Groundwater Monitoring Report
December 2023

Marshall Landfill
Spokane County, Washington
for
Herrera Environmental Consultants, Inc.

April 26, 2024

GeoEngineers
Earth Science + Technology

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File No. 0504-104-01

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1.0 INTRODUCTION

This report summarizes analytical results from the December 2023 groundwater monitoring event at the Marshall Landfill facility (herein referred to as "Site") located in Spokane County, Washington. Groundwater monitoring was conducted by GeoEngineers, Inc. (GeoEngineers) for the Washington State Department of Ecology (Ecology) under Herrera Environmental Consultants, Inc. (Herrera) Client Contract No. C2200149, Amendment 2. The purpose of this sampling was to assess current groundwater conditions to inform Site cleanup design. Groundwater analysis included historic contaminants of concern (COCs) for the Site identified in the Remedial Investigation (RI) report (GEI 2018A) and COCs which had not been previously evaluated, including per- and polyfluoroalkyl substances (PFAS). The site location is shown in the Vicinity Map, Figure 1. Key site features, including monitoring well locations and groundwater elevations, are presented in the Site Plan, Figure 2.

2.0 SITE DESCRIPTION AND BACKGROUND

The Marshall Landfill Site is located northwest of Cheney-Spokane Road about 1 mile southwest of the town of Marshall, Washington and 7 miles southwest of Spokane, Washington. The site is bounded to the north by a gravel pit and privately-owned undeveloped land, to the east by South Cheney-Spokane Road, to the south by a landfill property owned by Spokane County and to the west by undeveloped land owned by Spokane County Engineers.

The site consists of two primary historic land use areas: the approximate 25-acre Main Landfill and the Five-Acre Landfill. The landfills are capped with varying thicknesses of gravel and silt or clay and are generally vegetated. The site is generally flat to the west and steeply sloped to the east. The site is described in detail in GeoEngineers' RI and Feasibility Study (FS) reports (2018B). Site features are summarized below:

- The Main Landfill: This approximate 25-acre waste disposal area is located within the south-central portion of the site. Sand and gravel removed and replaced with waste during the period from 1970 through 1990. The landfilled waste thickness in this area was estimated to be 100 feet (Fetrow 1991).
- The Five-Acre Landfill: This approximate 5-acre waste disposal area is located within the northwest portion of the site. Waste was disposed within the Five-Acre Landfill during the period from 1980 through 1984. The landfilled waste thickness in this area was estimated to be 45 feet (Fetrow 1991).

GeoEngineers identified three hydrostratigraphic units in the RI, including:

- The basement rock unit underlying the north portion of the Main Landfill, most of the Five-Acre Landfill, and the central portion of the gravel pit;
- The Columbia River Basalt Group (CRBG) unit underlying the north portions of the Five-Acre Landfill and gravel pit; and
- The glaciofluvial sediments unit underlying the Former Spokane County Landfill, most of the Main Landfill and the southeast corner of the gravel pit.

Groundwater flow is generally to the east in the basement rock unit and to the northeast in the glaciofluvial sediments and CRBG units. The hydrostratigraphic units are described in detail in the RI (GEI 2018A).

Based on RI/FS results and supplemental groundwater monitoring events conducted by Ecology, groundwater contamination is limited, discontinuous and variable between monitoring events. Given the limited and sporadic nature of groundwater contamination, there does not appear to be a significant impact to groundwater beneath the site. However, because the site contains landfilled waste, further groundwater monitoring was requested by Ecology prior to finalizing site cleanup design.

There are currently 20 monitoring wells at the site. Ecology identified five monitoring wells to be monitored and sampled to support remedial design: MW-2A, MW-5A, MW-7B, MW-11A and MW-12A. Monitoring well construction details are shown in Summary of Groundwater Monitoring Well Measurements, Table 1, and their approximate locations are shown in Figure 2.

3.0 SCOPE OF SERVICES

The purpose of the groundwater monitoring was to evaluate groundwater conditions, including depth, flow direction and COC concentrations at the Site to support remedial design. Groundwater monitoring activities were completed in accordance with the Ecology-approved Work Plan (GEI 2023). Our specific scope of services included:

- Removing existing pumps and redeveloping wells MW-2A, MW-5A, MW-7B, MA-11A and MW-12A surging and pumping methods.
- Installing new, dedicated PFAS-free low-flow bladder pumps and PFAS-free tubing in groundwater monitoring wells MW-2A, MW-5A, MW-7B, MA-11A and MW-12A.
- Measuring depth to groundwater and total depth in 17 groundwater monitoring wells as outlined in Section 5.1 below.
- Collecting water quality parameters and groundwater samples using low-flow well purging techniques and dedicated bladder pumps from groundwater monitoring wells MW-2A, MW-5A, MW-7B, MA-11A and MW-12A.
- Submitting one groundwater sample from monitoring wells MW-2A, MW-5A, MW-7B, MA-11A and MW-12A and one duplicate groundwater sample from monitoring well MW-5A to Eurofins Environment Testing Northwest (Eurofins) in Spokane Valley, Washington for the chemical analyses listed in Section 5.2.
- Collecting and submitting quality assurance/quality control (QA/QC) samples, including one equipment blank and one field blank to Eurofins for chemical analysis.
- Drumming and labeling investigation-derived waste (IDW) produced from redevelopment and groundwater sampling activities. Coordinating transport and off-site disposal of redevelopment fluids at the Chemical Waste Management facility in Arlington, Oregon.

4.0 MONITORING WELL REDEVELOPMENT

Monitoring wells MW-2A, MW-5A, MW-7B, MW-11A and MW-12A were redeveloped between December 4 and 8, 2023 using pumping and surging methods in accordance with the Work Plan. Prior to well redevelopment, dedicated pumps and tubing were removed from each monitoring well and depth to water and well bottom measurements were collected to determine the well volumes for groundwater removal. Five well volumes or a maximum volume of 90 gallons were removed from each well using PFAS-free equipment, as shown in Table I. New PFAS-free bladder pumps and tubing were installed at the conclusion of development activities. Redevelopment fluids were stored on site in secured drums prior to waste profiling and off-site disposal.

TABLE I. MONITORING WELL DEVELOPMENT SUMMARY

Monitoring Well	Measured Well Volume (gallons)	Target Removal Volume (gallons)	Volume Removed (gallons)	Water Quality Observations Following Development
MW-2A	4.8	24	24	Clear
MW-5A	10.9	54.5	55	Clear
MW-7B	48.9	90	90	Light Brown, some suspended solids
MW-11A	15.7	78.7	79	Light Brown, some suspended solids
MW-12A	11.9	59.5	59	Clear

Notes:

Measured Well Volume calculated using depth to water and total depth measurements relative to the top of polyvinyl chloride (PVC) casing.

5.0 GROUNDWATER MONITORING

5.1. Groundwater Elevation and Flow Direction

Depth to groundwater was measured in 17 groundwater monitoring wells (MW-1A, MW-2, MW-2A, MW-3, MW-4A, MW-5A, MW-7B, MW-7D, MW-8A, MW-8B, MW-9A, MW-11A, MW-12A, MW-14, MW-15, MW-15A and MW-16) on December 14, 2023 . Monitoring wells MW-1A and MW-2 were dry during the December 14, 2023 event. Groundwater elevations were calculated by subtracting the depth to water measurement from the surveyed well casing elevation and are referenced to the North American Vertical Datum of 1988 (NAVD88). Groundwater elevations ranged from approximately 2065.79 feet in MW-8B to 2235.68 feet in MW-12A.

Based on groundwater elevations measured during the December 2023 groundwater monitoring event, the inferred groundwater flow direction in the basement rock aquifer trends generally south to southeast throughout the Five-Acre landfill, and east to northeast in the glaciofluvial aquifer throughout the Main Landfill and valley bottom. Groundwater depths and elevations from the December 2023 event are provided in Table 1, and interpreted groundwater contours are shown in Groundwater Contours (December 2023), Figure 3.

5.2. Groundwater Sampling

Groundwater samples were collected from monitoring wells MW-2A, MW-5A, MW-7B, MW-11A, and MW-12A on December 14 and 15, 2023. A duplicate sample was collected from monitoring well MW-5A. Groundwater quality parameters are summarized in Summary of Water Quality Parameters, Table 2.

Groundwater samples were submitted on a standard 10-day turnaround time to Eurofins in Spokane Valley, Washington for chemical analysis of the following.

- Alkalinity and bicarbonate using Method SM 2320B;
- Total and dissolved arsenic, cadmium, iron, manganese, lead and zinc using U.S. Environmental Protection Agency (EPA) Method 6020B;
- Total and dissolved mercury using EPA Method 7470A;
- Total potassium, magnesium and sodium using EPA Method 6010D;
- Dissolved calcium and magnesium using EPA Method 6010D;
- Chloride, sulfate, nitrate, and nitrite using EPA Method 300.0;
- Ammonia as nitrogen using EPA Method 350.0;
- Total organic carbon (TOC) using EPA Method SM 5310B;
- Total dissolved solids (TDS) using Standard Method (SM) 2540C;
- Cyanide (weak acid dissociable) using SM 4500 CN I;
- Volatile organic compounds (VOCs) using EPA Method 8260D;
- Semivolatile organic compounds (SVOCs) using EPA Method 8270E;
- Herbicides using EPA Method 8151A; and
- PFAS using EPA Method 1633 (Draft-4).

6.0 INVESTIGATION-DERIVED WASTE

Redevelopment fluids and purge water produced from monitoring well redevelopment and sampling efforts were staged on site in labeled 55-gallon steel drums prior to transport and off-site disposal. Due to the presence of PFAS, the groundwater was disposed of at the Chemical Waste Management facility in Arlington, Oregon. Waste disposal tickets are included in Appendix A.

7.0 GROUNDWATER ANALYTICAL RESULTS

Groundwater samples were submitted to Eurofins for chemical analysis of the compounds and general chemistry parameters as listed in Section 5.2. Chemical analytical results are summarized and compared to the Model Toxics Control Act (MTCA) Method A/B groundwater cleanup levels below and in Summary of Groundwater Chemical Analytical Results, Table 3.

- PFAS: Perfluorooctanoic acid (PFOA) was detected in MW-5A (53 nanograms per liter [ng/L]) and the duplicate (DUP-121523 at 56 ng/L) at concentrations above the Washington State Department of

Health (DOH) State Action Level (SAL) (10 ng/L) and the MTCA Method B cleanup level (48 ng/L). Perfluorooctanesulfonic acid (PFOS) was also detected in MW-5A (29 ng/L) and the duplicate (DUP-121523 at 27 ng/L) at concentrations above the DOH SAL (15 ng/L), but below the MTCA Method B cleanup level (48 ng/L).

The other PFAS compounds were either not detected above the laboratory reporting limits or were detected at concentrations below their respective MTCA cleanup levels and DOH SALs, where established.

- Other COCs were either not detected above the laboratory reporting limit or were detected at concentrations less than their MTCA cleanup levels or DOH SALs, where established.
- COCs were not detected above the laboratory reporting limit in the QA/QC samples (equipment blank and field blank) analyzed.

Chemical analytical laboratory reports are included in Appendix B.

7.1. Data Quality Exceptions

Samples assigned data qualifiers based on our data validation process are summarized as follows:

- All samples analyzed for herbicides were assigned the qualifier UJ for sample preservation because samples shipped between Eurofins laboratories (Spokane to California) were received outside of required temperature criteria.
- PFOS analysis for the sample collected from monitoring well MW-7B was assigned the qualifier J for laboratory control sample/laboratory control sample duplicate (LCS/LCSD) precision because the relative percent difference (RPD) values were greater than the control limits in the LCS/LCSD sample set.

Based on our data validation results and our overall data quality review, it is our opinion that the analytical data are of acceptable quality for their intended use, noting the qualifications listed above and discussed in detail in our data validation report included as Appendix C.

8.0 SUMMARY AND FUTURE MONITORING SCHEDULE

The December 2023 groundwater monitoring event was conducted at the Site on December 14 and 15, 2023. Five monitoring wells were redeveloped, fitted with new dedicated PFAS-free equipment and sampled.

Groundwater elevations, calculated from depth to groundwater measurements, indicated a south to southeast flow direction in the bedrock aquifer throughout the Five-Acre landfill and an east to northeast flow direction in the glaciofluvial aquifer throughout the Main Landfill and valley bottom.

PFAS were detected in MW-5A, including PFOA at a concentration above the DOH SAL and MTCA Method B cleanup level and PFOS at a concentration above the DOH SAL, but below the MTCA Method B cleanup level. The other COCs analyzed were either not detected above the laboratory reporting limits or were detected at concentrations less than their respective MTCA cleanup levels and DOH SALs, where established. Based on these results, analytes which were not detected above the laboratory reporting limits (cyanide, VOCs, SVOCs and herbicides) may be eliminated from future groundwater monitoring with Ecology

approval. Any future changes to the groundwater monitoring program will be documented in a Work Plan addendum for Herrera and Ecology approval prior to implementation.

The next groundwater monitoring event is scheduled to occur in the first quarter of 2024.

9.0 LIMITATIONS

We have prepared this report for Herrera and Ecology in accordance with the generally accepted environmental science practices in this area at the time this report was prepared. We have prepared this report for the exclusive use of Herrera and Ecology, their authorized agents and regulatory agencies; therefore, this report is not intended for use by others and the information contained herein is not applicable to other sites. The data presented in this report are based on the agreed upon scope of services outlined in the report. Use of this report for any purpose whatsoever by any other parties is at their own risk. No third party shall have the right to rely on the product of GeoEngineers, Inc.'s (GeoEngineers') services without GeoEngineers' prior written consent and the third party's Agreement to be bound by the same terms and conditions as Herrera and Ecology. GeoEngineers makes no representation to such other parties as to the accuracy or completeness of this report or the suitability of its use by any other parties for any purpose whatsoever, known or unknown. GeoEngineers, Herrera and Ecology shall not be liable to indemnify or hold harmless any third parties for losses incurred by the actual or purported use or misuse of this report.

Within the limitations of scope, schedule and budget, our services were executed in accordance with generally accepted environmental science practices in this area at the time this report was prepared. No warranty or other conditions, express or implied, should be understood.

Please refer to Appendix D for additional information pertaining to the use of this report.

10.0 REFERENCES

Fetrow Engineering, Inc. 1991. "Marshall Landfill Site Characterization Study Final Report (Volumes 1 and 2). September, 1991.

GeoEngineers, Inc. (GEI) 2018A. "Remedial Investigation Report, Marshall Landfill, Spokane County, Washington." GEI File No. 0504-104-00, May 22, 2018.

GEI 2018B. "Feasibility Study Report, Marshall Landfill, Spokane County, Washington." GEI File No. 0504-104-00, May 31, 2018.

GEI 2023. "Marshall Landfill Groundwater Monitoring, Marshall Landfill, Spokane County, Washington." GEI File No. 0504-104-01, November 17, 2023.

TABLES

GeoEngineers

Table 1

Summary of Groundwater Monitoring Well Measurements

Marshall Landfill

Spokane County, Washington

Monitoring Well ID and Top of Casing Elevation[1] (feet)	Well Screen Interval (feet bTOC)	Measured Depth to Bottom of Well (feet bTOC)	Aquifer	Date Measured	Depth to Groundwater (feet bTOC)	Groundwater Elevation[2] (feet)
MW-1A 2335.52	199 to 209	210	Weathered Basement	12/14/2023	Dry	-
MW-2 2176.05	73 to 83	83	Glaciofluvial	12/14/2023	Dry	-
MW-2A 2175.80	93 to 108	108	Glaciofluvial	12/14/2023	93.33	2,082.47
MW-3 2182.30	106 to 116	118	Glaciofluvial	12/14/2023	105.63	2,076.67
MW-4A 2,159.26	63 to 78	80	Glaciofluvial	12/14/2023	69.99	2,089.27
MW-5A 2,187.46	124.5 to 139.5	142[3]	Glaciofluvial	12/14/2023	116.01	2,071.45
MW-7B 2327.48	288.5 to 298.5	299	Basement	12/14/2023	223.91	2,103.57
MW-7D 2331.70	283 to 298	298	Basement	12/14/2023	214.17	2,117.53
MW-8A 2,139.65	104.5 to 119.5	122	Basement	12/14/2023	73.80	2,065.85
MW-8B 2139.56	64.5 to 89.5	94	Glaciofluvial	12/14/2023	73.77	2,065.79
MW-9A 2,156.97	43.5 to 68.5	72	Glaciofluvial	12/14/2023	65.05	2,091.92
MW-11A 2,324.51	207.5 to 237.5	243	Weathered Basement	12/14/2023	218.96	2,105.55
MW-12A 2353.36	104.5 to 134.5	135	CRBG	12/14/2023	117.68	2,235.68
MW-14 2,313.83	242.3 to 252.3	255	Glaciofluvial	12/14/2023	221.53	2,092.30

Monitoring Well ID and Top of Casing Elevation[1] (feet)	Well Screen Interval (feet bTOC)	Measured Depth to Bottom of Well (feet bTOC)	Aquifer	Date Measured	Depth to Groundwater (feet bTOC)	Groundwater Elevation[2] (feet)
MW-15 2236.04	160 to 175	179	Glaciofluvial	12/14/2023	161.83	2,074.21
MW-15A 2,237.26	192 to 202	205	Glaciofluvial	12/14/2023	162.97	2,074.29
MW-16 2170.24	69.5 to 86.5	89	Glaciofluvial	12/14/2023	82.85	2,087.39

Notes:

[1]Monitoring well locations are shown on Figures 2 and 3. Top of monitoring well casing elevations referenced to NAVD88 datum, as reported in the Remedial Investigation Report for the site dated May 22, 2018.

[2]Groundwater elevations calculated using the formula: Groundwater Elevation = Top of Casing Elevation - Depth to Water

[3]Measured depth to bottom on 11/16/15 as part of the Remedial Investigation; depth to bottom during this monitoring event was not obtained.

bTOC = below top of casing

CRBG = Columbia River Basalt Group

- = Not Calculated

Table 2

Summary of Water Quality Parameters

Marshall Landfill

Spokane County, Washington

Monitoring Well ID[1]	Date Measured	pH	Specific Conductivity (µS/cm)	Redox Potential (millivolts)	Dissolved Oxygen (mg/L)	Turbidity (NTU)	Temperature (degrees C)
MW-2A	12/15/23	7.19	0.5	-35.5	1.0	1.18	10.0
MW-5A	12/15/23	7.15	1	-42.3	1.1	1.19	11.0
MW-7B	12/14/23	7.25	0.3	-56.8	1.4	32.68	10.2
MW-11A	12/14/23	7.18	0	76.2	81.40	2.7	9.3
MW-12A	12/14/23	7.59	0.2	76.9	88.7	2.65	10.3

Notes:

[1]Monitoring well locations are shown on Figures 2 and 3.

µS/cm = microsiemens per centimeter; mg/L = milligrams per liter

NTU = Nephelometric Turbidity Unit; C = Celsius

Table 3

Summary of Groundwater Chemical Analytical Results

Marshall Landfill

Spokane County, Washington

Location ID	MW-2A	MW-5A		MW-7B	MW-11A	MW-12A	MTCA Cleanup Level[3]	DOH SAL[4]
Sample ID	MW-2A-121523	MW-5A-121523	DUP-121523[2]	MW-7B-121423	MW-11A-121423	MW-12A-121423		
Sample Date	12/15/2023	12/15/2023		12/14/2023	12/14/2023	12/14/2023		
Volatile Organic Compounds by EPA 8260D (µg/L)								
1,1,1,2-Tetrachloroethane	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	240	–
1,1,1-Trichloroethane	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	200	–
1,1,2,2-Tetrachloroethane	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	160	–
1,1,2-Trichloroethane	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	32	–
1,1-Dichloroethane	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1,600	–
1,1-Dichloroethene	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	400	–
1,1-Dichloropropene	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	240	–
1,2,3-Trichlorobenzene	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	NE	–
1,2,3-Trichloropropane	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	32	–
1,2,4-Trichlorobenzene	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	80	–
1,2,4-Trimethylbenzene	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	80	–
1,2-Dibromo-3-Chloropropane	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	1.6	–
1,2-Dibromoethane (EDB)	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	0.01	–
1,2-Dichlorobenzene	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	720	–
1,2-Dichloroethane	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	5	–
1,2-Dichloropropane	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	32	–
1,3,5-Trimethylbenzene	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	80	–
1,3-Dichlorobenzene	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	NE	–
1,3-Dichloropropane	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	160	–
1,4-Dichlorobenzene	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	560	–
2,2-Dichloropropane	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	NE	–
2-Chlorotoluene	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	160	–
4-Chlorotoluene	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	160	–
Benzene	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U	5	–
Bromobenzene	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	64	–
Bromochloromethane	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	NE	–
Bromodichloromethane	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	160	–
Bromoform	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	160	–
Bromomethane	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	11	–
Carbon Tetrachloride	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	32	–
Chlorobenzene	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	160	–
Chloroethane	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	NE	–
Chloroform	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	80	–
Chloromethane	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U	NE	–
cis-1,2-Dichloroethene	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	16	–
cis-1,3-Dichloropropene	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	NE	–
Dibromochloromethane	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	160	–
Dibromomethane	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	NE	–
Dichlorodifluoromethane	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	1,600	–
Ethylbenzene	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	700	–
Hexachlorobutadiene	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	8	–
Isopropylbenzene	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	NE	–
m,p-Xylene	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	NE	–
Methyl tert-butyl ether	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	20	–
Methylene Chloride	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5	–
Naphthalene	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	160	–
n-Butylbenzene	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	400	–
N-Propylbenzene	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	800	–
o-Xylene	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	NE	–
p-Isopropyltoluene	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	NE	–
Sec-Butylbenzene	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	800	–
Styrene	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1,600	–
tert-Butylbenzene	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	800	–
Tetrachloroethene	1.0 U	**0.84 J**	**0.80 J**	1.0 U	1.0 U	1.0 U	5	–
Toluene	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1,000	–
trans-1,2-Dichloroethene	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	160	–
trans-1,3-Dichloropropene	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	NE	–
Trichloroethene	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	5	–
Trichlorofluoromethane	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2,400	–
Vinyl Chloride	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	0.2	–
Total Xylenes	ND	ND	ND	ND	ND	ND	1,000	–
Semivolatile Organic Compounds and Polycyclic Aromatic Hydrocarbons by EPA 8270E (µg/L)								
1,2,4-Trichlorobenzene	0.38 U	0.38 U	0.38 U	0.38 U	0.39 U	0.38 U	80	–
1,2-Dichlorobenzene	0.38 U	0.38 U	0.38 U	0.38 U	0.39 U	0.38 U	720	–
1,3-Dichlorobenzene	0.38 U	0.38 U	0.38 U	0.38 U	0.39 U	0.38 U	NE	–
1,4-Dichlorobenzene	0.38 U	0.38 U	0.38 U	0.38 U	0.39 U	0.38 U	560	–
1-Methylnaphthalene	0.95 U	0.96 U	0.95 U	0.95 U	0.96 U	0.95 U	160	–
2,4,5-Trichlorophenol	0.38 U	0.38 U	0.38 U	0.38 U	0.39 U	0.38 U	1,600	–
2,4,6-Trichlorophenol	0.57 U	0.57 U	0.57 U	0.57 U	0.57 U	0.57 U	16	–
2,4-Dichlorophenol	0.95 U	0.96 U	0.95 U	0.95 U	0.96 U	0.95 U	48	–
2,4-Dimethylphenol	3.8 U	3.8 U	3.8 U	3.8 U	3.9 U	3.8 U	48	–
2,4-Dinitrophenol	4.8 U	4.8 U	4.8 U	4.7 U	4.8 U	4.7 U	32	–
2,4-Dinitrotoluene	0.95 U	0.96 U	0.95 U	0.95 U	0.96 U	0.95 U	14	–
2,6-Dinitrotoluene	0.38 U	0.38 U	0.38 U	0.38 U	0.39 U	0.38 U	14	–
2-Chloronaphthalene	0.95 U	0.96 U	0.95 U	0.95 U	0.96 U	0.95 U	NE	–
2-Chlorophenol	0.95 U	0.96 U	0.95 U	0.95 U	0.96 U	0.95 U	40	–
2-Methylnaphthalene	0.38 U	0.38 U	0.38 U	0.38 U	0.39 U	0.38 U	160	–
2-Methylphenol	0.57 U	0.57 U	0.57 U	0.57 U	0.57 U	0.57 U	NE	–
2-Nitroaniline	0.95 U	0.96 U	0.95 U	0.95 U	0.96 U	0.95 U	160	–
2-Nitrophenol	0.95 U	0.96 U	0.95 U	0.95 U	0.96 U	0.95 U	NE	–

Location ID	MW-2A	MW-5A		MW-7B	MW-11A	MW-12A	MTCA Cleanup Level[3]	DOH SAL[4]
Sample ID	MW-2A-121523	MW-5A-121523	DUP-121523[2]	MW-7B-121423	MW-11A-121423	MW-12A-121423		
Sample Date	12/15/2023	12/15/2023		12/14/2023	12/14/2023	12/14/2023		
3 & 4 Methylphenol	0.57 U	0.57 U	0.57 U	0.57 U	0.57 U	0.57 U	NE	–
3,3'-Dichlorobenzidine	0.95 U	0.96 U	0.95 U	0.95 U	0.96 U	0.95 U	0.19	–
3-Nitroaniline	2.9 U	2.9 U	2.9 U	2.9 U	2.9 U	2.9 U	64	–
4,6-Dinitro-2-methylphenol	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	NE	–
4-Bromophenyl phenyl ether	0.57 U	0.57 U	0.57 U	0.57 U	0.57 U	0.57 U	NE	–
4-Chloro-3-methylphenol	0.57 U	0.57 U	0.57 U	0.57 U	0.57 U	0.57 U	NE	–
4-Chloroaniline	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	64	–
4-Chlorophenyl phenyl ether	0.57 U	0.57 U	0.57 U	0.57 U	0.57 U	0.57 U	NE	–
4-Nitroaniline	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	64	–
4-Nitrophenol	9.5 U	9.6 U	9.5 U	9.5 U	9.6 U	9.5 U	NE	–
Acenaphthene	0.38 U	0.38 U	0.38 U	0.38 U	0.39 U	0.38 U	480	–
Acenaphthylene	0.95 U	0.96 U	0.95 U	0.95 U	0.96 U	0.95 U	NE	–
Anthracene	0.95 U	0.96 U	0.95 U	0.95 U	0.96 U	0.95 U	2,400	–
Benzo[a]anthracene	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U	NE	–
Benzo[a]pyrene	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U	0.1	–
Benzo[b]fluoranthene	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U	NE	–
Benzo[g,h,i]perylene	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U	NE	–
Benzo[k]fluoranthene	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U	NE	–
Benzoic acid	9.5 U	9.6 U	9.5 U	**3.0 J**	**3.0 J**	9.5 U	64,000	–
Benzyl alcohol	4.8 U	4.8 U	4.8 U	4.7 U	4.8 U	4.7 U	1,600	–
Bis(2-chloroethoxy)methane	0.57 U	0.57 U	0.57 U	0.57 U	0.57 U	0.57 U	48	–
Bis(2-chloroethyl)ether	0.095 U	0.096 U	0.095 U	0.095 U	0.096 U	0.095 U	0.04	–
Bis(2-ethylhexyl) phthalate	2.9 U	2.9 U	2.9 U	2.9 U	2.9 U	2.9 U	320	–
bis(chloroisopropyl) ether	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U	NE	–
Butyl benzyl phthalate	3.8 U	3.8 U	3.8 U	3.8 U	3.9 U	3.8 U	3,200	–
Carbazole	0.57 U	0.57 U	0.57 U	0.57 U	0.57 U	0.57 U	NE	–
Chrysene	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U	NE	–
Dibenz(a,h)anthracene	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U	NE	–
Dibenzofuran	0.38 U	0.38 U	0.38 U	0.38 U	0.39 U	0.38 U	8	–
Diethyl phthalate	0.95 U	0.96 U	0.95 U	0.95 U	0.96 U	0.95 U	13,000	–
Dimethyl phthalate	0.57 U	0.57 U	0.57 U	0.57 U	0.57 U	0.57 U	NE	–
Di-n-butyl phthalate	9.5 U	9.6 U	9.5 U	9.5 U	9.6 U	9.5 U	NE	–
Di-n-octyl phthalate	0.95 U	0.96 U	0.95 U	0.95 U	0.96 U	0.95 U	160	–
Fluoranthene	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U	640	–
Fluorene	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U	320	–
Hexachlorobenzene	0.57 U	0.57 U	0.57 U	0.57 U	0.57 U	0.57 U	6.4	–
Hexachlorobutadiene	0.95 U	0.96 U	0.95 U	0.95 U	0.96 U	0.95 U	8	–
Hexachlorocyclopentadiene	0.95 U	0.96 U	0.95 U	0.95 U	0.96 U	0.95 U	48	–
Hexachloroethane	0.95 U	0.96 U	0.95 U	0.95 U	0.96 U	0.95 U	NE	–
Indeno[1,2,3-cd]pyrene	0.38 U	0.38 U	0.38 U	0.38 U	0.39 U	0.38 U	NE	–
Isophorone	0.38 U	0.38 U	0.38 U	0.38 U	0.39 U	0.38 U	NE	–
Naphthalene	0.38 U	0.38 U	0.38 U	0.38 U	0.39 U	0.38 U	160	–
Nitrobenzene	0.95 U	0.95 U	0.95 U	0.95 U	0.95 U	0.95 U	3,200	–
N-Nitrosodi-n-propylamine	0.38 U	0.38 U	0.38 U	0.38 U	0.39 U	0.38 U	0.013	–
N-Nitrosodiphenylamine	0.95 U	0.96 U	0.95 U	0.95 U	0.96 U	0.95 U	18	–
Pentachlorophenol	4.8 U	4.8 U	4.8 U	4.7 U	4.8 U	4.7 U	80	–
Phenanthrene	0.95 U	0.96 U	0.95 U	0.95 U	0.96 U	0.95 U	NE	–
Phenol	0.95 U	0.96 U	0.95 U	0.95 U	0.96 U	0.95 U	4,800	–
Pyrene	0.95 U	0.96 U	0.95 U	0.95 U	0.96 U	0.95 U	240	–
cPAH TEC[5]	ND	ND	ND	ND	ND	ND	0.1	–
Herbicides by EPA 8151A (µg/L)								
2,4,5-T	0.48 UJ	0.49 UJ	0.48 UJ	0.48 UJ	0.48 UJ	0.47 UJ	NE	–
2,4,5-TP (Silvex)	0.48 UJ	0.49 UJ	0.48 UJ	0.48 UJ	0.48 UJ	0.47 UJ	130	–
2,4-D	4.8 UJ	4.9 UJ	4.8 UJ	4.8 UJ	4.8 UJ	4.7 UJ	NE	–
2,4-DB	4.8 UJ	4.9 UJ	4.8 UJ	4.8 UJ	4.8 UJ	4.7 UJ	NE	–
Dalapon	12 UJ	12 UJ	12 UJ	12 UJ	12 UJ	12 UJ	480	–
Dicamba	0.48 UJ	0.49 UJ	0.48 UJ	0.48 UJ	0.48 UJ	0.47 UJ	480	–
Dichlorprop	4.8 UJ	4.9 UJ	4.8 UJ	4.8 UJ	4.8 UJ	4.7 UJ	NE	–
Dinoseb	2.4 UJ	2.4 UJ	2.4 UJ	2.4 UJ	2.4 UJ	2.4 UJ	16	–
MCPA	480 UJ	490 UJ	480 UJ	480 UJ	480 UJ	470 UJ	NE	–
MCPP	480 UJ	490 UJ	480 UJ	480 UJ	480 UJ	470 UJ	NE	–
Per- and Polyfluoroalkyl Substances by EPA Draft-4 1633 (ng/L)								
Perfluorobutanoic acid (PFBA)	**5.6 J**	**23**	**22**	**11**	7.2 U	**4.9 J**	NE	NE
Perfluoropentanoic acid (PFPeA)	**3.1 J**	**17**	**17**	**9.1**	3.6 U	**1.6 J**	NE	NE
Perfluorohexanoic acid (PFHxA)	**1.5 J**	**27**	**29**	**3.9**	1.8 U	**1.1 J**	NE	NE
Perfluoroheptanoic acid (PFHpA)	**1.3 J**	**20**	**20**	**1.8**	1.8 U	**0.82 J**	NE	NE
Perfluorooctanoic acid (PFOA)	**7.6**	**53**	**56**	**0.57 J**	1.8 U	**0.85 J**	48	10
Perfluorononanoic acid (PFNA)	**0.90 J**	**2.1**	**2.2**	1.8 U	1.8 U	1.8 U	40	9
Perfluorodecanoic acid (PFDA)	1.8 U	1.8 U	1.9 U	1.8 U	1.8 U	1.8 U	NE	NE
Perfluoroundecanoic acid (PFUnA)	1.8 U	1.8 U	1.9 U	1.8 U	1.8 U	1.8 U	NE	NE
Perfluorododecanoic acid (PFDoA)	1.8 U	1.8 U	1.9 U	1.8 U	1.8 U	1.8 U	NE	NE
Perfluorotridecanoic acid (PFTrDA)	1.8 U	1.8 U	1.9 U	1.8 U	1.8 U	1.8 U	NE	NE
Perfluorotetradecanoic acid (PFTeDA)	1.8 U	1.8 U	1.9 U	1.8 U	1.8 U	1.8 U	NE	NE
Perfluorobutanesulfonic acid (PFBS)	**4.2**	**14**	**14**	1.8 U	**0.50 J**	**0.86 J**	4,800	345
Perfluoropentanesulfonic acid (PFPeS)	1.8 U	**10**	**11**	1.8 U	1.8 U	1.8 U	NE	NE
Perfluorohexanesulfonic acid (PFHxS)	**2.6**	**49**	**46**	1.8 U	**0.48 J**	1.8 U	160	65
Perfluoroheptanesulfonic acid (PFHpS)	1.8 U	**0.77 J**	**0.70 J**	1.8 U	1.8 U	1.8 U	NE	NE
Perfluorooctanesulfonic acid (PFOS)	**11**	**29**	**27**	**0.58 J**	1.8 U	1.8 U	48	15
Perfluorononanesulfonic acid (PFNS)	1.8 U	1.8 U	1.9 U	1.8 U	1.8 U	1.8 U	NE	NE
Perfluorodecanesulfonic acid (PFDS)	1.8 U	1.8 U	1.9 U	1.8 U	1.8 U	1.8 U	NE	NE
Perfluorododecanesulfonic acid (PFDoS)	1.8 U	1.8 U	1.9 U	1.8 U	1.8 U	1.8 U	NE	NE
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	7.2 U	7.3 U	7.6 U	7.2 U	7.2 U	7.2 U	NE	NE
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	7.2 U	7.3 U	7.6 U	7.2 U	7.2 U	7.2 U	NE	NE
Perfluorooctanesulfonamide (PFOSA)	1.8 U	1.8 U	1.9 U	1.8 U	1.8 U	1.8 U	NE	NE
N-methylperfluorooctane sulfonamide (NMeFOSA)	1.8 U	1.8 U	1.9 U	1.8 U	1.8 U	1.8 U	NE	NE
N-ethylperfluorooctane sulfonamide (NEtFOSA)	1.8 U	1.8 U	1.9 U	1.8 U	1.8 U	1.8 U	NE	NE
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	1.8 U	1.8 U	1.9 U	1.8 U	1.8 U	1.8 U	NE	NE
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	1.8 U	1.8 U	1.9 U	1.8 U	1.8 U	1.8 U	NE	NE

Location ID	MW-2A	MW-5A		MW-7B	MW-11A	MW-12A	MTCA Cleanup Level[3]	DOH SAL[4]
Sample ID	MW-2A-121523	MW-5A-121523	DUP-121523[2]	MW-7B-121423	MW-11A-121423	MW-12A-121423		
Sample Date	12/15/2023	12/15/2023		12/14/2023	12/14/2023	12/14/2023		
N-methylperfluorooctane sulfonamidoethanol (NMeFOSE)	18 U	18 U	19 U	18 U	18 U	18 U	NE	NE
N-ethylperfluorooctane sulfonamidoethanol (NEtFOSE)	18 U	18 U	19 U	18 U	18 U	18 U	NE	NE
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	7.2 U	7.3 U	7.6 U	7.2 U	7.2 U	7.2 U	24	NE
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	7.2 U	7.3 U	7.6 U	7.2 U	7.2 U	7.2 U	NE	NE
Perfluoro-3-methoxypropanoic acid (PFMPA)	3.6 U	3.6 U	3.8 U	3.6 U	3.6 U	3.6 U	NE	NE
Perfluoro-4-methoxybutanoic acid (PFMBA)	3.6 U	3.6 U	3.8 U	3.6 U	3.6 U	3.6 U	NE	NE
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	3.6 U	3.6 U	3.8 U	3.6 U	3.6 U	3.6 U	NE	NE
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	7.2 U	7.3 U	7.6 U	7.2 U	7.2 U	7.2 U	NE	NE
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	7.2 U	7.3 U	7.6 U	7.2 U	7.2 U	7.2 U	NE	NE
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	3.6 U	3.6 U	3.8 U	3.6 U	3.6 U	3.6 U	NE	NE
3-Perfluoropropylpropanoic acid (3:3 FTCA)	9.0 U	9.0 U	9.5 U	9.0 U	9.0 U	9.1 U	NE	NE
3-Perfluoropentylpropanoic acid (5:3 FTCA)	45 U	45 U	48 U	45 U	45 U	45 U	NE	NE
3-Perfluoroheptylpropanoic acid (7:3 FTCA)	45 U	45 U	48 U	45 U	45 U	45 U	NE	NE
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	7.2 U	7.3 U	7.6 U	7.2 U	7.2 U	7.2 U	NE	NE
Total Metals by EPA 6020B (mg/L)								
Arsenic	**0.0020 J**	**0.0011 J**	**0.0011 J**	0.0050 U	**0.0021 J**	0.0050 U	0.005	0.005
Cadmium	0.0020 U	0.0020 U	0.0020 U	0.0020 U	0.0020 U	0.0020 U	0.005	0.005
Iron	0.50 U	**0.095 J**	**0.10 J**	**0.21 J**	**0.13 J**	0.50 U	11	11
Lead	0.0020 U	0.0020 U	0.0020 U	**0.0015 J**	0.0020 U	0.0020 U	0.015	0.015
Manganese	0.010 U	0.010 U	0.010 U	**0.0068 J**	**0.0025 J**	0.010 U	0.75	0.75
Zinc	0.035 U	0.035 U	0.035 U	**0.018 J**	0.035 U	**0.0051 J**	4.8	4.8
Total Metals by EPA 7470A (µg/L)								
Mercury	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	2	2
Dissolved Metals[6] by EPA 6020B (mg/L)								
Arsenic	**0.0024 J**	**0.0014 J**	**0.0014 J**	0.0050 U	**0.0020 J**	0.0050 U	0.005	0.005
Cadmium	0.0020 U	0.0020 U	0.0020 U	0.0020 U	0.0020 U	0.0020 U	0.005	0.005
Iron	0.50 U	**0.074 J**	**0.078 J**	0.50 U	0.50 U	0.50 U	11	11
Lead	0.0020 U	0.0020 U	0.0020 U	0.0020 U	0.0020 U	0.0020 U	0.015	0.015
Manganese	0.010 U	0.010 U	**0.0024 J**	0.010 U	0.010 U	**0.0060 J**	0.75	0.75
Zinc	0.035 U	0.035 U	**0.040**	**0.014 J**	**0.0051 J**	0.035 U	4.8	4.8
Dissolved Metals[6] by EPA 7470A (µg/L)								
Mercury	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	2	2
General Chemistry Parameters (mg/L), method noted in parentheses								
Ammonia as Nitrogen (EPA 350.1)	**0.042 J**	**0.052 J**	**0.037 J**	**0.032 J**	**0.15**	0.10 U	NE	NE
Alkalinity (SM 2320B)	**210**	**320**	**330**	**150**	**140**	**85**	NE	NE
Bicarbonate Alkalinity as CaCO3 (SM 2320B)	**210**	**320**	**330**	**150**	**140**	**85**	NE	NE
Total Dissolved Solids (SM 2540C)	**340**	**520**	**530**	**240**	**300**	**140**	NE	NE
Cyanide, Weak Acid Dissociable (SM 4500 CN I)	0.010 U	0.010 U	0.010 U	0.010 U	0.010 U	0.010 U	0.005	0.005
Total Organic Carbon (SM 5310B)	**4.2**	**2.0**	**2.0**	**4.3**	**0.84 J**	**2.6**	NE	NE
Total Magnesium (EPA 6010D)	**16**	**16**	**16**	**10**	**9.5**	**8.9**	NE	NE
Dissolved Magnesium (EPA 6010D)	**17**	**17**	**16**	**10**	**9.4**	**8.8**	NE	NE
Total Potassium (EPA 6010D)	**7.8**	**4.9**	**4.8**	**1.7**	**2.8**	**2.7**	NE	NE
Total Sodium (EPA 6010D)	**42**	**28**	**27**	**5.3**	**9.0**	**8.5**	NE	NE
Dissolved Calcium (EPA 6010D)	**41**	**120**	**110**	**34**	**41**	**25**	NE	NE
Chloride (EPA 300.0)	**59**	**33**	**34**	**0.58 J**	**9.8**	**3.3**	NE	NE
Nitrate as N (EPA 300.0)	0.20 U	**5.7**	**5.6**	0.20 U	**3.4**	**6.8**	26	26
Nitrite as N (EPA 300.0)	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	1.6	1.6
Sulfate (EPA 300.0)	**14**	**46**	**47**	**4.0**	**10**	**16**	NE	NE

Notes:

[1]Samples analyzed by Eurofins Environment Testing located in Spokane Valley, Washington. Sample locations are shown on Figures 2 and 3.

[2]Duplicate sampling procedures are summarized in the Work Plan for Marshall Landfill Groundwater Monitoring dated November 17, 2023. Other quality assurance/quality control sampling (not shown) included trip blank, equipment blank and field blank sampling and analysis. Analyzed contaminants of concern were not detected above laboratory reporting limits in the trip blank, equipment blank or field blank (see laboratory reports).

[3]MTCA Method A or B Cleanup Level.

[4]Department of Health (DOH) State Action Level (SAL) for PFAS compounds are listed where available.

[5]Carcinogenic polycyclic aromatic hydrocarbon (cPAH) total toxic equivalent concentration (TEC) calculated per WAC 173-340-708.

[6]Samples submitted for dissolved metals analysis were lab filtered.

J = estimated concentration; refer to laboratory and data validation reports for data qualifier information and discussion (Appendices B and C respectively).

mg/L = milligrams per liter

µg/L = micrograms per liter

MTCA CUL = Model Toxics Control Act Cleanup Level (Method A or B)

ND = not detected

NE = not established

ng/L = nanogram per liter

U = analyte was not detected above the laboratory reporting limit

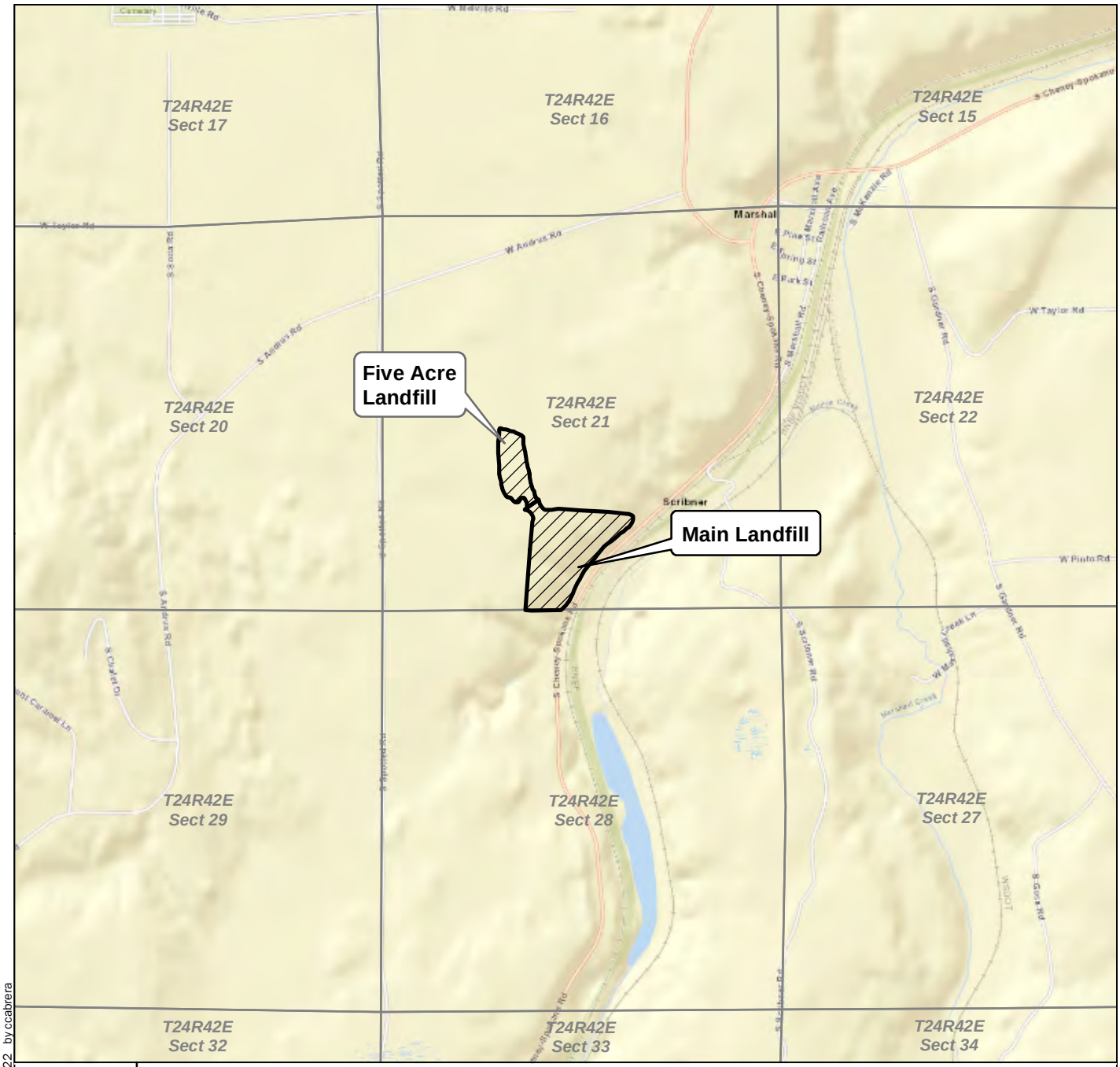
Bold indicates analyte was detected above the laboratory reporting limit

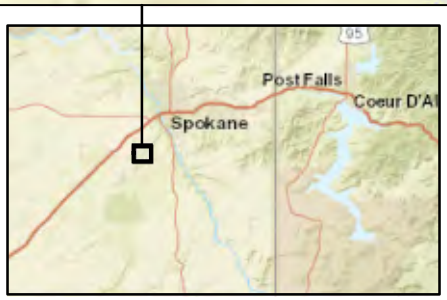
Bold with grey shading indicates the analyte was detected at a concentration greater than the listed MTCA CUL

Bold with blue shading indicates the analyte was detected at a concentration greater than the listed DOH SAL but less than the MTCA CUL

FIGURES

GeoEngineers





N
W E
S

2,000 0 2,000

Feet

Notes:

1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. cannot guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.

Data Source: Mapbox Open Street Map, 2016

Projection: NAD 1983 UTM Zone 11N

Vicinity Map

Marshall Landfill
Spokane County, Washington

GeoEngineers

Figure 1

P:\0\0504104\GIS\MXD\0504104_F01_VM_2022.mxd Date Exported: 10/27/22 by ccabrera

P:\0\0504104\GIS\MXD\050410401_F02_SitePlan_4th2023GW.mxd Date Exported: 03/25/24 by ccabrera

Legend

MW-2A — Monitoring Well Redeveloped and Sampled in December 2023

MW-5A — Monitoring Well Location, Well Number and Groundwater Elevation (feet), if Measured.

Approximate Landfill Boundaries[3]

Approximate Limits of Adjacent Landfill or Mining Land Use[3]

N W E S

400 0 400
Feet

Data Source: Aerial from ESRI Data Online. Water features from PNW Hydrography.

Notes:
1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. cannot guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.
3. Boundaries of landfill and mining land use were adapted from Fetrow Engineering (1991) based on Remedial Investigation explorations and aerial photography. The Former Spokane County landfill boundaries have not been modified from Fetrow Engineering (1991).

Projection: NAD 1983 StatePlane Washington North FIPS 4601 Feet

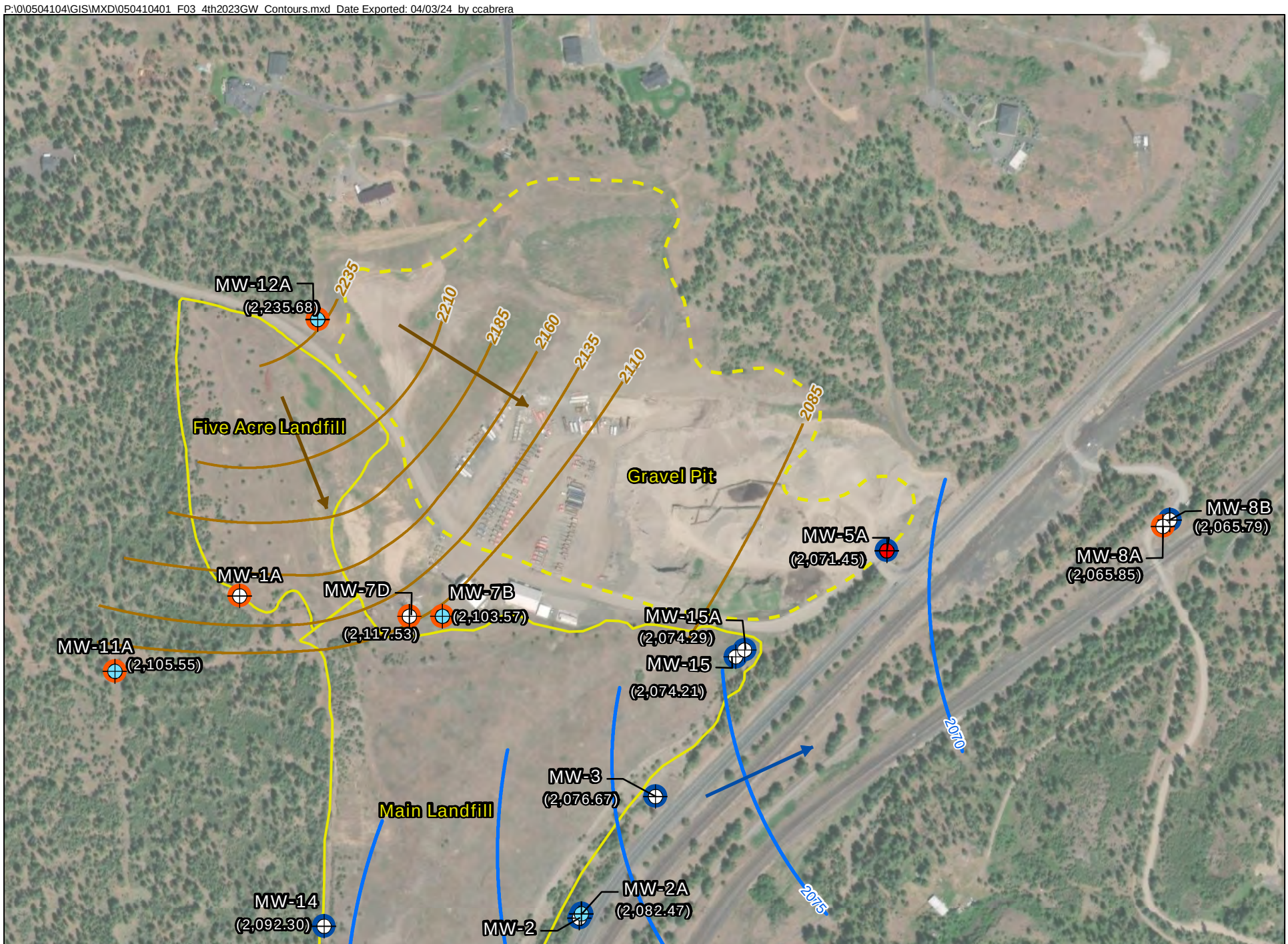
Site Plan

Marshall Landfill
Spokane County, Washington

GeoEngineers

Figure 2

P:\0\0504104\GIS\MXD\050410401_F03_4th2023GW_Contours.mxd Date Exported: 04/03/24 by ccabrera



Legend

- Monitoring Well Redeveloped and Sampled in December 2023
- COC(s) Exceeded MTCA Cleanup Level in Groundwater in December 2023
- MW-2A — Monitoring Well Location, Well Number and Groundwater Elevation (feet), if Measured.
- Approximate Landfill Boundaries[3]
- Approximate Limits of Adjacent Landfill or Mining Land Use[3]
- Estimated groundwater contour for Glaciofluvial Aquifer (feet, NAVD88)
- Estimated groundwater contour for Basement Aquifer (feet, NAVD88)
- Inferred Groundwater Flow Direction for Basement Aquifer
- Inferred Groundwater Flow Direction for Glaciofluvial Aquifer
- Well Screened in Basement or Columbia River Basalt Group Aquifer
- Well Screened in Glaciofluvial Aquifer

COC = contaminant of concern
MTCA = model toxics control act

N W E S

400 0 400
Feet

Data Source: Aerial from ESRI Data Online. Water features from PNW Hydrography.
Notes:
1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. cannot guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.
3. Boundaries of landfill and mining land use were adapted from Fetrow Engineering (1991) based on Remedial Investigation explorations and aerial photography. The Former Spokane County landfill boundaries have not been modified from Fetrow Engineering (1991).
4. Depth to groundwater measurements were collected on December 14, 2023.
Projection: NAD 1983 StatePlane Washington North FIPS 4601 Feet

Groundwater Contours (December 2023)

Marshall Landfill
Spokane County, Washington

GeoEngineers

Figure 3

APPENDICES

GeoEngineers

APPENDIX A
Waste Disposal Documentation

Please print or type.

Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator ID Number	2. Page 1 of	3. Emergency Response Phone	4. Manifest Tracking Number
WAD980511794	1	800-424-8802	016345498 FLE

GENERATOR

5. Generator's Name and Mailing Address
Washington State Department of Ecology
4601 N. Monroe St
Spokane, WA 99205
Generator's Phone: 509-251-5239-1

Generator's Site Address (if different than mailing address)
10710 CHENEY SPOKANE RD
CHENEY, WA 99004 USA

6. Transporter 1 Company Name
Able Clean-up Technologies

U.S. EPA ID Number
WAH000018838

7. Transporter 2 Company Name

U.S. EPA ID Number

8. Designated Facility Name and Site Address
Chemical Waste Management
17629 Cedar Springs Lane
Arlington, OR 97812
Facility's Phone: 541-454-2643

U.S. EPA ID Number
ORD089452353

9a. HM	9b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	13. Waste Codes
	~~NON HAZARDOUS, NON D.O.T. REGULATED, (PURGE WATER), PFAS CONTAMINATED WATER~~	~~1~~	~~DM~~		~~P~~	~~X004~~
2	NON HAZARDOUS, NON D.O.T. REGULATED, (PURGE WATER), PFAS CONTAMINATED WATER	1	TP	2000	P	X004
3.						
4.						

14. Special Handling Instructions and Additional Information
~~9b1) OR3545556~~
9b2) ~~OR3545556~~
OR358556

JOB # 24032

15. **GENERATOR'S/OFFEROR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations. If export shipment and I am the Primary Exporter, I certify that the contents of this consignment conform to the terms of the attached EPA Acknowledgment of Consent.
I certify that the waste minimization statement identified in 40 CFR 262.27(a) (if I am a large quantity generator) or (b) (if I am a small quantity generator) is true.

Generator's/Offeror's Printed/Typed Name: Jarrod Judd — Signature — Month: 2 — Day: 26 — Year: 24

INT'L

16. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter signature (for exports only): Date leaving U.S.:

TRANSPORTER

17. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: Jarrod Judd — Signature — Month: 2 — Day: 26 — Year: 24

Transporter 2 Printed/Typed Name: Jarrod Judd — Signature — Month: 3 — Day: 4 — Year: 24

DESIGNATED FACILITY

18. Discrepancy

18a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

18b. Alternate Facility (or Generator) — U.S. EPA ID Number

Facility's Phone:

18c. Signature of Alternate Facility (or Generator) — Month — Day — Year

19. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)

1.	2.	3.	4.

20. Designated Facility Owner or Operator: Certification of receipt of hazardous materials covered by the manifest except as noted in Item 18a

Printed/Typed Name — Signature — Month — Day — Year

APPENDIX B
Chemical Analytical Laboratory Reports

eurofins | Environment Testing

ANALYTICAL REPORT

PREPARED FOR

Attn: Justin Orr
GeoEngineers Inc
523 East Second Ave
Spokane, Washington 99202

Generated 1/31/2024 3:43:04 PM

JOB DESCRIPTION

Marshall Landfill

JOB NUMBER

590-22504-1

Eurofins Spokane
11922 East 1st Ave
Spokane WA 99206

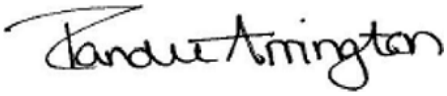
See page two for job notes and contact information.

Job Notes

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing Northwest, LLC Project Manager.

Authorization



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Authorized for release by
Randee Arrington, Business Unit Manager
Randee.Arrington@et.eurofinsus.com
(509)924-9200

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Job Narrative
590-22504-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

- Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
- Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Receipt
The samples were received on 12/15/2023 8:45 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 2.9°C and 5.5°C

Receipt Exceptions
The following samples was received at the laboratory outside the required temperature criteria: MW-7B-121423 (590-22504-1), MW-11A-121423 (590-22504-2) and MW-12A-121423 (590-22504-3). This does not meet regulatory requirements.

GC/MS VOA
Method 8260D: The continuing calibration verification (CCV) associated with batch 590-45100 recovered above the upper control limit for 2,2-Dichloropropane and Chloromethane. The samples associated with this CCV were non-detects for the affected analytes; therefore, the data have been reported.

Method 8260D: The laboratory control sample (LCS) and / or laboratory control sample duplicate (LCSD) for analytical batch 590-45100 recovered outside control limits for the following analytes: Chloromethane. These analytes were biased high in the LCS and were not detected in the associated samples; therefore, the data have been reported.

Method 8260D: The RPD of the laboratory control sample (LCS) and laboratory control sample duplicate (LCSD) for analytical batch 590-45100 recovered outside control limits for the following analytes: Chloromethane.

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

GC/MS Semi VOA
Method 8270E: The continuing calibration verification (CCV) associated with batch 580-446659 recovered above the upper control limit for 4-Nitroaniline and Benzoic acid. The samples associated with this CCV were non-detects for the affected analytes; therefore, the data have been reported. The associated samples are impacted: MW-7B-121423 (590-22504-1), MW-11A-121423 (590-22504-2), MW-12A-121423 (590-22504-3) and (CCVIS 580-446659/3).

Method 8270E: Surrogate recovery for the following sample was outside control limits: MW-7B-121423 (590-22504-1). Evidence of matrix interference is present; therefore, re-extraction and/or re-analysis was not performed.

Method 8270E: The continuing calibration verification (CCV) associated with batch 580-446659 recovered outside acceptance criteria, low biased, for Carbazole and Pentachlorophenol. A reporting limit (RL) standard was analyzed, and the target analytes are detected. Since the associated samples were non-detect for the analyte(s), the data are reported.

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

Herbicides
Method 8151A: The RPD of the laboratory control sample (LCS) and laboratory control sample duplicate (LCSD) for preparation batch 570-394080 and analytical batch 570-394962 recovered outside control limits for the following analytes: 2,4,5-T, 2,4,5-TP (Silvex), 2,4-D, 2,4-DB, Dalapon, Dicamba, Dichlorprop, Dinoseb and MCPA.

Method 8151A: The continuing calibration verification (CCV) associated with 570-394962 recovered high and outside the control limits for Dalapon and Dichlorprop on one column. Results are confirmed on both columns and reported from the passing column. The associated samples are: MW-7B-121423 (590-22504-1), MW-11A-121423 (590-22504-2) and MW-12A-121423

(590-22504-3).

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

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

PFAS
Method 1633: The following samples in preparation batch 320-732663 were observed to be yellow in color and contain floating particulates prior to extraction: MW-7B-121423 (590-22504-1)

Method 1633: During the solid phase extraction process, the following samples contained a large amount of particulates which clogged the solid phase extraction column: MW-7B-121423 (590-22504-1).preparation batch 320-732663

Method 1633: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-733811.

Method 1633: The following samples were re-prepared outside of preparation holding time due to suspected mis spike of low level laboratory control sample, MW-11A-121423 (590-22504-2), MW-12A-121423 (590-22504-3), EB-121423 (590-22504-4) and FB-121423 (590-22504-5).

Method 1633: The low level laboratory control sample (LLCS) for preparation batch 320-732663 and analytical batch 320-733287 recovered outside control limits for the following analytes: several analytes. The associated samples were re-prepared and/or re-analyzed outside holding time.

Method 1633: The RPD of the laboratory control sample (LCS) and laboratory control sample duplicate (LCSD) for preparation batch 320-732663 and analytical batch 320-733287 recovered outside control limits for the following analytes: Perfluorooctanesulfonic acid (PFOS) and 4,8-Dioxa-3H-perfluorononanoic acid (ADONA).

Method 1633: The following sample in preparation batch 320-734764 was observed to have floating particulates present in the sample bottle. MW-7B-121423 (590-22504-1)

Method 1633: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-734764.

Method 1633: The following sample was re-prepared outside of preparation holding time due to the low-level laboratory control sample being mis-spiked: MW-7B-121423 (590-22504-1).

Method 1633: The laboratory control sample (LCS) for preparation batch 320-732663 and analytical batch 320-735085 recovered outside control limits for several analytes. The associated samples were re-prepared and/or re-analyzed outside holding time. Both sets of data have been reported.

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

Metals
Method 6010D: The low level initial calibration verification (ICVL) associated with batch 590-45149 recovered above the upper control limit for Sodium. The samples associated with this ICV were either 10x the spike amount, have hits below the RL, or non-detects for the affected analytes; therefore, the data have been reported.

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

General Chemistry
Method 2320B: The method blank for analytical batch 590-45219 contained Alkalinity and Bicarbonate Alkalinity as CaCO3 above the method detection limit (MDL). Associated samples were not re-analyzed because the method blank results were less than the reporting limit (RL)

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

Sample Summary

Client: GeoEngineers Inc
Project/Site: Marshall Landfill

Job ID: 590-22504-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
590-22504-1	MW-7B-121423	Water	12/14/23 13:00	12/15/23 08:45
590-22504-2	MW-11A-121423	Water	12/14/23 11:05	12/15/23 08:45
590-22504-3	MW-12A-121423	Water	12/14/23 14:25	12/15/23 08:45
590-22504-4	EB-121423	Water	12/14/23 08:20	12/15/23 08:45
590-22504-5	FB-121423	Water	12/14/23 08:30	12/15/23 08:45

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
*+	LCS and/or LCSD is outside acceptance limits, high biased.
*1	LCS/LCSD RPD exceeds control limits.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

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.
S1-	Surrogate recovery exceeds control limits, low biased.

GC Semi VOA

Qualifier	Qualifier Description
*1	LCS/LCSD RPD exceeds control limits.

HPLC/IC

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
*+	LCS and/or LCSD is outside acceptance limits, high biased.
*1	LCS/LCSD RPD exceeds control limits.
H	Sample was prepped or analyzed beyond the specified holding time. This does not meet regulatory requirements.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Metals

Qualifier	Qualifier Description
^1+	Initial Calibration Verification (ICV) is outside acceptance limits, high biased.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

General Chemistry

Qualifier	Qualifier Description
B	Compound was found in the blank and sample.
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

Glossary (Continued)

Abbreviation	These commonly used abbreviations may or may not be present in this report.
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

Client: GeoEngineers Inc
Project/Site: Marshall Landfill

Job ID: 590-22504-1

Client Sample ID: MW-7B-121423
Date Collected: 12/14/23 13:00
Date Received: 12/15/23 08:45

Lab Sample ID: 590-22504-1
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	ND		1.0	0.48	ug/L			12/15/23 15:51	1
1,1,1-Trichloroethane	ND		1.0	0.17	ug/L			12/15/23 15:51	1
1,1,2,2-Tetrachloroethane	ND		2.0	0.32	ug/L			12/15/23 15:51	1
1,1,2-Trichloroethane	ND		2.0	0.43	ug/L			12/15/23 15:51	1
1,1-Dichloroethane	ND		1.0	0.29	ug/L			12/15/23 15:51	1
1,1-Dichloroethene	ND		1.0	0.20	ug/L			12/15/23 15:51	1
1,1-Dichloropropene	ND		1.0	0.50	ug/L			12/15/23 15:51	1
1,2,3-Trichlorobenzene	ND		1.0	0.33	ug/L			12/15/23 15:51	1
1,2,3-Trichloropropane	ND		2.0	0.50	ug/L			12/15/23 15:51	1
1,2,4-Trichlorobenzene	ND		1.0	0.50	ug/L			12/15/23 15:51	1
1,2,4-Trimethylbenzene	ND		1.0	0.31	ug/L			12/15/23 15:51	1
1,2-Dibromo-3-Chloropropane	ND		10	1.5	ug/L			12/15/23 15:51	1
1,2-Dibromoethane (EDB)	ND		1.0	0.20	ug/L			12/15/23 15:51	1
1,2-Dichlorobenzene	ND		1.0	0.23	ug/L			12/15/23 15:51	1
1,2-Dichloroethane	ND		1.0	0.31	ug/L			12/15/23 15:51	1
1,2-Dichloropropane	ND		1.0	0.23	ug/L			12/15/23 15:51	1
1,3,5-Trimethylbenzene	ND		1.0	0.32	ug/L			12/15/23 15:51	1
1,3-Dichlorobenzene	ND		1.0	0.14	ug/L			12/15/23 15:51	1
1,3-Dichloropropane	ND		2.0	0.21	ug/L			12/15/23 15:51	1
1,4-Dichlorobenzene	ND		1.0	0.28	ug/L			12/15/23 15:51	1
2,2-Dichloropropane	ND		2.0	0.66	ug/L			12/15/23 15:51	1
2-Chlorotoluene	ND		1.0	0.36	ug/L			12/15/23 15:51	1
4-Chlorotoluene	ND		1.0	0.26	ug/L			12/15/23 15:51	1
Benzene	ND		0.40	0.093	ug/L			12/15/23 15:51	1
Bromobenzene	ND		1.0	0.28	ug/L			12/15/23 15:51	1
Bromochloromethane	ND		2.0	0.44	ug/L			12/15/23 15:51	1
Bromodichloromethane	ND		1.0	0.29	ug/L			12/15/23 15:51	1
Bromoform	ND		5.0	0.66	ug/L			12/15/23 15:51	1
Bromomethane	ND		5.0	0.76	ug/L			12/15/23 15:51	1
Carbon tetrachloride	ND		1.0	0.40	ug/L			12/15/23 15:51	1
Chlorobenzene	ND		1.0	0.32	ug/L			12/15/23 15:51	1
Chloroethane	ND		2.0	0.40	ug/L			12/15/23 15:51	1
Chloroform	ND		1.0	0.24	ug/L			12/15/23 15:51	1
Chloromethane	ND	*+ *1	3.0	0.50	ug/L			12/15/23 15:51	1
cis-1,2-Dichloroethene	ND		1.0	0.23	ug/L			12/15/23 15:51	1
cis-1,3-Dichloropropene	ND		1.0	0.25	ug/L			12/15/23 15:51	1
Dibromochloromethane	ND		2.0	0.33	ug/L			12/15/23 15:51	1
Dibromomethane	ND		2.0	0.50	ug/L			12/15/23 15:51	1
Dichlorodifluoromethane	ND		2.0	0.64	ug/L			12/15/23 15:51	1
Ethylbenzene	ND		1.0	0.20	ug/L			12/15/23 15:51	1
Hexachlorobutadiene	ND		2.0	0.21	ug/L			12/15/23 15:51	1
Isopropylbenzene	ND		1.0	0.24	ug/L			12/15/23 15:51	1
m,p-Xylene	ND		2.0	0.28	ug/L			12/15/23 15:51	1
Methyl tert-butyl ether	ND		1.0	0.16	ug/L			12/15/23 15:51	1
Methylene Chloride	ND		5.0	2.2	ug/L			12/15/23 15:51	1
Naphthalene	ND		2.0	0.63	ug/L			12/15/23 15:51	1
n-Butylbenzene	ND		1.0	0.20	ug/L			12/15/23 15:51	1
N-Propylbenzene	ND		1.0	0.25	ug/L			12/15/23 15:51	1
o-Xylene	ND		1.0	0.16	ug/L			12/15/23 15:51	1

Client Sample ID: MW-7B-121423
Date Collected: 12/14/23 13:00
Date Received: 12/15/23 08:45

Lab Sample ID: 590-22504-1
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
p-Isopropyltoluene	ND		1.0	0.27	ug/L			12/15/23 15:51	1
sec-Butylbenzene	ND		1.0	0.22	ug/L			12/15/23 15:51	1
Styrene	ND		1.0	0.24	ug/L			12/15/23 15:51	1
tert-Butylbenzene	ND		1.0	0.12	ug/L			12/15/23 15:51	1
Tetrachloroethene	ND		1.0	0.22	ug/L			12/15/23 15:51	1
Toluene	ND		1.0	0.31	ug/L			12/15/23 15:51	1
trans-1,2-Dichloroethene	ND		1.0	0.20	ug/L			12/15/23 15:51	1
trans-1,3-Dichloropropene	ND		1.0	0.45	ug/L			12/15/23 15:51	1
Trichloroethene	ND		1.0	0.20	ug/L			12/15/23 15:51	1
Trichlorofluoromethane	ND		1.0	0.20	ug/L			12/15/23 15:51	1
Vinyl chloride	ND		0.40	0.13	ug/L			12/15/23 15:51	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*103*		*80 - 120*		*12/15/23 15:51*	*1*
4-Bromofluorobenzene (Surr)	*91*		*76 - 120*		*12/15/23 15:51*	*1*
Dibromofluoromethane (Surr)	*111*		*80 - 123*		*12/15/23 15:51*	*1*
Toluene-d8 (Surr)	*101*		*80 - 120*		*12/15/23 15:51*	*1*

Method: SW846 8270E - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,4-Trichlorobenzene	ND		0.38	0.085	ug/L		12/19/23 08:40	12/19/23 22:31	1
1,2-Dichlorobenzene	ND		0.38	0.047	ug/L		12/19/23 08:40	12/19/23 22:31	1
1,3-Dichlorobenzene	ND		0.38	0.038	ug/L		12/19/23 08:40	12/19/23 22:31	1
1,4-Dichlorobenzene	ND		0.38	0.038	ug/L		12/19/23 08:40	12/19/23 22:31	1
1-Methylnaphthalene	ND		0.95	0.047	ug/L		12/19/23 08:40	12/19/23 22:31	1
2,4,5-Trichlorophenol	ND		0.38	0.095	ug/L		12/19/23 08:40	12/19/23 22:31	1
2,4,6-Trichlorophenol	ND		0.57	0.095	ug/L		12/19/23 08:40	12/19/23 22:31	1
2,4-Dichlorophenol	ND		0.95	0.19	ug/L		12/19/23 08:40	12/19/23 22:31	1
2,4-Dimethylphenol	ND		3.8	0.15	ug/L		12/19/23 08:40	12/19/23 22:31	1
2,4-Dinitrophenol	ND		4.7	0.43	ug/L		12/19/23 08:40	12/19/23 22:31	1
2,4-Dinitrotoluene	ND		0.95	0.095	ug/L		12/19/23 08:40	12/19/23 22:31	1
2,6-Dinitrotoluene	ND		0.38	0.095	ug/L		12/19/23 08:40	12/19/23 22:31	1
2-Chloronaphthalene	ND		0.95	0.066	ug/L		12/19/23 08:40	12/19/23 22:31	1
2-Chlorophenol	ND		0.95	0.047	ug/L		12/19/23 08:40	12/19/23 22:31	1
2-Methylnaphthalene	ND		0.38	0.057	ug/L		12/19/23 08:40	12/19/23 22:31	1
2-Methylphenol	ND		0.57	0.047	ug/L		12/19/23 08:40	12/19/23 22:31	1
2-Nitroaniline	ND		0.95	0.095	ug/L		12/19/23 08:40	12/19/23 22:31	1
2-Nitrophenol	ND		0.95	0.066	ug/L		12/19/23 08:40	12/19/23 22:31	1
3 & 4 Methylphenol	ND		0.57	0.095	ug/L		12/19/23 08:40	12/19/23 22:31	1
3,3'-Dichlorobenzidine	ND		0.95	0.11	ug/L		12/19/23 08:40	12/19/23 22:31	1
3-Nitroaniline	ND		2.8	0.15	ug/L		12/19/23 08:40	12/19/23 22:31	1
4,6-Dinitro-2-methylphenol	ND		1.9	0.52	ug/L		12/19/23 08:40	12/19/23 22:31	1
4-Bromophenyl phenyl ether	ND		0.57	0.057	ug/L		12/19/23 08:40	12/19/23 22:31	1
4-Chloro-3-methylphenol	ND		0.57	0.12	ug/L		12/19/23 08:40	12/19/23 22:31	1
4-Chloroaniline	ND		1.9	0.14	ug/L		12/19/23 08:40	12/19/23 22:31	1
4-Chlorophenyl phenyl ether	ND		0.57	0.047	ug/L		12/19/23 08:40	12/19/23 22:31	1
4-Nitroaniline	ND		1.9	0.20	ug/L		12/19/23 08:40	12/19/23 22:31	1
4-Nitrophenol	ND		9.5	1.6	ug/L		12/19/23 08:40	12/19/23 22:31	1
Acenaphthene	ND		0.38	0.047	ug/L		12/19/23 08:40	12/19/23 22:31	1
Acenaphthylene	ND		0.95	0.057	ug/L		12/19/23 08:40	12/19/23 22:31	1

Client: GeoEngineers Inc
Project/Site: Marshall Landfill

Job ID: 590-22504-1

Client Sample ID: MW-7B-121423

Date Collected: 12/14/23 13:00
Date Received: 12/15/23 08:45

Lab Sample ID: 590-22504-1

Matrix: Water

Method: SW846 8270E - Semivolatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Anthracene	ND		0.95	0.047	ug/L		12/19/23 08:40	12/19/23 22:31	1
Benzo[a]anthracene	ND		0.24	0.047	ug/L		12/19/23 08:40	12/19/23 22:31	1
Benzo[a]pyrene	ND		0.24	0.038	ug/L		12/19/23 08:40	12/19/23 22:31	1
Benzo[b]fluoranthene	ND		0.24	0.038	ug/L		12/19/23 08:40	12/19/23 22:31	1
Benzo[g,h,i]perylene	ND		0.24	0.038	ug/L		12/19/23 08:40	12/19/23 22:31	1
Benzo[k]fluoranthene	ND		0.24	0.047	ug/L		12/19/23 08:40	12/19/23 22:31	1
Benzoic acid	**3.0**	**J**	9.5	1.3	ug/L		12/19/23 08:40	12/19/23 22:31	1
Benzyl alcohol	ND		4.7	0.17	ug/L		12/19/23 08:40	12/19/23 22:31	1
Bis(2-chloroethoxy)methane	ND		0.57	0.047	ug/L		12/19/23 08:40	12/19/23 22:31	1
Bis(2-chloroethyl)ether	ND		0.095	0.028	ug/L		12/19/23 08:40	12/19/23 22:31	1
Bis(2-ethylhexyl) phthalate	ND		2.8	0.70	ug/L		12/19/23 08:40	12/19/23 22:31	1
bis(chloroisopropyl) ether	ND		0.24	0.057	ug/L		12/19/23 08:40	12/19/23 22:31	1
Butyl benzyl phthalate	ND		3.8	0.26	ug/L		12/19/23 08:40	12/19/23 22:31	1
Carbazole	ND		0.57	0.095	ug/L		12/19/23 08:40	12/19/23 22:31	1
Chrysene	ND		0.24	0.085	ug/L		12/19/23 08:40	12/19/23 22:31	1
Dibenz(a,h)anthracene	ND		0.24	0.066	ug/L		12/19/23 08:40	12/19/23 22:31	1
Dibenzofuran	ND		0.38	0.095	ug/L		12/19/23 08:40	12/19/23 22:31	1
Diethyl phthalate	ND		0.95	0.14	ug/L		12/19/23 08:40	12/19/23 22:31	1
Dimethyl phthalate	ND		0.57	0.057	ug/L		12/19/23 08:40	12/19/23 22:31	1
Di-n-butyl phthalate	ND		9.5	2.8	ug/L		12/19/23 08:40	12/19/23 22:31	1
Di-n-octyl phthalate	ND		0.95	0.12	ug/L		12/19/23 08:40	12/19/23 22:31	1
Fluoranthene	ND		0.24	0.057	ug/L		12/19/23 08:40	12/19/23 22:31	1
Fluorene	ND		0.24	0.047	ug/L		12/19/23 08:40	12/19/23 22:31	1
Hexachlorobenzene	ND		0.57	0.076	ug/L		12/19/23 08:40	12/19/23 22:31	1
Hexachlorobutadiene	ND		0.95	0.076	ug/L		12/19/23 08:40	12/19/23 22:31	1
Hexachlorocyclopentadiene	ND		0.95	0.13	ug/L		12/19/23 08:40	12/19/23 22:31	1
Hexachloroethane	ND		0.95	0.047	ug/L		12/19/23 08:40	12/19/23 22:31	1
Indeno[1,2,3-cd]pyrene	ND		0.38	0.12	ug/L		12/19/23 08:40	12/19/23 22:31	1
Isophorone	ND		0.38	0.095	ug/L		12/19/23 08:40	12/19/23 22:31	1
Naphthalene	ND		0.38	0.15	ug/L		12/19/23 08:40	12/19/23 22:31	1
Nitrobenzene	ND		0.95	0.038	ug/L		12/19/23 08:40	12/19/23 22:31	1
N-Nitrosodi-n-propylamine	ND		0.38	0.057	ug/L		12/19/23 08:40	12/19/23 22:31	1
N-Nitrosodiphenylamine	ND		0.95	0.066	ug/L		12/19/23 08:40	12/19/23 22:31	1
Pentachlorophenol	ND		4.7	0.48	ug/L		12/19/23 08:40	12/19/23 22:31	1
Phenanthrene	ND		0.95	0.11	ug/L		12/19/23 08:40	12/19/23 22:31	1
Phenol	ND		0.95	0.15	ug/L		12/19/23 08:40	12/19/23 22:31	1
Pyrene	ND		0.95	0.038	ug/L		12/19/23 08:40	12/19/23 22:31	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol (Surr)	*87*		*50 - 130*	*12/19/23 08:40*	*12/19/23 22:31*	*1*
2-Fluorobiphenyl	*53*		*35 - 120*	*12/19/23 08:40*	*12/19/23 22:31*	*1*
2-Fluorophenol (Surr)	*38*		*21 - 120*	*12/19/23 08:40*	*12/19/23 22:31*	*1*
Nitrobenzene-d5 (Surr)	*58*		*39 - 120*	*12/19/23 08:40*	*12/19/23 22:31*	*1*
Phenol-d5 (Surr)	*26*		*10 - 120*	*12/19/23 08:40*	*12/19/23 22:31*	*1*
Terphenyl-d14 (Surr)	*56*	*S1-*	*63 - 137*	*12/19/23 08:40*	*12/19/23 22:31*	*1*

Method: SW846 8151A - Herbicides (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4,5-T	ND	*1	0.48	0.20	ug/L		12/18/23 21:35	12/20/23 23:10	1
2,4,5-TP (Silvex)	ND		0.48	0.13	ug/L		12/18/23 21:35	12/20/23 23:10	1

Client Sample ID: MW-7B-121423

Date Collected: 12/14/23 13:00
Date Received: 12/15/23 08:45

Lab Sample ID: 590-22504-1
Matrix: Water

Method: SW846 8151A - Herbicides (GC) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4-D	ND	*1	4.8	1.9	ug/L		12/18/23 21:35	12/20/23 23:10	1
2,4-DB	ND		4.8	3.3	ug/L		12/18/23 21:35	12/20/23 23:10	1
Dalapon	ND	*1	12	4.5	ug/L		12/18/23 21:35	12/20/23 23:10	1
Dicamba	ND	*1	0.48	0.27	ug/L		12/18/23 21:35	12/20/23 23:10	1
Dichlorprop	ND	*1	4.8	1.9	ug/L		12/18/23 21:35	12/20/23 23:10	1
Dinoseb	ND	*1	2.4	2.1	ug/L		12/18/23 21:35	12/20/23 23:10	1
MCPA	ND	*1	480	330	ug/L		12/18/23 21:35	12/20/23 23:10	1
MCPP	ND		480	290	ug/L		12/18/23 21:35	12/20/23 23:10	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4-Dichlorophenylacetic acid	*102*		*20 - 161*	*12/18/23 21:35*	*12/20/23 23:10*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**0.58**	**J**	0.80	0.42	mg/L			12/15/23 14:15	1
Nitrate as N	ND		0.20	0.057	mg/L			12/15/23 14:15	1
Nitrite as N	ND		0.20	0.069	mg/L			12/15/23 14:15	1
Sulfate	**4.0**		0.50	0.13	mg/L			12/15/23 14:15	1

Method: EPA Draft-4 1633 - Per- and Polyfluoroalkyl Substances by LC/MS/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**11**	***+**	7.2	1.8	ng/L		01/11/24 05:03	01/13/24 12:56	1
Perfluoropentanoic acid (PFPeA)	**9.1**	***+**	3.6	0.90	ng/L		01/11/24 05:03	01/13/24 12:56	1
Perfluorohexanoic acid (PFHxA)	**3.9**	***+**	1.8	0.45	ng/L		01/11/24 05:03	01/13/24 12:56	1
Perfluoroheptanoic acid (PFHpA)	**1.8**	***+**	1.8	0.45	ng/L		01/11/24 05:03	01/13/24 12:56	1
Perfluorooctanoic acid (PFOA)	**0.57**	**J *+**	1.8	0.45	ng/L		01/11/24 05:03	01/13/24 12:56	1
Perfluorononanoic acid (PFNA)	ND	*+	1.8	0.45	ng/L		01/11/24 05:03	01/13/24 12:56	1
Perfluorodecanoic acid (PFDA)	ND	*+	1.8	0.45	ng/L		01/11/24 05:03	01/13/24 12:56	1
Perfluoroundecanoic acid (PFUnA)	ND	*+	1.8	0.45	ng/L		01/11/24 05:03	01/13/24 12:56	1
Perfluorododecanoic acid (PFDoA)	ND	*+	1.8	0.45	ng/L		01/11/24 05:03	01/13/24 12:56	1
Perfluorotridecanoic acid (PFTrDA)	ND	*+	1.8	0.45	ng/L		01/11/24 05:03	01/13/24 12:56	1
Perfluorotetradecanoic acid (PFTeDA)	ND	*+	1.8	0.45	ng/L		01/11/24 05:03	01/13/24 12:56	1
Perfluorobutanesulfonic acid (PFBS)	ND	*+	1.8	0.45	ng/L		01/11/24 05:03	01/13/24 12:56	1
Perfluoropentanesulfonic acid (PFPeS)	ND	*+	1.8	0.45	ng/L		01/11/24 05:03	01/13/24 12:56	1
Perfluorohexanesulfonic acid (PFHxS)	ND	*+	1.8	0.45	ng/L		01/11/24 05:03	01/13/24 12:56	1
Perfluoroheptanesulfonic acid (PFHpS)	ND	*+	1.8	0.45	ng/L		01/11/24 05:03	01/13/24 12:56	1
Perfluorooctanesulfonic acid (PFOS)	**0.58**	**J *+ *1**	1.8	0.45	ng/L		01/11/24 05:03	01/13/24 12:56	1
Perfluorononanesulfonic acid (PFNS)	ND	*+	1.8	0.45	ng/L		01/11/24 05:03	01/13/24 12:56	1
Perfluorodecanesulfonic acid (PFDS)	ND	*+	1.8	0.45	ng/L		01/11/24 05:03	01/13/24 12:56	1
Perfluorododecanesulfonic acid (PFDoS)	ND	*+	1.8	0.45	ng/L		01/11/24 05:03	01/13/24 12:56	1
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	ND	*+	7.2	1.8	ng/L		01/11/24 05:03	01/13/24 12:56	1
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	ND	*+	7.2	1.8	ng/L		01/11/24 05:03	01/13/24 12:56	1
N-methylperfluorooctane sulfonamide (NMeFOSA)	ND	*+	1.8	0.45	ng/L		01/11/24 05:03	01/13/24 12:56	1
N-ethylperfluorooctane sulfonamide (NEtFOSA)	ND	*+	1.8	0.45	ng/L		01/11/24 05:03	01/13/24 12:56	1

Client: GeoEngineers Inc
Project/Site: Marshall Landfill

Job ID: 590-22504-1

Client Sample ID: MW-7B-121423
Date Collected: 12/14/23 13:00
Date Received: 12/15/23 08:45

Lab Sample ID: 590-22504-1
Matrix: Water

Method: EPA Draft-4 1633 - Per- and Polyfluoroalkyl Substances by LC/MS/MS (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND	*+	1.8	0.45	ng/L		01/11/24 05:03	01/13/24 12:56	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND	*+	1.8	0.45	ng/L		01/11/24 05:03	01/13/24 12:56	1
N-methylperfluorooctane sulfonamidoethanol (NMeFOSE)	ND	*+	18	4.5	ng/L		01/11/24 05:03	01/13/24 12:56	1
N-ethylperfluorooctane sulfonamidoethanol (NEtFOSE)	ND	*+	18	4.5	ng/L		01/11/24 05:03	01/13/24 12:56	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND	*+	7.2	1.8	ng/L		01/11/24 05:03	01/13/24 12:56	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	*+ *1	7.2	1.8	ng/L		01/11/24 05:03	01/13/24 12:56	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	ND	*+	3.6	0.90	ng/L		01/11/24 05:03	01/13/24 12:56	1
Perfluoro-4-methoxybutanoic acid (PFMBA)	ND	*+	3.6	0.90	ng/L		01/11/24 05:03	01/13/24 12:56	1
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	*+	3.6	0.90	ng/L		01/11/24 05:03	01/13/24 12:56	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	ND	*+	7.2	1.8	ng/L		01/11/24 05:03	01/13/24 12:56	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	ND		7.2	1.8	ng/L		01/11/24 05:03	01/13/24 12:56	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	ND	*+	3.6	0.90	ng/L		01/11/24 05:03	01/13/24 12:56	1
3-Perfluoropropylpropanoic acid (3:3 FTCA)	ND	*+	9.0	2.2	ng/L		01/11/24 05:03	01/13/24 12:56	1
3-Perfluoropentylpropanoic acid (5:3 FTCA)	ND	*+	45	11	ng/L		01/11/24 05:03	01/13/24 12:56	1
3-Perfluoroheptylpropanoic acid (7:3 FTCA)	ND	*+	45	11	ng/L		01/11/24 05:03	01/13/24 12:56	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*63.6*		*5 - 130*	*01/11/24 05:03*	*01/13/24 12:56*	*1*
13C5 PFPeA	*70.3*		*40 - 130*	*01/11/24 05:03*	*01/13/24 12:56*	*1*
13C5 PFHxA	*66.1*		*40 - 130*	*01/11/24 05:03*	*01/13/24 12:56*	*1*
13C4 PFHpA	*71.0*		*40 - 130*	*01/11/24 05:03*	*01/13/24 12:56*	*1*
13C8 PFOA	*69.1*		*40 - 130*	*01/11/24 05:03*	*01/13/24 12:56*	*1*
13C9 PFNA	*74.5*		*40 - 130*	*01/11/24 05:03*	*01/13/24 12:56*	*1*
13C6 PFDA	*62.2*		*40 - 130*	*01/11/24 05:03*	*01/13/24 12:56*	*1*
13C7 PFUnA	*59.9*		*30 - 130*	*01/11/24 05:03*	*01/13/24 12:56*	*1*
13C2 PFDoA	*55.4*		*10 - 130*	*01/11/24 05:03*	*01/13/24 12:56*	*1*
13C2 PFTeDA	*34.3*		*10 - 130*	*01/11/24 05:03*	*01/13/24 12:56*	*1*
13C3 PFBS	*58.0*		*40 - 135*	*01/11/24 05:03*	*01/13/24 12:56*	*1*
13C3 PFHxS	*65.5*		*40 - 130*	*01/11/24 05:03*	*01/13/24 12:56*	*1*
13C8 PFOS	*69.9*		*40 - 130*	*01/11/24 05:03*	*01/13/24 12:56*	*1*
13C8 PFOSA	*57.6*		*40 - 130*	*01/11/24 05:03*	*01/13/24 12:56*	*1*
d3-NMeFOSAA	*80.5*		*40 - 170*	*01/11/24 05:03*	*01/13/24 12:56*	*1*
d5-NEtFOSAA	*81.4*		*25 - 135*	*01/11/24 05:03*	*01/13/24 12:56*	*1*
13C2 4:2 FTS	*114*		*40 - 200*	*01/11/24 05:03*	*01/13/24 12:56*	*1*
13C2 6:2 FTS	*116*		*40 - 200*	*01/11/24 05:03*	*01/13/24 12:56*	*1*
13C3 HFPO-DA	*69.2*		*40 - 130*	*01/11/24 05:03*	*01/13/24 12:56*	*1*
d7-N-MeFOSE-M	*55.2*		*10 - 130*	*01/11/24 05:03*	*01/13/24 12:56*	*1*
d9-N-EtFOSE-M	*49.7*		*10 - 130*	*01/11/24 05:03*	*01/13/24 12:56*	*1*
d5-NEtPFOSA	*43.9*		*10 - 130*	*01/11/24 05:03*	*01/13/24 12:56*	*1*

