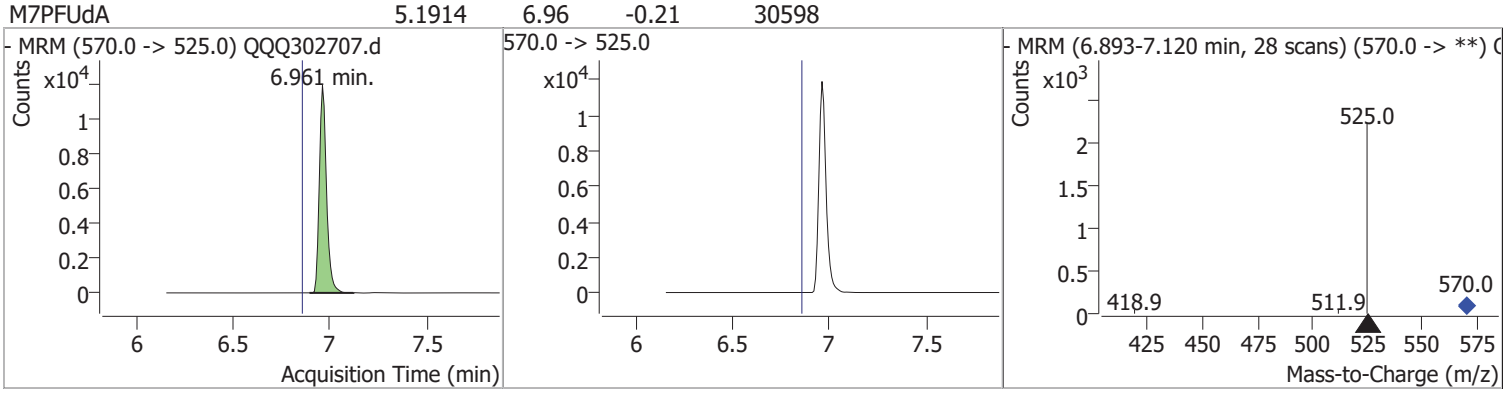
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
d5-N-EtFOSAA	4.2657	6.94	-0.22	5974	589.0 -> 530.9	51.1	41.4	62.1



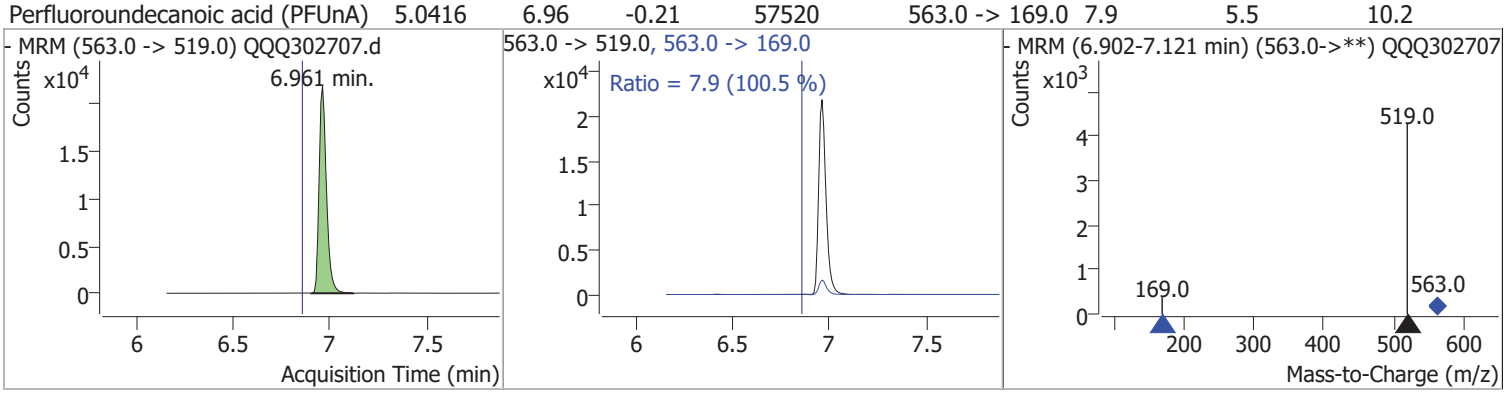
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
N-EtFOSAA	5.0862	6.95	-0.21	14095	584.0 -> 525.9	65.7	46.2	69.3



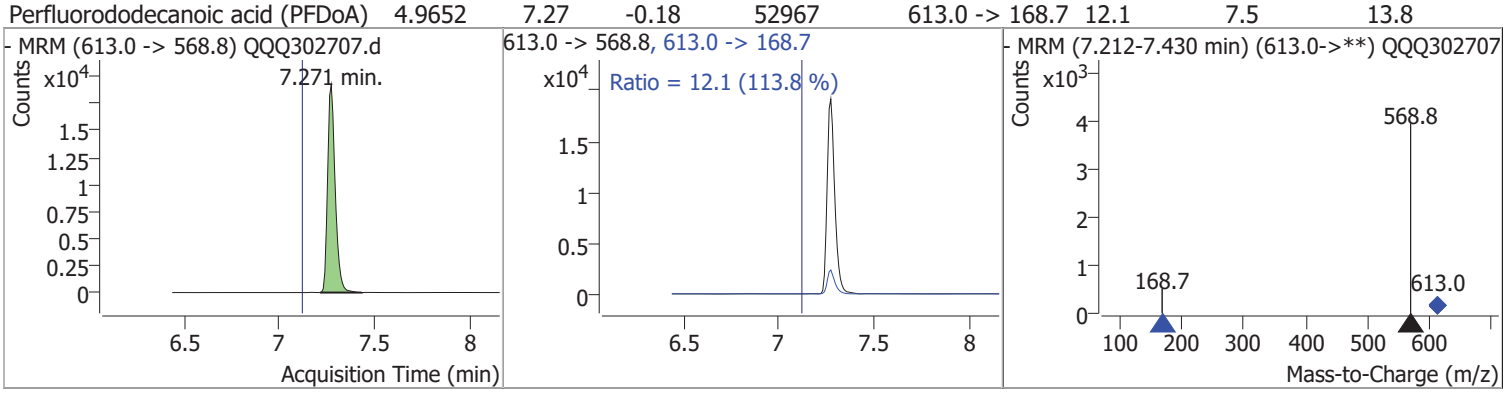
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M7PFUdA	5.1914	6.96	-0.21	30598				



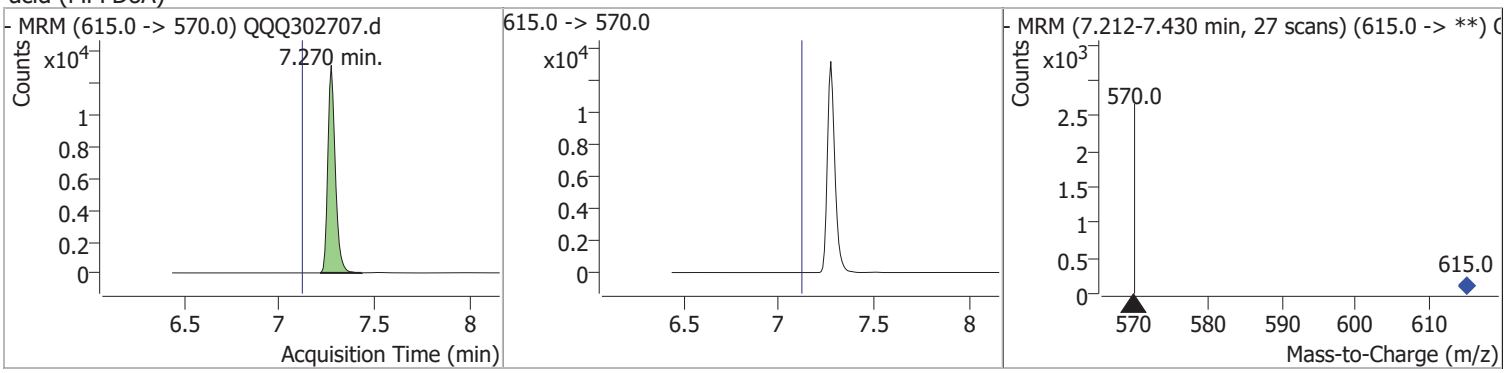
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoroundecanoic acid (PFUnA)	5.0416	6.96	-0.21	57520	563.0 -> 169.0	7.9	5.5	10.2



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorododecanoic acid (PFDoA)	4.9652	7.27	-0.18	52967	613.0 -> 168.7	12.1	7.5	13.8

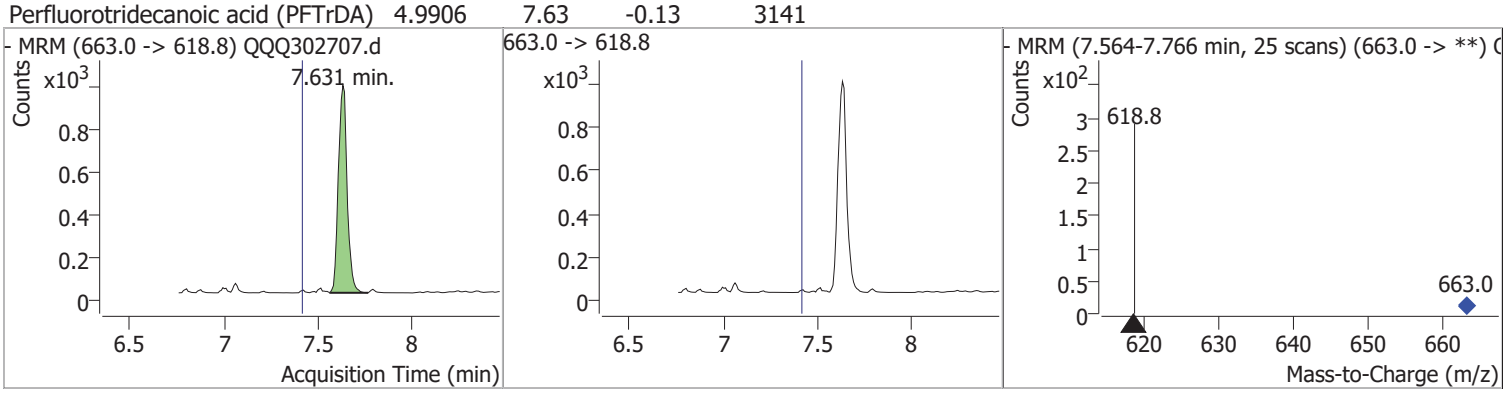


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-n-[1,2-13C2]dodecanoic acid (MPFDoA)	5.2154	7.27	-0.18	35777				

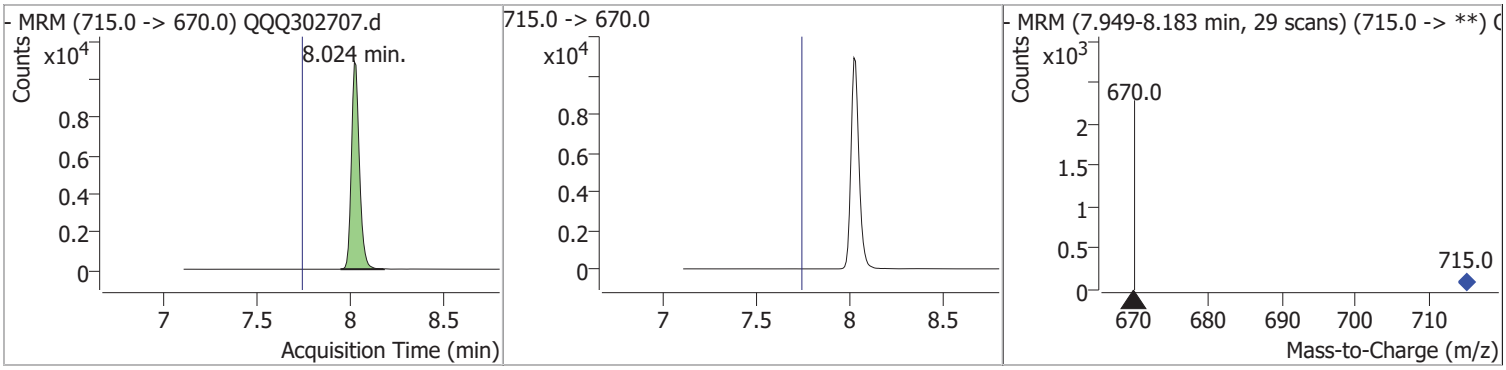


Quantitation Results Report (Not Reviewed)

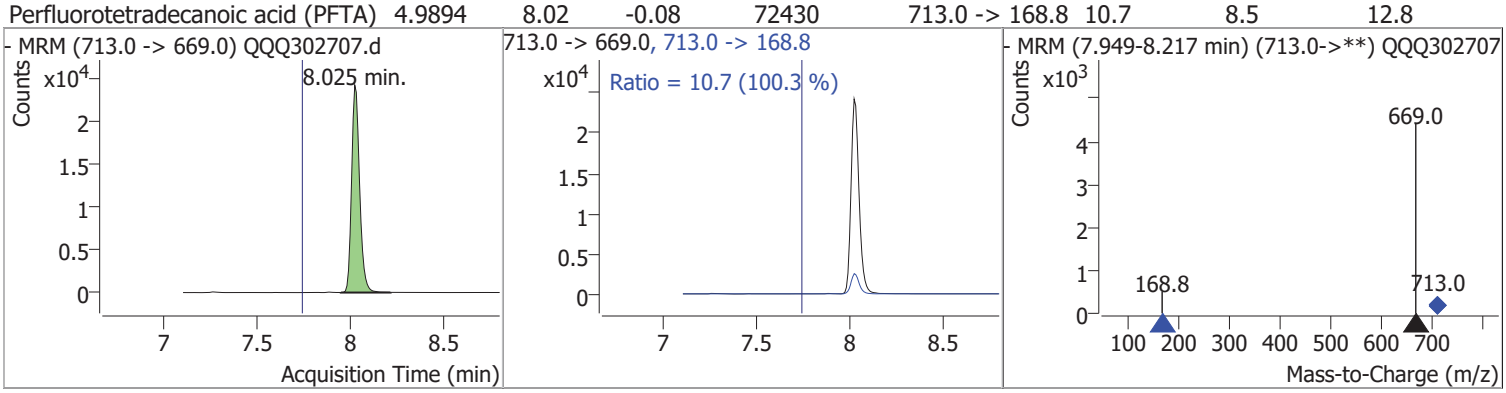
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorotridecanoic acid (PFTrDA)	4.9906	7.63	-0.13	3141				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M2PFTeDA	5.6873	8.02	-0.08	32683				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorotetradecanoic acid (PFTA)	4.9894	8.02	-0.08	72430	713.0 -> 168.8	10.7	8.5	12.8



METHOD BLANK RAW DATA

SDG: 22G0348
CLASS: PFAS
METHOD: EPA 537m

FORM I

METHOD BLANK DATA SHEET

EPA 537m

Laboratory:	York Analytical Laboratories, Inc.		SDG:	22G0348	
Client:	Phoenix Environmental Laboratories, Inc.		Project:	GCL69739	
Matrix:	Soil	Laboratory ID:	BG20572-BLK1	File ID:	QQQ302671.d
Prepared:	07/12/22 12:42	Preparation:	SPE PFAS Extraction-Soil-E	Initial/Final:	2.0285 g / 2 mL
Analyzed:	07/14/22 13:00	Instrument:	QQQ3		
Batch:	BG20572	Sequence:	Y2G1435	Calibration:	YF20026

CAS NO.	COMPOUND	CONC. (ug/kg wet)	Q
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.246	U
307-24-4	Perfluorohexanoic acid (PFHxA)	0.246	U
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.246	U
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	0.246	U
335-67-1	Perfluorooctanoic acid (PFOA)	0.246	U
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.246	U
375-95-1	Perfluorononanoic acid (PFNA)	0.246	U
335-76-2	Perfluorodecanoic acid (PFDA)	0.246	U
2058-94-8	Perfluoroundecanoic acid (PFUnA)	0.246	U
307-55-1	Perfluorododecanoic acid (PFDoA)	0.246	U
72629-94-8	Perfluorotridecanoic acid (PFTrDA)	0.246	J
376-06-7	Perfluorotetradecanoic acid (PFTA)	0.246	U
2355-31-9	N-MeFOSAA	0.246	U
2991-50-6	N-EtFOSAA	0.246	U
2706-90-3	Perfluoropentanoic acid (PFPeA)	0.246	U
754-91-6	Perfluoro-1-octanesulfonamide (FOSA)	0.246	U
375-92-8	Perfluoro-1-heptanesulfonic acid (PFHpS)	0.246	U
335-77-3	Perfluoro-1-decanesulfonic acid (PFDS)	0.246	U
27619-97-2	1H,1H,2H,2H-Perfluorooctanesulfonic acid (6:2 FTS)	0.246	U
39108-34-4	1H,1H,2H,2H-Perfluorodecanesulfonic acid (8:2 FTS)	0.246	U
375-22-4	Perfluoro-n-butanoic acid (PFBA)	0.246	U

SYSTEM MONITORING COMPOUND	ADDED (ug/kg wet)	CONC (ug/kg wet)	% REC	QC LIMITS	Q
M3PFBS	4.58	2.92	63.8	25 - 150	
M5PFHxA	4.93	3.72	75.4	25 - 150	
M4PFHpA	4.93	4.08	82.7	25 - 150	
M3PFHxS	4.66	3.58	76.8	25 - 150	
Perfluoro-n-[13C8]octanoic acid (M8PFOA)	4.93	4.46	90.5	25 - 150	
M6PFDA	4.93	3.61	73.3	25 - 150	
M7PFUdA	4.93	3.31	67.2	25 - 150	
Perfluoro-n-[1,2-13C2]dodecanoic acid (MPFDoA)	4.93	3.07	62.3	25 - 150	

FORM I

METHOD BLANK DATA SHEET

EPA 537m

Laboratory:	York Analytical Laboratories, Inc.		SDG:	22G0348	
Client:	Phoenix Environmental Laboratories, Inc.		Project:	GCL69739	
Matrix:	Soil	Laboratory ID:	BG20572-BLK1	File ID:	QQQ302671.d
Prepared:	07/12/22 12:42	Preparation:	SPE PFAS Extraction-Soil-E	Initial/Final:	2.0285 g / 2 mL
Analyzed:	07/14/22 13:00	Instrument:	QQQ3		
Batch:	BG20572	Sequence:	Y2G1435	Calibration:	YF20026

SYSTEM MONITORING COMPOUND	ADDED (ug/kg wet)	CONC (ug/kg wet)	% REC	QC LIMITS	Q
M2PFTeDA	4.93	3.57	72.3	10 - 150	
Perfluoro-n-[13C4]butanoic acid (MPFBA)	4.93	3.52	71.5	25 - 150	
Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)	4.72	4.05	85.9	25 - 150	
Perfluoro-n-[13C5]pentanoic acid (M5PFPeA)	4.93	3.68	74.6	25 - 150	
Perfluoro-1-[13C8]octanesulfonamide (M8FOSA)	4.93	2.98	60.5	10 - 150	
d3-N-MeFOSAA	4.93	3.62	73.4	25 - 150	
d5-N-EtFOSAA	4.93	3.37	68.3	25 - 150	
M2-6:2 FTS	4.68	3.35	71.7	25 - 200	
M2-8:2 FTS	4.72	5.28	112	25 - 200	
M9PFNA	4.93	3.31	67.1	25 - 150	

INTERNAL STANDARD	AREA	RT	REF AREA	REF RT	Q
MPFOA	136503.8	6.140083	142217.4	6.123283	

Quantitation Results Report (Not Reviewed)

Agilent | Trusted Answers

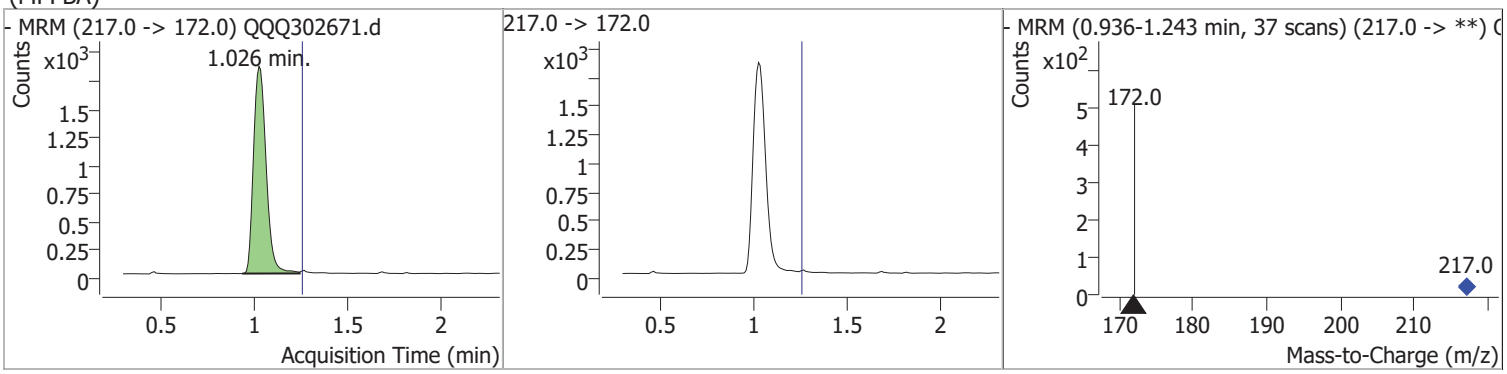
Data File	QQQ302671.d	Operator	
Acq. Method	PFAS 24_IDA ACQ_QQQ3A.m	Acq. Date-Time	7/14/2022 1:00:55 PM
Sample Name	BG20572-BLK1	Instrument	QQQ3
Vial		Multiplier	1.00
DA Method File	PFAS_24_IDA_QUANT_QQQ3_062722.m	Comment	
Tune File		Tune Date	
Batch Name	2022-07-14-IDA.batch.bin	Last Calib Update	6/27/2022 4:24:30 PM
Ref Library			

Compound	RT	QIon	Resp.	Conc.	Units		Dev(Min)
Internal Standards							
MPFOA	6.140	417.0 -> 372.0	136504	10.0000	ng/ml		-0.290
System Monitoring Compounds							
Perfluoro-n-[13C4]butanoic acid (MPFBA)	1.026	217.0 -> 172.0	8611	3.5743	ng/ml		-0.283
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 35.74%			
Perfluoro-n-[13C54]pentanoic acid (M5PFPeA)	4.053	268.0 -> 223.0	7474	3.7284	ng/ml		-0.534
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 37.28%			
M3PFBS	4.691	302.0 -> 79.9	3102	2.9637	ng/ml		-0.472
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 29.64%			
M2-4-2FTS	5.275	329.0 -> 309.0	2765	3.9754	ng/ml	#	-0.415
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 39.75%			
M5PFHxA	5.318	318.0 -> 273.0	14807	3.7714	ng/ml		-0.406
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 37.71%			
M4PFHpA	5.813	367.0 -> 322.0	8453	4.1369	ng/ml		-0.331
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 41.37%			
M3PFHxS	5.854	402.0 -> 80.0	3198	3.6326	ng/ml	#	-0.323
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 36.33%			
M2-6-2FTS	6.122	429.0 -> 409.0	2266	3.4013	ng/ml		-0.298
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 34.01%			
Perfluoro-n-[13C8]octanoic acid (M8PFOA)	6.140	421.0 -> 376.0	15287	4.5264	ng/ml		-0.290
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 45.26%			
Perfluoro-n-[13C9]nonanoic acid (M9PFNA)	6.417	472.0 -> 427.0	13489	3.3529	ng/ml	#	-0.263
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 33.53%			
Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)	6.424	507.0 -> 80.0	3710	4.1113	ng/ml		-0.264
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 41.11%			
M2-8-2FTS	6.675	529.0 -> 509.0	3103	5.3508	ng/ml	#	-0.243
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 53.51%			
M6PFDA	6.684	519.0 -> 473.9	16357	3.6658	ng/ml		-0.238
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 36.66%			
d3-N-MeFOSAA	6.801	573.0 -> 418.8	5748	3.6685	ng/ml		-0.229
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 36.69%			
Perfluoro-1-[13C8]octanesulfonamide (M8FOSA)	7.174	506.0 -> 78.0	6125	3.0257	ng/ml		0.055
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 30.26%			
d5-N-EtFOSAA	6.943	589.0 -> 418.8	4732	3.4140	ng/ml		-0.221
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 34.14%			
M7PFUdA	6.961	570.0 -> 525.0	19729	3.3606	ng/ml		-0.212
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 33.61%			
Perfluoro-n-[1,2-13C2]dodecanoic acid (MPFDoA)	7.270	615.0 -> 570.0	21016	3.1156	ng/ml		-0.178
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 31.16%			
M2PFTeDA	8.024	715.0 -> 670.0	20393	3.6160	ng/ml		-0.077
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 36.16%			
Target Compounds							**QValue**

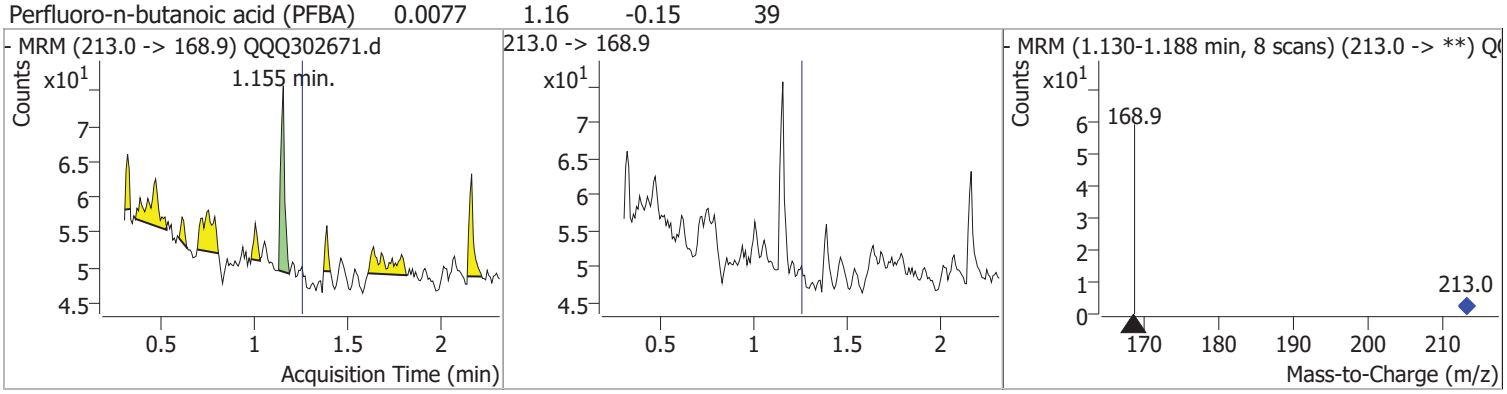
Compound	RT	QIon	Resp.	Conc.	Units		Dev(Min)
Perfluoro-n-butanoic acid (PFBA)	1.155	213.0 -> 168.9	39	0.0077	ng/ml		100
Perfluoro-n-pentanoic acid (PFPeA)	4.360	263.0 -> 219.0	4	0.0011	ng/ml		100
Perfluorobutanesulfonic acid (PFBS)	4.961	298.9 -> 79.9	11	0.0048	ng/ml	#	76
1H,1H,2H,2H-perfluoro-1-hexanesulfonate (4 2FTS)	5.579	327.0 -> 307.0	9	0.0073	ng/ml	#	1
Perfluorohexanoic acid (PFHxA)	5.555	313.0 -> 268.9	34	0.0039	ng/ml	#	1
Perfluoro-1-pentanesulfonate (L-PFPeS)	5.022	348.9 -> 79.9	10	0.0054	ng/ml	#	78
Perfluoroheptanoic acid (PFHpA)	6.175	363.0 -> 318.8	56	0.0049	ng/ml	#	51
Perfluorohexanesulfonic acid (PFHxS)	6.369	398.9 -> 79.9	9	0.0050	ng/ml	#	1
1H,1H,2H,2H-perfluoro-1-octanesulfonate (6 2FTS)	6.721	427.0 -> 407.0	19	0.0174	ng/ml	#	1
Perfluorooctanoic acid (PFOA)	6.149	413.0 -> 368.8	172	0.0151	ng/ml	#	86
Perfluoro-1-heptanesulfonate (L-PFHpS)	6.712	448.9 -> 80.0	17	0.0115	ng/ml	#	6
Perfluorononanoic acid (PFNA)	6.375	463.0 -> 418.8	31	0.0026	ng/ml		65
Perfluorooctanesulfonic acid (PFOS)	6.240	498.9 -> 79.9	9	0.0055	ng/ml	#	1
1H,1H,2H,2H-perfluoro-1-decanesulfonate (8 2FTS)	6.684	527.0 -> 507.0	1	0.0009	ng/ml	#	1
Perfluorononanesulfonate (L-PFNS)	6.751	548.9 -> 79.9	14	0.0088	ng/ml	#	36
Perfluorodecanoic acid (PFDA)	6.609	513.0 -> 468.8	41	0.0039	ng/ml		65
N-MeFOSAA	6.650	570.0 -> 418.9	68	0.0213	ng/ml		39
Perfluoro-1-octanesulfonamide (FOSA)	7.056	497.9 -> 78.0	1	0.0003	ng/ml	#	1
Perfluoro-1-decanesulfonate (L-PFDS)	6.834	598.9 -> 98.9	16	0.0092	ng/ml		100
N-EtFOSAA	6.977	584.0 -> 418.8	8	0.0030	ng/ml	#	70
Perfluoroundecanoic acid (PFUnA)	6.852	563.0 -> 519.0	64	0.0058	ng/ml		78
Perfluorododecanoic acid (PFDoA)	7.279	613.0 -> 568.8	160	0.0160	ng/ml		96
Perfluorotridecanoic acid (PFTrDA)	7.262	663.0 -> 618.8	16	0.0278	ng/ml		100
Perfluorotetradecanoic acid (PFTA)	7.631	713.0 -> 669.0	9	0.0007	ng/ml		72

(#) = Qualifier Out of Range; (m) = Manual Integration; (+) = Area Summed; (*) = Surrogate Percent Recovery Out of Range; (d): Zeroed Peak

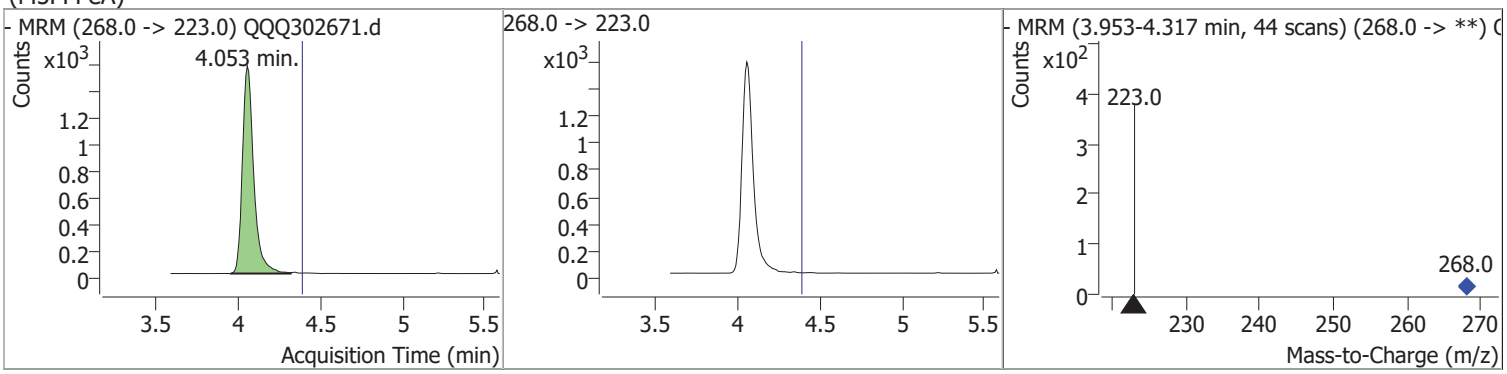
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-n-[13C4]butanoic acid (MPFBA)	3.5743	1.03	-0.28	8611				



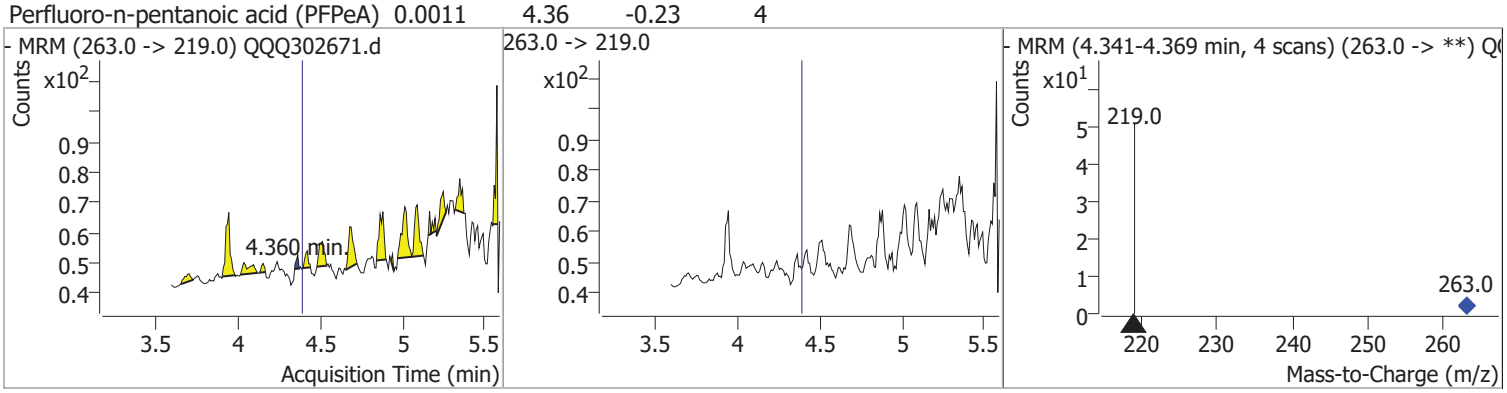
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-n-butanoic acid (PFBA)	0.0077	1.16	-0.15	39				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-n-[13C54]pentanoic acid (M5PFPeA)	3.7284	4.05	-0.53	7474				

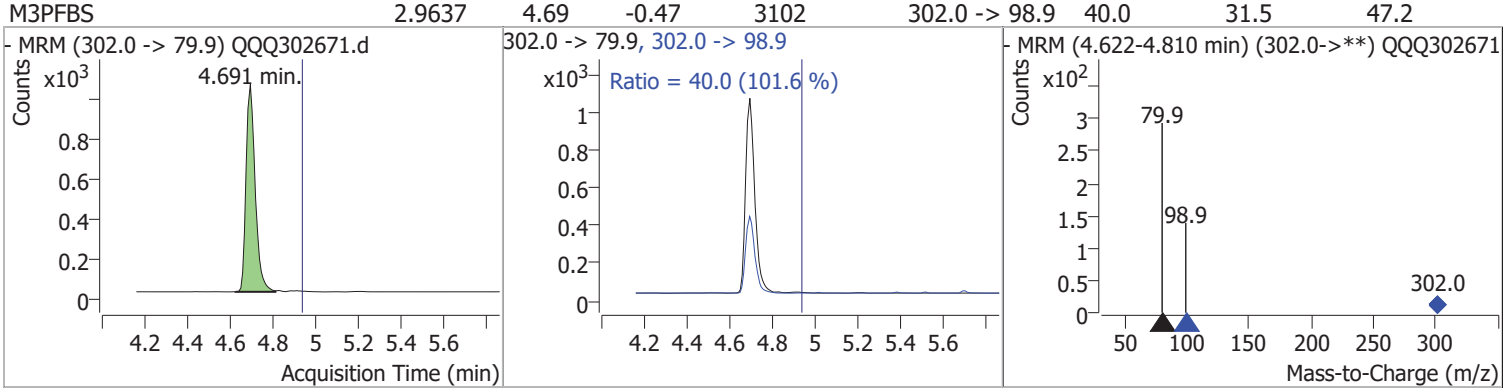


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-n-pentanoic acid (PFPeA)	0.0011	4.36	-0.23	4				

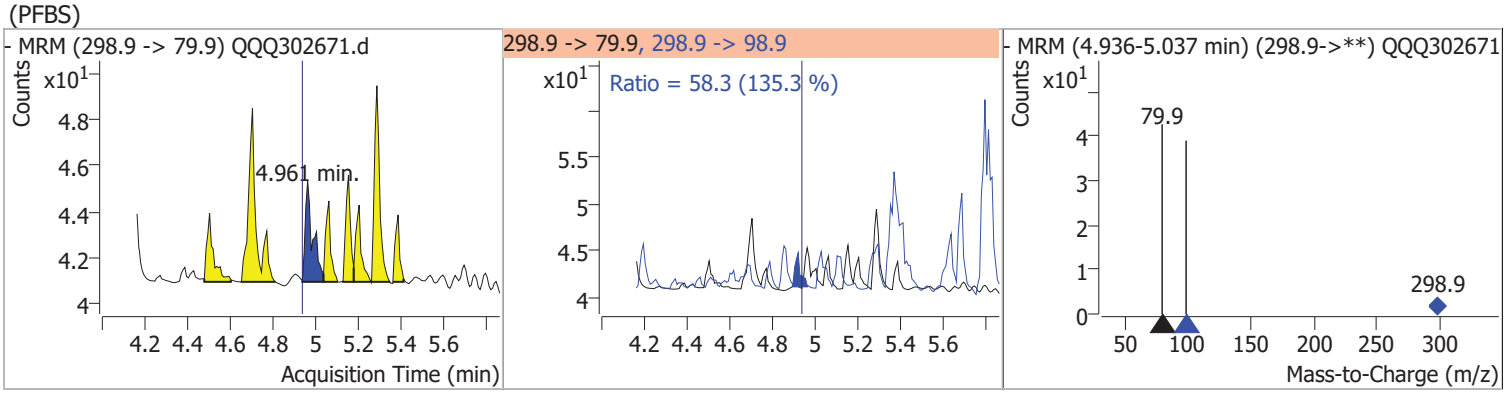


Quantitation Results Report (Not Reviewed)

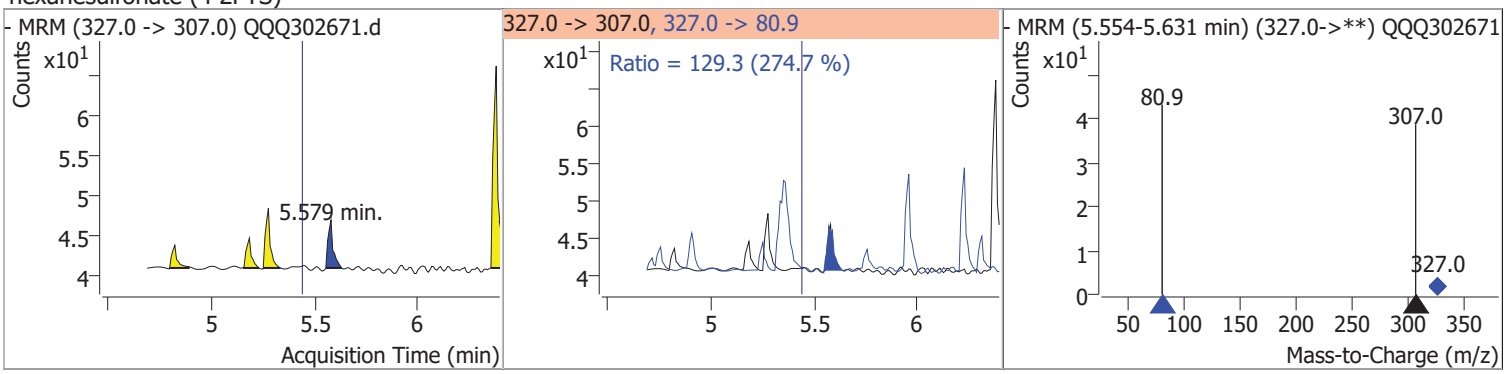
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M3PFBS	2.9637	4.69	-0.47	3102	302.0 -> 98.9	40.0	31.5	47.2



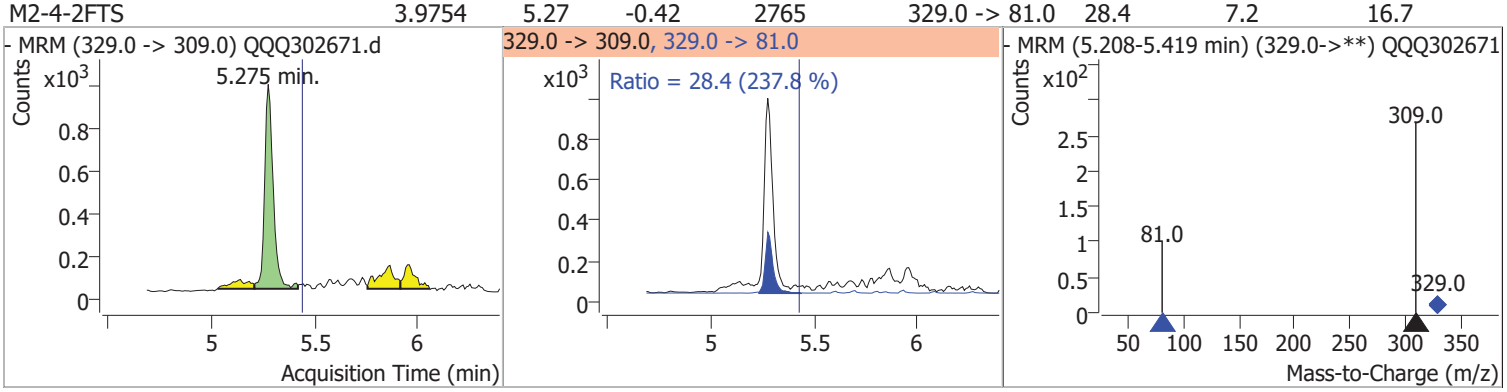
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorobutanesulfonic acid (PFBS)	0.0048	4.96	-0.20	11	298.9 -> 98.9	58.3	34.5	51.7



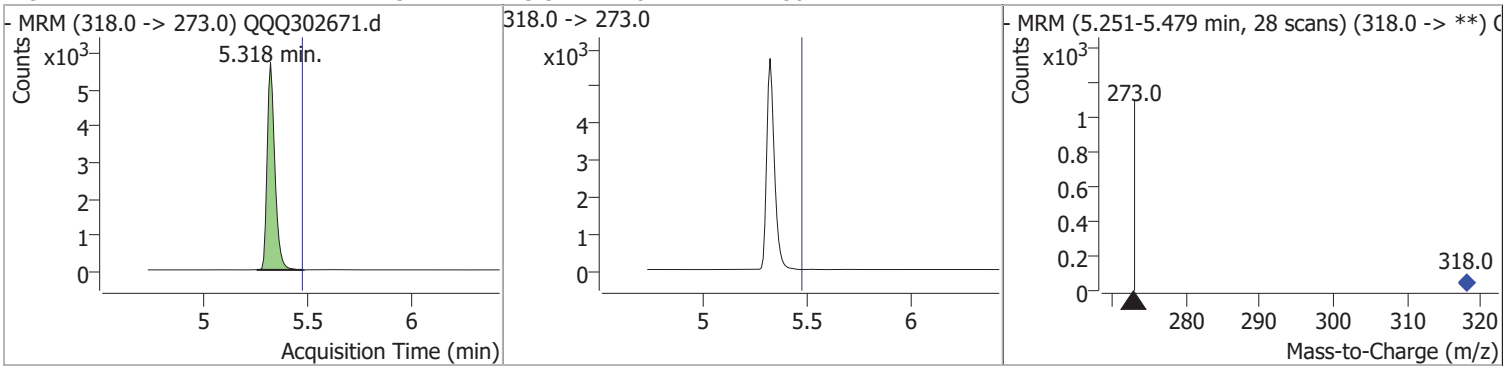
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
1H,1H,2H,2H-perfluoro-1-hexanesulfonate (4 2FTS)	0.0073	5.58	-0.11	9	327.0 -> 80.9	129.3	28.2	65.9



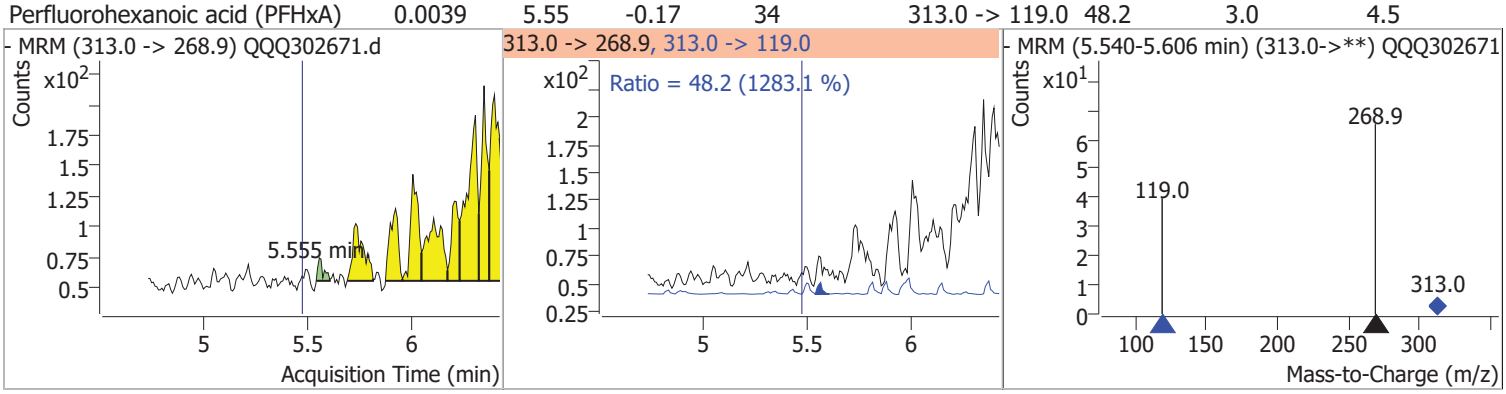
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M2-4-2FTS	3.9754	5.27	-0.42	2765	329.0 -> 81.0	28.4	7.2	16.7



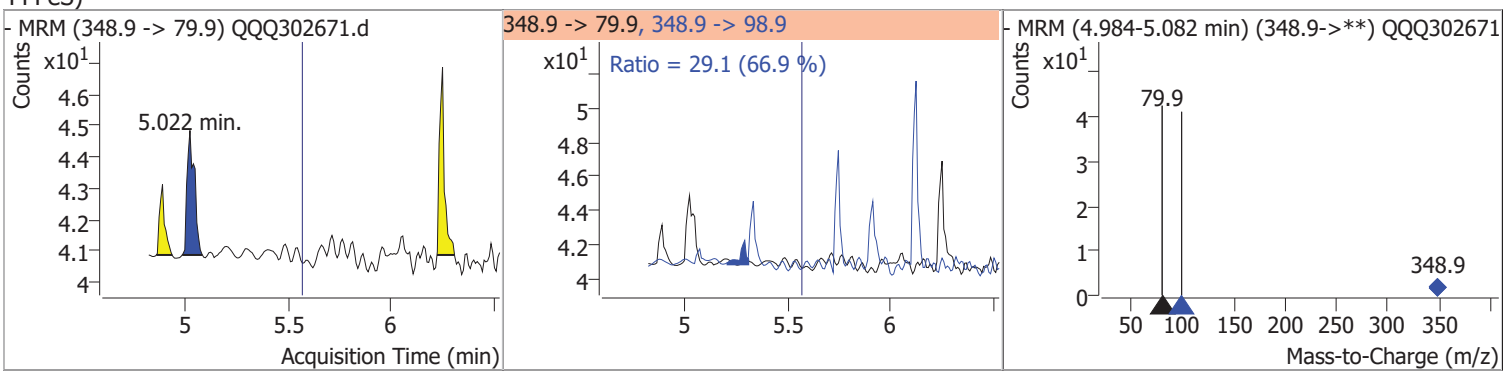
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M5PFHxA	3.7714	5.32	-0.41	14807				



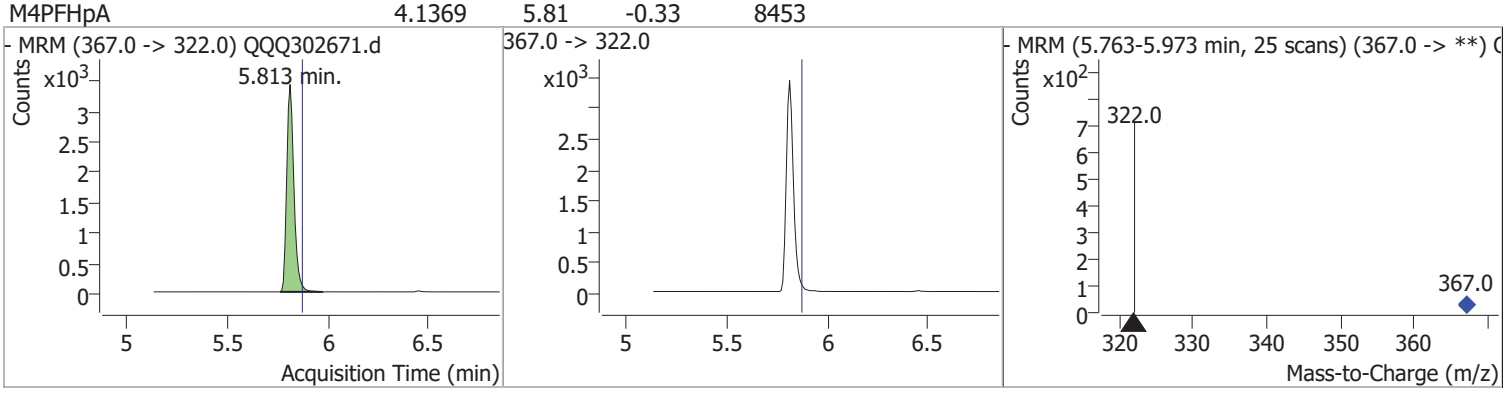
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorohexanoic acid (PFHxA)	0.0039	5.55	-0.17	34	313.0 -> 119.0	48.2	3.0	4.5



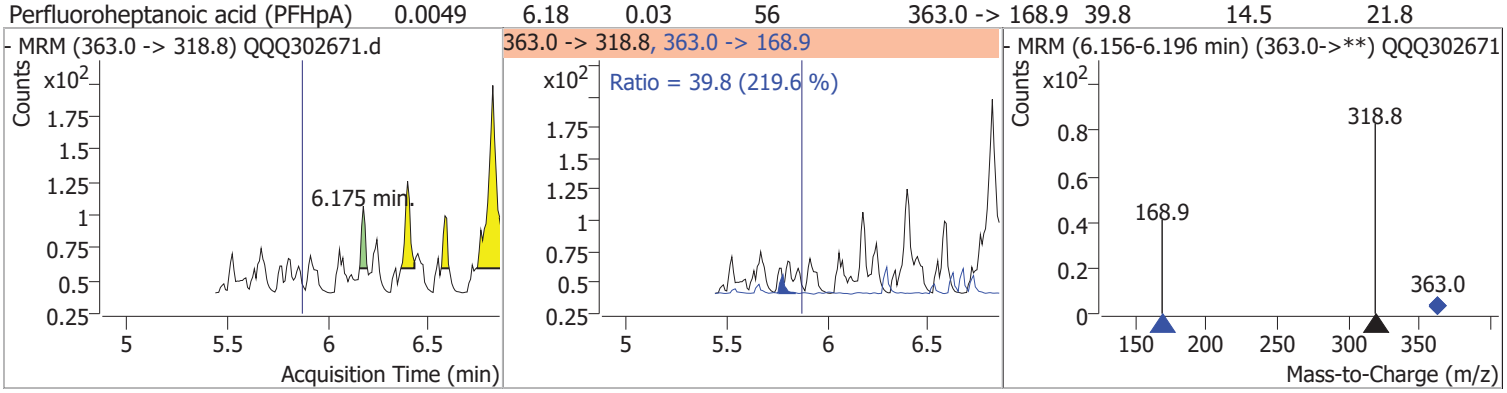
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-1-pentanesulfonate (L-PFPeS)	0.0054	5.02	-0.80	10	348.9 -> 98.9	29.1	34.8	52.2



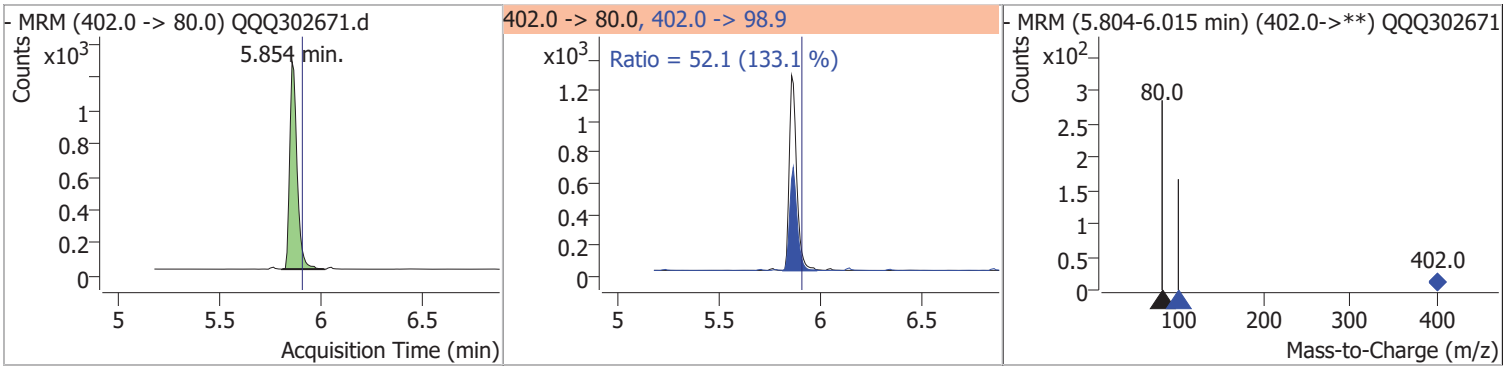
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M4PFHpA	4.1369	5.81	-0.33	8453				



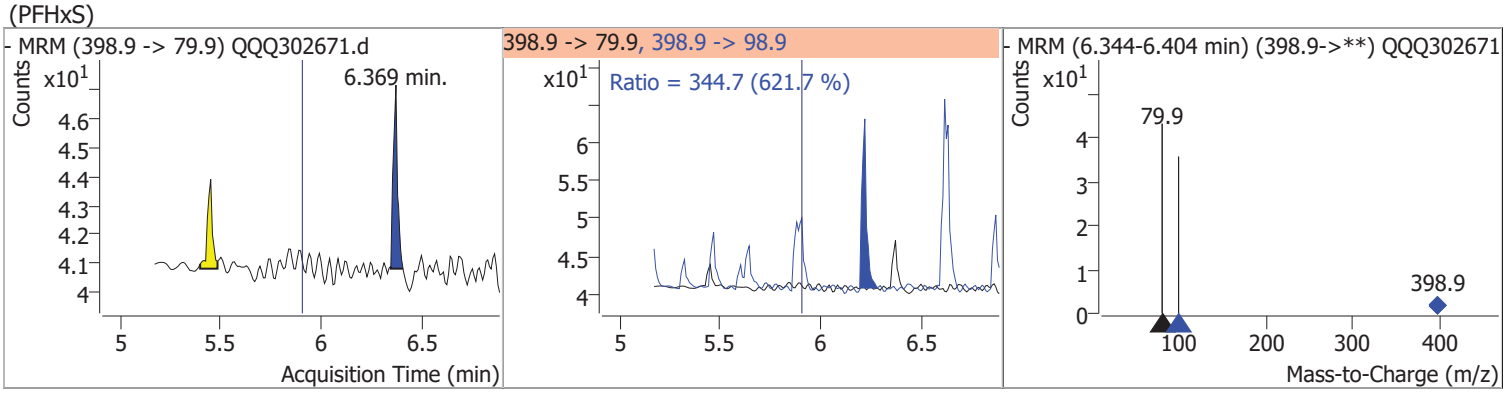
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoroheptanoic acid (PFHpA)	0.0049	6.18	0.03	56	363.0 -> 168.9	39.8	14.5	21.8



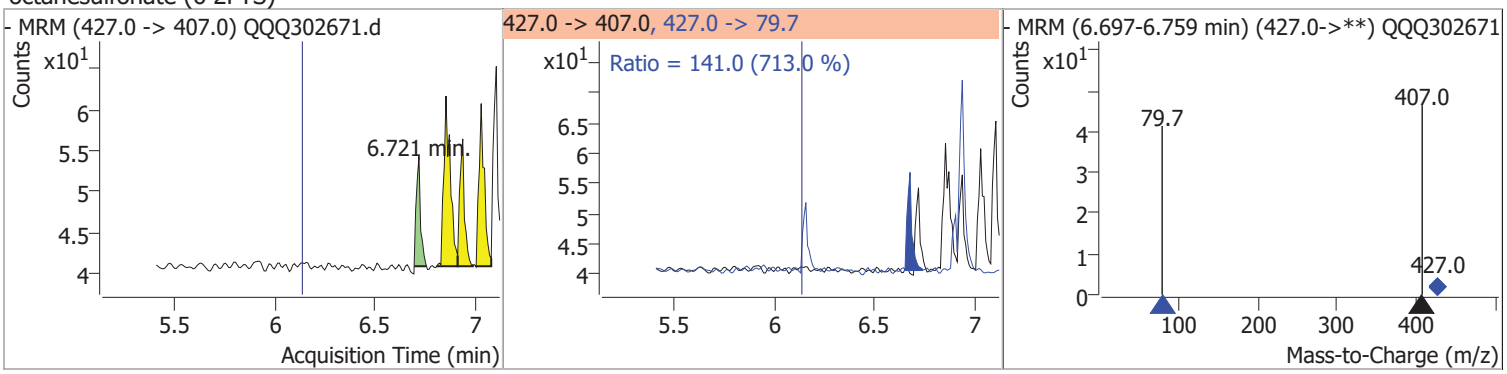
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M3PFHxS	3.6326	5.85	-0.32	3198	402.0 -> 98.9	52.1	31.3	47.0



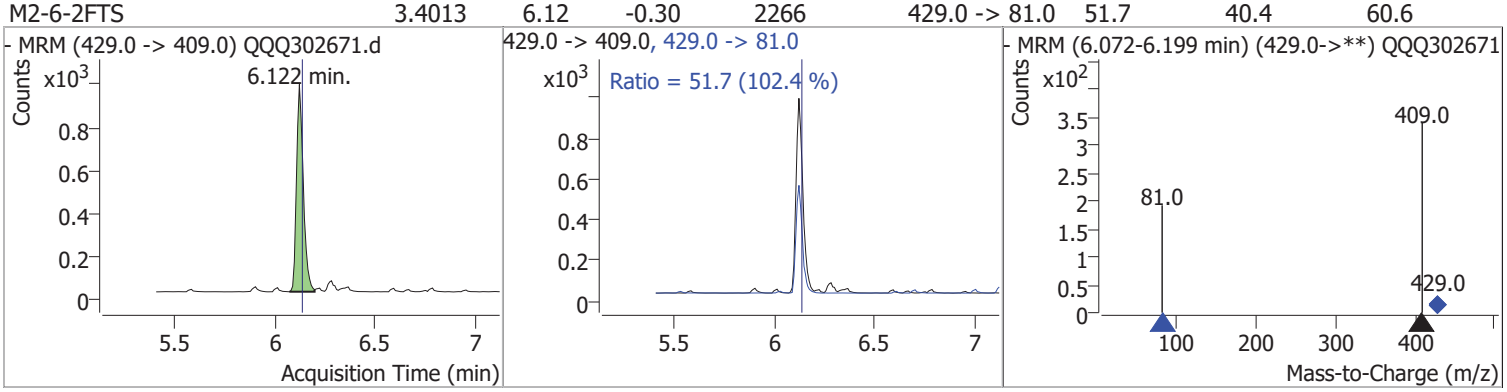
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorohexanesulfonic acid (PFHxS)	0.0050	6.37	0.19	9	398.9 -> 98.9	344.7	44.4	66.5



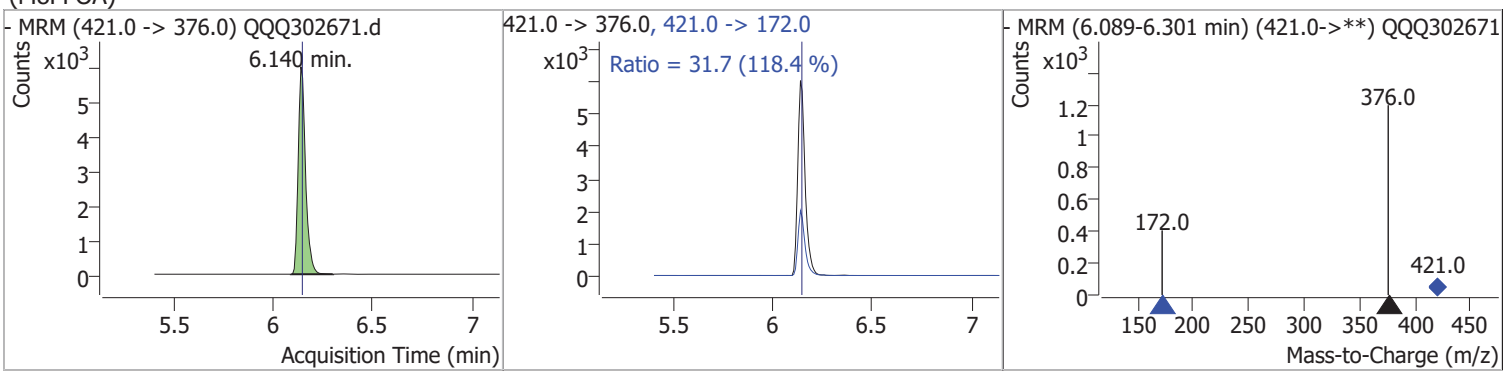
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
1H,1H,2H,2H-perfluoro-1-octanesulfonate (6 2FTS)	0.0174	6.72	0.30	19	427.0 -> 79.7	141.0	15.8	23.7



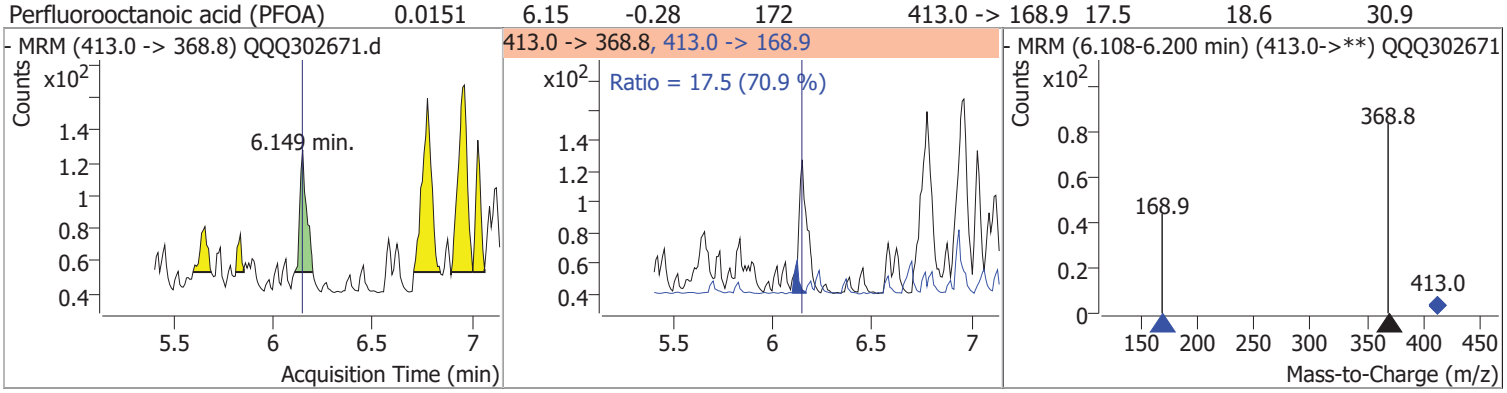
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M2-6-2FTS	3.4013	6.12	-0.30	2266	429.0 -> 81.0	51.7	40.4	60.6



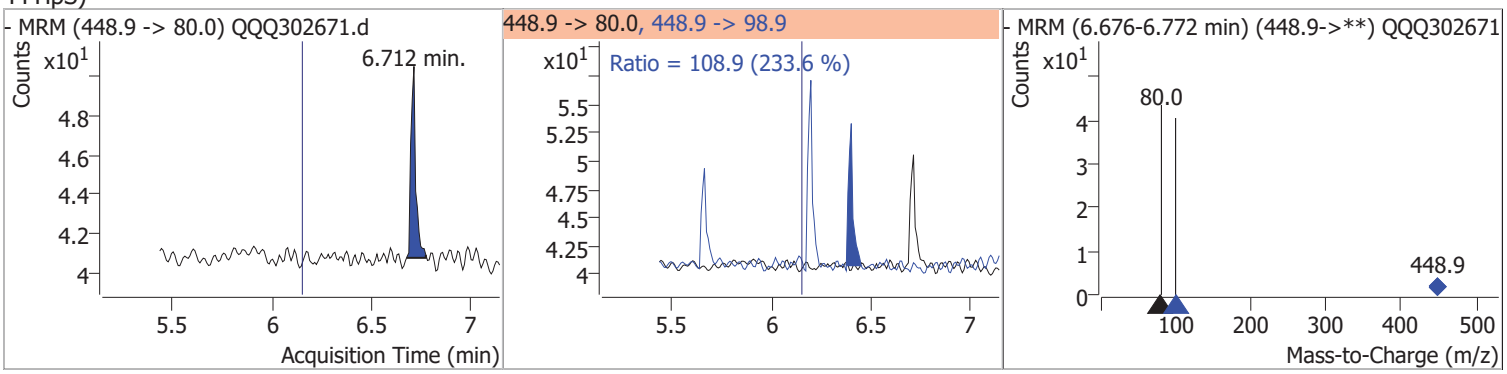
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-n-[13C8]octanoic acid (M8PFOA)	4.5264	6.14	-0.29	15287	421.0 -> 172.0	31.7	21.5	32.2



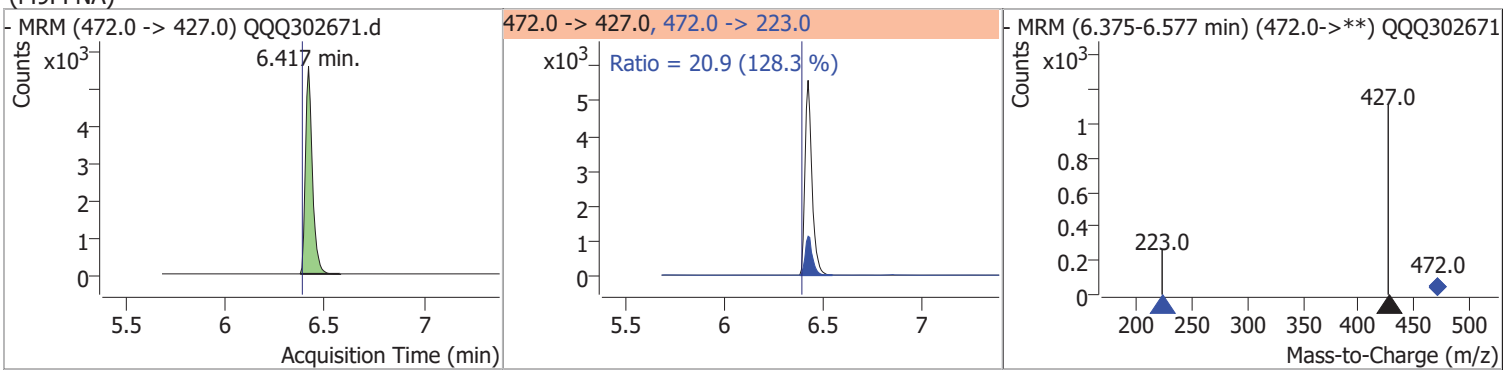
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorooctanoic acid (PFOA)	0.0151	6.15	-0.28	172	413.0 -> 168.9	17.5	18.6	30.9



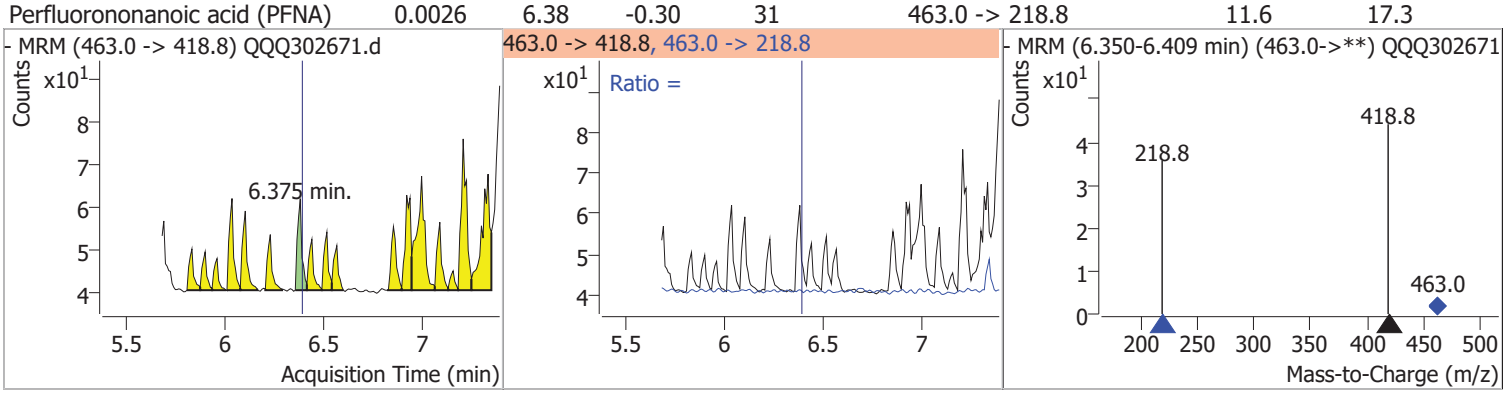
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-1-heptanesulfonate (L-PFHpS)	0.0115	6.71	0.28	17	448.9 -> 98.9	108.9	37.3	56.0



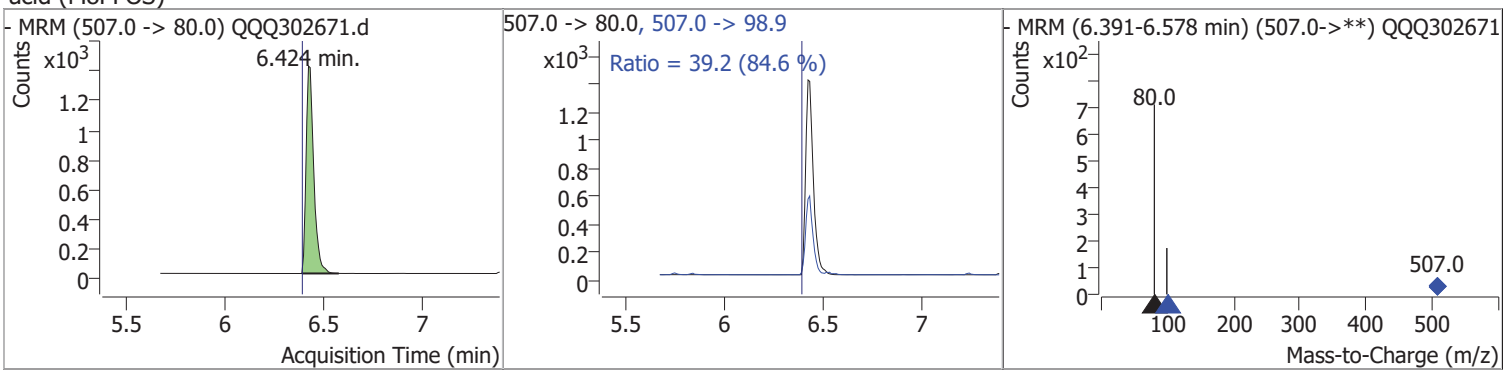
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-n-[13C9]nonanoic acid (M9PFNA)	3.3529	6.42	-0.26	13489	472.0 -> 223.0	20.9	13.1	19.6



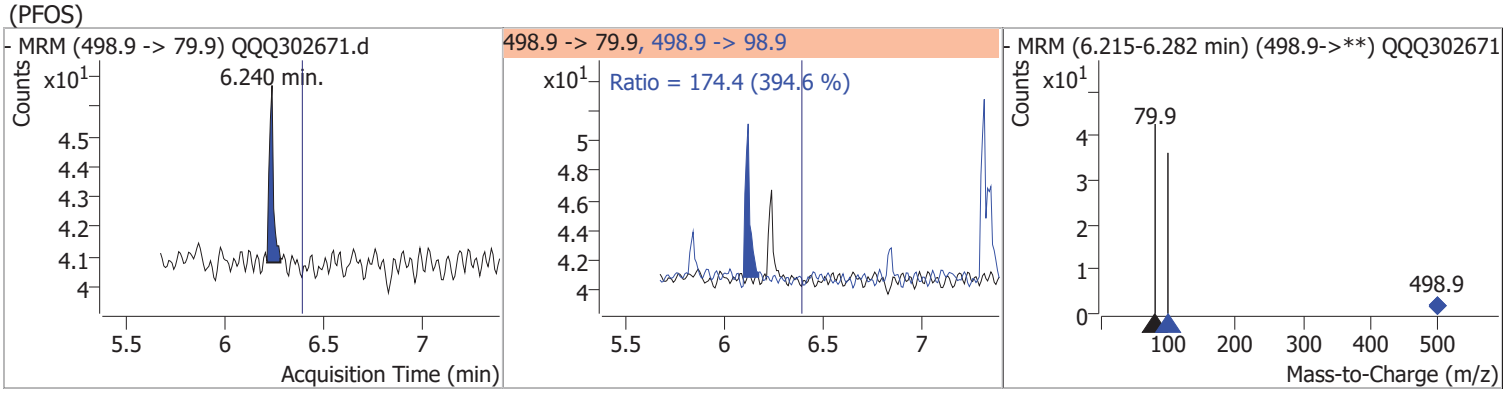
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorononanoic acid (PFNA)	0.0026	6.38	-0.30	31	463.0 -> 218.8		11.6	17.3



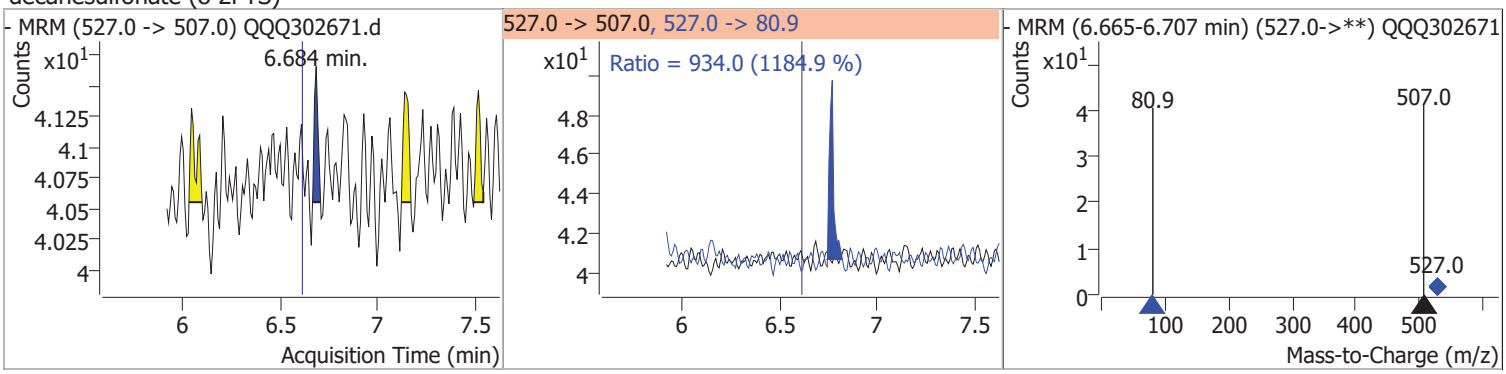
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)	4.1113	6.42	-0.26	3710	507.0 -> 98.9	39.2	37.1	55.6



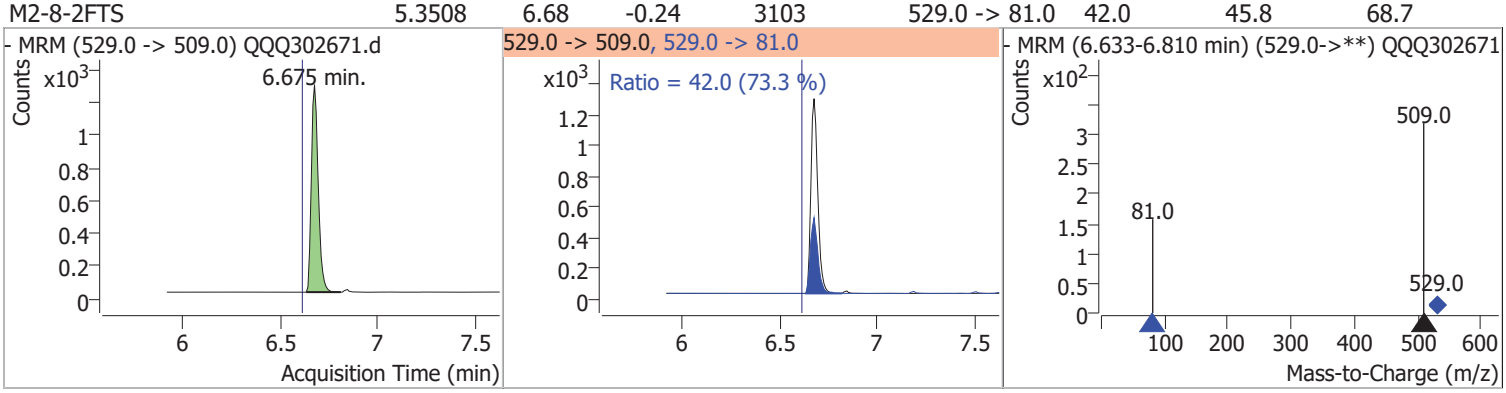
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorooctanesulfonic acid (PFOS)	0.0055	6.24	-0.45	9	498.9 -> 98.9	174.4	35.4	53.0



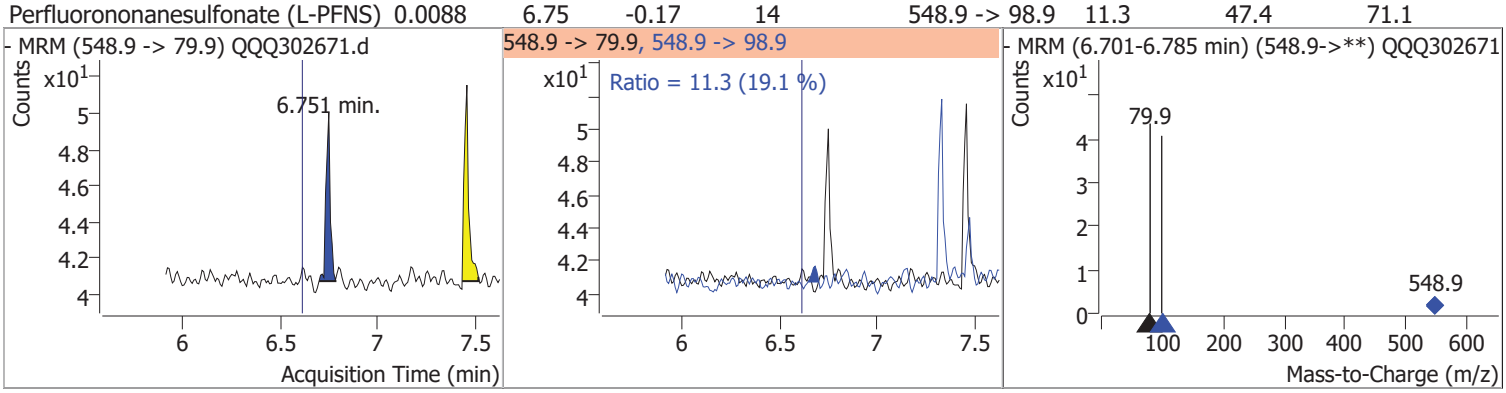
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
1H,1H,2H,2H-perfluoro-1-decanesulfonate (8 2FTS)	0.0009	6.68	-0.23	1	527.0 -> 80.9	934.0	63.1	94.6



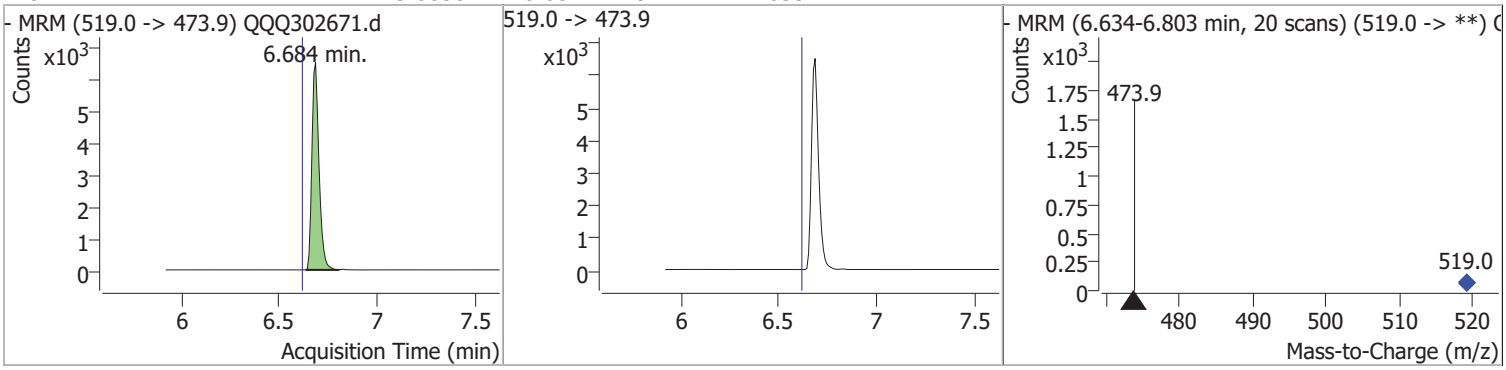
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M2-8-2FTS	5.3508	6.68	-0.24	3103	529.0 -> 81.0	42.0	45.8	68.7



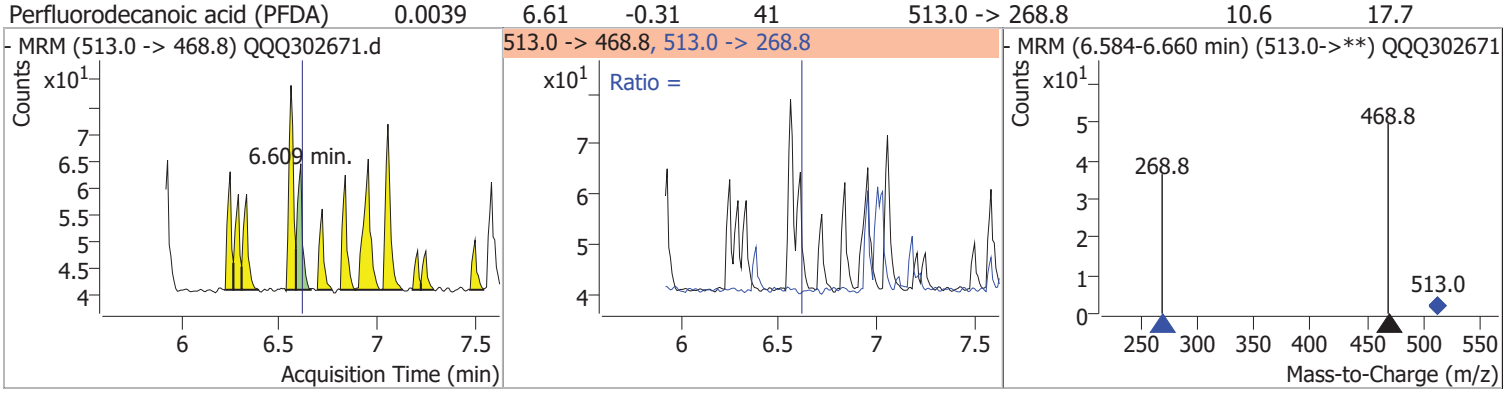
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorononanesulfonate (L-PFNS)	0.0088	6.75	-0.17	14	548.9 -> 98.9	11.3	47.4	71.1



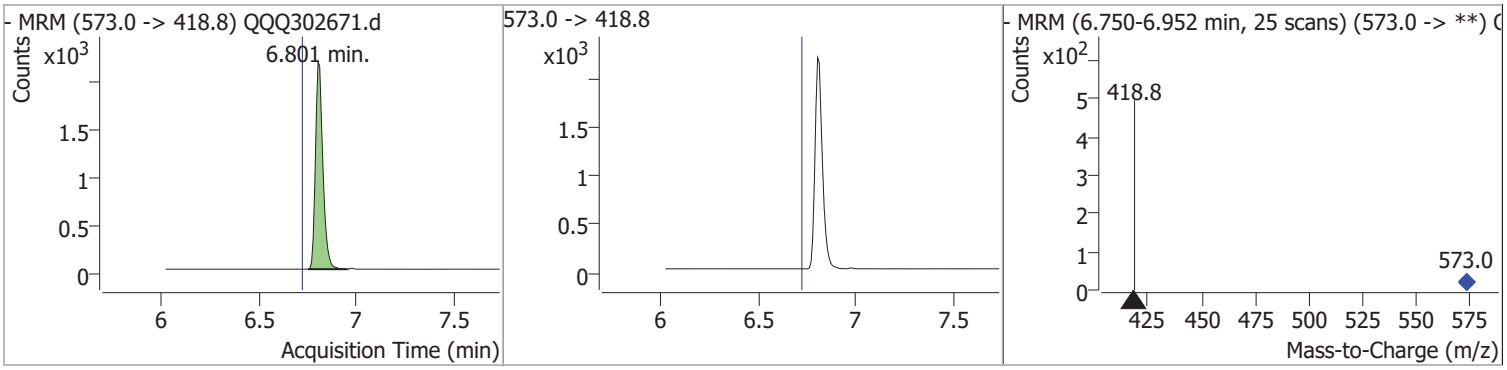
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M6PFDA	3.6658	6.68	-0.24	16357				



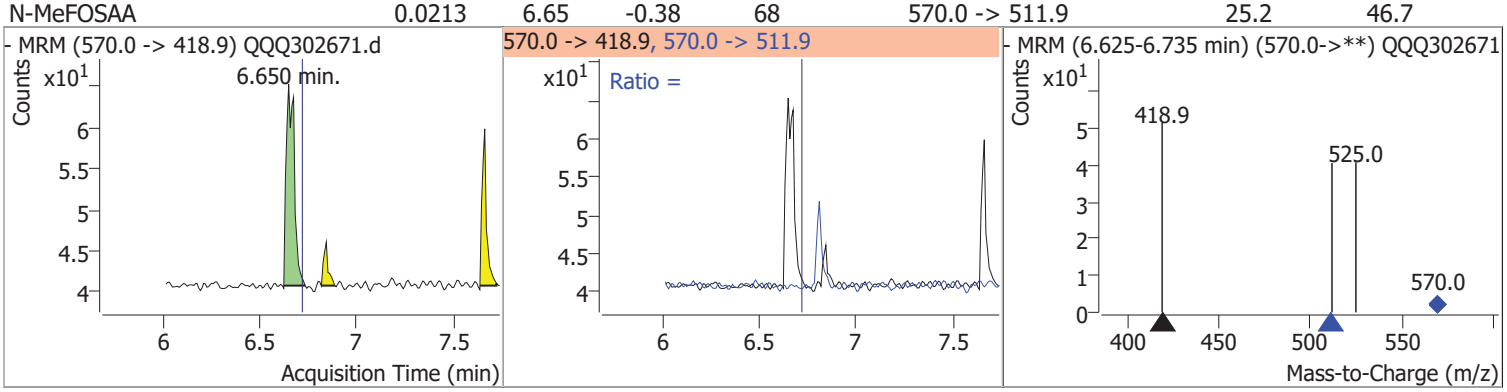
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorodecanoic acid (PFDA)	0.0039	6.61	-0.31	41	513.0 -> 268.8		10.6	17.7



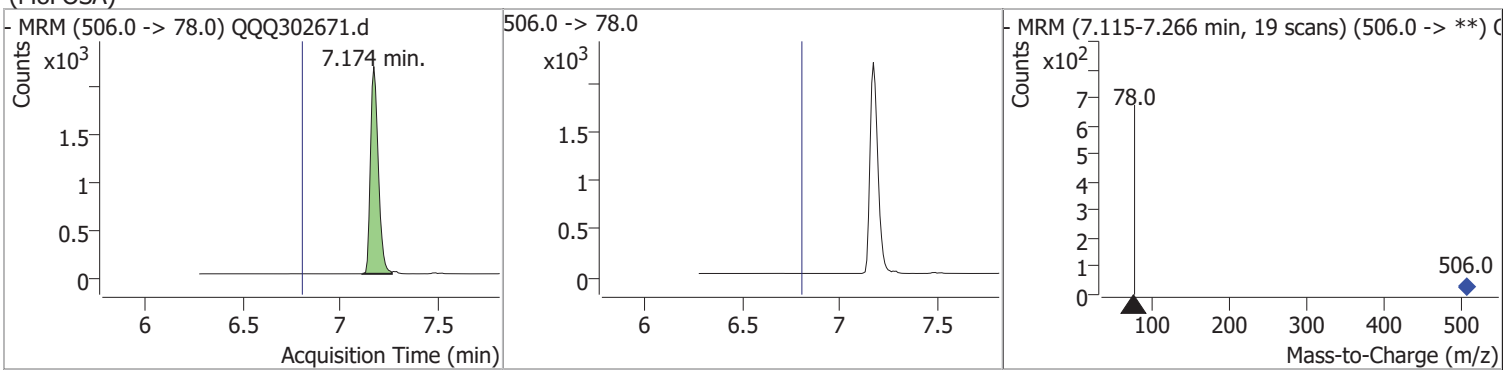
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
d3-N-MeFOSAA	3.6685	6.80	-0.23	5748				



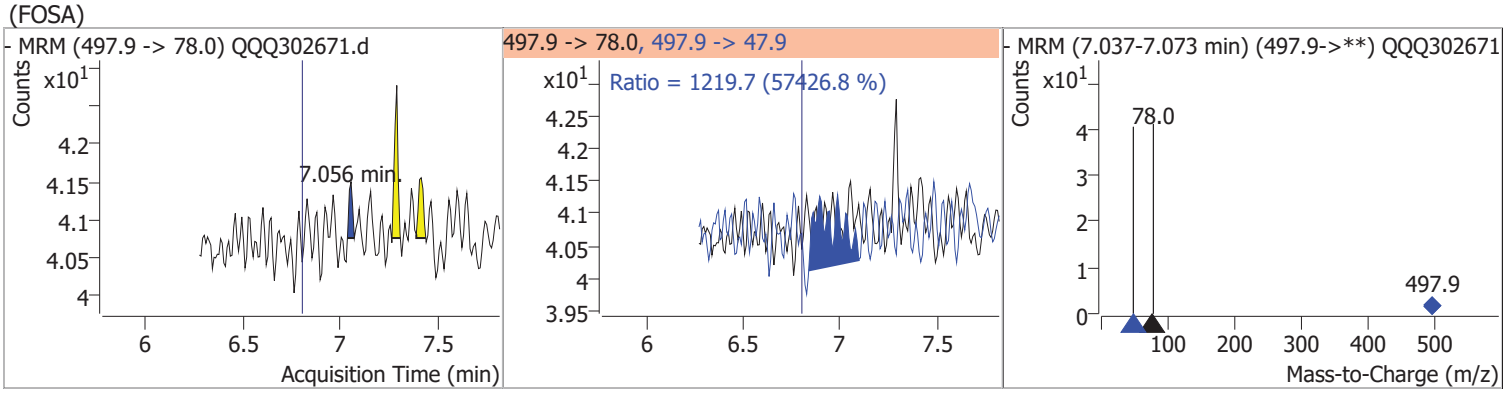
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
N-MeFOSAA	0.0213	6.65	-0.38	68	570.0 -> 511.9		25.2	46.7



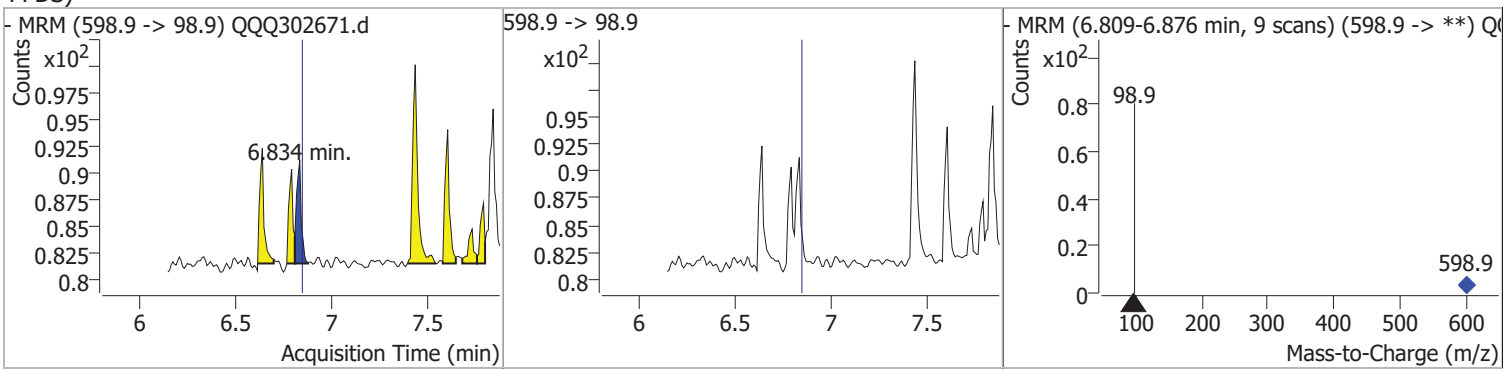
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-1-[13C8]octanesulfonamide (M8FOSA)	3.0257	7.17	0.05	6125				



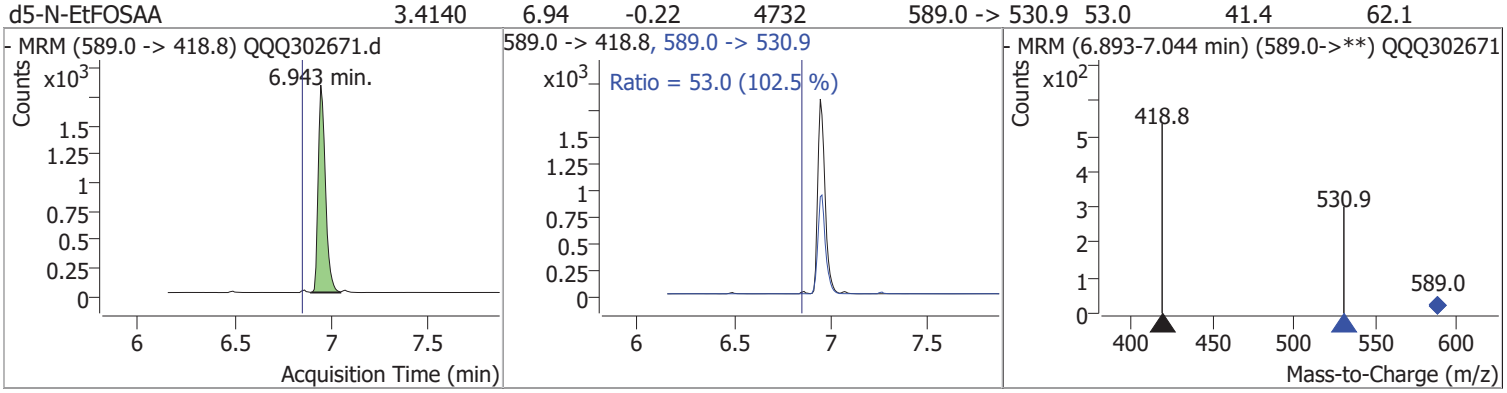
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-1-octanesulfonamide (FOSA)	0.0003	7.06	-0.06	1	497.9 -> 47.9	1219.7	1.7	2.5



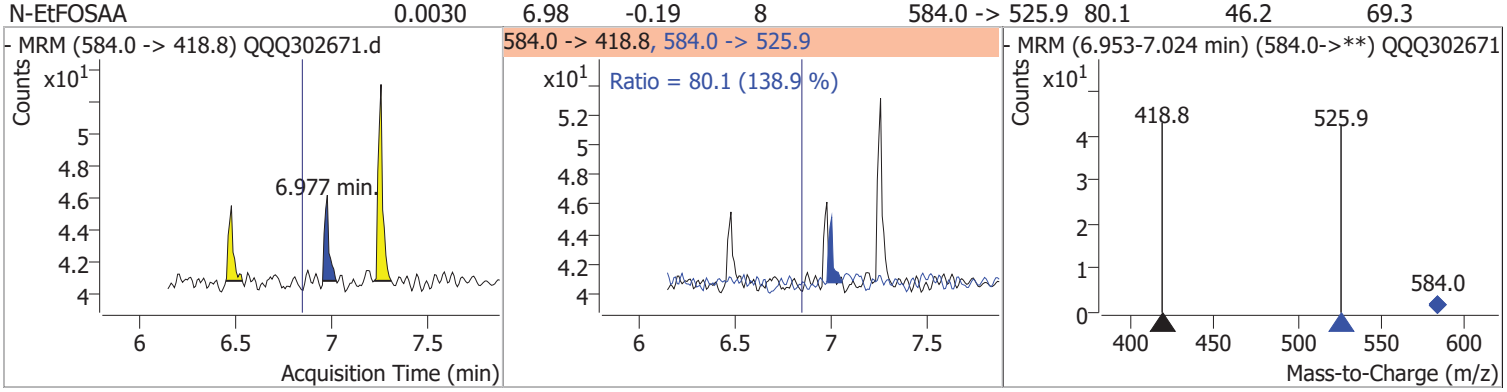
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-1-decanesulfonate (L-PFDS)	0.0092	6.83	-0.33	16				



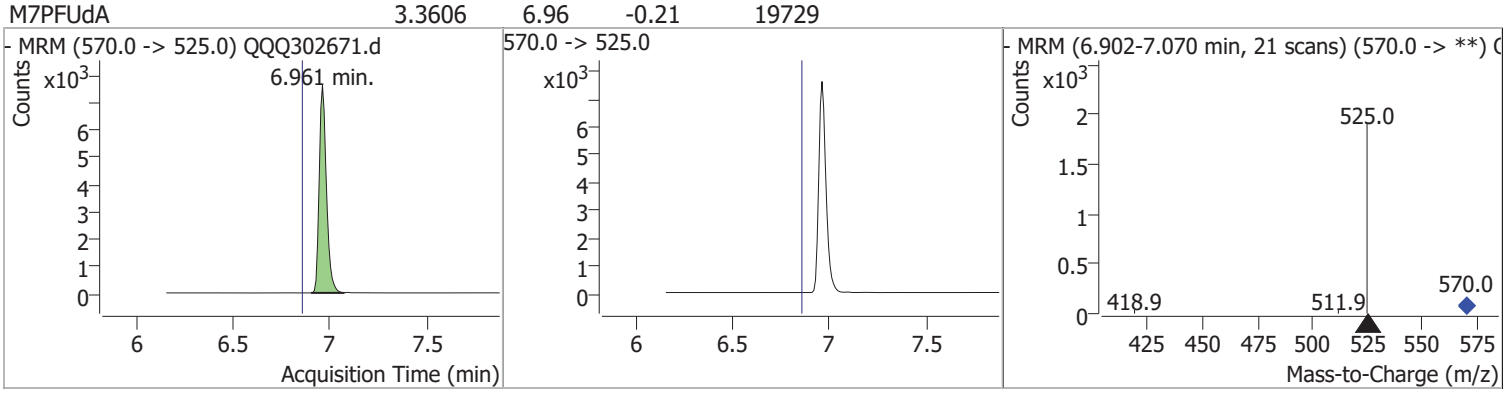
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
d5-N-EtFOSAA	3.4140	6.94	-0.22	4732	589.0 -> 530.9	53.0	41.4	62.1



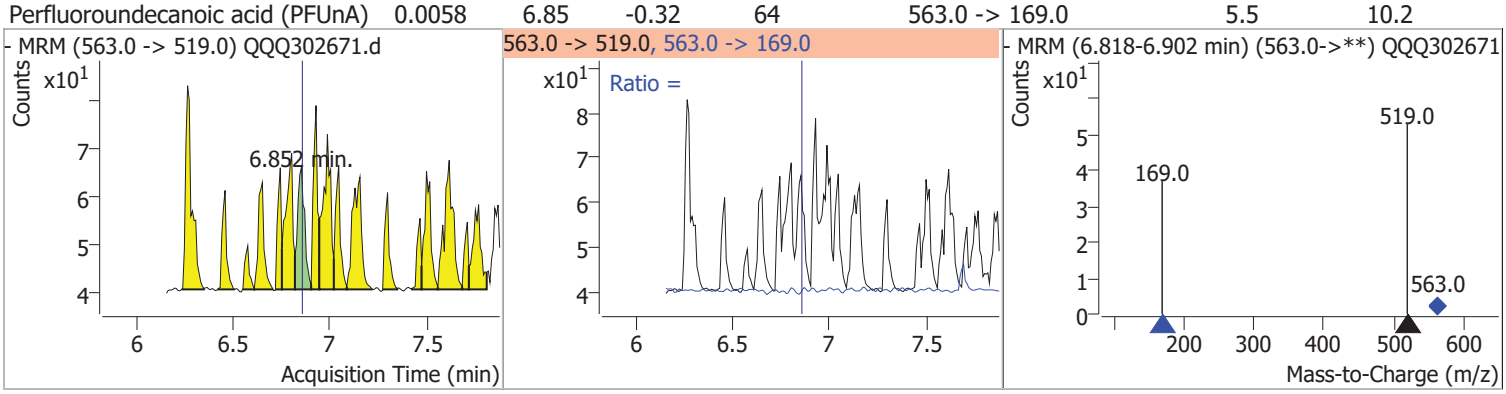
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
N-EtFOSAA	0.0030	6.98	-0.19	8	584.0 -> 525.9	80.1	46.2	69.3



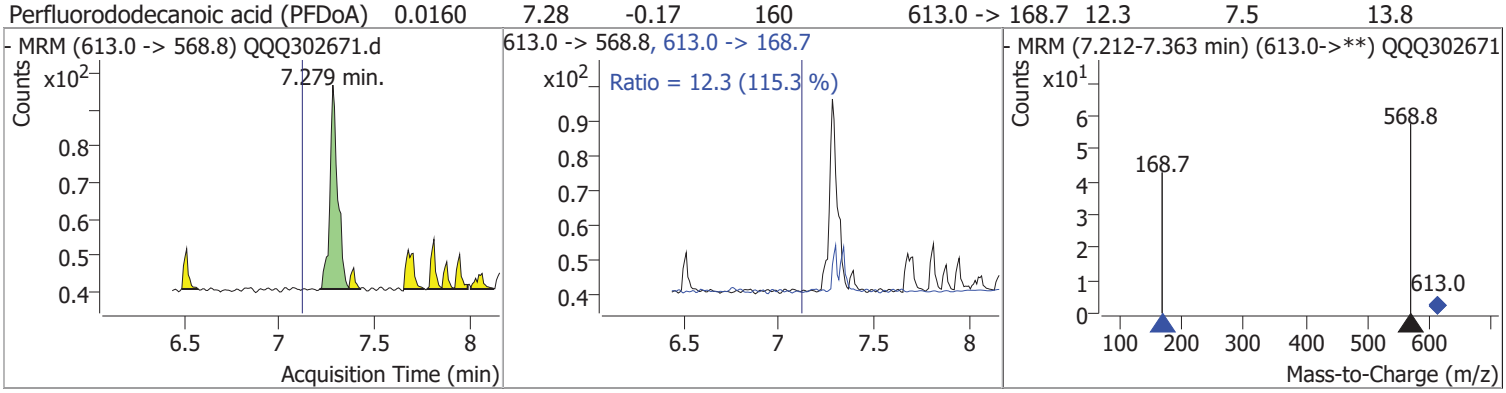
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M7PFUdA	3.3606	6.96	-0.21	19729				



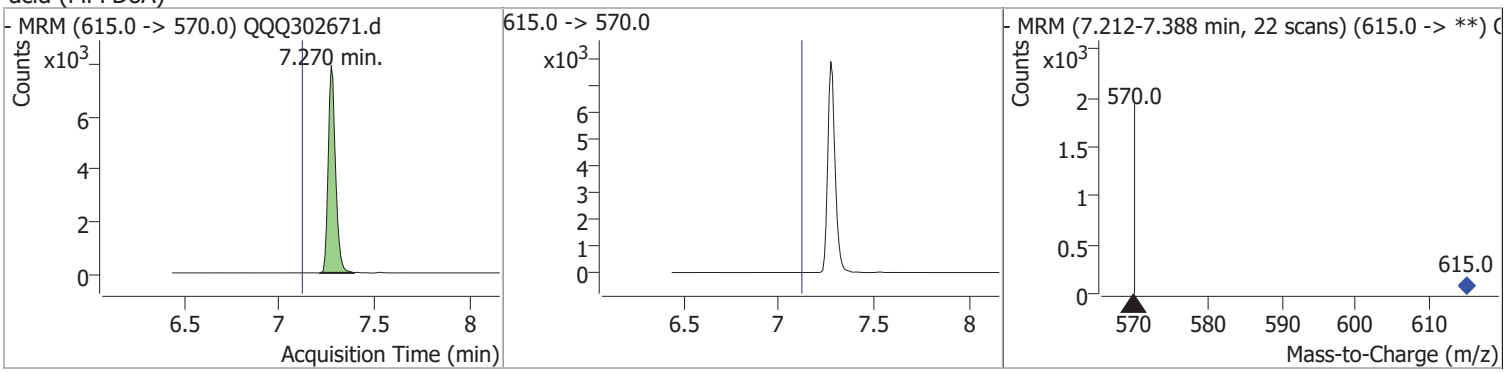
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoroundecanoic acid (PFUnA)	0.0058	6.85	-0.32	64	563.0 -> 169.0		5.5	10.2



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorododecanoic acid (PFDoA)	0.0160	7.28	-0.17	160	613.0 -> 168.7	12.3	7.5	13.8

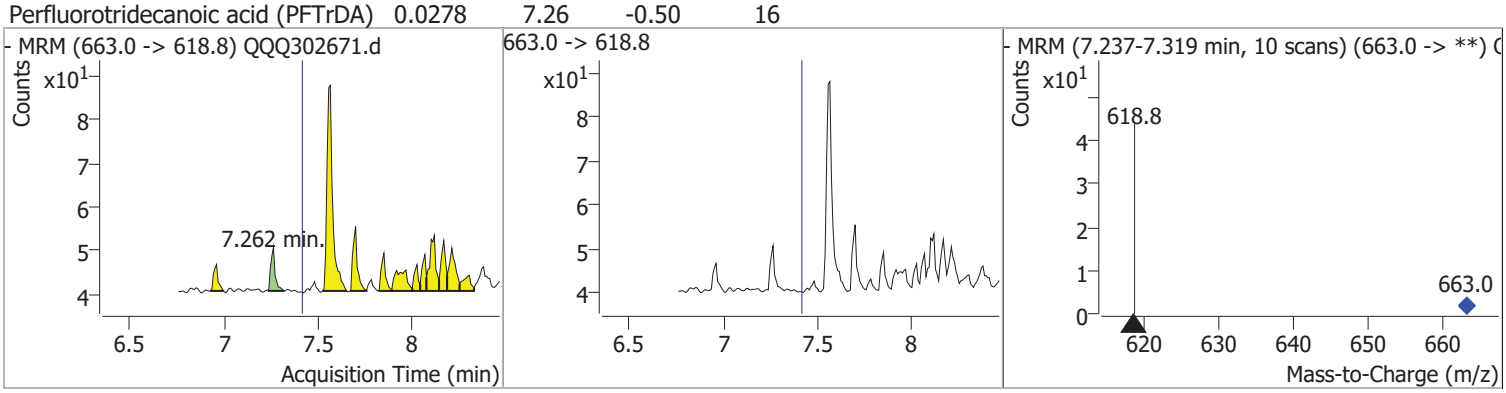


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-n-[1,2-13C2]dodecanoic acid (MPFDoA)	3.1156	7.27	-0.18	21016				

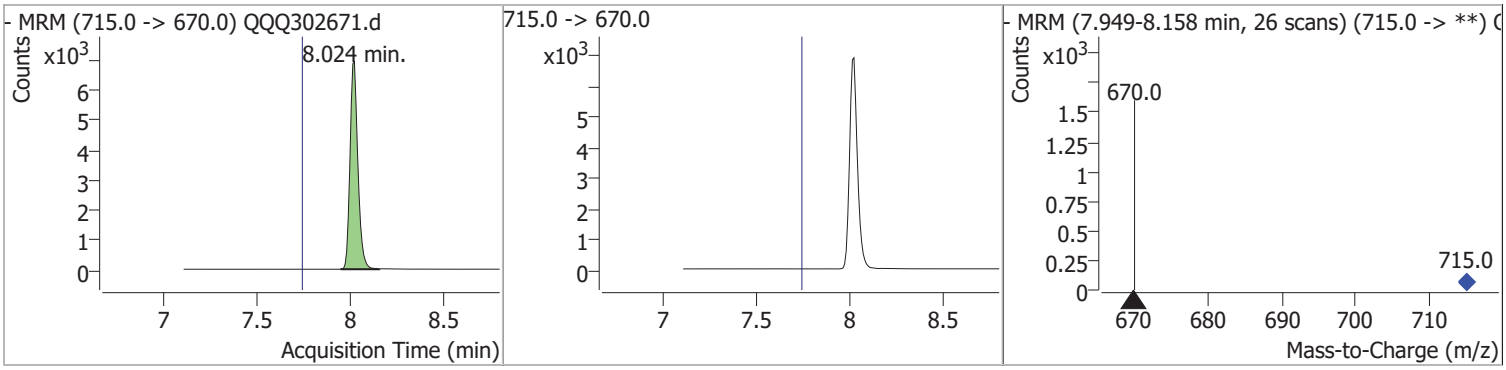


Quantitation Results Report (Not Reviewed)

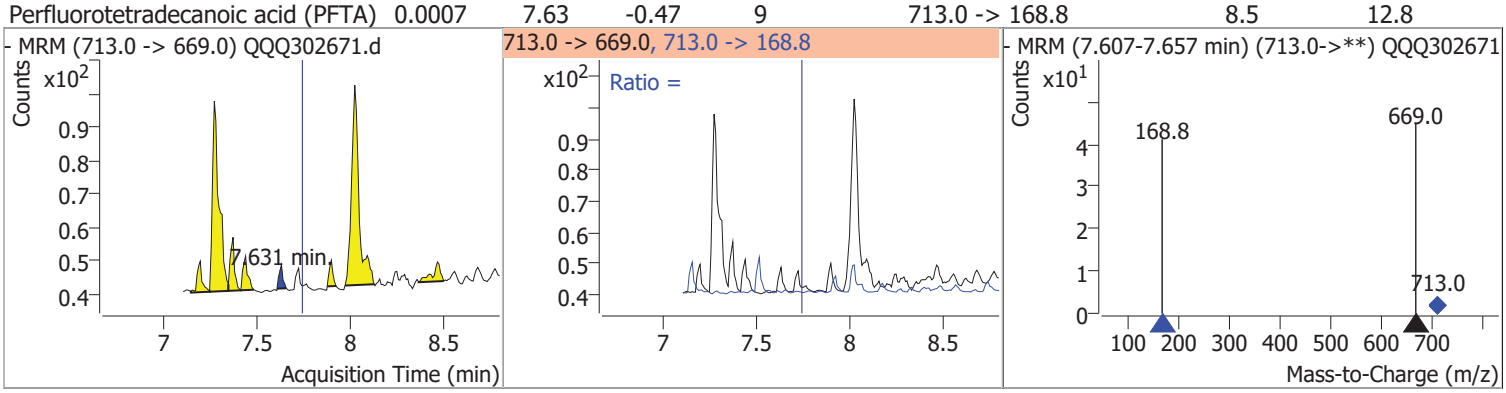
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorotridecanoic acid (PFTrDA)	0.0278	7.26	-0.50	16				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M2PFTeDA	3.6160	8.02	-0.08	20393				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorotetradecanoic acid (PFTA)	0.0007	7.63	-0.47	9	713.0 -> 168.8		8.5	12.8



LCS RAW DATA

SDG: 22G0348
CLASS: PFAS
METHOD: EPA 537m

Quantitation Results Report (Not Reviewed)

Agilent | Trusted Answers

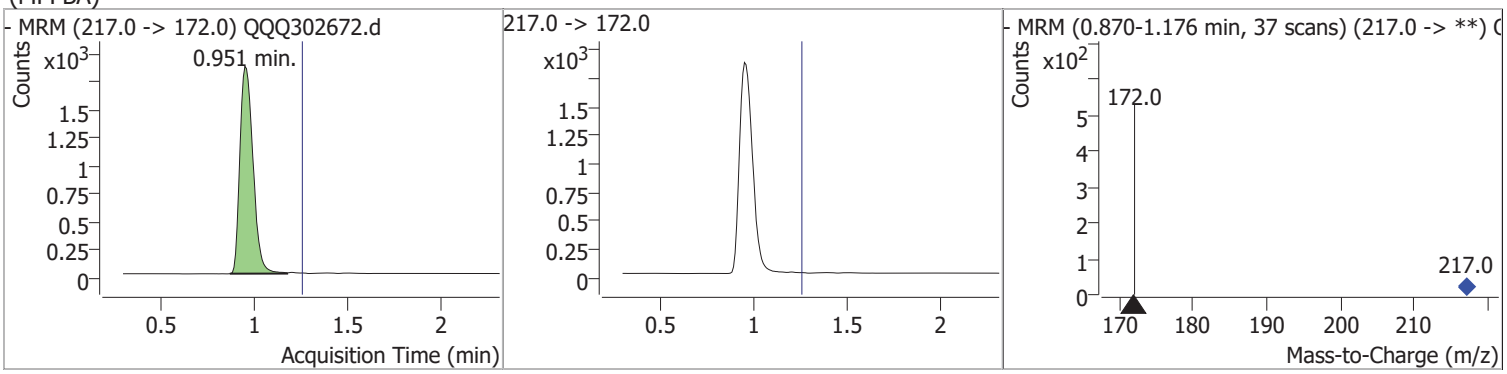
Data File	QQQ302672.d	Operator	
Acq. Method	PFAS 24_IDA ACQ_QQQ3A.m	Acq. Date-Time	7/14/2022 1:14:07 PM
Sample Name	BG20572-BS1	Instrument	QQQ3
Vial		Multiplier	1.00
DA Method File	PFAS_24_IDA_QUANT_QQQ3_062722.m	Comment	
Tune File		Tune Date	
Batch Name	2022-07-14-IDA.batch.bin	Last Calib Update	6/27/2022 4:24:30 PM
Ref Library			

Compound	RT	QIon	Resp.	Conc.	Units		Dev(Min)
Internal Standards							
MPFOA	6.140	417.0 -> 372.0	137393	10.0000	ng/ml		-0.290
System Monitoring Compounds							
Perfluoro-n-[13C4]butanoic acid (MPFBA)	0.951	217.0 -> 172.0	8995	3.7032	ng/ml		-0.358
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 37.03%			
Perfluoro-n-[13C54]pentanoic acid (M5PFPeA)	4.011	268.0 -> 223.0	7823	3.8713	ng/ml		-0.576
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 38.71%			
M3PFBS	4.672	302.0 -> 79.9	3263	3.0981	ng/ml		-0.491
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 30.98%			
M2-4-2FTS	5.267	329.0 -> 309.0	2922	4.1727	ng/ml	#	-0.424
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 41.73%			
M5PFHxA	5.310	318.0 -> 273.0	15804	3.9903	ng/ml		-0.414
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 39.90%			
M4PFHpA	5.805	367.0 -> 322.0	8848	4.2950	ng/ml		-0.339
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 42.95%			
M3PFHxS	5.854	402.0 -> 80.0	3306	3.7304	ng/ml	#	-0.323
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 37.30%			
M2-6-2FTS	6.122	429.0 -> 409.0	2787	4.2021	ng/ml		-0.298
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 42.02%			
Perfluoro-n-[13C8]octanoic acid (M8PFOA)	6.140	421.0 -> 376.0	15363	4.5200	ng/ml		-0.290
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 45.20%			
Perfluoro-n-[13C9]nonanoic acid (M9PFNA)	6.417	472.0 -> 427.0	16080	3.9611	ng/ml	#	-0.263
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 39.61%			
Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)	6.424	507.0 -> 80.0	3824	4.2095	ng/ml	#	-0.264
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 42.10%			
M2-8-2FTS	6.675	529.0 -> 509.0	3304	5.6600	ng/ml		-0.243
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 56.60%			
M6PFDA	6.684	519.0 -> 473.9	15339	3.4179	ng/ml		-0.238
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 34.18%			
d3-N-MeFOSAA	6.801	573.0 -> 418.8	5233	3.3203	ng/ml		-0.229
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 33.20%			
Perfluoro-1-[13C8]octanesulfonamide (M8FOSA)	7.174	506.0 -> 78.0	6244	3.0635	ng/ml		0.055
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 30.64%			
d5-N-EtFOSAA	6.952	589.0 -> 418.8	5811	4.1552	ng/ml		-0.212
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 41.55%			
M7PFUdA	6.961	570.0 -> 525.0	20243	3.4263	ng/ml		-0.212
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 34.26%			
Perfluoro-n-[1,2-13C2]dodecanoic acid (MPFDoA)	7.279	615.0 -> 570.0	24711	3.6314	ng/ml		-0.169
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 36.31%			
M2PFTeDA	8.033	715.0 -> 670.0	21236	3.7385	ng/ml		-0.068
Spiked Amount: 10.000	Range: 25.0 - 140.0%			Recovery = 37.38%			
Target Compounds							**QValue**

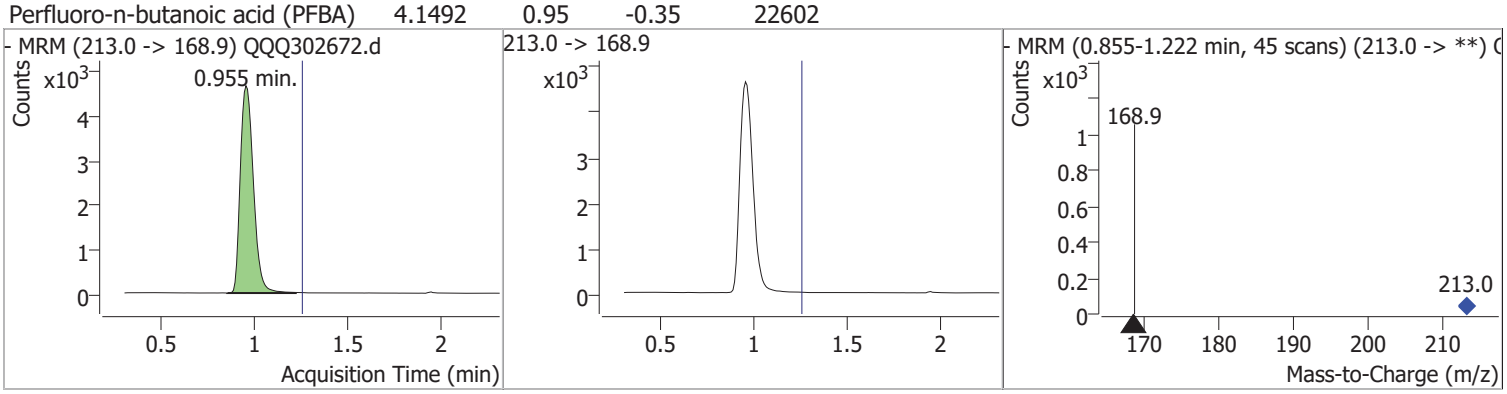
Compound	RT	QIon	Resp.	Conc.	Units		Dev(Min)
Perfluoro-n-butanoic acid (PFBA)	0.955	213.0 -> 168.9	22602	4.1492	ng/ml		100
Perfluoro-n-pentanoic acid (PFPeA)	4.016	263.0 -> 219.0	16919	4.2238	ng/ml		100
Perfluorobutanesulfonic acid (PFBS)	4.666	298.9 -> 79.9	7968	3.3910	ng/ml		97
1H,1H,2H,2H-perfluoro-1-hexanesulfonate (4 2FTS)	5.259	327.0 -> 307.0	5384	4.0192	ng/ml		97
Perfluorohexanoic acid (PFHxA)	5.303	313.0 -> 268.9	37350	4.2332	ng/ml		100
Perfluoro-1-pentanesulfonate (L-PFPeS)	5.435	348.9 -> 79.9	7742	3.9860	ng/ml		98
Perfluoroheptanoic acid (PFHpA)	5.805	363.0 -> 318.8	49123	4.1902	ng/ml		99
Perfluorohexanesulfonic acid (PFHxS)	5.855	398.9 -> 79.9	7308	3.7556	ng/ml	m	97
1H,1H,2H,2H-perfluoro-1-octanesulfonate (6 2FTS)	6.123	427.0 -> 407.0	6060	5.4297	ng/ml		95
Perfluorooctanoic acid (PFOA)	6.140	413.0 -> 368.8	51286	4.3304	ng/ml		99
Perfluoro-1-heptanesulfonate (L-PFHpS)	6.165	448.9 -> 80.0	6304	4.1763	ng/ml		92
Perfluorononanoic acid (PFNA)	6.417	463.0 -> 418.8	51382	4.2898	ng/ml		99
Perfluorooctanesulfonic acid (PFOS)	6.425	498.9 -> 79.9	6274	3.7657	ng/ml	#m	83
1H,1H,2H,2H-perfluoro-1-decanesulfonate (8 2FTS)	6.676	527.0 -> 507.0	7096	4.9895	ng/ml	#	77
Perfluorononanesulfonate (L-PFNS)	6.684	548.9 -> 79.9	5678	3.5247	ng/ml		87
Perfluorodecanoic acid (PFDA)	6.685	513.0 -> 468.8	47958	4.3031	ng/ml		99
N-MeFOSAA	6.810	570.0 -> 418.9	13199	3.9975	ng/ml		91
Perfluoro-1-octanesulfonamide (FOSA)	7.183	497.9 -> 78.0	9460	3.3729	ng/ml	#	97
Perfluoro-1-decanesulfonate (L-PFDS)	6.960	598.9 -> 98.9	5321	2.9798	ng/ml		100
N-EtFOSAA	6.952	584.0 -> 418.8	11642	4.2144	ng/ml	#	84
Perfluoroundecanoic acid (PFUnA)	6.961	563.0 -> 519.0	42943	3.7809	ng/ml		100
Perfluorododecanoic acid (PFDoA)	7.279	613.0 -> 568.8	40734	3.8698	ng/ml		97
Perfluorotridecanoic acid (PFTrDA)	7.631	663.0 -> 618.8	2074	3.3844	ng/ml		100
Perfluorotetradecanoic acid (PFTA)	8.033	713.0 -> 669.0	52740	3.7021	ng/ml		98

(#) = Qualifier Out of Range; (m) = Manual Integration; (+) = Area Summed; (*) = Surrogate Percent Recovery Out of Range; (d): Zeroed Peak

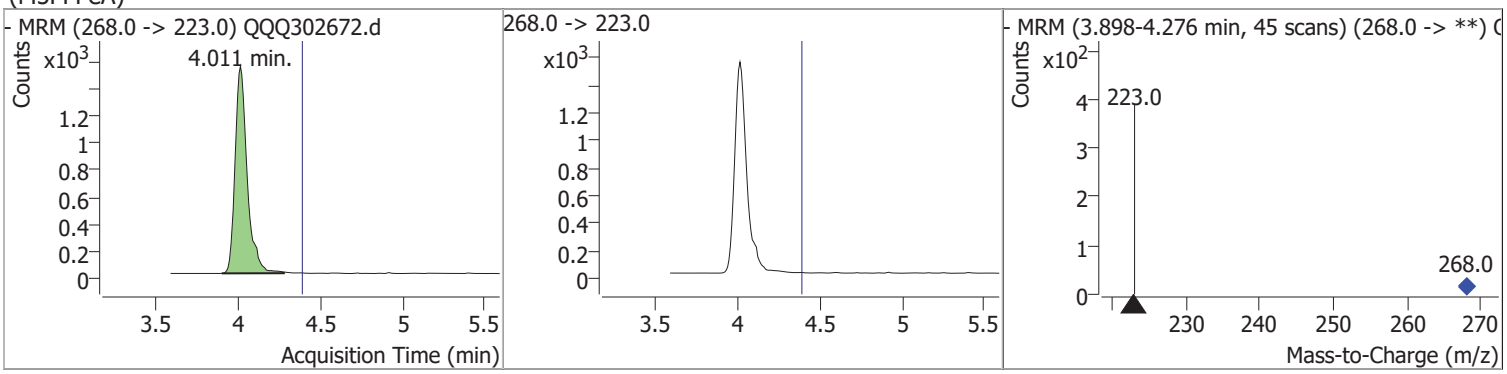
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-n-[13C4]butanoic acid (MPFBA)	3.7032	0.95	-0.36	8995				



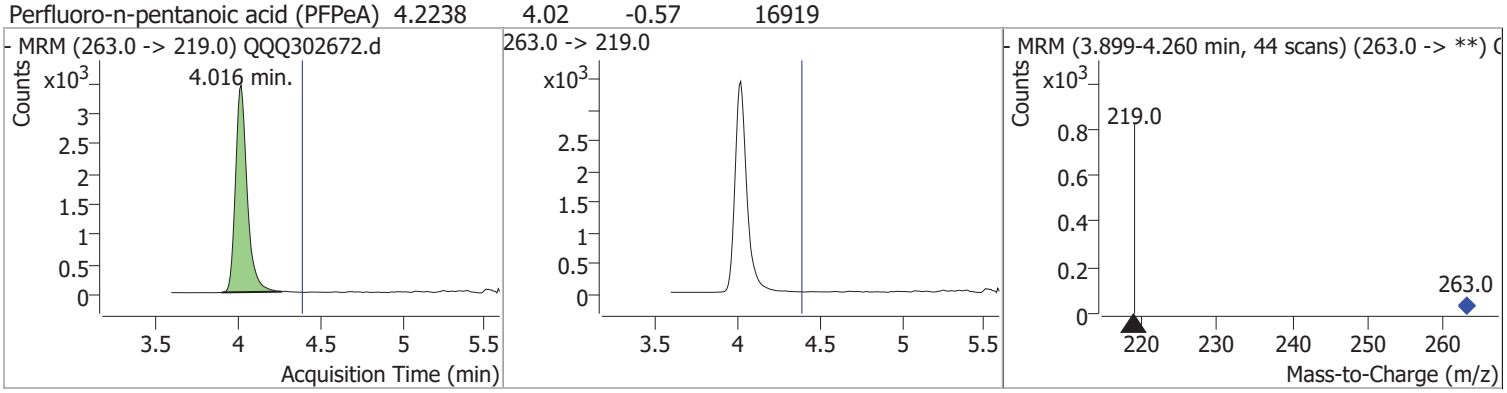
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-n-butanoic acid (PFBA)	4.1492	0.95	-0.35	22602				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-n-[13C54]pentanoic acid (M5PFPeA)	3.8713	4.01	-0.58	7823				

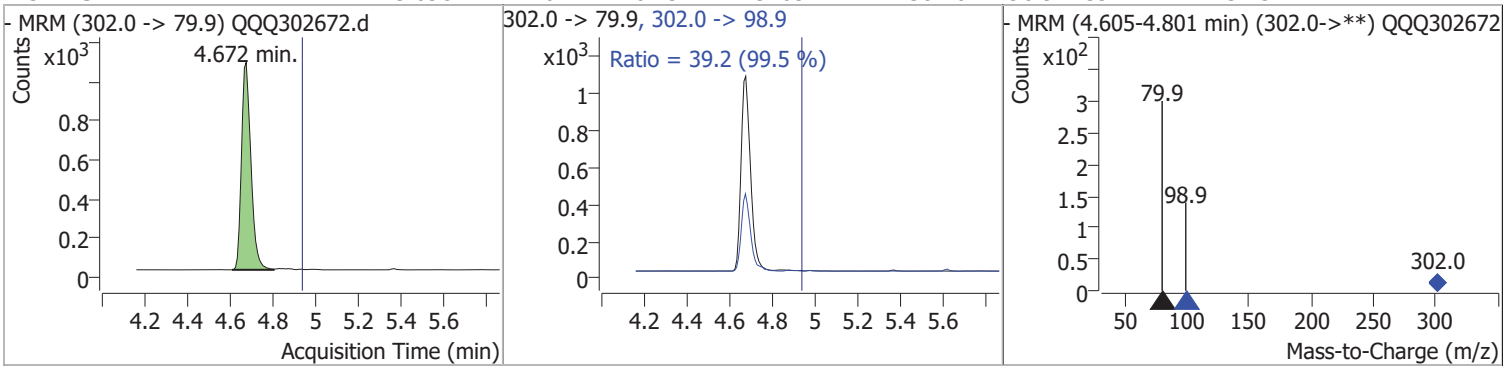


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-n-pentanoic acid (PFPeA)	4.2238	4.02	-0.57	16919				

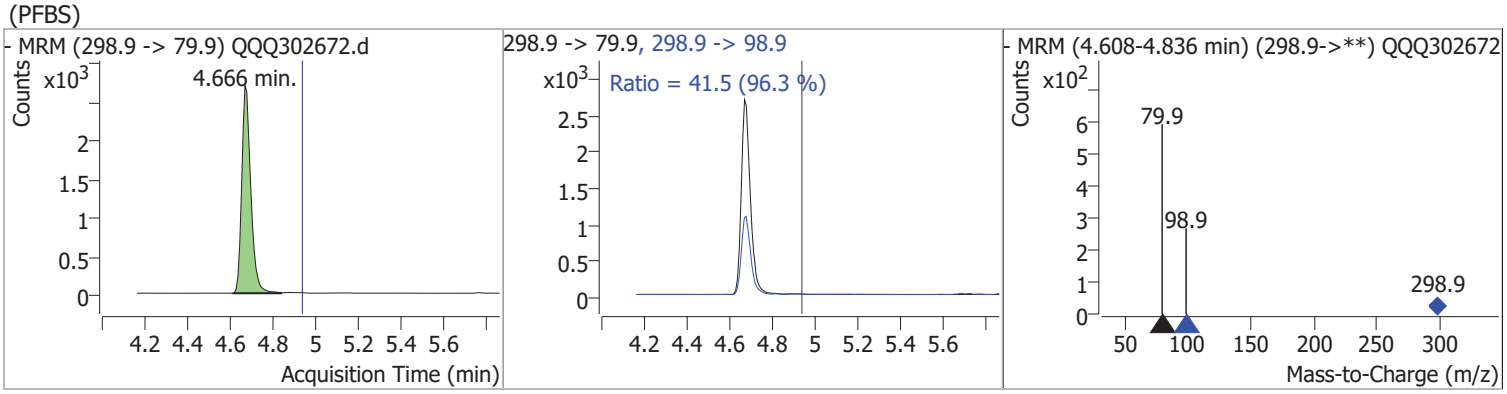


Quantitation Results Report (Not Reviewed)

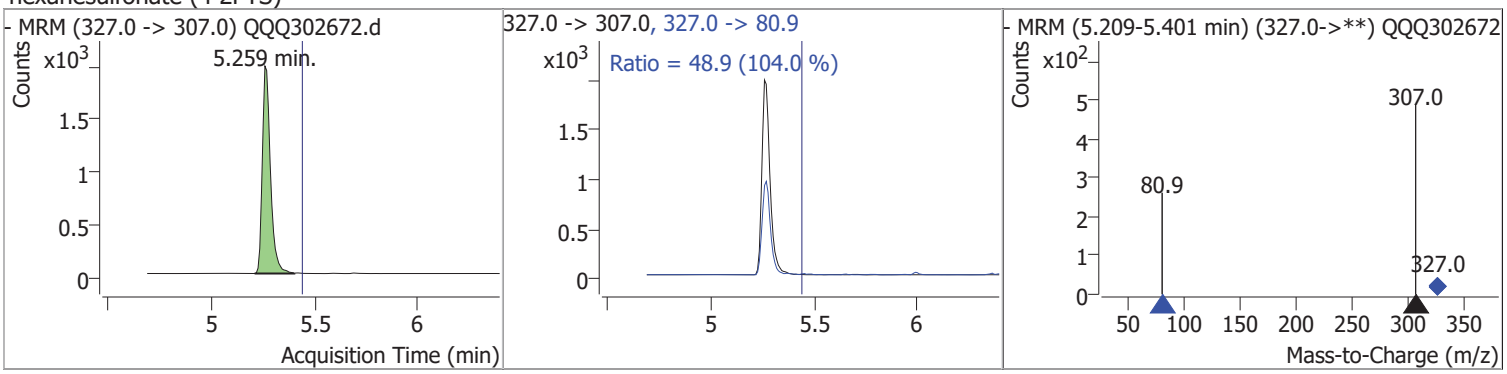
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M3PFBS	3.0981	4.67	-0.49	3263	302.0 -> 98.9	39.2	31.5	47.2



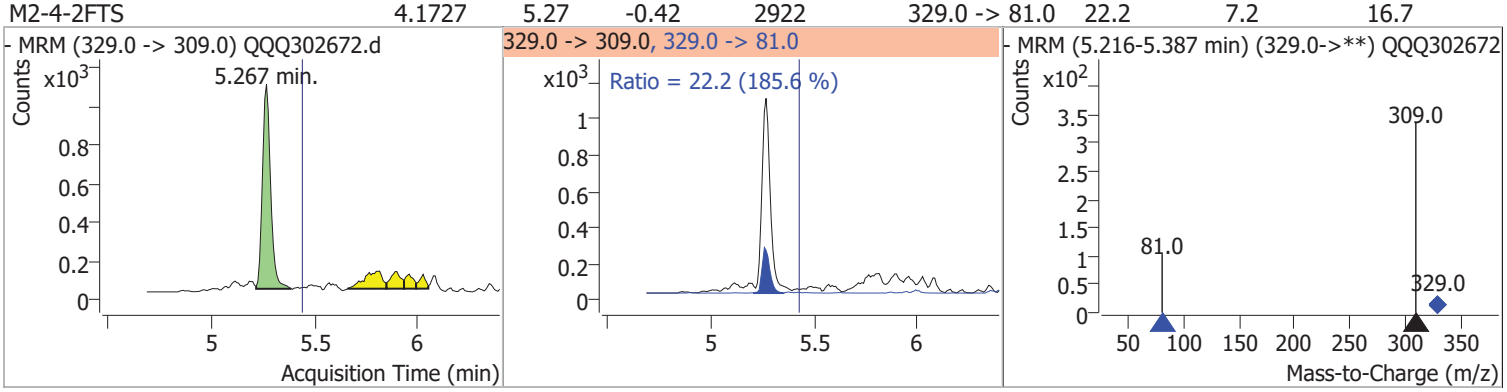
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorobutanesulfonic acid (PFBS)	3.3910	4.67	-0.50	7968	298.9 -> 98.9	41.5	34.5	51.7



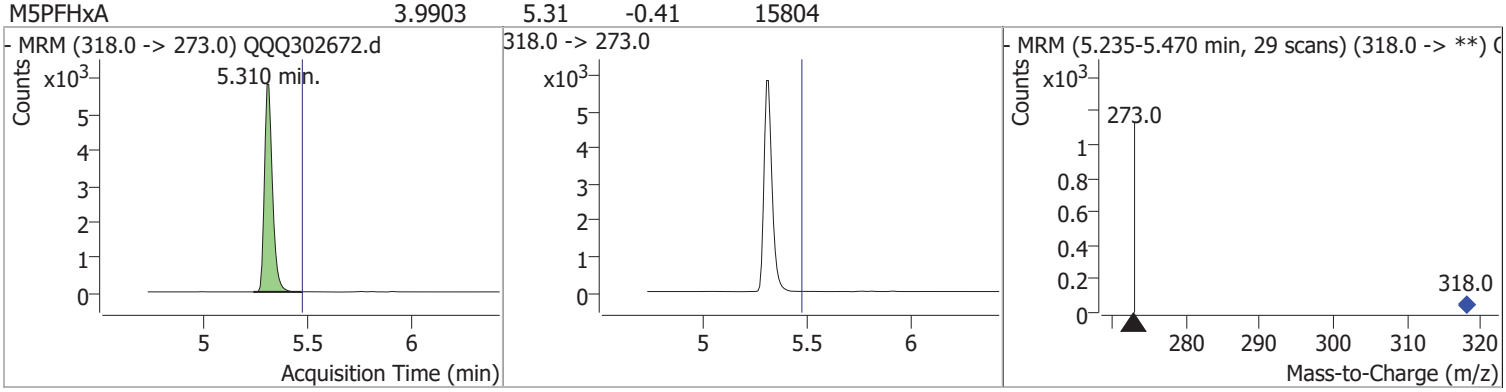
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
1H,1H,2H,2H-perfluoro-1-hexanesulfonate (4 2FTS)	4.0192	5.26	-0.43	5384	327.0 -> 80.9	48.9	28.2	65.9



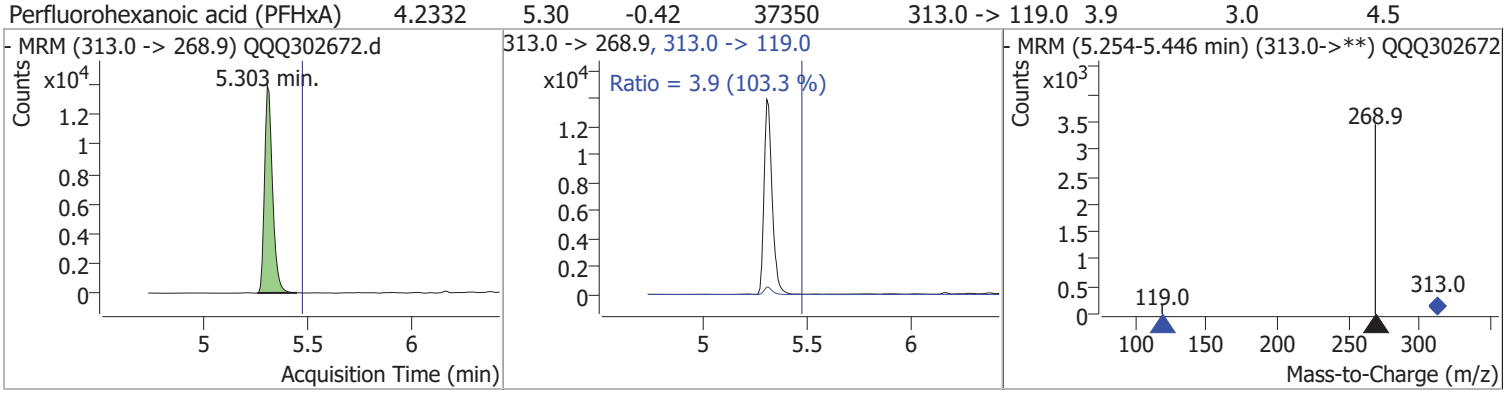
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M2-4-2FTS	4.1727	5.27	-0.42	2922	329.0 -> 81.0	22.2	7.2	16.7



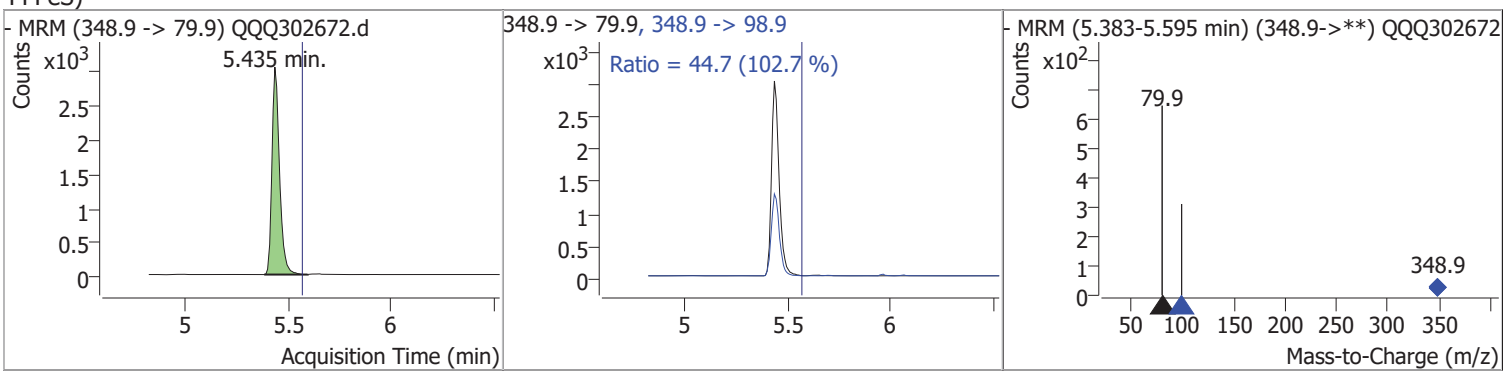
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M5PFHxA	3.9903	5.31	-0.41	15804				



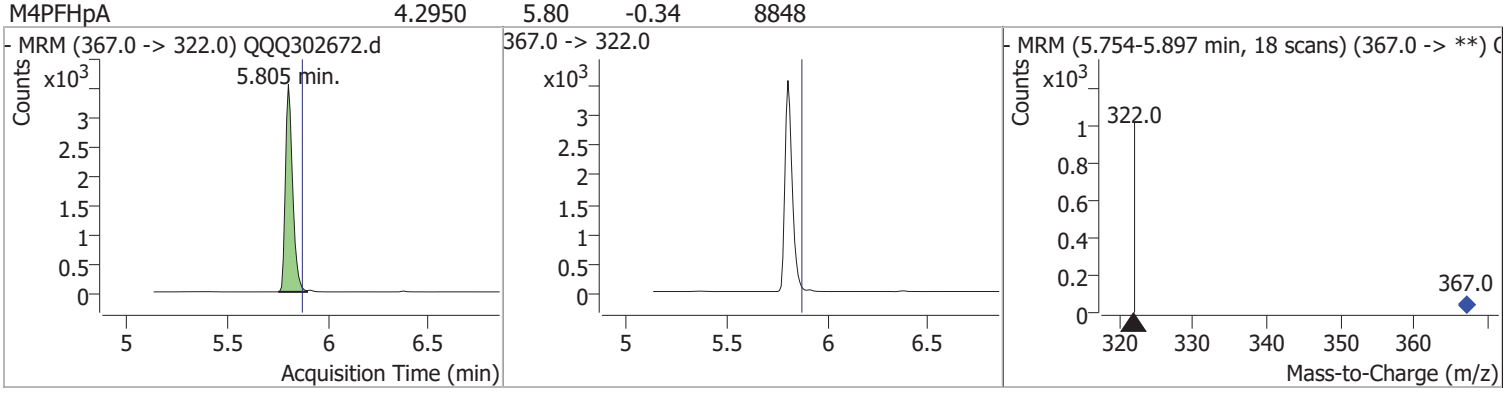
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorohexanoic acid (PFHxA)	4.2332	5.30	-0.42	37350	313.0 -> 119.0	3.9	3.0	4.5



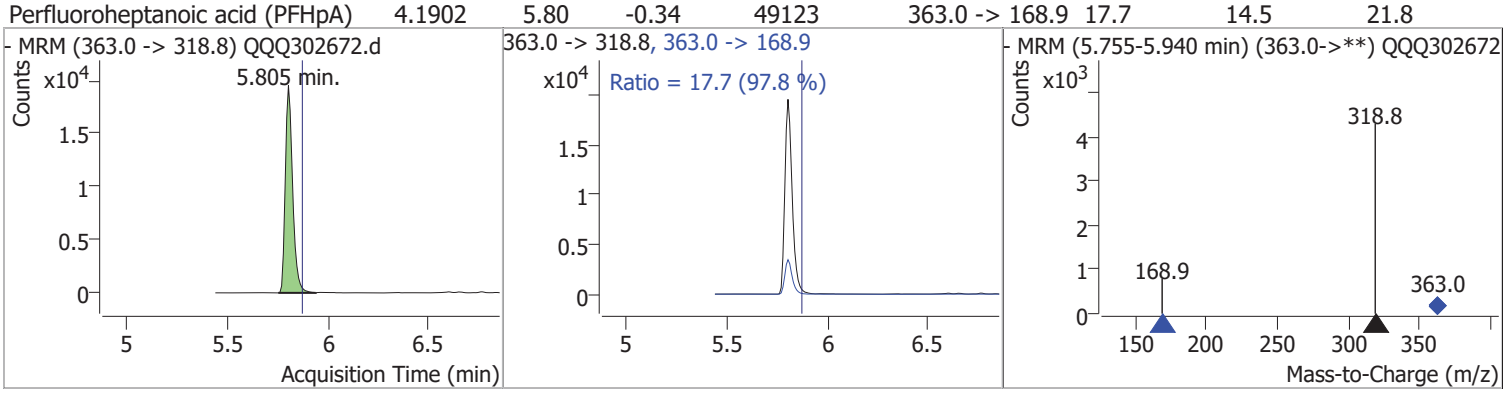
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-1-pentanesulfonate (L-PFPeS)	3.9860	5.44	-0.39	7742	348.9 -> 98.9	44.7	34.8	52.2



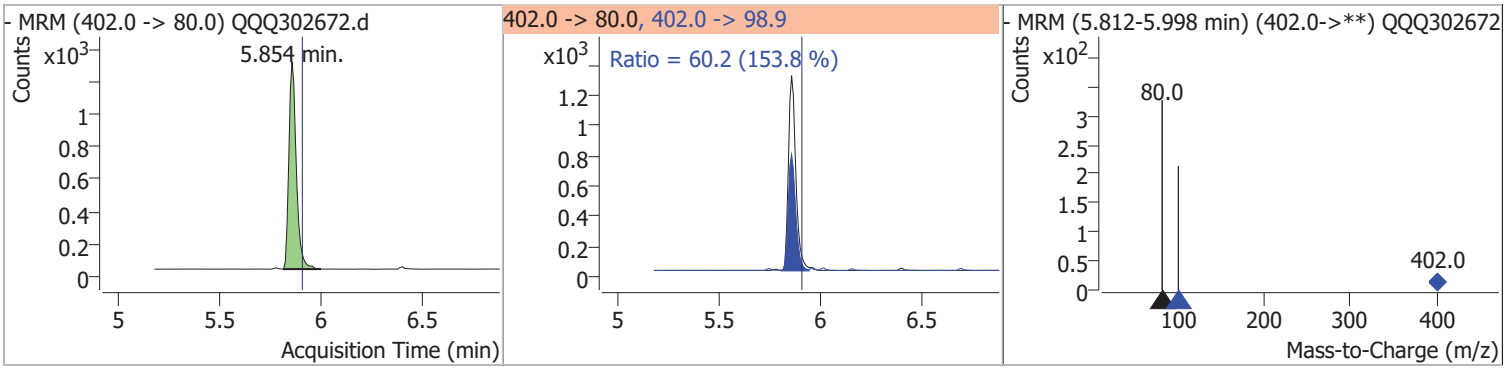
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M4PFHpA	4.2950	5.80	-0.34	8848				



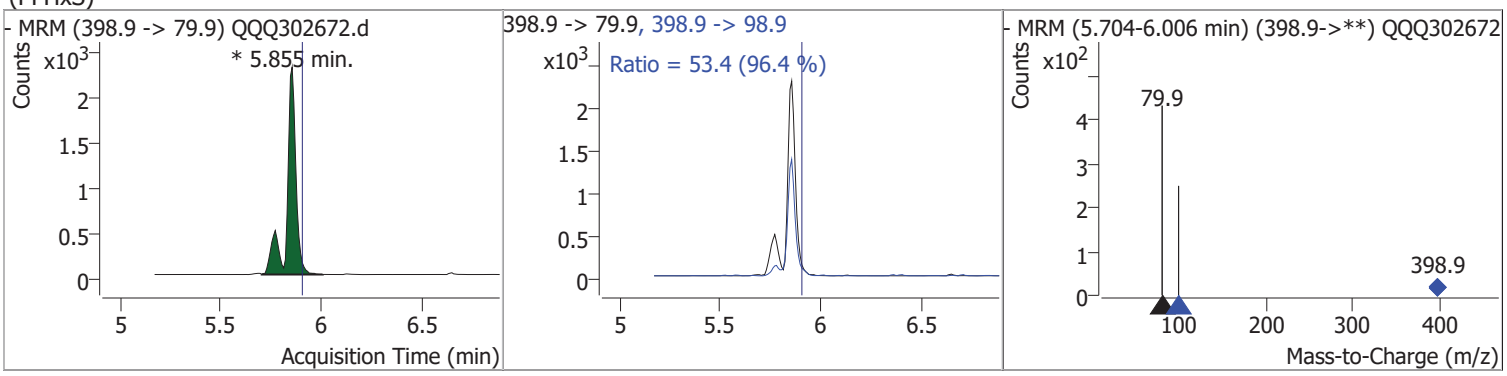
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoroheptanoic acid (PFHpA)	4.1902	5.80	-0.34	49123	363.0 -> 168.9	17.7	14.5	21.8



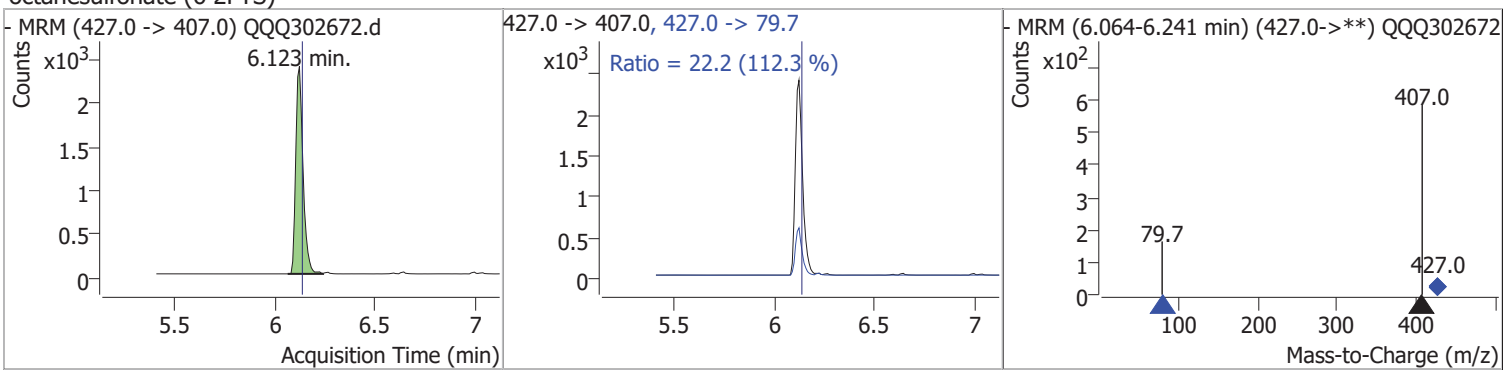
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M3PFHxS	3.7304	5.85	-0.32	3306	402.0 -> 98.9	60.2	31.3	47.0



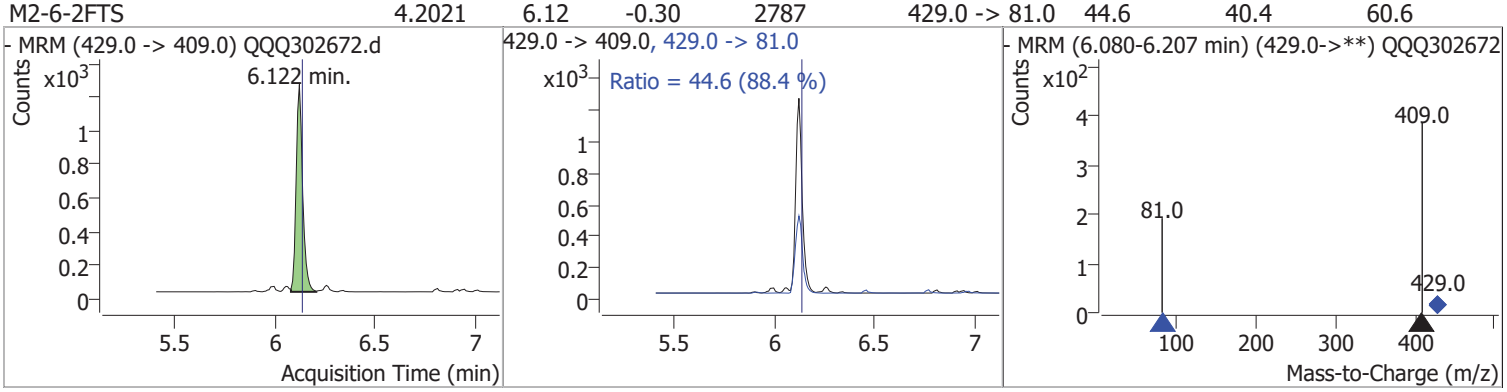
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorohexanesulfonic acid (PFHxS)	3.7556	5.85	-0.32	7308 (m)	398.9 -> 98.9	53.4	44.4	66.5



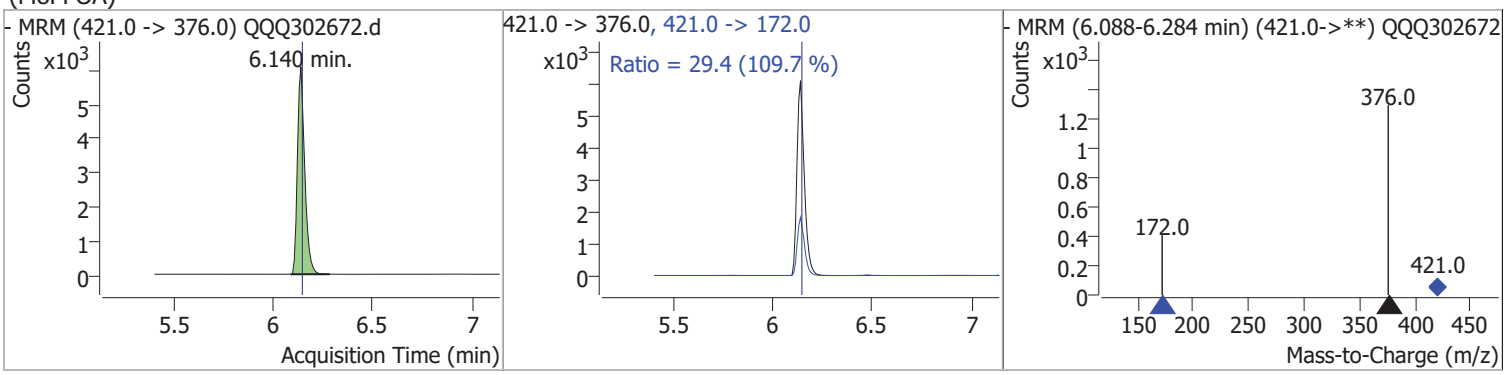
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
1H,1H,2H,2H-perfluoro-1-octanesulfonate (6 2FTS)	5.4297	6.12	-0.30	6060	427.0 -> 79.7	22.2	15.8	23.7



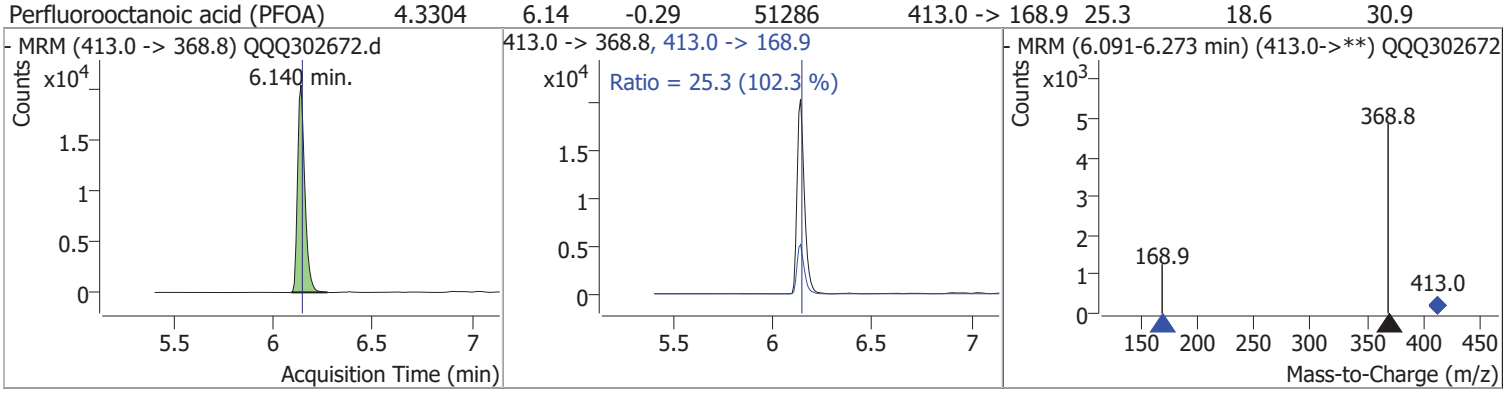
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M2-6-2FTS	4.2021	6.12	-0.30	2787	429.0 -> 81.0	44.6	40.4	60.6



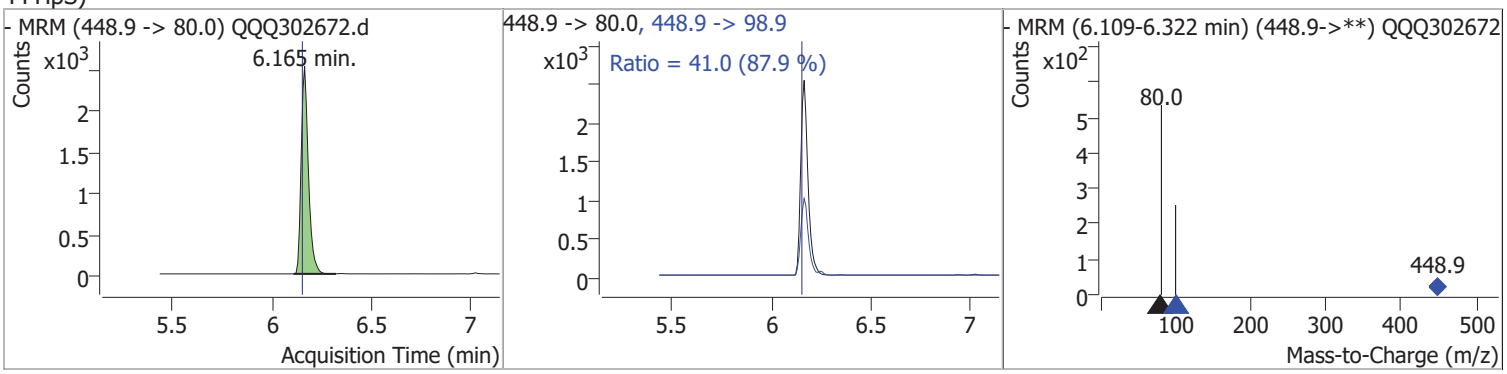
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-n-[13C8]octanoic acid (M8PFOA)	4.5200	6.14	-0.29	15363	421.0 -> 172.0	29.4	21.5	32.2



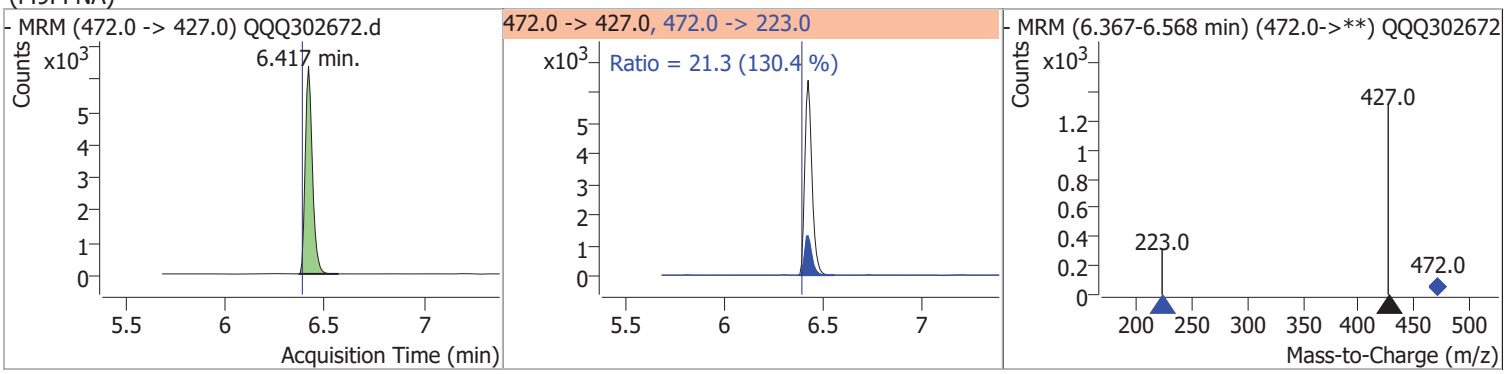
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorooctanoic acid (PFOA)	4.3304	6.14	-0.29	51286	413.0 -> 168.9	25.3	18.6	30.9



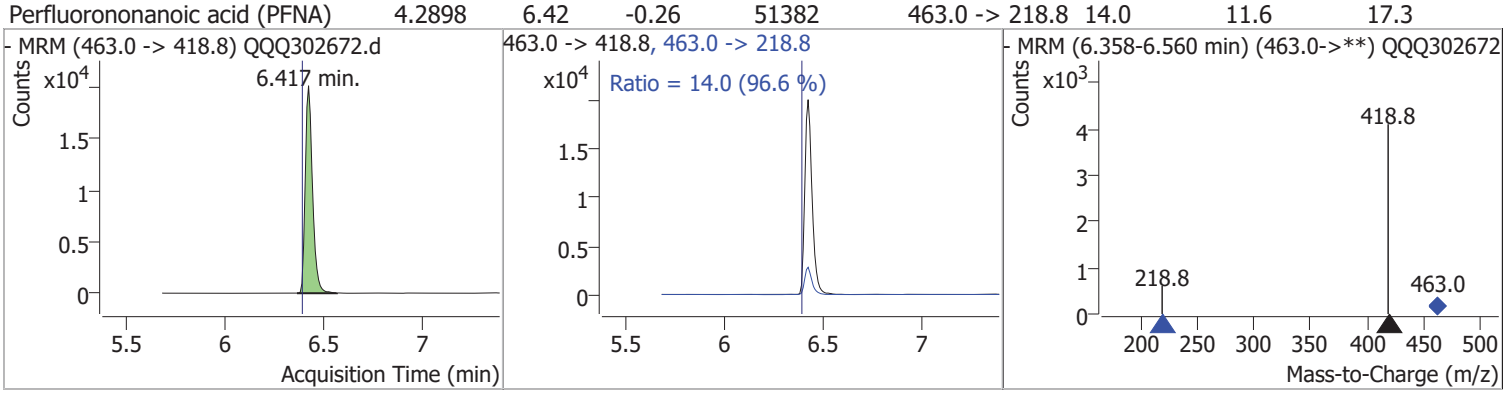
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-1-heptanesulfonate (L-PFHpS)	4.1763	6.16	-0.27	6304	448.9 -> 98.9	41.0	37.3	56.0



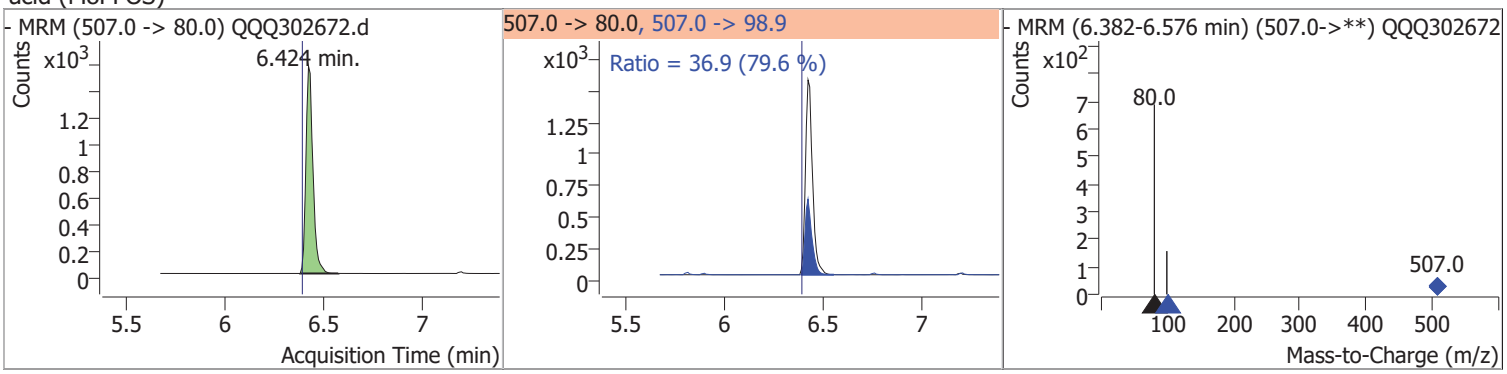
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-n-[13C9]nonanoic acid (M9PFNA)	3.9611	6.42	-0.26	16080	472.0 -> 223.0	21.3	13.1	19.6



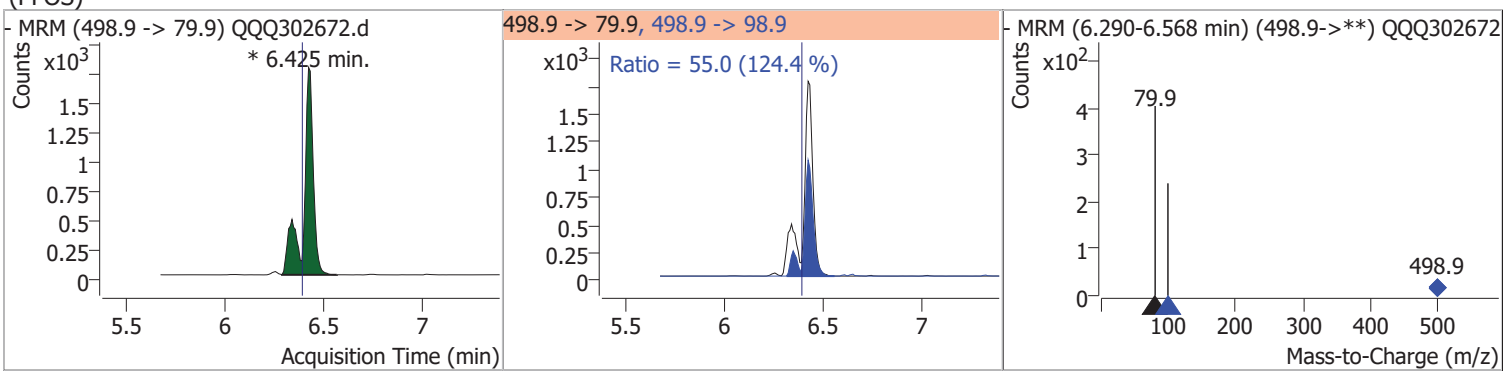
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorononanoic acid (PFNA)	4.2898	6.42	-0.26	51382	463.0 -> 218.8	14.0	11.6	17.3



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)	4.2095	6.42	-0.26	3824	507.0 -> 98.9	36.9	37.1	55.6

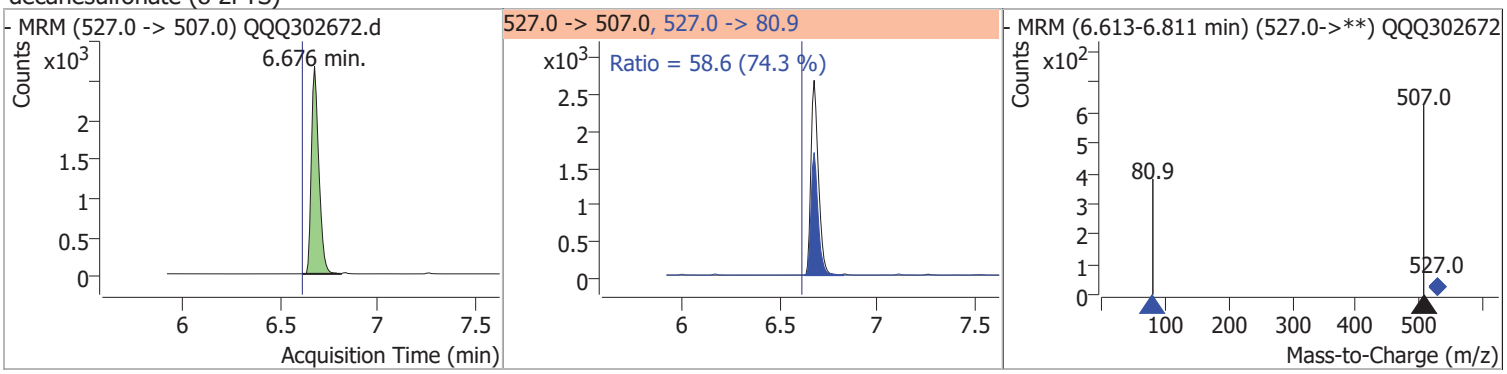


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorooctanesulfonic acid (PFOS)	3.7657	6.43	-0.26	6274 (m)	498.9 -> 98.9	55.0	35.4	53.0

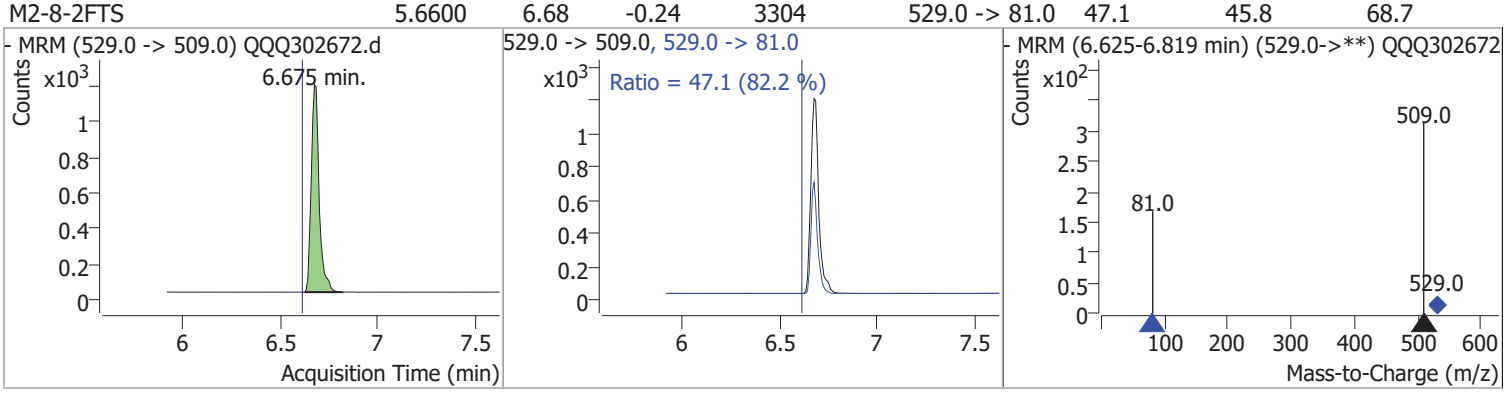


Quantitation Results Report (Not Reviewed)

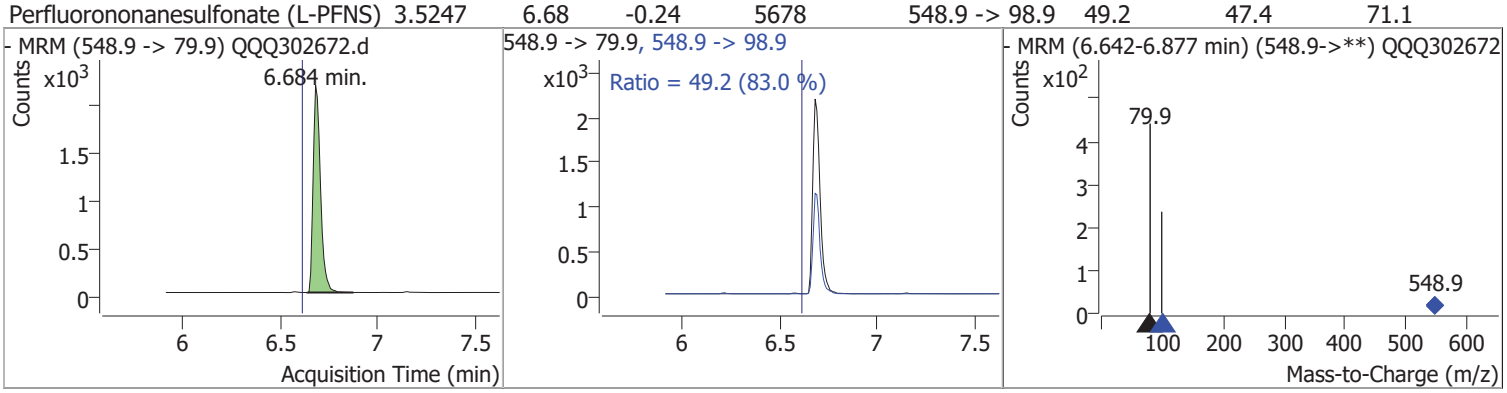
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
1H,1H,2H,2H-perfluoro-1-decanesulfonate (8 2FTS)	4.9895	6.68	-0.24	7096	527.0 -> 80.9	58.6	63.1	94.6



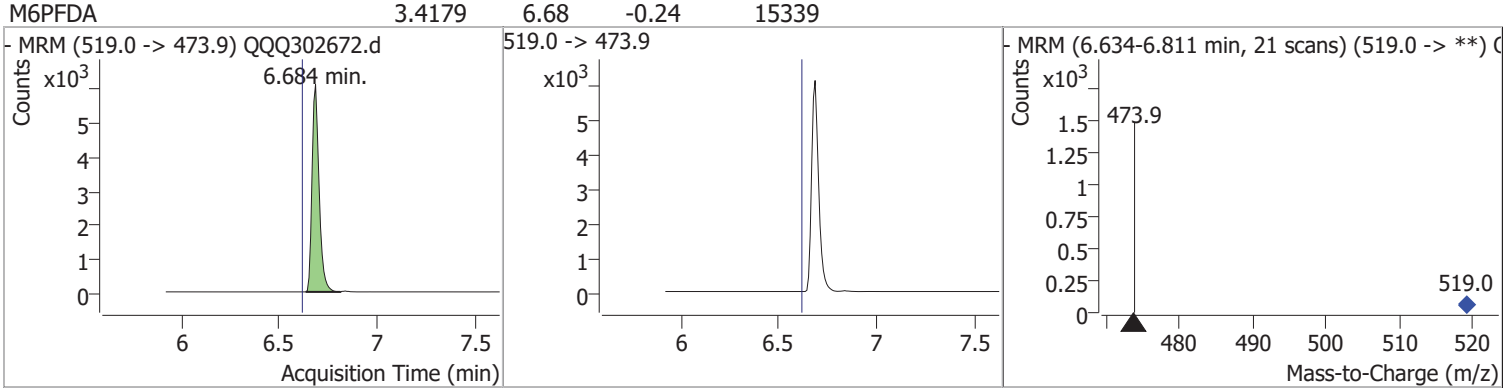
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M2-8-2FTS	5.6600	6.68	-0.24	3304	529.0 -> 81.0	47.1	45.8	68.7



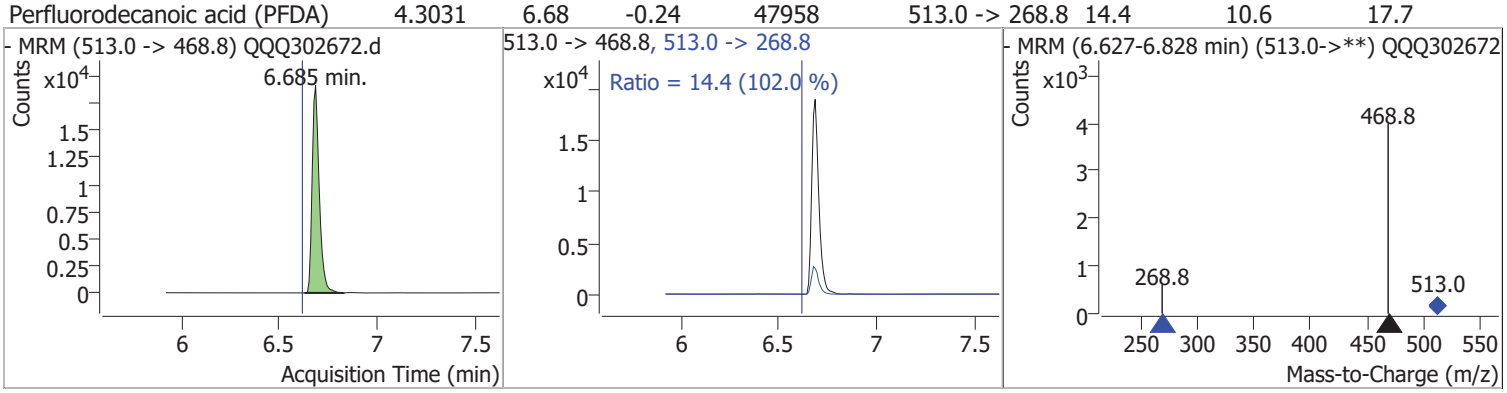
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorononanesulfonate (L-PFNS)	3.5247	6.68	-0.24	5678	548.9 -> 98.9	49.2	47.4	71.1



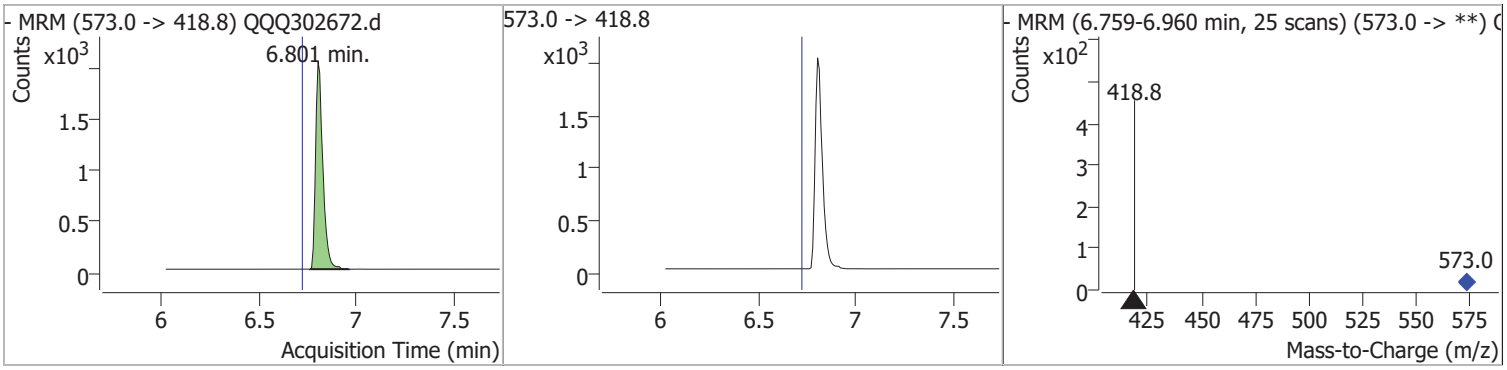
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M6PFDA	3.4179	6.68	-0.24	15339				



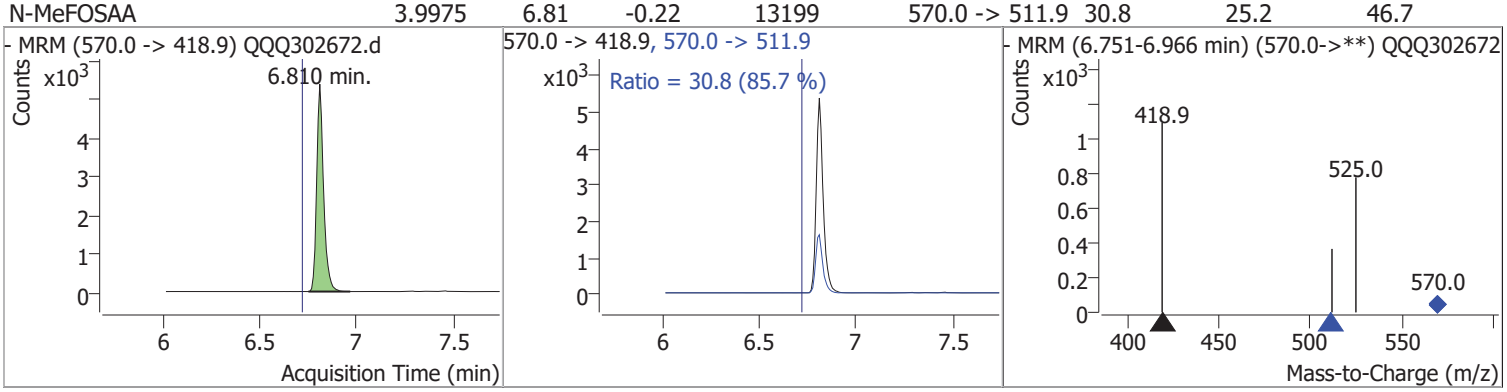
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorodecanoic acid (PFDA)	4.3031	6.68	-0.24	47958	513.0 -> 268.8	14.4	10.6	17.7



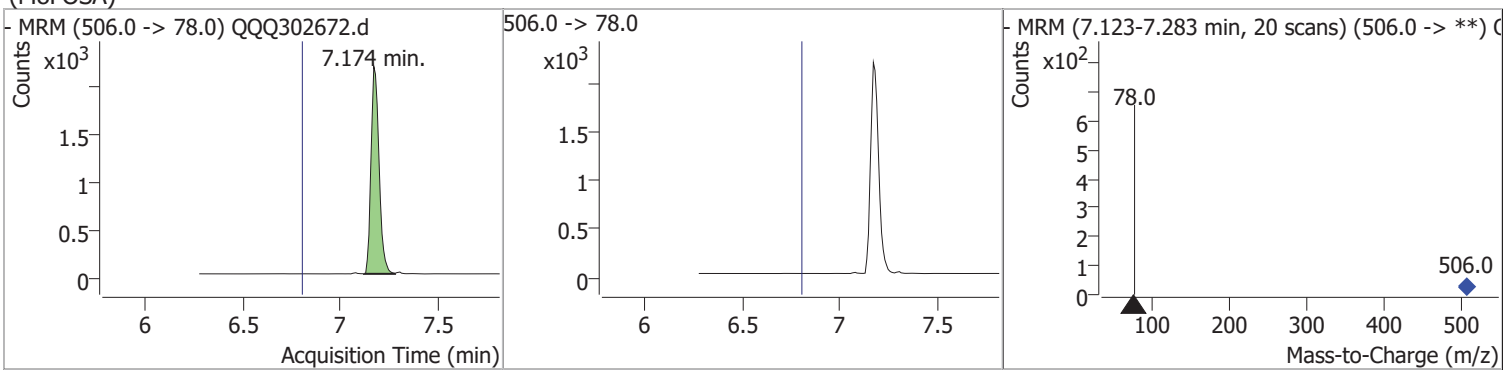
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
d3-N-MeFOSAA	3.3203	6.80	-0.23	5233				



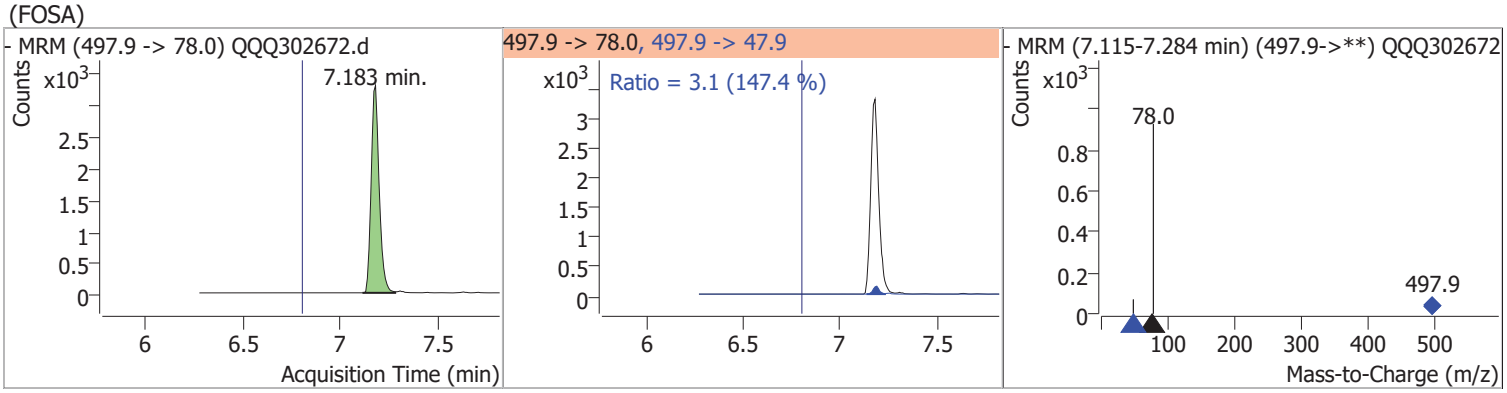
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
N-MeFOSAA	3.9975	6.81	-0.22	13199	570.0 -> 511.9	30.8	25.2	46.7



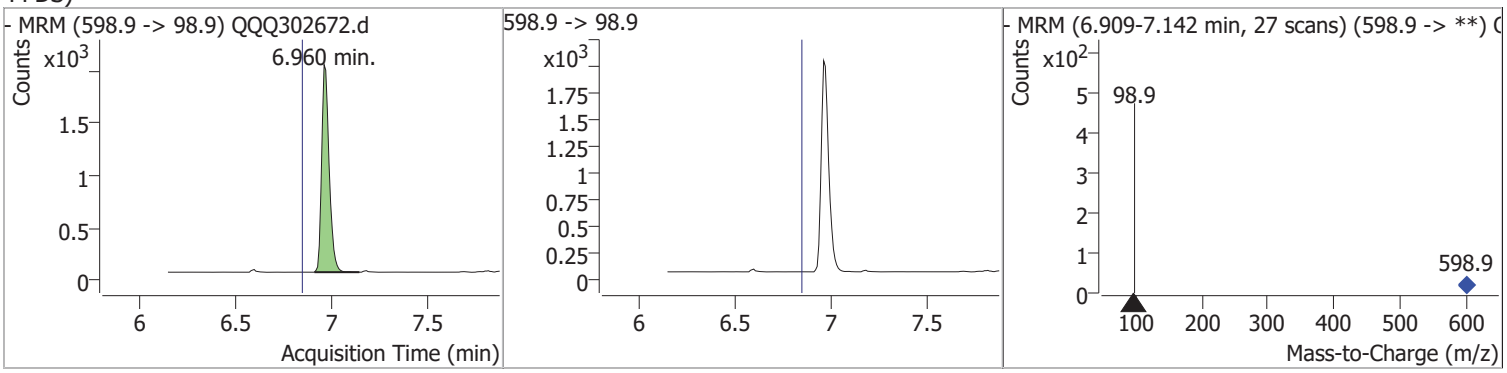
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-1-[13C8]octanesulfonamide (M8FOSA)	3.0635	7.17	0.05	6244				



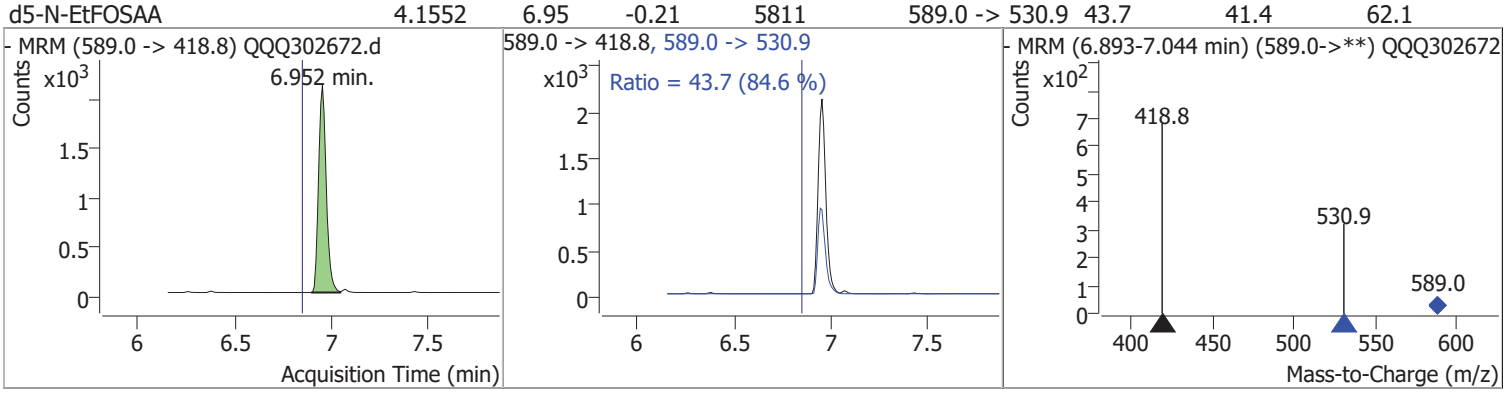
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-1-octanesulfonamide (FOSA)	3.3729	7.18	0.06	9460	497.9 -> 47.9	3.1	1.7	2.5



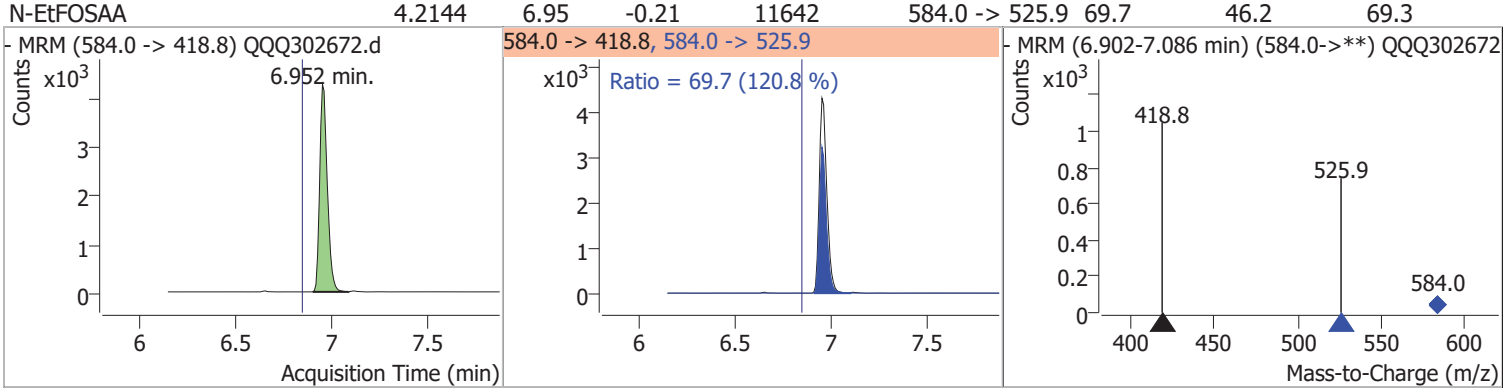
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-1-decanesulfonate (L-PFDS)	2.9798	6.96	-0.20	5321				



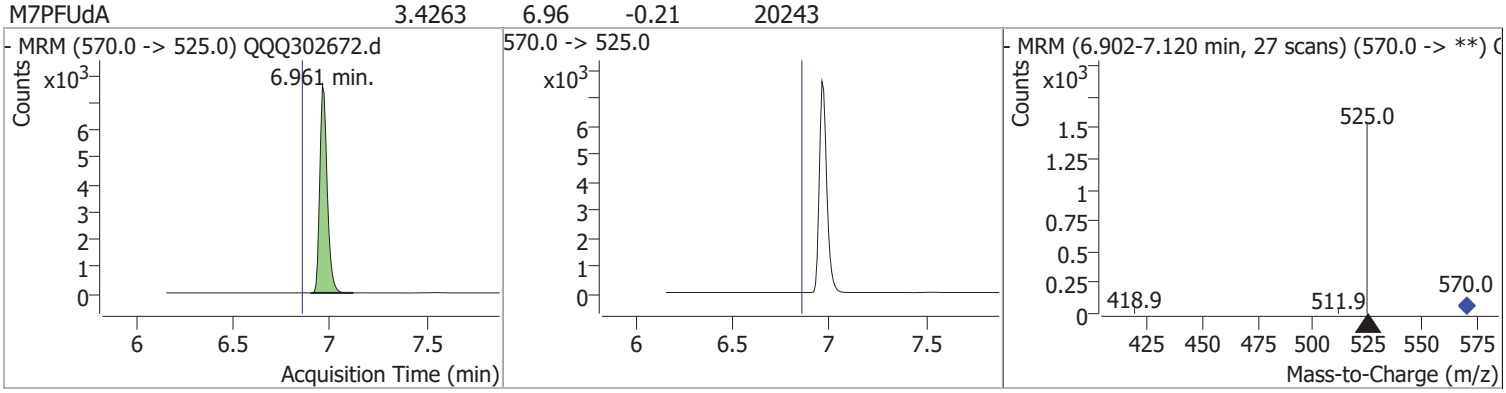
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
d5-N-EtFOSAA	4.1552	6.95	-0.21	5811	589.0 -> 530.9	43.7	41.4	62.1



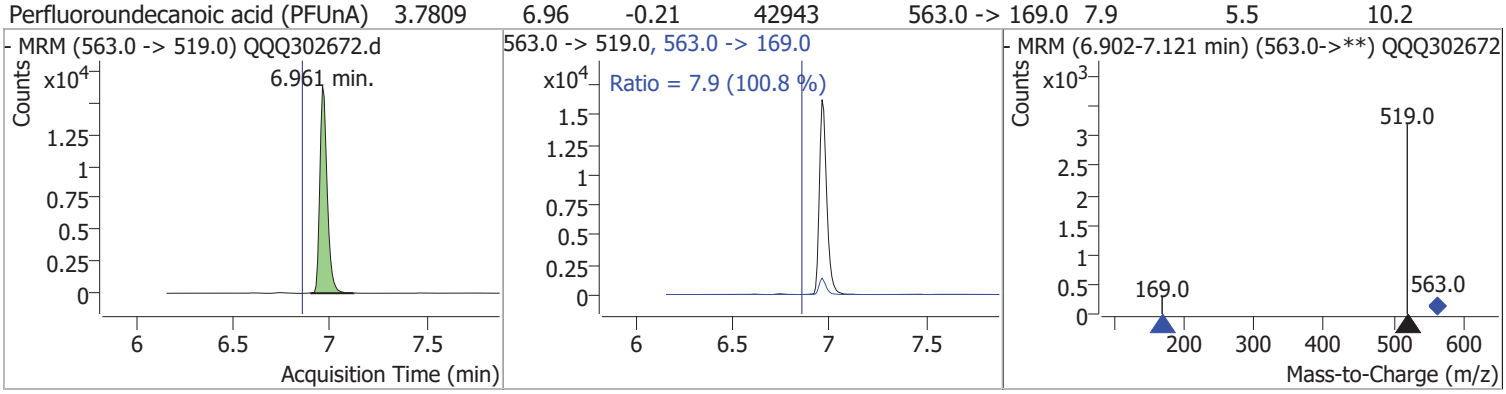
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
N-EtFOSAA	4.2144	6.95	-0.21	11642	584.0 -> 525.9	69.7	46.2	69.3



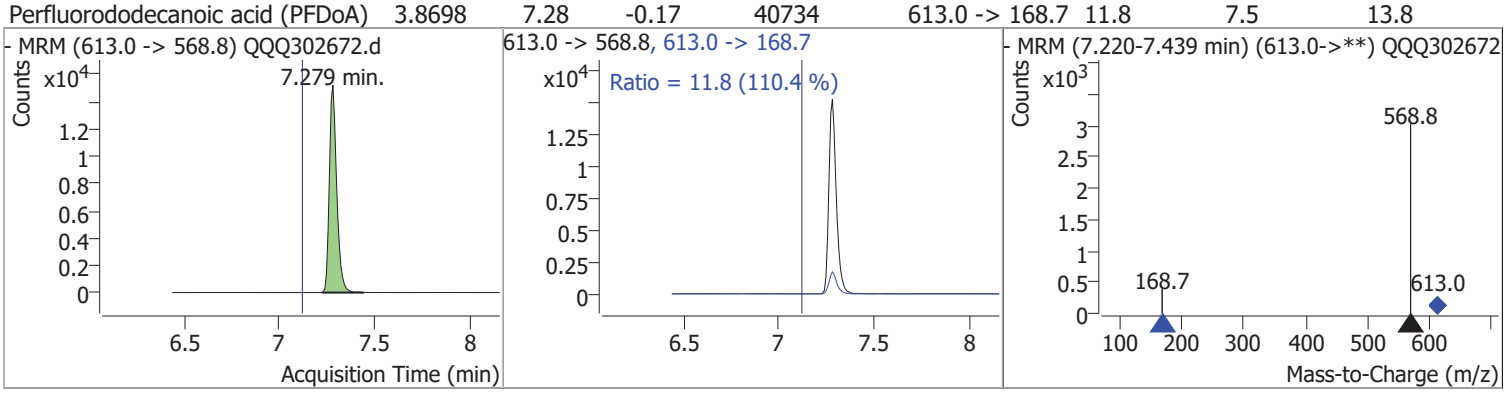
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M7PFUdA	3.4263	6.96	-0.21	20243				



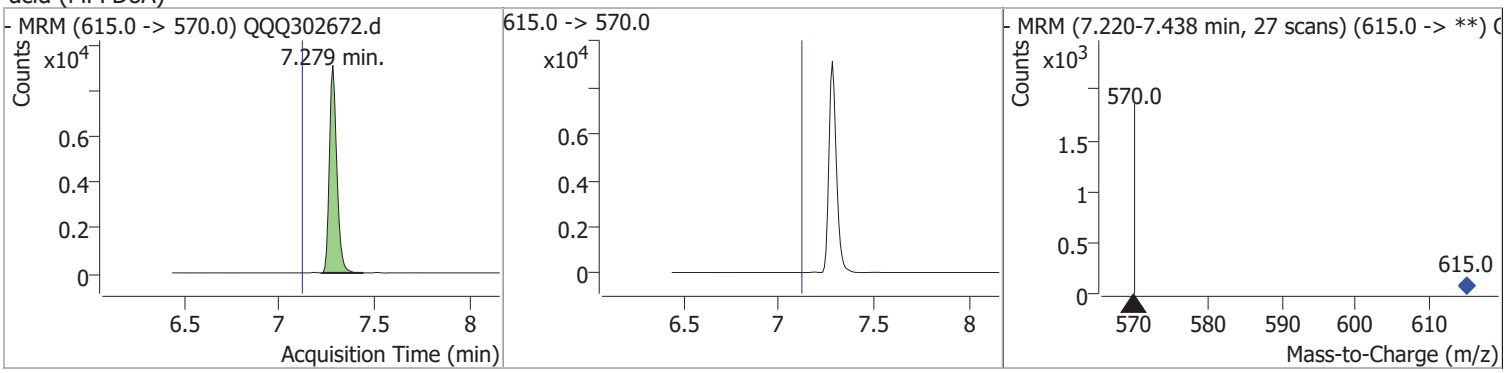
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoroundecanoic acid (PFUnA)	3.7809	6.96	-0.21	42943	563.0 -> 169.0	7.9	5.5	10.2



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorododecanoic acid (PFDoA)	3.8698	7.28	-0.17	40734	613.0 -> 168.7	11.8	7.5	13.8

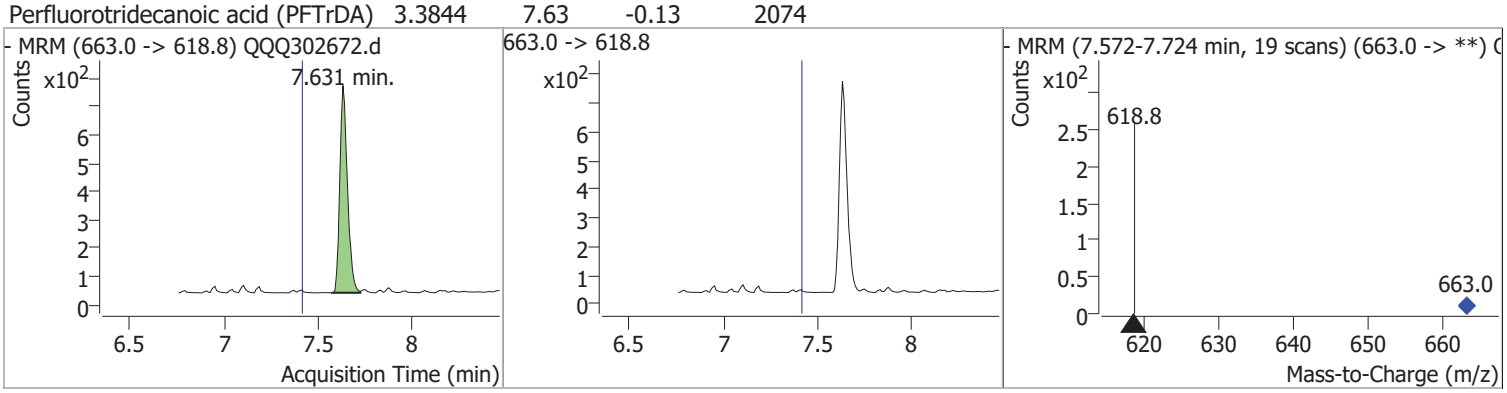


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluoro-n-[1,2-13C2]dodecanoic acid (MPFDoA)	3.6314	7.28	-0.17	24711				

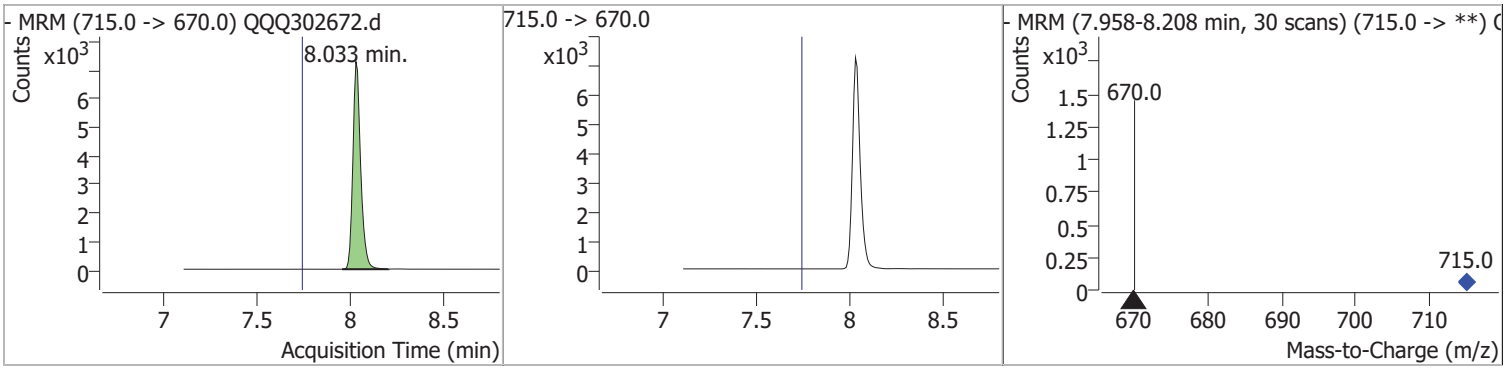


Quantitation Results Report (Not Reviewed)

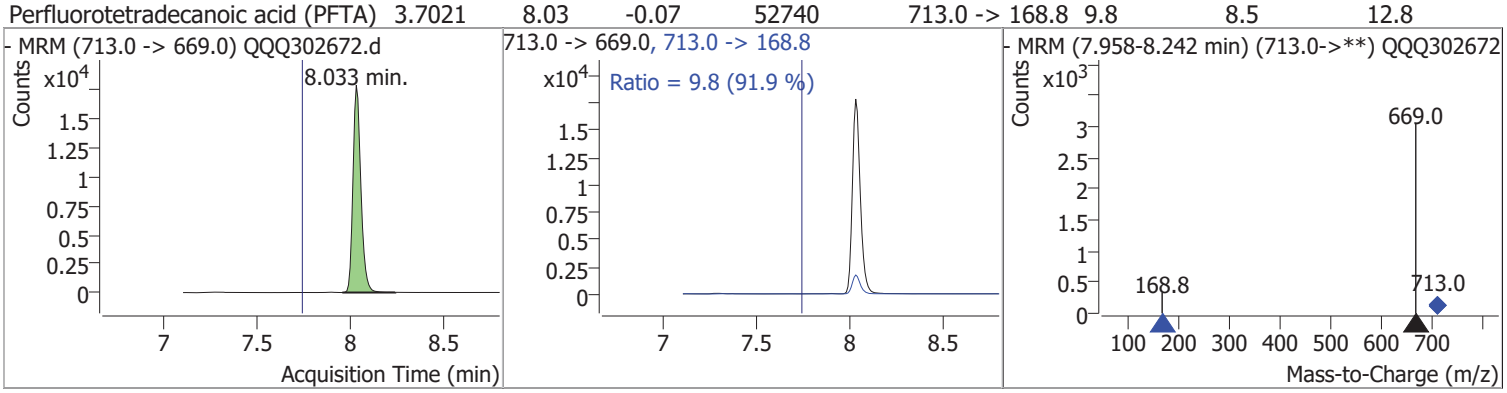
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorotridecanoic acid (PFTrDA)	3.3844	7.63	-0.13	2074				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
M2PFTeDA	3.7385	8.03	-0.07	21236				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Lower	Upper
Perfluorotetradecanoic acid (PFTA)	3.7021	8.03	-0.07	52740	713.0 -> 168.8	9.8	8.5	12.8



BENCHSHEETS

SDG: 22G0348

CLASS: PFAS

METHOD: EPA 537m

PREPARATION BENCH SHEET-SOILS/SOLIDS: BG20572

Preparation Date: 07/12/2022 12:42

York Analytical Laboratories, Inc. **Printed: 7/14/2022 5:07:41PM**

Matrix: Soil **Preparation: SPE PFAS Extractic** **Surrogate used: Y22F203 100 ul**

Lab Number	Analysis	Initial (g)	Final (mL)	Spike ID	Source ID	ul Spike	Comments
22G0336-05 A	PFAS, NYSDEC Target List	2.0255	2				
22G0336-05 A	PFAS by EPA 537 m	2.0255	2				Added for BatchQC in: BG2
22G0348-01 A	PFAS by EPA 537 m	2.0112	2				
22G0348-02 A	PFAS by EPA 537 m	2.025	2				
22G0348-03 A	PFAS by EPA 537 m	2.011	2				
22G0349-01 A	PFAS by EPA 537 m	2.022	2				
22G0349-02 A	PFAS by EPA 537 m	2.01	2				
22G0349-03 A	PFAS by EPA 537 m	2.004	2				
22G0356-01 A	PFAS by EPA 537 m	2.0126	2				
22G0356-02 A	PFAS by EPA 537 m	2.033	2				
BG20572-BLK1	QC	2.0285	2				
BG20572-BS1	QC	2.034	2	Y22F202		100	
BG20572-MS1	QC	2.0263	2	Y22F202	22G0336-05	100	
BG20572-MSD1	QC	2.0353	2	Y22F202	22G0336-05	100	

Reagents:

ID Number	Description	Lot Number	ID Number	Description	Lot Number
Y19I302	0.4 % KOH/Methanol Solution	YorkPFAS-2	Y19I303	0.3% NH4OH/Methanol Soluito	YorkPFAS-1
Y22A069	Ottawa Sand	MKCQ4342	Y22E310	Water, PFAS Free Lot 050422A	042222A
Y22E313	Strata PFAST(WAX/GCB), 200	M04243/1256 E00618	Y22F044	Methanol, HPLC Plus Grade	SHBP1940

Preparations Performed by **ESJ** **Date:** **07/12/2022 12:42**

Monday, July 18, 2022

PFAS Isotope Dilution Report - Targets

SampleName: BG20572-BLK1 **DataFileName:** QQQ302671. **Operator:** WEL **AcqTime:** 2022-07-14T13:00:55.4909371-04:00

Matrix: Soil WorkOrder: 0

CompoundName	Type	DF	UncorrConc	IsotopeCorrConc	Units	%IsoRec
1H,1H,2H,2H-perfluoro-1-decanesulfonate (8 2FTS)	T	1	0.000913	0.000817	ng/ml	111.71%
1H,1H,2H,2H-perfluoro-1-octanesulfonate (6 2FTS)	T	1	0.017392	0.024262	ng/ml	71.68%
N-EtFOSAA	T	1	0.003012	0.004412	ng/ml	68.28%
N-MeFOSAA	T	1	0.021314	0.029049	ng/ml	73.37%
Perfluoro-1-decanesulfonate (L-PFDS)	T	1	0.009234	0.010747	ng/ml	85.92%
Perfluoro-1-heptanesulfonate (L-PFHpS)	T	1	0.011488	0.013370	ng/ml	85.92%
Perfluoro-1-octanesulfonamide (FOSA)	T	1	0.000284	0.000469	ng/ml	60.51%
Perfluorobutanesulfonic acid (PFBS)	T	1	0.004796	0.007517	ng/ml	63.80%
Perfluorodecanoic acid (PFDA)	T	1	0.003874	0.005284	ng/ml	73.32%
Perfluorododecanoic acid (PFDoA)	T	1	0.016037	0.025736	ng/ml	62.31%
Perfluoroheptanoic acid (PFHpA)	T	1	0.004939	0.005969	ng/ml	82.74%
Perfluorohexanesulfonic acid (PFHxS)	T	1	0.004968	0.006469	ng/ml	76.80%
Perfluorohexanoic acid (PFHxA)	T	1	0.003947	0.005233	ng/ml	75.43%
Perfluoro-n-butanoic acid (PFBA)	T	1	0.007714	0.010791	ng/ml	71.49%
Perfluorononanoic acid (PFNA)	T	1	0.002634	0.003928	ng/ml	67.06%
Perfluoro-n-pentanoic acid (PFPeA)	T	1	0.001105	0.001482	ng/ml	74.57%
Perfluorooctanesulfonic acid (PFOS)	T	1	0.005516	0.006420	ng/ml	85.92%
Perfluorooctanoic acid (PFOA)	T	1	0.015104	0.016684	ng/ml	90.53%
Perfluorotetradecanoic acid (PFTA)	T	1	0.000681	0.000942	ng/ml	72.32%
Perfluorotridecanoic acid (PFTrDA)	T	1	0.027806	0.044624	ng/ml	62.31%
Perfluoroundecanoic acid (PFUnA)	T	1	0.005763	0.008574	ng/ml	67.21%

PFAS Isotope Dilution Report - Targets

SampleName: BG20572-BS1 **DataFileName:** QQQ302672. **Operator:** WEL **AcqTime:** 2022-07-14T13:14:07.0822742-04:00

Matrix: Soil WorkOrder: 0

CompoundName	Type	DF	UncorrConc	IsotopeCorrConc	Units	%IsoRec
1H,1H,2H,2H-perfluoro-1-decanesulfonate (8 2FTS)	T	1	4.989502	4.222589	ng/ml	118.16%
1H,1H,2H,2H-perfluoro-1-octanesulfonate (6 2FTS)	T	1	5.429723	6.131228	ng/ml	88.56%
N-EtFOSAA	T	1	4.214409	5.071256	ng/ml	83.10%
N-MeFOSAA	T	1	3.997492	6.019774	ng/ml	66.41%
Perfluoro-1-decanesulfonate (L-PFDS)	T	1	2.979772	3.387123	ng/ml	87.97%
Perfluoro-1-heptanesulfonate (L-PFHpS)	T	1	4.176325	4.747253	ng/ml	87.97%
Perfluoro-1-octanesulfonamide (FOSA)	T	1	3.372897	5.504917	ng/ml	61.27%
Perfluorobutanesulfonic acid (PFBS)	T	1	3.391021	5.084244	ng/ml	66.70%
Perfluorodecanoic acid (PFDA)	T	1	4.303135	6.295087	ng/ml	68.36%
Perfluorododecanoic acid (PFDoA)	T	1	3.869809	5.328314	ng/ml	72.63%
Perfluoroheptanoic acid (PFHpA)	T	1	4.190233	4.877983	ng/ml	85.90%
Perfluorohexanesulfonic acid (PFHxS)	T	1	3.755633	4.762046	ng/ml	78.87%
Perfluorohexanoic acid (PFHxA)	T	1	4.233195	5.304331	ng/ml	79.81%
Perfluoro-n-butanoic acid (PFBA)	T	1	4.149212	5.602146	ng/ml	74.06%
Perfluorononanoic acid (PFNA)	T	1	4.289753	5.414846	ng/ml	79.22%
Perfluoro-n-pentanoic acid (PFPeA)	T	1	4.223810	5.455243	ng/ml	77.43%
Perfluorooctanesulfonic acid (PFOS)	T	1	3.765694	4.280486	ng/ml	87.97%
Perfluorooctanoic acid (PFOA)	T	1	4.330434	4.790301	ng/ml	90.40%
Perfluorotetradecanoic acid (PFTA)	T	1	3.702143	4.951406	ng/ml	74.77%
Perfluorotridecanoic acid (PFTrDA)	T	1	3.384389	4.659942	ng/ml	72.63%
Perfluoroundecanoic acid (PFUnA)	T	1	3.780921	5.517537	ng/ml	68.53%

PFAS Isotope Dilution Report - Targets

SampleName: BG20572-MS1 **DataFileName:** QQQ302674. **Operator:** WEL **AcqTime:** 2022-07-14T13:39:57.2908475-04:00

Matrix: Soil WorkOrder: 22G0336-05

CompoundName	Type	DF	UncorrConc	IsotopeCorrConc	Units	%IsoRec
1H,1H,2H,2H-perfluoro-1-decanesulfonate (8 2FTS)	T	1	4.171102	3.925597	ng/ml	106.25%
1H,1H,2H,2H-perfluoro-1-octanesulfonate (6 2FTS)	T	1	5.812356	7.551456	ng/ml	76.97%
N-EtFOSAA	T	1	3.840604	5.612210	ng/ml	68.43%
N-MeFOSAA	T	1	3.216617	5.641979	ng/ml	57.01%
Perfluoro-1-decanesulfonate (L-PFDS)	T	1	2.659679	3.615796	ng/ml	73.56%
Perfluoro-1-heptanesulfonate (L-PFHpS)	T	1	3.948919	5.368498	ng/ml	73.56%
Perfluoro-1-octanesulfonamide (FOSA)	T	1	3.188447	5.564029	ng/ml	57.30%
Perfluorobutanesulfonic acid (PFBS)	T	1	3.304582	5.076122	ng/ml	65.10%
Perfluorodecanoic acid (PFDA)	T	1	3.960529	5.542581	ng/ml	71.46%
Perfluorododecanoic acid (PFDoA)	T	1	3.277083	5.396815	ng/ml	60.72%
Perfluoroheptanoic acid (PFHpA)	T	1	3.924306	4.485833	ng/ml	87.48%
Perfluorohexanesulfonic acid (PFHxS)	T	1	3.750893	4.307095	ng/ml	87.09%
Perfluorohexanoic acid (PFHxA)	T	1	4.323255	5.534026	ng/ml	78.12%
Perfluoro-n-butanoic acid (PFBA)	T	1	3.869284	5.201232	ng/ml	74.39%
Perfluorononanoic acid (PFNA)	T	1	3.912554	5.097761	ng/ml	76.75%
Perfluoro-n-pentanoic acid (PFPeA)	T	1	4.151685	5.237922	ng/ml	79.26%
Perfluorooctanesulfonic acid (PFOS)	T	1	3.714648	5.050011	ng/ml	73.56%
Perfluorooctanoic acid (PFOA)	T	1	4.079999	4.759358	ng/ml	85.73%
Perfluorotetradecanoic acid (PFTA)	T	1	3.274013	4.759263	ng/ml	68.79%
Perfluorotridecanoic acid (PFTrDA)	T	1	3.803927	6.264441	ng/ml	60.72%
Perfluoroundecanoic acid (PFUnA)	T	1	3.097272	5.030310	ng/ml	61.57%

PFAS Isotope Dilution Report - Targets

SampleName: BG20572-MSD1 **DataFileName:** QQQ302675. **Operator:** WEL **AcqTime:** 2022-07-14T13:52:54.8118012-04:00

Matrix: Soil WorkOrder: 22G0336-05

CompoundName	Type	DF	UncorrConc	IsotopeCorrConc	Units	%IsoRec
1H,1H,2H,2H-perfluoro-1-decanesulfonate (8 2FTS)	T	1	3.633740	3.844940	ng/ml	94.51%
1H,1H,2H,2H-perfluoro-1-octanesulfonate (6 2FTS)	T	1	4.008537	4.590185	ng/ml	87.33%
N-EtFOSAA	T	1	3.432309	4.499311	ng/ml	76.29%
N-MeFOSAA	T	1	3.110483	5.692040	ng/ml	54.65%
Perfluoro-1-decanesulfonate (L-PFDS)	T	1	2.412786	3.047830	ng/ml	79.16%
Perfluoro-1-heptanesulfonate (L-PFHpS)	T	1	3.982255	5.030383	ng/ml	79.16%
Perfluoro-1-octanesulfonamide (FOSA)	T	1	2.891523	6.042858	ng/ml	47.85%
Perfluorobutanesulfonic acid (PFBS)	T	1	3.272628	5.066085	ng/ml	64.60%
Perfluorodecanoic acid (PFDA)	T	1	3.584647	5.550708	ng/ml	64.58%
Perfluorododecanoic acid (PFDoA)	T	1	2.935376	5.709641	ng/ml	51.41%
Perfluoroheptanoic acid (PFHpA)	T	1	3.690489	4.530351	ng/ml	81.46%
Perfluorohexanesulfonic acid (PFHxS)	T	1	3.625357	4.511866	ng/ml	80.35%
Perfluorohexanoic acid (PFHxA)	T	1	4.075240	5.300009	ng/ml	76.89%
Perfluoro-n-butanoic acid (PFBA)	T	1	3.986361	5.231705	ng/ml	76.20%
Perfluorononanoic acid (PFNA)	T	1	3.612831	4.773956	ng/ml	75.68%
Perfluoro-n-pentanoic acid (PFPeA)	T	1	4.006463	5.254604	ng/ml	76.25%
Perfluorooctanesulfonic acid (PFOS)	T	1	3.592544	4.538101	ng/ml	79.16%
Perfluorooctanoic acid (PFOA)	T	1	4.259153	5.176445	ng/ml	82.28%
Perfluorotetradecanoic acid (PFTA)	T	1	3.185082	4.689488	ng/ml	67.92%
Perfluorotridecanoic acid (PFTrDA)	T	1	3.996556	7.773758	ng/ml	51.41%
Perfluoroundecanoic acid (PFUnA)	T	1	2.792709	4.992349	ng/ml	55.94%

PFAS Isotope Dilution Report - Targets

SampleName: 22G0348-01 **DataFileName:** QQQ302687. **Operator:** WEL **AcqTime:** 2022-07-14T16:28:42.3711855-04:00

Matrix: Soil WorkOrder: 22G0348

CompoundName	Type	DF	UncorrConc	IsotopeCorrConc	Units	%IsoRec
1H,1H,2H,2H-perfluoro-1-decanesulfonate (8 2FTS)	T	1	0.002152	0.002188	ng/ml	98.34%
1H,1H,2H,2H-perfluoro-1-octanesulfonate (6 2FTS)	T	1	0.047327	0.062572	ng/ml	75.64%
N-EtFOSAA	T	1	0.015918	0.024193	ng/ml	65.80%
N-MeFOSAA	T	1	0.009549	0.014653	ng/ml	65.16%
Perfluoro-1-decanesulfonate (L-PFDS)	T	1	0.010210	0.015355	ng/ml	66.49%
Perfluoro-1-heptanesulfonate (L-PFHpS)	T	1	0.007878	0.011848	ng/ml	66.49%
Perfluoro-1-octanesulfonamide (FOSA)	T	1	0.000340	0.000653	ng/ml	52.12%
Perfluorobutanesulfonic acid (PFBS)	T	1	0.008068	0.012908	ng/ml	62.50%
Perfluorodecanoic acid (PFDA)	T	1	0.001567	0.002276	ng/ml	68.85%
Perfluorododecanoic acid (PFDoA)	T	1	0.001048	0.001807	ng/ml	57.99%
Perfluoroheptanoic acid (PFHpA)	T	1	0.000679	0.000819	ng/ml	82.88%
Perfluorohexanesulfonic acid (PFHxS)	T	1	0.009160	0.010811	ng/ml	84.72%
Perfluorohexanoic acid (PFHxA)	T	1	0.014400	0.018466	ng/ml	77.98%
Perfluoro-n-butanoic acid (PFBA)	T	1	0.009534	0.012904	ng/ml	73.88%
Perfluorononanoic acid (PFNA)	T	1	0.001737	0.002133	ng/ml	81.43%
Perfluoro-n-pentanoic acid (PFPeA)	T	1	0.004322	0.005851	ng/ml	73.86%
Perfluorooctanesulfonic acid (PFOS)	T	1	0.008077	0.012148	ng/ml	66.49%
Perfluorooctanoic acid (PFOA)	T	1	0.055370	0.064855	ng/ml	85.37%
Perfluorotetradecanoic acid (PFTA)	T	1	0.017994	0.026341	ng/ml	68.31%
Perfluorotridecanoic acid (PFTrDA)	T	1	0.030877	0.053247	ng/ml	57.99%
Perfluoroundecanoic acid (PFUnA)	T	1	0.007286	0.011657	ng/ml	62.50%

PFAS Isotope Dilution Report - Targets

SampleName: 22G0348-02 **DataFileName:** QQQ302688. **Operator:** WEL **AcqTime:** 2022-07-14T16:41:37.8592667-04:00

Matrix: Soil WorkOrder: 22G0348

CompoundName	Type	DF	UncorrConc	IsotopeCorrConc	Units	%IsoRec
1H,1H,2H,2H-perfluoro-1-decanesulfonate (8 2FTS)	T	1	0.024952	0.025885	ng/ml	96.39%
1H,1H,2H,2H-perfluoro-1-octanesulfonate (6 2FTS)	T	1	0.010144	0.013983	ng/ml	72.54%
N-EtFOSAA	T	1	0.011773	0.019234	ng/ml	61.21%
N-MeFOSAA	T	1	0.004967	0.007707	ng/ml	64.46%
Perfluoro-1-decanesulfonate (L-PFDS)	T	1	0.010985	0.013847	ng/ml	79.33%
Perfluoro-1-heptanesulfonate (L-PFHpS)	T	1	0.007132	0.008990	ng/ml	79.33%
Perfluoro-1-octanesulfonamide (FOSA)	T	1	0.000887	0.001781	ng/ml	49.82%
Perfluorobutanesulfonic acid (PFBS)	T	1	0.002069	0.003028	ng/ml	68.32%
Perfluorodecanoic acid (PFDA)	T	1	0.005197	0.008371	ng/ml	62.09%
Perfluorododecanoic acid (PFDoA)	T	1	0.003505	0.007720	ng/ml	45.40%
Perfluoroheptanoic acid (PFHpA)	T	1	0.013106	0.015715	ng/ml	83.40%
Perfluorohexanesulfonic acid (PFHxS)	T	1	0.030185	0.036042	ng/ml	83.75%
Perfluorohexanoic acid (PFHxA)	T	1	0.028352	0.035936	ng/ml	78.90%
Perfluoro-n-butanoic acid (PFBA)	T	1	0.000890	0.001183	ng/ml	75.24%
Perfluorononanoic acid (PFNA)	T	1	0.002909	0.003312	ng/ml	87.84%
Perfluoro-n-pentanoic acid (PFPeA)	T	1	0.006566	0.008326	ng/ml	78.86%
Perfluorooctanesulfonic acid (PFOS)	T	1	0.018311	0.023081	ng/ml	79.33%
Perfluorooctanoic acid (PFOA)	T	1	0.076795	0.086734	ng/ml	88.54%
Perfluorotetradecanoic acid (PFTA)	T	1	0.001127	0.001760	ng/ml	64.04%
Perfluorotridecanoic acid (PFTrDA)	T	1	0.029850	0.065744	ng/ml	45.40%
Perfluoroundecanoic acid (PFUnA)	T	1	0.001630	0.003170	ng/ml	51.43%

PFAS Isotope Dilution Report - Targets

SampleName: 22G0348-03 **DataFileName:** QQQ302690. **Operator:** WEL **AcqTime:** 2022-07-14T17:07:45.3287731-04:00

Matrix: Soil WorkOrder: 22G0348

CompoundName	Type	DF	UncorrConc	IsotopeCorrConc	Units	%IsoRec
1H,1H,2H,2H-perfluoro-1-decanesulfonate (8 2FTS)	T	1	0.001586	0.001978	ng/ml	80.17%
1H,1H,2H,2H-perfluoro-1-octanesulfonate (6 2FTS)	T	1	0.015963	0.022283	ng/ml	71.64%
N-EtFOSAA	T	1	0.024613	0.052008	ng/ml	47.33%
N-MeFOSAA	T	1	0.016557	0.032159	ng/ml	51.48%
Perfluoro-1-decanesulfonate (L-PFDS)	T	1	0.013755	0.025276	ng/ml	54.42%
Perfluoro-1-heptanesulfonate (L-PFHpS)	T	1	0.013078	0.024033	ng/ml	54.42%
Perfluoro-1-octanesulfonamide (FOSA)	T	1	0.000398	0.000858	ng/ml	46.35%
Perfluorobutanesulfonic acid (PFBS)	T	1	0.000562	0.000836	ng/ml	67.25%
Perfluorodecanoic acid (PFDA)	T	1	0.001202	0.002199	ng/ml	54.66%
Perfluorododecanoic acid (PFDoA)	T	1	0.002511	0.005437	ng/ml	46.19%
Perfluoroheptanoic acid (PFHpA)	T	1	0.001745	0.002000	ng/ml	87.28%
Perfluorohexanesulfonic acid (PFHxS)	T	1	0.526467	0.706384	ng/ml	74.53%
Perfluorohexanoic acid (PFHxA)	T	1	0.003519	0.004450	ng/ml	79.08%
Perfluoro-n-butanoic acid (PFBA)	T	1	0.023897	0.031846	ng/ml	75.04%
Perfluorononanoic acid (PFNA)	T	1	0.007167	0.009770	ng/ml	73.36%
Perfluoro-n-pentanoic acid (PFPeA)	T	1	0.002142	0.002787	ng/ml	76.85%
Perfluorooctanesulfonic acid (PFOS)	T	1	0.014378	0.026421	ng/ml	54.42%
Perfluorooctanoic acid (PFOA)	T	1	0.054489	0.057164	ng/ml	95.32%
Perfluorotetradecanoic acid (PFTA)	T	1	0.003317	0.005091	ng/ml	65.16%
Perfluorotridecanoic acid (PFTrDA)	T	1	0.030155	0.065291	ng/ml	46.19%
Perfluoroundecanoic acid (PFUnA)	T	1	0.001621	0.003327	ng/ml	48.73%

York Analytical Laboratories, Inc.

