HALEY & ALDRICH OF NEW YORK
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Rochester, NY 14623
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28 September 2021
File No. 0127982-004

New York State Department of Environmental Conservation
Division of Environmental Remediation (DER) Region 8 Office
6274 East Avon-Lima Road
Avon, New York 14414-9519

Attention: Kelly C. Cloyd, PhD.
Project Manager

Subject: 1,4 Dioxane and Per- and Polyfluorinated Alkyl Substances (PFAS) Sampling Event
Delphi Automotive Systems NYSDEC Site No. 828064
1000 Lexington Avenue
Rochester, New York 14606

Dr. Cloyd:

Haley & Aldrich of New York (Haley & Aldrich) has prepared this letter report presenting the results of groundwater samples collected at the Delphi Automotive Systems Site No. 8-28-064 on 1000 Lexington Avenue in Rochester, New York for the analysis of per- and polyfluorinated alkyl substances (PFAS) and 1,4-dioxane. The sampling and analysis program was implemented in accordance with the PFAS and 1,4-Dioxane Sampling and Analysis Work Plan prepared by Haley & Aldrich approved by the New York State Department of Environmental Conservation (NYSDEC) with clarifications via electronic mail on 4 June 2021 (See Attachment 3).

Background

On 5 January 2021, General Motors Components Holdings LLC (GMCH) received a letter from the NYSDEC requesting the preparation of a work plan to collect representative groundwater samples for analysis of PFAS and 1,4-dioxane at the above referenced site (see Attachment 3). As stated in the Department's letter, the purpose of the sampling event would be "to evaluate the risk to New Yorkers by 1,4-Dioxane and PFAS." In response to this request, GMCH proposed to collect representative groundwater samples from three existing monitoring wells installed within the shallow bedrock water bearing unit, which included upgradient well location SR-101 located along Mt. Read Boulevard to determine the background water quality and two wells, SR-8 and SR-9 at the eastern property boundary along Driving Park Avenue.

During the synoptic groundwater level survey conducted prior to the sampling event, monitoring wells SR-8 and SR-9 were found to contain insufficient groundwater volume to collect representative samples for analysis. This potential issue was raised in the Department's review of the proposed sampling plan, and as recommended, Haley & Aldrich identified contingent sampling locations, SR-103 and SR-107. The

work plan, including the option to select revised sampling locations, was approved by the Department on 4 June 2021.

Well ID	Well Location
SR-101	At the western property boundary and hydraulically upgradient of the facility
SR-103	Hydraulically downgradient of the manufacturing building and upgradient of the groundwater migration control systems
SR-107	At the eastern property boundary and upgradient of the groundwater migration control systems

Figure 1 presents the location of the monitoring wells where samples were collected for analysis of PFAS and 1,4-dioxane.

SAMPLE COLLECTION

Prior to the collection of the samples, a sample container containing PFAS-free water provided by the laboratory was opened and placed at the location of the groundwater monitoring well SR-107 to serve as a field blank sample to evaluate the potential for cross contamination from the sample collection and handling activities. Following placement of the field blank, the monitoring well was accessed by removing the well casing cover, and a water level meter was lowered to the top of the water table to record the depth to water (DTW) and total depth (TD) of the well to calculate the standing volume of groundwater in the well.

Following the recording of the DTW and TD, a high-density polyethylene (HDPE) bailer was lowered to below the top of the water table, and the well was purged of three standing well volumes prior to the collection of a grab sample. The grab sample was poured directly from the bailer into precleaned sample containers provided by the laboratory. In addition to the collection of the primary sample for analysis, additional samples were collected for site-specific quality assurance analysis, which included a field duplicate (FD) from well SR-103 and matrix spike samples (MS/MSD) from well SR-101.

QUALITY ASSURANCE / QUALITY CONTROL (QA/QC) SAMPLES

Quality assurance and quality control (QA/QC) samples collected and analyzed concurrently with the project samples to evaluate the precision and accuracy of the reported results included:

- field blank sample (PFAS analysis only)
- field duplicate sample (SR-103)
- matrix spike / matrix spike duplicate samples (SR-101)
- laboratory control sample / laboratory control sample duplicate set (LCS/LCSD)
- laboratory method blank sample

PFAS AND 1,4-DIOXANE ANALYSIS

The collected groundwater and associated QA/QC samples were placed in a cooler with ice, doubled-bagged in zip-lock bags, and shipped under Chain of Custody (COC) procedures to Eurofins Test America Laboratories, a New York Department of Health (NYSDOH) Environmental Laboratory Approval Program (ELAP) certified laboratory for the analysis of PFAS target compounds in accordance with EPA Method 537.1 (modified with isotope dilution quantification standards) and 1,4-dioxane in accordance with EPA Method 8270 Selective Ion Mode (SIM). The results of the laboratory analysis are presented on Table 1 and the laboratory report is provided as Attachment 1.

The laboratory report was reviewed and evaluated to determine the usability of the reported results by a third-party data validator, GHD, Inc. The data usability review was performed with guidance from the *USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review,"* USEPA 540-R-2016-002, September 2016.

The results of the QA/QC sample analysis indicate that the reported results are representative of the site conditions. Target compounds were not detected in the associated field or method blank samples and the calculated recoveries and replicate percent difference of FD, MS and LCS analyses were within the laboratory specific quality control limits without exception. The Data Usability Summary Report is provided as Attachment 2.

DISCUSSION

As presented in Table 1 and on Figure 1, PFAS target compounds were detected in each groundwater sample collected, including at the upgradient well SR-101 located along Mt. Read Boulevard. 1,4-dioxane was detected at monitoring wells SR-103 and SR-107.

Even though groundwater use is prohibited by a City of Rochester ordinance, the analysis results were compared to the recently published Maximum Contaminant Levels (MCLs) by the New York State Department of Health (NYSDOH) for perfluorooctanoic acid (PFOA) and perfluorooctane sulfonate (PFOS) and 1,4-dioxane. The reported concentrations in each of the samples collected were below the MCLs of 10 parts per trillion (ppt) for PFOS and 10 ppt for PFOA and 1.0 parts per billion (ppb) for 1,4-dioxane with one exception. PFOA was detected at a concentration of 30 ppt at monitoring well SR-107.

Figure 1 presents the potentiometric surface of the shallow bedrock groundwater bearing zone at the time of the sampling event. The general groundwater flow direction is towards the north/northeast but is locally influenced by a cone of depression created by the pumping wells and the groundwater recovery from a blasted bedrock trench installed beneath the North Parking lot of the facility.

The radius of influence from the active pumping wells (GR-1 and GR-2) extends to slightly beyond the eastern property boundary suggesting that the PFAS target compounds detected at monitoring well SR-107 are due to a source located to the east of the Site and not related to facility operations. This observation is also supported by the detection of the additional PFAS target compounds, PFPeA and 6:2 FTS and 8:2 FTS that were not detected at SR-103.

CLOSING

Should you have any questions concerning the findings of this sampling event, please do not hesitate to contact us at 585-321-4245.

Sincerely yours,
HALEY & ALDRICH OF NEW YORK

Denis M. Conley
Technical Expert

Claire Mondello, CHMM
Program Manager

Attachments

Table 1 – Sampling and Analysis Results
Figure 1 – Results Posting Map with Groundwater Contours
Attachment 1 – Final Laboratory Report – Eurofins Test America, Inc.
Attachment 2 – Data Usability Summary Report – GHD, Inc.
Attachment 3 – NYSDEC Correspondence

c: NYSDOH; Attn: Julia Kenney
NYSDEC; Attn: David Pratt, Dudley Loew, Danielle Miles
GM, LLC; Attn: James F. Hartnett, GM, LLC.

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TABLE

TABLE 1
SUMMARY OF ANALYTICAL RESULTS
ADDITIONAL GROUNDWATER SAMPLING
DELPHI AUTOMOTIVE SYSTEMS SITE NO. 828064
1000 LEXINGTON AVENUE
ROCHESTER, NEW YORK

LOCATION		SR-101	SR-103	SR-103	SR-107
SAMPLE TYPE		N	FD	N	N
DATE		6/24/2021	6/24/2021	6/24/2021	6/24/2021
Semi-Volatile Organic Compounds (ug/L)	Cas No.				
1,4-Dioxane	123-91-1	0.19 U	**0.34**	**0.3**	**0.14 J**
Fluorinated Alkyl Substances (ng/L)					
Fluorotelomer sulfonic acid (6:2)	27619-97-2	4.4 U	**6**	**5.5**	**36**
Fluorotelomer sulfonic acid (8:2)	39108-34-4_8:2	1.8 U	1.6 U	1.7 U	**3.4**
N-Ethyl perfluorooctane sulfonamidoacetic acid	2991-50-6	4.4 U	4.1 U	4.3 U	4.2 U
N-Methyl perfluorooctane sulfonamido acetic acid	2355-31-9	4.4 U	4.1 U	4.3 U	4.2 U
Perfluorobutane sulfonic acid (PFBS)	375-73-5	**1.7 J**	**2**	**2**	**0.44 J**
Perfluorobutanoic acid (PFBA)	375-22-4	**13**	**30**	**33**	**59**
Perfluorodecanesulfonic acid (PFDS)	335-77-3	1.8 U	1.6 U	1.7 U	1.7 U
Perfluorodecanoic acid (PFDA)	335-76-2	**0.33 J**	1.6 U	1.7 U	1.7 U
Perfluorododecanoic acid (PFDoDA)	307-55-1	1.8 U	1.6 U	1.7 U	1.7 U
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	1.8 U	1.6 U	1.7 U	1.7 U
Perfluoroheptanoic acid (PFHpA)	375-85-9	**1.5 J**	**8.4**	**7.5**	**130**
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	**0.72 J**	**0.88 J**	**1.1 J**	**0.33 J**
Perfluorohexanoic acid (PFHxA)	307-24-4	**2.6**	**12**	**12**	**84**
Perfluorononanoic acid (PFNA)	375-95-1	**0.49 J**	**1.7**	**1.4 J**	**2.8**
Perfluorooctane sulfonamide (FOSA)	754-91-6	1.8 U	1.6 U	1.7 U	1.7 U
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	**2**	**1.4 J**	**1.2 J**	**0.39 J**
Perfluorooctanoic acid (PFOA)	335-67-1	**2.4**	**4.8**	**4.7**	**30**
Perfluoropentanoic acid (PFPeA)	2706-90-3	**4.5**	**30**	**30**	**130**
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	1.8 U	1.6 U	1.7 U	1.7 U
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	1.8 U	1.6 U	1.7 U	1.7 U
Perfluoroundecanoic acid (PFUnA)	2058-94-8	1.8 U	1.6 U	1.7 U	1.7 U

Notes and Abbreviations:

1. Results in **bold** were detected.
2. U - Parameter not detected at a concentration above the method detection limit.
3. J - Estimated result - Parameter detected at a concentration below the Laboratory Reporting Limit but above the Method Detection Limit.
4. Sample Types: N - Normal Sample, FD - Field Duplicate Sample.

FIGURE

SR-101

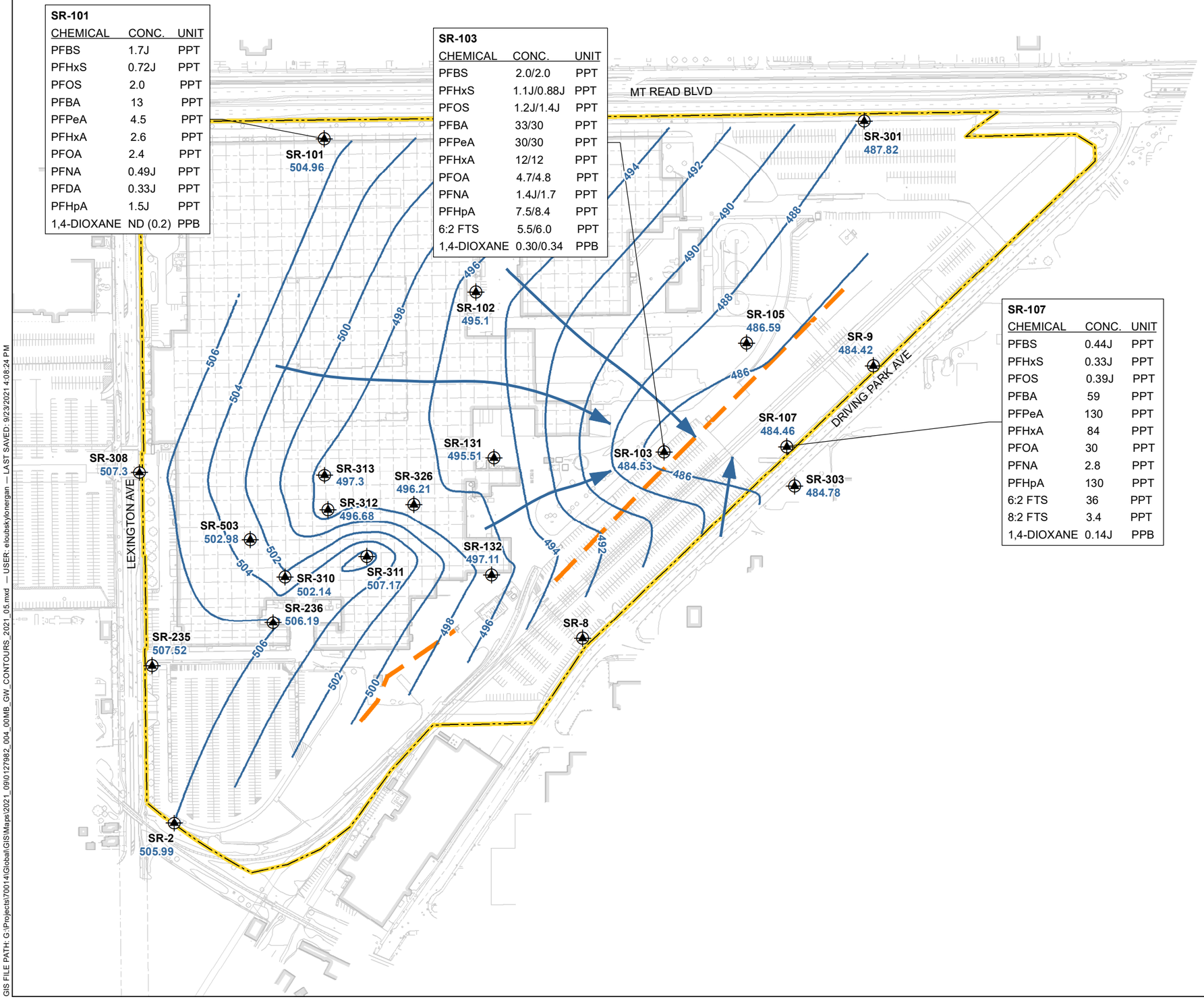
CHEMICAL	CONC.	UNIT
PFBS	1.7J	PPT
PFHxS	0.72J	PPT
PFOS	2.0	PPT
PFBA	13	PPT
PFPeA	4.5	PPT
PFHxA	2.6	PPT
PFOA	2.4	PPT
PFNA	0.49J	PPT
PFDA	0.33J	PPT
PFHpA	1.5J	PPT
1,4-DIOXANE	ND (0.2)	PPB

SR-103

CHEMICAL	CONC.	UNIT
PFBS	2.0/2.0	PPT
PFHxS	1.1J/0.88J	PPT
PFOS	1.2J/1.4J	PPT
PFBA	33/30	PPT
PFPeA	30/30	PPT
PFHxA	12/12	PPT
PFOA	4.7/4.8	PPT
PFNA	1.4J/1.7	PPT
PFHpA	7.5/8.4	PPT
6:2 FTS	5.5/6.0	PPT
1,4-DIOXANE	0.30/0.34	PPB

