Groundwater Monitoring Report
June 2024

Marshall Landfill
Spokane County, Washington

for
Herrera Environmental Consultants, Inc.

January 21, 2025

523 East Second Avenue
Spokane, Washington 99202
509.363.3125

GeoEngineers

Groundwater Monitoring Report
June 2024

Marshall Landfill
Spokane County, Washington

File No. 0504-104-01
January 21, 2025

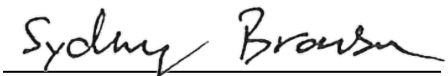
Prepared for:

Herrera Environmental Consultants, Inc.
2200 Sixth Avenue, Suite 1100
Seattle, Washington 98121

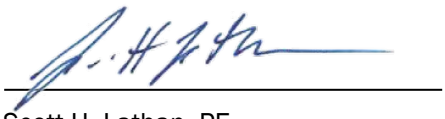
Attention: Nigel Baummer

Prepared by:

GeoEngineers, Inc.
523 East Second Avenue
Spokane, Washington 99202
509.363.3125



Sydney J. Bronson, PE
Environmental Engineer



Scott H. Lathan, PE
Environmental Engineer

SJB:SHL:kjb:mce

cc: Christer Loftenius
Washington State Department of Ecology

Table of Contents

List of Tables

List of Figures

Appendices

1.0 Introduction

This report summarizes analytical results from the March 2024 groundwater monitoring event at the Marshall Landfill (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), until the previous groundwater monitoring event conducted in December 2023. 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 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 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 was 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 northeast to southeast 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.

2.1 GROUNDWATER MONITORING PROGRAM

There are currently 20 monitoring wells at the Site. Ecology identified five initial monitoring wells (MW-2A, MW-5A, MW-7B, MW-11A and MW-12A) to be monitored and sampled quarterly for one year, starting in December 2023, to support remedial design. Following receipt of the December 2023 groundwater monitoring event data (GEI 2024a) which identified PFAS in groundwater at the Site, Ecology identified four additional monitoring wells (MW-8B, MW-9A, MW-15 and MW-16) to be sampled and discontinued sampling at one well. Additional changes to the monitoring program were made following the March 2024 groundwater monitoring event (GEI 2024b) to better understand PFAS in groundwater at the Site, including adding monitoring well MW-3, and a sample from the hose bib of the on-site building and adding artificial sweetener analysis for groundwater samples from select wells. Changes to the groundwater sampling and analysis plan are documented in the updated Work Plan (GEI 2023). Our specific scope of services for this quarterly event is described below.

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) and included the following activities for March 2024:

- Removing existing pump and redeveloping well MW-3 using surging and pumping methods;
- Installing a new, dedicated PFAS-free low-flow bladder pump and PFAS-free tubing in groundwater monitoring well MW-3;
- Measuring depth to groundwater 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-3, MW-5A, MW-7B, MW-8B, MW-9A, MW-12A, MW-15 and MW-16 and the on-site building's hose bib;
- Submitting one groundwater sample from monitoring wells MW-2A, MW-3, MW-5A, MW-7B, MW-8B, MW-9A, MW-12A, MW-15 and MW-16, one duplicate groundwater sample from monitoring well MW-5A, and the hose bib 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 field blank and one trip 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; and
- Documenting sampling activities in this report.

3.1 DEVIATIONS FROM WORK PLAN

The following deviations from the Work Plan were conducted during this investigation:

- Three wells (MW-8A, MW-15A and MW-16A) were sampled instead of monitoring wells MW-8B, MW-15 and MW-16 that were specified in the Work Plan for sampling. MW-8A, MW-15A and MW-16A were historically installed as paired wells with the monitoring wells that were intended for sampling (MW-8B, MW-15 and MW-16) and are the deeper of the well pair; ex. MW-8A which was sampled is deeper than MW-8B which was supposed to be sampled. Groundwater samples collected from wells MW-8A, MW-15A and MW-16A were submitted for chemical analysis based on the analysis intended for its well pair per the Work Plan. Text, tables, figures and chemical analytical laboratory reports contained herein reflect actual wells sampled.

4.0 Monitoring Well Redevelopment

The monitoring well added to the sampling program starting this quarter, MW-3, was redeveloped between June 17th and 18th, 2024 using pumping and surging methods in accordance with the Work Plan. Prior to well redevelopment, the dedicated pump and tubing were removed from the monitoring well (if present) and depth to water and a well bottom measurement was collected to determine the well volumes for groundwater removal. Five well volumes or a maximum volume of 90 gallons were removed from the well using PFAS-free equipment, as shown in Table I. A new PFAS-free bladder pump and tubing was 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[1] (gallons)	Target Removal Volume (gallons)	Volume Removed (gallons)	Water Quality Observations Following Development
MW-3	6.63	40	40	Clear (<1 NTU)

Notes:

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

NTU = nephelometric turbidity units.

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 June 18, 2024. Monitoring well construction details are summarized in Table 1, and their locations are shown on Figure 2. Groundwater elevations were calculated by subtracting the depth to water measurement from the surveyed top of well casing elevation and are referenced to the North American Vertical Datum of 1988 (NAVD88). Groundwater elevations ranged from approximately 2088.59 feet in MW-8B to 2,244.20 feet in MW-12A.

Based on groundwater elevations measured during the June 2024 groundwater monitoring event, the inferred groundwater flow direction in the basement rock aquifer trends generally east 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 June 2024 event are provided in Table 1 and interpreted groundwater contours are shown in Figure 3. A summary of groundwater depths and elevations measured during previous events (December 2023 to present) is included in Appendix A, Table A-1.

5.2 GROUNDWATER SAMPLING

Groundwater samples were collected from monitoring wells MW-2A, MW-3, MW-5A, MW-7B, MW-8A, MW-9A, MW-12A, MW-15A and MW-16A and the on-site hose bib on June 18 through June 21, 2024. A duplicate sample was collected from monitoring well MW-5A. Groundwater samples were submitted for chemical analysis, as described below, to Eurofins in Spokane Valley, Washington on a standard turnaround time. Groundwater quality parameters are summarized in Table 2. A summary of water quality parameters during previous events is included in Appendix A, Table A-2.

Groundwater samples from MW-2A, MW-3, MW-5A (and the duplicate), MW-7B, MW-8A, MW-9A, MW-15A and MW-16A and the hose bib were analyzed for the list below. The groundwater sample from well MW-12A was also analyzed for the list below, except for dissolved iron and manganese.

- Alkalinity and bicarbonate using Standard Method (SM) 2320B;
- Total and dissolved arsenic, cadmium, iron, manganese, lead and zinc using 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 350.1;
- Total organic carbon (TOC) using SM 5310B; and
- Total dissolved solids (TDS) using SM 2540C;

Additionally, groundwater samples from select wells (listed in parentheses following the analytical method) were submitted for the following:

- Tetrachloroethene (PCE) and 1,1,1-trichloroethane (1,1,1-TCA) using EPA Method 8260D (wells MW-2A, MW-5A and its duplicate, MW-7B and MW-12A);
- 1,4-Dioxane using EPA Method 8270E SIM (wells MW-2A, MW-5A and its duplicate, MW-7B and MW-12A);
- PFAS using EPA Draft-4 Method 1633 (wells MW-2A, MW-3, MW-5A (and the duplicate), MW-7B, MW-8A, MW-9A, MW-15A and MW-16A); and
- Artificial sweeteners, acesulfame potassium and sucralose using EPA Method 1694 (wells MW-2A, MW-3, MW-5A [and the duplicate], MW-8A, MW-9A, MW-15A and MW-16A).

6.0 Investigation-Derived Waste

Water generated from well redevelopment and sampling was placed in labeled 55-gallon steel drums staged on site near each well and covered with a tarp prior to transport and off-site disposal at a permitted facility. The IDW from the March 2024 event was disposed on June 17th, 2024. 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 B, Waste Disposal Documentation. The IDW from this event will be disposed in October 2024, and the disposal documentation will be provided in the third quarter 2024 groundwater monitoring report.

7.0 Groundwater Analytical Results

Chemical analytical results for the second quarter 2024 sampling event are summarized below and in Table 3. Regulatory criteria used for comparison include Model Toxics Control Act (MTCA) Method A/B groundwater cleanup levels, the Washington Department of Health (DOH) State Action Levels (SALs) and the EPA Maximum Contaminant Levels (MCL) as applicable. Chemical analytical results for the previous groundwater monitoring events are included in Appendix A, Table A-3.

- PFAS:
  - Perfluorooctanoic acid (PFOA) was detected greater than the MTCA Method B cleanup level (0.48 nanograms per liter [ng/L]) in groundwater samples from six locations: MW-2A (2.1 ng/L), MW-3 (0.61 ng/L), MW-5A and its duplicate (17 and 16 ng/L respectively), MW-8A (3.6 ng/L), MW-9A (13 ng/L) and MW-15A (1.7 ng/L). The MTCA Method B cleanup level is lower than both the DOH SAL and EPA MCL for PFOA.
  - Perfluorooctanesulfonic acid (PFOS) was detected greater than the MTCA Method B cleanup level (1.6 ng/L) in groundwater samples from five locations: MW-2A (8.7 ng/L), MW-3 (4.4 ng/L), MW-5A and its duplicate (both 14 ng/L), MW-9A (13 ng/L) and MW-15A (2.5 ng/L). The MTCA Method B cleanup level is lower than both the DOH SAL and EPA MCL for PFOS.
  - Perfluorohexanesulfonic acid (PFHxS) was detected greater than the EPA MCL (10 ng/L) in the groundwater sample from well MW-2A (11 ng/L). The EPA MCL is lower than both the DOH SAL and MTCA Method B cleanup level for PFHxS.

  The other PFAS compounds analyzed were either detected at concentrations less than their respective MTCA cleanup levels, DOH SALs and EPA MCLs, where established or were not detected at concentrations exceeding the laboratory reporting limits.

- Other COCs analyzed were either not detected exceeding the laboratory reporting limits or were detected at concentrations less than their MTCA cleanup levels, DOH SALs, or EPA MCLs where established.
- QA/QC Samples:
  - Trip Blank: Methylene chloride was detected; other VOCs analyzed were not detected at concentrations greater than the laboratory reporting limits. Data quality exceptions regarding the trip blank detection are discussed in Section 7.1 below.
  - Field Blank: PFAS were not detected at concentrations greater than the laboratory reporting limits.

The chemical analytical laboratory report is included in Appendix C.

7.1 DATA QUALITY EXCEPTIONS

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

- Trichloroethene analysis for the trip blank was assigned the qualifier UJ for holding time because the 14-day holding time was exceeded.

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 D, Chemical Analytical Data Review.

8.0 Summary and Future Monitoring Schedule

The June 2024 groundwater monitoring event was conducted at the Site between June 17 and 21, 2024. One monitoring well was redeveloped and fitted with new dedicated PFAS-free equipment between June 17th and 18th, 2024, and eight monitoring wells were sampled between June 18th and 21st, 2024.

Groundwater elevations, calculated from depth to groundwater measurements, indicated an east to southeast flow direction in the basement rock aquifer across the landfills and an east to northeast flow direction in the glaciofluvial aquifer throughout the Main Landfill and valley bottom which is generally consistent with previous monitoring data from the Site. Groundwater elevations increased in most wells, with a range between 1.03 feet in MW-2 and 8.14 feet in MW-8B within the glaciofluvial aquifer, and 3.26 feet in MW-7D and 8.85 in MW-8A within the basement aquifer. Lower groundwater elevations, as compared to March 2024 conditions, were observed in wells MW-1A, MW-4A, MW-9A, MW-12A, and MW-16A, which represent a mix of glaciofluvial, basement and CRBG conditions.

PFAS including PFOS, PFOA and/or PFHxS were detected at concentrations greater than the newly established MTCA Method B cleanup levels or EPA MCLs in groundwater samples from monitoring wells MW-2A, MW-3, MW-5A, MW-8A, MW-9A and MW-15A. The concentrations of PFAS generally decreased slightly between March and June 2024 in wells where they were detected during both events. A notable exception is MW-9A where concentrations of PFAS were at least an order of magnitude higher in June than in March 2024.

The other COCs analyzed were either not detected above laboratory reporting limits or were detected at concentrations less than their respective MTCA cleanup levels, DOH SALs and EPA MCLs, where established. Based on these results, additional sampling for PFAS in groundwater, particularly from

groundwater wells which have not previously been sampled for PFAS, may be warranted to help understand the current nature and extent of PFAS impacts across the Site. Additional PFAS sampling in groundwater could also inform potential upgradient source(s) of PFAS beyond the landfilled waste, if any. 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 third 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 have been 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 E, Report Limitations and Guidelines for Use, for additional information pertaining to use of this report.

10.0 References

Fetrow Engineering, Inc. (Fetrow) 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. Updated June 6, 2024.

GEI 2024a. "Groundwater Monitoring Report, December 2023, Marshall Landfill, Spokane County, Washington." GEI File No. 0504-104-01, April 26, 2024.

GEI 2024b. "Groundwater Monitoring Report, March 2024, Marshall Landfill, Spokane County, Washington." GEI File No. 0504-104-01, September 16, 2024.

Tables

Table 1

Summary of Groundwater Monitoring Well Measurements – June 2024

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[2] (feet bTOC)	Aquifer	Date Measured	Depth to Groundwater (feet bTOC)	Groundwater Elevation[3] (feet)
MW-1A 2,335.52	199 to 209	210	Weathered Basement	6/18/2024	205.97	2,129.55
MW-2 2,176.05	73 to 83	83	Glaciofluvial	6/18/2024	67.27	2,108.78
MW-2A 2,175.80	93 to 108	108	Glaciofluvial	6/18/2024	67.25	2,108.55
MW-3 2,182.30	106 to 116	118	Glaciofluvial	6/18/2024	80.16	2,102.14
MW-4A 2,159.26	63 to 78	80	Glaciofluvial	6/18/2024	41.35	2,117.91
MW-5A 2,187.46	124.5 to 139.5	143[4]	Glaciofluvial	6/18/2024	92.80	2,094.66
MW-7B 2,327.48	288.5 to 298.5	299	Basement	6/18/2024	214.24	2,113.24
MW-7D 2,331.70	283 to 298	298	Basement	6/18/2024	215.09	2,116.61
MW-8A 2,139.65	104.5 to 119.5	122	Basement	6/18/2024	50.90	2,088.75
MW-8B 2,139.56	64.5 to 89.5	94	Glaciofluvial	6/18/2024	50.97	2,088.59
MW-9A 2,156.97	43.5 to 68.5	72	Glaciofluvial	6/18/2024	37.05	2,119.92
MW-11A 2,324.51	207.5 to 237.5	243	Weathered Basement	6/18/2024	200.19	2,124.32
MW-12A 2,353.36	104.5 to 134.5	135	CRBG	6/18/2024	109.16	2,244.20
MW-14 2,313.83	242.3 to 252.3	255	Glaciofluvial	6/18/2024	197.70	2,116.13

Monitoring Well ID and Top of Casing Elevation[1] (feet)	Well Screen Interval (feet bTOC)	Measured Depth to Bottom of Well[2] (feet bTOC)	Aquifer	Date Measured	Depth to Groundwater (feet bTOC)	Groundwater Elevation[3] (feet)
MW-15 2,236.04	160 to 175	179	Glaciofluvial	6/18/2024	137.36	2,098.68
MW-15A 2,237.26	192 to 202	205	Glaciofluvial	6/18/2024	138.60	2,098.66
MW-16 2,170.24	69.5 to 86.5	89	Glaciofluvial	6/18/2024	55.32	2,114.92
MW-16A 2,167.89	111 to 126	132[5]	Basement	6/20/2024	52.56	2,115.33

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]Depth to bottom measured on December 14, 2023 unless otherwise noted.

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

[4]Measured depth to bottom on August 9, 2024.

[5]Measured depth to bottom on August 8, 2024.

bTOC = below top of casing

CRBG = Columbia River Basalt Group

Table 2

Summary of Water Quality Parameters – June 2024

Marshall Landfill

Spokane County, Washington

Monitoring Well ID[1]	Date Measured	pH	Specific Conductivity (µS/cm)	Oxidation Reduction Potential (millivolts)	Dissolved Oxygen (mg/L)	Turbidity (NTU)	Temperature (degrees C)
MW-2A	06/20/24	7.06	506.6	-750.2	0.19	<1	8.6
MW-3	06/21/24	7.07	479.1	-471.2	5.05	3.33	9.1
MW-5A	06/20/24	7.09	769	-536.8	5.17	<1	14.0
MW-7B	06/19/24	7.05	267.4	-482.0	0.53	<1	13.7
MW-8A	06/18/24	7.39	409.9	-12.2	4.21	<1	11.7
MW-9A	06/18/24	7.08	530.1	-443.1	0.11	<1	9.7
MW-15A	06/19/24	7.04	470.4	-553.3	2.19	31.6	15.0
MW-16A	06/20/24	7.14	480.8	-544.5	1.96	<1	10.0
MW-12A	06/19/24	7.55	296.0	-389.3	8.50	<1	12.2
Hose Bib	06/21/24	7.05	508.5	-547.3	1.60	Not measured	15.1

Notes:

[1]Monitoring well locations are shown on Figures 2 and 3. Hose bib sample taken from on site building.

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-3	MW-5A		MW-7B	MW-8A	MW-9A	MW-12A	MW-15A	MW-16A	Hose Bib	MTCA	DOH	EPA
Sample ID	MW-2A-062024	MW-3-062124	MW-5A-062024	DUP-062024	MW-7B-061924	MW-8A-061824	MW-9A-061824	MW-12A-061924	MW-15A-061924	MW-16A-062024	HOSE BIB-062124	Cleanup Level[3]	SAL[4]	MCL[5]
Sample Date	6/20/2024	6/21/2024	6/20/2024		6/19/2024	6/18/2024	6/18/2024	6/19/2024	6/19/2024	6/20/2024	6/21/2024			
Volatile Organic Compounds by EPA 8260D (µg/L)														
1,1,1-Trichloroethane	1.0 U	--	1.0 U	1.0 U	1.0 U	--	--	1.0 U	--	--	--	200	--	--
Tetrachloroethene	1.0 U	--	**0.47 J**	**0.51 J**	1.0 U	--	--	1.0 U	--	--	--	5	--	--
Semivolatile Organic Compounds by EPA 8270E (µg/L)														
1,4 Dioxane	0.19 U	--	**0.29**	**0.29**	**0.078 J**	--	--	0.19 U	--	--	--	240	--	--
Per- and Polyfluoroalkyl Substances by EPA Draft-4 1633 (ng/L)														
Perfluorobutanoic acid (PFBA)	**20**	6.7 U	**6.9 J**	**6.7**	**5.9 J**	**6.1 J**	**20**	–	**21**	6.9 U	–	8,000	NE	NE
Perfluoropentanoic acid (PFPeA)	3.4 U	3.4 U	**8.9**	**9.2**	**5.6**	**10**	**35**	–	**12**	3.4 U	–	NE	NE	NE
Perfluorohexanoic acid (PFHxA)	1.7 U	1.7 U	**10**	**11**	**1.9**	**4.1**	**24**	–	**4.2**	1.7 U	–	8,000	NE	NE
Perfluoroheptanoic acid (PFHpA)	**0.45 J**	1.7 U	**4.8**	**4.8**	**0.93 J**	**1.7**	**5.9**	–	**2.3**	1.7 U	–	NE	NE	NE
Perfluorooctanoic acid (PFOA)	**2.1**	**0.61 J**	**17**	**16**	1.7 U	**3.6**	**13**	–	**1.7**	1.7 U	–	0.48	10	4
Perfluorononanoic acid (PFNA)	1.7 U	1.7 U	**0.94 J**	**0.77 J**	1.7 U	1.7 U	**0.56 J**	–	1.7 U	1.7 U	–	40	9	10
Perfluorodecanoic acid (PFDA)	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	–	1.7 U	1.7 U	–	NE	NE	NE
Perfluoroundecanoic acid (PFUnA)	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	–	1.7 U	1.7 U	–	NE	NE	NE
Perfluorododecanoic acid (PFDoA)	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	–	1.7 U	1.7 U	–	NE	NE	NE
Perfluorotridecanoic acid (PFTrDA)	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	–	1.7 U	1.7 U	–	NE	NE	NE
Perfluorotetradecanoic acid (PFTeDA)	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	–	1.7 U	1.7 U	–	NE	NE	NE
Perfluorobutanesulfonic acid (PFBS)	**21**	**2.8**	**3.8**	**4.1**	1.7 U	**1.6 J**	**7.1**	–	**0.91 J**	**3.1**	–	4,800	345	NE
Perfluoropentanesulfonic acid (PFPeS)	**2.2**	1.7 U	**1.9**	**1.7**	1.7 U	**0.63 J**	**0.74 J**	–	1.7 U	1.7 U	–	NE	NE	NE
Perfluorohexanesulfonic acid (PFHxS)	**11**	**1.5 J**	**8.7**	**8.8**	1.7 U	**2.6**	**6.7**	–	1.7 U	1.7 U	–	160	65	10
Perfluoroheptanesulfonic acid (PFHpS)	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	–	1.7 U	1.7 U	–	NE	NE	NE
Perfluorooctanesulfonic acid (PFOS)	**8.7**	**4.4**	**14**	**14**	1.7 U	1.7 U	**13**	–	**2.5**	1.7 U	–	1.6	15	4
Perfluorononanesulfonic acid (PFNS)	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	–	1.7 U	1.7 U	–	NE	NE	NE
Perfluorodecanesulfonic acid (PFDS)	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	–	1.7 U	1.7 U	–	NE	NE	NE
Perfluorododecanesulfonic acid (PFDoS)	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	–	1.7 U	1.7 U	–	NE	NE	NE
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	6.7 U	6.7 U	7.0 U	6.7 U	6.7 U	6.7 U	6.7 U	–	6.7 U	6.9 U	–	NE	NE	NE
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	6.7 U	6.7 U	7.0 U	6.7 U	6.7 U	6.7 U	6.7 U	–	6.7 U	6.9 U	–	NE	NE	NE
Perfluorooctanesulfonamide (PFOSA)	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	–	1.7 U	1.7 U	–	NE	NE	NE
N-methylperfluorooctane sulfonamide (NMeFOSA)	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	–	1.7 U	1.7 U	–	NE	NE	NE
N-ethylperfluorooctane sulfonamide (NEtFOSA)	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	–	1.7 U	1.7 U	–	NE	NE	NE
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	–	1.7 U	1.7 U	–	NE	NE	NE
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	–	1.7 U	1.7 U	–	NE	NE	NE
N-methylperfluorooctane sulfonamidoethanol (NMeFOSE)	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	–	1.7 U	1.7 U	–	NE	NE	NE
N-ethylperfluorooctane sulfonamidoethanol (NEtFOSE)	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	–	1.7 U	1.7 U	–	NE	NE	NE
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	6.7 U	6.7 U	7.0 U	6.7 U	6.7 U	6.7 U	6.7 U	–	6.7 U	6.9 U	–	24	NE	10
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	6.7 U	6.7 U	7.0 U	6.7 U	6.7 U	6.7 U	6.7 U	–	6.7 U	6.9 U	–	NE	NE	NE
Perfluoro-3-methoxypropanoic acid (PFMPA)	3.4 U	3.4 U	3.5 U	3.4 U	3.3 U	3.4 U	3.3 U	–	3.4 U	3.4 U	–	NE	NE	NE
Perfluoro-4-methoxybutanoic acid (PFMBA)	3.4 U	3.4 U	3.5 U	3.4 U	3.3 U	3.4 U	3.3 U	–	3.4 U	3.4 U	–	NE	NE	NE
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	3.4 U	3.4 U	3.5 U	3.4 U	3.3 U	3.4 U	3.3 U	–	3.4 U	3.4 U	–	NE	NE	NE
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	6.6 U	6.7 U	6.9 U	7.0 U	22 U	6.8 U	6.7 U	–	6.8 U	6.9 U	–	NE	NE	NE
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	6.7 U	6.7 U	7.0 U	6.7 U	6.7 U	6.7 U	6.7 U	–	6.7 U	6.9 U	–	NE	NE	NE
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	3.4 U	3.4 U	3.5 U	3.4 U	3.3 U	3.4 U	3.3 U	–	3.4 U	3.4 U	–	NE	NE	NE
3-Perfluoropropylpropanoic acid (3:3 FTCA)	8.4 U	8.4 U	8.7 U	8.4 U	8.3 U	8.4 U	8.4 U	–	8.4 U	8.6 U	–	NE	NE	NE

Location ID	MW-2A	MW-3	MW-5A		MW-7B	MW-8A MW-8A-061824	MW-9A MW-9A-061824	MW-12A	MW-15A MW-15A-061924	MW-16A MW-16A-062024	Hose Bib HOSE BIB-062124	MTCA Cleanup Level[3]	DOH SAL[4]	EPA MCL[5]
Sample ID	MW-2A-062024	MW-3-062124	MW-5A-062024	DUP-062024	MW-7B-061924			MW-12A-061924						
Sample Date	6/20/2024	6/21/2024	6/20/2024		6/19/2024	6/18/2024	6/18/2024	6/19/2024	6/19/2024	6/20/2024	6/21/2024			
3-Perfluoropentylpropanoic acid (5:3 FTCA)	42 U	42 U	44 U	42 U	42 U	42 U	42 U	–	42 U	43 U	–	NE	NE	NE
3-Perfluoroheptylpropanoic acid (7:3 FTCA)	42 U	42 U	44 U	42 U	42 U	42 U	42 U	–	42 U	43 U	–	NE	NE	NE
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	6.7 U	6.7 U	7.0 U	6.7 U	6.7 U	6.7 U	6.7 U	–	6.7 U	6.9 U	–	NE	NE	NE
Artificial Sweeteners by EPA 1694 (µg/L)														
Acesulfame K	**0.16**	**0.31**	**0.30**	**0.30**	--	**0.12**	**0.45**	--	**0.58**	**0.56**	--	NE	NE	NE
Sucralose	**11**	**9.9**	**9.8**	**9.8**	--	**0.40**	**12**	--	**11**	**8.9**	--	NE	NE	NE
Total Metals by EPA 6020B (mg/L)														
Arsenic	**0.0024 J**	--	**0.0017 J**	**0.0014 J**	0.0050 U	--	--	**0.0013 J**	--	--	--	0.005	--	--
Cadmium	0.0020 U	--	0.0020 U	0.0020 U	0.0020 U	--	--	0.0020 U	--	--	--	0.005	--	--
Iron	0.50 U	--	0.50 U	0.50 U	**0.34 J**	--	--	0.50 U	--	--	--	11	--	--
Lead	**0.00034 J**	--	**0.00026 J**	**0.00023 J**	0.0020 U	--	--	**0.00054 J**	--	--	--	0.015	--	--
Manganese	0.010 U	--	0.010 U	0.010 U	**0.0059 J**	--	--	0.010 U	--	--	--	0.75	--	--
Zinc	0.035 U	--	0.035 U	0.035 U	0.035 U	--	--	0.035 U	--	--	--	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	--	--	--	2	--	--
Dissolved Metals[6] by EPA 6020B (mg/L)														
Arsenic	**0.0020 J**	--	**0.0014 J**	**0.0014 J**	0.0050 U	--	--	0.0050 U	--	--	--	0.005	--	--
Cadmium	0.0020 U	--	0.0020 U	0.0020 U	0.0020 U	--	--	0.0020 U	--	--	--	0.005	--	--
Iron	0.50 U	0.50 U	0.50 U	**0.073 J**	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	**0.074 J**	--	11	--	--
Lead	0.002 U	--	0.002 U	0.002 U	0.002 U	--	--	0.002 U	--	--	--	0.015	--	--
Manganese	0.010 U	0.010 U	0.010 U	0.010 U	0.010 U	0.010 U	0.010 U	0.010 U	0.010 U	**0.0044 J**	--	0.75	--	--
Zinc	0.035 U	--	0.035 U	0.035 U	0.035 U	--	--	0.035 U	--	--	--	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	--	--	--	2	--	--
General Chemistry Parameters (mg/L), method noted in parentheses														
Ammonia as Nitrogen (EPA 350.1)	0.10 U	0.10 U	0.10 U	0.10 U	**0.034 J**	**0.036 J**	**0.068 J**	**0.031 J**	0.10 U	0.10 U	0.10 U	NE	--	--
Alkalinity (SM 2320B)	**160**	**140**	**260**	**290**	**140**	**180**	**180**	**100**	**140**	**160**	**180**	NE	--	--
Bicarbonate Alkalinity as CaCO3 (SM 2320B)	**160**	**140**	**260**	**290**	**140**	**180**	**180**	**100**	**140**	**160**	**180**	NE	--	--
Total Dissolved Solids (SM 2540C)	**270**	**300**	**410**	**420**	**150**	**220**	**280**	**190**	**270**	**250**	**290**	NE	--	--
Total Organic Carbon (SM 5310B)	**4.2**	**3.7**	**2.4**	**2.4**	**0.77 J**	**0.78 J**	**5.3**	**2.6**	**3.5**	**3.7**	**2.1**	NE	--	--
Total Magnesium (EPA 6010D)	**16**	**15**	**14**	**14**	**11**	**14**	**15**	**11**	**14**	**15**	**16**	NE	--	--
Dissolved Magnesium (EPA 6010D)	**14**	**14**	**13**	**13**	**10**	**13**	**13**	**10**	**13**	**14**	**14**	NE	--	--
Total Potassium (EPA 6010D)	**6.8**	**6.5**	**4.9**	**4.9**	**1.5 J**	**2.1**	**6.8**	**2.6**	**6.6**	**6.2**	**5.8**	NE	--	--
Total Sodium (EPA 6010D)	**39**	**39**	**43**	**43**	**4.1**	**9.7**	**41**	**8.9**	**38**	**36**	**32**	NE	--	--
Dissolved Calcium (EPA 6010D)	**34**	**32**	**86**	**87**	**34**	**40**	**31**	**29**	**31**	**32**	**42**	NE	--	--
Chloride (EPA 300.0)	**59**	**58**	**67**	**67**	**0.62 J**	**13**	**57**	**7.5**	**56**	**57**	**49**	NE	--	--
Nitrate as N (EPA 300.0)	**0.24**	**0.40**	**3.1**	**3.1**	0.20 U	**2.1**	0.20 U	**7.0**	**0.92**	**0.52**	**2.0**	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	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	1.6	--	--
Sulfate (EPA 300.0)	**14**	**16**	**25**	**25**	**3.3**	**12**	**12**	**14**	**17**	**16**	**18**	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 and field blank sampling and analysis. See Section 7.0 of the report

[3]MTCA Method A or B Cleanup Level.

[4]DOH SAL for PFAS compounds are listed where available.

[5]EPA MCL for PFAS compounds are listed where available.

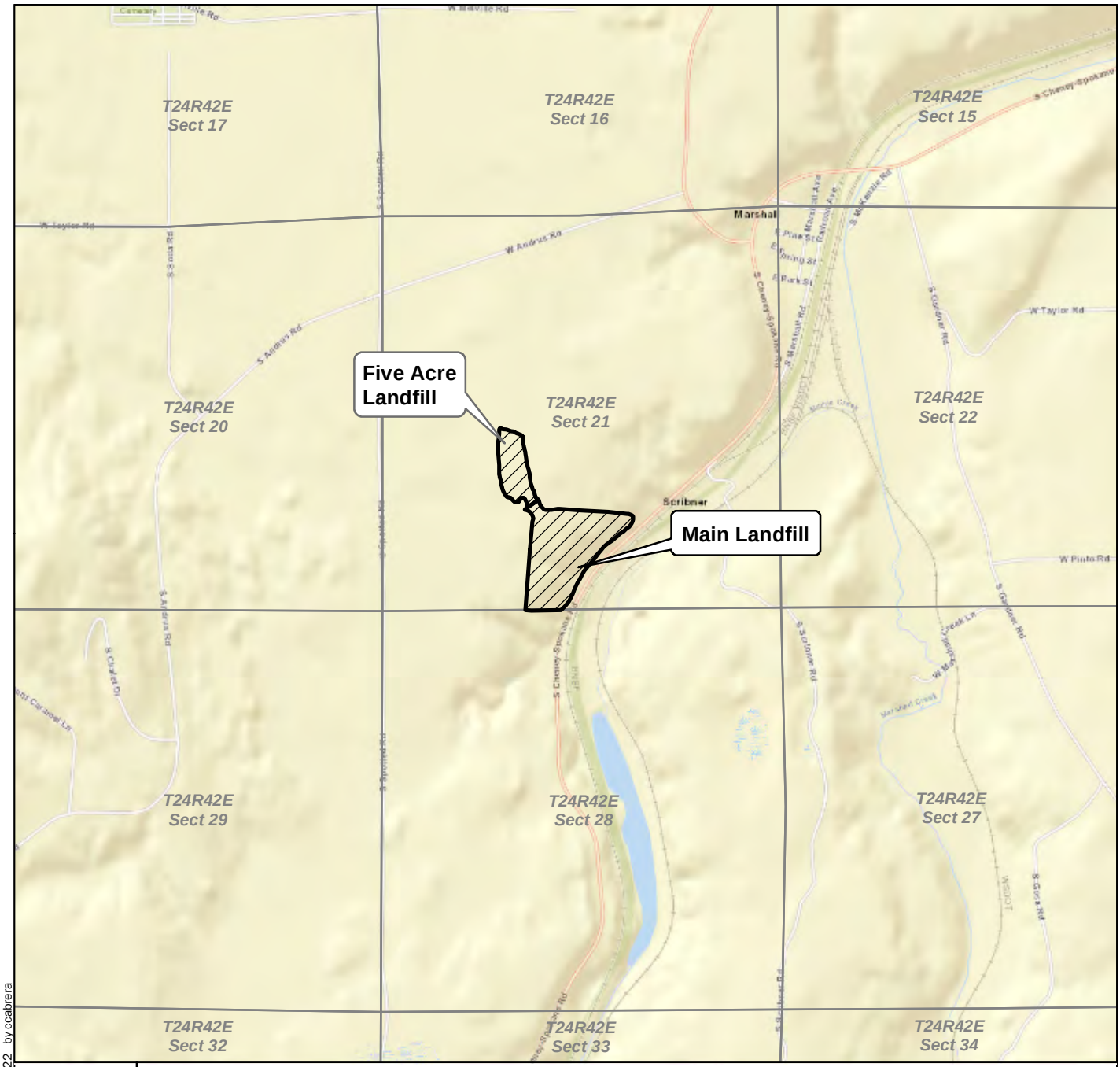
[7]Samples submitted for dissolved metals analysis were lab filtered.

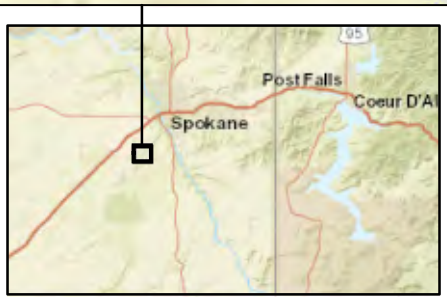
J = estimated concentration; refer to laboratory and data validation reports for data qualifier information and discussion (Appendices C and D respectively).

Notes for Table 3 (continued):

mg/L = milligrams per liter
µg/L = micrograms per liter
MTCA CUL = Model Toxics Control Act Cleanup Level (Method A or B)
DOH SAL = Washington State Department of Health State Action Level
EPA MCL = EPA Maximum Contaminant Level
ND = not detected
ng/L = nanogram per liter
U = analyte was not detected above the laboratory reporting limit
"--" = not analyzed
Bold indicates analyte was detected above the laboratory reporting limit.
Bold with gray shading indicates the analyte was detected at a concentration greater than the lowest listed screening criteria (MTCA CUL, DOH SAL or EPA MCL).

Figures





N
W E
S

2,000 0 2,000

Feet

Vicinity Map

Marshall Landfill
Spokane County, Washington

GeoEngineers

Figure 1

Notes:

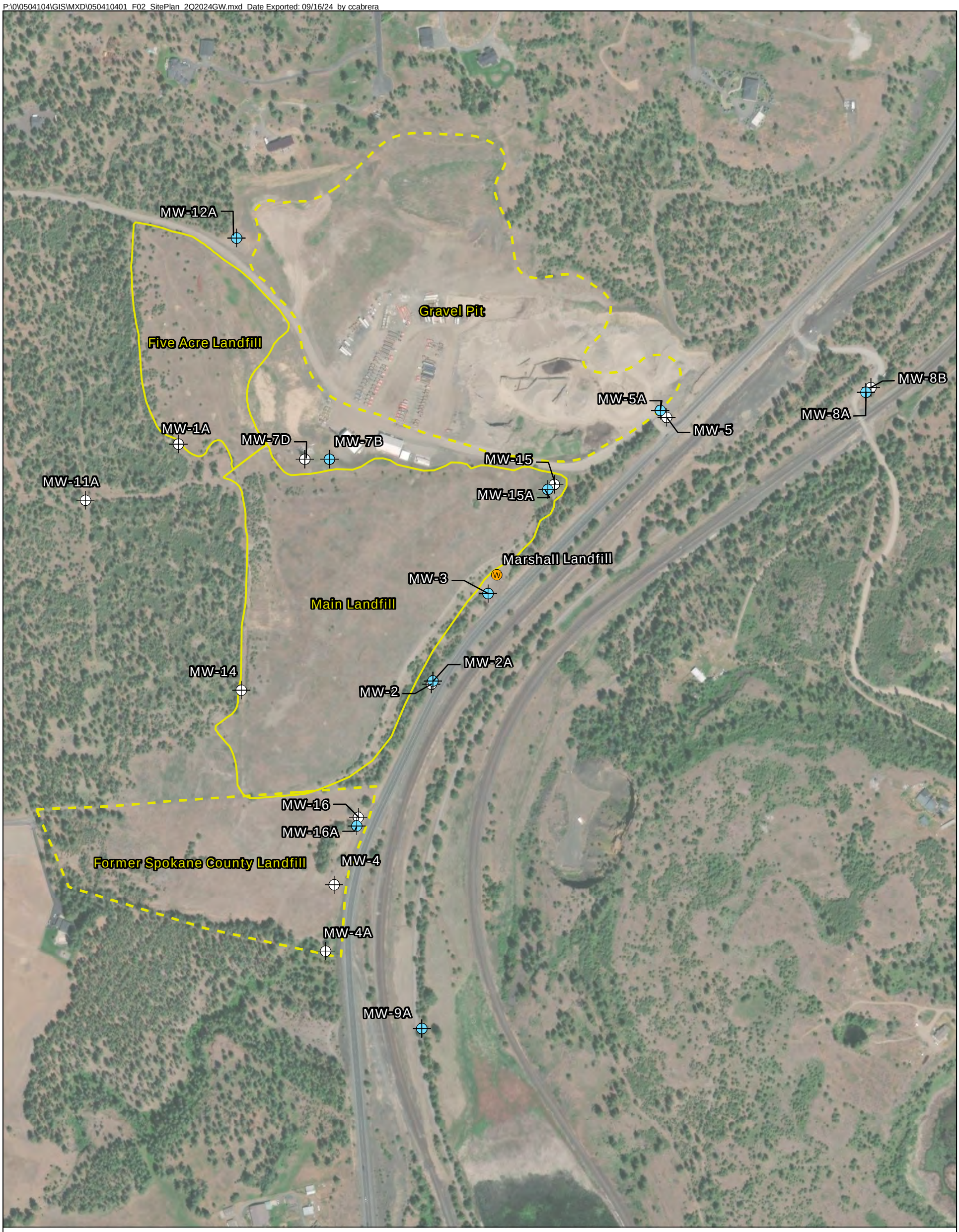
1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. cannot guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers,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

Data Source: Mapbox Open Street Map, 2016

Projection: NAD 1983 UTM Zone 11N

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_2Q2024GW.mxd Date Exported: 09/16/24 by ccabrera



Legend

- MW-2A — Monitoring Well Sampled in March 2024
- MW-5A — Monitoring Well Location and Well Number
- Marshall Landfill (W) — Marshall Landfill Groundwater Supply Well
- 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, aerial photography and test pit investigation data collected in November 2022. The Former Spokane County landfill boundaries have not been modified from Fetrow Engineering (1991).

Projection: NAD 1983 StatePlane Washington North FIPS 4601 Feet

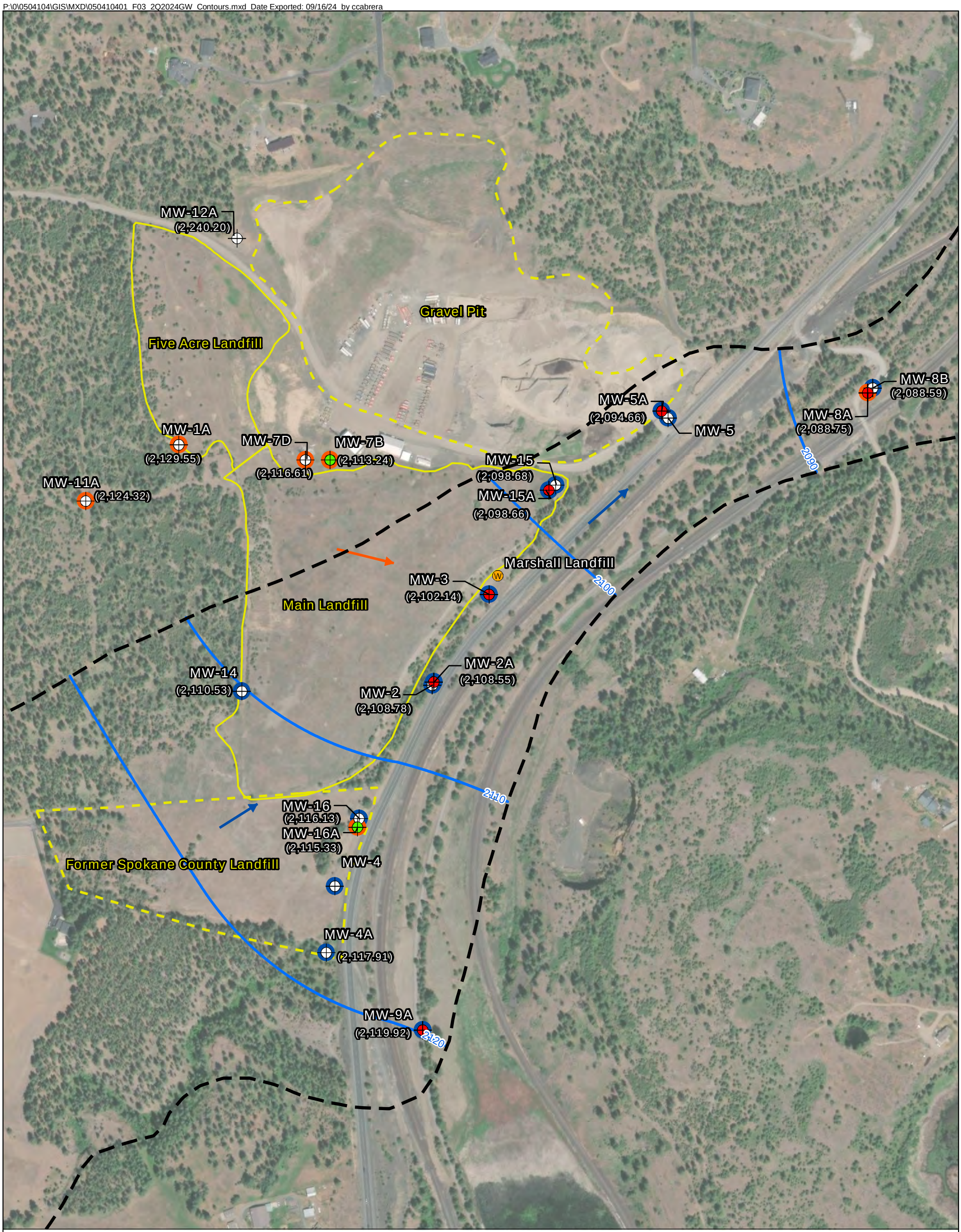
Site Plan

Marshall Landfill
Spokane County, Washington

GeoEngineers

Figure 2

P:\0\0504104\GIS\MXD\050410401_F03_2Q2024GW_Contours.mxd Date Exported: 09/16/24 by ccabrera



Legend

- MW-2A — Monitoring Well Location, Well Number and Groundwater Elevation (feet), if Measured.
- PFAS Were Detected at Concentrations Less than Screening Criteria in June 2024
- PFAS Were Detected at Concentrations Above Screening Criteria in June 2024
- Marshall Landfill Groundwater Supply Well
- Glaciofluvial Unit Boundary (see Note 4)
- Estimated groundwater contour for Glaciofluvial Aquifer (feet, NAVD88)
- Inferred Groundwater Flow Direction for Basement Aquifer
- Inferred Groundwater Flow Direction for Glaciofluvial Aquifer
- Approximate Landfill Boundaries[3]
- Approximate Limits of Adjacent Landfill or Mining Land Use[3]
- Well Screened in Basement Group Aquifer
- Well Screened in Glaciofluvial Aquifer

COC = contaminant of concern
PFAS = Per- and Polyfluoroalkyl Substances
MTCA CUL = Model Toxics Control Act Cleanup Level
DOH SAL = Department of Health State Action Level
EPA MCL = Environmental Protection Agency Maximum Contaminant Level
PFAS Screening Criteria = MTCA Method B CULs, DOH SALs and EPA MCLs (lowest value selected).

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, aerial photography and test pit investigation data collected in November 2022. The Former Spokane County landfill boundaries have not been modified from Fetrow Engineering (1991).
4. Glaciofluvial unit boundary as estimated as part of the Remedial Investigation Report dated May 22, 2018.
Projection: NAD 1983 StatePlane Washington North FIPS 4601 Feet

Groundwater Contours (June 2024)

Marshall Landfill
Spokane County, Washington

GeoEngineers

Figure 3

Appendices

Appendix A

Previous Groundwater Monitoring Results

Table A-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[2] (feet bTOC)	Aquifer	Date Measured	Depth to Groundwater (feet bTOC)	Groundwater Elevation[3] (feet)
MW-1A	199 to 209	210	Weathered Basement	12/14/2023	Dry	>210
				3/25/2024	205.55	2129.97
2335.52				6/18/2024	205.97	2129.55
MW-2	73 to 83	83	Glaciofluvial	12/14/2023	Dry	>83
				3/25/2024	68.30	2107.75
2176.05				6/18/2024	67.27	2108.78
MW-2A	93 to 108	108	Glaciofluvial	12/14/2023	93.33	2082.47
				3/25/2024	68.49	2107.31
2175.80				6/18/2024	67.25	2108.55
MW-3	106 to 116	118	Glaciofluvial	12/14/2023	105.63	2076.67
				3/25/2024	84.75	2097.55
2182.30				6/18/2024	80.16	2102.14
MW-4A	63 to 78	80	Glaciofluvial	12/14/2023	69.99	2089.27
				3/25/2024	36.02	2123.24
2,159.26				6/18/2024	41.35	2117.91
MW-5A	124.5 to 139.5	143[4]	Glaciofluvial	12/14/2023	116.01	2071.45
				3/25/2024	99.10	2088.36
2,187.46				6/18/2024	92.80	2094.66
MW-7B	288.5 to 298.5	299	Basement	12/14/2023	223.91	2103.57
				3/25/2024	218.30	2109.18
2327.48				6/18/2024	214.24	2113.24
MW-7D	283 to 298	298	Basement	12/14/2023	214.17	2117.53
				3/25/2024	218.35	2113.35
2331.70				6/18/2024	215.09	2116.61
MW-8A	104.5 to 119.5	122	Basement	12/14/2023	73.80	2065.85
				3/25/2024	59.75	2079.90
2,139.65				6/18/2024	50.90	2088.75
MW-8B	64.5 to 89.5	94	Glaciofluvial	12/14/2023	73.77	2065.79
				3/25/2024	59.11	2080.45
2139.56				6/18/2024	50.97	2088.59
MW-9A	43.5 to 68.5	72	Glaciofluvial	12/14/2023	65.05	2091.92
				3/25/2024	28.89	2128.08
2,156.97				6/18/2024	37.05	2119.92
MW-11A	207.5 to 237.5	243	Weathered Basement	12/14/2023	218.96	2105.55
				3/25/2024	208.10	2116.41
2,324.51				6/18/2024	200.19	2124.32
MW-12A	104.5 to 134.5	135	CRBG	12/14/2023	117.68	2235.68
				3/25/2024	101.75	2251.61
2353.36				6/18/2024	109.16	2244.20
MW-14	242.3 to 252.3	255	Glaciofluvial	12/14/2023	221.53	2092.30
				3/25/2024	203.30	2110.53
2,313.83				6/18/2024	197.70	2116.13

Monitoring Well ID and Top of Casing Elevation[1] (feet)	Well Screen Interval (feet bTOC)	Measured Depth to Bottom of Well[2] (feet bTOC)	Aquifer	Date Measured	Depth to Groundwater (feet bTOC)	Groundwater Elevation[3] (feet)
MW-15	160 to 175	179	Glaciofluvial	12/14/2023	161.83	2074.21
				3/25/2024	144.08	2091.96
2236.04				6/18/2024	137.36	2098.68
MW-15A	192 to 202	205	Glaciofluvial	12/14/2023	162.97	2074.29
				3/25/2024	142.88	2094.38
2,237.26				6/18/2024	138.60	2098.66
MW-16	69.5 to 86.5	89	Glaciofluvial	12/14/2023	82.85	2087.39
				3/25/2024	Not measured	--
2170.24				6/18/2024	55.32	2114.92
MW-16A	111 to 126	132[5]	Basement	12/14/2023	Not measured	--
				3/25/2024	49.55	2118.34
2167.89				6/20/2024	52.56	2115.33

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]Depth to bottom measured on December 14, 2023 unless otherwise noted.

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

[4]Measured depth to bottom on August 9, 2024.