SDG: 22G0348

CLASS: WET

METHOD: SM 2540G

DATA PACKAGE COVER PAGE

SM 2540G

Laboratory:	York Analytical Laboratories, Inc.	SDG:	22G0348
Client:	Phoenix Environmental Laboratories, Inc.	Project:	GCL69739

Client Sample Id:	Lab Sample Id:
IMJC COMP-1	22G0348-01
IMJC COMP-2	22G0348-02
IMJC COMP-3	22G0348-03

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed in the project narrative. Release of the data contained in this hardcopy data package and in computer-readable data submitted on diskette has been authorized by the Laboratory Manager or the Manager's designee, as verified by the

Signature: Cassie L Mosher

Name: Cassie L. Mosher

Date: 7/19/2022

Title: Laboratory Manager

FORM I

INORGANIC ANALYSIS DATA SHEET

SM 2540G

IMJC COMP-1

Laboratory: York Analytical Laboratories, Inc. SDG: 22G0348

Client: Phoenix Environmental Laboratories, Inc. Project: GCL69739

Matrix: Soil Laboratory ID: 22G0348-01 File ID:

Sampled: 07/05/22 09:00 Prepared: 07/12/22 14:23 Analyzed: 07/12/22 16:32

Solids: 99.25 Preparation: % Solids Prep Initial/Final: 5 g / 5 g

Batch: BG20605 Sequence: Calibration: 07/12/22 1 Instrument: Inst

CAS NO.	Analyte	Concentration (%)	Dilution Factor	Q	Method
solids	% Solids	99.2	1		SM 2540G

FORM I

INORGANIC ANALYSIS DATA SHEET

SM 2540G

IMJC COMP-2

Laboratory: York Analytical Laboratories, Inc. SDG: 22G0348

Client: Phoenix Environmental Laboratories, Inc. Project: GCL69739

Matrix: Soil Laboratory ID: 22G0348-02 File ID:

Sampled: 07/05/22 09:05 Prepared: 07/12/22 14:23 Analyzed: 07/12/22 16:32

Solids: 99.65 Preparation: % Solids Prep Initial/Final: 5 g / 5 g

Batch: BG20605 Sequence: Calibration: 07/12/22 1 Instrument: Inst

CAS NO.	Analyte	Concentration (%)	Dilution Factor	Q	Method
solids	% Solids	99.6	1		SM 2540G

FORM I

INORGANIC ANALYSIS DATA SHEET

SM 2540G

IMJC COMP-3

Laboratory: York Analytical Laboratories, Inc. SDG: 22G0348

Client: Phoenix Environmental Laboratories, Inc. Project: GCL69739

Matrix: Soil Laboratory ID: 22G0348-03 File ID:

Sampled: 07/05/22 09:10 Prepared: 07/12/22 14:23 Analyzed: 07/12/22 16:32

Solids: 99.83 Preparation: % Solids Prep Initial/Final: 5 g / 5 g

Batch: BG20605 Sequence: Calibration: 07/12/22 1 Instrument: Inst

CAS NO.	Analyte	Concentration (%)	Dilution Factor	Q	Method
solids	% Solids	99.8	1		SM 2540G

FORM IV

PREPARATION BATCH SUMMARY

SM 2540G

Laboratory: York Analytical Laboratories, Inc. SDG: 22G0348

Client: Phoenix Environmental Laboratories, Inc. Project: GCL69739

Batch: BG20605 Batch Matrix: Soil Preparation: % Solids Prep

SAMPLE NAME	LAB SAMPLE ID	LAB FILE ID	DATE PREPARED	OBSERVATIONS
IMJC COMP-1	22G0348-01		07/12/22 14:23	
IMJC COMP-2	22G0348-02		07/12/22 14:23	
IMJC COMP-3	22G0348-03		07/12/22 14:23	

BENCHSHEETS

SDG: 22G0348

CLASS: WET

METHOD: SM 2540G

PREPARATION BENCH SHEET-AQUEOUS: BG20605

Prepared: **07/12/2022 14:23**

York Analytical Laboratories, Inc.

Printed: 7/13/2022 6:02:46PM

Matrix: Soil

Lab Number	Analysis	Initial (g)	**Preparation**	Oven Temps.oC	Source ID	Comments
22G0336-05 A	Total Solids	5	**% Solids Prep**	102.2 / 102.6		
22G0348-01 A	Total Solids	5	**% Solids Prep**	102.2 / 102.6		
22G0348-02 A	Total Solids	5	**% Solids Prep**	102.2 / 102.6		
22G0348-03 A	Total Solids	5	**% Solids Prep**	102.2 / 102.6		
22G0349-01 A	Total Solids	5	**% Solids Prep**	102.2 / 102.6		
22G0349-02 A	Total Solids	5	**% Solids Prep**	102.2 / 102.6		
22G0349-03 A	Total Solids	5	**% Solids Prep**	102.2 / 102.6		
22G0356-01 A	Total Solids	5	**% Solids Prep**	102.2 / 102.6		
22G0356-02 A	Total Solids	5	**% Solids Prep**	102.2 / 102.6		
BG20605-DUP1	QC	5	**% Solids Prep**	102.2 / 102.6	22G0336-05	

Preparation Performed by **YR** **Date:** **07/12/2022 16:30**

TOTAL SOLIDS ELECTRONIC LOG

Sample No.	Analyte	Analysis Date	Analyst	Batch ID	Init. Result	Final Result	Units	Prep. Units
22G0336-05	% Solids	7/12/2022 4:32:24PM	YR	BG20605	97.80	97.8	%	g
22G0336-05	Final Wt.	7/12/2022 4:32:24PM	YR	BG20605	6.62	6.62	%	g
22G0336-05	Initial Wt.	7/12/2022 4:32:24PM	YR	BG20605	6.74	6.74	%	g
22G0336-05	Tare Wt.	7/12/2022 4:32:24PM	YR	BG20605	1.29	1.29	%	g
22G0348-01	% Solids	7/12/2022 4:32:24PM	YR	BG20605	99.25	99.2	%	g
22G0348-01	Final Wt.	7/12/2022 4:32:24PM	YR	BG20605	6.56	6.56	%	g
22G0348-01	Initial Wt.	7/12/2022 4:32:24PM	YR	BG20605	6.60	6.60	%	g
22G0348-01	Tare Wt.	7/12/2022 4:32:24PM	YR	BG20605	1.27	1.27	%	g
22G0348-02	% Solids	7/12/2022 4:32:24PM	YR	BG20605	99.65	99.6	%	g
22G0348-02	Final Wt.	7/12/2022 4:32:24PM	YR	BG20605	6.96	6.96	%	g
22G0348-02	Initial Wt.	7/12/2022 4:32:24PM	YR	BG20605	6.98	6.98	%	g
22G0348-02	Tare Wt.	7/12/2022 4:32:24PM	YR	BG20605	1.28	1.28	%	g
22G0348-03	% Solids	7/12/2022 4:32:24PM	YR	BG20605	99.83	99.8	%	g
22G0348-03	Final Wt.	7/12/2022 4:32:24PM	YR	BG20605	6.98	6.98	%	g
22G0348-03	Initial Wt.	7/12/2022 4:32:24PM	YR	BG20605	6.99	6.99	%	g
22G0348-03	Tare Wt.	7/12/2022 4:32:24PM	YR	BG20605	1.27	1.27	%	g
BG20605-DUP1	% Solids	7/12/2022 4:32:24PM	YR	BG20605	98.10	98.1	%	g
BG20605-DUP1	Final Wt.	7/12/2022 4:32:24PM	YR	BG20605	6.45	6.45	%	g
BG20605-DUP1	Initial Wt.	7/12/2022 4:32:24PM	YR	BG20605	6.55	6.55	%	g
BG20605-DUP1	Tare Wt.	7/12/2022 4:32:24PM	YR	BG20605	1.28	1.28	%	g

Note: Units for Tare, Initial and Final Wts. are in grams

HOLDING TIME SUMMARY

SM 2540G

Laboratory: York Analytical Laboratories, Inc. SDG: 22G0348

Client: Phoenix Environmental Laboratories, Inc. Project: GCL69739

Sample Name	Date Collected	Date Received	Date Prepared	Days to Prep	Max Days to Prep	Date Analyzed	Days to Analysis	Max Days to Analysis	Q
IMJC COMP-1	07/05/22 09:00	07/08/22 15:50	07/12/22 14:23	7.22	28.00	07/12/22 16:32	7.31	28.00	
IMJC COMP-2	07/05/22 09:05	07/08/22 15:50	07/12/22 14:23	7.22	28.00	07/12/22 16:32	7.31	28.00	
IMJC COMP-3	07/05/22 09:10	07/08/22 15:50	07/12/22 14:23	7.22	28.00	07/12/22 16:32	7.31	28.00	

METHOD DETECTION AND REPORTING LIMITS

SM 2540G

Laboratory: York Analytical Laboratories, Inc. **SDG:** 22G0348

Client: Phoenix Environmental Laboratories, Inc. **Project:** GCL69739

Matrix: Soil **Instrument:**

Analyte	LOD	LOQ	Units
% Solids	0.100	0.100	%

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

NY # 11301

Analysis Report

October 21, 2022

FOR: Attn: Mr. Jeff Bogoian
Impact Consulting
170 Keyland Court
Bohemia NY 11716

Sample Information		Custody Information		Date	Time
Matrix:	SOIL	Collected by:	SR	10/12/22	8:00
Location Code:	IMPACTJB-IEC	Received by:	CP	10/12/22	17:14
Rush Request:	Standard	Analyzed by:	see "By" below		
P.O.#:	FAC-20				

Laboratory Data

SDG ID: GCM60739
Phoenix ID: CM60739

Project ID: IMJC
Client ID: IMJC NORTH

Parameter	Result	RL/ PQL	LOD/ MDL	Units	Dilution	Date/Time	By	Reference	
Silver	ND	0.39	0.39	mg/Kg	1	10/14/22	CPP	SW6010D	
Aluminum	17500	39	7.8	mg/Kg	10	10/14/22	CPP	SW6010D	
Arsenic	2.00	0.78	0.78	mg/Kg	1	10/14/22	CPP	SW6010D	
Barium	223	0.8	0.39	mg/Kg	1	10/14/22	CPP	SW6010D	
Beryllium	0.61	0.31	0.16	mg/Kg	1	10/14/22	CPP	SW6010D	
Calcium	13200	39	36	mg/Kg	10	10/14/22	CPP	SW6010D	
Cadmium	1.63	0.39	0.39	mg/Kg	1	10/14/22	CPP	SW6010D	
Cobalt	21.9	0.39	0.39	mg/Kg	1	10/14/22	CPP	SW6010D	
Chromium	46.7	0.39	0.39	mg/Kg	1	10/14/22	CPP	SW6010D	
Copper	77.1	0.8	0.39	mg/kg	1	10/14/22	CPP	SW6010D	
Iron	30600	39	39	mg/Kg	10	10/14/22	CPP	SW6010D	
Mercury	0.06	0.03	0.02	mg/Kg	2	10/13/22	IE	SW7471B	
Potassium	7340	78	30	mg/Kg	10	10/14/22	CPP	SW6010D	
Magnesium	12900	39	39	mg/Kg	10	10/14/22	CPP	SW6010D	
Manganese	511	3.9	3.9	mg/Kg	10	10/14/22	CPP	SW6010D	
Sodium	836	8	3.3	mg/Kg	1	10/14/22	CPP	SW6010D	
Nickel	48.3	0.39	0.39	mg/Kg	1	10/14/22	CPP	SW6010D	
Lead	39.6	0.8	0.39	mg/Kg	1	10/14/22	CPP	SW6010D	
Antimony	ND	3.9	3.9	mg/Kg	1	10/14/22	CPP	SW6010D	
Selenium	ND	1.6	1.3	mg/Kg	1	10/14/22	CPP	SW6010D	
Thallium	ND	1.6	1.6	mg/Kg	1	10/14/22	CPP	SW6010D	
Trivalent Chromium	46.7	0.39	0.39	mg/kg	1	10/16/22		CALC 6010-7196	
Vanadium	59.9	0.39	0.39	mg/Kg	1	10/14/22	CPP	SW6010D	
Zinc	102	0.8	0.39	mg/Kg	1	10/14/22	TH	SW6010D	
Percent Solid	88			%		10/12/22	Q	SW846-%Solid	
Chromium, Hex. (SW3060A digestion	ND	0.45	0.45	mg/Kg	1	10/13/22	DK	SW7196A	
pH at 25C - Soil	9.61	1.00	1.00	pH Units	1	10/12/22 22:59	ER	SW846 9045D	1
Redox Potential	151			mV	1	10/12/22	ER	SM2580B-09	1

Project ID: IMJC
Client ID: IMJC NORTH

Phoenix I.D.: CM60739

Parameter	Result	RL/ PQL	LOD/ MDL	Units	Dilution	Date/Time	By	Reference	
Total Cyanide (SW9010C Distill.)	ND	0.57	0.284	mg/Kg	1	10/17/22	EG	SW9012B	
Soil Extraction for PCB	Completed					10/12/22	O/N	SW3545A	
Soil Extraction for Pesticides	Completed					10/12/22	O/N	SW3545A	
Mercury Digestion	Completed					10/13/22	KL/KL	SW7471B	
Soil Extraction for Herbicide	Completed					10/13/22	J/D	SW3546	
NJ EPH Extraction	Completed					10/13/22	M/B/C	NJDEP 10-08 R3	
Soil Extraction for SVOA	Completed					10/13/22	M/B/U	SW3546	
Total Metals Digest	Completed					10/12/22	J/AG	SW3050B	
NJ EPH Category 2									
Total EPH (C9-C40)	ND	56	56	mg/kg	1	10/14/22	JRB	NJEPH 10-08 R3	1
QA/QC Surrogates									
% COD (surr)	101			%	1	10/14/22	JRB	40 - 140 %	
% Terphenyl (surr)	103			%	1	10/14/22	JRB	40 - 140 %	
Chlorinated Herbicides									
2,4,5-T	ND	140	140	ug/Kg	10	10/14/22	JRB	SW8151A	
2,4,5-TP (Silvex)	ND	140	140	ug/Kg	10	10/14/22	JRB	SW8151A	
2,4-D	ND	280	280	ug/Kg	10	10/14/22	JRB	SW8151A	
2,4-DB	ND	2800	2800	ug/Kg	10	10/14/22	JRB	SW8151A	
Dalapon	ND	140	140	ug/Kg	10	10/14/22	JRB	SW8151A	
Dicamba	ND	140	140	ug/Kg	10	10/14/22	JRB	SW8151A	
Dichloroprop	ND	280	280	ug/Kg	10	10/14/22	JRB	SW8151A	
Dinoseb	ND	280	280	ug/Kg	10	10/14/22	JRB	SW8151A	
QA/QC Surrogates									
% DCAA	83			%	10	10/14/22	JRB	30 - 150 %	
% DCAA (Confirmation)	102			%	10	10/14/22	JRB	30 - 150 %	
Polychlorinated Biphenyls									
PCB-1016	ND	74	74	ug/Kg	2	10/13/22	SC	SW8082A	
PCB-1221	ND	74	74	ug/Kg	2	10/13/22	SC	SW8082A	
PCB-1232	ND	74	74	ug/Kg	2	10/13/22	SC	SW8082A	
PCB-1242	ND	74	74	ug/Kg	2	10/13/22	SC	SW8082A	
PCB-1248	ND	74	74	ug/Kg	2	10/13/22	SC	SW8082A	
PCB-1254	ND	74	74	ug/Kg	2	10/13/22	SC	SW8082A	
PCB-1260	ND	74	74	ug/Kg	2	10/13/22	SC	SW8082A	
PCB-1262	ND	74	74	ug/Kg	2	10/13/22	SC	SW8082A	
PCB-1268	ND	74	74	ug/Kg	2	10/13/22	SC	SW8082A	
QA/QC Surrogates									
% DCBP	90			%	2	10/13/22	SC	30 - 150 %	
% DCBP (Confirmation)	79			%	2	10/13/22	SC	30 - 150 %	
% TCMX	104			%	2	10/13/22	SC	30 - 150 %	
% TCMX (Confirmation)	88			%	2	10/13/22	SC	30 - 150 %	
Pesticides - Soil									
4,4' -DDD	ND	2.2	2.2	ug/Kg	2	10/14/22	AW	SW8081B	
4,4' -DDE	ND	2.2	2.2	ug/Kg	2	10/14/22	AW	SW8081B	
4,4' -DDT	5.0	2.2	2.2	ug/Kg	2	10/14/22	AW	SW8081B	
a-BHC	ND	1.5	1.5	ug/Kg	2	10/14/22	AW	SW8081B	

Parameter	Result	RL/ PQL	LOD/ MDL	Units	Dilution	Date/Time	By	Reference
a-Chlordane	ND	3.7	3.7	ug/Kg	2	10/14/22	AW	SW8081B
Alachlor	ND	3.7	3.7	ug/Kg	2	10/14/22	AW	SW8081B
Aldrin	ND	3.7	3.7	ug/Kg	2	10/14/22	AW	SW8081B
b-BHC	ND	1.5	1.5	ug/Kg	2	10/14/22	AW	SW8081B
Chlordane	ND	37	37	ug/Kg	2	10/14/22	AW	SW8081B
d-BHC	ND	7.4	7.4	ug/Kg	2	10/14/22	AW	SW8081B
Dieldrin	1.6	1.5	1.5	ug/Kg	2	10/14/22	AW	SW8081B
Endosulfan I	ND	7.4	7.4	ug/Kg	2	10/14/22	AW	SW8081B
Endosulfan II	ND	7.4	7.4	ug/Kg	2	10/14/22	AW	SW8081B
Endosulfan sulfate	ND	7.4	7.4	ug/Kg	2	10/14/22	AW	SW8081B
Endrin	ND	7.4	7.4	ug/Kg	2	10/14/22	AW	SW8081B
Endrin aldehyde	ND	7.4	7.4	ug/Kg	2	10/14/22	AW	SW8081B
Endrin ketone	ND	7.4	7.4	ug/Kg	2	10/14/22	AW	SW8081B
g-BHC	ND	1.5	1.5	ug/Kg	2	10/14/22	AW	SW8081B
g-Chlordane	ND	5.0	5.0	ug/Kg	2	10/14/22	AW	SW8081B
Heptachlor	ND	7.4	7.4	ug/Kg	2	10/14/22	AW	SW8081B
Heptachlor epoxide	ND	7.4	7.4	ug/Kg	2	10/14/22	AW	SW8081B
Methoxychlor	ND	37	37	ug/Kg	2	10/14/22	AW	SW8081B
Toxaphene	ND	150	150	ug/Kg	2	10/14/22	AW	SW8081B
QA/QC Surrogates								
% DCBP	79			%	2	10/14/22	AW	30 - 150 %
% DCBP (Confirmation)	71			%	2	10/14/22	AW	30 - 150 %
% TCMX	72			%	2	10/14/22	AW	30 - 150 %
% TCMX (Confirmation)	61			%	2	10/14/22	AW	30 - 150 %
Volatiles								
1,2,4-Trimethylbenzene	ND	2.8	0.28	ug/Kg	1	10/13/22	JLI	SW8260C
1,3,5-Trimethylbenzene	ND	2.8	0.28	ug/Kg	1	10/13/22	JLI	SW8260C
1,3-Dichlorobenzene	ND	2.8	0.28	ug/Kg	1	10/13/22	JLI	SW8260C
Naphthalene	ND	2.8	0.56	ug/Kg	1	10/13/22	JLI	SW8260C
n-Butylbenzene	ND	2.8	0.28	ug/Kg	1	10/13/22	JLI	SW8260C
n-Propylbenzene	ND	2.8	0.56	ug/Kg	1	10/13/22	JLI	SW8260C
p-Isopropyltoluene	ND	2.8	0.28	ug/Kg	1	10/13/22	JLI	SW8260C
sec-Butylbenzene	ND	2.8	0.28	ug/Kg	1	10/13/22	JLI	SW8260C
tert-Butylbenzene	ND	2.8	0.28	ug/Kg	1	10/13/22	JLI	SW8260C
QA/QC Surrogates								
% 1,2-dichlorobenzene-d4	96			%	1	10/13/22	JLI	70 - 130 %
% Bromofluorobenzene	93			%	1	10/13/22	JLI	70 - 130 %
% Dibromofluoromethane	97			%	1	10/13/22	JLI	70 - 130 %
% Toluene-d8	92			%	1	10/13/22	JLI	70 - 130 %
1,4-dioxane								
1,4-dioxane	ND	42	22	ug/kg	1	10/13/22	JLI	SW8260C
Volatiles								
1,1,1,2-Tetrachloroethane	ND	2.8	0.56	ug/Kg	1	10/13/22	JLI	SW8260C
1,1,1-Trichloroethane	ND	2.8	0.28	ug/Kg	1	10/13/22	JLI	SW8260C
1,1,2,2-Tetrachloroethane	ND	2.8	0.56	ug/Kg	1	10/13/22	JLI	SW8260C
1,1,2-Trichloroethane	ND	2.8	0.56	ug/Kg	1	10/13/22	JLI	SW8260C
1,1-Dichloroethane	ND	2.8	0.56	ug/Kg	1	10/13/22	JLI	SW8260C

Project ID: IMJC
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Phoenix I.D.: CM60739

Parameter	Result	RL/ PQL	LOD/ MDL	Units	Dilution	Date/Time	By	Reference
1,1-Dichloroethene	ND	2.8	0.28	ug/Kg	1	10/13/22	JLI	SW8260C
1,2,3-Trichlorobenzene	ND	2.8	0.56	ug/Kg	1	10/13/22	JLI	SW8260C
1,2,4-Trichlorobenzene	ND	2.8	0.56	ug/Kg	1	10/13/22	JLI	SW8260C
1,2-Dibromo-3-chloropropane	ND	2.8	0.56	ug/Kg	1	10/13/22	JLI	SW8260C
1,2-Dibromoethane	ND	2.5	0.28	ug/Kg	1	10/13/22	JLI	SW8260C
1,2-Dichlorobenzene	ND	2.8	0.28	ug/Kg	1	10/13/22	JLI	SW8260C
1,2-Dichloroethane	ND	2.8	0.28	ug/Kg	1	10/13/22	JLI	SW8260C
1,2-Dichloropropane	ND	2.8	0.56	ug/Kg	1	10/13/22	JLI	SW8260C
1,3-Dichlorobenzene	ND	2.8	0.28	ug/Kg	1	10/13/22	JLI	SW8260C
1,4-Dichlorobenzene	ND	2.8	0.28	ug/Kg	1	10/13/22	JLI	SW8260C
2-Hexanone	ND	14	2.8	ug/Kg	1	10/13/22	JLI	SW8260C
4-Methyl-2-pentanone	ND	14	2.8	ug/Kg	1	10/13/22	JLI	SW8260C
Acetone	ND	28	2.8	ug/Kg	1	10/13/22	JLI	SW8260C
Acrolein	ND	14	1.4	ug/Kg	1	10/13/22	JLI	SW8260C
Acrylonitrile	ND	5.6	0.28	ug/Kg	1	10/13/22	JLI	SW8260C
Benzene	ND	2.8	0.28	ug/Kg	1	10/13/22	JLI	SW8260C
Bromochloromethane	ND	2.8	0.28	ug/Kg	1	10/13/22	JLI	SW8260C
Bromodichloromethane	ND	2.8	0.56	ug/Kg	1	10/13/22	JLI	SW8260C
Bromoform	ND	2.8	0.56	ug/Kg	1	10/13/22	JLI	SW8260C
Bromomethane	ND	2.8	1.1	ug/Kg	1	10/13/22	JLI	SW8260C
Carbon Disulfide	ND	2.8	0.56	ug/Kg	1	10/13/22	JLI	SW8260C
Carbon tetrachloride	ND	2.8	0.56	ug/Kg	1	10/13/22	JLI	SW8260C
Chlorobenzene	ND	2.8	0.28	ug/Kg	1	10/13/22	JLI	SW8260C
Chloroethane	ND	2.8	0.28	ug/Kg	1	10/13/22	JLI	SW8260C
Chloroform	ND	2.8	0.28	ug/Kg	1	10/13/22	JLI	SW8260C
Chloromethane	ND	2.8	0.56	ug/Kg	1	10/13/22	JLI	SW8260C
cis-1,2-Dichloroethene	ND	2.8	0.28	ug/Kg	1	10/13/22	JLI	SW8260C
cis-1,3-Dichloropropene	ND	2.8	0.28	ug/Kg	1	10/13/22	JLI	SW8260C
Cyclohexane	ND	2.8	0.56	ug/Kg	1	10/13/22	JLI	SW8260C
Dibromochloromethane	ND	2.8	0.56	ug/Kg	1	10/13/22	JLI	SW8260C
Dichlorodifluoromethane	ND	2.8	0.28	ug/Kg	1	10/13/22	JLI	SW8260C
Ethylbenzene	ND	2.8	0.28	ug/Kg	1	10/13/22	JLI	SW8260C
Isopropylbenzene	ND	2.8	0.28	ug/Kg	1	10/13/22	JLI	SW8260C
m&p-Xylene	ND	2.8	0.56	ug/Kg	1	10/13/22	JLI	SW8260C
Methyl ethyl ketone	ND	17	2.8	ug/Kg	1	10/13/22	JLI	SW8260C
Methyl t-butyl ether (MTBE)	ND	5.6	0.56	ug/Kg	1	10/13/22	JLI	SW8260C
Methylacetate	ND	5.6	5.6	ug/Kg	1	10/13/22	JLI	SW8260C
Methylcyclohexane	ND	2.8	0.56	ug/Kg	1	10/13/22	JLI	SW8260C
Methylene chloride	ND	2.8	2.8	ug/Kg	1	10/13/22	JLI	SW8260C
o-Xylene	ND	2.8	0.56	ug/Kg	1	10/13/22	JLI	SW8260C
Styrene	ND	2.8	0.28	ug/Kg	1	10/13/22	JLI	SW8260C
tert-butyl alcohol	ND	56	11	ug/Kg	1	10/13/22	JLI	SW8260C
Tetrachloroethene	ND	2.8	0.56	ug/Kg	1	10/13/22	JLI	SW8260C
Toluene	ND	2.8	0.28	ug/Kg	1	10/13/22	JLI	SW8260C
Total Xylenes	ND	2.8	2.8	ug/Kg	1	10/13/22	JLI	SW8260C
trans-1,2-Dichloroethene	ND	2.8	0.28	ug/Kg	1	10/13/22	JLI	SW8260C
trans-1,3-Dichloropropene	ND	2.8	0.28	ug/Kg	1	10/13/22	JLI	SW8260C
Trichloroethene	ND	2.8	0.28	ug/Kg	1	10/13/22	JLI	SW8260C
Trichlorofluoromethane	ND	2.8	0.56	ug/Kg	1	10/13/22	JLI	SW8260C

Parameter	Result		RL/ PQL	LOD/ MDL	Units	Dilution	Date/Time	By	Reference	
Trichlorotrifluoroethane	ND		2.8	0.28	ug/Kg	1	10/13/22	JLI	SW8260C	
Vinyl chloride	ND		2.8	0.28	ug/Kg	1	10/13/22	JLI	SW8260C	
QA/QC Surrogates										
% 1,2-dichlorobenzene-d4	96				%	1	10/13/22	JLI	70 - 130 %	
% Bromofluorobenzene	93				%	1	10/13/22	JLI	70 - 130 %	
% Dibromofluoromethane	97				%	1	10/13/22	JLI	70 - 130 %	
% Toluene-d8	92				%	1	10/13/22	JLI	70 - 130 %	
Vinyl Acetate	ND		28	28	ug/Kg	1	10/13/22	JLI	SW8260C	
Semivolatiles										
1,1-Biphenyl	ND		260	110	ug/Kg	1	10/14/22	WB	SW8270D	
1,2,4,5-Tetrachlorobenzene	ND		260	130	ug/Kg	1	10/14/22	WB	SW8270D	
1,2-Diphenylhydrazine	ND		370	370	ug/Kg	1	10/14/22	WB	SW8270D	
2,2'-Oxybis(1-Chloropropane)	ND		260	100	ug/Kg	1	10/14/22	WB	SW8270D	1
2,3,4,6-tetrachlorophenol	ND		260	170	ug/Kg	1	10/14/22	WB	SW8270D	
2,4,5-Trichlorophenol	ND		260	200	ug/Kg	1	10/14/22	WB	SW8270D	
2,4,6-Trichlorophenol	ND		150	120	ug/Kg	1	10/14/22	WB	SW8270D	
2,4-Dichlorophenol	ND		150	130	ug/Kg	1	10/14/22	WB	SW8270D	
2,4-Dimethylphenol	ND		260	92	ug/Kg	1	10/14/22	WB	SW8270D	
2,4-Dinitrophenol	ND		260	260	ug/Kg	1	10/14/22	WB	SW8270D	
2,4-Dinitrotoluene	ND		150	150	ug/Kg	1	10/14/22	WB	SW8270D	
2,6-Dinitrotoluene	ND		150	120	ug/Kg	1	10/14/22	WB	SW8270D	
2-Chloronaphthalene	ND		260	110	ug/Kg	1	10/14/22	WB	SW8270D	
2-Chlorophenol	ND		260	110	ug/Kg	1	10/14/22	WB	SW8270D	
2-Methylnaphthalene	ND		260	110	ug/Kg	1	10/14/22	WB	SW8270D	
2-Methylphenol (o-cresol)	ND		260	170	ug/Kg	1	10/14/22	WB	SW8270D	
2-Nitroaniline	ND		300	260	ug/Kg	1	10/14/22	WB	SW8270D	
2-Nitrophenol	ND		260	240	ug/Kg	1	10/14/22	WB	SW8270D	
3&4-Methylphenol (m&p-cresol)	ND		260	150	ug/Kg	1	10/14/22	WB	SW8270D	1
3,3'-Dichlorobenzidine	ND		150	150	ug/Kg	1	10/14/22	WB	SW8270D	
3-Nitroaniline	ND		740	260	ug/Kg	1	10/14/22	WB	SW8270D	
4,6-Dinitro-2-methylphenol	ND		260	260	ug/Kg	1	10/14/22	WB	SW8270D	
4-Bromophenyl phenyl ether	ND		260	110	ug/Kg	1	10/14/22	WB	SW8270D	
4-Chloro-3-methylphenol	ND		260	130	ug/Kg	1	10/14/22	WB	SW8270D	
4-Chloroaniline	ND		740	170	ug/Kg	1	10/14/22	WB	SW8270D	
4-Chlorophenyl phenyl ether	ND		260	120	ug/Kg	1	10/14/22	WB	SW8270D	
4-Nitroaniline	ND		370	120	ug/Kg	1	10/14/22	WB	SW8270D	
4-Nitrophenol	ND		370	170	ug/Kg	1	10/14/22	WB	SW8270D	
Acenaphthene	ND		260	110	ug/Kg	1	10/14/22	WB	SW8270D	
Acenaphthylene	ND		150	100	ug/Kg	1	10/14/22	WB	SW8270D	
Acetophenone	ND		260	120	ug/Kg	1	10/14/22	WB	SW8270D	
Anthracene	200	J	260	120	ug/Kg	1	10/14/22	WB	SW8270D	
Atrazine	ND		150	110	ug/Kg	1	10/14/22	WB	SW8270D	
Benz(a)anthracene	390		260	120	ug/Kg	1	10/14/22	WB	SW8270D	
Benzaldehyde	ND		260	110	ug/Kg	1	10/14/22	WB	SW8270D	
Benzidine	ND		260	150	ug/Kg	1	10/14/22	WB	SW8270D	
Benzo(a)pyrene	400		150	120	ug/Kg	1	10/14/22	WB	SW8270D	
Benzo(b)fluoranthene	290		260	130	ug/Kg	1	10/14/22	WB	SW8270D	
Benzo(ghi)perylene	230	J	260	120	ug/Kg	1	10/14/22	WB	SW8270D	

Project ID: IMJC
Client ID: IMJC NORTH

Phoenix I.D.: CM60739

Parameter	Result	RL/ PQL	LOD/ MDL	Units	Dilution	Date/Time	By	Reference
Benzo(k)fluoranthene	290	260	120	ug/Kg	1	10/14/22	WB	SW8270D
Benzyl Alcohol	ND	370	370	ug/Kg	1	10/14/22	WB	SW8270D
Benzyl butyl phthalate	ND	260	96	ug/Kg	1	10/14/22	WB	SW8270D
Bis(2-chloroethoxy)methane	ND	260	100	ug/Kg	1	10/14/22	WB	SW8270D
Bis(2-chloroethyl)ether	ND	150	100	ug/Kg	1	10/14/22	WB	SW8270D
Bis(2-ethylhexyl)phthalate	ND	260	110	ug/Kg	1	10/14/22	WB	SW8270D
Caprolactam	ND	260	260	ug/Kg	1	10/14/22	WB	SW8270D
Carbazole	ND	190	150	ug/Kg	1	10/14/22	WB	SW8270D
Chrysene	360	260	120	ug/Kg	1	10/14/22	WB	SW8270D
Dibenz(a,h)anthracene	ND	150	120	ug/Kg	1	10/14/22	WB	SW8270D
Dibenzofuran	ND	260	110	ug/Kg	1	10/14/22	WB	SW8270D
Diethyl phthalate	ND	260	120	ug/Kg	1	10/14/22	WB	SW8270D
Dimethylphthalate	ND	260	120	ug/Kg	1	10/14/22	WB	SW8270D
Di-n-butylphthalate	ND	260	99	ug/Kg	1	10/14/22	WB	SW8270D
Di-n-octylphthalate	ND	260	96	ug/Kg	1	10/14/22	WB	SW8270D
Fluoranthene	820	260	120	ug/Kg	1	10/14/22	WB	SW8270D
Fluorene	ND	260	120	ug/Kg	1	10/14/22	WB	SW8270D
Hexachlorobenzene	ND	150	110	ug/Kg	1	10/14/22	WB	SW8270D
Hexachlorobutadiene	ND	260	130	ug/Kg	1	10/14/22	WB	SW8270D
Hexachlorocyclopentadiene	ND	260	110	ug/Kg	1	10/14/22	WB	SW8270D
Hexachloroethane	ND	150	110	ug/Kg	1	10/14/22	WB	SW8270D
Indeno(1,2,3-cd)pyrene	280	260	120	ug/Kg	1	10/14/22	WB	SW8270D
Isophorone	ND	150	100	ug/Kg	1	10/14/22	WB	SW8270D
Naphthalene	ND	260	110	ug/Kg	1	10/14/22	WB	SW8270D
Nitrobenzene	ND	150	130	ug/Kg	1	10/14/22	WB	SW8270D
N-Nitrosodimethylamine	ND	260	100	ug/Kg	1	10/14/22	WB	SW8270D
N-Nitrosodi-n-propylamine	ND	150	120	ug/Kg	1	10/14/22	WB	SW8270D
N-Nitrosodiphenylamine	ND	150	140	ug/Kg	1	10/14/22	WB	SW8270D
Pentachlorophenol	ND	260	140	ug/Kg	1	10/14/22	WB	SW8270D
Phenanthrene	710	150	110	ug/Kg	1	10/14/22	WB	SW8270D
Phenol	ND	260	120	ug/Kg	1	10/14/22	WB	SW8270D
Pyrene	670	260	130	ug/Kg	1	10/14/22	WB	SW8270D
QA/QC Surrogates								
% 2,4,6-Tribromophenol	115			%	1	10/14/22	WB	30 - 130 %
% 2-Fluorobiphenyl	78			%	1	10/14/22	WB	30 - 130 %
% 2-Fluorophenol	79			%	1	10/14/22	WB	30 - 130 %
% Nitrobenzene-d5	86			%	1	10/14/22	WB	30 - 130 %
% Phenol-d5	89			%	1	10/14/22	WB	30 - 130 %
% Terphenyl-d14	88			%	1	10/14/22	WB	30 - 130 %
Aniline	ND	370	370	ug/Kg	1	10/14/22	WB	SW8270D
Benzoic Acid	ND	370	260	ug/Kg	1	10/14/22	WB	SW8270D
Parathion	ND	370	150	ug/Kg	1	10/14/22	WB	SW8270D

Parameter	Result	RL/ PQL	LOD/ MDL	Units	Dilution	Date/Time	By	Reference

1 = This parameter is not certified by the primary accrediting authority (NY NELAC) for this matrix. NY NELAC does not offer certification for all parameters at this time.

RL/PQL=Reporting/Practical Quantitation Level (Equivalent to NELAC LOQ, Limit of Quantitation) ND=Not Detected BRL=Below Reporting Level L=Biased Low J=Estimated Below RL LOD=Limit of Detection MDL=Method Detection Limit1
QA/QC Surrogates: Surrogates are compounds (preceeded with a %) added by the lab to determine analysis efficiency. Surrogate results(%) listed in the report are not "detected" compounds.

Comments:

Per 1.4.6 of EPA method 8270D, 1,2-Diphenylhydrazine is unstable and readily converts to Azobenzene. Azobenzene is used for the calibration of 1,2-Diphenylhydrazine.

Please be advised that the NY 375 soil criteria for chromium are based on hexavalent chromium and trivalent chromium.

The regulatory hold time for pH is immediately. This pH was performed in the laboratory and may be considered outside of hold-time.

Hexavalent Chromium:
This sample is in a reducing state.

Semi-Volatile Comment:
To achieve client's objectives, where the lowest calibration standard or LOD justifies lowering the RL/PQL, the RL/PQL of some compounds have been lowered to meet criteria.

All soils, solids and sludges are reported on a dry weight basis unless otherwise noted in the sample comments.

If you are the client above and have any questions concerning this testing, please do not hesitate to contact Phoenix Client Services at ext.200.
The contents of this report cannot be discussed with anyone other than the client listed above without their written consent.

Phyllis Shiller, Laboratory Director
October 21, 2022
Official Report Release To Follow

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

ACCREDITED IN ACCORDANCE WITH nelac NY # 11301

Analysis Report

October 21, 2022

FOR: Attn: Mr. Jeff Bogoian
Impact Consulting
170 Keyland Court
Bohemia NY 11716

Sample Information		Custody Information		Date	Time
Matrix:	SOIL	Collected by:	SR	10/12/22	8:05
Location Code:	IMPACTJB-IEC	Received by:	CP	10/12/22	17:14
Rush Request:	Standard	Analyzed by:	see "By" below		
P.O.#:	FAC-20				

Laboratory Data

SDG ID: GCM60739
Phoenix ID: CM60740

Project ID: IMJC
Client ID: IMJC SOUTH

Parameter	Result	RL/ PQL	LOD/ MDL	Units	Dilution	Date/Time	By	Reference	
Silver	ND	0.34	0.34	mg/Kg	1	10/14/22	CPP	SW6010D	
Aluminum	16100	34	6.8	mg/Kg	10	10/14/22	CPP	SW6010D	
Arsenic	2.05	0.68	0.68	mg/Kg	1	10/14/22	CPP	SW6010D	
Barium	165	0.7	0.34	mg/Kg	1	10/14/22	CPP	SW6010D	
Beryllium	0.42	0.27	0.14	mg/Kg	1	10/14/22	CPP	SW6010D	
Calcium	7240	3.4	3.1	mg/Kg	1	10/14/22	CPP	SW6010D	
Cadmium	1.48	0.34	0.34	mg/Kg	1	10/14/22	CPP	SW6010D	
Cobalt	22.2	0.34	0.34	mg/Kg	1	10/14/22	CPP	SW6010D	
Chromium	45.8	0.34	0.34	mg/Kg	1	10/14/22	CPP	SW6010D	
Copper	63.6	0.7	0.34	mg/kg	1	10/14/22	CPP	SW6010D	
Iron	30000	34	34	mg/Kg	10	10/14/22	CPP	SW6010D	
Mercury	0.10	0.03	0.02	mg/Kg	2	10/13/22	IE	SW7471B	
Potassium	7550	68	26	mg/Kg	10	10/14/22	CPP	SW6010D	
Magnesium	11700	34	34	mg/Kg	10	10/14/22	CPP	SW6010D	
Manganese	345	3.4	3.4	mg/Kg	10	10/14/22	CPP	SW6010D	
Sodium	752	7	2.9	mg/Kg	1	10/14/22	CPP	SW6010D	
Nickel	50.1	0.34	0.34	mg/Kg	1	10/14/22	CPP	SW6010D	
Lead	29.4	0.7	0.34	mg/Kg	1	10/14/22	CPP	SW6010D	
Antimony	ND	3.4	3.4	mg/Kg	1	10/14/22	CPP	SW6010D	
Selenium	ND	1.4	1.2	mg/Kg	1	10/14/22	CPP	SW6010D	
Thallium	ND	1.4	1.4	mg/Kg	1	10/14/22	CPP	SW6010D	
Trivalent Chromium	45.8	0.34	0.34	mg/kg	1	10/16/22		CALC 6010-7196	
Vanadium	56.0	0.34	0.34	mg/Kg	1	10/14/22	CPP	SW6010D	
Zinc	107	0.7	0.34	mg/Kg	1	10/14/22	TH	SW6010D	
Percent Solid	90			%		10/12/22	Q	SW846-%Solid	
Chromium, Hex. (SW3060A digestion	ND	0.43	0.43	mg/Kg	1	10/13/22	DK	SW7196A	
pH at 25C - Soil	9.75	1.00	1.00	pH Units	1	10/12/22 22:59	ER	SW846 9045D	1
Redox Potential	153			mV	1	10/12/22	ER	SM2580B-09	1

Project ID: IMJC
Client ID: IMJC SOUTH

Phoenix I.D.: CM60740

Parameter	Result	RL/ PQL	LOD/ MDL	Units	Dilution	Date/Time	By	Reference	
Total Cyanide (SW9010C Distill.)	ND	0.56	0.278	mg/Kg	1	10/17/22	EG	SW9012B	
Soil Extraction for PCB	Completed					10/12/22	O/N	SW3545A	
Soil Extraction for Pesticides	Completed					10/12/22	O/N	SW3545A	
Mercury Digestion	Completed					10/13/22	KL/KL	SW7471B	
Soil Extraction for Herbicide	Completed					10/13/22	J/D	SW3546	
NJ EPH Extraction	Completed					10/13/22	M/B/C	NJDEP 10-08 R3	
Soil Extraction for SVOA	Completed					10/13/22	M/B/U	SW3546	
Total Metals Digest	Completed					10/12/22	J/AG	SW3050B	
NJ EPH Category 2									
Total EPH (C9-C40)	ND	55	55	mg/kg	1	10/14/22	JRB	NJEPH 10-08 R3	1
QA/QC Surrogates									
% COD (surr)	91			%	1	10/14/22	JRB	40 - 140 %	
% Terphenyl (surr)	102			%	1	10/14/22	JRB	40 - 140 %	
Chlorinated Herbicides									
2,4,5-T	ND	140	140	ug/Kg	10	10/14/22	JRB	SW8151A	
2,4,5-TP (Silvex)	ND	140	140	ug/Kg	10	10/14/22	JRB	SW8151A	
2,4-D	ND	270	270	ug/Kg	10	10/14/22	JRB	SW8151A	
2,4-DB	ND	2700	2700	ug/Kg	10	10/14/22	JRB	SW8151A	
Dalapon	ND	140	140	ug/Kg	10	10/14/22	JRB	SW8151A	
Dicamba	ND	140	140	ug/Kg	10	10/14/22	JRB	SW8151A	
Dichloroprop	ND	270	270	ug/Kg	10	10/14/22	JRB	SW8151A	
Dinoseb	ND	270	270	ug/Kg	10	10/14/22	JRB	SW8151A	
QA/QC Surrogates									
% DCAA	86			%	10	10/14/22	JRB	30 - 150 %	
% DCAA (Confirmation)	101			%	10	10/14/22	JRB	30 - 150 %	
Polychlorinated Biphenyls									
PCB-1016	ND	72	72	ug/Kg	2	10/13/22	SC	SW8082A	
PCB-1221	ND	72	72	ug/Kg	2	10/13/22	SC	SW8082A	
PCB-1232	ND	72	72	ug/Kg	2	10/13/22	SC	SW8082A	
PCB-1242	ND	72	72	ug/Kg	2	10/13/22	SC	SW8082A	
PCB-1248	ND	72	72	ug/Kg	2	10/13/22	SC	SW8082A	
PCB-1254	ND	72	72	ug/Kg	2	10/13/22	SC	SW8082A	
PCB-1260	ND	72	72	ug/Kg	2	10/13/22	SC	SW8082A	
PCB-1262	ND	72	72	ug/Kg	2	10/13/22	SC	SW8082A	
PCB-1268	ND	72	72	ug/Kg	2	10/13/22	SC	SW8082A	
QA/QC Surrogates									
% DCBP	92			%	2	10/13/22	SC	30 - 150 %	
% DCBP (Confirmation)	84			%	2	10/13/22	SC	30 - 150 %	
% TCMX	105			%	2	10/13/22	SC	30 - 150 %	
% TCMX (Confirmation)	96			%	2	10/13/22	SC	30 - 150 %	
Pesticides - Soil									
4,4' -DDD	ND	2.2	2.2	ug/Kg	2	10/13/22	AW	SW8081B	
4,4' -DDE	ND	2.2	2.2	ug/Kg	2	10/13/22	AW	SW8081B	
4,4' -DDT	7.1	2.2	2.2	ug/Kg	2	10/13/22	AW	SW8081B	
a-BHC	ND	1.4	1.4	ug/Kg	2	10/13/22	AW	SW8081B	

Parameter	Result	RL/ PQL	LOD/ MDL	Units	Dilution	Date/Time	By	Reference
a-Chlordane	5.5	3.6	3.6	ug/Kg	2	10/13/22	AW	SW8081B
Alachlor	ND	3.6	3.6	ug/Kg	2	10/13/22	AW	SW8081B
Aldrin	ND	3.6	3.6	ug/Kg	2	10/13/22	AW	SW8081B
b-BHC	ND	1.4	1.4	ug/Kg	2	10/13/22	AW	SW8081B
Chlordane	ND	36	36	ug/Kg	2	10/13/22	AW	SW8081B
d-BHC	ND	7.2	7.2	ug/Kg	2	10/13/22	AW	SW8081B
Dieldrin	ND	1.4	1.4	ug/Kg	2	10/13/22	AW	SW8081B
Endosulfan I	ND	7.2	7.2	ug/Kg	2	10/13/22	AW	SW8081B
Endosulfan II	ND	7.2	7.2	ug/Kg	2	10/13/22	AW	SW8081B
Endosulfan sulfate	ND	7.2	7.2	ug/Kg	2	10/13/22	AW	SW8081B
Endrin	ND	7.2	7.2	ug/Kg	2	10/13/22	AW	SW8081B
Endrin aldehyde	ND	7.2	7.2	ug/Kg	2	10/13/22	AW	SW8081B
Endrin ketone	ND	7.2	7.2	ug/Kg	2	10/13/22	AW	SW8081B
g-BHC	ND	1.4	1.4	ug/Kg	2	10/13/22	AW	SW8081B
g-Chlordane	4.4	3.6	3.6	ug/Kg	2	10/13/22	AW	SW8081B
Heptachlor	ND	7.2	7.2	ug/Kg	2	10/13/22	AW	SW8081B
Heptachlor epoxide	ND	7.2	7.2	ug/Kg	2	10/13/22	AW	SW8081B
Methoxychlor	ND	36	36	ug/Kg	2	10/13/22	AW	SW8081B
Toxaphene	ND	140	140	ug/Kg	2	10/13/22	AW	SW8081B
QA/QC Surrogates								
% DCBP	80			%	2	10/13/22	AW	30 - 150 %
% DCBP (Confirmation)	81			%	2	10/13/22	AW	30 - 150 %
% TCMX	78			%	2	10/13/22	AW	30 - 150 %
% TCMX (Confirmation)	74			%	2	10/13/22	AW	30 - 150 %
Volatiles								
1,2,4-Trimethylbenzene	ND	3.3	0.33	ug/Kg	1	10/13/22	JLI	SW8260C
1,3,5-Trimethylbenzene	ND	3.3	0.33	ug/Kg	1	10/13/22	JLI	SW8260C
1,3-Dichlorobenzene	ND	3.3	0.33	ug/Kg	1	10/13/22	JLI	SW8260C
Naphthalene	ND	3.3	0.67	ug/Kg	1	10/13/22	JLI	SW8260C
n-Butylbenzene	ND	3.3	0.33	ug/Kg	1	10/13/22	JLI	SW8260C
n-Propylbenzene	ND	3.3	0.67	ug/Kg	1	10/13/22	JLI	SW8260C
p-Isopropyltoluene	ND	3.3	0.33	ug/Kg	1	10/13/22	JLI	SW8260C
sec-Butylbenzene	ND	3.3	0.33	ug/Kg	1	10/13/22	JLI	SW8260C
tert-Butylbenzene	ND	3.3	0.33	ug/Kg	1	10/13/22	JLI	SW8260C
QA/QC Surrogates								
% 1,2-dichlorobenzene-d4	97			%	1	10/13/22	JLI	70 - 130 %
% Bromofluorobenzene	94			%	1	10/13/22	JLI	70 - 130 %
% Dibromofluoromethane	99			%	1	10/13/22	JLI	70 - 130 %
% Toluene-d8	91			%	1	10/13/22	JLI	70 - 130 %
1,4-dioxane								
1,4-dioxane	ND	50	27	ug/kg	1	10/13/22	JLI	SW8260C
Volatiles								
1,1,1,2-Tetrachloroethane	ND	3.3	0.67	ug/Kg	1	10/13/22	JLI	SW8260C
1,1,1-Trichloroethane	ND	3.3	0.33	ug/Kg	1	10/13/22	JLI	SW8260C
1,1,2,2-Tetrachloroethane	ND	3.3	0.67	ug/Kg	1	10/13/22	JLI	SW8260C
1,1,2-Trichloroethane	ND	3.3	0.67	ug/Kg	1	10/13/22	JLI	SW8260C
1,1-Dichloroethane	ND	3.3	0.67	ug/Kg	1	10/13/22	JLI	SW8260C

Project ID: IMJC
Client ID: IMJC SOUTH

Phoenix I.D.: CM60740

Parameter	Result	RL/ PQL	LOD/ MDL	Units	Dilution	Date/Time	By	Reference
1,1-Dichloroethene	ND	3.3	0.33	ug/Kg	1	10/13/22	JLI	SW8260C
1,2,3-Trichlorobenzene	ND	3.3	0.67	ug/Kg	1	10/13/22	JLI	SW8260C
1,2,4-Trichlorobenzene	ND	3.3	0.67	ug/Kg	1	10/13/22	JLI	SW8260C
1,2-Dibromo-3-chloropropane	ND	3.3	0.67	ug/Kg	1	10/13/22	JLI	SW8260C
1,2-Dibromoethane	ND	3.0	0.33	ug/Kg	1	10/13/22	JLI	SW8260C
1,2-Dichlorobenzene	ND	3.3	0.33	ug/Kg	1	10/13/22	JLI	SW8260C
1,2-Dichloroethane	ND	3.3	0.33	ug/Kg	1	10/13/22	JLI	SW8260C
1,2-Dichloropropane	ND	3.3	0.67	ug/Kg	1	10/13/22	JLI	SW8260C
1,3-Dichlorobenzene	ND	3.3	0.33	ug/Kg	1	10/13/22	JLI	SW8260C
1,4-Dichlorobenzene	ND	3.3	0.33	ug/Kg	1	10/13/22	JLI	SW8260C
2-Hexanone	ND	17	3.3	ug/Kg	1	10/13/22	JLI	SW8260C
4-Methyl-2-pentanone	ND	17	3.3	ug/Kg	1	10/13/22	JLI	SW8260C
Acetone	ND	33	3.3	ug/Kg	1	10/13/22	JLI	SW8260C
Acrolein	ND	17	1.7	ug/Kg	1	10/13/22	JLI	SW8260C
Acrylonitrile	ND	6.7	0.33	ug/Kg	1	10/13/22	JLI	SW8260C
Benzene	ND	3.3	0.33	ug/Kg	1	10/13/22	JLI	SW8260C
Bromochloromethane	ND	3.3	0.33	ug/Kg	1	10/13/22	JLI	SW8260C
Bromodichloromethane	ND	3.3	0.67	ug/Kg	1	10/13/22	JLI	SW8260C
Bromoform	ND	3.3	0.67	ug/Kg	1	10/13/22	JLI	SW8260C
Bromomethane	ND	3.3	1.3	ug/Kg	1	10/13/22	JLI	SW8260C
Carbon Disulfide	ND	3.3	0.67	ug/Kg	1	10/13/22	JLI	SW8260C
Carbon tetrachloride	ND	3.3	0.67	ug/Kg	1	10/13/22	JLI	SW8260C
Chlorobenzene	ND	3.3	0.33	ug/Kg	1	10/13/22	JLI	SW8260C
Chloroethane	ND	3.3	0.33	ug/Kg	1	10/13/22	JLI	SW8260C
Chloroform	ND	3.3	0.33	ug/Kg	1	10/13/22	JLI	SW8260C
Chloromethane	ND	3.3	0.67	ug/Kg	1	10/13/22	JLI	SW8260C
cis-1,2-Dichloroethene	ND	3.3	0.33	ug/Kg	1	10/13/22	JLI	SW8260C
cis-1,3-Dichloropropene	ND	3.3	0.33	ug/Kg	1	10/13/22	JLI	SW8260C
Cyclohexane	ND	3.3	0.67	ug/Kg	1	10/13/22	JLI	SW8260C
Dibromochloromethane	ND	3.3	0.67	ug/Kg	1	10/13/22	JLI	SW8260C
Dichlorodifluoromethane	ND	3.3	0.33	ug/Kg	1	10/13/22	JLI	SW8260C
Ethylbenzene	ND	3.3	0.33	ug/Kg	1	10/13/22	JLI	SW8260C
Isopropylbenzene	ND	3.3	0.33	ug/Kg	1	10/13/22	JLI	SW8260C
m&p-Xylene	ND	3.3	0.67	ug/Kg	1	10/13/22	JLI	SW8260C
Methyl ethyl ketone	ND	20	3.3	ug/Kg	1	10/13/22	JLI	SW8260C
Methyl t-butyl ether (MTBE)	ND	6.7	0.67	ug/Kg	1	10/13/22	JLI	SW8260C
Methylacetate	ND	6.7	6.7	ug/Kg	1	10/13/22	JLI	SW8260C
Methylcyclohexane	ND	3.3	0.67	ug/Kg	1	10/13/22	JLI	SW8260C
Methylene chloride	ND	3.3	3.3	ug/Kg	1	10/13/22	JLI	SW8260C
o-Xylene	ND	3.3	0.67	ug/Kg	1	10/13/22	JLI	SW8260C
Styrene	ND	3.3	0.33	ug/Kg	1	10/13/22	JLI	SW8260C
tert-butyl alcohol	ND	67	13	ug/Kg	1	10/13/22	JLI	SW8260C
Tetrachloroethene	ND	3.3	0.67	ug/Kg	1	10/13/22	JLI	SW8260C
Toluene	ND	3.3	0.33	ug/Kg	1	10/13/22	JLI	SW8260C
Total Xylenes	ND	3.3	3.3	ug/Kg	1	10/13/22	JLI	SW8260C
trans-1,2-Dichloroethene	ND	3.3	0.33	ug/Kg	1	10/13/22	JLI	SW8260C
trans-1,3-Dichloropropene	ND	3.3	0.33	ug/Kg	1	10/13/22	JLI	SW8260C
Trichloroethene	ND	3.3	0.33	ug/Kg	1	10/13/22	JLI	SW8260C
Trichlorofluoromethane	ND	3.3	0.67	ug/Kg	1	10/13/22	JLI	SW8260C

Parameter	Result		RL/ PQL	LOD/ MDL	Units	Dilution	Date/Time	By	Reference	
Trichlorotrifluoroethane	ND		3.3	0.33	ug/Kg	1	10/13/22	JLI	SW8260C	
Vinyl chloride	ND		3.3	0.33	ug/Kg	1	10/13/22	JLI	SW8260C	
QA/QC Surrogates										
% 1,2-dichlorobenzene-d4	97				%	1	10/13/22	JLI	70 - 130 %	
% Bromofluorobenzene	94				%	1	10/13/22	JLI	70 - 130 %	
% Dibromofluoromethane	99				%	1	10/13/22	JLI	70 - 130 %	
% Toluene-d8	91				%	1	10/13/22	JLI	70 - 130 %	
Vinyl Acetate	ND		33	33	ug/Kg	1	10/13/22	JLI	SW8260C	
Semivolatiles										
1,1-Biphenyl	ND		260	110	ug/Kg	1	10/14/22	WB	SW8270D	
1,2,4,5-Tetrachlorobenzene	ND		260	130	ug/Kg	1	10/14/22	WB	SW8270D	
1,2-Diphenylhydrazine	ND		370	370	ug/Kg	1	10/14/22	WB	SW8270D	
2,2'-Oxybis(1-Chloropropane)	ND		260	100	ug/Kg	1	10/14/22	WB	SW8270D	1
2,3,4,6-tetrachlorophenol	ND		260	170	ug/Kg	1	10/14/22	WB	SW8270D	
2,4,5-Trichlorophenol	ND		260	200	ug/Kg	1	10/14/22	WB	SW8270D	
2,4,6-Trichlorophenol	ND		150	120	ug/Kg	1	10/14/22	WB	SW8270D	
2,4-Dichlorophenol	ND		150	130	ug/Kg	1	10/14/22	WB	SW8270D	
2,4-Dimethylphenol	ND		260	91	ug/Kg	1	10/14/22	WB	SW8270D	
2,4-Dinitrophenol	ND		260	260	ug/Kg	1	10/14/22	WB	SW8270D	
2,4-Dinitrotoluene	ND		150	140	ug/Kg	1	10/14/22	WB	SW8270D	
2,6-Dinitrotoluene	ND		150	120	ug/Kg	1	10/14/22	WB	SW8270D	
2-Chloronaphthalene	ND		260	100	ug/Kg	1	10/14/22	WB	SW8270D	
2-Chlorophenol	ND		260	100	ug/Kg	1	10/14/22	WB	SW8270D	
2-Methylnaphthalene	ND		260	110	ug/Kg	1	10/14/22	WB	SW8270D	
2-Methylphenol (o-cresol)	ND		260	170	ug/Kg	1	10/14/22	WB	SW8270D	
2-Nitroaniline	ND		300	260	ug/Kg	1	10/14/22	WB	SW8270D	
2-Nitrophenol	ND		260	230	ug/Kg	1	10/14/22	WB	SW8270D	
3&4-Methylphenol (m&p-cresol)	ND		260	140	ug/Kg	1	10/14/22	WB	SW8270D	1
3,3'-Dichlorobenzidine	ND		150	150	ug/Kg	1	10/14/22	WB	SW8270D	
3-Nitroaniline	ND		730	260	ug/Kg	1	10/14/22	WB	SW8270D	
4,6-Dinitro-2-methylphenol	ND		260	260	ug/Kg	1	10/14/22	WB	SW8270D	
4-Bromophenyl phenyl ether	ND		260	110	ug/Kg	1	10/14/22	WB	SW8270D	
4-Chloro-3-methylphenol	ND		260	130	ug/Kg	1	10/14/22	WB	SW8270D	
4-Chloroaniline	ND		730	170	ug/Kg	1	10/14/22	WB	SW8270D	
4-Chlorophenyl phenyl ether	ND		260	120	ug/Kg	1	10/14/22	WB	SW8270D	
4-Nitroaniline	ND		370	120	ug/Kg	1	10/14/22	WB	SW8270D	
4-Nitrophenol	ND		370	160	ug/Kg	1	10/14/22	WB	SW8270D	
Acenaphthene	ND		260	110	ug/Kg	1	10/14/22	WB	SW8270D	
Acenaphthylene	ND		150	100	ug/Kg	1	10/14/22	WB	SW8270D	
Acetophenone	ND		260	110	ug/Kg	1	10/14/22	WB	SW8270D	
Anthracene	ND		260	120	ug/Kg	1	10/14/22	WB	SW8270D	
Atrazine	ND		150	110	ug/Kg	1	10/14/22	WB	SW8270D	
Benz(a)anthracene	160	J	260	120	ug/Kg	1	10/14/22	WB	SW8270D	
Benzaldehyde	ND		260	110	ug/Kg	1	10/14/22	WB	SW8270D	
Benzidine	ND		260	150	ug/Kg	1	10/14/22	WB	SW8270D	
Benzo(a)pyrene	160		150	120	ug/Kg	1	10/14/22	WB	SW8270D	
Benzo(b)fluoranthene	ND		260	120	ug/Kg	1	10/14/22	WB	SW8270D	
Benzo(ghi)perylene	ND		260	120	ug/Kg	1	10/14/22	WB	SW8270D	

Project ID: IMJC
Client ID: IMJC SOUTH

Phoenix I.D.: CM60740

Parameter	Result		RL/ PQL	LOD/ MDL	Units	Dilution	Date/Time	By	Reference
Benzo(k)fluoranthene	ND		260	120	ug/Kg	1	10/14/22	WB	SW8270D
Benzyl Alcohol	ND		370	370	ug/Kg	1	10/14/22	WB	SW8270D
Benzyl butyl phthalate	ND		260	94	ug/Kg	1	10/14/22	WB	SW8270D
Bis(2-chloroethoxy)methane	ND		260	100	ug/Kg	1	10/14/22	WB	SW8270D
Bis(2-chloroethyl)ether	ND		150	99	ug/Kg	1	10/14/22	WB	SW8270D
Bis(2-ethylhexyl)phthalate	260		260	110	ug/Kg	1	10/14/22	WB	SW8270D
Caprolactam	ND		260	260	ug/Kg	1	10/14/22	WB	SW8270D
Carbazole	ND		180	150	ug/Kg	1	10/14/22	WB	SW8270D
Chrysene	160	J	260	120	ug/Kg	1	10/14/22	WB	SW8270D
Dibenz(a,h)anthracene	ND		150	120	ug/Kg	1	10/14/22	WB	SW8270D
Dibenzofuran	ND		260	110	ug/Kg	1	10/14/22	WB	SW8270D
Diethyl phthalate	ND		260	120	ug/Kg	1	10/14/22	WB	SW8270D
Dimethylphthalate	ND		260	110	ug/Kg	1	10/14/22	WB	SW8270D
Di-n-butylphthalate	ND		260	97	ug/Kg	1	10/14/22	WB	SW8270D
Di-n-octylphthalate	ND		260	94	ug/Kg	1	10/14/22	WB	SW8270D
Fluoranthene	270		260	120	ug/Kg	1	10/14/22	WB	SW8270D
Fluorene	ND		260	120	ug/Kg	1	10/14/22	WB	SW8270D
Hexachlorobenzene	ND		150	110	ug/Kg	1	10/14/22	WB	SW8270D
Hexachlorobutadiene	ND		260	130	ug/Kg	1	10/14/22	WB	SW8270D
Hexachlorocyclopentadiene	ND		260	110	ug/Kg	1	10/14/22	WB	SW8270D
Hexachloroethane	ND		150	110	ug/Kg	1	10/14/22	WB	SW8270D
Indeno(1,2,3-cd)pyrene	ND		260	120	ug/Kg	1	10/14/22	WB	SW8270D
Isophorone	ND		150	100	ug/Kg	1	10/14/22	WB	SW8270D
Naphthalene	ND		260	110	ug/Kg	1	10/14/22	WB	SW8270D
Nitrobenzene	ND		150	130	ug/Kg	1	10/14/22	WB	SW8270D
N-Nitrosodimethylamine	ND		260	100	ug/Kg	1	10/14/22	WB	SW8270D
N-Nitrosodi-n-propylamine	ND		150	120	ug/Kg	1	10/14/22	WB	SW8270D
N-Nitrosodiphenylamine	ND		150	140	ug/Kg	1	10/14/22	WB	SW8270D
Pentachlorophenol	ND		260	140	ug/Kg	1	10/14/22	WB	SW8270D
Phenanthrene	180		150	100	ug/Kg	1	10/14/22	WB	SW8270D
Phenol	ND		260	120	ug/Kg	1	10/14/22	WB	SW8270D
Pyrene	260		260	130	ug/Kg	1	10/14/22	WB	SW8270D
QA/QC Surrogates									
% 2,4,6-Tribromophenol	108				%	1	10/14/22	WB	30 - 130 %
% 2-Fluorobiphenyl	74				%	1	10/14/22	WB	30 - 130 %
% 2-Fluorophenol	80				%	1	10/14/22	WB	30 - 130 %
% Nitrobenzene-d5	88				%	1	10/14/22	WB	30 - 130 %
% Phenol-d5	89				%	1	10/14/22	WB	30 - 130 %
% Terphenyl-d14	79				%	1	10/14/22	WB	30 - 130 %
Aniline	ND		370	370	ug/Kg	1	10/14/22	WB	SW8270D
Benzoic Acid	ND		370	260	ug/Kg	1	10/14/22	WB	SW8270D
Parathion	ND		370	150	ug/Kg	1	10/14/22	WB	SW8270D

Parameter	Result	RL/ PQL	LOD/ MDL	Units	Dilution	Date/Time	By	Reference

1 = This parameter is not certified by the primary accrediting authority (NY NELAC) for this matrix. NY NELAC does not offer certification for all parameters at this time.

RL/PQL=Reporting/Practical Quantitation Level (Equivalent to NELAC LOQ, Limit of Quantitation) ND=Not Detected BRL=Below Reporting Level L=Biased Low J=Estimated Below RL LOD=Limit of Detection MDL=Method Detection Limit1
QA/QC Surrogates: Surrogates are compounds (preceeded with a %) added by the lab to determine analysis efficiency. Surrogate results(%) listed in the report are not "detected" compounds.

Comments:

Per 1.4.6 of EPA method 8270D, 1,2-Diphenylhydrazine is unstable and readily converts to Azobenzene. Azobenzene is used for the calibration of 1,2-Diphenylhydrazine.

Please be advised that the NY 375 soil criteria for chromium are based on hexavalent chromium and trivalent chromium.

The regulatory hold time for pH is immediately. This pH was performed in the laboratory and may be considered outside of hold-time.

Hexavalent Chromium:
This sample is in a reducing state.

Semi-Volatile Comment:
To achieve client's objectives, where the lowest calibration standard or LOD justifies lowering the RL/PQL, the RL/PQL of some compounds have been lowered to meet criteria.

All soils, solids and sludges are reported on a dry weight basis unless otherwise noted in the sample comments.

If you are the client above and have any questions concerning this testing, please do not hesitate to contact Phoenix Client Services at ext.200.
The contents of this report cannot be discussed with anyone other than the client listed above without their written consent.

Phyllis Shiller, Laboratory Director
October 21, 2022
Official Report Release To Follow

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

ACCREDITED IN ACCORDANCE WITH nelac NY # 11301

Analysis Report

October 21, 2022

FOR: Attn: Mr. Jeff Bogoian
Impact Consulting
170 Keyland Court
Bohemia NY 11716

Sample Information		Custody Information		Date	Time
Matrix:	SOIL	Collected by:	SR	10/12/22	8:10
Location Code:	IMPACTJB-IEC	Received by:	CP	10/12/22	17:14
Rush Request:	Standard	Analyzed by:	see "By" below		
P.O.#:	FAC-20				

Laboratory Data

SDG ID: GCM60739
Phoenix ID: CM60741

Project ID: IMJC
Client ID: IMJC EAST

Parameter	Result	RL/ PQL	LOD/ MDL	Units	Dilution	Date/Time	By	Reference	
Silver	ND	0.39	0.39	mg/Kg	1	10/14/22	CPP	SW6010D	
Aluminum	16900	39	7.8	mg/Kg	10	10/14/22	CPP	SW6010D	
Arsenic	1.61	0.78	0.78	mg/Kg	1	10/14/22	CPP	SW6010D	
Barium	159	0.8	0.39	mg/Kg	1	10/14/22	CPP	SW6010D	
Beryllium	0.50	0.31	0.16	mg/Kg	1	10/14/22	CPP	SW6010D	
Calcium	6930	3.9	3.6	mg/Kg	1	10/14/22	CPP	SW6010D	
Cadmium	1.59	0.39	0.39	mg/Kg	1	10/14/22	CPP	SW6010D	
Cobalt	21.6	0.39	0.39	mg/Kg	1	10/14/22	CPP	SW6010D	
Chromium	51.8	0.39	0.39	mg/Kg	1	10/14/22	CPP	SW6010D	
Copper	48.3	0.8	0.39	mg/kg	1	10/14/22	CPP	SW6010D	
Iron	31200	39	39	mg/Kg	10	10/14/22	CPP	SW6010D	
Mercury	0.06	0.03	0.02	mg/Kg	2	10/13/22	IE	SW7471B	
Potassium	8180	78	31	mg/Kg	10	10/14/22	CPP	SW6010D	
Magnesium	12300	39	39	mg/Kg	10	10/14/22	CPP	SW6010D	
Manganese	423	3.9	3.9	mg/Kg	10	10/14/22	CPP	SW6010D	
Sodium	794	8	3.4	mg/Kg	1	10/14/22	CPP	SW6010D	
Nickel	47.2	0.39	0.39	mg/Kg	1	10/14/22	CPP	SW6010D	
Lead	26.9	0.8	0.39	mg/Kg	1	10/14/22	CPP	SW6010D	
Antimony	ND	3.9	3.9	mg/Kg	1	10/14/22	CPP	SW6010D	
Selenium	ND	1.6	1.3	mg/Kg	1	10/14/22	CPP	SW6010D	
Thallium	ND	1.6	1.6	mg/Kg	1	10/14/22	CPP	SW6010D	
Trivalent Chromium	51.8	0.39	0.39	mg/kg	1	10/16/22		CALC 6010-7196	
Vanadium	62.2	0.39	0.39	mg/Kg	1	10/14/22	CPP	SW6010D	
Zinc	85.0	0.8	0.39	mg/Kg	1	10/14/22	TH	SW6010D	
Percent Solid	90			%		10/12/22	Q	SW846-%Solid	
Chromium, Hex. (SW3060A digestion	ND	0.44	0.44	mg/Kg	1	10/13/22	DK	SW7196A	
pH at 25C - Soil	10.1	1.00	1.00	pH Units	1	10/12/22 22:59	ER	SW846 9045D	1
Redox Potential	140			mV	1	10/12/22	ER	SM2580B-09	1

Project ID: IMJC
Client ID: IMJC EAST

Phoenix I.D.: CM60741

Parameter	Result	RL/ PQL	LOD/ MDL	Units	Dilution	Date/Time	By	Reference	
Total Cyanide (SW9010C Distill.)	ND	0.56	0.278	mg/Kg	1	10/17/22	EG	SW9012B	
Soil Extraction for PCB	Completed					10/12/22	O/N	SW3545A	
Soil Extraction for Pesticides	Completed					10/12/22	O/N	SW3545A	
Mercury Digestion	Completed					10/13/22	KL/KL	SW7471B	
Soil Extraction for Herbicide	Completed					10/13/22	J/D	SW3546	
NJ EPH Extraction	Completed					10/13/22	M/B/C	NJDEP 10-08 R3	
Soil Extraction for SVOA	Completed					10/13/22	M/B/U	SW3546	
Total Metals Digest	Completed					10/12/22	J/AG	SW3050B	
NJ EPH Category 2									
Total EPH (C9-C40)	ND	54	54	mg/kg	1	10/14/22	JRB	NJEPH 10-08 R3	1
QA/QC Surrogates									
% COD (surr)	84			%	1	10/14/22	JRB	40 - 140 %	
% Terphenyl (surr)	96			%	1	10/14/22	JRB	40 - 140 %	
Chlorinated Herbicides									
2,4,5-T	ND	140	140	ug/Kg	10	10/14/22	JRB	SW8151A	
2,4,5-TP (Silvex)	ND	140	140	ug/Kg	10	10/14/22	JRB	SW8151A	
2,4-D	ND	280	280	ug/Kg	10	10/14/22	JRB	SW8151A	
2,4-DB	ND	2800	2800	ug/Kg	10	10/14/22	JRB	SW8151A	
Dalapon	ND	140	140	ug/Kg	10	10/14/22	JRB	SW8151A	
Dicamba	ND	140	140	ug/Kg	10	10/14/22	JRB	SW8151A	
Dichloroprop	ND	280	280	ug/Kg	10	10/14/22	JRB	SW8151A	
Dinoseb	ND	280	280	ug/Kg	10	10/14/22	JRB	SW8151A	
QA/QC Surrogates									
% DCAA	66			%	10	10/14/22	JRB	30 - 150 %	
% DCAA (Confirmation)	81			%	10	10/14/22	JRB	30 - 150 %	
Polychlorinated Biphenyls									
PCB-1016	ND	73	73	ug/Kg	2	10/13/22	SC	SW8082A	
PCB-1221	ND	73	73	ug/Kg	2	10/13/22	SC	SW8082A	
PCB-1232	ND	73	73	ug/Kg	2	10/13/22	SC	SW8082A	
PCB-1242	ND	73	73	ug/Kg	2	10/13/22	SC	SW8082A	
PCB-1248	ND	73	73	ug/Kg	2	10/13/22	SC	SW8082A	
PCB-1254	ND	73	73	ug/Kg	2	10/13/22	SC	SW8082A	
PCB-1260	ND	73	73	ug/Kg	2	10/13/22	SC	SW8082A	
PCB-1262	ND	73	73	ug/Kg	2	10/13/22	SC	SW8082A	
PCB-1268	ND	73	73	ug/Kg	2	10/13/22	SC	SW8082A	
QA/QC Surrogates									
% DCBP	86			%	2	10/13/22	SC	30 - 150 %	
% DCBP (Confirmation)	74			%	2	10/13/22	SC	30 - 150 %	
% TCMX	107			%	2	10/13/22	SC	30 - 150 %	
% TCMX (Confirmation)	87			%	2	10/13/22	SC	30 - 150 %	
Pesticides - Soil									
4,4' -DDD	ND	2.2	2.2	ug/Kg	2	10/14/22	AW	SW8081B	
4,4' -DDE	ND	2.2	2.2	ug/Kg	2	10/14/22	AW	SW8081B	
4,4' -DDT	12	2.2	2.2	ug/Kg	2	10/14/22	AW	SW8081B	
a-BHC	ND	1.5	1.5	ug/Kg	2	10/14/22	AW	SW8081B	

Parameter	Result	RL/ PQL	LOD/ MDL	Units	Dilution	Date/Time	By	Reference
a-Chlordane	ND	5.0	5.0	ug/Kg	2	10/14/22	AW	SW8081B
Alachlor	ND	3.7	3.7	ug/Kg	2	10/14/22	AW	SW8081B
Aldrin	ND	3.7	3.7	ug/Kg	2	10/14/22	AW	SW8081B
b-BHC	ND	1.5	1.5	ug/Kg	2	10/14/22	AW	SW8081B
Chlordane	ND	37	37	ug/Kg	2	10/14/22	AW	SW8081B
d-BHC	ND	7.3	7.3	ug/Kg	2	10/14/22	AW	SW8081B
Dieldrin	ND	1.5	1.5	ug/Kg	2	10/14/22	AW	SW8081B
Endosulfan I	ND	7.3	7.3	ug/Kg	2	10/14/22	AW	SW8081B
Endosulfan II	ND	7.3	7.3	ug/Kg	2	10/14/22	AW	SW8081B
Endosulfan sulfate	ND	7.3	7.3	ug/Kg	2	10/14/22	AW	SW8081B
Endrin	ND	7.3	7.3	ug/Kg	2	10/14/22	AW	SW8081B
Endrin aldehyde	ND	7.3	7.3	ug/Kg	2	10/14/22	AW	SW8081B
Endrin ketone	ND	7.3	7.3	ug/Kg	2	10/14/22	AW	SW8081B
g-BHC	ND	1.5	1.5	ug/Kg	2	10/14/22	AW	SW8081B
g-Chlordane	ND	5.0	5.0	ug/Kg	2	10/14/22	AW	SW8081B
Heptachlor	ND	7.3	7.3	ug/Kg	2	10/14/22	AW	SW8081B
Heptachlor epoxide	ND	7.3	7.3	ug/Kg	2	10/14/22	AW	SW8081B
Methoxychlor	ND	37	37	ug/Kg	2	10/14/22	AW	SW8081B
Toxaphene	ND	150	150	ug/Kg	2	10/14/22	AW	SW8081B
QA/QC Surrogates								
% DCBP	76			%	2	10/14/22	AW	30 - 150 %
% DCBP (Confirmation)	75			%	2	10/14/22	AW	30 - 150 %
% TCMX	73			%	2	10/14/22	AW	30 - 150 %
% TCMX (Confirmation)	70			%	2	10/14/22	AW	30 - 150 %
Volatiles								
1,2,4-Trimethylbenzene	ND	2.9	0.29	ug/Kg	1	10/13/22	JLI	SW8260C
1,3,5-Trimethylbenzene	ND	2.9	0.29	ug/Kg	1	10/13/22	JLI	SW8260C
1,3-Dichlorobenzene	ND	2.9	0.29	ug/Kg	1	10/13/22	JLI	SW8260C
Naphthalene	ND	2.9	0.59	ug/Kg	1	10/13/22	JLI	SW8260C
n-Butylbenzene	ND	2.9	0.29	ug/Kg	1	10/13/22	JLI	SW8260C
n-Propylbenzene	ND	2.9	0.59	ug/Kg	1	10/13/22	JLI	SW8260C
p-Isopropyltoluene	ND	2.9	0.29	ug/Kg	1	10/13/22	JLI	SW8260C
sec-Butylbenzene	ND	2.9	0.29	ug/Kg	1	10/13/22	JLI	SW8260C
tert-Butylbenzene	ND	2.9	0.29	ug/Kg	1	10/13/22	JLI	SW8260C
QA/QC Surrogates								
% 1,2-dichlorobenzene-d4	96			%	1	10/13/22	JLI	70 - 130 %
% Bromofluorobenzene	93			%	1	10/13/22	JLI	70 - 130 %
% Dibromofluoromethane	98			%	1	10/13/22	JLI	70 - 130 %
% Toluene-d8	91			%	1	10/13/22	JLI	70 - 130 %
1,4-dioxane								
1,4-dioxane	ND	44	24	ug/kg	1	10/13/22	JLI	SW8260C
Volatiles								
1,1,1,2-Tetrachloroethane	ND	2.9	0.59	ug/Kg	1	10/13/22	JLI	SW8260C
1,1,1-Trichloroethane	ND	2.9	0.29	ug/Kg	1	10/13/22	JLI	SW8260C
1,1,2,2-Tetrachloroethane	ND	2.9	0.59	ug/Kg	1	10/13/22	JLI	SW8260C
1,1,2-Trichloroethane	ND	2.9	0.59	ug/Kg	1	10/13/22	JLI	SW8260C
1,1-Dichloroethane	ND	2.9	0.59	ug/Kg	1	10/13/22	JLI	SW8260C

Project ID: IMJC
Client ID: IMJC EAST

Phoenix I.D.: CM60741

Parameter	Result	RL/ PQL	LOD/ MDL	Units	Dilution	Date/Time	By	Reference
1,1-Dichloroethene	ND	2.9	0.29	ug/Kg	1	10/13/22	JLI	SW8260C
1,2,3-Trichlorobenzene	ND	2.9	0.59	ug/Kg	1	10/13/22	JLI	SW8260C
1,2,4-Trichlorobenzene	ND	2.9	0.59	ug/Kg	1	10/13/22	JLI	SW8260C
1,2-Dibromo-3-chloropropane	ND	2.9	0.59	ug/Kg	1	10/13/22	JLI	SW8260C
1,2-Dibromoethane	ND	2.7	0.29	ug/Kg	1	10/13/22	JLI	SW8260C
1,2-Dichlorobenzene	ND	2.9	0.29	ug/Kg	1	10/13/22	JLI	SW8260C
1,2-Dichloroethane	ND	2.9	0.29	ug/Kg	1	10/13/22	JLI	SW8260C
1,2-Dichloropropane	ND	2.9	0.59	ug/Kg	1	10/13/22	JLI	SW8260C
1,3-Dichlorobenzene	ND	2.9	0.29	ug/Kg	1	10/13/22	JLI	SW8260C
1,4-Dichlorobenzene	ND	2.9	0.29	ug/Kg	1	10/13/22	JLI	SW8260C
2-Hexanone	ND	15	2.9	ug/Kg	1	10/13/22	JLI	SW8260C
4-Methyl-2-pentanone	ND	15	2.9	ug/Kg	1	10/13/22	JLI	SW8260C
Acetone	ND	29	2.9	ug/Kg	1	10/13/22	JLI	SW8260C
Acrolein	ND	15	1.5	ug/Kg	1	10/13/22	JLI	SW8260C
Acrylonitrile	ND	5.9	0.29	ug/Kg	1	10/13/22	JLI	SW8260C
Benzene	ND	2.9	0.29	ug/Kg	1	10/13/22	JLI	SW8260C
Bromochloromethane	ND	2.9	0.29	ug/Kg	1	10/13/22	JLI	SW8260C
Bromodichloromethane	ND	2.9	0.59	ug/Kg	1	10/13/22	JLI	SW8260C
Bromoform	ND	2.9	0.59	ug/Kg	1	10/13/22	JLI	SW8260C
Bromomethane	ND	2.9	1.2	ug/Kg	1	10/13/22	JLI	SW8260C
Carbon Disulfide	ND	2.9	0.59	ug/Kg	1	10/13/22	JLI	SW8260C
Carbon tetrachloride	ND	2.9	0.59	ug/Kg	1	10/13/22	JLI	SW8260C
Chlorobenzene	ND	2.9	0.29	ug/Kg	1	10/13/22	JLI	SW8260C
Chloroethane	ND	2.9	0.29	ug/Kg	1	10/13/22	JLI	SW8260C
Chloroform	ND	2.9	0.29	ug/Kg	1	10/13/22	JLI	SW8260C
Chloromethane	ND	2.9	0.59	ug/Kg	1	10/13/22	JLI	SW8260C
cis-1,2-Dichloroethene	ND	2.9	0.29	ug/Kg	1	10/13/22	JLI	SW8260C
cis-1,3-Dichloropropene	ND	2.9	0.29	ug/Kg	1	10/13/22	JLI	SW8260C
Cyclohexane	ND	2.9	0.59	ug/Kg	1	10/13/22	JLI	SW8260C
Dibromochloromethane	ND	2.9	0.59	ug/Kg	1	10/13/22	JLI	SW8260C
Dichlorodifluoromethane	ND	2.9	0.29	ug/Kg	1	10/13/22	JLI	SW8260C
Ethylbenzene	ND	2.9	0.29	ug/Kg	1	10/13/22	JLI	SW8260C
Isopropylbenzene	ND	2.9	0.29	ug/Kg	1	10/13/22	JLI	SW8260C
m&p-Xylene	ND	2.9	0.59	ug/Kg	1	10/13/22	JLI	SW8260C
Methyl ethyl ketone	ND	18	2.9	ug/Kg	1	10/13/22	JLI	SW8260C
Methyl t-butyl ether (MTBE)	ND	5.9	0.59	ug/Kg	1	10/13/22	JLI	SW8260C
Methylacetate	ND	5.9	5.9	ug/Kg	1	10/13/22	JLI	SW8260C
Methylcyclohexane	ND	2.9	0.59	ug/Kg	1	10/13/22	JLI	SW8260C
Methylene chloride	ND	2.9	2.9	ug/Kg	1	10/13/22	JLI	SW8260C
o-Xylene	ND	2.9	0.59	ug/Kg	1	10/13/22	JLI	SW8260C
Styrene	ND	2.9	0.29	ug/Kg	1	10/13/22	JLI	SW8260C
tert-butyl alcohol	ND	59	12	ug/Kg	1	10/13/22	JLI	SW8260C
Tetrachloroethene	ND	2.9	0.59	ug/Kg	1	10/13/22	JLI	SW8260C
Toluene	ND	2.9	0.29	ug/Kg	1	10/13/22	JLI	SW8260C
Total Xylenes	ND	2.9	2.9	ug/Kg	1	10/13/22	JLI	SW8260C
trans-1,2-Dichloroethene	ND	2.9	0.29	ug/Kg	1	10/13/22	JLI	SW8260C
trans-1,3-Dichloropropene	ND	2.9	0.29	ug/Kg	1	10/13/22	JLI	SW8260C
Trichloroethene	ND	2.9	0.29	ug/Kg	1	10/13/22	JLI	SW8260C
Trichlorofluoromethane	ND	2.9	0.59	ug/Kg	1	10/13/22	JLI	SW8260C

Parameter	Result		RL/ PQL	LOD/ MDL	Units	Dilution	Date/Time	By	Reference	
Trichlorotrifluoroethane	ND		2.9	0.29	ug/Kg	1	10/13/22	JLI	SW8260C	
Vinyl chloride	ND		2.9	0.29	ug/Kg	1	10/13/22	JLI	SW8260C	
QA/QC Surrogates										
% 1,2-dichlorobenzene-d4	96				%	1	10/13/22	JLI	70 - 130 %	
% Bromofluorobenzene	93				%	1	10/13/22	JLI	70 - 130 %	
% Dibromofluoromethane	98				%	1	10/13/22	JLI	70 - 130 %	
% Toluene-d8	91				%	1	10/13/22	JLI	70 - 130 %	
Vinyl Acetate	ND		29	29	ug/Kg	1	10/13/22	JLI	SW8260C	
Semivolatiles										
1,1-Biphenyl	ND		250	110	ug/Kg	1	10/14/22	WB	SW8270D	
1,2,4,5-Tetrachlorobenzene	ND		250	130	ug/Kg	1	10/14/22	WB	SW8270D	
1,2-Diphenylhydrazine	ND		360	360	ug/Kg	1	10/14/22	WB	SW8270D	
2,2'-Oxybis(1-Chloropropane)	ND		250	100	ug/Kg	1	10/14/22	WB	SW8270D	1
2,3,4,6-tetrachlorophenol	ND		250	170	ug/Kg	1	10/14/22	WB	SW8270D	
2,4,5-Trichlorophenol	ND		250	200	ug/Kg	1	10/14/22	WB	SW8270D	
2,4,6-Trichlorophenol	ND		140	120	ug/Kg	1	10/14/22	WB	SW8270D	
2,4-Dichlorophenol	ND		140	130	ug/Kg	1	10/14/22	WB	SW8270D	
2,4-Dimethylphenol	ND		250	89	ug/Kg	1	10/14/22	WB	SW8270D	
2,4-Dinitrophenol	ND		250	250	ug/Kg	1	10/14/22	WB	SW8270D	
2,4-Dinitrotoluene	ND		140	140	ug/Kg	1	10/14/22	WB	SW8270D	
2,6-Dinitrotoluene	ND		140	110	ug/Kg	1	10/14/22	WB	SW8270D	
2-Chloronaphthalene	ND		250	100	ug/Kg	1	10/14/22	WB	SW8270D	
2-Chlorophenol	ND		250	100	ug/Kg	1	10/14/22	WB	SW8270D	
2-Methylnaphthalene	ND		250	110	ug/Kg	1	10/14/22	WB	SW8270D	
2-Methylphenol (o-cresol)	ND		250	170	ug/Kg	1	10/14/22	WB	SW8270D	
2-Nitroaniline	ND		300	250	ug/Kg	1	10/14/22	WB	SW8270D	
2-Nitrophenol	ND		250	230	ug/Kg	1	10/14/22	WB	SW8270D	
3&4-Methylphenol (m&p-cresol)	ND		250	140	ug/Kg	1	10/14/22	WB	SW8270D	1
3,3'-Dichlorobenzidine	ND		140	140	ug/Kg	1	10/14/22	WB	SW8270D	
3-Nitroaniline	ND		720	250	ug/Kg	1	10/14/22	WB	SW8270D	
4,6-Dinitro-2-methylphenol	ND		250	250	ug/Kg	1	10/14/22	WB	SW8270D	
4-Bromophenyl phenyl ether	ND		250	110	ug/Kg	1	10/14/22	WB	SW8270D	
4-Chloro-3-methylphenol	ND		250	130	ug/Kg	1	10/14/22	WB	SW8270D	
4-Chloroaniline	ND		720	170	ug/Kg	1	10/14/22	WB	SW8270D	
4-Chlorophenyl phenyl ether	ND		250	120	ug/Kg	1	10/14/22	WB	SW8270D	
4-Nitroaniline	ND		360	120	ug/Kg	1	10/14/22	WB	SW8270D	
4-Nitrophenol	ND		360	160	ug/Kg	1	10/14/22	WB	SW8270D	
Acenaphthene	ND		250	110	ug/Kg	1	10/14/22	WB	SW8270D	
Acenaphthylene	ND		140	100	ug/Kg	1	10/14/22	WB	SW8270D	
Acetophenone	ND		250	110	ug/Kg	1	10/14/22	WB	SW8270D	
Anthracene	ND		250	120	ug/Kg	1	10/14/22	WB	SW8270D	
Atrazine	ND		140	110	ug/Kg	1	10/14/22	WB	SW8270D	
Benz(a)anthracene	190	J	250	120	ug/Kg	1	10/14/22	WB	SW8270D	
Benzaldehyde	ND		250	110	ug/Kg	1	10/14/22	WB	SW8270D	
Benzidine	ND		250	140	ug/Kg	1	10/14/22	WB	SW8270D	
Benzo(a)pyrene	200		140	120	ug/Kg	1	10/14/22	WB	SW8270D	
Benzo(b)fluoranthene	150	J	250	120	ug/Kg	1	10/14/22	WB	SW8270D	
Benzo(ghi)perylene	ND		250	120	ug/Kg	1	10/14/22	WB	SW8270D	

Project ID: IMJC
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Phoenix I.D.: CM60741

Parameter	Result		RL/ PQL	LOD/ MDL	Units	Dilution	Date/Time	By	Reference
Benzo(k)fluoranthene	140	J	250	120	ug/Kg	1	10/14/22	WB	SW8270D
Benzyl Alcohol	ND		360	360	ug/Kg	1	10/14/22	WB	SW8270D
Benzyl butyl phthalate	ND		250	93	ug/Kg	1	10/14/22	WB	SW8270D
Bis(2-chloroethoxy)methane	ND		250	99	ug/Kg	1	10/14/22	WB	SW8270D
Bis(2-chloroethyl)ether	ND		140	97	ug/Kg	1	10/14/22	WB	SW8270D
Bis(2-ethylhexyl)phthalate	ND		250	100	ug/Kg	1	10/14/22	WB	SW8270D
Caprolactam	ND		250	250	ug/Kg	1	10/14/22	WB	SW8270D
Carbazole	ND		180	140	ug/Kg	1	10/14/22	WB	SW8270D
Chrysene	190	J	250	120	ug/Kg	1	10/14/22	WB	SW8270D
Dibenz(a,h)anthracene	ND		140	120	ug/Kg	1	10/14/22	WB	SW8270D
Dibenzofuran	ND		250	110	ug/Kg	1	10/14/22	WB	SW8270D
Diethyl phthalate	ND		250	110	ug/Kg	1	10/14/22	WB	SW8270D
Dimethylphthalate	ND		250	110	ug/Kg	1	10/14/22	WB	SW8270D
Di-n-butylphthalate	ND		250	96	ug/Kg	1	10/14/22	WB	SW8270D
Di-n-octylphthalate	ND		250	93	ug/Kg	1	10/14/22	WB	SW8270D
Fluoranthene	350		250	120	ug/Kg	1	10/14/22	WB	SW8270D
Fluorene	ND		250	120	ug/Kg	1	10/14/22	WB	SW8270D
Hexachlorobenzene	ND		140	110	ug/Kg	1	10/14/22	WB	SW8270D
Hexachlorobutadiene	ND		250	130	ug/Kg	1	10/14/22	WB	SW8270D
Hexachlorocyclopentadiene	ND		250	110	ug/Kg	1	10/14/22	WB	SW8270D
Hexachloroethane	ND		140	110	ug/Kg	1	10/14/22	WB	SW8270D
Indeno(1,2,3-cd)pyrene	140	J	250	120	ug/Kg	1	10/14/22	WB	SW8270D
Isophorone	ND		140	100	ug/Kg	1	10/14/22	WB	SW8270D
Naphthalene	ND		250	100	ug/Kg	1	10/14/22	WB	SW8270D
Nitrobenzene	ND		140	130	ug/Kg	1	10/14/22	WB	SW8270D
N-Nitrosodimethylamine	ND		250	100	ug/Kg	1	10/14/22	WB	SW8270D
N-Nitrosodi-n-propylamine	ND		140	120	ug/Kg	1	10/14/22	WB	SW8270D
N-Nitrosodiphenylamine	ND		140	140	ug/Kg	1	10/14/22	WB	SW8270D
Pentachlorophenol	ND		250	140	ug/Kg	1	10/14/22	WB	SW8270D
Phenanthrene	230		140	100	ug/Kg	1	10/14/22	WB	SW8270D
Phenol	ND		250	120	ug/Kg	1	10/14/22	WB	SW8270D
Pyrene	320		250	120	ug/Kg	1	10/14/22	WB	SW8270D
QA/QC Surrogates									
% 2,4,6-Tribromophenol	115				%	1	10/14/22	WB	30 - 130 %
% 2-Fluorobiphenyl	80				%	1	10/14/22	WB	30 - 130 %
% 2-Fluorophenol	83				%	1	10/14/22	WB	30 - 130 %
% Nitrobenzene-d5	91				%	1	10/14/22	WB	30 - 130 %
% Phenol-d5	91				%	1	10/14/22	WB	30 - 130 %
% Terphenyl-d14	86				%	1	10/14/22	WB	30 - 130 %
Aniline	ND		360	360	ug/Kg	1	10/14/22	WB	SW8270D
Benzoic Acid	ND		360	250	ug/Kg	1	10/14/22	WB	SW8270D
Parathion	ND		360	140	ug/Kg	1	10/14/22	WB	SW8270D

Parameter	Result	RL/ PQL	LOD/ MDL	Units	Dilution	Date/Time	By	Reference

1 = This parameter is not certified by the primary accrediting authority (NY NELAC) for this matrix. NY NELAC does not offer certification for all parameters at this time.

RL/PQL=Reporting/Practical Quantitation Level (Equivalent to NELAC LOQ, Limit of Quantitation) ND=Not Detected BRL=Below Reporting Level L=Biased Low J=Estimated Below RL LOD=Limit of Detection MDL=Method Detection Limit1
QA/QC Surrogates: Surrogates are compounds (preceeded with a %) added by the lab to determine analysis efficiency. Surrogate results(%) listed in the report are not "detected" compounds.

Comments:

Per 1.4.6 of EPA method 8270D, 1,2-Diphenylhydrazine is unstable and readily converts to Azobenzene. Azobenzene is used for the calibration of 1,2-Diphenylhydrazine.

Please be advised that the NY 375 soil criteria for chromium are based on hexavalent chromium and trivalent chromium.

The regulatory hold time for pH is immediately. This pH was performed in the laboratory and may be considered outside of hold-time.

Hexavalent Chromium:
This sample is in a reducing state.

Semi-Volatile Comment:
To achieve client's objectives, where the lowest calibration standard or LOD justifies lowering the RL/PQL, the RL/PQL of some compounds have been lowered to meet criteria.

All soils, solids and sludges are reported on a dry weight basis unless otherwise noted in the sample comments.

If you are the client above and have any questions concerning this testing, please do not hesitate to contact Phoenix Client Services at ext.200.
The contents of this report cannot be discussed with anyone other than the client listed above without their written consent.

Phyllis Shiller, Laboratory Director
October 21, 2022
Official Report Release To Follow

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

ACCREDITED IN ACCORDANCE WITH nelac NY # 11301

Analysis Report

October 21, 2022

FOR: Attn: Mr. Jeff Bogoian
Impact Consulting
170 Keyland Court
Bohemia NY 11716

Sample Information		Custody Information		Date	Time
Matrix:	SOIL	Collected by:	SR	10/12/22	8:15
Location Code:	IMPACTJB-IEC	Received by:	CP	10/12/22	17:14
Rush Request:	72 Hour	Analyzed by:	see "By" below		
P.O.#:	FAC-20				

Laboratory Data

SDG ID: GCM60739
Phoenix ID: CM60742

Project ID: IMJC
Client ID: IMJC WEST

Parameter	Result	RL/ PQL	LOD/ MDL	Units	Dilution	Date/Time	By	Reference	
Silver	ND	0.34	0.34	mg/Kg	1	10/14/22	CPP	SW6010D	
Aluminum	17500	34	6.9	mg/Kg	10	10/14/22	CPP	SW6010D	
Arsenic	1.82	0.69	0.69	mg/Kg	1	10/14/22	CPP	SW6010D	
Barium	150	0.7	0.34	mg/Kg	1	10/14/22	CPP	SW6010D	
Beryllium	0.43	0.27	0.14	mg/Kg	1	10/14/22	CPP	SW6010D	
Calcium	8670	3.4	3.2	mg/Kg	1	10/14/22	CPP	SW6010D	
Cadmium	1.54	0.34	0.34	mg/Kg	1	10/14/22	CPP	SW6010D	
Cobalt	17.2	0.37	0.37	mg/Kg	1	10/21/22	TH	SW6010D	
Chromium	44.7	0.34	0.34	mg/Kg	1	10/14/22	CPP	SW6010D	
Copper	66.8	0.7	0.34	mg/kg	1	10/14/22	CPP	SW6010D	
Iron	29400	34	34	mg/Kg	10	10/14/22	CPP	SW6010D	B
Mercury	0.07	0.03	0.02	mg/Kg	2	10/13/22	IE	SW7471B	
Potassium	6730	69	27	mg/Kg	10	10/14/22	CPP	SW6010D	B
Magnesium	11600	34	34	mg/Kg	10	10/14/22	CPP	SW6010D	
Manganese	391	3.4	3.4	mg/Kg	10	10/14/22	CPP	SW6010D	
Sodium	1100	7	2.9	mg/Kg	1	10/14/22	CPP	SW6010D	
Nickel	45.5	0.34	0.34	mg/Kg	1	10/14/22	CPP	SW6010D	
Lead	29.7	0.7	0.34	mg/Kg	1	10/14/22	CPP	SW6010D	
Antimony	ND	3.4	3.4	mg/Kg	1	10/14/22	CPP	SW6010D	
Selenium	ND	1.4	1.2	mg/Kg	1	10/14/22	CPP	SW6010D	
Thallium	ND	1.4	1.4	mg/Kg	1	10/14/22	CPP	SW6010D	
Trivalent Chromium	44.7	0.34	0.34	mg/kg	1	10/16/22		CALC 6010-7196	
Vanadium	63.0	0.34	0.34	mg/Kg	1	10/14/22	CPP	SW6010D	
Zinc	85.4	0.7	0.34	mg/Kg	1	10/14/22	TH	SW6010D	
Percent Solid	90			%		10/12/22	Q	SW846-%Solid	
Chromium, Hex. (SW3060A digestion	ND	0.43	0.43	mg/Kg	1	10/13/22	DK	SW7196A	
pH at 25C - Soil	9.89	1.00	1.00	pH Units	1	10/12/22 22:59	ER	SW846 9045D	1
Redox Potential	155			mV	1	10/12/22	ER	SM2580B-09	1

Project ID: IMJC
Client ID: IMJC WEST

Phoenix I.D.: CM60742

Parameter	Result	RL/ PQL	LOD/ MDL	Units	Dilution	Date/Time	By	Reference	
Total Cyanide (SW9010C Distill.)	ND	0.56	0.278	mg/Kg	1	10/17/22	EG	SW9012B	
Soil Extraction for PCB	Completed					10/12/22	O/E	SW3545A	
Soil Extraction for Pesticides	Completed					10/12/22	O/E	SW3545A	
Mercury Digestion	Completed					10/13/22	KL/KL	SW7471B	
Soil Extraction for Herbicide	Completed					10/13/22	J/D	SW3546	
NJ EPH Extraction	Completed					10/13/22	B/H/C	NJDEP 10-08 R3	
Soil Extraction for SVOA	Completed					10/13/22	M/B/U	SW3546	
Total Metals Digest	Completed					10/19/22	J/AG	SW3050B	
NJ EPH Category 2									
Total EPH (C9-C40)	ND	54	54	mg/kg	1	10/15/22	JRB	NJEPH 10-08 R3	1
QA/QC Surrogates									
% COD (surr)	88			%	1	10/15/22	JRB	40 - 140 %	
% Terphenyl (surr)	109			%	1	10/15/22	JRB	40 - 140 %	
Chlorinated Herbicides									
2,4,5-T	ND	140	140	ug/Kg	10	10/14/22	JRB	SW8151A	
2,4,5-TP (Silvex)	ND	140	140	ug/Kg	10	10/14/22	JRB	SW8151A	
2,4-D	ND	280	280	ug/Kg	10	10/14/22	JRB	SW8151A	
2,4-DB	ND	2800	2800	ug/Kg	10	10/14/22	JRB	SW8151A	
Dalapon	ND	140	140	ug/Kg	10	10/14/22	JRB	SW8151A	
Dicamba	ND	140	140	ug/Kg	10	10/14/22	JRB	SW8151A	
Dichloroprop	ND	280	280	ug/Kg	10	10/14/22	JRB	SW8151A	
Dinoseb	ND	280	280	ug/Kg	10	10/14/22	JRB	SW8151A	
QA/QC Surrogates									
% DCAA	81			%	10	10/14/22	JRB	30 - 150 %	
% DCAA (Confirmation)	105			%	10	10/14/22	JRB	30 - 150 %	
Polychlorinated Biphenyls									
PCB-1016	ND	74	74	ug/Kg	2	10/14/22	SC	SW8082A	
PCB-1221	ND	74	74	ug/Kg	2	10/14/22	SC	SW8082A	
PCB-1232	ND	74	74	ug/Kg	2	10/14/22	SC	SW8082A	
PCB-1242	ND	74	74	ug/Kg	2	10/14/22	SC	SW8082A	
PCB-1248	ND	74	74	ug/Kg	2	10/14/22	SC	SW8082A	
PCB-1254	ND	74	74	ug/Kg	2	10/14/22	SC	SW8082A	
PCB-1260	ND	74	74	ug/Kg	2	10/14/22	SC	SW8082A	
PCB-1262	ND	74	74	ug/Kg	2	10/14/22	SC	SW8082A	
PCB-1268	ND	74	74	ug/Kg	2	10/14/22	SC	SW8082A	
QA/QC Surrogates									
% DCBP	80			%	2	10/14/22	SC	30 - 150 %	
% DCBP (Confirmation)	78			%	2	10/14/22	SC	30 - 150 %	
% TCMX	78			%	2	10/14/22	SC	30 - 150 %	
% TCMX (Confirmation)	82			%	2	10/14/22	SC	30 - 150 %	
Pesticides - Soil									
4,4' -DDD	ND	2.2	2.2	ug/Kg	2	10/13/22	AW	SW8081B	
4,4' -DDE	ND	2.2	2.2	ug/Kg	2	10/13/22	AW	SW8081B	
4,4' -DDT	5.9	2.2	2.2	ug/Kg	2	10/13/22	AW	SW8081B	
a-BHC	ND	1.5	1.5	ug/Kg	2	10/13/22	AW	SW8081B	

Parameter	Result	RL/ PQL	LOD/ MDL	Units	Dilution	Date/Time	By	Reference
a-Chlordane	ND	3.7	3.7	ug/Kg	2	10/13/22	AW	SW8081B
Alachlor	ND	3.7	3.7	ug/Kg	2	10/13/22	AW	SW8081B
Aldrin	ND	3.7	3.7	ug/Kg	2	10/13/22	AW	SW8081B
b-BHC	ND	1.5	1.5	ug/Kg	2	10/13/22	AW	SW8081B
Chlordane	ND	37	37	ug/Kg	2	10/13/22	AW	SW8081B
d-BHC	ND	7.4	7.4	ug/Kg	2	10/13/22	AW	SW8081B
Dieldrin	ND	1.5	1.5	ug/Kg	2	10/13/22	AW	SW8081B
Endosulfan I	ND	7.4	7.4	ug/Kg	2	10/13/22	AW	SW8081B
Endosulfan II	ND	7.4	7.4	ug/Kg	2	10/13/22	AW	SW8081B
Endosulfan sulfate	ND	7.4	7.4	ug/Kg	2	10/13/22	AW	SW8081B
Endrin	ND	7.4	7.4	ug/Kg	2	10/13/22	AW	SW8081B
Endrin aldehyde	ND	7.4	7.4	ug/Kg	2	10/13/22	AW	SW8081B
Endrin ketone	ND	7.4	7.4	ug/Kg	2	10/13/22	AW	SW8081B
g-BHC	ND	1.5	1.5	ug/Kg	2	10/13/22	AW	SW8081B
g-Chlordane	ND	3.7	3.7	ug/Kg	2	10/13/22	AW	SW8081B
Heptachlor	ND	7.4	7.4	ug/Kg	2	10/13/22	AW	SW8081B
Heptachlor epoxide	ND	7.4	7.4	ug/Kg	2	10/13/22	AW	SW8081B
Methoxychlor	ND	37	37	ug/Kg	2	10/13/22	AW	SW8081B
Toxaphene	ND	150	150	ug/Kg	2	10/13/22	AW	SW8081B
QA/QC Surrogates								
% DCBP	57			%	2	10/13/22	AW	30 - 150 %
% DCBP (Confirmation)	57			%	2	10/13/22	AW	30 - 150 %
% TCMX	68			%	2	10/13/22	AW	30 - 150 %
% TCMX (Confirmation)	64			%	2	10/13/22	AW	30 - 150 %
Volatiles								
1,2,4-Trimethylbenzene	ND	2.7	0.27	ug/Kg	1	10/13/22	JLI	SW8260C
1,3,5-Trimethylbenzene	ND	2.7	0.27	ug/Kg	1	10/13/22	JLI	SW8260C
1,3-Dichlorobenzene	ND	2.7	0.27	ug/Kg	1	10/13/22	JLI	SW8260C
Naphthalene	ND	2.7	0.54	ug/Kg	1	10/13/22	JLI	SW8260C
n-Butylbenzene	ND	2.7	0.27	ug/Kg	1	10/13/22	JLI	SW8260C
n-Propylbenzene	ND	2.7	0.54	ug/Kg	1	10/13/22	JLI	SW8260C
p-Isopropyltoluene	ND	2.7	0.27	ug/Kg	1	10/13/22	JLI	SW8260C
sec-Butylbenzene	ND	2.7	0.27	ug/Kg	1	10/13/22	JLI	SW8260C
tert-Butylbenzene	ND	2.7	0.27	ug/Kg	1	10/13/22	JLI	SW8260C
QA/QC Surrogates								
% 1,2-dichlorobenzene-d4	96			%	1	10/13/22	JLI	70 - 130 %
% Bromofluorobenzene	93			%	1	10/13/22	JLI	70 - 130 %
% Dibromofluoromethane	100			%	1	10/13/22	JLI	70 - 130 %
% Toluene-d8	94			%	1	10/13/22	JLI	70 - 130 %
1,4-dioxane								
1,4-dioxane	ND	41	22	ug/kg	1	10/13/22	JLI	SW8260C
Volatiles								
1,1,1,2-Tetrachloroethane	ND	2.7	0.54	ug/Kg	1	10/13/22	JLI	SW8260C
1,1,1-Trichloroethane	ND	2.7	0.27	ug/Kg	1	10/13/22	JLI	SW8260C
1,1,2,2-Tetrachloroethane	ND	2.7	0.54	ug/Kg	1	10/13/22	JLI	SW8260C
1,1,2-Trichloroethane	ND	2.7	0.54	ug/Kg	1	10/13/22	JLI	SW8260C
1,1-Dichloroethane	ND	2.7	0.54	ug/Kg	1	10/13/22	JLI	SW8260C

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Parameter	Result	RL/ PQL	LOD/ MDL	Units	Dilution	Date/Time	By	Reference
1,1-Dichloroethene	ND	2.7	0.27	ug/Kg	1	10/13/22	JLI	SW8260C
1,2,3-Trichlorobenzene	ND	2.7	0.54	ug/Kg	1	10/13/22	JLI	SW8260C
1,2,4-Trichlorobenzene	ND	2.7	0.54	ug/Kg	1	10/13/22	JLI	SW8260C
1,2-Dibromo-3-chloropropane	ND	2.7	0.54	ug/Kg	1	10/13/22	JLI	SW8260C
1,2-Dibromoethane	ND	2.5	0.27	ug/Kg	1	10/13/22	JLI	SW8260C
1,2-Dichlorobenzene	ND	2.7	0.27	ug/Kg	1	10/13/22	JLI	SW8260C
1,2-Dichloroethane	ND	2.7	0.27	ug/Kg	1	10/13/22	JLI	SW8260C
1,2-Dichloropropane	ND	2.7	0.54	ug/Kg	1	10/13/22	JLI	SW8260C
1,3-Dichlorobenzene	ND	2.7	0.27	ug/Kg	1	10/13/22	JLI	SW8260C
1,4-Dichlorobenzene	ND	2.7	0.27	ug/Kg	1	10/13/22	JLI	SW8260C
2-Hexanone	ND	14	2.7	ug/Kg	1	10/13/22	JLI	SW8260C
4-Methyl-2-pentanone	ND	14	2.7	ug/Kg	1	10/13/22	JLI	SW8260C
Acetone	ND	27	2.7	ug/Kg	1	10/13/22	JLI	SW8260C
Acrolein	ND	14	1.4	ug/Kg	1	10/13/22	JLI	SW8260C
Acrylonitrile	ND	5.4	0.27	ug/Kg	1	10/13/22	JLI	SW8260C
Benzene	ND	2.7	0.27	ug/Kg	1	10/13/22	JLI	SW8260C
Bromochloromethane	ND	2.7	0.27	ug/Kg	1	10/13/22	JLI	SW8260C
Bromodichloromethane	ND	2.7	0.54	ug/Kg	1	10/13/22	JLI	SW8260C
Bromoform	ND	2.7	0.54	ug/Kg	1	10/13/22	JLI	SW8260C
Bromomethane	ND	2.7	1.1	ug/Kg	1	10/13/22	JLI	SW8260C
Carbon Disulfide	ND	2.7	0.54	ug/Kg	1	10/13/22	JLI	SW8260C
Carbon tetrachloride	ND	2.7	0.54	ug/Kg	1	10/13/22	JLI	SW8260C
Chlorobenzene	ND	2.7	0.27	ug/Kg	1	10/13/22	JLI	SW8260C
Chloroethane	ND	2.7	0.27	ug/Kg	1	10/13/22	JLI	SW8260C
Chloroform	ND	2.7	0.27	ug/Kg	1	10/13/22	JLI	SW8260C
Chloromethane	ND	2.7	0.54	ug/Kg	1	10/13/22	JLI	SW8260C
cis-1,2-Dichloroethene	ND	2.7	0.27	ug/Kg	1	10/13/22	JLI	SW8260C
cis-1,3-Dichloropropene	ND	2.7	0.27	ug/Kg	1	10/13/22	JLI	SW8260C
Cyclohexane	ND	2.7	0.54	ug/Kg	1	10/13/22	JLI	SW8260C
Dibromochloromethane	ND	2.7	0.54	ug/Kg	1	10/13/22	JLI	SW8260C
Dichlorodifluoromethane	ND	2.7	0.27	ug/Kg	1	10/13/22	JLI	SW8260C
Ethylbenzene	ND	2.7	0.27	ug/Kg	1	10/13/22	JLI	SW8260C
Isopropylbenzene	ND	2.7	0.27	ug/Kg	1	10/13/22	JLI	SW8260C
m&p-Xylene	ND	2.7	0.54	ug/Kg	1	10/13/22	JLI	SW8260C
Methyl ethyl ketone	ND	16	2.7	ug/Kg	1	10/13/22	JLI	SW8260C
Methyl t-butyl ether (MTBE)	ND	5.4	0.54	ug/Kg	1	10/13/22	JLI	SW8260C
Methylacetate	ND	5.4	5.4	ug/Kg	1	10/13/22	JLI	SW8260C
Methylcyclohexane	ND	2.7	0.54	ug/Kg	1	10/13/22	JLI	SW8260C
Methylene chloride	ND	2.7	2.7	ug/Kg	1	10/13/22	JLI	SW8260C
o-Xylene	ND	2.7	0.54	ug/Kg	1	10/13/22	JLI	SW8260C
Styrene	ND	2.7	0.27	ug/Kg	1	10/13/22	JLI	SW8260C
tert-butyl alcohol	ND	54	11	ug/Kg	1	10/13/22	JLI	SW8260C
Tetrachloroethene	ND	2.7	0.54	ug/Kg	1	10/13/22	JLI	SW8260C
Toluene	ND	2.7	0.27	ug/Kg	1	10/13/22	JLI	SW8260C
Total Xylenes	ND	2.7	2.7	ug/Kg	1	10/13/22	JLI	SW8260C
trans-1,2-Dichloroethene	ND	2.7	0.27	ug/Kg	1	10/13/22	JLI	SW8260C
trans-1,3-Dichloropropene	ND	2.7	0.27	ug/Kg	1	10/13/22	JLI	SW8260C
Trichloroethene	ND	2.7	0.27	ug/Kg	1	10/13/22	JLI	SW8260C
Trichlorofluoromethane	ND	2.7	0.54	ug/Kg	1	10/13/22	JLI	SW8260C

Parameter	Result		RL/ PQL	LOD/ MDL	Units	Dilution	Date/Time	By	Reference	
Trichlorotrifluoroethane	ND		2.7	0.27	ug/Kg	1	10/13/22	JLI	SW8260C	
Vinyl chloride	ND		2.7	0.27	ug/Kg	1	10/13/22	JLI	SW8260C	
QA/QC Surrogates										
% 1,2-dichlorobenzene-d4	96				%	1	10/13/22	JLI	70 - 130 %	
% Bromofluorobenzene	93				%	1	10/13/22	JLI	70 - 130 %	
% Dibromofluoromethane	100				%	1	10/13/22	JLI	70 - 130 %	
% Toluene-d8	94				%	1	10/13/22	JLI	70 - 130 %	
Vinyl Acetate	ND		27	27	ug/Kg	1	10/13/22	JLI	SW8260C	
Semivolatiles										
1,1-Biphenyl	ND		260	110	ug/Kg	1	10/14/22	WB	SW8270D	
1,2,4,5-Tetrachlorobenzene	ND		260	130	ug/Kg	1	10/14/22	WB	SW8270D	
1,2-Diphenylhydrazine	ND		370	370	ug/Kg	1	10/14/22	WB	SW8270D	
2,2'-Oxybis(1-Chloropropane)	ND		260	100	ug/Kg	1	10/14/22	WB	SW8270D	1
2,3,4,6-tetrachlorophenol	ND		260	170	ug/Kg	1	10/14/22	WB	SW8270D	
2,4,5-Trichlorophenol	ND		260	200	ug/Kg	1	10/14/22	WB	SW8270D	
2,4,6-Trichlorophenol	ND		150	120	ug/Kg	1	10/14/22	WB	SW8270D	
2,4-Dichlorophenol	ND		150	130	ug/Kg	1	10/14/22	WB	SW8270D	
2,4-Dimethylphenol	ND		260	91	ug/Kg	1	10/14/22	WB	SW8270D	
2,4-Dinitrophenol	ND		260	260	ug/Kg	1	10/14/22	WB	SW8270D	
2,4-Dinitrotoluene	ND		150	140	ug/Kg	1	10/14/22	WB	SW8270D	
2,6-Dinitrotoluene	ND		150	120	ug/Kg	1	10/14/22	WB	SW8270D	
2-Chloronaphthalene	ND		260	100	ug/Kg	1	10/14/22	WB	SW8270D	
2-Chlorophenol	ND		260	100	ug/Kg	1	10/14/22	WB	SW8270D	
2-Methylnaphthalene	ND		260	110	ug/Kg	1	10/14/22	WB	SW8270D	
2-Methylphenol (o-cresol)	ND		260	170	ug/Kg	1	10/14/22	WB	SW8270D	
2-Nitroaniline	ND		300	260	ug/Kg	1	10/14/22	WB	SW8270D	
2-Nitrophenol	ND		260	230	ug/Kg	1	10/14/22	WB	SW8270D	
3&4-Methylphenol (m&p-cresol)	ND		260	140	ug/Kg	1	10/14/22	WB	SW8270D	1
3,3'-Dichlorobenzidine	ND		150	150	ug/Kg	1	10/14/22	WB	SW8270D	
3-Nitroaniline	ND		740	260	ug/Kg	1	10/14/22	WB	SW8270D	
4,6-Dinitro-2-methylphenol	ND		260	260	ug/Kg	1	10/14/22	WB	SW8270D	
4-Bromophenyl phenyl ether	ND		260	110	ug/Kg	1	10/14/22	WB	SW8270D	
4-Chloro-3-methylphenol	ND		260	130	ug/Kg	1	10/14/22	WB	SW8270D	
4-Chloroaniline	ND		740	170	ug/Kg	1	10/14/22	WB	SW8270D	
4-Chlorophenyl phenyl ether	ND		260	120	ug/Kg	1	10/14/22	WB	SW8270D	
4-Nitroaniline	ND		370	120	ug/Kg	1	10/14/22	WB	SW8270D	
4-Nitrophenol	ND		370	170	ug/Kg	1	10/14/22	WB	SW8270D	
Acenaphthene	ND		260	110	ug/Kg	1	10/14/22	WB	SW8270D	
Acenaphthylene	ND		150	100	ug/Kg	1	10/14/22	WB	SW8270D	
Acetophenone	ND		260	110	ug/Kg	1	10/14/22	WB	SW8270D	
Anthracene	130	J	260	120	ug/Kg	1	10/14/22	WB	SW8270D	
Atrazine	ND		150	110	ug/Kg	1	10/14/22	WB	SW8270D	
Benz(a)anthracene	310		260	120	ug/Kg	1	10/14/22	WB	SW8270D	
Benzaldehyde	ND		260	110	ug/Kg	1	10/14/22	WB	SW8270D	
Benzidine	ND		260	150	ug/Kg	1	10/14/22	WB	SW8270D	
Benzo(a)pyrene	310		150	120	ug/Kg	1	10/14/22	WB	SW8270D	
Benzo(b)fluoranthene	230	J	260	130	ug/Kg	1	10/14/22	WB	SW8270D	
Benzo(ghi)perylene	180	J	260	120	ug/Kg	1	10/14/22	WB	SW8270D	

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Parameter	Result		RL/ PQL	LOD/ MDL	Units	Dilution	Date/Time	By	Reference
Benzo(k)fluoranthene	230	J	260	120	ug/Kg	1	10/14/22	WB	SW8270D
Benzyl Alcohol	ND		370	370	ug/Kg	1	10/14/22	WB	SW8270D
Benzyl butyl phthalate	ND		260	95	ug/Kg	1	10/14/22	WB	SW8270D
Bis(2-chloroethoxy)methane	ND		260	100	ug/Kg	1	10/14/22	WB	SW8270D
Bis(2-chloroethyl)ether	ND		150	99	ug/Kg	1	10/14/22	WB	SW8270D
Bis(2-ethylhexyl)phthalate	ND		260	110	ug/Kg	1	10/14/22	WB	SW8270D
Caprolactam	ND		260	260	ug/Kg	1	10/14/22	WB	SW8270D
Carbazole	ND		180	150	ug/Kg	1	10/14/22	WB	SW8270D
Chrysene	300		260	120	ug/Kg	1	10/14/22	WB	SW8270D
Dibenz(a,h)anthracene	ND		150	120	ug/Kg	1	10/14/22	WB	SW8270D
Dibenzofuran	ND		260	110	ug/Kg	1	10/14/22	WB	SW8270D
Diethyl phthalate	ND		260	120	ug/Kg	1	10/14/22	WB	SW8270D
Dimethylphthalate	ND		260	110	ug/Kg	1	10/14/22	WB	SW8270D
Di-n-butylphthalate	ND		260	98	ug/Kg	1	10/14/22	WB	SW8270D
Di-n-octylphthalate	ND		260	95	ug/Kg	1	10/14/22	WB	SW8270D
Fluoranthene	640		260	120	ug/Kg	1	10/14/22	WB	SW8270D
Fluorene	ND		260	120	ug/Kg	1	10/14/22	WB	SW8270D
Hexachlorobenzene	ND		150	110	ug/Kg	1	10/14/22	WB	SW8270D
Hexachlorobutadiene	ND		260	130	ug/Kg	1	10/14/22	WB	SW8270D
Hexachlorocyclopentadiene	ND		260	110	ug/Kg	1	10/14/22	WB	SW8270D
Hexachloroethane	ND		150	110	ug/Kg	1	10/14/22	WB	SW8270D
Indeno(1,2,3-cd)pyrene	230	J	260	120	ug/Kg	1	10/14/22	WB	SW8270D
Isophorone	ND		150	100	ug/Kg	1	10/14/22	WB	SW8270D
Naphthalene	ND		260	110	ug/Kg	1	10/14/22	WB	SW8270D
Nitrobenzene	ND		150	130	ug/Kg	1	10/14/22	WB	SW8270D
N-Nitrosodimethylamine	ND		260	100	ug/Kg	1	10/14/22	WB	SW8270D
N-Nitrosodi-n-propylamine	ND		150	120	ug/Kg	1	10/14/22	WB	SW8270D
N-Nitrosodiphenylamine	ND		150	140	ug/Kg	1	10/14/22	WB	SW8270D
Pentachlorophenol	ND		260	140	ug/Kg	1	10/14/22	WB	SW8270D
Phenanthrene	500		150	110	ug/Kg	1	10/14/22	WB	SW8270D
Phenol	ND		260	120	ug/Kg	1	10/14/22	WB	SW8270D
Pyrene	550		260	130	ug/Kg	1	10/14/22	WB	SW8270D
QA/QC Surrogates									
% 2,4,6-Tribromophenol	108				%	1	10/14/22	WB	30 - 130 %
% 2-Fluorobiphenyl	56				%	1	10/14/22	WB	30 - 130 %
% 2-Fluorophenol	57				%	1	10/14/22	WB	30 - 130 %
% Nitrobenzene-d5	61				%	1	10/14/22	WB	30 - 130 %
% Phenol-d5	68				%	1	10/14/22	WB	30 - 130 %
% Terphenyl-d14	80				%	1	10/14/22	WB	30 - 130 %
Aniline	ND		370	370	ug/Kg	1	10/14/22	WB	SW8270D
Benzoic Acid	ND		370	260	ug/Kg	1	10/14/22	WB	SW8270D
Parathion	ND		370	150	ug/Kg	1	10/14/22	WB	SW8270D

Parameter	Result	RL/ PQL	LOD/ MDL	Units	Dilution	Date/Time	By	Reference

1 = This parameter is not certified by the primary accrediting authority (NY NELAC) for this matrix. NY NELAC does not offer certification for all parameters at this time.
B = Present in blank, no bias suspected.

RL/PQL=Reporting/Practical Quantitation Level (Equivalent to NELAC LOQ, Limit of Quantitation) ND=Not Detected BRL=Below Reporting Level L=Biased Low J=Estimated Below RL LOD=Limit of Detection MDL=Method Detection Limit1
QA/QC Surrogates: Surrogates are compounds (preceeded with a %) added by the lab to determine analysis efficiency. Surrogate results(%) listed in the report are not "detected" compounds.

Comments:

Per 1.4.6 of EPA method 8270D, 1,2-Diphenylhydrazine is unstable and readily converts to Azobenzene. Azobenzene is used for the calibration of 1,2-Diphenylhydrazine.

Please be advised that the NY 375 soil criteria for chromium are based on hexavalent chromium and trivalent chromium.

The regulatory hold time for pH is immediately. This pH was performed in the laboratory and may be considered outside of hold-time.

Hexavalent Chromium:
This sample is in a reducing state.

Semi-Volatile Comment:
To achieve client's objectives, where the lowest calibration standard or LOD justifies lowering the RL/PQL, the RL/PQL of some compounds have been lowered to meet criteria.

All soils, solids and sludges are reported on a dry weight basis unless otherwise noted in the sample comments.

If you are the client above and have any questions concerning this testing, please do not hesitate to contact Phoenix Client Services at ext.200.
The contents of this report cannot be discussed with anyone other than the client listed above without their written consent.

Phyllis Shiller, Laboratory Director
October 21, 2022
Official Report Release To Follow

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

ACCREDITED IN ACCORDANCE WITH nelac NY # 11301

Analysis Report

October 21, 2022

FOR: Attn: Mr. Jeff Bogoian
Impact Consulting
170 Keyland Court
Bohemia NY 11716

Sample Information		Custody Information		Date	Time
Matrix:	SOIL	Collected by:	SR	10/12/22	8:20
Location Code:	IMPACTJB-IEC	Received by:	CP	10/12/22	17:14
Rush Request:	Standard	Analyzed by:	see "By" below		
P.O.#:	FAC-20				

Laboratory Data

SDG ID: GCM60739
Phoenix ID: CM60743

Project ID: IMJC
Client ID: IMJC NW

Parameter	Result	RL/ PQL	LOD/ MDL	Units	Dilution	Date/Time	By	Reference	
Silver	ND	0.33	0.33	mg/Kg	1	10/14/22	CPP	SW6010D	
Aluminum	17500	33	6.7	mg/Kg	10	10/14/22	CPP	SW6010D	
Arsenic	1.75	0.67	0.67	mg/Kg	1	10/14/22	CPP	SW6010D	
Barium	184	0.7	0.33	mg/Kg	1	10/14/22	CPP	SW6010D	
Beryllium	0.48	0.27	0.13	mg/Kg	1	10/14/22	CPP	SW6010D	
Calcium	7750	3.3	3.1	mg/Kg	1	10/14/22	CPP	SW6010D	
Cadmium	1.59	0.33	0.33	mg/Kg	1	10/14/22	CPP	SW6010D	
Cobalt	22.6	0.33	0.33	mg/Kg	1	10/14/22	CPP	SW6010D	
Chromium	52.8	0.33	0.33	mg/Kg	1	10/14/22	CPP	SW6010D	
Copper	61.7	0.7	0.33	mg/kg	1	10/14/22	CPP	SW6010D	
Iron	32200	33	33	mg/Kg	10	10/14/22	CPP	SW6010D	
Mercury	0.05	0.03	0.02	mg/Kg	2	10/13/22	IE	SW7471B	
Potassium	8530	67	26	mg/Kg	10	10/14/22	CPP	SW6010D	
Magnesium	12400	33	33	mg/Kg	10	10/14/22	CPP	SW6010D	
Manganese	373	3.3	3.3	mg/Kg	10	10/14/22	CPP	SW6010D	
Sodium	779	7	2.9	mg/Kg	1	10/14/22	CPP	SW6010D	
Nickel	52.4	0.33	0.33	mg/Kg	1	10/14/22	CPP	SW6010D	
Lead	29.8	0.7	0.33	mg/Kg	1	10/14/22	CPP	SW6010D	
Antimony	ND	3.3	3.3	mg/Kg	1	10/14/22	CPP	SW6010D	
Selenium	ND	1.3	1.1	mg/Kg	1	10/14/22	CPP	SW6010D	
Thallium	ND	1.3	1.3	mg/Kg	1	10/14/22	CPP	SW6010D	
Trivalent Chromium	52.8	0.33	0.33	mg/kg	1	10/16/22		CALC 6010-7196	
Vanadium	59.0	0.33	0.33	mg/Kg	1	10/14/22	CPP	SW6010D	
Zinc	93.5	0.7	0.33	mg/Kg	1	10/14/22	TH	SW6010D	
Percent Solid	89			%		10/12/22	Q	SW846-%Solid	
Chromium, Hex. (SW3060A digestion	ND	0.44	0.44	mg/Kg	1	10/13/22	DK	SW7196A	
pH at 25C - Soil	9.49	1.00	1.00	pH Units	1	10/12/22 22:59	ER	SW846 9045D	1
Redox Potential	160			mV	1	10/12/22	ER	SM2580B-09	1

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Parameter	Result	RL/ PQL	LOD/ MDL	Units	Dilution	Date/Time	By	Reference	
Total Cyanide (SW9010C Distill.)	ND	0.56	0.281	mg/Kg	1	10/17/22	EG	SW9012B	
Soil Extraction for PCB	Completed					10/12/22	O/E	SW3545A	
Soil Extraction for Pesticides	Completed					10/12/22	O/E	SW3545A	
Mercury Digestion	Completed					10/13/22	KL/KL	SW7471B	
Soil Extraction for Herbicide	Completed					10/13/22	J/D	SW3546	
NJ EPH Extraction	Completed					10/13/22	B/H/C	NJDEP 10-08 R3	
Soil Extraction for SVOA	Completed					10/13/22	M/B/U	SW3546	
Total Metals Digest	Completed					10/12/22	J/AG	SW3050B	
NJ EPH Category 2									
Total EPH (C9-C40)	ND	56	56	mg/kg	1	10/15/22	JRB	NJEPH 10-08 R3	1
QA/QC Surrogates									
% COD (surr)	115			%	1	10/15/22	JRB	40 - 140 %	
% Terphenyl (surr)	139			%	1	10/15/22	JRB	40 - 140 %	
Chlorinated Herbicides									
2,4,5-T	ND	140	140	ug/Kg	10	10/15/22	JRB	SW8151A	
2,4,5-TP (Silvex)	ND	140	140	ug/Kg	10	10/15/22	JRB	SW8151A	
2,4-D	ND	280	280	ug/Kg	10	10/15/22	JRB	SW8151A	
2,4-DB	ND	2800	2800	ug/Kg	10	10/15/22	JRB	SW8151A	
Dalapon	ND	140	140	ug/Kg	10	10/15/22	JRB	SW8151A	
Dicamba	ND	140	140	ug/Kg	10	10/15/22	JRB	SW8151A	
Dichloroprop	ND	280	280	ug/Kg	10	10/15/22	JRB	SW8151A	
Dinoseb	ND	280	280	ug/Kg	10	10/15/22	JRB	SW8151A	
QA/QC Surrogates									
% DCAA	74			%	10	10/15/22	JRB	30 - 150 %	
% DCAA (Confirmation)	86			%	10	10/15/22	JRB	30 - 150 %	
Polychlorinated Biphenyls									
PCB-1016	ND	74	74	ug/Kg	2	10/13/22	SC	SW8082A	
PCB-1221	ND	74	74	ug/Kg	2	10/13/22	SC	SW8082A	
PCB-1232	ND	74	74	ug/Kg	2	10/13/22	SC	SW8082A	
PCB-1242	ND	74	74	ug/Kg	2	10/13/22	SC	SW8082A	
PCB-1248	ND	74	74	ug/Kg	2	10/13/22	SC	SW8082A	
PCB-1254	ND	74	74	ug/Kg	2	10/13/22	SC	SW8082A	
PCB-1260	ND	74	74	ug/Kg	2	10/13/22	SC	SW8082A	
PCB-1262	ND	74	74	ug/Kg	2	10/13/22	SC	SW8082A	
PCB-1268	ND	74	74	ug/Kg	2	10/13/22	SC	SW8082A	
QA/QC Surrogates									
% DCBP	73			%	2	10/13/22	SC	30 - 150 %	
% DCBP (Confirmation)	81			%	2	10/13/22	SC	30 - 150 %	
% TCMX	75			%	2	10/13/22	SC	30 - 150 %	
% TCMX (Confirmation)	83			%	2	10/13/22	SC	30 - 150 %	
Pesticides - Soil									
4,4' -DDD	ND	2.2	2.2	ug/Kg	2	10/13/22	AW	SW8081B	
4,4' -DDE	ND	2.2	2.2	ug/Kg	2	10/13/22	AW	SW8081B	
4,4' -DDT	6.1	2.2	2.2	ug/Kg	2	10/13/22	AW	SW8081B	
a-BHC	ND	1.5	1.5	ug/Kg	2	10/13/22	AW	SW8081B	

Parameter	Result	RL/ PQL	LOD/ MDL	Units	Dilution	Date/Time	By	Reference
a-Chlordane	ND	3.7	3.7	ug/Kg	2	10/13/22	AW	SW8081B
Alachlor	ND	3.7	3.7	ug/Kg	2	10/13/22	AW	SW8081B
Aldrin	ND	3.7	3.7	ug/Kg	2	10/13/22	AW	SW8081B
b-BHC	ND	1.5	1.5	ug/Kg	2	10/13/22	AW	SW8081B
Chlordane	ND	37	37	ug/Kg	2	10/13/22	AW	SW8081B
d-BHC	ND	7.4	7.4	ug/Kg	2	10/13/22	AW	SW8081B
Dieldrin	ND	1.5	1.5	ug/Kg	2	10/13/22	AW	SW8081B
Endosulfan I	ND	7.4	7.4	ug/Kg	2	10/13/22	AW	SW8081B
Endosulfan II	ND	7.4	7.4	ug/Kg	2	10/13/22	AW	SW8081B
Endosulfan sulfate	ND	7.4	7.4	ug/Kg	2	10/13/22	AW	SW8081B
Endrin	ND	7.4	7.4	ug/Kg	2	10/13/22	AW	SW8081B
Endrin aldehyde	ND	7.4	7.4	ug/Kg	2	10/13/22	AW	SW8081B
Endrin ketone	ND	7.4	7.4	ug/Kg	2	10/13/22	AW	SW8081B
g-BHC	ND	1.5	1.5	ug/Kg	2	10/13/22	AW	SW8081B
g-Chlordane	ND	3.7	3.7	ug/Kg	2	10/13/22	AW	SW8081B
Heptachlor	ND	7.4	7.4	ug/Kg	2	10/13/22	AW	SW8081B
Heptachlor epoxide	ND	7.4	7.4	ug/Kg	2	10/13/22	AW	SW8081B
Methoxychlor	ND	37	37	ug/Kg	2	10/13/22	AW	SW8081B
Toxaphene	ND	150	150	ug/Kg	2	10/13/22	AW	SW8081B
QA/QC Surrogates								
% DCBP	55			%	2	10/13/22	AW	30 - 150 %
% DCBP (Confirmation)	54			%	2	10/13/22	AW	30 - 150 %
% TCMX	68			%	2	10/13/22	AW	30 - 150 %
% TCMX (Confirmation)	62			%	2	10/13/22	AW	30 - 150 %
Volatiles								
1,2,4-Trimethylbenzene	ND	3.1	0.31	ug/Kg	1	10/13/22	JLI	SW8260C
1,3,5-Trimethylbenzene	ND	3.1	0.31	ug/Kg	1	10/13/22	JLI	SW8260C
1,3-Dichlorobenzene	ND	3.1	0.31	ug/Kg	1	10/13/22	JLI	SW8260C
Naphthalene	ND	3.1	0.63	ug/Kg	1	10/13/22	JLI	SW8260C
n-Butylbenzene	ND	3.1	0.31	ug/Kg	1	10/13/22	JLI	SW8260C
n-Propylbenzene	ND	3.1	0.63	ug/Kg	1	10/13/22	JLI	SW8260C
p-Isopropyltoluene	ND	3.1	0.31	ug/Kg	1	10/13/22	JLI	SW8260C
sec-Butylbenzene	ND	3.1	0.31	ug/Kg	1	10/13/22	JLI	SW8260C
tert-Butylbenzene	ND	3.1	0.31	ug/Kg	1	10/13/22	JLI	SW8260C
QA/QC Surrogates								
% 1,2-dichlorobenzene-d4	97			%	1	10/13/22	JLI	70 - 130 %
% Bromofluorobenzene	93			%	1	10/13/22	JLI	70 - 130 %
% Dibromofluoromethane	97			%	1	10/13/22	JLI	70 - 130 %
% Toluene-d8	91			%	1	10/13/22	JLI	70 - 130 %
1,4-dioxane								
1,4-dioxane	ND	47	25	ug/kg	1	10/13/22	JLI	SW8260C
Volatiles								
1,1,1,2-Tetrachloroethane	ND	3.1	0.63	ug/Kg	1	10/13/22	JLI	SW8260C
1,1,1-Trichloroethane	ND	3.1	0.31	ug/Kg	1	10/13/22	JLI	SW8260C
1,1,2,2-Tetrachloroethane	ND	3.1	0.63	ug/Kg	1	10/13/22	JLI	SW8260C
1,1,2-Trichloroethane	ND	3.1	0.63	ug/Kg	1	10/13/22	JLI	SW8260C
1,1-Dichloroethane	ND	3.1	0.63	ug/Kg	1	10/13/22	JLI	SW8260C

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1,1-Dichloroethene	ND	3.1	0.31	ug/Kg	1	10/13/22	JLI	SW8260C
1,2,3-Trichlorobenzene	ND	3.1	0.63	ug/Kg	1	10/13/22	JLI	SW8260C
1,2,4-Trichlorobenzene	ND	3.1	0.63	ug/Kg	1	10/13/22	JLI	SW8260C
1,2-Dibromo-3-chloropropane	ND	3.1	0.63	ug/Kg	1	10/13/22	JLI	SW8260C
1,2-Dibromoethane	ND	2.8	0.31	ug/Kg	1	10/13/22	JLI	SW8260C
1,2-Dichlorobenzene	ND	3.1	0.31	ug/Kg	1	10/13/22	JLI	SW8260C
1,2-Dichloroethane	ND	3.1	0.31	ug/Kg	1	10/13/22	JLI	SW8260C
1,2-Dichloropropane	ND	3.1	0.63	ug/Kg	1	10/13/22	JLI	SW8260C
1,3-Dichlorobenzene	ND	3.1	0.31	ug/Kg	1	10/13/22	JLI	SW8260C
1,4-Dichlorobenzene	ND	3.1	0.31	ug/Kg	1	10/13/22	JLI	SW8260C
2-Hexanone	ND	16	3.1	ug/Kg	1	10/13/22	JLI	SW8260C
4-Methyl-2-pentanone	ND	16	3.1	ug/Kg	1	10/13/22	JLI	SW8260C
Acetone	ND	31	3.1	ug/Kg	1	10/13/22	JLI	SW8260C
Acrolein	ND	16	1.6	ug/Kg	1	10/13/22	JLI	SW8260C
Acrylonitrile	ND	6.3	0.31	ug/Kg	1	10/13/22	JLI	SW8260C
Benzene	ND	3.1	0.31	ug/Kg	1	10/13/22	JLI	SW8260C
Bromochloromethane	ND	3.1	0.31	ug/Kg	1	10/13/22	JLI	SW8260C
Bromodichloromethane	ND	3.1	0.63	ug/Kg	1	10/13/22	JLI	SW8260C
Bromoform	ND	3.1	0.63	ug/Kg	1	10/13/22	JLI	SW8260C
Bromomethane	ND	3.1	1.3	ug/Kg	1	10/13/22	JLI	SW8260C
Carbon Disulfide	ND	3.1	0.63	ug/Kg	1	10/13/22	JLI	SW8260C
Carbon tetrachloride	ND	3.1	0.63	ug/Kg	1	10/13/22	JLI	SW8260C
Chlorobenzene	ND	3.1	0.31	ug/Kg	1	10/13/22	JLI	SW8260C
Chloroethane	ND	3.1	0.31	ug/Kg	1	10/13/22	JLI	SW8260C
Chloroform	ND	3.1	0.31	ug/Kg	1	10/13/22	JLI	SW8260C
Chloromethane	ND	3.1	0.63	ug/Kg	1	10/13/22	JLI	SW8260C
cis-1,2-Dichloroethene	ND	3.1	0.31	ug/Kg	1	10/13/22	JLI	SW8260C
cis-1,3-Dichloropropene	ND	3.1	0.31	ug/Kg	1	10/13/22	JLI	SW8260C
Cyclohexane	ND	3.1	0.63	ug/Kg	1	10/13/22	JLI	SW8260C
Dibromochloromethane	ND	3.1	0.63	ug/Kg	1	10/13/22	JLI	SW8260C
Dichlorodifluoromethane	ND	3.1	0.31	ug/Kg	1	10/13/22	JLI	SW8260C
Ethylbenzene	ND	3.1	0.31	ug/Kg	1	10/13/22	JLI	SW8260C
Isopropylbenzene	ND	3.1	0.31	ug/Kg	1	10/13/22	JLI	SW8260C
m&p-Xylene	ND	3.1	0.63	ug/Kg	1	10/13/22	JLI	SW8260C
Methyl ethyl ketone	ND	19	3.1	ug/Kg	1	10/13/22	JLI	SW8260C
Methyl t-butyl ether (MTBE)	ND	6.3	0.63	ug/Kg	1	10/13/22	JLI	SW8260C
Methylacetate	ND	6.3	6.3	ug/Kg	1	10/13/22	JLI	SW8260C
Methylcyclohexane	ND	3.1	0.63	ug/Kg	1	10/13/22	JLI	SW8260C
Methylene chloride	ND	3.1	3.1	ug/Kg	1	10/13/22	JLI	SW8260C
o-Xylene	ND	3.1	0.63	ug/Kg	1	10/13/22	JLI	SW8260C
Styrene	ND	3.1	0.31	ug/Kg	1	10/13/22	JLI	SW8260C
tert-butyl alcohol	ND	63	13	ug/Kg	1	10/13/22	JLI	SW8260C
Tetrachloroethene	ND	3.1	0.63	ug/Kg	1	10/13/22	JLI	SW8260C
Toluene	ND	3.1	0.31	ug/Kg	1	10/13/22	JLI	SW8260C
Total Xylenes	ND	3.1	3.1	ug/Kg	1	10/13/22	JLI	SW8260C
trans-1,2-Dichloroethene	ND	3.1	0.31	ug/Kg	1	10/13/22	JLI	SW8260C
trans-1,3-Dichloropropene	ND	3.1	0.31	ug/Kg	1	10/13/22	JLI	SW8260C
Trichloroethene	ND	3.1	0.31	ug/Kg	1	10/13/22	JLI	SW8260C
Trichlorofluoromethane	ND	3.1	0.63	ug/Kg	1	10/13/22	JLI	SW8260C

Parameter	Result		RL/ PQL	LOD/ MDL	Units	Dilution	Date/Time	By	Reference	
Trichlorotrifluoroethane	ND		3.1	0.31	ug/Kg	1	10/13/22	JLI	SW8260C	
Vinyl chloride	ND		3.1	0.31	ug/Kg	1	10/13/22	JLI	SW8260C	
QA/QC Surrogates										
% 1,2-dichlorobenzene-d4	97				%	1	10/13/22	JLI	70 - 130 %	
% Bromofluorobenzene	93				%	1	10/13/22	JLI	70 - 130 %	
% Dibromofluoromethane	97				%	1	10/13/22	JLI	70 - 130 %	
% Toluene-d8	91				%	1	10/13/22	JLI	70 - 130 %	
Vinyl Acetate	ND		31	31	ug/Kg	1	10/13/22	JLI	SW8260C	
Semivolatiles										
1,1-Biphenyl	ND		260	110	ug/Kg	1	10/14/22	WB	SW8270D	
1,2,4,5-Tetrachlorobenzene	ND		260	130	ug/Kg	1	10/14/22	WB	SW8270D	
1,2-Diphenylhydrazine	ND		370	370	ug/Kg	1	10/14/22	WB	SW8270D	
2,2'-Oxybis(1-Chloropropane)	ND		260	100	ug/Kg	1	10/14/22	WB	SW8270D	1
2,3,4,6-tetrachlorophenol	ND		260	170	ug/Kg	1	10/14/22	WB	SW8270D	
2,4,5-Trichlorophenol	ND		260	200	ug/Kg	1	10/14/22	WB	SW8270D	
2,4,6-Trichlorophenol	ND		150	120	ug/Kg	1	10/14/22	WB	SW8270D	
2,4-Dichlorophenol	ND		150	130	ug/Kg	1	10/14/22	WB	SW8270D	
2,4-Dimethylphenol	ND		260	92	ug/Kg	1	10/14/22	WB	SW8270D	
2,4-Dinitrophenol	ND		260	260	ug/Kg	1	10/14/22	WB	SW8270D	
2,4-Dinitrotoluene	ND		150	150	ug/Kg	1	10/14/22	WB	SW8270D	
2,6-Dinitrotoluene	ND		150	120	ug/Kg	1	10/14/22	WB	SW8270D	
2-Chloronaphthalene	ND		260	110	ug/Kg	1	10/14/22	WB	SW8270D	
2-Chlorophenol	ND		260	110	ug/Kg	1	10/14/22	WB	SW8270D	
2-Methylnaphthalene	ND		260	110	ug/Kg	1	10/14/22	WB	SW8270D	
2-Methylphenol (o-cresol)	ND		260	170	ug/Kg	1	10/14/22	WB	SW8270D	
2-Nitroaniline	ND		300	260	ug/Kg	1	10/14/22	WB	SW8270D	
2-Nitrophenol	ND		260	240	ug/Kg	1	10/14/22	WB	SW8270D	
3&4-Methylphenol (m&p-cresol)	ND		260	150	ug/Kg	1	10/14/22	WB	SW8270D	1
3,3'-Dichlorobenzidine	ND		150	150	ug/Kg	1	10/14/22	WB	SW8270D	
3-Nitroaniline	ND		740	260	ug/Kg	1	10/14/22	WB	SW8270D	
4,6-Dinitro-2-methylphenol	ND		260	260	ug/Kg	1	10/14/22	WB	SW8270D	
4-Bromophenyl phenyl ether	ND		260	110	ug/Kg	1	10/14/22	WB	SW8270D	
4-Chloro-3-methylphenol	ND		260	130	ug/Kg	1	10/14/22	WB	SW8270D	
4-Chloroaniline	ND		740	170	ug/Kg	1	10/14/22	WB	SW8270D	
4-Chlorophenyl phenyl ether	ND		260	130	ug/Kg	1	10/14/22	WB	SW8270D	
4-Nitroaniline	ND		370	120	ug/Kg	1	10/14/22	WB	SW8270D	
4-Nitrophenol	ND		370	170	ug/Kg	1	10/14/22	WB	SW8270D	
Acenaphthene	ND		260	110	ug/Kg	1	10/14/22	WB	SW8270D	
Acenaphthylene	ND		150	100	ug/Kg	1	10/14/22	WB	SW8270D	
Acetophenone	ND		260	120	ug/Kg	1	10/14/22	WB	SW8270D	
Anthracene	ND		260	120	ug/Kg	1	10/14/22	WB	SW8270D	
Atrazine	ND		150	110	ug/Kg	1	10/14/22	WB	SW8270D	
Benz(a)anthracene	180	J	260	130	ug/Kg	1	10/14/22	WB	SW8270D	
Benzaldehyde	ND		260	110	ug/Kg	1	10/14/22	WB	SW8270D	
Benzidine	ND		260	150	ug/Kg	1	10/14/22	WB	SW8270D	
Benzo(a)pyrene	200		150	120	ug/Kg	1	10/14/22	WB	SW8270D	
Benzo(b)fluoranthene	150	J	260	130	ug/Kg	1	10/14/22	WB	SW8270D	
Benzo(ghi)perylene	120	J	260	120	ug/Kg	1	10/14/22	WB	SW8270D	

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Parameter	Result		RL/ PQL	LOD/ MDL	Units	Dilution	Date/Time	By	Reference
Benzo(k)fluoranthene	140	J	260	120	ug/Kg	1	10/14/22	WB	SW8270D
Benzyl Alcohol	ND		370	370	ug/Kg	1	10/14/22	WB	SW8270D
Benzyl butyl phthalate	ND		260	96	ug/Kg	1	10/14/22	WB	SW8270D
Bis(2-chloroethoxy)methane	ND		260	100	ug/Kg	1	10/14/22	WB	SW8270D
Bis(2-chloroethyl)ether	ND		150	100	ug/Kg	1	10/14/22	WB	SW8270D
Bis(2-ethylhexyl)phthalate	ND		260	110	ug/Kg	1	10/14/22	WB	SW8270D
Caprolactam	ND		260	260	ug/Kg	1	10/14/22	WB	SW8270D
Carbazole	ND		190	150	ug/Kg	1	10/14/22	WB	SW8270D
Chrysene	190	J	260	130	ug/Kg	1	10/14/22	WB	SW8270D
Dibenz(a,h)anthracene	ND		150	120	ug/Kg	1	10/14/22	WB	SW8270D
Dibenzofuran	ND		260	110	ug/Kg	1	10/14/22	WB	SW8270D
Diethyl phthalate	ND		260	120	ug/Kg	1	10/14/22	WB	SW8270D
Dimethylphthalate	ND		260	120	ug/Kg	1	10/14/22	WB	SW8270D
Di-n-butylphthalate	ND		260	99	ug/Kg	1	10/14/22	WB	SW8270D
Di-n-octylphthalate	ND		260	96	ug/Kg	1	10/14/22	WB	SW8270D
Fluoranthene	350		260	120	ug/Kg	1	10/14/22	WB	SW8270D
Fluorene	ND		260	120	ug/Kg	1	10/14/22	WB	SW8270D
Hexachlorobenzene	ND		150	110	ug/Kg	1	10/14/22	WB	SW8270D
Hexachlorobutadiene	ND		260	130	ug/Kg	1	10/14/22	WB	SW8270D
Hexachlorocyclopentadiene	ND		260	110	ug/Kg	1	10/14/22	WB	SW8270D
Hexachloroethane	ND		150	110	ug/Kg	1	10/14/22	WB	SW8270D
Indeno(1,2,3-cd)pyrene	150	J	260	120	ug/Kg	1	10/14/22	WB	SW8270D
Isophorone	ND		150	100	ug/Kg	1	10/14/22	WB	SW8270D
Naphthalene	ND		260	110	ug/Kg	1	10/14/22	WB	SW8270D
Nitrobenzene	ND		150	130	ug/Kg	1	10/14/22	WB	SW8270D
N-Nitrosodimethylamine	ND		260	100	ug/Kg	1	10/14/22	WB	SW8270D
N-Nitrosodi-n-propylamine	ND		150	120	ug/Kg	1	10/14/22	WB	SW8270D
N-Nitrosodiphenylamine	ND		150	140	ug/Kg	1	10/14/22	WB	SW8270D
Pentachlorophenol	ND		260	140	ug/Kg	1	10/14/22	WB	SW8270D
Phenanthrene	220		150	110	ug/Kg	1	10/14/22	WB	SW8270D
Phenol	ND		260	120	ug/Kg	1	10/14/22	WB	SW8270D
Pyrene	330		260	130	ug/Kg	1	10/14/22	WB	SW8270D
QA/QC Surrogates									
% 2,4,6-Tribromophenol	111				%	1	10/14/22	WB	30 - 130 %
% 2-Fluorobiphenyl	66				%	1	10/14/22	WB	30 - 130 %
% 2-Fluorophenol	71				%	1	10/14/22	WB	30 - 130 %
% Nitrobenzene-d5	74				%	1	10/14/22	WB	30 - 130 %
% Phenol-d5	79				%	1	10/14/22	WB	30 - 130 %
% Terphenyl-d14	88				%	1	10/14/22	WB	30 - 130 %
Aniline	ND		370	370	ug/Kg	1	10/14/22	WB	SW8270D
Benzoic Acid	ND		370	260	ug/Kg	1	10/14/22	WB	SW8270D
Parathion	ND		370	150	ug/Kg	1	10/14/22	WB	SW8270D

Parameter	Result	RL/ PQL	LOD/ MDL	Units	Dilution	Date/Time	By	Reference

1 = This parameter is not certified by the primary accrediting authority (NY NELAC) for this matrix. NY NELAC does not offer certification for all parameters at this time.

RL/PQL=Reporting/Practical Quantitation Level (Equivalent to NELAC LOQ, Limit of Quantitation) ND=Not Detected BRL=Below Reporting Level L=Biased Low J=Estimated Below RL LOD=Limit of Detection MDL=Method Detection Limit1
QA/QC Surrogates: Surrogates are compounds (preceeded with a %) added by the lab to determine analysis efficiency. Surrogate results(%) listed in the report are not "detected" compounds.

Comments:

Per 1.4.6 of EPA method 8270D, 1,2-Diphenylhydrazine is unstable and readily converts to Azobenzene. Azobenzene is used for the calibration of 1,2-Diphenylhydrazine.

Please be advised that the NY 375 soil criteria for chromium are based on hexavalent chromium and trivalent chromium.

The regulatory hold time for pH is immediately. This pH was performed in the laboratory and may be considered outside of hold-time.

Hexavalent Chromium:
This sample is in a reducing state.

Semi-Volatile Comment:
To achieve client's objectives, where the lowest calibration standard or LOD justifies lowering the RL/PQL, the RL/PQL of some compounds have been lowered to meet criteria.

All soils, solids and sludges are reported on a dry weight basis unless otherwise noted in the sample comments.

If you are the client above and have any questions concerning this testing, please do not hesitate to contact Phoenix Client Services at ext.200.
The contents of this report cannot be discussed with anyone other than the client listed above without their written consent.

Phyllis Shiller, Laboratory Director
October 21, 2022
Official Report Release To Follow

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

ACCREDITED IN ACCORDANCE WITH nelac NY # 11301

Analysis Report

October 21, 2022

FOR: Attn: Mr. Jeff Bogoian
Impact Consulting
170 Keyland Court
Bohemia NY 11716

Sample Information		Custody Information		Date	Time
Matrix:	SOIL	Collected by:	SR	10/12/22	8:25
Location Code:	IMPACTJB-IEC	Received by:	CP	10/12/22	17:14
Rush Request:	72 Hour	Analyzed by:	see "By" below		
P.O.#:	FAC-20				

Laboratory Data

SDG ID: GCM60739
Phoenix ID: CM60744

Project ID: IMJC
Client ID: IMJC NE

Parameter	Result	RL/ PQL	LOD/ MDL	Units	Dilution	Date/Time	By	Reference	
Silver	ND	0.34	0.34	mg/Kg	1	10/14/22	CPP	SW6010D	
Aluminum	15300	34	6.9	mg/Kg	10	10/14/22	CPP	SW6010D	
Arsenic	2.13	0.69	0.69	mg/Kg	1	10/14/22	CPP	SW6010D	
Barium	148	0.7	0.34	mg/Kg	1	10/14/22	CPP	SW6010D	
Beryllium	0.41	0.27	0.14	mg/Kg	1	10/14/22	CPP	SW6010D	
Calcium	7990	3.4	3.2	mg/Kg	1	10/14/22	CPP	SW6010D	
Cadmium	1.52	0.34	0.34	mg/Kg	1	10/14/22	CPP	SW6010D	
Cobalt	18.2	0.33	0.33	mg/Kg	1	10/21/22	TH	SW6010D	
Chromium	45.1	0.34	0.34	mg/Kg	1	10/14/22	CPP	SW6010D	
Copper	56.5	0.7	0.34	mg/kg	1	10/14/22	CPP	SW6010D	
Iron	29500	34	34	mg/Kg	10	10/14/22	CPP	SW6010D	B
Mercury	0.07	0.03	0.02	mg/Kg	2	10/13/22	IE	SW7471B	
Potassium	6010	69	27	mg/Kg	10	10/14/22	CPP	SW6010D	B
Magnesium	12600	34	34	mg/Kg	10	10/14/22	CPP	SW6010D	
Manganese	475	3.4	3.4	mg/Kg	10	10/14/22	CPP	SW6010D	
Sodium	841	7	3.0	mg/Kg	1	10/14/22	CPP	SW6010D	
Nickel	58.8	0.34	0.34	mg/Kg	1	10/14/22	CPP	SW6010D	
Lead	31.1	0.7	0.34	mg/Kg	1	10/14/22	CPP	SW6010D	
Antimony	ND	3.4	3.4	mg/Kg	1	10/14/22	CPP	SW6010D	
Selenium	ND	1.4	1.2	mg/Kg	1	10/14/22	CPP	SW6010D	
Thallium	ND	1.4	1.4	mg/Kg	1	10/14/22	CPP	SW6010D	
Trivalent Chromium	45.1	0.34	0.34	mg/kg	1	10/16/22		CALC 6010-7196	
Vanadium	57.0	0.34	0.34	mg/Kg	1	10/14/22	CPP	SW6010D	
Zinc	88.7	0.7	0.34	mg/Kg	1	10/14/22	TH	SW6010D	
Percent Solid	91			%		10/12/22	Q	SW846-%Solid	
Chromium, Hex. (SW3060A digestion	ND	0.43	0.43	mg/Kg	1	10/13/22	DK	SW7196A	
pH at 25C - Soil	9.52	1.00	1.00	pH Units	1	10/12/22 22:59	ER	SW846 9045D	1
Redox Potential	170			mV	1	10/12/22	ER	SM2580B-09	1

Project ID: IMJC
Client ID: IMJC NE

Phoenix I.D.: CM60744

Parameter	Result	RL/ PQL	LOD/ MDL	Units	Dilution	Date/Time	By	Reference	
Total Cyanide (SW9010C Distill.)	ND	0.55	0.275	mg/Kg	1	10/17/22	EG	SW9012B	
Soil Extraction for PCB	Completed					10/12/22	O/E	SW3545A	
Soil Extraction for Pesticides	Completed					10/12/22	O/E	SW3545A	
Mercury Digestion	Completed					10/13/22	KL/KL	SW7471B	
Soil Extraction for Herbicide	Completed					10/13/22	J/D	SW3546	
NJ EPH Extraction	Completed					10/13/22	B/H/C	NJDEP 10-08 R3	
Soil Extraction for SVOA	Completed					10/13/22	M/B/U	SW3546	
Total Metals Digest	Completed					10/19/22	J/AG	SW3050B	
NJ EPH Category 2									
Total EPH (C9-C40)	ND	55	55	mg/kg	1	10/15/22	JRB	NJEPH 10-08 R3	1
QA/QC Surrogates									
% COD (surr)	84			%	1	10/15/22	JRB	40 - 140 %	
% Terphenyl (surr)	96			%	1	10/15/22	JRB	40 - 140 %	
Chlorinated Herbicides									
2,4,5-T	ND	140	140	ug/Kg	10	10/15/22	JRB	SW8151A	
2,4,5-TP (Silvex)	ND	140	140	ug/Kg	10	10/15/22	JRB	SW8151A	
2,4-D	ND	270	270	ug/Kg	10	10/15/22	JRB	SW8151A	
2,4-DB	ND	2700	2700	ug/Kg	10	10/15/22	JRB	SW8151A	
Dalapon	ND	140	140	ug/Kg	10	10/15/22	JRB	SW8151A	
Dicamba	ND	140	140	ug/Kg	10	10/15/22	JRB	SW8151A	
Dichloroprop	ND	270	270	ug/Kg	10	10/15/22	JRB	SW8151A	
Dinoseb	ND	270	270	ug/Kg	10	10/15/22	JRB	SW8151A	
QA/QC Surrogates									
% DCAA	77			%	10	10/15/22	JRB	30 - 150 %	
% DCAA (Confirmation)	94			%	10	10/15/22	JRB	30 - 150 %	
Polychlorinated Biphenyls									
PCB-1016	ND	73	73	ug/Kg	2	10/13/22	SC	SW8082A	
PCB-1221	ND	73	73	ug/Kg	2	10/13/22	SC	SW8082A	
PCB-1232	ND	73	73	ug/Kg	2	10/13/22	SC	SW8082A	
PCB-1242	ND	73	73	ug/Kg	2	10/13/22	SC	SW8082A	
PCB-1248	ND	73	73	ug/Kg	2	10/13/22	SC	SW8082A	
PCB-1254	ND	73	73	ug/Kg	2	10/13/22	SC	SW8082A	
PCB-1260	ND	73	73	ug/Kg	2	10/13/22	SC	SW8082A	
PCB-1262	ND	73	73	ug/Kg	2	10/13/22	SC	SW8082A	
PCB-1268	ND	73	73	ug/Kg	2	10/13/22	SC	SW8082A	
QA/QC Surrogates									
% DCBP	64			%	2	10/13/22	SC	30 - 150 %	
% DCBP (Confirmation)	74			%	2	10/13/22	SC	30 - 150 %	
% TCMX	71			%	2	10/13/22	SC	30 - 150 %	
% TCMX (Confirmation)	77			%	2	10/13/22	SC	30 - 150 %	
Pesticides - Soil									
4,4' -DDD	ND	2.2	2.2	ug/Kg	2	10/14/22	AW	SW8081B	
4,4' -DDE	ND	2.2	2.2	ug/Kg	2	10/14/22	AW	SW8081B	
4,4' -DDT	5.6	2.2	2.2	ug/Kg	2	10/14/22	AW	SW8081B	
a-BHC	ND	1.5	1.5	ug/Kg	2	10/14/22	AW	SW8081B	

Parameter	Result	RL/ PQL	LOD/ MDL	Units	Dilution	Date/Time	By	Reference
a-Chlordane	ND	3.6	3.6	ug/Kg	2	10/14/22	AW	SW8081B
Alachlor	ND	3.6	3.6	ug/Kg	2	10/14/22	AW	SW8081B
Aldrin	ND	3.6	3.6	ug/Kg	2	10/14/22	AW	SW8081B
b-BHC	ND	1.5	1.5	ug/Kg	2	10/14/22	AW	SW8081B
Chlordane	ND	36	36	ug/Kg	2	10/14/22	AW	SW8081B
d-BHC	ND	7.3	7.3	ug/Kg	2	10/14/22	AW	SW8081B
Dieldrin	ND	1.5	1.5	ug/Kg	2	10/14/22	AW	SW8081B
Endosulfan I	ND	7.3	7.3	ug/Kg	2	10/14/22	AW	SW8081B
Endosulfan II	ND	7.3	7.3	ug/Kg	2	10/14/22	AW	SW8081B
Endosulfan sulfate	ND	7.3	7.3	ug/Kg	2	10/14/22	AW	SW8081B
Endrin	ND	7.3	7.3	ug/Kg	2	10/14/22	AW	SW8081B
Endrin aldehyde	ND	7.3	7.3	ug/Kg	2	10/14/22	AW	SW8081B
Endrin ketone	ND	7.3	7.3	ug/Kg	2	10/14/22	AW	SW8081B
g-BHC	ND	1.5	1.5	ug/Kg	2	10/14/22	AW	SW8081B
g-Chlordane	ND	5.0	5.0	ug/Kg	2	10/14/22	AW	SW8081B
Heptachlor	ND	7.3	7.3	ug/Kg	2	10/14/22	AW	SW8081B
Heptachlor epoxide	ND	7.3	7.3	ug/Kg	2	10/14/22	AW	SW8081B
Methoxychlor	ND	36	36	ug/Kg	2	10/14/22	AW	SW8081B
Toxaphene	ND	150	150	ug/Kg	2	10/14/22	AW	SW8081B
QA/QC Surrogates								
% DCBP	55			%	2	10/14/22	AW	30 - 150 %
% DCBP (Confirmation)	54			%	2	10/14/22	AW	30 - 150 %
% TCMX	66			%	2	10/14/22	AW	30 - 150 %
% TCMX (Confirmation)	63			%	2	10/14/22	AW	30 - 150 %
Volatiles								
1,2,4-Trimethylbenzene	ND	2.5	0.25	ug/Kg	1	10/13/22	JLI	SW8260C
1,3,5-Trimethylbenzene	ND	2.5	0.25	ug/Kg	1	10/13/22	JLI	SW8260C
1,3-Dichlorobenzene	ND	2.5	0.25	ug/Kg	1	10/13/22	JLI	SW8260C
Naphthalene	ND	2.5	0.51	ug/Kg	1	10/13/22	JLI	SW8260C
n-Butylbenzene	ND	2.5	0.25	ug/Kg	1	10/13/22	JLI	SW8260C
n-Propylbenzene	ND	2.5	0.51	ug/Kg	1	10/13/22	JLI	SW8260C
p-Isopropyltoluene	ND	2.5	0.25	ug/Kg	1	10/13/22	JLI	SW8260C
sec-Butylbenzene	ND	2.5	0.25	ug/Kg	1	10/13/22	JLI	SW8260C
tert-Butylbenzene	ND	2.5	0.25	ug/Kg	1	10/13/22	JLI	SW8260C
QA/QC Surrogates								
% 1,2-dichlorobenzene-d4	97			%	1	10/13/22	JLI	70 - 130 %
% Bromofluorobenzene	93			%	1	10/13/22	JLI	70 - 130 %
% Dibromofluoromethane	100			%	1	10/13/22	JLI	70 - 130 %
% Toluene-d8	91			%	1	10/13/22	JLI	70 - 130 %
1,4-dioxane								
1,4-dioxane	ND	38	20	ug/kg	1	10/13/22	JLI	SW8260C
Volatiles								
1,1,1,2-Tetrachloroethane	ND	2.5	0.51	ug/Kg	1	10/13/22	JLI	SW8260C
1,1,1-Trichloroethane	ND	2.5	0.25	ug/Kg	1	10/13/22	JLI	SW8260C
1,1,2,2-Tetrachloroethane	ND	2.5	0.51	ug/Kg	1	10/13/22	JLI	SW8260C
1,1,2-Trichloroethane	ND	2.5	0.51	ug/Kg	1	10/13/22	JLI	SW8260C
1,1-Dichloroethane	ND	2.5	0.51	ug/Kg	1	10/13/22	JLI	SW8260C

Project ID: IMJC
Client ID: IMJC NE

Phoenix I.D.: CM60744

Parameter	Result	RL/ PQL	LOD/ MDL	Units	Dilution	Date/Time	By	Reference
1,1-Dichloroethene	ND	2.5	0.25	ug/Kg	1	10/13/22	JLI	SW8260C
1,2,3-Trichlorobenzene	ND	2.5	0.51	ug/Kg	1	10/13/22	JLI	SW8260C
1,2,4-Trichlorobenzene	ND	2.5	0.51	ug/Kg	1	10/13/22	JLI	SW8260C
1,2-Dibromo-3-chloropropane	ND	2.5	0.51	ug/Kg	1	10/13/22	JLI	SW8260C
1,2-Dibromoethane	ND	2.3	0.25	ug/Kg	1	10/13/22	JLI	SW8260C
1,2-Dichlorobenzene	ND	2.5	0.25	ug/Kg	1	10/13/22	JLI	SW8260C
1,2-Dichloroethane	ND	2.5	0.25	ug/Kg	1	10/13/22	JLI	SW8260C
1,2-Dichloropropane	ND	2.5	0.51	ug/Kg	1	10/13/22	JLI	SW8260C
1,3-Dichlorobenzene	ND	2.5	0.25	ug/Kg	1	10/13/22	JLI	SW8260C
1,4-Dichlorobenzene	ND	2.5	0.25	ug/Kg	1	10/13/22	JLI	SW8260C
2-Hexanone	ND	13	2.5	ug/Kg	1	10/13/22	JLI	SW8260C
4-Methyl-2-pentanone	ND	13	2.5	ug/Kg	1	10/13/22	JLI	SW8260C
Acetone	ND	25	2.5	ug/Kg	1	10/13/22	JLI	SW8260C
Acrolein	ND	13	1.3	ug/Kg	1	10/13/22	JLI	SW8260C
Acrylonitrile	ND	5.1	0.25	ug/Kg	1	10/13/22	JLI	SW8260C
Benzene	ND	2.5	0.25	ug/Kg	1	10/13/22	JLI	SW8260C
Bromochloromethane	ND	2.5	0.25	ug/Kg	1	10/13/22	JLI	SW8260C
Bromodichloromethane	ND	2.5	0.51	ug/Kg	1	10/13/22	JLI	SW8260C
Bromoform	ND	2.5	0.51	ug/Kg	1	10/13/22	JLI	SW8260C
Bromomethane	ND	2.5	1.0	ug/Kg	1	10/13/22	JLI	SW8260C
Carbon Disulfide	ND	2.5	0.51	ug/Kg	1	10/13/22	JLI	SW8260C
Carbon tetrachloride	ND	2.5	0.51	ug/Kg	1	10/13/22	JLI	SW8260C
Chlorobenzene	ND	2.5	0.25	ug/Kg	1	10/13/22	JLI	SW8260C
Chloroethane	ND	2.5	0.25	ug/Kg	1	10/13/22	JLI	SW8260C
Chloroform	ND	2.5	0.25	ug/Kg	1	10/13/22	JLI	SW8260C
Chloromethane	ND	2.5	0.51	ug/Kg	1	10/13/22	JLI	SW8260C
cis-1,2-Dichloroethene	ND	2.5	0.25	ug/Kg	1	10/13/22	JLI	SW8260C
cis-1,3-Dichloropropene	ND	2.5	0.25	ug/Kg	1	10/13/22	JLI	SW8260C
Cyclohexane	ND	2.5	0.51	ug/Kg	1	10/13/22	JLI	SW8260C
Dibromochloromethane	ND	2.5	0.51	ug/Kg	1	10/13/22	JLI	SW8260C
Dichlorodifluoromethane	ND	2.5	0.25	ug/Kg	1	10/13/22	JLI	SW8260C
Ethylbenzene	ND	2.5	0.25	ug/Kg	1	10/13/22	JLI	SW8260C
Isopropylbenzene	ND	2.5	0.25	ug/Kg	1	10/13/22	JLI	SW8260C
m&p-Xylene	ND	2.5	0.51	ug/Kg	1	10/13/22	JLI	SW8260C
Methyl ethyl ketone	ND	15	2.5	ug/Kg	1	10/13/22	JLI	SW8260C
Methyl t-butyl ether (MTBE)	ND	5.1	0.51	ug/Kg	1	10/13/22	JLI	SW8260C
Methylacetate	ND	5.1	5.1	ug/Kg	1	10/13/22	JLI	SW8260C
Methylcyclohexane	ND	2.5	0.51	ug/Kg	1	10/13/22	JLI	SW8260C
Methylene chloride	ND	2.5	2.5	ug/Kg	1	10/13/22	JLI	SW8260C
o-Xylene	ND	2.5	0.51	ug/Kg	1	10/13/22	JLI	SW8260C
Styrene	ND	2.5	0.25	ug/Kg	1	10/13/22	JLI	SW8260C
tert-butyl alcohol	ND	51	10	ug/Kg	1	10/13/22	JLI	SW8260C
Tetrachloroethene	ND	2.5	0.51	ug/Kg	1	10/13/22	JLI	SW8260C
Toluene	ND	2.5	0.25	ug/Kg	1	10/13/22	JLI	SW8260C
Total Xylenes	ND	2.5	2.5	ug/Kg	1	10/13/22	JLI	SW8260C
trans-1,2-Dichloroethene	ND	2.5	0.25	ug/Kg	1	10/13/22	JLI	SW8260C
trans-1,3-Dichloropropene	ND	2.5	0.25	ug/Kg	1	10/13/22	JLI	SW8260C
Trichloroethene	ND	2.5	0.25	ug/Kg	1	10/13/22	JLI	SW8260C
Trichlorofluoromethane	ND	2.5	0.51	ug/Kg	1	10/13/22	JLI	SW8260C

Parameter	Result		RL/ PQL	LOD/ MDL	Units	Dilution	Date/Time	By	Reference	
Trichlorotrifluoroethane	ND		2.5	0.25	ug/Kg	1	10/13/22	JLI	SW8260C	
Vinyl chloride	ND		2.5	0.25	ug/Kg	1	10/13/22	JLI	SW8260C	
QA/QC Surrogates										
% 1,2-dichlorobenzene-d4	97				%	1	10/13/22	JLI	70 - 130 %	
% Bromofluorobenzene	93				%	1	10/13/22	JLI	70 - 130 %	
% Dibromofluoromethane	100				%	1	10/13/22	JLI	70 - 130 %	
% Toluene-d8	91				%	1	10/13/22	JLI	70 - 130 %	
Vinyl Acetate	ND		25	25	ug/Kg	1	10/13/22	JLI	SW8260C	
Semivolatiles										
1,1-Biphenyl	ND		250	110	ug/Kg	1	10/14/22	WB	SW8270D	
1,2,4,5-Tetrachlorobenzene	ND		250	130	ug/Kg	1	10/14/22	WB	SW8270D	
1,2-Diphenylhydrazine	ND		360	360	ug/Kg	1	10/14/22	WB	SW8270D	
2,2'-Oxybis(1-Chloropropane)	ND		250	100	ug/Kg	1	10/14/22	WB	SW8270D	1
2,3,4,6-tetrachlorophenol	ND		250	170	ug/Kg	1	10/14/22	WB	SW8270D	
2,4,5-Trichlorophenol	ND		250	200	ug/Kg	1	10/14/22	WB	SW8270D	
2,4,6-Trichlorophenol	ND		140	120	ug/Kg	1	10/14/22	WB	SW8270D	
2,4-Dichlorophenol	ND		140	130	ug/Kg	1	10/14/22	WB	SW8270D	
2,4-Dimethylphenol	ND		250	90	ug/Kg	1	10/14/22	WB	SW8270D	
2,4-Dinitrophenol	ND		250	250	ug/Kg	1	10/14/22	WB	SW8270D	
2,4-Dinitrotoluene	ND		140	140	ug/Kg	1	10/14/22	WB	SW8270D	
2,6-Dinitrotoluene	ND		140	110	ug/Kg	1	10/14/22	WB	SW8270D	
2-Chloronaphthalene	ND		250	100	ug/Kg	1	10/14/22	WB	SW8270D	
2-Chlorophenol	ND		250	100	ug/Kg	1	10/14/22	WB	SW8270D	
2-Methylnaphthalene	ND		250	110	ug/Kg	1	10/14/22	WB	SW8270D	
2-Methylphenol (o-cresol)	ND		250	170	ug/Kg	1	10/14/22	WB	SW8270D	
2-Nitroaniline	ND		300	250	ug/Kg	1	10/14/22	WB	SW8270D	
2-Nitrophenol	ND		250	230	ug/Kg	1	10/14/22	WB	SW8270D	
3&4-Methylphenol (m&p-cresol)	ND		250	140	ug/Kg	1	10/14/22	WB	SW8270D	1
3,3'-Dichlorobenzidine	ND		140	140	ug/Kg	1	10/14/22	WB	SW8270D	
3-Nitroaniline	ND		720	250	ug/Kg	1	10/14/22	WB	SW8270D	
4,6-Dinitro-2-methylphenol	ND		250	250	ug/Kg	1	10/14/22	WB	SW8270D	
4-Bromophenyl phenyl ether	ND		250	110	ug/Kg	1	10/14/22	WB	SW8270D	
4-Chloro-3-methylphenol	ND		250	130	ug/Kg	1	10/14/22	WB	SW8270D	
4-Chloroaniline	ND		720	170	ug/Kg	1	10/14/22	WB	SW8270D	
4-Chlorophenyl phenyl ether	ND		250	120	ug/Kg	1	10/14/22	WB	SW8270D	
4-Nitroaniline	ND		360	120	ug/Kg	1	10/14/22	WB	SW8270D	
4-Nitrophenol	ND		360	160	ug/Kg	1	10/14/22	WB	SW8270D	
Acenaphthene	ND		250	110	ug/Kg	1	10/14/22	WB	SW8270D	
Acenaphthylene	ND		140	100	ug/Kg	1	10/14/22	WB	SW8270D	
Acetophenone	ND		250	110	ug/Kg	1	10/14/22	WB	SW8270D	
Anthracene	ND		250	120	ug/Kg	1	10/14/22	WB	SW8270D	
Atrazine	ND		140	110	ug/Kg	1	10/14/22	WB	SW8270D	
Benz(a)anthracene	240	J	250	120	ug/Kg	1	10/14/22	WB	SW8270D	
Benzaldehyde	ND		250	110	ug/Kg	1	10/14/22	WB	SW8270D	
Benzidine	ND		250	140	ug/Kg	1	10/14/22	WB	SW8270D	
Benzo(a)pyrene	250		140	120	ug/Kg	1	10/14/22	WB	SW8270D	
Benzo(b)fluoranthene	180	J	250	120	ug/Kg	1	10/14/22	WB	SW8270D	
Benzo(ghi)perylene	140	J	250	120	ug/Kg	1	10/14/22	WB	SW8270D	

Project ID: IMJC
Client ID: IMJC NE

Phoenix I.D.: CM60744

Parameter	Result		RL/ PQL	LOD/ MDL	Units	Dilution	Date/Time	By	Reference
Benzo(k)fluoranthene	170	J	250	120	ug/Kg	1	10/14/22	WB	SW8270D
Benzyl Alcohol	ND		360	360	ug/Kg	1	10/14/22	WB	SW8270D
Benzyl butyl phthalate	ND		250	93	ug/Kg	1	10/14/22	WB	SW8270D
Bis(2-chloroethoxy)methane	ND		250	100	ug/Kg	1	10/14/22	WB	SW8270D
Bis(2-chloroethyl)ether	ND		140	97	ug/Kg	1	10/14/22	WB	SW8270D
Bis(2-ethylhexyl)phthalate	ND		250	100	ug/Kg	1	10/14/22	WB	SW8270D
Caprolactam	ND		250	250	ug/Kg	1	10/14/22	WB	SW8270D
Carbazole	ND		180	140	ug/Kg	1	10/14/22	WB	SW8270D
Chrysene	230	J	250	120	ug/Kg	1	10/14/22	WB	SW8270D
Dibenz(a,h)anthracene	ND		140	120	ug/Kg	1	10/14/22	WB	SW8270D
Dibenzofuran	ND		250	110	ug/Kg	1	10/14/22	WB	SW8270D
Diethyl phthalate	ND		250	110	ug/Kg	1	10/14/22	WB	SW8270D
Dimethylphthalate	ND		250	110	ug/Kg	1	10/14/22	WB	SW8270D
Di-n-butylphthalate	ND		250	96	ug/Kg	1	10/14/22	WB	SW8270D
Di-n-octylphthalate	ND		250	93	ug/Kg	1	10/14/22	WB	SW8270D
Fluoranthene	470		250	120	ug/Kg	1	10/14/22	WB	SW8270D
Fluorene	ND		250	120	ug/Kg	1	10/14/22	WB	SW8270D
Hexachlorobenzene	ND		140	110	ug/Kg	1	10/14/22	WB	SW8270D
Hexachlorobutadiene	ND		250	130	ug/Kg	1	10/14/22	WB	SW8270D
Hexachlorocyclopentadiene	ND		250	110	ug/Kg	1	10/14/22	WB	SW8270D
Hexachloroethane	ND		140	110	ug/Kg	1	10/14/22	WB	SW8270D
Indeno(1,2,3-cd)pyrene	180	J	250	120	ug/Kg	1	10/14/22	WB	SW8270D
Isophorone	ND		140	100	ug/Kg	1	10/14/22	WB	SW8270D
Naphthalene	ND		250	100	ug/Kg	1	10/14/22	WB	SW8270D
Nitrobenzene	ND		140	130	ug/Kg	1	10/14/22	WB	SW8270D
N-Nitrosodimethylamine	ND		250	100	ug/Kg	1	10/14/22	WB	SW8270D
N-Nitrosodi-n-propylamine	ND		140	120	ug/Kg	1	10/14/22	WB	SW8270D
N-Nitrosodiphenylamine	ND		140	140	ug/Kg	1	10/14/22	WB	SW8270D
Pentachlorophenol	ND		250	140	ug/Kg	1	10/14/22	WB	SW8270D
Phenanthrene	310		140	100	ug/Kg	1	10/14/22	WB	SW8270D
Phenol	ND		250	120	ug/Kg	1	10/14/22	WB	SW8270D
Pyrene	390		250	120	ug/Kg	1	10/14/22	WB	SW8270D
QA/QC Surrogates									
% 2,4,6-Tribromophenol	115				%	1	10/14/22	WB	30 - 130 %
% 2-Fluorobiphenyl	76				%	1	10/14/22	WB	30 - 130 %
% 2-Fluorophenol	80				%	1	10/14/22	WB	30 - 130 %
% Nitrobenzene-d5	84				%	1	10/14/22	WB	30 - 130 %
% Phenol-d5	87				%	1	10/14/22	WB	30 - 130 %
% Terphenyl-d14	86				%	1	10/14/22	WB	30 - 130 %
Aniline	ND		360	360	ug/Kg	1	10/14/22	WB	SW8270D
Benzoic Acid	ND		360	250	ug/Kg	1	10/14/22	WB	SW8270D
Parathion	ND		360	140	ug/Kg	1	10/14/22	WB	SW8270D

Parameter	Result	RL/ PQL	LOD/ MDL	Units	Dilution	Date/Time	By	Reference

1 = This parameter is not certified by the primary accrediting authority (NY NELAC) for this matrix. NY NELAC does not offer certification for all parameters at this time.
B = Present in blank, no bias suspected.

RL/PQL=Reporting/Practical Quantitation Level (Equivalent to NELAC LOQ, Limit of Quantitation) ND=Not Detected BRL=Below Reporting Level L=Biased Low J=Estimated Below RL LOD=Limit of Detection MDL=Method Detection Limit1
QA/QC Surrogates: Surrogates are compounds (preceeded with a %) added by the lab to determine analysis efficiency. Surrogate results(%) listed in the report are not "detected" compounds.

Comments:

Per 1.4.6 of EPA method 8270D, 1,2-Diphenylhydrazine is unstable and readily converts to Azobenzene. Azobenzene is used for the calibration of 1,2-Diphenylhydrazine.

Please be advised that the NY 375 soil criteria for chromium are based on hexavalent chromium and trivalent chromium.

The regulatory hold time for pH is immediately. This pH was performed in the laboratory and may be considered outside of hold-time.

Hexavalent Chromium:
This sample is in a reducing state.

Semi-Volatile Comment:
To achieve client's objectives, where the lowest calibration standard or LOD justifies lowering the RL/PQL, the RL/PQL of some compounds have been lowered to meet criteria.

All soils, solids and sludges are reported on a dry weight basis unless otherwise noted in the sample comments.

If you are the client above and have any questions concerning this testing, please do not hesitate to contact Phoenix Client Services at ext.200.
The contents of this report cannot be discussed with anyone other than the client listed above without their written consent.