SR-107

CHEMICAL	CONC.	UNIT
PFBS	0.44J	PPT
PFHxS	0.33J	PPT
PFOS	0.39J	PPT
PFBA	59	PPT
PFPeA	130	PPT
PFHxA	84	PPT
PFOA	30	PPT
PFNA	2.8	PPT
PFHpA	130	PPT
6:2 FTS	36	PPT
8:2 FTS	3.4	PPT
1,4-DIOXANE	0.14J	PPB



LEGEND

- MONITORING WELL WITH GROUNDWATER ELEVATION IN FEET ABOVE MEAN SEA LEVEL
- GROUNDWATER ELEVATION CONTOUR, IN FEET ABOVE MEAN SEA LEVEL
- INFERRED GROUNDWATER FLOW DIRECTION
- BLASTED BEDROCK TRENCH
- SITE BOUNDARY

NOTES

1. ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE.
2. WATER LEVELS MEASURED 26 THROUGH 27 MAY 2021.
3. BASE MAP SOURCE: DELPHI AUTOMOTIVE SYSTEMS
4. PFBS - PERFLUOROBUTANE SULFONIC ACID
5. PFHxS - PERFLUOROHEXANE SULFONIC ACID
6. PFOS - PERFLUOROOCTANE SULFONIC ACID
7. PFBA - PERFLUOROBUTANOIC ACID
8. PFPeA - PERFLUOROPENTANOIC ACID
9. PFHxA - PERFLUOROHEXANOIC ACID
10. PFOA - PERFLUOROOCTANOIC ACID
11. PFNA - PERFLUORONONANOIC ACID
12. PFHpA - PERFLUOROHEPTANOIC ACID
13. 6:2 FTS - FLUOROTELOMER SULFONIC ACID (6:2)
14. 8:2 FTS - FLUOROTELOMER SULFONIC ACID (8:2)
15. PPB - PARTS PER BILLION OR MICROGRAMS PER LITER (ug/L)
16. PPT - PARTS PER TRILLION OR NANOGRAMS PER LITER (ng/L)
17. ND (0.2) - NOT DETECTED AT A REPORTING LIMIT (RL) OF 0.2 ug/L
18. J - ESTIMATED CONCENTRATION DETECTED BELOW THE RL BUT ABOVE THE METHOD DETECTION LIMIT (MDL)

N

0 300 600
SCALE IN FEET

HALEY ALDRICH

DELPHI AUTOMOTIVE SYSTEMS SITE NO. 828064
1000 LEXINGTON AVENUE
ROCHESTER, NEW YORK

PFAS AND 1,4-DIOXANE SAMPLING RESULTS SHALLOW BEDROCK ZONE JUNE 2021

SEPTEMBER 2021

FIGURE 1

GIS FILE PATH: G:\Projects\70014\Global\GIS\Maps\2021_09\0127982_004_00MB_GW_CONTOURS_2021_05.mxd — USER: eloubsky\onergan — LAST SAVED: 9/23/2021 4:08:24 PM

ATTACHMENT 1

Final Laboratory Report

HALEY ALDRICH

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins TestAmerica, Buffalo
10 Hazelwood Drive
Amherst, NY 14228-2298
Tel: (716)691-2600

Laboratory Job ID: 480-186555-1
Client Project/Site: 255021 GMCH - 1000 Lexington Ave

For:
GHD Services Inc.
2055 Niagara Falls Blvd., Suite 3
Niagara Falls, New York 14304

Attn: Kathleen Willy

Denise D Heckler

Authorized for release by:
7/9/2021 9:09:03 AM

Denise Heckler, Project Manager II
(330)966-9477
Denise.Heckler@Eurofinset.com

LINKS

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The test results in this report meet all 2003 NELAC, 2009 TNI, and 2016 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

Table of Contents

Definitions/Glossary

Client: GHD Services Inc.
Job ID: 480-186555-1
Project/Site: 255021 GMCH - 1000 Lexington Ave

Qualifiers

GC/MS Semi VOA

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

LCMS

Qualifier	Qualifier Description
I	Value is EMPC (estimated maximum possible concentration).
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: GHD Services Inc.
Project/Site: 255021 GMCH - 1000 Lexington Ave

Job ID: 480-186555-1

Job ID: 480-186555-1

Laboratory: Eurofins TestAmerica, Buffalo

Narrative

Job Narrative
480-186555-1

Comments
No additional comments.

Receipt
The samples were received on 6/25/2021 10:00 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperatures of the 3 coolers at receipt time were 2.7º C, 2.8º C and 3.0º C.

GC/MS Semi VOA
Method 8270D SIM ID: The breakdown of 4,4'-DDT in the tuning evaluation exceeded 20%. Breakdown is not a criteria of the method but rather an internal check performed by the laboratory to evaluate the peak shape of 1,4-Dioxane and 1,4-Dioxane-d8. No adverse performance was observed and QC recoveries were in control. The data have been reported.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

LCMS
Method 537 (modified): Method 537 (modified): The “I” qualifier associated with samples SR103-062421-1030 (480-186555-2) and 20109-062421-0002 (480-186555-5) is applied because the transition mass ratio for the indicated analyte(s) was outside of the established ratio limits. The qualitative identification has some degree of uncertainty, however analyst judgment was used to positively identify the analyte(s).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Organic Prep
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Detection Summary

Client: GHD Services Inc.
Project/Site: 255021 GMCH - 1000 Lexington Ave

Job ID: 480-186555-1

Client Sample ID: SR101-062421-0850 — Lab Sample ID: 480-186555-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	13		4.4	0.79	ng/L	1		537 (modified)	Total/NA
Perfluoropentanoic acid (PFPeA)	4.5		1.8	0.42	ng/L	1		537 (modified)	Total/NA
Perfluorohexanoic acid (PFHxA)	2.6		1.8	0.40	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	1.5	J	1.8	0.21	ng/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	2.4		1.8	0.37	ng/L	1		537 (modified)	Total/NA
Perfluorononanoic acid (PFNA)	0.49	J	1.8	0.25	ng/L	1		537 (modified)	Total/NA
Perfluorodecanoic acid (PFDA)	0.33	J	1.8	0.27	ng/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	1.7	J	1.8	0.22	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	0.72	J	1.8	0.27	ng/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	2.0		1.8	0.26	ng/L	1		537 (modified)	Total/NA

Client Sample ID: SR103-062421-1030 — Lab Sample ID: 480-186555-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	0.30		0.19	0.095	ug/L	1		8270D SIM ID	Total/NA
Perfluorobutanoic acid (PFBA)	33		4.3	0.77	ng/L	1		537 (modified)	Total/NA
Perfluoropentanoic acid (PFPeA)	30		1.7	0.41	ng/L	1		537 (modified)	Total/NA
Perfluorohexanoic acid (PFHxA)	12		1.7	0.39	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	7.5		1.7	0.21	ng/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	4.7		1.7	0.37	ng/L	1		537 (modified)	Total/NA
Perfluorononanoic acid (PFNA)	1.4	J	1.7	0.24	ng/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	2.0	I	1.7	0.22	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	1.1	J	1.7	0.26	ng/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	1.2	J I	1.7	0.25	ng/L	1		537 (modified)	Total/NA
1H,1H,2H,2H-perfluorooctanesulfonic acid (6:2)	5.5		4.3	0.95	ng/L	1		537 (modified)	Total/NA

Client Sample ID: SR107-062421-1150 — Lab Sample ID: 480-186555-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	0.14	J	0.19	0.095	ug/L	1		8270D SIM ID	Total/NA
Perfluorobutanoic acid (PFBA)	59		4.2	0.76	ng/L	1		537 (modified)	Total/NA
Perfluoropentanoic acid (PFPeA)	130		1.7	0.40	ng/L	1		537 (modified)	Total/NA
Perfluorohexanoic acid (PFHxA)	84		1.7	0.38	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	130		1.7	0.20	ng/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	30		1.7	0.36	ng/L	1		537 (modified)	Total/NA
Perfluorononanoic acid (PFNA)	2.8		1.7	0.24	ng/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.44	J	1.7	0.21	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	0.33	J	1.7	0.26	ng/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	0.39	J	1.7	0.25	ng/L	1		537 (modified)	Total/NA
1H,1H,2H,2H-perfluorooctanesulfonic acid (6:2)	36		4.2	0.93	ng/L	1		537 (modified)	Total/NA
1H,1H,2H,2H-perfluorodecanesulfonic acid (8:2)	3.4		1.7	0.33	ng/L	1		537 (modified)	Total/NA

Client Sample ID: 20109-062421-0001 — Lab Sample ID: 480-186555-4

No Detections.

Client Sample ID: 20109-062421-0002 — Lab Sample ID: 480-186555-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	0.34		0.19	0.095	ug/L	1		8270D SIM ID	Total/NA
Perfluorobutanoic acid (PFBA)	30		4.1	0.72	ng/L	1		537 (modified)	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Buffalo

Detection Summary

Client: GHD Services Inc.
Project/Site: 255021 GMCH - 1000 Lexington Ave

Job ID: 480-186555-1

Client Sample ID: 20109-062421-0002 (Continued)

Lab Sample ID: 480-186555-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluoropentanoic acid (PFPeA)	30		1.6	0.38	ng/L	1		537 (modified)	Total/NA
Perfluorohexanoic acid (PFHxA)	12		1.6	0.37	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	8.4		1.6	0.19	ng/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	4.8		1.6	0.34	ng/L	1		537 (modified)	Total/NA
Perfluorononanoic acid (PFNA)	1.7		1.6	0.23	ng/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	2.0	I	1.6	0.20	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	0.88	J I	1.6	0.25	ng/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	1.4	J I	1.6	0.24	ng/L	1		537 (modified)	Total/NA
1H,1H,2H,2H-perfluorooctanesulfonic acid (6:2)	6.0		4.1	0.89	ng/L	1		537 (modified)	Total/NA

Client Sample ID: 20109-062421-0003

Lab Sample ID: 480-186555-6

No Detections.

This Detection Summary does not include radiochemical test results.

Client: GHD Services Inc.
Project/Site: 255021 GMCH - 1000 Lexington Ave

Job ID: 480-186555-1

Client Sample ID: SR101-062421-0850
Date Collected: 06/24/21 08:50
Date Received: 06/25/21 10:00

Lab Sample ID: 480-186555-1
Matrix: Water

Method: 8270D SIM ID - Semivolatile Organic Compounds (GC/MS SIM / Isotope Dilution)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	ND		0.19	0.095	ug/L		06/28/21 08:26	07/06/21 21:35	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,4-Dioxane-d8	*28*		*15 - 110*	*06/28/21 08:26*	*07/06/21 21:35*	*1*

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**13**		4.4	0.79	ng/L		06/30/21 08:44	06/30/21 22:10	1
Perfluoropentanoic acid (PFPeA)	**4.5**		1.8	0.42	ng/L		06/30/21 08:44	06/30/21 22:10	1
Perfluorohexanoic acid (PFHxA)	**2.6**		1.8	0.40	ng/L		06/30/21 08:44	06/30/21 22:10	1
Perfluoroheptanoic acid (PFHpA)	**1.5**	**J**	1.8	0.21	ng/L		06/30/21 08:44	06/30/21 22:10	1
Perfluorooctanoic acid (PFOA)	**2.4**		1.8	0.37	ng/L		06/30/21 08:44	06/30/21 22:10	1
Perfluorononanoic acid (PFNA)	**0.49**	**J**	1.8	0.25	ng/L		06/30/21 08:44	06/30/21 22:10	1
Perfluorodecanoic acid (PFDA)	**0.33**	**J**	1.8	0.27	ng/L		06/30/21 08:44	06/30/21 22:10	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	0.30	ng/L		06/30/21 08:44	06/30/21 22:10	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.34	ng/L		06/30/21 08:44	06/30/21 22:10	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	0.38	ng/L		06/30/21 08:44	06/30/21 22:10	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.56	ng/L		06/30/21 08:44	06/30/21 22:10	1
Perfluorobutanesulfonic acid (PFBS)	**1.7**	**J**	1.8	0.22	ng/L		06/30/21 08:44	06/30/21 22:10	1
Perfluorohexanesulfonic acid (PFHxS)	**0.72**	**J**	1.8	0.27	ng/L		06/30/21 08:44	06/30/21 22:10	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		1.8	0.21	ng/L		06/30/21 08:44	06/30/21 22:10	1
Perfluorooctanesulfonic acid (PFOS)	**2.0**		1.8	0.26	ng/L		06/30/21 08:44	06/30/21 22:10	1
Perfluorodecanesulfonic acid (PFDS)	ND		1.8	0.27	ng/L		06/30/21 08:44	06/30/21 22:10	1
Perfluorooctanesulfonamide (PFOSA)	ND		1.8	0.51	ng/L		06/30/21 08:44	06/30/21 22:10	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.4	0.80	ng/L		06/30/21 08:44	06/30/21 22:10	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.4	0.66	ng/L		06/30/21 08:44	06/30/21 22:10	1
1H,1H,2H,2H-perfluorooctanesulfonic acid (6:2)	ND		4.4	0.97	ng/L		06/30/21 08:44	06/30/21 22:10	1
1H,1H,2H,2H-perfluorodecanesulfonic acid (8:2)	ND		1.8	0.34	ng/L		06/30/21 08:44	06/30/21 22:10	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
18O2 PFHxS	*87*		*50 - 150*	*06/30/21 08:44*	*06/30/21 22:10*	*1*
13C4 PFHpA	*97*		*50 - 150*	*06/30/21 08:44*	*06/30/21 22:10*	*1*
13C4 PFOA	*97*		*50 - 150*	*06/30/21 08:44*	*06/30/21 22:10*	*1*
13C4 PFOS	*80*		*50 - 150*	*06/30/21 08:44*	*06/30/21 22:10*	*1*
13C5 PFNA	*93*		*50 - 150*	*06/30/21 08:44*	*06/30/21 22:10*	*1*
13C4 PFBA	*93*		*25 - 150*	*06/30/21 08:44*	*06/30/21 22:10*	*1*
13C2 PFHxA	*95*		*50 - 150*	*06/30/21 08:44*	*06/30/21 22:10*	*1*
13C2 PFDA	*89*		*50 - 150*	*06/30/21 08:44*	*06/30/21 22:10*	*1*
13C2 PFUnA	*84*		*50 - 150*	*06/30/21 08:44*	*06/30/21 22:10*	*1*
13C2 PFDoA	*84*		*50 - 150*	*06/30/21 08:44*	*06/30/21 22:10*	*1*
13C8 FOSA	*73*		*25 - 150*	*06/30/21 08:44*	*06/30/21 22:10*	*1*
13C5 PFPeA	*97*		*25 - 150*	*06/30/21 08:44*	*06/30/21 22:10*	*1*
13C2 PFTeDA	*80*		*50 - 150*	*06/30/21 08:44*	*06/30/21 22:10*	*1*
d3-NMeFOSAA	*82*		*50 - 150*	*06/30/21 08:44*	*06/30/21 22:10*	*1*
d5-NEtFOSAA	*93*		*50 - 150*	*06/30/21 08:44*	*06/30/21 22:10*	*1*