Client Sample ID: MW-7B-121423

Date Collected: 12/14/23 13:00
Date Received: 12/15/23 08:45

Lab Sample ID: 590-22504-1

Matrix: Water

Method: EPA Draft-4 1633 - Per- and Polyfluoroalkyl Substances by LC/MS/MS (Continued)

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
d3-NMePFOSA	*53.0*		*10 - 130*	*01/11/24 05:03*	*01/13/24 12:56*	*1*

Method: EPA Draft-4 1633 - Per- and Polyfluoroalkyl Substances by LC/MS/MS - RA

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	ND	*+	7.2	1.8	ng/L		01/11/24 05:03	01/19/24 21:06	1
Perfluorooctanesulfonamide (PFOSA)	ND	*+	1.8	0.45	ng/L		01/11/24 05:03	01/19/24 21:06	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C8 PFOSA	*66.9*		*40 - 130*	*01/11/24 05:03*	*01/19/24 21:06*	*1*
13C2 8:2 FTS	*111*		*40 - 300*	*01/11/24 05:03*	*01/19/24 21:06*	*1*

Method: EPA Draft-4 1633 - Per- and Polyfluoroalkyl Substances by LC/MS/MS - RE

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**11**	**H**	6.8	1.7	ng/L		01/19/24 11:50	01/23/24 06:20	1
Perfluoropentanoic acid (PFPeA)	**8.5**	**H**	3.4	0.85	ng/L		01/19/24 11:50	01/23/24 06:20	1
Perfluorohexanoic acid (PFHxA)	**3.3**	**H**	1.7	0.43	ng/L		01/19/24 11:50	01/23/24 06:20	1
Perfluoroheptanoic acid (PFHpA)	**2.1**	**H**	1.7	0.43	ng/L		01/19/24 11:50	01/23/24 06:20	1
Perfluorooctanoic acid (PFOA)	**0.62**	**J H**	1.7	0.43	ng/L		01/19/24 11:50	01/23/24 06:20	1
Perfluorononanoic acid (PFNA)	ND	H	1.7	0.43	ng/L		01/19/24 11:50	01/23/24 06:20	1
Perfluorodecanoic acid (PFDA)	ND	H	1.7	0.43	ng/L		01/19/24 11:50	01/23/24 06:20	1
Perfluoroundecanoic acid (PFUnA)	ND	H	1.7	0.43	ng/L		01/19/24 11:50	01/23/24 06:20	1
Perfluorododecanoic acid (PFDoA)	ND	H	1.7	0.43	ng/L		01/19/24 11:50	01/23/24 06:20	1
Perfluorotridecanoic acid (PFTrDA)	ND	H	1.7	0.43	ng/L		01/19/24 11:50	01/23/24 06:20	1
Perfluorotetradecanoic acid (PFTeDA)	ND	H	1.7	0.43	ng/L		01/19/24 11:50	01/23/24 06:20	1
Perfluorobutanesulfonic acid (PFBS)	ND	H	1.7	0.43	ng/L		01/19/24 11:50	01/23/24 06:20	1
Perfluoropentanesulfonic acid (PFPeS)	ND	H	1.7	0.43	ng/L		01/19/24 11:50	01/23/24 06:20	1
Perfluorohexanesulfonic acid (PFHxS)	ND	H	1.7	0.43	ng/L		01/19/24 11:50	01/23/24 06:20	1
Perfluoroheptanesulfonic acid (PFHpS)	ND	H	1.7	0.43	ng/L		01/19/24 11:50	01/23/24 06:20	1
Perfluorooctanesulfonic acid (PFOS)	**0.62**	**J H**	1.7	0.43	ng/L		01/19/24 11:50	01/23/24 06:20	1
Perfluorononanesulfonic acid (PFNS)	ND	H	1.7	0.43	ng/L		01/19/24 11:50	01/23/24 06:20	1
Perfluorodecanesulfonic acid (PFDS)	ND	H	1.7	0.43	ng/L		01/19/24 11:50	01/23/24 06:20	1
Perfluorododecanesulfonic acid (PFDoS)	ND	H	1.7	0.43	ng/L		01/19/24 11:50	01/23/24 06:20	1
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	ND	H	6.8	1.7	ng/L		01/19/24 11:50	01/23/24 06:20	1
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	ND	H	6.8	1.7	ng/L		01/19/24 11:50	01/23/24 06:20	1
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	ND	H	6.8	1.7	ng/L		01/19/24 11:50	01/23/24 06:20	1
Perfluorooctanesulfonamide (PFOSA)	ND	H	1.7	0.43	ng/L		01/19/24 11:50	01/23/24 06:20	1
N-methylperfluorooctane sulfonamide (NMeFOSA)	ND	H	1.7	0.43	ng/L		01/19/24 11:50	01/23/24 06:20	1
N-ethylperfluorooctane sulfonamide (NEtFOSA)	ND	H	1.7	0.43	ng/L		01/19/24 11:50	01/23/24 06:20	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND	H	1.7	0.43	ng/L		01/19/24 11:50	01/23/24 06:20	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND	H	1.7	0.43	ng/L		01/19/24 11:50	01/23/24 06:20	1
N-methylperfluorooctane sulfonamidoethanol (NMeFOSE)	ND	H	17	4.3	ng/L		01/19/24 11:50	01/23/24 06:20	1

Client: GeoEngineers Inc
Project/Site: Marshall Landfill

Job ID: 590-22504-1

Client Sample ID: MW-7B-121423
Date Collected: 12/14/23 13:00
Date Received: 12/15/23 08:45

Lab Sample ID: 590-22504-1
Matrix: Water

Method: EPA Draft-4 1633 - Per- and Polyfluoroalkyl Substances by LC/MS/MS - RE (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
N-ethylperfluorooctane sulfonamidoethanol (NEtFOSE)	ND	H	17	4.3	ng/L		01/19/24 11:50	01/23/24 06:20	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND	H	6.8	1.7	ng/L		01/19/24 11:50	01/23/24 06:20	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	H	6.8	1.7	ng/L		01/19/24 11:50	01/23/24 06:20	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	ND	H	3.4	0.85	ng/L		01/19/24 11:50	01/23/24 06:20	1
Perfluoro-4-methoxybutanoic acid (PFMBA)	ND	H	3.4	0.85	ng/L		01/19/24 11:50	01/23/24 06:20	1
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	H	3.4	0.85	ng/L		01/19/24 11:50	01/23/24 06:20	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	ND	H	6.8	1.7	ng/L		01/19/24 11:50	01/23/24 06:20	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	ND	H	6.8	1.7	ng/L		01/19/24 11:50	01/23/24 06:20	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	ND	H	3.4	0.85	ng/L		01/19/24 11:50	01/23/24 06:20	1
3-Perfluoropropylpropanoic acid (3:3 FTCA)	ND	H	8.5	2.1	ng/L		01/19/24 11:50	01/23/24 06:20	1
3-Perfluoropentylpropanoic acid (5:3 FTCA)	ND	H	43	11	ng/L		01/19/24 11:50	01/23/24 06:20	1
3-Perfluoroheptylpropanoic acid (7:3 FTCA)	ND	H	43	11	ng/L		01/19/24 11:50	01/23/24 06:20	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*81.6*		*5 - 130*	*01/19/24 11:50*	*01/23/24 06:20*	*1*
13C5 PFPeA	*89.1*		*40 - 130*	*01/19/24 11:50*	*01/23/24 06:20*	*1*
13C5 PFHxA	*82.4*		*40 - 130*	*01/19/24 11:50*	*01/23/24 06:20*	*1*
13C4 PFHpA	*78.7*		*40 - 130*	*01/19/24 11:50*	*01/23/24 06:20*	*1*
13C8 PFOA	*86.0*		*40 - 130*	*01/19/24 11:50*	*01/23/24 06:20*	*1*
13C9 PFNA	*77.4*		*40 - 130*	*01/19/24 11:50*	*01/23/24 06:20*	*1*
13C6 PFDA	*79.6*		*40 - 130*	*01/19/24 11:50*	*01/23/24 06:20*	*1*
13C7 PFUnA	*67.6*		*30 - 130*	*01/19/24 11:50*	*01/23/24 06:20*	*1*
13C2 PFDoA	*52.0*		*10 - 130*	*01/19/24 11:50*	*01/23/24 06:20*	*1*
13C2 PFTeDA	*42.7*		*10 - 130*	*01/19/24 11:50*	*01/23/24 06:20*	*1*
13C3 PFBS	*78.3*		*40 - 135*	*01/19/24 11:50*	*01/23/24 06:20*	*1*
13C3 PFHxS	*77.0*		*40 - 130*	*01/19/24 11:50*	*01/23/24 06:20*	*1*
13C8 PFOS	*80.1*		*40 - 130*	*01/19/24 11:50*	*01/23/24 06:20*	*1*
13C8 PFOSA	*76.4*		*40 - 130*	*01/19/24 11:50*	*01/23/24 06:20*	*1*
d3-NMeFOSAA	*92.3*		*40 - 170*	*01/19/24 11:50*	*01/23/24 06:20*	*1*
d5-NEtFOSAA	*94.9*		*25 - 135*	*01/19/24 11:50*	*01/23/24 06:20*	*1*
13C2 4:2 FTS	*149*		*40 - 200*	*01/19/24 11:50*	*01/23/24 06:20*	*1*
13C2 6:2 FTS	*137*		*40 - 200*	*01/19/24 11:50*	*01/23/24 06:20*	*1*
13C2 8:2 FTS	*121*		*40 - 300*	*01/19/24 11:50*	*01/23/24 06:20*	*1*
13C3 HFPO-DA	*82.9*		*40 - 130*	*01/19/24 11:50*	*01/23/24 06:20*	*1*
d7-N-MeFOSE-M	*53.1*		*10 - 130*	*01/19/24 11:50*	*01/23/24 06:20*	*1*
d9-N-EtFOSE-M	*40.9*		*10 - 130*	*01/19/24 11:50*	*01/23/24 06:20*	*1*
d5-NEtPFOSA	*51.1*		*10 - 130*	*01/19/24 11:50*	*01/23/24 06:20*	*1*
d3-NMePFOSA	*58.0*		*10 - 130*	*01/19/24 11:50*	*01/23/24 06:20*	*1*

Client Sample Results

Client: GeoEngineers Inc
Project/Site: Marshall Landfill

Job ID: 590-22504-1

Client Sample ID: MW-7B-121423

Date Collected: 12/14/23 13:00
Date Received: 12/15/23 08:45

Lab Sample ID: 590-22504-1

Matrix: Water

Method: SW846 6010D - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Magnesium	**10**		1.0	0.13	mg/L		12/18/23 10:30	12/18/23 15:23	1
Potassium	**1.7**		0.50	0.29	mg/L		12/18/23 10:30	12/18/23 15:23	1
Sodium	**5.3**	**^1+**	0.50	0.20	mg/L		12/18/23 10:30	12/18/23 15:23	1

Method: SW846 6010D - Metals (ICP) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	**34**		2.0	0.20	mg/L		12/18/23 17:27	12/19/23 13:27	1
Magnesium	**10**		1.0	0.13	mg/L		12/18/23 17:27	12/19/23 13:27	1

Method: SW846 6020B - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		0.0050	0.0010	mg/L		12/18/23 15:58	12/20/23 17:57	5
Cadmium	ND		0.0020	0.00019	mg/L		12/18/23 15:58	12/20/23 17:57	5
Iron	**0.21**	**J**	0.50	0.067	mg/L		12/18/23 15:58	12/20/23 17:57	5
Lead	**0.0015**	**J**	0.0020	0.00020	mg/L		12/18/23 15:58	12/20/23 17:57	5
Manganese	**0.0068**	**J**	0.010	0.0023	mg/L		12/18/23 15:58	12/20/23 17:57	5
Zinc	**0.018**	**J**	0.035	0.0046	mg/L		12/18/23 15:58	12/20/23 17:57	5

Method: SW846 6020B - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		0.0050	0.0010	mg/L		12/20/23 15:52	12/22/23 11:51	5
Cadmium	ND		0.0020	0.00019	mg/L		12/20/23 15:52	12/22/23 11:51	5
Iron	ND		0.50	0.067	mg/L		12/20/23 15:52	12/22/23 11:51	5
Lead	ND		0.0020	0.00020	mg/L		12/20/23 15:52	12/22/23 11:51	5
Manganese	ND		0.010	0.0023	mg/L		12/20/23 15:52	12/22/23 11:51	5
Zinc	**0.014**	**J**	0.035	0.0046	mg/L		12/20/23 15:52	12/22/23 11:51	5

Method: SW846 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.090	ug/L		12/18/23 10:28	12/18/23 15:24	1

Method: SW846 7470A - Mercury (CVAA) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.090	ug/L		12/27/23 10:16	12/28/23 13:20	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ammonia as N (EPA 350.1)	**0.032**	**J**	0.10	0.029	mg/L			01/09/24 11:35	1
Alkalinity (SM 2320B)	**150**	**B**	20	5.0	mg/L			12/27/23 10:12	1
Bicarbonate Alkalinity as CaCO3 (SM 2320B)	**150**	**B**	20	5.0	mg/L			12/27/23 10:12	1
Total Dissolved Solids (SM 2540C)	**240**		25	13	mg/L			12/18/23 16:57	1
Cyanide, Weak Acid Dissociable (SM 4500 CN I)	ND		0.010	0.0050	mg/L			12/22/23 12:53	1
Total Organic Carbon - Duplicates (SM 5310B)	**4.3**		1.0	0.35	mg/L			12/28/23 09:03	1

Client: GeoEngineers Inc
Project/Site: Marshall Landfill

Job ID: 590-22504-1

Client Sample ID: MW-11A-121423
Date Collected: 12/14/23 11:05
Date Received: 12/15/23 08:45

Lab Sample ID: 590-22504-2
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	ND		1.0	0.48	ug/L			12/15/23 16:34	1
1,1,1-Trichloroethane	ND		1.0	0.17	ug/L			12/15/23 16:34	1
1,1,2,2-Tetrachloroethane	ND		2.0	0.32	ug/L			12/15/23 16:34	1
1,1,2-Trichloroethane	ND		2.0	0.43	ug/L			12/15/23 16:34	1
1,1-Dichloroethane	ND		1.0	0.29	ug/L			12/15/23 16:34	1
1,1-Dichloroethene	ND		1.0	0.20	ug/L			12/15/23 16:34	1
1,1-Dichloropropene	ND		1.0	0.50	ug/L			12/15/23 16:34	1
1,2,3-Trichlorobenzene	ND		1.0	0.33	ug/L			12/15/23 16:34	1
1,2,3-Trichloropropane	ND		2.0	0.50	ug/L			12/15/23 16:34	1
1,2,4-Trichlorobenzene	ND		1.0	0.50	ug/L			12/15/23 16:34	1
1,2,4-Trimethylbenzene	ND		1.0	0.31	ug/L			12/15/23 16:34	1
1,2-Dibromo-3-Chloropropane	ND		10	1.5	ug/L			12/15/23 16:34	1
1,2-Dibromoethane (EDB)	ND		1.0	0.20	ug/L			12/15/23 16:34	1
1,2-Dichlorobenzene	ND		1.0	0.23	ug/L			12/15/23 16:34	1
1,2-Dichloroethane	ND		1.0	0.31	ug/L			12/15/23 16:34	1
1,2-Dichloropropane	ND		1.0	0.23	ug/L			12/15/23 16:34	1
1,3,5-Trimethylbenzene	ND		1.0	0.32	ug/L			12/15/23 16:34	1
1,3-Dichlorobenzene	ND		1.0	0.14	ug/L			12/15/23 16:34	1
1,3-Dichloropropane	ND		2.0	0.21	ug/L			12/15/23 16:34	1
1,4-Dichlorobenzene	ND		1.0	0.28	ug/L			12/15/23 16:34	1
2,2-Dichloropropane	ND		2.0	0.66	ug/L			12/15/23 16:34	1
2-Chlorotoluene	ND		1.0	0.36	ug/L			12/15/23 16:34	1
4-Chlorotoluene	ND		1.0	0.26	ug/L			12/15/23 16:34	1
Benzene	ND		0.40	0.093	ug/L			12/15/23 16:34	1
Bromobenzene	ND		1.0	0.28	ug/L			12/15/23 16:34	1
Bromochloromethane	ND		2.0	0.44	ug/L			12/15/23 16:34	1
Bromodichloromethane	ND		1.0	0.29	ug/L			12/15/23 16:34	1
Bromoform	ND		5.0	0.66	ug/L			12/15/23 16:34	1
Bromomethane	ND		5.0	0.76	ug/L			12/15/23 16:34	1
Carbon tetrachloride	ND		1.0	0.40	ug/L			12/15/23 16:34	1
Chlorobenzene	ND		1.0	0.32	ug/L			12/15/23 16:34	1
Chloroethane	ND		2.0	0.40	ug/L			12/15/23 16:34	1
Chloroform	ND		1.0	0.24	ug/L			12/15/23 16:34	1
Chloromethane	ND	*+ *1	3.0	0.50	ug/L			12/15/23 16:34	1
cis-1,2-Dichloroethene	ND		1.0	0.23	ug/L			12/15/23 16:34	1
cis-1,3-Dichloropropene	ND		1.0	0.25	ug/L			12/15/23 16:34	1
Dibromochloromethane	ND		2.0	0.33	ug/L			12/15/23 16:34	1
Dibromomethane	ND		2.0	0.50	ug/L			12/15/23 16:34	1
Dichlorodifluoromethane	ND		2.0	0.64	ug/L			12/15/23 16:34	1
Ethylbenzene	ND		1.0	0.20	ug/L			12/15/23 16:34	1
Hexachlorobutadiene	ND		2.0	0.21	ug/L			12/15/23 16:34	1
Isopropylbenzene	ND		1.0	0.24	ug/L			12/15/23 16:34	1
m,p-Xylene	ND		2.0	0.28	ug/L			12/15/23 16:34	1
Methyl tert-butyl ether	ND		1.0	0.16	ug/L			12/15/23 16:34	1
Methylene Chloride	ND		5.0	2.2	ug/L			12/15/23 16:34	1
Naphthalene	ND		2.0	0.63	ug/L			12/15/23 16:34	1
n-Butylbenzene	ND		1.0	0.20	ug/L			12/15/23 16:34	1
N-Propylbenzene	ND		1.0	0.25	ug/L			12/15/23 16:34	1
o-Xylene	ND		1.0	0.16	ug/L			12/15/23 16:34	1

Client Sample ID: MW-11A-121423
Date Collected: 12/14/23 11:05
Date Received: 12/15/23 08:45

Lab Sample ID: 590-22504-2
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
p-Isopropyltoluene	ND		1.0	0.27	ug/L			12/15/23 16:34	1
sec-Butylbenzene	ND		1.0	0.22	ug/L			12/15/23 16:34	1
Styrene	ND		1.0	0.24	ug/L			12/15/23 16:34	1
tert-Butylbenzene	ND		1.0	0.12	ug/L			12/15/23 16:34	1
Tetrachloroethene	ND		1.0	0.22	ug/L			12/15/23 16:34	1
Toluene	ND		1.0	0.31	ug/L			12/15/23 16:34	1
trans-1,2-Dichloroethene	ND		1.0	0.20	ug/L			12/15/23 16:34	1
trans-1,3-Dichloropropene	ND		1.0	0.45	ug/L			12/15/23 16:34	1
Trichloroethene	ND		1.0	0.20	ug/L			12/15/23 16:34	1
Trichlorofluoromethane	ND		1.0	0.20	ug/L			12/15/23 16:34	1
Vinyl chloride	ND		0.40	0.13	ug/L			12/15/23 16:34	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*80 - 120*		*12/15/23 16:34*	*1*
4-Bromofluorobenzene (Surr)	*96*		*76 - 120*		*12/15/23 16:34*	*1*
Dibromofluoromethane (Surr)	*108*		*80 - 123*		*12/15/23 16:34*	*1*
Toluene-d8 (Surr)	*100*		*80 - 120*		*12/15/23 16:34*	*1*

Method: SW846 8270E - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,4-Trichlorobenzene	ND		0.39	0.087	ug/L		12/19/23 08:40	12/19/23 22:56	1
1,2-Dichlorobenzene	ND		0.39	0.048	ug/L		12/19/23 08:40	12/19/23 22:56	1
1,3-Dichlorobenzene	ND		0.39	0.039	ug/L		12/19/23 08:40	12/19/23 22:56	1
1,4-Dichlorobenzene	ND		0.39	0.039	ug/L		12/19/23 08:40	12/19/23 22:56	1
1-Methylnaphthalene	ND		0.96	0.048	ug/L		12/19/23 08:40	12/19/23 22:56	1
2,4,5-Trichlorophenol	ND		0.39	0.096	ug/L		12/19/23 08:40	12/19/23 22:56	1
2,4,6-Trichlorophenol	ND		0.58	0.096	ug/L		12/19/23 08:40	12/19/23 22:56	1
2,4-Dichlorophenol	ND		0.96	0.19	ug/L		12/19/23 08:40	12/19/23 22:56	1
2,4-Dimethylphenol	ND		3.9	0.15	ug/L		12/19/23 08:40	12/19/23 22:56	1
2,4-Dinitrophenol	ND		4.8	0.43	ug/L		12/19/23 08:40	12/19/23 22:56	1
2,4-Dinitrotoluene	ND		0.96	0.096	ug/L		12/19/23 08:40	12/19/23 22:56	1
2,6-Dinitrotoluene	ND		0.39	0.096	ug/L		12/19/23 08:40	12/19/23 22:56	1
2-Chloronaphthalene	ND		0.96	0.067	ug/L		12/19/23 08:40	12/19/23 22:56	1
2-Chlorophenol	ND		0.96	0.048	ug/L		12/19/23 08:40	12/19/23 22:56	1
2-Methylnaphthalene	ND		0.39	0.058	ug/L		12/19/23 08:40	12/19/23 22:56	1
2-Methylphenol	ND		0.58	0.048	ug/L		12/19/23 08:40	12/19/23 22:56	1
2-Nitroaniline	ND		0.96	0.096	ug/L		12/19/23 08:40	12/19/23 22:56	1
2-Nitrophenol	ND		0.96	0.067	ug/L		12/19/23 08:40	12/19/23 22:56	1
3 & 4 Methylphenol	ND		0.58	0.096	ug/L		12/19/23 08:40	12/19/23 22:56	1
3,3'-Dichlorobenzidine	ND		0.96	0.12	ug/L		12/19/23 08:40	12/19/23 22:56	1
3-Nitroaniline	ND		2.9	0.15	ug/L		12/19/23 08:40	12/19/23 22:56	1
4,6-Dinitro-2-methylphenol	ND		1.9	0.53	ug/L		12/19/23 08:40	12/19/23 22:56	1
4-Bromophenyl phenyl ether	ND		0.58	0.058	ug/L		12/19/23 08:40	12/19/23 22:56	1
4-Chloro-3-methylphenol	ND		0.58	0.13	ug/L		12/19/23 08:40	12/19/23 22:56	1
4-Chloroaniline	ND		1.9	0.14	ug/L		12/19/23 08:40	12/19/23 22:56	1
4-Chlorophenyl phenyl ether	ND		0.58	0.048	ug/L		12/19/23 08:40	12/19/23 22:56	1
4-Nitroaniline	ND		1.9	0.20	ug/L		12/19/23 08:40	12/19/23 22:56	1
4-Nitrophenol	ND		9.6	1.6	ug/L		12/19/23 08:40	12/19/23 22:56	1
Acenaphthene	ND		0.39	0.048	ug/L		12/19/23 08:40	12/19/23 22:56	1
Acenaphthylene	ND		0.96	0.058	ug/L		12/19/23 08:40	12/19/23 22:56	1

Client: GeoEngineers Inc
Project/Site: Marshall Landfill

Job ID: 590-22504-1

Client Sample ID: MW-11A-121423

Date Collected: 12/14/23 11:05
Date Received: 12/15/23 08:45

Lab Sample ID: 590-22504-2

Matrix: Water

Method: SW846 8270E - Semivolatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Anthracene	ND		0.96	0.048	ug/L		12/19/23 08:40	12/19/23 22:56	1
Benzo[a]anthracene	ND		0.24	0.048	ug/L		12/19/23 08:40	12/19/23 22:56	1
Benzo[a]pyrene	ND		0.24	0.039	ug/L		12/19/23 08:40	12/19/23 22:56	1
Benzo[b]fluoranthene	ND		0.24	0.039	ug/L		12/19/23 08:40	12/19/23 22:56	1
Benzo[g,h,i]perylene	ND		0.24	0.039	ug/L		12/19/23 08:40	12/19/23 22:56	1
Benzo[k]fluoranthene	ND		0.24	0.048	ug/L		12/19/23 08:40	12/19/23 22:56	1
Benzoic acid	**3.0**	**J**	9.6	1.3	ug/L		12/19/23 08:40	12/19/23 22:56	1
Benzyl alcohol	ND		4.8	0.17	ug/L		12/19/23 08:40	12/19/23 22:56	1
Bis(2-chloroethoxy)methane	ND		0.58	0.048	ug/L		12/19/23 08:40	12/19/23 22:56	1
Bis(2-chloroethyl)ether	ND		0.096	0.029	ug/L		12/19/23 08:40	12/19/23 22:56	1
Bis(2-ethylhexyl) phthalate	ND		2.9	0.71	ug/L		12/19/23 08:40	12/19/23 22:56	1
bis(chloroisopropyl) ether	ND		0.24	0.058	ug/L		12/19/23 08:40	12/19/23 22:56	1
Butyl benzyl phthalate	ND		3.9	0.26	ug/L		12/19/23 08:40	12/19/23 22:56	1
Carbazole	ND		0.58	0.096	ug/L		12/19/23 08:40	12/19/23 22:56	1
Chrysene	ND		0.24	0.087	ug/L		12/19/23 08:40	12/19/23 22:56	1
Dibenz(a,h)anthracene	ND		0.24	0.067	ug/L		12/19/23 08:40	12/19/23 22:56	1
Dibenzofuran	ND		0.39	0.096	ug/L		12/19/23 08:40	12/19/23 22:56	1
Diethyl phthalate	ND		0.96	0.14	ug/L		12/19/23 08:40	12/19/23 22:56	1
Dimethyl phthalate	ND		0.58	0.058	ug/L		12/19/23 08:40	12/19/23 22:56	1
Di-n-butyl phthalate	ND		9.6	2.9	ug/L		12/19/23 08:40	12/19/23 22:56	1
Di-n-octyl phthalate	ND		0.96	0.13	ug/L		12/19/23 08:40	12/19/23 22:56	1
Fluoranthene	ND		0.24	0.058	ug/L		12/19/23 08:40	12/19/23 22:56	1
Fluorene	ND		0.24	0.048	ug/L		12/19/23 08:40	12/19/23 22:56	1
Hexachlorobenzene	ND		0.58	0.077	ug/L		12/19/23 08:40	12/19/23 22:56	1
Hexachlorobutadiene	ND		0.96	0.077	ug/L		12/19/23 08:40	12/19/23 22:56	1
Hexachlorocyclopentadiene	ND		0.96	0.13	ug/L		12/19/23 08:40	12/19/23 22:56	1
Hexachloroethane	ND		0.96	0.048	ug/L		12/19/23 08:40	12/19/23 22:56	1
Indeno[1,2,3-cd]pyrene	ND		0.39	0.13	ug/L		12/19/23 08:40	12/19/23 22:56	1
Isophorone	ND		0.39	0.096	ug/L		12/19/23 08:40	12/19/23 22:56	1
Naphthalene	ND		0.39	0.15	ug/L		12/19/23 08:40	12/19/23 22:56	1
Nitrobenzene	ND		0.96	0.039	ug/L		12/19/23 08:40	12/19/23 22:56	1
N-Nitrosodi-n-propylamine	ND		0.39	0.058	ug/L		12/19/23 08:40	12/19/23 22:56	1
N-Nitrosodiphenylamine	ND		0.96	0.067	ug/L		12/19/23 08:40	12/19/23 22:56	1
Pentachlorophenol	ND		4.8	0.49	ug/L		12/19/23 08:40	12/19/23 22:56	1
Phenanthrene	ND		0.96	0.12	ug/L		12/19/23 08:40	12/19/23 22:56	1
Phenol	ND		0.96	0.15	ug/L		12/19/23 08:40	12/19/23 22:56	1
Pyrene	ND		0.96	0.039	ug/L		12/19/23 08:40	12/19/23 22:56	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol (Surr)	*76*		*50 - 130*	*12/19/23 08:40*	*12/19/23 22:56*	*1*
2-Fluorobiphenyl	*50*		*35 - 120*	*12/19/23 08:40*	*12/19/23 22:56*	*1*
2-Fluorophenol (Surr)	*42*		*21 - 120*	*12/19/23 08:40*	*12/19/23 22:56*	*1*
Nitrobenzene-d5 (Surr)	*61*		*39 - 120*	*12/19/23 08:40*	*12/19/23 22:56*	*1*
Phenol-d5 (Surr)	*25*		*10 - 120*	*12/19/23 08:40*	*12/19/23 22:56*	*1*
Terphenyl-d14 (Surr)	*73*		*63 - 137*	*12/19/23 08:40*	*12/19/23 22:56*	*1*

Method: SW846 8151A - Herbicides (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4,5-T	ND	*1	0.48	0.20	ug/L		12/18/23 21:35	12/20/23 23:32	1
2,4,5-TP (Silvex)	ND		0.48	0.13	ug/L		12/18/23 21:35	12/20/23 23:32	1

Client Sample ID: MW-11A-121423

Date Collected: 12/14/23 11:05
Date Received: 12/15/23 08:45

Lab Sample ID: 590-22504-2

Matrix: Water

Method: SW846 8151A - Herbicides (GC) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4-D	ND	*1	4.8	1.9	ug/L		12/18/23 21:35	12/20/23 23:32	1
2,4-DB	ND		4.8	3.3	ug/L		12/18/23 21:35	12/20/23 23:32	1
Dalapon	ND	*1	12	4.5	ug/L		12/18/23 21:35	12/20/23 23:32	1
Dicamba	ND	*1	0.48	0.27	ug/L		12/18/23 21:35	12/20/23 23:32	1
Dichlorprop	ND	*1	4.8	1.9	ug/L		12/18/23 21:35	12/20/23 23:32	1
Dinoseb	ND	*1	2.4	2.1	ug/L		12/18/23 21:35	12/20/23 23:32	1
MCPA	ND	*1	480	330	ug/L		12/18/23 21:35	12/20/23 23:32	1
MCPP	ND		480	290	ug/L		12/18/23 21:35	12/20/23 23:32	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4-Dichlorophenylacetic acid	*73*		*20 - 161*	*12/18/23 21:35*	*12/20/23 23:32*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**9.8**		0.80	0.42	mg/L			12/15/23 14:55	1
Nitrate as N	**3.4**		0.20	0.057	mg/L			12/15/23 14:55	1
Nitrite as N	ND		0.20	0.069	mg/L			12/15/23 14:55	1
Sulfate	**10**		0.50	0.13	mg/L			12/15/23 14:55	1

Method: EPA Draft-4 1633 - Per- and Polyfluoroalkyl Substances by LC/MS/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	ND	*+	7.2	1.8	ng/L		01/11/24 05:03	01/13/24 13:46	1
Perfluoropentanoic acid (PFPeA)	ND	*+	3.6	0.90	ng/L		01/11/24 05:03	01/13/24 13:46	1
Perfluorohexanoic acid (PFHxA)	ND	*+	1.8	0.45	ng/L		01/11/24 05:03	01/13/24 13:46	1
Perfluoroheptanoic acid (PFHpA)	ND	*+	1.8	0.45	ng/L		01/11/24 05:03	01/13/24 13:46	1
Perfluorooctanoic acid (PFOA)	ND	*+	1.8	0.45	ng/L		01/11/24 05:03	01/13/24 13:46	1
Perfluorononanoic acid (PFNA)	ND	*+	1.8	0.45	ng/L		01/11/24 05:03	01/13/24 13:46	1
Perfluorodecanoic acid (PFDA)	ND	*+	1.8	0.45	ng/L		01/11/24 05:03	01/13/24 13:46	1
Perfluoroundecanoic acid (PFUnA)	ND	*+	1.8	0.45	ng/L		01/11/24 05:03	01/13/24 13:46	1
Perfluorododecanoic acid (PFDoA)	ND	*+	1.8	0.45	ng/L		01/11/24 05:03	01/13/24 13:46	1
Perfluorotridecanoic acid (PFTrDA)	ND	*+	1.8	0.45	ng/L		01/11/24 05:03	01/13/24 13:46	1
Perfluorotetradecanoic acid (PFTeDA)	ND	*+	1.8	0.45	ng/L		01/11/24 05:03	01/13/24 13:46	1
Perfluorobutanesulfonic acid (PFBS)	**0.50**	**J *+**	1.8	0.45	ng/L		01/11/24 05:03	01/13/24 13:46	1
Perfluoropentanesulfonic acid (PFPeS)	ND	*+	1.8	0.45	ng/L		01/11/24 05:03	01/13/24 13:46	1
Perfluorohexanesulfonic acid (PFHxS)	**0.48**	**J *+**	1.8	0.45	ng/L		01/11/24 05:03	01/13/24 13:46	1
Perfluoroheptanesulfonic acid (PFHpS)	ND	*+	1.8	0.45	ng/L		01/11/24 05:03	01/13/24 13:46	1
Perfluorooctanesulfonic acid (PFOS)	ND	*+ *1	1.8	0.45	ng/L		01/11/24 05:03	01/13/24 13:46	1
Perfluorononanesulfonic acid (PFNS)	ND	*+	1.8	0.45	ng/L		01/11/24 05:03	01/13/24 13:46	1
Perfluorodecanesulfonic acid (PFDS)	ND	*+	1.8	0.45	ng/L		01/11/24 05:03	01/13/24 13:46	1
Perfluorododecanesulfonic acid (PFDoS)	ND	*+	1.8	0.45	ng/L		01/11/24 05:03	01/13/24 13:46	1
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	ND	*+	7.2	1.8	ng/L		01/11/24 05:03	01/13/24 13:46	1
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	ND	*+	7.2	1.8	ng/L		01/11/24 05:03	01/13/24 13:46	1
N-methylperfluorooctane sulfonamide (NMeFOSA)	ND	*+	1.8	0.45	ng/L		01/11/24 05:03	01/13/24 13:46	1

Client: GeoEngineers Inc
Project/Site: Marshall Landfill

Job ID: 590-22504-1

Client Sample ID: MW-11A-121423
Date Collected: 12/14/23 11:05
Date Received: 12/15/23 08:45

Lab Sample ID: 590-22504-2
Matrix: Water

Method: EPA Draft-4 1633 - Per- and Polyfluoroalkyl Substances by LC/MS/MS (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
N-ethylperfluorooctane sulfonamide (NEtFOSA)	ND	*+	1.8	0.45	ng/L		01/11/24 05:03	01/13/24 13:46	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND	*+	1.8	0.45	ng/L		01/11/24 05:03	01/13/24 13:46	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND	*+	1.8	0.45	ng/L		01/11/24 05:03	01/13/24 13:46	1
N-methylperfluorooctane sulfonamidoethanol (NMeFOSE)	ND	*+	18	4.5	ng/L		01/11/24 05:03	01/13/24 13:46	1
N-ethylperfluorooctane sulfonamidoethanol (NEtFOSE)	ND	*+	18	4.5	ng/L		01/11/24 05:03	01/13/24 13:46	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND	*+	7.2	1.8	ng/L		01/11/24 05:03	01/13/24 13:46	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	*+ *1	7.2	1.8	ng/L		01/11/24 05:03	01/13/24 13:46	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	ND	*+	3.6	0.90	ng/L		01/11/24 05:03	01/13/24 13:46	1
Perfluoro-4-methoxybutanoic acid (PFMBA)	ND	*+	3.6	0.90	ng/L		01/11/24 05:03	01/13/24 13:46	1
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	*+	3.6	0.90	ng/L		01/11/24 05:03	01/13/24 13:46	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	ND	*+	7.2	1.8	ng/L		01/11/24 05:03	01/13/24 13:46	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	ND		7.2	1.8	ng/L		01/11/24 05:03	01/13/24 13:46	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	ND	*+	3.6	0.90	ng/L		01/11/24 05:03	01/13/24 13:46	1
3-Perfluoropropylpropanoic acid (3:3 FTCA)	ND	*+	9.0	2.3	ng/L		01/11/24 05:03	01/13/24 13:46	1
3-Perfluoropentylpropanoic acid (5:3 FTCA)	ND	*+	45	11	ng/L		01/11/24 05:03	01/13/24 13:46	1
3-Perfluoroheptylpropanoic acid (7:3 FTCA)	ND	*+	45	11	ng/L		01/11/24 05:03	01/13/24 13:46	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*69.9*		*5 - 130*	*01/11/24 05:03*	*01/13/24 13:46*	*1*
13C5 PFPeA	*75.3*		*40 - 130*	*01/11/24 05:03*	*01/13/24 13:46*	*1*
13C5 PFHxA	*72.7*		*40 - 130*	*01/11/24 05:03*	*01/13/24 13:46*	*1*
13C4 PFHpA	*79.7*		*40 - 130*	*01/11/24 05:03*	*01/13/24 13:46*	*1*
13C8 PFOA	*68.3*		*40 - 130*	*01/11/24 05:03*	*01/13/24 13:46*	*1*
13C9 PFNA	*68.1*		*40 - 130*	*01/11/24 05:03*	*01/13/24 13:46*	*1*
13C6 PFDA	*66.4*		*40 - 130*	*01/11/24 05:03*	*01/13/24 13:46*	*1*
13C7 PFUnA	*67.0*		*30 - 130*	*01/11/24 05:03*	*01/13/24 13:46*	*1*
13C2 PFDoA	*56.7*		*10 - 130*	*01/11/24 05:03*	*01/13/24 13:46*	*1*
13C2 PFTeDA	*54.1*		*10 - 130*	*01/11/24 05:03*	*01/13/24 13:46*	*1*
13C3 PFBS	*63.7*		*40 - 135*	*01/11/24 05:03*	*01/13/24 13:46*	*1*
13C3 PFHxS	*70.4*		*40 - 130*	*01/11/24 05:03*	*01/13/24 13:46*	*1*
13C8 PFOS	*66.0*		*40 - 130*	*01/11/24 05:03*	*01/13/24 13:46*	*1*
d3-NMeFOSAA	*63.8*		*40 - 170*	*01/11/24 05:03*	*01/13/24 13:46*	*1*
d5-NEtFOSAA	*68.2*		*25 - 135*	*01/11/24 05:03*	*01/13/24 13:46*	*1*
13C2 4:2 FTS	*60.8*		*40 - 200*	*01/11/24 05:03*	*01/13/24 13:46*	*1*
13C2 6:2 FTS	*63.7*		*40 - 200*	*01/11/24 05:03*	*01/13/24 13:46*	*1*
13C3 HFPO-DA	*71.2*		*40 - 130*	*01/11/24 05:03*	*01/13/24 13:46*	*1*
d7-N-MeFOSE-M	*56.7*		*10 - 130*	*01/11/24 05:03*	*01/13/24 13:46*	*1*
d9-N-EtFOSE-M	*48.4*		*10 - 130*	*01/11/24 05:03*	*01/13/24 13:46*	*1*

Client Sample ID: MW-11A-121423

Date Collected: 12/14/23 11:05
Date Received: 12/15/23 08:45

Lab Sample ID: 590-22504-2

Matrix: Water

Method: EPA Draft-4 1633 - Per- and Polyfluoroalkyl Substances by LC/MS/MS (Continued)

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
d5-NEtPFOSA	*53.9*		*10 - 130*	*01/11/24 05:03*	*01/13/24 13:46*	*1*
d3-NMePFOSA	*53.3*		*10 - 130*	*01/11/24 05:03*	*01/13/24 13:46*	*1*

Method: EPA Draft-4 1633 - Per- and Polyfluoroalkyl Substances by LC/MS/MS - RA

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	ND	*+	7.2	1.8	ng/L		01/11/24 05:03	01/19/24 21:24	1
Perfluorooctanesulfonamide (PFOSA)	ND	*+	1.8	0.45	ng/L		01/11/24 05:03	01/19/24 21:24	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C8 PFOSA	*66.6*		*40 - 130*	*01/11/24 05:03*	*01/19/24 21:24*	*1*
13C2 8:2 FTS	*92.7*		*40 - 300*	*01/11/24 05:03*	*01/19/24 21:24*	*1*

Method: EPA Draft-4 1633 - Per- and Polyfluoroalkyl Substances by LC/MS/MS - RE

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	ND	H	7.4	1.8	ng/L		01/16/24 03:55	01/18/24 16:31	1
Perfluoropentanoic acid (PFPeA)	ND	H	3.7	0.92	ng/L		01/16/24 03:55	01/18/24 16:31	1
Perfluorohexanoic acid (PFHxA)	ND	H	1.8	0.46	ng/L		01/16/24 03:55	01/18/24 16:31	1
Perfluoroheptanoic acid (PFHpA)	ND	H	1.8	0.46	ng/L		01/16/24 03:55	01/18/24 16:31	1
Perfluorooctanoic acid (PFOA)	ND	H	1.8	0.46	ng/L		01/16/24 03:55	01/18/24 16:31	1
Perfluorononanoic acid (PFNA)	ND	H	1.8	0.46	ng/L		01/16/24 03:55	01/18/24 16:31	1
Perfluorodecanoic acid (PFDA)	ND	H	1.8	0.46	ng/L		01/16/24 03:55	01/18/24 16:31	1
Perfluoroundecanoic acid (PFUnA)	ND	H	1.8	0.46	ng/L		01/16/24 03:55	01/18/24 16:31	1
Perfluorododecanoic acid (PFDoA)	ND	H	1.8	0.46	ng/L		01/16/24 03:55	01/18/24 16:31	1
Perfluorotridecanoic acid (PFTrDA)	ND	H	1.8	0.46	ng/L		01/16/24 03:55	01/18/24 16:31	1
Perfluorotetradecanoic acid (PFTeDA)	ND	H	1.8	0.46	ng/L		01/16/24 03:55	01/18/24 16:31	1
Perfluorobutanesulfonic acid (PFBS)	**0.50**	**J H**	1.8	0.46	ng/L		01/16/24 03:55	01/18/24 16:31	1
Perfluoropentanesulfonic acid (PFPeS)	ND	H	1.8	0.46	ng/L		01/16/24 03:55	01/18/24 16:31	1
Perfluorohexanesulfonic acid (PFHxS)	**0.63**	**J H**	1.8	0.46	ng/L		01/16/24 03:55	01/18/24 16:31	1
Perfluoroheptanesulfonic acid (PFHpS)	ND	H	1.8	0.46	ng/L		01/16/24 03:55	01/18/24 16:31	1
Perfluorooctanesulfonic acid (PFOS)	ND	H	1.8	0.46	ng/L		01/16/24 03:55	01/18/24 16:31	1
Perfluorononanesulfonic acid (PFNS)	ND	H	1.8	0.46	ng/L		01/16/24 03:55	01/18/24 16:31	1
Perfluorodecanesulfonic acid (PFDS)	ND	H	1.8	0.46	ng/L		01/16/24 03:55	01/18/24 16:31	1
Perfluorododecanesulfonic acid (PFDoS)	ND	H	1.8	0.46	ng/L		01/16/24 03:55	01/18/24 16:31	1
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	ND	H	7.4	1.8	ng/L		01/16/24 03:55	01/18/24 16:31	1
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	ND	H	7.4	1.8	ng/L		01/16/24 03:55	01/18/24 16:31	1
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	ND	H	7.4	1.8	ng/L		01/16/24 03:55	01/18/24 16:31	1
Perfluorooctanesulfonamide (PFOSA)	ND	H	1.8	0.46	ng/L		01/16/24 03:55	01/18/24 16:31	1
N-methylperfluorooctane sulfonamide (NMeFOSA)	ND	H	1.8	0.46	ng/L		01/16/24 03:55	01/18/24 16:31	1
N-ethylperfluorooctane sulfonamide (NEtFOSA)	ND	H	1.8	0.46	ng/L		01/16/24 03:55	01/18/24 16:31	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND	H	1.8	0.46	ng/L		01/16/24 03:55	01/18/24 16:31	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND	H	1.8	0.46	ng/L		01/16/24 03:55	01/18/24 16:31	1

Client: GeoEngineers Inc
Project/Site: Marshall Landfill

Job ID: 590-22504-1

Client Sample ID: MW-11A-121423
Date Collected: 12/14/23 11:05
Date Received: 12/15/23 08:45

Lab Sample ID: 590-22504-2
Matrix: Water

Method: EPA Draft-4 1633 - Per- and Polyfluoroalkyl Substances by LC/MS/MS - RE (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
N-methylperfluorooctane sulfonamidoethanol (NMeFOSE)	ND	H	18	4.6	ng/L		01/16/24 03:55	01/18/24 16:31	1
N-ethylperfluorooctane sulfonamidoethanol (NEtFOSE)	ND	H	18	4.6	ng/L		01/16/24 03:55	01/18/24 16:31	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND	H	7.4	1.8	ng/L		01/16/24 03:55	01/18/24 16:31	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	H	7.4	1.8	ng/L		01/16/24 03:55	01/18/24 16:31	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	ND	H	3.7	0.92	ng/L		01/16/24 03:55	01/18/24 16:31	1
Perfluoro-4-methoxybutanoic acid (PFMBA)	ND	H	3.7	0.92	ng/L		01/16/24 03:55	01/18/24 16:31	1
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	H	3.7	0.92	ng/L		01/16/24 03:55	01/18/24 16:31	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	ND	H	7.4	1.8	ng/L		01/16/24 03:55	01/18/24 16:31	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	ND	H	7.4	1.8	ng/L		01/16/24 03:55	01/18/24 16:31	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	ND	H	3.7	0.92	ng/L		01/16/24 03:55	01/18/24 16:31	1
3-Perfluoropropylpropanoic acid (3:3 FTCA)	ND	H	9.2	2.3	ng/L		01/16/24 03:55	01/18/24 16:31	1
3-Perfluoropentylpropanoic acid (5:3 FTCA)	ND	H	46	12	ng/L		01/16/24 03:55	01/18/24 16:31	1
3-Perfluoroheptylpropanoic acid (7:3 FTCA)	ND	H	46	12	ng/L		01/16/24 03:55	01/18/24 16:31	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*77.7*		*5 - 130*	*01/16/24 03:55*	*01/18/24 16:31*	*1*
13C5 PFPeA	*87.4*		*40 - 130*	*01/16/24 03:55*	*01/18/24 16:31*	*1*
13C5 PFHxA	*82.6*		*40 - 130*	*01/16/24 03:55*	*01/18/24 16:31*	*1*
13C4 PFHpA	*107*		*40 - 130*	*01/16/24 03:55*	*01/18/24 16:31*	*1*
13C8 PFOA	*73.6*		*40 - 130*	*01/16/24 03:55*	*01/18/24 16:31*	*1*
13C9 PFNA	*80.4*		*40 - 130*	*01/16/24 03:55*	*01/18/24 16:31*	*1*
13C6 PFDA	*71.9*		*40 - 130*	*01/16/24 03:55*	*01/18/24 16:31*	*1*
13C7 PFUnA	*62.6*		*30 - 130*	*01/16/24 03:55*	*01/18/24 16:31*	*1*
13C2 PFDoA	*64.7*		*10 - 130*	*01/16/24 03:55*	*01/18/24 16:31*	*1*
13C2 PFTeDA	*56.3*		*10 - 130*	*01/16/24 03:55*	*01/18/24 16:31*	*1*
13C3 PFBS	*82.7*		*40 - 135*	*01/16/24 03:55*	*01/18/24 16:31*	*1*
13C3 PFHxS	*81.4*		*40 - 130*	*01/16/24 03:55*	*01/18/24 16:31*	*1*
13C8 PFOS	*82.9*		*40 - 130*	*01/16/24 03:55*	*01/18/24 16:31*	*1*
13C8 PFOSA	*82.6*		*40 - 130*	*01/16/24 03:55*	*01/18/24 16:31*	*1*
d3-NMeFOSAA	*79.4*		*40 - 170*	*01/16/24 03:55*	*01/18/24 16:31*	*1*
d5-NEtFOSAA	*84.2*		*25 - 135*	*01/16/24 03:55*	*01/18/24 16:31*	*1*
13C2 4:2 FTS	*105*		*40 - 200*	*01/16/24 03:55*	*01/18/24 16:31*	*1*
13C2 6:2 FTS	*118*		*40 - 200*	*01/16/24 03:55*	*01/18/24 16:31*	*1*
13C2 8:2 FTS	*91.0*		*40 - 300*	*01/16/24 03:55*	*01/18/24 16:31*	*1*
13C3 HFPO-DA	*99.0*		*40 - 130*	*01/16/24 03:55*	*01/18/24 16:31*	*1*
d7-N-MeFOSE-M	*68.0*		*10 - 130*	*01/16/24 03:55*	*01/18/24 16:31*	*1*
d9-N-EtFOSE-M	*68.7*		*10 - 130*	*01/16/24 03:55*	*01/18/24 16:31*	*1*
d5-NEtPFOSA	*58.1*		*10 - 130*	*01/16/24 03:55*	*01/18/24 16:31*	*1*
d3-NMePFOSA	*66.1*		*10 - 130*	*01/16/24 03:55*	*01/18/24 16:31*	*1*

Client Sample Results

Client: GeoEngineers Inc
Project/Site: Marshall Landfill

Job ID: 590-22504-1

Client Sample ID: MW-11A-121423

Date Collected: 12/14/23 11:05
Date Received: 12/15/23 08:45

Lab Sample ID: 590-22504-2

Matrix: Water

Method: SW846 6010D - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Magnesium	**9.5**		1.0	0.13	mg/L		12/18/23 10:30	12/18/23 15:27	1
Potassium	**2.8**		0.50	0.29	mg/L		12/18/23 10:30	12/18/23 15:27	1
Sodium	**9.0**	**^1+**	0.50	0.20	mg/L		12/18/23 10:30	12/18/23 15:27	1

Method: SW846 6010D - Metals (ICP) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	**41**		2.0	0.20	mg/L		12/18/23 17:27	12/19/23 13:32	1
Magnesium	**9.4**		1.0	0.13	mg/L		12/18/23 17:27	12/19/23 13:32	1

Method: SW846 6020B - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**0.0021**	**J**	0.0050	0.0010	mg/L		12/18/23 15:58	12/20/23 18:00	5
Cadmium	ND		0.0020	0.00019	mg/L		12/18/23 15:58	12/20/23 18:00	5
Iron	**0.13**	**J**	0.50	0.067	mg/L		12/18/23 15:58	12/20/23 18:00	5
Lead	ND		0.0020	0.00020	mg/L		12/18/23 15:58	12/20/23 18:00	5
Manganese	**0.0025**	**J**	0.010	0.0023	mg/L		12/18/23 15:58	12/20/23 18:00	5
Zinc	ND		0.035	0.0046	mg/L		12/18/23 15:58	12/20/23 18:00	5

Method: SW846 6020B - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**0.0020**	**J**	0.0050	0.0010	mg/L		12/20/23 15:52	12/22/23 09:55	5
Cadmium	ND		0.0020	0.00019	mg/L		12/20/23 15:52	12/22/23 09:55	5
Iron	ND		0.50	0.067	mg/L		12/20/23 15:52	12/22/23 09:55	5
Lead	ND		0.0020	0.00020	mg/L		12/20/23 15:52	12/22/23 09:55	5
Manganese	ND		0.010	0.0023	mg/L		12/20/23 15:52	12/22/23 09:55	5
Zinc	**0.0051**	**J**	0.035	0.0046	mg/L		12/20/23 15:52	12/22/23 09:55	5

Method: SW846 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.090	ug/L		12/18/23 10:28	12/18/23 15:26	1

Method: SW846 7470A - Mercury (CVAA) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.090	ug/L		12/27/23 10:16	12/28/23 13:31	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ammonia as N (EPA 350.1)	**0.15**		0.10	0.029	mg/L			01/09/24 11:37	1
Alkalinity (SM 2320B)	**140**	**B**	20	5.0	mg/L			12/27/23 10:12	1
Bicarbonate Alkalinity as CaCO3 (SM 2320B)	**140**	**B**	20	5.0	mg/L			12/27/23 10:12	1
Total Dissolved Solids (SM 2540C)	**300**		25	13	mg/L			12/18/23 16:57	1
Cyanide, Weak Acid Dissociable (SM 4500 CN I)	ND		0.010	0.0050	mg/L			12/22/23 13:01	1
Total Organic Carbon - Duplicates (SM 5310B)	**0.84**	**J**	1.0	0.35	mg/L			12/28/23 09:19	1

Client: GeoEngineers Inc
Project/Site: Marshall Landfill

Job ID: 590-22504-1

Client Sample ID: MW-12A-121423
Date Collected: 12/14/23 14:25
Date Received: 12/15/23 08:45

Lab Sample ID: 590-22504-3
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	ND		1.0	0.48	ug/L			12/15/23 16:56	1
1,1,1-Trichloroethane	ND		1.0	0.17	ug/L			12/15/23 16:56	1
1,1,2,2-Tetrachloroethane	ND		2.0	0.32	ug/L			12/15/23 16:56	1
1,1,2-Trichloroethane	ND		2.0	0.43	ug/L			12/15/23 16:56	1
1,1-Dichloroethane	ND		1.0	0.29	ug/L			12/15/23 16:56	1
1,1-Dichloroethene	ND		1.0	0.20	ug/L			12/15/23 16:56	1
1,1-Dichloropropene	ND		1.0	0.50	ug/L			12/15/23 16:56	1
1,2,3-Trichlorobenzene	ND		1.0	0.33	ug/L			12/15/23 16:56	1
1,2,3-Trichloropropane	ND		2.0	0.50	ug/L			12/15/23 16:56	1
1,2,4-Trichlorobenzene	ND		1.0	0.50	ug/L			12/15/23 16:56	1
1,2,4-Trimethylbenzene	ND		1.0	0.31	ug/L			12/15/23 16:56	1
1,2-Dibromo-3-Chloropropane	ND		10	1.5	ug/L			12/15/23 16:56	1
1,2-Dibromoethane (EDB)	ND		1.0	0.20	ug/L			12/15/23 16:56	1
1,2-Dichlorobenzene	ND		1.0	0.23	ug/L			12/15/23 16:56	1
1,2-Dichloroethane	ND		1.0	0.31	ug/L			12/15/23 16:56	1
1,2-Dichloropropane	ND		1.0	0.23	ug/L			12/15/23 16:56	1
1,3,5-Trimethylbenzene	ND		1.0	0.32	ug/L			12/15/23 16:56	1
1,3-Dichlorobenzene	ND		1.0	0.14	ug/L			12/15/23 16:56	1
1,3-Dichloropropane	ND		2.0	0.21	ug/L			12/15/23 16:56	1
1,4-Dichlorobenzene	ND		1.0	0.28	ug/L			12/15/23 16:56	1
2,2-Dichloropropane	ND		2.0	0.66	ug/L			12/15/23 16:56	1
2-Chlorotoluene	ND		1.0	0.36	ug/L			12/15/23 16:56	1
4-Chlorotoluene	ND		1.0	0.26	ug/L			12/15/23 16:56	1
Benzene	ND		0.40	0.093	ug/L			12/15/23 16:56	1
Bromobenzene	ND		1.0	0.28	ug/L			12/15/23 16:56	1
Bromochloromethane	ND		2.0	0.44	ug/L			12/15/23 16:56	1
Bromodichloromethane	ND		1.0	0.29	ug/L			12/15/23 16:56	1
Bromoform	ND		5.0	0.66	ug/L			12/15/23 16:56	1
Bromomethane	ND		5.0	0.76	ug/L			12/15/23 16:56	1
Carbon tetrachloride	ND		1.0	0.40	ug/L			12/15/23 16:56	1
Chlorobenzene	ND		1.0	0.32	ug/L			12/15/23 16:56	1
Chloroethane	ND		2.0	0.40	ug/L			12/15/23 16:56	1
Chloroform	ND		1.0	0.24	ug/L			12/15/23 16:56	1
Chloromethane	ND	*+ *1	3.0	0.50	ug/L			12/15/23 16:56	1
cis-1,2-Dichloroethene	ND		1.0	0.23	ug/L			12/15/23 16:56	1
cis-1,3-Dichloropropene	ND		1.0	0.25	ug/L			12/15/23 16:56	1
Dibromochloromethane	ND		2.0	0.33	ug/L			12/15/23 16:56	1
Dibromomethane	ND		2.0	0.50	ug/L			12/15/23 16:56	1
Dichlorodifluoromethane	ND		2.0	0.64	ug/L			12/15/23 16:56	1
Ethylbenzene	ND		1.0	0.20	ug/L			12/15/23 16:56	1
Hexachlorobutadiene	ND		2.0	0.21	ug/L			12/15/23 16:56	1
Isopropylbenzene	ND		1.0	0.24	ug/L			12/15/23 16:56	1
m,p-Xylene	ND		2.0	0.28	ug/L			12/15/23 16:56	1
Methyl tert-butyl ether	ND		1.0	0.16	ug/L			12/15/23 16:56	1
Methylene Chloride	ND		5.0	2.2	ug/L			12/15/23 16:56	1
Naphthalene	ND		2.0	0.63	ug/L			12/15/23 16:56	1
n-Butylbenzene	ND		1.0	0.20	ug/L			12/15/23 16:56	1
N-Propylbenzene	ND		1.0	0.25	ug/L			12/15/23 16:56	1
o-Xylene	ND		1.0	0.16	ug/L			12/15/23 16:56	1

Client Sample ID: MW-12A-121423
Date Collected: 12/14/23 14:25
Date Received: 12/15/23 08:45

Lab Sample ID: 590-22504-3
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
p-Isopropyltoluene	ND		1.0	0.27	ug/L			12/15/23 16:56	1
sec-Butylbenzene	ND		1.0	0.22	ug/L			12/15/23 16:56	1
Styrene	ND		1.0	0.24	ug/L			12/15/23 16:56	1
tert-Butylbenzene	ND		1.0	0.12	ug/L			12/15/23 16:56	1
Tetrachloroethene	ND		1.0	0.22	ug/L			12/15/23 16:56	1
Toluene	ND		1.0	0.31	ug/L			12/15/23 16:56	1
trans-1,2-Dichloroethene	ND		1.0	0.20	ug/L			12/15/23 16:56	1
trans-1,3-Dichloropropene	ND		1.0	0.45	ug/L			12/15/23 16:56	1
Trichloroethene	ND		1.0	0.20	ug/L			12/15/23 16:56	1
Trichlorofluoromethane	ND		1.0	0.20	ug/L			12/15/23 16:56	1
Vinyl chloride	ND		0.40	0.13	ug/L			12/15/23 16:56	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*103*		*80 - 120*		*12/15/23 16:56*	*1*
4-Bromofluorobenzene (Surr)	*97*		*76 - 120*		*12/15/23 16:56*	*1*
Dibromofluoromethane (Surr)	*110*		*80 - 123*		*12/15/23 16:56*	*1*
Toluene-d8 (Surr)	*102*		*80 - 120*		*12/15/23 16:56*	*1*

Method: SW846 8270E - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,4-Trichlorobenzene	ND		0.38	0.086	ug/L		12/19/23 08:40	12/19/23 23:20	1
1,2-Dichlorobenzene	ND		0.38	0.048	ug/L		12/19/23 08:40	12/19/23 23:20	1
1,3-Dichlorobenzene	ND		0.38	0.038	ug/L		12/19/23 08:40	12/19/23 23:20	1
1,4-Dichlorobenzene	ND		0.38	0.038	ug/L		12/19/23 08:40	12/19/23 23:20	1
1-Methylnaphthalene	ND		0.95	0.048	ug/L		12/19/23 08:40	12/19/23 23:20	1
2,4,5-Trichlorophenol	ND		0.38	0.095	ug/L		12/19/23 08:40	12/19/23 23:20	1
2,4,6-Trichlorophenol	ND		0.57	0.095	ug/L		12/19/23 08:40	12/19/23 23:20	1
2,4-Dichlorophenol	ND		0.95	0.19	ug/L		12/19/23 08:40	12/19/23 23:20	1
2,4-Dimethylphenol	ND		3.8	0.15	ug/L		12/19/23 08:40	12/19/23 23:20	1
2,4-Dinitrophenol	ND		4.8	0.43	ug/L		12/19/23 08:40	12/19/23 23:20	1
2,4-Dinitrotoluene	ND		0.95	0.095	ug/L		12/19/23 08:40	12/19/23 23:20	1
2,6-Dinitrotoluene	ND		0.38	0.095	ug/L		12/19/23 08:40	12/19/23 23:20	1
2-Chloronaphthalene	ND		0.95	0.067	ug/L		12/19/23 08:40	12/19/23 23:20	1
2-Chlorophenol	ND		0.95	0.048	ug/L		12/19/23 08:40	12/19/23 23:20	1
2-Methylnaphthalene	ND		0.38	0.057	ug/L		12/19/23 08:40	12/19/23 23:20	1
2-Methylphenol	ND		0.57	0.048	ug/L		12/19/23 08:40	12/19/23 23:20	1
2-Nitroaniline	ND		0.95	0.095	ug/L		12/19/23 08:40	12/19/23 23:20	1
2-Nitrophenol	ND		0.95	0.067	ug/L		12/19/23 08:40	12/19/23 23:20	1
3 & 4 Methylphenol	ND		0.57	0.095	ug/L		12/19/23 08:40	12/19/23 23:20	1
3,3'-Dichlorobenzidine	ND		0.95	0.11	ug/L		12/19/23 08:40	12/19/23 23:20	1
3-Nitroaniline	ND		2.9	0.15	ug/L		12/19/23 08:40	12/19/23 23:20	1
4,6-Dinitro-2-methylphenol	ND		1.9	0.52	ug/L		12/19/23 08:40	12/19/23 23:20	1
4-Bromophenyl phenyl ether	ND		0.57	0.057	ug/L		12/19/23 08:40	12/19/23 23:20	1
4-Chloro-3-methylphenol	ND		0.57	0.12	ug/L		12/19/23 08:40	12/19/23 23:20	1
4-Chloroaniline	ND		1.9	0.14	ug/L		12/19/23 08:40	12/19/23 23:20	1
4-Chlorophenyl phenyl ether	ND		0.57	0.048	ug/L		12/19/23 08:40	12/19/23 23:20	1
4-Nitroaniline	ND		1.9	0.20	ug/L		12/19/23 08:40	12/19/23 23:20	1
4-Nitrophenol	ND		9.5	1.6	ug/L		12/19/23 08:40	12/19/23 23:20	1
Acenaphthene	ND		0.38	0.048	ug/L		12/19/23 08:40	12/19/23 23:20	1
Acenaphthylene	ND		0.95	0.057	ug/L		12/19/23 08:40	12/19/23 23:20	1

Client Sample ID: MW-12A-121423
Date Collected: 12/14/23 14:25
Date Received: 12/15/23 08:45

Lab Sample ID: 590-22504-3
Matrix: Water

Method: SW846 8270E - Semivolatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Anthracene	ND		0.95	0.048	ug/L		12/19/23 08:40	12/19/23 23:20	1
Benzo[a]anthracene	ND		0.24	0.048	ug/L		12/19/23 08:40	12/19/23 23:20	1
Benzo[a]pyrene	ND		0.24	0.038	ug/L		12/19/23 08:40	12/19/23 23:20	1
Benzo[b]fluoranthene	ND		0.24	0.038	ug/L		12/19/23 08:40	12/19/23 23:20	1
Benzo[g,h,i]perylene	ND		0.24	0.038	ug/L		12/19/23 08:40	12/19/23 23:20	1
Benzo[k]fluoranthene	ND		0.24	0.048	ug/L		12/19/23 08:40	12/19/23 23:20	1
Benzoic acid	ND		9.5	1.3	ug/L		12/19/23 08:40	12/19/23 23:20	1
Benzyl alcohol	ND		4.8	0.17	ug/L		12/19/23 08:40	12/19/23 23:20	1
Bis(2-chloroethoxy)methane	ND		0.57	0.048	ug/L		12/19/23 08:40	12/19/23 23:20	1
Bis(2-chloroethyl)ether	ND		0.095	0.029	ug/L		12/19/23 08:40	12/19/23 23:20	1
Bis(2-ethylhexyl) phthalate	ND		2.9	0.71	ug/L		12/19/23 08:40	12/19/23 23:20	1
bis(chloroisopropyl) ether	ND		0.24	0.057	ug/L		12/19/23 08:40	12/19/23 23:20	1
Butyl benzyl phthalate	ND		3.8	0.26	ug/L		12/19/23 08:40	12/19/23 23:20	1
Carbazole	ND		0.57	0.095	ug/L		12/19/23 08:40	12/19/23 23:20	1
Chrysene	ND		0.24	0.086	ug/L		12/19/23 08:40	12/19/23 23:20	1
Dibenz(a,h)anthracene	ND		0.24	0.067	ug/L		12/19/23 08:40	12/19/23 23:20	1
Dibenzofuran	ND		0.38	0.095	ug/L		12/19/23 08:40	12/19/23 23:20	1
Diethyl phthalate	ND		0.95	0.14	ug/L		12/19/23 08:40	12/19/23 23:20	1
Dimethyl phthalate	ND		0.57	0.057	ug/L		12/19/23 08:40	12/19/23 23:20	1
Di-n-butyl phthalate	ND		9.5	2.8	ug/L		12/19/23 08:40	12/19/23 23:20	1
Di-n-octyl phthalate	ND		0.95	0.12	ug/L		12/19/23 08:40	12/19/23 23:20	1
Fluoranthene	ND		0.24	0.057	ug/L		12/19/23 08:40	12/19/23 23:20	1
Fluorene	ND		0.24	0.048	ug/L		12/19/23 08:40	12/19/23 23:20	1
Hexachlorobenzene	ND		0.57	0.076	ug/L		12/19/23 08:40	12/19/23 23:20	1
Hexachlorobutadiene	ND		0.95	0.076	ug/L		12/19/23 08:40	12/19/23 23:20	1
Hexachlorocyclopentadiene	ND		0.95	0.13	ug/L		12/19/23 08:40	12/19/23 23:20	1
Hexachloroethane	ND		0.95	0.048	ug/L		12/19/23 08:40	12/19/23 23:20	1
Indeno[1,2,3-cd]pyrene	ND		0.38	0.12	ug/L		12/19/23 08:40	12/19/23 23:20	1
Isophorone	ND		0.38	0.095	ug/L		12/19/23 08:40	12/19/23 23:20	1
Naphthalene	ND		0.38	0.15	ug/L		12/19/23 08:40	12/19/23 23:20	1
Nitrobenzene	ND		0.95	0.038	ug/L		12/19/23 08:40	12/19/23 23:20	1
N-Nitrosodi-n-propylamine	ND		0.38	0.057	ug/L		12/19/23 08:40	12/19/23 23:20	1
N-Nitrosodiphenylamine	ND		0.95	0.067	ug/L		12/19/23 08:40	12/19/23 23:20	1
Pentachlorophenol	ND		4.8	0.49	ug/L		12/19/23 08:40	12/19/23 23:20	1
Phenanthrene	ND		0.95	0.11	ug/L		12/19/23 08:40	12/19/23 23:20	1
Phenol	ND		0.95	0.15	ug/L		12/19/23 08:40	12/19/23 23:20	1
Pyrene	ND		0.95	0.038	ug/L		12/19/23 08:40	12/19/23 23:20	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol (Surr)	*72*		*50 - 130*	*12/19/23 08:40*	*12/19/23 23:20*	*1*
2-Fluorobiphenyl	*60*		*35 - 120*	*12/19/23 08:40*	*12/19/23 23:20*	*1*
2-Fluorophenol (Surr)	*45*		*21 - 120*	*12/19/23 08:40*	*12/19/23 23:20*	*1*
Nitrobenzene-d5 (Surr)	*71*		*39 - 120*	*12/19/23 08:40*	*12/19/23 23:20*	*1*
Phenol-d5 (Surr)	*28*		*10 - 120*	*12/19/23 08:40*	*12/19/23 23:20*	*1*
Terphenyl-d14 (Surr)	*72*		*63 - 137*	*12/19/23 08:40*	*12/19/23 23:20*	*1*

Method: SW846 8151A - Herbicides (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4,5-T	ND	*1	0.47	0.20	ug/L		12/18/23 21:35	12/20/23 23:55	1
2,4,5-TP (Silvex)	ND		0.47	0.13	ug/L		12/18/23 21:35	12/20/23 23:55	1

Client Sample ID: MW-12A-121423

Date Collected: 12/14/23 14:25
Date Received: 12/15/23 08:45

Lab Sample ID: 590-22504-3

Matrix: Water

Method: SW846 8151A - Herbicides (GC) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4-D	ND	*1	4.7	1.9	ug/L		12/18/23 21:35	12/20/23 23:55	1
2,4-DB	ND		4.7	3.3	ug/L		12/18/23 21:35	12/20/23 23:55	1
Dalapon	ND	*1	12	4.5	ug/L		12/18/23 21:35	12/20/23 23:55	1
Dicamba	ND	*1	0.47	0.27	ug/L		12/18/23 21:35	12/20/23 23:55	1
Dichlorprop	ND	*1	4.7	1.9	ug/L		12/18/23 21:35	12/20/23 23:55	1
Dinoseb	ND	*1	2.4	2.1	ug/L		12/18/23 21:35	12/20/23 23:55	1
MCPA	ND	*1	470	330	ug/L		12/18/23 21:35	12/20/23 23:55	1
MCPP	ND		470	290	ug/L		12/18/23 21:35	12/20/23 23:55	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4-Dichlorophenylacetic acid	*93*		*20 - 161*	*12/18/23 21:35*	*12/20/23 23:55*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**3.3**		0.80	0.42	mg/L			12/15/23 15:05	1
Nitrate as N	**6.8**		0.20	0.057	mg/L			12/15/23 15:05	1
Nitrite as N	ND		0.20	0.069	mg/L			12/15/23 15:05	1
Sulfate	**16**		0.50	0.13	mg/L			12/15/23 15:05	1

Method: EPA Draft-4 1633 - Per- and Polyfluoroalkyl Substances by LC/MS/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**4.9**	**J *+**	7.2	1.8	ng/L		01/11/24 05:03	01/13/24 14:03	1
Perfluoropentanoic acid (PFPeA)	**1.6**	**J *+**	3.6	0.91	ng/L		01/11/24 05:03	01/13/24 14:03	1
Perfluorohexanoic acid (PFHxA)	**1.1**	**J *+**	1.8	0.45	ng/L		01/11/24 05:03	01/13/24 14:03	1
Perfluoroheptanoic acid (PFHpA)	**0.82**	**J *+**	1.8	0.45	ng/L		01/11/24 05:03	01/13/24 14:03	1
Perfluorooctanoic acid (PFOA)	**0.85**	**J *+**	1.8	0.45	ng/L		01/11/24 05:03	01/13/24 14:03	1
Perfluorononanoic acid (PFNA)	ND	*+	1.8	0.45	ng/L		01/11/24 05:03	01/13/24 14:03	1
Perfluorodecanoic acid (PFDA)	ND	*+	1.8	0.45	ng/L		01/11/24 05:03	01/13/24 14:03	1
Perfluoroundecanoic acid (PFUnA)	ND	*+	1.8	0.45	ng/L		01/11/24 05:03	01/13/24 14:03	1
Perfluorododecanoic acid (PFDoA)	ND	*+	1.8	0.45	ng/L		01/11/24 05:03	01/13/24 14:03	1
Perfluorotridecanoic acid (PFTrDA)	ND	*+	1.8	0.45	ng/L		01/11/24 05:03	01/13/24 14:03	1
Perfluorotetradecanoic acid (PFTeDA)	ND	*+	1.8	0.45	ng/L		01/11/24 05:03	01/13/24 14:03	1
Perfluorobutanesulfonic acid (PFBS)	**0.86**	**J *+**	1.8	0.45	ng/L		01/11/24 05:03	01/13/24 14:03	1
Perfluoropentanesulfonic acid (PFPeS)	ND	*+	1.8	0.45	ng/L		01/11/24 05:03	01/13/24 14:03	1
Perfluorohexanesulfonic acid (PFHxS)	ND	*+	1.8	0.45	ng/L		01/11/24 05:03	01/13/24 14:03	1
Perfluoroheptanesulfonic acid (PFHpS)	ND	*+	1.8	0.45	ng/L		01/11/24 05:03	01/13/24 14:03	1
Perfluorooctanesulfonic acid (PFOS)	ND	*+ *1	1.8	0.45	ng/L		01/11/24 05:03	01/13/24 14:03	1
Perfluorononanesulfonic acid (PFNS)	ND	*+	1.8	0.45	ng/L		01/11/24 05:03	01/13/24 14:03	1
Perfluorodecanesulfonic acid (PFDS)	ND	*+	1.8	0.45	ng/L		01/11/24 05:03	01/13/24 14:03	1
Perfluorododecanesulfonic acid (PFDoS)	ND	*+	1.8	0.45	ng/L		01/11/24 05:03	01/13/24 14:03	1
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	ND	*+	7.2	1.8	ng/L		01/11/24 05:03	01/13/24 14:03	1
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	ND	*+	7.2	1.8	ng/L		01/11/24 05:03	01/13/24 14:03	1
N-methylperfluorooctane sulfonamide (NMeFOSA)	ND	*+	1.8	0.45	ng/L		01/11/24 05:03	01/13/24 14:03	1
N-ethylperfluorooctane sulfonamide (NEtFOSA)	ND	*+	1.8	0.45	ng/L		01/11/24 05:03	01/13/24 14:03	1

Client Sample ID: MW-12A-121423
Date Collected: 12/14/23 14:25
Date Received: 12/15/23 08:45

Lab Sample ID: 590-22504-3
Matrix: Water

Method: EPA Draft-4 1633 - Per- and Polyfluoroalkyl Substances by LC/MS/MS (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND	*+	1.8	0.45	ng/L		01/11/24 05:03	01/13/24 14:03	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND	*+	1.8	0.45	ng/L		01/11/24 05:03	01/13/24 14:03	1
N-methylperfluorooctane sulfonamidoethanol (NMeFOSE)	ND	*+	18	4.5	ng/L		01/11/24 05:03	01/13/24 14:03	1
N-ethylperfluorooctane sulfonamidoethanol (NEtFOSE)	ND	*+	18	4.5	ng/L		01/11/24 05:03	01/13/24 14:03	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND	*+	7.2	1.8	ng/L		01/11/24 05:03	01/13/24 14:03	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	*+ *1	7.2	1.8	ng/L		01/11/24 05:03	01/13/24 14:03	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	ND	*+	3.6	0.91	ng/L		01/11/24 05:03	01/13/24 14:03	1
Perfluoro-4-methoxybutanoic acid (PFMBA)	ND	*+	3.6	0.91	ng/L		01/11/24 05:03	01/13/24 14:03	1
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	*+	3.6	0.91	ng/L		01/11/24 05:03	01/13/24 14:03	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	ND	*+	7.2	1.8	ng/L		01/11/24 05:03	01/13/24 14:03	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	ND		7.2	1.8	ng/L		01/11/24 05:03	01/13/24 14:03	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	ND	*+	3.6	0.91	ng/L		01/11/24 05:03	01/13/24 14:03	1
3-Perfluoropropylpropanoic acid (3:3 FTCA)	ND	*+	9.1	2.3	ng/L		01/11/24 05:03	01/13/24 14:03	1
3-Perfluoropentylpropanoic acid (5:3 FTCA)	ND	*+	45	11	ng/L		01/11/24 05:03	01/13/24 14:03	1
3-Perfluoroheptylpropanoic acid (7:3 FTCA)	ND	*+	45	11	ng/L		01/11/24 05:03	01/13/24 14:03	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*74.1*		*5 - 130*	*01/11/24 05:03*	*01/13/24 14:03*	*1*
13C5 PFPeA	*82.6*		*40 - 130*	*01/11/24 05:03*	*01/13/24 14:03*	*1*
13C5 PFHxA	*79.8*		*40 - 130*	*01/11/24 05:03*	*01/13/24 14:03*	*1*
13C4 PFHpA	*87.4*		*40 - 130*	*01/11/24 05:03*	*01/13/24 14:03*	*1*
13C8 PFOA	*77.9*		*40 - 130*	*01/11/24 05:03*	*01/13/24 14:03*	*1*
13C9 PFNA	*80.7*		*40 - 130*	*01/11/24 05:03*	*01/13/24 14:03*	*1*
13C6 PFDA	*79.9*		*40 - 130*	*01/11/24 05:03*	*01/13/24 14:03*	*1*
13C7 PFUnA	*69.8*		*30 - 130*	*01/11/24 05:03*	*01/13/24 14:03*	*1*
13C2 PFDoA	*69.3*		*10 - 130*	*01/11/24 05:03*	*01/13/24 14:03*	*1*
13C2 PFTeDA	*62.7*		*10 - 130*	*01/11/24 05:03*	*01/13/24 14:03*	*1*
13C3 PFBS	*75.7*		*40 - 135*	*01/11/24 05:03*	*01/13/24 14:03*	*1*
13C3 PFHxS	*80.8*		*40 - 130*	*01/11/24 05:03*	*01/13/24 14:03*	*1*
13C8 PFOS	*86.3*		*40 - 130*	*01/11/24 05:03*	*01/13/24 14:03*	*1*
d3-NMeFOSAA	*85.7*		*40 - 170*	*01/11/24 05:03*	*01/13/24 14:03*	*1*
d5-NEtFOSAA	*86.0*		*25 - 135*	*01/11/24 05:03*	*01/13/24 14:03*	*1*
13C2 4:2 FTS	*85.7*		*40 - 200*	*01/11/24 05:03*	*01/13/24 14:03*	*1*
13C2 6:2 FTS	*77.4*		*40 - 200*	*01/11/24 05:03*	*01/13/24 14:03*	*1*
13C3 HFPO-DA	*77.0*		*40 - 130*	*01/11/24 05:03*	*01/13/24 14:03*	*1*
d7-N-MeFOSE-M	*70.4*		*10 - 130*	*01/11/24 05:03*	*01/13/24 14:03*	*1*
d9-N-EtFOSE-M	*66.0*		*10 - 130*	*01/11/24 05:03*	*01/13/24 14:03*	*1*
d5-NEtPFOSA	*69.9*		*10 - 130*	*01/11/24 05:03*	*01/13/24 14:03*	*1*
d3-NMePFOSA	*71.6*		*10 - 130*	*01/11/24 05:03*	*01/13/24 14:03*	*1*

Client Sample ID: MW-12A-121423

Date Collected: 12/14/23 14:25
Date Received: 12/15/23 08:45

Lab Sample ID: 590-22504-3

Matrix: Water

Method: EPA Draft-4 1633 - Per- and Polyfluoroalkyl Substances by LC/MS/MS - RA

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	ND	*+	7.2	1.8	ng/L		01/11/24 05:03	01/19/24 21:42	1
Perfluorooctanesulfonamide (PFOSA)	ND	*+	1.8	0.45	ng/L		01/11/24 05:03	01/19/24 21:42	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C8 PFOSA	*79.7*		*40 - 130*	*01/11/24 05:03*	*01/19/24 21:42*	*1*
13C2 8:2 FTS	*96.2*		*40 - 300*	*01/11/24 05:03*	*01/19/24 21:42*	*1*

Method: EPA Draft-4 1633 - Per- and Polyfluoroalkyl Substances by LC/MS/MS - RE

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**4.6**	**J H**	7.8	1.9	ng/L		01/16/24 03:55	01/18/24 16:48	1
Perfluoropentanoic acid (PFPeA)	ND	H	3.9	0.97	ng/L		01/16/24 03:55	01/18/24 16:48	1
Perfluorohexanoic acid (PFHxA)	**1.0**	**J H**	1.9	0.49	ng/L		01/16/24 03:55	01/18/24 16:48	1
Perfluoroheptanoic acid (PFHpA)	**0.82**	**J H**	1.9	0.49	ng/L		01/16/24 03:55	01/18/24 16:48	1
Perfluorooctanoic acid (PFOA)	**1.2**	**J H**	1.9	0.49	ng/L		01/16/24 03:55	01/18/24 16:48	1
Perfluorononanoic acid (PFNA)	ND	H	1.9	0.49	ng/L		01/16/24 03:55	01/18/24 16:48	1
Perfluorodecanoic acid (PFDA)	ND	H	1.9	0.49	ng/L		01/16/24 03:55	01/18/24 16:48	1
Perfluoroundecanoic acid (PFUnA)	ND	H	1.9	0.49	ng/L		01/16/24 03:55	01/18/24 16:48	1
Perfluorododecanoic acid (PFDoA)	ND	H	1.9	0.49	ng/L		01/16/24 03:55	01/18/24 16:48	1
Perfluorotridecanoic acid (PFTrDA)	ND	H	1.9	0.49	ng/L		01/16/24 03:55	01/18/24 16:48	1
Perfluorotetradecanoic acid (PFTeDA)	ND	H	1.9	0.49	ng/L		01/16/24 03:55	01/18/24 16:48	1
Perfluorobutanesulfonic acid (PFBS)	**0.83**	**J H**	1.9	0.49	ng/L		01/16/24 03:55	01/18/24 16:48	1
Perfluoropentanesulfonic acid (PFPeS)	ND	H	1.9	0.49	ng/L		01/16/24 03:55	01/18/24 16:48	1
Perfluorohexanesulfonic acid (PFHxS)	ND	H	1.9	0.49	ng/L		01/16/24 03:55	01/18/24 16:48	1
Perfluoroheptanesulfonic acid (PFHpS)	ND	H	1.9	0.49	ng/L		01/16/24 03:55	01/18/24 16:48	1
Perfluorooctanesulfonic acid (PFOS)	ND	H	1.9	0.49	ng/L		01/16/24 03:55	01/18/24 16:48	1
Perfluorononanesulfonic acid (PFNS)	ND	H	1.9	0.49	ng/L		01/16/24 03:55	01/18/24 16:48	1
Perfluorodecanesulfonic acid (PFDS)	ND	H	1.9	0.49	ng/L		01/16/24 03:55	01/18/24 16:48	1
Perfluorododecanesulfonic acid (PFDoS)	ND	H	1.9	0.49	ng/L		01/16/24 03:55	01/18/24 16:48	1
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	ND	H	7.8	1.9	ng/L		01/16/24 03:55	01/18/24 16:48	1
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	ND	H	7.8	1.9	ng/L		01/16/24 03:55	01/18/24 16:48	1
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	ND	H	7.8	1.9	ng/L		01/16/24 03:55	01/18/24 16:48	1
Perfluorooctanesulfonamide (PFOSA)	ND	H	1.9	0.49	ng/L		01/16/24 03:55	01/18/24 16:48	1
N-methylperfluorooctane sulfonamide (NMeFOSA)	ND	H	1.9	0.49	ng/L		01/16/24 03:55	01/18/24 16:48	1
N-ethylperfluorooctane sulfonamide (NEtFOSA)	ND	H	1.9	0.49	ng/L		01/16/24 03:55	01/18/24 16:48	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND	H	1.9	0.49	ng/L		01/16/24 03:55	01/18/24 16:48	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND	H	1.9	0.49	ng/L		01/16/24 03:55	01/18/24 16:48	1
N-methylperfluorooctane sulfonamidoethanol (NMeFOSE)	ND	H	19	4.9	ng/L		01/16/24 03:55	01/18/24 16:48	1
N-ethylperfluorooctane sulfonamidoethanol (NEtFOSE)	ND	H	19	4.9	ng/L		01/16/24 03:55	01/18/24 16:48	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND	H	7.8	1.9	ng/L		01/16/24 03:55	01/18/24 16:48	1

Client Sample ID: MW-12A-121423
Date Collected: 12/14/23 14:25
Date Received: 12/15/23 08:45

Lab Sample ID: 590-22504-3
Matrix: Water

Method: EPA Draft-4 1633 - Per- and Polyfluoroalkyl Substances by LC/MS/MS - RE (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	H	7.8	1.9	ng/L		01/16/24 03:55	01/18/24 16:48	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	ND	H	3.9	0.97	ng/L		01/16/24 03:55	01/18/24 16:48	1
Perfluoro-4-methoxybutanoic acid (PFMBA)	ND	H	3.9	0.97	ng/L		01/16/24 03:55	01/18/24 16:48	1
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	H	3.9	0.97	ng/L		01/16/24 03:55	01/18/24 16:48	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	ND	H	7.8	1.9	ng/L		01/16/24 03:55	01/18/24 16:48	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	ND	H	7.8	1.9	ng/L		01/16/24 03:55	01/18/24 16:48	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	ND	H	3.9	0.97	ng/L		01/16/24 03:55	01/18/24 16:48	1
3-Perfluoropropylpropanoic acid (3:3 FTCA)	ND	H	9.7	2.4	ng/L		01/16/24 03:55	01/18/24 16:48	1
3-Perfluoropentylpropanoic acid (5:3 FTCA)	ND	H	49	12	ng/L		01/16/24 03:55	01/18/24 16:48	1
3-Perfluoroheptylpropanoic acid (7:3 FTCA)	ND	H	49	12	ng/L		01/16/24 03:55	01/18/24 16:48	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*77.3*		*5 - 130*	*01/16/24 03:55*	*01/18/24 16:48*	*1*
13C5 PFPeA	*79.5*		*40 - 130*	*01/16/24 03:55*	*01/18/24 16:48*	*1*
13C5 PFHxA	*78.1*		*40 - 130*	*01/16/24 03:55*	*01/18/24 16:48*	*1*
13C4 PFHpA	*79.8*		*40 - 130*	*01/16/24 03:55*	*01/18/24 16:48*	*1*
13C8 PFOA	*73.1*		*40 - 130*	*01/16/24 03:55*	*01/18/24 16:48*	*1*
13C9 PFNA	*75.7*		*40 - 130*	*01/16/24 03:55*	*01/18/24 16:48*	*1*
13C6 PFDA	*73.4*		*40 - 130*	*01/16/24 03:55*	*01/18/24 16:48*	*1*
13C7 PFUnA	*71.4*		*30 - 130*	*01/16/24 03:55*	*01/18/24 16:48*	*1*
13C2 PFDoA	*57.4*		*10 - 130*	*01/16/24 03:55*	*01/18/24 16:48*	*1*
13C2 PFTeDA	*52.2*		*10 - 130*	*01/16/24 03:55*	*01/18/24 16:48*	*1*
13C3 PFBS	*82.5*		*40 - 135*	*01/16/24 03:55*	*01/18/24 16:48*	*1*
13C3 PFHxS	*79.9*		*40 - 130*	*01/16/24 03:55*	*01/18/24 16:48*	*1*
13C8 PFOS	*80.5*		*40 - 130*	*01/16/24 03:55*	*01/18/24 16:48*	*1*
13C8 PFOSA	*76.4*		*40 - 130*	*01/16/24 03:55*	*01/18/24 16:48*	*1*
d3-NMeFOSAA	*77.2*		*40 - 170*	*01/16/24 03:55*	*01/18/24 16:48*	*1*
d5-NEtFOSAA	*72.1*		*25 - 135*	*01/16/24 03:55*	*01/18/24 16:48*	*1*
13C2 4:2 FTS	*116*		*40 - 200*	*01/16/24 03:55*	*01/18/24 16:48*	*1*
13C2 6:2 FTS	*104*		*40 - 200*	*01/16/24 03:55*	*01/18/24 16:48*	*1*
13C2 8:2 FTS	*91.7*		*40 - 300*	*01/16/24 03:55*	*01/18/24 16:48*	*1*
13C3 HFPO-DA	*79.6*		*40 - 130*	*01/16/24 03:55*	*01/18/24 16:48*	*1*
d7-N-MeFOSE-M	*58.7*		*10 - 130*	*01/16/24 03:55*	*01/18/24 16:48*	*1*
d9-N-EtFOSE-M	*55.4*		*10 - 130*	*01/16/24 03:55*	*01/18/24 16:48*	*1*
d5-NEtPFOSA	*60.7*		*10 - 130*	*01/16/24 03:55*	*01/18/24 16:48*	*1*
d3-NMePFOSA	*66.1*		*10 - 130*	*01/16/24 03:55*	*01/18/24 16:48*	*1*

Method: SW846 6010D - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Magnesium	**8.9**		1.0	0.13	mg/L		12/18/23 10:30	12/18/23 15:31	1
Potassium	**2.7**		0.50	0.29	mg/L		12/18/23 10:30	12/18/23 15:31	1
Sodium	**8.5**	**^1+**	0.50	0.20	mg/L		12/18/23 10:30	12/18/23 15:31	1

Client Sample ID: MW-12A-121423

Lab Sample ID: 590-22504-3

Date Collected: 12/14/23 14:25

Matrix: Water

Date Received: 12/15/23 08:45

Method: SW846 6010D - Metals (ICP) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	**25**		2.0	0.20	mg/L		12/18/23 17:27	12/19/23 13:36	1
Magnesium	**8.8**		1.0	0.13	mg/L		12/18/23 17:27	12/19/23 13:36	1

Method: SW846 6020B - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		0.0050	0.0010	mg/L		12/18/23 15:58	12/20/23 18:03	5
Cadmium	ND		0.0020	0.00019	mg/L		12/18/23 15:58	12/20/23 18:03	5
Iron	ND		0.50	0.067	mg/L		12/18/23 15:58	12/20/23 18:03	5
Lead	ND		0.0020	0.00020	mg/L		12/18/23 15:58	12/20/23 18:03	5
Manganese	ND		0.010	0.0023	mg/L		12/18/23 15:58	12/20/23 18:03	5
Zinc	**0.0051**	**J**	0.035	0.0046	mg/L		12/18/23 15:58	12/20/23 18:03	5