Phyllis Shiller, Laboratory Director
October 21, 2022
Official Report Release To Follow

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

ACCREDITED IN ACCORDANCE WITH nelac NY # 11301

Analysis Report

October 21, 2022

FOR: Attn: Mr. Jeff Bogoian
Impact Consulting
170 Keyland Court
Bohemia NY 11716

Sample Information		Custody Information		Date	Time
Matrix:	SOIL	Collected by:	SR	10/12/22	8:30
Location Code:	IMPACTJB-IEC	Received by:	CP	10/12/22	17:14
Rush Request:	Standard	Analyzed by:	see "By" below		
P.O.#:	FAC-20				

Laboratory Data

SDG ID: GCM60739
Phoenix ID: CM60745

Project ID: IMJC
Client ID: IMJC SW

Parameter	Result	RL/ PQL	LOD/ MDL	Units	Dilution	Date/Time	By	Reference	
Silver	ND	0.39	0.39	mg/Kg	1	10/14/22	CPP	SW6010D	
Aluminum	15700	39	7.8	mg/Kg	10	10/14/22	CPP	SW6010D	
Arsenic	1.89	0.78	0.78	mg/Kg	1	10/14/22	CPP	SW6010D	
Barium	149	0.8	0.39	mg/Kg	1	10/14/22	CPP	SW6010D	
Beryllium	0.46	0.31	0.16	mg/Kg	1	10/14/22	CPP	SW6010D	
Calcium	8210	3.9	3.6	mg/Kg	1	10/14/22	CPP	SW6010D	
Cadmium	2.35	0.39	0.39	mg/Kg	1	10/14/22	CPP	SW6010D	
Cobalt	19.5	0.39	0.39	mg/Kg	1	10/14/22	CPP	SW6010D	
Chromium	51.6	0.39	0.39	mg/Kg	1	10/14/22	CPP	SW6010D	
Copper	52.3	0.8	0.39	mg/kg	1	10/14/22	CPP	SW6010D	
Iron	28300	39	39	mg/Kg	10	10/14/22	CPP	SW6010D	
Mercury	0.06	0.03	0.02	mg/Kg	2	10/13/22	IE	SW7471B	
Potassium	6570	78	30	mg/Kg	10	10/14/22	CPP	SW6010D	
Magnesium	10500	39	39	mg/Kg	10	10/14/22	CPP	SW6010D	
Manganese	347	3.9	3.9	mg/Kg	10	10/14/22	CPP	SW6010D	
Sodium	792	8	3.3	mg/Kg	1	10/14/22	CPP	SW6010D	
Nickel	40.4	0.39	0.39	mg/Kg	1	10/14/22	CPP	SW6010D	
Lead	32.3	0.8	0.39	mg/Kg	1	10/14/22	CPP	SW6010D	
Antimony	ND	3.9	3.9	mg/Kg	1	10/14/22	CPP	SW6010D	
Selenium	ND	1.6	1.3	mg/Kg	1	10/14/22	CPP	SW6010D	
Thallium	ND	1.6	1.6	mg/Kg	1	10/14/22	CPP	SW6010D	
Trivalent Chromium	51.6	0.39	0.39	mg/kg	1	10/16/22		CALC 6010-7196	
Vanadium	54.3	0.39	0.39	mg/Kg	1	10/14/22	CPP	SW6010D	
Zinc	743	7.8	3.9	mg/Kg	10	10/14/22	TH	SW6010D	
Percent Solid	92			%		10/12/22	Q	SW846-%Solid	
Chromium, Hex. (SW3060A digestion	ND	0.43	0.43	mg/Kg	1	10/14/22	DK	SW7196A	
pH at 25C - Soil	9.61	1.00	1.00	pH Units	1	10/12/22 22:59	ER	SW846 9045D	1
Redox Potential	171			mV	1	10/12/22	ER	SM2580B-09	1

Project ID: IMJC
Client ID: IMJC SW

Phoenix I.D.: CM60745

Parameter	Result	RL/ PQL	LOD/ MDL	Units	Dilution	Date/Time	By	Reference	
Total Cyanide (SW9010C Distill.)	ND	0.54	0.272	mg/Kg	1	10/17/22	EG	SW9012B	
Soil Extraction for PCB	Completed					10/12/22	O/E	SW3545A	
Soil Extraction for Pesticides	Completed					10/12/22	O/E	SW3545A	
Mercury Digestion	Completed					10/13/22	KL/KL	SW7471B	
Soil Extraction for Herbicide	Completed					10/13/22	J/D	SW3546	
NJ EPH Extraction	Completed					10/13/22	B/H/C	NJDEP 10-08 R3	
Soil Extraction for SVOA	Completed					10/13/22	M/B/U	SW3546	
Total Metals Digest	Completed					10/12/22	J/AG	SW3050B	
NJ EPH Category 2									
Total EPH (C9-C40)	ND	54	54	mg/kg	1	10/15/22	JRB	NJEPH 10-08 R3	1
QA/QC Surrogates									
% COD (surr)	101			%	1	10/15/22	JRB	40 - 140 %	
% Terphenyl (surr)	121			%	1	10/15/22	JRB	40 - 140 %	
Chlorinated Herbicides									
2,4,5-T	ND	130	130	ug/Kg	10	10/15/22	JRB	SW8151A	
2,4,5-TP (Silvex)	ND	130	130	ug/Kg	10	10/15/22	JRB	SW8151A	
2,4-D	ND	270	270	ug/Kg	10	10/15/22	JRB	SW8151A	
2,4-DB	ND	2700	2700	ug/Kg	10	10/15/22	JRB	SW8151A	
Dalapon	ND	130	130	ug/Kg	10	10/15/22	JRB	SW8151A	
Dicamba	ND	130	130	ug/Kg	10	10/15/22	JRB	SW8151A	
Dichloroprop	ND	270	270	ug/Kg	10	10/15/22	JRB	SW8151A	
Dinoseb	ND	270	270	ug/Kg	10	10/15/22	JRB	SW8151A	
QA/QC Surrogates									
% DCAA	91			%	10	10/15/22	JRB	30 - 150 %	
% DCAA (Confirmation)	101			%	10	10/15/22	JRB	30 - 150 %	
Polychlorinated Biphenyls									
PCB-1016	ND	70	70	ug/Kg	2	10/13/22	SC	SW8082A	
PCB-1221	ND	70	70	ug/Kg	2	10/13/22	SC	SW8082A	
PCB-1232	ND	70	70	ug/Kg	2	10/13/22	SC	SW8082A	
PCB-1242	ND	70	70	ug/Kg	2	10/13/22	SC	SW8082A	
PCB-1248	ND	70	70	ug/Kg	2	10/13/22	SC	SW8082A	
PCB-1254	ND	70	70	ug/Kg	2	10/13/22	SC	SW8082A	
PCB-1260	ND	70	70	ug/Kg	2	10/13/22	SC	SW8082A	
PCB-1262	ND	70	70	ug/Kg	2	10/13/22	SC	SW8082A	
PCB-1268	ND	70	70	ug/Kg	2	10/13/22	SC	SW8082A	
QA/QC Surrogates									
% DCBP	68			%	2	10/13/22	SC	30 - 150 %	
% DCBP (Confirmation)	77			%	2	10/13/22	SC	30 - 150 %	
% TCMX	71			%	2	10/13/22	SC	30 - 150 %	
% TCMX (Confirmation)	77			%	2	10/13/22	SC	30 - 150 %	
Pesticides - Soil									
4,4' -DDD	ND	2.1	2.1	ug/Kg	2	10/14/22	AW	SW8081B	
4,4' -DDE	ND	2.1	2.1	ug/Kg	2	10/14/22	AW	SW8081B	
4,4' -DDT	5.7	2.1	2.1	ug/Kg	2	10/14/22	AW	SW8081B	
a-BHC	ND	1.4	1.4	ug/Kg	2	10/14/22	AW	SW8081B	

Parameter	Result	RL/ PQL	LOD/ MDL	Units	Dilution	Date/Time	By	Reference
a-Chlordane	ND	3.5	3.5	ug/Kg	2	10/14/22	AW	SW8081B
Alachlor	ND	3.5	3.5	ug/Kg	2	10/14/22	AW	SW8081B
Aldrin	ND	3.5	3.5	ug/Kg	2	10/14/22	AW	SW8081B
b-BHC	ND	1.4	1.4	ug/Kg	2	10/14/22	AW	SW8081B
Chlordane	ND	35	35	ug/Kg	2	10/14/22	AW	SW8081B
d-BHC	ND	7.0	7.0	ug/Kg	2	10/14/22	AW	SW8081B
Dieldrin	ND	1.4	1.4	ug/Kg	2	10/14/22	AW	SW8081B
Endosulfan I	ND	7.0	7.0	ug/Kg	2	10/14/22	AW	SW8081B
Endosulfan II	ND	7.0	7.0	ug/Kg	2	10/14/22	AW	SW8081B
Endosulfan sulfate	ND	7.0	7.0	ug/Kg	2	10/14/22	AW	SW8081B
Endrin	ND	7.0	7.0	ug/Kg	2	10/14/22	AW	SW8081B
Endrin aldehyde	ND	7.0	7.0	ug/Kg	2	10/14/22	AW	SW8081B
Endrin ketone	ND	7.0	7.0	ug/Kg	2	10/14/22	AW	SW8081B
g-BHC	ND	1.4	1.4	ug/Kg	2	10/14/22	AW	SW8081B
g-Chlordane	ND	3.5	3.5	ug/Kg	2	10/14/22	AW	SW8081B
Heptachlor	ND	7.0	7.0	ug/Kg	2	10/14/22	AW	SW8081B
Heptachlor epoxide	ND	7.0	7.0	ug/Kg	2	10/14/22	AW	SW8081B
Methoxychlor	ND	35	35	ug/Kg	2	10/14/22	AW	SW8081B
Toxaphene	ND	140	140	ug/Kg	2	10/14/22	AW	SW8081B
QA/QC Surrogates								
% DCBP	53			%	2	10/14/22	AW	30 - 150 %
% DCBP (Confirmation)	52			%	2	10/14/22	AW	30 - 150 %
% TCMX	67			%	2	10/14/22	AW	30 - 150 %
% TCMX (Confirmation)	63			%	2	10/14/22	AW	30 - 150 %
Volatiles								
1,2,4-Trimethylbenzene	ND	2.8	0.28	ug/Kg	1	10/13/22	JLI	SW8260C
1,3,5-Trimethylbenzene	ND	2.8	0.28	ug/Kg	1	10/13/22	JLI	SW8260C
1,3-Dichlorobenzene	ND	2.8	0.28	ug/Kg	1	10/13/22	JLI	SW8260C
Naphthalene	ND	2.8	0.57	ug/Kg	1	10/13/22	JLI	SW8260C
n-Butylbenzene	ND	2.8	0.28	ug/Kg	1	10/13/22	JLI	SW8260C
n-Propylbenzene	ND	2.8	0.57	ug/Kg	1	10/13/22	JLI	SW8260C
p-Isopropyltoluene	ND	2.8	0.28	ug/Kg	1	10/13/22	JLI	SW8260C
sec-Butylbenzene	ND	2.8	0.28	ug/Kg	1	10/13/22	JLI	SW8260C
tert-Butylbenzene	ND	2.8	0.28	ug/Kg	1	10/13/22	JLI	SW8260C
QA/QC Surrogates								
% 1,2-dichlorobenzene-d4	97			%	1	10/13/22	JLI	70 - 130 %
% Bromofluorobenzene	94			%	1	10/13/22	JLI	70 - 130 %
% Dibromofluoromethane	99			%	1	10/13/22	JLI	70 - 130 %
% Toluene-d8	92			%	1	10/13/22	JLI	70 - 130 %
1,4-dioxane								
1,4-dioxane	ND	42	23	ug/kg	1	10/13/22	JLI	SW8260C
Volatiles								
1,1,1,2-Tetrachloroethane	ND	2.8	0.57	ug/Kg	1	10/13/22	JLI	SW8260C
1,1,1-Trichloroethane	ND	2.8	0.28	ug/Kg	1	10/13/22	JLI	SW8260C
1,1,2,2-Tetrachloroethane	ND	2.8	0.57	ug/Kg	1	10/13/22	JLI	SW8260C
1,1,2-Trichloroethane	ND	2.8	0.57	ug/Kg	1	10/13/22	JLI	SW8260C
1,1-Dichloroethane	ND	2.8	0.57	ug/Kg	1	10/13/22	JLI	SW8260C

Project ID: IMJC
Client ID: IMJC SW

Phoenix I.D.: CM60745

Parameter	Result	RL/ PQL	LOD/ MDL	Units	Dilution	Date/Time	By	Reference
1,1-Dichloroethene	ND	2.8	0.28	ug/Kg	1	10/13/22	JLI	SW8260C
1,2,3-Trichlorobenzene	ND	2.8	0.57	ug/Kg	1	10/13/22	JLI	SW8260C
1,2,4-Trichlorobenzene	ND	2.8	0.57	ug/Kg	1	10/13/22	JLI	SW8260C
1,2-Dibromo-3-chloropropane	ND	2.8	0.57	ug/Kg	1	10/13/22	JLI	SW8260C
1,2-Dibromoethane	ND	2.5	0.28	ug/Kg	1	10/13/22	JLI	SW8260C
1,2-Dichlorobenzene	ND	2.8	0.28	ug/Kg	1	10/13/22	JLI	SW8260C
1,2-Dichloroethane	ND	2.8	0.28	ug/Kg	1	10/13/22	JLI	SW8260C
1,2-Dichloropropane	ND	2.8	0.57	ug/Kg	1	10/13/22	JLI	SW8260C
1,3-Dichlorobenzene	ND	2.8	0.28	ug/Kg	1	10/13/22	JLI	SW8260C
1,4-Dichlorobenzene	ND	2.8	0.28	ug/Kg	1	10/13/22	JLI	SW8260C
2-Hexanone	ND	14	2.8	ug/Kg	1	10/13/22	JLI	SW8260C
4-Methyl-2-pentanone	ND	14	2.8	ug/Kg	1	10/13/22	JLI	SW8260C
Acetone	ND	28	2.8	ug/Kg	1	10/13/22	JLI	SW8260C
Acrolein	ND	14	1.4	ug/Kg	1	10/13/22	JLI	SW8260C
Acrylonitrile	ND	5.7	0.28	ug/Kg	1	10/13/22	JLI	SW8260C
Benzene	ND	2.8	0.28	ug/Kg	1	10/13/22	JLI	SW8260C
Bromochloromethane	ND	2.8	0.28	ug/Kg	1	10/13/22	JLI	SW8260C
Bromodichloromethane	ND	2.8	0.57	ug/Kg	1	10/13/22	JLI	SW8260C
Bromoform	ND	2.8	0.57	ug/Kg	1	10/13/22	JLI	SW8260C
Bromomethane	ND	2.8	1.1	ug/Kg	1	10/13/22	JLI	SW8260C
Carbon Disulfide	ND	2.8	0.57	ug/Kg	1	10/13/22	JLI	SW8260C
Carbon tetrachloride	ND	2.8	0.57	ug/Kg	1	10/13/22	JLI	SW8260C
Chlorobenzene	ND	2.8	0.28	ug/Kg	1	10/13/22	JLI	SW8260C
Chloroethane	ND	2.8	0.28	ug/Kg	1	10/13/22	JLI	SW8260C
Chloroform	ND	2.8	0.28	ug/Kg	1	10/13/22	JLI	SW8260C
Chloromethane	ND	2.8	0.57	ug/Kg	1	10/13/22	JLI	SW8260C
cis-1,2-Dichloroethene	ND	2.8	0.28	ug/Kg	1	10/13/22	JLI	SW8260C
cis-1,3-Dichloropropene	ND	2.8	0.28	ug/Kg	1	10/13/22	JLI	SW8260C
Cyclohexane	ND	2.8	0.57	ug/Kg	1	10/13/22	JLI	SW8260C
Dibromochloromethane	ND	2.8	0.57	ug/Kg	1	10/13/22	JLI	SW8260C
Dichlorodifluoromethane	ND	2.8	0.28	ug/Kg	1	10/13/22	JLI	SW8260C
Ethylbenzene	ND	2.8	0.28	ug/Kg	1	10/13/22	JLI	SW8260C
Isopropylbenzene	ND	2.8	0.28	ug/Kg	1	10/13/22	JLI	SW8260C
m&p-Xylene	ND	2.8	0.57	ug/Kg	1	10/13/22	JLI	SW8260C
Methyl ethyl ketone	ND	17	2.8	ug/Kg	1	10/13/22	JLI	SW8260C
Methyl t-butyl ether (MTBE)	ND	5.7	0.57	ug/Kg	1	10/13/22	JLI	SW8260C
Methylacetate	ND	5.7	5.7	ug/Kg	1	10/13/22	JLI	SW8260C
Methylcyclohexane	ND	2.8	0.57	ug/Kg	1	10/13/22	JLI	SW8260C
Methylene chloride	ND	2.8	2.8	ug/Kg	1	10/13/22	JLI	SW8260C
o-Xylene	ND	2.8	0.57	ug/Kg	1	10/13/22	JLI	SW8260C
Styrene	ND	2.8	0.28	ug/Kg	1	10/13/22	JLI	SW8260C
tert-butyl alcohol	ND	57	11	ug/Kg	1	10/13/22	JLI	SW8260C
Tetrachloroethene	ND	2.8	0.57	ug/Kg	1	10/13/22	JLI	SW8260C
Toluene	ND	2.8	0.28	ug/Kg	1	10/13/22	JLI	SW8260C
Total Xylenes	ND	2.8	2.8	ug/Kg	1	10/13/22	JLI	SW8260C
trans-1,2-Dichloroethene	ND	2.8	0.28	ug/Kg	1	10/13/22	JLI	SW8260C
trans-1,3-Dichloropropene	ND	2.8	0.28	ug/Kg	1	10/13/22	JLI	SW8260C
Trichloroethene	ND	2.8	0.28	ug/Kg	1	10/13/22	JLI	SW8260C
Trichlorofluoromethane	ND	2.8	0.57	ug/Kg	1	10/13/22	JLI	SW8260C

Parameter	Result		RL/ PQL	LOD/ MDL	Units	Dilution	Date/Time	By	Reference	
Trichlorotrifluoroethane	ND		2.8	0.28	ug/Kg	1	10/13/22	JLI	SW8260C	
Vinyl chloride	ND		2.8	0.28	ug/Kg	1	10/13/22	JLI	SW8260C	
QA/QC Surrogates										
% 1,2-dichlorobenzene-d4	97				%	1	10/13/22	JLI	70 - 130 %	
% Bromofluorobenzene	94				%	1	10/13/22	JLI	70 - 130 %	
% Dibromofluoromethane	99				%	1	10/13/22	JLI	70 - 130 %	
% Toluene-d8	92				%	1	10/13/22	JLI	70 - 130 %	
Vinyl Acetate	ND		28	28	ug/Kg	1	10/13/22	JLI	SW8260C	
Semivolatiles										
1,1-Biphenyl	ND		250	110	ug/Kg	1	10/14/22	WB	SW8270D	
1,2,4,5-Tetrachlorobenzene	ND		250	120	ug/Kg	1	10/14/22	WB	SW8270D	
1,2-Diphenylhydrazine	ND		360	360	ug/Kg	1	10/14/22	WB	SW8270D	
2,2'-Oxybis(1-Chloropropane)	ND		250	99	ug/Kg	1	10/14/22	WB	SW8270D	1
2,3,4,6-tetrachlorophenol	ND		250	170	ug/Kg	1	10/14/22	WB	SW8270D	
2,4,5-Trichlorophenol	ND		250	190	ug/Kg	1	10/14/22	WB	SW8270D	
2,4,6-Trichlorophenol	ND		140	110	ug/Kg	1	10/14/22	WB	SW8270D	
2,4-Dichlorophenol	ND		140	120	ug/Kg	1	10/14/22	WB	SW8270D	
2,4-Dimethylphenol	ND		250	88	ug/Kg	1	10/14/22	WB	SW8270D	
2,4-Dinitrophenol	ND		250	250	ug/Kg	1	10/14/22	WB	SW8270D	
2,4-Dinitrotoluene	ND		140	140	ug/Kg	1	10/14/22	WB	SW8270D	
2,6-Dinitrotoluene	ND		140	110	ug/Kg	1	10/14/22	WB	SW8270D	
2-Chloronaphthalene	ND		250	100	ug/Kg	1	10/14/22	WB	SW8270D	
2-Chlorophenol	ND		250	100	ug/Kg	1	10/14/22	WB	SW8270D	
2-Methylnaphthalene	ND		250	110	ug/Kg	1	10/14/22	WB	SW8270D	
2-Methylphenol (o-cresol)	ND		250	170	ug/Kg	1	10/14/22	WB	SW8270D	
2-Nitroaniline	ND		300	250	ug/Kg	1	10/14/22	WB	SW8270D	
2-Nitrophenol	ND		250	230	ug/Kg	1	10/14/22	WB	SW8270D	
3&4-Methylphenol (m&p-cresol)	ND		250	140	ug/Kg	1	10/14/22	WB	SW8270D	1
3,3'-Dichlorobenzidine	ND		140	140	ug/Kg	1	10/14/22	WB	SW8270D	
3-Nitroaniline	ND		710	250	ug/Kg	1	10/14/22	WB	SW8270D	
4,6-Dinitro-2-methylphenol	ND		250	250	ug/Kg	1	10/14/22	WB	SW8270D	
4-Bromophenyl phenyl ether	ND		250	100	ug/Kg	1	10/14/22	WB	SW8270D	
4-Chloro-3-methylphenol	ND		250	120	ug/Kg	1	10/14/22	WB	SW8270D	
4-Chloroaniline	ND		710	170	ug/Kg	1	10/14/22	WB	SW8270D	
4-Chlorophenyl phenyl ether	ND		250	120	ug/Kg	1	10/14/22	WB	SW8270D	
4-Nitroaniline	ND		360	120	ug/Kg	1	10/14/22	WB	SW8270D	
4-Nitrophenol	ND		360	160	ug/Kg	1	10/14/22	WB	SW8270D	
Acenaphthene	ND		250	110	ug/Kg	1	10/14/22	WB	SW8270D	
Acenaphthylene	ND		140	99	ug/Kg	1	10/14/22	WB	SW8270D	
Acetophenone	ND		250	110	ug/Kg	1	10/14/22	WB	SW8270D	
Anthracene	ND		250	120	ug/Kg	1	10/14/22	WB	SW8270D	
Atrazine	ND		140	110	ug/Kg	1	10/14/22	WB	SW8270D	
Benz(a)anthracene	210	J	250	120	ug/Kg	1	10/14/22	WB	SW8270D	
Benzaldehyde	ND		250	110	ug/Kg	1	10/14/22	WB	SW8270D	
Benzidine	ND		250	140	ug/Kg	1	10/14/22	WB	SW8270D	
Benzo(a)pyrene	220		140	120	ug/Kg	1	10/14/22	WB	SW8270D	
Benzo(b)fluoranthene	170	J	250	120	ug/Kg	1	10/14/22	WB	SW8270D	
Benzo(ghi)perylene	120	J	250	120	ug/Kg	1	10/14/22	WB	SW8270D	

Project ID: IMJC
Client ID: IMJC SW

Phoenix I.D.: CM60745

Parameter	Result		RL/ PQL	LOD/ MDL	Units	Dilution	Date/Time	By	Reference
Benzo(k)fluoranthene	160	J	250	120	ug/Kg	1	10/14/22	WB	SW8270D
Benzyl Alcohol	ND		360	360	ug/Kg	1	10/14/22	WB	SW8270D
Benzyl butyl phthalate	ND		250	92	ug/Kg	1	10/14/22	WB	SW8270D
Bis(2-chloroethoxy)methane	ND		250	98	ug/Kg	1	10/14/22	WB	SW8270D
Bis(2-chloroethyl)ether	ND		140	96	ug/Kg	1	10/14/22	WB	SW8270D
Bis(2-ethylhexyl)phthalate	190	J	250	100	ug/Kg	1	10/14/22	WB	SW8270D
Caprolactam	ND		250	250	ug/Kg	1	10/14/22	WB	SW8270D
Carbazole	ND		180	140	ug/Kg	1	10/14/22	WB	SW8270D
Chrysene	210	J	250	120	ug/Kg	1	10/14/22	WB	SW8270D
Dibenz(a,h)anthracene	ND		140	120	ug/Kg	1	10/14/22	WB	SW8270D
Dibenzofuran	ND		250	100	ug/Kg	1	10/14/22	WB	SW8270D
Diethyl phthalate	ND		250	110	ug/Kg	1	10/14/22	WB	SW8270D
Dimethylphthalate	ND		250	110	ug/Kg	1	10/14/22	WB	SW8270D
Di-n-butylphthalate	ND		250	94	ug/Kg	1	10/14/22	WB	SW8270D
Di-n-octylphthalate	ND		250	92	ug/Kg	1	10/14/22	WB	SW8270D
Fluoranthene	430		250	120	ug/Kg	1	10/14/22	WB	SW8270D
Fluorene	ND		250	120	ug/Kg	1	10/14/22	WB	SW8270D
Hexachlorobenzene	ND		140	100	ug/Kg	1	10/14/22	WB	SW8270D
Hexachlorobutadiene	ND		250	130	ug/Kg	1	10/14/22	WB	SW8270D
Hexachlorocyclopentadiene	ND		250	110	ug/Kg	1	10/14/22	WB	SW8270D
Hexachloroethane	ND		140	110	ug/Kg	1	10/14/22	WB	SW8270D
Indeno(1,2,3-cd)pyrene	150	J	250	120	ug/Kg	1	10/14/22	WB	SW8270D
Isophorone	ND		140	99	ug/Kg	1	10/14/22	WB	SW8270D
Naphthalene	ND		250	100	ug/Kg	1	10/14/22	WB	SW8270D
Nitrobenzene	ND		140	120	ug/Kg	1	10/14/22	WB	SW8270D
N-Nitrosodimethylamine	ND		250	100	ug/Kg	1	10/14/22	WB	SW8270D
N-Nitrosodi-n-propylamine	ND		140	120	ug/Kg	1	10/14/22	WB	SW8270D
N-Nitrosodiphenylamine	ND		140	140	ug/Kg	1	10/14/22	WB	SW8270D
Pentachlorophenol	ND		250	130	ug/Kg	1	10/14/22	WB	SW8270D
Phenanthrene	350		140	100	ug/Kg	1	10/14/22	WB	SW8270D
Phenol	ND		250	110	ug/Kg	1	10/14/22	WB	SW8270D
Pyrene	370		250	120	ug/Kg	1	10/14/22	WB	SW8270D
QA/QC Surrogates									
% 2,4,6-Tribromophenol	109				%	1	10/14/22	WB	30 - 130 %
% 2-Fluorobiphenyl	76				%	1	10/14/22	WB	30 - 130 %
% 2-Fluorophenol	81				%	1	10/14/22	WB	30 - 130 %
% Nitrobenzene-d5	89				%	1	10/14/22	WB	30 - 130 %
% Phenol-d5	89				%	1	10/14/22	WB	30 - 130 %
% Terphenyl-d14	82				%	1	10/14/22	WB	30 - 130 %
Aniline	ND		360	360	ug/Kg	1	10/14/22	WB	SW8270D
Benzoic Acid	ND		360	250	ug/Kg	1	10/14/22	WB	SW8270D
Parathion	ND		360	140	ug/Kg	1	10/14/22	WB	SW8270D

Parameter	Result	RL/ PQL	LOD/ MDL	Units	Dilution	Date/Time	By	Reference

1 = This parameter is not certified by the primary accrediting authority (NY NELAC) for this matrix. NY NELAC does not offer certification for all parameters at this time.

RL/PQL=Reporting/Practical Quantitation Level (Equivalent to NELAC LOQ, Limit of Quantitation) ND=Not Detected BRL=Below Reporting Level L=Biased Low J=Estimated Below RL LOD=Limit of Detection MDL=Method Detection Limit1
QA/QC Surrogates: Surrogates are compounds (preceeded with a %) added by the lab to determine analysis efficiency. Surrogate results(%) listed in the report are not "detected" compounds.

Comments:

Per 1.4.6 of EPA method 8270D, 1,2-Diphenylhydrazine is unstable and readily converts to Azobenzene. Azobenzene is used for the calibration of 1,2-Diphenylhydrazine.

Please be advised that the NY 375 soil criteria for chromium are based on hexavalent chromium and trivalent chromium.

The regulatory hold time for pH is immediately. This pH was performed in the laboratory and may be considered outside of hold-time.

Semi-Volatile Comment:
To achieve client's objectives, where the lowest calibration standard or LOD justifies lowering the RL/PQL, the RL/PQL of some compounds have been lowered to meet criteria.

Hexavalent Chromium:
This sample is in a reducing state.

All soils, solids and sludges are reported on a dry weight basis unless otherwise noted in the sample comments.

If you are the client above and have any questions concerning this testing, please do not hesitate to contact Phoenix Client Services at ext.200.
The contents of this report cannot be discussed with anyone other than the client listed above without their written consent.

Phyllis Shiller, Laboratory Director
October 21, 2022
Official Report Release To Follow

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

ACCREDITED IN ACCORDANCE WITH nelac NY # 11301

Analysis Report

October 21, 2022

FOR: Attn: Mr. Jeff Bogoian
Impact Consulting
170 Keyland Court
Bohemia NY 11716

Sample Information		Custody Information		Date	Time
Matrix:	SOIL	Collected by:	SR	10/12/22	8:35
Location Code:	IMPACTJB-IEC	Received by:	CP	10/12/22	17:14
Rush Request:	72 Hour	Analyzed by:	see "By" below		
P.O.#:	FAC-20				

Laboratory Data

SDG ID: GCM60739
Phoenix ID: CM60746

Project ID: IMJC
Client ID: IMJC SE

Parameter	Result	RL/ PQL	LOD/ MDL	Units	Dilution	Date/Time	By	Reference	
Silver	ND	0.45	0.45	mg/Kg	1	10/14/22	CPP	SW6010D	
Aluminum	21800	45	9.0	mg/Kg	10	10/14/22	CPP	SW6010D	
Arsenic	2.55	0.90	0.90	mg/Kg	1	10/14/22	CPP	SW6010D	
Barium	197	0.9	0.45	mg/Kg	1	10/14/22	CPP	SW6010D	
Beryllium	0.56	0.36	0.18	mg/Kg	1	10/14/22	CPP	SW6010D	
Calcium	10200	4.5	4.1	mg/Kg	1	10/14/22	CPP	SW6010D	
Cadmium	1.87	0.45	0.45	mg/Kg	1	10/14/22	CPP	SW6010D	
Cobalt	21.6	0.40	0.40	mg/Kg	1	10/21/22	TH	SW6010D	
Chromium	56.6	0.45	0.45	mg/Kg	1	10/14/22	CPP	SW6010D	
Copper	84.4	0.9	0.45	mg/kg	1	10/14/22	CPP	SW6010D	
Iron	39200	45	45	mg/Kg	10	10/14/22	CPP	SW6010D	B
Mercury	0.09	0.03	0.02	mg/Kg	2	10/13/22	IE	SW7471B	
Potassium	8920	90	35	mg/Kg	10	10/14/22	CPP	SW6010D	B
Magnesium	15900	45	45	mg/Kg	10	10/14/22	CPP	SW6010D	
Manganese	483	4.5	4.5	mg/Kg	10	10/14/22	CPP	SW6010D	
Sodium	1090	9	3.9	mg/Kg	1	10/14/22	CPP	SW6010D	
Nickel	64.1	0.45	0.45	mg/Kg	1	10/14/22	CPP	SW6010D	
Lead	48.6	0.9	0.45	mg/Kg	1	10/14/22	CPP	SW6010D	
Antimony	ND	4.5	4.5	mg/Kg	1	10/14/22	CPP	SW6010D	
Selenium	ND	1.8	1.5	mg/Kg	1	10/14/22	CPP	SW6010D	
Thallium	ND	1.8	1.8	mg/Kg	1	10/14/22	CPP	SW6010D	
Trivalent Chromium	56.6	0.45	0.45	mg/kg	1	10/16/22		CALC 6010-7196	
Vanadium	65.6	0.45	0.45	mg/Kg	1	10/14/22	CPP	SW6010D	
Zinc	109	0.9	0.45	mg/Kg	1	10/14/22	TH	SW6010D	
Percent Solid	74			%		10/12/22	Q	SW846-%Solid	
Chromium, Hex. (SW3060A digestion	ND	0.52	0.52	mg/Kg	1	10/14/22	DK	SW7196A	
pH at 25C - Soil	9.51	1.00	1.00	pH Units	1	10/12/22 22:59	ER	SW846 9045D	1
Redox Potential	179			mV	1	10/12/22	ER	SM2580B-09	1

Project ID: IMJC
Client ID: IMJC SE

Phoenix I.D.: CM60746

Parameter	Result	RL/ PQL	LOD/ MDL	Units	Dilution	Date/Time	By	Reference	
Total Cyanide (SW9010C Distill.)	ND	0.68	0.338	mg/Kg	1	10/17/22	EG	SW9012B	
Soil Extraction for PCB	Completed					10/12/22	O/E	SW3545A	
Soil Extraction for Pesticides	Completed					10/12/22	O/E	SW3545A	
Mercury Digestion	Completed					10/13/22	KL/KL	SW7471B	
Soil Extraction for Herbicide	Completed					10/13/22	J/D	SW3546	
NJ EPH Extraction	Completed					10/13/22	B/H/C	NJDEP 10-08 R3	
Soil Extraction for SVOA	Completed					10/13/22	M/B/U	SW3546	
Total Metals Digest	Completed					10/19/22	J/AG	SW3050B	
NJ EPH Category 2									
Total EPH (C9-C40)	ND	67	67	mg/kg	1	10/15/22	JRB	NJEPH 10-08 R3	1
QA/QC Surrogates									
% COD (surr)	106			%	1	10/15/22	JRB	40 - 140 %	
% Terphenyl (surr)	129			%	1	10/15/22	JRB	40 - 140 %	
Chlorinated Herbicides									
2,4,5-T	ND	160	160	ug/Kg	10	10/17/22	KCA	SW8151A	
2,4,5-TP (Silvex)	ND	160	160	ug/Kg	10	10/17/22	KCA	SW8151A	
2,4-D	ND	330	330	ug/Kg	10	10/17/22	KCA	SW8151A	
2,4-DB	ND	3300	3300	ug/Kg	10	10/17/22	KCA	SW8151A	
Dalapon	ND	160	160	ug/Kg	10	10/17/22	KCA	SW8151A	
Dicamba	ND	160	160	ug/Kg	10	10/17/22	KCA	SW8151A	
Dichloroprop	ND	330	330	ug/Kg	10	10/17/22	KCA	SW8151A	
Dinoseb	ND	330	330	ug/Kg	10	10/17/22	KCA	SW8151A	
QA/QC Surrogates									
% DCAA	80			%	10	10/17/22	KCA	30 - 150 %	
% DCAA (Confirmation)	101			%	10	10/17/22	KCA	30 - 150 %	
Polychlorinated Biphenyls									
PCB-1016	ND	89	89	ug/Kg	2	10/13/22	SC	SW8082A	
PCB-1221	ND	89	89	ug/Kg	2	10/13/22	SC	SW8082A	
PCB-1232	ND	89	89	ug/Kg	2	10/13/22	SC	SW8082A	
PCB-1242	ND	89	89	ug/Kg	2	10/13/22	SC	SW8082A	
PCB-1248	ND	89	89	ug/Kg	2	10/13/22	SC	SW8082A	
PCB-1254	ND	89	89	ug/Kg	2	10/13/22	SC	SW8082A	
PCB-1260	ND	89	89	ug/Kg	2	10/13/22	SC	SW8082A	
PCB-1262	ND	89	89	ug/Kg	2	10/13/22	SC	SW8082A	
PCB-1268	ND	89	89	ug/Kg	2	10/13/22	SC	SW8082A	
QA/QC Surrogates									
% DCBP	69			%	2	10/13/22	SC	30 - 150 %	
% DCBP (Confirmation)	76			%	2	10/13/22	SC	30 - 150 %	
% TCMX	71			%	2	10/13/22	SC	30 - 150 %	
% TCMX (Confirmation)	76			%	2	10/13/22	SC	30 - 150 %	
Pesticides - Soil									
4,4' -DDD	ND	2.7	2.7	ug/Kg	2	10/14/22	AW	SW8081B	
4,4' -DDE	ND	2.7	2.7	ug/Kg	2	10/14/22	AW	SW8081B	
4,4' -DDT	6.4	2.7	2.7	ug/Kg	2	10/14/22	AW	SW8081B	
a-BHC	ND	1.8	1.8	ug/Kg	2	10/14/22	AW	SW8081B	

Parameter	Result	RL/ PQL	LOD/ MDL	Units	Dilution	Date/Time	By	Reference
a-Chlordane	ND	4.5	4.5	ug/Kg	2	10/14/22	AW	SW8081B
Alachlor	ND	4.5	4.5	ug/Kg	2	10/14/22	AW	SW8081B
Aldrin	ND	4.5	4.5	ug/Kg	2	10/14/22	AW	SW8081B
b-BHC	ND	1.8	1.8	ug/Kg	2	10/14/22	AW	SW8081B
Chlordane	ND	45	45	ug/Kg	2	10/14/22	AW	SW8081B
d-BHC	ND	8.9	8.9	ug/Kg	2	10/14/22	AW	SW8081B
Dieldrin	ND	1.8	1.8	ug/Kg	2	10/14/22	AW	SW8081B
Endosulfan I	ND	8.9	8.9	ug/Kg	2	10/14/22	AW	SW8081B
Endosulfan II	ND	8.9	8.9	ug/Kg	2	10/14/22	AW	SW8081B
Endosulfan sulfate	ND	8.9	8.9	ug/Kg	2	10/14/22	AW	SW8081B
Endrin	ND	8.9	8.9	ug/Kg	2	10/14/22	AW	SW8081B
Endrin aldehyde	ND	8.9	8.9	ug/Kg	2	10/14/22	AW	SW8081B
Endrin ketone	ND	8.9	8.9	ug/Kg	2	10/14/22	AW	SW8081B
g-BHC	ND	1.8	1.8	ug/Kg	2	10/14/22	AW	SW8081B
g-Chlordane	ND	4.5	4.5	ug/Kg	2	10/14/22	AW	SW8081B
Heptachlor	ND	8.9	8.9	ug/Kg	2	10/14/22	AW	SW8081B
Heptachlor epoxide	ND	8.9	8.9	ug/Kg	2	10/14/22	AW	SW8081B
Methoxychlor	ND	45	45	ug/Kg	2	10/14/22	AW	SW8081B
Toxaphene	ND	180	180	ug/Kg	2	10/14/22	AW	SW8081B
QA/QC Surrogates								
% DCBP	49			%	2	10/14/22	AW	30 - 150 %
% DCBP (Confirmation)	50			%	2	10/14/22	AW	30 - 150 %
% TCMX	61			%	2	10/14/22	AW	30 - 150 %
% TCMX (Confirmation)	58			%	2	10/14/22	AW	30 - 150 %
Volatiles								
1,2,4-Trimethylbenzene	ND	2.9	0.29	ug/Kg	1	10/13/22	JLI	SW8260C
1,3,5-Trimethylbenzene	ND	2.9	0.29	ug/Kg	1	10/13/22	JLI	SW8260C
1,3-Dichlorobenzene	ND	2.9	0.29	ug/Kg	1	10/13/22	JLI	SW8260C
Naphthalene	ND	2.9	0.58	ug/Kg	1	10/13/22	JLI	SW8260C
n-Butylbenzene	ND	2.9	0.29	ug/Kg	1	10/13/22	JLI	SW8260C
n-Propylbenzene	ND	2.9	0.58	ug/Kg	1	10/13/22	JLI	SW8260C
p-Isopropyltoluene	ND	2.9	0.29	ug/Kg	1	10/13/22	JLI	SW8260C
sec-Butylbenzene	ND	2.9	0.29	ug/Kg	1	10/13/22	JLI	SW8260C
tert-Butylbenzene	ND	2.9	0.29	ug/Kg	1	10/13/22	JLI	SW8260C
QA/QC Surrogates								
% 1,2-dichlorobenzene-d4	96			%	1	10/13/22	JLI	70 - 130 %
% Bromofluorobenzene	93			%	1	10/13/22	JLI	70 - 130 %
% Dibromofluoromethane	99			%	1	10/13/22	JLI	70 - 130 %
% Toluene-d8	92			%	1	10/13/22	JLI	70 - 130 %
1,4-dioxane								
1,4-dioxane	ND	44	23	ug/kg	1	10/13/22	JLI	SW8260C
Volatiles								
1,1,1,2-Tetrachloroethane	ND	2.9	0.58	ug/Kg	1	10/13/22	JLI	SW8260C
1,1,1-Trichloroethane	ND	2.9	0.29	ug/Kg	1	10/13/22	JLI	SW8260C
1,1,2,2-Tetrachloroethane	ND	2.9	0.58	ug/Kg	1	10/13/22	JLI	SW8260C
1,1,2-Trichloroethane	ND	2.9	0.58	ug/Kg	1	10/13/22	JLI	SW8260C
1,1-Dichloroethane	ND	2.9	0.58	ug/Kg	1	10/13/22	JLI	SW8260C

Project ID: IMJC
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Parameter	Result	RL/ PQL	LOD/ MDL	Units	Dilution	Date/Time	By	Reference
1,1-Dichloroethene	ND	2.9	0.29	ug/Kg	1	10/13/22	JLI	SW8260C
1,2,3-Trichlorobenzene	ND	2.9	0.58	ug/Kg	1	10/13/22	JLI	SW8260C
1,2,4-Trichlorobenzene	ND	2.9	0.58	ug/Kg	1	10/13/22	JLI	SW8260C
1,2-Dibromo-3-chloropropane	ND	2.9	0.58	ug/Kg	1	10/13/22	JLI	SW8260C
1,2-Dibromoethane	ND	2.6	0.29	ug/Kg	1	10/13/22	JLI	SW8260C
1,2-Dichlorobenzene	ND	2.9	0.29	ug/Kg	1	10/13/22	JLI	SW8260C
1,2-Dichloroethane	ND	2.9	0.29	ug/Kg	1	10/13/22	JLI	SW8260C
1,2-Dichloropropane	ND	2.9	0.58	ug/Kg	1	10/13/22	JLI	SW8260C
1,3-Dichlorobenzene	ND	2.9	0.29	ug/Kg	1	10/13/22	JLI	SW8260C
1,4-Dichlorobenzene	ND	2.9	0.29	ug/Kg	1	10/13/22	JLI	SW8260C
2-Hexanone	ND	15	2.9	ug/Kg	1	10/13/22	JLI	SW8260C
4-Methyl-2-pentanone	ND	15	2.9	ug/Kg	1	10/13/22	JLI	SW8260C
Acetone	ND	29	2.9	ug/Kg	1	10/13/22	JLI	SW8260C
Acrolein	ND	15	1.5	ug/Kg	1	10/13/22	JLI	SW8260C
Acrylonitrile	ND	5.8	0.29	ug/Kg	1	10/13/22	JLI	SW8260C
Benzene	ND	2.9	0.29	ug/Kg	1	10/13/22	JLI	SW8260C
Bromochloromethane	ND	2.9	0.29	ug/Kg	1	10/13/22	JLI	SW8260C
Bromodichloromethane	ND	2.9	0.58	ug/Kg	1	10/13/22	JLI	SW8260C
Bromoform	ND	2.9	0.58	ug/Kg	1	10/13/22	JLI	SW8260C
Bromomethane	ND	2.9	1.2	ug/Kg	1	10/13/22	JLI	SW8260C
Carbon Disulfide	ND	2.9	0.58	ug/Kg	1	10/13/22	JLI	SW8260C
Carbon tetrachloride	ND	2.9	0.58	ug/Kg	1	10/13/22	JLI	SW8260C
Chlorobenzene	ND	2.9	0.29	ug/Kg	1	10/13/22	JLI	SW8260C
Chloroethane	ND	2.9	0.29	ug/Kg	1	10/13/22	JLI	SW8260C
Chloroform	ND	2.9	0.29	ug/Kg	1	10/13/22	JLI	SW8260C
Chloromethane	ND	2.9	0.58	ug/Kg	1	10/13/22	JLI	SW8260C
cis-1,2-Dichloroethene	ND	2.9	0.29	ug/Kg	1	10/13/22	JLI	SW8260C
cis-1,3-Dichloropropene	ND	2.9	0.29	ug/Kg	1	10/13/22	JLI	SW8260C
Cyclohexane	ND	2.9	0.58	ug/Kg	1	10/13/22	JLI	SW8260C
Dibromochloromethane	ND	2.9	0.58	ug/Kg	1	10/13/22	JLI	SW8260C
Dichlorodifluoromethane	ND	2.9	0.29	ug/Kg	1	10/13/22	JLI	SW8260C
Ethylbenzene	ND	2.9	0.29	ug/Kg	1	10/13/22	JLI	SW8260C
Isopropylbenzene	ND	2.9	0.29	ug/Kg	1	10/13/22	JLI	SW8260C
m&p-Xylene	ND	2.9	0.58	ug/Kg	1	10/13/22	JLI	SW8260C
Methyl ethyl ketone	ND	17	2.9	ug/Kg	1	10/13/22	JLI	SW8260C
Methyl t-butyl ether (MTBE)	ND	5.8	0.58	ug/Kg	1	10/13/22	JLI	SW8260C
Methylacetate	ND	5.8	5.8	ug/Kg	1	10/13/22	JLI	SW8260C
Methylcyclohexane	ND	2.9	0.58	ug/Kg	1	10/13/22	JLI	SW8260C
Methylene chloride	ND	2.9	2.9	ug/Kg	1	10/13/22	JLI	SW8260C
o-Xylene	ND	2.9	0.58	ug/Kg	1	10/13/22	JLI	SW8260C
Styrene	ND	2.9	0.29	ug/Kg	1	10/13/22	JLI	SW8260C
tert-butyl alcohol	ND	58	12	ug/Kg	1	10/13/22	JLI	SW8260C
Tetrachloroethene	ND	2.9	0.58	ug/Kg	1	10/13/22	JLI	SW8260C
Toluene	ND	2.9	0.29	ug/Kg	1	10/13/22	JLI	SW8260C
Total Xylenes	ND	2.9	2.9	ug/Kg	1	10/13/22	JLI	SW8260C
trans-1,2-Dichloroethene	ND	2.9	0.29	ug/Kg	1	10/13/22	JLI	SW8260C
trans-1,3-Dichloropropene	ND	2.9	0.29	ug/Kg	1	10/13/22	JLI	SW8260C
Trichloroethene	ND	2.9	0.29	ug/Kg	1	10/13/22	JLI	SW8260C
Trichlorofluoromethane	ND	2.9	0.58	ug/Kg	1	10/13/22	JLI	SW8260C

Parameter	Result		RL/ PQL	LOD/ MDL	Units	Dilution	Date/Time	By	Reference	
Trichlorotrifluoroethane	ND		2.9	0.29	ug/Kg	1	10/13/22	JLI	SW8260C	
Vinyl chloride	ND		2.9	0.29	ug/Kg	1	10/13/22	JLI	SW8260C	
QA/QC Surrogates										
% 1,2-dichlorobenzene-d4	96				%	1	10/13/22	JLI	70 - 130 %	
% Bromofluorobenzene	93				%	1	10/13/22	JLI	70 - 130 %	
% Dibromofluoromethane	99				%	1	10/13/22	JLI	70 - 130 %	
% Toluene-d8	92				%	1	10/13/22	JLI	70 - 130 %	
Vinyl Acetate	ND		29	29	ug/Kg	1	10/13/22	JLI	SW8260C	
Semivolatiles										
1,1-Biphenyl	ND		310	130	ug/Kg	1	10/14/22	WB	SW8270D	
1,2,4,5-Tetrachlorobenzene	ND		310	150	ug/Kg	1	10/14/22	WB	SW8270D	
1,2-Diphenylhydrazine	ND		440	440	ug/Kg	1	10/14/22	WB	SW8270D	
2,2'-Oxybis(1-Chloropropane)	ND		310	120	ug/Kg	1	10/14/22	WB	SW8270D	1
2,3,4,6-tetrachlorophenol	ND		310	200	ug/Kg	1	10/14/22	WB	SW8270D	
2,4,5-Trichlorophenol	ND		310	240	ug/Kg	1	10/14/22	WB	SW8270D	
2,4,6-Trichlorophenol	ND		180	140	ug/Kg	1	10/14/22	WB	SW8270D	
2,4-Dichlorophenol	ND		180	150	ug/Kg	1	10/14/22	WB	SW8270D	
2,4-Dimethylphenol	ND		310	110	ug/Kg	1	10/14/22	WB	SW8270D	
2,4-Dinitrophenol	ND		300	300	ug/Kg	1	10/14/22	WB	SW8270D	
2,4-Dinitrotoluene	ND		180	170	ug/Kg	1	10/14/22	WB	SW8270D	
2,6-Dinitrotoluene	ND		180	140	ug/Kg	1	10/14/22	WB	SW8270D	
2-Chloronaphthalene	ND		310	120	ug/Kg	1	10/14/22	WB	SW8270D	
2-Chlorophenol	ND		310	120	ug/Kg	1	10/14/22	WB	SW8270D	
2-Methylnaphthalene	ND		310	130	ug/Kg	1	10/14/22	WB	SW8270D	
2-Methylphenol (o-cresol)	ND		310	210	ug/Kg	1	10/14/22	WB	SW8270D	
2-Nitroaniline	ND		300	300	ug/Kg	1	10/14/22	WB	SW8270D	
2-Nitrophenol	ND		310	280	ug/Kg	1	10/14/22	WB	SW8270D	
3&4-Methylphenol (m&p-cresol)	ND		310	170	ug/Kg	1	10/14/22	WB	SW8270D	1
3,3'-Dichlorobenzidine	ND		180	180	ug/Kg	1	10/14/22	WB	SW8270D	
3-Nitroaniline	ND		880	310	ug/Kg	1	10/14/22	WB	SW8270D	
4,6-Dinitro-2-methylphenol	ND		300	300	ug/Kg	1	10/14/22	WB	SW8270D	
4-Bromophenyl phenyl ether	ND		310	130	ug/Kg	1	10/14/22	WB	SW8270D	
4-Chloro-3-methylphenol	ND		310	150	ug/Kg	1	10/14/22	WB	SW8270D	
4-Chloroaniline	ND		880	200	ug/Kg	1	10/14/22	WB	SW8270D	
4-Chlorophenyl phenyl ether	ND		310	150	ug/Kg	1	10/14/22	WB	SW8270D	
4-Nitroaniline	ND		440	150	ug/Kg	1	10/14/22	WB	SW8270D	
4-Nitrophenol	ND		440	200	ug/Kg	1	10/14/22	WB	SW8270D	
Acenaphthene	ND		310	130	ug/Kg	1	10/14/22	WB	SW8270D	
Acenaphthylene	ND		180	120	ug/Kg	1	10/14/22	WB	SW8270D	
Acetophenone	ND		310	140	ug/Kg	1	10/14/22	WB	SW8270D	
Anthracene	ND		310	140	ug/Kg	1	10/14/22	WB	SW8270D	
Atrazine	ND		180	130	ug/Kg	1	10/14/22	WB	SW8270D	
Benz(a)anthracene	250	J	310	150	ug/Kg	1	10/14/22	WB	SW8270D	
Benzaldehyde	ND		310	130	ug/Kg	1	10/14/22	WB	SW8270D	
Benzidine	ND		310	180	ug/Kg	1	10/14/22	WB	SW8270D	
Benzo(a)pyrene	250		180	140	ug/Kg	1	10/14/22	WB	SW8270D	
Benzo(b)fluoranthene	190	J	310	150	ug/Kg	1	10/14/22	WB	SW8270D	
Benzo(ghi)perylene	ND		310	140	ug/Kg	1	10/14/22	WB	SW8270D	

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Parameter	Result		RL/ PQL	LOD/ MDL	Units	Dilution	Date/Time	By	Reference
Benzo(k)fluoranthene	180	J	310	150	ug/Kg	1	10/14/22	WB	SW8270D
Benzyl Alcohol	ND		440	440	ug/Kg	1	10/14/22	WB	SW8270D
Benzyl butyl phthalate	ND		310	110	ug/Kg	1	10/14/22	WB	SW8270D
Bis(2-chloroethoxy)methane	ND		310	120	ug/Kg	1	10/14/22	WB	SW8270D
Bis(2-chloroethyl)ether	ND		180	120	ug/Kg	1	10/14/22	WB	SW8270D
Bis(2-ethylhexyl)phthalate	ND		310	130	ug/Kg	1	10/14/22	WB	SW8270D
Caprolactam	ND		310	310	ug/Kg	1	10/14/22	WB	SW8270D
Carbazole	ND		200	180	ug/Kg	1	10/14/22	WB	SW8270D
Chrysene	250	J	310	150	ug/Kg	1	10/14/22	WB	SW8270D
Dibenz(a,h)anthracene	ND		180	140	ug/Kg	1	10/14/22	WB	SW8270D
Dibenzofuran	ND		310	130	ug/Kg	1	10/14/22	WB	SW8270D
Diethyl phthalate	ND		310	140	ug/Kg	1	10/14/22	WB	SW8270D
Dimethylphthalate	ND		310	140	ug/Kg	1	10/14/22	WB	SW8270D
Di-n-butylphthalate	ND		310	120	ug/Kg	1	10/14/22	WB	SW8270D
Di-n-octylphthalate	ND		310	110	ug/Kg	1	10/14/22	WB	SW8270D
Fluoranthene	490		310	140	ug/Kg	1	10/14/22	WB	SW8270D
Fluorene	ND		310	140	ug/Kg	1	10/14/22	WB	SW8270D
Hexachlorobenzene	ND		180	130	ug/Kg	1	10/14/22	WB	SW8270D
Hexachlorobutadiene	ND		310	160	ug/Kg	1	10/14/22	WB	SW8270D
Hexachlorocyclopentadiene	ND		310	130	ug/Kg	1	10/14/22	WB	SW8270D
Hexachloroethane	ND		180	130	ug/Kg	1	10/14/22	WB	SW8270D
Indeno(1,2,3-cd)pyrene	ND		310	150	ug/Kg	1	10/14/22	WB	SW8270D
Isophorone	ND		180	120	ug/Kg	1	10/14/22	WB	SW8270D
Naphthalene	ND		310	130	ug/Kg	1	10/14/22	WB	SW8270D
Nitrobenzene	ND		180	150	ug/Kg	1	10/14/22	WB	SW8270D
N-Nitrosodimethylamine	ND		310	120	ug/Kg	1	10/14/22	WB	SW8270D
N-Nitrosodi-n-propylamine	ND		170	140	ug/Kg	1	10/14/22	WB	SW8270D
N-Nitrosodiphenylamine	ND		180	170	ug/Kg	1	10/14/22	WB	SW8270D
Pentachlorophenol	ND		300	170	ug/Kg	1	10/14/22	WB	SW8270D
Phenanthrene	410		180	130	ug/Kg	1	10/14/22	WB	SW8270D
Phenol	ND		310	140	ug/Kg	1	10/14/22	WB	SW8270D
Pyrene	430		310	150	ug/Kg	1	10/14/22	WB	SW8270D
QA/QC Surrogates									
% 2,4,6-Tribromophenol	80				%	1	10/14/22	WB	30 - 130 %
% 2-Fluorobiphenyl	55				%	1	10/14/22	WB	30 - 130 %
% 2-Fluorophenol	59				%	1	10/14/22	WB	30 - 130 %
% Nitrobenzene-d5	64				%	1	10/14/22	WB	30 - 130 %
% Phenol-d5	64				%	1	10/14/22	WB	30 - 130 %
% Terphenyl-d14	56				%	1	10/14/22	WB	30 - 130 %
Aniline	ND		440	440	ug/Kg	1	10/14/22	WB	SW8270D
Benzoic Acid	ND		440	310	ug/Kg	1	10/14/22	WB	SW8270D
Parathion	ND		440	180	ug/Kg	1	10/14/22	WB	SW8270D

Parameter	Result	RL/ PQL	LOD/ MDL	Units	Dilution	Date/Time	By	Reference

1 = This parameter is not certified by the primary accrediting authority (NY NELAC) for this matrix. NY NELAC does not offer certification for all parameters at this time.
B = Present in blank, no bias suspected.

RL/PQL=Reporting/Practical Quantitation Level (Equivalent to NELAC LOQ, Limit of Quantitation) ND=Not Detected BRL=Below Reporting Level L=Biased Low J=Estimated Below RL LOD=Limit of Detection MDL=Method Detection Limit1
QA/QC Surrogates: Surrogates are compounds (preceeded with a %) added by the lab to determine analysis efficiency. Surrogate results(%) listed in the report are not "detected" compounds.

Comments:

Per 1.4.6 of EPA method 8270D, 1,2-Diphenylhydrazine is unstable and readily converts to Azobenzene. Azobenzene is used for the calibration of 1,2-Diphenylhydrazine.

Please be advised that the NY 375 soil criteria for chromium are based on hexavalent chromium and trivalent chromium.

The regulatory hold time for pH is immediately. This pH was performed in the laboratory and may be considered outside of hold-time.

Semi-Volatile Comment:
To achieve client's objectives, where the lowest calibration standard or LOD justifies lowering the RL/PQL, the RL/PQL of some compounds have been lowered to meet criteria.

Hexavalent Chromium:
This sample is in a reducing state.

All soils, solids and sludges are reported on a dry weight basis unless otherwise noted in the sample comments.

If you are the client above and have any questions concerning this testing, please do not hesitate to contact Phoenix Client Services at ext.200.
The contents of this report cannot be discussed with anyone other than the client listed above without their written consent.

Phyllis Shiller, Laboratory Director
October 21, 2022
Official Report Release To Follow

Sample Criteria Exceedances Report

GCM60739 - IMPACTJB-IEC

Criteria: NJ: IGWSS, RC; NY: 375

State: NJ

SampNo	Acode	Phoenix Analyte	Criteria	Result	RL	Criteria	RL Criteria	Analysis Units
CM60739	$DPSVNJ_TCL	Benzo(a)pyrene	NJ / Impact To Ground Water / Soil Screen Levels	400	150	200	200	ug/Kg
CM60739	$PESTSMDPR	4,4' -DDT	NY / 375-6.8 PCBs/Pesticides / Unrestricted Use Soil	5.0	2.2	3.3	3.3	ug/Kg
CM60739	AL-SMDP	Aluminum	NJ / Impact To Ground Water / Soil Screen Levels	17500	39	6000	3900	mg/Kg
CM60739	CU-SM	Copper	NY / 375-6.8 Metals / Unrestricted Use Soil	77.1	0.8	50	50	mg/kg
CM60739	MN-SM	Manganese	NJ / Impact To Ground Water / Soil Screen Levels	511	3.9	65	42	mg/Kg
CM60739	NI-SM	Nickel	NJ / Impact To Ground Water / Soil Screen Levels	48.3	0.39	48	31	mg/Kg
CM60739	NI-SM	Nickel	NY / 375-6.8 Metals / Unrestricted Use Soil	48.3	0.39	30	30	mg/Kg
CM60740	$PESTSMDPR	4,4' -DDT	NY / 375-6.8 PCBs/Pesticides / Unrestricted Use Soil	7.1	2.2	3.3	3.3	ug/Kg
CM60740	AL-SMDP	Aluminum	NJ / Impact To Ground Water / Soil Screen Levels	16100	34	6000	3900	mg/Kg
CM60740	CU-SM	Copper	NY / 375-6.8 Metals / Unrestricted Use Soil	63.6	0.7	50	50	mg/kg
CM60740	MN-SM	Manganese	NJ / Impact To Ground Water / Soil Screen Levels	345	3.4	65	42	mg/Kg
CM60740	NI-SM	Nickel	NJ / Impact To Ground Water / Soil Screen Levels	50.1	0.34	48	31	mg/Kg
CM60740	NI-SM	Nickel	NY / 375-6.8 Metals / Unrestricted Use Soil	50.1	0.34	30	30	mg/Kg
CM60741	$PESTSMDPR	4,4' -DDT	NY / 375-6.8 PCBs/Pesticides / Unrestricted Use Soil	12	2.2	3.3	3.3	ug/Kg
CM60741	AL-SMDP	Aluminum	NJ / Impact To Ground Water / Soil Screen Levels	16900	39	6000	3900	mg/Kg
CM60741	MN-SM	Manganese	NJ / Impact To Ground Water / Soil Screen Levels	423	3.9	65	42	mg/Kg
CM60741	NI-SM	Nickel	NY / 375-6.8 Metals / Unrestricted Use Soil	47.2	0.39	30	30	mg/Kg
CM60742	$DPSVNJ_TCL	Benzo(a)pyrene	NJ / Impact To Ground Water / Soil Screen Levels	310	150	200	200	ug/Kg
CM60742	$PESTSMDPR	4,4' -DDT	NY / 375-6.8 PCBs/Pesticides / Unrestricted Use Soil	5.9	2.2	3.3	3.3	ug/Kg
CM60742	AL-SMDP	Aluminum	NJ / Impact To Ground Water / Soil Screen Levels	17500	34	6000	3900	mg/Kg
CM60742	CU-SM	Copper	NY / 375-6.8 Metals / Unrestricted Use Soil	66.8	0.7	50	50	mg/kg
CM60742	MN-SM	Manganese	NJ / Impact To Ground Water / Soil Screen Levels	391	3.4	65	42	mg/Kg
CM60742	NI-SM	Nickel	NY / 375-6.8 Metals / Unrestricted Use Soil	45.5	0.34	30	30	mg/Kg
CM60743	$PESTSMDPR	4,4' -DDT	NY / 375-6.8 PCBs/Pesticides / Unrestricted Use Soil	6.1	2.2	3.3	3.3	ug/Kg
CM60743	AL-SMDP	Aluminum	NJ / Impact To Ground Water / Soil Screen Levels	17500	33	6000	3900	mg/Kg
CM60743	CU-SM	Copper	NY / 375-6.8 Metals / Unrestricted Use Soil	61.7	0.7	50	50	mg/kg
CM60743	MN-SM	Manganese	NJ / Impact To Ground Water / Soil Screen Levels	373	3.3	65	42	mg/Kg
CM60743	NI-SM	Nickel	NJ / Impact To Ground Water / Soil Screen Levels	52.4	0.33	48	31	mg/Kg
CM60743	NI-SM	Nickel	NY / 375-6.8 Metals / Unrestricted Use Soil	52.4	0.33	30	30	mg/Kg
CM60744	$DPSVNJ_TCL	Benzo(a)pyrene	NJ / Impact To Ground Water / Soil Screen Levels	250	140	200	200	ug/Kg
CM60744	$PESTSMDPR	4,4' -DDT	NY / 375-6.8 PCBs/Pesticides / Unrestricted Use Soil	5.6	2.2	3.3	3.3	ug/Kg
CM60744	AL-SMDP	Aluminum	NJ / Impact To Ground Water / Soil Screen Levels	15300	34	6000	3900	mg/Kg
CM60744	CU-SM	Copper	NY / 375-6.8 Metals / Unrestricted Use Soil	56.5	0.7	50	50	mg/kg
CM60744	MN-SM	Manganese	NJ / Impact To Ground Water / Soil Screen Levels	475	3.4	65	42	mg/Kg
CM60744	NI-SM	Nickel	NJ / Impact To Ground Water / Soil Screen Levels	58.8	0.34	48	31	mg/Kg
CM60744	NI-SM	Nickel	NY / 375-6.8 Metals / Unrestricted Use Soil	58.8	0.34	30	30	mg/Kg
CM60745	$DPSVNJ_TCL	Benzo(a)pyrene	NJ / Impact To Ground Water / Soil Screen Levels	220	140	200	200	ug/Kg

Sample Criteria Exceedances Report

GCM60739 - IMPACTJB-IEC

Criteria: NJ: IGWSS, RC; NY: 375

State: NJ

SampNo	Acode	Phoenix Analyte	Criteria	Result	RL	Criteria	RL Criteria	Analysis Units
CM60745	$PESTSMDPR	4,4' -DDT	NY / 375-6.8 PCBs/Pesticides / Unrestricted Use Soil	5.7	2.1	3.3	3.3	ug/Kg
CM60745	AL-SMDP	Aluminum	NJ / Impact To Ground Water / Soil Screen Levels	15700	39	6000	3900	mg/Kg
CM60745	CD-SM	Cadmium	NJ / Impact To Ground Water / Soil Screen Levels	2.35	0.39	2	1	mg/Kg
CM60745	CU-SM	Copper	NY / 375-6.8 Metals / Unrestricted Use Soil	52.3	0.8	50	50	mg/kg
CM60745	MN-SM	Manganese	NJ / Impact To Ground Water / Soil Screen Levels	347	3.9	65	42	mg/Kg
CM60745	NI-SM	Nickel	NY / 375-6.8 Metals / Unrestricted Use Soil	40.4	0.39	30	30	mg/Kg
CM60745	ZN-SMDP	Zinc	NY / 375-6.8 Metals / Unrestricted Use Soil	743	7.8	109	109	mg/Kg
CM60746	$DPSVNJ_TCL	Benzo(a)pyrene	NJ / Impact To Ground Water / Soil Screen Levels	250	180	200	200	ug/Kg
CM60746	$PESTSMDPR	4,4' -DDT	NY / 375-6.8 PCBs/Pesticides / Unrestricted Use Soil	6.4	2.7	3.3	3.3	ug/Kg
CM60746	AL-SMDP	Aluminum	NJ / Impact To Ground Water / Soil Screen Levels	21800	45	6000	3900	mg/Kg
CM60746	CU-SM	Copper	NY / 375-6.8 Metals / Unrestricted Use Soil	84.4	0.9	50	50	mg/kg
CM60746	MN-SM	Manganese	NJ / Impact To Ground Water / Soil Screen Levels	483	4.5	65	42	mg/Kg
CM60746	NI-SM	Nickel	NJ / Impact To Ground Water / Soil Screen Levels	64.1	0.45	48	31	mg/Kg
CM60746	NI-SM	Nickel	NY / 375-6.8 Metals / Unrestricted Use Soil	64.1	0.45	30	30	mg/Kg

Phoenix Laboratories does not assume responsibility for the data contained in this exceedance report. It is provided as an additional tool to identify requested criteria exceedences. All efforts are made to ensure the accuracy of the data (obtained from appropriate agencies). A lack of exceedence information does not necessarily suggest conformance to the criteria. It is ultimately the site professional's responsibility to determine appropriate compliance.

CHAIN OF CUSTODY

IMPACT ENVIRONMENTAL
170 Keyland Court, Bohemia, New York 11716
(Tel.) 631-269-8800 (Fax) 631-269-1599

Page 1 *of* 1

ICL ☐ ISW ☐
IEC ☒ SGC ☐
IM ☐

LAB NAME: Phoenix Labs

RECEIVED DATE: 10-12-22

Client Information

Company Name Impact Environmental
Address 170 Keyland Court
City Bohemia **State** NY **Zip** 11716
Project Contact Jeff Bogoian
Phone # 631-269-8800 **Fax #** 631-269-1599
E-mail

Project Information

Project Name IMJC
Street 34 Caven Point Avenue
City Jersey City **State** NJ **Zip**
Project # FAC-20
Sampler's Name Satish Ramrup
Sampler's Signature Satish Ramrup

Analytical Information / **Sample Information** / **Sample Collection** / **Sample Containers** (Number of Each Preserved Bottle)

LAB SAMPLE # (LAB USE ONLY)	Sample ID	IEC Project Code	Matrix Code	Sample Type	Sample Date	Time	Total # of bottles	NONE or OTHER*	ICE	HCL	Methanol (USEPA 5035)	Sodium Bisulfate (EPA 5035)	Impact Analytical Package A*	Impact Analytical Package B**	Impact Analytical Package C***	VOC 8260 (Analyte List for NY Part 375 and NJ NRDCC)	GP82 Analysis	VOCs 8260 (CP51 Analyte List)	EPH Category II				(LAB USE ONLY)
1	IMJC North		S	G	10-12-22	0800	5						X			X			X				60739
2	IMJC South		S	G		0805	5						X			X			X				60740
3	IMJC East		S	G		0810	5						X			X			X				60741
4	IMJC West		S	G		0815	5						X			X			X				60742
5	IMJC NW		S	G		0820	5						X			X			X				60743
6	IMJC NE		S	G		0825	5						X			X			X				60744
7	IMJC SW		S	G		0830	5						X			X			X				60745
8	IMJC SE		S	G	10-12-22	0835	5						X			X			X				60746
9																							
10																							

Matrix Codes
L - Liquid
S - Soil
A - Air
OL - Oil
W - Wipe
PC - Paint Chips
SL - Sludge
SD - Solid
DW- Drinking Water
DISS - Dissolved

Sample Type
G=Grab
C=Composite
B=Blank

Turnaround Time (Business Days)

Standard Service
☐ Standard - 5 day
☐ Standard - 4 day
☒ ~~Standard - 3~~ day

Rush Service
☐ 48 Hour *RUSH*
☐ 24 Hour *RUSH*

(LAB USE ONLY)
TAT Approved By / Date:

Data Deliverable Information
☐ Results Only (Level-1)
☐ Results plus Misc. QC (Level-2)
☐ Results plus ALL QC (Level-3)
☐ PA QC Package
☐ NJ QC Package (Level3NJ)
☐ CLP Category A (Level-2)
☐ CLP Category B (Level-4)
☐ ASP QC Package (Level-4)
☐ Other _____
☐ EDD Format_____
(EDD Formats: Excel, pdf, EQUIS, GIS, GISKey, SPDES, Ascii, TAGM, OENJ)

REFERENCES
*Package A (proprietary) - Priority Pollutants Metals, SVOCs, PCB/Pest and Herbicides - to match all NJ DCSRS & NY Part 375 parameters and dectection limits. **Package B (proprietary)-Same as Package A, plus TCLP Metals & Category II EPH. ***Package C (proprietary)- Same as Package B plus RCRA characteristics and Full TCLP

NOTES/COMMENTS:

Sample custody must be documented below, each time samples change possession, with a signature, date, and time.

Relinquished by Sampler:	Date / Time:	Received By:	Relinquished By:	Date / Time:	Received By:
1 Satish Ramrup	10-12-22 1200	1 [signature]	2 [signature]	2 10/12 1714	2 [signature]
Relinquished by:	**Date / Time:**	**Received By:**	**Relinquished By:**	**Date / Time:**	**Received By:**
3	3	3	4	4	4
Relinquished by:	**Date / Time:**	**Received By:**	**COOLER INFORMATION**		
5	5	5	Cooler Temp: 2, 1 WAP	pH:_____	☐ On Ice ☐ Sample Receipt Discrepancy(attach information)

Form SS-2/Nov. 2013

Bobbi Aloisa

From: Michael Lapman
Sent: Wednesday, October 19, 2022 11:31 AM
To: Bobbi Aloisa
Subject: FW: IMJC---Re-Analyze

Bobbi:

Please see the below from Jeff, thank you.

Regards,
Michael Lapman
Phoenix Environmental Laboratories, Inc.
587 East Middle Turnpike
Manchester, CT 06040
Direct Line: 917.449.0850
www.phoenixlabs.com

This message, including any attachments hereto, may contain privileged or confidential information and is sent solely for the attention and use of the intended addressee(s). If you are not an intended addressee, you may neither use this message nor copy or deliver it to anyone. In such case, you should immediately destroy this message and kindly notify the sender by reply email. Thank you.

From: Jeff Bogoian <jbogoian@impactenvironmental.com>
Date: Wednesday, October 19, 2022 at 11:24 AM
To: Michael Lapman <michael@phoenixlabs.com>
Subject: RE: IMJC

Please re-extract and reanalyze CM60742, CM60744, and CM60746 for Cobalt.

JEFF BOGOIAN | Facility Manager
O: 201-268-5686 x140 C: 631-334-2325
1000 Page Avenue, Lyndhurst, NJ 07071
Our email policies

Impact Recovery and Reuse Center Crushed Stone Report

Laboratory Testing on Material Stockpiled at Impact Recovery and Reuse Center

Submitted by:
Impact Materials
1000 Page Ave,
Lyndhurst, NJ

IMPACT MATERIALS 1000 Page Avenue| Lyndhurst| NJ | 07071 | 201.268.5686

November 22, 2023

Chris Connolly
Impact Environmental Closures
170 Keyland Ct,
Bohemia, NY 11716

RE: Impact Recovery and Reuse Center
1000 Page Avenue, Lyndhurst, NJ
Blue Stone Product at IRRC Intended for 13-16 Beach Channel Dr, Queens, NY

Mr. Connolly:

This letter was prepared to report the environmental and geotechnical quality of the bluestone product manufactured at the Impact Reuse and Recovery Center ("IRRC"), a permitted Class B Recycling Facility located at 1000 Page Avenue in Lyndhurst, New Jersey. The product is proposed as backfill at 13-16 Beach Channel Dr, Queens, NY.

IRRC uses a thorough process to ensure the quality of the products it manufactures. This includes vetting sources used to manufacture our products and performing requisite certified third-party analytical testing on representative samples.

This specific product was made by crushing and screening virgin bedrock sourced from construction projects in the New York City area to a ¾" clean aggregate and inspected for quality control. Geotechnical analysis was conducted periodically. The product is continually inspected for visual and olfactory signs of contamination as well as PID screenings. The product is free of solid waste materials. Post processing, it was stored in surge piles for additional quality control analysis. Grab samples were secured from random locations within the stockpile. Samples were secured for volatile organic analysis using Encore © sampling kits. The balance of the discreet sample was secured into glass jars for semivolatile, metal, PCB, pesticide, herbicide, total extractable petroleum hydrocarbon and PFAS analysis. Once analytical results were received and verified to New York Codes, Rules and Regulations ("NYCRR") Part 375 Restricted Residential Use and Protection of Groundwater Soil Cleanup Objectives, the product was combined into a larger finished stockpile.

The results of the finished stockpile sampling are presented below in Table 1. All results are below NYCRR Part 375 Restricted Residential Use and Protection of Groundwater Soil Cleanup Objectives. For a more in-depth examination of the sampling results, please see the attached summary table, field notes, and Laboratory Report complete with a signed Chain of Custody for the most recent sampling. Proposed product will be delivered by trucks in compliance with applicable laws and regulations and will enter the site at designated locations.

Sincerely,

IMPACT ENVIRONMENTAL

Jeff Bogoian
IRRC QA/QC Engineer

Bluestone Analysis
Location: 1000 Page Ave, Lyndhurst, NJ

CAS Number	Parameter Name	Parameter ID	NYCRR 375 Restricted-Residential	NYCRR 375 Protection of Groundwater	IRRC BLUESTONE 1A (GRAB)	RL	Q	MDL	IRRC BLUESTONE 1B (GRAB)	RL	Q	MDL	IRRC BLUESTONE 1C (GRAB)	RL	Q	MDL	IRRC BLUESTONE 2A (GRAB)	RL	Q	MDL	IRRC BLUESTONE 2B (GRAB)	RL	Q	MDL	IRRC BLUESTONE 2C (GRAB)	RL	Q	MDL	IRRC BLUESTONE 3A (GRAB)	RL	Q	MDL
	Sample ID	Depth																														
	Date																															
	Unit		ug/kg	ug/kg	ug/kg	ug/kg		ug/kg	ug/kg	ug/kg		ug/kg	ug/kg	ug/kg		ug/kg	ug/kg	ug/kg		ug/kg	ug/kg	ug/kg		ug/kg	ug/kg	ug/kg		ug/kg	ug/kg	ug/kg		ug/kg
630-20-6	1,1,1,2-Tetrachloroethane	VOC	NA	NA	< 3.1	3.1	U	0.61	< 3.1	3.1	U	0.61	< 2.9	2.9	U	0.57	< 3.0	3	U	0.59	< 3.9	3.9	U	0.77	< 3.7	3.7	U	0.73	< 3.0	3	U	0.6
71-55-6	1,1,1-Trichloroethane	VOC	100,000a	680	< 3.1	3.1	U	0.31	< 3.1	3.1	U	0.31	< 2.9	2.9	U	0.29	< 3.0	3	U	0.3	< 3.9	3.9	U	0.39	< 3.7	3.7	U	0.37	< 3.0	3	U	0.3
79-34-5	1,1,2,2-Tetrachloroethane	VOC	NA	600	< 3.1	3.1	U	0.61	< 3.1	3.1	U	0.61	< 2.9	2.9	U	0.57	< 3.0	3	U	0.59	< 3.9	3.9	U	0.77	< 3.7	3.7	U	0.73	< 3.0	3	U	0.6
79-00-5	1,1,2-Trichloroethane	VOC	NA	NA	< 3.1	3.1	U	0.61	< 3.1	3.1	U	0.61	< 2.9	2.9	U	0.57	< 3.0	3	U	0.59	< 3.9	3.9	U	0.77	< 3.7	3.7	U	0.73	< 3.0	3	U	0.6
76-13-1	1,1,2 Trichloro-1,2,2 Trifluoroethane	VOC	NA	NA	< 3.1	3.1	U	0.31	< 3.1	3.1	U	0.31	< 2.9	2.9	U	0.29	< 3.0	3	U	0.3	< 3.9	3.9	U	0.39	< 3.7	3.7	U	0.37	< 3.0	3	U	0.3
75-34-3	1,1-Dichloroethane	VOC	26000	270	< 3.1	3.1	U	0.61	< 3.1	3.1	U	0.61	< 2.9	2.9	U	0.57	< 3.0	3	U	0.59	< 3.9	3.9	U	0.77	< 3.7	3.7	U	0.73	< 3.0	3	U	0.6
75-35-4	1,1-Dichloroethene	VOC	100,000a	330	< 3.1	3.1	U	0.31	< 3.1	3.1	U	0.31	< 2.9	2.9	U	0.29	< 3.0	3	U	0.3	< 3.9	3.9	U	0.39	< 3.7	3.7	U	0.37	< 3.0	3	U	0.3
120-82-1	1,2,4-Trichlorobenzene	VOC	NA	3400	< 3.1	3.1	U	0.61	< 3.1	3.1	U	0.61	< 2.9	2.9	U	0.57	< 3.0	3	U	0.59	< 3.9	3.9	U	0.77	< 3.7	3.7	U	0.73	< 3.0	3	U	0.6
95-63-6	1,2,4-Trimethylbenzene	VOC	52000	3600	< 3.1	3.1	U	0.31	< 3.1	3.1	U	0.31	< 2.9	2.9	U	0.29	< 3.0	3	U	0.3	< 3.9	3.9	U	0.39	< 3.7	3.7	U	0.37	< 3.0	3	U	0.3
96-12-8	1,2-Dibromo-3-Chloropropane	VOC	NA	NA	< 3.1	3.1	U	0.61	< 3.1	3.1	U	0.61	< 2.9	2.9	U	0.57	< 3.0	3	U	0.59	< 3.9	3.9	U	0.77	< 3.7	3.7	U	0.73	< 3.0	3	U	0.6
106-93-4	1,2-Dibromoethane	VOC	NA	NA	< 1.2	1.2	U	0.31	< 1.2	1.2	U	0.31	< 1.2	1.2	U	0.29	< 1.2	1.2	U	0.3	< 1.2	1.2	U	0.39	< 1.2	1.2	U	0.37	< 1.2	1.2	U	0.3
95-50-1	1,2-Dichlorobenzene	VOC	100,000a	1100	< 3.1	3.1	U	0.31	< 3.1	3.1	U	0.31	< 2.9	2.9	U	0.29	< 3.0	3	U	0.3	< 3.9	3.9	U	0.39	< 3.7	3.7	U	0.37	< 3.0	3	U	0.3
107-06-2	1,2-Dichloroethane	VOC	3100	20f	< 3.1	3.1	U	0.31	< 3.1	3.1	U	0.31	< 2.9	2.9	U	0.29	< 3.0	3	U	0.3	< 3.9	3.9	U	0.39	< 3.7	3.7	U	0.37	< 3.0	3	U	0.3
78-87-5	1,2-Dichloropropane	VOC	NA	NA	< 3.1	3.1	U	0.61	< 3.1	3.1	U	0.61	< 2.9	2.9	U	0.57	< 3.0	3	U	0.59	< 3.9	3.9	U	0.77	< 3.7	3.7	U	0.73	< 3.0	3	U	0.6
108-67-8	1,3,5-Trimethylbenzene	VOC	52000	8400	< 3.1	3.1	U	0.31	< 3.1	3.1	U	0.31	< 2.9	2.9	U	0.29	< 3.0	3	U	0.3	< 3.9	3.9	U	0.39	< 3.7	3.7	U	0.37	< 3.0	3	U	0.3
541-73-1	1,3-Dichlorobenzene	VOC	49000	2400	< 3.1	3.1	U	0.31	< 3.1	3.1	U	0.31	< 2.9	2.9	U	0.29	< 3.0	3	U	0.3	< 3.9	3.9	U	0.39	< 3.7	3.7	U	0.37	< 3.0	3	U	0.3
106-46-7	1,4-Dichlorobenzene	VOC	13000	1800	< 3.1	3.1	U	0.31	< 3.1	3.1	U	0.31	< 2.9	2.9	U	0.29	< 3.0	3	U	0.3	< 3.9	3.9	U	0.39	< 3.7	3.7	U	0.37	< 3.0	3	U	0.3
123-91-1	1,4-Dioxane	VOC	13000	100e	< 46	46	U	24	< 46	46	U	24	< 43	43	U	23	< 44	44	U	24	< 58	58	U	31	< 55	55	U	29	< 45	45	U	24
78-93-3	2-Butanone	VOC	100,000a	120	< 18	18	U	3.1	< 18	18	U	3.1	< 17	17	U	2.9	< 18	18	U	3	< 23	23	U	3.9	< 22	22	U	3.7	< 18	18	U	3
108-10-1	4-Methyl-2-Pentanone	VOC	NA	1000	< 15	15	U	3.1	< 15	15	U	3.1	< 14	14	U	2.9	< 15	15	U	3	< 19	19	U	3.9	< 18	18	U	3.7	< 15	15	U	3
67-64-1	Acetone	VOC	100,000b	50	< 31	31	U	3.1	< 31	31	U	3.1	2.9	29	JS	2.9	< 30	30	U	3	< 39	39	U	3.9	< 37	37	U	3.7	< 30	30	U	3
107-02-8	Acrolein	VOC	NA	NA	< 0.47	0.47	U	0.47	< 0.47	0.47	U	0.47	< 0.47	0.47	U	0.47	< 0.47	0.47	U	0.47	< 0.47	0.47	U	0.47	< 0.47	0.47	U	0.47	< 0.47	0.47	U	0.47
107-13-1	Acrylonitrile	VOC	NA	NA	< 6.1	6.1	U	0.31	< 6.1	6.1	U	0.31	< 5.7	5.7	U	0.29	< 5.9	5.9	U	0.3	< 7.7	7.7	U	0.39	< 7.3	7.3	U	0.37	< 6.0	6	U	0.3
71-43-2	Benzene	VOC	4800	60	< 3.1	3.1	U	0.31	< 3.1	3.1	U	0.31	< 2.9	2.9	U	0.29	< 3.0	3	U	0.3	< 3.9	3.9	U	0.39	< 3.7	3.7	U	0.37	< 3.0	3	U	0.3
74-97-5	Bromochloromethane	VOC	NA	NA	< 3.1	3.1	U	0.31	< 3.1	3.1	U	0.31	< 2.9	2.9	U	0.29	< 3.0	3	U	0.3	< 3.9	3.9	U	0.39	< 3.7	3.7	U	0.37	< 3.0	3	U	0.3
75-27-4	Bromodichloromethane	VOC	NA	NA	< 3.1	3.1	U	0.61	< 3.1	3.1	U	0.61	< 2.9	2.9	U	0.57	< 3.0	3	U	0.59	< 3.9	3.9	U	0.77	< 3.7	3.7	U	0.73	< 3.0	3	U	0.6
75-25-2	Bromoform	VOC	NA	NA	< 3.1	3.1	U	0.61	< 3.1	3.1	U	0.61	< 2.9	2.9	U	0.57	< 3.0	3	U	0.59	< 3.9	3.9	U	0.77	< 3.7	3.7	U	0.73	< 3.0	3	U	0.6
74-83-9	Bromomethane	VOC	NA	NA	< 3.1	3.1	U	1.2	< 3.1	3.1	U	1.2	< 2.9	2.9	U	1.1	< 3.0	3	U	1.2	< 3.9	3.9	U	1.5	< 3.7	3.7	U	1.5	< 3.0	3	U	1.2
75-15-0	Carbon Disulfide	VOC	NA	2700	< 3.1	3.1	U	0.61	< 3.1	3.1	U	0.61	< 2.9	2.9	U	0.57	< 3.0	3	U	0.59	< 3.9	3.9	U	0.77	< 3.7	3.7	U	0.73	< 3.0	3	U	0.6
56-23-5	Carbon Tetrachloride	VOC	2400	760	< 3.1	3.1	U	0.61	< 3.1	3.1	U	0.61	< 2.9	2.9	U	0.57	< 3.0	3	U	0.59	< 3.9	3.9	U	0.77	< 3.7	3.7	U	0.73	< 3.0	3	U	0.6
108-90-7	Chlorobenzene	VOC	100,000a	1100	< 3.1	3.1	U	0.31	< 3.1	3.1	U	0.31	< 2.9	2.9	U	0.29	< 3.0	3	U	0.3	< 3.9	3.9	U	0.39	< 3.7	3.7	U	0.37	< 3.0	3	U	0.3
124-48-1	Chlorodibromomethane	VOC	NA	NA	< 3.1	3.1	U	0.61	< 3.1	3.1	U	0.61	< 2.9	2.9	U	0.57	< 3.0	3	U	0.59	< 3.9	3.9	U	0.77	< 3.7	3.7	U	0.73	< 3.0	3	U	0.6
75-00-3	Chloroethane	VOC	NA	1900	< 3.1	3.1	U	0.31	< 3.1	3.1	U	0.31	< 2.9	2.9	U	0.29	< 3.0	3	U	0.3	< 3.9	3.9	U	0.39	< 3.7	3.7	U	0.37	< 3.0	3	U	0.3
67-66-3	Chloroform	VOC	49000	370	< 3.1	3.1	U	0.31	< 3.1	3.1	U	0.31	< 2.9	2.9	U	0.29	< 3.0	3	U	0.3	< 3.9	3.9	U	0.39	< 3.7	3.7	U	0.37	< 3.0	3	U	0.3
74-87-3	Chloromethane	VOC	NA	NA	< 3.1	3.1	U	0.61	< 3.1	3.1	U	0.61	< 2.9	2.9	U	0.57	< 3.0	3	U	0.59	< 3.9	3.9	U	0.77	< 3.7	3.7	U	0.73	< 3.0	3	U	0.6
156-59-2	cis-1,2-Dichloroethene	VOC	100,000a	250	< 3.1	3.1	U	0.31	< 3.1	3.1	U	0.31	< 2.9	2.9	U	0.29	< 3.0	3	U	0.3	< 3.9	3.9	U	0.39	< 3.7	3.7	U	0.37	< 3.0	3	U	0.3
75-71-8	Dichlorodifluoromethane	VOC	NA	NA	< 3.1	3.1	U	0.31	< 3.1	3.1	U	0.31	< 2.9	2.9	U	0.29	< 3.0	3	U	0.3	< 3.9	3.9	U	0.39	< 3.7	3.7	U	0.37	< 3.0	3	U	0.3
100-41-4	Ethylbenzene	VOC	41000	1000	< 3.1	3.1	U	0.31	< 3.1	3.1	U	0.31	< 2.9	2.9	U	0.29	< 3.0	3	U	0.3	< 3.9	3.9	U	0.39	< 3.7	3.7	U	0.37	< 3.0	3	U	0.3
98-82-8	Isopropylbenzene	VOC	NA	2300	< 3.1	3.1	U	0.31	< 3.1	3.1	U	0.31	< 2.9	2.9	U	0.29	< 3.0	3	U	0.3	< 3.9	3.9	U	0.39	< 3.7	3.7	U	0.37	< 3.0	3	U	0.3
79-20-9	Methyl Acetate	VOC	NA	NA	< 6.1	6.1	U	6.1	< 6.1	6.1	U	6.1	< 5.7	5.7	U	5.7	< 5.9	5.9	U	5.9	< 7.7	7.7	U	7.7	< 7.3	7.3	U	7.3	< 6.0	6	U	6
75-09-2	Methylene Chloride	VOC	100,000a	50	< 3.1	3.1	U	3.1	< 3.1	3.1	U	3.1	< 2.9	2.9	U	2.9	< 3.0	3	U	3	< 3.9	3.9	U	3.9	< 3.7	3.7	U	3.7	< 3.0	3	U	3
1634-04-4	Methyl Tert-Butyl Ether	VOC	100,000a	930	< 6.1	6.1	U	0.61	< 6.1	6.1	U	0.61	< 5.7	5.7	U	0.57	< 5.9	5.9	U	0.59	< 7.7	7.7	U	0.77	< 7.3	7.3	U	0.73	< 6.0	6	U	0.6
104-51-8	n-Butylbenzene	VOC	100,000a	12000	< 3.1	3.1	U	0.31	< 3.1	3.1	U	0.31	< 2.9	2.9	U	0.29	< 3.0	3	U	0.3	< 3.9	3.9	U	0.39	< 3.7	3.7	U	0.37	< 3.0	3	U	0.3
103-65-1	n-Propylbenzene	VOC	100,000a	3900	< 3.1	3.1	U	0.61	< 3.1	3.1	U	0.61	< 2.9	2.9	U	0.57	< 3.0	3	U	0.59	< 3.9	3.9	U	0.77	< 3.7	3.7	U	0.73	< 3.0	3	U	0.6
99-87-6	p-Isoproplytoluene	VOC	NA	10000	< 3.1	3.1	U	0.31	< 3.1	3.1	U	0.31	< 2.9	2.9	U	0.29	< 3.0	3	U	0.3	< 3.9	3.9	U	0.39	< 3.7	3.7	U	0.37	< 3.0	3	U	0.3
135-98-8	sec-Butylbenzene	VOC	100,000a	11000	< 3.1	3.1	U	0.31	< 3.1	3.1	U	0.31	< 2.9	2.9	U	0.29	< 3.0	3	U	0.3	< 3.9	3.9	U	0.39	< 3.7	3.7	U	0.37	< 3.0	3	U	0.3
100-42-5	Styrene	VOC	NA	NA	< 3.1	3.1	U	0.31	< 3.1	3.1	U	0.31	< 2.9	2.9	U	0.29	< 3.0	3	U	0.3	< 3.9	3.9	U	0.39	< 3.7	3.7	U	0.37	< 3.0	3	U	0.3
98-06-6	tert-Butylbenzene	VOC	100,000a	5900	< 3.1	3.1	U	0.31	< 3.1	3.1	U	0.31	< 2.9	2.9	U	0.29	< 3.0	3	U	0.3	< 3.9	3.9	U	0.39	< 3.7	3.7	U	0.37	< 3.0	3	U	0.3
75-65-0	Tertiary Butyl Alcohol	VOC	NA	NA	< 61	61	U	12	< 61	61	U	12	< 57	57	U	11	< 59	59	U	12	< 77	77	U	15	< 73	73	U	15	< 60	60	U	12
127-18-4	Tetrachloroethene	VOC	19000	1300	< 3.1	3.1	U	0.61	< 3.1	3.1	U	0.61	< 2.9	2.9	U	0.57	< 3.0	3	U	0.59	< 3.9	3.9	U	0.77	< 3.7	3.7	U	0.73	< 3.0	3	U	0.6
108-88-3	Toluene	VOC	100,000a	700	< 3.1	3.1	U	0.31	< 3.1	3.1	U	0.31	< 2.9	2.9	U	0.29	< 3.0	3	U	0.3	< 3.9	3.9	U	0.39	< 3.7	3.7	U	0.37	< 3.0	3	U	0.3
1330-20-7	Total Xylenes	VOC	100,000a	1600	< 3.1	3.1	U	3.1	< 3.1	3.1	U	3.1	< 2.9	2.9	U	2.9	< 3.0	3	U	3	< 3.9	3.9	U	3.9	< 3.7	3.7	U	3.7	< 3.0	3	U	3
156-60-5	trans-1,2-Dichloroethene	VOC	100,000a	190	< 3.1	3.1	U	0.31	< 3.1	3.1	U	0.31	< 2.9	2.9	U	0.29	< 3.0	3	U	0.3	< 3.9	3.9	U	0.39	< 3.7	3.7	U	0.37	< 3.0	3	U	0.3
79-01-6	Trichloroethene	VOC	21000	470	< 3.1	3.1	U	0.31	< 3.1	3.1	U	0.31	< 2.9	2.9	U	0.29	< 3.0	3	U	0.3	< 3.9	3.9	U	0.39	< 3.7	3.7	U	0.37	< 3.0	3	U	0.3
75-69-4	Trichlorofluoromethane	VOC	NA	NA	< 3.1	3.1	U	0.61	< 3.1	3.1	U	0.61	< 2.9	2.9	U	0.57	< 3.0	3	U	0.59	< 3.9	3.9	U	0.77	< 3.7	3.7	U	0.73	< 3.0	3	U	0.6
108-05-4	Vinyl Acetate	VOC	NA	NA	< 31	31	U	31	< 31	31	U	31	< 29	29	U	29	< 30	30	U	30	< 39	39	U	39	< 37	37	U	37	< 30	30	U	30
75-01-4	Vinyl Chloride	VOC	900	20	< 3.1	3.1	U	0.31	< 3.1	3.1	U	0.31	< 2.9	2.9	U	0.29	< 3.0	3	U	0.3	< 3.9	3.9	U	0.39	< 3.7	3.7	U	0.37	< 3.0	3	U	0.3

Bluestone Analysis
Location: 1000 Page Ave, Lyndhurst, NJ

CAS Number	Parameter Name	Parameter ID	NYCRR 375 Restricted-Residential	NYCRR 375 Protection of Groundwater	IRRC BLUESTON E 3B (GRAB)	RL	Q	MDL	IRRC BLUESTON E 3C (GRAB)	RL	Q	MDL	IRRC BLUESTON E 4A (GRAB)	RL	Q	MDL	IRRC BLUESTON E 4B (GRAB)	RL	Q	MDL	IRRC BLUESTON E 4C (GRAB)	RL	Q	MDL	IRRC BLUESTON E 5A (GRAB)	RL	Q	MDL	IRRC BLUESTON E 5B (GRAB)	RL	Q	MDL	IRRC BLUESTON E 5C (GRAB)	RL	Q	MDL
	Sample ID	Depth																																		
	Date																																			
	Unit		ug/kg	ug/kg	ug/kg	ug/kg		ug/kg	ug/kg	ug/kg		ug/kg	ug/kg	ug/kg		ug/kg	ug/kg	ug/kg		ug/kg	ug/kg	ug/kg		ug/kg	ug/kg	ug/kg		ug/kg	ug/kg	ug/kg		ug/kg	ug/kg	ug/kg		ug/kg
630-20-6	1,1,1,2-Tetrachloroethane	VOC	NA	NA	< 2.9	2.9	U	0.58	< 3.5	3.5	U	0.69	< 3.4	3.4	U	0.67	< 3.6	3.6	U	0.72	< 3.0	3	U	0.59	< 3.0	3	U	0.6	< 4.4	4.4	U	0.87	< 2.6	2.6	U	0.52
71-55-6	1,1,1-Trichloroethane	VOC	100,000a	680	< 2.9	2.9	U	0.29	< 3.5	3.5	U	0.35	< 3.4	3.4	U	0.34	< 3.6	3.6	U	0.36	< 3.0	3	U	0.3	< 3.0	3	U	0.3	< 4.4	4.4	U	0.44	< 2.6	2.6	U	0.26
79-34-5	1,1,2,2-Tetrachloroethane	VOC	NA	600	< 2.9	2.9	U	0.58	< 3.5	3.5	U	0.69	< 3.4	3.4	U	0.67	< 3.6	3.6	U	0.72	< 3.0	3	U	0.59	< 3.0	3	U	0.6	< 4.4	4.4	U	0.87	< 2.6	2.6	U	0.52
79-00-5	1,1,2-Trichloroethane	VOC	NA	NA	< 2.9	2.9	U	0.58	< 3.5	3.5	U	0.69	< 3.4	3.4	U	0.67	< 3.6	3.6	U	0.72	< 3.0	3	U	0.59	< 3.0	3	U	0.6	< 4.4	4.4	U	0.87	< 2.6	2.6	U	0.52
76-13-1	1,1,2 Trichloro-1,2,2 Trifluoroethane	VOC	NA	NA	< 2.9	2.9	U	0.29	< 3.5	3.5	U	0.35	< 3.4	3.4	U	0.34	< 3.6	3.6	U	0.36	< 3.0	3	U	0.3	< 3.0	3	U	0.3	< 4.4	4.4	U	0.44	< 2.6	2.6	U	0.26
75-34-3	1,1-Dichloroethane	VOC	26000	270	< 2.9	2.9	U	0.58	< 3.5	3.5	U	0.69	< 3.4	3.4	U	0.67	< 3.6	3.6	U	0.72	< 3.0	3	U	0.59	< 3.0	3	U	0.6	< 4.4	4.4	U	0.87	< 2.6	2.6	U	0.52
75-35-4	1,1-Dichloroethene	VOC	100,000a	330	< 2.9	2.9	U	0.29	< 3.5	3.5	U	0.35	< 3.4	3.4	U	0.34	< 3.6	3.6	U	0.36	< 3.0	3	U	0.3	< 3.0	3	U	0.3	< 4.4	4.4	U	0.44	< 2.6	2.6	U	0.26
120-82-1	1,2,4-Trichlorobenzene	VOC	NA	3400	< 2.9	2.9	U	0.58	< 3.5	3.5	U	0.69	< 3.4	3.4	U	0.67	< 3.6	3.6	U	0.72	< 3.0	3	U	0.59	< 3.0	3	U	0.6	< 4.4	4.4	U	0.87	< 2.6	2.6	U	0.52
95-63-6	1,2,4-Trimethylbenzene	VOC	52000	3600	< 2.9	2.9	U	0.29	< 3.5	3.5	U	0.35	< 3.4	3.4	U	0.34	< 3.6	3.6	U	0.36	< 3.0	3	U	0.3	< 3.0	3	U	0.3	< 4.4	4.4	U	0.44	< 2.6	2.6	U	0.26
96-12-8	1,2-Dibromo-3-Chloropropane	VOC	NA	NA	< 2.9	2.9	U	0.58	< 3.5	3.5	U	0.69	< 3.4	3.4	U	0.67	< 3.6	3.6	U	0.72	< 3.0	3	U	0.59	< 3.0	3	U	0.6	< 4.4	4.4	U	0.87	< 2.6	2.6	U	0.52
106-93-4	1,2-Dibromoethane	VOC	NA	NA	< 1.2	1.2	U	0.29	< 1.2	1.2	U	0.35	< 1.2	1.2	U	0.34	< 1.2	1.2	U	0.36	< 1.2	1.2	U	0.3	< 1.2	1.2	U	0.3	< 1.2	1.2	U	0.44	< 1.2	1.2	U	0.26
95-50-1	1,2-Dichlorobenzene	VOC	100,000a	1100	< 2.9	2.9	U	0.29	< 3.5	3.5	U	0.35	< 3.4	3.4	U	0.34	< 3.6	3.6	U	0.36	< 3.0	3	U	0.3	< 3.0	3	U	0.3	< 4.4	4.4	U	0.44	< 2.6	2.6	U	0.26
107-06-2	1,2-Dichloroethane	VOC	3100	20f	< 2.9	2.9	U	0.29	< 3.5	3.5	U	0.35	< 3.4	3.4	U	0.34	< 3.6	3.6	U	0.36	< 3.0	3	U	0.3	< 3.0	3	U	0.3	< 4.4	4.4	U	0.44	< 2.6	2.6	U	0.26
78-87-5	1,2-Dichloropropane	VOC	NA	NA	< 2.9	2.9	U	0.58	< 3.5	3.5	U	0.69	< 3.4	3.4	U	0.67	< 3.6	3.6	U	0.72	< 3.0	3	U	0.59	< 3.0	3	U	0.6	< 4.4	4.4	U	0.87	< 2.6	2.6	U	0.52
108-67-8	1,3,5-Trimethylbenzene	VOC	52000	8400	< 2.9	2.9	U	0.29	< 3.5	3.5	U	0.35	< 3.4	3.4	U	0.34	< 3.6	3.6	U	0.36	< 3.0	3	U	0.3	< 3.0	3	U	0.3	< 4.4	4.4	U	0.44	< 2.6	2.6	U	0.26
541-73-1	1,3-Dichlorobenzene	VOC	49000	2400	< 2.9	2.9	U	0.29	< 3.5	3.5	U	0.35	< 3.4	3.4	U	0.34	< 3.6	3.6	U	0.36	< 3.0	3	U	0.3	< 3.0	3	U	0.3	< 4.4	4.4	U	0.44	< 2.6	2.6	U	0.26
106-46-7	1,4-Dichlorobenzene	VOC	13000	1800	< 2.9	2.9	U	0.29	< 3.5	3.5	U	0.35	< 3.4	3.4	U	0.34	< 3.6	3.6	U	0.36	< 3.0	3	U	0.3	< 3.0	3	U	0.3	< 4.4	4.4	U	0.44	< 2.6	2.6	U	0.26
123-91-1	1,4-Dioxane	VOC	13000	100e	< 44	44	U	23	< 52	52	U	28	< 50	50	U	27	< 54	54	U	29	< 44	44	U	24	< 45	45	U	24	< 65	65	U	35	< 39	39	U	21
78-93-3	2-Butanone	VOC	100,000a	120	< 17	17	U	2.9	< 21	21	U	3.5	< 20	20	U	3.4	< 22	22	U	3.6	< 18	18	U	3	< 18	18	U	3	< 26	26	U	4.4	< 16	16	U	2.6
108-10-1	4-Methyl-2-Pentanone	VOC	NA	1000	< 15	15	U	2.9	< 17	17	U	3.5	< 17	17	U	3.4	< 18	18	U	3.6	< 15	15	U	3	< 15	15	U	3	< 22	22	U	4.4	< 13	13	U	2.6
67-64-1	Acetone	VOC	100,000b	50	< 29	29	U	2.9	< 35	35	U	3.5	< 34	34	U	3.4	< 36	36	U	3.6	< 30	30	U	3	3.4	30	JS	3	4.5	44	JS	4.4	< 26	26	U	2.6
107-02-8	Acrolein	VOC	NA	NA	< 0.47	0.47	U	0.47	< 0.47	0.47	U	0.47	< 0.47	0.47	U	0.47	< 0.47	0.47	U	0.47	< 0.47	0.47	U	0.47	< 0.47	0.47	U	0.47	< 0.47	0.47	U	0.47	< 0.47	0.47	U	0.47
107-13-1	Acrylonitrile	VOC	NA	NA	< 5.8	5.8	U	0.29	< 6.9	6.9	U	0.35	< 6.7	6.7	U	0.34	< 7.2	7.2	U	0.36	< 5.9	5.9	U	0.3	< 6.0	6	U	0.3	< 8.7	8.7	U	0.44	< 5.2	5.2	U	0.26
71-43-2	Benzene	VOC	4800	60	< 2.9	2.9	U	0.29	< 3.5	3.5	U	0.35	< 3.4	3.4	U	0.34	< 3.6	3.6	U	0.36	< 3.0	3	U	0.3	< 3.0	3	U	0.3	< 4.4	4.4	U	0.44	< 2.6	2.6	U	0.26
74-97-5	Bromochloromethane	VOC	NA	NA	< 2.9	2.9	U	0.29	< 3.5	3.5	U	0.35	< 3.4	3.4	U	0.34	< 3.6	3.6	U	0.36	< 3.0	3	U	0.3	< 3.0	3	U	0.3	< 4.4	4.4	U	0.44	< 2.6	2.6	U	0.26
75-27-4	Bromodichloromethane	VOC	NA	NA	< 2.9	2.9	U	0.58	< 3.5	3.5	U	0.69	< 3.4	3.4	U	0.67	< 3.6	3.6	U	0.72	< 3.0	3	U	0.59	< 3.0	3	U	0.6	< 4.4	4.4	U	0.87	< 2.6	2.6	U	0.52
75-25-2	Bromoform	VOC	NA	NA	< 2.9	2.9	U	0.58	< 3.5	3.5	U	0.69	< 3.4	3.4	U	0.67	< 3.6	3.6	U	0.72	< 3.0	3	U	0.59	< 3.0	3	U	0.6	< 4.4	4.4	U	0.87	< 2.6	2.6	U	0.52
74-83-9	Bromomethane	VOC	NA	NA	< 2.9	2.9	U	1.2	< 3.5	3.5	U	1.4	< 3.4	3.4	U	1.3	< 3.6	3.6	U	1.4	< 3.0	3	U	1.2	< 3.0	3	U	1.2	< 4.4	4.4	U	1.7	< 2.6	2.6	U	1
75-15-0	Carbon Disulfide	VOC	NA	2700	< 2.9	2.9	U	0.58	0.76	3.5	J	0.69	< 3.4	3.4	U	0.67	< 3.6	3.6	U	0.72	< 3.0	3	U	0.59	1.1	3	J	0.6	< 4.4	4.4	U	0.87	< 2.6	2.6	U	0.52
56-23-5	Carbon Tetrachloride	VOC	2400	760	< 2.9	2.9	U	0.58	< 3.5	3.5	U	0.69	< 3.4	3.4	U	0.67	< 3.6	3.6	U	0.72	< 3.0	3	U	0.59	< 3.0	3	U	0.6	< 4.4	4.4	U	0.87	< 2.6	2.6	U	0.52
108-90-7	Chlorobenzene	VOC	100,000a	1100	< 2.9	2.9	U	0.29	< 3.5	3.5	U	0.35	< 3.4	3.4	U	0.34	< 3.6	3.6	U	0.36	< 3.0	3	U	0.3	< 3.0	3	U	0.3	< 4.4	4.4	U	0.44	< 2.6	2.6	U	0.26
124-48-1	Chlorodibromomethane	VOC	NA	NA	< 2.9	2.9	U	0.58	< 3.5	3.5	U	0.69	< 3.4	3.4	U	0.67	< 3.6	3.6	U	0.72	< 3.0	3	U	0.59	< 3.0	3	U	0.6	< 4.4	4.4	U	0.87	< 2.6	2.6	U	0.52
75-00-3	Chloroethane	VOC	NA	1900	< 2.9	2.9	U	0.29	< 3.5	3.5	U	0.35	< 3.4	3.4	U	0.34	< 3.6	3.6	U	0.36	< 3.0	3	U	0.3	< 3.0	3	U	0.3	< 4.4	4.4	U	0.44	< 2.6	2.6	U	0.26
67-66-3	Chloroform	VOC	49000	370	< 2.9	2.9	U	0.29	< 3.5	3.5	U	0.35	< 3.4	3.4	U	0.34	< 3.6	3.6	U	0.36	< 3.0	3	U	0.3	< 3.0	3	U	0.3	< 4.4	4.4	U	0.44	< 2.6	2.6	U	0.26
74-87-3	Chloromethane	VOC	NA	NA	< 2.9	2.9	U	0.58	< 3.5	3.5	U	0.69	< 3.4	3.4	U	0.67	< 3.6	3.6	U	0.72	< 3.0	3	U	0.59	< 3.0	3	U	0.6	< 4.4	4.4	U	0.87	< 2.6	2.6	U	0.52
156-59-2	cis-1,2-Dichloroethene	VOC	100,000a	250	< 2.9	2.9	U	0.29	< 3.5	3.5	U	0.35	< 3.4	3.4	U	0.34	< 3.6	3.6	U	0.36	< 3.0	3	U	0.3	< 3.0	3	U	0.3	< 4.4	4.4	U	0.44	< 2.6	2.6	U	0.26
75-71-8	Dichlorodifluoromethane	VOC	NA	NA	< 2.9	2.9	U	0.29	< 3.5	3.5	U	0.35	< 3.4	3.4	U	0.34	< 3.6	3.6	U	0.36	< 3.0	3	U	0.3	< 3.0	3	U	0.3	< 4.4	4.4	U	0.44	< 2.6	2.6	U	0.26
100-41-4	Ethylbenzene	VOC	41000	1000	< 2.9	2.9	U	0.29	< 3.5	3.5	U	0.35	< 3.4	3.4	U	0.34	< 3.6	3.6	U	0.36	< 3.0	3	U	0.3	< 3.0	3	U	0.3	< 4.4	4.4	U	0.44	< 2.6	2.6	U	0.26
98-82-8	Isopropylbenzene	VOC	NA	2300	< 2.9	2.9	U	0.29	< 3.5	3.5	U	0.35	< 3.4	3.4	U	0.34	< 3.6	3.6	U	0.36	< 3.0	3	U	0.3	< 3.0	3	U	0.3	< 4.4	4.4	U	0.44	< 2.6	2.6	U	0.26
79-20-9	Methyl Acetate	VOC	NA	NA	< 5.8	5.8	U	5.8	< 6.9	6.9	U	6.9	< 6.7	6.7	U	6.7	< 7.2	7.2	U	7.2	< 5.9	5.9	U	5.9	< 6.0	6	U	6	< 8.7	8.7	U	8.7	< 5.2	5.2	U	5.2
75-09-2	Methylene Chloride	VOC	100,000a	50	< 2.9	2.9	U	2.9	< 3.5	3.5	U	3.5	< 3.4	3.4	U	3.4	< 3.6	3.6	U	3.6	< 3.0	3	U	3	< 3.0	3	U	3	< 4.4	4.4	U	4.4	< 2.6	2.6	U	2.6
1634-04-4	Methyl Tert-Butyl Ether	VOC	100,000a	930	< 5.8	5.8	U	0.58	< 6.9	6.9	U	0.69	< 6.7	6.7	U	0.67	< 7.2	7.2	U	0.72	< 5.9	5.9	U	0.59	< 6.0	6	U	0.6	< 8.7	8.7	U	0.87	< 5.2	5.2	U	0.52
104-51-8	n-Butylbenzene	VOC	100,000a	12000	< 2.9	2.9	U	0.29	< 3.5	3.5	U	0.35	< 3.4	3.4	U	0.34	< 3.6	3.6	U	0.36	< 3.0	3	U	0.3	< 3.0	3	U	0.3	< 4.4	4.4	U	0.44	< 2.6	2.6	U	0.26
103-65-1	n-Propylbenzene	VOC	100,000a	3900	< 2.9	2.9	U	0.58	< 3.5	3.5	U	0.69	< 3.4	3.4	U	0.67	< 3.6	3.6	U	0.72	< 3.0	3	U	0.59	< 3.0	3	U	0.6	< 4.4	4.4	U	0.87	< 2.6	2.6	U	0.52
99-87-6	p-Isoproplytoluene	VOC	NA	10000	< 2.9	2.9	U	0.29	< 3.5	3.5	U	0.35	< 3.4	3.4	U	0.34	< 3.6	3.6	U	0.36	< 3.0	3	U	0.3	< 3.0	3	U	0.3	< 4.4	4.4	U	0.44	< 2.6	2.6	U	0.26
135-98-8	sec-Butylbenzene	VOC	100,000a	11000	< 2.9	2.9	U	0.29	< 3.5	3.5	U	0.35	< 3.4	3.4	U	0.34	< 3.6	3.6	U	0.36	< 3.0	3	U	0.3	< 3.0	3	U	0.3	< 4.4	4.4	U	0.44	< 2.6	2.6	U	0.26
100-42-5	Styrene	VOC	NA	NA	< 2.9	2.9	U	0.29	< 3.5	3.5	U	0.35	< 3.4	3.4	U	0.34	< 3.6	3.6	U	0.36	< 3.0	3	U	0.3	< 3.0	3	U	0.3	< 4.4	4.4	U	0.44	< 2.6	2.6	U	0.26
98-06-6	tert-Butylbenzene	VOC	100,000a	5900	< 2.9	2.9	U	0.29	< 3.5	3.5	U	0.35	< 3.4	3.4	U	0.34	< 3.6	3.6	U	0.36	< 3.0	3	U	0.3	< 3.0	3	U	0.3	< 4.4	4.4	U	0.44	< 2.6	2.6	U	0.26
75-65-0	Tertiary Butyl Alcohol	VOC	NA	NA	< 58	58	U	12	< 69	69	U	14	< 67	67	U	13	< 72	72	U	14	< 59	59	U	12	< 60	60	U	12	< 87	87	U	17	< 52	52	U	10
127-18-4	Tetrachloroethene	VOC	19000	1300	< 2.9	2.9	U	0.58	< 3.5	3.5	U	0.69	< 3.4	3.4	U	0.67	< 3.6	3.6	U	0.72	< 3.0	3	U	0.59	< 3.0	3	U	0.6	< 4.4	4.4	U	0.87	< 2.6	2.6	U	0.52
108-88-3	Toluene	VOC	100,000a	700	< 2.9	2.9	U	0.29	< 3.5	3.5	U	0.35	< 3.4	3.4	U	0.34	< 3.6	3.6	U	0.36	< 3.0	3	U	0.3	< 3.0	3	U	0.3	< 4.4	4.4	U	0.44	< 2.6	2.6	U	0.26
1330-20-7	Total Xylenes	VOC	100,000a	1600	< 2.9	2.9	U	2.9	< 3.5	3.5	U	3.5	< 3.4	3.4	U	3.4	< 3.6	3.6	U	3.6	< 3.0	3	U	3	< 3.0	3	U	3	< 4.4	4.4	U	4.4	< 2.6	2.6	U	2.6
156-60-5	trans-1,2-Dichloroethene	VOC	100,000a	190	< 2.9	2.9	U	0.29	< 3.5	3.5	U	0.35	< 3.4	3.4	U	0.34	< 3.6	3.6	U	0.36	< 3.0	3	U	0.3	< 3.0	3	U	0.3	< 4.4	4.4	U	0.44	< 2.6	2.6	U	0.26
79-01-6	Trichloroethene	VOC	21000	470	< 2.9	2.9	U	0.29	< 3.5	3.5	U	0.35	< 3.4	3.4	U	0.34	< 3.6	3.6	U	0.36	< 3.0	3	U	0.3	< 3.0	3	U	0.3	< 4.4	4.4	U	0.44	< 2.6	2.6	U	0.26
75-69-4	Trichlorofluoromethane	VOC	NA	NA	< 2.9	2.9	U	0.58	< 3.5	3.5	U	0.69	< 3.4	3.4	U	0.67	< 3.6	3.6	U	0.72	< 3.0	3	U	0.59	< 3.0	3	U	0.6	< 4.4	4.4	U	0.87	< 2.6	2.6	U	0.52
108-05-4	Vinyl Acetate	VOC	NA	NA	< 29	29	U	29	< 35	35	U	35	< 34	34	U	34	< 36	36	U	36	< 30	30	U	30	< 30	30	U	30	< 44	44	U	44	< 26	26	U	26
75-01-4	Vinyl Chloride	VOC	900	20	< 2.9	2.9	U	0.29	< 3.5	3.5	U	0.35	< 3.4	3.4	U	0.34	< 3.6	3.6	U	0.36	< 3.0	3	U	0.3	< 3.0	3	U	0.3	< 4.4	4.4	U	0.44	< 2.6	2.6	U	0.26

Bluestone Analysis
Location: 1000 Page Ave, Lyndhurst, NJ

CAS Number	Parameter Name	Parameter ID	NYCRR 375 Restricted-Residential	NYCRR 375 Protection of Groundwater	IRRC BLUESTONE COMP-1	RL	Q	MDL	IRRC BLUESTONE COMP-2	RL	Q	MDL	IRRC BLUESTONE COMP-3	RL	Q	MDL	IRRC BLUESTONE COMP-4	RL	Q	MDL	IRRC BLUESTONE COMP-5	RL	Q	MDL
	Unit		ug/kg	ug/kg	ug/kg	ug/kg		ug/kg	ug/kg	ug/kg		ug/kg	ug/kg	ug/kg		ug/kg	ug/kg	ug/kg		ug/kg	ug/kg	ug/kg		ug/kg
87-68-3	Hexachlorobutadiene	SVOC	NA	NA	< 240	240	U	130	< 240	240	U	130	< 240	240	U	120	< 240	240	U	120	< 230	230	U	120
92-52-4	1-1- Biphenyl	SVOC	NA	NA	< 240	240	U	110	< 240	240	U	110	< 240	240	U	100	< 240	240	U	110	< 230	230	U	100
122-66-7	1,2- Diphenylhydrazine	SVOC	NA	NA	< 70	70	U	70	< 70	70	U	70	< 68	68	U	68	< 69	69	U	69	< 67	67	U	67
95-94-3	1,2,4,5-Tetrachlorobenzene	SVOC	NA	NA	< 240	240	U	120	< 240	240	U	120	< 240	240	U	120	< 240	240	U	120	< 230	230	U	120
58-90-2	2,3,4,6-Tetrachlorophenol	SVOC	NA	NA	< 240	240	U	160	< 240	240	U	160	< 240	240	U	160	< 240	240	U	160	< 230	230	U	160
95-95-4	2,4,5-Trichlorophenol	SVOC	NA	100	< 240	240	U	190	< 240	240	U	190	< 240	240	U	190	< 240	240	U	190	< 230	230	U	180
88-06-2	2,4,6-Trichlorophenol	SVOC	NA	NA	< 140	140	U	110	< 140	140	U	110	< 140	140	U	110	< 140	140	U	110	< 130	130	U	110
102-83-2	2,4-Dichlorophenol	SVOC	NA	400	< 140	140	U	120	< 140	140	U	120	< 140	140	U	120	< 140	140	U	120	< 130	130	U	120
105-67-9	2,4-Dimethylphenol	SVOC	NA	NA	< 240	240	U	86	< 240	240	U	86	< 240	240	U	85	< 240	240	U	86	< 230	230	U	83
51-28-5	2,4-Dinitrophenol	SVOC	NA	200	< 240	240	U	240	< 240	240	U	240	< 240	240	U	240	< 240	240	U	240	< 230	230	U	230
121-14-2	2,4-Dinitrotoluene	SVOC	NA	NA	< 70	70	U	70	< 70	70	U	70	< 68	68	U	68	< 69	69	U	69	< 67	67	U	67
606-20-2	2,6-Dinitrotoluene	SVOC	NA	170	< 70	70	U	70	< 70	70	U	70	< 68	68	U	68	< 69	69	U	69	< 67	67	U	67
91-58-7	2-Chloronaphthalene	SVOC	NA	NA	< 240	240	U	99	< 240	240	U	99	< 240	240	U	97	< 240	240	U	98	< 230	230	U	95
95-57-8	2-Chlorophenol	SVOC	NA	NA	< 240	240	U	99	< 240	240	U	99	< 240	240	U	97	< 240	240	U	98	< 230	230	U	95
91-57-6	2-Methylnaphthalene	SVOC	NA	NA	< 240	240	U	100	< 240	240	U	100	< 240	240	U	100	< 240	240	U	100	< 230	230	U	100
95-48-7	2-Methylphenol	SVOC	100,000a	330e	< 240	240	U	160	< 240	240	U	160	< 240	240	U	160	< 240	240	U	160	< 230	230	U	160
88-74-4	2-Nitroaniline	SVOC	NA	400	< 70	70	U	70	< 70	70	U	70	< 68	68	U	68	< 69	69	U	69	< 67	67	U	67
88-75-5	2-Nitrophenol	SVOC	NA	300	< 240	240	U	220	< 240	240	U	220	< 240	240	U	220	< 240	240	U	220	< 230	230	U	210
91-94-1	3,3-Dichlorobenzidine	SVOC	NA	NA	< 140	140	U	140	< 140	140	U	140	< 140	140	U	140	< 140	140	U	140	< 130	130	U	130
99-09-2	3-Nitroaniline	SVOC	NA	500	< 91	91	U	91	< 91	91	U	91	< 91	91	U	91	< 91	91	U	91	< 91	91	U	91
534-52-1	4,6-Dinitro-2-methylphenol	SVOC	NA	NA	< 210	210	U	210	< 210	210	U	210	< 210	210	U	210	< 210	210	U	210	< 210	210	U	210
59-50-7	4-Chloro-3-methylphenol	SVOC	NA	NA	< 240	240	U	120	< 240	240	U	120	< 240	240	U	120	< 240	240	U	120	< 230	230	U	120
106-47-8	4-Chloroaniline	SVOC	NA	220	< 420	420	U	160	< 420	420	U	160	< 420	420	U	160	< 420	420	U	160	< 420	420	U	160
15831-10-4	3+4 Methylphenol	SVOC	100,000a	330e	< 240	240	U	140	< 240	240	U	140	< 240	240	U	130	< 240	240	U	140	< 230	230	U	130
100-01-6	4-Nitroaniline	SVOC	NA	NA	< 86	86	U	86	< 86	86	U	86	< 86	86	U	86	< 86	86	U	86	< 86	86	U	86
100-02-7	4-Nitrophenol	SVOC	NA	100	< 350	350	U	160	< 350	350	U	160	< 340	340	U	150	< 350	350	U	160	< 340	340	U	150
83-32-9	Acenaphthene	SVOC	100,000a	98000	< 240	240	U	110	< 240	240	U	110	< 240	240	U	100	< 240	240	U	100	< 230	230	U	100
208-96-8	Acenaphthylene	SVOC	100,000a	107000	< 140	140	U	98	< 140	140	U	98	< 140	140	U	96	< 140	140	U	97	< 130	130	U	94
98-86-2	Acetophenone	SVOC	NA	NA	< 240	240	U	110	< 240	240	U	110	< 240	240	U	110	< 240	240	U	110	< 230	230	U	100
62-53-3	Aniline	SVOC	100000	330	< 120	120	U	120	< 120	120	U	120	< 120	120	U	120	< 120	120	U	120	< 120	120	U	120
120-12-7	Anthracene	SVOC	100,000a	1,000,000c	< 240	240	U	110	< 240	240	U	110	< 240	240	U	110	< 240	240	U	110	< 230	230	U	110
1912-24-9	Atrazine	SVOC	NA	NA	< 130	130	U	100	< 130	130	U	100	< 130	130	U	100	< 130	130	U	100	< 130	130	U	100
100-52-7	Benzaldehyde	SVOC	NA	NA	< 240	240	U	100	< 240	240	U	100	< 240	240	U	100	< 240	240	U	100	< 230	230	U	99
92-87-5	Benzidine	SVOC	NA	NA	< 70	70	U	70	< 70	70	U	70	< 68	68	U	68	< 69	69	U	69	< 67	67	U	67
56-55-3	Benzo-a-Anthracene	SVOC	1,000f	1,000f	< 240	240	U	120	< 240	240	U	120	< 240	240	U	110	< 240	240	U	120	< 230	230	U	110
50-32-8	Benzo-a-Pyrene	SVOC	1,000f	22000	< 140	140	U	110	< 140	140	U	110	< 140	140	U	110	< 140	140	U	110	< 130	130	U	110
205-99-2	Benzo-b-Fluoranthene	SVOC	1,000f	1700	< 240	240	U	120	< 240	240	U	120	< 240	240	U	120	< 240	240	U	120	< 230	230	U	110
207-08-9	Benzo-k-Fluoranthene	SVOC	3900	1700	< 240	240	U	120	< 240	240	U	120	< 240	240	U	110	< 240	240	U	110	< 230	230	U	110
191-24-2	Benzo-g,h,i-Perylene	SVOC	100,000a	1,000,000c	< 240	240	U	110	< 240	240	U	110	< 240	240	U	110	< 240	240	U	110	< 230	230	U	110
65-85-0	Benzoic Acid	SVOC	NA	100000	< 350	350	U	240	< 350	350	U	240	< 340	340	U	240	< 350	350	U	240	< 340	340	U	230
100-51-6	Benzyl Alcohol	SVOC	NA	NA	< 350	350	U	350	< 350	350	U	350	< 340	340	U	340	< 350	350	U	350	< 340	340	U	340
111-44-4	Bis(2-Chloroethyl)ether	SVOC	NA	NA	< 70	70	U	70	< 70	70	U	70	< 68	68	U	68	< 69	69	U	69	< 67	67	U	67
117-81-7	Bis(2-Ethylhexyl)Phthalate	SVOC	NA	435000	< 240	240	U	100	< 240	240	U	100	< 240	240	U	98	< 240	240	U	99	< 230	230	U	97
85-68-7	Butylbenzylphthalate	SVOC	NA	122000	< 240	240	U	90	< 240	240	U	90	< 240	240	U	88	< 240	240	U	89	< 230	230	U	86
105-60-2	Caprolactam	SVOC	NA	NA	< 240	240	U	240	< 240	240	U	240	< 240	240	U	240	< 240	240	U	240	< 230	230	U	230
86-74-8	Carbazole	SVOC	NA	NA	< 170	170	U	140	< 170	170	U	140	< 170	170	U	140	< 170	170	U	140	< 170	170	U	130
218-01-9	Chrysene	SVOC	3900	1,000f	< 240	240	U	120	< 240	240	U	120	< 240	240	U	110	< 240	240	U	120	< 230	230	U	110
75-99-0	Dalapon	SVOC	NA	NA	< 130	130	U	130	< 130	130	U	130	< 130	130	U	130	< 130	130	U	130	< 130	130	U	130
132-64-9	Dibenzofuran	SVOC	59000	6200	< 240	240	U	100	< 240	240	U	100	< 240	240	U	100	< 240	240	U	100	< 230	230	U	98
53-70-3	Dibenzo-a,h-Anthracene	SVOC	330e	1,000,000c	< 140	140	U	110	< 140	140	U	110	< 140	140	U	110	< 140	140	U	110	< 130	130	U	110
84-66-2	Diethyl Phthalate	SVOC	NA	7100	< 240	240	U	110	< 240	240	U	110	< 240	240	U	110	< 240	240	U	110	< 230	230	U	110
131-11-3	Dimethyl Phthalate	SVOC	NA	27000	< 240	240	U	110	< 240	240	U	110	< 240	240	U	110	< 240	240	U	110	< 230	230	U	100
84-74-2	Di-n-Butyl Phthalate	SVOC	NA	8100	< 240	240	U	93	< 240	240	U	93	< 240	240	U	91	< 240	240	U	92	< 230	230	U	89
117-84-0	Di-n-Octyl Phthalate	SVOC	NA	120000	< 240	240	U	90	< 240	240	U	90	< 240	240	U	88	< 240	240	U	89	< 230	230	U	86
206-44-0	Fluoranthene	SVOC	100,000a	1,000,000c	< 240	240	U	110	< 240	240	U	110	< 240	240	U	110	120	240	J	110	< 230	230	U	110
86-73-7	Fluorene	SVOC	100,000a	386000	< 240	240	U	120	< 240	240	U	110	< 240	240	U	110	< 240	240	U	110	< 230	230	U	110
118-74-1	Hexachlorobenzene	SVOC	1200	3200	< 140	140	U	100	< 140	140	U	100	< 140	140	U	100	< 140	140	U	100	< 130	130	U	98
77-47-4	Hexachlorocyclopentadiene	SVOC	NA	NA	< 240	240	U	110	< 240	240	U	110	< 240	240	U	100	< 240	240	U	110	< 230	230	U	100
67-72-1	Hexachloroethane	SVOC	NA	NA	< 140	140	U	100	< 140	140	U	100	< 140	140	U	100	< 140	140	U	100	< 130	130	U	100
193-39-5	Indeno(1,2,3-cd)Pyrene	SVOC	500f	8200	< 240	240	U	120	< 240	240	U	120	< 240	240	U	110	< 240	240	U	110	< 230	230	U	110
78-59-1	Isophorone	SVOC	NA	4400	< 140	140	U	98	< 140	140	U	98	< 140	140	U	96	< 140	140	U	97	< 130	130	U	94
91-20-3	Naphthalene	SVOC	100,000a	12000	< 240	240	U	100	< 240	240	U	100	< 240	240	U	98	< 240	240	U	99	< 230	230	U	97
98-95-3	Nitrobenzene	SVOC	15000	170	< 70	70	U	70	< 70	70	U	70	< 68	68	U	68	< 69	69	U	69	< 67	67	U	67
62-75-9	N-Nitrosodimethylamine	SVOC	NA	NA	< 70	70	U	70	< 70	70	U	70	< 68	68	U	68	< 69	69	U	69	< 67	67	U	67
621-64-7	N-Nitroso-di-n-Propylamine	SVOC	NA	NA	< 70	70	U	70	< 70	70	U	70	< 68	68	U	68	< 69	69	U	69	< 67	67	U	67
86-30-6	N-Nitrosodiphenylamine	SVOC	NA	NA	< 140	140	U	130	< 140	140	U	130	< 140	140	U	130	< 140	140	U	130	< 130	130	U	130
87-86-5	Pentachlorophenol	SVOC	6700	800e	< 240	240	U	130	< 240	240	U	130	< 240	240	U	130	< 240	240	U	130	< 230	230	U	130
85-01-8	Phenanthrene	SVOC	100,000a	1,000,000c	< 140	140	U	100	< 140	140	U	100	< 140	140	U	98	< 140	140	U	99	< 130	130	U	96
108-95-2	Phenol	SVOC	100,000a	330e	< 240	240	U	110	< 240	240	U	110	< 240	240	U	110	< 240	240	U	110	< 230	230	U	110
129-00-0	Pyrene	SVOC	100,000a	1,000,000c	< 240	240	U	120	< 240	240	U	120	< 240	240	U	120	< 240	240	U	120	< 230	230	U	120
93-76-5	2,4,5-T	HERBICIDE	NA	1900	< 130	130	U	130	< 130	130	U	130	< 130	130	U	130	< 130	130	U	130	< 130	130	U	130
93-72-1	2,4,5-TP Acid	PESTICIDE	100,000a	3800	< 130	130	U	130	< 130	130	U	130	< 130	130	U	130	< 130	130	U	130	< 130	130	U	130

Bluestone Analysis
Location: 1000 Page Ave, Lyndhurst, NJ

CAS Number	Parameter Name	Parameter ID	NYCRR 375 Restricted-Residential	NYCRR 375 Protection of Groundwater	IRRC BLUESTONE COMP-1	RL	Q	MDL	IRRC BLUESTONE COMP-2	RL	Q	MDL	IRRC BLUESTONE COMP-3	RL	Q	MDL	IRRC BLUESTONE COMP-4	RL	Q	MDL	IRRC BLUESTONE COMP-5	RL	Q	MDL
	Unit		ug/kg	ug/kg	ug/kg	ug/kg		ug/kg	ug/kg	ug/kg		ug/kg	ug/kg	ug/kg		ug/kg	ug/kg	ug/kg		ug/kg	ug/kg	ug/kg		ug/kg
94-75-7	2,4-D	HERBICIDE	NA	500	< 260	260	U	260	< 260	260	U	260	< 260	260	U	260	< 260	260	U	260	< 260	260	U	260
72-54-8	4,4-DDD	PESTICIDE	13000	14000	< 2.0	2	U	2	< 2.1	2.1	U	2.1	< 2.1	2.1	U	2.1	< 2.0	2	U	2	< 2.0	2	U	2
72-55-9	4,4-DDE	PESTICIDE	8900	17000	< 2.0	2	U	2	< 2.1	2.1	U	2.1	< 2.1	2.1	U	2.1	< 2.0	2	U	2	< 2.0	2	U	2
50-29-3	4,4-DDT	PESTICIDE	7900	136000	< 2.0	2	U	2	< 2.1	2.1	U	2.1	< 2.1	2.1	U	2.1	< 2.0	2	U	2	< 2.0	2	U	2
309-00-2	Aldrin	PESTICIDE	97	190	< 3.4	3.4	U	3.4	< 3.5	3.5	U	3.5	< 3.5	3.5	U	3.5	< 3.4	3.4	U	3.4	< 3.4	3.4	U	3.4
319-84-6	alpha-BHC	PESTICIDE	480	20	< 1.4	1.4	U	1.4	< 1.4	1.4	U	1.4	< 1.4	1.4	U	1.4	< 1.4	1.4	U	1.4	< 1.4	1.4	U	1.4
5103-71-9	Alpha Chlordane	PESTICIDE	4200	2900	< 3.4	3.4	U	3.4	< 3.5	3.5	U	3.5	< 3.5	3.5	U	3.5	< 3.4	3.4	U	3.4	< 3.4	3.4	U	3.4
12674-11-2	Aroclor 1016	PCB	NA	NA	< 68	68	U	68	< 70	70	U	70	< 69	69	U	69	< 68	68	U	68	< 68	68	U	68
11104-28-2	Aroclor 1221	PCB	NA	NA	< 68	68	U	68	< 70	70	U	70	< 69	69	U	69	< 68	68	U	68	< 68	68	U	68
11141-16-5	Aroclor 1232	PCB	NA	NA	< 68	68	U	68	< 70	70	U	70	< 69	69	U	69	< 68	68	U	68	< 68	68	U	68
53469-21-9	Aroclor 1242	PCB	NA	NA	< 68	68	U	68	< 70	70	U	70	< 69	69	U	69	< 68	68	U	68	< 68	68	U	68
12672-29-6	Aroclor 1248	PCB	NA	NA	< 68	68	U	68	< 70	70	U	70	< 69	69	U	69	< 68	68	U	68	< 68	68	U	68
11097-69-1	Aroclor 1254	PCB	NA	NA	< 68	68	U	68	< 70	70	U	70	< 69	69	U	69	< 68	68	U	68	< 68	68	U	68
11096-82-5	Aroclor 1260	PCB	NA	NA	< 68	68	U	68	< 70	70	U	70	< 69	69	U	69	< 68	68	U	68	< 68	68	U	68
37324-23-5	Aroclor 1262	PCB	NA	NA	< 68	68	U	68	< 70	70	U	70	< 69	69	U	69	< 68	68	U	68	< 68	68	U	68
11100-14-4	Aroclor 1268	PCB	NA	NA	< 68	68	U	68	< 70	70	U	70	< 69	69	U	69	< 68	68	U	68	< 68	68	U	68
319-85-7	beta-BHC	PESTICIDE	360	90	< 1.4	1.4	U	1.4	< 1.4	1.4	U	1.4	< 1.4	1.4	U	1.4	< 1.4	1.4	U	1.4	< 1.4	1.4	U	1.4
57-74-9	Chlordane	PESTICIDE	4200	2900	< 34	34	U	34	< 35	35	U	35	< 35	35	U	35	< 34	34	U	34	< 34	34	U	34
319-86-8	delta-BHC	PESTICIDE	100,000a	250	< 6.8	6.8	U	6.8	< 7.0	7	U	7	< 6.9	6.9	U	6.9	< 6.8	6.8	U	6.8	< 6.8	6.8	U	6.8
1918-00-9	Dicamba	HERBICIDE	NA	NA	< 130	130	U	130	< 130	130	U	130	< 130	130	U	130	< 130	130	U	130	< 130	130	U	130
60-57-1	Dieldrin	PESTICIDE	200	100	< 1.4	1.4	U	1.4	< 1.4	1.4	U	1.4	< 1.4	1.4	U	1.4	< 1.4	1.4	U	1.4	< 1.4	1.4	U	1.4
115-29-7	Endosulfan	PESTICIDE	NA	NA	< 6.8	6.8	U	6.8	< 7.0	7	U	7	< 6.9	6.9	U	6.9	< 6.8	6.8	U	6.8	< 6.8	6.8	U	6.8
959-98-8	Endosulfan I	PESTICIDE	24,000i	102000	< 6.8	6.8	U	6.8	< 7.0	7	U	7	< 6.9	6.9	U	6.9	< 6.8	6.8	U	6.8	< 6.8	6.8	U	6.8
33213-65-9	Endosulfan II	PESTICIDE	24,000i	102000	< 6.8	6.8	U	6.8	< 7.0	7	U	7	< 6.9	6.9	U	6.9	< 6.8	6.8	U	6.8	< 6.8	6.8	U	6.8
1031-07-8	Endosulfan Sulfate	PESTICIDE	24,000i	1,000,000c	< 6.8	6.8	U	6.8	< 7.0	7	U	7	< 6.9	6.9	U	6.9	< 6.8	6.8	U	6.8	< 6.8	6.8	U	6.8
72-20-8	Endrin	PESTICIDE	11000	60	< 6.8	6.8	U	6.8	< 7.0	7	U	7	< 6.9	6.9	U	6.9	< 6.8	6.8	U	6.8	< 6.8	6.8	U	6.8
58-89-9	gamma-BHC	PESTICIDE	1300	100	< 1.4	1.4	U	1.4	< 1.4	1.4	U	1.4	< 1.4	1.4	U	1.4	< 1.4	1.4	U	1.4	< 1.4	1.4	U	1.4
5103-74-2	Gamma Chlordane	PESTICIDE	NA	14000	< 3.4	3.4	U	3.4	< 3.5	3.5	U	3.5	< 3.5	3.5	U	3.5	< 3.4	3.4	U	3.4	< 3.4	3.4	U	3.4
76-44-8	Heptachlor	PESTICIDE	2100	380	< 6.8	6.8	U	6.8	< 7.0	7	U	7	< 6.9	6.9	U	6.9	< 6.8	6.8	U	6.8	< 6.8	6.8	U	6.8
1024-57-3	Heptachlor Epoxide	PESTICIDE	NA	20	< 6.8	6.8	U	6.8	< 7.0	7	U	7	< 6.9	6.9	U	6.9	< 6.8	6.8	U	6.8	< 6.8	6.8	U	6.8
72-43-5	Methoxychlor	PESTICIDE	NA	900000	< 34	34	U	34	< 35	35	U	35	< 35	35	U	35	< 34	34	U	34	< 34	34	U	34
56-38-2	Parathion	PESTICIDE	NA	1200	< 350	350	U	140	< 350	350	U	140	< 340	340	U	140	< 350	350	U	140	< 340	340	U	130
1336-36-3	Polychlorinated Biphenyls	PCBs	1000	3200	ND				ND				ND				ND				ND			
8001-35-2	Toxaphene	PESTICIDE	NA	NA	< 140	140	U	140	< 140	140	U	140	< 140	140	U	140	< 140	140	U	140	< 140	140	U	140
	Unit		mg/kg	mg/kg	mg/kg	mg/kg		mg/kg	mg/kg	mg/kg		mg/kg	mg/kg	mg/kg		mg/kg	mg/kg	mg/kg		mg/kg	mg/kg	mg/kg		mg/kg
7429-90-5	Aluminum, Al	METAL	NA	NA	13200	36		7.2	17700	33		6.7	17200	32		6.3	17200	35		7	15100	32		6.4
7440-36-0	Antimony, Sb	METAL	NA	NA	< 3.6	3.6	U	3.6	< 3.3	3.3	U	3.3	< 3.2	3.2	U	3.2	< 3.5	3.5	U	3.5	< 3.2	3.2	U	3.2
7440-38-2	Arsenic, As	METAL	16f	16f	< 0.72	0.72	U	0.72	< 0.67	0.67	U	0.67	< 0.63	0.63	U	0.63	< 0.70	0.7	U	0.7	< 0.64	0.64	U	0.64
7440-39-3	Barium, Ba	METAL	400	820	217	0.7		0.36	228	0.7		0.33	218	0.6		0.32	238	0.7		0.35	196	0.6		0.32
7440-41-7	Beryllium, Be	METAL	72	47	0.25	0.29	J	0.14	0.32	0.27		0.13	0.28	0.25		0.13	0.32	0.28		0.14	0.33	0.25		0.13
7440-43-9	Cadmium, Cd	METAL	4.3	7.5	0.76	0.36		0.36	0.94	0.33		0.33	0.89	0.32		0.32	0.93	0.35		0.35	0.81	0.32		0.32
7440-47-3	Chromium, Cr	METAL	110	NA	29	0.36		0.36	36.6	0.33		0.33	32.7	0.32		0.32	37.3	0.35		0.35	34.5	0.32		0.32
18540-29-9	Chromium, hexavalent	METAL	110	19	< 0.42	0.42	U	0.42	< 0.40	0.4	U	0.4	< 0.39	0.39	U	0.39	< 0.40	0.4	U	0.4	< 0.41	0.41	U	0.41
16065-83-1	Chromium, trivalent	METAL	180	NA	29	0.36		0.36	36.6	0.33		0.33	32.7	0.32		0.32	37.3	0.35		0.35	34.5	0.32		0.32
7440-48-4	Cobalt, Co	METAL	NA	NA	14.8	0.36		0.36	19.3	0.33		0.33	18.4	0.32		0.32	18.8	0.35		0.35	16.5	0.32		0.32
7440-50-8	Copper, Cu	METAL	270	1720	46.1	0.7		0.36	71.2	0.7		0.33	74.2	0.6		0.32	66.7	0.7		0.35	57.5	0.6		0.32
57-12-5	Cyanide	METAL	27	40	< 0.53	0.53	U	0.263	< 0.53	0.53	U	0.263	< 0.53	0.53	U	0.263	< 0.53	0.53	U	0.263	< 0.52	0.52	U	0.258
7439-89-6	Iron, Fe	METAL	NA	NA	25300	36		36	31400	33		33	29700	32		32	30700	35		35	28000	32		32
7439-92-1	Lead, Pb	METAL	400	450	14	0.7		0.36	15.2	0.7		0.33	14.8	0.6		0.32	14	0.7		0.35	11.1	0.6		0.32
7439-96-5	Manganese, Mn	METAL	2,000f	2,000f	241	3.6		3.6	278	3.3		3.3	261	3.2		3.2	281	3.5		3.5	210	3.2		3.2
7439-97-6	Mercury, Hg	METAL	.81j	0.73	< 0.03	0.03	U	0.02	< 0.03	0.03	U	0.02	< 0.03	0.03	U	0.02	< 0.03	0.03	U	0.02	< 0.03	0.03	U	0.02
7440-02-0	Nickel, Ni	METAL	310	130	22.4	0.36		0.36	27.6	0.33		0.33	28	0.32		0.32	28.3	0.35		0.35	26.9	0.32		0.32
7782-49-2	Selenium, Se	METAL	180	4f	< 1.4	1.4	U	1.2	< 1.3	1.3	U	1.1	< 1.3	1.3	U	1.1	< 1.4	1.4	U	1.2	< 1.3	1.3	U	1.1
7440-22-4	Silver, Ag	METAL	180	8.3	< 0.36	0.36	U	0.36	< 0.33	0.33	U	0.33	< 0.32	0.32	U	0.32	< 0.35	0.35	U	0.35	< 0.32	0.32	U	0.32
7440-28-0	Thallium, Tl	METAL	NA	NA	< 1.4	1.4	U	1.4	< 1.3	1.3	U	1.3	< 1.3	1.3	U	1.3	< 1.4	1.4	U	1.4	< 1.3	1.3	U	1.3
7440-62-2	Vanadium, V	METAL	NA	NA	58.4	0.36		0.36	74	0.33		0.33	67.3	0.32		0.32	69.4	0.35		0.35	56.8	0.32		0.32
7440-66-6	Zinc, Zn	METAL	10,000d	2480	69.6	0.7		0.36	78.4	0.7		0.33	70.5	0.6		0.32	75.6	0.7		0.35	71.9	0.6		0.32

Bluestone Analysis
Location: 1000 Page Ave, Lyndhurst, NJ

CAS Number	Parameter Name	Parameter ID	NYCRR 375 Restricted-Residential	NYCRR 375 Protection of Groundwater	IRRC BLUESTONE COMP-1	RL	Q	MDL	IRRC BLUESTONE COMP-2	RL	Q	MDL	IRRC BLUESTONE COMP-3	RL	Q	MDL	IRRC BLUESTONE COMP-4	RL	Q	MDL	IRRC BLUESTONE COMP-5	RL	Q	MDL
			ug/kg	ug/kg	ug/kg	ug/kg		ug/kg	ug/kg	ug/kg		ug/kg	ug/kg	ug/kg		ug/kg	ug/kg	ug/kg		ug/kg	ug/kg	ug/kg		ug/kg
763051-92-9	11CL-PF3OUdS	PFAS	NA	NA	ND	0.788	U	0.324	ND	0.785	U	0.323	ND	0.793	U	0.326	ND	0.789	U	0.325	ND	0.782	U	0.322
39108-34-4	1H,1H,2H,2H-Perfluorodecanesulfonic acid (8:2	PFAS	NA	NA	ND	0.8	U	0.786	ND	0.797	U	0.784	ND	0.806	U	0.792	ND	0.802	U	0.788	ND	0.794	U	0.781
757124-72-4	1H,1H,2H,2H-Perfluorohexanesulfonic acid (4:2	PFAS	NA	NA	ND	0.781	U	0.62	ND	0.779	U	0.618	ND	0.787	U	0.624	ND	0.783	U	0.621	ND	0.776	U	0.615
27619-97-2	1H,1H,2H,2H-Perfluorooctanesulfonic acid (6:2	PFAS	NA	NA	ND	0.792	U	0.62	ND	0.789	U	0.618	ND	0.797	U	0.624	ND	0.793	U	0.621	ND	0.786	U	0.615
812-70-4	3-Perfluoroheptyl propanoic acid (FHpPA)	PFAS	NA	NA	ND	5.21	U	1.56	ND	5.19	U	1.56	ND	5.25	U	1.57	ND	5.22	U	1.57	ND	5.17	U	1.55
914637-49-3	3-Perfluoropentyl propanoic acid (FPePA)	PFAS	NA	NA	ND	5.21	U	2.19	ND	5.19	U	2.18	ND	5.25	U	2.2	ND	5.22	U	2.19	ND	5.17	U	2.17
356-02-5	3-Perfluoropropyl propanoic acid (FPrPA)	PFAS	NA	NA	ND	1.04	U	0.66	ND	1.04	U	0.658	ND	1.05	U	0.665	ND	1.04	U	0.662	ND	1.03	U	0.656
756426-58-1	9CL-PF3ONS	PFAS	NA	NA	ND	0.779	U	0.256	ND	0.777	U	0.255	ND	0.785	U	0.258	ND	0.781	U	0.257	ND	0.774	U	0.254
919005-14-4	ADONA	PFAS	NA	NA	ND	0.788	U	0.181	ND	0.785	U	0.181	ND	0.793	U	0.183	ND	0.789	U	0.182	ND	0.782	U	0.18
13252-13-6	HFPO-DA (Gen-X)	PFAS	NA	NA	ND	0.833	U	0.633	ND	0.831	U	0.631	ND	0.839	U	0.638	ND	0.835	U	0.635	ND	0.828	U	0.629
4151-50-2	N-EtFOSA	PFAS	NA	NA	ND	0.208	U	0.206	ND	0.208	U	0.206	ND	0.21	U	0.208	ND	0.209	U	0.207	ND	0.207	U	0.205
2991-50-6	N-EtFOSAA	PFAS	NA	NA	ND	0.208	U	0.202	ND	0.208	U	0.201	ND	0.21	U	0.204	ND	0.209	U	0.202	ND	0.207	U	0.201
1691-99-2	N-EtFOSE	PFAS	NA	NA	ND	2.08	U	0.726	ND	2.08	U	0.724	ND	2.1	U	0.731	ND	2.09	U	0.727	ND	2.07	U	0.721
31506-32-8	N-MeFOSA	PFAS	NA	NA	ND	0.208	U	0.188	ND	0.208	U	0.187	ND	0.21	U	0.189	ND	0.209	U	0.188	ND	0.207	U	0.186
2355-31-9	N-MeFOSAA	PFAS	NA	NA	ND	0.208	U	0.154	ND	0.208	U	0.154	ND	0.21	U	0.155	ND	0.209	U	0.154	ND	0.207	U	0.153
24448-09-7	N-MeFOSE	PFAS	NA	NA	ND	2.08	U	0.636	ND	2.08	U	0.634	ND	2.1	U	0.641	ND	2.09	U	0.638	ND	2.07	U	0.632
113507-82-7	Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	PFAS	NA	NA	ND	0.371	U	0.145	ND	0.37	U	0.144	ND	0.373	U	0.146	ND	0.372	U	0.145	ND	0.368	U	0.144
335-77-3	Perfluoro-1-decanesulfonic acid (PFDS)	PFAS	NA	NA	ND	0.201	U	0.199	ND	0.2	U	0.198	ND	0.202	U	0.2	ND	0.201	U	0.199	ND	0.2	U	0.198
375-92-8	Perfluoro-1-heptanesulfonic acid (PFHpS)	PFAS	NA	NA	ND	0.208	U	0.161	ND	0.208	U	0.161	ND	0.21	U	0.163	ND	0.209	U	0.162	ND	0.207	U	0.16
68259-12-1	Perfluoro-1-nonanesulfonic acid (PFNS)	PFAS	NA	NA	ND	0.2	U	0.129	ND	0.199	U	0.129	ND	0.201	U	0.13	ND	0.2	U	0.129	ND	0.199	U	0.128
754-91-6	Perfluoro-1-octanesulfonamide (FOSA)	PFAS	NA	NA	ND	0.208	U	0.152	ND	0.208	U	0.152	ND	0.21	U	0.153	ND	0.209	U	0.152	ND	0.207	U	0.151
2706-91-4	Perfluoro-1-pentanesulfonate (PFPeS)	PFAS	NA	NA	ND	0.196	U	0.164	ND	0.195	U	0.163	ND	0.197	U	0.165	ND	0.196	U	0.164	ND	0.194	U	0.162
151772-58-6	Perfluoro-3,6-dioxaheptanoic acid (NFDHA)	PFAS	NA	NA	ND	0.417	U	0.201	ND	0.415	U	0.2	ND	0.42	U	0.202	ND	0.417	U	0.201	ND	0.414	U	0.2
377-73-1	Perfluoro-4-oxapentanoic acid (PFMPA)	PFAS	NA	NA	ND	0.417	U	0.0646	ND	0.415	U	0.0644	ND	0.42	U	0.065	ND	0.417	U	0.0647	ND	0.414	U	0.0641
863090-89-5	Perfluoro-5-oxahexanoic acid (PFMBA)	PFAS	NA	NA	ND	0.417	U	0.1	ND	0.415	U	0.0997	ND	0.42	U	0.101	ND	0.417	U	0.1	ND	0.414	U	0.0993
375-73-5	Perfluorobutanesulfonic acid (PFBS)	PFAS	NA	NA	ND	0.184	U	0.116	ND	0.184	U	0.115	ND	0.186	U	0.116	ND	0.185	U	0.116	ND	0.183	U	0.115
335-76-2	Perfluorodecanoic acid (PFDA)	PFAS	NA	NA	ND	0.208	U	0.199	ND	0.208	U	0.198	ND	0.21	U	0.2	ND	0.209	U	0.199	ND	0.207	U	0.198
79780-39-5	Perfluorododecanesulfonic acid (PFDoS)	PFAS	NA	NA	ND	0.202	U	0.176	ND	0.201	U	0.175	ND	0.204	U	0.177	ND	0.202	U	0.176	ND	0.201	U	0.175
307-55-1	Perfluorododecanoic acid (PFDoA)	PFAS	NA	NA	ND	0.208	U	0.17	ND	0.208	U	0.169	ND	0.21	U	0.171	ND	0.209	U	0.17	ND	0.207	U	0.169
375-85-9	Perfluoroheptanoic acid (PFHpA)	PFAS	NA	NA	ND	0.208	U	0.109	ND	0.208	U	0.109	ND	0.21	U	0.11	ND	0.209	U	0.11	ND	0.207	U	0.109
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	PFAS	NA	NA	ND	0.191	U	0.186	ND	0.19	U	0.186	ND	0.192	U	0.188	ND	0.191	U	0.187	ND	0.189	U	0.185
307-24-4	Perfluorohexanoic acid (PFHxA)	PFAS	NA	NA	ND	0.208	U	0.0552	ND	0.208	U	0.055	ND	0.21	U	0.0556	ND	0.209	U	0.0553	ND	0.207	U	0.0548
375-22-4	Perfluoro-n-butanoic acid (PFBA)	PFAS	NA	NA	ND	0.833	U	0.114	ND	0.831	U	0.113	ND	0.839	U	0.114	ND	0.835	U	0.114	ND	0.828	U	0.113
375-95-1	Perfluorononanoic acid (PFNA)	PFAS	NA	NA	ND	0.208	U	0.197	ND	0.208	U	0.196	ND	0.21	U	0.198	ND	0.209	U	0.197	ND	0.207	U	0.195
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	PFAS	44	3.7	ND	0.194	U	0.174	ND	0.193	U	0.173	ND	0.195	U	0.175	ND	0.194	U	0.174	ND	0.192	U	0.173
335-67-1	Perfluorooctanoic acid (PFOA)	PFAS	33	1.1	ND	0.208	U	0.179	ND	0.208	U	0.179	ND	0.21	U	0.18	ND	0.209	U	0.18	ND	0.207	U	0.178
2706-90-3	Perfluoropentanoic acid (PFPeA)	PFAS	NA	NA	ND	0.417	U	0.114	ND	0.415	U	0.113	ND	0.42	U	0.114	ND	0.417	U	0.114	ND	0.414	U	0.113
376-06-7	Perfluorotetradecanoic acid (PFTA)	PFAS	NA	NA	ND	0.208	U	0.107	ND	0.208	U	0.107	ND	0.21	U	0.108	ND	0.209	U	0.108	ND	0.207	U	0.107
72629-94-8	Perfluorotridecanoic acid (PFTrDA)	PFAS	NA	NA	ND	0.208	U	0.13	ND	0.208	U	0.13	ND	0.21	U	0.131	ND	0.209	U	0.13	ND	0.207	U	0.129
2058-94-8	Perfluoroundecanoic acid (PFUnA)	PFAS	NA	NA	ND	0.208	U	0.206	ND	0.208	U	0.206	ND	0.21	U	0.208	ND	0.209	U	0.207	ND	0.207	U	0.205

Notes: Shaded values indicate an exceedance of NYCRR Part 375 SCO's

SOR TESTING LABORATORIES, INC.

98 Sand Park Road - Cedar Grove, NJ 07009
Tel.: (973) 239-6001 Fax: (973) 239-8380 http://www.sorlabs.com

PARTICLE SIZE DISTRIBUTION TEST REPORT

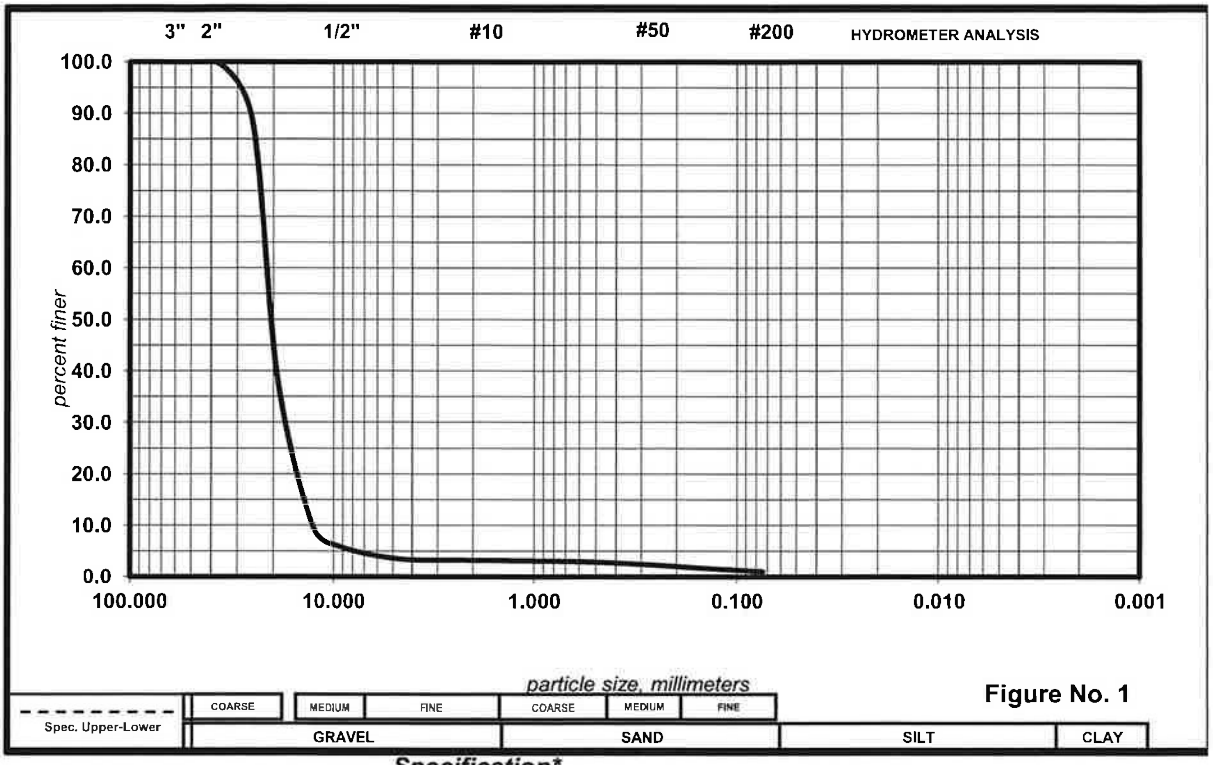

Figure No. 1

Sieve Size	% Finer	Specification* Min.(%)	Specification* Max.(%)
4" (102 mm)			
2 1/2" (63 mm)			
2" (50 mm)			
1 1/2" (38.1 mm)	100.0		
1" (25 mm)	88.9		
3/4" (19 mm)	38.5		
5/8" (16 mm)			
1/2" (12.5 mm)	9.8		
3/8" (9.5 mm)	6.0		
5/16" (8 mm)			
1/4" (6.3 mm)			
#4 (4.75 mm)	3.5		
#6 (3.35 mm)			
#8 (2.36 mm)	3.3		
#10 (2 mm)			
#14 (1.4 mm)			
#16 (1.18 mm)	3.1		
#20 (850 µm)			
#30 (600 µm)	2.9		
#40 (425 µm)			
#50 (300 µm)	2.5		
#60 (250 µm)			
#100 (150 µm)	1.7		
#200 (75 µm)	1.0		
-			

Sample Identification

Sample No.: 3/4" Bluestone
Lab No.: A23-083-01
Source/Location: 1000 Page Avenue
Description:
Gray cf GRAVEL trace, cf Sand

sample description in accordance with Burmister System

LL : **PL :** **PI :**

As received Moisture Content: %

Classification:
USCS: [GP]
AASHTO:

Remarks:
Sample received in lab on June 29, 2023

Client: Impact Materials
Project: IRRC
Location:
Date: 13-Jul-23
Job No.: 20-09 **Report No.:** 23-611

PHOENIX
Environmental Laboratories, Inc.

Sunday, March 12, 2023

Attn: Mr. Jeff Bogoian
Impact Consulting
170 Keyland Court
Bohemia NY 11716

Project ID: IRRC BLUESTONE
SDG ID: GCN49338
Sample ID#s: CN49338 - CN49357

This laboratory is in compliance with the NELAC requirements of procedures used except where indicated.

This report contains results for the parameters tested, under the sampling conditions described on the Chain Of Custody, as received by the laboratory. This report is incomplete unless all pages indicated in the pagination at the bottom of the page are included.

All soils, solids and sludges are reported on a dry weight basis unless otherwise noted in the sample comments.

A scanned version of the COC form accompanies the analytical report and is an exact duplicate of the original.

Enclosed are revised Analysis Report pages. Please replace and discard the original pages. If you are the client above and have any questions concerning this testing, please do not hesitate to contact Phoenix Client Services at ext.200. The contents of this report cannot be discussed with anyone other than the client listed above without their written consent.

Sincerely yours,

Phyllis Shiller
Laboratory Director

NELAC - #NY11301
CT Lab Registration #PH-0618
MA Lab Registration #M-CT007
ME Lab Registration #CT-007
NH Lab Registration #213693-A,B
NJ Lab Registration #CT-003
NY Lab Registration #11301
PA Lab Registration #68-03530
RI Lab Registration #63
VT Lab Registration #VT11301

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NEW JERSEY REDUCED DELIVERABLES DATA PACKAGE

Client: Impact Consulting

Project: IRRC BLUESTONE

Laboratory Project: GCN49338

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March 12, 2023 **SDG I.D.: GCN49338**

Impact Consulting IRRC BLUESTONE

Methodology Summary

Chlorinated Herbicides:

Soil Sample - USEPA SW-846 Test Methods for Evaluating Solid Waste Physical/Chemical Methods 3rd Ed. Update III, Method 8151A.

Hexavalent Chromium in Soils

USEPA SW-846 Test Methods for Evaluating Solid Waste Physical/Chemical Methods 3rd Ed. Update III, Alkaline Digestion Method 3060A and Colorimetric method 7196A.

Mercury Prep

Soil Sample - USEPA SW-846 Test Methods for Evaluating Solid Waste Physical/Chemical Methods 3rd Ed. Update IV, Method 7471B.

Metals

ICP :
USEPA SW-846 Test Methods for Evaluating Solid Waste Physical/Chemical Methods 3rd Ed. Update IV, Method 6010D.
Mercury:
USEPA SW-846 Test Methods for Evaluating Solid Waste Physical/Chemical Methods Update III, 7471B

Pesticides:

USEPA SW-846 Test Methods for Evaluating Solid Waste Physical/Chemical Methods 3rd Ed. Update IV, Method 8081B.

Polychlorinated Biphenyls (PCBs):

USEPA SW-846 Test Methods for Evaluating Solid Waste Physical/Chemical Methods 3rd Ed. Update IV, Method 8082A.

Semivolatile Organic Compounds

USEPA SW-846 Test Methods for Evaluating Solid Waste Physical/Chemical Methods 3rd Ed. Update IV, Method 8270D.

Total Cyanide

USEPA SW-846 Test Methods for Evaluating Solid Waste Physical/Chemical Methods 3rd Ed. Update IV, Method 9010B and SW9012B

Volatile Organic Compounds:

USEPA SW-846 Test Methods for Evaluating Solid Waste Physical/Chemical Methods 3rd Ed.Update III,

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Method 8260C and Environmental Protection Agency, EPA-600/4-79-020, Revised March 1983 (Methods 624) as printed in 40CFR part 136.

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March 12, 2023 **SDG I.D.: GCN49338**

Impact Consulting IRRC BLUESTONE

Laboratory Chronicle

The samples in this delivery group were received at 2.1°C.

Sample	Analysis	Collection Date	Prep Date	Analysis Date	Analyst	Hold Time Met
CN49338	1,4-dioxane	02/24/23	02/25/23	02/25/23	JLI	Y
CN49338	Vinyl Acetate	02/24/23	02/25/23	02/25/23	JLI	Y
CN49338	Volatiles	02/24/23	02/25/23	02/25/23	JLI	Y
CN49339	1,4-dioxane	02/24/23	02/25/23	02/25/23	JLI	Y
CN49339	Vinyl Acetate	02/24/23	02/25/23	02/25/23	JLI	Y
CN49339	Volatiles	02/24/23	02/25/23	02/25/23	JLI	Y
CN49340	1,4-dioxane	02/24/23	02/25/23	02/25/23	JLI	Y
CN49340	Vinyl Acetate	02/24/23	02/25/23	02/25/23	JLI	Y
CN49340	Volatiles	02/24/23	02/25/23	02/25/23	JLI	Y
CN49341	1,4-dioxane	02/24/23	02/25/23	02/25/23	JLI	Y
CN49341	Vinyl Acetate	02/24/23	02/25/23	02/25/23	JLI	Y
CN49341	Volatiles	02/24/23	02/25/23	02/25/23	JLI	Y
CN49342	1,4-dioxane	02/24/23	02/25/23	02/25/23	JLI	Y
CN49342	Vinyl Acetate	02/24/23	02/25/23	02/25/23	JLI	Y
CN49342	Volatiles	02/24/23	02/25/23	02/25/23	JLI	Y
CN49343	1,4-dioxane	02/24/23	02/25/23	02/25/23	JLI	Y
CN49343	Vinyl Acetate	02/24/23	02/25/23	02/25/23	JLI	Y
CN49343	Volatiles	02/24/23	02/25/23	02/25/23	JLI	Y
CN49344	1,4-dioxane	02/24/23	02/25/23	02/25/23	JLI	Y
CN49344	Vinyl Acetate	02/24/23	02/25/23	02/25/23	JLI	Y
CN49344	Volatiles	02/24/23	02/25/23	02/25/23	JLI	Y
CN49345	1,4-dioxane	02/24/23	02/25/23	02/25/23	JLI	Y
CN49345	Vinyl Acetate	02/24/23	02/25/23	02/25/23	JLI	Y
CN49345	Volatiles	02/24/23	02/25/23	02/25/23	JLI	Y
CN49346	1,4-dioxane	02/24/23	02/25/23	02/25/23	JLI	Y
CN49346	Vinyl Acetate	02/24/23	02/25/23	02/25/23	JLI	Y
CN49346	Volatiles	02/24/23	02/25/23	02/25/23	JLI	Y
CN49347	1,4-dioxane	02/24/23	02/25/23	02/25/23	JLI	Y
CN49347	Vinyl Acetate	02/24/23	02/25/23	02/25/23	JLI	Y
CN49347	Volatiles	02/24/23	02/25/23	02/25/23	JLI	Y
CN49348	1,4-dioxane	02/24/23	02/25/23	02/25/23	JLI	Y
CN49348	Vinyl Acetate	02/24/23	02/25/23	02/25/23	JLI	Y

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CN49348	Volatiles	02/24/23	02/25/23	02/25/23	JLI	Y
CN49349	1,4-dioxane	02/24/23	02/25/23	02/25/23	JLI	Y
CN49349	Vinyl Acetate	02/24/23	02/25/23	02/25/23	JLI	Y
CN49349	Volatiles	02/24/23	02/25/23	02/25/23	JLI	Y
CN49350	1,4-dioxane	02/24/23	02/25/23	02/25/23	JLI	Y
CN49350	Vinyl Acetate	02/24/23	02/25/23	02/25/23	JLI	Y
CN49350	Volatiles	02/24/23	02/25/23	02/25/23	JLI	Y
CN49351	1,4-dioxane	02/24/23	02/25/23	02/25/23	JLI	Y
CN49351	Vinyl Acetate	02/24/23	02/25/23	02/25/23	JLI	Y
CN49351	Volatiles	02/24/23	02/25/23	02/25/23	JLI	Y
CN49352	1,4-dioxane	02/24/23	02/25/23	02/25/23	JLI	Y
CN49352	Vinyl Acetate	02/24/23	02/25/23	02/25/23	JLI	Y
CN49352	Volatiles	02/24/23	02/25/23	02/25/23	JLI	Y
CN49353	Aluminum	02/24/23	02/24/23	02/28/23	CPP	Y
CN49353	Aniline	02/24/23	02/27/23	02/28/23	KCA	Y
CN49353	Antimony	02/24/23	02/24/23	02/28/23	CPP	Y
CN49353	Arsenic	02/24/23	02/24/23	02/28/23	CPP	Y
CN49353	Barium	02/24/23	02/24/23	02/28/23	CPP	Y
CN49353	Benzoic Acid	02/24/23	02/27/23	02/28/23	KCA	Y
CN49353	Beryllium	02/24/23	02/24/23	02/28/23	CPP	Y
CN49353	Cadmium	02/24/23	02/24/23	02/28/23	CPP	Y
CN49353	Calcium	02/24/23	02/24/23	02/28/23	CPP	Y
CN49353	Chlorinated Herbicides	02/24/23	02/24/23	02/28/23	JRB	Y
CN49353	Chromium	02/24/23	02/24/23	02/28/23	CPP	Y
CN49353	Chromium, Hex. (SW3060A digestio	02/24/23	02/27/23	02/27/23	DK	Y
CN49353	Cobalt	02/24/23	02/24/23	02/28/23	CPP	Y
CN49353	Copper	02/24/23	02/24/23	02/28/23	CPP	Y
CN49353	Iron	02/24/23	02/24/23	02/28/23	CPP	Y
CN49353	Lead	02/24/23	02/24/23	02/28/23	CPP	Y
CN49353	Magnesium	02/24/23	02/24/23	02/28/23	CPP	Y
CN49353	Manganese	02/24/23	02/24/23	02/28/23	TH	Y
CN49353	Mercury	02/24/23	02/27/23	02/27/23	PM	Y
CN49353	Nickel	02/24/23	02/24/23	02/28/23	CPP	Y
CN49353	Parathion	02/24/23	02/27/23	02/28/23	KCA	Y
CN49353	Percent Solid	02/24/23	02/24/23	02/24/23	AL	Y
CN49353	Pesticides - Soil	02/24/23	02/27/23	03/01/23	AW	Y
CN49353	pH at 25C - Soil	02/24/23	02/24/23	02/24/23	ER/PK	Y

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CN49353	Polychlorinated Biphenyls	02/24/23	02/27/23	03/01/23	SC	Y
CN49353	Potassium	02/24/23	02/24/23	02/28/23	CPP	Y
CN49353	Redox Potential	02/24/23	02/24/23	02/24/23	ER/PK	Y
CN49353	Selenium	02/24/23	02/24/23	02/28/23	CPP	Y
CN49353	Semivolatiles	02/24/23	02/27/23	02/28/23	KCA	Y
CN49353	Silver	02/24/23	02/24/23	02/28/23	CPP	Y
CN49353	Sodium	02/24/23	02/24/23	02/28/23	TH	Y
CN49353	Thallium	02/24/23	02/24/23	02/28/23	CPP	Y
CN49353	Total Cyanide (SW9010C Distill.)	02/24/23	02/28/23	02/28/23	CL/GD	Y
CN49353	Vanadium	02/24/23	02/24/23	02/28/23	CPP	Y
CN49353	Zinc	02/24/23	02/24/23	02/28/23	CPP	Y
CN49354	Aluminum	02/24/23	02/24/23	02/28/23	CPP	Y
CN49354	Aniline	02/24/23	02/27/23	02/28/23	KCA	Y
CN49354	Antimony	02/24/23	02/24/23	02/28/23	CPP	Y
CN49354	Arsenic	02/24/23	02/24/23	02/28/23	CPP	Y
CN49354	Barium	02/24/23	02/24/23	02/28/23	CPP	Y
CN49354	Benzoic Acid	02/24/23	02/27/23	02/28/23	KCA	Y
CN49354	Beryllium	02/24/23	02/24/23	02/28/23	CPP	Y
CN49354	Cadmium	02/24/23	02/24/23	02/28/23	CPP	Y
CN49354	Calcium	02/24/23	02/24/23	02/28/23	CPP	Y
CN49354	Chlorinated Herbicides	02/24/23	02/24/23	02/28/23	JRB	Y
CN49354	Chromium	02/24/23	02/24/23	02/28/23	CPP	Y
CN49354	Chromium, Hex. (SW3060A digestio	02/24/23	02/27/23	02/27/23	DK	Y
CN49354	Cobalt	02/24/23	02/24/23	02/28/23	CPP	Y
CN49354	Copper	02/24/23	02/24/23	02/28/23	CPP	Y
CN49354	Iron	02/24/23	02/24/23	02/28/23	CPP	Y
CN49354	Lead	02/24/23	02/24/23	02/28/23	CPP	Y
CN49354	Magnesium	02/24/23	02/24/23	02/28/23	CPP	Y
CN49354	Manganese	02/24/23	02/24/23	02/28/23	TH	Y
CN49354	Mercury	02/24/23	02/27/23	02/27/23	PM	Y
CN49354	Nickel	02/24/23	02/24/23	02/28/23	CPP	Y
CN49354	Parathion	02/24/23	02/27/23	02/28/23	KCA	Y
CN49354	Percent Solid	02/24/23	02/24/23	02/24/23	AL	Y
CN49354	Pesticides - Soil	02/24/23	02/27/23	03/01/23	AW	Y
CN49354	pH at 25C - Soil	02/24/23	02/24/23	02/24/23	ER/PK	Y
CN49354	Polychlorinated Biphenyls	02/24/23	02/27/23	03/01/23	SC	Y
CN49354	Potassium	02/24/23	02/24/23	03/01/23	TH	Y

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March 12, 2023 **SDG I.D.: GCN49338**

Impact Consulting IRRC BLUESTONE

CN49354	Redox Potential	02/24/23	02/24/23	02/24/23	ER/PK	Y
CN49354	Selenium	02/24/23	02/24/23	02/28/23	CPP	Y
CN49354	Semivolatiles	02/24/23	02/27/23	02/28/23	KCA	Y
CN49354	Silver	02/24/23	02/24/23	02/28/23	CPP	Y
CN49354	Sodium	02/24/23	02/24/23	02/28/23	TH	Y
CN49354	Thallium	02/24/23	02/24/23	02/28/23	CPP	Y
CN49354	Total Cyanide (SW9010C Distill.)	02/24/23	02/28/23	02/28/23	CL/GD	Y
CN49354	Vanadium	02/24/23	02/24/23	02/28/23	CPP	Y
CN49354	Zinc	02/24/23	02/24/23	02/28/23	CPP	Y
CN49355	Aluminum	02/24/23	02/24/23	02/28/23	CPP	Y
CN49355	Aniline	02/24/23	02/27/23	02/28/23	KCA	Y
CN49355	Antimony	02/24/23	02/24/23	02/28/23	CPP	Y
CN49355	Arsenic	02/24/23	02/24/23	02/28/23	CPP	Y
CN49355	Barium	02/24/23	02/24/23	02/28/23	CPP	Y
CN49355	Benzoic Acid	02/24/23	02/27/23	02/28/23	KCA	Y
CN49355	Beryllium	02/24/23	02/24/23	02/28/23	CPP	Y
CN49355	Cadmium	02/24/23	02/24/23	02/28/23	CPP	Y
CN49355	Calcium	02/24/23	02/24/23	02/28/23	CPP	Y
CN49355	Chlorinated Herbicides	02/24/23	02/24/23	02/28/23	JRB	Y
CN49355	Chromium	02/24/23	02/24/23	02/28/23	CPP	Y
CN49355	Chromium, Hex. (SW3060A digestio	02/24/23	02/27/23	02/27/23	DK	Y
CN49355	Cobalt	02/24/23	02/24/23	02/28/23	CPP	Y
CN49355	Copper	02/24/23	02/24/23	02/28/23	CPP	Y
CN49355	Iron	02/24/23	02/24/23	02/28/23	CPP	Y
CN49355	Lead	02/24/23	02/24/23	02/28/23	CPP	Y
CN49355	Magnesium	02/24/23	02/24/23	02/28/23	CPP	Y
CN49355	Manganese	02/24/23	02/24/23	02/28/23	TH	Y
CN49355	Mercury	02/24/23	02/27/23	02/27/23	PM	Y
CN49355	Nickel	02/24/23	02/24/23	02/28/23	CPP	Y
CN49355	Parathion	02/24/23	02/27/23	02/28/23	KCA	Y
CN49355	Percent Solid	02/24/23	02/24/23	02/24/23	AL	Y
CN49355	Pesticides - Soil	02/24/23	02/27/23	03/01/23	AW	Y
CN49355	pH at 25C - Soil	02/24/23	02/24/23	02/24/23	ER/PK	Y
CN49355	Polychlorinated Biphenyls	02/24/23	02/27/23	03/01/23	SC	Y
CN49355	Potassium	02/24/23	02/24/23	03/01/23	TH	Y
CN49355	Redox Potential	02/24/23	02/24/23	02/24/23	ER/PK	Y
CN49355	Selenium	02/24/23	02/24/23	02/28/23	CPP	Y

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Environmental Laboratories, Inc.
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March 12, 2023 **SDG I.D.: GCN49338**

Impact Consulting IRRC BLUESTONE

CN49355	Semivolatiles	02/24/23	02/27/23	02/28/23	KCA	Y
CN49355	Silver	02/24/23	02/24/23	02/28/23	CPP	Y
CN49355	Sodium	02/24/23	02/24/23	02/28/23	TH	Y
CN49355	Thallium	02/24/23	02/24/23	02/28/23	CPP	Y
CN49355	Total Cyanide (SW9010C Distill.)	02/24/23	02/28/23	02/28/23	CL/GD	Y
CN49355	Vanadium	02/24/23	02/24/23	02/28/23	CPP	Y
CN49355	Zinc	02/24/23	02/24/23	02/28/23	CPP	Y
CN49356	Aluminum	02/24/23	02/24/23	02/28/23	CPP	Y
CN49356	Aniline	02/24/23	02/27/23	02/28/23	KCA	Y
CN49356	Antimony	02/24/23	02/24/23	02/28/23	CPP	Y
CN49356	Arsenic	02/24/23	02/24/23	02/28/23	CPP	Y
CN49356	Barium	02/24/23	02/24/23	02/28/23	CPP	Y
CN49356	Benzoic Acid	02/24/23	02/27/23	02/28/23	KCA	Y
CN49356	Beryllium	02/24/23	02/24/23	02/28/23	CPP	Y
CN49356	Cadmium	02/24/23	02/24/23	02/28/23	CPP	Y
CN49356	Calcium	02/24/23	02/24/23	02/28/23	CPP	Y
CN49356	Chlorinated Herbicides	02/24/23	02/24/23	02/28/23	JRB	Y
CN49356	Chromium	02/24/23	02/24/23	02/28/23	CPP	Y
CN49356	Chromium, Hex. (SW3060A digestio	02/24/23	02/27/23	02/27/23	DK	Y
CN49356	Cobalt	02/24/23	02/24/23	02/28/23	CPP	Y
CN49356	Copper	02/24/23	02/24/23	02/28/23	CPP	Y
CN49356	Iron	02/24/23	02/24/23	02/28/23	CPP	Y
CN49356	Lead	02/24/23	02/24/23	02/28/23	CPP	Y
CN49356	Magnesium	02/24/23	02/24/23	02/28/23	CPP	Y
CN49356	Manganese	02/24/23	02/24/23	02/28/23	TH	Y
CN49356	Mercury	02/24/23	02/27/23	02/27/23	PM	Y
CN49356	Nickel	02/24/23	02/24/23	02/28/23	CPP	Y
CN49356	Parathion	02/24/23	02/27/23	02/28/23	KCA	Y
CN49356	Percent Solid	02/24/23	02/24/23	02/24/23	AL	Y
CN49356	Pesticides - Soil	02/24/23	02/27/23	03/01/23	AW	Y
CN49356	pH at 25C - Soil	02/24/23	02/24/23	02/24/23	ER/PK	Y
CN49356	Polychlorinated Biphenyls	02/24/23	02/27/23	03/01/23	SC	Y
CN49356	Potassium	02/24/23	02/24/23	03/01/23	TH	Y
CN49356	Redox Potential	02/24/23	02/24/23	02/24/23	ER/PK	Y
CN49356	Selenium	02/24/23	02/24/23	02/28/23	CPP	Y
CN49356	Semivolatiles	02/24/23	02/27/23	02/28/23	KCA	Y
CN49356	Silver	02/24/23	02/24/23	02/28/23	CPP	Y

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March 12, 2023 **SDG I.D.: GCN49338**

Impact Consulting IRRC BLUESTONE

CN49356	Sodium	02/24/23	02/24/23	02/28/23	TH	Y
CN49356	Thallium	02/24/23	02/24/23	02/28/23	CPP	Y
CN49356	Total Cyanide (SW9010C Distill.)	02/24/23	02/28/23	02/28/23	CL/GD	Y
CN49356	Vanadium	02/24/23	02/24/23	02/28/23	CPP	Y
CN49356	Zinc	02/24/23	02/24/23	02/28/23	CPP	Y
CN49357	Aluminum	02/24/23	02/24/23	02/28/23	CPP	Y
CN49357	Aniline	02/24/23	02/27/23	02/28/23	KCA	Y
CN49357	Antimony	02/24/23	02/24/23	02/28/23	CPP	Y
CN49357	Arsenic	02/24/23	02/24/23	02/28/23	CPP	Y
CN49357	Barium	02/24/23	02/24/23	02/28/23	CPP	Y
CN49357	Benzoic Acid	02/24/23	02/27/23	02/28/23	KCA	Y
CN49357	Beryllium	02/24/23	02/24/23	02/28/23	CPP	Y
CN49357	Cadmium	02/24/23	02/24/23	02/28/23	CPP	Y
CN49357	Calcium	02/24/23	02/24/23	02/28/23	CPP	Y
CN49357	Chlorinated Herbicides	02/24/23	02/24/23	02/28/23	JRB	Y
CN49357	Chromium	02/24/23	02/24/23	02/28/23	CPP	Y
CN49357	Chromium, Hex. (SW3060A digestio	02/24/23	02/27/23	02/27/23	DK	Y
CN49357	Cobalt	02/24/23	02/24/23	02/28/23	CPP	Y
CN49357	Copper	02/24/23	02/24/23	02/28/23	CPP	Y
CN49357	Iron	02/24/23	02/24/23	02/28/23	CPP	Y
CN49357	Lead	02/24/23	02/24/23	02/28/23	CPP	Y
CN49357	Magnesium	02/24/23	02/24/23	02/28/23	CPP	Y
CN49357	Manganese	02/24/23	02/24/23	02/28/23	TH	Y
CN49357	Mercury	02/24/23	02/27/23	02/27/23	PM	Y
CN49357	Nickel	02/24/23	02/24/23	02/28/23	CPP	Y
CN49357	Parathion	02/24/23	02/27/23	02/28/23	KCA	Y
CN49357	Percent Solid	02/24/23	02/24/23	02/24/23	AL	Y
CN49357	Pesticides - Soil	02/24/23	02/27/23	03/01/23	AW	Y
CN49357	pH at 25C - Soil	02/24/23	02/24/23	02/24/23	ER/PK	Y
CN49357	Polychlorinated Biphenyls	02/24/23	02/27/23	03/01/23	SC	Y
CN49357	Potassium	02/24/23	02/24/23	03/01/23	TH	Y
CN49357	Redox Potential	02/24/23	02/24/23	02/24/23	ER/PK	Y
CN49357	Selenium	02/24/23	02/24/23	02/28/23	CPP	Y
CN49357	Semivolatiles	02/24/23	02/27/23	02/28/23	KCA	Y
CN49357	Silver	02/24/23	02/24/23	02/28/23	CPP	Y
CN49357	Sodium	02/24/23	02/24/23	02/28/23	TH	Y
CN49357	Thallium	02/24/23	02/24/23	02/28/23	CPP	Y

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March 12, 2023 **SDG I.D.: GCN49338**

Impact Consulting IRRC BLUESTONE

CN49357	Total Cyanide (SW9010C Distill.)	02/24/23	02/28/23	02/28/23	CL/GD	Y
CN49357	Vanadium	02/24/23	02/24/23	02/28/23	CPP	Y
CN49357	Zinc	02/24/23	02/24/23	02/28/23	CPP	Y

Environmental Laboratories, Inc.
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NY # 11301

SDG Comments

March 12, 2023

SDG I.D.: GCN49338

Please be advised that the NY 375 soil criteria for chromium are based on hexavalent chromium and trivalent chromium.

Any compound that is not detected above the MDL/LOD is reported as ND on the report and is reported in the electronic deliverables (EDD) as <RL or U at the RL per state and EPA guidance.

Version 1: Analysis results minus forms.

Version 2: Complete report with QC and forms.

Environmental Laboratories, Inc.
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Tel. (860) 645-1102 Fax (860) 645-0823

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Sample Id Cross Reference

March 12, 2023

SDG I.D.: GCN49338

Project ID: IRRC BLUESTONE

Client Id	Lab Id	Matrix
IRRC BLUESTONE 1A (GRAB)	CN49338	SOIL
IRRC BLUESTONE 1B (GRAB)	CN49339	SOIL
IRRC BLUESTONE 1C (GRAB)	CN49340	SOIL
IRRC BLUESTONE 2A (GRAB)	CN49341	SOIL
IRRC BLUESTONE 2B (GRAB)	CN49342	SOIL
IRRC BLUESTONE 2C (GRAB)	CN49343	SOIL
IRRC BLUESTONE 3A (GRAB)	CN49344	SOIL
IRRC BLUESTONE 3B (GRAB)	CN49345	SOIL
IRRC BLUESTONE 3C (GRAB)	CN49346	SOIL
IRRC BLUESTONE 4A (GRAB)	CN49347	SOIL
IRRC BLUESTONE 4B (GRAB)	CN49348	SOIL
IRRC BLUESTONE 4C (GRAB)	CN49349	SOIL
IRRC BLUESTONE 5A (GRAB)	CN49350	SOIL
IRRC BLUESTONE 5B (GRAB)	CN49351	SOIL
IRRC BLUESTONE 5C (GRAB)	CN49352	SOIL
IRRC BLUESTONE COMP-1	CN49353	SOIL
IRRC BLUESTONE COMP-2	CN49354	SOIL
IRRC BLUESTONE COMP-3	CN49355	SOIL
IRRC BLUESTONE COMP-4	CN49356	SOIL
IRRC BLUESTONE COMP-5	CN49357	SOIL

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Analysis Report

March 12, 2023

FOR: Attn: Mr. Jeff Bogoian
Impact Consulting
170 Keyland Court
Bohemia NY 11716

Sample Information		Custody Information		Date	Time
Matrix:	SOIL	Collected by:	SR	02/24/23	8:00
Location Code:	IMPACTJB-IEC	Received by:	CP	02/24/23	17:38
Rush Request:	72 Hour	Analyzed by:	see "By" below		
P.O.#:					

Laboratory Data

SDG ID: GCN49338
Phoenix ID: CN49338

Project ID: IRRC BLUESTONE
Client ID: IRRC BLUESTONE 1A (GRAB)

Parameter	Result	RL/ PQL	LOD/ MDL	Units	Dilution	Date/Time	By	Reference
Volatiles								
1,2,4-Trimethylbenzene	ND	3.1	0.31	ug/Kg	1	02/25/23	JLI	SW8260C
1,3,5-Trimethylbenzene	ND	3.1	0.31	ug/Kg	1	02/25/23	JLI	SW8260C
1,3-Dichlorobenzene	ND	3.1	0.31	ug/Kg	1	02/25/23	JLI	SW8260C
Naphthalene	ND	3.1	0.61	ug/Kg	1	02/25/23	JLI	SW8260C
n-Butylbenzene	ND	3.1	0.31	ug/Kg	1	02/25/23	JLI	SW8260C
n-Propylbenzene	ND	3.1	0.61	ug/Kg	1	02/25/23	JLI	SW8260C
p-Isopropyltoluene	ND	3.1	0.31	ug/Kg	1	02/25/23	JLI	SW8260C
sec-Butylbenzene	ND	3.1	0.31	ug/Kg	1	02/25/23	JLI	SW8260C
tert-Butylbenzene	ND	3.1	0.31	ug/Kg	1	02/25/23	JLI	SW8260C
QA/QC Surrogates								
% 1,2-dichlorobenzene-d4	99			%	1	02/25/23	JLI	70 - 130 %
% Bromofluorobenzene	96			%	1	02/25/23	JLI	70 - 130 %
% Dibromofluoromethane	91			%	1	02/25/23	JLI	70 - 130 %
% Toluene-d8	100			%	1	02/25/23	JLI	70 - 130 %
1,4-dioxane								
1,4-dioxane	ND	46	24	ug/kg	1	02/25/23	JLI	SW8260C
Volatiles								
1,1,1,2-Tetrachloroethane	ND	3.1	0.61	ug/Kg	1	02/25/23	JLI	SW8260C
1,1,1-Trichloroethane	ND	3.1	0.31	ug/Kg	1	02/25/23	JLI	SW8260C
1,1,2,2-Tetrachloroethane	ND	3.1	0.61	ug/Kg	1	02/25/23	JLI	SW8260C
1,1,2-Trichloroethane	ND	3.1	0.61	ug/Kg	1	02/25/23	JLI	SW8260C
1,1-Dichloroethane	ND	3.1	0.61	ug/Kg	1	02/25/23	JLI	SW8260C
1,1-Dichloroethene	ND	3.1	0.31	ug/Kg	1	02/25/23	JLI	SW8260C
1,2,3-Trichlorobenzene	ND	3.1	0.61	ug/Kg	1	02/25/23	JLI	SW8260C

Project ID: IRRC BLUESTONE

Client ID: IRRC BLUESTONE 1A (GRAB)

Phoenix I.D.: CN49338

Parameter	Result	RL/ PQL	LOD/ MDL	Units	Dilution	Date/Time	By	Reference
1,2,4-Trichlorobenzene	ND	3.1	0.61	ug/Kg	1	02/25/23	JLI	SW8260C
1,2-Dibromo-3-chloropropane	ND	3.1	0.61	ug/Kg	1	02/25/23	JLI	SW8260C
1,2-Dibromoethane	ND	1.2	0.31	ug/Kg	1	02/25/23	JLI	SW8260C
1,2-Dichlorobenzene	ND	3.1	0.31	ug/Kg	1	02/25/23	JLI	SW8260C
1,2-Dichloroethane	ND	3.1	0.31	ug/Kg	1	02/25/23	JLI	SW8260C
1,2-Dichloropropane	ND	3.1	0.61	ug/Kg	1	02/25/23	JLI	SW8260C
1,3-Dichlorobenzene	ND	3.1	0.31	ug/Kg	1	02/25/23	JLI	SW8260C
1,4-Dichlorobenzene	ND	3.1	0.31	ug/Kg	1	02/25/23	JLI	SW8260C
2-Hexanone	ND	15	3.1	ug/Kg	1	02/25/23	JLI	SW8260C
4-Methyl-2-pentanone	ND	15	3.1	ug/Kg	1	02/25/23	JLI	SW8260C
Acetone	ND	31	3.1	ug/Kg	1	02/25/23	JLI	SW8260C
Acrolein	ND	0.47	0.47	ug/Kg	1	02/25/23	JLI	SW8260C
Acrylonitrile	ND	6.1	0.31	ug/Kg	1	02/25/23	JLI	SW8260C
Benzene	ND	3.1	0.31	ug/Kg	1	02/25/23	JLI	SW8260C
Bromochloromethane	ND	3.1	0.31	ug/Kg	1	02/25/23	JLI	SW8260C
Bromodichloromethane	ND	3.1	0.61	ug/Kg	1	02/25/23	JLI	SW8260C
Bromoform	ND	3.1	0.61	ug/Kg	1	02/25/23	JLI	SW8260C
Bromomethane	ND	3.1	1.2	ug/Kg	1	02/25/23	JLI	SW8260C
Carbon Disulfide	ND	3.1	0.61	ug/Kg	1	02/25/23	JLI	SW8260C
Carbon tetrachloride	ND	3.1	0.61	ug/Kg	1	02/25/23	JLI	SW8260C
Chlorobenzene	ND	3.1	0.31	ug/Kg	1	02/25/23	JLI	SW8260C
Chloroethane	ND	3.1	0.31	ug/Kg	1	02/25/23	JLI	SW8260C
Chloroform	ND	3.1	0.31	ug/Kg	1	02/25/23	JLI	SW8260C
Chloromethane	ND	3.1	0.61	ug/Kg	1	02/25/23	JLI	SW8260C
cis-1,2-Dichloroethene	ND	3.1	0.31	ug/Kg	1	02/25/23	JLI	SW8260C
cis-1,3-Dichloropropene	ND	3.1	0.31	ug/Kg	1	02/25/23	JLI	SW8260C
Cyclohexane	ND	3.1	0.61	ug/Kg	1	02/25/23	JLI	SW8260C
Dibromochloromethane	ND	3.1	0.61	ug/Kg	1	02/25/23	JLI	SW8260C
Dichlorodifluoromethane	ND	3.1	0.31	ug/Kg	1	02/25/23	JLI	SW8260C
Ethylbenzene	ND	3.1	0.31	ug/Kg	1	02/25/23	JLI	SW8260C
Isopropylbenzene	ND	3.1	0.31	ug/Kg	1	02/25/23	JLI	SW8260C
m&p-Xylene	ND	3.1	0.61	ug/Kg	1	02/25/23	JLI	SW8260C
Methyl ethyl ketone	ND	18	3.1	ug/Kg	1	02/25/23	JLI	SW8260C
Methyl t-butyl ether (MTBE)	ND	6.1	0.61	ug/Kg	1	02/25/23	JLI	SW8260C
Methylacetate	ND	6.1	6.1	ug/Kg	1	02/25/23	JLI	SW8260C
Methylcyclohexane	ND	3.1	0.61	ug/Kg	1	02/25/23	JLI	SW8260C
Methylene chloride	ND	3.1	3.1	ug/Kg	1	02/25/23	JLI	SW8260C
o-Xylene	ND	3.1	0.61	ug/Kg	1	02/25/23	JLI	SW8260C
Styrene	ND	3.1	0.31	ug/Kg	1	02/25/23	JLI	SW8260C
tert-butyl alcohol	ND	61	12	ug/Kg	1	02/25/23	JLI	SW8260C
Tetrachloroethene	ND	3.1	0.61	ug/Kg	1	02/25/23	JLI	SW8260C
Toluene	ND	3.1	0.31	ug/Kg	1	02/25/23	JLI	SW8260C
Total Xylenes	ND	3.1	3.1	ug/Kg	1	02/25/23	JLI	SW8260C
trans-1,2-Dichloroethene	ND	3.1	0.31	ug/Kg	1	02/25/23	JLI	SW8260C
trans-1,3-Dichloropropene	ND	3.1	0.31	ug/Kg	1	02/25/23	JLI	SW8260C
Trichloroethene	ND	3.1	0.31	ug/Kg	1	02/25/23	JLI	SW8260C
Trichlorofluoromethane	ND	3.1	0.61	ug/Kg	1	02/25/23	JLI	SW8260C
Trichlorotrifluoroethane	ND	3.1	0.31	ug/Kg	1	02/25/23	JLI	SW8260C
Vinyl chloride	ND	3.1	0.31	ug/Kg	1	02/25/23	JLI	SW8260C

Project ID: IRRC BLUESTONE

Client ID: IRRC BLUESTONE 1A (GRAB)

Phoenix I.D.: CN49338

Parameter	Result	RL/ PQL	LOD/ MDL	Units	Dilution	Date/Time	By	Reference
QA/QC Surrogates								
% 1,2-dichlorobenzene-d4	99			%	1	02/25/23	JLI	70 - 130 %
% Bromofluorobenzene	96			%	1	02/25/23	JLI	70 - 130 %
% Dibromofluoromethane	91			%	1	02/25/23	JLI	70 - 130 %
% Toluene-d8	100			%	1	02/25/23	JLI	70 - 130 %
Vinyl Acetate	ND	31	31	ug/Kg	1	02/25/23	JLI	SW8260C

RL/PQL=Reporting/Practical Quantitation Level (Equivalent to NELAC LOQ, Limit of Quantitation) ND=Not Detected BRL=Below Reporting Level L=Biased Low LOD=Limit of Detection MDL=Method Detection Limit1
QA/QC Surrogates: Surrogates are compounds (preceeded with a %) added by the lab to determine analysis efficiency. Surrogate results(%) listed in the report are not "detected" compounds.

Comments:

Results are reported on an ``as received`` basis, and are not corrected for dry weight.

Volatile Comment:
To achieve client's objectives, where the lowest calibration standard or LOD justifies lowering the RL/PQL, the RL/PQL of some compounds have been lowered to meet criteria.

All soils, solids and sludges are reported on a dry weight basis unless otherwise noted in the sample comments.

If you are the client above and have any questions concerning this testing, please do not hesitate to contact Phoenix Client Services at ext.200.
The contents of this report cannot be discussed with anyone other than the client listed above without their written consent.

Phyllis Shiller, Laboratory Director
March 12, 2023
Reviewed and Released by: Maryam Taylor, Project Manager

PHOENIX
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587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

ACCREDITED IN ACCORDANCE WITH nelac NY # 11301

Analysis Report

March 12, 2023

FOR: Attn: Mr. Jeff Bogoian
Impact Consulting
170 Keyland Court
Bohemia NY 11716

Sample Information		Custody Information		Date	Time
Matrix:	SOIL	Collected by:	SR	02/24/23	8:05
Location Code:	IMPACTJB-IEC	Received by:	CP	02/24/23	17:38
Rush Request:	72 Hour	Analyzed by:	see "By" below		
P.O.#:					

Laboratory Data

SDG ID: GCN49338
Phoenix ID: CN49339

Project ID: IRRC BLUESTONE
Client ID: IRRC BLUESTONE 1B (GRAB)

Parameter	Result	RL/ PQL	LOD/ MDL	Units	Dilution	Date/Time	By	Reference
Volatiles								
1,2,4-Trimethylbenzene	ND	3.1	0.31	ug/Kg	1	02/25/23	JLI	SW8260C
1,3,5-Trimethylbenzene	ND	3.1	0.31	ug/Kg	1	02/25/23	JLI	SW8260C
1,3-Dichlorobenzene	ND	3.1	0.31	ug/Kg	1	02/25/23	JLI	SW8260C
Naphthalene	ND	3.1	0.61	ug/Kg	1	02/25/23	JLI	SW8260C
n-Butylbenzene	ND	3.1	0.31	ug/Kg	1	02/25/23	JLI	SW8260C
n-Propylbenzene	ND	3.1	0.61	ug/Kg	1	02/25/23	JLI	SW8260C
p-Isopropyltoluene	ND	3.1	0.31	ug/Kg	1	02/25/23	JLI	SW8260C
sec-Butylbenzene	ND	3.1	0.31	ug/Kg	1	02/25/23	JLI	SW8260C
tert-Butylbenzene	ND	3.1	0.31	ug/Kg	1	02/25/23	JLI	SW8260C
QA/QC Surrogates								
% 1,2-dichlorobenzene-d4	99			%	1	02/25/23	JLI	70 - 130 %
% Bromofluorobenzene	95			%	1	02/25/23	JLI	70 - 130 %
% Dibromofluoromethane	92			%	1	02/25/23	JLI	70 - 130 %
% Toluene-d8	99			%	1	02/25/23	JLI	70 - 130 %
1,4-dioxane								
1,4-dioxane	ND	46	24	ug/kg	1	02/25/23	JLI	SW8260C
Volatiles								
1,1,1,2-Tetrachloroethane	ND	3.1	0.61	ug/Kg	1	02/25/23	JLI	SW8260C
1,1,1-Trichloroethane	ND	3.1	0.31	ug/Kg	1	02/25/23	JLI	SW8260C
1,1,2,2-Tetrachloroethane	ND	3.1	0.61	ug/Kg	1	02/25/23	JLI	SW8260C
1,1,2-Trichloroethane	ND	3.1	0.61	ug/Kg	1	02/25/23	JLI	SW8260C
1,1-Dichloroethane	ND	3.1	0.61	ug/Kg	1	02/25/23	JLI	SW8260C
1,1-Dichloroethene	ND	3.1	0.31	ug/Kg	1	02/25/23	JLI	SW8260C
1,2,3-Trichlorobenzene	ND	3.1	0.61	ug/Kg	1	02/25/23	JLI	SW8260C

Project ID: IRRC BLUESTONE

Client ID: IRRC BLUESTONE 1B (GRAB)

Phoenix I.D.: CN49339

Parameter	Result	RL/ PQL	LOD/ MDL	Units	Dilution	Date/Time	By	Reference
1,2,4-Trichlorobenzene	ND	3.1	0.61	ug/Kg	1	02/25/23	JLI	SW8260C
1,2-Dibromo-3-chloropropane	ND	3.1	0.61	ug/Kg	1	02/25/23	JLI	SW8260C
1,2-Dibromoethane	ND	1.2	0.31	ug/Kg	1	02/25/23	JLI	SW8260C
1,2-Dichlorobenzene	ND	3.1	0.31	ug/Kg	1	02/25/23	JLI	SW8260C
1,2-Dichloroethane	ND	3.1	0.31	ug/Kg	1	02/25/23	JLI	SW8260C
1,2-Dichloropropane	ND	3.1	0.61	ug/Kg	1	02/25/23	JLI	SW8260C
1,3-Dichlorobenzene	ND	3.1	0.31	ug/Kg	1	02/25/23	JLI	SW8260C
1,4-Dichlorobenzene	ND	3.1	0.31	ug/Kg	1	02/25/23	JLI	SW8260C
2-Hexanone	ND	15	3.1	ug/Kg	1	02/25/23	JLI	SW8260C
4-Methyl-2-pentanone	ND	15	3.1	ug/Kg	1	02/25/23	JLI	SW8260C
Acetone	ND	31	3.1	ug/Kg	1	02/25/23	JLI	SW8260C
Acrolein	ND	0.47	0.47	ug/Kg	1	02/25/23	JLI	SW8260C
Acrylonitrile	ND	6.1	0.31	ug/Kg	1	02/25/23	JLI	SW8260C
Benzene	ND	3.1	0.31	ug/Kg	1	02/25/23	JLI	SW8260C
Bromochloromethane	ND	3.1	0.31	ug/Kg	1	02/25/23	JLI	SW8260C
Bromodichloromethane	ND	3.1	0.61	ug/Kg	1	02/25/23	JLI	SW8260C
Bromoform	ND	3.1	0.61	ug/Kg	1	02/25/23	JLI	SW8260C
Bromomethane	ND	3.1	1.2	ug/Kg	1	02/25/23	JLI	SW8260C
Carbon Disulfide	ND	3.1	0.61	ug/Kg	1	02/25/23	JLI	SW8260C
Carbon tetrachloride	ND	3.1	0.61	ug/Kg	1	02/25/23	JLI	SW8260C
Chlorobenzene	ND	3.1	0.31	ug/Kg	1	02/25/23	JLI	SW8260C
Chloroethane	ND	3.1	0.31	ug/Kg	1	02/25/23	JLI	SW8260C
Chloroform	ND	3.1	0.31	ug/Kg	1	02/25/23	JLI	SW8260C
Chloromethane	ND	3.1	0.61	ug/Kg	1	02/25/23	JLI	SW8260C
cis-1,2-Dichloroethene	ND	3.1	0.31	ug/Kg	1	02/25/23	JLI	SW8260C
cis-1,3-Dichloropropene	ND	3.1	0.31	ug/Kg	1	02/25/23	JLI	SW8260C
Cyclohexane	ND	3.1	0.61	ug/Kg	1	02/25/23	JLI	SW8260C
Dibromochloromethane	ND	3.1	0.61	ug/Kg	1	02/25/23	JLI	SW8260C
Dichlorodifluoromethane	ND	3.1	0.31	ug/Kg	1	02/25/23	JLI	SW8260C
Ethylbenzene	ND	3.1	0.31	ug/Kg	1	02/25/23	JLI	SW8260C
Isopropylbenzene	ND	3.1	0.31	ug/Kg	1	02/25/23	JLI	SW8260C
m&p-Xylene	ND	3.1	0.61	ug/Kg	1	02/25/23	JLI	SW8260C
Methyl ethyl ketone	ND	18	3.1	ug/Kg	1	02/25/23	JLI	SW8260C
Methyl t-butyl ether (MTBE)	ND	6.1	0.61	ug/Kg	1	02/25/23	JLI	SW8260C
Methylacetate	ND	6.1	6.1	ug/Kg	1	02/25/23	JLI	SW8260C
Methylcyclohexane	ND	3.1	0.61	ug/Kg	1	02/25/23	JLI	SW8260C
Methylene chloride	ND	3.1	3.1	ug/Kg	1	02/25/23	JLI	SW8260C
o-Xylene	ND	3.1	0.61	ug/Kg	1	02/25/23	JLI	SW8260C
Styrene	ND	3.1	0.31	ug/Kg	1	02/25/23	JLI	SW8260C
tert-butyl alcohol	ND	61	12	ug/Kg	1	02/25/23	JLI	SW8260C
Tetrachloroethene	ND	3.1	0.61	ug/Kg	1	02/25/23	JLI	SW8260C
Toluene	ND	3.1	0.31	ug/Kg	1	02/25/23	JLI	SW8260C
Total Xylenes	ND	3.1	3.1	ug/Kg	1	02/25/23	JLI	SW8260C
trans-1,2-Dichloroethene	ND	3.1	0.31	ug/Kg	1	02/25/23	JLI	SW8260C
trans-1,3-Dichloropropene	ND	3.1	0.31	ug/Kg	1	02/25/23	JLI	SW8260C
Trichloroethene	ND	3.1	0.31	ug/Kg	1	02/25/23	JLI	SW8260C
Trichlorofluoromethane	ND	3.1	0.61	ug/Kg	1	02/25/23	JLI	SW8260C
Trichlorotrifluoroethane	ND	3.1	0.31	ug/Kg	1	02/25/23	JLI	SW8260C
Vinyl chloride	ND	3.1	0.31	ug/Kg	1	02/25/23	JLI	SW8260C

Project ID: IRRC BLUESTONE

Client ID: IRRC BLUESTONE 1B (GRAB)

Phoenix I.D.: CN49339

Parameter	Result	RL/ PQL	LOD/ MDL	Units	Dilution	Date/Time	By	Reference
QA/QC Surrogates								
% 1,2-dichlorobenzene-d4	99			%	1	02/25/23	JLI	70 - 130 %
% Bromofluorobenzene	95			%	1	02/25/23	JLI	70 - 130 %
% Dibromofluoromethane	92			%	1	02/25/23	JLI	70 - 130 %
% Toluene-d8	99			%	1	02/25/23	JLI	70 - 130 %
Vinyl Acetate	ND	31	31	ug/Kg	1	02/25/23	JLI	SW8260C

RL/PQL=Reporting/Practical Quantitation Level (Equivalent to NELAC LOQ, Limit of Quantitation) ND=Not Detected BRL=Below Reporting Level L=Biased Low LOD=Limit of Detection MDL=Method Detection Limit1
QA/QC Surrogates: Surrogates are compounds (preceeded with a %) added by the lab to determine analysis efficiency. Surrogate results(%) listed in the report are not "detected" compounds.

Comments:

Results are reported on an ``as received`` basis, and are not corrected for dry weight.

Volatile Comment:
To achieve client's objectives, where the lowest calibration standard or LOD justifies lowering the RL/PQL, the RL/PQL of some compounds have been lowered to meet criteria.

All soils, solids and sludges are reported on a dry weight basis unless otherwise noted in the sample comments.

If you are the client above and have any questions concerning this testing, please do not hesitate to contact Phoenix Client Services at ext.200.
The contents of this report cannot be discussed with anyone other than the client listed above without their written consent.

Phyllis Shiller, Laboratory Director

March 12, 2023

Reviewed and Released by: Maryam Taylor, Project Manager

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587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

ACCREDITED IN ACCORDANCE WITH nelac NY # 11301

Analysis Report

March 12, 2023

FOR: Attn: Mr. Jeff Bogoian
Impact Consulting
170 Keyland Court
Bohemia NY 11716

Sample Information		Custody Information		Date	Time
Matrix:	SOIL	Collected by:	SR	02/24/23	8:10
Location Code:	IMPACTJB-IEC	Received by:	CP	02/24/23	17:38
Rush Request:	72 Hour	Analyzed by:	see "By" below		
P.O.#:					

Laboratory Data

SDG ID: GCN49338
Phoenix ID: CN49340

Project ID: IRRC BLUESTONE
Client ID: IRRC BLUESTONE 1C (GRAB)

Parameter	Result	RL/ PQL	LOD/ MDL	Units	Dilution	Date/Time	By	Reference
Volatiles								
1,2,4-Trimethylbenzene	ND	2.9	0.29	ug/Kg	1	02/25/23	JLI	SW8260C
1,3,5-Trimethylbenzene	ND	2.9	0.29	ug/Kg	1	02/25/23	JLI	SW8260C
1,3-Dichlorobenzene	ND	2.9	0.29	ug/Kg	1	02/25/23	JLI	SW8260C
Naphthalene	ND	2.9	0.57	ug/Kg	1	02/25/23	JLI	SW8260C
n-Butylbenzene	ND	2.9	0.29	ug/Kg	1	02/25/23	JLI	SW8260C
n-Propylbenzene	ND	2.9	0.57	ug/Kg	1	02/25/23	JLI	SW8260C
p-Isopropyltoluene	ND	2.9	0.29	ug/Kg	1	02/25/23	JLI	SW8260C
sec-Butylbenzene	ND	2.9	0.29	ug/Kg	1	02/25/23	JLI	SW8260C
tert-Butylbenzene	ND	2.9	0.29	ug/Kg	1	02/25/23	JLI	SW8260C
QA/QC Surrogates								
% 1,2-dichlorobenzene-d4	99			%	1	02/25/23	JLI	70 - 130 %
% Bromofluorobenzene	96			%	1	02/25/23	JLI	70 - 130 %
% Dibromofluoromethane	92			%	1	02/25/23	JLI	70 - 130 %
% Toluene-d8	100			%	1	02/25/23	JLI	70 - 130 %
1,4-dioxane								
1,4-dioxane	ND	43	23	ug/kg	1	02/25/23	JLI	SW8260C
Volatiles								
1,1,1,2-Tetrachloroethane	ND	2.9	0.57	ug/Kg	1	02/25/23	JLI	SW8260C
1,1,1-Trichloroethane	ND	2.9	0.29	ug/Kg	1	02/25/23	JLI	SW8260C
1,1,2,2-Tetrachloroethane	ND	2.9	0.57	ug/Kg	1	02/25/23	JLI	SW8260C
1,1,2-Trichloroethane	ND	2.9	0.57	ug/Kg	1	02/25/23	JLI	SW8260C
1,1-Dichloroethane	ND	2.9	0.57	ug/Kg	1	02/25/23	JLI	SW8260C
1,1-Dichloroethene	ND	2.9	0.29	ug/Kg	1	02/25/23	JLI	SW8260C
1,2,3-Trichlorobenzene	ND	2.9	0.57	ug/Kg	1	02/25/23	JLI	SW8260C

Project ID: IRRC BLUESTONE

Client ID: IRRC BLUESTONE 1C (GRAB)

Phoenix I.D.: CN49340

Parameter	Result		RL/ PQL	LOD/ MDL	Units	Dilution	Date/Time	By	Reference
1,2,4-Trichlorobenzene	ND		2.9	0.57	ug/Kg	1	02/25/23	JLI	SW8260C
1,2-Dibromo-3-chloropropane	ND		2.9	0.57	ug/Kg	1	02/25/23	JLI	SW8260C
1,2-Dibromoethane	ND		1.2	0.29	ug/Kg	1	02/25/23	JLI	SW8260C
1,2-Dichlorobenzene	ND		2.9	0.29	ug/Kg	1	02/25/23	JLI	SW8260C
1,2-Dichloroethane	ND		2.9	0.29	ug/Kg	1	02/25/23	JLI	SW8260C
1,2-Dichloropropane	ND		2.9	0.57	ug/Kg	1	02/25/23	JLI	SW8260C
1,3-Dichlorobenzene	ND		2.9	0.29	ug/Kg	1	02/25/23	JLI	SW8260C
1,4-Dichlorobenzene	ND		2.9	0.29	ug/Kg	1	02/25/23	JLI	SW8260C
2-Hexanone	ND		14	2.9	ug/Kg	1	02/25/23	JLI	SW8260C
4-Methyl-2-pentanone	ND		14	2.9	ug/Kg	1	02/25/23	JLI	SW8260C
Acetone	2.9	JS	29	2.9	ug/Kg	1	02/25/23	JLI	SW8260C
Acrolein	ND		0.47	0.47	ug/Kg	1	02/25/23	JLI	SW8260C
Acrylonitrile	ND		5.7	0.29	ug/Kg	1	02/25/23	JLI	SW8260C
Benzene	ND		2.9	0.29	ug/Kg	1	02/25/23	JLI	SW8260C
Bromochloromethane	ND		2.9	0.29	ug/Kg	1	02/25/23	JLI	SW8260C
Bromodichloromethane	ND		2.9	0.57	ug/Kg	1	02/25/23	JLI	SW8260C
Bromoform	ND		2.9	0.57	ug/Kg	1	02/25/23	JLI	SW8260C
Bromomethane	ND		2.9	1.1	ug/Kg	1	02/25/23	JLI	SW8260C
Carbon Disulfide	ND		2.9	0.57	ug/Kg	1	02/25/23	JLI	SW8260C
Carbon tetrachloride	ND		2.9	0.57	ug/Kg	1	02/25/23	JLI	SW8260C
Chlorobenzene	ND		2.9	0.29	ug/Kg	1	02/25/23	JLI	SW8260C
Chloroethane	ND		2.9	0.29	ug/Kg	1	02/25/23	JLI	SW8260C
Chloroform	ND		2.9	0.29	ug/Kg	1	02/25/23	JLI	SW8260C
Chloromethane	ND		2.9	0.57	ug/Kg	1	02/25/23	JLI	SW8260C
cis-1,2-Dichloroethene	ND		2.9	0.29	ug/Kg	1	02/25/23	JLI	SW8260C
cis-1,3-Dichloropropene	ND		2.9	0.29	ug/Kg	1	02/25/23	JLI	SW8260C
Cyclohexane	ND		2.9	0.57	ug/Kg	1	02/25/23	JLI	SW8260C
Dibromochloromethane	ND		2.9	0.57	ug/Kg	1	02/25/23	JLI	SW8260C
Dichlorodifluoromethane	ND		2.9	0.29	ug/Kg	1	02/25/23	JLI	SW8260C
Ethylbenzene	ND		2.9	0.29	ug/Kg	1	02/25/23	JLI	SW8260C
Isopropylbenzene	ND		2.9	0.29	ug/Kg	1	02/25/23	JLI	SW8260C
m&p-Xylene	ND		2.9	0.57	ug/Kg	1	02/25/23	JLI	SW8260C
Methyl ethyl ketone	ND		17	2.9	ug/Kg	1	02/25/23	JLI	SW8260C
Methyl t-butyl ether (MTBE)	ND		5.7	0.57	ug/Kg	1	02/25/23	JLI	SW8260C
Methylacetate	ND		5.7	5.7	ug/Kg	1	02/25/23	JLI	SW8260C
Methylcyclohexane	ND		2.9	0.57	ug/Kg	1	02/25/23	JLI	SW8260C
Methylene chloride	ND		2.9	2.9	ug/Kg	1	02/25/23	JLI	SW8260C
o-Xylene	ND		2.9	0.57	ug/Kg	1	02/25/23	JLI	SW8260C
Styrene	ND		2.9	0.29	ug/Kg	1	02/25/23	JLI	SW8260C
tert-butyl alcohol	ND		57	11	ug/Kg	1	02/25/23	JLI	SW8260C
Tetrachloroethene	ND		2.9	0.57	ug/Kg	1	02/25/23	JLI	SW8260C
Toluene	ND		2.9	0.29	ug/Kg	1	02/25/23	JLI	SW8260C
Total Xylenes	ND		2.9	2.9	ug/Kg	1	02/25/23	JLI	SW8260C
trans-1,2-Dichloroethene	ND		2.9	0.29	ug/Kg	1	02/25/23	JLI	SW8260C
trans-1,3-Dichloropropene	ND		2.9	0.29	ug/Kg	1	02/25/23	JLI	SW8260C
Trichloroethene	ND		2.9	0.29	ug/Kg	1	02/25/23	JLI	SW8260C
Trichlorofluoromethane	ND		2.9	0.57	ug/Kg	1	02/25/23	JLI	SW8260C
Trichlorotrifluoroethane	ND		2.9	0.29	ug/Kg	1	02/25/23	JLI	SW8260C
Vinyl chloride	ND		2.9	0.29	ug/Kg	1	02/25/23	JLI	SW8260C

Project ID: IRRC BLUESTONE

Client ID: IRRC BLUESTONE 1C (GRAB)

Phoenix I.D.: CN49340

Parameter	Result	RL/ PQL	LOD/ MDL	Units	Dilution	Date/Time	By	Reference
QA/QC Surrogates								
% 1,2-dichlorobenzene-d4	99			%	1	02/25/23	JLI	70 - 130 %
% Bromofluorobenzene	96			%	1	02/25/23	JLI	70 - 130 %
% Dibromofluoromethane	92			%	1	02/25/23	JLI	70 - 130 %
% Toluene-d8	100			%	1	02/25/23	JLI	70 - 130 %
Vinyl Acetate	ND	29	29	ug/Kg	1	02/25/23	JLI	SW8260C

RL/PQL=Reporting/Practical Quantitation Level (Equivalent to NELAC LOQ, Limit of Quantitation) ND=Not Detected BRL=Below Reporting Level L=Biased Low J=Estimated Below RL LOD=Limit of Detection MDL=Method Detection Limit1
QA/QC Surrogates: Surrogates are compounds (preceeded with a %) added by the lab to determine analysis efficiency. Surrogate results(%) listed in the report are not "detected" compounds.