[5]Measured depth to bottom on August 8, 2024.

bTOC = below top of casing

CRBG = Columbia River Basalt Group

Table A-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	548.0	-35.5	0.11	1.18	10.0
	03/26/24	6.65	549.0	102.5	3.3	12.66	9.1
	06/20/24	7.06	506.6	-750.2	0.19	<1	8.6
MW-3	06/21/24	7.07	479.1	-471.2	5.05	3.33	9.1
MW-5A	12/15/23	7.19	774.0	-35.5	0.11	1.18	10.0
	03/26/24	6.65	549.0	102.5	2.2	12.66	9.1
	06/20/24	7.09	769.0	-536.8	5.2	<1	14.0
MW-7B	12/14/23	7.25	269.0	-56.8	0.16	32.68	10.2
	03/27/24	6.73	291.1	79.2	0.36	1.7	12.4
	06/19/24	7.05	267.4	-482	0.53	<1	13.7
MW-8A	03/26/24	7.08	426.0	118.4	5.31	62.8	10.3
	06/18/24	7.39	410	-12.2	4.21	<1	11.7
MW-9A	03/26/24	6.77	498.5	136.2	5.89	2.85	4.9
	06/18/24	7.08	530.1	-443.1	0.11	<1	9.7
MW-11A	12/14/23	7.18	325.0	76.2	9.41	2.7	9.3
MW-15A	03/25/24	6.47	644.0	95.3	0.27	221.48	13.0
	06/19/24	7.04	470.4	-553.3	2.19	31.6	15.0
MW-16A	03/26/24	6.90	620.0	29.7	3.30	1.9	10.1
	06/20/24	7.14	480.8	-544.5	1.96	<1	10.0
MW-12A	12/14/23	7.59	246.0	76.9	10.01	2.65	10.3
	03/25/24	7.13	316.4	133.1	11.09	22.99	11.1
	06/19/24	7.55	296.0	-389.3	8.5	<1	12.2
Hose Bib	06/21/24	7.05	508.5	-547.3	1.6	Not measured	15.1

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 A-3

Summary of Groundwater Chemical Analytical Results

Marshall Landfill

Spokane County, Washington

Location ID	MW-2A			MW-3	MW-5A						MW-7B			MW-8A-032524		MW-9A		MW-11A	MW-12A			MW-15A		MW-16A		Hose Bib			
Sample ID	MW-2A-121523	MW-2A-032524	MW-2A-062024	MW-3-062124	MW-5A-121523	DUP-121523[2]	MW-5A-032524	DUP-032724	MW-5A-062024	DUP-062024	MW-7B-121423	MW-7B-032524	MW-7B-061924	MW-8A-032524	MW-8A-061824	MW-9A-032524	MW-9A-061824	MW-11A-121423	MW-12A-121423	MW-12A-032524	MW-12A-061924	MW-15A-032524	MW-15A-061924	MW-16A-032524	MW-16A-062024	HOSE BIB-062124	MTCA Cleanup Level[3]	DOH SAL[4]	EPA MCL[5]
Sample Date	12/15/2023	3/26/2024	6/20/2024	6/21/2024	12/15/2023		3/27/2024		6/20/2024		12/14/2023	3/25/2024	6/19/2024	3/26/2024	6/18/2024	3/26/2024	6/18/2024	12/14/2023	12/14/2023	3/25/2024	6/19/2024	3/25/2024	6/19/2024	3/25/2024	6/20/2024	6/21/2024			
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	1.0 U	1.0 U	1.0 U	1.0 U	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	1.0 U	1.0 U	--	**0.84 J**	**0.80 J**	1.0 U	1.0 U	**0.47 J**	**0.51 J**	1.0 U	1.0 U	1.0 U	--	--	--	--	1.0 U	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	--	--
1,4 Dioxane	--	0.19 U	0.19 U	--	--	--	0.19 U	0.21 U	**0.29**	**0.29**	--	0.18 UJ	**0.078 J**	--	--	--	--	--	--	0.19 U	0.19 U	--	--	--	--	--	240	--	--
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	--	--

Location ID	MW-2A			MW-3	MW-5A						MW-7B			MW-8A-032524		MW-9A		MW-11A	MW-12A			MW-15A		MW-16A		Hose Bib	MTCA		
Sample ID	MW-2A-121523	MW-2A-032524	MW-2A-062024	MW-3-062124	MW-5A-121523	DUP-121523[2]	MW-5A-032524	DUP-032724	MW-5A-062024	DUP-062024	MW-7B-121423	MW-7B-032524	MW-7B-061924	MW-8A-032524	MW-8A-061824	MW-9A-032524	MW-9A-061824	MW-11A-121423	MW-12A-121423	MW-12A-032524	MW-12A-061924	MW-15A-032524	MW-15A-061924	MW-16A-032524	MW-16A-062024	HOSE BIB-062124	Cleanup Level[3]	DOH SAL[4]	EPA MCL[5]
Sample Date	12/15/2023	3/26/2024	6/20/2024	6/21/2024	12/15/2023		3/27/2024		6/20/2024		12/14/2023	3/25/2024	6/19/2024	3/26/2024	6/18/2024	3/26/2024	6/18/2024	12/14/2023	12/14/2023	3/25/2024	6/19/2024	3/25/2024	6/19/2024	3/25/2024	6/20/2024	6/21/2024			
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	–	–
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[6]	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	–	–	–	–	– c	–	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**	7.2 U	**20**	6.7 U	**23**	**22**	**19**	**19**	**6.9 J**	**6.7**	**11**	**4.3 J**	**5.9 J**	**14**	**6.1 J**	7.1 U	**20**	7.2 U	**4.9 J**	–	–	**53**	**21**	**2.6 J**	6.9 U	–	8,000	NE	NE
Perfluoropentanoic acid (PFPeA)	**3.1 J**	3.6 U	3.4 U	3.4 U	**17**	**17**	**13**	**13**	**8.9**	**9.2**	**9.1**	**3.6 J**	**5.6**	**22**	**10**	3.6 U	**35**	3.6 U	**1.6 J**	–	–	**28**	**12**	**2.1 J**	3.4 U	–	NE	NE	NE
Perfluorohexanoic acid (PFHxA)	**1.5 J**	1.8 U	1.7 U	1.7 U	**27**	**29**	**24**	**23**	**10**	**11**	**3.9**	**1.4 J**	**1.9**	**7.4**	**4.1**	1.8 U	**24**	1.8 U	**1.1 J**	–	–	**8.7**	**4.2**	**1.0 J**	1.7 U	–	8,000	NE	NE
Perfluoroheptanoic acid (PFHpA)	**1.3 J**	1.8 U	**0.45 J**	1.7 U	**20**	**20**	**21**	**19**	**4.8**	**4.8**	**1.8**	**0.77 J**	**0.93 J**	**2.8**	**1.7**	1.8 U	**5.9**	1.8 U	**0.82 J**	–	–	**5.2**	**2.3**	1.8 U	1.7 U	–	NE	NE	NE
Perfluorooctanoic acid (PFOA)	**7.6**	1.8 U	**2.1**	**0.61 J**	**53**	**56**	**39**	**38**	**17**	**16**	**0.57 J**	2.1 U	1.7 U	**4.4**	**3.6**	**0.70 J**	**13**	1.8 U	**0.85 J**	–	–	**5.8**	**1.7**	**1.5 J**	1.7 U	–	0.48	10	4
Perfluorononanoic acid (PFNA)	**0.90 J**	1.8 U	1.7 U	1.7 U	**2.1**	**2.2**	**1.0 J**	**1.1 J**	**0.94 J**	**0.77 J**	1.8 U	2.1 U	1.7 U	1.8 U	1.7 U	1.8 U	**0.56 J**	1.8 U	1.8 U	–	–	**1.6 J**	1.7 U	1.8 U	1.7 U	–	40	9	10
Perfluorodecanoic acid (PFDA)	1.8 U	1.8 U	1.7 U	1.7 U	1.8 U	1.9 U	1.8 U	1.9 U	1.7 U	1.7 U	1.8 U	2.1 U	1.7 U	1.8 U	1.7 U	1.8 U	1.7 U	1.8 U	1.8 U	–	–	1.8 U	1.7 U	1.8 U	1.7 U	–	NE	NE	NE
Perfluoroundecanoic acid (PFUnA)	1.8 U	1.8 U	1.7 U	1.7 U	1.8 U	1.9 U	1.8 U	1.9 U	1.7 U	1.7 U	1.8 U	2.1 U	1.7 U	1.8 U	1.7 U	1.8 U	1.7 U	1.8 U	1.8 U	–	–	1.8 U	1.7 U	1.8 U	1.7 U	–	NE	NE	NE
Perfluorododecanoic acid (PFDoA)	1.8 U	1.8 U	1.7 U	1.7 U	1.8 U	1.9 U	1.8 U	1.9 U	1.7 U	1.7 U	1.8 U	2.1 U	1.7 U	1.8 U	1.7 U	1.8 U	1.7 U	1.8 U	1.8 U	–	–	1.8 U	1.7 U	1.8 U	1.7 U	–	NE	NE	NE

Location ID	MW-2A			MW-3	MW-5A						MW-7B			MW-8A-032524		MW-9A		MW-11A	MW-12A			MW-15A		MW-16A		Hose Bib			
Sample ID	MW-2A-121523	MW-2A-032524	MW-2A-062024	MW-3-062124	MW-5A-121523	DUP-121523[2]	MW-5A-032524	DUP-032724	MW-5A-062024	DUP-062024	MW-7B-121423	MW-7B-032524	MW-7B-061924	MW-8A-032524	MW-8A-061824	MW-9A-032524	MW-9A-061824	MW-11A-121423	MW-12A-121423	MW-12A-032524	MW-12A-061924	MW-15A-032524	MW-15A-061924	MW-16A-032524	MW-16A-062024	HOSE BIB-062124	MTCA Cleanup Level[3]	DOH SAL[4]	EPA MCL[5]
Sample Date	12/15/2023	3/26/2024	6/20/2024	6/21/2024	12/15/2023		3/27/2024		6/20/2024		12/14/2023	3/25/2024	6/19/2024	3/26/2024	6/18/2024	3/26/2024	6/18/2024	12/14/2023	12/14/2023	3/25/2024	6/19/2024	3/25/2024	6/19/2024	3/25/2024	6/20/2024	6/21/2024			
Perfluorotridecanoic acid (PFTrDA)	1.8 U	1.8 U	1.7 U	1.7 U	1.8 U	1.9 U	1.8 U	1.9 U	1.7 U	1.7 U	1.8 U	2.1 U	1.7 U	1.8 U	1.7 U	1.8 U	1.7 U	1.8 U	1.8 U	–	–	1.8 U	1.7 U	1.8 U	1.7 U	–	NE	NE	NE
Perfluorotetradecanoic acid (PFTeDA)	1.8 U	1.8 U	1.7 U	1.7 U	1.8 U	1.9 U	1.8 U	1.9 U	1.7 U	1.7 U	1.8 U	2.1 U	1.7 U	1.8 U	1.7 U	1.8 U	1.7 U	1.8 U	1.8 U	–	–	1.8 U	1.7 U	1.8 U	1.7 U	–	NE	NE	NE
Perfluorobutanesulfonic acid (PFBS)	**4.2**	**0.98 J**	**21**	**2.8**	**14**	**14**	**7.8**	**8.3**	**3.8**	**4.1**	1.8 U	2.1 U	1.7 U	**1.7 J**	**1.6 J**	**3.3**	**7.1**	**0.50 J**	**0.86 J**	–	–	**4.0**	**0.91 J**	1.8 U	**3.1**	–	4,800	345	NE
Perfluoropentanesulfonic acid (PFPeS)	1.8 U	1.8 U	**2.2**	1.7 U	**10**	**11**	**2.5**	**2.3**	**1.9**	**1.7**	1.8 U	2.1 U	1.7 U	**0.61 J**	**0.63 J**	1.8 U	**0.74 J**	1.8 U	1.8 U	–	–	0.8 U	1.7 U	1.8 U	1.7 U	–	NE	NE	NE
Perfluorohexanesulfonic acid (PFHxS)	**2.6**	**0.58 J**	**11**	**1.5 J**	**49**	**46**	**9.3**	**8.8**	**8.7**	**8.8**	1.8 U	2.1 U	1.7 U	**2.4**	**2.6**	**1.3 J**	**6.7**	**0.48 J**	1.8 U	–	–	**2.1**	1.7 U	1.8 U	1.7 U	–	160	65	10
Perfluoroheptanesulfonic acid (PFHpS)	1.8 U	1.8 U	1.7 U	1.7 U	**0.77 J**	**0.70 J**	1.8 U	1.9 U	1.7 U	1.7 U	1.8 U	2.1 U	1.7 U	1.8 U	1.7 U	1.8 U	1.7 U	1.8 U	1.8 U	–	–	1.8 U	1.7 U	1.8 U	1.7 U	–	NE	NE	NE
Perfluorooctanesulfonic acid (PFOS)	**11**	**2.7**	**8.7**	**4.4**	**29**	**27**	**15**	**15**	**14**	**14**	**0.58 J**	2.1 U	1.7 U	**3.0**	1.7 U	**1.9**	**13**	1.8 U	1.8 U	–	–	**9.9**	**2.5**	**2.6**	1.7 U	–	1.6	15	4
Perfluorononanesulfonic acid (PFNS)	1.8 U	1.8 U	1.7 U	1.7 U	1.8 U	1.9 U	1.8 U	1.9 U	1.7 U	1.7 U	1.8 U	2.1 U	1.7 U	1.8 U	1.7 U	1.8 U	1.7 U	1.8 U	1.8 U	–	–	1.8 U	1.7 U	1.8 U	1.7 U	–	NE	NE	NE
Perfluorodecanesulfonic acid (PFDS)	1.8 U	1.8 U	1.7 U	1.7 U	1.8 U	1.9 U	1.8 U	1.9 U	1.7 U	1.7 U	1.8 U	2.1 U	1.7 U	1.8 U	1.7 U	1.8 U	1.7 U	1.8 U	1.8 U	–	–	1.8 U	1.7 U	1.8 U	1.7 U	–	NE	NE	NE
Perfluorododecanesulfonic acid (PFDoS)	1.8 U	1.8 U	1.7 U	1.7 U	1.8 U	1.9 U	1.8 U	1.9 U	1.7 U	1.7 U	1.8 U	2.1 U	1.7 U	1.8 U	1.7 U	1.8 U	1.7 U	1.8 U	1.8 U	–	–	1.8 U	1.7 U	1.8 U	1.7 U	–	NE	NE	NE
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	7.2 U	7.2 U	6.7 U	6.7 U	7.3 U	7.6 U	7.2 U	7.4 U	7.0 U	6.7 U	7.2 U	8.4 U	6.7 U	7.4 U	6.7 U	7.1 U	6.7 U	7.2 U	7.2 U	–	–	7.3 U	6.7 U	7.3 U	6.9 U	–	NE	NE	NE
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	7.2 U	7.2 U	6.7 U	6.7 U	7.3 U	7.6 U	7.2 U	7.4 U	7.0 U	6.7 U	7.2 U	8.4 U	6.7 U	7.4 U	6.7 U	7.1 U	6.7 U	7.2 U	7.2 U	–	–	7.3 U	6.7 U	7.3 U	6.9 U	–	NE	NE	NE
Perfluorooctanesulfonamide (PFOSA)	1.8 U	1.8 U	1.7 U	1.7 U	1.8 U	1.9 U	1.8 U	1.9 U	1.7 U	1.7 U	1.8 U	2.1 U	1.7 U	1.8 U	1.7 U	1.8 U	1.7 U	1.8 U	1.8 U	–	–	1.8 U	1.7 U	1.8 U	1.7 U	–	NE	NE	NE
N-methylperfluorooctane sulfonamide (NMeFOSA)	1.8 U	1.8 U	1.7 U	1.7 U	1.8 U	1.9 U	1.8 U	1.9 U	1.7 U	1.7 U	1.8 U	2.1 U	1.7 U	1.8 U	1.7 U	1.8 U	1.7 U	1.8 U	1.8 U	–	–	1.8 U	1.7 U	1.8 U	1.7 U	–	NE	NE	NE
N-ethylperfluorooctane sulfonamide (NEtFOSA)	1.8 U	1.8 U	1.7 U	1.7 U	1.8 U	1.9 U	1.8 U	1.9 U	1.7 U	1.7 U	1.8 U	2.1 U	1.7 U	1.8 U	1.7 U	1.8 U	1.7 U	1.8 U	1.8 U	–	–	1.8 U	1.7 U	1.8 U	1.7 U	–	NE	NE	NE
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA	1.8 U	1.8 U	1.7 U	1.7 U	1.8 U	1.9 U	1.8 U	1.9 U	1.7 U	1.7 U	1.8 U	2.1 U	1.7 U	1.8 U	1.7 U	1.8 U	1.7 U	1.8 U	1.8 U	–	–	1.8 U	1.7 U	1.8 U	1.7 U	–	NE	NE	NE
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	1.8 U	1.8 U	1.7 U	1.7 U	1.8 U	1.9 U	1.8 U	1.9 U	1.7 U	1.7 U	1.8 U	2.1 U	1.7 U	1.8 U	1.7 U	1.8 U	1.7 U	1.8 U	1.8 U	–	–	1.8 U	1.7 U	1.8 U	1.7 U	–	NE	NE	NE
N-methylperfluorooctane sulfonamidoethanol (NMeFOSE)	18 U	18 U	1.7 U	1.7 U	18 U	19 U	18 U	19 U	1.7 U	1.7 U	18 U	21 U	1.7 U	18 U	1.7 U	18 U	1.7 U	18 U	18 U	–	–	18 U	1.7 U	18 U	1.7 U	–	NE	NE	NE
N-ethylperfluorooctane sulfonamidoethanol (NEtFOSE)	18 U	18 U	1.7 U	1.7 U	18 U	19 U	18 U	19 U	1.7 U	1.7 U	18 U	21 U	1.7 U	18 U	1.7 U	18 U	1.7 U	18 U	18 U	–	–	18 U	1.7 U	18 U	1.7 U	–	NE	NE	NE
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	7.2 U	7.2 U	6.7 U	6.7 U	7.3 U	7.6 U	7.2 U	7.4 U	7.0 U	6.7 U	7.2 U	8.4 U	6.7 U	7.4 U	6.7 U	7.1 U	6.7 U	7.2 U	7.2 U	–	–	7.3 U	6.7 U	7.3 U	6.9 U	–	24	NE	10
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	7.2 U	7.2 U	6.7 U	6.7 U	7.3 U	7.6 U	7.2 U	7.4 U	7.0 U	6.7 U	7.2 U	8.4 U	6.7 U	7.4 U	6.7 U	7.1 U	6.7 U	7.2 U	7.2 U	–	–	7.3 U	6.7 U	7.3 U	6.9 U	–	NE	NE	NE
Perfluoro-3-methoxypropanoic acid (PFMPA)	3.6 U	3.6 U	3.4 U	3.4 U	3.6 U	3.8 U	3.6 U	3.7 U	3.5 U	3.4 U	3.6 U	4.2 U	3.3 U	3.7 U	3.4 U	3.6 U	3.3 U	3.6 U	3.6 U	–	–	3.6 U	3.4 U	3.7 U	3.4 U	–	NE	NE	NE
Perfluoro-4-methoxybutanoic acid (PFMBA)	3.6 U	3.6 U	3.4 U	3.4 U	3.6 U	3.8 U	3.6 U	3.7 U	3.5 U	3.4 U	3.6 U	4.2 U	3.3 U	3.7 U	3.4 U	3.6 U	3.3 U	3.6 U	3.6 U	–	–	3.6 U	3.4 U	3.7 U	3.4 U	–	NE	NE	NE
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	3.6 U	3.6 U	3.4 U	3.4 U	3.6 U	3.8 U	3.6 U	3.7 U	3.5 U	3.4 U	3.6 U	4.2 U	3.3 U	3.7 U	3.4 U	3.6 U	3.3 U	3.6 U	3.6 U	–	–	3.6 U	3.4 U	3.7 U	3.4 U	–	NE	NE	NE
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3	7.2 U	7.2 U	6.6 U	6.7 U	7.3 U	7.6 U	7.2 U	7.4 U	6.9 U	7.0 U	7.2 U	8.4 U	22 U	7.4 U	6.8 U	7.1 U	6.7 U	7.2 U	7.2 U	–	–	7.3 U	6.8 U	7.3 U	6.9 U	–	NE	NE	NE
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-P	7.2 U	7.2 U	6.7 U	6.7 U	7.3 U	7.6 U	7.2 U	7.4 U	7.0 U	6.7 U	7.2 U	8.4 U	6.7 U	7.4 U	6.7 U	7.1 U	6.7 U	7.2 U	7.2 U	–	–	7.3 U	6.7 U	7.3 U	6.9 U	–	NE	NE	NE
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	3.6 U	3.6 U	3.4 U	3.4 U	3.6 U	3.8 U	3.6 U	3.7 U	3.5 U	3.4 U	3.6 U	4.2 U	3.3 U	3.7 U	3.4 U	3.6 U	3.3 U	3.6 U	3.6 U	–	–	3.6 U	3.4 U	3.7 U	3.4 U	–	NE	NE	NE
3-Perfluoropropylpropanoic acid (3:3 FTCA)	9.0 U	9.0 U	8.4 U	8.4 U	9.0 U	9.5 U	8.9 U	9.3 U	8.7 U	8.4 U	9.0 U	10.0 U	8.3 U	9.2 U	8.4 U	8.9 U	8.4 U	9.0 U	9.1 U	–	–	9.1 U	8.4 U	9.2 U	8.6 U	–	NE	NE	NE
3-Perfluoropentylpropanoic acid (5:3 FTCA)	45 U	45 U	42 U	42 U	45 U	48 U	45 U	46 U	44 U	42 U	45 U	52 U	42 U	46 U	42 U	45 U	42 U	45 U	45 U	–	–	46 U	42 U	46 U	43 U	–	NE	NE	NE
3-Perfluoroheptylpropanoic acid (7:3 FTCA)	45 U	45 U	42 U	42 U	45 U	48 U	45 U	46 U	44 U	42 U	45 U	52 U	42 U	46 U	42 U	45 U	42 U	45 U	45 U	–	–	46 U	42 U	46 U	43 U	–	NE	NE	NE
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	7.2 U	7.2 U	6.7 U	6.7 U	7.3 U	7.6 U	7.2 U	7.4 U	7.0 U	6.7 U	7.2 U	8.4 U	6.7 U	7.4 U	6.7 U	7.1 U	6.7 U	7.2 U	7.2 U	–	–	7.3 U	6.7 U	7.3 U	6.9 U	–	NE	NE	NE
Artificial Sweeteners by EPA 1694 (µg/L)																													
Acesulfame K	–		0.16	0.31	–				0.30	0.30	–		–	–	0.12	–	0.45				–	–	0.58	–	0.56	–	NE	–	–
Sucralose	–		11	9.9	–				9.8	9.8	–		–	–	0.40	–	12				–	–	11	–	8.9	–	NE	–	–
Total Metals by EPA 6020B (mg/L)																													
Arsenic	**0.0020 J**	**0.0018 J**	**0.0024 J**	–	**0.0011 J**	**0.0011 J**	**0.0012 J**	**0.0014 J**	**0.0017 J**	**0.0014 J**	0.0050 U	0.0050 U	0.0050 U	–	–	–	–	**0.0021 J**	0.0050 U	0.0050 U	**0.0013 J**	–	–	–	–	–	0.005	–	–
Cadmium	0.0020 U	0.0020 U	0.0020 U	–	0.0020 U	0.0020 U	0.0020 U	0.0020 U	0.0020 U	0.0020 U	0.0020 U	0.0020 U	0.0020 U	–	–	–	–	0.0020 U	0.0020 U	0.0020 U	0.0020 U	–	–	–	–	–	0.005	–	–
Iron	0.50 U	0.50 U	0.50 U	–	**0.095 J**	**0.10 J**	0.50 U	0.50 U	0.50 U	0.50 U	**0.21 J**	**0.13 J**	**0.34 J**	–	–	–	–	**0.13 J**	0.50 U	0.50 U	0.50 U	–	–	–	–	–	11	–	–
Lead	0.0020 U	0.0020 U	**0.00034 J**	–	0.0020 U	0.0020 U	0.0020 U	0.0020 U	**0.00026 J**	**0.00023 J**	**0.0015 J**	**0.00088 J**	0.0020 U	–	–	–	–	0.0020 U	0.0020 U	0.0020 U	**0.00054 J**	–	–	–	–	–	0.015	–	–
Manganese	0.010 U	0.010 U	0.010 U	–	0.010 U	0.010 U	0.010 U	0.010 U	0.010 U	0.010 U	**0.0068 J**	**0.0050 J**	**0.0059 J**	–	–	–	–	**0.0025 J**	0.010 U	0.010 U	0.010 U	–	–	–	–	–	0.75	–	–
Zinc	0.035 U	0.035 U	0.035 U	–	0.035 U	0.035 U	0.035 U	0.035 U	0.035 U	0.035 U	**0.018 J**	**0.0055 J**	0.035 U	–	–	–	–	0.035 U	**0.0051 J**	0.035 U	0.035 U	–	–	–	–	–	4.8	–	–
Total Metals by EPA 7470A (µg/L)																													
Mercury	0.20 U	**0.12 J**	0.20 U	**–**	0.20 U	0.20 U	**0.13 J**	**0.13 J**	0.20 U	0.20 U	0.20 U	**0.12 J**	0.20 U	–	–	–	–	0.20 U	0.20 U		0.20 U	–	–	–	–	–	2	–	–
Dissolved Metals[7] by EPA 6020B (mg/L)																													
Arsenic	**0.0024 J**	**0.0019 J**	**0.0020 J**	–	**0.0014 J**	**0.0014 J**	**0.0012 J**	**0.0013 J**	**0.0014 J**	**0.0014 J**	0.0050 U	0.0050 U	0.0050 U	–	–	–	–	**0.0020 J**	0.0050 U	0.0050 U	0.0050 U	–	–	–	–	–	0.005	–	–
Cadmium	0.0020 U	0.0020 U	0.0020 U	–	0.0020 U	0.0020 U	0.0020 U	0.0020 U	0.0020 U	0.0020 U	0.0020 U	0.0020 U	0.0020 U	–	–	–	–	0.0020 U	0.0020 U	0.0020 U	0.0020 U	–	–	–	–	–	0.005	–	–
Iron	0.50 U	0.50 U	0.50 U	0.50 U	**0.074 J**	**0.078 J**	0.50 U	0.50 U	0.50 U	**0.073 J**	0.50 U	0.50 U	0.50 U	–	0.50 U	–	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	–	0.50 U	–	**0.074 J**	–	11	–	–
Lead	0.0020 U	0.0020 U	0.002 U	–	0.0020 U	0.0020 U	0.0020 U	0.0020 U	0.002 U	0.002 U	0.0020 U	0.0020 U	0.002 U	–	–	–	–	0.0020 U	0.0020 U	0.0020 U	0.002 U	–	–	–	–	–	0.015	–	–
Manganese	0.010 U	**0.013**	0.010 U	0.010 U	0.010 U	**0.0024 J**	0.010 U	0.010 U	0.010 U	0.010 U	0.010 U	**0.0078 J**	0.010 U	–	0.010 U	–	0.010 U	0.010 U	**0.0060 J**	0.010 U	0.010 U	–	0.010 U	–	**0.0044 J**	–	0.75	–	–
Zinc	0.035 U	0.035 U	0.035 U	–	0.035 U	**0.040**	0.035 U	0.035 U	0.035 U	0.035 U	**0.014 J**	**0.0046 J**	0.035 U	–	–	–	–	**0.0051 J**	0.035 U	0.035 U	0.035 U	–	–	–	–	–	4.8	–	–
Dissolved Metals[7] by EPA 7470A (µg/L)																													
Mercury	0.20 U	**0.12 J**	0.20 U	**–**	0.20 U	0.20 U	**0.13 J**	**0.13 J**	0.20 U	0.20 U	0.20 U	**0.13 J**	0.20 U	–	–	–	–	0.20 U	0.20 U	**0.13 J**	0.20 U	–	–	–	–	–	2	–	–
General Chemistry Parameters (mg/L), method noted in parentheses																													
Ammonia as Nitrogen (EPA 350.1)	**0.042 J**	0.10 U	0.10 U	0.10 U	**0.052 J**	**0.037 J**	0.10 U	0.10 U	0.10 U	0.10 U	**0.032 J**	0.10 U	**0.034 J**	–	**0.036 J**	–	**0.068 J**	**0.15**	0.10 U	0.10 U	**0.031 J**	–	0.10 U	–	0.10 U	0.10 U	NE	–	–
Alkalinity (SM 2320B)	**210**	**200**	**160**	**140**	**320**	**330**	**340**	**330**	**260**	**290**	**150**	**160**	**140**	–	**180**	–	**180**	**140**	**85**	**110**	**100**	–	**140**	–	**160**	**180**	NE	–	–
Bicarbonate Alkalinity as CaCO3 (SM 2320B)	**210**	**200**	**160**	**140**	**320**	**330**	**340**	**330**	**260**	**290**	**150**	**160**	**140**	–	**180**	–	**180**	**140**	**85**	**110**	**100**	–	**140**	–	**160**	**180**	NE	–	–
Total Dissolved Solids (SM 2540C)	**340**	**340**	**270**	**300**	**520**	**530**	**540**	**520**	**410**	**420**	**240**	**230**	**150**	–	**220**	–	**280**	**300**	**140**	**140**	**190**	–	**270**	–	**250**	**290**	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	–	–
Total Organic Carbon (SM 5310B)	**4.2**	**3.1**	**4.2**	**3.7**	**2.0**	**2.0**	**2.5**	**2.3**	**2.4**	**2.4**	**4.3**	**0.78 J**	**0.77 J**	–	**0.78 J**	–	**5.3**	**0.84 J**	**2.6**	**2.8**	**2.6**	–	**3.5**	–	**3.7**	**2.1**	NE	–	–
Total Magnesium (EPA 6010D)	**16**	**16**	**16**	**15**	**16**	**16**	**11**	**11**	**14**	**14**	**10**	**11**	**11**	–	**14**	–	**15**	**9.5**	**8.9**	**11**	**11**	–	**14**	–	**15**	**16**	NE	–	–
Dissolved Magnesium (EPA 6010D)	**17**	**13**	**14**	**14**	**17**	**16**	**10**	**10**	**13**	**13**	**10**	**10**	**10**	–	**13**	–	**13**	**9.4**	**8.8**	**10**	**10**	–	**13**	–	**14**	**14**	NE	–	–
Total Potassium (EPA 6010D)	**7.8**	**6.8**	**6.8**	**6.5**	**4.9**	**4.8**	**3.8**	**3.8**	**4.9**	**4.9**	**1.7**	**1.6**	**1.5 J**	–	**2.1**	–	**6.8**	**2.8**	**2.7**	**2.6**	**2.6**	–	**6.6**	–	**6.2**	**5.8**	NE	–	–
Total Sodium (EPA 6010D)	**42**	**37**	**39**	**39**	**28**	**27**	**27**	**27**	**43**	**43**	**5.3**	**4.0**	**4.1**	–	**9.7**	–	**41**	**9.0**	**8.5**	**8.6**	**8.9**	–	**38**	–	**36**	**32**	NE	–	–
Dissolved Calcium (EPA 6010D)	**41**	**32**	**34**	**32**	**120**	**110**	**71**	**72**	**86**	**87**	**34**	**34**	**34**	–	**40**	–	**31**	**41**	**25**	**29**	**29**	–	**31**	–	**32**	**42**	NE	–	–
Chloride (EPA 300.0)	**59**	**62**	**59**	**58**	**33**	**34**	**54**	**57**	**67**	**67**	**0.58 J**	**0.70 J**	**0.62 J**	–	**13**	–	**57**	**9.8**	**3.3**	**6.7**	**7.5**	–	**56**	–	**57**	**49**	NE	–	–
Nitrate as N (EPA 300.0)	0.20 U	**2.4**	**0.24**	**0.40**	**5.7**	**5.6**	**1.4**	**1.9**	**3.1**	**3.1**	0.20 U	0.20 U	0.20 U	–	**2.1**	–	0.20 U	**3.4**	**6.8**	**8.1**	**7.0**	–	**0.92**	–	**0.52**	**2.0**	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	0.20 U	**0.43**	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	–	0.20 U	–	0.20 U	0.20 U	0.20 U	0.20	0.20 U	–	0.20 U	–	0.20 U	0.20 U	1.6	–	–
Sulfate (EPA 300.0)	**14**	**21**	**14**	**16**	**46**	**47**	**14**	**14**	**25**	**25**	**4.0**	**3.9**	**3.3**	–	**12**	–	**12**	**10**	**16**	**16**	**14**	–	**17**	–	**16**	**18**	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 and field blank sampling and analysis. See associated report discussion and chemical analytical reports for additional detail.

[3]MTCA Method A or B Cleanup Level.

[4]DOH SAL for PFAS compounds are listed where available.

[5]EPA MCL for PFAS compounds are listed where available.

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

[7]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 C and D respectively).
mg/L = milligrams per liter
µg/L = micrograms per liter
MTCA CUL = Model Toxics Control Act Cleanup Level (Method A or B)
DOH SAL = Washington State Department of Health State Action Level
EPA MCL = EPA Maximum Contaminant Level
ND = not detected
NE = not established
ng/L = nanogram per liter
U = analyte was not detected above the laboratory reporting limit
"--" = not analyzed
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 lowest listed screening criteria (MTCA CUL, DOH SAL or EPA MCL).

Appendix B

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	800-424-9802	016345506 FLE

GENERATOR

5. Generator's Name and Mailing Address
Washington State Department of Ecology
4601 N. Monroe St.
Spokane, WA 99205
Generator's Phone: 509-251-6239-1

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: WAH000018338

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
	1. NON HAZARDOUS, NON D.O.T. REGULATED, (PURGE WATER), PFAS CONTAMINATED WATER	8	DM	4500		
	2.					
	3.					
	4.					

14. Special Handling Instructions and Additional Information
9b. 1) OR356586 — Eight 55gallon drums — WO # 170165

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: Sheila Williams for dept. of Ecology — Signature — Month: 06 — Day: 12 — 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: Allen Phillips — Signature — Month: 06 — Day: 12 — Year: 24

Transporter 2 Printed/Typed Name: Josh King — Signature — Month: 06 — Day: 17 — 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: 6 — Day: 17 — Year: 24

EPA Form 8700-22 (Rev. 12-17) Previous editions are obsolete.

TRANSPORTER COPY

Appendix C

Chemical Analytical Laboratory Reports

eurofins | Environment Testing

ANALYTICAL REPORT

PREPARED FOR

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

Generated 8/28/2024 11:23:50 AM Revision 1

JOB DESCRIPTION

Marshall Landfill

JOB NUMBER

590-25435-1

Eurofins Spokane
11922 East 1st Ave
Spokane WA 99206

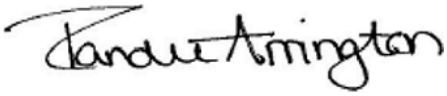
See page two for job notes and contact information.

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



Generated
8/28/2024 11:23:50 AM
Revision 1

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

Table of Contents

Job Narrative
590-25435-1

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.

Revision
The report being provided is a revision of the original report sent on 7/10/2024. The report (revision 1) is being revised due to: revised the following sample per the clients request:

MW-8B-061824 revised to MW-8A-061824 (590-25435-2).

Receipt
The samples were received on 6/18/2024 4:27 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 4.4°C.

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

LCMS
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 320-775603.

Method 1633: The following samples in preparation batch 320-775603 were yellow in color following extraction. MW-9A-061824 (590-25435-1)

Method 1633: The "I" qualifier means the transition mass ratio for the indicated analyte was outside the established ratio limits. The qualitative identification of the analyte has some degree of uncertainty. However, analyst judgment was used to positively identify the analyte: MW-9A-061824 (590-25435-1).

Method 1633: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate/sample duplicate (MS/MSD/DUP) associated with preparation batch 320-777242.

Method 1633: The following samples in preparation batch 320-777242 were light green in color following extraction. MW-9A-061824 (590-25435-1)

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

Metals
Method 6010D - Dissolved: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for preparation batch 590-48117 and 590-48188 and analytical batch 590-48207 were outside control limits. Sample matrix interference is suspected because the associated laboratory control sample (LCS) recovery was within acceptance limits.

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 590-48087 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: 590-25435-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
590-25435-1	MW-9A-061824	Water	06/18/24 13:25	06/18/24 16:27
590-25435-2	MW-8A-061824	Water	06/18/24 14:40	06/18/24 16:27

Definitions/Glossary

Client: GeoEngineers Inc
Project/Site: Marshall Landfill

Job ID: 590-25435-1

Qualifiers

LCMS

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

Metals

Qualifier	Qualifier Description
F1	MS and/or MSD recovery exceeds control limits.

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
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: 590-25435-1

Client Sample ID: MW-9A-061824

Date Collected: 06/18/24 13:25
Date Received: 06/18/24 16:27

Lab Sample ID: 590-25435-1

Matrix: Water

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**57**		0.80	0.42	mg/L			06/19/24 17:28	1
Nitrate as N	ND		0.20	0.057	mg/L			06/19/24 17:28	1
Nitrite as N	ND		0.20	0.069	mg/L			06/19/24 17:28	1
Sulfate	**12**		0.50	0.13	mg/L			06/20/24 14:45	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)	**20**		6.7	1.7	ng/L		06/29/24 08:01	07/05/24 00:29	1
Perfluoropentanoic acid (PFPeA)	**35**		3.3	0.84	ng/L		06/29/24 08:01	07/05/24 00:29	1
Perfluorohexanoic acid (PFHxA)	**24**		1.7	0.42	ng/L		06/29/24 08:01	07/05/24 00:29	1
Perfluoroheptanoic acid (PFHpA)	**5.9**		1.7	0.42	ng/L		06/29/24 08:01	07/05/24 00:29	1
Perfluorooctanoic acid (PFOA)	**13**		1.7	0.42	ng/L		06/29/24 08:01	07/05/24 00:29	1
Perfluorononanoic acid (PFNA)	**0.56**	**J**	1.7	0.42	ng/L		06/29/24 08:01	07/05/24 00:29	1
Perfluorodecanoic acid (PFDA)	ND		1.7	0.42	ng/L		06/29/24 08:01	07/05/24 00:29	1
Perfluoroundecanoic acid (PFUnA)	ND		1.7	0.42	ng/L		06/29/24 08:01	07/05/24 00:29	1
Perfluorododecanoic acid (PFDoA)	ND		1.7	0.42	ng/L		06/29/24 08:01	07/05/24 00:29	1
Perfluorotridecanoic acid (PFTrDA)	ND		1.7	0.42	ng/L		06/29/24 08:01	07/05/24 00:29	1
Perfluorotetradecanoic acid (PFTeDA)	ND		1.7	0.42	ng/L		06/29/24 08:01	07/05/24 00:29	1
Perfluorobutanesulfonic acid (PFBS)	**7.1**		1.7	0.42	ng/L		06/29/24 08:01	07/05/24 00:29	1
Perfluoropentanesulfonic acid (PFPeS)	**0.74**	**J**	1.7	0.42	ng/L		06/29/24 08:01	07/05/24 00:29	1
Perfluorohexanesulfonic acid (PFHxS)	**6.7**		1.7	0.42	ng/L		06/29/24 08:01	07/05/24 00:29	1
Perfluoroheptanesulfonic acid (PFHpS)	ND		1.7	0.42	ng/L		06/29/24 08:01	07/05/24 00:29	1
Perfluorooctanesulfonic acid (PFOS)	**13**	**I**	1.7	0.42	ng/L		06/29/24 08:01	07/05/24 00:29	1
Perfluorononanesulfonic acid (PFNS)	ND		1.7	0.42	ng/L		06/29/24 08:01	07/05/24 00:29	1
Perfluorodecanesulfonic acid (PFDS)	ND		1.7	0.42	ng/L		06/29/24 08:01	07/05/24 00:29	1
Perfluorododecanesulfonic acid (PFDoS)	ND		1.7	0.42	ng/L		06/29/24 08:01	07/05/24 00:29	1
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	ND		6.7	1.7	ng/L		06/29/24 08:01	07/05/24 00:29	1
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	ND		6.7	1.7	ng/L		06/29/24 08:01	07/05/24 00:29	1
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	ND		6.7	1.7	ng/L		06/29/24 08:01	07/05/24 00:29	1
Perfluorooctanesulfonamide (PFOSA)	ND		1.7	0.42	ng/L		06/29/24 08:01	07/05/24 00:29	1
N-methylperfluorooctane sulfonamide (NMeFOSA)	ND		1.7	0.42	ng/L		06/29/24 08:01	07/05/24 00:29	1
N-ethylperfluorooctane sulfonamide (NEtFOSA)	ND		1.7	0.42	ng/L		06/29/24 08:01	07/05/24 00:29	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		1.7	0.42	ng/L		06/29/24 08:01	07/05/24 00:29	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		1.7	0.42	ng/L		06/29/24 08:01	07/05/24 00:29	1
N-methylperfluorooctane sulfonamidoethanol (NMeFOSE)	ND		17	4.2	ng/L		06/29/24 08:01	07/05/24 00:29	1
N-ethylperfluorooctane sulfonamidoethanol (NEtFOSE)	ND		17	4.2	ng/L		06/29/24 08:01	07/05/24 00:29	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		6.7	1.7	ng/L		06/29/24 08:01	07/05/24 00:29	1

Client Sample ID: MW-9A-061824
Date Collected: 06/18/24 13:25
Date Received: 06/18/24 16:27

Lab Sample ID: 590-25435-1
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
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		6.7	1.7	ng/L		06/29/24 08:01	07/05/24 00:29	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	ND		3.3	0.84	ng/L		06/29/24 08:01	07/05/24 00:29	1
Perfluoro-4-methoxybutanoic acid (PFMBA)	ND		3.3	0.84	ng/L		06/29/24 08:01	07/05/24 00:29	1
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND		3.3	0.84	ng/L		06/29/24 08:01	07/05/24 00:29	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	ND		6.7	1.7	ng/L		06/29/24 08:01	07/05/24 00:29	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	ND		3.3	0.84	ng/L		06/29/24 08:01	07/05/24 00:29	1
3-Perfluoropropylpropanoic acid (3:3 FTCA)	ND		8.4	2.1	ng/L		06/29/24 08:01	07/05/24 00:29	1
3-Perfluoropentylpropanoic acid (5:3 FTCA)	ND		42	10	ng/L		06/29/24 08:01	07/05/24 00:29	1
3-Perfluoroheptylpropanoic acid (7:3 FTCA)	ND		42	10	ng/L		06/29/24 08:01	07/05/24 00:29	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*86.9*		*5 - 130*	*06/29/24 08:01*	*07/05/24 00:29*	*1*
13C5 PFPeA	*71.4*		*40 - 130*	*06/29/24 08:01*	*07/05/24 00:29*	*1*
13C5 PFHxA	*80.0*		*40 - 130*	*06/29/24 08:01*	*07/05/24 00:29*	*1*
13C4 PFHpA	*80.3*		*40 - 130*	*06/29/24 08:01*	*07/05/24 00:29*	*1*
13C8 PFOA	*86.9*		*40 - 130*	*06/29/24 08:01*	*07/05/24 00:29*	*1*
13C9 PFNA	*93.0*		*40 - 130*	*06/29/24 08:01*	*07/05/24 00:29*	*1*
13C6 PFDA	*91.2*		*40 - 130*	*06/29/24 08:01*	*07/05/24 00:29*	*1*
13C7 PFUnA	*73.5*		*30 - 130*	*06/29/24 08:01*	*07/05/24 00:29*	*1*
13C2 PFDoA	*72.3*		*10 - 130*	*06/29/24 08:01*	*07/05/24 00:29*	*1*
13C2 PFTeDA	*70.4*		*10 - 130*	*06/29/24 08:01*	*07/05/24 00:29*	*1*
13C3 PFBS	*83.8*		*40 - 135*	*06/29/24 08:01*	*07/05/24 00:29*	*1*
13C3 PFHxS	*78.7*		*40 - 130*	*06/29/24 08:01*	*07/05/24 00:29*	*1*
13C8 PFOS	*79.2*		*40 - 130*	*06/29/24 08:01*	*07/05/24 00:29*	*1*
13C8 PFOSA	*87.1*		*40 - 130*	*06/29/24 08:01*	*07/05/24 00:29*	*1*
d3-NMeFOSAA	*78.3*		*40 - 170*	*06/29/24 08:01*	*07/05/24 00:29*	*1*
d5-NEtFOSAA	*78.8*		*25 - 135*	*06/29/24 08:01*	*07/05/24 00:29*	*1*
13C2 4:2 FTS	*89.0*		*40 - 200*	*06/29/24 08:01*	*07/05/24 00:29*	*1*
13C2 6:2 FTS	*88.4*		*40 - 200*	*06/29/24 08:01*	*07/05/24 00:29*	*1*
13C2 8:2 FTS	*75.9*		*40 - 300*	*06/29/24 08:01*	*07/05/24 00:29*	*1*
13C3 HFPO-DA	*84.8*		*40 - 130*	*06/29/24 08:01*	*07/05/24 00:29*	*1*
d7-N-MeFOSE-M	*65.6*		*10 - 130*	*06/29/24 08:01*	*07/05/24 00:29*	*1*
d9-N-EtFOSE-M	*61.1*		*10 - 130*	*06/29/24 08:01*	*07/05/24 00:29*	*1*
d5-NEtPFOSA	*55.3*		*10 - 130*	*06/29/24 08:01*	*07/05/24 00:29*	*1*
d3-NMePFOSA	*56.4*		*10 - 130*	*06/29/24 08:01*	*07/05/24 00:29*	*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
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	ND		6.7	1.7	ng/L		07/08/24 05:18	07/09/24 10:58	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*83.7*		*40 - 130*	*07/08/24 05:18*	*07/09/24 10:58*	*1*

Client Sample ID: MW-9A-061824

Lab Sample ID: 590-25435-1

Date Collected: 06/18/24 13:25

Matrix: Water

Date Received: 06/18/24 16:27

Method: Lab SOP PPCP NEG - Pharmaceuticals and Personal Care Products (LC/MS/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acesulfame K	0.45		0.020	0.0020	ug/L			06/25/24 03:43	1

Method: Lab SOP PPCP NEG - Pharmaceuticals and Personal Care Products (LC/MS/MS) - DL

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sucralose	12		1.0	0.14	ug/L			06/25/24 15:24	10

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Magnesium	15		0.50	0.13	mg/L		06/27/24 10:32	07/02/24 12:22	1
Potassium	6.8		2.0	0.29	mg/L		06/27/24 10:32	07/02/24 12:22	1
Sodium	41		2.0	0.20	mg/L		06/27/24 10:32	07/02/24 12:22	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	31	F1	1.0	0.20	mg/L		07/02/24 11:12	07/02/24 13:14	1
Magnesium	13		0.50	0.13	mg/L		07/02/24 11:12	07/02/24 13:14	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	ND		0.50	0.067	mg/L		06/25/24 15:33	06/26/24 12:42	5
Manganese	ND		0.010	0.0023	mg/L		06/25/24 15:33	06/26/24 12:42	5

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ammonia as N (EPA 350.1)	0.068	J	0.10	0.029	mg/L			06/21/24 11:51	1
Alkalinity (SM 2320B)	180	B	20	5.0	mg/L			06/26/24 09:37	1
Bicarbonate Alkalinity as CaCO3 (SM 2320B)	180	B	20	5.0	mg/L			06/26/24 09:37	1
Total Dissolved Solids (SM 2540C)	280		25	13	mg/L			06/24/24 15:52	1
Total Organic Carbon - Duplicates (SM 5310B)	5.3		1.0	0.35	mg/L			06/25/24 04:52	1

Client Sample ID: MW-8A-061824

Lab Sample ID: 590-25435-2

Date Collected: 06/18/24 14:40

Matrix: Water

Date Received: 06/18/24 16:27

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	13		0.80	0.42	mg/L			06/19/24 17:38	1
Nitrate as N	2.1		0.20	0.057	mg/L			06/19/24 17:38	1
Nitrite as N	ND		0.20	0.069	mg/L			06/19/24 17:38	1
Sulfate	12		0.50	0.13	mg/L			06/20/24 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)	6.1	J	6.7	1.7	ng/L		06/29/24 08:01	07/05/24 00:49	1
Perfluoropentanoic acid (PFPeA)	10		3.4	0.84	ng/L		06/29/24 08:01	07/05/24 00:49	1
Perfluorohexanoic acid (PFHxA)	4.1		1.7	0.42	ng/L		06/29/24 08:01	07/05/24 00:49	1
Perfluoroheptanoic acid (PFHpA)	1.7		1.7	0.42	ng/L		06/29/24 08:01	07/05/24 00:49	1
Perfluorooctanoic acid (PFOA)	3.6		1.7	0.42	ng/L		06/29/24 08:01	07/05/24 00:49	1
Perfluorononanoic acid (PFNA)	ND		1.7	0.42	ng/L		06/29/24 08:01	07/05/24 00:49	1
Perfluorodecanoic acid (PFDA)	ND		1.7	0.42	ng/L		06/29/24 08:01	07/05/24 00:49	1

Client Sample ID: MW-8A-061824
Date Collected: 06/18/24 14:40
Date Received: 06/18/24 16:27

Lab Sample ID: 590-25435-2
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
Perfluoroundecanoic acid (PFUnA)	ND		1.7	0.42	ng/L		06/29/24 08:01	07/05/24 00:49	1
Perfluorododecanoic acid (PFDoA)	ND		1.7	0.42	ng/L		06/29/24 08:01	07/05/24 00:49	1
Perfluorotridecanoic acid (PFTrDA)	ND		1.7	0.42	ng/L		06/29/24 08:01	07/05/24 00:49	1
Perfluorotetradecanoic acid (PFTeDA)	ND		1.7	0.42	ng/L		06/29/24 08:01	07/05/24 00:49	1
Perfluorobutanesulfonic acid (PFBS)	**1.6**	**J**	1.7	0.42	ng/L		06/29/24 08:01	07/05/24 00:49	1
Perfluoropentanesulfonic acid (PFPeS)	**0.63**	**J**	1.7	0.42	ng/L		06/29/24 08:01	07/05/24 00:49	1
Perfluorohexanesulfonic acid (PFHxS)	**2.6**		1.7	0.42	ng/L		06/29/24 08:01	07/05/24 00:49	1
Perfluoroheptanesulfonic acid (PFHpS)	ND		1.7	0.42	ng/L		06/29/24 08:01	07/05/24 00:49	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.7	0.42	ng/L		06/29/24 08:01	07/05/24 00:49	1
Perfluorononanesulfonic acid (PFNS)	ND		1.7	0.42	ng/L		06/29/24 08:01	07/05/24 00:49	1
Perfluorodecanesulfonic acid (PFDS)	ND		1.7	0.42	ng/L		06/29/24 08:01	07/05/24 00:49	1
Perfluorododecanesulfonic acid (PFDoS)	ND		1.7	0.42	ng/L		06/29/24 08:01	07/05/24 00:49	1
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	ND		6.7	1.7	ng/L		06/29/24 08:01	07/05/24 00:49	1
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	ND		6.7	1.7	ng/L		06/29/24 08:01	07/05/24 00:49	1
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	ND		6.7	1.7	ng/L		06/29/24 08:01	07/05/24 00:49	1
Perfluorooctanesulfonamide (PFOSA)	ND		1.7	0.42	ng/L		06/29/24 08:01	07/05/24 00:49	1
N-methylperfluorooctane sulfonamide (NMeFOSA)	ND		1.7	0.42	ng/L		06/29/24 08:01	07/05/24 00:49	1
N-ethylperfluorooctane sulfonamide (NEtFOSA)	ND		1.7	0.42	ng/L		06/29/24 08:01	07/05/24 00:49	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		1.7	0.42	ng/L		06/29/24 08:01	07/05/24 00:49	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		1.7	0.42	ng/L		06/29/24 08:01	07/05/24 00:49	1
N-methylperfluorooctane sulfonamidoethanol (NMeFOSE)	ND		17	4.2	ng/L		06/29/24 08:01	07/05/24 00:49	1
N-ethylperfluorooctane sulfonamidoethanol (NEtFOSE)	ND		17	4.2	ng/L		06/29/24 08:01	07/05/24 00:49	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		6.7	1.7	ng/L		06/29/24 08:01	07/05/24 00:49	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		6.7	1.7	ng/L		06/29/24 08:01	07/05/24 00:49	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	ND		3.4	0.84	ng/L		06/29/24 08:01	07/05/24 00:49	1
Perfluoro-4-methoxybutanoic acid (PFMBA)	ND		3.4	0.84	ng/L		06/29/24 08:01	07/05/24 00:49	1
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND		3.4	0.84	ng/L		06/29/24 08:01	07/05/24 00:49	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	ND		6.7	1.7	ng/L		06/29/24 08:01	07/05/24 00:49	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	ND		3.4	0.84	ng/L		06/29/24 08:01	07/05/24 00:49	1
3-Perfluoropropylpropanoic acid (3:3 FTCA)	ND		8.4	2.1	ng/L		06/29/24 08:01	07/05/24 00:49	1
3-Perfluoropentylpropanoic acid (5:3 FTCA)	ND		42	10	ng/L		06/29/24 08:01	07/05/24 00:49	1