Client Sample ID: SR101-062421-0850 — Lab Sample ID: 480-186555-1

Date Collected: 06/24/21 08:50 — **Matrix: Water**
Date Received: 06/25/21 10:00

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
M2-6:2 FTS	94		25 - 150	06/30/21 08:44	06/30/21 22:10	1
M2-8:2 FTS	97		25 - 150	06/30/21 08:44	06/30/21 22:10	1
13C3 PFBS	88		50 - 150	06/30/21 08:44	06/30/21 22:10	1

Client Sample ID: SR103-062421-1030 — Lab Sample ID: 480-186555-2

Date Collected: 06/24/21 10:30 — **Matrix: Water**
Date Received: 06/25/21 10:00

Method: 8270D SIM ID - Semivolatile Organic Compounds (GC/MS SIM / Isotope Dilution)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	0.30		0.19	0.095	ug/L		06/28/21 08:26	07/07/21 01:30	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,4-Dioxane-d8	30		15 - 110	06/28/21 08:26	07/07/21 01:30	1

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	33		4.3	0.77	ng/L		06/30/21 08:44	06/30/21 22:35	1
Perfluoropentanoic acid (PFPeA)	30		1.7	0.41	ng/L		06/30/21 08:44	06/30/21 22:35	1
Perfluorohexanoic acid (PFHxA)	12		1.7	0.39	ng/L		06/30/21 08:44	06/30/21 22:35	1
Perfluoroheptanoic acid (PFHpA)	7.5		1.7	0.21	ng/L		06/30/21 08:44	06/30/21 22:35	1
Perfluorooctanoic acid (PFOA)	4.7		1.7	0.37	ng/L		06/30/21 08:44	06/30/21 22:35	1
Perfluorononanoic acid (PFNA)	1.4	J	1.7	0.24	ng/L		06/30/21 08:44	06/30/21 22:35	1
Perfluorodecanoic acid (PFDA)	ND		1.7	0.26	ng/L		06/30/21 08:44	06/30/21 22:35	1
Perfluoroundecanoic acid (PFUnA)	ND		1.7	0.30	ng/L		06/30/21 08:44	06/30/21 22:35	1
Perfluorododecanoic acid (PFDoA)	ND		1.7	0.33	ng/L		06/30/21 08:44	06/30/21 22:35	1
Perfluorotridecanoic acid (PFTriA)	ND		1.7	0.37	ng/L		06/30/21 08:44	06/30/21 22:35	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.7	0.55	ng/L		06/30/21 08:44	06/30/21 22:35	1
Perfluorobutanesulfonic acid (PFBS)	2.0	I	1.7	0.22	ng/L		06/30/21 08:44	06/30/21 22:35	1
Perfluorohexanesulfonic acid (PFHxS)	1.1	J	1.7	0.26	ng/L		06/30/21 08:44	06/30/21 22:35	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		1.7	0.20	ng/L		06/30/21 08:44	06/30/21 22:35	1
Perfluorooctanesulfonic acid (PFOS)	1.2	J I	1.7	0.25	ng/L		06/30/21 08:44	06/30/21 22:35	1
Perfluorodecanesulfonic acid (PFDS)	ND		1.7	0.26	ng/L		06/30/21 08:44	06/30/21 22:35	1
Perfluorooctanesulfonamide (PFOSA)	ND		1.7	0.50	ng/L		06/30/21 08:44	06/30/21 22:35	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.3	0.78	ng/L		06/30/21 08:44	06/30/21 22:35	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.3	0.64	ng/L		06/30/21 08:44	06/30/21 22:35	1
1H,1H,2H,2H-perfluorooctanesulfonic acid (6:2)	5.5		4.3	0.95	ng/L		06/30/21 08:44	06/30/21 22:35	1
1H,1H,2H,2H-perfluorodecanesulfonic acid (8:2)	ND		1.7	0.34	ng/L		06/30/21 08:44	06/30/21 22:35	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
18O2 PFHxS	85		50 - 150	06/30/21 08:44	06/30/21 22:35	1
13C4 PFHpA	91		50 - 150	06/30/21 08:44	06/30/21 22:35	1
13C4 PFOA	97		50 - 150	06/30/21 08:44	06/30/21 22:35	1
13C4 PFOS	86		50 - 150	06/30/21 08:44	06/30/21 22:35	1
13C5 PFNA	100		50 - 150	06/30/21 08:44	06/30/21 22:35	1
13C4 PFBA	64		25 - 150	06/30/21 08:44	06/30/21 22:35	1

Client Sample ID: SR103-062421-1030
Lab Sample ID: 480-186555-2
Date Collected: 06/24/21 10:30
Matrix: Water
Date Received: 06/25/21 10:00

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	89		50 - 150	06/30/21 08:44	06/30/21 22:35	1
13C2 PFDA	108		50 - 150	06/30/21 08:44	06/30/21 22:35	1
13C2 PFUnA	107		50 - 150	06/30/21 08:44	06/30/21 22:35	1
13C2 PFDoA	110		50 - 150	06/30/21 08:44	06/30/21 22:35	1
13C8 FOSA	71		25 - 150	06/30/21 08:44	06/30/21 22:35	1
13C5 PFPeA	74		25 - 150	06/30/21 08:44	06/30/21 22:35	1
13C2 PFTeDA	110		50 - 150	06/30/21 08:44	06/30/21 22:35	1
d3-NMeFOSAA	111		50 - 150	06/30/21 08:44	06/30/21 22:35	1
d5-NEtFOSAA	137		50 - 150	06/30/21 08:44	06/30/21 22:35	1
M2-6:2 FTS	134		25 - 150	06/30/21 08:44	06/30/21 22:35	1
M2-8:2 FTS	118		25 - 150	06/30/21 08:44	06/30/21 22:35	1
13C3 PFBS	80		50 - 150	06/30/21 08:44	06/30/21 22:35	1

Client Sample ID: SR107-062421-1150
Lab Sample ID: 480-186555-3
Date Collected: 06/24/21 11:50
Matrix: Water
Date Received: 06/25/21 10:00

Method: 8270D SIM ID - Semivolatile Organic Compounds (GC/MS SIM / Isotope Dilution)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	**0.14**	**J**	0.19	0.095	ug/L		06/28/21 08:26	07/07/21 01:53	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,4-Dioxane-d8	28		15 - 110	06/28/21 08:26	07/07/21 01:53	1

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**59**		4.2	0.76	ng/L		06/30/21 08:44	06/30/21 22:43	1
Perfluoropentanoic acid (PFPeA)	**130**		1.7	0.40	ng/L		06/30/21 08:44	06/30/21 22:43	1
Perfluorohexanoic acid (PFHxA)	**84**		1.7	0.38	ng/L		06/30/21 08:44	06/30/21 22:43	1
Perfluoroheptanoic acid (PFHpA)	**130**		1.7	0.20	ng/L		06/30/21 08:44	06/30/21 22:43	1
Perfluorooctanoic acid (PFOA)	**30**		1.7	0.36	ng/L		06/30/21 08:44	06/30/21 22:43	1
Perfluorononanoic acid (PFNA)	**2.8**		1.7	0.24	ng/L		06/30/21 08:44	06/30/21 22:43	1
Perfluorodecanoic acid (PFDA)	ND		1.7	0.26	ng/L		06/30/21 08:44	06/30/21 22:43	1
Perfluoroundecanoic acid (PFUnA)	ND		1.7	0.29	ng/L		06/30/21 08:44	06/30/21 22:43	1
Perfluorododecanoic acid (PFDoA)	ND		1.7	0.33	ng/L		06/30/21 08:44	06/30/21 22:43	1
Perfluorotridecanoic acid (PFTriA)	ND		1.7	0.37	ng/L		06/30/21 08:44	06/30/21 22:43	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.7	0.54	ng/L		06/30/21 08:44	06/30/21 22:43	1
Perfluorobutanesulfonic acid (PFBS)	**0.44**	**J**	1.7	0.21	ng/L		06/30/21 08:44	06/30/21 22:43	1
Perfluorohexanesulfonic acid (PFHxS)	**0.33**	**J**	1.7	0.26	ng/L		06/30/21 08:44	06/30/21 22:43	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		1.7	0.20	ng/L		06/30/21 08:44	06/30/21 22:43	1
Perfluorooctanesulfonic acid (PFOS)	**0.39**	**J**	1.7	0.25	ng/L		06/30/21 08:44	06/30/21 22:43	1
Perfluorodecanesulfonic acid (PFDS)	ND		1.7	0.26	ng/L		06/30/21 08:44	06/30/21 22:43	1
Perfluorooctanesulfonamide (PFOSA)	ND		1.7	0.49	ng/L		06/30/21 08:44	06/30/21 22:43	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.2	0.77	ng/L		06/30/21 08:44	06/30/21 22:43	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.2	0.63	ng/L		06/30/21 08:44	06/30/21 22:43	1
1H,1H,2H,2H-perfluorooctanesulfonic acid (6:2)	**36**		4.2	0.93	ng/L		06/30/21 08:44	06/30/21 22:43	1

Client: GHD Services Inc.
Job ID: 480-186555-1
Project/Site: 255021 GMCH - 1000 Lexington Ave

Client Sample ID: SR107-062421-1150
Lab Sample ID: 480-186555-3
Date Collected: 06/24/21 11:50
Matrix: Water
Date Received: 06/25/21 10:00

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1H,1H,2H,2H-perfluorodecanesulfonic acid (8:2)	3.4		1.7	0.33	ng/L		06/30/21 08:44	06/30/21 22:43	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
18O2 PFHxS	*86*		*50 - 150*	*06/30/21 08:44*	*06/30/21 22:43*	*1*
13C4 PFHpA	*88*		*50 - 150*	*06/30/21 08:44*	*06/30/21 22:43*	*1*
13C4 PFOA	*93*		*50 - 150*	*06/30/21 08:44*	*06/30/21 22:43*	*1*
13C4 PFOS	*75*		*50 - 150*	*06/30/21 08:44*	*06/30/21 22:43*	*1*
13C5 PFNA	*87*		*50 - 150*	*06/30/21 08:44*	*06/30/21 22:43*	*1*
13C4 PFBA	*93*		*25 - 150*	*06/30/21 08:44*	*06/30/21 22:43*	*1*
13C2 PFHxA	*93*		*50 - 150*	*06/30/21 08:44*	*06/30/21 22:43*	*1*
13C2 PFDA	*83*		*50 - 150*	*06/30/21 08:44*	*06/30/21 22:43*	*1*
13C2 PFUnA	*78*		*50 - 150*	*06/30/21 08:44*	*06/30/21 22:43*	*1*
13C2 PFDoA	*76*		*50 - 150*	*06/30/21 08:44*	*06/30/21 22:43*	*1*
13C8 FOSA	*74*		*25 - 150*	*06/30/21 08:44*	*06/30/21 22:43*	*1*
13C5 PFPeA	*90*		*25 - 150*	*06/30/21 08:44*	*06/30/21 22:43*	*1*
13C2 PFTeDA	*69*		*50 - 150*	*06/30/21 08:44*	*06/30/21 22:43*	*1*
d3-NMeFOSAA	*78*		*50 - 150*	*06/30/21 08:44*	*06/30/21 22:43*	*1*
d5-NEtFOSAA	*78*		*50 - 150*	*06/30/21 08:44*	*06/30/21 22:43*	*1*
M2-6:2 FTS	*95*		*25 - 150*	*06/30/21 08:44*	*06/30/21 22:43*	*1*
M2-8:2 FTS	*90*		*25 - 150*	*06/30/21 08:44*	*06/30/21 22:43*	*1*
13C3 PFBS	*86*		*50 - 150*	*06/30/21 08:44*	*06/30/21 22:43*	*1*

Client Sample ID: 20109-062421-0001
Lab Sample ID: 480-186555-4
Date Collected: 06/24/21 00:00
Matrix: Water
Date Received: 06/25/21 10:00

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	ND		4.5	0.80	ng/L		06/30/21 08:44	06/30/21 22:52	1
Perfluoropentanoic acid (PFPeA)	ND		1.8	0.42	ng/L		06/30/21 08:44	06/30/21 22:52	1
Perfluorohexanoic acid (PFHxA)	ND		1.8	0.40	ng/L		06/30/21 08:44	06/30/21 22:52	1
Perfluoroheptanoic acid (PFHpA)	ND		1.8	0.21	ng/L		06/30/21 08:44	06/30/21 22:52	1
Perfluorooctanoic acid (PFOA)	ND		1.8	0.38	ng/L		06/30/21 08:44	06/30/21 22:52	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.25	ng/L		06/30/21 08:44	06/30/21 22:52	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.27	ng/L		06/30/21 08:44	06/30/21 22:52	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	0.31	ng/L		06/30/21 08:44	06/30/21 22:52	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.34	ng/L		06/30/21 08:44	06/30/21 22:52	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	0.39	ng/L		06/30/21 08:44	06/30/21 22:52	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.56	ng/L		06/30/21 08:44	06/30/21 22:52	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.8	0.22	ng/L		06/30/21 08:44	06/30/21 22:52	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.8	0.27	ng/L		06/30/21 08:44	06/30/21 22:52	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		1.8	0.21	ng/L		06/30/21 08:44	06/30/21 22:52	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.8	0.26	ng/L		06/30/21 08:44	06/30/21 22:52	1
Perfluorodecanesulfonic acid (PFDS)	ND		1.8	0.27	ng/L		06/30/21 08:44	06/30/21 22:52	1
Perfluorooctanesulfonamide (PFOSA)	ND		1.8	0.51	ng/L		06/30/21 08:44	06/30/21 22:52	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.5	0.80	ng/L		06/30/21 08:44	06/30/21 22:52	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.5	0.66	ng/L		06/30/21 08:44	06/30/21 22:52	1

Client Sample ID: 20109-062421-0001 — Lab Sample ID: 480-186555-4

Date Collected: 06/24/21 00:00 — **Matrix: Water**
Date Received: 06/25/21 10:00

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1H,1H,2H,2H-perfluorooctanesulfonic acid (6:2)	ND		4.5	0.98	ng/L		06/30/21 08:44	06/30/21 22:52	1
1H,1H,2H,2H-perfluorodecanesulfonic acid (8:2)	ND		1.8	0.35	ng/L		06/30/21 08:44	06/30/21 22:52	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
18O2 PFHxS	*89*		*50 - 150*	*06/30/21 08:44*	*06/30/21 22:52*	*1*
13C4 PFHpA	*98*		*50 - 150*	*06/30/21 08:44*	*06/30/21 22:52*	*1*
13C4 PFOA	*102*		*50 - 150*	*06/30/21 08:44*	*06/30/21 22:52*	*1*
13C4 PFOS	*90*		*50 - 150*	*06/30/21 08:44*	*06/30/21 22:52*	*1*
13C5 PFNA	*100*		*50 - 150*	*06/30/21 08:44*	*06/30/21 22:52*	*1*
13C4 PFBA	*99*		*25 - 150*	*06/30/21 08:44*	*06/30/21 22:52*	*1*
13C2 PFHxA	*102*		*50 - 150*	*06/30/21 08:44*	*06/30/21 22:52*	*1*
13C2 PFDA	*99*		*50 - 150*	*06/30/21 08:44*	*06/30/21 22:52*	*1*
13C2 PFUnA	*102*		*50 - 150*	*06/30/21 08:44*	*06/30/21 22:52*	*1*
13C2 PFDoA	*85*		*50 - 150*	*06/30/21 08:44*	*06/30/21 22:52*	*1*
13C8 FOSA	*69*		*25 - 150*	*06/30/21 08:44*	*06/30/21 22:52*	*1*
13C5 PFPeA	*99*		*25 - 150*	*06/30/21 08:44*	*06/30/21 22:52*	*1*
13C2 PFTeDA	*70*		*50 - 150*	*06/30/21 08:44*	*06/30/21 22:52*	*1*
d3-NMeFOSAA	*85*		*50 - 150*	*06/30/21 08:44*	*06/30/21 22:52*	*1*
d5-NEtFOSAA	*85*		*50 - 150*	*06/30/21 08:44*	*06/30/21 22:52*	*1*
M2-6:2 FTS	*92*		*25 - 150*	*06/30/21 08:44*	*06/30/21 22:52*	*1*
M2-8:2 FTS	*104*		*25 - 150*	*06/30/21 08:44*	*06/30/21 22:52*	*1*
13C3 PFBS	*89*		*50 - 150*	*06/30/21 08:44*	*06/30/21 22:52*	*1*