Comments:

Results are reported on an ``as received`` basis, and are not corrected for dry weight.

Volatile Comment:
To achieve client's objectives, where the lowest calibration standard or LOD justifies lowering the RL/PQL, the RL/PQL of some compounds have been lowered to meet criteria.

All soils, solids and sludges are reported on a dry weight basis unless otherwise noted in the sample comments.

S - Laboratory solvent, contamination is possible.

If you are the client above and have any questions concerning this testing, please do not hesitate to contact Phoenix Client Services at ext.200.
The contents of this report cannot be discussed with anyone other than the client listed above without their written consent.

Phyllis Shiller, Laboratory Director

March 12, 2023

Reviewed and Released by: Maryam Taylor, Project Manager

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ACCREDITED IN ACCORDANCE WITH nelac NY # 11301

Analysis Report

March 12, 2023

FOR: Attn: Mr. Jeff Bogoian
Impact Consulting
170 Keyland Court
Bohemia NY 11716

Sample Information		Custody Information		Date	Time
Matrix:	SOIL	Collected by:	SR	02/24/23	8:15
Location Code:	IMPACTJB-IEC	Received by:	CP	02/24/23	17:38
Rush Request:	72 Hour	Analyzed by:	see "By" below		
P.O.#:					

Laboratory Data

SDG ID: GCN49338
Phoenix ID: CN49341

Project ID: IRRC BLUESTONE
Client ID: IRRC BLUESTONE 2A (GRAB)

Parameter	Result	RL/ PQL	LOD/ MDL	Units	Dilution	Date/Time	By	Reference
Volatiles								
1,2,4-Trimethylbenzene	ND	3.0	0.30	ug/Kg	1	02/25/23	JLI	SW8260C
1,3,5-Trimethylbenzene	ND	3.0	0.30	ug/Kg	1	02/25/23	JLI	SW8260C
1,3-Dichlorobenzene	ND	3.0	0.30	ug/Kg	1	02/25/23	JLI	SW8260C
Naphthalene	ND	3.0	0.59	ug/Kg	1	02/25/23	JLI	SW8260C
n-Butylbenzene	ND	3.0	0.30	ug/Kg	1	02/25/23	JLI	SW8260C
n-Propylbenzene	ND	3.0	0.59	ug/Kg	1	02/25/23	JLI	SW8260C
p-Isopropyltoluene	ND	3.0	0.30	ug/Kg	1	02/25/23	JLI	SW8260C
sec-Butylbenzene	ND	3.0	0.30	ug/Kg	1	02/25/23	JLI	SW8260C
tert-Butylbenzene	ND	3.0	0.30	ug/Kg	1	02/25/23	JLI	SW8260C
QA/QC Surrogates								
% 1,2-dichlorobenzene-d4	99			%	1	02/25/23	JLI	70 - 130 %
% Bromofluorobenzene	95			%	1	02/25/23	JLI	70 - 130 %
% Dibromofluoromethane	94			%	1	02/25/23	JLI	70 - 130 %
% Toluene-d8	100			%	1	02/25/23	JLI	70 - 130 %
1,4-dioxane								
1,4-dioxane	ND	44	24	ug/kg	1	02/25/23	JLI	SW8260C
Volatiles								
1,1,1,2-Tetrachloroethane	ND	3.0	0.59	ug/Kg	1	02/25/23	JLI	SW8260C
1,1,1-Trichloroethane	ND	3.0	0.30	ug/Kg	1	02/25/23	JLI	SW8260C
1,1,2,2-Tetrachloroethane	ND	3.0	0.59	ug/Kg	1	02/25/23	JLI	SW8260C
1,1,2-Trichloroethane	ND	3.0	0.59	ug/Kg	1	02/25/23	JLI	SW8260C
1,1-Dichloroethane	ND	3.0	0.59	ug/Kg	1	02/25/23	JLI	SW8260C
1,1-Dichloroethene	ND	3.0	0.30	ug/Kg	1	02/25/23	JLI	SW8260C
1,2,3-Trichlorobenzene	ND	3.0	0.59	ug/Kg	1	02/25/23	JLI	SW8260C

Project ID: IRRC BLUESTONE

Client ID: IRRC BLUESTONE 2A (GRAB)

Phoenix I.D.: CN49341

Parameter	Result	RL/ PQL	LOD/ MDL	Units	Dilution	Date/Time	By	Reference
1,2,4-Trichlorobenzene	ND	3.0	0.59	ug/Kg	1	02/25/23	JLI	SW8260C
1,2-Dibromo-3-chloropropane	ND	3.0	0.59	ug/Kg	1	02/25/23	JLI	SW8260C
1,2-Dibromoethane	ND	1.2	0.30	ug/Kg	1	02/25/23	JLI	SW8260C
1,2-Dichlorobenzene	ND	3.0	0.30	ug/Kg	1	02/25/23	JLI	SW8260C
1,2-Dichloroethane	ND	3.0	0.30	ug/Kg	1	02/25/23	JLI	SW8260C
1,2-Dichloropropane	ND	3.0	0.59	ug/Kg	1	02/25/23	JLI	SW8260C
1,3-Dichlorobenzene	ND	3.0	0.30	ug/Kg	1	02/25/23	JLI	SW8260C
1,4-Dichlorobenzene	ND	3.0	0.30	ug/Kg	1	02/25/23	JLI	SW8260C
2-Hexanone	ND	15	3.0	ug/Kg	1	02/25/23	JLI	SW8260C
4-Methyl-2-pentanone	ND	15	3.0	ug/Kg	1	02/25/23	JLI	SW8260C
Acetone	ND	30	3.0	ug/Kg	1	02/25/23	JLI	SW8260C
Acrolein	ND	0.47	0.47	ug/Kg	1	02/25/23	JLI	SW8260C
Acrylonitrile	ND	5.9	0.30	ug/Kg	1	02/25/23	JLI	SW8260C
Benzene	ND	3.0	0.30	ug/Kg	1	02/25/23	JLI	SW8260C
Bromochloromethane	ND	3.0	0.30	ug/Kg	1	02/25/23	JLI	SW8260C
Bromodichloromethane	ND	3.0	0.59	ug/Kg	1	02/25/23	JLI	SW8260C
Bromoform	ND	3.0	0.59	ug/Kg	1	02/25/23	JLI	SW8260C
Bromomethane	ND	3.0	1.2	ug/Kg	1	02/25/23	JLI	SW8260C
Carbon Disulfide	ND	3.0	0.59	ug/Kg	1	02/25/23	JLI	SW8260C
Carbon tetrachloride	ND	3.0	0.59	ug/Kg	1	02/25/23	JLI	SW8260C
Chlorobenzene	ND	3.0	0.30	ug/Kg	1	02/25/23	JLI	SW8260C
Chloroethane	ND	3.0	0.30	ug/Kg	1	02/25/23	JLI	SW8260C
Chloroform	ND	3.0	0.30	ug/Kg	1	02/25/23	JLI	SW8260C
Chloromethane	ND	3.0	0.59	ug/Kg	1	02/25/23	JLI	SW8260C
cis-1,2-Dichloroethene	ND	3.0	0.30	ug/Kg	1	02/25/23	JLI	SW8260C
cis-1,3-Dichloropropene	ND	3.0	0.30	ug/Kg	1	02/25/23	JLI	SW8260C
Cyclohexane	ND	3.0	0.59	ug/Kg	1	02/25/23	JLI	SW8260C
Dibromochloromethane	ND	3.0	0.59	ug/Kg	1	02/25/23	JLI	SW8260C
Dichlorodifluoromethane	ND	3.0	0.30	ug/Kg	1	02/25/23	JLI	SW8260C
Ethylbenzene	ND	3.0	0.30	ug/Kg	1	02/25/23	JLI	SW8260C
Isopropylbenzene	ND	3.0	0.30	ug/Kg	1	02/25/23	JLI	SW8260C
m&p-Xylene	ND	3.0	0.59	ug/Kg	1	02/25/23	JLI	SW8260C
Methyl ethyl ketone	ND	18	3.0	ug/Kg	1	02/25/23	JLI	SW8260C
Methyl t-butyl ether (MTBE)	ND	5.9	0.59	ug/Kg	1	02/25/23	JLI	SW8260C
Methylacetate	ND	5.9	5.9	ug/Kg	1	02/25/23	JLI	SW8260C
Methylcyclohexane	ND	3.0	0.59	ug/Kg	1	02/25/23	JLI	SW8260C
Methylene chloride	ND	3.0	3.0	ug/Kg	1	02/25/23	JLI	SW8260C
o-Xylene	ND	3.0	0.59	ug/Kg	1	02/25/23	JLI	SW8260C
Styrene	ND	3.0	0.30	ug/Kg	1	02/25/23	JLI	SW8260C
tert-butyl alcohol	ND	59	12	ug/Kg	1	02/25/23	JLI	SW8260C
Tetrachloroethene	ND	3.0	0.59	ug/Kg	1	02/25/23	JLI	SW8260C
Toluene	ND	3.0	0.30	ug/Kg	1	02/25/23	JLI	SW8260C
Total Xylenes	ND	3.0	3.0	ug/Kg	1	02/25/23	JLI	SW8260C
trans-1,2-Dichloroethene	ND	3.0	0.30	ug/Kg	1	02/25/23	JLI	SW8260C
trans-1,3-Dichloropropene	ND	3.0	0.30	ug/Kg	1	02/25/23	JLI	SW8260C
Trichloroethene	ND	3.0	0.30	ug/Kg	1	02/25/23	JLI	SW8260C
Trichlorofluoromethane	ND	3.0	0.59	ug/Kg	1	02/25/23	JLI	SW8260C
Trichlorotrifluoroethane	ND	3.0	0.30	ug/Kg	1	02/25/23	JLI	SW8260C
Vinyl chloride	ND	3.0	0.30	ug/Kg	1	02/25/23	JLI	SW8260C

Project ID: IRRC BLUESTONE

Client ID: IRRC BLUESTONE 2A (GRAB)

Phoenix I.D.: CN49341

Parameter	Result	RL/ PQL	LOD/ MDL	Units	Dilution	Date/Time	By	Reference
QA/QC Surrogates								
% 1,2-dichlorobenzene-d4	99			%	1	02/25/23	JLI	70 - 130 %
% Bromofluorobenzene	95			%	1	02/25/23	JLI	70 - 130 %
% Dibromofluoromethane	94			%	1	02/25/23	JLI	70 - 130 %
% Toluene-d8	100			%	1	02/25/23	JLI	70 - 130 %
Vinyl Acetate	ND	30	30	ug/Kg	1	02/25/23	JLI	SW8260C

RL/PQL=Reporting/Practical Quantitation Level (Equivalent to NELAC LOQ, Limit of Quantitation) ND=Not Detected BRL=Below Reporting Level L=Biased Low LOD=Limit of Detection MDL=Method Detection Limit1
QA/QC Surrogates: Surrogates are compounds (preceeded with a %) added by the lab to determine analysis efficiency. Surrogate results(%) listed in the report are not "detected" compounds.

Comments:

Results are reported on an ``as received`` basis, and are not corrected for dry weight.

Volatile Comment:
To achieve client's objectives, where the lowest calibration standard or LOD justifies lowering the RL/PQL, the RL/PQL of some compounds have been lowered to meet criteria.

All soils, solids and sludges are reported on a dry weight basis unless otherwise noted in the sample comments.

If you are the client above and have any questions concerning this testing, please do not hesitate to contact Phoenix Client Services at ext.200.
The contents of this report cannot be discussed with anyone other than the client listed above without their written consent.

Phyllis Shiller, Laboratory Director

March 12, 2023

Reviewed and Released by: Maryam Taylor, Project Manager

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587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

ACCREDITED IN ACCORDANCE WITH nelac NY # 11301

Analysis Report

March 12, 2023

FOR: Attn: Mr. Jeff Bogoian
Impact Consulting
170 Keyland Court
Bohemia NY 11716

Sample Information		Custody Information		Date	Time
Matrix:	SOIL	Collected by:	SR	02/24/23	8:20
Location Code:	IMPACTJB-IEC	Received by:	CP	02/24/23	17:38
Rush Request:	72 Hour	Analyzed by:	see "By" below		
P.O.#:					

Laboratory Data

SDG ID: GCN49338
Phoenix ID: CN49342

Project ID: IRRC BLUESTONE
Client ID: IRRC BLUESTONE 2B (GRAB)

Parameter	Result	RL/ PQL	LOD/ MDL	Units	Dilution	Date/Time	By	Reference
Volatiles								
1,2,4-Trimethylbenzene	ND	3.9	0.39	ug/Kg	1	02/25/23	JLI	SW8260C
1,3,5-Trimethylbenzene	ND	3.9	0.39	ug/Kg	1	02/25/23	JLI	SW8260C
1,3-Dichlorobenzene	ND	3.9	0.39	ug/Kg	1	02/25/23	JLI	SW8260C
Naphthalene	ND	3.9	0.77	ug/Kg	1	02/25/23	JLI	SW8260C
n-Butylbenzene	ND	3.9	0.39	ug/Kg	1	02/25/23	JLI	SW8260C
n-Propylbenzene	ND	3.9	0.77	ug/Kg	1	02/25/23	JLI	SW8260C
p-Isopropyltoluene	ND	3.9	0.39	ug/Kg	1	02/25/23	JLI	SW8260C
sec-Butylbenzene	ND	3.9	0.39	ug/Kg	1	02/25/23	JLI	SW8260C
tert-Butylbenzene	ND	3.9	0.39	ug/Kg	1	02/25/23	JLI	SW8260C
QA/QC Surrogates								
% 1,2-dichlorobenzene-d4	99			%	1	02/25/23	JLI	70 - 130 %
% Bromofluorobenzene	95			%	1	02/25/23	JLI	70 - 130 %
% Dibromofluoromethane	91			%	1	02/25/23	JLI	70 - 130 %
% Toluene-d8	100			%	1	02/25/23	JLI	70 - 130 %
1,4-dioxane								
1,4-dioxane	ND	58	31	ug/kg	1	02/25/23	JLI	SW8260C
Volatiles								
1,1,1,2-Tetrachloroethane	ND	3.9	0.77	ug/Kg	1	02/25/23	JLI	SW8260C
1,1,1-Trichloroethane	ND	3.9	0.39	ug/Kg	1	02/25/23	JLI	SW8260C
1,1,2,2-Tetrachloroethane	ND	3.9	0.77	ug/Kg	1	02/25/23	JLI	SW8260C
1,1,2-Trichloroethane	ND	3.9	0.77	ug/Kg	1	02/25/23	JLI	SW8260C
1,1-Dichloroethane	ND	3.9	0.77	ug/Kg	1	02/25/23	JLI	SW8260C
1,1-Dichloroethene	ND	3.9	0.39	ug/Kg	1	02/25/23	JLI	SW8260C
1,2,3-Trichlorobenzene	ND	3.9	0.77	ug/Kg	1	02/25/23	JLI	SW8260C

Project ID: IRRC BLUESTONE

Client ID: IRRC BLUESTONE 2B (GRAB)

Phoenix I.D.: CN49342

Parameter	Result	RL/ PQL	LOD/ MDL	Units	Dilution	Date/Time	By	Reference
1,2,4-Trichlorobenzene	ND	3.9	0.77	ug/Kg	1	02/25/23	JLI	SW8260C
1,2-Dibromo-3-chloropropane	ND	3.9	0.77	ug/Kg	1	02/25/23	JLI	SW8260C
1,2-Dibromoethane	ND	1.2	0.39	ug/Kg	1	02/25/23	JLI	SW8260C
1,2-Dichlorobenzene	ND	3.9	0.39	ug/Kg	1	02/25/23	JLI	SW8260C
1,2-Dichloroethane	ND	3.9	0.39	ug/Kg	1	02/25/23	JLI	SW8260C
1,2-Dichloropropane	ND	3.9	0.77	ug/Kg	1	02/25/23	JLI	SW8260C
1,3-Dichlorobenzene	ND	3.9	0.39	ug/Kg	1	02/25/23	JLI	SW8260C
1,4-Dichlorobenzene	ND	3.9	0.39	ug/Kg	1	02/25/23	JLI	SW8260C
2-Hexanone	ND	19	3.9	ug/Kg	1	02/25/23	JLI	SW8260C
4-Methyl-2-pentanone	ND	19	3.9	ug/Kg	1	02/25/23	JLI	SW8260C
Acetone	ND	39	3.9	ug/Kg	1	02/25/23	JLI	SW8260C
Acrolein	ND	0.47	0.47	ug/Kg	1	02/25/23	JLI	SW8260C
Acrylonitrile	ND	7.7	0.39	ug/Kg	1	02/25/23	JLI	SW8260C
Benzene	ND	3.9	0.39	ug/Kg	1	02/25/23	JLI	SW8260C
Bromochloromethane	ND	3.9	0.39	ug/Kg	1	02/25/23	JLI	SW8260C
Bromodichloromethane	ND	3.9	0.77	ug/Kg	1	02/25/23	JLI	SW8260C
Bromoform	ND	3.9	0.77	ug/Kg	1	02/25/23	JLI	SW8260C
Bromomethane	ND	3.9	1.5	ug/Kg	1	02/25/23	JLI	SW8260C
Carbon Disulfide	ND	3.9	0.77	ug/Kg	1	02/25/23	JLI	SW8260C
Carbon tetrachloride	ND	3.9	0.77	ug/Kg	1	02/25/23	JLI	SW8260C
Chlorobenzene	ND	3.9	0.39	ug/Kg	1	02/25/23	JLI	SW8260C
Chloroethane	ND	3.9	0.39	ug/Kg	1	02/25/23	JLI	SW8260C
Chloroform	ND	3.9	0.39	ug/Kg	1	02/25/23	JLI	SW8260C
Chloromethane	ND	3.9	0.77	ug/Kg	1	02/25/23	JLI	SW8260C
cis-1,2-Dichloroethene	ND	3.9	0.39	ug/Kg	1	02/25/23	JLI	SW8260C
cis-1,3-Dichloropropene	ND	3.9	0.39	ug/Kg	1	02/25/23	JLI	SW8260C
Cyclohexane	ND	3.9	0.77	ug/Kg	1	02/25/23	JLI	SW8260C
Dibromochloromethane	ND	3.9	0.77	ug/Kg	1	02/25/23	JLI	SW8260C
Dichlorodifluoromethane	ND	3.9	0.39	ug/Kg	1	02/25/23	JLI	SW8260C
Ethylbenzene	ND	3.9	0.39	ug/Kg	1	02/25/23	JLI	SW8260C
Isopropylbenzene	ND	3.9	0.39	ug/Kg	1	02/25/23	JLI	SW8260C
m&p-Xylene	ND	3.9	0.77	ug/Kg	1	02/25/23	JLI	SW8260C
Methyl ethyl ketone	ND	23	3.9	ug/Kg	1	02/25/23	JLI	SW8260C
Methyl t-butyl ether (MTBE)	ND	7.7	0.77	ug/Kg	1	02/25/23	JLI	SW8260C
Methylacetate	ND	7.7	7.7	ug/Kg	1	02/25/23	JLI	SW8260C
Methylcyclohexane	ND	3.9	0.77	ug/Kg	1	02/25/23	JLI	SW8260C
Methylene chloride	ND	3.9	3.9	ug/Kg	1	02/25/23	JLI	SW8260C
o-Xylene	ND	3.9	0.77	ug/Kg	1	02/25/23	JLI	SW8260C
Styrene	ND	3.9	0.39	ug/Kg	1	02/25/23	JLI	SW8260C
tert-butyl alcohol	ND	77	15	ug/Kg	1	02/25/23	JLI	SW8260C
Tetrachloroethene	ND	3.9	0.77	ug/Kg	1	02/25/23	JLI	SW8260C
Toluene	ND	3.9	0.39	ug/Kg	1	02/25/23	JLI	SW8260C
Total Xylenes	ND	3.9	3.9	ug/Kg	1	02/25/23	JLI	SW8260C
trans-1,2-Dichloroethene	ND	3.9	0.39	ug/Kg	1	02/25/23	JLI	SW8260C
trans-1,3-Dichloropropene	ND	3.9	0.39	ug/Kg	1	02/25/23	JLI	SW8260C
Trichloroethene	ND	3.9	0.39	ug/Kg	1	02/25/23	JLI	SW8260C
Trichlorofluoromethane	ND	3.9	0.77	ug/Kg	1	02/25/23	JLI	SW8260C
Trichlorotrifluoroethane	ND	3.9	0.39	ug/Kg	1	02/25/23	JLI	SW8260C
Vinyl chloride	ND	3.9	0.39	ug/Kg	1	02/25/23	JLI	SW8260C

Project ID: IRRC BLUESTONE

Client ID: IRRC BLUESTONE 2B (GRAB)

Phoenix I.D.: CN49342

Parameter	Result	RL/ PQL	LOD/ MDL	Units	Dilution	Date/Time	By	Reference
QA/QC Surrogates								
% 1,2-dichlorobenzene-d4	99			%	1	02/25/23	JLI	70 - 130 %
% Bromofluorobenzene	95			%	1	02/25/23	JLI	70 - 130 %
% Dibromofluoromethane	91			%	1	02/25/23	JLI	70 - 130 %
% Toluene-d8	100			%	1	02/25/23	JLI	70 - 130 %
Vinyl Acetate	ND	39	39	ug/Kg	1	02/25/23	JLI	SW8260C

RL/PQL=Reporting/Practical Quantitation Level (Equivalent to NELAC LOQ, Limit of Quantitation) ND=Not Detected BRL=Below Reporting Level L=Biased Low LOD=Limit of Detection MDL=Method Detection Limit1
QA/QC Surrogates: Surrogates are compounds (preceeded with a %) added by the lab to determine analysis efficiency. Surrogate results(%) listed in the report are not "detected" compounds.

Comments:

Results are reported on an ``as received`` basis, and are not corrected for dry weight.

Volatile Comment:
To achieve client's objectives, where the lowest calibration standard or LOD justifies lowering the RL/PQL, the RL/PQL of some compounds have been lowered to meet criteria.

All soils, solids and sludges are reported on a dry weight basis unless otherwise noted in the sample comments.

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Phyllis Shiller, Laboratory Director

March 12, 2023

Reviewed and Released by: Maryam Taylor, Project Manager

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Tel. (860) 645-1102 Fax (860) 645-0823

ACCREDITED IN ACCORDANCE WITH nelac NY # 11301

Analysis Report

March 12, 2023

FOR: Attn: Mr. Jeff Bogoian
Impact Consulting
170 Keyland Court
Bohemia NY 11716

Sample Information		Custody Information		Date	Time
Matrix:	SOIL	Collected by:	SR	02/24/23	8:25
Location Code:	IMPACTJB-IEC	Received by:	CP	02/24/23	17:38
Rush Request:	72 Hour	Analyzed by:	see "By" below		
P.O.#:					

Laboratory Data

SDG ID: GCN49338
Phoenix ID: CN49343

Project ID: IRRC BLUESTONE
Client ID: IRRC BLUESTONE 2C (GRAB)

Parameter	Result	RL/ PQL	LOD/ MDL	Units	Dilution	Date/Time	By	Reference
Volatiles								
1,2,4-Trimethylbenzene	ND	3.7	0.37	ug/Kg	1	02/25/23	JLI	SW8260C
1,3,5-Trimethylbenzene	ND	3.7	0.37	ug/Kg	1	02/25/23	JLI	SW8260C
1,3-Dichlorobenzene	ND	3.7	0.37	ug/Kg	1	02/25/23	JLI	SW8260C
Naphthalene	ND	3.7	0.73	ug/Kg	1	02/25/23	JLI	SW8260C
n-Butylbenzene	ND	3.7	0.37	ug/Kg	1	02/25/23	JLI	SW8260C
n-Propylbenzene	ND	3.7	0.73	ug/Kg	1	02/25/23	JLI	SW8260C
p-Isopropyltoluene	ND	3.7	0.37	ug/Kg	1	02/25/23	JLI	SW8260C
sec-Butylbenzene	ND	3.7	0.37	ug/Kg	1	02/25/23	JLI	SW8260C
tert-Butylbenzene	ND	3.7	0.37	ug/Kg	1	02/25/23	JLI	SW8260C
QA/QC Surrogates								
% 1,2-dichlorobenzene-d4	99			%	1	02/25/23	JLI	70 - 130 %
% Bromofluorobenzene	96			%	1	02/25/23	JLI	70 - 130 %
% Dibromofluoromethane	93			%	1	02/25/23	JLI	70 - 130 %
% Toluene-d8	100			%	1	02/25/23	JLI	70 - 130 %
1,4-dioxane								
1,4-dioxane	ND	55	29	ug/kg	1	02/25/23	JLI	SW8260C
Volatiles								
1,1,1,2-Tetrachloroethane	ND	3.7	0.73	ug/Kg	1	02/25/23	JLI	SW8260C
1,1,1-Trichloroethane	ND	3.7	0.37	ug/Kg	1	02/25/23	JLI	SW8260C
1,1,2,2-Tetrachloroethane	ND	3.7	0.73	ug/Kg	1	02/25/23	JLI	SW8260C
1,1,2-Trichloroethane	ND	3.7	0.73	ug/Kg	1	02/25/23	JLI	SW8260C
1,1-Dichloroethane	ND	3.7	0.73	ug/Kg	1	02/25/23	JLI	SW8260C
1,1-Dichloroethene	ND	3.7	0.37	ug/Kg	1	02/25/23	JLI	SW8260C
1,2,3-Trichlorobenzene	ND	3.7	0.73	ug/Kg	1	02/25/23	JLI	SW8260C

Project ID: IRRC BLUESTONE

Client ID: IRRC BLUESTONE 2C (GRAB)

Phoenix I.D.: CN49343

Parameter	Result	RL/ PQL	LOD/ MDL	Units	Dilution	Date/Time	By	Reference
1,2,4-Trichlorobenzene	ND	3.7	0.73	ug/Kg	1	02/25/23	JLI	SW8260C
1,2-Dibromo-3-chloropropane	ND	3.7	0.73	ug/Kg	1	02/25/23	JLI	SW8260C
1,2-Dibromoethane	ND	1.2	0.37	ug/Kg	1	02/25/23	JLI	SW8260C
1,2-Dichlorobenzene	ND	3.7	0.37	ug/Kg	1	02/25/23	JLI	SW8260C
1,2-Dichloroethane	ND	3.7	0.37	ug/Kg	1	02/25/23	JLI	SW8260C
1,2-Dichloropropane	ND	3.7	0.73	ug/Kg	1	02/25/23	JLI	SW8260C
1,3-Dichlorobenzene	ND	3.7	0.37	ug/Kg	1	02/25/23	JLI	SW8260C
1,4-Dichlorobenzene	ND	3.7	0.37	ug/Kg	1	02/25/23	JLI	SW8260C
2-Hexanone	ND	18	3.7	ug/Kg	1	02/25/23	JLI	SW8260C
4-Methyl-2-pentanone	ND	18	3.7	ug/Kg	1	02/25/23	JLI	SW8260C
Acetone	ND	37	3.7	ug/Kg	1	02/25/23	JLI	SW8260C
Acrolein	ND	0.47	0.47	ug/Kg	1	02/25/23	JLI	SW8260C
Acrylonitrile	ND	7.3	0.37	ug/Kg	1	02/25/23	JLI	SW8260C
Benzene	ND	3.7	0.37	ug/Kg	1	02/25/23	JLI	SW8260C
Bromochloromethane	ND	3.7	0.37	ug/Kg	1	02/25/23	JLI	SW8260C
Bromodichloromethane	ND	3.7	0.73	ug/Kg	1	02/25/23	JLI	SW8260C
Bromoform	ND	3.7	0.73	ug/Kg	1	02/25/23	JLI	SW8260C
Bromomethane	ND	3.7	1.5	ug/Kg	1	02/25/23	JLI	SW8260C
Carbon Disulfide	ND	3.7	0.73	ug/Kg	1	02/25/23	JLI	SW8260C
Carbon tetrachloride	ND	3.7	0.73	ug/Kg	1	02/25/23	JLI	SW8260C
Chlorobenzene	ND	3.7	0.37	ug/Kg	1	02/25/23	JLI	SW8260C
Chloroethane	ND	3.7	0.37	ug/Kg	1	02/25/23	JLI	SW8260C
Chloroform	ND	3.7	0.37	ug/Kg	1	02/25/23	JLI	SW8260C
Chloromethane	ND	3.7	0.73	ug/Kg	1	02/25/23	JLI	SW8260C
cis-1,2-Dichloroethene	ND	3.7	0.37	ug/Kg	1	02/25/23	JLI	SW8260C
cis-1,3-Dichloropropene	ND	3.7	0.37	ug/Kg	1	02/25/23	JLI	SW8260C
Cyclohexane	ND	3.7	0.73	ug/Kg	1	02/25/23	JLI	SW8260C
Dibromochloromethane	ND	3.7	0.73	ug/Kg	1	02/25/23	JLI	SW8260C
Dichlorodifluoromethane	ND	3.7	0.37	ug/Kg	1	02/25/23	JLI	SW8260C
Ethylbenzene	ND	3.7	0.37	ug/Kg	1	02/25/23	JLI	SW8260C
Isopropylbenzene	ND	3.7	0.37	ug/Kg	1	02/25/23	JLI	SW8260C
m&p-Xylene	ND	3.7	0.73	ug/Kg	1	02/25/23	JLI	SW8260C
Methyl ethyl ketone	ND	22	3.7	ug/Kg	1	02/25/23	JLI	SW8260C
Methyl t-butyl ether (MTBE)	ND	7.3	0.73	ug/Kg	1	02/25/23	JLI	SW8260C
Methylacetate	ND	7.3	7.3	ug/Kg	1	02/25/23	JLI	SW8260C
Methylcyclohexane	ND	3.7	0.73	ug/Kg	1	02/25/23	JLI	SW8260C
Methylene chloride	ND	3.7	3.7	ug/Kg	1	02/25/23	JLI	SW8260C
o-Xylene	ND	3.7	0.73	ug/Kg	1	02/25/23	JLI	SW8260C
Styrene	ND	3.7	0.37	ug/Kg	1	02/25/23	JLI	SW8260C
tert-butyl alcohol	ND	73	15	ug/Kg	1	02/25/23	JLI	SW8260C
Tetrachloroethene	ND	3.7	0.73	ug/Kg	1	02/25/23	JLI	SW8260C
Toluene	ND	3.7	0.37	ug/Kg	1	02/25/23	JLI	SW8260C
Total Xylenes	ND	3.7	3.7	ug/Kg	1	02/25/23	JLI	SW8260C
trans-1,2-Dichloroethene	ND	3.7	0.37	ug/Kg	1	02/25/23	JLI	SW8260C
trans-1,3-Dichloropropene	ND	3.7	0.37	ug/Kg	1	02/25/23	JLI	SW8260C
Trichloroethene	ND	3.7	0.37	ug/Kg	1	02/25/23	JLI	SW8260C
Trichlorofluoromethane	ND	3.7	0.73	ug/Kg	1	02/25/23	JLI	SW8260C
Trichlorotrifluoroethane	ND	3.7	0.37	ug/Kg	1	02/25/23	JLI	SW8260C
Vinyl chloride	ND	3.7	0.37	ug/Kg	1	02/25/23	JLI	SW8260C

Project ID: IRRC BLUESTONE

Client ID: IRRC BLUESTONE 2C (GRAB)

Phoenix I.D.: CN49343

Parameter	Result	RL/ PQL	LOD/ MDL	Units	Dilution	Date/Time	By	Reference
QA/QC Surrogates								
% 1,2-dichlorobenzene-d4	99			%	1	02/25/23	JLI	70 - 130 %
% Bromofluorobenzene	96			%	1	02/25/23	JLI	70 - 130 %
% Dibromofluoromethane	93			%	1	02/25/23	JLI	70 - 130 %
% Toluene-d8	100			%	1	02/25/23	JLI	70 - 130 %
Vinyl Acetate	ND	37	37	ug/Kg	1	02/25/23	JLI	SW8260C

RL/PQL=Reporting/Practical Quantitation Level (Equivalent to NELAC LOQ, Limit of Quantitation) ND=Not Detected BRL=Below Reporting Level L=Biased Low LOD=Limit of Detection MDL=Method Detection Limit1
QA/QC Surrogates: Surrogates are compounds (preceeded with a %) added by the lab to determine analysis efficiency. Surrogate results(%) listed in the report are not "detected" compounds.

Comments:

Results are reported on an ``as received`` basis, and are not corrected for dry weight.

Volatile Comment:
To achieve client's objectives, where the lowest calibration standard or LOD justifies lowering the RL/PQL, the RL/PQL of some compounds have been lowered to meet criteria.

All soils, solids and sludges are reported on a dry weight basis unless otherwise noted in the sample comments.

If you are the client above and have any questions concerning this testing, please do not hesitate to contact Phoenix Client Services at ext.200.
The contents of this report cannot be discussed with anyone other than the client listed above without their written consent.

Phyllis Shiller, Laboratory Director

March 12, 2023

Reviewed and Released by: Maryam Taylor, Project Manager

PHOENIX
Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

ACCREDITED IN ACCORDANCE WITH nelac NY # 11301

Analysis Report

March 12, 2023

FOR: Attn: Mr. Jeff Bogoian
Impact Consulting
170 Keyland Court
Bohemia NY 11716

Sample Information		Custody Information		Date	Time
Matrix:	SOIL	Collected by:	SR	02/24/23	8:30
Location Code:	IMPACTJB-IEC	Received by:	CP	02/24/23	17:38
Rush Request:	72 Hour	Analyzed by:	see "By" below		
P.O.#:					

Laboratory Data

SDG ID: GCN49338
Phoenix ID: CN49344

Project ID: IRRC BLUESTONE
Client ID: IRRC BLUESTONE 3A (GRAB)

Parameter	Result	RL/ PQL	LOD/ MDL	Units	Dilution	Date/Time	By	Reference
Volatiles								
1,2,4-Trimethylbenzene	ND	3.0	0.30	ug/Kg	1	02/25/23	JLI	SW8260C
1,3,5-Trimethylbenzene	ND	3.0	0.30	ug/Kg	1	02/25/23	JLI	SW8260C
1,3-Dichlorobenzene	ND	3.0	0.30	ug/Kg	1	02/25/23	JLI	SW8260C
Naphthalene	ND	3.0	0.60	ug/Kg	1	02/25/23	JLI	SW8260C
n-Butylbenzene	ND	3.0	0.30	ug/Kg	1	02/25/23	JLI	SW8260C
n-Propylbenzene	ND	3.0	0.60	ug/Kg	1	02/25/23	JLI	SW8260C
p-Isopropyltoluene	ND	3.0	0.30	ug/Kg	1	02/25/23	JLI	SW8260C
sec-Butylbenzene	ND	3.0	0.30	ug/Kg	1	02/25/23	JLI	SW8260C
tert-Butylbenzene	ND	3.0	0.30	ug/Kg	1	02/25/23	JLI	SW8260C
QA/QC Surrogates								
% 1,2-dichlorobenzene-d4	99			%	1	02/25/23	JLI	70 - 130 %
% Bromofluorobenzene	95			%	1	02/25/23	JLI	70 - 130 %
% Dibromofluoromethane	93			%	1	02/25/23	JLI	70 - 130 %
% Toluene-d8	99			%	1	02/25/23	JLI	70 - 130 %
1,4-dioxane								
1,4-dioxane	ND	45	24	ug/kg	1	02/25/23	JLI	SW8260C
Volatiles								
1,1,1,2-Tetrachloroethane	ND	3.0	0.60	ug/Kg	1	02/25/23	JLI	SW8260C
1,1,1-Trichloroethane	ND	3.0	0.30	ug/Kg	1	02/25/23	JLI	SW8260C
1,1,2,2-Tetrachloroethane	ND	3.0	0.60	ug/Kg	1	02/25/23	JLI	SW8260C
1,1,2-Trichloroethane	ND	3.0	0.60	ug/Kg	1	02/25/23	JLI	SW8260C
1,1-Dichloroethane	ND	3.0	0.60	ug/Kg	1	02/25/23	JLI	SW8260C
1,1-Dichloroethene	ND	3.0	0.30	ug/Kg	1	02/25/23	JLI	SW8260C
1,2,3-Trichlorobenzene	ND	3.0	0.60	ug/Kg	1	02/25/23	JLI	SW8260C

Project ID: IRRC BLUESTONE

Client ID: IRRC BLUESTONE 3A (GRAB)

Phoenix I.D.: CN49344

Parameter	Result	RL/ PQL	LOD/ MDL	Units	Dilution	Date/Time	By	Reference
1,2,4-Trichlorobenzene	ND	3.0	0.60	ug/Kg	1	02/25/23	JLI	SW8260C
1,2-Dibromo-3-chloropropane	ND	3.0	0.60	ug/Kg	1	02/25/23	JLI	SW8260C
1,2-Dibromoethane	ND	1.2	0.30	ug/Kg	1	02/25/23	JLI	SW8260C
1,2-Dichlorobenzene	ND	3.0	0.30	ug/Kg	1	02/25/23	JLI	SW8260C
1,2-Dichloroethane	ND	3.0	0.30	ug/Kg	1	02/25/23	JLI	SW8260C
1,2-Dichloropropane	ND	3.0	0.60	ug/Kg	1	02/25/23	JLI	SW8260C
1,3-Dichlorobenzene	ND	3.0	0.30	ug/Kg	1	02/25/23	JLI	SW8260C
1,4-Dichlorobenzene	ND	3.0	0.30	ug/Kg	1	02/25/23	JLI	SW8260C
2-Hexanone	ND	15	3.0	ug/Kg	1	02/25/23	JLI	SW8260C
4-Methyl-2-pentanone	ND	15	3.0	ug/Kg	1	02/25/23	JLI	SW8260C
Acetone	ND	30	3.0	ug/Kg	1	02/25/23	JLI	SW8260C
Acrolein	ND	0.47	0.47	ug/Kg	1	02/25/23	JLI	SW8260C
Acrylonitrile	ND	6.0	0.30	ug/Kg	1	02/25/23	JLI	SW8260C
Benzene	ND	3.0	0.30	ug/Kg	1	02/25/23	JLI	SW8260C
Bromochloromethane	ND	3.0	0.30	ug/Kg	1	02/25/23	JLI	SW8260C
Bromodichloromethane	ND	3.0	0.60	ug/Kg	1	02/25/23	JLI	SW8260C
Bromoform	ND	3.0	0.60	ug/Kg	1	02/25/23	JLI	SW8260C
Bromomethane	ND	3.0	1.2	ug/Kg	1	02/25/23	JLI	SW8260C
Carbon Disulfide	ND	3.0	0.60	ug/Kg	1	02/25/23	JLI	SW8260C
Carbon tetrachloride	ND	3.0	0.60	ug/Kg	1	02/25/23	JLI	SW8260C
Chlorobenzene	ND	3.0	0.30	ug/Kg	1	02/25/23	JLI	SW8260C
Chloroethane	ND	3.0	0.30	ug/Kg	1	02/25/23	JLI	SW8260C
Chloroform	ND	3.0	0.30	ug/Kg	1	02/25/23	JLI	SW8260C
Chloromethane	ND	3.0	0.60	ug/Kg	1	02/25/23	JLI	SW8260C
cis-1,2-Dichloroethene	ND	3.0	0.30	ug/Kg	1	02/25/23	JLI	SW8260C
cis-1,3-Dichloropropene	ND	3.0	0.30	ug/Kg	1	02/25/23	JLI	SW8260C
Cyclohexane	ND	3.0	0.60	ug/Kg	1	02/25/23	JLI	SW8260C
Dibromochloromethane	ND	3.0	0.60	ug/Kg	1	02/25/23	JLI	SW8260C
Dichlorodifluoromethane	ND	3.0	0.30	ug/Kg	1	02/25/23	JLI	SW8260C
Ethylbenzene	ND	3.0	0.30	ug/Kg	1	02/25/23	JLI	SW8260C
Isopropylbenzene	ND	3.0	0.30	ug/Kg	1	02/25/23	JLI	SW8260C
m&p-Xylene	ND	3.0	0.60	ug/Kg	1	02/25/23	JLI	SW8260C
Methyl ethyl ketone	ND	18	3.0	ug/Kg	1	02/25/23	JLI	SW8260C
Methyl t-butyl ether (MTBE)	ND	6.0	0.60	ug/Kg	1	02/25/23	JLI	SW8260C
Methylacetate	ND	6.0	6.0	ug/Kg	1	02/25/23	JLI	SW8260C
Methylcyclohexane	ND	3.0	0.60	ug/Kg	1	02/25/23	JLI	SW8260C
Methylene chloride	ND	3.0	3.0	ug/Kg	1	02/25/23	JLI	SW8260C
o-Xylene	ND	3.0	0.60	ug/Kg	1	02/25/23	JLI	SW8260C
Styrene	ND	3.0	0.30	ug/Kg	1	02/25/23	JLI	SW8260C
tert-butyl alcohol	ND	60	12	ug/Kg	1	02/25/23	JLI	SW8260C
Tetrachloroethene	ND	3.0	0.60	ug/Kg	1	02/25/23	JLI	SW8260C
Toluene	ND	3.0	0.30	ug/Kg	1	02/25/23	JLI	SW8260C
Total Xylenes	ND	3.0	3.0	ug/Kg	1	02/25/23	JLI	SW8260C
trans-1,2-Dichloroethene	ND	3.0	0.30	ug/Kg	1	02/25/23	JLI	SW8260C
trans-1,3-Dichloropropene	ND	3.0	0.30	ug/Kg	1	02/25/23	JLI	SW8260C
Trichloroethene	ND	3.0	0.30	ug/Kg	1	02/25/23	JLI	SW8260C
Trichlorofluoromethane	ND	3.0	0.60	ug/Kg	1	02/25/23	JLI	SW8260C
Trichlorotrifluoroethane	ND	3.0	0.30	ug/Kg	1	02/25/23	JLI	SW8260C
Vinyl chloride	ND	3.0	0.30	ug/Kg	1	02/25/23	JLI	SW8260C

Project ID: IRRC BLUESTONE

Client ID: IRRC BLUESTONE 3A (GRAB)

Phoenix I.D.: CN49344

Parameter	Result	RL/ PQL	LOD/ MDL	Units	Dilution	Date/Time	By	Reference
QA/QC Surrogates								
% 1,2-dichlorobenzene-d4	99			%	1	02/25/23	JLI	70 - 130 %
% Bromofluorobenzene	95			%	1	02/25/23	JLI	70 - 130 %
% Dibromofluoromethane	93			%	1	02/25/23	JLI	70 - 130 %
% Toluene-d8	99			%	1	02/25/23	JLI	70 - 130 %
Vinyl Acetate	ND	30	30	ug/Kg	1	02/25/23	JLI	SW8260C

RL/PQL=Reporting/Practical Quantitation Level (Equivalent to NELAC LOQ, Limit of Quantitation) ND=Not Detected BRL=Below Reporting Level L=Biased Low LOD=Limit of Detection MDL=Method Detection Limit1
QA/QC Surrogates: Surrogates are compounds (preceeded with a %) added by the lab to determine analysis efficiency. Surrogate results(%) listed in the report are not "detected" compounds.

Comments:

Results are reported on an ``as received`` basis, and are not corrected for dry weight.

Volatile Comment:
To achieve client's objectives, where the lowest calibration standard or LOD justifies lowering the RL/PQL, the RL/PQL of some compounds have been lowered to meet criteria.

All soils, solids and sludges are reported on a dry weight basis unless otherwise noted in the sample comments.

If you are the client above and have any questions concerning this testing, please do not hesitate to contact Phoenix Client Services at ext.200.
The contents of this report cannot be discussed with anyone other than the client listed above without their written consent.

Phyllis Shiller, Laboratory Director

March 12, 2023

Reviewed and Released by: Maryam Taylor, Project Manager

PHOENIX
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Tel. (860) 645-1102 Fax (860) 645-0823

ACCREDITED IN ACCORDANCE WITH nelac NY # 11301

Analysis Report

March 12, 2023

FOR: Attn: Mr. Jeff Bogoian
Impact Consulting
170 Keyland Court
Bohemia NY 11716

Sample Information		Custody Information		Date	Time
Matrix:	SOIL	Collected by:	SR	02/24/23	8:35
Location Code:	IMPACTJB-IEC	Received by:	CP	02/24/23	17:38
Rush Request:	72 Hour	Analyzed by:	see "By" below		
P.O.#:					

Laboratory Data

SDG ID: GCN49338
Phoenix ID: CN49345

Project ID: IRRC BLUESTONE
Client ID: IRRC BLUESTONE 3B (GRAB)

Parameter	Result	RL/ PQL	LOD/ MDL	Units	Dilution	Date/Time	By	Reference
Volatiles								
1,2,4-Trimethylbenzene	ND	2.9	0.29	ug/Kg	1	02/25/23	JLI	SW8260C
1,3,5-Trimethylbenzene	ND	2.9	0.29	ug/Kg	1	02/25/23	JLI	SW8260C
1,3-Dichlorobenzene	ND	2.9	0.29	ug/Kg	1	02/25/23	JLI	SW8260C
Naphthalene	ND	2.9	0.58	ug/Kg	1	02/25/23	JLI	SW8260C
n-Butylbenzene	ND	2.9	0.29	ug/Kg	1	02/25/23	JLI	SW8260C
n-Propylbenzene	ND	2.9	0.58	ug/Kg	1	02/25/23	JLI	SW8260C
p-Isopropyltoluene	ND	2.9	0.29	ug/Kg	1	02/25/23	JLI	SW8260C
sec-Butylbenzene	ND	2.9	0.29	ug/Kg	1	02/25/23	JLI	SW8260C
tert-Butylbenzene	ND	2.9	0.29	ug/Kg	1	02/25/23	JLI	SW8260C
QA/QC Surrogates								
% 1,2-dichlorobenzene-d4	99			%	1	02/25/23	JLI	70 - 130 %
% Bromofluorobenzene	96			%	1	02/25/23	JLI	70 - 130 %
% Dibromofluoromethane	94			%	1	02/25/23	JLI	70 - 130 %
% Toluene-d8	100			%	1	02/25/23	JLI	70 - 130 %
1,4-dioxane								
1,4-dioxane	ND	44	23	ug/kg	1	02/25/23	JLI	SW8260C
Volatiles								
1,1,1,2-Tetrachloroethane	ND	2.9	0.58	ug/Kg	1	02/25/23	JLI	SW8260C
1,1,1-Trichloroethane	ND	2.9	0.29	ug/Kg	1	02/25/23	JLI	SW8260C
1,1,2,2-Tetrachloroethane	ND	2.9	0.58	ug/Kg	1	02/25/23	JLI	SW8260C
1,1,2-Trichloroethane	ND	2.9	0.58	ug/Kg	1	02/25/23	JLI	SW8260C
1,1-Dichloroethane	ND	2.9	0.58	ug/Kg	1	02/25/23	JLI	SW8260C
1,1-Dichloroethene	ND	2.9	0.29	ug/Kg	1	02/25/23	JLI	SW8260C
1,2,3-Trichlorobenzene	ND	2.9	0.58	ug/Kg	1	02/25/23	JLI	SW8260C

Project ID: IRRC BLUESTONE

Client ID: IRRC BLUESTONE 3B (GRAB)

Phoenix I.D.: CN49345

Parameter	Result	RL/ PQL	LOD/ MDL	Units	Dilution	Date/Time	By	Reference
1,2,4-Trichlorobenzene	ND	2.9	0.58	ug/Kg	1	02/25/23	JLI	SW8260C
1,2-Dibromo-3-chloropropane	ND	2.9	0.58	ug/Kg	1	02/25/23	JLI	SW8260C
1,2-Dibromoethane	ND	1.2	0.29	ug/Kg	1	02/25/23	JLI	SW8260C
1,2-Dichlorobenzene	ND	2.9	0.29	ug/Kg	1	02/25/23	JLI	SW8260C
1,2-Dichloroethane	ND	2.9	0.29	ug/Kg	1	02/25/23	JLI	SW8260C
1,2-Dichloropropane	ND	2.9	0.58	ug/Kg	1	02/25/23	JLI	SW8260C
1,3-Dichlorobenzene	ND	2.9	0.29	ug/Kg	1	02/25/23	JLI	SW8260C
1,4-Dichlorobenzene	ND	2.9	0.29	ug/Kg	1	02/25/23	JLI	SW8260C
2-Hexanone	ND	15	2.9	ug/Kg	1	02/25/23	JLI	SW8260C
4-Methyl-2-pentanone	ND	15	2.9	ug/Kg	1	02/25/23	JLI	SW8260C
Acetone	ND	29	2.9	ug/Kg	1	02/25/23	JLI	SW8260C
Acrolein	ND	0.47	0.47	ug/Kg	1	02/25/23	JLI	SW8260C
Acrylonitrile	ND	5.8	0.29	ug/Kg	1	02/25/23	JLI	SW8260C
Benzene	ND	2.9	0.29	ug/Kg	1	02/25/23	JLI	SW8260C
Bromochloromethane	ND	2.9	0.29	ug/Kg	1	02/25/23	JLI	SW8260C
Bromodichloromethane	ND	2.9	0.58	ug/Kg	1	02/25/23	JLI	SW8260C
Bromoform	ND	2.9	0.58	ug/Kg	1	02/25/23	JLI	SW8260C
Bromomethane	ND	2.9	1.2	ug/Kg	1	02/25/23	JLI	SW8260C
Carbon Disulfide	ND	2.9	0.58	ug/Kg	1	02/25/23	JLI	SW8260C
Carbon tetrachloride	ND	2.9	0.58	ug/Kg	1	02/25/23	JLI	SW8260C
Chlorobenzene	ND	2.9	0.29	ug/Kg	1	02/25/23	JLI	SW8260C
Chloroethane	ND	2.9	0.29	ug/Kg	1	02/25/23	JLI	SW8260C
Chloroform	ND	2.9	0.29	ug/Kg	1	02/25/23	JLI	SW8260C
Chloromethane	ND	2.9	0.58	ug/Kg	1	02/25/23	JLI	SW8260C
cis-1,2-Dichloroethene	ND	2.9	0.29	ug/Kg	1	02/25/23	JLI	SW8260C
cis-1,3-Dichloropropene	ND	2.9	0.29	ug/Kg	1	02/25/23	JLI	SW8260C
Cyclohexane	ND	2.9	0.58	ug/Kg	1	02/25/23	JLI	SW8260C
Dibromochloromethane	ND	2.9	0.58	ug/Kg	1	02/25/23	JLI	SW8260C
Dichlorodifluoromethane	ND	2.9	0.29	ug/Kg	1	02/25/23	JLI	SW8260C
Ethylbenzene	ND	2.9	0.29	ug/Kg	1	02/25/23	JLI	SW8260C
Isopropylbenzene	ND	2.9	0.29	ug/Kg	1	02/25/23	JLI	SW8260C
m&p-Xylene	ND	2.9	0.58	ug/Kg	1	02/25/23	JLI	SW8260C
Methyl ethyl ketone	ND	17	2.9	ug/Kg	1	02/25/23	JLI	SW8260C
Methyl t-butyl ether (MTBE)	ND	5.8	0.58	ug/Kg	1	02/25/23	JLI	SW8260C
Methylacetate	ND	5.8	5.8	ug/Kg	1	02/25/23	JLI	SW8260C
Methylcyclohexane	ND	2.9	0.58	ug/Kg	1	02/25/23	JLI	SW8260C
Methylene chloride	ND	2.9	2.9	ug/Kg	1	02/25/23	JLI	SW8260C
o-Xylene	ND	2.9	0.58	ug/Kg	1	02/25/23	JLI	SW8260C
Styrene	ND	2.9	0.29	ug/Kg	1	02/25/23	JLI	SW8260C
tert-butyl alcohol	ND	58	12	ug/Kg	1	02/25/23	JLI	SW8260C
Tetrachloroethene	ND	2.9	0.58	ug/Kg	1	02/25/23	JLI	SW8260C
Toluene	ND	2.9	0.29	ug/Kg	1	02/25/23	JLI	SW8260C
Total Xylenes	ND	2.9	2.9	ug/Kg	1	02/25/23	JLI	SW8260C
trans-1,2-Dichloroethene	ND	2.9	0.29	ug/Kg	1	02/25/23	JLI	SW8260C
trans-1,3-Dichloropropene	ND	2.9	0.29	ug/Kg	1	02/25/23	JLI	SW8260C
Trichloroethene	ND	2.9	0.29	ug/Kg	1	02/25/23	JLI	SW8260C
Trichlorofluoromethane	ND	2.9	0.58	ug/Kg	1	02/25/23	JLI	SW8260C
Trichlorotrifluoroethane	ND	2.9	0.29	ug/Kg	1	02/25/23	JLI	SW8260C
Vinyl chloride	ND	2.9	0.29	ug/Kg	1	02/25/23	JLI	SW8260C

Project ID: IRRC BLUESTONE

Client ID: IRRC BLUESTONE 3B (GRAB)

Phoenix I.D.: CN49345

Parameter	Result	RL/ PQL	LOD/ MDL	Units	Dilution	Date/Time	By	Reference
QA/QC Surrogates								
% 1,2-dichlorobenzene-d4	99			%	1	02/25/23	JLI	70 - 130 %
% Bromofluorobenzene	96			%	1	02/25/23	JLI	70 - 130 %
% Dibromofluoromethane	94			%	1	02/25/23	JLI	70 - 130 %
% Toluene-d8	100			%	1	02/25/23	JLI	70 - 130 %
Vinyl Acetate	ND	29	29	ug/Kg	1	02/25/23	JLI	SW8260C

RL/PQL=Reporting/Practical Quantitation Level (Equivalent to NELAC LOQ, Limit of Quantitation) ND=Not Detected BRL=Below Reporting Level L=Biased Low LOD=Limit of Detection MDL=Method Detection Limit1
QA/QC Surrogates: Surrogates are compounds (preceeded with a %) added by the lab to determine analysis efficiency. Surrogate results(%) listed in the report are not "detected" compounds.

Comments:

Results are reported on an ``as received`` basis, and are not corrected for dry weight.

Volatile Comment:
To achieve client's objectives, where the lowest calibration standard or LOD justifies lowering the RL/PQL, the RL/PQL of some compounds have been lowered to meet criteria.

All soils, solids and sludges are reported on a dry weight basis unless otherwise noted in the sample comments.

If you are the client above and have any questions concerning this testing, please do not hesitate to contact Phoenix Client Services at ext.200.
The contents of this report cannot be discussed with anyone other than the client listed above without their written consent.

Phyllis Shiller, Laboratory Director

March 12, 2023

Reviewed and Released by: Maryam Taylor, Project Manager

PHOENIX
Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

ACCREDITED IN ACCORDANCE WITH nelac NY # 11301

Analysis Report

March 12, 2023

FOR: Attn: Mr. Jeff Bogoian
Impact Consulting
170 Keyland Court
Bohemia NY 11716

Sample Information		Custody Information		Date	Time
Matrix:	SOIL	Collected by:	SR	02/24/23	8:40
Location Code:	IMPACTJB-IEC	Received by:	CP	02/24/23	17:38
Rush Request:	72 Hour	Analyzed by:	see "By" below		
P.O.#:					

Laboratory Data

SDG ID: GCN49338
Phoenix ID: CN49346

Project ID: IRRC BLUESTONE
Client ID: IRRC BLUESTONE 3C (GRAB)

Parameter	Result	RL/ PQL	LOD/ MDL	Units	Dilution	Date/Time	By	Reference
Volatiles								
1,2,4-Trimethylbenzene	ND	3.5	0.35	ug/Kg	1	02/25/23	JLI	SW8260C
1,3,5-Trimethylbenzene	ND	3.5	0.35	ug/Kg	1	02/25/23	JLI	SW8260C
1,3-Dichlorobenzene	ND	3.5	0.35	ug/Kg	1	02/25/23	JLI	SW8260C
Naphthalene	ND	3.5	0.69	ug/Kg	1	02/25/23	JLI	SW8260C
n-Butylbenzene	ND	3.5	0.35	ug/Kg	1	02/25/23	JLI	SW8260C
n-Propylbenzene	ND	3.5	0.69	ug/Kg	1	02/25/23	JLI	SW8260C
p-Isopropyltoluene	ND	3.5	0.35	ug/Kg	1	02/25/23	JLI	SW8260C
sec-Butylbenzene	ND	3.5	0.35	ug/Kg	1	02/25/23	JLI	SW8260C
tert-Butylbenzene	ND	3.5	0.35	ug/Kg	1	02/25/23	JLI	SW8260C
QA/QC Surrogates								
% 1,2-dichlorobenzene-d4	99			%	1	02/25/23	JLI	70 - 130 %
% Bromofluorobenzene	96			%	1	02/25/23	JLI	70 - 130 %
% Dibromofluoromethane	94			%	1	02/25/23	JLI	70 - 130 %
% Toluene-d8	99			%	1	02/25/23	JLI	70 - 130 %
1,4-dioxane								
1,4-dioxane	ND	52	28	ug/kg	1	02/25/23	JLI	SW8260C
Volatiles								
1,1,1,2-Tetrachloroethane	ND	3.5	0.69	ug/Kg	1	02/25/23	JLI	SW8260C
1,1,1-Trichloroethane	ND	3.5	0.35	ug/Kg	1	02/25/23	JLI	SW8260C
1,1,2,2-Tetrachloroethane	ND	3.5	0.69	ug/Kg	1	02/25/23	JLI	SW8260C
1,1,2-Trichloroethane	ND	3.5	0.69	ug/Kg	1	02/25/23	JLI	SW8260C
1,1-Dichloroethane	ND	3.5	0.69	ug/Kg	1	02/25/23	JLI	SW8260C
1,1-Dichloroethene	ND	3.5	0.35	ug/Kg	1	02/25/23	JLI	SW8260C
1,2,3-Trichlorobenzene	ND	3.5	0.69	ug/Kg	1	02/25/23	JLI	SW8260C

Project ID: IRRC BLUESTONE

Client ID: IRRC BLUESTONE 3C (GRAB)

Phoenix I.D.: CN49346

Parameter	Result		RL/ PQL	LOD/ MDL	Units	Dilution	Date/Time	By	Reference
1,2,4-Trichlorobenzene	ND		3.5	0.69	ug/Kg	1	02/25/23	JLI	SW8260C
1,2-Dibromo-3-chloropropane	ND		3.5	0.69	ug/Kg	1	02/25/23	JLI	SW8260C
1,2-Dibromoethane	ND		1.2	0.35	ug/Kg	1	02/25/23	JLI	SW8260C
1,2-Dichlorobenzene	ND		3.5	0.35	ug/Kg	1	02/25/23	JLI	SW8260C
1,2-Dichloroethane	ND		3.5	0.35	ug/Kg	1	02/25/23	JLI	SW8260C
1,2-Dichloropropane	ND		3.5	0.69	ug/Kg	1	02/25/23	JLI	SW8260C
1,3-Dichlorobenzene	ND		3.5	0.35	ug/Kg	1	02/25/23	JLI	SW8260C
1,4-Dichlorobenzene	ND		3.5	0.35	ug/Kg	1	02/25/23	JLI	SW8260C
2-Hexanone	ND		17	3.5	ug/Kg	1	02/25/23	JLI	SW8260C
4-Methyl-2-pentanone	ND		17	3.5	ug/Kg	1	02/25/23	JLI	SW8260C
Acetone	ND		35	3.5	ug/Kg	1	02/25/23	JLI	SW8260C
Acrolein	ND		0.47	0.47	ug/Kg	1	02/25/23	JLI	SW8260C
Acrylonitrile	ND		6.9	0.35	ug/Kg	1	02/25/23	JLI	SW8260C
Benzene	ND		3.5	0.35	ug/Kg	1	02/25/23	JLI	SW8260C
Bromochloromethane	ND		3.5	0.35	ug/Kg	1	02/25/23	JLI	SW8260C
Bromodichloromethane	ND		3.5	0.69	ug/Kg	1	02/25/23	JLI	SW8260C
Bromoform	ND		3.5	0.69	ug/Kg	1	02/25/23	JLI	SW8260C
Bromomethane	ND		3.5	1.4	ug/Kg	1	02/25/23	JLI	SW8260C
Carbon Disulfide	0.76	J	3.5	0.69	ug/Kg	1	02/25/23	JLI	SW8260C
Carbon tetrachloride	ND		3.5	0.69	ug/Kg	1	02/25/23	JLI	SW8260C
Chlorobenzene	ND		3.5	0.35	ug/Kg	1	02/25/23	JLI	SW8260C
Chloroethane	ND		3.5	0.35	ug/Kg	1	02/25/23	JLI	SW8260C
Chloroform	ND		3.5	0.35	ug/Kg	1	02/25/23	JLI	SW8260C
Chloromethane	ND		3.5	0.69	ug/Kg	1	02/25/23	JLI	SW8260C
cis-1,2-Dichloroethene	ND		3.5	0.35	ug/Kg	1	02/25/23	JLI	SW8260C
cis-1,3-Dichloropropene	ND		3.5	0.35	ug/Kg	1	02/25/23	JLI	SW8260C
Cyclohexane	ND		3.5	0.69	ug/Kg	1	02/25/23	JLI	SW8260C
Dibromochloromethane	ND		3.5	0.69	ug/Kg	1	02/25/23	JLI	SW8260C
Dichlorodifluoromethane	ND		3.5	0.35	ug/Kg	1	02/25/23	JLI	SW8260C
Ethylbenzene	ND		3.5	0.35	ug/Kg	1	02/25/23	JLI	SW8260C
Isopropylbenzene	ND		3.5	0.35	ug/Kg	1	02/25/23	JLI	SW8260C
m&p-Xylene	ND		3.5	0.69	ug/Kg	1	02/25/23	JLI	SW8260C
Methyl ethyl ketone	ND		21	3.5	ug/Kg	1	02/25/23	JLI	SW8260C
Methyl t-butyl ether (MTBE)	ND		6.9	0.69	ug/Kg	1	02/25/23	JLI	SW8260C
Methylacetate	ND		6.9	6.9	ug/Kg	1	02/25/23	JLI	SW8260C
Methylcyclohexane	ND		3.5	0.69	ug/Kg	1	02/25/23	JLI	SW8260C
Methylene chloride	ND		3.5	3.5	ug/Kg	1	02/25/23	JLI	SW8260C
o-Xylene	ND		3.5	0.69	ug/Kg	1	02/25/23	JLI	SW8260C
Styrene	ND		3.5	0.35	ug/Kg	1	02/25/23	JLI	SW8260C
tert-butyl alcohol	ND		69	14	ug/Kg	1	02/25/23	JLI	SW8260C
Tetrachloroethene	ND		3.5	0.69	ug/Kg	1	02/25/23	JLI	SW8260C
Toluene	ND		3.5	0.35	ug/Kg	1	02/25/23	JLI	SW8260C
Total Xylenes	ND		3.5	3.5	ug/Kg	1	02/25/23	JLI	SW8260C
trans-1,2-Dichloroethene	ND		3.5	0.35	ug/Kg	1	02/25/23	JLI	SW8260C
trans-1,3-Dichloropropene	ND		3.5	0.35	ug/Kg	1	02/25/23	JLI	SW8260C
Trichloroethene	ND		3.5	0.35	ug/Kg	1	02/25/23	JLI	SW8260C
Trichlorofluoromethane	ND		3.5	0.69	ug/Kg	1	02/25/23	JLI	SW8260C
Trichlorotrifluoroethane	ND		3.5	0.35	ug/Kg	1	02/25/23	JLI	SW8260C
Vinyl chloride	ND		3.5	0.35	ug/Kg	1	02/25/23	JLI	SW8260C

Project ID: IRRC BLUESTONE

Client ID: IRRC BLUESTONE 3C (GRAB)

Phoenix I.D.: CN49346

Parameter	Result	RL/ PQL	LOD/ MDL	Units	Dilution	Date/Time	By	Reference
QA/QC Surrogates								
% 1,2-dichlorobenzene-d4	99			%	1	02/25/23	JLI	70 - 130 %
% Bromofluorobenzene	96			%	1	02/25/23	JLI	70 - 130 %
% Dibromofluoromethane	94			%	1	02/25/23	JLI	70 - 130 %
% Toluene-d8	99			%	1	02/25/23	JLI	70 - 130 %
Vinyl Acetate	ND	35	35	ug/Kg	1	02/25/23	JLI	SW8260C

RL/PQL=Reporting/Practical Quantitation Level (Equivalent to NELAC LOQ, Limit of Quantitation) ND=Not Detected BRL=Below Reporting Level L=Biased Low J=Estimated Below RL LOD=Limit of Detection MDL=Method Detection Limit1
QA/QC Surrogates: Surrogates are compounds (preceeded with a %) added by the lab to determine analysis efficiency. Surrogate results(%) listed in the report are not "detected" compounds.

Comments:

Results are reported on an ``as received`` basis, and are not corrected for dry weight.

Volatile Comment:
To achieve client's objectives, where the lowest calibration standard or LOD justifies lowering the RL/PQL, the RL/PQL of some compounds have been lowered to meet criteria.

All soils, solids and sludges are reported on a dry weight basis unless otherwise noted in the sample comments.

If you are the client above and have any questions concerning this testing, please do not hesitate to contact Phoenix Client Services at ext.200.
The contents of this report cannot be discussed with anyone other than the client listed above without their written consent.

Phyllis Shiller, Laboratory Director

March 12, 2023

Reviewed and Released by: Maryam Taylor, Project Manager

PHOENIX
Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

ACCREDITED IN ACCORDANCE WITH nelac NY # 11301

Analysis Report

March 12, 2023

FOR: Attn: Mr. Jeff Bogoian
Impact Consulting
170 Keyland Court
Bohemia NY 11716

Sample Information		Custody Information		Date	Time
Matrix:	SOIL	Collected by:	SR	02/24/23	8:45
Location Code:	IMPACTJB-IEC	Received by:	CP	02/24/23	17:38
Rush Request:	72 Hour	Analyzed by:	see "By" below		
P.O.#:					

Laboratory Data

SDG ID: GCN49338
Phoenix ID: CN49347

Project ID: IRRC BLUESTONE
Client ID: IRRC BLUESTONE 4A (GRAB)

Parameter	Result	RL/ PQL	LOD/ MDL	Units	Dilution	Date/Time	By	Reference
Volatiles								
1,2,4-Trimethylbenzene	ND	3.4	0.34	ug/Kg	1	02/25/23	JLI	SW8260C
1,3,5-Trimethylbenzene	ND	3.4	0.34	ug/Kg	1	02/25/23	JLI	SW8260C
1,3-Dichlorobenzene	ND	3.4	0.34	ug/Kg	1	02/25/23	JLI	SW8260C
Naphthalene	ND	3.4	0.67	ug/Kg	1	02/25/23	JLI	SW8260C
n-Butylbenzene	ND	3.4	0.34	ug/Kg	1	02/25/23	JLI	SW8260C
n-Propylbenzene	ND	3.4	0.67	ug/Kg	1	02/25/23	JLI	SW8260C
p-Isopropyltoluene	ND	3.4	0.34	ug/Kg	1	02/25/23	JLI	SW8260C
sec-Butylbenzene	ND	3.4	0.34	ug/Kg	1	02/25/23	JLI	SW8260C
tert-Butylbenzene	ND	3.4	0.34	ug/Kg	1	02/25/23	JLI	SW8260C
QA/QC Surrogates								
% 1,2-dichlorobenzene-d4	99			%	1	02/25/23	JLI	70 - 130 %
% Bromofluorobenzene	95			%	1	02/25/23	JLI	70 - 130 %
% Dibromofluoromethane	92			%	1	02/25/23	JLI	70 - 130 %
% Toluene-d8	100			%	1	02/25/23	JLI	70 - 130 %
1,4-dioxane								
1,4-dioxane	ND	50	27	ug/kg	1	02/25/23	JLI	SW8260C
Volatiles								
1,1,1,2-Tetrachloroethane	ND	3.4	0.67	ug/Kg	1	02/25/23	JLI	SW8260C
1,1,1-Trichloroethane	ND	3.4	0.34	ug/Kg	1	02/25/23	JLI	SW8260C
1,1,2,2-Tetrachloroethane	ND	3.4	0.67	ug/Kg	1	02/25/23	JLI	SW8260C
1,1,2-Trichloroethane	ND	3.4	0.67	ug/Kg	1	02/25/23	JLI	SW8260C
1,1-Dichloroethane	ND	3.4	0.67	ug/Kg	1	02/25/23	JLI	SW8260C
1,1-Dichloroethene	ND	3.4	0.34	ug/Kg	1	02/25/23	JLI	SW8260C
1,2,3-Trichlorobenzene	ND	3.4	0.67	ug/Kg	1	02/25/23	JLI	SW8260C

Project ID: IRRC BLUESTONE

Client ID: IRRC BLUESTONE 4A (GRAB)

Phoenix I.D.: CN49347

Parameter	Result	RL/ PQL	LOD/ MDL	Units	Dilution	Date/Time	By	Reference
1,2,4-Trichlorobenzene	ND	3.4	0.67	ug/Kg	1	02/25/23	JLI	SW8260C
1,2-Dibromo-3-chloropropane	ND	3.4	0.67	ug/Kg	1	02/25/23	JLI	SW8260C
1,2-Dibromoethane	ND	1.2	0.34	ug/Kg	1	02/25/23	JLI	SW8260C
1,2-Dichlorobenzene	ND	3.4	0.34	ug/Kg	1	02/25/23	JLI	SW8260C
1,2-Dichloroethane	ND	3.4	0.34	ug/Kg	1	02/25/23	JLI	SW8260C
1,2-Dichloropropane	ND	3.4	0.67	ug/Kg	1	02/25/23	JLI	SW8260C
1,3-Dichlorobenzene	ND	3.4	0.34	ug/Kg	1	02/25/23	JLI	SW8260C
1,4-Dichlorobenzene	ND	3.4	0.34	ug/Kg	1	02/25/23	JLI	SW8260C
2-Hexanone	ND	17	3.4	ug/Kg	1	02/25/23	JLI	SW8260C
4-Methyl-2-pentanone	ND	17	3.4	ug/Kg	1	02/25/23	JLI	SW8260C
Acetone	ND	34	3.4	ug/Kg	1	02/25/23	JLI	SW8260C
Acrolein	ND	0.47	0.47	ug/Kg	1	02/25/23	JLI	SW8260C
Acrylonitrile	ND	6.7	0.34	ug/Kg	1	02/25/23	JLI	SW8260C
Benzene	ND	3.4	0.34	ug/Kg	1	02/25/23	JLI	SW8260C
Bromochloromethane	ND	3.4	0.34	ug/Kg	1	02/25/23	JLI	SW8260C
Bromodichloromethane	ND	3.4	0.67	ug/Kg	1	02/25/23	JLI	SW8260C
Bromoform	ND	3.4	0.67	ug/Kg	1	02/25/23	JLI	SW8260C
Bromomethane	ND	3.4	1.3	ug/Kg	1	02/25/23	JLI	SW8260C
Carbon Disulfide	ND	3.4	0.67	ug/Kg	1	02/25/23	JLI	SW8260C
Carbon tetrachloride	ND	3.4	0.67	ug/Kg	1	02/25/23	JLI	SW8260C
Chlorobenzene	ND	3.4	0.34	ug/Kg	1	02/25/23	JLI	SW8260C
Chloroethane	ND	3.4	0.34	ug/Kg	1	02/25/23	JLI	SW8260C
Chloroform	ND	3.4	0.34	ug/Kg	1	02/25/23	JLI	SW8260C
Chloromethane	ND	3.4	0.67	ug/Kg	1	02/25/23	JLI	SW8260C
cis-1,2-Dichloroethene	ND	3.4	0.34	ug/Kg	1	02/25/23	JLI	SW8260C
cis-1,3-Dichloropropene	ND	3.4	0.34	ug/Kg	1	02/25/23	JLI	SW8260C
Cyclohexane	ND	3.4	0.67	ug/Kg	1	02/25/23	JLI	SW8260C
Dibromochloromethane	ND	3.4	0.67	ug/Kg	1	02/25/23	JLI	SW8260C
Dichlorodifluoromethane	ND	3.4	0.34	ug/Kg	1	02/25/23	JLI	SW8260C
Ethylbenzene	ND	3.4	0.34	ug/Kg	1	02/25/23	JLI	SW8260C
Isopropylbenzene	ND	3.4	0.34	ug/Kg	1	02/25/23	JLI	SW8260C
m&p-Xylene	ND	3.4	0.67	ug/Kg	1	02/25/23	JLI	SW8260C
Methyl ethyl ketone	ND	20	3.4	ug/Kg	1	02/25/23	JLI	SW8260C
Methyl t-butyl ether (MTBE)	ND	6.7	0.67	ug/Kg	1	02/25/23	JLI	SW8260C
Methylacetate	ND	6.7	6.7	ug/Kg	1	02/25/23	JLI	SW8260C
Methylcyclohexane	ND	3.4	0.67	ug/Kg	1	02/25/23	JLI	SW8260C
Methylene chloride	ND	3.4	3.4	ug/Kg	1	02/25/23	JLI	SW8260C
o-Xylene	ND	3.4	0.67	ug/Kg	1	02/25/23	JLI	SW8260C
Styrene	ND	3.4	0.34	ug/Kg	1	02/25/23	JLI	SW8260C
tert-butyl alcohol	ND	67	13	ug/Kg	1	02/25/23	JLI	SW8260C
Tetrachloroethene	ND	3.4	0.67	ug/Kg	1	02/25/23	JLI	SW8260C
Toluene	ND	3.4	0.34	ug/Kg	1	02/25/23	JLI	SW8260C
Total Xylenes	ND	3.4	3.4	ug/Kg	1	02/25/23	JLI	SW8260C
trans-1,2-Dichloroethene	ND	3.4	0.34	ug/Kg	1	02/25/23	JLI	SW8260C
trans-1,3-Dichloropropene	ND	3.4	0.34	ug/Kg	1	02/25/23	JLI	SW8260C
Trichloroethene	ND	3.4	0.34	ug/Kg	1	02/25/23	JLI	SW8260C
Trichlorofluoromethane	ND	3.4	0.67	ug/Kg	1	02/25/23	JLI	SW8260C
Trichlorotrifluoroethane	ND	3.4	0.34	ug/Kg	1	02/25/23	JLI	SW8260C
Vinyl chloride	ND	3.4	0.34	ug/Kg	1	02/25/23	JLI	SW8260C

Project ID: IRRC BLUESTONE

Client ID: IRRC BLUESTONE 4A (GRAB)

Phoenix I.D.: CN49347

Parameter	Result	RL/ PQL	LOD/ MDL	Units	Dilution	Date/Time	By	Reference
QA/QC Surrogates								
% 1,2-dichlorobenzene-d4	99			%	1	02/25/23	JLI	70 - 130 %
% Bromofluorobenzene	95			%	1	02/25/23	JLI	70 - 130 %
% Dibromofluoromethane	92			%	1	02/25/23	JLI	70 - 130 %
% Toluene-d8	100			%	1	02/25/23	JLI	70 - 130 %
Vinyl Acetate	ND	34	34	ug/Kg	1	02/25/23	JLI	SW8260C

RL/PQL=Reporting/Practical Quantitation Level (Equivalent to NELAC LOQ, Limit of Quantitation) ND=Not Detected BRL=Below Reporting Level L=Biased Low LOD=Limit of Detection MDL=Method Detection Limit1
QA/QC Surrogates: Surrogates are compounds (preceeded with a %) added by the lab to determine analysis efficiency. Surrogate results(%) listed in the report are not "detected" compounds.

Comments:

Results are reported on an ``as received`` basis, and are not corrected for dry weight.

Volatile Comment:
To achieve client's objectives, where the lowest calibration standard or LOD justifies lowering the RL/PQL, the RL/PQL of some compounds have been lowered to meet criteria.

All soils, solids and sludges are reported on a dry weight basis unless otherwise noted in the sample comments.

If you are the client above and have any questions concerning this testing, please do not hesitate to contact Phoenix Client Services at ext.200.
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Phyllis Shiller, Laboratory Director

March 12, 2023

Reviewed and Released by: Maryam Taylor, Project Manager

PHOENIX
Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

ACCREDITED IN ACCORDANCE WITH nelac NY # 11301

Analysis Report

March 12, 2023

FOR: Attn: Mr. Jeff Bogoian
Impact Consulting
170 Keyland Court
Bohemia NY 11716

Sample Information		Custody Information		Date	Time
Matrix:	SOIL	Collected by:	SR	02/24/23	8:50
Location Code:	IMPACTJB-IEC	Received by:	CP	02/24/23	17:38
Rush Request:	72 Hour	Analyzed by:	see "By" below		
P.O.#:					

Laboratory Data

SDG ID: GCN49338
Phoenix ID: CN49348

Project ID: IRRC BLUESTONE
Client ID: IRRC BLUESTONE 4B (GRAB)

Parameter	Result	RL/ PQL	LOD/ MDL	Units	Dilution	Date/Time	By	Reference
Volatiles								
1,2,4-Trimethylbenzene	ND	3.6	0.36	ug/Kg	1	02/25/23	JLI	SW8260C
1,3,5-Trimethylbenzene	ND	3.6	0.36	ug/Kg	1	02/25/23	JLI	SW8260C
1,3-Dichlorobenzene	ND	3.6	0.36	ug/Kg	1	02/25/23	JLI	SW8260C
Naphthalene	ND	3.6	0.72	ug/Kg	1	02/25/23	JLI	SW8260C
n-Butylbenzene	ND	3.6	0.36	ug/Kg	1	02/25/23	JLI	SW8260C
n-Propylbenzene	ND	3.6	0.72	ug/Kg	1	02/25/23	JLI	SW8260C
p-Isopropyltoluene	ND	3.6	0.36	ug/Kg	1	02/25/23	JLI	SW8260C
sec-Butylbenzene	ND	3.6	0.36	ug/Kg	1	02/25/23	JLI	SW8260C
tert-Butylbenzene	ND	3.6	0.36	ug/Kg	1	02/25/23	JLI	SW8260C
QA/QC Surrogates								
% 1,2-dichlorobenzene-d4	98			%	1	02/25/23	JLI	70 - 130 %
% Bromofluorobenzene	95			%	1	02/25/23	JLI	70 - 130 %
% Dibromofluoromethane	91			%	1	02/25/23	JLI	70 - 130 %
% Toluene-d8	100			%	1	02/25/23	JLI	70 - 130 %
1,4-dioxane								
1,4-dioxane	ND	54	29	ug/kg	1	02/25/23	JLI	SW8260C
Volatiles								
1,1,1,2-Tetrachloroethane	ND	3.6	0.72	ug/Kg	1	02/25/23	JLI	SW8260C
1,1,1-Trichloroethane	ND	3.6	0.36	ug/Kg	1	02/25/23	JLI	SW8260C
1,1,2,2-Tetrachloroethane	ND	3.6	0.72	ug/Kg	1	02/25/23	JLI	SW8260C
1,1,2-Trichloroethane	ND	3.6	0.72	ug/Kg	1	02/25/23	JLI	SW8260C
1,1-Dichloroethane	ND	3.6	0.72	ug/Kg	1	02/25/23	JLI	SW8260C
1,1-Dichloroethene	ND	3.6	0.36	ug/Kg	1	02/25/23	JLI	SW8260C
1,2,3-Trichlorobenzene	ND	3.6	0.72	ug/Kg	1	02/25/23	JLI	SW8260C

Project ID: IRRC BLUESTONE

Client ID: IRRC BLUESTONE 4B (GRAB)

Phoenix I.D.: CN49348

Parameter	Result	RL/ PQL	LOD/ MDL	Units	Dilution	Date/Time	By	Reference
1,2,4-Trichlorobenzene	ND	3.6	0.72	ug/Kg	1	02/25/23	JLI	SW8260C
1,2-Dibromo-3-chloropropane	ND	3.6	0.72	ug/Kg	1	02/25/23	JLI	SW8260C
1,2-Dibromoethane	ND	1.2	0.36	ug/Kg	1	02/25/23	JLI	SW8260C
1,2-Dichlorobenzene	ND	3.6	0.36	ug/Kg	1	02/25/23	JLI	SW8260C
1,2-Dichloroethane	ND	3.6	0.36	ug/Kg	1	02/25/23	JLI	SW8260C
1,2-Dichloropropane	ND	3.6	0.72	ug/Kg	1	02/25/23	JLI	SW8260C
1,3-Dichlorobenzene	ND	3.6	0.36	ug/Kg	1	02/25/23	JLI	SW8260C
1,4-Dichlorobenzene	ND	3.6	0.36	ug/Kg	1	02/25/23	JLI	SW8260C
2-Hexanone	ND	18	3.6	ug/Kg	1	02/25/23	JLI	SW8260C
4-Methyl-2-pentanone	ND	18	3.6	ug/Kg	1	02/25/23	JLI	SW8260C
Acetone	ND	36	3.6	ug/Kg	1	02/25/23	JLI	SW8260C
Acrolein	ND	0.47	0.47	ug/Kg	1	02/25/23	JLI	SW8260C
Acrylonitrile	ND	7.2	0.36	ug/Kg	1	02/25/23	JLI	SW8260C
Benzene	ND	3.6	0.36	ug/Kg	1	02/25/23	JLI	SW8260C
Bromochloromethane	ND	3.6	0.36	ug/Kg	1	02/25/23	JLI	SW8260C
Bromodichloromethane	ND	3.6	0.72	ug/Kg	1	02/25/23	JLI	SW8260C
Bromoform	ND	3.6	0.72	ug/Kg	1	02/25/23	JLI	SW8260C
Bromomethane	ND	3.6	1.4	ug/Kg	1	02/25/23	JLI	SW8260C
Carbon Disulfide	ND	3.6	0.72	ug/Kg	1	02/25/23	JLI	SW8260C
Carbon tetrachloride	ND	3.6	0.72	ug/Kg	1	02/25/23	JLI	SW8260C
Chlorobenzene	ND	3.6	0.36	ug/Kg	1	02/25/23	JLI	SW8260C
Chloroethane	ND	3.6	0.36	ug/Kg	1	02/25/23	JLI	SW8260C
Chloroform	ND	3.6	0.36	ug/Kg	1	02/25/23	JLI	SW8260C
Chloromethane	ND	3.6	0.72	ug/Kg	1	02/25/23	JLI	SW8260C
cis-1,2-Dichloroethene	ND	3.6	0.36	ug/Kg	1	02/25/23	JLI	SW8260C
cis-1,3-Dichloropropene	ND	3.6	0.36	ug/Kg	1	02/25/23	JLI	SW8260C
Cyclohexane	ND	3.6	0.72	ug/Kg	1	02/25/23	JLI	SW8260C
Dibromochloromethane	ND	3.6	0.72	ug/Kg	1	02/25/23	JLI	SW8260C
Dichlorodifluoromethane	ND	3.6	0.36	ug/Kg	1	02/25/23	JLI	SW8260C
Ethylbenzene	ND	3.6	0.36	ug/Kg	1	02/25/23	JLI	SW8260C
Isopropylbenzene	ND	3.6	0.36	ug/Kg	1	02/25/23	JLI	SW8260C
m&p-Xylene	ND	3.6	0.72	ug/Kg	1	02/25/23	JLI	SW8260C
Methyl ethyl ketone	ND	22	3.6	ug/Kg	1	02/25/23	JLI	SW8260C
Methyl t-butyl ether (MTBE)	ND	7.2	0.72	ug/Kg	1	02/25/23	JLI	SW8260C
Methylacetate	ND	7.2	7.2	ug/Kg	1	02/25/23	JLI	SW8260C
Methylcyclohexane	ND	3.6	0.72	ug/Kg	1	02/25/23	JLI	SW8260C
Methylene chloride	ND	3.6	3.6	ug/Kg	1	02/25/23	JLI	SW8260C
o-Xylene	ND	3.6	0.72	ug/Kg	1	02/25/23	JLI	SW8260C
Styrene	ND	3.6	0.36	ug/Kg	1	02/25/23	JLI	SW8260C
tert-butyl alcohol	ND	72	14	ug/Kg	1	02/25/23	JLI	SW8260C
Tetrachloroethene	ND	3.6	0.72	ug/Kg	1	02/25/23	JLI	SW8260C
Toluene	ND	3.6	0.36	ug/Kg	1	02/25/23	JLI	SW8260C
Total Xylenes	ND	3.6	3.6	ug/Kg	1	02/25/23	JLI	SW8260C
trans-1,2-Dichloroethene	ND	3.6	0.36	ug/Kg	1	02/25/23	JLI	SW8260C
trans-1,3-Dichloropropene	ND	3.6	0.36	ug/Kg	1	02/25/23	JLI	SW8260C
Trichloroethene	ND	3.6	0.36	ug/Kg	1	02/25/23	JLI	SW8260C
Trichlorofluoromethane	ND	3.6	0.72	ug/Kg	1	02/25/23	JLI	SW8260C
Trichlorotrifluoroethane	ND	3.6	0.36	ug/Kg	1	02/25/23	JLI	SW8260C
Vinyl chloride	ND	3.6	0.36	ug/Kg	1	02/25/23	JLI	SW8260C

Project ID: IRRC BLUESTONE

Client ID: IRRC BLUESTONE 4B (GRAB)

Phoenix I.D.: CN49348

Parameter	Result	RL/ PQL	LOD/ MDL	Units	Dilution	Date/Time	By	Reference
QA/QC Surrogates								
% 1,2-dichlorobenzene-d4	98			%	1	02/25/23	JLI	70 - 130 %
% Bromofluorobenzene	95			%	1	02/25/23	JLI	70 - 130 %
% Dibromofluoromethane	91			%	1	02/25/23	JLI	70 - 130 %
% Toluene-d8	100			%	1	02/25/23	JLI	70 - 130 %
Vinyl Acetate	ND	36	36	ug/Kg	1	02/25/23	JLI	SW8260C

RL/PQL=Reporting/Practical Quantitation Level (Equivalent to NELAC LOQ, Limit of Quantitation) ND=Not Detected BRL=Below Reporting Level L=Biased Low LOD=Limit of Detection MDL=Method Detection Limit1
QA/QC Surrogates: Surrogates are compounds (preceeded with a %) added by the lab to determine analysis efficiency. Surrogate results(%) listed in the report are not "detected" compounds.

Comments:

Results are reported on an ``as received`` basis, and are not corrected for dry weight.

Volatile Comment:
To achieve client's objectives, where the lowest calibration standard or LOD justifies lowering the RL/PQL, the RL/PQL of some compounds have been lowered to meet criteria.

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Phyllis Shiller, Laboratory Director
March 12, 2023
Reviewed and Released by: Maryam Taylor, Project Manager

PHOENIX
Environmental Laboratories, Inc.
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Tel. (860) 645-1102 Fax (860) 645-0823

ACCREDITED IN ACCORDANCE WITH nelac NY # 11301

Analysis Report

March 12, 2023

FOR: Attn: Mr. Jeff Bogoian
Impact Consulting
170 Keyland Court
Bohemia NY 11716

Sample Information		Custody Information		Date	Time
Matrix:	SOIL	Collected by:	SR	02/24/23	8:55
Location Code:	IMPACTJB-IEC	Received by:	CP	02/24/23	17:38
Rush Request:	72 Hour	Analyzed by:	see "By" below		
P.O.#:					

Laboratory Data

SDG ID: GCN49338
Phoenix ID: CN49349

Project ID: IRRC BLUESTONE
Client ID: IRRC BLUESTONE 4C (GRAB)

Parameter	Result	RL/ PQL	LOD/ MDL	Units	Dilution	Date/Time	By	Reference
Volatiles								
1,2,4-Trimethylbenzene	ND	3.0	0.30	ug/Kg	1	02/25/23	JLI	SW8260C
1,3,5-Trimethylbenzene	ND	3.0	0.30	ug/Kg	1	02/25/23	JLI	SW8260C
1,3-Dichlorobenzene	ND	3.0	0.30	ug/Kg	1	02/25/23	JLI	SW8260C
Naphthalene	ND	3.0	0.59	ug/Kg	1	02/25/23	JLI	SW8260C
n-Butylbenzene	ND	3.0	0.30	ug/Kg	1	02/25/23	JLI	SW8260C
n-Propylbenzene	ND	3.0	0.59	ug/Kg	1	02/25/23	JLI	SW8260C
p-Isopropyltoluene	ND	3.0	0.30	ug/Kg	1	02/25/23	JLI	SW8260C
sec-Butylbenzene	ND	3.0	0.30	ug/Kg	1	02/25/23	JLI	SW8260C
tert-Butylbenzene	ND	3.0	0.30	ug/Kg	1	02/25/23	JLI	SW8260C
QA/QC Surrogates								
% 1,2-dichlorobenzene-d4	99			%	1	02/25/23	JLI	70 - 130 %
% Bromofluorobenzene	96			%	1	02/25/23	JLI	70 - 130 %
% Dibromofluoromethane	92			%	1	02/25/23	JLI	70 - 130 %
% Toluene-d8	100			%	1	02/25/23	JLI	70 - 130 %
1,4-dioxane								
1,4-dioxane	ND	44	24	ug/kg	1	02/25/23	JLI	SW8260C
Volatiles								
1,1,1,2-Tetrachloroethane	ND	3.0	0.59	ug/Kg	1	02/25/23	JLI	SW8260C
1,1,1-Trichloroethane	ND	3.0	0.30	ug/Kg	1	02/25/23	JLI	SW8260C
1,1,2,2-Tetrachloroethane	ND	3.0	0.59	ug/Kg	1	02/25/23	JLI	SW8260C
1,1,2-Trichloroethane	ND	3.0	0.59	ug/Kg	1	02/25/23	JLI	SW8260C
1,1-Dichloroethane	ND	3.0	0.59	ug/Kg	1	02/25/23	JLI	SW8260C
1,1-Dichloroethene	ND	3.0	0.30	ug/Kg	1	02/25/23	JLI	SW8260C
1,2,3-Trichlorobenzene	ND	3.0	0.59	ug/Kg	1	02/25/23	JLI	SW8260C

Project ID: IRRC BLUESTONE

Client ID: IRRC BLUESTONE 4C (GRAB)

Phoenix I.D.: CN49349

Parameter	Result	RL/ PQL	LOD/ MDL	Units	Dilution	Date/Time	By	Reference
1,2,4-Trichlorobenzene	ND	3.0	0.59	ug/Kg	1	02/25/23	JLI	SW8260C
1,2-Dibromo-3-chloropropane	ND	3.0	0.59	ug/Kg	1	02/25/23	JLI	SW8260C
1,2-Dibromoethane	ND	1.2	0.30	ug/Kg	1	02/25/23	JLI	SW8260C
1,2-Dichlorobenzene	ND	3.0	0.30	ug/Kg	1	02/25/23	JLI	SW8260C
1,2-Dichloroethane	ND	3.0	0.30	ug/Kg	1	02/25/23	JLI	SW8260C
1,2-Dichloropropane	ND	3.0	0.59	ug/Kg	1	02/25/23	JLI	SW8260C
1,3-Dichlorobenzene	ND	3.0	0.30	ug/Kg	1	02/25/23	JLI	SW8260C
1,4-Dichlorobenzene	ND	3.0	0.30	ug/Kg	1	02/25/23	JLI	SW8260C
2-Hexanone	ND	15	3.0	ug/Kg	1	02/25/23	JLI	SW8260C
4-Methyl-2-pentanone	ND	15	3.0	ug/Kg	1	02/25/23	JLI	SW8260C
Acetone	ND	30	3.0	ug/Kg	1	02/25/23	JLI	SW8260C
Acrolein	ND	0.47	0.47	ug/Kg	1	02/25/23	JLI	SW8260C
Acrylonitrile	ND	5.9	0.30	ug/Kg	1	02/25/23	JLI	SW8260C
Benzene	ND	3.0	0.30	ug/Kg	1	02/25/23	JLI	SW8260C
Bromochloromethane	ND	3.0	0.30	ug/Kg	1	02/25/23	JLI	SW8260C
Bromodichloromethane	ND	3.0	0.59	ug/Kg	1	02/25/23	JLI	SW8260C
Bromoform	ND	3.0	0.59	ug/Kg	1	02/25/23	JLI	SW8260C
Bromomethane	ND	3.0	1.2	ug/Kg	1	02/25/23	JLI	SW8260C
Carbon Disulfide	ND	3.0	0.59	ug/Kg	1	02/25/23	JLI	SW8260C
Carbon tetrachloride	ND	3.0	0.59	ug/Kg	1	02/25/23	JLI	SW8260C
Chlorobenzene	ND	3.0	0.30	ug/Kg	1	02/25/23	JLI	SW8260C
Chloroethane	ND	3.0	0.30	ug/Kg	1	02/25/23	JLI	SW8260C
Chloroform	ND	3.0	0.30	ug/Kg	1	02/25/23	JLI	SW8260C
Chloromethane	ND	3.0	0.59	ug/Kg	1	02/25/23	JLI	SW8260C
cis-1,2-Dichloroethene	ND	3.0	0.30	ug/Kg	1	02/25/23	JLI	SW8260C
cis-1,3-Dichloropropene	ND	3.0	0.30	ug/Kg	1	02/25/23	JLI	SW8260C
Cyclohexane	ND	3.0	0.59	ug/Kg	1	02/25/23	JLI	SW8260C
Dibromochloromethane	ND	3.0	0.59	ug/Kg	1	02/25/23	JLI	SW8260C
Dichlorodifluoromethane	ND	3.0	0.30	ug/Kg	1	02/25/23	JLI	SW8260C
Ethylbenzene	ND	3.0	0.30	ug/Kg	1	02/25/23	JLI	SW8260C
Isopropylbenzene	ND	3.0	0.30	ug/Kg	1	02/25/23	JLI	SW8260C
m&p-Xylene	ND	3.0	0.59	ug/Kg	1	02/25/23	JLI	SW8260C
Methyl ethyl ketone	ND	18	3.0	ug/Kg	1	02/25/23	JLI	SW8260C
Methyl t-butyl ether (MTBE)	ND	5.9	0.59	ug/Kg	1	02/25/23	JLI	SW8260C
Methylacetate	ND	5.9	5.9	ug/Kg	1	02/25/23	JLI	SW8260C
Methylcyclohexane	ND	3.0	0.59	ug/Kg	1	02/25/23	JLI	SW8260C
Methylene chloride	ND	3.0	3.0	ug/Kg	1	02/25/23	JLI	SW8260C
o-Xylene	ND	3.0	0.59	ug/Kg	1	02/25/23	JLI	SW8260C
Styrene	ND	3.0	0.30	ug/Kg	1	02/25/23	JLI	SW8260C
tert-butyl alcohol	ND	59	12	ug/Kg	1	02/25/23	JLI	SW8260C
Tetrachloroethene	ND	3.0	0.59	ug/Kg	1	02/25/23	JLI	SW8260C
Toluene	ND	3.0	0.30	ug/Kg	1	02/25/23	JLI	SW8260C
Total Xylenes	ND	3.0	3.0	ug/Kg	1	02/25/23	JLI	SW8260C
trans-1,2-Dichloroethene	ND	3.0	0.30	ug/Kg	1	02/25/23	JLI	SW8260C
trans-1,3-Dichloropropene	ND	3.0	0.30	ug/Kg	1	02/25/23	JLI	SW8260C
Trichloroethene	ND	3.0	0.30	ug/Kg	1	02/25/23	JLI	SW8260C
Trichlorofluoromethane	ND	3.0	0.59	ug/Kg	1	02/25/23	JLI	SW8260C
Trichlorotrifluoroethane	ND	3.0	0.30	ug/Kg	1	02/25/23	JLI	SW8260C
Vinyl chloride	ND	3.0	0.30	ug/Kg	1	02/25/23	JLI	SW8260C

Project ID: IRRC BLUESTONE

Client ID: IRRC BLUESTONE 4C (GRAB)

Phoenix I.D.: CN49349

Parameter	Result	RL/ PQL	LOD/ MDL	Units	Dilution	Date/Time	By	Reference
QA/QC Surrogates								
% 1,2-dichlorobenzene-d4	99			%	1	02/25/23	JLI	70 - 130 %
% Bromofluorobenzene	96			%	1	02/25/23	JLI	70 - 130 %
% Dibromofluoromethane	92			%	1	02/25/23	JLI	70 - 130 %
% Toluene-d8	100			%	1	02/25/23	JLI	70 - 130 %
Vinyl Acetate	ND	30	30	ug/Kg	1	02/25/23	JLI	SW8260C

RL/PQL=Reporting/Practical Quantitation Level (Equivalent to NELAC LOQ, Limit of Quantitation) ND=Not Detected BRL=Below Reporting Level L=Biased Low LOD=Limit of Detection MDL=Method Detection Limit1
QA/QC Surrogates: Surrogates are compounds (preceeded with a %) added by the lab to determine analysis efficiency. Surrogate results(%) listed in the report are not "detected" compounds.

Comments:

Results are reported on an ``as received`` basis, and are not corrected for dry weight.

Volatile Comment:
To achieve client's objectives, where the lowest calibration standard or LOD justifies lowering the RL/PQL, the RL/PQL of some compounds have been lowered to meet criteria.

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Phyllis Shiller, Laboratory Director

March 12, 2023

Reviewed and Released by: Maryam Taylor, Project Manager

PHOENIX
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Tel. (860) 645-1102 Fax (860) 645-0823

ACCREDITED IN ACCORDANCE WITH nelac NY # 11301

Analysis Report

March 12, 2023

FOR: Attn: Mr. Jeff Bogoian
Impact Consulting
170 Keyland Court
Bohemia NY 11716

Sample Information		Custody Information		Date	Time
Matrix:	SOIL	Collected by:	SR	02/24/23	9:00
Location Code:	IMPACTJB-IEC	Received by:	CP	02/24/23	17:38
Rush Request:	72 Hour	Analyzed by:	see "By" below		
P.O.#:					

Laboratory Data

SDG ID: GCN49338
Phoenix ID: CN49350

Project ID: IRRC BLUESTONE
Client ID: IRRC BLUESTONE 5A (GRAB)

Parameter	Result	RL/ PQL	LOD/ MDL	Units	Dilution	Date/Time	By	Reference
Volatiles								
1,2,4-Trimethylbenzene	ND	3.0	0.30	ug/Kg	1	02/25/23	JLI	SW8260C
1,3,5-Trimethylbenzene	ND	3.0	0.30	ug/Kg	1	02/25/23	JLI	SW8260C
1,3-Dichlorobenzene	ND	3.0	0.30	ug/Kg	1	02/25/23	JLI	SW8260C
Naphthalene	ND	3.0	0.60	ug/Kg	1	02/25/23	JLI	SW8260C
n-Butylbenzene	ND	3.0	0.30	ug/Kg	1	02/25/23	JLI	SW8260C
n-Propylbenzene	ND	3.0	0.60	ug/Kg	1	02/25/23	JLI	SW8260C
p-Isopropyltoluene	ND	3.0	0.30	ug/Kg	1	02/25/23	JLI	SW8260C
sec-Butylbenzene	ND	3.0	0.30	ug/Kg	1	02/25/23	JLI	SW8260C
tert-Butylbenzene	ND	3.0	0.30	ug/Kg	1	02/25/23	JLI	SW8260C
QA/QC Surrogates								
% 1,2-dichlorobenzene-d4	100			%	1	02/25/23	JLI	70 - 130 %
% Bromofluorobenzene	96			%	1	02/25/23	JLI	70 - 130 %
% Dibromofluoromethane	94			%	1	02/25/23	JLI	70 - 130 %
% Toluene-d8	100			%	1	02/25/23	JLI	70 - 130 %
1,4-dioxane								
1,4-dioxane	ND	45	24	ug/kg	1	02/25/23	JLI	SW8260C
Volatiles								
1,1,1,2-Tetrachloroethane	ND	3.0	0.60	ug/Kg	1	02/25/23	JLI	SW8260C
1,1,1-Trichloroethane	ND	3.0	0.30	ug/Kg	1	02/25/23	JLI	SW8260C
1,1,2,2-Tetrachloroethane	ND	3.0	0.60	ug/Kg	1	02/25/23	JLI	SW8260C
1,1,2-Trichloroethane	ND	3.0	0.60	ug/Kg	1	02/25/23	JLI	SW8260C
1,1-Dichloroethane	ND	3.0	0.60	ug/Kg	1	02/25/23	JLI	SW8260C
1,1-Dichloroethene	ND	3.0	0.30	ug/Kg	1	02/25/23	JLI	SW8260C
1,2,3-Trichlorobenzene	ND	3.0	0.60	ug/Kg	1	02/25/23	JLI	SW8260C

Project ID: IRRC BLUESTONE

Client ID: IRRC BLUESTONE 5A (GRAB)

Phoenix I.D.: CN49350

Parameter	Result		RL/ PQL	LOD/ MDL	Units	Dilution	Date/Time	By	Reference
1,2,4-Trichlorobenzene	ND		3.0	0.60	ug/Kg	1	02/25/23	JLI	SW8260C
1,2-Dibromo-3-chloropropane	ND		3.0	0.60	ug/Kg	1	02/25/23	JLI	SW8260C
1,2-Dibromoethane	ND		1.2	0.30	ug/Kg	1	02/25/23	JLI	SW8260C
1,2-Dichlorobenzene	ND		3.0	0.30	ug/Kg	1	02/25/23	JLI	SW8260C
1,2-Dichloroethane	ND		3.0	0.30	ug/Kg	1	02/25/23	JLI	SW8260C
1,2-Dichloropropane	ND		3.0	0.60	ug/Kg	1	02/25/23	JLI	SW8260C
1,3-Dichlorobenzene	ND		3.0	0.30	ug/Kg	1	02/25/23	JLI	SW8260C
1,4-Dichlorobenzene	ND		3.0	0.30	ug/Kg	1	02/25/23	JLI	SW8260C
2-Hexanone	ND		15	3.0	ug/Kg	1	02/25/23	JLI	SW8260C
4-Methyl-2-pentanone	ND		15	3.0	ug/Kg	1	02/25/23	JLI	SW8260C
Acetone	3.4	JS	30	3.0	ug/Kg	1	02/25/23	JLI	SW8260C
Acrolein	ND		0.47	0.47	ug/Kg	1	02/25/23	JLI	SW8260C
Acrylonitrile	ND		6.0	0.30	ug/Kg	1	02/25/23	JLI	SW8260C
Benzene	ND		3.0	0.30	ug/Kg	1	02/25/23	JLI	SW8260C
Bromochloromethane	ND		3.0	0.30	ug/Kg	1	02/25/23	JLI	SW8260C
Bromodichloromethane	ND		3.0	0.60	ug/Kg	1	02/25/23	JLI	SW8260C
Bromoform	ND		3.0	0.60	ug/Kg	1	02/25/23	JLI	SW8260C
Bromomethane	ND		3.0	1.2	ug/Kg	1	02/25/23	JLI	SW8260C
Carbon Disulfide	1.1	J	3.0	0.60	ug/Kg	1	02/25/23	JLI	SW8260C
Carbon tetrachloride	ND		3.0	0.60	ug/Kg	1	02/25/23	JLI	SW8260C
Chlorobenzene	ND		3.0	0.30	ug/Kg	1	02/25/23	JLI	SW8260C
Chloroethane	ND		3.0	0.30	ug/Kg	1	02/25/23	JLI	SW8260C
Chloroform	ND		3.0	0.30	ug/Kg	1	02/25/23	JLI	SW8260C
Chloromethane	ND		3.0	0.60	ug/Kg	1	02/25/23	JLI	SW8260C
cis-1,2-Dichloroethene	ND		3.0	0.30	ug/Kg	1	02/25/23	JLI	SW8260C
cis-1,3-Dichloropropene	ND		3.0	0.30	ug/Kg	1	02/25/23	JLI	SW8260C
Cyclohexane	ND		3.0	0.60	ug/Kg	1	02/25/23	JLI	SW8260C
Dibromochloromethane	ND		3.0	0.60	ug/Kg	1	02/25/23	JLI	SW8260C
Dichlorodifluoromethane	ND		3.0	0.30	ug/Kg	1	02/25/23	JLI	SW8260C
Ethylbenzene	ND		3.0	0.30	ug/Kg	1	02/25/23	JLI	SW8260C
Isopropylbenzene	ND		3.0	0.30	ug/Kg	1	02/25/23	JLI	SW8260C
m&p-Xylene	ND		3.0	0.60	ug/Kg	1	02/25/23	JLI	SW8260C
Methyl ethyl ketone	ND		18	3.0	ug/Kg	1	02/25/23	JLI	SW8260C
Methyl t-butyl ether (MTBE)	ND		6.0	0.60	ug/Kg	1	02/25/23	JLI	SW8260C
Methylacetate	ND		6.0	6.0	ug/Kg	1	02/25/23	JLI	SW8260C
Methylcyclohexane	ND		3.0	0.60	ug/Kg	1	02/25/23	JLI	SW8260C
Methylene chloride	ND		3.0	3.0	ug/Kg	1	02/25/23	JLI	SW8260C
o-Xylene	ND		3.0	0.60	ug/Kg	1	02/25/23	JLI	SW8260C
Styrene	ND		3.0	0.30	ug/Kg	1	02/25/23	JLI	SW8260C
tert-butyl alcohol	ND		60	12	ug/Kg	1	02/25/23	JLI	SW8260C
Tetrachloroethene	ND		3.0	0.60	ug/Kg	1	02/25/23	JLI	SW8260C
Toluene	ND		3.0	0.30	ug/Kg	1	02/25/23	JLI	SW8260C
Total Xylenes	ND		3.0	3.0	ug/Kg	1	02/25/23	JLI	SW8260C
trans-1,2-Dichloroethene	ND		3.0	0.30	ug/Kg	1	02/25/23	JLI	SW8260C
trans-1,3-Dichloropropene	ND		3.0	0.30	ug/Kg	1	02/25/23	JLI	SW8260C
Trichloroethene	ND		3.0	0.30	ug/Kg	1	02/25/23	JLI	SW8260C
Trichlorofluoromethane	ND		3.0	0.60	ug/Kg	1	02/25/23	JLI	SW8260C
Trichlorotrifluoroethane	ND		3.0	0.30	ug/Kg	1	02/25/23	JLI	SW8260C
Vinyl chloride	ND		3.0	0.30	ug/Kg	1	02/25/23	JLI	SW8260C

Project ID: IRRC BLUESTONE

Client ID: IRRC BLUESTONE 5A (GRAB)

Phoenix I.D.: CN49350

Parameter	Result	RL/ PQL	LOD/ MDL	Units	Dilution	Date/Time	By	Reference
QA/QC Surrogates								
% 1,2-dichlorobenzene-d4	100			%	1	02/25/23	JLI	70 - 130 %
% Bromofluorobenzene	96			%	1	02/25/23	JLI	70 - 130 %
% Dibromofluoromethane	94			%	1	02/25/23	JLI	70 - 130 %
% Toluene-d8	100			%	1	02/25/23	JLI	70 - 130 %
Vinyl Acetate	ND	30	30	ug/Kg	1	02/25/23	JLI	SW8260C

RL/PQL=Reporting/Practical Quantitation Level (Equivalent to NELAC LOQ, Limit of Quantitation) ND=Not Detected BRL=Below Reporting Level L=Biased Low J=Estimated Below RL LOD=Limit of Detection MDL=Method Detection Limit1
QA/QC Surrogates: Surrogates are compounds (preceeded with a %) added by the lab to determine analysis efficiency. Surrogate results(%) listed in the report are not "detected" compounds.

Comments:

Results are reported on an ``as received`` basis, and are not corrected for dry weight.

Volatile Comment:
To achieve client's objectives, where the lowest calibration standard or LOD justifies lowering the RL/PQL, the RL/PQL of some compounds have been lowered to meet criteria.

All soils, solids and sludges are reported on a dry weight basis unless otherwise noted in the sample comments.

S - Laboratory solvent, contamination is possible.

If you are the client above and have any questions concerning this testing, please do not hesitate to contact Phoenix Client Services at ext.200.
The contents of this report cannot be discussed with anyone other than the client listed above without their written consent.

Phyllis Shiller, Laboratory Director

March 12, 2023

Reviewed and Released by: Maryam Taylor, Project Manager

PHOENIX
Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

ACCREDITED IN ACCORDANCE WITH nelac NY # 11301

Analysis Report

March 12, 2023

FOR: Attn: Mr. Jeff Bogoian
Impact Consulting
170 Keyland Court
Bohemia NY 11716

Sample Information		Custody Information		Date	Time
Matrix:	SOIL	Collected by:	SR	02/24/23	9:05
Location Code:	IMPACTJB-IEC	Received by:	CP	02/24/23	17:38
Rush Request:	72 Hour	Analyzed by:	see "By" below		
P.O.#:					

Laboratory Data

SDG ID: GCN49338
Phoenix ID: CN49351

Project ID: IRRC BLUESTONE
Client ID: IRRC BLUESTONE 5B (GRAB)

Parameter	Result	RL/ PQL	LOD/ MDL	Units	Dilution	Date/Time	By	Reference
Volatiles								
1,2,4-Trimethylbenzene	ND	4.4	0.44	ug/Kg	1	02/25/23	JLI	SW8260C
1,3,5-Trimethylbenzene	ND	4.4	0.44	ug/Kg	1	02/25/23	JLI	SW8260C
1,3-Dichlorobenzene	ND	4.4	0.44	ug/Kg	1	02/25/23	JLI	SW8260C
Naphthalene	ND	4.4	0.87	ug/Kg	1	02/25/23	JLI	SW8260C
n-Butylbenzene	ND	4.4	0.44	ug/Kg	1	02/25/23	JLI	SW8260C
n-Propylbenzene	ND	4.4	0.87	ug/Kg	1	02/25/23	JLI	SW8260C
p-Isopropyltoluene	ND	4.4	0.44	ug/Kg	1	02/25/23	JLI	SW8260C
sec-Butylbenzene	ND	4.4	0.44	ug/Kg	1	02/25/23	JLI	SW8260C
tert-Butylbenzene	ND	4.4	0.44	ug/Kg	1	02/25/23	JLI	SW8260C
QA/QC Surrogates								
% 1,2-dichlorobenzene-d4	99			%	1	02/25/23	JLI	70 - 130 %
% Bromofluorobenzene	95			%	1	02/25/23	JLI	70 - 130 %
% Dibromofluoromethane	88			%	1	02/25/23	JLI	70 - 130 %
% Toluene-d8	100			%	1	02/25/23	JLI	70 - 130 %
1,4-dioxane								
1,4-dioxane	ND	65	35	ug/kg	1	02/25/23	JLI	SW8260C
Volatiles								
1,1,1,2-Tetrachloroethane	ND	4.4	0.87	ug/Kg	1	02/25/23	JLI	SW8260C
1,1,1-Trichloroethane	ND	4.4	0.44	ug/Kg	1	02/25/23	JLI	SW8260C
1,1,2,2-Tetrachloroethane	ND	4.4	0.87	ug/Kg	1	02/25/23	JLI	SW8260C
1,1,2-Trichloroethane	ND	4.4	0.87	ug/Kg	1	02/25/23	JLI	SW8260C
1,1-Dichloroethane	ND	4.4	0.87	ug/Kg	1	02/25/23	JLI	SW8260C
1,1-Dichloroethene	ND	4.4	0.44	ug/Kg	1	02/25/23	JLI	SW8260C
1,2,3-Trichlorobenzene	ND	4.4	0.87	ug/Kg	1	02/25/23	JLI	SW8260C

Project ID: IRRC BLUESTONE

Client ID: IRRC BLUESTONE 5B (GRAB)

Phoenix I.D.: CN49351

Parameter	Result		RL/ PQL	LOD/ MDL	Units	Dilution	Date/Time	By	Reference
1,2,4-Trichlorobenzene	ND		4.4	0.87	ug/Kg	1	02/25/23	JLI	SW8260C
1,2-Dibromo-3-chloropropane	ND		4.4	0.87	ug/Kg	1	02/25/23	JLI	SW8260C
1,2-Dibromoethane	ND		1.2	0.44	ug/Kg	1	02/25/23	JLI	SW8260C
1,2-Dichlorobenzene	ND		4.4	0.44	ug/Kg	1	02/25/23	JLI	SW8260C
1,2-Dichloroethane	ND		4.4	0.44	ug/Kg	1	02/25/23	JLI	SW8260C
1,2-Dichloropropane	ND		4.4	0.87	ug/Kg	1	02/25/23	JLI	SW8260C
1,3-Dichlorobenzene	ND		4.4	0.44	ug/Kg	1	02/25/23	JLI	SW8260C
1,4-Dichlorobenzene	ND		4.4	0.44	ug/Kg	1	02/25/23	JLI	SW8260C
2-Hexanone	ND		22	4.4	ug/Kg	1	02/25/23	JLI	SW8260C
4-Methyl-2-pentanone	ND		22	4.4	ug/Kg	1	02/25/23	JLI	SW8260C
Acetone	4.5	JS	44	4.4	ug/Kg	1	02/25/23	JLI	SW8260C
Acrolein	ND		0.47	0.47	ug/Kg	1	02/25/23	JLI	SW8260C
Acrylonitrile	ND		8.7	0.44	ug/Kg	1	02/25/23	JLI	SW8260C
Benzene	ND		4.4	0.44	ug/Kg	1	02/25/23	JLI	SW8260C
Bromochloromethane	ND		4.4	0.44	ug/Kg	1	02/25/23	JLI	SW8260C
Bromodichloromethane	ND		4.4	0.87	ug/Kg	1	02/25/23	JLI	SW8260C
Bromoform	ND		4.4	0.87	ug/Kg	1	02/25/23	JLI	SW8260C
Bromomethane	ND		4.4	1.7	ug/Kg	1	02/25/23	JLI	SW8260C
Carbon Disulfide	ND		4.4	0.87	ug/Kg	1	02/25/23	JLI	SW8260C
Carbon tetrachloride	ND		4.4	0.87	ug/Kg	1	02/25/23	JLI	SW8260C
Chlorobenzene	ND		4.4	0.44	ug/Kg	1	02/25/23	JLI	SW8260C
Chloroethane	ND		4.4	0.44	ug/Kg	1	02/25/23	JLI	SW8260C
Chloroform	ND		4.4	0.44	ug/Kg	1	02/25/23	JLI	SW8260C
Chloromethane	ND		4.4	0.87	ug/Kg	1	02/25/23	JLI	SW8260C
cis-1,2-Dichloroethene	ND		4.4	0.44	ug/Kg	1	02/25/23	JLI	SW8260C
cis-1,3-Dichloropropene	ND		4.4	0.44	ug/Kg	1	02/25/23	JLI	SW8260C
Cyclohexane	ND		4.4	0.87	ug/Kg	1	02/25/23	JLI	SW8260C
Dibromochloromethane	ND		4.4	0.87	ug/Kg	1	02/25/23	JLI	SW8260C
Dichlorodifluoromethane	ND		4.4	0.44	ug/Kg	1	02/25/23	JLI	SW8260C
Ethylbenzene	ND		4.4	0.44	ug/Kg	1	02/25/23	JLI	SW8260C
Isopropylbenzene	ND		4.4	0.44	ug/Kg	1	02/25/23	JLI	SW8260C
m&p-Xylene	ND		4.4	0.87	ug/Kg	1	02/25/23	JLI	SW8260C
Methyl ethyl ketone	ND		26	4.4	ug/Kg	1	02/25/23	JLI	SW8260C
Methyl t-butyl ether (MTBE)	ND		8.7	0.87	ug/Kg	1	02/25/23	JLI	SW8260C
Methylacetate	ND		8.7	8.7	ug/Kg	1	02/25/23	JLI	SW8260C
Methylcyclohexane	ND		4.4	0.87	ug/Kg	1	02/25/23	JLI	SW8260C
Methylene chloride	ND		4.4	4.4	ug/Kg	1	02/25/23	JLI	SW8260C
o-Xylene	ND		4.4	0.87	ug/Kg	1	02/25/23	JLI	SW8260C
Styrene	ND		4.4	0.44	ug/Kg	1	02/25/23	JLI	SW8260C
tert-butyl alcohol	ND		87	17	ug/Kg	1	02/25/23	JLI	SW8260C
Tetrachloroethene	ND		4.4	0.87	ug/Kg	1	02/25/23	JLI	SW8260C
Toluene	ND		4.4	0.44	ug/Kg	1	02/25/23	JLI	SW8260C
Total Xylenes	ND		4.4	4.4	ug/Kg	1	02/25/23	JLI	SW8260C
trans-1,2-Dichloroethene	ND		4.4	0.44	ug/Kg	1	02/25/23	JLI	SW8260C
trans-1,3-Dichloropropene	ND		4.4	0.44	ug/Kg	1	02/25/23	JLI	SW8260C
Trichloroethene	ND		4.4	0.44	ug/Kg	1	02/25/23	JLI	SW8260C
Trichlorofluoromethane	ND		4.4	0.87	ug/Kg	1	02/25/23	JLI	SW8260C
Trichlorotrifluoroethane	ND		4.4	0.44	ug/Kg	1	02/25/23	JLI	SW8260C
Vinyl chloride	ND		4.4	0.44	ug/Kg	1	02/25/23	JLI	SW8260C

Project ID: IRRC BLUESTONE

Client ID: IRRC BLUESTONE 5B (GRAB)

Phoenix I.D.: CN49351

Parameter	Result	RL/ PQL	LOD/ MDL	Units	Dilution	Date/Time	By	Reference
QA/QC Surrogates								
% 1,2-dichlorobenzene-d4	99			%	1	02/25/23	JLI	70 - 130 %
% Bromofluorobenzene	95			%	1	02/25/23	JLI	70 - 130 %
% Dibromofluoromethane	88			%	1	02/25/23	JLI	70 - 130 %
% Toluene-d8	100			%	1	02/25/23	JLI	70 - 130 %
Vinyl Acetate	ND	44	44	ug/Kg	1	02/25/23	JLI	SW8260C

RL/PQL=Reporting/Practical Quantitation Level (Equivalent to NELAC LOQ, Limit of Quantitation) ND=Not Detected BRL=Below Reporting Level L=Biased Low J=Estimated Below RL LOD=Limit of Detection MDL=Method Detection Limit1
QA/QC Surrogates: Surrogates are compounds (preceeded with a %) added by the lab to determine analysis efficiency. Surrogate results(%) listed in the report are not "detected" compounds.

Comments:

Results are reported on an ``as received`` basis, and are not corrected for dry weight.

Volatile Comment:
To achieve client's objectives, where the lowest calibration standard or LOD justifies lowering the RL/PQL, the RL/PQL of some compounds have been lowered to meet criteria.

All soils, solids and sludges are reported on a dry weight basis unless otherwise noted in the sample comments.

S - Laboratory solvent, contamination is possible.

If you are the client above and have any questions concerning this testing, please do not hesitate to contact Phoenix Client Services at ext.200.
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Phyllis Shiller, Laboratory Director

March 12, 2023

Reviewed and Released by: Maryam Taylor, Project Manager

PHOENIX
Environmental Laboratories, Inc.
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Tel. (860) 645-1102 Fax (860) 645-0823

ACCREDITED IN ACCORDANCE WITH nelac NY # 11301

Analysis Report

March 12, 2023

FOR: Attn: Mr. Jeff Bogoian
Impact Consulting
170 Keyland Court
Bohemia NY 11716

Sample Information		Custody Information		Date	Time
Matrix:	SOIL	Collected by:	SR	02/24/23	9:10
Location Code:	IMPACTJB-IEC	Received by:	CP	02/24/23	17:38
Rush Request:	72 Hour	Analyzed by:	see "By" below		
P.O.#:					

Laboratory Data

SDG ID: GCN49338
Phoenix ID: CN49352

Project ID: IRRC BLUESTONE
Client ID: IRRC BLUESTONE 5C (GRAB)

Parameter	Result	RL/ PQL	LOD/ MDL	Units	Dilution	Date/Time	By	Reference
Volatiles								
1,2,4-Trimethylbenzene	ND	2.6	0.26	ug/Kg	1	02/25/23	JLI	SW8260C
1,3,5-Trimethylbenzene	ND	2.6	0.26	ug/Kg	1	02/25/23	JLI	SW8260C
1,3-Dichlorobenzene	ND	2.6	0.26	ug/Kg	1	02/25/23	JLI	SW8260C
Naphthalene	ND	2.6	0.52	ug/Kg	1	02/25/23	JLI	SW8260C
n-Butylbenzene	ND	2.6	0.26	ug/Kg	1	02/25/23	JLI	SW8260C
n-Propylbenzene	ND	2.6	0.52	ug/Kg	1	02/25/23	JLI	SW8260C
p-Isopropyltoluene	ND	2.6	0.26	ug/Kg	1	02/25/23	JLI	SW8260C
sec-Butylbenzene	ND	2.6	0.26	ug/Kg	1	02/25/23	JLI	SW8260C
tert-Butylbenzene	ND	2.6	0.26	ug/Kg	1	02/25/23	JLI	SW8260C
QA/QC Surrogates								
% 1,2-dichlorobenzene-d4	98			%	1	02/25/23	JLI	70 - 130 %
% Bromofluorobenzene	95			%	1	02/25/23	JLI	70 - 130 %
% Dibromofluoromethane	92			%	1	02/25/23	JLI	70 - 130 %
% Toluene-d8	100			%	1	02/25/23	JLI	70 - 130 %
1,4-dioxane								
1,4-dioxane	ND	39	21	ug/kg	1	02/25/23	JLI	SW8260C
Volatiles								
1,1,1,2-Tetrachloroethane	ND	2.6	0.52	ug/Kg	1	02/25/23	JLI	SW8260C
1,1,1-Trichloroethane	ND	2.6	0.26	ug/Kg	1	02/25/23	JLI	SW8260C
1,1,2,2-Tetrachloroethane	ND	2.6	0.52	ug/Kg	1	02/25/23	JLI	SW8260C
1,1,2-Trichloroethane	ND	2.6	0.52	ug/Kg	1	02/25/23	JLI	SW8260C
1,1-Dichloroethane	ND	2.6	0.52	ug/Kg	1	02/25/23	JLI	SW8260C
1,1-Dichloroethene	ND	2.6	0.26	ug/Kg	1	02/25/23	JLI	SW8260C
1,2,3-Trichlorobenzene	ND	2.6	0.52	ug/Kg	1	02/25/23	JLI	SW8260C

Project ID: IRRC BLUESTONE

Client ID: IRRC BLUESTONE 5C (GRAB)

Phoenix I.D.: CN49352

Parameter	Result	RL/ PQL	LOD/ MDL	Units	Dilution	Date/Time	By	Reference
1,2,4-Trichlorobenzene	ND	2.6	0.52	ug/Kg	1	02/25/23	JLI	SW8260C
1,2-Dibromo-3-chloropropane	ND	2.6	0.52	ug/Kg	1	02/25/23	JLI	SW8260C
1,2-Dibromoethane	ND	1.2	0.26	ug/Kg	1	02/25/23	JLI	SW8260C
1,2-Dichlorobenzene	ND	2.6	0.26	ug/Kg	1	02/25/23	JLI	SW8260C
1,2-Dichloroethane	ND	2.6	0.26	ug/Kg	1	02/25/23	JLI	SW8260C
1,2-Dichloropropane	ND	2.6	0.52	ug/Kg	1	02/25/23	JLI	SW8260C
1,3-Dichlorobenzene	ND	2.6	0.26	ug/Kg	1	02/25/23	JLI	SW8260C
1,4-Dichlorobenzene	ND	2.6	0.26	ug/Kg	1	02/25/23	JLI	SW8260C
2-Hexanone	ND	13	2.6	ug/Kg	1	02/25/23	JLI	SW8260C
4-Methyl-2-pentanone	ND	13	2.6	ug/Kg	1	02/25/23	JLI	SW8260C
Acetone	ND	26	2.6	ug/Kg	1	02/25/23	JLI	SW8260C
Acrolein	ND	0.47	0.47	ug/Kg	1	02/25/23	JLI	SW8260C
Acrylonitrile	ND	5.2	0.26	ug/Kg	1	02/25/23	JLI	SW8260C
Benzene	ND	2.6	0.26	ug/Kg	1	02/25/23	JLI	SW8260C
Bromochloromethane	ND	2.6	0.26	ug/Kg	1	02/25/23	JLI	SW8260C
Bromodichloromethane	ND	2.6	0.52	ug/Kg	1	02/25/23	JLI	SW8260C
Bromoform	ND	2.6	0.52	ug/Kg	1	02/25/23	JLI	SW8260C
Bromomethane	ND	2.6	1.0	ug/Kg	1	02/25/23	JLI	SW8260C
Carbon Disulfide	ND	2.6	0.52	ug/Kg	1	02/25/23	JLI	SW8260C
Carbon tetrachloride	ND	2.6	0.52	ug/Kg	1	02/25/23	JLI	SW8260C
Chlorobenzene	ND	2.6	0.26	ug/Kg	1	02/25/23	JLI	SW8260C
Chloroethane	ND	2.6	0.26	ug/Kg	1	02/25/23	JLI	SW8260C
Chloroform	ND	2.6	0.26	ug/Kg	1	02/25/23	JLI	SW8260C
Chloromethane	ND	2.6	0.52	ug/Kg	1	02/25/23	JLI	SW8260C
cis-1,2-Dichloroethene	ND	2.6	0.26	ug/Kg	1	02/25/23	JLI	SW8260C
cis-1,3-Dichloropropene	ND	2.6	0.26	ug/Kg	1	02/25/23	JLI	SW8260C
Cyclohexane	ND	2.6	0.52	ug/Kg	1	02/25/23	JLI	SW8260C
Dibromochloromethane	ND	2.6	0.52	ug/Kg	1	02/25/23	JLI	SW8260C
Dichlorodifluoromethane	ND	2.6	0.26	ug/Kg	1	02/25/23	JLI	SW8260C
Ethylbenzene	ND	2.6	0.26	ug/Kg	1	02/25/23	JLI	SW8260C
Isopropylbenzene	ND	2.6	0.26	ug/Kg	1	02/25/23	JLI	SW8260C
m&p-Xylene	ND	2.6	0.52	ug/Kg	1	02/25/23	JLI	SW8260C
Methyl ethyl ketone	ND	16	2.6	ug/Kg	1	02/25/23	JLI	SW8260C
Methyl t-butyl ether (MTBE)	ND	5.2	0.52	ug/Kg	1	02/25/23	JLI	SW8260C
Methylacetate	ND	5.2	5.2	ug/Kg	1	02/25/23	JLI	SW8260C
Methylcyclohexane	ND	2.6	0.52	ug/Kg	1	02/25/23	JLI	SW8260C
Methylene chloride	ND	2.6	2.6	ug/Kg	1	02/25/23	JLI	SW8260C
o-Xylene	ND	2.6	0.52	ug/Kg	1	02/25/23	JLI	SW8260C
Styrene	ND	2.6	0.26	ug/Kg	1	02/25/23	JLI	SW8260C
tert-butyl alcohol	ND	52	10	ug/Kg	1	02/25/23	JLI	SW8260C
Tetrachloroethene	ND	2.6	0.52	ug/Kg	1	02/25/23	JLI	SW8260C
Toluene	ND	2.6	0.26	ug/Kg	1	02/25/23	JLI	SW8260C
Total Xylenes	ND	2.6	2.6	ug/Kg	1	02/25/23	JLI	SW8260C
trans-1,2-Dichloroethene	ND	2.6	0.26	ug/Kg	1	02/25/23	JLI	SW8260C
trans-1,3-Dichloropropene	ND	2.6	0.26	ug/Kg	1	02/25/23	JLI	SW8260C
Trichloroethene	ND	2.6	0.26	ug/Kg	1	02/25/23	JLI	SW8260C
Trichlorofluoromethane	ND	2.6	0.52	ug/Kg	1	02/25/23	JLI	SW8260C
Trichlorotrifluoroethane	ND	2.6	0.26	ug/Kg	1	02/25/23	JLI	SW8260C
Vinyl chloride	ND	2.6	0.26	ug/Kg	1	02/25/23	JLI	SW8260C

Project ID: IRRC BLUESTONE

Client ID: IRRC BLUESTONE 5C (GRAB)

Phoenix I.D.: CN49352

Parameter	Result	RL/ PQL	LOD/ MDL	Units	Dilution	Date/Time	By	Reference
QA/QC Surrogates								
% 1,2-dichlorobenzene-d4	98			%	1	02/25/23	JLI	70 - 130 %
% Bromofluorobenzene	95			%	1	02/25/23	JLI	70 - 130 %
% Dibromofluoromethane	92			%	1	02/25/23	JLI	70 - 130 %
% Toluene-d8	100			%	1	02/25/23	JLI	70 - 130 %
Vinyl Acetate	ND	26	26	ug/Kg	1	02/25/23	JLI	SW8260C

RL/PQL=Reporting/Practical Quantitation Level (Equivalent to NELAC LOQ, Limit of Quantitation) ND=Not Detected BRL=Below Reporting Level L=Biased Low LOD=Limit of Detection MDL=Method Detection Limit1
QA/QC Surrogates: Surrogates are compounds (preceeded with a %) added by the lab to determine analysis efficiency. Surrogate results(%) listed in the report are not "detected" compounds.

Comments:

Results are reported on an ``as received`` basis, and are not corrected for dry weight.

Volatile Comment:
To achieve client's objectives, where the lowest calibration standard or LOD justifies lowering the RL/PQL, the RL/PQL of some compounds have been lowered to meet criteria.

All soils, solids and sludges are reported on a dry weight basis unless otherwise noted in the sample comments.

If you are the client above and have any questions concerning this testing, please do not hesitate to contact Phoenix Client Services at ext.200.
The contents of this report cannot be discussed with anyone other than the client listed above without their written consent.

Phyllis Shiller, Laboratory Director

March 12, 2023

Reviewed and Released by: Maryam Taylor, Project Manager

PHOENIX
Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

ACCREDITED IN ACCORDANCE WITH nelac NY # 11301

Analysis Report

March 12, 2023

FOR: Attn: Mr. Jeff Bogoian
Impact Consulting
170 Keyland Court
Bohemia NY 11716

Sample Information		Custody Information		Date	Time
Matrix:	SOIL	Collected by:	SR	02/24/23	9:15
Location Code:	IMPACTJB-IEC	Received by:	CP	02/24/23	17:38
Rush Request:	72 Hour	Analyzed by:	see "By" below		
P.O.#:					

Laboratory Data

SDG ID: GCN49338
Phoenix ID: CN49353

Project ID: IRRC BLUESTONE
Client ID: IRRC BLUESTONE COMP-1

Parameter	Result		RL/ PQL	LOD/ MDL	Units	Dilution	Date/Time	By	Reference	
Silver	ND		0.36	0.36	mg/Kg	1	02/28/23	CPP	SW6010D	
Aluminum	13200		36	7.2	mg/Kg	10	02/28/23	CPP	SW6010D	
Arsenic	ND		0.72	0.72	mg/Kg	1	02/28/23	CPP	SW6010D	
Barium	217		0.7	0.36	mg/Kg	1	02/28/23	CPP	SW6010D	
Beryllium	0.25	J	0.29	0.14	mg/Kg	1	02/28/23	CPP	SW6010D	
Calcium	5980		3.6	3.3	mg/Kg	1	02/28/23	CPP	SW6010D	
Cadmium	0.76		0.36	0.36	mg/Kg	1	02/28/23	CPP	SW6010D	
Cobalt	14.8		0.36	0.36	mg/Kg	1	02/28/23	CPP	SW6010D	
Chromium	29.0		0.36	0.36	mg/Kg	1	02/28/23	CPP	SW6010D	
Copper	46.1		0.7	0.36	mg/kg	1	02/28/23	CPP	SW6010D	
Iron	25300		36	36	mg/Kg	10	02/28/23	CPP	SW6010D	
Mercury	ND		0.03	0.02	mg/Kg	2	02/27/23	PM	SW7471B	
Potassium	7160		72	28	mg/Kg	10	02/28/23	CPP	SW6010D	
Magnesium	7930		36	36	mg/Kg	10	02/28/23	CPP	SW6010D	
Manganese	241		3.6	3.6	mg/Kg	10	02/28/23	TH	SW6010D	
Sodium	668	*	7	3.1	mg/Kg	1	02/28/23	TH	SW6010D	
Nickel	22.4		0.36	0.36	mg/Kg	1	02/28/23	CPP	SW6010D	
Lead	14.0		0.7	0.36	mg/Kg	1	02/28/23	CPP	SW6010D	
Antimony	ND		3.6	3.6	mg/Kg	1	02/28/23	CPP	SW6010D	
Selenium	ND		1.4	1.2	mg/Kg	1	02/28/23	CPP	SW6010D	
Thallium	ND		1.4	1.4	mg/Kg	1	02/28/23	CPP	SW6010D	
Trivalent Chromium	29.0		0.36	0.36	mg/kg	1	02/28/23		CALC 6010-7196	
Vanadium	58.4		0.36	0.36	mg/Kg	1	02/28/23	CPP	SW6010D	
Zinc	69.6		0.7	0.36	mg/Kg	1	02/28/23	CPP	SW6010D	
Percent Solid	95				%		02/24/23	AL	SW846-%Solid	
Chromium, Hex. (SW3060A digestion	ND		0.42	0.42	mg/Kg	1	02/27/23	DK	SW7196A	
pH at 25C - Soil	10.3		1.00	1.00	pH Units	1	02/24/23 20:55	ER/PK	SW846 9045D	1
Redox Potential	55.5				mV	1	02/24/23	ER/PK	SM2580B-09	1

Ver 2

Project ID: IRRC BLUESTONE
Client ID: IRRC BLUESTONE COMP-1

Phoenix I.D.: CN49353

Parameter	Result	RL/ PQL	LOD/ MDL	Units	Dilution	Date/Time	By	Reference
Total Cyanide (SW9010C Distill.)	ND	0.53	0.263	mg/Kg	1	02/28/23	CL/GD	SW9012B
Mercury Digestion	Completed					02/27/23	AL/AL	SW7471B
Soil Extraction for Herbicide	Completed					02/24/23	J/DKD	SW3546
Soil Extraction for PCB	Completed					02/27/23	MO/F	SW3546
Soil Extraction for Pesticides	Completed					02/27/23	MO/F	SW3546
Soil Extraction for SVOA	Completed					02/27/23	H/M	SW3546
Total Metals Digest	Completed					02/24/23	S/AG	SW3050B
Chlorinated Herbicides								
2,4,5-T	ND	130	130	ug/Kg	10	02/28/23	JRB	SW8151A
2,4,5-TP (Silvex)	ND	130	130	ug/Kg	10	02/28/23	JRB	SW8151A
2,4-D	ND	260	260	ug/Kg	10	02/28/23	JRB	SW8151A
2,4-DB	ND	2600	2600	ug/Kg	10	02/28/23	JRB	SW8151A
Dalapon	ND	130	130	ug/Kg	10	02/28/23	JRB	SW8151A
Dicamba	ND	130	130	ug/Kg	10	02/28/23	JRB	SW8151A
Dichloroprop	ND	260	260	ug/Kg	10	02/28/23	JRB	SW8151A
Dinoseb	ND	260	260	ug/Kg	10	02/28/23	JRB	SW8151A
QA/QC Surrogates								
% DCAA	146			%	10	02/28/23	JRB	30 - 150 %
% DCAA (Confirmation)	120			%	10	02/28/23	JRB	30 - 150 %
Polychlorinated Biphenyls								
PCB-1016	ND	68	68	ug/Kg	2	03/01/23	SC	SW8082A
PCB-1221	ND	68	68	ug/Kg	2	03/01/23	SC	SW8082A
PCB-1232	ND	68	68	ug/Kg	2	03/01/23	SC	SW8082A
PCB-1242	ND	68	68	ug/Kg	2	03/01/23	SC	SW8082A
PCB-1248	ND	68	68	ug/Kg	2	03/01/23	SC	SW8082A
PCB-1254	ND	68	68	ug/Kg	2	03/01/23	SC	SW8082A
PCB-1260	ND	68	68	ug/Kg	2	03/01/23	SC	SW8082A
PCB-1262	ND	68	68	ug/Kg	2	03/01/23	SC	SW8082A
PCB-1268	ND	68	68	ug/Kg	2	03/01/23	SC	SW8082A
QA/QC Surrogates								
% DCBP	96			%	2	03/01/23	SC	30 - 150 %
% DCBP (Confirmation)	94			%	2	03/01/23	SC	30 - 150 %
% TCMX	78			%	2	03/01/23	SC	30 - 150 %
% TCMX (Confirmation)	80			%	2	03/01/23	SC	30 - 150 %
Pesticides - Soil								
4,4' -DDD	ND	2.0	2.0	ug/Kg	2	03/01/23	AW	SW8081B
4,4' -DDE	ND	2.0	2.0	ug/Kg	2	03/01/23	AW	SW8081B
4,4' -DDT	ND	2.0	2.0	ug/Kg	2	03/01/23	AW	SW8081B
a-BHC	ND	1.4	1.4	ug/Kg	2	03/01/23	AW	SW8081B
a-Chlordane	ND	3.4	3.4	ug/Kg	2	03/01/23	AW	SW8081B
Alachlor	ND	3.4	3.4	ug/Kg	2	03/01/23	AW	SW8081B
Aldrin	ND	3.4	3.4	ug/Kg	2	03/01/23	AW	SW8081B
b-BHC	ND	1.4	1.4	ug/Kg	2	03/01/23	AW	SW8081B
Chlordane	ND	34	34	ug/Kg	2	03/01/23	AW	SW8081B
d-BHC	ND	6.8	6.8	ug/Kg	2	03/01/23	AW	SW8081B
Dieldrin	ND	1.4	1.4	ug/Kg	2	03/01/23	AW	SW8081B

Project ID: IRRC BLUESTONE
Client ID: IRRC BLUESTONE COMP-1

Phoenix I.D.: CN49353

Parameter	Result	RL/ PQL	LOD/ MDL	Units	Dilution	Date/Time	By	Reference	
Endosulfan I	ND	6.8	6.8	ug/Kg	2	03/01/23	AW	SW8081B	
Endosulfan II	ND	6.8	6.8	ug/Kg	2	03/01/23	AW	SW8081B	
Endosulfan sulfate	ND	6.8	6.8	ug/Kg	2	03/01/23	AW	SW8081B	
Endrin	ND	6.8	6.8	ug/Kg	2	03/01/23	AW	SW8081B	
Endrin aldehyde	ND	6.8	6.8	ug/Kg	2	03/01/23	AW	SW8081B	
Endrin ketone	ND	6.8	6.8	ug/Kg	2	03/01/23	AW	SW8081B	
g-BHC	ND	1.4	1.4	ug/Kg	2	03/01/23	AW	SW8081B	
g-Chlordane	ND	3.4	3.4	ug/Kg	2	03/01/23	AW	SW8081B	
Heptachlor	ND	6.8	6.8	ug/Kg	2	03/01/23	AW	SW8081B	
Heptachlor epoxide	ND	6.8	6.8	ug/Kg	2	03/01/23	AW	SW8081B	
Methoxychlor	ND	34	34	ug/Kg	2	03/01/23	AW	SW8081B	
Toxaphene	ND	140	140	ug/Kg	2	03/01/23	AW	SW8081B	
QA/QC Surrogates									
% DCBP	105			%	2	03/01/23	AW	30 - 150 %	
% DCBP (Confirmation)	95			%	2	03/01/23	AW	30 - 150 %	
% TCMX	79			%	2	03/01/23	AW	30 - 150 %	
% TCMX (Confirmation)	76			%	2	03/01/23	AW	30 - 150 %	
Semivolatiles									
1,1-Biphenyl	ND	240	110	ug/Kg	1	02/28/23	KCA	SW8270D	
1,2,4,5-Tetrachlorobenzene	ND	240	120	ug/Kg	1	02/28/23	KCA	SW8270D	
1,2-Diphenylhydrazine	ND	70	70	ug/Kg	1	02/28/23	KCA	SW8270D	
2,2'-Oxybis(1-Chloropropane)	ND	240	97	ug/Kg	1	02/28/23	KCA	SW8270D	1
2,3,4,6-tetrachlorophenol	ND	240	160	ug/Kg	1	02/28/23	KCA	SW8270D	
2,4,5-Trichlorophenol	ND	240	190	ug/Kg	1	02/28/23	KCA	SW8270D	
2,4,6-Trichlorophenol	ND	140	110	ug/Kg	1	02/28/23	KCA	SW8270D	
2,4-Dichlorophenol	ND	140	120	ug/Kg	1	02/28/23	KCA	SW8270D	
2,4-Dimethylphenol	ND	240	86	ug/Kg	1	02/28/23	KCA	SW8270D	
2,4-Dinitrophenol	ND	240	240	ug/Kg	1	02/28/23	KCA	SW8270D	
2,4-Dinitrotoluene	ND	70	70	ug/Kg	1	02/28/23	KCA	SW8270D	
2,6-Dinitrotoluene	ND	70	70	ug/Kg	1	02/28/23	KCA	SW8270D	
2-Chloronaphthalene	ND	240	99	ug/Kg	1	02/28/23	KCA	SW8270D	
2-Chlorophenol	ND	240	99	ug/Kg	1	02/28/23	KCA	SW8270D	
2-Methylnaphthalene	ND	240	100	ug/Kg	1	02/28/23	KCA	SW8270D	
2-Methylphenol (o-cresol)	ND	240	160	ug/Kg	1	02/28/23	KCA	SW8270D	
2-Nitroaniline	ND	70	70	ug/Kg	1	02/28/23	KCA	SW8270D	
2-Nitrophenol	ND	240	220	ug/Kg	1	02/28/23	KCA	SW8270D	
3&4-Methylphenol (m&p-cresol)	ND	240	140	ug/Kg	1	02/28/23	KCA	SW8270D	1
3,3'-Dichlorobenzidine	ND	140	140	ug/Kg	1	02/28/23	KCA	SW8270D	
3-Nitroaniline	ND	91	91	ug/Kg	1	02/28/23	KCA	SW8270D	
4,6-Dinitro-2-methylphenol	ND	210	210	ug/Kg	1	02/28/23	KCA	SW8270D	
4-Bromophenyl phenyl ether	ND	240	100	ug/Kg	1	02/28/23	KCA	SW8270D	
4-Chloro-3-methylphenol	ND	240	120	ug/Kg	1	02/28/23	KCA	SW8270D	
4-Chloroaniline	ND	420	160	ug/Kg	1	02/28/23	KCA	SW8270D	
4-Chlorophenyl phenyl ether	ND	240	120	ug/Kg	1	02/28/23	KCA	SW8270D	
4-Nitroaniline	ND	86	86	ug/Kg	1	02/28/23	KCA	SW8270D	
4-Nitrophenol	ND	350	160	ug/Kg	1	02/28/23	KCA	SW8270D	
Acenaphthene	ND	240	110	ug/Kg	1	02/28/23	KCA	SW8270D	
Acenaphthylene	ND	140	98	ug/Kg	1	02/28/23	KCA	SW8270D	
Acetophenone	ND	240	110	ug/Kg	1	02/28/23	KCA	SW8270D	

Project ID: IRRC BLUESTONE
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Phoenix I.D.: CN49353

Parameter	Result	RL/ PQL	LOD/ MDL	Units	Dilution	Date/Time	By	Reference
Anthracene	ND	240	110	ug/Kg	1	02/28/23	KCA	SW8270D
Atrazine	ND	130	100	ug/Kg	1	02/28/23	KCA	SW8270D
Benz(a)anthracene	ND	240	120	ug/Kg	1	02/28/23	KCA	SW8270D
Benzaldehyde	ND	240	100	ug/Kg	1	02/28/23	KCA	SW8270D
Benzidine	ND	70	70	ug/Kg	1	02/28/23	KCA	SW8270D
Benzo(a)pyrene	ND	140	110	ug/Kg	1	02/28/23	KCA	SW8270D
Benzo(b)fluoranthene	ND	240	120	ug/Kg	1	02/28/23	KCA	SW8270D
Benzo(ghi)perylene	ND	240	110	ug/Kg	1	02/28/23	KCA	SW8270D
Benzo(k)fluoranthene	ND	240	120	ug/Kg	1	02/28/23	KCA	SW8270D
Benzyl Alcohol	ND	350	350	ug/Kg	1	02/28/23	KCA	SW8270D
Benzyl butyl phthalate	ND	240	90	ug/Kg	1	02/28/23	KCA	SW8270D
Bis(2-chloroethoxy)methane	ND	240	96	ug/Kg	1	02/28/23	KCA	SW8270D
Bis(2-chloroethyl)ether	ND	70	70	ug/Kg	1	02/28/23	KCA	SW8270D
Bis(2-ethylhexyl)phthalate	ND	240	100	ug/Kg	1	02/28/23	KCA	SW8270D
Caprolactam	ND	240	240	ug/Kg	1	02/28/23	KCA	SW8270D
Carbazole	ND	170	140	ug/Kg	1	02/28/23	KCA	SW8270D
Chrysene	ND	240	120	ug/Kg	1	02/28/23	KCA	SW8270D
Dibenz(a,h)anthracene	ND	140	110	ug/Kg	1	02/28/23	KCA	SW8270D
Dibenzofuran	ND	240	100	ug/Kg	1	02/28/23	KCA	SW8270D
Diethyl phthalate	ND	240	110	ug/Kg	1	02/28/23	KCA	SW8270D
Dimethylphthalate	ND	240	110	ug/Kg	1	02/28/23	KCA	SW8270D
Di-n-butylphthalate	ND	240	93	ug/Kg	1	02/28/23	KCA	SW8270D
Di-n-octylphthalate	ND	240	90	ug/Kg	1	02/28/23	KCA	SW8270D
Fluoranthene	ND	240	110	ug/Kg	1	02/28/23	KCA	SW8270D
Fluorene	ND	240	120	ug/Kg	1	02/28/23	KCA	SW8270D
Hexachlorobenzene	ND	140	100	ug/Kg	1	02/28/23	KCA	SW8270D
Hexachlorobutadiene	ND	240	130	ug/Kg	1	02/28/23	KCA	SW8270D
Hexachlorocyclopentadiene	ND	240	110	ug/Kg	1	02/28/23	KCA	SW8270D
Hexachloroethane	ND	140	100	ug/Kg	1	02/28/23	KCA	SW8270D
Indeno(1,2,3-cd)pyrene	ND	240	120	ug/Kg	1	02/28/23	KCA	SW8270D
Isophorone	ND	140	98	ug/Kg	1	02/28/23	KCA	SW8270D
Naphthalene	ND	240	100	ug/Kg	1	02/28/23	KCA	SW8270D
Nitrobenzene	ND	70	70	ug/Kg	1	02/28/23	KCA	SW8270D
N-Nitrosodimethylamine	ND	70	70	ug/Kg	1	02/28/23	KCA	SW8270D
N-Nitrosodi-n-propylamine	ND	70	70	ug/Kg	1	02/28/23	KCA	SW8270D
N-Nitrosodiphenylamine	ND	140	130	ug/Kg	1	02/28/23	KCA	SW8270D
Pentachlorophenol	ND	240	130	ug/Kg	1	02/28/23	KCA	SW8270D
Phenanthrene	ND	140	100	ug/Kg	1	02/28/23	KCA	SW8270D
Phenol	ND	240	110	ug/Kg	1	02/28/23	KCA	SW8270D
Pyrene	ND	240	120	ug/Kg	1	02/28/23	KCA	SW8270D
QA/QC Surrogates								
% 2,4,6-Tribromophenol	88			%	1	02/28/23	KCA	30 - 130 %
% 2-Fluorobiphenyl	55			%	1	02/28/23	KCA	30 - 130 %
% 2-Fluorophenol	57			%	1	02/28/23	KCA	30 - 130 %
% Nitrobenzene-d5	69			%	1	02/28/23	KCA	30 - 130 %
% Phenol-d5	62			%	1	02/28/23	KCA	30 - 130 %
% Terphenyl-d14	60			%	1	02/28/23	KCA	30 - 130 %
Aniline	ND	120	120	ug/Kg	1	02/28/23	KCA	SW8270D

Project ID: IRRC BLUESTONE

Client ID: IRRC BLUESTONE COMP-1

Phoenix I.D.: CN49353

Parameter	Result	RL/ PQL	LOD/ MDL	Units	Dilution	Date/Time	By	Reference
Benzoic Acid	ND	350	240	ug/Kg	1	02/28/23	KCA	SW8270D
Parathion	ND	350	140	ug/Kg	1	02/28/23	KCA	SW8270D

1 = This parameter is not certified by the primary accrediting authority (NY NELAC) for this matrix. NY NELAC does not offer certification for all parameters at this time.

RL/PQL=Reporting/Practical Quantitation Level (Equivalent to NELAC LOQ, Limit of Quantitation) ND=Not Detected BRL=Below Reporting Level L=Biased Low J=Estimated Below RL LOD=Limit of Detection MDL=Method Detection Limit1
QA/QC Surrogates: Surrogates are compounds (preceeded with a %) added by the lab to determine analysis efficiency. Surrogate results(%) listed in the report are not "detected" compounds.

Comments:

Per 1.4.6 of EPA method 8270D, 1,2-Diphenylhydrazine is unstable and readily converts to Azobenzene. Azobenzene is used for the calibration of 1,2-Diphenylhydrazine.

The regulatory hold time for pH is immediately. This pH was performed in the laboratory and may be considered outside of hold-time.

Please be advised that the NY 375 soil criteria for chromium are based on hexavalent chromium and trivalent chromium.

Hexavalent Chromium:
This sample is in a reducing state.

Semi-Volatile Comment:
To achieve client's objectives, where the lowest calibration standard or LOD justifies lowering the RL/PQL, the RL/PQL of some compounds have been lowered to meet criteria.

All soils, solids and sludges are reported on a dry weight basis unless otherwise noted in the sample comments.

If you are the client above and have any questions concerning this testing, please do not hesitate to contact Phoenix Client Services at ext.200.
The contents of this report cannot be discussed with anyone other than the client listed above without their written consent.

Phyllis Shiller, Laboratory Director

March 12, 2023

Reviewed and Released by: Maryam Taylor, Project Manager

PHOENIX
Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

ACCREDITED IN ACCORDANCE WITH nelac NY # 11301

Analysis Report

March 12, 2023

FOR: Attn: Mr. Jeff Bogoian
Impact Consulting
170 Keyland Court
Bohemia NY 11716

Sample Information		Custody Information		Date	Time
Matrix:	SOIL	Collected by:	SR	02/24/23	9:20
Location Code:	IMPACTJB-IEC	Received by:	CP	02/24/23	17:38
Rush Request:	72 Hour	Analyzed by:	see "By" below		
P.O.#:					

Laboratory Data

SDG ID: GCN49338
Phoenix ID: CN49354

Project ID: IRRC BLUESTONE
Client ID: IRRC BLUESTONE COMP-2

Parameter	Result		RL/ PQL	LOD/ MDL	Units	Dilution	Date/Time	By	Reference	
Silver	ND		0.33	0.33	mg/Kg	1	02/28/23	CPP	SW6010D	
Aluminum	17700		33	6.7	mg/Kg	10	02/28/23	CPP	SW6010D	
Arsenic	ND		0.67	0.67	mg/Kg	1	02/28/23	CPP	SW6010D	
Barium	228		0.7	0.33	mg/Kg	1	02/28/23	CPP	SW6010D	
Beryllium	0.32		0.27	0.13	mg/Kg	1	02/28/23	CPP	SW6010D	
Calcium	6690		3.3	3.1	mg/Kg	1	02/28/23	CPP	SW6010D	
Cadmium	0.94		0.33	0.33	mg/Kg	1	02/28/23	CPP	SW6010D	
Cobalt	19.3		0.33	0.33	mg/Kg	1	02/28/23	CPP	SW6010D	
Chromium	36.6		0.33	0.33	mg/Kg	1	02/28/23	CPP	SW6010D	
Copper	71.2		0.7	0.33	mg/kg	1	02/28/23	CPP	SW6010D	
Iron	31400		33	33	mg/Kg	10	02/28/23	CPP	SW6010D	
Mercury	ND		0.03	0.02	mg/Kg	2	02/27/23	PM	SW7471B	
Potassium	9610		670	260	mg/Kg	100	03/01/23	TH	SW6010D	
Magnesium	9230		33	33	mg/Kg	10	02/28/23	CPP	SW6010D	
Manganese	278		3.3	3.3	mg/Kg	10	02/28/23	TH	SW6010D	
Sodium	809	*	7	2.9	mg/Kg	1	02/28/23	TH	SW6010D	
Nickel	27.6		0.33	0.33	mg/Kg	1	02/28/23	CPP	SW6010D	
Lead	15.2		0.7	0.33	mg/Kg	1	02/28/23	CPP	SW6010D	
Antimony	ND		3.3	3.3	mg/Kg	1	02/28/23	CPP	SW6010D	
Selenium	ND		1.3	1.1	mg/Kg	1	02/28/23	CPP	SW6010D	
Thallium	ND		1.3	1.3	mg/Kg	1	02/28/23	CPP	SW6010D	
Trivalent Chromium	36.6		0.33	0.33	mg/kg	1	02/28/23		CALC 6010-7196	
Vanadium	74.0		0.33	0.33	mg/Kg	1	02/28/23	CPP	SW6010D	
Zinc	78.4		0.7	0.33	mg/Kg	1	02/28/23	CPP	SW6010D	
Percent Solid	95				%		02/24/23	AL	SW846-%Solid	
Chromium, Hex. (SW3060A digestion	ND		0.40	0.40	mg/Kg	1	02/27/23	DK	SW7196A	
pH at 25C - Soil	10.3		1.00	1.00	pH Units	1	02/24/23 20:55	ER/PK	SW846 9045D	1
Redox Potential	45.0				mV	1	02/24/23	ER/PK	SM2580B-09	1

Ver 2

Project ID: IRRC BLUESTONE
Client ID: IRRC BLUESTONE COMP-2

Phoenix I.D.: CN49354

Parameter	Result	RL/ PQL	LOD/ MDL	Units	Dilution	Date/Time	By	Reference
Total Cyanide (SW9010C Distill.)	ND	0.53	0.263	mg/Kg	1	02/28/23	CL/GD	SW9012B
Mercury Digestion	Completed					02/27/23	AL/AL	SW7471B
Soil Extraction for Herbicide	Completed					02/24/23	J/DKD	SW3546
Soil Extraction for PCB	Completed					02/27/23	MO/F	SW3546
Soil Extraction for Pesticides	Completed					02/27/23	MO/F	SW3546
Soil Extraction for SVOA	Completed					02/27/23	H/M	SW3546
Total Metals Digest	Completed					02/24/23	S/AG	SW3050B
Chlorinated Herbicides								
2,4,5-T	ND	130	130	ug/Kg	10	02/28/23	JRB	SW8151A
2,4,5-TP (Silvex)	ND	130	130	ug/Kg	10	02/28/23	JRB	SW8151A
2,4-D	ND	260	260	ug/Kg	10	02/28/23	JRB	SW8151A
2,4-DB	ND	2600	2600	ug/Kg	10	02/28/23	JRB	SW8151A
Dalapon	ND	130	130	ug/Kg	10	02/28/23	JRB	SW8151A
Dicamba	ND	130	130	ug/Kg	10	02/28/23	JRB	SW8151A
Dichloroprop	ND	260	260	ug/Kg	10	02/28/23	JRB	SW8151A
Dinoseb	ND	260	260	ug/Kg	10	02/28/23	JRB	SW8151A
QA/QC Surrogates								
% DCAA	140			%	10	02/28/23	JRB	30 - 150 %
% DCAA (Confirmation)	109			%	10	02/28/23	JRB	30 - 150 %
Polychlorinated Biphenyls								
PCB-1016	ND	70	70	ug/Kg	2	03/01/23	SC	SW8082A
PCB-1221	ND	70	70	ug/Kg	2	03/01/23	SC	SW8082A
PCB-1232	ND	70	70	ug/Kg	2	03/01/23	SC	SW8082A
PCB-1242	ND	70	70	ug/Kg	2	03/01/23	SC	SW8082A
PCB-1248	ND	70	70	ug/Kg	2	03/01/23	SC	SW8082A
PCB-1254	ND	70	70	ug/Kg	2	03/01/23	SC	SW8082A
PCB-1260	ND	70	70	ug/Kg	2	03/01/23	SC	SW8082A
PCB-1262	ND	70	70	ug/Kg	2	03/01/23	SC	SW8082A
PCB-1268	ND	70	70	ug/Kg	2	03/01/23	SC	SW8082A
QA/QC Surrogates								
% DCBP	111			%	2	03/01/23	SC	30 - 150 %
% DCBP (Confirmation)	110			%	2	03/01/23	SC	30 - 150 %
% TCMX	90			%	2	03/01/23	SC	30 - 150 %
% TCMX (Confirmation)	93			%	2	03/01/23	SC	30 - 150 %
Pesticides - Soil								
4,4' -DDD	ND	2.1	2.1	ug/Kg	2	03/01/23	AW	SW8081B
4,4' -DDE	ND	2.1	2.1	ug/Kg	2	03/01/23	AW	SW8081B
4,4' -DDT	ND	2.1	2.1	ug/Kg	2	03/01/23	AW	SW8081B
a-BHC	ND	1.4	1.4	ug/Kg	2	03/01/23	AW	SW8081B
a-Chlordane	ND	3.5	3.5	ug/Kg	2	03/01/23	AW	SW8081B
Alachlor	ND	3.5	3.5	ug/Kg	2	03/01/23	AW	SW8081B
Aldrin	ND	3.5	3.5	ug/Kg	2	03/01/23	AW	SW8081B
b-BHC	ND	1.4	1.4	ug/Kg	2	03/01/23	AW	SW8081B
Chlordane	ND	35	35	ug/Kg	2	03/01/23	AW	SW8081B
d-BHC	ND	7.0	7.0	ug/Kg	2	03/01/23	AW	SW8081B
Dieldrin	ND	1.4	1.4	ug/Kg	2	03/01/23	AW	SW8081B

Project ID: IRRC BLUESTONE
Client ID: IRRC BLUESTONE COMP-2

Phoenix I.D.: CN49354

Parameter	Result	RL/ PQL	LOD/ MDL	Units	Dilution	Date/Time	By	Reference	
Endosulfan I	ND	7.0	7.0	ug/Kg	2	03/01/23	AW	SW8081B	
Endosulfan II	ND	7.0	7.0	ug/Kg	2	03/01/23	AW	SW8081B	
Endosulfan sulfate	ND	7.0	7.0	ug/Kg	2	03/01/23	AW	SW8081B	
Endrin	ND	7.0	7.0	ug/Kg	2	03/01/23	AW	SW8081B	
Endrin aldehyde	ND	7.0	7.0	ug/Kg	2	03/01/23	AW	SW8081B	
Endrin ketone	ND	7.0	7.0	ug/Kg	2	03/01/23	AW	SW8081B	
g-BHC	ND	1.4	1.4	ug/Kg	2	03/01/23	AW	SW8081B	
g-Chlordane	ND	3.5	3.5	ug/Kg	2	03/01/23	AW	SW8081B	
Heptachlor	ND	7.0	7.0	ug/Kg	2	03/01/23	AW	SW8081B	
Heptachlor epoxide	ND	7.0	7.0	ug/Kg	2	03/01/23	AW	SW8081B	
Methoxychlor	ND	35	35	ug/Kg	2	03/01/23	AW	SW8081B	
Toxaphene	ND	140	140	ug/Kg	2	03/01/23	AW	SW8081B	
QA/QC Surrogates									
% DCBP	115			%	2	03/01/23	AW	30 - 150 %	
% DCBP (Confirmation)	111			%	2	03/01/23	AW	30 - 150 %	
% TCMX	90			%	2	03/01/23	AW	30 - 150 %	
% TCMX (Confirmation)	87			%	2	03/01/23	AW	30 - 150 %	
Semivolatiles									
1,1-Biphenyl	ND	240	110	ug/Kg	1	02/28/23	KCA	SW8270D	
1,2,4,5-Tetrachlorobenzene	ND	240	120	ug/Kg	1	02/28/23	KCA	SW8270D	
1,2-Diphenylhydrazine	ND	70	70	ug/Kg	1	02/28/23	KCA	SW8270D	
2,2'-Oxybis(1-Chloropropane)	ND	240	97	ug/Kg	1	02/28/23	KCA	SW8270D	1
2,3,4,6-tetrachlorophenol	ND	240	160	ug/Kg	1	02/28/23	KCA	SW8270D	
2,4,5-Trichlorophenol	ND	240	190	ug/Kg	1	02/28/23	KCA	SW8270D	
2,4,6-Trichlorophenol	ND	140	110	ug/Kg	1	02/28/23	KCA	SW8270D	
2,4-Dichlorophenol	ND	140	120	ug/Kg	1	02/28/23	KCA	SW8270D	
2,4-Dimethylphenol	ND	240	86	ug/Kg	1	02/28/23	KCA	SW8270D	
2,4-Dinitrophenol	ND	240	240	ug/Kg	1	02/28/23	KCA	SW8270D	
2,4-Dinitrotoluene	ND	70	70	ug/Kg	1	02/28/23	KCA	SW8270D	
2,6-Dinitrotoluene	ND	70	70	ug/Kg	1	02/28/23	KCA	SW8270D	
2-Chloronaphthalene	ND	240	99	ug/Kg	1	02/28/23	KCA	SW8270D	
2-Chlorophenol	ND	240	99	ug/Kg	1	02/28/23	KCA	SW8270D	
2-Methylnaphthalene	ND	240	100	ug/Kg	1	02/28/23	KCA	SW8270D	
2-Methylphenol (o-cresol)	ND	240	160	ug/Kg	1	02/28/23	KCA	SW8270D	
2-Nitroaniline	ND	70	70	ug/Kg	1	02/28/23	KCA	SW8270D	
2-Nitrophenol	ND	240	220	ug/Kg	1	02/28/23	KCA	SW8270D	
3&4-Methylphenol (m&p-cresol)	ND	240	140	ug/Kg	1	02/28/23	KCA	SW8270D	1
3,3'-Dichlorobenzidine	ND	140	140	ug/Kg	1	02/28/23	KCA	SW8270D	
3-Nitroaniline	ND	91	91	ug/Kg	1	02/28/23	KCA	SW8270D	
4,6-Dinitro-2-methylphenol	ND	210	210	ug/Kg	1	02/28/23	KCA	SW8270D	
4-Bromophenyl phenyl ether	ND	240	100	ug/Kg	1	02/28/23	KCA	SW8270D	
4-Chloro-3-methylphenol	ND	240	120	ug/Kg	1	02/28/23	KCA	SW8270D	
4-Chloroaniline	ND	420	160	ug/Kg	1	02/28/23	KCA	SW8270D	
4-Chlorophenyl phenyl ether	ND	240	120	ug/Kg	1	02/28/23	KCA	SW8270D	
4-Nitroaniline	ND	86	86	ug/Kg	1	02/28/23	KCA	SW8270D	
4-Nitrophenol	ND	350	160	ug/Kg	1	02/28/23	KCA	SW8270D	
Acenaphthene	ND	240	110	ug/Kg	1	02/28/23	KCA	SW8270D	
Acenaphthylene	ND	140	98	ug/Kg	1	02/28/23	KCA	SW8270D	
Acetophenone	ND	240	110	ug/Kg	1	02/28/23	KCA	SW8270D	

Project ID: IRRC BLUESTONE
Client ID: IRRC BLUESTONE COMP-2

Phoenix I.D.: CN49354

Parameter	Result	RL/ PQL	LOD/ MDL	Units	Dilution	Date/Time	By	Reference
Anthracene	ND	240	110	ug/Kg	1	02/28/23	KCA	SW8270D
Atrazine	ND	130	100	ug/Kg	1	02/28/23	KCA	SW8270D
Benz(a)anthracene	ND	240	120	ug/Kg	1	02/28/23	KCA	SW8270D
Benzaldehyde	ND	240	100	ug/Kg	1	02/28/23	KCA	SW8270D
Benzidine	ND	70	70	ug/Kg	1	02/28/23	KCA	SW8270D
Benzo(a)pyrene	ND	140	110	ug/Kg	1	02/28/23	KCA	SW8270D
Benzo(b)fluoranthene	ND	240	120	ug/Kg	1	02/28/23	KCA	SW8270D
Benzo(ghi)perylene	ND	240	110	ug/Kg	1	02/28/23	KCA	SW8270D
Benzo(k)fluoranthene	ND	240	120	ug/Kg	1	02/28/23	KCA	SW8270D
Benzyl Alcohol	ND	350	350	ug/Kg	1	02/28/23	KCA	SW8270D
Benzyl butyl phthalate	ND	240	90	ug/Kg	1	02/28/23	KCA	SW8270D
Bis(2-chloroethoxy)methane	ND	240	96	ug/Kg	1	02/28/23	KCA	SW8270D
Bis(2-chloroethyl)ether	ND	70	70	ug/Kg	1	02/28/23	KCA	SW8270D
Bis(2-ethylhexyl)phthalate	ND	240	100	ug/Kg	1	02/28/23	KCA	SW8270D
Caprolactam	ND	240	240	ug/Kg	1	02/28/23	KCA	SW8270D
Carbazole	ND	170	140	ug/Kg	1	02/28/23	KCA	SW8270D
Chrysene	ND	240	120	ug/Kg	1	02/28/23	KCA	SW8270D
Dibenz(a,h)anthracene	ND	140	110	ug/Kg	1	02/28/23	KCA	SW8270D
Dibenzofuran	ND	240	100	ug/Kg	1	02/28/23	KCA	SW8270D
Diethyl phthalate	ND	240	110	ug/Kg	1	02/28/23	KCA	SW8270D
Dimethylphthalate	ND	240	110	ug/Kg	1	02/28/23	KCA	SW8270D
Di-n-butylphthalate	ND	240	93	ug/Kg	1	02/28/23	KCA	SW8270D
Di-n-octylphthalate	ND	240	90	ug/Kg	1	02/28/23	KCA	SW8270D
Fluoranthene	ND	240	110	ug/Kg	1	02/28/23	KCA	SW8270D
Fluorene	ND	240	110	ug/Kg	1	02/28/23	KCA	SW8270D
Hexachlorobenzene	ND	140	100	ug/Kg	1	02/28/23	KCA	SW8270D
Hexachlorobutadiene	ND	240	130	ug/Kg	1	02/28/23	KCA	SW8270D
Hexachlorocyclopentadiene	ND	240	110	ug/Kg	1	02/28/23	KCA	SW8270D
Hexachloroethane	ND	140	100	ug/Kg	1	02/28/23	KCA	SW8270D
Indeno(1,2,3-cd)pyrene	ND	240	120	ug/Kg	1	02/28/23	KCA	SW8270D
Isophorone	ND	140	98	ug/Kg	1	02/28/23	KCA	SW8270D
Naphthalene	ND	240	100	ug/Kg	1	02/28/23	KCA	SW8270D
Nitrobenzene	ND	70	70	ug/Kg	1	02/28/23	KCA	SW8270D
N-Nitrosodimethylamine	ND	70	70	ug/Kg	1	02/28/23	KCA	SW8270D
N-Nitrosodi-n-propylamine	ND	70	70	ug/Kg	1	02/28/23	KCA	SW8270D
N-Nitrosodiphenylamine	ND	140	130	ug/Kg	1	02/28/23	KCA	SW8270D
Pentachlorophenol	ND	240	130	ug/Kg	1	02/28/23	KCA	SW8270D
Phenanthrene	ND	140	100	ug/Kg	1	02/28/23	KCA	SW8270D
Phenol	ND	240	110	ug/Kg	1	02/28/23	KCA	SW8270D
Pyrene	ND	240	120	ug/Kg	1	02/28/23	KCA	SW8270D
QA/QC Surrogates								
% 2,4,6-Tribromophenol	85			%	1	02/28/23	KCA	30 - 130 %
% 2-Fluorobiphenyl	54			%	1	02/28/23	KCA	30 - 130 %
% 2-Fluorophenol	55			%	1	02/28/23	KCA	30 - 130 %
% Nitrobenzene-d5	67			%	1	02/28/23	KCA	30 - 130 %
% Phenol-d5	60			%	1	02/28/23	KCA	30 - 130 %
% Terphenyl-d14	58			%	1	02/28/23	KCA	30 - 130 %
Aniline	ND	120	120	ug/Kg	1	02/28/23	KCA	SW8270D

Project ID: IRRC BLUESTONE

Client ID: IRRC BLUESTONE COMP-2

Phoenix I.D.: CN49354

Parameter	Result	RL/ PQL	LOD/ MDL	Units	Dilution	Date/Time	By	Reference
Benzoic Acid	ND	350	240	ug/Kg	1	02/28/23	KCA	SW8270D
Parathion	ND	350	140	ug/Kg	1	02/28/23	KCA	SW8270D

1 = This parameter is not certified by the primary accrediting authority (NY NELAC) for this matrix. NY NELAC does not offer certification for all parameters at this time.

RL/PQL=Reporting/Practical Quantitation Level (Equivalent to NELAC LOQ, Limit of Quantitation) ND=Not Detected BRL=Below Reporting Level L=Biased Low LOD=Limit of Detection MDL=Method Detection Limit1
QA/QC Surrogates: Surrogates are compounds (preceeded with a %) added by the lab to determine analysis efficiency. Surrogate results(%) listed in the report are not "detected" compounds.

Comments:

Please be advised that the NY 375 soil criteria for chromium are based on hexavalent chromium and trivalent chromium.

Per 1.4.6 of EPA method 8270D, 1,2-Diphenylhydrazine is unstable and readily converts to Azobenzene. Azobenzene is used for the calibration of 1,2-Diphenylhydrazine.

The regulatory hold time for pH is immediately. This pH was performed in the laboratory and may be considered outside of hold-time.

Hexavalent Chromium:
This sample is in a reducing state.

Semi-Volatile Comment:
To achieve client's objectives, where the lowest calibration standard or LOD justifies lowering the RL/PQL, the RL/PQL of some compounds have been lowered to meet criteria.

All soils, solids and sludges are reported on a dry weight basis unless otherwise noted in the sample comments.

If you are the client above and have any questions concerning this testing, please do not hesitate to contact Phoenix Client Services at ext.200.
The contents of this report cannot be discussed with anyone other than the client listed above without their written consent.

Phyllis Shiller, Laboratory Director

March 12, 2023

Reviewed and Released by: Maryam Taylor, Project Manager

PHOENIX
Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

ACCREDITED IN ACCORDANCE WITH nelac NY # 11301

Analysis Report

March 12, 2023

FOR: Attn: Mr. Jeff Bogoian
Impact Consulting
170 Keyland Court
Bohemia NY 11716

Sample Information		Custody Information		Date	Time
Matrix:	SOIL	Collected by:	SR	02/24/23	9:25
Location Code:	IMPACTJB-IEC	Received by:	CP	02/24/23	17:38
Rush Request:	72 Hour	Analyzed by:	see "By" below		
P.O.#:					

Laboratory Data

SDG ID: GCN49338
Phoenix ID: CN49355

Project ID: IRRC BLUESTONE
Client ID: IRRC BLUESTONE COMP-3

Parameter	Result		RL/ PQL	LOD/ MDL	Units	Dilution	Date/Time	By	Reference	
Silver	ND		0.32	0.32	mg/Kg	1	02/28/23	CPP	SW6010D	
Aluminum	17200		32	6.3	mg/Kg	10	02/28/23	CPP	SW6010D	
Arsenic	ND		0.63	0.63	mg/Kg	1	02/28/23	CPP	SW6010D	
Barium	218		0.6	0.32	mg/Kg	1	02/28/23	CPP	SW6010D	
Beryllium	0.28		0.25	0.13	mg/Kg	1	02/28/23	CPP	SW6010D	
Calcium	6720		3.2	2.9	mg/Kg	1	02/28/23	CPP	SW6010D	
Cadmium	0.89		0.32	0.32	mg/Kg	1	02/28/23	CPP	SW6010D	
Cobalt	18.4		0.32	0.32	mg/Kg	1	02/28/23	CPP	SW6010D	
Chromium	32.7		0.32	0.32	mg/Kg	1	02/28/23	CPP	SW6010D	
Copper	74.2		0.6	0.32	mg/kg	1	02/28/23	CPP	SW6010D	
Iron	29700		32	32	mg/Kg	10	02/28/23	CPP	SW6010D	
Mercury	ND		0.03	0.02	mg/Kg	2	02/27/23	PM	SW7471B	
Potassium	8600		630	250	mg/Kg	100	03/01/23	TH	SW6010D	
Magnesium	8780		32	32	mg/Kg	10	02/28/23	CPP	SW6010D	
Manganese	261		3.2	3.2	mg/Kg	10	02/28/23	TH	SW6010D	
Sodium	870	*	6	2.7	mg/Kg	1	02/28/23	TH	SW6010D	
Nickel	28.0		0.32	0.32	mg/Kg	1	02/28/23	CPP	SW6010D	
Lead	14.8		0.6	0.32	mg/Kg	1	02/28/23	CPP	SW6010D	
Antimony	ND		3.2	3.2	mg/Kg	1	02/28/23	CPP	SW6010D	
Selenium	ND		1.3	1.1	mg/Kg	1	02/28/23	CPP	SW6010D	
Thallium	ND		1.3	1.3	mg/Kg	1	02/28/23	CPP	SW6010D	
Trivalent Chromium	32.7		0.32	0.32	mg/kg	1	02/28/23		CALC 6010-7196	
Vanadium	67.3		0.32	0.32	mg/Kg	1	02/28/23	CPP	SW6010D	
Zinc	70.5		0.6	0.32	mg/Kg	1	02/28/23	CPP	SW6010D	
Percent Solid	95				%		02/24/23	AL	SW846-%Solid	
Chromium, Hex. (SW3060A digestion	ND		0.39	0.39	mg/Kg	1	02/27/23	DK	SW7196A	
pH at 25C - Soil	10.1		1.00	1.00	pH Units	1	02/24/23 20:55	ER/PK	SW846 9045D	1
Redox Potential	50.0				mV	1	02/24/23	ER/PK	SM2580B-09	1

Ver 2

Project ID: IRRC BLUESTONE
Client ID: IRRC BLUESTONE COMP-3

Phoenix I.D.: CN49355

Parameter	Result	RL/ PQL	LOD/ MDL	Units	Dilution	Date/Time	By	Reference	
Total Cyanide (SW9010C Distill.)	ND	0.53	0.263	mg/Kg	1	02/28/23	CL/GD	SW9012B	
Mercury Digestion	Completed					02/27/23	AL/AL	SW7471B	
Soil Extraction for Herbicide	Completed					02/24/23	J/DKD	SW3546	
Soil Extraction for PCB	Completed					02/27/23	MO/F	SW3546	
Soil Extraction for Pesticides	Completed					02/27/23	MO/F	SW3546	
Soil Extraction for SVOA	Completed					02/27/23	H/M	SW3546	
Total Metals Digest	Completed					02/24/23	S/AG	SW3050B	
Chlorinated Herbicides									
2,4,5-T	ND	130	130	ug/Kg	10	02/28/23	JRB	SW8151A	
2,4,5-TP (Silvex)	ND	130	130	ug/Kg	10	02/28/23	JRB	SW8151A	
2,4-D	ND	260	260	ug/Kg	10	02/28/23	JRB	SW8151A	
2,4-DB	ND	2600	2600	ug/Kg	10	02/28/23	JRB	SW8151A	
Dalapon	ND	130	130	ug/Kg	10	02/28/23	JRB	SW8151A	
Dicamba	ND	130	130	ug/Kg	10	02/28/23	JRB	SW8151A	
Dichloroprop	ND	260	260	ug/Kg	10	02/28/23	JRB	SW8151A	
Dinoseb	ND	260	260	ug/Kg	10	02/28/23	JRB	SW8151A	
QA/QC Surrogates									
% DCAA	125			%	10	02/28/23	JRB	30 - 150 %	
% DCAA (Confirmation)	152			%	10	02/28/23	JRB	30 - 150 %	3
Polychlorinated Biphenyls									
PCB-1016	ND	69	69	ug/Kg	2	03/01/23	SC	SW8082A	
PCB-1221	ND	69	69	ug/Kg	2	03/01/23	SC	SW8082A	
PCB-1232	ND	69	69	ug/Kg	2	03/01/23	SC	SW8082A	
PCB-1242	ND	69	69	ug/Kg	2	03/01/23	SC	SW8082A	
PCB-1248	ND	69	69	ug/Kg	2	03/01/23	SC	SW8082A	
PCB-1254	ND	69	69	ug/Kg	2	03/01/23	SC	SW8082A	
PCB-1260	ND	69	69	ug/Kg	2	03/01/23	SC	SW8082A	
PCB-1262	ND	69	69	ug/Kg	2	03/01/23	SC	SW8082A	
PCB-1268	ND	69	69	ug/Kg	2	03/01/23	SC	SW8082A	
QA/QC Surrogates									
% DCBP	110			%	2	03/01/23	SC	30 - 150 %	
% DCBP (Confirmation)	111			%	2	03/01/23	SC	30 - 150 %	
% TCMX	89			%	2	03/01/23	SC	30 - 150 %	
% TCMX (Confirmation)	93			%	2	03/01/23	SC	30 - 150 %	
Pesticides - Soil									
4,4' -DDD	ND	2.1	2.1	ug/Kg	2	03/01/23	AW	SW8081B	
4,4' -DDE	ND	2.1	2.1	ug/Kg	2	03/01/23	AW	SW8081B	
4,4' -DDT	ND	2.1	2.1	ug/Kg	2	03/01/23	AW	SW8081B	
a-BHC	ND	1.4	1.4	ug/Kg	2	03/01/23	AW	SW8081B	
a-Chlordane	ND	3.5	3.5	ug/Kg	2	03/01/23	AW	SW8081B	
Alachlor	ND	3.5	3.5	ug/Kg	2	03/01/23	AW	SW8081B	
Aldrin	ND	3.5	3.5	ug/Kg	2	03/01/23	AW	SW8081B	
b-BHC	ND	1.4	1.4	ug/Kg	2	03/01/23	AW	SW8081B	
Chlordane	ND	35	35	ug/Kg	2	03/01/23	AW	SW8081B	
d-BHC	ND	6.9	6.9	ug/Kg	2	03/01/23	AW	SW8081B	
Dieldrin	ND	1.4	1.4	ug/Kg	2	03/01/23	AW	SW8081B	

Project ID: IRRC BLUESTONE
Client ID: IRRC BLUESTONE COMP-3

Phoenix I.D.: CN49355

Parameter	Result	RL/ PQL	LOD/ MDL	Units	Dilution	Date/Time	By	Reference	
Endosulfan I	ND	6.9	6.9	ug/Kg	2	03/01/23	AW	SW8081B	
Endosulfan II	ND	6.9	6.9	ug/Kg	2	03/01/23	AW	SW8081B	
Endosulfan sulfate	ND	6.9	6.9	ug/Kg	2	03/01/23	AW	SW8081B	
Endrin	ND	6.9	6.9	ug/Kg	2	03/01/23	AW	SW8081B	
Endrin aldehyde	ND	6.9	6.9	ug/Kg	2	03/01/23	AW	SW8081B	
Endrin ketone	ND	6.9	6.9	ug/Kg	2	03/01/23	AW	SW8081B	
g-BHC	ND	1.4	1.4	ug/Kg	2	03/01/23	AW	SW8081B	
g-Chlordane	ND	3.5	3.5	ug/Kg	2	03/01/23	AW	SW8081B	
Heptachlor	ND	6.9	6.9	ug/Kg	2	03/01/23	AW	SW8081B	
Heptachlor epoxide	ND	6.9	6.9	ug/Kg	2	03/01/23	AW	SW8081B	
Methoxychlor	ND	35	35	ug/Kg	2	03/01/23	AW	SW8081B	
Toxaphene	ND	140	140	ug/Kg	2	03/01/23	AW	SW8081B	
QA/QC Surrogates									
% DCBP	123			%	2	03/01/23	AW	30 - 150 %	
% DCBP (Confirmation)	110			%	2	03/01/23	AW	30 - 150 %	
% TCMX	96			%	2	03/01/23	AW	30 - 150 %	
% TCMX (Confirmation)	86			%	2	03/01/23	AW	30 - 150 %	
Semivolatiles									
1,1-Biphenyl	ND	240	100	ug/Kg	1	02/28/23	KCA	SW8270D	
1,2,4,5-Tetrachlorobenzene	ND	240	120	ug/Kg	1	02/28/23	KCA	SW8270D	
1,2-Diphenylhydrazine	ND	68	68	ug/Kg	1	02/28/23	KCA	SW8270D	
2,2'-Oxybis(1-Chloropropane)	ND	240	95	ug/Kg	1	02/28/23	KCA	SW8270D	1
2,3,4,6-tetrachlorophenol	ND	240	160	ug/Kg	1	02/28/23	KCA	SW8270D	
2,4,5-Trichlorophenol	ND	240	190	ug/Kg	1	02/28/23	KCA	SW8270D	
2,4,6-Trichlorophenol	ND	140	110	ug/Kg	1	02/28/23	KCA	SW8270D	
2,4-Dichlorophenol	ND	140	120	ug/Kg	1	02/28/23	KCA	SW8270D	
2,4-Dimethylphenol	ND	240	85	ug/Kg	1	02/28/23	KCA	SW8270D	
2,4-Dinitrophenol	ND	240	240	ug/Kg	1	02/28/23	KCA	SW8270D	
2,4-Dinitrotoluene	ND	68	68	ug/Kg	1	02/28/23	KCA	SW8270D	
2,6-Dinitrotoluene	ND	68	68	ug/Kg	1	02/28/23	KCA	SW8270D	
2-Chloronaphthalene	ND	240	97	ug/Kg	1	02/28/23	KCA	SW8270D	
2-Chlorophenol	ND	240	97	ug/Kg	1	02/28/23	KCA	SW8270D	
2-Methylnaphthalene	ND	240	100	ug/Kg	1	02/28/23	KCA	SW8270D	
2-Methylphenol (o-cresol)	ND	240	160	ug/Kg	1	02/28/23	KCA	SW8270D	
2-Nitroaniline	ND	68	68	ug/Kg	1	02/28/23	KCA	SW8270D	
2-Nitrophenol	ND	240	220	ug/Kg	1	02/28/23	KCA	SW8270D	
3&4-Methylphenol (m&p-cresol)	ND	240	130	ug/Kg	1	02/28/23	KCA	SW8270D	1
3,3'-Dichlorobenzidine	ND	140	140	ug/Kg	1	02/28/23	KCA	SW8270D	
3-Nitroaniline	ND	91	91	ug/Kg	1	02/28/23	KCA	SW8270D	
4,6-Dinitro-2-methylphenol	ND	210	210	ug/Kg	1	02/28/23	KCA	SW8270D	
4-Bromophenyl phenyl ether	ND	240	100	ug/Kg	1	02/28/23	KCA	SW8270D	
4-Chloro-3-methylphenol	ND	240	120	ug/Kg	1	02/28/23	KCA	SW8270D	
4-Chloroaniline	ND	420	160	ug/Kg	1	02/28/23	KCA	SW8270D	
4-Chlorophenyl phenyl ether	ND	240	110	ug/Kg	1	02/28/23	KCA	SW8270D	
4-Nitroaniline	ND	86	86	ug/Kg	1	02/28/23	KCA	SW8270D	
4-Nitrophenol	ND	340	150	ug/Kg	1	02/28/23	KCA	SW8270D	
Acenaphthene	ND	240	100	ug/Kg	1	02/28/23	KCA	SW8270D	
Acenaphthylene	ND	140	96	ug/Kg	1	02/28/23	KCA	SW8270D	
Acetophenone	ND	240	110	ug/Kg	1	02/28/23	KCA	SW8270D	

Project ID: IRRC BLUESTONE
Client ID: IRRC BLUESTONE COMP-3

Phoenix I.D.: CN49355

Parameter	Result	RL/ PQL	LOD/ MDL	Units	Dilution	Date/Time	By	Reference
Anthracene	ND	240	110	ug/Kg	1	02/28/23	KCA	SW8270D
Atrazine	ND	130	100	ug/Kg	1	02/28/23	KCA	SW8270D
Benz(a)anthracene	ND	240	110	ug/Kg	1	02/28/23	KCA	SW8270D
Benzaldehyde	ND	240	100	ug/Kg	1	02/28/23	KCA	SW8270D
Benzidine	ND	68	68	ug/Kg	1	02/28/23	KCA	SW8270D
Benzo(a)pyrene	ND	140	110	ug/Kg	1	02/28/23	KCA	SW8270D
Benzo(b)fluoranthene	ND	240	120	ug/Kg	1	02/28/23	KCA	SW8270D
Benzo(ghi)perylene	ND	240	110	ug/Kg	1	02/28/23	KCA	SW8270D
Benzo(k)fluoranthene	ND	240	110	ug/Kg	1	02/28/23	KCA	SW8270D
Benzyl Alcohol	ND	340	340	ug/Kg	1	02/28/23	KCA	SW8270D
Benzyl butyl phthalate	ND	240	88	ug/Kg	1	02/28/23	KCA	SW8270D
Bis(2-chloroethoxy)methane	ND	240	94	ug/Kg	1	02/28/23	KCA	SW8270D
Bis(2-chloroethyl)ether	ND	68	68	ug/Kg	1	02/28/23	KCA	SW8270D
Bis(2-ethylhexyl)phthalate	ND	240	98	ug/Kg	1	02/28/23	KCA	SW8270D
Caprolactam	ND	240	240	ug/Kg	1	02/28/23	KCA	SW8270D
Carbazole	ND	170	140	ug/Kg	1	02/28/23	KCA	SW8270D
Chrysene	ND	240	110	ug/Kg	1	02/28/23	KCA	SW8270D
Dibenz(a,h)anthracene	ND	140	110	ug/Kg	1	02/28/23	KCA	SW8270D
Dibenzofuran	ND	240	100	ug/Kg	1	02/28/23	KCA	SW8270D
Diethyl phthalate	ND	240	110	ug/Kg	1	02/28/23	KCA	SW8270D
Dimethylphthalate	ND	240	110	ug/Kg	1	02/28/23	KCA	SW8270D
Di-n-butylphthalate	ND	240	91	ug/Kg	1	02/28/23	KCA	SW8270D
Di-n-octylphthalate	ND	240	88	ug/Kg	1	02/28/23	KCA	SW8270D
Fluoranthene	ND	240	110	ug/Kg	1	02/28/23	KCA	SW8270D
Fluorene	ND	240	110	ug/Kg	1	02/28/23	KCA	SW8270D
Hexachlorobenzene	ND	140	100	ug/Kg	1	02/28/23	KCA	SW8270D
Hexachlorobutadiene	ND	240	120	ug/Kg	1	02/28/23	KCA	SW8270D
Hexachlorocyclopentadiene	ND	240	100	ug/Kg	1	02/28/23	KCA	SW8270D
Hexachloroethane	ND	140	100	ug/Kg	1	02/28/23	KCA	SW8270D
Indeno(1,2,3-cd)pyrene	ND	240	110	ug/Kg	1	02/28/23	KCA	SW8270D
Isophorone	ND	140	96	ug/Kg	1	02/28/23	KCA	SW8270D
Naphthalene	ND	240	98	ug/Kg	1	02/28/23	KCA	SW8270D
Nitrobenzene	ND	68	68	ug/Kg	1	02/28/23	KCA	SW8270D
N-Nitrosodimethylamine	ND	68	68	ug/Kg	1	02/28/23	KCA	SW8270D
N-Nitrosodi-n-propylamine	ND	68	68	ug/Kg	1	02/28/23	KCA	SW8270D
N-Nitrosodiphenylamine	ND	140	130	ug/Kg	1	02/28/23	KCA	SW8270D
Pentachlorophenol	ND	240	130	ug/Kg	1	02/28/23	KCA	SW8270D
Phenanthrene	ND	140	98	ug/Kg	1	02/28/23	KCA	SW8270D
Phenol	ND	240	110	ug/Kg	1	02/28/23	KCA	SW8270D
Pyrene	ND	240	120	ug/Kg	1	02/28/23	KCA	SW8270D
QA/QC Surrogates								
% 2,4,6-Tribromophenol	53			%	1	02/28/23	KCA	30 - 130 %
% 2-Fluorobiphenyl	35			%	1	02/28/23	KCA	30 - 130 %
% 2-Fluorophenol	35			%	1	02/28/23	KCA	30 - 130 %
% Nitrobenzene-d5	43			%	1	02/28/23	KCA	30 - 130 %
% Phenol-d5	39			%	1	02/28/23	KCA	30 - 130 %
% Terphenyl-d14	37			%	1	02/28/23	KCA	30 - 130 %
Aniline	ND	120	120	ug/Kg	1	02/28/23	KCA	SW8270D

Project ID: IRRC BLUESTONE

Client ID: IRRC BLUESTONE COMP-3

Phoenix I.D.: CN49355

Parameter	Result	RL/ PQL	LOD/ MDL	Units	Dilution	Date/Time	By	Reference
Benzoic Acid	ND	340	240	ug/Kg	1	02/28/23	KCA	SW8270D
Parathion	ND	340	140	ug/Kg	1	02/28/23	KCA	SW8270D

1 = This parameter is not certified by the primary accrediting authority (NY NELAC) for this matrix. NY NELAC does not offer certification for all parameters at this time.
3 = This parameter exceeds laboratory specified limits.

RL/PQL=Reporting/Practical Quantitation Level (Equivalent to NELAC LOQ, Limit of Quantitation) ND=Not Detected BRL=Below Reporting Level L=Biased Low LOD=Limit of Detection MDL=Method Detection Limit1
QA/QC Surrogates: Surrogates are compounds (preceeded with a %) added by the lab to determine analysis efficiency. Surrogate results(%) listed in the report are not "detected" compounds.

Comments:

Per 1.4.6 of EPA method 8270D, 1,2-Diphenylhydrazine is unstable and readily converts to Azobenzene. Azobenzene is used for the calibration of 1,2-Diphenylhydrazine.

The regulatory hold time for pH is immediately. This pH was performed in the laboratory and may be considered outside of hold-time.

Please be advised that the NY 375 soil criteria for chromium are based on hexavalent chromium and trivalent chromium.

Hexavalent Chromium:
This sample is in a reducing state.

Semi-Volatile Comment:
To achieve client's objectives, where the lowest calibration standard or LOD justifies lowering the RL/PQL, the RL/PQL of some compounds have been lowered to meet criteria.

All soils, solids and sludges are reported on a dry weight basis unless otherwise noted in the sample comments.

If you are the client above and have any questions concerning this testing, please do not hesitate to contact Phoenix Client Services at ext.200.
The contents of this report cannot be discussed with anyone other than the client listed above without their written consent.

Phyllis Shiller, Laboratory Director

March 12, 2023

Reviewed and Released by: Maryam Taylor, Project Manager

PHOENIX
Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

ACCREDITED IN ACCORDANCE WITH nelac NY # 11301

Analysis Report

March 12, 2023

FOR: Attn: Mr. Jeff Bogoian
Impact Consulting
170 Keyland Court
Bohemia NY 11716

Sample Information		Custody Information		Date	Time
Matrix:	SOIL	Collected by:	SR	02/24/23	9:30
Location Code:	IMPACTJB-IEC	Received by:	CP	02/24/23	17:38
Rush Request:	72 Hour	Analyzed by:	see "By" below		
P.O.#:					

Laboratory Data

SDG ID: GCN49338
Phoenix ID: CN49356

Project ID: IRRC BLUESTONE
Client ID: IRRC BLUESTONE COMP-4

Parameter	Result		RL/ PQL	LOD/ MDL	Units	Dilution	Date/Time	By	Reference	
Silver	ND		0.35	0.35	mg/Kg	1	02/28/23	CPP	SW6010D	
Aluminum	17200		35	7.0	mg/Kg	10	02/28/23	CPP	SW6010D	
Arsenic	ND		0.70	0.70	mg/Kg	1	02/28/23	CPP	SW6010D	
Barium	238		0.7	0.35	mg/Kg	1	02/28/23	CPP	SW6010D	
Beryllium	0.32		0.28	0.14	mg/Kg	1	02/28/23	CPP	SW6010D	
Calcium	6500		3.5	3.2	mg/Kg	1	02/28/23	CPP	SW6010D	
Cadmium	0.93		0.35	0.35	mg/Kg	1	02/28/23	CPP	SW6010D	
Cobalt	18.8		0.35	0.35	mg/Kg	1	02/28/23	CPP	SW6010D	
Chromium	37.3		0.35	0.35	mg/Kg	1	02/28/23	CPP	SW6010D	
Copper	66.7		0.7	0.35	mg/kg	1	02/28/23	CPP	SW6010D	
Iron	30700		35	35	mg/Kg	10	02/28/23	CPP	SW6010D	
Mercury	ND		0.03	0.02	mg/Kg	2	02/27/23	PM	SW7471B	
Potassium	9890		700	270	mg/Kg	100	03/01/23	TH	SW6010D	
Magnesium	9350		35	35	mg/Kg	10	02/28/23	CPP	SW6010D	
Manganese	281		3.5	3.5	mg/Kg	10	02/28/23	TH	SW6010D	
Sodium	819	*	7	3.0	mg/Kg	1	02/28/23	TH	SW6010D	
Nickel	28.3		0.35	0.35	mg/Kg	1	02/28/23	CPP	SW6010D	
Lead	14.0		0.7	0.35	mg/Kg	1	02/28/23	CPP	SW6010D	
Antimony	ND		3.5	3.5	mg/Kg	1	02/28/23	CPP	SW6010D	
Selenium	ND		1.4	1.2	mg/Kg	1	02/28/23	CPP	SW6010D	
Thallium	ND		1.4	1.4	mg/Kg	1	02/28/23	CPP	SW6010D	
Trivalent Chromium	37.3		0.35	0.35	mg/kg	1	02/28/23		CALC 6010-7196	
Vanadium	69.4		0.35	0.35	mg/Kg	1	02/28/23	CPP	SW6010D	
Zinc	75.6		0.7	0.35	mg/Kg	1	02/28/23	CPP	SW6010D	
Percent Solid	95				%		02/24/23	AL	SW846-%Solid	
Chromium, Hex. (SW3060A digestion	ND		0.40	0.40	mg/Kg	1	02/27/23	DK	SW7196A	
pH at 25C - Soil	10.3		1.00	1.00	pH Units	1	02/24/23 20:55	ER/PK	SW846 9045D	1
Redox Potential	170				mV	1	02/24/23	ER/PK	SM2580B-09	1

Ver 2

Project ID: IRRC BLUESTONE
Client ID: IRRC BLUESTONE COMP-4

Phoenix I.D.: CN49356

Parameter	Result	RL/ PQL	LOD/ MDL	Units	Dilution	Date/Time	By	Reference
Total Cyanide (SW9010C Distill.)	ND	0.53	0.263	mg/Kg	1	02/28/23	CL/GD	SW9012B
Mercury Digestion	Completed					02/27/23	AL/AL	SW7471B
Soil Extraction for Herbicide	Completed					02/24/23	J/DKD	SW3546
Soil Extraction for PCB	Completed					02/27/23	MO/F	SW3546
Soil Extraction for Pesticides	Completed					02/27/23	MO/F	SW3546
Soil Extraction for SVOA	Completed					02/27/23	H/M	SW3546
Total Metals Digest	Completed					02/24/23	S/AG	SW3050B
Chlorinated Herbicides								
2,4,5-T	ND	130	130	ug/Kg	10	02/28/23	JRB	SW8151A
2,4,5-TP (Silvex)	ND	130	130	ug/Kg	10	02/28/23	JRB	SW8151A
2,4-D	ND	260	260	ug/Kg	10	02/28/23	JRB	SW8151A
2,4-DB	ND	2600	2600	ug/Kg	10	02/28/23	JRB	SW8151A
Dalapon	ND	130	130	ug/Kg	10	02/28/23	JRB	SW8151A
Dicamba	ND	130	130	ug/Kg	10	02/28/23	JRB	SW8151A
Dichloroprop	ND	260	260	ug/Kg	10	02/28/23	JRB	SW8151A
Dinoseb	ND	260	260	ug/Kg	10	02/28/23	JRB	SW8151A
QA/QC Surrogates								
% DCAA	118			%	10	02/28/23	JRB	30 - 150 %
% DCAA (Confirmation)	112			%	10	02/28/23	JRB	30 - 150 %
Polychlorinated Biphenyls								
PCB-1016	ND	68	68	ug/Kg	2	03/01/23	SC	SW8082A
PCB-1221	ND	68	68	ug/Kg	2	03/01/23	SC	SW8082A
PCB-1232	ND	68	68	ug/Kg	2	03/01/23	SC	SW8082A
PCB-1242	ND	68	68	ug/Kg	2	03/01/23	SC	SW8082A
PCB-1248	ND	68	68	ug/Kg	2	03/01/23	SC	SW8082A
PCB-1254	ND	68	68	ug/Kg	2	03/01/23	SC	SW8082A
PCB-1260	ND	68	68	ug/Kg	2	03/01/23	SC	SW8082A
PCB-1262	ND	68	68	ug/Kg	2	03/01/23	SC	SW8082A
PCB-1268	ND	68	68	ug/Kg	2	03/01/23	SC	SW8082A
QA/QC Surrogates								
% DCBP	91			%	2	03/01/23	SC	30 - 150 %
% DCBP (Confirmation)	81			%	2	03/01/23	SC	30 - 150 %
% TCMX	76			%	2	03/01/23	SC	30 - 150 %
% TCMX (Confirmation)	79			%	2	03/01/23	SC	30 - 150 %
Pesticides - Soil								
4,4' -DDD	ND	2.0	2.0	ug/Kg	2	03/01/23	AW	SW8081B
4,4' -DDE	ND	2.0	2.0	ug/Kg	2	03/01/23	AW	SW8081B
4,4' -DDT	ND	2.0	2.0	ug/Kg	2	03/01/23	AW	SW8081B
a-BHC	ND	1.4	1.4	ug/Kg	2	03/01/23	AW	SW8081B
a-Chlordane	ND	3.4	3.4	ug/Kg	2	03/01/23	AW	SW8081B
Alachlor	ND	3.4	3.4	ug/Kg	2	03/01/23	AW	SW8081B
Aldrin	ND	3.4	3.4	ug/Kg	2	03/01/23	AW	SW8081B
b-BHC	ND	1.4	1.4	ug/Kg	2	03/01/23	AW	SW8081B
Chlordane	ND	34	34	ug/Kg	2	03/01/23	AW	SW8081B
d-BHC	ND	6.8	6.8	ug/Kg	2	03/01/23	AW	SW8081B
Dieldrin	ND	1.4	1.4	ug/Kg	2	03/01/23	AW	SW8081B

Project ID: IRRC BLUESTONE
Client ID: IRRC BLUESTONE COMP-4

Phoenix I.D.: CN49356

Parameter	Result	RL/ PQL	LOD/ MDL	Units	Dilution	Date/Time	By	Reference	
Endosulfan I	ND	6.8	6.8	ug/Kg	2	03/01/23	AW	SW8081B	
Endosulfan II	ND	6.8	6.8	ug/Kg	2	03/01/23	AW	SW8081B	
Endosulfan sulfate	ND	6.8	6.8	ug/Kg	2	03/01/23	AW	SW8081B	
Endrin	ND	6.8	6.8	ug/Kg	2	03/01/23	AW	SW8081B	
Endrin aldehyde	ND	6.8	6.8	ug/Kg	2	03/01/23	AW	SW8081B	
Endrin ketone	ND	6.8	6.8	ug/Kg	2	03/01/23	AW	SW8081B	
g-BHC	ND	1.4	1.4	ug/Kg	2	03/01/23	AW	SW8081B	
g-Chlordane	ND	3.4	3.4	ug/Kg	2	03/01/23	AW	SW8081B	
Heptachlor	ND	6.8	6.8	ug/Kg	2	03/01/23	AW	SW8081B	
Heptachlor epoxide	ND	6.8	6.8	ug/Kg	2	03/01/23	AW	SW8081B	
Methoxychlor	ND	34	34	ug/Kg	2	03/01/23	AW	SW8081B	
Toxaphene	ND	140	140	ug/Kg	2	03/01/23	AW	SW8081B	
QA/QC Surrogates									
% DCBP	97			%	2	03/01/23	AW	30 - 150 %	
% DCBP (Confirmation)	93			%	2	03/01/23	AW	30 - 150 %	
% TCMX	78			%	2	03/01/23	AW	30 - 150 %	
% TCMX (Confirmation)	74			%	2	03/01/23	AW	30 - 150 %	
Semivolatiles									
1,1-Biphenyl	ND	240	110	ug/Kg	1	02/28/23	KCA	SW8270D	
1,2,4,5-Tetrachlorobenzene	ND	240	120	ug/Kg	1	02/28/23	KCA	SW8270D	
1,2-Diphenylhydrazine	ND	69	69	ug/Kg	1	02/28/23	KCA	SW8270D	
2,2'-Oxybis(1-Chloropropane)	ND	240	96	ug/Kg	1	02/28/23	KCA	SW8270D	1
2,3,4,6-tetrachlorophenol	ND	240	160	ug/Kg	1	02/28/23	KCA	SW8270D	
2,4,5-Trichlorophenol	ND	240	190	ug/Kg	1	02/28/23	KCA	SW8270D	
2,4,6-Trichlorophenol	ND	140	110	ug/Kg	1	02/28/23	KCA	SW8270D	
2,4-Dichlorophenol	ND	140	120	ug/Kg	1	02/28/23	KCA	SW8270D	
2,4-Dimethylphenol	ND	240	86	ug/Kg	1	02/28/23	KCA	SW8270D	
2,4-Dinitrophenol	ND	240	240	ug/Kg	1	02/28/23	KCA	SW8270D	
2,4-Dinitrotoluene	ND	69	69	ug/Kg	1	02/28/23	KCA	SW8270D	
2,6-Dinitrotoluene	ND	69	69	ug/Kg	1	02/28/23	KCA	SW8270D	
2-Chloronaphthalene	ND	240	98	ug/Kg	1	02/28/23	KCA	SW8270D	
2-Chlorophenol	ND	240	98	ug/Kg	1	02/28/23	KCA	SW8270D	
2-Methylnaphthalene	ND	240	100	ug/Kg	1	02/28/23	KCA	SW8270D	
2-Methylphenol (o-cresol)	ND	240	160	ug/Kg	1	02/28/23	KCA	SW8270D	
2-Nitroaniline	ND	69	69	ug/Kg	1	02/28/23	KCA	SW8270D	
2-Nitrophenol	ND	240	220	ug/Kg	1	02/28/23	KCA	SW8270D	
3&4-Methylphenol (m&p-cresol)	ND	240	140	ug/Kg	1	02/28/23	KCA	SW8270D	1
3,3'-Dichlorobenzidine	ND	140	140	ug/Kg	1	02/28/23	KCA	SW8270D	
3-Nitroaniline	ND	91	91	ug/Kg	1	02/28/23	KCA	SW8270D	
4,6-Dinitro-2-methylphenol	ND	210	210	ug/Kg	1	02/28/23	KCA	SW8270D	
4-Bromophenyl phenyl ether	ND	240	100	ug/Kg	1	02/28/23	KCA	SW8270D	
4-Chloro-3-methylphenol	ND	240	120	ug/Kg	1	02/28/23	KCA	SW8270D	
4-Chloroaniline	ND	420	160	ug/Kg	1	02/28/23	KCA	SW8270D	
4-Chlorophenyl phenyl ether	ND	240	120	ug/Kg	1	02/28/23	KCA	SW8270D	
4-Nitroaniline	ND	86	86	ug/Kg	1	02/28/23	KCA	SW8270D	
4-Nitrophenol	ND	350	160	ug/Kg	1	02/28/23	KCA	SW8270D	
Acenaphthene	ND	240	100	ug/Kg	1	02/28/23	KCA	SW8270D	
Acenaphthylene	ND	140	97	ug/Kg	1	02/28/23	KCA	SW8270D	
Acetophenone	ND	240	110	ug/Kg	1	02/28/23	KCA	SW8270D	

Project ID: IRRC BLUESTONE
Client ID: IRRC BLUESTONE COMP-4

Phoenix I.D.: CN49356

Parameter	Result		RL/ PQL	LOD/ MDL	Units	Dilution	Date/Time	By	Reference
Anthracene	ND		240	110	ug/Kg	1	02/28/23	KCA	SW8270D
Atrazine	ND		130	100	ug/Kg	1	02/28/23	KCA	SW8270D
Benz(a)anthracene	ND		240	120	ug/Kg	1	02/28/23	KCA	SW8270D
Benzaldehyde	ND		240	100	ug/Kg	1	02/28/23	KCA	SW8270D
Benzidine	ND		69	69	ug/Kg	1	02/28/23	KCA	SW8270D
Benzo(a)pyrene	ND		140	110	ug/Kg	1	02/28/23	KCA	SW8270D
Benzo(b)fluoranthene	ND		240	120	ug/Kg	1	02/28/23	KCA	SW8270D
Benzo(ghi)perylene	ND		240	110	ug/Kg	1	02/28/23	KCA	SW8270D
Benzo(k)fluoranthene	ND		240	110	ug/Kg	1	02/28/23	KCA	SW8270D
Benzyl Alcohol	ND		350	350	ug/Kg	1	02/28/23	KCA	SW8270D
Benzyl butyl phthalate	ND		240	89	ug/Kg	1	02/28/23	KCA	SW8270D
Bis(2-chloroethoxy)methane	ND		240	95	ug/Kg	1	02/28/23	KCA	SW8270D
Bis(2-chloroethyl)ether	ND		69	69	ug/Kg	1	02/28/23	KCA	SW8270D
Bis(2-ethylhexyl)phthalate	ND		240	99	ug/Kg	1	02/28/23	KCA	SW8270D
Caprolactam	ND		240	240	ug/Kg	1	02/28/23	KCA	SW8270D
Carbazole	ND		170	140	ug/Kg	1	02/28/23	KCA	SW8270D
Chrysene	ND		240	120	ug/Kg	1	02/28/23	KCA	SW8270D
Dibenz(a,h)anthracene	ND		140	110	ug/Kg	1	02/28/23	KCA	SW8270D
Dibenzofuran	ND		240	100	ug/Kg	1	02/28/23	KCA	SW8270D
Diethyl phthalate	ND		240	110	ug/Kg	1	02/28/23	KCA	SW8270D
Dimethylphthalate	ND		240	110	ug/Kg	1	02/28/23	KCA	SW8270D
Di-n-butylphthalate	ND		240	92	ug/Kg	1	02/28/23	KCA	SW8270D
Di-n-octylphthalate	ND		240	89	ug/Kg	1	02/28/23	KCA	SW8270D
Fluoranthene	120	J	240	110	ug/Kg	1	02/28/23	KCA	SW8270D
Fluorene	ND		240	110	ug/Kg	1	02/28/23	KCA	SW8270D
Hexachlorobenzene	ND		140	100	ug/Kg	1	02/28/23	KCA	SW8270D
Hexachlorobutadiene	ND		240	120	ug/Kg	1	02/28/23	KCA	SW8270D
Hexachlorocyclopentadiene	ND		240	110	ug/Kg	1	02/28/23	KCA	SW8270D
Hexachloroethane	ND		140	100	ug/Kg	1	02/28/23	KCA	SW8270D
Indeno(1,2,3-cd)pyrene	ND		240	110	ug/Kg	1	02/28/23	KCA	SW8270D
Isophorone	ND		140	97	ug/Kg	1	02/28/23	KCA	SW8270D
Naphthalene	ND		240	99	ug/Kg	1	02/28/23	KCA	SW8270D
Nitrobenzene	ND		69	69	ug/Kg	1	02/28/23	KCA	SW8270D
N-Nitrosodimethylamine	ND		69	69	ug/Kg	1	02/28/23	KCA	SW8270D
N-Nitrosodi-n-propylamine	ND		69	69	ug/Kg	1	02/28/23	KCA	SW8270D
N-Nitrosodiphenylamine	ND		140	130	ug/Kg	1	02/28/23	KCA	SW8270D
Pentachlorophenol	ND		240	130	ug/Kg	1	02/28/23	KCA	SW8270D
Phenanthrene	ND		140	99	ug/Kg	1	02/28/23	KCA	SW8270D
Phenol	ND		240	110	ug/Kg	1	02/28/23	KCA	SW8270D
Pyrene	ND		240	120	ug/Kg	1	02/28/23	KCA	SW8270D
QA/QC Surrogates									
% 2,4,6-Tribromophenol	117				%	1	02/28/23	KCA	30 - 130 %
% 2-Fluorobiphenyl	78				%	1	02/28/23	KCA	30 - 130 %
% 2-Fluorophenol	73				%	1	02/28/23	KCA	30 - 130 %
% Nitrobenzene-d5	89				%	1	02/28/23	KCA	30 - 130 %
% Phenol-d5	82				%	1	02/28/23	KCA	30 - 130 %
% Terphenyl-d14	84				%	1	02/28/23	KCA	30 - 130 %
Aniline	ND		120	120	ug/Kg	1	02/28/23	KCA	SW8270D

Project ID: IRRC BLUESTONE

Client ID: IRRC BLUESTONE COMP-4

Phoenix I.D.: CN49356

Parameter	Result	RL/ PQL	LOD/ MDL	Units	Dilution	Date/Time	By	Reference
Benzoic Acid	ND	350	240	ug/Kg	1	02/28/23	KCA	SW8270D
Parathion	ND	350	140	ug/Kg	1	02/28/23	KCA	SW8270D

1 = This parameter is not certified by the primary accrediting authority (NY NELAC) for this matrix. NY NELAC does not offer certification for all parameters at this time.