Client Sample ID: MW-8A-061824
Date Collected: 06/18/24 14:40
Date Received: 06/18/24 16:27

Lab Sample ID: 590-25435-2
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
3-Perfluoroheptylpropanoic acid (7:3 FTCA)	ND		42	10	ng/L		06/29/24 08:01	07/05/24 00:49	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*96.6*		*5 - 130*	*06/29/24 08:01*	*07/05/24 00:49*	*1*
13C5 PFPeA	*74.0*		*40 - 130*	*06/29/24 08:01*	*07/05/24 00:49*	*1*
13C5 PFHxA	*90.7*		*40 - 130*	*06/29/24 08:01*	*07/05/24 00:49*	*1*
13C4 PFHpA	*87.4*		*40 - 130*	*06/29/24 08:01*	*07/05/24 00:49*	*1*
13C8 PFOA	*90.9*		*40 - 130*	*06/29/24 08:01*	*07/05/24 00:49*	*1*
13C9 PFNA	*96.2*		*40 - 130*	*06/29/24 08:01*	*07/05/24 00:49*	*1*
13C6 PFDA	*107*		*40 - 130*	*06/29/24 08:01*	*07/05/24 00:49*	*1*
13C7 PFUnA	*88.5*		*30 - 130*	*06/29/24 08:01*	*07/05/24 00:49*	*1*
13C2 PFDoA	*95.1*		*10 - 130*	*06/29/24 08:01*	*07/05/24 00:49*	*1*
13C2 PFTeDA	*89.9*		*10 - 130*	*06/29/24 08:01*	*07/05/24 00:49*	*1*
13C3 PFBS	*85.2*		*40 - 135*	*06/29/24 08:01*	*07/05/24 00:49*	*1*
13C3 PFHxS	*78.4*		*40 - 130*	*06/29/24 08:01*	*07/05/24 00:49*	*1*
13C8 PFOS	*90.6*		*40 - 130*	*06/29/24 08:01*	*07/05/24 00:49*	*1*
13C8 PFOSA	*96.0*		*40 - 130*	*06/29/24 08:01*	*07/05/24 00:49*	*1*
d3-NMeFOSAA	*91.4*		*40 - 170*	*06/29/24 08:01*	*07/05/24 00:49*	*1*
d5-NEtFOSAA	*88.8*		*25 - 135*	*06/29/24 08:01*	*07/05/24 00:49*	*1*
13C2 4:2 FTS	*92.3*		*40 - 200*	*06/29/24 08:01*	*07/05/24 00:49*	*1*
13C2 6:2 FTS	*95.6*		*40 - 200*	*06/29/24 08:01*	*07/05/24 00:49*	*1*
13C2 8:2 FTS	*86.7*		*40 - 300*	*06/29/24 08:01*	*07/05/24 00:49*	*1*
13C3 HFPO-DA	*86.1*		*40 - 130*	*06/29/24 08:01*	*07/05/24 00:49*	*1*
d7-N-MeFOSE-M	*81.1*		*10 - 130*	*06/29/24 08:01*	*07/05/24 00:49*	*1*
d9-N-EtFOSE-M	*75.8*		*10 - 130*	*06/29/24 08:01*	*07/05/24 00:49*	*1*
d5-NEtPFOSA	*70.5*		*10 - 130*	*06/29/24 08:01*	*07/05/24 00:49*	*1*
d3-NMePFOSA	*69.0*		*10 - 130*	*06/29/24 08:01*	*07/05/24 00:49*	*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
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	ND		6.8	1.7	ng/L		07/08/24 05:18	07/09/24 11:19	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*84.1*		*40 - 130*	*07/08/24 05:18*	*07/09/24 11:19*	*1*

Method: Lab SOP PPCP NEG - Pharmaceuticals and Personal Care Products (LC/MS/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acesulfame K	**0.12**		0.020	0.0020	ug/L			06/25/24 04:11	1
Sucralose	**0.40**		0.10	0.014	ug/L			06/25/24 04:11	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Magnesium	**14**		0.50	0.13	mg/L		06/27/24 10:32	07/02/24 12:46	1
Potassium	**2.1**		2.0	0.29	mg/L		06/27/24 10:32	07/02/24 12:46	1
Sodium	**9.7**		2.0	0.20	mg/L		06/27/24 10:32	07/02/24 12:46	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	**40**		1.0	0.20	mg/L		07/02/24 11:12	07/02/24 13:39	1
Magnesium	**13**		0.50	0.13	mg/L		07/02/24 11:12	07/02/24 13:39	1

Client: GeoEngineers Inc
Project/Site: Marshall Landfill

Job ID: 590-25435-1

Client Sample ID: MW-8A-061824

Date Collected: 06/18/24 14:40
Date Received: 06/18/24 16:27

Lab Sample ID: 590-25435-2

Matrix: Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	ND		0.50	0.067	mg/L		06/25/24 15:33	06/26/24 12:38	5
Manganese	ND		0.010	0.0023	mg/L		06/25/24 15:33	06/26/24 12:38	5

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ammonia as N (EPA 350.1)	0.036	J	0.10	0.029	mg/L			06/21/24 11:53	1
Alkalinity (SM 2320B)	180	B	20	5.0	mg/L			06/26/24 09:37	1
Bicarbonate Alkalinity as CaCO3 (SM 2320B)	180	B	20	5.0	mg/L			06/26/24 09:37	1
Total Dissolved Solids (SM 2540C)	220		25	13	mg/L			06/24/24 15:52	1
Total Organic Carbon - Duplicates (SM 5310B)	0.78	J	1.0	0.35	mg/L			06/25/24 05:06	1

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 590-47983/1003
Matrix: Water
Analysis Batch: 47983

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			06/19/24 14:45	1
Nitrite as N	ND		0.20	0.069	mg/L			06/19/24 14:45	1

Lab Sample ID: LCS 590-47983/1004
Matrix: Water
Analysis Batch: 47983

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	4.80		mg/L		96	90 - 110
Nitrite as N	5.00	4.71		mg/L		94	90 - 110

Lab Sample ID: MB 590-47984/1003
Matrix: Water
Analysis Batch: 47984

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			06/19/24 14:45	1

Lab Sample ID: LCS 590-47984/1004
Matrix: Water
Analysis Batch: 47984

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	11.8		mg/L		94	90 - 110

Lab Sample ID: MB 590-47992/1015
Matrix: Water
Analysis Batch: 47992

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			06/20/24 10:57	1
Sulfate	ND		0.50	0.13	mg/L			06/20/24 10:57	1

Lab Sample ID: LCS 590-47992/1016
Matrix: Water
Analysis Batch: 47992

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		101	90 - 110
Sulfate	12.5	12.1		mg/L		97	90 - 110

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

Lab Sample ID: MB 320-775603/1-A
Matrix: Water
Analysis Batch: 776597

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 775603

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	ND		8.0	2.0	ng/L		06/29/24 08:01	07/04/24 22:05	1
Perfluoropentanoic acid (PFPeA)	ND		4.0	1.0	ng/L		06/29/24 08:01	07/04/24 22:05	1

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

Lab Sample ID: MB 320-775603/1-A
Matrix: Water
Analysis Batch: 776597

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 775603

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		2.0	0.50	ng/L		06/29/24 08:01	07/04/24 22:05	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.50	ng/L		06/29/24 08:01	07/04/24 22:05	1
Perfluorooctanoic acid (PFOA)	ND		2.0	0.50	ng/L		06/29/24 08:01	07/04/24 22:05	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.50	ng/L		06/29/24 08:01	07/04/24 22:05	1
Perfluorodecanoic acid (PFDA)	ND		2.0	0.50	ng/L		06/29/24 08:01	07/04/24 22:05	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	0.50	ng/L		06/29/24 08:01	07/04/24 22:05	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	0.50	ng/L		06/29/24 08:01	07/04/24 22:05	1
Perfluorotridecanoic acid (PFTrDA)	ND		2.0	0.50	ng/L		06/29/24 08:01	07/04/24 22:05	1
Perfluorotetradecanoic acid (PFTeDA)	ND		2.0	0.50	ng/L		06/29/24 08:01	07/04/24 22:05	1
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	0.50	ng/L		06/29/24 08:01	07/04/24 22:05	1
Perfluoropentanesulfonic acid (PFPeS)	ND		2.0	0.50	ng/L		06/29/24 08:01	07/04/24 22:05	1
Perfluorohexanesulfonic acid (PFHxS)	ND		2.0	0.50	ng/L		06/29/24 08:01	07/04/24 22:05	1
Perfluoroheptanesulfonic acid (PFHpS)	ND		2.0	0.50	ng/L		06/29/24 08:01	07/04/24 22:05	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.0	0.50	ng/L		06/29/24 08:01	07/04/24 22:05	1
Perfluorononanesulfonic acid (PFNS)	ND		2.0	0.50	ng/L		06/29/24 08:01	07/04/24 22:05	1
Perfluorodecanesulfonic acid (PFDS)	ND		2.0	0.50	ng/L		06/29/24 08:01	07/04/24 22:05	1
Perfluorododecanesulfonic acid (PFDoS)	ND		2.0	0.50	ng/L		06/29/24 08:01	07/04/24 22:05	1
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	ND		8.0	2.0	ng/L		06/29/24 08:01	07/04/24 22:05	1
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	ND		8.0	2.0	ng/L		06/29/24 08:01	07/04/24 22:05	1
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	ND		8.0	2.0	ng/L		06/29/24 08:01	07/04/24 22:05	1
Perfluorooctanesulfonamide (PFOSA)	ND		2.0	0.50	ng/L		06/29/24 08:01	07/04/24 22:05	1
N-methylperfluorooctane sulfonamide (NMeFOSA)	ND		2.0	0.50	ng/L		06/29/24 08:01	07/04/24 22:05	1
N-ethylperfluorooctane sulfonamide (NEtFOSA)	ND		2.0	0.50	ng/L		06/29/24 08:01	07/04/24 22:05	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		2.0	0.50	ng/L		06/29/24 08:01	07/04/24 22:05	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		2.0	0.50	ng/L		06/29/24 08:01	07/04/24 22:05	1
N-methylperfluorooctane sulfonamidoethanol (NMeFOSE)	ND		20	5.0	ng/L		06/29/24 08:01	07/04/24 22:05	1
N-ethylperfluorooctane sulfonamidoethanol (NEtFOSE)	ND		20	5.0	ng/L		06/29/24 08:01	07/04/24 22:05	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		8.0	2.0	ng/L		06/29/24 08:01	07/04/24 22:05	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		8.0	2.0	ng/L		06/29/24 08:01	07/04/24 22:05	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	ND		4.0	1.0	ng/L		06/29/24 08:01	07/04/24 22:05	1
Perfluoro-4-methoxybutanoic acid (PFMBA)	ND		4.0	1.0	ng/L		06/29/24 08:01	07/04/24 22:05	1
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND		4.0	1.0	ng/L		06/29/24 08:01	07/04/24 22:05	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	ND		8.0	2.0	ng/L		06/29/24 08:01	07/04/24 22:05	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	ND		4.0	1.0	ng/L		06/29/24 08:01	07/04/24 22:05	1

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

Lab Sample ID: MB 320-775603/1-A
Matrix: Water
Analysis Batch: 776597

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 775603

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
3-Perfluoropropylpropanoic acid (3:3 FTCA)	ND		10	2.5	ng/L		06/29/24 08:01	07/04/24 22:05	1
3-Perfluoropentylpropanoic acid (5:3 FTCA)	ND		50	13	ng/L		06/29/24 08:01	07/04/24 22:05	1
3-Perfluoroheptylpropanoic acid (7:3 FTCA)	ND		50	13	ng/L		06/29/24 08:01	07/04/24 22:05	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*94.9*		*5 - 130*	*06/29/24 08:01*	*07/04/24 22:05*	*1*
13C5 PFPeA	*79.7*		*40 - 130*	*06/29/24 08:01*	*07/04/24 22:05*	*1*
13C5 PFHxA	*88.2*		*40 - 130*	*06/29/24 08:01*	*07/04/24 22:05*	*1*
13C4 PFHpA	*97.2*		*40 - 130*	*06/29/24 08:01*	*07/04/24 22:05*	*1*
13C8 PFOA	*90.2*		*40 - 130*	*06/29/24 08:01*	*07/04/24 22:05*	*1*
13C9 PFNA	*96.7*		*40 - 130*	*06/29/24 08:01*	*07/04/24 22:05*	*1*
13C6 PFDA	*107*		*40 - 130*	*06/29/24 08:01*	*07/04/24 22:05*	*1*
13C7 PFUnA	*93.5*		*30 - 130*	*06/29/24 08:01*	*07/04/24 22:05*	*1*
13C2 PFDoA	*102*		*10 - 130*	*06/29/24 08:01*	*07/04/24 22:05*	*1*
13C2 PFTeDA	*96.5*		*10 - 130*	*06/29/24 08:01*	*07/04/24 22:05*	*1*
13C3 PFBS	*91.3*		*40 - 135*	*06/29/24 08:01*	*07/04/24 22:05*	*1*
13C3 PFHxS	*82.8*		*40 - 130*	*06/29/24 08:01*	*07/04/24 22:05*	*1*
13C8 PFOS	*89.7*		*40 - 130*	*06/29/24 08:01*	*07/04/24 22:05*	*1*
13C8 PFOSA	*92.9*		*40 - 130*	*06/29/24 08:01*	*07/04/24 22:05*	*1*
d3-NMeFOSAA	*100*		*40 - 170*	*06/29/24 08:01*	*07/04/24 22:05*	*1*
d5-NEtFOSAA	*96.2*		*25 - 135*	*06/29/24 08:01*	*07/04/24 22:05*	*1*
13C2 4:2 FTS	*103*		*40 - 200*	*06/29/24 08:01*	*07/04/24 22:05*	*1*
13C2 6:2 FTS	*101*		*40 - 200*	*06/29/24 08:01*	*07/04/24 22:05*	*1*
13C2 8:2 FTS	*101*		*40 - 300*	*06/29/24 08:01*	*07/04/24 22:05*	*1*
13C3 HFPO-DA	*94.8*		*40 - 130*	*06/29/24 08:01*	*07/04/24 22:05*	*1*
d7-N-MeFOSE-M	*84.9*		*10 - 130*	*06/29/24 08:01*	*07/04/24 22:05*	*1*
d9-N-EtFOSE-M	*81.0*		*10 - 130*	*06/29/24 08:01*	*07/04/24 22:05*	*1*
d5-NEtPFOSA	*73.7*		*10 - 130*	*06/29/24 08:01*	*07/04/24 22:05*	*1*
d3-NMePFOSA	*71.7*		*10 - 130*	*06/29/24 08:01*	*07/04/24 22:05*	*1*

Lab Sample ID: LCS 320-775603/3-A
Matrix: Water
Analysis Batch: 776597

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 775603

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluorobutanoic acid (PFBA)	128	121		ng/L		94	70 - 140
Perfluoropentanoic acid (PFPeA)	64.0	58.9		ng/L		92	65 - 135
Perfluorohexanoic acid (PFHxA)	32.0	30.8		ng/L		96	70 - 145
Perfluoroheptanoic acid (PFHpA)	32.0	29.9		ng/L		94	70 - 150
Perfluorooctanoic acid (PFOA)	32.0	29.7		ng/L		93	70 - 150
Perfluorononanoic acid (PFNA)	32.0	31.8		ng/L		99	70 - 150
Perfluorodecanoic acid (PFDA)	32.0	29.1		ng/L		91	70 - 140
Perfluoroundecanoic acid (PFUnA)	32.0	31.0		ng/L		97	70 - 145
Perfluorododecanoic acid (PFDoA)	32.0	28.2		ng/L		88	70 - 140

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

Lab Sample ID: LCS 320-775603/3-A
Matrix: Water
Analysis Batch: 776597

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 775603

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluorotridecanoic acid (PFTrDA)	32.0	27.9		ng/L		87	65 - 140
Perfluorotetradecanoic acid (PFTeDA)	32.0	29.2		ng/L		91	60 - 140
Perfluorobutanesulfonic acid (PFBS)	28.4	27.4		ng/L		97	60 - 145
Perfluoropentanesulfonic acid (PFPeS)	30.1	29.5		ng/L		98	65 - 140
Perfluorohexanesulfonic acid (PFHxS)	29.2	27.2		ng/L		93	65 - 145
Perfluoroheptanesulfonic acid (PFHpS)	30.5	26.9		ng/L		88	70 - 150
Perfluorooctanesulfonic acid (PFOS)	29.8	27.4		ng/L		92	55 - 150
Perfluorononanesulfonic acid (PFNS)	30.8	28.7		ng/L		93	65 - 145
Perfluorodecanesulfonic acid (PFDS)	30.8	28.7		ng/L		93	60 - 145
Perfluorododecanesulfonic acid (PFDoS)	31.0	25.8		ng/L		83	50 - 145
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	120	113		ng/L		94	70 - 145
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	122	119		ng/L		98	65 - 155
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	123	125		ng/L		101	60 - 150
Perfluorooctanesulfonamide (PFOSA)	32.0	24.7		ng/L		77	70 - 145
N-methylperfluorooctane sulfonamide (NMeFOSA)	32.0	32.0		ng/L		100	60 - 150
N-ethylperfluorooctane sulfonamide (NEtFOSA)	32.0	31.2		ng/L		97	65 - 145
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	32.0	30.0		ng/L		94	50 - 140
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	32.0	28.7		ng/L		90	70 - 145
N-methylperfluorooctane sulfonamidoethanol (NMeFOSE)	320	291		ng/L		91	70 - 145
N-ethylperfluorooctane sulfonamidoethanol (NEtFOSE)	320	286		ng/L		89	70 - 135
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	128	117		ng/L		91	70 - 140
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	121	110		ng/L		91	65 - 145
Perfluoro-3-methoxypropanoic acid (PFMPA)	64.0	60.0		ng/L		94	55 - 140
Perfluoro-4-methoxybutanoic acid (PFMBA)	64.0	64.8		ng/L		101	60 - 150
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	64.0	64.7		ng/L		101	50 - 150
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	121	100		ng/L		83	55 - 160
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	57.1	52.8		ng/L		93	70 - 140

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

Lab Sample ID: LCS 320-775603/3-A
Matrix: Water
Analysis Batch: 776597

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 775603

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
3-Perfluoropropylpropanoic acid (3:3 FTCA)	160	154		ng/L		96	65 - 130
3-Perfluoropentylpropanoic acid (5:3 FTCA)	799	725		ng/L		91	70 - 135
3-Perfluoroheptylpropanoic acid (7:3 FTCA)	799	708		ng/L		89	50 - 145

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C4 PFBA	*96.0*		*5 - 130*
13C5 PFPeA	*78.8*		*40 - 130*
13C5 PFHxA	*89.2*		*40 - 130*
13C4 PFHpA	*92.4*		*40 - 130*
13C8 PFOA	*90.6*		*40 - 130*
13C9 PFNA	*101*		*40 - 130*
13C6 PFDA	*103*		*40 - 130*
13C7 PFUnA	*94.2*		*30 - 130*
13C2 PFDoA	*101*		*10 - 130*
13C2 PFTeDA	*93.1*		*10 - 130*
13C3 PFBS	*89.9*		*40 - 135*
13C3 PFHxS	*85.2*		*40 - 130*
13C8 PFOS	*97.8*		*40 - 130*
13C8 PFOSA	*94.3*		*40 - 130*
d3-NMeFOSAA	*101*		*40 - 170*
d5-NEtFOSAA	*99.4*		*25 - 135*
13C2 4:2 FTS	*95.9*		*40 - 200*
13C2 6:2 FTS	*99.5*		*40 - 200*
13C2 8:2 FTS	*97.6*		*40 - 300*
13C3 HFPO-DA	*95.1*		*40 - 130*
d7-N-MeFOSE-M	*86.9*		*10 - 130*
d9-N-EtFOSE-M	*83.1*		*10 - 130*
d5-NEtPFOSA	*75.5*		*10 - 130*
d3-NMePFOSA	*68.5*		*10 - 130*

Lab Sample ID: LLCS 320-775603/2-A
Matrix: Water
Analysis Batch: 776597

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 775603

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluorobutanoic acid (PFBA)	12.8	11.3		ng/L		88	70 - 140
Perfluoropentanoic acid (PFPeA)	6.40	5.52		ng/L		86	65 - 135
Perfluorohexanoic acid (PFHxA)	3.20	2.64		ng/L		83	70 - 145
Perfluoroheptanoic acid (PFHpA)	3.20	2.95		ng/L		92	70 - 150
Perfluorooctanoic acid (PFOA)	3.20	2.42		ng/L		76	70 - 150
Perfluorononanoic acid (PFNA)	3.20	3.04		ng/L		95	70 - 150
Perfluorodecanoic acid (PFDA)	3.20	2.60		ng/L		81	70 - 140
Perfluoroundecanoic acid (PFUnA)	3.20	2.98		ng/L		93	70 - 145
Perfluorododecanoic acid (PFDoA)	3.20	2.51		ng/L		78	70 - 140

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

Lab Sample ID: LLCS 320-775603/2-A
Matrix: Water
Analysis Batch: 776597

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 775603

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluorotridecanoic acid (PFTrDA)	3.20	2.59		ng/L		81	65 - 140
Perfluorotetradecanoic acid (PFTeDA)	3.20	2.69		ng/L		84	60 - 140
Perfluorobutanesulfonic acid (PFBS)	2.84	2.49		ng/L		88	60 - 145
Perfluoropentanesulfonic acid (PFPeS)	3.01	2.32		ng/L		77	65 - 140
Perfluorohexanesulfonic acid (PFHxS)	2.92	2.73		ng/L		94	65 - 145
Perfluoroheptanesulfonic acid (PFHpS)	3.05	2.27		ng/L		74	70 - 150
Perfluorooctanesulfonic acid (PFOS)	2.98	2.52		ng/L		85	55 - 150
Perfluorononanesulfonic acid (PFNS)	3.08	2.75		ng/L		89	65 - 145
Perfluorodecanesulfonic acid (PFDS)	3.08	2.49		ng/L		81	60 - 145
Perfluorododecanesulfonic acid (PFDoS)	3.10	2.90		ng/L		93	50 - 145
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	12.0	11.2		ng/L		93	70 - 145
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	12.2	11.7		ng/L		96	65 - 155
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	12.3	11.8		ng/L		96	60 - 150
Perfluorooctanesulfonamide (PFOSA)	3.20	2.32		ng/L		72	70 - 145
N-methylperfluorooctane sulfonamide (NMeFOSA)	3.20	2.47		ng/L		77	60 - 150
N-ethylperfluorooctane sulfonamide (NEtFOSA)	3.20	2.54		ng/L		79	65 - 145
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	3.20	2.71		ng/L		85	50 - 140
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	3.20	2.76		ng/L		86	70 - 145
N-methylperfluorooctane sulfonamidoethanol (NMeFOSE)	32.0	26.1		ng/L		82	70 - 145
N-ethylperfluorooctane sulfonamidoethanol (NEtFOSE)	32.0	25.8		ng/L		81	70 - 135
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	12.8	11.3		ng/L		88	70 - 140
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	12.1	10.4		ng/L		86	65 - 145
Perfluoro-3-methoxypropanoic acid (PFMPA)	6.40	5.18		ng/L		81	55 - 140
Perfluoro-4-methoxybutanoic acid (PFMBA)	6.40	5.96		ng/L		93	60 - 150
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	6.40	6.02		ng/L		94	50 - 150
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	12.1	9.08		ng/L		75	55 - 160
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	5.71	4.13		ng/L		72	70 - 140

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

Lab Sample ID: LLCS 320-775603/2-A
Matrix: Water
Analysis Batch: 776597

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 775603

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
3-Perfluoropropylpropanoic acid (3:3 FTCA)	16.0	14.3		ng/L		90	65 - 130
3-Perfluoropentylpropanoic acid (5:3 FTCA)	79.9	66.3		ng/L		83	70 - 135
3-Perfluoroheptylpropanoic acid (7:3 FTCA)	79.9	65.5		ng/L		82	50 - 145

Isotope Dilution	*LLCS %Recovery*	*LLCS Qualifier*	*Limits*
13C4 PFBA	*90.0*		*5 - 130*
13C5 PFPeA	*76.4*		*40 - 130*
13C5 PFHxA	*87.4*		*40 - 130*
13C4 PFHpA	*88.1*		*40 - 130*
13C8 PFOA	*93.5*		*40 - 130*
13C9 PFNA	*97.6*		*40 - 130*
13C6 PFDA	*103*		*40 - 130*
13C7 PFUnA	*89.7*		*30 - 130*
13C2 PFDoA	*98.5*		*10 - 130*
13C2 PFTeDA	*99.0*		*10 - 130*
13C3 PFBS	*85.9*		*40 - 135*
13C3 PFHxS	*77.6*		*40 - 130*
13C8 PFOS	*90.0*		*40 - 130*
13C8 PFOSA	*93.1*		*40 - 130*
d3-NMeFOSAA	*94.8*		*40 - 170*
d5-NEtFOSAA	*96.4*		*25 - 135*
13C2 4:2 FTS	*88.6*		*40 - 200*
13C2 6:2 FTS	*89.0*		*40 - 200*
13C2 8:2 FTS	*91.5*		*40 - 300*
13C3 HFPO-DA	*91.5*		*40 - 130*
d7-N-MeFOSE-M	*85.7*		*10 - 130*
d9-N-EtFOSE-M	*82.5*		*10 - 130*
d5-NEtPFOSA	*73.0*		*10 - 130*
d3-NMePFOSA	*69.4*		*10 - 130*

Lab Sample ID: MB 320-777242/1-A
Matrix: Water
Analysis Batch: 777673

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 777242

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	ND		8.0	2.0	ng/L		07/08/24 05:18	07/09/24 09:16	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*84.2*		*40 - 130*	*07/08/24 05:18*	*07/09/24 09:16*	*1*

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

Lab Sample ID: LCS 320-777242/3-A
Matrix: Water
Analysis Batch: 777673

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 777242

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)			120	117		ng/L		98	70 - 155		

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C3 HFPO-DA	*83.6*		*40 - 130*

Lab Sample ID: LCSD 320-777242/4-A
Matrix: Water
Analysis Batch: 777673

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 777242

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	107		ng/L		90	70 - 155	8	30

Isotope Dilution	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
13C3 HFPO-DA	*86.6*		*40 - 130*

Lab Sample ID: LLCS 320-777242/2-A
Matrix: Water
Analysis Batch: 777673

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 777242

Analyte			Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits		
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)			12.0	10.7		ng/L		89	70 - 155		

Isotope Dilution	*LLCS %Recovery*	*LLCS Qualifier*	*Limits*
13C3 HFPO-DA	*87.0*		*40 - 130*

Method: PPCP NEG - Pharmaceuticals and Personal Care Products (LC/MS/MS)

Lab Sample ID: MB 810-103678/10
Matrix: Water
Analysis Batch: 103678

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acesulfame K	ND		0.020	0.0020	ug/L			06/25/24 02:47	1
Sucralose	ND		0.10	0.014	ug/L			06/25/24 02:47	1

Method: 6010D - Metals (ICP)

Lab Sample ID: MB 590-48116/2-A
Matrix: Water
Analysis Batch: 48207

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 48116

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Magnesium	ND		0.50	0.13	mg/L		06/27/24 10:32	07/02/24 12:18	1
Potassium	ND		2.0	0.29	mg/L		06/27/24 10:32	07/02/24 12:18	1
Sodium	ND		2.0	0.20	mg/L		06/27/24 10:32	07/02/24 12:18	1

Method: 6010D - Metals (ICP)

Lab Sample ID: LCS 590-48116/1-A
Matrix: Water
Analysis Batch: 48207

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 48116

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Magnesium			25.0	22.5		mg/L		90	80 - 120		
Potassium			25.0	22.5		mg/L		90	80 - 135		
Sodium			25.0	26.1		mg/L		104	80 - 154		

Lab Sample ID: 590-25435-1 MS
Matrix: Water
Analysis Batch: 48207

Client Sample ID: MW-9A-061824
Prep Type: Total Recoverable
Prep Batch: 48116

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
Magnesium	15		25.0	35.9		mg/L		84	75 - 125		
Potassium	6.8		25.0	28.9		mg/L		88	75 - 125		
Sodium	41		25.0	64.6		mg/L		95	75 - 125		

Lab Sample ID: 590-25435-1 MSD
Matrix: Water
Analysis Batch: 48207

Client Sample ID: MW-9A-061824
Prep Type: Total Recoverable
Prep Batch: 48116

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Magnesium	15		25.0	35.7		mg/L		83	75 - 125	0	20
Potassium	6.8		25.0	28.8		mg/L		88	75 - 125	0	20
Sodium	41		25.0	64.5		mg/L		94	75 - 125	0	20

Lab Sample ID: 590-25435-1 DU
Matrix: Water
Analysis Batch: 48207

Client Sample ID: MW-9A-061824
Prep Type: Total Recoverable
Prep Batch: 48116

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Magnesium	15		14.8		mg/L		0.6	20
Potassium	6.8		6.75		mg/L		0.5	20
Sodium	41		40.9		mg/L		0	20

Lab Sample ID: MB 590-48117/2-B
Matrix: Water
Analysis Batch: 48207

Client Sample ID: Method Blank
Prep Type: Dissolved
Prep Batch: 48188

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	ND		1.0	0.20	mg/L		07/02/24 11:12	07/02/24 13:10	1
Magnesium	ND		0.50	0.13	mg/L		07/02/24 11:12	07/02/24 13:10	1

Lab Sample ID: LCS 590-48117/1-B
Matrix: Water
Analysis Batch: 48207

Client Sample ID: Lab Control Sample
Prep Type: Dissolved
Prep Batch: 48188

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Calcium			25.0	21.7		mg/L		87	80 - 120		
Magnesium			25.0	21.8		mg/L		87	80 - 120		

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

Lab Sample ID: 590-25435-1 MS
Matrix: Water
Analysis Batch: 48207

Client Sample ID: MW-9A-061824
Prep Type: Dissolved
Prep Batch: 48188

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Calcium	31	F1	25.0	48.9	F1	mg/L		70	75 - 125
Magnesium	13		25.0	32.3		mg/L		77	75 - 125

Lab Sample ID: 590-25435-1 MSD
Matrix: Water
Analysis Batch: 48207

Client Sample ID: MW-9A-061824
Prep Type: Dissolved
Prep Batch: 48188

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Calcium	31	F1	25.0	50.7		mg/L		77	75 - 125	4	20
Magnesium	13		25.0	33.5		mg/L		82	75 - 125	4	20

Lab Sample ID: 590-25435-1 DU
Matrix: Water
Analysis Batch: 48207

Client Sample ID: MW-9A-061824
Prep Type: Dissolved
Prep Batch: 48188

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Calcium	31	F1	31.3		mg/L		0.6	20
Magnesium	13		13.0		mg/L		0.6	20

Method: 6020B - Metals (ICP/MS)

Lab Sample ID: MB 580-463083/11-B
Matrix: Water
Analysis Batch: 463405

Client Sample ID: Method Blank
Prep Type: Dissolved
Prep Batch: 463243

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	ND		0.50	0.067	mg/L		06/25/24 15:33	06/26/24 12:13	5
Manganese	ND		0.010	0.0023	mg/L		06/25/24 15:33	06/26/24 12:13	5

Lab Sample ID: LCS 580-463083/12-B
Matrix: Water
Analysis Batch: 463405

Client Sample ID: Lab Control Sample
Prep Type: Dissolved
Prep Batch: 463243

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Iron	20.0	19.8		mg/L		99	80 - 120
Manganese	1.00	0.978		mg/L		98	80 - 120

Lab Sample ID: LCSD 580-463083/13-B
Matrix: Water
Analysis Batch: 463405

Client Sample ID: Lab Control Sample Dup
Prep Type: Dissolved
Prep Batch: 463243

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Iron	20.0	20.0		mg/L		100	80 - 120	1	20
Manganese	1.00	0.992		mg/L		99	80 - 120	1	20

Method: 350.1 - Nitrogen, Ammonia

Lab Sample ID: MB 280-657963/19
Matrix: Water
Analysis Batch: 657963

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			06/21/24 11:34	1

Lab Sample ID: LCS 280-657963/20
Matrix: Water
Analysis Batch: 657963

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	2.47		mg/L		99	90 - 110

Method: SM 2320B - Alkalinity

Lab Sample ID: MB 590-48087/1
Matrix: Water
Analysis Batch: 48087

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			06/26/24 09:37	1
Bicarbonate Alkalinity as CaCO3	5.00	J	20	5.0	mg/L			06/26/24 09:37	1

Lab Sample ID: LCS 590-48087/2
Matrix: Water
Analysis Batch: 48087

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Alkalinity	501	475		mg/L		95	90 - 110

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

Lab Sample ID: MB 590-48060/1
Matrix: Water
Analysis Batch: 48060

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			06/24/24 15:51	1

Lab Sample ID: LCS 590-48060/2
Matrix: Water
Analysis Batch: 48060

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	500	500		mg/L		100	80 - 120

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

Lab Sample ID: MB 280-658294/36
Matrix: Water
Analysis Batch: 658294

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			06/24/24 22:53	1

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

Lab Sample ID: LCS 280-658294/35
Matrix: Water
Analysis Batch: 658294

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	25.2		mg/L		101	88 - 112		

Lab Chronicle

Client: GeoEngineers Inc
Project/Site: Marshall Landfill

Job ID: 590-25435-1

Client Sample ID: MW-9A-061824

Date Collected: 06/18/24 13:25
Date Received: 06/18/24 16:27

Lab Sample ID: 590-25435-1

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	300.0		1	5 mL	5 mL	47983	06/19/24 17:28	NMI	EET SPK
Total/NA	Analysis	300.0		1	5 mL	5 mL	47984	06/19/24 17:28	NMI	EET SPK
Total/NA	Analysis	300.0		1	5 mL	5 mL	47992	06/20/24 14:45	NMI	EET SPK
Total/NA	Prep	1633			598.6 mL	5.0 mL	775603	06/29/24 08:01	WVD	EET SAC
Total/NA	Analysis	Draft-4 1633		1	1 mL	1 mL	776597	07/05/24 00:29	EMF	EET SAC
Total/NA	Prep	1633	RE		593 mL	5.0 mL	777242	07/08/24 05:18	GAT	EET SAC
Total/NA	Analysis	Draft-4 1633	RE	1	1 mL	1 mL	777673	07/09/24 10:58	K1D	EET SAC
Total/NA	Analysis	PPCP NEG		1	1 mL	1 mL	103678	06/25/24 03:43	BS	EA SB
Total/NA	Analysis	PPCP NEG	DL	10	1 mL	1 mL	103678	06/25/24 15:24	BS	EA SB
Dissolved	Filtration	FILTRATION			50 mL	50 mL	48117	06/27/24 10:48	AMB	EET SPK
Dissolved	Prep	3005A			50 mL	50 mL	48188	07/02/24 11:12	AMB	EET SPK
Dissolved	Analysis	6010D		1			48207	07/02/24 13:14	AMB	EET SPK
Total Recoverable	Prep	3005A			50 mL	50 mL	48116	06/27/24 10:32	AMB	EET SPK
Total Recoverable	Analysis	6010D		1			48207	07/02/24 12:22	AMB	EET SPK
Dissolved	Filtration	FILTRATION			250 mL	250 mL	463083	06/24/24 10:04	TMH	EET SEA
Dissolved	Prep	3005A			50 mL	50 mL	463243	06/25/24 15:33	MCMS	EET SEA
Dissolved	Analysis	6020B		5			463405	06/26/24 12:42	TMH	EET SEA
Total/NA	Analysis	350.1		1	10 mL	10 mL	657963	06/21/24 11:51	LBR	EET DEN
Total/NA	Analysis	SM 2320B		1	100 mL	100 mL	48087	06/26/24 09:37	RMA	EET SPK
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	48060	06/24/24 15:52	RMA	EET SPK
Total/NA	Analysis	SM 5310B		1	20 mL	20 mL	658294	06/25/24 04:52	ABW	EET DEN

Client Sample ID: MW-8A-061824

Date Collected: 06/18/24 14:40
Date Received: 06/18/24 16:27

Lab Sample ID: 590-25435-2

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	300.0		1	5 mL	5 mL	47983	06/19/24 17:38	NMI	EET SPK
Total/NA	Analysis	300.0		1	5 mL	5 mL	47984	06/19/24 17:38	NMI	EET SPK
Total/NA	Analysis	300.0		1	5 mL	5 mL	47992	06/20/24 14:55	NMI	EET SPK
Total/NA	Prep	1633			595.8 mL	5.0 mL	775603	06/29/24 08:01	WVD	EET SAC
Total/NA	Analysis	Draft-4 1633		1	1 mL	1 mL	776597	07/05/24 00:49	EMF	EET SAC
Total/NA	Prep	1633	RE		586.3 mL	5.0 mL	777242	07/08/24 05:18	GAT	EET SAC
Total/NA	Analysis	Draft-4 1633	RE	1	1 mL	1 mL	777673	07/09/24 11:19	K1D	EET SAC
Total/NA	Analysis	PPCP NEG		1	1 mL	1 mL	103678	06/25/24 04:11	BS	EA SB
Dissolved	Filtration	FILTRATION			50 mL	50 mL	48117	06/27/24 10:48	AMB	EET SPK
Dissolved	Prep	3005A			50 mL	50 mL	48188	07/02/24 11:12	AMB	EET SPK
Dissolved	Analysis	6010D		1			48207	07/02/24 13:39	AMB	EET SPK
Total Recoverable	Prep	3005A			50 mL	50 mL	48116	06/27/24 10:32	AMB	EET SPK
Total Recoverable	Analysis	6010D		1			48207	07/02/24 12:46	AMB	EET SPK
Dissolved	Filtration	FILTRATION			250 mL	250 mL	463083	06/24/24 10:04	TMH	EET SEA
Dissolved	Prep	3005A			50 mL	50 mL	463243	06/25/24 15:33	MCMS	EET SEA
Dissolved	Analysis	6020B		5			463405	06/26/24 12:38	TMH	EET SEA

Lab Chronicle

Client: GeoEngineers Inc
Project/Site: Marshall Landfill

Job ID: 590-25435-1

Client Sample ID: MW-8A-061824

Date Collected: 06/18/24 14:40
Date Received: 06/18/24 16:27

Lab Sample ID: 590-25435-2

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	350.1		1	10 mL	10 mL	657963	06/21/24 11:53	LBR	EET DEN
Total/NA	Analysis	SM 2320B		1	100 mL	100 mL	48087	06/26/24 09:37	RMA	EET SPK
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	48060	06/24/24 15:52	RMA	EET SPK
Total/NA	Analysis	SM 5310B		1	20 mL	20 mL	658294	06/25/24 05:06	ABW	EET DEN

Laboratory References:

EA SB = Eurofins Eaton Analytical South Bend, 110 S Hill Street, South Bend, IN 46617, TEL (574)233-4777
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: 590-25435-1

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	01-07-25

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 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	10-31-25
A2LA	ISO/IEC 17025	2907.01	10-31-25
Alabama	State Program	40730	09-30-12 *
Alaska (UST)	State	18-001	06-26-24
Arizona	State	AZ0713	07-30-24
Arkansas DEQ	State	19-047-0	04-21-25
California	State	2513	01-08-25
Colorado	Petroleum Storage Tank Program	4025 (or)	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	2000172024-9	05-31-25
Iowa	State	370	08-04-24
Kansas	NELAP	E-10166	04-30-25
Kentucky (WW)	State	KY98047	12-31-24
Louisiana	NELAP	30785	06-30-14 *
Louisiana (All)	NELAP	30785	06-30-25
Minnesota	NELAP	1788752	08-20-24
Nevada	State	CO000262024-08	07-31-24
New Hampshire	NELAP	2053	08-12-24
New Jersey	NELAP	230001	06-30-24
New York	NELAP	59923	04-01-25
Oklahoma	NELAP	8614	08-31-24
Oregon	NELAP	4025	07-16-24
Pennsylvania	NELAP	013	07-08-24
South Carolina	State	72002001	01-08-24 *
Texas	NELAP	TX104704183-08-TX	09-30-09 *
Texas	NELAP	T104704183-23-23	09-30-24
USDA	US Federal Programs	P330-20-00065	12-19-25
Utah	NELAP	QUAN5	06-30-13 *
Utah	NELAP	CO000262019-11	07-31-25
Virginia	NELAP	460232	06-30-24
Washington	State	C583	08-03-24
West Virginia DEP	State	354	11-30-24
Wisconsin	State	999615430	08-19-24
Wyoming (UST)	A2LA	2907.01	10-31-25

Laboratory: Eurofins Eaton Analytical South Bend

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: 590-25435-1

Laboratory: Eurofins Eaton Analytical South Bend (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
A2LA	ISO/IEC 17025	5794.01	07-21-24
Alabama	State	40700	06-30-24
Alaska	State	IN00035	06-30-24
Arizona	State	AZ0432	07-25-24
Arkansas (DW)	State	EPA IN00035	06-30-24
California	State	2920	06-30-24
Colorado	State	IN00035	08-05-24
Connecticut	State	PH-0132	07-08-24
Delaware (DW)	State	IN00035	06-27-24
Florida	NELAP	E87775	06-30-24
Georgia (DW)	State	929	06-30-24
Guam	State	23-011R	07-15-24
Hawaii	State	IN035	06-30-24
Idaho (DW)	State	IN00035	08-15-24
IL Dept. of Public Health (Micro)	State	17767	06-30-24
Illinois	NELAP	200001	09-19-24
Indiana	State	C-71-01	12-31-25
Indiana (Micro)	State	M-76-07	12-31-25
Iowa	State	IA Lab #098	08-01-24
Kansas	NELAP	E-10233	10-31-24
Kentucky (DW)	State	KY90056	08-12-24
Louisiana (DW)	State	LA014	07-16-24
Maine	State	IN00035	05-01-25
Maryland	State	209	06-27-24
Massachusetts	State	M-IN035	07-30-24
MI - RadChem Recognition	State	9926	06-26-24
Michigan	State	9926	06-26-24
Minnesota	NELAP	1989807	12-31-24
Mississippi	State	IN00035	06-30-24
Missouri	State	880	09-30-24
Montana (DW)	State	CERT0026	07-16-24
Nebraska	State	NE-OS-05-04	06-30-24
Nevada	State	IN000352024-01	07-31-24
New Hampshire	NELAP	2124	11-05-24
New Jersey	NELAP	IN598	06-30-24
New Mexico	State	IN00035	06-30-24
New York	NELAP	11398	04-01-25
North Carolina (DW)	State	18700	06-30-24
North Dakota	State	R-035	06-30-24
Northern Mariana Islands (DW)	State	IN00035	06-30-24
Ohio	State	87775	06-27-24
Oklahoma	NELAP	D9508	08-31-24
Oregon	NELAP	4156	09-16-24
Pennsylvania	NELAP	68-00466	04-30-25
Puerto Rico	State	IN00035	07-10-24
Rhode Island	State	LAO00343	07-21-24
South Carolina	State	95005001	06-30-24
South Dakota (DW)	State	IN00035	06-30-24
Tennessee	State	TN02973	06-30-24
Texas	NELAP	T104704187-22-16	12-31-24

Accreditation/Certification Summary

Client: GeoEngineers Inc
Project/Site: Marshall Landfill

Job ID: 590-25435-1

Laboratory: Eurofins Eaton Analytical South Bend (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
Texas	TCEQ Water Supply	TX207	06-30-24
USEPA Reg X SDWA	US Federal Programs	IN00035	08-24-24
USEPA UCMR 5	US Federal Programs	IN00035	12-31-25
Utah	NELAP	IN00035	07-31-24
Vermont	State	VT-8775	07-16-24
Virginia	NELAP	460275	07-31-24
Washington	State	C837	01-01-25
West Virginia (DW)	State	9927 C	08-19-24
Wisconsin	State	999766900	08-31-24
Wisconsin (Micro)	State	10121	12-31-24
Wyoming	State	8TMS-L	06-30-24

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	02-20-27
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	05-18-25
California	State	2897	01-31-26
Colorado	State	CA00044	08-31-24
Florida	NELAP	E87570	06-30-25
Georgia	State	4040	01-29-25
Hawaii	State	Eurofins Sacramento	01-29-25
Illinois	NELAP	200060	03-31-25
Kansas	NELAP	E-10375	10-31-25
Louisiana	NELAP	01944	06-30-25
Louisiana (All)	NELAP	01944	06-30-25
Maine	State	CA00004	04-14-26
Michigan	State	9947	08-18-24
Nevada	State	CA00044	07-31-24
New Hampshire	NELAP	2997	04-19-25
New Jersey	NELAP	CA005	06-30-25
New York	NELAP	11666	04-01-25
Ohio	State	41252	01-29-25
Oregon	NELAP	4040	07-16-24
Texas	NELAP	T104704399-23-17	05-31-25
US Fish & Wildlife	US Federal Programs	A22139	04-30-25
USDA	US Federal Programs	P330-18-00239	02-28-26
Utah	NELAP	CA000442023-16	02-28-25
Virginia	NELAP	460278	03-14-25
Washington	State	C581	05-05-25
West Virginia (DW)	State	9930C	01-31-25
Wisconsin	State	998204680	08-07-24
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: 590-25435-1

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	08-07-24
ANAB	Dept. of Energy	L2236	08-07-24
ANAB	ISO/IEC 17025	L2236	08-07-24
California	State	2954	07-07-24
Florida	NELAP	E87575	06-30-24
Louisiana	NELAP	03073	06-30-24
Louisiana (All)	NELAP	03073	06-30-24
Maine	State	WA01273	05-02-26
Montana (UST)	State	NA	04-14-27
New Jersey	NELAP	WA014	06-30-24
New York	NELAP	11662	04-01-25
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	C788-24	07-13-24
Wisconsin	State	399133460	08-31-24

Method Summary

Client: GeoEngineers Inc
Project/Site: Marshall Landfill

Job ID: 590-25435-1

Method	Method Description	Protocol	Laboratory
300.0	Anions, Ion Chromatography	EPA	EET SPK
Draft-4 1633	Per- and Polyfluoroalkyl Substances by LC/MS/MS	EPA	EET SAC
PPCP NEG	Pharmaceuticals and Personal Care Products (LC/MS/MS)	Lab SOP	EA SB
6010D	Metals (ICP)	SW846	EET SPK
6020B	Metals (ICP/MS)	SW846	EET SEA
350.1	Nitrogen, Ammonia	EPA	EET DEN
SM 2320B	Alkalinity	SM	EET SPK
SM 2540C	Solids, Total Dissolved (TDS)	SM	EET SPK
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
FILTRATION	Sample Filtration	None	EET SEA
FILTRATION	Sample Filtration	None	EET SPK

Protocol References:

EPA = US Environmental Protection Agency
Lab SOP = Laboratory Standard Operating Procedure
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:

EA SB = Eurofins Eaton Analytical South Bend, 110 S Hill Street, South Bend, IN 46617, TEL (574)233-4777
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 E 1st Avenue

Spokane, WA 99206-5302
phone 509.924.9200 fax 509.924.9290

Chain of Custody Record

eurofins | Environment Testing America

Regulatory Program ☐ DW ☐ NPDES ☐ RCRA ☐ Other

Eurofins Environment Testing America

Client Contact	**Project Manager:** Sydney Bronson	COC No:
GeoEngineers, Inc.	Email sbronson@geoengineers.com	Site Contact: / Date	___ of ___ COCs
523 E 2nd Ave	Tel/Fax: 509.570.0779	Lab Contact: / Carrier:	TALS Project #:
Spokane, WA 99202	**Analysis Turnaround Time**		Sampler:
509.363.3125 Phone	☐ CALENDAR DAYS ☐ WORKING DAYS		**For Lab Use Only:**
FAX	TAT if different from Below ___		Walk-in Client:
Project Name: Marshall Landfill GWM	☒ 2 weeks		Lab Sampling:
Site: Marshall Landfill Site Design	☐ 1 week		Job / SDG No.
P O # 0504-104-01	☐ 2 days ☐ 1 day		

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS / MSD (Y/N)	PFAS / EPA 1633	Ammonia as N / EPA 350.1	Alkalinity bicarbonate / SM 2320B	TDS / SM 2540C	TOC / SM 5310B	Total K, Mg, Na / EPA 6010D	Dissolved Ca, Mg / EPA 6010D	Chloride, sulfate, nitrate, nitrite / EPA 300.0	Diss. Fe Mn / EPA 6020B	Total Hg / EPA 7470A	Diss Hg / 7470A	Total As, Cd, Fe, Mn, Pb, Zn / EPA 6020B	Diss As, Cd, Fe, Mn, Pb, Zn / EPA 6020B	Artificial Sweeteners (acesulfame K, sucralose	PCE, 1,1,1 TCA / EPA 8260D	1,4-dioxane / EPA 8270E SIM	Sample Specific Notes:
MW-9A-061824	6-18-24	13 25	G	W				X	X	X	X	X	X	X	X	X						X		
MW-8B-061824	6-18-24	14:40	G	W				X	X	X	X	X	X	X	X	X						X		

590-25435 Chain of Custody

Preservation Used. 1= Ice, 2= HCl; 3= H_2SO_4; 4=HNO_3; 5=NaOH, 6= Other ___

Possible Hazard Identification:
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.

☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

☐ Return to Client ☐ Disposal by Lab ☐ Archive for ___ Months

Special Instructions/QC Requirements & Comments:
DISSOLVED METALS LAB FILTERED

Custody Seals Intact: ☐ Yes ☐ No | Custody Seal No. | Cooler Temp. (°C): Obs'd: 4.3 Corr'd: 4.4 | Therm ID No.: IR006

Relinquished by:	Company: GEOENGINEERS	Date/Time: 06/18/24 1626	Received by:	Company: EE? SPO	Date/Time: 6/18/24 16:27
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:

8/28/2024 (Rev. 1)

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: 590-9305.1
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 #: 590-25435-1
Address: 4955 Yarrow Street, ,	Due Date Requested: 7/1/2024			
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: -

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	Total Number of containers	Special Instructions/Note:
Preservation Code:										
MW-9A-061824 (590-25435-1)	6/18/24	13:25 Pacific		Water			X	X	2	
MW-8B-061824 (590-25435-2)	6/18/24	14:40 Pacific		Water			X	X	2	

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

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

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
	6/19/24 15:23	EEC8PD			
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
				6-20-24 0910	EE7DEN
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°C NAC1ACF0.2

Ver: 04/02/2024

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: 590-9318 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 #: 590-25435-1
Address: 880 Riverside Parkway, ,	Due Date Requested: 7/1/2024			
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: -

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-9A-061824 (590-25435-1)	6/18/24	13:25 Pacific		Water			X	3	
MW-8B-061824 (590-25435-2)	6/18/24	14.40 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		6/20/24 15:55	EET SO		6.21.24 930	EET TO
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	Cooler Temperature(s) °C and Other Remarks:
	0074644	1.3c

Ver: 04/02/2024

8/28/2024 (Rev. 1)

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: 590-9307.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: Randee.Arrington@et.eurofinsus.com	State of Origin: Washington	Page: Page 1 of 1
Company: Eurofins Eaton Analytical		Accreditations Required (See note): State Program - Washington		Job #: 590-25435-1
Address: 110 S Hill Street, ,	Due Date Requested: 7/1/2024			Preservation Codes: -
City: South Bend	TAT Requested (days):			
State, Zip: IN, 46617				
Phone: 574-233-4777(Tel) 574-233-8207(Fax)	PO #:			
Email:	WO #:			
Project Name: Marshall Landfill	Project #: 59002669			
Site:	SSOW#:			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)	LCMS_PPCP_NEG/ (MOD) Acesulfame K & Sucralose	Total Number of containers	Special Instructions/Note:
			Preservation Code:						
MW-9A-061824 (590-25435-1)	6/18/24	13:25 Pacific		Water			X	2	
MW-8B-061824 (590-25435-2)	6/18/24	14:40 Pacific		Water			X	2	

Analysis Requested

pH Acceptable

Temp: 1.8 2.0
Cool Temp:
Lot #: 24

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
	6/19/24 1945	EET SO		6-20-24 0900	
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

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

Ver: 04/02/2024

Login Sample Receipt Checklist

Client: GeoEngineers Inc

Job Number: 590-25435-1

Login Number: 25435
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: 590-25435-1

Login Number: 25435
List Number: 3
Creator: Held, Wesley

List Source: Eurofins Denver
List Creation: 06/20/24 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.	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?	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.	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").	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: 590-25435-1

Login Number: 25435
List Number: 2
Creator: Moore, Gary

List Source: Eurofins Eaton Analytical South Bend
List Creation: 06/20/24 09:36 AM

Question	Answer	Comment
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	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	
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	
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	
Samples do not require splitting or compositing.	True	
Container provided by EEA	True	

Login Sample Receipt Checklist

Client: GeoEngineers Inc

Job Number: 590-25435-1

Login Number: 25435
List Number: 5
Creator: Simmons, Jason C

List Source: Eurofins Sacramento
List Creation: 06/21/24 02:30 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	2274641
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	1.3c
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: 590-25435-1

Login Number: 25435
List Number: 4
Creator: Martinez, Lanea

List Source: Eurofins Seattle
List Creation: 06/21/24 11:08 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	IR14 1.0c/0.7c
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.	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)

Job _____

590 25435 Field Sheet

Tracking # 7391 0416 9643

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: L-11 Corr. Factor (+ / -) _____ °C

Ice 1 Wet 1 Gel _____ Other _____

Cooler Custody Seal: 0074641

Cooler ID: _____

Temp Observed: 1.3 °C Corrected 1.3 °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 _____ Date 6.21.24

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 _____ Date 6.21.24

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 _____ Date 6.21.24

Isotope Dilution Summary

Client: GeoEngineers Inc
Project/Site: Marshall Landfill

Job ID: 590-25435-1

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)
590-25435-1	MW-9A-061824	86.9	71.4	80.0	80.3	86.9	93.0	91.2	73.5
590-25435-1 - RE	MW-9A-061824								
590-25435-2	MW-8A-061824	96.6	74.0	90.7	87.4	90.9	96.2	107	88.5
590-25435-2 - RE	MW-8A-061824								
LCS 320-775603/3-A	Lab Control Sample	96.0	78.8	89.2	92.4	90.6	101	103	94.2
LCS 320-777242/3-A	Lab Control Sample								
LCSD 320-777242/4-A	Lab Control Sample Dup								
LLCS 320-775603/2-A	Lab Control Sample	90.0	76.4	87.4	88.1	93.5	97.6	103	89.7
LLCS 320-777242/2-A	Lab Control Sample								
MB 320-775603/1-A	Method Blank	94.9	79.7	88.2	97.2	90.2	96.7	107	93.5
MB 320-777242/1-A	Method Blank								

		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)
590-25435-1	MW-9A-061824	72.3	70.4	83.8	78.7	79.2	87.1	78.3	78.8
590-25435-1 - RE	MW-9A-061824								
590-25435-2	MW-8A-061824	95.1	89.9	85.2	78.4	90.6	96.0	91.4	88.8
590-25435-2 - RE	MW-8A-061824								
LCS 320-775603/3-A	Lab Control Sample	101	93.1	89.9	85.2	97.8	94.3	101	99.4
LCS 320-777242/3-A	Lab Control Sample								
LCSD 320-777242/4-A	Lab Control Sample Dup								
LLCS 320-775603/2-A	Lab Control Sample	98.5	99.0	85.9	77.6	90.0	93.1	94.8	96.4
LLCS 320-777242/2-A	Lab Control Sample								
MB 320-775603/1-A	Method Blank	102	96.5	91.3	82.8	89.7	92.9	100	96.2
MB 320-777242/1-A	Method Blank								

		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)
590-25435-1	MW-9A-061824	89.0	88.4	75.9	84.8	65.6	61.1	55.3	56.4
590-25435-1 - RE	MW-9A-061824				83.7				
590-25435-2	MW-8A-061824	92.3	95.6	86.7	86.1	81.1	75.8	70.5	69.0
590-25435-2 - RE	MW-8A-061824				84.1				
LCS 320-775603/3-A	Lab Control Sample	95.9	99.5	97.6	95.1	86.9	83.1	75.5	68.5
LCS 320-777242/3-A	Lab Control Sample				83.6				
LCSD 320-777242/4-A	Lab Control Sample Dup				86.6				
LLCS 320-775603/2-A	Lab Control Sample	88.6	89.0	91.5	91.5	85.7	82.5	73.0	69.4
LLCS 320-777242/2-A	Lab Control Sample				87.0				
MB 320-775603/1-A	Method Blank	103	101	101	94.8	84.9	81.0	73.7	71.7
MB 320-777242/1-A	Method Blank				84.2				

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

Isotope Dilution Summary

Client: GeoEngineers Inc
Project/Site: Marshall Landfill

Job ID: 590-25435-1

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

eurofins | Environment Testing

1 2 3 4 5 6 7 8 9 10 11 12 13 14

ANALYTICAL REPORT

PREPARED FOR

Attn: Sydney Bronson
GeoEngineers Inc
523 East Second Ave
Spokane, Washington 99202

Generated 8/28/2024 11:32:42 AM Revision 2

JOB DESCRIPTION

Marshall Landfill

JOB NUMBER

590-25447-1

Eurofins Spokane
11922 East 1st Ave
Spokane WA 99206

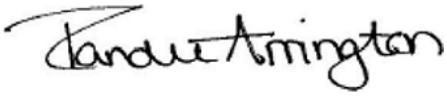
See page two for job notes and contact information.

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



Generated
8/28/2024 11:32:42 AM
Revision 2

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

Table of Contents

Job Narrative
590-25447-1

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.

Revision
The report being provided is a revision of the original report sent on 7/12/2024. The report (revision 1) is being revised due to: revised COC that was provided by client on 6/20/24 was added to the final report.

Revision
The report being provided is a revision of the original report sent on 7/12/2024. The report (revision 2) is being revised due to: revised the following client sample IDs per the clients request:

MW-15-061924 revised to MW-15A-061924 (590-25447-3)

Receipt
The samples were received on 6/19/2024 4:17 PM. 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 3.8°C and 11.5°C.

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

GC/MS Semi VOA
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.

LCMS
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 320-775603.

Method 1633: The following samples in preparation batch 320-775603 were yellow in color following extraction. MW-15-061924 (590-25447-3)

Method 1633: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate/sample duplicate (MS/MSD/DUP) associated with preparation batch 320-777242.

Method 1633: The following samples in preparation batch 320-777242 were light green in color following extraction. MW-15-061924 (590-25447-3)

Method 1633: Elevated reporting limits are provided for the following samples due to RX status; Existing samples consumed or spiked in previous extraction: MW-7B-061924 (590-25447-1).

Method 1633: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-777797.

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

Metals
Method 6010D - Dissolved: The low level initial calibration verification (ICVL) associated with batch 590-48256 recovered above the upper control limit for Potassium and Sodium. The samples associated with this ICVL were 10x the spike amount or non-detects for the affected analytes; therefore, the data have been reported.

Method 6010D - Total Recoverable: The low level initial calibration verification (ICVL) associated with batch 590-48256 recovered above the upper control limit for Potassium and Sodium. The samples associated with this ICVL were 10x the spike amount 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 590-48087 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: 590-25447-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
590-25447-1	MW-7B-061924	Water	06/19/24 09:15	06/19/24 16:17
590-25447-2	MW-12A-061924	Water	06/19/24 11:40	06/19/24 16:17
590-25447-3	MW-15A-061924	Water	06/19/24 13:40	06/19/24 16:17

Qualifiers

GC/MS Semi VOA

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

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
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
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 Sample ID: MW-7B-061924

Date Collected: 06/19/24 09:15
Date Received: 06/19/24 16:17

Lab Sample ID: 590-25447-1

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-Trichloroethane	ND		1.0	0.17	ug/L			06/24/24 13:58	1
Tetrachloroethene	ND		1.0	0.22	ug/L			06/24/24 13:58	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*98*		*80 - 120*		*06/24/24 13:58*	*1*
4-Bromofluorobenzene (Surr)	*88*		*76 - 120*		*06/24/24 13:58*	*1*
Dibromofluoromethane (Surr)	*118*		*80 - 123*		*06/24/24 13:58*	*1*
Toluene-d8 (Surr)	*104*		*80 - 120*		*06/24/24 13:58*	*1*

Method: SW846 8270C SIM ID - Semivolatile Organic Compounds (GC/MS SIM / Isotope Dilution)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	**0.078**	**J**	0.21	0.037	ug/L		06/25/24 08:16	06/26/24 18:28	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,4-Dioxane-d8	*52*		*40 - 140*	*06/25/24 08:16*	*06/26/24 18:28*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**0.62**	**J**	0.80	0.42	mg/L			06/20/24 15:05	1
Nitrate as N	ND		0.20	0.057	mg/L			06/20/24 15:05	1
Nitrite as N	ND		0.20	0.069	mg/L			06/20/24 15:05	1
Sulfate	**3.3**		0.50	0.13	mg/L			06/20/24 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)	**5.9**	**J**	6.7	1.7	ng/L		06/29/24 08:01	07/05/24 01:50	1
Perfluoropentanoic acid (PFPeA)	**5.6**		3.3	0.83	ng/L		06/29/24 08:01	07/05/24 01:50	1
Perfluorohexanoic acid (PFHxA)	**1.9**		1.7	0.42	ng/L		06/29/24 08:01	07/05/24 01:50	1
Perfluoroheptanoic acid (PFHpA)	**0.93**	**J**	1.7	0.42	ng/L		06/29/24 08:01	07/05/24 01:50	1
Perfluorooctanoic acid (PFOA)	ND		1.7	0.42	ng/L		06/29/24 08:01	07/05/24 01:50	1
Perfluorononanoic acid (PFNA)	ND		1.7	0.42	ng/L		06/29/24 08:01	07/05/24 01:50	1
Perfluorodecanoic acid (PFDA)	ND		1.7	0.42	ng/L		06/29/24 08:01	07/05/24 01:50	1
Perfluoroundecanoic acid (PFUnA)	ND		1.7	0.42	ng/L		06/29/24 08:01	07/05/24 01:50	1
Perfluorododecanoic acid (PFDoA)	ND		1.7	0.42	ng/L		06/29/24 08:01	07/05/24 01:50	1
Perfluorotridecanoic acid (PFTrDA)	ND		1.7	0.42	ng/L		06/29/24 08:01	07/05/24 01:50	1
Perfluorotetradecanoic acid (PFTeDA)	ND		1.7	0.42	ng/L		06/29/24 08:01	07/05/24 01:50	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.7	0.42	ng/L		06/29/24 08:01	07/05/24 01:50	1
Perfluoropentanesulfonic acid (PFPeS)	ND		1.7	0.42	ng/L		06/29/24 08:01	07/05/24 01:50	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.7	0.42	ng/L		06/29/24 08:01	07/05/24 01:50	1
Perfluoroheptanesulfonic acid (PFHpS)	ND		1.7	0.42	ng/L		06/29/24 08:01	07/05/24 01:50	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.7	0.42	ng/L		06/29/24 08:01	07/05/24 01:50	1
Perfluorononanesulfonic acid (PFNS)	ND		1.7	0.42	ng/L		06/29/24 08:01	07/05/24 01:50	1
Perfluorodecanesulfonic acid (PFDS)	ND		1.7	0.42	ng/L		06/29/24 08:01	07/05/24 01:50	1
Perfluorododecanesulfonic acid (PFDoS)	ND		1.7	0.42	ng/L		06/29/24 08:01	07/05/24 01:50	1
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	ND		6.7	1.7	ng/L		06/29/24 08:01	07/05/24 01:50	1
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	ND		6.7	1.7	ng/L		06/29/24 08:01	07/05/24 01:50	1
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	ND		6.7	1.7	ng/L		06/29/24 08:01	07/05/24 01:50	1

Client: GeoEngineers Inc
Project/Site: Marshall Landfill

Job ID: 590-25447-1

Client Sample ID: MW-7B-061924
Date Collected: 06/19/24 09:15
Date Received: 06/19/24 16:17

Lab Sample ID: 590-25447-1
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
Perfluorooctanesulfonamide (PFOSA)	ND		1.7	0.42	ng/L		06/29/24 08:01	07/05/24 01:50	1
N-methylperfluorooctane sulfonamide (NMeFOSA)	ND		1.7	0.42	ng/L		06/29/24 08:01	07/05/24 01:50	1
N-ethylperfluorooctane sulfonamide (NEtFOSA)	ND		1.7	0.42	ng/L		06/29/24 08:01	07/05/24 01:50	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		1.7	0.42	ng/L		06/29/24 08:01	07/05/24 01:50	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		1.7	0.42	ng/L		06/29/24 08:01	07/05/24 01:50	1
N-methylperfluorooctane sulfonamidoethanol (NMeFOSE)	ND		17	4.2	ng/L		06/29/24 08:01	07/05/24 01:50	1
N-ethylperfluorooctane sulfonamidoethanol (NEtFOSE)	ND		17	4.2	ng/L		06/29/24 08:01	07/05/24 01:50	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		6.7	1.7	ng/L		06/29/24 08:01	07/05/24 01:50	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		6.7	1.7	ng/L		06/29/24 08:01	07/05/24 01:50	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	ND		3.3	0.83	ng/L		06/29/24 08:01	07/05/24 01:50	1
Perfluoro-4-methoxybutanoic acid (PFMBA)	ND		3.3	0.83	ng/L		06/29/24 08:01	07/05/24 01:50	1
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND		3.3	0.83	ng/L		06/29/24 08:01	07/05/24 01:50	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	ND		6.7	1.7	ng/L		06/29/24 08:01	07/05/24 01:50	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	ND		3.3	0.83	ng/L		06/29/24 08:01	07/05/24 01:50	1
3-Perfluoropropylpropanoic acid (3:3 FTCA)	ND		8.3	2.1	ng/L		06/29/24 08:01	07/05/24 01:50	1
3-Perfluoropentylpropanoic acid (5:3 FTCA)	ND		42	10	ng/L		06/29/24 08:01	07/05/24 01:50	1
3-Perfluoroheptylpropanoic acid (7:3 FTCA)	ND		42	10	ng/L		06/29/24 08:01	07/05/24 01:50	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*91.9*		*5 - 130*	*06/29/24 08:01*	*07/05/24 01:50*	*1*
13C5 PFPeA	*78.3*		*40 - 130*	*06/29/24 08:01*	*07/05/24 01:50*	*1*
13C5 PFHxA	*87.6*		*40 - 130*	*06/29/24 08:01*	*07/05/24 01:50*	*1*
13C4 PFHpA	*89.8*		*40 - 130*	*06/29/24 08:01*	*07/05/24 01:50*	*1*
13C8 PFOA	*86.7*		*40 - 130*	*06/29/24 08:01*	*07/05/24 01:50*	*1*
13C9 PFNA	*93.4*		*40 - 130*	*06/29/24 08:01*	*07/05/24 01:50*	*1*
13C6 PFDA	*98.6*		*40 - 130*	*06/29/24 08:01*	*07/05/24 01:50*	*1*
13C7 PFUnA	*76.0*		*30 - 130*	*06/29/24 08:01*	*07/05/24 01:50*	*1*
13C2 PFDoA	*79.8*		*10 - 130*	*06/29/24 08:01*	*07/05/24 01:50*	*1*
13C2 PFTeDA	*76.4*		*10 - 130*	*06/29/24 08:01*	*07/05/24 01:50*	*1*
13C3 PFBS	*84.0*		*40 - 135*	*06/29/24 08:01*	*07/05/24 01:50*	*1*
13C3 PFHxS	*78.9*		*40 - 130*	*06/29/24 08:01*	*07/05/24 01:50*	*1*
13C8 PFOS	*83.0*		*40 - 130*	*06/29/24 08:01*	*07/05/24 01:50*	*1*
13C8 PFOSA	*88.9*		*40 - 130*	*06/29/24 08:01*	*07/05/24 01:50*	*1*
d3-NMeFOSAA	*90.9*		*40 - 170*	*06/29/24 08:01*	*07/05/24 01:50*	*1*
d5-NEtFOSAA	*85.2*		*25 - 135*	*06/29/24 08:01*	*07/05/24 01:50*	*1*
13C2 4:2 FTS	*94.4*		*40 - 200*	*06/29/24 08:01*	*07/05/24 01:50*	*1*
13C2 6:2 FTS	*97.9*		*40 - 200*	*06/29/24 08:01*	*07/05/24 01:50*	*1*
13C2 8:2 FTS	*89.5*		*40 - 300*	*06/29/24 08:01*	*07/05/24 01:50*	*1*

Client Sample ID: MW-7B-061924
Date Collected: 06/19/24 09:15
Date Received: 06/19/24 16:17

Lab Sample ID: 590-25447-1
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*
13C3 HFPO-DA	*92.0*		*40 - 130*	*06/29/24 08:01*	*07/05/24 01:50*	*1*
d7-N-MeFOSE-M	*71.2*		*10 - 130*	*06/29/24 08:01*	*07/05/24 01:50*	*1*
d9-N-EtFOSE-M	*66.9*		*10 - 130*	*06/29/24 08:01*	*07/05/24 01:50*	*1*
d5-NEtPFOSA	*66.6*		*10 - 130*	*06/29/24 08:01*	*07/05/24 01:50*	*1*
d3-NMePFOSA	*68.1*		*10 - 130*	*06/29/24 08:01*	*07/05/24 01:50*	*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
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	ND		22	5.6	ng/L		07/09/24 12:39	07/11/24 04:34	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*78.4*		*40 - 130*	*07/09/24 12:39*	*07/11/24 04:34*	*1*

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Magnesium	**11**		0.50	0.13	mg/L		06/27/24 10:32	07/02/24 18:20	1
Potassium	**1.5**	**J ^1+**	2.0	0.29	mg/L		06/27/24 10:32	07/02/24 18:20	1
Sodium	**4.1**	**^1+**	2.0	0.20	mg/L		06/27/24 10:32	07/02/24 18:20	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	**34**		1.0	0.20	mg/L		07/02/24 11:12	07/02/24 18:58	1
Magnesium	**10**		0.50	0.13	mg/L		07/02/24 11:12	07/02/24 18:58	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		06/21/24 15:42	06/24/24 12:19	5
Cadmium	ND		0.0020	0.00019	mg/L		06/21/24 15:42	06/24/24 12:19	5
Iron	**0.34**	**J**	0.50	0.067	mg/L		06/21/24 15:42	06/24/24 13:08	5
Lead	ND		0.0020	0.00020	mg/L		06/21/24 15:42	06/24/24 12:19	5
Manganese	**0.0059**	**J**	0.010	0.0023	mg/L		06/21/24 15:42	06/24/24 12:19	5
Zinc	ND		0.035	0.0046	mg/L		06/21/24 15:42	06/24/24 12:19	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		06/25/24 15:33	06/26/24 12:49	5
Cadmium	ND		0.0020	0.00019	mg/L		06/25/24 15:33	06/26/24 12:49	5
Iron	ND		0.50	0.067	mg/L		06/25/24 15:33	06/26/24 12:49	5
Lead	ND		0.0020	0.00020	mg/L		06/25/24 15:33	06/26/24 12:49	5
Manganese	ND		0.010	0.0023	mg/L		06/25/24 15:33	06/26/24 12:49	5
Zinc	ND		0.035	0.0046	mg/L		06/25/24 15:33	06/26/24 12:49	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		07/03/24 10:13	07/03/24 12:20	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		07/03/24 10:15	07/03/24 13:01	1

Client Sample ID: MW-7B-061924

Lab Sample ID: 590-25447-1

Date Collected: 06/19/24 09:15

Matrix: Water

Date Received: 06/19/24 16:17

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ammonia as N (EPA 350.1)	0.034	J	0.10	0.029	mg/L			06/25/24 17:18	1
Alkalinity (SM 2320B)	140	B	20	5.0	mg/L			06/26/24 09:37	1
Bicarbonate Alkalinity as CaCO3 (SM 2320B)	140	B	20	5.0	mg/L			06/26/24 09:37	1
Total Dissolved Solids (SM 2540C)	150		25	13	mg/L			06/26/24 14:27	1
Total Organic Carbon - Duplicates (SM 5310B)	0.77	J	1.0	0.35	mg/L			06/25/24 05:20	1

Client Sample ID: MW-12A-061924

Lab Sample ID: 590-25447-2

Date Collected: 06/19/24 11:40

Matrix: Water

Date Received: 06/19/24 16:17

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		1.0	0.17	ug/L			06/24/24 14:21	1
Tetrachloroethene	ND		1.0	0.22	ug/L			06/24/24 14:21	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*80 - 120*		*06/24/24 14:21*	*1*
4-Bromofluorobenzene (Surr)	*87*		*76 - 120*		*06/24/24 14:21*	*1*
Dibromofluoromethane (Surr)	*121*		*80 - 123*		*06/24/24 14:21*	*1*
Toluene-d8 (Surr)	*106*		*80 - 120*		*06/24/24 14:21*	*1*

Method: SW846 8270C SIM ID - Semivolatile Organic Compounds (GC/MS SIM / Isotope Dilution)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	ND		0.19	0.034	ug/L		06/25/24 08:16	06/26/24 18:42	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,4-Dioxane-d8	*49*		*40 - 140*	*06/25/24 08:16*	*06/26/24 18:42*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	7.5		0.80	0.42	mg/L			06/20/24 15:15	1
Nitrate as N	7.0		0.20	0.057	mg/L			06/20/24 15:15	1
Nitrite as N	ND		0.20	0.069	mg/L			06/20/24 15:15	1
Sulfate	14		0.50	0.13	mg/L			06/20/24 15:15	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Magnesium	11		0.50	0.13	mg/L		06/27/24 10:32	07/02/24 18:25	1
Potassium	2.6	^1+	2.0	0.29	mg/L		06/27/24 10:32	07/02/24 18:25	1
Sodium	8.9	^1+	2.0	0.20	mg/L		06/27/24 10:32	07/02/24 18:25	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	29		1.0	0.20	mg/L		07/02/24 11:12	07/03/24 13:34	1
Magnesium	10		0.50	0.13	mg/L		07/02/24 11:12	07/03/24 13:34	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.0013	J	0.0050	0.0010	mg/L		06/24/24 16:51	06/25/24 11:19	5
Cadmium	ND		0.0020	0.00019	mg/L		06/24/24 16:51	06/25/24 11:19	5
Iron	ND		0.50	0.067	mg/L		06/24/24 16:51	06/25/24 11:19	5

Client Sample ID: MW-12A-061924

Date Collected: 06/19/24 11:40
Date Received: 06/19/24 16:17

Lab Sample ID: 590-25447-2
Matrix: Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	**0.00054**	**J**	0.0020	0.00020	mg/L		06/24/24 16:51	06/25/24 11:19	5
Manganese	ND		0.010	0.0023	mg/L		06/24/24 16:51	06/25/24 11:19	5
Zinc	ND		0.035	0.0046	mg/L		06/24/24 16:51	06/25/24 11:19	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		06/25/24 15:33	06/26/24 12:55	5
Iron	ND		0.50	0.067	mg/L		06/25/24 15:33	06/26/24 12:55	5
Cadmium	ND		0.0020	0.00019	mg/L		06/25/24 15:33	06/26/24 12:55	5
Manganese	ND		0.010	0.0023	mg/L		06/25/24 15:33	06/26/24 12:55	5
Iron	ND		0.50	0.067	mg/L		06/25/24 15:33	06/26/24 12:55	5
Lead	ND		0.0020	0.00020	mg/L		06/25/24 15:33	06/26/24 12:55	5
Manganese	ND		0.010	0.0023	mg/L		06/25/24 15:33	06/26/24 12:55	5
Zinc	ND		0.035	0.0046	mg/L		06/25/24 15:33	06/26/24 12:55	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		07/03/24 10:13	07/03/24 12:31	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		07/03/24 10:15	07/03/24 13:16	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ammonia as N (EPA 350.1)	**0.031**	**J**	0.10	0.029	mg/L			06/25/24 15:34	1
Alkalinity (SM 2320B)	**100**	**B**	20	5.0	mg/L			06/26/24 09:37	1
Bicarbonate Alkalinity as CaCO3 (SM 2320B)	**100**	**B**	20	5.0	mg/L			06/26/24 09:37	1
Total Dissolved Solids (SM 2540C)	**190**		25	13	mg/L			06/26/24 14:27	1
Total Organic Carbon - Duplicates (SM 5310B)	**2.6**		1.0	0.35	mg/L			06/25/24 06:08	1

Client Sample ID: MW-15A-061924

Date Collected: 06/19/24 13:40
Date Received: 06/19/24 16:17

Lab Sample ID: 590-25447-3
Matrix: Water

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**56**		0.80	0.42	mg/L			06/20/24 15:25	1
Nitrate as N	**0.92**		0.20	0.057	mg/L			06/20/24 15:25	1
Nitrite as N	ND		0.20	0.069	mg/L			06/20/24 15:25	1
Sulfate	**17**		0.50	0.13	mg/L			06/20/24 15:25	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)	**21**		6.7	1.7	ng/L		06/29/24 08:01	07/05/24 02:31	1
Perfluoropentanoic acid (PFPeA)	**12**		3.4	0.84	ng/L		06/29/24 08:01	07/05/24 02:31	1
Perfluorohexanoic acid (PFHxA)	**4.2**		1.7	0.42	ng/L		06/29/24 08:01	07/05/24 02:31	1
Perfluoroheptanoic acid (PFHpA)	**2.3**		1.7	0.42	ng/L		06/29/24 08:01	07/05/24 02:31	1
Perfluorooctanoic acid (PFOA)	**1.7**		1.7	0.42	ng/L		06/29/24 08:01	07/05/24 02:31	1
Perfluorononanoic acid (PFNA)	ND		1.7	0.42	ng/L		06/29/24 08:01	07/05/24 02:31	1

Client Sample ID: MW-15A-061924
Date Collected: 06/19/24 13:40
Date Received: 06/19/24 16:17

Lab Sample ID: 590-25447-3
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
Perfluorodecanoic acid (PFDA)	ND		1.7	0.42	ng/L		06/29/24 08:01	07/05/24 02:31	1
Perfluoroundecanoic acid (PFUnA)	ND		1.7	0.42	ng/L		06/29/24 08:01	07/05/24 02:31	1
Perfluorododecanoic acid (PFDoA)	ND		1.7	0.42	ng/L		06/29/24 08:01	07/05/24 02:31	1
Perfluorotridecanoic acid (PFTrDA)	ND		1.7	0.42	ng/L		06/29/24 08:01	07/05/24 02:31	1
Perfluorotetradecanoic acid (PFTeDA)	ND		1.7	0.42	ng/L		06/29/24 08:01	07/05/24 02:31	1
Perfluorobutanesulfonic acid (PFBS)	**0.91**	**J**	1.7	0.42	ng/L		06/29/24 08:01	07/05/24 02:31	1
Perfluoropentanesulfonic acid (PFPeS)	ND		1.7	0.42	ng/L		06/29/24 08:01	07/05/24 02:31	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.7	0.42	ng/L		06/29/24 08:01	07/05/24 02:31	1
Perfluoroheptanesulfonic acid (PFHpS)	ND		1.7	0.42	ng/L		06/29/24 08:01	07/05/24 02:31	1
Perfluorooctanesulfonic acid (PFOS)	**2.5**		1.7	0.42	ng/L		06/29/24 08:01	07/05/24 02:31	1
Perfluorononanesulfonic acid (PFNS)	ND		1.7	0.42	ng/L		06/29/24 08:01	07/05/24 02:31	1
Perfluorodecanesulfonic acid (PFDS)	ND		1.7	0.42	ng/L		06/29/24 08:01	07/05/24 02:31	1
Perfluorododecanesulfonic acid (PFDoS)	ND		1.7	0.42	ng/L		06/29/24 08:01	07/05/24 02:31	1
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	ND		6.7	1.7	ng/L		06/29/24 08:01	07/05/24 02:31	1
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	ND		6.7	1.7	ng/L		06/29/24 08:01	07/05/24 02:31	1
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	ND		6.7	1.7	ng/L		06/29/24 08:01	07/05/24 02:31	1
Perfluorooctanesulfonamide (PFOSA)	ND		1.7	0.42	ng/L		06/29/24 08:01	07/05/24 02:31	1
N-methylperfluorooctane sulfonamide (NMeFOSA)	ND		1.7	0.42	ng/L		06/29/24 08:01	07/05/24 02:31	1
N-ethylperfluorooctane sulfonamide (NEtFOSA)	ND		1.7	0.42	ng/L		06/29/24 08:01	07/05/24 02:31	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		1.7	0.42	ng/L		06/29/24 08:01	07/05/24 02:31	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		1.7	0.42	ng/L		06/29/24 08:01	07/05/24 02:31	1
N-methylperfluorooctane sulfonamidoethanol (NMeFOSE)	ND		17	4.2	ng/L		06/29/24 08:01	07/05/24 02:31	1
N-ethylperfluorooctane sulfonamidoethanol (NEtFOSE)	ND		17	4.2	ng/L		06/29/24 08:01	07/05/24 02:31	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		6.7	1.7	ng/L		06/29/24 08:01	07/05/24 02:31	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		6.7	1.7	ng/L		06/29/24 08:01	07/05/24 02:31	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	ND		3.4	0.84	ng/L		06/29/24 08:01	07/05/24 02:31	1
Perfluoro-4-methoxybutanoic acid (PFMBA)	ND		3.4	0.84	ng/L		06/29/24 08:01	07/05/24 02:31	1
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND		3.4	0.84	ng/L		06/29/24 08:01	07/05/24 02:31	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	ND		6.7	1.7	ng/L		06/29/24 08:01	07/05/24 02:31	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	ND		3.4	0.84	ng/L		06/29/24 08:01	07/05/24 02:31	1
3-Perfluoropropylpropanoic acid (3:3 FTCA)	ND		8.4	2.1	ng/L		06/29/24 08:01	07/05/24 02:31	1
3-Perfluoropentylpropanoic acid (5:3 FTCA)	ND		42	11	ng/L		06/29/24 08:01	07/05/24 02:31	1

Client Sample ID: MW-15A-061924
Date Collected: 06/19/24 13:40
Date Received: 06/19/24 16:17

Lab Sample ID: 590-25447-3
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
3-Perfluoroheptylpropanoic acid (7:3 FTCA)	ND		42	11	ng/L		06/29/24 08:01	07/05/24 02:31	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*86.9*		*5 - 130*	*06/29/24 08:01*	*07/05/24 02:31*	*1*
13C5 PFPeA	*71.6*		*40 - 130*	*06/29/24 08:01*	*07/05/24 02:31*	*1*
13C5 PFHxA	*82.2*		*40 - 130*	*06/29/24 08:01*	*07/05/24 02:31*	*1*
13C4 PFHpA	*83.5*		*40 - 130*	*06/29/24 08:01*	*07/05/24 02:31*	*1*
13C8 PFOA	*81.8*		*40 - 130*	*06/29/24 08:01*	*07/05/24 02:31*	*1*
13C9 PFNA	*88.0*		*40 - 130*	*06/29/24 08:01*	*07/05/24 02:31*	*1*
13C6 PFDA	*91.1*		*40 - 130*	*06/29/24 08:01*	*07/05/24 02:31*	*1*
13C7 PFUnA	*78.6*		*30 - 130*	*06/29/24 08:01*	*07/05/24 02:31*	*1*
13C2 PFDoA	*79.4*		*10 - 130*	*06/29/24 08:01*	*07/05/24 02:31*	*1*
13C2 PFTeDA	*68.4*		*10 - 130*	*06/29/24 08:01*	*07/05/24 02:31*	*1*
13C3 PFBS	*81.4*		*40 - 135*	*06/29/24 08:01*	*07/05/24 02:31*	*1*
13C3 PFHxS	*75.8*		*40 - 130*	*06/29/24 08:01*	*07/05/24 02:31*	*1*
13C8 PFOS	*79.7*		*40 - 130*	*06/29/24 08:01*	*07/05/24 02:31*	*1*
13C8 PFOSA	*85.8*		*40 - 130*	*06/29/24 08:01*	*07/05/24 02:31*	*1*
d3-NMeFOSAA	*88.6*		*40 - 170*	*06/29/24 08:01*	*07/05/24 02:31*	*1*
d5-NEtFOSAA	*83.1*		*25 - 135*	*06/29/24 08:01*	*07/05/24 02:31*	*1*
13C2 4:2 FTS	*91.0*		*40 - 200*	*06/29/24 08:01*	*07/05/24 02:31*	*1*
13C2 6:2 FTS	*86.3*		*40 - 200*	*06/29/24 08:01*	*07/05/24 02:31*	*1*
13C2 8:2 FTS	*85.6*		*40 - 300*	*06/29/24 08:01*	*07/05/24 02:31*	*1*
13C3 HFPO-DA	*84.6*		*40 - 130*	*06/29/24 08:01*	*07/05/24 02:31*	*1*
d7-N-MeFOSE-M	*60.0*		*10 - 130*	*06/29/24 08:01*	*07/05/24 02:31*	*1*
d9-N-EtFOSE-M	*51.3*		*10 - 130*	*06/29/24 08:01*	*07/05/24 02:31*	*1*
d5-NEtPFOSA	*60.4*		*10 - 130*	*06/29/24 08:01*	*07/05/24 02:31*	*1*
d3-NMePFOSA	*63.1*		*10 - 130*	*06/29/24 08:01*	*07/05/24 02:31*	*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
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	ND		6.8	1.7	ng/L		07/08/24 05:18	07/09/24 11:39	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*85.2*		*40 - 130*	*07/08/24 05:18*	*07/09/24 11:39*	*1*

Method: Lab SOP PPCP NEG - Pharmaceuticals and Personal Care Products (LC/MS/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acesulfame K	**0.58**		0.020	0.0020	ug/L			06/25/24 06:31	1

Method: Lab SOP PPCP NEG - Pharmaceuticals and Personal Care Products (LC/MS/MS) - DL

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sucralose	**11**		1.0	0.14	ug/L			06/25/24 13:04	10

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Magnesium	**14**		0.50	0.13	mg/L		06/27/24 10:32	07/02/24 18:29	1
Potassium	**6.6**	^1+	2.0	0.29	mg/L		06/27/24 10:32	07/02/24 18:29	1
Sodium	**38**	^1+	2.0	0.20	mg/L		06/27/24 10:32	07/02/24 18:29	1

Client: GeoEngineers Inc
Project/Site: Marshall Landfill

Job ID: 590-25447-1

Client Sample ID: MW-15A-061924

Date Collected: 06/19/24 13:40
Date Received: 06/19/24 16:17

Lab Sample ID: 590-25447-3

Matrix: Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	31		1.0	0.20	mg/L		07/02/24 11:12	07/03/24 13:38	1
Magnesium	13		0.50	0.13	mg/L		07/02/24 11:12	07/03/24 13:38	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	ND		0.50	0.067	mg/L		06/25/24 15:33	06/26/24 12:53	5
Manganese	ND		0.010	0.0023	mg/L		06/25/24 15:33	06/26/24 12:53	5

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			06/25/24 15:37	1
Alkalinity (SM 2320B)	140	B	20	5.0	mg/L			06/26/24 09:37	1
Bicarbonate Alkalinity as CaCO3 (SM 2320B)	140	B	20	5.0	mg/L			06/26/24 09:37	1
Total Dissolved Solids (SM 2540C)	270		25	13	mg/L			06/26/24 14:27	1
Total Organic Carbon - Duplicates (SM 5310B)	3.5		1.0	0.35	mg/L			06/25/24 06:25	1

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

Lab Sample ID: MB 590-48050/10
Matrix: Water
Analysis Batch: 48050

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-Trichloroethane	ND		1.0	0.17	ug/L			06/24/24 13:35	1
Tetrachloroethene	ND		1.0	0.22	ug/L			06/24/24 13:35	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*80 - 120*		*06/24/24 13:35*	*1*
4-Bromofluorobenzene (Surr)	*91*		*76 - 120*		*06/24/24 13:35*	*1*
Dibromofluoromethane (Surr)	*120*		*80 - 123*		*06/24/24 13:35*	*1*
Toluene-d8 (Surr)	*106*		*80 - 120*		*06/24/24 13:35*	*1*

Lab Sample ID: LCS 590-48050/1005
Matrix: Water
Analysis Batch: 48050

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-Trichloroethane			10.0	10.6		ug/L		106	71 - 138		
Tetrachloroethene			10.0	11.7		ug/L		117	80 - 139		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*94*		*80 - 120*
4-Bromofluorobenzene (Surr)	*86*		*76 - 120*
Dibromofluoromethane (Surr)	*107*		*80 - 123*
Toluene-d8 (Surr)	*101*		*80 - 120*

Lab Sample ID: LCSD 590-48050/6
Matrix: Water
Analysis Batch: 48050

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-Trichloroethane			10.0	10.4		ug/L		104	71 - 138	2	17
Tetrachloroethene			10.0	11.0		ug/L		110	80 - 139	7	20

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*94*		*80 - 120*
4-Bromofluorobenzene (Surr)	*85*		*76 - 120*
Dibromofluoromethane (Surr)	*111*		*80 - 123*
Toluene-d8 (Surr)	*99*		*80 - 120*

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

Lab Sample ID: MB 580-463156/1-A
Matrix: Water
Analysis Batch: 463356

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 463156

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	ND		0.20	0.036	ug/L		06/25/24 08:16	06/26/24 17:46	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,4-Dioxane-d8	*58*		*40 - 140*	*06/25/24 08:16*	*06/26/24 17:46*	*1*

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

Lab Sample ID: LCS 580-463156/2-A
Matrix: Water
Analysis Batch: 463356

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 463156

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane			8.00	8.20		ug/L		102	78 - 130		

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,4-Dioxane-d8	*63*		*40 - 140*

Lab Sample ID: LCSD 580-463156/3-A
Matrix: Water
Analysis Batch: 463356

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 463156

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane			8.00	8.14		ug/L		102	78 - 130	1	13

Isotope Dilution	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
1,4-Dioxane-d8	*58*		*40 - 140*

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 590-47991/1015
Matrix: Water
Analysis Batch: 47991

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			06/20/24 10:57	1
Nitrite as N	ND		0.20	0.069	mg/L			06/20/24 10:57	1

Lab Sample ID: LCS 590-47991/1016
Matrix: Water
Analysis Batch: 47991

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	5.04		mg/L		101	90 - 110		
Nitrite as N			5.00	4.95		mg/L		99	90 - 110		

Lab Sample ID: MB 590-47992/1015
Matrix: Water
Analysis Batch: 47992

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			06/20/24 10:57	1
Sulfate	ND		0.50	0.13	mg/L			06/20/24 10:57	1

Lab Sample ID: LCS 590-47992/1016
Matrix: Water
Analysis Batch: 47992

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		101	90 - 110		
Sulfate			12.5	12.1		mg/L		97	90 - 110		

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

Lab Sample ID: MB 320-775603/1-A
Matrix: Water
Analysis Batch: 776597

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 775603

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	ND		8.0	2.0	ng/L		06/29/24 08:01	07/04/24 22:05	1
Perfluoropentanoic acid (PFPeA)	ND		4.0	1.0	ng/L		06/29/24 08:01	07/04/24 22:05	1
Perfluorohexanoic acid (PFHxA)	ND		2.0	0.50	ng/L		06/29/24 08:01	07/04/24 22:05	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.50	ng/L		06/29/24 08:01	07/04/24 22:05	1
Perfluorooctanoic acid (PFOA)	ND		2.0	0.50	ng/L		06/29/24 08:01	07/04/24 22:05	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.50	ng/L		06/29/24 08:01	07/04/24 22:05	1
Perfluorodecanoic acid (PFDA)	ND		2.0	0.50	ng/L		06/29/24 08:01	07/04/24 22:05	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	0.50	ng/L		06/29/24 08:01	07/04/24 22:05	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	0.50	ng/L		06/29/24 08:01	07/04/24 22:05	1
Perfluorotridecanoic acid (PFTrDA)	ND		2.0	0.50	ng/L		06/29/24 08:01	07/04/24 22:05	1
Perfluorotetradecanoic acid (PFTeDA)	ND		2.0	0.50	ng/L		06/29/24 08:01	07/04/24 22:05	1
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	0.50	ng/L		06/29/24 08:01	07/04/24 22:05	1
Perfluoropentanesulfonic acid (PFPeS)	ND		2.0	0.50	ng/L		06/29/24 08:01	07/04/24 22:05	1
Perfluorohexanesulfonic acid (PFHxS)	ND		2.0	0.50	ng/L		06/29/24 08:01	07/04/24 22:05	1
Perfluoroheptanesulfonic acid (PFHpS)	ND		2.0	0.50	ng/L		06/29/24 08:01	07/04/24 22:05	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.0	0.50	ng/L		06/29/24 08:01	07/04/24 22:05	1
Perfluorononanesulfonic acid (PFNS)	ND		2.0	0.50	ng/L		06/29/24 08:01	07/04/24 22:05	1
Perfluorodecanesulfonic acid (PFDS)	ND		2.0	0.50	ng/L		06/29/24 08:01	07/04/24 22:05	1
Perfluorododecanesulfonic acid (PFDoS)	ND		2.0	0.50	ng/L		06/29/24 08:01	07/04/24 22:05	1
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	ND		8.0	2.0	ng/L		06/29/24 08:01	07/04/24 22:05	1
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	ND		8.0	2.0	ng/L		06/29/24 08:01	07/04/24 22:05	1
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	ND		8.0	2.0	ng/L		06/29/24 08:01	07/04/24 22:05	1
Perfluorooctanesulfonamide (PFOSA)	ND		2.0	0.50	ng/L		06/29/24 08:01	07/04/24 22:05	1
N-methylperfluorooctane sulfonamide (NMeFOSA)	ND		2.0	0.50	ng/L		06/29/24 08:01	07/04/24 22:05	1
N-ethylperfluorooctane sulfonamide (NEtFOSA)	ND		2.0	0.50	ng/L		06/29/24 08:01	07/04/24 22:05	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		2.0	0.50	ng/L		06/29/24 08:01	07/04/24 22:05	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		2.0	0.50	ng/L		06/29/24 08:01	07/04/24 22:05	1
N-methylperfluorooctane sulfonamidoethanol (NMeFOSE)	ND		20	5.0	ng/L		06/29/24 08:01	07/04/24 22:05	1
N-ethylperfluorooctane sulfonamidoethanol (NEtFOSE)	ND		20	5.0	ng/L		06/29/24 08:01	07/04/24 22:05	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		8.0	2.0	ng/L		06/29/24 08:01	07/04/24 22:05	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		8.0	2.0	ng/L		06/29/24 08:01	07/04/24 22:05	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	ND		4.0	1.0	ng/L		06/29/24 08:01	07/04/24 22:05	1
Perfluoro-4-methoxybutanoic acid (PFMBA)	ND		4.0	1.0	ng/L		06/29/24 08:01	07/04/24 22:05	1
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND		4.0	1.0	ng/L		06/29/24 08:01	07/04/24 22:05	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	ND		8.0	2.0	ng/L		06/29/24 08:01	07/04/24 22:05	1

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

Lab Sample ID: MB 320-775603/1-A
Matrix: Water
Analysis Batch: 776597

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 775603

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	ND		4.0	1.0	ng/L		06/29/24 08:01	07/04/24 22:05	1
3-Perfluoropropylpropanoic acid (3:3 FTCA)	ND		10	2.5	ng/L		06/29/24 08:01	07/04/24 22:05	1
3-Perfluoropentylpropanoic acid (5:3 FTCA)	ND		50	13	ng/L		06/29/24 08:01	07/04/24 22:05	1
3-Perfluoroheptylpropanoic acid (7:3 FTCA)	ND		50	13	ng/L		06/29/24 08:01	07/04/24 22:05	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*94.9*		*5 - 130*	*06/29/24 08:01*	*07/04/24 22:05*	*1*
13C5 PFPeA	*79.7*		*40 - 130*	*06/29/24 08:01*	*07/04/24 22:05*	*1*
13C5 PFHxA	*88.2*		*40 - 130*	*06/29/24 08:01*	*07/04/24 22:05*	*1*
13C4 PFHpA	*97.2*		*40 - 130*	*06/29/24 08:01*	*07/04/24 22:05*	*1*
13C8 PFOA	*90.2*		*40 - 130*	*06/29/24 08:01*	*07/04/24 22:05*	*1*
13C9 PFNA	*96.7*		*40 - 130*	*06/29/24 08:01*	*07/04/24 22:05*	*1*
13C6 PFDA	*107*		*40 - 130*	*06/29/24 08:01*	*07/04/24 22:05*	*1*
13C7 PFUnA	*93.5*		*30 - 130*	*06/29/24 08:01*	*07/04/24 22:05*	*1*
13C2 PFDoA	*102*		*10 - 130*	*06/29/24 08:01*	*07/04/24 22:05*	*1*
13C2 PFTeDA	*96.5*		*10 - 130*	*06/29/24 08:01*	*07/04/24 22:05*	*1*
13C3 PFBS	*91.3*		*40 - 135*	*06/29/24 08:01*	*07/04/24 22:05*	*1*
13C3 PFHxS	*82.8*		*40 - 130*	*06/29/24 08:01*	*07/04/24 22:05*	*1*
13C8 PFOS	*89.7*		*40 - 130*	*06/29/24 08:01*	*07/04/24 22:05*	*1*
13C8 PFOSA	*92.9*		*40 - 130*	*06/29/24 08:01*	*07/04/24 22:05*	*1*
d3-NMeFOSAA	*100*		*40 - 170*	*06/29/24 08:01*	*07/04/24 22:05*	*1*
d5-NEtFOSAA	*96.2*		*25 - 135*	*06/29/24 08:01*	*07/04/24 22:05*	*1*
13C2 4:2 FTS	*103*		*40 - 200*	*06/29/24 08:01*	*07/04/24 22:05*	*1*
13C2 6:2 FTS	*101*		*40 - 200*	*06/29/24 08:01*	*07/04/24 22:05*	*1*
13C2 8:2 FTS	*101*		*40 - 300*	*06/29/24 08:01*	*07/04/24 22:05*	*1*
13C3 HFPO-DA	*94.8*		*40 - 130*	*06/29/24 08:01*	*07/04/24 22:05*	*1*
d7-N-MeFOSE-M	*84.9*		*10 - 130*	*06/29/24 08:01*	*07/04/24 22:05*	*1*
d9-N-EtFOSE-M	*81.0*		*10 - 130*	*06/29/24 08:01*	*07/04/24 22:05*	*1*
d5-NEtPFOSA	*73.7*		*10 - 130*	*06/29/24 08:01*	*07/04/24 22:05*	*1*
d3-NMePFOSA	*71.7*		*10 - 130*	*06/29/24 08:01*	*07/04/24 22:05*	*1*

Lab Sample ID: LCS 320-775603/3-A
Matrix: Water
Analysis Batch: 776597

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 775603

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluorobutanoic acid (PFBA)	128	121		ng/L		94	70 - 140
Perfluoropentanoic acid (PFPeA)	64.0	58.9		ng/L		92	65 - 135
Perfluorohexanoic acid (PFHxA)	32.0	30.8		ng/L		96	70 - 145
Perfluoroheptanoic acid (PFHpA)	32.0	29.9		ng/L		94	70 - 150
Perfluorooctanoic acid (PFOA)	32.0	29.7		ng/L		93	70 - 150
Perfluorononanoic acid (PFNA)	32.0	31.8		ng/L		99	70 - 150
Perfluorodecanoic acid (PFDA)	32.0	29.1		ng/L		91	70 - 140
Perfluoroundecanoic acid (PFUnA)	32.0	31.0		ng/L		97	70 - 145

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

Lab Sample ID: LCS 320-775603/3-A
Matrix: Water
Analysis Batch: 776597

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 775603

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluorododecanoic acid (PFDoA)	32.0	28.2		ng/L		88	70 - 140
Perfluorotridecanoic acid (PFTrDA)	32.0	27.9		ng/L		87	65 - 140
Perfluorotetradecanoic acid (PFTeDA)	32.0	29.2		ng/L		91	60 - 140
Perfluorobutanesulfonic acid (PFBS)	28.4	27.4		ng/L		97	60 - 145
Perfluoropentanesulfonic acid (PFPeS)	30.1	29.5		ng/L		98	65 - 140
Perfluorohexanesulfonic acid (PFHxS)	29.2	27.2		ng/L		93	65 - 145
Perfluoroheptanesulfonic acid (PFHpS)	30.5	26.9		ng/L		88	70 - 150
Perfluorooctanesulfonic acid (PFOS)	29.8	27.4		ng/L		92	55 - 150
Perfluorononanesulfonic acid (PFNS)	30.8	28.7		ng/L		93	65 - 145
Perfluorodecanesulfonic acid (PFDS)	30.8	28.7		ng/L		93	60 - 145
Perfluorododecanesulfonic acid (PFDoS)	31.0	25.8		ng/L		83	50 - 145
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	120	113		ng/L		94	70 - 145
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	122	119		ng/L		98	65 - 155
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	123	125		ng/L		101	60 - 150
Perfluorooctanesulfonamide (PFOSA)	32.0	24.7		ng/L		77	70 - 145
N-methylperfluorooctane sulfonamide (NMeFOSA)	32.0	32.0		ng/L		100	60 - 150
N-ethylperfluorooctane sulfonamide (NEtFOSA)	32.0	31.2		ng/L		97	65 - 145
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	32.0	30.0		ng/L		94	50 - 140
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	32.0	28.7		ng/L		90	70 - 145
N-methylperfluorooctane sulfonamidoethanol (NMeFOSE)	320	291		ng/L		91	70 - 145
N-ethylperfluorooctane sulfonamidoethanol (NEtFOSE)	320	286		ng/L		89	70 - 135
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	128	117		ng/L		91	70 - 140
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	121	110		ng/L		91	65 - 145
Perfluoro-3-methoxypropanoic acid (PFMPA)	64.0	60.0		ng/L		94	55 - 140
Perfluoro-4-methoxybutanoic acid (PFMBA)	64.0	64.8		ng/L		101	60 - 150
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	64.0	64.7		ng/L		101	50 - 150
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	121	100		ng/L		83	55 - 160