Method: SW846 6020B - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		0.0050	0.0010	mg/L		12/20/23 15:52	12/22/23 11:29	5
Cadmium	ND		0.0020	0.00019	mg/L		12/20/23 15:52	12/22/23 11:29	5
Iron	ND		0.50	0.067	mg/L		12/20/23 15:52	12/22/23 11:29	5
Lead	ND		0.0020	0.00020	mg/L		12/20/23 15:52	12/22/23 11:29	5
Manganese	**0.0060**	**J**	0.010	0.0023	mg/L		12/20/23 15:52	12/22/23 11:29	5
Zinc	ND		0.035	0.0046	mg/L		12/20/23 15:52	12/22/23 11:29	5

Method: SW846 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.090	ug/L		12/18/23 10:28	12/18/23 15:34	1

Method: SW846 7470A - Mercury (CVAA) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.090	ug/L		12/27/23 10:16	12/28/23 13:33	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ammonia as N (EPA 350.1)	ND		0.10	0.029	mg/L			01/09/24 11:40	1
Alkalinity (SM 2320B)	**85**	**B**	20	5.0	mg/L			12/27/23 10:12	1
Bicarbonate Alkalinity as CaCO3 (SM 2320B)	**85**	**B**	20	5.0	mg/L			12/27/23 10:12	1
Total Dissolved Solids (SM 2540C)	**140**		25	13	mg/L			12/18/23 16:57	1
Cyanide, Weak Acid Dissociable (SM 4500 CN I)	ND		0.010	0.0050	mg/L			12/22/23 13:04	1
Total Organic Carbon - Duplicates (SM 5310B)	**2.6**		1.0	0.35	mg/L			12/28/23 09:34	1

Client Sample ID: EB-121423

Lab Sample ID: 590-22504-4

Date Collected: 12/14/23 08:20

Matrix: Water

Date Received: 12/15/23 08:45

Method: EPA Draft-4 1633 - Per- and Polyfluoroalkyl Substances by LC/MS/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	ND	*+	7.3	1.8	ng/L		01/11/24 05:03	01/13/24 14:19	1
Perfluoropentanoic acid (PFPeA)	ND	*+	3.6	0.91	ng/L		01/11/24 05:03	01/13/24 14:19	1
Perfluorohexanoic acid (PFHxA)	ND	*+	1.8	0.45	ng/L		01/11/24 05:03	01/13/24 14:19	1
Perfluoroheptanoic acid (PFHpA)	ND	*+	1.8	0.45	ng/L		01/11/24 05:03	01/13/24 14:19	1
Perfluorooctanoic acid (PFOA)	ND	*+	1.8	0.45	ng/L		01/11/24 05:03	01/13/24 14:19	1

Client Sample ID: EB-121423
Date Collected: 12/14/23 08:20
Date Received: 12/15/23 08:45

Lab Sample ID: 590-22504-4
Matrix: Water

Method: EPA Draft-4 1633 - Per- and Polyfluoroalkyl Substances by LC/MS/MS (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorononanoic acid (PFNA)	ND	*+	1.8	0.45	ng/L		01/11/24 05:03	01/13/24 14:19	1
Perfluorodecanoic acid (PFDA)	ND	*+	1.8	0.45	ng/L		01/11/24 05:03	01/13/24 14:19	1
Perfluoroundecanoic acid (PFUnA)	ND	*+	1.8	0.45	ng/L		01/11/24 05:03	01/13/24 14:19	1
Perfluorododecanoic acid (PFDoA)	ND	*+	1.8	0.45	ng/L		01/11/24 05:03	01/13/24 14:19	1
Perfluorotridecanoic acid (PFTrDA)	ND	*+	1.8	0.45	ng/L		01/11/24 05:03	01/13/24 14:19	1
Perfluorotetradecanoic acid (PFTeDA)	ND	*+	1.8	0.45	ng/L		01/11/24 05:03	01/13/24 14:19	1
Perfluorobutanesulfonic acid (PFBS)	ND	*+	1.8	0.45	ng/L		01/11/24 05:03	01/13/24 14:19	1
Perfluoropentanesulfonic acid (PFPeS)	ND	*+	1.8	0.45	ng/L		01/11/24 05:03	01/13/24 14:19	1
Perfluorohexanesulfonic acid (PFHxS)	ND	*+	1.8	0.45	ng/L		01/11/24 05:03	01/13/24 14:19	1
Perfluoroheptanesulfonic acid (PFHpS)	ND	*+	1.8	0.45	ng/L		01/11/24 05:03	01/13/24 14:19	1
Perfluorooctanesulfonic acid (PFOS)	ND	*+ *1	1.8	0.45	ng/L		01/11/24 05:03	01/13/24 14:19	1
Perfluorononanesulfonic acid (PFNS)	ND	*+	1.8	0.45	ng/L		01/11/24 05:03	01/13/24 14:19	1
Perfluorodecanesulfonic acid (PFDS)	ND	*+	1.8	0.45	ng/L		01/11/24 05:03	01/13/24 14:19	1
Perfluorododecanesulfonic acid (PFDoS)	ND	*+	1.8	0.45	ng/L		01/11/24 05:03	01/13/24 14:19	1
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	ND	*+	7.3	1.8	ng/L		01/11/24 05:03	01/13/24 14:19	1
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	ND	*+	7.3	1.8	ng/L		01/11/24 05:03	01/13/24 14:19	1
N-methylperfluorooctane sulfonamide (NMeFOSA)	ND	*+	1.8	0.45	ng/L		01/11/24 05:03	01/13/24 14:19	1
N-ethylperfluorooctane sulfonamide (NEtFOSA)	ND	*+	1.8	0.45	ng/L		01/11/24 05:03	01/13/24 14:19	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND	*+	1.8	0.45	ng/L		01/11/24 05:03	01/13/24 14:19	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND	*+	1.8	0.45	ng/L		01/11/24 05:03	01/13/24 14:19	1
N-methylperfluorooctane sulfonamidoethanol (NMeFOSE)	ND	*+	18	4.5	ng/L		01/11/24 05:03	01/13/24 14:19	1
N-ethylperfluorooctane sulfonamidoethanol (NEtFOSE)	ND	*+	18	4.5	ng/L		01/11/24 05:03	01/13/24 14:19	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND	*+	7.3	1.8	ng/L		01/11/24 05:03	01/13/24 14:19	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	*+ *1	7.3	1.8	ng/L		01/11/24 05:03	01/13/24 14:19	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	ND	*+	3.6	0.91	ng/L		01/11/24 05:03	01/13/24 14:19	1
Perfluoro-4-methoxybutanoic acid (PFMBA)	ND	*+	3.6	0.91	ng/L		01/11/24 05:03	01/13/24 14:19	1
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	*+	3.6	0.91	ng/L		01/11/24 05:03	01/13/24 14:19	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	ND	*+	7.3	1.8	ng/L		01/11/24 05:03	01/13/24 14:19	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	ND		7.3	1.8	ng/L		01/11/24 05:03	01/13/24 14:19	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	ND	*+	3.6	0.91	ng/L		01/11/24 05:03	01/13/24 14:19	1
3-Perfluoropropylpropanoic acid (3:3 FTCA)	ND	*+	9.1	2.3	ng/L		01/11/24 05:03	01/13/24 14:19	1
3-Perfluoropentylpropanoic acid (5:3 FTCA)	ND	*+	45	11	ng/L		01/11/24 05:03	01/13/24 14:19	1
3-Perfluoroheptylpropanoic acid (7:3 FTCA)	ND	*+	45	11	ng/L		01/11/24 05:03	01/13/24 14:19	1

Client Sample ID: EB-121423

Date Collected: 12/14/23 08:20
Date Received: 12/15/23 08:45

Lab Sample ID: 590-22504-4

Matrix: Water

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*77.8*		*5 - 130*	*01/11/24 05:03*	*01/13/24 14:19*	*1*
13C5 PFPeA	*80.3*		*40 - 130*	*01/11/24 05:03*	*01/13/24 14:19*	*1*
13C5 PFHxA	*81.9*		*40 - 130*	*01/11/24 05:03*	*01/13/24 14:19*	*1*
13C4 PFHpA	*82.8*		*40 - 130*	*01/11/24 05:03*	*01/13/24 14:19*	*1*
13C8 PFOA	*76.6*		*40 - 130*	*01/11/24 05:03*	*01/13/24 14:19*	*1*
13C9 PFNA	*83.9*		*40 - 130*	*01/11/24 05:03*	*01/13/24 14:19*	*1*
13C6 PFDA	*80.6*		*40 - 130*	*01/11/24 05:03*	*01/13/24 14:19*	*1*
13C7 PFUnA	*82.0*		*30 - 130*	*01/11/24 05:03*	*01/13/24 14:19*	*1*
13C2 PFDoA	*80.4*		*10 - 130*	*01/11/24 05:03*	*01/13/24 14:19*	*1*
13C2 PFTeDA	*58.8*		*10 - 130*	*01/11/24 05:03*	*01/13/24 14:19*	*1*
13C3 PFBS	*71.4*		*40 - 135*	*01/11/24 05:03*	*01/13/24 14:19*	*1*
13C3 PFHxS	*78.5*		*40 - 130*	*01/11/24 05:03*	*01/13/24 14:19*	*1*
13C8 PFOS	*88.3*		*40 - 130*	*01/11/24 05:03*	*01/13/24 14:19*	*1*
d3-NMeFOSAA	*80.4*		*40 - 170*	*01/11/24 05:03*	*01/13/24 14:19*	*1*
d5-NEtFOSAA	*86.7*		*25 - 135*	*01/11/24 05:03*	*01/13/24 14:19*	*1*
13C2 4:2 FTS	*65.8*		*40 - 200*	*01/11/24 05:03*	*01/13/24 14:19*	*1*
13C2 6:2 FTS	*63.3*		*40 - 200*	*01/11/24 05:03*	*01/13/24 14:19*	*1*
13C3 HFPO-DA	*76.3*		*40 - 130*	*01/11/24 05:03*	*01/13/24 14:19*	*1*
d7-N-MeFOSE-M	*75.3*		*10 - 130*	*01/11/24 05:03*	*01/13/24 14:19*	*1*
d9-N-EtFOSE-M	*69.0*		*10 - 130*	*01/11/24 05:03*	*01/13/24 14:19*	*1*
d5-NEtPFOSA	*66.1*		*10 - 130*	*01/11/24 05:03*	*01/13/24 14:19*	*1*
d3-NMePFOSA	*66.0*		*10 - 130*	*01/11/24 05:03*	*01/13/24 14:19*	*1*

Method: EPA Draft-4 1633 - Per- and Polyfluoroalkyl Substances by LC/MS/MS - RA

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	ND	*+	7.3	1.8	ng/L		01/11/24 05:03	01/19/24 21:59	1
Perfluorooctanesulfonamide (PFOSA)	ND	*+	1.8	0.45	ng/L		01/11/24 05:03	01/19/24 21:59	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C8 PFOSA	*74.6*		*40 - 130*	*01/11/24 05:03*	*01/19/24 21:59*	*1*
13C2 8:2 FTS	*109*		*40 - 300*	*01/11/24 05:03*	*01/19/24 21:59*	*1*

Method: EPA Draft-4 1633 - Per- and Polyfluoroalkyl Substances by LC/MS/MS - RE

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	ND	H	7.1	1.8	ng/L		01/16/24 03:55	01/18/24 17:05	1
Perfluoropentanoic acid (PFPeA)	ND	H	3.6	0.89	ng/L		01/16/24 03:55	01/18/24 17:05	1
Perfluorohexanoic acid (PFHxA)	ND	H	1.8	0.45	ng/L		01/16/24 03:55	01/18/24 17:05	1
Perfluoroheptanoic acid (PFHpA)	ND	H	1.8	0.45	ng/L		01/16/24 03:55	01/18/24 17:05	1
Perfluorooctanoic acid (PFOA)	ND	H	1.8	0.45	ng/L		01/16/24 03:55	01/18/24 17:05	1
Perfluorononanoic acid (PFNA)	ND	H	1.8	0.45	ng/L		01/16/24 03:55	01/18/24 17:05	1
Perfluorodecanoic acid (PFDA)	ND	H	1.8	0.45	ng/L		01/16/24 03:55	01/18/24 17:05	1
Perfluoroundecanoic acid (PFUnA)	ND	H	1.8	0.45	ng/L		01/16/24 03:55	01/18/24 17:05	1
Perfluorododecanoic acid (PFDoA)	ND	H	1.8	0.45	ng/L		01/16/24 03:55	01/18/24 17:05	1
Perfluorotridecanoic acid (PFTrDA)	ND	H	1.8	0.45	ng/L		01/16/24 03:55	01/18/24 17:05	1
Perfluorotetradecanoic acid (PFTeDA)	ND	H	1.8	0.45	ng/L		01/16/24 03:55	01/18/24 17:05	1
Perfluorobutanesulfonic acid (PFBS)	ND	H	1.8	0.45	ng/L		01/16/24 03:55	01/18/24 17:05	1
Perfluoropentanesulfonic acid (PFPeS)	ND	H	1.8	0.45	ng/L		01/16/24 03:55	01/18/24 17:05	1
Perfluorohexanesulfonic acid (PFHxS)	ND	H	1.8	0.45	ng/L		01/16/24 03:55	01/18/24 17:05	1
Perfluoroheptanesulfonic acid (PFHpS)	ND	H	1.8	0.45	ng/L		01/16/24 03:55	01/18/24 17:05	1

Client: GeoEngineers Inc
Project/Site: Marshall Landfill

Job ID: 590-22504-1

Client Sample ID: EB-121423
Date Collected: 12/14/23 08:20
Date Received: 12/15/23 08:45

Lab Sample ID: 590-22504-4
Matrix: Water

Method: EPA Draft-4 1633 - Per- and Polyfluoroalkyl Substances by LC/MS/MS - RE (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	ND	H	1.8	0.45	ng/L		01/16/24 03:55	01/18/24 17:05	1
Perfluorononanesulfonic acid (PFNS)	ND	H	1.8	0.45	ng/L		01/16/24 03:55	01/18/24 17:05	1
Perfluorodecanesulfonic acid (PFDS)	ND	H	1.8	0.45	ng/L		01/16/24 03:55	01/18/24 17:05	1
Perfluorododecanesulfonic acid (PFDoS)	ND	H	1.8	0.45	ng/L		01/16/24 03:55	01/18/24 17:05	1
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	ND	H	7.1	1.8	ng/L		01/16/24 03:55	01/18/24 17:05	1
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	ND	H	7.1	1.8	ng/L		01/16/24 03:55	01/18/24 17:05	1
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	ND	H	7.1	1.8	ng/L		01/16/24 03:55	01/18/24 17:05	1
Perfluorooctanesulfonamide (PFOSA)	ND	H	1.8	0.45	ng/L		01/16/24 03:55	01/18/24 17:05	1
N-methylperfluorooctane sulfonamide (NMeFOSA)	ND	H	1.8	0.45	ng/L		01/16/24 03:55	01/18/24 17:05	1
N-ethylperfluorooctane sulfonamide (NEtFOSA)	ND	H	1.8	0.45	ng/L		01/16/24 03:55	01/18/24 17:05	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND	H	1.8	0.45	ng/L		01/16/24 03:55	01/18/24 17:05	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND	H	1.8	0.45	ng/L		01/16/24 03:55	01/18/24 17:05	1
N-methylperfluorooctane sulfonamidoethanol (NMeFOSE)	ND	H	18	4.5	ng/L		01/16/24 03:55	01/18/24 17:05	1
N-ethylperfluorooctane sulfonamidoethanol (NEtFOSE)	ND	H	18	4.5	ng/L		01/16/24 03:55	01/18/24 17:05	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND	H	7.1	1.8	ng/L		01/16/24 03:55	01/18/24 17:05	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	H	7.1	1.8	ng/L		01/16/24 03:55	01/18/24 17:05	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	ND	H	3.6	0.89	ng/L		01/16/24 03:55	01/18/24 17:05	1
Perfluoro-4-methoxybutanoic acid (PFMBA)	ND	H	3.6	0.89	ng/L		01/16/24 03:55	01/18/24 17:05	1
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	H	3.6	0.89	ng/L		01/16/24 03:55	01/18/24 17:05	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	ND	H	7.1	1.8	ng/L		01/16/24 03:55	01/18/24 17:05	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	ND	H	7.1	1.8	ng/L		01/16/24 03:55	01/18/24 17:05	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	ND	H	3.6	0.89	ng/L		01/16/24 03:55	01/18/24 17:05	1
3-Perfluoropropylpropanoic acid (3:3 FTCA)	ND	H	8.9	2.2	ng/L		01/16/24 03:55	01/18/24 17:05	1
3-Perfluoropentylpropanoic acid (5:3 FTCA)	ND	H	45	11	ng/L		01/16/24 03:55	01/18/24 17:05	1
3-Perfluoroheptylpropanoic acid (7:3 FTCA)	ND	H	45	11	ng/L		01/16/24 03:55	01/18/24 17:05	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*78.2*		*5 - 130*	*01/16/24 03:55*	*01/18/24 17:05*	*1*
13C5 PFPeA	*78.8*		*40 - 130*	*01/16/24 03:55*	*01/18/24 17:05*	*1*
13C5 PFHxA	*74.5*		*40 - 130*	*01/16/24 03:55*	*01/18/24 17:05*	*1*
13C4 PFHpA	*80.6*		*40 - 130*	*01/16/24 03:55*	*01/18/24 17:05*	*1*
13C8 PFOA	*74.0*		*40 - 130*	*01/16/24 03:55*	*01/18/24 17:05*	*1*
13C9 PFNA	*80.5*		*40 - 130*	*01/16/24 03:55*	*01/18/24 17:05*	*1*
13C6 PFDA	*72.5*		*40 - 130*	*01/16/24 03:55*	*01/18/24 17:05*	*1*

Client Sample ID: EB-121423

Lab Sample ID: 590-22504-4

Date Collected: 12/14/23 08:20

Matrix: Water

Date Received: 12/15/23 08:45

Method: EPA Draft-4 1633 - Per- and Polyfluoroalkyl Substances by LC/MS/MS - RE (Continued)

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C7 PFUnA	77.0		30 - 130	01/16/24 03:55	01/18/24 17:05	1
13C2 PFDoA	70.8		10 - 130	01/16/24 03:55	01/18/24 17:05	1
13C2 PFTeDA	59.7		10 - 130	01/16/24 03:55	01/18/24 17:05	1
13C3 PFBS	75.2		40 - 135	01/16/24 03:55	01/18/24 17:05	1
13C3 PFHxS	79.5		40 - 130	01/16/24 03:55	01/18/24 17:05	1
13C8 PFOS	76.4		40 - 130	01/16/24 03:55	01/18/24 17:05	1
13C8 PFOSA	75.9		40 - 130	01/16/24 03:55	01/18/24 17:05	1
d3-NMeFOSAA	74.0		40 - 170	01/16/24 03:55	01/18/24 17:05	1
d5-NEtFOSAA	75.1		25 - 135	01/16/24 03:55	01/18/24 17:05	1
13C2 4:2 FTS	111		40 - 200	01/16/24 03:55	01/18/24 17:05	1
13C2 6:2 FTS	91.5		40 - 200	01/16/24 03:55	01/18/24 17:05	1
13C2 8:2 FTS	93.3		40 - 300	01/16/24 03:55	01/18/24 17:05	1
13C3 HFPO-DA	81.4		40 - 130	01/16/24 03:55	01/18/24 17:05	1
d7-N-MeFOSE-M	63.3		10 - 130	01/16/24 03:55	01/18/24 17:05	1
d9-N-EtFOSE-M	60.7		10 - 130	01/16/24 03:55	01/18/24 17:05	1
d5-NEtPFOSA	60.4		10 - 130	01/16/24 03:55	01/18/24 17:05	1
d3-NMePFOSA	65.0		10 - 130	01/16/24 03:55	01/18/24 17:05	1

Client Sample ID: FB-121423

Lab Sample ID: 590-22504-5

Date Collected: 12/14/23 08:30

Matrix: Water

Date Received: 12/15/23 08:45

Method: EPA Draft-4 1633 - Per- and Polyfluoroalkyl Substances by LC/MS/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	ND	*+	7.0	1.8	ng/L		01/11/24 05:03	01/13/24 14:36	1
Perfluoropentanoic acid (PFPeA)	ND	*+	3.5	0.88	ng/L		01/11/24 05:03	01/13/24 14:36	1
Perfluorohexanoic acid (PFHxA)	ND	*+	1.8	0.44	ng/L		01/11/24 05:03	01/13/24 14:36	1
Perfluoroheptanoic acid (PFHpA)	ND	*+	1.8	0.44	ng/L		01/11/24 05:03	01/13/24 14:36	1
Perfluorooctanoic acid (PFOA)	ND	*+	1.8	0.44	ng/L		01/11/24 05:03	01/13/24 14:36	1
Perfluorononanoic acid (PFNA)	ND	*+	1.8	0.44	ng/L		01/11/24 05:03	01/13/24 14:36	1
Perfluorodecanoic acid (PFDA)	ND	*+	1.8	0.44	ng/L		01/11/24 05:03	01/13/24 14:36	1
Perfluoroundecanoic acid (PFUnA)	ND	*+	1.8	0.44	ng/L		01/11/24 05:03	01/13/24 14:36	1
Perfluorododecanoic acid (PFDoA)	ND	*+	1.8	0.44	ng/L		01/11/24 05:03	01/13/24 14:36	1
Perfluorotridecanoic acid (PFTrDA)	ND	*+	1.8	0.44	ng/L		01/11/24 05:03	01/13/24 14:36	1
Perfluorotetradecanoic acid (PFTeDA)	ND	*+	1.8	0.44	ng/L		01/11/24 05:03	01/13/24 14:36	1
Perfluorobutanesulfonic acid (PFBS)	ND	*+	1.8	0.44	ng/L		01/11/24 05:03	01/13/24 14:36	1
Perfluoropentanesulfonic acid (PFPeS)	ND	*+	1.8	0.44	ng/L		01/11/24 05:03	01/13/24 14:36	1
Perfluorohexanesulfonic acid (PFHxS)	ND	*+	1.8	0.44	ng/L		01/11/24 05:03	01/13/24 14:36	1
Perfluoroheptanesulfonic acid (PFHpS)	ND	*+	1.8	0.44	ng/L		01/11/24 05:03	01/13/24 14:36	1
Perfluorooctanesulfonic acid (PFOS)	ND	*+ *1	1.8	0.44	ng/L		01/11/24 05:03	01/13/24 14:36	1
Perfluorononanesulfonic acid (PFNS)	ND	*+	1.8	0.44	ng/L		01/11/24 05:03	01/13/24 14:36	1
Perfluorodecanesulfonic acid (PFDS)	ND	*+	1.8	0.44	ng/L		01/11/24 05:03	01/13/24 14:36	1
Perfluorododecanesulfonic acid (PFDoS)	ND	*+	1.8	0.44	ng/L		01/11/24 05:03	01/13/24 14:36	1
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	ND	*+	7.0	1.8	ng/L		01/11/24 05:03	01/13/24 14:36	1
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	ND	*+	7.0	1.8	ng/L		01/11/24 05:03	01/13/24 14:36	1

Client: GeoEngineers Inc
Project/Site: Marshall Landfill

Job ID: 590-22504-1

Client Sample ID: FB-121423
Date Collected: 12/14/23 08:30
Date Received: 12/15/23 08:45

Lab Sample ID: 590-22504-5
Matrix: Water

Method: EPA Draft-4 1633 - Per- and Polyfluoroalkyl Substances by LC/MS/MS (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
N-methylperfluorooctane sulfonamide (NMeFOSA)	ND	*+	1.8	0.44	ng/L		01/11/24 05:03	01/13/24 14:36	1
N-ethylperfluorooctane sulfonamide (NEtFOSA)	ND	*+	1.8	0.44	ng/L		01/11/24 05:03	01/13/24 14:36	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND	*+	1.8	0.44	ng/L		01/11/24 05:03	01/13/24 14:36	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND	*+	1.8	0.44	ng/L		01/11/24 05:03	01/13/24 14:36	1
N-methylperfluorooctane sulfonamidoethanol (NMeFOSE)	ND	*+	18	4.4	ng/L		01/11/24 05:03	01/13/24 14:36	1
N-ethylperfluorooctane sulfonamidoethanol (NEtFOSE)	ND	*+	18	4.4	ng/L		01/11/24 05:03	01/13/24 14:36	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND	*+	7.0	1.8	ng/L		01/11/24 05:03	01/13/24 14:36	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	*+ *1	7.0	1.8	ng/L		01/11/24 05:03	01/13/24 14:36	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	ND	*+	3.5	0.88	ng/L		01/11/24 05:03	01/13/24 14:36	1
Perfluoro-4-methoxybutanoic acid (PFMBA)	ND	*+	3.5	0.88	ng/L		01/11/24 05:03	01/13/24 14:36	1
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	*+	3.5	0.88	ng/L		01/11/24 05:03	01/13/24 14:36	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	ND	*+	7.0	1.8	ng/L		01/11/24 05:03	01/13/24 14:36	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	ND		7.0	1.8	ng/L		01/11/24 05:03	01/13/24 14:36	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	ND	*+	3.5	0.88	ng/L		01/11/24 05:03	01/13/24 14:36	1
3-Perfluoropropylpropanoic acid (3:3 FTCA)	ND	*+	8.8	2.2	ng/L		01/11/24 05:03	01/13/24 14:36	1
3-Perfluoropentylpropanoic acid (5:3 FTCA)	ND	*+	44	11	ng/L		01/11/24 05:03	01/13/24 14:36	1
3-Perfluoroheptylpropanoic acid (7:3 FTCA)	ND	*+	44	11	ng/L		01/11/24 05:03	01/13/24 14:36	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*77.5*		*5 - 130*	*01/11/24 05:03*	*01/13/24 14:36*	*1*
13C5 PFPeA	*81.0*		*40 - 130*	*01/11/24 05:03*	*01/13/24 14:36*	*1*
13C5 PFHxA	*75.6*		*40 - 130*	*01/11/24 05:03*	*01/13/24 14:36*	*1*
13C4 PFHpA	*83.1*		*40 - 130*	*01/11/24 05:03*	*01/13/24 14:36*	*1*
13C8 PFOA	*77.1*		*40 - 130*	*01/11/24 05:03*	*01/13/24 14:36*	*1*
13C9 PFNA	*83.3*		*40 - 130*	*01/11/24 05:03*	*01/13/24 14:36*	*1*
13C6 PFDA	*78.0*		*40 - 130*	*01/11/24 05:03*	*01/13/24 14:36*	*1*
13C7 PFUnA	*75.2*		*30 - 130*	*01/11/24 05:03*	*01/13/24 14:36*	*1*
13C2 PFDoA	*71.1*		*10 - 130*	*01/11/24 05:03*	*01/13/24 14:36*	*1*
13C2 PFTeDA	*56.9*		*10 - 130*	*01/11/24 05:03*	*01/13/24 14:36*	*1*
13C3 PFBS	*70.2*		*40 - 135*	*01/11/24 05:03*	*01/13/24 14:36*	*1*
13C3 PFHxS	*77.3*		*40 - 130*	*01/11/24 05:03*	*01/13/24 14:36*	*1*
13C8 PFOS	*76.0*		*40 - 130*	*01/11/24 05:03*	*01/13/24 14:36*	*1*
d3-NMeFOSAA	*70.1*		*40 - 170*	*01/11/24 05:03*	*01/13/24 14:36*	*1*
d5-NEtFOSAA	*72.4*		*25 - 135*	*01/11/24 05:03*	*01/13/24 14:36*	*1*
13C2 4:2 FTS	*67.8*		*40 - 200*	*01/11/24 05:03*	*01/13/24 14:36*	*1*
13C2 6:2 FTS	*70.1*		*40 - 200*	*01/11/24 05:03*	*01/13/24 14:36*	*1*
13C3 HFPO-DA	*87.3*		*40 - 130*	*01/11/24 05:03*	*01/13/24 14:36*	*1*

Client Sample ID: FB-121423

Date Collected: 12/14/23 08:30
Date Received: 12/15/23 08:45

Lab Sample ID: 590-22504-5

Matrix: Water

Method: EPA Draft-4 1633 - Per- and Polyfluoroalkyl Substances by LC/MS/MS (Continued)

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
d7-N-MeFOSE-M	*70.5*		*10 - 130*	*01/11/24 05:03*	*01/13/24 14:36*	*1*
d9-N-EtFOSE-M	*60.4*		*10 - 130*	*01/11/24 05:03*	*01/13/24 14:36*	*1*
d5-NEtPFOSA	*61.4*		*10 - 130*	*01/11/24 05:03*	*01/13/24 14:36*	*1*
d3-NMePFOSA	*64.1*		*10 - 130*	*01/11/24 05:03*	*01/13/24 14:36*	*1*

Method: EPA Draft-4 1633 - Per- and Polyfluoroalkyl Substances by LC/MS/MS - RA

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	ND	*+	7.0	1.8	ng/L		01/11/24 05:03	01/19/24 22:17	1
Perfluorooctanesulfonamide (PFOSA)	ND	*+	1.8	0.44	ng/L		01/11/24 05:03	01/19/24 22:17	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C8 PFOSA	*70.4*		*40 - 130*	*01/11/24 05:03*	*01/19/24 22:17*	*1*
13C2 8:2 FTS	*104*		*40 - 300*	*01/11/24 05:03*	*01/19/24 22:17*	*1*

Method: EPA Draft-4 1633 - Per- and Polyfluoroalkyl Substances by LC/MS/MS - RE

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	ND	H	7.3	1.8	ng/L		01/16/24 03:55	01/18/24 17:21	1
Perfluoropentanoic acid (PFPeA)	ND	H	3.6	0.91	ng/L		01/16/24 03:55	01/18/24 17:21	1
Perfluorohexanoic acid (PFHxA)	ND	H	1.8	0.46	ng/L		01/16/24 03:55	01/18/24 17:21	1
Perfluoroheptanoic acid (PFHpA)	ND	H	1.8	0.46	ng/L		01/16/24 03:55	01/18/24 17:21	1
Perfluorooctanoic acid (PFOA)	ND	H	1.8	0.46	ng/L		01/16/24 03:55	01/18/24 17:21	1
Perfluorononanoic acid (PFNA)	ND	H	1.8	0.46	ng/L		01/16/24 03:55	01/18/24 17:21	1
Perfluorodecanoic acid (PFDA)	ND	H	1.8	0.46	ng/L		01/16/24 03:55	01/18/24 17:21	1
Perfluoroundecanoic acid (PFUnA)	ND	H	1.8	0.46	ng/L		01/16/24 03:55	01/18/24 17:21	1
Perfluorododecanoic acid (PFDoA)	ND	H	1.8	0.46	ng/L		01/16/24 03:55	01/18/24 17:21	1
Perfluorotridecanoic acid (PFTrDA)	ND	H	1.8	0.46	ng/L		01/16/24 03:55	01/18/24 17:21	1
Perfluorotetradecanoic acid (PFTeDA)	ND	H	1.8	0.46	ng/L		01/16/24 03:55	01/18/24 17:21	1
Perfluorobutanesulfonic acid (PFBS)	ND	H	1.8	0.46	ng/L		01/16/24 03:55	01/18/24 17:21	1
Perfluoropentanesulfonic acid (PFPeS)	ND	H	1.8	0.46	ng/L		01/16/24 03:55	01/18/24 17:21	1
Perfluorohexanesulfonic acid (PFHxS)	ND	H	1.8	0.46	ng/L		01/16/24 03:55	01/18/24 17:21	1
Perfluoroheptanesulfonic acid (PFHpS)	ND	H	1.8	0.46	ng/L		01/16/24 03:55	01/18/24 17:21	1
Perfluorooctanesulfonic acid (PFOS)	ND	H	1.8	0.46	ng/L		01/16/24 03:55	01/18/24 17:21	1
Perfluorononanesulfonic acid (PFNS)	ND	H	1.8	0.46	ng/L		01/16/24 03:55	01/18/24 17:21	1
Perfluorodecanesulfonic acid (PFDS)	ND	H	1.8	0.46	ng/L		01/16/24 03:55	01/18/24 17:21	1
Perfluorododecanesulfonic acid (PFDoS)	ND	H	1.8	0.46	ng/L		01/16/24 03:55	01/18/24 17:21	1
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	ND	H	7.3	1.8	ng/L		01/16/24 03:55	01/18/24 17:21	1
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	ND	H	7.3	1.8	ng/L		01/16/24 03:55	01/18/24 17:21	1
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	ND	H	7.3	1.8	ng/L		01/16/24 03:55	01/18/24 17:21	1
Perfluorooctanesulfonamide (PFOSA)	ND	H	1.8	0.46	ng/L		01/16/24 03:55	01/18/24 17:21	1
N-methylperfluorooctane sulfonamide (NMeFOSA)	ND	H	1.8	0.46	ng/L		01/16/24 03:55	01/18/24 17:21	1
N-ethylperfluorooctane sulfonamide (NEtFOSA)	ND	H	1.8	0.46	ng/L		01/16/24 03:55	01/18/24 17:21	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND	H	1.8	0.46	ng/L		01/16/24 03:55	01/18/24 17:21	1

Client Sample ID: FB-121423
Date Collected: 12/14/23 08:30
Date Received: 12/15/23 08:45

Lab Sample ID: 590-22504-5
Matrix: Water

Method: EPA Draft-4 1633 - Per- and Polyfluoroalkyl Substances by LC/MS/MS - RE (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND	H	1.8	0.46	ng/L		01/16/24 03:55	01/18/24 17:21	1
N-methylperfluorooctane sulfonamidoethanol (NMeFOSE)	ND	H	18	4.6	ng/L		01/16/24 03:55	01/18/24 17:21	1
N-ethylperfluorooctane sulfonamidoethanol (NEtFOSE)	ND	H	18	4.6	ng/L		01/16/24 03:55	01/18/24 17:21	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND	H	7.3	1.8	ng/L		01/16/24 03:55	01/18/24 17:21	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	H	7.3	1.8	ng/L		01/16/24 03:55	01/18/24 17:21	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	ND	H	3.6	0.91	ng/L		01/16/24 03:55	01/18/24 17:21	1
Perfluoro-4-methoxybutanoic acid (PFMBA)	ND	H	3.6	0.91	ng/L		01/16/24 03:55	01/18/24 17:21	1
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	H	3.6	0.91	ng/L		01/16/24 03:55	01/18/24 17:21	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	ND	H	7.3	1.8	ng/L		01/16/24 03:55	01/18/24 17:21	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	ND	H	7.3	1.8	ng/L		01/16/24 03:55	01/18/24 17:21	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	ND	H	3.6	0.91	ng/L		01/16/24 03:55	01/18/24 17:21	1
3-Perfluoropropylpropanoic acid (3:3 FTCA)	ND	H	9.1	2.3	ng/L		01/16/24 03:55	01/18/24 17:21	1
3-Perfluoropentylpropanoic acid (5:3 FTCA)	ND	H	46	11	ng/L		01/16/24 03:55	01/18/24 17:21	1
3-Perfluoroheptylpropanoic acid (7:3 FTCA)	ND	H	46	11	ng/L		01/16/24 03:55	01/18/24 17:21	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*81.1*		*5 - 130*	*01/16/24 03:55*	*01/18/24 17:21*	*1*
13C5 PFPeA	*86.7*		*40 - 130*	*01/16/24 03:55*	*01/18/24 17:21*	*1*
13C5 PFHxA	*82.5*		*40 - 130*	*01/16/24 03:55*	*01/18/24 17:21*	*1*
13C4 PFHpA	*90.9*		*40 - 130*	*01/16/24 03:55*	*01/18/24 17:21*	*1*
13C8 PFOA	*77.3*		*40 - 130*	*01/16/24 03:55*	*01/18/24 17:21*	*1*
13C9 PFNA	*80.7*		*40 - 130*	*01/16/24 03:55*	*01/18/24 17:21*	*1*
13C6 PFDA	*75.4*		*40 - 130*	*01/16/24 03:55*	*01/18/24 17:21*	*1*
13C7 PFUnA	*74.3*		*30 - 130*	*01/16/24 03:55*	*01/18/24 17:21*	*1*
13C2 PFDoA	*69.5*		*10 - 130*	*01/16/24 03:55*	*01/18/24 17:21*	*1*
13C2 PFTeDA	*61.3*		*10 - 130*	*01/16/24 03:55*	*01/18/24 17:21*	*1*
13C3 PFBS	*81.5*		*40 - 135*	*01/16/24 03:55*	*01/18/24 17:21*	*1*
13C3 PFHxS	*81.8*		*40 - 130*	*01/16/24 03:55*	*01/18/24 17:21*	*1*
13C8 PFOS	*82.2*		*40 - 130*	*01/16/24 03:55*	*01/18/24 17:21*	*1*
13C8 PFOSA	*77.2*		*40 - 130*	*01/16/24 03:55*	*01/18/24 17:21*	*1*
d3-NMeFOSAA	*83.0*		*40 - 170*	*01/16/24 03:55*	*01/18/24 17:21*	*1*
d5-NEtFOSAA	*81.5*		*25 - 135*	*01/16/24 03:55*	*01/18/24 17:21*	*1*
13C2 4:2 FTS	*112*		*40 - 200*	*01/16/24 03:55*	*01/18/24 17:21*	*1*
13C2 6:2 FTS	*105*		*40 - 200*	*01/16/24 03:55*	*01/18/24 17:21*	*1*
13C2 8:2 FTS	*97.9*		*40 - 300*	*01/16/24 03:55*	*01/18/24 17:21*	*1*
13C3 HFPO-DA	*89.0*		*40 - 130*	*01/16/24 03:55*	*01/18/24 17:21*	*1*
d7-N-MeFOSE-M	*63.5*		*10 - 130*	*01/16/24 03:55*	*01/18/24 17:21*	*1*
d9-N-EtFOSE-M	*70.1*		*10 - 130*	*01/16/24 03:55*	*01/18/24 17:21*	*1*
d5-NEtPFOSA	*69.6*		*10 - 130*	*01/16/24 03:55*	*01/18/24 17:21*	*1*
d3-NMePFOSA	*74.5*		*10 - 130*	*01/16/24 03:55*	*01/18/24 17:21*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 590-45100/10
Matrix: Water
Analysis Batch: 45100

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	ND		1.0	0.48	ug/L			12/15/23 13:42	1
1,1,1-Trichloroethane	ND		1.0	0.17	ug/L			12/15/23 13:42	1
1,1,2,2-Tetrachloroethane	ND		2.0	0.32	ug/L			12/15/23 13:42	1
1,1,2-Trichloroethane	ND		2.0	0.43	ug/L			12/15/23 13:42	1
1,1-Dichloroethane	ND		1.0	0.29	ug/L			12/15/23 13:42	1
1,1-Dichloroethene	ND		1.0	0.20	ug/L			12/15/23 13:42	1
1,1-Dichloropropene	ND		1.0	0.50	ug/L			12/15/23 13:42	1
1,2,3-Trichlorobenzene	ND		1.0	0.33	ug/L			12/15/23 13:42	1
1,2,3-Trichloropropane	ND		2.0	0.50	ug/L			12/15/23 13:42	1
1,2,4-Trichlorobenzene	ND		1.0	0.50	ug/L			12/15/23 13:42	1
1,2,4-Trimethylbenzene	ND		1.0	0.31	ug/L			12/15/23 13:42	1
1,2-Dibromo-3-Chloropropane	ND		10	1.5	ug/L			12/15/23 13:42	1
1,2-Dibromoethane (EDB)	ND		1.0	0.20	ug/L			12/15/23 13:42	1
1,2-Dichlorobenzene	ND		1.0	0.23	ug/L			12/15/23 13:42	1
1,2-Dichloroethane	ND		1.0	0.31	ug/L			12/15/23 13:42	1
1,2-Dichloropropane	ND		1.0	0.23	ug/L			12/15/23 13:42	1
1,3,5-Trimethylbenzene	ND		1.0	0.32	ug/L			12/15/23 13:42	1
1,3-Dichlorobenzene	ND		1.0	0.14	ug/L			12/15/23 13:42	1
1,3-Dichloropropane	ND		2.0	0.21	ug/L			12/15/23 13:42	1
1,4-Dichlorobenzene	ND		1.0	0.28	ug/L			12/15/23 13:42	1
2,2-Dichloropropane	ND		2.0	0.66	ug/L			12/15/23 13:42	1
2-Chlorotoluene	ND		1.0	0.36	ug/L			12/15/23 13:42	1
4-Chlorotoluene	ND		1.0	0.26	ug/L			12/15/23 13:42	1
Benzene	ND		0.40	0.093	ug/L			12/15/23 13:42	1
Bromobenzene	ND		1.0	0.28	ug/L			12/15/23 13:42	1
Bromochloromethane	ND		2.0	0.44	ug/L			12/15/23 13:42	1
Bromodichloromethane	ND		1.0	0.29	ug/L			12/15/23 13:42	1
Bromoform	ND		5.0	0.66	ug/L			12/15/23 13:42	1
Bromomethane	ND		5.0	0.76	ug/L			12/15/23 13:42	1
Carbon tetrachloride	ND		1.0	0.40	ug/L			12/15/23 13:42	1
Chlorobenzene	ND		1.0	0.32	ug/L			12/15/23 13:42	1
Chloroethane	ND		2.0	0.40	ug/L			12/15/23 13:42	1
Chloroform	ND		1.0	0.24	ug/L			12/15/23 13:42	1
Chloromethane	ND		3.0	0.50	ug/L			12/15/23 13:42	1
cis-1,2-Dichloroethene	ND		1.0	0.23	ug/L			12/15/23 13:42	1
cis-1,3-Dichloropropene	ND		1.0	0.25	ug/L			12/15/23 13:42	1
Dibromochloromethane	ND		2.0	0.33	ug/L			12/15/23 13:42	1
Dibromomethane	ND		2.0	0.50	ug/L			12/15/23 13:42	1
Dichlorodifluoromethane	ND		2.0	0.64	ug/L			12/15/23 13:42	1
Ethylbenzene	ND		1.0	0.20	ug/L			12/15/23 13:42	1
Hexachlorobutadiene	ND		2.0	0.21	ug/L			12/15/23 13:42	1
Isopropylbenzene	ND		1.0	0.24	ug/L			12/15/23 13:42	1
m,p-Xylene	ND		2.0	0.28	ug/L			12/15/23 13:42	1
Methyl tert-butyl ether	ND		1.0	0.16	ug/L			12/15/23 13:42	1
Methylene Chloride	ND		5.0	2.2	ug/L			12/15/23 13:42	1
Naphthalene	ND		2.0	0.63	ug/L			12/15/23 13:42	1
n-Butylbenzene	ND		1.0	0.20	ug/L			12/15/23 13:42	1
N-Propylbenzene	ND		1.0	0.25	ug/L			12/15/23 13:42	1

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: MB 590-45100/10
Matrix: Water
Analysis Batch: 45100

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
o-Xylene	ND		1.0	0.16	ug/L			12/15/23 13:42	1
p-Isopropyltoluene	ND		1.0	0.27	ug/L			12/15/23 13:42	1
sec-Butylbenzene	ND		1.0	0.22	ug/L			12/15/23 13:42	1
Styrene	ND		1.0	0.24	ug/L			12/15/23 13:42	1
tert-Butylbenzene	ND		1.0	0.12	ug/L			12/15/23 13:42	1
Tetrachloroethene	ND		1.0	0.22	ug/L			12/15/23 13:42	1
Toluene	ND		1.0	0.31	ug/L			12/15/23 13:42	1
trans-1,2-Dichloroethene	ND		1.0	0.20	ug/L			12/15/23 13:42	1
trans-1,3-Dichloropropene	ND		1.0	0.45	ug/L			12/15/23 13:42	1
Trichloroethene	ND		1.0	0.20	ug/L			12/15/23 13:42	1
Trichlorofluoromethane	ND		1.0	0.20	ug/L			12/15/23 13:42	1
Vinyl chloride	ND		0.40	0.13	ug/L			12/15/23 13:42	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*103*		*80 - 120*		*12/15/23 13:42*	*1*
4-Bromofluorobenzene (Surr)	*94*		*76 - 120*		*12/15/23 13:42*	*1*
Dibromofluoromethane (Surr)	*109*		*80 - 123*		*12/15/23 13:42*	*1*
Toluene-d8 (Surr)	*103*		*80 - 120*		*12/15/23 13:42*	*1*

Lab Sample ID: LCS 590-45100/1003
Matrix: Water
Analysis Batch: 45100

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1,1,2-Tetrachloroethane	10.0	10.2		ug/L		102	80 - 131
1,1,1-Trichloroethane	10.0	10.9		ug/L		109	71 - 138
1,1,2,2-Tetrachloroethane	10.0	9.55		ug/L		96	60 - 150
1,1,2-Trichloroethane	10.0	10.8		ug/L		108	80 - 128
1,1-Dichloroethane	10.0	9.75		ug/L		98	80 - 125
1,1-Dichloroethene	10.0	9.99		ug/L		100	65 - 141
1,1-Dichloropropene	10.0	9.86		ug/L		99	82 - 123
1,2,3-Trichlorobenzene	10.0	9.85		ug/L		99	70 - 137
1,2,3-Trichloropropane	10.0	9.28		ug/L		93	65 - 142
1,2,4-Trichlorobenzene	10.0	9.64		ug/L		96	76 - 131
1,2,4-Trimethylbenzene	10.0	8.36		ug/L		84	78 - 131
1,2-Dibromo-3-Chloropropane	10.0	9.81	J	ug/L		98	53 - 142
1,2-Dibromoethane (EDB)	10.0	10.7		ug/L		107	80 - 124
1,2-Dichlorobenzene	10.0	9.69		ug/L		97	80 - 120
1,2-Dichloroethane	10.0	9.90		ug/L		99	80 - 120
1,2-Dichloropropane	10.0	9.51		ug/L		95	79 - 122
1,3,5-Trimethylbenzene	10.0	8.24		ug/L		82	76 - 129
1,3-Dichlorobenzene	10.0	9.67		ug/L		97	80 - 122
1,3-Dichloropropane	10.0	10.1		ug/L		101	78 - 129
1,4-Dichlorobenzene	10.0	9.36		ug/L		94	80 - 120
2,2-Dichloropropane	10.0	13.3		ug/L		133	73 - 140
2-Chlorotoluene	10.0	9.07		ug/L		91	74 - 129
4-Chlorotoluene	10.0	9.10		ug/L		91	79 - 125
Benzene	10.0	9.90		ug/L		99	80 - 120

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 590-45100/1003
Matrix: Water
Analysis Batch: 45100

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Bromobenzene	10.0	8.94		ug/L		89	73 - 125
Bromochloromethane	10.0	9.81		ug/L		98	71 - 136
Bromodichloromethane	10.0	9.56		ug/L		96	80 - 120
Bromoform	10.0	11.3		ug/L		113	73 - 139
Bromomethane	10.0	8.34		ug/L		83	66 - 149
Carbon tetrachloride	10.0	11.2		ug/L		112	72 - 138
Chlorobenzene	10.0	9.79		ug/L		98	80 - 124
Chloroethane	10.0	9.27		ug/L		93	64 - 134
Chloroform	10.0	9.96		ug/L		100	80 - 123
Chloromethane	10.0	16.6	*+	ug/L		166	19 - 150
cis-1,2-Dichloroethene	10.0	9.60		ug/L		96	80 - 122
cis-1,3-Dichloropropene	10.0	9.39		ug/L		94	80 - 121
Dibromochloromethane	10.0	10.5		ug/L		105	80 - 130
Dibromomethane	10.0	9.37		ug/L		94	80 - 122
Dichlorodifluoromethane	10.0	9.54		ug/L		95	30 - 150
Ethylbenzene	10.0	9.76		ug/L		98	80 - 122
Hexachlorobutadiene	10.0	10.1		ug/L		101	77 - 132
Isopropylbenzene	10.0	10.3		ug/L		103	80 - 122
m,p-Xylene	10.0	9.96		ug/L		100	80 - 125
Methyl tert-butyl ether	10.0	11.4		ug/L		114	68 - 134
Methylene Chloride	10.0	8.30		ug/L		83	30 - 150
Naphthalene	10.0	10.1		ug/L		101	61 - 140
n-Butylbenzene	10.0	9.52		ug/L		95	75 - 121
N-Propylbenzene	10.0	9.10		ug/L		91	73 - 136
o-Xylene	10.0	9.98		ug/L		100	80 - 130
p-Isopropyltoluene	10.0	9.54		ug/L		95	78 - 128
sec-Butylbenzene	10.0	8.29		ug/L		83	73 - 138
Styrene	10.0	9.46		ug/L		95	79 - 134
tert-Butylbenzene	10.0	8.27		ug/L		83	76 - 131
Tetrachloroethene	10.0	11.0		ug/L		110	80 - 139
Toluene	10.0	9.12		ug/L		91	80 - 129
trans-1,2-Dichloroethene	10.0	8.99		ug/L		90	73 - 137
trans-1,3-Dichloropropene	10.0	10.5		ug/L		105	73 - 138
Trichloroethene	10.0	9.73		ug/L		97	80 - 123
Trichlorofluoromethane	10.0	9.49		ug/L		95	71 - 147
Vinyl chloride	10.0	8.41		ug/L		84	50 - 150

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*103*		*80 - 120*
4-Bromofluorobenzene (Surr)	*100*		*76 - 120*
Dibromofluoromethane (Surr)	*103*		*80 - 123*
Toluene-d8 (Surr)	*100*		*80 - 120*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCSD 590-45100/4
Matrix: Water
Analysis Batch: 45100

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1,1,2-Tetrachloroethane			10.0	10.7		ug/L		107	80 - 131	5	17
1,1,1-Trichloroethane			10.0	11.4		ug/L		114	71 - 138	5	17
1,1,2,2-Tetrachloroethane			10.0	9.77		ug/L		98	60 - 150	2	17
1,1,2-Trichloroethane			10.0	10.1		ug/L		101	80 - 128	6	15
1,1-Dichloroethane			10.0	10.0		ug/L		100	80 - 125	3	20
1,1-Dichloroethene			10.0	10.9		ug/L		109	65 - 141	9	19
1,1-Dichloropropene			10.0	9.71		ug/L		97	82 - 123	2	20
1,2,3-Trichlorobenzene			10.0	9.68		ug/L		97	70 - 137	2	30
1,2,3-Trichloropropane			10.0	9.42		ug/L		94	65 - 142	1	34
1,2,4-Trichlorobenzene			10.0	9.51		ug/L		95	76 - 131	1	24
1,2,4-Trimethylbenzene			10.0	8.57		ug/L		86	78 - 131	2	16
1,2-Dibromo-3-Chloropropane			10.0	11.3		ug/L		113	53 - 142	14	29
1,2-Dibromoethane (EDB)			10.0	10.7		ug/L		107	80 - 124	0	14
1,2-Dichlorobenzene			10.0	10.3		ug/L		103	80 - 120	6	14
1,2-Dichloroethane			10.0	9.66		ug/L		97	80 - 120	2	14
1,2-Dichloropropane			10.0	9.28		ug/L		93	79 - 122	2	15
1,3,5-Trimethylbenzene			10.0	8.51		ug/L		85	76 - 129	3	17
1,3-Dichlorobenzene			10.0	9.88		ug/L		99	80 - 122	2	15
1,3-Dichloropropane			10.0	9.78		ug/L		98	78 - 129	3	17
1,4-Dichlorobenzene			10.0	9.80		ug/L		98	80 - 120	5	14
2,2-Dichloropropane			10.0	13.0		ug/L		130	73 - 140	2	18
2-Chlorotoluene			10.0	9.70		ug/L		97	74 - 129	7	19
4-Chlorotoluene			10.0	9.29		ug/L		93	79 - 125	2	16
Benzene			10.0	9.85		ug/L		99	80 - 120	0	15
Bromobenzene			10.0	8.77		ug/L		88	73 - 125	2	16
Bromochloromethane			10.0	9.39		ug/L		94	71 - 136	4	21
Bromodichloromethane			10.0	9.76		ug/L		98	80 - 120	2	16
Bromoform			10.0	11.1		ug/L		111	73 - 139	2	17
Bromomethane			10.0	8.51		ug/L		85	66 - 149	2	24
Carbon tetrachloride			10.0	11.3		ug/L		113	72 - 138	0	28
Chlorobenzene			10.0	9.91		ug/L		99	80 - 124	1	14
Chloroethane			10.0	9.76		ug/L		98	64 - 134	5	24
Chloroform			10.0	10.3		ug/L		103	80 - 123	3	18
Chloromethane			10.0	5.25	*1	ug/L		52	19 - 150	104	35
cis-1,2-Dichloroethene			10.0	9.77		ug/L		98	80 - 122	2	17
cis-1,3-Dichloropropene			10.0	9.46		ug/L		95	80 - 121	1	16
Dibromochloromethane			10.0	10.1		ug/L		101	80 - 130	4	15
Dibromomethane			10.0	9.19		ug/L		92	80 - 122	2	16
Dichlorodifluoromethane			10.0	10.3		ug/L		103	30 - 150	7	22
Ethylbenzene			10.0	10.1		ug/L		101	80 - 122	3	35
Hexachlorobutadiene			10.0	10.3		ug/L		103	77 - 132	2	25
Isopropylbenzene			10.0	10.9		ug/L		109	80 - 122	6	16
m,p-Xylene			10.0	10.4		ug/L		104	80 - 125	4	35
Methyl tert-butyl ether			10.0	11.4		ug/L		114	68 - 134	0	18
Methylene Chloride			10.0	9.60		ug/L		96	30 - 150	15	25
Naphthalene			10.0	10.1		ug/L		101	61 - 140	0	25
n-Butylbenzene			10.0	9.78		ug/L		98	75 - 121	3	16
N-Propylbenzene			10.0	9.33		ug/L		93	73 - 136	2	18

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCSD 590-45100/4
Matrix: Water
Analysis Batch: 45100

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
o-Xylene			10.0	10.6		ug/L		106	80 - 130	6	35
p-Isopropyltoluene			10.0	9.93		ug/L		99	78 - 128	4	17
sec-Butylbenzene			10.0	8.59		ug/L		86	73 - 138	4	17
Styrene			10.0	9.69		ug/L		97	79 - 134	2	17
tert-Butylbenzene			10.0	8.49		ug/L		85	76 - 131	3	18
Tetrachloroethene			10.0	11.1		ug/L		111	80 - 139	1	20
Toluene			10.0	9.28		ug/L		93	80 - 129	2	35
trans-1,2-Dichloroethene			10.0	9.99		ug/L		100	73 - 137	11	18
trans-1,3-Dichloropropene			10.0	10.3		ug/L		103	73 - 138	1	17
Trichloroethene			10.0	9.89		ug/L		99	80 - 123	2	14
Trichlorofluoromethane			10.0	10.4		ug/L		104	71 - 147	10	24
Vinyl chloride			10.0	9.22		ug/L		92	50 - 150	9	26

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*97*		*80 - 120*
4-Bromofluorobenzene (Surr)	*96*		*76 - 120*
Dibromofluoromethane (Surr)	*102*		*80 - 123*
Toluene-d8 (Surr)	*99*		*80 - 120*

Lab Sample ID: 590-22504-1 DU
Matrix: Water
Analysis Batch: 45100

Client Sample ID: MW-7B-121423
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
1,1,1,2-Tetrachloroethane	ND			ND		ug/L				NC	17
1,1,1-Trichloroethane	ND			ND		ug/L				NC	17
1,1,2,2-Tetrachloroethane	ND			ND		ug/L				NC	17
1,1,2-Trichloroethane	ND			ND		ug/L				NC	15
1,1-Dichloroethane	ND			ND		ug/L				NC	20
1,1-Dichloroethene	ND			ND		ug/L				NC	19
1,1-Dichloropropene	ND			ND		ug/L				NC	20
1,2,3-Trichlorobenzene	ND			ND		ug/L				NC	30
1,2,3-Trichloropropane	ND			ND		ug/L				NC	34
1,2,4-Trichlorobenzene	ND			ND		ug/L				NC	24
1,2,4-Trimethylbenzene	ND			ND		ug/L				NC	16
1,2-Dibromo-3-Chloropropane	ND			ND		ug/L				NC	29
1,2-Dibromoethane (EDB)	ND			ND		ug/L				NC	14
1,2-Dichlorobenzene	ND			ND		ug/L				NC	14
1,2-Dichloroethane	ND			ND		ug/L				NC	14
1,2-Dichloropropane	ND			ND		ug/L				NC	15
1,3,5-Trimethylbenzene	ND			ND		ug/L				NC	17
1,3-Dichlorobenzene	ND			ND		ug/L				NC	15
1,3-Dichloropropane	ND			ND		ug/L				NC	17
1,4-Dichlorobenzene	ND			ND		ug/L				NC	14
2,2-Dichloropropane	ND			ND		ug/L				NC	18
2-Chlorotoluene	ND			ND		ug/L				NC	19
4-Chlorotoluene	ND			ND		ug/L				NC	16
Benzene	ND			ND		ug/L				NC	15

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 590-22504-1 DU
Matrix: Water
Analysis Batch: 45100

Client Sample ID: MW-7B-121423
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Bromobenzene	ND			ND		ug/L				NC	16
Bromochloromethane	ND			ND		ug/L				NC	21
Bromodichloromethane	ND			ND		ug/L				NC	16
Bromoform	ND			ND		ug/L				NC	17
Bromomethane	ND			ND		ug/L				NC	24
Carbon tetrachloride	ND			ND		ug/L				NC	28
Chlorobenzene	ND			ND		ug/L				NC	14
Chloroethane	ND			ND		ug/L				NC	24
Chloroform	ND			ND		ug/L				NC	18
Chloromethane	ND	*+ *1		ND	*+ *1	ug/L				NC	35
cis-1,2-Dichloroethene	ND			ND		ug/L				NC	17
cis-1,3-Dichloropropene	ND			ND		ug/L				NC	16
Dibromochloromethane	ND			ND		ug/L				NC	15
Dibromomethane	ND			ND		ug/L				NC	16
Dichlorodifluoromethane	ND			ND		ug/L				NC	22
Ethylbenzene	ND			ND		ug/L				NC	35
Hexachlorobutadiene	ND			ND		ug/L				NC	25
Isopropylbenzene	ND			ND		ug/L				NC	16
m,p-Xylene	ND			ND		ug/L				NC	35
Methyl tert-butyl ether	ND			ND		ug/L				NC	18
Methylene Chloride	ND			ND		ug/L				NC	25
Naphthalene	ND			ND		ug/L				NC	25
n-Butylbenzene	ND			ND		ug/L				NC	16
N-Propylbenzene	ND			ND		ug/L				NC	18
o-Xylene	ND			ND		ug/L				NC	35
p-Isopropyltoluene	ND			ND		ug/L				NC	17
sec-Butylbenzene	ND			ND		ug/L				NC	17
Styrene	ND			ND		ug/L				NC	17
tert-Butylbenzene	ND			ND		ug/L				NC	18
Tetrachloroethene	ND			ND		ug/L				NC	20
Toluene	ND			ND		ug/L				NC	35
trans-1,2-Dichloroethene	ND			ND		ug/L				NC	18
trans-1,3-Dichloropropene	ND			ND		ug/L				NC	17
Trichloroethene	ND			ND		ug/L				NC	14
Trichlorofluoromethane	ND			ND		ug/L				NC	24
Vinyl chloride	ND			ND		ug/L				NC	26

Surrogate	*DU %Recovery*	*DU Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*98*		*80 - 120*
4-Bromofluorobenzene (Surr)	*97*		*76 - 120*
Dibromofluoromethane (Surr)	*109*		*80 - 123*
Toluene-d8 (Surr)	*101*		*80 - 120*

Method: 8270E - Semivolatile Organic Compounds (GC/MS)

Lab Sample ID: MB 580-446589/1-A
Matrix: Water
Analysis Batch: 446659

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 446589

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,4-Trichlorobenzene	ND		0.40	0.090	ug/L		12/19/23 08:40	12/19/23 20:06	1
1,2-Dichlorobenzene	ND		0.40	0.050	ug/L		12/19/23 08:40	12/19/23 20:06	1
1,3-Dichlorobenzene	ND		0.40	0.040	ug/L		12/19/23 08:40	12/19/23 20:06	1
1,4-Dichlorobenzene	ND		0.40	0.040	ug/L		12/19/23 08:40	12/19/23 20:06	1
1-Methylnaphthalene	ND		1.0	0.050	ug/L		12/19/23 08:40	12/19/23 20:06	1
2,4,5-Trichlorophenol	ND		0.40	0.10	ug/L		12/19/23 08:40	12/19/23 20:06	1
2,4,6-Trichlorophenol	ND		0.60	0.10	ug/L		12/19/23 08:40	12/19/23 20:06	1
2,4-Dichlorophenol	ND		1.0	0.20	ug/L		12/19/23 08:40	12/19/23 20:06	1
2,4-Dimethylphenol	ND		4.0	0.16	ug/L		12/19/23 08:40	12/19/23 20:06	1
2,4-Dinitrophenol	ND		5.0	0.45	ug/L		12/19/23 08:40	12/19/23 20:06	1
2,4-Dinitrotoluene	ND		1.0	0.10	ug/L		12/19/23 08:40	12/19/23 20:06	1
2,6-Dinitrotoluene	ND		0.40	0.10	ug/L		12/19/23 08:40	12/19/23 20:06	1
2-Chloronaphthalene	ND		1.0	0.070	ug/L		12/19/23 08:40	12/19/23 20:06	1
2-Chlorophenol	ND		1.0	0.050	ug/L		12/19/23 08:40	12/19/23 20:06	1
2-Methylnaphthalene	ND		0.40	0.060	ug/L		12/19/23 08:40	12/19/23 20:06	1
2-Methylphenol	ND		0.60	0.050	ug/L		12/19/23 08:40	12/19/23 20:06	1
2-Nitroaniline	ND		1.0	0.10	ug/L		12/19/23 08:40	12/19/23 20:06	1
2-Nitrophenol	ND		1.0	0.070	ug/L		12/19/23 08:40	12/19/23 20:06	1
3 & 4 Methylphenol	ND		0.60	0.10	ug/L		12/19/23 08:40	12/19/23 20:06	1
3,3'-Dichlorobenzidine	ND		1.0	0.12	ug/L		12/19/23 08:40	12/19/23 20:06	1
3-Nitroaniline	ND		3.0	0.16	ug/L		12/19/23 08:40	12/19/23 20:06	1
4,6-Dinitro-2-methylphenol	ND		2.0	0.55	ug/L		12/19/23 08:40	12/19/23 20:06	1
4-Bromophenyl phenyl ether	ND		0.60	0.060	ug/L		12/19/23 08:40	12/19/23 20:06	1
4-Chloro-3-methylphenol	ND		0.60	0.13	ug/L		12/19/23 08:40	12/19/23 20:06	1
4-Chloroaniline	ND		2.0	0.15	ug/L		12/19/23 08:40	12/19/23 20:06	1
4-Chlorophenyl phenyl ether	ND		0.60	0.050	ug/L		12/19/23 08:40	12/19/23 20:06	1
4-Nitroaniline	ND		2.0	0.21	ug/L		12/19/23 08:40	12/19/23 20:06	1
4-Nitrophenol	ND		10	1.7	ug/L		12/19/23 08:40	12/19/23 20:06	1
Acenaphthene	ND		0.40	0.050	ug/L		12/19/23 08:40	12/19/23 20:06	1
Acenaphthylene	ND		1.0	0.060	ug/L		12/19/23 08:40	12/19/23 20:06	1
Anthracene	ND		1.0	0.050	ug/L		12/19/23 08:40	12/19/23 20:06	1
Benzo[a]anthracene	ND		0.25	0.050	ug/L		12/19/23 08:40	12/19/23 20:06	1
Benzo[a]pyrene	ND		0.25	0.040	ug/L		12/19/23 08:40	12/19/23 20:06	1
Benzo[b]fluoranthene	ND		0.25	0.040	ug/L		12/19/23 08:40	12/19/23 20:06	1
Benzo[g,h,i]perylene	ND		0.25	0.040	ug/L		12/19/23 08:40	12/19/23 20:06	1
Benzo[k]fluoranthene	ND		0.25	0.050	ug/L		12/19/23 08:40	12/19/23 20:06	1
Benzoic acid	ND		10	1.3	ug/L		12/19/23 08:40	12/19/23 20:06	1
Benzyl alcohol	ND		5.0	0.18	ug/L		12/19/23 08:40	12/19/23 20:06	1
Bis(2-chloroethoxy)methane	ND		0.60	0.050	ug/L		12/19/23 08:40	12/19/23 20:06	1
Bis(2-chloroethyl)ether	ND		0.10	0.030	ug/L		12/19/23 08:40	12/19/23 20:06	1
Bis(2-ethylhexyl) phthalate	ND		3.0	0.74	ug/L		12/19/23 08:40	12/19/23 20:06	1
bis(chloroisopropyl) ether	ND		0.25	0.060	ug/L		12/19/23 08:40	12/19/23 20:06	1
Butyl benzyl phthalate	ND		4.0	0.27	ug/L		12/19/23 08:40	12/19/23 20:06	1
Carbazole	ND		0.60	0.10	ug/L		12/19/23 08:40	12/19/23 20:06	1
Chrysene	ND		0.25	0.090	ug/L		12/19/23 08:40	12/19/23 20:06	1
Dibenz(a,h)anthracene	ND		0.25	0.070	ug/L		12/19/23 08:40	12/19/23 20:06	1
Dibenzofuran	ND		0.40	0.10	ug/L		12/19/23 08:40	12/19/23 20:06	1
Diethyl phthalate	ND		1.0	0.15	ug/L		12/19/23 08:40	12/19/23 20:06	1

Method: 8270E - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 580-446589/1-A
Matrix: Water
Analysis Batch: 446659

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 446589

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Dimethyl phthalate	ND		0.60	0.060	ug/L		12/19/23 08:40	12/19/23 20:06	1
Di-n-butyl phthalate	ND		10	3.0	ug/L		12/19/23 08:40	12/19/23 20:06	1
Di-n-octyl phthalate	ND		1.0	0.13	ug/L		12/19/23 08:40	12/19/23 20:06	1
Fluoranthene	ND		0.25	0.060	ug/L		12/19/23 08:40	12/19/23 20:06	1
Fluorene	ND		0.25	0.050	ug/L		12/19/23 08:40	12/19/23 20:06	1
Hexachlorobenzene	ND		0.60	0.080	ug/L		12/19/23 08:40	12/19/23 20:06	1
Hexachlorobutadiene	ND		1.0	0.080	ug/L		12/19/23 08:40	12/19/23 20:06	1
Hexachlorocyclopentadiene	ND		1.0	0.14	ug/L		12/19/23 08:40	12/19/23 20:06	1
Hexachloroethane	ND		1.0	0.050	ug/L		12/19/23 08:40	12/19/23 20:06	1
Indeno[1,2,3-cd]pyrene	ND		0.40	0.13	ug/L		12/19/23 08:40	12/19/23 20:06	1
Isophorone	ND		0.40	0.10	ug/L		12/19/23 08:40	12/19/23 20:06	1
Naphthalene	ND		0.40	0.16	ug/L		12/19/23 08:40	12/19/23 20:06	1
Nitrobenzene	ND		1.0	0.040	ug/L		12/19/23 08:40	12/19/23 20:06	1
N-Nitrosodi-n-propylamine	ND		0.40	0.060	ug/L		12/19/23 08:40	12/19/23 20:06	1
N-Nitrosodiphenylamine	ND		1.0	0.070	ug/L		12/19/23 08:40	12/19/23 20:06	1
Pentachlorophenol	ND		5.0	0.51	ug/L		12/19/23 08:40	12/19/23 20:06	1
Phenanthrene	ND		1.0	0.12	ug/L		12/19/23 08:40	12/19/23 20:06	1
Phenol	ND		1.0	0.16	ug/L		12/19/23 08:40	12/19/23 20:06	1
Pyrene	ND		1.0	0.040	ug/L		12/19/23 08:40	12/19/23 20:06	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol (Surr)	*72*		*50 - 130*	*12/19/23 08:40*	*12/19/23 20:06*	*1*
2-Fluorobiphenyl	*56*		*35 - 120*	*12/19/23 08:40*	*12/19/23 20:06*	*1*
2-Fluorophenol (Surr)	*47*		*21 - 120*	*12/19/23 08:40*	*12/19/23 20:06*	*1*
Nitrobenzene-d5 (Surr)	*67*		*39 - 120*	*12/19/23 08:40*	*12/19/23 20:06*	*1*
Phenol-d5 (Surr)	*28*		*10 - 120*	*12/19/23 08:40*	*12/19/23 20:06*	*1*
Terphenyl-d14 (Surr)	*79*		*63 - 137*	*12/19/23 08:40*	*12/19/23 20:06*	*1*

Lab Sample ID: LCS 580-446589/2-A
Matrix: Water
Analysis Batch: 446659

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 446589

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,2,4-Trichlorobenzene	4.00	1.23		ug/L		31	21 - 120
1,2-Dichlorobenzene	4.00	1.23		ug/L		31	20 - 120
1,3-Dichlorobenzene	4.00	1.01		ug/L		25	20 - 120
1,4-Dichlorobenzene	4.00	1.10		ug/L		28	20 - 120
1-Methylnaphthalene	4.00	2.21		ug/L		55	36 - 120
2,4,5-Trichlorophenol	4.00	3.56		ug/L		89	45 - 120
2,4,6-Trichlorophenol	4.00	3.75		ug/L		94	43 - 120
2,4-Dichlorophenol	4.00	3.49		ug/L		87	45 - 120
2,4-Dimethylphenol	4.00	3.41	J	ug/L		85	37 - 120
2,4-Dinitrophenol	8.00	5.84		ug/L		73	10 - 146
2,4-Dinitrotoluene	4.00	3.53		ug/L		88	51 - 120
2,6-Dinitrotoluene	4.00	3.70		ug/L		92	52 - 120
2-Chloronaphthalene	4.00	2.35		ug/L		59	35 - 120
2-Chlorophenol	4.00	3.42		ug/L		86	44 - 120
2-Methylnaphthalene	4.00	2.14		ug/L		53	35 - 120

Method: 8270E - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 580-446589/2-A
Matrix: Water
Analysis Batch: 446659

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 446589

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
2-Methylphenol	4.00	3.17		ug/L		79	30 - 120
2-Nitroaniline	4.00	3.50		ug/L		88	43 - 120
2-Nitrophenol	4.00	3.14		ug/L		79	44 - 120
3 & 4 Methylphenol	4.00	2.95		ug/L		74	29 - 120
3,3'-Dichlorobenzidine	8.00	7.25		ug/L		91	33 - 150
3-Nitroaniline	4.00	3.30		ug/L		82	10 - 138
4,6-Dinitro-2-methylphenol	8.00	7.14		ug/L		89	29 - 136
4-Bromophenyl phenyl ether	4.00	3.52		ug/L		88	53 - 120
4-Chloro-3-methylphenol	4.00	3.66		ug/L		91	36 - 120
4-Chloroaniline	4.00	2.23		ug/L		56	10 - 150
4-Chlorophenyl phenyl ether	4.00	3.08		ug/L		77	41 - 120
4-Nitroaniline	4.00	4.43		ug/L		111	38 - 133
4-Nitrophenol	8.00	3.72	J	ug/L		47	10 - 120
Acenaphthene	4.00	2.76		ug/L		69	41 - 120
Acenaphthylene	4.00	2.99		ug/L		75	43 - 120
Anthracene	4.00	3.61		ug/L		90	58 - 120
Benzo[a]anthracene	4.00	4.03		ug/L		101	48 - 131
Benzo[a]pyrene	4.00	3.63		ug/L		91	55 - 125
Benzo[b]fluoranthene	4.00	3.91		ug/L		98	54 - 124
Benzo[g,h,i]perylene	4.00	3.59		ug/L		90	46 - 124
Benzo[k]fluoranthene	4.00	3.60		ug/L		90	52 - 132
Benzoic acid	8.00	5.41	J	ug/L		68	10 - 120
Benzyl alcohol	4.00	3.24	J	ug/L		81	10 - 120
Bis(2-chloroethoxy)methane	4.00	3.35		ug/L		84	38 - 120
Bis(2-chloroethyl)ether	4.00	3.13		ug/L		78	39 - 120
Bis(2-ethylhexyl) phthalate	4.00	4.08		ug/L		102	41 - 150
bis(chloroisopropyl) ether	4.00	2.89		ug/L		72	20 - 139
Butyl benzyl phthalate	4.00	4.09		ug/L		102	40 - 150
Carbazole	4.00	3.27		ug/L		82	61 - 150
Chrysene	4.00	3.56		ug/L		89	57 - 125
Dibenz(a,h)anthracene	4.00	3.64		ug/L		91	48 - 126
Dibenzofuran	4.00	3.06		ug/L		77	45 - 120
Diethyl phthalate	4.00	3.69		ug/L		92	60 - 121
Dimethyl phthalate	4.00	3.59		ug/L		90	54 - 120
Di-n-butyl phthalate	4.00	3.99	J	ug/L		100	55 - 150
Di-n-octyl phthalate	4.00	4.19		ug/L		105	48 - 140
Fluoranthene	4.00	3.84		ug/L		96	60 - 121
Fluorene	4.00	3.22		ug/L		80	20 - 120
Hexachlorobenzene	4.00	3.33		ug/L		83	49 - 120
Hexachlorobutadiene	4.00	0.451	J	ug/L		11	10 - 130
Hexachlorocyclopentadiene	4.00	0.615	J	ug/L		15	10 - 125
Hexachloroethane	4.00	0.554	J	ug/L		14	10 - 130
Indeno[1,2,3-cd]pyrene	4.00	3.93		ug/L		98	39 - 124
Isophorone	4.00	3.50		ug/L		87	41 - 120
Naphthalene	4.00	2.17		ug/L		54	42 - 120
Nitrobenzene	4.00	3.25		ug/L		81	38 - 120
N-Nitrosodi-n-propylamine	4.00	3.28		ug/L		82	39 - 120
N-Nitrosodiphenylamine	4.00	3.59		ug/L		90	52 - 120
Pentachlorophenol	8.00	3.56	J	ug/L		45	18 - 135

Method: 8270E - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 580-446589/2-A
Matrix: Water
Analysis Batch: 446659

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 446589

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Phenanthrene			4.00	3.43		ug/L		86	54 - 120		
Phenol			4.00	1.57		ug/L		39	13 - 120		
Pyrene			4.00	3.81		ug/L		95	57 - 120		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
2,4,6-Tribromophenol (Surr)	*84*		*50 - 130*
2-Fluorobiphenyl	*63*		*35 - 120*
2-Fluorophenol (Surr)	*52*		*21 - 120*
Nitrobenzene-d5 (Surr)	*72*		*39 - 120*
Phenol-d5 (Surr)	*32*		*10 - 120*
Terphenyl-d14 (Surr)	*80*		*63 - 137*

Lab Sample ID: LCSD 580-446589/3-A
Matrix: Water
Analysis Batch: 446659

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 446589

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,2,4-Trichlorobenzene			4.00	1.07		ug/L		27	21 - 120	14	35
1,2-Dichlorobenzene			4.00	1.04		ug/L		26	20 - 120	17	35
1,3-Dichlorobenzene			4.00	0.876		ug/L		22	20 - 120	14	35
1,4-Dichlorobenzene			4.00	0.944		ug/L		24	20 - 120	16	35
1-Methylnaphthalene			4.00	1.98		ug/L		49	36 - 120	11	35
2,4,5-Trichlorophenol			4.00	3.42		ug/L		85	45 - 120	4	35
2,4,6-Trichlorophenol			4.00	3.58		ug/L		89	43 - 120	5	35
2,4-Dichlorophenol			4.00	3.32		ug/L		83	45 - 120	5	35
2,4-Dimethylphenol			4.00	3.11	J	ug/L		78	37 - 120	9	35
2,4-Dinitrophenol			8.00	6.82		ug/L		85	10 - 146	15	35
2,4-Dinitrotoluene			4.00	3.75		ug/L		94	51 - 120	6	35
2,6-Dinitrotoluene			4.00	3.80		ug/L		95	52 - 120	3	35
2-Chloronaphthalene			4.00	2.13		ug/L		53	35 - 120	10	35
2-Chlorophenol			4.00	3.07		ug/L		77	44 - 120	11	35
2-Methylnaphthalene			4.00	1.93		ug/L		48	35 - 120	10	35
2-Methylphenol			4.00	2.73		ug/L		68	30 - 120	15	35
2-Nitroaniline			4.00	3.68		ug/L		92	43 - 120	5	35
2-Nitrophenol			4.00	3.10		ug/L		77	44 - 120	1	35
3 & 4 Methylphenol			4.00	2.70		ug/L		68	29 - 120	9	35
3,3'-Dichlorobenzidine			8.00	6.17		ug/L		77	33 - 150	16	35
3-Nitroaniline			4.00	3.05		ug/L		76	10 - 138	8	35
4,6-Dinitro-2-methylphenol			8.00	7.93		ug/L		99	29 - 136	10	35
4-Bromophenyl phenyl ether			4.00	3.64		ug/L		91	53 - 120	3	35
4-Chloro-3-methylphenol			4.00	3.49		ug/L		87	36 - 120	5	35
4-Chloroaniline			4.00	1.74	J	ug/L		44	10 - 150	25	35
4-Chlorophenyl phenyl ether			4.00	3.12		ug/L		78	41 - 120	1	35
4-Nitroaniline			4.00	4.48		ug/L		112	38 - 133	1	35
4-Nitrophenol			8.00	3.96	J	ug/L		50	10 - 120	6	35
Acenaphthene			4.00	2.68		ug/L		67	41 - 120	3	35
Acenaphthylene			4.00	2.80		ug/L		70	43 - 120	7	35
Anthracene			4.00	3.68		ug/L		92	58 - 120	2	35

Method: 8270E - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCSD 580-446589/3-A
Matrix: Water
Analysis Batch: 446659

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 446589

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Benzo[a]anthracene			4.00	4.17		ug/L		104	48 - 131	3	35
Benzo[a]pyrene			4.00	3.82		ug/L		96	55 - 125	5	35
Benzo[b]fluoranthene			4.00	4.38		ug/L		110	54 - 124	11	35
Benzo[g,h,i]perylene			4.00	3.96		ug/L		99	46 - 124	10	35
Benzo[k]fluoranthene			4.00	3.73		ug/L		93	52 - 132	4	35
Benzoic acid			8.00	5.66	J	ug/L		71	10 - 120	4	35
Benzyl alcohol			4.00	2.89	J	ug/L		72	10 - 120	12	35
Bis(2-chloroethoxy)methane			4.00	3.10		ug/L		78	38 - 120	7	35
Bis(2-chloroethyl)ether			4.00	2.76		ug/L		69	39 - 120	13	35
Bis(2-ethylhexyl) phthalate			4.00	4.20		ug/L		105	41 - 150	3	35
bis(chloroisopropyl) ether			4.00	2.53		ug/L		63	20 - 139	13	35
Butyl benzyl phthalate			4.00	4.42		ug/L		110	40 - 150	8	35
Carbazole			4.00	3.41		ug/L		85	61 - 150	4	35
Chrysene			4.00	3.61		ug/L		90	57 - 125	1	35
Dibenz(a,h)anthracene			4.00	3.94		ug/L		98	48 - 126	8	35
Dibenzofuran			4.00	2.96		ug/L		74	45 - 120	3	35
Diethyl phthalate			4.00	3.96		ug/L		99	60 - 121	7	35
Dimethyl phthalate			4.00	3.76		ug/L		94	54 - 120	4	35
Di-n-butyl phthalate			4.00	4.32	J	ug/L		108	55 - 150	8	35
Di-n-octyl phthalate			4.00	4.51		ug/L		113	48 - 140	7	35
Fluoranthene			4.00	3.98		ug/L		100	60 - 121	4	35
Fluorene			4.00	3.16		ug/L		79	20 - 120	2	35
Hexachlorobenzene			4.00	3.42		ug/L		86	49 - 120	3	35
Hexachlorobutadiene			4.00	0.413	J	ug/L		10	10 - 130	9	35
Hexachlorocyclopentadiene			4.00	0.568	J	ug/L		14	10 - 125	8	35
Hexachloroethane			4.00	0.492	J	ug/L		12	10 - 130	12	35
Indeno[1,2,3-cd]pyrene			4.00	4.23		ug/L		106	39 - 124	7	35
Isophorone			4.00	3.15		ug/L		79	41 - 120	11	35
Naphthalene			4.00	1.91		ug/L		48	42 - 120	13	35
Nitrobenzene			4.00	2.82		ug/L		70	38 - 120	14	35
N-Nitrosodi-n-propylamine			4.00	3.06		ug/L		77	39 - 120	7	35
N-Nitrosodiphenylamine			4.00	3.66		ug/L		92	52 - 120	2	35
Pentachlorophenol			8.00	4.94	J	ug/L		62	18 - 135	32	35
Phenanthrene			4.00	3.56		ug/L		89	54 - 120	4	35
Phenol			4.00	1.36		ug/L		34	13 - 120	14	35
Pyrene			4.00	3.96		ug/L		99	57 - 120	4	35

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
2,4,6-Tribromophenol (Surr)	*84*		*50 - 130*
2-Fluorobiphenyl	*56*		*35 - 120*
2-Fluorophenol (Surr)	*46*		*21 - 120*
Nitrobenzene-d5 (Surr)	*69*		*39 - 120*
Phenol-d5 (Surr)	*29*		*10 - 120*
Terphenyl-d14 (Surr)	*84*		*63 - 137*

Method: 8151A - Herbicides (GC)

Lab Sample ID: MB 570-394080/1-A
Matrix: Water
Analysis Batch: 394962

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 394080

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4,5-T	ND		0.50	0.21	ug/L		12/18/23 21:35	12/20/23 21:19	1
2,4,5-TP (Silvex)	ND		0.50	0.14	ug/L		12/18/23 21:35	12/20/23 21:19	1
2,4-D	ND		5.0	2.0	ug/L		12/18/23 21:35	12/20/23 21:19	1
2,4-DB	ND		5.0	3.5	ug/L		12/18/23 21:35	12/20/23 21:19	1
Dalapon	ND		13	4.7	ug/L		12/18/23 21:35	12/20/23 21:19	1
Dicamba	ND		0.50	0.29	ug/L		12/18/23 21:35	12/20/23 21:19	1
Dichlorprop	ND		5.0	2.0	ug/L		12/18/23 21:35	12/20/23 21:19	1
Dinoseb	ND		2.5	2.2	ug/L		12/18/23 21:35	12/20/23 21:19	1
MCPA	ND		500	350	ug/L		12/18/23 21:35	12/20/23 21:19	1
MCPP	ND		500	310	ug/L		12/18/23 21:35	12/20/23 21:19	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4-Dichlorophenylacetic acid	*99*		*20 - 161*	*12/18/23 21:35*	*12/20/23 21:19*	*1*

Lab Sample ID: LCS 570-394080/2-A
Matrix: Water
Analysis Batch: 394962

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 394080

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
2,4,5-T			1.00	0.755		ug/L		76	28 - 180		
2,4-D			10.0	9.12		ug/L		91	10 - 180		
2,4-DB			10.0	8.37		ug/L		84	10 - 180		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
2,4-Dichlorophenylacetic acid	*82*		*20 - 161*

Lab Sample ID: LCSD 570-394080/3-A
Matrix: Water
Analysis Batch: 394962

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 394080

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
2,4,5-T			1.00	1.23	*1	ug/L		123	28 - 180	48	20
2,4-D			10.0	14.9	*1	ug/L		149	10 - 180	48	20
2,4-DB			10.0	11.7	*1	ug/L		117	10 - 180	33	20

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
2,4-Dichlorophenylacetic acid	*102*		*20 - 161*

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 590-45119/1003
Matrix: Water
Analysis Batch: 45119

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		0.80	0.42	mg/L			12/15/23 13:55	1
Sulfate	ND		0.50	0.13	mg/L			12/15/23 13:55	1

Method: 300.0 - Anions, Ion Chromatography (Continued)

Lab Sample ID: LCS 590-45119/1004
Matrix: Water
Analysis Batch: 45119

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

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Chloride			12.5	12.7		mg/L		102	90 - 110		
Sulfate			12.5	12.5		mg/L		100	90 - 110		

Lab Sample ID: 590-22504-1 MS
Matrix: Water
Analysis Batch: 45119

Client Sample ID: MW-7B-121423
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
Chloride	0.58	J	11.4	12.7		mg/L		106	80 - 120		
Sulfate	4.0		11.4	15.8		mg/L		103	80 - 120		

Lab Sample ID: 590-22504-1 MSD
Matrix: Water
Analysis Batch: 45119

Client Sample ID: MW-7B-121423
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Chloride	0.58	J	11.4	12.7		mg/L		106	80 - 120	0	10
Sulfate	4.0		11.4	15.8		mg/L		103	80 - 120	0	10

Lab Sample ID: 590-22504-1 DU
Matrix: Water
Analysis Batch: 45119

Client Sample ID: MW-7B-121423
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Chloride	0.58	J		0.643	J	mg/L				10	18.8
Sulfate	4.0			4.19		mg/L				4	15.7

Lab Sample ID: MB 590-45120/1003
Matrix: Water
Analysis Batch: 45120

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate as N	ND		0.20	0.057	mg/L			12/15/23 13:55	1
Nitrite as N	ND		0.20	0.069	mg/L			12/15/23 13:55	1

Lab Sample ID: LCS 590-45120/1004
Matrix: Water
Analysis Batch: 45120

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

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Nitrate as N			5.00	5.09		mg/L		102	90 - 110		
Nitrite as N			5.00	5.03		mg/L		101	90 - 110		

Lab Sample ID: 590-22504-1 MS
Matrix: Water
Analysis Batch: 45120

Client Sample ID: MW-7B-121423
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
Nitrate as N	ND		4.55	4.78		mg/L		105	80 - 120		
Nitrite as N	ND		4.55	4.73		mg/L		104	80 - 120		

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: 590-22504-1 MSD
Matrix: Water
Analysis Batch: 45120

Client Sample ID: MW-7B-121423
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Nitrate as N	ND		4.55	4.78		mg/L		105	80 - 120	0	12.1
Nitrite as N	ND		4.55	4.77		mg/L		105	80 - 120	1	10

Lab Sample ID: 590-22504-1 DU
Matrix: Water
Analysis Batch: 45120

Client Sample ID: MW-7B-121423
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Nitrate as N	ND		ND		mg/L				NC	13.1
Nitrite as N	ND		ND		mg/L				NC	10

Method: Draft-4 1633 - Per- and Polyfluoroalkyl Substances by LC/MS/MS

Lab Sample ID: MB 320-732663/1-A
Matrix: Water
Analysis Batch: 733287

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 732663

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	ND		8.0	2.0	ng/L		01/11/24 05:03	01/13/24 10:27	1
Perfluoropentanoic acid (PFPeA)	ND		4.0	1.0	ng/L		01/11/24 05:03	01/13/24 10:27	1
Perfluorohexanoic acid (PFHxA)	ND		2.0	0.50	ng/L		01/11/24 05:03	01/13/24 10:27	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.50	ng/L		01/11/24 05:03	01/13/24 10:27	1
Perfluorooctanoic acid (PFOA)	ND		2.0	0.50	ng/L		01/11/24 05:03	01/13/24 10:27	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.50	ng/L		01/11/24 05:03	01/13/24 10:27	1
Perfluorodecanoic acid (PFDA)	ND		2.0	0.50	ng/L		01/11/24 05:03	01/13/24 10:27	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	0.50	ng/L		01/11/24 05:03	01/13/24 10:27	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	0.50	ng/L		01/11/24 05:03	01/13/24 10:27	1
Perfluorotridecanoic acid (PFTrDA)	ND		2.0	0.50	ng/L		01/11/24 05:03	01/13/24 10:27	1
Perfluorotetradecanoic acid (PFTeDA)	ND		2.0	0.50	ng/L		01/11/24 05:03	01/13/24 10:27	1
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	0.50	ng/L		01/11/24 05:03	01/13/24 10:27	1
Perfluoropentanesulfonic acid (PFPeS)	ND		2.0	0.50	ng/L		01/11/24 05:03	01/13/24 10:27	1
Perfluorohexanesulfonic acid (PFHxS)	ND		2.0	0.50	ng/L		01/11/24 05:03	01/13/24 10:27	1
Perfluoroheptanesulfonic acid (PFHpS)	ND		2.0	0.50	ng/L		01/11/24 05:03	01/13/24 10:27	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.0	0.50	ng/L		01/11/24 05:03	01/13/24 10:27	1
Perfluorononanesulfonic acid (PFNS)	ND		2.0	0.50	ng/L		01/11/24 05:03	01/13/24 10:27	1
Perfluorodecanesulfonic acid (PFDS)	ND		2.0	0.50	ng/L		01/11/24 05:03	01/13/24 10:27	1
Perfluorododecanesulfonic acid (PFDoS)	ND		2.0	0.50	ng/L		01/11/24 05:03	01/13/24 10:27	1
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	ND		8.0	2.0	ng/L		01/11/24 05:03	01/13/24 10:27	1
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	ND		8.0	2.0	ng/L		01/11/24 05:03	01/13/24 10:27	1
N-methylperfluorooctane sulfonamide (NMeFOSA)	ND		2.0	0.50	ng/L		01/11/24 05:03	01/13/24 10:27	1
N-ethylperfluorooctane sulfonamide (NEtFOSA)	ND		2.0	0.50	ng/L		01/11/24 05:03	01/13/24 10:27	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		2.0	0.50	ng/L		01/11/24 05:03	01/13/24 10:27	1

Client: GeoEngineers Inc
Project/Site: Marshall Landfill

Job ID: 590-22504-1

Method: Draft-4 1633 - Per- and Polyfluoroalkyl Substances by LC/MS/MS (Continued)