Client Sample ID: 20109-062421-0002 — Lab Sample ID: 480-186555-5

Date Collected: 06/24/21 00:00 — **Matrix: Water**
Date Received: 06/25/21 10:00

Method: 8270D SIM ID - Semivolatile Organic Compounds (GC/MS SIM / Isotope Dilution)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	**0.34**		0.19	0.095	ug/L		06/28/21 08:26	07/07/21 02:16	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,4-Dioxane-d8	*30*		*15 - 110*	*06/28/21 08:26*	*07/07/21 02:16*	*1*

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**30**		4.1	0.72	ng/L		06/30/21 08:44	06/30/21 23:00	1
Perfluoropentanoic acid (PFPeA)	**30**		1.6	0.38	ng/L		06/30/21 08:44	06/30/21 23:00	1
Perfluorohexanoic acid (PFHxA)	**12**		1.6	0.37	ng/L		06/30/21 08:44	06/30/21 23:00	1
Perfluoroheptanoic acid (PFHpA)	**8.4**		1.6	0.19	ng/L		06/30/21 08:44	06/30/21 23:00	1
Perfluorooctanoic acid (PFOA)	**4.8**		1.6	0.34	ng/L		06/30/21 08:44	06/30/21 23:00	1
Perfluorononanoic acid (PFNA)	**1.7**		1.6	0.23	ng/L		06/30/21 08:44	06/30/21 23:00	1
Perfluorodecanoic acid (PFDA)	ND		1.6	0.25	ng/L		06/30/21 08:44	06/30/21 23:00	1
Perfluoroundecanoic acid (PFUnA)	ND		1.6	0.28	ng/L		06/30/21 08:44	06/30/21 23:00	1
Perfluorododecanoic acid (PFDoA)	ND		1.6	0.31	ng/L		06/30/21 08:44	06/30/21 23:00	1
Perfluorotridecanoic acid (PFTriA)	ND		1.6	0.35	ng/L		06/30/21 08:44	06/30/21 23:00	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.6	0.51	ng/L		06/30/21 08:44	06/30/21 23:00	1
Perfluorobutanesulfonic acid (PFBS)	**2.0**	**I**	1.6	0.20	ng/L		06/30/21 08:44	06/30/21 23:00	1
Perfluorohexanesulfonic acid (PFHxS)	**0.88**	**J I**	1.6	0.25	ng/L		06/30/21 08:44	06/30/21 23:00	1

Client Sample ID: 20109-062421-0002
Lab Sample ID: 480-186555-5
Date Collected: 06/24/21 00:00
Matrix: Water
Date Received: 06/25/21 10:00

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanesulfonic Acid (PFHpS)	ND		1.6	0.19	ng/L		06/30/21 08:44	06/30/21 23:00	1
Perfluorooctanesulfonic acid (PFOS)	**1.4**	**J I**	1.6	0.24	ng/L		06/30/21 08:44	06/30/21 23:00	1
Perfluorodecanesulfonic acid (PFDS)	ND		1.6	0.25	ng/L		06/30/21 08:44	06/30/21 23:00	1
Perfluorooctanesulfonamide (PFOSA)	ND		1.6	0.47	ng/L		06/30/21 08:44	06/30/21 23:00	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.1	0.73	ng/L		06/30/21 08:44	06/30/21 23:00	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.1	0.60	ng/L		06/30/21 08:44	06/30/21 23:00	1
1H,1H,2H,2H-perfluorooctanesulfonic acid (6:2)	**6.0**		4.1	0.89	ng/L		06/30/21 08:44	06/30/21 23:00	1
1H,1H,2H,2H-perfluorodecanesulfonic acid (8:2)	ND		1.6	0.32	ng/L		06/30/21 08:44	06/30/21 23:00	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
18O2 PFHxS	*73*		*50 - 150*	*06/30/21 08:44*	*06/30/21 23:00*	*1*
13C4 PFHpA	*82*		*50 - 150*	*06/30/21 08:44*	*06/30/21 23:00*	*1*
13C4 PFOA	*82*		*50 - 150*	*06/30/21 08:44*	*06/30/21 23:00*	*1*
13C4 PFOS	*60*		*50 - 150*	*06/30/21 08:44*	*06/30/21 23:00*	*1*
13C5 PFNA	*71*		*50 - 150*	*06/30/21 08:44*	*06/30/21 23:00*	*1*
13C4 PFBA	*61*		*25 - 150*	*06/30/21 08:44*	*06/30/21 23:00*	*1*
13C2 PFHxA	*84*		*50 - 150*	*06/30/21 08:44*	*06/30/21 23:00*	*1*
13C2 PFDA	*80*		*50 - 150*	*06/30/21 08:44*	*06/30/21 23:00*	*1*
13C2 PFUnA	*78*		*50 - 150*	*06/30/21 08:44*	*06/30/21 23:00*	*1*
13C2 PFDoA	*81*		*50 - 150*	*06/30/21 08:44*	*06/30/21 23:00*	*1*
13C8 FOSA	*51*		*25 - 150*	*06/30/21 08:44*	*06/30/21 23:00*	*1*
13C5 PFPeA	*72*		*25 - 150*	*06/30/21 08:44*	*06/30/21 23:00*	*1*
13C2 PFTeDA	*96*		*50 - 150*	*06/30/21 08:44*	*06/30/21 23:00*	*1*
d3-NMeFOSAA	*82*		*50 - 150*	*06/30/21 08:44*	*06/30/21 23:00*	*1*
d5-NEtFOSAA	*100*		*50 - 150*	*06/30/21 08:44*	*06/30/21 23:00*	*1*
M2-6:2 FTS	*114*		*25 - 150*	*06/30/21 08:44*	*06/30/21 23:00*	*1*
M2-8:2 FTS	*100*		*25 - 150*	*06/30/21 08:44*	*06/30/21 23:00*	*1*
13C3 PFBS	*82*		*50 - 150*	*06/30/21 08:44*	*06/30/21 23:00*	*1*

Client Sample ID: 20109-062421-0003
Lab Sample ID: 480-186555-6
Date Collected: 06/24/21 00:00
Matrix: Water
Date Received: 06/25/21 10:00

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	ND		4.4	0.78	ng/L		06/30/21 08:44	06/30/21 23:08	1
Perfluoropentanoic acid (PFPeA)	ND		1.7	0.41	ng/L		06/30/21 08:44	06/30/21 23:08	1
Perfluorohexanoic acid (PFHxA)	ND		1.7	0.39	ng/L		06/30/21 08:44	06/30/21 23:08	1
Perfluoroheptanoic acid (PFHpA)	ND		1.7	0.21	ng/L		06/30/21 08:44	06/30/21 23:08	1
Perfluorooctanoic acid (PFOA)	ND		1.7	0.37	ng/L		06/30/21 08:44	06/30/21 23:08	1
Perfluorononanoic acid (PFNA)	ND		1.7	0.24	ng/L		06/30/21 08:44	06/30/21 23:08	1
Perfluorodecanoic acid (PFDA)	ND		1.7	0.26	ng/L		06/30/21 08:44	06/30/21 23:08	1
Perfluoroundecanoic acid (PFUnA)	ND		1.7	0.30	ng/L		06/30/21 08:44	06/30/21 23:08	1
Perfluorododecanoic acid (PFDoA)	ND		1.7	0.34	ng/L		06/30/21 08:44	06/30/21 23:08	1
Perfluorotridecanoic acid (PFTriA)	ND		1.7	0.38	ng/L		06/30/21 08:44	06/30/21 23:08	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.7	0.55	ng/L		06/30/21 08:44	06/30/21 23:08	1

Client: GHD Services Inc.
Job ID: 480-186555-1
Project/Site: 255021 GMCH - 1000 Lexington Ave

Client Sample ID: 20109-062421-0003
Lab Sample ID: 480-186555-6
Date Collected: 06/24/21 00:00
Matrix: Water
Date Received: 06/25/21 10:00

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanesulfonic acid (PFBS)	ND		1.7	0.22	ng/L		06/30/21 08:44	06/30/21 23:08	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.7	0.26	ng/L		06/30/21 08:44	06/30/21 23:08	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		1.7	0.20	ng/L		06/30/21 08:44	06/30/21 23:08	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.7	0.25	ng/L		06/30/21 08:44	06/30/21 23:08	1
Perfluorodecanesulfonic acid (PFDS)	ND		1.7	0.27	ng/L		06/30/21 08:44	06/30/21 23:08	1
Perfluorooctanesulfonamide (PFOSA)	ND		1.7	0.50	ng/L		06/30/21 08:44	06/30/21 23:08	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.4	0.79	ng/L		06/30/21 08:44	06/30/21 23:08	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.4	0.65	ng/L		06/30/21 08:44	06/30/21 23:08	1
1H,1H,2H,2H-perfluorooctanesulfonic acid (6:2)	ND		4.4	0.95	ng/L		06/30/21 08:44	06/30/21 23:08	1
1H,1H,2H,2H-perfluorodecanesulfonic acid (8:2)	ND		1.7	0.34	ng/L		06/30/21 08:44	06/30/21 23:08	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
18O2 PFHxS	*93*		*50 - 150*	*06/30/21 08:44*	*06/30/21 23:08*	*1*
13C4 PFHpA	*97*		*50 - 150*	*06/30/21 08:44*	*06/30/21 23:08*	*1*
13C4 PFOA	*100*		*50 - 150*	*06/30/21 08:44*	*06/30/21 23:08*	*1*
13C4 PFOS	*93*		*50 - 150*	*06/30/21 08:44*	*06/30/21 23:08*	*1*
13C5 PFNA	*106*		*50 - 150*	*06/30/21 08:44*	*06/30/21 23:08*	*1*
13C4 PFBA	*105*		*25 - 150*	*06/30/21 08:44*	*06/30/21 23:08*	*1*
13C2 PFHxA	*106*		*50 - 150*	*06/30/21 08:44*	*06/30/21 23:08*	*1*
13C2 PFDA	*105*		*50 - 150*	*06/30/21 08:44*	*06/30/21 23:08*	*1*
13C2 PFUnA	*89*		*50 - 150*	*06/30/21 08:44*	*06/30/21 23:08*	*1*
13C2 PFDoA	*81*		*50 - 150*	*06/30/21 08:44*	*06/30/21 23:08*	*1*
13C8 FOSA	*71*		*25 - 150*	*06/30/21 08:44*	*06/30/21 23:08*	*1*
13C5 PFPeA	*103*		*25 - 150*	*06/30/21 08:44*	*06/30/21 23:08*	*1*
13C2 PFTeDA	*74*		*50 - 150*	*06/30/21 08:44*	*06/30/21 23:08*	*1*
d3-NMeFOSAA	*92*		*50 - 150*	*06/30/21 08:44*	*06/30/21 23:08*	*1*
d5-NEtFOSAA	*88*		*50 - 150*	*06/30/21 08:44*	*06/30/21 23:08*	*1*
M2-6:2 FTS	*90*		*25 - 150*	*06/30/21 08:44*	*06/30/21 23:08*	*1*
M2-8:2 FTS	*109*		*25 - 150*	*06/30/21 08:44*	*06/30/21 23:08*	*1*
13C3 PFBS	*91*		*50 - 150*	*06/30/21 08:44*	*06/30/21 23:08*	*1*

Isotope Dilution Summary

Client: GHD Services Inc.
Job ID: 480-186555-1
Project/Site: 255021 GMCH - 1000 Lexington Ave

Method: 8270D SIM ID - Semivolatile Organic Compounds (GC/MS SIM / Isotope Dilution)

Matrix: Water **Prep Type: Total/NA**

		Percent Isotope Dilution Recovery (Acceptance Limits)
Lab Sample ID	Client Sample ID	DXE (15-110)
480-186555-1	SR101-062421-0850	28
480-186555-1 MS	SR101-062421-0850	29
480-186555-1 MSD	SR101-062421-0850	31
480-186555-2	SR103-062421-1030	30
480-186555-3	SR107-062421-1150	28
480-186555-5	20109-062421-0002	30
LCS 480-587182/2-A	Lab Control Sample	29
MB 480-587182/1-A	Method Blank	32

Surrogate Legend

DXE = 1,4-Dioxane-d8

Method: 537 (modified) - Fluorinated Alkyl Substances

Matrix: Water **Prep Type: Total/NA**

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	PFHxS (50-150)	C4PFHA (50-150)	PFOA (50-150)	PFOS (50-150)	PFNA (50-150)	PFBA (25-150)	PFHxA (50-150)	PFDA (50-150)
480-186555-1	SR101-062421-0850	87	97	97	80	93	93	95	89
480-186555-1 MS	SR101-062421-0850	91	99	103	85	100	95	100	96
480-186555-1 MSD	SR101-062421-0850	90	96	101	70	90	99	95	83
480-186555-2	SR103-062421-1030	85	91	97	86	100	64	89	108
480-186555-3	SR107-062421-1150	86	88	93	75	87	93	93	83
480-186555-4	20109-062421-0001	89	98	102	90	100	99	102	99
480-186555-5	20109-062421-0002	73	82	82	60	71	61	84	80
480-186555-6	20109-062421-0003	93	97	100	93	106	105	106	105
LCS 200-168585/2-A	Lab Control Sample	92	98	97	93	99	103	102	103
MB 200-168585/1-A	Method Blank	84	92	94	82	93	97	97	92

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	PFUnA (50-150)	PFDoA (50-150)	PFOSA (25-150)	PFPeA (25-150)	PFTDA (50-150)	d3NMFOS (50-150)	d5NEFOS (50-150)	M262FTS (25-150)
480-186555-1	SR101-062421-0850	84	84	73	97	80	82	93	94
480-186555-1 MS	SR101-062421-0850	91	81	76	99	80	83	83	104
480-186555-1 MSD	SR101-062421-0850	77	68	67	96	76	73	82	100
480-186555-2	SR103-062421-1030	107	110	71	74	110	111	137	134
480-186555-3	SR107-062421-1150	78	76	74	90	69	78	78	95
480-186555-4	20109-062421-0001	102	85	69	99	70	85	85	92
480-186555-5	20109-062421-0002	78	81	51	72	96	82	100	114
480-186555-6	20109-062421-0003	89	81	71	103	74	92	88	90
LCS 200-168585/2-A	Lab Control Sample	91	79	67	101	74	97	80	89
MB 200-168585/1-A	Method Blank	75	69	56	98	63	79	74	85

		Percent Isotope Dilution Recovery (Acceptance Limits)	
Lab Sample ID	Client Sample ID	M282FTS (25-150)	C3PFBS (50-150)
480-186555-1	SR101-062421-0850	97	88
480-186555-1 MS	SR101-062421-0850	103	90
480-186555-1 MSD	SR101-062421-0850	88	86
480-186555-2	SR103-062421-1030	118	80
480-186555-3	SR107-062421-1150	90	86
480-186555-4	20109-062421-0001	104	89