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

Lab Sample ID: LCS 320-775603/3-A
Matrix: Water
Analysis Batch: 776597

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 775603

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	57.1	52.8		ng/L		93	70 - 140
3-Perfluoropropylpropanoic acid (3:3 FTCA)	160	154		ng/L		96	65 - 130
3-Perfluoropentylpropanoic acid (5:3 FTCA)	799	725		ng/L		91	70 - 135
3-Perfluoroheptylpropanoic acid (7:3 FTCA)	799	708		ng/L		89	50 - 145

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C4 PFBA	*96.0*		*5 - 130*
13C5 PFPeA	*78.8*		*40 - 130*
13C5 PFHxA	*89.2*		*40 - 130*
13C4 PFHpA	*92.4*		*40 - 130*
13C8 PFOA	*90.6*		*40 - 130*
13C9 PFNA	*101*		*40 - 130*
13C6 PFDA	*103*		*40 - 130*
13C7 PFUnA	*94.2*		*30 - 130*
13C2 PFDoA	*101*		*10 - 130*
13C2 PFTeDA	*93.1*		*10 - 130*
13C3 PFBS	*89.9*		*40 - 135*
13C3 PFHxS	*85.2*		*40 - 130*
13C8 PFOS	*97.8*		*40 - 130*
13C8 PFOSA	*94.3*		*40 - 130*
d3-NMeFOSAA	*101*		*40 - 170*
d5-NEtFOSAA	*99.4*		*25 - 135*
13C2 4:2 FTS	*95.9*		*40 - 200*
13C2 6:2 FTS	*99.5*		*40 - 200*
13C2 8:2 FTS	*97.6*		*40 - 300*
13C3 HFPO-DA	*95.1*		*40 - 130*
d7-N-MeFOSE-M	*86.9*		*10 - 130*
d9-N-EtFOSE-M	*83.1*		*10 - 130*
d5-NEtPFOSA	*75.5*		*10 - 130*
d3-NMePFOSA	*68.5*		*10 - 130*

Lab Sample ID: LLCS 320-775603/2-A
Matrix: Water
Analysis Batch: 776597

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 775603

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluorobutanoic acid (PFBA)	12.8	11.3		ng/L		88	70 - 140
Perfluoropentanoic acid (PFPeA)	6.40	5.52		ng/L		86	65 - 135
Perfluorohexanoic acid (PFHxA)	3.20	2.64		ng/L		83	70 - 145
Perfluoroheptanoic acid (PFHpA)	3.20	2.95		ng/L		92	70 - 150
Perfluorooctanoic acid (PFOA)	3.20	2.42		ng/L		76	70 - 150
Perfluorononanoic acid (PFNA)	3.20	3.04		ng/L		95	70 - 150
Perfluorodecanoic acid (PFDA)	3.20	2.60		ng/L		81	70 - 140
Perfluoroundecanoic acid (PFUnA)	3.20	2.98		ng/L		93	70 - 145

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

Lab Sample ID: LLCS 320-775603/2-A
Matrix: Water
Analysis Batch: 776597

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 775603

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluorododecanoic acid (PFDoA)	3.20	2.51		ng/L		78	70 - 140
Perfluorotridecanoic acid (PFTrDA)	3.20	2.59		ng/L		81	65 - 140
Perfluorotetradecanoic acid (PFTeDA)	3.20	2.69		ng/L		84	60 - 140
Perfluorobutanesulfonic acid (PFBS)	2.84	2.49		ng/L		88	60 - 145
Perfluoropentanesulfonic acid (PFPeS)	3.01	2.32		ng/L		77	65 - 140
Perfluorohexanesulfonic acid (PFHxS)	2.92	2.73		ng/L		94	65 - 145
Perfluoroheptanesulfonic acid (PFHpS)	3.05	2.27		ng/L		74	70 - 150
Perfluorooctanesulfonic acid (PFOS)	2.98	2.52		ng/L		85	55 - 150
Perfluorononanesulfonic acid (PFNS)	3.08	2.75		ng/L		89	65 - 145
Perfluorodecanesulfonic acid (PFDS)	3.08	2.49		ng/L		81	60 - 145
Perfluorododecanesulfonic acid (PFDoS)	3.10	2.90		ng/L		93	50 - 145
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	12.0	11.2		ng/L		93	70 - 145
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	12.2	11.7		ng/L		96	65 - 155
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	12.3	11.8		ng/L		96	60 - 150
Perfluorooctanesulfonamide (PFOSA)	3.20	2.32		ng/L		72	70 - 145
N-methylperfluorooctane sulfonamide (NMeFOSA)	3.20	2.47		ng/L		77	60 - 150
N-ethylperfluorooctane sulfonamide (NEtFOSA)	3.20	2.54		ng/L		79	65 - 145
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	3.20	2.71		ng/L		85	50 - 140
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	3.20	2.76		ng/L		86	70 - 145
N-methylperfluorooctane sulfonamidoethanol (NMeFOSE)	32.0	26.1		ng/L		82	70 - 145
N-ethylperfluorooctane sulfonamidoethanol (NEtFOSE)	32.0	25.8		ng/L		81	70 - 135
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	12.8	11.3		ng/L		88	70 - 140
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	12.1	10.4		ng/L		86	65 - 145
Perfluoro-3-methoxypropanoic acid (PFMPA)	6.40	5.18		ng/L		81	55 - 140
Perfluoro-4-methoxybutanoic acid (PFMBA)	6.40	5.96		ng/L		93	60 - 150
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	6.40	6.02		ng/L		94	50 - 150
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	12.1	9.08		ng/L		75	55 - 160

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

Lab Sample ID: LLCS 320-775603/2-A
Matrix: Water
Analysis Batch: 776597

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 775603

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	5.71	4.13		ng/L		72	70 - 140
3-Perfluoropropylpropanoic acid (3:3 FTCA)	16.0	14.3		ng/L		90	65 - 130
3-Perfluoropentylpropanoic acid (5:3 FTCA)	79.9	66.3		ng/L		83	70 - 135
3-Perfluoroheptylpropanoic acid (7:3 FTCA)	79.9	65.5		ng/L		82	50 - 145

Isotope Dilution	*LLCS %Recovery*	*LLCS Qualifier*	*Limits*
13C4 PFBA	*90.0*		*5 - 130*
13C5 PFPeA	*76.4*		*40 - 130*
13C5 PFHxA	*87.4*		*40 - 130*
13C4 PFHpA	*88.1*		*40 - 130*
13C8 PFOA	*93.5*		*40 - 130*
13C9 PFNA	*97.6*		*40 - 130*
13C6 PFDA	*103*		*40 - 130*
13C7 PFUnA	*89.7*		*30 - 130*
13C2 PFDoA	*98.5*		*10 - 130*
13C2 PFTeDA	*99.0*		*10 - 130*
13C3 PFBS	*85.9*		*40 - 135*
13C3 PFHxS	*77.6*		*40 - 130*
13C8 PFOS	*90.0*		*40 - 130*
13C8 PFOSA	*93.1*		*40 - 130*
d3-NMeFOSAA	*94.8*		*40 - 170*
d5-NEtFOSAA	*96.4*		*25 - 135*
13C2 4:2 FTS	*88.6*		*40 - 200*
13C2 6:2 FTS	*89.0*		*40 - 200*
13C2 8:2 FTS	*91.5*		*40 - 300*
13C3 HFPO-DA	*91.5*		*40 - 130*
d7-N-MeFOSE-M	*85.7*		*10 - 130*
d9-N-EtFOSE-M	*82.5*		*10 - 130*
d5-NEtPFOSA	*73.0*		*10 - 130*
d3-NMePFOSA	*69.4*		*10 - 130*

Lab Sample ID: 590-25447-1 DU
Matrix: Water
Analysis Batch: 776597

Client Sample ID: MW-7B-061924
Prep Type: Total/NA
Prep Batch: 775603

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Perfluorobutanoic acid (PFBA)	5.9	J	6.53	J	ng/L		10	30
Perfluoropentanoic acid (PFPeA)	5.6		5.64		ng/L		0.5	30
Perfluorohexanoic acid (PFHxA)	1.9		1.81		ng/L		4	30
Perfluoroheptanoic acid (PFHpA)	0.93	J	1.05	J	ng/L		12	30
Perfluorooctanoic acid (PFOA)	ND		ND		ng/L		NC	30
Perfluorononanoic acid (PFNA)	ND		ND		ng/L		NC	30
Perfluorodecanoic acid (PFDA)	ND		ND		ng/L		NC	30
Perfluoroundecanoic acid (PFUnA)	ND		ND		ng/L		NC	30

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

Lab Sample ID: 590-25447-1 DU
Matrix: Water
Analysis Batch: 776597

Client Sample ID: MW-7B-061924
Prep Type: Total/NA
Prep Batch: 775603

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Perfluorododecanoic acid (PFDoA)	ND			ND		ng/L				NC	30
Perfluorotridecanoic acid (PFTrDA)	ND			ND		ng/L				NC	30
Perfluorotetradecanoic acid (PFTeDA)	ND			ND		ng/L				NC	30
Perfluorobutanesulfonic acid (PFBS)	ND			ND		ng/L				NC	30
Perfluoropentanesulfonic acid (PFPeS)	ND			ND		ng/L				NC	30
Perfluorohexanesulfonic acid (PFHxS)	ND			ND		ng/L				NC	30
Perfluoroheptanesulfonic acid (PFHpS)	ND			ND		ng/L				NC	30
Perfluorooctanesulfonic acid (PFOS)	ND			ND		ng/L				NC	30
Perfluorononanesulfonic acid (PFNS)	ND			ND		ng/L				NC	30
Perfluorodecanesulfonic acid (PFDS)	ND			ND		ng/L				NC	30
Perfluorododecanesulfonic acid (PFDoS)	ND			ND		ng/L				NC	30
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	ND			ND		ng/L				NC	30
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	ND			ND		ng/L				NC	30
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	ND			ND		ng/L				NC	30
Perfluorooctanesulfonamide (PFOSA)	ND			ND		ng/L				NC	30
N-methylperfluorooctane sulfonamide (NMeFOSA)	ND			ND		ng/L				NC	30
N-ethylperfluorooctane sulfonamide (NEtFOSA)	ND			ND		ng/L				NC	30
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND			ND		ng/L				NC	30
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND			ND		ng/L				NC	30
N-methylperfluorooctane sulfonamidoethanol (NMeFOSE)	ND			ND		ng/L				NC	30
N-ethylperfluorooctane sulfonamidoethanol (NEtFOSE)	ND			ND		ng/L				NC	30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND			ND		ng/L				NC	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND			ND		ng/L				NC	30
Perfluoro-3-methoxypropanoic acid (PFMPA)	ND			ND		ng/L				NC	30
Perfluoro-4-methoxybutanoic acid (PFMBA)	ND			ND		ng/L				NC	30
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND			ND		ng/L				NC	30
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	ND			ND		ng/L				NC	30

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

Lab Sample ID: 590-25447-1 DU
Matrix: Water
Analysis Batch: 776597

Client Sample ID: MW-7B-061924
Prep Type: Total/NA
Prep Batch: 775603

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	ND			ND		ng/L				NC	30
3-Perfluoropropylpropanoic acid (3:3 FTCA)	ND			ND		ng/L				NC	30
3-Perfluoropentylpropanoic acid (5:3 FTCA)	ND			ND		ng/L				NC	30
3-Perfluoroheptylpropanoic acid (7:3 FTCA)	ND			ND		ng/L				NC	30

Isotope Dilution	*DU %Recovery*	*DU Qualifier*	*Limits*
13C4 PFBA	*87.3*		*5 - 130*
13C5 PFPeA	*71.1*		*40 - 130*
13C5 PFHxA	*83.3*		*40 - 130*
13C4 PFHpA	*80.7*		*40 - 130*
13C8 PFOA	*84.5*		*40 - 130*
13C9 PFNA	*88.0*		*40 - 130*
13C6 PFDA	*89.5*		*40 - 130*
13C7 PFUnA	*74.1*		*30 - 130*
13C2 PFDoA	*78.9*		*10 - 130*
13C2 PFTeDA	*71.5*		*10 - 130*
13C3 PFBS	*86.6*		*40 - 135*
13C3 PFHxS	*77.0*		*40 - 130*
13C8 PFOS	*81.3*		*40 - 130*
13C8 PFOSA	*84.2*		*40 - 130*
d3-NMeFOSAA	*84.3*		*40 - 170*
d5-NEtFOSAA	*82.5*		*25 - 135*
13C2 4:2 FTS	*97.0*		*40 - 200*
13C2 6:2 FTS	*93.8*		*40 - 200*
13C2 8:2 FTS	*90.3*		*40 - 300*
13C3 HFPO-DA	*83.9*		*40 - 130*
d7-N-MeFOSE-M	*70.8*		*10 - 130*
d9-N-EtFOSE-M	*64.9*		*10 - 130*
d5-NEtPFOSA	*66.8*		*10 - 130*
d3-NMePFOSA	*66.6*		*10 - 130*

Lab Sample ID: MB 320-777242/1-A
Matrix: Water
Analysis Batch: 777673

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 777242

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	ND		8.0	2.0	ng/L		07/08/24 05:18	07/09/24 09:16	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*84.2*		*40 - 130*	*07/08/24 05:18*	*07/09/24 09:16*	*1*

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

Lab Sample ID: LCS 320-777242/3-A
Matrix: Water
Analysis Batch: 777673

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 777242

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)			120	117		ng/L		98	70 - 155		

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C3 HFPO-DA	*83.6*		*40 - 130*

Lab Sample ID: LCSD 320-777242/4-A
Matrix: Water
Analysis Batch: 777673

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 777242

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	107		ng/L		90	70 - 155	8	30

Isotope Dilution	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
13C3 HFPO-DA	*86.6*		*40 - 130*

Lab Sample ID: LLCS 320-777242/2-A
Matrix: Water
Analysis Batch: 777673

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 777242

Analyte			Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits		
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)			12.0	10.7		ng/L		89	70 - 155		

Isotope Dilution	*LLCS %Recovery*	*LLCS Qualifier*	*Limits*
13C3 HFPO-DA	*87.0*		*40 - 130*

Lab Sample ID: MB 320-777797/1-A
Matrix: Water
Analysis Batch: 778118

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 777797

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	ND		8.0	2.0	ng/L		07/09/24 12:39	07/11/24 03:12	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*73.8*		*40 - 130*	*07/09/24 12:39*	*07/11/24 03:12*	*1*

Lab Sample ID: LCS 320-777797/3-A
Matrix: Water
Analysis Batch: 778118

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 777797

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)			120	119		ng/L		100	70 - 155		

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

Isotope Dilution	LCS %Recovery	LCS Qualifier	Limits
13C3 HFPO-DA	77.1		40 - 130

Lab Sample ID: LCSD 320-777797/4-A
Matrix: Water
Analysis Batch: 778118

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 777797

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	126		ng/L		105	70 - 155	5	30

Isotope Dilution	LCSD %Recovery	LCSD Qualifier	Limits
13C3 HFPO-DA	82.1		40 - 130

Lab Sample ID: LLCS 320-777797/2-A
Matrix: Water
Analysis Batch: 778118

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 777797

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	12.0	11.9		ng/L		99	70 - 155

Isotope Dilution	LLCS %Recovery	LLCS Qualifier	Limits
13C3 HFPO-DA	79.3		40 - 130

Method: PPCP NEG - Pharmaceuticals and Personal Care Products (LC/MS/MS)

Lab Sample ID: MB 810-103678/10
Matrix: Water
Analysis Batch: 103678

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acesulfame K	ND		0.020	0.0020	ug/L			06/25/24 02:47	1
Sucralose	ND		0.10	0.014	ug/L			06/25/24 02:47	1

Method: 6010D - Metals (ICP)

Lab Sample ID: MB 590-48116/2-A
Matrix: Water
Analysis Batch: 48207

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 48116

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Magnesium	ND		0.50	0.13	mg/L		06/27/24 10:32	07/02/24 12:18	1
Potassium	ND		2.0	0.29	mg/L		06/27/24 10:32	07/02/24 12:18	1
Sodium	ND		2.0	0.20	mg/L		06/27/24 10:32	07/02/24 12:18	1

Lab Sample ID: LCS 590-48116/1-A
Matrix: Water
Analysis Batch: 48207

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 48116

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Magnesium	25.0	22.5		mg/L		90	80 - 120
Potassium	25.0	22.5		mg/L		90	80 - 135

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

Lab Sample ID: LCS 590-48116/1-A
Matrix: Water
Analysis Batch: 48207

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 48116

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Sodium	25.0	26.1		mg/L		104	80 - 154

Lab Sample ID: MB 590-48117/2-B
Matrix: Water
Analysis Batch: 48207

Client Sample ID: Method Blank
Prep Type: Dissolved
Prep Batch: 48188

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	ND		1.0	0.20	mg/L		07/02/24 11:12	07/02/24 13:10	1
Magnesium	ND		0.50	0.13	mg/L		07/02/24 11:12	07/02/24 13:10	1

Lab Sample ID: LCS 590-48117/1-B
Matrix: Water
Analysis Batch: 48207

Client Sample ID: Lab Control Sample
Prep Type: Dissolved
Prep Batch: 48188

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Calcium	25.0	21.7		mg/L		87	80 - 120
Magnesium	25.0	21.8		mg/L		87	80 - 120

Method: 6020B - Metals (ICP/MS)

Lab Sample ID: MB 580-463023/11-A
Matrix: Water
Analysis Batch: 463150

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 463023

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		0.0050	0.0010	mg/L		06/21/24 15:42	06/24/24 11:46	5
Cadmium	ND		0.0020	0.00019	mg/L		06/21/24 15:42	06/24/24 11:46	5
Iron	ND		0.50	0.067	mg/L		06/21/24 15:42	06/24/24 11:46	5
Lead	0.000306	J	0.0020	0.00020	mg/L		06/21/24 15:42	06/24/24 11:46	5
Manganese	ND		0.010	0.0023	mg/L		06/21/24 15:42	06/24/24 11:46	5
Zinc	ND		0.035	0.0046	mg/L		06/21/24 15:42	06/24/24 11:46	5

Lab Sample ID: LCS 580-463023/12-A
Matrix: Water
Analysis Batch: 463150

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 463023

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Arsenic	1.00	1.01		mg/L		101	80 - 120
Cadmium	1.00	0.987		mg/L		99	80 - 120
Iron	20.0	20.8		mg/L		104	80 - 120
Lead	1.00	0.989		mg/L		99	80 - 120
Manganese	1.00	0.970		mg/L		97	80 - 120
Zinc	1.00	1.04		mg/L		104	80 - 120

Lab Sample ID: LCSD 580-463023/13-A
Matrix: Water
Analysis Batch: 463150

Client Sample ID: Lab Control Sample Dup
Prep Type: Total Recoverable
Prep Batch: 463023

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Arsenic	1.00	1.01		mg/L		101	80 - 120	0	20

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

Lab Sample ID: LCSD 580-463023/13-A
Matrix: Water
Analysis Batch: 463150

Client Sample ID: Lab Control Sample Dup
Prep Type: Total Recoverable
Prep Batch: 463023

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Cadmium	1.00	0.987		mg/L		99	80 - 120	0	20
Iron	20.0	21.4		mg/L		107	80 - 120	3	20
Lead	1.00	0.990		mg/L		99	80 - 120	0	20
Manganese	1.00	0.974		mg/L		97	80 - 120	0	20
Zinc	1.00	1.04		mg/L		104	80 - 120	1	20

Lab Sample ID: MB 580-463143/10-A
Matrix: Water
Analysis Batch: 463282

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 463143

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		0.0050	0.0010	mg/L		06/24/24 16:51	06/25/24 10:50	5
Cadmium	ND		0.0020	0.00019	mg/L		06/24/24 16:51	06/25/24 10:50	5
Iron	ND		0.50	0.067	mg/L		06/24/24 16:51	06/25/24 10:50	5
Lead	ND		0.0020	0.00020	mg/L		06/24/24 16:51	06/25/24 10:50	5
Manganese	ND		0.010	0.0023	mg/L		06/24/24 16:51	06/25/24 10:50	5
Zinc	ND		0.035	0.0046	mg/L		06/24/24 16:51	06/25/24 10:50	5

Lab Sample ID: LCS 580-463143/11-A
Matrix: Water
Analysis Batch: 463282

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 463143

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Arsenic	1.00	0.988		mg/L		99	80 - 120
Cadmium	1.00	0.939		mg/L		94	80 - 120
Iron	20.0	19.7		mg/L		99	80 - 120
Lead	1.00	1.02		mg/L		102	80 - 120
Manganese	1.00	0.948		mg/L		95	80 - 120
Zinc	1.00	0.994		mg/L		99	80 - 120

Lab Sample ID: LCSD 580-463143/12-A
Matrix: Water
Analysis Batch: 463282

Client Sample ID: Lab Control Sample Dup
Prep Type: Total Recoverable
Prep Batch: 463143

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Arsenic	1.00	0.957		mg/L		96	80 - 120	3	20
Cadmium	1.00	0.918		mg/L		92	80 - 120	2	20
Iron	20.0	19.0		mg/L		95	80 - 120	4	20
Lead	1.00	1.01		mg/L		101	80 - 120	1	20
Manganese	1.00	0.914		mg/L		91	80 - 120	4	20
Zinc	1.00	0.953		mg/L		95	80 - 120	4	20

Lab Sample ID: MB 580-463083/11-B
Matrix: Water
Analysis Batch: 463405

Client Sample ID: Method Blank
Prep Type: Dissolved
Prep Batch: 463243

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		0.0050	0.0010	mg/L		06/25/24 15:33	06/26/24 12:13	5
Cadmium	ND		0.0020	0.00019	mg/L		06/25/24 15:33	06/26/24 12:13	5
Iron	ND		0.50	0.067	mg/L		06/25/24 15:33	06/26/24 12:13	5

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

Lab Sample ID: MB 580-463083/11-B
Matrix: Water
Analysis Batch: 463405

Client Sample ID: Method Blank
Prep Type: Dissolved
Prep Batch: 463243

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	ND		0.0020	0.00020	mg/L		06/25/24 15:33	06/26/24 12:13	5
Manganese	ND		0.010	0.0023	mg/L		06/25/24 15:33	06/26/24 12:13	5
Zinc	ND		0.035	0.0046	mg/L		06/25/24 15:33	06/26/24 12:13	5

Lab Sample ID: LCS 580-463083/12-B
Matrix: Water
Analysis Batch: 463405

Client Sample ID: Lab Control Sample
Prep Type: Dissolved
Prep Batch: 463243

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Arsenic	1.00	1.03		mg/L		103	80 - 120
Cadmium	1.00	1.02		mg/L		102	80 - 120
Iron	20.0	19.8		mg/L		99	80 - 120
Lead	1.00	1.01		mg/L		101	80 - 120
Manganese	1.00	0.978		mg/L		98	80 - 120
Zinc	1.00	0.986		mg/L		99	80 - 120

Lab Sample ID: LCSD 580-463083/13-B
Matrix: Water
Analysis Batch: 463405

Client Sample ID: Lab Control Sample Dup
Prep Type: Dissolved
Prep Batch: 463243

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Arsenic	1.00	1.04		mg/L		104	80 - 120	0	20
Cadmium	1.00	1.03		mg/L		103	80 - 120	1	20
Iron	20.0	20.0		mg/L		100	80 - 120	1	20
Lead	1.00	1.03		mg/L		103	80 - 120	2	20
Manganese	1.00	0.992		mg/L		99	80 - 120	1	20
Zinc	1.00	0.986		mg/L		99	80 - 120	0	20

Method: 7470A - Mercury (CVAA)

Lab Sample ID: MB 590-48224/9-A
Matrix: Water
Analysis Batch: 48241

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 48224

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.090	ug/L		07/03/24 10:12	07/03/24 12:18	1

Lab Sample ID: LCS 590-48224/8-A
Matrix: Water
Analysis Batch: 48241

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 48224

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Mercury	2.00	1.69		ug/L		85	80 - 120

Lab Sample ID: 590-25447-1 MS
Matrix: Water
Analysis Batch: 48241

Client Sample ID: MW-7B-061924
Prep Type: Total/NA
Prep Batch: 48224

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Mercury	ND		2.00	1.79		ug/L		90	80 - 120

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

Lab Sample ID: 590-25447-1 MSD
Matrix: Water
Analysis Batch: 48241

Client Sample ID: MW-7B-061924
Prep Type: Total/NA
Prep Batch: 48224

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Mercury	ND		2.00	1.78		ug/L		89	80 - 120	1	20

Lab Sample ID: 590-25447-1 DU
Matrix: Water
Analysis Batch: 48241

Client Sample ID: MW-7B-061924
Prep Type: Total/NA
Prep Batch: 48224

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

Lab Sample ID: MB 590-48117/2-C
Matrix: Water
Analysis Batch: 48241

Client Sample ID: Method Blank
Prep Type: Dissolved
Prep Batch: 48225

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.090	ug/L		07/03/24 10:15	07/03/24 12:59	1

Lab Sample ID: LCS 590-48117/1-C
Matrix: Water
Analysis Batch: 48241

Client Sample ID: Lab Control Sample
Prep Type: Dissolved
Prep Batch: 48225

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Mercury	2.00	1.74		ug/L		87	80 - 120

Lab Sample ID: 590-25447-1 MS
Matrix: Water
Analysis Batch: 48241

Client Sample ID: MW-7B-061924
Prep Type: Dissolved
Prep Batch: 48225

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Mercury	ND		2.00	1.77		ug/L		89	80 - 120

Lab Sample ID: 590-25447-1 MSD
Matrix: Water
Analysis Batch: 48241

Client Sample ID: MW-7B-061924
Prep Type: Dissolved
Prep Batch: 48225

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Mercury	ND		2.00	1.81		ug/L		91	80 - 120	2	20

Lab Sample ID: 590-25447-1 DU
Matrix: Water
Analysis Batch: 48241

Client Sample ID: MW-7B-061924
Prep Type: Dissolved
Prep Batch: 48225

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 280-658344/19
Matrix: Water
Analysis Batch: 658344

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			06/25/24 15:15	1

Lab Sample ID: LCS 280-658344/20
Matrix: Water
Analysis Batch: 658344

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	2.43		mg/L		97	90 - 110

Lab Sample ID: LCSD 280-658344/21
Matrix: Water
Analysis Batch: 658344

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	2.50		mg/L		100	90 - 110	3	10

Method: SM 2320B - Alkalinity

Lab Sample ID: MB 590-48087/1
Matrix: Water
Analysis Batch: 48087

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			06/26/24 09:37	1
Bicarbonate Alkalinity as CaCO3	5.00	J	20	5.0	mg/L			06/26/24 09:37	1

Lab Sample ID: LCS 590-48087/2
Matrix: Water
Analysis Batch: 48087

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Alkalinity	501	475		mg/L		95	90 - 110

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

Lab Sample ID: MB 590-48103/1
Matrix: Water
Analysis Batch: 48103

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			06/26/24 14:26	1

Lab Sample ID: LCS 590-48103/2
Matrix: Water
Analysis Batch: 48103

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	500	499		mg/L		100	80 - 120

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

Lab Sample ID: MB 280-658294/36
Matrix: Water
Analysis Batch: 658294

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			06/24/24 22:53	1

Lab Sample ID: LCS 280-658294/35
Matrix: Water
Analysis Batch: 658294

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	25.2		mg/L		101	88 - 112		

Lab Chronicle

Client: GeoEngineers Inc
Project/Site: Marshall Landfill

Job ID: 590-25447-1

Client Sample ID: MW-7B-061924

Date Collected: 06/19/24 09:15
Date Received: 06/19/24 16:17

Lab Sample ID: 590-25447-1

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	48050	06/24/24 13:58	JSP	EET SPK
Total/NA	Prep	3510C			242.8 mL	1 mL	463156	06/25/24 08:16	JW	EET SEA
Total/NA	Analysis	8270C SIM ID		1	1 mL	1 mL	463356	06/26/24 18:28	TL1	EET SEA
Total/NA	Analysis	300.0		1	5 mL	5 mL	47991	06/20/24 15:05	NMI	EET SPK
Total/NA	Analysis	300.0		1	5 mL	5 mL	47992	06/20/24 15:05	NMI	EET SPK
Total/NA	Prep	1633			599.8 mL	5.0 mL	775603	06/29/24 08:01	WVD	EET SAC
Total/NA	Analysis	Draft-4 1633		1	1 mL	1 mL	776597	07/05/24 01:50	EMF	EET SAC
Total/NA	Prep	1633	RE		178.9 mL	5.0 mL	777797	07/09/24 12:39	ATB	EET SAC
Total/NA	Analysis	Draft-4 1633	RE	1	1 mL	1 mL	778118	07/11/24 04:34	RS1	EET SAC
Dissolved	Filtration	FILTRATION			50 mL	50 mL	48117	06/27/24 10:48	AMB	EET SPK
Dissolved	Prep	3005A			50 mL	50 mL	48188	07/02/24 11:12	AMB	EET SPK
Dissolved	Analysis	6010D		1			48256	07/02/24 18:58	AMB	EET SPK
Total Recoverable	Prep	3005A			50 mL	50 mL	48116	06/27/24 10:32	AMB	EET SPK
Total Recoverable	Analysis	6010D		1			48256	07/02/24 18:20	AMB	EET SPK
Dissolved	Filtration	FILTRATION			250 mL	250 mL	463083	06/24/24 10:04	TMH	EET SEA
Dissolved	Prep	3005A			50 mL	50 mL	463243	06/25/24 15:33	MCMS	EET SEA
Dissolved	Analysis	6020B		5			463405	06/26/24 12:49	TMH	EET SEA
Total Recoverable	Prep	3005A			50 mL	50 mL	463023	06/21/24 15:42	MCMS	EET SEA
Total Recoverable	Analysis	6020B		5			463150	06/24/24 12:19	FCW	EET SEA
Total Recoverable	Prep	3005A			50 mL	50 mL	463023	06/21/24 15:42	MCMS	EET SEA
Total Recoverable	Analysis	6020B		5			463150	06/24/24 13:08	FCW	EET SEA
Dissolved	Filtration	FILTRATION			50 mL	50 mL	48117	06/27/24 10:48	AMB	EET SPK
Dissolved	Prep	7470A			50 mL	50 mL	48225	07/03/24 10:15	AMB	EET SPK
Dissolved	Analysis	7470A		1			48241	07/03/24 13:01	AMB	EET SPK
Total/NA	Prep	7470A			50 mL	50 mL	48224	07/03/24 10:13	AMB	EET SPK
Total/NA	Analysis	7470A		1			48241	07/03/24 12:20	AMB	EET SPK
Total/NA	Analysis	350.1		1	10 mL	10 mL	658344	06/25/24 17:18	LBR	EET DEN
Total/NA	Analysis	SM 2320B		1	100 mL	100 mL	48087	06/26/24 09:37	RMA	EET SPK
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	48103	06/26/24 14:27	RMA	EET SPK
Total/NA	Analysis	SM 5310B		1	20 mL	20 mL	658294	06/25/24 05:20	ABW	EET DEN

Client Sample ID: MW-12A-061924

Date Collected: 06/19/24 11:40
Date Received: 06/19/24 16:17

Lab Sample ID: 590-25447-2

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	48050	06/24/24 14:21	JSP	EET SPK
Total/NA	Prep	3510C			268 mL	1 mL	463156	06/25/24 08:16	JW	EET SEA
Total/NA	Analysis	8270C SIM ID		1	1 mL	1 mL	463356	06/26/24 18:42	TL1	EET SEA
Total/NA	Analysis	300.0		1	5 mL	5 mL	47991	06/20/24 15:15	NMI	EET SPK
Total/NA	Analysis	300.0		1	5 mL	5 mL	47992	06/20/24 15:15	NMI	EET SPK
Dissolved	Filtration	FILTRATION			50 mL	50 mL	48117	06/27/24 10:48	AMB	EET SPK
Dissolved	Prep	3005A			50 mL	50 mL	48188	07/02/24 11:12	AMB	EET SPK
Dissolved	Analysis	6010D		1			48257	07/03/24 13:34	AMB	EET SPK

Lab Chronicle

Client: GeoEngineers Inc
Project/Site: Marshall Landfill

Job ID: 590-25447-1

Client Sample ID: MW-12A-061924

Date Collected: 06/19/24 11:40
Date Received: 06/19/24 16:17

Lab Sample ID: 590-25447-2

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			50 mL	50 mL	48116	06/27/24 10:32	AMB	EET SPK
Total Recoverable	Analysis	6010D		1			48256	07/02/24 18:25	AMB	EET SPK
Dissolved	Filtration	FILTRATION			250 mL	250 mL	463083	06/24/24 10:04	TMH	EET SEA
Dissolved	Prep	3005A			50 mL	50 mL	463243	06/25/24 15:33	MCMS	EET SEA
Dissolved	Analysis	6020B		5			463405	06/26/24 12:55	TMH	EET SEA
Total Recoverable	Prep	3005A			50 mL	50 mL	463143	06/24/24 16:51	MCMS	EET SEA
Total Recoverable	Analysis	6020B		5			463282	06/25/24 11:19	FCW	EET SEA
Dissolved	Filtration	FILTRATION			50 mL	50 mL	48117	06/27/24 10:48	AMB	EET SPK
Dissolved	Prep	7470A			50 mL	50 mL	48225	07/03/24 10:15	AMB	EET SPK
Dissolved	Analysis	7470A		1			48241	07/03/24 13:16	AMB	EET SPK
Total/NA	Prep	7470A			50 mL	50 mL	48224	07/03/24 10:13	AMB	EET SPK
Total/NA	Analysis	7470A		1			48241	07/03/24 12:31	AMB	EET SPK
Total/NA	Analysis	350.1		1	10 mL	10 mL	658344	06/25/24 15:34	LBR	EET DEN
Total/NA	Analysis	SM 2320B		1	100 mL	100 mL	48087	06/26/24 09:37	RMA	EET SPK
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	48103	06/26/24 14:27	RMA	EET SPK
Total/NA	Analysis	SM 5310B		1	20 mL	20 mL	658294	06/25/24 06:08	ABW	EET DEN

Client Sample ID: MW-15A-061924

Date Collected: 06/19/24 13:40
Date Received: 06/19/24 16:17

Lab Sample ID: 590-25447-3

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	47991	06/20/24 15:25	NMI	EET SPK
Total/NA	Analysis	300.0		1	5 mL	5 mL	47992	06/20/24 15:25	NMI	EET SPK
Total/NA	Prep	1633			594.2 mL	5.0 mL	775603	06/29/24 08:01	WVD	EET SAC
Total/NA	Analysis	Draft-4 1633		1	1 mL	1 mL	776597	07/05/24 02:31	EMF	EET SAC
Total/NA	Prep	1633	RE		585.7 mL	5.0 mL	777242	07/08/24 05:18	GAT	EET SAC
Total/NA	Analysis	Draft-4 1633	RE	1	1 mL	1 mL	777673	07/09/24 11:39	K1D	EET SAC
Total/NA	Analysis	PPCP NEG		1	1 mL	1 mL	103678	06/25/24 06:31	BS	EA SB
Total/NA	Analysis	PPCP NEG	DL	10	1 mL	1 mL	103678	06/25/24 13:04	BS	EA SB
Dissolved	Filtration	FILTRATION			50 mL	50 mL	48117	06/27/24 10:48	AMB	EET SPK
Dissolved	Prep	3005A			50 mL	50 mL	48188	07/02/24 11:12	AMB	EET SPK
Dissolved	Analysis	6010D		1			48257	07/03/24 13:38	AMB	EET SPK
Total Recoverable	Prep	3005A			50 mL	50 mL	48116	06/27/24 10:32	AMB	EET SPK
Total Recoverable	Analysis	6010D		1			48256	07/02/24 18:29	AMB	EET SPK
Dissolved	Filtration	FILTRATION			250 mL	250 mL	463083	06/24/24 10:04	TMH	EET SEA
Dissolved	Prep	3005A			50 mL	50 mL	463243	06/25/24 15:33	MCMS	EET SEA
Dissolved	Analysis	6020B		5			463405	06/26/24 12:53	TMH	EET SEA
Total/NA	Analysis	350.1		1	10 mL	10 mL	658344	06/25/24 15:37	LBR	EET DEN
Total/NA	Analysis	SM 2320B		1	100 mL	100 mL	48087	06/26/24 09:37	RMA	EET SPK
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	48103	06/26/24 14:27	RMA	EET SPK
Total/NA	Analysis	SM 5310B		1	20 mL	20 mL	658294	06/25/24 06:25	ABW	EET DEN

Lab Chronicle

Client: GeoEngineers Inc
Project/Site: Marshall Landfill

Job ID: 590-25447-1

Laboratory References:

EA SB = Eurofins Eaton Analytical South Bend, 110 S Hill Street, South Bend, IN 46617, TEL (574)233-4777

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: 590-25447-1

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	01-07-25

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 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	10-31-25
A2LA	ISO/IEC 17025	2907.01	10-31-25
Alabama	State Program	40730	09-30-12 *
Alaska (UST)	State	18-001	06-26-24
Arizona	State	AZ0713	07-30-24
Arkansas DEQ	State	19-047-0	04-21-25
California	State	2513	01-08-25
Colorado	Petroleum Storage Tank Program	4025 (or)	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	2000172024-9	05-31-25
Iowa	State	370	08-04-24
Kansas	NELAP	E-10166	04-30-25
Kentucky (WW)	State	KY98047	12-31-24
Louisiana	NELAP	30785	06-30-14 *
Louisiana (All)	NELAP	30785	06-30-25
Minnesota	NELAP	1788752	08-20-24
Nevada	State	CO000262024-08	07-31-24
New Hampshire	NELAP	2053	08-12-24
New Jersey	NELAP	230001	06-30-24
New York	NELAP	59923	04-01-25
Oklahoma	NELAP	8614	08-31-24
Oregon	NELAP	4025	07-16-24
Pennsylvania	NELAP	013	07-08-24
South Carolina	State	72002001	01-08-24 *
Texas	NELAP	TX104704183-08-TX	09-30-09 *
Texas	NELAP	T104704183-23-23	09-30-24
USDA	US Federal Programs	P330-20-00065	12-19-25
Utah	NELAP	QUAN5	06-30-13 *
Utah	NELAP	CO000262019-11	07-31-25
Virginia	NELAP	460232	06-30-24
Washington	State	C583	08-03-24
West Virginia DEP	State	354	11-30-24
Wisconsin	State	999615430	08-19-24
Wyoming (UST)	A2LA	2907.01	10-31-25

Laboratory: Eurofins Eaton Analytical South Bend

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: 590-25447-1

Laboratory: Eurofins Eaton Analytical South Bend (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
A2LA	ISO/IEC 17025	5794.01	07-21-24
Alabama	State	40700	06-30-24
Alaska	State	IN00035	06-30-24
Arizona	State	AZ0432	07-25-24
Arkansas (DW)	State	EPA IN00035	06-30-24
California	State	2920	06-30-24
Colorado	State	IN00035	08-05-24
Connecticut	State	PH-0132	07-08-24
Delaware (DW)	State	IN00035	06-27-24
Florida	NELAP	E87775	06-30-24
Georgia (DW)	State	929	06-30-24
Guam	State	23-011R	07-15-24
Hawaii	State	IN035	06-30-24
Idaho (DW)	State	IN00035	08-15-24
IL Dept. of Public Health (Micro)	State	17767	06-30-24
Illinois	NELAP	200001	09-19-24
Indiana	State	C-71-01	12-31-25
Indiana (Micro)	State	M-76-07	12-31-25
Iowa	State	IA Lab #098	08-01-24
Kansas	NELAP	E-10233	10-31-24
Kentucky (DW)	State	KY90056	08-12-24
Louisiana (DW)	State	LA014	07-16-24
Maine	State	IN00035	05-01-25
Maryland	State	209	06-27-24
Massachusetts	State	M-IN035	07-30-24
MI - RadChem Recognition	State	9926	06-26-24
Michigan	State	9926	06-26-24
Minnesota	NELAP	1989807	12-31-24
Mississippi	State	IN00035	06-30-24
Missouri	State	880	09-30-24
Montana (DW)	State	CERT0026	07-16-24
Nebraska	State	NE-OS-05-04	06-30-24
Nevada	State	IN000352024-01	07-31-24
New Hampshire	NELAP	2124	11-05-24
New Jersey	NELAP	IN598	06-30-24
New Mexico	State	IN00035	06-30-24
New York	NELAP	11398	04-01-25
North Carolina (DW)	State	18700	06-30-24
North Dakota	State	R-035	06-30-24
Northern Mariana Islands (DW)	State	IN00035	06-30-24
Ohio	State	87775	06-27-24
Oklahoma	NELAP	D9508	08-31-24
Oregon	NELAP	4156	09-16-24
Pennsylvania	NELAP	68-00466	04-30-25
Puerto Rico	State	IN00035	07-10-24
Rhode Island	State	LAO00343	07-21-24
South Carolina	State	95005001	06-30-24
South Dakota (DW)	State	IN00035	06-30-24
Tennessee	State	TN02973	06-30-24
Texas	NELAP	T104704187-22-16	12-31-24

Laboratory: Eurofins Eaton Analytical South Bend (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
Texas	TCEQ Water Supply	TX207	06-30-24
USEPA Reg X SDWA	US Federal Programs	IN00035	08-24-24
USEPA UCMR 5	US Federal Programs	IN00035	12-31-25
Utah	NELAP	IN00035	07-31-24
Vermont	State	VT-8775	07-16-24
Virginia	NELAP	460275	07-31-24
Washington	State	C837	01-01-25
West Virginia (DW)	State	9927 C	08-19-24
Wisconsin	State	999766900	08-31-24
Wisconsin (Micro)	State	10121	12-31-24
Wyoming	State	8TMS-L	06-30-24

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	02-20-27
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	05-18-25
California	State	2897	01-31-26
Colorado	State	CA00044	08-31-24
Florida	NELAP	E87570	06-30-25
Georgia	State	4040	01-29-25
Hawaii	State	Eurofins Sacramento	01-29-25
Illinois	NELAP	200060	03-31-25
Kansas	NELAP	E-10375	10-31-25
Louisiana	NELAP	01944	06-30-25
Louisiana (All)	NELAP	01944	06-30-25
Maine	State	CA00004	04-14-26
Michigan	State	9947	08-18-24
Nevada	State	CA00044	07-31-24
New Hampshire	NELAP	2997	04-19-25
New Jersey	NELAP	CA005	06-30-25
New York	NELAP	11666	04-01-25
Ohio	State	41252	01-29-25
Oregon	NELAP	4040	07-16-24
Texas	NELAP	T104704399-23-17	05-31-25
US Fish & Wildlife	US Federal Programs	A22139	04-30-25
USDA	US Federal Programs	P330-18-00239	02-28-26
Utah	NELAP	CA000442023-16	02-28-25
Virginia	NELAP	460278	03-14-25
Washington	State	C581	05-05-25
West Virginia (DW)	State	9930C	01-31-25
Wisconsin	State	998204680	08-07-24
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: 590-25447-1

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	08-07-24
ANAB	Dept. of Energy	L2236	08-07-24
ANAB	ISO/IEC 17025	L2236	08-07-24
California	State	2954	07-07-24
Florida	NELAP	E87575	06-30-24
Louisiana	NELAP	03073	06-30-24
Louisiana (All)	NELAP	03073	06-30-24
Maine	State	WA01273	05-02-26
Montana (UST)	State	NA	04-14-27
New Jersey	NELAP	WA014	06-30-24
New York	NELAP	11662	04-01-25
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	C788-24	07-13-24
Wisconsin	State	399133460	08-31-24

Method Summary

Client: GeoEngineers Inc
Project/Site: Marshall Landfill

Job ID: 590-25447-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET SPK
8270C SIM ID	Semivolatile Organic Compounds (GC/MS SIM / Isotope Dilution)	SW846	EET SEA
300.0	Anions, Ion Chromatography	EPA	EET SPK
Draft-4 1633	Per- and Polyfluoroalkyl Substances by LC/MS/MS	EPA	EET SAC
PPCP NEG	Pharmaceuticals and Personal Care Products (LC/MS/MS)	Lab SOP	EA SB
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 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
FILTRATION	Sample Filtration	None	EET SEA
FILTRATION	Sample Filtration	None	EET SPK

Protocol References:

EPA = US Environmental Protection Agency
Lab SOP = Laboratory Standard Operating Procedure
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:

EA SB = Eurofins Eaton Analytical South Bend, 110 S Hill Street, South Bend, IN 46617, TEL (574)233-4777
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 E 1st Avenue

Spokane, WA 99206-5302
phone 509.924.9200 fax 509.924.9290

Chain of Custody Record

eurofins Environment Testing America

Regulatory Program ☐ DW ☐ NPDES ☐ RCRA ☐ Other

Eurofins Environment Testing America

Client Contact	Project Manager: Sydney Bronson	Site Contact: Alex Nelsen	Date: 6/19/24
GeoEngineers, Inc.	Email: sbronson@geoengineers.com	Lab Contact:	Carrier:
523 E 2nd Ave	Tel/Fax: 509.570.0779		
Spokane, WA 99202	**Analysis Turnaround Time**		
509.363.3125 Phone	☐ CALENDAR DAYS ☐ WORKING DAYS		
FAX	TAT if different from Below ____		
Project Name: Marshall Landfill GWM	☒ 2 weeks		
Site: Marshall Landfill Site Design	☐ 1 week		
P O # 0504-104-01	☐ 2 days		
	☐ 1 day		

COC No: 1 of 1 COCs
TALS Project #
Sampler
For Lab Use Only
Walk-in Client:
Lab Sampling
Job / SDG No.