RL/PQL=Reporting/Practical Quantitation Level (Equivalent to NELAC LOQ, Limit of Quantitation) ND=Not Detected BRL=Below Reporting Level L=Biased Low J=Estimated Below RL LOD=Limit of Detection MDL=Method Detection Limit1
QA/QC Surrogates: Surrogates are compounds (preceeded with a %) added by the lab to determine analysis efficiency. Surrogate results(%) listed in the report are not "detected" compounds.

Comments:

Per 1.4.6 of EPA method 8270D, 1,2-Diphenylhydrazine is unstable and readily converts to Azobenzene. Azobenzene is used for the calibration of 1,2-Diphenylhydrazine.

Please be advised that the NY 375 soil criteria for chromium are based on hexavalent chromium and trivalent chromium.

The regulatory hold time for pH is immediately. This pH was performed in the laboratory and may be considered outside of hold-time.

Hexavalent Chromium:
This sample is in a reducing state.

Semi-Volatile Comment:
To achieve client's objectives, where the lowest calibration standard or LOD justifies lowering the RL/PQL, the RL/PQL of some compounds have been lowered to meet criteria.

All soils, solids and sludges are reported on a dry weight basis unless otherwise noted in the sample comments.

If you are the client above and have any questions concerning this testing, please do not hesitate to contact Phoenix Client Services at ext.200.
The contents of this report cannot be discussed with anyone other than the client listed above without their written consent.

Phyllis Shiller, Laboratory Director

March 12, 2023

Reviewed and Released by: Maryam Taylor, Project Manager

PHOENIX
Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

ACCREDITED IN ACCORDANCE WITH nelac NY # 11301

Analysis Report

March 12, 2023

FOR: Attn: Mr. Jeff Bogoian
Impact Consulting
170 Keyland Court
Bohemia NY 11716

Sample Information		Custody Information		Date	Time
Matrix:	SOIL	Collected by:	SR	02/24/23	9:35
Location Code:	IMPACTJB-IEC	Received by:	CP	02/24/23	17:38
Rush Request:	72 Hour	Analyzed by:	see "By" below		
P.O.#:					

Laboratory Data

SDG ID: GCN49338
Phoenix ID: CN49357

Project ID: IRRC BLUESTONE
Client ID: IRRC BLUESTONE COMP-5

Parameter	Result		RL/ PQL	LOD/ MDL	Units	Dilution	Date/Time	By	Reference	
Silver	ND		0.32	0.32	mg/Kg	1	02/28/23	CPP	SW6010D	
Aluminum	15100		32	6.4	mg/Kg	10	02/28/23	CPP	SW6010D	
Arsenic	ND		0.64	0.64	mg/Kg	1	02/28/23	CPP	SW6010D	
Barium	196		0.6	0.32	mg/Kg	1	02/28/23	CPP	SW6010D	
Beryllium	0.33		0.25	0.13	mg/Kg	1	02/28/23	CPP	SW6010D	
Calcium	4690		3.2	2.9	mg/Kg	1	02/28/23	CPP	SW6010D	
Cadmium	0.81		0.32	0.32	mg/Kg	1	02/28/23	CPP	SW6010D	
Cobalt	16.5		0.32	0.32	mg/Kg	1	02/28/23	CPP	SW6010D	
Chromium	34.5		0.32	0.32	mg/Kg	1	02/28/23	CPP	SW6010D	
Copper	57.5		0.6	0.32	mg/kg	1	02/28/23	CPP	SW6010D	
Iron	28000		32	32	mg/Kg	10	02/28/23	CPP	SW6010D	
Mercury	ND		0.03	0.02	mg/Kg	2	02/27/23	PM	SW7471B	
Potassium	9260		640	250	mg/Kg	100	03/01/23	TH	SW6010D	
Magnesium	8400		32	32	mg/Kg	10	02/28/23	CPP	SW6010D	
Manganese	210		3.2	3.2	mg/Kg	10	02/28/23	TH	SW6010D	
Sodium	530	*	6	2.7	mg/Kg	1	02/28/23	TH	SW6010D	
Nickel	26.9		0.32	0.32	mg/Kg	1	02/28/23	CPP	SW6010D	
Lead	11.1		0.6	0.32	mg/Kg	1	02/28/23	CPP	SW6010D	
Antimony	ND		3.2	3.2	mg/Kg	1	02/28/23	CPP	SW6010D	
Selenium	ND		1.3	1.1	mg/Kg	1	02/28/23	CPP	SW6010D	
Thallium	ND		1.3	1.3	mg/Kg	1	02/28/23	CPP	SW6010D	
Trivalent Chromium	34.5		0.32	0.32	mg/kg	1	02/28/23		CALC 6010-7196	
Vanadium	56.8		0.32	0.32	mg/Kg	1	02/28/23	CPP	SW6010D	
Zinc	71.9		0.6	0.32	mg/Kg	1	02/28/23	CPP	SW6010D	
Percent Solid	97				%		02/24/23	AL	SW846-%Solid	
Chromium, Hex. (SW3060A digestion	ND		0.41	0.41	mg/Kg	1	02/27/23	DK	SW7196A	
pH at 25C - Soil	9.88		1.00	1.00	pH Units	1	02/24/23 20:55	ER/PK	SW846 9045D	1
Redox Potential	102				mV	1	02/24/23	ER/PK	SM2580B-09	1

Ver 2

Project ID: IRRC BLUESTONE
Client ID: IRRC BLUESTONE COMP-5

Phoenix I.D.: CN49357

Parameter	Result	RL/ PQL	LOD/ MDL	Units	Dilution	Date/Time	By	Reference
Total Cyanide (SW9010C Distill.)	ND	0.52	0.258	mg/Kg	1	02/28/23	CL/GD	SW9012B
Mercury Digestion	Completed					02/27/23	AL/AL	SW7471B
Soil Extraction for Herbicide	Completed					02/24/23	J/DKD	SW3546
Soil Extraction for PCB	Completed					02/27/23	MO/F	SW3546
Soil Extraction for Pesticides	Completed					02/27/23	MO/F	SW3546
Soil Extraction for SVOA	Completed					02/27/23	H/M	SW3546
Total Metals Digest	Completed					02/24/23	S/AG	SW3050B
Chlorinated Herbicides								
2,4,5-T	ND	130	130	ug/Kg	10	02/28/23	JRB	SW8151A
2,4,5-TP (Silvex)	ND	130	130	ug/Kg	10	02/28/23	JRB	SW8151A
2,4-D	ND	260	260	ug/Kg	10	02/28/23	JRB	SW8151A
2,4-DB	ND	2600	2600	ug/Kg	10	02/28/23	JRB	SW8151A
Dalapon	ND	130	130	ug/Kg	10	02/28/23	JRB	SW8151A
Dicamba	ND	130	130	ug/Kg	10	02/28/23	JRB	SW8151A
Dichloroprop	ND	260	260	ug/Kg	10	02/28/23	JRB	SW8151A
Dinoseb	ND	260	260	ug/Kg	10	02/28/23	JRB	SW8151A
QA/QC Surrogates								
% DCAA	148			%	10	02/28/23	JRB	30 - 150 %
% DCAA (Confirmation)	130			%	10	02/28/23	JRB	30 - 150 %
Polychlorinated Biphenyls								
PCB-1016	ND	68	68	ug/Kg	2	03/01/23	SC	SW8082A
PCB-1221	ND	68	68	ug/Kg	2	03/01/23	SC	SW8082A
PCB-1232	ND	68	68	ug/Kg	2	03/01/23	SC	SW8082A
PCB-1242	ND	68	68	ug/Kg	2	03/01/23	SC	SW8082A
PCB-1248	ND	68	68	ug/Kg	2	03/01/23	SC	SW8082A
PCB-1254	ND	68	68	ug/Kg	2	03/01/23	SC	SW8082A
PCB-1260	ND	68	68	ug/Kg	2	03/01/23	SC	SW8082A
PCB-1262	ND	68	68	ug/Kg	2	03/01/23	SC	SW8082A
PCB-1268	ND	68	68	ug/Kg	2	03/01/23	SC	SW8082A
QA/QC Surrogates								
% DCBP	111			%	2	03/01/23	SC	30 - 150 %
% DCBP (Confirmation)	101			%	2	03/01/23	SC	30 - 150 %
% TCMX	92			%	2	03/01/23	SC	30 - 150 %
% TCMX (Confirmation)	94			%	2	03/01/23	SC	30 - 150 %
Pesticides - Soil								
4,4' -DDD	ND	2.0	2.0	ug/Kg	2	03/01/23	AW	SW8081B
4,4' -DDE	ND	2.0	2.0	ug/Kg	2	03/01/23	AW	SW8081B
4,4' -DDT	ND	2.0	2.0	ug/Kg	2	03/01/23	AW	SW8081B
a-BHC	ND	1.4	1.4	ug/Kg	2	03/01/23	AW	SW8081B
a-Chlordane	ND	3.4	3.4	ug/Kg	2	03/01/23	AW	SW8081B
Alachlor	ND	3.4	3.4	ug/Kg	2	03/01/23	AW	SW8081B
Aldrin	ND	3.4	3.4	ug/Kg	2	03/01/23	AW	SW8081B
b-BHC	ND	1.4	1.4	ug/Kg	2	03/01/23	AW	SW8081B
Chlordane	ND	34	34	ug/Kg	2	03/01/23	AW	SW8081B
d-BHC	ND	6.8	6.8	ug/Kg	2	03/01/23	AW	SW8081B
Dieldrin	ND	1.4	1.4	ug/Kg	2	03/01/23	AW	SW8081B

Project ID: IRRC BLUESTONE
Client ID: IRRC BLUESTONE COMP-5

Phoenix I.D.: CN49357

Parameter	Result	RL/ PQL	LOD/ MDL	Units	Dilution	Date/Time	By	Reference	
Endosulfan I	ND	6.8	6.8	ug/Kg	2	03/01/23	AW	SW8081B	
Endosulfan II	ND	6.8	6.8	ug/Kg	2	03/01/23	AW	SW8081B	
Endosulfan sulfate	ND	6.8	6.8	ug/Kg	2	03/01/23	AW	SW8081B	
Endrin	ND	6.8	6.8	ug/Kg	2	03/01/23	AW	SW8081B	
Endrin aldehyde	ND	6.8	6.8	ug/Kg	2	03/01/23	AW	SW8081B	
Endrin ketone	ND	6.8	6.8	ug/Kg	2	03/01/23	AW	SW8081B	
g-BHC	ND	1.4	1.4	ug/Kg	2	03/01/23	AW	SW8081B	
g-Chlordane	ND	3.4	3.4	ug/Kg	2	03/01/23	AW	SW8081B	
Heptachlor	ND	6.8	6.8	ug/Kg	2	03/01/23	AW	SW8081B	
Heptachlor epoxide	ND	6.8	6.8	ug/Kg	2	03/01/23	AW	SW8081B	
Methoxychlor	ND	34	34	ug/Kg	2	03/01/23	AW	SW8081B	
Toxaphene	ND	140	140	ug/Kg	2	03/01/23	AW	SW8081B	
QA/QC Surrogates									
% DCBP	118			%	2	03/01/23	AW	30 - 150 %	
% DCBP (Confirmation)	111			%	2	03/01/23	AW	30 - 150 %	
% TCMX	96			%	2	03/01/23	AW	30 - 150 %	
% TCMX (Confirmation)	90			%	2	03/01/23	AW	30 - 150 %	
Semivolatiles									
1,1-Biphenyl	ND	230	100	ug/Kg	1	02/28/23	KCA	SW8270D	
1,2,4,5-Tetrachlorobenzene	ND	230	120	ug/Kg	1	02/28/23	KCA	SW8270D	
1,2-Diphenylhydrazine	ND	67	67	ug/Kg	1	02/28/23	KCA	SW8270D	
2,2'-Oxybis(1-Chloropropane)	ND	230	93	ug/Kg	1	02/28/23	KCA	SW8270D	1
2,3,4,6-tetrachlorophenol	ND	230	160	ug/Kg	1	02/28/23	KCA	SW8270D	
2,4,5-Trichlorophenol	ND	230	180	ug/Kg	1	02/28/23	KCA	SW8270D	
2,4,6-Trichlorophenol	ND	130	110	ug/Kg	1	02/28/23	KCA	SW8270D	
2,4-Dichlorophenol	ND	130	120	ug/Kg	1	02/28/23	KCA	SW8270D	
2,4-Dimethylphenol	ND	230	83	ug/Kg	1	02/28/23	KCA	SW8270D	
2,4-Dinitrophenol	ND	230	230	ug/Kg	1	02/28/23	KCA	SW8270D	
2,4-Dinitrotoluene	ND	67	67	ug/Kg	1	02/28/23	KCA	SW8270D	
2,6-Dinitrotoluene	ND	67	67	ug/Kg	1	02/28/23	KCA	SW8270D	
2-Chloronaphthalene	ND	230	95	ug/Kg	1	02/28/23	KCA	SW8270D	
2-Chlorophenol	ND	230	95	ug/Kg	1	02/28/23	KCA	SW8270D	
2-Methylnaphthalene	ND	230	100	ug/Kg	1	02/28/23	KCA	SW8270D	
2-Methylphenol (o-cresol)	ND	230	160	ug/Kg	1	02/28/23	KCA	SW8270D	
2-Nitroaniline	ND	67	67	ug/Kg	1	02/28/23	KCA	SW8270D	
2-Nitrophenol	ND	230	210	ug/Kg	1	02/28/23	KCA	SW8270D	
3&4-Methylphenol (m&p-cresol)	ND	230	130	ug/Kg	1	02/28/23	KCA	SW8270D	1
3,3'-Dichlorobenzidine	ND	130	130	ug/Kg	1	02/28/23	KCA	SW8270D	
3-Nitroaniline	ND	91	91	ug/Kg	1	02/28/23	KCA	SW8270D	
4,6-Dinitro-2-methylphenol	ND	210	210	ug/Kg	1	02/28/23	KCA	SW8270D	
4-Bromophenyl phenyl ether	ND	230	99	ug/Kg	1	02/28/23	KCA	SW8270D	
4-Chloro-3-methylphenol	ND	230	120	ug/Kg	1	02/28/23	KCA	SW8270D	
4-Chloroaniline	ND	420	160	ug/Kg	1	02/28/23	KCA	SW8270D	
4-Chlorophenyl phenyl ether	ND	230	110	ug/Kg	1	02/28/23	KCA	SW8270D	
4-Nitroaniline	ND	86	86	ug/Kg	1	02/28/23	KCA	SW8270D	
4-Nitrophenol	ND	340	150	ug/Kg	1	02/28/23	KCA	SW8270D	
Acenaphthene	ND	230	100	ug/Kg	1	02/28/23	KCA	SW8270D	
Acenaphthylene	ND	130	94	ug/Kg	1	02/28/23	KCA	SW8270D	
Acetophenone	ND	230	100	ug/Kg	1	02/28/23	KCA	SW8270D	

Project ID: IRRC BLUESTONE

Client ID: IRRC BLUESTONE COMP-5

Phoenix I.D.: CN49357

Parameter	Result	RL/ PQL	LOD/ MDL	Units	Dilution	Date/Time	By	Reference
Anthracene	ND	230	110	ug/Kg	1	02/28/23	KCA	SW8270D
Atrazine	ND	130	100	ug/Kg	1	02/28/23	KCA	SW8270D
Benz(a)anthracene	ND	230	110	ug/Kg	1	02/28/23	KCA	SW8270D
Benzaldehyde	ND	230	99	ug/Kg	1	02/28/23	KCA	SW8270D
Benzidine	ND	67	67	ug/Kg	1	02/28/23	KCA	SW8270D
Benzo(a)pyrene	ND	130	110	ug/Kg	1	02/28/23	KCA	SW8270D
Benzo(b)fluoranthene	ND	230	110	ug/Kg	1	02/28/23	KCA	SW8270D
Benzo(ghi)perylene	ND	230	110	ug/Kg	1	02/28/23	KCA	SW8270D
Benzo(k)fluoranthene	ND	230	110	ug/Kg	1	02/28/23	KCA	SW8270D
Benzyl Alcohol	ND	340	340	ug/Kg	1	02/28/23	KCA	SW8270D
Benzyl butyl phthalate	ND	230	86	ug/Kg	1	02/28/23	KCA	SW8270D
Bis(2-chloroethoxy)methane	ND	230	93	ug/Kg	1	02/28/23	KCA	SW8270D
Bis(2-chloroethyl)ether	ND	67	67	ug/Kg	1	02/28/23	KCA	SW8270D
Bis(2-ethylhexyl)phthalate	ND	230	97	ug/Kg	1	02/28/23	KCA	SW8270D
Caprolactam	ND	230	230	ug/Kg	1	02/28/23	KCA	SW8270D
Carbazole	ND	170	130	ug/Kg	1	02/28/23	KCA	SW8270D
Chrysene	ND	230	110	ug/Kg	1	02/28/23	KCA	SW8270D
Dibenz(a,h)anthracene	ND	130	110	ug/Kg	1	02/28/23	KCA	SW8270D
Dibenzofuran	ND	230	98	ug/Kg	1	02/28/23	KCA	SW8270D
Diethyl phthalate	ND	230	110	ug/Kg	1	02/28/23	KCA	SW8270D
Dimethylphthalate	ND	230	100	ug/Kg	1	02/28/23	KCA	SW8270D
Di-n-butylphthalate	ND	230	89	ug/Kg	1	02/28/23	KCA	SW8270D
Di-n-octylphthalate	ND	230	86	ug/Kg	1	02/28/23	KCA	SW8270D
Fluoranthene	ND	230	110	ug/Kg	1	02/28/23	KCA	SW8270D
Fluorene	ND	230	110	ug/Kg	1	02/28/23	KCA	SW8270D
Hexachlorobenzene	ND	130	98	ug/Kg	1	02/28/23	KCA	SW8270D
Hexachlorobutadiene	ND	230	120	ug/Kg	1	02/28/23	KCA	SW8270D
Hexachlorocyclopentadiene	ND	230	100	ug/Kg	1	02/28/23	KCA	SW8270D
Hexachloroethane	ND	130	100	ug/Kg	1	02/28/23	KCA	SW8270D
Indeno(1,2,3-cd)pyrene	ND	230	110	ug/Kg	1	02/28/23	KCA	SW8270D
Isophorone	ND	130	94	ug/Kg	1	02/28/23	KCA	SW8270D
Naphthalene	ND	230	97	ug/Kg	1	02/28/23	KCA	SW8270D
Nitrobenzene	ND	67	67	ug/Kg	1	02/28/23	KCA	SW8270D
N-Nitrosodimethylamine	ND	67	67	ug/Kg	1	02/28/23	KCA	SW8270D
N-Nitrosodi-n-propylamine	ND	67	67	ug/Kg	1	02/28/23	KCA	SW8270D
N-Nitrosodiphenylamine	ND	130	130	ug/Kg	1	02/28/23	KCA	SW8270D
Pentachlorophenol	ND	230	130	ug/Kg	1	02/28/23	KCA	SW8270D
Phenanthrene	ND	130	96	ug/Kg	1	02/28/23	KCA	SW8270D
Phenol	ND	230	110	ug/Kg	1	02/28/23	KCA	SW8270D
Pyrene	ND	230	120	ug/Kg	1	02/28/23	KCA	SW8270D
QA/QC Surrogates								
% 2,4,6-Tribromophenol	71			%	1	02/28/23	KCA	30 - 130 %
% 2-Fluorobiphenyl	48			%	1	02/28/23	KCA	30 - 130 %
% 2-Fluorophenol	49			%	1	02/28/23	KCA	30 - 130 %
% Nitrobenzene-d5	59			%	1	02/28/23	KCA	30 - 130 %
% Phenol-d5	53			%	1	02/28/23	KCA	30 - 130 %
% Terphenyl-d14	51			%	1	02/28/23	KCA	30 - 130 %
Aniline	ND	120	120	ug/Kg	1	02/28/23	KCA	SW8270D

Project ID: IRRC BLUESTONE

Client ID: IRRC BLUESTONE COMP-5

Phoenix I.D.: CN49357

Parameter	Result	RL/ PQL	LOD/ MDL	Units	Dilution	Date/Time	By	Reference
Benzoic Acid	ND	340	230	ug/Kg	1	02/28/23	KCA	SW8270D
Parathion	ND	340	130	ug/Kg	1	02/28/23	KCA	SW8270D

1 = This parameter is not certified by the primary accrediting authority (NY NELAC) for this matrix. NY NELAC does not offer certification for all parameters at this time.

RL/PQL=Reporting/Practical Quantitation Level (Equivalent to NELAC LOQ, Limit of Quantitation) ND=Not Detected BRL=Below Reporting Level L=Biased Low LOD=Limit of Detection MDL=Method Detection Limit1
QA/QC Surrogates: Surrogates are compounds (preceeded with a %) added by the lab to determine analysis efficiency. Surrogate results(%) listed in the report are not "detected" compounds.

Comments:

The regulatory hold time for pH is immediately. This pH was performed in the laboratory and may be considered outside of hold-time.

Per 1.4.6 of EPA method 8270D, 1,2-Diphenylhydrazine is unstable and readily converts to Azobenzene. Azobenzene is used for the calibration of 1,2-Diphenylhydrazine.

Please be advised that the NY 375 soil criteria for chromium are based on hexavalent chromium and trivalent chromium.

Hexavalent Chromium:
This sample is in a reducing state.

Semi-Volatile Comment:
To achieve client's objectives, where the lowest calibration standard or LOD justifies lowering the RL/PQL, the RL/PQL of some compounds have been lowered to meet criteria.

All soils, solids and sludges are reported on a dry weight basis unless otherwise noted in the sample comments.

If you are the client above and have any questions concerning this testing, please do not hesitate to contact Phoenix Client Services at ext.200.
The contents of this report cannot be discussed with anyone other than the client listed above without their written consent.

Phyllis Shiller, Laboratory Director

March 12, 2023

Reviewed and Released by: Maryam Taylor, Project Manager

PHOENIX
Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102

ACCREDITED IN ACCORDANCE WITH nelac NY # 11301

QA/QC Report

March 12, 2023

QA/QC Data

SDG I.D.: GCN49338

Parameter	Blank	Blk RL	Sample Result	Dup Result	Dup RPD	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits	
QA/QC Batch 665871 (mg/kg), QC Sample No: CN49317 40X (CN49353, CN49354, CN49355, CN49356, CN49357)														
Chromium, Hexavalent - Soil														
Chromium, Hexavalent	BRL	0.40	0.47	0.58	NC	98.6						90 - 110	30	
Chromium, Hexavalent (Ins)						92.5			87.9			90 - 110	30	
Chromium, Hexavalent (Sol)						93.8			90.9			90 - 110	30	
QA/QC Batch 665851 (mg/kg), QC Sample No: CN49085 2X (CN49353, CN49354, CN49355, CN49356, CN49357)														
Mercury - Soil	BRL	0.02	<0.03	<0.03	NC	103	100	3.0	101	102	1.0	70 - 130	30	
Comment:														
Additional Mercury criteria: LCS acceptance range for waters is 80-120% and for soils is 70-130%.														
QA/QC Batch 665780 (mg/kg), QC Sample No: CN49333 (CN49353, CN49354, CN49355, CN49356, CN49357)														
ICP Metals - Soil														
Aluminum	BRL	5.0	14100	12700	10.4	100	109	8.6	NC			75 - 125	30	
Antimony	BRL	3.3	<3.7	<3.6	NC	98.6	110	10.9	107			75 - 125	30	
Arsenic	BRL	0.67	2.80	2.94	NC	111	118	6.1	106			75 - 125	30	
Barium	BRL	0.33	82.6	88.4	6.80	118	124	5.0	105			75 - 125	30	
Beryllium	BRL	0.27	0.47	0.53	NC	110	115	4.4	106			75 - 125	30	
Cadmium	BRL	0.33	0.83	0.93	NC	108	117	8.0	111			75 - 125	30	
Calcium	BRL	5.0	9770	10300	5.30	108	115	6.3	NC			75 - 125	30	
Chromium	BRL	0.33	26.0	31.5	19.1	112	120	6.9	117			75 - 125	30	
Cobalt	BRL	0.33	9.95	10.9	9.10	111	118	6.1	110			75 - 125	30	
Copper	BRL	0.67	28.8	34.5	18.0	111	119	7.0	106			75 - 125	30	
Iron	BRL	5.0	27500	29000	5.30	95.3	104	8.7	NC			75 - 125	30	
Lead	BRL	0.33	41.1	44.6	8.20	116	122	5.0	113			75 - 125	30	
Magnesium	BRL	5.0	5570	5480	1.60	111	123	10.3	NC			75 - 125	30	
Manganese	BRL	0.33	469	478	1.90	109	116	6.2	NC			75 - 125	30	
Nickel	BRL	0.33	26.0	26.6	2.30	113	120	6.0	123			75 - 125	30	
Potassium	BRL	5.0	3010	2910	3.40	113	121	6.8	90.7			75 - 125	30	
Selenium	BRL	1.3	<1.5	<1.5	NC	112	118	5.2	107			75 - 125	30	
Silver	BRL	0.33	<0.37	<0.36	NC	115	123	6.7	113			75 - 125	30	
Sodium	BRL	100	481 *	309	43.5	109	108	0.9	NC			75 - 125	30	r
Thallium	BRL	3.0	<1.5	<3.3	NC	114	121	6.0	109			75 - 125	30	
Vanadium	BRL	0.33	36.6	43.5	17.2	113	121	6.8	105			75 - 125	30	
Zinc	BRL	0.67	64.2	70.3	9.10	111	118	6.1	107			75 - 125	30	

r = This parameter is outside laboratory RPD specified recovery limits.

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ACCREDITED IN ACCORDANCE WITH nelac NY # 11301

QA/QC Report

March 12, 2023

QA/QC Data

SDG I.D.: GCN49338

Parameter	Blank	Blk RL	Sample Result	Dup Result	Dup RPD	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits
QA/QC Batch 665951 (mg/Kg), QC Sample No: CN48510 50X (CN49353, CN49354, CN49355, CN49356, CN49357)													
Total Cyanide (SW9010C Distill.)	BRL	0.50	<0.54	<0.54	NC	93.0			101			80 - 120	30
QA/QC Batch 665813 (PH), QC Sample No: CN49353 (CN49353, CN49354, CN49355, CN49356, CN49357)													
pH			10.3	10.2	1.00	101						85 - 115	20
QA/QC Batch 665814 (mV), QC Sample No: CN49353 (CN49353, CN49354, CN49355, CN49356, CN49357)													
Redox Potential			55.5	55.5	NC							75 - 125	30

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QA/QC Report

March 12, 2023

QA/QC Data

SDG I.D.: GCN49338

Parameter	Blank	Blk RL	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits
QA/QC Batch 665791 (ug/Kg), QC Sample No: CN49365 10X (CN49353, CN49354, CN49355, CN49356, CN49357)										
Chlorinated Herbicides - Soil										
2,4,5-T	ND	130	65	63	3.1	83	67	21.3	40 - 140	30
2,4,5-TP (Silvex)	ND	130	60	59	1.7	78	74	5.3	40 - 140	30
2,4-D	ND	250	52	52	0.0	72	64	11.8	40 - 140	30
2,4-DB	ND	2500	37	37	0.0	72	66	8.7	40 - 140	30
Dalapon	ND	130	48	66	31.6	57	57	0.0	40 - 140	30
Dicamba	ND	130	95	94	1.1	103	106	2.9	40 - 140	30
Dichloroprop	ND	130	71	67	5.8	104	98	5.9	40 - 140	30
Dinoseb	ND	130	92	91	1.1	62	64	3.2	40 - 140	30
% DCAA (Surrogate Rec)	131	%	95	96	1.0	143	148	3.4	30 - 150	30
% DCAA (Surrogate Rec) (Confirm	102	%	84	87	3.5	104	103	1.0	30 - 150	30
QA/QC Batch 665927 (ug/Kg), QC Sample No: CN49354 2X (CN49353, CN49354, CN49355, CN49356, CN49357)										
Polychlorinated Biphenyls - Soil										
PCB-1016	ND	33	112	108	3.6	97	104	7.0	40 - 140	30
PCB-1221	ND	33							40 - 140	30
PCB-1232	ND	33							40 - 140	30
PCB-1242	ND	33							40 - 140	30
PCB-1248	ND	33							40 - 140	30
PCB-1254	ND	33							40 - 140	30
PCB-1260	ND	33	120	119	0.8	108	115	6.3	40 - 140	30
PCB-1262	ND	33							40 - 140	30
PCB-1268	ND	33							40 - 140	30
% DCBP (Surrogate Rec)	99	%	111	103	7.5	96	103	7.0	30 - 150	30
% DCBP (Surrogate Rec) (Confirm	87	%	102	95	7.1	86	94	8.9	30 - 150	30
% TCMX (Surrogate Rec)	79	%	90	84	6.9	76	82	7.6	30 - 150	30
% TCMX (Surrogate Rec) (Confirm	83	%	95	83	13.5	80	87	8.4	30 - 150	30
QA/QC Batch 665929 (ug/Kg), QC Sample No: CN49354 2X (CN49353, CN49354, CN49355, CN49356, CN49357)										
Pesticides - Soil										
4,4' -DDD	ND	1.7	105	94	11.1	92	89	3.3	40 - 140	30
4,4' -DDE	ND	1.7	98	93	5.2	86	87	1.2	40 - 140	30
4,4' -DDT	ND	1.7	102	101	1.0	91	91	0.0	40 - 140	30
a-BHC	ND	1.0	85	85	0.0	82	87	5.9	40 - 140	30
a-Chlordane	ND	3.3	102	97	5.0	90	91	1.1	40 - 140	30
Alachlor	ND	3.3	NA	NA	NC	NA	NA	NC	40 - 140	30
Aldrin	ND	1.0	93	89	4.4	84	86	2.4	40 - 140	30
b-BHC	ND	1.0	95	87	8.8	83	93	11.4	40 - 140	30
Chlordane	ND	33	106	107	0.9	91	92	1.1	40 - 140	30
d-BHC	ND	3.3	98	87	11.9	70	81	14.6	40 - 140	30
Dieldrin	ND	1.0	104	95	9.0	89	91	2.2	40 - 140	30
Endosulfan I	ND	3.3	125	110	12.8	106	110	3.7	40 - 140	30
Endosulfan II	ND	3.3	111	102	8.5	88	88	0.0	40 - 140	30

QA/QC Data

SDG I.D.: GCN49338

Parameter	Blank	Blk RL	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits	
Endosulfan sulfate	ND	3.3	112	95	16.4	92	91	1.1	40 - 140	30	
Endrin	ND	3.3	97	76	24.3	83	83	0.0	40 - 140	30	
Endrin aldehyde	ND	3.3	97	87	10.9	95	82	14.7	40 - 140	30	
Endrin ketone	ND	3.3	112	103	8.4	93	94	1.1	40 - 140	30	
g-BHC	ND	1.0	124	121	2.4	112	117	4.4	40 - 140	30	
g-Chlordane	ND	3.3	106	107	0.9	91	92	1.1	40 - 140	30	
Heptachlor	ND	3.3	94	91	3.2	88	97	9.7	40 - 140	30	
Heptachlor epoxide	ND	3.3	94	91	3.2	82	84	2.4	40 - 140	30	
Methoxychlor	ND	3.3	104	98	5.9	93	92	1.1	40 - 140	30	
Toxaphene	ND	130	NA	NA	NC	NA	NA	NC	40 - 140	30	
% DCBP	87	%	109	100	8.6	101	94	7.2	30 - 150	30	
% DCBP (Confirmation)	79	%	97	90	7.5	97	83	15.6	30 - 150	30	
% TCMX	64	%	79	81	2.5	81	81	0.0	30 - 150	30	
% TCMX (Confirmation)	67	%	79	83	4.9	93	80	15.0	30 - 150	30	

QA/QC Batch 665931 (ug/kg), QC Sample No: CN49358 (CN49353, CN49354, CN49355, CN49356, CN49357)

Semivolatiles - Soil

1,1-Biphenyl	ND	230	72	76	5.4	58	45	25.2	30 - 130	30	
1,2,4,5-Tetrachlorobenzene	ND	230	68	74	8.5	57	46	21.4	30 - 130	30	
1,2-Diphenylhydrazine	ND	230	83	85	2.4	65	53	20.3	30 - 130	30	
2,2'-Oxybis(1-Chloropropane)	ND	230	80	91	12.9	71	58	20.2	30 - 130	30	
2,3,4,6-tetrachlorophenol	ND	230	86	86	0.0	64	50	24.6	30 - 130	30	
2,4,5-Trichlorophenol	ND	230	89	90	1.1	68	53	24.8	30 - 130	30	
2,4,6-Trichlorophenol	ND	130	87	89	2.3	68	53	24.8	30 - 130	30	
2,4-Dichlorophenol	ND	130	79	83	4.9	64	52	20.7	30 - 130	30	
2,4-Dimethylphenol	ND	230	79	84	6.1	70	56	22.2	30 - 130	30	
2,4-Dinitrophenol	ND	230	58	43	29.7	65	55	16.7	20 - 160	30	
2,4-Dinitrotoluene	ND	130	97	97	0.0	75	60	22.2	30 - 130	30	
2,6-Dinitrotoluene	ND	130	93	93	0.0	72	58	21.5	30 - 130	30	
2-Chloronaphthalene	ND	230	76	80	5.1	61	48	23.9	30 - 130	30	
2-Chlorophenol	ND	230	74	82	10.3	61	49	21.8	30 - 130	30	
2-Methylnaphthalene	ND	230	72	78	8.0	62	49	23.4	30 - 130	30	
2-Methylphenol (o-cresol)	ND	230	75	83	10.1	64	52	20.7	30 - 130	30	
2-Nitroaniline	ND	330	187	185	1.1	144	117	20.7	30 - 130	30	l,m
2-Nitrophenol	ND	230	115	139	18.9	110	81	30.4	30 - 130	30	l
3&4-Methylphenol (m&p-cresol)	ND	230	78	85	8.6	65	52	22.2	20 - 160	30	
3,3'-Dichlorobenzidine	ND	130	86	88	2.3	73	58	22.9	30 - 130	30	
3-Nitroaniline	ND	330	116	116	0.0	88	72	20.0	30 - 130	30	
4,6-Dinitro-2-methylphenol	ND	230	86	69	21.9	80	63	23.8	30 - 130	30	
4-Bromophenyl phenyl ether	ND	230	82	84	2.4	63	50	23.0	30 - 130	30	
4-Chloro-3-methylphenol	ND	230	84	87	3.5	70	56	22.2	30 - 130	30	
4-Chloroaniline	ND	230	83	90	8.1	71	60	16.8	30 - 130	30	
4-Chlorophenyl phenyl ether	ND	230	84	87	3.5	64	50	24.6	30 - 130	30	
4-Nitroaniline	ND	230	104	109	4.7	84	68	21.1	30 - 130	30	
4-Nitrophenol	ND	230	120	123	2.5	94	81	14.9	20 - 160	30	
Acenaphthene	ND	230	71	73	2.8	60	44	30.8	30 - 130	30	r
Acenaphthylene	ND	130	69	72	4.3	55	44	22.2	30 - 130	30	
Acetophenone	ND	230	73	81	10.4	60	49	20.2	30 - 130	30	
Aniline	ND	330	62	70	12.1	51	43	17.0	20 - 160	30	
Anthracene	ND	230	77	77	0.0	61	43	34.6	30 - 130	30	r
Atrazine	ND	130	82	84	2.4	62	50	21.4	30 - 130	30	
Benz(a)anthracene	ND	230	74	74	0.0	64	41	43.8	30 - 130	30	r
Benzaldehyde	ND	230	79	72	9.3	27	20	29.8	20 - 160	30	

QA/QC Data

SDG I.D.: GCN49338

Parameter	Blank	Blk RL	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits	
Benzidine	ND	330	77	73	5.3	56	47	17.5	20 - 160	30	
Benzo(a)pyrene	ND	130	86	86	0.0	72	48	40.0	30 - 130	30	r
Benzo(b)fluoranthene	ND	160	75	76	1.3	65	41	45.3	30 - 130	30	r
Benzo(ghi)perylene	ND	230	84	85	1.2	66	47	33.6	30 - 130	30	r
Benzo(k)fluoranthene	ND	230	71	71	0.0	59	45	26.9	30 - 130	30	
Benzoic Acid	ND	670	41	38	7.6	12	36	100.0	20 - 160	30	m,r
Benzyl Alcohol	ND	230	66	74	11.4	56	45	21.8	20 - 160	30	
Benzyl butyl phthalate	ND	230	95	96	1.0	70	57	20.5	30 - 130	30	
Bis(2-chloroethoxy)methane	ND	230	74	80	7.8	62	49	23.4	30 - 130	30	
Bis(2-chloroethyl)ether	ND	130	76	87	13.5	65	53	20.3	30 - 130	30	
Bis(2-ethylhexyl)phthalate	ND	230	92	95	3.2	69	56	20.8	30 - 130	30	
Caprolactam	ND	230	78	78	0.0	62	50	21.4	20 - 160	30	
Carbazole	ND	230	81	81	0.0	63	50	23.0	30 - 130	30	
Chrysene	ND	230	73	74	1.4	61	41	39.2	30 - 130	30	r
Dibenz(a,h)anthracene	ND	130	84	84	0.0	63	48	27.0	30 - 130	30	
Dibenzofuran	ND	230	78	79	1.3	63	48	27.0	30 - 130	30	
Diethyl phthalate	ND	230	84	84	0.0	64	51	22.6	30 - 130	30	
Dimethylphthalate	ND	230	82	82	0.0	64	50	24.6	30 - 130	30	
Di-n-butylphthalate	ND	670	91	92	1.1	67	55	19.7	30 - 130	30	
Di-n-octylphthalate	ND	230	91	92	1.1	70	57	20.5	30 - 130	30	
Fluoranthene	ND	230	80	81	1.2	80	39	68.9	30 - 130	30	r
Fluorene	ND	230	79	82	3.7	65	49	28.1	30 - 130	30	
Hexachlorobenzene	ND	130	85	89	4.6	67	53	23.3	30 - 130	30	
Hexachlorobutadiene	ND	230	71	78	9.4	60	49	20.2	30 - 130	30	
Hexachlorocyclopentadiene	ND	230	71	75	5.5	42	30	33.3	20 - 160	30	r
Hexachloroethane	ND	130	67	76	12.6	59	47	22.6	20 - 160	30	
Indeno(1,2,3-cd)pyrene	ND	230	90	91	1.1	72	51	34.1	30 - 130	30	r
Isophorone	ND	130	72	79	9.3	62	50	21.4	30 - 130	30	
Naphthalene	ND	230	66	74	11.4	52	39	28.6	30 - 130	30	
Nitrobenzene	ND	130	84	94	11.2	73	60	19.5	30 - 130	30	
N-Nitrosodimethylamine	ND	230	63	70	10.5	53	44	18.6	20 - 160	30	
N-Nitrosodi-n-propylamine	ND	130	81	91	11.6	70	56	22.2	30 - 130	30	
N-Nitrosodiphenylamine	ND	130	77	77	0.0	59	47	22.6	30 - 130	30	
Parathion	ND	330	108	110	1.8	86	72	17.7	30 - 130	30	
Pentachlorophenol	ND	230	89	87	2.3	61	48	23.9	20 - 160	30	
Phenanthrene	ND	130	73	74	1.4	72	33	74.3	30 - 130	30	r
Phenol	ND	230	77	86	11.0	64	51	22.6	20 - 160	30	
Pyrene	ND	230	78	79	1.3	73	39	60.7	30 - 130	30	r
% 2,4,6-Tribromophenol	56	%	114	122	6.8	95	75	23.5	30 - 130	30	
% 2-Fluorobiphenyl	36	%	69	75	8.3	57	45	23.5	30 - 130	30	
% 2-Fluorophenol	36	%	66	77	15.4	57	45	23.5	30 - 130	30	
% Nitrobenzene-d5	42	%	74	87	16.1	67	54	21.5	30 - 130	30	
% Phenol-d5	38	%	73	83	12.8	63	51	21.1	30 - 130	30	
% Terphenyl-d14	37	%	75	77	2.6	59	46	24.8	30 - 130	30	

Comment:

The laboratory criteria of 30-130% is different than the NJKDQP general criteria of 70-130%. The NJKDQP criteria for problem compounds is 20-160%.

QA/QC Batch 665905 (ug/kg), QC Sample No: CN49404 (CN49338, CN49339, CN49340, CN49341, CN49342, CN49343, CN49344, CN49345, CN49346, CN49347, CN49348, CN49349, CN49350, CN49351, CN49352)

Volatiles - Soil (Low Level)

1,1,1,2-Tetrachloroethane	ND	5.0	109	106	2.8	92	92	0.0	70 - 130	30
1,1,1-Trichloroethane	ND	5.0	107	103	3.8	101	102	1.0	70 - 130	30

QA/QC Data

SDG I.D.: GCN49338

Parameter	Blank	Blk RL	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits	
1,1,2,2-Tetrachloroethane	ND	3.0	101	97	4.0	83	82	1.2	70 - 130	30	
1,1,2-Trichloroethane	ND	5.0	98	96	2.1	86	86	0.0	70 - 130	30	
1,1-Dichloroethane	ND	5.0	103	99	4.0	99	99	0.0	70 - 130	30	
1,1-Dichloroethene	ND	5.0	113	108	4.5	110	112	1.8	70 - 130	30	
1,2,3-Trichlorobenzene	ND	5.0	96	90	6.5	43	36	17.7	70 - 130	30	m
1,2,4-Trichlorobenzene	ND	5.0	97	91	6.4	45	39	14.3	70 - 130	30	m
1,2,4-Trimethylbenzene	ND	1.0	101	95	6.1	78	76	2.6	70 - 130	30	
1,2-Dibromo-3-chloropropane	ND	5.0	111	106	4.6	77	75	2.6	70 - 130	30	
1,2-Dibromoethane	ND	5.0	100	97	3.0	85	85	0.0	70 - 130	30	
1,2-Dichlorobenzene	ND	5.0	96	92	4.3	66	61	7.9	70 - 130	30	m
1,2-Dichloroethane	ND	5.0	102	99	3.0	93	93	0.0	70 - 130	30	
1,2-Dichloropropane	ND	5.0	97	95	2.1	91	91	0.0	70 - 130	30	
1,3,5-Trimethylbenzene	ND	1.0	102	96	6.1	81	79	2.5	70 - 130	30	
1,3-Dichlorobenzene	ND	5.0	97	92	5.3	67	63	6.2	70 - 130	30	m
1,4-Dichlorobenzene	ND	5.0	97	93	4.2	67	63	6.2	70 - 130	30	m
1,4-dioxane	ND	100	108	104	3.8	123	110	11.2	40 - 160	30	
2-Hexanone	ND	25	108	104	3.8	76	75	1.3	70 - 130	30	
4-Methyl-2-pentanone	ND	25	106	102	3.8	84	85	1.2	70 - 130	30	
Acetone	ND	10	107	104	2.8	100	103	3.0	70 - 130	30	
Acrolein	ND	25	80	78	2.5	16	13	20.7	70 - 130	30	m
Acrylonitrile	ND	5.0	103	101	2.0	81	80	1.2	70 - 130	30	
Benzene	ND	1.0	97	95	2.1	92	92	0.0	70 - 130	30	
Bromochloromethane	ND	5.0	101	98	3.0	92	92	0.0	70 - 130	30	
Bromodichloromethane	ND	5.0	105	102	2.9	93	93	0.0	70 - 130	30	
Bromoform	ND	5.0	115	110	4.4	82	84	2.4	70 - 130	30	
Bromomethane	ND	5.0	118	115	2.6	116	114	1.7	70 - 130	30	
Carbon Disulfide	ND	5.0	119	114	4.3	113	115	1.8	70 - 130	30	
Carbon tetrachloride	ND	5.0	115	110	4.4	102	104	1.9	70 - 130	30	
Chlorobenzene	ND	5.0	99	95	4.1	84	82	2.4	70 - 130	30	
Chloroethane	ND	5.0	109	105	3.7	112	115	2.6	70 - 130	30	
Chloroform	ND	5.0	102	99	3.0	96	97	1.0	70 - 130	30	
Chloromethane	ND	5.0	100	99	1.0	97	98	1.0	70 - 130	30	
cis-1,2-Dichloroethene	ND	5.0	103	94	9.1	96	95	1.0	70 - 130	30	
cis-1,3-Dichloropropene	ND	5.0	106	103	2.9	92	91	1.1	70 - 130	30	
Cyclohexane	ND	5.0	106	100	5.8	98	100	2.0	70 - 130	30	
Dibromochloromethane	ND	3.0	112	107	4.6	90	91	1.1	70 - 130	30	
Dichlorodifluoromethane	ND	5.0	98	94	4.2	98	99	1.0	70 - 130	30	
Ethylbenzene	ND	1.0	100	96	4.1	88	86	2.3	70 - 130	30	
Isopropylbenzene	ND	1.0	101	96	5.1	85	84	1.2	70 - 130	30	
m&p-Xylene	ND	2.0	101	96	5.1	87	85	2.3	70 - 130	30	
Methyl ethyl ketone	ND	5.0	102	101	1.0	79	86	8.5	70 - 130	30	
Methyl t-butyl ether (MTBE)	ND	1.0	108	104	3.8	99	100	1.0	70 - 130	30	
Methylacetate	ND	5.0	117	111	5.3	94	94	0.0	70 - 130	30	
Methylcyclohexane	ND	5.0	109	101	7.6	91	94	3.2	70 - 130	30	
Methylene chloride	ND	5.0	106	102	3.8	103	102	1.0	70 - 130	30	
Naphthalene	ND	5.0	101	97	4.0	56	49	13.3	70 - 130	30	m
n-Butylbenzene	ND	1.0	104	96	8.0	68	68	0.0	70 - 130	30	m
n-Propylbenzene	ND	1.0	101	96	5.1	81	80	1.2	70 - 130	30	
o-Xylene	ND	2.0	100	96	4.1	86	84	2.4	70 - 130	30	
p-Isopropyltoluene	ND	1.0	103	95	8.1	75	74	1.3	70 - 130	30	
sec-Butylbenzene	ND	1.0	102	96	6.1	77	77	0.0	70 - 130	30	
Styrene	ND	5.0	102	97	5.0	81	79	2.5	70 - 130	30	
tert-butyl alcohol	ND	100	109	99	9.6	109	102	6.6	70 - 130	30	

QA/QC Data

SDG I.D.: GCN49338

Parameter	Blank	Blk RL	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits	
tert-Butylbenzene	ND	1.0	100	95	5.1	80	80	0.0	70 - 130	30	
Tetrachloroethene	ND	5.0	99	92	7.3	85	86	1.2	70 - 130	30	
Toluene	ND	1.0	98	95	3.1	90	89	1.1	70 - 130	30	
trans-1,2-Dichloroethene	ND	5.0	111	107	3.7	107	108	0.9	70 - 130	30	
trans-1,3-Dichloropropene	ND	5.0	113	110	2.7	93	93	0.0	70 - 130	30	
Trichloroethene	ND	5.0	100	96	4.1	91	91	0.0	70 - 130	30	
Trichlorofluoromethane	ND	5.0	114	109	4.5	113	116	2.6	70 - 130	30	
Trichlorotrifluoroethane	ND	5.0	112	103	8.4	107	110	2.8	70 - 130	30	
Vinyl Acetate	ND	5.0	104	100	3.9	16	15	6.5	70 - 130	30	m
Vinyl chloride	ND	5.0	113	109	3.6	113	114	0.9	70 - 130	30	
% 1,2-dichlorobenzene-d4	99	%	100	99	1.0	98	98	0.0	70 - 130	30	
% Bromofluorobenzene	96	%	100	101	1.0	100	100	0.0	70 - 130	30	
% Dibromofluoromethane	93	%	99	99	0.0	97	97	0.0	70 - 130	30	
% Toluene-d8	100	%	100	100	0.0	100	101	1.0	70 - 130	30	

Comment:

Additional 8260 criteria: 10% of LCS/LCSD compounds can be outside of acceptance criteria as long as recovery is 40-160%.

l = This parameter is outside laboratory LCS/LCSD specified recovery limits.
m = This parameter is outside laboratory MS/MSD specified recovery limits.
r = This parameter is outside laboratory RPD specified recovery limits.

If there are any questions regarding this data, please call Phoenix Client Services at extension 200.

RPD - Relative Percent Difference
LCS - Laboratory Control Sample
LCSD - Laboratory Control Sample Duplicate
MS - Matrix Spike
MS Dup - Matrix Spike Duplicate
NC - No Criteria
Intf - Interference

Phyllis Shiller, Laboratory Director
March 12, 2023

Sunday, March 12, 2023

Criteria: NJ: IGWSS, RC; NY: 375; PA: CLNF, REGF

State: NY

Sample Criteria Exceedances Report

GCN49338 - IMPACTJB-IEC

SampNo	Acode	Phoenix Analyte	Criteria	Result	RL	Criteria	RL Criteria	Analysis Units
CN49353	$DPSVNJ_TCL	N-Nitrosodimethylamine	PA / Clean Fill Limits / Organics	ND	70	0.019	0.019	ug/Kg
CN49353	$DPSVNJ_TCL	N-Nitrosodimethylamine	PA / Reg Fill Limits GP-1a / Organics	ND	70	0.17	0.17	ug/Kg
CN49353	$DPSVNJ_TCL	Bis(2-chloroethyl)ether	PA / Clean Fill Limits / Organics	ND	70	4.5	4.5	ug/Kg
CN49353	$DPSVNJ_TCL	Bis(2-chloroethyl)ether	PA / Reg Fill Limits GP-1a / Organics	ND	70	17	17	ug/Kg
CN49353	$DPSVNJ_TCL	N-Nitrosodi-n-propylamine	PA / Clean Fill Limits / Organics	ND	70	0.35	0.35	ug/Kg
CN49353	$DPSVNJ_TCL	N-Nitrosodi-n-propylamine	PA / Reg Fill Limits GP-1a / Organics	ND	70	5.1	5.1	ug/Kg
CN49353	$DPSVNJ_TCL	Nitrobenzene	PA / Clean Fill Limits / Organics	ND	70	52	52	ug/Kg
CN49353	$DPSVNJ_TCL	2,6-Dinitrotoluene	PA / Clean Fill Limits / Organics	ND	70	13	13	ug/Kg
CN49353	$DPSVNJ_TCL	2,4-Dinitrotoluene	PA / Clean Fill Limits / Organics	ND	70	50	50	ug/Kg
CN49353	$DPSVNJ_TCL	2-Nitroaniline	PA / Clean Fill Limits / Organics	ND	70	2	2	ug/Kg
CN49353	$DPSVNJ_TCL	1,2-Diphenylhydrazine	PA / Clean Fill Limits / Organics	ND	70	39	39	ug/Kg
CN49353	$DPSVNJ_TCL	Benzidine	PA / Clean Fill Limits / Organics	ND	70	18	18	ug/Kg
CN49353	AL-SMDP	Aluminum	NJ / Impact To Ground Water / Soil Screen Levels	13200	36	6000	3900	mg/Kg
CN49353	MN-SM	Manganese	NJ / Impact To Ground Water / Soil Screen Levels	241	3.6	65	42	mg/Kg
CN49354	$DPSVNJ_TCL	N-Nitrosodimethylamine	PA / Clean Fill Limits / Organics	ND	70	0.019	0.019	ug/Kg
CN49354	$DPSVNJ_TCL	N-Nitrosodimethylamine	PA / Reg Fill Limits GP-1a / Organics	ND	70	0.17	0.17	ug/Kg
CN49354	$DPSVNJ_TCL	Bis(2-chloroethyl)ether	PA / Clean Fill Limits / Organics	ND	70	4.5	4.5	ug/Kg
CN49354	$DPSVNJ_TCL	Bis(2-chloroethyl)ether	PA / Reg Fill Limits GP-1a / Organics	ND	70	17	17	ug/Kg
CN49354	$DPSVNJ_TCL	N-Nitrosodi-n-propylamine	PA / Clean Fill Limits / Organics	ND	70	0.35	0.35	ug/Kg
CN49354	$DPSVNJ_TCL	N-Nitrosodi-n-propylamine	PA / Reg Fill Limits GP-1a / Organics	ND	70	5.1	5.1	ug/Kg
CN49354	$DPSVNJ_TCL	Nitrobenzene	PA / Clean Fill Limits / Organics	ND	70	52	52	ug/Kg
CN49354	$DPSVNJ_TCL	2,6-Dinitrotoluene	PA / Clean Fill Limits / Organics	ND	70	13	13	ug/Kg
CN49354	$DPSVNJ_TCL	2,4-Dinitrotoluene	PA / Clean Fill Limits / Organics	ND	70	50	50	ug/Kg
CN49354	$DPSVNJ_TCL	2-Nitroaniline	PA / Clean Fill Limits / Organics	ND	70	2	2	ug/Kg
CN49354	$DPSVNJ_TCL	1,2-Diphenylhydrazine	PA / Clean Fill Limits / Organics	ND	70	39	39	ug/Kg
CN49354	$DPSVNJ_TCL	Benzidine	PA / Clean Fill Limits / Organics	ND	70	18	18	ug/Kg
CN49354	AL-SMDP	Aluminum	NJ / Impact To Ground Water / Soil Screen Levels	17700	33	6000	3900	mg/Kg
CN49354	CU-SM	Copper	NY / 375-6.8 Metals / Unrestricted Use Soil	71.2	0.7	50	50	mg/kg
CN49354	MN-SM	Manganese	NJ / Impact To Ground Water / Soil Screen Levels	278	3.3	65	42	mg/Kg
CN49354	TRI-CRSM	Trivalent Chromium	NY / 375-6.8 Metals / Unrestricted Use Soil	36.6	0.33	30	30	mg/kg
CN49355	$DPSVNJ_TCL	N-Nitrosodimethylamine	PA / Clean Fill Limits / Organics	ND	68	0.019	0.019	ug/Kg
CN49355	$DPSVNJ_TCL	N-Nitrosodimethylamine	PA / Reg Fill Limits GP-1a / Organics	ND	68	0.17	0.17	ug/Kg
CN49355	$DPSVNJ_TCL	Bis(2-chloroethyl)ether	PA / Clean Fill Limits / Organics	ND	68	4.5	4.5	ug/Kg
CN49355	$DPSVNJ_TCL	Bis(2-chloroethyl)ether	PA / Reg Fill Limits GP-1a / Organics	ND	68	17	17	ug/Kg
CN49355	$DPSVNJ_TCL	N-Nitrosodi-n-propylamine	PA / Clean Fill Limits / Organics	ND	68	0.35	0.35	ug/Kg
CN49355	$DPSVNJ_TCL	N-Nitrosodi-n-propylamine	PA / Reg Fill Limits GP-1a / Organics	ND	68	5.1	5.1	ug/Kg
CN49355	$DPSVNJ_TCL	Nitrobenzene	PA / Clean Fill Limits / Organics	ND	68	52	52	ug/Kg
CN49355	$DPSVNJ_TCL	2,6-Dinitrotoluene	PA / Clean Fill Limits / Organics	ND	68	13	13	ug/Kg
CN49355	$DPSVNJ_TCL	2,4-Dinitrotoluene	PA / Clean Fill Limits / Organics	ND	68	50	50	ug/Kg
CN49355	$DPSVNJ_TCL	2-Nitroaniline	PA / Clean Fill Limits / Organics	ND	68	2	2	ug/Kg

Sunday, March 12, 2023

Criteria: NJ: IGWSS, RC; NY: 375; PA: CLNF, REGF

State: NY

Sample Criteria Exceedances Report

GCN49338 - IMPACTJB-IEC

SampNo	Acode	Phoenix Analyte	Criteria	Result	RL	Criteria	RL Criteria	Analysis Units
CN49355	$DPSVNJ_TCL	1,2-Diphenylhydrazine	PA / Clean Fill Limits / Organics	ND	68	39	39	ug/Kg
CN49355	$DPSVNJ_TCL	Benzidine	PA / Clean Fill Limits / Organics	ND	68	18	18	ug/Kg
CN49355	AL-SMDP	Aluminum	NJ / Impact To Ground Water / Soil Screen Levels	17200	32	6000	3900	mg/Kg
CN49355	CU-SM	Copper	NY / 375-6.8 Metals / Unrestricted Use Soil	74.2	0.6	50	50	mg/kg
CN49355	MN-SM	Manganese	NJ / Impact To Ground Water / Soil Screen Levels	261	3.2	65	42	mg/Kg
CN49355	TRI-CRSM	Trivalent Chromium	NY / 375-6.8 Metals / Unrestricted Use Soil	32.7	0.32	30	30	mg/kg
CN49356	$DPSVNJ_TCL	N-Nitrosodimethylamine	PA / Clean Fill Limits / Organics	ND	69	0.019	0.019	ug/Kg
CN49356	$DPSVNJ_TCL	N-Nitrosodimethylamine	PA / Reg Fill Limits GP-1a / Organics	ND	69	0.17	0.17	ug/Kg
CN49356	$DPSVNJ_TCL	Bis(2-chloroethyl)ether	PA / Clean Fill Limits / Organics	ND	69	4.5	4.5	ug/Kg
CN49356	$DPSVNJ_TCL	Bis(2-chloroethyl)ether	PA / Reg Fill Limits GP-1a / Organics	ND	69	17	17	ug/Kg
CN49356	$DPSVNJ_TCL	N-Nitrosodi-n-propylamine	PA / Clean Fill Limits / Organics	ND	69	0.35	0.35	ug/Kg
CN49356	$DPSVNJ_TCL	N-Nitrosodi-n-propylamine	PA / Reg Fill Limits GP-1a / Organics	ND	69	5.1	5.1	ug/Kg
CN49356	$DPSVNJ_TCL	Nitrobenzene	PA / Clean Fill Limits / Organics	ND	69	52	52	ug/Kg
CN49356	$DPSVNJ_TCL	2,6-Dinitrotoluene	PA / Clean Fill Limits / Organics	ND	69	13	13	ug/Kg
CN49356	$DPSVNJ_TCL	2,4-Dinitrotoluene	PA / Clean Fill Limits / Organics	ND	69	50	50	ug/Kg
CN49356	$DPSVNJ_TCL	2-Nitroaniline	PA / Clean Fill Limits / Organics	ND	69	2	2	ug/Kg
CN49356	$DPSVNJ_TCL	1,2-Diphenylhydrazine	PA / Clean Fill Limits / Organics	ND	69	39	39	ug/Kg
CN49356	$DPSVNJ_TCL	Benzidine	PA / Clean Fill Limits / Organics	ND	69	18	18	ug/Kg
CN49356	AL-SMDP	Aluminum	NJ / Impact To Ground Water / Soil Screen Levels	17200	35	6000	3900	mg/Kg
CN49356	CU-SM	Copper	NY / 375-6.8 Metals / Unrestricted Use Soil	66.7	0.7	50	50	mg/kg
CN49356	MN-SM	Manganese	NJ / Impact To Ground Water / Soil Screen Levels	281	3.5	65	42	mg/Kg
CN49356	TRI-CRSM	Trivalent Chromium	NY / 375-6.8 Metals / Unrestricted Use Soil	37.3	0.35	30	30	mg/kg
CN49357	$DPSVNJ_TCL	N-Nitrosodimethylamine	PA / Clean Fill Limits / Organics	ND	67	0.019	0.019	ug/Kg
CN49357	$DPSVNJ_TCL	N-Nitrosodimethylamine	PA / Reg Fill Limits GP-1a / Organics	ND	67	0.17	0.17	ug/Kg
CN49357	$DPSVNJ_TCL	Bis(2-chloroethyl)ether	PA / Clean Fill Limits / Organics	ND	67	4.5	4.5	ug/Kg
CN49357	$DPSVNJ_TCL	Bis(2-chloroethyl)ether	PA / Reg Fill Limits GP-1a / Organics	ND	67	17	17	ug/Kg
CN49357	$DPSVNJ_TCL	N-Nitrosodi-n-propylamine	PA / Clean Fill Limits / Organics	ND	67	0.35	0.35	ug/Kg
CN49357	$DPSVNJ_TCL	N-Nitrosodi-n-propylamine	PA / Reg Fill Limits GP-1a / Organics	ND	67	5.1	5.1	ug/Kg
CN49357	$DPSVNJ_TCL	Nitrobenzene	PA / Clean Fill Limits / Organics	ND	67	52	52	ug/Kg
CN49357	$DPSVNJ_TCL	2,6-Dinitrotoluene	PA / Clean Fill Limits / Organics	ND	67	13	13	ug/Kg
CN49357	$DPSVNJ_TCL	2,4-Dinitrotoluene	PA / Clean Fill Limits / Organics	ND	67	50	50	ug/Kg
CN49357	$DPSVNJ_TCL	2-Nitroaniline	PA / Clean Fill Limits / Organics	ND	67	2	2	ug/Kg
CN49357	$DPSVNJ_TCL	1,2-Diphenylhydrazine	PA / Clean Fill Limits / Organics	ND	67	39	39	ug/Kg
CN49357	$DPSVNJ_TCL	Benzidine	PA / Clean Fill Limits / Organics	ND	67	18	18	ug/Kg
CN49357	AL-SMDP	Aluminum	NJ / Impact To Ground Water / Soil Screen Levels	15100	32	6000	3900	mg/Kg
CN49357	CU-SM	Copper	NY / 375-6.8 Metals / Unrestricted Use Soil	57.5	0.6	50	50	mg/kg
CN49357	MN-SM	Manganese	NJ / Impact To Ground Water / Soil Screen Levels	210	3.2	65	42	mg/Kg
CN49357	TRI-CRSM	Trivalent Chromium	NY / 375-6.8 Metals / Unrestricted Use Soil	34.5	0.32	30	30	mg/kg

Sunday, March 12, 2023

Criteria: NJ: IGWSS, RC; NY: 375; PA: CLNF, REGF

State: NY

Sample Criteria Exceedances Report

GCN49338 - IMPACTJB-IEC

SampNo	Acode	Phoenix Analyte	Criteria	Result	RL	Criteria	RL Criteria	Analysis Units

Phoenix Laboratories does not assume responsibility for the data contained in this exceedance report. It is provided as an additional tool to identify requested criteria exceedences. All efforts are made to ensure the accuracy of the data (obtained from appropriate agencies). A lack of exceedence information does not necessarily suggest conformance to the criteria. It is ultimately the site professional's responsibility to determine appropriate compliance.

DATA OF KNOWN QUALITY CONFORMANCE/NON-CONFORMANCE SUMMARY QUESTIONNAIRE

Laboratory Name: Phoenix Environmental Labs, Inc. **Client:** Impact Consulting

Project Location: IRRC BLUESTONE **Project Number:**

Laboratory Sample ID(s): CN49338, CN49339, CN49340, CN49341, CN49342, CN49343, CN49344, CN49345, CN49346, CN49347, CN49348, CN49349, CN49350, CN49351, CN49352, CN49353, CN49354, CN49355, CN49356, CN49357

Sampling Date(s): 2/24/2023

DKQP Methods Used

☐ 1311/1312	☑ 6010	☐ 6020	☐ 7000	☑ 7196	☑ 7470/7471	☑ 8081	☐ EPH
☑ 8082	☑ 8151	☑ 8260	☑ 8270	☐ ETPH	☑ 9010/9012	☐ VPH	☐ TO15

1.	For each analytical method referenced in this laboratory report package, were all specified QA/QC performance criteria followed, including the requirement to explain any criteria falling outside of acceptable guidelines, as specified in the NJDEP Data of Known Quality performance standards?	☑ Yes ☐ No
1a.	Were the method specified handling, preservation, and holding time requirements met?	☑ Yes ☐ No
1b.	EPH Method: Was the EPH method conducted without significant modifications (see Section 11.3 of respective DKQ methods)	☐ Yes ☐ No ☑ NA
2.	Were all samples received by the laboratory in a condition consistent with that described on the associated chain-of-custody document(s)?	☑ Yes ☐ No
3.	Were samples received at an appropriate temperature (4±2° C)?	☑ Yes ☐ No ☐ NA
4.	Were all QA/QC performance criteria specified in the NJDEP DKQP standards achieved?	☐ Yes ☑ No
5a.	Were reporting limits specified or referenced on the chain-of-custody or communicated to the laboratory prior to sample receipt?	☑ Yes ☐ No
5b.	Were these reporting limits met?	☐ Yes ☑ No ☐ NA
6.	For each analytical method referenced in this laboratory report package, were results reported for all constituents identified in the method-specific analyte lists presented in the DKQP documents and/or site-specific QAPP?	☑ Yes ☐ No
7.	Are project-specific matrix spikes and/or laboratory duplicates included in this data set?	☑ Yes ☐ No

Note: For all questions to which the response was "No" (with the exception of question #7), additional information should be provided in an attached narrative. If the answer to question #1, #1A, or #1B is "No", the data package does not meet the requirements for "Data of Known Quality."

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete.

Authorized Signature: Rashmi Makol

Date: Sunday, March 12, 2023

Printed Name: Rashmi Makol

Position: Project Manager

Apr 2014

PHOENIX

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NJDKQP Certification Report

March 12, 2023

SDG I.D.: GCN49338

Cyanide Narration

Were all QA/QC performance criteria specified in the analytical method achieved? Yes.

Instrument:

LACHAT 02/28/23-1 Catherine Lundigan, Greg Danielewski, Chemist 02/28/23

CN49353 , CN49354 , CN49355 , CN49356 , CN49357

The samples were distilled in accordance with the method.
The initial calibration met criteria.

The calibration check standards (ICV,CCV) were within 15% of true value and were analyzed at a frequencey of one per ten samples.
The continuing calibration blanks (ICB,CCB) had concentrations less than the reporting level.

The method blank, laboratory control sample (LCS), and matrix spike were distilled with the samples.

QC (Batch Specific):

Batch 665951 (CN48510)

CN49353, CN49354, CN49355, CN49356, CN49357

All LCS recoveries were within 80 - 120 with the following exceptions: None.

Herbicide Narration

Were all QA/QC performance criteria specified in the analytical method achieved? No.

QC Batch 665791 (Samples: CN49353, CN49354, CN49355, CN49356, CN49357): -----

One or more analytes is below the method criteria. A low bias for these analytes is possible. (2,4-DB)

The LCS/LCSD RPD exceeds the method criteria for one or more analytes, but these analytes were not reported in the sample(s) so no variability is suspected. (Dalapon)

Instrument:

AU-ECD2 02/28/23-1 Jeff Bucko, Chemist 02/28/23

CN49353 (10X), CN49354 (10X), CN49355 (10X), CN49356 (10X), CN49357 (10X)

The initial calibration (HRB210AI) RSD for the compound list was less than 20% except for the following compounds: None.
The initial calibration (HRB210BI) RSD for the compound list was less than 20% except for the following compounds: None.
The continuing calibration %D for the compound list was less than 15% except for the following compounds:
Samples: CN49353, CN49354, CN49355, CN49356, CN49357
Preceding CC 228A015 - 2,4,5-T (11) 28%H (15%), 2,4,5-TP (10) 30%H (15%), 2,4-D (8) 37%H (15%), Dalapon (1) 22%H (15%), Dicamba (4) 19%H (15%), Dichloroprop (7) 20%H (15%), Dinoseb 53%H (15%)
Succeeding CC 228A027 - 2,4,5-T (11) 37%H (15%), 2,4,5-TP (10) 38%H (15%), Dalapon (1) 25%H (15%), Dicamba (4) 26%H (15%), Dichloroprop (7) 26%H (15%), Dinoseb 63%H (15%)
Samples: CN49353, CN49354, CN49355, CN49356, CN49357
Preceding CC 228B015 - None.
Succeeding CC 228B027 - Dichloroprop (7) 18%H (15%), Dinoseb 16%H (15%)

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NJDKQP Certification Report

March 12, 2023

SDG I.D.: GCN49338

Herbicide Narration

QC (Batch Specific):

Batch 665791 (CN49365)

CN49353, CN49354, CN49355, CN49356, CN49357

All LCS recoveries were within 40 - 140 with the following exceptions: 2,4-DB(37%)
All LCSD recoveries were within 40 - 140 with the following exceptions: 2,4-DB(37%)
All LCS/LCSD RPDs were less than 30% with the following exceptions: Dalapon(31.6%)

Soil Hex Chromium Narration

Were all QA/QC performance criteria specified in the analytical method achieved? Yes.

Instrument:

BECKMAN DU720 02/27/23-1 Dan Kinney, Chemist 02/27/23

CN49353 , CN49354 , CN49355 , CN49356 , CN49357

The initial calibration met criteria, the calibration `r` > 0.995

Three LCS solutions were evaluated and reported:
The hexavalent Chromium LCS does not require digestion and is used as a continuing calibration standard.
The insoluble and soluble spikes (LCS) monitor the performance of the extraction.
The insoluble and soluble matrix spikes monitor the effect of matrix on the recoveries of hexavalent chromium.
Some matrix spike recoveries may be outside of the acceptance criteria of 75-125, however the corresponding LCSs are within control. No further action is required, but a sample matrix bias is suspected.

QC (Batch Specific):

Batch 665871 (CN49317)

CN49353, CN49354, CN49355, CN49356, CN49357

All LCS recoveries were within 90 - 110 with the following exceptions: None.

Mercury Narration

Were all QA/QC performance criteria specified in the analytical method achieved? Yes.

Instrument:

MERLIN 02/27/23 13:18 Paul Marshall, Chemist 02/27/23

CN49353, CN49354, CN49355, CN49356, CN49357

The method preparation blank, ICB, and CCBs contain all of the acids and reagents as the samples.
The initial calibration met all criteria including a standard run at or below the reporting level.
All calibration verification standards (ICV, CCV) met criteria.
All calibration blank verification standards (ICB, CCB) met criteria.
The matrix spike sample is used to identify spectral interference for each batch of samples, if within 85-115%, no interference is observed and no further action is taken.
The following Initial Calibration Verification (ICV) compounds did not meet criteria: None.
The following Continuing Calibration Verification (CCV) compounds did not meet criteria: None.

QC (Batch Specific):

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Certification Report

March 12, 2023

SDG I.D.: GCN49338

Mercury Narration

QC (Batch Specific):

Batch 665851 (CN49085)

CN49353, CN49354, CN49355, CN49356, CN49357

All LCS recoveries were within 70 - 130 with the following exceptions: None.
All LCSD recoveries were within 70 - 130 with the following exceptions: None.
All LCS/LCSD RPDs were less than 30% with the following exceptions: None.
Additional Mercury criteria: LCS acceptance range for waters is 80-120% and for soils is 70-130%.

ICP Metals Narration

Were all QA/QC performance criteria specified in the analytical method achieved? No.

QC Batch 665780 (Samples: CN49353, CN49354, CN49355, CN49356, CN49357): -----

The Sample/Duplicate RPD exceeds the method criteria for one or more analytes, therefore there may be variability in the reported result. (Sodium)

Instrument:

ARCOS-2 02/28/23 12:14 Cindy Pearce, Tina Hall, Chemist 02/28/23

CN49353, CN49354, CN49355, CN49356, CN49357

The linear range is defined daily by the calibration range.
The following Initial Calibration Verification (ICV) compounds did not meet criteria: None.
The following Continuing Calibration Verification (CCV) compounds did not meet criteria: None.
The following ICP Interference Check (ICSAB) compounds did not meet criteria: None.

ARCOS-2 03/01/23 10:43 Cindy Pearce, Tina Hall, Chemist 03/01/23

CN49354, CN49355, CN49356, CN49357

The linear range is defined daily by the calibration range.
The following Initial Calibration Verification (ICV) compounds did not meet criteria: None.
The following Continuing Calibration Verification (CCV) compounds did not meet criteria: None.
The following ICP Interference Check (ICSAB) compounds did not meet criteria: None.

QC (Batch Specific):

Batch 665780 (CN49333)

CN49353, CN49354, CN49355, CN49356, CN49357

All LCS recoveries were within 75 - 125 with the following exceptions: None.
All LCSD recoveries were within 75 - 125 with the following exceptions: None.
All LCS/LCSD RPDs were less than 30% with the following exceptions: None.

PCB Narration

Were all QA/QC performance criteria specified in the analytical method achieved? Yes.

Instrument:

AU-ECD1 03/01/23-1 Saadia Chudary, Chemist 03/01/23

CN49356 (2X), CN49357 (2X)

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NJDKQP Certification Report

March 12, 2023

SDG I.D.: GCN49338

PCB Narration

Instrument:

AU-ECD1 03/01/23-1 Saadia Chudary, Chemist 03/01/23

CN49356 (2X), CN49357 (2X)

The initial calibration (PC0209AI) RSD for the compound list was less than 20% except for the following compounds: None.
The initial calibration (PC0209BI) RSD for the compound list was less than 20% except for the following compounds: None.
The continuing calibration %D for the compound list was less than 15% except for the following compounds:None.

AU-ECD5 03/01/23-1 Saadia Chudary, Chemist 03/01/23

CN49353 (2X), CN49354 (2X), CN49355 (2X)

The initial calibration (PC0207AI) RSD for the compound list was less than 20% except for the following compounds: None.
The initial calibration (PC0207BI) RSD for the compound list was less than 20% except for the following compounds: None.
The continuing calibration %D for the compound list was less than 15% except for the following compounds:
Samples: CN49353, CN49354, CN49355
Preceding CC 301B003 - None.
Succeeding CC 301B019 - PCB 1260 17%H (%)

QC (Batch Specific):

Batch 665927 (CN49354)

CN49353, CN49354, CN49355, CN49356, CN49357

All LCS recoveries were within 40 - 140 with the following exceptions: None.
All LCSD recoveries were within 40 - 140 with the following exceptions: None.
All LCS/LCSD RPDs were less than 30% with the following exceptions: None.

PEST Narration

Were all QA/QC performance criteria specified in the analytical method achieved? Yes.

Instrument:

AU-ECD4 03/01/23-1 Adam Werner, Chemist 03/01/23

CN49353 (2X), CN49354 (2X), CN49355 (2X), CN49356 (2X), CN49357 (2X)

The initial calibration (PS0227AI) RSD for the compound list was less than 20% except for the following compounds: None.
The initial calibration (PS0227BI) RSD for the compound list was less than 20% except for the following compounds: None.
The Endrin and DDT breakdown does not exceed 15% except for the following compounds:None.
The Endrin and DDT breakdown does not exceed the maximum of 20% except for the following compounds:None.
The continuing calibration %D for the compound list was less than 20% except for the following compounds:None.

QC (Batch Specific):

Batch 665929 (CN49354)

CN49353, CN49354, CN49355, CN49356, CN49357

All LCS recoveries were within 40 - 140 with the following exceptions: None.
All LCSD recoveries were within 40 - 140 with the following exceptions: None.
All LCS/LCSD RPDs were less than 30% with the following exceptions: None.

SVOA Narration

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NJDKQP Certification Report

March 12, 2023

SDG I.D.: GCN49338

SVOA Narration

Were all QA/QC performance criteria specified in the analytical method achieved? No.

QC Batch 665931 (Samples: CN49353, CN49354, CN49355, CN49356, CN49357): -----

The LCS and/or the LCSD recovery is above the upper range for one or more analytes that were not reported in the sample(s), therefore no significant bias is suspected. (2-Nitrophenol)

The QC recovery for one or more analytes is above the upper range but were not reported in the sample(s), therefore no significant bias is suspected. (2-Nitroaniline)

Instrument:

CHEM07 02/27/23-2 Keith Aloisa, Chemist 02/27/23

CN49353 (1X), CN49354 (1X), CN49355 (1X), CN49356 (1X), CN49357 (1X)

For 8270 full list, the DDT breakdown and pentachlorophenol & benzidine peak tailing were evaluated in the DFTPP tune and were found to be in control.
For 8270 BN list, benzidine peak tailing was evaluated in the DFTPP tune and was found to be in control.

Initial Calibration Evaluation (CHEM07/7_SPLIT_0227):
99% of target compounds met criteria.
The following compounds had %RSDs >20%: Benzyl Alcohol 23% (20%)
The following compounds did not meet recommended response factors: 2-Nitrophenol 0.068 (0.1), Hexachlorobenzene 0.080 (0.1)
The following compounds did not meet a minimum response factors: None.

Continuing Calibration Verification (CHEM07/0227_20-7_SPLIT_0227):
Internal standard areas were within 50 to 200% of the initial calibration with the following exceptions: None.
100% of target compounds met criteria.
The following compounds did not meet % deviation criteria: None.
The following compounds did not meet maximum % deviations: None.
The following compounds did not meet recommended response factors: 2-Nitrophenol 0.067 (0.1), Hexachlorobenzene 0.080 (0.1)
The following compounds did not meet minimum response factors: None.

QC (Batch Specific):

Batch 665931 (CN49358)

CN49353, CN49354, CN49355, CN49356, CN49357

All LCS recoveries were within 30 - 130 with the following exceptions: 2-Nitroaniline(187%)
All LCSD recoveries were within 30 - 130 with the following exceptions: 2-Nitroaniline(185%), 2-Nitrophenol(139%)
All LCS/LCSD RPDs were less than 30% with the following exceptions: None.
The laboratory criteria of 30-130% is different than the NJKDQP general criteria of 70-130%. The NJKDQP criteria for problem compounds is 20-160%.

VOA Narration

Were all QA/QC performance criteria specified in the analytical method achieved? Yes.

Instrument:

CHEM03 02/24/23-2 Jane Li, Chemist 02/24/23

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NJDKQP Certification Report

March 12, 2023

SDG I.D.: GCN49338

VOA Narration

Instrument:

CN49338 (1X), CN49339 (1X), CN49340 (1X), CN49341 (1X), CN49342 (1X), CN49343 (1X), CN49344 (1X), CN49345 (1X), CN49346 (1X), CN49347 (1X), CN49348 (1X), CN49349 (1X), CN49350 (1X), CN49351 (1X), CN49352 (1X)

Initial Calibration Evaluation (CHEM03/VT-L021323):
93% of target compounds met criteria.
The following compounds had %RSDs >20%: 1,2-Dibromo-3-chloropropane 29% (20%), 1,4-dioxane 22% (20%), Bromoform 35% (20%), Dibromochloromethane 26% (20%), trans-1,3-Dichloropropene 24% (20%)
The following compounds did not meet Table 4 recommended minimum response factors: Acetone 0.045 (0.1), Acrolein 0.031 (0.05), Methyl ethyl ketone 0.092 (0.1), Tetrachloroethene 0.178 (0.2)
The following compounds did not meet the minimum response factor of 0.05: Acetone 0.045 (0.05), Acrolein 0.031 (0.05)

Continuing Calibration Verification (CHEM03/0224_37-VT-L021323):
Internal standard areas were within 50 to 200% of the initial calibration with the following exceptions: None.
100% of target compounds met criteria.
The following compounds did not meet % deviation criteria: None.
The following compounds did not meet maximum % deviations: None.
The following compounds did not meet Table 4 recommended minimum response factors: Acrolein 0.034 (0.05)

QC (Batch Specific):

Batch 665905 (CN49404) CHEM03 2/24/2023-2

CN49338(1X), CN49339(1X), CN49340(1X), CN49341(1X), CN49342(1X), CN49343(1X), CN49344(1X), CN49345(1X), CN49346(1X), CN49347(1X), CN49348(1X), CN49349(1X), CN49350(1X), CN49351(1X), CN49352(1X)

All LCS recoveries were within 70 - 130 with the following exceptions: None.
All LCSD recoveries were within 70 - 130 with the following exceptions: None.
All LCS/LCSD RPDs were less than 30% with the following exceptions: None.
Additional 8260 criteria: 10% of LCS/LCSD compounds can be outside of acceptance criteria as long as recovery is 40-160%.

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

NY Temperature Narration

March 12, 2023

SDG I.D.: GCN49338

The samples in this delivery group were received at 2.1°C.
(Note acceptance criteria for relevant matrices is above freezing up to 6°C)

Cooler: Yes ☒ No ☐
Coolant: IPK ☒ ICE ☐ No ☐
Temp 2.1 °C Pg of

PHOENIX Environmental Laboratories, Inc.

NY/NJ CHAIN OF CUSTODY RECORD

587 East Middle Turnpike, P.O. Box 370, Manchester, CT 06040
Email: info@phoenixlabs.com Fax (860) 645-0823
Client Services (860) 645-8726

Contact Options:
☐ Fax:
☐ Phone:
☐ Email:

Customer: Impact Materials
Address: 1000 Page Ave
Lyndhurst, NJ

Project: IRRC Bluestone
Report to: Jbogoian@impactenvironmental.com
Invoice to: BWalsh@impactenvironmental.com
QUOTE # :

Project P.O:

This section MUST be completed with Bottle Quantities.

Sampler's Signature: Satish Ramrep Date: 2-24-23

Matrix Code:
DW=Drinking Water **GW**=Ground Water **SW**=Surface Water **WW**=Waste Water
RW=Raw Water **SE**=Sediment **SL**=Sludge **S**=Soil **SD**=Solid **W**=Wipe
OIL=Oil **B**=Bulk **L**=Liquid

Client Sample - Information - Identification

Analysis Request

PHOENIX USE ONLY SAMPLE #	Customer Sample Identification	Sample Matrix	Date Sampled	Time Sampled	Impact Package A	VOCs	GL Amber 8 oz. w/H3PO4	Soil VOA Vials [ ] 1 methanol [ ] 2 H 2O	GL Soil container (8) oz	GL Soil container ( ) oz	40 ml VOA Vial [ ] As is [ ] HCl	GL Amber 1000ml [ ] As is [ ] H2SO4	PL As is [ ] 500ml [ ] 1000ml	PL H2SO4 [ ] 250ml [ ] 500ml	PL NaOH 250ml	PL HNO3 250ml	Bacteria Bottle w/thio	PFAS Container
49338	IRRC Bluestone 1A (GRAB)	S	2/24/2023	8:00 AM		X		x										
49339	IRRC Bluestone 1B (GRAB)	S	2/24/2023	8:05 AM		X		x										
49340	IRRC Bluestone 1C (GRAB)	S	2/24/2023	8:10 AM		X		x										
49341	IRRC Bluestone 2A (GRAB)	S	2/24/2023	8:15 AM		X		x										
49342	IRRC Bluestone 2B (GRAB)	S	2/24/2023	8:20 AM		X		x										
49343	IRRC Bluestone 2C (GRAB)	S	2/24/2023	8:25 AM		X		x										
49344	IRRC Bluestone 3A (GRAB)	S	2/24/2023	8:30 AM		X		x										
49345	IRRC Bluestone 3B (GRAB)	S	2/24/2023	8:35 AM		X		x										
49346	IRRC Bluestone 3C (GRAB)	S	2/24/2023	8:40 AM		X		x										
49347	IRRC Bluestone 4A (GRAB)	S	2/24/2023	8:45 AM		X		x										
49348	IRRC Bluestone 4B (GRAB)	S	2/24/2023	8:50 AM		X		x										
49349	IRRC Bluestone 4C (GRAB)	S	2/24/2023	8:55		X		x										
49350	IRRC Bluestone 5A (GRAB)	S	2/24/2023	0900		X		x										
49351	IRRC Bluestone 5B (GRAB)	S	2/24/2023	0905		X		x										
49352	IRRC Bluestone 5C (GRAB)	S	2/24/2023	0910		X		x										
49353	IRRC Bluestone COMP-1	S	2/24/2023	0915	X				2									
49354	IRRC Bluestone COMP-2	S	2/24/2023	0920	X				2									
49355	IRRC Bluestone COMP-3	S	2/24/2023	0925	X				2									
49356	IRRC Bluestone COMP-4	S	2/24/2023	0930	X				2									
49357	IRRC Bluestone COMP-5	S	2/24/2023	0935	X				2									

Relinquished by:	Accepted by:	Date:	Time:
[signature]	[signature]	2-24-23	135
[signature]	Emily [signature]	2/24/23	1735

Comments, Special Requirements or Regulations:

Turnaround:
☐ 1 Day*
☐ 2 Days*
☒ 3 Days*
☐ 5 Days
☐ 10 Days
☐ Other
* SURCHARGE APPLIES

NJ
☐ SRS Ingestion - Dermal Res. Criteria
☐ SRS Inhalation Res. Criteria
☐ SRS Migration to GW

What State were samples collected?

NY
☐ TOGS GW
☐ CP-51 SOIL
☐ 375SCO Unrestricted Soil
☐ 375SCO Residential Soil
☐ 375SCO Residential Restricted Soil
☐ 375SCO Commercial Soil
☐ 375SCO Industrial Soil
☐ Subpart 5 DW

Data Format
☐ Phoenix Std Report
☐ Excel
☐ PDF
☐ GIS/Key
☐ EQuIS
☐ NJ Hazsite EDD
☐ NY EZ EDD (ASP)
☐ Other

Data Package
☐ NJ Reduced Deliv. *
☐ NY Enhanced (ASP B) *
☐ Other

GCN 49338

Shannon Wilhelm

From: Michael Lapman
Sent: Friday, February 24, 2023 1:38 PM
To: Shannon Wilhelm
Subject: FW: Impact
Attachments: 2023_02_24_13_02_18.pdf

Impact—IEC:

3-Day Rush TAT and compare to:

1. EPA Toxicity Characteristics
2. NJ SR MGW (not NJ-IGW Soil Scrn)
3. NJ-Soil Res Inhalation
4. NJ-Soil Res. (ID)
5. NY-UnRestricted SCO
6. PA-CleanFill
7. PA-RegFill

Thank you.

Regards,
Michael Lapman
Phoenix Environmental Laboratories, Inc.
587 East Middle Turnpike
Manchester, CT 06040
Direct Line: 917.449.0850
www.phoenixlabs.com

PHOENIX
Environmental Laboratories, Inc

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From: Shannon Wilhelm <shannon@phoenixlabs.com>
Date: Friday, February 24, 2023 at 1:08 PM
To: Michael Lapman <michael@phoenixlabs.com>
Subject: Impact

Shannon Wilhelm
Client Services Representative
Sample login Supervisor

Technical Report

prepared for:

Phoenix Environmental Laboratories, Inc.
P.O. Box 370, 587 East Middle Turnpike
Manchester CT, 06040
Attention: Helen Geoghegan

Report Date: 03/09/2023
Client Project ID: GCN48307
York Project (SDG) No.: 23C0079

Report Date: 03/09/2023
Client Project ID: GCN48307
York Project (SDG) No.: 23C0079

Phoenix Environmental Laboratories, Inc.
P.O. Box 370, 587 East Middle Turnpike
Manchester CT, 06040
Attention: Helen Geoghegan

Purpose and Results

This report contains the analytical data for the sample(s) identified on the attached chain-of-custody received in our laboratory on February 27, 2023 and listed below. The project was identified as your project: **GCN48307**.

The analyses were conducted utilizing appropriate EPA, Standard Methods, and ASTM methods as detailed in the data summary tables.

All samples were received in proper condition meeting the customary acceptance requirements for environmental samples except those indicated under the Sample and Analysis Qualifiers section of this report.

All analyses met the method and laboratory standard operating procedure requirements except as indicated by any data flags, the meaning of which are explained in the Sample and Data Qualifiers Relating to This Work Order section of this report and case narrative if applicable.

The results of the analyses, which are all reported on dry weight basis (soils) unless otherwise noted, are detailed in the following pages.

Please contact Client Services at 203.325.1371 with any questions regarding this report.

York Sample ID	Client Sample ID	Matrix	Date Collected	Date Received
23C0079-01	IRRC BLUESTONE COMP-1	Soil	02/23/2023	02/27/2023
23C0079-02	IRRC BLUESTONE COMP-2	Soil	02/23/2023	02/27/2023
23C0079-03	IRRC BLUESTONE COMP-3	Soil	02/23/2023	02/27/2023
23C0079-04	IRRC BLUESTONE COMP-4	Soil	02/23/2023	02/27/2023
23C0079-05	IRRC BLUESTONE COMP-5	Soil	02/23/2023	02/27/2023

General Notes for York Project (SDG) No.: 23C0079

1. The RLs and MDLs (Reporting Limit and Method Detection Limit respectively) reported are adjusted for any dilution necessary due to the levels of target and/or non-target analytes and matrix interference. The RL(REPORTING LIMIT) is based upon the lowest standard utilized for the calibration where applicable.
2. Samples are retained for a period of thirty days after submittal of report, unless other arrangements are made.
3. York's liability for the above data is limited to the dollar value paid to York for the referenced project.
4. This report shall not be reproduced without the written approval of York Analytical Laboratories, Inc.
5. All analyses conducted met method or Laboratory SOP requirements. See the Sample and Data Qualifiers Section for further information.
6. It is noted that no analyses reported herein were subcontracted to another laboratory, unless noted in the report.
7. This report reflects results that relate only to the samples submitted on the attached chain-of-custody form(s) received by York.
8. Analyses conducted at York Analytical Laboratories, Inc. Stratford, CT are indicated by NY Cert. No. 10854; those conducted at York Analytical Laboratories, Inc., Richmond Hill, NY are indicated by NY Cert. No. 12058.

Approved By: **Date:** 03/09/2023

Cassie L. Mosher
Laboratory Manager

Sample Information

Client Sample ID: **IRRC BLUESTONE COMP-1** **York Sample ID:** **23C0079-01**

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
23C0079	GCN48307	Soil	February 23, 2023 9:00 am	02/27/2023

PFAS, EPA 1633 Target List **Log-in Notes:** **Sample Notes:**

Sample Prepared by Method: EPA 1633 Prep

CAS No.	Parameter	Result	Flag	Units	Reported to LOD/MDL	LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
375-73-5	* Perfluorobutanesulfonic acid (PFBS)	ND		ug/kg dry	0.116	0.184	1	EPA 1633 Draft 2 Certifications:	03/03/2023 18:44	03/08/2023 18:42	ESJ
307-24-4	Perfluorohexanoic acid (PFHxA)	ND		ug/kg dry	0.0552	0.208	1	EPA 1633 Draft 2 Certifications: NELAC-NY12058	03/03/2023 18:44	03/08/2023 18:42	ESJ
375-85-9	Perfluoroheptanoic acid (PFHpA)	ND		ug/kg dry	0.109	0.208	1	EPA 1633 Draft 2 Certifications: NELAC-NY12058	03/03/2023 18:44	03/08/2023 18:42	ESJ
355-46-4	* Perfluorohexanesulfonic acid (PFHxS)	ND		ug/kg dry	0.186	0.191	1	EPA 1633 Draft 2 Certifications:	03/03/2023 18:44	03/08/2023 18:42	ESJ
335-67-1	Perfluorooctanoic acid (PFOA)	ND		ug/kg dry	0.179	0.208	1	EPA 1633 Draft 2 Certifications: NELAC-NY12058	03/03/2023 18:44	03/08/2023 18:42	ESJ
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	ND		ug/kg dry	0.174	0.194	1	EPA 1633 Draft 2 Certifications: NELAC-NY12058	03/03/2023 18:44	03/08/2023 18:42	ESJ
375-95-1	Perfluorononanoic acid (PFNA)	ND		ug/kg dry	0.197	0.208	1	EPA 1633 Draft 2 Certifications: NELAC-NY12058	03/03/2023 18:44	03/08/2023 18:42	ESJ
335-76-2	Perfluorodecanoic acid (PFDA)	ND		ug/kg dry	0.199	0.208	1	EPA 1633 Draft 2 Certifications: NELAC-NY12058	03/03/2023 18:44	03/08/2023 18:42	ESJ
2058-94-8	Perfluoroundecanoic acid (PFUnA)	ND		ug/kg dry	0.206	0.208	1	EPA 1633 Draft 2 Certifications: NELAC-NY12058	03/03/2023 18:44	03/08/2023 18:42	ESJ
307-55-1	Perfluorododecanoic acid (PFDoA)	ND		ug/kg dry	0.170	0.208	1	EPA 1633 Draft 2 Certifications: NELAC-NY12058	03/03/2023 18:44	03/08/2023 18:42	ESJ
72629-94-8	Perfluorotridecanoic acid (PFTrDA)	ND		ug/kg dry	0.130	0.208	1	EPA 1633 Draft 2 Certifications: NELAC-NY12058	03/03/2023 18:44	03/08/2023 18:42	ESJ
376-06-7	Perfluorotetradecanoic acid (PFTA)	ND		ug/kg dry	0.107	0.208	1	EPA 1633 Draft 2 Certifications: NELAC-NY12058	03/03/2023 18:44	03/08/2023 18:42	ESJ
2355-31-9	N-MeFOSAA	ND		ug/kg dry	0.154	0.208	1	EPA 1633 Draft 2 Certifications: NELAC-NY12058	03/03/2023 18:44	03/08/2023 18:42	ESJ
2991-50-6	N-EtFOSAA	ND		ug/kg dry	0.202	0.208	1	EPA 1633 Draft 2 Certifications: NELAC-NY12058	03/03/2023 18:44	03/08/2023 18:42	ESJ
2706-90-3	Perfluoropentanoic acid (PFPeA)	ND		ug/kg dry	0.114	0.417	1	EPA 1633 Draft 2 Certifications: NELAC-NY12058	03/03/2023 18:44	03/08/2023 18:42	ESJ
754-91-6	* Perfluoro-1-octanesulfonamide (FOSA)	ND		ug/kg dry	0.152	0.208	1	EPA 1633 Draft 2 Certifications:	03/03/2023 18:44	03/08/2023 18:42	ESJ
375-92-8	* Perfluoro-1-heptanesulfonic acid (PFHpS)	ND		ug/kg dry	0.161	0.208	1	EPA 1633 Draft 2 Certifications:	03/03/2023 18:44	03/08/2023 18:42	ESJ
335-77-3	* Perfluoro-1-decanesulfonic acid (PFDS)	ND		ug/kg dry	0.199	0.201	1	EPA 1633 Draft 2 Certifications:	03/03/2023 18:44	03/08/2023 18:42	ESJ
27619-97-2	* 1H,1H,2H,2H-Perfluorooctanesulfonic acid (6:2 FTS)	ND		ug/kg dry	0.620	0.792	1	EPA 1633 Draft 2 Certifications:	03/03/2023 18:44	03/08/2023 18:42	ESJ
39108-34-4	1H,1H,2H,2H-Perfluorodecanesulfonic acid (8:2 FTS)	ND		ug/kg dry	0.786	0.800	1	EPA 1633 Draft 2 Certifications: NELAC-NY12058	03/03/2023 18:44	03/08/2023 18:42	ESJ
375-22-4	Perfluoro-n-butanoic acid (PFBA)	ND		ug/kg dry	0.114	0.833	1	EPA 1633 Draft 2 Certifications: NELAC-NY12058	03/03/2023 18:44	03/08/2023 18:42	ESJ
113507-82-7	* Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	ND		ug/kg dry	0.145	0.371	1	EPA 1633 Draft 2 Certifications:	03/03/2023 18:44	03/08/2023 18:42	ESJ

Sample Information

Client Sample ID: **IRRC BLUESTONE COMP-1** **York Sample ID:** **23C0079-01**

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
23C0079	GCN48307	Soil	February 23, 2023 9:00 am	02/27/2023

PFAS, EPA 1633 Target List

Log-in Notes:

Sample Notes:

Sample Prepared by Method: EPA 1633 Prep

CAS No.	Parameter	Result	Flag	Units	Reported to LOD/MDL	LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
151772-58-6	* Perfluoro-3,6-dioxaheptanoic acid (NFDHA)	ND		ug/kg dry	0.201	0.417	1	EPA 1633 Draft 2 Certifications:	03/03/2023 18:44	03/08/2023 18:42	ESJ
377-73-1	* Perfluoro-4-oxapentanoic acid (PFMPA)	ND		ug/kg dry	0.0646	0.417	1	EPA 1633 Draft 2 Certifications:	03/03/2023 18:44	03/08/2023 18:42	ESJ
863090-89-5	* Perfluoro-5-oxahexanoic acid (PFMBA)	ND		ug/kg dry	0.100	0.417	1	EPA 1633 Draft 2 Certifications:	03/03/2023 18:44	03/08/2023 18:42	ESJ
2706-91-4	* Perfluoro-1-pentanesulfonate (PFPeS)	ND		ug/kg dry	0.164	0.196	1	EPA 1633 Draft 2 Certifications:	03/03/2023 18:44	03/08/2023 18:42	ESJ
757124-72-4	* 1H,1H,2H,2H-Perfluorohexanesulfonic acid (4:2 FTS)	ND		ug/kg dry	0.620	0.781	1	EPA 1633 Draft 2 Certifications:	03/03/2023 18:44	03/08/2023 18:42	ESJ
13252-13-6	* HFPO-DA (Gen-X)	ND		ug/kg dry	0.633	0.833	1	EPA 1633 Draft 2 Certifications:	03/03/2023 18:44	03/08/2023 18:42	ESJ
763051-92-9	* 11CL-PF3OUdS	ND		ug/kg dry	0.324	0.788	1	EPA 1633 Draft 2 Certifications:	03/03/2023 18:44	03/08/2023 18:42	ESJ
756426-58-1	* 9CL-PF3ONS	ND		ug/kg dry	0.256	0.779	1	EPA 1633 Draft 2 Certifications:	03/03/2023 18:44	03/08/2023 18:42	ESJ
919005-14-4	* ADONA	ND		ug/kg dry	0.181	0.788	1	EPA 1633 Draft 2 Certifications:	03/03/2023 18:44	03/08/2023 18:42	ESJ
79780-39-5	* Perfluorododecanesulfonic acid (PFDoS)	ND		ug/kg dry	0.176	0.202	1	EPA 1633 Draft 2 Certifications:	03/03/2023 18:44	03/08/2023 18:42	ESJ
68259-12-1	* Perfluoro-1-nonanesulfonic acid (PFNS)	ND		ug/kg dry	0.129	0.200	1	EPA 1633 Draft 2 Certifications:	03/03/2023 18:44	03/08/2023 18:42	ESJ
356-02-5	* 3-Perfluoropropyl propanoic acid (FPrPA)	ND		ug/kg dry	0.660	1.04	1	EPA 1633 Draft 2 Certifications:	03/03/2023 18:44	03/08/2023 18:42	ESJ
914637-49-3	* 3-Perfluoropentyl propanoic acid (FPePA)	ND		ug/kg dry	2.19	5.21	1	EPA 1633 Draft 2 Certifications:	03/03/2023 18:44	03/08/2023 18:42	ESJ
812-70-4	* 3-Perfluoroheptyl propanoic acid (FHpPA)	ND		ug/kg dry	1.56	5.21	1	EPA 1633 Draft 2 Certifications:	03/03/2023 18:44	03/08/2023 18:42	ESJ
24448-09-7	* N-MeFOSE	ND		ug/kg dry	0.636	2.08	1	EPA 1633 Draft 2 Certifications:	03/03/2023 18:44	03/08/2023 18:42	ESJ
31506-32-8	* N-MeFOSA	ND		ug/kg dry	0.188	0.208	1	EPA 1633 Draft 2 Certifications:	03/03/2023 18:44	03/08/2023 18:42	ESJ
1691-99-2	* N-EtFOSE	ND		ug/kg dry	0.726	2.08	1	EPA 1633 Draft 2 Certifications:	03/03/2023 18:44	03/08/2023 18:42	ESJ
4151-50-2	* N-EtFOSA	ND		ug/kg dry	0.206	0.208	1	EPA 1633 Draft 2 Certifications:	03/03/2023 18:44	03/08/2023 18:42	ESJ

Surrogate Recoveries	Result	Acceptance Range
Surrogate: M3PFBS	*110 %*	*25-150*
Surrogate: M5PFHxA	*105 %*	*25-150*
Surrogate: M4PFHpA	*106 %*	*25-150*
Surrogate: M3PFHxS	*110 %*	*25-150*
Surrogate: Perfluoro-n-[13C8]octanoic acid (M8PFOA)	*100 %*	*25-150*
Surrogate: M6PFDA	*98.6 %*	*25-150*
Surrogate: M7PFUdA	*94.7 %*	*25-150*

Sample Information

Client Sample ID: **IRRC BLUESTONE COMP-1** **York Sample ID:** **23C0079-01**

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
23C0079	GCN48307	Soil	February 23, 2023 9:00 am	02/27/2023

PFAS, EPA 1633 Target List **Log-in Notes:** **Sample Notes:**

Sample Prepared by Method: EPA 1633 Prep

CAS No.	Parameter	Result	Flag	Units	Reported to LOD/MDL	LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
	Surrogate: Perfluoro-n-[1,2-13C2]dodecanoic acid (MPFDoA)	*97.1 %*			*25-150*						
	Surrogate: M2PFTeDA	*82.3 %*			*10-150*						
	Surrogate: Perfluoro-n-[13C4]butanoic acid (MPFBA)	*102 %*			*25-150*						
	Surrogate: Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)	*93.4 %*			*25-150*						
	Surrogate: Perfluoro-n-[13C5]pentanoic acid (M5PFPeA)	*105 %*			*25-150*						
	Surrogate: Perfluoro-1-[13C8]octanesulfonamide (M8FOSA)	*23.6 %*			*10-150*						
	Surrogate: d3-N-MeFOSAA	*83.6 %*			*25-150*						
	Surrogate: d5-N-EtFOSAA	*84.5 %*			*25-150*						
	Surrogate: M2-6:2 FTS	*86.1 %*			*25-200*						
	Surrogate: M2-8:2 FTS	*79.3 %*			*25-200*						
	Surrogate: M9PFNA	*93.5 %*			*25-150*						
	Surrogate: M2-4:2 FTS	*83.8 %*			*25-150*						
	Surrogate: d-N-MeFOSA	*17.8 %*			*25-150*						
	Surrogate: d-N-EtFOSA	*24.1 %*			*25-150*						
	Surrogate: M3HFPO-DA	*115 %*			*25-150*						
	Surrogate: d9-N-EtFOSE	*19.4 %*			*25-150*						
	Surrogate: d7-N-MeFOSE	*20.9 %*			*25-150*						

Total Solids **Log-in Notes:** **Sample Notes:**

Sample Prepared by Method: % Solids Prep

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
solids	*** % Solids**	**95.4**		%	0.100	1	SM 2540G	03/06/2023 18:21	03/06/2023 18:24	JTG
							Certifications: CTDOH-PH-0723			

Sample Information

Client Sample ID: **IRRC BLUESTONE COMP-2** **York Sample ID:** **23C0079-02**

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
23C0079	GCN48307	Soil	February 23, 2023 9:05 am	02/27/2023

PFAS, EPA 1633 Target List **Log-in Notes:** **Sample Notes:**

Sample Information

Client Sample ID: **IRRC BLUESTONE COMP-2** **York Sample ID:** **23C0079-02**

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
23C0079	GCN48307	Soil	February 23, 2023 9:05 am	02/27/2023

Sample Prepared by Method: EPA 1633 Prep

CAS No.	Parameter	Result	Flag	Units	Reported to LOD/MDL	LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
375-73-5	* Perfluorobutanesulfonic acid (PFBS)	ND		ug/kg dry	0.115	0.184	1	EPA 1633 Draft 2 Certifications:	03/03/2023 18:44	03/08/2023 18:58	ESJ
307-24-4	Perfluorohexanoic acid (PFHxA)	ND		ug/kg dry	0.0550	0.208	1	EPA 1633 Draft 2 Certifications: NELAC-NY12058	03/03/2023 18:44	03/08/2023 18:58	ESJ
375-85-9	Perfluoroheptanoic acid (PFHpA)	ND		ug/kg dry	0.109	0.208	1	EPA 1633 Draft 2 Certifications: NELAC-NY12058	03/03/2023 18:44	03/08/2023 18:58	ESJ
355-46-4	* Perfluorohexanesulfonic acid (PFHxS)	ND		ug/kg dry	0.186	0.190	1	EPA 1633 Draft 2 Certifications:	03/03/2023 18:44	03/08/2023 18:58	ESJ
335-67-1	Perfluorooctanoic acid (PFOA)	ND		ug/kg dry	0.179	0.208	1	EPA 1633 Draft 2 Certifications: NELAC-NY12058	03/03/2023 18:44	03/08/2023 18:58	ESJ
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	ND		ug/kg dry	0.173	0.193	1	EPA 1633 Draft 2 Certifications: NELAC-NY12058	03/03/2023 18:44	03/08/2023 18:58	ESJ
375-95-1	Perfluorononanoic acid (PFNA)	ND		ug/kg dry	0.196	0.208	1	EPA 1633 Draft 2 Certifications: NELAC-NY12058	03/03/2023 18:44	03/08/2023 18:58	ESJ
335-76-2	Perfluorodecanoic acid (PFDA)	ND		ug/kg dry	0.198	0.208	1	EPA 1633 Draft 2 Certifications: NELAC-NY12058	03/03/2023 18:44	03/08/2023 18:58	ESJ
2058-94-8	Perfluoroundecanoic acid (PFUnA)	ND		ug/kg dry	0.206	0.208	1	EPA 1633 Draft 2 Certifications: NELAC-NY12058	03/03/2023 18:44	03/08/2023 18:58	ESJ
307-55-1	Perfluorododecanoic acid (PFDoA)	ND		ug/kg dry	0.169	0.208	1	EPA 1633 Draft 2 Certifications: NELAC-NY12058	03/03/2023 18:44	03/08/2023 18:58	ESJ
72629-94-8	Perfluorotridecanoic acid (PFTrDA)	ND		ug/kg dry	0.130	0.208	1	EPA 1633 Draft 2 Certifications: NELAC-NY12058	03/03/2023 18:44	03/08/2023 18:58	ESJ
376-06-7	Perfluorotetradecanoic acid (PFTA)	ND		ug/kg dry	0.107	0.208	1	EPA 1633 Draft 2 Certifications: NELAC-NY12058	03/03/2023 18:44	03/08/2023 18:58	ESJ
2355-31-9	N-MeFOSAA	ND		ug/kg dry	0.154	0.208	1	EPA 1633 Draft 2 Certifications: NELAC-NY12058	03/03/2023 18:44	03/08/2023 18:58	ESJ
2991-50-6	N-EtFOSAA	ND		ug/kg dry	0.201	0.208	1	EPA 1633 Draft 2 Certifications: NELAC-NY12058	03/03/2023 18:44	03/08/2023 18:58	ESJ
2706-90-3	Perfluoropentanoic acid (PFPeA)	ND		ug/kg dry	0.113	0.415	1	EPA 1633 Draft 2 Certifications: NELAC-NY12058	03/03/2023 18:44	03/08/2023 18:58	ESJ
754-91-6	* Perfluoro-1-octanesulfonamide (FOSA)	ND		ug/kg dry	0.152	0.208	1	EPA 1633 Draft 2 Certifications:	03/03/2023 18:44	03/08/2023 18:58	ESJ
375-92-8	* Perfluoro-1-heptanesulfonic acid (PFHpS)	ND		ug/kg dry	0.161	0.208	1	EPA 1633 Draft 2 Certifications:	03/03/2023 18:44	03/08/2023 18:58	ESJ
335-77-3	* Perfluoro-1-decanesulfonic acid (PFDS)	ND		ug/kg dry	0.198	0.200	1	EPA 1633 Draft 2 Certifications:	03/03/2023 18:44	03/08/2023 18:58	ESJ
27619-97-2	* 1H,1H,2H,2H-Perfluorooctanesulfonic acid (6:2 FTS)	ND		ug/kg dry	0.618	0.789	1	EPA 1633 Draft 2 Certifications:	03/03/2023 18:44	03/08/2023 18:58	ESJ
39108-34-4	1H,1H,2H,2H-Perfluorodecanesulfonic acid (8:2 FTS)	ND		ug/kg dry	0.784	0.797	1	EPA 1633 Draft 2 Certifications: NELAC-NY12058	03/03/2023 18:44	03/08/2023 18:58	ESJ
375-22-4	Perfluoro-n-butanoic acid (PFBA)	ND		ug/kg dry	0.113	0.831	1	EPA 1633 Draft 2 Certifications: NELAC-NY12058	03/03/2023 18:44	03/08/2023 18:58	ESJ
113507-82-7	* Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	ND		ug/kg dry	0.144	0.370	1	EPA 1633 Draft 2 Certifications:	03/03/2023 18:44	03/08/2023 18:58	ESJ
151772-58-6	* Perfluoro-3,6-dioxaheptanoic acid (NFDHA)	ND		ug/kg dry	0.200	0.415	1	EPA 1633 Draft 2 Certifications:	03/03/2023 18:44	03/08/2023 18:58	ESJ
377-73-1	* Perfluoro-4-oxapentanoic acid (PFMPA)	ND		ug/kg dry	0.0644	0.415	1	EPA 1633 Draft 2 Certifications:	03/03/2023 18:44	03/08/2023 18:58	ESJ

Sample Information

Client Sample ID: **IRRC BLUESTONE COMP-2** **York Sample ID:** **23C0079-02**

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
23C0079	GCN48307	Soil	February 23, 2023 9:05 am	02/27/2023

PFAS, EPA 1633 Target List

Log-in Notes: **Sample Notes:**

Sample Prepared by Method: EPA 1633 Prep

CAS No.	Parameter	Result	Flag	Units	Reported to LOD/MDL	LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
863090-89-5	* Perfluoro-5-oxahexanoic acid (PFMBA)	ND		ug/kg dry	0.0997	0.415	1	EPA 1633 Draft 2 Certifications:	03/03/2023 18:44	03/08/2023 18:58	ESJ
2706-91-4	* Perfluoro-1-pentanesulfonate (PFPeS)	ND		ug/kg dry	0.163	0.195	1	EPA 1633 Draft 2 Certifications:	03/03/2023 18:44	03/08/2023 18:58	ESJ
757124-72-4	* 1H,1H,2H,2H-Perfluorohexanesulfonic acid (4:2 FTS)	ND		ug/kg dry	0.618	0.779	1	EPA 1633 Draft 2 Certifications:	03/03/2023 18:44	03/08/2023 18:58	ESJ
13252-13-6	* HFPO-DA (Gen-X)	ND		ug/kg dry	0.631	0.831	1	EPA 1633 Draft 2 Certifications:	03/03/2023 18:44	03/08/2023 18:58	ESJ
763051-92-9	* 11CL-PF3OUdS	ND		ug/kg dry	0.323	0.785	1	EPA 1633 Draft 2 Certifications:	03/03/2023 18:44	03/08/2023 18:58	ESJ
756426-58-1	* 9CL-PF3ONS	ND		ug/kg dry	0.255	0.777	1	EPA 1633 Draft 2 Certifications:	03/03/2023 18:44	03/08/2023 18:58	ESJ
919005-14-4	* ADONA	ND		ug/kg dry	0.181	0.785	1	EPA 1633 Draft 2 Certifications:	03/03/2023 18:44	03/08/2023 18:58	ESJ
79780-39-5	* Perfluorododecanesulfonic acid (PFDoS)	ND		ug/kg dry	0.175	0.201	1	EPA 1633 Draft 2 Certifications:	03/03/2023 18:44	03/08/2023 18:58	ESJ
68259-12-1	* Perfluoro-1-nonanesulfonic acid (PFNS)	ND		ug/kg dry	0.129	0.199	1	EPA 1633 Draft 2 Certifications:	03/03/2023 18:44	03/08/2023 18:58	ESJ
356-02-5	* 3-Perfluoropropyl propanoic acid (FPrPA)	ND		ug/kg dry	0.658	1.04	1	EPA 1633 Draft 2 Certifications:	03/03/2023 18:44	03/08/2023 18:58	ESJ
914637-49-3	* 3-Perfluoropentyl propanoic acid (FPePA)	ND		ug/kg dry	2.18	5.19	1	EPA 1633 Draft 2 Certifications:	03/03/2023 18:44	03/08/2023 18:58	ESJ
812-70-4	* 3-Perfluoroheptyl propanoic acid (FHpPA)	ND		ug/kg dry	1.56	5.19	1	EPA 1633 Draft 2 Certifications:	03/03/2023 18:44	03/08/2023 18:58	ESJ
24448-09-7	* N-MeFOSE	ND		ug/kg dry	0.634	2.08	1	EPA 1633 Draft 2 Certifications:	03/03/2023 18:44	03/08/2023 18:58	ESJ
31506-32-8	* N-MeFOSA	ND		ug/kg dry	0.187	0.208	1	EPA 1633 Draft 2 Certifications:	03/03/2023 18:44	03/08/2023 18:58	ESJ
1691-99-2	* N-EtFOSE	ND		ug/kg dry	0.724	2.08	1	EPA 1633 Draft 2 Certifications:	03/03/2023 18:44	03/08/2023 18:58	ESJ
4151-50-2	* N-EtFOSA	ND		ug/kg dry	0.206	0.208	1	EPA 1633 Draft 2 Certifications:	03/03/2023 18:44	03/08/2023 18:58	ESJ

Surrogate Recoveries	Result	Acceptance Range
Surrogate: M3PFBS	*96.2 %*	*25-150*
Surrogate: M5PFHxA	*107 %*	*25-150*
Surrogate: M4PFHpA	*109 %*	*25-150*
Surrogate: M3PFHxS	*107 %*	*25-150*
Surrogate: Perfluoro-n-[13C8]octanoic acid (M8PFOA)	*95.2 %*	*25-150*
Surrogate: M6PFDA	*90.1 %*	*25-150*
Surrogate: M7PFUdA	*95.9 %*	*25-150*
Surrogate: Perfluoro-n-[1,2-13C2]dodecanoic acid (MPFDoA)	*70.6 %*	*25-150*
Surrogate: M2PFTeDA	*72.9 %*	*10-150*

Sample Information

Client Sample ID: **IRRC BLUESTONE COMP-2** **York Sample ID:** **23C0079-02**

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
23C0079	GCN48307	Soil	February 23, 2023 9:05 am	02/27/2023

PFAS, EPA 1633 Target List

Log-in Notes: **Sample Notes:**

Sample Prepared by Method: EPA 1633 Prep

CAS No.	Parameter	Result	Flag	Units	Reported to LOD/MDL	LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
	Surrogate: Perfluoro-n-[13C4]butanoic acid (MPFBA)	*102 %*			*25-150*						
	Surrogate: Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)	*99.0 %*			*25-150*						
	Surrogate: Perfluoro-n-[13C5]pentanoic acid (M5PFPeA)	*96.9 %*			*25-150*						
	Surrogate: Perfluoro-1-[13C8]octanesulfonamide (M8FOSA)	*17.6 %*			*10-150*						
	Surrogate: d3-N-MeFOSAA	*84.7 %*			*25-150*						
	Surrogate: d5-N-EtFOSAA	*89.8 %*			*25-150*						
	Surrogate: M2-6:2 FTS	*94.2 %*			*25-200*						
	Surrogate: M2-8:2 FTS	*77.7 %*			*25-200*						
	Surrogate: M9PFNA	*98.0 %*			*25-150*						
	Surrogate: M2-4:2 FTS	*84.5 %*			*25-150*						
	Surrogate: d-N-MeFOSA	*11.4 %*			*25-150*						
	Surrogate: d-N-EtFOSA	*14.7 %*			*25-150*						
	Surrogate: M3HFPO-DA	*106 %*			*25-150*						
	Surrogate: d9-N-EtFOSE	*15.5 %*			*25-150*						
	Surrogate: d7-N-MeFOSE	*15.3 %*			*25-150*						

Total Solids

Log-in Notes: **Sample Notes:**

Sample Prepared by Method: % Solids Prep

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
solids	*** % Solids**	**95.9**		%	0.100	1	SM 2540G Certifications: CTDOH-PH-0723	03/06/2023 18:21	03/06/2023 18:24	JTG

Sample Information

Client Sample ID: **IRRC BLUESTONE COMP-3** **York Sample ID:** **23C0079-03**

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
23C0079	GCN48307	Soil	February 23, 2023 9:10 am	02/27/2023

PFAS, EPA 1633 Target List

Log-in Notes: **Sample Notes:**

Sample Prepared by Method: EPA 1633 Prep

CAS No.	Parameter	Result	Flag	Units	Reported to LOD/MDL	LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
375-73-5	* Perfluorobutanesulfonic acid (PFBS)	ND		ug/kg dry	0.116	0.186	1	EPA 1633 Draft 2 Certifications:	03/03/2023 18:44	03/08/2023 19:14	ESJ

Sample Information

Client Sample ID: **IRRC BLUESTONE COMP-3** **York Sample ID:** **23C0079-03**

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
23C0079	GCN48307	Soil	February 23, 2023 9:10 am	02/27/2023

PFAS, EPA 1633 Target List

Log-in Notes:

Sample Notes:

Sample Prepared by Method: EPA 1633 Prep

CAS No.	Parameter	Result	Flag	Units	Reported to LOD/MDL	LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
307-24-4	Perfluorohexanoic acid (PFHxA)	ND		ug/kg dry	0.0556	0.210	1	EPA 1633 Draft 2 Certifications: NELAC-NY12058	03/03/2023 18:44	03/08/2023 19:14	ESJ
375-85-9	Perfluoroheptanoic acid (PFHpA)	ND		ug/kg dry	0.110	0.210	1	EPA 1633 Draft 2 Certifications: NELAC-NY12058	03/03/2023 18:44	03/08/2023 19:14	ESJ
355-46-4	* Perfluorohexanesulfonic acid (PFHxS)	ND		ug/kg dry	0.188	0.192	1	EPA 1633 Draft 2 Certifications:	03/03/2023 18:44	03/08/2023 19:14	ESJ
335-67-1	Perfluorooctanoic acid (PFOA)	ND		ug/kg dry	0.180	0.210	1	EPA 1633 Draft 2 Certifications: NELAC-NY12058	03/03/2023 18:44	03/08/2023 19:14	ESJ
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	ND		ug/kg dry	0.175	0.195	1	EPA 1633 Draft 2 Certifications: NELAC-NY12058	03/03/2023 18:44	03/08/2023 19:14	ESJ
375-95-1	Perfluorononanoic acid (PFNA)	ND		ug/kg dry	0.198	0.210	1	EPA 1633 Draft 2 Certifications: NELAC-NY12058	03/03/2023 18:44	03/08/2023 19:14	ESJ
335-76-2	Perfluorodecanoic acid (PFDA)	ND		ug/kg dry	0.200	0.210	1	EPA 1633 Draft 2 Certifications: NELAC-NY12058	03/03/2023 18:44	03/08/2023 19:14	ESJ
2058-94-8	Perfluoroundecanoic acid (PFUnA)	ND		ug/kg dry	0.208	0.210	1	EPA 1633 Draft 2 Certifications: NELAC-NY12058	03/03/2023 18:44	03/08/2023 19:14	ESJ
307-55-1	Perfluorododecanoic acid (PFDoA)	ND		ug/kg dry	0.171	0.210	1	EPA 1633 Draft 2 Certifications: NELAC-NY12058	03/03/2023 18:44	03/08/2023 19:14	ESJ
72629-94-8	Perfluorotridecanoic acid (PFTrDA)	ND		ug/kg dry	0.131	0.210	1	EPA 1633 Draft 2 Certifications: NELAC-NY12058	03/03/2023 18:44	03/08/2023 19:14	ESJ
376-06-7	Perfluorotetradecanoic acid (PFTA)	ND		ug/kg dry	0.108	0.210	1	EPA 1633 Draft 2 Certifications: NELAC-NY12058	03/03/2023 18:44	03/08/2023 19:14	ESJ
2355-31-9	N-MeFOSAA	ND		ug/kg dry	0.155	0.210	1	EPA 1633 Draft 2 Certifications: NELAC-NY12058	03/03/2023 18:44	03/08/2023 19:14	ESJ
2991-50-6	N-EtFOSAA	ND		ug/kg dry	0.204	0.210	1	EPA 1633 Draft 2 Certifications: NELAC-NY12058	03/03/2023 18:44	03/08/2023 19:14	ESJ
2706-90-3	Perfluoropentanoic acid (PFPeA)	ND		ug/kg dry	0.114	0.420	1	EPA 1633 Draft 2 Certifications: NELAC-NY12058	03/03/2023 18:44	03/08/2023 19:14	ESJ
754-91-6	* Perfluoro-1-octanesulfonamide (FOSA)	ND		ug/kg dry	0.153	0.210	1	EPA 1633 Draft 2 Certifications:	03/03/2023 18:44	03/08/2023 19:14	ESJ
375-92-8	* Perfluoro-1-heptanesulfonic acid (PFHpS)	ND		ug/kg dry	0.163	0.210	1	EPA 1633 Draft 2 Certifications:	03/03/2023 18:44	03/08/2023 19:14	ESJ
335-77-3	* Perfluoro-1-decanesulfonic acid (PFDS)	ND		ug/kg dry	0.200	0.202	1	EPA 1633 Draft 2 Certifications:	03/03/2023 18:44	03/08/2023 19:14	ESJ
27619-97-2	* 1H,1H,2H,2H-Perfluorooctanesulfonic acid (6:2 FTS)	ND		ug/kg dry	0.624	0.797	1	EPA 1633 Draft 2 Certifications:	03/03/2023 18:44	03/08/2023 19:14	ESJ
39108-34-4	1H,1H,2H,2H-Perfluorodecanesulfonic acid (8:2 FTS)	ND		ug/kg dry	0.792	0.806	1	EPA 1633 Draft 2 Certifications: NELAC-NY12058	03/03/2023 18:44	03/08/2023 19:14	ESJ
375-22-4	Perfluoro-n-butanoic acid (PFBA)	ND		ug/kg dry	0.114	0.839	1	EPA 1633 Draft 2 Certifications: NELAC-NY12058	03/03/2023 18:44	03/08/2023 19:14	ESJ
113507-82-7	* Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	ND		ug/kg dry	0.146	0.373	1	EPA 1633 Draft 2 Certifications:	03/03/2023 18:44	03/08/2023 19:14	ESJ
151772-58-6	* Perfluoro-3,6-dioxaheptanoic acid (NFDHA)	ND		ug/kg dry	0.202	0.420	1	EPA 1633 Draft 2 Certifications:	03/03/2023 18:44	03/08/2023 19:14	ESJ
377-73-1	* Perfluoro-4-oxapentanoic acid (PFMPA)	ND		ug/kg dry	0.0650	0.420	1	EPA 1633 Draft 2 Certifications:	03/03/2023 18:44	03/08/2023 19:14	ESJ

Sample Information

Client Sample ID: **IRRC BLUESTONE COMP-3** **York Sample ID:** **23C0079-03**

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
23C0079	GCN48307	Soil	February 23, 2023 9:10 am	02/27/2023

PFAS, EPA 1633 Target List

Log-in Notes: **Sample Notes:**

Sample Prepared by Method: EPA 1633 Prep

CAS No.	Parameter	Result	Flag	Units	Reported to LOD/MDL	LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
863090-89-5	* Perfluoro-5-oxahexanoic acid (PFMBA)	ND		ug/kg dry	0.101	0.420	1	EPA 1633 Draft 2 Certifications:	03/03/2023 18:44	03/08/2023 19:14	ESJ
2706-91-4	* Perfluoro-1-pentanesulfonate (PFPeS)	ND		ug/kg dry	0.165	0.197	1	EPA 1633 Draft 2 Certifications:	03/03/2023 18:44	03/08/2023 19:14	ESJ
757124-72-4	* 1H,1H,2H,2H-Perfluorohexanesulfonic acid (4:2 FTS)	ND		ug/kg dry	0.624	0.787	1	EPA 1633 Draft 2 Certifications:	03/03/2023 18:44	03/08/2023 19:14	ESJ
13252-13-6	* HFPO-DA (Gen-X)	ND		ug/kg dry	0.638	0.839	1	EPA 1633 Draft 2 Certifications:	03/03/2023 18:44	03/08/2023 19:14	ESJ
763051-92-9	* 11CL-PF3OUdS	ND		ug/kg dry	0.326	0.793	1	EPA 1633 Draft 2 Certifications:	03/03/2023 18:44	03/08/2023 19:14	ESJ
756426-58-1	* 9CL-PF3ONS	ND		ug/kg dry	0.258	0.785	1	EPA 1633 Draft 2 Certifications:	03/03/2023 18:44	03/08/2023 19:14	ESJ
919005-14-4	* ADONA	ND		ug/kg dry	0.183	0.793	1	EPA 1633 Draft 2 Certifications:	03/03/2023 18:44	03/08/2023 19:14	ESJ
79780-39-5	* Perfluorododecanesulfonic acid (PFDoS)	ND		ug/kg dry	0.177	0.204	1	EPA 1633 Draft 2 Certifications:	03/03/2023 18:44	03/08/2023 19:14	ESJ
68259-12-1	* Perfluoro-1-nonanesulfonic acid (PFNS)	ND		ug/kg dry	0.130	0.201	1	EPA 1633 Draft 2 Certifications:	03/03/2023 18:44	03/08/2023 19:14	ESJ
356-02-5	* 3-Perfluoropropyl propanoic acid (FPrPA)	ND		ug/kg dry	0.665	1.05	1	EPA 1633 Draft 2 Certifications:	03/03/2023 18:44	03/08/2023 19:14	ESJ
914637-49-3	* 3-Perfluoropentyl propanoic acid (FPePA)	ND		ug/kg dry	2.20	5.25	1	EPA 1633 Draft 2 Certifications:	03/03/2023 18:44	03/08/2023 19:14	ESJ
812-70-4	* 3-Perfluoroheptyl propanoic acid (FHpPA)	ND		ug/kg dry	1.57	5.25	1	EPA 1633 Draft 2 Certifications:	03/03/2023 18:44	03/08/2023 19:14	ESJ
24448-09-7	* N-MeFOSE	ND		ug/kg dry	0.641	2.10	1	EPA 1633 Draft 2 Certifications:	03/03/2023 18:44	03/08/2023 19:14	ESJ
31506-32-8	* N-MeFOSA	ND		ug/kg dry	0.189	0.210	1	EPA 1633 Draft 2 Certifications:	03/03/2023 18:44	03/08/2023 19:14	ESJ
1691-99-2	* N-EtFOSE	ND		ug/kg dry	0.731	2.10	1	EPA 1633 Draft 2 Certifications:	03/03/2023 18:44	03/08/2023 19:14	ESJ
4151-50-2	* N-EtFOSA	ND		ug/kg dry	0.208	0.210	1	EPA 1633 Draft 2 Certifications:	03/03/2023 18:44	03/08/2023 19:14	ESJ

Surrogate Recoveries	Result	Acceptance Range
Surrogate: M3PFBS	*93.7 %*	*25-150*
Surrogate: M5PFHxA	*101 %*	*25-150*
Surrogate: M4PFHpA	*97.0 %*	*25-150*
Surrogate: M3PFHxS	*93.0 %*	*25-150*
Surrogate: Perfluoro-n-[13C8]octanoic acid (M8PFOA)	*87.3 %*	*25-150*
Surrogate: M6PFDA	*73.0 %*	*25-150*
Surrogate: M7PFUdA	*71.7 %*	*25-150*
Surrogate: Perfluoro-n-[1,2-13C2]dodecanoic acid (MPFDoA)	*70.2 %*	*25-150*
Surrogate: M2PFTeDA	*65.9 %*	*10-150*

Sample Information

Client Sample ID: **IRRC BLUESTONE COMP-3** **York Sample ID:** **23C0079-03**

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
23C0079	GCN48307	Soil	February 23, 2023 9:10 am	02/27/2023

PFAS, EPA 1633 Target List

Log-in Notes: **Sample Notes:**

Sample Prepared by Method: EPA 1633 Prep

CAS No.	Parameter	Result	Flag	Units	Reported to LOD/MDL	LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
	Surrogate: Perfluoro-n-[13C4]butanoic acid (MPFBA)	*97.4 %*			*25-150*						
	Surrogate: Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)	*80.8 %*			*25-150*						
	Surrogate: Perfluoro-n-[13C5]pentanoic acid (M5PFPeA)	*99.7 %*			*25-150*						
	Surrogate: Perfluoro-1-[13C8]octanesulfonamide (M8FOSA)	*74.8 %*			*10-150*						
	Surrogate: d3-N-MeFOSAA	*68.3 %*			*25-150*						
	Surrogate: d5-N-EtFOSAA	*72.4 %*			*25-150*						
	Surrogate: M2-6:2 FTS	*70.5 %*			*25-200*						
	Surrogate: M2-8:2 FTS	*62.8 %*			*25-200*						
	Surrogate: M9PFNA	*82.7 %*			*25-150*						
	Surrogate: M2-4:2 FTS	*69.9 %*			*25-150*						
	Surrogate: d-N-MeFOSA	*64.7 %*			*25-150*						
	Surrogate: d-N-EtFOSA	*76.7 %*			*25-150*						
	Surrogate: M3HFPO-DA	*109 %*			*25-150*						
	Surrogate: d9-N-EtFOSE	*65.4 %*			*25-150*						
	Surrogate: d7-N-MeFOSE	*69.5 %*			*25-150*						

Total Solids

Log-in Notes: **Sample Notes:**

Sample Prepared by Method: % Solids Prep

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
solids	*** % Solids**	**94.8**		%	0.100	1	SM 2540G Certifications: CTDOH-PH-0723	03/06/2023 18:21	03/06/2023 18:24	JTG

Sample Information

Client Sample ID: **IRRC BLUESTONE COMP-4** **York Sample ID:** **23C0079-04**

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
23C0079	GCN48307	Soil	February 23, 2023 9:15 am	02/27/2023

PFAS, EPA 1633 Target List

Log-in Notes: **Sample Notes:**

Sample Prepared by Method: EPA 1633 Prep

CAS No.	Parameter	Result	Flag	Units	Reported to LOD/MDL	LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
375-73-5	* Perfluorobutanesulfonic acid (PFBS)	ND		ug/kg dry	0.116	0.185	1	EPA 1633 Draft 2 Certifications:	03/03/2023 18:44	03/08/2023 20:02	ESJ

Sample Information

Client Sample ID: **IRRC BLUESTONE COMP-4** **York Sample ID:** **23C0079-04**

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
23C0079	GCN48307	Soil	February 23, 2023 9:15 am	02/27/2023

PFAS, EPA 1633 Target List

Log-in Notes: **Sample Notes:**

Sample Prepared by Method: EPA 1633 Prep

CAS No.	Parameter	Result	Flag	Units	Reported to LOD/MDL	LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
307-24-4	Perfluorohexanoic acid (PFHxA)	ND		ug/kg dry	0.0553	0.209	1	EPA 1633 Draft 2 Certifications: NELAC-NY12058	03/03/2023 18:44	03/08/2023 20:02	ESJ
375-85-9	Perfluoroheptanoic acid (PFHpA)	ND		ug/kg dry	0.110	0.209	1	EPA 1633 Draft 2 Certifications: NELAC-NY12058	03/03/2023 18:44	03/08/2023 20:02	ESJ
355-46-4	* Perfluorohexanesulfonic acid (PFHxS)	ND		ug/kg dry	0.187	0.191	1	EPA 1633 Draft 2 Certifications:	03/03/2023 18:44	03/08/2023 20:02	ESJ
335-67-1	Perfluorooctanoic acid (PFOA)	ND		ug/kg dry	0.180	0.209	1	EPA 1633 Draft 2 Certifications: NELAC-NY12058	03/03/2023 18:44	03/08/2023 20:02	ESJ
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	ND		ug/kg dry	0.174	0.194	1	EPA 1633 Draft 2 Certifications: NELAC-NY12058	03/03/2023 18:44	03/08/2023 20:02	ESJ
375-95-1	Perfluorononanoic acid (PFNA)	ND		ug/kg dry	0.197	0.209	1	EPA 1633 Draft 2 Certifications: NELAC-NY12058	03/03/2023 18:44	03/08/2023 20:02	ESJ
335-76-2	Perfluorodecanoic acid (PFDA)	ND		ug/kg dry	0.199	0.209	1	EPA 1633 Draft 2 Certifications: NELAC-NY12058	03/03/2023 18:44	03/08/2023 20:02	ESJ
2058-94-8	Perfluoroundecanoic acid (PFUnA)	ND		ug/kg dry	0.207	0.209	1	EPA 1633 Draft 2 Certifications: NELAC-NY12058	03/03/2023 18:44	03/08/2023 20:02	ESJ
307-55-1	Perfluorododecanoic acid (PFDoA)	ND		ug/kg dry	0.170	0.209	1	EPA 1633 Draft 2 Certifications: NELAC-NY12058	03/03/2023 18:44	03/08/2023 20:02	ESJ
72629-94-8	Perfluorotridecanoic acid (PFTrDA)	ND		ug/kg dry	0.130	0.209	1	EPA 1633 Draft 2 Certifications: NELAC-NY12058	03/03/2023 18:44	03/08/2023 20:02	ESJ
376-06-7	Perfluorotetradecanoic acid (PFTA)	ND		ug/kg dry	0.108	0.209	1	EPA 1633 Draft 2 Certifications: NELAC-NY12058	03/03/2023 18:44	03/08/2023 20:02	ESJ
2355-31-9	N-MeFOSAA	ND		ug/kg dry	0.154	0.209	1	EPA 1633 Draft 2 Certifications: NELAC-NY12058	03/03/2023 18:44	03/08/2023 20:02	ESJ
2991-50-6	N-EtFOSAA	ND		ug/kg dry	0.202	0.209	1	EPA 1633 Draft 2 Certifications: NELAC-NY12058	03/03/2023 18:44	03/08/2023 20:02	ESJ
2706-90-3	Perfluoropentanoic acid (PFPeA)	ND		ug/kg dry	0.114	0.417	1	EPA 1633 Draft 2 Certifications: NELAC-NY12058	03/03/2023 18:44	03/08/2023 20:02	ESJ
754-91-6	* Perfluoro-1-octanesulfonamide (FOSA)	ND		ug/kg dry	0.152	0.209	1	EPA 1633 Draft 2 Certifications:	03/03/2023 18:44	03/08/2023 20:02	ESJ
375-92-8	* Perfluoro-1-heptanesulfonic acid (PFHpS)	ND		ug/kg dry	0.162	0.209	1	EPA 1633 Draft 2 Certifications:	03/03/2023 18:44	03/08/2023 20:02	ESJ
335-77-3	* Perfluoro-1-decanesulfonic acid (PFDS)	ND		ug/kg dry	0.199	0.201	1	EPA 1633 Draft 2 Certifications:	03/03/2023 18:44	03/08/2023 20:02	ESJ
27619-97-2	* 1H,1H,2H,2H-Perfluorooctanesulfonic acid (6:2 FTS)	ND		ug/kg dry	0.621	0.793	1	EPA 1633 Draft 2 Certifications:	03/03/2023 18:44	03/08/2023 20:02	ESJ
39108-34-4	1H,1H,2H,2H-Perfluorodecanesulfonic acid (8:2 FTS)	ND		ug/kg dry	0.788	0.802	1	EPA 1633 Draft 2 Certifications: NELAC-NY12058	03/03/2023 18:44	03/08/2023 20:02	ESJ
375-22-4	Perfluoro-n-butanoic acid (PFBA)	ND		ug/kg dry	0.114	0.835	1	EPA 1633 Draft 2 Certifications: NELAC-NY12058	03/03/2023 18:44	03/08/2023 20:02	ESJ
113507-82-7	* Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	ND		ug/kg dry	0.145	0.372	1	EPA 1633 Draft 2 Certifications:	03/03/2023 18:44	03/08/2023 20:02	ESJ
151772-58-6	* Perfluoro-3,6-dioxaheptanoic acid (NFDHA)	ND		ug/kg dry	0.201	0.417	1	EPA 1633 Draft 2 Certifications:	03/03/2023 18:44	03/08/2023 20:02	ESJ
377-73-1	* Perfluoro-4-oxapentanoic acid (PFMPA)	ND		ug/kg dry	0.0647	0.417	1	EPA 1633 Draft 2 Certifications:	03/03/2023 18:44	03/08/2023 20:02	ESJ

Sample Information

Client Sample ID: **IRRC BLUESTONE COMP-4** **York Sample ID:** **23C0079-04**

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
23C0079	GCN48307	Soil	February 23, 2023 9:15 am	02/27/2023

PFAS, EPA 1633 Target List

Log-in Notes: **Sample Notes:**

Sample Prepared by Method: EPA 1633 Prep

CAS No.	Parameter	Result	Flag	Units	Reported to LOD/MDL	LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
863090-89-5	* Perfluoro-5-oxahexanoic acid (PFMBA)	ND		ug/kg dry	0.100	0.417	1	EPA 1633 Draft 2 Certifications:	03/03/2023 18:44	03/08/2023 20:02	ESJ
2706-91-4	* Perfluoro-1-pentanesulfonate (PFPeS)	ND		ug/kg dry	0.164	0.196	1	EPA 1633 Draft 2 Certifications:	03/03/2023 18:44	03/08/2023 20:02	ESJ
757124-72-4	* 1H,1H,2H,2H-Perfluorohexanesulfonic acid (4:2 FTS)	ND		ug/kg dry	0.621	0.783	1	EPA 1633 Draft 2 Certifications:	03/03/2023 18:44	03/08/2023 20:02	ESJ
13252-13-6	* HFPO-DA (Gen-X)	ND		ug/kg dry	0.635	0.835	1	EPA 1633 Draft 2 Certifications:	03/03/2023 18:44	03/08/2023 20:02	ESJ
763051-92-9	* 11CL-PF3OUdS	ND		ug/kg dry	0.325	0.789	1	EPA 1633 Draft 2 Certifications:	03/03/2023 18:44	03/08/2023 20:02	ESJ
756426-58-1	* 9CL-PF3ONS	ND		ug/kg dry	0.257	0.781	1	EPA 1633 Draft 2 Certifications:	03/03/2023 18:44	03/08/2023 20:02	ESJ
919005-14-4	* ADONA	ND		ug/kg dry	0.182	0.789	1	EPA 1633 Draft 2 Certifications:	03/03/2023 18:44	03/08/2023 20:02	ESJ
79780-39-5	* Perfluorododecanesulfonic acid (PFDoS)	ND		ug/kg dry	0.176	0.202	1	EPA 1633 Draft 2 Certifications:	03/03/2023 18:44	03/08/2023 20:02	ESJ
68259-12-1	* Perfluoro-1-nonanesulfonic acid (PFNS)	ND		ug/kg dry	0.129	0.200	1	EPA 1633 Draft 2 Certifications:	03/03/2023 18:44	03/08/2023 20:02	ESJ
356-02-5	* 3-Perfluoropropyl propanoic acid (FPrPA)	ND		ug/kg dry	0.662	1.04	1	EPA 1633 Draft 2 Certifications:	03/03/2023 18:44	03/08/2023 20:02	ESJ
914637-49-3	* 3-Perfluoropentyl propanoic acid (FPePA)	ND		ug/kg dry	2.19	5.22	1	EPA 1633 Draft 2 Certifications:	03/03/2023 18:44	03/08/2023 20:02	ESJ
812-70-4	* 3-Perfluoroheptyl propanoic acid (FHpPA)	ND		ug/kg dry	1.57	5.22	1	EPA 1633 Draft 2 Certifications:	03/03/2023 18:44	03/08/2023 20:02	ESJ
24448-09-7	* N-MeFOSE	ND		ug/kg dry	0.638	2.09	1	EPA 1633 Draft 2 Certifications:	03/03/2023 18:44	03/08/2023 20:02	ESJ
31506-32-8	* N-MeFOSA	ND		ug/kg dry	0.188	0.209	1	EPA 1633 Draft 2 Certifications:	03/03/2023 18:44	03/08/2023 20:02	ESJ
1691-99-2	* N-EtFOSE	ND		ug/kg dry	0.727	2.09	1	EPA 1633 Draft 2 Certifications:	03/03/2023 18:44	03/08/2023 20:02	ESJ
4151-50-2	* N-EtFOSA	ND		ug/kg dry	0.207	0.209	1	EPA 1633 Draft 2 Certifications:	03/03/2023 18:44	03/08/2023 20:02	ESJ

Surrogate Recoveries	Result	Acceptance Range
Surrogate: M3PFBS	*97.6 %*	*25-150*
Surrogate: M5PFHxA	*96.4 %*	*25-150*
Surrogate: M4PFHpA	*94.6 %*	*25-150*
Surrogate: M3PFHxS	*91.7 %*	*25-150*
Surrogate: Perfluoro-n-[13C8]octanoic acid (M8PFOA)	*84.8 %*	*25-150*
Surrogate: M6PFDA	*83.4 %*	*25-150*
Surrogate: M7PFUdA	*82.4 %*	*25-150*
Surrogate: Perfluoro-n-[1,2-13C2]dodecanoic acid (MPFDoA)	*69.8 %*	*25-150*
Surrogate: M2PFTeDA	*68.3 %*	*10-150*

Sample Information

Client Sample ID: **IRRC BLUESTONE COMP-4** **York Sample ID:** **23C0079-04**

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
23C0079	GCN48307	Soil	February 23, 2023 9:15 am	02/27/2023

PFAS, EPA 1633 Target List

Log-in Notes: **Sample Notes:**

Sample Prepared by Method: EPA 1633 Prep

CAS No.	Parameter	Result	Flag	Units	Reported to LOD/MDL	LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
	Surrogate: Perfluoro-n-[13C4]butanoic acid (MPFBA)	*92.5 %*			*25-150*						
	Surrogate: Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)	*85.4 %*			*25-150*						
	Surrogate: Perfluoro-n-[13C5]pentanoic acid (M5PFPeA)	*93.0 %*			*25-150*						
	Surrogate: Perfluoro-1-[13C8]octanesulfonamide (M8FOSA)	*17.8 %*			*10-150*						
	Surrogate: d3-N-MeFOSAA	*67.5 %*			*25-150*						
	Surrogate: d5-N-EtFOSAA	*77.9 %*			*25-150*						
	Surrogate: M2-6:2 FTS	*69.4 %*			*25-200*						
	Surrogate: M2-8:2 FTS	*59.9 %*			*25-200*						
	Surrogate: M9PFNA	*98.2 %*			*25-150*						
	Surrogate: M2-4:2 FTS	*71.7 %*			*25-150*						
	Surrogate: d-N-MeFOSA	*16.4 %*			*25-150*						
	Surrogate: d-N-EtFOSA	*18.1 %*			*25-150*						
	Surrogate: M3HFPO-DA	*99.4 %*			*25-150*						
	Surrogate: d9-N-EtFOSE	*18.1 %*			*25-150*						
	Surrogate: d7-N-MeFOSE	*17.4 %*			*25-150*						

Total Solids

Log-in Notes: **Sample Notes:**

Sample Prepared by Method: % Solids Prep

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
solids	*** % Solids**	**94.3**		%	0.100	1	SM 2540G Certifications: CTDOH-PH-0723	03/06/2023 18:21	03/06/2023 18:24	JTG

Sample Information

Client Sample ID: **IRRC BLUESTONE COMP-5** **York Sample ID:** **23C0079-05**

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
23C0079	GCN48307	Soil	February 23, 2023 9:20 am	02/27/2023

PFAS, EPA 1633 Target List

Log-in Notes: **Sample Notes:**

Sample Prepared by Method: EPA 1633 Prep

CAS No.	Parameter	Result	Flag	Units	Reported to LOD/MDL	LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
375-73-5	* Perfluorobutanesulfonic acid (PFBS)	ND		ug/kg dry	0.115	0.183	1	EPA 1633 Draft 2 Certifications:	03/03/2023 18:44	03/08/2023 20:19	ESJ

Sample Information

Client Sample ID: **IRRC BLUESTONE COMP-5** **York Sample ID:** **23C0079-05**

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
23C0079	GCN48307	Soil	February 23, 2023 9:20 am	02/27/2023

PFAS, EPA 1633 Target List

Log-in Notes:

Sample Notes:

Sample Prepared by Method: EPA 1633 Prep

CAS No.	Parameter	Result	Flag	Units	Reported to LOD/MDL	LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
307-24-4	Perfluorohexanoic acid (PFHxA)	ND		ug/kg dry	0.0548	0.207	1	EPA 1633 Draft 2 Certifications: NELAC-NY12058	03/03/2023 18:44	03/08/2023 20:19	ESJ
375-85-9	Perfluoroheptanoic acid (PFHpA)	ND		ug/kg dry	0.109	0.207	1	EPA 1633 Draft 2 Certifications: NELAC-NY12058	03/03/2023 18:44	03/08/2023 20:19	ESJ
355-46-4	* Perfluorohexanesulfonic acid (PFHxS)	ND		ug/kg dry	0.185	0.189	1	EPA 1633 Draft 2 Certifications:	03/03/2023 18:44	03/08/2023 20:19	ESJ
335-67-1	Perfluorooctanoic acid (PFOA)	ND		ug/kg dry	0.178	0.207	1	EPA 1633 Draft 2 Certifications: NELAC-NY12058	03/03/2023 18:44	03/08/2023 20:19	ESJ
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	ND		ug/kg dry	0.173	0.192	1	EPA 1633 Draft 2 Certifications: NELAC-NY12058	03/03/2023 18:44	03/08/2023 20:19	ESJ
375-95-1	Perfluorononanoic acid (PFNA)	ND		ug/kg dry	0.195	0.207	1	EPA 1633 Draft 2 Certifications: NELAC-NY12058	03/03/2023 18:44	03/08/2023 20:19	ESJ
335-76-2	Perfluorodecanoic acid (PFDA)	ND		ug/kg dry	0.198	0.207	1	EPA 1633 Draft 2 Certifications: NELAC-NY12058	03/03/2023 18:44	03/08/2023 20:19	ESJ
2058-94-8	Perfluoroundecanoic acid (PFUnA)	ND		ug/kg dry	0.205	0.207	1	EPA 1633 Draft 2 Certifications: NELAC-NY12058	03/03/2023 18:44	03/08/2023 20:19	ESJ
307-55-1	Perfluorododecanoic acid (PFDoA)	ND		ug/kg dry	0.169	0.207	1	EPA 1633 Draft 2 Certifications: NELAC-NY12058	03/03/2023 18:44	03/08/2023 20:19	ESJ
72629-94-8	Perfluorotridecanoic acid (PFTrDA)	ND		ug/kg dry	0.129	0.207	1	EPA 1633 Draft 2 Certifications: NELAC-NY12058	03/03/2023 18:44	03/08/2023 20:19	ESJ
376-06-7	Perfluorotetradecanoic acid (PFTA)	ND		ug/kg dry	0.107	0.207	1	EPA 1633 Draft 2 Certifications: NELAC-NY12058	03/03/2023 18:44	03/08/2023 20:19	ESJ
2355-31-9	N-MeFOSAA	ND		ug/kg dry	0.153	0.207	1	EPA 1633 Draft 2 Certifications: NELAC-NY12058	03/03/2023 18:44	03/08/2023 20:19	ESJ
2991-50-6	N-EtFOSAA	ND		ug/kg dry	0.201	0.207	1	EPA 1633 Draft 2 Certifications: NELAC-NY12058	03/03/2023 18:44	03/08/2023 20:19	ESJ
2706-90-3	Perfluoropentanoic acid (PFPeA)	ND		ug/kg dry	0.113	0.414	1	EPA 1633 Draft 2 Certifications: NELAC-NY12058	03/03/2023 18:44	03/08/2023 20:19	ESJ
754-91-6	* Perfluoro-1-octanesulfonamide (FOSA)	ND		ug/kg dry	0.151	0.207	1	EPA 1633 Draft 2 Certifications:	03/03/2023 18:44	03/08/2023 20:19	ESJ
375-92-8	* Perfluoro-1-heptanesulfonic acid (PFHpS)	ND		ug/kg dry	0.160	0.207	1	EPA 1633 Draft 2 Certifications:	03/03/2023 18:44	03/08/2023 20:19	ESJ
335-77-3	* Perfluoro-1-decanesulfonic acid (PFDS)	ND		ug/kg dry	0.198	0.200	1	EPA 1633 Draft 2 Certifications:	03/03/2023 18:44	03/08/2023 20:19	ESJ
27619-97-2	* 1H,1H,2H,2H-Perfluorooctanesulfonic acid (6:2 FTS)	ND		ug/kg dry	0.615	0.786	1	EPA 1633 Draft 2 Certifications:	03/03/2023 18:44	03/08/2023 20:19	ESJ
39108-34-4	1H,1H,2H,2H-Perfluorodecanesulfonic acid (8:2 FTS)	ND		ug/kg dry	0.781	0.794	1	EPA 1633 Draft 2 Certifications: NELAC-NY12058	03/03/2023 18:44	03/08/2023 20:19	ESJ
375-22-4	Perfluoro-n-butanoic acid (PFBA)	ND		ug/kg dry	0.113	0.828	1	EPA 1633 Draft 2 Certifications: NELAC-NY12058	03/03/2023 18:44	03/08/2023 20:19	ESJ
113507-82-7	* Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	ND		ug/kg dry	0.144	0.368	1	EPA 1633 Draft 2 Certifications:	03/03/2023 18:44	03/08/2023 20:19	ESJ
151772-58-6	* Perfluoro-3,6-dioxaheptanoic acid (NFDHA)	ND		ug/kg dry	0.200	0.414	1	EPA 1633 Draft 2 Certifications:	03/03/2023 18:44	03/08/2023 20:19	ESJ
377-73-1	* Perfluoro-4-oxapentanoic acid (PFMPA)	ND		ug/kg dry	0.0641	0.414	1	EPA 1633 Draft 2 Certifications:	03/03/2023 18:44	03/08/2023 20:19	ESJ

Sample Information

Client Sample ID: **IRRC BLUESTONE COMP-5** **York Sample ID:** **23C0079-05**

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
23C0079	GCN48307	Soil	February 23, 2023 9:20 am	02/27/2023

PFAS, EPA 1633 Target List

Log-in Notes: **Sample Notes:**

Sample Prepared by Method: EPA 1633 Prep

CAS No.	Parameter	Result	Flag	Units	Reported to LOD/MDL	LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
863090-89-5	* Perfluoro-5-oxahexanoic acid (PFMBA)	ND		ug/kg dry	0.0993	0.414	1	EPA 1633 Draft 2 Certifications:	03/03/2023 18:44	03/08/2023 20:19	ESJ
2706-91-4	* Perfluoro-1-pentanesulfonate (PFPeS)	ND		ug/kg dry	0.162	0.194	1	EPA 1633 Draft 2 Certifications:	03/03/2023 18:44	03/08/2023 20:19	ESJ
757124-72-4	* 1H,1H,2H,2H-Perfluorohexanesulfonic acid (4:2 FTS)	ND		ug/kg dry	0.615	0.776	1	EPA 1633 Draft 2 Certifications:	03/03/2023 18:44	03/08/2023 20:19	ESJ
13252-13-6	* HFPO-DA (Gen-X)	ND		ug/kg dry	0.629	0.828	1	EPA 1633 Draft 2 Certifications:	03/03/2023 18:44	03/08/2023 20:19	ESJ
763051-92-9	* 11CL-PF3OUdS	ND		ug/kg dry	0.322	0.782	1	EPA 1633 Draft 2 Certifications:	03/03/2023 18:44	03/08/2023 20:19	ESJ
756426-58-1	* 9CL-PF3ONS	ND		ug/kg dry	0.254	0.774	1	EPA 1633 Draft 2 Certifications:	03/03/2023 18:44	03/08/2023 20:19	ESJ
919005-14-4	* ADONA	ND		ug/kg dry	0.180	0.782	1	EPA 1633 Draft 2 Certifications:	03/03/2023 18:44	03/08/2023 20:19	ESJ
79780-39-5	* Perfluorododecanesulfonic acid (PFDoS)	ND		ug/kg dry	0.175	0.201	1	EPA 1633 Draft 2 Certifications:	03/03/2023 18:44	03/08/2023 20:19	ESJ
68259-12-1	* Perfluoro-1-nonanesulfonic acid (PFNS)	ND		ug/kg dry	0.128	0.199	1	EPA 1633 Draft 2 Certifications:	03/03/2023 18:44	03/08/2023 20:19	ESJ
356-02-5	* 3-Perfluoropropyl propanoic acid (FPrPA)	ND		ug/kg dry	0.656	1.03	1	EPA 1633 Draft 2 Certifications:	03/03/2023 18:44	03/08/2023 20:19	ESJ
914637-49-3	* 3-Perfluoropentyl propanoic acid (FPePA)	ND		ug/kg dry	2.17	5.17	1	EPA 1633 Draft 2 Certifications:	03/03/2023 18:44	03/08/2023 20:19	ESJ
812-70-4	* 3-Perfluoroheptyl propanoic acid (FHpPA)	ND		ug/kg dry	1.55	5.17	1	EPA 1633 Draft 2 Certifications:	03/03/2023 18:44	03/08/2023 20:19	ESJ
24448-09-7	* N-MeFOSE	ND		ug/kg dry	0.632	2.07	1	EPA 1633 Draft 2 Certifications:	03/03/2023 18:44	03/08/2023 20:19	ESJ
31506-32-8	* N-MeFOSA	ND		ug/kg dry	0.186	0.207	1	EPA 1633 Draft 2 Certifications:	03/03/2023 18:44	03/08/2023 20:19	ESJ
1691-99-2	* N-EtFOSE	ND		ug/kg dry	0.721	2.07	1	EPA 1633 Draft 2 Certifications:	03/03/2023 18:44	03/08/2023 20:19	ESJ
4151-50-2	* N-EtFOSA	ND		ug/kg dry	0.205	0.207	1	EPA 1633 Draft 2 Certifications:	03/03/2023 18:44	03/08/2023 20:19	ESJ

Surrogate Recoveries	Result	Acceptance Range
Surrogate: M3PFBS	*95.8 %*	*25-150*
Surrogate: M5PFHxA	*96.8 %*	*25-150*
Surrogate: M4PFHpA	*96.5 %*	*25-150*
Surrogate: M3PFHxS	*93.6 %*	*25-150*
Surrogate: Perfluoro-n-[13C8]octanoic acid (M8PFOA)	*88.9 %*	*25-150*
Surrogate: M6PFDA	*94.8 %*	*25-150*
Surrogate: M7PFUdA	*87.4 %*	*25-150*
Surrogate: Perfluoro-n-[1,2-13C2]dodecanoic acid (MPFDoA)	*84.8 %*	*25-150*
Surrogate: M2PFTeDA	*83.1 %*	*10-150*

Sample Information

Client Sample ID: **IRRC BLUESTONE COMP-5** **York Sample ID:** **23C0079-05**

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
23C0079	GCN48307	Soil	February 23, 2023 9:20 am	02/27/2023

PFAS, EPA 1633 Target List

Log-in Notes: **Sample Notes:**

Sample Prepared by Method: EPA 1633 Prep

CAS No.	Parameter	Result	Flag	Units	Reported to LOD/MDL	LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
	Surrogate: Perfluoro-n-[13C4]butanoic acid (MPFBA)	*95.0 %*			*25-150*						
	Surrogate: Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)	*88.4 %*			*25-150*						
	Surrogate: Perfluoro-n-[13C5]pentanoic acid (M5PFPeA)	*96.3 %*			*25-150*						
	Surrogate: Perfluoro-1-[13C8]octanesulfonamide (M8FOSA)	*16.1 %*			*10-150*						
	Surrogate: d3-N-MeFOSAA	*73.3 %*			*25-150*						
	Surrogate: d5-N-EtFOSAA	*79.2 %*			*25-150*						
	Surrogate: M2-6:2 FTS	*72.8 %*			*25-200*						
	Surrogate: M2-8:2 FTS	*64.1 %*			*25-200*						
	Surrogate: M9PFNA	*94.8 %*			*25-150*						
	Surrogate: M2-4:2 FTS	*71.3 %*			*25-150*						
	Surrogate: d-N-MeFOSA	*11.9 %*			*25-150*						
	Surrogate: d-N-EtFOSA	*11.8 %*			*25-150*						
	Surrogate: M3HFPO-DA	*103 %*			*25-150*						
	Surrogate: d9-N-EtFOSE	*13.0 %*			*25-150*						
	Surrogate: d7-N-MeFOSE	*12.8 %*			*25-150*						

Total Solids

Log-in Notes: **Sample Notes:**

Sample Prepared by Method: % Solids Prep

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
solids	*** % Solids**	**95.5**		%	0.100	1	SM 2540G	03/06/2023 18:21	03/06/2023 18:24	JTG
							Certifications: CTDOH-PH-0723			

Analytical Batch Summary

Batch ID: BC30258 **Preparation Method:** EPA 1633 Prep **Prepared By:** BAMW

YORK Sample ID	Client Sample ID	Preparation Date
23C0079-01	IRRC BLUESTONE COMP-1	03/03/23
23C0079-02	IRRC BLUESTONE COMP-2	03/03/23
23C0079-03	IRRC BLUESTONE COMP-3	03/03/23
23C0079-04	IRRC BLUESTONE COMP-4	03/03/23
23C0079-05	IRRC BLUESTONE COMP-5	03/03/23
BC30258-BLK1	Blank	03/03/23
BC30258-BS1	LCS	03/03/23
BC30258-BS2	LCS	03/03/23
BC30258-DUP1	Duplicate	03/03/23

Batch ID: BC30375 **Preparation Method:** % Solids Prep **Prepared By:** JTG

YORK Sample ID	Client Sample ID	Preparation Date
23C0079-01	IRRC BLUESTONE COMP-1	03/06/23
23C0079-02	IRRC BLUESTONE COMP-2	03/06/23
23C0079-03	IRRC BLUESTONE COMP-3	03/06/23
23C0079-04	IRRC BLUESTONE COMP-4	03/06/23
23C0079-05	IRRC BLUESTONE COMP-5	03/06/23
BC30375-DUP1	Duplicate	03/06/23
BC30375-DUP2	Duplicate	03/06/23

PFAS Target compounds by LC/MS-MS - Quality Control Data

York Analytical Laboratories, Inc. - Stratford

Analyte	Result	Reporting Limit	Units	Spike Level	Source* Result	%REC	%REC Limits	Flag	RPD	RPD Limit	Flag
Batch BC30258 - EPA 1633 Prep											
Blank (BC30258-BLK1)									Prepared: 03/03/2023 Analyzed: 03/08/2023		
Perfluorobutanesulfonic acid (PFBS)	ND	0.176	ug/kg wet								
Perfluorohexanoic acid (PFHxA)	ND	0.199	"								
Perfluoroheptanoic acid (PFHpA)	ND	0.199	"								
Perfluorohexanesulfonic acid (PFHxS)	ND	0.182	"								
Perfluorooctanoic acid (PFOA)	ND	0.199	"								
Perfluorooctanesulfonic acid (PFOS)	ND	0.185	"								
Perfluorononanoic acid (PFNA)	ND	0.199	"								
Perfluorodecanoic acid (PFDA)	ND	0.199	"								
Perfluoroundecanoic acid (PFUnA)	ND	0.199	"								
Perfluorododecanoic acid (PFDoA)	ND	0.199	"								
Perfluorotridecanoic acid (PFTrDA)	ND	0.199	"								
Perfluorotetradecanoic acid (PFTA)	ND	0.199	"								
N-MeFOSAA	ND	0.199	"								
N-EtFOSAA	ND	0.199	"								
Perfluoropentanoic acid (PFPeA)	ND	0.398	"								
Perfluoro-1-octanesulfonamide (FOSA)	ND	0.199	"								
Perfluoro-1-heptanesulfonic acid (PFHpS)	ND	0.199	"								
Perfluoro-1-decanesulfonic acid (PFDS)	ND	0.192	"								
1H,1H,2H,2H-Perfluorooctanesulfonic acid (6:2 FTS)	ND	0.757	"								
1H,1H,2H,2H-Perfluorodecanesulfonic acid (8:2 FTS)	ND	0.765	"								
Perfluoro-n-butanoic acid (PFBA)	ND	0.797	"								
Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	ND	0.355	"								
Perfluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	0.398	"								
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	0.398	"								
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	0.398	"								
Perfluoro-1-pentanesulfonate (PFPeS)	ND	0.187	"								
1H,1H,2H,2H-Perfluorohexanesulfonic acid (4:2 FTS)	ND	0.747	"								
HFPO-DA (Gen-X)	ND	0.797	"								
11CL-PF3OUdS	ND	0.753	"								
9CL-PF3ONS	ND	0.745	"								
ADONA	ND	0.753	"								
Perfluorododecanesulfonic acid (PFDoS)	ND	0.193	"								
Perfluoro-1-nonanesulfonic acid (PFNS)	ND	0.191	"								
3-Perfluoropropyl propanoic acid (FPrPA)	ND	0.996	"								
3-Perfluoropentyl propanoic acid (FPePA)	ND	4.98	"								
3-Perfluoroheptyl propanoic acid (FHpPA)	ND	4.98	"								
N-MeFOSE	ND	1.99	"								
N-MeFOSA	ND	0.199	"								
N-EtFOSE	ND	1.99	"								
N-EtFOSA	ND	0.199	"								
Surrogate: M3PFBS	*2.24*		*"*	*2.32*		*96.6*	*25-150*				
Surrogate: M5PFHxA	*2.33*		*"*	*2.49*		*93.4*	*25-150*				
Surrogate: M4PFHpA	*2.30*		*"*	*2.49*		*92.3*	*25-150*				
Surrogate: M3PFHxS	*2.35*		*"*	*2.36*		*99.5*	*25-150*				
Surrogate: Perfluoro-n-[13C8]octanoic acid (M8PFOA)	*2.42*		*"*	*2.49*		*97.4*	*25-150*				
Surrogate: M6PFDA	*1.07*		*"*	*1.25*		*85.6*	*25-150*				

PFAS Target compounds by LC/MS-MS - Quality Control Data

York Analytical Laboratories, Inc. - Stratford

Analyte	Result	Reporting Limit	Units	Spike Level	Source* Result	%REC	%REC Limits	Flag	RPD	RPD Limit	Flag
Batch BC30258 - EPA 1633 Prep											
Blank (BC30258-BLK1)								Prepared: 03/03/2023 Analyzed: 03/08/2023			
Surrogate: M7PFUdA	*1.06*		*ug/kg wet*	*1.25*		*85.5*	*25-150*				
Surrogate: Perfluoro-n-[1,2-13C2]dodecanoic acid (MPFDoA)	*0.993*		*"*	*1.25*		*79.8*	*25-150*				
Surrogate: M2PFTeDA	*0.886*		*"*	*1.25*		*71.2*	*10-150*				
Surrogate: Perfluoro-n-[13C4]butanoic acid (MPFBA)	*8.92*		*"*	*9.96*		*89.5*	*25-150*				
Surrogate: Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)	*2.13*		*"*	*2.39*		*89.1*	*25-150*				
Surrogate: Perfluoro-n-[13C5]pentanoic acid (M5PFPeA)	*4.57*		*"*	*4.98*		*91.8*	*25-150*				
Surrogate: Perfluoro-1-[13C8]octanesulfonamide (M8FOSA)	*0.634*		*"*	*2.49*		*25.4*	*10-150*				
Surrogate: d3-N-MeFOSAA	*3.95*		*"*	*4.98*		*79.3*	*25-150*				
Surrogate: d5-N-EtFOSAA	*3.88*		*"*	*4.98*		*77.8*	*25-150*				
Surrogate: M2-6:2 FTS	*3.67*		*"*	*4.74*		*77.5*	*25-200*				
Surrogate: M2-8:2 FTS	*3.54*		*"*	*4.78*		*74.0*	*25-200*				
Surrogate: M9PFNA	*1.12*		*"*	*1.25*		*89.6*	*25-150*				
Surrogate: M2-4:2 FTS	*3.71*		*"*	*4.67*		*79.5*	*25-150*				
Surrogate: d-N-MeFOSA	*0.549*		*"*	*2.49*		*22.0*	*25-150*				
Surrogate: d-N-EtFOSA	*0.538*		*"*	*2.49*		*21.6*	*25-150*				
Surrogate: M3HFPO-DA	*9.42*		*"*	*9.96*		*94.6*	*25-150*				
Surrogate: d9-N-EtFOSE	*4.24*		*"*	*24.9*		*17.0*	*25-150*				
Surrogate: d7-N-MeFOSE	*3.89*		*"*	*24.9*		*15.6*	*25-150*				
LCS (BC30258-BS1)								Prepared: 03/03/2023 Analyzed: 03/08/2023			
Perfluorobutanesulfonic acid (PFBS)	0.588	0.175	ug/kg wet	0.700		84.1	50-150				
Perfluorohexanoic acid (PFHxA)	0.664	0.198	"	0.791		84.0	50-150				
Perfluoroheptanoic acid (PFHpA)	0.676	0.198	"	0.791		85.5	50-150				
Perfluorohexanesulfonic acid (PFHxS)	0.590	0.181	"	0.723		81.6	50-150				
Perfluorooctanoic acid (PFOA)	0.624	0.198	"	0.791		79.0	50-150				
Perfluorooctanesulfonic acid (PFOS)	0.587	0.184	"	0.735		79.9	50-150				
Perfluorononanoic acid (PFNA)	0.601	0.198	"	0.791		76.0	50-150				
Perfluorodecanoic acid (PFDA)	0.632	0.198	"	0.791		80.0	50-150				
Perfluoroundecanoic acid (PFUnA)	0.599	0.198	"	0.791		75.8	50-150				
Perfluorododecanoic acid (PFDoA)	0.648	0.198	"	0.791		82.0	50-150				
Perfluorotridecanoic acid (PFTrDA)	0.672	0.198	"	0.791		85.0	50-150				
Perfluorotetradecanoic acid (PFTA)	0.750	0.198	"	0.791		94.9	50-150				
N-MeFOSAA	0.749	0.198	"	0.791		94.7	50-150				
N-EtFOSAA	0.711	0.198	"	0.791		89.9	50-150				
Perfluoropentanoic acid (PFPeA)	1.27	0.395	"	1.58		80.4	50-150				
Perfluoro-1-octanesulfonamide (FOSA)	0.663	0.198	"	0.791		83.9	50-150				
Perfluoro-1-heptanesulfonic acid (PFHpS)	0.664	0.198	"	0.755		88.0	50-150				
Perfluoro-1-decanesulfonic acid (PFDS)	0.551	0.191	"	0.763		72.3	50-150				
1H,1H,2H,2H-Perfluorooctanesulfonic acid (6:2 FTS)	2.78	0.751	"	3.00		92.6	50-150				
1H,1H,2H,2H-Perfluorodecanesulfonic acid (8:2 FTS)	2.88	0.759	"	3.04		94.7	50-150				
Perfluoro-n-butanoic acid (PFBA)	2.61	0.791	"	3.16		82.7	50-150				
Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	1.19	0.352	"	1.41		84.8	50-150				
Perfluoro-3,6-dioxaheptanoic acid (NFDHA)	1.40	0.395	"	1.58		88.6	50-150				
Perfluoro-4-oxapentanoic acid (PFMPA)	1.34	0.395	"	1.58		84.8	50-150				
Perfluoro-5-oxahexanoic acid (PFMBA)	1.31	0.395	"	1.58		82.6	50-150				

PFAS Target compounds by LC/MS-MS - Quality Control Data

York Analytical Laboratories, Inc. - Stratford

Analyte	Result	Reporting Limit	Units	Spike Level	Source* Result	%REC	%REC Limits	Flag	RPD	RPD Limit	Flag
Batch BC30258 - EPA 1633 Prep											
LCS (BC30258-BS1)							Prepared: 03/03/2023 Analyzed: 03/08/2023				
Perfluoro-1-pentanesulfonate (PFPeS)	0.556	0.186	ug/kg wet	0.743		74.9	50-150				
1H,1H,2H,2H-Perfluorohexanesulfonic acid (4:2 FTS)	2.64	0.741	"	2.96		89.1	50-150				
HFPO-DA (Gen-X)	1.45	0.791	"	1.58		91.6	50-150				
11CL-PF3OUdS	1.15	0.747	"	1.49		77.1	50-150				
9CL-PF3ONS	1.52	0.739	"	1.48		103	50-150				
ADONA	1.52	0.747	"	1.49		102	50-150				
Perfluorododecanesulfonic acid (PFDoS)	0.478	0.192	"	0.767		62.3	50-150				
Perfluoro-1-nonanesulfonic acid (PFNS)	0.663	0.190	"	0.759		87.3	50-150				
3-Perfluoropropyl propanoic acid (FPrPA)	3.06	0.988	"	3.16		96.7	50-150				
3-Perfluoropentyl propanoic acid (FPePA)	17.6	4.94	"	15.8		111	50-150				
3-Perfluoroheptyl propanoic acid (FHpPA)	15.3	4.94	"	15.8		96.5	50-150				
N-MeFOSE	6.84	1.98	"	7.91		86.5	50-150				
N-MeFOSA	0.700	0.198	"	0.791		88.5	50-150				
N-EtFOSE	6.34	1.98	"	7.91		80.2	50-150				
N-EtFOSA	0.741	0.198	"	0.791		93.7	50-150				
Surrogate: M3PFBS	*2.10*		*"*	*2.30*		*91.2*	*25-150*				
Surrogate: M5PFHxA	*2.27*		*"*	*2.47*		*91.7*	*25-150*				
Surrogate: M4PFHpA	*2.17*		*"*	*2.47*		*88.0*	*25-150*				
Surrogate: M3PFHxS	*2.32*		*"*	*2.34*		*99.1*	*25-150*				
Surrogate: Perfluoro-n-[13C8]octanoic acid (M8PFOA)	*2.15*		*"*	*2.47*		*86.9*	*25-150*				
Surrogate: M6PFDA	*1.18*		*"*	*1.24*		*95.3*	*25-150*				
Surrogate: M7PFUdA	*1.19*		*"*	*1.24*		*96.0*	*25-150*				
Surrogate: Perfluoro-n-[1,2-13C2]dodecanoic acid (MPFDoA)	*1.04*		*"*	*1.24*		*83.9*	*25-150*				
Surrogate: M2PFTeDA	*0.878*		*"*	*1.24*		*71.1*	*10-150*				
Surrogate: Perfluoro-n-[13C4]butanoic acid (MPFBA)	*9.17*		*"*	*9.88*		*92.8*	*25-150*				
Surrogate: Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)	*2.05*		*"*	*2.37*		*86.5*	*25-150*				
Surrogate: Perfluoro-n-[13C5]pentanoic acid (M5PFPeA)	*4.50*		*"*	*4.94*		*91.1*	*25-150*				
Surrogate: Perfluoro-1-[13C8]octanesulfonamide (M8FOSA)	*0.990*		*"*	*2.47*		*40.1*	*10-150*				
Surrogate: d3-N-MeFOSAA	*3.43*		*"*	*4.94*		*69.5*	*25-150*				
Surrogate: d5-N-EtFOSAA	*3.63*		*"*	*4.94*		*73.5*	*25-150*				
Surrogate: M2-6:2 FTS	*3.73*		*"*	*4.70*		*79.4*	*25-200*				
Surrogate: M2-8:2 FTS	*3.40*		*"*	*4.74*		*71.6*	*25-200*				
Surrogate: M9PFNA	*1.25*		*"*	*1.24*		*101*	*25-150*				
Surrogate: M2-4:2 FTS	*3.51*		*"*	*4.63*		*75.8*	*25-150*				
Surrogate: d-N-MeFOSA	*0.625*		*"*	*2.47*		*25.3*	*25-150*				
Surrogate: d-N-EtFOSA	*0.806*		*"*	*2.47*		*32.6*	*25-150*				
Surrogate: M3HFPO-DA	*9.58*		*"*	*9.88*		*96.9*	*25-150*				
Surrogate: d9-N-EtFOSE	*6.94*		*"*	*24.7*		*28.1*	*25-150*				
Surrogate: d7-N-MeFOSE	*6.83*		*"*	*24.7*		*27.6*	*25-150*				

PFAS Target compounds by LC/MS-MS - Quality Control Data

York Analytical Laboratories, Inc. - Stratford

Analyte	Result	Reporting Limit	Units	Spike Level	Source* Result	%REC	%REC Limits	Flag	RPD	RPD Limit	Flag
Batch BC30258 - EPA 1633 Prep											
LCS (BC30258-BS2)							Prepared: 03/03/2023 Analyzed: 03/08/2023				
Perfluorobutanesulfonic acid (PFBS)	3.11	0.175	ug/kg wet	3.49		89.0	50-150				
Perfluorohexanoic acid (PFHxA)	3.49	0.197	"	3.94		88.6	50-150				
Perfluoroheptanoic acid (PFHpA)	3.46	0.197	"	3.94		87.8	50-150				
Perfluorohexanesulfonic acid (PFHxS)	3.16	0.180	"	3.61		87.6	50-150				
Perfluorooctanoic acid (PFOA)	3.00	0.197	"	3.94		76.0	50-150				
Perfluorooctanesulfonic acid (PFOS)	3.38	0.183	"	3.67		92.2	50-150				
Perfluorononanoic acid (PFNA)	3.07	0.197	"	3.94		77.9	50-150				
Perfluorodecanoic acid (PFDA)	3.16	0.197	"	3.94		80.1	50-150				
Perfluoroundecanoic acid (PFUnA)	3.14	0.197	"	3.94		79.5	50-150				
Perfluorododecanoic acid (PFDoA)	3.63	0.197	"	3.94		91.9	50-150				
Perfluorotridecanoic acid (PFTrDA)	3.57	0.197	"	3.94		90.6	50-150				
Perfluorotetradecanoic acid (PFTA)	3.66	0.197	"	3.94		92.8	50-150				
N-MeFOSAA	3.64	0.197	"	3.94		92.4	50-150				
N-EtFOSAA	3.31	0.197	"	3.94		83.9	50-150				
Perfluoropentanoic acid (PFPeA)	6.79	0.394	"	7.89		86.0	50-150				
Perfluoro-1-octanesulfonamide (FOSA)	3.36	0.197	"	3.94		85.2	50-150				
Perfluoro-1-heptanesulfonic acid (PFHpS)	3.61	0.197	"	3.77		95.7	50-150				
Perfluoro-1-decanesulfonic acid (PFDS)	3.10	0.190	"	3.81		81.6	50-150				
1H,1H,2H,2H-Perfluorooctanesulfonic acid (6:2 FTS)	13.4	0.750	"	15.0		89.1	50-150				
1H,1H,2H,2H-Perfluorodecanesulfonic acid (8:2 FTS)	12.4	0.757	"	15.1		82.1	50-150				
Perfluoro-n-butanoic acid (PFBA)	13.8	0.789	"	15.8		87.6	50-150				
Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	6.57	0.351	"	7.02		93.5	50-150				
Perfluoro-3,6-dioxaheptanoic acid (NFDHA)	7.72	0.394	"	7.89		97.8	50-150				
Perfluoro-4-oxapentanoic acid (PFMPA)	6.86	0.394	"	7.89		86.9	50-150				
Perfluoro-5-oxahexanoic acid (PFMBA)	6.83	0.394	"	7.89		86.6	50-150				
Perfluoro-1-pentanesulfonate (PFPeS)	3.17	0.185	"	3.71		85.5	50-150				
1H,1H,2H,2H-Perfluorohexanesulfonic acid (4:2 FTS)	13.3	0.740	"	14.8		89.7	50-150				
HFPO-DA (Gen-X)	9.20	0.789	"	7.89		117	50-150				
11CL-PF3OUdS	7.07	0.746	"	7.46		94.9	50-150				
9CL-PF3ONS	8.15	0.738	"	7.38		110	50-150				
ADONA	8.63	0.746	"	7.46		116	50-150				
Perfluorododecanesulfonic acid (PFDoS)	2.71	0.191	"	3.83		70.7	50-150				
Perfluoro-1-nonanesulfonic acid (PFNS)	3.56	0.189	"	3.79		94.1	50-150				
3-Perfluoropropyl propanoic acid (FPrPA)	16.3	0.986	"	15.8		103	50-150				
3-Perfluoropentyl propanoic acid (FPePA)	90.2	4.93	"	78.9		114	50-150				
3-Perfluoroheptyl propanoic acid (FHpPA)	83.4	4.93	"	78.9		106	50-150				
N-MeFOSE	35.5	1.97	"	39.4		89.9	50-150				
N-MeFOSA	3.92	0.197	"	3.94		99.3	50-150				
N-EtFOSE	30.0	1.97	"	39.4		76.2	50-150				
N-EtFOSA	3.71	0.197	"	3.94		94.1	50-150				
Surrogate: M3PFBS	*2.25*		*"*	*2.30*		*98.0*	*25-150*				
Surrogate: M5PFHxA	*2.39*		*"*	*2.47*		*96.8*	*25-150*				
Surrogate: M4PFHpA	*2.41*		*"*	*2.47*		*97.6*	*25-150*				
Surrogate: M3PFHxS	*2.37*		*"*	*2.34*		*101*	*25-150*				
Surrogate: Perfluoro-n-[13C8]octanoic acid (M8PFOA)	*2.37*		*"*	*2.47*		*96.2*	*25-150*				
Surrogate: M6PFDA	*1.13*		*"*	*1.23*		*91.6*	*25-150*				
Surrogate: M7PFUdA	*1.16*		*"*	*1.23*		*94.4*	*25-150*				

PFAS Target compounds by LC/MS-MS - Quality Control Data

York Analytical Laboratories, Inc. - Stratford

Analyte	Result	Reporting Limit	Units	Spike Level	Source* Result	%REC	%REC Limits	Flag	RPD	RPD Limit	Flag
Batch BC30258 - EPA 1633 Prep											
LCS (BC30258-BS2)								Prepared: 03/03/2023 Analyzed: 03/08/2023			
Surrogate: Perfluoro-n-[1,2-13C2]dodecanoic acid (MPFDoA)	*1.07*		*ug/kg wet*	*1.23*		*86.5*	*25-150*				
Surrogate: M2PFTeDA	*0.987*		*"*	*1.23*		*80.1*	*10-150*				
Surrogate: Perfluoro-n-[13C4]butanoic acid (MPFBA)	*9.38*		*"*	*9.86*		*95.1*	*25-150*				
Surrogate: Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)	*2.15*		*"*	*2.36*		*90.9*	*25-150*				
Surrogate: Perfluoro-n-[13C5]pentanoic acid (M5PFPeA)	*4.80*		*"*	*4.93*		*97.4*	*25-150*				
Surrogate: Perfluoro-1-[13C8]octanesulfonamide (M8FOSA)	*0.672*		*"*	*2.47*		*27.2*	*10-150*				
Surrogate: d3-N-MeFOSAA	*3.89*		*"*	*4.93*		*78.8*	*25-150*				
Surrogate: d5-N-EtFOSAA	*3.98*		*"*	*4.93*		*80.6*	*25-150*				
Surrogate: M2-6:2 FTS	*4.44*		*"*	*4.69*		*94.6*	*25-200*				
Surrogate: M2-8:2 FTS	*3.92*		*"*	*4.73*		*82.9*	*25-200*				
Surrogate: M9PFNA	*1.24*		*"*	*1.23*		*100*	*25-150*				
Surrogate: M2-4:2 FTS	*4.04*		*"*	*4.63*		*87.4*	*25-150*				
Surrogate: d-N-MeFOSA	*0.430*		*"*	*2.47*		*17.4*	*25-150*				
Surrogate: d-N-EtFOSA	*0.554*		*"*	*2.47*		*22.5*	*25-150*				
Surrogate: M3HFPO-DA	*9.83*		*"*	*9.86*		*99.6*	*25-150*				
Surrogate: d9-N-EtFOSE	*5.06*		*"*	*24.7*		*20.5*	*25-150*				
Surrogate: d7-N-MeFOSE	*4.66*		*"*	*24.7*		*18.9*	*25-150*				
Duplicate (BC30258-DUP1)	*Source sample: 23C0153-18 (Duplicate)							Prepared: 03/03/2023 Analyzed: 03/08/2023			
Perfluorobutanesulfonic acid (PFBS)	ND	0.184	ug/kg dry		ND					30	
Perfluorohexanoic acid (PFHxA)	ND	0.208	"		ND					30	
Perfluoroheptanoic acid (PFHpA)	ND	0.208	"		ND					30	
Perfluorohexanesulfonic acid (PFHxS)	ND	0.191	"		ND					30	
Perfluorooctanoic acid (PFOA)	ND	0.208	"		ND					30	
Perfluorooctanesulfonic acid (PFOS)	ND	0.194	"		ND					30	
Perfluorononanoic acid (PFNA)	ND	0.208	"		ND					30	
Perfluorodecanoic acid (PFDA)	ND	0.208	"		ND					30	
Perfluoroundecanoic acid (PFUnA)	ND	0.208	"		ND					30	
Perfluorododecanoic acid (PFDoA)	ND	0.208	"		ND					30	
Perfluorotridecanoic acid (PFTrDA)	ND	0.208	"		ND					30	
Perfluorotetradecanoic acid (PFTA)	ND	0.208	"		ND					30	
N-MeFOSAA	ND	0.208	"		ND					30	
N-EtFOSAA	ND	0.208	"		ND					30	
Perfluoropentanoic acid (PFPeA)	ND	0.417	"		ND					30	
Perfluoro-1-octanesulfonamide (FOSA)	ND	0.208	"		ND					30	
Perfluoro-1-heptanesulfonic acid (PFHpS)	ND	0.208	"		ND					30	
Perfluoro-1-decanesulfonic acid (PFDS)	ND	0.201	"		ND					30	
1H,1H,2H,2H-Perfluorooctanesulfonic acid (6:2 FTS)	ND	0.792	"		ND					30	
1H,1H,2H,2H-Perfluorodecanesulfonic acid (8:2 FTS)	ND	0.801	"		ND					30	
Perfluoro-n-butanoic acid (PFBA)	ND	0.834	"		ND					30	
Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	ND	0.371	"		ND					30	
Perfluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	0.417	"		ND					30	
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	0.417	"		ND					30	
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	0.417	"		ND					30	
Perfluoro-1-pentanesulfonate (PFPeS)	ND	0.196	"		ND					30	

PFAS Target compounds by LC/MS-MS - Quality Control Data

York Analytical Laboratories, Inc. - Stratford

Analyte	Result	Reporting Limit	Units	Spike Level	Source* Result	%REC	%REC Limits	Flag	RPD	RPD Limit	Flag
Batch BC30258 - EPA 1633 Prep											
Duplicate (BC30258-DUP1)	*Source sample: 23C0153-18 (Duplicate)								Prepared: 03/03/2023 Analyzed: 03/08/2023		
1H,1H,2H,2H-Perfluorohexanesulfonic acid (4:2 FTS)	ND	0.782	ug/kg dry		ND					30	
HFPO-DA (Gen-X)	ND	0.834	"		ND					30	
11CL-PF3OUdS	ND	0.788	"		ND					30	
9CL-PF3ONS	ND	0.780	"		ND					30	
ADONA	ND	0.788	"		ND					30	
Perfluorododecanesulfonic acid (PFDoS)	ND	0.202	"		ND					30	
Perfluoro-1-nonanesulfonic acid (PFNS)	ND	0.200	"		ND					30	
3-Perfluoropropyl propanoic acid (FPrPA)	ND	1.04	"		ND					30	
3-Perfluoropentyl propanoic acid (FPePA)	ND	5.21	"		ND					30	
3-Perfluoroheptyl propanoic acid (FHpPA)	ND	5.21	"		ND					30	
N-MeFOSE	ND	2.08	"		ND					30	
N-MeFOSA	ND	0.208	"		ND					30	
N-EtFOSE	ND	2.08	"		ND					30	
N-EtFOSA	ND	0.208	"		ND					30	
Surrogate: M3PFBS	*2.40*		*"*	*2.43*		*99.0*	*25-150*				
Surrogate: M5PFHxA	*2.72*		*"*	*2.61*		*104*	*25-150*				
Surrogate: M4PFHpA	*2.77*		*"*	*2.61*		*106*	*25-150*				
Surrogate: M3PFHxS	*2.50*		*"*	*2.47*		*101*	*25-150*				
Surrogate: Perfluoro-n-[13C8]octanoic acid (M8PFOA)	*2.53*		*"*	*2.61*		*97.0*	*25-150*				
Surrogate: M6PFDA	*1.29*		*"*	*1.30*		*99.4*	*25-150*				
Surrogate: M7PFUdA	*1.25*		*"*	*1.30*		*96.3*	*25-150*				
Surrogate: Perfluoro-n-[1,2-13C2]dodecanoic acid (MPFDoA)	*1.25*		*"*	*1.30*		*96.0*	*25-150*				
Surrogate: M2PFTeDA	*1.07*		*"*	*1.30*		*82.5*	*10-150*				
Surrogate: Perfluoro-n-[13C4]butanoic acid (MPFBA)	*10.2*		*"*	*10.4*		*97.5*	*25-150*				
Surrogate: Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)	*2.39*		*"*	*2.50*		*95.7*	*25-150*				
Surrogate: Perfluoro-n-[13C5]pentanoic acid (M5PFPeA)	*5.37*		*"*	*5.21*		*103*	*25-150*				
Surrogate: Perfluoro-1-[13C8]octanesulfonamide (M8FOSA)	*0.942*		*"*	*2.61*		*36.1*	*10-150*				
Surrogate: d3-N-MeFOSAA	*4.22*		*"*	*5.21*		*81.1*	*25-150*				
Surrogate: d5-N-EtFOSAA	*4.37*		*"*	*5.21*		*83.9*	*25-150*				
Surrogate: M2-6:2 FTS	*4.00*		*"*	*4.96*		*80.6*	*25-200*				
Surrogate: M2-8:2 FTS	*3.83*		*"*	*5.00*		*76.6*	*25-200*				
Surrogate: M9PFNA	*1.34*		*"*	*1.30*		*103*	*25-150*				
Surrogate: M2-4:2 FTS	*3.99*		*"*	*4.89*		*81.6*	*25-150*				
Surrogate: d-N-MeFOSA	*0.519*		*"*	*2.61*		*19.9*	*25-150*				
Surrogate: d-N-EtFOSA	*0.631*		*"*	*2.61*		*24.2*	*25-150*				
Surrogate: M3HFPO-DA	*11.1*		*"*	*10.4*		*107*	*25-150*				
Surrogate: d9-N-EtFOSE	*5.51*		*"*	*26.1*		*21.2*	*25-150*				
Surrogate: d7-N-MeFOSE	*5.89*		*"*	*26.1*		*22.6*	*25-150*				

Miscellaneous Physical Parameters - Quality Control Data

York Analytical Laboratories, Inc. - Stratford

Analyte	Result	Reporting Limit	Units	Spike Level	Source* Result	%REC	%REC Limits	Flag	RPD	RPD Limit	Flag
Batch BC30375 - % Solids Prep											
Duplicate (BC30375-DUP1)	*Source sample: 23C0071-03 (Duplicate)							Prepared & Analyzed: 03/06/2023			
% Solids	92.7	0.100	%		92.3				0.419	20	
Duplicate (BC30375-DUP2)	*Source sample: 23C0079-05 (IRRC BLUESTONE COMP-5)							Prepared & Analyzed: 03/06/2023			
% Solids	95.5	0.100	%		95.5				0.00906	20	

Sample and Data Qualifiers Relating to This Work Order

Definitions and Other Explanations

*	Analyte is not certified or the state of the samples origination does not offer certification for the Analyte.
ND	NOT DETECTED - the analyte is not detected at the Reported to level (LOQ/RL or LOD/MDL)
RL	REPORTING LIMIT - the minimum reportable value based upon the lowest point in the analyte calibration curve.
LOQ	LIMIT OF QUANTITATION - the minimum concentration of a target analyte that can be reported within a specified degree of confidence. This is the lowest point in an analyte calibration curve that has been subjected to all steps of the processing/analysis and verified to meet defined criteria. This is based upon NELAC 2009 Standards and applies to all analyses.
LOD	LIMIT OF DETECTION - a verified estimate of the minimum concentration of a substance in a given matrix that an analytical process can reliably detect. This is based upon NELAC 2009 Standards and applies to all analyses conducted under the auspices of EPA SW-846.
MDL	METHOD DETECTION LIMIT - a statistically derived estimate of the minimum amount of a substance an analytical system can reliably detect with a 99% confidence that the concentration of the substance is greater than zero. This is based upon 40 CFR Part 136 Appendix B and applies only to EPA 600 and 200 series methods.
Reported to	This indicates that the data for a particular analysis is reported to either the LOD/MDL, or the LOQ/RL. In cases where the "Reported to" is located above the LOD/MDL, any value between this and the LOQ represents an estimated value which is "J" flagged accordingly. This applies to volatile and semi-volatile target compounds only.
NR	Not reported
RPD	Relative Percent Difference
Wet	The data has been reported on an as-received (wet weight) basis
Low Bias	Low Bias flag indicates that the recovery of the flagged analyte is below the laboratory or regulatory lower control limit. The data user should take note that this analyte may be biased low but should evaluate multiple lines of evidence including the LCS and site-specific MS/MSD data to draw bias conclusions. In cases where no site-specific MS/MSD was requested, only the LCS data can be used to evaluate such bias.
High Bias	High Bias flag indicates that the recovery of the flagged analyte is above the laboratory or regulatory upper control limit. The data user should take note that this analyte may be biased high but should evaluate multiple lines of evidence including the LCS and site-specific MS/MSD data to draw bias conclusions. In cases where no site-specific MS/MSD was requested, only the LCS data can be used to evaluate such bias.
Non-Dir.	Non-dir. flag (Non-Directional Bias) indicates that the Relative Percent Difference (RPD) (a measure of precision) among the MS and MSD data is outside the laboratory or regulatory control limit. This alerts the data user where the MS and MSD are from site-specific samples that the RPD is high due to either non-homogeneous distribution of target analyte between the MS/MSD or indicates poor reproducibility for other reasons.

If EPA SW-846 method 8270 is included herein it is noted that the target compound N-nitrosodiphenylamine (NDPA) decomposes in the gas chromatographic inlet and cannot be separated from diphenylamine (DPA). These results could actually represent 100% DPA, 100% NDPA or some combination of the two. For this reason, York reports the combined result for n-nitrosodiphenylamine and diphenylamine for either of these compounds as a combined concentration as Diphenylamine.

If Total PCBs are detected and the target aroclors reported are "Not detected", the Total PCB value is reported due to the presence of either or both Aroclors 1262 and 1268 which are non-target aroclors for some regulatory lists.

2-chloroethylvinyl ether readily breaks down under acidic conditions. Samples that are acid preserved, including standards will exhibit breakdown. The data user should take note.

Certification for pH is no longer offered by NYDOH ELAP.

Semi-Volatile and Volatile analyses are reported down to the LOD/MDL, with values between the LOD/MDL and the LOQ being "J" flagged as estimated results.

For analyses by EPA SW-846-8270D, the Limit of Quantitation (LOQ) reported for benzidine is based upon the lowest standard used for calibration and is not a verified LOQ due to this compound's propensity for oxidative losses during extraction/concentration procedures and non-reproducible chromatographic performance.

23C0079

Cooler: Yes ☐ No ☐
Coolant: IPK ☐ ICE ☐ No ☐
Temp °C Pg of

PHOENIX Environmental Laboratories, Inc.

CHAIN OF CUSTODY RECORD

Page 1 of 1

587 East Middle Turnpike, P.O. Box 370, Manchester, CT 06040
Email: info@phoenixlabs.com Fax (860) 645-0823
Client Services (860) 645-8726

Contact Options:
☐ Fax: 860-645-0823
☐ Phone: 800-827-5426
☐ Email: HelenG@PhoenixLabs.com

Customer: York Analtyical Laboratories
Address: 132-02 89th Avenue
Richmond Hill, NY

Project #: GCN48307
Report to: HelenG@PhoenixLabs.com / Helen Geoghegan
Invoice to: AccountsPayable@PhoenixLabs.com
Quote# :

Project P.O: GCN48307

This section MUST be completed with Bottle Quantities.

Client Sample - Information - Identification

Sampler's Signature _____ Date: _____

Matrix Code:
DW=Drinking Water **GW**=Ground Water **SW**=Surface Water **WW**=Waste Water
RW=Raw Water **SE**=Sediment **SL**=Sludge **S**=Soil **SD**=Solid **W**=Wipe
OIL=Oil **B**=Bulk **L**=Liquid

Analysis Request

	Phoenix Sample ID	Sample Matrix	Date Sampled	Time Sampled	PFAS (40) Draft 1633	8oz HDPE Plastic As Is
	IRRC BLUESTONE COMP-1	SOIL	2/23/2023	9:00 AM	x	1
	IRRC BLUESTONE COMP-2	SOIL	2/23/2023	9:05 AM	x	1
	IRRC BLUESTONE COMP-3	SOIL	2/23/2023	9:10 AM	x	1
	IRRC BLUESTONE COMP-4	SOIL	2/23/2023	9:15 AM	x	1
	IRRC BLUESTONE COMP-5	SOIL	2/23/2023	9:20 AM	x	1

Relinquished by:	Accepted by:	Date:	Time:
[signature]	[signature]	2.27.23	0930
[signature]	[signature]	2/27/23	1253
[signature]	[signature]	2/27/23	1345

Comments, Special Requirements or Regulations:

5.7°C Ice

Please send notice as soon as possible not exceeding 24 hours of obtaining valid data, of the results of all drinking water samples that exceed any EPA or Department-established maximum contaminant level, maximum residual disinfectant level or reportable concentration.

Please notify Phoenix Environmental Laboratories, Inc. immediately and prior to conducting analysis if certification is not held for the analyses requested.

Turnaround:
☐ 1 Day
☐ 2 Days
☐ 3 Days
☐ 5 Days
☐ 10 Days
☒ Standard
☐ Other_____

Report Type:
☒ Standard PDF
☐ Full Data Package
☐ NJ Reduced Deliverable
☐ NJ Full Deliverable
☒ NY ASP B

EDD Format:
☐ Excel
☐ GIS/Key
☐ EQuIS
☐ NJ Hazsite EDD
☐ NY EZ EDD (ASP)
☐ Other:_____

State Criteria:
NJ: Impact to GW Soil Screening
NY: 375 Unrestricted

What State were samples collected?
NY

Philip D. Murphy
Governor

Sheila Y. Oliver
Lieutenant Governor

State of New Jersey
DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT
LABOR STANDARDS AND SAFETY ENFORCEMENT
DIVISION OF PUBLIC SAFETY & OCCUPATIONAL SAFETY & HEALTH
Office of Safety Compliance
P.O. Box 386
Trenton, NJ 08625-0386
(609) 292-2096 • Fax: (609) 777-4589

Robert Asaro-Angelo
Commissioner

Certificate No: 004851

Expiration Date: 03/31/2024

MINE REGISTRATION CERTIFICATE

ISSUED TO: Tilcon New York Inc-Mt Hope Quarry

LOCATION: Tilcon New York Inc-Mt Hope Quarry
625 Mt Hope Rd
Wharton, NJ

BLK NO(S): SEE BELOW

LOT NO(S): SEE BELOW

COUNTY: Morris

FEE: $3,000.00

Issued pursuant to the provisions of N.J.S.A 34:6-98.1 et. seq. Failure to comply with the provisions of the Act, and the Rules promulgated thereunder, shall be good cause for the revocation of this Certificate.