Lab Sample ID: MB 320-732663/1-A
Matrix: Water
Analysis Batch: 733287

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 732663

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		2.0	0.50	ng/L		01/11/24 05:03	01/13/24 10:27	1
N-methylperfluorooctane sulfonamidoethanol (NMeFOSE)	ND		20	5.0	ng/L		01/11/24 05:03	01/13/24 10:27	1
N-ethylperfluorooctane sulfonamidoethanol (NEtFOSE)	ND		20	5.0	ng/L		01/11/24 05:03	01/13/24 10:27	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		8.0	2.0	ng/L		01/11/24 05:03	01/13/24 10:27	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		8.0	2.0	ng/L		01/11/24 05:03	01/13/24 10:27	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	ND		4.0	1.0	ng/L		01/11/24 05:03	01/13/24 10:27	1
Perfluoro-4-methoxybutanoic acid (PFMBA)	ND		4.0	1.0	ng/L		01/11/24 05:03	01/13/24 10:27	1
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND		4.0	1.0	ng/L		01/11/24 05:03	01/13/24 10:27	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	ND		8.0	2.0	ng/L		01/11/24 05:03	01/13/24 10:27	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	ND		8.0	2.0	ng/L		01/11/24 05:03	01/13/24 10:27	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	ND		4.0	1.0	ng/L		01/11/24 05:03	01/13/24 10:27	1
3-Perfluoropropylpropanoic acid (3:3 FTCA)	ND		10	2.5	ng/L		01/11/24 05:03	01/13/24 10:27	1
3-Perfluoropentylpropanoic acid (5:3 FTCA)	ND		50	13	ng/L		01/11/24 05:03	01/13/24 10:27	1
3-Perfluoroheptylpropanoic acid (7:3 FTCA)	ND		50	13	ng/L		01/11/24 05:03	01/13/24 10:27	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*85.5*		*5 - 130*	*01/11/24 05:03*	*01/13/24 10:27*	*1*
13C5 PFPeA	*90.5*		*40 - 130*	*01/11/24 05:03*	*01/13/24 10:27*	*1*
13C5 PFHxA	*85.5*		*40 - 130*	*01/11/24 05:03*	*01/13/24 10:27*	*1*
13C4 PFHpA	*92.8*		*40 - 130*	*01/11/24 05:03*	*01/13/24 10:27*	*1*
13C8 PFOA	*85.7*		*40 - 130*	*01/11/24 05:03*	*01/13/24 10:27*	*1*
13C9 PFNA	*85.0*		*40 - 130*	*01/11/24 05:03*	*01/13/24 10:27*	*1*
13C6 PFDA	*77.5*		*40 - 130*	*01/11/24 05:03*	*01/13/24 10:27*	*1*
13C7 PFUnA	*70.5*		*30 - 130*	*01/11/24 05:03*	*01/13/24 10:27*	*1*
13C2 PFDoA	*71.2*		*10 - 130*	*01/11/24 05:03*	*01/13/24 10:27*	*1*
13C2 PFTeDA	*57.2*		*10 - 130*	*01/11/24 05:03*	*01/13/24 10:27*	*1*
13C3 PFBS	*82.1*		*40 - 135*	*01/11/24 05:03*	*01/13/24 10:27*	*1*
13C3 PFHxS	*86.6*		*40 - 130*	*01/11/24 05:03*	*01/13/24 10:27*	*1*
13C8 PFOS	*86.6*		*40 - 130*	*01/11/24 05:03*	*01/13/24 10:27*	*1*
d3-NMeFOSAA	*77.2*		*40 - 170*	*01/11/24 05:03*	*01/13/24 10:27*	*1*
d5-NEtFOSAA	*79.3*		*25 - 135*	*01/11/24 05:03*	*01/13/24 10:27*	*1*
13C2 4:2 FTS	*67.0*		*40 - 200*	*01/11/24 05:03*	*01/13/24 10:27*	*1*
13C2 6:2 FTS	*71.4*		*40 - 200*	*01/11/24 05:03*	*01/13/24 10:27*	*1*
13C3 HFPO-DA	*92.7*		*40 - 130*	*01/11/24 05:03*	*01/13/24 10:27*	*1*
d7-N-MeFOSE-M	*71.2*		*10 - 130*	*01/11/24 05:03*	*01/13/24 10:27*	*1*
d9-N-EtFOSE-M	*73.7*		*10 - 130*	*01/11/24 05:03*	*01/13/24 10:27*	*1*
d5-NEtPFOSA	*72.1*		*10 - 130*	*01/11/24 05:03*	*01/13/24 10:27*	*1*
d3-NMePFOSA	*72.8*		*10 - 130*	*01/11/24 05:03*	*01/13/24 10:27*	*1*

Method: Draft-4 1633 - Per- and Polyfluoroalkyl Substances by LC/MS/MS (Continued)

Lab Sample ID: LCS 320-732663/3-A
Matrix: Water
Analysis Batch: 733287

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 732663

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluorobutanoic acid (PFBA)	128	131		ng/L		102	70 - 140
Perfluoropentanoic acid (PFPeA)	64.0	58.5		ng/L		91	65 - 135
Perfluorohexanoic acid (PFHxA)	32.0	30.8		ng/L		96	70 - 145
Perfluoroheptanoic acid (PFHpA)	32.0	28.1		ng/L		88	70 - 150
Perfluorooctanoic acid (PFOA)	32.0	28.6		ng/L		89	70 - 150
Perfluorononanoic acid (PFNA)	32.0	33.8		ng/L		106	70 - 150
Perfluorodecanoic acid (PFDA)	32.0	30.5		ng/L		95	70 - 140
Perfluoroundecanoic acid (PFUnA)	32.0	31.8		ng/L		99	70 - 145
Perfluorododecanoic acid (PFDoA)	32.0	34.3		ng/L		107	70 - 140
Perfluorotridecanoic acid (PFTrDA)	32.0	34.5		ng/L		108	65 - 140
Perfluorotetradecanoic acid (PFTeDA)	32.0	39.0		ng/L		122	60 - 140
Perfluorobutanesulfonic acid (PFBS)	28.4	29.2		ng/L		103	60 - 145
Perfluoropentanesulfonic acid (PFPeS)	30.1	31.8		ng/L		106	65 - 140
Perfluorohexanesulfonic acid (PFHxS)	29.2	27.4		ng/L		94	65 - 145
Perfluoroheptanesulfonic acid (PFHpS)	30.5	30.2		ng/L		99	70 - 150
Perfluorooctanesulfonic acid (PFOS)	29.8	28.0		ng/L		94	55 - 150
Perfluorononanesulfonic acid (PFNS)	30.7	30.9		ng/L		100	65 - 145
Perfluorodecanesulfonic acid (PFDS)	30.8	29.4		ng/L		95	60 - 145
Perfluorododecanesulfonic acid (PFDoS)	31.0	28.0		ng/L		90	50 - 145
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	120	116		ng/L		97	70 - 145
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	122	135		ng/L		110	65 - 155
N-methylperfluorooctane sulfonamide (NMeFOSA)	32.0	34.4		ng/L		108	60 - 150
N-ethylperfluorooctane sulfonamide (NEtFOSA)	32.0	31.4		ng/L		98	65 - 145
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	32.0	30.9		ng/L		96	50 - 140
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	32.0	28.8		ng/L		90	70 - 145
N-methylperfluorooctane sulfonamidoethanol (NMeFOSE)	320	343		ng/L		107	70 - 145
N-ethylperfluorooctane sulfonamidoethanol (NEtFOSE)	320	322		ng/L		101	70 - 135
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	128	103		ng/L		81	70 - 140
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	121	95.8		ng/L		79	65 - 145
Perfluoro-3-methoxypropanoic acid (PFMPA)	64.0	57.0		ng/L		89	55 - 140

Method: Draft-4 1633 - Per- and Polyfluoroalkyl Substances by LC/MS/MS (Continued)

Lab Sample ID: LCS 320-732663/3-A
Matrix: Water
Analysis Batch: 733287

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 732663

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluoro-4-methoxybutanoic acid (PFMBA)	64.0	60.6		ng/L		95	60 - 150
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	64.0	77.9		ng/L		122	50 - 150
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	120	99.8		ng/L		83	70 - 155
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	121	92.6		ng/L		77	55 - 160
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	57.1	56.7		ng/L		99	70 - 140
3-Perfluoropropylpropanoic acid (3:3 FTCA)	160	152		ng/L		95	65 - 130
3-Perfluoropentylpropanoic acid (5:3 FTCA)	799	759		ng/L		95	70 - 135
3-Perfluoroheptylpropanoic acid (7:3 FTCA)	799	790		ng/L		99	50 - 145

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C4 PFBA	*75.0*		*5 - 130*
13C5 PFPeA	*76.0*		*40 - 130*
13C5 PFHxA	*71.3*		*40 - 130*
13C4 PFHpA	*81.6*		*40 - 130*
13C8 PFOA	*88.1*		*40 - 130*
13C9 PFNA	*77.4*		*40 - 130*
13C6 PFDA	*80.1*		*40 - 130*
13C7 PFUnA	*85.4*		*30 - 130*
13C2 PFDoA	*80.6*		*10 - 130*
13C2 PFTeDA	*61.4*		*10 - 130*
13C3 PFBS	*74.5*		*40 - 135*
13C3 PFHxS	*77.3*		*40 - 130*
13C8 PFOS	*74.3*		*40 - 130*
d3-NMeFOSAA	*74.9*		*40 - 170*
d5-NEtFOSAA	*69.6*		*25 - 135*
13C2 4:2 FTS	*64.8*		*40 - 200*
13C2 6:2 FTS	*67.6*		*40 - 200*
13C3 HFPO-DA	*92.4*		*40 - 130*
d7-N-MeFOSE-M	*70.2*		*10 - 130*
d9-N-EtFOSE-M	*65.1*		*10 - 130*
d5-NEtPFOSA	*62.3*		*10 - 130*
d3-NMePFOSA	*62.2*		*10 - 130*

Lab Sample ID: LCSD 320-732663/4-A
Matrix: Water
Analysis Batch: 733287

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 732663

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Perfluorobutanoic acid (PFBA)	128	136		ng/L		106	70 - 140	4	30
Perfluoropentanoic acid (PFPeA)	64.0	62.4		ng/L		97	65 - 135	6	30
Perfluorohexanoic acid (PFHxA)	32.0	31.0		ng/L		97	70 - 145	1	30

Method: Draft-4 1633 - Per- and Polyfluoroalkyl Substances by LC/MS/MS (Continued)

Lab Sample ID: LCSD 320-732663/4-A
Matrix: Water
Analysis Batch: 733287

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 732663

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Perfluoroheptanoic acid (PFHpA)	32.0	32.8		ng/L		103	70 - 150	16	30
Perfluorooctanoic acid (PFOA)	32.0	30.2		ng/L		94	70 - 150	5	30
Perfluorononanoic acid (PFNA)	32.0	34.3		ng/L		107	70 - 150	1	30
Perfluorodecanoic acid (PFDA)	32.0	31.6		ng/L		99	70 - 140	4	30
Perfluoroundecanoic acid (PFUnA)	32.0	30.7		ng/L		96	70 - 145	3	30
Perfluorododecanoic acid (PFDoA)	32.0	35.3		ng/L		110	70 - 140	3	30
Perfluorotridecanoic acid (PFTrDA)	32.0	32.7		ng/L		102	65 - 140	5	30
Perfluorotetradecanoic acid (PFTeDA)	32.0	31.7		ng/L		99	60 - 140	21	30
Perfluorobutanesulfonic acid (PFBS)	28.4	24.9		ng/L		88	60 - 145	16	30
Perfluoropentanesulfonic acid (PFPeS)	30.1	31.5		ng/L		105	65 - 140	1	30
Perfluorohexanesulfonic acid (PFHxS)	29.2	30.6		ng/L		105	65 - 145	11	30
Perfluoroheptanesulfonic acid (PFHpS)	30.5	33.7		ng/L		110	70 - 150	11	30
Perfluorooctanesulfonic acid (PFOS)	29.8	31.5	*1	ng/L		106	55 - 150	36	30
Perfluorononanesulfonic acid (PFNS)	30.7	32.0		ng/L		104	65 - 145	4	30
Perfluorodecanesulfonic acid (PFDS)	30.8	34.5		ng/L		112	60 - 145	16	30
Perfluorododecanesulfonic acid (PFDoS)	31.0	31.3		ng/L		101	50 - 145	11	30
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	120	115		ng/L		96	70 - 145	1	30
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	122	128		ng/L		105	65 - 155	5	30
N-methylperfluorooctane sulfonamide (NMeFOSA)	32.0	33.0		ng/L		103	60 - 150	4	30
N-ethylperfluorooctane sulfonamide (NEtFOSA)	32.0	35.2		ng/L		110	65 - 145	11	30
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	32.0	32.0		ng/L		100	50 - 140	3	30
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	32.0	31.6		ng/L		99	70 - 145	9	30
N-methylperfluorooctane sulfonamidoethanol (NMeFOSE)	320	338		ng/L		106	70 - 145	1	30
N-ethylperfluorooctane sulfonamidoethanol (NEtFOSE)	320	329		ng/L		103	70 - 135	2	30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	128	127		ng/L		99	70 - 140	20	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	121	133	*1	ng/L		110	65 - 145	32	30
Perfluoro-3-methoxypropanoic acid (PFMPA)	64.0	60.0		ng/L		94	55 - 140	5	30
Perfluoro-4-methoxybutanoic acid (PFMBA)	64.0	67.5		ng/L		106	60 - 150	11	30
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	64.0	77.1		ng/L		121	50 - 150	1	30

Method: Draft-4 1633 - Per- and Polyfluoroalkyl Substances by LC/MS/MS (Continued)

Lab Sample ID: LCSD 320-732663/4-A
Matrix: Water
Analysis Batch: 733287

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 732663

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	120	128		ng/L		107	70 - 155	24	30
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	121	123		ng/L		101	55 - 160	28	30
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	57.1	57.5		ng/L		101	70 - 140	1	30
3-Perfluoropropylpropanoic acid (3:3 FTCA)	160	153		ng/L		96	65 - 130	0	30
3-Perfluoropentylpropanoic acid (5:3 FTCA)	799	826		ng/L		103	70 - 135	8	30
3-Perfluoroheptylpropanoic acid (7:3 FTCA)	799	789		ng/L		99	50 - 145	0	30

Isotope Dilution	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
13C4 PFBA	*69.8*		*5 - 130*
13C5 PFPeA	*70.5*		*40 - 130*
13C5 PFHxA	*70.6*		*40 - 130*
13C4 PFHpA	*69.6*		*40 - 130*
13C8 PFOA	*69.0*		*40 - 130*
13C9 PFNA	*64.1*		*40 - 130*
13C6 PFDA	*69.2*		*40 - 130*
13C7 PFUnA	*71.6*		*30 - 130*
13C2 PFDoA	*62.3*		*10 - 130*
13C2 PFTeDA	*56.5*		*10 - 130*
13C3 PFBS	*68.0*		*40 - 135*
13C3 PFHxS	*69.1*		*40 - 130*
13C8 PFOS	*69.2*		*40 - 130*
d3-NMeFOSAA	*70.1*		*40 - 170*
d5-NEtFOSAA	*67.7*		*25 - 135*
13C2 4:2 FTS	*62.1*		*40 - 200*
13C2 6:2 FTS	*64.9*		*40 - 200*
13C3 HFPO-DA	*67.5*		*40 - 130*
d7-N-MeFOSE-M	*62.8*		*10 - 130*
d9-N-EtFOSE-M	*65.3*		*10 - 130*
d5-NEtPFOSA	*58.5*		*10 - 130*
d3-NMePFOSA	*60.8*		*10 - 130*

Lab Sample ID: LLCS 320-732663/2-A
Matrix: Water
Analysis Batch: 733287

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 732663

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluorobutanoic acid (PFBA)	12.8	22.9	*+	ng/L		179	70 - 140
Perfluoropentanoic acid (PFPeA)	6.40	10.5	*+	ng/L		164	65 - 135
Perfluorohexanoic acid (PFHxA)	3.20	5.42	*+	ng/L		169	70 - 145
Perfluoroheptanoic acid (PFHpA)	3.20	5.17	*+	ng/L		162	70 - 150
Perfluorooctanoic acid (PFOA)	3.20	5.11	*+	ng/L		160	70 - 150
Perfluorononanoic acid (PFNA)	3.20	5.14	*+	ng/L		161	70 - 150
Perfluorodecanoic acid (PFDA)	3.20	5.50	*+	ng/L		172	70 - 140

Method: Draft-4 1633 - Per- and Polyfluoroalkyl Substances by LC/MS/MS (Continued)

Lab Sample ID: LLCS 320-732663/2-A
Matrix: Water
Analysis Batch: 733287

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 732663

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluoroundecanoic acid (PFUnA)	3.20	5.10	*+	ng/L		159	70 - 145
Perfluorododecanoic acid (PFDoA)	3.20	5.79	*+	ng/L		181	70 - 140
Perfluorotridecanoic acid (PFTrDA)	3.20	5.41	*+	ng/L		169	65 - 140
Perfluorotetradecanoic acid (PFTeDA)	3.20	6.21	*+	ng/L		194	60 - 140
Perfluorobutanesulfonic acid (PFBS)	2.84	4.93	*+	ng/L		174	60 - 145
Perfluoropentanesulfonic acid (PFPeS)	3.01	5.44	*+	ng/L		181	65 - 140
Perfluorohexanesulfonic acid (PFHxS)	2.92	4.78	*+	ng/L		164	65 - 145
Perfluoroheptanesulfonic acid (PFHpS)	3.05	5.80	*+	ng/L		190	70 - 150
Perfluorooctanesulfonic acid (PFOS)	2.98	5.23	*+	ng/L		176	55 - 150
Perfluorononanesulfonic acid (PFNS)	3.07	5.28	*+	ng/L		172	65 - 145
Perfluorodecanesulfonic acid (PFDS)	3.08	5.10	*+	ng/L		165	60 - 145
Perfluorododecanesulfonic acid (PFDoS)	3.10	4.65	*+	ng/L		150	50 - 145
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	12.0	19.5	*+	ng/L		163	70 - 145
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	12.2	22.4	*+	ng/L		184	65 - 155
N-methylperfluorooctane sulfonamide (NMeFOSA)	3.20	5.65	*+	ng/L		177	60 - 150
N-ethylperfluorooctane sulfonamide (NEtFOSA)	3.20	5.47	*+	ng/L		171	65 - 145
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	3.20	4.99	*+	ng/L		156	50 - 140
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	3.20	5.16	*+	ng/L		161	70 - 145
N-methylperfluorooctane sulfonamidoethanol (NMeFOSE)	32.0	54.5	*+	ng/L		170	70 - 145
N-ethylperfluorooctane sulfonamidoethanol (NEtFOSE)	32.0	55.4	*+	ng/L		173	70 - 135
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	12.8	19.4	*+	ng/L		152	70 - 140
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	12.1	20.7	*+	ng/L		171	65 - 145
Perfluoro-3-methoxypropanoic acid (PFMPA)	6.40	10.3	*+	ng/L		161	55 - 140
Perfluoro-4-methoxybutanoic acid (PFMBA)	6.40	10.7	*+	ng/L		168	60 - 150
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	6.40	10.8	*+	ng/L		169	50 - 150
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	12.0	19.6	*+	ng/L		164	70 - 155
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	12.1	17.5		ng/L		145	55 - 160

Method: Draft-4 1633 - Per- and Polyfluoroalkyl Substances by LC/MS/MS (Continued)

Lab Sample ID: LLCS 320-732663/2-A
Matrix: Water
Analysis Batch: 733287

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 732663

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	5.71	9.67	*+	ng/L		169	70 - 140
3-Perfluoropropylpropanoic acid (3:3 FTCA)	16.0	23.8	*+	ng/L		149	65 - 130
3-Perfluoropentylpropanoic acid (5:3 FTCA)	79.9	135	*+	ng/L		169	70 - 135
3-Perfluoroheptylpropanoic acid (7:3 FTCA)	79.9	121	*+	ng/L		151	50 - 145

Isotope Dilution	*LLCS %Recovery*	*LLCS Qualifier*	*Limits*
13C4 PFBA	*86.3*		*5 - 130*
13C5 PFPeA	*93.7*		*40 - 130*
13C5 PFHxA	*85.4*		*40 - 130*
13C4 PFHpA	*96.0*		*40 - 130*
13C8 PFOA	*90.9*		*40 - 130*
13C9 PFNA	*93.0*		*40 - 130*
13C6 PFDA	*91.7*		*40 - 130*
13C7 PFUnA	*80.4*		*30 - 130*
13C2 PFDoA	*75.8*		*10 - 130*
13C2 PFTeDA	*60.7*		*10 - 130*
13C3 PFBS	*85.6*		*40 - 135*
13C3 PFHxS	*87.7*		*40 - 130*
13C8 PFOS	*89.9*		*40 - 130*
d3-NMeFOSAA	*81.9*		*40 - 170*
d5-NEtFOSAA	*82.1*		*25 - 135*
13C2 4:2 FTS	*65.8*		*40 - 200*
13C2 6:2 FTS	*65.3*		*40 - 200*
13C3 HFPO-DA	*96.5*		*40 - 130*
d7-N-MeFOSE-M	*85.7*		*10 - 130*
d9-N-EtFOSE-M	*83.6*		*10 - 130*
d5-NEtPFOSA	*75.0*		*10 - 130*
d3-NMePFOSA	*76.2*		*10 - 130*

Lab Sample ID: MB 320-733811/1-A
Matrix: Water
Analysis Batch: 734386

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 733811

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	ND		8.0	2.0	ng/L		01/16/24 03:55	01/18/24 12:06	1
Perfluoropentanoic acid (PFPeA)	ND		4.0	1.0	ng/L		01/16/24 03:55	01/18/24 12:06	1
Perfluorohexanoic acid (PFHxA)	ND		2.0	0.50	ng/L		01/16/24 03:55	01/18/24 12:06	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.50	ng/L		01/16/24 03:55	01/18/24 12:06	1
Perfluorooctanoic acid (PFOA)	ND		2.0	0.50	ng/L		01/16/24 03:55	01/18/24 12:06	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.50	ng/L		01/16/24 03:55	01/18/24 12:06	1
Perfluorodecanoic acid (PFDA)	ND		2.0	0.50	ng/L		01/16/24 03:55	01/18/24 12:06	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	0.50	ng/L		01/16/24 03:55	01/18/24 12:06	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	0.50	ng/L		01/16/24 03:55	01/18/24 12:06	1
Perfluorotridecanoic acid (PFTrDA)	ND		2.0	0.50	ng/L		01/16/24 03:55	01/18/24 12:06	1
Perfluorotetradecanoic acid (PFTeDA)	ND		2.0	0.50	ng/L		01/16/24 03:55	01/18/24 12:06	1
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	0.50	ng/L		01/16/24 03:55	01/18/24 12:06	1

Method: Draft-4 1633 - Per- and Polyfluoroalkyl Substances by LC/MS/MS (Continued)

Lab Sample ID: MB 320-733811/1-A
Matrix: Water
Analysis Batch: 734386

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 733811

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoropentanesulfonic acid (PFPeS)	ND		2.0	0.50	ng/L		01/16/24 03:55	01/18/24 12:06	1
Perfluorohexanesulfonic acid (PFHxS)	ND		2.0	0.50	ng/L		01/16/24 03:55	01/18/24 12:06	1
Perfluoroheptanesulfonic acid (PFHpS)	ND		2.0	0.50	ng/L		01/16/24 03:55	01/18/24 12:06	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.0	0.50	ng/L		01/16/24 03:55	01/18/24 12:06	1
Perfluorononanesulfonic acid (PFNS)	ND		2.0	0.50	ng/L		01/16/24 03:55	01/18/24 12:06	1
Perfluorodecanesulfonic acid (PFDS)	ND		2.0	0.50	ng/L		01/16/24 03:55	01/18/24 12:06	1
Perfluorododecanesulfonic acid (PFDoS)	ND		2.0	0.50	ng/L		01/16/24 03:55	01/18/24 12:06	1
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	ND		8.0	2.0	ng/L		01/16/24 03:55	01/18/24 12:06	1
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	ND		8.0	2.0	ng/L		01/16/24 03:55	01/18/24 12:06	1
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	ND		8.0	2.0	ng/L		01/16/24 03:55	01/18/24 12:06	1
Perfluorooctanesulfonamide (PFOSA)	ND		2.0	0.50	ng/L		01/16/24 03:55	01/18/24 12:06	1
N-methylperfluorooctane sulfonamide (NMeFOSA)	ND		2.0	0.50	ng/L		01/16/24 03:55	01/18/24 12:06	1
N-ethylperfluorooctane sulfonamide (NEtFOSA)	ND		2.0	0.50	ng/L		01/16/24 03:55	01/18/24 12:06	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		2.0	0.50	ng/L		01/16/24 03:55	01/18/24 12:06	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		2.0	0.50	ng/L		01/16/24 03:55	01/18/24 12:06	1
N-methylperfluorooctane sulfonamidoethanol (NMeFOSE)	ND		20	5.0	ng/L		01/16/24 03:55	01/18/24 12:06	1
N-ethylperfluorooctane sulfonamidoethanol (NEtFOSE)	ND		20	5.0	ng/L		01/16/24 03:55	01/18/24 12:06	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		8.0	2.0	ng/L		01/16/24 03:55	01/18/24 12:06	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		8.0	2.0	ng/L		01/16/24 03:55	01/18/24 12:06	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	ND		4.0	1.0	ng/L		01/16/24 03:55	01/18/24 12:06	1
Perfluoro-4-methoxybutanoic acid (PFMBA)	ND		4.0	1.0	ng/L		01/16/24 03:55	01/18/24 12:06	1
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND		4.0	1.0	ng/L		01/16/24 03:55	01/18/24 12:06	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	ND		8.0	2.0	ng/L		01/16/24 03:55	01/18/24 12:06	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	ND		8.0	2.0	ng/L		01/16/24 03:55	01/18/24 12:06	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	ND		4.0	1.0	ng/L		01/16/24 03:55	01/18/24 12:06	1
3-Perfluoropropylpropanoic acid (3:3 FTCA)	ND		10	2.5	ng/L		01/16/24 03:55	01/18/24 12:06	1
3-Perfluoropentylpropanoic acid (5:3 FTCA)	ND		50	13	ng/L		01/16/24 03:55	01/18/24 12:06	1
3-Perfluoroheptylpropanoic acid (7:3 FTCA)	ND		50	13	ng/L		01/16/24 03:55	01/18/24 12:06	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*79.3*		*5 - 130*	*01/16/24 03:55*	*01/18/24 12:06*	*1*

Method: Draft-4 1633 - Per- and Polyfluoroalkyl Substances by LC/MS/MS (Continued)

Lab Sample ID: MB 320-733811/1-A
Matrix: Water
Analysis Batch: 734386

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 733811

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C5 PFPeA	87.9		40 - 130	01/16/24 03:55	01/18/24 12:06	1
13C5 PFHxA	87.2		40 - 130	01/16/24 03:55	01/18/24 12:06	1
13C4 PFHpA	93.5		40 - 130	01/16/24 03:55	01/18/24 12:06	1
13C8 PFOA	79.2		40 - 130	01/16/24 03:55	01/18/24 12:06	1
13C9 PFNA	83.3		40 - 130	01/16/24 03:55	01/18/24 12:06	1
13C6 PFDA	76.3		40 - 130	01/16/24 03:55	01/18/24 12:06	1
13C7 PFUnA	75.9		30 - 130	01/16/24 03:55	01/18/24 12:06	1
13C2 PFDoA	73.0		10 - 130	01/16/24 03:55	01/18/24 12:06	1
13C2 PFTeDA	61.1		10 - 130	01/16/24 03:55	01/18/24 12:06	1
13C3 PFBS	84.2		40 - 135	01/16/24 03:55	01/18/24 12:06	1
13C3 PFHxS	79.8		40 - 130	01/16/24 03:55	01/18/24 12:06	1
13C8 PFOS	77.5		40 - 130	01/16/24 03:55	01/18/24 12:06	1
13C8 PFOSA	75.3		40 - 130	01/16/24 03:55	01/18/24 12:06	1
d3-NMeFOSAA	77.4		40 - 170	01/16/24 03:55	01/18/24 12:06	1
d5-NEtFOSAA	76.0		25 - 135	01/16/24 03:55	01/18/24 12:06	1
13C2 4:2 FTS	117		40 - 200	01/16/24 03:55	01/18/24 12:06	1
13C2 6:2 FTS	95.8		40 - 200	01/16/24 03:55	01/18/24 12:06	1
13C2 8:2 FTS	97.9		40 - 300	01/16/24 03:55	01/18/24 12:06	1
13C3 HFPO-DA	96.2		40 - 130	01/16/24 03:55	01/18/24 12:06	1
d7-N-MeFOSE-M	67.3		10 - 130	01/16/24 03:55	01/18/24 12:06	1
d9-N-EtFOSE-M	67.1		10 - 130	01/16/24 03:55	01/18/24 12:06	1
d5-NEtPFOSA	71.1		10 - 130	01/16/24 03:55	01/18/24 12:06	1
d3-NMePFOSA	71.1		10 - 130	01/16/24 03:55	01/18/24 12:06	1

Lab Sample ID: LCS 320-733811/3-A
Matrix: Water
Analysis Batch: 734386

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 733811

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluorobutanoic acid (PFBA)	128	134		ng/L		105	70 - 140
Perfluoropentanoic acid (PFPeA)	64.0	64.7		ng/L		101	65 - 135
Perfluorohexanoic acid (PFHxA)	32.0	30.0		ng/L		94	70 - 145
Perfluoroheptanoic acid (PFHpA)	32.0	30.1		ng/L		94	70 - 150
Perfluorooctanoic acid (PFOA)	32.0	28.3		ng/L		88	70 - 150
Perfluorononanoic acid (PFNA)	32.0	33.5		ng/L		105	70 - 150
Perfluorodecanoic acid (PFDA)	32.0	32.1		ng/L		100	70 - 140
Perfluoroundecanoic acid (PFUnA)	32.0	32.0		ng/L		100	70 - 145
Perfluorododecanoic acid (PFDoA)	32.0	33.9		ng/L		106	70 - 140
Perfluorotridecanoic acid (PFTrDA)	32.0	34.1		ng/L		107	65 - 140
Perfluorotetradecanoic acid (PFTeDA)	32.0	39.7		ng/L		124	60 - 140
Perfluorobutanesulfonic acid (PFBS)	28.4	27.0		ng/L		95	60 - 145
Perfluoropentanesulfonic acid (PFPeS)	30.1	27.9		ng/L		93	65 - 140
Perfluorohexanesulfonic acid (PFHxS)	29.2	30.0		ng/L		103	65 - 145

Method: Draft-4 1633 - Per- and Polyfluoroalkyl Substances by LC/MS/MS (Continued)

Lab Sample ID: LCS 320-733811/3-A
Matrix: Water
Analysis Batch: 734386

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 733811

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluoroheptanesulfonic acid (PFHpS)	30.5	31.7		ng/L		104	70 - 150
Perfluorooctanesulfonic acid (PFOS)	29.8	29.5		ng/L		99	55 - 150
Perfluorononanesulfonic acid (PFNS)	30.7	31.1		ng/L		101	65 - 145
Perfluorodecanesulfonic acid (PFDS)	30.8	34.0		ng/L		110	60 - 145
Perfluorododecanesulfonic acid (PFDoS)	31.0	31.0		ng/L		100	50 - 145
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	120	125		ng/L		105	70 - 145
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	122	136		ng/L		112	65 - 155
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	123	134		ng/L		109	60 - 150
Perfluorooctanesulfonamide (PFOSA)	32.0	30.1		ng/L		94	70 - 145
N-methylperfluorooctane sulfonamide (NMeFOSA)	32.0	32.0		ng/L		100	60 - 150
N-ethylperfluorooctane sulfonamide (NEtFOSA)	32.0	31.0		ng/L		97	65 - 145
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	32.0	32.3		ng/L		101	50 - 140
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	32.0	30.7		ng/L		96	70 - 145
N-methylperfluorooctane sulfonamidoethanol (NMeFOSE)	320	330		ng/L		103	70 - 145
N-ethylperfluorooctane sulfonamidoethanol (NEtFOSE)	320	392		ng/L		122	70 - 135
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	128	128		ng/L		100	70 - 140
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	121	122		ng/L		100	65 - 145
Perfluoro-3-methoxypropanoic acid (PFMPA)	64.0	59.7		ng/L		93	55 - 140
Perfluoro-4-methoxybutanoic acid (PFMBA)	64.0	71.1		ng/L		111	60 - 150
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	64.0	59.9		ng/L		94	50 - 150
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	120	118		ng/L		98	70 - 155
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	121	106		ng/L		87	55 - 160
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	57.1	50.7		ng/L		89	70 - 140
3-Perfluoropropylpropanoic acid (3:3 FTCA)	160	138		ng/L		87	65 - 130
3-Perfluoropentylpropanoic acid (5:3 FTCA)	799	680		ng/L		85	70 - 135
3-Perfluoroheptylpropanoic acid (7:3 FTCA)	799	694		ng/L		87	50 - 145

Method: Draft-4 1633 - Per- and Polyfluoroalkyl Substances by LC/MS/MS (Continued)

Isotope Dilution	LCS %Recovery	LCS Qualifier	Limits
13C4 PFBA	77.9		5 - 130
13C5 PFPeA	75.8		40 - 130
13C5 PFHxA	81.8		40 - 130
13C4 PFHpA	78.9		40 - 130
13C8 PFOA	73.0		40 - 130
13C9 PFNA	74.2		40 - 130
13C6 PFDA	71.9		40 - 130
13C7 PFUnA	71.6		30 - 130
13C2 PFDoA	65.5		10 - 130
13C2 PFTeDA	46.9		10 - 130
13C3 PFBS	85.9		40 - 135
13C3 PFHxS	75.9		40 - 130
13C8 PFOS	74.0		40 - 130
13C8 PFOSA	76.8		40 - 130
d3-NMeFOSAA	73.2		40 - 170
d5-NEtFOSAA	76.9		25 - 135
13C2 4:2 FTS	101		40 - 200
13C2 6:2 FTS	91.3		40 - 200
13C2 8:2 FTS	86.8		40 - 300
13C3 HFPO-DA	76.5		40 - 130
d7-N-MeFOSE-M	73.6		10 - 130
d9-N-EtFOSE-M	64.3		10 - 130
d5-NEtPFOSA	69.9		10 - 130
d3-NMePFOSA	72.0		10 - 130

Lab Sample ID: LCSD 320-733811/4-A
Matrix: Water
Analysis Batch: 734386

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 733811

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Perfluorobutanoic acid (PFBA)			128	137		ng/L		107	70 - 140	3	30
Perfluoropentanoic acid (PFPeA)			64.0	64.8		ng/L		101	65 - 135	0	30
Perfluorohexanoic acid (PFHxA)			32.0	32.7		ng/L		102	70 - 145	9	30
Perfluoroheptanoic acid (PFHpA)			32.0	34.3		ng/L		107	70 - 150	13	30
Perfluorooctanoic acid (PFOA)			32.0	30.9		ng/L		96	70 - 150	9	30
Perfluorononanoic acid (PFNA)			32.0	36.2		ng/L		113	70 - 150	8	30
Perfluorodecanoic acid (PFDA)			32.0	38.3		ng/L		120	70 - 140	18	30
Perfluoroundecanoic acid (PFUnA)			32.0	33.9		ng/L		106	70 - 145	6	30
Perfluorododecanoic acid (PFDoA)			32.0	33.3		ng/L		104	70 - 140	2	30
Perfluorotridecanoic acid (PFTrDA)			32.0	32.5		ng/L		102	65 - 140	5	30
Perfluorotetradecanoic acid (PFTeDA)			32.0	33.3		ng/L		104	60 - 140	17	30
Perfluorobutanesulfonic acid (PFBS)			28.4	31.8		ng/L		112	60 - 145	16	30
Perfluoropentanesulfonic acid (PFPeS)			30.1	29.9		ng/L		100	65 - 140	7	30
Perfluorohexanesulfonic acid (PFHxS)			29.2	29.8		ng/L		102	65 - 145	1	30
Perfluoroheptanesulfonic acid (PFHpS)			30.5	33.2		ng/L		109	70 - 150	5	30

Method: Draft-4 1633 - Per- and Polyfluoroalkyl Substances by LC/MS/MS (Continued)

Lab Sample ID: LCSD 320-733811/4-A
Matrix: Water
Analysis Batch: 734386

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 733811

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Perfluorooctanesulfonic acid (PFOS)			29.8	34.9		ng/L		117	55 - 150	17	30
Perfluorononanesulfonic acid (PFNS)			30.7	34.3		ng/L		112	65 - 145	10	30
Perfluorodecanesulfonic acid (PFDS)			30.8	34.2		ng/L		111	60 - 145	0	30
Perfluorododecanesulfonic acid (PFDoS)			31.0	31.5		ng/L		102	50 - 145	2	30
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)			120	134		ng/L		112	70 - 145	7	30
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)			122	144		ng/L		118	65 - 155	6	30
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)			123	128		ng/L		104	60 - 150	5	30
Perfluorooctanesulfonamide (PFOSA)			32.0	33.9		ng/L		106	70 - 145	12	30
N-methylperfluorooctane sulfonamide (NMeFOSA)			32.0	35.0		ng/L		109	60 - 150	9	30
N-ethylperfluorooctane sulfonamide (NEtFOSA)			32.0	33.7		ng/L		105	65 - 145	8	30
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)			32.0	34.3		ng/L		107	50 - 140	6	30
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)			32.0	32.7		ng/L		102	70 - 145	6	30
N-methylperfluorooctane sulfonamidoethanol (NMeFOSE)			320	377		ng/L		118	70 - 145	13	30
N-ethylperfluorooctane sulfonamidoethanol (NEtFOSE)			320	356		ng/L		111	70 - 135	10	30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)			128	121		ng/L		95	70 - 140	6	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)			121	119		ng/L		98	65 - 145	2	30
Perfluoro-3-methoxypropanoic acid (PFMPA)			64.0	61.8		ng/L		97	55 - 140	3	30
Perfluoro-4-methoxybutanoic acid (PFMBA)			64.0	71.3		ng/L		111	60 - 150	0	30
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)			64.0	64.8		ng/L		101	50 - 150	8	30
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)			120	120		ng/L		101	70 - 155	2	30
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)			121	105		ng/L		87	55 - 160	1	30
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)			57.1	57.8		ng/L		101	70 - 140	13	30
3-Perfluoropropylpropanoic acid (3:3 FTCA)			160	145		ng/L		91	65 - 130	5	30
3-Perfluoropentylpropanoic acid (5:3 FTCA)			799	788		ng/L		99	70 - 135	15	30
3-Perfluoroheptylpropanoic acid (7:3 FTCA)			799	776		ng/L		97	50 - 145	11	30

Isotope Dilution	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
13C4 PFBA	*78.2*		*5 - 130*

Method: Draft-4 1633 - Per- and Polyfluoroalkyl Substances by LC/MS/MS (Continued)

Lab Sample ID: LCSD 320-733811/4-A
Matrix: Water
Analysis Batch: 734386

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 733811

Isotope Dilution	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
13C5 PFPeA	*85.1*		*40 - 130*
13C5 PFHxA	*81.9*		*40 - 130*
13C4 PFHpA	*87.1*		*40 - 130*
13C8 PFOA	*70.4*		*40 - 130*
13C9 PFNA	*79.4*		*40 - 130*
13C6 PFDA	*72.9*		*40 - 130*
13C7 PFUnA	*77.7*		*30 - 130*
13C2 PFDoA	*75.7*		*10 - 130*
13C2 PFTeDA	*69.2*		*10 - 130*
13C3 PFBS	*72.0*		*40 - 135*
13C3 PFHxS	*74.4*		*40 - 130*
13C8 PFOS	*72.4*		*40 - 130*
13C8 PFOSA	*73.3*		*40 - 130*
d3-NMeFOSAA	*78.7*		*40 - 170*
d5-NEtFOSAA	*82.2*		*25 - 135*
13C2 4:2 FTS	*83.9*		*40 - 200*
13C2 6:2 FTS	*91.1*		*40 - 200*
13C2 8:2 FTS	*93.1*		*40 - 300*
13C3 HFPO-DA	*91.1*		*40 - 130*
d7-N-MeFOSE-M	*67.2*		*10 - 130*
d9-N-EtFOSE-M	*70.8*		*10 - 130*
d5-NEtPFOSA	*69.4*		*10 - 130*
d3-NMePFOSA	*73.4*		*10 - 130*

Lab Sample ID: LLCS 320-733811/2-A
Matrix: Water
Analysis Batch: 734386

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 733811

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluorobutanoic acid (PFBA)	12.8	14.1		ng/L		110	70 - 140
Perfluoropentanoic acid (PFPeA)	6.40	6.72		ng/L		105	65 - 135
Perfluorohexanoic acid (PFHxA)	3.20	3.43		ng/L		107	70 - 145
Perfluoroheptanoic acid (PFHpA)	3.20	3.37		ng/L		105	70 - 150
Perfluorooctanoic acid (PFOA)	3.20	3.64		ng/L		114	70 - 150
Perfluorononanoic acid (PFNA)	3.20	3.88		ng/L		121	70 - 150
Perfluorodecanoic acid (PFDA)	3.20	3.49		ng/L		109	70 - 140
Perfluoroundecanoic acid (PFUnA)	3.20	3.51		ng/L		110	70 - 145
Perfluorododecanoic acid (PFDoA)	3.20	3.66		ng/L		114	70 - 140
Perfluorotridecanoic acid (PFTrDA)	3.20	3.52		ng/L		110	65 - 140
Perfluorotetradecanoic acid (PFTeDA)	3.20	3.36		ng/L		105	60 - 140
Perfluorobutanesulfonic acid (PFBS)	2.84	2.99		ng/L		105	60 - 145
Perfluoropentanesulfonic acid (PFPeS)	3.01	2.95		ng/L		98	65 - 140
Perfluorohexanesulfonic acid (PFHxS)	2.92	3.60		ng/L		123	65 - 145

Method: Draft-4 1633 - Per- and Polyfluoroalkyl Substances by LC/MS/MS (Continued)

Lab Sample ID: LLCS 320-733811/2-A
Matrix: Water
Analysis Batch: 734386

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 733811

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluoroheptanesulfonic acid (PFHpS)	3.05	3.29		ng/L		108	70 - 150
Perfluorooctanesulfonic acid (PFOS)	2.98	3.52		ng/L		118	55 - 150
Perfluorononanesulfonic acid (PFNS)	3.07	3.27		ng/L		106	65 - 145
Perfluorodecanesulfonic acid (PFDS)	3.08	3.09		ng/L		100	60 - 145
Perfluorododecanesulfonic acid (PFDoS)	3.10	3.06		ng/L		99	50 - 145
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	12.0	12.2		ng/L		102	70 - 145
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	12.2	15.0		ng/L		123	65 - 155
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	12.3	14.7		ng/L		120	60 - 150
Perfluorooctanesulfonamide (PFOSA)	3.20	3.71		ng/L		116	70 - 145
N-methylperfluorooctane sulfonamide (NMeFOSA)	3.20	3.61		ng/L		113	60 - 150
N-ethylperfluorooctane sulfonamide (NEtFOSA)	3.20	3.47		ng/L		108	65 - 145
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	3.20	3.44		ng/L		108	50 - 140
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	3.20	3.41		ng/L		106	70 - 145
N-methylperfluorooctane sulfonamidoethanol (NMeFOSE)	32.0	37.4		ng/L		117	70 - 145
N-ethylperfluorooctane sulfonamidoethanol (NEtFOSE)	32.0	36.5		ng/L		114	70 - 135
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	12.8	13.8		ng/L		107	70 - 140
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	12.1	13.8		ng/L		114	65 - 145
Perfluoro-3-methoxypropanoic acid (PFMPA)	6.40	6.63		ng/L		104	55 - 140
Perfluoro-4-methoxybutanoic acid (PFMBA)	6.40	7.43		ng/L		116	60 - 150
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	6.40	6.80		ng/L		106	50 - 150
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	12.0	13.0		ng/L		109	70 - 155
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	12.1	12.0		ng/L		99	55 - 160
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	5.71	5.72		ng/L		100	70 - 140
3-Perfluoropropylpropanoic acid (3:3 FTCA)	16.0	12.8		ng/L		80	65 - 130
3-Perfluoropentylpropanoic acid (5:3 FTCA)	79.9	84.2		ng/L		105	70 - 135
3-Perfluoroheptylpropanoic acid (7:3 FTCA)	79.9	77.6		ng/L		97	50 - 145

Method: Draft-4 1633 - Per- and Polyfluoroalkyl Substances by LC/MS/MS (Continued)

Isotope Dilution	LLCS %Recovery	LLCS Qualifier	Limits
13C4 PFBA	81.6		5 - 130
13C5 PFPeA	82.2		40 - 130
13C5 PFHxA	81.3		40 - 130
13C4 PFHpA	77.6		40 - 130
13C8 PFOA	75.4		40 - 130
13C9 PFNA	77.5		40 - 130
13C6 PFDA	78.1		40 - 130
13C7 PFUnA	75.8		30 - 130
13C2 PFDoA	69.2		10 - 130
13C2 PFTeDA	63.2		10 - 130
13C3 PFBS	79.3		40 - 135
13C3 PFHxS	77.4		40 - 130
13C8 PFOS	81.2		40 - 130
13C8 PFOSA	71.7		40 - 130
d3-NMeFOSAA	79.5		40 - 170
d5-NEtFOSAA	85.3		25 - 135
13C2 4:2 FTS	107		40 - 200
13C2 6:2 FTS	102		40 - 200
13C2 8:2 FTS	95.8		40 - 300
13C3 HFPO-DA	82.8		40 - 130
d7-N-MeFOSE-M	61.7		10 - 130
d9-N-EtFOSE-M	69.8		10 - 130
d5-NEtPFOSA	66.8		10 - 130
d3-NMePFOSA	70.6		10 - 130

Lab Sample ID: MB 320-734764/1-A
Matrix: Water
Analysis Batch: 735461

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 734764

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	ND		8.0	2.0	ng/L		01/19/24 11:50	01/23/24 05:13	1
Perfluoropentanoic acid (PFPeA)	ND		4.0	1.0	ng/L		01/19/24 11:50	01/23/24 05:13	1
Perfluorohexanoic acid (PFHxA)	ND		2.0	0.50	ng/L		01/19/24 11:50	01/23/24 05:13	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.50	ng/L		01/19/24 11:50	01/23/24 05:13	1
Perfluorooctanoic acid (PFOA)	ND		2.0	0.50	ng/L		01/19/24 11:50	01/23/24 05:13	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.50	ng/L		01/19/24 11:50	01/23/24 05:13	1
Perfluorodecanoic acid (PFDA)	ND		2.0	0.50	ng/L		01/19/24 11:50	01/23/24 05:13	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	0.50	ng/L		01/19/24 11:50	01/23/24 05:13	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	0.50	ng/L		01/19/24 11:50	01/23/24 05:13	1
Perfluorotridecanoic acid (PFTrDA)	ND		2.0	0.50	ng/L		01/19/24 11:50	01/23/24 05:13	1
Perfluorotetradecanoic acid (PFTeDA)	ND		2.0	0.50	ng/L		01/19/24 11:50	01/23/24 05:13	1
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	0.50	ng/L		01/19/24 11:50	01/23/24 05:13	1
Perfluoropentanesulfonic acid (PFPeS)	ND		2.0	0.50	ng/L		01/19/24 11:50	01/23/24 05:13	1
Perfluorohexanesulfonic acid (PFHxS)	ND		2.0	0.50	ng/L		01/19/24 11:50	01/23/24 05:13	1
Perfluoroheptanesulfonic acid (PFHpS)	ND		2.0	0.50	ng/L		01/19/24 11:50	01/23/24 05:13	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.0	0.50	ng/L		01/19/24 11:50	01/23/24 05:13	1
Perfluorononanesulfonic acid (PFNS)	ND		2.0	0.50	ng/L		01/19/24 11:50	01/23/24 05:13	1
Perfluorodecanesulfonic acid (PFDS)	ND		2.0	0.50	ng/L		01/19/24 11:50	01/23/24 05:13	1
Perfluorododecanesulfonic acid (PFDoS)	ND		2.0	0.50	ng/L		01/19/24 11:50	01/23/24 05:13	1

Method: Draft-4 1633 - Per- and Polyfluoroalkyl Substances by LC/MS/MS (Continued)

Lab Sample ID: MB 320-734764/1-A
Matrix: Water
Analysis Batch: 735461

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 734764

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	ND		8.0	2.0	ng/L		01/19/24 11:50	01/23/24 05:13	1
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	ND		8.0	2.0	ng/L		01/19/24 11:50	01/23/24 05:13	1
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	ND		8.0	2.0	ng/L		01/19/24 11:50	01/23/24 05:13	1
Perfluorooctanesulfonamide (PFOSA)	ND		2.0	0.50	ng/L		01/19/24 11:50	01/23/24 05:13	1
N-methylperfluorooctane sulfonamide (NMeFOSA)	ND		2.0	0.50	ng/L		01/19/24 11:50	01/23/24 05:13	1
N-ethylperfluorooctane sulfonamide (NEtFOSA)	ND		2.0	0.50	ng/L		01/19/24 11:50	01/23/24 05:13	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		2.0	0.50	ng/L		01/19/24 11:50	01/23/24 05:13	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		2.0	0.50	ng/L		01/19/24 11:50	01/23/24 05:13	1
N-methylperfluorooctane sulfonamidoethanol (NMeFOSE)	ND		20	5.0	ng/L		01/19/24 11:50	01/23/24 05:13	1
N-ethylperfluorooctane sulfonamidoethanol (NEtFOSE)	ND		20	5.0	ng/L		01/19/24 11:50	01/23/24 05:13	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		8.0	2.0	ng/L		01/19/24 11:50	01/23/24 05:13	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		8.0	2.0	ng/L		01/19/24 11:50	01/23/24 05:13	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	ND		4.0	1.0	ng/L		01/19/24 11:50	01/23/24 05:13	1
Perfluoro-4-methoxybutanoic acid (PFMBA)	ND		4.0	1.0	ng/L		01/19/24 11:50	01/23/24 05:13	1
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND		4.0	1.0	ng/L		01/19/24 11:50	01/23/24 05:13	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	ND		8.0	2.0	ng/L		01/19/24 11:50	01/23/24 05:13	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	ND		8.0	2.0	ng/L		01/19/24 11:50	01/23/24 05:13	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	ND		4.0	1.0	ng/L		01/19/24 11:50	01/23/24 05:13	1
3-Perfluoropropylpropanoic acid (3:3 FTCA)	ND		10	2.5	ng/L		01/19/24 11:50	01/23/24 05:13	1
3-Perfluoropentylpropanoic acid (5:3 FTCA)	ND		50	13	ng/L		01/19/24 11:50	01/23/24 05:13	1
3-Perfluoroheptylpropanoic acid (7:3 FTCA)	ND		50	13	ng/L		01/19/24 11:50	01/23/24 05:13	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*83.6*		*5 - 130*	*01/19/24 11:50*	*01/23/24 05:13*	*1*
13C5 PFPeA	*92.4*		*40 - 130*	*01/19/24 11:50*	*01/23/24 05:13*	*1*
13C5 PFHxA	*85.7*		*40 - 130*	*01/19/24 11:50*	*01/23/24 05:13*	*1*
13C4 PFHpA	*94.8*		*40 - 130*	*01/19/24 11:50*	*01/23/24 05:13*	*1*
13C8 PFOA	*74.7*		*40 - 130*	*01/19/24 11:50*	*01/23/24 05:13*	*1*
13C9 PFNA	*82.0*		*40 - 130*	*01/19/24 11:50*	*01/23/24 05:13*	*1*
13C6 PFDA	*77.6*		*40 - 130*	*01/19/24 11:50*	*01/23/24 05:13*	*1*
13C7 PFUnA	*73.6*		*30 - 130*	*01/19/24 11:50*	*01/23/24 05:13*	*1*
13C2 PFDoA	*59.7*		*10 - 130*	*01/19/24 11:50*	*01/23/24 05:13*	*1*
13C2 PFTeDA	*62.5*		*10 - 130*	*01/19/24 11:50*	*01/23/24 05:13*	*1*
13C3 PFBS	*88.3*		*40 - 135*	*01/19/24 11:50*	*01/23/24 05:13*	*1*

Method: Draft-4 1633 - Per- and Polyfluoroalkyl Substances by LC/MS/MS (Continued)

Lab Sample ID: MB 320-734764/1-A
Matrix: Water
Analysis Batch: 735461

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 734764

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C3 PFHxS	83.9		40 - 130	01/19/24 11:50	01/23/24 05:13	1
13C8 PFOS	81.1		40 - 130	01/19/24 11:50	01/23/24 05:13	1
13C8 PFOSA	74.3		40 - 130	01/19/24 11:50	01/23/24 05:13	1
d3-NMeFOSAA	84.3		40 - 170	01/19/24 11:50	01/23/24 05:13	1
d5-NEtFOSAA	76.1		25 - 135	01/19/24 11:50	01/23/24 05:13	1
13C2 4:2 FTS	76.7		40 - 200	01/19/24 11:50	01/23/24 05:13	1
13C2 6:2 FTS	87.1		40 - 200	01/19/24 11:50	01/23/24 05:13	1
13C2 8:2 FTS	98.4		40 - 300	01/19/24 11:50	01/23/24 05:13	1
13C3 HFPO-DA	97.4		40 - 130	01/19/24 11:50	01/23/24 05:13	1
d7-N-MeFOSE-M	62.6		10 - 130	01/19/24 11:50	01/23/24 05:13	1
d9-N-EtFOSE-M	60.1		10 - 130	01/19/24 11:50	01/23/24 05:13	1
d5-NEtPFOSA	55.3		10 - 130	01/19/24 11:50	01/23/24 05:13	1
d3-NMePFOSA	52.4		10 - 130	01/19/24 11:50	01/23/24 05:13	1

Lab Sample ID: LCS 320-734764/3-A
Matrix: Water
Analysis Batch: 735461

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 734764

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluorobutanoic acid (PFBA)	128	132		ng/L		103	70 - 140
Perfluoropentanoic acid (PFPeA)	64.0	60.3		ng/L		94	65 - 135
Perfluorohexanoic acid (PFHxA)	32.0	30.2		ng/L		94	70 - 145
Perfluoroheptanoic acid (PFHpA)	32.0	30.7		ng/L		96	70 - 150
Perfluorooctanoic acid (PFOA)	32.0	31.3		ng/L		98	70 - 150
Perfluorononanoic acid (PFNA)	32.0	30.9		ng/L		97	70 - 150
Perfluorodecanoic acid (PFDA)	32.0	35.4		ng/L		111	70 - 140
Perfluoroundecanoic acid (PFUnA)	32.0	32.9		ng/L		103	70 - 145
Perfluorododecanoic acid (PFDoA)	32.0	32.3		ng/L		101	70 - 140
Perfluorotridecanoic acid (PFTrDA)	32.0	29.4		ng/L		92	65 - 140
Perfluorotetradecanoic acid (PFTeDA)	32.0	27.2		ng/L		85	60 - 140
Perfluorobutanesulfonic acid (PFBS)	28.4	30.7		ng/L		108	60 - 145
Perfluoropentanesulfonic acid (PFPeS)	30.1	29.0		ng/L		96	65 - 140
Perfluorohexanesulfonic acid (PFHxS)	29.2	27.0		ng/L		93	65 - 145
Perfluoroheptanesulfonic acid (PFHpS)	30.5	31.8		ng/L		104	70 - 150
Perfluorooctanesulfonic acid (PFOS)	29.8	31.0		ng/L		104	55 - 150
Perfluorononanesulfonic acid (PFNS)	30.7	33.0		ng/L		107	65 - 145
Perfluorodecanesulfonic acid (PFDS)	30.8	34.5		ng/L		112	60 - 145
Perfluorododecanesulfonic acid (PFDoS)	31.0	27.3		ng/L		88	50 - 145
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	120	111		ng/L		93	70 - 145

Method: Draft-4 1633 - Per- and Polyfluoroalkyl Substances by LC/MS/MS (Continued)

Lab Sample ID: LCS 320-734764/3-A
Matrix: Water
Analysis Batch: 735461

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 734764

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	122	131		ng/L		108	65 - 155
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	123	150		ng/L		122	60 - 150
Perfluorooctanesulfonamide (PFOSA)	32.0	31.6		ng/L		99	70 - 145
N-methylperfluorooctane sulfonamide (NMeFOSA)	32.0	33.8		ng/L		106	60 - 150
N-ethylperfluorooctane sulfonamide (NEtFOSA)	32.0	33.2		ng/L		104	65 - 145
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	32.0	29.2		ng/L		91	50 - 140
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	32.0	34.8		ng/L		109	70 - 145
N-methylperfluorooctane sulfonamidoethanol (NMeFOSE)	320	358		ng/L		112	70 - 145
N-ethylperfluorooctane sulfonamidoethanol (NEtFOSE)	320	318		ng/L		99	70 - 135
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	128	128		ng/L		100	70 - 140
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	121	111		ng/L		91	65 - 145
Perfluoro-3-methoxypropanoic acid (PFMPA)	64.0	51.6		ng/L		81	55 - 140
Perfluoro-4-methoxybutanoic acid (PFMBA)	64.0	61.4		ng/L		96	60 - 150
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	64.0	59.5		ng/L		93	50 - 150
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	120	109		ng/L		91	70 - 155
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	121	96.5		ng/L		80	55 - 160
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	57.1	49.7		ng/L		87	70 - 140
3-Perfluoropropylpropanoic acid (3:3 FTCA)	160	129		ng/L		80	65 - 130
3-Perfluoropentylpropanoic acid (5:3 FTCA)	799	727		ng/L		91	70 - 135
3-Perfluoroheptylpropanoic acid (7:3 FTCA)	799	735		ng/L		92	50 - 145

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C4 PFBA	*81.3*		*5 - 130*
13C5 PFPeA	*88.5*		*40 - 130*
13C5 PFHxA	*83.6*		*40 - 130*
13C4 PFHpA	*85.7*		*40 - 130*
13C8 PFOA	*83.9*		*40 - 130*
13C9 PFNA	*88.8*		*40 - 130*
13C6 PFDA	*79.3*		*40 - 130*
13C7 PFUnA	*77.2*		*30 - 130*
13C2 PFDoA	*73.2*		*10 - 130*
13C2 PFTeDA	*70.5*		*10 - 130*

Method: Draft-4 1633 - Per- and Polyfluoroalkyl Substances by LC/MS/MS (Continued)

Lab Sample ID: LCS 320-734764/3-A
Matrix: Water
Analysis Batch: 735461

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 734764

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C3 PFBS	*78.4*		*40 - 135*
13C3 PFHxS	*83.6*		*40 - 130*
13C8 PFOS	*82.5*		*40 - 130*
13C8 PFOSA	*82.5*		*40 - 130*
d3-NMeFOSAA	*85.8*		*40 - 170*
d5-NEtFOSAA	*84.9*		*25 - 135*
13C2 4:2 FTS	*90.5*		*40 - 200*
13C2 6:2 FTS	*89.2*		*40 - 200*
13C2 8:2 FTS	*89.4*		*40 - 300*
13C3 HFPO-DA	*89.5*		*40 - 130*
d7-N-MeFOSE-M	*63.1*		*10 - 130*
d9-N-EtFOSE-M	*68.0*		*10 - 130*
d5-NEtPFOSA	*61.4*		*10 - 130*
d3-NMePFOSA	*59.2*		*10 - 130*

Lab Sample ID: LCSD 320-734764/4-A
Matrix: Water
Analysis Batch: 735461

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 734764

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Perfluorobutanoic acid (PFBA)			128	132		ng/L		103	70 - 140	0	30
Perfluoropentanoic acid (PFPeA)			64.0	59.3		ng/L		93	65 - 135	2	30
Perfluorohexanoic acid (PFHxA)			32.0	29.3		ng/L		92	70 - 145	3	30
Perfluoroheptanoic acid (PFHpA)			32.0	31.8		ng/L		99	70 - 150	4	30
Perfluorooctanoic acid (PFOA)			32.0	31.5		ng/L		98	70 - 150	1	30
Perfluorononanoic acid (PFNA)			32.0	31.6		ng/L		99	70 - 150	2	30
Perfluorodecanoic acid (PFDA)			32.0	32.2		ng/L		100	70 - 140	10	30
Perfluoroundecanoic acid (PFUnA)			32.0	31.4		ng/L		98	70 - 145	5	30
Perfluorododecanoic acid (PFDoA)			32.0	34.8		ng/L		109	70 - 140	7	30
Perfluorotridecanoic acid (PFTrDA)			32.0	26.7		ng/L		83	65 - 140	10	30
Perfluorotetradecanoic acid (PFTeDA)			32.0	28.1		ng/L		88	60 - 140	3	30
Perfluorobutanesulfonic acid (PFBS)			28.4	26.8		ng/L		94	60 - 145	13	30
Perfluoropentanesulfonic acid (PFPeS)			30.1	25.2		ng/L		84	65 - 140	14	30
Perfluorohexanesulfonic acid (PFHxS)			29.2	28.5		ng/L		98	65 - 145	5	30
Perfluoroheptanesulfonic acid (PFHpS)			30.5	30.6		ng/L		100	70 - 150	4	30
Perfluorooctanesulfonic acid (PFOS)			29.8	29.5		ng/L		99	55 - 150	5	30
Perfluorononanesulfonic acid (PFNS)			30.7	29.5		ng/L		96	65 - 145	11	30
Perfluorodecanesulfonic acid (PFDS)			30.8	30.5		ng/L		99	60 - 145	12	30
Perfluorododecanesulfonic acid (PFDoS)			31.0	25.4		ng/L		82	50 - 145	7	30

Method: Draft-4 1633 - Per- and Polyfluoroalkyl Substances by LC/MS/MS (Continued)

Lab Sample ID: LCSD 320-734764/4-A
Matrix: Water
Analysis Batch: 735461

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 734764

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)			120	114		ng/L		96	70 - 145	3	30
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)			122	140		ng/L		115	65 - 155	6	30
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)			123	134		ng/L		109	60 - 150	11	30
Perfluorooctanesulfonamide (PFOSA)			32.0	30.7		ng/L		96	70 - 145	3	30
N-methylperfluorooctane sulfonamide (NMeFOSA)			32.0	33.8		ng/L		106	60 - 150	0	30
N-ethylperfluorooctane sulfonamide (NEtFOSA)			32.0	34.0		ng/L		106	65 - 145	2	30
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)			32.0	29.9		ng/L		93	50 - 140	2	30
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)			32.0	34.9		ng/L		109	70 - 145	0	30
N-methylperfluorooctane sulfonamidoethanol (NMeFOSE)			320	323		ng/L		101	70 - 145	10	30
N-ethylperfluorooctane sulfonamidoethanol (NEtFOSE)			320	369		ng/L		115	70 - 135	15	30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)			128	136		ng/L		106	70 - 140	6	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)			121	128		ng/L		106	65 - 145	15	30
Perfluoro-3-methoxypropanoic acid (PFMPA)			64.0	51.6		ng/L		81	55 - 140	0	30
Perfluoro-4-methoxybutanoic acid (PFMBA)			64.0	62.9		ng/L		98	60 - 150	2	30
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)			64.0	72.7		ng/L		114	50 - 150	20	30
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)			120	126		ng/L		106	70 - 155	15	30
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)			121	105		ng/L		87	55 - 160	8	30
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)			57.1	57.1		ng/L		100	70 - 140	14	30
3-Perfluoropropylpropanoic acid (3:3 FTCA)			160	134		ng/L		84	65 - 130	4	30
3-Perfluoropentylpropanoic acid (5:3 FTCA)			799	788		ng/L		99	70 - 135	8	30
3-Perfluoroheptylpropanoic acid (7:3 FTCA)			799	822		ng/L		103	50 - 145	11	30

Isotope Dilution	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
13C4 PFBA	*82.9*		*5 - 130*
13C5 PFPeA	*95.2*		*40 - 130*
13C5 PFHxA	*81.7*		*40 - 130*
13C4 PFHpA	*85.3*		*40 - 130*
13C8 PFOA	*75.3*		*40 - 130*
13C9 PFNA	*87.2*		*40 - 130*
13C6 PFDA	*80.7*		*40 - 130*
13C7 PFUnA	*81.7*		*30 - 130*

Method: Draft-4 1633 - Per- and Polyfluoroalkyl Substances by LC/MS/MS (Continued)

Lab Sample ID: LCSD 320-734764/4-A
Matrix: Water
Analysis Batch: 735461

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 734764

Isotope Dilution	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
13C2 PFDoA	*71.6*		*10 - 130*
13C2 PFTeDA	*62.8*		*10 - 130*
13C3 PFBS	*89.1*		*40 - 135*
13C3 PFHxS	*84.6*		*40 - 130*
13C8 PFOS	*87.4*		*40 - 130*
13C8 PFOSA	*82.3*		*40 - 130*
d3-NMeFOSAA	*87.0*		*40 - 170*
d5-NEtFOSAA	*89.2*		*25 - 135*
13C2 4:2 FTS	*90.1*		*40 - 200*
13C2 6:2 FTS	*84.2*		*40 - 200*
13C2 8:2 FTS	*97.8*		*40 - 300*
13C3 HFPO-DA	*88.5*		*40 - 130*
d7-N-MeFOSE-M	*61.6*		*10 - 130*
d9-N-EtFOSE-M	*52.8*		*10 - 130*
d5-NEtPFOSA	*57.1*		*10 - 130*
d3-NMePFOSA	*58.7*		*10 - 130*

Lab Sample ID: LLCS 320-734764/2-A
Matrix: Water
Analysis Batch: 735461

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 734764

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluorobutanoic acid (PFBA)	12.8	13.3		ng/L		104	70 - 140
Perfluoropentanoic acid (PFPeA)	6.40	6.11		ng/L		95	65 - 135
Perfluorohexanoic acid (PFHxA)	3.20	3.46		ng/L		108	70 - 145
Perfluoroheptanoic acid (PFHpA)	3.20	3.02		ng/L		95	70 - 150
Perfluorooctanoic acid (PFOA)	3.20	3.38		ng/L		106	70 - 150
Perfluorononanoic acid (PFNA)	3.20	3.40		ng/L		106	70 - 150
Perfluorodecanoic acid (PFDA)	3.20	2.91		ng/L		91	70 - 140
Perfluoroundecanoic acid (PFUnA)	3.20	3.26		ng/L		102	70 - 145
Perfluorododecanoic acid (PFDoA)	3.20	3.31		ng/L		103	70 - 140
Perfluorotridecanoic acid (PFTrDA)	3.20	2.92		ng/L		91	65 - 140
Perfluorotetradecanoic acid (PFTeDA)	3.20	2.93		ng/L		91	60 - 140
Perfluorobutanesulfonic acid (PFBS)	2.84	2.94		ng/L		104	60 - 145
Perfluoropentanesulfonic acid (PFPeS)	3.01	2.71		ng/L		90	65 - 140
Perfluorohexanesulfonic acid (PFHxS)	2.92	3.09		ng/L		106	65 - 145
Perfluoroheptanesulfonic acid (PFHpS)	3.05	3.62		ng/L		118	70 - 150
Perfluorooctanesulfonic acid (PFOS)	2.98	3.22		ng/L		108	55 - 150
Perfluorononanesulfonic acid (PFNS)	3.07	3.15		ng/L		102	65 - 145
Perfluorodecanesulfonic acid (PFDS)	3.08	3.50		ng/L		114	60 - 145

Method: Draft-4 1633 - Per- and Polyfluoroalkyl Substances by LC/MS/MS (Continued)

Lab Sample ID: LLCS 320-734764/2-A
Matrix: Water
Analysis Batch: 735461

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 734764

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluorododecanesulfonic acid (PFDoS)	3.10	2.94		ng/L		95	50 - 145
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	12.0	13.0		ng/L		109	70 - 145
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	12.2	13.8		ng/L		113	65 - 155
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	12.3	14.3		ng/L		116	60 - 150
Perfluorooctanesulfonamide (PFOSA)	3.20	3.13		ng/L		98	70 - 145
N-methylperfluorooctane sulfonamide (NMeFOSA)	3.20	3.17		ng/L		99	60 - 150
N-ethylperfluorooctane sulfonamide (NEtFOSA)	3.20	2.99		ng/L		93	65 - 145
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	3.20	3.20		ng/L		100	50 - 140
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	3.20	3.73		ng/L		117	70 - 145
N-methylperfluorooctane sulfonamidoethanol (NMeFOSE)	32.0	31.3		ng/L		98	70 - 145
N-ethylperfluorooctane sulfonamidoethanol (NEtFOSE)	32.0	31.6		ng/L		99	70 - 135
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	12.8	14.3		ng/L		112	70 - 140
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	12.1	13.1		ng/L		108	65 - 145
Perfluoro-3-methoxypropanoic acid (PFMPA)	6.40	5.39		ng/L		84	55 - 140
Perfluoro-4-methoxybutanoic acid (PFMBA)	6.40	6.42		ng/L		100	60 - 150
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	6.40	4.87		ng/L		76	50 - 150
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	12.0	12.6		ng/L		105	70 - 155
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	12.1	10.5		ng/L		87	55 - 160
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	5.71	6.05		ng/L		106	70 - 140
3-Perfluoropropylpropanoic acid (3:3 FTCA)	16.0	12.1		ng/L		76	65 - 130
3-Perfluoropentylpropanoic acid (5:3 FTCA)	79.9	81.4		ng/L		102	70 - 135
3-Perfluoroheptylpropanoic acid (7:3 FTCA)	79.9	78.8		ng/L		99	50 - 145

Isotope Dilution	*LLCS %Recovery*	*LLCS Qualifier*	*Limits*
13C4 PFBA	*82.0*		*5 - 130*
13C5 PFPeA	*99.0*		*40 - 130*
13C5 PFHxA	*85.7*		*40 - 130*
13C4 PFHpA	*95.3*		*40 - 130*
13C8 PFOA	*76.8*		*40 - 130*
13C9 PFNA	*82.0*		*40 - 130*

Method: Draft-4 1633 - Per- and Polyfluoroalkyl Substances by LC/MS/MS (Continued)

Lab Sample ID: LLCS 320-734764/2-A
Matrix: Water
Analysis Batch: 735461

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 734764

Isotope Dilution	LLCS %Recovery	LLCS Qualifier	Limits
13C6 PFDA	86.1		40 - 130
13C7 PFUnA	82.8		30 - 130
13C2 PFDoA	73.3		10 - 130
13C2 PFTeDA	71.5		10 - 130
13C3 PFBS	89.0		40 - 135
13C3 PFHxS	85.0		40 - 130
13C8 PFOS	83.7		40 - 130
13C8 PFOSA	82.4		40 - 130
d3-NMeFOSAA	89.9		40 - 170
d5-NEtFOSAA	81.4		25 - 135
13C2 4:2 FTS	82.2		40 - 200
13C2 6:2 FTS	80.2		40 - 200
13C2 8:2 FTS	92.7		40 - 300
13C3 HFPO-DA	93.9		40 - 130
d7-N-MeFOSE-M	69.9		10 - 130
d9-N-EtFOSE-M	66.8		10 - 130
d5-NEtPFOSA	64.9		10 - 130
d3-NMePFOSA	62.6		10 - 130

Method: Draft-4 1633 - Per- and Polyfluoroalkyl Substances by LC/MS/MS - RA

Lab Sample ID: MB 320-732663/1-A
Matrix: Water
Analysis Batch: 735085

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 732663

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS) - RA	ND		8.0	2.0	ng/L		01/11/24 05:03	01/19/24 19:56	1
Perfluorooctanesulfonamide (PFOSA) - RA	ND		2.0	0.50	ng/L		01/11/24 05:03	01/19/24 19:56	1

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C8 PFOSA - RA	78.9		40 - 130	01/11/24 05:03	01/19/24 19:56	1
13C2 8:2 FTS - RA	114		40 - 300	01/11/24 05:03	01/19/24 19:56	1

Lab Sample ID: LCS 320-732663/3-A
Matrix: Water
Analysis Batch: 735085

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 732663

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS) - RA	123	136		ng/L		110	60 - 150
Perfluorooctanesulfonamide (PFOSA) - RA	32.0	31.7		ng/L		99	70 - 145

Isotope Dilution	LCS %Recovery	LCS Qualifier	Limits
13C8 PFOSA - RA	74.8		40 - 130
13C2 8:2 FTS - RA	91.4		40 - 300

Method: Draft-4 1633 - Per- and Polyfluoroalkyl Substances by LC/MS/MS - RA (Continued)

Lab Sample ID: LCSD 320-732663/4-A
Matrix: Water
Analysis Batch: 735085

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 732663

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS) - RA			123	141		ng/L		115	60 - 150	4	30
Perfluorooctanesulfonamide (PFOSA) - RA			32.0	32.1		ng/L		100	70 - 145	1	30

Isotope Dilution	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
13C8 PFOSA - RA	*64.2*		*40 - 130*
13C2 8:2 FTS - RA	*88.5*		*40 - 300*

Lab Sample ID: LLCS 320-732663/2-A
Matrix: Water
Analysis Batch: 735085

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 732663

Analyte			Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits		
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS) - RA			12.3	22.5	*+	ng/L		183	60 - 150		
Perfluorooctanesulfonamide (PFOSA) - RA			3.20	5.49	*+	ng/L		171	70 - 145		

Isotope Dilution	*LLCS %Recovery*	*LLCS Qualifier*	*Limits*
13C8 PFOSA - RA	*83.1*		*40 - 130*
13C2 8:2 FTS - RA	*111*		*40 - 300*

Method: 6010D - Metals (ICP)

Lab Sample ID: MB 590-45128/2-A
Matrix: Water
Analysis Batch: 45138

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 45128

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Magnesium	ND		1.0	0.13	mg/L		12/18/23 10:30	12/18/23 14:01	1
Potassium	ND		0.50	0.29	mg/L		12/18/23 10:30	12/18/23 14:01	1

Lab Sample ID: LCS 590-45128/1-A
Matrix: Water
Analysis Batch: 45138

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 45128

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Magnesium			25.0	23.7		mg/L		95	80 - 120		
Potassium			25.0	23.3		mg/L		93	80 - 135		

Lab Sample ID: MB 590-45148/2-B
Matrix: Water
Analysis Batch: 45163

Client Sample ID: Method Blank
Prep Type: Dissolved
Prep Batch: 45147

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	ND		2.0	0.20	mg/L		12/18/23 17:27	12/19/23 11:02	1
Magnesium	ND		1.0	0.13	mg/L		12/18/23 17:27	12/19/23 11:02	1

Method: 6010D - Metals (ICP) (Continued)

Lab Sample ID: LCS 590-45148/1-B
Matrix: Water
Analysis Batch: 45163

Client Sample ID: Lab Control Sample
Prep Type: Dissolved
Prep Batch: 45147

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Calcium	25.0	27.5		mg/L		110	80 - 120
Magnesium	25.0	27.6		mg/L		110	80 - 120

Method: 6020B - Metals (ICP/MS)

Lab Sample ID: MB 580-446548/24-A
Matrix: Water
Analysis Batch: 446858

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 446548

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		0.0050	0.0010	mg/L		12/18/23 15:58	12/20/23 17:07	5
Cadmium	ND		0.0020	0.00019	mg/L		12/18/23 15:58	12/20/23 17:07	5
Iron	ND		0.50	0.067	mg/L		12/18/23 15:58	12/20/23 17:07	5
Lead	ND		0.0020	0.00020	mg/L		12/18/23 15:58	12/20/23 17:07	5
Manganese	ND		0.010	0.0023	mg/L		12/18/23 15:58	12/20/23 17:07	5
Zinc	ND		0.035	0.0046	mg/L		12/18/23 15:58	12/20/23 17:07	5

Lab Sample ID: LCS 580-446548/25-A
Matrix: Water
Analysis Batch: 446858

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 446548

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Arsenic	1.00	0.931		mg/L		93	80 - 120
Cadmium	1.00	0.920		mg/L		92	80 - 120
Iron	20.0	19.2		mg/L		96	80 - 120
Lead	1.00	0.957		mg/L		96	80 - 120
Manganese	1.00	0.977		mg/L		98	80 - 120
Zinc	1.00	0.922		mg/L		92	80 - 120

Lab Sample ID: LCSD 580-446548/26-A
Matrix: Water
Analysis Batch: 446858

Client Sample ID: Lab Control Sample Dup
Prep Type: Total Recoverable
Prep Batch: 446548

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Arsenic	1.00	0.947		mg/L		95	80 - 120	2	20
Cadmium	1.00	0.927		mg/L		93	80 - 120	1	20
Iron	20.0	19.6		mg/L		98	80 - 120	2	20
Lead	1.00	0.975		mg/L		98	80 - 120	2	20
Manganese	1.00	0.987		mg/L		99	80 - 120	1	20
Zinc	1.00	0.931		mg/L		93	80 - 120	1	20

Lab Sample ID: MB 580-446663/21-B
Matrix: Water
Analysis Batch: 447094

Client Sample ID: Method Blank
Prep Type: Dissolved
Prep Batch: 446761

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		0.0050	0.0010	mg/L		12/20/23 15:52	12/22/23 09:50	5
Cadmium	ND		0.0020	0.00019	mg/L		12/20/23 15:52	12/22/23 09:50	5
Iron	ND		0.50	0.067	mg/L		12/20/23 15:52	12/22/23 09:50	5
Lead	ND		0.0020	0.00020	mg/L		12/20/23 15:52	12/22/23 09:50	5

Method: 6020B - Metals (ICP/MS) (Continued)

Lab Sample ID: MB 580-446663/21-B
Matrix: Water
Analysis Batch: 447094

Client Sample ID: Method Blank
Prep Type: Dissolved
Prep Batch: 446761

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Manganese	ND		0.010	0.0023	mg/L		12/20/23 15:52	12/22/23 09:50	5
Zinc	ND		0.035	0.0046	mg/L		12/20/23 15:52	12/22/23 09:50	5

Lab Sample ID: LCS 580-446663/22-B
Matrix: Water
Analysis Batch: 447094

Client Sample ID: Lab Control Sample
Prep Type: Dissolved
Prep Batch: 446761

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Arsenic	1.00	1.04		mg/L		104	80 - 120
Cadmium	1.00	0.992		mg/L		99	80 - 120
Iron	20.0	19.9		mg/L		100	80 - 120
Lead	1.00	0.985		mg/L		99	80 - 120
Manganese	1.00	0.975		mg/L		98	80 - 120
Zinc	1.00	0.979		mg/L		98	80 - 120

Lab Sample ID: LCSD 580-446663/23-B
Matrix: Water
Analysis Batch: 447094

Client Sample ID: Lab Control Sample Dup
Prep Type: Dissolved
Prep Batch: 446761

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Arsenic	1.00	1.07		mg/L		107	80 - 120	3	20
Cadmium	1.00	0.981		mg/L		98	80 - 120	1	20
Iron	20.0	20.2		mg/L		101	80 - 120	1	20
Lead	1.00	0.988		mg/L		99	80 - 120	0	20
Manganese	1.00	0.992		mg/L		99	80 - 120	2	20
Zinc	1.00	1.00		mg/L		100	80 - 120	2	20

Lab Sample ID: 590-22504-2 MS
Matrix: Water
Analysis Batch: 447094

Client Sample ID: MW-11A-121423
Prep Type: Dissolved
Prep Batch: 446761

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Arsenic	0.0020	J	1.00	1.08		mg/L		108	80 - 120
Cadmium	ND		1.00	1.01		mg/L		101	80 - 120
Iron	ND		20.0	20.8		mg/L		104	80 - 120
Lead	ND		1.00	1.00		mg/L		100	80 - 120
Manganese	ND		1.00	1.02		mg/L		102	80 - 120
Zinc	0.0051	J	1.00	1.02		mg/L		102	80 - 120

Lab Sample ID: 590-22504-2 MSD
Matrix: Water
Analysis Batch: 447094

Client Sample ID: MW-11A-121423
Prep Type: Dissolved
Prep Batch: 446761

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Arsenic	0.0020	J	1.00	1.05		mg/L		105	80 - 120	2	20
Cadmium	ND		1.00	0.980		mg/L		98	80 - 120	3	20
Iron	ND		20.0	20.0		mg/L		100	80 - 120	4	20
Lead	ND		1.00	0.978		mg/L		98	80 - 120	3	20
Manganese	ND		1.00	0.978		mg/L		98	80 - 120	4	20
Zinc	0.0051	J	1.00	0.992		mg/L		99	80 - 120	3	20

Method: 6020B - Metals (ICP/MS)

Lab Sample ID: 590-22504-2 DU
Matrix: Water
Analysis Batch: 447094

Client Sample ID: MW-11A-121423
Prep Type: Dissolved
Prep Batch: 446761

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Arsenic	0.0020	J	0.00194	J	mg/L		5	20
Cadmium	ND		ND		mg/L		NC	20
Iron	ND		ND		mg/L		NC	20
Lead	ND		ND		mg/L		NC	20
Manganese	ND		ND		mg/L		NC	20
Zinc	0.0051	J	ND		mg/L		NC	20

Method: 7470A - Mercury (CVAA)

Lab Sample ID: MB 590-45127/9-A
Matrix: Water
Analysis Batch: 45139

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 45127

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.090	ug/L		12/18/23 10:28	12/18/23 15:06	1

Lab Sample ID: LCS 590-45127/8-A
Matrix: Water
Analysis Batch: 45139

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 45127

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Mercury	2.00	1.82		ug/L		91	80 - 120

Lab Sample ID: MB 590-45221/2-A
Matrix: Water
Analysis Batch: 45244

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 45221

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.090	ug/L		12/27/23 10:16	12/28/23 13:18	1

Lab Sample ID: LCS 590-45221/1-A
Matrix: Water
Analysis Batch: 45244

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 45221

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Mercury	2.00	1.87		ug/L		94	80 - 120

Lab Sample ID: 590-22504-1 MS
Matrix: Water
Analysis Batch: 45244

Client Sample ID: MW-7B-121423
Prep Type: Dissolved
Prep Batch: 45221

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Mercury	ND		2.00	1.92		ug/L		96	80 - 120

Lab Sample ID: 590-22504-1 MSD
Matrix: Water
Analysis Batch: 45244

Client Sample ID: MW-7B-121423
Prep Type: Dissolved
Prep Batch: 45221

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Mercury	ND		2.00	1.93		ug/L		97	80 - 120	1	20

Method: 7470A - Mercury (CVAA) (Continued)

Lab Sample ID: 590-22504-1 DU
Matrix: Water
Analysis Batch: 45244

Client Sample ID: MW-7B-121423
Prep Type: Dissolved
Prep Batch: 45221

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Mercury	ND		ND		ug/L		NC	20

Method: 350.1 - Nitrogen, Ammonia

Lab Sample ID: MB 280-639548/19
Matrix: Water
Analysis Batch: 639548

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ammonia as N	ND		0.10	0.029	mg/L			01/09/24 11:03	1

Lab Sample ID: LCS 280-639548/17
Matrix: Water
Analysis Batch: 639548

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Ammonia as N	2.50	2.49		mg/L		99	90 - 110

Lab Sample ID: LCSD 280-639548/18
Matrix: Water
Analysis Batch: 639548

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Ammonia as N	2.50	2.49		mg/L		100	90 - 110	0	10

Method: SM 2320B - Alkalinity

Lab Sample ID: MB 590-45219/1
Matrix: Water
Analysis Batch: 45219

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity	5.00	J	20	5.0	mg/L			12/27/23 10:12	1
Bicarbonate Alkalinity as CaCO3	5.00	J	20	5.0	mg/L			12/27/23 10:12	1

Lab Sample ID: LCS 590-45219/2
Matrix: Water
Analysis Batch: 45219

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Alkalinity	501	500		mg/L		100	90 - 110

Method: SM 2540C - Solids, Total Dissolved (TDS)

Lab Sample ID: MB 590-45141/1
Matrix: Water
Analysis Batch: 45141

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	ND		25	13	mg/L			12/18/23 16:56	1

Method: SM 2540C - Solids, Total Dissolved (TDS) (Continued)

Lab Sample ID: LCS 590-45141/2
Matrix: Water
Analysis Batch: 45141

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Total Dissolved Solids	503	499		mg/L		99	80 - 120

Method: SM 4500 CN I - Cyanide, Weak Acid Dissociable

Lab Sample ID: MB 280-638313/20
Matrix: Water
Analysis Batch: 638313

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cyanide, Weak Acid Dissociable	ND		0.010	0.0050	mg/L			12/22/23 12:08	1

Lab Sample ID: HLCS 280-638313/19
Matrix: Water
Analysis Batch: 638313

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

Analyte	Spike Added	HLCS Result	HLCS Qualifier	Unit	D	%Rec	%Rec Limits
Cyanide, Weak Acid Dissociable	0.350	0.361		mg/L		103	75 - 120

Lab Sample ID: LCS 280-638313/17
Matrix: Water
Analysis Batch: 638313

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Cyanide, Weak Acid Dissociable	0.100	0.0983		mg/L		98	75 - 120

Lab Sample ID: LLCS 280-638313/18
Matrix: Water
Analysis Batch: 638313

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

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Cyanide, Weak Acid Dissociable	0.100	0.0951		mg/L		95	90 - 110

Lab Sample ID: 590-22504-1 MS
Matrix: Water
Analysis Batch: 638313

Client Sample ID: MW-7B-121423
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Cyanide, Weak Acid Dissociable	ND		0.100	0.119		mg/L		119	75 - 120

Lab Sample ID: 590-22504-1 MSD
Matrix: Water
Analysis Batch: 638313

Client Sample ID: MW-7B-121423
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Cyanide, Weak Acid Dissociable	ND		0.100	0.117		mg/L		117	75 - 120	2	20

Method: SM 5310B - Organic Carbon, Total (TOC)

Lab Sample ID: MB 280-638646/69
Matrix: Water
Analysis Batch: 638646

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon - Duplicates	ND		1.0	0.35	mg/L			12/28/23 07:05	1

Lab Sample ID: LCS 280-638646/68
Matrix: Water
Analysis Batch: 638646

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

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Total Organic Carbon - Duplicates			25.0	26.5		mg/L		106	88 - 112		

Lab Chronicle

Client: GeoEngineers Inc
Project/Site: Marshall Landfill

Job ID: 590-22504-1

Client Sample ID: MW-7B-121423

Date Collected: 12/14/23 13:00
Date Received: 12/15/23 08:45

Lab Sample ID: 590-22504-1

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260D		1	43 mL	43 mL	45100	12/15/23 15:51	JSP	EET SPK
Total/NA	Prep	3510C			1053.9 mL	2 mL	446589	12/19/23 08:40	SL	EET SEA
Total/NA	Analysis	8270E		1	1 mL	1 mL	446659	12/19/23 22:31	K1K	EET SEA
Total/NA	Prep	8151A			1052 mL	5 mL	394080	12/18/23 21:35	C6FB	EET CAL 4
Total/NA	Analysis	8151A		1	1 mL	1 mL	394962	12/20/23 23:10	J7WE	EET CAL 4
Total/NA	Analysis	300.0		1	5 mL	5 mL	45119	12/15/23 14:15	NMI	EET SPK
Total/NA	Analysis	300.0		1	5 mL	5 mL	45120	12/15/23 14:15	NMI	EET SPK
Total/NA	Prep	1633	RA		556.6 mL	5.0 mL	732663	01/11/24 05:03	HJA	EET SAC
Total/NA	Analysis	Draft-4 1633	RA	1			735085	01/19/24 21:06	S1M	EET SAC
Total/NA	Prep	1633			556.6 mL	5.0 mL	732663	01/11/24 05:03	HJA	EET SAC
Total/NA	Analysis	Draft-4 1633		1	1 mL	1 mL	733287	01/13/24 12:56	RS1	EET SAC
Total/NA	Prep	1633	RE		586.6 mL	5.0 mL	734764	01/19/24 11:50	JS	EET SAC
Total/NA	Analysis	Draft-4 1633	RE	1	1 mL	1 mL	735461	01/23/24 06:20	SEY	EET SAC
Dissolved	Filtration	FILTRATION			250 mL	250 mL	45148	12/18/23 17:26	AMB	EET SPK
Dissolved	Prep	3005A			50 mL	50 mL	45147	12/18/23 17:27	AMB	EET SPK
Dissolved	Analysis	6010D		1			45163	12/19/23 13:27	AMB	EET SPK
Total Recoverable	Prep	3005A			50 mL	50 mL	45128	12/18/23 10:30	AMB	EET SPK
Total Recoverable	Analysis	6010D		1			45149	12/18/23 15:23	AMB	EET SPK
Dissolved	Filtration	FILTRATION			250 mL	250 mL	446663	12/19/23 16:28	AUA	EET SEA
Dissolved	Prep	3005A			50 mL	50 mL	446761	12/20/23 15:52	JL	EET SEA
Dissolved	Analysis	6020B		5	50 mL	50 mL	447094	12/22/23 11:51	FCW	EET SEA
Total Recoverable	Prep	3005A			50 mL	50 mL	446548	12/18/23 15:58	TMH	EET SEA
Total Recoverable	Analysis	6020B		5	50 mL	50 mL	446858	12/20/23 17:57	TMH	EET SEA
Dissolved	Filtration	FILTRATION			250 mL	250 mL	45148	12/18/23 17:26	AMB	EET SPK
Dissolved	Prep	7470A			50 mL	50 mL	45221	12/27/23 10:16	AMB	EET SPK
Dissolved	Analysis	7470A		1			45244	12/28/23 13:20	AMB	EET SPK
Total/NA	Prep	7470A			50 mL	50 mL	45127	12/18/23 10:28	AMB	EET SPK
Total/NA	Analysis	7470A		1			45139	12/18/23 15:24	AMB	EET SPK
Total/NA	Analysis	350.1		1	10 mL	10 mL	639548	01/09/24 11:35	MMP	EET DEN
Total/NA	Analysis	SM 2320B		1	100 mL	100 mL	45219	12/27/23 10:12	AMB	EET SPK
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	45141	12/18/23 16:57	AMB	EET SPK
Total/NA	Analysis	SM 4500 CN I		1	10 mL	10 mL	638313	12/22/23 12:53	MMP	EET DEN
Total/NA	Analysis	SM 5310B		1	20 mL	20 mL	638646	12/28/23 09:03	ABW	EET DEN