Isotope Dilution Summary

Client: GHD Services Inc. Job ID: 480-186555-1
Project/Site: 255021 GMCH - 1000 Lexington Ave

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Matrix: Water **Prep Type: Total/NA**

		Percent Isotope Dilution Recovery (Acceptance Limits)									
Lab Sample ID	Client Sample ID	M282FTS (25-150)	C3PFBS (50-150)								
480-186555-5	20109-062421-0002	100	82								
480-186555-6	20109-062421-0003	109	91								
LCS 200-168585/2-A	Lab Control Sample	100	89								
MB 200-168585/1-A	Method Blank	95	86								

Surrogate Legend

PFHxS = 18O2 PFHxS
C4PFHA = 13C4 PFHpA
PFOA = 13C4 PFOA
PFOS = 13C4 PFOS
PFNA = 13C5 PFNA
PFBA = 13C4 PFBA
PFHxA = 13C2 PFHxA
PFDA = 13C2 PFDA
PFUnA = 13C2 PFUnA
PFDoA = 13C2 PFDoA
PFOSA = 13C8 FOSA
PFPeA = 13C5 PFPeA
PFTDA = 13C2 PFTeDA
d3NMFOS = d3-NMeFOSAA
d5NEFOS = d5-NEtFOSAA
M262FTS = M2-6:2 FTS
M282FTS = M2-8:2 FTS
C3PFBS = 13C3 PFBS

Method: 8270D SIM ID - Semivolatile Organic Compounds (GC/MS SIM / Isotope Dilution)

Lab Sample ID: MB 480-587182/1-A
Matrix: Water
Analysis Batch: 588108

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 587182

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	ND		0.20	0.10	ug/L		06/28/21 08:26	07/06/21 19:16	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,4-Dioxane-d8	*32*		*15 - 110*	*06/28/21 08:26*	*07/06/21 19:16*	*1*

Lab Sample ID: LCS 480-587182/2-A
Matrix: Water
Analysis Batch: 588108

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 587182

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
1,4-Dioxane			1.00	1.07		ug/L		107	40 - 140		

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,4-Dioxane-d8	*29*		*15 - 110*

Lab Sample ID: 480-186555-1 MS
Matrix: Water
Analysis Batch: 588108

Client Sample ID: SR101-062421-0850
Prep Type: Total/NA
Prep Batch: 587182

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
1,4-Dioxane	ND		0.952	0.985		ug/L		103	40 - 140		

Isotope Dilution	*MS %Recovery*	*MS Qualifier*	*Limits*
1,4-Dioxane-d8	*29*		*15 - 110*

Lab Sample ID: 480-186555-1 MSD
Matrix: Water
Analysis Batch: 588108

Client Sample ID: SR101-062421-0850
Prep Type: Total/NA
Prep Batch: 587182

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,4-Dioxane	ND		0.952	1.02		ug/L		107	40 - 140	3	20

Isotope Dilution	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,4-Dioxane-d8	*31*		*15 - 110*

Method: 537 (modified) - Fluorinated Alkyl Substances

Lab Sample ID: MB 200-168585/1-A
Matrix: Water
Analysis Batch: 168615

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 168585

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	ND		5.0	0.89	ng/L		06/30/21 08:44	06/30/21 20:31	1
Perfluoropentanoic acid (PFPeA)	ND		2.0	0.47	ng/L		06/30/21 08:44	06/30/21 20:31	1
Perfluorohexanoic acid (PFHxA)	ND		2.0	0.45	ng/L		06/30/21 08:44	06/30/21 20:31	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.24	ng/L		06/30/21 08:44	06/30/21 20:31	1
Perfluorooctanoic acid (PFOA)	ND		2.0	0.42	ng/L		06/30/21 08:44	06/30/21 20:31	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.28	ng/L		06/30/21 08:44	06/30/21 20:31	1
Perfluorodecanoic acid (PFDA)	ND		2.0	0.30	ng/L		06/30/21 08:44	06/30/21 20:31	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	0.34	ng/L		06/30/21 08:44	06/30/21 20:31	1

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: MB 200-168585/1-A
Matrix: Water
Analysis Batch: 168615

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 168585

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorododecanoic acid (PFDoA)	ND		2.0	0.39	ng/L		06/30/21 08:44	06/30/21 20:31	1
Perfluorotridecanoic acid (PFTriA)	ND		2.0	0.43	ng/L		06/30/21 08:44	06/30/21 20:31	1
Perfluorotetradecanoic acid (PFTeA)	ND		2.0	0.63	ng/L		06/30/21 08:44	06/30/21 20:31	1
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	0.25	ng/L		06/30/21 08:44	06/30/21 20:31	1
Perfluorohexanesulfonic acid (PFHxS)	ND		2.0	0.30	ng/L		06/30/21 08:44	06/30/21 20:31	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		2.0	0.23	ng/L		06/30/21 08:44	06/30/21 20:31	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.0	0.29	ng/L		06/30/21 08:44	06/30/21 20:31	1
Perfluorodecanesulfonic acid (PFDS)	ND		2.0	0.31	ng/L		06/30/21 08:44	06/30/21 20:31	1
Perfluorooctanesulfonamide (PFOSA)	ND		2.0	0.58	ng/L		06/30/21 08:44	06/30/21 20:31	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		5.0	0.90	ng/L		06/30/21 08:44	06/30/21 20:31	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		5.0	0.74	ng/L		06/30/21 08:44	06/30/21 20:31	1
1H,1H,2H,2H-perfluorooctanesulfonic acid (6:2)	ND		5.0	1.1	ng/L		06/30/21 08:44	06/30/21 20:31	1
1H,1H,2H,2H-perfluorodecanesulfonic acid (8:2)	ND		2.0	0.39	ng/L		06/30/21 08:44	06/30/21 20:31	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
18O2 PFHxS	*84*		*50 - 150*	*06/30/21 08:44*	*06/30/21 20:31*	*1*
13C4 PFHpA	*92*		*50 - 150*	*06/30/21 08:44*	*06/30/21 20:31*	*1*
13C4 PFOA	*94*		*50 - 150*	*06/30/21 08:44*	*06/30/21 20:31*	*1*
13C4 PFOS	*82*		*50 - 150*	*06/30/21 08:44*	*06/30/21 20:31*	*1*
13C5 PFNA	*93*		*50 - 150*	*06/30/21 08:44*	*06/30/21 20:31*	*1*
13C4 PFBA	*97*		*25 - 150*	*06/30/21 08:44*	*06/30/21 20:31*	*1*
13C2 PFHxA	*97*		*50 - 150*	*06/30/21 08:44*	*06/30/21 20:31*	*1*
13C2 PFDA	*92*		*50 - 150*	*06/30/21 08:44*	*06/30/21 20:31*	*1*
13C2 PFUnA	*75*		*50 - 150*	*06/30/21 08:44*	*06/30/21 20:31*	*1*
13C2 PFDoA	*69*		*50 - 150*	*06/30/21 08:44*	*06/30/21 20:31*	*1*
13C8 FOSA	*56*		*25 - 150*	*06/30/21 08:44*	*06/30/21 20:31*	*1*
13C5 PFPeA	*98*		*25 - 150*	*06/30/21 08:44*	*06/30/21 20:31*	*1*
13C2 PFTeDA	*63*		*50 - 150*	*06/30/21 08:44*	*06/30/21 20:31*	*1*
d3-NMeFOSAA	*79*		*50 - 150*	*06/30/21 08:44*	*06/30/21 20:31*	*1*
d5-NEtFOSAA	*74*		*50 - 150*	*06/30/21 08:44*	*06/30/21 20:31*	*1*
M2-6:2 FTS	*85*		*25 - 150*	*06/30/21 08:44*	*06/30/21 20:31*	*1*
M2-8:2 FTS	*95*		*25 - 150*	*06/30/21 08:44*	*06/30/21 20:31*	*1*
13C3 PFBS	*86*		*50 - 150*	*06/30/21 08:44*	*06/30/21 20:31*	*1*

Lab Sample ID: LCS 200-168585/2-A
Matrix: Water
Analysis Batch: 168615

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 168585

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorobutanoic acid (PFBA)	40.0	40.3		ng/L		101	50 - 150
Perfluoropentanoic acid (PFPeA)	40.0	41.8		ng/L		105	50 - 150
Perfluorohexanoic acid (PFHxA)	40.0	40.1		ng/L		100	70 - 130
Perfluoroheptanoic acid (PFHpA)	40.0	42.1		ng/L		105	70 - 130
Perfluorooctanoic acid (PFOA)	40.0	42.4		ng/L		106	70 - 130
Perfluorononanoic acid (PFNA)	40.0	39.3		ng/L		98	70 - 130

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: LCS 200-168585/2-A
Client Sample ID: Lab Control Sample
Matrix: Water
Prep Type: Total/NA
Analysis Batch: 168615
Prep Batch: 168585

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorodecanoic acid (PFDA)	40.0	39.3		ng/L		98	70 - 130
Perfluoroundecanoic acid (PFUnA)	40.0	40.0		ng/L		100	70 - 130
Perfluorododecanoic acid (PFDoA)	40.0	41.5		ng/L		104	70 - 130
Perfluorotridecanoic acid (PFTriA)	40.0	37.2		ng/L		93	70 - 130
Perfluorotetradecanoic acid (PFTeA)	40.0	40.8		ng/L		102	70 - 130
Perfluorobutanesulfonic acid (PFBS)	35.4	36.6		ng/L		104	70 - 130
Perfluorohexanesulfonic acid (PFHxS)	36.4	35.8		ng/L		98	70 - 130
Perfluoroheptanesulfonic Acid (PFHpS)	38.1	36.2		ng/L		95	50 - 150
Perfluorooctanesulfonic acid (PFOS)	37.1	36.7		ng/L		99	70 - 130
Perfluorodecanesulfonic acid (PFDS)	38.6	33.0		ng/L		85	50 - 150
Perfluorooctanesulfonamide (PFOSA)	40.0	38.2		ng/L		96	50 - 150
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	34.7		ng/L		87	70 - 130
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	41.2		ng/L		103	70 - 130
1H,1H,2H,2H-perfluorooctanesulfonic acid (6:2)	37.9	41.0		ng/L		108	50 - 150
1H,1H,2H,2H-perfluorodecanesulfonic acid (8:2)	38.3	37.8		ng/L		99	50 - 150

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
18O2 PFHxS	*92*		*50 - 150*
13C4 PFHpA	*98*		*50 - 150*
13C4 PFOA	*97*		*50 - 150*
13C4 PFOS	*93*		*50 - 150*
13C5 PFNA	*99*		*50 - 150*
13C4 PFBA	*103*		*25 - 150*
13C2 PFHxA	*102*		*50 - 150*
13C2 PFDA	*103*		*50 - 150*
13C2 PFUnA	*91*		*50 - 150*
13C2 PFDoA	*79*		*50 - 150*
13C8 FOSA	*67*		*25 - 150*
13C5 PFPeA	*101*		*25 - 150*
13C2 PFTeDA	*74*		*50 - 150*
d3-NMeFOSAA	*97*		*50 - 150*
d5-NEtFOSAA	*80*		*50 - 150*
M2-6:2 FTS	*89*		*25 - 150*
M2-8:2 FTS	*100*		*25 - 150*
13C3 PFBS	*89*		*50 - 150*

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: 480-186555-1 MS
Matrix: Water
Analysis Batch: 168615

Client Sample ID: SR101-062421-0850
Prep Type: Total/NA
Prep Batch: 168585

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorobutanoic acid (PFBA)	13		35.1	46.7		ng/L		97	40 - 160
Perfluoropentanoic acid (PFPeA)	4.5		35.1	41.6		ng/L		106	40 - 160
Perfluorohexanoic acid (PFHxA)	2.6		35.1	39.2		ng/L		104	40 - 160
Perfluoroheptanoic acid (PFHpA)	1.5	J	35.1	38.9		ng/L		107	40 - 160
Perfluorooctanoic acid (PFOA)	2.4		35.1	36.8		ng/L		98	40 - 160
Perfluorononanoic acid (PFNA)	0.49	J	35.1	36.1		ng/L		101	40 - 160
Perfluorodecanoic acid (PFDA)	0.33	J	35.1	34.0		ng/L		96	40 - 160
Perfluoroundecanoic acid (PFUnA)	ND		35.1	34.6		ng/L		99	40 - 160
Perfluorododecanoic acid (PFDoA)	ND		35.1	36.8		ng/L		105	40 - 160
Perfluorotridecanoic acid (PFTriA)	ND		35.1	41.1		ng/L		117	40 - 160
Perfluorotetradecanoic acid (PFTeA)	ND		35.1	35.5		ng/L		101	40 - 160
Perfluorobutanesulfonic acid (PFBS)	1.7	J	31.0	35.3		ng/L		108	40 - 160
Perfluorohexanesulfonic acid (PFHxS)	0.72	J	32.0	33.1		ng/L		101	40 - 160
Perfluoroheptanesulfonic Acid (PFHpS)	ND		33.4	36.3		ng/L		108	40 - 160
Perfluorooctanesulfonic acid (PFOS)	2.0		32.6	35.1		ng/L		102	40 - 160
Perfluorodecanesulfonic acid (PFDS)	ND		33.8	29.8		ng/L		88	40 - 160
Perfluorooctanesulfonamide (PFOSA)	ND		35.1	35.1		ng/L		100	40 - 160
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		35.1	33.8		ng/L		96	40 - 160
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		35.1	36.5		ng/L		104	40 - 160
1H,1H,2H,2H-perfluorooctanesulfonic acid (6:2)	ND		33.3	34.8		ng/L		104	40 - 160
1H,1H,2H,2H-perfluorodecanesulfonic acid (8:2)	ND		33.6	35.4		ng/L		105	40 - 160

Isotope Dilution	*MS %Recovery*	*MS Qualifier*	*Limits*
18O2 PFHxS	*91*		*50 - 150*
13C4 PFHpA	*99*		*50 - 150*
13C4 PFOA	*103*		*50 - 150*
13C4 PFOS	*85*		*50 - 150*
13C5 PFNA	*100*		*50 - 150*
13C4 PFBA	*95*		*25 - 150*
13C2 PFHxA	*100*		*50 - 150*
13C2 PFDA	*96*		*50 - 150*
13C2 PFUnA	*91*		*50 - 150*
13C2 PFDoA	*81*		*50 - 150*
13C8 FOSA	*76*		*25 - 150*
13C5 PFPeA	*99*		*25 - 150*
13C2 PFTeDA	*80*		*50 - 150*
d3-NMeFOSAA	*83*		*50 - 150*
d5-NEtFOSAA	*83*		*50 - 150*

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: 480-186555-1 MS
Matrix: Water
Analysis Batch: 168615

Client Sample ID: SR101-062421-0850
Prep Type: Total/NA
Prep Batch: 168585

Isotope Dilution	MS %Recovery	MS Qualifier	Limits
M2-6:2 FTS	104		25 - 150
M2-8:2 FTS	103		25 - 150
13C3 PFBS	90		50 - 150