Commissioner

THIS CERTIFICATE MUST BE POSTED AT ALL TIMES

BLOCK NO(S)	LOT NO(S)
625 Mt Hope Rd	
20001, 70001,, 20101	501, 502, 7, 2, 6

Appendix E E

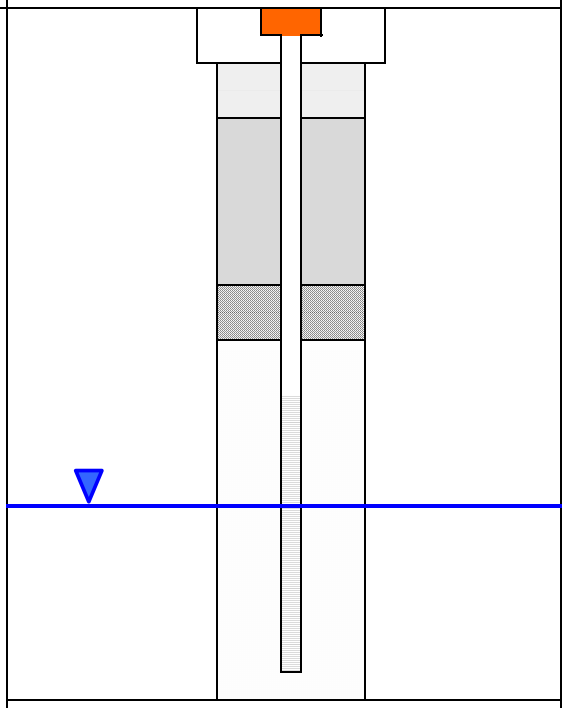
13-12 Beach Channel Drive

Well Construction Logs

IMPACT ENVIRONMENTAL
170 Keyland Court
Bohemia, New York 11716
TEL: (631) 268-8800
FAX: (631) 269-1599

PROJECT NAME:	Beach Channel Drive	BORING NUMBER:	**MW-1R**
PROJECT ADDRESS:	13-12 Beach Channel Drive Queens, NY		
DRILLING CONTRACTOR:	Coastal Environmental Solutions, Inc	BORING LOCATION:	South of new building
DRILLING METHOD:	3.25 inch OD Probe Rods	TOTAL DEPTH (FBG): 24	MEASURING POINT: Ground Surface
DRILLING EQUIPMENT:	Geoprobe® 7822DT	GROUND SURFACE ELEVATION:	DATE COMPLETED: 6/7/2023
SAMPLING METHOD:	N/A	DEPTH TO GROUNDWATER (FBG): 18.45	
HAMMER WEIGHT: N/A	DROP: N/A	RESPONSIBLE PROFESSIONAL: Thomas Stone	LOGGED BY: Amanda Bischak

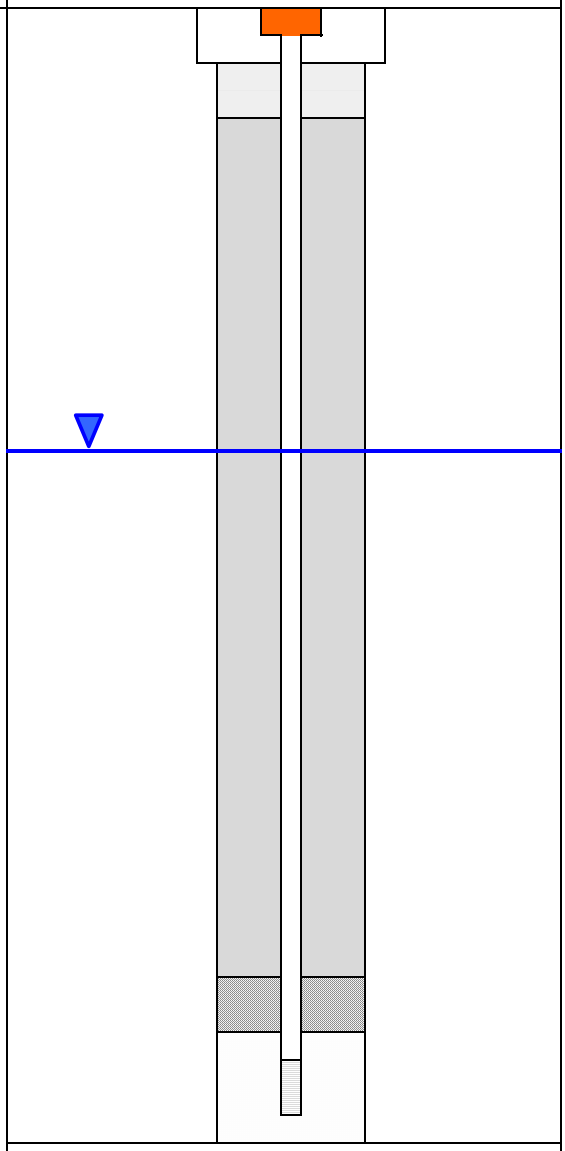
DEPTH (FT)	WELL CONSTRUCTION	WELL LOG
0.0	5-in diameter flush mount roadbox	
	Locking J-Plug	
2.0	Neat Cement Grout	
4.0		
6.0		
8.0		
	2" diameter Schedule 40 PVC Riser	
10.0	Clean Sand Backfill	
12.0		
	Groundwater Interface	
14.0		
16.0		
18.0		
	Bentonite Chip Seal	
20.0		
22.0	#2 Morie Sand Pack	
	2" diameter 0.020" Slot, Schedule 40 PVC Screen	
24.0	End Cap	
26.0		
28.0		
30.0		
32.0		
34.0		
36.0		
38.0		
40.0		
42.0		
44.0		
46.0		
48.0		
50.0		



PROJECT NAME:	Beach Channel Drive	BORING NUMBER:	**MW-1IR**
PROJECT ADDRESS:	13-12 Beach Channel Drive Queens, NY		
DRILLING CONTRACTOR:	Coastal Environmental Solutions, Inc	BORING LOCATION:	South of new building
DRILLING METHOD:	3.25 inch OD Probe Rods	TOTAL DEPTH (FBG): 40	MEASURING POINT: Ground Surface
DRILLING EQUIPMENT:	Geoprobe® 7822DT	GROUND SURFACE ELEVATION:	DATE COMPLETED: 6/6/2023
SAMPLING METHOD:	N/A	DEPTH TO GROUNDWATER (FBG): 16.26	
HAMMER WEIGHT: N/A	DROP: N/A	RESPONSIBLE PROFESSIONAL: Thomas Stone	LOGGED BY: Amanda Bischak

DEPTH (FT)	WELL CONSTRUCTION
0.0	3-ft Steel Stubbed Up Collar with Locking Lid
	Locking J-Plug
2.0	Neat Cement Grout
4.0	
6.0	
8.0	
	2" diameter Schedule 40 PVC Riser
10.0	Clean Sand Backfill
12.0	
	Groundwater Interface
14.0	
16.0	
18.0	
20.0	
22.0	
24.0	
26.0	
28.0	
30.0	
32.0	
34.0	
36.0	Bentonite Chip Seal
38.0	#2 Morie Sand Pack
	2" diameter 0.020" Slot, Schedule 40 PVC Screen
40.0	End Cap
42.0	
44.0	
46.0	
48.0	
50.0	

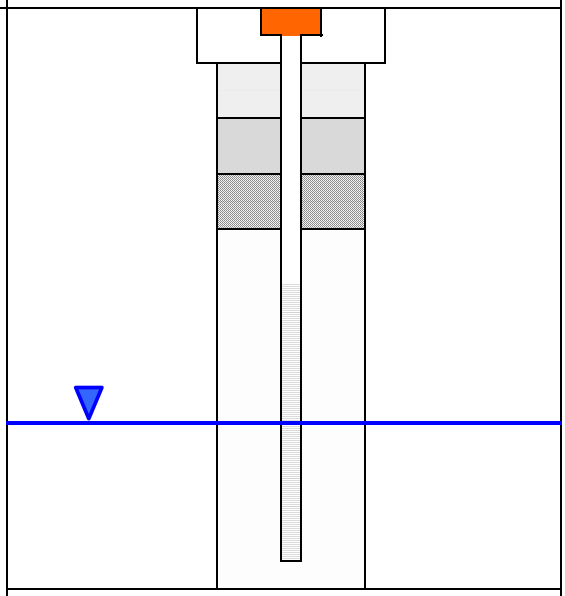
WELL LOG



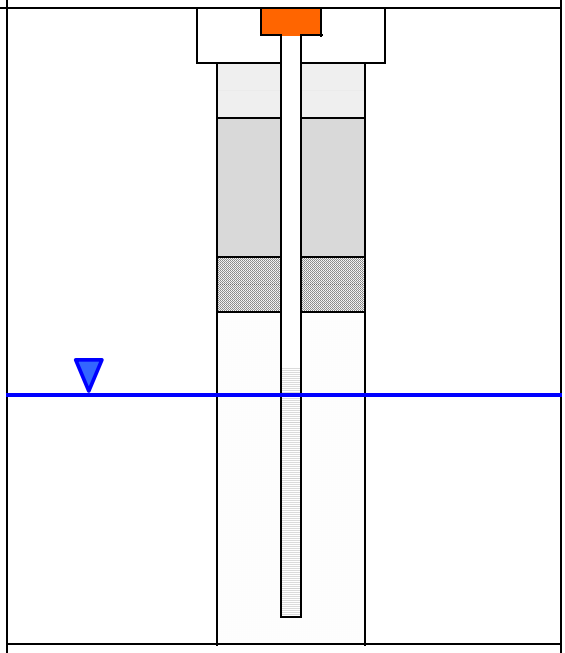
PROJECT NAME:	Beach Channel Drive	BORING NUMBER:	**MW-3R**
PROJECT ADDRESS:	13-12 Beach Channel Drive Queens, NY		
DRILLING CONTRACTOR:	Coastal Environmental Solutions, Inc	BORING LOCATION:	South of new building
DRILLING METHOD:	3.25 inch OD Probe Rods	TOTAL DEPTH (FBG): 20	MEASURING POINT: Ground Surface
DRILLING EQUIPMENT:	Geoprobe® 7822DT	GROUND SURFACE ELEVATION:	DATE COMPLETED: 6/8/2023
SAMPLING METHOD:	N/A	DEPTH TO GROUNDWATER (FBG): 15	
HAMMER WEIGHT: N/A	DROP: N/A	RESPONSIBLE PROFESSIONAL: Thomas Stone	LOGGED BY: Amanda Bischak

DEPTH (FT)	WELL CONSTRUCTION
0.0	5-in diameter flush mount roadbox
	Locking J-Plug
2.0	Neat Cement Grout
4.0	2" diameter Schedule 40 PVC Riser
	Clean Sand Backfill
6.0	
	Bentonite Chip Seal
8.0	
10.0	
12.0	
14.0	Groundwater Interface
16.0	
18.0	#2 Morie Sand Pack
	2" diameter 0.020" Slot, Schedule 40 PVC Screen
20.0	End Cap
22.0	
24.0	
26.0	
28.0	
30.0	
32.0	
34.0	
36.0	
38.0	
40.0	
42.0	
44.0	
46.0	
48.0	
50.0	

WELL LOG



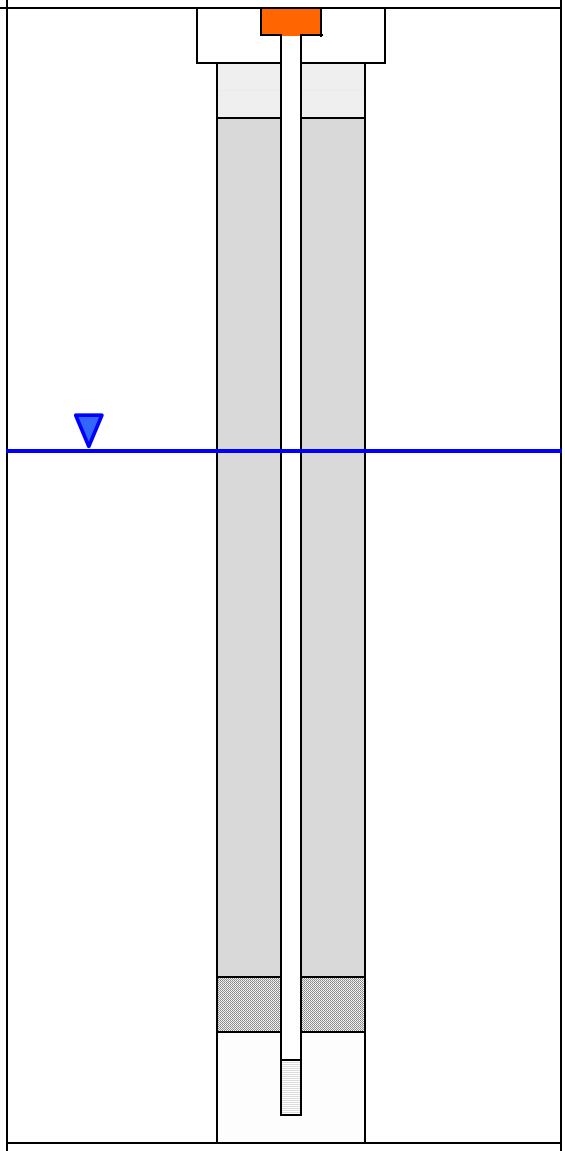
PROJECT NAME:	Beach Channel Drive	BORING NUMBER:	**MW-4R**
PROJECT ADDRESS:	13-12 Beach Channel Drive Queens, NY		
DRILLING CONTRACTOR:	Coastal Environmental Solutions, Inc	BORING LOCATION:	Sidewalk adjacent to Beach Channel Dr.
DRILLING METHOD:	3.25 inch OD Probe Rods	TOTAL DEPTH (FBG): 23	MEASURING POINT: Ground Surface
DRILLING EQUIPMENT:	Geoprobe® 7822DT	GROUND SURFACE ELEVATION:	DATE COMPLETED: 6/5/2023
SAMPLING METHOD:	N/A	DEPTH TO GROUNDWATER (FBG): 13.77	
HAMMER WEIGHT: N/A	DROP: N/A	RESPONSIBLE PROFESSIONAL: Thomas Stone	LOGGED BY: Amanda Bischak

DEPTH (FT)	WELL CONSTRUCTION	WELL LOG
0.0	3-ft Steel Stubbed Up Collar with Locking Lid	
	Locking J-Plug	
2.0	Neat Cement Grout	
4.0	2" diameter Schedule 40 PVC Riser	
	Clean Sand Backfill	
6.0		
8.0		
	Bentonite Chip Seal	
10.0		
12.0		
	Groundwater Interface	
14.0		
16.0		
18.0		
20.0	#2 Morie Sand Pack	
	2" diameter 0.020" Slot, Schedule 40 PVC Screen	
22.0	End Cap	
24.0		
26.0		
28.0		
30.0		
32.0		
34.0		
36.0		
38.0		
40.0		
42.0		
44.0		
46.0		
48.0		
50.0		

PROJECT NAME:	Beach Channel Drive	BORING NUMBER:	**MW-7IR**
PROJECT ADDRESS:	13-12 Beach Channel Drive Queens, NY		
DRILLING CONTRACTOR:	Coastal Environmental Solutions, Inc	BORING LOCATION:	South of new building
DRILLING METHOD:	3.25 inch OD Probe Rods	TOTAL DEPTH (FBG): 23	MEASURING POINT: Ground Surface
DRILLING EQUIPMENT:	Geoprobe® 7822DT	GROUND SURFACE ELEVATION:	DATE COMPLETED: 6/8/2023
SAMPLING METHOD:	N/A	DEPTH TO GROUNDWATER (FBG): 18	
HAMMER WEIGHT: N/A	DROP: N/A	RESPONSIBLE PROFESSIONAL: Thomas Stone	LOGGED BY: Amanda Bischak

DEPTH (FT)	WELL CONSTRUCTION
0.0	3-ft Steel Stubbed Up Collar with Locking Lid
	Locking J-Plug
2.0	Neat Cement Grout
4.0	
6.0	
8.0	
	2" diameter Schedule 40 PVC Riser
10.0	Clean Sand Backfill
12.0	
	Groundwater Interface
14.0	
16.0	
18.0	
20.0	
22.0	
24.0	
26.0	
28.0	
30.0	
32.0	
34.0	
36.0	Bentonite Chip Seal
38.0	#2 Morie Sand Pack
	2" diameter 0.020" Slot, Schedule 40 PVC Screen
40.0	End Cap
42.0	
44.0	
46.0	
48.0	
50.0	

WELL LOG



PROJECT NAME:	Beach Channel Drive	BORING NUMBER:	**MW-8R**
PROJECT ADDRESS:	13-12 Beach Channel Drive Queens, NY		
DRILLING CONTRACTOR:	Coastal Environmental Solutions, Inc	BORING LOCATION:	South of new building
DRILLING METHOD:	3.25 inch OD Probe Rods	TOTAL DEPTH (FBG): 21	MEASURING POINT: Ground Surface
DRILLING EQUIPMENT:	Geoprobe® 7822DT	GROUND SURFACE ELEVATION:	DATE COMPLETED: 6/6/2023
SAMPLING METHOD:	N/A	DEPTH TO GROUNDWATER (FBG): 14.52	
HAMMER WEIGHT: N/A	DROP: N/A	RESPONSIBLE PROFESSIONAL: Thomas Stone	LOGGED BY: Amanda Bischak

DEPTH (FT)	WELL CONSTRUCTION
0.0	5-in diameter flush mount roadbox
	Locking J-Plug
2.0	Neat Cement Grout
4.0	2" diameter Schedule 40 PVC Riser
	Clean Sand Backfill
6.0	
	Bentonite Chip Seal
8.0	
10.0	
12.0	
	Groundwater Interface
14.0	
16.0	
18.0	#2 Morie Sand Pack
	2" diameter 0.020" Slot, Schedule 40 PVC Screen
20.0	End Cap
22.0	
24.0	
26.0	
28.0	
30.0	
32.0	
34.0	
36.0	
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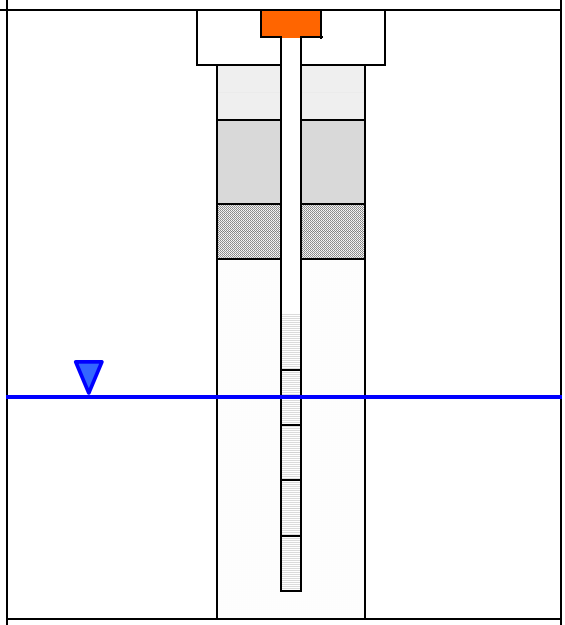

PROJECT NAME:	Beach Channel Drive	BORING NUMBER:	**MW-10R**
PROJECT ADDRESS:	13-12 Beach Channel Drive Queens, NY		
DRILLING CONTRACTOR:	Coastal Environmental Solutions, Inc	BORING LOCATION:	South of new building
DRILLING METHOD:	3.25 inch OD Probe Rods	TOTAL DEPTH (FBG): 21	MEASURING POINT: Ground Surface
DRILLING EQUIPMENT:	Geoprobe® 7822DT	GROUND SURFACE ELEVATION:	DATE COMPLETED: 6/6/2023
SAMPLING METHOD:	N/A	DEPTH TO GROUNDWATER (FBG): 14.15	
HAMMER WEIGHT: N/A	DROP: N/A	RESPONSIBLE PROFESSIONAL: Thomas Stone	LOGGED BY: Amanda Bischak

DEPTH (FT)	WELL CONSTRUCTION
0.0	3-ft Steel Stubbed Up Collar with Locking Lid
	Locking J-Plug
2.0	Neat Cement Grout
4.0	2" diameter Schedule 40 PVC Riser
	Clean Sand Backfill
6.0	
8.0	Bentonite Chip Seal
10.0	
12.0	
	Groundwater Interface
14.0	
16.0	#2 Morie Sand Pack
	2" diameter 0.020" Slot, Schedule 40 PVC Screen
18.0	End Cap
20.0	
22.0	
24.0	
26.0	
28.0	
30.0	
32.0	
34.0	
36.0	
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40.0	
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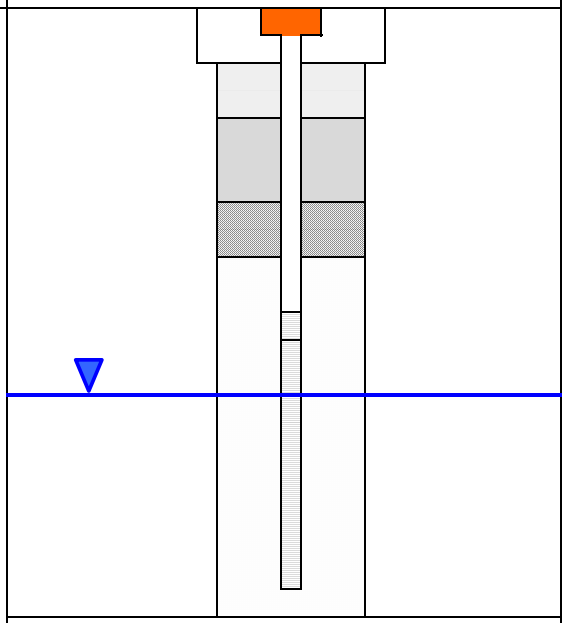
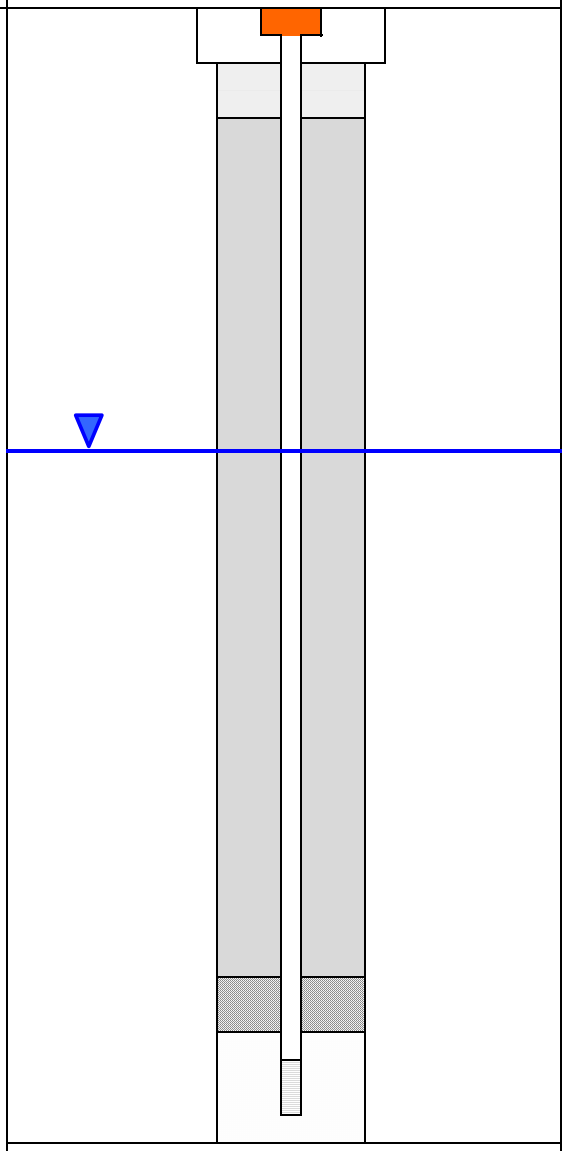
WELL LOG



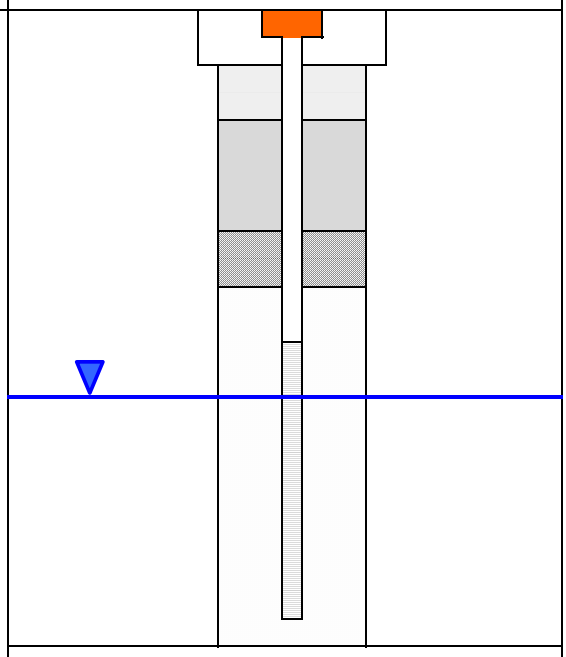
PROJECT NAME:	Beach Channel Drive	BORING NUMBER:	**MW-10IR**
PROJECT ADDRESS:	13-12 Beach Channel Drive Queens, NY		
DRILLING CONTRACTOR:	Coastal Environmental Solutions, Inc	BORING LOCATION:	South of new building
DRILLING METHOD:	3.25 inch OD Probe Rods	TOTAL DEPTH (FBG): 40	MEASURING POINT: Ground Surface
DRILLING EQUIPMENT:	Geoprobe® 7822DT	GROUND SURFACE ELEVATION:	DATE COMPLETED: 6/6/2023
SAMPLING METHOD:	N/A	DEPTH TO GROUNDWATER (FBG): 16.26	
HAMMER WEIGHT: N/A	DROP: N/A	RESPONSIBLE PROFESSIONAL: Thomas Stone	LOGGED BY: Amanda Bischak

DEPTH (FT)	WELL CONSTRUCTION
0.0	3-ft Steel Stubbed Up Collar with Locking Lid
	Locking J-Plug
2.0	Neat Cement Grout
4.0	
6.0	
8.0	
	2" diameter Schedule 40 PVC Riser
10.0	Clean Sand Backfill
12.0	
	Groundwater Interface
14.0	
16.0	
18.0	
20.0	
22.0	
24.0	
26.0	
28.0	
30.0	
32.0	
34.0	
36.0	Bentonite Chip Seal
38.0	
	#2 Morie Sand Pack
40.0	2" diameter 0.020" Slot, Schedule 40 PVC Screen
	End Cap
42.0	
44.0	
46.0	
48.0	
50.0	

WELL LOG

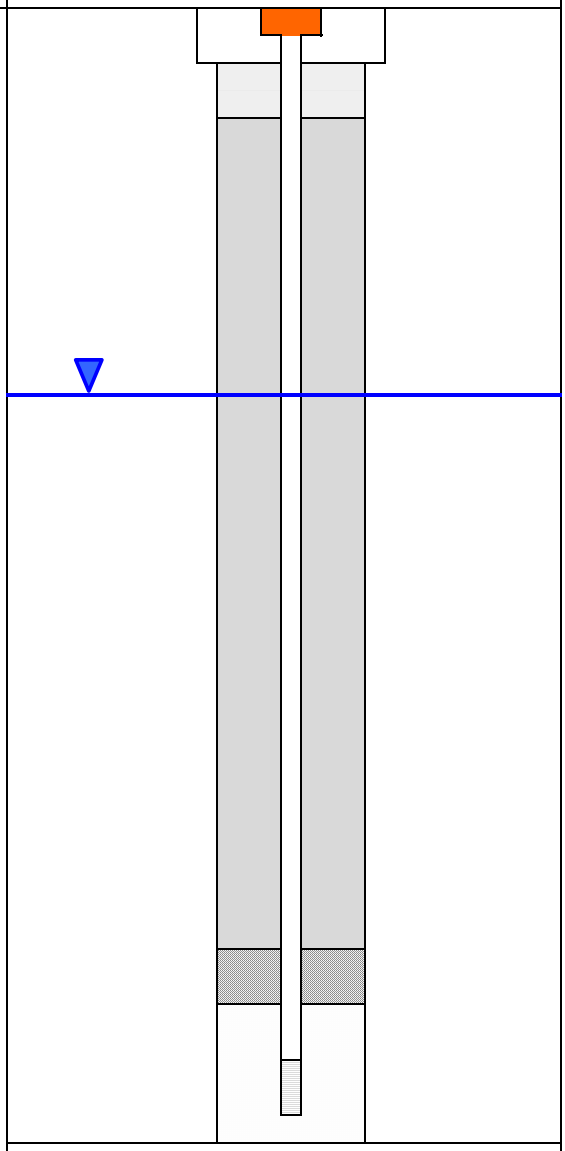


PROJECT NAME:	Beach Channel Drive	BORING NUMBER:	**MW-11R**
PROJECT ADDRESS:	13-12 Beach Channel Drive Queens, NY		
DRILLING CONTRACTOR:	Coastal Environmental Solutions, Inc	BORING LOCATION:	Sidewalk adjacent to Beach Channel Dr.
DRILLING METHOD:	3.25 inch OD Probe Rods	TOTAL DEPTH (FBG): 22	MEASURING POINT: Ground Surface
DRILLING EQUIPMENT:	Geoprobe® 7822DT	GROUND SURFACE ELEVATION:	DATE COMPLETED: 6/5/2023
SAMPLING METHOD:	N/A	DEPTH TO GROUNDWATER (FBG): 13.67	
HAMMER WEIGHT: N/A	DROP: N/A	RESPONSIBLE PROFESSIONAL: Thomas Stone	LOGGED BY: Amanda Bischak

DEPTH (FT)	WELL CONSTRUCTION	WELL LOG
0.0	3-ft Steel Stubbed Up Collar with Locking Lid	
	Locking J-Plug	
2.0	Neat Cement Grout	
4.0		
	2" diameter Schedule 40 PVC Riser	
6.0	Clean Sand Backfill	
8.0		
	Bentonite Chip Seal	
10.0		
12.0		
	Groundwater Interface	
14.0		
16.0		
18.0		
20.0	#2 Morie Sand Pack	
	2" diameter 0.020" Slot, Schedule 40 PVC Screen	
22.0	End Cap	
24.0		
26.0		
28.0		
30.0		
32.0		
34.0		
36.0		
38.0		
40.0		
42.0		
44.0		
46.0		
48.0		
50.0		

PROJECT NAME:	Beach Channel Drive	BORING NUMBER:	**MW-11IR**
PROJECT ADDRESS:	13-12 Beach Channel Drive Queens, NY		
DRILLING CONTRACTOR:	Coastal Environmental Solutions, Inc	BORING LOCATION:	Sidewalk adjacent to Beach Channel Dr.
DRILLING METHOD:	3.25 inch OD Probe Rods	TOTAL DEPTH (FBG): 40	MEASURING POINT: Ground Surface
DRILLING EQUIPMENT:	Geoprobe® 7822DT	GROUND SURFACE ELEVATION:	DATE COMPLETED: 6/5/2023
SAMPLING METHOD:	N/A	DEPTH TO GROUNDWATER (FBG): 13.67	
HAMMER WEIGHT: N/A	DROP: N/A	RESPONSIBLE PROFESSIONAL: Thomas Stone	LOGGED BY: Amanda Bischak

DEPTH (FT)	WELL CONSTRUCTION	WELL LOG
0.0	3-ft Steel Stubbed Up Collar with Locking Lid	
	Locking J-Plug	
2.0	Neat Cement Grout	
4.0		
6.0		
8.0		
	2" diameter Schedule 40 PVC Riser	
10.0	Clean Sand Backfill	
12.0		
	Groundwater Interface	
14.0		
16.0		
18.0		
20.0		
22.0		
24.0		
26.0		
28.0		
30.0		
32.0		
34.0	Bentonite Chip Seal	
36.0		
38.0	#2 Morie Sand Pack	
	2" diameter 0.020" Slot, Schedule 40 PVC Screen	
40.0	End Cap	
42.0		
44.0		
46.0		
48.0		
50.0		



Appendix F F

13-12 Beach Channel Drive

Excavation Work Plan

IMPACT ENVIRONMENTAL
170 Keyland Court
Bohemia, New York 11716
TEL: (631) 268-8800
FAX: (631) 269-1599

APPENDIX F – EXCAVATION WORK PLAN (EWP)

E-1 NOTIFICATION

At least 15 days prior to the start of any activity that is anticipated to encounter remaining contamination or breach or alter the site's cover system, the site owner or their representative will notify the NYSDEC contacts listed in the table below. Table E1 includes contact information for the above notification. The information on this table will be updated as necessary to provide accurate contact information. A full listing of site-related contact information is provided in **Appendix B.**

Table E1: Notifications*

Christopher Allan	(718) 482-4065 Christopher.allan@dec.ny.gov
Cris-Sandra Maycock	(718) 482-4679 Cris-sandra.maycock@dec.ny.gov
Kelly Lewandowski	(518) 402-9569 kelly.lewandowski@dec.ny.gov

* Note: Notifications are subject to change and will be updated as necessary.

This notification will include:

- A detailed description of the work to be performed, including the location and areal extent of excavation, plans/drawings for site re-grading, intrusive elements or utilities to be installed below the soil cover, estimated volumes of contaminated soil to be excavated, any modifications of truck routes, and any work that may impact an engineering control;
- A summary of environmental conditions anticipated to be encountered in the work areas, including the nature and concentration levels of contaminants of concern, potential presence of grossly contaminated media, and plans for any pre-construction sampling;
- A schedule for the work, detailing the start and completion of all intrusive work, and submittals (e.g., reports) to the NYSDEC documenting the completed intrusive work;
- A summary of the applicable components of this EWP;

- A statement that the work will be performed in compliance with this EWP, 29 CFR 1910.120 and 29 CFR 1926 Subpart P;
- A copy of the contractor's health and safety plan (HASP), in electronic format, if it differs from the HASP provided in **Appendix K** of this SMP;
- Identification of disposal facilities for potential waste streams; and
- Identification of sources of any anticipated backfill, along with the required request to import form and all supporting documentation including, but not limited to, chemical testing results.

The NYSDEC project manager will review the notification and may impose additional requirements for the excavation that are not listed in this EWP. The alteration, restoration and modification of engineering controls must conform with Article 145 Section 7209 of the Education Law regarding the application professional seals and alterations.

E-2 SOIL SCREENING METHODS

Visual, olfactory and instrument-based (e.g. photoionization detector) soil screening will be performed during all excavations into known or potentially contaminated material (remaining contamination) or a breach of the cover system. A qualified environmental professional as defined in 6 NYCRR Part 375, a PE who is licensed and registered in New York State, or a qualified person who directly reports to a PE who is licensed and registered in New York State will perform the screening. Soil screening will be performed when invasive work is done and will include all excavation and invasive work performed during development, such as excavations for foundations and utility work, after issuance of the COC.

Soils will be segregated based on previous environmental data and screening results into material that requires off-site disposal and material that requires testing to determine if the material can be reused on-site as soil beneath a cover or if the material can be used as cover soil. Further discussion of off-site disposal of materials and on-site reuse is provided in **Section E-5** of this Appendix.

E-3 SOIL STAGING METHODS

Soil stockpiles will be continuously encircled with a berm and/or silt fence. Hay bales will be used as needed near catch basins, surface waters and other discharge points.

Stockpiles will be kept covered at all times with appropriately anchored tarps. Stockpiles will be routinely inspected and damaged tarp covers will be promptly replaced.

Stockpiles will be inspected at a minimum once each week and after every storm event. Results of inspections will be recorded in a logbook and maintained at the site and available for inspection by the NYSDEC.

E-4 MATERIALS EXCAVATION AND LOAD-OUT

A qualified environmental professional as defined in 6 NYCRR Part 375, a PE who is licensed and registered in New York State, or a qualified person who directly reports to a PE who is licensed and registered in New York State will oversee all invasive work and the excavation and load-out of all excavated material.

The owner of the property and remedial party (if applicable) and its contractors are responsible for safe execution of all invasive and other work performed under this Plan.

The presence of utilities and easements on the site will be investigated by the qualified environmental professional. It will be determined whether a risk or impediment to the planned work under this SMP is posed by utilities or easements on the site. A site utility stakeout will be completed for all utilities prior to any ground intrusive activities at the site.

Loaded vehicles leaving the site will be appropriately lined, tarped, securely covered, manifested, and placarded in accordance with appropriate Federal, State, local, and NYSDOT requirements (and all other applicable transportation requirements). Trucks transporting contaminated soil must have either tight-fitting opaque covers that are secured on the sides and/or back, or opaque covers that are locked on all sides.

A truck wash will be operated on-site, as appropriate. The qualified environmental professional will be responsible for ensuring that all outbound trucks will be washed at the truck wash before leaving the site until the activities performed under this section are complete. Truck wash waters will be collected and disposed of off-site in an appropriate manner.

Locations where vehicles enter or exit the site shall be inspected daily for evidence of off-site soil tracking.

The qualified environmental professional will be responsible for ensuring that all egress points for truck and equipment transport from the site are clean of dirt and other materials derived from the site during intrusive excavation activities. Cleaning of the adjacent streets will be performed as needed to maintain a clean condition with respect to site-derived materials. Material accumulated from the street cleaning and egress cleaning activities will be disposed off-site at a permitted landfill facility in accordance with all applicable local, State, and Federal regulations.

E-5 MATERIALS TRANSPORT OFF-SITE

All transport of materials will be performed by licensed haulers in accordance with appropriate local, State, and Federal regulations, including 6 NYCRR Part 364. Haulers will be appropriately licensed and trucks properly placarded.

Material transported by trucks exiting the site will be secured with either tight-fitting opaque covers that are secured on the sides and/or back, or opaque covers that are locked on all sides. Loose-fitting canvas-type truck covers will be prohibited. If loads contain wet material capable of producing free liquid, truck liners will be used.

Truck transport routes can be found in **Figure 14** of this SMP. All trucks loaded with site materials will exit the vicinity of the site using only these approved truck routes. This is the most appropriate route and takes into account: (a) limiting transport through residential areas and past sensitive sites; (b) use of city mapped truck routes; (c) prohibiting off-site queuing of trucks entering the facility; (d) limiting total distance to major highways; (e) promoting safety in access to highways; and (f) overall safety in transport.

Trucks will be prohibited from stopping and idling in the neighborhood outside the project site.

Egress points for truck and equipment transport from the site will be kept clean of dirt and other materials during site remediation and development.

Queuing of trucks will be performed on-site in order to minimize off-site disturbance. Off-site queuing will be prohibited.

E-6 MATERIALS DISPOSAL OFF-SITE

All material excavated and removed from the site will be treated as contaminated and regulated material and will be transported and disposed off-site in a permitted facility in accordance with all local, State and Federal regulations. If disposal of material from this site is proposed for unregulated off-site disposal (i.e. clean soil removed for development purposes), a formal request with an associated plan will be made to the NYSDEC project manager. Unregulated off-site management of materials from this site will not occur without formal NYSDEC project manager approval.

Off-site disposal locations for excavated soils will be identified in the pre-excavation notification. This will include estimated quantities and a breakdown by class of disposal facility if appropriate, (e.g. hazardous waste disposal facility, solid waste landfill, petroleum treatment facility, C&D debris recovery facility). Actual disposal quantities and associated documentation will be reported to the NYSDEC in the Periodic Review Report. This documentation will include, but will not be limited to: waste profiles, test results, facility acceptance letters, manifests, bills of lading and facility receipts.

Non-hazardous historic fill and contaminated soils taken off-site will be handled consistent with 6 NYCRR Parts 360, 361, 362, 363, 364 and 365. Material that does not meet Unrestricted SCOs is

prohibited from being taken to a New York State C&D debris recovery facility (6 NYCRR Subpart 360-15 registered or permitted facility).

E-7 MATERIALS REUSE ON-SITE

The qualified environmental professional, as defined in 6 NYCRR Part 375, will ensure that procedures defined for materials reuse in this SMP are followed and that unacceptable material (i.e. contaminated) does not remain on-site. Contaminated on-site material, including historic fill and contaminated soil, that is acceptable for reuse on-site will be placed below the demarcation layer or impervious surface, and will not be reused within the cover system or within landscaping berms. Contaminated on-site material may only be used beneath the site cover as backfill for subsurface utility lines with prior approval from the DEC project manager.

Proposed materials for reuse on-site must be sampled for full suite analytical parameters including per- and polyfluoroalkyl substances (PFAS) and 1,4-dioxane. The sampling frequency will be in accordance with DER-10 Table 5.4(e)10 unless prior approval is obtained from the NYSDEC project manager for modification of the sampling frequency. The analytical results of soil/fill material testing must meet the site use criteria presented in NYSDEC DER-10 Appendix 5 – Allowable Constituent Levels for Imported Fill or Soil for all constituents listed, and the NYSDEC Sampling, Analysis, and Assessment of Per- and Polyfluoroalkyl Substances (April 2023) guidance values. Approvals for modifications to the analytical parameters must be obtained from the NYSDEC project manager prior to the sampling event.

Soil/fill material for reuse on-site will be segregated and staged as described in Sections X-2 and X-3 of this EWP. The anticipated size and location of stockpiles will be provided in the 15-day notification to the NYSDEC project manager. Stockpile locations will be based on the location of site excavation activities and proximity to nearby site features. Material reuse on-site will comply with requirements of NYSDEC DER-10 Section 5.4(e)4. Any modifications to the requirements of DER-10 Section 5.4(e)4 must be approved by the NYSDEC project manager.

Any demolition material proposed for reuse on-site will be sampled for asbestos and the results will be reported to the NYSDEC for acceptance. Concrete crushing or processing on-site will not be performed without prior NYSDEC approval. Organic matter (wood, roots, stumps, etc.) or other solid waste derived from clearing and grubbing of the site will not be reused on-site.

E-8 FLUIDS MANAGEMENT

All liquids to be removed from the site, including but not limited to, excavation dewatering, decontamination waters and groundwater monitoring well purge and development waters, will be handled, transported and disposed off-site at a permitted facility in accordance with applicable local, State, and Federal regulations. Dewatering, purge and development fluids will not be recharged back to

the land surface or subsurface of the site, and will be managed off-site, unless prior approval is obtained from NYSDEC.

Discharge of water generated during large-scale construction activities to surface waters (i.e. a local pond, stream or river) will be performed under a SPDES permit.

E-9 COVER SYSTEM RESTORATION

After the completion of soil removal and any other invasive activities the cover system will be restored in a manner that complies with the RAWP and decision document. The existing cover system is comprised of a minimum of asphalt pavement in the open parking areas, a minimum of 12-inches of clean soil in the landscaped areas, and approximately 12-inches of concrete slab in the building footprint. The demarcation layer, consisting of 20-mil Stego Industries Drago(R) Wrap vapor barrier under the building footprint, and orange snow fencing in the open areas, will be replaced to provide a visual reference to the top of the remaining contamination zone, the zone that requires adherence to special conditions for disturbance of remaining contaminated soils defined in this SMP. If the type of cover system changes from that which exists prior to the excavation (i.e., a soil cover is replaced by asphalt), this will constitute a modification of the cover element of the remedy and the upper surface of the remaining contamination. A figure showing the modified surface will be included in the subsequent Periodic Review Report and in an updated SMP. The alteration, restoration and modification of engineering controls must conform with Article 145 Section 7209 of the Education Law regarding the application professional seals and alterations.

E-10 BACKFILL FROM OFF-SITE SOURCES

All materials proposed for import onto the site will be approved by the qualified environmental professional, as defined in 6 NYCRR Part 375, and will be in compliance with provisions in this SMP prior to receipt at the site. A Request to Import/Reuse Fill or Soil form, which can be found at http://www.dec.ny.gov/regulations/67386.html, will be prepared and submitted to the NYSDEC project manager allowing a minimum of 5 business days for review. A copy of the form is presented in **Appendix H**.

Material from industrial sites, spill sites, other environmental remediation sites, or potentially contaminated sites will not be imported to the site.

All imported soils will meet the backfill and cover soil quality standards established in 6 NYCRR 375-6.7(d) and DER-10 Appendix 5 for Restricted Residential. Based on an evaluation of the land use, protection of groundwater and protection of ecological resources criteria, the resulting soil quality standards are listed in **Table 6**. Soils that meet 'general' fill requirements under 6 NYCRR Part 360.13, but do not meet backfill or cover soil objectives for this site, will not be imported onto the site without prior approval by NYSDEC project manager. Soil material will be sampled for the full suite of analytical parameters, including PFAS and 1, 4-dioxane. Solid waste will not be imported onto the site.

Trucks entering the site with imported soils will be securely covered with tight fitting covers. Imported soils will be stockpiled separately from excavated materials and covered to prevent dust releases.

E-11 STORMWATER POLLUTION PREVENTION

Barriers and hay bale checks will be installed and inspected once a week and after every storm event. Results of inspections will be recorded in a logbook and maintained at the site and available for inspection by the NYSDEC. All necessary repairs shall be made immediately.

Accumulated sediments will be removed as required to keep the barrier and hay bale check functional.

All undercutting or erosion of the silt fence toe anchor shall be repaired immediately with appropriate backfill materials.

Manufacturer's recommendations will be followed for replacing silt fencing damaged due to weathering.

Erosion and sediment control measures identified in the SMP shall be observed to ensure that they are operating correctly. Where discharge locations or points are accessible, they shall be inspected to ascertain whether erosion control measures are effective in preventing significant impacts to receiving waters.

Silt fencing or hay bales will be installed around the entire perimeter of the construction area.

E-12 EXCAVATION CONTINGENCY PLAN

If underground tanks or other previously unidentified contaminant sources are found during post-remedial subsurface excavations or development related construction, excavation activities will be suspended until sufficient equipment is mobilized to address the condition. The NYSDEC project manager will be promptly notified of the discovery.

Sampling will be performed on product, sediment and surrounding soils, etc. as necessary to determine the nature of the material and proper disposal method. Chemical analysis will be performed for a full list of analytes [TAL metals, TCL volatiles and semi-volatiles (including 1,4-dioxane), TCL pesticides and PCBs, and PFAS], unless the site history and previous sampling results provide sufficient justification to limit the list of analytes. In this case, a reduced list of analytes will be proposed to the NYSDEC project manager for approval prior to sampling. Any tanks will be closed as per NYSDEC regulations and guidance.

Identification of unknown or unexpected contaminated media identified by screening during invasive site work will be promptly communicated by phone within two hours to NYSDEC's Project Manager. Reportable quantities of petroleum product will also be reported to the NYSDEC spills hotline. These findings will be also included in the Periodic Review Report.

E-13 COMMUNITY AIR MONITORING PLAN

Continuous air monitoring will be conducted for protection of the downwind community during site work activities, per the NYSDOH generic Community Air Monitoring Plan in DER-10 Appendix 1A. Continuous air monitoring for VOCs will be conducted by a minimum of one dedicated person and will use approved instrumentation during ground intrusive activities. The following action levels have been established for air monitoring:

Parameter	Action Level	Action
Total particulates	2.5 times background and/or greater than 150 micrograms per cubic meter	Work ceases until mitigated
Volatile organic compounds	5 parts per million above background (15-minute average) at the downwind perimeter of the work zone	Work ceases until mitigated
Visible dust	Visible dust as determined by the Engineer	Work ceases until mitigated

Exceedances of action levels listed in the CAMP will be reported to NYSDEC and NYSDOH Project Managers.

E-14 ODOR CONTROL PLAN

This odor control plan is capable of controlling emissions of nuisance odors off-site and on-site if there are residents or tenants on the property. Specific odor control methods to be used on a routine basis will include odor masking agents. If nuisance odors are identified at the site boundary, or if odor complaints are received, work will be halted and the source of odors will be identified and corrected. Work will not resume until all nuisance odors have been abated. NYSDEC and NYSDOH will be notified of all odor events and of any other complaints about the project. Implementation of all odor controls, including the halt of work, is the responsibility of the remedial party's Remediation Engineer, and any measures that are implemented will be discussed in the Periodic Review Report.

All necessary means will be employed to prevent on- and off-site nuisances. At a minimum, these measures will include: (a) limiting the area of open excavations and size of soil stockpiles; (b) shrouding open excavations with tarps and other covers; and (c) using foams to cover exposed odorous soils. If odors develop and cannot be otherwise controlled, additional means to eliminate odor nuisances will include: (d) direct load-out of soils to trucks for off-site disposal; (e) use of chemical odorants in spray or misting systems; and, (f) use of staff to monitor odors in surrounding neighborhoods.

If nuisance odors develop during intrusive work that cannot be corrected, or where the control of nuisance odors cannot otherwise be achieved due to on-site conditions or close proximity to sensitive receptors, odor control will be achieved by sheltering the excavation and handling areas in a temporary containment structure equipped with appropriate air venting/filtering systems.

E-15 DUST CONTROL PLAN

Particulate monitoring must be conducted according to the Community Air Monitoring Plan (CAMP) provided in Section [X]-13. If particulate levels at the site exceed the thresholds listed in the CAMP or if airborne dust is observed on the site or leaving the site, the dust suppression techniques listed below will be employed. The remedial party will also take measures listed below to prevent dust production on the site.

A dust suppression plan that addresses dust management during invasive on-site work will include, at a minimum, the items listed below:

- Dust suppression will be achieved using a dedicated on-site water truck for road wetting. The truck will be equipped with a water cannon capable of spraying water directly onto off-road areas including excavations and stockpiles.
- Clearing and grubbing of larger sites will be done in stages to limit the area of exposed, unvegetated soils vulnerable to dust production.
- Gravel will be used on roadways to provide a clean and dust-free road surface.
- On-site roads will be limited in total area to minimize the area required for water truck sprinkling.

Appendix G

G 13-12 Beach Channel Drive

O&M Manual

IMPACT ENVIRONMENTAL
170 Keyland Court
Bohemia, New York 11716
TEL: (631) 268-8800
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Sub-Slab Depressurization System Operations and Maintenance (O&M) Manual

September 6, 2023

Conducted at:
13-12 Beach Channel Drive
13-12, 13-16, and 13-24 Beach Channel Drive
Far Rockaway
Queens County, New York
NYSDEC BCP #C241254

Prepared for:

BCD Owner, LLC
419 Park Avenue South, 4th Floor.
New York, New York

Prepared by:

Impact Environmental Engineering and Geology, PLLC. (IEEG)
170 Keyland Court
Bohemia, New York 11716

IEC# 15209

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FIGURES

Figure 1 Site Location Map
Figure 2 Sub-Slab Depressurization System Diagram

APPENDICES

Appendix A: SSDS Operation and Maintenance Forms

1.0 INTRODUCTION

1.1 Purpose

Impact Environmental Closures, Inc. (IEC) is pleased to provide this Operation and Maintenance ("O&M Plan") Manual for the sub-slab depressurization system (SSDS) at the property identified as 13-12 Beach Channel Drive, located at 13-12, 13-16, and 13-24 Beach Channel Drive, Far Rockaway, New York (the "Site"). A general site location map, which identifies the overall residential complex is included as **Figure 1**. The SSDS configuration is illustrated in **Figure 2**. This O&M Manual is intended to inform the Building operators and/or owners of the original design intent of the SSDS, and the recommended operation, maintenance, and monitoring requirements of the SSDS and will include the following:

- Steps necessary to allow individuals unfamiliar with the Site to operate and maintain the SSDS system located within the Site;
- An operation and maintenance contingency plan; and,
- Will be updated periodically to reflect changes in Site conditions or the way the SSDS system is operated and maintained.

1.2 Site Description

The Site consists of an active construction Site. The Site is zoned C2-4 for commercial use and is currently being redeveloped into an 8-story mixed-use residential and community facility building, and will maintain a small rear yard and asphalt paved parking lot. The Site is currently unoccupied, aside from said construction activity. Formerly, Lot 5 was occupied by a KFC Restaurant, Lot 6 was occupied by a multi-family dwelling, and Lot 9 was occupied by a car wash and detail facility.

Historically, the Site was unoccupied and contained three (3) vacant structures. The building located on the south side of the site, Lot 5, was an approximately 1,400 square foot slab-on-grade structure, with one-story plus a mezzanine that was most recently occupied by a Kentucky Fried Chicken. The remainder of the 10,500 square foot Lot 5 was comprised of an asphalt paved parking lot. The building located in the center of the Site, Lot 6, was an approximately 1,800 square-foot 3-story commercial and residential structure with a partial basement at a depth of approximately 4-feet below grade, that was most recently occupied by various retail establishments and residential apartment units. The remainder of the 11,095

square foot Lot 6 was comprised of concrete paved parking areas. Finally, the building located on the north of the Site, Lot 9, was an approximately 3,600 square foot slab on grade structure, with a single story, that was most recently occupied by a car wash and auto detailing establishment. The remainder of the 11,500 square foot Lot 9 was comprised of asphalt and concrete paved parking areas.

During a Final Remedial Investigation conducted by IEEG in September, October, and November, 2021, soil vapor samples were collected from the Site, which included the Installation of six (6) soil vapor points throughout the property for the collection of soil vapor samples to further define the extent of chlorinated volatile organic compounds (cVOCs) across the Site and assess the potential for off-site migration in relation to downgradient receptors.

The following cVOC compounds were detected in soil vapor samples collected at the Site in exceedance of the New York State Department of Health (NYSDOH) Indoor Air Guidance Values:

Targeted Soil Vapors

	Results (ug/m3)				**Standard(ug/m3)**
Compound	**SV-7**	**SV-9**	**SV-10**	**SV-12**	**NYSDOH Indoor Air Guidance Values**
PCE	**271,000**	**260**	**1,000**	**239**	30
TCE	**1,460**	**-**	-	-	2

Note: Samples not included in the table did not display regulatory exceedances

Based on the results of the Final RI, IEEG concluded that remedial action was appropriate to support the proposed site development.

1.3 Sub-Slab Depressurization System General Description

The system consists of four (4) roof mounted blowers, connected to 14 vapor extraction points. The system was constructed using principles and equipment typically used for radon mitigation in buildings as detailed in the United States Environmental Protection Agency (EPA) and the final NYSDOH Guidance for Evaluating Soil Vapor Intrusion in the State of New York (October 2006). This SSDS was installed as permanent, integral addition to the Site. The key components of the SSDS include four (4) variable frequency high performance radial blowers, roof mounted, to provide sub-slab depressurization via 3”

and 4" cast iron pipe and PVC pipe to roof exhaust, 14 suction pits, nine (9) vacuum monitoring points, four (4) Magnehelic manometers, four (4) SSDS failure alarms, and electrical connection to breaker panel.

The SSDS consists of 14 suction pit venting zones beneath the approximately 40,000 square foot building footprint in accordance with the USEPA Handbook for Sub-Slab Depressurization for Low-Permeability Fill Soils and ANSI/AARST Radon Mitigation Standards for Schools and Large Buildings which recommend a separate vent loop for every 2,000 to 4,000 square feet of the slab area. The SSDS included the installation of vertical vapor extraction/collection pits within a continuous gravel envelope laid out beneath the foundation slab across the entire building footprint. The extraction points are connected to transitional header piping on the first floor extending to four risers which have been installed to the roof. The gravel envelope surrounding each extraction point was backfilled with clean, virgin mined ½ inch to ¾ inch gravel (e.g., bluestone) to grade beneath the vapor barrier which acts as a gas permeable layer. Risers have extended to the roof through chase-way locations and extend at least 3-feet above the roof line. The active SSDS required will achieve a pressure differential of at least 0.02 inches of water to provide an adequate safety factor for long-term and seasonal variation. The system will consist of in-line radon-style low flow fans fitted to the risers penetrating the roof line, and will be hardwired into the building's electrical system to prevent accidental shut off and maintain continuous operation. Durable pressure monitoring devices and alarms will be installed to indicate operational parameters (such as on/off or pressure indicators). These devices will be placed in readily visible, frequently trafficked locations within the structure and monitored regularly. The low flow fans are capable of moving up to 272 cubic feet per minute (cfm) of air.

2.0 PERFORMANCE EVALUATION

2.1 System Operations

- Fan should be kept in continuous operation. New York State Soil Vapor Intrusion Guidance (2006) specifies that operation, maintenance and monitoring of the SSD system should be included as part of site management. Until subsurface remediation efforts eventually address VOCs in soil and/or groundwater to acceptable levels (i.e. SSD operation no longer required) operation of the SSD system should continue. At that point, the vapor mitigation system may be shut down and/or removed and O&M requirements would cease.
- Reset. Fan restarts automatically in event of power loss. In case of overheating, fan requires 1-minute power interruption to reset.
- In the event of unusual fan noise, failure to start, physical damage, or repeated circuit breaker trip, turn fan off and call for service. IEEG – 631-269-8800.
- Regularly inspect fan gauge to verify that value, indicated by a mark on the gauge, has not changed significantly from the position of the mark. Gauge is inspected by observing the position of the indicator needle.
- Normal system operation requires unchanged structural conditions. Report any changes in structure, HVAC systems, slab conditions, etc., so that the change can be evaluated for impact on the SSD System. For service, call MITIGATION TECH at 1-800-637-9228
- Ensure that a periodic inspection is performed.

2.2 SAMPLING EVENT PROTOCOL

System performance and concurrent mass removal sampling should be performed on an annual basis and concurrently performed during routine system maintenance. Said sampling work consists of collecting two (2) indoor air samples from within the eastern and western section of the building, while concurrently collecting effluent vapor samples from sample ports located on the effluent-side of the four (4) mitigation fans.

Said effluent sample is collected utilizing teflon tubing connecting a six (6) liter summa canister to the sample port. Prior to sample collection, indoor air and the effluent sampling location are screened with a portable photoionization detector (PID) and measurements recorded. Effluent purging is not performed

prior to sample collection. Each sample will be collected over a 24- hour period, utilizing a laboratory prepared flow regulator attached to each summa canister.

The system performance samples must be transported under proper chain of custody procedures to an ELAP-accredited environmental laboratory. Analyses performed on said samples will consist of chlorinated Volatile Organic Compounds (tetrachloroethene, trichloroethene, cis-1,2-dichlortoethene and vinyl chloride) by USEPA Test Method TO-15.

2.3 ROUTINE OPERATION AND EQUIPMENT MAINTENANCE (MONTHLY)

Monthly monitoring events of the system are currently performed. Said tasks during this monitoring event include, but not limited to:

- Inspect fan vacuum indicator to verify that value, indicated by a mark on the gauge, has not changed significantly from the position of the mark;
- Record the observed measurement for the fan vacuum indicator on form labeled “System Operation Log”. Store all forms in the facility maintenance office;
- Inspect visible components of SSDS in vicinity of gauge for degraded condition; and,
- Investigate and report any gauge reading that deviates 50% or more from the vacuum readings referred in Section 2.1 of this O&M Plan, or any degraded condition of visible components.

2.4 ROUTINE OPERATION AND EQUIPMENT MAINTENANCE (ANNUAL)

Annual monitoring events of the system are currently performed. Said tasks during this monitoring event include, but not limited to:

- Conduct a visual inspection of the complete System (e.g., vent fans, piping, warning devices, labeling);
- Check for overall rigidity and integrity of all interior and exterior pipes and supports and hose clamps holding vertical pipe in place. Look for any loose pipe supports and repair. Verify that no building retrofit has taken place that obstructs or could obstruct the vertical discharge pipe;
- Conduct an inspection of all building floor surfaces to which vacuum is applied. The floor should be monitored or repaired, if required, or sealed where objects, including utilities, penetrate the concrete slab;
- Listen for unusual noises or visual indicators that the fan within the crawl space is operating

poorly;

- Identify and repair any leaks in accordance with Sections 4.3.1(a) and 4.3.4(a) of the NYS DOH VI Guidance (i.e.; with the systems running, use smoke sticks to check for leaks through concrete cracks, floor joints and at the suction points; any leaks will be resealed until smoke is no longer observed flowing through the opening);
- Conduct pressure field extension testing (to ensure that the system is maintaining a vacuum beneath the entire slab). Perform at least one differential pressure reading for each building slab section enclosed by a separate footer using the three permanent sub-slab monitoring implants referenced in the attached SSDS diagram; and,
- Check to see that the circuit breakers controlling the circuits on which the soil vapor vent fans operate are labeled "Soil Vapor System.”

3.0 REPORTING AND RECORD MANAGEMENT

3.1 Routine Maintenance Reports

There is Checklists or forms will be completed during each routine maintenance event. Checklists/forms will include, but not be limited to the following information:

- Date;
- Name, company, and position of person(s) conducting maintenance activities;
- Remediation system identification (SSDS);
- Maintenance activities conducted;
- Any modifications to the system(s);
- Where appropriate, color photographs or sketches showing the approximate location of any problems or incidents noted (included either on the checklist/form or on an attached sheet); and,
- Other documentation such as copies of invoices for maintenance work, receipts for replacement equipment, etc., (attached to the checklist/form).

3.2 Non-Routine Maintenance Reports

During each non-routine maintenance event, a form will be completed which will include, but not be limited to, the following information:

- Date;
- Name, company, and position of person(s) conducting non-routine maintenance/repair activities;
- Remediation system identification (SSDS);
- Presence of leaks;
- Date of leak repair;
- Other repairs or adjustments made to the system(s);
- Where appropriate, color photographs or sketches showing the approximate location of any problems or incidents (included either on the form or on an attached sheet); and,
- Other documentation such as copies of invoices for repair work, receipts for replacement equipment, etc. (attached to the checklist/form).

System specific maintenance activities will be provided in accordance with equipment manufacturer's

recommendations and/or good practice. Basic inspection tasks will be conducted by a qualified individual, and only skilled personnel will perform maintenance tasks. Such tasks may require the operator(s) to have proper licenses and credentials prior to performing work. All maintenance services and system adjustments will be recorded in a service log and kept onsite for reference. Typical forms that will be used for operation and maintenance tracking are listed below and presented in **Appendix A**.

FIGURES

13-12 Beach Channel Drive,
Far Rockaway, NY

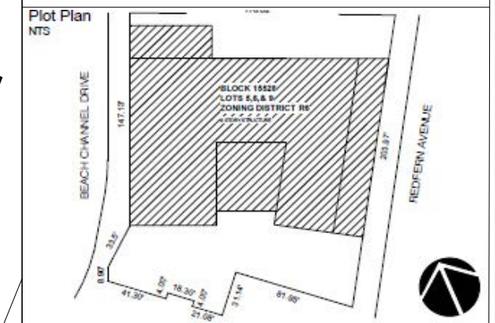
SSDS O&M Plan
NYSDEC BCP #C360211

IMPACT ENVIRONMENTAL
170 Keyland Court
Bohemia, New York 11716
TEL: (631) 268-8800
FAX: (631) 269-1599

LEGEND

- APPROXIMATE PROPERTY LINE
- PVE-1 — PROPOSED VAPOR EXTRACTION PIT WITH 4" Ø VERTICAL RISER (TO 1ST FLOOR CEILING)
- PROPOSED 4" Ø RISER TO ROOF
- PROPOSED VACUUM MONITORING POINT
- PROPOSED SSDS OVERHEAD PIPING (1ST FLOOR CEILING)
- 0.5% MIN. SLOPE OF PIPE TOWARD VERTICAL EXTRACTION RISER TO DRAIN CONDENSATE TO SUB-SLAB

Plot Plan
NTS



SSD System
First Floor Layout

13-12 to 13-24
Beach Channel Drive
Queens, New York

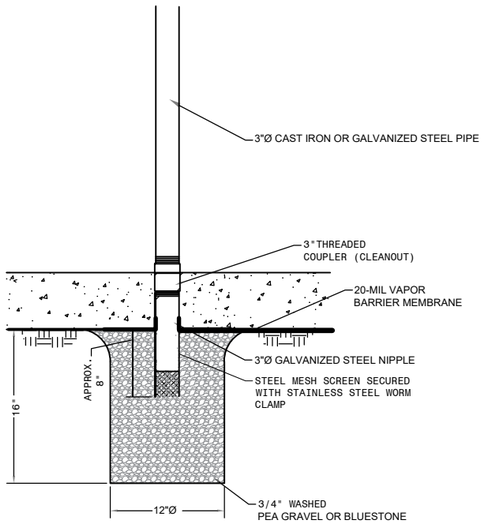
Pate No: 13

PROJECT NO.	15209-01
DESIGNED BY:	LR
DRAWN BY:	AB
CHECKED BY:	GMC
DATE:	12/3/2021
SCALE:	1" = 20'

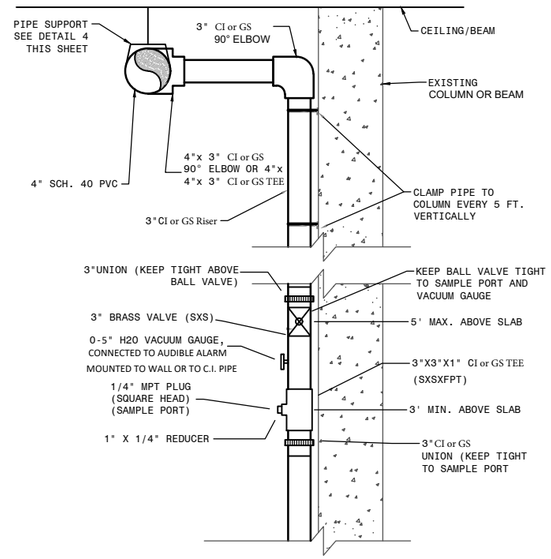
REVISIONS

IMPACT ENVIRONMENTAL CLOSURES, INC.

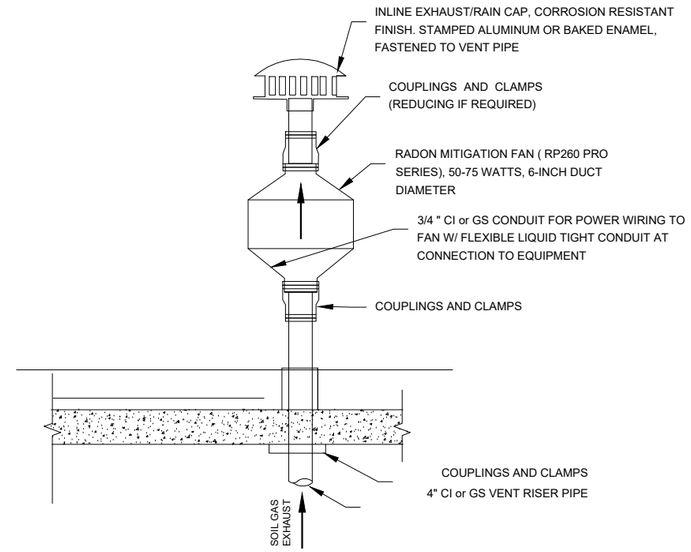
170 KEYLAND COURT
BOHEMIA, NEW YORK 11716
TEL (631) 269-8800
FAX (631) 269-1599



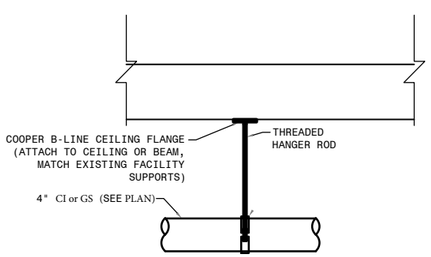
1 TYPICAL SSD EXTRACTION PIT DETAIL
SCALE: N.T.S.



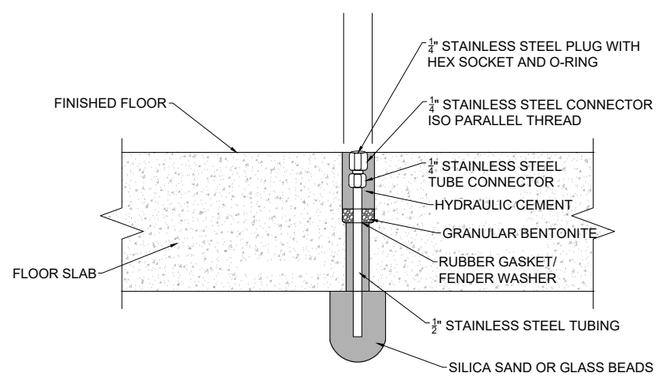
2 TYPICAL EXTRACTION RISER
SCALE: N.T.S.



3 ROOF TOP EQUIPMENT
SCALE: N.T.S.



4 HANGING PIPE SUPPORT
SCALE: N.T.S.



5 VAPOR MONITORING POINT
SCALE: N.T.S.

NOTES:
1. HORIZONTAL PIPING SHALL BE SUPPORTED A MINIMUM OF EVERY 10 FEET.
2. HORIZONTAL PIPING SHALL BE INSTALLED WITH 0.5% SLOPE TO FACILITATE DRAINAGE OF CONDENSATE.

LEGEND

Plot Plan
NTS

SUB-SLAB DEPRESSURIZATION SYSTEM DETAIL

13-12 to 13-24
Beach Channel Drive
Queens, New York

Plate No: 13a

PROJECT NO.	15209-01
DESIGNED BY:	LR
DRAWN BY:	AB
CHECKED BY:	GMC
DATE:	12/3/2021
SCALE:	1" = 20'

REVISIONS

IMPACT ENVIRONMENTAL CLOSURES, INC.

170 KEYLAND COURT
BOHEMIA, NEW YORK 11716
TEL (631) 269-8800
FAX (631) 269-1599

1. PURPOSE
THE INTENT OF THE SUB-SLAB DEPRESSURIZATION SYSTEM DESCRIBED IN THIS PLAN IS TO PROMOTE PUBLIC SAFETY AND WELFARE BY CONTROLLING SOIL GAS INTRUSION POTENTIALLY EMANATING FROM BENEATH THE BUILDING SUB GRADE. THE SYSTEM IS NOT INTENDED TO REGULATE FLAMMABLE VAPORS THAT MAY ORIGINATE IN AND PROPAGATE FROM OTHER SOURCES, WHICH INCLUDE, BUT ARE NOT LIMITED TO, RUPTURED HAZARDOUS MATERIAL TRANSMISSION LINES, UNDERGROUND ATMOSPHERIC TANKS, OR SIMILAR INSTALLATIONS.

2. THE CONTRACTOR SHALL SUPPLY ALL LABOR, EQUIPMENT AND MATERIALS TO COMPLETE THE SUB-SLAB EXTRACTION PITS, PIPING, MANIFOLDS, EQUIPMENT STAGING, REMEDIAL EQUIPMENT CONNECTIONS ACCORDING TO THE PLANS AND SPECIFICATION HEREIN.

3. THESE DRAWINGS WERE PRODUCDED FROM MAPS AND DRAWINGS COLLECTED FROM THE OWNER'S ARCHITECT. THE LOCATIONS OF FEATURES AND ONJECTS ARE APPROXIMATE. IT IS NOT INTENDED TO AN ACCURATE PROPERTY SURVEY.

4. GENERAL REQUIREMENTS CODES:
ALL WORK SHALL BE IN COMPLIANCE WITHE CURRENT BUILDING CODE AND POLICIES OF THE DEPARTMENT OF BUILDING AND ALL APPLICABLE COUNTY, STATE, AND FEDERAL CODES.
INSPECTION:
ALL WORK, REQUIRING INSPECTION BY THE DEPARTMENT OF BUILDING, SHALL BE AVAILABLE TO THE INSPECTOR PRIOR TO BEING COVERED BY SUBSEQUENT WORK.

5. MITIGATION REQUIREMENTS
ALL VENTILATION SYSTEMS SHALL BE MAINTAINED AND SERVICED IN PROPER WORKING CONDITION AND MEET ALL REQUIREMENTS OF THE DEPARTMENT OF BUILDING CODE.

6. SUB-SLAB VENT SYSTEM CONSTRUCTION CRITERIA
SUB-SLAB VENT SYSTEM SHALL CONSIST OF PERFORATED HORIZONTAL PIPES, GRAVEL BLANKET UNDER IMPERVIOUS MEMBRANE, GRAVEL AROUND PERFORATED HORIZONTAL PIPES AND VENT RISERS.

7. OWNER'S CONTRACTOR TO COMPLETE ALL PIPING INSTALLATION WORK FROM 2 FT. STUB-UPS PROVIDED AT FIRST FLOOR SLAB TO SSDS EQUIPMENT AT ROOF IN ACCORDANCEW WITH LOCAL, STATE AND FEDERAL CODES, REGULATIONS AND REQUIREMENTS.

8. OWNER'S ELECTRICAL CONTRACTOR TO COMPLETE ALL ELECTRICAL WORK NECESSARY TO SUPPLY POWER TO THE SSDS PRE-PACKAGED AND PRE-WIRED SYSTEMS STAGED AT ROOF, INCLUDING ALL ELECTRICAL CONNECTIONS IN ACCORDANCE WITH LOCAL, STATE AND FEDERAL CODES, REGULATIONS AND REQUIREMENTS..

1. GRAVEL TYPE AND THICKNESS:
a. BEDDING MATERIAL AND EXTRACTION PIT MATERIAL SHALL BE 3/8-INCH BLUESTONE.
b. EXTRACTION PITS MUST BE A MINIMUM OF 16-INCHES IN DEPTH BY 12-INCHES IN WIDTH.
c. SUB-BAS EMATERIAL SHALL CONSIST OF SIMILAR MATERIAL AS THE EXTRACTION PITS.

2. VENT RISER OUTLETS SHALL BE LOCATED AT LEAST:
a. 10-FFET ABOVE GRADE
b. 10 FEET AWAY FROM ANY WINDOW, DOORS, ROOF HATCH, OPENING OR AIR INTAKE INTO THE BUILDING.
c. 3 FEET ABOVE HIGHEST POINT OF ROOF

3. LABELING - PIPE AND EQUIPMENT:
a. LABEL ALL RADON DUCT (C.I. PIPE) CONTINUOUSLY. LABEL TO READ “CAUTION – SUB—SLAB DEPRESSURIZATION SYSTEM. DO NOT CONNECT ANY OTHER SERVICE”
b. LABEL RADON FAN, LABEL TO READ: “CAUTION – THIS IS A COMPONENT OF A SUB-SLAB DEPRESSURIZATION SYSTEM. DO NOT ALTER OR DISCONNECT”
c. LABEL RADON FAN CIRCUIT BREAKER. LABEL TO READ: “SUB-SLAB DEPRESSURIZATRION FAN CIRCUIT. DO NOT TURN OFF”

4. PROPOSED LOCATIONS OF DEPRESSURIZATION SYSTEM RISER PIPES TO BE VERIFIED BY ARCHITECT.

5. PREPARE SUBSOIL AS SPECIFIED BY PROJECT GEOTECHNICAL OR STRUCTURAL ENGINEER. PLACE, LEVEL, AND COMPACT GRAVEL BED CONSISTING OF CLEAN 3/4-INCH BLUESTONE, OR AN EQUIVALENT APPROVED BY THE DESIGN ENGINEER. GRAVEL TO BE NO MORE THAN 1-INCH IN DIAMETER.

6. THE RISERS SHALL RAISE AT LEAST 3-FEET ABOVE THE ROOF. RAIN CAPS SHALL BE INSTALLED ON THE ROOF AT THE END OF THE RISERS.

7. PLUMBING, PRIMING, GLUING, PAINTING, FASTENING, AND SUPPORTING PVC AND STEEL PIPES, SCREENS, RISERS, AND FITTINGS TO BE CONDUCTED IN ACCORDANCE WITH EXISTING PROJECT PLANS AND SPECIFICATIONS, INDUSTRY STANDARDS, AND MANUFACTURERS INSTRUCTIONS, UNLESS OTHERWISE APPROVED BY THE PROJECT ENGINEER. THE INSTALLATION SHALL COMPLY WITH ALL FEDERAL, STATE, AND LOCAL CODES.

8. CONTRACTOR SHALL STORE MATERIALS IN A CLEAN AND DRY AREA, AND SHALL PROTECT MATERIALS FROM DAMAGE DURING HANDLING AND INSTALLATION.

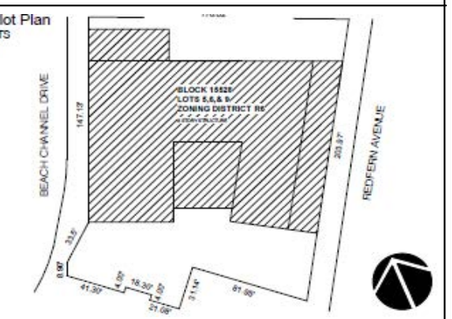
9. SAMPLING PORTS SHALL BE INSTALLED AT EACH SEPARATE BRANCH OF THE SSDS FOR TESTING OF THE SYSTEM EFFECTIVENESS.

10. EXTRACTION PIPE PRESSURE GAUGES TO BE INSTALLED IN VISIBLE LCOATION TO INDICATE PROPER OPERATIONS OF THE SYSTEM AND ADEQUATE NEGATIVE PRESSURE.

11. REMOTE MOUNTED PRESSURE ALARM WITH VISUAL INDICATION TO BE INSTALLED IN VISIBLE LOICATION TO INDICATE FAILURE OF THE SYSTEM.

1. AS PER THE MEMORANDUM ISSUED BY THE NYSDEC ("SUBSTANTIVE COMPLIANCE WITH AIR REQUIRMENTS" FEBRURY 28, 2003), ANY REMEDIAL SYSTEM UNDER A DEC PROGRAM IS EXEMPT FOR AIR PERMITTING. HOWEVER, ALL SYSTEMS MUST DEMONSTRATE THAT THE COMPLY WITH THE SUBSTANTIVE REGULATION. IN THE CASE OF THE PROPSOED SSD SYSTEM, BASED ON HISOTRICAL EMISSIONS SAMPLING RESULTS AND THE SSDS PERFORMANCE SPECIFICATION (LOW FLOW), OFF-GAS TREATMENT WILL NOT BE REQUIRED TO SATISFY THIS REQUIREMENT. ALTHOUGH IT IS NOT ANTICIPATED, IN THE EVENT THAT FUTURE SAMPLING RESULTS INDICATE THE NEED FOR OFF-GAS TREATMENT, THE SYSTEM CAN BE RETRIFITTED TO ACCOMODATE TREATMENT IN ORDER TO BRING THE SYSTEM BACK INTO REGULATORY COMPLAINCE.

Plot Plan
NTS



GENERAL NOTES: SUB-SLAB DEPRESSURIZATION SYSTEM

13-12 to 13-24
Beach Channel Drive
Queens, New York

Plate No: 13b

PROJECT NO.	15209-01
DESIGNED BY:	DP
DRAWN BY:	LR
CHECKED BY:	GMC
DATE:	12/12/2021
SCALE:	N.T.S
REVISIONS	

IMPACT ENVIRONMENTAL CLOSURES, INC.

170 KEYLAND COURT
BOHEMIA, NEW YORK 11716
TEL (631) 269-8800
FAX (631) 269-1599

Appendix A

13-12 Beach Channel Drive,
Far Rockaway, NY

SSDS O&M Plan
NYSDEC BCP #C360211

IMPACT ENVIRONMENTAL
170 Keyland Court
Bohemia, New York 11716
TEL: (631) 268-8800
FAX: (631) 269-1599

MONTHLY SUPER SYSTEM INSPECTION FORM
13-12 Beach Channel Drive, Queens, NY

Inspector Name:	**Date:**

Is the blower running? yes or no (*circle one*) If off, immediately notify an emergency contact. Is the SSDS Fan running? yes or no (*circle one*) If off, immediately notify an emergency contact.

Are there any unusual odors, spills or leaks noted in system? yes or no (*circle one*)
If yes, plans for repair:

Date of last quarterly moisture separator tank and moisture sump inspection and clean-out.

Describe location and quantity of material removed.

	Flow Rate in Accepted Range?	**Vacuum In Accepted Range?**
SSDS East	☐ YES ☐ NO	☐ YES ☐ NO
SSDS West	☐ YES ☐ NO	☐ YES ☐ NO
SVE East	☐ YES ☐ NO	☐ YES ☐ NO
SVE West	☐ YES ☐ NO	☐ YES ☐ NO
SVE South	☐ YES ☐ NO	☐ YES ☐ NO
	☐ YES ☐ NO	☐ YES ☐ NO
		(Magnehelic 7 to 9 "H_2O)
Combined - Before Tank	NA	☐ YES ☐ NO
Combined - After Tank	NA	☐ YES ☐ NO

Comments:

* If readings are outside of the ranges indicated, inspect and clean out moisture tank and sumps. If readings still outside of range, inform emergency contacts below.

Emergency Contact Information

Name	**Title**	**Contact Numbers**
Jon Tarabokija	BB Manager/ Supervisor	201-783-6078 (direct)
Daniel Fruhauf	IEC Project Manager	631-269-8800 (office) 631-901-2470 (cell)

OM&M Log Sheet, Sub-Slab Depressurization System / SVE

Date: _____
Time: _____
Technician: _____

When on site for other routine ***monthly*** *OM&M, record data included on* ***pages 1 and 2*** *of this quarterly OM&M Log Sheet/Checklist.*

SYSTEM STATUS

System operational? *(screen indicating system in "AUTO" or "MANUAL")* _____

Alarms? (List) _____

SYSTEM PARAMETER	ID	Gauge Reading		PID	Reading	
			(in. W.C.)			(in. W.C.)
			(°F)			(°F)
			(°F)			(°F)
			(in. W.C.)			(cfm)
			(in. W.C.)			(in. W.C.)
			(in. W.C.)			
			(in. W.C.)			
			(in. W.C.)			

METEOROLOGICAL DATA

Ambient Outdoor Temperature (°F): _____

Ambient Indoor Temperature (°F): _____

Barometric Pressure (in. Hg): _____

Barometric Pressure Trend: Rising or falling?

ADDITIONAL DATA

VFD Frequency (Hz): _____

Influent Vapor Velocity _____ (fpm)

Note position of HX-300 H-O-A switch: _____ (cfm)

Electrical Meter Reading (KWH): _____

Surge Protector Operational? (Y/N): _____

SYSTEM WATER/CONDENSATE INSPECTION

Water present in site gauges? (Y/N)

VALVE INSPECTION

Note position of SVE Valves: _____ _____ _____

Are condensate drain valves in closed position? (Y/N)

BASEMENT SUMP INSPECTION

Water present in sumps? (Y/N): How much? (est. in inches)

OTHER NOTES:

OM&M Checklist, Subslab Depressurization System / SVE

Date: _____

Time: _____

Technician: _____

When on site for other routine ***monthly*** *OM&M, record data included on* ***pages 1 and 2*** *of this quarterly OM&M Log Sheet/Checklist.*

CRITICAL SYSTEM DEVICE	Device Location	Inspected/Tested (yes/no)	Pass/Fail	Comments/Notes
MCC/MCP Mounted Equipment				
System Disconnect				
Blower H-O-A Switch				
Heat Exchanger H-O-A Switch				
VFD By-Pass Switch				
Backup Battery[1]				
Panel Indicator Lights				
Electrical Hazard Signage				
Electric Meter				
Surge Protection Device				
Process Equipment				
Vacuum Relief Valve (VPGAC)				
Filter Element VPGAC				
Field Mounted Equipment				
System Exhaust Vent Screen				
Process Valve Locks/Positions[3]				
Post Blower Piping Connections				
Heat Trace[4]				
Fire Extinguisher				
System Vapor Effluent Stack				

Definitions:
AWS = Air/Water Separator
MCC - motor control center
MCP = main control panel
VPGAC = Vapor Phase Granular Activated Carbon
VT = Vacuum Transmitter
FT = Transmitter
LS = Level Sensor
B = Blower
NA = Not Applicable
VRV = Vacuum Relief Valve

Notes:
[1] UPS battery backup should be replaced at a minimum, annually or as needed.
[2] Filter element F-201should be replaced at a minimum, annually or as needed.
[3] Equipment locations can be found on the process and instrumentation diagram.
[4] Heat trace is only used during winter months.

OM&M Log Sheet, Sub-Slab Depressurization System / SVE

Date: _____
Time: _____
Technician: _____

VAPOR SAMPLING LOCATIONS

Sample Location	PID	Vapor Sample Collected (Y/N)	Condensate Present in Sample (Y/N)	Canister #	Canister Vacuum at Start (in. Hg.)	Canister Vacuum at Finish (in. Hg.)	Sample Time
Effluent (Post-Carbon)							

24 HOUR CONTINUOUS SUBSLAB MONITORING SCHEDULE

VMP Location	First Quarter	Second Quarter	Third Quarter	Fourth Quarter

Definitions:
NR - Not Recorded
SDS - Sub-Slab Depressurization Sump
SP - Sample Port
PID - Piping and Instrumentation Diagram
VOCs - Volatile Organic Compounds
VMP - Vacuum monitoring point
in. Hg. - Inches of mercury

OM&M Log Sheet, Sub-Slab Depressurization System / SVE

Date: _____

Time: _____

Technician: _____

VACUUM MONITORING POINTS	
VMP Location	**Differential Pressure (in. W.C.)**

SUB-SLAB DEPRESSURIZATION Branch/ Legs					
SDS Location	**Induced Vacuum (in. W.C.)**		**Orifice Plate Differential Pressure (in. W.C.)**	**Orifice Plate Differential Pressure Typ. Ranges**	**FCV Position (turns open)**

Definitions:

NR - Not Recorded

SDS - Sub-Slab Depressurization Sump

SP - Sample Port

PID - Piping and Instrumentation Diagram

VOCs - Volatile Organic Compounds

VMP - Vacuum monitoring point

in. Hg. - Inches of mercury

Date: _____

Time: _____

Technician: _____

CRITICAL DEVICE / ALARM POINTS TESTING

Test the following critical alarms *:*

Alarm	Corresponding Transmitter / Sensor	PLC Alarm Name	Alarm Type	Caused PLC Alarm State Change? (Y/N)	Caused System Shutdown? (Y/N)	Passed (Y/N)
	Notes:					
	Notes:					
	Notes:					
	Notes:					
	Notes:					
	Notes:					
	Notes:					
	Notes:					

OM&M Log Sheet, Sub-Slab Depressurization System / SVE

Date: _____

Time: _____

Technician: _____

CRITICAL DEVICE CORRECTIVE ACTION LOG SHEET

Date: Time:

Critical Device Failure:

Device Failure:

Corrective Action:

Appendix H
H

13-12 Beach Channel Drive

QAPP

IMPACT ENVIRONMENTAL
170 Keyland Court
Bohemia, New York 11716
TEL: (631) 268-8800
FAX: (631) 269-1599

SITE MANAGEMENT PLAN
QUALITY ASSURANCE PROJECT PLAN

NYSDEC BROWNFIELD CLEANUP PROGRAM

Submitted for:

13-16 to 13-24 Beach Channel Drive
Far Rockaway, New York 11691
New York City Tax Map Designation: Block 15228; Lots 5, 6, and 9

Submitted to:

New York State Department of Environmental Conservation
Chief, Site Control Section
Region 2, Division of Environmental Remediation
47-40 21st Street
Long Island City, NY

Prepared for:

BCD Owner LLC
419 Park Avenue South, 4th Floor
New York, New York

December 22, 2023
***IEC Project Number:* #15209**

IMPACT ENVIRONMENTAL | 170 Keyland Court | Bohemia | New York | 11716 | 631.269.8800

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1 INTRODUCTION

Impact Environmental Closures, Inc. (Impact) has been retained by BCD Owner LLC to prepare a Site Management Plan (SMP) for a property located at 13-12 to 13-24 Beach Channel Drive, within the Far Rockaway section of Queens County, New York ("Site"), in accordance with the provisions of the New York State Department of Environmental Conservation's Brownfield Cleanup Program.

This Quality Assurance Project Plan (QAPP) provides an outline of the field and laboratory procedures that will be used during the SMP sampling proposed for the Site. The QAPP is used to ensure the accuracy and precision of data collected and interpreted during the post RA sampling in order to meet project requirements. The QAPP identifies procedures for sample collection to maintain consistency among datasets and mitigate the potential for cross-contamination, as well as analytical requirements necessary to allow for independent data validation. A Sampling and Analysis Plan (SAP) identifying methods for sample collection, decontamination, handling and shipping, is provided in the following sections.

This QAPP has been prepared in accordance with United States Environmental Protection Agency (USEPA) *Requirements for Quality Assurance Project Plans*; the USEPA Region II *CERCLA Quality Assurance Manual*, and New York State Department of Environmental Conservation (NYSDEC) *DER-10 Technical Guidance for Site Investigation and Remediation* (May 2010) and subsequent updates.

1.1 Scope and Goals

This QAPP has been prepared to support the post remedial action sampling activities planned for the Site. The goals of the RA are to remove contaminated soil and treat contaminated groundwater identified during Remedial Investigation activities and collect additional data to support efficacy of the remedial actions. This QAPP was prepared to provide quality assurance guidelines to be implemented during the SMP sampling activities to fulfill the RA goals for the Site. This document may be modified for subsequent phases of investigative work, as necessary. The QAPP provides:

- A means to communicate exactly what is to be done, by whom, and when to the individuals executing the various activities;
- A culmination to the planning process that ensures that the program includes provisions for obtaining quality data (e.g., suitable methods of field operations);
- A historical record that documents the sampling activities in terms of the methods used, calibration standards and frequencies planned, and auditing planned;
- A document that can be used by the Project Manager's and the QA Officer to assess if the activities planned are being implemented and their importance for accomplishing the goal of

quality data;

- A plan to document and track project data and results; and,
- Detailed descriptions of the data documentation materials and procedures, project files, and tabular and graphical reports.

The QAPP is primarily concerned with the quality assurance (QA) and quality control (QC) aspects of the procedures involved in the collection, preservation, packaging, and transportation of samples; field testing; record keeping; data management; chain-of-custody procedures; laboratory analyses; and other necessary matters to assure that the investigation activities, once completed, will yield data whose integrity can be defended.

QA refers to the conduct of all planned and systematic actions necessary to perform satisfactorily all task-specific activities and to provide information and data confidence as a result of such activities. The QA for task-specific activities includes the development of procedures, auditing, monitoring and surveillance of the performance.

QC refers to the activity performed to determine if the work activities conform to the requirements. This includes activities such as inspections of the work activities in the field (e.g., verification that the items and materials installed conform to applicable codes and design specifications). QA is an overview monitoring of the performance of QC activities through audits rather than first time inspections.

1.2 Cleanup Criteria and Laboratory Reporting Limits

The following soil cleanup criteria will be used to evaluate the analytical data collected as part of the RA sampling:

Soil:	6 NYCRR Part 375 Restricted Residential Use Soil Cleanup Objectives (SCOs) listed in Table 375-6.8(b), Protection of Public Health Restricted Use SCOs and the Protection of Groundwater SCOs listed in Table 375-6.8(b).

The following groundwater cleanup criteria will be used to evaluate the analytical data collected following completion of the RA:

Groundwater:	6 NYCRR Part 703 Groundwater Quality Standards and the NYSDEC Division of Water Technical and Operational Guidance Series (TOGS) 1.1.1, Ambient Water Quality Standards and Guidance Values

The environmental analytical laboratory selected for this SMP must have reporting limits that are low enough to meet the above referenced cleanup standard and QA/QC objectives specified in NYSDEC DER-10 Remedial Program Guidance. As part of project planning and throughout the project life cycle, the environmental consultant will maintain close communications with the contracted laboratory to convey the necessity for establishing and achieving data reporting goals. Additional information regarding the contracted lab and reporting limits are provided in *Section 4.6* of this document.

2 QAPP ORGANIZATION AND RESPONSIBILITY

The principal organizations involved in verifying achievement of data collection goals for the Site include: the NYSDEC, NYSDOH, Applicant, Consultant, drilling subcontractor(s), independent environmental laboratory and the independent third-party data validator. Roles, responsibilities, and required qualifications of these organizations are discussed in the following subsections.

2.1 NYSDEC and NYSDOH

It is the responsibility of the NYSDEC, in conjunction with NYSDOH, to review the SMP and supporting documents, for completeness and conformance with the site-specific cleanup objectives and to make a decision to accept or reject these documents based on this review. The NYSDEC also has the responsibility and authority to review and approve all QA documentation collected during brownfield cleanup construction and to confirm that the QAPP was followed.

2.2 Applicant

BCD Owner LLC ("Applicant") will be responsible for complying with the QA requirements as specified herein and for monitoring and controlling the quality of the Brownfield cleanup construction either directly or through their designated environmental consultant and/or legal counsel. The Applicant will also have the authority to a select Remedial Action Contractor(s) to assist them in fulfilling these responsibilities. The designated Project Manager is responsible for implementing the project and has the authority to commit the resources necessary to meet project objectives and requirements.

2.3 Environmental Consultant

Impact is the prime consultant on this project and is responsible for the performance of the services required to implement each phase of the SMP, including, but not limited to, field operations, laboratory testing, data management, data analysis and reporting. Any one member of Impact's staff may fill more than one of the identified project positions (e.g., field team leader and site safety and health officer). The various quality assurance, field, laboratory, and management responsibilities of key project personnel are defined below and the resumes are provided in **Appendix A**.

<u>Impact Project Manager (PM): Chris Connolly</u>

The Impact PM has the responsibility for ensuring that the project meets the SMP objectives. The PM will report directly to the by BCD Owner LLC Project Coordinator and the NYSDEC/NYSDOH Project Coordinators and is responsible for technical and project oversight. The PM will:

- Define project objectives and develop a detailed work plan schedule.

- Establish project policy and procedures to address the specific needs of the project as a whole, as well as the objectives of each task.
- Acquire and apply technical and corporate resources as needed to assure performance within budget and schedule constraints.
- Develop and meet ongoing project and/or task staffing requirements, including mechanisms to review and evaluate each task product.
- Review the work performed on each task to assure its quality, responsiveness, and timeliness.
- Review and analyze overall task performance with respect to planned requirements and authorizations.
- Review and approve all deliverables before their submission to NYSDEC.
- Develop and meet ongoing project and/or task staffing requirements, including mechanisms to review and evaluate each task product.
- Ultimately be responsible for the preparation and quality of interim and final reports.
- Represent the project team at meetings.

Impact Field Team Leader: Alex Keenan

The Field Team Leader (FTL) has the responsibility for implementation of specific project tasks identified at the Site and is responsible for the supervision of project field personnel, subconsultants, and subcontractors. The FTL reports directly to the Project Manager. The FTL will:

- Define daily work activities.
- Orient field staff concerning the project's special considerations.
- Monitor and direct subcontractor personnel.
- Review the work performed on each task to ensure its quality, responsiveness, and timeliness.
- Assure that field activities, including sample collection and handling, are carried out in accordance with this QAPP.

For this project, the FTL will also serve as the Site Safety and Health Officer (SSHO). As such, he is responsible for implementing the procedures and required components of the Site Health and Safety Plan (HASP), determining levels of protection needed during field tasks, controlling site entry/exit, briefing the field team and subcontractors on site-specific health and safety issues, and all other responsibilities as identified in the HASP.

Impact Field Personnel:

The field personnel hold a minimum of a bachelor's degree in a relevant natural or physical science or engineering. The field personnel will complete the collection of environmental samples from the Site in accordance with the requirements of the remedial investigation work plan and the QAPP and oversee subcontractor work. The field personnel will:

- Implement sample collection protocols in accordance with applicable procedures for soil and groundwater sample collection.
- Ensure quality control procedures are being implemented.
- Ensure adherence to and successful completion of SMP tasks.
- Oversee subcontractors to ensure field work is completed in accordance with the SMP and QAPP.
- Record field notes and provide daily updates on work progress.

2.4 Quality Assurance (QA) Responsibilities

The QA Officer will have direct access to corporate executive staff as necessary, to resolve any QA dispute, and is responsible for auditing the implementation of the QA program in conformance with the demands of specific investigations and Impact policies, and NYSDEC requirements. The QA Officer has sufficient authority to stop work on the investigation as deemed necessary in the event of serious QA issues. The resume for the QA Officer is provided in **Appendix B**.

Impact Project QA Officer: Donald Peters

Specific function and duties include:

- Performing QA audits on various phases of the field operations.
- Reviewing and approving QA plans and procedures.
- Providing QA technical assistance to project staff.
- Reporting on the adequacy, status, and effectiveness of the QA program on a regular basis to the Project Manager for technical operations.
- Responsible for assuring third party data review of all sample results from the analytical laboratory.

2.5 Field Responsibilities

Impact field staff for this project is drawn from a pool of qualified resources. The Project Manager will use staff to gather and analyze data, and to prepare various task reports and support materials. The designated technical team members are experienced professionals who possess the degree of specialization and technical competence required to perform the required work effectively and efficiently. The resumes for field personnel are provided in **Appendix C**.

3 QUALITY ASSURANCE OBJECTIVES FOR MEASUREMENT DATA

The overall objectives and criteria for assuring quality for this effort are discussed below. This QAPP addresses how the acquisition and handling of samples and the review and reporting of data will be documented. The objectives of this QAPP are to address the following:

- The procedures to be used to collect, preserve, package, and transport soil and groundwater samples.
- Field data collection.
- Record keeping.
- Data management
- Chain-of-custody procedures.
- Precision, accuracy, completeness, representativeness, decision rules, comparability and level of quality control effort conformance for sample analysis and data management by Alpha Analytical under EPA analytical methods.

3.1 Level of QC Effort for Sample Parameters

Method blank, field duplicate, laboratory duplicate, laboratory control, standard reference materials (SRM) and matrix spike samples will be analyzed to assess the quality of the data resulting from the field sampling and analytical programs. QC samples are discussed below.

- Method blank samples are generated within the laboratory and used to assess contamination resulting from laboratory procedures.
- Duplicate samples are analyzed to check for sampling and analytical reproducibility.
- MS/MSD and MS/Duplicate samples provide information about the effect of the sample matrix on the digestion and measurement methodology. Depending on site-specific circumstances, one MS/MSD or MS/Duplicate should be collected for every 20 or fewer investigative samples to be analyzed for organic and inorganic chemicals of a given matrix.
- Equipment field blank samples are used to determine if specific materials utilized in sample collection can cross contaminate the sample.

The general level of QC effort will be one field (blind) duplicate and one equipment field blank (when non-dedicated equipment is used) for every 20 or fewer investigative samples of a given matrix. Additional sample volume will also be provided to the laboratory to allow site-specific MS/MSD or MS/Duplicate for every 20 or fewer investigative samples of a given matrix. One trip blank consisting of distilled, deionized water will be included along with each sample delivery group of aqueous VOC samples. Equipment field blanks will be collected at a frequency of 1 per day for all PFAS and 1,4-dioxane sampling for each matrix. Number of all QA samples are included in Table 1.

4 SAMPLING AND ANALYSIS PLAN

Methods and protocols to be used for collection of environmental samples (i.e., soil, groundwater, and soil vapor) for this investigation are described in the Impact Field Operating Procedures (FOPs) presented in Appendix D. The overall investigative planning process pursues targeting specific matrices in locations of potential concern based on current/historical uses and/or site conditions. Once a sample group meets data quality objectives, analysis is considered valid and used to determine if values exceed state designated guidance values. Based on data evaluation the generated conceptual site model can inform the remedial strategy to better develop site-specific remedial action objectives.

Sample parameter lists, holding times and sample container requirements are summarized in Table 1. The sampling program and related site activities are discussed below. To the extent allowed by existing physical conditions at the facility, sample collection efforts will adhere to the specific methods presented herein. If alternative sampling locations or procedures are implemented in response to facility specific constraints, each will be selected on the basis of meeting data quality objectives. Such alternatives will be approved by NYSDEC before implementation and subsequently documented for inclusion in the project file.

4.1 Custody Procedures

Sample custody is controlled and maintained through the chain-of-custody procedures. Chain of custody is the means by which the possession and handling of samples will be tracked from the source (field) to their final disposition, the laboratory. A sample is considered to be in a person's custody if it is in the person's possession or it is in the person's view after being in his or her possession or it was in that person's possession and that person has locked it in a vehicle or room. Sample containers will be cleaned and preserved at the laboratory before shipment to the Site. The following section and FOPs for Sampling, Labeling, Storage, and Shipment, located in Appendix B, describe procedures for maintaining sample custody from the time samples are collected to the time they are received by the analytical laboratory.

4.2 Sample Storage

Samples are stored in secure limited-access areas. Walk-in coolers or refrigerators are maintained at 4 degrees Celsius (°C), or as required by the applicable regulatory program. The temperatures of all refrigerated storage areas are monitored and recorded a minimum of once per day. Deviations of temperature from the applicable range require corrective action, including moving samples to another storage location if necessary.

4.3 Sample Custody

Sample custody is defined by this document as when any of the following occur:

- It is in someone's actual possession.
- It is in someone's view after being in his or her physical possession.
- It was in someone's possession and then locked, sealed or secured in a manner that prevents unsuspected tampering.
- It is placed in a designated and secured area.

Samples are removed from storage areas by the sample custodian or analysts and transported to secure laboratory areas for analysis. Access to the laboratory and sample storage areas is restricted to laboratory personnel and escorted visitors only; all areas of the laboratory are therefore considered secure. If required by the applicable regulatory program, internal chain-of-custody is documented in a log by the person moving the samples between laboratory and storage areas.

Laboratory documentation used to establish COC and sample identification may include the following:

- Field COC forms or other paperwork that arrives with the sample.
- The laboratory COC.
- Sample labels or tags are attached to each sample container.
- Sample custody seals.
- Sample preparation logs (i.e., extraction and digestion information) recorded in hardbound laboratory books that are filled out in legible handwriting and signed and dated by the chemist.
- Sample analysis logs (e.g., metals, GC/MS, etc.) information recorded in hardbound laboratory books that are filled out in legible handwriting and signed and dated by the chemist.
- Sample storage log (same as the laboratory COC).
- Sample disposition log, which documents sample disposal by a contracted waste disposal company.

4.4 Sample Tracking

All samples are maintained in the appropriate coolers prior to and after analysis. The analysts remove and return their samples as needed. Samples that require internal COC are relinquished to the analysts by the sample custodians. The analyst and sample custodian must sign the original COC relinquishing custody of the samples from the sample custodian to the analyst. When the samples are returned, the analyst will sign the original COC returning sample custody to the sample custodian. Sample extracts are relinquished to the instrumentation analysts by the preparatory analysts. Each preparation department tracks internal COC through their logbooks/spreadsheets. Any change in the sample during the time of custody will be noted on the COC (e.g., sample breakage or depletion).

4.5 Field Instrument Calibration

This section describes the calibration procedures and the frequency at which these procedures will be performed for instruments.

4.5.1 Instrument Calibration and Tuning

Calibration of instrumentation is required to ensure that the analytical system is operating correctly and functioning at the proper sensitivity to meet established reporting limits. Each instrument is calibrated with standard solutions appropriate to the type of instrument and the linear range established for the analytical method. The frequency of calibration and the concentration of calibration standards is determined by the manufacturer's guidelines, the analytical method, and/or laboratory's internal Quality Assurance Plan.

4.5.2 Field Instrument Calibration

Calibration of the field instruments will be completed prior to each day's use in accordance with the manufacturer's instructions. The field equipment will be maintained, calibrated, and operated in a manner consistent with the manufacturer's guidelines and standard use methods. Quantitative field measurements will be limited to organic vapor readings (Photoionization Detector). Records of calibration, repair or replacement will be filed and maintained by the Field Team Leader.

4.6 Analytical Procedures

A single laboratory will be utilized for analysis of the soil and groundwater samples collected during the post RA field sampling activities. The selected analytical laboratory for this project is Alpha Analytical of Westborough, Massachusetts. Alpha is certified by the NYSDOH Environmental Laboratory Approval Program (ELAP) Number 11148. The laboratory analyses will be in accordance with the most recent version of the NYSDEC Analytical Services Protocol (ASP) and the laboratory's internal Quality Assurance Plan. The lab will provide a Category B data deliverable.

The analytical methods Alpha will use for samples collected to delineate contaminants during the post RA sampling include:

Analytical Methods for Soil Samples	
USEPA Method 8260C/5035	Target Compound List (TCL) Volatile Organic Compounds (VOCs) + Tentatively Identified Compounds (TICs)

Analytical Methods for Groundwater Samples	
USEPA Method 8260C	TCL VOCs + TICs

All other reporting and deliverables (i.e., waste characterization samples, geochemistry data for remedial action evaluation) will be in accordance with Standard Laboratory Procedure.

Alpha has provided a series of tables that contain the analytical parameters for soil with the applicable reporting limits, method detection limits, containers and hold times. The Alpha tables are provided in **Appendix E**. Alpha has also provided the SOP for the PFAS analysis which is provided in **Appendix F**.

4.7 Data Validation/ Usability Evaluation

The analytical laboratory data package will be validated by Christina Rink-Ashdown with Laboratory Data Consultants, Inc of Carlsbad, CA (LDC, Inc.), an independent/third-party data validator subcontractor, in accordance with the NYSDEC Division of Environmental Remediation DER-10, Appendix 2B(b) DEC Analytical Services Protocol Category B Data Deliverable. Refer to **Appendix G** for resume of the third-party data validator.

4.7.1 Procedures Used to Evaluate Data Usability

The sample analytical data for each sample matrix shall be evaluated and include, but are not limited to:

- Lab Report Narrative Review
- Data Package Completeness and COC records
- Sample Preservation and Holding Times
- Initial and Continuing Calibration
- QC Blanks
- Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD)
- Matrix Spike/Matrix Spike Duplicates (MS/MSD)
- Surrogate Spikes
- Internal Standard Response and Retention Times
- Laboratory Duplicates
- Field Duplicates
- Raw Data (chromatograms), Calculation Checks and Transcription Verifications
- Reporting Limits

4.7.2 Data Usability Summary Report (DUSR)

The DUSR will provide an evaluation of the analytical data to determine whether the data meets the criteria of a NYSDEC ASP Category B data deliverable and meets the data quality objectives for the project.

4.7.3 Data Submissions/ Electronic Data Deliverables

The Analytical Services Protocol (ASP) Category B data packages and an electronic data deliverable (EDD) will be provided by the laboratory after receipt of a complete sample delivery group. The Project Manager will immediately arrange for archiving the results and preparation of result tables. These tables will form the database for assessment

of the site contamination condition. Each EDD deliverable must be formatted using a Microsoft Windows operating system and the NYSDEC data deliverable format for EQuIS. To avoid transcription errors, data will be loaded directly into the ASCII format from the laboratory information management system. If this cannot be accomplished, the consultant should be notified via letter of transmittal indicating that manual entry of data is required for a particular method of analysis. All EDDs must also undergo a QC check by the laboratory before delivery. The original data, tabulations, and electronic media are stored in a secure and retrievable fashion. The Project Manager or Task Manager will maintain close contact with the QA reviewer to ensure all non-conformance issues are acted upon prior to data manipulation and assessment routines. Once the QA review has been completed, the Project Manager may direct the Team Leaders or others to initiate and finalize the analytical data assessment.

Table 1: Summary of Sample Parameters, Holding Times and Sample Container Requirements

Table 1. Summary of Sample Parameters, Holding Times and Sample Container Requirements
13-16 to 13-24 Beach Channel Drive, Queens, New York

Sample Matrix	Test Method	Parameters	Containers	Preservation	Holding Times
Soil - Gas (air) Analysis	USEPA Compendium TO-15	VOCs	6-Liter Summa Canister	Summa - NA	15 Days
Soil	USEPA SW846 Method 5035A/8260C	TCL VOC+TICs	Terra Core	Water, 4 °C	48 Hours/14 Days*
	USEPA SW846 Method 8270D	TCL SVOCs+TICs	4oz glass jar	4 °C	14 Days (extraction)
	USEPA SW846 Method 8082A	TCL PCBs	4oz glass jar	4 °C	14 Days (extraction)
	USEPA SW846 Method 8081B	TCL Organochlorine Pesticides	4oz glass jar	4 °C	14 Days (to extraction)
	USEPA Method 6010D	TAL Metals	4oz glass jar	4 °C	180 Days
	USEPA Method 7471B	TAL Metal - Mercury	4oz glass jar	4 °C	28 Days
	USEPA Method 7196A	Hexavelent Chromium	4oz glass jar	4 °C	30 Days
	USEPA Method 9010C	Total Cyanide	4oz glass jar	4 °C	14 Days
	Modified USEPA Method 1633	PFAS	8oz HDPE Container	4 °C	14 days to Extraction, and 40 days After Extraction
	USEPA Method 8270 SIM	1,4-Dioxane	4oz glass jar	4 °C	14 Days (extraction)

* The holding time for VOCs is soil is 48-hours, until the sample is aliquoted and extruded into two (2) sealed vials with DI water and frozen to -7°C and one (1) sealed vial with methanol, then the hole time is extended to 14 days.

Table 1. Summary of Sample Parameters, Holding Times and Sample Container Requirements
13-16 to 13-24 Beach Channel Drive, Queens, New York

Sample Matrix	Test Method	Parameters	Containers	Preservation	Holding Times
Groundwater	USEPA SW846 Method 8260C	TCL VOC+TICs	3 - 40ml VOA Vials	HCL, pH<2, 4 °C	14 days
	USEPA SW846 Method 8270D	TCL SVOCs+TICs	2 - 1000 ml glass	4 °C	7 Days (extraction)
	USEPA SW846 Method 8082A	TCL PCBs	2 - 1000 ml glass	4 °C	7 Days (extraction)
	USEPA SW846 Method 8081B	TCL Pesticides	2 - 500 ml glass	4 °C	7 Days (extraction)
	USEPA Method 6010D	Total TAL Metals	500 ml plastic	HNO3, pH<2, 4 °C	180 Days
	USEPA Method 7471B	TAL Metal - Total Mercury	500 ml plastic	HNO_3, pH<2, 4 °C	28 Days
	Lab Sample Filtration	TAL Dissolved Metals	-	-	Filtration in Lab within 24 hours
	USEPA Method 3015A	Acid Digestion for Filtered TAL Metals	-	-	After Filtration
	USEPA Method 6010D	Dissolved TAL Metals	500 ml plastic	4 °C	180 Days after digestion
	USEPA Method 7471B	TAL Metal - Dissolved Mercury	500 ml plastic	4 °C	28 Days after digestion
	USEPA Method 7196A	Hexavelent Chromium	500 ml plastic	4 °C	24 Hours
	USEPA Method 9010C	Total Cyanide	250 ml plastic	NaOH, pH>12, 4 °C	14 Days
	Modified USEPA Method 1633	PFAS	2 - 250 ml HDPE	Trizma, 4 °C	14 Days (extraction)
	USEPA Method 8270D-SIM w/Isotope Dilution	1,4-Dioxane	2 - 1000 ml glass	4 °C	7 Days (extraction)

Appendix A: Key Project Personnel Resumes

CHRISTOPHER CONNOLLY

PROJECT MANAGER

11 years EXPERIENCE

EDUCATION

Bachelor of Science, Music Technology and Studio Systems Design-, University of Rhode Island(2008)

EXPERIENCE

2015-Present **IMPACT ENVIRONMENTAL** Project Manager

- Conducts visual inspections and produces Phase I Environmental Site Assessments.
- Arranges, organizes, and oversees Phase II Environmental Site Assessments and Limited Subsurface Investigations.
- Arranges and oversees small, moderate and large-scale remediation projects, including communication with disposal facilities, subcontractors, Clients and regulatory agencies, as applicable.
- Produces Work Plans, Final Engineering Reports and other associated regulatory reports.
- Conducts various methods of soil and groundwater sampling, groundwater monitoring, well purging & sampling, and soil vapor sampling.

2010-2015 **Laurel Environmental Associates.** Environmental Scientist

- Conducts visual inspections of Phase I & II Environmental Site Assessments.
- Writes Transaction screen and Phase I, II, and III Environmental Site Assessments, Remedial Action Work Plans (RIWP), Environmental Assessment Statements (EAS) and Supplemental Studies reports, as well as New York City Office of Environmental Remediation Voluntary Cleanup Program Reports.
- Assists in Phase II site operations.
- Organizes, arranges logistics, and oversees small to large scale remediation projects, with accurate communication with disposal facility, trucking, developer and regulatory agency required. Conducts associated CAMP monitoring and writes Daily Reports.
- Conducts various methods of soil and groundwater sampling, groundwater monitoring, well purging & sampling, and soil vapor sampling.
- Experience operating and assisting with truck-mounted, track-mounted and portable Geoprobe® machines and tooling.
- Conducts ground penetrating radar, magnetic and utility surveys.
- Completed OSHA 24-Hour HAZWOPER Training program.
- Conducts Nuisance Noise and Excessive Vibration monitoring assessments.
- Project manages numerous NYC OER Voluntary Cleanup Projects, dealing with the remediation and continuing use of Brownfields sites.

KEY PROJECTS

- KENSINGTON ROAD, Bronxville, NY.
    - 1.63-acre New York State Department of Environmental Conservation Brownfields Cleanup Program (BCP) Remediation: Oversight, Reporting, Agency, client and developer coordination.
- RCRA Closure projects, activities and reports.
- CEQR EAS Reports, OER Work Plans, OER Final Engineering Reports.
- Gasoline Station Portfolio Phase I and II ESAs

CERTIFICATIONS/ ACHIEVEMENTS

- OSHA – Health and Safety for Hazardous Waste Site Investigation Personnel Certification, 40 Hours
- OSHA – Construction Safety Curse, 10 Hours

Appendix B: Project QA Officer Resume

MICHAEL BLUIGHT, P.G.

Technical Manager

19 years EXPERIENCE

EDUCATION

Masters of Science, Hydrogeology SUNY at Stony Brook (In Progress)
Bachelor of Science, Geology. SUNY at Stony Brook (2000)

EXPERIENCE

2013-Present **IMPACT ENVIRONMENTAL** *Technical Manager/Quality Service Manager/Project Manager*

- Directed environmental related tasks related to the redevelopment of New York State Voluntary Cleanup Program and Inactive Hazardous Waste sites for future retail and commercial use
- Managed a portfolio of retail petroleum/automotive service station remediation projects in the metropolitan New York City and Long Island regions.
- Constructed and implemented interim and operable unit remedial measures and performed contaminant migration investigations for New York State Superfund projects.
- Devised and implemented bioremediative and in-situ chemical oxidation subsurface injection remedial work for petroleum and chlorinated solvent impacted sites.
- Provided project manager support related to technical design and construction of soil, soil vapor and groundwater remediation systems.
- Mentored and provided support for junior-level staff related to Federal, State and local environmental regulations, protocols and procedures, remediation system design and technical specifications, regulatory report writing, contaminate transport and flow modeling software, and field work protocols and procedures.
- Conducted ultiple UST removal/replacement assessments, closures and remedial actions, Phase I and Phase II environmental site assessments and investigation and soil vapor intrusion investigation projects in the metropolitan New York City and Long Island regions.

2000-2013 Experience as a Project Manager and Senior Hydrogeologist at leading metropolitan New York based environmental and engineering firms

KEY PROJECTS

- Dzus Fasteners (NYS Inactive Hazardous Waste Disposal) Site, West Islip, NY
- Melody Cleaners (NYS Voluntary Cleanup Program) Site, East Meadow, NY
- Gerdau Steel/Anaconda Copper Site, Perth Amboy, NJ
- Cerro Wire (NYS Inactive Hazardous Waste Disposal) Site, Syosset, New York
- Sid Harvey Industries (NYS Voluntary Cleanup Program) Site, Valley Stream, New York
- General Dynamics Armament and Technical Products Site, Glen Cove, New York
- Fujicolor Processing, Inc. Sites, Nationwide locations
- Fairchild Republic Aircraft Main Plant (NYS Inactive Hazardous Waste Disposal) Site, Farmingdale, New York
- Commercial Envelope Manufacturing (NYS Inactive Hazardous Waste Disposal) Site, Deer Park, New York

ORGANIZATIONS

- National Ground Water Association
- Long Island Association of Professional Geologists
- New York State Council of Professional Geologists

CERTIFICATIONS/ ACHIEVEMENTS

- OSHA 40-hour HAZWOPER Training
- OSHA 10-hour Construction Safety
- CPR & First Aide Training
- Undergraduate Excellence in Teaching – SUNY @ Stony Brook
- Professional Geologist NYS#000872

Appendix C: Project Personnel Resumes

KEVIN KLEAKA, P.G.

Executive Vice President/Senior Environmental Scientist

23 years EXPERIENCE

EDUCATION

State University of New York at Plattsburg,
Bachelor of Science in Environmental Science, 1995 Applied Environmental Science Program

EXPERIENCE

(1997-Present) **– IMPACT ENVIRONMENTAL CLOSURES Inc.,**
Executive Vice President, Senior Environmental Scientist

- Principally responsible for managing environmental assessment, investigation, construction and remediation projects in commercial and industrial markets for lenders, real estate investment/development firms, construction firms and government agencies.
- Manage Phase I and II Environmental Site Assessments, State Spill Investigation and Remediation, County and Federal Underground Injection Control Programs, State & City Voluntary/Brownfield Cleanup Programs, State & Federal Superfund Sites, Brownfield Environmental Restoration Programs, Federal RCRA Closure, City E-Designation Projects.
- Responsible for environmental compliance of construction projects for waste management.
- Quality control of work products and deliverables.
- Supervise staff of geologists, hydrogeologists, engineers, environmental scientists, and environmental technicians to develop and implement sampling and analysis plans, quality assurance programs, remedial action plans.
- Provide expert witness testimony/fact statements and support in litigation cases involving soil, air and/or groundwater pollution.

(1995-1997) – **WYETH AYERST LABORATORIES**, Chemist worked in chromatographic separations division performing quality assurance analysis.

- Performed laboratory procedures and analyses in accordance with USFDA analytical test methods by liquid, gas, and thin layer chromatography.

KEY PROJECTS

- East Side Access MTA LIRR
- Melody Cleaners
- ExxonMobil Spill- Valley Stream, NY
- Spartan Petroleum
- JFK 1020, Runway 13R-31L
- Rheingold Brewery Redevelopment Project
- WTC Greenwich Street Corridor Reconstruction
- Yankee Stadium Macomb's Park

ORGANIZATIONS

- New York City Brownfield Partnership
- New Partners for Community Revitalization
- ASTM Committee
- National Groundwater Association
- Environmental Bankers Association
- Vapor Intrusion Network
- Long Island Geologist Association
- Environmental Consulting Professionals
- Environmental Insurance Professionals

CERTIFICATIONS/ ACHIEVEMENTS

- Licensed Profession Geologist (NYS# 000735)
- Gold Certified Brownfield Professional 2012
- Advanced Tools for In-Situ Remediation Workshop
- ASTM Technical & Professional Training for Assessment of Vapor Intrusion into Structures of Property & New York State Department of Health, Vapor Intrusion Training
- New York Precision Equipment Global Survey Positioning Training
- MTBE & TBA Comprehensive Site Assessment and Successful Groundwater Remediation
- Environmental Data Resources, Due Diligence Workshop
- Advanced Technologies for Accelerated Natural Attenuation
- Eophysical Survey Systems, Theory and Practice of Applying Subsurface Interface Radar in Engineering and Geophysical Investigation.
- 40-Hour Occupational Safety & Health Administration

GREG MENDEZ-CHICAS

SENIOR PROJECT MANAGER

11 years EXPERIENCE

EDUCATION

Bachelor of Science, Environmental Science, SUNY at Plattsburgh (2007)

EXPERIENCE

IMPACT ENVIRONMENTAL, 2009-Present, *Senior Project Manager*

- Direct and supervise staff of geologists, hydrogeologists, and environmental engineers in development and implementation of environmental assessments, investigations, construction and remediation projects in commercial and industrial markets for lenders, real estate investment/development firms, construction firms and government agencies.
- Provide regulatory and technical guidance and strategy
- Manage Phase I and Phase II assessments, State Spill Investigation and Remediation, County and Federal Underground Injection Control Programs, State & City Voluntary/Brownfield Cleanup Programs, State & Federal Superfund Sites, Brownfield Environmental Restoration Programs, Federal RCRA Closure, City E-Designation Projects.
- Quality control of project budgets, efficiencies, and profitability
- Maintain key relationships with existing clients, and cultivate the development of new business and growth.

APEX COMPANIES, 2007-2009, *Environmental Scientist*

- Prepared Phase I Environmental Assessments (ESAs) in general conformation with ASTM Practice E-1527-05 and USEPA ALL Appropriate Inquiries (AAI).
- Performed various aspects of Phase II scopes of work for commercial and industrial properties.
- Conducted microbiological sampling/investigations at a medical equipment manufacturing facility
- Preparation and implementation of sub-slab soil vapor sampling plans at former utilized gasoline and/or dry cleaning operations.

KEY PROJECTS

- LIRR/MTA East Side Access (five contracts)
- Briarcliff Manor
- Saint Barnabas Hospital Expansion

CERTIFICATIONS/ ACHIEVEMENTS

- OSHA 40-hour HAZWOPER Training
- OSHA 8-hour Refresher (2007-to-present)
- OSHA 10-hour Construction Training (2016)
- New York State Licensed Asbestos Inspector (2007-to-present)
- NYSDEC Erosion & Sediment Control Training (2016)
- Amtrak (2016) & LIRR Roadway Safety Training (2017)
- New York City Office of Environmental Remediation – Certified Brownfield Professional (Silver Certification)

DANIEL FRUHAUF

Associate Project Manager

8 years EXPERIENCE

EDUCATION

Bachelor of Arts, Ecosystems & Human Impact. SUNY at Stony Brook (2012)

EXPERIENCE

2014-Present **IMPACT ENVIRONMENTAL** *Associate Project Manager*

- Responsible for management and logistical coordination of investigative and remedial tasks, schedule and implementation quality on very large to small clean-up projects within NYC, Long Island, NY and East Chicago, Indiana
- Developed and prepared various environmental planning documents approved by regulators including, Remedial Action Work Plans, Corrective Measures Implementation Work Plan, Health and Safety Plans, Waste Characterization Work Plans, Community Air Monitoring Plans, Phase II ESA Work Plans, Underground Storage Tank Removal Work Plan, etc.
- Responsible for developing complex methods of tracking and incorporating innovative technology to measure remedial completion for adequate reporting purposes
- Assembled proposals, work orders, change orders and general contracts for multiple clients
- Performed complex Phase II Assessments and other Subsurface Investigations to detect and target specific contaminants for delineation purposes.
- Designed and constructed various remedial systems including sub-slab depressurization systems, soil vapor extraction systems.
- Conducted, presented and attended multiple regulator meetings with USEPA, NYSDEC, NYC OER.
- Provided a professional attitude of always learning, exploring new methods and teaching along the way

2013-2014 **SOVEREIGN CONSULTING Inc.** *Environmental Scientist*

- Collected field data, soil, groundwater samples from various NYSDEC regulated Spill Sites and other hazardous waste sites
- Assisted in construction and design of SVE, SSDS and product skim systems at multiple tri-state clean-up projects
- Prepared various reporting components specific to NYSDEC Quarterly Monitoring Reports, Phase I ESA, Phase II ESA and owner liability risk assessments
- Provided contractor oversight and split sampling with multiple environmental contractors on various clean-up and development projects
- Engaged in various meetings with regulators as to develop clean-up strategies for complex projects

KEY PROJECTS

- Former Du Pont East Chicago Facility – RCRA CA Clean-up Project, East Chicago, IN
- Independent Metal Strapping – NYSDEC/RCRA Closure, Roslyn, NY
- Multiple MTA/ LIRR Development Projects – NYC, LI NY
- Saint Barnabas Hospital Development Project – Bronx NY
- Multiple NYC OER regulated Commercial Development Projects - NYC

CERTIFICATIONS/ ACHIEVEMENTS

- HAZWOPER 40hr + 8hr Refreshers
- OSHA 10hr Construction Safety
- OSHA 30hr Construction Safety
- Transportation Worker Identification Card (TWIC)
- NYC Office of Environmental Remediation (OER) Trained
- MTA/Amtrak Track Safety
- MTA/NYC Transit Track Safety
- LIRR Safety Blue Card
- NYSDEC SWPPP Certified Inspector
- Certified NYSDOL Asbestos Inspector

LEIF ROBERTSON

ASSOCIATE PROJECT MANAGER

6 years EXPERIENCE

EDUCATION

Bachelor of Science, Geology, SUNY at Cortland (2012)

EXPERIENCE

2017-Present **IMPACT ENVIRONMENTAL** *Associate Project Manager*

- Prepares Phase I and Phase II Environmental Site Assessments (ESAs) in general conformance with ASTM Practice.
- Prepares Field Sampling Plans for NYSDEC Spill Sites.
- Carry out environmental investigative work including soil borings, soil sampling, groundwater monitoring well installation and groundwater collection, soil vapor and sub-slab soil vapor probe installation and sample collection and subsequent data analysis and presentation to client.
- Oversees logistics of small to moderate scale remediation projects, including drafting and modeling, communication with disposal facilities, subcontractors, Clients and regulatory agencies, as applicable.
- Coordinate and oversee remediation work in compliance with site-specific approved Remedial Action Work Plans and with Local, State, and Federal Regulations.

2015-2017 **VHB ENGINEERING** *Project Scientist*

- Gather field data on NYSDEC spill sites.
- Performed Underground Storage Tank removal oversight and soil screening.
- Document environmental field work, and assist in preparing and completing reports.
- Maintain community air monitoring programs and document job site activities related to foundation construction phase projects.
- Conduct groundwater (low-flow) sampling events and real time water parameter data logging using various equipment
- Contamination concentration, plume direction reports related to petroleum spills.
- Groundwater, soil & vapor sampling.
- Perform ASTM Phase I ESA Site Inspections and Prepare Reports.

KEY PROJECTS

- Bill Wolf Petroleum
- Spartan Petroleum
- Atlantis Management Group
- Former DuPont Facility East Chicago

CERTIFICATIONS/ ACHIEVEMENTS

- OSHA 40-hour HAZWOPER Training
- OSHA 8-hour Refresher
- OSHA 10-hour Construction Training
- OSHA 30-Hour Construction Training

XIN YUAN, P.E.

Quality Control Manager

EDUCATION

Masters of Science, Civil Engineering, UMass Amherst (2010)
Bachelor of Science, Environmental Engineering. Tsinghua University, Beijing, China (2008)

EXPERIENCE

2010-Present **IMPACT ENVIRONMENTAL** *Quality Control Manager/Environmental Analyst*

- Quality control of all waste management/brownfield redevelopment projects;
- Management of site remediation/waste management projects;
- Environmental compliance & permitting of waste management facilities
- Achieve and maintain appropriate and consistent application of environmental compliance for waste disposal/beneficial use facilities
- Achieve and maintain appropriate and consistent application of environmental compliance at the regional Levels for waste management projects
- Review & evaluate site investigation/waste characterization results for waste management projects and provide technical recommendations to project manager
- Authored a multitude of BUD petitions for various other solid waste related projects in NY,NJ &PA, including projects such as The East Side Access, The Air Rail Project and JFK International Jet Blue Terminal 5
- Design and perform waste characterization investigations for waste management projects

KEY PROJECTS

- Columbia University Manhattanville Development Project
- LIRR 3rd Track Expansion Project
- Atlas Quarry Reclamation Project
- Former New Jersey Zinc Company-West Plant Remediation Project
- Morris Blanchard Redevelopment Project
- Brooklyn Bridge Park Pier 1 Redevelopment Project
- Southwest Brooklyn Marine Transfer Station Redevelopment Project
- Doremus Avenue Redevelopment Project

CERTIFICATIONS/ ACHIEVEMENTS

- Long Island Association of Professional Geologists
- American Chinese Real Estate Society

CERTIFICATIONS/ ACHIEVEMENTS

- US EPA 40hr Hazardous Materials Response for First Responders Training
- Professional Engineer in MA, PA, NJ & NY

Appendix D: Field Operating Procedures

FIELD OPERATING PROCEDURES

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B.1 FIELD SAMPLING PROCEDURES

B.1.1 Sampling Personnel

The activities associated with the remedial investigation will be performed by or under the auspices of a Quality Assurance Officer. The sample staff (samplers) will possess a minimum of a BA Degree in the Earth, Space or Biological Sciences or a BS Degree in Engineering. Samplers will have a minimum of one (1) year experience in environmental/geological fieldwork. Additionally, all samplers will have received mandatory forty-hour Occupational Safety and Health Administration (OSHA) training on working with potentially hazardous materials and appropriate Hazard Communication Program and "Right-To-Know" training.

B.1.2 Geophysical Survey

A geophysical survey will be performed over target portions of the planimetric surface of the subject property utilizing a GSSI model SIR-2 ground penetrating radar (GPR) system equipped with a 400MHz antenna. The survey will be performed to identify the presence of any abandoned and/or active underground injection wells associated with the on-site sanitary systems on the Site.

A GPR system consists of a radar control unit, control cable and a transducer (antenna). The control unit transmits a trigger pulse at a normal repetition rate of 50 KHz. The trigger pulse is sent to the transmitter electronics in the transducer via the control cable. The transmitter electronics amplify the trigger pulses into bipolar pulses that are radiated to the subsurface. The transformed pulses vary in shape and frequency according to the transducer used. In the subsurface, variations of the signal occur at boundaries where there is a dielectric contrast (void, steel, soil type, etc.). Signal reflections travel back to the control unit represented as color graphic images for interpolation. This system is capable of transmitting electromagnetic energy in the frequency range of 16MHz to 2000MHz.

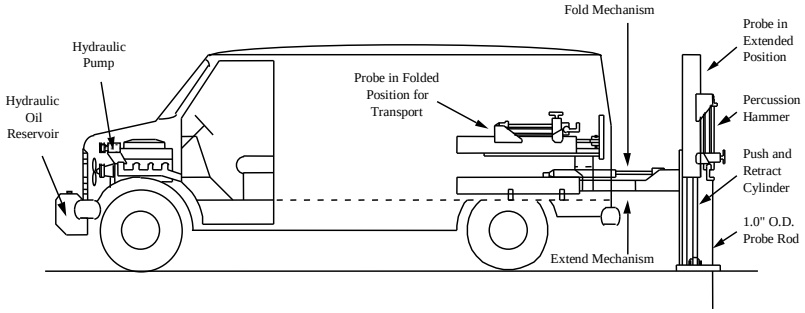
A qualified Impact Environmental Consulting, Inc. technician will specify a coordinate system on the planimetric surface of the site to map any subsurface dielectric anomalies detected on the premises. The operator will use knowledge of the subsurface soil composition to calibrate the SIR-2 system to site-specific conditions. Factor settings such as range, gain, number of gain points, and scans per unit, may be modified to yield the most accurate data to describe the subsurface conditions.

Upon finding a dielectric anomaly, a more spatially specific coordinate system may be designed over the area to determine size, shape and orientation. The data collected during the survey will be reviewed by the operator and compared against past experience, technical judgment and prior site knowledge to classify any detected anomalies.

B.1.3 Subsurface Vapor Probe and Soil Boring Installation/Soil Sampling

Subsurface probes will be installed using a *Geoprobe* hydraulically powered probing tool. Mechanized, vehicle mounted probe systems apply both static force and hydraulically powered percussion hammers for tool placement (static down forces up to 18,000 pounds combined with percussion hammers of eight horsepower continuous output). Recovery of large sample volumes will be facilitated with a probe-driven sampler. The probe-driven sampler consists of a hollow probe, which opens via a remote-control mechanism at the selected sampling depth in the soil profile to allow soil to enter as it was advanced. Discrete media samples will be secured at the desired depths and contained within a non-reactive transparent plastic sleeve that lined the hollow probe. The plastic sleeves will be removed for subsequent inspection and sample aliquot acquisition.

Geoprobe Operating System



B.1.4 Sample Characterization

A visual inspection of all soil samples recovered for the hydrogeological study will be conducted to classify the sample media. Color classifications will be made in accordance with the Munsell Classification System. Gradation classifications will be made in accordance with the Unified Soil Classification System.

B.1.5 Field Headspace Analysis

Headspace analysis will be performed on each of the acquired soil samples utilizing a portable photo ionization detection meter to measure what, if any, hydrocarbon concentrations were present in isolated portions of the secured samples. Calibration of the PID will be conducted prior to sampling using a span gas of known concentration. Headspace analysis will be conducted by partially filling a wide-mouth glass container with sample aliquot and sealing the top with aluminum foil, thereby creating a void. This void is referred to as the sample headspace. To facilitate the detection of any hydrocarbons contained within the headspace, the container will be agitated for a period of thirty (30) seconds. The probe of the vapor analyzer will then be injected through the foil into the headspace to measure the hydrocarbon concentrations present. A Photovac Micro-Tip, photo ionization detection meter (PID) will be the organic vapor analyzer selected for the headspace analysis. A PID utilizes the principle of photo ionization for detection and measurement of hydrocarbon compounds. A PID does not respond to all compounds similarly; rather, each compound has its own response factor relative to its calibration. For this investigation, the PID will be calibrated to isobutylene. Hydrocarbon relative response factors for a PID calibrated to isobutylene are published by the manufacturer.

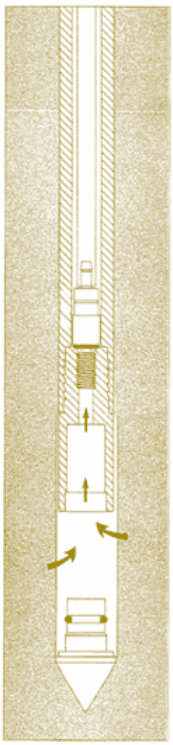
B.1.6 Soil Gas Survey – Photoionization Detector

The concrete slab will be cored at the sampling points using an electric powered core drill. Subsurface probes will be installed using *Geoprobe* manual probing tools. The probes will be equipped with retractable points that allow for soil gas to be measured at discrete depths. Each soil gas sample will be collected from the retractable point utilizing 3/8-inch in diameter disposable tubing. The soil gas will be drawn (purged) for approximately 15 seconds using a portable vacuum pump. The photo ionization detector will then be attached to the tubing to secure a soil gas reading.

B.1.7 Soil Gas Survey –Laboratory Analysis

Subsurface probes will be installed using a Geoprobe operating system. The probes will be equipped with a port run tubing system that allows for soil gas to be measured at discrete depths (see diagram below). This soil-gas sampling device uses a vacuum tight seal that isolates the sample acquisition to the specified depth. This device will assure quality control of the multi-depth soil-gas samples and eliminate the potential for inaccurate data. Each soil gas sample will be collected from the port run tubing system-utilizing 3/8-inch in diameter disposable Teflon tubing. The soil gas will be drawn (purged) for approximately 30 seconds using a portable vacuum pump. The soil gas will be pumped into a decontaminated portable pump and collected within a tedlar bag for preservation. Purging and sample collection flow rates will not exceed 0.2 liters per minute.

Geoprobe Port Run Tubing System



Tracer gas field testing, using helium gas, will be performed on all implants prior to sampling, to verify the integrity of each implant seal and to limit the possibility of sample dilution from surface air. The tracer gas field test will consist of sealing the area surrounding the implant with plastic sheeting and then introduce the tracer gas underneath the sheeting, so that the area where the probe intersects the ground is immersed in the tracer gas. A Model MGD-2002 Multi-Gas Leak Locator or equivalently approved helium detector will be connected to the soil vapor implant and sub-slab vapor implant, in accordance with Section 2.7.5 of the *October 2006, Guidance for Evaluating Soil Vapor Intrusion in the State of New York* NYSDOH guidance document, and tracer gas concentrations in the well will be recorded in the sampling log sheet. This procedure will be duplicated at each implant, prior to sample collection. The laboratory will confirm the field tracer gas tests by first analyzing approximately 85 to 90% of each sample canister for VOC's via USEPA method TO-15 and then use a helium detector to analyze the remaining contents in the Summa Canisters.

The sampling logs with the recorded field tracer gas test measurements and the tracer gas measurements reported by the laboratory will be submitted to NYSDEC with the initial sampling round report. NYSDEC will review the field and laboratory tracer gas test results to determine if the bentonite/cement grout seal

for each implant will require repairs and/or replacement to reduce the infiltration of ambient air and if additional tracer gas field/laboratory testing is required in the subsequent soil vapor sampling round.

B.1.8 Permanent Well Installation

Permanent monitoring wells are installed to provide repeated access to groundwater for collecting samples, as well as for obtaining water-level and other field data. Because monitoring wells are used to collect samples, it is important that construction materials not interfere with sample quality either by contributing contaminants or by sorbing contaminants already present. Further, construction materials must be compatible with (i.e., not degraded by) contaminants present in soils or groundwater.

Monitoring wells are potential contaminant migration routes between aquifers or from the surface to the subsurface. Construction procedures and standards must ensure that neither passive nor active introduction of contaminants can occur. Properly installed hydraulic seals and locking well covers reduce the potential for cross-contamination of monitoring wells.

Equipment needed:

- Drilling or auguring equipment appropriate to site conditions, drilling depth, and other project requirements.
- Drill bits appropriate for the expected soil and rock type(s) to be encountered.
- Sufficient threaded flush-joint riser pipe of an approved material [stainless steel, polyvinyl chloride (PVC)] in convenient lengths. *(NOTE: No glues are permitted.)*
- Sufficient threaded flush-joint slotted screen of an approved material (stainless steel, PVC) to meet design criteria. *(NOTE: No glues are permitted.)*
- Properly sized and washed filter pack material (quartz sand) in sufficient volume to meet well design criteria.
- Powdered bentonite.
- Photoionization detector.
- Steel surface casing (if required).
- Steel protective casing with locking cap.
- Tremie pump and pipe.
- Protective clothing, as required.
- Weighted measuring tape.

The following steps will be followed when installing monitor wells:

1. Advance the borehole to the required depth using a bit or auger flight of a diameter sufficient to allow for insertion of the tremie pipe when the casing is centered. It is preferred that the borehole be at least 2 inches in diameter larger than the casing diameter. The borehole should be drilled slightly deeper than required for the combined length of casing and screen. The final completion depth should be sounded with a decontaminated, weighted tape before continuance of well placement.

2. Make up the screen for installation. The casing and screen must be decontaminated. Tighten joints.
3. Withdraw the drill rods and bit through the auger flights. Check the borehole depth with a weighted surveyor's tape.
4. Lower the casing string into the drill casing.
5. Install the filter pack. Six inches or more of filter pack material should be spotted at the bottom of the hole, under the screen. Filter pack will be installed to 2 - 3 feet above the top of the screen.
6. Check the depth to the top of the filter pack with a weighted tape.
7. Tremie, or for shallow wells (<35 feet), gravity feed bentonite onto the top of the filter pack.
8. Pure bentonite grout (or equivalent) will be used as the annular seal, grout will be mechanically mixed with the appropriate amount of water. For shallow wells (<35 feet) granular bentonite may be substituted for grout.
9. Tremie the grout into the annulus using a tremie. Slowly withdraw the tremie pipe as the annulus fills. Grout the well to within 1 foot of the surface. Compare actual volume of grout placed with calculated volume. Both should be annotated in the field logbook.
10. After installing grout, dismantle and clean tremie equipment.
11. Finish the concrete pad so that it slopes away from the wellhead in all directions with a minimum thickness of 4 inches. If weather conditions warrant, cover the concrete until cured. Lock the well cover.
12. If the well design specified guard posts, dig the holes and set the guard posts in concrete separate from the concrete pad. Posts and concrete must extend to a depth of 2 feet.
13. Record the appropriate construction/completion information in the field logbook and on the appropriate monitoring well installation.
14. If a form was used for the concrete pad, return to the well site after the concrete has cured for at least 24 hours and remove the form. Backfill around the pad with native soil. Drill a weep hole for protective casing and just above the concrete pad.
15. The well identification should be marked on the protective casing and PVC cap. Paint the well cover and posts, if required.

B.1.9 Well Development

Monitor wells are developed to remove fines from the filter pack. Wells should not be developed for 24 hours after completion when a bentonite grout is used to seal the annular space. However, wells may be developed before grouting if conditions warrant. Wells are purged immediately before groundwater sampling to remove stagnant water and a sample representative of groundwater conditions. Wells should be sampled within 3 hours of purging (optimum) to 24 hours after purging (maximum, for low recharge conditions).

Equipment needed:

• Pump, pump tubing, or bailer and rope or wire line

• Water-level meter

• Temperature, conductivity and pH meters

• Personnel protective equipment as specified in the site-specific HASP

• Decontamination supplies

• Disposal drums, if required

• Photoionization Detector

Procedures.

The following steps will be followed when developing wells:

1. Put on personnel protective clothing and equipment as specified in the site-specific HASP.

2. Open and check the condition of the wellhead, including the condition of the surveyed reference mark, if any. Use photoionization detector at wellhead to determine the presence of VOCs (if applicable).

3. Determine the depth to static water level and depth to bottom of the casing.

4. Prepare the necessary equipment for developing the well. There are a number of techniques that can be used to develop a well. Some of the more common methods are bailing, surging and purge, and over pumping.

5. Continue well development until produced water is clear and free of suspended solids.

6. Remove the pump assembly or bailers from the well, decontaminate, and cleanup the site.

7. Lock the well cover before leaving. Dispose of produced water as required by the project work plan.

B.1.10 Monitoring Well Sampling

Monitoring well sampling is conducted with the goal of collecting data representative of groundwater conditions in the subsurface. The data obtained from a sampling event is typically very important for decision making, as it may be used to identify the presence of constituents of concern in groundwater, monitor the performance of a remedial measure, or evaluate the risks to potential receptors.

A written site specific monitoring or sampling plan is typically available that identifies the frequency of sampling, the wells to be monitored, equipment to be used, required laboratory analytical methods and parameters, sampling procedures, equipment decontamination procedures, sample quality

assurance/quality control (QA/QC) measures and data reporting requirements. Each monitoring or sampling plan will vary from one site to the next and should be reviewed when planning for a monitoring well sampling event.

Equipment:

The following is a list of standard equipment needed to conduct monitoring well sampling. Additional equipment may be required based on the sampling techniques and site conditions.

- Health and Safety Plan (HASP)
- Field Book
- Personal Protective Equipment
- Decontamination Equipment
- Traffic Control Devices
- Polyethylene Sheeting
- Bailers
- String
- Pumps
- Power Source to Operate Pumps
- Water Level Meter
- Tubing
- Buckets
- Sample Bottles
- Cooler
- Ice
- Bubble Wrap
- Calculator
- Disposable gloves

Procedures

Monitoring Well Gauging

Monitoring wells are typically gauged before sampling. Gauging includes measuring the depth to water (and/or non-aqueous phase liquids) and depth to bottom in the monitoring well with an electronic water level meter (WLM) or electronic interface probe (EIP). An EIP is used to gauge a well that contains non-aqueous phase liquids (NAPL-floating product). If wells do not contain NAPL, then a WLM is sufficient. The list of monitoring wells to be gauged should be provided in the monitoring or sampling plan and listed on the PTA. The entire network of monitoring wells should be gauged before sampling begins.

Sample Bottles

Groundwater samples are collected into laboratory supplied bottles. Bottles are typically ordered from the laboratory in advance of the sampling event. The size, bottle material (glass, plastic), and number of

bottles required for each sample will depend on the constituents being analyzed for and the analytical methods. Bottles delivered from the laboratory may contain a small amount of preservative. The preservative is to remain in the bottle. Overfilling the bottle may result in dilution of the preservative and should be avoided. When sampling for volatile compounds, no air (bubbles) may be present in the sample bottle.

Sampling Techniques

Many different techniques exist for sampling monitoring wells. The techniques vary depending on the constituents of concern, depth to groundwater, diameter of monitoring well and regulatory requirements. The technique appropriate for a specific site should be identified in the monitoring and sampling plan

Purging

Many of the sampling techniques include purging the monitoring well prior to sample collection. Purging is indented to remove stagnant water from the monitoring well after which a representative sample of the groundwater from the subsurface can be collected. During purging, three to five volumes of standing water in the well are removed. The volume of water in a monitoring can be calculated using the following equation:

Feet of standing water in well * Conversion factor = 1 well volume

Example:
10’ * 0.65 = 6.5 gallons (1 well volume)

Well Diameter (in inches)	Conversion Factor
½	0.01
1	0.04
2	0.16
3	0.37
4	0.65
6	1.50

Purge water must be managed in accordance with the monitoring or sampling plan and local regulations.

Field Monitoring

Monitor indicator parameters (main indicator parameter for VOCs is DO) during purging, monitor and record the field indicator parameters (turbidity, temperature, specific conductance, pH, Eh and DO) at three to five-minute intervals. The well is considered stabilized and ready for sample collection when the indicator parameters have stabilized for three consecutive readings as follows:

1. 50 NTUs for turbidity

+/-0.1 for pH

2. +/-3% for conductance

3. +/-10 mv for redox potential

4. +/-10% for DO and turbidity

Sample Chain of Custody

The chain of custody (COC) form is used to record the inventory of samples to be delivered to the laboratory and document the transfer of custody from the sampler to the laboratory. All samples, including QA/QC samples, to be delivered to the laboratory must be listed on the COC along with requested analytical methods and parameters. The COC is to remain with the samples from the time of collection until receipt at the laboratory.

Sample Handling, Storage and Shipment Samples should be stored in laboratory-supplied coolers immediately after sampling. The cooler must contain ice in order to bring the temperature of the sample to 4 degrees Celsius. Samples must remain on ice until received by the laboratory. Care must be exercised to ensure that bottles do not break during handling of the cooler. Glass-on-glass contact often leads to breakage and should be avoided by wrapping each bottle in bubble wrap material.

Samples are to be delivered to the laboratory in coolers as soon as possible after collection. Each laboratory analytical method has a unique holding time, which is defined as the maximum time between sample collection and analysis by the laboratory. Samples analyzed after the hold time are usually considered invalid. Hold times may vary from one day to 6 months depending on the laboratory analytical methods. Holding time information can be obtained from the laboratory. It is the responsibility of the sampler to confirm that the delivery method will ensure receipt of the samples by the laboratory within the allotted holding time.

Sample delivery options include: shipment by common courier, personal delivery to the laboratory and delivery by the laboratory's courier service. Each laboratory may have a preferred sample delivery process. Coolers must be packed with sufficient amounts of ice and bubble wrap material to ensure the samples will be received by the laboratory intact and at an acceptable temperature. A custody seal, provided by the laboratory, should be placed over the opening between the lid and the base of the cooler, and the seal ID number recorded on the chain of custody form. The custody seal provides a means of alerting the laboratory if the cooler has been opened, and potentially tampered with, between the time it was sealed by the sampler and received by the laboratory. Guidance on cooler packing may be obtained from the laboratory.

Decontamination

Decontamination is necessary to avoid cross-contaminating samples. Sampling equipment that is not dedicated to a specific well must be decontaminated before sampling and after each sample is collected. Decontamination procedures may be specific to the site's monitoring or sampling plan. Typical equipment decontamination procedures may include rinses in the following sequence:

1) Tap water rinse
2) Alconox rinse
3) Tap Water Rinse
4) Deionized water rinse

When possible, samples should be collected from the least contaminated wells first and progress onto the more contaminated wells in order to reduce chances of sample cross-contamination.

Documenting a Monitoring Well Sampling Event

Information from the monitoring well sampling event must be documented on a field data form or recorded in the site-specific field book. Information to be recorded includes weather conditions, well integrity issues, well gauging information, purge volumes, sampling equipment and supplies used, sample identifications, sample collection times and the presence of any conditions that may compromise the integrity of the samples.

B.1.11 Low Flow Well Purging and Sampling

Purpose

The purpose of the low flow (low formation stress) purging and sampling procedure is to collect groundwater samples from monitoring wells that are representative of ground water conditions in a particular geological formation. This is accomplished by setting the intake velocity of the sampling pump to a flow rate, which limits drawdown inside the well casing. The placement of the intake of the sampling pump should be midway within the most permeable zone of the formation.

Equipment

- Pump system (adjustable rate, positive displacement groundwater sampling pump e.g., bladder or centrifugal pump)
- Control box (with or without a built-in compressor)
- Compressed Nitrogen tank (if necessary)
- Indicator parameter monitoring device(s)

- Flow measurement device (Flow cell)
- Personal Protection Equipment (PPE)
- Field Book
- Health and Safety Plan (HASP)
- Tools to access monitoring wells
- Disposable gloves
- Kevlar gloves
- Safety cones
- Sample containers (provided by laboratory)
- Chains of Custody (provided by laboratory)
- Blank or Pre-printed labels
- Glassware with appropriate preservative (provided by the laboratory)
- Ice
- Calculator
- Adsorbent pads
- Electronic interface probe
- Decontamination equipment
- String
- Appropriate size bailers
- Tubing (preferably Teflon for organics)

Procedure

Remove the gripper cap at all well locations and allow the water table to equilibrate, take care to secure all wells by closing the flush mount covers. Start sampling at the well-known or believed to have the least contamination and systematically to the most contaminated well, remembering to conduct proper decon procedure. During gauging and sampling activities equipment should not come into direct contact with the ground surface, plastic sheeting may be utilized as a clean and disposable working surface.

Slowly lower the pump to the depth specified for that well, the pump intake should never be set within two feet of the bottom of any well. This prevents disturbance and resuspension of any sediment. Record the depth of the pump intake. Re-measure the water level and begin purging, keeping the purge rate within 200-500 millimeters per minute (ml/min). Water level should be measured and recorded at three to five-minute intervals. Ideally, a steady flow rate should be maintained that results in a stabilized water level (drawdown of 0.3 ft or less is desired). Monitor indicator parameters (main indicator parameter for VOCs is DO) during purging, monitor and record the field indicator parameters (turbidity, temperature,

specific conductance, pH, Eh and DO) at three to five-minute intervals. The well is considered stabilized and ready for sample collection when the indicator parameters have stabilized for three consecutive readings as follows:

1. 50 NTUs for turbidity
2. +/-0.1 for pH
3. +/-3% for conductance
4. +/-10 mv for redox potential
5. +/-10% for DO

Collect sample from dedicated or disposable tubing. Remove any non-dedicated equipment from the well. Secure all wells. Fill out the chain of custody. At the end of the sampling day, coolers will be taped shut with the custodian's initials placed on custody seals at points of entry. Samples will be shipped via lab courier to the contract laboratory for morning delivery, picked up by courier or delivered directly to the laboratory by the field personnel at the end of the sampling day.

Contact with the laboratory will be made within 24 hours after each sampling event to ensure that samples arrived safely and with proper integrity preserved.

B.1.12 Grouting Bore Holes

Subsequent to the completion of each soil and groundwater probe installed during the remedial investigation, bottom-up grouting of the borehole will be conducted to grade. The grouting system was designed specifically for direct push applications. With powerful reciprocating (piston) pumps, the Geoprobe Grout Machines will deliver standard ASTM grout materials through 1.25-inch diameter Geoprobe probe rods or through 3/8-inch (1/4-inch inside diameter) polyethylene tubing. The pump is rated at 1000 psi with flow rates from 0.9 to 2.3 gpm.

B.1.13 Emerging Contaminant PFAS

The NYSDEC requires analysis for Per- and Polyfluoroalkyl Substances (PFAS) for new remedial program Sites as part of the investigation of potentially affected media, including soil, groundwater, surface water and sediment as an addition to the standard TAL/TCL sampling. Soil vapor sampling for PFAS is not required.

The following is the list of the 40 PFAS compounds identified by the NYSDEC for investigation:

- Perfluorobutanoic acid (PFBA)
- Perfluoropentanoic acid (PFPeA)
- Perfluorohexanoic acid (PFHxA)
- Perfluoroheptanoic acid (PFHpA)
- Perfluorooctanoic acid (PFOA)
- Perfluorononanoic acid (PFNA)
- Perfluorodecanoic acid (PFDA)
- Perfluoroundecanoic acid (PFUnA)
- Perfluorododecanoic acid (PFDoA)
- Perfluorotridecanoic acid (PFTriA)
- Perfluorotetradecanoic acid (PFTeA)
- Perfluorobutanesulfonic acid (PFBS)
- Perfluoropentanesulfonic acid (PFPeS)
- Perfluorohexanesulfonic acid (PFHxS)
- Perfluoroheptanesulfonic Acid (PFHpS)
- Perfluorooctanesulfonic acid (PFOS)
- Perfluorononanesulfonic acid (PFNS)
- Perfluorodecanesulfonic acid (PFDS)
- Perfluorododecanesulfonic acid (PFDoS)
- Perfluorooctanesulfonamide (FOSA)
- NMeFOSAA
- NEtFOSAA
- 4:2 FTS
- 6:2 FTS
- 8:2 FTS
- NEtFOSA
- NMeFOSA
- NMeFOSE
- NEtFOSE
- 9Cl-PF3ONS
- HFPO-DA (GenX)
- 11Cl-PF3OUdS
- ADONA
- 3:3 FTCA
- 5:3 FTCA
- 7:3 FTCA
- NFDHA
- PFMBA
- PFMPA
- PFEESA

PFAS Sampling Protocol:

Since the probability of false positives is relatively high during PFAS sample collection, due to the potential for many sources of cross-contamination combined with the low laboratory detection limits, guidance is needed for staff who will perform subsurface investigation activities (i.e., soil borings, monitoring well installation) and for staff collecting and/or handling PFAS environmental samples.

There are many products/materials/supplies that contain PFAS which pose a greater risk for introducing PFAS contamination into a sample during the sample collection process. These sources include the water used during drilling or decontamination, materials used within the sampling environment, sampling equipment, field clothing and personal protective equipment, sun and biological protection products, personal hygiene and personal care products, food packaging and the environment itself.

Field Clothing and Personal Protective Equipment (PPE)

Due to the extensive use of PFAS in many industries and products, clothing and PPE are likely to contain PFAS. Personnel completing field investigation work that will include the collection of samples for PFAS

analysis will need to address the physical, chemical and biological hazards associated with the Site. Field planning is essential to mitigate the potential for PFAS cross-contamination and to maintain personal safety.

- No clothing or boots with protective coatings can be worn (e.g., waterproof, water-repellent, fire-repellant or stain-resistant clothing or footwear). No Gore-Tex® or Tyvek material clothing/boots.
- Clothing worn during the collection of samples for PFAS analysis should be made of natural fibers (preferable cotton) and must have been previously washed a minimum of 5 times (i.e. no new clothing), without fabric softener and not with other clothing that may contain coatings.
- Use disposable, coating-free polyethylene coveralls and boot as applicable.
- Do not use personal care products on the day of sample collection:
    - Use PFAS-free soap and shampoo when scheduled for sample collection.
    - Limit toothpaste, mouthwash and dental floss to fluoride free options.
    - Do not use lotions, moisturizers, cosmetics, sunscreen or insect repellents prior to sampling.
- Use disposable, nitrile gloves.
- Do not use aluminum foil, prepackaged food, fast food wrappers or containers.

<u>Field Sampling Equipment/Materials</u>:

Because of the potential presence of PFAS in equipment typically used for drilling and to collect soil, groundwater, surface water, sediment, and drinking water samples, as well as the need for very low reporting limits, special handling and care must be taken when collecting samples for PFAS analysis to avoid sample contamination. The following guidance should be considered when using field sampling equipment.

- A screening of the equipment and materials that will be used during field sampling activities must be completed to identify equipment/materials that may be potential PFAS sources.
- Identify and use a PFAS free water source for drilling and decontamination of equipment.
- Use high density polyethylene [HDPE] water holding tanks.
- Use HDPE or silicone tubing materials.
- Use HDPE or polypropylene containers with HDPE or polypropylene caps.
- Use regular ice and Ziploc bags where there is no direct contact with the sample.
- Use loose plain paper, metal clipboard, ballpoint pens.
- When feasible, utilize single-use, disposable polyethylene or silicone materials (tubing, bailers, etc.) for monitoring well purging and sampling.

- Consumable core liners and catchers must be PVC.
- When using positive displacement/submersible pumps, familiarize yourself with the sampling pump/accessory equipment specifications to confirm that the device components do not contain Teflon® or Polytetrafluoroethylene (PTFE). Do not use pumps and tubing that contain Teflon™ and other fluoropolymer-containing materials.
- Do not use waterproof/treated paper or field books, plastic clipboards, water proof markers, Post-its and other adhesive paper products.
- Do not use passive diffusion bags for groundwater sampling.
- Do not use low density polyethylene (LDPE) sampling equipment/materials.
- Do not use drill casing thread lubricants that contain PFAS. Verify with supplier.
- Do not use LDPE or glass bottles with Teflon™-lined caps.
- Do not use chemical ice packs (i.e., Blue ice®).
- Do not handle any packaged food or drinks, aluminum foil, adhesive labels, etc. at or around sampling site.

Equipment Prep and Decontamination Procedures

The following procedure should be used to decontaminate HPDE, polypropylene or stainless-steel equipment used to collect samples for PFAS analysis. Because of the extremely low detection and reporting levels required for PFAS analysis, precaution should be taken to ensure decontamination materials (e.g., soap, tap water, deionized water) are not contaminated with PFAS prior to use. Traditional best practice techniques and procedures shall be subject to modification to prevent the introduction of non-site-derived contaminants including PFAS. Sample containers will be new and used only once for each sample and disposable equipment (e.g., gloves, tubing, etc.) will not be reused, therefore; these items will not require decontamination. All non-dedicated or non-disposable sampling equipment (i.e., the stainless-steel compositing vessel(s), flow-through cell, etc.) will be decontaminated between sample locations. The following guidance should be considered when preparing equipment and decontamination of equipment.

- An equipment decontamination area with a decon pad should be set up in the field to accommodate the sampling and drilling equipment.
- General Sampling Equipment Decon:
  - Rinse equipment with PFAS free – municipal PFAS free water to remove solids.
  - Use a polyethylene or poly vinyl chloride (PVC) brush and a low-phosphate lab detergent (i.e., Alconox) to scrub the equipment to remove residue and particulates.
  - Triple rinse clean equipment with PFAS Free deionized water and let air dry.

- Decontaminate sampling equipment after sampling at each location, or at the end of the field work day.
- The decontamination water should be changed between equipment cleanings.
- Clean, decontaminated equipment will be placed on clean polyethylene plastic or HPDE sheets to air dry. Direct contact with the ground will be avoided.

- Drilling Equipment Decon:
  - Drilling equipment, including rig, tooling, augers, bits, samplers, tremie pipes, etc. will be cleaned with a hot water pressure washer within a decon pad constructed of on clean polyethylene plastic or HPDE sheets and barriers to contain liquid generated.
  - The clean drilling equipment will be rinsed with PFAS Free deionized water and let air dry on clean polyethylene plastic or HPDE sheets.
  - Drilling equipment must be cleaned before beginning work (when applicable), in-between/following completion of borings, wells, and at the end of the field work day.
  - Tools, drill rods, and augers will be placed on polyethylene plastic or HPDE sheets following pressure washing. Direct contact with the ground will be avoided.
  - Decon water will be temporarily collected in 55-gallon drums and transported to a waste accumulation area for later disposal.
- Well Development Equipment Decon:
  - Prior to well development, non-dedicated equipment (e.g., bailers, PFOS-free pumps, etc.) will be washed with potable water and a PFC/phosphate-free detergent (i.e., Alconox®).
  - The sampling equipment will then be rinsed with potable water followed by a triple rinse with PFAS Free deionized water.
  - The clean/decontaminated equipment will be placed on polyethylene plastic or HPDE sheets to air dry. At no time, will washed equipment be placed directly on the ground.
  - Decon water will be temporarily collected in 55-gallon drums and transported to a waste accumulation area for later disposal.

Sample Collection

PFAS are ubiquitous in consumer products and the pervasive presence of these chemicals coupled with very sensitive analytical methods makes contamination of samples both in the lab and the field a significant concern from sources extraneous of the environmental media being sampled. The following guidance should be considered when undertaking collection of samples for PFAS analysis.

- Transport of sample collection supplies and equipment have the potential to come into contact with carpets and fabric in vehicles which have likely been treated with stain-resistant/water proofing containing PFAS. Steps should be taken to minimize this contact by packaging supplies

and equipment in the designated coolers and/or using polyethylene plastic or HPDE sheets as a barrier.

- Sample container labels should be prepared to the extent possible using a ball-point pen only before arrival at the sampling site and completed at the Site with a ball point pen; do not use sharpie or other permanent markers. No waterproof logbooks or plastic clipboards are to be used.
- Keep materials/equipment that may contain PFAS away from the sampling area and avoid physical contact with anything likely to contain PFAS (e.g., food, clothing, personal care products, etc.) during the sample collection process.
- Maintain an inventory of items used/maintained in the sampling area.
- If other sampling is to be performed, ALWAYS collect PFAS samples first. This avoids contact with any other type of sample container, bottles or package materials
- All sample containers use for PFAS sampling must come from the laboratory that will also be performing the PFAS analysis. Recommended sampling containers should be HDPE bottles fitted with unlined (no Teflon) polyethylene screw caps.
- Sample containers must be stored in a PFAS free container prior to sampling.
- For all environmental media, hands should be washed well before sampling.
- Wear disposable, powder free nitrile gloves to handle sampling equipment and sample containers. Clean nitrile gloves should be used when collecting the sample.
- Take precautions not to touch any surfaces prior to sample collection.
- As with all other samples, do not place the sample bottle cap on any surface when collecting the sample, and avoid all contact with the inside of the sample bottle or its cap.
- Sample directly into the provided HDPE bottle seal with cap. Place the bottles into individual sealed plastic bag (e.g. Ziploc®) separate from other samples in a clean, dedicated cooler for PFAS samples only.
- Use bagged ice (PFAS free) in the dedicated PFAS sample cooler; NO chemical ice packs in this cooler.
- No samples collected for other parameters can be stored with the PFAS samples.

PFAS Analysis and Reporting

The designated analytical laboratory must provide a full category B deliverable, and a DUSR will be prepared by an independent 3rd party data validator. QA/QC samples will be collected as required in DER-10, Section 2.3(c).

Modified EPA Method 537.1 is the preferred method to use for environmental samples due to its ability to achieve very low detection limits. Reporting limits for PFAS in groundwater and soil are to be 2 ng/L (ppt) and 0.5 ug/kg (ppb), respectively. If contract labs or work plans submitted by responsible parties indicate that they are not able to achieve these reporting limits for the entire list of 21 PFAS, site specific decisions will need to be made by the NYSDEC project manager in consultation with the NYSDEC remedial program chemist. Note: Reporting limits for PFOA and PFOS in groundwater should not exceed 2 ng/L.

The NYSDEC has developed a PFAS Analyte List for remedial programs. If lab and/or matrix specific issues are encountered for any compounds, the NYSDEC PM, in consul with the NYSDEC Remedial Program Chemist, will make case-by-case decisions as to whether certain analytes may be temporarily or permanently discontinued from analysis at each Site.

Summary of Prohibited and Acceptable Items for PFAS Sampling

Prohibited	Acceptable
Field Equipment	
Teflon/Silicone containing materials	HDPE, stainless steel, polypropylene materials
LDPE materials	Acetate liners
Waterproof field books/paper/bottle labels	Loose non-waterproof paper, and non-waterproof sample labels
Plastic Clipboards/binders/hard cover notebooks	Aluminum field clipboards or with Masonite
Waterproof markers/sharpies	Pens
Post-it-notes	Wet-ice
Chemical ice packs	
Field clothing and PPE	
New cotton clothing or synthetic water resistant, waterproof, or stain-treated clothing, clothing treated with Gore-Tex	Well laundered clothing made of natural fibers (preferably cotton)
Clothing laundered with fabric softener	No fabric softener
Boots containing Gore-Tex or treated with water resistant spray	Boots made with polyurethane and PVC
Tyvek	Laundered cotton clothing
Cosmetics, moisturizers, hand cream etc. as part of personal cleaning/showering routine, or non-natural toxic containing sunscreens and insecticides	Natural, non-toxic, and natural sunscreens/insect repellents.
Sample Containers	
LDPE or glass containers	HDPE or polypropylene
Teflon-lined caps	Unlined polypropylene caps
Rain events	
Waterproof or resistant rain gear	Wet weather gear made from polyurethane and PVC only
Equipment Decontamination	
Decon 90 Liquinox Water from onsite well	Alconox 7th Generation Free & Clear Dish Soap
Food considerations	
All food and drink with the exceptions of those noted on the right	Bottled water with hydration fluids (i.e. Gatorade and Powerade) to be brought and consumed only in staging areas
Vehicle Considerations	
Vehicle fabrics, carpets and mats may contain PFAAs	Avoid utilizing areas inside vehicles as sample/staging areas

B.1.14 Emerging Contaminant 1,4-Dioxane

The NYSDEC requires analysis for 1-4 Dioxane for new remedial program Sites as part of the investigation of potentially affected media, including soil, groundwater, surface water and sediment as an addition to the standard TAL/TCL sampling. Soil vapor sampling for 1,4-Dioxane is not required. 1,4-Dioxane is used as a stabilizer and inhibitor in chlorinated solvents, and used for a wide variety of other industrial processes. It is present in adhesives, sealants, cosmetics, pharmaceuticals, rubber chemicals and surface coatings.

The NYSDEC reporting limit for 1,4-dioxane in groundwater should be no higher than 0.35 µg/L (ppb) and no higher than 0.1 mg/kg (ppm) in soil. Materials used in environmental sampling can be a source of 1,4-dioxane contamination. 1,4-Dioxane also might be present in detergents used to decontaminate environmental sampling equipment.

Because of the potential presence of 1,4-dioxane in equipment typically used to collect environmental samples, as well as the need for very low reporting limits, special handling and care must be taken when collecting samples to avoid sample contamination. The best practice techniques and procedures provided in Section B.1.13 entitled *Emerging Contaminant PFAS* should be implemented when collecting samples for 1,4-dioxane analysis.

Although ELAP offers certification for both EPA Method 8260 SIM and EPA Method 8270 SIM in waters, the NYSDEC DER is advising the use of Method 8270 SIM because it provides a more robust extraction procedure, uses a larger sample volume, and is less vulnerable to interference from chlorinated solvents. The analysis currently performed for SVOCs in soil is adequate for evaluation of 1,4-dioxane in soil, which already has an established SCO.

B.2 QA/QC FIELD PROCEDURES

B.2.1 Decontamination Procedures

Prior to arrival on the Site and between sample locations, the probes will be decontaminated by steam cleaning, Alconox wash, and rinsing with distilled water. This will be followed by air drying as per project requirements. All sampling apparatus will be dedicated or disposable. A clean, new liner will be used for each sample. Parts will be inspected for wear and damage before each use.

B.2.2 Field Blanks

A field blank is a sample of analyte-free water transferred, at the project site, into an appropriate container for the purpose of distinguishing ambient air contamination from in-situ sample contamination. Field blanks are used to indicate potential cross contamination from sampling equipment as quality control of decontamination procedures. With regards to field sampling, one field blank will be collected for every work day. The procedures for obtaining a field blank sample are as follows:

- Collect two sets of sample vessels. One vessel shall contain analyte free water and the other is empty.
- Run the analyte free water through the decontaminated sampling equipment into the empty vessel. Analye the water of this collecting vessel for target analytes.

B.2.3 Trip Blanks

A trip blank is used to identify the presence of volatile compound contamination attributable to transfer across a sample container septum during shipping and storage of samples. A trip blank is a sample of analyte-free matrix that is transported from the laboratory to the sampling site with the sample containers. The trip blank is stored on-site with the sample containers and field samples and then transported back to the laboratory with the samples for analysis. The trip blank is received and processed as a sample by the laboratory. One trip blank shall be submitted per pickup from laboratory personnel.

B.2.4 Duplicate Samples

Duplicate sample collection will apply to groundwater, soil, soil vapor and ambient air samples collected at this Site. A duplicate (replicate) sample is collected to control the general sampling methodology that is being employed. This sample ensures that a representative sample is being collected. Duplicate samples may also be submitted to verify the accuracy of analytical results.

B.2.5 Matrix Spike/Matrix Spike Duplicate Samples

Matrix Spike/Matrix Spike Duplicate sample collection will apply to groundwater samples collected at this Site. A Matrix Spike and Spike Duplicate (MS/MSD) sample(s) are representative but randomly chosen client samples that have known concentrations of analytes of interest added to the samples prior to sample preparation and analysis. They are processed along with the same un-spiked sample. The purpose of the MS/MSD is to document the accuracy and precision of the method for that specific sample.

B.3 RECORD KEEPING AND DOCUMENTATION PROCEDURES

B.3.1 Sampling Documentation

The sample team or individual performing an activity shall be required to keep a weatherproof Site field notebook. The Site field notebook will be used on-site to record notes pertaining to the field sampling plan. Field notebooks are intended to provide sufficient data and observations to enable participants to reconstruct events that occurred during projects and to refresh the memory of the field personnel if called upon to give testimony during legal proceedings. In a legal proceeding, notes, if referred to, are subject to cross-examination and are admissible as evidence. The field notebook entries should be factual, detailed, and objective. All entries are to be signed and dated. All members of the field investigation team are to use this notebook, which shall be kept as a permanent record. The field notebook shall be filled out at the location of sample collection immediately after sampling. It shall contain sample descriptions including: sample number, sample collection time, sample location, sample description, sampling method used, daily weather conditions, field measurements, name of sampler, and other site-specific observations. The field notebook shall contain any deviations from the protocol contained herein, visitor's names, and community contacts made during sampling, and geologic and other site-specific information that may be noteworthy.

B.3.2 Sample Containers and Analytical Requirements

All sample vessels will be "level A" certified decontaminated containers supplied by a New York State Certified Commercial Laboratory. Samples analyzed for hydrocarbons will be placed in containers with Teflon lined caps. All samples will be preserved by cooling them to a temperature of approximately four degrees Celsius. If glass bottles are used, extra glass bottles will be obtained from the laboratory to allow for accidental breakage that may occur. Necessary preservatives will be placed in the sample bottles by the laboratory. The sample bottles will be handled carefully so that preservatives and glassware are not inadvertently spilled. All liquid samples will be put into 40-ml glass vials with Teflon liners.

B.3.3 Sample Tracking System

In order to provide for proper identification in the field, and proper tracking in the laboratory, all samples must be labeled clear and in a consistent fashion using the procedures and protocols described below and with the following subsections.

Sample labels will be waterproof and have a pre-assigned, unique number that is indelible.

Field personnel must maintain a field notebook. This notebook must be water resistant with sequentially numbered pages. Field activities shall be sequentially recorded at a later time. The notebook, along with the chain of custody form, must contain sufficient information to allow reconstruction of the sample collection and handling procedure at a later time. Each sample shall have a corresponding notebook entry that includes:

- Sample ID number
- Well location and number
- Date and time
- Analysis for which sample was collected
- Additional comments as necessary
- Sampler's name

Each sample must have a corresponding notebook entry on a chain-of-custody form. The manifest entry for sampling at any one location is to be completed before sampling is initiated by the same sampling team at any other location. In cases where the samples leave the immediate control of the sampling team, the samples must be sealed.

B.3.4 Sample Identification System

Each sample collected shall be designated by an alphanumeric code that shall identify the type of sampling location, the specific location, the matrix sampled, and a specific sample designation. Site specific procedures are described below.

Sample identifications shall contain a sequential code consisting of three segments. The first segment shall designate the project number. The second segment shall identify the location type. Location types shall be identified by a two-letter code. For example, MW will be used for monitoring well and GP for geoprobe. The third segment shall identify the specific sample location. The specific sampling location shall be identified using a three-digit number.

The fourth segment shall identify the matrix type and sample designation or identifier that identifies the sample depth, the sample event number, or other designation depending on the sample type. The matrix type shall be designated by a two-letter code. For example: GW will be used for groundwater. The sample identifier shall be represented by a two digit numeric code. Sampling events or rounds, such as for groundwater sampling shall be numbered in sequence beginning with "01" that corresponds to the round of sampling.

The following shall be a general guide for sample identification:

First Segment	Second Segment	Third Segment	Fourth Segment
NNN	AA	NNN	AANN
Project #	Location Type	Specific Type	Matrix Sample Identifier
455	GP	1	GW01

Symbol Definitions:	Location Type:	Matrix Type:
A = Alphabetic	MW = Monitoring Well	S = Soil
N = Numeric	GP = Geoprobe	GW = Groundwater

B.3.5 Sample Transfer

Samples shall be containerized and immediately transferred within a cooler to the mobile laboratory with minimal disturbance. Chain-of-custody forms will be completed at the time of sample collection and will accompany the samples inside a cooler for transfer from sample team to mobile laboratory representatives.

B.3.6 Chain-of-Custody Protocol

The primary objective of the sample custody procedures is to create an accurate written record that can be used to trace the possession and handling of all samples from the moment of their collection, through analysis, until their final disposition. Sample custody for samples collected during the investigation will be maintained by the field personnel collecting the samples. Field personnel are responsible for documenting each sample transfer and maintaining custody of all samples until they are transferred to the mobile laboratory.

Appendix E: Alpha Analytical Parameter Summary Tables

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PFAAs via EPA 1633 (Draft) (SOIL)

Holding Time: 90 days
Container/Sample Preservation: 1 - Plastic 8oz unpreserved

Analyte	CAS #	RL	MDL	Units	LCS Criteria	LCS RPD	MS Criteria	MS RPD	Duplicate RPD	Surrogate Criteria		
Perfluorobutanoic Acid (PFBA)	375-22-4	0.8	0.0504	ng/g	40-150	30	40-150	30	30			
Perfluoropentanoic Acid (PFPeA)	2706-90-3	0.4	0.056	ng/g	40-150	30	40-150	30	30			
Perfluorobutanesulfonic Acid (PFBS)	375-73-5	0.2	0.0432	ng/g	40-150	30	40-150	30	30			
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	757124-72-4	0.8	0.0808	ng/g	40-150	30	40-150	30	30			
Perfluorohexanoic Acid (PFHxA)	307-24-4	0.2	0.0464	ng/g	40-150	30	40-150	30	30			
Perfluoropentanesulfonic Acid (PFPeS)	2706-91-4	0.2	0.0232	ng/g	40-150	30	40-150	30	30			
Perfluoroheptanoic Acid (PFHpA)	375-85-9	0.2	0.0232	ng/g	40-150	30	40-150	30	30			
Perfluorohexanesulfonic Acid (PFHxS)	355-46-4	0.2	0.0592	ng/g	40-150	30	40-150	30	30			
Perfluorooctanoic Acid (PFOA)	335-67-1	0.2	0.052	ng/g	40-150	30	40-150	30	30			
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	27619-97-2	0.8	0.28	ng/g	40-150	30	40-150	30	30			
Perfluoroheptanesulfonic Acid (PFHpS)	375-92-8	0.2	0.0368	ng/g	40-150	30	40-150	30	30			
Perfluorononanoic Acid (PFNA)	375-95-1	0.2	0.0784	ng/g	40-150	30	40-150	30	30			
Perfluorooctanesulfonic Acid (PFOS)	1763-23-1	0.2	0.0792	ng/g	40-150	30	40-150	30	30			
Perfluorodecanoic Acid (PFDA)	335-76-2	0.2	0.0752	ng/g	40-150	30	40-150	30	30			
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	39108-34-4	0.8	0.3872	ng/g	40-150	30	40-150	30	30			
Perfluorononanesulfonic Acid (PFNS)	68259-12-1	0.2	0.0424	ng/g	40-150	30	40-150	30	30			
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSA	2355-31-9	0.2	0.1	ng/g	40-150	30	40-150	30	30			
Perfluoroundecanoic Acid (PFUnA)	2058-94-8	0.2	0.0512	ng/g	40-150	30	40-150	30	30			
Perfluorodecanesulfonic Acid (PFDS)	335-77-3	0.2	0.032	ng/g	40-150	30	40-150	30	30			
Perfluorooctanesulfonamide (FOSA)	754-91-6	0.2	0.0432	ng/g	40-150	30	40-150	30	30			
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	2991-50-6	0.2	0.0824	ng/g	40-150	30	40-150	30	30			
Perfluorododecanoic Acid (PFDoA)	307-55-1	0.2	0.0408	ng/g	40-150	30	40-150	30	30			
Perfluorotridecanoic Acid (PFTrDA)	72629-94-8	0.2	0.0528	ng/g	40-150	30	40-150	30	30			
Perfluorotetradecanoic Acid (PFTA)	376-06-7	0.2	0.1064	ng/g	40-150	30	40-150	30	30			
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-P	13252-13-6	0.8	0.0984	ng/g	40-150	30	40-150	30	30			
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	919005-14-4	0.8	0.1464	ng/g	40-150	30	40-150	30	30			
Perfluorododecane Sulfonic Acid (PFDoDS)	79780-39-5	0.2	0.0384	ng/g	40-150	30	40-150	30	30			
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF	756426-58-1	0.8	0.196	ng/g	40-150	30	40-150	30	30			
11-Chloroeicosafluoro-3-Oxaundecane-1-Sulfonic Acid (11C	763051-92-9	0.8	0.1672	ng/g	40-150	30	40-150	30	30			
N-Methyl Perfluorooctane Sulfonamide (NMeFOSA)	31506-32-8	0.2	0.1	ng/g	40-150	30	40-150	30	30			
N-Ethyl Perfluorooctane Sulfonamide (NEtFOSA)	4151-50-2	0.2	0.112	ng/g	40-150	30	40-150	30	30			
N-Methyl Perfluorooctanesulfonamido Ethanol (NMeFOSE)	24448-09-7	2	0.2504	ng/g	40-150	30	40-150	30	30			
N-Ethyl Perfluorooctanesulfonamido Ethanol (NEtFOSE)	1691-99-2	2	0.5104	ng/g	40-150	30	40-150	30	30			
Perfluoro-3-Methoxypropanoic Acid (PFMPA)	377-73-1	0.4	0.0408	ng/g	40-150	30	40-150	30	30			
Perfluoro-4-Methoxybutanoic Acid (PFMBA)	863090-89-5	0.4	0.0312	ng/g	40-150	30	40-150	30	30			
Perfluoro(2-Ethoxyethane)Sulfonic Acid (PFEESA)	113507-82-7	0.4	0.0832	ng/g	40-150	30	40-150	30	30			
Nonafluoro-3,6-Dioxaheptanoic Acid (NFDHA)	151772-58-6	0.4	0.0952	ng/g	40-150	30	40-150	30	30			
3-Perfluoropropyl Propanoic Acid (3:3FTCA)	356-02-5	1	0.144	ng/g	40-150	30	40-150	30	30			
2H,2H,3H,3H-Perfluorooctanoic Acid (5:3FTCA)	914637-49-3	5	0.5048	ng/g	40-150	30	40-150	30	30			
3-Perfluoroheptyl Propanoic Acid (7:3FTCA)	812-70-4	5	1.76	ng/g	40-150	30	40-150	30	30			
Perfluoro[13C4]Butanoic Acid (MPFBA)	*NONE*									*20-150*		
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	*NONE*									*20-150*		

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PFAAs via EPA 1633 (Draft) (SOIL)

Holding Time: 90 days
Container/Sample Preservation: 1 - Plastic 8oz unpreserved

Analyte	CAS #	RL	MDL	Units	LCS Criteria	LCS RPD	MS Criteria	MS RPD	Duplicate RPD	Surrogate Criteria		
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	*NONE*									*20-150*		
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-	*NONE*									*20-150*		
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	*NONE*									*20-150*		
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	*NONE*									*20-150*		
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	*NONE*									*20-150*		
Perfluoro[13C8]Octanoic Acid (M8PFOA)	*NONE*									*20-150*		
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-	*NONE*									*20-150*		
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	*NONE*									*20-150*		
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	*NONE*									*20-150*		
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	*NONE*									*20-150*		
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-	*NONE*									*20-150*		
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid	*NONE*									*20-150*		
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	*NONE*									*20-150*		
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	*NONE*									*20-150*		
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (	*NONE*									*20-150*		
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	*NONE*									*20-150*		
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	*NONE*									*20-150*		
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-1	*NONE*									*20-150*		
N-Methyl-d3-Perfluoro-1-Octanesulfonamide (d3-NMeFOSA	*NONE*									*20-150*		
N-Ethyl-d5-Perfluoro-1-Octanesulfonamide (d5-NEtFOSA)	*NONE*									*20-150*		
2-(N-Methyl-d3-Perfluoro-1-Octanesulfonamido)ethan-d4-o	*1265205-95-5*									*20-150*		
2-(N-Ethyl-d5-Perfluoro-1-Octanesulfonamido)ethan-d4-ol	*NONE*									*20-150*		

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1,4 Dioxane via EPA 8270D-SIM (SOIL)

Holding Time: 14 days
Container/Sample Preservation: 1 - Glass 250ml/8oz unpreserved

Analyte	CAS #	RL	MDL	Units	LCS Criteria	LCS RPD	MS Criteria	MS RPD	Duplicate RPD	Surrogate Criteria		
1,4-Dioxane	123-91-1	8	2.04	ug/kg	40-140	30	40-140	30	30			
1,4-Dioxane-d8	*17647-74-4*									*15-110*		
1,4-Dioxane-d8 (IS)	17647-74-4			ug/kg								

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METALS by 6010D (SOIL)

Analyte	CAS #	RL	MDL	Units	LCS Criteria	LCS RPD	MS Criteria	MS RPD	Duplicate RPD	Surrogate Criteria	Holding Time	Container/Sample Preservation
Aluminum, Total	7429-90-5	4	1.08	mg/kg	48-151		75-125	20	20		180 days	1 - Metals Only-Glass 60mL/2oz unpreserved
Antimony, Total	7440-36-0	2	0.152	mg/kg	1-208		75-125	20	20		180 days	1 - Metals Only-Glass 60mL/2oz unpreserved
Arsenic, Total	7440-38-2	0.4	0.0832	mg/kg	79-121		75-125	20	20		180 days	1 - Metals Only-Glass 60mL/2oz unpreserved
Barium, Total	7440-39-3	0.4	0.0696	mg/kg	83-117		75-125	20	20		180 days	1 - Metals Only-Glass 60mL/2oz unpreserved
Beryllium, Total	7440-41-7	0.2	0.0132	mg/kg	83-117		75-125	20	20		180 days	1 - Metals Only-Glass 60mL/2oz unpreserved
Cadmium, Total	7440-43-9	0.4	0.0392	mg/kg	83-117		75-125	20	20		180 days	1 - Metals Only-Glass 60mL/2oz unpreserved
Calcium, Total	7440-70-2	4	1.4	mg/kg	81-119		75-125	20	20		180 days	1 - Metals Only-Glass 60mL/2oz unpreserved
Chromium, Total	7440-47-3	0.4	0.0384	mg/kg	80-120		75-125	20	20		180 days	1 - Metals Only-Glass 60mL/2oz unpreserved
Cobalt, Total	7440-48-4	0.8	0.0664	mg/kg	84-115		75-125	20	20		180 days	1 - Metals Only-Glass 60mL/2oz unpreserved
Copper, Total	7440-50-8	0.4	0.1032	mg/kg	81-118		75-125	20	20		180 days	1 - Metals Only-Glass 60mL/2oz unpreserved
Iron, Total	7439-89-6	2	0.3612	mg/kg	45-155		75-125	20	20		180 days	1 - Metals Only-Glass 60mL/2oz unpreserved
Lead, Total	7439-92-1	2	0.1072	mg/kg	81-117		75-125	20	20		180 days	1 - Metals Only-Glass 60mL/2oz unpreserved
Magnesium, Total	7439-95-4	4	0.616	mg/kg	76-124		75-125	20	20		180 days	1 - Metals Only-Glass 60mL/2oz unpreserved
Manganese, Total	7439-96-5	0.4	0.0636	mg/kg	81-117		75-125	20	20		180 days	1 - Metals Only-Glass 60mL/2oz unpreserved
Nickel, Total	7440-02-0	1	0.0968	mg/kg	83-117		75-125	20	20		180 days	1 - Metals Only-Glass 60mL/2oz unpreserved
Potassium, Total	7440-09-7	100	5.76	mg/kg	71-129		75-125	20	20		180 days	1 - Metals Only-Glass 60mL/2oz unpreserved
Selenium, Total	7782-49-2	0.8	0.1032	mg/kg	78-122		75-125	20	20		180 days	1 - Metals Only-Glass 60mL/2oz unpreserved
Silver, Total	7440-22-4	0.4	0.1132	mg/kg	75-124		75-125	20	20		180 days	1 - Metals Only-Glass 60mL/2oz unpreserved
Sodium, Total	7440-23-5	80	1.26	mg/kg	72-127		75-125	20	20		180 days	1 - Metals Only-Glass 60mL/2oz unpreserved
Thallium, Total	7440-28-0	0.8	0.126	mg/kg	80-120		75-125	20	20		180 days	1 - Metals Only-Glass 60mL/2oz unpreserved
Vanadium, Total	7440-62-2	0.4	0.0812	mg/kg	78-122		75-125	20	20		180 days	1 - Metals Only-Glass 60mL/2oz unpreserved
Zinc, Total	7440-66-6	2	0.1172	mg/kg	82-118		75-125	20	20		180 days	1 - Metals Only-Glass 60mL/2oz unpreserved

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METALS by 7471B (SOIL)

Analyte	CAS #	RL	MDL	Units	LCS Criteria	LCS RPD	MS Criteria	MS RPD	Duplicate RPD	Surrogate Criteria	Holding Time	Container/Sample Preservation
Mercury, Total	7439-97-6	0.08	0.016896	mg/kg	72-128		80-120	20	20		28 days	1 - Metals Only-Glass 60mL/2oz unpreserved

Please Note that the RL information provided in this table is calculated using a 100% Solids factor. (Soil/Solids only)
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TCL Pesticides - EPA 8081B (SOIL)

Holding Time: 14 days
Container/Sample Preservation: 1 - Glass 250ml/8oz unpreserved

Analyte	CAS #	RL	MDL	Units	LCS Criteria	LCS RPD	MS Criteria	MS RPD	Duplicate RPD	Surrogate Criteria		
Delta-BHC	319-86-8	0.0016008	0.00031349	mg/kg	30-150	30	30-150	50	50			
Lindane	58-89-9	0.000667	0.000298149	mg/kg	30-150	30	30-150	50	50			
Alpha-BHC	319-84-6	0.000667	0.000189428	mg/kg	30-150	30	30-150	50	50			
Beta-BHC	319-85-7	0.0016008	0.00060697	mg/kg	30-150	30	30-150	50	50			
Heptachlor	76-44-8	0.0008004	0.000358846	mg/kg	30-150	30	30-150	50	50			
Aldrin	309-00-2	0.0016008	0.000563615	mg/kg	30-150	30	30-150	50	50			
Heptachlor epoxide	1024-57-3	0.0030015	0.00090045	mg/kg	30-150	30	30-150	50	50			
Endrin	72-20-8	0.000667	0.00027347	mg/kg	30-150	30	30-150	50	50			
Endrin aldehyde	7421-93-4	0.002001	0.00070035	mg/kg	30-150	30	30-150	50	50			
Endrin ketone	53494-70-5	0.0016008	0.000412206	mg/kg	30-150	30	30-150	50	50			
Dieldrin	60-57-1	0.0010005	0.00050025	mg/kg	30-150	30	30-150	50	50			
4,4'-DDE	72-55-9	0.0016008	0.000370185	mg/kg	30-150	30	30-150	50	50			
4,4'-DDD	72-54-8	0.0016008	0.000570952	mg/kg	30-150	30	30-150	50	50			
4,4'-DDT	50-29-3	0.0030015	0.00128731	mg/kg	30-150	30	30-150	50	50			
Endosulfan I	959-98-8	0.0016008	0.000378189	mg/kg	30-150	30	30-150	50	50			
Endosulfan II	33213-65-9	0.0016008	0.000534934	mg/kg	30-150	30	30-150	50	50			
Endosulfan sulfate	1031-07-8	0.000667	0.000317492	mg/kg	30-150	30	30-150	50	50			
Methoxychlor	72-43-5	0.0030015	0.0009338	mg/kg	30-150	30	30-150	50	50			
Toxaphene	8001-35-2	0.030015	0.0084042	mg/kg	30-150	30	30-150	50	50			
cis-Chlordane	5103-71-9	0.002001	0.000557612	mg/kg	30-150	30	30-150	50	50			
trans-Chlordane	5103-74-2	0.002001	0.000528264	mg/kg	30-150	30	30-150	50	50			
Chlordane	57-74-9	0.0130065	0.00530265	mg/kg	30-150	30	30-150	50	50			
2,4,5,6-Tetrachloro-m-xylene	*877-09-8*									*30-150*		
Decachlorobiphenyl	*2051-24-3*									*30-150*		

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TCL Volatiles - EPA 8260C/5035 High&Low (SOIL)

Holding Time: 14 days
Container/Sample Preservation: 1 - 1 Vial MeOH/2 Vial Water

Analyte	CAS #	RL	MDL	Units	LCS Criteria	LCS RPD	MS Criteria	MS RPD	Duplicate RPD	Surrogate Criteria		
Methylene chloride	75-09-2	5	2.29	ug/kg	70-130	30	70-130	30	30			
1,1-Dichloroethane	75-34-3	1	0.145	ug/kg	70-130	30	70-130	30	30			
Chloroform	67-66-3	1.5	0.14	ug/kg	70-130	30	70-130	30	30			
Carbon tetrachloride	56-23-5	1	0.23	ug/kg	70-130	30	70-130	30	30			
1,2-Dichloropropane	78-87-5	1	0.125	ug/kg	70-130	30	70-130	30	30			
Dibromochloromethane	124-48-1	1	0.14	ug/kg	70-130	30	70-130	30	30			
1,1,2-Trichloroethane	79-00-5	1	0.267	ug/kg	70-130	30	70-130	30	30			
Tetrachloroethene	127-18-4	0.5	0.196	ug/kg	70-130	30	70-130	30	30			
Chlorobenzene	108-90-7	0.5	0.127	ug/kg	70-130	30	70-130	30	30			
Trichlorofluoromethane	75-69-4	4	0.695	ug/kg	70-139	30	70-139	30	30			
1,2-Dichloroethane	107-06-2	1	0.257	ug/kg	70-130	30	70-130	30	30			
1,1,1-Trichloroethane	71-55-6	0.5	0.167	ug/kg	70-130	30	70-130	30	30			
Bromodichloromethane	75-27-4	0.5	0.109	ug/kg	70-130	30	70-130	30	30			
trans-1,3-Dichloropropene	10061-02-6	1	0.273	ug/kg	70-130	30	70-130	30	30			
cis-1,3-Dichloropropene	10061-01-5	0.5	0.158	ug/kg	70-130	30	70-130	30	30			
1,3-Dichloropropene, Total	542-75-6	0.5	0.158	ug/kg				30	30			
1,1-Dichloropropene	563-58-6	0.5	0.159	ug/kg	70-130	30	70-130	30	30			
Bromoform	75-25-2	4	0.246	ug/kg	70-130	30	70-130	30	30			
1,1,2,2-Tetrachloroethane	79-34-5	0.5	0.166	ug/kg	70-130	30	70-130	30	30			
Benzene	71-43-2	0.5	0.166	ug/kg	70-130	30	70-130	30	30			
Toluene	108-88-3	1	0.543	ug/kg	70-130	30	70-130	30	30			
Ethylbenzene	100-41-4	1	0.141	ug/kg	70-130	30	70-130	30	30			
Chloromethane	74-87-3	4	0.932	ug/kg	52-130	30	52-130	30	30			
Bromomethane	74-83-9	2	0.581	ug/kg	57-147	30	57-147	30	30			
Vinyl chloride	75-01-4	1	0.335	ug/kg	67-130	30	67-130	30	30			
Chloroethane	75-00-3	2	0.452	ug/kg	50-151	30	50-151	30	30			
1,1-Dichloroethene	75-35-4	1	0.238	ug/kg	65-135	30	65-135	30	30			
trans-1,2-Dichloroethene	156-60-5	1.5	0.137	ug/kg	70-130	30	70-130	30	30			
Trichloroethene	79-01-6	0.5	0.137	ug/kg	70-130	30	70-130	30	30			
1,2-Dichlorobenzene	95-50-1	2	0.144	ug/kg	70-130	30	70-130	30	30			
1,3-Dichlorobenzene	541-73-1	2	0.148	ug/kg	70-130	30	70-130	30	30			
1,4-Dichlorobenzene	106-46-7	2	0.171	ug/kg	70-130	30	70-130	30	30			
Methyl tert butyl ether	1634-04-4	2	0.201	ug/kg	66-130	30	66-130	30	30			
p/m-Xylene	179601-23-1	2	0.56	ug/kg	70-130	30	70-130	30	30			
o-Xylene	95-47-6	1	0.291	ug/kg	70-130	30	70-130	30	30			
Xylene (Total)	1330-20-7	1	0.291	ug/kg				30	30			
cis-1,2-Dichloroethene	156-59-2	1	0.175	ug/kg	70-130	30	70-130	30	30			
1,2-Dichloroethene (total)	540-59-0	1	0.137	ug/kg				30	30			
Dibromomethane	74-95-3	2	0.238	ug/kg	70-130	30	70-130	30	30			
Styrene	100-42-5	1	0.196	ug/kg	70-130	30	70-130	30	30			
Dichlorodifluoromethane	75-71-8	10	0.915	ug/kg	30-146	30	30-146	30	30			
Acetone	67-64-1	10	4.811	ug/kg	54-140	30	54-140	30	30			

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TCL Volatiles - EPA 8260C/5035 High&Low (SOIL)

Holding Time: 14 days
Container/Sample Preservation: 1 - 1 Vial MeOH/2 Vial Water

Analyte	CAS #	RL	MDL	Units	LCS Criteria	LCS RPD	MS Criteria	MS RPD	Duplicate RPD	Surrogate Criteria		
Carbon disulfide	75-15-0	10	4.55	ug/kg	59-130	30	59-130	30	30			
2-Butanone	78-93-3	10	2.22	ug/kg	70-130	30	70-130	30	30			
Vinyl acetate	108-05-4	10	2.15	ug/kg	70-130	30	70-130	30	30			
4-Methyl-2-pentanone	108-10-1	10	1.28	ug/kg	70-130	30	70-130	30	30			
1,2,3-Trichloropropane	96-18-4	2	0.127	ug/kg	68-130	30	68-130	30	30			
2-Hexanone	591-78-6	10	1.18	ug/kg	70-130	30	70-130	30	30			
Bromochloromethane	74-97-5	2	0.205	ug/kg	70-130	30	70-130	30	30			
2,2-Dichloropropane	594-20-7	2	0.202	ug/kg	70-130	30	70-130	30	30			
1,2-Dibromoethane	106-93-4	1	0.279	ug/kg	70-130	30	70-130	30	30			
1,3-Dichloropropane	142-28-9	2	0.167	ug/kg	69-130	30	69-130	30	30			
1,1,1,2-Tetrachloroethane	630-20-6	0.5	0.132	ug/kg	70-130	30	70-130	30	30			
Bromobenzene	108-86-1	2	0.145	ug/kg	70-130	30	70-130	30	30			
n-Butylbenzene	104-51-8	1	0.167	ug/kg	70-130	30	70-130	30	30			
sec-Butylbenzene	135-98-8	1	0.146	ug/kg	70-130	30	70-130	30	30			
tert-Butylbenzene	98-06-6	2	0.118	ug/kg	70-130	30	70-130	30	30			
o-Chlorotoluene	95-49-8	2	0.191	ug/kg	70-130	30	70-130	30	30			
p-Chlorotoluene	106-43-4	2	0.108	ug/kg	70-130	30	70-130	30	30			
1,2-Dibromo-3-chloropropane	96-12-8	3	0.998	ug/kg	68-130	30	68-130	30	30			
Hexachlorobutadiene	87-68-3	4	0.169	ug/kg	67-130	30	67-130	30	30			
Isopropylbenzene	98-82-8	1	0.109	ug/kg	70-130	30	70-130	30	30			
p-Isopropyltoluene	99-87-6	1	0.109	ug/kg	70-130	30	70-130	30	30			
Naphthalene	91-20-3	4	0.65	ug/kg	70-130	30	70-130	30	30			
Acrylonitrile	107-13-1	4	1.15	ug/kg	70-130	30	70-130	30	30			
n-Propylbenzene	103-65-1	1	0.171	ug/kg	70-130	30	70-130	30	30			
1,2,3-Trichlorobenzene	87-61-6	2	0.322	ug/kg	70-130	30	70-130	30	30			
1,2,4-Trichlorobenzene	120-82-1	2	0.272	ug/kg	70-130	30	70-130	30	30			
1,3,5-Trimethylbenzene	108-67-8	2	0.193	ug/kg	70-130	30	70-130	30	30			
1,2,4-Trimethylbenzene	95-63-6	2	0.334	ug/kg	70-130	30	70-130	30	30			
1,4-Dioxane	123-91-1	80	35.1	ug/kg	65-136	30	65-136	30	30			
1,4-Diethylbenzene	105-05-5	2	0.177	ug/kg	70-130	30	70-130	30	30			
4-Ethyltoluene	622-96-8	2	0.384	ug/kg	70-130	30	70-130	30	30			
1,2,4,5-Tetramethylbenzene	95-93-2	2	0.191	ug/kg	70-130	30	70-130	30	30			
Ethyl ether	60-29-7	2	0.341	ug/kg	67-130	30	67-130	30	30			
trans-1,4-Dichloro-2-butene	110-57-6	5	1.42	ug/kg	70-130	30	70-130	30	30			
1,2-Dichloroethane-d4	*17060-07-0*									*70-130*		
2-Chloroethoxyethane												
Toluene-d8	*2037-26-5*									*70-130*		
4-Bromofluorobenzene	*460-00-4*									*70-130*		
Dibromofluoromethane	*1868-53-7*									*70-130*		

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NYTCL Semivolatiles - EPA 8270D (SOIL)

Holding Time: 14 days
Container/Sample Preservation: 1 - Glass 250ml/8oz unpreserved

Analyte	CAS #	RL	MDL	Units	LCS Criteria	LCS RPD	MS Criteria	MS RPD	Duplicate RPD	Surrogate Criteria		
Acenaphthene	83-32-9	133.6	17.3012	ug/kg	31-137	50	31-137	50	50			
1,2,4-Trichlorobenzene	120-82-1	167	19.1048	ug/kg	38-107	50	38-107	50	50			
Hexachlorobenzene	118-74-1	100.2	18.704	ug/kg	40-140	50	40-140	50	50			
Bis(2-chloroethyl)ether	111-44-4	150.3	22.6452	ug/kg	40-140	50	40-140	50	50			
2-Chloronaphthalene	91-58-7	167	16.5664	ug/kg	40-140	50	40-140	50	50			
1,2-Dichlorobenzene	95-50-1	167	29.9932	ug/kg	40-140	50	40-140	50	50			
1,3-Dichlorobenzene	541-73-1	167	28.724	ug/kg	40-140	50	40-140	50	50			
1,4-Dichlorobenzene	106-46-7	167	29.1582	ug/kg	28-104	50	28-104	50	50			
3,3'-Dichlorobenzidine	91-94-1	167	44.422	ug/kg	40-140	50	40-140	50	50			
2,4-Dinitrotoluene	121-14-2	167	33.4	ug/kg	40-132	50	40-132	50	50			
2,6-Dinitrotoluene	606-20-2	167	28.6572	ug/kg	40-140	50	40-140	50	50			
Fluoranthene	206-44-0	100.2	19.1716	ug/kg	40-140	50	40-140	50	50			
4-Chlorophenyl phenyl ether	7005-72-3	167	17.869	ug/kg	40-140	50	40-140	50	50			
4-Bromophenyl phenyl ether	101-55-3	167	25.4842	ug/kg	40-140	50	40-140	50	50			
Bis(2-chloroisopropyl)ether	108-60-1	200.4	28.5236	ug/kg	40-140	50	40-140	50	50			
Bis(2-chloroethoxy)methane	111-91-1	180.36	16.7334	ug/kg	40-117	50	40-117	50	50			
Hexachlorobutadiene	87-68-3	167	24.4488	ug/kg	40-140	50	40-140	50	50			
Hexachlorocyclopentadiene	77-47-4	477.62	151.302	ug/kg	40-140	50	40-140	50	50			
Hexachloroethane	67-72-1	133.6	27.0206	ug/kg	40-140	50	40-140	50	50			
Isophorone	78-59-1	150.3	21.6766	ug/kg	40-140	50	40-140	50	50			
Naphthalene	91-20-3	167	20.3406	ug/kg	40-140	50	40-140	50	50			
Nitrobenzene	98-95-3	150.3	24.716	ug/kg	40-140	50	40-140	50	50			
NitrosoDiPhenylAmine(NDPA)/DPA	86-30-6	133.6	19.0046	ug/kg	36-157	50	36-157	50	50			
n-Nitrosodi-n-propylamine	621-64-7	167	25.7848	ug/kg	32-121	50	32-121	50	50			
Bis(2-Ethylhexyl)phthalate	117-81-7	167	57.782	ug/kg	40-140	50	40-140	50	50			
Butyl benzyl phthalate	85-68-7	167	42.084	ug/kg	40-140	50	40-140	50	50			
Di-n-butylphthalate	84-74-2	167	31.6632	ug/kg	40-140	50	40-140	50	50			
Di-n-octylphthalate	117-84-0	167	56.78	ug/kg	40-140	50	40-140	50	50			
Diethyl phthalate	84-66-2	167	15.4642	ug/kg	40-140	50	40-140	50	50			
Dimethyl phthalate	131-11-3	167	35.07	ug/kg	40-140	50	40-140	50	50			
Benzo(a)anthracene	56-55-3	100.2	18.8042	ug/kg	40-140	50	40-140	50	50			
Benzo(a)pyrene	50-32-8	133.6	40.748	ug/kg	40-140	50	40-140	50	50			
Benzo(b)fluoranthene	205-99-2	100.2	28.1228	ug/kg	40-140	50	40-140	50	50			
Benzo(k)fluoranthene	207-08-9	100.2	26.72	ug/kg	40-140	50	40-140	50	50			
Chrysene	218-01-9	100.2	17.368	ug/kg	40-140	50	40-140	50	50			
Acenaphthylene	208-96-8	133.6	25.7848	ug/kg	40-140	50	40-140	50	50			
Anthracene	120-12-7	100.2	32.565	ug/kg	40-140	50	40-140	50	50			
Benzo(ghi)perylene	191-24-2	133.6	19.6392	ug/kg	40-140	50	40-140	50	50			
Fluorene	86-73-7	167	16.2324	ug/kg	40-140	50	40-140	50	50			
Phenanthrene	85-01-8	100.2	20.3072	ug/kg	40-140	50	40-140	50	50			
Dibenzo(a,h)anthracene	53-70-3	100.2	19.3052	ug/kg	40-140	50	40-140	50	50			
Indeno(1,2,3-cd)Pyrene	193-39-5	133.6	23.2798	ug/kg	40-140	50	40-140	50	50			

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NYTCL Semivolatiles - EPA 8270D (SOIL)

Holding Time: 14 days
Container/Sample Preservation: 1 - Glass 250ml/8oz unpreserved

Analyte	CAS #	RL	MDL	Units	LCS Criteria	LCS RPD	MS Criteria	MS RPD	Duplicate RPD	Surrogate Criteria		
Pyrene	129-00-0	100.2	16.5998	ug/kg	35-142	50	35-142	50	50			
Biphenyl	92-52-4	380.76	38.744	ug/kg	54-104	50	54-104	50	50			
4-Chloroaniline	106-47-8	167	30.394	ug/kg	40-140	50	40-140	50	50			
2-Nitroaniline	88-74-4	167	32.1976	ug/kg	47-134	50	47-134	50	50			
3-Nitroaniline	99-09-2	167	31.4962	ug/kg	26-129	50	26-129	50	50			
4-Nitroaniline	100-01-6	167	69.138	ug/kg	41-125	50	41-125	50	50			
Dibenzofuran	132-64-9	167	15.7982	ug/kg	40-140	50	40-140	50	50			
2-Methylnaphthalene	91-57-6	200.4	20.1736	ug/kg	40-140	50	40-140	50	50			
Acetophenone	98-86-2	167	20.6746	ug/kg	14-144	50	14-144	50	50			
2,4,6-Trichlorophenol	88-06-2	100.2	31.6632	ug/kg	30-130	50	30-130	50	50			
P-Chloro-M-Cresol	59-50-7	167	24.883	ug/kg	26-103	50	26-103	50	50			
2-Chlorophenol	95-57-8	167	19.7394	ug/kg	25-102	50	25-102	50	50			
2,4-Dichlorophenol	120-83-2	150.3	26.8536	ug/kg	30-130	50	30-130	50	50			
2,4-Dimethylphenol	105-67-9	167	55.11	ug/kg	30-130	50	30-130	50	50			
2-Nitrophenol	88-75-5	360.72	62.792	ug/kg	30-130	50	30-130	50	50			
4-Nitrophenol	100-02-7	233.8	68.136	ug/kg	11-114	50	11-114	50	50			
2,4-Dinitrophenol	51-28-5	801.6	77.822	ug/kg	4-130	50	4-130	50	50			
4,6-Dinitro-o-cresol	534-52-1	434.2	80.16	ug/kg	10-130	50	10-130	50	50			
Pentachlorophenol	87-86-5	133.6	36.74	ug/kg	17-109	50	17-109	50	50			
Phenol	108-95-2	167	25.217	ug/kg	26-90	50	26-90	50	50			
2-Methylphenol	95-48-7	167	25.885	ug/kg	30-130.	50	30-130.	50	50			
3-Methylphenol/4-Methylphenol	108-39-4/106-44-5	240.48	26.1522	ug/kg	30-130	50	30-130	50	50			
2,4,5-Trichlorophenol	95-95-4	167	31.9972	ug/kg	30-130	50	30-130	50	50			
Benzoic Acid	65-85-0	541.08	169.004	ug/kg	10-110	50	10-110	50	50			
Benzyl Alcohol	100-51-6	167	51.102	ug/kg	40-140	50	40-140	50	50			
Carbazole	86-74-8	167	16.2324	ug/kg	54-128	50	54-128	50	50			
2-Fluorophenol	*367-12-4*									*25-120*		
Phenol-d6	*13127-88-3*									*10-120*		
Nitrobenzene-d5	*4165-60-0*									*23-120*		
2-Fluorobiphenyl	*321-60-8*									*30-120*		
2,4,6-Tribromophenol	*118-79-6*									*10-136*		
4-Terphenyl-d14	*1718-51-0*									*18-120*		

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NY PFAAs via EPA 537(M)-Isotope Dilution (SOIL)

Holding Time: 28 days
Container/Sample Preservation: 1 - Plastic 8oz unpreserved

Analyte	CAS #	RL	MDL	Units	LCS Criteria	LCS RPD	MS Criteria	MS RPD	Duplicate RPD	Surrogate Criteria		
Perfluorobutanoic Acid (PFBA)	375-22-4	1	0.0213	ng/g	71-135	30	71-135	30	30			
Perfluoropentanoic Acid (PFPeA)	2706-90-3	1	0.01035	ng/g	69-132	30	69-132	30	30			
Perfluorobutanesulfonic Acid (PFBS)	375-73-5	1	0.0635	ng/g	72-128	30	72-128	30	30			
Perfluorohexanoic Acid (PFHxA)	307-24-4	1	0.064	ng/g	70-132	30	70-132	30	30			
Perfluoroheptanoic Acid (PFHpA)	375-85-9	1	0.064	ng/g	71-131	30	71-131	30	30			
Perfluorohexanesulfonic Acid (PFHxS)	355-46-4	1	0.057	ng/g	67-130	30	67-130	30	30			
Perfluorooctanoic Acid (PFOA)	335-67-1	1	0.04105	ng/g	69-133	30	69-133	30	30			
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	27619-97-2	1	0.198	ng/g	64-140	30	64-140	30	30			
Perfluoroheptanesulfonic Acid (PFHpS)	375-92-8	1	0.136	ng/g	70-132	30	70-132	30	30			
Perfluorononanoic Acid (PFNA)	375-95-1	1	0.083	ng/g	72-129	30	72-129	30	30			
Perfluorooctanesulfonic Acid (PFOS)	1763-23-1	1	0.1205	ng/g	68-136	30	68-136	30	30			
Perfluorodecanoic Acid (PFDA)	335-76-2	1	0.072	ng/g	69-133	30	69-133	30	30			
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	39108-34-4	1	0.275	ng/g	65-137	30	65-137	30	30			
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSA	2355-31-9	1	0.103	ng/g	63-144	30	63-144	30	30			
Perfluoroundecanoic Acid (PFUnA)	2058-94-8	1	0.056	ng/g	64-136	30	64-136	30	30			
Perfluorodecanesulfonic Acid (PFDS)	335-77-3	1	0.097	ng/g	59-134	30	59-134	30	30			
Perfluorooctanesulfonamide (FOSA)	754-91-6	1	0.1025	ng/g	67-137	30	67-137	30	30			
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	2991-50-6	1	0.09	ng/g	61-139	30	61-139	30	30			
Perfluorododecanoic Acid (PFDoA)	307-55-1	1	0.086	ng/g	69-135	30	69-135	30	30			
Perfluorotridecanoic Acid (PFTrDA)	72629-94-8	1	0.062	ng/g	66-139	30	66-139	30	30			
Perfluorotetradecanoic Acid (PFTA)	376-06-7	1	0.07	ng/g	69-133	30	69-133	30	30			
PFOA/PFOS, Total		1	0.04105	ng/g				30	30			
Perfluoro[13C4]Butanoic Acid (MPFBA)	*NONE*									*60-153*		
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	*NONE*									*65-182*		
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	*NONE*									*70-151*		
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	*NONE*									*61-147*		
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	*NONE*									*62-149*		
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	*NONE*									*63-166*		
Perfluoro[13C8]Octanoic Acid (M8PFOA)	*NONE*									*62-152*		
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6	*NONE*									*32-182*		
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	*NONE*									*61-154*		
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	*NONE*									*65-151*		
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	*NONE*									*65-150*		
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8	*NONE*									*25-186*		
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid	*NONE*									*45-137*		
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	*NONE*									*64-158*		
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	*NONE*									*1-125*		
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (o	*NONE*									*42-136*		
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	*NONE*									*56-148*		
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	*NONE*									*26-160*		

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TCL PCBs - EPA 8082A (SOIL)

Holding Time: 14 days
Container/Sample Preservation: 1 - Glass 250ml/8oz unpreserved

Analyte	CAS #	RL	MDL	Units	LCS Criteria	LCS RPD	MS Criteria	MS RPD	Duplicate RPD	Surrogate Criteria		
Aroclor 1016	12674-11-2	33.5	2.9748	ug/kg	40-140	50	40-140	50	50			
Aroclor 1221	11104-28-2	33.5	3.3567	ug/kg	40-140	50	40-140	50	50			
Aroclor 1232	11141-16-5	33.5	7.102	ug/kg	40-140	50	40-140	50	50			
Aroclor 1242	53469-21-9	33.5	4.5158	ug/kg	40-140	50	40-140	50	50			
Aroclor 1248	12672-29-6	33.5	5.025	ug/kg	40-140	50	40-140	50	50			
Aroclor 1254	11097-69-1	33.5	3.6649	ug/kg	40-140	50	40-140	50	50			
Aroclor 1260	11096-82-5	33.5	6.1908	ug/kg	40-140	50	40-140	50	50			
Aroclor 1262	37324-23-5	33.5	4.2545	ug/kg	40-140	50	40-140	50	50			
Aroclor 1268	11100-14-4	33.5	3.4706	ug/kg	40-140	50	40-140	50	50			
PCBs, Total	1336-36-3	33.5	2.9748	ug/kg				50	50			
2,4,5,6-Tetrachloro-m-xylene	*877-09-8*									*30-150*		
Decachlorobiphenyl	*2051-24-3*									*30-150*		

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WETCHEM (SOIL)

Analyte	CAS #	RL	MDL	Units	LCS Criteria	LCS RPD	MS Criteria	MS RPD	Duplicate RPD	Method	Holding Time	Container/Sample Preservation
Chromium, Hexavalent	18540-29-9	0.8	0.16	mg/kg	80-120	20	75-125	20	20	7196A	30 days	1 - Glass 120ml/4oz unpreserved
Cyanide, Total	57-12-5	1	0.212	mg/kg	80-120	35	75-125	35	35	9010C/9012B	14 days	1 - Glass 250ml/8oz unpreserved

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Volatile Organics in Air: TO-15 (SOIL_VAPOR)

Holding Time: 30 days
Container/Sample Preservation: 1 - Canister - 2.7 Liter

Analyte	CAS #	RL	MDL	Units	LCS Criteria	LCS RPD	MS Criteria	MS RPD	Duplicate RPD	Surrogate Criteria		
1,1,1-Trichloroethane	71-55-6	0.2	0.0554	ppbV	70-130			25	25			
1,1,2,2-Tetrachloroethane	79-34-5	0.2	0.0611	ppbV	70-130			25	25			
1,1,2-Trichloroethane	79-00-5	0.2	0.0694	ppbV	70-130			25	25			
1,1-Dichloroethane	75-34-3	0.2	0.0628	ppbV	70-130			25	25			
1,1-Dichloroethene	75-35-4	0.2	0.0613	ppbV	70-130			25	25			
1,2,3-Trimethylbenzene	526-73-8	0.2	0.0636	ppbV	70-130			25	25			
1,2,4-Trichlorobenzene	120-82-1	0.2	0.0759	ppbV	70-130			25	25			
1,2,4-Trimethylbenzene	95-63-6	0.2	0.0416	ppbV	70-130			25	25			
1,2,4,5-Tetramethylbenzene	95-93-2	0.2	0.068	ppbV	70-130			25	25			
1,2-Dibromoethane	106-93-4	0.2	0.0577	ppbV	70-130			25	25			
1,2-Dichlorobenzene	95-50-1	0.2	0.0653	ppbV	70-130			25	25			
1,2-Dichloroethane	107-06-2	0.2	0.0634	ppbV	70-130			25	25			
1,2-Dichloropropane	78-87-5	0.2	0.062	ppbV	70-130			25	25			
1,3,5-Trimethylbenzene	108-67-8	0.2	0.0737	ppbV	70-130			25	25			
1,3-Butadiene	106-99-0	0.2	0.063	ppbV	70-130			25	25			
1,3-Dichlorobenzene	541-73-1	0.2	0.0658	ppbV	70-130			25	25			
1,4-Dichlorobenzene	106-46-7	0.2	0.0681	ppbV	70-130			25	25			
1,4-Dioxane	123-91-1	0.2	0.0903	ppbV	70-130			25	25			
2,2,4-Trimethylpentane	540-84-1	0.2	0.0391	ppbV	70-130			25	25			
2-Butanone	78-93-3	0.5	0.0476	ppbV	70-130			25	25			
2-Hexanone	591-78-6	0.2	0.0662	ppbV	70-130			25	25			
2-Methylthiophene	554-14-3	0.2	0.0577	ppbV	70-130			25	25			
3-Methylthiophene	616-44-4	0.2	0.0577	ppbV	70-130			25	25			
3-Chloropropene	107-05-1	0.2	0.0517	ppbV	70-130			25	25			
2-Ethylthiophene	872-55-9	0.2	0.0455	ppbV	70-130			25	25			
4-Ethyltoluene	622-96-8	0.2	0.041	ppbV	70-130			25	25			
Acetone	67-64-1	1	0.544	ppbV	40-160			25	25			
Benzene	71-43-2	0.2	0.0494	ppbV	70-130			25	25			
Benzyl chloride	100-44-7	0.2	0.0545	ppbV	70-130			25	25			
Benzothiophene	95-15-8	0.5	0.0863	ppbV	70-130			25	25			
Bromodichloromethane	75-27-4	0.2	0.0534	ppbV	70-130			25	25			
Bromoform	75-25-2	0.2	0.0711	ppbV	70-130			25	25			
Bromomethane	74-83-9	0.2	0.0713	ppbV	70-130			25	25			
Carbon disulfide	75-15-0	0.2	0.0552	ppbV	70-130			25	25			
Carbon tetrachloride	56-23-5	0.2	0.0561	ppbV	70-130			25	25			
Chlorobenzene	108-90-7	0.2	0.0634	ppbV	70-130			25	25			
Chloroethane	75-00-3	0.2	0.0785	ppbV	70-130			25	25			
Chloroform	67-66-3	0.2	0.0632	ppbV	70-130			25	25			
Chloromethane	74-87-3	0.2	0.0735	ppbV	70-130			25	25			
cis-1,2-Dichloroethene	156-59-2	0.2	0.12	ppbV	70-130			25	25			
cis-1,3-Dichloropropene	10061-01-5	0.2	0.0461	ppbV	70-130			25	25			
Cyclohexane	110-82-7	0.2	0.0389	ppbV	70-130			25	25			

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Volatile Organics in Air: TO-15 (SOIL_VAPOR)