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y / N)	Perform MS / MSD (Y / N)	PFAS / EPA 1633	Ammonia as N / EPA 350.1	Alkalinity bicarbonate / SM 2320B	TDS / SC 2540C	TOC / SM 5310B	Total K, Mg, Na / EPA 6010D	Dissolved Ca, Mg / EPA 6010D	Chloride, sulfate, nitrate, nitrite / EPA 300.0	Diss. Fe Mn / EPA 6020B	Total Hg / EPA 7470A	Diss Hg / 7470A	Total As, Cd, Fe, Mn, Pb, Zn / EPA 6020B	Diss As, Cd, Fe, Mn, Pb, Zn / EPA 6020B	Artificial Sweeteners (acesulfame K, sucralose	PCE, 1,1,1 TCA / EPA 8260D	1,4-dioxane / EPA 8270E SIM	Sample Specific Notes.
MW-7B-061924	6/19/24	0915	G	W				X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	
MW-12A-061924	6/19/24	1140	G	W					X	X	X	X	X	X	X	X	X	X	X	X		X	X	SJB 6/20/24
MW-15-061924	6/19/24	1340	G	W				X	X	X	X	X	X	X	X	X					X			

590-25447 Chain of Custody

Preservation Used: 1= Ice, 2= HCl, 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other ____

Possible Hazard Identification
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return to Client ☐ Disposal by Lab ☐ Archive for ____ Months

Special Instructions/QC Requirements & Comments.
DISSOLVED METALS LAB FILTERED

37, 3.8 corr IR006

Custody Seals Intact: ☐ Yes ☐ No | Custody Seal No. | Cooler Temp. (°C): Obs'd: 11.4 Corr'd: 11.5 Therm ID No.: IR006

Relinquished by:	Company:	Date/Time: 06/19/24 1617	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company: EET SPO	Date/Time: 6/19/24 16:17

Eurofins Spokane
11922 E 1st Avenue

Spokane, WA 99206-5302
phone 509.924.9200 fax 509.924.9290

Chain of Custody Record

eurofins | Environment Testing America

Regulatory Program ☐ DW ☐ NPDES ☐ RCRA ☐ Other

Eurofins Environment Testing America

Client Contact	**Project Manager:** Sydney Bronson	**COC No:**
GeoEngineers, Inc.	Email: sbronson@geoengineers.com	1 of 1 COCs
523 E 2nd Ave	Tel/Fax: 509.570.0779	TALS Project #
Spokane, WA 99202	**Analysis Turnaround Time**	Sampler:
509.363.3125 Phone	☐ CALENDAR DAYS ☐ WORKING DAYS	**For Lab Use Only:**
FAX	TAT if different from Below	Walk-in Client:
Project Name: Marshall Landfill GWM	☒ 2 weeks	Lab Sampling
Site: Marshall Landfill Site Design	☐ 1 week	Job / SDG No.
P O # 0504-104-01	☐ 2 days ☐ 1 day	

Site Contact: Alex Nuraim **Date:** 6/19/24
Lab Contact: **Carrier:**

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS/MSD (Y/N)	PFAS / EPA 1633	Ammonia as N / EPA 350.1	Alkalinity bicarbonate / SM 2320B	TDS / S< 2540C	TOC / SM 5310B	Total K, Mg, Na / EPA 6010D	Dissolved Ca, Mg / EPA 6010D	Chloride, sulfate, nitrate, nitrite / EPA 300.0	Diss. Fe Mn / EPA 6020B	Total Hg / EPA 7470A	Diss Hg / 7470A	Total As, Cd, Fe, Mn, Pb, Zn / EPA 6020B	Diss As, Cd, Fe, Mn, Pb, Zn / EPA 6020B	Artificial Sweeteners (acesulfame K, sucralose	PCE, 1 1 1 TCA / EPA 8260D	1,4-dioxane / EPA 8270E SIM	Sample Specific Notes.
MW-7B-061924	6/19/24	0915	G	W				X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	
MW-12A-061924	6/19/24	1140	G	W					X	X	X	X	X	X	X	X								
MW-15-061924	6/19/24	1340	G	W				X	X	X	X	X	X	X	X	X						X			

590-25447 Chain of Custody

Preservation Used: 1= Ice, 2= HCl, 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other

Possible Hazard Identification
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return to Client ☐ Disposal by Lab ☐ Archive for _____ Months

Special Instructions/QC Requirements & Comments.
DISSOLVED METALS LAB FILTERED

37, 3.8 corr VR2006

Custody Seals Intact: ☐ Yes ☐ No | Custody Seal No. | Cooler Temp. (°C): Obs'd: 11.4 Corr'd: 11.5 | Therm ID No.: VR2016

Relinquished by:	Company:	Date/Time: 06/19/24 1617	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company: EET SPO	Date/Time: 6/19/24 1617

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: 590-9313.1
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 #: 590-25447-1
Address: 4955 Yarrow Street, ,	Due Date Requested: 7/2/2024			
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: -

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	Total Number of containers	Special Instructions/Note:
			Preservation Code:							
MW-7B-061924 (590-25447-1)	6/19/24	09:15 Pacific		Water			X	X	2	
MW-12A-061924 (590-25447-2)	6/19/24	11:40 Pacific		Water			X	X	2	
MW-15-061924 (590-25447-3)	6/19/24	13:40 Pacific		Water			X	X	1	

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

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

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
	6/20/24 14:42	EETSPO			
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
				6-21-24 0920	EETDEN
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: 1.8°C WACA CF-02

Ver: 04/02/2024

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: 590-9318.1
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 #: 590-25447-1
Address: 880 Riverside Parkway, ,	Due Date Requested: 7/2/2024			
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: -

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-7B-061924 (590-25447-1)	6/19/24	09:15 Pacific		Water			X	3	
MW-15-061924 (590-25447-3)	6/19/24	13.40 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 *Unconfirmed*	***Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)*** ☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For* ____ *Months*
Deliverable Requested I, II, III, IV, Other (specify) Primary Deliverable Rank: 2	Special Instructions/QC Requirements:

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

	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
1		6/20/24 15:55	EBT&D		6/21/24 0730	EBTDC
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. 3734641	Cooler Temperature(s) °C and Other Remarks: 1.3c

Ver: 04/02/2024

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: 590-9325.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: Randee.Arrington@et.eurofinsus.com	State of Origin: Washington	Page: Page 1 of 1
Company: Eurofins Eaton Analytical		Accreditations Required (See note): State Program - Washington		Job #: 590-25447-1
Address: 110 S Hill Street, ,	Due Date Requested: 7/2/2024			Preservation Codes: -
City: South Bend	TAT Requested (days):			
State, Zip: IN, 46617				
Phone: 574-233-4777(Tel) 574-233-8207(Fax)	PO #:			
Email:	WO #:			
Project Name: Marshall Landfill	Project #: 59002669			
Site:	SSOW#:			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	Perform MS/MSD	LCMS_PPCP_NEG/ (MOD) Acesulfame K & Sucralose	Total Number of containers	Special Instructions/Note:
			Preservation Code:						
MW-15-061924 (590-25447-3)	6/19/24	13:40 Pacific		Water			X	2	

Initial Temp: 0.0
Corrected Temp: 0.6
IR Gun #: T1

pH Acceptable <2

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

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

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
	6/21/24 14:22	FEC80		6/22/24 0900	
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

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

Ver: 04/02/2024

Login Sample Receipt Checklist

Client: GeoEngineers Inc

Job Number: 590-25447-1

Login Number: 25447
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.	False	Received same day of collection; chilling process has begun.
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: 590-25447-1

Login Number: 25447
List Number: 2
Creator: Held, Wesley

List Source: Eurofins Denver
List Creation: 06/21/24 11:34 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.	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?	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.	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").	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: 590-25447-1

Login Number: 25447
List Number: 5
Creator: Trowbridge, Peyton

List Source: Eurofins Eaton Analytical South Bend
List Creation: 06/22/24 10:26 AM

Question	Answer	Comment
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	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	
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	
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	
Samples do not require splitting or compositing.	True	
Container provided by EEA	True	

Login Sample Receipt Checklist

Client: GeoEngineers Inc

Job Number: 590-25447-1

Login Number: 25447
List Number: 4
Creator: Simmons, Jason C

List Source: Eurofins Sacramento
List Creation: 06/21/24 02:30 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	2274641
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	1.3c
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: 590-25447-1

Login Number: 25447
List Number: 3
Creator: Martinez, Lanea

List Source: Eurofins Seattle
List Creation: 06/21/24 11:00 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	IR14 1.0c/0.7c
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.	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)

Job:____ 590 25447 Field Sheet

Tracking # 7391 0416 9643

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 L-11 Corr. Factor (+ / -) _____ °C

Ice 1 Wet 1 Gel _____ Other _____

Cooler Custody Seal: 0074641

Cooler ID _____

Temp Observed 1.3 °C Corrected 1.3 °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: _____ Date 6.21.24

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 _____ Date 6.21.24

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 _____ Date 6.21.24

Isotope Dilution Summary

Client: GeoEngineers Inc
Project/Site: Marshall Landfill

Job ID: 590-25447-1

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

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

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	DXE (40-140)							
590-25447-1	MW-7B-061924	52							
590-25447-2	MW-12A-061924	49							
LCS 580-463156/2-A	Lab Control Sample	63							
LCSD 580-463156/3-A	Lab Control Sample Dup	58							
MB 580-463156/1-A	Method Blank	58							

Surrogate Legend

DXE = 1,4-Dioxane-d8

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)
590-25447-1	MW-7B-061924	91.9	78.3	87.6	89.8	86.7	93.4	98.6	76.0
590-25447-1 - RE	MW-7B-061924								
590-25447-1 DU	MW-7B-061924	87.3	71.1	83.3	80.7	84.5	88.0	89.5	74.1
590-25447-3	MW-15A-061924	86.9	71.6	82.2	83.5	81.8	88.0	91.1	78.6
590-25447-3 - RE	MW-15A-061924								
LCS 320-775603/3-A	Lab Control Sample	96.0	78.8	89.2	92.4	90.6	101	103	94.2
LCS 320-777242/3-A	Lab Control Sample								
LCS 320-777797/3-A	Lab Control Sample								
LCSD 320-777242/4-A	Lab Control Sample Dup								
LCSD 320-777797/4-A	Lab Control Sample Dup								
LLCS 320-775603/2-A	Lab Control Sample	90.0	76.4	87.4	88.1	93.5	97.6	103	89.7
LLCS 320-777242/2-A	Lab Control Sample								
LLCS 320-777797/2-A	Lab Control Sample								
MB 320-775603/1-A	Method Blank	94.9	79.7	88.2	97.2	90.2	96.7	107	93.5
MB 320-777242/1-A	Method Blank								
MB 320-777797/1-A	Method Blank								

		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)
590-25447-1	MW-7B-061924	79.8	76.4	84.0	78.9	83.0	88.9	90.9	85.2
590-25447-1 - RE	MW-7B-061924								
590-25447-1 DU	MW-7B-061924	78.9	71.5	86.6	77.0	81.3	84.2	84.3	82.5
590-25447-3	MW-15A-061924	79.4	68.4	81.4	75.8	79.7	85.8	88.6	83.1
590-25447-3 - RE	MW-15A-061924								
LCS 320-775603/3-A	Lab Control Sample	101	93.1	89.9	85.2	97.8	94.3	101	99.4
LCS 320-777242/3-A	Lab Control Sample								
LCS 320-777797/3-A	Lab Control Sample								
LCSD 320-777242/4-A	Lab Control Sample Dup								
LCSD 320-777797/4-A	Lab Control Sample Dup								
LLCS 320-775603/2-A	Lab Control Sample	98.5	99.0	85.9	77.6	90.0	93.1	94.8	96.4
LLCS 320-777242/2-A	Lab Control Sample								
LLCS 320-777797/2-A	Lab Control Sample								
MB 320-775603/1-A	Method Blank	102	96.5	91.3	82.8	89.7	92.9	100	96.2
MB 320-777242/1-A	Method Blank								
MB 320-777797/1-A	Method Blank								

Isotope Dilution Summary

Client: GeoEngineers Inc
Job ID: 590-25447-1
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	M242FTS (40-200)	M262FTS (40-200)	M282FTS (40-300)	HFPODA (40-130)	NMFM (10-130)	NEFM (10-130)	d5NPFSA (10-130)	d3NMFSA (10-130)
590-25447-1	MW-7B-061924	94.4	97.9	89.5	92.0	71.2	66.9	66.6	68.1
590-25447-1 - RE	MW-7B-061924				78.4				
590-25447-1 DU	MW-7B-061924	97.0	93.8	90.3	83.9	70.8	64.9	66.8	66.6
590-25447-3	MW-15A-061924	91.0	86.3	85.6	84.6	60.0	51.3	60.4	63.1
590-25447-3 - RE	MW-15A-061924				85.2				
LCS 320-775603/3-A	Lab Control Sample	95.9	99.5	97.6	95.1	86.9	83.1	75.5	68.5
LCS 320-777242/3-A	Lab Control Sample				83.6				
LCS 320-777797/3-A	Lab Control Sample				77.1				
LCSD 320-777242/4-A	Lab Control Sample Dup				86.6				
LCSD 320-777797/4-A	Lab Control Sample Dup				82.1				
LLCS 320-775603/2-A	Lab Control Sample	88.6	89.0	91.5	91.5	85.7	82.5	73.0	69.4
LLCS 320-777242/2-A	Lab Control Sample				87.0				
LLCS 320-777797/2-A	Lab Control Sample				79.3				
MB 320-775603/1-A	Method Blank	103	101	101	94.8	84.9	81.0	73.7	71.7
MB 320-777242/1-A	Method Blank				84.2				
MB 320-777797/1-A	Method Blank				73.8				

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

eurofins | Environment Testing

1 2 3 4 5 6 7 8 9 10 11 12 13 14

ANALYTICAL REPORT

PREPARED FOR

Attn: Sydney Bronson
GeoEngineers Inc
523 East Second Ave
Spokane, Washington 99202

Generated 8/28/2024 11:29:44 AM Revision 1

JOB DESCRIPTION

Marshall Landfill

JOB NUMBER

590-25479-1

Eurofins Spokane
11922 East 1st Ave
Spokane WA 99206

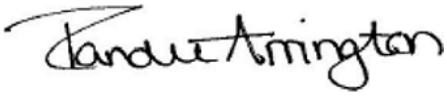
See page two for job notes and contact information.

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



Generated
8/28/2024 11:29:44 AM
Revision 1

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

Table of Contents

Job Narrative
590-25479-1

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.

Revision
The report being provided is a revision of the original report sent on 7/10/2024. The report (revision 1) is being revised due to: revised the client sample ID for the following sample per the clients request:

MW-16-062024 revised to MW-16A-062024 (590-25479-1).

Receipt
The samples were received on 6/20/2024 4:27 PM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperatures of the 3 coolers at receipt time were 3.0°C, 11.7°C and 13.7°C.

Receipt Exceptions
Container "F-2" for the following sample was received in Denver with a cracked lid on 06/25/2024. Seal is intact. No volume was lost. MW-2A-062024 (590-25479-2).

GC/MS VOA
Method 8260D: Surrogate recovery for the following sample was outside the upper control limit: DUP-062024 (590-25479-4). This sample did not contain any target analytes; therefore, re-extraction and/or re-analysis was not performed.

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

GC/MS Semi VOA
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.

LCMS
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 320-775603.

Method 1633: The following samples in preparation batch 320-775603 were yellow in color following extraction. MW-16-062024 (590-25479-1) and MW-2A-062024 (590-25479-2)

Method 1633: The following samples in preparation batch 320-775603 were light yellow in color following extraction. MW-5A-062024 (590-25479-3) and DUP-062024 (590-25479-4)

Method 1633: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate/sample duplicate (MS/MSD/DUP) associated with preparation batch 320-777242.

Method 1633: The following samples in preparation batch 320-777242 were light green in color following extraction. MW-16-062024 (590-25479-1) and MW-2A-062024 (590-25479-2)

Method 1633: The "I" qualifier means the transition mass ratio for the indicated analyte was outside the established ratio limits. The qualitative identification of the analyte has some degree of uncertainty, however, analyst judgment was used to positively identify the analyte: MW-2A-062024 (590-25479-2) .

MW-2A-062024 (590-25479-2)

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

Metals
Method 6010D - Total Recoverable: The low level initial calibration verification (ICVL) associated with batch 590-48256 recovered above the upper control limit for Potassium and Sodium. The samples associated with this ICV were 10x the spike amount 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 590-48087 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: 590-25479-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
590-25479-1	MW-16A-062024	Water	06/20/24 08:50	06/20/24 16:27
590-25479-2	MW-2A-062024	Water	06/20/24 10:20	06/20/24 16:27
590-25479-3	MW-5A-062024	Water	06/20/24 13:40	06/20/24 16:27
590-25479-4	DUP-062024	Water	06/20/24 08:00	06/20/24 16:27
590-25479-5	FB-062024	Water	06/20/24 15:30	06/20/24 16:27

Qualifiers

GC/MS 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, high biased.

LCMS

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

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
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: 590-25479-1

Client Sample ID: MW-16A-062024

Date Collected: 06/20/24 08:50
Date Received: 06/20/24 16:27

Lab Sample ID: 590-25479-1

Matrix: Water

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**57**		0.80	0.42	mg/L			06/21/24 11:00	1
Nitrate as N	**0.52**		0.20	0.057	mg/L			06/21/24 11:00	1
Nitrite as N	ND		0.20	0.069	mg/L			06/21/24 11:00	1
Sulfate	**16**		0.50	0.13	mg/L			06/21/24 11:00	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		6.9	1.7	ng/L		06/29/24 08:01	07/05/24 04:14	1
Perfluoropentanoic acid (PFPeA)	ND		3.4	0.86	ng/L		06/29/24 08:01	07/05/24 04:14	1
Perfluorohexanoic acid (PFHxA)	ND		1.7	0.43	ng/L		06/29/24 08:01	07/05/24 04:14	1
Perfluoroheptanoic acid (PFHpA)	ND		1.7	0.43	ng/L		06/29/24 08:01	07/05/24 04:14	1
Perfluorooctanoic acid (PFOA)	ND		1.7	0.43	ng/L		06/29/24 08:01	07/05/24 04:14	1
Perfluorononanoic acid (PFNA)	ND		1.7	0.43	ng/L		06/29/24 08:01	07/05/24 04:14	1
Perfluorodecanoic acid (PFDA)	ND		1.7	0.43	ng/L		06/29/24 08:01	07/05/24 04:14	1
Perfluoroundecanoic acid (PFUnA)	ND		1.7	0.43	ng/L		06/29/24 08:01	07/05/24 04:14	1
Perfluorododecanoic acid (PFDoA)	ND		1.7	0.43	ng/L		06/29/24 08:01	07/05/24 04:14	1
Perfluorotridecanoic acid (PFTrDA)	ND		1.7	0.43	ng/L		06/29/24 08:01	07/05/24 04:14	1
Perfluorotetradecanoic acid (PFTeDA)	ND		1.7	0.43	ng/L		06/29/24 08:01	07/05/24 04:14	1
Perfluorobutanesulfonic acid (PFBS)	**3.1**		1.7	0.43	ng/L		06/29/24 08:01	07/05/24 04:14	1
Perfluoropentanesulfonic acid (PFPeS)	ND		1.7	0.43	ng/L		06/29/24 08:01	07/05/24 04:14	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.7	0.43	ng/L		06/29/24 08:01	07/05/24 04:14	1
Perfluoroheptanesulfonic acid (PFHpS)	ND		1.7	0.43	ng/L		06/29/24 08:01	07/05/24 04:14	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.7	0.43	ng/L		06/29/24 08:01	07/05/24 04:14	1
Perfluorononanesulfonic acid (PFNS)	ND		1.7	0.43	ng/L		06/29/24 08:01	07/05/24 04:14	1
Perfluorodecanesulfonic acid (PFDS)	ND		1.7	0.43	ng/L		06/29/24 08:01	07/05/24 04:14	1
Perfluorododecanesulfonic acid (PFDoS)	ND		1.7	0.43	ng/L		06/29/24 08:01	07/05/24 04:14	1
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	ND		6.9	1.7	ng/L		06/29/24 08:01	07/05/24 04:14	1
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	ND		6.9	1.7	ng/L		06/29/24 08:01	07/05/24 04:14	1
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	ND		6.9	1.7	ng/L		06/29/24 08:01	07/05/24 04:14	1
Perfluorooctanesulfonamide (PFOSA)	ND		1.7	0.43	ng/L		06/29/24 08:01	07/05/24 04:14	1
N-methylperfluorooctane sulfonamide (NMeFOSA)	ND		1.7	0.43	ng/L		06/29/24 08:01	07/05/24 04:14	1
N-ethylperfluorooctane sulfonamide (NEtFOSA)	ND		1.7	0.43	ng/L		06/29/24 08:01	07/05/24 04:14	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		1.7	0.43	ng/L		06/29/24 08:01	07/05/24 04:14	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		1.7	0.43	ng/L		06/29/24 08:01	07/05/24 04:14	1
N-methylperfluorooctane sulfonamidoethanol (NMeFOSE)	ND		17	4.3	ng/L		06/29/24 08:01	07/05/24 04:14	1
N-ethylperfluorooctane sulfonamidoethanol (NEtFOSE)	ND		17	4.3	ng/L		06/29/24 08:01	07/05/24 04:14	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		6.9	1.7	ng/L		06/29/24 08:01	07/05/24 04:14	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		6.9	1.7	ng/L		06/29/24 08:01	07/05/24 04:14	1

Client Sample ID: MW-16A-062024
Date Collected: 06/20/24 08:50
Date Received: 06/20/24 16:27

Lab Sample ID: 590-25479-1
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
Perfluoro-3-methoxypropanoic acid (PFMPA)	ND		3.4	0.86	ng/L		06/29/24 08:01	07/05/24 04:14	1
Perfluoro-4-methoxybutanoic acid (PFMBA)	ND		3.4	0.86	ng/L		06/29/24 08:01	07/05/24 04:14	1
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND		3.4	0.86	ng/L		06/29/24 08:01	07/05/24 04:14	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	ND		6.9	1.7	ng/L		06/29/24 08:01	07/05/24 04:14	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	ND		3.4	0.86	ng/L		06/29/24 08:01	07/05/24 04:14	1
3-Perfluoropropylpropanoic acid (3:3 FTCA)	ND		8.6	2.1	ng/L		06/29/24 08:01	07/05/24 04:14	1
3-Perfluoropentylpropanoic acid (5:3 FTCA)	ND		43	11	ng/L		06/29/24 08:01	07/05/24 04:14	1
3-Perfluoroheptylpropanoic acid (7:3 FTCA)	ND		43	11	ng/L		06/29/24 08:01	07/05/24 04:14	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*83.5*		*5 - 130*	*06/29/24 08:01*	*07/05/24 04:14*	*1*
13C5 PFPeA	*70.8*		*40 - 130*	*06/29/24 08:01*	*07/05/24 04:14*	*1*
13C5 PFHxA	*77.8*		*40 - 130*	*06/29/24 08:01*	*07/05/24 04:14*	*1*
13C4 PFHpA	*80.8*		*40 - 130*	*06/29/24 08:01*	*07/05/24 04:14*	*1*
13C8 PFOA	*81.5*		*40 - 130*	*06/29/24 08:01*	*07/05/24 04:14*	*1*
13C9 PFNA	*88.5*		*40 - 130*	*06/29/24 08:01*	*07/05/24 04:14*	*1*
13C6 PFDA	*83.1*		*40 - 130*	*06/29/24 08:01*	*07/05/24 04:14*	*1*
13C7 PFUnA	*73.4*		*30 - 130*	*06/29/24 08:01*	*07/05/24 04:14*	*1*
13C2 PFDoA	*74.5*		*10 - 130*	*06/29/24 08:01*	*07/05/24 04:14*	*1*
13C2 PFTeDA	*64.7*		*10 - 130*	*06/29/24 08:01*	*07/05/24 04:14*	*1*
13C3 PFBS	*80.9*		*40 - 135*	*06/29/24 08:01*	*07/05/24 04:14*	*1*
13C3 PFHxS	*74.2*		*40 - 130*	*06/29/24 08:01*	*07/05/24 04:14*	*1*
13C8 PFOS	*73.3*		*40 - 130*	*06/29/24 08:01*	*07/05/24 04:14*	*1*
13C8 PFOSA	*79.9*		*40 - 130*	*06/29/24 08:01*	*07/05/24 04:14*	*1*
d3-NMeFOSAA	*80.0*		*40 - 170*	*06/29/24 08:01*	*07/05/24 04:14*	*1*
d5-NEtFOSAA	*76.6*		*25 - 135*	*06/29/24 08:01*	*07/05/24 04:14*	*1*
13C2 4:2 FTS	*95.9*		*40 - 200*	*06/29/24 08:01*	*07/05/24 04:14*	*1*
13C2 6:2 FTS	*93.4*		*40 - 200*	*06/29/24 08:01*	*07/05/24 04:14*	*1*
13C2 8:2 FTS	*86.9*		*40 - 300*	*06/29/24 08:01*	*07/05/24 04:14*	*1*
13C3 HFPO-DA	*84.1*		*40 - 130*	*06/29/24 08:01*	*07/05/24 04:14*	*1*
d7-N-MeFOSE-M	*59.5*		*10 - 130*	*06/29/24 08:01*	*07/05/24 04:14*	*1*
d9-N-EtFOSE-M	*55.1*		*10 - 130*	*06/29/24 08:01*	*07/05/24 04:14*	*1*
d5-NEtPFOSA	*57.3*		*10 - 130*	*06/29/24 08:01*	*07/05/24 04:14*	*1*
d3-NMePFOSA	*57.1*		*10 - 130*	*06/29/24 08:01*	*07/05/24 04:14*	*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
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	ND		6.9	1.7	ng/L		07/08/24 05:18	07/09/24 13:42	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*90.9*		*40 - 130*	*07/08/24 05:18*	*07/09/24 13:42*	*1*

Method: Lab SOP PPCP NEG - Pharmaceuticals and Personal Care Products (LC/MS/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acesulfame K	**0.56**		0.020	0.0020	ug/L			06/25/24 06:59	1

Client Sample ID: MW-16A-062024

Lab Sample ID: 590-25479-1

Date Collected: 06/20/24 08:50

Matrix: Water

Date Received: 06/20/24 16:27

Method: Lab SOP PPCP NEG - Pharmaceuticals and Personal Care Products (LC/MS/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sucralose	8.9		0.10	0.014	ug/L			06/25/24 06:59	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Magnesium	15		0.50	0.13	mg/L		06/27/24 10:32	07/02/24 18:33	1
Potassium	6.2	^1+	2.0	0.29	mg/L		06/27/24 10:32	07/02/24 18:33	1
Sodium	36	^1+	2.0	0.20	mg/L		06/27/24 10:32	07/02/24 18:33	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	32		1.0	0.20	mg/L		07/02/24 11:12	07/03/24 13:42	1
Magnesium	14		0.50	0.13	mg/L		07/02/24 11:12	07/03/24 13:42	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	0.074	J	0.50	0.067	mg/L		06/25/24 15:33	06/26/24 12:20	5
Manganese	0.0044	J	0.010	0.0023	mg/L		06/25/24 15:33	06/26/24 12:20	5

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			07/02/24 14:14	1
Alkalinity (SM 2320B)	160	B	20	5.0	mg/L			06/26/24 09:37	1
Bicarbonate Alkalinity as CaCO3 (SM 2320B)	160	B	20	5.0	mg/L			06/26/24 09:37	1
Total Dissolved Solids (SM 2540C)	250		25	13	mg/L			06/26/24 14:27	1
Total Organic Carbon - Duplicates (SM 5310B)	3.7		1.0	0.35	mg/L			06/28/24 03:07	1

Client Sample ID: MW-2A-062024

Lab Sample ID: 590-25479-2

Date Collected: 06/20/24 10:20

Matrix: Water

Date Received: 06/20/24 16:27

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		1.0	0.17	ug/L			06/24/24 16:34	1
Tetrachloroethene	ND		1.0	0.22	ug/L			06/24/24 16:34	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*102*		*80 - 120*		*06/24/24 16:34*	*1*
4-Bromofluorobenzene (Surr)	*87*		*76 - 120*		*06/24/24 16:34*	*1*
Dibromofluoromethane (Surr)	*122*		*80 - 123*		*06/24/24 16:34*	*1*
Toluene-d8 (Surr)	*107*		*80 - 120*		*06/24/24 16:34*	*1*

Method: SW846 8270C SIM ID - Semivolatile Organic Compounds (GC/MS SIM / Isotope Dilution)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	ND		0.19	0.034	ug/L		06/25/24 08:16	06/26/24 18:56	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,4-Dioxane-d8	*55*		*40 - 140*	*06/25/24 08:16*	*06/26/24 18:56*	*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			06/21/24 11:10	1

Client: GeoEngineers Inc
Project/Site: Marshall Landfill

Job ID: 590-25479-1

Client Sample ID: MW-2A-062024
Date Collected: 06/20/24 10:20
Date Received: 06/20/24 16:27

Lab Sample ID: 590-25479-2
Matrix: Water

Method: EPA 300.0 - Anions, Ion Chromatography (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate as N	**0.24**		0.20	0.057	mg/L			06/21/24 11:10	1
Nitrite as N	ND		0.20	0.069	mg/L			06/21/24 11:10	1
Sulfate	**14**		0.50	0.13	mg/L			06/21/24 11:10	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)	**20**		6.7	1.7	ng/L		06/29/24 08:01	07/06/24 03:25	1
Perfluoropentanoic acid (PFPeA)	ND		3.4	0.84	ng/L		06/29/24 08:01	07/06/24 03:25	1
Perfluorohexanoic acid (PFHxA)	ND		1.7	0.42	ng/L		06/29/24 08:01	07/06/24 03:25	1
Perfluoroheptanoic acid (PFHpA)	**0.45**	**J**	1.7	0.42	ng/L		06/29/24 08:01	07/06/24 03:25	1
Perfluorooctanoic acid (PFOA)	**2.1**		1.7	0.42	ng/L		06/29/24 08:01	07/06/24 03:25	1
Perfluorononanoic acid (PFNA)	ND		1.7	0.42	ng/L		06/29/24 08:01	07/06/24 03:25	1
Perfluorodecanoic acid (PFDA)	ND		1.7	0.42	ng/L		06/29/24 08:01	07/06/24 03:25	1
Perfluoroundecanoic acid (PFUnA)	ND		1.7	0.42	ng/L		06/29/24 08:01	07/06/24 03:25	1
Perfluorododecanoic acid (PFDoA)	ND		1.7	0.42	ng/L		06/29/24 08:01	07/06/24 03:25	1
Perfluorotridecanoic acid (PFTrDA)	ND		1.7	0.42	ng/L		06/29/24 08:01	07/06/24 03:25	1
Perfluorotetradecanoic acid (PFTeDA)	ND		1.7	0.42	ng/L		06/29/24 08:01	07/06/24 03:25	1
Perfluorobutanesulfonic acid (PFBS)	**21**		1.7	0.42	ng/L		06/29/24 08:01	07/06/24 03:25	1
Perfluoropentanesulfonic acid (PFPeS)	**2.2**		1.7	0.42	ng/L		06/29/24 08:01	07/06/24 03:25	1
Perfluorohexanesulfonic acid (PFHxS)	**11**		1.7	0.42	ng/L		06/29/24 08:01	07/06/24 03:25	1
Perfluoroheptanesulfonic acid (PFHpS)	ND		1.7	0.42	ng/L		06/29/24 08:01	07/06/24 03:25	1
Perfluorooctanesulfonic acid (PFOS)	**8.7**	**I**	1.7	0.42	ng/L		06/29/24 08:01	07/06/24 03:25	1
Perfluorononanesulfonic acid (PFNS)	ND		1.7	0.42	ng/L		06/29/24 08:01	07/06/24 03:25	1
Perfluorodecanesulfonic acid (PFDS)	ND		1.7	0.42	ng/L		06/29/24 08:01	07/06/24 03:25	1
Perfluorododecanesulfonic acid (PFDoS)	ND		1.7	0.42	ng/L		06/29/24 08:01	07/06/24 03:25	1
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	ND		6.7	1.7	ng/L		06/29/24 08:01	07/06/24 03:25	1
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	ND		6.7	1.7	ng/L		06/29/24 08:01	07/06/24 03:25	1
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	ND		6.7	1.7	ng/L		06/29/24 08:01	07/06/24 03:25	1
Perfluorooctanesulfonamide (PFOSA)	ND		1.7	0.42	ng/L		06/29/24 08:01	07/06/24 03:25	1
N-methylperfluorooctane sulfonamide (NMeFOSA)	ND		1.7	0.42	ng/L		06/29/24 08:01	07/06/24 03:25	1
N-ethylperfluorooctane sulfonamide (NEtFOSA)	ND		1.7	0.42	ng/L		06/29/24 08:01	07/06/24 03:25	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		1.7	0.42	ng/L		06/29/24 08:01	07/06/24 03:25	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		1.7	0.42	ng/L		06/29/24 08:01	07/06/24 03:25	1
N-methylperfluorooctane sulfonamidoethanol (NMeFOSE)	ND		17	4.2	ng/L		06/29/24 08:01	07/06/24 03:25	1
N-ethylperfluorooctane sulfonamidoethanol (NEtFOSE)	ND		17	4.2	ng/L		06/29/24 08:01	07/06/24 03:25	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		6.7	1.7	ng/L		06/29/24 08:01	07/06/24 03:25	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		6.7	1.7	ng/L		06/29/24 08:01	07/06/24 03:25	1

Client Sample ID: MW-2A-062024
Date Collected: 06/20/24 10:20
Date Received: 06/20/24 16:27

Lab Sample ID: 590-25479-2
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
Perfluoro-3-methoxypropanoic acid (PFMPA)	ND		3.4	0.84	ng/L		06/29/24 08:01	07/06/24 03:25	1
Perfluoro-4-methoxybutanoic acid (PFMBA)	ND		3.4	0.84	ng/L		06/29/24 08:01	07/06/24 03:25	1
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND		3.4	0.84	ng/L		06/29/24 08:01	07/06/24 03:25	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	ND		6.7	1.7	ng/L		06/29/24 08:01	07/06/24 03:25	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	ND		3.4	0.84	ng/L		06/29/24 08:01	07/06/24 03:25	1
3-Perfluoropropylpropanoic acid (3:3 FTCA)	ND		8.4	2.1	ng/L		06/29/24 08:01	07/06/24 03:25	1
3-Perfluoropentylpropanoic acid (5:3 FTCA)	ND		42	10	ng/L		06/29/24 08:01	07/06/24 03:25	1
3-Perfluoroheptylpropanoic acid (7:3 FTCA)	ND		42	10	ng/L		06/29/24 08:01	07/06/24 03:25	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*82.3*		*5 - 130*	*06/29/24 08:01*	*07/06/24 03:25*	*1*
13C5 PFPeA	*67.3*		*40 - 130*	*06/29/24 08:01*	*07/06/24 03:25*	*1*
13C5 PFHxA	*79.3*		*40 - 130*	*06/29/24 08:01*	*07/06/24 03:25*	*1*
13C4 PFHpA	*75.1*		*40 - 130*	*06/29/24 08:01*	*07/06/24 03:25*	*1*
13C8 PFOA	*82.0*		*40 - 130*	*06/29/24 08:01*	*07/06/24 03:25*	*1*
13C9 PFNA	*88.3*		*40 - 130*	*06/29/24 08:01*	*07/06/24 03:25*	*1*
13C6 PFDA	*91.9*		*40 - 130*	*06/29/24 08:01*	*07/06/24 03:25*	*1*
13C7 PFUnA	*77.4*		*30 - 130*	*06/29/24 08:01*	*07/06/24 03:25*	*1*
13C2 PFDoA	*81.5*		*10 - 130*	*06/29/24 08:01*	*07/06/24 03:25*	*1*
13C2 PFTeDA	*71.6*		*10 - 130*	*06/29/24 08:01*	*07/06/24 03:25*	*1*
13C3 PFBS	*85.8*		*40 - 135*	*06/29/24 08:01*	*07/06/24 03:25*	*1*
13C3 PFHxS	*77.9*		*40 - 130*	*06/29/24 08:01*	*07/06/24 03:25*	*1*
13C8 PFOS	*80.6*		*40 - 130*	*06/29/24 08:01*	*07/06/24 03:25*	*1*
13C8 PFOSA	*86.4*		*40 - 130*	*06/29/24 08:01*	*07/06/24 03:25*	*1*
d3-NMeFOSAA	*85.4*		*40 - 170*	*06/29/24 08:01*	*07/06/24 03:25*	*1*
d5-NEtFOSAA	*81.9*		*25 - 135*	*06/29/24 08:01*	*07/06/24 03:25*	*1*
13C2 4:2 FTS	*85.4*		*40 - 200*	*06/29/24 08:01*	*07/06/24 03:25*	*1*
13C2 6:2 FTS	*88.9*		*40 - 200*	*06/29/24 08:01*	*07/06/24 03:25*	*1*
13C2 8:2 FTS	*88.4*		*40 - 300*	*06/29/24 08:01*	*07/06/24 03:25*	*1*
13C3 HFPO-DA	*79.8*		*40 - 130*	*06/29/24 08:01*	*07/06/24 03:25*	*1*
d7-N-MeFOSE-M	*75.6*		*10 - 130*	*06/29/24 08:01*	*07/06/24 03:25*	*1*
d9-N-EtFOSE-M	*71.1*		*10 - 130*	*06/29/24 08:01*	*07/06/24 03:25*	*1*
d5-NEtPFOSA	*65.8*		*10 - 130*	*06/29/24 08:01*	*07/06/24 03:25*	*1*
d3-NMePFOSA	*65.4*		*10 - 130*	*06/29/24 08:01*	*07/06/24 03:25*	*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
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	ND		6.6	1.7	ng/L		07/08/24 05:18	07/09/24 14:02	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*85.0*		*40 - 130*	*07/08/24 05:18*	*07/09/24 14:02*	*1*

Method: Lab SOP PPCP NEG - Pharmaceuticals and Personal Care Products (LC/MS/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acesulfame K	**0.16**		0.020	0.0020	ug/L			06/25/24 07:27	1

Client Sample ID: MW-2A-062024

Date Collected: 06/20/24 10:20
Date Received: 06/20/24 16:27

Lab Sample ID: 590-25479-2

Matrix: Water

Method: Lab SOP PPCP NEG - Pharmaceuticals and Personal Care Products (LC/MS/MS) - DL

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sucralose	**11**		1.0	0.14	ug/L			06/25/24 13:32	10

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Magnesium	**16**		0.50	0.13	mg/L		06/27/24 10:32	07/02/24 18:37	1
Potassium	**6.8**	**^1+**	2.0	0.29	mg/L		06/27/24 10:32	07/02/24 18:37	1
Sodium	**39**	**^1+**	2.0	0.20	mg/L		06/27/24 10:32	07/02/24 18:37	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	**34**		1.0	0.20	mg/L		07/02/24 11:12	07/03/24 13:46	1
Magnesium	**14**		0.50	0.13	mg/L		07/02/24 11:12	07/03/24 13:46	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**0.0024**	**J**	0.0050	0.0010	mg/L		06/24/24 16:51	06/25/24 11:21	5
Cadmium	ND		0.0020	0.00019	mg/L		06/24/24 16:51	06/25/24 11:21	5
Iron	ND		0.50	0.067	mg/L		06/24/24 16:51	06/25/24 11:21	5
Lead	**0.00034**	**J**	0.0020	0.00020	mg/L		06/24/24 16:51	06/25/24 11:21	5
Manganese	ND		0.010	0.0023	mg/L		06/24/24 16:51	06/25/24 11:21	5
Zinc	ND		0.035	0.0046	mg/L		06/24/24 16:51	06/25/24 11:21	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		06/25/24 15:33	06/26/24 12:44	5
Cadmium	ND		0.0020	0.00019	mg/L		06/25/24 15:33	06/26/24 12:44	5
Iron	ND		0.50	0.067	mg/L		06/25/24 15:33	06/26/24 12:44	5
Lead	ND		0.0020	0.00020	mg/L		06/25/24 15:33	06/26/24 12:44	5
Manganese	ND		0.010	0.0023	mg/L		06/25/24 15:33	06/26/24 12:44	5
Zinc	ND		0.035	0.0046	mg/L		06/25/24 15:33	06/26/24 12:44	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		07/03/24 10:13	07/03/24 12:38	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		07/03/24 10:15	07/03/24 13:24	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			06/27/24 14:49	1
Alkalinity (SM 2320B)	**160**	**B**	20	5.0	mg/L			06/26/24 09:37	1
Bicarbonate Alkalinity as CaCO3 (SM 2320B)	**160**	**B**	20	5.0	mg/L			06/26/24 09:37	1
Total Dissolved Solids (SM 2540C)	**270**		25	13	mg/L			06/26/24 14:27	1
Total Organic Carbon - Duplicates (SM 5310B)	**4.2**		1.0	0.35	mg/L			06/28/24 03:21	1

Client Sample ID: MW-5A-062024

Date Collected: 06/20/24 13:40
Date Received: 06/20/24 16:27

Lab Sample ID: 590-25479-3

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-Trichloroethane	ND		1.0	0.17	ug/L			06/24/24 16:56	1
Tetrachloroethene	**0.47**	**J**	1.0	0.22	ug/L			06/24/24 16:56	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*103*		*80 - 120*		*06/24/24 16:56*	*1*
4-Bromofluorobenzene (Surr)	*86*		*76 - 120*		*06/24/24 16:56*	*1*
Dibromofluoromethane (Surr)	*122*		*80 - 123*		*06/24/24 16:56*	*1*
Toluene-d8 (Surr)	*106*		*80 - 120*		*06/24/24 16:56*	*1*

Method: SW846 8270C SIM ID - Semivolatile Organic Compounds (GC/MS SIM / Isotope Dilution)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	**0.29**		0.19	0.034	ug/L		06/25/24 08:16	06/26/24 19:10	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,4-Dioxane-d8	*57*		*40 - 140*	*06/25/24 08:16*	*06/26/24 19:10*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**67**		0.80	0.42	mg/L			06/21/24 11:20	1
Nitrate as N	**3.1**		0.20	0.057	mg/L			06/21/24 11:20	1
Nitrite as N	ND		0.20	0.069	mg/L			06/21/24 11:20	1
Sulfate	**25**		0.50	0.13	mg/L			06/21/24 11:20	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)	**6.9**	**J**	7.0	1.7	ng/L		06/29/24 08:01	07/03/24 06:53	1
Perfluoropentanoic acid (PFPeA)	**8.9**		3.5	0.87	ng/L		06/29/24 08:01	07/03/24 06:53	1
Perfluorohexanoic acid (PFHxA)	**10**		1.7	0.44	ng/L		06/29/24 08:01	07/03/24 06:53	1
Perfluoroheptanoic acid (PFHpA)	**4.8**		1.7	0.44	ng/L		06/29/24 08:01	07/03/24 06:53	1
Perfluorooctanoic acid (PFOA)	**17**		1.7	0.44	ng/L		06/29/24 08:01	07/03/24 06:53	1
Perfluorononanoic acid (PFNA)	**0.94**	**J**	1.7	0.44	ng/L		06/29/24 08:01	07/03/24 06:53	1
Perfluorodecanoic acid (PFDA)	ND		1.7	0.44	ng/L		06/29/24 08:01	07/03/24 06:53	1
Perfluoroundecanoic acid (PFUnA)	ND		1.7	0.44	ng/L		06/29/24 08:01	07/03/24 06:53	1
Perfluorododecanoic acid (PFDoA)	ND		1.7	0.44	ng/L		06/29/24 08:01	07/03/24 06:53	1
Perfluorotridecanoic acid (PFTrDA)	ND		1.7	0.44	ng/L		06/29/24 08:01	07/03/24 06:53	1
Perfluorotetradecanoic acid (PFTeDA)	ND		1.7	0.44	ng/L		06/29/24 08:01	07/03/24 06:53	1
Perfluorobutanesulfonic acid (PFBS)	**3.8**		1.7	0.44	ng/L		06/29/24 08:01	07/03/24 06:53	1
Perfluoropentanesulfonic acid (PFPeS)	**1.9**		1.7	0.44	ng/L		06/29/24 08:01	07/03/24 06:53	1
Perfluorohexanesulfonic acid (PFHxS)	**8.7**		1.7	0.44	ng/L		06/29/24 08:01	07/03/24 06:53	1
Perfluoroheptanesulfonic acid (PFHpS)	ND		1.7	0.44	ng/L		06/29/24 08:01	07/03/24 06:53	1
Perfluorooctanesulfonic acid (PFOS)	**14**		1.7	0.44	ng/L		06/29/24 08:01	07/03/24 06:53	1
Perfluorononanesulfonic acid (PFNS)	ND		1.7	0.44	ng/L		06/29/24 08:01	07/03/24 06:53	1
Perfluorodecanesulfonic acid (PFDS)	ND		1.7	0.44	ng/L		06/29/24 08:01	07/03/24 06:53	1
Perfluorododecanesulfonic acid (PFDoS)	ND		1.7	0.44	ng/L		06/29/24 08:01	07/03/24 06:53	1
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	ND		7.0	1.7	ng/L		06/29/24 08:01	07/03/24 06:53	1

Client: GeoEngineers Inc
Project/Site: Marshall Landfill

Job ID: 590-25479-1

Client Sample ID: MW-5A-062024
Date Collected: 06/20/24 13:40
Date Received: 06/20/24 16:27

Lab Sample ID: 590-25479-3
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
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	ND		7.0	1.7	ng/L		06/29/24 08:01	07/03/24 06:53	1
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	ND		7.0	1.7	ng/L		06/29/24 08:01	07/03/24 06:53	1
Perfluorooctanesulfonamide (PFOSA)	ND		1.7	0.44	ng/L		06/29/24 08:01	07/03/24 06:53	1
N-methylperfluorooctane sulfonamide (NMeFOSA)	ND		1.7	0.44	ng/L		06/29/24 08:01	07/03/24 06:53	1
N-ethylperfluorooctane sulfonamide (NEtFOSA)	ND		1.7	0.44	ng/L		06/29/24 08:01	07/03/24 06:53	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		1.7	0.44	ng/L		06/29/24 08:01	07/03/24 06:53	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		1.7	0.44	ng/L		06/29/24 08:01	07/03/24 06:53	1
N-methylperfluorooctane sulfonamidoethanol (NMeFOSE)	ND		17	4.4	ng/L		06/29/24 08:01	07/03/24 06:53	1
N-ethylperfluorooctane sulfonamidoethanol (NEtFOSE)	ND		17	4.4	ng/L		06/29/24 08:01	07/03/24 06:53	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		7.0	1.7	ng/L		06/29/24 08:01	07/03/24 06:53	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		7.0	1.7	ng/L		06/29/24 08:01	07/03/24 06:53	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	ND		3.5	0.87	ng/L		06/29/24 08:01	07/03/24 06:53	1
Perfluoro-4-methoxybutanoic acid (PFMBA)	ND		3.5	0.87	ng/L		06/29/24 08:01	07/03/24 06:53	1
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND		3.5	0.87	ng/L		06/29/24 08:01	07/03/24 06:53	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	ND		7.0	1.7	ng/L		06/29/24 08:01	07/03/24 06:53	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	ND		3.5	0.87	ng/L		06/29/24 08:01	07/03/24 06:53	1
3-Perfluoropropylpropanoic acid (3:3 FTCA)	ND		8.7	2.2	ng/L		06/29/24 08:01	07/03/24 06:53	1
3-Perfluoropentylpropanoic acid (5:3 FTCA)	ND		44	11	ng/L		06/29/24 08:01	07/03/24 06:53	1
3-Perfluoroheptylpropanoic acid (7:3 FTCA)	ND		44	11	ng/L		06/29/24 08:01	07/03/24 06:53	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*92.3*		*5 - 130*	*06/29/24 08:01*	*07/03/24 06:53*	*1*
13C5 PFPeA	*73.9*		*40 - 130*	*06/29/24 08:01*	*07/03/24 06:53*	*1*
13C5 PFHxA	*88.8*		*40 - 130*	*06/29/24 08:01*	*07/03/24 06:53*	*1*
13C4 PFHpA	*87.1*		*40 - 130*	*06/29/24 08:01*	*07/03/24 06:53*	*1*
13C8 PFOA	*82.5*		*40 - 130*	*06/29/24 08:01*	*07/03/24 06:53*	*1*
13C9 PFNA	*99.4*		*40 - 130*	*06/29/24 08:01*	*07/03/24 06:53*	*1*
13C6 PFDA	*102*		*40 - 130*	*06/29/24 08:01*	*07/03/24 06:53*	*1*
13C7 PFUnA	*87.0*		*30 - 130*	*06/29/24 08:01*	*07/03/24 06:53*	*1*
13C2 PFDoA	*91.3*		*10 - 130*	*06/29/24 08:01*	*07/03/24 06:53*	*1*
13C2 PFTeDA	*90.0*		*10 - 130*	*06/29/24 08:01*	*07/03/24 06:53*	*1*
13C3 PFBS	*85.1*		*40 - 135*	*06/29/24 08:01*	*07/03/24 06:53*	*1*
13C3 PFHxS	*80.0*		*40 - 130*	*06/29/24 08:01*	*07/03/24 06:53*	*1*
13C8 PFOS	*94.1*		*40 - 130*	*06/29/24 08:01*	*07/03/24 06:53*	*1*
13C8 PFOSA	*92.7*		*40 - 130*	*06/29/24 08:01*	*07/03/24 06:53*	*1*
d3-NMeFOSAA	*89.7*		*40 - 170*	*06/29/24 08:01*	*07/03/24 06:53*	*1*
d5-NEtFOSAA	*92.2*		*25 - 135*	*06/29/24 08:01*	*07/03/24 06:53*	*1*

Client Sample ID: MW-5A-062024

Date Collected: 06/20/24 13:40
Date Received: 06/20/24 16:27

Lab Sample ID: 590-25479-3

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 4:2 FTS	*97.7*		*40 - 200*	*06/29/24 08:01*	*07/03/24 06:53*	*1*
13C2 6:2 FTS	*104*		*40 - 200*	*06/29/24 08:01*	*07/03/24 06:53*	*1*
13C2 8:2 FTS	*87.2*		*40 - 300*	*06/29/24 08:01*	*07/03/24 06:53*	*1*
13C3 HFPO-DA	*89.2*		*40 - 130*	*06/29/24 08:01*	*07/03/24 06:53*	*1*
d7-N-MeFOSE-M	*82.2*		*10 - 130*	*06/29/24 08:01*	*07/03/24 06:53*	*1*
d9-N-EtFOSE-M	*78.9*		*10 - 130*	*06/29/24 08:01*	*07/03/24 06:53*	*1*
d5-NEtPFOSA	*76.2*		*10 - 130*	*06/29/24 08:01*	*07/03/24 06:53*	*1*
d3-NMePFOSA	*71.8*		*10 - 130*	*06/29/24 08:01*	*07/03/24 06:53*	*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
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	ND		6.9	1.7	ng/L		07/08/24 05:18	07/09/24 14:23	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*83.3*		*40 - 130*	*07/08/24 05:18*	*07/09/24 14:23*	*1*

Method: Lab SOP PPCP NEG - Pharmaceuticals and Personal Care Products (LC/MS/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acesulfame K	**0.30**		0.020	0.0020	ug/L			06/25/24 08:23	1
Sucralose	**9.8**		0.10	0.014	ug/L			06/25/24 08:23	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Magnesium	**14**		0.50	0.13	mg/L		06/27/24 10:32	07/02/24 18:41	1
Potassium	**4.9**	**^1+**	2.0	0.29	mg/L		06/27/24 10:32	07/02/24 18:41	1
Sodium	**43**	**^1+**	2.0	0.20	mg/L		06/27/24 10:32	07/02/24 18:41	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	**86**		1.0	0.20	mg/L		07/02/24 11:12	07/03/24 13:50	1
Magnesium	**13**		0.50	0.13	mg/L		07/02/24 11:12	07/03/24 13:50	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**0.0017**	**J**	0.0050	0.0010	mg/L		06/24/24 16:51	06/25/24 11:23	5
Cadmium	ND		0.0020	0.00019	mg/L		06/24/24 16:51	06/25/24 11:23	5
Iron	ND		0.50	0.067	mg/L		06/24/24 16:51	06/25/24 11:23	5
Lead	**0.00026**	**J**	0.0020	0.00020	mg/L		06/24/24 16:51	06/25/24 11:23	5
Manganese	ND		0.010	0.0023	mg/L		06/24/24 16:51	06/25/24 11:23	5
Zinc	ND		0.035	0.0046	mg/L		06/24/24 16:51	06/25/24 11:23	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		06/25/24 15:33	06/26/24 12:46	5
Cadmium	ND		0.0020	0.00019	mg/L		06/25/24 15:33	06/26/24 12:46	5
Iron	ND		0.50	0.067	mg/L		06/25/24 15:33	06/26/24 12:46	5
Lead	ND		0.0020	0.00020	mg/L		06/25/24 15:33	06/26/24 12:46	5
Manganese	ND		0.010	0.0023	mg/L		06/25/24 15:33	06/26/24 12:46	5
Zinc	ND		0.035	0.0046	mg/L		06/25/24 15:33	06/26/24 12:46	5

Client Sample ID: MW-5A-062024

Lab Sample ID: 590-25479-3

Date Collected: 06/20/24 13:40
Matrix: Water
Date Received: 06/20/24 16:27

Method: SW846 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.090	ug/L		07/03/24 10:13	07/03/24 12:46	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		07/03/24 10:16	07/03/24 13:26	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			06/27/24 14:51	1
Alkalinity (SM 2320B)	**260**	**B**	20	5.0	mg/L			06/26/24 09:37	1
Bicarbonate Alkalinity as CaCO3 (SM 2320B)	**260**	**B**	20	5.0	mg/L			06/26/24 09:37	1
Total Dissolved Solids (SM 2540C)	**410**		25	13	mg/L			06/26/24 14:27	1
Total Organic Carbon - Duplicates (SM 5310B)	**2.4**		1.0	0.35	mg/L			06/28/24 03:37	1

Client Sample ID: DUP-062024

Lab Sample ID: 590-25479-4

Date Collected: 06/20/24 08:00
Matrix: Water
Date Received: 06/20/24 16:27

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		1.0	0.17	ug/L			06/24/24 17:40	1
Tetrachloroethene	**0.51**	**J**	1.0	0.22	ug/L			06/24/24 17:40	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*104*		*80 - 120*		*06/24/24 17:40*	*1*
4-Bromofluorobenzene (Surr)	*87*		*76 - 120*		*06/24/24 17:40*	*1*
Dibromofluoromethane (Surr)	*124*	*S1+*	*80 - 123*		*06/24/24 17:40*	*1*
Toluene-d8 (Surr)	*104*		*80 - 120*		*06/24/24 17:40*	*1*

Method: SW846 8270C SIM ID - Semivolatile Organic Compounds (GC/MS SIM / Isotope Dilution)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	**0.29**		0.20	0.035	ug/L		06/25/24 08:16	06/26/24 19:24	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,4-Dioxane-d8	*51*		*40 - 140*	*06/25/24 08:16*	*06/26/24 19:24*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**67**		0.80	0.42	mg/L			06/21/24 11:30	1
Nitrate as N	**3.1**		0.20	0.057	mg/L			06/21/24 11:30	1
Nitrite as N	ND		0.20	0.069	mg/L			06/21/24 11:30	1
Sulfate	**25**		0.50	0.13	mg/L			06/21/24 11:30	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)	**6.7**		6.7	1.7	ng/L		06/29/24 08:01	07/03/24 07:13	1
Perfluoropentanoic acid (PFPeA)	**9.2**		3.4	0.84	ng/L		06/29/24 08:01	07/03/24 07:13	1
Perfluorohexanoic acid (PFHxA)	**11**		1.7	0.42	ng/L		06/29/24 08:01	07/03/24 07:13	1
Perfluoroheptanoic acid (PFHpA)	**4.8**		1.7	0.42	ng/L		06/29/24 08:01	07/03/24 07:13	1
Perfluorooctanoic acid (PFOA)	**16**		1.7	0.42	ng/L		06/29/24 08:01	07/03/24 07:13	1
Perfluorononanoic acid (PFNA)	**0.77**	**J**	1.7	0.42	ng/L		06/29/24 08:01	07/03/24 07:13	1

Client Sample ID: DUP-062024
Date Collected: 06/20/24 08:00
Date Received: 06/20/24 16:27