Client Sample ID: MW-11A-121423

Date Collected: 12/14/23 11:05
Date Received: 12/15/23 08:45

Lab Sample ID: 590-22504-2

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260D		1	43 mL	43 mL	45100	12/15/23 16:34	JSP	EET SPK
Total/NA	Prep	3510C			1038.4 mL	2 mL	446589	12/19/23 08:40	SL	EET SEA
Total/NA	Analysis	8270E		1	1 mL	1 mL	446659	12/19/23 22:56	K1K	EET SEA
Total/NA	Prep	8151A			1051.3 mL	5 mL	394080	12/18/23 21:35	C6FB	EET CAL 4
Total/NA	Analysis	8151A		1	1 mL	1 mL	394962	12/20/23 23:32	J7WE	EET CAL 4

Client Sample ID: MW-11A-121423

Lab Sample ID: 590-22504-2

Date Collected: 12/14/23 11:05

Matrix: Water

Date Received: 12/15/23 08:45

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	300.0		1	5 mL	5 mL	45119	12/15/23 14:55	NMI	EET SPK
Total/NA	Analysis	300.0		1	5 mL	5 mL	45120	12/15/23 14:55	NMI	EET SPK
Total/NA	Prep	1633	RA		552.9 mL	5.0 mL	732663	01/11/24 05:03	HJA	EET SAC
Total/NA	Analysis	Draft-4 1633	RA	1			735085	01/19/24 21:24	S1M	EET SAC
Total/NA	Prep	1633			552.9 mL	5.0 mL	732663	01/11/24 05:03	HJA	EET SAC
Total/NA	Analysis	Draft-4 1633		1	1 mL	1 mL	733287	01/13/24 13:46	RS1	EET SAC
Total/NA	Prep	1633	RE		542.5 mL	5.0 mL	733811	01/16/24 03:55	HJA	EET SAC
Total/NA	Analysis	Draft-4 1633	RE	1	1 mL	1 mL	734386	01/18/24 16:31	S1M	EET SAC
Dissolved	Filtration	FILTRATION			250 mL	250 mL	45148	12/18/23 17:26	AMB	EET SPK
Dissolved	Prep	3005A			50 mL	50 mL	45147	12/18/23 17:27	AMB	EET SPK
Dissolved	Analysis	6010D		1			45163	12/19/23 13:32	AMB	EET SPK
Total Recoverable	Prep	3005A			50 mL	50 mL	45128	12/18/23 10:30	AMB	EET SPK
Total Recoverable	Analysis	6010D		1			45149	12/18/23 15:27	AMB	EET SPK
Dissolved	Filtration	FILTRATION			250 mL	250 mL	446663	12/19/23 16:28	AUA	EET SEA
Dissolved	Prep	3005A			50 mL	50 mL	446761	12/20/23 15:52	JL	EET SEA
Dissolved	Analysis	6020B		5	50 mL	50 mL	447094	12/22/23 09:55	FCW	EET SEA
Total Recoverable	Prep	3005A			50 mL	50 mL	446548	12/18/23 15:58	TMH	EET SEA
Total Recoverable	Analysis	6020B		5	50 mL	50 mL	446858	12/20/23 18:00	TMH	EET SEA
Dissolved	Filtration	FILTRATION			250 mL	250 mL	45148	12/18/23 17:26	AMB	EET SPK
Dissolved	Prep	7470A			50 mL	50 mL	45221	12/27/23 10:16	AMB	EET SPK
Dissolved	Analysis	7470A		1			45244	12/28/23 13:31	AMB	EET SPK
Total/NA	Prep	7470A			50 mL	50 mL	45127	12/18/23 10:28	AMB	EET SPK
Total/NA	Analysis	7470A		1			45139	12/18/23 15:26	AMB	EET SPK
Total/NA	Analysis	350.1		1	10 mL	10 mL	639548	01/09/24 11:37	MMP	EET DEN
Total/NA	Analysis	SM 2320B		1	100 mL	100 mL	45219	12/27/23 10:12	AMB	EET SPK
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	45141	12/18/23 16:57	AMB	EET SPK
Total/NA	Analysis	SM 4500 CN I		1	10 mL	10 mL	638313	12/22/23 13:01	MMP	EET DEN
Total/NA	Analysis	SM 5310B		1	20 mL	20 mL	638646	12/28/23 09:19	ABW	EET DEN

Client Sample ID: MW-12A-121423

Lab Sample ID: 590-22504-3

Date Collected: 12/14/23 14:25

Matrix: Water

Date Received: 12/15/23 08:45

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260D		1	43 mL	43 mL	45100	12/15/23 16:56	JSP	EET SPK
Total/NA	Prep	3510C			1047.7 mL	2 mL	446589	12/19/23 08:40	SL	EET SEA
Total/NA	Analysis	8270E		1	1 mL	1 mL	446659	12/19/23 23:20	K1K	EET SEA
Total/NA	Prep	8151A			1053.9 mL	5 mL	394080	12/18/23 21:35	C6FB	EET CAL 4
Total/NA	Analysis	8151A		1	1 mL	1 mL	394962	12/20/23 23:55	J7WE	EET CAL 4
Total/NA	Analysis	300.0		1	5 mL	5 mL	45119	12/15/23 15:05	NMI	EET SPK
Total/NA	Analysis	300.0		1	5 mL	5 mL	45120	12/15/23 15:05	NMI	EET SPK
Total/NA	Prep	1633	RA		552 mL	5.0 mL	732663	01/11/24 05:03	HJA	EET SAC
Total/NA	Analysis	Draft-4 1633	RA	1			735085	01/19/24 21:42	S1M	EET SAC

Client Sample ID: MW-12A-121423

Lab Sample ID: 590-22504-3

Date Collected: 12/14/23 14:25

Matrix: Water

Date Received: 12/15/23 08:45

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	1633			552 mL	5.0 mL	732663	01/11/24 05:03	HJA	EET SAC
Total/NA	Analysis	Draft-4 1633		1	1 mL	1 mL	733287	01/13/24 14:03	RS1	EET SAC
Total/NA	Prep	1633	RE		513.4 mL	5.0 mL	733811	01/16/24 03:55	HJA	EET SAC
Total/NA	Analysis	Draft-4 1633	RE	1	1 mL	1 mL	734386	01/18/24 16:48	S1M	EET SAC
Dissolved	Filtration	FILTRATION			250 mL	250 mL	45148	12/18/23 17:26	AMB	EET SPK
Dissolved	Prep	3005A			50 mL	50 mL	45147	12/18/23 17:27	AMB	EET SPK
Dissolved	Analysis	6010D		1			45163	12/19/23 13:36	AMB	EET SPK
Total Recoverable	Prep	3005A			50 mL	50 mL	45128	12/18/23 10:30	AMB	EET SPK
Total Recoverable	Analysis	6010D		1			45149	12/18/23 15:31	AMB	EET SPK
Dissolved	Filtration	FILTRATION			250 mL	250 mL	446663	12/19/23 16:28	AUA	EET SEA
Dissolved	Prep	3005A			50 mL	50 mL	446761	12/20/23 15:52	JL	EET SEA
Dissolved	Analysis	6020B		5	50 mL	50 mL	447094	12/22/23 11:29	FCW	EET SEA
Total Recoverable	Prep	3005A			50 mL	50 mL	446548	12/18/23 15:58	TMH	EET SEA
Total Recoverable	Analysis	6020B		5	50 mL	50 mL	446858	12/20/23 18:03	TMH	EET SEA
Dissolved	Filtration	FILTRATION			250 mL	250 mL	45148	12/18/23 17:26	AMB	EET SPK
Dissolved	Prep	7470A			50 mL	50 mL	45221	12/27/23 10:16	AMB	EET SPK
Dissolved	Analysis	7470A		1			45244	12/28/23 13:33	AMB	EET SPK
Total/NA	Prep	7470A			50 mL	50 mL	45127	12/18/23 10:28	AMB	EET SPK
Total/NA	Analysis	7470A		1			45139	12/18/23 15:34	AMB	EET SPK
Total/NA	Analysis	350.1		1	10 mL	10 mL	639548	01/09/24 11:40	MMP	EET DEN
Total/NA	Analysis	SM 2320B		1	100 mL	100 mL	45219	12/27/23 10:12	AMB	EET SPK
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	45141	12/18/23 16:57	AMB	EET SPK
Total/NA	Analysis	SM 4500 CN I		1	10 mL	10 mL	638313	12/22/23 13:04	MMP	EET DEN
Total/NA	Analysis	SM 5310B		1	20 mL	20 mL	638646	12/28/23 09:34	ABW	EET DEN

Client Sample ID: EB-121423

Lab Sample ID: 590-22504-4

Date Collected: 12/14/23 08:20

Matrix: Water

Date Received: 12/15/23 08:45

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	1633	RA		550.8 mL	5.0 mL	732663	01/11/24 05:03	HJA	EET SAC
Total/NA	Analysis	Draft-4 1633	RA	1			735085	01/19/24 21:59	S1M	EET SAC
Total/NA	Prep	1633			550.8 mL	5.0 mL	732663	01/11/24 05:03	HJA	EET SAC
Total/NA	Analysis	Draft-4 1633		1	1 mL	1 mL	733287	01/13/24 14:19	RS1	EET SAC
Total/NA	Prep	1633	RE		559.7 mL	5.0 mL	733811	01/16/24 03:55	HJA	EET SAC
Total/NA	Analysis	Draft-4 1633	RE	1	1 mL	1 mL	734386	01/18/24 17:05	S1M	EET SAC

Client Sample ID: FB-121423

Lab Sample ID: 590-22504-5

Date Collected: 12/14/23 08:30

Matrix: Water

Date Received: 12/15/23 08:45

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	1633	RA		567.5 mL	5.0 mL	732663	01/11/24 05:03	HJA	EET SAC
Total/NA	Analysis	Draft-4 1633	RA	1			735085	01/19/24 22:17	S1M	EET SAC

Lab Chronicle

Client: GeoEngineers Inc
Project/Site: Marshall Landfill

Job ID: 590-22504-1

Client Sample ID: FB-121423

Date Collected: 12/14/23 08:30
Date Received: 12/15/23 08:45

Lab Sample ID: 590-22504-5

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	1633			567.5 mL	5.0 mL	732663	01/11/24 05:03	HJA	EET SAC
Total/NA	Analysis	Draft-4 1633		1	1 mL	1 mL	733287	01/13/24 14:36	RS1	EET SAC
Total/NA	Prep	1633	RE		548.6 mL	5.0 mL	733811	01/16/24 03:55	HJA	EET SAC
Total/NA	Analysis	Draft-4 1633	RE	1	1 mL	1 mL	734386	01/18/24 17:21	S1M	EET SAC

Laboratory References:

EET CAL 4 = Eurofins Calscience Tustin, 2841 Dow Avenue, Tustin, CA 92780, TEL (714)895-5494
EET DEN = Eurofins Denver, 4955 Yarrow Street, Arvada, CO 80002, TEL (303)736-0100
EET SAC = Eurofins Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600
EET SEA = Eurofins Seattle, 5755 8th Street East, Tacoma, WA 98424, TEL (253)922-2310
EET SPK = Eurofins Spokane, 11922 East 1st Ave, Spokane, WA 99206, TEL (509)924-9200

Accreditation/Certification Summary

Client: GeoEngineers Inc
Project/Site: Marshall Landfill

Job ID: 590-22504-1

Laboratory: Eurofins Spokane

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

Authority	Program	Identification Number	Expiration Date
Washington	State	C569	01-06-24

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
SM 2320B		Water	Bicarbonate Alkalinity as CaCO3

Laboratory: Eurofins Calscience

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

Authority	Program	Identification Number	Expiration Date
Arizona	State	AZ0830	11-16-24
California	Los Angeles County Sanitation Districts	10109	08-01-24
California	State	3082	07-31-24
Kansas	NELAP	E-10420	08-01-24
Nevada	State	CA00111	07-31-24
Oregon	NELAP	4175	02-02-24
USDA	US Federal Programs	P330-22-00059	06-08-26
Washington	State	C916-18	10-11-24

Laboratory: Eurofins Denver

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

Authority	Program	Identification Number	Expiration Date
A2LA	Dept. of Defense ELAP	2907.01	10-31-24
A2LA	ISO/IEC 17025	2907.01	10-31-25
Alabama	State Program	40730	09-30-12 *
Alaska (UST)	State	18-001	02-10-24
Arizona	State	AZ0713	12-20-24
Arkansas DEQ	State	19-047-0	04-21-24
California	State	2513	01-08-25
Connecticut	State	PH-0686	09-30-24
Florida	NELAP	E87667-57	06-30-24
Georgia	State	4025-011	01-08-25
Illinois	NELAP	2000172019-1	04-30-24
Iowa	State	370	12-01-24
Kansas	NELAP	E-10166	04-30-24
Kentucky (WW)	State	KY98047	12-31-24
Louisiana	NELAP	30785	06-30-14 *
Louisiana	NELAP	30785	06-30-23 *
Louisiana (All)	NELAP	30785	06-30-24
Minnesota	NELAP	1788752	12-31-24
Nevada	State	CO000262020-1	07-31-24
New Hampshire	NELAP	2053	04-28-24
New Jersey	NELAP	230001	06-30-24
New York	NELAP	59923	03-31-24
North Dakota	State	R-034	01-08-24 *
Oklahoma	NELAP	8614	08-31-24
Oregon	NELAP	4025-020	01-08-25
Pennsylvania	NELAP	013	07-31-24

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

Accreditation/Certification Summary

Client: GeoEngineers Inc
Project/Site: Marshall Landfill

Job ID: 590-22504-1

Laboratory: Eurofins Denver (Continued)

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

Authority	Program	Identification Number	Expiration Date
South Carolina	State	72002001	01-08-24 *
Texas	NELAP	TX104704183-08-TX	09-30-09 *
Texas	NELAP	T104704183-21-19	09-30-24
USDA	US Federal Programs	P330-20-00065	12-19-25
Utah	NELAP	QUAN5	06-30-13 *
Utah	NELAP	CO000262019-11	07-31-24
Virginia	NELAP	460232	06-14-24
Washington	State	C583	08-03-24
West Virginia DEP	State	354	11-30-24
Wisconsin	State	999615430	08-31-24
Wyoming (UST)	A2LA	2907.01	10-31-25

Laboratory: Eurofins Sacramento

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

Authority	Program	Identification Number	Expiration Date
Alaska (UST)	State	17-020	02-20-24
ANAB	Dept. of Defense ELAP	L2468	01-20-27
ANAB	Dept. of Energy	L2468.01	01-20-27
ANAB	ISO/IEC 17025	L2468	01-20-27
Arizona	State	AZ0708	08-11-24
Arkansas DEQ	State	88-0691	05-18-24
California	State	2897	01-31-24
Colorado	State	CA00044	08-31-24
Florida	NELAP	E87570	06-30-24
Georgia	State	4040	01-29-24
Hawaii	State	<cert No.>	01-29-24
Illinois	NELAP	200060	03-17-24
Kansas	NELAP	E-10375	10-31-24
Louisiana	NELAP	01944	06-30-24
Louisiana (All)	NELAP	01944	06-30-24
Maine	State	CA00004	04-14-24
Michigan	State	9947	01-31-24
Nevada	State	CA00044	07-31-24
New Hampshire	NELAP	2997	04-18-24
New Jersey	NELAP	CA005	06-30-24
New York	NELAP	11666	04-01-24
Ohio	State	41252	01-29-24
Oregon	NELAP	4040	01-29-24
Texas	NELAP	T104704399-23-17	05-31-24
US Fish & Wildlife	US Federal Programs	58448	04-30-24
USDA	US Federal Programs	P330-18-00239	02-28-26
Utah	NELAP	CA000442023-16	02-29-24
Virginia	NELAP	460278	03-14-24
Washington	State	C581	05-05-24
West Virginia (DW)	State	9930C	01-31-25
Wisconsin	State	998204680	08-31-24
Wyoming	State Program	8TMS-L	01-28-19 *

Laboratory: Eurofins Seattle

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

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

Accreditation/Certification Summary

Client: GeoEngineers Inc
Project/Site: Marshall Landfill

Job ID: 590-22504-1

Laboratory: Eurofins Seattle (Continued)

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

Authority	Program	Identification Number	Expiration Date
Alaska (UST)	State	20-004	02-19-25
ANAB	Dept. of Defense ELAP	L2236	01-19-25
ANAB	Dept. of Energy	L2236	01-19-25
ANAB	ISO/IEC 17025	L2236	01-19-25
California	State	2954	07-07-24
Florida	NELAP	E87575	06-30-24
Louisiana (All)	NELAP	03073	07-01-24
Maine	State	WA01273	05-02-24
Montana (UST)	State	NA	04-14-27
New Jersey	NELAP	WA014	06-30-24
New York	NELAP	11662	03-31-24
Oregon	NELAP	4167	07-07-24
US Fish & Wildlife	US Federal Programs	A20571	06-30-24
USDA	US Federal Programs	525-23-4-22573	01-04-26
Washington	State	C788	07-13-24
Wisconsin	State	399133460	08-31-24

Method Summary

Client: GeoEngineers Inc
Project/Site: Marshall Landfill

Job ID: 590-22504-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET SPK
8270E	Semivolatile Organic Compounds (GC/MS)	SW846	EET SEA
8151A	Herbicides (GC)	SW846	EET CAL 4
300.0	Anions, Ion Chromatography	EPA	EET SPK
Draft-4 1633	Per- and Polyfluoroalkyl Substances by LC/MS/MS	EPA	EET SAC
6010D	Metals (ICP)	SW846	EET SPK
6020B	Metals (ICP/MS)	SW846	EET SEA
7470A	Mercury (CVAA)	SW846	EET SPK
350.1	Nitrogen, Ammonia	EPA	EET DEN
SM 2320B	Alkalinity	SM	EET SPK
SM 2540C	Solids, Total Dissolved (TDS)	SM	EET SPK
SM 4500 CN I	Cyanide, Weak Acid Dissociable	SM	EET DEN
SM 5310B	Organic Carbon, Total (TOC)	SM	EET DEN
1633	Solid-Phase Extraction (SPE)	EPA	EET SAC
3005A	Preparation, Total Recoverable or Dissolved Metals	SW846	EET SEA
3005A	Preparation, Total Recoverable or Dissolved Metals	SW846	EET SPK
3510C	Liquid-Liquid Extraction (Separatory Funnel)	SW846	EET SEA
5030C	Purge and Trap	SW846	EET SPK
7470A	Preparation, Mercury	SW846	EET SPK
8151A	Extraction (Herbicides)	SW846	EET CAL 4
FILTRATION	Sample Filtration	None	EET SEA
FILTRATION	Sample Filtration	None	EET SPK

Protocol References:

EPA = US Environmental Protection Agency
None = None
SM = "Standard Methods For The Examination Of Water And Wastewater"
SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAL 4 = Eurofins Calscience Tustin, 2841 Dow Avenue, Tustin, CA 92780, TEL (714)895-5494
EET DEN = Eurofins Denver, 4955 Yarrow Street, Arvada, CO 80002, TEL (303)736-0100
EET SAC = Eurofins Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600
EET SEA = Eurofins Seattle, 5755 8th Street East, Tacoma, WA 98424, TEL (253)922-2310
EET SPK = Eurofins Spokane, 11922 East 1st Ave, Spokane, WA 99206, TEL (509)924-9200

Eurofins Spokane
11922 East 1st Ave
Spokane, WA 99206
Phone (509) 924-9200 Phone (509) 924-9290

Chain of Custody Record

eurofins | Environment Testing

Client Information	Sampler: Justin Orr	Lab PM: Arrington, Randee E	Carrier Tracking No(s):	COC No: 590-9177-2634.1
Client Contact: Justin Orr	Phone: (406) 890-1310	E-Mail: Randee.Arrington@et.eurofinsus.com	State of Origin:	Page: Page 1 of 1
Company: GeoEngineers Inc	PWSID:			Job #:
Address: 523 East Second Ave	Due Date Requested: STD			
City: Spokane	TAT Requested (days): STD			
State, Zip: WA, 99202	Compliance Project: Δ Yes Δ No			
Phone:	PO #: Purchase Order not required			
Email: jorr@geoengineers.com	WO #:			
Project Name: Marshall Landfill	Project #: 59002669			
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, Y Trizma, 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 (Yes or No)	2320B Alk/Bicarb, 2540C TDS, 300-Cl, NO3, NO2 & SO4	6020B Total As, Cd, Fe, Mn, Pb & Zn	6020B Diss As, Cd, Fe, Mn, Pb & Zn	6010D Total K, Mg & Na, 7470A Total Hg	6010D Dissolved Ca & Mg, 7470 Dissolved Hg	350.1 Ammonia	SM5310B TOC	4500_CN_I_NP Cyanide, Weak Acid Dissociable	8260D Standard Analyte List	8270E Semivolatiles, standard list	8151A Routine Herbicides List (Standard Spike	1633 EPA 1633	Total Number of containers	Special Instructions/Note:
			Preservation Code:		X	X	N	D	N	D	N	S	S	B	A	N	N	N	X	
MW-7B-121423	12/14/23	1300	G	Water			X	X	X	X	X	X	X	X	X	X	X	X		
MW-11A-121423	12/14/23	1105	G	Water			X	X	X	X	X	X	X	X	X	X	X	X		
MW-12A-121423	12/14/23	1425	G	Water			X	X	X	X	X	X	X	X	X	X	X	X		
EB-121423	12/14/23	0820	G	Water														X		
FB-121423	12/14/23	0830	G	Water														X		
				Water																
				Water																

590-22504 Chain of Custody

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

Sample Disposal (A fee may be assessed
☐ Return To Client ☐ Disposal

Deliverable Requested: I II III IV Other (specify)

Special Instructions/QC Requirements.

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

Relinquished by:	Date/Time:	Company	Received by	Date/Time:	Company
	12-14-23 / 1600	GEI		12/14/23 1615	GEI
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
	12/15/23 / 1845	GEI		12/15/23 8:45	EETSPO
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: 5.4, 5.5 & 2.8, 2.9 on IR006

1/31/2024

e: 5099249200

TRACKING NUMBER: 710195998783

FedEx.

TRK# 0201 7101 9599 8783

SATURDAY 1:30P
PRIORITY OVERNIGHT

X0 DTHA

92780
CA-US
SNA

Eurofins Spokane
11922 East 1st Ave
Spokane, WA 99206
Phone: 509-924-9200 Fax: 509-924-9290

Chain of Custody Record

eurofins | Environment Testing

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Arrington, Randee E	Carrier Tracking No(s):	COC No: 590-8492.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: Randee.Arrington@et.eurofinsus.com	State of Origin: Washington	Page: Page 1 of 1
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note): State Program - Washington		Job #: 590-22504-1
Address: 4955 Yarrow Street, ,	Due Date Requested: 1/2/2024			
City: Arvada	TAT Requested (days):			
State, Zip: CO, 80002				
Phone: 303-736-0100(Tel) 303-431-7171(Fax)	PO #:			
Email:	WO #:			
Project Name: Marshall Landfill	Project #: 59002669			
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, Y - Trizma, 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)	350.1	SM5310B/ (MOD) TOC	4500_CN_I_NP/ (MOD) Cyanide, Weak Acid Dissociable	Total Number of containers	Special Instructions/Note:
			Preservation Code:								
MW-7B-121423 (590-22504-1)	12/14/23	13:00 Pacific		Water			X	X	X	3	
MW-11A-121423 (590-22504-2)	12/14/23	11:05 Pacific		Water			X	X	X	3	
MW-12A-121423 (590-22504-3)	12/14/23	14:25 Pacific		Water			X	X	X	3	

Note: Since laboratory accreditations are subject to change, Eurofins Environment Testing Northwest, LLC places the ownership of method, analyte & accreditation compliance upon our 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 Environment Testing Northwest, LLC laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins Environment Testing Northwest, LLC attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to Eurofins Environment Testing Northwest, LLC.

Possible Hazard Identification	***Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)***
Unconfirmed	☐ *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:	Company	Received by:	Date/Time:	Company
[signature]	12/15/23 15:23	EET SPO	[signature]	12-16-23 1010	EETDEN
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: 0.8 cf 0.2 IR AppA

Ver: 06/08/2021

1/31/2024

Eurofins Spokane
11922 East 1st Ave
Spokane, WA 99206
Phone: 509-924-9200 Fax: 509-924-9290

Chain of Custody Record

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Client Information (Sub Contract Lab)	Sampler:	Lab PM: Arrington, Randee E	Carrier Tracking No(s):	COC No: 590-8493.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: Randee.Arrington@et.eurofinsus.com	State of Origin: Washington	Page: Page 1 of 1
Company: Eurofins Environment Testing Northern Ca		Accreditations Required (See note): State Program Washington		Job #: 590-22504-1
Address: 880 Riverside Parkway	Due Date Requested: 1/2/2024			
City: West Sacramento	TAT Requested (days):			
State, Zip: CA, 95605				
Phone: 916-373-5600(Tel) 916-372-1059(Fax)	PO #:			
Email:	WO #:			
Project Name: Marshall Landfill	Project #: 59002669			
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, Y Trizma, 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/oi BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	1633/1633_SPE EPA 1633 Method List	Total Number of containers	Special Instructions/Note:
			Preservation Code:						
MW-7B-121423 (590-22504-1)	12/14/23	13:00 Pacific		Water			X	3	
MW-11A-121423 (590-22504-2)	12/14/23	11:05 Pacific		Water			X	3	
MW-12A-121423 (590-22504-3)	12/14/23	14:25 Pacific		Water			X	3	
EB-121423 (590-22504-4)	12/14/23	08:20 Pacific		Water			X	3	
FB-121423 (590-22504-5)	12/14/23	08:30 Pacific		Water			X	3	

Note: Since laboratory accreditations are subject to change, Eurofins Environment Testing Northwest, LLC places the ownership of method, analyte & accreditation compliance upon our 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 Environment Testing Northwest, LLC laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins Environment Testing Northwest, LLC attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to Eurofins Environment Testing Northwest, LLC.

Possible Hazard Identification	Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
Unconfirmed	☐ 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:	Company	Received by:	Date/Time:	Company
	12/15/23 15:37	EET SPO		12/16/23 900	EET SPO
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. 2260219	Cooler Temperature(s) °C and Other Remarks: 3.6

Ver: 06/08/2021

Eurofins Spokane
11922 East 1st Ave
Spokane, WA 99206
Phone: 509-924-9200 Fax: 509-924-9290

Chain of Custody Record

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Loc: 590
22504

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Arrington, Randee E	Carrier Tracking No(s):	COC No: 590-8490.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: Randee.Arrington@et.eurofinsus.com	State of Origin: Washington	Page: Page 1 of 1
Company: Eurofins Environment Testing Southwest,		Accreditations Required (See note): State Program - Washington		Job #: 590-22504-1
Address: 2841 Dow Avenue, Suite 100, ,	Due Date Requested: 1/2/2024			
City: Tustin	TAT Requested (days):			
State, Zip: CA, 92780				
Phone: 714-895-5494(Tel)	PO #:			
Email:	WO #:			
Project Name: Marshall Landfill	Project #: 59002669			
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, Y - Trizma, 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)	8151A/8151A_AP Routine Herbicides List (Standard Spike	Total Number of containers	Special Instructions/Note:
			Preservation Code:						
MW-7B-121423 (590-22504-1)	12/14/23	13:00 Pacific		Water			X	1	
MW-11A-121423 (590-22504-2)	12/14/23	11:05 Pacific		Water			X	1	
MW-12A-121423 (590-22504-3)	12/14/23	14:25 Pacific		Water			X	1	

590-22504 Chain of Custody

Note: Since laboratory accreditations are subject to change, Eurofins Environment Testing Northwest, LLC places the ownership of method, analyte & accreditation compliance upon our 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 Environment Testing Northwest, LLC laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins Environment Testing Northwest, LLC attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to Eurofins Environment Testing Northwest, LLC.

Possible Hazard Identification	*Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)*
Unconfirmed	☐ *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:	Company	Received by:	Date/Time:	Company
	12/15/23 1440	EET SPO		12/18/23 0905	
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: *Melted Ice 11-9 | 11-8 542

Login Sample Receipt Checklist

Client: GeoEngineers Inc

Job Number: 590-22504-1

Login Number: 22504
List Number: 1
Creator: Morris, Mackenzie 1

List Source: Eurofins Spokane

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	N/A	
Sample custody seals, if present, are intact.	N/A	
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 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.	True	
Sample Preservation Verified.	N/A	
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	

Login Sample Receipt Checklist

Client: GeoEngineers Inc

Job Number: 590-22504-1

Login Number: 22504
List Number: 5
Creator: Khana, Piyush

List Source: Eurofins Calscience
List Creation: 12/18/23 12:13 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	2300748
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	Water present in cooler; indicates evidence of melted ice.
Cooler Temperature is acceptable.	False	Cooler temperature outside required temperature criteria.
Cooler Temperature is recorded.	True	11.8
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.	True	
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	

Login Sample Receipt Checklist

Client: GeoEngineers Inc

Job Number: 590-22504-1

Login Number: 22504
List Number: 3
Creator: Martinez, Anthony

List Source: Eurofins Denver
List Creation: 12/16/23 12:11 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
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	
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	
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.	True	
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	

Login Sample Receipt Checklist

Client: GeoEngineers Inc

Job Number: 590-22504-1

Login Number: 22504
List Number: 4
Creator: Simmons, Jason C

List Source: Eurofins Sacramento
List Creation: 12/16/23 03:40 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	2300719
Sample custody seals, if present, are intact.	N/A	
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	3.4c
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.	True	
Sample Preservation Verified.	N/A	
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	

Login Sample Receipt Checklist

Client: GeoEngineers Inc

Job Number: 590-22504-1

Login Number: 22504
List Number: 2
Creator: Prigge, Madison

List Source: Eurofins Seattle
List Creation: 12/16/23 10:37 AM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
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	IR12 0.4/0.3
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.	True	
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	

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Sacramento Sample Receiving Notes (SSRN)

Tracking # 7401959988 75

Job ___ 590-22504 Field Sheet ___

SO / PO / FO / (SAT) / 2-Day / Ground / UPS / CDO / Courier

GSL / OnTrac / Goldstreak / USPS / Other_____

Use this form to record Sample Custody Seal, Cooler Custody Seal, Temperature & corrected Temperature & other observations. File in the job folder with the COC.

Therm ID L06 Corr Factor (+ / -) - °C

Ice 1 Wet 1 Gel _____ Other _____

Cooler Custody Seal: 2300719

Cooler ID _____

Temp Observed 3.4 °C Corrected 3.4 °C

From Temp Blank ☐ Sample ☑

Opening/Processing The Shipment	Yes	No	NA
Cooler compromised/tampered with?	☐	☑	☐
Cooler Temperature is acceptable?	☑	☐	☐
Frozen samples show signs of thaw?	☐	☐	☑

Initials. [illegible] Date. 12.16.23

Unpacking/Labeling The Samples	Yes	No	NA
Containers are not broken or leaking?	☑	☐	☐
Samples compromised/tampered with?	☐	☑	☐
COC is complete w/o discrepancies	☑	☐	☐
Sample custody seal?	☐	☐	☑
Sample containers have legible labels?	☑	☐	☐
Sample date/times are provided?	☑	☐	☐
Appropriate containers are used?	☑	☐	☐
Sample bottles are completely filled?	☑	☐	☐
Sample preservatives verified?	☐	☐	☑
Is the Field Sampler's name on COC?	☐	☐	☑
Samples w/o discrepancies?	☑	☐	☐
Zero headspace?*	☐	☐	☑
Alkalinity has no headspace?	☐	☐	☑
Perchlorate has headspace? (Methods 314, 331 6850)	☐	☐	☑
Multiphasic samples are not present?	☑	☐	☐

*Containers requiring zero headspace have no headspace, or bubble < 6 mm (1/4")

Initials. [illegible] Date. 12.16.23

Notes _____

Trizma Lot #(s) _____

Ammonium Acetate Lot #(s) _____

Login Completion	Yes	No	NA
Receipt Temperature on COC?	☑	☐	☐
NCM Filed?	☐	☐	☑
Samples received within hold time?	☐	☐	☑
Log Release checked in TALS?	☐	☐	☑

Initials. [illegible] Date. 12.16.23

Isotope Dilution Summary

Client: GeoEngineers Inc
Project/Site: Marshall Landfill

Job ID: 590-22504-1

Method: Draft-4 1633 - Per- and Polyfluoroalkyl Substances by LC/MS/MS

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

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	PFBA (5-130)	PFPeA (40-130)	13C5PHA (40-130)	C4PFHA (40-130)	C8PFOA (40-130)	C9PFNA (40-130)	C6PFDA (40-130)	13C7PUA (30-130)
590-22504-1	MW-7B-121423	63.6	70.3	66.1	71.0	69.1	74.5	62.2	59.9
590-22504-1 - RA	MW-7B-121423								
590-22504-1 - RE	MW-7B-121423	81.6	89.1	82.4	78.7	86.0	77.4	79.6	67.6
590-22504-2	MW-11A-121423	69.9	75.3	72.7	79.7	68.3	68.1	66.4	67.0
590-22504-2 - RE	MW-11A-121423	77.7	87.4	82.6	107	73.6	80.4	71.9	62.6
590-22504-2 - RA	MW-11A-121423								
590-22504-3	MW-12A-121423	74.1	82.6	79.8	87.4	77.9	80.7	79.9	69.8
590-22504-3 - RE	MW-12A-121423	77.3	79.5	78.1	79.8	73.1	75.7	73.4	71.4
590-22504-3 - RA	MW-12A-121423								
590-22504-4	EB-121423	77.8	80.3	81.9	82.8	76.6	83.9	80.6	82.0
590-22504-4 - RE	EB-121423	78.2	78.8	74.5	80.6	74.0	80.5	72.5	77.0
590-22504-4 - RA	EB-121423								
590-22504-5	FB-121423	77.5	81.0	75.6	83.1	77.1	83.3	78.0	75.2
590-22504-5 - RE	FB-121423	81.1	86.7	82.5	90.9	77.3	80.7	75.4	74.3
590-22504-5 - RA	FB-121423								
LCS 320-732663/3-A	Lab Control Sample	75.0	76.0	71.3	81.6	88.1	77.4	80.1	85.4
LCS 320-732663/3-A - RA	Lab Control Sample								
LCS 320-733811/3-A	Lab Control Sample	77.9	75.8	81.8	78.9	73.0	74.2	71.9	71.6
LCS 320-734764/3-A	Lab Control Sample	81.3	88.5	83.6	85.7	83.9	88.8	79.3	77.2
LCSD 320-732663/4-A	Lab Control Sample Dup	69.8	70.5	70.6	69.6	69.0	64.1	69.2	71.6
LCSD 320-732663/4-A - RA	Lab Control Sample Dup								
LCSD 320-733811/4-A	Lab Control Sample Dup	78.2	85.1	81.9	87.1	70.4	79.4	72.9	77.7
LCSD 320-734764/4-A	Lab Control Sample Dup	82.9	95.2	81.7	85.3	75.3	87.2	80.7	81.7
LLCS 320-732663/2-A	Lab Control Sample	86.3	93.7	85.4	96.0	90.9	93.0	91.7	80.4
LLCS 320-732663/2-A - RA	Lab Control Sample								
LLCS 320-733811/2-A	Lab Control Sample	81.6	82.2	81.3	77.6	75.4	77.5	78.1	75.8
LLCS 320-734764/2-A	Lab Control Sample	82.0	99.0	85.7	95.3	76.8	82.0	86.1	82.8
MB 320-732663/1-A	Method Blank	85.5	90.5	85.5	92.8	85.7	85.0	77.5	70.5
MB 320-732663/1-A - RA	Method Blank								
MB 320-733811/1-A	Method Blank	79.3	87.9	87.2	93.5	79.2	83.3	76.3	75.9
MB 320-734764/1-A	Method Blank	83.6	92.4	85.7	94.8	74.7	82.0	77.6	73.6

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	PFDoA (10-130)	PFTDA (10-130)	C3PFBS (40-135)	C3PFHS (40-130)	C8PFOS (40-130)	PFOSA (40-130)	d3NMFOS (40-170)	d5NEFOS (25-135)
590-22504-1	MW-7B-121423	55.4	34.3	58.0	65.5	69.9	57.6	80.5	81.4
590-22504-1 - RA	MW-7B-121423						66.9		
590-22504-1 - RE	MW-7B-121423	52.0	42.7	78.3	77.0	80.1	76.4	92.3	94.9
590-22504-2	MW-11A-121423	56.7	54.1	63.7	70.4	66.0		63.8	68.2
590-22504-2 - RE	MW-11A-121423	64.7	56.3	82.7	81.4	82.9	82.6	79.4	84.2
590-22504-2 - RA	MW-11A-121423						66.6		
590-22504-3	MW-12A-121423	69.3	62.7	75.7	80.8	86.3		85.7	86.0
590-22504-3 - RE	MW-12A-121423	57.4	52.2	82.5	79.9	80.5	76.4	77.2	72.1
590-22504-3 - RA	MW-12A-121423						79.7		
590-22504-4	EB-121423	80.4	58.8	71.4	78.5	88.3		80.4	86.7
590-22504-4 - RE	EB-121423	70.8	59.7	75.2	79.5	76.4	75.9	74.0	75.1
590-22504-4 - RA	EB-121423						74.6		
590-22504-5	FB-121423	71.1	56.9	70.2	77.3	76.0		70.1	72.4
590-22504-5 - RE	FB-121423	69.5	61.3	81.5	81.8	82.2	77.2	83.0	81.5
590-22504-5 - RA	FB-121423						70.4		

Isotope Dilution Summary

Client: GeoEngineers Inc
Job ID: 590-22504-1
Project/Site: Marshall Landfill

Method: Draft-4 1633 - Per- and Polyfluoroalkyl Substances by LC/MS/MS (Continued)

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

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	PFDoA (10-130)	PFTDA (10-130)	C3PFBS (40-135)	C3PFHS (40-130)	C8PFOS (40-130)	PFOSA (40-130)	d3NMFOS (40-170)	d5NEFOS (25-135)
LCS 320-732663/3-A	Lab Control Sample	80.6	61.4	74.5	77.3	74.3		74.9	69.6
LCS 320-732663/3-A - RA	Lab Control Sample						74.8		
LCS 320-733811/3-A	Lab Control Sample	65.5	46.9	85.9	75.9	74.0	76.8	73.2	76.9
LCS 320-734764/3-A	Lab Control Sample	73.2	70.5	78.4	83.6	82.5	82.5	85.8	84.9
LCSD 320-732663/4-A	Lab Control Sample Dup	62.3	56.5	68.0	69.1	69.2		70.1	67.7
LCSD 320-732663/4-A - RA	Lab Control Sample Dup						64.2		
LCSD 320-733811/4-A	Lab Control Sample Dup	75.7	69.2	72.0	74.4	72.4	73.3	78.7	82.2
LCSD 320-734764/4-A	Lab Control Sample Dup	71.6	62.8	89.1	84.6	87.4	82.3	87.0	89.2
LLCS 320-732663/2-A	Lab Control Sample	75.8	60.7	85.6	87.7	89.9		81.9	82.1
LLCS 320-732663/2-A - RA	Lab Control Sample						83.1		
LLCS 320-733811/2-A	Lab Control Sample	69.2	63.2	79.3	77.4	81.2	71.7	79.5	85.3
LLCS 320-734764/2-A	Lab Control Sample	73.3	71.5	89.0	85.0	83.7	82.4	89.9	81.4
MB 320-732663/1-A	Method Blank	71.2	57.2	82.1	86.6	86.6		77.2	79.3
MB 320-732663/1-A - RA	Method Blank						78.9		
MB 320-733811/1-A	Method Blank	73.0	61.1	84.2	79.8	77.5	75.3	77.4	76.0
MB 320-734764/1-A	Method Blank	59.7	62.5	88.3	83.9	81.1	74.3	84.3	76.1

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	M242FTS (40-200)	M262FTS (40-200)	M282FTS (40-300)	HFPODA (40-130)	NMFM (10-130)	NEFM (10-130)	d5NPFSA (10-130)	d3NMFSA (10-130)
590-22504-1	MW-7B-121423	114	116		69.2	55.2	49.7	43.9	53.0
590-22504-1 - RA	MW-7B-121423			111					
590-22504-1 - RE	MW-7B-121423	149	137	121	82.9	53.1	40.9	51.1	58.0
590-22504-2	MW-11A-121423	60.8	63.7		71.2	56.7	48.4	53.9	53.3
590-22504-2 - RE	MW-11A-121423	105	118	91.0	99.0	68.0	68.7	58.1	66.1
590-22504-2 - RA	MW-11A-121423			92.7					
590-22504-3	MW-12A-121423	85.7	77.4		77.0	70.4	66.0	69.9	71.6
590-22504-3 - RE	MW-12A-121423	116	104	91.7	79.6	58.7	55.4	60.7	66.1
590-22504-3 - RA	MW-12A-121423			96.2					
590-22504-4	EB-121423	65.8	63.3		76.3	75.3	69.0	66.1	66.0
590-22504-4 - RE	EB-121423	111	91.5	93.3	81.4	63.3	60.7	60.4	65.0
590-22504-4 - RA	EB-121423			109					
590-22504-5	FB-121423	67.8	70.1		87.3	70.5	60.4	61.4	64.1
590-22504-5 - RE	FB-121423	112	105	97.9	89.0	63.5	70.1	69.6	74.5
590-22504-5 - RA	FB-121423			104					
LCS 320-732663/3-A	Lab Control Sample	64.8	67.6		92.4	70.2	65.1	62.3	62.2
LCS 320-732663/3-A - RA	Lab Control Sample			91.4					
LCS 320-733811/3-A	Lab Control Sample	101	91.3	86.8	76.5	73.6	64.3	69.9	72.0
LCS 320-734764/3-A	Lab Control Sample	90.5	89.2	89.4	89.5	63.1	68.0	61.4	59.2
LCSD 320-732663/4-A	Lab Control Sample Dup	62.1	64.9		67.5	62.8	65.3	58.5	60.8
LCSD 320-732663/4-A - RA	Lab Control Sample Dup			88.5					
LCSD 320-733811/4-A	Lab Control Sample Dup	83.9	91.1	93.1	91.1	67.2	70.8	69.4	73.4
LCSD 320-734764/4-A	Lab Control Sample Dup	90.1	84.2	97.8	88.5	61.6	52.8	57.1	58.7
LLCS 320-732663/2-A	Lab Control Sample	65.8	65.3		96.5	85.7	83.6	75.0	76.2
LLCS 320-732663/2-A - RA	Lab Control Sample			111					
LLCS 320-733811/2-A	Lab Control Sample	107	102	95.8	82.8	61.7	69.8	66.8	70.6
LLCS 320-734764/2-A	Lab Control Sample	82.2	80.2	92.7	93.9	69.9	66.8	64.9	62.6
MB 320-732663/1-A	Method Blank	67.0	71.4		92.7	71.2	73.7	72.1	72.8
MB 320-732663/1-A - RA	Method Blank			114					
MB 320-733811/1-A	Method Blank	117	95.8	97.9	96.2	67.3	67.1	71.1	71.1
MB 320-734764/1-A	Method Blank	76.7	87.1	98.4	97.4	62.6	60.1	55.3	52.4

Isotope Dilution Summary

Client: GeoEngineers Inc
Project/Site: Marshall Landfill

Job ID: 590-22504-1

Surrogate Legend

PFBA = 13C4 PFBA
PFPeA = 13C5 PFPeA
13C5PHA = 13C5 PFHxA
C4PFHA = 13C4 PFHpA
C8PFOA = 13C8 PFOA
C9PFNA = 13C9 PFNA
C6PFDA = 13C6 PFDA
13C7PUA = 13C7 PFUnA
PFDoA = 13C2 PFDoA
PFTDA = 13C2 PFTeDA
C3PFBS = 13C3 PFBS
C3PFHS = 13C3 PFHxS
C8PFOS = 13C8 PFOS
PFOSA = 13C8 PFOSA
d3NMFOS = d3-NMeFOSAA
d5NEFOS = d5-NEtFOSAA
M242FTS = 13C2 4:2 FTS
M262FTS = 13C2 6:2 FTS
M282FTS = 13C2 8:2 FTS
HFPODA = 13C3 HFPO-DA
NMFM = d7-N-MeFOSE-M
NEFM = d9-N-EtFOSE-M
d5NPFSA = d5-NEtPFOSA
d3NMFSA = d3-NMePFOSA

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ANALYTICAL REPORT

PREPARED FOR

Attn: Justin Orr
GeoEngineers Inc
523 East Second Ave
Spokane, Washington 99202

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JOB DESCRIPTION

Marshall Landfill

JOB NUMBER

590-22513-1

Eurofins Spokane
11922 East 1st Ave
Spokane WA 99206

See page two for job notes and contact information.

Job Notes

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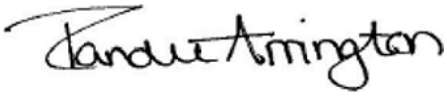

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Job Narrative
590-22513-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

- Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
- Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Receipt
The samples were received on 12/15/2023 12:35 PM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 5.0°C

Receipt Exceptions
The following samples was received at the laboratory outside the required temperature criteria: MW-2A-121523 (590-22513-1), MW-5A-121523 (590-22513-2) and DUP-121523 (590-22513-3). This does not meet regulatory requirements

GC/MS VOA
Method 8260D: The laboratory control sample (LCS) and / or laboratory control sample duplicate (LCSD) for analytical batch 590-45132 recovered outside control limits for the following analytes: Chloromethane. These analytes were biased high in the LCS and were not detected in the associated samples; therefore, the data have been reported.

Method 8260D: The continuing calibration verification (CCV) associated with batch 590-45132 recovered above the upper control limit for Trichloroethene. The samples associated with this CCV were non-detects for the affected analytes; therefore, the data have been reported.

Method 8260D: The continuing calibration verification (CCV) associated with batch 590-45132 recovered above the upper control limit for 1,1,1-Trichloroethane, 2,2-Dichloropropane, Carbon tetrachloride, Chloromethane and Methyl tert-butyl ether. The samples associated with this CCV were non-detects for the affected analytes; therefore, the data have been reported.

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

GC/MS Semi VOA
Method 8270E: The continuing calibration verification (CCV) associated with batch 580-446882 recovered above the upper control limit for 3-Nitroaniline, 4-Nitroaniline, Benzoic acid, Di-n-octyl phthalate and Indeno[1,2,3-cd]pyrene. The samples associated with this CCV were non-detects for the affected analytes; therefore, the data have been reported. The associated samples are impacted: MW-2A-121523 (590-22513-1), MW-5A-121523 (590-22513-2), DUP-121523 (590-22513-3) and (CCVIS 580-446882/3).

Method 8270E: The continuing calibration verification (CCV) associated with batch 580-446882 recovered outside acceptance criteria, low biased, for Pentachlorophenol. A reporting limit (RL) standard was analyzed, and the target analytes are detected. Since the associated samples were non-detect for the analyte(s), the data are reported.

Method 8270E: The minimum response factor (RF) criteria for the continuing calibration verification (CCV) analyzed in batch 580-446882 was outside criteria for the following analyte(s): Hexachlorobutadiene and Hexachlorocyclopentadiene. As indicated in the reference method, sample analysis may proceed; however, any detection or non-detection for the affected analyte(s) is considered estimated.

Method 8270E: The following sample(s) was re-prepared outside of preparation holding time due to low LCS/LCSD %R. 8270E.

Method 8270E: Internal standard (ISTD) response for the following sample was low outside of acceptance limits: (CCVIS 580-447355/3). The sample(s) was not re-analyzed due as the low CCVIS would create a high bias in the samples, and the affected samples were ND. Therefore, results have been reported.

Method 8270E: The laboratory control sample (LCS) for preparation batch 580-447085 and analytical batch 580-447355 recovered outside acceptance limits for 1,2,4-Trichlorobenzene, 1,2-Dichlorobenzene, 1,3-Dichlorobenzene, 1,4-Dichlorobenzene, 2,4,5-Trichlorophenol, 2,4,6-Trichlorophenol, 2,4-Dichlorophenol, 2,4-Dimethylphenol, 2,4-Dinitrophenol, 2-Chlorophenol, 2-Methylphenol, 2-Nitroaniline, 2-Nitrophenol, 3 & 4 Methylphenol, 4,6-Dinitro-2-methylphenol, 4-Chloro-3-methylphenol, 4-Nitrophenol, Benzoic acid, Hexachlorobutadiene, Hexachlorocyclopentadiene, Hexachloroethane, Naphthalene, Pentachlorophenol and Phenol. There is insufficient sample for re-extraction, as this was the re-extracted sample; therefore, the both sets of data have been reported.

Method 8270E: The sample was re-extracted out of hold time due to failures in batch QC in the original extraction. Therefore, both sets of data have been reported.

DUP-121523 (590-22513-3)

Method 8270E: The continuing calibration verification (CCV) associated with batch 580-447355 recovered above the upper control limit for Benzoic acid. The samples associated with this CCV were non-detects for the affected analytes; therefore, the data have been reported. The associated samples are impacted: DUP-121523 (590-22513-3) and (CCVIS 580-447355/3).

Method 8270E: The CCVIS recovered low outside of control for bis(chloroisopropyl) ether, Pentachlorophenol and Phenol. These analytes have been reported in the previous run, and therefore are not being reported from this extraction.

(CCVIS 580-447355/3)

Method 8270E: Surrogate recovery for the following samples were outside of acceptance limits: DUP-121523 (590-22513-3), (LCS 580-447085/2-A), (LCSD 580-447085/3-A) and (MB 580-447085/1-A). There was insufficient sample to perform a re-extraction; therefore, the data have been reported.

Method 8270E: The RPD of the laboratory control sample (LCS) and laboratory control sample duplicate (LCSD) for preparation batch 580-447085 and analytical batch 580-447355 recovered outside control limits for the following analytes: 2,4,5-Trichlorophenol, 2,4,6-Trichlorophenol, 2,4-Dichlorophenol, 2,4-Dimethylphenol, 2,4-Dinitrophenol, 2-Chlorophenol, 2-Methylphenol, 2-Nitrophenol, 3 & 4 Methylphenol, 4,6-Dinitro-2-methylphenol, 4-Chloro-3-methylphenol, 4-Nitrophenol, Benzoic acid, Hexachlorobutadiene, Hexachlorocyclopentadiene, Pentachlorophenol and Phenol.

Method 8270E: Surrogate recovery for the following samples were outside of acceptance limits: MW-5A-121523 (590-22513-2), (LCS 580-447085/2-A) and (MB 580-447085/1-A). There was insufficient sample to perform a re-extraction; therefore, the data have been reported.

Method 8270E: The samples were re-extracted out of preparation hold time due to failures in the original extraction.

MW-2A-121523 (590-22513-1) and MW-5A-121523 (590-22513-2)

Method 8270E: The LCS/LCSD recovered out of control for 1,2,4-Trichlorobenzene, 1,2-Dichlorobenzene, 1,3-Dichlorobenzene, 1,4-Dichlorobenzene, Hexachlorobutadiene, Hexachlorocyclopentadiene, Hexachloroethane and Naphthalene. As these are the re-extracted samples which repeat the original failures, both sets of data have been reported.

(LCS 580-447085/2-A) and (LCSD 580-447085/3-A)

Method 8270E: The RPD of the laboratory control sample (LCS) and laboratory control sample duplicate (LCSD) for preparation batch 580-447085 and analytical batch 580-447287 recovered outside control limits for the following analytes: 2,4,5-Trichlorophenol, 2,4,6-Trichlorophenol, 2,4-Dichlorophenol, 2,4-Dimethylphenol, 2,4-Dinitrophenol, 2,4-Dinitrotoluene, 2-Chlorophenol, 2-Methylphenol, 3 & 4 Methylphenol, 4,6-Dinitro-2-methylphenol, 4-Chloro-3-methylphenol, 4-Nitrophenol, Benzoic acid, Hexachlorobutadiene, Hexachlorocyclopentadiene, Pentachlorophenol and Phenol.

Method 8270E: The continuing calibration verification (CCV) associated with batch 580-447287 recovered above the upper control limit for 3-Nitroaniline, 4-Nitroaniline, Benzoic acid and Di-n-octyl phthalate. The samples associated with this CCV were non-detects for the affected analytes; therefore, the data have been reported. The associated samples are impacted: MW-2A-121523 (590-22513-1), MW-5A-121523 (590-22513-2) and (CCVIS 580-447287/3).

Method 8270E: The LCS/LCSD associated with batch 580-447287 recovered above the upper control limit for 4-Nitroaniline and Benzo[b]fluoranthene. The samples associated with the LCS/LCSD were non-detects for the affected analytes; therefore, the data have been reported. The associated samples are impacted: MW-2A-121523 (590-22513-1), MW-5A-121523 (590-22513-2), (LCS

580-447085/2-A) and (LCSD 580-447085/3-A).

Method 8270E: The LCS/LCSD recovered low outside of control criteria for 1,2,4-Trichlorobenzene, 1,2-Dichlorobenzene, 1,3-Dichlorobenzene, 1,4-Dichlorobenzene, 1-Methylnaphthalene, 2-Methylnaphthalene, Hexachlorobutadiene, Hexachlorocyclopentadiene, Hexachloroethane and Naphthalene. The samples were re-extracted out of hold time, so both sets of data are reported.

(LCS 580-446826/2-A) and (LCSD 580-446826/3-A)

Method 8270E: The RPD of the laboratory control sample (LCS) and laboratory control sample duplicate (LCSD) for preparation batch 580-446826 and analytical batch 580-446882 recovered outside control limits for the following analytes: 1,2,4-Trichlorobenzene, 1,2-Dichlorobenzene, 1,3-Dichlorobenzene, 1,4-Dichlorobenzene, Hexachlorobutadiene, Hexachlorocyclopentadiene and Hexachloroethane.

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

Herbicides
Method 8151A: The RPD of the laboratory control sample (LCS) and laboratory control sample duplicate (LCSD) for preparation batch 570-394080 and analytical batch 570-394962 recovered outside control limits for the following analytes: 2,4,5-T, 2,4,5-TP (Silvex), 2,4-D, 2,4-DB, Dalapon, Dicamba, Dichlorprop, Dinoseb and MCPA.

Method 8151A: The continuing calibration verification (CCV) associated with 570-394962 recovered high and outside the control limits for Dalapon and Dichlorprop on one column. Results are confirmed on both columns and reported from the passing column. The associated samples are: MW-2A-121523 (590-22513-1), MW-5A-121523 (590-22513-2) and DUP-121523 (590-22513-3).

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

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

PFAS
Method 1633: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-732888.

Method 1633: The following samples in preparation batch 320-732888 were yellow in color following extraction. MW-2A-121523 (590-22513-1), MW-5A-121523 (590-22513-2) and DUP-121523 (590-22513-3)

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

Metals
Method 6010D: The low level initial calibration verification (ICVL) associated with batch 590-45149 recovered above the upper control limit for Sodium. The samples associated with this ICVL were either 10x the spike amount, have hits below the RL, or non-detects for the affected analytes; therefore, the data have been reported.

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

General Chemistry
Method 2320B: The method blank for analytical batch 590-45219 contained Alkalinity and Bicarbonate Alkalinity as CaCO3 above the method detection limit (MDL). Associated samples were not re-analyzed because the method blank results were less than the reporting limit (RL)

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

Sample Summary

Client: GeoEngineers Inc
Project/Site: Marshall Landfill

Job ID: 590-22513-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
590-22513-1	MW-2A-121523	Water	12/15/23 10:00	12/15/23 12:35
590-22513-2	MW-5A-121523	Water	12/15/23 08:25	12/15/23 12:35
590-22513-3	DUP-121523	Water	12/15/23 08:00	12/15/23 12:35
590-22513-4	Trip Blank	Water	12/15/23 08:00	12/15/23 12:35

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
*+	LCS and/or LCSD is outside acceptance limits, high biased.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

GC/MS Semi VOA

Qualifier	Qualifier Description
*-	LCS and/or LCSD is outside acceptance limits, low biased.
*+	LCS and/or LCSD is outside acceptance limits, high biased.
*1	LCS/LCSD RPD exceeds control limits.
H	Sample was prepped or analyzed beyond the specified holding time. This does not meet regulatory requirements.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
S1-	Surrogate recovery exceeds control limits, low biased.

GC Semi VOA

Qualifier	Qualifier Description
*1	LCS/LCSD RPD exceeds control limits.

LCMS

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.

Metals

Qualifier	Qualifier Description
^1+	Initial Calibration Verification (ICV) is outside acceptance limits, high biased.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

General Chemistry

Qualifier	Qualifier Description
B	Compound was found in the blank and sample.
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

Glossary (Continued)

Abbreviation	These commonly used abbreviations may or may not be present in this report.
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

Client: GeoEngineers Inc
Project/Site: Marshall Landfill

Job ID: 590-22513-1

Client Sample ID: MW-2A-121523
Date Collected: 12/15/23 10:00
Date Received: 12/15/23 12:35

Lab Sample ID: 590-22513-1
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	ND		1.0	0.48	ug/L			12/18/23 17:12	1
1,1,1-Trichloroethane	ND		1.0	0.17	ug/L			12/18/23 17:12	1
1,1,2,2-Tetrachloroethane	ND		2.0	0.32	ug/L			12/18/23 17:12	1
1,1,2-Trichloroethane	ND		2.0	0.43	ug/L			12/18/23 17:12	1
1,1-Dichloroethane	ND		1.0	0.29	ug/L			12/18/23 17:12	1
1,1-Dichloroethene	ND		1.0	0.20	ug/L			12/18/23 17:12	1
1,1-Dichloropropene	ND		1.0	0.50	ug/L			12/18/23 17:12	1
1,2,3-Trichlorobenzene	ND		1.0	0.33	ug/L			12/18/23 17:12	1
1,2,3-Trichloropropane	ND		2.0	0.50	ug/L			12/18/23 17:12	1
1,2,4-Trichlorobenzene	ND		1.0	0.50	ug/L			12/18/23 17:12	1
1,2,4-Trimethylbenzene	ND		1.0	0.31	ug/L			12/18/23 17:12	1
1,2-Dibromo-3-Chloropropane	ND		10	1.5	ug/L			12/18/23 17:12	1
1,2-Dibromoethane (EDB)	ND		1.0	0.20	ug/L			12/18/23 17:12	1
1,2-Dichlorobenzene	ND		1.0	0.23	ug/L			12/18/23 17:12	1
1,2-Dichloroethane	ND		1.0	0.31	ug/L			12/18/23 17:12	1
1,2-Dichloropropane	ND		1.0	0.23	ug/L			12/18/23 17:12	1
1,3,5-Trimethylbenzene	ND		1.0	0.32	ug/L			12/18/23 17:12	1
1,3-Dichlorobenzene	ND		1.0	0.14	ug/L			12/18/23 17:12	1
1,3-Dichloropropane	ND		2.0	0.21	ug/L			12/18/23 17:12	1
1,4-Dichlorobenzene	ND		1.0	0.28	ug/L			12/18/23 17:12	1
2,2-Dichloropropane	ND		2.0	0.66	ug/L			12/18/23 17:12	1
2-Chlorotoluene	ND		1.0	0.36	ug/L			12/18/23 17:12	1
4-Chlorotoluene	ND		1.0	0.26	ug/L			12/18/23 17:12	1
Benzene	ND		0.40	0.093	ug/L			12/18/23 17:12	1
Bromobenzene	ND		1.0	0.28	ug/L			12/18/23 17:12	1
Bromochloromethane	ND		2.0	0.44	ug/L			12/18/23 17:12	1
Bromodichloromethane	ND		1.0	0.29	ug/L			12/18/23 17:12	1
Bromoform	ND		5.0	0.66	ug/L			12/18/23 17:12	1
Bromomethane	ND		5.0	0.76	ug/L			12/18/23 17:12	1
Carbon tetrachloride	ND		1.0	0.40	ug/L			12/18/23 17:12	1
Chlorobenzene	ND		1.0	0.32	ug/L			12/18/23 17:12	1
Chloroethane	ND		2.0	0.40	ug/L			12/18/23 17:12	1
Chloroform	ND		1.0	0.24	ug/L			12/18/23 17:12	1
Chloromethane	ND	*+	3.0	0.50	ug/L			12/18/23 17:12	1
cis-1,2-Dichloroethene	ND		1.0	0.23	ug/L			12/18/23 17:12	1
cis-1,3-Dichloropropene	ND		1.0	0.25	ug/L			12/18/23 17:12	1
Dibromochloromethane	ND		2.0	0.33	ug/L			12/18/23 17:12	1
Dibromomethane	ND		2.0	0.50	ug/L			12/18/23 17:12	1
Dichlorodifluoromethane	ND		2.0	0.64	ug/L			12/18/23 17:12	1
Ethylbenzene	ND		1.0	0.20	ug/L			12/18/23 17:12	1
Hexachlorobutadiene	ND		2.0	0.21	ug/L			12/18/23 17:12	1
Isopropylbenzene	ND		1.0	0.24	ug/L			12/18/23 17:12	1
m,p-Xylene	ND		2.0	0.28	ug/L			12/18/23 17:12	1
Methyl tert-butyl ether	ND		1.0	0.16	ug/L			12/18/23 17:12	1
Methylene Chloride	ND		5.0	2.2	ug/L			12/18/23 17:12	1
Naphthalene	ND		2.0	0.63	ug/L			12/18/23 17:12	1
n-Butylbenzene	ND		1.0	0.20	ug/L			12/18/23 17:12	1
N-Propylbenzene	ND		1.0	0.25	ug/L			12/18/23 17:12	1
o-Xylene	ND		1.0	0.16	ug/L			12/18/23 17:12	1

Client Sample ID: MW-2A-121523
Date Collected: 12/15/23 10:00
Date Received: 12/15/23 12:35

Lab Sample ID: 590-22513-1
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
p-Isopropyltoluene	ND		1.0	0.27	ug/L			12/18/23 17:12	1
sec-Butylbenzene	ND		1.0	0.22	ug/L			12/18/23 17:12	1
Styrene	ND		1.0	0.24	ug/L			12/18/23 17:12	1
tert-Butylbenzene	ND		1.0	0.12	ug/L			12/18/23 17:12	1
Tetrachloroethene	ND		1.0	0.22	ug/L			12/18/23 17:12	1
Toluene	ND		1.0	0.31	ug/L			12/18/23 17:12	1
trans-1,2-Dichloroethene	ND		1.0	0.20	ug/L			12/18/23 17:12	1
trans-1,3-Dichloropropene	ND		1.0	0.45	ug/L			12/18/23 17:12	1
Trichloroethene	ND		1.0	0.20	ug/L			12/18/23 17:12	1
Trichlorofluoromethane	ND		1.0	0.20	ug/L			12/18/23 17:12	1
Vinyl chloride	ND		0.40	0.13	ug/L			12/18/23 17:12	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*102*		*80 - 120*		*12/18/23 17:12*	*1*
4-Bromofluorobenzene (Surr)	*99*		*76 - 120*		*12/18/23 17:12*	*1*
Dibromofluoromethane (Surr)	*108*		*80 - 123*		*12/18/23 17:12*	*1*
Toluene-d8 (Surr)	*103*		*80 - 120*		*12/18/23 17:12*	*1*

Method: SW846 8270E - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,4-Trichlorobenzene	ND	*1 *-	0.38	0.086	ug/L		12/21/23 08:20	12/21/23 19:30	1
1,2-Dichlorobenzene	ND	*1 *-	0.38	0.048	ug/L		12/21/23 08:20	12/21/23 19:30	1
1,3-Dichlorobenzene	ND	*1 *-	0.38	0.038	ug/L		12/21/23 08:20	12/21/23 19:30	1
1,4-Dichlorobenzene	ND	*1 *-	0.38	0.038	ug/L		12/21/23 08:20	12/21/23 19:30	1
1-Methylnaphthalene	ND	*-	0.95	0.048	ug/L		12/21/23 08:20	12/21/23 19:30	1
2,4,5-Trichlorophenol	ND		0.38	0.095	ug/L		12/21/23 08:20	12/21/23 19:30	1
2,4,6-Trichlorophenol	ND		0.57	0.095	ug/L		12/21/23 08:20	12/21/23 19:30	1
2,4-Dichlorophenol	ND		0.95	0.19	ug/L		12/21/23 08:20	12/21/23 19:30	1
2,4-Dimethylphenol	ND		3.8	0.15	ug/L		12/21/23 08:20	12/21/23 19:30	1
2,4-Dinitrophenol	ND		4.8	0.43	ug/L		12/21/23 08:20	12/21/23 19:30	1
2,4-Dinitrotoluene	ND		0.95	0.095	ug/L		12/21/23 08:20	12/21/23 19:30	1
2,6-Dinitrotoluene	ND		0.38	0.095	ug/L		12/21/23 08:20	12/21/23 19:30	1
2-Chloronaphthalene	ND		0.95	0.067	ug/L		12/21/23 08:20	12/21/23 19:30	1
2-Chlorophenol	ND		0.95	0.048	ug/L		12/21/23 08:20	12/21/23 19:30	1
2-Methylnaphthalene	ND	*-	0.38	0.057	ug/L		12/21/23 08:20	12/21/23 19:30	1
2-Methylphenol	ND		0.57	0.048	ug/L		12/21/23 08:20	12/21/23 19:30	1
2-Nitroaniline	ND		0.95	0.095	ug/L		12/21/23 08:20	12/21/23 19:30	1
2-Nitrophenol	ND		0.95	0.067	ug/L		12/21/23 08:20	12/21/23 19:30	1
3 & 4 Methylphenol	ND		0.57	0.095	ug/L		12/21/23 08:20	12/21/23 19:30	1
3,3'-Dichlorobenzidine	ND		0.95	0.11	ug/L		12/21/23 08:20	12/21/23 19:30	1
3-Nitroaniline	ND		2.9	0.15	ug/L		12/21/23 08:20	12/21/23 19:30	1
4,6-Dinitro-2-methylphenol	ND		1.9	0.52	ug/L		12/21/23 08:20	12/21/23 19:30	1
4-Bromophenyl phenyl ether	ND		0.57	0.057	ug/L		12/21/23 08:20	12/21/23 19:30	1
4-Chloro-3-methylphenol	ND		0.57	0.12	ug/L		12/21/23 08:20	12/21/23 19:30	1
4-Chloroaniline	ND		1.9	0.14	ug/L		12/21/23 08:20	12/21/23 19:30	1
4-Chlorophenyl phenyl ether	ND		0.57	0.048	ug/L		12/21/23 08:20	12/21/23 19:30	1
4-Nitroaniline	ND		1.9	0.20	ug/L		12/21/23 08:20	12/21/23 19:30	1
4-Nitrophenol	ND		9.5	1.6	ug/L		12/21/23 08:20	12/21/23 19:30	1
Acenaphthene	ND		0.38	0.048	ug/L		12/21/23 08:20	12/21/23 19:30	1
Acenaphthylene	ND		0.95	0.057	ug/L		12/21/23 08:20	12/21/23 19:30	1

Client Sample ID: MW-2A-121523
Date Collected: 12/15/23 10:00
Date Received: 12/15/23 12:35

Lab Sample ID: 590-22513-1
Matrix: Water

Method: SW846 8270E - Semivolatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Anthracene	ND		0.95	0.048	ug/L		12/21/23 08:20	12/21/23 19:30	1
Benzo[a]anthracene	ND		0.24	0.048	ug/L		12/21/23 08:20	12/21/23 19:30	1
Benzo[a]pyrene	ND		0.24	0.038	ug/L		12/21/23 08:20	12/21/23 19:30	1
Benzo[b]fluoranthene	ND		0.24	0.038	ug/L		12/21/23 08:20	12/21/23 19:30	1
Benzo[g,h,i]perylene	ND		0.24	0.038	ug/L		12/21/23 08:20	12/21/23 19:30	1
Benzo[k]fluoranthene	ND		0.24	0.048	ug/L		12/21/23 08:20	12/21/23 19:30	1
Benzoic acid	ND		9.5	1.3	ug/L		12/21/23 08:20	12/21/23 19:30	1
Benzyl alcohol	ND		4.8	0.17	ug/L		12/21/23 08:20	12/21/23 19:30	1
Bis(2-chloroethoxy)methane	ND		0.57	0.048	ug/L		12/21/23 08:20	12/21/23 19:30	1
Bis(2-chloroethyl)ether	ND		0.095	0.029	ug/L		12/21/23 08:20	12/21/23 19:30	1
Bis(2-ethylhexyl) phthalate	ND		2.9	0.70	ug/L		12/21/23 08:20	12/21/23 19:30	1
bis(chloroisopropyl) ether	ND		0.24	0.057	ug/L		12/21/23 08:20	12/21/23 19:30	1
Butyl benzyl phthalate	ND		3.8	0.26	ug/L		12/21/23 08:20	12/21/23 19:30	1
Carbazole	ND		0.57	0.095	ug/L		12/21/23 08:20	12/21/23 19:30	1
Chrysene	ND		0.24	0.086	ug/L		12/21/23 08:20	12/21/23 19:30	1
Dibenz(a,h)anthracene	ND		0.24	0.067	ug/L		12/21/23 08:20	12/21/23 19:30	1
Dibenzofuran	ND		0.38	0.095	ug/L		12/21/23 08:20	12/21/23 19:30	1
Diethyl phthalate	ND		0.95	0.14	ug/L		12/21/23 08:20	12/21/23 19:30	1
Dimethyl phthalate	ND		0.57	0.057	ug/L		12/21/23 08:20	12/21/23 19:30	1
Di-n-butyl phthalate	ND		9.5	2.8	ug/L		12/21/23 08:20	12/21/23 19:30	1
Di-n-octyl phthalate	ND		0.95	0.12	ug/L		12/21/23 08:20	12/21/23 19:30	1
Fluoranthene	ND		0.24	0.057	ug/L		12/21/23 08:20	12/21/23 19:30	1
Fluorene	ND		0.24	0.048	ug/L		12/21/23 08:20	12/21/23 19:30	1
Hexachlorobenzene	ND		0.57	0.076	ug/L		12/21/23 08:20	12/21/23 19:30	1
Hexachlorobutadiene	ND	*1 *-	0.95	0.076	ug/L		12/21/23 08:20	12/21/23 19:30	1
Hexachlorocyclopentadiene	ND	*1 *-	0.95	0.13	ug/L		12/21/23 08:20	12/21/23 19:30	1
Hexachloroethane	ND	*1 *-	0.95	0.048	ug/L		12/21/23 08:20	12/21/23 19:30	1
Indeno[1,2,3-cd]pyrene	ND		0.38	0.12	ug/L		12/21/23 08:20	12/21/23 19:30	1
Isophorone	ND		0.38	0.095	ug/L		12/21/23 08:20	12/21/23 19:30	1
Naphthalene	ND	*-	0.38	0.15	ug/L		12/21/23 08:20	12/21/23 19:30	1
Nitrobenzene	ND		0.95	0.038	ug/L		12/21/23 08:20	12/21/23 19:30	1
N-Nitrosodi-n-propylamine	ND		0.38	0.057	ug/L		12/21/23 08:20	12/21/23 19:30	1
N-Nitrosodiphenylamine	ND		0.95	0.067	ug/L		12/21/23 08:20	12/21/23 19:30	1
Pentachlorophenol	ND		4.8	0.48	ug/L		12/21/23 08:20	12/21/23 19:30	1
Phenanthrene	ND		0.95	0.11	ug/L		12/21/23 08:20	12/21/23 19:30	1
Phenol	ND		0.95	0.15	ug/L		12/21/23 08:20	12/21/23 19:30	1
Pyrene	ND		0.95	0.038	ug/L		12/21/23 08:20	12/21/23 19:30	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol (Surr)	*76*		*50 - 130*	*12/21/23 08:20*	*12/21/23 19:30*	*1*
2-Fluorobiphenyl	*61*		*35 - 120*	*12/21/23 08:20*	*12/21/23 19:30*	*1*
2-Fluorophenol (Surr)	*40*		*21 - 120*	*12/21/23 08:20*	*12/21/23 19:30*	*1*
Nitrobenzene-d5 (Surr)	*65*		*39 - 120*	*12/21/23 08:20*	*12/21/23 19:30*	*1*
Phenol-d5 (Surr)	*23*		*10 - 120*	*12/21/23 08:20*	*12/21/23 19:30*	*1*
Terphenyl-d14 (Surr)	*80*		*63 - 137*	*12/21/23 08:20*	*12/21/23 19:30*	*1*

Method: SW846 8270E - Semivolatile Organic Compounds (GC/MS) - RE

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,4-Trichlorobenzene	ND	H *-	0.38	0.086	ug/L		12/27/23 08:30	12/28/23 20:17	1
1,2-Dichlorobenzene	ND	H *-	0.38	0.048	ug/L		12/27/23 08:30	12/28/23 20:17	1

Client Sample ID: MW-2A-121523

Date Collected: 12/15/23 10:00
Date Received: 12/15/23 12:35

Lab Sample ID: 590-22513-1
Matrix: Water

Method: SW846 8270E - Semivolatile Organic Compounds (GC/MS) - RE (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,3-Dichlorobenzene	ND	H *-	0.38	0.038	ug/L		12/27/23 08:30	12/28/23 20:17	1
1,4-Dichlorobenzene	ND	H *-	0.38	0.038	ug/L		12/27/23 08:30	12/28/23 20:17	1
1-Methylnaphthalene	ND	H	0.95	0.048	ug/L		12/27/23 08:30	12/28/23 20:17	1
2-Methylnaphthalene	ND	H	0.38	0.057	ug/L		12/27/23 08:30	12/28/23 20:17	1
Hexachlorobutadiene	ND	H *- *1	0.95	0.076	ug/L		12/27/23 08:30	12/28/23 20:17	1
Hexachlorocyclopentadiene	ND	H *- *1	0.95	0.13	ug/L		12/27/23 08:30	12/28/23 20:17	1
Hexachloroethane	ND	H *-	0.95	0.048	ug/L		12/27/23 08:30	12/28/23 20:17	1
Naphthalene	ND	H *-	0.38	0.15	ug/L		12/27/23 08:30	12/28/23 20:17	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol (Surr)	*54*		*50 - 130*	*12/27/23 08:30*	*12/28/23 20:17*	*1*
2-Fluorobiphenyl	*45*		*35 - 120*	*12/27/23 08:30*	*12/28/23 20:17*	*1*
2-Fluorophenol (Surr)	*28*		*21 - 120*	*12/27/23 08:30*	*12/28/23 20:17*	*1*
Nitrobenzene-d5 (Surr)	*48*		*39 - 120*	*12/27/23 08:30*	*12/28/23 20:17*	*1*
Phenol-d5 (Surr)	*16*		*10 - 120*	*12/27/23 08:30*	*12/28/23 20:17*	*1*
Terphenyl-d14 (Surr)	*63*		*63 - 137*	*12/27/23 08:30*	*12/28/23 20:17*	*1*

Method: SW846 8151A - Herbicides (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4,5-T	ND	*1	0.48	0.20	ug/L		12/18/23 21:35	12/21/23 00:17	1
2,4,5-TP (Silvex)	ND		0.48	0.13	ug/L		12/18/23 21:35	12/21/23 00:17	1
2,4-D	ND	*1	4.8	1.9	ug/L		12/18/23 21:35	12/21/23 00:17	1
2,4-DB	ND		4.8	3.3	ug/L		12/18/23 21:35	12/21/23 00:17	1
Dalapon	ND	*1	12	4.5	ug/L		12/18/23 21:35	12/21/23 00:17	1
Dicamba	ND	*1	0.48	0.27	ug/L		12/18/23 21:35	12/21/23 00:17	1
Dichlorprop	ND	*1	4.8	1.9	ug/L		12/18/23 21:35	12/21/23 00:17	1
Dinoseb	ND	*1	2.4	2.1	ug/L		12/18/23 21:35	12/21/23 00:17	1
MCPA	ND	*1	480	330	ug/L		12/18/23 21:35	12/21/23 00:17	1
MCPP	ND		480	290	ug/L		12/18/23 21:35	12/21/23 00:17	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4-Dichlorophenylacetic acid	*81*		*20 - 161*	*12/18/23 21:35*	*12/21/23 00:17*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**59**		0.80	0.42	mg/L			12/15/23 16:15	1
Nitrate as N	ND		0.20	0.057	mg/L			12/15/23 16:15	1
Nitrite as N	ND		0.20	0.069	mg/L			12/15/23 16:15	1
Sulfate	**14**		0.50	0.13	mg/L			12/15/23 16:15	1

Method: EPA Draft-4 1633 - Per- and Polyfluoroalkyl Substances by LC/MS/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**5.6**	**J**	7.2	1.8	ng/L		01/12/24 04:17	01/16/24 02:09	1
Perfluoropentanoic acid (PFPeA)	**3.1**	**J**	3.6	0.90	ng/L		01/12/24 04:17	01/16/24 02:09	1
Perfluorohexanoic acid (PFHxA)	**1.5**	**J**	1.8	0.45	ng/L		01/12/24 04:17	01/16/24 02:09	1
Perfluoroheptanoic acid (PFHpA)	**1.3**	**J**	1.8	0.45	ng/L		01/12/24 04:17	01/16/24 02:09	1
Perfluorooctanoic acid (PFOA)	**7.6**		1.8	0.45	ng/L		01/12/24 04:17	01/16/24 02:09	1
Perfluorononanoic acid (PFNA)	**0.90**	**J**	1.8	0.45	ng/L		01/12/24 04:17	01/16/24 02:09	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.45	ng/L		01/12/24 04:17	01/16/24 02:09	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	0.45	ng/L		01/12/24 04:17	01/16/24 02:09	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.45	ng/L		01/12/24 04:17	01/16/24 02:09	1

Client Sample ID: MW-2A-121523
Date Collected: 12/15/23 10:00
Date Received: 12/15/23 12:35

Lab Sample ID: 590-22513-1
Matrix: Water

Method: EPA Draft-4 1633 - Per- and Polyfluoroalkyl Substances by LC/MS/MS (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorotridecanoic acid (PFTrDA)	ND		1.8	0.45	ng/L		01/12/24 04:17	01/16/24 02:09	1
Perfluorotetradecanoic acid (PFTeDA)	ND		1.8	0.45	ng/L		01/12/24 04:17	01/16/24 02:09	1
Perfluorobutanesulfonic acid (PFBS)	**4.2**		1.8	0.45	ng/L		01/12/24 04:17	01/16/24 02:09	1
Perfluoropentanesulfonic acid (PFPeS)	ND		1.8	0.45	ng/L		01/12/24 04:17	01/16/24 02:09	1
Perfluorohexanesulfonic acid (PFHxS)	**2.6**		1.8	0.45	ng/L		01/12/24 04:17	01/16/24 02:09	1
Perfluoroheptanesulfonic acid (PFHpS)	ND		1.8	0.45	ng/L		01/12/24 04:17	01/16/24 02:09	1
Perfluorooctanesulfonic acid (PFOS)	**11**		1.8	0.45	ng/L		01/12/24 04:17	01/16/24 02:09	1
Perfluorononanesulfonic acid (PFNS)	ND		1.8	0.45	ng/L		01/12/24 04:17	01/16/24 02:09	1
Perfluorodecanesulfonic acid (PFDS)	ND		1.8	0.45	ng/L		01/12/24 04:17	01/16/24 02:09	1
Perfluorododecanesulfonic acid (PFDoS)	ND		1.8	0.45	ng/L		01/12/24 04:17	01/16/24 02:09	1
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	ND		7.2	1.8	ng/L		01/12/24 04:17	01/16/24 02:09	1
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	ND		7.2	1.8	ng/L		01/12/24 04:17	01/16/24 02:09	1
Perfluorooctanesulfonamide (PFOSA)	ND		1.8	0.45	ng/L		01/12/24 04:17	01/16/24 02:09	1
N-methylperfluorooctane sulfonamide (NMeFOSA)	ND		1.8	0.45	ng/L		01/12/24 04:17	01/16/24 02:09	1
N-ethylperfluorooctane sulfonamide (NEtFOSA)	ND		1.8	0.45	ng/L		01/12/24 04:17	01/16/24 02:09	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		1.8	0.45	ng/L		01/12/24 04:17	01/16/24 02:09	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		1.8	0.45	ng/L		01/12/24 04:17	01/16/24 02:09	1
N-methylperfluorooctane sulfonamidoethanol (NMeFOSE)	ND		18	4.5	ng/L		01/12/24 04:17	01/16/24 02:09	1
N-ethylperfluorooctane sulfonamidoethanol (NEtFOSE)	ND		18	4.5	ng/L		01/12/24 04:17	01/16/24 02:09	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		7.2	1.8	ng/L		01/12/24 04:17	01/16/24 02:09	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		7.2	1.8	ng/L		01/12/24 04:17	01/16/24 02:09	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	ND		3.6	0.90	ng/L		01/12/24 04:17	01/16/24 02:09	1
Perfluoro-4-methoxybutanoic acid (PFMBA)	ND		3.6	0.90	ng/L		01/12/24 04:17	01/16/24 02:09	1
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND		3.6	0.90	ng/L		01/12/24 04:17	01/16/24 02:09	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	ND		7.2	1.8	ng/L		01/12/24 04:17	01/16/24 02:09	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	ND		7.2	1.8	ng/L		01/12/24 04:17	01/16/24 02:09	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	ND		3.6	0.90	ng/L		01/12/24 04:17	01/16/24 02:09	1
3-Perfluoropropylpropanoic acid (3:3 FTCA)	ND		9.0	2.3	ng/L		01/12/24 04:17	01/16/24 02:09	1
3-Perfluoropentylpropanoic acid (5:3 FTCA)	ND		45	11	ng/L		01/12/24 04:17	01/16/24 02:09	1
3-Perfluoroheptylpropanoic acid (7:3 FTCA)	ND		45	11	ng/L		01/12/24 04:17	01/16/24 02:09	1

Client Sample ID: MW-2A-121523

Date Collected: 12/15/23 10:00
Date Received: 12/15/23 12:35

Lab Sample ID: 590-22513-1

Matrix: Water

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFBA	77.7		5 - 130	01/12/24 04:17	01/16/24 02:09	1
13C5 PFPeA	83.0		40 - 130	01/12/24 04:17	01/16/24 02:09	1
13C5 PFHxA	86.2		40 - 130	01/12/24 04:17	01/16/24 02:09	1
13C4 PFHpA	79.1		40 - 130	01/12/24 04:17	01/16/24 02:09	1
13C8 PFOA	77.7		40 - 130	01/12/24 04:17	01/16/24 02:09	1
13C9 PFNA	75.7		40 - 130	01/12/24 04:17	01/16/24 02:09	1
13C6 PFDA	67.8		40 - 130	01/12/24 04:17	01/16/24 02:09	1
13C7 PFUnA	65.7		30 - 130	01/12/24 04:17	01/16/24 02:09	1
13C2 PFDoA	54.9		10 - 130	01/12/24 04:17	01/16/24 02:09	1
13C2 PFTeDA	39.5		10 - 130	01/12/24 04:17	01/16/24 02:09	1
13C3 PFBS	80.4		40 - 135	01/12/24 04:17	01/16/24 02:09	1
13C3 PFHxS	80.3		40 - 130	01/12/24 04:17	01/16/24 02:09	1
13C8 PFOS	83.9		40 - 130	01/12/24 04:17	01/16/24 02:09	1
13C8 PFOSA	78.4		40 - 130	01/12/24 04:17	01/16/24 02:09	1
d3-NMeFOSAA	66.6		40 - 170	01/12/24 04:17	01/16/24 02:09	1
d5-NEtFOSAA	72.2		25 - 135	01/12/24 04:17	01/16/24 02:09	1
13C2 6:2 FTS	93.2		40 - 200	01/12/24 04:17	01/16/24 02:09	1
13C2 8:2 FTS	78.2		40 - 300	01/12/24 04:17	01/16/24 02:09	1
13C3 HFPO-DA	84.9		40 - 130	01/12/24 04:17	01/16/24 02:09	1
d7-N-MeFOSE-M	56.9		10 - 130	01/12/24 04:17	01/16/24 02:09	1
d9-N-EtFOSE-M	51.5		10 - 130	01/12/24 04:17	01/16/24 02:09	1
d5-NEtPFOSA	58.5		10 - 130	01/12/24 04:17	01/16/24 02:09	1
d3-NMePFOSA	64.5		10 - 130	01/12/24 04:17	01/16/24 02:09	1

Method: EPA Draft-4 1633 - Per- and Polyfluoroalkyl Substances by LC/MS/MS - RA

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	ND		7.2	1.8	ng/L		01/12/24 04:17	01/18/24 13:59	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 4:2 FTS	98.6		40 - 200	01/12/24 04:17	01/18/24 13:59	1

Method: SW846 6010D - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Magnesium	**16**		1.0	0.13	mg/L		12/18/23 10:30	12/18/23 15:35	1
Potassium	**7.8**		0.50	0.29	mg/L		12/18/23 10:30	12/18/23 15:35	1
Sodium	**42**	**^1+**	0.50	0.20	mg/L		12/18/23 10:30	12/18/23 15:35	1

Method: SW846 6010D - Metals (ICP) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	**41**		2.0	0.20	mg/L		12/18/23 17:27	12/19/23 13:40	1
Magnesium	**17**		1.0	0.13	mg/L		12/18/23 17:27	12/19/23 13:40	1

Method: SW846 6020B - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**0.0020**	**J**	0.0050	0.0010	mg/L		12/18/23 15:58	12/20/23 18:06	5
Cadmium	ND		0.0020	0.00019	mg/L		12/18/23 15:58	12/20/23 18:06	5
Iron	ND		0.50	0.067	mg/L		12/18/23 15:58	12/20/23 18:06	5
Lead	ND		0.0020	0.00020	mg/L		12/18/23 15:58	12/20/23 18:06	5
Manganese	ND		0.010	0.0023	mg/L		12/18/23 15:58	12/20/23 18:06	5
Zinc	ND		0.035	0.0046	mg/L		12/18/23 15:58	12/20/23 18:06	5

Client Sample ID: MW-2A-121523

Lab Sample ID: 590-22513-1

Date Collected: 12/15/23 10:00

Matrix: Water

Date Received: 12/15/23 12:35

Method: SW846 6020B - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**0.0024**	**J**	0.0050	0.0010	mg/L		12/20/23 15:52	12/22/23 11:46	5
Cadmium	ND		0.0020	0.00019	mg/L		12/20/23 15:52	12/22/23 11:46	5
Iron	ND		0.50	0.067	mg/L		12/20/23 15:52	12/22/23 11:46	5
Lead	ND		0.0020	0.00020	mg/L		12/20/23 15:52	12/22/23 11:46	5
Manganese	ND		0.010	0.0023	mg/L		12/20/23 15:52	12/22/23 11:46	5
Zinc	ND		0.035	0.0046	mg/L		12/20/23 15:52	12/22/23 11:46	5

Method: SW846 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.090	ug/L		12/18/23 10:28	12/18/23 15:36	1

Method: SW846 7470A - Mercury (CVAA) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.090	ug/L		12/27/23 10:16	12/28/23 13:36	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ammonia as N (EPA 350.1)	**0.042**	**J**	0.10	0.029	mg/L			01/09/24 11:26	1
Alkalinity (SM 2320B)	**210**	**B**	20	5.0	mg/L			12/27/23 10:12	1
Bicarbonate Alkalinity as CaCO3 (SM 2320B)	**210**	**B**	20	5.0	mg/L			12/27/23 10:12	1
Total Dissolved Solids (SM 2540C)	**340**		25	13	mg/L			12/18/23 16:57	1
Cyanide, Weak Acid Dissociable (SM 4500 CN I)	ND		0.010	0.0050	mg/L			12/22/23 13:07	1
Total Organic Carbon - Duplicates (SM 5310B)	**4.2**		1.0	0.35	mg/L			12/28/23 06:34	1

Client Sample ID: MW-5A-121523

Lab Sample ID: 590-22513-2

Date Collected: 12/15/23 08:25

Matrix: Water

Date Received: 12/15/23 12:35

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	ND		1.0	0.48	ug/L			12/18/23 17:34	1
1,1,1-Trichloroethane	ND		1.0	0.17	ug/L			12/18/23 17:34	1
1,1,2,2-Tetrachloroethane	ND		2.0	0.32	ug/L			12/18/23 17:34	1
1,1,2-Trichloroethane	ND		2.0	0.43	ug/L			12/18/23 17:34	1
1,1-Dichloroethane	ND		1.0	0.29	ug/L			12/18/23 17:34	1
1,1-Dichloroethene	ND		1.0	0.20	ug/L			12/18/23 17:34	1
1,1-Dichloropropene	ND		1.0	0.50	ug/L			12/18/23 17:34	1
1,2,3-Trichlorobenzene	ND		1.0	0.33	ug/L			12/18/23 17:34	1
1,2,3-Trichloropropane	ND		2.0	0.50	ug/L			12/18/23 17:34	1
1,2,4-Trichlorobenzene	ND		1.0	0.50	ug/L			12/18/23 17:34	1
1,2,4-Trimethylbenzene	ND		1.0	0.31	ug/L			12/18/23 17:34	1
1,2-Dibromo-3-Chloropropane	ND		10	1.5	ug/L			12/18/23 17:34	1
1,2-Dibromoethane (EDB)	ND		1.0	0.20	ug/L			12/18/23 17:34	1
1,2-Dichlorobenzene	ND		1.0	0.23	ug/L			12/18/23 17:34	1
1,2-Dichloroethane	ND		1.0	0.31	ug/L			12/18/23 17:34	1
1,2-Dichloropropane	ND		1.0	0.23	ug/L			12/18/23 17:34	1
1,3,5-Trimethylbenzene	ND		1.0	0.32	ug/L			12/18/23 17:34	1
1,3-Dichlorobenzene	ND		1.0	0.14	ug/L			12/18/23 17:34	1

Client: GeoEngineers Inc
Project/Site: Marshall Landfill

Job ID: 590-22513-1

Client Sample ID: MW-5A-121523
Date Collected: 12/15/23 08:25
Date Received: 12/15/23 12:35