Holding Time: 30 days
Container/Sample Preservation: 1 - Canister - 2.7 Liter

Analyte	CAS #	RL	MDL	Units	LCS Criteria	LCS RPD	MS Criteria	MS RPD	Duplicate RPD	Surrogate Criteria		
Dibromochloromethane	124-48-1	0.2	0.0671	ppbV	70-130			25	25			
Dichlorodifluoromethane	75-71-8	0.2	0.0599	ppbV	70-130			25	25			
Ethyl Alcohol	64-17-5	5	0.788	ppbV	40-160			25	25			
Ethyl Acetate	141-78-6	0.5	0.137	ppbV	70-130			25	25			
Ethylbenzene	100-41-4	0.2	0.0467	ppbV	70-130			25	25			
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	0.2	0.0649	ppbV	70-130			25	25			
1,2-Dichloro-1,1,2,2-tetrafluoroethane	76-14-2	0.2	0.0609	ppbV	70-130			25	25			
Hexachlorobutadiene	87-68-3	0.2	0.0555	ppbV	70-130			25	25			
iso-Propyl Alcohol	67-63-0	0.5	0.348	ppbV	40-160			25	25			
Methylene chloride	75-09-2	0.5	0.07	ppbV	70-130			25	25			
4-Methyl-2-pentanone	108-10-1	0.5	0.0464	ppbV	70-130			25	25			
Methyl tert butyl ether	1634-04-4	0.2	0.0571	ppbV	70-130			25	25			
Methyl Methacrylate	80-62-6	0.5	0.06	ppbV	40-160			25	25			
p/m-Xylene	179601-23-1	0.4	0.101	ppbV	70-130			25	25			
o-Xylene	95-47-6	0.2	0.051	ppbV	70-130			25	25			
Xylene (Total)	1330-20-7	0.2	0.051	ppbV				25	25			
Heptane	142-82-5	0.2	0.0529	ppbV	70-130			25	25			
n-Heptane	142-82-5	0.2	0.0529	ppbV	70-130			25	25			
n-Hexane	110-54-3	0.2	0.0364	ppbV	70-130			25	25			
Propylene	115-07-1	0.5	0.0669	ppbV	70-130			25	25			
Styrene	100-42-5	0.2	0.0476	ppbV	70-130			25	25			
Tetrachloroethene	127-18-4	0.2	0.0673	ppbV	70-130			25	25			
Thiophene	110-02-1	0.2	0.0428	ppbV	70-130			25	25			
Tetrahydrofuran	109-99-9	0.5	0.0634	ppbV	70-130			25	25			
Toluene	108-88-3	0.2	0.0545	ppbV	70-130			25	25			
trans-1,2-Dichloroethene	156-60-5	0.2	0.0645	ppbV	70-130			25	25			
1,2-Dichloroethene (total)	540-59-0	0.2	0.0645	ppbV				25	25			
trans-1,3-Dichloropropene	10061-02-6	0.2	0.0491	ppbV	70-130			25	25			
1,3-Dichloropropene, Total	542-75-6	0.2	0.0461	ppbV				25	25			
Trichloroethene	79-01-6	0.2	0.0512	ppbV	70-130			25	25			
Trichlorofluoromethane	75-69-4	0.2	0.0755	ppbV	70-130			25	25			
Vinyl acetate	108-05-4	1	0.0508	ppbV	70-130			25	25			
Vinyl bromide	593-60-2	0.2	0.0696	ppbV	70-130			25	25			
Vinyl chloride	75-01-4	0.2	0.0598	ppbV	70-130			25	25			
Naphthalene	91-20-3	0.2	0.0984	ppbV	70-130			25	25			
Total HC As Hexane	NONE	10	0.0364	ppbV	70-130			25	25			
Total VOCs As Toluene	NONE	10	0.0545	ppbV	70-130			25	25			
Propane	74-98-6	0.5	0.149	ppbV	70-130			25	25			
Acrylonitrile	107-13-1	0.5	0.0544	ppbV	70-130			25	25			
Acrolein	107-02-8	0.5	0.0545	ppbV	70-130			25	25			
1,1,1,2-Tetrachloroethane	630-20-6	0.2	0.0591	ppbV	70-130			25	25			
Isopropylbenzene	98-82-8	0.2	0.0516	ppbV	70-130			25	25			

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Volatile Organics in Air: TO-15 (SOIL_VAPOR)

Holding Time: 30 days
Container/Sample Preservation: 1 - Canister - 2.7 Liter

Analyte	CAS #	RL	MDL	Units	LCS Criteria	LCS RPD	MS Criteria	MS RPD	Duplicate RPD	Surrogate Criteria		
1,2,3-Trichloropropane	96-18-4	0.2	0.0592	ppbV	70-130			25	25			
Acetonitrile	75-05-8	0.2	0.0745	ppbV	70-130			25	25			
Bromobenzene	108-86-1	0.2	0.064	ppbV	70-130			25	25			
Chlorodifluoromethane	75-45-6	0.2	0.0599	ppbV	70-130			25	25			
Dichlorofluoromethane	75-43-4	0.2	0.0835	ppbV	70-130			25	25			
Dibromomethane	74-95-3	0.2	0.0597	ppbV	70-130			25	25			
Pentane	109-66-0	0.2	0.0656	ppbV	70-130			25	25			
Octane	111-65-9	0.2	0.0495	ppbV	70-130			25	25			
Tertiary-Amyl Methyl Ether	994-05-8	0.2	0.0532	ppbV	70-130			25	25			
o-Chlorotoluene	95-49-8	0.2	0.0517	ppbV	70-130			25	25			
p-Chlorotoluene	106-43-4	0.2	0.0574	ppbV	70-130			25	25			
2,2-Dichloropropane	594-20-7	0.2	0.0514	ppbV	70-130			25	25			
1,1-Dichloropropene	563-58-6	0.2	0.0512	ppbV	70-130			25	25			
Isopropyl Ether	108-20-3	0.2	0.0978	ppbV	70-130			25	25			
Ethyl-Tert-Butyl-Ether	637-92-3	0.2	0.0656	ppbV	70-130			25	25			
1,2,3-Trichlorobenzene	87-61-6	0.2	0.0756	ppbV	70-130			25	25			
Ethyl ether	60-29-7	0.2	0.0795	ppbV	70-130			25	25			
n-Butylbenzene	104-51-8	0.2	0.049	ppbV	70-130			25	25			
sec-Butylbenzene	135-98-8	0.2	0.0469	ppbV	70-130			25	25			
tert-Butylbenzene	98-06-6	0.2	0.0464	ppbV	70-130			25	25			
1,2-Dibromo-3-chloropropane	96-12-8	0.2	0.0557	ppbV	70-130			25	25			
p-Isopropyltoluene	99-87-6	0.2	0.058	ppbV	70-130			25	25			
n-Propylbenzene	103-65-1	0.2	0.0462	ppbV	70-130			25	25			
1,3-Dichloropropane	142-28-9	0.2	0.0601	ppbV	70-130			25	25			
Methanol	67-56-1	5	0.616	ppbV	70-130			25	25			
Acetaldehyde	75-07-0	2.5	0.499	ppbV	70-130			25	25			
Butane	106-97-8	0.2	0.0659	ppbV	70-130			25	25			
Nonane (C9)	111-84-2	0.2	0.0523	ppbV	70-130			25	25			
Decane (C10)	124-18-5	0.2	0.0448	ppbV	70-130			25	25			
Undecane	1120-21-4	0.2	0.0478	ppbV	70-130			25	25			
Indane	496-11-7	0.2	0.0534	ppbV	70-130			25	25			
Indene	95-13-6	0.2	0.0474	ppbV	70-130			25	25			
1-Methylnaphthalene	90-12-0	1	0.518	ppbV	70-130			25	25			
Dodecane (C12)	112-40-3	0.2	0.0719	ppbV	70-130			25	25			
Butyl Acetate	123-86-4	0.5	0.127	ppbV	70-130			25	25			
tert-Butyl Alcohol	75-65-0	0.5	0.0446	ppbV	70-130			25	25			
2-Methylnaphthalene	91-57-6	1	0.428	ppbV	70-130			25	25			
1,2-Dichloroethane-d4	*17060-07-0*									*70-130*		
Toluene-d8	*2037-26-5*									*70-130*		
Bromofluorobenzene	*460-00-4*									*70-130*		

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TCL Volatiles - EPA 8260C (WATER)

Holding Time: 14 days
Container/Sample Preservation: 3 - Vial HCl preserved

Analyte	CAS #	RL	MDL	Units	LCS Criteria	LCS RPD	MS Criteria	MS RPD	Duplicate RPD	Surrogate Criteria		
Methylene chloride	75-09-2	2.5	0.7	ug/l	70-130	20	70-130	20	20			
1,1-Dichloroethane	75-34-3	2.5	0.7	ug/l	70-130	20	70-130	20	20			
Chloroform	67-66-3	2.5	0.7	ug/l	70-130	20	70-130	20	20			
Carbon tetrachloride	56-23-5	0.5	0.134	ug/l	63-132	20	63-132	20	20			
1,2-Dichloropropane	78-87-5	1	0.133	ug/l	70-130	20	70-130	20	20			
Dibromochloromethane	124-48-1	0.5	0.149	ug/l	63-130	20	63-130	20	20			
1,1,2-Trichloroethane	79-00-5	1.5	0.5	ug/l	70-130	20	70-130	20	20			
Tetrachloroethene	127-18-4	0.5	0.181	ug/l	70-130	20	70-130	20	20			
Chlorobenzene	108-90-7	2.5	0.7	ug/l	75-130	20	75-130	20	20			
Trichlorofluoromethane	75-69-4	2.5	0.7	ug/l	62-150	20	62-150	20	20			
1,2-Dichloroethane	107-06-2	0.5	0.132	ug/l	70-130	20	70-130	20	20			
1,1,1-Trichloroethane	71-55-6	2.5	0.7	ug/l	67-130	20	67-130	20	20			
Bromodichloromethane	75-27-4	0.5	0.192	ug/l	67-130	20	67-130	20	20			
trans-1,3-Dichloropropene	10061-02-6	0.5	0.164	ug/l	70-130	20	70-130	20	20			
cis-1,3-Dichloropropene	10061-01-5	0.5	0.144	ug/l	70-130	20	70-130	20	20			
1,3-Dichloropropene, Total	542-75-6	0.5	0.144	ug/l				20	20			
1,1-Dichloropropene	563-58-6	2.5	0.7	ug/l	70-130	20	70-130	20	20			
Bromoform	75-25-2	2	0.65	ug/l	54-136	20	54-136	20	20			
1,1,2,2-Tetrachloroethane	79-34-5	0.5	0.144	ug/l	67-130	20	67-130	20	20			
Benzene	71-43-2	0.5	0.159	ug/l	70-130	20	70-130	20	20			
Toluene	108-88-3	2.5	0.7	ug/l	70-130	20	70-130	20	20			
Ethylbenzene	100-41-4	2.5	0.7	ug/l	70-130	20	70-130	20	20			
Chloromethane	74-87-3	2.5	0.7	ug/l	64-130	20	64-130	20	20			
Bromomethane	74-83-9	2.5	0.7	ug/l	39-139	20	39-139	20	20			
Vinyl chloride	75-01-4	1	0.0699	ug/l	55-140	20	55-140	20	20			
Chloroethane	75-00-3	2.5	0.7	ug/l	55-138	20	55-138	20	20			
1,1-Dichloroethene	75-35-4	0.5	0.142	ug/l	61-145	20	61-145	20	20			
trans-1,2-Dichloroethene	156-60-5	2.5	0.7	ug/l	70-130	20	70-130	20	20			
Trichloroethene	79-01-6	0.5	0.175	ug/l	70-130	20	70-130	20	20			
1,2-Dichlorobenzene	95-50-1	2.5	0.7	ug/l	70-130	20	70-130	20	20			
1,3-Dichlorobenzene	541-73-1	2.5	0.7	ug/l	70-130	20	70-130	20	20			
1,4-Dichlorobenzene	106-46-7	2.5	0.7	ug/l	70-130	20	70-130	20	20			
Methyl tert butyl ether	1634-04-4	2.5	0.7	ug/l	63-130	20	63-130	20	20			
p/m-Xylene	179601-23-1	2.5	0.7	ug/l	70-130	20	70-130	20	20			
o-Xylene	95-47-6	2.5	0.7	ug/l	70-130	20	70-130	20	20			
Xylene (Total)	1330-20-7	2.5	0.7	ug/l				20	20			
cis-1,2-Dichloroethene	156-59-2	2.5	0.7	ug/l	70-130	20	70-130	20	20			
1,2-Dichloroethene (total)	540-59-0	2.5	0.7	ug/l				20	20			
Dibromomethane	74-95-3	5	1	ug/l	70-130	20	70-130	20	20			
1,2,3-Trichloropropane	96-18-4	2.5	0.7	ug/l	64-130	20	64-130	20	20			
Acrylonitrile	107-13-1	5	1.5	ug/l	70-130	20	70-130	20	20			
Styrene	100-42-5	2.5	0.7	ug/l	70-130	20	70-130	20	20			

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TCL Volatiles - EPA 8260C (WATER)

Holding Time: 14 days
Container/Sample Preservation: 3 - Vial HCl preserved

Analyte	CAS #	RL	MDL	Units	LCS Criteria	LCS RPD	MS Criteria	MS RPD	Duplicate RPD	Surrogate Criteria		
Dichlorodifluoromethane	75-71-8	5	1	ug/l	36-147	20	36-147	20	20			
Acetone	67-64-1	5	1.46	ug/l	58-148	20	58-148	20	20			
Carbon disulfide	75-15-0	5	1	ug/l	51-130	20	51-130	20	20			
2-Butanone	78-93-3	5	1.94	ug/l	63-138	20	63-138	20	20			
Vinyl acetate	108-05-4	5	1	ug/l	70-130	20	70-130	20	20			
4-Methyl-2-pentanone	108-10-1	5	1	ug/l	59-130	20	59-130	20	20			
2-Hexanone	591-78-6	5	1	ug/l	57-130	20	57-130	20	20			
Bromochloromethane	74-97-5	2.5	0.7	ug/l	70-130	20	70-130	20	20			
2,2-Dichloropropane	594-20-7	2.5	0.7	ug/l	63-133	20	63-133	20	20			
1,2-Dibromoethane	106-93-4	2	0.65	ug/l	70-130	20	70-130	20	20			
1,3-Dichloropropane	142-28-9	2.5	0.7	ug/l	70-130	20	70-130	20	20			
1,1,1,2-Tetrachloroethane	630-20-6	2.5	0.7	ug/l	64-130	20	64-130	20	20			
Bromobenzene	108-86-1	2.5	0.7	ug/l	70-130	20	70-130	20	20			
n-Butylbenzene	104-51-8	2.5	0.7	ug/l	53-136	20	53-136	20	20			
sec-Butylbenzene	135-98-8	2.5	0.7	ug/l	70-130	20	70-130	20	20			
tert-Butylbenzene	98-06-6	2.5	0.7	ug/l	70-130	20	70-130	20	20			
o-Chlorotoluene	95-49-8	2.5	0.7	ug/l	70-130	20	70-130	20	20			
p-Chlorotoluene	106-43-4	2.5	0.7	ug/l	70-130	20	70-130	20	20			
1,2-Dibromo-3-chloropropane	96-12-8	2.5	0.7	ug/l	41-144	20	41-144	20	20			
Hexachlorobutadiene	87-68-3	2.5	0.7	ug/l	63-130	20	63-130	20	20			
Isopropylbenzene	98-82-8	2.5	0.7	ug/l	70-130	20	70-130	20	20			
p-Isopropyltoluene	99-87-6	2.5	0.7	ug/l	70-130	20	70-130	20	20			
Naphthalene	91-20-3	2.5	0.7	ug/l	70-130	20	70-130	20	20			
n-Propylbenzene	103-65-1	2.5	0.7	ug/l	69-130	20	69-130	20	20			
1,2,3-Trichlorobenzene	87-61-6	2.5	0.7	ug/l	70-130	20	70-130	20	20			
1,2,4-Trichlorobenzene	120-82-1	2.5	0.7	ug/l	70-130	20	70-130	20	20			
1,3,5-Trimethylbenzene	108-67-8	2.5	0.7	ug/l	64-130	20	64-130	20	20			
1,2,4-Trimethylbenzene	95-63-6	2.5	0.7	ug/l	70-130	20	70-130	20	20			
1,4-Dioxane	123-91-1	250	41.1	ug/l	56-162	20	56-162	20	20			
1,4-Diethylbenzene	105-05-5	2	0.7	ug/l	70-130	20	70-130	20	20			
4-Ethyltoluene	622-96-8	2	0.7	ug/l	70-130	20	70-130	20	20			
1,2,4,5-Tetramethylbenzene	95-93-2	2	0.65	ug/l	70-130	20	70-130	20	20			
Ethyl ether	60-29-7	2.5	0.7	ug/l	59-134	20	59-134	20	20			
trans-1,4-Dichloro-2-butene	110-57-6	2.5	0.7	ug/l	70-130	20	70-130	20	20			
1,2-Dichloroethane-d4	*17060-07-0*									*70-130*		
Toluene-d8	*2037-26-5*									*70-130*		
4-Bromofluorobenzene	*460-00-4*									*70-130*		
Dibromofluoromethane	*1868-53-7*									*70-130*		

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1,4 Dioxane via EPA 8270D-SIM (WATER)

Holding Time: 7 days
Container/Sample Preservation: 2 - Amber 250ml unpreserved

Analyte	CAS #	RL	MDL	Units	LCS Criteria	LCS RPD	MS Criteria	MS RPD	Duplicate RPD	Surrogate Criteria		
1,4-Dioxane	123-91-1	150	33.9	ng/l	40-140	30	40-140	30	30			
1,4-Dioxane-d8	*17647-74-4*									*15-110*		
1,4-Dioxane-d8 (IS)	17647-74-4			ng/l								

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TCL PCBs - EPA 8082A (LVI) (WATER)

Holding Time: 7 days
Container/Sample Preservation: 2 - Amber 120ml unpreserved

Analyte	CAS #	RL	MDL	Units	LCS Criteria	LCS RPD	MS Criteria	MS RPD	Duplicate RPD	Surrogate Criteria		
Aroclor 1016	12674-11-2	0.082824	0.0344148	ug/l	40-140	50	40-140	50	50			
Aroclor 1221	11104-28-2	0.082824	0.0664734	ug/l	40-140	50	40-140	50	50			
Aroclor 1232	11141-16-5	0.082824	0.0455532	ug/l	40-140	50	40-140	50	50			
Aroclor 1242	53469-21-9	0.082824	0.0387702	ug/l	40-140	50	40-140	50	50			
Aroclor 1248	12672-29-6	0.082824	0.048909	ug/l	40-140	50	40-140	50	50			
Aroclor 1254	11097-69-1	0.082824	0.0390558	ug/l	40-140	50	40-140	50	50			
Aroclor 1260	11096-82-5	0.082824	0.0320586	ug/l	40-140	50	40-140	50	50			
Aroclor 1262	37324-23-5	0.082824	0.0347718	ug/l	40-140	50	40-140	50	50			
Aroclor 1268	11100-14-4	0.082824	0.0334866	ug/l	40-140	50	40-140	50	50			
PCBs, Total	1336-36-3	0.082824	0.0320586	ug/l				50	50			
2,4,5,6-Tetrachloro-m-xylene	*877-09-8*									*30-150*		
Decachlorobiphenyl	*2051-24-3*									*30-150*		

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METALS by 6020B (WATER)

Analyte	CAS #	RL	MDL	Units	LCS Criteria	LCS RPD	MS Criteria	MS RPD	Duplicate RPD	Surrogate Criteria	Holding Time	Container/Sample Preservation
Aluminum, Total	7429-90-5	0.01	0.00327	mg/l	80-120		75-125	20	20		180 days	1 - Plastic 500ml HNO3 preserved
Antimony, Total	7440-36-0	0.004	0.000429	mg/l	80-120		75-125	20	20		180 days	1 - Plastic 500ml HNO3 preserved
Arsenic, Total	7440-38-2	0.0005	0.000165	mg/l	80-120		75-125	20	20		180 days	1 - Plastic 500ml HNO3 preserved
Barium, Total	7440-39-3	0.0005	0.000173	mg/l	80-120		75-125	20	20		180 days	1 - Plastic 500ml HNO3 preserved
Beryllium, Total	7440-41-7	0.0005	0.000107	mg/l	80-120		75-125	20	20		180 days	1 - Plastic 500ml HNO3 preserved
Cadmium, Total	7440-43-9	0.0002	0.0000599	mg/l	80-120		75-125	20	20		180 days	1 - Plastic 500ml HNO3 preserved
Calcium, Total	7440-70-2	0.1	0.0394	mg/l	80-120		75-125	20	20		180 days	1 - Plastic 500ml HNO3 preserved
Chromium, Total	7440-47-3	0.001	0.000178	mg/l	80-120		75-125	20	20		180 days	1 - Plastic 500ml HNO3 preserved
Cobalt, Total	7440-48-4	0.0005	0.000163	mg/l	80-120		75-125	20	20		180 days	1 - Plastic 500ml HNO3 preserved
Copper, Total	7440-50-8	0.001	0.000384	mg/l	80-120		75-125	20	20		180 days	1 - Plastic 500ml HNO3 preserved
Iron, Total	7439-89-6	0.05	0.0191	mg/l	80-120		75-125	20	20		180 days	1 - Plastic 500ml HNO3 preserved
Lead, Total	7439-92-1	0.001	0.000343	mg/l	80-120		75-125	20	20		180 days	1 - Plastic 500ml HNO3 preserved
Magnesium, Total	7439-95-4	0.07	0.0242	mg/l	80-120		75-125	20	20		180 days	1 - Plastic 500ml HNO3 preserved
Manganese, Total	7439-96-5	0.001	0.00044	mg/l	80-120		75-125	20	20		180 days	1 - Plastic 500ml HNO3 preserved
Nickel, Total	7440-02-0	0.002	0.000556	mg/l	80-120		75-125	20	20		180 days	1 - Plastic 500ml HNO3 preserved
Potassium, Total	7440-09-7	0.1	0.0309	mg/l	80-120		75-125	20	20		180 days	1 - Plastic 500ml HNO3 preserved
Selenium, Total	7782-49-2	0.005	0.00173	mg/l	80-120		75-125	20	20		180 days	1 - Plastic 500ml HNO3 preserved
Silver, Total	7440-22-4	0.0004	0.000163	mg/l	80-120		75-125	20	20		180 days	1 - Plastic 500ml HNO3 preserved
Sodium, Total	7440-23-5	0.1	0.0293	mg/l	80-120		75-125	20	20		180 days	1 - Plastic 500ml HNO3 preserved
Thallium, Total	7440-28-0	0.0005	0.000143	mg/l	80-120		75-125	20	20		180 days	1 - Plastic 500ml HNO3 preserved
Vanadium, Total	7440-62-2	0.005	0.00157	mg/l	80-120		75-125	20	20		180 days	1 - Plastic 500ml HNO3 preserved
Zinc, Total	7440-66-6	0.01	0.00341	mg/l	80-120		75-125	20	20		180 days	1 - Plastic 500ml HNO3 preserved

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METALS by 7470A (WATER)

Analyte	CAS #	RL	MDL	Units	LCS Criteria	LCS RPD	MS Criteria	MS RPD	Duplicate RPD	Surrogate Criteria	Holding Time	Container/Sample Preservation
Mercury, Total	7439-97-6	0.0002	0.0000915	mg/l	80-120		75-125	20	20		28 days	1 - Plastic 500ml HNO3 preserved

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TCL Pesticides - EPA 8081B (WATER)

Holding Time: 7 days
Container/Sample Preservation: 2 - Amber 120ml unpreserved

Analyte	CAS #	RL	MDL	Units	LCS Criteria	LCS RPD	MS Criteria	MS RPD	Duplicate RPD	Surrogate Criteria		
Delta-BHC	319-86-8	0.02	0.00467	ug/l	30-150	20	30-150	30	30			
Lindane	58-89-9	0.02	0.00434	ug/l	30-150	20	30-150	30	30			
Alpha-BHC	319-84-6	0.02	0.00439	ug/l	30-150	20	30-150	30	30			
Beta-BHC	319-85-7	0.02	0.0056	ug/l	30-150	20	30-150	30	30			
Heptachlor	76-44-8	0.02	0.0031	ug/l	30-150	20	30-150	30	30			
Aldrin	309-00-2	0.02	0.00216	ug/l	30-150	20	30-150	30	30			
Heptachlor epoxide	1024-57-3	0.02	0.00415	ug/l	30-150	20	30-150	30	30			
Endrin	72-20-8	0.04	0.00429	ug/l	30-150	20	30-150	30	30			
Endrin aldehyde	7421-93-4	0.04	0.0081	ug/l	30-150	20	30-150	30	30			
Endrin ketone	53494-70-5	0.04	0.00477	ug/l	30-150	20	30-150	30	30			
Dieldrin	60-57-1	0.04	0.00429	ug/l	30-150	20	30-150	30	30			
4,4'-DDE	72-55-9	0.04	0.00381	ug/l	30-150	20	30-150	30	30			
4,4'-DDD	72-54-8	0.04	0.00464	ug/l	30-150	20	30-150	30	30			
4,4'-DDT	50-29-3	0.04	0.00432	ug/l	30-150	20	30-150	30	30			
Endosulfan I	959-98-8	0.02	0.00345	ug/l	30-150	20	30-150	30	30			
Endosulfan II	33213-65-9	0.04	0.00519	ug/l	30-150	20	30-150	30	30			
Endosulfan sulfate	1031-07-8	0.04	0.00481	ug/l	30-150	20	30-150	30	30			
Methoxychlor	72-43-5	0.2	0.00684	ug/l	30-150	20	30-150	30	30			
Toxaphene	8001-35-2	0.2	0.0627	ug/l	30-150	20	30-150	30	30			
cis-Chlordane	5103-71-9	0.02	0.00666	ug/l	30-150	20	30-150	30	30			
trans-Chlordane	5103-74-2	0.02	0.00627	ug/l	30-150	20	30-150	30	30			
Chlordane	57-74-9	0.2	0.0463	ug/l	30-150	20	30-150	30	30			
2,4,5,6-Tetrachloro-m-xylene	*877-09-8*									*30-150*		
Decachlorobiphenyl	*2051-24-3*									*30-150*		

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NYTCL Semivolatiles -EPA 8270D-SIM (LVI) (WATER)

Holding Time: 7 days
Container/Sample Preservation: 2 - Amber 250ml unpreserved

Analyte	CAS #	RL	MDL	Units	LCS Criteria	LCS RPD	MS Criteria	MS RPD	Duplicate RPD	Surrogate Criteria		
Acenaphthene	83-32-9	0.1001	0.01442168	ug/l	40-140	40	40-140	40	40			
2-Chloronaphthalene	91-58-7	0.2002	0.01804712	ug/l	40-140	40	40-140	40	40			
Fluoranthene	206-44-0	0.1001	0.02054052	ug/l	40-140	40	40-140	40	40			
Hexachlorobutadiene	87-68-3	0.5005	0.04674852	ug/l	40-140	40	40-140	40	40			
Naphthalene	91-20-3	0.1001	0.04882696	ug/l	40-140	40	40-140	40	40			
Benzo(a)anthracene	56-55-3	0.1001	0.0198198	ug/l	40-140	40	40-140	40	40			
Benzo(a)pyrene	50-32-8	0.1001	0.01493856	ug/l	40-140	40	40-140	40	40			
Benzo(b)fluoranthene	205-99-2	0.1001	0.01156792	ug/l	40-140	40	40-140	40	40			
Benzo(k)fluoranthene	207-08-9	0.1001	0.00889616	ug/l	40-140	40	40-140	40	40			
Chrysene	218-01-9	0.1001	0.01198288	ug/l	40-140	40	40-140	40	40			
Acenaphthylene	208-96-8	0.1001	0.01222676	ug/l	40-140	40	40-140	40	40			
Anthracene	120-12-7	0.1001	0.01450176	ug/l	40-140	40	40-140	40	40			
Benzo(ghi)perylene	191-24-2	0.1001	0.01365	ug/l	40-140	40	40-140	40	40			
Fluorene	86-73-7	0.1001	0.01456364	ug/l	40-140	40	40-140	40	40			
Phenanthrene	85-01-8	0.1001	0.02333604	ug/l	40-140	40	40-140	40	40			
Dibenzo(a,h)anthracene	53-70-3	0.1001	0.0127218	ug/l	40-140	40	40-140	40	40			
Indeno(1,2,3-cd)Pyrene	193-39-5	0.1001	0.01217216	ug/l	40-140	40	40-140	40	40			
Pyrene	129-00-0	0.1001	0.01902264	ug/l	40-140	40	40-140	40	40			
2-Methylnaphthalene	91-57-6	0.1001	0.02192372	ug/l	40-140	40	40-140	40	40			
Pentachlorophenol	87-86-5	0.8008	0.0143416	ug/l	40-140	40	40-140	40	40			
Hexachlorobenzene	118-74-1	0.8008	0.00938028	ug/l	40-140	40	40-140	40	40			
Hexachloroethane	67-72-1	0.8008	0.06320132	ug/l	40-140	40	40-140	40	40			
2-Fluorophenol	*367-12-4*									*21-120*		
Phenol-d6	*13127-88-3*									*10-120*		
Nitrobenzene-d5	*4165-60-0*									*23-120*		
2-Fluorobiphenyl	*321-60-8*									*15-120*		
2,4,6-Tribromophenol	*118-79-6*									*10-120*		
4-Terphenyl-d14	*1718-51-0*									*41-149*		

Please Note that the RL information provided in this table is calculated using a 100% Solids factor. (Soil/Solids only)
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PFAAs via EPA 1633 (Draft) (WATER)

Holding Time: 28 days
Container/Sample Preservation: 3 - Plastic 500ml unpreserved

Analyte	CAS #	RL	MDL	Units	LCS Criteria	LCS RPD	MS Criteria	MS RPD	Duplicate RPD	Surrogate Criteria		
Perfluorobutanoic Acid (PFBA)	375-22-4	6.4	1.024	ng/l	40-150	30	40-150	30	30			
Perfluoropentanoic Acid (PFPeA)	2706-90-3	3.2	0.856	ng/l	40-150	30	40-150	30	30			
Perfluorobutanesulfonic Acid (PFBS)	375-73-5	1.6	0.536	ng/l	40-150	30	40-150	30	30			
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	757124-72-4	6.4	1.672	ng/l	40-150	30	40-150	30	30			
Perfluorohexanoic Acid (PFHxA)	307-24-4	1.6	0.472	ng/l	40-150	30	40-150	30	30			
Perfluoropentanesulfonic Acid (PFPeS)	2706-91-4	1.6	0.28	ng/l	40-150	30	40-150	30	30			
Perfluoroheptanoic Acid (PFHpA)	375-85-9	1.6	0.32	ng/l	40-150	30	40-150	30	30			
Perfluorohexanesulfonic Acid (PFHxS)	355-46-4	1.6	0.384	ng/l	40-150	30	40-150	30	30			
Perfluorooctanoic Acid (PFOA)	335-67-1	1.6	0.696	ng/l	40-150	30	40-150	30	30			
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	27619-97-2	6.4	2.16	ng/l	40-150	30	40-150	30	30			
Perfluoroheptanesulfonic Acid (PFHpS)	375-92-8	1.6	0.432	ng/l	40-150	30	40-150	30	30			
Perfluorononanoic Acid (PFNA)	375-95-1	1.6	0.504	ng/l	40-150	30	40-150	30	30			
Perfluorooctanesulfonic Acid (PFOS)	1763-23-1	1.6	0.728	ng/l	40-150	30	40-150	30	30			
Perfluorodecanoic Acid (PFDA)	335-76-2	1.6	0.648	ng/l	40-150	30	40-150	30	30			
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	39108-34-4	6.4	2.488	ng/l	40-150	30	40-150	30	30			
Perfluorononanesulfonic Acid (PFNS)	68259-12-1	1.6	0.496	ng/l	40-150	30	40-150	30	30			
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSA	2355-31-9	1.6	0.872	ng/l	40-150	30	40-150	30	30			
Perfluoroundecanoic Acid (PFUnA)	2058-94-8	1.6	0.696	ng/l	40-150	30	40-150	30	30			
Perfluorodecanesulfonic Acid (PFDS)	335-77-3	1.6	0.368	ng/l	40-150	30	40-150	30	30			
Perfluorooctanesulfonamide (FOSA)	754-91-6	1.6	0.432	ng/l	40-150	30	40-150	30	30			
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	2991-50-6	1.6	0.864	ng/l	40-150	30	40-150	30	30			
Perfluorododecanoic Acid (PFDoA)	307-55-1	1.6	0.736	ng/l	40-150	30	40-150	30	30			
Perfluorotridecanoic Acid (PFTrDA)	72629-94-8	1.6	0.6	ng/l	40-150	30	40-150	30	30			
Perfluorotetradecanoic Acid (PFTA)	376-06-7	1.6	0.424	ng/l	40-150	30	40-150	30	30			
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-P	13252-13-6	6.4	0.896	ng/l	40-150	30	40-150	30	30			
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	919005-14-4	6.4	1.008	ng/l	40-150	30	40-150	30	30			
Perfluorododecane Sulfonic Acid (PFDoDS)	79780-39-5	1.6	0.608	ng/l	40-150	30	40-150	30	30			
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF	756426-58-1	6.4	1.32	ng/l	40-150	30	40-150	30	30			
11-Chloroeicosafluoro-3-Oxaundecane-1-Sulfonic Acid (11C	763051-92-9	6.4	1.32	ng/l	40-150	30	40-150	30	30			
N-Methyl Perfluorooctane Sulfonamide (NMeFOSA)	31506-32-8	1.6	0.696	ng/l	40-150	30	40-150	30	30			
N-Ethyl Perfluorooctane Sulfonamide (NEtFOSA)	4151-50-2	1.6	0.736	ng/l	40-150	30	40-150	30	30			
N-Methyl Perfluorooctanesulfonamido Ethanol (NMeFOSE)	24448-09-7	16	3.76	ng/l	40-150	30	40-150	30	30			
N-Ethyl Perfluorooctanesulfonamido Ethanol (NEtFOSE)	1691-99-2	16	1.96	ng/l	40-150	30	40-150	30	30			
Perfluoro-3-Methoxypropanoic Acid (PFMPA)	377-73-1	3.2	0.456	ng/l	40-150	30	40-150	30	30			
Perfluoro-4-Methoxybutanoic Acid (PFMBA)	863090-89-5	3.2	0.424	ng/l	40-150	30	40-150	30	30			
Perfluoro(2-Ethoxyethane)Sulfonic Acid (PFEESA)	113507-82-7	3.2	0.352	ng/l	40-150	30	40-150	30	30			
Nonafluoro-3,6-Dioxaheptanoic Acid (NFDHA)	151772-58-6	3.2	1.888	ng/l	40-150	30	40-150	30	30			
3-Perfluoropropyl Propanoic Acid (3:3FTCA)	356-02-5	8	2.64	ng/l	40-150	30	40-150	30	30			
2H,2H,3H,3H-Perfluorooctanoic Acid (5:3FTCA)	914637-49-3	40	9.36	ng/l	40-150	30	40-150	30	30			
3-Perfluoroheptyl Propanoic Acid (7:3FTCA)	812-70-4	40	6.312	ng/l	40-150	30	40-150	30	30			
Perfluoro[13C4]Butanoic Acid (MPFBA)	*NONE*									*20-150*		
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	*NONE*									*20-150*		

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PFAAs via EPA 1633 (Draft) (WATER)

Holding Time: 28 days
Container/Sample Preservation: 3 - Plastic 500ml unpreserved

Analyte	CAS #	RL	MDL	Units	LCS Criteria	LCS RPD	MS Criteria	MS RPD	Duplicate RPD	Surrogate Criteria		
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	*NONE*									*20-150*		
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-	*NONE*									*20-150*		
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	*NONE*									*20-150*		
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	*NONE*									*20-150*		
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	*NONE*									*20-150*		
Perfluoro[13C8]Octanoic Acid (M8PFOA)	*NONE*									*20-150*		
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-	*NONE*									*20-150*		
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	*NONE*									*20-150*		
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	*NONE*									*20-150*		
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	*NONE*									*20-150*		
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-	*NONE*									*20-150*		
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid	*NONE*									*20-150*		
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	*NONE*									*20-150*		
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	*NONE*									*20-150*		
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (	*NONE*									*20-150*		
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	*NONE*									*20-150*		
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	*NONE*									*20-150*		
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-1	*NONE*									*20-150*		
N-Methyl-d3-Perfluoro-1-Octanesulfonamide (d3-NMeFOSA	*NONE*									*20-150*		
N-Ethyl-d5-Perfluoro-1-Octanesulfonamide (d5-NEtFOSA)	*NONE*									*20-150*		
2-(N-Methyl-d3-Perfluoro-1-Octanesulfonamido)ethan-d4-o	*1265205-95-5*									*20-150*		
2-(N-Ethyl-d5-Perfluoro-1-Octanesulfonamido)ethan-d4-ol	*NONE*									*20-150*		

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WETCHEM (WATER)

Analyte	CAS #	RL	MDL	Units	LCS Criteria	LCS RPD	MS Criteria	MS RPD	Duplicate RPD	Method	Holding Time	Container/Sample Preservation
Chromium, Hexavalent	18540-29-9	0.01	0.003	mg/l	85-115	20	85-115	20	20	7196A	24 hours	1 - Plastic 500ml unpreserved
Cyanide, Total	57-12-5	0.005	0.0018	mg/l	85-115	20	80-120	20	20	9010C/9012B	14 days	1 - Plastic 250ml NaOH preserved

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NYTCL Semivolatiles - EPA 8270D (LVI) (WATER)

Holding Time: 7 days
Container/Sample Preservation: 2 - Amber 250ml unpreserved

Analyte	CAS #	RL	MDL	Units	LCS Criteria	LCS RPD	MS Criteria	MS RPD	Duplicate RPD	Surrogate Criteria		
Acenaphthene	83-32-9	2.002	0.44408	ug/l	37-111	30	37-111	30	30			
1,2,4-Trichlorobenzene	120-82-1	5.0232	0.49868	ug/l	39-98	30	39-98	30	30			
Hexachlorobenzene	118-74-1	2.002	0.46592	ug/l	40-140	30	40-140	30	30			
Bis(2-chloroethyl)ether	111-44-4	2.002	0.50596	ug/l	40-140	30	40-140	30	30			
2-Chloronaphthalene	91-58-7	2.002	0.4368	ug/l	40-140	30	40-140	30	30			
1,2-Dichlorobenzene	95-50-1	2.002	0.455	ug/l	40-140	30	40-140	30	30			
1,3-Dichlorobenzene	541-73-1	2.002	0.40404	ug/l	40-140	30	40-140	30	30			
1,4-Dichlorobenzene	106-46-7	2.002	0.43316	ug/l	36-97	30	36-97	30	30			
3,3'-Dichlorobenzidine	91-94-1	5.0232	1.62344	ug/l	40-140	30	40-140	30	30			
2,4-Dinitrotoluene	121-14-2	5.0232	1.1648	ug/l	48-143	30	48-143	30	30			
2,6-Dinitrotoluene	606-20-2	5.0232	0.93184	ug/l	40-140	30	40-140	30	30			
Fluoranthene	206-44-0	2.002	0.257348	ug/l	40-140	30	40-140	30	30			
4-Chlorophenyl phenyl ether	7005-72-3	2.002	0.48776	ug/l	40-140	30	40-140	30	30			
4-Bromophenyl phenyl ether	101-55-3	2.002	0.37856	ug/l	40-140	30	40-140	30	30			
Bis(2-chloroisopropyl)ether	108-60-1	2.002	0.5278	ug/l	40-140	30	40-140	30	30			
Bis(2-chloroethoxy)methane	111-91-1	5.0232	0.50232	ug/l	40-140	30	40-140	30	30			
Hexachlorobutadiene	87-68-3	2.002	0.65884	ug/l	40-140	30	40-140	30	30			
Hexachlorocyclopentadiene	77-47-4	20.02	0.68796	ug/l	40-140	30	40-140	30	30			
Hexachloroethane	67-72-1	2.002	0.58604	ug/l	40-140	30	40-140	30	30			
Isophorone	78-59-1	5.0232	1.20484	ug/l	40-140	30	40-140	30	30			
Naphthalene	91-20-3	2.002	0.46592	ug/l	40-140	30	40-140	30	30			
Nitrobenzene	98-95-3	2.002	0.77168	ug/l	40-140	30	40-140	30	30			
NitrosoDiPhenylAmine(NDPA)/DPA	86-30-6	2.002	0.4186	ug/l	40-140	30	40-140	30	30			
n-Nitrosodi-n-propylamine	621-64-7	5.0232	0.64428	ug/l	29-132	30	29-132	30	30			
Bis(2-Ethylhexyl)phthalate	117-81-7	3.003	1.53608	ug/l	40-140	30	40-140	30	30			
Butyl benzyl phthalate	85-68-7	5.0232	1.17208	ug/l	40-140	30	40-140	30	30			
Di-n-butylphthalate	84-74-2	5.0232	0.38948	ug/l	40-140	30	40-140	30	30			
Di-n-octylphthalate	117-84-0	5.0232	1.274	ug/l	40-140	30	40-140	30	30			
Diethyl phthalate	84-66-2	5.0232	0.3822	ug/l	40-140	30	40-140	30	30			
Dimethyl phthalate	131-11-3	5.0232	1.82	ug/l	40-140	30	40-140	30	30			
Benzo(a)anthracene	56-55-3	2.002	0.32578	ug/l	40-140	30	40-140	30	30			
Benzo(a)pyrene	50-32-8	2.002	0.40768	ug/l	40-140	30	40-140	30	30			
Benzo(b)fluoranthene	205-99-2	2.002	0.355264	ug/l	40-140	30	40-140	30	30			
Benzo(k)fluoranthene	207-08-9	2.002	0.37492	ug/l	40-140	30	40-140	30	30			
Chrysene	218-01-9	2.002	0.341068	ug/l	40-140	30	40-140	30	30			
Acenaphthylene	208-96-8	2.002	0.46592	ug/l	45-123	30	45-123	30	30			
Anthracene	120-12-7	2.002	0.32942	ug/l	40-140	30	40-140	30	30			
Benzo(ghi)perylene	191-24-2	2.002	0.296296	ug/l	40-140	30	40-140	30	30			
Fluorene	86-73-7	2.002	0.41496	ug/l	40-140	30	40-140	30	30			
Phenanthrene	85-01-8	2.002	0.33124	ug/l	40-140	30	40-140	30	30			
Dibenzo(a,h)anthracene	53-70-3	2.002	0.323232	ug/l	40-140	30	40-140	30	30			
Indeno(1,2,3-cd)Pyrene	193-39-5	2.002	0.39676	ug/l	40-140	30	40-140	30	30			

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NYTCL Semivolatiles - EPA 8270D (LVI) (WATER)

Holding Time: 7 days
Container/Sample Preservation: 2 - Amber 250ml unpreserved

Analyte	CAS #	RL	MDL	Units	LCS Criteria	LCS RPD	MS Criteria	MS RPD	Duplicate RPD	Surrogate Criteria		
Pyrene	129-00-0	2.002	0.279552	ug/l	26-127	30	26-127	30	30			
Biphenyl	92-52-4	2.002	0.45864	ug/l	40-140	30	40-140	30	30			
4-Chloroaniline	106-47-8	5.0232	1.07016	ug/l	40-140	30	40-140	30	30			
2-Nitroaniline	88-74-4	5.0232	0.49868	ug/l	52-143	30	52-143	30	30			
3-Nitroaniline	99-09-2	5.0232	0.81536	ug/l	25-145	30	25-145	30	30			
4-Nitroaniline	100-01-6	5.0232	0.8008	ug/l	51-143	30	51-143	30	30			
Dibenzofuran	132-64-9	2.002	0.49868	ug/l	40-140	30	40-140	30	30			
2-Methylnaphthalene	91-57-6	2.002	0.455	ug/l	40-140	30	40-140	30	30			
Acetophenone	98-86-2	5.0232	0.5278	ug/l	39-129	30	39-129	30	30			
2,4,6-Trichlorophenol	88-06-2	5.0232	0.61152	ug/l	30-130	30	30-130	30	30			
P-Chloro-M-Cresol	59-50-7	2.002	0.35126	ug/l	23-97	30	23-97	30	30			
2-Chlorophenol	95-57-8	2.002	0.48048	ug/l	27-123	30	27-123	30	30			
2,4-Dichlorophenol	120-83-2	5.0232	0.41132	ug/l	30-130	30	30-130	30	30			
2,4-Dimethylphenol	105-67-9	5.0232	1.77996	ug/l	30-130	30	30-130	30	30			
2-Nitrophenol	88-75-5	10.01	0.84812	ug/l	30-130	30	30-130	30	30			
4-Nitrophenol	100-02-7	10.01	0.6734	ug/l	10-80	30	10-80	30	30			
2,4-Dinitrophenol	51-28-5	20.02	6.6612	ug/l	20-130	30	20-130	30	30			
4,6-Dinitro-o-cresol	534-52-1	10.01	1.81636	ug/l	20-164	30	20-164	30	30			
Pentachlorophenol	87-86-5	10.01	1.79452	ug/l	9-103	30	9-103	30	30			
Phenol	108-95-2	5.0232	0.56784	ug/l	12-110	30	12-110	30	30			
2-Methylphenol	95-48-7	5.0232	0.4914	ug/l	30-130	30	30-130	30	30			
3-Methylphenol/4-Methylphenol	108-39-4/106-44-5	5.0232	0.48048	ug/l	30-130	30	30-130	30	30			
2,4,5-Trichlorophenol	95-95-4	5.0232	0.77532	ug/l	30-130	30	30-130	30	30			
Benzoic Acid	65-85-0	50.232	2.66084	ug/l	10-164	30	10-164	30	30			
Benzyl Alcohol	100-51-6	2.002	0.58968	ug/l	26-116	30	26-116	30	30			
Carbazole	86-74-8	2.002	0.4914	ug/l	55-144	30	55-144	30	30			
2-Fluorophenol	*367-12-4*									*21-120*		
Phenol-d6	*13127-88-3*									*10-120*		
Nitrobenzene-d5	*4165-60-0*									*23-120*		
2-Fluorobiphenyl	*321-60-8*									*15-120*		
2,4,6-Tribromophenol	*118-79-6*									*10-120*		
4-Terphenyl-d14	*1718-51-0*									*41-149*		

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Appendix F: Alpha Analytical SOP for PFAS Analysis

Method 1633 Analysis of Per- and Polyfluoroalkyl Substances (PFAS) in Aqueous, Solid, Biosolids, Oil and Tissue Samples by LC-MS/MS

References: Method 1633 - Analysis of Per- and Polyfluoroalkyl Substances (PFAS) in Aqueous, Solid, Biosolids, Oil and Tissue Samples by LC-MS/MS (2nd Draft -June 2022)

DOD QSM (US Department of Defense Quality Systems Manual for Environmental Laboratories, version 5.4, 20221)

1. Scope and Application

Matrices: Drinking water, Non-potable Water, Tissues, Oils, Biosolids and Solid Matrices

Definitions: Refer to Alpha Analytical Quality Manual.

1.1 Method 1633 is for use in the Clean Water Act (CWA) for the determination of the per- and polyfluoroalkyl substances (PFAS) in Table 1 in aqueous, solid (soil, biosolids, sediment) and tissue samples by liquid chromatography/mass spectrometry (LC-MS/MS).

1.2 The method calibrates and quantifies PFAS analytes using isotopically labeled standards. Where linear and branched isomers are present in the sample and either qualitative or quantitative standards containing branched and linear isomers are commercially available, the PFAS analyte is reported as a single analyte consisting of the sum of the linear and branched isomer concentrations

1.3 This is a liquid chromatography/tandem mass spectrometry (LC/MS/MS) method for the determination of selected perfluorinated alkyl substances (PFAS) in Non-Drinking Water, tissue soil and biosolid Matrices. Accuracy and precision data have been generated for the compounds listed in Table 1.

1.4 The data report packages present the documentation of any method modification related to the samples tested. Depending upon the nature of the modification and the extent of intended use, the laboratory may be required to demonstrate that the modifications will produce equivalent results for the matrix. Approval of all method modifications is by one or more of the following laboratory personnel before performing the modification: Area Supervisor, Department Supervisor, Laboratory Director, or Quality Assurance Officer.

1.5 This method is restricted to use by or under the supervision of analysts experienced in the operation of the LC/MS/MS and in the interpretation of LC/MS/MS data. Each analyst must demonstrate the ability to generate acceptable results with this method by performing an initial demonstration of capability.

2. Summary of Method

2.1 Environmental samples are prepared and extracted using method-specific procedures. Sample extracts are subjected to cleanup procedures designed to remove interferences. Analyses of the sample extracts are conducted by LC-MS/MS in the multiple reaction monitoring (MRM) mode. Sample concentrations are determined by isotope dilution or

extracted internal standard quantification using isotopically labeled compounds added to the samples before extraction.

2.2 Aqueous samples are spiked with isotopically labeled standards, extracted using solid-phase extraction (SPE) cartridges and undergo cleanup using carbon before analysis.

2.3 Solid and Oil samples are spiked with isotopically labeled standards, extracted into basic methanol, and cleaned up by carbon and SPE cartridges before analysis

2.4 Tissue samples are spiked with isotopically labeled standards, extracted in potassium hydroxide and acetonitrile followed by basic methanol, and cleaned up by carbon and SPE cartridges before analysis.

2.5 A sample extract is injected into an LC equipped with a C18 column that is interfaced to an MS/MS). The analytes are separated and identified by comparing the acquired mass spectra and retention times to reference spectra and retention times for calibration standards acquired under identical LC/MS/MS conditions. The concentration of each analyte is determined by using the isotope dilution technique. Extracted Internal Standards (EIS) analytes are used to monitor the extraction efficiency of the method analytes.

2.6 Method Modifications from Reference

N/A

3. Reporting Limits

The reporting limit for PFAS's are listed in Table 8.

4. Interferences

4.1 PFAS standards, extracts and samples should not come in contact with any glass containers or pipettes as these analytes can potentially adsorb to glass surfaces. PFAS analyte and EIS standards commercially purchased in glass ampoules are acceptable; however, all subsequent transfers or dilutions performed by the analyst must be prepared and stored in polypropylene containers.

4.2 Method interferences may be caused by contaminants in solvents, reagents (including reagent water), sample bottles and caps, and other sample processing hardware that lead to discrete artifacts and/or elevated baselines in the chromatograms. The method analytes in this method can also be found in many common laboratory supplies and equipment, such as PTFE (polytetrafluoroethylene) products, LC solvent lines, methanol, aluminum foil, SPE sample transfer lines, etc. All items such as these must be routinely demonstrated to be free from interferences (less than 1/2 the RL for each method analyte) under the conditions of the analysis by analyzing laboratory reagent blanks as described in Section 9.1. Subtracting blank values from sample results is not permitted.

4.3 Matrix interferences may be caused by contaminants that are co-extracted from the sample. The extent of matrix interferences will vary considerably from source to source, depending upon the nature of the water. Humic and/or fulvic material can be co-extracted during SPE and high levels can cause enhancement and/or suppression in the electrospray ionization

source or low recoveries on the SPE sorbent. Total organic carbon (TOC) is a good indicator of humic content of the sample.

4.4 SPE cartridges can be a source of interferences. The analysis of field and laboratory reagent blanks can provide important information regarding the presence or absence of such interferences. Brands and lots of SPE devices should be tested to ensure that contamination does not preclude analyte identification and quantitation.

5. Health and Safety

5.1 The toxicity or carcinogenicity of each reagent and standard used in this method is not fully established; however, each chemical compound should be treated as a potential health hazard. From this viewpoint, exposure to these chemicals must be reduced to the lowest possible level by whatever means available. A reference file of material safety data sheets is available to all personnel involved in the chemical analysis. Additional references to laboratory safety are available in the Chemical Hygiene Plan.

5.2 All personnel handling environmental samples known to contain or to have been in contact with municipal waste must follow safety practices for handling known disease causative agents.

5.3 PFOA has been described as “likely to be carcinogenic to humans.” Pure standard materials and stock standard solutions of these method analytes should be handled with suitable protection to skin and eyes, and care should be taken not to breathe the vapors or ingest the materials.

6. Sample Collection, Preservation, Shipping and Handling

6.1 Sample Collection for Aqueous Samples

6.1.1 Samples must be collected in two (2) 500-mL or 250-mL high density polyethylene (HDPE) container with an unlined plastic screw cap. All sample containers must have linerless HDPE or polypropylene caps.

6.1.2 The sample handler must wash their hands before sampling and wear nitrile gloves while filling and sealing the sample bottles. PFAS contamination during sampling can occur from a number of common sources, such as food packaging and certain foods and beverages. Proper hand washing and wearing nitrile gloves will aid in minimizing this type of accidental contamination of the samples.

6.1.3 Open the tap and allow the system to flush until the water temperature has stabilized (approximately 3 to 5 min). Collect samples from the flowing system.

6.1.4 Fill sample bottles. Samples do not need to be collected headspace free.

6.1.5 After collecting the sample and cap the bottle. Keep the sample sealed from time of collection until extraction.

6.1.6 Maintain all aqueous samples protected from light at 0 - 6 ºC from the time of collection until shipped to the laboratory. Samples must be shipped as soon as practical with sufficient ice to maintain the sample temperature below 6 ºC during transport and be received by the laboratory within 48 hours of collection. The laboratory must confirm that the sample temperature is 0 - 6 ºC upon receipt.

Once received by the laboratory, the samples must be stored at ≤ -20 ºC until sample preparation.

6.2 Sample Collection for Solid and Oil samples.

6.2.1 Grab samples are collected in polypropylene containers. Sample containers and contact surfaces containing PTFE shall be avoided. Samples should fill no more than ¾ full.

6.2.2 Maintain solid samples protected from light (in HDPE containers) at 0 - 6 ºC from the time of collection until receipt at the laboratory. The laboratory must confirm that the sample temperature is 0 - 6 ºC upon receipt. Once received by the laboratory, the samples must be stored at ≤ -20 ºC until sample preparation.

6.3 Sample Collection for fish and other tissue samples

6.3.1 If the time of collection to the time of receipt at the laboratory is expected to exceed 24 hours, the tissue samples must be frozen upon collection and shipped to the laboratory on dry ice.

6.3.2 Once received by the laboratory, the samples must be maintained protected from light at ≤ -20 ºC until prepared. Store unused samples in HDPE containers or wrapped in aluminum foil at ≤ -20 ºC.

6.3.3 The nature of the tissues of interest may vary by project. Field sampling plans and protocols should explicitly state the samples to be collected and if any processing will be conducted in the field (e.g., filleting of whole fish or removal of organs). All field procedures must involve materials and equipment that have been shown to be free of PFAS.

6.4 Sample Preservation

Not applicable.

6.5 Sample Shipping

Samples must be chilled during shipment and must not exceed 0 – 6 °C during the first 48 hours after collection. Sample temperature must be confirmed to be at or below 0 – 6 °C when the samples are received at the laboratory. Samples stored in the lab must be held at or below 6 °C until extraction but should not be frozen.

NOTE: Samples that are significantly above 0 – 6 ° C, at the time of collection, may need to be iced or refrigerated for a period of time, in order to chill them prior to shipping. This will allow them to be shipped with sufficient ice to meet the above requirements.

6.6 Sample Handling

6.6.1 Aqueous samples (including leachates) should be analyzed as soon as possible; however, samples may be held in the laboratory for up to 90 days from collection, when stored at ≤ -20 ºC and protected from the light. When stored at 0 - 6 ºC and protected from the light, aqueous samples may be held for up to 28 days, with the caveat that issues were observed with certain perfluorooctane sulfonamide ethanols and perfluorooctane sulfonamidoacetic acids after 7 days. These issues are more likely to elevate the observed concentrations of other PFAS compounds via the transformation of these precursors if they are present in the sample.

6.6.2 Solid samples (soils and sediments), Oil and tissue samples may be held for up to 90 days, if stored by the laboratory in the dark at either 0 - 6 ºC or ≤ -20 ºC, with the caveat that samples may need to be extracted as soon as possible if NFDHA is an important analyte.

6.6.3 Biosolids samples may be held for up to 90 days, if stored by the laboratory in the dark at 0 - 6 ºC or at -20 ºC. Because microbiological activity in biosolids samples at 0 - 6 ºC may lead to production of gases which may cause the sample to be expelled from the container when it is opened, as well as producing noxious odors, EPA recommends that samples be frozen if they need to be stored for more than a few days before extraction. Store sample extracts in the dark at less than 0 - 4 ºC until analyzed. If stored in the dark at less than 0 - 4 ºC, sample extracts may be stored for up to 90 days, with the caveat that issues were observed for some ether sulfonates after 28 days. These issues may elevate the observed concentrations of the ether sulfonates in the extract over time. Samples may need to be extracted as soon as possible if NFDHA is an important analyte.

7. Equipment and Supplies

7.1 SAMPLE CONTAINERS – 500-mL or 250-mL high density polyethylene (HDPE) bottles fitted with unlined screw caps. Sample bottles must be discarded after use.

7.2 SAMPLE JARS – 8-ounce wide mouth high density polyethylene (HDPE) bottles fitted with unlined screw caps. Sample bottles must be discarded after use.

7.3 POLYPROPYLENE BOTTLES – 4-mL narrow-mouth polypropylene bottles.

7.4 CENTRIFUGE TUBES – 50-mL conical polypropylene tubes with polypropylene screw caps for storing standard solutions and for collection of the extracts.

7.5 AUTOSAMPLER VIALS – Polypropylene 0.7-mL autosampler vials with polypropylene caps.

7.5.1 NOTE: Polypropylene vials and caps are necessary to prevent contamination of the sample from PTFE coated septa. However, polypropylene caps do not reseal, so evaporation occurs after injection. Thus, multiple injections from the same vial are not possible.

7.6 POLYPROPYLENE GRADUATED CYLINDERS – Suggested sizes include 25, 50, 100 and 1000-mL cylinders.

7.7 Auto Pipets – Suggested sizes include 5, 10, 25, 50, 100, 250, 500, 1000, 5000 and 10,000-µls.

7.8 PLASTIC PIPETS – Polypropylene or polyethylene disposable pipets.

7.9 Silanized glass wool (Sigma-Aldrich, Cat # 20411 or equivalent) – store in a clean glass jar and rinsed with methanol (2 times) prior to use.

7.10 Disposable syringe filter, 25-mm, 0.2-µm Nylon membrane, PALL/Acrodisc or equivalent

7.11 Variable volume pipettes with disposable HDPE or polypropylene tips (10 µL to 5 mL) used for preparation of calibration standards and spiked samples.

7.12 ANALYTICAL BALANCE – Capable of weighing to the nearest 0.0001 g.

7.13 ANALYTICAL BALANCE – Capable of weighing to the nearest 0.1 g.

7.14 SOLID PHASE EXTRACTION (SPE) APPARATUS FOR USING CARTRIDGES

7.14.1 SPE CARTRIDGES – (Phenomenex WAX 150 or 250mg or equivalent). The SPE sorbent must have a pKa above 8 so that it remains positively charged during the extraction.

7.14.1.1 Note: SPE cartridges with different bed volume (e.g., 500 mg) may be used; however, the laboratory must demonstrate that the bed volume does not negatively affect analyte absorption and elution, by performing the initial demonstration of capability analyses described in Section 13.

7.14.2 VACUUM EXTRACTION MANIFOLD – A manual vacuum manifold with large volume sampler for cartridge extractions, or an automatic/robotic sample preparation system designed for use with SPE cartridges, may be used if all QC requirements discussed in Section 9 are met. Extraction and/or elution steps may not be changed or omitted to accommodate the use of an automated system. Care must be taken with automated SPE systems to ensure the PTFE commonly used in these systems does not contribute to unacceptable analyte concentrations in the MB.

7.14.3 SAMPLE DELIVERY SYSTEM – Use of a polypropylene transfer tube system, which transfers the sample directly from the sample container to the SPE cartridge, is recommended, but not mandatory. Standard extraction manifolds come equipped with PTFE transfer tube systems. These can be replaced with 1/8” O.D. x 1/16” I.D. polypropylene or polyethylene tubing cut to an appropriate length to ensure no sample contamination from the sample transfer lines. Other types of non-PTFE tubing may be used provided it meets the MB and LCS QC requirements.

7.15 EXTRACT CONCENTRATION SYSTEM – Extracts are concentrated by evaporation with nitrogen using a water bath set no higher than 55 °C.

7.16 LABORATORY OR ASPIRATOR VACUUM SYSTEM – Sufficient capacity to maintain a vacuum of approximately 10 to 15 inches of mercury for extraction cartridges.

7.17 LIQUID CHROMATOGRAPHY (LC)/TANDEM MASS SPECTROMETER (MS/MS) WITH DATA SYSTEM

7.17.1 LC SYSTEM – Instrument capable of reproducibly injecting up to 10-µL aliquots and performing binary linear gradients at a constant flow rate near the flow rate used for development of this method (0.4 mL/min). The LC must be capable of pumping the water/methanol mobile phase without the use of a degasser which pulls vacuum on the mobile phase bottle (other types of degassers are acceptable). Degassers which pull vacuum on the mobile phase bottle will volatilize the ammonium acetate mobile phase causing the analyte peaks to shift to earlier retention times over the course of the analysis batch. The usage of a column heater is optional.

7.17.2 LC/TANDEM MASS SPECTROMETER – The LC/MS/MS must be capable of negative ion electrospray ionization (ESI) near the suggested LC flow rate of 0.4 mL/min. The system must be capable of performing MS/MS to produce unique product ions for the method analytes within specified retention time segments. A minimum of 10 scans across the chromatographic peak is required to ensure adequate precision.

7.17.3 DATA SYSTEM – An interfaced data system is required to acquire, store, reduce, and output mass spectral data. The computer software should have the capability of processing stored LC/MS/MS data by recognizing an LC peak within any given retention time window. The software must allow integration of the ion abundance of any specific ion within specified time or scan number limits. The software must be able to calculate relative response factors, construct linear regressions or quadratic calibration curves, and calculate analyte concentrations.

7.17.4 INSTRUMENT COLUMNS

7.17.4.1 ANALYTICAL: C18 column, 1.7 µm, 50 x 2.1 mm (Waters Acquity UPLC® BEH or equivalent)

7.17.4.2 OPTIONAL GUARD COLUMN: (Phenomenex Kinetex® Evo C18 or equivalent)

8. Reagents and Standards

8.1 GASES, REAGENTS, AND SOLVENTS – Reagent grade or better chemicals must be used.

8.1.1 REAGENT WATER – Purified water which does not contain any measurable quantities of any method analytes or interfering compounds greater than 1/2 the RL for each method analyte of interest. Prior to daily use, at least 3 L of reagent water should be flushed from the purification system to rinse out any build-up of analytes in the system's tubing.

8.1.2 METHANOL (CH_3OH, CAS#: 67-56-1) – High purity, demonstrated to be free of analytes and interferences.

8.1.3 AMMONIUM ACETATE ($NH_4C_2H_3O_2$, CAS#: 631-61-8) – High purity, demonstrated to be free of analytes and interferences. Store at 2-8° and replace 2 years after opening date.

8.1.4 ACETIC ACID (H_3CCOOH, CAS#: 64-19-7) - High purity, demonstrated to be free of analytes and interferences and stored at room temperature.

8.1.4.1 Acetic Acid (0.1%) – Dissolve acetic acid (1 mL) in reagent water (1 L), store at room temperature, replace after 3 months.

8.1.5 1M AMMONIUM ACETATE/REAGENT WATER – High purity, demonstrated to be free of analytes and interferences.

8.1.6 2mM AMMONIUM ACETATE/METHANOL:WATER (5:95) – To prepare, mix 2 ml of 1M AMMONIUM ACETATE,1 ml ACETIC ACID and 50 ml METHANOL into I Liter of REAGENT WATER.

8.1.7 ACETONITRILE – UPLC grade or equivalent, store at room temperature

8.1.8 TOLUENE – HPLC grade or equivalent.

8.1.9 ACETONE – pesticide grade or equivalent

8.1.10 AMMONIUM HYDROXIDE (NH_3, CAS#: 1336-21-6) – High purity, demonstrated to be free of analytes and interferences, and stored at room temperature.

8.1.11 AQUEOUS AMMONIUM HYDROXIDE (3%) – Add ammonium hydroxide (10 mL, 30%) to reagent water (90 mL), store at room temperature, replace after 3 months.

8.1.12 METHANOLIC AMMONIUM HYDROXIDE (0.3%) - add ammonium hydroxide (1 mL, 30%) to methanol (99 mL), store at room temperature, replace after 1 month

8.1.13 METHANOLIC AMMONIUM HYDROXIDE (1%) - add ammonium hydroxide (3.3 mL, 30%) to methanol (97 mL), store at room temperature, replace after 1 month

8.1.14 METHANOLIC AMMONIUM HYDROXIDE (2%) - add ammonium hydroxide (6.6 mL, 30%) to methanol (93.4 mL), store at room temperature, replace after 1 month

8.1.15 METHANOLIC POTASSIUM HYDROXIDE (0.05 M) – add 3.3 g of potassium hydroxide to 1 L of methanol, store at room temperature, replace after 3 months

8.1.16 METHANOL WITH 4% WATER, 1% AMMONIUM HYDROXIDE AND 0.625% ACETIC ACID - add ammonium hydroxide (3.3 mL, 30%), reagent water (1.7 mL) and acetic acid (0.625 mL) to methanol (92 mL), store at room temperature, replace after 1 month. This solution is used to prepare the instrument blank and calibration standards (Section 8.3.2).

8.1.17 FORMIC ACID – (greater than 96% purity or equivalent). Store at room temperature and replace after 2 years.

8.1.18 FORMIC ACID (aqueous, 0.1 M) - dissolve formic acid (4.6 g) in reagent water (1 L), store at room temperature, replace after 2 years.

8.1.19 FORMIC ACID (aqueous, 0.3 M) - dissolve formic acid (13.8 g) in reagent water (1 L), store at room temperature, replace after 2 years.

8.1.20 FORMIC ACID (aqueous, 5% v/v) - mix 5 mL formic acid with 95 mL reagent water, store at room temperature, replace after 2 years.

8.1.21 FORMIC ACID (methanolic 1:1, 0.1 M formic acid/methanol) - mix equal volumes of methanol and 0.1 M formic acid, store at room temperature, replace after 2 years.

8.1.22 FORMIC ACID (aqueous, 50% v/v) - mix 50 mL formic acid with 50 mL reagent water, store at room temperature, replace after 2 years.

8.1.23 POTASSIUM HYDROXIDE – certified ACS or equivalent, store at room temperature, replace after 2 years.

8.1.24 CARBON - – EnviCarb® 1-M-USP or equivalent, verified by lot number before use, stored at room temperature. Loose carbon allows for better adsorption of interferent organics. Note: The single-laboratory validation laboratory achieved better performance with loose carbon than carbon cartridges. Loose carbon will be used for the multi-laboratory validation to set statistically based method criteria.

8.1.25 NITROGEN – Used for the following purposes: Nitrogen aids in aerosol generation of the ESI liquid spray and is used as collision gas in some MS/MS instruments. The nitrogen used should meet or exceed instrument manufacturer's specifications. In addition, Nitrogen is used to concentrate sample extracts (Ultra High Purity or equivalent).

8.1.26 ARGON – Used as collision gas in some MS/MS instruments. Argon should meet or exceed instrument manufacturer's specifications. Nitrogen gas may be used as the collision gas provided sufficient sensitivity (product ion formation) is achieved.

8.2 REFERENCE MATRICES - Matrices in which PFAS and interfering compounds are not detected by this method. These matrices are to be used to prepare the batch QC samples, LOQ/MDL, and IDOC samples.

8.2.1 Reagent water - purified water, Type I

8.2.2 Solid reference matrix Ottawa Sand or equivalent

8.2.3 Tissue Reference matrix – Cod loin or other animal tissue demonstrated to be PFAS free.

8.3 STANDARD SOLUTIONS – When a compound purity is assayed to be 96% or greater, the weight can be used without correction to calculate the concentration of the stock standard. PFAS analyte and IS standards commercially purchased in glass ampoules are acceptable; however, all subsequent transfers or dilutions performed by the analyst must be prepared and stored in polypropylene containers and are stored at ≤4 °C. Standards for sample fortification generally should be prepared in the smallest volume that can be accurately measured to minimize the addition of excess organic solvent to aqueous samples.

8.3.1 Stock standards and diluted stock standards are stored at ≤4 °C. Prepare a spiking solution, containing the method analytes listed in Table 1, in methanol from prime stocks. The solution is used to prepare the calibration standards and to spike the known reference QC samples that are analyzed with every batch. Quantitative standards containing a mixture of branched and linear isomers must be used for method analytes if they are commercially available. Currently, these include PFOS, PFHxS, NEtFOSAA, and NMeFOSAA.

8.3.2 Calibration standard solutions – A series of calibration solutions containing the target analytes and the Labeled extracted internal standards (EIS) and non-extracted internal standards (NIS) is used to establish the initial calibration of the analytical instrument. Table 4 represents the concentrations of the native, EIS and NIS analytes of the calibration curve. Calibration standard solutions are made using the solution described in section 8.1.16.

8.3.3 ISOTOPE DILUTION EXTRACTED INTERNAL STANDARD (EIS) – Isotopically labelled analogs of the target analytes to be used for the quantification of target analytes. EIS stock standard solutions are purchased in glass ampoules and are stored in accordance with the manufacturer's recommendations. The EIS stock solution to be used for the fortification of samples and QC in accordance with the isotope dilution procedure. Table 2 represents the EIS concentrations and nominal sample amounts added to each field sample and QC element.

8.3.4 ISOTOPE DILUTION NON-EXTRACTED INTERNAL STANDARDS (NIS) – Isotopically labelled analogs to be added post extraction for the measurement of EIS extraction efficiency and is added to the final volume of all extractions. Table 3 represents the EIS concentrations and nominal sample amounts added to each field sample and QC element.

9. Quality Control

9.1 Method Blank

9.1.1 A Method Blank (MB) is required with each extraction batch to confirm that potential background contaminants are not interfering with the identification or quantitation of method analytes. An aliquot of reagent water that is treated exactly as a sample including exposure to all glassware, equipment, solvents, reagents and standards. Prep and analyze a MB for every 20 samples. If the MB produces a peak within the retention time window of any analyte that would prevent the determination of that analyte, determine the source of contamination, and eliminate the interference before processing samples. Background contamination must be reduced to an acceptable level before proceeding. Background from method analytes or other contaminants that interfere with the measurement of method analytes must be below the RL. If the method analytes are detected in the MB at concentrations equal to or greater than this level, then all data for the problem analyte(s) must be considered invalid for all samples in the extraction batch.

9.2 Laboratory Control Sample (LCS)

9.2.1 Low Level LCS or OPR (Ongoing Precision Recovery) sample is required with each extraction batch. A LLCS or OPR samples is a method blank spiked with known quantities of analytes. The fortified concentration of the LCS is spiked at 2X the LOQ. Default limits of 70-130% of the true value may be used for analytes until sufficient replicates have been analyzed to generate proper control limits. Calculate the percent recovery (%*R*) for each analyte using the equation:

9.2.2 An LCS or OPR (Ongoing Precision Recovery) sample is required with each extraction batch. A LCS or OPR samples is a method blank spiked with known quantities of analytes. The fortified concentration of the LCS is spiked at the midpoint of the calibration curve. Default limits of 70-130% of the true value may be used for analytes until sufficient replicates have been analyzed to generate proper control limits. Calculate the percent recovery (%*R*) for each analyte using the equation:

$$\%R = \frac{A \times 100}{B}$$

Where:

A = measured concentration in the fortified sample
B =fortification concentration.

9.1.1 Where applicable, in the absence of additional sample volume required to perform matrix specific QC, LCSD's are to be extracted and analyzed. The concentration and analyte

recovery criteria for the LCSD must be the same as the batch LCS The RSD's must fall within ≤30% of the true value for medium and high-level replicates, and ≤50% for low level replicates. Calculate the relative percent difference (RPD) for duplicate MSs (MS and MSD) using the equation:

$$RPD = \frac{|LCS - LCSD|}{(LCS + LCSD) / 2} \times 100$$

9.1.2 If the LCS and or LCSD results do not meet these criteria for method analytes, then all data for the problem analyte(s) must be considered invalid for all samples in the extraction batch.

9.3 Non-extracted Internal Standard Area (NIS)

Each time an initial calibration is performed, use the data from all the initial calibration standards used to meet the linearity test in Section 10.3.3.3 to calculate the mean area response for each of the NIS compounds, using the equation below.

$$\text{Mean Area}_{NISi} = \sum AREA_{NISi} / n$$

where:

AreaNISi = Area counts for the ith NIS, where i ranges from 1 to 7, for the seven NIS compounds listed in Table 1
n = The number of ICAL standards (the default value is n = 6). If a different number of standards is used for the ICAL, for example, to increase the calibration range or by dropping a point at either end of the range to meet the linearity criterion, change 6 to match the actual number of standards used)

Record the mean areas for each NIS for use in evaluating results for sample analyses. There is no acceptance criterion associated with the mean NIS area data.

9.4 Extracted Internal Standards (EIS)

9.4.1 The EIS standard is fortified into all samples, CCVs, MBs, LCSs, MSs, MSDs, FD, and FRB prior to extraction. It is also added to the CAL standards. The EIS is a means of assessing method performance from extraction to final chromatographic measurement. Calculate the recovery (%R) for the EIS using the following equation:

$$\%R = (A / B) \times 100$$

Where:
A = calculated EIS concentration for the QC or Field Sample
B = fortified concentration of the EIS.

9.4.2 Default limits of 50-150% may be used for analytes until sufficient replicates have been analyzed to generate proper control limits. A low or high percent recovery for a sample, blank, or CCV does not require discarding the analytical data but it may indicate a potential problem with future analytical data. When EIS recovery from a sample, blank, or CCV are outside control limits, check 1) calculations to locate possible errors, 2) standard solutions for degradation, 3) contamination, and 4)

instrument performance. For CCVs and QC elements spiked with all target analytes, if the recovery of the corresponding target analytes meet the acceptance criteria for the EIS in question, the data can be used but all potential biases in the recovery of the EIS must be documented in the sample report. If the associated target analytes do not meet the acceptance criteria, the data must be reanalyzed.

9.5 Matrix Spike (MS/MSD)

9.5.1 Analysis of an MS is prepared one per preparation batch (if required).

9.5.2 Aliquots of field samples that have been fortified with a known concentration of target compounds, prior to sample preparation and extraction, and analyzed to measure the effect of matrix interferences. The use of MS/MSD samples is generally not required in isotope dilution methods because the labeled compounds added to every sample provide more performance data than spiking a single sample in each preparation batch. Aliquots of field samples

9.5.3 Analyte recoveries may exhibit matrix bias. For samples fortified at or above their native concentration, recoveries should range between 50-150%. If the accuracy of any analyte falls outside the designated range, and the laboratory performance for that analyte is shown to be in control in the LCS, the recovery is judged to be matrix biased. The result for that analyte in the unfortified sample is labeled suspect/matrix to inform the data user that the results are suspect due to matrix effects.

9.6 Laboratory Duplicate

9.6.1 FIELD DUPLICATE OR LABORATORY FORTIFIED SAMPLE MATRIX DUPLICATE (FD or MSD) – Within each extraction batch (not to exceed 20 Field Samples), a minimum of one FD or MSD must be analyzed. Duplicates check the precision associated with sample collection, preservation, storage, and laboratory procedures. If method analytes are not routinely observed in Field Samples, an MSD should be analyzed rather than an FD.

9.6.2 Calculate the relative percent difference (*RPD*) for duplicate measurements (*FD1* and *FD2*) using the equation:

$$RPD = \frac{|FD1 - FD2|}{(FD1 + FD2) / 2} \times 100$$

9.6.3 RPDs for FDs should be ≤30%. Greater variability may be observed when FDs have analyte concentrations that are within a factor of 2 of the RL. At these concentrations, FDs should have RPDs that are ≤50%. If the RPD of any analyte falls outside the designated range, and the laboratory performance for that analyte is shown to be in control in the CCV, the recovery is judged to be matrix biased. The result for that analyte in the unfortified sample is labeled suspect/matrix to inform the data user that the results are suspect due to matrix effects.

9.6.4 If an MSD is analyzed instead of a FD, calculate the relative percent difference (RPD) for duplicate MSs (MS and MSD) using the equation:

$$RPD = \frac{|MS - MSD|}{} \times 100$$

(MS + MSD) / 2

9.6.5 RPDs for duplicate MSs should be ≤30% for samples fortified at or above their native concentration. Greater variability may be observed when MSs are fortified at analyte concentrations that are within a factor of 2 of the RL. MSs fortified at these concentrations should have RPDs that are ≤50% for samples fortified at or above their native concentration. If the RPD of any analyte falls outside the designated range, and the laboratory performance for that analyte is shown to be in control in the LCSD where applicable, the result is judged to be matrix biased. If no LCSD is present, the associated MS and MSD are to be re-analyzed to determine if any analytical has occurred. If the resulting RPDs are still outside control limits, the result for that analyte in the unfortified sample is labeled suspect/matrix to inform the data user that the results are suspect due to matrix effects.

9.7 Bile Salt Interference Check

9.7.1 The laboratory must analyze a TDCA standard after the initial calibration, prior to the analysis of tissue samples, to check for interferences caused by bile salts. If an interference is present, the chromatographic conditions must be modified to eliminate the interference from TDCA (e.g., changing the retention time of TDCA such that it falls outside the

9.8 Initial Calibration Verification (ICV)

9.8.1 After each ICAL, analyze a QCS sample from a source different from the source of the CAL standards. If a second vendor is not available, then a different lot of the standard should be used. The QCS should be prepared and analyzed just like a CCV. Acceptance criteria for the QCS are identical to the CCVs; the calculated amount for each analyte must be ± 30% of the expected value. If measured analyte concentrations are not of acceptable accuracy, check the entire analytical procedure to locate and correct the problem.

9.9 Instrument Sensitivity Check (ISC)

9.9.1 At the start of each 12-hour shift, analyze a standard at the LOQ. The signal-to-noise ratio of the ISC standard must be greater than or equal to 3:1. If the requirements cannot be met, the problem must be corrected before analyses can proceed.

9.10 Continuing Calibration Verification (CCV)

9.10.1 CCV Standards must be analyzed at the beginning of each analysis batch, after every 10 Field Samples, and at the end of the analysis batch.

9.10.2 The recovery of native and isotopically labeled compounds for the CVs must be within 70 - 130%

9.11 Method-specific Quality Control Samples

9.11.1 Instrument Blank – During the analysis of a batch of samples, a solvent blank is analyzed after samples containing high level of target compounds (e.g., calibration, CV) to monitor carryover from the previous injection. The injection blank consists of the solution in Section 8.1.16 fortified with the EIS and NIS for quantitation purposes.

9.12 Example Method Sequence

- INSTRUMENT BLANK
- INSTRUMENT SENSITIVITY CHECK
- CALIBRATION VERIFICATION STANDARD
- QUALITATIVE IDENTIFICATION STANDARDS
- TDCA STANDARD (only if analyzing tissues)
- INSTRUMENT BLANK
- METHOD BLANK
- LOW-LEVEL LCS/OPR
- OPR/LCS
- SAMPLE (10 or fewer)
- CALIBRATION VERIFICATION STANDARD
- INSTRUMENT BLANK
- SAMPLE (10 or fewer)
- CALIBRATION VERIFICATION STANDARD
- INSTRUMENT BLANK

10. Procedure

10.1 Equipment Set-up

10.1.1 This procedure may be performed manually or in an automated mode using a robotic or automatic sample preparation device. If an automated system is used to prepare samples, follow the manufacturer's operating instructions, but all extraction and elution steps must be the same as in the manual procedure. Extraction and/or elution steps may not be changed or omitted to accommodate the use of an automated system. If an automated system is used, the MBs should be rotated among the ports to ensure that all the valves and tubing meet the MB requirements.

10.1.2 Some of the PFAS's adsorb to surfaces, including polypropylene. Therefore, the aqueous sample bottles must be rinsed with the elution solvent whether extractions are performed manually or by automation. The bottle rinse is passed through the cartridge to elute the method analytes and is then collected.

10.1.3 The SPE cartridges and sample bottles described in this section are designed as single use items and should be discarded after use. They may not be refurbished for reuse in subsequent analyses.

10.1.4 All SPE apparatus, including manifolds, tubing and sample ports must be thoroughly rinsed following each use with 1% methanolic ammonium hydroxide, followed by Methanol and then DI water. Additionally, sample manifold ports and transfer tubing should be inspected regularly for signs of wear and/or

discoloration. When such observations are made, the associated components should be replaced.

10.1.5 Prior to the start of any extraction, sample site information must be evaluated for any potentially high level PFAS concentrations or sample matrix irregularities that may impact the extraction process. If such samples are identified, aqueous samples may be pre-screened via direct aqueous injection prior to analysis to estimate the potential PFAS concentrations present.

10.1.6 To perform a direct aqueous injection (DAI) screen, the sample should be inverted several times to try and evenly disperse any organic matter present. A 1 ml aliquot (or less depending on the matrix) is to be taken from the parent sample, volume adjusted to 1 ml with reagent water if less than 1ml, fortified with EIS and NIS spiking solutions to match the concentrations of an extracted sample (typically 5 µl per 1 ml DAI), and then analyzed under the same analytical conditions as field samples.

10.2 Sample Preparation of Aqueous Samples

10.2.1 Samples are preserved, collected, and stored as presented in Section 6.

10.2.2 Determine sample volume. Weigh all samples to the nearest 1g. If visible sediment is present, centrifuge and decant into a new HDPE bottle and record the weight of the new container.

NOTE: Some of the PFAS's adsorb to surfaces, thus the sample volume may not be transferred to a graduated cylinder for volume measurement.

10.2.3 The MB, LCS and FRB may be prepared by measuring reagent water with a polypropylene graduated cylinder or filling an HDPE sample bottle near the top.

10.2.4 Check that the pH is 6.5 ± 0.5. If necessary, adjust pH with 50% formic acid or ammonium hydroxide and 3% aqueous ammonium hydroxide. The extract is now ready for solid-phase extraction (SPE) and cleanup.

10.2.5 Add 20 µL of the EIS to each sample and QC, cap and invert to mix.

10.2.6 If the sample is an LCS, LCSD, MS, or MSD, add the necessary amount of analyte PDS. Cap and invert each sample to mix.

10.3 Sample Prep and Extraction Protocol for Solids.

10.3.1 Homogenize and weigh 5 grams of sample (measured to the nearest hundredth of a gram) into a 50 ml polypropylene centrifuge tube. For laboratory control blanks and spikes, 5 grams of clean sand is used.

10.3.1.1 For Biosolids and other complex matrices, a small aliquot may be required due to co-extracted matrix interferences.

10.3.1.2 For batch QC samples using 5 g of reference solid, add 2.5 g of reagent water. The addition of reagent water to the sand provides a matrix closer in composition to real-world samples.

10.3.2 Add 20 µL of the EIS to each sample and QC.

10.3.3 If the sample is an LCS, LCSD, MS, or MSD, add the necessary amount of analyte PDS. Cap and invert each sample to mix.

10.3.4 Vortex the samples to evenly disperse the spiking solutions and allow to equilibrate for 30 minutes.

10.3.5 To all samples, add 10 ml of 0.3% methanolic ammonium hydroxide, cap, vortex for 25 seconds.

10.3.6 Following mixing, shake each sample for 30 minutes on a shaker table.

10.3.7 Centrifuge each sample at 2800RPM for 10 minutes.

10.3.8 Remove the supernatant and transfer to a clean 50 ml polypropylene centrifuge tube.

10.3.9 Repeat steps 10.3.4 to 10.3.7, with 15 ml of 0.3% methanolic ammonium hydroxide, combining the supernatants.

10.3.10 Add 5ml of 0.3% methanolic ammonium hydroxide to the sample, vortex for 25 seconds and centrifuge each sample at 2800RPM for 10 minutes.

10.3.11 Remove the supernatant and transfer to the same 50 ml polypropylene centrifuge tube containing eluates from the previous cycles.

10.3.12 Add 10 mg of carbon to the combined extract, mix by occasional hand shaking for no more than five minutes and then centrifuge at 2800 rpm for 10 minutes. Immediately decant the extract into a 50 ml polypropylene centrifuge tube.

10.3.13 Dilute to approximately 35 mL with reagent water. Samples containing more than 50% water may yield extracts that are greater than 35 mL in volume; therefore, do not add water to these. Determine the water content in the sample as follows (percent moisture is determined from the % solids):

Water Content in Sample = (Sample Weight * Percent moisture) / 100

10.3.14 Concentrate each extract at approximately 55 ºC with a gentle N2 flow to a final volume that is based on the water content of the sample (see table below). Allow extracts to concentrate for 10 minutes, then mix (by vortex if the volume is < 20. Continue concentrating and mixing every 5 minutes until the extract has been reduced to the required volume as specified in the table below. If the extract volume appears to stop dropping, the concentration must be stopped and the volume at which it was stopped recorded.

Water Content in Sample	Concentrated Final Volume
< 5 grams	15 ml
5-8 grams	15-20 ml
8-9 grams	20-22.5 ml
9-10 grams	22.5-25 ml

10.3.15 Add 40 - 50 mL of reagent water to the extract and vortex. Check that the pH is 6.5 ±0.5 and adjust as necessary with 50% formic acid or 30% ammonium hydroxide, or with 5% formic acid and 3% aqueous ammonium hydroxide. The extracts are ready for SPE and cleanup.

10.4 Sample Prep and Extraction Protocol for Oils.

10.4.1 Weigh 1-2 grams of sample (measured to the nearest hundredth of a gram) into a 50 ml polypropylene centrifuge tube. For laboratory control blanks and spikes, 1 grams of mineral oil is used.

10.4.1.1 For batch QC samples use 1 g of reference oil.

10.4.2 Add 20 µL of the EIS to each sample and QC.

10.4.3 If the sample is an LCS, LCSD, MS, or MSD, add the necessary amount of analyte PDS. Cap and invert each sample to mix.

10.4.4 Vortex the samples to evenly disperse the spiking solutions and allow to equilibrate for 30 minutes.

10.4.5 To all samples, add 10 ml of 0.3% methanolic ammonium hydroxide, cap, vortex for 25 seconds.

10.4.6 Following mixing, shake each sample for 30 minutes on a shaker table.

10.4.7 Centrifuge each sample at 2800RPM for 10 minutes.

10.4.8 Remove the supernatant and transfer to a clean 50 ml polypropylene centrifuge tube.

10.4.9 Repeat steps 10.3.4 to 10.3.7, with 15 ml of 0.3% methanolic ammonium hydroxide, combining the supernatants.

10.4.10 Add 5ml of 0.3% methanolic ammonium hydroxide to the sample, vortex for 25 seconds and centrifuge each sample at 2800RPM for 10 minutes.

10.4.11 Remove the supernatant and transfer to the same 50 ml polypropylene centrifuge tube containing eluates from the previous cycles.

10.4.12 Add 10 mg of carbon to the combined extract, mix by occasional hand shaking for no more than five minutes and then centrifuge at 2800 rpm for 10 minutes. Immediately decant the extract into a 50 ml polypropylene centrifuge tube.

10.5 Sample Prep and Extraction Protocol for Tissues.

10.5.1 Homogenize and weigh 2 grams of sample (measured to the nearest hundredth of a gram) into a 50 ml polypropylene centrifuge tube. For laboratory control blanks and spikes, 2 grams of clean tissue is used.

10.5.2 Add 20 µL of the EIS PDS to each sample and QC.

10.5.3 If the sample is an LCS, LCSD, MS, or MSD, add the necessary amount of analyte PDS. Cap and invert each sample to mix.

10.5.4 Add 10 mL of 0.05M KOH in methanol to each sample. Vortex to disperse the tissue then place tubes on a mixing table to extract for at 16 hours. Centrifuge at 2800 rpm for 10 minutes and collect the supernatant in a 50-mL polypropylene centrifuge tube.

10.5.5 Add 10 mL of acetonitrile to remaining tissue in the 50-mL centrifuge tube, vortex to mix and disperse the tissue. Sonicate for 30 minutes. Centrifuge at 2800 rpm for 10 minutes and collect the supernatant, adding it to the 50-mL centrifuge tube containing the initial extract.

10.5.6 Add 5 mL of 0.05M KOH in methanol to the remaining sample in each centrifuge tube. Vortex to disperse the tissue and hand mix briefly. Centrifuge at 2800 rpm

for 10 minutes and collect the supernatant, adding it to the 50-mL centrifuge tube containing the first two extracts.

10.5.7 Add 10 mg of carbon to the combined extract, mix by occasional hand shaking over a period of no more than five minutes and then centrifuge at 2800 rpm for 10 minutes. Immediately decant the extract into a 50-mL centrifuge tube.

10.5.8 Add 1 mL of reagent water to each tube and concentrate each extract at approximately 55 ºC with a gentle N2 flow to a final volume of 2.5 ml.

10.5.9 Add reagent water to each evaporation/concentrator tube to dilute the extracts to 50 mL. Check that the pH = 6.5 ± 0.5 and adjust as needed with 50% formic acid, or ammonium hydroxide or with 5% formic acid and 3% aqueous ammonium hydroxide. The extracts are ready for SPE and cleanup.

10.6 SPE Extract: All matrices

10.6.1 Pack clean silanized glass wool to half the height of the WAX SPE cartridge barrel.

10.6.2 Pre-condition the cartridges by washing them with 3 X 5 mL of 1% methanolic ammonium hydroxide, discarding the wash volumes.

10.6.3 Rinse the cartridge with 5 mL of 0.3M formic acid, allowing the cartridge to drain using gravity only, discarding the rinse volume. Do not allow the cartridge to go dry

10.6.4 Adjust the vacuum so that the approximate flow rate is ~5 mL/min and load the sample across the cartridge. Do not allow the cartridge to go dry before all the sample has passed through.

10.6.5 Once all the sample has passed across the cartridge, rinse the walls of the reservoir with 2 X 5 mL reagent water, loading the rinse across the cartridge.

10.6.6 Rinse the walls of the reservoir with 5 mL of 1:1 0.1M formic acid/methanol and pass the rinse through the cartridge using vacuum. Dry the cartridge by pulling air through for 15 seconds.

10.6.7 Rinse the inside of the sample bottle with 5 mL of 1% methanolic ammonium hydroxide. Use vacuum to pull the elution solvent through the cartridge and into the collection tubes. When the cartridge bed and glass wool are submerged, stop the cartridge flow by closing the valve, keeping the sorbent bed and wool submerged.

10.6.8 Let the wetted sorbent bed and wool soak for 1 minute.

10.6.9 Open the cartridge valve and collect the eluate into a 15 ml polypropylene collection tube.

10.6.10 Add 25 µL of concentrated acetic acid to each sample eluted in the collection tubes and vortex to mix.

10.6.11 Add 10 mg of carbon to each sample and batch QC extract, using a 10-mg scoop. Handshake occasionally for no more than 5 minutes. It is important to minimize the time the sample extract is in contact with the carbon. Immediately vortex (30 seconds) and centrifuge at 2800 rpm for 10 minutes.

10.6.12 Add NIS solution to a clean collection tube. Place a syringe filter (25-mm filter, 0.2-µm nylon membrane) on a 5-mL polypropylene syringe. Take the plunger out and carefully decant the sample supernatant into the syringe barrel. Replace the

plunger and filter the entire extract into the new collection tube containing the NIS.

10.6.13 Vortex to mix and transfer a portion of the extract into a .7-mL polypropylene LC vial for LC-MS/MS analysis. Cap the collection tube containing the remaining extract and store at 4 °C

10.7 Sample Volume Determination

10.7.1 If using weight to determine volume, weigh the empty bottle to the nearest 1 g and determine the sample weight by subtraction of the empty bottle weight from the original sample weight. Assume a sample density of 1.0 g/mL. In either case, the sample volume will be used in the final calculations of the analyte concentration.

10.8 Initial Calibration - Demonstration and documentation of acceptable initial calibration is required before any samples are analyzed. After the initial calibration is successful, a CCV is required at the beginning and end of each period in which analyses are performed, and after every tenth Field Sample.

10.8.1 ESI-MS/MS TUNE

10.8.1.1 Calibrate the mass scale of the MS with the calibration compounds and procedures prescribed by the manufacturer.

10.8.1.2 Optimize the [M-H]- or [M-CO_2]- for each method analyte by infusing approximately 0.5-1.0 µg/mL of each analyte (prepared in the initial mobile phase conditions) directly into the MS at the chosen LC mobile phase flow rate (0.4 mL/min). This tune can be done on a mix of the method analytes. The MS parameters (voltages, temperatures, gas flows, etc.) are varied until optimal analyte responses are determined. The method analytes may have different optima requiring some compromise between the optima.

The Mass spec conditions found in Table 7 show the Sciex Triple Quad 5500+ operation conditions used in this method.

10.8.1.3 Optimize the product ion for each analyte by infusing approximately 0.5-1.0 µg/mL of each analyte (prepared in the initial mobile phase conditions) directly into the MS at the chosen LC mobile phase flow rate (approximately 0.4 mL/min). This tune can be done on a mix of the method analytes. The MS/MS parameters (collision gas pressure, collision energy, etc.) are varied until optimal analyte responses are determined. Typically, the carboxylic acids have very similar MS/MS conditions, and the sulfonic acids have similar MS/MS conditions.

The conditions found on table 5 are representative of expected tune optimizations for each analyte. If conditions other the ones close to the values provided in table 5 are achieved, the process should be re-performed and/or instrument maintenance performed to resolve the problem.

10.8.2 Establish LC operating parameters that optimize resolution and peak shape. Modifying the standard or extract composition to more aqueous content to prevent poor shape is not permitted.

Table 6 represents the operation conditions of a Sciex Exion LC system when running this method.

10.8.3 Inject 2µl of a mid-level CAL standard under LC/MS conditions to obtain the retention times of each method analyte. Divide the chromatogram into retention time windows each of which contains one or more chromatographic peaks. During MS/MS analysis, fragment a small number of selected precursor ions ([M-H]-) for the analytes in each window and choose the most abundant product ion. For maximum sensitivity, small mass windows of ±0.5 daltons around the product ion mass were used for quantitation.

10.8.4 Inject a mid-level CAL standard under optimized LC/MS/MS conditions to ensure that each method analyte is observed in its MS/MS window and that there are at least 10 scans across the peak for optimum precision.

NOTE: PFHxS, PFOS, NMeFOSAA, and NEtFOSAA have multiple chromatographic peaks using the LC conditions in Table 7 due to chromatographic resolution of the linear and branched isomers of these compounds. Most PFAS's are produced by two different processes. One process gives rise to linear PFAS's only while the other process produces both linear and branched isomers. Thus, both branched and linear PFAS's can potentially be found in the environment. For the aforementioned compounds that give rise to more than one peak, all the chromatographic peaks observed in the standard must be integrated and the areas totaled. Chromatographic peaks in a sample must be integrated in the same way as the CAL standard.

10.8.5 Prepare a set of CAL standards as outlined in table 5. The lowest concentration CAL standard must be at or below the LOQ.

10.8.6 The LC/MS/MS system is calibrated using the isotope dilution technique. Target analytes are quantitated against their isotopically labeled analog (Extracted Internal Standard) where commercially available. If a labeled analog is not commercially available, the extracted internal standard with the closest retention time and /or closest chemical similarity is to be used. Use the LC/MS/MS data system software to generate a linear regression or quadratic calibration curve for each of the analytes. This curve must always be forced through zero and may be concentration weighted, if necessary. Forcing zero allows for a better estimate of the background levels of method analytes. A minimum of 6 calibration points are required for a linear or quadratic calibration model.

10.8.7 **CALIBRATION ACCEPTANCE CRITERIA** – A linear fit is acceptable if the calculated RSD or RSE for each target analyte is ≤20%. If linear or Quadratic regressions are used, coefficient of determination (r^2) values must be greater than 0.99. When quantitated using the initial calibration curve, each calibration point at or above the LOQ for each analyte must calculate to be within 70-130% of its true value. The calculate value of each EIS analyte must be within 50-150% of its true value. If these criteria cannot be met, corrective action is taken to reanalyze the CAL standards, restrict the range of calibration.

10.8.8 **Bile salts interference check -** The laboratory must analyze a TDCA standard after the initial calibration, prior to the analysis of tissue samples, to check for interferences caused by bile salts. If an interference is present, the chromatographic conditions must be modified to eliminate the interference from TDCA (e.g., changing the retention time of TDCA such that it falls outside the

retention window for PFOS by at least one minute), and the initial calibration repeated.

10.9 CONTINUING CALIBRATION CHECK (CCV) – Minimum daily calibration verification is as follows. Verify the initial calibration at the beginning and end of each group of analyses, and after every tenth sample during analyses. In this context, a "sample" is considered to be a Field Sample. MBs, CCVs, LCSs, MSs, FDs FRBs and MSDs are not counted as samples. The beginning CCV of each analysis batch must be at or below the RL in order to verify instrument sensitivity prior to any analyses. If standards have been prepared such that all low CAL points are not in the same CAL solution, it may be necessary to analyze two CAL standards to meet this requirement. Alternatively, the analyte concentrations in the analyte PDS may be customized to meet these criteria. Subsequent CCVs should alternate between a medium and Low concentration CAL standard.

10.9.1 Inject an aliquot of the appropriate concentration CAL standard and analyze with the same conditions used during the initial calibration.

10.9.2 Calculate the concentration of each analyte and EIS in the CCV. The calculated amount for each native and EIS analyte for medium level CCVs must be within ± 30% of the true. If these conditions do not exist, then all data for the problem analyte must be considered invalid, and remedial action should be taken which may require recalibration. Any Field or QC Samples that have been analyzed since the last acceptable calibration verification should be reanalyzed after adequate calibration has been restored, with the following exception. If the CCV fails because the calculated concentration is greater than 130% for a particular method analyte, and Field Sample extracts show no detection for that method analyte, non-detects may be reported without re-analysis.

10.9.3 REMEDIAL ACTION – Failure to meet CCV QC performance criteria may require remedial action. Major maintenance, such as cleaning the electrospray probe, atmospheric pressure ionization source, cleaning the mass analyzer, replacing the LC column, etc., requires recalibration and verification of sensitivity by analyzing a CCV at or below the LOQ.

10.10 EXTRACT ANALYSIS

10.10.1 The same operating conditions used for the initial calibration and summarized in Tables 6 and 7 are to be used.

10.10.2 Prior to analysis of sample extracts, the Instrument mass calibration verification must be performed using standards whose mass range brackets the masses of interest and performed in the negative ion mode. The mass calibration is verified if the calculated mass is within ± .2 daltons of the specified mass.

10.10.3 Establish an appropriate retention time window for each analyte. This should be based on measurements of actual retention time variation for each method analyte in CAL standard solutions analyzed on the LC over the course of time. A value of plus or minus three times the standard deviation of the retention time obtained for each method analyte while establishing the initial calibration can be used to calculate a suggested window size. However, the experience of the analyst should weigh heavily on the determination of the appropriate retention window size.

10.10.4 Calibrate the system by either the analysis of a calibration curve or by confirming the initial calibration is still valid by analyzing a CCV.

10.10.5 Begin analyzing Field Samples, including QC samples, at their appropriate frequency by injecting the same size aliquots under the same conditions used to analyze the CAL standards.

10.10.6 For concentrations at or above the method LOQ, the total (branched and linear isomer) quantification ion response to the total (branched and linear isomer) confirmation ion response ratio must fall within ± 50% of the ratio observed in the midpoint initial calibration standard.

10.10.7 At the conclusion of data acquisition, use the same software that was used in the calibration procedure to identify peaks of interest in predetermined retention time windows. Use the data system software to examine the ion abundances of the peaks in the chromatogram. Identify an analyte by comparison of its retention time with that of the corresponding method analyte peak in a reference standard.

10.10.7.1 Method analyte, EIS analyte, and NIS analyte RTs must fall within 0.4 minutes of the predicted retention times from the midpoint standard of the ICAL or initial daily CV, whichever was used to establish the RT window position for the analytical batch. All branched isomer peaks identified in either the calibration standard or the qualitative (technical grade) standard must fall within in the retention time window for that analyte.

10.10.7.2 For all method analytes with exact corresponding isotopically labeled analogs, method analytes must elute within 0.1 minutes of the associated EIS.

10.10.8 The analyst must not extrapolate beyond the established calibration range. If an analyte peak area exceeds the range of the initial calibration curve, the sample should be re-extracted with a reduced sample volume in order to bring the out of range target analytes into the calibration range. If a smaller sample size would not be representative of the entire sample, the following options are recommended. Re-extract an additional aliquot of sufficient size to ensure that it is representative of the entire sample. Spike it with a higher concentration of internal standard. Prior to LC/MS analysis, dilute the sample so that it has a concentration of internal standard equivalent to that present in the calibration standard. Then, analyze the diluted extract.3

10.10.9 In instances where re-extraction is not an option, dilute a subsample of the sample extract with 0.1% acetic acid by a factor no greater than 10x adjust the amount of the NIS in the diluted extract, and analyze the diluted extract. If the responses for each EIS in the diluted extract meet the S/N and retention time, and the EIS recoveries from the analysis of the diluted extract are greater than 5%, then the compounds associated with those EISs may be quantified using isotope dilution. Use the EIS recoveries from the original analysis to select the dilution factor, with the objective of keeping the EIS recoveries in the dilution above that 5% lower limit. If the adjusted EIS recoveries are below 5%, the dilution is assumed invalid. If the adjusted EIS recoveries are greater than 5%, adjust the compound concentrations, detection limits, and minimum levels to account for the dilution.

11. Data Evaluation, Calculations and Reporting

11.1 Complete chromatographic resolution is not necessary for accurate and precise measurements of analyte concentrations using MS/MS. In validating this method, concentrations were calculated by measuring the product ions listed in Table 9.

11.2 Calculate analyte concentrations using the multipoint calibration established in Section 10.9. Do not use daily calibration verification data to quantitate analytes in samples. Adjust final analyte concentrations to reflect the actual sample volume determined in Section 10.8

C_{ex} = (Area of target analyte * Concentration of Labeled analog) / (area of labeled analog * CF)

C_s = (C_{ex} / sample volume in ml) * 1000

C_{ex} = The concentration of the analyte in the extract
CF = calibration factor from calibration.

11.3 Prior to reporting the data, the chromatogram should be reviewed for any incorrect peak identification or poor integration.

11.4 PFHxS, PFOS, PFOA, NMeFOSAA, and NEtFOSAA have multiple chromatographic peaks using the LC conditions in Table 7 due to the linear and branch isomers of these compounds (Sect. 10.10.4.). The areas of all the linear and branched isomer peaks observed in the CAL standards for each of these analytes must be summed and the concentrations reported as a total for each of these analytes.

11.5 Calculations must utilize all available digits of precision, but final reported concentrations should be rounded to an appropriate number of significant figures (one digit of uncertainty), typically two, and not more than three significant figures.

12. Contingencies for Handling Out-of-Control Data or Unacceptable Data

12.1 Section 9.0 outlines sample batch QC acceptance criteria. If non-compliant organic compound results are to be reported, the Organic Section Head and/or the Laboratory Director, and the Operations Manager must approve the reporting of these results. The laboratory Project Manager shall be notified and may choose to relay the non-compliance to the client, for approval, or other corrective action, such as re-sampling and re-analysis. The analyst, Data Reviewer, or Department Supervisor performing the secondary review initiates the project narrative, and the narrative must clearly document the non-compliance and provide a reason for acceptance of these results.

12.2 All results for the organic compounds of interest are reportable without qualification if extraction and analytical holding times are met, preservation requirements (including cooler temperatures) are met, all QC criteria are met, and matrix interference is not suspected during extraction or analysis of the samples. If any of the below QC parameters are not met, all associated samples must be evaluated for re-extraction and/or re-analysis.

13. Method Performance

13.1 Detection Limit Study (DL) / Limit of Detection Study (LOD) / Limit of Quantitation (LOQ)

13.1.1 The laboratory follows the procedure to determine the DL, LOD, and/or LOQ as outlined in Alpha SOP ID 1732. These studies performed by the laboratory are maintained on file for review.

13.2 Demonstration of Capability Studies

13.2.1 Refer to Alpha SOP ID 1739 for further information regarding IDC/DOC Generation.

13.2.2 The analyst must make a continuing, annual, demonstration of the ability to generate acceptable accuracy and precision with this method.

14. Pollution Prevention and Waste Management

14.1 Refer to Alpha's Chemical Hygiene Plan and Hazardous Waste Management and Disposal SOP for further pollution prevention and waste management information.

14.2 This method utilizes SPE to extract analytes from water. It requires the use of very small volumes of organic solvent and very small quantities of pure analytes, thereby minimizing the potential hazards to both the analyst and the environment as compared to the use of large volumes of organic solvents in conventional liquid-liquid extractions.

14.3 The analytical procedures described in this method generate relatively small amounts of waste since only small amounts of reagents and solvents are used. The matrices of concern are finished drinking water or source water. However, laboratory waste management practices must be conducted consistent with all applicable rules and regulations, and that laboratories protect the air, water, and land by minimizing and controlling all releases from fume hoods and bench operations. Also, compliance is required with any sewage discharge permits and regulations, particularly the hazardous waste identification rules and land disposal restrictions.

15. Referenced Documents

Chemical Hygiene Plan – ID 2124

SOP ID 1732 Detection Limit (DL), Limit of Detection (LOD) & Limit of Quantitation (LOQ) SOP

SOP ID 1739 Demonstration of Capability (DOC) Generation SOP

SOP ID 1728 Hazardous Waste Management and Disposal SOP

16. Attachments

Table 1: Names, Abbreviations, and CAS Registry Numbers for Target PFAS, Extracted Internal Standards and Non-extracted Internal Standards

Parameter	Acronym	CAS
PER- and POLYFLUOROALKYLETHER CARBOXYLIC ACIDS (PFECAs)		
Tetrafluoro-2-(heptafluoropropoxy)propanoic acid	HFPO-DA	13252-13-6
4,8-dioxa-3H-perfluorononanoic acid	ADONA	919005-14-4
Perfluoro-3-methoxypropanoic acid	PFMPA	377-73-1
Perfluoro-4-methoxybutanoic acid	PFMBA	863090-89-5
Nonafluoro-3,6-dioxaheptanoic acid	NFDHA	151772-58-6
PERFLUOROALKYLCARBOXILIC ACIDS (PFCAs)		
Perfluorobutanoic acid	PFBA	375-22-4
Perfluoropentanoic acid	PFPeA	2706-90-3
Perfluorohexanoic acid	PFHxA	307-24-4
Perfluoroheptanoic acid	PFHpA	375-85-9

Perfluorooctanoic acid	PFOA	335-67-1
Perfluorononanoic acid	PFNA	375-95-1
Perfluorodecanoic acid	PFDA	335-76-2
Perfluoroundecanoic acid	PFUnA	2058-94-8
Perfluorododecanoic acid	PFDoA	307-55-1
Perfluorotridecanoic acid	PFTrDA	72629-94-8
Perfluoorotetradecanoic acid	PFTeDA	376-06-7
PERFLUOROALKYL SULFONIC ACIDS (PFASs)		
Perfluorobutanesulfonic acid	PFBS	375-73-5
Perfluoropentanesulfonic acid	PFPeS	2706-91-4
Perfluorohexanesulfonic acid	PFHxS	355-46-4
Perfluoroheptanesulfonic acid	PFHpS	375-92-8
Perfluorooctanesulfonic acid	PFOS	1763-23-1
Perfluorononanesulfonic acid	PFNS	68259-12-1
Perfluorodecanesulfonic acid	PFDS	335-77-3
Perfluorododecanesulfonic acid	PFDoS	79780-39-5
CHLORO-PERFLUOROALKYLSULFONATE		
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	11Cl-PF3OUdS	763051-92-9

Perfluoro(2-ethoxyethane)sulfonic acid	PFEESA	113507-82-7
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid	9Cl-PF3ONS	756426-58-1
FLUOROTELOMER CARBOXYLIC ACIDS		
3-Perfluoropropyl propanoic acid	3:3FTCA	356-02-5
2H,2H,3H,3H-Perfluorooctanoic acid	5:3FTCA	914637-49-3
Perfluoroheptyl propanoic acid	7:3FTCA	812-70-4
PERFLUOROOCTANESULFONAMIDES		
Perfluorooctanesulfonamide	PFOSA	754-91-6
N-methylperfluoro-1-octanesulfonamide	NMeFOSA	31506-32-8
N-ethylperfluoro-1-octanesulfonamide	NEtFOSA	4151-50-2
PERFLUOROCTANE SULFONAMIDE ETHANOLS		
N-Methyl perfluorooctanesulfonamidoethanol	NMeFOSE	24448-09-7
N-ethyl perfluorooctanesulfonamidoethanol	NEtFOSE	1691-99-2
TELOMER SULFONIC ACIDS		
1H,1H,2H,2H-perfluorohexanesulfonic acid (4:2)	4:2FTS	757124-72-4
1H,1H,2H,2H-perfluorooctanesulfonic acid (6:2)	6:2FTS	27619-97-2
1H,1H,2H,2H-perfluorodecanesulfonic acid (8:2)	8:2FTS	39108-34-4
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS		

N-methyl perfluorooctanesulfonamidoacetic acid	NMeFOSAA	2355-31-9
N-ethyl perfluorooctanesulfonamidoacetic acid	NEtFOSAA	2991-50-6
PERFLUOROETHER AND POLYETHER CARBOXYLIC ACIDS		
Perfluoro-3-methoxypropanoic acid	PFMPA	377-73-1
Perfluoro-4-methoxybutanoic acid	PFMBA	863090-89-5
Perfluoro(2-ethoxyethane)sulfonic acid	PFEESA	113507-82-7
Nonafluoro-3,6-dioxaheptanoic acid	NFDHA	151772-58-6

Table 2: Stock and Nominal Extracted Internal Standard Concentrations

Isotope Labeled Standard	Conc. of EIS Stock (ng/mL)	Nominal amount of EIS added to extracts (ng)
M4PFBA	2000	40
M5PFPeA	1000	20
M5PFHxA	500	10
M4PFHpA	500	10
M8PFOA	500	10
M9PFNA	250	5
M6PFDA	250	5
M7PFUdA	250	5
MPFDoA	250	5
M2PFTeDA	250	5
M3PFBS	466	9.32
M3PFHxS	474	9.48
M8PFOS	479	9.58
M2-4:2FTS	938	18.8
M2-6:2FTS	951	19
M2-8:2FTS	960	19.2
M8FOSA	500	10
d3-N-MeFOSA	500	10
d5-N-EtFOSA	500	10
d3-N-MeFOSAA	1000	20
d5-N-EtFOSAA	1000	20
d7-N-MeFOSE	5000	100
d9-N-EtFOSE	5000	100
M3HFPO-DA	2000	40

Table 3: Stock and Nominal Non-Extracted Internal Standard Concentrations

Isotope Labeled Standard	Conc. of EIS Stock (ng/mL)	Nominal amount of EIS added to extracts (ng)
M3PFBA	1000	40
M2PFHxA	500	10
M4PFOA	500	10
M5PFNA	250	5
M2PFDA	250	5
18O2PFHxS	474	9.48
M4PFOS	479	9.58

Table 4: Initial Calibration levels and Concentrations

Analyte	Cal A	Cal B (LOQ)	CAL C	Cal D	Cal E (CCV)	Cal F	Cal G	Cal H	Cal I
PFBA	.4	.8	2	5	10	20	50	250	500
PFPeA	.2	.4	1	2.5	5	10	25	125	250
PFHxA	.1	.2	.5	1.25	2.5	5	12.5	62.5	125
PFHpA	.1	.2	.5	1.25	2.5	5	12.5	62.5	125
PFOA	.1	.2	.5	1.25	2.5	5	12.5	62.5	125
PFNA	.1	.2	.5	1.25	2.5	5	12.5	62.5	125
PFDA	.1	.2	.5	1.25	2.5	5	12.5	62.5	125
PFUnA	.1	.2	.5	1.25	2.5	5	12.5	62.5	125
PFDoA	.1	.2	.5	1.25	2.5	5	12.5	62.5	125
PFTrDA	.1	.2	.5	1.25	2.5	5	12.5	62.5	125
PFTA	.1	.2	.5	1.25	2.5	5	12.5	62.5	125
PFBS	0.089	0.177	0.444	1.11	2.22	4.44	11.1	55.4	111
PFPeS	0.094	0.188	0.471	1.18	2.35	4.71	11.8	58.8	118
PFHxS	0.091	0.183	0.457	1.14	2.29	4.57	11.4	57.1	114
PFHpS	0.095	0.191	0.477	1.19	2.38	4.77	11.9	59.6	119
PFOS	0.093	0.186	0.464	1.16	2.32	4.64	11.6	58	116
PFNS	0.096	0.192	0.481	1.20	2.41	4.81	12	60.1	120
PFDS	0.097	0.193	0.483	1.21	2.41	4.83	12.1	60.3	121
PFDOS	0.097	0.194	0.485	1.21	2.43	4.85	12.1	60.6	121.
4:2FTS	0.375	0.75	1.88	4.69	9.38	18.8	46.9	234	469
6:2FTS	0.38	0.76	1.9	4.75	9.5	19	47.5	238	475
8:2FTS	0.384	0.768	1.92	4.8	9.6	19.2	48	240	480
PFOSA	.1	.2	.5	1.25	2.5	5	12.5	62.5	125

NMeFOSA	.1	.2	.5	1.25	2.5	5	12.5	62.5	125
NEtFOSA	.1	.2	.5	1.25	2.5	5	12.5	62.5	125
NMeFOSAA	.1	.2	.5	1.25	2.5	5	12.5	62.5	125
NEtFOSAA	.1	.2	.5	1.25	2.5	5	12.5	62.5	125
NMeFOSE	1	2	5	12.5	25	50	125	625	1250
NEtFOSE	1	2	5	12.5	25	50	125	625	1250
HFPO-DA	.4	.8	2	5	10	20	50	250	500
ADONA	0.378	0.756	1.89	4.73	9.45	18.9	47.3	236	473
9Cl-PFONS	0.374	0.748	1.87	4.68	9.35	18.7	46.8	234	468
11Cl-PFOUdS	0.378	0.756	1.89	4.73	9.45	18.9	47.3	236	473
PFMPA	.2	.4	1	2.5	5	10	25	125	250
PFMBA	.2	.4	1	2.5	5	10	25	125	250
PFEESA	0.178	0.356	0.89	2.23	4.45	8.9	22.3	111	223
NFDHA	.2	.4	1	2.5	5	10	25	125	250
3:3FTCA	.5	1	2.5	6.25	12.5	25	62.5	312	624
5:3FTCA	2.5	5	12.5	31.3	62.5	125	312	1560	3120
7:3FTCA	2.5	5	12.5	31.3	62.5	125	312	1560	3125
M4PFBA	10	10	10	10	10	10	10	10	10
M5PFPeA	5	5	5	5	5	5	5	5	5
M5PFHxA	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
M4PFHpA	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
M8PFOA	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
M9PFNA	1.25	1.25	1.25	1.25	1.25	1.25	1.25	1.25	1.25
M6PFDA	1.25	1.25	1.25	1.25	1.25	1.25	1.25	1.25	1.25
M7PFUdA	1.25	1.25	1.25	1.25	1.25	1.25	1.25	1.25	1.25
MPFDoA	1.25	1.25	1.25	1.25	1.25	1.25	1.25	1.25	1.25
M2PFTeDA	1.25	1.25	1.25	1.25	1.25	1.25	1.25	1.25	1.25
M3PFBS	2.33	2.33	2.33	2.33	2.33	2.33	2.33	2.33	2.33
M3PFHxS	2.37	2.37	2.37	2.37	2.37	2.37	2.37	2.37	2.37
M8PFOS	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4
M2-4:2FTS	4.69	4.69	4.69	4.69	4.69	4.69	4.69	4.69	4.69
M2-6:2FTS	4.76	4.76	4.76	4.76	4.76	4.76	4.76	4.76	4.76
M2-8:2FTS	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8
M8FOSA	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
d3-N-MeFOSA	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
d5-N-EtFOSA	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5

d3-N-MeFOSAA	5	5	5	5	5	5	5	5	5
d5-N-EtFOSAA	5	5	5	5	5	5	5	5	5
d7-N-MeFOSE	25	25	25	25	25	25	25	25	25
d9-N-EtFOSE	25	25	25	25	25	25	25	25	25
M3HFPO-DA	10	10	10	10	10	10	10	10	10
M3PFBA	5	5	5	5	5	5	5	5	5
M2PFHxA	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
M4PFOA	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
M5PFNA	1.25	1.25	1.25	1.25	1.25	1.25	1.25	1.25	1.25
M2PFDA	1.25	1.25	1.25	1.25	1.25	1.25	1.25	1.25	1.25
18O2PFHxS	2.37	2.37	2.37	2.37	2.37	2.37	2.37	2.37	2.37
M4PFOS	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4

Table 5: Expected Mass Transitions and instrument conditions.

Q1	Q2	Analyte	DP Volts	CE Volts
213.032	169.022	PFBA	-50	-14
263.039	219.03	PFPeA	-55	-12
263.039	68.9	PFPeA_2	-55	-55
313.047	269.037	PFHxA	-45	-12
313.047	119	PFHxA_2	-45	-28
363.055	319.045	PFHpA	-60	-12
363.055	169.022	PFHpA_2	-60	-24
413.063	369.053	PFOA	-65	-14
413.063	169.022	PFOA_2	-65	-23
463.071	419.061	PFNA	-70	-14
463.071	219.03	PFNA_2	-70	-24
513.078	469.069	PFDA	-80	-16
513.078	219.03	PFDA_2	-80	-30
563.086	519.076	PFUnA	-85	-18
563.086	269.037	PFUnA_2	-85	-25
613.094	569.084	PFDoA	-85	-18
613.094	319.045	PFDoA_2	-85	-28
663.102	619.092	PFTrDA	-85	-20
663.102	169.022	PFTrDA_2	-85	-36
713.11	669.1	PFTA	-70	-22
713.11	169.022	PFTA_2	-70	-38
299.092	80.062	PFBS	-100	-65

299.092	99.061	PFBS_2	-100	-40
349.1	80.062	PFPeS	-100	-75
349.1	99.061	PFPeS_2	-100	-60
399.107	80.062	PFHxS	-120	-75
399.107	99.061	PFHxS_2	-120	-80
449.115	80.062	PFHpS	-140	-95
449.115	99.061	PFHpS_2	-140	-80
499.113	80.062	PFOS	-145	-108
499.113	99.061	PFOS_2	-145	-85
549.131	80.062	PFNS	-180	-100
549.131	99.061	PFNS_2	-180	-100
599.139	80.062	PFDS	-170	-110
599.138	99.061	PFDS_2	-170	-100
699.154	80.062	PFDoS	-160	-150
699.154	99.061	PFDoS_2	-160	-130
327.146	307.139	4:2FTS	-100	-28
327.146	81.07	4:2FTS_2	-100	-50
427.161	407.155	6:2FTS	-120	-33
427.161	81.07	6:2FTS_2	-120	-65
527.177	507.17	8:2FTS	-140	-39
527.177	81.07	8:2FTS_2	-140	-85
498.146	78.07	FOSA	-150	-90
498.146	478	FOSA_2	-150	-35
512.163	219.03	NMeFOSA	-130	-35
512.163	169.022	NMeFOSA_2	-130	-40
526.192	219.03	NEtFOSA	-140	-35
526.192	169.022	NEtFOSA_2	-140	-35
570.202	419.061	NMeFOSAA	-100	-28
570.202	483	NMeFOSAA_2	-100	-22
584.229	419.061	NEtFOSAA	-100	-28
584.229	526.192	NEtFOSAA_2	-100	-38
616.1	58.9	NMeFOSE	-90	-70
630	58.9	NEtFOSE	-80	-75
285.035	169.022	HFPO-DA	-60	-12
285.035	184.9	HFPO-DA_2	-60	-18
377.06	251.028	ADONA	-65	-18
377.06	84.8	ADONA_2	-65	-48
530.8	351.05	9Cl-PFONS	-130	-38
532.8	353	9Cl-PFONS_2	-130	-38

630.9	451.031	11Cl-PFOUdS	-145	-41
632.9	452.9	11Cl-PFOUdS_2	-145	-41
241.085	177.069	3:3FTCA	-60	-12
241.085	117	3:3FTCA_2	-60	-50
341.101	237.072	5:3FTCA	-70	-20
341.101	217	5:3FTCA_2	-70	-35
441.117	316.9	7:3FTCA	-85	-30
441.117	337.088	7:3FTCA_2	-85	-20
315.093	135.013	PFEESA	-100	-35
315.093	82.9	PFEESA_2	-100	-25
229.032	85.006	PFMPA	-40	-25
279.042	85.006	PFMBA	-45	-25
295.032	201	NFDHA	-30	-15
295.032	84.9	NFDHA_2	-30	-40
217.001	171.999	MPFBA	-50	-14
268.001	222.999	M5PFPeA	-55	-12
318.009	273.007	M5PFHxA	-45	-12
367.024	322.022	M4PFHpA	-60	-12
421.002	376	M8PFOA	-65	-14
472.002	427	M9PFNA	-70	-14
519.033	474.03	M6PFDA	-80	-16
570.033	525.031	M7-PFUdA	-85	-18
615.079	570.033	MPFDoA	-85	-18
715.094	670.092	M2PFTeDA	-70	-22
302.069	80.062	M3PFBS	-100	-65
402.084	80.062	M3PFHxS	-120	-74
507.062	80.062	M8PFOS	-145	-85
329.13	81.07	M2-4:2FTS	-100	-50
429.162	81.07	M2-6:2FTS	-120	-65
529.162	81.07	M2-8:2FTS	-140	-85
506.077	78.07	M8FOSA	-150	-90
515.183	219.03	d3-NMeFOSA	-130	-35
531.222	219.03	d5-NEtFOSA	-140	-35
573.22	419.061	d3-NMeFOSAA	-75	-28
589.259	419.061	d5-NEtFOSAA	-90	-28
623.2	58.9	d7-NMeFOSE	-100	-28
639.2	58.9	d9-NEtFOSE	-100	-28
287.02	169.022	M3HFPO-DA	-60	-12
216.009	171.999	M3PFBA	-50	-14

315.032	270.03	M2PFHxA	-45	-12
417.032	372.03	M4PFOA	-65	-14
468.032	423.03	M5PFNA	-70	-14
515.063	470.061	M2PFDA	-80	-16
403.107	84.062	18O2-PFHxS	-120	-74
503.093	80.062	M4PFOS	-145	-85

Table 6: LC Method Conditions

Time (min)	2 mM Ammonium Acetate (5:95 CH/H_2O)	100% Acetonitrile	Gradient Curve
Initial	100.0	0.0	0
.2	100.0	0.0	2
4	70	30	7
7	45	55	8
9	25	80	8
10	5	95	6
10.4	98	2	10
11.8	100	0	7
12	100	0	1
Waters Aquity UPLC ® BEHC_{18} 2.1 x 50 mm packed with 1.7 µm BEH C_{18} stationary phase Flow rate of 0.4 mL/min 2 µL injection			

Table 7: ESI-MS Method Conditions

ESI Conditions	
Polarity	Negative ion
Curtain Gas	30
Collision gas	9
Ion Spray Voltage	-4500
Desolvation gas temp.	500 ºC
Ion Source Gas 1	30
Ion Source Gas 2	50
Entrance Poitential	-10
Exic Cell Potential	-11

Table 8. Reporting limits by Matrix

Compound	Aqueous (ng/L)	Solid (ng/g)	Tissue (ng/g)
PFBA	6.4	0.8	2
PFPeA	3.2	0.4	1
PFHxA	1.6	0.2	0.5
PFHpA	1.6	0.2	0.5
PFOA	1.6	0.2	0.5
PFNA	1.6	0.2	0.5
PFDA	1.6	0.2	0.5
PFUnA	1.6	0.2	0.5
PFDoA	1.6	0.2	0.5
PFTrDA	1.6	0.2	0.5
PFTA	1.6	0.2	0.5
PFBS	1.6	0.2	0.5
PFPeS	1.6	0.2	0.5
PFHxS	1.6	0.2	0.5
PFHpS	1.6	0.2	0.5
PFOS	1.6	0.2	0.5
PFNS	1.6	0.2	0.5
PFDS	1.6	0.2	0.5
PFDoS	1.6	0.2	0.5
4:2FTS	6.4	0.8	2
6:2FTS	6.4	0.8	2
8:2FTS	6.4	0.8	2
FOSA	1.6	0.2	2
NMeFOSA	1.6	0.2	0.5
NEtFOSA	1.6	0.2	0.5
NMeFOSAA	1.6	0.2	0.5
NEtFOSAA	1.6	0.2	0.5
NMeFOSE	16	2	5
NEtFOSE	16	2	5
HFPO-DA	6.4	0.8	2
ADONA	6.4	0.8	2
9Cl-PFONS	6.4	0.8	2
11Cl-PFOUdS	6.4	0.8	2
3:3FTCA	8	1	2.5
5:3FTCA	40	5	12.5

7:3FTCA	40	5	12.5
PFEESA	3.2	0.4	1
PFMPA	3.2	0.4	1
PFMBA	3.2	0.4	1
NFDHA	3.2	0.4	1

Appendix G: Third Party Data Validator

Linda Wright

Linda Wright has 17 years extensive experience in analytical chemistry. Her expertise in data validation includes all types of parameters such as volatile target compounds (TCL), semivolatile target compounds, pesticide/PCBs, dioxins & furans, conventional general/wet chemistry, TAL metals, leachate and reactivity characteristics (TCLP) priority pollutants-metals & organics; radiological parameters including gross α/β; gamma spectroscopy parameters; thermal ionization mass spectroscopy, fluorometric uranium, β spectroscopy-strontium 89/90; alpha spectrometry- thorium-237, uranium-234, 238, neptunium-237, plutonium-238, 239, 240, americium-241 and curium-242, 243, 244 and, liquid scintillation counting parameters-tritium.

Her other experience includes QA/QC consulting for private sector clients as well as the for state and federal programs, development of SOPs for standard and non-standard methods, laboratory training and chemical analyses.

Professional Qualifications

Ms. Wright has 17 years experience in environmental/analytical chemistry. This includes 15 years extensive experience in analytical data validation (CLP and non-CLP). Ms Wright has 4 years project management experience and 9 years environmental/radiochemical analytical chemistry experience, which includes instrumentation and advance organic chemistry.

Education

BS, Chemistry, 1988, New York University, NY.

Additional Training

Radiochemistry Training-1999
PACS data Validation Training- 1996 & 2001
Radiochemistry Training- 1992
Radioactivity safety Training-1991
OSHA 40hr Health and Safety Training 1991
Data Validation Training- 1989

Work Experience

EDV, Inc.PA

1994- Present Responsible for data validation of organic (VOA, SVOA, PEST/PCB, Herbicide), inorganic, wet chemistry parameters and radiochemical analyses. Advance analyses such as dioxins/furans and PCB-congeners.
Senior oversight validator. Manage and oversee QAPPs for several different Projects. Assist with the training of new validators.

1992-1994 Analytical Testing Labs, NJ
Data Reviewer. Responsible for USEPA Region 1, 11 and 111 data validation for CLP and non-CLP samples. Also radiochemical data validation for various Department of Energy projects. Quality control and writing of quality manuals.

Linda Wright

1987-1992 Brooklyn Analytical, NY

Chemist. Duties included Analysis of soil and water samples for parameters such as BNA, VOA, herbicides, pesticides, PCBs, dioxins and furans for the Contract Laboratory program (CLP). Analysis of non-CLP parameters such as pesticides, herbicides, BTEX, TPH and PNAs for several different matrices such as soil, water, air and tissue. These samples were analyzed using the GC/GCMS. Radiochemical analyses of samples via Gamma Spectrometry and Alpha Spectrometry. Worked initially as a laboratory Technician performing wet chemistry analyses, sample extraction, preparation of organic surrogates and matrix spikes.

Appendix I I

13-12 Beach Channel Drive

Site Management Forms

IMPACT ENVIRONMENTAL
170 Keyland Court
Bohemia, New York 11716
TEL: (631) 268-8800
FAX: (631) 269-1599

Summary of Green Remediation Metrics for Site Management

Site Name: _____ Site Code: _____
Address: _____ City: _____
State: _____ Zip Code: _____ County: _____

Initial Report Period (Start Date of period covered by the Initial Report submittal)
Start Date: _____

Current Reporting Period
Reporting Period From: _____ To: _____

Contact Information
Preparer's Name: _____ Phone No.: _____
Preparer's Affiliation: _____

I. Energy Usage: Quantify the amount of energy used directly on-site and the portion of that derived from renewable energy sources.

	Current Reporting Period	**Total to Date**
Fuel Type 1 (e.g. natural gas (cf))		
Fuel Type 2 (e.g. fuel oil, propane (gals))		
Electricity (kWh)		
Of that Electric usage, provide quantity:		
Derived from renewable sources (e.g. solar, wind)		
Other energy sources (e.g. geothermal, solar thermal (Btu))		

Provide a description of all energy usage reduction programs for the site in the space provided on Page 3.

II. Solid Waste Generation: Quantify the management of solid waste generated on-site.

	Current Reporting Period (tons)	**Total to Date (tons)**
Total waste generated on-site		
OM&M generated waste		
Of that total amount, provide quantity:		
Transported off-site to landfills		
Transported off-site to other disposal facilities		
Transported off-site for recycling/reuse		
Reused on-site		

Provide a description of any implemented waste reduction programs for the site in the space provided on Page 3.

III. Transportation/Shipping: Quantify the distances travelled for delivery of supplies, shipping of laboratory samples, and the removal of waste.

	Current Reporting Period (miles)	**Total to Date (miles)**
Standby Engineer/Contractor		
Laboratory Courier/Delivery Service		
Waste Removal/Hauling		

Provide a description of all mileage reduction programs for the site in the space provided on Page 3. Include specifically any local vendor/services utilized that are within 50 miles of the site.

IV. Water Usage: Quantify the volume of water used on-site from various sources.

	Current Reporting Period (gallons)	**Total to Date (gallons)**
Total quantity of water used on-site		
Of that total amount, provide quantity:		
Public potable water supply usage		
Surface water usage		
On-site groundwater usage		
Collected or diverted storm water usage		

Provide a description of any implemented water consumption reduction programs for the site in the space provided on Page 3.

V. Land Use and Ecosystems: Quantify the amount of land and/or ecosystems disturbed and the area of land and/or ecosystems restored to a pre-development condition (i.e. Green Infrastructure).

	Current Reporting Period (acres)	**Total to Date (acres)**
Land disturbed		
Land restored		

Provide a description of any implemented land restoration/green infrastructure programs for the site in the space provided on Page 3.

Description of green remediation programs reported above (Attach additional sheets if needed)
Energy Usage:
Waste Generation:
Transportation/Shipping:
Water usage:
Land Use and Ecosystems:
Other:

CONTRACTOR CERTIFICATION
I, _____ (**Name**) do hereby certify that I am _____ (**Title**) of _____ (**Contractor Name**), which is responsible for the work documented on this form. According to my knowledge and belief, all of the information provided in this form is accurate and the site management program complies with the DER-10, DER-31, and CP-49 policies. _____ **Date** **Contractor**

IMPACT ENVIRONMENTAL 170 Keyland Court| Bohemia| NY | 11716 | 631.269.8800
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Monthly Operation & Maintenance Log
Active Sub-Slab Depressurization

Project Name: _____ Project No.: _____
Project Location: _____ Client: _____
Preparer's Name: _____ Date/Time: _____
Weather Conditions: _____ Barometric Pressure: _____

General Notes / Comments:

_____
_____
_____
_____

Monthly Operating Status:

System(s) currently running? ☐ yes ☐ no
Has the system been off-line in the past month? ☐ yes ☐ no
Abnormal Operating Conditions? ☐ yes ☐ no
Alarms from Telemetry System? ☐ yes ☐ no

If yes, please list the dates and brief description why (i.e. maintenance, part replacement, etc.):

_____
_____

SSDS Instrument Measurements?

Sub-Slab Monitoring Point	Differential pressure (in. H_20)
VMP-1	
VMP-2	
VMP-3	
VMP-4	
VMP-5	
VMP-6	
VMP-7	
VMP-8	
VMP-9	

Riser	Air Flow Velocity (cfm)	Pressure (in. H_20)
R-1		
R-2		
R-3		
R-4		

Notes/Comments:

_____
_____
_____
_____
_____

Visual Inspection:

Any piping disconnected? ☐ yes ☐ no

Any damage or wear visible in SSDS piping? ☐ yes ☐ no

Any cracks or damage to building floor / slab? ☐ yes ☐ no

Any damage or wear to SSDS Inline Fans at Roof? ☐ yes ☐ no

Is the Sensaphone Sentinel monitoring system operating properly? ☐ yes ☐ no

If yes to any question above, please provide more information below.

_____

_____

_____

_____

Change in Occupancy / Use of Space:

Please indicate general use of floor space? _____

Has this general use changed in the past month? ☐ yes ☐ no
If yes, please explain:

_____

_____

_____

System Modifications:

Have any modifications been made to the Sub-Slab Depressurization System? ☐ yes ☐ no
If so, please list with date:

_____

_____

_____

< END OF RECORD >

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Annual Certification Checklist
Active Sub-Slab Depressurization

Project Name: _____ Project No.: _____
Project Location: _____ Client: _____
Preparer's Name: _____ Date/Time: _____

General Notes / Comments:

_____
_____
_____
_____

System Information:

1. Has monthly system inspection been completed regularly? ☐ yes ☐ no
2. Are the last 11 inspection logs attached for the past 12 months? ☐ yes ☐ no
3. Is the SSDS continuing to perform as designed and continuing to be protective of human health and the environment? ☐ yes ☐ no
4. Are monitoring system operational reports up to date? ☐ yes ☐ no
5. Has compliance with the SSDS O&M Protocol in the SMP been maintained? ☐ yes ☐ no
6. Are any changes needed to the SSDS System? ☐ yes ☐ no

If yes, please list the dates and brief description why:

_____
_____
_____
_____

SSDS Instrument Measurements?

Sub-Slab Monitoring Point	Differential pressure (in. H_20)
VMP-1	
VMP-2	
VMP-3	
VMP-4	
VMP-5	
VMP-6	
VMP-7	
VMP-8	
VMP-9	

Riser	Air Flow Velocity (cfm)	Prssure (in. H_20)
R-1		
R-2		
R-3		
R-4		

Notes/Comments:

_____
_____
_____
_____

Visual Inspection:

Any piping disconnected? ☐ yes ☐ no

Any damage or wear visible in SSDS piping? ☐ yes ☐ no

Any cracks or damage to building floor / slab? ☐ yes ☐ no

Any damage or wear to SSDS inline fans at roof? ☐ yes ☐ no

Is the Sensaphone Sentinel monitoring system operating properly? ☐ yes ☐ no

If yes to any question above, please provide more information below.

_____

_____

_____

_____

Change in Occupancy / Use of Space:

Please indicate general use of floor space? _____

Has this general use changed in the past year? ☐ yes ☐ no
If yes, please explain:

_____

_____

_____

System Modifications:

Have any modifications been made to the Sub-Slab Depressurization System? ☐ yes ☐ no
Have any building renovations taken place in the last year? ☐ yes ☐ no
If so, please list with date:

_____

_____

_____

_____

Enclosure: Sub-Slab Depressurization System Layout

SCHEDULE OF ROUTINE O&M TASKS
13-12 Beach Channel Drive, Far Rockaway, New York

O&M Task	Schedule
Visual Inspections	
Inspection of SSDS Piping and Fittings for Wear or Damage	Year 1: Monthly Year 2+: Semi-Annual
Inspection of Building Floor for Cracks or Damage	Year 1: Monthly Year 2+: Semi-Annual
Inspection of SSDS Equipment /Enclosures for Damage or Abnormal Conditions	Year 1: Monthly Year 2+: Semi-Annual
Inspection of Building/Slab for Modifications	Year 1: Monthly Year 2+: Semi-Annual
System Monitoring and Maintenance	
Monitoring System Operational Reports and System Alarms from Telemetry System	Daily via the remote telemetry system
Manually Record System Operational Parameters on SSDS Field Data Sheet at described in O&M Plan	Year 1: Monthly Year 2+: Semi-Annual
Inline Fans - Inspection/cleaning of dirt/debris on the outside of the fan; inspection/cleaning of the fan wheel for corrosion, wear, or buildup; and lubrication of bearings	Year 1: Annual Year 2+: Annual (consult manufacturer's manual for schedule of any additional O&M)
Sub-Slab Differential Pressure Measurements	
Sub-Slab Differential Pressure Measurements from Vacuum Monitoring Pins	Year 1: Monthly Year 2+: Semi-Annual
Confirmatory Indoor Air Sampling	
Indoor Air Verification Sampling	Year 1: one event 30 to 60 days after building completion & a second event during the winter months (November 1 to March 31)

Note. This table presents a schedule for routine O&M. Additional, non-routine O&M may be required as outlined in the O&M plan in response to system alarms or adjustments.

Appendix

13-12 Beach Channel Drive

RSO Outline

IMPACT ENVIRONMENTAL
170 Keyland Court
Bohemia, New York 11716
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FAX: (631) 269-1599

APPENDIX J

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Appendix

13-12 Beach Channel Drive

CHASP

IMPACT ENVIRONMENTAL
170 Keyland Court
Bohemia, New York 11716
TEL: (631) 268-8800
FAX: (631) 269-1599

Construction Health and Safety Plan

September 6, 2023

conducted at:

13-16 Beach Channel Drive
13-12, 13-16 and 13-24 Beach Channel Drive
Far Rockaway, New York
Block 15528 Lots 5,6, and 9
NYSDEC BCP Site No. C241254

prepared for:

BCD Owner LLC
419 Park Avenue South, 4th Floor
New York, New York

submitted to:

New York State Department of Environmental Protection
Region 2 Division of Environmental Remediation
47-40 21st Street Long Island City,
NY 11101

IE Project # 15209

IMPACT ENVIRONMENTAL |170 Keyland Court | Bohemia | New York | 11716 | 631.269.8800

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1 Introduction

This Construction Health and Safety Plan (CHASP) describes the procedures to be followed in order to reduce employee exposure to potential health and safety hazards that may be present during environmental remedial activities being performed at the site. The emergency response procedures necessary to respond to such hazards are also described within this CHASP. All activities performed under this CHASP are targeted to comply with Occupational Safety and Health Administration (OSHA) Regulations 29 CFR Part 1910.1025.

This document is not, nor does it purport to be, a complete description of all safety and health requirements applicable to work performed at the site. Rather, the CHASP is a general overview of the compliance policies and work practices applicable to the primary tasks and hazards associated with the environmental assessment portion of the development project, as well as a recitation of minimum safety and health compliance obligations for contractors, subcontractors and workers at the site. All subcontractors of any tier operating at the worksite are obligated to implement and maintain comprehensive safety and health plans for their own employees and to ensure that their employees comply with all applicable safety and health requirements. All subcontractors operating at the worksite should refer to the applicable specific OSHA Standards for detailed requirements.

1.1 Purpose

The purpose of this CHASP is to provide the contractors' field personnel, as well as other site-occupants, with an understanding of the potential chemical and physical hazards that exist or may arise while portions of this project are being performed. To this end, this CHASP also presents information on the progression of the environmental restoration activities and specific details regarding the handling of materials excavated from the site.

The primary objective is to ensure the well being of all field personnel and the community surrounding this site. In order to accomplish this, project staff and approved subcontractors of any tier shall acknowledge and adhere to the policies and procedures established herein. Accordingly, all personnel assigned to the remediation activities associated with this project (Remedial Personnel) shall read this CHASP and sign the Agreement and Acknowledgment Statement (**Appendix A**) to certify that they have read, understood, and agree to abide by its provisions. A copy of this CHASP will be available to anyone that requests it. Personnel involved in construction activities (Construction Personnel) and other Personnel (e.g. government officials, administrators, bank inspectors, assessors, etc.) that will have limited exposure to the site native soil/fill material during construction activities will be instructed on how to reduce the probability of exposure to site contaminants, but will not be required read the CHASP.

2 Application of Health and Safety Plan

The procedures of this CHASP apply for any person that will enter the boundaries of the site or a portion of the Site during environmental remediation activities or construction, until the existing soil/fill material has been covered with either a paved surface or an uncontaminated soil cap. When the Project Manager has designated an area of the site as clear of any environmental issues, construction contractors and subcontractors of any tier will perform the balance of the work in accordance with their individual OSHA-compliant corporate CHASP.

2.1 Restoration Personnel

Employees of contractors and subcontractors of any tier performing the following activities will be considered Restoration Personnel:

- Excavation of native soil/fill material
- Loading of native soil/fill onto vehicles
- Processing of native soil/fill into components
- Transporting of native soil/fill across the site
- Sampling of native soil/fill material for subsequent physical or chemical analysis
- Cleaning or decontaminating equipment or personnel
- Handling of ground waters

All subcontractors, of any tier, must submit a CHASP to the Site Health and Safety Officer for review and approval prior to mobilizing to the site. Only CHASPs that comply with this CHASP will be approved. Where a subcontractors CHASP is deficient, the Site Health and Safety Officer will provide written notification of any required changes. Approved CHASPs will be submitted to the Project Manager and retained on-site for reference by the Site Health and Safety Officer.

2.1.1 Construction Personnel

For this document, “Construction Personnel” is the term given for those employees of contractors and subcontractors of any tier performing activities associated with site development other than those performed by the Remedial Personnel. This designation does not preclude that Construction Personnel will traverse or work upon native soil/fill material, rather, it infers that it will not involve performing tasks that will create a route of exposure to the contaminants contained therein. Construction Personnel will receive instruction to limit the potential for exposure to these contaminants. Construction Personnel will be prohibited from entering

Environmental Remediation Areas (i.e., active excavation / handling / processing areas, loading areas, exclusion zones or support zones).

3 Key Personnel / Identification of Health & Safety Personnel

3.1 Key Personnel

A list of the pertinent personnel authorized to be present on site is as follows:

Title	Name	Telephone Number
Senior Project Manager *Impact Environmental*	Greg Mendez-Chicas	(O) 631-269-8800 ext: 124 (C) 631-252-5480
Project Manager *Impact Environmental*	Christopher Connolly	(O) 631-269-8800 ext: 152 (C) 631-664-4425
Field Operations Leader *Impact Environmental*	Dan Fruhauf	(O) 631-269-8800 ext: 141 (C) 631-401-2470
Site Health & Safety Officer *Impact Environmental*	Alex Keenan	(O) 631-269-8800 ext: 161 (C) 516-301-0675

3.2 Organizational Responsibility

3.2.1 Senior Project Manager

The Senior Project Manager will be responsible for implementing the project and obtaining any necessary personnel or resources for the completion of the project. Specific duties will include:

- Selecting a Site Health and Safety Officer and field personnel for the work to be undertaken on site;
- Providing authority and resources to ensure that the Site Health and Safety Officer is able to implement and manage safety procedures;

- Preparing reports and recommendations about the project to clients and affected personnel;
- Ensuring that all persons allowed to enter the site (e.g.., EPA, contractors, state officials, visitors) are made aware of the potential hazards associated with the substances known or suspected to be on site, and are knowledgeable as to the on-site copy of the specific CHASP; and
- Ensuring that the Site Health and Safety Officer is aware of all of the provisions of this CHASP and is instructing all personnel on site about the safety practices and emergency procedures defined in the plan.

3.2.2 Project Manager

The Project Manager will be responsible for implementing the Senior Project Manager' duties as well as oversee activities regarding the project both in the field and in the office as well as interact with environmental regulatory agencies, sub-contractors and internal company personnel.

- Coordinating the activities of all construction and Remedial Personnel, to include informing them of the required Personal Protective Equipment (PPE) and insuring their signature acknowledging this CHASP;
- Ensuring that the tasks assigned are being completed as planned and on schedule; and
- Serving as liaison with public officials where there is no Public Affairs official designated.

3.2.3 Field Operations Leader

The Field Operations Leader will be responsible for field operations and safety. Specific duties will include, but are not limited to:

- Scheduling with the construction company and their subcontractors;
- Coordinating with the Site Health and Safety Officer in determining protection levels;
- Documenting field activities;
- Coordinate activities between environmental and construction personnel;
- Coordination with waste management contractors; and
- Review and approval of waste disposal facilities.

In the event that the Project Manager and the Site Health and Safety Officer are not on site, the Field Operations Leader will assume all responsibility of the Site Health and Safety Officer.

3.2.4 Site Health and Safety Officer

The Site Health and Safety Officer shall be responsible for the implementation of the CHASP on site. Specific duties will include:

- Monitoring the compliance of construction and environmental remediation activities personnel (field personnel) for the routine and proper use of the PPE that has been designated for each task;
- Routinely inspecting PPE and clothing to ensure that it is in good condition and is being stored and maintained properly;
- Stopping work on the site or changing work assignments or procedures if any operation threatens the health and safety of workers or the public;
- Monitoring personnel who enter and exit the site and all controlled access points;
- Reporting any signs of fatigue, work-related stress, or chemical exposures to the Project Manager;
- Dismissing field personnel from the site if their actions or negligence endanger themselves, co-workers, or the public, and reporting the same to the Project Manager;
- Reporting any accidents or violations of the CHASP plan to the Project Manager and documenting the same for the project in the records;
- Knowing emergency procedures, evacuation routes, and the telephone numbers of the ambulance, local hospital, poison control center, fire and police departments;
- Ensuring that all project-related personnel have signed the personnel agreement and acknowledgments form contained in this CHASP; and
- Coordinate upgrading and downgrading PPE as necessary due to changes in exposure levels, monitoring results, weather, and other site conditions.

4 Chemical Hazard Analysis and Control Measures

Based on the Phase II Environmental Site Assessment and Remedial Investigation performed at the site, the contaminants of concern include the following:

- CVOC's
- VOC's
- SVOCs
- Metals

Chlorinated volatile organic compounds (CVOCs) and Volatile organic compounds (VOC's) were found in soil, groundwater, and soil vapor. SVOCs and Metals were found in soil and groundwater. A summary of the health hazards associated with the contaminant of concerns are shown below.

4.1 CVOCs, VOC's and SVOCs

The Phase II Environmental Site Assessment and Remedial Investigation performed at the site have identified the CVOCs VOC's and metals in soil, groundwater, and soil vapor.

Soil vapor sampling results indicate that tetrachloroethene (PCE) and trichloroethene (TCE) were detected in all sampling points at concentrations above the respective New York State Department of Health (NYSDOH) Indoor/Outdoor Air Guidance Values. Additionally, trace concentrations of cis-1,2-dichloroethene,2-butanone, 1,1,1-TCE, toluene, 2-hexanone,o-xylene and 1,2,4-Trimethylbenzene were present in the soil vapor samples.

A hotspot source area of PCE/TCE contamination was identified during the Remedial Investigation located in the southern portion of the Site (Lot 5) in which PCE and TCE were detected at concentrations above Industrial Use Soil Cleanup Objectives at depths ranging from 0-8 feet below grade. Shallow depth soil samples also contained concentrations of the SVOC benzo (a) anthracene, benzo(a)pyrene, benzo(b) fluoranthene, benzo(k)fluoranthene, chrysene and indeno(1,2,3-cd)pyrene at concentrations above UUSCOs.

The VOCs chloroform, PCE, and TCE were detected at concentrations exceeding the NYSDEC Ambient Water Quality Standards (AWQS) in several groundwater samples. Groundwater samples also displayed concentrations of several Polycyclic Aromatic Hydrocarbon (PAH) SVOCs above the AWQS.

Possible routes of exposure include inhalation, ingestion, and absorption. Prolonged exposure to CVOCs/VOCs above their respective OSHA permissible exposure limits may result in irritation of the mucous membranes of the respiratory system, eyes, and mouth. Overexposure to CVOCs/VOCs may also result in the depression of the central nervous system. Symptoms may include drowsiness, headache, and fatigue.

4.2 Metals

The Phase II Environmental Site Assessment and Remedial Investigation performed at the site have identified metals in soil and groundwater. During the Remedial Investigation Lead and mercury was detected above Part 375 Unrestricted Use SCOs (UUSCOs) in one shallow soil sample. Several soil samples contained detectable concentrations of arsenic, barium, beryllium, chromium (total) copper (total), lead, manganese, mercury, selenium zinc and cyanide, lead and mercury. These concentrations may be indicative of the former use of the Site or related to the Site being in a coastal zone. Additionally, iron, magnesium, manganese, sodium, chromium (total) arsenic, iron, lead and thallium were detected above the NYSDEC AWQS in groundwater in water samples, both locally (arsenic, magnesium and lead) and Site wide. Possible routes of exposure include inhalation and ingestion. Metals exposure, generally in the form of soil/fill material dust, may cause skin, eye, or mucous membrane irritation. Exposure symptoms may include headaches, nausea, vomiting, abdominal pain, aches, and dizziness.

5 Health and Safety Risk Analysis

The field tasks covered by the CHASP will include material excavation with hydraulic equipment and hand tools, the manual sorting of materials, and containerization of soil and groundwater samples. Additionally, standard job task hazards that are inherent to a construction project will exist.

5.1 Explosion and Fire

This Section is not, nor does it purport to be, a comprehensive recitation of safety and health requirements applicable to explosion and fire. Rather, contractors, subcontractors and workers at the site must refer to OSHA's Fire Protection and Prevention Standard, set forth at 29 C.F.R. § 1910 part 1926.35, as well as all supporting OSHA Compliance Directives and Letters of Interpretation, for complete information on safety and health compliance obligations. The following are possible fire and explosion hazards that may be encountered on the job site along with fire preventive measures to take.

5.1.1 Flammable Vapors

The presence of flammable vapors can pose a potential fire and health hazard. Hazard reduction procedures include monitoring the ambient air with an oxygen/LEL meter (combustible gas indicator). If the LEL reading exceeds 20%, all work will stop and employees will leave the site immediately and contact the fire department. For OSHA-defined "confined space" activities, work will stop if the LEL reading exceeds 10%.

5.1.2 High Oxygen Levels

Atmospheres that contain a level of oxygen greater than 23% pose an extreme fire hazard (the usual ambient oxygen level is approximately 20.5%). All personnel encountering atmospheres that contain a level of oxygen greater than 23% must evacuate the site immediately and must notify the Fire Department. If the oxygen level is less than 19.5%, do not enter the space without level B PPE.

5.1.3 Fire Prevention

- During equipment operation, periodic vapor concentration measurements should be taken with an explosimeter or combustimeter. If at any time the vapor concentrations exceed 20% of the lower explosive limit (LEL), then the Site Health and Safety Officer or designated field worker should immediately shut down all operations.
- Only approved safety cans will be used to transport and store flammable liquids.

- All gasoline and diesel-driven engines requiring refueling must be shut down and allowed to cool prior to filling.
- Smoking is not allowed during any operations within the work area in which petroleum products or solvents in free-floating, dissolved, or vapor forms, or other flammable liquids may be present.
- No open flame or spark is allowed in any area containing petroleum products or other flammable liquids.

5.2 Operational Safety Hazards

This Section is not, nor does it purport to be, a comprehensive recitation of safety and health requirements applicable to earth moving equipment. Rather, contractors, subcontractors and workers at the site must refer to OSHA's Excavation Standard, set forth at 29 C.F.R. § 1910 Subpart P as well as all supporting OSHA Compliance Directives and Letters of Interpretation, for complete information on safety and health compliance obligations.

5.2.1 Heavy Machinery / Equipment

All site employees must remain aware of those site activities that involve the use of heavy equipment and machinery. Respiratory protection and protective eyewear may be worn frequently during site activities. This protective equipment significantly reduces peripheral vision of the wearer. Therefore, it is essential that all employees at the site exercise extreme caution during operation of equipment and machinery to avoid physical injury to themselves or others.

5.2.2 Vehicular Traffic

All employees will be required to wear a fluorescent safety vest at all times while on site. In addition, supplemental traffic safety equipment use can be exercised when warranted by specific task. Supplemental equipment can be items such as cones, flags, barricades, and/or caution tape. Drivers of waste transportation vehicles will only exit vehicles in designated areas within the Support Zone. During this time, drivers will only be allowed to inspect the placement of waste loads and cover their trailers.

5.3 Noise Hazards

This Section is not, nor does it purport to be, a comprehensive recitation of safety and health requirements applicable to noise hazards. Rather, contractors, subcontractors and workers at the site must refer to OSHA's Occupational Noise Exposure Standard, set forth at 29 C.F.R. § 1910 part 1926.52, as well as all supporting OSHA Compliance Directives and Letters of Interpretation, for complete information on safety and health compliance obligations.

Hearing protection shall be provided to the employees where sound pressure levels exceed 85 dB. Hearing protection shall be worn where sound pressure levels in areas and/or on equipment exceeds 90 dB. Typical heavy excavation operations have been monitored with a sound level meter and indicate that hearing protection is required for all personnel while engaged in this action.

5.4 Safe Material Handling

This Section is not, nor does it purport to be, a comprehensive recitation of safety and health requirements applicable to safe material (soil/fill) handling. Rather, contractors, subcontractors and workers at the site must refer to OSHA's Eye and Face, and Respiratory Safety Standards, set forth at 29 C.F.R. § 1910 Parts 1926.102 and 1926.103 as well as all supporting OSHA Compliance Directives and Letters of Interpretation, for complete information on safety and health compliance obligations.

Skin and eye contact with contaminated soil/fill or materials in contact with the soil/fill may occur during excavation, handling and decontamination activities. Nitrile gloves and approved safety glasses must be worn to prevent exposure to the associated contaminants. Employees working at or near (within ten feet of) excavation fronts could be required to wear respiratory protection. If necessary, all associated activities will be performed pursuant to 29 C.F.R. § 1910 Parts 1926.134 (a)(2) and 1926.55.

5.5 Temperature Hazards

This Section is not, nor does it purport to be, a comprehensive recitation of safety and health requirements applicable to temperature stresses. Rather, contractors, subcontractors and workers at the site must refer to OSHA's Technical Manual (TED 1-0.15A), Section III – Chapter 4 (1999) as well as all supporting OSHA Compliance Directives and Letters of Interpretation, for complete information on safety and health compliance obligations.

Since climatic changes cannot be avoided, work schedules will be adjusted to provide time intervals for intake of juices, juice products, and water in an area free from contamination and in quantities appropriate for fluid replacement to prevent heat stress conditions from occurring.

5.5.1 Types of Heat Stress

Heat stress may occur even in moderate temperature areas and may present any or all of the following:

5.5.1.1 Heat Rash

Result of continuous exposure to heat, humid air, and chafing clothes. Heat rash is uncomfortable and decreases the ability to tolerate heat.

5.5.1.2 Heat Cramps

Result of the inadequate replacement of body electrolytes lost through perspiration. Signs include severe spasms and pain in the extremities and abdomen.

5.5.1.3 Heat Exhaustion

Result of increased stress on the vital organs of the body in the effort to meet the body's cooling demands. Signs include shallow breathing; pale, cool, moist skin; profuse sweating; and dizziness.

5.5.1.4 Heat Stroke

Result of overworked cooling system. Heat stroke is the most serious form of heat stress. Body surfaces must be cooled and medical help must be obtained immediately to prevent severe injury and/or death. Signs include red, hot, dry skin, absence of perspiration, nausea, dizziness and confusion, strong, rapid pulse that could lead to coma or death.

5.5.2 Heat Stress Prevention

A. Replace body fluids (water and electrolytes) lost through perspiration. Solutions may include a 0.1% salt and water solution or commercial mixes such as "Gatorade". Employees must be encouraged to drink more than the amount required in order to satisfy thirst.
B. Use cooling devices to aid the natural body ventilation. Cooling occurs through evaporation of perspiration and limited body contact with heat-absorbing protective clothing. Utilize fans and air conditioners to assist in evaporation. Long, cotton underwear is suggested to absorb perspiration and limit any contact with heat-absorbing protective clothing (i.e., coated Tyvek suits).
C. Conduct non-emergency response activities in the early morning or evening during very hot weather.
D. Provide shelter against heat and direct sunlight to protect personnel. Take breaks in shaded areas.
E. Rotate workers utilizing protective clothing during hot weather.
F. Establish a work regime that will provide adequate rest periods, with personnel working in shifts.

5.6 Cold Exposure Hazards

If work is performed continuously in the cold at or below -7 ºC (20 ºF), including wind chill factor, heated warming shelters (tents, cabins, company vehicles, rest rooms, etc.) shall be made available nearby and the worker should be encouraged to use these shelters at regular intervals, the frequency depending on the severity of the environmental exposure. The onset of heavy shivering, frostnip, the feeling of excessive fatigue, drowsiness, irritability, or euphoria, are indications for immediate return to the shelter. When entering the heated shelter, the outer layer of clothing shall be removed and the remainder of the clothing loosened to permit sweat evaporation. A change of dry work clothing shall be provided as necessary to prevent workers from returning to their work with wet clothing.

Dehydration, or the loss of body fluids, occurs in the cold environment and may increase the susceptibility of the worker to cold injury due to a significant change in blood flow to the extremities. Warm sweet drinks and soups should be provided at the work site to provide caloric intake and fluid volume. The intake of coffee should be limited because of a diuretic and circulatory effect (adapted from TLV's and Biological Exposure Indices 1988-1989, ACGIH).

5.7 Community Air Monitoring Program (CAMP)

Real-time air monitoring for VOCs and/or particulate levels at the perimeter of the exclusion zone or work area will be necessary during the Remedial Investigation as Per NYSDEC DER-10 Technical Guidance for Site Investigation and Remediation.

- Continuous monitoring will be required for all ground intrusive activities and during the demolition of contaminated or potentially contaminated structures. Ground intrusive activities include, but are not limited to, soil/waste excavation and handling, test pitting or trenching, and the installation of soil borings or monitoring wells.

- Periodic monitoring for VOCs will be required during non-intrusive activities such as the collection of soil and sediment samples or the collection of groundwater samples from existing monitoring wells. “Periodic” monitoring during sample collection might reasonably consist of taking a reading upon arrival at a sample location, monitoring while opening a well cap or overturning soil, monitoring during well baling/purging, and taking a reading prior to leaving a sample location. In some instances, depending upon the proximity of potentially exposed individuals, continuous monitoring may be required during sampling activities.

Examples of such situations include groundwater sampling at wells on the curb of a busy urban street, in the midst of a public park, or adjacent to a school or residence.

VOC Monitoring, Response Levels, and Actions

Volatile organic compounds (VOCs) must be monitored at the downwind perimeter of the immediate work area (i.e., the exclusion zone) on a continuous basis or as otherwise specified. Upwind concentrations should be measured at the start of each workday and periodically thereafter to establish background conditions, particularly if wind direction changes. The monitoring work should be performed using equipment appropriate to measure the types of contaminants known or suspected to be present. The equipment should be calibrated at least daily for the contaminant(s) of concern or for an appropriate surrogate. The equipment should be capable of calculating 15-minute running average concentrations, which will be compared to the levels specified below.

1. If the ambient air concentration of total organic vapors at the downwind perimeter of the work area or exclusion zone exceeds 5 parts per million (ppm) above background for the 15-minute average, work activities must be temporarily halted and monitoring continued. If the total organic vapor level readily decreases (per instantaneous readings) below 5 ppm over background, work activities can resume with continued monitoring.
2. If total organic vapor levels at the downwind perimeter of the work area or exclusion zone persist at levels in excess of 5 ppm over background but less than 25 ppm, work activities must be halted, the source of vapors identified, corrective actions taken to abate emissions, and monitoring continued. After these steps, work activities can resume provided that the total organic vapor level 200 feet downwind of the exclusion zone or half the distance to the nearest potential receptor or residential/commercial structure, whichever is less - but in no case less than 20 feet, is below 5 ppm over background for the 15-minute average.
3. If the organic vapor level is above 25 ppm at the perimeter of the work area, activities must be shutdown.
4. All 15-minute readings must be recorded and be available for State (DEC and NYSDOH) personnel to review. Instantaneous readings, if any, used for decision purposes should also be recorded.

Particulate Monitoring, Response Levels, and Actions

Particulate concentrations should be monitored continuously at the upwind and downwind perimeters of the exclusion zone at temporary particulate monitoring stations. The particulate monitoring should be performed using real-time monitoring equipment capable of measuring particulate matter less than 10 micrometers in size (PM-10) and capable of integrating over a period of 15 minutes (or less) for comparison to the airborne particulate action level. The equipment must be equipped with an audible alarm to indicate

exceedance of the action level. In addition, fugitive dust migration should be visually assessed during all work activities.

1. If the downwind PM-10 particulate level is 100 micrograms per cubic meter (mcg/m3) greater than background (upwind perimeter) for the 15-minute period or if airborne dust is observed leaving the work area, then dust suppression techniques must be employed. Work may continue with dust suppression techniques provided that downwind PM-10 particulate levels do not exceed 150 mcg/m3 above the upwind level and provided that no visible dust is migrating from the work area.
2. If, after implementation of dust suppression techniques, downwind PM-10 particulate levels are greater than 150 mcg/m3 above the upwind level, work must be stopped and a re-evaluation of activities initiated. Work can resume provided that dust suppression measures and other controls are successful in reducing the downwind PM-10 particulate concentration to within 150 mcg/m3 of the upwind level and in preventing visible dust migration.
3. All readings must be recorded and be available for State (DEC and NYSDOH) and County Health personnel to review.

4 Personnel Training

4.1 Pre-assignment and OSHA Training

All Remedial Personnel that will be in direct contact (that is hand digging, sampling, processing) with the native soil/fill materials must complete an initial 40-hour Hazardous Waste Operations and Emergency Response (HAZWOPER) training course and, where necessary, a current eight hour refresher course (as required annually after initial 40-hour training completion). Restoration Personnel that will not be in direct contact with native soil/fill materials are only required to prove they have read and understood the procedures presented in this HASP.

On-site managers and supervisors of Restoration Personnel (Field Operations Leader, Site Health and Safety Officer) directly responsible for employees engaged in hazardous substance operations have received an initial 40-hour HAZWOPER training course. These training requirements comply with the OSHA Hazardous Waste Operations and Emergency Response Regulation, 29 CFR 1910.120.

The Site Health and Safety Officer will conduct an on-site training meeting for all Construction Personnel and observers that could potentially be exposed to the native soil/fill material during construction activities. Training meetings will be provided routinely for any new project personnel. This program will cover specific health and safety equipment and protocols and potential problems inherent to each project operation. The Site Health and Safety Officer will be present for any activities being performed by Construction Personnel that will involve the handling of soil/fill during construction activities to provide supervision on exposure reduction. This may include insuring the use of proper PPE and air quality monitoring.

4.2 Respirator Requirements

4.2.1 Respirator Requirements and Fit Testing

The OSHA respiratory protection standard, 29 CFR 1910.134, under paragraph (f)(2), requires fit testing for all employees using tight fitting respirators including filtering facepiece respirator. The fit test must be performed before the respirator is used and must be repeated at least annually and whenever a different respirator facepiece is used or a change in the employee's physical condition could affect the respirator fit.

The user seal check is a separate requirement under paragraph (g)(1)(iii) and must be performed each time the employee dons the respirator. Employers must adhere to the recommendations of the respirator's manufacturer; different manufacturers recommend different procedures.

4.2.2 Medical Surveillance

OSHA requires a medical evaluation to determine whether each employee required to wear a respirator is physically able to wear a respirator and perform the work. This evaluation can be a medical examination or an evaluation of employee responses to the OSHA Respirator Medical Evaluation Questionnaire located in **Appendix B.** Either method must be performed by a physician or other licensed healthcare professional. A medical examination may be necessary whenever the employee gives a positive response to any of questions 1 through 8 in Appendix B, Part A, Section 2.

5 Personal Protective Equipment

This Section is not, nor does it purport to be, a comprehensive recitation of safety and health requirements applicable to personal protective equipment. Rather, contractors, subcontractors and workers at the site must refer to OSHA's Personal Protective Equipment Standard, set forth at 29 C.F.R. § 1910.Part 1926.28(a) as well as all supporting OSHA Compliance Directives and Letters of Interpretation, for complete information on safety and health compliance obligations.

The purpose of personal protective clothing and equipment (PPE) is to shield or isolate individuals from the chemical, physical, and biological hazards that may be encountered on-site when engineering and other controls are not feasible or cannot provide adequate protection. Careful selection and use of adequate PPE should protect the health of all on-site workers. No single combination of PPE is capable of protecting against all hazards. Therefore, PPE should be used in conjunction with, not in place of, other protective methods, such as engineering controls and safe work practices.

Site-specific chemicals of concern include semi-volatile organic compounds. These chemicals are of moderate to low hazard. Therefore, level D personal protective equipment will be required at all times when on site. The following is a breakdown of the types of protective clothing and equipment to be used during the site activities.

5.1.1 Levels of Protection

The Site Health and Safety Officer will determine whether a level of protection should be upgraded or downgraded. Changes in the level of protection will be recorded in the dedicated site logbook along with the rationale for the changes (see Section 7.1.3 for additional information on PPE upgrades). Level D PPE will be the minimum requirement at all times during the environmental remediation portion of the project.

5.1.2 Level D Personal Protective Equipment

All initial site access and activities will be done in Level D attire. Level D protection is sufficient under conditions where no contaminants are present or those activities that do not pose a potential threat of unexpected inhalation of or contact with hazardous levels of any substances. Typical Level D activities may include sediment, logging and groundwater sampling, and as surficial site surveys.

- Hard hat
- Safety glasses (as appropriate)
- Steel toe and shank boots
- Fluorescent vest
- Hearing protection (as appropriate)

5.1.3 Modified Level D Personal Protective Equipment

- Hard hat
- Safety glasses
- Steel toe and shank boots
- Fluorescent vest
- Nitrile "N-Dex" inner gloves
- Latex outer boots (chemical resistant)
- Polyethylene coated Tyvek suit
- Hearing protection (as appropriate)

5.1.4 Level C Personal Protective Equipment

Level C protection, as described in this plan, will be available at a minimum for those activities that involve surface and subsurface soil (strata disturbance such as well installation, and all subsurface media sampling activities such as split-spoon sampling and borings). Level C protection equipment should be readily available at all times. Consistent with OSHA training, prior to donning Level C, oxygen percent must be continuously monitored.

- Buddy system required at all times
- Full face respirator with NIOSH approved OV/AG/HEPA combination cartridges (MSA GMC-H)
- Saranex coated Tyvek Suit
- Inner Nitrile "N-Dex" gloves
- Outer Nitrile (NBR) gloves
- Steel toe and shank boots
- Outer boots (chemical resistant)
- Hard hat

• Hearing protection (as appropriate)

5.1.5 Level B Personal Protective Equipment

Some activities may require Level B protection. In atmospheres potentially containing toluene and xylenes, the protective ensemble should include chemical resistant clothing since the two compounds have skin absorption potential.

Regional Health and Safety representatives must be on site upon start-up of <u>any</u> project requiring level B protection. This should be understood to include subcontractors conducting Level B activity.

• Buddy system required at all times
• Supplied air respirator or SCBA
• Saranex coated Tyvek Suit
• Inner Nitrile "N-Dex" gloves
• Outer Nitrile (NBR) gloves
• Steel toe and shank boots
• Outer boots (chemical resistant)
• Hard hat
• Hearing protection (as appropriate)

5.1.6 Personal Use Factors and Equipment Change Out Schedule

Prohibitive or precautionary measures should be taken as necessary to prevent workers from jeopardizing safety during equipment use.

If necessary, all respiratory protective equipment used will be approved by NIOSH/MSHA. Respirator cartridges will be changed once per eight-hour shift at a minimum. This can be accomplished at the end of the workday during respirator decontamination. Employees working within the excavation front should change the cartridge of their respirators once every four hours. If odor breakthrough is detected while wearing the respirator or if breathing becomes difficult, change cartridges immediately. A filter change out schedule is provided below.

Remedial Worker	**Work Area**	**Filter Type**	**Replacement Rate**
Site Screener	EZ – At Excavation Front	MSA GMC-H	Every 4 Hours
Laborer	EZ – At Excavation Front	MSA GMC-H	Every 2 Hours
	SZ, CRZ	MSA GMC-H	Every 8 Hours

Equipment Operator	EZ	MSA GMC-H	Every 4 Hours
	SZ, CRZ	MSA GMC-H	Every 8 Hours
Administrator	EZ	MSA GMC-H	Every 4 Hours
	SZ, CRZ	MSA GMC-H	Every 8 Hours

When utilizing protective garments such as Tyvek suits, gloves, and booties, all seams between protective items will be sealed with duct tape.

Contact with contaminated surfaces, or surfaces suspected of being contaminated, should be avoided. This includes walking through, kneeling in, or placing equipment in puddles, mud, discolored surfaces, or on drums and other containers.

Eating, smoking, drinking, and/or the application of cosmetics in the immediate work area is prohibited. Ingestion of contaminants or absorption of contaminants into the skin may occur.

The use of contact lenses on the job site is strongly advised against. Contact lenses may trap contaminants and/or particulate between the lens and eye, causing irritation. However, when glasses are not available, contact lenses are preferred over faulty vision. When contact lenses are worn, safety glasses and/or goggles must be worn at all times while on the job site. Wearing contact lenses with a respirator in a contaminated atmosphere is prohibited under 29 CFR ss1910.134 (e)(5)(iii).

6 Work Zones

6.1 Work Zone Definitions

Work and support areas shall be established based on ambient air data and proposed work sites. They shall be established in order to contain contamination within the smallest areas possible and shall ensure that each employee has the proper PPE for the area or zone in which work is to be performed.

6.1.1 Exclusion Zone (EZ)

It is within this zone that the excavation or environmental remediation activities such as tank abandonment operations (as described in 8.1.1.1) are performed. No one shall enter this zone unless the appropriate PPE is donned. The location of this zone will change as the construction-related excavation activities are performed.

6.1.2 Contaminant Reduction Zone (CRZ)

It is within this zone that the decontamination process is undertaken. Personnel and their equipment must be adequately decontaminated before leaving this zone for the support zone. This zone will be set up between the EZ (no less than 100 feet away) and the site boundary.

6.1.3 Support Zone (SZ)

The support zone is considered to be uncontaminated; as such, protective clothing and equipment are not required but should be available for use in emergencies. All equipment and materials are stored and maintained within this zone. Protective clothing is put on within the SZ before entering the EZ or the CRZ. The SZ will be established in a safe environment at least 50 feet away from the EZ.

7 General Safety and Health Provisions

This Section is not, nor does it purport to be, a comprehensive recitation of safety and health requirements applicable to general safety and health provisions. Rather, contractors, subcontractors and workers at the site must refer to OSHA's General Safety and Health Provision Standard, set forth at 29 C.F.R. § 1910 subparts C and G as well as all supporting OSHA Compliance Directives and Letters of Interpretation, for complete information on safety and health compliance obligations.

7.1 Safety Practices / Standing Orders

The following are important safety precautions that will be enforced during work activities.

1. Eating, drinking, chewing gum or tobacco, smoking, or any practice that increases the probability of hand-to-mouth transfer and ingestion of material is prohibited in any area designated as contaminated.
2. Hands and face must be thoroughly washed upon leaving the work area and before eating, drinking, or any other activity.
3. Whenever decontamination procedures for outer garments are in effect, the entire body should be thoroughly washed as soon as possible after the protective garments are removed.

4. No excessive facial hair that interferes with the effectiveness of a respirator will be permitted on personnel required to wear respiratory protection equipment. The respirator must seal against the face so that the wearer receives air only through the air purifying cartridges attached to the respirator. Fit testing shall be performed prior to respirator use to ensure the wearer obtains a proper seal.
5. Contact with potentially contaminated surfaces should be avoided whenever possible. One should not walk through puddles; kneel on the ground; lean, sit, or place equipment on drums, containers, vehicles, or the ground.
6. Medicine and alcohol can potentate the effect from exposure to certain compounds. Prescribed drugs and alcoholic beverages should not be consumed by personnel involved in the project.
7. Personnel and equipment in the work areas should be minimized, consistent with effective site operations.
8. Work areas for various operational activities should be established.
9. Procedures for leaving the work area must be planned and implemented prior to going to the site. Work areas and decontamination procedures must be established on the basis of prevailing site conditions.
10. Respirators will be issued for the exclusive use of one worker and will be cleaned and disinfected after each use.
11. Safety gloves and boots shall be taped to the disposable, chemical-protective suits as necessary.
12. All unsafe equipment left unattended will be identified by a "DANGER, DO NOT OPERATE" tag.
13. Noise mufflers or earplugs may be required for all site personnel working around heavy equipment. This requirement will be at the discretion of the Site Health and Safety Officer. Disposable, form-fitting plugs are preferred.
14. Cartridges for air-purifying respirators in use will be changed daily at a minimum.

7.2 Buddy System

Site personnel will employ the buddy system when working under certain circumstances, such as enclosed spacing. Under the buddy system, each site worker is responsible for monitoring the well-being of another worker. No one will work alone when the buddy system is implemented. At no time will fewer than two employees be present at the site if activities are underway.

7.3 Site Communications Plan

Mobile telephone and/or two-way radios will be used to communicate between the work parties on the site. The following standard hand signals will be used in case of failure of radio communication:

- Hands on top of head = Need assistance
- Thumbs up = OK, I am alright, I understand
- Thumbs down = No, negative

Personnel in the Contaminated Zone should remain in constant radio communication or within sight of the project team leader. Any failure of radio communication will require the team leader to evaluate whether personnel should leave the zone.

7.4 Retention of Records

The following records will be maintained on-site and in corporate records for no less than three years.

- Fit test results
- OSHA Training Certification
- Medical Questionaire and/or Medical Clearance
- Medical Data Sheets
- Accident Report Forms

8 Decontamination Plan

8.1 General

Personnel involved in work activities at the site may be exposed to compounds in a number of ways, despite the most stringent protective procedures. Site personnel may come in contact with vapors, gases, mists, particulates in the air, or other site media while performing site duties. Use of monitoring instruments and site equipment can also result in exposure and transmittal of hazardous substances.

In general, decontamination involves scrubbing with a detergent water solution followed by clean water rinses. All disposable items shall be disposed of in a dry container. Certain parts of contaminated respirators, such as harness assemblies and leather or cloth components, are difficult to decontaminate. If grossly contaminated, they may have to be discarded. Rubber components can be soaked in detergent and water and scrubbed with a brush. In addition to being contaminated, all respirators, non-disposable protective clothing, and other personal articles must be sanitized or replaced before they can be used again if they become soiled from exhalation, body oils, and perspiration. The manufacturer's instructions should be followed in sanitizing the respirator masks.

The Site Health and Safety Officer will be responsible for the proper maintenance, decontamination, and sanitizing of any respirator equipment that may be used on-site.

The decontamination zone layout and procedures should match the prescribed levels of personal protection.

The following procedures have been established to provide site personnel with minimum guidelines for proper decontamination. Personnel leaving the point of operations designated as the EZ must follow these minimum procedures. The decontamination process shall take place within the contaminant reduction zone.

8.2 Minimum Decontamination Procedure

Personnel leaving the point of operations should remove or change outer gloves. At a minimum, boots shall be cleaned of all accumulated soil/fill. Outer boots must be properly washed where gross contamination is evident or disposed of. If Tyvek suits are being utilized, they should be removed or changed. Personnel should remove the Tyvek suits so that the inner clothing does not come in contact with any contaminated surfaces. After Tyvek removal, personnel shall remove and discard outer Nitrile gloves. Personnel shall then remove the respirator, where applicable. Respirators shall be disinfected between uses with towelettes or other sanitary methods. Potable water, at a minimum, will be present so that site personnel can thoroughly wash hands and face after leaving the point of operations.

The Site Health and Safety Officer will monitor decontamination procedures to ensure their effectiveness. Modifications of the decontamination procedure may be necessary as determined by the Site Health and Safety Officer's observations.

8.3 Standard Decontamination Procedure

The following decontamination procedures should be implemented during site operations for the appropriate level of protection.

8.3.1 Level B

Segregated equipment drop	Deposit equipment (tools, sampling devices, notes, monitoring instruments, radios, etc.) used on the site onto plastic drop cloths.
Boot covers and glove wash	Outer boots and outer gloves should be scrubbed with a decontamination solution of detergent and water or replaced.
Rinse off boot covers and gloves	Decontamination solution should be rinsed off boot covers and gloves using generous amounts of water. Repeat as many times as necessary.
Tape removal	Remove tape from around boots and gloves and place into container with plastic liner.
Boot cover removal	Remove disposable boot covers and place into container with plastic liner.
Outer glove removal	Remove outer gloves and deposit in container with plastic liner.
Suit / safety boot wash	Completely wash splash suit, SCBA, gloves, and safety boots. Care should be exercised that no water is allowed into the SCBA regulator. It is suggested that the SCBA regulator be wrapped in plastic.
Suit / safety boot rinse	Thoroughly rinse off all decontamination solution from protective clothing.
Tank or canister changes	This is the last step in the decontamination procedure for those workers wishing to change air tanks and return to the EZ. The worker's air tank or

	cartridge is exchanged, new outer glove and boot covers are donned, and joints taped.
Removal of safety boots	Remove safety boots and deposit in container with a plastic liner.
SCBA backpack removal	Without removing the face piece, the SCBA backpack should be removed and placed on a table. The face piece should then be disconnected from the remaining SCBA unit and then proceed to the next station.
Splash suit removal	With care, remove the splash suit. The exterior of the splash suit should not come in contact with any inner layers of clothing.
Inner glove wash	The inner gloves should be washed with a mild decontamination solution (detergent / water).
Inner glove rinse	Generously rinse the inner gloves with water.
Face piece removal	Without touching the face with gloves, remove the face piece. The face piece should be deposited into a container that has a plastic liner.
Inner glove removal	Remove the inner glove and deposit into a container that has a plastic liner.
Field wash	Wash hands and face thoroughly. If highly toxic, skin corrosive, or skin absorbent materials are known or suspected to be present, a shower should be taken.

8.3.2 Level C and Level D

The decontamination procedure for Level C and Level D will be satisfied with the Minimum procedures outlined in section 8.2.

8.4 Heavy Equipment and Handling Equipment Decontamination

Equipment traversing the site and exiting the site will be subjected to a decontamination protocol. At a minimum the protocol will consist of an inspection of the truck fenders, tires and mud flaps for accumulated soil/fill, and removal of all accumulations using hand tools (brush, broom and scrapers). If deemed necessary by the Health and Safety Officer, this inspection will be performed over a thirty by fifteen foot area that has been filled with ¾ inch crushed recycled concrete aggregate to facilitate the removal of soil/fill accumulations from the tires, and to immobilize soil/fill removed from the truck body. Additionally, all trucks hauling waste will be required to be covered prior to exiting the site.

At the conclusion of the use of each piece of excavation equipment on the site, it will be decontaminated with an Alconox / water solution followed by a clean water rinse within the Contaminant Reduction Zone. The rinsate will be allowed to charge into the site ground.

9 Emergency Response / Contingency Plan

9.1 Pre-Emergency Planning

In order to properly prepare for emergencies, Material Safety Data Sheets (MSDS) will be maintained on-site for the type of contaminants to which workers may be exposed. Based upon the results of previous investigations, these

contaminants consist of a mixture of organic compounds consistent with those found within dry cleaning fluids and chemical processing or utilization facilities. The SDSs for these products are found in **Appendix D.**

In the event a suspected or known hazardous substance or substance container is encountered during site activities, a contingency plan will be triggered (see Section 11.3).

9.2 Emergency Contact Information

In the event of an accident or emergency situation, emergency procedures will be executed. Said procedures can and will be executed by the first person to observe an accident or emergency situation. The Project Field Manager will be notified about the situation immediately after emergency procedures are implemented.

9.2.1 Emergency Contacts

Emergency:	911	
Hospital:	718-869-7000	St. John's Episcopal
Police:	911	Police
Fire Department:	911	NYFD
Chemtrec:	800-424-9300	
Poison Control Center:	800-336-6997	
National Response Center:	800-424-8802	
US EPA (24-hour hotline):	800-424-9346	

Driving directions to St John's Episcopal Hospital and a map showing the respective route to the hospital are provided in **Appendix F**, at the end of this document.

9.2.2 Utility Emergencies / Initiating Subsurface Investigation Work

Where necessary, utility markouts will be called in via the one call center or to the individual entities listed below.

Mark Out One-Call Center (811)	1-800-272-4480	No-Cuts
Gas Company:	718-643-4050	Con Edison
Telephone Company:	516-661-6000	Verizon
Electric Company:	718-643-4050	Con Edison

9.3 Contingency / Evacuation Plan

This Section is not, nor does it purport to be, a comprehensive recitation of safety and health requirements applicable to emergency procedures. Rather, contractors, subcontractors and workers at the site must refer to OSHA's Employee Emergency Action Plan Standard, set forth at 29 C.F.R. § 1910 Part 1926.35(a), as well as all supporting OSHA Compliance Directives and Letters of Interpretation, for complete information on safety and health compliance obligations.

If an unknown substance or substance container is encountered during site activities, the following contingency plan will be triggered.

1. The Site Health and Safety Officer, Project Manager and Field Operations Leader will be notified and an Exclusion Zone (the aerial extent of which will be determined by the above safety staff) will be established.
2. All staff will be evacuated from the Exclusion Zone.
3. Air monitoring will be conducted down-wind of the Exclusion Zone.
4. The NYSDEC, as well as any other Government regulatory agency whose need may be prompted by the particular situation, will be notified.
5. Upon arrival of the NYSDEC or Government regulatory agency representative(s), site control will transfer to the appropriate Government personnel.

It may be possible that a situation could develop site emergency could necessitate the evacuation of all personnel from the site. If such a situation develops, an audible alarm shall be given for site evacuation (consisting of an air horn). Personnel shall evacuate the site in a calm and controlled fashion and regroup at a predetermined location. The route of evacuation will be dependent on wind direction, severity, type of incident, etc. The site must not be re-entered until back-up help, monitoring equipment, and/or personal protective equipment are on hand and the appropriate regulatory agencies have been notified.

9.4 Emergency Medical Treatment Procedures

This Section is not, nor does it purport to be, a comprehensive recitation of safety and health requirements applicable to medical treatment and first aid. Rather, contractors, subcontractors and workers at the site must refer to OSHA's Medical Services and First Aid Standard, set forth at 29 C.F.R. § 1910 Part 1926.23 and 1926.50, as well as all supporting OSHA Compliance Directives and Letters of Interpretation, for complete information on safety and health compliance obligations.

All injuries, no matter how slight, will be reported to the site safety supervisor immediately. The safety supervisor will complete an accident report for all incidents (**Appendix E**).

Some injuries, such as severe lacerations or burns, may require immediate treatment. Unless required due to immediate danger, seriously injured persons should not be moved without direction from attending medical personnel.

9.4.1 Standard Procedures for Injury

1. Notify the Site Health and Safety Officer, Project Manager, and the NYCDEP and NYCDHPD of all accidents, incidents, and near emergency situations.
2. If the injury is minor, trained personnel should proceed to administer appropriate first aid.
3. Telephone for ambulance/medical assistance if necessary. Whenever possible, notify the receiving hospital of the nature of physical injury or chemical overexposure. If no phone is available, transport the person to the nearest hospital. Refer to the map in section 11.2.1.
4. When transporting an injured person to a hospital, bring this Health and Safety Plan with the attached MSDS to assist medical personnel with diagnosis and treatment.

9.4.2 Chemical Overexposure

In all cases of chemical overexposure, follow standard procedures as outlined below for poison management, first aid, and, if applicable, cardiopulmonary resuscitation. Different routes of exposure and their respective first aid/poison management procedures are outlined below.

Ingestion	Do not induce vomiting unless prompted by a health professional. Transport person to nearest hospital immediately.
Inhalation / Confined Space	Do not enter a confined space to rescue someone who has been overcome unless properly equipped and a standby person present.

Inhalation / Other	Move the person from the contaminated environment. Initiate CPR if necessary. Call or have someone call for medical assistance. Refer to MSDS for additional specific information. If necessary, transport the victim to the nearest hospital as soon as possible.
Skin Contact / Non-Caustic Contaminant (Petroleum, Gasoline, etc.)	Wash off skin with a large amount of water immediately. Remove any affected clothing and rewash skin using soap, if available. Transport person to a medical facility if necessary.
Skin Contact / Corrosive Contaminant (Acids, Hydrogen Peroxide, etc.)	Wash off skin with a large amount of water immediately. Remove any affected clothing and rewash skin with water. Transport person to a medical facility if necessary.
Eyes	Hold eyelids open and rinse the eyes immediately with large amounts of water for 15 minutes. Never permit the eyes to be rubbed. Transport person to a medical facility as soon as possible.

9.4.3 First Aid for Injuries Incurred During Field Work

A first aid kit and an emergency eyewash will be available on-site. Field crews, when performing field operations, will carry portable first aid kits that include emergency eye wash stations.

9.4.4 First Aid Equipment List

The first aid kit(s) kept at the site will consist of a weatherproof container with individually sealed packages for each type of item.

The kit will include at least the following items:

- Gauze roller bandages, 1-inch and 2-inch
- Gauze compress bandages, 4-inch
- Gauze pads, 2-inch
- Adhesive tape, 1-inch
- Bandage, 1-inch
- Butterfly bandages
- Triangular bandages, 40-inch
- Ampules of ammonia inhalants
- Antiseptic applicators or swabs
- Burn dressing and sterilized towels

- Surgical scissors
- Eye dressing
- Portable emergency eye wash
- Emergency oxygen supply
- Alcohol
- Hydrogen peroxide
- Clinical grade thermometer
- Tourniquet

9.4.5 Other Emergency Equipment

One portable fire extinguisher with a rating (ratio) of 20 pound A/B/C and one portable fire extinguisher with a rating of 2A will be conspicuously and centrally located between the restricted and non-restricted zones. In addition, similar extinguishers of the same size and class will be located in the site office trailer so that maximum travel distance to the nearest unit shall not exceed 50 feet. Portable extinguishers will be properly tagged with inspection dates and maintained in accordance with standard maintenance procedures for portable fire extinguishers. Field personnel will be trained in fire extinguisher use before field operations begin.

An emergency at any part of the site, such as fire or chemical release, might require that some appropriately trained site workers direct traffic on or near the site.
The following safety equipment to be used for traffic should be kept readily available on site in the field office:

- reflective/fluorescent vests
- flares
- traffic cones (and flags, or the equivalent, as needed)
- hazard tape (barricades as needed)
- working flashlights

9.5 Record of Injuries Incurred On-Site

9.5.1 Occupational Injuries and Illnesses Form (OSHA 200)

All occupational injuries and illnesses that are required to be recorded under the Occupational Safety and Health Act will be registered on OSHA Form 200 (see **Appendix C**). The site safety supervisor will record occupational injuries and illnesses within 48 hours of occurrence, as required by statute.

9.5.2 Employer's First Report of Injury

The site safety supervisor for all accidents involving work injury at the site will complete this form (Appendix D). Follow-up procedures will include investigation of each accident or near-miss by the safety supervisor to assure that no similar accidents occur in the future.

Appendix A:
Acknowledgment Statement

DATE	EMPLOYEE NAME	SAFETY OFFICER/SUPERVISOR	ACKNOLEDGEMENT THAT YOU HAVE READ AND UNDERSTSAND THE HASP SUPPLEMENT – TARGET SAFETY TOPIC FOR CONSTRUCTION PERSONNEL

Appendix B:
OSHA Respirator Medical Evaluation Questionnaire

Attachment 4
Appendix C to 1910.134:OSHA Respirator Medical Evaluation Questionnaire (Mandatory)

To the employer: Answers to questions in Section 1, and to question 9 in Section 2 of Part A, do not require a medical examination.

To the employee:
Can you read (circle one): Yes No
Your employer must allow you to answer this questionnaire during normal working hours, or at a time and place
that is convenient to you. To maintain your confidentiality, your employer or supervisor must not look at or review your answers, and your employer must tell you how to deliver or send this questionnaire to the health
care professional who will review it.
Part A. Section 1. (Mandatory) The following information must be provided by every employee who has been
selected to use any type of respirator (please print).
1. Today's date:_____
2. Your name:_____
3. Your age (to nearest year):_____
4. Sex (circle one): Male Female
5. Your height: _____ ft. _____ in.
6. Your weight: _____ lbs.
7. Your job title:_____
8. A phone number where you can be reached by the health care professional who reviews this questionnaire
(include the Area Code): _____
9. The best time to phone you at this number: _____
10. Has your employer told you how to contact the health care professional who will review this questionnaire
(circle one): . . . . . Yes No
11. Check the type of respirator you will use (you can check more than one category):
a. _____ N, R, or P disposable respirator (filter-mask, non-cartridge type only).
b. _____ Other type (for example, half- or full-facepiece type, powered-air purifying, supplied-air, self-contained
breathing apparatus).
12. Have you worn a respirator (circle one): . . . . . Yes No
If "yes," what
type(s):_____
_____
_____

Part A. Section 2. (Mandatory) Questions 1 through 9 below must be answered by every employee who has been
selected to use any type of respirator (please circle "yes" or "no").

1. Do you currently smoke tobacco, or have you smoked tobacco in the last month: . . . . . Yes No

2. Have you ever had any of the following conditions?

a. Seizures (fits): . . . . . Yes No
b. Diabetes (sugar disease): . . . . . Yes No
c. Allergic reactions that interfere with your breathing: . . . . . Yes No
d. Claustrophobia (fear of closed-in places): . . . . . Yes No
e. Trouble smelling odors (except when you had a cold): . . . . . Yes No

3. Have you ever had any of the following pulmonary or lung problems?

a. Asbestosis: . . . . . Yes No
b. Asthma: . . . . . Yes No
c. Chronic bronchitis: . . . . . Yes No
d. Emphysema: . . . . . Yes No
e. Pneumonia: . . . . . Yes No
f. Tuberculosis: . . . . . Yes No
g. Silicosis: . . . . . Yes No
h. Pneumothorax (collapsed lung): . . . . . Yes No
i. Lung cancer: . . . . . Yes No
j. Broken ribs: . . . . . Yes No
k. Any chest injuries or surgeries: . . . . . Yes No
l. Any other lung problem that you've been told about: . . . . . Yes No

4. Do you currently have any of the following symptoms of pulmonary or lung illness?

a. Shortness of breath: . . . . . Yes No
b. Shortness of breath when walking fast on level ground or walking up a slight hill or incline: Yes No
c. Shortness of breath when walking with other people at an ordinary pace on level ground: . . Yes No
d. Have to stop for breath when walking at your own pace on level ground: . . . . . Yes No
e. Shortness of breath when washing or dressing yourself: . . . . . Yes No
f. Shortness of breath that interferes with your job: . . . . . Yes No
g. Coughing that produces phlegm (thick sputum): . . . . . Yes No
h. Coughing that wakes you early in the morning: . . . . . Yes No
i. Coughing that occurs mostly when you are lying down: . . . . . Yes No
j. Coughing up blood in the last month: . . . . . Yes No
k. Wheezing: . . . . . Yes No
l. Wheezing that interferes with your job: . . . . . Yes No
m. Chest pain when you breathe deeply: . . . . . Yes No
n. Any other symptoms that you think may be related to lung problems: . . . . . Yes No

5. Have you ever had any of the following cardiovascular or heart problems?

a. Heart attack: . . . . . Yes No
b. Stroke: . . . . . Yes No
c. Angina: . . . . . Yes No
d. Heart failure: . . . . . Yes No
e. Swelling in your legs or feet (not caused by walking): . . . . . Yes No
f. Heart arrhythmia (heart beating irregularly): . . . . . Yes No
g. High blood pressure: . . . . . Yes No
h. Any other heart problem that you've been told about: . . . . . Yes No

6. Have you ever had any of the following cardiovascular or heart symptoms?
a. Frequent pain or tightness in your chest: . . . . . Yes No
b. Pain or tightness in your chest during physical activity: . . . . . Yes No
c. Pain or tightness in your chest that interferes with your job: . . . . . Yes No
d. In the past two years, have you noticed your heart skipping or missing a beat: . . . . . Yes No
e. Heartburn or indigestion that is not related to eating: . . . . . Yes No
f. Any other symptoms that you think may be related to heart or circulation problems: . . . . . Yes No
7. Do you currently take medication for any of the following problems?
a. Breathing or lung problems: . . . . . Yes No
b. Heart trouble: . . . . . Yes No
c. Blood pressure: . . . . . Yes No
d. Seizures (fits): . . . . . Yes No
8. Has your wearing a respirator caused any of the following problems? (If you've never used a respirator, check the following space __ and go to question 9:)
a. Eye irritation: . . . . . Yes No
b. Skin allergies or rashes: . . . . . Yes No
c. Anxiety that occurs only when you use the respirator: . . . . . Yes No
d. Unusual weakness or fatigue: . . . . . Yes No
e. Any other problem that interferes with your use of a respirator: . . . . . Yes No
9. Would you like to talk to the health care professional who will review this questionnaire about your answers
to this questionnaire: . . . . . Yes No
Questions 10 to 15 below must be answered by every employee who has been selected to use either a full-facepiece respirator or a self-contained breathing apparatus (SCBA). For employees who have been
selected to use other types of respirators, answering these questions is voluntary.
10. Have you ever lost vision in either eye (temporarily or permanently): . . . . . Yes No
11. Do you currently have any of the following vision problems?
a. Wear contact lenses: . . . . . Yes No
b. Wear glasses: . . . . . Yes No
c. Color blind: . . . . . Yes No
d. Any other eye or vision problem: . . . . . Yes No
12. Have you ever had an injury to your ears, including a broken ear drum: . . . . . Yes No
13. Do you currently have any of the following hearing problems?
a. Difficulty hearing: . . . . . Yes No
b. Wear a hearing aid: . . . . . Yes No
c. Any other hearing or ear problem: . . . . . Yes No
14. Have you ever had a back injury: . . . . . Yes No
15. Do you currently have any of the following musculoskeletal problems?
a. Weakness in any of your arms, hands, legs, or feet: . . . . . Yes No
b. Back pain: . . . . . Yes No
c. Difficulty fully moving your arms and legs: . . . . . Yes No
d. Pain or stiffness when you lean forward or backward at the waist: . . . . . Yes No
e. Difficulty fully moving your head up or down: . . . . . Yes No
f. Difficulty fully moving your head side to side: . . . . . Yes No
g. Difficulty bending at your knees: . . . . . Yes No
h. Difficulty squatting to the ground: . . . . . Yes No

i. Difficulty climbing a flight of stairs or a ladder carrying more than 25 lbs: . . . . . Yes No
j. Any other muscle or skeletal problem that interferes with using a respirator: . . . . . Yes No

Part B Any of the following questions, and other questions not listed, may be added to the questionnaire at
the discretion of the health care professional who will review the questionnaire.

1. In your present job, are you working at high altitudes (over 5,000 feet) or in a place that has lower than normal
amounts of oxygen: . . . . . Yes No
If "yes," do you have feelings of dizziness, shortness of breath, pounding in your chest, or other symptoms when you're working under these conditions: . . . . . Yes No

2. At work or at home, have you ever been exposed to hazardous solvents, hazardous airborne chemicals (e.g.,
gases, fumes, or dust), or have you come into skin contact with hazardous chemicals: . . . . . Yes No
If "yes," name the chemicals if you know them:_____
_____
_____

3. Have you ever worked with any of the materials, or under any of the conditions, listed below:
a. Asbestos: . . . . . Yes No
b. Silica (e.g., in sandblasting): . . . . . Yes No
c. Tungsten/cobalt (e.g., grinding or welding this material): . . . . . Yes No
d. Beryllium: . . . . . Yes No
e. Aluminum: . . . . . Yes No
f. Coal (for example, mining): . . . . . Yes No
g. Iron: . . . . . Yes No
h. Tin: . . . . . Yes No
i. Dusty environments: . . . . . Yes No
j. Any other hazardous exposures: . . . . . Yes No
If "yes," describe these
exposures:_____
_____
___
_____
___

4. List any second jobs or side businesses you
have:_____
_____
____

5. List your previous
occupations:_____
_____
_____

6. List your current and previous
hobbies:_____
_____
_____

7. Have you been in the military services? . . . . . Yes No
If "yes," were you exposed to biological or chemical agents (either in training or combat): . . . . . Yes No

8. Have you ever worked on a HAZMAT team? . . . . . Yes No

9. Other than medications for breathing and lung problems, heart trouble, blood pressure, and seizures mentioned earlier in this questionnaire, are you taking any other medications for any reason (including over-the-counter medications): . . . . . Yes No
If "yes," name the medications if you know
them:_____
10. Will you be using any of the following items with your respirator(s)?
a. HEPA Filters: . . . . . Yes No
b. Canisters (for example, gas masks): . . . . . Yes No
c. Cartridges: . . . . . Yes No
11. How often are you expected to use the respirator(s) (circle "yes" or "no" for all answers that apply to you)?:
a. Escape only (no rescue): . . . . . Yes No
b. Emergency rescue only: . . . . . Yes No
c. Less than 5 hours per week: . . . . . Yes No
d. Less than 2 hours per day: . . . . . Yes No
e. 2 to 4 hours per day: . . . . . Yes No
f. Over 4 hours per day: . . . . . Yes No
12. During the period you are using the respirator(s), is your work effort:
a. Light (less than 200 kcal per hour): . . . . . Yes No
If "yes," how long does this period last during the average shift:_____hrs._____mins.
Examples of a light work effort are sitting while writing, typing, drafting, or performing light assembly work; or
standing while operating a drill press (1-3 lbs.) or controlling machines.
b. Moderate (200 to 350 kcal per hour): . . . . . Yes No
If "yes," how long does this period last during the average shift:_____hrs._____mins.
Examples of moderate work effort are sitting while nailing or filing; driving a truck or bus in urban traffic; standing while drilling, nailing, performing assembly work, or transferring a moderate load (about 35 lbs.) at
trunk level; walking on a level surface about 2 mph or down a 5-degree grade about 3 mph; or pushing a wheelbarrow with a heavy load (about 100 lbs.) on a level surface.
c. Heavy (above 350 kcal per hour): . . . . . Yes No
If "yes," how long does this period last during the average shift:_____hrs._____mins.
Examples of heavy work are lifting a heavy load (about 50 lbs.) from the floor to your waist or shoulder; working
on a loading dock; shoveling; standing while bricklaying or chipping castings; walking up an 8-degree grade
about 2 mph; climbing stairs with a heavy load (about 50 lbs.).
13. Will you be wearing protective clothing and or equipment (other than the respirator) when you're using your
respirator: . . . . . Yes No
If "yes," describe this protective clothing and or
equipment:_____
_____
____
14. Will you be working under hot conditions (temperature exceeding 77 deg. F): . . . . . Yes No
15. Will you be working under humid conditions: . . . . . Yes No

16. Describe the work you'll be doing while you're using your respirator(s):
_____
_____
_____
_____

17. Describe any special or hazardous conditions you might encounter when you're using your respirator(s) (for
example, confined spaces, life-threatening gases):
_____
_____
_____
_____

18. Provide the following information, if you know it, for each toxic substance that you'll be exposed to when
you're using your respirator(s):
Name of the first toxic substance:_____
Estimated maximum exposure level per shift:_____
Duration of exposure per shift_____
Name of the second toxic substance:_____
Estimated maximum exposure level per shift:_____
Duration of exposure per shift:_____
Name of the third toxic substance:_____
Estimated maximum exposure level per shift:_____
Duration of exposure per shift:_____
The name of any other toxic substances that you'll be exposed to while using your respirator:
_____
_____
_____

19. Describe any special responsibilities you'll have while using your respirator(s) that may affect the safety and
well-being of others (for example, rescue, security):
_____
_____
_____

Apéndice C: Cuestionario de Evaluación Médico obligado por la OSHA
(La agencia de seguridad y salud ocupacional)
Parte 29 CFR 1910.134 Mandatorio para Proteccion del Sistema Respiratorio

Marque con un circulo para indicar sus respuestas a cada pregunta.
Para el empleado: Puede usted leer (circule uno): Sí o No
Su patrón debe dejarlo responder estas preguntas durante horas de trabajo o en un tiempo y lugar que sea conveniente para usted. Para mantener este cuestionario confidencial, su patrón o supervisor no debe ver o revisar sus respuestas. Su patrón debe informarle a quien dar o enviar este cuestionario para ser revisado por un
profesional de sanidad con licencia autorizado por el estado.

Parte A. Sección 1. (Mandatorio). La siguiente información debe de ser proveida por cada empleado que ha
sido seleccionado para usar cualquier tipo de respirador (escriba claro por favor).

1. Fecha :_____
2. Nombre:_____
3. Edad:_____
4. Su sexo (circule uno) Masculino o Femenino
5. Altura: _____pies _____pulgadas
6. Peso: _____libras
7. Su ocupación, título o tipo de trabajo: _____
8. Número de teléfono al donde pueda ser llamado por un profesional de sanidad con licencia que revisara este cuestionario (incluya el área):_____
9. Indique la hora mas conveniente para llamarle a este numero:_____
10. ¿Le ha informado su patrón como comunicarse con el profesional de sanidad con licencia que va a revisar
este cuestionario (circule una respuesta)? . . . . . Sí o No
11. Anote el tipo de equipo protector respíratorio que va utilizar (puede anotar mas de una categoría)
a._____ Respirador disponible de clase N, R, o P (por ejemplo: respirador de filtro mécanico, respirador sin
cartucho)
b._____ Otros tipos (respirador con cartucho químico, máscara con cartucho químico, máscara con manguera con soplador (PAPR),máscara con manguera sin soplador (SAR), aparato respiratorio autónomos (SCBA)).
12. ¿Ha usado algun tipo de respirador ? . . . . . Sí o No

Si ha usado equipo protector respíratorio, que tipo(s) ha utilizado:
_____
_____

Parte A. Seccion 2. (Mandatorio): Preguntas del 1 al 9 deben ser contestadas por cada empleado que fue seleccionado a usar cualquier tipo de respirador. Marque con un circulo para indicar sus repuestas.

1. ¿Corrientemente fuma tabaco, o ha fumado tabaco durante el ultimo mes? . . . . . Sí o No

2. ¿Ha tenido algunas de las siguientes condiciones medicas?

a. Convulsiones : . . . . . Sí o No
b. Diabetes (azucar en la sangre): . . . . . Sí o No
c. Reacciones alergicas que no lo deja respirar: . . . . . Sí o No
d. Claustrofobia (miedo de estar en espacios cerrados): . . . . . Sí o No
e. Dificultad oliendo excepto cuando ha cogido un resfriado: . . . . . Sí o No

3. ¿Ha tenido algunas de los siguientes problemas pulmonares?

a. Asbestosis: . . . . . Sí o No
b. Asma: . . . . . Sí o No
c. Bronquitis cronica: . . . . . Sí o No
d. Emfisema: . . . . . Sí o No
e. Pulmonía: . . . . . Sí o No
f. Tuberculosis: . . . . . Sí o No
g. Silicosis: . . . . . Sí o No
h. Neumotorax (pulmon colapsado): . . . . . Sí o No
i. Cáncer en los pulmones: . . . . . Sí o No
j. Costillas quebradas: . . . . . Sí o No
k. Injuria o cirujía en el pecho: . . . . . Sí o No
l. Algun otro problema de los pulmones que le ha dicho su medico: . . . . . Sí o No

4. ¿Corrientemente tiene alguno de los siguientes síntomas o enfermedades en sus pulmones?

a. Respiración dificultosa . . . . . Sí o No
b. Respiración dificultosa cuando camina rapido sobre terreno plano o subiendo una colina: Sí o No
c. Respiración dificultosa cuando camina normalmente con otras personas sobre terreno plano: Sí o No
d. Cuando camina normalmente en terreno plano se encuentra corto de resuello? . . . . . Sí o No
e. Respiración dificultosa cuando se esta bañando o vistiendo: . . . . . Sí o No
f. Respiración dificultosa que lo impede trabajar: . . . . . Sí o No
g. Tos con flema: . . . . . Sí o No
h. Tos que lo despierta temprano en la mañana: . . . . . Sí o No
i. Tos que occure cuando esta acostado: . . . . . Sí o No
j. Ha tosido sangre en el ultimo mes: . . . . . Sí o No
k. Silbar o respirar con mucha dificultad: . . . . . Sí o No
l. Silbar que lo impede trabajar: . . . . . Sí o No
m. Dolor del pecho cuando respira profundamente: . . . . . Sí o No
n. Otros símtomas que crea usted estar relacionados a los pulmones: . . . . . Sí o No

5. ¿Ha tenido algunos de los siguientes problemas con el corazón?

a. Ataque cardiaco: . . . . . Sí o No
b. Ataque cerebrovascular: . . . . . Sí o No
c. Dolor en el pecho: . . . . . Sí o No
d. Falla de corazón: . . . . . Sí o No
e. Hinchazón en las piernas o pies (que no sea por caminar): . . . . . Sí o No
f. Latidos irregulares del corazón: . . . . . Sí o No
g. Alta presión: . . . . . Sí o No
h. Algun otro problema cardio-vascular o cardiaco: . . . . . Sí o No

6. ¿Ha tenido algunos de los siguientes síntomas causados por su corazón?

a. Dolor de pecho frecuente o pecho apretado: . . . . . Sí o No
b. Dolor o pecho apretado durante actividad fisica: . . . . . Sí o No

c. Dolor o pecho apretado que no lo deja trabajar normalmente: . . . . . Sí o No
d. En los ultimos dos años ha notado que su corazón late irregularmente: . . . . . Sí o No
e. Dolor en el pecho o indigestion que no es relacionado a la comida: . . . . . Sí o No
f. Algunos otros síntomas que usted piensa ser causado por problemas de su corazón o de su circulation.
. . . . . Sí o No
7. ¿Esta tomando medicina por algunso de los siguientes problemas?
a. Respiración dificultosa: . . . . . Sí o No
b. Problemas del corazón: . . . . . Sí o No
c. Alta presión : . . . . . Sí o No
d. Convulsiones: . . . . . Sí o No
8. ¿Le ha causado alguno de los siguientes problemas usando el respirador? (si no ha usado un respirador, deje
esta pregunta en blanco__ y continue con pregunta 9).
a. Irritación de los ojos: . . . . . Sí o No
b. Alergias del cutis o sarpullido: . . . . . Sí o No
c. Ansiedad que ocurre solamente cuando usa el respirado: . . . . . Sí o No
d. Debilidad, falta de vigor o fatiga desacostumbrada: . . . . . Sí o No
e. Algun otro problema que le impida utilizar su respirador: . . . . . Sí o No
9. ¿Le gustaria hablar con el profesional de sanidad con licencia autorizado por el estado que revisara este cuestionario sobre sus respuestas? . . . . . Sí o No

Las preguntas del 10 al 15 deben ser contestadas por los empleados seleccionados para usar una máscara
con cartucho químico o aparato respiratorio autónomo (SCBA). Los empleados que usan otro tipo de respirador no tienen que contestar estas preguntas.