Lab Sample ID: 590-25479-4
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
Perfluorodecanoic acid (PFDA)	ND		1.7	0.42	ng/L		06/29/24 08:01	07/03/24 07:13	1
Perfluoroundecanoic acid (PFUnA)	ND		1.7	0.42	ng/L		06/29/24 08:01	07/03/24 07:13	1
Perfluorododecanoic acid (PFDoA)	ND		1.7	0.42	ng/L		06/29/24 08:01	07/03/24 07:13	1
Perfluorotridecanoic acid (PFTrDA)	ND		1.7	0.42	ng/L		06/29/24 08:01	07/03/24 07:13	1
Perfluorotetradecanoic acid (PFTeDA)	ND		1.7	0.42	ng/L		06/29/24 08:01	07/03/24 07:13	1
Perfluorobutanesulfonic acid (PFBS)	**4.1**		1.7	0.42	ng/L		06/29/24 08:01	07/03/24 07:13	1
Perfluoropentanesulfonic acid (PFPeS)	**1.7**		1.7	0.42	ng/L		06/29/24 08:01	07/03/24 07:13	1
Perfluorohexanesulfonic acid (PFHxS)	**8.8**		1.7	0.42	ng/L		06/29/24 08:01	07/03/24 07:13	1
Perfluoroheptanesulfonic acid (PFHpS)	ND		1.7	0.42	ng/L		06/29/24 08:01	07/03/24 07:13	1
Perfluorooctanesulfonic acid (PFOS)	**14**		1.7	0.42	ng/L		06/29/24 08:01	07/03/24 07:13	1
Perfluorononanesulfonic acid (PFNS)	ND		1.7	0.42	ng/L		06/29/24 08:01	07/03/24 07:13	1
Perfluorodecanesulfonic acid (PFDS)	ND		1.7	0.42	ng/L		06/29/24 08:01	07/03/24 07:13	1
Perfluorododecanesulfonic acid (PFDoS)	ND		1.7	0.42	ng/L		06/29/24 08:01	07/03/24 07:13	1
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	ND		6.7	1.7	ng/L		06/29/24 08:01	07/03/24 07:13	1
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	ND		6.7	1.7	ng/L		06/29/24 08:01	07/03/24 07:13	1
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	ND		6.7	1.7	ng/L		06/29/24 08:01	07/03/24 07:13	1
Perfluorooctanesulfonamide (PFOSA)	ND		1.7	0.42	ng/L		06/29/24 08:01	07/03/24 07:13	1
N-methylperfluorooctane sulfonamide (NMeFOSA)	ND		1.7	0.42	ng/L		06/29/24 08:01	07/03/24 07:13	1
N-ethylperfluorooctane sulfonamide (NEtFOSA)	ND		1.7	0.42	ng/L		06/29/24 08:01	07/03/24 07:13	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		1.7	0.42	ng/L		06/29/24 08:01	07/03/24 07:13	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		1.7	0.42	ng/L		06/29/24 08:01	07/03/24 07:13	1
N-methylperfluorooctane sulfonamidoethanol (NMeFOSE)	ND		17	4.2	ng/L		06/29/24 08:01	07/03/24 07:13	1
N-ethylperfluorooctane sulfonamidoethanol (NEtFOSE)	ND		17	4.2	ng/L		06/29/24 08:01	07/03/24 07:13	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		6.7	1.7	ng/L		06/29/24 08:01	07/03/24 07:13	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		6.7	1.7	ng/L		06/29/24 08:01	07/03/24 07:13	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	ND		3.4	0.84	ng/L		06/29/24 08:01	07/03/24 07:13	1
Perfluoro-4-methoxybutanoic acid (PFMBA)	ND		3.4	0.84	ng/L		06/29/24 08:01	07/03/24 07:13	1
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND		3.4	0.84	ng/L		06/29/24 08:01	07/03/24 07:13	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	ND		6.7	1.7	ng/L		06/29/24 08:01	07/03/24 07:13	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	ND		3.4	0.84	ng/L		06/29/24 08:01	07/03/24 07:13	1
3-Perfluoropropylpropanoic acid (3:3 FTCA)	ND		8.4	2.1	ng/L		06/29/24 08:01	07/03/24 07:13	1

Client Sample ID: DUP-062024
Date Collected: 06/20/24 08:00
Date Received: 06/20/24 16:27

Lab Sample ID: 590-25479-4
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
3-Perfluoropentylpropanoic acid (5:3 FTCA)	ND		42	11	ng/L		06/29/24 08:01	07/03/24 07:13	1
3-Perfluoroheptylpropanoic acid (7:3 FTCA)	ND		42	11	ng/L		06/29/24 08:01	07/03/24 07:13	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*90.4*		*5 - 130*	*06/29/24 08:01*	*07/03/24 07:13*	*1*
13C5 PFPeA	*74.9*		*40 - 130*	*06/29/24 08:01*	*07/03/24 07:13*	*1*
13C5 PFHxA	*84.1*		*40 - 130*	*06/29/24 08:01*	*07/03/24 07:13*	*1*
13C4 PFHpA	*89.4*		*40 - 130*	*06/29/24 08:01*	*07/03/24 07:13*	*1*
13C8 PFOA	*88.6*		*40 - 130*	*06/29/24 08:01*	*07/03/24 07:13*	*1*
13C9 PFNA	*90.4*		*40 - 130*	*06/29/24 08:01*	*07/03/24 07:13*	*1*
13C6 PFDA	*98.9*		*40 - 130*	*06/29/24 08:01*	*07/03/24 07:13*	*1*
13C7 PFUnA	*91.7*		*30 - 130*	*06/29/24 08:01*	*07/03/24 07:13*	*1*
13C2 PFDoA	*89.6*		*10 - 130*	*06/29/24 08:01*	*07/03/24 07:13*	*1*
13C2 PFTeDA	*82.7*		*10 - 130*	*06/29/24 08:01*	*07/03/24 07:13*	*1*
13C3 PFBS	*81.5*		*40 - 135*	*06/29/24 08:01*	*07/03/24 07:13*	*1*
13C3 PFHxS	*77.8*		*40 - 130*	*06/29/24 08:01*	*07/03/24 07:13*	*1*
13C8 PFOS	*87.3*		*40 - 130*	*06/29/24 08:01*	*07/03/24 07:13*	*1*
13C8 PFOSA	*91.3*		*40 - 130*	*06/29/24 08:01*	*07/03/24 07:13*	*1*
d3-NMeFOSAA	*86.8*		*40 - 170*	*06/29/24 08:01*	*07/03/24 07:13*	*1*
d5-NEtFOSAA	*91.7*		*25 - 135*	*06/29/24 08:01*	*07/03/24 07:13*	*1*
13C2 4:2 FTS	*89.8*		*40 - 200*	*06/29/24 08:01*	*07/03/24 07:13*	*1*
13C2 6:2 FTS	*89.4*		*40 - 200*	*06/29/24 08:01*	*07/03/24 07:13*	*1*
13C2 8:2 FTS	*86.7*		*40 - 300*	*06/29/24 08:01*	*07/03/24 07:13*	*1*
13C3 HFPO-DA	*86.2*		*40 - 130*	*06/29/24 08:01*	*07/03/24 07:13*	*1*
d7-N-MeFOSE-M	*80.3*		*10 - 130*	*06/29/24 08:01*	*07/03/24 07:13*	*1*
d9-N-EtFOSE-M	*77.6*		*10 - 130*	*06/29/24 08:01*	*07/03/24 07:13*	*1*
d5-NEtPFOSA	*75.1*		*10 - 130*	*06/29/24 08:01*	*07/03/24 07:13*	*1*
d3-NMePFOSA	*71.5*		*10 - 130*	*06/29/24 08:01*	*07/03/24 07:13*	*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
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	ND		7.0	1.7	ng/L		07/08/24 05:18	07/09/24 14:43	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*85.2*		*40 - 130*	*07/08/24 05:18*	*07/09/24 14:43*	*1*

Method: Lab SOP PPCP NEG - Pharmaceuticals and Personal Care Products (LC/MS/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acesulfame K	**0.30**		0.020	0.0020	ug/L			06/25/24 08:51	1
Sucralose	**9.8**		0.10	0.014	ug/L			06/25/24 08:51	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Magnesium	**14**		0.50	0.13	mg/L		06/27/24 10:32	07/02/24 18:45	1
Potassium	**4.9**	^1+	2.0	0.29	mg/L		06/27/24 10:32	07/02/24 18:45	1
Sodium	**43**	^1+	2.0	0.20	mg/L		06/27/24 10:32	07/02/24 18:45	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	**87**		1.0	0.20	mg/L		07/02/24 11:12	07/03/24 13:54	1

Client Sample ID: DUP-062024

Date Collected: 06/20/24 08:00
Date Received: 06/20/24 16:27

Lab Sample ID: 590-25479-4
Matrix: Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Magnesium	**13**		0.50	0.13	mg/L		07/02/24 11:12	07/03/24 13:54	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**0.0014**	**J**	0.0050	0.0010	mg/L		06/24/24 16:51	06/25/24 11:26	5
Cadmium	ND		0.0020	0.00019	mg/L		06/24/24 16:51	06/25/24 11:26	5
Iron	ND		0.50	0.067	mg/L		06/24/24 16:51	06/25/24 11:26	5
Lead	**0.00023**	**J**	0.0020	0.00020	mg/L		06/24/24 16:51	06/25/24 11:26	5
Manganese	ND		0.010	0.0023	mg/L		06/24/24 16:51	06/25/24 11:26	5
Zinc	ND		0.035	0.0046	mg/L		06/24/24 16:51	06/25/24 11:26	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		06/25/24 15:33	06/26/24 12:51	5
Cadmium	ND		0.0020	0.00019	mg/L		06/25/24 15:33	06/26/24 12:51	5
Iron	**0.073**	**J**	0.50	0.067	mg/L		06/25/24 15:33	06/26/24 12:51	5
Lead	ND		0.0020	0.00020	mg/L		06/25/24 15:33	06/26/24 12:51	5
Manganese	ND		0.010	0.0023	mg/L		06/25/24 15:33	06/26/24 12:51	5
Zinc	ND		0.035	0.0046	mg/L		06/25/24 15:33	06/26/24 12:51	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		07/03/24 10:13	07/03/24 12:48	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		07/03/24 10:16	07/03/24 13:29	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			06/27/24 14:53	1
Alkalinity (SM 2320B)	**290**	**B**	20	5.0	mg/L			06/26/24 09:37	1
Bicarbonate Alkalinity as CaCO3 (SM 2320B)	**290**	**B**	20	5.0	mg/L			06/26/24 09:37	1
Total Dissolved Solids (SM 2540C)	**420**		25	13	mg/L			06/26/24 14:27	1
Total Organic Carbon - Duplicates (SM 5310B)	**2.4**		1.0	0.35	mg/L			06/28/24 03:53	1

Client Sample ID: FB-062024

Date Collected: 06/20/24 15:30
Date Received: 06/20/24 16:27

Lab Sample ID: 590-25479-5
Matrix: Water

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		6.9	1.7	ng/L		06/29/24 08:01	07/03/24 07:34	1
Perfluoropentanoic acid (PFPeA)	ND		3.5	0.87	ng/L		06/29/24 08:01	07/03/24 07:34	1
Perfluorohexanoic acid (PFHxA)	ND		1.7	0.43	ng/L		06/29/24 08:01	07/03/24 07:34	1
Perfluoroheptanoic acid (PFHpA)	ND		1.7	0.43	ng/L		06/29/24 08:01	07/03/24 07:34	1
Perfluorooctanoic acid (PFOA)	ND		1.7	0.43	ng/L		06/29/24 08:01	07/03/24 07:34	1
Perfluorononanoic acid (PFNA)	ND		1.7	0.43	ng/L		06/29/24 08:01	07/03/24 07:34	1
Perfluorodecanoic acid (PFDA)	ND		1.7	0.43	ng/L		06/29/24 08:01	07/03/24 07:34	1
Perfluoroundecanoic acid (PFUnA)	ND		1.7	0.43	ng/L		06/29/24 08:01	07/03/24 07:34	1

Client Sample ID: FB-062024
Date Collected: 06/20/24 15:30
Date Received: 06/20/24 16:27

Lab Sample ID: 590-25479-5
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
Perfluorododecanoic acid (PFDoA)	ND		1.7	0.43	ng/L		06/29/24 08:01	07/03/24 07:34	1
Perfluorotridecanoic acid (PFTrDA)	ND		1.7	0.43	ng/L		06/29/24 08:01	07/03/24 07:34	1
Perfluorotetradecanoic acid (PFTeDA)	ND		1.7	0.43	ng/L		06/29/24 08:01	07/03/24 07:34	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.7	0.43	ng/L		06/29/24 08:01	07/03/24 07:34	1
Perfluoropentanesulfonic acid (PFPeS)	ND		1.7	0.43	ng/L		06/29/24 08:01	07/03/24 07:34	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.7	0.43	ng/L		06/29/24 08:01	07/03/24 07:34	1
Perfluoroheptanesulfonic acid (PFHpS)	ND		1.7	0.43	ng/L		06/29/24 08:01	07/03/24 07:34	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.7	0.43	ng/L		06/29/24 08:01	07/03/24 07:34	1
Perfluorononanesulfonic acid (PFNS)	ND		1.7	0.43	ng/L		06/29/24 08:01	07/03/24 07:34	1
Perfluorodecanesulfonic acid (PFDS)	ND		1.7	0.43	ng/L		06/29/24 08:01	07/03/24 07:34	1
Perfluorododecanesulfonic acid (PFDoS)	ND		1.7	0.43	ng/L		06/29/24 08:01	07/03/24 07:34	1
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	ND		6.9	1.7	ng/L		06/29/24 08:01	07/03/24 07:34	1
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	ND		6.9	1.7	ng/L		06/29/24 08:01	07/03/24 07:34	1
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	ND		6.9	1.7	ng/L		06/29/24 08:01	07/03/24 07:34	1
Perfluorooctanesulfonamide (PFOSA)	ND		1.7	0.43	ng/L		06/29/24 08:01	07/03/24 07:34	1
N-methylperfluorooctane sulfonamide (NMeFOSA)	ND		1.7	0.43	ng/L		06/29/24 08:01	07/03/24 07:34	1
N-ethylperfluorooctane sulfonamide (NEtFOSA)	ND		1.7	0.43	ng/L		06/29/24 08:01	07/03/24 07:34	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		1.7	0.43	ng/L		06/29/24 08:01	07/03/24 07:34	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		1.7	0.43	ng/L		06/29/24 08:01	07/03/24 07:34	1
N-methylperfluorooctane sulfonamidoethanol (NMeFOSE)	ND		17	4.3	ng/L		06/29/24 08:01	07/03/24 07:34	1
N-ethylperfluorooctane sulfonamidoethanol (NEtFOSE)	ND		17	4.3	ng/L		06/29/24 08:01	07/03/24 07:34	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		6.9	1.7	ng/L		06/29/24 08:01	07/03/24 07:34	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		6.9	1.7	ng/L		06/29/24 08:01	07/03/24 07:34	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	ND		3.5	0.87	ng/L		06/29/24 08:01	07/03/24 07:34	1
Perfluoro-4-methoxybutanoic acid (PFMBA)	ND		3.5	0.87	ng/L		06/29/24 08:01	07/03/24 07:34	1
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND		3.5	0.87	ng/L		06/29/24 08:01	07/03/24 07:34	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	ND		6.9	1.7	ng/L		06/29/24 08:01	07/03/24 07:34	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	ND		3.5	0.87	ng/L		06/29/24 08:01	07/03/24 07:34	1
3-Perfluoropropylpropanoic acid (3:3 FTCA)	ND		8.7	2.2	ng/L		06/29/24 08:01	07/03/24 07:34	1
3-Perfluoropentylpropanoic acid (5:3 FTCA)	ND		43	11	ng/L		06/29/24 08:01	07/03/24 07:34	1
3-Perfluoroheptylpropanoic acid (7:3 FTCA)	ND		43	11	ng/L		06/29/24 08:01	07/03/24 07:34	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*87.5*		*5 - 130*	*06/29/24 08:01*	*07/03/24 07:34*	*1*

Client Sample ID: FB-062024
Date Collected: 06/20/24 15:30
Date Received: 06/20/24 16:27

Lab Sample ID: 590-25479-5
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
13C5 PFPeA	73.2		40 - 130	06/29/24 08:01	07/03/24 07:34	1
13C5 PFHxA	84.7		40 - 130	06/29/24 08:01	07/03/24 07:34	1
13C4 PFHpA	86.9		40 - 130	06/29/24 08:01	07/03/24 07:34	1
13C8 PFOA	96.8		40 - 130	06/29/24 08:01	07/03/24 07:34	1
13C9 PFNA	96.0		40 - 130	06/29/24 08:01	07/03/24 07:34	1
13C6 PFDA	104		40 - 130	06/29/24 08:01	07/03/24 07:34	1
13C7 PFUnA	96.1		30 - 130	06/29/24 08:01	07/03/24 07:34	1
13C2 PFDoA	89.6		10 - 130	06/29/24 08:01	07/03/24 07:34	1
13C2 PFTeDA	83.5		10 - 130	06/29/24 08:01	07/03/24 07:34	1
13C3 PFBS	82.8		40 - 135	06/29/24 08:01	07/03/24 07:34	1
13C3 PFHxS	80.2		40 - 130	06/29/24 08:01	07/03/24 07:34	1
13C8 PFOS	88.6		40 - 130	06/29/24 08:01	07/03/24 07:34	1
13C8 PFOSA	85.9		40 - 130	06/29/24 08:01	07/03/24 07:34	1
d3-NMeFOSAA	86.5		40 - 170	06/29/24 08:01	07/03/24 07:34	1
d5-NEtFOSAA	82.9		25 - 135	06/29/24 08:01	07/03/24 07:34	1
13C2 4:2 FTS	84.3		40 - 200	06/29/24 08:01	07/03/24 07:34	1
13C2 6:2 FTS	86.2		40 - 200	06/29/24 08:01	07/03/24 07:34	1
13C2 8:2 FTS	83.7		40 - 300	06/29/24 08:01	07/03/24 07:34	1
13C3 HFPO-DA	86.5		40 - 130	06/29/24 08:01	07/03/24 07:34	1
d7-N-MeFOSE-M	80.4		10 - 130	06/29/24 08:01	07/03/24 07:34	1
d9-N-EtFOSE-M	75.6		10 - 130	06/29/24 08:01	07/03/24 07:34	1
d5-NEtPFOSA	73.1		10 - 130	06/29/24 08:01	07/03/24 07:34	1
d3-NMePFOSA	70.5		10 - 130	06/29/24 08:01	07/03/24 07:34	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
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	ND		7.0	1.8	ng/L		07/08/24 05:18	07/09/24 15:04	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C3 HFPO-DA	86.8		40 - 130	07/08/24 05:18	07/09/24 15:04	1

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

Lab Sample ID: MB 590-48050/10
Matrix: Water
Analysis Batch: 48050

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-Trichloroethane	ND		1.0	0.17	ug/L			06/24/24 13:35	1
Tetrachloroethene	ND		1.0	0.22	ug/L			06/24/24 13:35	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*80 - 120*		*06/24/24 13:35*	*1*
4-Bromofluorobenzene (Surr)	*91*		*76 - 120*		*06/24/24 13:35*	*1*
Dibromofluoromethane (Surr)	*120*		*80 - 123*		*06/24/24 13:35*	*1*
Toluene-d8 (Surr)	*106*		*80 - 120*		*06/24/24 13:35*	*1*

Lab Sample ID: LCS 590-48050/1005
Matrix: Water
Analysis Batch: 48050

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-Trichloroethane			10.0	10.6		ug/L		106	71 - 138		
Tetrachloroethene			10.0	11.7		ug/L		117	80 - 139		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*94*		*80 - 120*
4-Bromofluorobenzene (Surr)	*86*		*76 - 120*
Dibromofluoromethane (Surr)	*107*		*80 - 123*
Toluene-d8 (Surr)	*101*		*80 - 120*

Lab Sample ID: LCSD 590-48050/6
Matrix: Water
Analysis Batch: 48050

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-Trichloroethane			10.0	10.4		ug/L		104	71 - 138	2	17
Tetrachloroethene			10.0	11.0		ug/L		110	80 - 139	7	20

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*94*		*80 - 120*
4-Bromofluorobenzene (Surr)	*85*		*76 - 120*
Dibromofluoromethane (Surr)	*111*		*80 - 123*
Toluene-d8 (Surr)	*99*		*80 - 120*

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

Lab Sample ID: MB 580-463156/1-A
Matrix: Water
Analysis Batch: 463356

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 463156

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	ND		0.20	0.036	ug/L		06/25/24 08:16	06/26/24 17:46	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,4-Dioxane-d8	*58*		*40 - 140*	*06/25/24 08:16*	*06/26/24 17:46*	*1*

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

Lab Sample ID: LCS 580-463156/2-A
Matrix: Water
Analysis Batch: 463356

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 463156

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane			8.00	8.20		ug/L		102	78 - 130		

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,4-Dioxane-d8	*63*		*40 - 140*

Lab Sample ID: LCSD 580-463156/3-A
Matrix: Water
Analysis Batch: 463356

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 463156

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane			8.00	8.14		ug/L		102	78 - 130	1	13

Isotope Dilution	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
1,4-Dioxane-d8	*58*		*40 - 140*

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 590-48022/1003
Matrix: Water
Analysis Batch: 48022

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			06/21/24 07:54	1
Sulfate	ND		0.50	0.13	mg/L			06/21/24 07:54	1

Lab Sample ID: LCS 590-48022/1004
Matrix: Water
Analysis Batch: 48022

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	12.9		mg/L		103	90 - 110		
Sulfate			12.5	12.4		mg/L		99	90 - 110		

Lab Sample ID: MB 590-48029/1003
Matrix: Water
Analysis Batch: 48029

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			06/21/24 07:54	1
Nitrite as N	ND		0.20	0.069	mg/L			06/21/24 07:54	1

Lab Sample ID: LCS 590-48029/1004
Matrix: Water
Analysis Batch: 48029

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	5.04		mg/L		101	90 - 110		
Nitrite as N			5.00	4.97		mg/L		99	90 - 110		

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

Lab Sample ID: MB 320-775603/1-A
Matrix: Water
Analysis Batch: 776597

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 775603

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	ND		8.0	2.0	ng/L		06/29/24 08:01	07/04/24 22:05	1
Perfluoropentanoic acid (PFPeA)	ND		4.0	1.0	ng/L		06/29/24 08:01	07/04/24 22:05	1
Perfluorohexanoic acid (PFHxA)	ND		2.0	0.50	ng/L		06/29/24 08:01	07/04/24 22:05	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.50	ng/L		06/29/24 08:01	07/04/24 22:05	1
Perfluorooctanoic acid (PFOA)	ND		2.0	0.50	ng/L		06/29/24 08:01	07/04/24 22:05	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.50	ng/L		06/29/24 08:01	07/04/24 22:05	1
Perfluorodecanoic acid (PFDA)	ND		2.0	0.50	ng/L		06/29/24 08:01	07/04/24 22:05	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	0.50	ng/L		06/29/24 08:01	07/04/24 22:05	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	0.50	ng/L		06/29/24 08:01	07/04/24 22:05	1
Perfluorotridecanoic acid (PFTrDA)	ND		2.0	0.50	ng/L		06/29/24 08:01	07/04/24 22:05	1
Perfluorotetradecanoic acid (PFTeDA)	ND		2.0	0.50	ng/L		06/29/24 08:01	07/04/24 22:05	1
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	0.50	ng/L		06/29/24 08:01	07/04/24 22:05	1
Perfluoropentanesulfonic acid (PFPeS)	ND		2.0	0.50	ng/L		06/29/24 08:01	07/04/24 22:05	1
Perfluorohexanesulfonic acid (PFHxS)	ND		2.0	0.50	ng/L		06/29/24 08:01	07/04/24 22:05	1
Perfluoroheptanesulfonic acid (PFHpS)	ND		2.0	0.50	ng/L		06/29/24 08:01	07/04/24 22:05	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.0	0.50	ng/L		06/29/24 08:01	07/04/24 22:05	1
Perfluorononanesulfonic acid (PFNS)	ND		2.0	0.50	ng/L		06/29/24 08:01	07/04/24 22:05	1
Perfluorodecanesulfonic acid (PFDS)	ND		2.0	0.50	ng/L		06/29/24 08:01	07/04/24 22:05	1
Perfluorododecanesulfonic acid (PFDoS)	ND		2.0	0.50	ng/L		06/29/24 08:01	07/04/24 22:05	1
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	ND		8.0	2.0	ng/L		06/29/24 08:01	07/04/24 22:05	1
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	ND		8.0	2.0	ng/L		06/29/24 08:01	07/04/24 22:05	1
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	ND		8.0	2.0	ng/L		06/29/24 08:01	07/04/24 22:05	1
Perfluorooctanesulfonamide (PFOSA)	ND		2.0	0.50	ng/L		06/29/24 08:01	07/04/24 22:05	1
N-methylperfluorooctane sulfonamide (NMeFOSA)	ND		2.0	0.50	ng/L		06/29/24 08:01	07/04/24 22:05	1
N-ethylperfluorooctane sulfonamide (NEtFOSA)	ND		2.0	0.50	ng/L		06/29/24 08:01	07/04/24 22:05	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		2.0	0.50	ng/L		06/29/24 08:01	07/04/24 22:05	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		2.0	0.50	ng/L		06/29/24 08:01	07/04/24 22:05	1
N-methylperfluorooctane sulfonamidoethanol (NMeFOSE)	ND		20	5.0	ng/L		06/29/24 08:01	07/04/24 22:05	1
N-ethylperfluorooctane sulfonamidoethanol (NEtFOSE)	ND		20	5.0	ng/L		06/29/24 08:01	07/04/24 22:05	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		8.0	2.0	ng/L		06/29/24 08:01	07/04/24 22:05	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		8.0	2.0	ng/L		06/29/24 08:01	07/04/24 22:05	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	ND		4.0	1.0	ng/L		06/29/24 08:01	07/04/24 22:05	1
Perfluoro-4-methoxybutanoic acid (PFMBA)	ND		4.0	1.0	ng/L		06/29/24 08:01	07/04/24 22:05	1
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND		4.0	1.0	ng/L		06/29/24 08:01	07/04/24 22:05	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	ND		8.0	2.0	ng/L		06/29/24 08:01	07/04/24 22:05	1

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

Lab Sample ID: MB 320-775603/1-A
Matrix: Water
Analysis Batch: 776597

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 775603

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	ND		4.0	1.0	ng/L		06/29/24 08:01	07/04/24 22:05	1
3-Perfluoropropylpropanoic acid (3:3 FTCA)	ND		10	2.5	ng/L		06/29/24 08:01	07/04/24 22:05	1
3-Perfluoropentylpropanoic acid (5:3 FTCA)	ND		50	13	ng/L		06/29/24 08:01	07/04/24 22:05	1
3-Perfluoroheptylpropanoic acid (7:3 FTCA)	ND		50	13	ng/L		06/29/24 08:01	07/04/24 22:05	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*94.9*		*5 - 130*	*06/29/24 08:01*	*07/04/24 22:05*	*1*
13C5 PFPeA	*79.7*		*40 - 130*	*06/29/24 08:01*	*07/04/24 22:05*	*1*
13C5 PFHxA	*88.2*		*40 - 130*	*06/29/24 08:01*	*07/04/24 22:05*	*1*
13C4 PFHpA	*97.2*		*40 - 130*	*06/29/24 08:01*	*07/04/24 22:05*	*1*
13C8 PFOA	*90.2*		*40 - 130*	*06/29/24 08:01*	*07/04/24 22:05*	*1*
13C9 PFNA	*96.7*		*40 - 130*	*06/29/24 08:01*	*07/04/24 22:05*	*1*
13C6 PFDA	*107*		*40 - 130*	*06/29/24 08:01*	*07/04/24 22:05*	*1*
13C7 PFUnA	*93.5*		*30 - 130*	*06/29/24 08:01*	*07/04/24 22:05*	*1*
13C2 PFDoA	*102*		*10 - 130*	*06/29/24 08:01*	*07/04/24 22:05*	*1*
13C2 PFTeDA	*96.5*		*10 - 130*	*06/29/24 08:01*	*07/04/24 22:05*	*1*
13C3 PFBS	*91.3*		*40 - 135*	*06/29/24 08:01*	*07/04/24 22:05*	*1*
13C3 PFHxS	*82.8*		*40 - 130*	*06/29/24 08:01*	*07/04/24 22:05*	*1*
13C8 PFOS	*89.7*		*40 - 130*	*06/29/24 08:01*	*07/04/24 22:05*	*1*
13C8 PFOSA	*92.9*		*40 - 130*	*06/29/24 08:01*	*07/04/24 22:05*	*1*
d3-NMeFOSAA	*100*		*40 - 170*	*06/29/24 08:01*	*07/04/24 22:05*	*1*
d5-NEtFOSAA	*96.2*		*25 - 135*	*06/29/24 08:01*	*07/04/24 22:05*	*1*
13C2 4:2 FTS	*103*		*40 - 200*	*06/29/24 08:01*	*07/04/24 22:05*	*1*
13C2 6:2 FTS	*101*		*40 - 200*	*06/29/24 08:01*	*07/04/24 22:05*	*1*
13C2 8:2 FTS	*101*		*40 - 300*	*06/29/24 08:01*	*07/04/24 22:05*	*1*
13C3 HFPO-DA	*94.8*		*40 - 130*	*06/29/24 08:01*	*07/04/24 22:05*	*1*
d7-N-MeFOSE-M	*84.9*		*10 - 130*	*06/29/24 08:01*	*07/04/24 22:05*	*1*
d9-N-EtFOSE-M	*81.0*		*10 - 130*	*06/29/24 08:01*	*07/04/24 22:05*	*1*
d5-NEtPFOSA	*73.7*		*10 - 130*	*06/29/24 08:01*	*07/04/24 22:05*	*1*
d3-NMePFOSA	*71.7*		*10 - 130*	*06/29/24 08:01*	*07/04/24 22:05*	*1*

Lab Sample ID: LCS 320-775603/3-A
Matrix: Water
Analysis Batch: 776597

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 775603

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluorobutanoic acid (PFBA)	128	121		ng/L		94	70 - 140
Perfluoropentanoic acid (PFPeA)	64.0	58.9		ng/L		92	65 - 135
Perfluorohexanoic acid (PFHxA)	32.0	30.8		ng/L		96	70 - 145
Perfluoroheptanoic acid (PFHpA)	32.0	29.9		ng/L		94	70 - 150
Perfluorooctanoic acid (PFOA)	32.0	29.7		ng/L		93	70 - 150
Perfluorononanoic acid (PFNA)	32.0	31.8		ng/L		99	70 - 150
Perfluorodecanoic acid (PFDA)	32.0	29.1		ng/L		91	70 - 140
Perfluoroundecanoic acid (PFUnA)	32.0	31.0		ng/L		97	70 - 145

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

Lab Sample ID: LCS 320-775603/3-A
Matrix: Water
Analysis Batch: 776597

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 775603

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluorododecanoic acid (PFDoA)	32.0	28.2		ng/L		88	70 - 140
Perfluorotridecanoic acid (PFTrDA)	32.0	27.9		ng/L		87	65 - 140
Perfluorotetradecanoic acid (PFTeDA)	32.0	29.2		ng/L		91	60 - 140
Perfluorobutanesulfonic acid (PFBS)	28.4	27.4		ng/L		97	60 - 145
Perfluoropentanesulfonic acid (PFPeS)	30.1	29.5		ng/L		98	65 - 140
Perfluorohexanesulfonic acid (PFHxS)	29.2	27.2		ng/L		93	65 - 145
Perfluoroheptanesulfonic acid (PFHpS)	30.5	26.9		ng/L		88	70 - 150
Perfluorooctanesulfonic acid (PFOS)	29.8	27.4		ng/L		92	55 - 150
Perfluorononanesulfonic acid (PFNS)	30.8	28.7		ng/L		93	65 - 145
Perfluorodecanesulfonic acid (PFDS)	30.8	28.7		ng/L		93	60 - 145
Perfluorododecanesulfonic acid (PFDoS)	31.0	25.8		ng/L		83	50 - 145
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	120	113		ng/L		94	70 - 145
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	122	119		ng/L		98	65 - 155
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	123	125		ng/L		101	60 - 150
Perfluorooctanesulfonamide (PFOSA)	32.0	24.7		ng/L		77	70 - 145
N-methylperfluorooctane sulfonamide (NMeFOSA)	32.0	32.0		ng/L		100	60 - 150
N-ethylperfluorooctane sulfonamide (NEtFOSA)	32.0	31.2		ng/L		97	65 - 145
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	32.0	30.0		ng/L		94	50 - 140
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	32.0	28.7		ng/L		90	70 - 145
N-methylperfluorooctane sulfonamidoethanol (NMeFOSE)	320	291		ng/L		91	70 - 145
N-ethylperfluorooctane sulfonamidoethanol (NEtFOSE)	320	286		ng/L		89	70 - 135
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	128	117		ng/L		91	70 - 140
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	121	110		ng/L		91	65 - 145
Perfluoro-3-methoxypropanoic acid (PFMPA)	64.0	60.0		ng/L		94	55 - 140
Perfluoro-4-methoxybutanoic acid (PFMBA)	64.0	64.8		ng/L		101	60 - 150
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	64.0	64.7		ng/L		101	50 - 150
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	121	100		ng/L		83	55 - 160

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

Lab Sample ID: LCS 320-775603/3-A
Matrix: Water
Analysis Batch: 776597

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 775603

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	57.1	52.8		ng/L		93	70 - 140
3-Perfluoropropylpropanoic acid (3:3 FTCA)	160	154		ng/L		96	65 - 130
3-Perfluoropentylpropanoic acid (5:3 FTCA)	799	725		ng/L		91	70 - 135
3-Perfluoroheptylpropanoic acid (7:3 FTCA)	799	708		ng/L		89	50 - 145

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C4 PFBA	*96.0*		*5 - 130*
13C5 PFPeA	*78.8*		*40 - 130*
13C5 PFHxA	*89.2*		*40 - 130*
13C4 PFHpA	*92.4*		*40 - 130*
13C8 PFOA	*90.6*		*40 - 130*
13C9 PFNA	*101*		*40 - 130*
13C6 PFDA	*103*		*40 - 130*
13C7 PFUnA	*94.2*		*30 - 130*
13C2 PFDoA	*101*		*10 - 130*
13C2 PFTeDA	*93.1*		*10 - 130*
13C3 PFBS	*89.9*		*40 - 135*
13C3 PFHxS	*85.2*		*40 - 130*
13C8 PFOS	*97.8*		*40 - 130*
13C8 PFOSA	*94.3*		*40 - 130*
d3-NMeFOSAA	*101*		*40 - 170*
d5-NEtFOSAA	*99.4*		*25 - 135*
13C2 4:2 FTS	*95.9*		*40 - 200*
13C2 6:2 FTS	*99.5*		*40 - 200*
13C2 8:2 FTS	*97.6*		*40 - 300*
13C3 HFPO-DA	*95.1*		*40 - 130*
d7-N-MeFOSE-M	*86.9*		*10 - 130*
d9-N-EtFOSE-M	*83.1*		*10 - 130*
d5-NEtPFOSA	*75.5*		*10 - 130*
d3-NMePFOSA	*68.5*		*10 - 130*

Lab Sample ID: LLCS 320-775603/2-A
Matrix: Water
Analysis Batch: 776597

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 775603

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluorobutanoic acid (PFBA)	12.8	11.3		ng/L		88	70 - 140
Perfluoropentanoic acid (PFPeA)	6.40	5.52		ng/L		86	65 - 135
Perfluorohexanoic acid (PFHxA)	3.20	2.64		ng/L		83	70 - 145
Perfluoroheptanoic acid (PFHpA)	3.20	2.95		ng/L		92	70 - 150
Perfluorooctanoic acid (PFOA)	3.20	2.42		ng/L		76	70 - 150
Perfluorononanoic acid (PFNA)	3.20	3.04		ng/L		95	70 - 150
Perfluorodecanoic acid (PFDA)	3.20	2.60		ng/L		81	70 - 140
Perfluoroundecanoic acid (PFUnA)	3.20	2.98		ng/L		93	70 - 145

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

Lab Sample ID: LLCS 320-775603/2-A
Matrix: Water
Analysis Batch: 776597

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 775603

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluorododecanoic acid (PFDoA)	3.20	2.51		ng/L		78	70 - 140
Perfluorotridecanoic acid (PFTrDA)	3.20	2.59		ng/L		81	65 - 140
Perfluorotetradecanoic acid (PFTeDA)	3.20	2.69		ng/L		84	60 - 140
Perfluorobutanesulfonic acid (PFBS)	2.84	2.49		ng/L		88	60 - 145
Perfluoropentanesulfonic acid (PFPeS)	3.01	2.32		ng/L		77	65 - 140
Perfluorohexanesulfonic acid (PFHxS)	2.92	2.73		ng/L		94	65 - 145
Perfluoroheptanesulfonic acid (PFHpS)	3.05	2.27		ng/L		74	70 - 150
Perfluorooctanesulfonic acid (PFOS)	2.98	2.52		ng/L		85	55 - 150
Perfluorononanesulfonic acid (PFNS)	3.08	2.75		ng/L		89	65 - 145
Perfluorodecanesulfonic acid (PFDS)	3.08	2.49		ng/L		81	60 - 145
Perfluorododecanesulfonic acid (PFDoS)	3.10	2.90		ng/L		93	50 - 145
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	12.0	11.2		ng/L		93	70 - 145
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	12.2	11.7		ng/L		96	65 - 155
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	12.3	11.8		ng/L		96	60 - 150
Perfluorooctanesulfonamide (PFOSA)	3.20	2.32		ng/L		72	70 - 145
N-methylperfluorooctane sulfonamide (NMeFOSA)	3.20	2.47		ng/L		77	60 - 150
N-ethylperfluorooctane sulfonamide (NEtFOSA)	3.20	2.54		ng/L		79	65 - 145
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	3.20	2.71		ng/L		85	50 - 140
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	3.20	2.76		ng/L		86	70 - 145
N-methylperfluorooctane sulfonamidoethanol (NMeFOSE)	32.0	26.1		ng/L		82	70 - 145
N-ethylperfluorooctane sulfonamidoethanol (NEtFOSE)	32.0	25.8		ng/L		81	70 - 135
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	12.8	11.3		ng/L		88	70 - 140
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	12.1	10.4		ng/L		86	65 - 145
Perfluoro-3-methoxypropanoic acid (PFMPA)	6.40	5.18		ng/L		81	55 - 140
Perfluoro-4-methoxybutanoic acid (PFMBA)	6.40	5.96		ng/L		93	60 - 150
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	6.40	6.02		ng/L		94	50 - 150
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	12.1	9.08		ng/L		75	55 - 160

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

Lab Sample ID: LLCS 320-775603/2-A
Matrix: Water
Analysis Batch: 776597

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 775603

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	5.71	4.13		ng/L		72	70 - 140
3-Perfluoropropylpropanoic acid (3:3 FTCA)	16.0	14.3		ng/L		90	65 - 130
3-Perfluoropentylpropanoic acid (5:3 FTCA)	79.9	66.3		ng/L		83	70 - 135
3-Perfluoroheptylpropanoic acid (7:3 FTCA)	79.9	65.5		ng/L		82	50 - 145

Isotope Dilution	*LLCS %Recovery*	*LLCS Qualifier*	*Limits*
13C4 PFBA	*90.0*		*5 - 130*
13C5 PFPeA	*76.4*		*40 - 130*
13C5 PFHxA	*87.4*		*40 - 130*
13C4 PFHpA	*88.1*		*40 - 130*
13C8 PFOA	*93.5*		*40 - 130*
13C9 PFNA	*97.6*		*40 - 130*
13C6 PFDA	*103*		*40 - 130*
13C7 PFUnA	*89.7*		*30 - 130*
13C2 PFDoA	*98.5*		*10 - 130*
13C2 PFTeDA	*99.0*		*10 - 130*
13C3 PFBS	*85.9*		*40 - 135*
13C3 PFHxS	*77.6*		*40 - 130*
13C8 PFOS	*90.0*		*40 - 130*
13C8 PFOSA	*93.1*		*40 - 130*
d3-NMeFOSAA	*94.8*		*40 - 170*
d5-NEtFOSAA	*96.4*		*25 - 135*
13C2 4:2 FTS	*88.6*		*40 - 200*
13C2 6:2 FTS	*89.0*		*40 - 200*
13C2 8:2 FTS	*91.5*		*40 - 300*
13C3 HFPO-DA	*91.5*		*40 - 130*
d7-N-MeFOSE-M	*85.7*		*10 - 130*
d9-N-EtFOSE-M	*82.5*		*10 - 130*
d5-NEtPFOSA	*73.0*		*10 - 130*
d3-NMePFOSA	*69.4*		*10 - 130*

Lab Sample ID: MB 320-777242/1-A
Matrix: Water
Analysis Batch: 777673

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 777242

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	ND		8.0	2.0	ng/L		07/08/24 05:18	07/09/24 09:16	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*84.2*		*40 - 130*	*07/08/24 05:18*	*07/09/24 09:16*	*1*

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

Lab Sample ID: LCS 320-777242/3-A
Matrix: Water
Analysis Batch: 777673

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 777242

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)			120	117		ng/L		98	70 - 155		

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C3 HFPO-DA	*83.6*		*40 - 130*

Lab Sample ID: LCSD 320-777242/4-A
Matrix: Water
Analysis Batch: 777673

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 777242

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	107		ng/L		90	70 - 155	8	30

Isotope Dilution	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
13C3 HFPO-DA	*86.6*		*40 - 130*

Lab Sample ID: LLCS 320-777242/2-A
Matrix: Water
Analysis Batch: 777673

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 777242

Analyte			Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits		
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)			12.0	10.7		ng/L		89	70 - 155		

Isotope Dilution	*LLCS %Recovery*	*LLCS Qualifier*	*Limits*
13C3 HFPO-DA	*87.0*		*40 - 130*

Method: PPCP NEG - Pharmaceuticals and Personal Care Products (LC/MS/MS)

Lab Sample ID: MB 810-103678/10
Matrix: Water
Analysis Batch: 103678

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acesulfame K	ND		0.020	0.0020	ug/L			06/25/24 02:47	1
Sucralose	ND		0.10	0.014	ug/L			06/25/24 02:47	1

Method: 6010D - Metals (ICP)

Lab Sample ID: MB 590-48116/2-A
Matrix: Water
Analysis Batch: 48207

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 48116

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Magnesium	ND		0.50	0.13	mg/L		06/27/24 10:32	07/02/24 12:18	1

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

Lab Sample ID: LCS 590-48116/1-A
Matrix: Water
Analysis Batch: 48207

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 48116

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Magnesium	25.0	22.5		mg/L		90	80 - 120

Lab Sample ID: MB 590-48117/2-B
Matrix: Water
Analysis Batch: 48207

Client Sample ID: Method Blank
Prep Type: Dissolved
Prep Batch: 48188

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	ND		1.0	0.20	mg/L		07/02/24 11:12	07/02/24 13:10	1
Magnesium	ND		0.50	0.13	mg/L		07/02/24 11:12	07/02/24 13:10	1

Lab Sample ID: LCS 590-48117/1-B
Matrix: Water
Analysis Batch: 48207

Client Sample ID: Lab Control Sample
Prep Type: Dissolved
Prep Batch: 48188

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Calcium	25.0	21.7		mg/L		87	80 - 120
Magnesium	25.0	21.8		mg/L		87	80 - 120

Method: 6020B - Metals (ICP/MS)

Lab Sample ID: MB 580-463143/10-A
Matrix: Water
Analysis Batch: 463282

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 463143

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		0.0050	0.0010	mg/L		06/24/24 16:51	06/25/24 10:50	5
Cadmium	ND		0.0020	0.00019	mg/L		06/24/24 16:51	06/25/24 10:50	5
Iron	ND		0.50	0.067	mg/L		06/24/24 16:51	06/25/24 10:50	5
Lead	ND		0.0020	0.00020	mg/L		06/24/24 16:51	06/25/24 10:50	5
Manganese	ND		0.010	0.0023	mg/L		06/24/24 16:51	06/25/24 10:50	5
Zinc	ND		0.035	0.0046	mg/L		06/24/24 16:51	06/25/24 10:50	5

Lab Sample ID: LCS 580-463143/11-A
Matrix: Water
Analysis Batch: 463282

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 463143

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Arsenic	1.00	0.988		mg/L		99	80 - 120
Cadmium	1.00	0.939		mg/L		94	80 - 120
Iron	20.0	19.7		mg/L		99	80 - 120
Lead	1.00	1.02		mg/L		102	80 - 120
Manganese	1.00	0.948		mg/L		95	80 - 120
Zinc	1.00	0.994		mg/L		99	80 - 120

Lab Sample ID: LCSD 580-463143/12-A
Matrix: Water
Analysis Batch: 463282

Client Sample ID: Lab Control Sample Dup
Prep Type: Total Recoverable
Prep Batch: 463143

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Arsenic	1.00	0.957		mg/L		96	80 - 120	3	20

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

Lab Sample ID: LCSD 580-463143/12-A
Matrix: Water
Analysis Batch: 463282

Client Sample ID: Lab Control Sample Dup
Prep Type: Total Recoverable
Prep Batch: 463143

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Cadmium	1.00	0.918		mg/L		92	80 - 120	2	20
Iron	20.0	19.0		mg/L		95	80 - 120	4	20
Lead	1.00	1.01		mg/L		101	80 - 120	1	20
Manganese	1.00	0.914		mg/L		91	80 - 120	4	20
Zinc	1.00	0.953		mg/L		95	80 - 120	4	20

Lab Sample ID: MB 580-463083/11-B
Matrix: Water
Analysis Batch: 463405

Client Sample ID: Method Blank
Prep Type: Dissolved
Prep Batch: 463243

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		0.0050	0.0010	mg/L		06/25/24 15:33	06/26/24 12:13	5
Cadmium	ND		0.0020	0.00019	mg/L		06/25/24 15:33	06/26/24 12:13	5
Iron	ND		0.50	0.067	mg/L		06/25/24 15:33	06/26/24 12:13	5
Lead	ND		0.0020	0.00020	mg/L		06/25/24 15:33	06/26/24 12:13	5
Manganese	ND		0.010	0.0023	mg/L		06/25/24 15:33	06/26/24 12:13	5
Zinc	ND		0.035	0.0046	mg/L		06/25/24 15:33	06/26/24 12:13	5

Lab Sample ID: LCS 580-463083/12-B
Matrix: Water
Analysis Batch: 463405

Client Sample ID: Lab Control Sample
Prep Type: Dissolved
Prep Batch: 463243

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Arsenic	1.00	1.03		mg/L		103	80 - 120
Cadmium	1.00	1.02		mg/L		102	80 - 120
Iron	20.0	19.8		mg/L		99	80 - 120
Lead	1.00	1.01		mg/L		101	80 - 120
Manganese	1.00	0.978		mg/L		98	80 - 120
Zinc	1.00	0.986		mg/L		99	80 - 120

Lab Sample ID: LCSD 580-463083/13-B
Matrix: Water
Analysis Batch: 463405

Client Sample ID: Lab Control Sample Dup
Prep Type: Dissolved
Prep Batch: 463243

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Arsenic	1.00	1.04		mg/L		104	80 - 120	0	20
Cadmium	1.00	1.03		mg/L		103	80 - 120	1	20
Iron	20.0	20.0		mg/L		100	80 - 120	1	20
Lead	1.00	1.03		mg/L		103	80 - 120	2	20
Manganese	1.00	0.992		mg/L		99	80 - 120	1	20
Zinc	1.00	0.986		mg/L		99	80 - 120	0	20

Lab Sample ID: 590-25479-1 MS
Matrix: Water
Analysis Batch: 463405

Client Sample ID: MW-16A-062024
Prep Type: Dissolved
Prep Batch: 463243

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Arsenic	0.0023	J	1.00	1.06		mg/L		106	80 - 120
Cadmium	ND		1.00	1.02		mg/L		102	80 - 120
Iron	0.074	J	20.0	20.8		mg/L		103	80 - 120

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

Lab Sample ID: 590-25479-1 MS
Matrix: Water
Analysis Batch: 463405

Client Sample ID: MW-16A-062024
Prep Type: Dissolved
Prep Batch: 463243

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Lead	ND		1.00	1.03		mg/L		103	80 - 120
Manganese	0.0044	J	1.00	1.00		mg/L		100	80 - 120
Zinc	ND		1.00	1.02		mg/L		102	80 - 120

Lab Sample ID: 590-25479-1 MSD
Matrix: Water
Analysis Batch: 463405

Client Sample ID: MW-16A-062024
Prep Type: Dissolved
Prep Batch: 463243

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Arsenic	0.0023	J	1.00	1.04		mg/L		104	80 - 120	2	20
Cadmium	ND		1.00	1.02		mg/L		102	80 - 120	1	20
Iron	0.074	J	20.0	19.9		mg/L		99	80 - 120	4	20
Lead	ND		1.00	1.01		mg/L		101	80 - 120	2	20
Manganese	0.0044	J	1.00	0.980		mg/L		98	80 - 120	2	20
Zinc	ND		1.00	0.988		mg/L		99	80 - 120	3	20

Lab Sample ID: 590-25479-1 DU
Matrix: Water
Analysis Batch: 463405

Client Sample ID: MW-16A-062024
Prep Type: Dissolved
Prep Batch: 463243

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Arsenic	0.0023	J	0.00222	J	mg/L		4	20
Cadmium	ND		ND		mg/L		NC	20
Iron	0.074	J	ND		mg/L		NC	20
Lead	ND		ND		mg/L		NC	20
Manganese	0.0044	J	0.00436	J	mg/L		0.7	20
Zinc	ND		ND		mg/L		NC	20

Method: 7470A - Mercury (CVAA)

Lab Sample ID: MB 590-48224/9-A
Matrix: Water
Analysis Batch: 48241

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 48224

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.090	ug/L		07/03/24 10:12	07/03/24 12:18	1

Lab Sample ID: LCS 590-48224/8-A
Matrix: Water
Analysis Batch: 48241

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 48224

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Mercury	2.00	1.69		ug/L		85	80 - 120

Lab Sample ID: MB 590-48117/2-C
Matrix: Water
Analysis Batch: 48241

Client Sample ID: Method Blank
Prep Type: Dissolved
Prep Batch: 48225

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.090	ug/L		07/03/24 10:15	07/03/24 12:59	1

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

Lab Sample ID: LCS 590-48117/1-C
Matrix: Water
Analysis Batch: 48241

Client Sample ID: Lab Control Sample
Prep Type: Dissolved
Prep Batch: 48225

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Mercury			2.00	1.74		ug/L		87	80 - 120		

Method: 350.1 - Nitrogen, Ammonia

Lab Sample ID: MB 280-658667/60
Matrix: Water
Analysis Batch: 658667

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			06/27/24 13:42	1

Lab Sample ID: LCS 280-658667/61
Matrix: Water
Analysis Batch: 658667

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	2.65		mg/L		106	90 - 110		

Lab Sample ID: MB 280-659155/63
Matrix: Water
Analysis Batch: 659155

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			07/02/24 13:26	1

Lab Sample ID: LCS 280-659155/64
Matrix: Water
Analysis Batch: 659155

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		100	90 - 110		

Lab Sample ID: 590-25479-1 MS
Matrix: Water
Analysis Batch: 659155

Client Sample ID: MW-16A-062024
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
Ammonia as N	ND		1.00	1.06		mg/L		106	90 - 110		