Lab Sample ID: 590-22513-2
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,3-Dichloropropane	ND		2.0	0.21	ug/L			12/18/23 17:34	1
1,4-Dichlorobenzene	ND		1.0	0.28	ug/L			12/18/23 17:34	1
2,2-Dichloropropane	ND		2.0	0.66	ug/L			12/18/23 17:34	1
2-Chlorotoluene	ND		1.0	0.36	ug/L			12/18/23 17:34	1
4-Chlorotoluene	ND		1.0	0.26	ug/L			12/18/23 17:34	1
Benzene	ND		0.40	0.093	ug/L			12/18/23 17:34	1
Bromobenzene	ND		1.0	0.28	ug/L			12/18/23 17:34	1
Bromochloromethane	ND		2.0	0.44	ug/L			12/18/23 17:34	1
Bromodichloromethane	ND		1.0	0.29	ug/L			12/18/23 17:34	1
Bromoform	ND		5.0	0.66	ug/L			12/18/23 17:34	1
Bromomethane	ND		5.0	0.76	ug/L			12/18/23 17:34	1
Carbon tetrachloride	ND		1.0	0.40	ug/L			12/18/23 17:34	1
Chlorobenzene	ND		1.0	0.32	ug/L			12/18/23 17:34	1
Chloroethane	ND		2.0	0.40	ug/L			12/18/23 17:34	1
Chloroform	ND		1.0	0.24	ug/L			12/18/23 17:34	1
Chloromethane	ND	*+	3.0	0.50	ug/L			12/18/23 17:34	1
cis-1,2-Dichloroethene	ND		1.0	0.23	ug/L			12/18/23 17:34	1
cis-1,3-Dichloropropene	ND		1.0	0.25	ug/L			12/18/23 17:34	1
Dibromochloromethane	ND		2.0	0.33	ug/L			12/18/23 17:34	1
Dibromomethane	ND		2.0	0.50	ug/L			12/18/23 17:34	1
Dichlorodifluoromethane	ND		2.0	0.64	ug/L			12/18/23 17:34	1
Ethylbenzene	ND		1.0	0.20	ug/L			12/18/23 17:34	1
Hexachlorobutadiene	ND		2.0	0.21	ug/L			12/18/23 17:34	1
Isopropylbenzene	ND		1.0	0.24	ug/L			12/18/23 17:34	1
m,p-Xylene	ND		2.0	0.28	ug/L			12/18/23 17:34	1
Methyl tert-butyl ether	ND		1.0	0.16	ug/L			12/18/23 17:34	1
Methylene Chloride	ND		5.0	2.2	ug/L			12/18/23 17:34	1
Naphthalene	ND		2.0	0.63	ug/L			12/18/23 17:34	1
n-Butylbenzene	ND		1.0	0.20	ug/L			12/18/23 17:34	1
N-Propylbenzene	ND		1.0	0.25	ug/L			12/18/23 17:34	1
o-Xylene	ND		1.0	0.16	ug/L			12/18/23 17:34	1
p-Isopropyltoluene	ND		1.0	0.27	ug/L			12/18/23 17:34	1
sec-Butylbenzene	ND		1.0	0.22	ug/L			12/18/23 17:34	1
Styrene	ND		1.0	0.24	ug/L			12/18/23 17:34	1
tert-Butylbenzene	ND		1.0	0.12	ug/L			12/18/23 17:34	1
Tetrachloroethene	**0.84**	**J**	1.0	0.22	ug/L			12/21/23 14:39	1
Toluene	ND		1.0	0.31	ug/L			12/18/23 17:34	1
trans-1,2-Dichloroethene	ND		1.0	0.20	ug/L			12/18/23 17:34	1
trans-1,3-Dichloropropene	ND		1.0	0.45	ug/L			12/18/23 17:34	1
Trichloroethene	ND		1.0	0.20	ug/L			12/18/23 17:34	1
Trichlorofluoromethane	ND		1.0	0.20	ug/L			12/18/23 17:34	1
Vinyl chloride	ND		0.40	0.13	ug/L			12/18/23 17:34	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*80 - 120*		*12/18/23 17:34*	*1*
1,2-Dichloroethane-d4 (Surr)	*99*		*80 - 120*		*12/21/23 14:39*	*1*
4-Bromofluorobenzene (Surr)	*96*		*76 - 120*		*12/18/23 17:34*	*1*
4-Bromofluorobenzene (Surr)	*94*		*76 - 120*		*12/21/23 14:39*	*1*
Dibromofluoromethane (Surr)	*109*		*80 - 123*		*12/18/23 17:34*	*1*
Dibromofluoromethane (Surr)	*108*		*80 - 123*		*12/21/23 14:39*	*1*

Client Sample ID: MW-5A-121523

Date Collected: 12/15/23 08:25
Date Received: 12/15/23 12:35

Lab Sample ID: 590-22513-2

Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS (Continued)

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*101*		*80 - 120*		*12/18/23 17:34*	*1*
Toluene-d8 (Surr)	*103*		*80 - 120*		*12/21/23 14:39*	*1*

Method: SW846 8270E - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,4-Trichlorobenzene	ND	*1 *-	0.38	0.086	ug/L		12/21/23 08:20	12/21/23 19:55	1
1,2-Dichlorobenzene	ND	*1 *-	0.38	0.048	ug/L		12/21/23 08:20	12/21/23 19:55	1
1,3-Dichlorobenzene	ND	*1 *-	0.38	0.038	ug/L		12/21/23 08:20	12/21/23 19:55	1
1,4-Dichlorobenzene	ND	*1 *-	0.38	0.038	ug/L		12/21/23 08:20	12/21/23 19:55	1
1-Methylnaphthalene	ND	*-	0.96	0.048	ug/L		12/21/23 08:20	12/21/23 19:55	1
2,4,5-Trichlorophenol	ND		0.38	0.096	ug/L		12/21/23 08:20	12/21/23 19:55	1
2,4,6-Trichlorophenol	ND		0.57	0.096	ug/L		12/21/23 08:20	12/21/23 19:55	1
2,4-Dichlorophenol	ND		0.96	0.19	ug/L		12/21/23 08:20	12/21/23 19:55	1
2,4-Dimethylphenol	ND		3.8	0.15	ug/L		12/21/23 08:20	12/21/23 19:55	1
2,4-Dinitrophenol	ND		4.8	0.43	ug/L		12/21/23 08:20	12/21/23 19:55	1
2,4-Dinitrotoluene	ND		0.96	0.096	ug/L		12/21/23 08:20	12/21/23 19:55	1
2,6-Dinitrotoluene	ND		0.38	0.096	ug/L		12/21/23 08:20	12/21/23 19:55	1
2-Chloronaphthalene	ND		0.96	0.067	ug/L		12/21/23 08:20	12/21/23 19:55	1
2-Chlorophenol	ND		0.96	0.048	ug/L		12/21/23 08:20	12/21/23 19:55	1
2-Methylnaphthalene	ND	*-	0.38	0.057	ug/L		12/21/23 08:20	12/21/23 19:55	1
2-Methylphenol	ND		0.57	0.048	ug/L		12/21/23 08:20	12/21/23 19:55	1
2-Nitroaniline	ND		0.96	0.096	ug/L		12/21/23 08:20	12/21/23 19:55	1
2-Nitrophenol	ND		0.96	0.067	ug/L		12/21/23 08:20	12/21/23 19:55	1
3 & 4 Methylphenol	ND		0.57	0.096	ug/L		12/21/23 08:20	12/21/23 19:55	1
3,3'-Dichlorobenzidine	ND		0.96	0.11	ug/L		12/21/23 08:20	12/21/23 19:55	1
3-Nitroaniline	ND		2.9	0.15	ug/L		12/21/23 08:20	12/21/23 19:55	1
4,6-Dinitro-2-methylphenol	ND		1.9	0.53	ug/L		12/21/23 08:20	12/21/23 19:55	1
4-Bromophenyl phenyl ether	ND		0.57	0.057	ug/L		12/21/23 08:20	12/21/23 19:55	1
4-Chloro-3-methylphenol	ND		0.57	0.12	ug/L		12/21/23 08:20	12/21/23 19:55	1
4-Chloroaniline	ND		1.9	0.14	ug/L		12/21/23 08:20	12/21/23 19:55	1
4-Chlorophenyl phenyl ether	ND		0.57	0.048	ug/L		12/21/23 08:20	12/21/23 19:55	1
4-Nitroaniline	ND		1.9	0.20	ug/L		12/21/23 08:20	12/21/23 19:55	1
4-Nitrophenol	ND		9.6	1.6	ug/L		12/21/23 08:20	12/21/23 19:55	1
Acenaphthene	ND		0.38	0.048	ug/L		12/21/23 08:20	12/21/23 19:55	1
Acenaphthylene	ND		0.96	0.057	ug/L		12/21/23 08:20	12/21/23 19:55	1
Anthracene	ND		0.96	0.048	ug/L		12/21/23 08:20	12/21/23 19:55	1
Benzo[a]anthracene	ND		0.24	0.048	ug/L		12/21/23 08:20	12/21/23 19:55	1
Benzo[a]pyrene	ND		0.24	0.038	ug/L		12/21/23 08:20	12/21/23 19:55	1
Benzo[b]fluoranthene	ND		0.24	0.038	ug/L		12/21/23 08:20	12/21/23 19:55	1
Benzo[g,h,i]perylene	ND		0.24	0.038	ug/L		12/21/23 08:20	12/21/23 19:55	1
Benzo[k]fluoranthene	ND		0.24	0.048	ug/L		12/21/23 08:20	12/21/23 19:55	1
Benzoic acid	ND		9.6	1.3	ug/L		12/21/23 08:20	12/21/23 19:55	1
Benzyl alcohol	ND		4.8	0.17	ug/L		12/21/23 08:20	12/21/23 19:55	1
Bis(2-chloroethoxy)methane	ND		0.57	0.048	ug/L		12/21/23 08:20	12/21/23 19:55	1
Bis(2-chloroethyl)ether	ND		0.096	0.029	ug/L		12/21/23 08:20	12/21/23 19:55	1
Bis(2-ethylhexyl) phthalate	ND		2.9	0.71	ug/L		12/21/23 08:20	12/21/23 19:55	1
bis(chloroisopropyl) ether	ND		0.24	0.057	ug/L		12/21/23 08:20	12/21/23 19:55	1
Butyl benzyl phthalate	ND		3.8	0.26	ug/L		12/21/23 08:20	12/21/23 19:55	1
Carbazole	ND		0.57	0.096	ug/L		12/21/23 08:20	12/21/23 19:55	1

Client Sample ID: MW-5A-121523

Date Collected: 12/15/23 08:25
Date Received: 12/15/23 12:35

Lab Sample ID: 590-22513-2

Matrix: Water

Method: SW846 8270E - Semivolatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chrysene	ND		0.24	0.086	ug/L		12/21/23 08:20	12/21/23 19:55	1
Dibenz(a,h)anthracene	ND		0.24	0.067	ug/L		12/21/23 08:20	12/21/23 19:55	1
Dibenzofuran	ND		0.38	0.096	ug/L		12/21/23 08:20	12/21/23 19:55	1
Diethyl phthalate	ND		0.96	0.14	ug/L		12/21/23 08:20	12/21/23 19:55	1
Dimethyl phthalate	ND		0.57	0.057	ug/L		12/21/23 08:20	12/21/23 19:55	1
Di-n-butyl phthalate	ND		9.6	2.8	ug/L		12/21/23 08:20	12/21/23 19:55	1
Di-n-octyl phthalate	ND		0.96	0.12	ug/L		12/21/23 08:20	12/21/23 19:55	1
Fluoranthene	ND		0.24	0.057	ug/L		12/21/23 08:20	12/21/23 19:55	1
Fluorene	ND		0.24	0.048	ug/L		12/21/23 08:20	12/21/23 19:55	1
Hexachlorobenzene	ND		0.57	0.076	ug/L		12/21/23 08:20	12/21/23 19:55	1
Hexachlorobutadiene	ND	*1 *-	0.96	0.076	ug/L		12/21/23 08:20	12/21/23 19:55	1
Hexachlorocyclopentadiene	ND	*1 *-	0.96	0.13	ug/L		12/21/23 08:20	12/21/23 19:55	1
Hexachloroethane	ND	*1 *-	0.96	0.048	ug/L		12/21/23 08:20	12/21/23 19:55	1
Indeno[1,2,3-cd]pyrene	ND		0.38	0.12	ug/L		12/21/23 08:20	12/21/23 19:55	1
Isophorone	ND		0.38	0.096	ug/L		12/21/23 08:20	12/21/23 19:55	1
Naphthalene	ND	*-	0.38	0.15	ug/L		12/21/23 08:20	12/21/23 19:55	1
Nitrobenzene	ND		0.96	0.038	ug/L		12/21/23 08:20	12/21/23 19:55	1
N-Nitrosodi-n-propylamine	ND		0.38	0.057	ug/L		12/21/23 08:20	12/21/23 19:55	1
N-Nitrosodiphenylamine	ND		0.96	0.067	ug/L		12/21/23 08:20	12/21/23 19:55	1
Pentachlorophenol	ND		4.8	0.49	ug/L		12/21/23 08:20	12/21/23 19:55	1
Phenanthrene	ND		0.96	0.11	ug/L		12/21/23 08:20	12/21/23 19:55	1
Phenol	ND		0.96	0.15	ug/L		12/21/23 08:20	12/21/23 19:55	1
Pyrene	ND		0.96	0.038	ug/L		12/21/23 08:20	12/21/23 19:55	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol (Surr)	*71*		*50 - 130*	*12/21/23 08:20*	*12/21/23 19:55*	*1*
2-Fluorobiphenyl	*65*		*35 - 120*	*12/21/23 08:20*	*12/21/23 19:55*	*1*
2-Fluorophenol (Surr)	*44*		*21 - 120*	*12/21/23 08:20*	*12/21/23 19:55*	*1*
Nitrobenzene-d5 (Surr)	*74*		*39 - 120*	*12/21/23 08:20*	*12/21/23 19:55*	*1*
Phenol-d5 (Surr)	*26*		*10 - 120*	*12/21/23 08:20*	*12/21/23 19:55*	*1*
Terphenyl-d14 (Surr)	*76*		*63 - 137*	*12/21/23 08:20*	*12/21/23 19:55*	*1*

Method: SW846 8270E - Semivolatile Organic Compounds (GC/MS) - RE

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,4-Trichlorobenzene	ND	H *-	0.39	0.088	ug/L		12/27/23 08:30	12/28/23 20:41	1
1,2-Dichlorobenzene	ND	H *-	0.39	0.049	ug/L		12/27/23 08:30	12/28/23 20:41	1
1,3-Dichlorobenzene	ND	H *-	0.39	0.039	ug/L		12/27/23 08:30	12/28/23 20:41	1
1,4-Dichlorobenzene	ND	H *-	0.39	0.039	ug/L		12/27/23 08:30	12/28/23 20:41	1
1-Methylnaphthalene	ND	H	0.98	0.049	ug/L		12/27/23 08:30	12/28/23 20:41	1
2-Methylnaphthalene	ND	H	0.39	0.059	ug/L		12/27/23 08:30	12/28/23 20:41	1
Hexachloroethane	ND	H *-	0.98	0.049	ug/L		12/27/23 08:30	12/28/23 20:41	1
Naphthalene	ND	H *-	0.39	0.16	ug/L		12/27/23 08:30	12/28/23 20:41	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol (Surr)	*54*		*50 - 130*	*12/27/23 08:30*	*12/28/23 20:41*	*1*
2-Fluorobiphenyl	*49*		*35 - 120*	*12/27/23 08:30*	*12/28/23 20:41*	*1*
2-Fluorophenol (Surr)	*31*		*21 - 120*	*12/27/23 08:30*	*12/28/23 20:41*	*1*
Nitrobenzene-d5 (Surr)	*52*		*39 - 120*	*12/27/23 08:30*	*12/28/23 20:41*	*1*
Phenol-d5 (Surr)	*18*		*10 - 120*	*12/27/23 08:30*	*12/28/23 20:41*	*1*
Terphenyl-d14 (Surr)	*59*	*S1-*	*63 - 137*	*12/27/23 08:30*	*12/28/23 20:41*	*1*

Client: GeoEngineers Inc
Project/Site: Marshall Landfill

Job ID: 590-22513-1

Client Sample ID: MW-5A-121523

Date Collected: 12/15/23 08:25
Date Received: 12/15/23 12:35

Lab Sample ID: 590-22513-2

Matrix: Water

Method: SW846 8151A - Herbicides (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4,5-T	ND	*1	0.49	0.21	ug/L		12/18/23 21:35	12/21/23 00:39	1
2,4,5-TP (Silvex)	ND		0.49	0.13	ug/L		12/18/23 21:35	12/21/23 00:39	1
2,4-D	ND	*1	4.9	1.9	ug/L		12/18/23 21:35	12/21/23 00:39	1
2,4-DB	ND		4.9	3.4	ug/L		12/18/23 21:35	12/21/23 00:39	1
Dalapon	ND	*1	12	4.6	ug/L		12/18/23 21:35	12/21/23 00:39	1
Dicamba	ND	*1	0.49	0.28	ug/L		12/18/23 21:35	12/21/23 00:39	1
Dichlorprop	ND	*1	4.9	1.9	ug/L		12/18/23 21:35	12/21/23 00:39	1
Dinoseb	ND	*1	2.4	2.1	ug/L		12/18/23 21:35	12/21/23 00:39	1
MCPA	ND	*1	490	340	ug/L		12/18/23 21:35	12/21/23 00:39	1
MCPP	ND		490	300	ug/L		12/18/23 21:35	12/21/23 00:39	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4-Dichlorophenylacetic acid	*74*		*20 - 161*	*12/18/23 21:35*	*12/21/23 00:39*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**33**		0.80	0.42	mg/L			12/15/23 16:24	1
Nitrate as N	**5.7**		0.20	0.057	mg/L			12/15/23 16:24	1
Nitrite as N	ND		0.20	0.069	mg/L			12/15/23 16:24	1
Sulfate	**46**		0.50	0.13	mg/L			12/15/23 16:24	1

Method: EPA Draft-4 1633 - Per- and Polyfluoroalkyl Substances by LC/MS/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**23**		7.3	1.8	ng/L		01/12/24 04:17	01/16/24 02:25	1
Perfluoropentanoic acid (PFPeA)	**17**		3.6	0.91	ng/L		01/12/24 04:17	01/16/24 02:25	1
Perfluorohexanoic acid (PFHxA)	**27**		1.8	0.45	ng/L		01/12/24 04:17	01/16/24 02:25	1
Perfluoroheptanoic acid (PFHpA)	**20**		1.8	0.45	ng/L		01/12/24 04:17	01/16/24 02:25	1
Perfluorooctanoic acid (PFOA)	**53**		1.8	0.45	ng/L		01/12/24 04:17	01/16/24 02:25	1
Perfluorononanoic acid (PFNA)	**2.1**		1.8	0.45	ng/L		01/12/24 04:17	01/16/24 02:25	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.45	ng/L		01/12/24 04:17	01/16/24 02:25	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	0.45	ng/L		01/12/24 04:17	01/16/24 02:25	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.45	ng/L		01/12/24 04:17	01/16/24 02:25	1
Perfluorotridecanoic acid (PFTrDA)	ND		1.8	0.45	ng/L		01/12/24 04:17	01/16/24 02:25	1
Perfluorotetradecanoic acid (PFTeDA)	ND		1.8	0.45	ng/L		01/12/24 04:17	01/16/24 02:25	1
Perfluorobutanesulfonic acid (PFBS)	**14**		1.8	0.45	ng/L		01/12/24 04:17	01/16/24 02:25	1
Perfluoropentanesulfonic acid (PFPeS)	**10**		1.8	0.45	ng/L		01/12/24 04:17	01/16/24 02:25	1
Perfluorohexanesulfonic acid (PFHxS)	**49**		1.8	0.45	ng/L		01/12/24 04:17	01/16/24 02:25	1
Perfluoroheptanesulfonic acid (PFHpS)	**0.77**	**J**	1.8	0.45	ng/L		01/12/24 04:17	01/16/24 02:25	1
Perfluorooctanesulfonic acid (PFOS)	**29**		1.8	0.45	ng/L		01/12/24 04:17	01/16/24 02:25	1
Perfluorononanesulfonic acid (PFNS)	ND		1.8	0.45	ng/L		01/12/24 04:17	01/16/24 02:25	1
Perfluorodecanesulfonic acid (PFDS)	ND		1.8	0.45	ng/L		01/12/24 04:17	01/16/24 02:25	1
Perfluorododecanesulfonic acid (PFDoS)	ND		1.8	0.45	ng/L		01/12/24 04:17	01/16/24 02:25	1
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	ND		7.3	1.8	ng/L		01/12/24 04:17	01/16/24 02:25	1
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	ND		7.3	1.8	ng/L		01/12/24 04:17	01/16/24 02:25	1

Client Sample ID: MW-5A-121523
Date Collected: 12/15/23 08:25
Date Received: 12/15/23 12:35

Lab Sample ID: 590-22513-2
Matrix: Water

Method: EPA Draft-4 1633 - Per- and Polyfluoroalkyl Substances by LC/MS/MS (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonamide (PFOSA)	ND		1.8	0.45	ng/L		01/12/24 04:17	01/16/24 02:25	1
N-methylperfluorooctane sulfonamide (NMeFOSA)	ND		1.8	0.45	ng/L		01/12/24 04:17	01/16/24 02:25	1
N-ethylperfluorooctane sulfonamide (NEtFOSA)	ND		1.8	0.45	ng/L		01/12/24 04:17	01/16/24 02:25	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		1.8	0.45	ng/L		01/12/24 04:17	01/16/24 02:25	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		1.8	0.45	ng/L		01/12/24 04:17	01/16/24 02:25	1
N-methylperfluorooctane sulfonamidoethanol (NMeFOSE)	ND		18	4.5	ng/L		01/12/24 04:17	01/16/24 02:25	1
N-ethylperfluorooctane sulfonamidoethanol (NEtFOSE)	ND		18	4.5	ng/L		01/12/24 04:17	01/16/24 02:25	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		7.3	1.8	ng/L		01/12/24 04:17	01/16/24 02:25	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		7.3	1.8	ng/L		01/12/24 04:17	01/16/24 02:25	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	ND		3.6	0.91	ng/L		01/12/24 04:17	01/16/24 02:25	1
Perfluoro-4-methoxybutanoic acid (PFMBA)	ND		3.6	0.91	ng/L		01/12/24 04:17	01/16/24 02:25	1
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND		3.6	0.91	ng/L		01/12/24 04:17	01/16/24 02:25	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	ND		7.3	1.8	ng/L		01/12/24 04:17	01/16/24 02:25	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	ND		7.3	1.8	ng/L		01/12/24 04:17	01/16/24 02:25	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	ND		3.6	0.91	ng/L		01/12/24 04:17	01/16/24 02:25	1
3-Perfluoropropylpropanoic acid (3:3 FTCA)	ND		9.1	2.3	ng/L		01/12/24 04:17	01/16/24 02:25	1
3-Perfluoropentylpropanoic acid (5:3 FTCA)	ND		45	11	ng/L		01/12/24 04:17	01/16/24 02:25	1
3-Perfluoroheptylpropanoic acid (7:3 FTCA)	ND		45	11	ng/L		01/12/24 04:17	01/16/24 02:25	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*80.2*		*5 - 130*	*01/12/24 04:17*	*01/16/24 02:25*	*1*
13C5 PFPeA	*83.5*		*40 - 130*	*01/12/24 04:17*	*01/16/24 02:25*	*1*
13C5 PFHxA	*90.6*		*40 - 130*	*01/12/24 04:17*	*01/16/24 02:25*	*1*
13C4 PFHpA	*87.9*		*40 - 130*	*01/12/24 04:17*	*01/16/24 02:25*	*1*
13C8 PFOA	*80.4*		*40 - 130*	*01/12/24 04:17*	*01/16/24 02:25*	*1*
13C9 PFNA	*76.8*		*40 - 130*	*01/12/24 04:17*	*01/16/24 02:25*	*1*
13C6 PFDA	*77.0*		*40 - 130*	*01/12/24 04:17*	*01/16/24 02:25*	*1*
13C7 PFUnA	*71.3*		*30 - 130*	*01/12/24 04:17*	*01/16/24 02:25*	*1*
13C2 PFDoA	*71.6*		*10 - 130*	*01/12/24 04:17*	*01/16/24 02:25*	*1*
13C2 PFTeDA	*54.2*		*10 - 130*	*01/12/24 04:17*	*01/16/24 02:25*	*1*
13C3 PFBS	*82.4*		*40 - 135*	*01/12/24 04:17*	*01/16/24 02:25*	*1*
13C3 PFHxS	*77.1*		*40 - 130*	*01/12/24 04:17*	*01/16/24 02:25*	*1*
13C8 PFOS	*85.4*		*40 - 130*	*01/12/24 04:17*	*01/16/24 02:25*	*1*
13C8 PFOSA	*86.7*		*40 - 130*	*01/12/24 04:17*	*01/16/24 02:25*	*1*
d3-NMeFOSAA	*72.9*		*40 - 170*	*01/12/24 04:17*	*01/16/24 02:25*	*1*
d5-NEtFOSAA	*79.4*		*25 - 135*	*01/12/24 04:17*	*01/16/24 02:25*	*1*
13C2 6:2 FTS	*85.1*		*40 - 200*	*01/12/24 04:17*	*01/16/24 02:25*	*1*

Client Sample ID: MW-5A-121523

Date Collected: 12/15/23 08:25
Date Received: 12/15/23 12:35

Lab Sample ID: 590-22513-2

Matrix: Water

Method: EPA Draft-4 1633 - Per- and Polyfluoroalkyl Substances by LC/MS/MS (Continued)

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 8:2 FTS	*78.9*		*40 - 300*	*01/12/24 04:17*	*01/16/24 02:25*	*1*
13C3 HFPO-DA	*87.1*		*40 - 130*	*01/12/24 04:17*	*01/16/24 02:25*	*1*
d7-N-MeFOSE-M	*63.4*		*10 - 130*	*01/12/24 04:17*	*01/16/24 02:25*	*1*
d9-N-EtFOSE-M	*65.5*		*10 - 130*	*01/12/24 04:17*	*01/16/24 02:25*	*1*
d5-NEtPFOSA	*67.3*		*10 - 130*	*01/12/24 04:17*	*01/16/24 02:25*	*1*
d3-NMePFOSA	*73.3*		*10 - 130*	*01/12/24 04:17*	*01/16/24 02:25*	*1*

Method: EPA Draft-4 1633 - Per- and Polyfluoroalkyl Substances by LC/MS/MS - RA

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	ND		7.3	1.8	ng/L		01/12/24 04:17	01/18/24 14:16	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 4:2 FTS	*107*		*40 - 200*	*01/12/24 04:17*	*01/18/24 14:16*	*1*

Method: SW846 6010D - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Magnesium	**16**		1.0	0.13	mg/L		12/18/23 10:30	12/18/23 15:40	1
Potassium	**4.9**		0.50	0.29	mg/L		12/18/23 10:30	12/18/23 15:40	1
Sodium	**28**	**^1+**	0.50	0.20	mg/L		12/18/23 10:30	12/18/23 15:40	1

Method: SW846 6010D - Metals (ICP) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	**120**		2.0	0.20	mg/L		12/18/23 17:27	12/19/23 13:44	1
Magnesium	**17**		1.0	0.13	mg/L		12/18/23 17:27	12/19/23 13:44	1

Method: SW846 6020B - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**0.0011**	**J**	0.0050	0.0010	mg/L		12/18/23 15:58	12/20/23 17:54	5
Cadmium	ND		0.0020	0.00019	mg/L		12/18/23 15:58	12/20/23 17:54	5
Iron	**0.095**	**J**	0.50	0.067	mg/L		12/18/23 15:58	12/20/23 17:54	5
Lead	ND		0.0020	0.00020	mg/L		12/18/23 15:58	12/20/23 17:54	5
Manganese	ND		0.010	0.0023	mg/L		12/18/23 15:58	12/20/23 17:54	5
Zinc	ND		0.035	0.0046	mg/L		12/18/23 15:58	12/20/23 17:54	5

Method: SW846 6020B - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**0.0014**	**J**	0.0050	0.0010	mg/L		12/20/23 15:52	12/22/23 11:54	5
Cadmium	ND		0.0020	0.00019	mg/L		12/20/23 15:52	12/22/23 11:54	5
Iron	**0.074**	**J**	0.50	0.067	mg/L		12/20/23 15:52	12/22/23 11:54	5
Lead	ND		0.0020	0.00020	mg/L		12/20/23 15:52	12/22/23 11:54	5
Manganese	ND		0.010	0.0023	mg/L		12/20/23 15:52	12/22/23 11:54	5
Zinc	ND		0.035	0.0046	mg/L		12/20/23 15:52	12/22/23 11:54	5

Method: SW846 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.090	ug/L		12/18/23 10:28	12/18/23 15:39	1

Method: SW846 7470A - Mercury (CVAA) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.090	ug/L		12/27/23 10:16	12/28/23 13:38	1

Client Sample ID: MW-5A-121523

Lab Sample ID: 590-22513-2

Date Collected: 12/15/23 08:25

Matrix: Water

Date Received: 12/15/23 12:35

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ammonia as N (EPA 350.1)	**0.052**	**J**	0.10	0.029	mg/L			01/09/24 11:30	1
Alkalinity (SM 2320B)	**320**	**B**	20	5.0	mg/L			12/27/23 10:12	1
Bicarbonate Alkalinity as CaCO3 (SM 2320B)	**320**	**B**	20	5.0	mg/L			12/27/23 10:12	1
Total Dissolved Solids (SM 2540C)	**520**		25	13	mg/L			12/18/23 16:57	1
Cyanide, Weak Acid Dissociable (SM 4500 CN I)	ND		0.010	0.0050	mg/L			12/22/23 13:09	1
Total Organic Carbon - Duplicates (SM 5310B)	**2.0**		1.0	0.35	mg/L			12/28/23 08:05	1

Client Sample ID: DUP-121523

Lab Sample ID: 590-22513-3

Date Collected: 12/15/23 08:00

Matrix: Water

Date Received: 12/15/23 12:35

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	ND		1.0	0.48	ug/L			12/18/23 17:56	1
1,1,1-Trichloroethane	ND		1.0	0.17	ug/L			12/18/23 17:56	1
1,1,2,2-Tetrachloroethane	ND		2.0	0.32	ug/L			12/18/23 17:56	1
1,1,2-Trichloroethane	ND		2.0	0.43	ug/L			12/18/23 17:56	1
1,1-Dichloroethane	ND		1.0	0.29	ug/L			12/18/23 17:56	1
1,1-Dichloroethene	ND		1.0	0.20	ug/L			12/18/23 17:56	1
1,1-Dichloropropene	ND		1.0	0.50	ug/L			12/18/23 17:56	1
1,2,3-Trichlorobenzene	ND		1.0	0.33	ug/L			12/18/23 17:56	1
1,2,3-Trichloropropane	ND		2.0	0.50	ug/L			12/18/23 17:56	1
1,2,4-Trichlorobenzene	ND		1.0	0.50	ug/L			12/18/23 17:56	1
1,2,4-Trimethylbenzene	ND		1.0	0.31	ug/L			12/18/23 17:56	1
1,2-Dibromo-3-Chloropropane	ND		10	1.5	ug/L			12/18/23 17:56	1
1,2-Dibromoethane (EDB)	ND		1.0	0.20	ug/L			12/18/23 17:56	1
1,2-Dichlorobenzene	ND		1.0	0.23	ug/L			12/18/23 17:56	1
1,2-Dichloroethane	ND		1.0	0.31	ug/L			12/18/23 17:56	1
1,2-Dichloropropane	ND		1.0	0.23	ug/L			12/18/23 17:56	1
1,3,5-Trimethylbenzene	ND		1.0	0.32	ug/L			12/18/23 17:56	1
1,3-Dichlorobenzene	ND		1.0	0.14	ug/L			12/18/23 17:56	1
1,3-Dichloropropane	ND		2.0	0.21	ug/L			12/18/23 17:56	1
1,4-Dichlorobenzene	ND		1.0	0.28	ug/L			12/18/23 17:56	1
2,2-Dichloropropane	ND		2.0	0.66	ug/L			12/18/23 17:56	1
2-Chlorotoluene	ND		1.0	0.36	ug/L			12/18/23 17:56	1
4-Chlorotoluene	ND		1.0	0.26	ug/L			12/18/23 17:56	1
Benzene	ND		0.40	0.093	ug/L			12/18/23 17:56	1
Bromobenzene	ND		1.0	0.28	ug/L			12/18/23 17:56	1
Bromochloromethane	ND		2.0	0.44	ug/L			12/18/23 17:56	1
Bromodichloromethane	ND		1.0	0.29	ug/L			12/18/23 17:56	1
Bromoform	ND		5.0	0.66	ug/L			12/18/23 17:56	1
Bromomethane	ND		5.0	0.76	ug/L			12/18/23 17:56	1
Carbon tetrachloride	ND		1.0	0.40	ug/L			12/18/23 17:56	1
Chlorobenzene	ND		1.0	0.32	ug/L			12/18/23 17:56	1
Chloroethane	ND		2.0	0.40	ug/L			12/18/23 17:56	1
Chloroform	ND		1.0	0.24	ug/L			12/18/23 17:56	1
Chloromethane	ND	*+	3.0	0.50	ug/L			12/18/23 17:56	1
cis-1,2-Dichloroethene	ND		1.0	0.23	ug/L			12/18/23 17:56	1

Client Sample ID: DUP-121523
Date Collected: 12/15/23 08:00
Date Received: 12/15/23 12:35

Lab Sample ID: 590-22513-3
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,3-Dichloropropene	ND		1.0	0.25	ug/L			12/18/23 17:56	1
Dibromochloromethane	ND		2.0	0.33	ug/L			12/18/23 17:56	1
Dibromomethane	ND		2.0	0.50	ug/L			12/18/23 17:56	1
Dichlorodifluoromethane	ND		2.0	0.64	ug/L			12/18/23 17:56	1
Ethylbenzene	ND		1.0	0.20	ug/L			12/18/23 17:56	1
Hexachlorobutadiene	ND		2.0	0.21	ug/L			12/18/23 17:56	1
Isopropylbenzene	ND		1.0	0.24	ug/L			12/18/23 17:56	1
m,p-Xylene	ND		2.0	0.28	ug/L			12/18/23 17:56	1
Methyl tert-butyl ether	ND		1.0	0.16	ug/L			12/18/23 17:56	1
Methylene Chloride	ND		5.0	2.2	ug/L			12/18/23 17:56	1
Naphthalene	ND		2.0	0.63	ug/L			12/18/23 17:56	1
n-Butylbenzene	ND		1.0	0.20	ug/L			12/18/23 17:56	1
N-Propylbenzene	ND		1.0	0.25	ug/L			12/18/23 17:56	1
o-Xylene	ND		1.0	0.16	ug/L			12/18/23 17:56	1
p-Isopropyltoluene	ND		1.0	0.27	ug/L			12/18/23 17:56	1
sec-Butylbenzene	ND		1.0	0.22	ug/L			12/18/23 17:56	1
Styrene	ND		1.0	0.24	ug/L			12/18/23 17:56	1
tert-Butylbenzene	ND		1.0	0.12	ug/L			12/18/23 17:56	1
Tetrachloroethene	**0.80**	**J**	1.0	0.22	ug/L			12/21/23 15:01	1
Toluene	ND		1.0	0.31	ug/L			12/18/23 17:56	1
trans-1,2-Dichloroethene	ND		1.0	0.20	ug/L			12/18/23 17:56	1
trans-1,3-Dichloropropene	ND		1.0	0.45	ug/L			12/18/23 17:56	1
Trichloroethene	ND		1.0	0.20	ug/L			12/18/23 17:56	1
Trichlorofluoromethane	ND		1.0	0.20	ug/L			12/18/23 17:56	1
Vinyl chloride	ND		0.40	0.13	ug/L			12/18/23 17:56	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*103*		*80 - 120*		*12/18/23 17:56*	*1*
1,2-Dichloroethane-d4 (Surr)	*101*		*80 - 120*		*12/21/23 15:01*	*1*
4-Bromofluorobenzene (Surr)	*92*		*76 - 120*		*12/18/23 17:56*	*1*
4-Bromofluorobenzene (Surr)	*92*		*76 - 120*		*12/21/23 15:01*	*1*
Dibromofluoromethane (Surr)	*110*		*80 - 123*		*12/18/23 17:56*	*1*
Dibromofluoromethane (Surr)	*110*		*80 - 123*		*12/21/23 15:01*	*1*
Toluene-d8 (Surr)	*102*		*80 - 120*		*12/18/23 17:56*	*1*
Toluene-d8 (Surr)	*101*		*80 - 120*		*12/21/23 15:01*	*1*

Method: SW846 8270E - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,4-Trichlorobenzene	ND	*1 *-	0.38	0.086	ug/L		12/21/23 08:20	12/21/23 20:19	1
1,2-Dichlorobenzene	ND	*1 *-	0.38	0.048	ug/L		12/21/23 08:20	12/21/23 20:19	1
1,3-Dichlorobenzene	ND	*1 *-	0.38	0.038	ug/L		12/21/23 08:20	12/21/23 20:19	1
1,4-Dichlorobenzene	ND	*1 *-	0.38	0.038	ug/L		12/21/23 08:20	12/21/23 20:19	1
1-Methylnaphthalene	ND	*-	0.95	0.048	ug/L		12/21/23 08:20	12/21/23 20:19	1
2,4,5-Trichlorophenol	ND		0.38	0.095	ug/L		12/21/23 08:20	12/21/23 20:19	1
2,4,6-Trichlorophenol	ND		0.57	0.095	ug/L		12/21/23 08:20	12/21/23 20:19	1
2,4-Dichlorophenol	ND		0.95	0.19	ug/L		12/21/23 08:20	12/21/23 20:19	1
2,4-Dimethylphenol	ND		3.8	0.15	ug/L		12/21/23 08:20	12/21/23 20:19	1
2,4-Dinitrophenol	ND		4.8	0.43	ug/L		12/21/23 08:20	12/21/23 20:19	1
2,4-Dinitrotoluene	ND		0.95	0.095	ug/L		12/21/23 08:20	12/21/23 20:19	1
2,6-Dinitrotoluene	ND		0.38	0.095	ug/L		12/21/23 08:20	12/21/23 20:19	1

Client: GeoEngineers Inc
Project/Site: Marshall Landfill

Job ID: 590-22513-1

Client Sample ID: DUP-121523
Date Collected: 12/15/23 08:00
Date Received: 12/15/23 12:35

Lab Sample ID: 590-22513-3
Matrix: Water

Method: SW846 8270E - Semivolatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-Chloronaphthalene	ND		0.95	0.067	ug/L		12/21/23 08:20	12/21/23 20:19	1
2-Chlorophenol	ND		0.95	0.048	ug/L		12/21/23 08:20	12/21/23 20:19	1
2-Methylnaphthalene	ND	*-	0.38	0.057	ug/L		12/21/23 08:20	12/21/23 20:19	1
2-Methylphenol	ND		0.57	0.048	ug/L		12/21/23 08:20	12/21/23 20:19	1
2-Nitroaniline	ND		0.95	0.095	ug/L		12/21/23 08:20	12/21/23 20:19	1
2-Nitrophenol	ND		0.95	0.067	ug/L		12/21/23 08:20	12/21/23 20:19	1
3 & 4 Methylphenol	ND		0.57	0.095	ug/L		12/21/23 08:20	12/21/23 20:19	1
3,3'-Dichlorobenzidine	ND		0.95	0.11	ug/L		12/21/23 08:20	12/21/23 20:19	1
3-Nitroaniline	ND		2.9	0.15	ug/L		12/21/23 08:20	12/21/23 20:19	1
4,6-Dinitro-2-methylphenol	ND		1.9	0.52	ug/L		12/21/23 08:20	12/21/23 20:19	1
4-Bromophenyl phenyl ether	ND		0.57	0.057	ug/L		12/21/23 08:20	12/21/23 20:19	1
4-Chloro-3-methylphenol	ND		0.57	0.12	ug/L		12/21/23 08:20	12/21/23 20:19	1
4-Chloroaniline	ND		1.9	0.14	ug/L		12/21/23 08:20	12/21/23 20:19	1
4-Chlorophenyl phenyl ether	ND		0.57	0.048	ug/L		12/21/23 08:20	12/21/23 20:19	1
4-Nitroaniline	ND		1.9	0.20	ug/L		12/21/23 08:20	12/21/23 20:19	1
4-Nitrophenol	ND		9.5	1.6	ug/L		12/21/23 08:20	12/21/23 20:19	1
Acenaphthene	ND		0.38	0.048	ug/L		12/21/23 08:20	12/21/23 20:19	1
Acenaphthylene	ND		0.95	0.057	ug/L		12/21/23 08:20	12/21/23 20:19	1
Anthracene	ND		0.95	0.048	ug/L		12/21/23 08:20	12/21/23 20:19	1
Benzo[a]anthracene	ND		0.24	0.048	ug/L		12/21/23 08:20	12/21/23 20:19	1
Benzo[a]pyrene	ND		0.24	0.038	ug/L		12/21/23 08:20	12/21/23 20:19	1
Benzo[b]fluoranthene	ND		0.24	0.038	ug/L		12/21/23 08:20	12/21/23 20:19	1
Benzo[g,h,i]perylene	ND		0.24	0.038	ug/L		12/21/23 08:20	12/21/23 20:19	1
Benzo[k]fluoranthene	ND		0.24	0.048	ug/L		12/21/23 08:20	12/21/23 20:19	1
Benzoic acid	ND		9.5	1.3	ug/L		12/21/23 08:20	12/21/23 20:19	1
Benzyl alcohol	ND		4.8	0.17	ug/L		12/21/23 08:20	12/21/23 20:19	1
Bis(2-chloroethoxy)methane	ND		0.57	0.048	ug/L		12/21/23 08:20	12/21/23 20:19	1
Bis(2-chloroethyl)ether	ND		0.095	0.029	ug/L		12/21/23 08:20	12/21/23 20:19	1
Bis(2-ethylhexyl) phthalate	ND		2.9	0.70	ug/L		12/21/23 08:20	12/21/23 20:19	1
bis(chloroisopropyl) ether	ND		0.24	0.057	ug/L		12/21/23 08:20	12/21/23 20:19	1
Butyl benzyl phthalate	ND		3.8	0.26	ug/L		12/21/23 08:20	12/21/23 20:19	1
Carbazole	ND		0.57	0.095	ug/L		12/21/23 08:20	12/21/23 20:19	1
Chrysene	ND		0.24	0.086	ug/L		12/21/23 08:20	12/21/23 20:19	1
Dibenz(a,h)anthracene	ND		0.24	0.067	ug/L		12/21/23 08:20	12/21/23 20:19	1
Dibenzofuran	ND		0.38	0.095	ug/L		12/21/23 08:20	12/21/23 20:19	1
Diethyl phthalate	ND		0.95	0.14	ug/L		12/21/23 08:20	12/21/23 20:19	1
Dimethyl phthalate	ND		0.57	0.057	ug/L		12/21/23 08:20	12/21/23 20:19	1
Di-n-butyl phthalate	ND		9.5	2.8	ug/L		12/21/23 08:20	12/21/23 20:19	1
Di-n-octyl phthalate	ND		0.95	0.12	ug/L		12/21/23 08:20	12/21/23 20:19	1
Fluoranthene	ND		0.24	0.057	ug/L		12/21/23 08:20	12/21/23 20:19	1
Fluorene	ND		0.24	0.048	ug/L		12/21/23 08:20	12/21/23 20:19	1
Hexachlorobenzene	ND		0.57	0.076	ug/L		12/21/23 08:20	12/21/23 20:19	1
Hexachlorobutadiene	ND	*1 *-	0.95	0.076	ug/L		12/21/23 08:20	12/21/23 20:19	1
Hexachlorocyclopentadiene	ND	*1 *-	0.95	0.13	ug/L		12/21/23 08:20	12/21/23 20:19	1
Hexachloroethane	ND	*1 *-	0.95	0.048	ug/L		12/21/23 08:20	12/21/23 20:19	1
Indeno[1,2,3-cd]pyrene	ND		0.38	0.12	ug/L		12/21/23 08:20	12/21/23 20:19	1
Isophorone	ND		0.38	0.095	ug/L		12/21/23 08:20	12/21/23 20:19	1
Naphthalene	ND	*-	0.38	0.15	ug/L		12/21/23 08:20	12/21/23 20:19	1
Nitrobenzene	ND		0.95	0.038	ug/L		12/21/23 08:20	12/21/23 20:19	1

Client Sample ID: DUP-121523

Date Collected: 12/15/23 08:00
Date Received: 12/15/23 12:35

Lab Sample ID: 590-22513-3

Matrix: Water

Method: SW846 8270E - Semivolatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
N-Nitrosodi-n-propylamine	ND		0.38	0.057	ug/L		12/21/23 08:20	12/21/23 20:19	1
N-Nitrosodiphenylamine	ND		0.95	0.067	ug/L		12/21/23 08:20	12/21/23 20:19	1
Pentachlorophenol	ND		4.8	0.49	ug/L		12/21/23 08:20	12/21/23 20:19	1
Phenanthrene	ND		0.95	0.11	ug/L		12/21/23 08:20	12/21/23 20:19	1
Phenol	ND		0.95	0.15	ug/L		12/21/23 08:20	12/21/23 20:19	1
Pyrene	ND		0.95	0.038	ug/L		12/21/23 08:20	12/21/23 20:19	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol (Surr)	*73*		*50 - 130*	*12/21/23 08:20*	*12/21/23 20:19*	*1*
2-Fluorobiphenyl	*54*		*35 - 120*	*12/21/23 08:20*	*12/21/23 20:19*	*1*
2-Fluorophenol (Surr)	*40*		*21 - 120*	*12/21/23 08:20*	*12/21/23 20:19*	*1*
Nitrobenzene-d5 (Surr)	*64*		*39 - 120*	*12/21/23 08:20*	*12/21/23 20:19*	*1*
Phenol-d5 (Surr)	*24*		*10 - 120*	*12/21/23 08:20*	*12/21/23 20:19*	*1*
Terphenyl-d14 (Surr)	*73*		*63 - 137*	*12/21/23 08:20*	*12/21/23 20:19*	*1*

Method: SW846 8270E - Semivolatile Organic Compounds (GC/MS) - RE

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,4-Trichlorobenzene	ND	H *-	0.38	0.086	ug/L		12/27/23 08:30	12/29/23 11:42	1
1,2-Dichlorobenzene	ND	H *-	0.38	0.048	ug/L		12/27/23 08:30	12/29/23 11:42	1
1,3-Dichlorobenzene	ND	H *-	0.38	0.038	ug/L		12/27/23 08:30	12/29/23 11:42	1
1,4-Dichlorobenzene	ND	H *-	0.38	0.038	ug/L		12/27/23 08:30	12/29/23 11:42	1
1-Methylnaphthalene	ND	H	0.95	0.048	ug/L		12/27/23 08:30	12/29/23 11:42	1
2-Methylnaphthalene	ND	H	0.38	0.057	ug/L		12/27/23 08:30	12/29/23 11:42	1
Hexachlorobutadiene	ND	H *- *1	0.95	0.076	ug/L		12/27/23 08:30	12/29/23 11:42	1
Hexachlorocyclopentadiene	ND	H *- *1	0.95	0.13	ug/L		12/27/23 08:30	12/29/23 11:42	1
Hexachloroethane	ND	H *-	0.95	0.048	ug/L		12/27/23 08:30	12/29/23 11:42	1
Naphthalene	ND	H *-	0.38	0.15	ug/L		12/27/23 08:30	12/29/23 11:42	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol (Surr)	*61*		*50 - 130*	*12/27/23 08:30*	*12/29/23 11:42*	*1*
2-Fluorobiphenyl	*43*		*35 - 120*	*12/27/23 08:30*	*12/29/23 11:42*	*1*
2-Fluorophenol (Surr)	*28*		*21 - 120*	*12/27/23 08:30*	*12/29/23 11:42*	*1*
Nitrobenzene-d5 (Surr)	*45*		*39 - 120*	*12/27/23 08:30*	*12/29/23 11:42*	*1*
Phenol-d5 (Surr)	*16*		*10 - 120*	*12/27/23 08:30*	*12/29/23 11:42*	*1*
Terphenyl-d14 (Surr)	*56*	*S1-*	*63 - 137*	*12/27/23 08:30*	*12/29/23 11:42*	*1*

Method: SW846 8151A - Herbicides (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4,5-T	ND	*1	0.48	0.20	ug/L		12/18/23 21:35	12/21/23 01:01	1
2,4,5-TP (Silvex)	ND		0.48	0.13	ug/L		12/18/23 21:35	12/21/23 01:01	1
2,4-D	ND	*1	4.8	1.9	ug/L		12/18/23 21:35	12/21/23 01:01	1
2,4-DB	ND		4.8	3.4	ug/L		12/18/23 21:35	12/21/23 01:01	1
Dalapon	ND	*1	12	4.6	ug/L		12/18/23 21:35	12/21/23 01:01	1
Dicamba	ND	*1	0.48	0.28	ug/L		12/18/23 21:35	12/21/23 01:01	1
Dichlorprop	ND	*1	4.8	1.9	ug/L		12/18/23 21:35	12/21/23 01:01	1
Dinoseb	ND	*1	2.4	2.1	ug/L		12/18/23 21:35	12/21/23 01:01	1
MCPA	ND	*1	480	340	ug/L		12/18/23 21:35	12/21/23 01:01	1
MCPP	ND		480	290	ug/L		12/18/23 21:35	12/21/23 01:01	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4-Dichlorophenylacetic acid	*70*		*20 - 161*	*12/18/23 21:35*	*12/21/23 01:01*	*1*

Client Sample ID: DUP-121523
Date Collected: 12/15/23 08:00
Date Received: 12/15/23 12:35

Lab Sample ID: 590-22513-3
Matrix: Water

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**34**		0.80	0.42	mg/L			12/15/23 16:34	1
Nitrate as N	**5.6**		0.20	0.057	mg/L			12/15/23 16:34	1
Nitrite as N	ND		0.20	0.069	mg/L			12/15/23 16:34	1
Sulfate	**47**		0.50	0.13	mg/L			12/15/23 16:34	1

Method: EPA Draft-4 1633 - Per- and Polyfluoroalkyl Substances by LC/MS/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**22**		7.6	1.9	ng/L		01/12/24 04:17	01/16/24 02:42	1
Perfluoropentanoic acid (PFPeA)	**17**		3.8	0.95	ng/L		01/12/24 04:17	01/16/24 02:42	1
Perfluorohexanoic acid (PFHxA)	**29**		1.9	0.48	ng/L		01/12/24 04:17	01/16/24 02:42	1
Perfluoroheptanoic acid (PFHpA)	**20**		1.9	0.48	ng/L		01/12/24 04:17	01/16/24 02:42	1
Perfluorooctanoic acid (PFOA)	**56**		1.9	0.48	ng/L		01/12/24 04:17	01/16/24 02:42	1
Perfluorononanoic acid (PFNA)	**2.2**		1.9	0.48	ng/L		01/12/24 04:17	01/16/24 02:42	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.48	ng/L		01/12/24 04:17	01/16/24 02:42	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	0.48	ng/L		01/12/24 04:17	01/16/24 02:42	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.48	ng/L		01/12/24 04:17	01/16/24 02:42	1
Perfluorotridecanoic acid (PFTrDA)	ND		1.9	0.48	ng/L		01/12/24 04:17	01/16/24 02:42	1
Perfluorotetradecanoic acid (PFTeDA)	ND		1.9	0.48	ng/L		01/12/24 04:17	01/16/24 02:42	1
Perfluorobutanesulfonic acid (PFBS)	**14**		1.9	0.48	ng/L		01/12/24 04:17	01/16/24 02:42	1
Perfluoropentanesulfonic acid (PFPeS)	**11**		1.9	0.48	ng/L		01/12/24 04:17	01/16/24 02:42	1
Perfluorohexanesulfonic acid (PFHxS)	**46**		1.9	0.48	ng/L		01/12/24 04:17	01/16/24 02:42	1
Perfluoroheptanesulfonic acid (PFHpS)	**0.70**	**J**	1.9	0.48	ng/L		01/12/24 04:17	01/16/24 02:42	1
Perfluorooctanesulfonic acid (PFOS)	**27**		1.9	0.48	ng/L		01/12/24 04:17	01/16/24 02:42	1
Perfluorononanesulfonic acid (PFNS)	ND		1.9	0.48	ng/L		01/12/24 04:17	01/16/24 02:42	1
Perfluorodecanesulfonic acid (PFDS)	ND		1.9	0.48	ng/L		01/12/24 04:17	01/16/24 02:42	1
Perfluorododecanesulfonic acid (PFDoS)	ND		1.9	0.48	ng/L		01/12/24 04:17	01/16/24 02:42	1
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	ND		7.6	1.9	ng/L		01/12/24 04:17	01/16/24 02:42	1
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	ND		7.6	1.9	ng/L		01/12/24 04:17	01/16/24 02:42	1
Perfluorooctanesulfonamide (PFOSA)	ND		1.9	0.48	ng/L		01/12/24 04:17	01/16/24 02:42	1
N-methylperfluorooctane sulfonamide (NMeFOSA)	ND		1.9	0.48	ng/L		01/12/24 04:17	01/16/24 02:42	1
N-ethylperfluorooctane sulfonamide (NEtFOSA)	ND		1.9	0.48	ng/L		01/12/24 04:17	01/16/24 02:42	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		1.9	0.48	ng/L		01/12/24 04:17	01/16/24 02:42	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		1.9	0.48	ng/L		01/12/24 04:17	01/16/24 02:42	1
N-methylperfluorooctane sulfonamidoethanol (NMeFOSE)	ND		19	4.8	ng/L		01/12/24 04:17	01/16/24 02:42	1
N-ethylperfluorooctane sulfonamidoethanol (NEtFOSE)	ND		19	4.8	ng/L		01/12/24 04:17	01/16/24 02:42	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		7.6	1.9	ng/L		01/12/24 04:17	01/16/24 02:42	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		7.6	1.9	ng/L		01/12/24 04:17	01/16/24 02:42	1

Client Sample ID: DUP-121523
Date Collected: 12/15/23 08:00
Date Received: 12/15/23 12:35

Lab Sample ID: 590-22513-3
Matrix: Water

Method: EPA Draft-4 1633 - Per- and Polyfluoroalkyl Substances by LC/MS/MS (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoro-3-methoxypropanoic acid (PFMPA)	ND		3.8	0.95	ng/L		01/12/24 04:17	01/16/24 02:42	1
Perfluoro-4-methoxybutanoic acid (PFMBA)	ND		3.8	0.95	ng/L		01/12/24 04:17	01/16/24 02:42	1
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND		3.8	0.95	ng/L		01/12/24 04:17	01/16/24 02:42	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	ND		7.6	1.9	ng/L		01/12/24 04:17	01/16/24 02:42	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	ND		7.6	1.9	ng/L		01/12/24 04:17	01/16/24 02:42	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	ND		3.8	0.95	ng/L		01/12/24 04:17	01/16/24 02:42	1
3-Perfluoropropylpropanoic acid (3:3 FTCA)	ND		9.5	2.4	ng/L		01/12/24 04:17	01/16/24 02:42	1
3-Perfluoropentylpropanoic acid (5:3 FTCA)	ND		48	12	ng/L		01/12/24 04:17	01/16/24 02:42	1
3-Perfluoroheptylpropanoic acid (7:3 FTCA)	ND		48	12	ng/L		01/12/24 04:17	01/16/24 02:42	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*81.1*		*5 - 130*	*01/12/24 04:17*	*01/16/24 02:42*	*1*
13C5 PFPeA	*89.7*		*40 - 130*	*01/12/24 04:17*	*01/16/24 02:42*	*1*
13C5 PFHxA	*90.9*		*40 - 130*	*01/12/24 04:17*	*01/16/24 02:42*	*1*
13C4 PFHpA	*91.5*		*40 - 130*	*01/12/24 04:17*	*01/16/24 02:42*	*1*
13C8 PFOA	*77.7*		*40 - 130*	*01/12/24 04:17*	*01/16/24 02:42*	*1*
13C9 PFNA	*81.6*		*40 - 130*	*01/12/24 04:17*	*01/16/24 02:42*	*1*
13C6 PFDA	*84.1*		*40 - 130*	*01/12/24 04:17*	*01/16/24 02:42*	*1*
13C7 PFUnA	*87.8*		*30 - 130*	*01/12/24 04:17*	*01/16/24 02:42*	*1*
13C2 PFDoA	*70.7*		*10 - 130*	*01/12/24 04:17*	*01/16/24 02:42*	*1*
13C2 PFTeDA	*59.8*		*10 - 130*	*01/12/24 04:17*	*01/16/24 02:42*	*1*
13C3 PFBS	*82.9*		*40 - 135*	*01/12/24 04:17*	*01/16/24 02:42*	*1*
13C3 PFHxS	*81.4*		*40 - 130*	*01/12/24 04:17*	*01/16/24 02:42*	*1*
13C8 PFOS	*87.1*		*40 - 130*	*01/12/24 04:17*	*01/16/24 02:42*	*1*
13C8 PFOSA	*88.5*		*40 - 130*	*01/12/24 04:17*	*01/16/24 02:42*	*1*
d3-NMeFOSAA	*75.9*		*40 - 170*	*01/12/24 04:17*	*01/16/24 02:42*	*1*
d5-NEtFOSAA	*71.2*		*25 - 135*	*01/12/24 04:17*	*01/16/24 02:42*	*1*
13C2 6:2 FTS	*89.4*		*40 - 200*	*01/12/24 04:17*	*01/16/24 02:42*	*1*
13C2 8:2 FTS	*85.4*		*40 - 300*	*01/12/24 04:17*	*01/16/24 02:42*	*1*
13C3 HFPO-DA	*87.4*		*40 - 130*	*01/12/24 04:17*	*01/16/24 02:42*	*1*
d7-N-MeFOSE-M	*69.3*		*10 - 130*	*01/12/24 04:17*	*01/16/24 02:42*	*1*
d9-N-EtFOSE-M	*63.0*		*10 - 130*	*01/12/24 04:17*	*01/16/24 02:42*	*1*
d5-NEtPFOSA	*71.5*		*10 - 130*	*01/12/24 04:17*	*01/16/24 02:42*	*1*
d3-NMePFOSA	*74.3*		*10 - 130*	*01/12/24 04:17*	*01/16/24 02:42*	*1*

Method: EPA Draft-4 1633 - Per- and Polyfluoroalkyl Substances by LC/MS/MS - RA

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	ND		7.6	1.9	ng/L		01/12/24 04:17	01/18/24 14:34	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 4:2 FTS	*104*		*40 - 200*	*01/12/24 04:17*	*01/18/24 14:34*	*1*

Client: GeoEngineers Inc
Project/Site: Marshall Landfill

Job ID: 590-22513-1

Client Sample ID: DUP-121523

Date Collected: 12/15/23 08:00
Date Received: 12/15/23 12:35

Lab Sample ID: 590-22513-3

Matrix: Water

Method: SW846 6010D - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Magnesium	16		1.0	0.13	mg/L		12/18/23 10:30	12/18/23 15:44	1
Potassium	4.8		0.50	0.29	mg/L		12/18/23 10:30	12/18/23 15:44	1
Sodium	27	^1+	0.50	0.20	mg/L		12/18/23 10:30	12/18/23 15:44	1

Method: SW846 6010D - Metals (ICP) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	110		2.0	0.20	mg/L		12/18/23 17:27	12/19/23 13:48	1
Magnesium	16		1.0	0.13	mg/L		12/18/23 17:27	12/19/23 13:48	1

Method: SW846 6020B - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.0011	J	0.0050	0.0010	mg/L		12/18/23 15:58	12/20/23 17:52	5
Cadmium	ND		0.0020	0.00019	mg/L		12/18/23 15:58	12/20/23 17:52	5
Iron	0.10	J	0.50	0.067	mg/L		12/18/23 15:58	12/20/23 17:52	5
Lead	ND		0.0020	0.00020	mg/L		12/18/23 15:58	12/20/23 17:52	5
Manganese	ND		0.010	0.0023	mg/L		12/18/23 15:58	12/20/23 17:52	5
Zinc	ND		0.035	0.0046	mg/L		12/18/23 15:58	12/20/23 17:52	5

Method: SW846 6020B - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.0014	J	0.0050	0.0010	mg/L		12/20/23 15:52	12/22/23 11:32	5
Cadmium	ND		0.0020	0.00019	mg/L		12/20/23 15:52	12/22/23 11:32	5
Iron	0.078	J	0.50	0.067	mg/L		12/20/23 15:52	12/22/23 11:32	5
Lead	ND		0.0020	0.00020	mg/L		12/20/23 15:52	12/22/23 11:32	5
Manganese	0.0024	J	0.010	0.0023	mg/L		12/20/23 15:52	12/22/23 11:32	5
Zinc	0.040		0.035	0.0046	mg/L		12/20/23 15:52	12/22/23 11:32	5

Method: SW846 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.090	ug/L		12/18/23 10:28	12/18/23 15:41	1

Method: SW846 7470A - Mercury (CVAA) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.090	ug/L		12/27/23 10:16	12/28/23 13:59	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ammonia as N (EPA 350.1)	0.037	J	0.10	0.029	mg/L			01/09/24 11:32	1
Alkalinity (SM 2320B)	330	B	20	5.0	mg/L			12/27/23 10:12	1
Bicarbonate Alkalinity as CaCO3 (SM 2320B)	330	B	20	5.0	mg/L			12/27/23 10:12	1
Total Dissolved Solids (SM 2540C)	530		25	13	mg/L			12/18/23 16:57	1
Cyanide, Weak Acid Dissociable (SM 4500 CN I)	ND		0.010	0.0050	mg/L			12/22/23 13:12	1
Total Organic Carbon - Duplicates (SM 5310B)	2.0		1.0	0.35	mg/L			12/28/23 08:19	1

Client: GeoEngineers Inc
Project/Site: Marshall Landfill

Job ID: 590-22513-1

Client Sample ID: Trip Blank
Date Collected: 12/15/23 08:00
Date Received: 12/15/23 12:35

Lab Sample ID: 590-22513-4
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	ND		1.0	0.48	ug/L			12/18/23 18:18	1
1,1,1-Trichloroethane	ND		1.0	0.17	ug/L			12/18/23 18:18	1
1,1,2,2-Tetrachloroethane	ND		2.0	0.32	ug/L			12/18/23 18:18	1
1,1,2-Trichloroethane	ND		2.0	0.43	ug/L			12/18/23 18:18	1
1,1-Dichloroethane	ND		1.0	0.29	ug/L			12/18/23 18:18	1
1,1-Dichloroethene	ND		1.0	0.20	ug/L			12/18/23 18:18	1
1,1-Dichloropropene	ND		1.0	0.50	ug/L			12/18/23 18:18	1
1,2,3-Trichlorobenzene	ND		1.0	0.33	ug/L			12/18/23 18:18	1
1,2,3-Trichloropropane	ND		2.0	0.50	ug/L			12/18/23 18:18	1
1,2,4-Trichlorobenzene	ND		1.0	0.50	ug/L			12/18/23 18:18	1
1,2,4-Trimethylbenzene	ND		1.0	0.31	ug/L			12/18/23 18:18	1
1,2-Dibromo-3-Chloropropane	ND		10	1.5	ug/L			12/18/23 18:18	1
1,2-Dibromoethane (EDB)	ND		1.0	0.20	ug/L			12/18/23 18:18	1
1,2-Dichlorobenzene	ND		1.0	0.23	ug/L			12/18/23 18:18	1
1,2-Dichloroethane	ND		1.0	0.31	ug/L			12/18/23 18:18	1
1,2-Dichloropropane	ND		1.0	0.23	ug/L			12/18/23 18:18	1
1,3,5-Trimethylbenzene	ND		1.0	0.32	ug/L			12/18/23 18:18	1
1,3-Dichlorobenzene	ND		1.0	0.14	ug/L			12/18/23 18:18	1
1,3-Dichloropropane	ND		2.0	0.21	ug/L			12/18/23 18:18	1
1,4-Dichlorobenzene	ND		1.0	0.28	ug/L			12/18/23 18:18	1
2,2-Dichloropropane	ND		2.0	0.66	ug/L			12/18/23 18:18	1
2-Chlorotoluene	ND		1.0	0.36	ug/L			12/18/23 18:18	1
4-Chlorotoluene	ND		1.0	0.26	ug/L			12/18/23 18:18	1
Benzene	ND		0.40	0.093	ug/L			12/18/23 18:18	1
Bromobenzene	ND		1.0	0.28	ug/L			12/18/23 18:18	1
Bromochloromethane	ND		2.0	0.44	ug/L			12/18/23 18:18	1
Bromodichloromethane	ND		1.0	0.29	ug/L			12/18/23 18:18	1
Bromoform	ND		5.0	0.66	ug/L			12/18/23 18:18	1
Bromomethane	ND		5.0	0.76	ug/L			12/18/23 18:18	1
Carbon tetrachloride	ND		1.0	0.40	ug/L			12/18/23 18:18	1
Chlorobenzene	ND		1.0	0.32	ug/L			12/18/23 18:18	1
Chloroethane	ND		2.0	0.40	ug/L			12/18/23 18:18	1
Chloroform	ND		1.0	0.24	ug/L			12/18/23 18:18	1
Chloromethane	ND	*+	3.0	0.50	ug/L			12/18/23 18:18	1
cis-1,2-Dichloroethene	ND		1.0	0.23	ug/L			12/18/23 18:18	1
cis-1,3-Dichloropropene	ND		1.0	0.25	ug/L			12/18/23 18:18	1
Dibromochloromethane	ND		2.0	0.33	ug/L			12/18/23 18:18	1
Dibromomethane	ND		2.0	0.50	ug/L			12/18/23 18:18	1
Dichlorodifluoromethane	ND		2.0	0.64	ug/L			12/18/23 18:18	1
Ethylbenzene	ND		1.0	0.20	ug/L			12/18/23 18:18	1
Hexachlorobutadiene	ND		2.0	0.21	ug/L			12/18/23 18:18	1
Isopropylbenzene	ND		1.0	0.24	ug/L			12/18/23 18:18	1
m,p-Xylene	ND		2.0	0.28	ug/L			12/18/23 18:18	1
Methyl tert-butyl ether	ND		1.0	0.16	ug/L			12/18/23 18:18	1
Methylene Chloride	ND		5.0	2.2	ug/L			12/18/23 18:18	1
Naphthalene	ND		2.0	0.63	ug/L			12/18/23 18:18	1
n-Butylbenzene	ND		1.0	0.20	ug/L			12/18/23 18:18	1
N-Propylbenzene	ND		1.0	0.25	ug/L			12/18/23 18:18	1
o-Xylene	ND		1.0	0.16	ug/L			12/18/23 18:18	1

Client: GeoEngineers Inc
Project/Site: Marshall Landfill

Job ID: 590-22513-1

Client Sample ID: Trip Blank

Date Collected: 12/15/23 08:00
Date Received: 12/15/23 12:35

Lab Sample ID: 590-22513-4

Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
p-Isopropyltoluene	ND		1.0	0.27	ug/L			12/18/23 18:18	1
sec-Butylbenzene	ND		1.0	0.22	ug/L			12/18/23 18:18	1
Styrene	ND		1.0	0.24	ug/L			12/18/23 18:18	1
tert-Butylbenzene	ND		1.0	0.12	ug/L			12/18/23 18:18	1
Tetrachloroethene	ND		1.0	0.22	ug/L			12/18/23 18:18	1
Toluene	ND		1.0	0.31	ug/L			12/18/23 18:18	1
trans-1,2-Dichloroethene	ND		1.0	0.20	ug/L			12/18/23 18:18	1
trans-1,3-Dichloropropene	ND		1.0	0.45	ug/L			12/18/23 18:18	1
Trichloroethene	ND		1.0	0.20	ug/L			12/18/23 18:18	1
Trichlorofluoromethane	ND		1.0	0.20	ug/L			12/18/23 18:18	1
Vinyl chloride	ND		0.40	0.13	ug/L			12/18/23 18:18	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*80 - 120*		*12/18/23 18:18*	*1*
4-Bromofluorobenzene (Surr)	*99*		*76 - 120*		*12/18/23 18:18*	*1*
Dibromofluoromethane (Surr)	*110*		*80 - 123*		*12/18/23 18:18*	*1*
Toluene-d8 (Surr)	*102*		*80 - 120*		*12/18/23 18:18*	*1*

Client: GeoEngineers Inc
Project/Site: Marshall Landfill

Job ID: 590-22513-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 590-45132/8
Matrix: Water
Analysis Batch: 45132

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	ND		1.0	0.48	ug/L			12/18/23 16:06	1
1,1,1-Trichloroethane	ND		1.0	0.17	ug/L			12/18/23 16:06	1
1,1,2,2-Tetrachloroethane	ND		2.0	0.32	ug/L			12/18/23 16:06	1
1,1,2-Trichloroethane	ND		2.0	0.43	ug/L			12/18/23 16:06	1
1,1-Dichloroethane	ND		1.0	0.29	ug/L			12/18/23 16:06	1
1,1-Dichloroethene	ND		1.0	0.20	ug/L			12/18/23 16:06	1
1,1-Dichloropropene	ND		1.0	0.50	ug/L			12/18/23 16:06	1
1,2,3-Trichlorobenzene	ND		1.0	0.33	ug/L			12/18/23 16:06	1
1,2,3-Trichloropropane	ND		2.0	0.50	ug/L			12/18/23 16:06	1
1,2,4-Trichlorobenzene	ND		1.0	0.50	ug/L			12/18/23 16:06	1
1,2,4-Trimethylbenzene	ND		1.0	0.31	ug/L			12/18/23 16:06	1
1,2-Dibromo-3-Chloropropane	ND		10	1.5	ug/L			12/18/23 16:06	1
1,2-Dibromoethane (EDB)	ND		1.0	0.20	ug/L			12/18/23 16:06	1
1,2-Dichlorobenzene	ND		1.0	0.23	ug/L			12/18/23 16:06	1
1,2-Dichloroethane	ND		1.0	0.31	ug/L			12/18/23 16:06	1
1,2-Dichloropropane	ND		1.0	0.23	ug/L			12/18/23 16:06	1
1,3,5-Trimethylbenzene	ND		1.0	0.32	ug/L			12/18/23 16:06	1
1,3-Dichlorobenzene	ND		1.0	0.14	ug/L			12/18/23 16:06	1
1,3-Dichloropropane	ND		2.0	0.21	ug/L			12/18/23 16:06	1
1,4-Dichlorobenzene	ND		1.0	0.28	ug/L			12/18/23 16:06	1
2,2-Dichloropropane	ND		2.0	0.66	ug/L			12/18/23 16:06	1
2-Chlorotoluene	ND		1.0	0.36	ug/L			12/18/23 16:06	1
4-Chlorotoluene	ND		1.0	0.26	ug/L			12/18/23 16:06	1
Benzene	ND		0.40	0.093	ug/L			12/18/23 16:06	1
Bromobenzene	ND		1.0	0.28	ug/L			12/18/23 16:06	1
Bromochloromethane	ND		2.0	0.44	ug/L			12/18/23 16:06	1
Bromodichloromethane	ND		1.0	0.29	ug/L			12/18/23 16:06	1
Bromoform	ND		5.0	0.66	ug/L			12/18/23 16:06	1
Bromomethane	ND		5.0	0.76	ug/L			12/18/23 16:06	1
Carbon tetrachloride	ND		1.0	0.40	ug/L			12/18/23 16:06	1
Chlorobenzene	ND		1.0	0.32	ug/L			12/18/23 16:06	1
Chloroethane	ND		2.0	0.40	ug/L			12/18/23 16:06	1
Chloroform	ND		1.0	0.24	ug/L			12/18/23 16:06	1
Chloromethane	ND		3.0	0.50	ug/L			12/18/23 16:06	1
cis-1,2-Dichloroethene	ND		1.0	0.23	ug/L			12/18/23 16:06	1
cis-1,3-Dichloropropene	ND		1.0	0.25	ug/L			12/18/23 16:06	1
Dibromochloromethane	ND		2.0	0.33	ug/L			12/18/23 16:06	1
Dibromomethane	ND		2.0	0.50	ug/L			12/18/23 16:06	1
Dichlorodifluoromethane	ND		2.0	0.64	ug/L			12/18/23 16:06	1
Ethylbenzene	ND		1.0	0.20	ug/L			12/18/23 16:06	1
Hexachlorobutadiene	ND		2.0	0.21	ug/L			12/18/23 16:06	1
Isopropylbenzene	ND		1.0	0.24	ug/L			12/18/23 16:06	1
m,p-Xylene	ND		2.0	0.28	ug/L			12/18/23 16:06	1
Methyl tert-butyl ether	ND		1.0	0.16	ug/L			12/18/23 16:06	1
Methylene Chloride	ND		5.0	2.2	ug/L			12/18/23 16:06	1
Naphthalene	ND		2.0	0.63	ug/L			12/18/23 16:06	1
n-Butylbenzene	ND		1.0	0.20	ug/L			12/18/23 16:06	1
N-Propylbenzene	ND		1.0	0.25	ug/L			12/18/23 16:06	1

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: MB 590-45132/8
Matrix: Water
Analysis Batch: 45132

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
o-Xylene	ND		1.0	0.16	ug/L			12/18/23 16:06	1
p-Isopropyltoluene	ND		1.0	0.27	ug/L			12/18/23 16:06	1
sec-Butylbenzene	ND		1.0	0.22	ug/L			12/18/23 16:06	1
Styrene	ND		1.0	0.24	ug/L			12/18/23 16:06	1
tert-Butylbenzene	ND		1.0	0.12	ug/L			12/18/23 16:06	1
Tetrachloroethene	ND		1.0	0.22	ug/L			12/18/23 16:06	1
Toluene	ND		1.0	0.31	ug/L			12/18/23 16:06	1
trans-1,2-Dichloroethene	ND		1.0	0.20	ug/L			12/18/23 16:06	1
trans-1,3-Dichloropropene	ND		1.0	0.45	ug/L			12/18/23 16:06	1
Trichloroethene	ND		1.0	0.20	ug/L			12/18/23 16:06	1
Trichlorofluoromethane	ND		1.0	0.20	ug/L			12/18/23 16:06	1
Vinyl chloride	ND		0.40	0.13	ug/L			12/18/23 16:06	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*105*		*80 - 120*		*12/18/23 16:06*	*1*
4-Bromofluorobenzene (Surr)	*93*		*76 - 120*		*12/18/23 16:06*	*1*
Dibromofluoromethane (Surr)	*109*		*80 - 123*		*12/18/23 16:06*	*1*
Toluene-d8 (Surr)	*101*		*80 - 120*		*12/18/23 16:06*	*1*

Lab Sample ID: LCS 590-45132/1005
Matrix: Water
Analysis Batch: 45132

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1,1,2-Tetrachloroethane	10.0	10.9		ug/L		109	80 - 131
1,1,1-Trichloroethane	10.0	12.3		ug/L		123	71 - 138
1,1,2,2-Tetrachloroethane	10.0	9.93		ug/L		99	60 - 150
1,1,2-Trichloroethane	10.0	10.8		ug/L		108	80 - 128
1,1-Dichloroethane	10.0	10.2		ug/L		102	80 - 125
1,1-Dichloroethene	10.0	11.2		ug/L		112	65 - 141
1,1-Dichloropropene	10.0	10.6		ug/L		106	82 - 123
1,2,3-Trichlorobenzene	10.0	10.5		ug/L		105	70 - 137
1,2,3-Trichloropropane	10.0	9.83		ug/L		98	65 - 142
1,2,4-Trichlorobenzene	10.0	10.6		ug/L		106	76 - 131
1,2,4-Trimethylbenzene	10.0	8.95		ug/L		90	78 - 131
1,2-Dibromo-3-Chloropropane	10.0	10.9		ug/L		109	53 - 142
1,2-Dibromoethane (EDB)	10.0	10.4		ug/L		104	80 - 124
1,2-Dichlorobenzene	10.0	10.3		ug/L		103	80 - 120
1,2-Dichloroethane	10.0	10.2		ug/L		102	80 - 120
1,2-Dichloropropane	10.0	9.99		ug/L		100	79 - 122
1,3,5-Trimethylbenzene	10.0	9.04		ug/L		90	76 - 129
1,3-Dichlorobenzene	10.0	10.4		ug/L		104	80 - 122
1,3-Dichloropropane	10.0	10.2		ug/L		102	78 - 129
1,4-Dichlorobenzene	10.0	10.1		ug/L		101	80 - 120
2,2-Dichloropropane	10.0	14.0		ug/L		140	73 - 140
2-Chlorotoluene	10.0	10.1		ug/L		101	74 - 129
4-Chlorotoluene	10.0	9.84		ug/L		98	79 - 125
Benzene	10.0	10.4		ug/L		104	80 - 120

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 590-45132/1005
Matrix: Water
Analysis Batch: 45132

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Bromobenzene	10.0	9.42		ug/L		94	73 - 125
Bromochloromethane	10.0	9.51		ug/L		95	71 - 136
Bromodichloromethane	10.0	10.2		ug/L		102	80 - 120
Bromoform	10.0	11.5		ug/L		115	73 - 139
Bromomethane	10.0	8.06		ug/L		81	66 - 149
Carbon tetrachloride	10.0	12.7		ug/L		127	72 - 138
Chlorobenzene	10.0	10.1		ug/L		101	80 - 124
Chloroethane	10.0	9.49		ug/L		95	64 - 134
Chloroform	10.0	10.8		ug/L		108	80 - 123
Chloromethane	10.0	16.4	*+	ug/L		164	19 - 150
cis-1,2-Dichloroethene	10.0	10.5		ug/L		105	80 - 122
cis-1,3-Dichloropropene	10.0	10.0		ug/L		100	80 - 121
Dibromochloromethane	10.0	10.7		ug/L		107	80 - 130
Dibromomethane	10.0	9.61		ug/L		96	80 - 122
Dichlorodifluoromethane	10.0	9.87		ug/L		99	30 - 150
Ethylbenzene	10.0	10.0		ug/L		100	80 - 122
Hexachlorobutadiene	10.0	11.7		ug/L		117	77 - 132
Isopropylbenzene	10.0	11.1		ug/L		111	80 - 122
m,p-Xylene	10.0	10.6		ug/L		106	80 - 125
Methyl tert-butyl ether	10.0	12.3		ug/L		123	68 - 134
Methylene Chloride	10.0	8.92		ug/L		89	30 - 150
Naphthalene	10.0	10.3		ug/L		103	61 - 140
n-Butylbenzene	10.0	9.61		ug/L		96	75 - 121
N-Propylbenzene	10.0	9.81		ug/L		98	73 - 136
o-Xylene	10.0	10.6		ug/L		106	80 - 130
p-Isopropyltoluene	10.0	10.4		ug/L		104	78 - 128
sec-Butylbenzene	10.0	8.97		ug/L		90	73 - 138
Styrene	10.0	10.1		ug/L		101	79 - 134
tert-Butylbenzene	10.0	9.18		ug/L		92	76 - 131
Tetrachloroethene	10.0	12.7		ug/L		127	80 - 139
Toluene	10.0	9.54		ug/L		95	80 - 129
trans-1,2-Dichloroethene	10.0	9.32		ug/L		93	73 - 137
trans-1,3-Dichloropropene	10.0	10.6		ug/L		106	73 - 138
Trichloroethene	10.0	10.5		ug/L		105	80 - 123
Trichlorofluoromethane	10.0	10.5		ug/L		105	71 - 147
Vinyl chloride	10.0	9.14		ug/L		91	50 - 150

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*100*		*80 - 120*
4-Bromofluorobenzene (Surr)	*99*		*76 - 120*
Dibromofluoromethane (Surr)	*106*		*80 - 123*
Toluene-d8 (Surr)	*98*		*80 - 120*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCSD 590-45132/6
Matrix: Water
Analysis Batch: 45132

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1,1,2-Tetrachloroethane			10.0	10.7		ug/L		107	80 - 131	2	17
1,1,1-Trichloroethane			10.0	11.8		ug/L		118	71 - 138	4	17
1,1,2,2-Tetrachloroethane			10.0	9.82		ug/L		98	60 - 150	1	17
1,1,2-Trichloroethane			10.0	10.5		ug/L		105	80 - 128	3	15
1,1-Dichloroethane			10.0	10.0		ug/L		100	80 - 125	2	20
1,1-Dichloroethene			10.0	10.3		ug/L		103	65 - 141	9	19
1,1-Dichloropropene			10.0	10.1		ug/L		101	82 - 123	4	20
1,2,3-Trichlorobenzene			10.0	10.6		ug/L		106	70 - 137	1	30
1,2,3-Trichloropropane			10.0	9.97		ug/L		100	65 - 142	1	34
1,2,4-Trichlorobenzene			10.0	10.4		ug/L		104	76 - 131	2	24
1,2,4-Trimethylbenzene			10.0	8.55		ug/L		85	78 - 131	5	16
1,2-Dibromo-3-Chloropropane			10.0	9.96	J	ug/L		100	53 - 142	9	29
1,2-Dibromoethane (EDB)			10.0	10.2		ug/L		102	80 - 124	2	14
1,2-Dichlorobenzene			10.0	10.4		ug/L		104	80 - 120	1	14
1,2-Dichloroethane			10.0	10.1		ug/L		101	80 - 120	1	14
1,2-Dichloropropane			10.0	9.77		ug/L		98	79 - 122	2	15
1,3,5-Trimethylbenzene			10.0	8.56		ug/L		86	76 - 129	5	17
1,3-Dichlorobenzene			10.0	10.2		ug/L		102	80 - 122	1	15
1,3-Dichloropropane			10.0	9.86		ug/L		99	78 - 129	3	17
1,4-Dichlorobenzene			10.0	9.82		ug/L		98	80 - 120	3	14
2,2-Dichloropropane			10.0	13.2		ug/L		132	73 - 140	6	18
2-Chlorotoluene			10.0	9.59		ug/L		96	74 - 129	5	19
4-Chlorotoluene			10.0	9.34		ug/L		93	79 - 125	5	16
Benzene			10.0	10.1		ug/L		101	80 - 120	2	15
Bromobenzene			10.0	8.95		ug/L		90	73 - 125	5	16
Bromochloromethane			10.0	9.73		ug/L		97	71 - 136	2	21
Bromodichloromethane			10.0	10.0		ug/L		100	80 - 120	1	16
Bromoform			10.0	11.8		ug/L		118	73 - 139	2	17
Bromomethane			10.0	9.13		ug/L		91	66 - 149	12	24
Carbon tetrachloride			10.0	11.5		ug/L		115	72 - 138	9	28
Chlorobenzene			10.0	9.84		ug/L		98	80 - 124	2	14
Chloroethane			10.0	8.54		ug/L		85	64 - 134	11	24
Chloroform			10.0	10.5		ug/L		105	80 - 123	3	18
Chloromethane			10.0	15.8	*+	ug/L		158	19 - 150	4	35
cis-1,2-Dichloroethene			10.0	10.1		ug/L		101	80 - 122	5	17
cis-1,3-Dichloropropene			10.0	9.98		ug/L		100	80 - 121	0	16
Dibromochloromethane			10.0	10.5		ug/L		105	80 - 130	1	15
Dibromomethane			10.0	9.63		ug/L		96	80 - 122	0	16
Dichlorodifluoromethane			10.0	9.43		ug/L		94	30 - 150	5	22
Ethylbenzene			10.0	9.95		ug/L		100	80 - 122	1	35
Hexachlorobutadiene			10.0	11.8		ug/L		118	77 - 132	1	25
Isopropylbenzene			10.0	10.8		ug/L		108	80 - 122	2	16
m,p-Xylene			10.0	10.3		ug/L		103	80 - 125	3	35
Methyl tert-butyl ether			10.0	12.3		ug/L		123	68 - 134	0	18
Methylene Chloride			10.0	8.27		ug/L		83	30 - 150	8	25
Naphthalene			10.0	10.5		ug/L		105	61 - 140	2	25
n-Butylbenzene			10.0	9.41		ug/L		94	75 - 121	2	16
N-Propylbenzene			10.0	9.37		ug/L		94	73 - 136	5	18

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCSD 590-45132/6
Matrix: Water
Analysis Batch: 45132

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
o-Xylene			10.0	10.4		ug/L		104	80 - 130	2	35
p-Isopropyltoluene			10.0	9.88		ug/L		99	78 - 128	6	17
sec-Butylbenzene			10.0	8.49		ug/L		85	73 - 138	5	17
Styrene			10.0	9.61		ug/L		96	79 - 134	5	17
tert-Butylbenzene			10.0	8.74		ug/L		87	76 - 131	5	18
Tetrachloroethene			10.0	11.7		ug/L		117	80 - 139	8	20
Toluene			10.0	9.05		ug/L		91	80 - 129	5	35
trans-1,2-Dichloroethene			10.0	9.39		ug/L		94	73 - 137	1	18
trans-1,3-Dichloropropene			10.0	10.3		ug/L		103	73 - 138	3	17
Trichloroethene			10.0	10.2		ug/L		102	80 - 123	3	14
Trichlorofluoromethane			10.0	9.54		ug/L		95	71 - 147	10	24
Vinyl chloride			10.0	8.75		ug/L		88	50 - 150	4	26

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*100*		*80 - 120*
4-Bromofluorobenzene (Surr)	*99*		*76 - 120*
Dibromofluoromethane (Surr)	*103*		*80 - 123*
Toluene-d8 (Surr)	*98*		*80 - 120*

Lab Sample ID: MB 590-45187/10
Matrix: Water
Analysis Batch: 45187

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	ND		1.0	0.48	ug/L			12/21/23 13:10	1
1,1,1-Trichloroethane	ND		1.0	0.17	ug/L			12/21/23 13:10	1
1,1,2,2-Tetrachloroethane	ND		2.0	0.32	ug/L			12/21/23 13:10	1
1,1,2-Trichloroethane	ND		2.0	0.43	ug/L			12/21/23 13:10	1
1,1-Dichloroethane	ND		1.0	0.29	ug/L			12/21/23 13:10	1
1,1-Dichloroethene	ND		1.0	0.20	ug/L			12/21/23 13:10	1
1,1-Dichloropropene	ND		1.0	0.50	ug/L			12/21/23 13:10	1
1,2,3-Trichlorobenzene	ND		1.0	0.33	ug/L			12/21/23 13:10	1
1,2,3-Trichloropropane	ND		2.0	0.50	ug/L			12/21/23 13:10	1
1,2,4-Trichlorobenzene	ND		1.0	0.50	ug/L			12/21/23 13:10	1
1,2,4-Trimethylbenzene	ND		1.0	0.31	ug/L			12/21/23 13:10	1
1,2-Dibromo-3-Chloropropane	ND		10	1.5	ug/L			12/21/23 13:10	1
1,2-Dibromoethane (EDB)	ND		1.0	0.20	ug/L			12/21/23 13:10	1
1,2-Dichlorobenzene	ND		1.0	0.23	ug/L			12/21/23 13:10	1
1,2-Dichloroethane	ND		1.0	0.31	ug/L			12/21/23 13:10	1
1,2-Dichloropropane	ND		1.0	0.23	ug/L			12/21/23 13:10	1
1,3,5-Trimethylbenzene	ND		1.0	0.32	ug/L			12/21/23 13:10	1
1,3-Dichlorobenzene	ND		1.0	0.14	ug/L			12/21/23 13:10	1
1,3-Dichloropropane	ND		2.0	0.21	ug/L			12/21/23 13:10	1
1,4-Dichlorobenzene	ND		1.0	0.28	ug/L			12/21/23 13:10	1
2,2-Dichloropropane	ND		2.0	0.66	ug/L			12/21/23 13:10	1
2-Chlorotoluene	ND		1.0	0.36	ug/L			12/21/23 13:10	1
4-Chlorotoluene	ND		1.0	0.26	ug/L			12/21/23 13:10	1
Benzene	ND		0.40	0.093	ug/L			12/21/23 13:10	1

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: MB 590-45187/10
Matrix: Water
Analysis Batch: 45187