Lab Sample ID: 480-186555-1 MSD
Matrix: Water
Analysis Batch: 168615

Client Sample ID: SR101-062421-0850
Prep Type: Total/NA
Prep Batch: 168585

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorobutanoic acid (PFBA)	13		35.3	45.6		ng/L		94	40 - 160	2	30
Perfluoropentanoic acid (PFPeA)	4.5		35.3	40.3		ng/L		102	40 - 160	3	30
Perfluorohexanoic acid (PFHxA)	2.6		35.3	38.2		ng/L		101	40 - 160	3	20
Perfluoroheptanoic acid (PFHpA)	1.5	J	35.3	38.9		ng/L		106	40 - 160	0	20
Perfluorooctanoic acid (PFOA)	2.4		35.3	38.8		ng/L		103	40 - 160	5	20
Perfluorononanoic acid (PFNA)	0.49	J	35.3	37.7		ng/L		105	40 - 160	4	20
Perfluorodecanoic acid (PFDA)	0.33	J	35.3	38.1		ng/L		107	40 - 160	12	20
Perfluoroundecanoic acid (PFUnA)	ND		35.3	38.2		ng/L		108	40 - 160	10	20
Perfluorododecanoic acid (PFDoA)	ND		35.3	40.4		ng/L		114	40 - 160	9	20
Perfluorotridecanoic acid (PFTriA)	ND		35.3	46.8		ng/L		133	40 - 160	13	20
Perfluorotetradecanoic acid (PFTeA)	ND		35.3	35.5		ng/L		101	40 - 160	0	20
Perfluorobutanesulfonic acid (PFBS)	1.7	J	31.2	34.1		ng/L		104	40 - 160	3	20
Perfluorohexanesulfonic acid (PFHxS)	0.72	J	32.1	32.4		ng/L		99	40 - 160	2	20
Perfluoroheptanesulfonic Acid (PFHpS)	ND		33.6	41.2		ng/L		123	40 - 160	13	30
Perfluorooctanesulfonic acid (PFOS)	2.0		32.7	40.3		ng/L		117	40 - 160	14	20
Perfluorodecanesulfonic acid (PFDS)	ND		34.0	31.0		ng/L		91	40 - 160	4	30
Perfluorooctanesulfonamide (PFOSA)	ND		35.3	39.8		ng/L		113	40 - 160	12	30
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		35.3	36.4		ng/L		103	40 - 160	7	20
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		35.3	36.8		ng/L		104	40 - 160	1	20
1H,1H,2H,2H-perfluorooctanesulfonic acid (6:2)	ND		33.5	39.1		ng/L		117	40 - 160	12	30
1H,1H,2H,2H-perfluorodecanesulfonic acid (8:2)	ND		33.8	38.9		ng/L		115	40 - 160	9	30

Isotope Dilution	MSD %Recovery	MSD Qualifier	Limits
18O2 PFHxS	90		50 - 150
13C4 PFHpA	96		50 - 150
13C4 PFOA	101		50 - 150
13C4 PFOS	70		50 - 150
13C5 PFNA	90		50 - 150
13C4 PFBA	99		25 - 150

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: 480-186555-1 MSD
Matrix: Water
Analysis Batch: 168615

Client Sample ID: SR101-062421-0850
Prep Type: Total/NA
Prep Batch: 168585

Isotope Dilution	MSD %Recovery	MSD Qualifier	Limits
13C2 PFHxA	95		50 - 150
13C2 PFDA	83		50 - 150
13C2 PFUnA	77		50 - 150
13C2 PFDoA	68		50 - 150
13C8 FOSA	67		25 - 150
13C5 PFPeA	96		25 - 150
13C2 PFTeDA	76		50 - 150
d3-NMeFOSAA	73		50 - 150
d5-NEtFOSAA	82		50 - 150
M2-6:2 FTS	100		25 - 150
M2-8:2 FTS	88		25 - 150
13C3 PFBS	86		50 - 150

QC Association Summary

Client: GHD Services Inc.
Project/Site: 255021 GMCH - 1000 Lexington Ave

Job ID: 480-186555-1

GC/MS Semi VOA

Prep Batch: 587182

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-186555-1	SR101-062421-0850	Total/NA	Water	3510C	
480-186555-2	SR103-062421-1030	Total/NA	Water	3510C	
480-186555-3	SR107-062421-1150	Total/NA	Water	3510C	
480-186555-5	20109-062421-0002	Total/NA	Water	3510C	
MB 480-587182/1-A	Method Blank	Total/NA	Water	3510C	
LCS 480-587182/2-A	Lab Control Sample	Total/NA	Water	3510C	
480-186555-1 MS	SR101-062421-0850	Total/NA	Water	3510C	
480-186555-1 MSD	SR101-062421-0850	Total/NA	Water	3510C	

Analysis Batch: 588108

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-186555-1	SR101-062421-0850	Total/NA	Water	8270D SIM ID	587182
MB 480-587182/1-A	Method Blank	Total/NA	Water	8270D SIM ID	587182
LCS 480-587182/2-A	Lab Control Sample	Total/NA	Water	8270D SIM ID	587182
480-186555-1 MS	SR101-062421-0850	Total/NA	Water	8270D SIM ID	587182
480-186555-1 MSD	SR101-062421-0850	Total/NA	Water	8270D SIM ID	587182

Analysis Batch: 588161

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-186555-2	SR103-062421-1030	Total/NA	Water	8270D SIM ID	587182
480-186555-3	SR107-062421-1150	Total/NA	Water	8270D SIM ID	587182
480-186555-5	20109-062421-0002	Total/NA	Water	8270D SIM ID	587182

LCMS

Prep Batch: 168585

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-186555-1	SR101-062421-0850	Total/NA	Water	3535	
480-186555-2	SR103-062421-1030	Total/NA	Water	3535	
480-186555-3	SR107-062421-1150	Total/NA	Water	3535	
480-186555-4	20109-062421-0001	Total/NA	Water	3535	
480-186555-5	20109-062421-0002	Total/NA	Water	3535	
480-186555-6	20109-062421-0003	Total/NA	Water	3535	
MB 200-168585/1-A	Method Blank	Total/NA	Water	3535	
LCS 200-168585/2-A	Lab Control Sample	Total/NA	Water	3535	
480-186555-1 MS	SR101-062421-0850	Total/NA	Water	3535	
480-186555-1 MSD	SR101-062421-0850	Total/NA	Water	3535	

Analysis Batch: 168615

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-186555-1	SR101-062421-0850	Total/NA	Water	537 (modified)	168585
480-186555-2	SR103-062421-1030	Total/NA	Water	537 (modified)	168585
480-186555-3	SR107-062421-1150	Total/NA	Water	537 (modified)	168585
480-186555-4	20109-062421-0001	Total/NA	Water	537 (modified)	168585
480-186555-5	20109-062421-0002	Total/NA	Water	537 (modified)	168585
480-186555-6	20109-062421-0003	Total/NA	Water	537 (modified)	168585
MB 200-168585/1-A	Method Blank	Total/NA	Water	537 (modified)	168585
LCS 200-168585/2-A	Lab Control Sample	Total/NA	Water	537 (modified)	168585
480-186555-1 MS	SR101-062421-0850	Total/NA	Water	537 (modified)	168585
480-186555-1 MSD	SR101-062421-0850	Total/NA	Water	537 (modified)	168585

Lab Chronicle

Client: GHD Services Inc.
Job ID: 480-186555-1
Project/Site: 255021 GMCH - 1000 Lexington Ave

Client Sample ID: SR101-062421-0850
Lab Sample ID: 480-186555-1
Date Collected: 06/24/21 08:50
Matrix: Water
Date Received: 06/25/21 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3510C			587182	06/28/21 08:26	JMP	TAL BUF
Total/NA	Analysis	8270D SIM ID		1	588108	07/06/21 21:35	IMZ	TAL BUF
Total/NA	Prep	3535			168585	06/30/21 08:44	KFW	TAL BUR
Total/NA	Analysis	537 (modified)		1	168615	06/30/21 22:10	BWC	TAL BUR

Client Sample ID: SR103-062421-1030
Lab Sample ID: 480-186555-2
Date Collected: 06/24/21 10:30
Matrix: Water
Date Received: 06/25/21 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3510C			587182	06/28/21 08:26	JMP	TAL BUF
Total/NA	Analysis	8270D SIM ID		1	588161	07/07/21 01:30	IMZ	TAL BUF
Total/NA	Prep	3535			168585	06/30/21 08:44	KFW	TAL BUR
Total/NA	Analysis	537 (modified)		1	168615	06/30/21 22:35	BWC	TAL BUR

Client Sample ID: SR107-062421-1150
Lab Sample ID: 480-186555-3
Date Collected: 06/24/21 11:50
Matrix: Water
Date Received: 06/25/21 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3510C			587182	06/28/21 08:26	JMP	TAL BUF
Total/NA	Analysis	8270D SIM ID		1	588161	07/07/21 01:53	IMZ	TAL BUF
Total/NA	Prep	3535			168585	06/30/21 08:44	KFW	TAL BUR
Total/NA	Analysis	537 (modified)		1	168615	06/30/21 22:43	BWC	TAL BUR

Client Sample ID: 20109-062421-0001
Lab Sample ID: 480-186555-4
Date Collected: 06/24/21 00:00
Matrix: Water
Date Received: 06/25/21 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			168585	06/30/21 08:44	KFW	TAL BUR
Total/NA	Analysis	537 (modified)		1	168615	06/30/21 22:52	BWC	TAL BUR

Client Sample ID: 20109-062421-0002
Lab Sample ID: 480-186555-5
Date Collected: 06/24/21 00:00
Matrix: Water
Date Received: 06/25/21 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3510C			587182	06/28/21 08:26	JMP	TAL BUF
Total/NA	Analysis	8270D SIM ID		1	588161	07/07/21 02:16	IMZ	TAL BUF
Total/NA	Prep	3535			168585	06/30/21 08:44	KFW	TAL BUR
Total/NA	Analysis	537 (modified)		1	168615	06/30/21 23:00	BWC	TAL BUR

Lab Chronicle

Client: GHD Services Inc.
Job ID: 480-186555-1
Project/Site: 255021 GMCH - 1000 Lexington Ave

Client Sample ID: 20109-062421-0003
Lab Sample ID: 480-186555-6

Date Collected: 06/24/21 00:00
Matrix: Water
Date Received: 06/25/21 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			168585	06/30/21 08:44	KFW	TAL BUR
Total/NA	Analysis	537 (modified)		1	168615	06/30/21 23:08	BWC	TAL BUR

Laboratory References:

TAL BUF = Eurofins TestAmerica, Buffalo, 10 Hazelwood Drive, Amherst, NY 14228-2298, TEL (716)691-2600

TAL BUR = Eurofins TestAmerica, Burlington, 530 Community Drive, Suite 11, South Burlington, VT 05403, TEL (802)660-1990

Accreditation/Certification Summary

Client: GHD Services Inc.
Job ID: 480-186555-1
Project/Site: 255021 GMCH - 1000 Lexington Ave

Laboratory: Eurofins TestAmerica, Buffalo

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Arkansas DEQ	State	88-0686	07-07-21
Connecticut	State	PH-0568	09-30-22
Florida	NELAP	E87672	06-30-22
Georgia	State	10026 (NY)	03-31-22
Georgia	State Program	N/A	03-31-09 *
Georgia (DW)	State	956	03-31-22
Illinois	NELAP	200003	10-01-21
Iowa	State	374	03-01-23
Iowa	State Program	374	03-01-09 *
Kansas	NELAP	E-10187	02-02-22
Kentucky (DW)	State	90029	12-31-21
Kentucky (UST)	State	30	04-01-22
Kentucky (WW)	State	KY90029	01-01-22
Louisiana	NELAP	02031	06-30-22
Maine	State	NY00044	12-05-22
Maryland	State	294	04-02-22
Massachusetts	State	M-NY044	06-30-22
Michigan	State	9937	04-01-22
Michigan	State Program	9937	04-01-09 *
Minnesota	NELAP	1524384	01-01-22
New Hampshire	NELAP	2973	09-11-19 *
New Hampshire	NELAP	2337	11-19-21
New Jersey	NELAP	NY455	06-30-22
New York	NELAP	10026	04-01-22
Oklahoma	State	9421	09-02-21
Oregon	NELAP	NY200003	06-12-22
Pennsylvania	NELAP	68-00281	07-31-21
Rhode Island	State	LAO00328	12-31-21
Tennessee	State	02970	03-31-22
Texas	NELAP	T104704412-18-10	08-02-21
USDA	US Federal Programs	P330-18-00039	02-06-21 *
Virginia	NELAP	460185	09-14-21
Washington	State	C784	02-10-22
Wisconsin	State	998310390	09-01-21

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Accreditation/Certification Summary

Client: GHD Services Inc. Job ID: 480-186555-1
Project/Site: 255021 GMCH - 1000 Lexington Ave

Laboratory: Eurofins TestAmerica, Burlington

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	Identification Number	Expiration Date
New York	NELAP	10391	04-01-22

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
537 (modified)	3535	Water	1H,1H,2H,2H-perfluorodecanesulfonic acid (8:2)
537 (modified)	3535	Water	1H,1H,2H,2H-perfluorooctanesulfonic acid (6:2)
537 (modified)	3535	Water	N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)
537 (modified)	3535	Water	N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)
537 (modified)	3535	Water	Perfluorobutanesulfonic acid (PFBS)
537 (modified)	3535	Water	Perfluorobutanoic acid (PFBA)
537 (modified)	3535	Water	Perfluorodecanesulfonic acid (PFDS)
537 (modified)	3535	Water	Perfluorodecanoic acid (PFDA)
537 (modified)	3535	Water	Perfluorododecanoic acid (PFDoA)
537 (modified)	3535	Water	Perfluoroheptanesulfonic Acid (PFHpS)
537 (modified)	3535	Water	Perfluoroheptanoic acid (PFHpA)
537 (modified)	3535	Water	Perfluorohexanesulfonic acid (PFHxS)
537 (modified)	3535	Water	Perfluorohexanoic acid (PFHxA)
537 (modified)	3535	Water	Perfluorononanoic acid (PFNA)
537 (modified)	3535	Water	Perfluorooctanesulfonamide (PFOSA)
537 (modified)	3535	Water	Perfluorooctanesulfonic acid (PFOS)
537 (modified)	3535	Water	Perfluorooctanoic acid (PFOA)
537 (modified)	3535	Water	Perfluoropentanoic acid (PFPeA)
537 (modified)	3535	Water	Perfluorotetradecanoic acid (PFTeA)
537 (modified)	3535	Water	Perfluorotridecanoic acid (PFTriA)
537 (modified)	3535	Water	Perfluoroundecanoic acid (PFUnA)

Method Summary

Client: GHD Services Inc.
Job ID: 480-186555-1
Project/Site: 255021 GMCH - 1000 Lexington Ave

Method	Method Description	Protocol	Laboratory
8270D SIM ID	Semivolatile Organic Compounds (GC/MS SIM / Isotope Dilution)	SW846	TAL BUF
537 (modified)	Fluorinated Alkyl Substances	EPA	TAL BUR
3510C	Liquid-Liquid Extraction (Separatory Funnel)	SW846	TAL BUF
3535	Solid-Phase Extraction (SPE)	SW846	TAL BUR

Protocol References:

EPA = US Environmental Protection Agency

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL BUF = Eurofins TestAmerica, Buffalo, 10 Hazelwood Drive, Amherst, NY 14228-2298, TEL (716)691-2600

TAL BUR = Eurofins TestAmerica, Burlington, 530 Community Drive, Suite 11, South Burlington, VT 05403, TEL (802)660-1990

Sample Summary

Client: GHD Services Inc.
Job ID: 480-186555-1
Project/Site: 255021 GMCH - 1000 Lexington Ave