10. ¿Ha perdido la vista en cualquiera de sus ojos (temporalmente o permanente): . . . . . Sí o No
11. ¿Corrientemente tiene algunos de los siguientes problemas con su vista?
a. Usa lentes de contacto: . . . . . Sí o No
b. Usa lentes: . . . . . Sí o No
c. Daltoniano (dificultad distinguiendo colores): . . . . . Sí o No
d. Tiene algún problema con sus ojos o su vista: . . . . . Sí o No
12. ¿Ha tenido daño en sus oidos incluyendo rotura del tímpano: . . . . . Sí o No
13. ¿Corrientemente tiene uno de las siguientes problemas para oir?
a. Dificultad oyendo: . . . . . Sí o No
b. Usa un aparato para oir: . . . . . Sí o No
c. Tiene algun otro problema con sus oidos o dificultad escuchando: . . . . . Sí o No
14. ¿Se ha dañado o lastimado su espalda? . . . . . Sí o No
15. ¿Tiene uno de los siguientes problemas de su aparato muscular or eskeleto?
a. Debilidad en sus brazos, manos, piernas o pies : . . . . . Sí o No
b. Dolor de espalda: . . . . . Sí o No
c. Dificultad para mover sus brazos y piernas completamente: . . . . . Sí o No
d. Dolor o engarrotamiento cuando se inclina para adelante o para atras: . . . . . Sí o No
e. Dificultad para mover su cabeza para arriba o para abajo completamente: . . . . . Sí o No
f. Dificultad para mover su cabeza de lado a lado: . . . . . Sí o No
g. Dificultad para agacharse doblando sus rodillas: . . . . . Sí o No
h. Dificultad para agacharse hasta tocar el piso: . . . . . Sí o No
i. Dificultad subiendo escaleras cargando mas de 25 libras: . . . . . Sí o No
j. Alguno problema muscular o con sus huesos que le evite usar un respirador: . . . . . Sí o No

Parte B - Las siguientes preguntas pueden ser agregadas al cuestionario a discrecion del profesional de
sanidad con licencia autorizado por el estado.

1. ¿Esta trabajando en las alturas arriba de 5,000 pies o en sitios que tienen menos oxígeno de lo normal? . . . . . Sí o No

Si la respuesta es "Sí", se ha sentido mareado, o ha tenido dificultad respirando, palpitaciones, o cualquier otro
síntoma que usted no tiene cuando no esta trabajando bajo estas condiciones: . . . . . Sí o No

2. ¿En el trabajo o en su casa, ha estado expuesto a solventes o contaminantes peligrosos en el aire (por ejemplo,
humos, neblina o polvos) o ha tenido contacto del cutis con químicas peligrosas? . . . . . Sí o No

Escriba las químicas y productos con las que ha estado expuesto, si sabe cuales
son:_____

3. ¿Ha trabajado con los siguientes materiales o las condiciones anotadas abajo?:

a. Asbestos: . . . . . Sí o No
b. Sílice (Limpiar mediante un chorro de arena): . . . . . Sí o No
c. Tungsteno/Cobalto (pulverizar o soldadura): . . . . . Sí o No
d. Berilio: . . . . . Sí o No
e. Aluminio: . . . . . Sí o No
f. Carbón de piedra (minando): . . . . . Sí o No
g. Hierro: . . . . . Sí o No
h. Estaño: . . . . . Sí o No
i. Ambiente polvoriento: . . . . . Sí o No
j. Otra exposicion peligrosa: . . . . . Sí o No

Describa las exposiciones peligrosas:
_____
_____

4. ¿Tiene usted otro trabajo o un negocio aparte de este?
_____
_____

5. Apunte su previos trabajos:
_____

6. Apunte sus pasatiempos:
_____
_____

7. ¿Tiene servicio militar? . . . . . Sí o No

Si la respuesta es "Sí", ha estado expuesto a agentes químicos o biologicos durante entrenamiento o
combate: . . . . . Sí o No

8. ¿Alguna vez ha trabajado en un equipo de HAZMAT (equipo respondedor a incidentes de materiales
peligosos con emergencia)? . . . . . Sí o No

9. ¿Esta tomando alguna medicina que no haya mencionado en este cuestionario (incluyendo remedios caseros o
medicinas que compra sin receta)? . . . . . Sí o No
Si la respuesta es "Sí", cuales son_____
10. ¿Va a usar algunas de las siguientes partes con su respirador?
a. filtros HEPA (filtro de alta eficiencia que remueve partículas tóxicas en la atmósfera): . . . . Sí o No
b. Canastillo (por ejemplo, máscara para gas): . . . . . Sí o No
c. Cartuchos: . . . . . Sí o No
11. ¿Cuántas veces espera usar un respirador?
a. Para salir de peligro solamente (no rescates): . . . . . Sí o No
b. Recates de emergencia solamente: . . . . . Sí o No
c. Menos de 5 horas *por semana*: . . . . . Sí o No
d. Menos de 2 horas *por día*: . . . . . Sí o No
e. 2 a 4 horas *por día*: . . . . . Sí o No
f. Mas de 4 horas *por día*: . . . . . Sí o No
12. ¿Durante el tiempo de usar el respirador, su trabajo es...?
a. **Ligero** (menos de 200 kcal por hora): . . . . . Sí o No
Si la respuesta es "sí", cuanto tiempo dura la obra _____horas _____minutos
Ejemplos de trabajos ligeros: estar sentado escribiendo, escribiendo a máquina, diseñando, trabajando la línea de
montaje, o estar parado gobernando un taladro o máquinas:
b. **Moderado** (200-350 kcal por hora): . . . . . Sí o No
Si la respuesta es "sí"cuanto tiempo dura en promedio por jornada _____horas_____minutos
Ejemplos de trabajos moderados : sentado clavando o archivando; manejando un camión o autobús en trafico
pesado; estar de pie taladrando, clavando, trabajando la línea de montaje, o transferiendo una carga (de 35 libras)
a la altura de la cintura; caminando sobre tierra plana a 2 millas por hora o bajando a 3 millas por hora; empujando una carretilla con una carga pesada (de 100 libras) sobre terreno plano.
c. **Pesado** (mas de 350 kcal por hora): . . . . . Sí o No
Si la respuesta es "sí"cuanto tiempo dura en promedio por jornada _____horas_____minutos
Ejemplos de trabajos pesados: levantando cargas pesadas (mas de 50 libras) desde el piso hasta la altura de la
cintura o los hombros; trabajando cargando o descargando; transpalear; estar de pie trabajando de albañil o demenuzando moldes; subiendo a 2 millas por hora; subiendo la escalera con una carga pesada (mas de 50 libras).
13. ¿Va a estar usando ropa o equipo protectivo cuando use el respirador? . . . . . Sí o No
Si la respuesta es "sí" describa que va a estar
usando_____
_____
14. ¿Va a estar trabajando en condiciones calurosas (temperatura mas de 77 grados F)? . . . . . Sí o No
15. ¿Va a estar trabajando en condiciones humedas? . . . . . Sí o No

16. Describa el tipo de trabajo que va a estar usted haciendo cuando use el respirador.
_____
_____

17. Describa cualquier situacion especial o peligrosa que pueda encontrar cuando este usando el respirador (por
ejemplo, espacios encerrados, gases que lo puedan matar, etc.)
_____

18. Provea la siguiente informacion si la sabe, por cada sustancia tóxica que usted va a estar expuesto cuando
este usando el respirador(s):
Nombre de la primera sustancia tóxica_____
Maximo nivel de exposición por jornada de trabajo_____
Tiempo de exposición por jornada_____
Nombre de la segunda sustancia tóxica_____
Maximo nivel de exposición por jornada de trabajo_____
Tiempo de exposición por jornada_____
Nombre de la tercera sustancia tóxica_____
Máximo nivel de exposición por jornada de trabajo_____
Tiempo de exposición por jornada_____
El nombre de cualquier sustancia tóxica que usted va a estar expuesto cuando este usted usando el
respirador_____
_____

19. Describa alguna responsabilidad especial que usted va a tener cuando usted este usado el respirador(s) que
pueda afectar la seguridad o la vida de otros (por ejemplo, rescate, seguridad).
_____

Appendix C:

OSHA Form 200-Occupational Injuries & Illnesses

Log and Summary of Occupational Injuries and illnesses

NOTE: This form is required by Public Law 91-596 and must be kept in the establishment for 5 years. Failure to maintain and post can result in issuance of citations and assessment of penalties. (*See posting requirements on the other side of form*)

RECORDABLE CASES: You are required to record information about every occupational death; every nonfatal occupational illness; and those nonfatal occupational injuries which involve one or more of the following: loss of conciousness, restriction of work or motion, transfer to another job, or medical treatment (other than first aid) (*See definitions on the other side of form*)

Case or File Number	Date of Injury or Onset of Illness	Employee's Name	Occupation	Department	Description of Injury or Illness
Enter a nonduplicating number which will facilitate comparisons with supplementary records.	Enter Mo/Day	Enter first name or initial, middle initial, last name	Enter regular job title, not activity employee was performing when injury occurred or at onset of illness. In the absence of a formal title, enter a brief description of the employee's duties.	Enter department in which the employee is regularly employed or a description of normal workplace to which employee is assigned, even though temporarily working in another department at the time of injury or illness.	Enter a brief description of the injury or illness and indicate the part or parts of the body affected. Typical entries for this column might be: Amputation of 1st joint right forefinger; Strain of lower back; Contact dermatitis on both hands; Electrocution - body.
(A)	(B)	(C)	(D)	(E)	(F)
					PREVIOUS PAGE TOTALS =>
					TOTALS (Instructions on other side of form) =>
OSHA No. 200					

U.S. Department of Labor

For Calendar Year _____ Page: _____ of _____

Company Name

Establishment Name

Establishment Address

Form Approved
O.M.B. No. 1218-0176
See OMB Disclosure Statement on reverse.

Extent of and Outcome of Injury						Type, Extent of, and Outcome of Illness												
Fatalities	Nonfatal Injuries					Type of Illness							Fatalities	Nonfatal Illnesses				
Injury Related	Injuries with Lost Workdays				Injuries Without Lost Workdays	CHECK Only One Column for Each Illness (See other side of form for terminations or permanent transfers)							Illness Related	Illnesses with Lost Workdays				Illnesses without Lost Workdays
Enter Date of death. mm/dd/yy	Enter a Check if injury involves DAYS away from work or restricted work activity or both.	Enter a Check if injury involves DAYS away from work.	Enter number of DAYS away from work	Enter number of DAYS of restricted work activity	Enter a Check if no entry was made in column 1 or 2 but the injury is recordable as defined above.	Occupational Skin Disorder or Disease	Dust Disease of the lungs	Respiratory Conditions due to toxic agents	Poisoning (systemic effects of toxic materials)	Disorders due to physical agents	Disorders associated with repeated trauma	All other occupational illnesses	Enter DATE of death, mm/dd/yy	Enter a CHECK if Illness involves DAYS away from work, or DAYS of restricted work activity or both.	Enter a CHECK if Illness involves DAYS away from work.	Enter number of DAYS away from work.	Enter number of DAYS of restricted work activity	Enter a CHECK if no entry was made in columns 8 or 9
						(7)												
(1)	(2)	(3)	(4)	(5)	(6)	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(8)	(9)	(10)	(11)	(12)	(13)

Certification of Annual Summary Totals by: _____ Title: _____ Date: _____

OSHA 200

POST ONLY THIS PORTION OF THE LAST PAGE NO LATER THAN FEBRUARY 1

OMB DISCLOSURE STATEMENT

Public reporting burden for this collection of information is estimated to vary from 4 to 30 (time in minutes) per response with an average of 15 (time in minutes) per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Persons are not required to respond to the collection of information unless it displays a currently valid OMB control number. If you have any comments regarding this estimate or any other aspect of this information collection, including suggestions for reducing this burden, please send them to the OSHA Office of Statistics, Room N-3644, 200 Constitution Avenue, N.W. Washington, D.C. 20210

Instructions for OSHA No. 200

I. Log and Summary of Occupational Injuries and Illnesses

Each employer who is subject to the recordkeeping requirements of the Occupational Safety and Health Act of 1970 must maintain for each establishment, a log of all recordable occupational injuries and illnesses. This form (OSHA No. 200) may be used for that purpose. A substitute for the OSHA No. 200 is acceptable if it is as detailed, easily readable, and understandable as the OSHA No. 200.

Enter each recordable case on the log within six (6) workdays after learning of its occurrence. Although other records must be maintained at the establishment to which they refer, it is possible to prepare and maintain the log at another location, using data processing equipment if desired. If the log is prepared elsewhere, a copy updated to within 45 calendar days must be present at all times in the establishment.

Logs must be maintained and retained for five (5) years following the end of the calendar year to which they relate. Logs must be available (normally at the establishment) for inspection and copying by representatives of the Department of Labor, or the Department of Health and Human Services, or States accorded jurisdiction under the Act. Access to the log is also provided to employees, former employees and their representatives.

II. Changes in Extent of or Outcome of Injury or Illness

If, during the 5-year period the log must be retained, there is a change in an extent and outcome of an injury or illness which affects entries in columns 1, 2, 6, 8, 9, or 13, the first entry should be lined out and a new entry made. For example, if an injured employee at first required only medical treatment but later lost workdays away from work, the check in column 6 should be lined out and checks entered in columns 2 and 3 and the number of lost workdays entered in column 4.

In another example, if an employee with an occupational illness lost wordays, returned to work, and then died of the illness, any entries in columns 9 through 12 would be lined out and the date of death entered in column 8.

The entire entry for an injury or illness should be lined out if later found to be nonrecordable. For example, an injury which is later determined not to be work related, or which was initially thought to involve medical treatement but later was determined to have involved only first aid.

III. Posting Requirements

A copy of the totals and information following the total line of the last page for the year, must be posted at each establishment in the place or places where notices to employees are customarily posted. This copy must be posted no later than February 1 and must remain in place until March 1. Even though there were no injuries or illnessed during the year, zeros must be entered on the totals line, and the form posted.

The person responsible for the annual summary totals shall certify that the totals are true and complete by signing at the bottom of the form.

IV. Instructions for Completing Log and Summary of Occupational injuries and illnesses

Column A - CASE OR FILE NUMBER. Self Expanatory

Column B - DATE OF INJURY OR ONSET OF ILLNESS

For occupational injuries, enter the date of the work accident which resulted in the injury. For occupational illnesses, enter the date of initial diagnosis of illness, or, if absence from work occurred before diagnosis, enter the first day of the absence attributable to the illness which was later diagnosed or recognized.

Columns C through F - Self Explanatory

Columns 1 and 8 - INJURY OR ILLNESS-RELATED DEATHS - Self Explanatory

Columns 2 and 9 - INJURIES OR ILLNESSES WITH LOST WORKDAYS - Self Explanatory

Any injury which involves days away from work, or days of restricted work activitiy, or both, must be recorded since it always involves one or more of the criteria for recordability.

Columns 3 and 10 - INJURIES OR ILLNESSES INVOLVING DAYS AWAY FROM WORK - Self Explanatory

Columns 4 and 11 - LOST WORKDAYS -- DAYS AWAY FROM WORK.
Enter the number of workdays (consecutive or not) on which the employee would have worked but could not because of occupational injury or illness. The number of lost workdays should not include the day of injury or onset of illness or any days on which the employee would not have worked even though able to work. NOTE: For employees not having a regularly scheduled shift, such as certain truck drivers, construction workers, farm labor, casual labor, part-time employees, etc., it may be necessary to estimate the number of lost workdays. Estimates of lost workdays shall be based on prior work history of the employee AND days worked by employees, not ill or injured, working in the department and/or occupation of the ill or injured employee.

Columns 5 and 12 - LOST WORKDAYS -- DAYS OF RESTRICTED WORK ACTIVITY.
Enter the number of workdays (consecutive or not) on which because of injury or illness:
(1) the employee was assigned to another job on a temporary basis, or
(2) the employee worked at a permanent job less than full time, or
(3) the employee worked at a permanently assigned job but could not perform all duties normally connected with it.

The number of lost workdays should not include the day of injury or onset of illness or any days on which the employee would not have worked even though able to work.

Columns 6 and 13 - INJURIES OR ILLNESSES WITHOUT LOST WORKDAYS - Self Explanatory

Columns 7a through 7g - TYPE OF ILLNESS. Enter a check in only *one* column for each illness.
TERMINATION OR PERMANENT TRANSFER - Place an asterisk to the right of the entry in columns 7a through 7g (type of illness) which represented a termination of employment or permanent transfer.

V. Totals
Add number of entries in columns 1 and 8.
Add number of checks in columns 2, 3, 6, 7, 9, 10 and 13.
Add number of days in columns 4, 5, 11 and 12.
Yearly totals for each column (1-13) are required for posting. Running or page totals may be generated at the discretion of the employer.

In an employee's loss of workdays is continuing at the time the totals are summarized, estimate the number of future workdays the employee will lose and add that estimate to the workdays already lost and include this figure in the annual totals. No further entries are to be made with respect to such cases in the next year's log.

VI. Definitions
OCCUPATIONAL INJURY is any injury such as a cut, fracture, sprain, amputation, etc. which results from a work accident or from an exposure involving a single incident in the work environment. NOTE: Conditions resulting from animal bites, such as insect or snake bites or from one-time exposure to chemicals, are considered to be injuries.

OCCUPATIONAL ILLNESS of an amployee is any abnormal condition or disorder, other than one resulting from an occupational injury, caused by exposure to environmental factors associated with employment. It includes acute and chronic illnesses or diseases which may be caused by inhalation, absorption, ingestion, or direct contact.

The following listing gives the categories of occupational illnesses and disorders that will be utilized for the purpose of classifying recordable illnesses. For porposes of information, examples of each category are given. These are typical examples, however, and are not to be considered the complete listing of the types of illnesses and disorders that are to be counted under each category.

7a. Occupational Skin Diseases or Disorders. Examples: Contact dermatitis, eczema, or rash caused by primary irritants and sensitizers or poisonous plants; oil acne; chrome ulcers; chemical burns or inflamation, etc.

7b. Dust Diseases of the Lungs (Pneumaconioses). Examples: Silicosis, asbestosis and other asbestos-related diseases, coal worker's pneumaconioses, byssinosis, siderosis, and other pneumaconioses.

7c. Respiratory Conditions Due to Toxic Agents. Examples: Pneumonitis, pharyngitis, rhinitis or acute congestion due to chemicals, dusts, gases, or fumes; farmer's lung; etc.

7d. Poisoning (Systemic Effects of Toxic Materials). Examples: Poisoning by lead, mercury, cadmium, arsenic, or other metals; poisoning by

carbon monoxide, hydrogen sulfide, or other gases; poisoning by benzol, carbon tetrachloride, or other organic solvents; poisoning by insecticide sprays such as parathion, lead arsenate; poisoning by other chemicals such as formaldehyde, plastics, and resins; etc.

7e. Disorders Due to Physical Agents (Other than Toxic Materials). Examples: Heatstroke, sunstroke, heat exhaustion, and other effects of environmental heat, freezing, frostbite, and effects of exposure to low temperatures; caisson disease; effects of ionizing radiation (isotopes, X-rays, radium); effects of nonionizing radiation (welding flash, ultraviolet rays, microwaves, sunburn); etc.

7f. Disorders Associated with Repeated Trauma. Examples: Noise-induced hearing loss; synovitis, tenosynovitis, and bursitis. Raynaud's phenomena; and other conditions due to repeated motion, vibration, or pressure.

7g. All Other Occupational Illnesses. Examples: Anthrax, brucellosis, infectious hepatitis, malignant and benign tumors, food poisoning, histoplasmosis, coccidioidomycosis, etc.

MEDICAL TREATMENT includes treatment (other than first aid) administered by a physician or by registered professional personnel under the standing orders of a physician. Medical treatment does NOT include first aid treatment (one-time treatment and subsequent observation of minor scratches, cuts, burns, splinters, and so forth, which do not ordinarily require medical care) even though provided by a physician or registered professional personnel.

ESTABLISHMENT: A single physical location where business is conducted or where services or industrial operations are performed (for example: a factory, mill, store, hotel, resturant, movie theater, farm, ranch, bank, sales office, warehouse, or central administrative office). Where distinctly separate activities are performed at a single physicial location, such as construction activities operated from the same physical locations as a lumber yard, each activity shall be treated as a separate establishment.

For firms engaged in activities which may be physically dispersed, such as agriculture; construction; transportation; communications and electric, gas, and sanitary services, records may be maintained at a place to which employees report each day.

Records for personnel who do not primarily report or work at a single establishment, such as traveling salesmen, technicians, engineers, etc., shall be maintained at the location from which they are paid or the base from which personnel operate to carry out their activities.

WORK ENVIRONMENT is comprised of the physical location, equipment, materials processed or used, and the kinds of operations performed in the course of an employee's work, wether on or off the employer's premisis.

Appendix D:
MSDS Sheets

SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006
Version 5.0 Revision Date 29.10.2012
Print Date 19.04.2017
GENERIC EU MSDS - NO COUNTRY SPECIFIC DATA - NO OEL DATA

1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1 Product identifiers

Product name	:	Arsenic
Product Number	:	267961
Brand	:	Aldrich
Index-No.	:	033-001-00-X
CAS-No.	:	7440-38-2

1.2 Relevant identified uses of the substance or mixture and uses advised against

Identified uses	:	Laboratory chemicals, Manufacture of substances

1.3 Details of the supplier of the safety data sheet

Company	:	Sigma-Aldrich Israel Ltd. 3 PARK RABIN, PLAUT 7670603 REHOVOT ISRAEL
Telephone	:	+972 8948-4222
Fax	:	+972 8948-4200

1.4 Emergency telephone number

Emergency Phone #	:	+972 (8) 948-4222

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

Classification according to Regulation (EC) No 1272/2008 [EU-GHS/CLP]
Acute aquatic toxicity (Category 1)
Chronic aquatic toxicity (Category 1)
Acute toxicity, Inhalation (Category 3)
Acute toxicity, Oral (Category 3)

Classification according to EU Directives 67/548/EEC or 1999/45/EC
Toxic by inhalation and if swallowed. Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

2.2 Label elements

Labelling according Regulation (EC) No 1272/2008 [CLP]

Pictogram

Signal word: Danger

Hazard statement(s)

H301	Toxic if swallowed.
H331	Toxic if inhaled.
H410	Very toxic to aquatic life with long lasting effects.

Precautionary statement(s)

P261	Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray.
P273	Avoid release to the environment.
P301 + P310	IF SWALLOWED: Immediately call a POISON CENTER or doctor/

	physician.
P311	Call a POISON CENTER or doctor/ physician.
P501	Dispose of contents/ container to an approved waste disposal plant.
Supplemental Hazard Statements	none

According to European Directive 67/548/EEC as amended.

Hazard symbol(s)

R-phrase(s)	
R23/25	Toxic by inhalation and if swallowed.
R50/53	Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
S-phrase(s)	
S20/21	When using do not eat, drink or smoke.
S28	After contact with skin, wash immediately with plenty of soap and water.
S45	In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).
S60	This material and its container must be disposed of as hazardous waste.
S61	Avoid release to the environment. Refer to special instructions/ Safety data sheets.

2.3 Other hazards - none

3. COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substances

Formula : As
Molecular Weight : 74,92 g/mol

Component		Concentration
Arsenic		
CAS-No.	7440-38-2	-
EC-No.	231-148-6	
Index-No.	033-001-00-X	

4. FIRST AID MEASURES

4.1 Description of first aid measures

General advice
Consult a physician. Show this safety data sheet to the doctor in attendance.

If inhaled
If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.

In case of skin contact
Wash off with soap and plenty of water. Take victim immediately to hospital. Consult a physician.

In case of eye contact
Flush eyes with water as a precaution.

If swallowed
Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

4.2 Most important symptoms and effects, both acute and delayed

Absorption into the body leads to the formation of methemoglobin which in sufficient concentration causes cyanosis. Onset may be delayed 2 to 4 hours or longer.

4.3 Indication of any immediate medical attention and special treatment needed

no data available

5. FIREFIGHTING MEASURES

5.1 Extinguishing media

Suitable extinguishing media
Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

5.2 Special hazards arising from the substance or mixture
Arsenic oxides

5.3 Advice for firefighters
Wear self contained breathing apparatus for fire fighting if necessary.

5.4 Further information
no data available

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures
Wear respiratory protection. Avoid dust formation. Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Evacuate personnel to safe areas. Avoid breathing dust.

6.2 Environmental precautions
Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.

6.3 Methods and materials for containment and cleaning up
Pick up and arrange disposal without creating dust. Sweep up and shovel. Keep in suitable, closed containers for disposal.

6.4 Reference to other sections
For disposal see section 13.

7. HANDLING AND STORAGE

7.1 Precautions for safe handling
Avoid contact with skin and eyes. Avoid formation of dust and aerosols.
Provide appropriate exhaust ventilation at places where dust is formed.

7.2 Conditions for safe storage, including any incompatibilities
Store in cool place. Keep container tightly closed in a dry and well-ventilated place.

7.3 Specific end uses
no data available

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters

Components with workplace control parameters

8.2 Exposure controls

Appropriate engineering controls
Avoid contact with skin, eyes and clothing. Wash hands before breaks and immediately after handling the product.

Personal protective equipment

Eye/face protection
Face shield and safety glasses Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

Skin protection
Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

The selected protective gloves have to satisfy the specifications of EU Directive 89/686/EEC and the standard EN 374 derived from it.

Immersion protection
Material: Nitrile rubber
Minimum layer thickness: 0,11 mm
Break through time: > 480 min
Material tested:Dermatril® (Aldrich Z677272, Size M)

Splash protection
Material: Nitrile rubber
Minimum layer thickness: 0,11 mm
Break through time: > 30 min
Material tested:Dermatril® (Aldrich Z677272, Size M)

data source: KCL GmbH, D-36124 Eichenzell, phone +49 (0)6659 873000, e-mail sales@kcl.de, test method: EN374
If used in solution, or mixed with other substances, and under conditions which differ from EN 374, contact the supplier of the CE approved gloves. This recommendation is advisory only and must be evaluated by an Industrial Hygienist familiar with the specific situation of anticipated use by our customers. It should not be construed as offering an approval for any specific use scenario.

Body Protection
Complete suit protecting against chemicals, The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

Respiratory protection
Where risk assessment shows air-purifying respirators are appropriate use a full-face particle respirator type N99 (US) or type P2 (EN 143) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

a)	Appearance	Form: powder Colour: grey
b)	Odour	no data available
c)	Odour Threshold	no data available
d)	pH	no data available
e)	Melting point/freezing point	Melting point/range: 817 °C - lit.
f)	Initial boiling point and boiling range	613 °C - lit.
g)	Flash point	not applicable
h)	Evaporation rate	no data available
i)	Flammability (solid, gas)	no data available
j)	Upper/lower flammability or explosive limits	no data available
k)	Vapour pressure	no data available
l)	Vapour density	no data available
m)	Relative density	5,727 g/mL at 25 °C
n)	Water solubility	no data available
o)	Partition coefficient: n-octanol/water	no data available

p)	Autoignition temperature	no data available
q)	Decomposition temperature	no data available
r)	Viscosity	no data available
s)	Explosive properties	no data available
t)	Oxidizing properties	no data available

9.2 Other safety information
no data available

10. STABILITY AND REACTIVITY

10.1 Reactivity
no data available

10.2 Chemical stability
no data available

10.3 Possibility of hazardous reactions
no data available

10.4 Conditions to avoid
Heat. Exposure to air may affect product quality.

10.5 Incompatible materials
Oxidizing agents, Halogens, Palladium undergoes a violent reaction with arsenic, Zinc, Platinum oxide, Nitrogen trichloride, Bromine azide

10.6 Hazardous decomposition products
Other decomposition products - no data available

11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute toxicity
LD50 Oral - rat - 763 mg/kg
Remarks: Behavioral:Ataxia. Diarrhoea

LD50 Oral - mouse - 145 mg/kg
Remarks: Behavioral:Ataxia. Diarrhoea

Inhalation: no data available

Skin corrosion/irritation
no data available

Serious eye damage/eye irritation
no data available

Respiratory or skin sensitization
no data available

Germ cell mutagenicity
no data available

Carcinogenicity

This is or contains a component that has been reported to be carcinogenic based on its IARC, OSHA, ACGIH, NTP, or EPA classification.

IARC: 1 - Group 1: Carcinogenic to humans (Arsenic)

Reproductive toxicity
no data available

Specific target organ toxicity - single exposure
no data available

Specific target organ toxicity - repeated exposure
no data available

Aspiration hazard
no data available

Potential health effects

Inhalation	Toxic if inhaled. May cause respiratory tract irritation.
Ingestion	Harmful if swallowed.
Skin	May be harmful if absorbed through skin. May cause skin irritation.
Eyes	May cause eye irritation.

Signs and Symptoms of Exposure
Absorption into the body leads to the formation of methemoglobin which in sufficient concentration causes cyanosis. Onset may be delayed 2 to 4 hours or longer.

Additional Information
RTECS: CG0525000

12. ECOLOGICAL INFORMATION

12.1 Toxicity

Toxicity to fish	LC50 - Pimephales promelas (fathead minnow) - 9,9 mg/l - 96,0 h
Toxicity to daphnia and other aquatic invertebrates	EC50 - Daphnia magna (Water flea) - 3,8 mg/l - 48 h

12.2 Persistence and degradability
no data available

12.3 Bioaccumulative potential
no data available

12.4 Mobility in soil
no data available

12.5 Results of PBT and vPvB assessment
no data available

12.6 Other adverse effects
Very toxic to aquatic life with long lasting effects.

13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Product
Offer surplus and non-recyclable solutions to a licensed disposal company. Dissolve or mix the material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber.

Contaminated packaging
Dispose of as unused product.

14. TRANSPORT INFORMATION

14.1 UN number
ADR/RID: 1558 IMDG: 1558 IATA: 1558

14.2 UN proper shipping name
ADR/RID: ARSENIC
IMDG: ARSENIC
IATA: Arsenic

14.3 Transport hazard class(es)

ADR/RID: 6.1	IMDG: 6.1	IATA: 6.1

14.4 Packaging group

ADR/RID: II	IMDG: II	IATA: II

14.5 Environmental hazards

ADR/RID: yes	IMDG Marine pollutant: yes	IATA: no

14.6 Special precautions for user

no data available

15. REGULATORY INFORMATION

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

no data available

15.2 Chemical Safety Assessment

no data available

16. OTHER INFORMATION

Further information

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The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Sigma-Aldrich Corporation and its Affiliates shall not be held liable for any damage resulting from handling or from contact with the above product. See www.sigma-aldrich.com and/or the reverse side of invoice or packing slip for additional terms and conditions of sale.

SAFETY DATA SHEET

Revision Date 19-Jan-2018 **Revision Number** 3

1. Identification

Product Name **1,2-Benzanthracene**

Cat No. : **AC105250000; AC105250010; AC105252500**

Synonyms Benzóa!anthracene; Tetraphene

Recommended Use Laboratory chemicals.
Uses advised against Food, drug, pesticide or biocidal product use.

Details of the supplier of the safety data sheet

Company

Fisher Scientific
One Reagent Lane
Fair Lawn, NJ 07410
Tel: (201) 796-7100

Acros Organics
One Reagent Lane
Fair Lawn, NJ 07410

Emergency Telephone Number
For information **US** call: 001-800-ACROS-01 / **Europe** call: +32 14 57 52 11
Emergency Number **US:**001-201-796-7100 / **Europe:** +32 14 57 52 99
CHEMTREC Tel. No.**US:**001-800-424-9300 / **Europe:**001-703-527-3887

2. Hazard(s) identification

Classification
This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Carcinogenicity	Category 1B

Label Elements

Signal Word
Danger

Hazard Statements
May cause cancer

Precautionary Statements
Prevention
Obtain special instructions before use
Do not handle until all safety precautions have been read and understood
Use personal protective equipment as required
Response
IF exposed or concerned: Get medical attention/advice
Storage
Store locked up
Disposal
Dispose of contents/container to an approved waste disposal plant
Hazards not otherwise classified (HNOC)
Very toxic to aquatic life with long lasting effects
WARNING. Cancer - https://www.p65warnings.ca.gov/.

3. Composition/Information on Ingredients

Component	CAS-No	Weight %
Benz[a]anthracene	56-55-3	99

4. First-aid measures

Eye Contact Immediate medical attention is required. Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes.

Skin Contact Wash off immediately with soap and plenty of water while removing all contaminated clothes and shoes. Immediate medical attention is required.

Inhalation Remove from exposure, lie down. Remove to fresh air. If not breathing, give artificial respiration. Immediate medical attention is required.

Ingestion Call a physician immediately. Clean mouth with water.

Most important symptoms and effects No information available.

Notes to Physician Treat symptomatically

5. Fire-fighting measures

Suitable Extinguishing Media Water spray. Carbon dioxide (CO_2). Dry chemical. Chemical foam.

Unsuitable Extinguishing Media No information available

Flash Point No information available
Method - No information available

Autoignition Temperature Not applicable
Explosion Limits
Upper No data available

Lower	No data available
Sensitivity to Mechanical Impact	No information available
Sensitivity to Static Discharge	No information available

Specific Hazards Arising from the Chemical
Do not allow run-off from fire-fighting to enter drains or water courses.

Hazardous Combustion Products
Carbon monoxide (CO). Carbon dioxide (CO_2).
Protective Equipment and Precautions for Firefighters
As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

NFPA

Health	Flammability	Instability	Physical hazards
0	1	0	N/A

6. Accidental release measures

Personal Precautions	Ensure adequate ventilation. Use personal protective equipment as required.
Environmental Precautions	Do not flush into surface water or sanitary sewer system. Do not allow material to contaminate ground water system. Prevent product from entering drains. Local authorities should be advised if significant spillages cannot be contained.
Methods for Containment and Clean Up	Sweep up and shovel into suitable containers for disposal.

7. Handling and storage

Handling	Do not breathe dust. Do not get in eyes, on skin, or on clothing. Handle product only in closed system or provide appropriate exhaust ventilation.
Storage	Keep in a dry, cool and well-ventilated place. Refer product specification and/or product label for specific storage temperature requirement. Keep container tightly closed.

8. Exposure controls / personal protection

Exposure Guidelines	This product does not contain any hazardous materials with occupational exposure limitsestablished by the region specific regulatory bodies.
Engineering Measures	Ensure adequate ventilation, especially in confined areas.

Personal Protective Equipment

Eye/face Protection	Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.
Skin and body protection	Wear appropriate protective gloves and clothing to prevent skin exposure.
Respiratory Protection	Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.
Hygiene Measures	Handle in accordance with good industrial hygiene and safety practice.

9. Physical and chemical properties

Physical State	Powder Solid

Appearance	Beige
Odor	Odorless
Odor Threshold	No information available
pH	No information available
Melting Point/Range	158 - 161 °C / 316.4 - 321.8 °F
Boiling Point/Range	437.6 °C / 819.7 °F
Flash Point	No information available
Evaporation Rate	Not applicable
Flammability (solid,gas)	No information available
Flammability or explosive limits	
Upper	No data available
Lower	No data available
Vapor Pressure	No information available
Vapor Density	Not applicable
Specific Gravity	No information available
Solubility	No information available
Partition coefficient; n-octanol/water	No data available
Autoignition Temperature	Not applicable
Decomposition Temperature	No information available
Viscosity	Not applicable
Molecular Formula	C18 H12
Molecular Weight	228.29

10. Stability and reactivity

Reactive Hazard None known, based on information available

Stability Stable under normal conditions.

Conditions to Avoid Incompatible products.

Incompatible Materials Strong oxidizing agents

Hazardous Decomposition Products Carbon monoxide (CO), Carbon dioxide (CO_2)

Hazardous Polymerization No information available.

Hazardous Reactions None under normal processing.

11. Toxicological information

Acute Toxicity

Product Information No acute toxicity information is available for this product

Component Information

Toxicologically Synergistic Products No information available

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Irritation No information available

Sensitization No information available

Carcinogenicity The table below indicates whether each agency has listed any ingredient as a carcinogen.

Component	CAS-No	IARC	NTP	ACGIH	OSHA	Mexico
Benz[a]anthracene	56-55-3	Group 2B	Reasonably Anticipated	A2	X	A2

Mutagenic Effects Ames test: positive.

Reproductive Effects No information available.

Developmental Effects No information available.

Teratogenicity No information available.

STOT - single exposure None known
STOT - repeated exposure None known

Aspiration hazard No information available

Symptoms / effects,both acute and delayed No information available

Endocrine Disruptor Information

Component	EU - Endocrine Disrupters Candidate List	EU - Endocrine Disruptors - Evaluated Substances	Japan - Endocrine Disruptor Information
Benz[a]anthracene	Group III Chemical	Not applicable	Not applicable

Other Adverse Effects The toxicological properties have not been fully investigated.

12. Ecological information

Ecotoxicity
The product contains following substances which are hazardous for the environment. Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Component	Freshwater Algae	Freshwater Fish	Microtox	Water Flea
Benz[a]anthracene	Not listed	Not listed	EC50 = 0.26 mg/L 15 min	LC50: = 0.01 mg/L, 96h Static (Daphnia magna) EC50: = 0.0042 mg/L, 48h (Daphnia magna)

Persistence and Degradability May persist

Bioaccumulation/ Accumulation No information available.

Mobility . Is not likely mobile in the environment due its low water solubility.

Component	log Pow
Benz[a]anthracene	5.61

13. Disposal considerations

Waste Disposal Methods Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. Chemical waste generators must also consult local, regional, and national hazardous waste regulations to ensure complete and accurate classification.

Component	RCRA - U Series Wastes	RCRA - P Series Wastes
Benz[a]anthracene - 56-55-3	U018	-

14. Transport information

DOT Not regulated
TDG Not regulated
IATA
- **UN-No** UN3077
- **Proper Shipping Name** ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S.*
- **Hazard Class** 9
- **Packing Group** III

IMDG/IMO
- **UN-No** UN3077
- **Proper Shipping Name** Environmentally hazardous substances, solid, n.o.s.

Hazard Class 9
Packing Group III

15. Regulatory information

United States of America Inventory

Component	CAS-No	TSCA	TSCA Inventory notification - Active/Inactive	TSCA - EPA Regulatory Flags
Benz[a]anthracene	56-55-3	X	ACTIVE	-

Legend:
TSCA - Toxic Substances Control Act, (40 CFR Part 710)
X - Listed
'-' - Not Listed

TSCA 12(b) - Notices of Export Not applicable

International Inventories
Canada (DSL/NDSL), Europe (EINECS/ELINCS/NLP), Philippines (PICCS), Japan (ENCS), Australia (AICS), China (IECSC), Korea (ECL).

Component	CAS-No	DSL	NDSL	EINECS	PICCS	ENCS	AICS	IECSC	KECL
Benz[a]anthracene	56-55-3	-	X	200-280-6	-	-	-	X	-

U.S. Federal Regulations

SARA 313

Component	CAS-No	Weight %	SARA 313 - Threshold Values %
Benz[a]anthracene	56-55-3	99	0.1

SARA 311/312 Hazard Categories See section 2 for more information

CWA (Clean Water Act)

Component	CWA - Hazardous Substances	CWA - Reportable Quantities	CWA - Toxic Pollutants	CWA - Priority Pollutants
Benz[a]anthracene	-	-	-	X

Clean Air Act Not applicable

OSHA - Occupational Safety and Health Administration Not applicable

CERCLA This material, as supplied, contains one or more substances regulated as a hazardous substance under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302)

Component	Hazardous Substances RQs	CERCLA EHS RQs
Benz[a]anthracene	10 lb	-

California Proposition 65 This product contains the following Proposition 65 chemicals.

Component	CAS-No	California Prop. 65	Prop 65 NSRL	Category
Benz[a]anthracene	56-55-3	Carcinogen	0.033 µg/day	Carcinogen

U.S. State Right-to-Know Regulations

Component	Massachusetts	New Jersey	Pennsylvania	Illinois	Rhode Island
Benz[a]anthracene	X	X	X	X	X

U.S. Department of Transportation
Reportable Quantity (RQ): N

DOT Marine Pollutant	N
DOT Severe Marine Pollutant	N
U.S. Department of Homeland Security	This product does not contain any DHS chemicals.

Other International Regulations

Mexico - Grade	No information available

16. Other information

Prepared By	Regulatory Affairs Thermo Fisher Scientific Email: EMSDS.RA@thermofisher.com
Revision Date	19-Jan-2018
Print Date	19-Jan-2018
Revision Summary	This document has been updated to comply with the US OSHA HazCom 2012 Standard replacing the current legislation under 29 CFR 1910.1200 to align with the Globally Harmonized System of Classification and Labeling of Chemicals (GHS).

Disclaimer

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text

End of SDS

SAFETY DATA SHEET

Revision Date 14-Feb-2020 **Revision Number** 2

1. Identification

Product Name **Benzo[a]pyrene**

Cat No. : **15856**

CAS-No 50-32-8
Synonyms Benzo[def]chrysene.; 3,4-Benzopyrene; 3,4-Benzpyrene

Recommended Use Laboratory chemicals.
Uses advised against Food, drug, pesticide or biocidal product use.

Details of the supplier of the safety data sheet

Company
Alfa Aesar
Thermo Fisher Scientific Chemicals, Inc.
30 Bond Street
Ward Hill, MA 01835-8099
Tel: 800-343-0660
Fax: 800-322-4757
Email: tech@alfa.com
www.alfa.com

Emergency Telephone Number
During normal business hours (Monday-Friday, 8am-7pm EST), call (800) 343-0660.
After normal business hours, call Carechem 24 at (866) 928-0789.

2. Hazard(s) identification

Classification
This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Skin Sensitization	Category 1
Germ Cell Mutagenicity	Category 1B
Carcinogenicity	Category 1A
Reproductive Toxicity	Category 1B

Label Elements

Signal Word
Danger

Hazard Statements
May cause an allergic skin reaction
May cause genetic defects
May cause cancer
May damage fertility. May damage the unborn child

Precautionary Statements
Prevention
Obtain special instructions before use
Do not handle until all safety precautions have been read and understood
Use personal protective equipment as required
Avoid breathing dust/fume/gas/mist/vapors/spray
Contaminated work clothing should not be allowed out of the workplace
Wear protective gloves
Response
IF exposed or concerned: Get medical attention/advice
Skin
IF ON SKIN: Wash with plenty of soap and water
If skin irritation or rash occurs: Get medical advice/attention
Wash contaminated clothing before reuse
Storage
Store locked up
Disposal
Dispose of contents/container to an approved waste disposal plant
Hazards not otherwise classified (HNOC)
Very toxic to aquatic life with long lasting effects
WARNING. Cancer - https://www.p65warnings.ca.gov/.

3. Composition/Information on Ingredients

Component	CAS-No	Weight %
Benzo[a]pyrene	50-32-8	> 96

4. First-aid measures

General Advice If symptoms persist, call a physician.

Eye Contact Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Get medical attention.

Skin Contact Wash off immediately with plenty of water for at least 15 minutes. If skin irritation persists, call a physician.

Inhalation Remove to fresh air. If not breathing, give artificial respiration. Get medical attention if symptoms occur.

Ingestion Clean mouth with water and drink afterwards plenty of water. Get medical attention if symptoms occur.

Most important symptoms and effects None reasonably foreseeable. . May cause allergic skin reaction. Symptoms of allergic reaction may include rash, itching, swelling, trouble breathing, tingling of the hands and feet, dizziness, lightheadedness, chest pain, muscle pain or flushing

Notes to Physician Treat symptomatically

5. Fire-fighting measures

Unsuitable Extinguishing Media No information available

Flash Point No information available
Method - No information available

Autoignition Temperature Not applicable
Explosion Limits
Upper No data available
Lower No data available
Sensitivity to Mechanical Impact No information available
Sensitivity to Static Discharge No information available

Specific Hazards Arising from the Chemical
Do not allow run-off from fire-fighting to enter drains or water courses.

Hazardous Combustion Products
Carbon monoxide (CO). Carbon dioxide (CO_2).
Protective Equipment and Precautions for Firefighters
As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

NFPA

Health	Flammability	Instability	Physical hazards
2	1	0	N/A

6. Accidental release measures

Personal Precautions Ensure adequate ventilation. Use personal protective equipment as required. Avoid dust formation.
Environmental Precautions Do not flush into surface water or sanitary sewer system. Do not allow material to contaminate ground water system. Prevent product from entering drains. Local authorities should be advised if significant spillages cannot be contained.

Methods for Containment and Clean Up Sweep up and shovel into suitable containers for disposal. Keep in suitable, closed containers for disposal.

7. Handling and storage

Handling Wear personal protective equipment/face protection. Ensure adequate ventilation. Do not get in eyes, on skin, or on clothing. Avoid ingestion and inhalation. Avoid dust formation.

Storage Keep containers tightly closed in a dry, cool and well-ventilated place.

8. Exposure controls / personal protection

Exposure Guidelines

Component	ACGIH TLV	OSHA PEL	NIOSH IDLH	Mexico OEL (TWA)
Benzo[a]pyrene		TWA: 0.2 mg/m³		

Legend

OSHA - Occupational Safety and Health Administration

Engineering Measures Ensure adequate ventilation, especially in confined areas.

Personal Protective Equipment

Eye/face Protection Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard

EN166.

Skin and body protection Wear appropriate protective gloves and clothing to prevent skin exposure.

Respiratory Protection Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

Hygiene Measures Handle in accordance with good industrial hygiene and safety practice.

9. Physical and chemical properties

Physical State	Powder Solid
Appearance	Dark yellow
Odor	aromatic
Odor Threshold	No information available
pH	Not applicable
Melting Point/Range	175 - 179 °C / 347 - 354.2 °F
Boiling Point/Range	495 °C / 923 °F @ 760 mmHg
Flash Point	No information available
Evaporation Rate	Not applicable
Flammability (solid,gas)	No information available
Flammability or explosive limits	
Upper	No data available
Lower	No data available
Vapor Pressure	No information available
Vapor Density	Not applicable
Specific Gravity	No information available
Solubility	Insoluble in water
Partition coefficient; n-octanol/water	No data available
Autoignition Temperature	Not applicable
Decomposition Temperature	No information available
Viscosity	Not applicable
Molecular Formula	C20H12
Molecular Weight	252.31

10. Stability and reactivity

Reactive Hazard None known, based on information available

Stability Stable under normal conditions.

Conditions to Avoid Incompatible products.

Incompatible Materials Oxidizing agent

Hazardous Decomposition Products Carbon monoxide (CO), Carbon dioxide (CO_2)

Hazardous Polymerization Hazardous polymerization does not occur.

Hazardous Reactions None under normal processing.

11. Toxicological information

Acute Toxicity

Product Information
Component Information
Toxicologically Synergistic Products No information available
Delayed and immediate effects as well as chronic effects from short and long-term exposure

Irritation No information available

Sensitization May cause sensitization by skin contact

Carcinogenicity The table below indicates whether each agency has listed any ingredient as a carcinogen.

Component	CAS-No	IARC	NTP	ACGIH	OSHA	Mexico
Benzo[a]pyrene	50-32-8	Group 1	Reasonably Anticipated	A2	X	A2

IARC (International Agency for Research on Cancer)

NTP: (National Toxicity Program)

ACGIH: (American Conference of Governmental Industrial Hygienists)

IARC (International Agency for Research on Cancer)
Group 1 - Carcinogenic to Humans
Group 2A - Probably Carcinogenic to Humans
Group 2B - Possibly Carcinogenic to Humans
NTP: (National Toxicity Program)
Known - Known Carcinogen
Reasonably Anticipated - Reasonably Anticipated to be a Human Carcinogen
A1 - Known Human Carcinogen
A2 - Suspected Human Carcinogen
A3 - Animal Carcinogen
ACGIH: (American Conference of Governmental Industrial Hygienists)

Mutagenic Effects No information available

Reproductive Effects No information available.

Developmental Effects No information available.

Teratogenicity No information available.

STOT - single exposure None known
STOT - repeated exposure None known

Aspiration hazard No information available

Symptoms / effects,both acute and delayed Symptoms of allergic reaction may include rash, itching, swelling, trouble breathing, tingling of the hands and feet, dizziness, lightheadedness, chest pain, muscle pain or flushing

Endocrine Disruptor Information

Component	EU - Endocrine Disrupters Candidate List	EU - Endocrine Disruptors - Evaluated Substances	Japan - Endocrine Disruptor Information
Benzo[a]pyrene	Group III Chemical	Not applicable	Not applicable

Other Adverse Effects The toxicological properties have not been fully investigated.

12. Ecological information

Ecotoxicity

Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment. The product contains following substances which are hazardous for the environment.

Persistence and Degradability May persist

Bioaccumulation/ Accumulation No information available.

Mobility Is not likely mobile in the environment due its low water solubility.

Component	log Pow
Benzo[a]pyrene	6.06

13. Disposal considerations

Waste Disposal Methods Chemical waste generators must determine whether a discarded chemical is classified as a

hazardous waste. Chemical waste generators must also consult local, regional, and national hazardous waste regulations to ensure complete and accurate classification.

Component	RCRA - U Series Wastes	RCRA - P Series Wastes
Benzo[a]pyrene - 50-32-8	U022	-

14. Transport information

DOT

UN-No	UN3077
Proper Shipping Name	Environmentally hazardous substances, solid, n.o.s.
Technical Name	Benzo[a]pyrene
Hazard Class	9
Packing Group	III

TDG

UN-No	UN3077
Proper Shipping Name	Environmentally hazardous substances, solid, n.o.s.
Hazard Class	9
Packing Group	III

IATA

UN-No	UN3077
Proper Shipping Name	Environmentally hazardous substances, solid, n.o.s.
Hazard Class	9
Packing Group	III

IMDG/IMO

UN-No	UN3077
Proper Shipping Name	Environmentally hazardous substances, solid, n.o.s.
Hazard Class	9
Packing Group	III

15. Regulatory information

United States of America Inventory

Component	CAS-No	TSCA	TSCA Inventory notification - Active/Inactive	TSCA - EPA Regulatory Flags
Benzo[a]pyrene	50-32-8	X	ACTIVE	-

Legend:
TSCA - Toxic Substances Control Act, (40 CFR Part 710)
X - Listed
'-' - Not Listed

TSCA 12(b) - Notices of Export Not applicable

International Inventories
Canada (DSL/NDSL), Europe (EINECS/ELINCS/NLP), Philippines (PICCS), Japan (ENCS), Australia (AICS), China (IECSC), Korea (ECL).

Component	CAS-No	DSL	NDSL	EINECS	PICCS	ENCS	AICS	IECSC	KECL
Benzo[a]pyrene	50-32-8	X	-	200-028-5	X	-	-	X	KE-05-0184

U.S. Federal Regulations

SARA 313

Component	CAS-No	Weight %	SARA 313 - Threshold Values %
Benzo[a]pyrene	50-32-8	> 96	0.1

SARA 311/312 Hazard Categories See section 2 for more information

CWA (Clean Water Act)

Component	CWA - Hazardous Substances	CWA - Reportable Quantities	CWA - Toxic Pollutants	CWA - Priority Pollutants
Benzo[a]pyrene	-	-	X	X

Clean Air Act Not applicable

OSHA - Occupational Safety and Health Administration Not applicable

CERCLA Not applicable

Component	Hazardous Substances RQs	CERCLA EHS RQs
Benzo[a]pyrene	1 lb	-

California Proposition 65 This product contains the following Proposition 65 chemicals.

Component	CAS-No	California Prop. 65	Prop 65 NSRL	Category
Benzo[a]pyrene	50-32-8	Carcinogen	0.06 µg/day	Carcinogen

U.S. State Right-to-Know Regulations

Component	Massachusetts	New Jersey	Pennsylvania	Illinois	Rhode Island
Benzo[a]pyrene	X	X	X	X	X

U.S. Department of Transportation

Reportable Quantity (RQ): N
DOT Marine Pollutant N
DOT Severe Marine Pollutant N

U.S. Department of Homeland Security This product does not contain any DHS chemicals.

Other International Regulations

Mexico - Grade No information available

16. Other information

Prepared By Health, Safety and Environmental Department
Email: tech@alfa.com
www.alfa.com

Revision Date 14-Feb-2020
Print Date 14-Feb-2020
Revision Summary SDS authoring systems update, replaces ChemGes SDS No. 50-32-8/1.

Disclaimer

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text

End of SDS

Safety Data Sheet

Revision Date: 07/31/19
www.restek.com

2 Letter ISO country code/language code: US/EN

1. IDENTIFICATION

Catalog Number / Product Name:	**31272 / Benzo(b)fluoranthene Standard**
Company:	Restek Corporation
Address:	110 Benner Circle Bellefonte, Pa. 16823
Phone#:	814-353-1300
Fax#:	814-353-1309
Emergency#:	800-424-9300 (CHEMTREC) 703-527-3887 (Outside the US)
Email:	www.restek.com
Revision Number:	11
Intended use:	For Laboratory use only

2. HAZARD(S)IDENTIFICATION

Emergency Overview:

GHS Hazard Symbols:

GHS Classification:	Carcinogenicity Category 1B Flammable Liquid Category 2 Serious Eye Damage/Eye Irritation Category 2 Specific Target Organ Systemic Toxicity (STOT) - Single Exposure Category 3
GHS Signal Word:	Danger
GHS Hazard:	Highly flammable liquid and vapour. Causes serious eye irritation. May cause drowsiness or dizziness. May cause cancer.
GHS Precautions:	
Safety Precautions:	Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Keep away from heat/sparks/open flames/hot surfaces. – No smoking. Ground/bond container and receiving equipment. Use explosion-proof electrical/ventilation and lighting equipment. Use only non-sparking tools. Take precautionary measures against static discharge. Avoid breathing dust/fume/gas/mist/vapours/spray. Wash hands and skin thoroughly after handling. Use only outdoors or in a well-ventilated area. Wear protective gloves/protective clothing/eye protection/face protection.
First Aid Measures:	IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower. IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. IF exposed or concerned: Get medical advice/attention. Call a POISON CENTER or doctor/physician if you feel unwell. If eye irritation persists: Get medical advice/attention. In case of fire: Use extinguishing media in section 5 for extinction.

Storage: Store in a well-ventilated place. Keep container tightly closed.
Store in a well-ventilated place. Keep cool.
Store locked up.

Disposal: Dispose of contents/container according to section 13 of the SDS.

Single Exposure Target Organs: Specific target organ toxicity - Single exposure - STOT SE 3: H336 May cause drowsiness or dizziness.

Repeated Exposure Target Organs: No data available

3. COMPOSITION / INFORMATION ON INGREDIENT

Chemical Name	CAS #	EINEC #	% Composition
Acetone	67-64-1	200-662-2	99.9
benzo (b) fluoranthene	205-99-2	205-911-9	0.1

4. FIRST-AID MEASURES

Inhalation: Remove to fresh air. If breathing is difficult, have a trained individual administer oxygen. If not breathing, give artificial respiration and have a trained individual administer oxygen. Get medical attention immediately

Eyes: Flush eyes with plenty of water for at least 20 minutes retracting eyelids often. Tilt the head to prevent chemical from transferring to the uncontaminated eye. Get immediate medical attention.

Skin Contact: Wash with soap and water. Remove contaminated clothing and launder. Get medical attention if irritation develops or persists.

Ingestion: Do not induce vomiting and seek medical attention immediately. Drink two glasses of water or milk to dilute. Provide medical care provider with this SDS.

5. FIRE- FIGHTING MEASURES

Extinguishing Media: Use alcohol resistant foam, carbon dioxide, or dry chemical extinguishing agents. Water spray or fog may also be effective for extinguishing if swept across the base of the fire. Water can also be used to absorb heat and keep exposed material from being damaged by fire. Flammable component(s) of this material may be lighter than water and burn while floating on the surface.

Fire and/or Explosion Hazards: Vapors may be ignited by heat, sparks, flames or other sources of ignition at or above the low flash point giving rise to a Class B fire. Vapors are heavier than air and may travel to a source of ignition and flash back

Fire Fighting Methods and Protection: Do not enter fire area without proper protection including self-contained toxic breathing apparatus and full protective equipment. Fight fire from a safe distance and a protected location due to the potential of hazardous vapors and decomposition products. Flammable component(s) of this material may be lighter than water and burn while floating on the surface. Use water spray/fog for cooling. Flammable component(s) of this material may be lighter than water and burn while floating on the surface.

Hazardous Combustion Products: Carbon dioxide, Carbon monoxide

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions and Equipment: Exposure to the spilled material may be irritating or harmful. Follow personal protective equipment recommendations found in Section 8 of this SDS. Additional precautions may be necessary based on special circumstances created by the spill including; the material spilled, the quantity of the spill, the area in which the spill occurred. Also consider the expertise of employees in the area responding to the spill.

Methods for Clean-up: Prevent the spread of any spill to minimize harm to human health and the environment if safe to do so. Wear complete and proper personal protective equipment following the recommendation of Section 8 at a minimum. Dike with suitable absorbent material like granulated clay. Gather and store in a sealed container pending a waste disposal

evaluation.

7. HANDLING AND STORAGE

Handling Technical Measures and Precautions:	Harmful or irritating material. Avoid contacting and avoid breathing the material. Use only in a well ventilated area. Use spark-proof tools and explosion-proof equipment
Storage Technical Measures and Conditions:	Store in a cool dry ventilated location. Isolate from incompatible materials and conditions. Keep container(s) closed. Keep away from sources of ignition

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

United States:

Chemical Name	CAS No.	IDLH	ACGIH STEL	ACGIH TLV-TWA	OSHA Exposure Limit
Acetone	67-64-1	2500 ppm IDLH (10% LEL)	750 ppm STEL; 1782 mg/m3 STEL	500 ppm TWA; 1188 mg/m3 TWA	1000 ppm TWA; 2400 mg/m3 TWA
benzo (b) fluoranthene	205-99-2	Not established	None Known	Not established	No data available

Personal Protection:

Engineering Measures:	Local exhaust ventilation is recommended when generating excessive levels of vapours from handling or thermal processing.
Respiratory Protection:	No respiratory protection required under normal conditions of use. Provide general room exhaust ventilation if symptoms of overexposure occur as explained Section 3. A respirator is not normally required.
Eye Protection:	Wear chemically resistant safety glasses with side shields when handling this product. Do not wear contact lenses.
Skin Protection:	Wear protective gloves. Inspect gloves for chemical break-through and replace at regular intervals. Clean protective equipment regularly. Wash hands and other exposed areas with mild soap and water before eating, drinking, and when leaving work
Medical Conditions Aggravated By Exposure:	Respiratory disease including asthma and bronchitis

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance, color:	Depends upon product selection
Odor:	Strong
Physical State:	No data available
pH:	Not applicable
Vapor Pressure:	No data available
Vapor Density:	2.0 (air = 1)
Boiling Point (°C):	56.05 °C at 1013.25 hPa
Melting Point (°C):	-95.4 °C Melting Point
Flash Point (°F):	39
Flammability:	Highly Flammable
Upper Flammable/Explosive Limit, % in air:	No data available
Lower Flammable/Explosive Limit, % in air:	No data available
Autoignition Temperature (°C):	465 deg C
Decomposition Temperature (°C):	No data available
Specific Gravity:	0.7845 g/cm3 at 25 °C
Evaporation Rate:	No data available
Odor Threshold:	ND
Solubility:	Complete; 100%
Partition Coefficient: n-octanol in water:	No data available
VOC % by weight:	99.9
Molecular Weight:	58.08

10. STABILITY AND REACTIVITY

Stability:	Stable under normal conditions.
Conditions to Avoid:	None known.
Materials to Avoid / Chemical Incompatiability:	Strong oxidizing agents Strong acids
Hazardous Decomposition Products:	Carbon dioxide Carbon monoxide

11. TOXICOLOGICAL INFORMATION

Routes of Entry:	Inhalation, Skin Contact, Eye Contact, Ingestion

Target Organs Potentially Affected By Exposure: Eyes, Central nervous system stimulation, Respiratory Tract, Skin

Chemical Interactions That Change Toxicity: None Known

Immediate (Acute) Health Effects by Route of Exposure:

Inhalation Irritation: Can cause minor respiratory irritation, dizziness, weakness, fatigue, nausea, and headache.

Skin Contact: Can cause minor skin irritation, defatting, and dermatitis.

Eye Contact: Can cause minor irritation, tearing and reddening.

Ingestion Irritation: May be harmful if swallowed.

Ingestion Toxicity: Harmful if swallowed. May cause systemic poisoning.

Long-Term (Chronic) Health Effects:

Carcinogenicity: Contains a probable or known human carcinogen.

Reproductive and Developmental Toxicity: No data available to indicate product or any components present at greater than 0.1% may cause birth defects.

Inhalation: Upon prolonged and/or repeated exposure, can cause minor respiratory irritation, dizziness, weakness, fatigue, nausea, and headache.

Skin Contact: Upon prolonged or repeated contact, can cause minor skin irritation, defatting, and dermatitis.

Component Toxicological Data:

NIOSH:

Chemical Name	CAS No.	LD50/LC50
Acetone	67-64-1	Dermal LD50 Rabbit >15700 mg/kg; Inhalation LC50 Rat 50100 mg/m3 8 h; Oral LD50 Rat 5800 mg/kg

Component Carcinogenic Data:

OSHA:

Chemical Name	CAS No.	
Benzo(b)fluoranthene	205-99-2	Present

ACGIH:

Chemical Name	CAS No.	
Benzo[b]fluoranthene	205-99-2	A2 - Suspected Human Carcinogen
Acetone	67-64-1	A4 - Not Classifiable as a Human Carcinogen

NIOSH:

Chemical Name	CAS No.
No data available	

NTP:

Chemical Name	CAS No.
No data available	

IARC:

Chemical Name	CAS No.	Group No.
Monograph 92 [2010]; Supplement 7 [1987]; Monograph 32 [1983]	205-99-2	Group 2B

12. ECOLOGICAL INFORMATION

Overview: This material is not expected to be harmful to the ecology.

Mobility: No data

Persistence: No data

Bioaccumulation: No data

Degradability: No data

Ecological Toxicity Data: No data available

13. DISPOSAL CONSIDERATIONS

Waste Description of Spent Product: Spent or discarded material is a hazardous waste.Mixing spent or discarded material with other materials may render the mixture hazardous. Perform a hazardous waste determination on mixtures.

Disposal Methods: Dispose of by incineration following Federal, State, Local, or Provincial regulations.

Waste Disposal of Packaging: Comply with all Local, State, Federal, and Provincial Environmental Regulations.

14. TRANSPORTATION INFORMATION

United States:

DOT Proper Shipping Name: Acetone
UN Number: UN1090
Hazard Class: 3
Packing Group: II

International:

IATA Proper Shipping Name: Acetone
UN Number: UN1090
Hazard Class: 3
Packing Group: II

Marine Pollutant: No

Chemical Name	CAS#	Marine Pollutant	Severe Marine Pollutant
No data available			

15. REGULATORY INFORMATION

United States:

Chemical Name	CAS#	CERCLA	SARA 313	SARA EHS 313	TSCA
Acetone	67-64-1	X	-	-	X
benzo (b) fluoranthene	205-99-2	X	X	-	-

The following chemicals are listed on CA Prop 65:

Chemical Name	CAS #	Regulation
Benzo[b]fluoranthene	205-99-2	Prop 65 Cancer

State Right To Know Listing:

Chemical Name	CAS#	New Jersey	Massachusetts	Pennsylvania	California
Acetone	67-64-1	X	X	X	X
benzo (b) fluoranthene	205-99-2	X	X	X	X

16. OTHER INFORMATION

Prior Version Date: 08/13/18
Other Information: Any changes to the SDS compared to previous versions are marked by a vertical line in front of the concerned paragraph.
References: No data available
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Safety Data Sheet

Revision Date: 07/15/19
www.restek.com

2 Letter ISO country code/language code: US/EN

1. IDENTIFICATION

Catalog Number / Product Name:	**31274 / Benzo(k)fluoranthene Standard**
Company:	Restek Corporation
Address:	110 Benner Circle Bellefonte, Pa. 16823
Phone#:	814-353-1300
Fax#:	814-353-1309
Emergency#:	800-424-9300 (CHEMTREC) 703-527-3887 (Outside the US)
Email:	www.restek.com
Revision Number:	12
Intended use:	For Laboratory use only

2. HAZARD(S)IDENTIFICATION

Emergency Overview:

GHS Hazard Symbols:

GHS Classification:	Carcinogenicity Category 1B Flammable Liquid Category 2 Serious Eye Damage/Eye Irritation Category 2 Specific Target Organ Systemic Toxicity (STOT) - Single Exposure Category 3
GHS Signal Word:	Danger
GHS Hazard:	Highly flammable liquid and vapour. Causes serious eye irritation. May cause drowsiness or dizziness. May cause cancer.
GHS Precautions:	
Safety Precautions:	Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Keep away from heat/sparks/open flames/hot surfaces. – No smoking. Ground/bond container and receiving equipment. Use explosion-proof electrical/ventilation and lighting equipment. Use only non-sparking tools. Take precautionary measures against static discharge. Avoid breathing dust/fume/gas/mist/vapours/spray. Wash hands and skin thoroughly after handling. Use only outdoors or in a well-ventilated area. Wear protective gloves/protective clothing/eye protection/face protection.
First Aid Measures:	IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower. IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. IF exposed or concerned: Get medical advice/attention. Call a POISON CENTER or doctor/physician if you feel unwell. If eye irritation persists: Get medical advice/attention. In case of fire: Use extinguishing media in section 5 for extinction.

Storage: Store in a well-ventilated place. Keep container tightly closed.
Store in a well-ventilated place. Keep cool.
Store locked up.

Disposal: Dispose of contents/container according to section 13 of the SDS.

Single Exposure Target Organs: Specific target organ toxicity - Single exposure - STOT SE 3: H336 May cause drowsiness or dizziness.

Repeated Exposure Target Organs: No data available

3. COMPOSITION / INFORMATION ON INGREDIENT

Chemical Name	CAS #	EINEC #	% Composition
Acetone	67-64-1	200-662-2	99.9
benzo (k) fluoranthene	207-08-9	205-916-6	0.1

4. FIRST-AID MEASURES

Inhalation: Remove to fresh air. If breathing is difficult, have a trained individual administer oxygen. If not breathing, give artificial respiration and have a trained individual administer oxygen. Get medical attention immediately

Eyes: Flush eyes with plenty of water for at least 20 minutes retracting eyelids often. Tilt the head to prevent chemical from transferring to the uncontaminated eye. Get immediate medical attention.

Skin Contact: Wash with soap and water. Remove contaminated clothing and launder. Get medical attention if irritation develops or persists.

Ingestion: Do not induce vomiting and seek medical attention immediately. Drink two glasses of water or milk to dilute. Provide medical care provider with this SDS.

5. FIRE- FIGHTING MEASURES

Extinguishing Media: Use alcohol resistant foam, carbon dioxide, or dry chemical extinguishing agents. Water spray or fog may also be effective for extinguishing if swept across the base of the fire. Water can also be used to absorb heat and keep exposed material from being damaged by fire. Flammable component(s) of this material may be lighter than water and burn while floating on the surface.

Fire and/or Explosion Hazards: Vapors may be ignited by heat, sparks, flames or other sources of ignition at or above the low flash point giving rise to a Class B fire. Vapors are heavier than air and may travel to a source of ignition and flash back

Fire Fighting Methods and Protection: Do not enter fire area without proper protection including self-contained toxic breathing apparatus and full protective equipment. Fight fire from a safe distance and a protected location due to the potential of hazardous vapors and decomposition products. Flammable component(s) of this material may be lighter than water and burn while floating on the surface. Use water spray/fog for cooling. Flammable component(s) of this material may be lighter than water and burn while floating on the surface.

Hazardous Combustion Products: Carbon dioxide, Carbon monoxide

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions and Equipment: Exposure to the spilled material may be irritating or harmful. Follow personal protective equipment recommendations found in Section 8 of this SDS. Additional precautions may be necessary based on special circumstances created by the spill including; the material spilled, the quantity of the spill, the area in which the spill occurred. Also consider the expertise of employees in the area responding to the spill.

Methods for Clean-up: Prevent the spread of any spill to minimize harm to human health and the environment if safe to do so. Wear complete and proper personal protective equipment following the recommendation of Section 8 at a minimum. Dike with suitable absorbent material like granulated clay. Gather and store in a sealed container pending a waste disposal

evaluation.

7. HANDLING AND STORAGE

Handling Technical Measures and Precautions:	Harmful or irritating material. Avoid contacting and avoid breathing the material. Use only in a well ventilated area. Use spark-proof tools and explosion-proof equipment
Storage Technical Measures and Conditions:	Store in a cool dry ventilated location. Isolate from incompatible materials and conditions. Keep container(s) closed. Keep away from sources of ignition

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

United States:

Chemical Name	CAS No.	IDLH	ACGIH STEL	ACGIH TLV-TWA	OSHA Exposure Limit
Acetone	67-64-1	2500 ppm IDLH (10% LEL)	750 ppm STEL; 1782 mg/m3 STEL	500 ppm TWA; 1188 mg/m3 TWA	1000 ppm TWA; 2400 mg/m3 TWA
benzo (k) fluoranthene	207-08-9	Not established	None Known	Not established	No data available

Personal Protection:

Engineering Measures:	Local exhaust ventilation is recommended when generating excessive levels of vapours from handling or thermal processing.
Respiratory Protection:	No respiratory protection required under normal conditions of use. Provide general room exhaust ventilation if symptoms of overexposure occur as explained Section 3. A respirator is not normally required.
Eye Protection:	Wear chemically resistant safety glasses with side shields when handling this product. Do not wear contact lenses.
Skin Protection:	Wear protective gloves. Inspect gloves for chemical break-through and replace at regular intervals. Clean protective equipment regularly. Wash hands and other exposed areas with mild soap and water before eating, drinking, and when leaving work
Medical Conditions Aggravated By Exposure:	Respiratory disease including asthma and bronchitis

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance, color:	Depends upon product selection
Odor:	Strong
Physical State:	No data available
pH:	Not applicable
Vapor Pressure:	No data available
Vapor Density:	2.0 (air = 1)
Boiling Point (°C):	480 °C 56.05 °C at 1013.25 hPa
Melting Point (°C):	-95.4 °C Melting Point
Flash Point (°F):	39
Flammability:	Highly Flammable
Upper Flammable/Explosive Limit, % in air:	No data available
Lower Flammable/Explosive Limit, % in air:	No data available
Autoignition Temperature (°C):	465 deg C
Decomposition Temperature (°C):	No data available
Specific Gravity:	0.7845 g/cm3 at 25 °C
Evaporation Rate:	No data available
Odor Threshold:	ND
Solubility:	Complete; 100%
Partition Coefficient: n-octanol in water:	No data available
VOC % by weight:	99.9
Molecular Weight:	58.08

10. STABILITY AND REACTIVITY

Stability:	Stable under normal conditions.
Conditions to Avoid:	None known.
Materials to Avoid / Chemical Incompatiability:	Strong oxidizing agents Strong acids
Hazardous Decomposition Products:	Carbon dioxide Carbon monoxide

11. TOXICOLOGICAL INFORMATION

Routes of Entry:	Inhalation, Skin Contact, Eye Contact, Ingestion

Target Organs Potentially Affected By Exposure: Eyes, Central nervous system stimulation, Respiratory Tract, Skin

Chemical Interactions That Change Toxicity: None Known

Immediate (Acute) Health Effects by Route of Exposure:

Inhalation Irritation: Can cause minor respiratory irritation, dizziness, weakness, fatigue, nausea, and headache.

Skin Contact: Can cause minor skin irritation, defatting, and dermatitis.

Eye Contact: Can cause minor irritation, tearing and reddening.

Ingestion Irritation: May be harmful if swallowed.

Ingestion Toxicity: Harmful if swallowed. May cause systemic poisoning.

Long-Term (Chronic) Health Effects:

Carcinogenicity: Contains a probable or known human carcinogen.

Reproductive and Developmental Toxicity: No data available to indicate product or any components present at greater than 0.1% may cause birth defects.

Inhalation: Upon prolonged and/or repeated exposure, can cause minor respiratory irritation, dizziness, weakness, fatigue, nausea, and headache.

Skin Contact: Upon prolonged or repeated contact, can cause minor skin irritation, defatting, and dermatitis.

Component Toxicological Data:

NIOSH:

Chemical Name	CAS No.	LD50/LC50
Acetone	67-64-1	Dermal LD50 Rabbit >15700 mg/kg; Inhalation LC50 Rat 50100 mg/m3 8 h; Oral LD50 Rat 5800 mg/kg

Component Carcinogenic Data:

OSHA:

Chemical Name	CAS No.	
Benzo(k)fluoranthene	207-08-9	Present

ACGIH:

Chemical Name	CAS No.	
Acetone	67-64-1	A4 - Not Classifiable as a Human Carcinogen

NIOSH:

Chemical Name	CAS No.
No data available	

NTP:

Chemical Name	CAS No.
No data available	

IARC:

Chemical Name	CAS No.	Group No.
Monograph 92 [2010]; Supplement 7 [1987]; Monograph 32 [1983]	207-08-9	Group 2B

12. ECOLOGICAL INFORMATION

Overview: This material is not expected to be harmful to the ecology.

Mobility: No data

Persistence: No data

Bioaccumulation: No data

Degradability: No data

Ecological Toxicity Data: No data available

13. DISPOSAL CONSIDERATIONS

Waste Description of Spent Product: Spent or discarded material is a hazardous waste.Mixing spent or discarded material with other materials may render the mixture hazardous. Perform a hazardous waste determination on mixtures.

Disposal Methods: Dispose of by incineration following Federal, State, Local,

or Provincial regulations.

Waste Disposal of Packaging: Comply with all Local, State, Federal, and Provincial Environmental Regulations.

14. TRANSPORTATION INFORMATION

United States:

DOT Proper Shipping Name: Acetone
UN Number: UN1090
Hazard Class: 3
Packing Group: II

International:

IATA Proper Shipping Name: Acetone
UN Number: UN1090
Hazard Class: 3
Packing Group: II

Marine Pollutant: No

Chemical Name	CAS#	Marine Pollutant	Severe Marine Pollutant
No data available			

15. REGULATORY INFORMATION

United States:

Chemical Name	CAS#	CERCLA	SARA 313	SARA EHS 313	TSCA
Acetone	67-64-1	X	-	-	X
benzo (k) fluoranthene	207-08-9	X	X	-	-

The following chemicals are listed on CA Prop 65:

Chemical Name	CAS #	Regulation
Benzo[k]fluoranthene	207-08-9	Prop 65 Cancer

State Right To Know Listing:

Chemical Name	CAS#	New Jersey	Massachusetts	Pennsylvania	California
Acetone	67-64-1	X	X	X	X
benzo (k) fluoranthene	207-08-9	X	X	X	X

16. OTHER INFORMATION

Prior Version Date: 06/15/18

Other Information: Any changes to the SDS compared to previous versions are marked by a vertical line in front of the concerned paragraph.

References: No data available

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Chloroform, Reagent Grade

SECTION 1 : Identification of the substance/mixture and of the supplier

Product name : **Chloroform, Reagent Grade**

Manufacturer/Supplier Trade name:

Manufacturer/Supplier Article number: **S25248**

Recommended uses of the product and uses restrictions on use:

Manufacturer Details:

AquaPhoenix Scientific
9 Barnhart Drive, Hanover, PA 17331

Supplier Details:

Fisher Science Education
15 Jet View Drive, Rochester, NY 14624

Emergency telephone number:

Fisher Science Education Emergency Telephone No.: 800-535-5053

SECTION 2 : Hazards identification

Classification of the substance or mixture:

Health hazard
Specific target organ toxicity following repeated exposure, category 1
Reproductive toxicity, category 2
Carcinogenicity, category 2

Irritant
Acute toxicity (oral, dermal, inhalation), category 4
Skin irritation, category 2
Eye irritation, category 2A

Toxic
Acute toxicity (oral, dermal, inhalation), category 3

Acute toxicity - Oral - Acute Tox. 4
Acute toxicity - Inhalation - Acute Tox. 3
Skin corrosion/irritation - Skin Irrit. 2.
Serious Eye Damage/Eye Irritation - Eye Irrit. 2
Carcinogenicity - Carc. 2
Reproductive Toxicity - Repr. 2
Specific target organ toxicity - Repeated exposure - STOT RE 1

Signal word :Danger

Hazard statements:
Harmful if swallowed
Causes skin irritation
Causes serious eye irritation
Toxic if inhaled
Suspected of causing cancer
Suspected of damaging fertility or the unborn child

Causes damage to organs through prolonged or repeated exposure
Precautionary statements:
If medical advice is needed, have product container or label at hand
Keep out of reach of children
Read label before use
Do not handle until all safety precautions have been read and understood
Obtain special instructions before use
Avoid breathing dust/fume/gas/mist/vapours/spray
Use only outdoors or in a well-ventilated area
Use personal protective equipment as required
Wash skin thoroughly after handling
Do not eat, drink or smoke when using this product
Wear protective gloves/protective clothing/eye protection/face protection
Call a POISON CENTER or doctor/physician
If skin irritation occurs: Get medical advice/attention
IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
IF exposed or concerned: Get medical advice/attention
Get Medical advice/attention if you feel unwell
Specific treatment (see supplemental first aid instructions on this label)
Rinse mouth
Take off contaminated clothing and wash before reuse
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do. Continue rinsing
If eye irritation persists get medical advice/attention
IF ON SKIN: Wash with soap and water
Store in a well ventilated place. Keep container tightly closed
Store locked up
Dispose of contents and container as instructed in Section 13

Other Non-GHS Classification:

WHMIS

D1B

D2B

NFPA/HMIS

NFPA SCALE (0-4)

HMIS RATINGS (0-4)

SECTION 3 : Composition/information on ingredients

Ingredients:		
CAS 67-66-3	Chloroform	100 %
		Percentages are by weight

SECTION 4 : First aid measures

Description of first aid measures

After inhalation: Loosen clothing as necessary and position individual in a comfortable position.Move exposed to fresh air. Give artificial respiration if necessary. If breathing is difficult give oxygen.Get medical assistance if cough or other symptoms appear.DO NOT use mouth-to-mouth resuscitation

After skin contact: Rinse/flush exposed skin gently using soap and water for 15-20 minutes.Seek medical advice if discomfort or irritation persists.

After eye contact: Protect unexposed eye.Rinse/flush exposed eye(s) gently using water for 15-20 minutes.Remove contact lens(es) if able to do so during rinsing.Seek medical attention if irritation persists or if concerned.

After swallowing: Rinse mouth thoroughly. Do not induce vomiting. Seek medical attention if irritation, discomfort, or vomiting persists.Never give anything by mouth to an unconscious person.Call Poison Control immediately

Most important symptoms and effects, both acute and delayed:

Aspiration hazard. May cause central nervous system effects. May cause gastrointestinal irritation, nausea, vomiting and diarrhea. Irritation- all routes of exposure.May cause irritation of respiratory tract. Inhalation may cause central nervous system effects. Headache.Shortness of breath.;Possible cancer hazard. Tumorigenic effects have been reported in experimental animals. May cause adverse liver and kidney effects. Central nervous system disorders. Cardiovascular. Preexisting eye disorders. Kidney disorders. Liver disorders. Skin disorders

Indication of any immediate medical attention and special treatment needed:

If seeking medical attention provide SDS document to physician. Physician should treat symptomatically.

SECTION 5 : Firefighting measures

Extinguishing media

Suitable extinguishing agents: Use water, dry chemical, chemical foam, carbon dioxide, or alcohol-resistant foam.

For safety reasons unsuitable extinguishing agents:

Special hazards arising from the substance or mixture:

Thermal decomposition can lead to release of irritating gases and vapors.Slight fire hazard when subjected to high heat

Advice for firefighters:

Protective equipment: Wear protective eyeware, gloves, and clothing. Refer to Section 8.Use NIOSH-approved respiratory protection/breathing apparatus.

Additional information (precautions): Avoid inhaling gases, fumes, dust, mist, vapor, and aerosols. Avoid contact with skin, eyes, and clothing.

SECTION 6 : Accidental release measures

Personal precautions, protective equipment and emergency procedures:

Ensure adequate ventilation.Ensure that air-handling systems are operational.

Environmental precautions:

Should not be released into environment.Prevent from reaching drains, sewer, or waterway.

Methods and material for containment and cleaning up:

Wear protective eyeware, gloves, and clothing. Refer to Section 8.Always obey local regulations.Containerize for disposal. Refer to Section 13.If necessary use trained response staff or contractor. Evacuate personnel to safe areas. Keep in suitable closed containers for disposal.

Reference to other sections:

SECTION 7 : Handling and storage

Precautions for safe handling:

Avoid contact with skin, eyes, and clothing.Follow good hygiene procedures when handling chemical materials. Refer to Section 8.Follow proper disposal methods. Refer to Section 13.Do not eat, drink, smoke, or use personal products when handling chemical substances.

Conditions for safe storage, including any incompatibilities:

Store in a cool location. Keep away from food and beverages.Protect from freezing and physical damage.Provide ventilation for containers. Keep container tightly sealed.Store away from incompatible materials.

SECTION 8 : Exposure controls/personal protection

Control Parameters:	67-66-3, Chloroform, ACGIH TLV: 49 mg/m3 67-66-3, Chloroform, OSHA PEL: 240 mg/m3 67-66-3, Chloroform, OSHA PEL 50 ppm Ceiling; 240 mg/m3 Ceiling 67-66-3, Chloroform, ACGIH TLV TWA:10 ppm TWA 67-66-3, Chloroform, NIOSH REL: Ca ST 2 ppm (9.78 mg/m3) 60-minute 67-66-3, Chloroform, NIOSH IDLH: Ca 500 ppm
Appropriate Engineering controls:	Emergency eye wash fountains and safety showers should be available in the immediate vicinity of use or handling. Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapor and mists below the applicable workplace exposure limits (Occupational Exposure Limits-OELs) indicated above.
Respiratory protection:	Not required under normal conditions of use. Where risk assessment shows air-purifying respirators are appropriate use a full-face particle respirator type N100 (US) or type P3 (EN 143) respirator cartridges as a backup to engineering controls.When necessary use NIOSH approved breathing equipment.
Protection of skin:	Select glove material impermeable and resistant to the substance.Select glove material based on rates of diffusion and degradation. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices.Use proper glove removal technique without touching outer surface. Avoid skin contact with used gloves.Wear protective clothing.
Eye protection:	Wear equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).Safety glasses or goggles are appropriate eye protection.

General hygienic measures: Perform routine housekeeping. Wash hands before breaks and at the end of work. Avoid contact with skin, eyes, and clothing.Before wearing wash contaminated clothing.

SECTION 9 : Physical and chemical properties

Appearance (physical state,color):	Clear Liquid	**Explosion limit lower**: **Explosion limit upper**:	Not determined Not determined
Odor:	Aromatic Chloroform Odor	**Vapor pressure**:	213 mbar @ 20 °C
Odor threshold:	Not determined	**Vapor density**:	4.12 (Air = 1.0)
pH-value:	Not determined	**Relative density**:	Not determined
Melting/Freezing point:	-63°C / -81.4°F	**Solubilities**:	Slightly soluble
Boiling point/Boiling range:	60.5 - 61.5°C / 140.9 - 142.7°F	**Partition coefficient (n-octanol/water)**:	Not determined
Flash point (closed cup):	Not determined	**Auto/Self-ignition temperature**:	Not determined
Evaporation rate:	11.6 (Butyl Acetate = 1.0)	**Decomposition temperature**:	290°C
Flammability (solid,gaseous):	Not determined	**Viscosity**:	a. Kinematic:Not determined b. Dynamic: Not determined
Density: Not determined **Specific Gravity:**1.480			

SECTION 10 : Stability and reactivity

Reactivity: Nonreactive under normal conditions.
Chemical stability: Stable under normal conditions.Light sensitive
Possible hazardous reactions: None under normal processing.
Conditions to avoid: Incompatible materials.Excess heat
Incompatible materials: Alkali metals, strong caustics and oxidizers
Hazardous decomposition products: Oxides of sodium. Emits very toxic fumes of chlorine and phosgene gas

SECTION 11 : Toxicological information

Acute Toxicity:		
Oral:	67-66-3	LD50 oral-rat: 695mg/kg
Chronic Toxicity:		
Inhalation:	67-66-3	May cause adverse liver effects. May cause adverse kidney effects
Corrosion Irritation: No additional information.		
Sensitization:		No additional information.

Single Target Organ (STOT):	No additional information.
Numerical Measures:	No additional information.
Carcinogenicity:	Possible cancer hazard based on tests with laboratory animals.: Tumorigenic effects have been reported in experimental animals.. OSHA: Carcinogen (67-66-3)
Mutagenicity:	Mutagenic effects have occurred in experimental animals
Reproductive Toxicity:	Experiments have shown reproductive toxicity effects on laboratory animals. Developmental effects have occurred in experimental animals.Teratogenic effects have occurred in experimental animals

SECTION 12 : Ecological information

Ecotoxicity Persistence and degradability:
Bioaccumulative potential:
Mobility in soil: log Pow: 2
Other adverse effects: Chloroform has moderate acute and chronic toxicity to aquatic life, especially brittle roots and chromosomal damage

SECTION 13 : Disposal considerations

Waste disposal recommendations:

Contact a licensed professional waste disposal service to dispose of this material.U.S. - RCRA (Resource Conservation & Recovery Act) - U Series Wastes - Acutely Toxic Wastes & Other Hazardous Characteristics waste number U044 (Chloroform) . U.S. - RCRA (Resource Conservation & Recovery Act) - Basis for Listing - Appendix VII Included in waste streams: F024, F025, F039, K009, K010, K019, K020, K021, K029, K073, K116, K149, K150, K151, K158 (Chloroform) . U.S. - RCRA (Resource Conservation & Recovery Act) - D Series Wastes - Max Conc of Contaminants for the Tox Characteristic 6.0 mg/L regulatory level (Chloroform) . Dispose of empty containers as unused product.Product or containers must not be disposed with household garbage. It is the responsibility of the waste generator to properly characterize all waste materials according to applicable regulatory entities (US 40CFR262.11). Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. Chemical waste generators must also consult local, regional, and national hazardous waste regulations. Ensure complete and accurate classification.

SECTION 14 : Transport information

UN-Number

1888

UN proper shipping name

Poisonous material, Chloroform

Transport hazard class(es)

Class:
6.1 Toxic substances

Packing group:III

Environmental hazard:
Transport in bulk:
Special precautions for user:

SECTION 15 : Regulatory information

United States (USA)

SARA Section 311/312 (Specific toxic chemical listings):

Acute, Chronic

SARA Section 313 (Specific toxic chemical listings):

67-66-3 Chloroform 0.1 % de minimis concentration

RCRA (hazardous waste code):

67-66-3 Chloroform waste codeU044

TSCA (Toxic Substances Control Act):

All ingredients are listed.

CERCLA (Comprehensive Environmental Response, Compensation, and Liability Act):

67-66-3 Chloroform

Proposition 65 (California):

Chemicals known to cause cancer:

67-66-3 Chloroform

Chemicals known to cause reproductive toxicity for females:

None of the ingredients is listed

Chemicals known to cause reproductive toxicity for males:

None of the ingredients is listed

Chemicals known to cause developmental toxicity:

67-66-3 Chloroform

Canada

Canadian Domestic Substances List (DSL):

All ingredients are listed.

Canadian NPRI Ingredient Disclosure list (limit 0.1%):

67-66-3 Chloroform

Canadian NPRI Ingredient Disclosure list (limit 1%):

None of the ingredients is listed

SECTION 16 : Other information

This product has been classified in accordance with hazard criteria of the Controlled Products Regulations and the SDS contains all the information required by the Controlled Products Regulations.Note:. The responsibility to provide a safe workplace remains with the user.The user should consider the health hazards and safety information contained herein as a guide and should take those precautions required in an individual operation to instruct employees and develop work practice procedures for a safe work environment.The information contained herein is, to the best of our knowledge and belief, accurate.However, since the conditions of handling and use are beyond our control, we make no guarantee of results, and assume no liability for damages incurred by the use of this material.It is the responsibility of the user to comply with all applicable laws and regulations applicable to this

material.
GHS Full Text Phrases:

Abbreviations and acronyms:
IMDG: International Maritime Code for Dangerous Goods
IATA: International Air Transport Association
GHS: Globally Harmonized System of Classification and Labelling of Chemicals
ACGIH: American Conference of Governmental Industrial Hygienists
CAS: Chemical Abstracts Service (division of the American Chemical Society)
NFPA: National Fire Protection Association (USA)
HMIS: Hazardous Materials Identification System (USA)
WHMIS: Workplace Hazardous Materials Information System (Canada)
DNEL: Derived No-Effect Level (REACH)
PNEC: Predicted No-Effect Concentration (REACH)
CFR: Code of Federal Regulations (USA)
SARA: Superfund Amendments and Reauthorization Act (USA)
RCRA: Resource Conservation and Recovery Act (USA)
TSCA: Toxic Substances Control Act (USA)
NPRI: National Pollutant Release Inventory (Canada)
DOT: US Department of Transportation

Effective date : 02.12.2015
Last updated : 03.19.2015

Material Safety Data Sheet
Chrysene, 98%

MSDS# 95251

Section 1 - Chemical Product and Company Identification

MSDS Name:	Chrysene, 98%
Catalog Numbers:	AC224140000, AC224140010, AC224140050, AC224145000
Synonyms:	1,2-Benzophenanthrene; Benzo(a)phenanthrene; 1,2,5,6-Dibenzonaphthalene.
Company Identification:	Acros Organics BVBA Janssen Pharmaceuticalaan 3a 2440 Geel, Belgium
Company Identification: (USA)	Acros Organics One Reagent Lane Fair Lawn, NJ 07410
For information in the US, call:	800-ACROS-01
For information in Europe, call:	+32 14 57 52 11
Emergency Number, Europe:	+32 14 57 52 99
Emergency Number US:	201-796-7100
CHEMTREC Phone Number, US:	800-424-9300
CHEMTREC Phone Number, Europe:	703-527-3887

Section 2 - Composition, Information on Ingredients

CAS#:	218-01-9
Chemical Name:	Chrysene
%:	98
EINECS#:	205-923-4

Hazard Symbols: T

Risk Phrases: 45 50/53

Section 3 - Hazards Identification

EMERGENCY OVERVIEW

Caution! May cause respiratory tract irritation. May cause eye and skin irritation. May cause cancer in humans. Target Organs: Liver, skin.

Potential Health Effects

Eye:	May cause eye irritation.
Skin:	May cause skin irritation.
Ingestion:	May cause gastrointestinal irritation with nausea, vomiting and diarrhea.
Inhalation:	May cause respiratory tract irritation.
Chronic:	May cause cancer according to animal studies.

Section 4 - First Aid Measures

Eyes:	Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.

Skin: Get medical aid. Immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse.

Ingestion: Do not induce vomiting. If victim is conscious and alert, give 2-4 cupfuls of milk or water. Never give anything by mouth to an unconscious person. Get medical aid immediately.

Inhalation: Get medical aid immediately. Remove from exposure and move to fresh air immediately. If not breathing, give artificial respiration. If breathing is difficult, give oxygen.

Notes to Physician:

Section 5 - Fire Fighting Measures

General Information: As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. During a fire, irritating and highly toxic gases may be generated by thermal decomposition or combustion. This material in sufficient quantity and reduced particle size is capable of creating a dust explosion.

Extinguishing Media: Use water spray, dry chemical, carbon dioxide, or chemical foam.

Autoignition Temperature: Not available.

Flash Point: Not applicable.

Explosion Limits: Lower: Not available

Explosion Limits: Upper: Not available

NFPA Rating: health: ; flammability: 1; instability: ;

Section 6 - Accidental Release Measures

General Information: Use proper personal protective equipment as indicated in Section 8.

Spills/Leaks: Vacuum or sweep up material and place into a suitable disposal container. Clean up spills immediately, observing precautions in the Protective Equipment section. Wear a self contained breathing apparatus and appropriate personal protection. (See Exposure Controls, Personal Protection section). Provide ventilation.

Section 7 - Handling and Storage

Handling: Wash thoroughly after handling. Wash thoroughly after handling. Avoid contact with eyes, skin, and clothing. Use only with adequate ventilation. Avoid breathing dust.

Storage: Store in a tightly closed container. Store in a cool, dry area away from incompatible substances.

Section 8 - Exposure Controls, Personal Protection

Chemical Name	ACGIH	NIOSH	OSHA - Final PELs
Chrysene	0.2 mg/m3 TWA (as benzene soluble aerosol) (listed under Coal tar pitches).	0.1 mg/m3 TWA	0.2 mg/m3 TWA (benzene soluble fraction) (listed under Coal tar pitches).

OSHA Vacated PELs: Chrysene: 0.2 mg/m3 TWA (benzene soluble fraction) (listed under Coal tar pitches)

Engineering Controls:

Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower. Use process enclosure, local exhaust ventilation, or other engineering controls to control airborne levels.

Exposure Limits

Personal Protective Equipment

Eyes: Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.

Skin: Wear appropriate protective gloves to prevent skin exposure.

Clothing: Wear appropriate protective clothing to prevent skin exposure.

Respirators: Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

Section 9 - Physical and Chemical Properties

Physical State:	Solid
Color:	very light beige
Odor:	Not available
pH:	Not available
Vapor Pressure:	Not available
Vapor Density:	Not available
Evaporation Rate:	Not available
Viscosity:	Not available
Boiling Point:	448 deg C @ 760 mm Hg (838.40°F)
Freezing/Melting Point:	250-255 deg C
Decomposition Temperature:	Not available
Solubility in water:	insoluble
Specific Gravity/Density:	
Molecular Formula:	C18H12
Molecular Weight:	228.29

Section 10 - Stability and Reactivity

Chemical Stability:	Stable under normal temperatures and pressures.
Conditions to Avoid:	Dust generation.
Incompatibilities with Other Materials	Not available
Hazardous Decomposition Products	Carbon monoxide, carbon dioxide.
Hazardous Polymerization	Has not been reported.

Section 11 - Toxicological Information

RTECS#:	CAS# 218-01-9: GC0700000
LD50/LC50:	RTECS: Not available.
Carcinogenicity:	Chrysene - ACGIH: A1 - Confirmed Human Carcinogen (Coal tar pitches). California: carcinogen, initial date 1/1/90 NTP: Known carcinogen (Coal tar pitches). IARC: Group 1 carcinogen (Coal tar pitches).
Other:	See actual entry in RTECS for complete information.

Section 12 - Ecological Information

Ecotoxicity: Water flea LC50 = 1.9 mg/L; 2 Hr.; Unspecified

Section 13 - Disposal Considerations

Dispose of in a manner consistent with federal, state, and local regulations.

Section 14 - Transport Information

US DOT
Shipping Name: Please contact Fisher Scientific for shipping information
Hazard Class:
UN Number:
Packing Group:
Canada TDG
Shipping Name: Not available
Hazard Class:
UN Number:
Packing Group:

USA RQ: CAS# 218-01-9: 100 lb final RQ; 45.4 kg final RQ

Section 15 - Regulatory Information

European/International Regulations

European Labeling in Accordance with EC Directives

Hazard Symbols: T

Risk Phrases:

R 45 May cause cancer.

R 50/53 Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Safety Phrases:

S 53 Avoid exposure - obtain special instructions before use.

S 45 In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

S 60 This material and its container must be disposed of as hazardous waste.

S 61 Avoid release to the environment. Refer to special instructions/safety data sheets.

WGK (Water Danger/Protection)

CAS# 218-01-9: Not available

Canada

CAS# 218-01-9 is listed on Canada's DSL List

Canadian WHMIS Classifications: D2A

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all of the information required by those regulations.

CAS# 218-01-9 is listed on Canada's Ingredient Disclosure List

US Federal

TSCA

CAS# 218-01-9 is listed on the TSCA Inventory.

Section 16 - Other Information

MSDS Creation Date: 6/30/1999

Revision #6 Date 7/20/2009

The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantibility or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no event shall the company be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential, or exemplary damages howsoever arising, even if the company has been advised of the possibility of such damages.

Safety Data Sheet

Revision Date: 10/02/19
www.restek.com

2 Letter ISO country code/language code: US/EN

1. IDENTIFICATION

Catalog Number / Product Name:	**31276 / Dibenzo(a,h)anthracene Standard**
Company:	Restek Corporation
Address:	110 Benner Circle Bellefonte, Pa. 16823
Phone#:	814-353-1300
Fax#:	814-353-1309
Emergency#:	800-424-9300 (CHEMTREC) 703-527-3887 (Outside the US)
Email:	www.restek.com
Revision Number:	9
Intended use:	For Laboratory use only

2. HAZARD(S)IDENTIFICATION

Emergency Overview:

GHS Hazard Symbols:

GHS Classification:	Carcinogenicity Category 2
GHS Signal Word:	Warning
GHS Hazard:	Suspected of causing cancer.
GHS Precautions:	
Safety Precautions:	Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Wear protective gloves/protective clothing/eye protection/face protection.
First Aid Measures:	IF exposed or concerned: Get medical advice/attention.
Storage:	Store locked up.
Disposal:	Dispose of contents/container according to section 13 of the SDS.
Single Exposure Target Organs:	No data available
Repeated Exposure Target Organs:	No data available

3. COMPOSITION / INFORMATION ON INGREDIENT

Chemical Name	CAS #	EINEC #	% Composition
Dichloromethane	75-09-2	200-838-9	99.9
dibenz (a,h) anthracene	53-70-3	200-181-8	0.1

4. FIRST-AID MEASURES

Inhalation: Remove to fresh air. If breathing is difficult, have a trained individual administer oxygen. If not breathing, give artificial respiration and have a trained individual administer oxygen. Get medical attention immediately

Eyes: Immediately flush eyes with plenty of water for at least 20 minutes retracting eyelids often. Tilt the head to prevent chemical from transferring to the uncontaminated eye. Get immediate medical attention and monitor the eye daily as advised by your physician. Serious harm (damage) may result if treatment is delayed. Continue to flush eyes while awaiting medical attention

Skin Contact: Wash with soap and water. Remove contaminated clothing, launder immediately, and discard contaminated leather goods. Get medical attention immediately.

Ingestion: Do not induce vomiting and seek medical attention immediately. Drink two glasses of water or milk to dilute. Provide medical care provider with this SDS. Never give anything by mouth to an unconscious person

5. FIRE- FIGHTING MEASURES

Extinguishing Media: Use alcohol resistant foam, carbon dioxide, or dry chemical when fighting fires. Water or foam may cause frothing if liquid is burning but it still may be a useful extinguishing agent if carefully applied to the surface of the fire. Do Not direct a stream of water into the hot burning liquid. Use methods suitable to fight surrounding fire.

Fire and/or Explosion Hazards: No data.

Fire Fighting Methods and Protection: Use methods for the surrounding fire.

Hazardous Combustion Products: Carbon dioxide, Carbon monoxide

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions and Equipment: Exposure to the spilled material may be severely irritating or toxic. Follow personal protective equipment recommendations found in Section 8 of this SDS. Personal protective equipment needs must be evaluated based on information provided on this sheet and the special circumstances created by the spill including; the material spilled, the quantity of the spill, the area in which the spill occurred, and the expertise of employees in the area responding to the spill. Never exceed any occupational exposure limits.

Methods for Clean-up: Prevent the spread of any spill to minimize harm to human health and the environment if safe to do so. Wear complete and proper personal protective equipment following the recommendation of Section 8 at a minimum. Dike with suitable absorbent material like granulated clay. Gather and store in a sealed container pending a waste disposal evaluation.

7. HANDLING AND STORAGE

Handling Technical Measures and Precautions: Toxic or severely irritating material. Avoid contacting and avoid breathing the material. Use only in a well ventilated area. As with all chemicals, good industrial hygiene practices should be followed when handling this material.

Storage Technical Measures and Conditions: Store in a cool dry place. Isolate from incompatible materials. Keep container closed when not in use

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

United States:

Chemical Name	CAS No.	IDLH	ACGIH STEL	ACGIH TLV-TWA	OSHA Exposure Limit
Dichloromethane	75-09-2	2300 ppm IDLH	None Known	50 ppm TWA	25 ppm TWA; 125 ppm STEL (15 min. TWA)
dibenz (a,h) anthracene	53-70-3	Not established	None Known	Not established	No data available

Personal Protection:

Engineering Measures: Local exhaust ventilation or other engineering controls are normally required when handling or using this product to avoid overexposure.

Respiratory Protection: Respiratory protection may be required to avoid overexposure when handling this product. General or local exhaust ventilation is the preferred means of protection. Use a respirator if general room ventilation is not available or sufficient to

	eliminate symptoms.
Eye Protection:	Wear chemically resistant safety glasses with side shields when handling this product. Wear additional eye protection such as chemical splash goggles and/or face shield when the possibility exists for eye contact with splashing or spraying liquid, or airborne material. Do not wear contact lenses. Have an eye wash station available.
Skin Protection:	Avoid skin contact by wearing chemically resistant gloves, an apron and other protective equipment depending upon conditions of use. Inspect gloves for chemical break-through and replace at regular intervals. Clean protective equipment regularly. Wash hands and other exposed areas with mild soap and water before eating, drinking, and when leaving work.
Medical Conditions Aggravated By Exposure:	Eye disease Skin disease including eczema and sensitization Respiratory disease including asthma and bronchitis

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance, color:	Colorless
Odor:	Strong
Physical State:	No data available
pH:	Not applicable
Vapor Pressure:	No data available
Vapor Density:	2.93 (air = 1)
Boiling Point (°C):	524 °C Boiling Point
Melting Point (°C):	-96.7 °C
Flash Point (°F):	No data available
Upper Flammable/Explosive Limit, % in air:	No data available
Lower Flammable/Explosive Limit, % in air:	No data available
Autoignition Temperature (°C):	556 deg C
Decomposition Temperature (°C):	No data available
Specific Gravity:	1.3254 - 1.3258 g/cm3 at 20 °C
Evaporation Rate:	No data available
Odor Threshold:	ND
Solubility:	Moderate; 50-99%
Partition Coefficient: n-octanol in water:	No data available
VOC % by weight:	99.9
Molecular Weight:	No data available

10. STABILITY AND REACTIVITY

Stability:	Stable under normal conditions.
Conditions to Avoid:	None known.Contamination High temperatures
Materials to Avoid / Chemical Incompatiability:	Strong oxidizing agents Caustics (bases)
Hazardous Decomposition Products:	Carbon dioxide Carbon monoxide

11. TOXICOLOGICAL INFORMATION

Routes of Entry:	Inhalation Absorption Ingestion Skin contact Eye contact
Target Organs Potentially Affected By Exposure:	Skin, Cardiovascular System, Eyes, Liver
Chemical Interactions That Change Toxicity:	None Known

Immediate (Acute) Health Effects by Route of Exposure:

Inhalation Irritation:	Can cause moderate respiratory irritation, dizziness, weakness, fatigue, nausea and headache.
Inhalation Toxicity:	Harmful! Can cause systemic damage (see "Target Organs)Inhalation may cause severe central nervous system depression (including unconsciousness).
Skin Contact:	Contact causes severe skin irritation and possible burns.
Skin Absorption:	Harmful if absorbed through the skin. May cause severe irritation and systemic damage.
Eye Contact:	Contact with the eyes may cause moderate to severe eye injury. Eye contact may result in tearing and reddening, but not likely to permanently injure eye tissue. Temporary vision impairment (cloudy or blurred vision) is possible.
Ingestion Irritation:	Irritating to mouth, throat, and stomach. Can cause abdominal discomfort, nausea, vomiting and diarrhea.
Ingestion Toxicity:	Harmful if swallowed. May cause systemic poisoning.

Long-Term (Chronic) Health Effects:

Carcinogenicity:	Contains a probable or known human carcinogen.
Reproductive and Developmental Toxicity:	No data available to indicate product or any components

present at greater than 0.1% may cause birth defects.

Inhalation: Upon prolonged and/or repeated exposure, can cause moderate respiratory irritation, dizziness, weakness, fatigue, nausea and headache.Harmful! Can cause systemic damage upon prolonged and/or repeated exposure (see "Target Organs)

Skin Absorption: Upon prolonged or repeated exposure, harmful if absorbed through the skin. May cause severe irritation and systemic damage

Component Toxicological Data:
NIOSH:

Chemical Name	CAS No.	LD50/LC50
Methane, dichloro-	75-09-2	Inhalation LC50 Rat 53 mg/L 6 h

Component Carcinogenic Data:
OSHA:

Chemical Name	CAS No.	
Dibenz[a,h]anthracene	53-70-3	Present
Methylene chloride	75-09-2	25 ppm TWA (8 hr.); 125 ppm STEL (15 min.); 12.5 ppm Action Level (see 29 CFR 1910.1051); effective date for respiratory protection for certain employers to acheive the 8-hour TWA PEL is August 31, 1998; the start up date to install engineering controls is December 10, 1998.; {OSHA - 29 CFR 1910 Specifically Regulate

ACGIH:

Chemical Name	CAS No.	
Dichloromethane	75-09-2	A3 - Confirmed Animal Carcinogen with Unknown Relevance to Humans

NIOSH:

Chemical Name	CAS No.	
Methylene chloride	75-09-2	potential occupational carcinogen

NTP:

Chemical Name	CAS No.
No data available	

IARC:

Chemical Name	CAS No.	Group No.
Monograph 92 [2010]; Supplement 7 [1987]; Monograph 32 [1983] (overall evaluation upgraded from 2B to 2A with supporting evidence from other relevant data)	53-70-3	Group 2A
Monograph 110 [in preparation]; Monograph 71 [1999]	75-09-2	Group 2A

12. ECOLOGICAL INFORMATION

Overview: Moderate ecological hazard. This product may be dangerous to plants and/or wildlife. Keep out of waterways.

Mobility: No data

Persistence: No data

Bioaccumulation: No data

Degradability: No data

Ecological Toxicity Data: No data available

13. DISPOSAL CONSIDERATIONS

Waste Description of Spent Product: Spent or discarded material is a hazardous waste.Mixing spent or discarded material with other materials may render the mixture hazardous. Perform a hazardous waste determination on mixtures.

Disposal Methods: Incinerate spent or discarded material a permitted hazardous waste facility.

Waste Disposal of Packaging: Comply with all Local, State, Federal, and Provincial Environmental Regulations.

14. TRANSPORTATION INFORMATION

United States:

DOT Proper Shipping Name: Dichloromethane
UN Number: UN1593
Hazard Class: 6.1
Packing Group: III

International:

IATA Proper Shipping Name: Dichloromethane
UN Number: UN1593
Hazard Class: 6.1
Packing Group: III

Marine Pollutant: No

Chemical Name	CAS#	Marine Pollutant	Severe Marine Pollutant
No data available			

15. REGULATORY INFORMATION

United States:

Chemical Name	CAS#	CERCLA	SARA 313	SARA EHS 313	TSCA
Dichloromethane	75-09-2	X	X	-	X
dibenz (a,h) anthracene	53-70-3	X	X	-	X

The following chemicals are listed on CA Prop 65:

Chemical Name	CAS #	Regulation
Dibenz[a,h]anthracene	53-70-3	Prop 65 Cancer
Dichloromethane Dichloromethane (Methylene chloride)	75-09-2	Prop 65 Cancer

State Right To Know Listing:

Chemical Name	CAS#	New Jersey	Massachusetts	Pennsylvania	California
Dichloromethane	75-09-2	X	X	X	X
dibenz (a,h) anthracene	53-70-3	X	X	X	X

16. OTHER INFORMATION

Prior Version Date: 06/20/18

Other Information: Any changes to the SDS compared to previous versions are marked by a vertical line in front of the concerned paragraph.

References: No data available

Disclaimer: Restek Corporation provides the descriptions, data and information contained herein in good faith but makes no representation as to its comprehensiveness or accuracy. It is provided for your guidance only. Because many factors may affect processing or application/use, Restek Corporation recommends you perform an assessment to determine the suitability of a product for your particular purpose prior to use. No warranties of any kind, either expressed or implied, including fitness for a particular purpose, are made regarding products described, data or information set forth. In no case shall the descriptions, information, or data provided be considered a part of our terms and conditions of sale. Further, the descriptions, data and information furnished hereunder are given gratis. No obligation or liability for the description, data and information given are assumed. All such being given and accepted at your risk.

Safety Data Sheet

Revision Date: 06/04/19
www.restek.com

2 Letter ISO country code/language code: US/EN

1. IDENTIFICATION

Catalog Number / Product Name:	**31279 / Indeno(1,2,3-c,d)pyrene Standard**
Company:	Restek Corporation
Address:	110 Benner Circle Bellefonte, Pa. 16823
Phone#:	814-353-1300
Fax#:	814-353-1309
Emergency#:	800-424-9300 (CHEMTREC) 703-527-3887 (Outside the US)
Email:	www.restek.com
Revision Number:	11
Intended use:	For Laboratory use only

2. HAZARD(S)IDENTIFICATION

Emergency Overview:

GHS Hazard Symbols:

GHS Classification:	Carcinogenicity Category 2
GHS Signal Word:	Warning
GHS Hazard:	Suspected of causing cancer.
GHS Precautions:	
Safety Precautions:	Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Wear protective gloves/protective clothing/eye protection/face protection.
First Aid Measures:	IF exposed or concerned: Get medical advice/attention.
Storage:	Store locked up.
Disposal:	Dispose of contents/container according to section 13 of the SDS.
Single Exposure Target Organs:	No data available
Repeated Exposure Target Organs:	No data available

3. COMPOSITION / INFORMATION ON INGREDIENT

Chemical Name	CAS #	EINEC #	% Composition
Dichloromethane	75-09-2	200-838-9	99.9
indeno (1,2,3-c,d) pyrene	193-39-5	205-893-2	0.1

4. FIRST-AID MEASURES

Inhalation: Remove to fresh air. If breathing is difficult, have a trained individual administer oxygen. If not breathing, give artificial respiration and have a trained individual administer oxygen. Get medical attention immediately

Eyes: Immediately flush eyes with plenty of water for at least 20 minutes retracting eyelids often. Tilt the head to prevent chemical from transferring to the uncontaminated eye. Get immediate medical attention and monitor the eye daily as advised by your physician. Serious harm (damage) may result if treatment is delayed. Continue to flush eyes while awaiting medical attention

Skin Contact: Wash with soap and water. Remove contaminated clothing, launder immediately, and discard contaminated leather goods. Get medical attention immediately.

Ingestion: Do not induce vomiting and seek medical attention immediately. Drink two glasses of water or milk to dilute. Provide medical care provider with this SDS. Never give anything by mouth to an unconscious person

5. FIRE- FIGHTING MEASURES

Extinguishing Media: Use alcohol resistant foam, carbon dioxide, or dry chemical when fighting fires. Water or foam may cause frothing if liquid is burning but it still may be a useful extinguishing agent if carefully applied to the surface of the fire. Do Not direct a stream of water into the hot burning liquid. Use methods suitable to fight surrounding fire.

Fire and/or Explosion Hazards: No data.

Fire Fighting Methods and Protection: Use methods for the surrounding fire.

Hazardous Combustion Products: Carbon dioxide, Carbon monoxide

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions and Equipment: Exposure to the spilled material may be severely irritating or toxic. Follow personal protective equipment recommendations found in Section 8 of this SDS. Personal protective equipment needs must be evaluated based on information provided on this sheet and the special circumstances created by the spill including; the material spilled, the quantity of the spill, the area in which the spill occurred, and the expertise of employees in the area responding to the spill. Never exceed any occupational exposure limits.

Methods for Clean-up: Prevent the spread of any spill to minimize harm to human health and the environment if safe to do so. Wear complete and proper personal protective equipment following the recommendation of Section 8 at a minimum. Dike with suitable absorbent material like granulated clay. Gather and store in a sealed container pending a waste disposal evaluation.

7. HANDLING AND STORAGE

Handling Technical Measures and Precautions: Toxic or severely irritating material. Avoid contacting and avoid breathing the material. Use only in a well ventilated area. As with all chemicals, good industrial hygiene practices should be followed when handling this material.

Storage Technical Measures and Conditions: Store in a cool dry place. Isolate from incompatible materials. Keep container closed when not in use

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

United States:

Chemical Name	CAS No.	IDLH	ACGIH STEL	ACGIH TLV-TWA	OSHA Exposure Limit
Dichloromethane	75-09-2	2300 ppm IDLH	None Known	50 ppm TWA	25 ppm TWA; 125 ppm STEL (15 min. TWA)
indeno (1,2,3-c,d) pyrene	193-39-5	Not established	None Known	Not established	No data available

Personal Protection:

Engineering Measures: Local exhaust ventilation or other engineering controls are normally required when handling or using this product to avoid overexposure.

Respiratory Protection: Respiratory protection may be required to avoid overexposure when handling this product. General or local exhaust ventilation is the preferred means of protection. Use a respirator if general room ventilation is not available or sufficient to

	eliminate symptoms.
Eye Protection:	Wear chemically resistant safety glasses with side shields when handling this product. Wear additional eye protection such as chemical splash goggles and/or face shield when the possibility exists for eye contact with splashing or spraying liquid, or airborne material. Do not wear contact lenses. Have an eye wash station available.
Skin Protection:	Avoid skin contact by wearing chemically resistant gloves, an apron and other protective equipment depending upon conditions of use. Inspect gloves for chemical break-through and replace at regular intervals. Clean protective equipment regularly. Wash hands and other exposed areas with mild soap and water before eating, drinking, and when leaving work.
Medical Conditions Aggravated By Exposure:	Eye disease Skin disease including eczema and sensitization Respiratory disease including asthma and bronchitis

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance, color:	Colorless
Odor:	Strong
Physical State:	No data available
pH:	Not applicable
Vapor Pressure:	No data available
Vapor Density:	2.93 (air = 1)
Boiling Point (°C):	530 °C
Melting Point (°C):	-96.7 °C
Flash Point (°F):	No data available
Upper Flammable/Explosive Limit, % in air:	No data available
Lower Flammable/Explosive Limit, % in air:	No data available
Autoignition Temperature (°C):	556 deg C
Decomposition Temperature (°C):	No data available
Specific Gravity:	1.3254 - 1.3258 g/cm3 at 20 °C
Evaporation Rate:	No data available
Odor Threshold:	ND
Solubility:	Moderate; 50-99%
Partition Coefficient: n-octanol in water:	No data available
VOC % by weight:	99.9
Molecular Weight:	No data available

10. STABILITY AND REACTIVITY

Stability:	Stable under normal conditions.
Conditions to Avoid:	None known.Contamination High temperatures
Materials to Avoid / Chemical Incompatiability:	Strong oxidizing agents Caustics (bases)
Hazardous Decomposition Products:	Carbon dioxide Carbon monoxide

11. TOXICOLOGICAL INFORMATION

Routes of Entry:	Inhalation Absorption Ingestion Skin contact Eye contact
Target Organs Potentially Affected By Exposure:	Skin, Cardiovascular System, Eyes, Liver
Chemical Interactions That Change Toxicity:	None Known

Immediate (Acute) Health Effects by Route of Exposure:

Inhalation Irritation:	Can cause moderate respiratory irritation, dizziness, weakness, fatigue, nausea and headache.
Inhalation Toxicity:	Harmful! Can cause systemic damage (see "Target Organs)Inhalation may cause severe central nervous system depression (including unconsciousness).
Skin Contact:	Contact causes severe skin irritation and possible burns.
Skin Absorption:	Harmful if absorbed through the skin. May cause severe irritation and systemic damage.
Eye Contact:	Contact with the eyes may cause moderate to severe eye injury. Eye contact may result in tearing and reddening, but not likely to permanently injure eye tissue. Temporary vision impairment (cloudy or blurred vision) is possible.
Ingestion Irritation:	Irritating to mouth, throat, and stomach. Can cause abdominal discomfort, nausea, vomiting and diarrhea.
Ingestion Toxicity:	Harmful if swallowed. May cause systemic poisoning.

Long-Term (Chronic) Health Effects:

Carcinogenicity:	Contains a probable or known human carcinogen.
Reproductive and Developmental Toxicity:	No data available to indicate product or any components

	present at greater than 0.1% may cause birth defects.
Inhalation:	Upon prolonged and/or repeated exposure, can cause moderate respiratory irritation, dizziness, weakness, fatigue, nausea and headache.Harmful! Can cause systemic damage upon prolonged and/or repeated exposure (see "Target Organs)
Skin Absorption:	Upon prolonged or repeated exposure, harmful if absorbed through the skin. May cause severe irritation and systemic damage

Component Toxicological Data:
NIOSH:

Chemical Name	CAS No.	LD50/LC50
Methane, dichloro-	75-09-2	Inhalation LC50 Rat 53 mg/L 6 h

Component Carcinogenic Data:
OSHA:

Chemical Name	CAS No.	
Indeno[1,2,3-cd]pyrene	193-39-5	Present
Methylene chloride	75-09-2	25 ppm TWA (8 hr.); 125 ppm STEL (15 min.); 12.5 ppm Action Level (see 29 CFR 1910.1051); effective date for respiratory protection for certain employers to acheive the 8-hour TWA PEL is August 31, 1998; the start up date to install engineering controls is December 10, 1998.; {OSHA - 29 CFR 1910 Specifically Regulate

ACGIH:

Chemical Name	CAS No.	
Dichloromethane	75-09-2	A3 - Confirmed Animal Carcinogen with Unknown Relevance to Humans

NIOSH:

Chemical Name	CAS No.	
Methylene chloride	75-09-2	potential occupational carcinogen

NTP:

Chemical Name	CAS No.
No data available	

IARC:

Chemical Name	CAS No.	Group No.
Monograph 110 [in preparation]; Monograph 71 [1999]	75-09-2	Group 2A
Monograph 92 [2010]; Supplement 7 [1987]; Monograph 32 [1983]	193-39-5	Group 2B

12. ECOLOGICAL INFORMATION

Overview:	Moderate ecological hazard. This product may be dangerous to plants and/or wildlife. Keep out of waterways.
Mobility:	No data
Persistence:	No data
Bioaccumulation:	No data
Degradability:	No data
Ecological Toxicity Data:	No data available

13. DISPOSAL CONSIDERATIONS

Waste Description of Spent Product:	Spent or discarded material is a hazardous waste.Mixing spent or discarded material with other materials may render the mixture hazardous. Perform a hazardous waste determination on mixtures.
Disposal Methods:	Incinerate spent or discarded material a permitted hazardous waste facility.
Waste Disposal of Packaging:	Comply with all Local, State, Federal, and Provincial

Environmental Regulations.

14. TRANSPORTATION INFORMATION

United States:

DOT Proper Shipping Name:	Dichloromethane
UN Number:	UN1593
Hazard Class:	6.1
Packing Group:	III

International:

IATA Proper Shipping Name:	Dichloromethane
UN Number:	UN1593
Hazard Class:	6.1
Packing Group:	III

Marine Pollutant: No

Chemical Name	CAS#	Marine Pollutant	Severe Marine Pollutant
No data available			

15. REGULATORY INFORMATION

United States:

Chemical Name	CAS#	CERCLA	SARA 313	SARA EHS 313	TSCA
Dichloromethane	75-09-2	X	X	-	X
indeno (1,2,3-c,d) pyrene	193-39-5	X	X	-	X

The following chemicals are listed on CA Prop 65:

Chemical Name	CAS #	Regulation
Indeno[1,2,3-cd]pyrene	193-39-5	Prop 65 Cancer
Dichloromethane Dichloromethane (Methylene chloride)	75-09-2	Prop 65 Cancer

State Right To Know Listing:

Chemical Name	CAS#	New Jersey	Massachusetts	Pennsylvania	California
Dichloromethane	75-09-2	X	X	X	X
indeno (1,2,3-c,d) pyrene	193-39-5	X	X	X	X

16. OTHER INFORMATION

Prior Version Date: 03/22/18

Other Information: Any changes to the SDS compared to previous versions are marked by a vertical line in front of the concerned paragraph.

References: No data available

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Lead

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

Date of issue: 12/15/2014 Revision date: 12/15/2014 Version: 1.1

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Product form	:	Substance
CAS No	:	7439-92-1
Formula	:	Pb
Synonyms	:	C.I. 77575, in massive state / elemental lead, in massive state / glover, in massive state
BIG no	:	10073

1.2. Relevant identified uses of the substance or mixture and uses advised against

Use of the substance/mixture : Solder
Battery: component
Construction
Electrodes

1.3. Details of the supplier of the safety data sheet

GSC International, Inc.
1747 N. Deffer Drive
Nixa,
MO 65714
United States of America

Tel: 417-374-7431
Fax: 417-374-7442
Email: info@gscinternationalinc.com

1.4. Emergency telephone number

Country	Organization/Company	Address	Emergency number
MEXICO	Servicio de Informacion Toxicologica Sintox	Tintoreto #32 Edif. a Desp. Col. Nochebuena Mixcoac México, D.F.	1 800 009 2800 +52 55 5611 2634 /+52 55 5598 9095
UNITED STATES OF AMERICA	American Association of Poison Control Centers		1-800-222-1222

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification (GHS-US)

Acute Tox. 4 (Oral)	H302
Acute Tox. 4 (Inhalation)	H332
Carc. 1B	H350
Repr. 1A	H360
STOT RE 2	H373
Aquatic Acute 1	H400
Aquatic Chronic 1	H410

Full text of H-phrases: see section 16

2.2. Label elements

GHS-US labeling

Hazard pictograms (GHS-US) :

GHS07 GHS08 GHS09

Signal word (GHS-US) : Danger

Hazard statements (GHS-US) : H302+H332 - Harmful if swallowed or if inhaled
H350 - May cause cancer
H360 - May damage fertility or the unborn child
H373 - May cause damage to organs through prolonged or repeated exposure

H400 - Very toxic to aquatic life
H410 - Very toxic to aquatic life with long lasting effects

Precautionary statements (GHS-US) : P201 - Obtain special instructions before use
P202 - Do not handle until all safety precautions have been read and understood
P260 - Do not breathe dust, fume
P264 - Wash hands thoroughly after handling
P270 - Do not eat, drink or smoke when using this product
P273 - Avoid release to the environment
P304+P340 - If inhaled: Remove person to fresh air and keep comfortable for breathing
P308+P313 - If exposed or concerned: Get medical advice/attention
P314 - Get medical advice/attention if you feel unwell
P501 - Dispose of contents/container to a licensed hazardous-waste disposal contractor or collection site except for empty clean containers which can be disposed of as non-hazardous waste

2.3. Other hazards

No additional information available

2.4. Unknown acute toxicity (GHS-US)

Not applicable

SECTION 3: Composition/information on ingredients

3.1. Substance

Name	Product identifier	%	Classification (GHS-US)
Lead (Main constituent)	(CAS No) 7439-92-1	> 99,9	Acute Tox. 4 (Oral), H302 Acute Tox. 4 (Inhalation), H332 Carc. 1B, H350 Repr. 1A, H360 STOT RE 2, H373 Aquatic Acute 1, H400 Aquatic Chronic 1, H410

Full text of H-phrases: see section 16

3.2. Mixture

Not applicable

4.1. Description of first aid measures

First-aid measures general : If you feel unwell, seek medical advice. IF exposed or concerned: Get medical advice/attention. Call a poison center/doctor/physician if you feel unwell.

First-aid measures after inhalation : Remove person to fresh air and keep comfortable for breathing. Not applicable. Call a poison center/doctor/physician if you feel unwell.

First-aid measures after skin contact : Not applicable. Wash skin with plenty of water.

First-aid measures after eye contact : Not applicable. Rinse eyes with water as a precaution.

First-aid measures after ingestion : Not applicable. Rinse mouth. Call a poison center/doctor/physician if you feel unwell.

4.2. Most important symptoms and effects, both acute and delayed

Symptoms/injuries after inhalation : No effects known.

Symptoms/injuries after skin contact : No effects known.

Symptoms/injuries after eye contact : No effects known.

Symptoms/injuries after ingestion : No effects known.

Chronic symptoms : No effects known.

4.3. Indication of any immediate medical attention and special treatment needed

Treat symptomatically.

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media : Adapt extinguishing media to the environment.

Unsuitable extinguishing media : No unsuitable extinguishing media known.

5.2. Special hazards arising from the substance or mixture

Fire hazard : DIRECT FIRE HAZARD. Non combustible.

Explosion hazard	:	DIRECT EXPLOSION HAZARD. No data available on direct explosion hazard. INDIRECT EXPLOSION HAZARD. No data available on indirect explosion hazard.
Reactivity	:	On burning: formation of metallic fumes. Oxidizes on exposure to air.

5.3. Advice for firefighters

Precautionary measures fire	:	Exposure to fire/heat: keep upwind. Exposure to fire/heat: consider evacuation. Exposure to heat: have neighborhood close doors and windows.
Firefighting instructions	:	Dilute toxic gases with water spray. Take account of toxic fire-fighting water. Use water moderately and if possible collect or contain it.
Protection during firefighting	:	Heat/fire exposure: compressed air/oxygen apparatus. Do not attempt to take action without suitable protective equipment. Self-contained breathing apparatus. Complete protective clothing.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

6.1.1. For non-emergency personnel

Protective equipment	:	Gloves. Protective clothing. See "Material-Handling" to select protective clothing.
Emergency procedures	:	Mark the danger area. No naked flames.

6.1.2. For emergency responders

Protective equipment	:	Do not attempt to take action without suitable protective equipment. For further information refer to section 8: "Exposure controls/personal protection".

6.2. Environmental precautions

Avoid release to the environment. Prevent soil and water pollution. Prevent spreading in sewers. Notify authorities if product enters sewers or public waters.

6.3. Methods and material for containment and cleaning up

For containment	:	Not applicable. Collect spillage.
Methods for cleaning up	:	Recover mechanically the product. Pick-up the material. Take collected spill to manufacturer/competent authority. Notify authorities if product enters sewers or public waters.
Other information	:	Dispose of materials or solid residues at an authorized site.

6.4. Reference to other sections

For further information refer to section 13.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Precautions for safe handling	:	Meet the legal requirements. Do not discharge the waste into the drain. Handle unclean empty containers as full ones. Observe strict hygiene. Measure the concentration in the atmosphere. Carry out operations in the open/under local exhaust/ventilation or with respiratory protection. Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Do not breathe dust, fume. Use only outdoors or in a well-ventilated area. Take all necessary technical measures to avoid or minimize the release of the product on the workplace. Limit quantities of product at the minimum necessary for handling and limit the number of exposed workers. Provide local exhaust or general room ventilation. Wear personal protective equipment. Floors, walls and other surfaces in the hazard area must be cleaned regularly.
Hygiene measures	:	Separate working clothes from town clothes. Launder separately. Do not eat, drink or smoke when using this product. Always wash hands after handling the product.

7.2. Conditions for safe storage, including any incompatibilities

Technical measures	:	Does not require any specific or particular technical measures. Comply with applicable regulations.
Storage conditions	:	Store locked up. Store in a well-ventilated place. Keep cool.
Incompatible materials	:	Strong acids, strong bases and oxidation agents.
Heat-ignition	:	KEEP SUBSTANCE AWAY FROM: heat sources.
Prohibitions on mixed storage	:	KEEP SUBSTANCE AWAY FROM: oxidizing agents. Strong acids. Strong bases.
Storage area	:	Meet the legal requirements.
Special rules on packaging	:	SPECIAL REQUIREMENTS: closing. correctly labeled. meet the legal requirements. Secure fragile packaging in solid containers.

7.3. Specific end use(s)

No additional information available

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Lead (7439-92-1)		
ACGIH	ACGIH TWA (mg/m³)	0,05 mg/m³
ACGIH	Remark (ACGIH)	CNS & PNS impair
OSHA	Not applicable	

8.2. Exposure controls

Appropriate engineering controls : Provide adequate general and local exhaust ventilation. Ensure good ventilation of the work station.

Personal protective equipment : Protective goggles. Gloves.

Materials for protective clothing : GIVE EXCELLENT RESISTANCE: No data available. GIVE GOOD RESISTANCE: butyl rubber. PVC. GIVE LESS RESISTANCE: No data available. GIVE POOR RESISTANCE: No data available.

Hand protection : protective gloves.

Eye protection : Safety glasses.

Skin and body protection : Not required for normal conditions of use.

Respiratory protection : Wear respiratory protection.

Environmental exposure controls : Avoid release to the environment.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state : Solid

Appearance : Metal.

Molecular mass : 207,20 g/mol

Color : White to blue-grey

Odor : Odorless

Odor threshold : No data available

pH : No data available

Relative evaporation rate (butyl acetate=1) : No data available

Melting point : 327 °C

Freezing point : No data available

Boiling point : 1740 °C

Flash point : Not applicable

Auto-ignition temperature : No data available

Decomposition temperature : No data available

Flammability (solid, gas) : No data available

Vapor pressure : < 0,1 hPa

Relative vapor density at 20 °C : No data available

Relative density : 11,3

Specific gravity / density : 11340 kg/m³

Solubility : insoluble in water. Substance sinks in water. Soluble in nitric acid. Insoluble in organic solvents. Water: < 0,1 g/100ml

Log Pow : 0,73 (Estimated value)

Log Kow : No data available

Viscosity, kinematic	:	Not applicable
Viscosity, dynamic	:	No data available
Explosive properties	:	No data available
Oxidizing properties	:	No data available
Explosive limits	:	No data available

9.2. Other information

VOC content	:	Not applicable (inorganic)

SECTION 10: Stability and reactivity

10.1. Reactivity

On burning: formation of metallic fumes. Oxidizes on exposure to air.

10.2. Chemical stability

Unstable on exposure to air.

10.3. Possibility of hazardous reactions

No additional information available

10.4. Conditions to avoid

No additional information available

10.5. Incompatible materials

Acids. Bases.

10.6. Hazardous decomposition products

Thermal decomposition generates : fume.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity : Oral: Harmful if swallowed. Inhalation: Harmful if inhaled.

Lead (\f)7439-92-1	
LD50 oral rat	> 2000 mg/kg body weight (Rat; Weight of evidence)
LD50 dermal rat	> 2000 mg/kg body weight (Rat; Experimental value; OECD 402: Acute Dermal Toxicity)
ATE US (oral)	500,000 mg/kg body weight
ATE US (gases)	4500,000 ppmV/4h
ATE US (vapors)	11,000 mg/l/4h
ATE US (dust, mist)	1,500 mg/l/4h
Additional information	Lead massive metal is not considered to be acutely toxic. It is not easily inhaled or ingested, and if it is accidentally ingested normally passes through the gastrointestinal system without significant absorption into the body. Lead is not easily absorbed through the skin.

Skin corrosion/irritation : Not classified
(Based on available data, the classification criteria are not met)

Serious eye damage/irritation : Not classified
(Based on available data, the classification criteria are not met)

Respiratory or skin sensitization : Not classified
(Based on available data, the classification criteria are not met)

Germ cell mutagenicity : Not classified
(Based on available data, the classification criteria are not met)

Carcinogenicity : May cause cancer.

Lead (7439-92-1)	
Additional information	There is some evidence that inorganic lead compounds may have a carcinogenic effect, and they have been classified by IARC as probably carcinogenic to humans. However, it is considered that this classification does not apply to lead in articles, given the very low bioavailability of metallic lead. Carcinogenicity studies of lead metal powder have been negative. Epidemiology studies of workers exposed to inorganic lead compounds have found a limited association with stomach cancer. IARC has concluded that lead metal is possibly carcinogenic to humans (Group aB).
IARC group	2B - Possibly carcinogenic to humans
National Toxicology Program (NTP) Status	3 - Reasonably anticipated to be Human Carcinogen

Reproductive toxicity : May damage fertility or the unborn child.

Specific target organ toxicity (single exposure) : Not classified

(Based on available data, the classification criteria are not met)

Specific target organ toxicity (repeated exposure) : May cause damage to organs through prolonged or repeated exposure.

Lead (7439-92-1)	
Additional information	Lead is a cumulative poison and may be absorbed into the body through ingestion or inhalation. Although inhalation and ingestion of lead in massive form are unlikely, poor hygiene practises may result in hand to mouth transfer which maybe significant over a prolonged period of time. Inorganic lead compounds have been documented in observational human studies to produce toxicity in multiple organ systems and body function including the haemotopoetic (blood) system, kidney function, reproductive function and the central nervous system.

Aspiration hazard : Not classified

(Based on available data, the classification criteria are not met)

Symptoms/injuries after inhalation : No effects known.

Symptoms/injuries after skin contact : No effects known.

Symptoms/injuries after eye contact : No effects known.

Symptoms/injuries after ingestion : No effects known.

Chronic symptoms : No effects known.

SECTION 12: Ecological information

12.1. Toxicity

Ecology - general : Dangerous for the environment. Very toxic to aquatic life with long lasting effects.

Ecology - air : Not dangerous for the ozone layer (Regulation (EC) No 1005/2009). Not included in the list of fluorinated greenhouse gases (Regulation (EC) No 842/2006). TA-Luft Klasse 5.2.2/II.

Ecology - water : No water pollutant (surface water). Maximum concentration in drinking water: 0.010 mg/l (lead) (Directive 98/83/EC). Highly toxic to aquatic organisms.

Lead (7439-92-1)	
LC50 fish 1	2,8 (0,44 - 542) mg/l (96h) Coughlan, D.J., S.P. Gloss, and J. Kubota 1986. Acute and Sub-Chronic Toxicity of Lead to the Early Life Stages of Small mouth Bass (Micropterus dolomieui). Water Air Soil Pollut. 28(3/4):265-275
EC50 Daphnia 1	4,46 (0,53 - 5,1) mg/l (48h) Govindarajan, S., C.P. Valsaraj, R. Mohan, V. Hariprasad, and R. Ramasubramanian 1993. Toxicity of Heavy Metals in Aquaculture Organisms: Penaeus indicus, Perna viridis, Artemia salina and Skeletonema costatum. Pollut.Res. 12(3):187-189

12.2. Persistence and degradability

Lead (7439-92-1)	
Persistence and degradability	Biodegradability: Not applicable. No (test)data available on mobility of the substance.
ThOD	Not applicable (inorganic)

12.3. Bioaccumulative potential

Lead (7439-92-1)	
Log Pow	0,73 (Estimated value)
Bioaccumulative potential	Low bioaccumulation potential (Log Kow < 4).

12.4. Mobility in soil

No additional information available

12.5. Other adverse effects

Effect on ozone layer :

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Waste disposal recommendations : Dispose in a safe manner in accordance with local/national regulations. Hazardous waste shall not be mixed together with other waste. Different types of hazardous waste shall not be mixed together if this may entail a risk of pollution or create problems for the further management of the waste. Hazardous waste shall be managed responsibly. All entities that store, transport or handle hazardous waste shall take the necessary measures to prevent risks of pollution or damage to people or animals. Reuse or recycle following decontamination. Remove to an authorized dump (Class I). Do not discharge into surface water (2000/60/EC, Council decision 2455/2001/EC, O.J. L331 of 15/12/2001).

Additional information : LWCA (the Netherlands): KGA category 05. Hazardous waste according to Directive 2008/98/EC.

SECTION 14: Transport information

In accordance with DOT

Transport document description : UN3077 Environmentally hazardous substances, solid, n.o.s. Lead(7439-92-1), 9, III

UN-No.(DOT) : UN3077

Proper Shipping Name (DOT) : Environmentally hazardous substances, solid, n.o.s.
Lead(7439-92-1)

Department of Transportation (DOT) Hazard Classes : 9 - Class 9 - Miscellaneous hazardous material 49 CFR 173.140

Hazard labels (DOT) : 9 - Class 9 (Miscellaneous dangerous materials)

DOT Symbols : G - Identifies PSN requiring a technical name

Packing group (DOT) : III - Minor Danger

DOT Special Provisions (49 CFR 172.102)	:	8 - A hazardous substance that is not a hazardous waste may be shipped under the shipping description “Other regulated substances, liquid or solid, n.o.s.”, as appropriate. In addition, for solid materials, special provision B54 applies. 146 - This description may be used for a material that poses a hazard to the environment but does not meet the definition for a hazardous waste or a hazardous substance, as defined in 171.8 of this subchapter, or any hazard class as defined in Part 173 of this subchapter, if it is designated as environmentally hazardous by the Competent Authority of the country of origin, transit or destination. 335 - Mixtures of solids that are not subject to this subchapter and environmentally hazardous liquids or solids may be classified as “Environmentally hazardous substances, solid, n.o.s,” UN3077 and may be transported under this entry, provided there is no free liquid visible at the time the material is loaded or at the time the packaging or transport unit is closed. Each transport unit must be leak-proof when used as bulk packaging. A112 - Notwithstanding the quantity limits shown in Column (9A) and (9B) for this entry, the following IBCs are authorized for transportation aboard passenger and cargo-only aircraft. Each IBC may not exceed a maximum net quantity of 1,000 kg: a. Metal: 11A, 11B, 11N, 21A, 21B and 21N b. Rigid plastics: 11H1, 11H2, 21H1 and 21H2 c. Composite with plastic inner receptacle: 11HZ1, 11HZ2, 21HZ1 and 21HZ2 d. Fiberboard: 11G e. Wooden: 11C, 11D and 11F (with inner liners) f. Flexible: 13H2, 13H3, 13H4, 13H5, 13L2, 13L3, 13L4, 13M1 and 13M2 (flexible IBCs must be sift-proof and water resistant or must be fitted with a sift-proof and water resistant liner). B54 - Open-top, sift-proof rail cars are also authorized. IB8 - Authorized IBCs: Metal (11A, 11B, 11N, 21A, 21B, 21N, 31A, 31B and 31N); Rigid plastics (11H1, 11H2, 21H1, 21H2, 31H1 and 31H2); Composite (11HZ1, 11HZ2, 21HZ1, 21HZ2, 31HZ1 and 31HZ2); Fiberboard (11G); Wooden (11C, 11D and 11F); Flexible (13H1, 13H2, 13H3, 13H4, 13H5, 13L1, 13L2, 13L3, 13L4, 13M1 or 13M2). IP3 - Flexible IBCs must be sift-proof and water-resistant or must be fitted with a sift-proof and water-resistant liner. N20 - A 5M1 multi-wall paper bag is authorized if transported in a closed transport vehicle. T1 - 1.5 178.274(d)(2) Normal..... 178.275(d)(2) TP33 - The portable tank instruction assigned for this substance applies for granular and powdered solids and for solids which are filled and discharged at temperatures above their melting point which are cooled and transported as a solid mass. Solid substances transported or offered for transport above their melting point are authorized for transportation in portable tanks conforming to the provisions of portable tank instruction T4 for solid substances of packing group III or T7 for solid substances of packing group II, unless a tank with more stringent requirements for minimum shell thickness, maximum allowable working pressure, pressure-relief devices or bottom outlets are assigned in which case the more stringent tank instruction and special provisions shall apply. Filling limits must be in accordance with portable tank special provision TP3. Solids meeting the definition of an elevated temperature material must be transported in accordance with the applicable requirements of this subchapter.
DOT Packaging Exceptions (49 CFR 173.xxx)	:	155
DOT Packaging Non Bulk (49 CFR 173.xxx)	:	213
DOT Packaging Bulk (49 CFR 173.xxx)	:	240
DOT Quantity Limitations Passenger aircraft/rail (49 CFR 173.27)	:	No limit
DOT Quantity Limitations Cargo aircraft only (49 CFR 175.75)	:	No limit
DOT Vessel Stowage Location	:	A - The material may be stowed ‘‘on deck’’ or ‘‘under deck’’ on a cargo vessel and on a passenger vessel.

Additional information

Other information	:	No supplementary information available.

ADR

No additional information available

Transport by sea

UN-No. (IMDG)	:	3077
Proper Shipping Name (IMDG)	:	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S.
Class (IMDG)	:	9 - Miscellaneous dangerous compounds
Packing group (IMDG)	:	III - substances presenting low danger

Air transport

UN-No.(IATA)	:	3077
Proper Shipping Name (IATA)	:	Environmentally hazardous substance, solid, n.o.s.
Class (IATA)	:	9 - Miscellaneous Dangerous Goods
Packing group (IATA)	:	III - Minor Danger

SECTION 15: Regulatory information

15.1. US Federal regulations

Lead (7439-92-1)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory Listed on United States SARA Section 313 Not listed on the United States SARA Section 313	
RQ (Reportable quantity, section 304 of EPA's List of Lists)	10 lb

15.2. International regulations

CANADA
No additional information available

EU-Regulations
No additional information available

Classification according to Regulation (EC) No. 1272/2008 [CLP]

Repr. 1A	H360Df
Acute Tox. 4 (Inhalation)	H332
Acute Tox. 4 (Oral)	H302
STOT RE 2	H373
Aquatic Acute 1	H400
Aquatic Chronic 1	H410

Full text of H-phrases: see section 16

Classification according to Directive 67/548/EEC [DSD] or 1999/45/EC [DPD]

Repr.Cat.1; R61
Repr.Cat.3; R62
Xn; R20/22
R33
N; R50/53

Full text of R-phrases: see section 16

15.2.2. National regulations

Lead (7439-92-1)
Listed on IARC (International Agency for Research on Cancer) Listed as carcinogen on NTP (National Toxicology Program)

15.3. US State regulations

No additional information available

SECTION 16: Other information

Revision date	:	12/15/2014

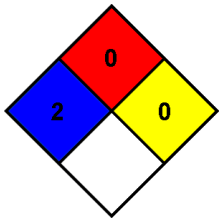
Full text of H-phrases:

Acute Tox. 4 (Inhalation)	Acute toxicity (inhalation) Category 4
Acute Tox. 4 (Oral)	Acute toxicity (oral) Category 4
Aquatic Acute 1	Hazardous to the aquatic environment - Acute Hazard Category 1
Aquatic Chronic 1	Hazardous to the aquatic environment - Chronic Hazard Category 1
Carc. 1B	Carcinogenicity Category 1B
Repr. 1A	Reproductive toxicity Category 1A
STOT RE 2	Specific target organ toxicity (repeated exposure) Category 2
H302	Harmful if swallowed
H332	Harmful if inhaled
H350	May cause cancer
H360	May damage fertility or the unborn child
H373	May cause damage to organs through prolonged or repeated exposure
H400	Very toxic to aquatic life
H410	Very toxic to aquatic life with long lasting effects

NFPA health hazard : 2 - Intense or continued exposure could cause temporary incapacitation or possible residual injury unless prompt medical attention is given.

NFPA fire hazard : 0 - Materials that will not burn.

NFPA reactivity : 0 - Normally stable, even under fire exposure conditions, and are not reactive with water.



HMIS III Rating

Health : * Chronic Hazard - Chronic (long-term) health effects may result from repeated overexposure

Flammability : 0 Minimal Hazard

Physical : 0 Minimal Hazard

Personal Protection : B

SDS US (GHS HazCom 2012)

This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product

SAFETY DATA SHEET

Creation Date 20-Aug-2014 **Revision Date** 17-Jan-2018 **Revision Number** 3

1. Identification

Product Name **Mercury (Certified ACS)**

Cat No. : **M141-1LB; M141-6LB**

Synonyms Colloidal mercury; Hydrargyrum; Metallic mercury

Recommended Use Laboratory chemicals.
Uses advised against Not for food, drug, pesticide or biocidal product use

Details of the supplier of the safety data sheet

Company
Fisher Scientific
One Reagent Lane
Fair Lawn, NJ 07410
Tel: (201) 796-7100

Emergency Telephone Number
CHEMTREC®, Inside the USA: 800-424-9300
CHEMTREC®, Outside the USA: 001-703-527-3887

2. Hazard(s) identification

Classification
This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Corrosive to metals	Category 1
Acute Inhalation Toxicity - Vapors	Category 2
Reproductive Toxicity	Category 1B
Specific target organ toxicity - (repeated exposure)	Category 1
Target Organs - Central nervous system (CNS), Kidney.	

Label Elements

Signal Word
Danger

Hazard Statements
May be corrosive to metals
Fatal if inhaled
May damage the unborn child
Causes damage to organs through prolonged or repeated exposure

Precautionary Statements
Prevention
Obtain special instructions before use
Do not handle until all safety precautions have been read and understood
Use personal protective equipment as required
Do not get in eyes, on skin, or on clothing
Wash face, hands and any exposed skin thoroughly after handling
Do not eat, drink or smoke when using this product
Do not breathe dust/fume/gas/mist/vapors/spray
Use only outdoors or in a well-ventilated area
Wear respiratory protection
Response
IF exposed or concerned: Get medical attention/advice
Inhalation
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
Immediately call a POISON CENTER or doctor/physician
Skin
Immediately call a POISON CENTER or doctor/physician
IF ON SKIN: Gently wash with plenty of soap and water
Remove/Take off immediately all contaminated clothing
Wash contaminated clothing before reuse
Storage
Store locked up
Store in a well-ventilated place. Keep container tightly closed
Disposal
Dispose of contents/container to an approved waste disposal plant
Hazards not otherwise classified (HNOC)
Very toxic to aquatic life with long lasting effects
WARNING. Reproductive Harm - https://www.p65warnings.ca.gov/.

3. Composition/Information on Ingredients

Component	CAS-No	Weight %
Mercury	7439-97-6	100

4. First-aid measures

Eye Contact Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Immediate medical attention is required.

Skin Contact Wash off immediately with soap and plenty of water while removing all contaminated clothes and shoes. Immediate medical attention is required.

Inhalation Move to fresh air. If breathing is difficult, give oxygen. Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. Immediate medical attention is required.

Ingestion Do not induce vomiting. Call a physician or Poison Control Center immediately.

Most important symptoms and effects No information available.
Notes to Physician Treat symptomatically

5. Fire-fighting measures

Suitable Extinguishing Media Substance is nonflammable; use agent most appropriate to extinguish surrounding fire.

Unsuitable Extinguishing Media No information available

Flash Point No information available
Method - No information available

Autoignition Temperature No information available
Explosion Limits
Upper No data available
Lower No data available
Sensitivity to Mechanical Impact No information available
Sensitivity to Static Discharge No information available

Specific Hazards Arising from the Chemical
Very toxic. Non-combustible, substance itself does not burn but may decompose upon heating to produce corrosive and/or toxic fumes. Keep product and empty container away from heat and sources of ignition.

Hazardous Combustion Products
Mercury oxide Highly toxic fumes
Protective Equipment and Precautions for Firefighters
As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

NFPA

Health	Flammability	Instability	Physical hazards
4	0	0	N/A

6. Accidental release measures

Personal Precautions Wear self-contained breathing apparatus and protective suit. Evacuate personnel to safe areas. Ensure adequate ventilation. Do not get in eyes, on skin, or on clothing.
Environmental Precautions Should not be released into the environment. See Section 12 for additional ecological information.

Methods for Containment and Clean Up Wear self-contained breathing apparatus and protective suit. Soak up with inert absorbent material. Keep in suitable, closed containers for disposal.

7. Handling and storage

Handling Use only under a chemical fume hood. Wear personal protective equipment. Do not get in eyes, on skin, or on clothing. Do not breathe vapors or spray mist. Do not ingest.

Storage Keep containers tightly closed in a dry, cool and well-ventilated place. Corrosives area.

8. Exposure controls / personal protection

Exposure Guidelines

Component	ACGIH TLV	OSHA PEL	NIOSH IDLH	Mexico OEL (TWA)
Mercury	TWA: 0.025 mg/m³ Skin	(Vacated) TWA: 0.05 mg/m³ Ceiling: 0.1 mg/m³ (Vacated) STEL: 0.03 mg/m³ Skin (Vacated) Ceiling: 0.1 mg/m³	IDLH: 10 mg/m³ TWA: 0.05 mg/m³ Ceiling: 0.1 mg/m³	TWA: 0.05 mg/m³

Legend

ACGIH - American Conference of Governmental Industrial Hygienists
OSHA - Occupational Safety and Health Administration
NIOSH IDLH: The National Institute for Occupational Safety and Health Immediately Dangerous to Life or Health

Engineering Measures Use only under a chemical fume hood. Ensure adequate ventilation, especially in confined areas. Ensure that eyewash stations and safety showers are close to the workstation location.

Personal Protective Equipment

Eye/face Protection Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.

Skin and body protection Wear appropriate protective gloves and clothing to prevent skin exposure.

Respiratory Protection Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

Hygiene Measures Handle in accordance with good industrial hygiene and safety practice.

9. Physical and chemical properties

Physical State	Liquid
Appearance	Silver
Odor	Odorless
Odor Threshold	No information available
pH	No information available
Melting Point/Range	-38.87 °C / -38 °F
Boiling Point/Range	356.72 °C / 674.1 °F
Flash Point	No information available
Evaporation Rate	No information available
Flammability (solid,gas)	No information available
Flammability or explosive limits	
Upper	No data available
Lower	No data available
Vapor Pressure	0.002 mmHg @ 25 °C
Vapor Density	7.0
Specific Gravity	13.59 (H2O=1)
Solubility	Insoluble in water
Partition coefficient; n-octanol/water	No data available
Autoignition Temperature	No information available
Decomposition Temperature	No information available
Viscosity	No information available
Molecular Formula	Hg
Molecular Weight	200.59

10. Stability and reactivity

Reactive Hazard None known, based on information available

Stability Stable under normal conditions.

Conditions to Avoid Incompatible products. Excess heat.

Incompatible Materials Strong oxidizing agents, Ammonia, Metals, Halogens

Hazardous Decomposition Products Mercury oxide, Highly toxic fumes

Hazardous Polymerization Hazardous polymerization does not occur.

Hazardous Reactions None under normal processing.

11. Toxicological information

Acute Toxicity

Product Information No acute toxicity information is available for this product

Component Information

Toxicologically Synergistic Products No information available

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Irritation No information available

Sensitization No information available

Carcinogenicity The table below indicates whether each agency has listed any ingredient as a carcinogen.

Component	CAS-No	IARC	NTP	ACGIH	OSHA	Mexico
Mercury	7439-97-6	Not listed	Not listed	Not listed	Not listed	Not listed

Mutagenic Effects No information available

Reproductive Effects No information available.

Developmental Effects May cause harm to the unborn child.

Teratogenicity No information available.

STOT - single exposure None known

STOT - repeated exposure Central nervous system (CNS) Kidney

Aspiration hazard No information available

Symptoms / effects,both acute and delayed No information available

Endocrine Disruptor Information No information available

Other Adverse Effects The toxicological properties have not been fully investigated.

12. Ecological information

Ecotoxicity

This product contains the following substance(s) which are hazardous for the environment.

Component	Freshwater Algae	Freshwater Fish	Microtox	Water Flea
Mercury	Not listed	0.9 mg/L LC50 96h 0.18 mg/L LC50 96h 0.16 mg/L LC50 96h 0.5 mg/L LC50 96h	Not listed	EC50: = 5.0 µg/L, 96h (water flea)

Persistence and Degradability No information available

Bioaccumulation/ Accumulation No information available.

Mobility No information available.

13. Disposal considerations

Waste Disposal Methods Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. Chemical waste generators must also consult local, regional, and national hazardous waste regulations to ensure complete and accurate classification.

Component	RCRA - U Series Wastes	RCRA - P Series Wastes
Mercury - 7439-97-6	U151	-

14. Transport information

DOT

UN-No	UN2809
Proper Shipping Name	MERCURY
Hazard Class	8
Subsidiary Hazard Class	6.1
Packing Group	III

TDG

UN-No	UN2809
Proper Shipping Name	MERCURY
Hazard Class	8
Subsidiary Hazard Class	6.1
Packing Group	III

IATA

UN-No	UN2809
Proper Shipping Name	MERCURY
Hazard Class	8
Subsidiary Hazard Class	6.1
Packing Group	III

IMDG/IMO

UN-No	UN2809
Proper Shipping Name	MERCURY
Hazard Class	8
Subsidiary Hazard Class	6.1
Packing Group	III

15. Regulatory information

International Inventories

Component	TSCA	DSL	NDSL	EINECS	ELINCS	NLP	PICCS	ENCS	AICS	IECSC	KECL
Mercury	X	X	-	231-106-7	-		X	-	X	X	X

Legend:
X - Listed
E - Indicates a substance that is the subject of a Section 5(e) Consent order under TSCA.
F - Indicates a substance that is the subject of a Section 5(f) Rule under TSCA.
N - Indicates a polymeric substance containing no free-radical initiator in its inventory name but is considered to cover the designated polymer made with any free-radical initiator regardless of the amount used.
P - Indicates a commenced PMN substance
R - Indicates a substance that is the subject of a Section 6 risk management rule under TSCA.
S - Indicates a substance that is identified in a proposed or final Significant New Use Rule
T - Indicates a substance that is the subject of a Section 4 test rule under TSCA.
XU - Indicates a substance exempt from reporting under the Inventory Update Rule, i.e. Partial Updating of the TSCA Inventory Data Base Production and Site Reports (40 CFR 710(B).
Y1 - Indicates an exempt polymer that has a number-average molecular weight of 1,000 or greater.
Y2 - Indicates an exempt polymer that is a polyester and is made only from reactants included in a specified list of low concern reactants that comprises one of the eligibility criteria for the exemption rule.

U.S. Federal Regulations

TSCA 12(b)

Component	TSCA 12(b)
Mercury	Section 5

SARA 313

Component	CAS-No	Weight %	SARA 313 - Threshold Values %
Mercury	7439-97-6	100	1.0

SARA 311/312 Hazard Categories See section 2 for more information

CWA (Clean Water Act)

Component	CWA - Hazardous Substances	CWA - Reportable Quantities	CWA - Toxic Pollutants	CWA - Priority Pollutants
Mercury	-	-	X	X

Clean Air Act

Component	HAPS Data	Class 1 Ozone Depletors	Class 2 Ozone Depletors
Mercury	X		-

OSHA Occupational Safety and Health Administration
Not applicable

CERCLA This material, as supplied, contains one or more substances regulated as a hazardous substance under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302)

Component	Hazardous Substances RQs	CERCLA EHS RQs
Mercury	1 lb	-

California Proposition 65 This product contains the following proposition 65 chemicals

Component	CAS-No	California Prop. 65	Prop 65 NSRL	Category
Mercury	7439-97-6	Developmental	-	Developmental

U.S. State Right-to-Know Regulations

Component	Massachusetts	New Jersey	Pennsylvania	Illinois	Rhode Island
Mercury	X	X	X	X	X

U.S. Department of Transportation

Reportable Quantity (RQ): N
DOT Marine Pollutant N
DOT Severe Marine Pollutant N

U.S. Department of Homeland Security
This product does not contain any DHS chemicals.

Other International Regulations

Mexico - Grade No information available

16. Other information

Prepared By Regulatory Affairs
Thermo Fisher Scientific
Email: EMSDS.RA@thermofisher.com

Creation Date 20-Aug-2014
Revision Date 17-Jan-2018
Print Date 17-Jan-2018
Revision Summary This document has been updated to comply with the US OSHA HazCom 2012 Standard replacing the current legislation under 29 CFR 1910.1200 to align with the Globally Harmonized System of Classification and Labeling of Chemicals (GHS).

Disclaimer

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text

End of SDS

Safety Data Sheet

Prepared in accordance with Commission Regulation (EU) 2015/830

Stock Number: 30413
Revision Date: 30-11-2020
This document replaces SDS dated: 31-05-2019
2 Letter ISO country code/language code: UK/EN

Tetrachloroethene Standard

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1 Product identifier: **Tetrachloroethene Standard**
Stock Number: 30413

Other means of identification:
Synonyms: None Known
REACH Registration No.: None Known
Molecular formula: CH3OH

1.2 Relevant identified uses of the substance or mixture and uses advised against:
Relevant identified uses: For Laboratory use only
Uses advised against: Uses other than recommended use.

1.3 Details of the Supplier of the Safety Data Sheet:

Manufacturer	**Supplier**
Restek Corporation	Thames Restek UK LTD
110 Benner Circle	Units 8-16, Ministry Wharf
Bellefonte, Pa. 16823	Wycombe Road, Saunderton
USA	Buckinghamshire
00 1 814-353-1300	United Kingdom HP14 4HW
00 1 814-353-1309	01494 563377
sds@restek.com	sales@thamesrestek.co.uk

1.4 Emergency telephone number:

00 1 800-424-9300	0870-8200418
(CHEMTREC within the US)	(CHEMTREC within the UK)
00 1 703-741-5970	+1 703-741-5970
(Outside USA)	(CHEMTREC International)

Poison Centre contact information: National Poisons Information Service (NPIS)
Email: director.birmingham.unit@npis.org
Website: http://www.npis.org/

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture:

Classification according to Regulation (EC) No 1272/2008 [CLP]: Specific Target Organ Systemic Toxicity (STOT) - Single Exposure Category 1
Flammable Liquid Category 2

Acute Toxicity - Dermal Category 3
Acute Toxicity - Oral Category 3

2.2 Label elements:

Labelling according to Regulation (EC) No 1272/2008 [CLP]:

Hazard pictograms:

Signal Word: Danger

Hazard Statements:
H225 - Highly flammable liquid and vapour
H301+H311 - Toxic if swallowed or in contact with skin
H370 - Causes damage to organs

Precautionary Statements:
P210 - Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.

P233 - Keep container tightly closed.

P260 - Do not breathe dust/fume/gas/mist/vapours/spray.

P280 - Wear protective gloves/protective clothing/eye protection/face protection.

P301+P310 - IF SWALLOWED: Immediately call a POISON CENTER/doctor.

P303+P361+P353 - IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.

Supplemental Hazard information (EU): None Known

2.3 Other hazards: This substance does not meet the PBT or vPvB criteria of REACH, Annex XIII

SECTION 3: Composition/information on ingredients

3.1 Substances:
Not applicable

3.2 Mixtures:

Chemical Name	%	CAS #	EC No. REACH Registration No.	Classification (EC) No 1272/2008	M Factor	SCL	Acute Toxicity Estimates
Tetrachloroethylene	0.2	127-18-4	204-825-9 None Known	Aquatic Chronic 2; H411 Carc. 2; H351	No data available	No data available	Not determined
Methanol	99.8	67-56-1	200-659-6 None Known	Acute Tox. 3 (Dermal); H311 Acute Tox. 3 (Inh Dust/Mist); H331 Acute Tox. 3 (Oral); H301 Flam. Liq. 2; H225 STOT SE 1; H370	No data available	STOT SE 2: 3%<10% STOT SE 1: 10%	Not determined

For full text of H-statements see Section 16.

SECTION 4: First aid measures

4.1 Description of first aid measures:

Inhalation: Remove to fresh air. If breathing is difficult, have a trained individual administer oxygen. If not breathing, give artificial respiration and have a trained individual administer oxygen. Get medical attention immediately

Eye contact: Immediately flush eyes with plenty of water for at least 20 minutes retracting eyelids often. Tilt the head to prevent chemical from transferring to the uncontaminated eye. Get immediate medical attention and monitor the eye daily as advised by your physician. Flush eyes with plenty of water for at least 20 minutes retracting eyelids often. Tilt the head to prevent chemical from transferring to the uncontaminated eye. Get immediate medical attention.

Skin Contact: Wash with soap and water. Remove contaminated clothing and launder. Get medical attention if irritation develops or persists.

Ingestion: Do not induce vomiting and seek medical attention immediately. Drink two glasses of water or milk to dilute. Provide medical care provider with this SDS.

Self protection of the first aider: No data available

4.2 Most important symptoms and effects, both acute and delayed: Coma and death

4.3 Indication of any immediate medical attention and special treatment needed: IF exposed or concerned: Call a POISON CENTER/doctor. Call a POISON CENTER/doctor if you feel unwell.

SECTION 5: Firefighting measures

5.1 Extinguishing media:

Suitable extinguishing media: Not combustible. Use extinguishing media appropriate for surrounding fire.

Use alcohol resistant foam, carbon dioxide, or dry chemical extinguishing agents. Water may be ineffective but water spray can be used extinguish a fire if swept across the base of the flames. Water can absorb heat and keep exposed material from being damaged by fire.

Unsuitable extinguishing media: None Known

5.2 Special hazards arising from the substance or mixture: Vapors may be ignited by sparks, flames or other sources of ignition if material is above the flash point giving rise to a fire (Class B). Vapors are heavier than air and may travel to a source of ignition and flash back.

Hazardous Combustion Products: Carbon dioxide, Carbon monoxide

5.3 Advice for firefighters: Do not enter fire area without proper protection including self-contained breathing apparatus and full protective equipment. Fight fire from a safe distance and a protected location due to the potential of hazardous vapors and decomposition products. Flammable component(s) of this material may be lighter than water and burn while floating on the surface.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures:

Non-emergency personnel: Non-emergency personnel should be kept clear of the area

Emergency responders: Exposure to the spilled material may be severely irritating or toxic. Follow personal protective equipment recommendations found in Section 8 of this SDS. Personal protective equipment needs must be evaluated based on information provided on this sheet and the special circumstances created by the spill including; the material spilled, the quantity of the spill, the area in which the spill occurred, and the expertise of employees in the area responding to the spill. Never exceed any occupational exposure limits.

6.2 Environmental precautions: No data available

6.3 Methods and material for containment and cleaning up:

Small spills: Refer to information provided for large spills

Large spills: Prevent the spread of any spill to minimize harm to human health and the environment if safe to do so. Wear complete and proper personal protective equipment following the recommendation of Section 8 at a minimum. Dike with suitable absorbent material like granulated clay. Gather and store in a sealed container pending a waste disposal evaluation.

6.4 Reference to other sections: Refer to section 13 for disposal information

SECTION 7: Handling and storage

7.1 Precautions for safe handling: Toxic or severely irritating material. Avoid contacting and avoid breathing the material. Use only in a well ventilated area. Use spark-proof tools and explosion-proof equipment

7.2 Conditions for safe storage, including any incompatibilities:

Conditions for safe storage: Store in a cool dry ventilated location. Isolate from incompatible materials and conditions. Keep container(s) closed. Keep away from sources of ignition

Materials to Avoid/Chemical Incompatibility: Strong oxidizing agents

7.3 Specific end use(s): For Laboratory use only

SECTION 8: Exposure controls/personal protection

8.1 Control parameters:

Occupational Exposure limit values:

Chemical Name	United Kingdom - Workplace Exposure Limits (WELs) - TWAs	United Kingdom - Workplace Exposure Limits (WELs) - STELs	United Kingdom - Biological Monitoring Guidance Values
Methanol	200 ppm TWA; 266 mg/m3 TWA	250 ppm STEL; 333 mg/m3 STEL	No data available
Tetrachloroethylene	50 ppm TWA; 345 mg/m3 TWA	100 ppm STEL; 689 mg/m3 STEL	No data available

DNEL: None Known

PNEC: None Known

8.2 Exposure controls:

Appropriate engineering controls: No exposure limits exist for the constituents of this product. Use local exhaust ventilation or other engineering controls to minimize exposures and maintain operator comfort.

Individual protection measures, such as personal protective equipment:

Eye and face protection: Wear chemically resistant safety glasses with side shields when handling this product. Do not wear contact lenses.

Skin Protection:

Hand protection: No information available

Other skin protection: Avoid skin contact by wearing chemically resistant gloves, an apron and other protective equipment depending upon conditions of use. Inspect gloves for chemical break-through and replace at regular intervals. Clean protective equipment regularly. Wash hands and other exposed areas with mild soap and water before eating, drinking, and when leaving work. Wear protective gloves. Inspect gloves for chemical break-through and replace at regular intervals. Clean protective equipment regularly. Wash hands and other exposed areas with mild soap and water before eating, drinking, and when leaving work

Respiratory Protection: If an exposure limit is exceeded or if an operator is experiencing symptoms of inhalation overexposure as explained in Section 3, provide respiratory protection. Respiratory protection may be required to avoid overexposure when handling this product. General or local exhaust ventilation is the preferred means of protection. Use a respirator if general room ventilation is not available or sufficient to eliminate symptoms.

Respirator Type(s): None required where adequate ventilation is provided. If airborne concentrations are above the applicable exposure limits, use NIOSH/MSHA approved respiratory protection.

Thermal Hazards: Not applicable

Environmental exposure controls: No data available

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties:

Appearance: Liquid

Colour: No data available

Odour: Mild

Odour threshold: No data available

pH: Not applicable

Melting Point/Freezing Point (°C):

Melting point (°C): No data available

Freezing point (°C):	No data available
Initial boiling point and boiling range (°C):	65
Flash point (°C):	11
Evaporation Rate (water = 1):	No data available
Flammability (solid, gas):	No data available
Upper/lower flammability or explosive limits:	
Upper flammable or explosive limit, % in air:	36
Lower flammable or explosive limit, % in air:	6
Vapour pressure:	No data available
Vapor Density (Air=1):	1.1
Relative density (water = 1):	0.791 - 0.792 g/cm3 at 20 °C
Solubility(ies):	Moderate; 50-99%
Partition coefficient: n-octanol/water:	No data available
Auto-ignition temperature (°C):	464
Decomposition temperature (°C):	No data available
Viscosity:	No data available
Explosive properties:	No data available
Oxidizing properties:	No data available

9.2 Other information:

Volatile Organic Chemicals:	100
Bulk density:	6.684

SECTION 10: Stability and reactivity

10.1 Reactivity:	Not expected to be reactive
10.2 Chemical stability:	Stable under normal conditions.
10.3 Possibility of hazardous reactions:	None expected under standard conditions of storage
10.4 Conditions to avoid:	No data available
10.5 Incompatible materials:	Strong oxidizing agents
10.6 Hazardous decomposition products:	Carbon dioxide, Carbon monoxide

SECTION 11: Toxicological information

11.1 Information on toxicological effects:

Acute toxicity:

Chemical Name	ORAL LD50 (rat)	DERMAL LD50 (rabbit)	INHALATION LC50 (rat)
Methanol	No data available	No data available	INHALATION LC50-8H Rat 22500 ppm
Tetrachloroethylene	ORAL LD50 Rat 2629 mg/kg	No data available	INHALATION LC50-4H VAPOR Rat 27.8 MG/L

Classification has been based on toxicological information of the components in Section 3.

Skin corrosion/irritation:
Based on available data, the classification criteria are not met.

Serious eye damage/irritation:
Based on available data, the classification criteria are not met.

Respiratory or skin sensitisation:
Based on available data, the classification criteria are not met.

Germ cell mutagenicity:
Based on available data, the classification criteria are not met.

Carcinogenicity:
Based on available data, the classification criteria are not met.

Reproductive toxicity:
Based on available data, the classification criteria are not met.

STOT-single exposure:
Classification has been based on toxicological information of the components in Section 3.

STOT-repeated exposure:
Based on available data, the classification criteria are not met.

Aspiration hazard:
Based on available data, the classification criteria are not met.

SECTION 12: Ecological information

12.1 Toxicity: Moderate ecological hazard. This product may be dangerous to plants and/or wildlife.

Ecological Toxicity Data:

Chemical Name	CAS #	Aquatic EC50 Crustacea	Aquatic ERC50 Algae	Aquatic LC50 Fish
No data available				

12.2 Persistence and degradability: Biodegrades slowly.

12.3 Bioaccumulative potential: No data available

12.4 Mobility in soil: No data available

12.5 Results of PBT and vPvB assessment: No data available

12.6 Other adverse effects: None Known

12.7 Additional information: No data available

SECTION 13: Disposal considerations

13.1 Waste treatment methods:

Disposal methods: Spent or discarded material is a hazardous waste.
Dispose of by incineration following Federal, State, Local, or Provincial regulations.

Waste codes / waste designations according to LoW: No data available

SECTION 14: Transport information

International carriage of dangerous goods by road (ADR), rail or inland waterways:

14.1 UN number: UN1230

14.2 UN proper shipping name: Methanol

14.3 Transport hazard class(es): 3(6.1)

14.4 Packing group: II

International carriage of dangerous goods by air (IATA):

14.1 UN number: UN1230

14.2 UN proper shipping name: Methanol

14.3 Transport hazard class(es): 3(6.1)

14.4 Packing group: II

14.5 Environmental hazards: No

14.6 Special precautions for user: No data available

14.7 Transport in bulk according to Annex II of MARPOL and the IBC Code: No data available

SECTION 15: Regulatory information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture:

Chemical Name	EINECS	SVHC
Methanol	Yes	No
Tetrachloroethylene	Yes	No

15.2 Chemical Safety Assessment No Chemical Safety Assessment has been carried out for this substance/mixture by the supplier.

SECTION 16: Other information

Revision Date: 30-11-2020

Indication of changes: Any changes to the SDS compared to previous versions are marked by a vertical line in front of the concerned paragraph.

Abbreviations and acronyms:
CAS = Chemical Abstract Service
DNEL= Derivative No Effect Level
EC= European Community
EINECS = European Inventory of Existing Chemical Substances
MSHA = Mine Safety Health Administration
NIOSH = National Institute of Occupational Safety & Health
OEL = Occupational Exposure Limit
PBT= Persistent, Bioaccumulative, Toxic
PNEC= Predicted No Effect Concentration
SCOEL= Scientific Committee on Occupational Exposure Limits
TLV = Threshold Limit Value
TWA= Time Weighted Average
vPvB= Very Persistent, Very Bioaccumulative
Wt.% = Weight Percent

Key literature references and sources for data:	No data available
Hazard phrase(s) referenced in section 3	H351 - Suspected of causing cancer. H225 - Highly flammable liquid and vapour H301+H311+H331 - Toxic if swallowed, in contact with skin or if inhaled H370 - Causes damage to organs H411 - Toxic to aquatic life with long lasting effects
Precautionary Statements:	
Prevention:	P210 - Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. P233 - Keep container tightly closed. P240 - Ground/bond container and receiving equipment. P241 - Use explosion-proof electrical/ventilating/lighting equipment. P242 - Use only non-sparking tools. P243 - Take precautionary measures against static discharge. P260 - Do not breathe dust/fume/gas/mist/vapours/spray. P264 - Wash thoroughly after handling. P270 - Do not eat, drink or smoke when using this product. P280 - Wear protective gloves/protective clothing/eye protection/face protection.
Response:	P301+P310 - IF SWALLOWED: Immediately call a POISON CENTER/doctor. P302+P352 - If on skin: Wash with plenty of water. P303+P361+P353 - IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower. P308+P311 - IF exposed or concerned: Call a POISON CENTER/doctor. P312 - Call a POISON CENTER/doctor if you feel unwell. P321 - Specific treatment (see Sections 4 to 8 on this SDS and any additional information on this label). P330 - Rinse mouth. P361+P364 - Take off immediately all contaminated clothing and wash it before reuse. P370+P378 - In case of fire: Use an appropriate extinguisher (see section 5) to extinguish.
Storage:	P233 - Keep container tightly closed.

P403+P235 - Store in a well-ventilated place. Keep cool.

P405 - Store locked up.

Disposal: P501 - Dispose of contents/container to a suitable disposal site in accordance with local/national/international regulations.

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SAFETY DATA SHEET

Trichloroethylene

Section 1. Identification

GHS product identifier : Trichloroethylene

Chemical name : trichloroethylene

Other means of identification : trichloroethene; Ethene, 1,1,2-trichloro-; Ethene, trichloro-; Trichlorethylene; Ethylene, trichloro-

Product use : Synthetic/Analytical chemistry.

Synonym : trichloroethene; Ethene, 1,1,2-trichloro-; Ethene, trichloro-; Trichlorethylene; Ethylene, trichloro-

SDS # : 001206

Supplier's details : Airgas USA, LLC and its affiliates
259 North Radnor-Chester Road
Suite 100
Radnor, PA 19087-5283
1-610-687-5253

24-hour telephone : 1-866-734-3438

Section 2. Hazards identification

OSHA/HCS status : This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Classification of the substance or mixture : SKIN CORROSION/IRRITATION - Category 2
SERIOUS EYE DAMAGE/ EYE IRRITATION - Category 2A
GERM CELL MUTAGENICITY - Category 2
CARCINOGENICITY - Category 1
AQUATIC HAZARD (LONG-TERM) - Category 3

GHS label elements

Hazard pictograms :

Signal word : Danger

Hazard statements : Causes serious eye irritation.
Causes skin irritation.
May cause cancer.
Suspected of causing genetic defects.
Harmful to aquatic life with long lasting effects.

Precautionary statements

General : Read label before use. Keep out of reach of children. If medical advice is needed, have product container or label at hand.

Prevention : Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Wear protective gloves. Wear eye or face protection. Wear protective clothing. Avoid release to the environment. Wash hands thoroughly after handling.

Response : IF exposed or concerned: Get medical attention. IF ON SKIN: Wash with plenty of soap and water. Take off contaminated clothing and wash it before reuse. If skin irritation occurs: Get medical attention. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical attention.

Storage : Store locked up.

Disposal : Dispose of contents and container in accordance with all local, regional, national and international regulations.

Section 2. Hazards identification

Hazards not otherwise classified : None known.

Section 3. Composition/information on ingredients

Substance/mixture : Substance

Chemical name : trichloroethylene

Other means of identification : trichloroethene; Ethene, 1,1,2-trichloro-; Ethene, trichloro-; Trichlorethylene; Ethylene, trichloro-

CAS number/other identifiers

CAS number : 79-01-6

Product code : 001206

Ingredient name	%	CAS number
trichloroethylene	100	79-01-6

Any concentration shown as a range is to protect confidentiality or is due to batch variation.

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

Occupational exposure limits, if available, are listed in Section 8.

Section 4. First aid measures

Description of necessary first aid measures

Eye contact : Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Get medical attention.

Inhalation : Remove victim to fresh air and keep at rest in a position comfortable for breathing. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband. In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.

Skin contact : Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Wash contaminated clothing thoroughly with water before removing it, or wear gloves. Continue to rinse for at least 10 minutes. Get medical attention. Wash clothing before reuse. Clean shoes thoroughly before reuse.

Ingestion : Wash out mouth with water. Remove dentures if any. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Get medical attention. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Most important symptoms/effects, acute and delayed

Potential acute health effects

Eye contact : Causes serious eye irritation.

Inhalation : No known significant effects or critical hazards.

Skin contact : Causes skin irritation.

Frostbite : Try to warm up the frozen tissues and seek medical attention.

Ingestion : No known significant effects or critical hazards.

Section 4. First aid measures

Over-exposure signs/symptoms

Eye contact : Adverse symptoms may include the following:, pain or irritation, watering, redness

Inhalation : No specific data.

Skin contact : Adverse symptoms may include the following:, irritation, redness

Ingestion : No specific data.

Indication of immediate medical attention and special treatment needed, if necessary

Notes to physician : In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.

Specific treatments : No specific treatment.

Protection of first-aiders : No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wash contaminated clothing thoroughly with water before removing it, or wear gloves.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media : Use an extinguishing agent suitable for the surrounding fire.

Unsuitable extinguishing media : None known.

Specific hazards arising from the chemical : In a fire or if heated, a pressure increase will occur and the container may burst. This material is harmful to aquatic life with long lasting effects. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain.

Hazardous thermal decomposition products : Decomposition products may include the following materials:
carbon dioxide
carbon monoxide
halogenated compounds
carbonyl halides

Special protective actions for fire-fighters : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.

Special protective equipment for fire-fighters : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Avoid breathing vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

For emergency responders : If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

Section 6. Accidental release measures

Environmental precautions : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). Water polluting material. May be harmful to the environment if released in large quantities.

Methods and materials for containment and cleaning up

Small spill : Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.

Large spill : Stop leak if without risk. Move containers from spill area. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

Section 7. Handling and storage

Precautions for safe handling

Protective measures : Put on appropriate personal protective equipment (see Section 8). Avoid exposure - obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Do not get in eyes or on skin or clothing. Do not ingest. Avoid breathing vapor or mist. Avoid release to the environment. If during normal use the material presents a respiratory hazard, use only with adequate ventilation or wear appropriate respirator. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Empty containers retain product residue and can be hazardous. Do not reuse container.

Advice on general occupational hygiene : Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

Conditions for safe storage, including any incompatibilities : Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Store locked up. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits

trichloroethylene

ACGIH TLV (United States, 3/2016).
STEL: 25 ppm 15 minutes.
TWA: 10 ppm 8 hours.
OSHA PEL 1989 (United States, 3/1989).
STEL: 1080 mg/m³ 15 minutes.
STEL: 200 ppm 15 minutes.
TWA: 270 mg/m³ 8 hours.
TWA: 50 ppm 8 hours.
OSHA PEL Z2 (United States, 2/2013).
AMP: 300 ppm 5 minutes.
CEIL: 200 ppm
TWA: 100 ppm 8 hours.

Section 8. Exposure controls/personal protection

Appropriate engineering controls : If user operations generate dust, fumes, gas, vapor or mist, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.

Environmental exposure controls : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

Individual protection measures

Hygiene measures : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Eye/face protection : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: chemical splash goggles.

Skin protection

Hand protection : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated.

Body protection : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Other skin protection : Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Respiratory protection : Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Section 9. Physical and chemical properties

Appearance

Physical state : Liquid. [Watery liquid.]

Color : Colorless.

Molecular weight : 131.38 g/mole

Molecular formula : C2-H-Cl3

Boiling/condensation point : 86.7°C (188.1°F)

Melting/freezing point : -84.8°C (-120.6°F)

Critical temperature : Not available.

Odor : Characteristic.

Odor threshold : Not available.

pH : Not available.

Flash point : Not available.

Burning time : Not applicable.

Burning rate : Not applicable.

Evaporation rate : 6.39 (butyl acetate = 1)

Flammability (solid, gas) : Not available.

Section 9. Physical and chemical properties

Lower and upper explosive (flammable) limits : Lower: 8%
Upper: 10.5%

Vapor pressure : 9.9 kPa (74.256033302 mm Hg) [room temperature]

Vapor density : 4.5 (Air = 1)

Specific Volume (ft ^{3}/lb) : 0.6849

Gas Density (lb/ft ^{3}) : 1.46

Relative density : 1.5

Solubility : Not available.

Solubility in water : 1.1 g/l

Partition coefficient: n-octanol/water : 2.53

Auto-ignition temperature : 410°C (770°F)

Decomposition temperature : Not available.

SADT : Not available.

Viscosity : Dynamic (room temperature): 0.58 mPa·s (0.58 cP)

Section 10. Stability and reactivity

Reactivity : No specific test data related to reactivity available for this product or its ingredients.

Chemical stability : The product is stable.

Possibility of hazardous reactions : Under normal conditions of storage and use, hazardous reactions will not occur.

Conditions to avoid : No specific data.

Incompatible materials : No specific data.

Hazardous decomposition products : Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Hazardous polymerization : Under normal conditions of storage and use, hazardous polymerization will not occur.

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
trichloroethylene	LC50 Inhalation Vapor LD50 Dermal LD50 Oral	Rat Rabbit Rat	140700 mg/m³ >20 g/kg 4920 mg/kg	1 hours - -

IDLH : 1000 ppm

Irritation/Corrosion

Product/ingredient name	Result	Species	Score	Exposure	Observation
trichloroethylene	Eyes - Moderate irritant Skin - Severe irritant	Rabbit Rabbit	- -	24 hours 20 milligrams 24 hours 2 milligrams	- -

Sensitization

Not available.

Section 11. Toxicological information

Mutagenicity

Not available.

Carcinogenicity

Not available.

Classification

Product/ingredient name	OSHA	IARC	NTP
trichloroethylene	-	1	Reasonably anticipated to be a human carcinogen.

Reproductive toxicity

Not available.

Teratogenicity

Not available.

Specific target organ toxicity (single exposure)

Not available.

Specific target organ toxicity (repeated exposure)

Not available.

Aspiration hazard

Not available.

Information on the likely routes of exposure : Not available.

Potential acute health effects

Eye contact : Causes serious eye irritation.

Inhalation : No known significant effects or critical hazards.

Skin contact : Causes skin irritation.

Ingestion : No known significant effects or critical hazards.

Symptoms related to the physical, chemical and toxicological characteristics

Eye contact : Adverse symptoms may include the following:, pain or irritation, watering, redness

Inhalation : No specific data.

Skin contact : Adverse symptoms may include the following:, irritation, redness

Ingestion : No specific data.

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Long term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Potential chronic health effects

Not available.

General : No known significant effects or critical hazards.

Carcinogenicity : May cause cancer. Risk of cancer depends on duration and level of exposure.

Mutagenicity : Suspected of causing genetic defects.

Section 11. Toxicological information

Teratogenicity : No known significant effects or critical hazards.

Developmental effects : No known significant effects or critical hazards.

Fertility effects : No known significant effects or critical hazards.

Numerical measures of toxicity

Acute toxicity estimates

Not available.

Section 12. Ecological information

Toxicity

Product/ingredient name	Result	Species	Exposure
trichloroethylene	Acute EC50 95000 µg/l Marine water	Algae - Skeletonema costatum	96 hours
	Acute EC50 36.5 mg/l Fresh water	Algae - Chlamydomonas reinhardtii - Exponential growth phase	72 hours
	Acute LC50 20 mg/l Marine water	Crustaceans - Elminius modestus	48 hours
	Acute LC50 18 mg/l Fresh water	Daphnia - Daphnia magna	48 hours
	Acute LC50 3100 µg/l Fresh water	Fish - Jordanella floridae - Juvenile (Fledgling, Hatchling, Weanling)	96 hours
	Chronic EC10 12.3 mg/l Fresh water	Algae - Chlamydomonas reinhardtii - Exponential growth phase	72 hours
	Chronic NOEC 10 mg/l Fresh water	Daphnia - Daphnia magna	21 days

Persistence and degradability

Not available.

Bioaccumulative potential

Product/ingredient name	$LogP_{ow}$	BCF	Potential
trichloroethylene	2.53	17	low

Mobility in soil

Soil/water partition coefficient (K_{OC}) : Not available.

Other adverse effects : No known significant effects or critical hazards.

Section 13. Disposal considerations

Disposal methods : The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Section 13. Disposal considerations

United States - RCRA Toxic hazardous waste "U" List

Ingredient	CAS #	Status	Reference number
Trichloroethylene; Ethene, trichloro-	79-01-6	Listed	U228

Section 14. Transport information

	DOT	TDG	Mexico	IMDG	IATA
UN number	UN1710	UN1710	UN1710	UN1710	UN1710
UN proper shipping name	TRICHLOROETHYLENE	TRICHLOROETHYLENE	TRICHLOROETHYLENE	TRICHLOROETHYLENE	TRICHLOROETHYLENE
Transport hazard class(es)	6.1	6.1	6.1	6.1	6.1
Packing group	III	III	III	III	III
Environment	No.	No.	No.	No.	No.
Additional information	**Reportable quantity** 100 lbs / 45.4 kg [8. 2147 gal / 31.096 L] Package sizes shipped in quantities less than the product reportable quantity are not subject to the RQ (reportable quantity) transportation requirements. **Limited quantity** Yes. **Packaging instruction** **Passenger aircraft** Quantity limitation: 60 L **Cargo aircraft** Quantity limitation: 220 L **Special provisions** IB3, N36, T4, TP1, T1	Product classified as per the following sections of the Transportation of Dangerous Goods Regulations: 2.26-2.36 (Class 6). **Explosive Limit and Limited Quantity Index** 5	-	-	**Passenger and Cargo Aircraft**Quantity limitation: 60 L **Cargo Aircraft Only** Quantity limitation: 220 L **Limited Quantities - Passenger Aircraft** Quantity limitation: 2 L

"Refer to CFR 49 (or authority having jurisdiction) to determine the information required for shipment of the product."

Special precautions for user : **Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code : Not available.

Section 15. Regulatory information

U.S. Federal regulations : **TSCA 5(a)2 final significant new use rules**: trichloroethylene
TSCA 8(a) CDR Exempt/Partial exemption: Not determined
TSCA 12(b) one-time export: trichloroethylene
United States inventory (TSCA 8b): This material is listed or exempted.
Clean Water Act (CWA) 307: trichloroethylene
Clean Water Act (CWA) 311: trichloroethylene

Clean Air Act Section 112 (b) Hazardous Air Pollutants (HAPs) : Listed

Clean Air Act Section 602 Class I Substances : Not listed

Clean Air Act Section 602 Class II Substances : Not listed

DEA List I Chemicals (Precursor Chemicals) : Not listed

DEA List II Chemicals (Essential Chemicals) : Not listed

SARA 302/304

Composition/information on ingredients

No products were found.

SARA 304 RQ : Not applicable.

SARA 311/312

Classification : Immediate (acute) health hazard
Delayed (chronic) health hazard

Composition/information on ingredients

Name	%	Fire hazard	Sudden release of pressure	Reactive	Immediate (acute) health hazard	Delayed (chronic) health hazard
trichloroethylene	100	No.	No.	No.	Yes.	Yes.

SARA 313

	Product name	CAS number	%
Form R - Reporting requirements	trichloroethylene	79-01-6	100
Supplier notification	trichloroethylene	79-01-6	100

SARA 313 notifications must not be detached from the SDS and any copying and redistribution of the SDS shall include copying and redistribution of the notice attached to copies of the SDS subsequently redistributed.

State regulations

Massachusetts : This material is listed.

New York : This material is listed.

New Jersey : This material is listed.

Pennsylvania : This material is listed.

California Prop. 65

WARNING: This product contains a chemical known to the State of California to cause cancer and birth defects or other reproductive harm.

Section 15. Regulatory information

Ingredient name	Cancer	Reproductive	No significant risk level	Maximum acceptable dosage level
trichloroethylene	Yes.	Yes.	14 µg/day (ingestion) 50 µg/day (inhalation)	No.

International regulations

International lists

National inventory

Australia : This material is listed or exempted.

Canada : This material is listed or exempted.

China : This material is listed or exempted.

Europe : This material is listed or exempted.

Japan : This material is listed or exempted.

Malaysia : This material is listed or exempted.

New Zealand : This material is listed or exempted.

Philippines : This material is listed or exempted.

Republic of Korea : This material is listed or exempted.

Taiwan : This material is listed or exempted.

Canada

WHMIS (Canada) : Class D-1B: Material causing immediate and serious toxic effects (Toxic).
Class D-2A: Material causing other toxic effects (Very toxic).
Class D-2B: Material causing other toxic effects (Toxic).

CEPA Toxic substances: This material is listed.
Canadian ARET: This material is not listed.
Canadian NPRI: This material is listed.
Alberta Designated Substances: This material is not listed.
Ontario Designated Substances: This material is not listed.
Quebec Designated Substances: This material is not listed.

Section 16. Other information

Canada Label requirements : Class D-1B: Material causing immediate and serious toxic effects (Toxic).
Class D-2A: Material causing other toxic effects (Very toxic).
Class D-2B: Material causing other toxic effects (Toxic).

Hazardous Material Information System (U.S.A.)

Health	*	2
Flammability		0
Physical hazards		0

Caution: HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks Although HMIS® ratings are not required on SDSs under 29 CFR 1910. 1200, the preparer may choose to provide them. HMIS® ratings are to be used with a fully implemented HMIS® program. HMIS® is a registered mark of the National Paint & Coatings Association (NPCA). HMIS® materials may be purchased exclusively from J. J. Keller (800) 327-6868.

The customer is responsible for determining the PPE code for this material.

National Fire Protection Association (U.S.A.)

Section 16. Other information

Reprinted with permission from NFPA 704-2001, Identification of the Hazards of Materials for Emergency Response Copyright ©1997, National Fire Protection Association, Quincy, MA 02269. This reprinted material is not the complete and official position of the National Fire Protection Association, on the referenced subject which is represented only by the standard in its entirety.

Copyright ©2001, National Fire Protection Association, Quincy, MA 02269. This warning system is intended to be interpreted and applied only by properly trained individuals to identify fire, health and reactivity hazards of chemicals. The user is referred to certain limited number of chemicals with recommended classifications in NFPA 49 and NFPA 325, which would be used as a guideline only. Whether the chemicals are classified by NFPA or not, anyone using the 704 systems to classify chemicals does so at their own risk.

Procedure used to derive the classification

Classification	Justification
Skin Irrit. 2, H315	Expert judgment
Eye Irrit. 2A, H319	Expert judgment
Muta. 2, H341	Expert judgment
Carc. 1, H350	Expert judgment
Aquatic Chronic 3, H412	Expert judgment

History

Date of printing : 11/21/2016

Date of issue/Date of revision : 11/21/2016

Date of previous issue : No previous validation

Version : 0.01

Key to abbreviations : ATE = Acute Toxicity Estimate
BCF = Bioconcentration Factor
GHS = Globally Harmonized System of Classification and Labelling of Chemicals
IATA = International Air Transport Association
IBC = Intermediate Bulk Container
IMDG = International Maritime Dangerous Goods
LogPow = logarithm of the octanol/water partition coefficient
MARPOL 73/78 = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution)
UN = United Nations

References : Not available.

Indicates information that has changed from previously issued version.

Notice to reader

To the best of our knowledge, the information contained herein is accurate. However, neither the above-named supplier, nor any of its subsidiaries, assumes any liability whatsoever for the accuracy or completeness of the information contained herein.
Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

Zinc Metal Mossy, Reagent

SECTION 1: Identification of the substance/mixture and of the supplier

Product name: **Zinc Metal Mossy, Reagent**

Manufacturer/Supplier Trade name:

Manufacturer/Supplier Article number: **S25636A**

Recommended uses of the product and restrictions on use:

Manufacturer Details:

AquaPhoenix Scientific, Inc
9 Barnhart Drive, Hanover, PA 17331
(717) 632-1291

Supplier Details:

Fisher Science Education
6771 Silver Crest Road, Nazareth, PA 18064
(724)517-1954

Emergency telephone number:

Fisher Science Education
Emergency Telephone No.: 800-535-5053

SECTION 2: Hazards identification

Classification of the substance or mixture:

Corrosive
Serious eye damage, category 1

Irritant
Acute toxicity (oral, dermal, inhalation), category 4

Environmentally Damaging
Acute hazards to the aquatic environment, category 1
Chronic hazards to the aquatic environment, category 1

Eye Damage 1.
Acute Toxicity 4 (oral).
Aquatic Acute Toxicity 1.
Aquatic Chronic Toxicity 1.

Signal word: Danger

Hazard statements:

Causes serious eye damage.
Harmful if swallowed.
Very toxic to aquatic life.
Very toxic to aquatic life with long lasting effects.

Precautionary statements:

If medical advice is needed, have product container or label at hand.
Keep out of reach of children.
Read label before use.
Do not eat, drink or smoke when using this product.

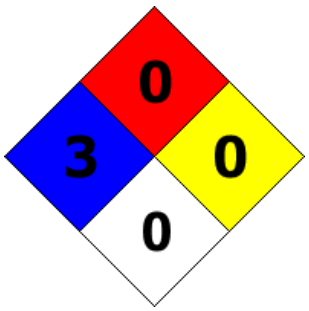
Wear protective gloves/protective clothing/eye protection/face protection.
Wash skin thoroughly after handling.
Avoid release to the environment.
Rinse mouth.
IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do. Continue rinsing.
Immediately call a POISON CENTER or doctor/physician.
Dispose of contents and container as instructed in Section 13.

Other Non-GHS Classification:

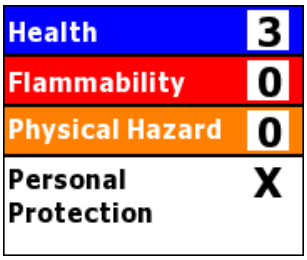
WHMIS

D2B

NFPA/HMIS



NFPA SCALE (0-4)



HMIS RATINGS (0-4)

SECTION 3: Composition/information on ingredients

Ingredients:		
CAS 7446-20-0	Zinc sulfate heptahydrate	100 %
		Percentages are by weight

SECTION 4: First aid measures

Description of first aid measures

After inhalation:

Loosen clothing as necessary and position individual in a comfortable position. Move exposed to fresh air. Give artificial respiration if necessary. If breathing is difficult give oxygen. Get medical assistance if cough or other symptoms appear.

After skin contact:

Rinse/flush exposed skin gently using soap and water for 15-20 minutes. Seek medical advice if discomfort or irritation persists.

After eye contact:

Protect unexposed eye. Rinse/flush exposed eye(s) gently using water for 15-20 minutes. Remove contact lens(es) if able to do so during rinsing. Seek medical attention if irritation persists or if concerned.

After swallowing:

Rinse mouth thoroughly. Do not induce vomiting. Seek medical attention if irritation, discomfort, or vomiting persists. Never give anything by mouth to an unconscious person.

Most important symptoms and effects, both acute and delayed:

Irritation- all routes of exposure. Inhalation of fumes may cause metal fume fever, which is characterized by flu-like symptoms with metallic taste, fever, chills, cough, weakness, chest pain, muscle pain and increased white blood cell count. Headache. Nausea. Shortness of breath. May cause bronchitis.

Indication of any immediate medical attention and special treatment needed:

If seeking medical attention provide SDS document to physician. Physician should treat symptomatically.

SECTION 5: Firefighting measures

Extinguishing media

Suitable extinguishing agents:

Use agent most suitable for extinguishing surrounding fire. Use water spray to keep fire-exposed containers cool.

Unsuitable extinguishing agents:

None identified.

Special hazards arising from the substance or mixture:

Thermal decomposition can lead to release of irritating gases and vapors. Containers may explode in the heat of a fire.

Advice for firefighters:

Protective equipment:

Wear protective eyeware, gloves, and clothing. Refer to Section 8. Use NIOSH-approved respiratory protection/breathing apparatus.

Additional information (precautions):

Avoid inhaling gases, fumes, dust, mist, vapor, and aerosols. Avoid contact with skin, eyes, and clothing.

SECTION 6: Accidental release measures

Personal precautions, protective equipment and emergency procedures:

Ensure adequate ventilation. Ensure that air-handling systems are operational.

Environmental precautions:

Should not be released into environment. Prevent from reaching drains, sewer, or waterway.

Methods and material for containment and cleaning up:

Wear protective eyeware, gloves, and clothing. Refer to Section 8. Always obey local regulations. Containerize for disposal. Refer to Section 13. Sweep up and containerize for disposal. Avoid generating dust. If necessary use trained response staff or contractor. Evacuate personnel to safe areas. Keep in suitable closed containers for disposal.

Reference to other sections: None

SECTION 7: Handling and storage

Precautions for safe handling:

Avoid contact with skin, eyes, and clothing. Follow good hygiene procedures when handling chemical materials. Refer to Section 8. Follow proper disposal methods. Refer to Section 13. Do not eat, drink, smoke, or use personal products when handling chemical substances.

Conditions for safe storage, including any incompatibilities:

Store in a cool location. Keep away from food and beverages. Protect from freezing and physical damage.

Provide ventilation for containers. Keep container tightly sealed. Store away from incompatible materials.

SECTION 8: Exposure controls/personal protection

Control Parameters: 7446-20-0, Zinc, ACGIH TLV: NA, OSHA PEL: NA.

Appropriate Engineering controls: Emergency eye wash fountains and safety showers should be available in the immediate vicinity of use or handling. Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapor and mists below the applicable workplace exposure limits (Occupational Exposure Limits-OELs) indicated above.

Respiratory protection: Not required under normal conditions of use. Where risk assessment shows air-purifying respirators are appropriate use a full-face particle respirator type N100 (US) or type P3 (EN 143) respirator cartridges as a backup to engineering controls. When necessary use NIOSH approved breathing equipment.

Protection of skin: Select glove material impermeable and resistant to the substance. Select glove material based on rates of diffusion and degradation. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Use proper glove removal technique without touching outer surface. Avoid skin contact with used gloves. Wear protective clothing.

Eye protection: Wear equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU). Safety glasses or goggles are appropriate eye protection.

General hygienic measures: Perform routine housekeeping. Wash hands before breaks and at the end of work. Avoid contact with skin, eyes, and clothing. Before wearing wash contaminated clothing.

SECTION 9: Physical and chemical properties

Appearance (physical state, color):	Gray solid	**Explosion limit lower**: **Explosion limit upper**:	Not determined Not determined
Odor:	Odorless	**Vapor pressure at 20°C**:	1 mmHg @ 487C
Odor threshold:	Not determined	**Vapor density**:	Not determined
pH-value:	Not determined	**Relative density**:	Not determined
Melting/Freezing point:	419C	**Solubilities**:	Reacts with water.
Boiling point/Boiling range:	908C	**Partition coefficient (n-octanol/water)**:	Not determined
Flash point (closed cup):	Not determined	**Auto/Self-ignition temperature**:	460C
Evaporation rate:	Not determined	**Decomposition temperature**:	Not determined
Flammability (solid, gaseous):	Not determined	**Viscosity**:	a. Kinematic: Not determined b. Dynamic: Not determined
Density at 20°C:	7.14 g/cm3 at 20 °C **Specific Gravity: :**7.14		

SECTION 10: Stability and reactivity

Reactivity:

Nonreactive under normal conditions. Reacts with water.

Chemical stability:

Stable under normal conditions.

Possible hazardous reactions:

None under normal processing.

Conditions to avoid:

Incompatible materials. Excess heat.

Incompatible materials:

Oxidizing agents. Strong acids or bases.

Hazardous decomposition products:

Zinc oxides.

SECTION 11: Toxicological information

Acute Toxicity: No additional information.
Chronic Toxicity: No additional information.
Corrosion Irritation: No additional information.
Sensitization: No additional information.
Numerical Measures: No additional information.
Carcinogenicity:

EPA: IRIS Carcinogenicity Assessment- D (data are inadequate for an assessment of human carcinogenic potential; inadequate information to assess carcinogenic potential) Zinc

Mutagenicity: No additional information.
Reproductive Toxicity:

Reproductive effects shown in laboratory animals.

SECTION 12: Ecological information

Ecotoxicity:

Fish (acute 7440-66-6): : 96 Hr LC50 Pimephales promelas: 2.16 - 3.05 mg/L [flow-through]; 96 Hr LC50 Pimephales promelas: 0.211 - 0.269 mg/L [semi-static]; 96 Hr LC50 Pimephales promelas: 2.66 mg/L [static]; 96 Hr LC50 Cyprinus carpio: 30 mg/L; 96 Hr LC50 Cyprinus carpio: 0.45 mg/L [semi-static]; 96 Hr LC50 Cyprinus carpio: 7.8 mg/L [static]; 96 Hr LC50 Lepomis macrochirus: 3.5 mg/L [static]; 96 Hr LC50 Oncorhynchus mykiss: 0.24 mg/L [flow-through]; 96 Hr LC50 Oncorhynchus mykiss: 0.59 mg/L [semi-static]; 96 Hr LC50 Oncorhynchus mykiss: 0.41 mg/L [static]

Crustacea (acute 7440-66-6): : 48 Hr EC50 Daphnia magna: 0.139 - 0.908 mg/L [Static]

Algae (acute 7440-66-6): 96 Hr EC50 Pseudokirchneriella subcapitata: 0.11 - 0.271 mg/L [static]; 72 Hr EC50 Pseudokirchneriella subcapitata: 0.09 - 0.125 mg/L [static]

Persistence and degradability: No additional information.
Bioaccumulative potential: No additional information.
Mobility in soil: No additional information.
Other adverse effects: No additional information.

SECTION 13: Disposal considerations

Waste disposal recommendations:

Contact a licensed professional waste disposal service to dispose of this material. Dispose of empty containers as unused product. Product or containers must not be disposed with household garbage. It is the responsibility of the waste generator to properly characterize all waste materials according to applicable regulatory entities (US 40CFR262.11). Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. Chemical waste generators must also consult local, regional, and national hazardous waste regulations. Ensure complete and accurate classification.

SECTION 14: Transport information

US DOT

UN Number:
ADR, ADN, DOT, IMDG, IATA Not Regulated.

Limited Quantity Exception: None

Bulk:
RQ (if applicable): None
Proper shipping Name: Not Regulated.
Hazard Class: None
Packing Group: Not Regulated.
Marine Pollutant (if applicable): No additional information.
Comments: None

Non Bulk:
RQ (if applicable): None
Proper shipping Name: Not Regulated.
Hazard Class: None
Packing Group: Not Regulated.
Marine Pollutant (if applicable): No additional information.
Comments: None

SECTION 15: Regulatory information

United States (USA)

SARA Section 311/312 (Specific toxic chemical listings):

None of the ingredients are listed.

SARA Section 313 (Specific toxic chemical listings):

7440-66-6 Zinc Compounds (N982).

RCRA (hazardous waste code):

7440-66-6 Zinc [Phase 4 LDR Rule - Universal Treatment Standards 2.61 mg/L (wastewater); 4.3 mg/L TCLP (nonwastewater)].

TSCA (Toxic Substances Control Act):

All ingredients are listed.

CERCLA (Comprehensive Environmental Response, Compensation, and Liability Act):

7440-66-6 Zinc 1000 lb final RQ (no reporting of releases of this hazardous substance is required if the diameter of the pieces of the solid metal released is >100 µm).

Proposition 65 (California):

Chemicals known to cause cancer:

None of the ingredients are listed.

Chemicals known to cause reproductive toxicity for females:

None of the ingredients are listed.

Chemicals known to cause reproductive toxicity for males:

None of the ingredients are listed.

Chemicals known to cause developmental toxicity:

None of the ingredients are listed.

Canada

Canadian Domestic Substances List (DSL):

All ingredients are listed.

Canadian NPRI Ingredient Disclosure list (limit 0.1%):

None of the ingredients are listed.

Canadian NPRI Ingredient Disclosure list (limit 1%):

None of the ingredients are listed.

SECTION 16: Other information

This product has been classified in accordance with hazard criteria of the Controlled Products Regulations and the SDS contains all the information required by the Controlled Products Regulations. Note. The responsibility to provide a safe workplace remains with the user. The user should consider the health hazards and safety information contained herein as a guide and should take those precautions required in an individual operation to instruct employees and develop work practice procedures for a safe work environment. The information contained herein is, to the best of our knowledge and belief, accurate. However, since the conditions of handling and use are beyond our control, we make no guarantee of results, and assume no liability for damages incurred by the use of this material. It is the responsibility of the user to comply with all applicable laws and regulations applicable to this material.

GHS Full Text Phrases: None

Abbreviations and Acronyms:

IMDG International Maritime Code for Dangerous Goods.
IATA International Air Transport Association.
GHS Globally Harmonized System of Classification and Labelling of Chemicals.
ACGIH American Conference of Governmental Industrial Hygienists.
CAS Chemical Abstracts Service (division of the American Chemical Society).
NFPA National Fire Protection Association (USA).
HMIS Hazardous Materials Identification System (USA).
WHMIS Workplace Hazardous Materials Information System (Canada).
DNEL Derived No-Effect Level (REACH).
PNEC Predicted No-Effect Concentration (REACH).
CFR Code of Federal Regulations (USA).
SARA Superfund Amendments and Reauthorization Act (USA).
RCRA Resource Conservation and Recovery Act (USA).
TSCA Toxic Substances Control Act (USA).
NPRI National Pollutant Release Inventory (Canada).
DOT US Department of Transportation.

Effective date: 10.24.2014
Last updated: 06.19.2015

Appendix E:

Accident Report Form

Employee Accident Report

EMPLOYEE

Name_____ SS#_____ Emp ID#_____

Home Address_____
Street city zip code phone

Sex: M F Birth Date_____ Age:_____ Employment Status: Full time _____Part time _____%_____

Job Title _____Time in Present Position _____ Yrs _____Months

Department _____Work Address_____
building/room # phone

Supervisor_____
name building/room # phone

Accident Date_____ Time _____am/pm Location_____

What were you doing and using (tools, chemicals, equipment, etc.) when the accident occurred? Describe what happened.

_____

_____

_____

Was this part of your normal job duty? _____ Yes _____No

Parts of body affected or injured_____

Witnesses:_____/_____
name phone name phone

Report prepared by (if different from the injured employee)_____
name phone

I understand that it is my right to apply for Workers' Compensation benefits and that I have two years from the date of this accident to do so. For more information regarding workers' compensation, call the New York State Department of Labor. I also authorize release of medical information regarding this accident to the Prime Contractors claim administrators.

EMPLOYEE SIGNATURE:_____DATE:_____

SUPERVISOR/CHARGE PERSON

This accident was reported to me on _____at_____ Cost Center/Dept # _____
(date) (time)

IS FURTHER INVESTIGATION REQUIRED? ___Yes ___No _____
Supervisor/Charge Person Signature Date

HEALTH CARE PROVIDER

Treated by:_____
print name signature

Address_____
name of facility street city state zip code phone

Hospitalized overnight as inpatient? _____yes _____no (if emergency room only mark no)

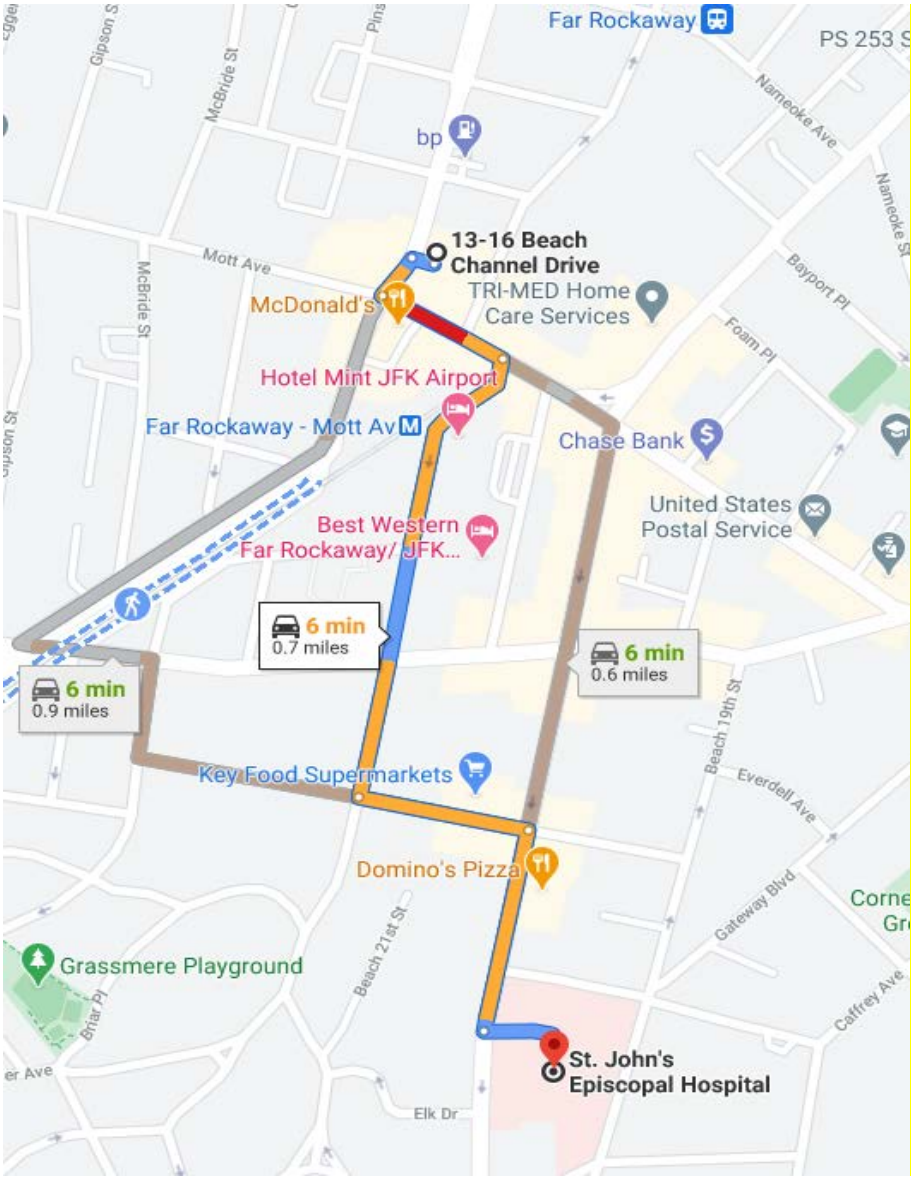
Diagnosis/Assessment_____

Parts of body affected_____

Reaggravation of previous work injury? _____ yes _____no Date of initial injury_____

Appendix F:
Directions to nearest Hospital and Map

Start: 13-16 to 13-24 Beach Channel Drive

- Head south-southwest on Beach Channel Drive toward Mott Avenue – 0.03mi
- Turn left onto Mott Avenue towards Beach 22nd Street – 0.08mi
- Turn right onto Beach 22nd Street towards New Haven Avenue – 0.3mi
- Turn left onto New Haven Avenue towards Beach 20th Street – 0.1mi
- Turn right onto Beach 20th Street – Destination will be on the left- 0.1 mi

End: St John's Episcopal Hospital - 327 Beach 19th Street, Far Rockaway, NY 11691