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bromobenzene	ND		1.0	0.28	ug/L			12/21/23 13:10	1
Bromochloromethane	ND		2.0	0.44	ug/L			12/21/23 13:10	1
Bromodichloromethane	ND		1.0	0.29	ug/L			12/21/23 13:10	1
Bromoform	ND		5.0	0.66	ug/L			12/21/23 13:10	1
Bromomethane	ND		5.0	0.76	ug/L			12/21/23 13:10	1
Carbon tetrachloride	ND		1.0	0.40	ug/L			12/21/23 13:10	1
Chlorobenzene	ND		1.0	0.32	ug/L			12/21/23 13:10	1
Chloroethane	ND		2.0	0.40	ug/L			12/21/23 13:10	1
Chloroform	ND		1.0	0.24	ug/L			12/21/23 13:10	1
Chloromethane	ND		3.0	0.50	ug/L			12/21/23 13:10	1
cis-1,2-Dichloroethene	ND		1.0	0.23	ug/L			12/21/23 13:10	1
cis-1,3-Dichloropropene	ND		1.0	0.25	ug/L			12/21/23 13:10	1
Dibromochloromethane	ND		2.0	0.33	ug/L			12/21/23 13:10	1
Dibromomethane	ND		2.0	0.50	ug/L			12/21/23 13:10	1
Dichlorodifluoromethane	ND		2.0	0.64	ug/L			12/21/23 13:10	1
Ethylbenzene	ND		1.0	0.20	ug/L			12/21/23 13:10	1
Hexachlorobutadiene	ND		2.0	0.21	ug/L			12/21/23 13:10	1
Isopropylbenzene	ND		1.0	0.24	ug/L			12/21/23 13:10	1
m,p-Xylene	ND		2.0	0.28	ug/L			12/21/23 13:10	1
Methyl tert-butyl ether	ND		1.0	0.16	ug/L			12/21/23 13:10	1
Methylene Chloride	ND		5.0	2.2	ug/L			12/21/23 13:10	1
Naphthalene	ND		2.0	0.63	ug/L			12/21/23 13:10	1
n-Butylbenzene	ND		1.0	0.20	ug/L			12/21/23 13:10	1
N-Propylbenzene	ND		1.0	0.25	ug/L			12/21/23 13:10	1
o-Xylene	ND		1.0	0.16	ug/L			12/21/23 13:10	1
p-Isopropyltoluene	ND		1.0	0.27	ug/L			12/21/23 13:10	1
sec-Butylbenzene	ND		1.0	0.22	ug/L			12/21/23 13:10	1
Styrene	ND		1.0	0.24	ug/L			12/21/23 13:10	1
tert-Butylbenzene	ND		1.0	0.12	ug/L			12/21/23 13:10	1
Tetrachloroethene	ND		1.0	0.22	ug/L			12/21/23 13:10	1
Toluene	ND		1.0	0.31	ug/L			12/21/23 13:10	1
trans-1,2-Dichloroethene	ND		1.0	0.20	ug/L			12/21/23 13:10	1
trans-1,3-Dichloropropene	ND		1.0	0.45	ug/L			12/21/23 13:10	1
Trichloroethene	ND		1.0	0.20	ug/L			12/21/23 13:10	1
Trichlorofluoromethane	ND		1.0	0.20	ug/L			12/21/23 13:10	1
Vinyl chloride	ND		0.40	0.13	ug/L			12/21/23 13:10	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*80 - 120*		*12/21/23 13:10*	*1*
4-Bromofluorobenzene (Surr)	*99*		*76 - 120*		*12/21/23 13:10*	*1*
Dibromofluoromethane (Surr)	*109*		*80 - 123*		*12/21/23 13:10*	*1*
Toluene-d8 (Surr)	*101*		*80 - 120*		*12/21/23 13:10*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 590-45187/1003
Matrix: Water
Analysis Batch: 45187

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1,1,2-Tetrachloroethane	10.0	11.0		ug/L		110	80 - 131
1,1,1-Trichloroethane	10.0	12.3		ug/L		123	71 - 138
1,1,2,2-Tetrachloroethane	10.0	9.22		ug/L		92	60 - 150
1,1,2-Trichloroethane	10.0	10.5		ug/L		105	80 - 128
1,1-Dichloroethane	10.0	10.8		ug/L		108	80 - 125
1,1-Dichloroethene	10.0	11.2		ug/L		112	65 - 141
1,1-Dichloropropene	10.0	10.4		ug/L		104	82 - 123
1,2,3-Trichlorobenzene	10.0	9.93		ug/L		99	70 - 137
1,2,3-Trichloropropane	10.0	8.81		ug/L		88	65 - 142
1,2,4-Trichlorobenzene	10.0	9.90		ug/L		99	76 - 131
1,2,4-Trimethylbenzene	10.0	8.70		ug/L		87	78 - 131
1,2-Dibromo-3-Chloropropane	10.0	9.84	J	ug/L		98	53 - 142
1,2-Dibromoethane (EDB)	10.0	10.3		ug/L		103	80 - 124
1,2-Dichlorobenzene	10.0	10.2		ug/L		102	80 - 120
1,2-Dichloroethane	10.0	10.1		ug/L		101	80 - 120
1,2-Dichloropropane	10.0	10.0		ug/L		100	79 - 122
1,3,5-Trimethylbenzene	10.0	8.74		ug/L		87	76 - 129
1,3-Dichlorobenzene	10.0	10.2		ug/L		102	80 - 122
1,3-Dichloropropane	10.0	9.96		ug/L		100	78 - 129
1,4-Dichlorobenzene	10.0	9.84		ug/L		98	80 - 120
2,2-Dichloropropane	10.0	15.1	*+	ug/L		151	73 - 140
2-Chlorotoluene	10.0	9.43		ug/L		94	74 - 129
4-Chlorotoluene	10.0	9.39		ug/L		94	79 - 125
Benzene	10.0	10.3		ug/L		103	80 - 120
Bromobenzene	10.0	9.10		ug/L		91	73 - 125
Bromochloromethane	10.0	10.2		ug/L		102	71 - 136
Bromodichloromethane	10.0	10.2		ug/L		102	80 - 120
Bromoform	10.0	11.5		ug/L		115	73 - 139
Bromomethane	10.0	9.82		ug/L		98	66 - 149
Carbon tetrachloride	10.0	12.3		ug/L		123	72 - 138
Chlorobenzene	10.0	10.2		ug/L		102	80 - 124
Chloroethane	10.0	10.5		ug/L		105	64 - 134
Chloroform	10.0	10.8		ug/L		108	80 - 123
Chloromethane	10.0	10.9		ug/L		109	19 - 150
cis-1,2-Dichloroethene	10.0	10.3		ug/L		103	80 - 122
cis-1,3-Dichloropropene	10.0	10.0		ug/L		100	80 - 121
Dibromochloromethane	10.0	10.8		ug/L		108	80 - 130
Dibromomethane	10.0	9.29		ug/L		93	80 - 122
Dichlorodifluoromethane	10.0	11.6		ug/L		116	30 - 150
Ethylbenzene	10.0	10.2		ug/L		102	80 - 122
Hexachlorobutadiene	10.0	10.8		ug/L		108	77 - 132
Isopropylbenzene	10.0	11.2		ug/L		112	80 - 122
m,p-Xylene	10.0	10.5		ug/L		105	80 - 125
Methyl tert-butyl ether	10.0	11.7		ug/L		117	68 - 134
Methylene Chloride	10.0	9.77		ug/L		98	30 - 150
Naphthalene	10.0	9.52		ug/L		95	61 - 140
n-Butylbenzene	10.0	9.35		ug/L		94	75 - 121
N-Propylbenzene	10.0	9.50		ug/L		95	73 - 136

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 590-45187/1003
Matrix: Water
Analysis Batch: 45187

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

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
o-Xylene			10.0	10.6		ug/L		106	80 - 130		
p-Isopropyltoluene			10.0	9.85		ug/L		98	78 - 128		
sec-Butylbenzene			10.0	8.64		ug/L		86	73 - 138		
Styrene			10.0	9.96		ug/L		100	79 - 134		
tert-Butylbenzene			10.0	8.65		ug/L		87	76 - 131		
Tetrachloroethene			10.0	12.0		ug/L		120	80 - 139		
Toluene			10.0	9.38		ug/L		94	80 - 129		
trans-1,2-Dichloroethene			10.0	10.6		ug/L		106	73 - 137		
trans-1,3-Dichloropropene			10.0	10.3		ug/L		103	73 - 138		
Trichloroethene			10.0	10.4		ug/L		104	80 - 123		
Trichlorofluoromethane			10.0	10.6		ug/L		106	71 - 147		
Vinyl chloride			10.0	10.9		ug/L		109	50 - 150		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*100*		*80 - 120*
4-Bromofluorobenzene (Surr)	*97*		*76 - 120*
Dibromofluoromethane (Surr)	*105*		*80 - 123*
Toluene-d8 (Surr)	*97*		*80 - 120*

Lab Sample ID: LCSD 590-45187/4
Matrix: Water
Analysis Batch: 45187

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1,1,2-Tetrachloroethane			10.0	10.8		ug/L		108	80 - 131	2	17
1,1,1-Trichloroethane			10.0	11.5		ug/L		115	71 - 138	7	17
1,1,2,2-Tetrachloroethane			10.0	8.76		ug/L		88	60 - 150	5	17
1,1,2-Trichloroethane			10.0	10.2		ug/L		102	80 - 128	3	15
1,1-Dichloroethane			10.0	9.93		ug/L		99	80 - 125	8	20
1,1-Dichloroethene			10.0	10.6		ug/L		106	65 - 141	5	19
1,1-Dichloropropene			10.0	10.2		ug/L		102	82 - 123	2	20
1,2,3-Trichlorobenzene			10.0	11.0		ug/L		110	70 - 137	10	30
1,2,3-Trichloropropane			10.0	8.70		ug/L		87	65 - 142	1	34
1,2,4-Trichlorobenzene			10.0	10.5		ug/L		105	76 - 131	6	24
1,2,4-Trimethylbenzene			10.0	8.50		ug/L		85	78 - 131	2	16
1,2-Dibromo-3-Chloropropane			10.0	10.1		ug/L		101	53 - 142	2	29
1,2-Dibromoethane (EDB)			10.0	10.2		ug/L		102	80 - 124	1	14
1,2-Dichlorobenzene			10.0	9.82		ug/L		98	80 - 120	4	14
1,2-Dichloroethane			10.0	9.97		ug/L		100	80 - 120	1	14
1,2-Dichloropropane			10.0	9.71		ug/L		97	79 - 122	3	15
1,3,5-Trimethylbenzene			10.0	8.30		ug/L		83	76 - 129	5	17
1,3-Dichlorobenzene			10.0	9.80		ug/L		98	80 - 122	4	15
1,3-Dichloropropane			10.0	9.99		ug/L		100	78 - 129	0	17
1,4-Dichlorobenzene			10.0	9.58		ug/L		96	80 - 120	3	14
2,2-Dichloropropane			10.0	13.8		ug/L		138	73 - 140	9	18
2-Chlorotoluene			10.0	9.06		ug/L		91	74 - 129	4	19
4-Chlorotoluene			10.0	9.13		ug/L		91	79 - 125	3	16
Benzene			10.0	9.93		ug/L		99	80 - 120	3	15

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCSD 590-45187/4
Matrix: Water
Analysis Batch: 45187

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Bromobenzene			10.0	8.76		ug/L		88	73 - 125	4	16
Bromochloromethane			10.0	10.2		ug/L		102	71 - 136	0	21
Bromodichloromethane			10.0	10.2		ug/L		102	80 - 120	0	16
Bromoform			10.0	11.3		ug/L		113	73 - 139	1	17
Bromomethane			10.0	9.53		ug/L		95	66 - 149	3	24
Carbon tetrachloride			10.0	11.4		ug/L		114	72 - 138	7	28
Chlorobenzene			10.0	9.91		ug/L		99	80 - 124	3	14
Chloroethane			10.0	10.2		ug/L		102	64 - 134	3	24
Chloroform			10.0	10.5		ug/L		105	80 - 123	3	18
Chloromethane			10.0	8.89		ug/L		89	19 - 150	20	35
cis-1,2-Dichloroethene			10.0	10.0		ug/L		100	80 - 122	3	17
cis-1,3-Dichloropropene			10.0	9.85		ug/L		99	80 - 121	2	16
Dibromochloromethane			10.0	10.4		ug/L		104	80 - 130	4	15
Dibromomethane			10.0	9.46		ug/L		95	80 - 122	2	16
Dichlorodifluoromethane			10.0	12.4		ug/L		124	30 - 150	7	22
Ethylbenzene			10.0	9.95		ug/L		99	80 - 122	3	35
Hexachlorobutadiene			10.0	11.1		ug/L		111	77 - 132	3	25
Isopropylbenzene			10.0	10.7		ug/L		107	80 - 122	4	16
m,p-Xylene			10.0	10.3		ug/L		103	80 - 125	2	35
Methyl tert-butyl ether			10.0	11.8		ug/L		118	68 - 134	0	18
Methylene Chloride			10.0	9.16		ug/L		92	30 - 150	6	25
Naphthalene			10.0	10.0		ug/L		100	61 - 140	5	25
n-Butylbenzene			10.0	8.93		ug/L		89	75 - 121	5	16
N-Propylbenzene			10.0	9.08		ug/L		91	73 - 136	5	18
o-Xylene			10.0	10.3		ug/L		103	80 - 130	3	35
p-Isopropyltoluene			10.0	9.55		ug/L		96	78 - 128	3	17
sec-Butylbenzene			10.0	8.28		ug/L		83	73 - 138	4	17
Styrene			10.0	9.58		ug/L		96	79 - 134	4	17
tert-Butylbenzene			10.0	8.39		ug/L		84	76 - 131	3	18
Tetrachloroethene			10.0	11.7		ug/L		117	80 - 139	2	20
Toluene			10.0	9.12		ug/L		91	80 - 129	3	35
trans-1,2-Dichloroethene			10.0	9.26		ug/L		93	73 - 137	13	18
trans-1,3-Dichloropropene			10.0	10.5		ug/L		105	73 - 138	2	17
Trichloroethene			10.0	9.99		ug/L		100	80 - 123	4	14
Trichlorofluoromethane			10.0	9.57		ug/L		96	71 - 147	11	24
Vinyl chloride			10.0	8.96		ug/L		90	50 - 150	19	26

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*100*		*80 - 120*
4-Bromofluorobenzene (Surr)	*97*		*76 - 120*
Dibromofluoromethane (Surr)	*104*		*80 - 123*
Toluene-d8 (Surr)	*98*		*80 - 120*

Method: 8270E - Semivolatile Organic Compounds (GC/MS)

Lab Sample ID: MB 580-446826/1-A
Matrix: Water
Analysis Batch: 446882

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 446826

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,4-Trichlorobenzene	ND		0.40	0.090	ug/L		12/21/23 08:20	12/21/23 17:30	1
1,2-Dichlorobenzene	ND		0.40	0.050	ug/L		12/21/23 08:20	12/21/23 17:30	1
1,3-Dichlorobenzene	ND		0.40	0.040	ug/L		12/21/23 08:20	12/21/23 17:30	1
1,4-Dichlorobenzene	ND		0.40	0.040	ug/L		12/21/23 08:20	12/21/23 17:30	1
1-Methylnaphthalene	ND		1.0	0.050	ug/L		12/21/23 08:20	12/21/23 17:30	1
2,4,5-Trichlorophenol	ND		0.40	0.10	ug/L		12/21/23 08:20	12/21/23 17:30	1
2,4,6-Trichlorophenol	ND		0.60	0.10	ug/L		12/21/23 08:20	12/21/23 17:30	1
2,4-Dichlorophenol	ND		1.0	0.20	ug/L		12/21/23 08:20	12/21/23 17:30	1
2,4-Dimethylphenol	ND		4.0	0.16	ug/L		12/21/23 08:20	12/21/23 17:30	1
2,4-Dinitrophenol	ND		5.0	0.45	ug/L		12/21/23 08:20	12/21/23 17:30	1
2,4-Dinitrotoluene	ND		1.0	0.10	ug/L		12/21/23 08:20	12/21/23 17:30	1
2,6-Dinitrotoluene	ND		0.40	0.10	ug/L		12/21/23 08:20	12/21/23 17:30	1
2-Chloronaphthalene	ND		1.0	0.070	ug/L		12/21/23 08:20	12/21/23 17:30	1
2-Chlorophenol	ND		1.0	0.050	ug/L		12/21/23 08:20	12/21/23 17:30	1
2-Methylnaphthalene	ND		0.40	0.060	ug/L		12/21/23 08:20	12/21/23 17:30	1
2-Methylphenol	ND		0.60	0.050	ug/L		12/21/23 08:20	12/21/23 17:30	1
2-Nitroaniline	ND		1.0	0.10	ug/L		12/21/23 08:20	12/21/23 17:30	1
2-Nitrophenol	ND		1.0	0.070	ug/L		12/21/23 08:20	12/21/23 17:30	1
3 & 4 Methylphenol	ND		0.60	0.10	ug/L		12/21/23 08:20	12/21/23 17:30	1
3,3'-Dichlorobenzidine	ND		1.0	0.12	ug/L		12/21/23 08:20	12/21/23 17:30	1
3-Nitroaniline	ND		3.0	0.16	ug/L		12/21/23 08:20	12/21/23 17:30	1
4,6-Dinitro-2-methylphenol	ND		2.0	0.55	ug/L		12/21/23 08:20	12/21/23 17:30	1
4-Bromophenyl phenyl ether	ND		0.60	0.060	ug/L		12/21/23 08:20	12/21/23 17:30	1
4-Chloro-3-methylphenol	ND		0.60	0.13	ug/L		12/21/23 08:20	12/21/23 17:30	1
4-Chloroaniline	ND		2.0	0.15	ug/L		12/21/23 08:20	12/21/23 17:30	1
4-Chlorophenyl phenyl ether	ND		0.60	0.050	ug/L		12/21/23 08:20	12/21/23 17:30	1
4-Nitroaniline	ND		2.0	0.21	ug/L		12/21/23 08:20	12/21/23 17:30	1
4-Nitrophenol	ND		10	1.7	ug/L		12/21/23 08:20	12/21/23 17:30	1
Acenaphthene	ND		0.40	0.050	ug/L		12/21/23 08:20	12/21/23 17:30	1
Acenaphthylene	ND		1.0	0.060	ug/L		12/21/23 08:20	12/21/23 17:30	1
Anthracene	ND		1.0	0.050	ug/L		12/21/23 08:20	12/21/23 17:30	1
Benzo[a]anthracene	ND		0.25	0.050	ug/L		12/21/23 08:20	12/21/23 17:30	1
Benzo[a]pyrene	ND		0.25	0.040	ug/L		12/21/23 08:20	12/21/23 17:30	1
Benzo[b]fluoranthene	ND		0.25	0.040	ug/L		12/21/23 08:20	12/21/23 17:30	1
Benzo[g,h,i]perylene	ND		0.25	0.040	ug/L		12/21/23 08:20	12/21/23 17:30	1
Benzo[k]fluoranthene	ND		0.25	0.050	ug/L		12/21/23 08:20	12/21/23 17:30	1
Benzoic acid	ND		10	1.3	ug/L		12/21/23 08:20	12/21/23 17:30	1
Benzyl alcohol	ND		5.0	0.18	ug/L		12/21/23 08:20	12/21/23 17:30	1
Bis(2-chloroethoxy)methane	ND		0.60	0.050	ug/L		12/21/23 08:20	12/21/23 17:30	1
Bis(2-chloroethyl)ether	ND		0.10	0.030	ug/L		12/21/23 08:20	12/21/23 17:30	1
Bis(2-ethylhexyl) phthalate	ND		3.0	0.74	ug/L		12/21/23 08:20	12/21/23 17:30	1
bis(chloroisopropyl) ether	ND		0.25	0.060	ug/L		12/21/23 08:20	12/21/23 17:30	1
Butyl benzyl phthalate	ND		4.0	0.27	ug/L		12/21/23 08:20	12/21/23 17:30	1
Carbazole	ND		0.60	0.10	ug/L		12/21/23 08:20	12/21/23 17:30	1
Chrysene	ND		0.25	0.090	ug/L		12/21/23 08:20	12/21/23 17:30	1
Dibenz(a,h)anthracene	ND		0.25	0.070	ug/L		12/21/23 08:20	12/21/23 17:30	1
Dibenzofuran	ND		0.40	0.10	ug/L		12/21/23 08:20	12/21/23 17:30	1
Diethyl phthalate	ND		1.0	0.15	ug/L		12/21/23 08:20	12/21/23 17:30	1

Method: 8270E - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 580-446826/1-A
Matrix: Water
Analysis Batch: 446882

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 446826

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Dimethyl phthalate	ND		0.60	0.060	ug/L		12/21/23 08:20	12/21/23 17:30	1
Di-n-butyl phthalate	ND		10	3.0	ug/L		12/21/23 08:20	12/21/23 17:30	1
Di-n-octyl phthalate	ND		1.0	0.13	ug/L		12/21/23 08:20	12/21/23 17:30	1
Fluoranthene	ND		0.25	0.060	ug/L		12/21/23 08:20	12/21/23 17:30	1
Fluorene	ND		0.25	0.050	ug/L		12/21/23 08:20	12/21/23 17:30	1
Hexachlorobenzene	ND		0.60	0.080	ug/L		12/21/23 08:20	12/21/23 17:30	1
Hexachlorobutadiene	ND		1.0	0.080	ug/L		12/21/23 08:20	12/21/23 17:30	1
Hexachlorocyclopentadiene	ND		1.0	0.14	ug/L		12/21/23 08:20	12/21/23 17:30	1
Hexachloroethane	ND		1.0	0.050	ug/L		12/21/23 08:20	12/21/23 17:30	1
Indeno[1,2,3-cd]pyrene	ND		0.40	0.13	ug/L		12/21/23 08:20	12/21/23 17:30	1
Isophorone	ND		0.40	0.10	ug/L		12/21/23 08:20	12/21/23 17:30	1
Naphthalene	ND		0.40	0.16	ug/L		12/21/23 08:20	12/21/23 17:30	1
Nitrobenzene	ND		1.0	0.040	ug/L		12/21/23 08:20	12/21/23 17:30	1
N-Nitrosodi-n-propylamine	ND		0.40	0.060	ug/L		12/21/23 08:20	12/21/23 17:30	1
N-Nitrosodiphenylamine	ND		1.0	0.070	ug/L		12/21/23 08:20	12/21/23 17:30	1
Pentachlorophenol	ND		5.0	0.51	ug/L		12/21/23 08:20	12/21/23 17:30	1
Phenanthrene	ND		1.0	0.12	ug/L		12/21/23 08:20	12/21/23 17:30	1
Phenol	ND		1.0	0.16	ug/L		12/21/23 08:20	12/21/23 17:30	1
Pyrene	ND		1.0	0.040	ug/L		12/21/23 08:20	12/21/23 17:30	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol (Surr)	*68*		*50 - 130*	*12/21/23 08:20*	*12/21/23 17:30*	*1*
2-Fluorobiphenyl	*54*		*35 - 120*	*12/21/23 08:20*	*12/21/23 17:30*	*1*
2-Fluorophenol (Surr)	*47*		*21 - 120*	*12/21/23 08:20*	*12/21/23 17:30*	*1*
Nitrobenzene-d5 (Surr)	*66*		*39 - 120*	*12/21/23 08:20*	*12/21/23 17:30*	*1*
Phenol-d5 (Surr)	*28*		*10 - 120*	*12/21/23 08:20*	*12/21/23 17:30*	*1*
Terphenyl-d14 (Surr)	*74*		*63 - 137*	*12/21/23 08:20*	*12/21/23 17:30*	*1*

Lab Sample ID: LCS 580-446826/2-A
Matrix: Water
Analysis Batch: 446882

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 446826

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,2,4-Trichlorobenzene	4.00	0.640	*-	ug/L		16	21 - 120
1,2-Dichlorobenzene	4.00	0.670	*-	ug/L		17	20 - 120
1,3-Dichlorobenzene	4.00	0.538	*-	ug/L		13	20 - 120
1,4-Dichlorobenzene	4.00	0.596	*-	ug/L		15	20 - 120
1-Methylnaphthalene	4.00	1.41	*-	ug/L		35	36 - 120
2,4,5-Trichlorophenol	4.00	3.33		ug/L		83	45 - 120
2,4,6-Trichlorophenol	4.00	3.13		ug/L		78	43 - 120
2,4-Dichlorophenol	4.00	3.13		ug/L		78	45 - 120
2,4-Dimethylphenol	4.00	2.96	J	ug/L		74	37 - 120
2,4-Dinitrophenol	8.00	5.42		ug/L		68	10 - 146
2,4-Dinitrotoluene	4.00	3.34		ug/L		84	51 - 120
2,6-Dinitrotoluene	4.00	3.40		ug/L		85	52 - 120
2-Chloronaphthalene	4.00	1.52		ug/L		38	35 - 120
2-Chlorophenol	4.00	2.79		ug/L		70	44 - 120
2-Methylnaphthalene	4.00	1.33	*-	ug/L		33	35 - 120

Method: 8270E - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 580-446826/2-A
Matrix: Water
Analysis Batch: 446882

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 446826

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
2-Methylphenol	4.00	2.64		ug/L		66	30 - 120
2-Nitroaniline	4.00	3.45		ug/L		86	43 - 120
2-Nitrophenol	4.00	2.90		ug/L		73	44 - 120
3 & 4 Methylphenol	4.00	2.39		ug/L		60	29 - 120
3,3'-Dichlorobenzidine	8.00	7.51		ug/L		94	33 - 150
3-Nitroaniline	4.00	3.78		ug/L		95	10 - 138
4,6-Dinitro-2-methylphenol	8.00	7.02		ug/L		88	29 - 136
4-Bromophenyl phenyl ether	4.00	3.04		ug/L		76	53 - 120
4-Chloro-3-methylphenol	4.00	3.32		ug/L		83	36 - 120
4-Chloroaniline	4.00	2.48		ug/L		62	10 - 150
4-Chlorophenyl phenyl ether	4.00	2.40		ug/L		60	41 - 120
4-Nitroaniline	4.00	4.77		ug/L		119	38 - 133
4-Nitrophenol	8.00	3.44	J	ug/L		43	10 - 120
Acenaphthene	4.00	2.02		ug/L		51	41 - 120
Acenaphthylene	4.00	2.37		ug/L		59	43 - 120
Anthracene	4.00	3.21		ug/L		80	58 - 120
Benzo[a]anthracene	4.00	3.69		ug/L		92	48 - 131
Benzo[a]pyrene	4.00	3.31		ug/L		83	55 - 125
Benzo[b]fluoranthene	4.00	3.56		ug/L		89	54 - 124
Benzo[g,h,i]perylene	4.00	3.42		ug/L		86	46 - 124
Benzo[k]fluoranthene	4.00	3.23		ug/L		81	52 - 132
Benzoic acid	8.00	5.39	J	ug/L		67	10 - 120
Benzyl alcohol	4.00	2.54	J	ug/L		63	10 - 120
Bis(2-chloroethoxy)methane	4.00	2.83		ug/L		71	38 - 120
Bis(2-chloroethyl)ether	4.00	2.57		ug/L		64	39 - 120
Bis(2-ethylhexyl) phthalate	4.00	3.64		ug/L		91	41 - 150
bis(chloroisopropyl) ether	4.00	2.09		ug/L		52	20 - 139
Butyl benzyl phthalate	4.00	3.74	J	ug/L		93	40 - 150
Carbazole	4.00	3.83		ug/L		96	61 - 150
Chrysene	4.00	3.06		ug/L		77	57 - 125
Dibenz(a,h)anthracene	4.00	3.58		ug/L		90	48 - 126
Dibenzofuran	4.00	2.45		ug/L		61	45 - 120
Diethyl phthalate	4.00	3.43		ug/L		86	60 - 121
Dimethyl phthalate	4.00	3.32		ug/L		83	54 - 120
Di-n-butyl phthalate	4.00	3.54	J	ug/L		89	55 - 150
Di-n-octyl phthalate	4.00	3.93		ug/L		98	48 - 140
Fluoranthene	4.00	3.51		ug/L		88	60 - 121
Fluorene	4.00	2.70		ug/L		67	20 - 120
Hexachlorobenzene	4.00	2.90		ug/L		73	49 - 120
Hexachlorobutadiene	4.00	0.197	J *-	ug/L		5	10 - 130
Hexachlorocyclopentadiene	4.00	0.331	J *-	ug/L		8	10 - 125
Hexachloroethane	4.00	0.235	J *-	ug/L		6	10 - 130
Indeno[1,2,3-cd]pyrene	4.00	3.92		ug/L		98	39 - 124
Isophorone	4.00	2.89		ug/L		72	41 - 120
Naphthalene	4.00	1.35	*-	ug/L		34	42 - 120
Nitrobenzene	4.00	2.57		ug/L		64	38 - 120
N-Nitrosodi-n-propylamine	4.00	2.92		ug/L		73	39 - 120
N-Nitrosodiphenylamine	4.00	3.34		ug/L		84	52 - 120
Pentachlorophenol	8.00	2.61	J	ug/L		33	18 - 135

Method: 8270E - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 580-446826/2-A
Matrix: Water
Analysis Batch: 446882

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 446826

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Phenanthrene			4.00	3.08		ug/L		77	54 - 120		
Phenol			4.00	1.19		ug/L		30	13 - 120		
Pyrene			4.00	3.50		ug/L		87	57 - 120		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
2,4,6-Tribromophenol (Surr)	*74*		*50 - 130*
2-Fluorobiphenyl	*52*		*35 - 120*
2-Fluorophenol (Surr)	*41*		*21 - 120*
Nitrobenzene-d5 (Surr)	*65*		*39 - 120*
Phenol-d5 (Surr)	*25*		*10 - 120*
Terphenyl-d14 (Surr)	*75*		*63 - 137*

Lab Sample ID: LCSD 580-446826/3-A
Matrix: Water
Analysis Batch: 446882

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 446826

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,2,4-Trichlorobenzene			4.00	1.21	*1	ug/L		30	21 - 120	62	35
1,2-Dichlorobenzene			4.00	1.09	*1	ug/L		27	20 - 120	47	35
1,3-Dichlorobenzene			4.00	0.945	*1	ug/L		24	20 - 120	55	35
1,4-Dichlorobenzene			4.00	1.03	*1	ug/L		26	20 - 120	53	35
1-Methylnaphthalene			4.00	1.89		ug/L		47	36 - 120	29	35
2,4,5-Trichlorophenol			4.00	3.08		ug/L		77	45 - 120	8	35
2,4,6-Trichlorophenol			4.00	3.10		ug/L		77	43 - 120	1	35
2,4-Dichlorophenol			4.00	2.91		ug/L		73	45 - 120	7	35
2,4-Dimethylphenol			4.00	2.76	J	ug/L		69	37 - 120	7	35
2,4-Dinitrophenol			8.00	5.26		ug/L		66	10 - 146	3	35
2,4-Dinitrotoluene			4.00	3.28		ug/L		82	51 - 120	2	35
2,6-Dinitrotoluene			4.00	3.30		ug/L		82	52 - 120	3	35
2-Chloronaphthalene			4.00	2.07		ug/L		52	35 - 120	30	35
2-Chlorophenol			4.00	2.72		ug/L		68	44 - 120	2	35
2-Methylnaphthalene			4.00	1.80		ug/L		45	35 - 120	30	35
2-Methylphenol			4.00	2.49		ug/L		62	30 - 120	6	35
2-Nitroaniline			4.00	3.20		ug/L		80	43 - 120	7	35
2-Nitrophenol			4.00	2.80		ug/L		70	44 - 120	4	35
3 & 4 Methylphenol			4.00	2.34		ug/L		58	29 - 120	2	35
3,3'-Dichlorobenzidine			8.00	7.03		ug/L		88	33 - 150	7	35
3-Nitroaniline			4.00	3.66		ug/L		92	10 - 138	3	35
4,6-Dinitro-2-methylphenol			8.00	6.64		ug/L		83	29 - 136	5	35
4-Bromophenyl phenyl ether			4.00	3.16		ug/L		79	53 - 120	4	35
4-Chloro-3-methylphenol			4.00	3.05		ug/L		76	36 - 120	9	35
4-Chloroaniline			4.00	2.62		ug/L		65	10 - 150	5	35
4-Chlorophenyl phenyl ether			4.00	2.85		ug/L		71	41 - 120	17	35
4-Nitroaniline			4.00	4.52		ug/L		113	38 - 133	5	35
4-Nitrophenol			8.00	3.48	J	ug/L		44	10 - 120	1	35
Acenaphthene			4.00	2.40		ug/L		60	41 - 120	17	35
Acenaphthylene			4.00	2.68		ug/L		67	43 - 120	12	35
Anthracene			4.00	3.15		ug/L		79	58 - 120	2	35

Method: 8270E - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCSD 580-446826/3-A
Matrix: Water
Analysis Batch: 446882

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 446826

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Benzo[a]anthracene			4.00	3.43		ug/L		86	48 - 131	7	35
Benzo[a]pyrene			4.00	3.26		ug/L		82	55 - 125	1	35
Benzo[b]fluoranthene			4.00	3.40		ug/L		85	54 - 124	5	35
Benzo[g,h,i]perylene			4.00	3.35		ug/L		84	46 - 124	2	35
Benzo[k]fluoranthene			4.00	3.12		ug/L		78	52 - 132	4	35
Benzoic acid			8.00	5.11	J	ug/L		64	10 - 120	5	35
Benzyl alcohol			4.00	2.31	J	ug/L		58	10 - 120	9	35
Bis(2-chloroethoxy)methane			4.00	2.67		ug/L		67	38 - 120	6	35
Bis(2-chloroethyl)ether			4.00	2.49		ug/L		62	39 - 120	3	35
Bis(2-ethylhexyl) phthalate			4.00	3.41		ug/L		85	41 - 150	6	35
bis(chloroisopropyl) ether			4.00	2.20		ug/L		55	20 - 139	5	35
Butyl benzyl phthalate			4.00	3.39	J	ug/L		85	40 - 150	10	35
Carbazole			4.00	3.64		ug/L		91	61 - 150	5	35
Chrysene			4.00	2.86		ug/L		72	57 - 125	7	35
Dibenz(a,h)anthracene			4.00	3.37		ug/L		84	48 - 126	6	35
Dibenzofuran			4.00	2.79		ug/L		70	45 - 120	13	35
Diethyl phthalate			4.00	3.31		ug/L		83	60 - 121	3	35
Dimethyl phthalate			4.00	3.23		ug/L		81	54 - 120	3	35
Di-n-butyl phthalate			4.00	3.41	J	ug/L		85	55 - 150	4	35
Di-n-octyl phthalate			4.00	3.81		ug/L		95	48 - 140	3	35
Fluoranthene			4.00	3.39		ug/L		85	60 - 121	3	35
Fluorene			4.00	2.91		ug/L		73	20 - 120	7	35
Hexachlorobenzene			4.00	2.95		ug/L		74	49 - 120	2	35
Hexachlorobutadiene			4.00	0.635	J *1	ug/L		16	10 - 130	105	35
Hexachlorocyclopentadiene			4.00	0.889	J *1	ug/L		22	10 - 125	91	35
Hexachloroethane			4.00	0.653	J *1	ug/L		16	10 - 130	94	35
Indeno[1,2,3-cd]pyrene			4.00	3.82		ug/L		96	39 - 124	3	35
Isophorone			4.00	2.78		ug/L		69	41 - 120	4	35
Naphthalene			4.00	1.73		ug/L		43	42 - 120	25	35
Nitrobenzene			4.00	2.59		ug/L		65	38 - 120	1	35
N-Nitrosodi-n-propylamine			4.00	2.76		ug/L		69	39 - 120	6	35
N-Nitrosodiphenylamine			4.00	3.21		ug/L		80	52 - 120	4	35
Pentachlorophenol			8.00	2.56	J	ug/L		32	18 - 135	2	35
Phenanthrene			4.00	3.02		ug/L		75	54 - 120	2	35
Phenol			4.00	1.12		ug/L		28	13 - 120	6	35
Pyrene			4.00	3.36		ug/L		84	57 - 120	4	35

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
2,4,6-Tribromophenol (Surr)	*75*		*50 - 130*
2-Fluorobiphenyl	*52*		*35 - 120*
2-Fluorophenol (Surr)	*41*		*21 - 120*
Nitrobenzene-d5 (Surr)	*60*		*39 - 120*
Phenol-d5 (Surr)	*25*		*10 - 120*
Terphenyl-d14 (Surr)	*72*		*63 - 137*

Method: 8270E - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 580-447085/1-A
Matrix: Water
Analysis Batch: 447287

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 447085

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,4-Trichlorobenzene	ND		0.40	0.090	ug/L		12/27/23 08:30	12/28/23 17:50	1
1,2-Dichlorobenzene	ND		0.40	0.050	ug/L		12/27/23 08:30	12/28/23 17:50	1
1,3-Dichlorobenzene	ND		0.40	0.040	ug/L		12/27/23 08:30	12/28/23 17:50	1
1,4-Dichlorobenzene	ND		0.40	0.040	ug/L		12/27/23 08:30	12/28/23 17:50	1
1-Methylnaphthalene	ND		1.0	0.050	ug/L		12/27/23 08:30	12/28/23 17:50	1
2,4,5-Trichlorophenol	ND		0.40	0.10	ug/L		12/27/23 08:30	12/28/23 17:50	1
2,4,6-Trichlorophenol	ND		0.60	0.10	ug/L		12/27/23 08:30	12/28/23 17:50	1
2,4-Dichlorophenol	ND		1.0	0.20	ug/L		12/27/23 08:30	12/28/23 17:50	1
2,4-Dimethylphenol	ND		4.0	0.16	ug/L		12/27/23 08:30	12/28/23 17:50	1
2,4-Dinitrophenol	ND		5.0	0.45	ug/L		12/27/23 08:30	12/28/23 17:50	1
2,4-Dinitrotoluene	ND		1.0	0.10	ug/L		12/27/23 08:30	12/28/23 17:50	1
2,6-Dinitrotoluene	ND		0.40	0.10	ug/L		12/27/23 08:30	12/28/23 17:50	1
2-Chloronaphthalene	ND		1.0	0.070	ug/L		12/27/23 08:30	12/28/23 17:50	1
2-Chlorophenol	ND		1.0	0.050	ug/L		12/27/23 08:30	12/28/23 17:50	1
2-Methylnaphthalene	ND		0.40	0.060	ug/L		12/27/23 08:30	12/28/23 17:50	1
2-Methylphenol	ND		0.60	0.050	ug/L		12/27/23 08:30	12/28/23 17:50	1
2-Nitroaniline	ND		1.0	0.10	ug/L		12/27/23 08:30	12/28/23 17:50	1
2-Nitrophenol	ND		1.0	0.070	ug/L		12/27/23 08:30	12/28/23 17:50	1
3 & 4 Methylphenol	ND		0.60	0.10	ug/L		12/27/23 08:30	12/28/23 17:50	1
3,3'-Dichlorobenzidine	ND		1.0	0.12	ug/L		12/27/23 08:30	12/28/23 17:50	1
3-Nitroaniline	ND		3.0	0.16	ug/L		12/27/23 08:30	12/28/23 17:50	1
4,6-Dinitro-2-methylphenol	ND		2.0	0.55	ug/L		12/27/23 08:30	12/28/23 17:50	1
4-Bromophenyl phenyl ether	ND		0.60	0.060	ug/L		12/27/23 08:30	12/28/23 17:50	1
4-Chloro-3-methylphenol	ND		0.60	0.13	ug/L		12/27/23 08:30	12/28/23 17:50	1
4-Chloroaniline	ND		2.0	0.15	ug/L		12/27/23 08:30	12/28/23 17:50	1
4-Chlorophenyl phenyl ether	ND		0.60	0.050	ug/L		12/27/23 08:30	12/28/23 17:50	1
4-Nitroaniline	ND		2.0	0.21	ug/L		12/27/23 08:30	12/28/23 17:50	1
4-Nitrophenol	ND		10	1.7	ug/L		12/27/23 08:30	12/28/23 17:50	1
Acenaphthene	ND		0.40	0.050	ug/L		12/27/23 08:30	12/28/23 17:50	1
Acenaphthylene	ND		1.0	0.060	ug/L		12/27/23 08:30	12/28/23 17:50	1
Anthracene	ND		1.0	0.050	ug/L		12/27/23 08:30	12/28/23 17:50	1
Benzo[a]anthracene	ND		0.25	0.050	ug/L		12/27/23 08:30	12/28/23 17:50	1
Benzo[a]pyrene	ND		0.25	0.040	ug/L		12/27/23 08:30	12/28/23 17:50	1
Benzo[b]fluoranthene	ND		0.25	0.040	ug/L		12/27/23 08:30	12/28/23 17:50	1
Benzo[g,h,i]perylene	ND		0.25	0.040	ug/L		12/27/23 08:30	12/28/23 17:50	1
Benzo[k]fluoranthene	ND		0.25	0.050	ug/L		12/27/23 08:30	12/28/23 17:50	1
Benzoic acid	ND		10	1.3	ug/L		12/27/23 08:30	12/28/23 17:50	1
Benzyl alcohol	ND		5.0	0.18	ug/L		12/27/23 08:30	12/28/23 17:50	1
Bis(2-chloroethoxy)methane	ND		0.60	0.050	ug/L		12/27/23 08:30	12/28/23 17:50	1
Bis(2-chloroethyl)ether	ND		0.10	0.030	ug/L		12/27/23 08:30	12/28/23 17:50	1
Bis(2-ethylhexyl) phthalate	ND		3.0	0.74	ug/L		12/27/23 08:30	12/28/23 17:50	1
bis(chloroisopropyl) ether	ND		0.25	0.060	ug/L		12/27/23 08:30	12/28/23 17:50	1
Butyl benzyl phthalate	ND		4.0	0.27	ug/L		12/27/23 08:30	12/28/23 17:50	1
Carbazole	ND		0.60	0.10	ug/L		12/27/23 08:30	12/28/23 17:50	1
Chrysene	ND		0.25	0.090	ug/L		12/27/23 08:30	12/28/23 17:50	1
Dibenz(a,h)anthracene	ND		0.25	0.070	ug/L		12/27/23 08:30	12/28/23 17:50	1
Dibenzofuran	ND		0.40	0.10	ug/L		12/27/23 08:30	12/28/23 17:50	1
Diethyl phthalate	ND		1.0	0.15	ug/L		12/27/23 08:30	12/28/23 17:50	1

Method: 8270E - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 580-447085/1-A
Matrix: Water
Analysis Batch: 447287

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 447085

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Dimethyl phthalate	ND		0.60	0.060	ug/L		12/27/23 08:30	12/28/23 17:50	1
Di-n-butyl phthalate	ND		10	3.0	ug/L		12/27/23 08:30	12/28/23 17:50	1
Di-n-octyl phthalate	ND		1.0	0.13	ug/L		12/27/23 08:30	12/28/23 17:50	1
Fluoranthene	ND		0.25	0.060	ug/L		12/27/23 08:30	12/28/23 17:50	1
Fluorene	ND		0.25	0.050	ug/L		12/27/23 08:30	12/28/23 17:50	1
Hexachlorobenzene	ND		0.60	0.080	ug/L		12/27/23 08:30	12/28/23 17:50	1
Hexachlorobutadiene	ND		1.0	0.080	ug/L		12/27/23 08:30	12/28/23 17:50	1
Hexachlorocyclopentadiene	ND		1.0	0.14	ug/L		12/27/23 08:30	12/28/23 17:50	1
Hexachloroethane	ND		1.0	0.050	ug/L		12/27/23 08:30	12/28/23 17:50	1
Indeno[1,2,3-cd]pyrene	ND		0.40	0.13	ug/L		12/27/23 08:30	12/28/23 17:50	1
Isophorone	ND		0.40	0.10	ug/L		12/27/23 08:30	12/28/23 17:50	1
Naphthalene	ND		0.40	0.16	ug/L		12/27/23 08:30	12/28/23 17:50	1
Nitrobenzene	ND		1.0	0.040	ug/L		12/27/23 08:30	12/28/23 17:50	1
N-Nitrosodi-n-propylamine	ND		0.40	0.060	ug/L		12/27/23 08:30	12/28/23 17:50	1
N-Nitrosodiphenylamine	ND		1.0	0.070	ug/L		12/27/23 08:30	12/28/23 17:50	1
Pentachlorophenol	ND		5.0	0.51	ug/L		12/27/23 08:30	12/28/23 17:50	1
Phenanthrene	ND		1.0	0.12	ug/L		12/27/23 08:30	12/28/23 17:50	1
Phenol	ND		1.0	0.16	ug/L		12/27/23 08:30	12/28/23 17:50	1
Pyrene	ND		1.0	0.040	ug/L		12/27/23 08:30	12/28/23 17:50	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol (Surr)	*36*	*S1-*	*50 - 130*	*12/27/23 08:30*	*12/28/23 17:50*	*1*
2-Fluorobiphenyl	*36*		*35 - 120*	*12/27/23 08:30*	*12/28/23 17:50*	*1*
2-Fluorophenol (Surr)	*21*		*21 - 120*	*12/27/23 08:30*	*12/28/23 17:50*	*1*
Nitrobenzene-d5 (Surr)	*49*		*39 - 120*	*12/27/23 08:30*	*12/28/23 17:50*	*1*
Phenol-d5 (Surr)	*15*		*10 - 120*	*12/27/23 08:30*	*12/28/23 17:50*	*1*
Terphenyl-d14 (Surr)	*61*	*S1-*	*63 - 137*	*12/27/23 08:30*	*12/28/23 17:50*	*1*

Lab Sample ID: MB 580-447085/1-A
Matrix: Water
Analysis Batch: 447355

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 447085

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,4-Trichlorobenzene	ND		0.40	0.090	ug/L		12/27/23 08:30	12/29/23 10:29	1
1,2-Dichlorobenzene	ND		0.40	0.050	ug/L		12/27/23 08:30	12/29/23 10:29	1
1,3-Dichlorobenzene	ND		0.40	0.040	ug/L		12/27/23 08:30	12/29/23 10:29	1
1,4-Dichlorobenzene	ND		0.40	0.040	ug/L		12/27/23 08:30	12/29/23 10:29	1
1-Methylnaphthalene	ND		1.0	0.050	ug/L		12/27/23 08:30	12/29/23 10:29	1
2,4,5-Trichlorophenol	ND		0.40	0.10	ug/L		12/27/23 08:30	12/29/23 10:29	1
2,4,6-Trichlorophenol	ND		0.60	0.10	ug/L		12/27/23 08:30	12/29/23 10:29	1
2,4-Dichlorophenol	ND		1.0	0.20	ug/L		12/27/23 08:30	12/29/23 10:29	1
2,4-Dimethylphenol	ND		4.0	0.16	ug/L		12/27/23 08:30	12/29/23 10:29	1
2,4-Dinitrophenol	ND		5.0	0.45	ug/L		12/27/23 08:30	12/29/23 10:29	1
2,4-Dinitrotoluene	ND		1.0	0.10	ug/L		12/27/23 08:30	12/29/23 10:29	1
2,6-Dinitrotoluene	ND		0.40	0.10	ug/L		12/27/23 08:30	12/29/23 10:29	1
2-Chloronaphthalene	ND		1.0	0.070	ug/L		12/27/23 08:30	12/29/23 10:29	1
2-Chlorophenol	ND		1.0	0.050	ug/L		12/27/23 08:30	12/29/23 10:29	1
2-Methylnaphthalene	ND		0.40	0.060	ug/L		12/27/23 08:30	12/29/23 10:29	1

Method: 8270E - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 580-447085/1-A
Matrix: Water
Analysis Batch: 447355

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 447085

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-Methylphenol	ND		0.60	0.050	ug/L		12/27/23 08:30	12/29/23 10:29	1
2-Nitroaniline	ND		1.0	0.10	ug/L		12/27/23 08:30	12/29/23 10:29	1
2-Nitrophenol	ND		1.0	0.070	ug/L		12/27/23 08:30	12/29/23 10:29	1
3 & 4 Methylphenol	ND		0.60	0.10	ug/L		12/27/23 08:30	12/29/23 10:29	1
3,3'-Dichlorobenzidine	ND		1.0	0.12	ug/L		12/27/23 08:30	12/29/23 10:29	1
3-Nitroaniline	ND		3.0	0.16	ug/L		12/27/23 08:30	12/29/23 10:29	1
4,6-Dinitro-2-methylphenol	ND		2.0	0.55	ug/L		12/27/23 08:30	12/29/23 10:29	1
4-Bromophenyl phenyl ether	ND		0.60	0.060	ug/L		12/27/23 08:30	12/29/23 10:29	1
4-Chloro-3-methylphenol	ND		0.60	0.13	ug/L		12/27/23 08:30	12/29/23 10:29	1
4-Chloroaniline	ND		2.0	0.15	ug/L		12/27/23 08:30	12/29/23 10:29	1
4-Chlorophenyl phenyl ether	ND		0.60	0.050	ug/L		12/27/23 08:30	12/29/23 10:29	1
4-Nitroaniline	ND		2.0	0.21	ug/L		12/27/23 08:30	12/29/23 10:29	1
4-Nitrophenol	ND		10	1.7	ug/L		12/27/23 08:30	12/29/23 10:29	1
Acenaphthene	ND		0.40	0.050	ug/L		12/27/23 08:30	12/29/23 10:29	1
Acenaphthylene	ND		1.0	0.060	ug/L		12/27/23 08:30	12/29/23 10:29	1
Anthracene	ND		1.0	0.050	ug/L		12/27/23 08:30	12/29/23 10:29	1
Benzo[a]anthracene	ND		0.25	0.050	ug/L		12/27/23 08:30	12/29/23 10:29	1
Benzo[a]pyrene	ND		0.25	0.040	ug/L		12/27/23 08:30	12/29/23 10:29	1
Benzo[b]fluoranthene	ND		0.25	0.040	ug/L		12/27/23 08:30	12/29/23 10:29	1
Benzo[g,h,i]perylene	ND		0.25	0.040	ug/L		12/27/23 08:30	12/29/23 10:29	1
Benzo[k]fluoranthene	ND		0.25	0.050	ug/L		12/27/23 08:30	12/29/23 10:29	1
Benzoic acid	ND		10	1.3	ug/L		12/27/23 08:30	12/29/23 10:29	1
Benzyl alcohol	ND		5.0	0.18	ug/L		12/27/23 08:30	12/29/23 10:29	1
Bis(2-chloroethoxy)methane	ND		0.60	0.050	ug/L		12/27/23 08:30	12/29/23 10:29	1
Bis(2-chloroethyl)ether	ND		0.10	0.030	ug/L		12/27/23 08:30	12/29/23 10:29	1
Bis(2-ethylhexyl) phthalate	ND		3.0	0.74	ug/L		12/27/23 08:30	12/29/23 10:29	1
bis(chloroisopropyl) ether	ND		0.25	0.060	ug/L		12/27/23 08:30	12/29/23 10:29	1
Butyl benzyl phthalate	ND		4.0	0.27	ug/L		12/27/23 08:30	12/29/23 10:29	1
Carbazole	ND		0.60	0.10	ug/L		12/27/23 08:30	12/29/23 10:29	1
Chrysene	ND		0.25	0.090	ug/L		12/27/23 08:30	12/29/23 10:29	1
Dibenz(a,h)anthracene	ND		0.25	0.070	ug/L		12/27/23 08:30	12/29/23 10:29	1
Dibenzofuran	ND		0.40	0.10	ug/L		12/27/23 08:30	12/29/23 10:29	1
Diethyl phthalate	ND		1.0	0.15	ug/L		12/27/23 08:30	12/29/23 10:29	1
Dimethyl phthalate	ND		0.60	0.060	ug/L		12/27/23 08:30	12/29/23 10:29	1
Di-n-butyl phthalate	ND		10	3.0	ug/L		12/27/23 08:30	12/29/23 10:29	1
Di-n-octyl phthalate	ND		1.0	0.13	ug/L		12/27/23 08:30	12/29/23 10:29	1
Fluoranthene	ND		0.25	0.060	ug/L		12/27/23 08:30	12/29/23 10:29	1
Fluorene	ND		0.25	0.050	ug/L		12/27/23 08:30	12/29/23 10:29	1
Hexachlorobenzene	ND		0.60	0.080	ug/L		12/27/23 08:30	12/29/23 10:29	1
Hexachlorobutadiene	ND		1.0	0.080	ug/L		12/27/23 08:30	12/29/23 10:29	1
Hexachlorocyclopentadiene	ND		1.0	0.14	ug/L		12/27/23 08:30	12/29/23 10:29	1
Hexachloroethane	ND		1.0	0.050	ug/L		12/27/23 08:30	12/29/23 10:29	1
Indeno[1,2,3-cd]pyrene	ND		0.40	0.13	ug/L		12/27/23 08:30	12/29/23 10:29	1
Isophorone	ND		0.40	0.10	ug/L		12/27/23 08:30	12/29/23 10:29	1
Naphthalene	ND		0.40	0.16	ug/L		12/27/23 08:30	12/29/23 10:29	1
Nitrobenzene	ND		1.0	0.040	ug/L		12/27/23 08:30	12/29/23 10:29	1
N-Nitrosodi-n-propylamine	ND		0.40	0.060	ug/L		12/27/23 08:30	12/29/23 10:29	1
N-Nitrosodiphenylamine	ND		1.0	0.070	ug/L		12/27/23 08:30	12/29/23 10:29	1
Pentachlorophenol	ND		5.0	0.51	ug/L		12/27/23 08:30	12/29/23 10:29	1

Method: 8270E - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 580-447085/1-A
Matrix: Water
Analysis Batch: 447355

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 447085

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phenanthrene	ND		1.0	0.12	ug/L		12/27/23 08:30	12/29/23 10:29	1
Phenol	ND		1.0	0.16	ug/L		12/27/23 08:30	12/29/23 10:29	1
Pyrene	ND		1.0	0.040	ug/L		12/27/23 08:30	12/29/23 10:29	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol (Surr)	*38*	*S1-*	*50 - 130*	*12/27/23 08:30*	*12/29/23 10:29*	*1*
2-Fluorobiphenyl	*33*	*S1-*	*35 - 120*	*12/27/23 08:30*	*12/29/23 10:29*	*1*
2-Fluorophenol (Surr)	*19*	*S1-*	*21 - 120*	*12/27/23 08:30*	*12/29/23 10:29*	*1*
Nitrobenzene-d5 (Surr)	*46*		*39 - 120*	*12/27/23 08:30*	*12/29/23 10:29*	*1*
Phenol-d5 (Surr)	*14*		*10 - 120*	*12/27/23 08:30*	*12/29/23 10:29*	*1*
Terphenyl-d14 (Surr)	*56*	*S1-*	*63 - 137*	*12/27/23 08:30*	*12/29/23 10:29*	*1*

Lab Sample ID: LCS 580-447085/2-A
Matrix: Water
Analysis Batch: 447287

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 447085

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,2,4-Trichlorobenzene	4.00	0.922		ug/L		23	21 - 120
1,2-Dichlorobenzene	4.00	0.856		ug/L		21	20 - 120
1,3-Dichlorobenzene	4.00	0.686	*-	ug/L		17	20 - 120
1,4-Dichlorobenzene	4.00	0.768	*-	ug/L		19	20 - 120
1-Methylnaphthalene	4.00	1.85		ug/L		46	36 - 120
2,4,5-Trichlorophenol	4.00	1.37	*-	ug/L		34	45 - 120
2,4,6-Trichlorophenol	4.00	0.999	*-	ug/L		25	43 - 120
2,4-Dichlorophenol	4.00	1.80		ug/L		45	45 - 120
2,4-Dimethylphenol	4.00	2.40	J	ug/L		60	37 - 120
2,4-Dinitrophenol	8.00	ND	*-	ug/L		0	10 - 146
2,4-Dinitrotoluene	4.00	2.18		ug/L		55	51 - 120
2,6-Dinitrotoluene	4.00	3.39		ug/L		85	52 - 120
2-Chloronaphthalene	4.00	2.20		ug/L		55	35 - 120
2-Chlorophenol	4.00	1.49	*-	ug/L		37	44 - 120
2-Methylnaphthalene	4.00	1.82		ug/L		45	35 - 120
2-Methylphenol	4.00	1.85		ug/L		46	30 - 120
2-Nitroaniline	4.00	3.99		ug/L		100	43 - 120
2-Nitrophenol	4.00	0.151	J *-	ug/L		4	44 - 120
3 & 4 Methylphenol	4.00	1.05	*-	ug/L		26	29 - 120
3,3'-Dichlorobenzidine	8.00	9.15		ug/L		114	33 - 150
3-Nitroaniline	4.00	5.21		ug/L		130	10 - 138
4,6-Dinitro-2-methylphenol	8.00	ND	*-	ug/L		0	29 - 136
4-Bromophenyl phenyl ether	4.00	3.85		ug/L		96	53 - 120
4-Chloro-3-methylphenol	4.00	1.20	*-	ug/L		30	36 - 120
4-Chloroaniline	4.00	3.88		ug/L		97	10 - 150
4-Chlorophenyl phenyl ether	4.00	3.54		ug/L		88	41 - 120
4-Nitroaniline	4.00	6.02	*+	ug/L		151	38 - 133
4-Nitrophenol	8.00	ND	*-	ug/L		0	10 - 120
Acenaphthene	4.00	2.70		ug/L		67	41 - 120
Acenaphthylene	4.00	3.05		ug/L		76	43 - 120
Anthracene	4.00	3.86		ug/L		97	58 - 120

Method: 8270E - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 580-447085/2-A
Matrix: Water
Analysis Batch: 447287

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 447085

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Benzo[a]anthracene	4.00	4.21		ug/L		105	48 - 131
Benzo[a]pyrene	4.00	3.94		ug/L		99	55 - 125
Benzo[b]fluoranthene	4.00	4.59		ug/L		115	54 - 124
Benzo[g,h,i]perylene	4.00	4.09		ug/L		102	46 - 124
Benzo[k]fluoranthene	4.00	3.58		ug/L		89	52 - 132
Benzoic acid	8.00	ND	*-	ug/L		0	10 - 120
Benzyl alcohol	4.00	3.22	J	ug/L		81	10 - 120
Bis(2-chloroethoxy)methane	4.00	3.34		ug/L		84	38 - 120
Bis(2-chloroethyl)ether	4.00	3.09		ug/L		77	39 - 120
Bis(2-ethylhexyl) phthalate	4.00	4.05		ug/L		101	41 - 150
bis(chloroisopropyl) ether	4.00	2.40		ug/L		60	20 - 139
Butyl benzyl phthalate	4.00	3.84	J	ug/L		96	40 - 150
Carbazole	4.00	4.82		ug/L		121	61 - 150
Chrysene	4.00	3.59		ug/L		90	57 - 125
Dibenz(a,h)anthracene	4.00	4.20		ug/L		105	48 - 126
Dibenzofuran	4.00	3.25		ug/L		81	45 - 120
Diethyl phthalate	4.00	4.14		ug/L		104	60 - 121
Dimethyl phthalate	4.00	3.97		ug/L		99	54 - 120
Di-n-butyl phthalate	4.00	4.07	J	ug/L		102	55 - 150
Di-n-octyl phthalate	4.00	4.09		ug/L		102	48 - 140
Fluoranthene	4.00	4.15		ug/L		104	60 - 121
Fluorene	4.00	3.50		ug/L		88	20 - 120
Hexachlorobenzene	4.00	3.64		ug/L		91	49 - 120
Hexachlorobutadiene	4.00	0.257	J *-	ug/L		6	10 - 130
Hexachlorocyclopentadiene	4.00	ND	*-	ug/L		2	10 - 125
Hexachloroethane	4.00	0.311	J *-	ug/L		8	10 - 130
Indeno[1,2,3-cd]pyrene	4.00	4.77		ug/L		119	39 - 124
Isophorone	4.00	3.43		ug/L		86	41 - 120
Naphthalene	4.00	1.70		ug/L		43	42 - 120
Nitrobenzene	4.00	3.17		ug/L		79	38 - 120
N-Nitrosodi-n-propylamine	4.00	3.63		ug/L		91	39 - 120
N-Nitrosodiphenylamine	4.00	4.06		ug/L		102	52 - 120
Pentachlorophenol	8.00	0.604	J *-	ug/L		8	18 - 135
Phenanthrene	4.00	3.74		ug/L		94	54 - 120
Phenol	4.00	0.462	J *-	ug/L		12	13 - 120
Pyrene	4.00	4.17		ug/L		104	57 - 120

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
2,4,6-Tribromophenol (Surr)	*10*	*S1-*	*50 - 130*
2-Fluorobiphenyl	*46*		*35 - 120*
2-Fluorophenol (Surr)	*12*	*S1-*	*21 - 120*
Nitrobenzene-d5 (Surr)	*52*		*39 - 120*
Phenol-d5 (Surr)	*6*	*S1-*	*10 - 120*
Terphenyl-d14 (Surr)	*61*	*S1-*	*63 - 137*

Method: 8270E - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 580-447085/2-A
Matrix: Water
Analysis Batch: 447355

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 447085

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,2,4-Trichlorobenzene	4.00	0.916		ug/L		23	21 - 120
1,2-Dichlorobenzene	4.00	0.808		ug/L		20	20 - 120
1,3-Dichlorobenzene	4.00	0.628	*-	ug/L		16	20 - 120
1,4-Dichlorobenzene	4.00	0.695	*-	ug/L		17	20 - 120
1-Methylnaphthalene	4.00	1.78		ug/L		44	36 - 120
2,4,5-Trichlorophenol	4.00	0.524	*-	ug/L		13	45 - 120
2,4,6-Trichlorophenol	4.00	0.818	*-	ug/L		20	43 - 120
2,4-Dichlorophenol	4.00	0.513	J *-	ug/L		13	45 - 120
2,4-Dimethylphenol	4.00	1.97	J	ug/L		49	37 - 120
2,4-Dinitrophenol	8.00	ND	*-	ug/L		0	10 - 146
2,4-Dinitrotoluene	4.00	3.25		ug/L		81	51 - 120
2,6-Dinitrotoluene	4.00	3.49		ug/L		87	52 - 120
2-Chloronaphthalene	4.00	1.95		ug/L		49	35 - 120
2-Chlorophenol	4.00	0.381	J *-	ug/L		10	44 - 120
2-Methylnaphthalene	4.00	1.72		ug/L		43	35 - 120
2-Methylphenol	4.00	1.31		ug/L		33	30 - 120
2-Nitroaniline	4.00	3.48		ug/L		87	43 - 120
2-Nitrophenol	4.00	0.166	J *-	ug/L		4	44 - 120
3 & 4 Methylphenol	4.00	0.506	J *-	ug/L		13	29 - 120
3,3'-Dichlorobenzidine	8.00	8.94		ug/L		112	33 - 150
3-Nitroaniline	4.00	4.59		ug/L		115	10 - 138
4,6-Dinitro-2-methylphenol	8.00	ND	*-	ug/L		0	29 - 136
4-Bromophenyl phenyl ether	4.00	3.82		ug/L		96	53 - 120
4-Chloro-3-methylphenol	4.00	0.314	J *-	ug/L		8	36 - 120
4-Chloroaniline	4.00	3.75		ug/L		94	10 - 150
4-Chlorophenyl phenyl ether	4.00	3.22		ug/L		81	41 - 120
4-Nitroaniline	4.00	5.17		ug/L		129	38 - 133
4-Nitrophenol	8.00	ND	*-	ug/L		0	10 - 120
Acenaphthene	4.00	2.42		ug/L		60	41 - 120
Acenaphthylene	4.00	2.70		ug/L		67	43 - 120
Anthracene	4.00	3.65		ug/L		91	58 - 120
Benzo[a]anthracene	4.00	4.12		ug/L		103	48 - 131
Benzo[a]pyrene	4.00	3.79		ug/L		95	55 - 125
Benzo[b]fluoranthene	4.00	4.07		ug/L		102	54 - 124
Benzo[g,h,i]perylene	4.00	3.85		ug/L		96	46 - 124
Benzo[k]fluoranthene	4.00	3.68		ug/L		92	52 - 132
Benzoic acid	8.00	ND	*-	ug/L		0	10 - 120
Benzyl alcohol	4.00	2.81	J	ug/L		70	10 - 120
Bis(2-chloroethoxy)methane	4.00	3.03		ug/L		76	38 - 120
Bis(2-chloroethyl)ether	4.00	2.80		ug/L		70	39 - 120
Bis(2-ethylhexyl) phthalate	4.00	3.99		ug/L		100	41 - 150
bis(chloroisopropyl) ether	4.00	2.13		ug/L		53	20 - 139
Butyl benzyl phthalate	4.00	4.14		ug/L		104	40 - 150
Carbazole	4.00	4.43		ug/L		111	61 - 150
Chrysene	4.00	3.43		ug/L		86	57 - 125
Dibenz(a,h)anthracene	4.00	3.94		ug/L		99	48 - 126
Dibenzofuran	4.00	2.95		ug/L		74	45 - 120
Diethyl phthalate	4.00	3.78		ug/L		94	60 - 121

Method: 8270E - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 580-447085/2-A
Matrix: Water
Analysis Batch: 447355

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 447085

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Dimethyl phthalate			4.00	3.48		ug/L		87	54 - 120		
Di-n-butyl phthalate			4.00	3.85	J	ug/L		96	55 - 150		
Di-n-octyl phthalate			4.00	4.24		ug/L		106	48 - 140		
Fluoranthene			4.00	3.80		ug/L		95	60 - 121		
Fluorene			4.00	3.21		ug/L		80	20 - 120		
Hexachlorobenzene			4.00	3.61		ug/L		90	49 - 120		
Hexachlorobutadiene			4.00	0.284	J *-	ug/L		7	10 - 130		
Hexachlorocyclopentadiene			2.00	ND	*-	ug/L		6	10 - 125		
Hexachloroethane			4.00	0.268	J *-	ug/L		7	10 - 130		
Indeno[1,2,3-cd]pyrene			4.00	4.49		ug/L		112	39 - 124		
Isophorone			4.00	3.16		ug/L		79	41 - 120		
Naphthalene			4.00	1.64	*-	ug/L		41	42 - 120		
Nitrobenzene			4.00	3.04		ug/L		76	38 - 120		
N-Nitrosodi-n-propylamine			4.00	3.25		ug/L		81	39 - 120		
N-Nitrosodiphenylamine			4.00	3.88		ug/L		97	52 - 120		
Pentachlorophenol			8.00	1.10	J *-	ug/L		14	18 - 135		
Phenanthrene			4.00	3.51		ug/L		88	54 - 120		
Phenol			4.00	ND	*-	ug/L		3	13 - 120		
Pyrene			4.00	3.95		ug/L		99	57 - 120		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
2,4,6-Tribromophenol (Surr)	*20*	*S1-*	*50 - 130*
2-Fluorobiphenyl	*42*		*35 - 120*
2-Fluorophenol (Surr)	*3*	*S1-*	*21 - 120*
Nitrobenzene-d5 (Surr)	*50*		*39 - 120*
Phenol-d5 (Surr)	*0*	*S1-*	*10 - 120*
Terphenyl-d14 (Surr)	*58*	*S1-*	*63 - 137*

Lab Sample ID: LCSD 580-447085/3-A
Matrix: Water
Analysis Batch: 447287

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 447085

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,2,4-Trichlorobenzene			4.00	0.743	*-	ug/L		19	21 - 120	21	35
1,2-Dichlorobenzene			4.00	0.716	*-	ug/L		18	20 - 120	18	35
1,3-Dichlorobenzene			4.00	0.556	*-	ug/L		14	20 - 120	21	35
1,4-Dichlorobenzene			4.00	0.617	*-	ug/L		15	20 - 120	22	35
1-Methylnaphthalene			4.00	1.60		ug/L		40	36 - 120	14	35
2,4,5-Trichlorophenol			4.00	4.18	*1	ug/L		104	45 - 120	101	35
2,4,6-Trichlorophenol			4.00	4.28	*1	ug/L		107	43 - 120	124	35
2,4-Dichlorophenol			4.00	4.20	*1	ug/L		105	45 - 120	80	35
2,4-Dimethylphenol			4.00	3.74	J *1	ug/L		94	37 - 120	44	35
2,4-Dinitrophenol			8.00	3.49	J *1	ug/L		44	10 - 146	200	35
2,4-Dinitrotoluene			4.00	4.29	*1	ug/L		107	51 - 120	65	35
2,6-Dinitrotoluene			4.00	4.47		ug/L		112	52 - 120	27	35
2-Chloronaphthalene			4.00	1.71		ug/L		43	35 - 120	25	35
2-Chlorophenol			4.00	3.62	*1	ug/L		90	44 - 120	83	35
2-Methylnaphthalene			4.00	1.45		ug/L		36	35 - 120	22	35

Method: 8270E - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCSD 580-447085/3-A
Matrix: Water
Analysis Batch: 447287

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 447085

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
2-Methylphenol			4.00	3.19	*1	ug/L		80	30 - 120	53	35
2-Nitroaniline			4.00	4.25		ug/L		106	43 - 120	6	35
2-Nitrophenol			4.00	3.89	*1	ug/L		97	44 - 120	185	35
3 & 4 Methylphenol			4.00	3.03	*1	ug/L		76	29 - 120	97	35
3,3'-Dichlorobenzidine			8.00	9.45		ug/L		118	33 - 150	3	35
3-Nitroaniline			4.00	5.15		ug/L		129	10 - 138	1	35
4,6-Dinitro-2-methylphenol			8.00	4.94	*1	ug/L		62	29 - 136	200	35
4-Bromophenyl phenyl ether			4.00	3.71		ug/L		93	53 - 120	4	35
4-Chloro-3-methylphenol			4.00	4.05	*1	ug/L		101	36 - 120	108	35
4-Chloroaniline			4.00	4.54		ug/L		113	10 - 150	16	35
4-Chlorophenyl phenyl ether			4.00	3.11		ug/L		78	41 - 120	13	35
4-Nitroaniline			4.00	6.43	*+	ug/L		161	38 - 133	7	35
4-Nitrophenol			8.00	4.04	J *1	ug/L		51	10 - 120	200	35
Acenaphthene			4.00	2.38		ug/L		59	41 - 120	13	35
Acenaphthylene			4.00	2.85		ug/L		71	43 - 120	7	35
Anthracene			4.00	4.04		ug/L		101	58 - 120	4	35
Benzo[a]anthracene			4.00	4.55		ug/L		114	48 - 131	8	35
Benzo[a]pyrene			4.00	4.29		ug/L		107	55 - 125	8	35
Benzo[b]fluoranthene			4.00	5.00	*+	ug/L		125	54 - 124	9	35
Benzo[g,h,i]perylene			4.00	4.53		ug/L		113	46 - 124	10	35
Benzo[k]fluoranthene			4.00	3.81		ug/L		95	52 - 132	6	35
Benzoic acid			8.00	3.99	J *1	ug/L		50	10 - 120	200	35
Benzyl alcohol			4.00	3.24	J	ug/L		81	10 - 120	1	35
Bis(2-chloroethoxy)methane			4.00	3.45		ug/L		86	38 - 120	3	35
Bis(2-chloroethyl)ether			4.00	3.07		ug/L		77	39 - 120	1	35
Bis(2-ethylhexyl) phthalate			4.00	4.26		ug/L		107	41 - 150	5	35
bis(chloroisopropyl) ether			4.00	2.24		ug/L		56	20 - 139	7	35
Butyl benzyl phthalate			4.00	4.48		ug/L		112	40 - 150	15	35
Carbazole			4.00	4.87		ug/L		122	61 - 150	1	35
Chrysene			4.00	3.79		ug/L		95	57 - 125	5	35
Dibenz(a,h)anthracene			4.00	4.50		ug/L		112	48 - 126	7	35
Dibenzofuran			4.00	3.01		ug/L		75	45 - 120	8	35
Diethyl phthalate			4.00	4.37		ug/L		109	60 - 121	5	35
Dimethyl phthalate			4.00	4.31		ug/L		108	54 - 120	8	35
Di-n-butyl phthalate			4.00	4.27	J	ug/L		107	55 - 150	5	35
Di-n-octyl phthalate			4.00	4.72		ug/L		118	48 - 140	14	35
Fluoranthene			4.00	4.36		ug/L		109	60 - 121	5	35
Fluorene			4.00	3.39		ug/L		85	20 - 120	3	35
Hexachlorobenzene			4.00	3.91		ug/L		98	49 - 120	7	35
Hexachlorobutadiene			4.00	0.172	J *- *1	ug/L		4	10 - 130	40	35
Hexachlorocyclopentadiene			4.00	0.230	J *- *1	ug/L		6	10 - 125	83	35
Hexachloroethane			4.00	0.228	J *-	ug/L		6	10 - 130	31	35
Indeno[1,2,3-cd]pyrene			4.00	4.84		ug/L		121	39 - 124	1	35
Isophorone			4.00	3.62		ug/L		91	41 - 120	6	35
Naphthalene			4.00	1.52	*-	ug/L		38	42 - 120	11	35
Nitrobenzene			4.00	3.08		ug/L		77	38 - 120	3	35
N-Nitrosodi-n-propylamine			4.00	3.63		ug/L		91	39 - 120	0	35
N-Nitrosodiphenylamine			4.00	4.24		ug/L		106	52 - 120	4	35
Pentachlorophenol			8.00	4.42	J *1	ug/L		55	18 - 135	152	35

Method: 8270E - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCSD 580-447085/3-A
Matrix: Water
Analysis Batch: 447287

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 447085

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Phenanthrene			4.00	3.82		ug/L		95	54 - 120	2	35
Phenol			4.00	1.48	*1	ug/L		37	13 - 120	105	35
Pyrene			4.00	4.33		ug/L		108	57 - 120	4	35

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
2,4,6-Tribromophenol (Surr)	*74*		*50 - 130*
2-Fluorobiphenyl	*47*		*35 - 120*
2-Fluorophenol (Surr)	*37*		*21 - 120*
Nitrobenzene-d5 (Surr)	*55*		*39 - 120*
Phenol-d5 (Surr)	*23*		*10 - 120*
Terphenyl-d14 (Surr)	*64*		*63 - 137*

Lab Sample ID: LCSD 580-447085/3-A
Matrix: Water
Analysis Batch: 447355

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 447085

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,2,4-Trichlorobenzene			4.00	0.705	*-	ug/L		18	21 - 120	26	35
1,2-Dichlorobenzene			4.00	0.673	*-	ug/L		17	20 - 120	18	35
1,3-Dichlorobenzene			4.00	0.514	*-	ug/L		13	20 - 120	20	35
1,4-Dichlorobenzene			4.00	0.571	*-	ug/L		14	20 - 120	20	35
1-Methylnaphthalene			4.00	1.47		ug/L		37	36 - 120	19	35
2,4,5-Trichlorophenol			4.00	3.97	*1	ug/L		99	45 - 120	153	35
2,4,6-Trichlorophenol			4.00	4.14	*1	ug/L		104	43 - 120	134	35
2,4-Dichlorophenol			4.00	3.89	*1	ug/L		97	45 - 120	153	35
2,4-Dimethylphenol			4.00	3.58	J *1	ug/L		90	37 - 120	58	35
2,4-Dinitrophenol			8.00	9.11	*1	ug/L		114	10 - 146	200	35
2,4-Dinitrotoluene			4.00	3.99		ug/L		100	51 - 120	20	35
2,6-Dinitrotoluene			4.00	4.11		ug/L		103	52 - 120	16	35
2-Chloronaphthalene			4.00	1.61		ug/L		40	35 - 120	19	35
2-Chlorophenol			4.00	3.41	*1	ug/L		85	44 - 120	160	35
2-Methylnaphthalene			4.00	1.41		ug/L		35	35 - 120	20	35
2-Methylphenol			4.00	3.07	*1	ug/L		77	30 - 120	80	35
2-Nitroaniline			4.00	4.05		ug/L		101	43 - 120	15	35
2-Nitrophenol			4.00	3.67	*1	ug/L		92	44 - 120	183	35
3 & 4 Methylphenol			4.00	2.90	*1	ug/L		73	29 - 120	141	35
3,3'-Dichlorobenzidine			8.00	9.16		ug/L		114	33 - 150	2	35
3-Nitroaniline			4.00	4.24		ug/L		106	10 - 138	8	35
4,6-Dinitro-2-methylphenol			8.00	9.41	*1	ug/L		118	29 - 136	200	35
4-Bromophenyl phenyl ether			4.00	3.82		ug/L		95	53 - 120	0	35
4-Chloro-3-methylphenol			4.00	3.68	*1	ug/L		92	36 - 120	169	35
4-Chloroaniline			4.00	3.90		ug/L		98	10 - 150	4	35
4-Chlorophenyl phenyl ether			4.00	2.92		ug/L		73	41 - 120	10	35
4-Nitroaniline			4.00	4.96		ug/L		124	38 - 133	4	35
4-Nitrophenol			8.00	3.84	J *1	ug/L		48	10 - 120	200	35
Acenaphthene			4.00	2.19		ug/L		55	41 - 120	10	35
Acenaphthylene			4.00	2.63		ug/L		66	43 - 120	2	35
Anthracene			4.00	3.88		ug/L		97	58 - 120	6	35

Method: 8270E - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCSD 580-447085/3-A
Matrix: Water
Analysis Batch: 447355

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 447085

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Benzo[a]anthracene			4.00	4.72		ug/L		118	48 - 131	13	35
Benzo[a]pyrene			4.00	4.17		ug/L		104	55 - 125	9	35
Benzo[b]fluoranthene			4.00	4.53		ug/L		113	54 - 124	11	35
Benzo[g,h,i]perylene			4.00	4.31		ug/L		108	46 - 124	11	35
Benzo[k]fluoranthene			4.00	4.04		ug/L		101	52 - 132	9	35
Benzoic acid			8.00	6.02	J *1	ug/L		75	10 - 120	200	35
Benzyl alcohol			4.00	3.22	J	ug/L		81	10 - 120	14	35
Bis(2-chloroethoxy)methane			4.00	3.34		ug/L		84	38 - 120	10	35
Bis(2-chloroethyl)ether			4.00	2.92		ug/L		73	39 - 120	4	35
Bis(2-ethylhexyl) phthalate			4.00	4.27		ug/L		107	41 - 150	7	35
bis(chloroisopropyl) ether			4.00	2.08		ug/L		52	20 - 139	2	35
Butyl benzyl phthalate			4.00	4.47		ug/L		112	40 - 150	8	35
Carbazole			4.00	4.63		ug/L		116	61 - 150	5	35
Chrysene			4.00	3.83		ug/L		96	57 - 125	11	35
Dibenz(a,h)anthracene			4.00	4.29		ug/L		107	48 - 126	9	35
Dibenzofuran			4.00	2.74		ug/L		69	45 - 120	7	35
Diethyl phthalate			4.00	3.99		ug/L		100	60 - 121	5	35
Dimethyl phthalate			4.00	3.93		ug/L		98	54 - 120	12	35
Di-n-butyl phthalate			4.00	4.17	J	ug/L		104	55 - 150	8	35
Di-n-octyl phthalate			4.00	4.67		ug/L		117	48 - 140	10	35
Fluoranthene			4.00	4.20		ug/L		105	60 - 121	10	35
Fluorene			4.00	3.13		ug/L		78	20 - 120	2	35
Hexachlorobenzene			4.00	3.78		ug/L		95	49 - 120	5	35
Hexachlorobutadiene			4.00	0.155	J *- *1	ug/L		4	10 - 130	59	35
Hexachlorocyclopentadiene			2.00	0.299	J *1	ug/L		15	10 - 125	81	35
Hexachloroethane			4.00	0.206	J *-	ug/L		5	10 - 130	26	35
Indeno[1,2,3-cd]pyrene			4.00	4.78		ug/L		119	39 - 124	6	35
Isophorone			4.00	3.44		ug/L		86	41 - 120	8	35
Naphthalene			4.00	1.42	*-	ug/L		36	42 - 120	14	35
Nitrobenzene			4.00	3.02		ug/L		76	38 - 120	0	35
N-Nitrosodi-n-propylamine			4.00	3.32		ug/L		83	39 - 120	2	35
N-Nitrosodiphenylamine			4.00	4.17		ug/L		104	52 - 120	7	35
Pentachlorophenol			8.00	7.05	*1	ug/L		88	18 - 135	146	35
Phenanthrene			4.00	3.66		ug/L		91	54 - 120	4	35
Phenol			4.00	1.28	*1	ug/L		32	13 - 120	161	35
Pyrene			4.00	4.20		ug/L		105	57 - 120	6	35

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
2,4,6-Tribromophenol (Surr)	*75*		*50 - 130*
2-Fluorobiphenyl	*42*		*35 - 120*
2-Fluorophenol (Surr)	*34*		*21 - 120*
Nitrobenzene-d5 (Surr)	*52*		*39 - 120*
Phenol-d5 (Surr)	*21*		*10 - 120*
Terphenyl-d14 (Surr)	*60*	*S1-*	*63 - 137*

Method: 8151A - Herbicides (GC)

Lab Sample ID: MB 570-394080/1-A
Matrix: Water
Analysis Batch: 394962

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 394080

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4,5-T	ND		0.50	0.21	ug/L		12/18/23 21:35	12/20/23 21:19	1
2,4,5-TP (Silvex)	ND		0.50	0.14	ug/L		12/18/23 21:35	12/20/23 21:19	1
2,4-D	ND		5.0	2.0	ug/L		12/18/23 21:35	12/20/23 21:19	1
2,4-DB	ND		5.0	3.5	ug/L		12/18/23 21:35	12/20/23 21:19	1
Dalapon	ND		13	4.7	ug/L		12/18/23 21:35	12/20/23 21:19	1
Dicamba	ND		0.50	0.29	ug/L		12/18/23 21:35	12/20/23 21:19	1
Dichlorprop	ND		5.0	2.0	ug/L		12/18/23 21:35	12/20/23 21:19	1
Dinoseb	ND		2.5	2.2	ug/L		12/18/23 21:35	12/20/23 21:19	1
MCPA	ND		500	350	ug/L		12/18/23 21:35	12/20/23 21:19	1
MCPP	ND		500	310	ug/L		12/18/23 21:35	12/20/23 21:19	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4-Dichlorophenylacetic acid	*99*		*20 - 161*	*12/18/23 21:35*	*12/20/23 21:19*	*1*

Lab Sample ID: LCS 570-394080/2-A
Matrix: Water
Analysis Batch: 394962

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 394080

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
2,4,5-T			1.00	0.755		ug/L		76	28 - 180		
2,4-D			10.0	9.12		ug/L		91	10 - 180		
2,4-DB			10.0	8.37		ug/L		84	10 - 180		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
2,4-Dichlorophenylacetic acid	*82*		*20 - 161*

Lab Sample ID: LCSD 570-394080/3-A
Matrix: Water
Analysis Batch: 394962

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 394080

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
2,4,5-T			1.00	1.23	*1	ug/L		123	28 - 180	48	20
2,4-D			10.0	14.9	*1	ug/L		149	10 - 180	48	20
2,4-DB			10.0	11.7	*1	ug/L		117	10 - 180	33	20

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
2,4-Dichlorophenylacetic acid	*102*		*20 - 161*

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 590-45119/1003
Matrix: Water
Analysis Batch: 45119

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		0.80	0.42	mg/L			12/15/23 13:55	1
Sulfate	ND		0.50	0.13	mg/L			12/15/23 13:55	1

Method: 300.0 - Anions, Ion Chromatography (Continued)

Lab Sample ID: LCS 590-45119/1004
Matrix: Water
Analysis Batch: 45119

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Chloride	12.5	12.7		mg/L		102	90 - 110
Sulfate	12.5	12.5		mg/L		100	90 - 110

Lab Sample ID: MB 590-45120/1003
Matrix: Water
Analysis Batch: 45120

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate as N	ND		0.20	0.057	mg/L			12/15/23 13:55	1
Nitrite as N	ND		0.20	0.069	mg/L			12/15/23 13:55	1

Lab Sample ID: LCS 590-45120/1004
Matrix: Water
Analysis Batch: 45120

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Nitrate as N	5.00	5.09		mg/L		102	90 - 110
Nitrite as N	5.00	5.03		mg/L		101	90 - 110

Method: Draft-4 1633 - Per- and Polyfluoroalkyl Substances by LC/MS/MS

Lab Sample ID: MB 320-732888/1-A
Matrix: Water
Analysis Batch: 733772

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 732888

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	ND		8.0	2.0	ng/L		01/12/24 04:17	01/16/24 01:02	1
Perfluoropentanoic acid (PFPeA)	ND		4.0	1.0	ng/L		01/12/24 04:17	01/16/24 01:02	1
Perfluorohexanoic acid (PFHxA)	ND		2.0	0.50	ng/L		01/12/24 04:17	01/16/24 01:02	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.50	ng/L		01/12/24 04:17	01/16/24 01:02	1
Perfluorooctanoic acid (PFOA)	ND		2.0	0.50	ng/L		01/12/24 04:17	01/16/24 01:02	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.50	ng/L		01/12/24 04:17	01/16/24 01:02	1
Perfluorodecanoic acid (PFDA)	ND		2.0	0.50	ng/L		01/12/24 04:17	01/16/24 01:02	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	0.50	ng/L		01/12/24 04:17	01/16/24 01:02	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	0.50	ng/L		01/12/24 04:17	01/16/24 01:02	1
Perfluorotridecanoic acid (PFTrDA)	ND		2.0	0.50	ng/L		01/12/24 04:17	01/16/24 01:02	1
Perfluorotetradecanoic acid (PFTeDA)	ND		2.0	0.50	ng/L		01/12/24 04:17	01/16/24 01:02	1
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	0.50	ng/L		01/12/24 04:17	01/16/24 01:02	1
Perfluoropentanesulfonic acid (PFPeS)	ND		2.0	0.50	ng/L		01/12/24 04:17	01/16/24 01:02	1
Perfluorohexanesulfonic acid (PFHxS)	ND		2.0	0.50	ng/L		01/12/24 04:17	01/16/24 01:02	1
Perfluoroheptanesulfonic acid (PFHpS)	ND		2.0	0.50	ng/L		01/12/24 04:17	01/16/24 01:02	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.0	0.50	ng/L		01/12/24 04:17	01/16/24 01:02	1
Perfluorononanesulfonic acid (PFNS)	ND		2.0	0.50	ng/L		01/12/24 04:17	01/16/24 01:02	1
Perfluorodecanesulfonic acid (PFDS)	ND		2.0	0.50	ng/L		01/12/24 04:17	01/16/24 01:02	1
Perfluorododecanesulfonic acid (PFDoS)	ND		2.0	0.50	ng/L		01/12/24 04:17	01/16/24 01:02	1
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	ND		8.0	2.0	ng/L		01/12/24 04:17	01/16/24 01:02	1

Method: Draft-4 1633 - Per- and Polyfluoroalkyl Substances by LC/MS/MS (Continued)

Lab Sample ID: MB 320-732888/1-A
Matrix: Water
Analysis Batch: 733772

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 732888

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	ND		8.0	2.0	ng/L		01/12/24 04:17	01/16/24 01:02	1
Perfluorooctanesulfonamide (PFOSA)	ND		2.0	0.50	ng/L		01/12/24 04:17	01/16/24 01:02	1
N-methylperfluorooctane sulfonamide (NMeFOSA)	ND		2.0	0.50	ng/L		01/12/24 04:17	01/16/24 01:02	1
N-ethylperfluorooctane sulfonamide (NEtFOSA)	ND		2.0	0.50	ng/L		01/12/24 04:17	01/16/24 01:02	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		2.0	0.50	ng/L		01/12/24 04:17	01/16/24 01:02	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		2.0	0.50	ng/L		01/12/24 04:17	01/16/24 01:02	1
N-methylperfluorooctane sulfonamidoethanol (NMeFOSE)	ND		20	5.0	ng/L		01/12/24 04:17	01/16/24 01:02	1
N-ethylperfluorooctane sulfonamidoethanol (NEtFOSE)	ND		20	5.0	ng/L		01/12/24 04:17	01/16/24 01:02	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		8.0	2.0	ng/L		01/12/24 04:17	01/16/24 01:02	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		8.0	2.0	ng/L		01/12/24 04:17	01/16/24 01:02	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	ND		4.0	1.0	ng/L		01/12/24 04:17	01/16/24 01:02	1
Perfluoro-4-methoxybutanoic acid (PFMBA)	ND		4.0	1.0	ng/L		01/12/24 04:17	01/16/24 01:02	1
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND		4.0	1.0	ng/L		01/12/24 04:17	01/16/24 01:02	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	ND		8.0	2.0	ng/L		01/12/24 04:17	01/16/24 01:02	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	ND		8.0	2.0	ng/L		01/12/24 04:17	01/16/24 01:02	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	ND		4.0	1.0	ng/L		01/12/24 04:17	01/16/24 01:02	1
3-Perfluoropropylpropanoic acid (3:3 FTCA)	ND		10	2.5	ng/L		01/12/24 04:17	01/16/24 01:02	1
3-Perfluoropentylpropanoic acid (5:3 FTCA)	ND		50	13	ng/L		01/12/24 04:17	01/16/24 01:02	1
3-Perfluoroheptylpropanoic acid (7:3 FTCA)	ND		50	13	ng/L		01/12/24 04:17	01/16/24 01:02	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*85.2*		*5 - 130*	*01/12/24 04:17*	*01/16/24 01:02*	*1*
13C5 PFPeA	*84.8*		*40 - 130*	*01/12/24 04:17*	*01/16/24 01:02*	*1*
13C5 PFHxA	*89.2*		*40 - 130*	*01/12/24 04:17*	*01/16/24 01:02*	*1*
13C4 PFHpA	*80.8*		*40 - 130*	*01/12/24 04:17*	*01/16/24 01:02*	*1*
13C8 PFOA	*83.7*		*40 - 130*	*01/12/24 04:17*	*01/16/24 01:02*	*1*
13C9 PFNA	*85.0*		*40 - 130*	*01/12/24 04:17*	*01/16/24 01:02*	*1*
13C6 PFDA	*82.3*		*40 - 130*	*01/12/24 04:17*	*01/16/24 01:02*	*1*
13C7 PFUnA	*82.3*		*30 - 130*	*01/12/24 04:17*	*01/16/24 01:02*	*1*
13C2 PFDoA	*75.2*		*10 - 130*	*01/12/24 04:17*	*01/16/24 01:02*	*1*
13C2 PFTeDA	*51.5*		*10 - 130*	*01/12/24 04:17*	*01/16/24 01:02*	*1*
13C3 PFBS	*80.9*		*40 - 135*	*01/12/24 04:17*	*01/16/24 01:02*	*1*
13C3 PFHxS	*78.7*		*40 - 130*	*01/12/24 04:17*	*01/16/24 01:02*	*1*
13C8 PFOS	*77.2*		*40 - 130*	*01/12/24 04:17*	*01/16/24 01:02*	*1*
13C8 PFOSA	*80.4*		*40 - 130*	*01/12/24 04:17*	*01/16/24 01:02*	*1*

Method: Draft-4 1633 - Per- and Polyfluoroalkyl Substances by LC/MS/MS (Continued)

Lab Sample ID: MB 320-732888/1-A
Matrix: Water
Analysis Batch: 733772

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 732888

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
d3-NMeFOSAA	68.1		40 - 170	01/12/24 04:17	01/16/24 01:02	1
d5-NEtFOSAA	71.4		25 - 135	01/12/24 04:17	01/16/24 01:02	1
13C2 6:2 FTS	83.6		40 - 200	01/12/24 04:17	01/16/24 01:02	1
13C2 8:2 FTS	84.1		40 - 300	01/12/24 04:17	01/16/24 01:02	1
13C3 HFPO-DA	90.7		40 - 130	01/12/24 04:17	01/16/24 01:02	1
d7-N-MeFOSE-M	67.7		10 - 130	01/12/24 04:17	01/16/24 01:02	1
d9-N-EtFOSE-M	65.0		10 - 130	01/12/24 04:17	01/16/24 01:02	1
d5-NEtPFOSA	68.6		10 - 130	01/12/24 04:17	01/16/24 01:02	1
d3-NMePFOSA	72.4		10 - 130	01/12/24 04:17	01/16/24 01:02	1