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
480-186555-1	SR101-062421-0850	Water	06/24/21 08:50	06/25/21 10:00	
480-186555-2	SR103-062421-1030	Water	06/24/21 10:30	06/25/21 10:00	
480-186555-3	SR107-062421-1150	Water	06/24/21 11:50	06/25/21 10:00	
480-186555-4	20109-062421-0001	Water	06/24/21 00:00	06/25/21 10:00	
480-186555-5	20109-062421-0002	Water	06/24/21 00:00	06/25/21 10:00	
480-186555-6	20109-062421-0003	Water	06/24/21 00:00	06/25/21 10:00	

Eurofins TestAmerica, Buffalo
10 Hazelwood Drive
Amherst, NY 14228-2298
Phone: 716-691-2600 Fax: 716-691-7991

Chain of Custody Record

original

eurofins | Environment Testing America

Client Information	Sampler: Tim Williams	Lab PM: Heckler, Denise D	Carrier Tracking No(s):	COC No: 480-162008-35450.1
Client Contact: Denis Conley	Phone: (585)217-6900	E-Mail: Denise.Heckler@Eurofinset.com	State of Origin: NY	Page: ~~Page 1 of 2~~ 1 of 1
Company: Haley & Aldrich, Inc.	PWSID:			Job #:
Address: 200 Town Centre Drive #2	Due Date Requested:			
City: Rochester	TAT Requested (days): Standard			
State, Zip: NY, 14623-4264	Compliance Project: Δ Yes Δ No			
Phone:	PO #: Purchase Order Requested			
Email: dconley@haleyaldrich.com	WO #: 255015			
Project Name: 058507, Site 255 GMCH - 1000 Lexington A	Project #: 48017366			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)

Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD	PFC_IDA - PFAS, Standard List (21 analytes)	8270D_SIM_MS_ID - 1,4-dioxane	Total Number of containers	Special Instructions/Note:
		Preservation Code:			N	N				
SR101-062421-0850	6/24/21	0850	G	Water		X	X	X	12	MS/MSD
SR103-062421-1030		1036		Water			X	X	4	
SR107-062421-1150		1150		Water			X	X	4	
20109-062421-0001		—		Water			X		1	
20109-062421-0002		—		Water			X	X	4	
20109-062421-0003		—		Water			X		1	
				Water						
				Water						
				Water						
				Water						
				Water						

480-186555 Chain of Custody

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Deliverable Requested: I, II, III, (IV) Other (specify)

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☒ Disposal By Lab ☐ Archive For _____ Months

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:
Relinquished by: T. Williams	Date/Time: 6/24/21 14:30	Company: Haley Aldrich	Received by:	Date/Time: 6/25/21 1000	Company: TAB
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: ☒ Yes Δ No | Custody Seal No.: 1556454, 1556457, 1556456

Cooler Temperature(s) °C and Other Remarks: 2.8 2.7 3.0 ICE Temp Controlled

Ver: 11/01/2020

Eurofins TestAmerica, Buffalo
10 Hazelwood Drive
Amherst, NY 14228-2298
Phone: 716-691-2600 Fax: 716-691-7991

Chain of Custody Record

480-186555 Chain of Custody

Environment Testing America

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Heckler, Denise D		71.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: Denise.Heckler@Eurofinset.com	State of Origin: New York	Page: Page 1 of 1
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note): NELAP - New York		Job #: 480-186555-1
Address: 530 Community Drive, Suite 11,	Due Date Requested: 7/11/2021			
City: South Burlington	TAT Requested (days):			
State, Zip: VT, 05403				
Phone: 802-660-1990(Tel) 802-660-1919(Fax)	PO #:			
Email:	WO #:			
Project Name: 058507, Site 255 GMCH - 1000 Lexington A	Project #: 48017366			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	PFC_IDA/3535_IVWT PFAS, Standard List (21 analytes)	Total Number of containers	Special Instructions/Note:
			Preservation Code:						
SR101-062421-850 (480-186555-1)	6/24/21	08:50 Eastern		Water			X	2	
SR101-062421-850 (480-186555-1MS)	6/24/21	08:50 Eastern	MS	Water			X	2	
SR101-062421-850 (480-186555-1MSD)	6/24/21	08:50 Eastern	MSD	Water			X	2	
SR103-062421-1030 (480-186555-2)	6/24/21	10:30 Eastern		Water			X	2	
SR107-062421-1150 (480-186555-3)	6/24/21	11:50 Eastern		Water			X	2	
20109-062421-0001 (480-186555-4)	6/24/21	Eastern		Water			X	1	
20109-062421-0002 (480-186555-5)	6/24/21	Eastern		Water			X	2	
20109-062421-0003 (480-186555-6)	6/24/21	Eastern		Water			X	1	

Note: Since laboratory accreditations are subject to change, Eurofins TestAmerica places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the Eurofins TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins TestAmerica attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to Eurofins TestAmerica.

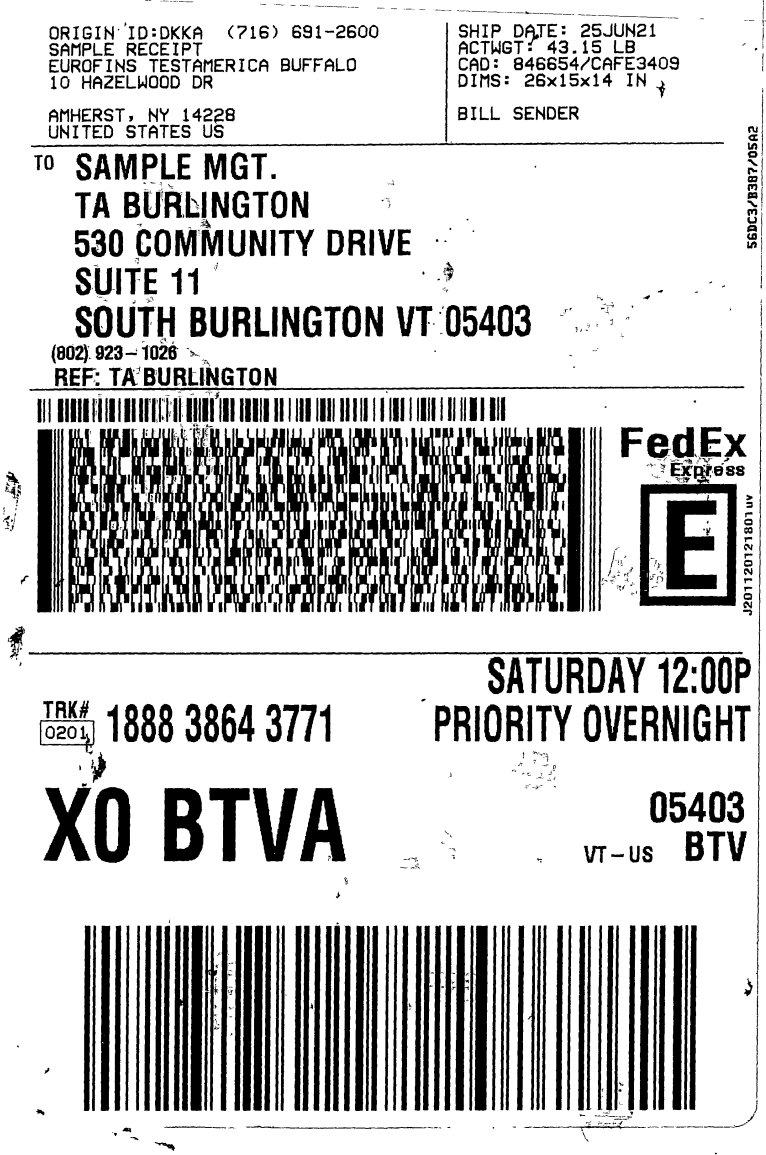
Possible Hazard Identification *Unconfirmed*	***Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)*** ☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For* _____ *Months*
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by:	Date/Time: 6-25-21 1700	Company TAB	Received by: Taylor Whitehar	Date/Time: 6/26/21 1000	Company TAB
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:
Cooler Temperature(s) °C and Other Remarks:	

Ver: 11/01/2020



ORIGIN ID:DKKA (716) 691-2600
SAMPLE RECEIPT
EUROFINS TESTAMERICA BUFFALO
10 HAZELWOOD DR

AMHERST, NY 14228
UNITED STATES US

SHIP DATE: 25JUN21
ACTWGT: 43.15 LB
CAD: 846654/CAFE3409
DIMS: 26x15x14 IN

BILL SENDER

TO SAMPLE MGT.
TA BURLINGTON
530 COMMUNITY DRIVE
SUITE 11
SOUTH BURLINGTON VT 05403
(802) 923-1026
REF: TA BURLINGTON

FedEx Express

SATURDAY 12:00P
PRIORITY OVERNIGHT

TRK# 0201 1888 3864 3771

XO BTVA

05403
VT-US BTV

Login Sample Receipt Checklist

Client: GHD Services Inc.

Job Number: 480-186555-1

Login Number: 186555
List Number: 1
Creator: Yeager, Brian A

List Source: Eurofins TestAmerica, Buffalo

Question	Answer	Comment
Radioactivity either was not measured or, if measured, is at or below background	True	
The cooler's custody seal, if present, is intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the sample IDs on the containers and the COC.	True	
Samples are received within Holding Time (Excluding tests with immediate HTs)..	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter.	N/A	
If necessary, staff have been informed of any short hold time or quick TAT needs	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Sampling Company provided.	True	haley aldrich
Samples received within 48 hours of sampling.	True	
Samples requiring field filtration have been filtered in the field.	True	
Chlorine Residual checked.	N/A	

Login Sample Receipt Checklist

Client: GHD Services Inc.

Job Number: 480-186555-1

Login Number: 186555
List Number: 2
Creator: Whitehouse, Taylor J

List Source: Eurofins TestAmerica, Burlington
List Creation: 06/26/21 10:44 AM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	Lab does not accept radioactive samples.
The cooler's custody seal, if present, is intact.	True	1513226
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	1.4ºC
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	N/A	Received project as a subcontract.
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	N/A	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

ATTACHMENT 2

Data Usability Summary Report

HALEY ALDRICH

Technical Memorandum

24 August 2021

To	Denis Conley [dconley@haleyaldrich.com]	**Tel**	716-205-1942
Copy to	Clair Mondello [cmondello@haleyaldrich.com]	**Email**	Kathleen.Willy@ghd.com
From	Kathy Willy/cs/295	**Ref. No.**	058507
Subject	Data Usability Summary Report Emerging Contaminant Sampling Delphi Automotive Systems Site #828064 Rochester, New York June 2021		

1. Introduction

The following details the data usability and quality assessment and validation of the analytical data resulting from the collection of groundwater samples at the Delphi Automotive Systems Site #828064 during June 2021. The sample summary detailing sample identification, sample location, quality control (QC) samples and analytical parameters is presented in Table 1. Samples were submitted to Eurofins TestAmerica Laboratory, Inc. located in Amherst, New York. Perfluorinated Alkyl Acids (PFAS) analysis was performed at Eurofins TestAmerica located in Burlington, Vermont. The validated analytical results are summarized in Table 2. A summary of the analytical methodology is presented in Table 3.

This Data Usability Summary Report (DUSR) has been prepared following the guidelines provided in New York State Department of Environmental Conservation (NYSDEC) Division of Environmental Remediation "DER-10, Technical Guidance for Site Investigation and Remediation, Appendix 2B-Guidance for Data Deliverables and the Development of Data Usability Summary Reports," (DER-10) May 2010.

2. Analytical Methodology and Data Validation

Evaluation of the data was based on information obtained from the finished data sheets, raw data, chain of custody forms, calibration data, blank data, recovery data from surrogate spikes/laboratory control samples (LCS)/matrix spike (MS) samples, and field quality assurance/quality control (QA/QC) samples. The assessment of analytical and in-house data included checks for adherence to accuracy and precision criteria, and transmittal errors.

The QA/QC criteria by which these data have been assessed are outlined in the analytical methods referenced in Table 3 and applicable guidance from the document entitled:

i) "USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review," USEPA 540-R-2016-002, September 2016.

This item will subsequently be referred to as the "Guidelines" in this Memorandum.

Full Contract Laboratory Program (CLP) equivalent raw data deliverables were provided by the laboratory. The data quality assessment and validation presented in the following subsections were performed based on the sample results, supporting QA/QC and all raw data provided.

3. QA/QC Review

Deliverables

The data package was complete as defined under the requirements for Analytical Services Protocol (ASP) Category B deliverables.

4. Sample Holding Time and Preservation

The sample holding time criteria for the analyses are summarized in Table 3. The sample chain of custody document and analytical report were used to determine sample holding times. All samples were analyzed within the required holding times.

All samples were properly preserved, delivered on ice, and stored by the laboratory at the required temperature (0-6ºC).

5. Gas Chromatography/Mass Spectrometry (GC/MS) – Tuning and Mass Calibration (Instrument Performance Check) – 1,4-Dioxane

Prior to 1,4-dioxane analysis, GC/MS instrumentation is tuned to ensure optimization over the mass range of interest. To evaluate instrument tuning, the method requires the analysis of the specific tuning compound decfluorotriphenylphosphine (DFTPP). The resulting spectra must meet the criteria cited in the method before analysis is initiated. Analysis of the tuning compound must then be repeated every 12 hours throughout sample analysis to ensure the continued optimization of the instrument.

The tuning compound was analyzed at the required frequency throughout the 1,4-dioxane analysis periods. All tuning criteria were met indicating that proper optimization of the instrumentation was achieved.

6. Liquid Chromatography/Mass Spectrometry – Mass Spectrometry (LC/MS-MS) – Tuning and Mass Calibration (Instrument Performance Check) – (PFAS) Perfluorinated Alkyl Acids

Prior to PFAS analysis, LC/MS-MS instrumentation is tuned initially to ensure optimization over the mass range of interest. Afterwards, the lowest level standard from the initial calibration curve is assessed to ensure that a signal to noise ratio greater than 10 to 1 (S/N >10:1) is achieved for each PFAS analyte. The resulting spectra must meet the criteria cited in the lab standard operating procedure before analysis to ensure the continued optimization of the instrument.

The tuning procedure was performed at the required frequency throughout the PFAS analysis periods. All tuning criteria were met, indicating that proper optimization of the instrumentation was achieved.

7. Initial Calibration – 1,4-Dioxane

To quantify 1,4-dioxane in samples, calibration of the GC/MS over a specific concentration range must be performed. Initially, a five-point calibration curve containing all compounds of interest is analyzed to characterize instrument response for each analyte over a specific concentration range. Linearity of the calibration curve and instrument sensitivity are evaluated against the following criteria:

i) All relative response factors (RRFs) must be greater than or equal to 0.010.

ii) The percent relative standard deviation (%RSD) value must not exceed 40.0 percent or a minimum correlation coefficient (R) and minimum coefficient of determination (R^2) of 0.99 if linear and quadratic equation calibration curves are used

The initial calibration data for 1,4-dioxane was reviewed. The compound met the above criteria for sensitivity and linearity.

8. Initial Calibration - PFAS

To quantify PFAS in samples, calibration of the LC/MS-MS over a specific concentration range must be performed. Initially, a multi-point calibration curve containing all compounds of interest is analyzed to characterize instrument response for each analyte over a specific concentration range. Linearity of the calibration curve and instrument sensitivity are evaluated against the following criteria:

i) The percent relative standard deviation (%RSD) value must not exceed 35 percent for identically labeled compounds and 50 percent for closely labeled compounds or a minimum correlation coefficient (R) and minimum coefficient of determination (R^2) of 0.995 and 0.990 respectively if linear and quadratic equation calibration curves are used

The initial calibration data for PFAS was reviewed. All compounds met the above criteria for sensitivity and linearity.