Lab Sample ID: LCS 320-732888/3-A
Matrix: Water
Analysis Batch: 733772

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 732888

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluorobutanoic acid (PFBA)	128	129		ng/L		101	70 - 140
Perfluoropentanoic acid (PFPeA)	64.0	65.4		ng/L		102	65 - 135
Perfluorohexanoic acid (PFHxA)	32.0	30.4		ng/L		95	70 - 145
Perfluoroheptanoic acid (PFHpA)	32.0	31.0		ng/L		97	70 - 150
Perfluorooctanoic acid (PFOA)	32.0	30.1		ng/L		94	70 - 150
Perfluorononanoic acid (PFNA)	32.0	29.1		ng/L		91	70 - 150
Perfluorodecanoic acid (PFDA)	32.0	34.3		ng/L		107	70 - 140
Perfluoroundecanoic acid (PFUnA)	32.0	32.0		ng/L		100	70 - 145
Perfluorododecanoic acid (PFDoA)	32.0	29.1		ng/L		91	70 - 140
Perfluorotridecanoic acid (PFTrDA)	32.0	32.9		ng/L		103	65 - 140
Perfluorotetradecanoic acid (PFTeDA)	32.0	31.3		ng/L		98	60 - 140
Perfluorobutanesulfonic acid (PFBS)	28.4	27.4		ng/L		97	60 - 145
Perfluoropentanesulfonic acid (PFPeS)	30.1	28.1		ng/L		93	65 - 140
Perfluorohexanesulfonic acid (PFHxS)	29.2	29.2		ng/L		100	65 - 145
Perfluoroheptanesulfonic acid (PFHpS)	30.5	32.0		ng/L		105	70 - 150
Perfluorooctanesulfonic acid (PFOS)	29.8	29.5		ng/L		99	55 - 150
Perfluorononanesulfonic acid (PFNS)	30.7	28.0		ng/L		91	65 - 145
Perfluorodecanesulfonic acid (PFDS)	30.8	32.5		ng/L		105	60 - 145
Perfluorododecanesulfonic acid (PFDoS)	31.0	26.5		ng/L		85	50 - 145
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	122	122		ng/L		100	65 - 155
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	123	136		ng/L		110	60 - 150
Perfluorooctanesulfonamide (PFOSA)	32.0	30.7		ng/L		96	70 - 145

Method: Draft-4 1633 - Per- and Polyfluoroalkyl Substances by LC/MS/MS (Continued)

Lab Sample ID: LCS 320-732888/3-A
Matrix: Water
Analysis Batch: 733772

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 732888

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
N-methylperfluorooctane sulfonamide (NMeFOSA)	32.0	33.3		ng/L		104	60 - 150
N-ethylperfluorooctane sulfonamide (NEtFOSA)	32.0	33.0		ng/L		103	65 - 145
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	32.0	34.0		ng/L		106	50 - 140
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	32.0	31.7		ng/L		99	70 - 145
N-methylperfluorooctane sulfonamidoethanol (NMeFOSE)	320	334		ng/L		104	70 - 145
N-ethylperfluorooctane sulfonamidoethanol (NEtFOSE)	320	288		ng/L		90	70 - 135
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	128	127		ng/L		99	70 - 140
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	121	121		ng/L		100	65 - 145
Perfluoro-3-methoxypropanoic acid (PFMPA)	64.0	49.3		ng/L		77	55 - 140
Perfluoro-4-methoxybutanoic acid (PFMBA)	64.0	68.5		ng/L		107	60 - 150
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	64.0	64.2		ng/L		100	50 - 150
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	120	126		ng/L		105	70 - 155
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	121	110		ng/L		91	55 - 160
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	57.1	53.3		ng/L		93	70 - 140
3-Perfluoropropylpropanoic acid (3:3 FTCA)	160	151		ng/L		94	65 - 130
3-Perfluoropentylpropanoic acid (5:3 FTCA)	799	738		ng/L		92	70 - 135
3-Perfluoroheptylpropanoic acid (7:3 FTCA)	799	708		ng/L		89	50 - 145

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C4 PFBA	*83.6*		*5 - 130*
13C5 PFPeA	*87.3*		*40 - 130*
13C5 PFHxA	*88.2*		*40 - 130*
13C4 PFHpA	*88.8*		*40 - 130*
13C8 PFOA	*77.9*		*40 - 130*
13C9 PFNA	*79.7*		*40 - 130*
13C6 PFDA	*84.9*		*40 - 130*
13C7 PFUnA	*75.1*		*30 - 130*
13C2 PFDoA	*81.3*		*10 - 130*
13C2 PFTeDA	*66.7*		*10 - 130*
13C3 PFBS	*90.2*		*40 - 135*
13C3 PFHxS	*84.6*		*40 - 130*
13C8 PFOS	*84.0*		*40 - 130*
13C8 PFOSA	*83.3*		*40 - 130*
d3-NMeFOSAA	*73.0*		*40 - 170*

Method: Draft-4 1633 - Per- and Polyfluoroalkyl Substances by LC/MS/MS (Continued)

Lab Sample ID: LCS 320-732888/3-A
Matrix: Water
Analysis Batch: 733772

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 732888

Isotope Dilution	LCS %Recovery	LCS Qualifier	Limits
d5-NEtFOSAA	74.5		25 - 135
13C2 6:2 FTS	89.3		40 - 200
13C2 8:2 FTS	84.9		40 - 300
13C3 HFPO-DA	87.4		40 - 130
d7-N-MeFOSE-M	70.2		10 - 130
d9-N-EtFOSE-M	77.4		10 - 130
d5-NEtPFOSA	70.7		10 - 130
d3-NMePFOSA	75.9		10 - 130

Lab Sample ID: LCSD 320-732888/4-A
Matrix: Water
Analysis Batch: 733772

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 732888

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Perfluorobutanoic acid (PFBA)			128	132		ng/L		103	70 - 140	2	30
Perfluoropentanoic acid (PFPeA)			64.0	65.4		ng/L		102	65 - 135	0	30
Perfluorohexanoic acid (PFHxA)			32.0	26.7		ng/L		84	70 - 145	13	30
Perfluoroheptanoic acid (PFHpA)			32.0	32.1		ng/L		100	70 - 150	4	30
Perfluorooctanoic acid (PFOA)			32.0	30.8		ng/L		96	70 - 150	3	30
Perfluorononanoic acid (PFNA)			32.0	33.6		ng/L		105	70 - 150	15	30
Perfluorodecanoic acid (PFDA)			32.0	32.7		ng/L		102	70 - 140	5	30
Perfluoroundecanoic acid (PFUnA)			32.0	31.9		ng/L		100	70 - 145	0	30
Perfluorododecanoic acid (PFDoA)			32.0	31.6		ng/L		99	70 - 140	8	30
Perfluorotridecanoic acid (PFTrDA)			32.0	31.7		ng/L		99	65 - 140	4	30
Perfluorotetradecanoic acid (PFTeDA)			32.0	39.2		ng/L		123	60 - 140	22	30
Perfluorobutanesulfonic acid (PFBS)			28.4	29.2		ng/L		103	60 - 145	6	30
Perfluoropentanesulfonic acid (PFPeS)			30.1	27.4		ng/L		91	65 - 140	3	30
Perfluorohexanesulfonic acid (PFHxS)			29.2	28.9		ng/L		99	65 - 145	1	30
Perfluoroheptanesulfonic acid (PFHpS)			30.5	29.9		ng/L		98	70 - 150	7	30
Perfluorooctanesulfonic acid (PFOS)			29.8	32.8		ng/L		110	55 - 150	10	30
Perfluorononanesulfonic acid (PFNS)			30.7	30.5		ng/L		99	65 - 145	8	30
Perfluorodecanesulfonic acid (PFDS)			30.8	30.2		ng/L		98	60 - 145	7	30
Perfluorododecanesulfonic acid (PFDoS)			31.0	27.9		ng/L		90	50 - 145	5	30
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)			122	129		ng/L		106	65 - 155	5	30
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)			123	117		ng/L		95	60 - 150	15	30
Perfluorooctanesulfonamide (PFOSA)			32.0	30.7		ng/L		96	70 - 145	0	30
N-methylperfluorooctane sulfonamide (NMeFOSA)			32.0	34.8		ng/L		109	60 - 150	4	30

Method: Draft-4 1633 - Per- and Polyfluoroalkyl Substances by LC/MS/MS (Continued)

Lab Sample ID: LCSD 320-732888/4-A
Matrix: Water
Analysis Batch: 733772

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 732888

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
N-ethylperfluorooctane sulfonamide (NEtFOSA)			32.0	33.1		ng/L		103	65 - 145	0	30
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)			32.0	32.9		ng/L		103	50 - 140	3	30
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)			32.0	28.8		ng/L		90	70 - 145	10	30
N-methylperfluorooctane sulfonamidoethanol (NMeFOSE)			320	380		ng/L		119	70 - 145	13	30
N-ethylperfluorooctane sulfonamidoethanol (NEtFOSE)			320	328		ng/L		103	70 - 135	13	30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)			128	134		ng/L		105	70 - 140	5	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)			121	118		ng/L		97	65 - 145	3	30
Perfluoro-3-methoxypropanoic acid (PFMPA)			64.0	53.7		ng/L		84	55 - 140	8	30
Perfluoro-4-methoxybutanoic acid (PFMBA)			64.0	67.2		ng/L		105	60 - 150	2	30
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)			64.0	60.2		ng/L		94	50 - 150	7	30
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)			120	117		ng/L		98	70 - 155	7	30
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)			121	101		ng/L		84	55 - 160	9	30
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)			57.1	51.8		ng/L		91	70 - 140	3	30
3-Perfluoropropylpropanoic acid (3:3 FTCA)			160	157		ng/L		98	65 - 130	4	30
3-Perfluoropentylpropanoic acid (5:3 FTCA)			799	677		ng/L		85	70 - 135	9	30
3-Perfluoroheptylpropanoic acid (7:3 FTCA)			799	721		ng/L		90	50 - 145	2	30

Isotope Dilution	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
13C4 PFBA	*81.6*		*5 - 130*
13C5 PFPeA	*79.5*		*40 - 130*
13C5 PFHxA	*85.9*		*40 - 130*
13C4 PFHpA	*77.5*		*40 - 130*
13C8 PFOA	*72.9*		*40 - 130*
13C9 PFNA	*80.7*		*40 - 130*
13C6 PFDA	*76.9*		*40 - 130*
13C7 PFUnA	*75.4*		*30 - 130*
13C2 PFDoA	*70.2*		*10 - 130*
13C2 PFTeDA	*48.7*		*10 - 130*
13C3 PFBS	*76.6*		*40 - 135*
13C3 PFHxS	*76.1*		*40 - 130*
13C8 PFOS	*82.7*		*40 - 130*
13C8 PFOSA	*81.0*		*40 - 130*
d3-NMeFOSAA	*71.8*		*40 - 170*
d5-NEtFOSAA	*82.3*		*25 - 135*
13C2 6:2 FTS	*80.5*		*40 - 200*

Method: Draft-4 1633 - Per- and Polyfluoroalkyl Substances by LC/MS/MS (Continued)

Lab Sample ID: LCSD 320-732888/4-A
Matrix: Water
Analysis Batch: 733772

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 732888

Isotope Dilution	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
13C2 8:2 FTS	*82.7*		*40 - 300*
13C3 HFPO-DA	*84.2*		*40 - 130*
d7-N-MeFOSE-M	*62.9*		*10 - 130*
d9-N-EtFOSE-M	*71.2*		*10 - 130*
d5-NEtPFOSA	*68.9*		*10 - 130*
d3-NMePFOSA	*70.9*		*10 - 130*

Lab Sample ID: LLCS 320-732888/2-A
Matrix: Water
Analysis Batch: 733772

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 732888

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluorobutanoic acid (PFBA)	12.8	13.1		ng/L		102	70 - 140
Perfluoropentanoic acid (PFPeA)	6.40	6.67		ng/L		104	65 - 135
Perfluorohexanoic acid (PFHxA)	3.20	2.79		ng/L		87	70 - 145
Perfluoroheptanoic acid (PFHpA)	3.20	3.39		ng/L		106	70 - 150
Perfluorooctanoic acid (PFOA)	3.20	3.20		ng/L		100	70 - 150
Perfluorononanoic acid (PFNA)	3.20	3.48		ng/L		109	70 - 150
Perfluorodecanoic acid (PFDA)	3.20	3.54		ng/L		111	70 - 140
Perfluoroundecanoic acid (PFUnA)	3.20	3.23		ng/L		101	70 - 145
Perfluorododecanoic acid (PFDoA)	3.20	3.50		ng/L		109	70 - 140
Perfluorotridecanoic acid (PFTrDA)	3.20	2.97		ng/L		93	65 - 140
Perfluorotetradecanoic acid (PFTeDA)	3.20	3.71		ng/L		116	60 - 140
Perfluorobutanesulfonic acid (PFBS)	2.84	2.78		ng/L		98	60 - 145
Perfluoropentanesulfonic acid (PFPeS)	3.01	3.14		ng/L		104	65 - 140
Perfluorohexanesulfonic acid (PFHxS)	2.92	3.15		ng/L		108	65 - 145
Perfluoroheptanesulfonic acid (PFHpS)	3.05	3.16		ng/L		104	70 - 150
Perfluorooctanesulfonic acid (PFOS)	2.98	2.76		ng/L		93	55 - 150
Perfluorononanesulfonic acid (PFNS)	3.07	2.69		ng/L		88	65 - 145
Perfluorodecanesulfonic acid (PFDS)	3.08	2.85		ng/L		92	60 - 145
Perfluorododecanesulfonic acid (PFDoS)	3.10	2.35		ng/L		76	50 - 145
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	12.2	13.0		ng/L		107	65 - 155
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	12.3	13.0		ng/L		106	60 - 150
Perfluorooctanesulfonamide (PFOSA)	3.20	3.15		ng/L		98	70 - 145
N-methylperfluorooctane sulfonamide (NMeFOSA)	3.20	3.31		ng/L		103	60 - 150
N-ethylperfluorooctane sulfonamide (NEtFOSA)	3.20	3.15		ng/L		98	65 - 145

Method: Draft-4 1633 - Per- and Polyfluoroalkyl Substances by LC/MS/MS (Continued)

Lab Sample ID: LLCS 320-732888/2-A
Matrix: Water
Analysis Batch: 733772

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 732888

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	3.20	3.03		ng/L		95	50 - 140
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	3.20	2.99		ng/L		93	70 - 145
N-methylperfluorooctane sulfonamidoethanol (NMeFOSE)	32.0	32.3		ng/L		101	70 - 145
N-ethylperfluorooctane sulfonamidoethanol (NEtFOSE)	32.0	32.3		ng/L		101	70 - 135
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	12.8	12.1		ng/L		94	70 - 140
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	12.1	11.5		ng/L		95	65 - 145
Perfluoro-3-methoxypropanoic acid (PFMPA)	6.40	5.22		ng/L		82	55 - 140
Perfluoro-4-methoxybutanoic acid (PFMBA)	6.40	7.46		ng/L		117	60 - 150
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	6.40	6.11		ng/L		95	50 - 150
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	12.0	13.0		ng/L		109	70 - 155
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	12.1	10.9		ng/L		91	55 - 160
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	5.71	5.27		ng/L		92	70 - 140
3-Perfluoropropylpropanoic acid (3:3 FTCA)	16.0	15.2		ng/L		95	65 - 130
3-Perfluoropentylpropanoic acid (5:3 FTCA)	79.9	70.2		ng/L		88	70 - 135
3-Perfluoroheptylpropanoic acid (7:3 FTCA)	79.9	65.8		ng/L		82	50 - 145

Isotope Dilution	*LLCS %Recovery*	*LLCS Qualifier*	*Limits*
13C4 PFBA	*85.9*		*5 - 130*
13C5 PFPeA	*80.5*		*40 - 130*
13C5 PFHxA	*92.8*		*40 - 130*
13C4 PFHpA	*83.2*		*40 - 130*
13C8 PFOA	*73.5*		*40 - 130*
13C9 PFNA	*78.8*		*40 - 130*
13C6 PFDA	*83.6*		*40 - 130*
13C7 PFUnA	*78.2*		*30 - 130*
13C2 PFDoA	*75.7*		*10 - 130*
13C2 PFTeDA	*59.4*		*10 - 130*
13C3 PFBS	*85.8*		*40 - 135*
13C3 PFHxS	*79.5*		*40 - 130*
13C8 PFOS	*83.5*		*40 - 130*
13C8 PFOSA	*76.2*		*40 - 130*
d3-NMeFOSAA	*67.9*		*40 - 170*
d5-NEtFOSAA	*66.4*		*25 - 135*
13C2 6:2 FTS	*97.5*		*40 - 200*
13C2 8:2 FTS	*83.4*		*40 - 300*
13C3 HFPO-DA	*90.4*		*40 - 130*

Method: Draft-4 1633 - Per- and Polyfluoroalkyl Substances by LC/MS/MS (Continued)

Lab Sample ID: LLCS 320-732888/2-A
Matrix: Water
Analysis Batch: 733772

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 732888

Isotope Dilution	*LLCS %Recovery*	*LLCS Qualifier*	*Limits*
d7-N-MeFOSE-M	*62.4*		*10 - 130*
d9-N-EtFOSE-M	*61.7*		*10 - 130*
d5-NEtPFOSA	*69.5*		*10 - 130*
d3-NMePFOSA	*70.1*		*10 - 130*

Method: Draft-4 1633 - Per- and Polyfluoroalkyl Substances by LC/MS/MS - RA

Lab Sample ID: MB 320-732888/1-A
Matrix: Water
Analysis Batch: 734424

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 732888

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS) - RA	ND		8.0	2.0	ng/L		01/12/24 04:17	01/18/24 12:48	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 4:2 FTS - RA	*115*		*40 - 200*	*01/12/24 04:17*	*01/18/24 12:48*	*1*

Lab Sample ID: LCS 320-732888/3-A
Matrix: Water
Analysis Batch: 734424

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 732888

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS) - RA			120	122		ng/L		102	70 - 145		

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C2 4:2 FTS - RA	*103*		*40 - 200*

Lab Sample ID: LCSD 320-732888/4-A
Matrix: Water
Analysis Batch: 734424

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 732888

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS) - RA			120	124		ng/L		104	70 - 145	2	30

Isotope Dilution	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
13C2 4:2 FTS - RA	*98.7*		*40 - 200*

Lab Sample ID: LLCS 320-732888/2-A
Matrix: Water
Analysis Batch: 734424

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 732888

Analyte			Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits		
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS) - RA			12.0	13.1		ng/L		109	70 - 145		

Isotope Dilution	*LLCS %Recovery*	*LLCS Qualifier*	*Limits*
13C2 4:2 FTS - RA	*113*		*40 - 200*

Method: 6010D - Metals (ICP)

Lab Sample ID: MB 590-45128/2-A
Matrix: Water
Analysis Batch: 45138

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 45128

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Magnesium	ND		1.0	0.13	mg/L		12/18/23 10:30	12/18/23 14:01	1
Potassium	ND		0.50	0.29	mg/L		12/18/23 10:30	12/18/23 14:01	1

Lab Sample ID: LCS 590-45128/1-A
Matrix: Water
Analysis Batch: 45138

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 45128

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Magnesium	25.0	23.7		mg/L		95	80 - 120
Potassium	25.0	23.3		mg/L		93	80 - 135

Lab Sample ID: MB 590-45148/2-B
Matrix: Water
Analysis Batch: 45163

Client Sample ID: Method Blank
Prep Type: Dissolved
Prep Batch: 45147

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	ND		2.0	0.20	mg/L		12/18/23 17:27	12/19/23 11:02	1
Magnesium	ND		1.0	0.13	mg/L		12/18/23 17:27	12/19/23 11:02	1

Lab Sample ID: LCS 590-45148/1-B
Matrix: Water
Analysis Batch: 45163

Client Sample ID: Lab Control Sample
Prep Type: Dissolved
Prep Batch: 45147

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Calcium	25.0	27.5		mg/L		110	80 - 120
Magnesium	25.0	27.6		mg/L		110	80 - 120

Method: 6020B - Metals (ICP/MS)

Lab Sample ID: MB 580-446548/24-A
Matrix: Water
Analysis Batch: 446858

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 446548

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		0.0050	0.0010	mg/L		12/18/23 15:58	12/20/23 17:07	5
Cadmium	ND		0.0020	0.00019	mg/L		12/18/23 15:58	12/20/23 17:07	5
Iron	ND		0.50	0.067	mg/L		12/18/23 15:58	12/20/23 17:07	5
Lead	ND		0.0020	0.00020	mg/L		12/18/23 15:58	12/20/23 17:07	5
Manganese	ND		0.010	0.0023	mg/L		12/18/23 15:58	12/20/23 17:07	5
Zinc	ND		0.035	0.0046	mg/L		12/18/23 15:58	12/20/23 17:07	5

Lab Sample ID: LCS 580-446548/25-A
Matrix: Water
Analysis Batch: 446858

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 446548

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Arsenic	1.00	0.931		mg/L		93	80 - 120
Cadmium	1.00	0.920		mg/L		92	80 - 120
Iron	20.0	19.2		mg/L		96	80 - 120
Lead	1.00	0.957		mg/L		96	80 - 120

Method: 6020B - Metals (ICP/MS) (Continued)

Lab Sample ID: LCS 580-446548/25-A
Matrix: Water
Analysis Batch: 446858

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 446548

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Manganese	1.00	0.977		mg/L		98	80 - 120
Zinc	1.00	0.922		mg/L		92	80 - 120

Lab Sample ID: LCSD 580-446548/26-A
Matrix: Water
Analysis Batch: 446858

Client Sample ID: Lab Control Sample Dup
Prep Type: Total Recoverable
Prep Batch: 446548

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Arsenic	1.00	0.947		mg/L		95	80 - 120	2	20
Cadmium	1.00	0.927		mg/L		93	80 - 120	1	20
Iron	20.0	19.6		mg/L		98	80 - 120	2	20
Lead	1.00	0.975		mg/L		98	80 - 120	2	20
Manganese	1.00	0.987		mg/L		99	80 - 120	1	20
Zinc	1.00	0.931		mg/L		93	80 - 120	1	20

Lab Sample ID: MB 580-446663/21-B
Matrix: Water
Analysis Batch: 447094

Client Sample ID: Method Blank
Prep Type: Dissolved
Prep Batch: 446761

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		0.0050	0.0010	mg/L		12/20/23 15:52	12/22/23 09:50	5
Cadmium	ND		0.0020	0.00019	mg/L		12/20/23 15:52	12/22/23 09:50	5
Iron	ND		0.50	0.067	mg/L		12/20/23 15:52	12/22/23 09:50	5
Lead	ND		0.0020	0.00020	mg/L		12/20/23 15:52	12/22/23 09:50	5
Manganese	ND		0.010	0.0023	mg/L		12/20/23 15:52	12/22/23 09:50	5
Zinc	ND		0.035	0.0046	mg/L		12/20/23 15:52	12/22/23 09:50	5

Lab Sample ID: LCS 580-446663/22-B
Matrix: Water
Analysis Batch: 447094

Client Sample ID: Lab Control Sample
Prep Type: Dissolved
Prep Batch: 446761

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Arsenic	1.00	1.04		mg/L		104	80 - 120
Cadmium	1.00	0.992		mg/L		99	80 - 120
Iron	20.0	19.9		mg/L		100	80 - 120
Lead	1.00	0.985		mg/L		99	80 - 120
Manganese	1.00	0.975		mg/L		98	80 - 120
Zinc	1.00	0.979		mg/L		98	80 - 120

Lab Sample ID: LCSD 580-446663/23-B
Matrix: Water
Analysis Batch: 447094

Client Sample ID: Lab Control Sample Dup
Prep Type: Dissolved
Prep Batch: 446761

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Arsenic	1.00	1.07		mg/L		107	80 - 120	3	20
Cadmium	1.00	0.981		mg/L		98	80 - 120	1	20
Iron	20.0	20.2		mg/L		101	80 - 120	1	20
Lead	1.00	0.988		mg/L		99	80 - 120	0	20
Manganese	1.00	0.992		mg/L		99	80 - 120	2	20
Zinc	1.00	1.00		mg/L		100	80 - 120	2	20

Method: 7470A - Mercury (CVAA)

Lab Sample ID: MB 590-45127/9-A
Matrix: Water
Analysis Batch: 45139

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 45127

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.090	ug/L		12/18/23 10:28	12/18/23 15:06	1

Lab Sample ID: LCS 590-45127/8-A
Matrix: Water
Analysis Batch: 45139

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 45127

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Mercury	2.00	1.82		ug/L		91	80 - 120

Lab Sample ID: MB 590-45221/2-A
Matrix: Water
Analysis Batch: 45244

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 45221

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.090	ug/L		12/27/23 10:16	12/28/23 13:18	1

Lab Sample ID: LCS 590-45221/1-A
Matrix: Water
Analysis Batch: 45244

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 45221

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Mercury	2.00	1.87		ug/L		94	80 - 120

Method: 350.1 - Nitrogen, Ammonia

Lab Sample ID: MB 280-639548/19
Matrix: Water
Analysis Batch: 639548

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ammonia as N	ND		0.10	0.029	mg/L			01/09/24 11:03	1

Lab Sample ID: LCS 280-639548/17
Matrix: Water
Analysis Batch: 639548

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Ammonia as N	2.50	2.49		mg/L		99	90 - 110

Lab Sample ID: LCSD 280-639548/18
Matrix: Water
Analysis Batch: 639548

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Ammonia as N	2.50	2.49		mg/L		100	90 - 110	0	10

Method: SM 2320B - Alkalinity

Lab Sample ID: MB 590-45219/1
Matrix: Water
Analysis Batch: 45219

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity	5.00	J	20	5.0	mg/L			12/27/23 10:12	1
Bicarbonate Alkalinity as CaCO3	5.00	J	20	5.0	mg/L			12/27/23 10:12	1

Lab Sample ID: LCS 590-45219/2
Matrix: Water
Analysis Batch: 45219

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

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Alkalinity			501	500		mg/L		100	90 - 110		

Method: SM 2540C - Solids, Total Dissolved (TDS)

Lab Sample ID: MB 590-45141/1
Matrix: Water
Analysis Batch: 45141

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	ND		25	13	mg/L			12/18/23 16:56	1

Lab Sample ID: LCS 590-45141/2
Matrix: Water
Analysis Batch: 45141

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

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Total Dissolved Solids			503	499		mg/L		99	80 - 120		

Lab Sample ID: 590-22513-3 DU
Matrix: Water
Analysis Batch: 45141

Client Sample ID: DUP-121523
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Total Dissolved Solids	530			521		mg/L				1	10

Method: SM 4500 CN I - Cyanide, Weak Acid Dissociable

Lab Sample ID: MB 280-638313/20
Matrix: Water
Analysis Batch: 638313

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cyanide, Weak Acid Dissociable	ND		0.010	0.0050	mg/L			12/22/23 12:08	1

Lab Sample ID: HLCS 280-638313/19
Matrix: Water
Analysis Batch: 638313

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

Analyte			Spike Added	HLCS Result	HLCS Qualifier	Unit	D	%Rec	%Rec Limits		
Cyanide, Weak Acid Dissociable			0.350	0.361		mg/L		103	75 - 120		

Method: SM 4500 CN I - Cyanide, Weak Acid Dissociable (Continued)

Lab Sample ID: LCS 280-638313/17
Matrix: Water
Analysis Batch: 638313

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Cyanide, Weak Acid Dissociable	0.100	0.0983		mg/L		98	75 - 120

Lab Sample ID: LLCS 280-638313/18
Matrix: Water
Analysis Batch: 638313

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

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Cyanide, Weak Acid Dissociable	0.100	0.0951		mg/L		95	90 - 110

Method: SM 5310B - Organic Carbon, Total (TOC)

Lab Sample ID: MB 280-638646/36
Matrix: Water
Analysis Batch: 638646

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon - Duplicates	ND		1.0	0.35	mg/L			12/27/23 22:29	1

Lab Sample ID: MB 280-638646/69
Matrix: Water
Analysis Batch: 638646

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon - Duplicates	ND		1.0	0.35	mg/L			12/28/23 07:05	1

Lab Sample ID: LCS 280-638646/35
Matrix: Water
Analysis Batch: 638646

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Total Organic Carbon - Duplicates	25.0	26.4		mg/L		106	88 - 112

Lab Sample ID: LCS 280-638646/68
Matrix: Water
Analysis Batch: 638646

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Total Organic Carbon - Duplicates	25.0	26.5		mg/L		106	88 - 112

Lab Chronicle

Client: GeoEngineers Inc
Project/Site: Marshall Landfill

Job ID: 590-22513-1

Client Sample ID: MW-2A-121523

Date Collected: 12/15/23 10:00
Date Received: 12/15/23 12:35

Lab Sample ID: 590-22513-1

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260D		1	43 mL	43 mL	45132	12/18/23 17:12	JSP	EET SPK
Total/NA	Prep	3510C			1052 mL	2 mL	446826	12/21/23 08:20	SL	EET SEA
Total/NA	Analysis	8270E		1	1 mL	1 mL	446882	12/21/23 19:30	K1K	EET SEA
Total/NA	Prep	3510C	RE		1052.5 mL	2 mL	447085	12/27/23 08:30	SL	EET SEA
Total/NA	Analysis	8270E	RE	1	1 mL	1 mL	447287	12/28/23 20:17	K1K	EET SEA
Total/NA	Prep	8151A			1049.8 mL	5 mL	394080	12/18/23 21:35	C6FB	EET CAL 4
Total/NA	Analysis	8151A		1	1 mL	1 mL	394962	12/21/23 00:17	J7WE	EET CAL 4
Total/NA	Analysis	300.0		1	5 mL	5 mL	45119	12/15/23 16:15	NMI	EET SPK
Total/NA	Analysis	300.0		1	5 mL	5 mL	45120	12/15/23 16:15	NMI	EET SPK
Total/NA	Prep	1633	RA		552.6 mL	5.0 mL	732888	01/12/24 04:17	HJA	EET SAC
Total/NA	Analysis	Draft-4 1633	RA	1			734424	01/18/24 13:59	S1M	EET SAC
Total/NA	Prep	1633			552.6 mL	5.0 mL	732888	01/12/24 04:17	HJA	EET SAC
Total/NA	Analysis	Draft-4 1633		1	1 mL	1 mL	733772	01/16/24 02:09	RS1	EET SAC
Dissolved	Filtration	FILTRATION			250 mL	250 mL	45148	12/18/23 17:26	AMB	EET SPK
Dissolved	Prep	3005A			50 mL	50 mL	45147	12/18/23 17:27	AMB	EET SPK
Dissolved	Analysis	6010D		1			45163	12/19/23 13:40	AMB	EET SPK
Total Recoverable	Prep	3005A			50 mL	50 mL	45128	12/18/23 10:30	AMB	EET SPK
Total Recoverable	Analysis	6010D		1			45149	12/18/23 15:35	AMB	EET SPK
Dissolved	Filtration	FILTRATION			250 mL	250 mL	446663	12/19/23 16:28	AUA	EET SEA
Dissolved	Prep	3005A			50 mL	50 mL	446761	12/20/23 15:52	JL	EET SEA
Dissolved	Analysis	6020B		5	50 mL	50 mL	447094	12/22/23 11:46	FCW	EET SEA
Total Recoverable	Prep	3005A			50 mL	50 mL	446548	12/18/23 15:58	TMH	EET SEA
Total Recoverable	Analysis	6020B		5	50 mL	50 mL	446858	12/20/23 18:06	TMH	EET SEA
Dissolved	Filtration	FILTRATION			250 mL	250 mL	45148	12/18/23 17:26	AMB	EET SPK
Dissolved	Prep	7470A			50 mL	50 mL	45221	12/27/23 10:16	AMB	EET SPK
Dissolved	Analysis	7470A		1			45244	12/28/23 13:36	AMB	EET SPK
Total/NA	Prep	7470A			50 mL	50 mL	45127	12/18/23 10:28	AMB	EET SPK
Total/NA	Analysis	7470A		1			45139	12/18/23 15:36	AMB	EET SPK
Total/NA	Analysis	350.1		1	10 mL	10 mL	639548	01/09/24 11:26	MMP	EET DEN
Total/NA	Analysis	SM 2320B		1	100 mL	100 mL	45219	12/27/23 10:12	AMB	EET SPK
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	45141	12/18/23 16:57	AMB	EET SPK
Total/NA	Analysis	SM 4500 CN I		1	10 mL	10 mL	638313	12/22/23 13:07	MMP	EET DEN
Total/NA	Analysis	SM 5310B		1	20 mL	20 mL	638646	12/28/23 06:34	ABW	EET DEN

Client Sample ID: MW-5A-121523

Date Collected: 12/15/23 08:25
Date Received: 12/15/23 12:35

Lab Sample ID: 590-22513-2

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260D		1	43 mL	43 mL	45132	12/18/23 17:34	JSP	EET SPK
Total/NA	Analysis	8260D		1	43 mL	43 mL	45187	12/21/23 14:39	JSP	EET SPK
Total/NA	Prep	3510C			1046.1 mL	2 mL	446826	12/21/23 08:20	SL	EET SEA
Total/NA	Analysis	8270E		1	1 mL	1 mL	446882	12/21/23 19:55	K1K	EET SEA

Lab Chronicle

Client: GeoEngineers Inc
Project/Site: Marshall Landfill

Job ID: 590-22513-1

Client Sample ID: MW-5A-121523

Date Collected: 12/15/23 08:25
Date Received: 12/15/23 12:35

Lab Sample ID: 590-22513-2

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3510C	RE		1019.7 mL	2 mL	447085	12/27/23 08:30	SL	EET SEA
Total/NA	Analysis	8270E	RE	1	1 mL	1 mL	447287	12/28/23 20:41	K1K	EET SEA
Total/NA	Prep	8151A			1020.9 mL	5 mL	394080	12/18/23 21:35	C6FB	EET CAL 4
Total/NA	Analysis	8151A		1	1 mL	1 mL	394962	12/21/23 00:39	J7WE	EET CAL 4
Total/NA	Analysis	300.0		1	5 mL	5 mL	45119	12/15/23 16:24	NMI	EET SPK
Total/NA	Analysis	300.0		1	5 mL	5 mL	45120	12/15/23 16:24	NMI	EET SPK
Total/NA	Prep	1633	RA		551.5 mL	5.0 mL	732888	01/12/24 04:17	HJA	EET SAC
Total/NA	Analysis	Draft-4 1633	RA	1			734424	01/18/24 14:16	S1M	EET SAC
Total/NA	Prep	1633			551.5 mL	5.0 mL	732888	01/12/24 04:17	HJA	EET SAC
Total/NA	Analysis	Draft-4 1633		1	1 mL	1 mL	733772	01/16/24 02:25	RS1	EET SAC
Dissolved	Filtration	FILTRATION			250 mL	250 mL	45148	12/18/23 17:26	AMB	EET SPK
Dissolved	Prep	3005A			50 mL	50 mL	45147	12/18/23 17:27	AMB	EET SPK
Dissolved	Analysis	6010D		1			45163	12/19/23 13:44	AMB	EET SPK
Total Recoverable	Prep	3005A			50 mL	50 mL	45128	12/18/23 10:30	AMB	EET SPK
Total Recoverable	Analysis	6010D		1			45149	12/18/23 15:40	AMB	EET SPK
Dissolved	Filtration	FILTRATION			250 mL	250 mL	446663	12/19/23 16:28	AUA	EET SEA
Dissolved	Prep	3005A			50 mL	50 mL	446761	12/20/23 15:52	JL	EET SEA
Dissolved	Analysis	6020B		5	50 mL	50 mL	447094	12/22/23 11:54	FCW	EET SEA
Total Recoverable	Prep	3005A			50 mL	50 mL	446548	12/18/23 15:58	TMH	EET SEA
Total Recoverable	Analysis	6020B		5	50 mL	50 mL	446858	12/20/23 17:54	TMH	EET SEA
Dissolved	Filtration	FILTRATION			250 mL	250 mL	45148	12/18/23 17:26	AMB	EET SPK
Dissolved	Prep	7470A			50 mL	50 mL	45221	12/27/23 10:16	AMB	EET SPK
Dissolved	Analysis	7470A		1			45244	12/28/23 13:38	AMB	EET SPK
Total/NA	Prep	7470A			50 mL	50 mL	45127	12/18/23 10:28	AMB	EET SPK
Total/NA	Analysis	7470A		1			45139	12/18/23 15:39	AMB	EET SPK
Total/NA	Analysis	350.1		1	10 mL	10 mL	639548	01/09/24 11:30	MMP	EET DEN
Total/NA	Analysis	SM 2320B		1	100 mL	100 mL	45219	12/27/23 10:12	AMB	EET SPK
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	45141	12/18/23 16:57	AMB	EET SPK
Total/NA	Analysis	SM 4500 CN I		1	10 mL	10 mL	638313	12/22/23 13:09	MMP	EET DEN
Total/NA	Analysis	SM 5310B		1	20 mL	20 mL	638646	12/28/23 08:05	ABW	EET DEN

Client Sample ID: DUP-121523

Date Collected: 12/15/23 08:00
Date Received: 12/15/23 12:35

Lab Sample ID: 590-22513-3

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260D		1	43 mL	43 mL	45132	12/18/23 17:56	JSP	EET SPK
Total/NA	Analysis	8260D		1	43 mL	43 mL	45187	12/21/23 15:01	JSP	EET SPK
Total/NA	Prep	3510C			1050.9 mL	2 mL	446826	12/21/23 08:20	SL	EET SEA
Total/NA	Analysis	8270E		1	1 mL	1 mL	446882	12/21/23 20:19	K1K	EET SEA
Total/NA	Prep	3510C	RE		1049.8 mL	2 mL	447085	12/27/23 08:30	SL	EET SEA
Total/NA	Analysis	8270E	RE	1	1 mL	1 mL	447355	12/29/23 11:42	CB	EET SEA
Total/NA	Prep	8151A			1034.9 mL	5 mL	394080	12/18/23 21:35	C6FB	EET CAL 4
Total/NA	Analysis	8151A		1	1 mL	1 mL	394962	12/21/23 01:01	J7WE	EET CAL 4

Lab Chronicle

Client: GeoEngineers Inc
Project/Site: Marshall Landfill

Job ID: 590-22513-1

Client Sample ID: DUP-121523

Date Collected: 12/15/23 08:00
Date Received: 12/15/23 12:35

Lab Sample ID: 590-22513-3

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	300.0		1	5 mL	5 mL	45119	12/15/23 16:34	NMI	EET SPK
Total/NA	Analysis	300.0		1	5 mL	5 mL	45120	12/15/23 16:34	NMI	EET SPK
Total/NA	Prep	1633	RA		525.6 mL	5.0 mL	732888	01/12/24 04:17	HJA	EET SAC
Total/NA	Analysis	Draft-4 1633	RA	1			734424	01/18/24 14:34	S1M	EET SAC
Total/NA	Prep	1633			525.6 mL	5.0 mL	732888	01/12/24 04:17	HJA	EET SAC
Total/NA	Analysis	Draft-4 1633		1	1 mL	1 mL	733772	01/16/24 02:42	RS1	EET SAC
Dissolved	Filtration	FILTRATION			250 mL	250 mL	45148	12/18/23 17:26	AMB	EET SPK
Dissolved	Prep	3005A			50 mL	50 mL	45147	12/18/23 17:27	AMB	EET SPK
Dissolved	Analysis	6010D		1			45163	12/19/23 13:48	AMB	EET SPK
Total Recoverable	Prep	3005A			50 mL	50 mL	45128	12/18/23 10:30	AMB	EET SPK
Total Recoverable	Analysis	6010D		1			45149	12/18/23 15:44	AMB	EET SPK
Dissolved	Filtration	FILTRATION			250 mL	250 mL	446663	12/19/23 16:28	AUA	EET SEA
Dissolved	Prep	3005A			50 mL	50 mL	446761	12/20/23 15:52	JL	EET SEA
Dissolved	Analysis	6020B		5	50 mL	50 mL	447094	12/22/23 11:32	FCW	EET SEA
Total Recoverable	Prep	3005A			50 mL	50 mL	446548	12/18/23 15:58	TMH	EET SEA
Total Recoverable	Analysis	6020B		5	50 mL	50 mL	446858	12/20/23 17:52	TMH	EET SEA
Dissolved	Filtration	FILTRATION			250 mL	250 mL	45148	12/18/23 17:26	AMB	EET SPK
Dissolved	Prep	7470A			50 mL	50 mL	45221	12/27/23 10:16	AMB	EET SPK
Dissolved	Analysis	7470A		1			45244	12/28/23 13:59	AMB	EET SPK
Total/NA	Prep	7470A			50 mL	50 mL	45127	12/18/23 10:28	AMB	EET SPK
Total/NA	Analysis	7470A		1			45139	12/18/23 15:41	AMB	EET SPK
Total/NA	Analysis	350.1		1	10 mL	10 mL	639548	01/09/24 11:32	MMP	EET DEN
Total/NA	Analysis	SM 2320B		1	100 mL	100 mL	45219	12/27/23 10:12	AMB	EET SPK
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	45141	12/18/23 16:57	AMB	EET SPK
Total/NA	Analysis	SM 4500 CN I		1	10 mL	10 mL	638313	12/22/23 13:12	MMP	EET DEN
Total/NA	Analysis	SM 5310B		1	20 mL	20 mL	638646	12/28/23 08:19	ABW	EET DEN

Client Sample ID: Trip Blank

Date Collected: 12/15/23 08:00
Date Received: 12/15/23 12:35

Lab Sample ID: 590-22513-4

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260D		1	43 mL	43 mL	45132	12/18/23 18:18	JSP	EET SPK

Laboratory References:

EET CAL 4 = Eurofins Calscience Tustin, 2841 Dow Avenue, Tustin, CA 92780, TEL (714)895-5494
EET DEN = Eurofins Denver, 4955 Yarrow Street, Arvada, CO 80002, TEL (303)736-0100
EET SAC = Eurofins Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600
EET SEA = Eurofins Seattle, 5755 8th Street East, Tacoma, WA 98424, TEL (253)922-2310
EET SPK = Eurofins Spokane, 11922 East 1st Ave, Spokane, WA 99206, TEL (509)924-9200

Accreditation/Certification Summary

Client: GeoEngineers Inc
Project/Site: Marshall Landfill

Job ID: 590-22513-1

Laboratory: Eurofins Spokane

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

Authority	Program	Identification Number	Expiration Date
Washington	State	C569	01-06-24

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
SM 2320B		Water	Bicarbonate Alkalinity as CaCO3

Laboratory: Eurofins Calscience

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

Authority	Program	Identification Number	Expiration Date
Arizona	State	AZ0830	11-16-24
California	Los Angeles County Sanitation Districts	10109	08-01-24
California	State	3082	07-31-24
Kansas	NELAP	E-10420	08-01-24
Nevada	State	CA00111	07-31-24
Oregon	NELAP	4175	02-02-24
USDA	US Federal Programs	P330-22-00059	06-08-26
Washington	State	C916-18	10-11-24

Laboratory: Eurofins Denver

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

Authority	Program	Identification Number	Expiration Date
A2LA	Dept. of Defense ELAP	2907.01	10-31-24
A2LA	ISO/IEC 17025	2907.01	10-31-25
Alabama	State Program	40730	09-30-12 *
Alaska (UST)	State	18-001	02-10-24
Arizona	State	AZ0713	12-20-24
Arkansas DEQ	State	19-047-0	04-21-24
California	State	2513	01-08-25
Connecticut	State	PH-0686	09-30-24
Florida	NELAP	E87667-57	06-30-24
Georgia	State	4025-011	01-08-25
Illinois	NELAP	2000172019-1	04-30-24
Iowa	State	370	12-01-24
Kansas	NELAP	E-10166	04-30-24
Kentucky (WW)	State	KY98047	12-31-24
Louisiana	NELAP	30785	06-30-14 *
Louisiana	NELAP	30785	06-30-23 *
Louisiana (All)	NELAP	30785	06-30-24
Minnesota	NELAP	1788752	12-31-24
Nevada	State	CO000262020-1	07-31-24
New Hampshire	NELAP	2053	04-28-24
New Jersey	NELAP	230001	06-30-24
New York	NELAP	59923	03-31-24
North Dakota	State	R-034	01-08-24 *
Oklahoma	NELAP	8614	08-31-24
Oregon	NELAP	4025-020	01-08-25
Pennsylvania	NELAP	013	07-31-24

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

Accreditation/Certification Summary

Client: GeoEngineers Inc
Project/Site: Marshall Landfill

Job ID: 590-22513-1

Laboratory: Eurofins Denver (Continued)

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

Authority	Program	Identification Number	Expiration Date
South Carolina	State	72002001	01-08-24 *
Texas	NELAP	TX104704183-08-TX	09-30-09 *
Texas	NELAP	T104704183-21-19	09-30-24
USDA	US Federal Programs	P330-20-00065	12-19-25
Utah	NELAP	QUAN5	06-30-13 *
Utah	NELAP	CO000262019-11	07-31-24
Virginia	NELAP	460232	06-14-24
Washington	State	C583	08-03-24
West Virginia DEP	State	354	11-30-24
Wisconsin	State	999615430	08-31-24
Wyoming (UST)	A2LA	2907.01	10-31-25

Laboratory: Eurofins Sacramento

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

Authority	Program	Identification Number	Expiration Date
Alaska (UST)	State	17-020	02-20-24
ANAB	Dept. of Defense ELAP	L2468	01-20-27
ANAB	Dept. of Energy	L2468.01	01-20-27
ANAB	ISO/IEC 17025	L2468	01-20-27
Arizona	State	AZ0708	08-11-24
Arkansas DEQ	State	88-0691	05-18-24
California	State	2897	01-22-24
Colorado	State	CA00044	08-31-24
Florida	NELAP	E87570	06-30-24
Georgia	State	4040	01-29-24
Hawaii	State	Eurofins Sacramento	01-29-24
Illinois	NELAP	200060	03-17-24
Kansas	NELAP	E-10375	10-31-24
Louisiana	NELAP	01944	06-30-24
Louisiana (All)	NELAP	01944	06-30-24
Maine	State	CA00004	04-14-24
Michigan	State	9947	01-31-24
Nevada	State	CA00044	07-31-24
New Hampshire	NELAP	2997	04-18-24
New Jersey	NELAP	CA005	06-30-24
New York	NELAP	11666	04-01-24
Ohio	State	41252	01-29-24
Oregon	NELAP	4040	01-29-24
Texas	NELAP	T104704399-23-17	05-31-24
US Fish & Wildlife	US Federal Programs	58448	04-30-24
USDA	US Federal Programs	P330-18-00239	02-28-26
Utah	NELAP	CA000442023-16	02-29-24
Virginia	NELAP	460278	03-14-24
Washington	State	C581	05-05-24
West Virginia (DW)	State	9930C	01-31-25
Wisconsin	State	998204680	08-31-24
Wyoming	State Program	8TMS-L	01-28-19 *

Laboratory: Eurofins Seattle

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

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

Accreditation/Certification Summary

Client: GeoEngineers Inc
Project/Site: Marshall Landfill

Job ID: 590-22513-1

Laboratory: Eurofins Seattle (Continued)

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

Authority	Program	Identification Number	Expiration Date
Alaska (UST)	State	20-004	02-19-25
ANAB	Dept. of Defense ELAP	L2236	01-19-25
ANAB	Dept. of Energy	L2236	01-19-25
ANAB	ISO/IEC 17025	L2236	01-19-25
California	State	2954	07-07-24
Florida	NELAP	E87575	06-30-24
Louisiana (All)	NELAP	03073	07-01-24
Maine	State	WA01273	05-02-24
Montana (UST)	State	NA	04-14-27
New Jersey	NELAP	WA014	06-30-24
New York	NELAP	11662	03-31-24
Oregon	NELAP	4167	07-07-24
US Fish & Wildlife	US Federal Programs	A20571	06-30-24
USDA	US Federal Programs	525-23-4-22573	01-04-26
Washington	State	C788	07-13-24
Wisconsin	State	399133460	08-31-24

Method Summary

Client: GeoEngineers Inc
Project/Site: Marshall Landfill

Job ID: 590-22513-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET SPK
8270E	Semivolatile Organic Compounds (GC/MS)	SW846	EET SEA
8151A	Herbicides (GC)	SW846	EET CAL 4
300.0	Anions, Ion Chromatography	EPA	EET SPK
Draft-4 1633	Per- and Polyfluoroalkyl Substances by LC/MS/MS	EPA	EET SAC
6010D	Metals (ICP)	SW846	EET SPK
6020B	Metals (ICP/MS)	SW846	EET SEA
7470A	Mercury (CVAA)	SW846	EET SPK
350.1	Nitrogen, Ammonia	EPA	EET DEN
SM 2320B	Alkalinity	SM	EET SPK
SM 2540C	Solids, Total Dissolved (TDS)	SM	EET SPK
SM 4500 CN I	Cyanide, Weak Acid Dissociable	SM	EET DEN
SM 5310B	Organic Carbon, Total (TOC)	SM	EET DEN
1633	Solid-Phase Extraction (SPE)	EPA	EET SAC
3005A	Preparation, Total Recoverable or Dissolved Metals	SW846	EET SEA
3005A	Preparation, Total Recoverable or Dissolved Metals	SW846	EET SPK
3510C	Liquid-Liquid Extraction (Separatory Funnel)	SW846	EET SEA
5030C	Purge and Trap	SW846	EET SPK
7470A	Preparation, Mercury	SW846	EET SPK
8151A	Extraction (Herbicides)	SW846	EET CAL 4
FILTRATION	Sample Filtration	None	EET SEA
FILTRATION	Sample Filtration	None	EET SPK

Protocol References:

EPA = US Environmental Protection Agency
None = None
SM = "Standard Methods For The Examination Of Water And Wastewater"
SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAL 4 = Eurofins Calscience Tustin, 2841 Dow Avenue, Tustin, CA 92780, TEL (714)895-5494
EET DEN = Eurofins Denver, 4955 Yarrow Street, Arvada, CO 80002, TEL (303)736-0100
EET SAC = Eurofins Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600
EET SEA = Eurofins Seattle, 5755 8th Street East, Tacoma, WA 98424, TEL (253)922-2310
EET SPK = Eurofins Spokane, 11922 East 1st Ave, Spokane, WA 99206, TEL (509)924-9200

Eurofins Spokane
11922 East 1st Ave
Spokane, WA 99206
Phone (509) 924-9200 Phone (509) 924-9290

Chain of Custody Record

eurofins | Environment Testing

Client Information	Sampler: Justin Orr	Lab PM: Arrington, Randee E	Carrier Tracking No(s):	COC No: 590-9177-2634.1
Client Contact: Justin Orr	Phone: (406) 890 1310	E-Mail: Randee.Arrington@et.eurofinsus.com	State of Origin:	Page: Page 1 of 1
Company: GeoEngineers Inc	PWSID:			Job #:
Address: 523 East Second Ave	Due Date Requested: STD			
City: Spokane	TAT Requested (days): STD			
State, Zip: WA, 99202	Compliance Project: Δ Yes Δ No			
Phone:	PO #: Purchase Order not required			
Email: jorr@geoengineers.com	WO #:			
Project Name: Marshall Landfill	Project #: 59002669			
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, Y Trizma, Z other (specify)
Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=wastefoil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	2320B Alk/Bicarb, 2540C TDS, 300-Cl, NO3, NO2 & SO4	6020B Total As, Cd, Fe, Mn, Pb & Zn	6020B Diss As, Cd, Fe, Mn, Pb & Zn	6010D Total K, Mg & Na, 7470A Total Hg	6010D Dissolved Ca & Mg, 7470 Dissolved Hg	350.1 Ammonia	SM5310B TOC	4500_CN_I_NP Cyanide, Weak Acid Dissociable	8260D Standard Analyte List	8270E Semivolatiles, standard list	8151A Routine Herbicides List (Standard Spike	1633 EPA 1633		Total Number of containers	Special Instructions/Note:
			Preservation Code:				N	D	N	D	N	S	S	B	A	N	N	N			
MW-2A-121523	12/15/23	1000	G	Water			X	X	X	X	X	X	X	X	X	X	X	X			
MW 5A-121523	12/15/23	0725	G	Water			X	X	X	X	X	X	X	X	X	X	X	X			
DUP-121523	12/15/23	0800	G	Water			X	X	X	X	X	X	X	X	X	X	X	X			
TB Trip Blank	12/15/23	0800	G	Water											X						
				Water																	
				Water																	
				Water																	

590-22513 Chain of Custody

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

Sample Disposal (A fee may be assessed if sam
☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

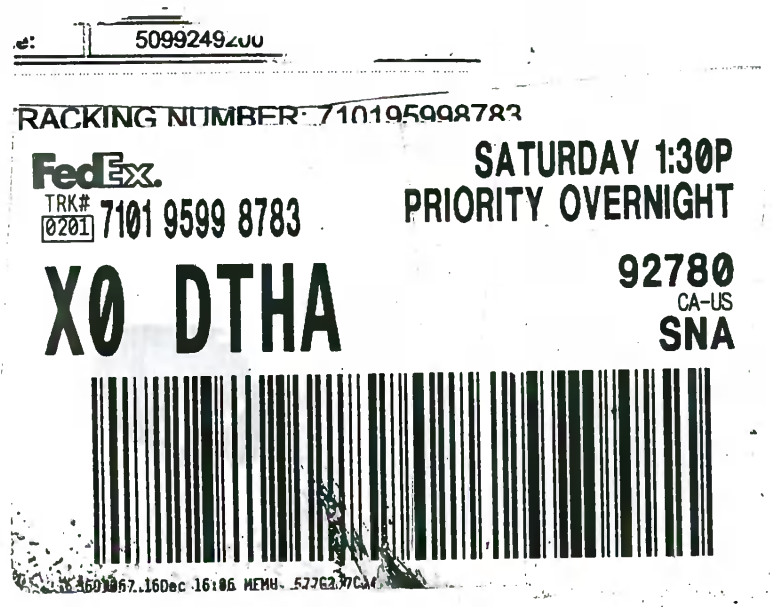
Deliverable Requested: I, II III IV Other (specify)

Special Instructions/QC Requirements.

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:
Relinquished by:	Date/Time: 12-15-23 1145	Company GEI	Received by: Morena Schofield	Date/Time: 12.15.23 1142	Company CoEI
Relinquished by: Morena Schofield	Date/Time: 12-15-23 1231	Company CoEI	Received by: OSSM	Date/Time: 12/15/23 1235	Company EurofinsSpokane
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: 4 °C 5 °C IR06C

590-22513 Waybill



Eurofins Spokane
11922 East 1st Ave
Spokane WA 99206
Phone: 509-924-9200 Fax: 509-924-9290

Chain of Custody Record

eurofins | Environment Testing

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Arrington, Randee E	Carrier Tracking No(s):	COC No: 590-8493.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: Randee.Arrington@et.eurofinsus.com	State of Origin: Washington	Page: Page 1 of 1
Company: Eurofins Environment Testing Northern Ca		Accreditations Required (See note): State Program Washington		Job #: 590-22513-1
Address: 880 Riverside Parkway	Due Date Requested: 1/2/2024			
City: West Sacramento	TAT Requested (days):			
State, Zip: CA, 95605				
Phone: 916-373-5600(Tel) 916-372-1059(Fax)	PO #:			
Email:	WO #:			
Project Name: Marshall Landfill	Project #: 59002669			
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, Y Trizma, 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)	1633/1633_SPE EPA 1633 Method List	Total Number of containers	Special Instructions/Note:
			Preservation Code:						
MW-2A-121523 (590-22513-1)	12/15/23	10:00 Pacific		Water			X	3	
MW-5A-121523 (590-22513-2)	12/15/23	08:25 Pacific		Water			X	3	
DUP-121523 (590-22513-3)	12/15/23	08:00 Pacific		Water			X	3	

Note: Since laboratory accreditations are subject to change, Eurofins Environment Testing Northwest, LLC places the ownership of method, analyte & accreditation compliance upon our 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 Environment Testing Northwest, LLC laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins Environment Testing Northwest, LLC attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to Eurofins Environment Testing Northwest, LLC.

Possible Hazard Identification	Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
Unconfirmed	☐ 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:	Company	Received by:	Date/Time:	Company
1		12/15/23 15:37	EET SPO		12/16/23 900	EET SAC
2	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
3	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No. 320719	Cooler Temperature(s) °C and Other Remarks: 3.4c

Ver: 06/08/2021

Eurofins Spokane
11922 East 1st Ave
Spokane, WA 99206
Phone: 509-924-9200 Fax: 509-924-9290

Chain of Custody Record

eurofins | Env

Loc: 590
22513

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Arrington, Randee E	Carrier Tracking No(s):	COC No: 590-8490.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: Randee.Arrington@et.eurofinsus.com	State of Origin: Washington	Page: Page 1 of 1
Company: Eurofins Environment Testing Southwest,		Accreditations Required (See note): State Program - Washington		Job #: 590-22513-1
Address: 2841 Dow Avenue, Suite 100, ,	Due Date Requested: 1/2/2024			
City: Tustin	TAT Requested (days):			
State, Zip: CA, 92780				
Phone: 714-895-5494(Tel)	PO #:			
Email:	WO #:			
Project Name: Marshall Landfill	Project #: 59002669			
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, Y - Trizma, 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)	8151A/8151A_AP Routine Herbicides List (Standard Spike	Total Number of containers	Special Instructions/Note:
			Preservation Code:						
MW-2A-121523 (590-22513-1)	12/15/23	10:00 Pacific		Water			X	1	
MW-5A-121523 (590-22513-2)	12/15/23	08:25 Pacific		Water			X	1	
DUP-121523 (590-22513-3)	12/15/23	08:00 Pacific		Water			X	1	

590-22513 Chain of Custody

Note: Since laboratory accreditations are subject to change, Eurofins Environment Testing Northwest, LLC places the ownership of method, analyte & accreditation compliance upon our 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 Environment Testing Northwest, LLC laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins Environment Testing Northwest, LLC attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to Eurofins Environment Testing Northwest, LLC.

Possible Hazard Identification	Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
Unconfirmed	☐ 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:	Company	Received by:	Date/Time:	Company
	12/15/23 14:40	EET SPO		12/18/23 0905	ET
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: *Melted ice 11-9/11-8 SGL

Ver: 06/08/2021

Eurofins Spokane
11922 East 1st Ave
Spokane, WA 99206
Phone: 509-924-9200 Fax: 509-924-9290

Chain of Custody Record

eurofins | Environment Testing

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Arrington, Randee E	Carrier Tracking No(s):	COC No: 590-8491.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: Randee.Arrington@et.eurofinsus.com	State of Origin: Washington	Page: Page 1 of 1
Company: Eurofins Environment Testing Northwest,		Accreditations Required (See note): State Program - Washington		Job #: 590-22513-1
Address: 5755 8th Street East, ,	Due Date Requested: 1/2/2024			
City: Tacoma	TAT Requested (days):			
State, Zip: WA, 98424				
Phone: 253-922-2310(Tel)	PO #:			
Email:	WO #:			
Project Name: Marshall Landfill	Project #: 59002669			
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, Y - Trizma, 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)	6020B/3005A (MOD) Total As, Cd, Fe, Mn, Pb & Zn	6020B/FILTRATION (MOD) Diss As, Cd, Fe, Mn, Pb & Zn	8270E/3510C Semivolatiles, standard list	Total Number of containers	Special Instructions/Note:
			Preservation Code:								
MW-2A-121523 (590-22513-1)	12/15/23	10:00 Pacific		Water			X	X	X	4	
MW-5A-121523 (590-22513-2)	12/15/23	08:25 Pacific		Water			X	X	X	4	
DUP-121523 (590-22513-3)	12/15/23	08:00 Pacific		Water			X	X	X	4	

Note: Since laboratory accreditations are subject to change, Eurofins Environment Testing Northwest, LLC places the ownership of method, analyte & accreditation compliance upon our 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 Environment Testing Northwest, LLC laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins Environment Testing Northwest, LLC attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to Eurofins Environment Testing Northwest, LLC.

Possible Hazard Identification	Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
Unconfirmed	☐ 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:	Company	Received by:	Date/Time:	Company
[signature]	12/15/23 15:01	EET SPO	[signature]	12/16/23 0910	EET N
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: ∆ Yes ∆ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks: IR12 0.4 10.3

Login Sample Receipt Checklist

Client: GeoEngineers Inc

Job Number: 590-22513-1

Login Number: 22513
List Number: 1
Creator: Morris, Mackenzie 1

List Source: Eurofins Spokane

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	N/A	
Sample custody seals, if present, are intact.	N/A	
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 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.	True	
Sample Preservation Verified.	N/A	
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	

Login Sample Receipt Checklist

Client: GeoEngineers Inc

Job Number: 590-22513-1

Login Number: 22513
List Number: 5
Creator: Khana, Piyush

List Source: Eurofins Calscience
List Creation: 12/18/23 12:13 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	2300748
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	Water present in cooler; indicates evidence of melted ice.
Cooler Temperature is acceptable.	False	Cooler temperature outside required temperature criteria.
Cooler Temperature is recorded.	True	11.8
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.	True	
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	

Login Sample Receipt Checklist

Client: GeoEngineers Inc

Job Number: 590-22513-1

Login Number: 22513
List Number: 3
Creator: Martinez, Anthony

List Source: Eurofins Denver
List Creation: 12/16/23 12:41 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
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	
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	
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.	True	
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").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: GeoEngineers Inc

Job Number: 590-22513-1

Login Number: 22513
List Number: 4
Creator: Simmons, Jason C

List Source: Eurofins Sacramento
List Creation: 12/16/23 03:40 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	2300719
Sample custody seals, if present, are intact.	N/A	
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	3.4c
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.	True	
Sample Preservation Verified.	N/A	
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	

Login Sample Receipt Checklist

Client: GeoEngineers Inc

Job Number: 590-22513-1

Login Number: 22513
List Number: 2
Creator: Prigge, Madison

List Source: Eurofins Seattle
List Creation: 12/16/23 10:37 AM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
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	IR12 0.4/0.3
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.	True	
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	

eurofins | Environment Testing

Sacramento Sample Receiving Notes (SSRN)

Tracking # 410195998875

Job.____

590-22513 Field Sheet

SO / PO / FO / (SAT) / 2-Day / Ground / UPS / CDO / Courier

GSL / OnTrac / Goldstreak / USPS / Other_____

Use this form to record Sample Custody Seal Cooler Custody Seal, Temperature & corrected Temperature & other observations.
File in the job folder with the COC

Therm ID 206 Corr Factor (+ / -) - °C

Ice 1 Wet 1 Gel _____ Other _____

Cooler Custody Seal 23007419

Cooler ID _____

Temp Observed 3.4 °C Corrected 3.4 °C

From Temp Blank ☐ Sample ☑

Opening/Processing The Shipment	Yes	No	NA
Cooler compromised/tampered with?	☐	☑	☐
Cooler Temperature is acceptable?	☑	☐	☐
Frozen samples show signs of thaw?	☐	☐	☑

Initials. [signature] Date. 12.16.23

Unpacking/Labeling The Samples	Yes	No	NA
Containers are not broken or leaking?	☑	☐	☐
Samples compromised/tampered with?	☐	☑	☐
COC is complete w/o discrepancies	☑	☐	☐
Sample custody seal?	☐	☐	☑
Sample containers have legible labels?	☑	☐	☐
Sample date/times are provided?	☑	☐	☐
Appropriate containers are used?	☑	☐	☐
Sample bottles are completely filled?	☑	☐	☐
Sample preservatives verified?	☐	☐	☑
Is the Field Sampler's name on COC?	☐	☐	☑
Samples w/o discrepancies?	☑	☐	☐
Zero headspace?*	☐	☐	☑
Alkalinity has no headspace?	☐	☐	☑
Perchlorate has headspace? (Methods 314, 331 6850)	☐	☐	☑
Multiphasic samples are not present?	☑	☐	☐

*Containers requiring zero headspace have no headspace, or bubble < 6 mm (1/4")

Initials. [signature] Date: 12.16.23

Notes _____

Trizma Lot #(s) _____

Ammonium Acetate Lot #(s) _____

Login Completion	Yes	No	NA
Receipt Temperature on COC?	☑	☐	☐
NCM Filed?	☐	☐	☑
Samples received within hold time?	☐	☐	☑
Log Release checked in TALS?	☐	☐	☑

Initials. [signature] Date 12 16 23

Isotope Dilution Summary

Client: GeoEngineers Inc
Project/Site: Marshall Landfill

Job ID: 590-22513-1

Method: Draft-4 1633 - Per- and Polyfluoroalkyl Substances by LC/MS/MS

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

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	PFBA (5-130)	PFPeA (40-130)	13C5PHA (40-130)	C4PFHA (40-130)	C8PFOA (40-130)	C9PFNA (40-130)	C6PFDA (40-130)	13C7PUA (30-130)
590-22513-1	MW-2A-121523	77.7	83.0	86.2	79.1	77.7	75.7	67.8	65.7
590-22513-2	MW-5A-121523	80.2	83.5	90.6	87.9	80.4	76.8	77.0	71.3
590-22513-3	DUP-121523	81.1	89.7	90.9	91.5	77.7	81.6	84.1	87.8
LCS 320-732888/3-A	Lab Control Sample	83.6	87.3	88.2	88.8	77.9	79.7	84.9	75.1
LCSD 320-732888/4-A	Lab Control Sample Dup	81.6	79.5	85.9	77.5	72.9	80.7	76.9	75.4
LLCS 320-732888/2-A	Lab Control Sample	85.9	80.5	92.8	83.2	73.5	78.8	83.6	78.2
MB 320-732888/1-A	Method Blank	85.2	84.8	89.2	80.8	83.7	85.0	82.3	82.3

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	PFDoA (10-130)	PFTDA (10-130)	C3PFBS (40-135)	C3PFHS (40-130)	C8PFOS (40-130)	PFOSA (40-130)	d3NMFOS (40-170)	d5NEFOS (25-135)
590-22513-1	MW-2A-121523	54.9	39.5	80.4	80.3	83.9	78.4	66.6	72.2
590-22513-2	MW-5A-121523	71.6	54.2	82.4	77.1	85.4	86.7	72.9	79.4
590-22513-3	DUP-121523	70.7	59.8	82.9	81.4	87.1	88.5	75.9	71.2
LCS 320-732888/3-A	Lab Control Sample	81.3	66.7	90.2	84.6	84.0	83.3	73.0	74.5
LCSD 320-732888/4-A	Lab Control Sample Dup	70.2	48.7	76.6	76.1	82.7	81.0	71.8	82.3
LLCS 320-732888/2-A	Lab Control Sample	75.7	59.4	85.8	79.5	83.5	76.2	67.9	66.4
MB 320-732888/1-A	Method Blank	75.2	51.5	80.9	78.7	77.2	80.4	68.1	71.4

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	M262FTS (40-200)	M282FTS (40-300)	HFPODA (40-130)	NMFM (10-130)	NEFM (10-130)	d5NPFSA (10-130)	d3NMFSA (10-130)	
590-22513-1	MW-2A-121523	93.2	78.2	84.9	56.9	51.5	58.5	64.5	
590-22513-2	MW-5A-121523	85.1	78.9	87.1	63.4	65.5	67.3	73.3	
590-22513-3	DUP-121523	89.4	85.4	87.4	69.3	63.0	71.5	74.3	
LCS 320-732888/3-A	Lab Control Sample	89.3	84.9	87.4	70.2	77.4	70.7	75.9	
LCSD 320-732888/4-A	Lab Control Sample Dup	80.5	82.7	84.2	62.9	71.2	68.9	70.9	
LLCS 320-732888/2-A	Lab Control Sample	97.5	83.4	90.4	62.4	61.7	69.5	70.1	
MB 320-732888/1-A	Method Blank	83.6	84.1	90.7	67.7	65.0	68.6	72.4	

Surrogate Legend

PFBA = 13C4 PFBA
PFPeA = 13C5 PFPeA
13C5PHA = 13C5 PFHxA
C4PFHA = 13C4 PFHpA
C8PFOA = 13C8 PFOA
C9PFNA = 13C9 PFNA
C6PFDA = 13C6 PFDA
13C7PUA = 13C7 PFUnA
PFDoA = 13C2 PFDoA
PFTDA = 13C2 PFTeDA
C3PFBS = 13C3 PFBS
C3PFHS = 13C3 PFHxS
C8PFOS = 13C8 PFOS
PFOSA = 13C8 PFOSA
d3NMFOS = d3-NMeFOSAA
d5NEFOS = d5-NEtFOSAA
M262FTS = 13C2 6:2 FTS
M282FTS = 13C2 8:2 FTS
HFPODA = 13C3 HFPO-DA
NMFM = d7-N-MeFOSE-M

Isotope Dilution Summary

Client: GeoEngineers Inc
Job ID: 590-22513-1
Project/Site: Marshall Landfill

NEFM = d9-N-EtFOSE-M
d5NPFSA = d5-NEtPFOSA
d3NMFSA = d3-NMePFOSA

Method: Draft-4 1633 - Per- and Polyfluoroalkyl Substances by LC/MS/MS

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

		Percent Isotope Dilution Recovery (Acceptance Limits)
Lab Sample ID	Client Sample ID	M242FTS (40-200)
590-22513-1 - RA	MW-2A-121523	98.6
590-22513-2 - RA	MW-5A-121523	107
590-22513-3 - RA	DUP-121523	104
LCS 320-732888/3-A - RA	Lab Control Sample	103
LCSD 320-732888/4-A - RA	Lab Control Sample Dup	98.7
LLCS 320-732888/2-A - RA	Lab Control Sample	113
MB 320-732888/1-A - RA	Method Blank	115

Surrogate Legend

M242FTS = 13C2 4:2 FTS

APPENDIX C
Chemical Analytical Data Review

GeoEngineers

523 East Second Avenue, Spokane, Washington 99202, Telephone: 509.363.3125 www.geoengineers.com

Data Validation Report

Project:	Marshall Landfill Site December 2023 Samples
GEI File No:	0504-104-01
Date:	March 11, 2024

This report documents the results of a United States Environmental Protection Agency (USEPA)-defined Stage 2A data validation (USEPA Document 540-R-08-005; USEPA, 2009) of analytical data from the analyses of water samples collected as part of the December 2023 sampling event, and the associated laboratory and field quality control (QC) samples. The samples were obtained from the Marshall Landfill site located in Spokane County, Washington.

OBJECTIVE AND QUALITY CONTROL ELEMENTS

GeoEngineers, Inc. (GeoEngineers) completed the data validation consistent with the USEPA Contract Laboratory Program National Functional for Organic Superfund Methods Data Review (USEPA, 2020a) and Inorganic Superfund Methods Data Review (USEPA, 2020b) (National Functional Guidelines) to determine if the laboratory analytical results meet the project objectives and are usable for their intended purpose. Data usability was assessed by determining if:

- The samples were analyzed using well-defined and acceptable methods that provide reporting limits below applicable regulatory criteria;
- The precision and accuracy of the data are well-defined and sufficient to provide defensible data; and
- The quality assurance/quality control (QA/QC) procedures utilized by the laboratory meet acceptable industry practices and standards.

In accordance with the Quality Assurance Project Plan (QAPP), Appendix B of the Work Plan (GeoEngineers, 2023), the data validation included the review of the following QC elements:

- Data Package Completeness
- Chain-of-Custody Documentation
- Holding Times and Sample Preservation
- Surrogate Recoveries
- Method, Trip, Field, Equipment Blanks
- Matrix Spikes/Matrix Spike Duplicates
- Laboratory Control Samples/Laboratory Control Sample Duplicates
- Laboratory and Field Duplicates
- Miscellaneous
- Validated Sample Delivery Groups

This data validation included review of the sample delivery groups (SDGs) listed below in Table 1.

TABLE 1. SUMMARY OF VALIDATED SAMPLE DELIVERY GROUPS

Laboratory SDG	Samples Validated
590-22504-1	MW-7B-121423, MW-11A-121423, MW-12A-121423, EB-121423, FB-121423
590-22513-1	MW-2A-121523, MW-5A-121523, DUP-121523, Trip Blank

CHEMICAL ANALYSIS PERFORMED

Eurofins Spokane, Environment Testing, LLC (Eurofins), located in Spokane, Washington, performed laboratory analyses on the samples using one or more of the following methods:

- Volatile Organic Compounds (VOCs) by Method EPA8260D;
- Semi-Volatile Organic Compounds (SVOCs) by Method EPA8270E;
- Chlorinated Herbicides by Method SW8151A;
- Total and Dissolved Metals by Methods SW6010D, SW6020B, or SW7470A;
- Anions by Method EPA300.0;
- Ammonia as N by Method EPA350.1;
- Total Alkalinity and Bicarbonate by Method SM2320B;
- Total Dissolved Solids (TDS) by Method SM2540C;
- Total Organic Carbon (TOC) by Method SM5310B;
- Total Cyanide by Method EPA335.4;
- Cyanide (Weak Acid Dissociable) by SM4500CN I; and
- Per- and Polyfluoroalkyl Substances (PFAS) by Method EPA1633

DATA VALIDATION SUMMARY

The results for each of the QC elements are summarized below.

Data Package Completeness

Eurofins provided the required deliverables for the data validation according to the National Functional Guidelines. The laboratory followed adequate corrective action processes and the identified anomalies were discussed in the relevant laboratory case narrative.

Chain-of-Custody Documentation

Chain-of-custody (COC) forms were provided with the laboratory analytical reports. The COCs were accurate and complete when submitted to the laboratory.

Holding Times and Sample Preservation

The sample holding time is defined as the time that elapses between sample collection and sample analysis. Maximum holding time criteria exist for each analysis to help ensure that the analyte concentrations found at the time of analysis reflect the concentration present at the time of sample collection. Established holding times were met for each analysis. The sample coolers arrived at the

laboratory within the appropriate temperatures of between 2 and 6 degrees Celsius, with the exception noted below.

SDGs 590-22504-1 and 590-22513-1: (Herbicides) The sample cooler temperatures recorded at the laboratory were 11.8 and 11.9 degrees Celsius. Eurofins sent six samples to their California location for herbicide analyses. The samples were sent in coolers with ice on 12/15/2023. The coolers were received on 12/18/2023 and the ice had melted. The reporting limits for the herbicides target analytes were qualified as estimated (UJ) in Samples MW-2A-121523, MW-5A-121523, DUP-121523, MW-7B-121423, MW-11A-121423 and MW-12A-121423.

Surrogate Recoveries

A surrogate compound is a compound that is chemically similar to the organic analytes of interest, but unlikely to be found in an environmental sample. Surrogates are used for organic analyses and are added to the samples, standards, and blanks to serve as an accuracy and specificity check of each analysis. The surrogates are added to the samples at a known concentration and percent recoveries are calculated following analysis. The surrogate percent recoveries for field samples were within the laboratory control limits, with the following exception:

SDG 590-22504-1: (SVOCs) The percent recovery for surrogate terphenyl-d14 was less than the control limits in Sample MW-7B-121423; however, the sample was spiked with five additional surrogates and in each case the percent recovery values were within their respective control limits. No action was required for this outlier.

Method, Trip, Field and Equipment Blanks

Method Blanks

Method blanks are analyzed to ensure that laboratory procedures and reagents do not introduce measurable concentrations of the analytes of interest. A method blank was analyzed with each batch of samples, at a frequency of one per 20 samples. For each sample batch, method blanks for the applicable methods were analyzed at the required frequency. None of the analytes of interest were detected in the method blanks, with the following exceptions:

SDG 590-22504-1: (Alkalinity) There was a positive result for total and bicarbonate alkalinity detected above the method detection limit, but below the reporting limit in the method blank digested on 12/27/2023. The positive results for these target analytes were greater than 10X the concentration in the method blank in the associated field samples; therefore, no qualifications were required.

SDG 590-22513-1: (Alkalinity) There was a positive result for total and bicarbonate alkalinity detected above the method detection limit, but below the reporting limit in the method blank digested on 12/27/2023. The positive results for these target analytes were greater than 10X the concentration in the method blank in the associated field samples; therefore, no qualifications were required.

Trip Blanks

Trip blanks are analyzed to provide an indication as to whether volatile compounds have cross contaminated other like samples within the transportation process to the laboratory. None of the analytes of interest were detected the trip blank.

Field Blanks

Field blanks are analyzed to provide an indication as to whether there has been cross-contamination from field condition during sample collection. None of the analytes of interest were detected in the field blank.

Equipment Blanks

Equipment rinsate blanks are analyzed to provide an indication as to whether field decontamination and sampling procedures effectively prevent cross-contamination in field activities. None of the analytes of interest were detected in the equipment blank.

Matrix Spikes/Matrix Spike Duplicates

Since the actual analyte concentration in an environmental sample is not known, the accuracy of a particular analysis is usually inferred by performing a matrix spike (MS) analysis on one sample from the associated batch, known as the parent sample. One aliquot of the sample is analyzed in the normal manner and then a second aliquot of the sample is spiked with a known amount of analyte concentration and analyzed. From these analyses, a percent recovery is calculated. Matrix spike duplicate (MSD) analyses are generally performed for organic analyses as a precision check and analyzed in the same sequence as a matrix spike. Using the result values from the MS and MSD, the relative percent difference (RPD) is calculated. The percent recovery control limits for MS and MSD analyses are specified in the laboratory documents, as are the RPD control limits for MS/MSD sample sets.

One MS/MSD analysis should be performed for every analytical batch or every 20 field samples, whichever is more frequent. The frequency requirements were met for each analysis and the percent recovery and RPD values were within the proper control limits.

Laboratory Control Samples/Laboratory Control Sample Duplicates

A laboratory control sample (LCS) is a blank sample that is spiked with a known amount of analyte and then analyzed. An LCS is similar to an MS, but without the possibility of matrix interference. Given that matrix interference is not an issue, the LCS/LCSD control limits for accuracy and precision are usually more rigorous than for MS/MSD analyses. Additionally, data qualification based on LCS/LCSD analyses would apply to all samples in the associated batch, instead of just the parent sample. The percent recovery control limits for LCS and LCSD analyses are specified in the laboratory documents, as are the RPD control limits for LCS/LCSD sample sets.

One LCS/LCSD analysis should be performed for every analytical batch or every 20 field samples, whichever is more frequent. The frequency requirements were met for all analyses and the percent recovery and RPD values were within the proper control limits, with the following exceptions:

SDG 590-22504-1: (VOCs) The RPD for chloromethane was greater than the control limit in the LCS/LCSD sample set extracted on 12/15/2023. There were no positive results for this target analyte in the associated field samples; therefore, no qualifications were required.

Additionally, in the same LCS/LCSD sample set, the percent recovery for chloromethane was greater than the control limits in the LCS; however, the percent recovery for this target analyte was within the control limits in the corresponding LCSD. No action was required for this outlier.

(Herbicides) The RPD values for 2,4,5-T, 2,4,5-TP, 2,4-D, 2,4-DB, dalapon, dicamba, dichlorprop, dinoseb and MCPA were greater than the control limits in the LCS/LCSD sample set extracted on 12/18/2023.

There were no positive results for these target analytes in the associated field samples; therefore, no qualifications were required.

(PFAS) The RPD values for ADONA and PFOS were greater than the control limits in the LCS/LCSD sample set extracted on 1/11/2024. The positive result for PFOS was qualified as estimated (J) in Sample MW-7B-121423.

SDG 590-22513-1: (VOCs) The percent recovery for chloromethane was greater than the control limits in the LCS/LCSD sample set extracted on 12/18/2023. There were no positive results for this target analyte in the associated field samples; therefore, no qualifications were required.

(SVOCs) The RPD values for 1,2,4-Trichlorobenzene, 1,2-Dichlorobenzene, 1,3-Dichlorobenzene, 1,4-Dichlorobenzene, hexachlorobutadiene, hexachlorocyclopentadiene, and hexachloroethane were greater than the control limits in the LCS/LCSD sample set extracted on 12/21/2023. There were no positive results for these target analytes in the associated field samples; therefore, no qualifications were required.

Additionally, in the same LCS/LCSD sample set, the percent recoveries for 1,2,4-Trichlorobenzene, 1,2-Dichlorobenzene, 1,3-Dichlorobenzene, 1,4-Dichlorobenzene, 2-Methylnaphthalene, hexachlorobutadiene, hexachlorocyclopentadiene, hexachloroethane, and naphthalene were less than the control limits in the LCS; however, the percent recoveries for these target analytes were within the control limits in the corresponding LCSD. No action was required for these outliers.

(Herbicides) The RPD values for 2,4,5-T, 2,4,5-TP, 2,4-D, 2,4-DB, dalapon, dicamba, dichlorprop, dinoseb and MCPA were greater than the control limits in the LCS/LCSD sample set extracted on 12/18/2023. There were no positive results for these target analytes in the associated field samples; therefore, no qualifications were required.

Laboratory Duplicates

Internal laboratory duplicate analyses are performed to monitor the precision of the analyses. Two separate aliquots of a sample are analyzed as distinct samples in the laboratory and the RPD between the two results is calculated. Duplicate analyses should be performed once per analytical batch. If one or more of the samples used has a concentration less than 5 times the reporting limit for that sample, the absolute difference is used instead of the RPD. The RPD control limits are specified in the laboratory documents. Laboratory duplicates were analyzed at the proper frequency and the specified acceptance criteria were met.

Field Duplicates

In order to assess precision, field duplicate samples were collected and analyzed along with the reviewed sample batches. The duplicate samples were analyzed for the same parameters as the associated parent samples. Precision is determined by calculating the RPD between each pair of samples. If one or more of the sample analytes has a concentration less than 5 times the reporting limit for that sample, then the absolute difference is used instead of the RPD. The RPD control limit for water samples is 35 percent.

SDG 590-22513-1: One field duplicate sample pair, MW-5A-121523 and DUP-121523, was submitted with this SDG. The precision criteria for the target analytes were met for this sample pair.

Miscellaneous

SDG 590-22504-1: (PFAS) The laboratory reported two sets of results for Samples MW-7B-121423, MW-11A-121423, MW-12A-121423, EB-121423 and FB-121423, initial results and reanalysis results,

due to low level laboratory control sample spiking error. The reanalysis results were labeled as DNR and should not be used for any purpose.

SDG 590-22513-1: (SVOCs) The laboratory reported two sets of results for Samples MW-2A-121523, MW-5A-121523, and DUP-121523, initial results and reanalysis results, due to laboratory control sample outliers. The reanalysis results were labeled as DNR and should not be used for any purpose.

OVERALL ASSESSMENT

As was determined by this data validation, the laboratory followed the specified analytical methods. Accuracy was acceptable, as demonstrated by the surrogate, LCS/LCSD, and MS/MSD percent recovery values, with the exceptions noted above. Precision was acceptable, as demonstrated by the LCS/LCSD, MS/MSD, and laboratory/field duplicate RPD values, with the exceptions noted above.

The data are acceptable for the intended use, with the following qualification listed below in Table 2.

TABLE 2. SUMMARY OF QUALIFIED SAMPLES

Sample ID	Analyte	Qualifier	Reason
MW-2A-121523	All herbicide target analytes	UJ	Sample Preservation
MW-5A-121523	All herbicide target analytes	UJ	Sample Preservation
DUP-121523	All herbicide target analytes	UJ	Sample Preservation
MW-7B-121423	PFOS All herbicide target analytes	J UJ	LCS/LCSD Precision Sample Preservation
MW-11A-121423	All herbicide target analytes	UJ	Sample Preservation
MW-12A-121423	All herbicide target analytes	UJ	Sample Preservation

REFERENCES

U.S. Environmental Protection Agency (USEPA). "Guidance for Labeling Externally Validated Laboratory Analytical Data for Superfund Use," EPA-540-R-08-005. January 2009.

U.S. Environmental Protection Agency (USEPA) 2020a. Contract Laboratory Program National Functional Guidelines for Organic Superfund Methods Data Review, EPA-540-R-20-005. November 2020.

U.S. Environmental Protection Agency (USEPA) 2020b. Contract Laboratory Program National Functional Guidelines for Inorganic Superfund Methods Data Review, EPA-542-R-20-006. November 2020.

GeoEngineers, Inc. "Work Plan, Marshall Landfill Groundwater Monitoring," prepared for Washington State Department of Ecology. November 17, 2023.

APPENDIX D
Report Limitations and Guidelines for Use

APPENDIX D
REPORT LIMITATIONS AND GUIDELINES FOR USE[1]

This appendix provides information to help you manage your risks with respect to the use of this report.

Environmental Services Are Performed for Specific Purposes, Persons and Projects

This report has been prepared for the exclusive use of Herrera and Ecology, their authorized agents, and regulatory agencies. This report is not intended for use by others and the information contained herein is not applicable to other sites.

GeoEngineers structures our services to meet the specific needs of our clients. For example, an environmental site assessment study conducted for a property owner may not fulfill the needs of a prospective purchaser of the same property. Because each environmental study is unique, each environmental report is unique, prepared solely for the specific client and project site. No one except Herrera and Ecology should rely on this environmental report without first conferring with GeoEngineers. This report should not be applied for any purpose or project except the one originally contemplated.

This Environmental Report is Based on a Unique Set of Project-Specific Factors

This report has been prepared for Herrera and Ecology. GeoEngineers considered a number of unique, project-specific factors when establishing the scope of services for this project and report. Unless GeoEngineers specifically indicates otherwise, do not rely on this report if it was:

- not prepared for you,
- not prepared for your project,
- not prepared for the specific site explored, or
- completed before important project changes were made.

If important changes are made after the date of this report, GeoEngineers should be given the opportunity to review our interpretations and recommendations and provide written modifications or confirmation, as appropriate.

Reliance Conditions for Third Parties

Our report was prepared for the exclusive use of our Client. No other party may rely on the product of our services unless we agree in advance to such reliance in writing. This is to provide our firm with reasonable protection against open-ended liability claims by third parties with whom there would otherwise be no contractual limits to their actions. Within the limitations of scope, schedule and budget, our services have been executed in accordance with our Agreement with the Client and generally accepted environmental practices in this area at the time this report was prepared.

Environmental Regulations are Always Evolving

Some substances may be present in the site vicinity in quantities or under conditions that may have led, or may lead, to contamination of the subject site, but are not included in current local, state or federal

[1] Developed based on material provided by GBA, GeoProfessional Business Association; www.geoprofessional.org.

regulatory definitions of hazardous substances or do not otherwise present current potential liability. GeoEngineers cannot be responsible if the standards for appropriate inquiry, or regulatory definitions of hazardous substance, change or if more stringent environmental standards are developed in the future.

Subsurface Conditions Can Change

This environmental report is based on conditions that existed at the time the study was performed. The findings and conclusions of this report may be affected by the passage of time, by manmade events such as construction on or adjacent to the site, by new releases of hazardous substances, or by natural events such as floods, earthquakes, slope instability or groundwater fluctuations. Always contact GeoEngineers before applying this report to determine if it is still applicable.

Soil and Groundwater End Use

The cleanup levels referenced in this report are site-and situation-specific. The cleanup levels may not be applicable for other sites or for other on-site uses of the affected media (soil and/or groundwater). Note that hazardous substances may be present in some of the site soil and/or groundwater at detectable concentrations that are less than the referenced cleanup levels. GeoEngineers should be contacted prior to the export of soil or groundwater from the subject site or reuse of the affected media on site to evaluate the potential for associated environmental liabilities. We cannot be responsible for potential environmental liability arising out of the transfer of soil and/or groundwater from the subject site to another location or its reuse on site in instances that we were not aware of or could not control.

Most Environmental Findings are Professional Opinions

Our interpretations of subsurface conditions are based on field observations and chemical analytical data from widely spaced sampling locations at the site. Site exploration identifies subsurface conditions only at those points where subsurface tests are conducted or samples are taken. GeoEngineers reviewed field and laboratory data and then applied our professional judgment to render an opinion about subsurface conditions throughout the site. Actual subsurface conditions may differ – sometimes significantly – from those indicated in this report. Our report, conclusions and interpretations should not be construed as a warranty of the subsurface conditions.

Do Not Redraw the Exploration Logs

Environmental scientists prepare final boring and testing logs based upon their interpretation of field logs and laboratory data. To prevent errors or omissions, the logs included in an environmental report should never be redrawn for inclusion in other design drawings. Only photographic or electronic reproduction is acceptable but recognizes that separating logs from the report can elevate risk.

Read These Provisions Closely

Some clients, design professionals and contractors may not recognize that the geoscience practices (geotechnical engineering, geology and environmental science) are far less exact than other engineering and natural science disciplines. This lack of understanding can create unrealistic expectations that could lead to disappointments, claims and disputes. GeoEngineers includes these explanatory “limitations” provisions in our reports to help reduce such risks. Please confer with GeoEngineers if you are unclear how these “Report Limitations and Guidelines for Use” apply to your project or site.

Geotechnical, Geologic and Geoenvironmental Reports Should Not be Interchanged

The equipment, techniques and personnel used to perform an environmental study differ significantly from those used to perform a geotechnical or geologic study and vice versa. For that reason, a geotechnical engineering or geologic report does not usually relate to any environmental findings, conclusions or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. Similarly, environmental reports are not used to address geotechnical or geologic concerns regarding a specific project.

Biological Pollutants

GeoEngineers' Scope of Work specifically excludes the investigation, detection, prevention or assessment of the presence of Biological Pollutants. Accordingly, this report does not include any interpretations, recommendations, findings, or conclusions regarding the detecting, assessing, preventing or abating of Biological Pollutants and no conclusions or inferences should be drawn regarding Biological Pollutants, as they may relate to this project. The term "Biological Pollutants" includes, but is not limited to, molds, fungi, spores, bacteria and viruses, and/or any of their byproducts.

If Client desires these specialized services, they should be obtained from a consultant who offers services in this specialized field.

GeoEngineers