9. Continuing Calibration – 1,4-Dioxane

To ensure that instrument calibration for 1,4-dioxane analysis is acceptable throughout the sample analysis period, continuing calibration standards must be analyzed and compared to the initial calibration curve every 12 hours.

The following criteria were employed to evaluate continuing calibration data:

i) All RRF values must be greater than or equal to 0.010

ii) Percent difference (%D) values must not exceed 40.0 percent

Calibration standards were analyzed at the required frequency, and the results met the above criteria for instrument sensitivity and stability.

10. Continuing Calibration – PFAS

To ensure that instrument calibration for PFAS analyses is acceptable throughout the sample analysis period, continuing calibration standards must be analyzed and compared to the initial calibration curve at the beginning and ending of every run sequence and after every ten samples.

The following criteria were employed to evaluate continuing calibration data:

i) Percent Difference (%D) values must be within 60 percent – 140 percent for all natives, quantitated against and identically labeled analog.

ii) %D values must be within 50 percent – 150 percent for all natives quantitated against a closely related labeled analog.

Calibration standards were analyzed at the required frequency, and the results met the above criteria for instrument sensitivity and stability.

11. Laboratory Blank Analyses

Method blanks are prepared from a purified matrix and analyzed with investigative samples to determine the existence and magnitude of sample contamination introduced during the analytical procedures.

For this study, laboratory method blanks were analyzed at a minimum frequency of 1 per 20 investigative samples and/or 1 per analytical batch.

All method blank results were non-detect indicating that laboratory contamination was not a factor for this investigation.

12. Surrogate Spike Recoveries

In accordance with the methods employed, all samples, blanks, and QC samples analyzed for organics are spiked with surrogate compounds prior to sample extraction and/or analysis. Surrogate recoveries provide a means to evaluate the effects of laboratory performance on individual sample matrices.

All samples submitted for 1,4-dioxane determinations were spiked with the appropriate number of surrogate compounds prior to sample extraction and analysis.

Surrogate recoveries were assessed against laboratory control limits. All surrogate recoveries met the laboratory criteria.

13. Isotope Dilution Analyte (IDA) Spike Recoveries

IDA data were evaluated for all PFAS sample analyses. IDAs are isotopically labeled analogs of the analytes of interest added to the investigative and QC samples at the time of extraction. All results are then calculated as a ratio of the IDA responses.

The IDA recovery results for each sample must be within 25-150 percent.

All IDA recoveries met the above criteria.

14. Internal Standards (IS) Analyses - 1,4-Dioxane

IS data were evaluated for all 1,4-dioxane and sample analyses.

To ensure that changes in the GC/MS sensitivity and response do not affect sample results IS compounds are added to each 1,4-dioxane sample prior to analysis. All results are then calculated as a ratio of the IS responses.

The sample IS results were evaluated against the following criteria:

i) The retention time of the IS must not vary more than ±30 seconds from the associated calibration standard

ii) IS area counts must not vary by more than a factor of two (-50 percent to +100 percent) from the associated calibration standard

All 1,4-dioxane IS recoveries and retention times met the above criteria.

15. Internal Standards (IS) Analyses - PFAS

IS quantitation is only used to quantitate the IDA recoveries. To assess matrix impact upon the quantitation of IDA recoveries, IS compounds are added to each sample prior to analysis. All results are then calculated as a ratio of the IS responses.

The sample IS results were evaluated against the following criteria:

i) The IS response (peak area) must not deviate by more than 50% from the most recent calibration check standard.

All PFAS IS recoveries met the above criteria.

16. Laboratory Control Sample Analyses

LCS are prepared and analyzed as a sample to assess the analytical efficiencies of the method employed independent of sample matrix effects.

For this study, LCS were analyzed at a minimum frequency of 1 per 20 investigative samples and/or 1 per analytical batch.

The LCS contained all compounds of interest. All LCS recoveries were within the laboratory control limits, demonstrating acceptable analytical accuracy.

17. Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analyses

To evaluate the effects of sample matrices on the preparation process, measurement procedures, and accuracy of a particular analysis, samples are spiked with a known concentration of the analyte of concern and analyzed as MS/MSD samples. The RPD between the MS and MSD is used to assess analytical precision.

MS/MSD analyses were performed as specified in Table 1.

The MS/MSD samples were spiked with all compounds of interest. All percent recoveries and RPD values were within the laboratory control limits, demonstrating acceptable accuracy and precision.

18. Field QA/QC Samples

The field QA/QC consisted of one rinse blank sample, one field blank sample and one field duplicate sample set.

Rinse/Field Blank Sample Analysis

To assess field decontamination procedures, ambient conditions at the site, and cleanliness of sample containers, a rinse blank and a field blank were submitted for analysis, as identified in Table 1. All results were non-detect for the analytes of interest.

Field Duplicate Sample Analysis

To assess the analytical and sampling protocol precision, one field duplicate sample was collected and submitted "blind" to the laboratory, as specified in Table 1. The relative percent difference (RPD) associated with the duplicate sample must be less than 50 percent for water samples. If the reported concentration in either the investigative sample or its duplicate is less than five times the reporting limit (RL), the evaluation criteria is one times the RL value for water samples.

All field duplicate results met the above criteria, demonstrating acceptable sampling and analytical precision.

19. Analyte Reporting

The laboratory reported detected results down to the laboratory's method detection limits (MDL) for each analyte. Positive analyte detections less than the RL but greater than the MDL were qualified as estimated (J) in Table 2 unless qualified otherwise in this memorandum. Non-detect results were presented as non-detect at the RL in Table 2.

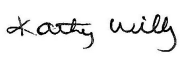
20. Target Compound Identification

To minimize erroneous compound identification during organic analyses, qualitative criteria including compound retention time and mass spectra were evaluated according to the identification criteria established by the methods. The organic compounds reported adhered to the specified identification criteria.

21. Conclusion

Based on the assessment detailed in the foregoing, the data summarized in Table 2 are acceptable without qualification.

Regards,



Kathleen Willy
Digital Intelligence-Data Management-Chemist

Table 1

Sample Collection and Analysis Summary
Emerging Contaminant Sampling
Delphi Automotive Systems Site #828064
Rochester, New York
June 2021

					Analysis/Parameters		
Sample Identification	**Location**	**Matrix**	**Collection Date (mm/dd/yyyy)**	**Collection Time (hr:min)**	**PFAS**	**1,4-Dioxane**	**Comments**
20109-062421-0003	-	Water	06/24/2021	-	X		Field Blank
20109-062421-0001	-	Water	06/24/2021	-	X		Rinse Blank
SR101-062421-0850	SR-101	Water	06/24/2021	08:50	X	X	MS/MSD
SR103-062421-1030	SR-103	Water	06/24/2021	10:30	X	X	
20109-062421-0002	SR-103	Water	06/24/2021	-	X	X	Field duplicate of sample SR103-062421-1030
SR107-062421-1150	SR-107	Water	06/24/2021	11:50	X	X	

Notes:

PFAS - Perfluorinated Alkyl Acids
MS/MSD - Matrix Spike/Martix Spike Duplicate

Table 2

Analytical Results Summary
Emerging Contaminant Sampling
Delphi Automotive Systems Site #828064
Rochester, New York
June 2021

Location ID:		**SR-101**	**SR-103**	**SR-103**	**SR-107**
Sample Name:		**SR101-062421-0850**	**SR103-062421-1030**	**20109-062421-0002**	**SR107-062421-1150**
Sample Date:		**06/24/2021**	**06/24/2021**	**06/24/2021**	**06/24/2021**
				Duplicate	
Parameters	**Unit**				
Semivolatile Organic Compounds, SIM					
1,4-Dioxane	µg/L	0.19 U	0.30	0.34	0.14 J
Per/Polyfluoroalkyl Substances (PFAS)					
Fluorotelomer sulfonic acid (6:2)	ng/L	4.4 U	5.5	6.0	36
Fluorotelomer sulfonic acid (8:2)	ng/L	1.8 U	1.7 U	1.6 U	3.4
N-Ethyl perfluorooctane sulfonamidoacetic acid	ng/L	4.4 U	4.3 U	4.1 U	4.2 U
N-Methyl perfluorooctane sulfonamido acetic acid	ng/L	4.4 U	4.3 U	4.1 U	4.2 U
Perfluorobutane sulfonic acid (PFBS)	ng/L	1.7 J	2.0	2.0	0.44 J
Perfluorobutanoic acid (PFBA)	ng/L	13	33	30	59
Perfluorodecanesulfonic acid (PFDS)	ng/L	1.8 U	1.7 U	1.6 U	1.7 U
Perfluorodecanoic acid (PFDA)	ng/L	0.33 J	1.7 U	1.6 U	1.7 U
Perfluorododecanoic acid (PFDoDA)	ng/L	1.8 U	1.7 U	1.6 U	1.7 U
Perfluoroheptane sulfonic acid (PFHpS)	ng/L	1.8 U	1.7 U	1.6 U	1.7 U
Perfluoroheptanoic acid (PFHpA)	ng/L	1.5 J	7.5	8.4	130
Perfluorohexane sulfonic acid (PFHxS)	ng/L	0.72 J	1.1 J	0.88 J	0.33 J
Perfluorohexanoic acid (PFHxA)	ng/L	2.6	12	12	84
Perfluorononanoic acid (PFNA)	ng/L	0.49 J	1.4 J	1.7	2.8
Perfluorooctane sulfonamide (FOSA)	ng/L	1.8 U	1.7 U	1.6 U	1.7 U
Perfluorooctane sulfonic acid (PFOS)	ng/L	2.0	1.2 J	1.4 J	0.39 J
Perfluorooctanoic acid (PFOA)	ng/L	2.4	4.7	4.8	30
Perfluoropentanoic acid (PFPeA)	ng/L	4.5	30	30	130
Perfluorotetradecanoic acid (PFTeDA)	ng/L	1.8 U	1.7 U	1.6 U	1.7 U
Perfluorotridecanoic acid (PFTrDA)	ng/L	1.8 U	1.7 U	1.6 U	1.7 U
Perfluoroundecanoic acid (PFUnA)	ng/L	1.8 U	1.7 U	1.6 U	1.7 U

Notes:

U - Not detected at the associated reporting limit
J - Estimated concentration
SIM - Selective Ion Monitoring

Table 3

Analytical Methods
Emerging Contaminant Sampling
Delphi Automotive Systems Site #828064
Rochester, New York
June 2021

Parameter	Method	Matrix	Holding Time	
			Collection to Extraction (Days)	Collection or Extraction to Analysis (Days)
1,4-Dioxane	SW-846 8270B SIM	Water	7	40
PFAS	EPA 537 (Modified)	Water	14	28

Notes:

PFAS - Perfluorinated Alkyl Acids

Method References:

SW-846 - "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", SW-846, Third Edition, 1986, with subsequent revisions

EPA 537 - Determination of Selected Perfluorinated Alkyl Acids in Drinking Water by Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS), Sept 2009

ATTACHMENT 3

NYSDEC Correspondence

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Division of Environmental Remediation, Region 8
6274 East Avon-Lima Road, Avon, NY 14414-9516
P: (585) 226-5353 I F: (585) 226-8139
www.dec.ny.gov

Transmitted via e-mail

January 5, 2021

Mr. James F. Hartnett
Manager, Eco-restorers/Remediation Team
Sustainable Workplaces
General Motors, LLC
One General Motors Drive
Syracuse, NY 13206

RE: Request for sampling of Emerging Contaminants
Delphi Automotive Systems Site, Site Number 828064
City of Rochester, Monroe County

Dear Mr. Hartnett:

The New York State Department of Environmental Conservation (DEC) is undertaking a Statewide evaluation of remediation sites to better understand the risk posed to New Yorkers by 1,4-Dioxane and per- and polyfluoroalkyl substances (PFASs). PFASs have historically not been evaluated at remediation sites, and 1,4-Dioxane has not been evaluated at the levels that are now thought to represent a health concern.

This initiative is being undertaken as a result of these “emerging contaminants” having been found in a number of drinking water supplies in New York. Accordingly, the DEC is requiring that you test site groundwater for these chemicals. 1,4-Dioxane and PFASs are appropriately investigated as part of the implementation of a complete remedial program in accordance with the requirements of DER-10 Technical Guidance for Site Investigation and Remediation (DER-10) due to regulation by the DEC of hazardous wastes under Environmental Conservation Law (ECL) Article 27, Title 13. To accommodate this requirement, a select number of existing monitoring wells, representative of the potential of the above-referenced site to be a source of these emerging contaminants, must be sampled. DEC recommends that at least one of these wells should be upgradient of the site.

The attached guidance provides information on the analytical methods and reporting requirements. A second guidance document describes special precautions that need to be considered when sampling for PFASs.

Please prepare a draft letter work plan that identifies the wells proposed for sampling, brief description of the sampling methods, and anticipated sampling date within the next 60 days.

If you wish to discuss the scope of the required water testing, please contact me at 585-319-1302 or kelly.cloyd@dec.ny.gov.

Sincerely,

Kelly C. Cloyd, Ph.D.
Professional Geologist 1
Division of Environmental Remediation
Region 8

ec: M. Cruden
J. Kenney
D. Loew
D. Pratt

From: Cloyd, Kelly (DEC)
To: Conley, Denis
Cc: jim.f.hartnett@gm.com; Kenney, Julia M (HEALTH); Pratt, David (DEC)
Subject: Re: GM Lexington Follow-up
Date: Friday, June 4, 2021 3:51:48 PM

CAUTION: External Email

Hi Dennis, thank you for the clarifications. Please append this e-mail exchange to the workplan. The Department concurs with the proposed work with those clarifications. Please consider this E-mail the Department's approval to proceed with the proposed work.

If you have any questions, please contact me at 585-319-1302, or via return e-mail.

Sincerely,

Kelly C. Cloyd, Ph.D.
Professional Geologist 1, Division of Environmental Remediation.
New York State Department of Environmental Conservation – Region 8
6274 East Avon-Lima Road, Avon, NY 14414
P: (585) 226-5351 | kelly.cloyd@dec.ny.gov

Conley, Denis <DConley@haleyaldrich.com>
Sent: Monday, May 17, 2021 11:38 AM
To: Cloyd, Kelly (DEC) <kelly.cloyd@dec.ny.gov>
Cc: jim.f.hartnett@gm.com <jim.f.hartnett@gm.com>; cmondello@haleyaldrich.com <cmondello@haleyaldrich.com>; Lewis, Quinn <QLewis@HaleyAldrich.com>
Subject: GM Lexington Follow-up

ATTENTION: This email came from an external source. Do not open attachments or click on links from unknown senders or unexpected emails.

Hi Kelly,

Thanks for your call.

As a follow-up to our discussion concerning the proposed groundwater sampling plan, we selected the shallow bedrock groundwater monitoring wells for the sampling of PFAS and 1,4 Dioxane because this water bearing unit is impacted with site related contaminants of concern and LNAPL and has existing well locations both upgradient and downgradient from the facility. If the proposed downgradient wells, SR-8 or SR-9 are found to be dry at the time of sample collection, we will select another well location that is also down gradient of the facility along Driving Park Avenue and screened in the shallow bedrock formation.

If these clarifications to the proposed plan are acceptable, please reply with concurrence and we will proceed with the sampling program along with the periodic groundwater monitoring event later this

month.

Thanks again for your continued assistance with this project.
Denis

Denis Conley
Senior Associate - Scientist

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