Lab Sample ID: 590-25479-1 MSD
Matrix: Water
Analysis Batch: 659155

Client Sample ID: MW-16A-062024
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Ammonia as N	ND		1.00	1.10		mg/L		110	90 - 110	4	10

Method: SM 2320B - Alkalinity

Lab Sample ID: MB 590-48087/1
Matrix: Water
Analysis Batch: 48087

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			06/26/24 09:37	1
Bicarbonate Alkalinity as CaCO3	5.00	J	20	5.0	mg/L			06/26/24 09:37	1

Lab Sample ID: LCS 590-48087/2
Matrix: Water
Analysis Batch: 48087

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Alkalinity	501	475		mg/L		95	90 - 110

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

Lab Sample ID: MB 590-48103/1
Matrix: Water
Analysis Batch: 48103

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			06/26/24 14:26	1

Lab Sample ID: LCS 590-48103/2
Matrix: Water
Analysis Batch: 48103

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	500	499		mg/L		100	80 - 120

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

Lab Sample ID: MB 280-658712/36
Matrix: Water
Analysis Batch: 658712

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			06/28/24 00:38	1

Lab Sample ID: LCS 280-658712/35
Matrix: Water
Analysis Batch: 658712

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 Chronicle

Client: GeoEngineers Inc
Project/Site: Marshall Landfill

Job ID: 590-25479-1

Client Sample ID: MW-16A-062024

Date Collected: 06/20/24 08:50
Date Received: 06/20/24 16:27

Lab Sample ID: 590-25479-1

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	300.0		1	5 mL	5 mL	48022	06/21/24 11:00	NMI	EET SPK
Total/NA	Analysis	300.0		1	5 mL	5 mL	48029	06/21/24 11:00	NMI	EET SPK
Total/NA	Prep	1633			581.4 mL	5.0 mL	775603	06/29/24 08:01	WVD	EET SAC
Total/NA	Analysis	Draft-4 1633		1	1 mL	1 mL	776597	07/05/24 04:14	EMF	EET SAC
Total/NA	Prep	1633	RE		579 mL	5.0 mL	777242	07/08/24 05:18	GAT	EET SAC
Total/NA	Analysis	Draft-4 1633	RE	1	1 mL	1 mL	777673	07/09/24 13:42	K1D	EET SAC
Total/NA	Analysis	PPCP NEG		1	1 mL	1 mL	103678	06/25/24 06:59	BS	EA SB
Dissolved	Filtration	FILTRATION			50 mL	50 mL	48117	06/27/24 10:48	AMB	EET SPK
Dissolved	Prep	3005A			50 mL	50 mL	48188	07/02/24 11:12	AMB	EET SPK
Dissolved	Analysis	6010D		1			48257	07/03/24 13:42	AMB	EET SPK
Total Recoverable	Prep	3005A			50 mL	50 mL	48116	06/27/24 10:32	AMB	EET SPK
Total Recoverable	Analysis	6010D		1			48256	07/02/24 18:33	AMB	EET SPK
Dissolved	Filtration	FILTRATION			250 mL	250 mL	463083	06/24/24 10:04	TMH	EET SEA
Dissolved	Prep	3005A			50 mL	50 mL	463243	06/25/24 15:33	MCMS	EET SEA
Dissolved	Analysis	6020B		5			463405	06/26/24 12:20	TMH	EET SEA
Total/NA	Analysis	350.1		1	10 mL	10 mL	659155	07/02/24 14:14	LBR	EET DEN
Total/NA	Analysis	SM 2320B		1	100 mL	100 mL	48087	06/26/24 09:37	RMA	EET SPK
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	48103	06/26/24 14:27	RMA	EET SPK
Total/NA	Analysis	SM 5310B		1	20 mL	20 mL	658712	06/28/24 03:07	ABW	EET DEN

Client Sample ID: MW-2A-062024

Date Collected: 06/20/24 10:20
Date Received: 06/20/24 16:27

Lab Sample ID: 590-25479-2

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	48050	06/24/24 16:34	JSP	EET SPK
Total/NA	Prep	3510C			263.7 mL	1 mL	463156	06/25/24 08:16	JW	EET SEA
Total/NA	Analysis	8270C SIM ID		1	1 mL	1 mL	463356	06/26/24 18:56	TL1	EET SEA
Total/NA	Analysis	300.0		1	5 mL	5 mL	48022	06/21/24 11:10	NMI	EET SPK
Total/NA	Analysis	300.0		1	5 mL	5 mL	48029	06/21/24 11:10	NMI	EET SPK
Total/NA	Prep	1633			596.9 mL	5.0 mL	775603	06/29/24 08:01	WVD	EET SAC
Total/NA	Analysis	Draft-4 1633		1	1 mL	1 mL	777022	07/06/24 03:25	EMF	EET SAC
Total/NA	Prep	1633	RE		602 mL	5.0 mL	777242	07/08/24 05:18	GAT	EET SAC
Total/NA	Analysis	Draft-4 1633	RE	1	1 mL	1 mL	777673	07/09/24 14:02	K1D	EET SAC
Total/NA	Analysis	PPCP NEG		1	1 mL	1 mL	103678	06/25/24 07:27	BS	EA SB
Total/NA	Analysis	PPCP NEG	DL	10	1 mL	1 mL	103678	06/25/24 13:32	BS	EA SB
Dissolved	Filtration	FILTRATION			50 mL	50 mL	48117	06/27/24 10:48	AMB	EET SPK
Dissolved	Prep	3005A			50 mL	50 mL	48188	07/02/24 11:12	AMB	EET SPK
Dissolved	Analysis	6010D		1			48257	07/03/24 13:46	AMB	EET SPK
Total Recoverable	Prep	3005A			50 mL	50 mL	48116	06/27/24 10:32	AMB	EET SPK
Total Recoverable	Analysis	6010D		1			48256	07/02/24 18:37	AMB	EET SPK
Dissolved	Filtration	FILTRATION			250 mL	250 mL	463083	06/24/24 10:04	TMH	EET SEA
Dissolved	Prep	3005A			50 mL	50 mL	463243	06/25/24 15:33	MCMS	EET SEA
Dissolved	Analysis	6020B		5			463405	06/26/24 12:44	TMH	EET SEA

Lab Chronicle

Client: GeoEngineers Inc
Project/Site: Marshall Landfill

Job ID: 590-25479-1

Client Sample ID: MW-2A-062024

Date Collected: 06/20/24 10:20
Date Received: 06/20/24 16:27

Lab Sample ID: 590-25479-2

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			50 mL	50 mL	463143	06/24/24 16:51	MCMS	EET SEA
Total Recoverable	Analysis	6020B		5			463282	06/25/24 11:21	FCW	EET SEA
Dissolved	Filtration	FILTRATION			50 mL	50 mL	48117	06/27/24 10:48	AMB	EET SPK
Dissolved	Prep	7470A			50 mL	50 mL	48225	07/03/24 10:15	AMB	EET SPK
Dissolved	Analysis	7470A		1			48241	07/03/24 13:24	AMB	EET SPK
Total/NA	Prep	7470A			50 mL	50 mL	48224	07/03/24 10:13	AMB	EET SPK
Total/NA	Analysis	7470A		1			48241	07/03/24 12:38	AMB	EET SPK
Total/NA	Analysis	350.1		1	10 mL	10 mL	658667	06/27/24 14:49	LBR	EET DEN
Total/NA	Analysis	SM 2320B		1	100 mL	100 mL	48087	06/26/24 09:37	RMA	EET SPK
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	48103	06/26/24 14:27	RMA	EET SPK
Total/NA	Analysis	SM 5310B		1	20 mL	20 mL	658712	06/28/24 03:21	ABW	EET DEN

Client Sample ID: MW-5A-062024

Date Collected: 06/20/24 13:40
Date Received: 06/20/24 16:27

Lab Sample ID: 590-25479-3

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	48050	06/24/24 16:56	JSP	EET SPK
Total/NA	Prep	3510C			262.8 mL	1 mL	463156	06/25/24 08:16	JW	EET SEA
Total/NA	Analysis	8270C SIM ID		1	1 mL	1 mL	463356	06/26/24 19:10	TL1	EET SEA
Total/NA	Analysis	300.0		1	5 mL	5 mL	48022	06/21/24 11:20	NMI	EET SPK
Total/NA	Analysis	300.0		1	5 mL	5 mL	48029	06/21/24 11:20	NMI	EET SPK
Total/NA	Prep	1633			573.1 mL	5.0 mL	775603	06/29/24 08:01	WVD	EET SAC
Total/NA	Analysis	Draft-4 1633		1	1 mL	1 mL	776321	07/03/24 06:53	K1D	EET SAC
Total/NA	Prep	1633	RE		583.9 mL	5.0 mL	777242	07/08/24 05:18	GAT	EET SAC
Total/NA	Analysis	Draft-4 1633	RE	1	1 mL	1 mL	777673	07/09/24 14:23	K1D	EET SAC
Total/NA	Analysis	PPCP NEG		1	1 mL	1 mL	103678	06/25/24 08:23	BS	EA SB
Dissolved	Filtration	FILTRATION			50 mL	50 mL	48117	06/27/24 10:48	AMB	EET SPK
Dissolved	Prep	3005A			50 mL	50 mL	48188	07/02/24 11:12	AMB	EET SPK
Dissolved	Analysis	6010D		1			48257	07/03/24 13:50	AMB	EET SPK
Total Recoverable	Prep	3005A			50 mL	50 mL	48116	06/27/24 10:32	AMB	EET SPK
Total Recoverable	Analysis	6010D		1			48256	07/02/24 18:41	AMB	EET SPK
Dissolved	Filtration	FILTRATION			250 mL	250 mL	463083	06/24/24 10:04	TMH	EET SEA
Dissolved	Prep	3005A			50 mL	50 mL	463243	06/25/24 15:33	MCMS	EET SEA
Dissolved	Analysis	6020B		5			463405	06/26/24 12:46	TMH	EET SEA
Total Recoverable	Prep	3005A			50 mL	50 mL	463143	06/24/24 16:51	MCMS	EET SEA
Total Recoverable	Analysis	6020B		5			463282	06/25/24 11:23	FCW	EET SEA
Dissolved	Filtration	FILTRATION			50 mL	50 mL	48117	06/27/24 10:48	AMB	EET SPK
Dissolved	Prep	7470A			50 mL	50 mL	48225	07/03/24 10:16	AMB	EET SPK
Dissolved	Analysis	7470A		1			48241	07/03/24 13:26	AMB	EET SPK
Total/NA	Prep	7470A			50 mL	50 mL	48224	07/03/24 10:13	AMB	EET SPK
Total/NA	Analysis	7470A		1			48241	07/03/24 12:46	AMB	EET SPK
Total/NA	Analysis	350.1		1	10 mL	10 mL	658667	06/27/24 14:51	LBR	EET DEN
Total/NA	Analysis	SM 2320B		1	100 mL	100 mL	48087	06/26/24 09:37	RMA	EET SPK

Lab Chronicle

Client: GeoEngineers Inc
Project/Site: Marshall Landfill

Job ID: 590-25479-1

Client Sample ID: MW-5A-062024

Lab Sample ID: 590-25479-3

Date Collected: 06/20/24 13:40

Matrix: Water

Date Received: 06/20/24 16:27

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	48103	06/26/24 14:27	RMA	EET SPK
Total/NA	Analysis	SM 5310B		1	20 mL	20 mL	658712	06/28/24 03:37	ABW	EET DEN

Client Sample ID: DUP-062024

Lab Sample ID: 590-25479-4

Date Collected: 06/20/24 08:00

Matrix: Water

Date Received: 06/20/24 16:27

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	48050	06/24/24 17:40	JSP	EET SPK
Total/NA	Prep	3510C			253.9 mL	1 mL	463156	06/25/24 08:16	JW	EET SEA
Total/NA	Analysis	8270C SIM ID		1	1 mL	1 mL	463356	06/26/24 19:24	TL1	EET SEA
Total/NA	Analysis	300.0		1	5 mL	5 mL	48022	06/21/24 11:30	NMI	EET SPK
Total/NA	Analysis	300.0		1	5 mL	5 mL	48029	06/21/24 11:30	NMI	EET SPK
Total/NA	Prep	1633			593 mL	5.0 mL	775603	06/29/24 08:01	WVD	EET SAC
Total/NA	Analysis	Draft-4 1633		1	1 mL	1 mL	776321	07/03/24 07:13	K1D	EET SAC
Total/NA	Prep	1633	RE		575.1 mL	5.0 mL	777242	07/08/24 05:18	GAT	EET SAC
Total/NA	Analysis	Draft-4 1633	RE	1	1 mL	1 mL	777673	07/09/24 14:43	K1D	EET SAC
Total/NA	Analysis	PPCP NEG		1	1 mL	1 mL	103678	06/25/24 08:51	BS	EA SB
Dissolved	Filtration	FILTRATION			50 mL	50 mL	48117	06/27/24 10:48	AMB	EET SPK
Dissolved	Prep	3005A			50 mL	50 mL	48188	07/02/24 11:12	AMB	EET SPK
Dissolved	Analysis	6010D		1			48257	07/03/24 13:54	AMB	EET SPK
Total Recoverable	Prep	3005A			50 mL	50 mL	48116	06/27/24 10:32	AMB	EET SPK
Total Recoverable	Analysis	6010D		1			48256	07/02/24 18:45	AMB	EET SPK
Dissolved	Filtration	FILTRATION			250 mL	250 mL	463083	06/24/24 10:04	TMH	EET SEA
Dissolved	Prep	3005A			50 mL	50 mL	463243	06/25/24 15:33	MCMS	EET SEA
Dissolved	Analysis	6020B		5			463405	06/26/24 12:51	TMH	EET SEA
Total Recoverable	Prep	3005A			50 mL	50 mL	463143	06/24/24 16:51	MCMS	EET SEA
Total Recoverable	Analysis	6020B		5			463282	06/25/24 11:26	FCW	EET SEA
Dissolved	Filtration	FILTRATION			50 mL	50 mL	48117	06/27/24 10:48	AMB	EET SPK
Dissolved	Prep	7470A			50 mL	50 mL	48225	07/03/24 10:16	AMB	EET SPK
Dissolved	Analysis	7470A		1			48241	07/03/24 13:29	AMB	EET SPK
Total/NA	Prep	7470A			50 mL	50 mL	48224	07/03/24 10:13	AMB	EET SPK
Total/NA	Analysis	7470A		1			48241	07/03/24 12:48	AMB	EET SPK
Total/NA	Analysis	350.1		1	10 mL	10 mL	658667	06/27/24 14:53	LBR	EET DEN
Total/NA	Analysis	SM 2320B		1	100 mL	100 mL	48087	06/26/24 09:37	RMA	EET SPK
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	48103	06/26/24 14:27	RMA	EET SPK
Total/NA	Analysis	SM 5310B		1	20 mL	20 mL	658712	06/28/24 03:53	ABW	EET DEN

Lab Chronicle

Client: GeoEngineers Inc
Project/Site: Marshall Landfill

Job ID: 590-25479-1

Client Sample ID: FB-062024

Date Collected: 06/20/24 15:30
Date Received: 06/20/24 16:27

Lab Sample ID: 590-25479-5

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			576.5 mL	5.0 mL	775603	06/29/24 08:01	WVD	EET SAC
Total/NA	Analysis	Draft-4 1633		1	1 mL	1 mL	776321	07/03/24 07:34	K1D	EET SAC
Total/NA	Prep	1633	RE		567.5 mL	5.0 mL	777242	07/08/24 05:18	GAT	EET SAC
Total/NA	Analysis	Draft-4 1633	RE	1	1 mL	1 mL	777673	07/09/24 15:04	K1D	EET SAC

Laboratory References:

EA SB = Eurofins Eaton Analytical South Bend, 110 S Hill Street, South Bend, IN 46617, TEL (574)233-4777
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: 590-25479-1

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	01-07-25

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 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	10-31-25
A2LA	ISO/IEC 17025	2907.01	10-31-25
Alabama	State Program	40730	09-30-12 *
Alaska (UST)	State	18-001	07-16-24
Arizona	State	AZ0713	07-30-24
Arkansas DEQ	State	19-047-0	04-21-25
California	State	2513	01-08-25
Colorado	Petroleum Storage Tank Program	4025 (or)	01-08-25
Colorado	State	CO00026	06-30-25
Connecticut	State	PH-0686	09-30-24
Florida	NELAP	E87667-57	06-30-25
Georgia	State	4025-011	01-08-25
Illinois	NELAP	2000172024-9	05-31-25
Iowa	State	370	08-04-24
Kansas	NELAP	E-10166	04-30-25
Kentucky (WW)	State	KY98047	12-31-24
Louisiana	NELAP	30785	06-30-14 *
Louisiana (All)	NELAP	30785	06-30-25
Minnesota	NELAP	1788752	08-20-24
Nevada	State	CO000262024-08	07-31-24
New Hampshire	NELAP	2053	08-12-24
New Jersey	NELAP	230001	07-07-24
New York	NELAP	59923	04-01-25
North Dakota	State	R-034	01-08-25
Oklahoma	NELAP	8614	08-31-24
Oregon	NELAP	4025	07-16-24
Pennsylvania	NELAP	013	07-08-24
South Carolina	State	72002001	01-08-24 *
Texas	NELAP	TX104704183-08-TX	09-30-09 *
Texas	NELAP	T104704183-23-23	09-30-24
USDA	US Federal Programs	P330-20-00065	12-19-25
Utah	NELAP	QUAN5	06-30-13 *
Utah	NELAP	CO000262019-11	07-31-25
Virginia	NELAP	460232	06-14-25
Washington	State	C583	08-03-24
West Virginia DEP	State	354	11-30-24
Wisconsin	State	999615430	08-19-24
Wyoming (UST)	A2LA	2907.01	10-31-25

Laboratory: Eurofins Eaton Analytical South Bend

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

Accreditation/Certification Summary

Client: GeoEngineers Inc
Project/Site: Marshall Landfill

Job ID: 590-25479-1

Laboratory: Eurofins Eaton Analytical South Bend (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
A2LA	ISO/IEC 17025	5794.01	07-21-24
Alabama	State	40700	06-30-24
Alaska	State	IN00035	06-30-24
Arizona	State	AZ0432	07-25-24
Arkansas (DW)	State	EPA IN00035	06-30-24
California	State	2920	06-30-24
Colorado	State	IN00035	08-05-24
Connecticut	State	PH-0132	07-08-24
Delaware (DW)	State	IN00035	06-27-24
Florida	NELAP	E87775	06-30-24
Georgia (DW)	State	929	06-30-24
Guam	State	23-011R	07-15-24
Hawaii	State	IN035	06-30-24
Idaho (DW)	State	IN00035	08-15-24
IL Dept. of Public Health (Micro)	State	17767	06-30-24
Illinois	NELAP	200001	09-19-24
Indiana	State	C-71-01	12-31-25
Indiana (Micro)	State	M-76-07	12-31-25
Iowa	State	IA Lab #098	08-01-24
Kansas	NELAP	E-10233	10-31-24
Kentucky (DW)	State	KY90056	08-12-24
Louisiana (DW)	State	LA014	07-16-24
Maine	State	IN00035	05-01-25
Maryland	State	209	06-27-24
Massachusetts	State	M-IN035	07-30-24
MI - RadChem Recognition	State	9926	06-26-24
Michigan	State	9926	06-26-24
Minnesota	NELAP	1989807	12-31-24
Mississippi	State	IN00035	06-30-24
Missouri	State	880	09-30-24
Montana (DW)	State	CERT0026	07-16-24
Nebraska	State	NE-OS-05-04	06-30-24
Nevada	State	IN000352024-01	07-31-24
New Hampshire	NELAP	2124	11-05-24
New Jersey	NELAP	IN598	06-30-24
New Mexico	State	IN00035	06-30-24
New York	NELAP	11398	04-01-25
North Carolina (DW)	State	18700	06-30-24
North Dakota	State	R-035	06-30-24
Northern Mariana Islands (DW)	State	IN00035	06-30-24
Ohio	State	87775	06-27-24
Oklahoma	NELAP	D9508	08-31-24
Oregon	NELAP	4156	09-16-24
Pennsylvania	NELAP	68-00466	04-30-25
Puerto Rico	State	IN00035	07-10-24
Rhode Island	State	LAO00343	07-21-24
South Carolina	State	95005001	06-30-24
South Dakota (DW)	State	IN00035	06-30-24
Tennessee	State	TN02973	06-30-24
Texas	NELAP	T104704187-22-16	12-31-24

Accreditation/Certification Summary

Client: GeoEngineers Inc
Project/Site: Marshall Landfill

Job ID: 590-25479-1

Laboratory: Eurofins Eaton Analytical South Bend (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
Texas	TCEQ Water Supply	TX207	06-30-24
USEPA Reg X SDWA	US Federal Programs	IN00035	08-24-24
USEPA UCMR 5	US Federal Programs	IN00035	12-31-25
Utah	NELAP	IN00035	07-31-24
Vermont	State	VT-8775	07-16-24
Virginia	NELAP	460275	07-31-24
Washington	State	C837	01-01-25
West Virginia (DW)	State	9927 C	08-19-24
Wisconsin	State	999766900	08-31-24
Wisconsin (Micro)	State	10121	12-31-24
Wyoming	State	8TMS-L	06-30-24

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	02-20-27
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	05-18-25
California	State	2897	01-31-26
Colorado	State	CA00044	08-31-24
Florida	NELAP	E87570	06-30-25
Georgia	State	4040	01-29-25
Hawaii	State	Eurofins Sacramento	01-29-25
Illinois	NELAP	200060	03-31-25
Kansas	NELAP	E-10375	10-31-25
Louisiana	NELAP	01944	06-30-25
Louisiana (All)	NELAP	01944	06-30-25
Maine	State	CA00004	04-14-26
Michigan	State	9947	08-18-24
Nevada	State	CA00044	07-31-24
New Hampshire	NELAP	2997	04-19-25
New Jersey	NELAP	CA005	06-30-25
New York	NELAP	11666	04-01-25
Ohio	State	41252	01-29-25
Oregon	NELAP	4040	07-16-24
Texas	NELAP	T104704399-23-17	05-31-25
US Fish & Wildlife	US Federal Programs	A22139	04-30-25
USDA	US Federal Programs	P330-18-00239	02-28-26
Utah	NELAP	CA000442023-16	02-28-25
Virginia	NELAP	460278	03-14-25
Washington	State	C581	05-05-25
West Virginia (DW)	State	9930C	01-31-25
Wisconsin	State	998204680	08-07-24
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: 590-25479-1

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	08-07-24
ANAB	Dept. of Energy	L2236	08-07-24
ANAB	ISO/IEC 17025	L2236	08-07-24
California	State	2954	07-07-24
Florida	NELAP	E87575	06-30-24
Louisiana	NELAP	03073	06-30-24
Louisiana (All)	NELAP	03073	06-30-24
Maine	State	WA01273	05-02-26
Montana (UST)	State	NA	04-14-27
New Jersey	NELAP	WA014	06-30-24
New York	NELAP	11662	04-01-25
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	C788-24	07-13-24
Wisconsin	State	399133460	08-31-24

Method Summary

Client: GeoEngineers Inc
Project/Site: Marshall Landfill

Job ID: 590-25479-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET SPK
8270C SIM ID	Semivolatile Organic Compounds (GC/MS SIM / Isotope Dilution)	SW846	EET SEA
300.0	Anions, Ion Chromatography	EPA	EET SPK
Draft-4 1633	Per- and Polyfluoroalkyl Substances by LC/MS/MS	EPA	EET SAC
PPCP NEG	Pharmaceuticals and Personal Care Products (LC/MS/MS)	Lab SOP	EA SB
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 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
FILTRATION	Sample Filtration	None	EET SEA
FILTRATION	Sample Filtration	None	EET SPK

Protocol References:

EPA = US Environmental Protection Agency
Lab SOP = Laboratory Standard Operating Procedure
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:

EA SB = Eurofins Eaton Analytical South Bend, 110 S Hill Street, South Bend, IN 46617, TEL (574)233-4777
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

Chain of Custody Record

Eurofins Spokane
11922 E 1st Avenue

Spokane, WA 99206-5302
phone 509.924 9200 fax 509.924 9290

eurofins Environment Testing America

Regulatory Program ☐ DW ☐ NPDES ☐ RCRA ☐ Other

Eurofins Environment Testing America

Client Contact	**Project Manager:** Sydney Bronson	COC No:
GeoEngineers, Inc.	Email: sbronson@geoengineers.com	**Site Contact:** Alex Navarra **Date:** 6/20/24	1 of 1 COCs
523 E 2nd Ave	Tel/Fax: 509.570.0779	**Lab Contact:** **Carrier:**	TALS Project #
Spokane, WA 99202	**Analysis Turnaround Time**		Sampler:
509.363.3125 Phone	☐ CALENDAR DAYS ☐ WORKING DAYS		**For Lab Use Only**
FAX	TAT if different from Below ____		Walk-in Client.
Project Name: Marshall Landfill GWM	☐ 2 weeks		Lab Sampling
Site: Marshall Landfill Site Design	☐ 1 week		Job / SDG No.
P O # 0504-104-01	☐ 2 days ☐ 1 day		

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y / N)	Perform MS / MSD (Y / N)	PFAS / EPA 1633	Ammonia as N / EPA 350.1	Alkalinity bicarbonate / SM 2320B	TDS / SC 2540C	TOC / SM 5310B	Total K, Mg, Na / EPA 6010D	Dissolved Ca, Mg / EPA 6010D	Chloride, sulfate, nitrate, nitrite / EPA 300.0	Diss. Fe, Mn / EPA 6020B	Total Hg / EPA 7470A	Diss Hg / 7470A	Total As, Cd, Fe, Mn, Pb, Zn / EPA 6020B	Diss As, Cd, Fe, Mn, Pb, Zn / EPA 6020B	Artificial Sweeteners (acesulfame K, sucralose	PCE, 1 1 1 TCA / EPA 8260D	1,4-dioxane / EPA 8270E SIM	Sample Specific Notes:
MW-16-062024	6/20/24	0850	G	W				X	X	X	X	X	X	X	X	X						X			
MW-2A-062024	6/20/24	1020	G	W				X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
MW-5A-062024	6/20/24	1340	G	W				X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
DUP-062024	6/20/24	0800	G	W				X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
FB-062024	6/20/24	1530	G	W				X																	

590-25479 Chain of Custody

Preservation Used: 1= Ice, 2= HCl, 3= H_2SO_4; 4=HNO_3; 5=NaOH, 6= Other ____

Possible Hazard Identification:
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.

☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

☐ Return to Client ☐ Disposal by Lab ☐ Archive for ____ Months

Special Instructions/QC Requirements & Comments:
DISSOLVED METALS LAB FILTERED

11.7 cor (Route
30 cor (Route
13.7 cor (Route

Custody Seals Intact: ☐ Yes ☐ No	Custody Seal No.		Cooler Temp. (°C): Obs'd: ____ Corr'd. ____		Therm ID No.: ____
Relinquished by:	Company:	Date/Time: 06/20/24 1630	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company: EET SPK	Date/Time: ~~EET~~ 6/20/24 1107

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: 590-9329.1
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 #: 590-25479-1
Address: 4955 Yarrow Street, ,	Due Date Requested: 7/5/2024			
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: -

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	Total Number of containers	Special Instructions/Note:
			Preservation Code:							
MW-16-062024 (590-25479-1)	6/20/24	08:50 Pacific		Water			X	X	2	
MW-2A-062024 (590-25479-2)	6/20/24	10:20 Pacific		Water			X	X	2	
MW-5A-062024 (590-25479-3)	6/20/24	13:40 Pacific		Water			X	X	2	
DUP-062024 (590-25479-4)	6/20/24	08:00 Pacific		Water			X	X	2	

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

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

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
	6/24/24 14:35	ETSPO		6/25/24 1245	ETSPO
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: 2.1, 2.3, IR: NOGC

Ver: 04/02/2024

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: 590-9327 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 #: 590-25479-1
Address: 880 Riverside Parkway, ,	Due Date Requested: 7/5/2024			
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: -

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-16-062024 (590-25479-1)	6/20/24	08 50 Pacific		Water			X	3	
MW-2A-062024 (590-25479-2)	6/20/24	10:20 Pacific		Water			X	3	
MW-5A-062024 (590-25479-3)	6/20/24	13.40 Pacific		Water			X	3	
DUP-062024 (590-25479-4)	6/20/24	08.00 Pacific		Water			X	3	
FB-062024 (590-25479-5)	6/20/24	15.30 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: 6/21/24 15:32	Company EEC80	Received by:	Date/Time: 06/22/24 0845	Company EEsac
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 2274589	Cooler Temperature(s) °C and Other Remarks: 1,8°C

Ver: 04/02/2024

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: 590-9326.1
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 #: 590-25479-1
Address: 5755 8th Street East, ,	Due Date Requested: 7/5/2024			
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: -

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/FILTRATION (MOD) Dissolved Fe & Mn	6020B/3005A (MOD) Total As, Cd, Fe, Mn, Pb & Zn	6020B/FILTRATION (MOD) Diss As, Cd, Fe, Mn, Pb & Zn	8270C_SIM_MS_ID/3510C_LVI 1,4-Dioxane	Total Number of containers	Special Instructions/Note:
			Preservation Code:									
MW-16-062024 (590-25479-1)	6/20/24	08:50 Pacific		Water			X				1	
MW-2A-062024 (590-25479-2)	6/20/24	10:20 Pacific		Water				X	X	X	6	
MW-5A-062024 (590-25479-3)	6/20/24	13:40 Pacific		Water				X	X	X	6	
DUP-062024 (590-25479-4)	6/20/24	08:00 Pacific		Water				X	X	X	6	

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]	6/21/24 14:41	EETSB	[signature]	6/22/24 0915	EETN
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: IR 11 1.6/1.1

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: 590-9325.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: Randee.Arrington@et.eurofinsus.com	State of Origin: Washington	Page: Page 1 of 1
Company: Eurofins Eaton Analytical		Accreditations Required (See note): State Program - Washington		Job #: 590-25479-1
Address: 110 S Hill Street, ,	Due Date Requested: 7/5/2024	Analysis Requested		Preservation Codes:
City: South Bend	TAT Requested (days):			
State, Zip: IN, 46617				
Phone: 574-233-4777(Tel) 574-233-8207(Fax)	PO #:			
Email:	WO #:			
Project Name: Marshall Landfill	Project #: 59002669			
Site:	SSOW#:			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)	LCMS_PPCP_NEG/ (MOD) Acesulfame K & Sucralose	Total Number of containers	Special Instructions/Note:
			Preservation Code:						
MW-16-062024 (590-25479-1)	6/20/24	08:50 Pacific		Water			X	2	
MW-2A-062024 (590-25479-2)	6/20/24	10:20 Pacific		Water			X	2	
MW-5A-062024 (590-25479-3)	6/20/24	13:40 Pacific		Water			X		
DUP-062024 (590-25479-4)	6/20/24	08:00 Pacific		Water			X		

Initial Temp: 0.0
Corrected Temp: 0.6
IR Gun #: 21

pH Acceptable KY

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
	6/21/24 14:28	EEC 880		6/22/24	880
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

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

Ver: 04/02/2024

Spokane, WA 99206
Phone: 509-924-9200 Fax: 509-924-9290

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Arrington, Randee E	Carrier Tracking No(s):	COC No: 590-9325.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: Randee.Arrington@et.eurofinsus.com	State of Origin: Washington	Page: Page 1 of 1
Company: Eurofins Eaton Analytical		Accreditations Required (See note): State Program - Washington		Job #: 590-25486-1
Address: 110 S Hill Street, ,	Due Date Requested: 7/8/2024	Analysis Requested		Preservation Codes: -
City: South Bend	TAT Requested (days):			
State, Zip: IN, 46617				
Phone: 574-233-4777(Tel) 574-233-8207(Fax)	PO #:			
Email:	WO #:			
Project Name: Marshall Landfill GWM	Project #: 59002669			
Site:	SSOW#:			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	LCMS_PPCP_NEG/ (MOD) Acesulfame K & Sucralose	Special Instructions/Note:
Preservation Code:					X	X	
MW-3-062124 (590-25486-1)	6/21/24	08:45 Pacific		Water		X	

Initial Temp: 0.0
Corrected Temp: 0.0
IR Gun #: 27

pH Acceptable <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
	6/21/24 14:22	EET SAC		6/22/24 0900	
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

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

Ver: 04/02/2024

Login Sample Receipt Checklist

Client: GeoEngineers Inc

Job Number: 590-25479-1

Login Number: 25479
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.	False	Received same day of collection; chilling process has begun.
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: 590-25479-1

Login Number: 25479
List Number: 5
Creator: Little, Matthew L

List Source: Eurofins Denver
List Creation: 06/25/24 02:20 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.	False	Refer to Job Narrative for details.
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").	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: 590-25479-1

Login Number: 25479
List Number: 2
Creator: Trowbridge, Peyton

List Source: Eurofins Eaton Analytical South Bend
List Creation: 06/22/24 10:26 AM

Question	Answer	Comment
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	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	
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	
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	
Samples do not require splitting or compositing.	True	
Container provided by EEA	True	

Login Sample Receipt Checklist

Client: GeoEngineers Inc

Job Number: 590-25479-1

Login Number: 25479
List Number: 3
Creator: Morazzini, Dominic S

List Source: Eurofins Sacramento
List Creation: 06/22/24 09:59 AM

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	2274589
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	1.8
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.	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: 590-25479-1

Login Number: 25479
List Number: 4
Creator: Harp, Cordelia

List Source: Eurofins Seattle
List Creation: 06/22/24 01:10 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	IR 11 1.6/1.1 c
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)

590 25479 Field Sheet

Job: _____

Tracking # 7391 0416 9757

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 (+/-) NA °C

Ice 1 Wet 1 Gel _____ Other _____

Cooler Custody Seal: 2274589

Cooler ID: _____

Temp Observed: 1.8 °C Corrected: 1.8 °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 DM Date 06/22/24

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 DM Date 06/22/24

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 DM Date 06/22/24

Isotope Dilution Summary

Client: GeoEngineers Inc
Project/Site: Marshall Landfill

Job ID: 590-25479-1

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

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

		Percent Isotope Dilution Recovery (Acceptance Limits)
Lab Sample ID	Client Sample ID	DXE (40-140)
590-25479-2	MW-2A-062024	55
590-25479-3	MW-5A-062024	57
590-25479-4	DUP-062024	51
LCS 580-463156/2-A	Lab Control Sample	63
LCSD 580-463156/3-A	Lab Control Sample Dup	58
MB 580-463156/1-A	Method Blank	58

Surrogate Legend

DXE = 1,4-Dioxane-d8

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)
590-25479-1	MW-16A-062024	83.5	70.8	77.8	80.8	81.5	88.5	83.1	73.4
590-25479-1 - RE	MW-16A-062024								
590-25479-2	MW-2A-062024	82.3	67.3	79.3	75.1	82.0	88.3	91.9	77.4
590-25479-2 - RE	MW-2A-062024								
590-25479-3	MW-5A-062024	92.3	73.9	88.8	87.1	82.5	99.4	102	87.0
590-25479-3 - RE	MW-5A-062024								
590-25479-4	DUP-062024	90.4	74.9	84.1	89.4	88.6	90.4	98.9	91.7
590-25479-4 - RE	DUP-062024								
590-25479-5	FB-062024	87.5	73.2	84.7	86.9	96.8	96.0	104	96.1
590-25479-5 - RE	FB-062024								
LCS 320-775603/3-A	Lab Control Sample	96.0	78.8	89.2	92.4	90.6	101	103	94.2
LCS 320-777242/3-A	Lab Control Sample								
LCSD 320-777242/4-A	Lab Control Sample Dup								
LLCS 320-775603/2-A	Lab Control Sample	90.0	76.4	87.4	88.1	93.5	97.6	103	89.7
LLCS 320-777242/2-A	Lab Control Sample								
MB 320-775603/1-A	Method Blank	94.9	79.7	88.2	97.2	90.2	96.7	107	93.5
MB 320-777242/1-A	Method Blank								

		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)
590-25479-1	MW-16A-062024	74.5	64.7	80.9	74.2	73.3	79.9	80.0	76.6
590-25479-1 - RE	MW-16A-062024								
590-25479-2	MW-2A-062024	81.5	71.6	85.8	77.9	80.6	86.4	85.4	81.9
590-25479-2 - RE	MW-2A-062024								
590-25479-3	MW-5A-062024	91.3	90.0	85.1	80.0	94.1	92.7	89.7	92.2
590-25479-3 - RE	MW-5A-062024								
590-25479-4	DUP-062024	89.6	82.7	81.5	77.8	87.3	91.3	86.8	91.7
590-25479-4 - RE	DUP-062024								
590-25479-5	FB-062024	89.6	83.5	82.8	80.2	88.6	85.9	86.5	82.9
590-25479-5 - RE	FB-062024								
LCS 320-775603/3-A	Lab Control Sample	101	93.1	89.9	85.2	97.8	94.3	101	99.4
LCS 320-777242/3-A	Lab Control Sample								
LCSD 320-777242/4-A	Lab Control Sample Dup								
LLCS 320-775603/2-A	Lab Control Sample	98.5	99.0	85.9	77.6	90.0	93.1	94.8	96.4

Isotope Dilution Summary

Client: GeoEngineers Inc
Job ID: 590-25479-1
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)
LLCS 320-777242/2-A	Lab Control Sample								
MB 320-775603/1-A	Method Blank	102	96.5	91.3	82.8	89.7	92.9	100	96.2
MB 320-777242/1-A	Method Blank								

		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)
590-25479-1	MW-16A-062024	95.9	93.4	86.9	84.1	59.5	55.1	57.3	57.1
590-25479-1 - RE	MW-16A-062024				90.9				
590-25479-2	MW-2A-062024	85.4	88.9	88.4	79.8	75.6	71.1	65.8	65.4
590-25479-2 - RE	MW-2A-062024				85.0				
590-25479-3	MW-5A-062024	97.7	104	87.2	89.2	82.2	78.9	76.2	71.8
590-25479-3 - RE	MW-5A-062024				83.3				
590-25479-4	DUP-062024	89.8	89.4	86.7	86.2	80.3	77.6	75.1	71.5
590-25479-4 - RE	DUP-062024				85.2				
590-25479-5	FB-062024	84.3	86.2	83.7	86.5	80.4	75.6	73.1	70.5
590-25479-5 - RE	FB-062024				86.8				
LCS 320-775603/3-A	Lab Control Sample	95.9	99.5	97.6	95.1	86.9	83.1	75.5	68.5
LCS 320-777242/3-A	Lab Control Sample				83.6				
LCSD 320-777242/4-A	Lab Control Sample Dup				86.6				
LLCS 320-775603/2-A	Lab Control Sample	88.6	89.0	91.5	91.5	85.7	82.5	73.0	69.4
LLCS 320-777242/2-A	Lab Control Sample				87.0				
MB 320-775603/1-A	Method Blank	103	101	101	94.8	84.9	81.0	73.7	71.7
MB 320-777242/1-A	Method Blank				84.2				

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

eurofins | Environment Testing

1 2 3 4 5 6 7 8 9 10 11 12 13 14

ANALYTICAL REPORT

PREPARED FOR

Attn: Sydney Bronson
GeoEngineers Inc
523 East Second Ave
Spokane, Washington 99202

Generated 7/10/2024 2:12:08 PM

JOB DESCRIPTION

Marshall Landfill GWM

JOB NUMBER

590-25486-1

Eurofins Spokane
11922 East 1st Ave
Spokane WA 99206

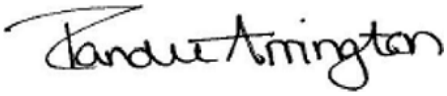
See page two for job notes and contact information.

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



Generated
7/10/2024 2:12:08 PM

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

Table of Contents

Job Narrative
590-25486-1

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 6/21/2024 11:13 AM. 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 5.4°C.

GC/MS VOA
Method 8260D: The continuing calibration verification (CCV) associated with batch 590-48244 recovered above the upper control limit for Chlorobromomethane, 1,1,2,2-Tetrachloroethane, 1,1-Dichloroethene, Bromomethane, Chloromethane, Methylene Chloride, Trichlorofluoromethane and Vinyl chloride. The samples associated with this CCV were non-detects for the affected analytes; therefore, the data have been reported.

Method 8260D: Surrogate recovery for the following sample was outside the upper control limit: (MB 590-48244/8). This sample did not contain any target analytes; therefore, re-extraction and/or re-analysis was not performed.

Method 8260D: Reanalysis of the following sample was performed outside of the analytical holding time due to QC failure : TB-062124 (590-25486-3).

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.

LCMS
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 320-776445 were yellow in color following extraction. MW-3-062124 (590-25486-1)

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

Metals
Method 6010D - Total Recoverable: The low level initial calibration verification (ICVL) associated with batch 590-48256 recovered above the upper control limit for Potassium and Sodium. The samples associated with this ICV were 10x the spike amount 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 590-48087 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 GWM

Job ID: 590-25486-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
590-25486-1	MW-3-062124	Water	06/21/24 08:45	06/21/24 11:13
590-25486-2	Hose Bib-062124	Water	06/21/24 10:30	06/21/24 11:13
590-25486-3	TB-062124	Water	06/21/24 00:00	06/21/24 11:13

Definitions/Glossary

Client: GeoEngineers Inc
Job ID: 590-25486-1
Project/Site: Marshall Landfill GWM

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
*-	LCS and/or LCSD is outside acceptance limits, low biased.
*+	LCS and/or LCSD is outside acceptance limits, high biased.
H	Sample was prepped or analyzed beyond the specified holding time. This does not meet regulatory requirements.
S1+	Surrogate recovery exceeds control limits, high biased.

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.

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
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 GWM

Job ID: 590-25486-1

Client Sample ID: MW-3-062124
Date Collected: 06/21/24 08:45
Date Received: 06/21/24 11:13

Lab Sample ID: 590-25486-1
Matrix: Water

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**58**		0.80	0.42	mg/L			06/21/24 14:22	1
Nitrate as N	**0.40**		0.20	0.057	mg/L			06/21/24 14:22	1
Nitrite as N	ND		0.20	0.069	mg/L			06/21/24 14:22	1
Sulfate	**16**		0.50	0.13	mg/L			06/21/24 14:22	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		6.7	1.7	ng/L		07/03/24 11:07	07/07/24 09:57	1
Perfluoropentanoic acid (PFPeA)	ND		3.4	0.84	ng/L		07/03/24 11:07	07/07/24 09:57	1
Perfluorohexanoic acid (PFHxA)	ND		1.7	0.42	ng/L		07/03/24 11:07	07/07/24 09:57	1
Perfluoroheptanoic acid (PFHpA)	ND		1.7	0.42	ng/L		07/03/24 11:07	07/07/24 09:57	1
Perfluorooctanoic acid (PFOA)	**0.61**	**J**	1.7	0.42	ng/L		07/03/24 11:07	07/07/24 09:57	1
Perfluorononanoic acid (PFNA)	ND		1.7	0.42	ng/L		07/03/24 11:07	07/07/24 09:57	1
Perfluoroundecanoic acid (PFUnA)	ND		1.7	0.42	ng/L		07/03/24 11:07	07/07/24 09:57	1
Perfluorododecanoic acid (PFDoA)	ND		1.7	0.42	ng/L		07/03/24 11:07	07/07/24 09:57	1
Perfluorotridecanoic acid (PFTrDA)	ND		1.7	0.42	ng/L		07/03/24 11:07	07/07/24 09:57	1
Perfluorotetradecanoic acid (PFTeDA)	ND		1.7	0.42	ng/L		07/03/24 11:07	07/07/24 09:57	1
Perfluorobutanesulfonic acid (PFBS)	**2.8**		1.7	0.42	ng/L		07/03/24 11:07	07/07/24 09:57	1
Perfluoropentanesulfonic acid (PFPeS)	ND		1.7	0.42	ng/L		07/03/24 11:07	07/07/24 09:57	1
Perfluorohexanesulfonic acid (PFHxS)	**1.5**	**J**	1.7	0.42	ng/L		07/03/24 11:07	07/07/24 09:57	1
Perfluoroheptanesulfonic acid (PFHpS)	ND		1.7	0.42	ng/L		07/03/24 11:07	07/07/24 09:57	1
Perfluorooctanesulfonic acid (PFOS)	**4.4**		1.7	0.42	ng/L		07/03/24 11:07	07/07/24 09:57	1
Perfluorononanesulfonic acid (PFNS)	ND		1.7	0.42	ng/L		07/03/24 11:07	07/07/24 09:57	1
Perfluorodecanesulfonic acid (PFDS)	ND		1.7	0.42	ng/L		07/03/24 11:07	07/07/24 09:57	1
Perfluorododecanesulfonic acid (PFDoS)	ND		1.7	0.42	ng/L		07/03/24 11:07	07/07/24 09:57	1
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	ND		6.7	1.7	ng/L		07/03/24 11:07	07/07/24 09:57	1
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	ND		6.7	1.7	ng/L		07/03/24 11:07	07/07/24 09:57	1
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	ND		6.7	1.7	ng/L		07/03/24 11:07	07/07/24 09:57	1
Perfluorooctanesulfonamide (PFOSA)	ND		1.7	0.42	ng/L		07/03/24 11:07	07/07/24 09:57	1
N-methylperfluorooctane sulfonamide (NMeFOSA)	ND		1.7	0.42	ng/L		07/03/24 11:07	07/07/24 09:57	1
N-ethylperfluorooctane sulfonamide (NEtFOSA)	ND		1.7	0.42	ng/L		07/03/24 11:07	07/07/24 09:57	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		1.7	0.42	ng/L		07/03/24 11:07	07/07/24 09:57	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		1.7	0.42	ng/L		07/03/24 11:07	07/07/24 09:57	1
N-methylperfluorooctane sulfonamidoethanol (NMeFOSE)	ND		17	4.2	ng/L		07/03/24 11:07	07/07/24 09:57	1
N-ethylperfluorooctane sulfonamidoethanol (NEtFOSE)	ND		17	4.2	ng/L		07/03/24 11:07	07/07/24 09:57	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		6.7	1.7	ng/L		07/03/24 11:07	07/07/24 09:57	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		6.7	1.7	ng/L		07/03/24 11:07	07/07/24 09:57	1

Client Sample ID: MW-3-062124
Date Collected: 06/21/24 08:45
Date Received: 06/21/24 11:13

Lab Sample ID: 590-25486-1
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
Perfluoro-3-methoxypropanoic acid (PFMPA)	ND		3.4	0.84	ng/L		07/03/24 11:07	07/07/24 09:57	1
Perfluoro-4-methoxybutanoic acid (PFMBA)	ND		3.4	0.84	ng/L		07/03/24 11:07	07/07/24 09:57	1
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND		3.4	0.84	ng/L		07/03/24 11:07	07/07/24 09:57	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	ND		6.7	1.7	ng/L		07/03/24 11:07	07/07/24 09:57	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	ND		6.7	1.7	ng/L		07/03/24 11:07	07/07/24 09:57	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	ND		3.4	0.84	ng/L		07/03/24 11:07	07/07/24 09:57	1
3-Perfluoropropylpropanoic acid (3:3 FTCA)	ND		8.4	2.1	ng/L		07/03/24 11:07	07/07/24 09:57	1
3-Perfluoropentylpropanoic acid (5:3 FTCA)	ND		42	10	ng/L		07/03/24 11:07	07/07/24 09:57	1
3-Perfluoroheptylpropanoic acid (7:3 FTCA)	ND		42	10	ng/L		07/03/24 11:07	07/07/24 09:57	1

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

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*79.4*		*5 - 130*	*07/03/24 11:07*	*07/07/24 09:57*	*1*
13C5 PFPeA	*80.4*		*40 - 130*	*07/03/24 11:07*	*07/07/24 09:57*	*1*
13C5 PFHxA	*75.4*		*40 - 130*	*07/03/24 11:07*	*07/07/24 09:57*	*1*
13C4 PFHpA	*74.9*		*40 - 130*	*07/03/24 11:07*	*07/07/24 09:57*	*1*
13C8 PFOA	*74.4*		*40 - 130*	*07/03/24 11:07*	*07/07/24 09:57*	*1*
13C9 PFNA	*77.0*		*40 - 130*	*07/03/24 11:07*	*07/07/24 09:57*	*1*
13C6 PFDA	*81.9*		*40 - 130*	*07/03/24 11:07*	*07/07/24 09:57*	*1*
13C7 PFUnA	*71.2*		*30 - 130*	*07/03/24 11:07*	*07/07/24 09:57*	*1*
13C2 PFDoA	*78.1*		*10 - 130*	*07/03/24 11:07*	*07/07/24 09:57*	*1*
13C2 PFTeDA	*71.7*		*10 - 130*	*07/03/24 11:07*	*07/07/24 09:57*	*1*
13C3 PFBS	*77.2*		*40 - 135*	*07/03/24 11:07*	*07/07/24 09:57*	*1*
13C3 PFHxS	*71.3*		*40 - 130*	*07/03/24 11:07*	*07/07/24 09:57*	*1*
13C8 PFOS	*86.0*		*40 - 130*	*07/03/24 11:07*	*07/07/24 09:57*	*1*
13C8 PFOSA	*80.8*		*40 - 130*	*07/03/24 11:07*	*07/07/24 09:57*	*1*
d3-NMeFOSAA	*77.3*		*40 - 170*	*07/03/24 11:07*	*07/07/24 09:57*	*1*
d5-NEtFOSAA	*78.2*		*25 - 135*	*07/03/24 11:07*	*07/07/24 09:57*	*1*
13C2 4:2 FTS	*92.6*		*40 - 200*	*07/03/24 11:07*	*07/07/24 09:57*	*1*
13C2 6:2 FTS	*80.0*		*40 - 200*	*07/03/24 11:07*	*07/07/24 09:57*	*1*
13C2 8:2 FTS	*105*		*40 - 300*	*07/03/24 11:07*	*07/07/24 09:57*	*1*
13C3 HFPO-DA	*75.6*		*40 - 130*	*07/03/24 11:07*	*07/07/24 09:57*	*1*
d7-N-MeFOSE-M	*66.1*		*10 - 130*	*07/03/24 11:07*	*07/07/24 09:57*	*1*
d9-N-EtFOSE-M	*56.5*		*10 - 130*	*07/03/24 11:07*	*07/07/24 09:57*	*1*
d5-NEtPFOSA	*61.5*		*10 - 130*	*07/03/24 11:07*	*07/07/24 09:57*	*1*
d3-NMePFOSA	*64.0*		*10 - 130*	*07/03/24 11:07*	*07/07/24 09:57*	*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
Perfluorodecanoic acid (PFDA)	ND		1.7	0.42	ng/L		07/03/24 11:07	07/08/24 12:49	1

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

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C6 PFDA	*87.5*		*40 - 130*	*07/03/24 11:07*	*07/08/24 12:49*	*1*

Client Sample ID: MW-3-062124

Date Collected: 06/21/24 08:45
Date Received: 06/21/24 11:13

Lab Sample ID: 590-25486-1

Matrix: Water

Method: Lab SOP PPCP NEG - Pharmaceuticals and Personal Care Products (LC/MS/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acesulfame K	0.31		0.020	0.0020	ug/L			06/25/24 09:19	1
Sucralose	9.9		0.10	0.014	ug/L			06/25/24 09:19	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Magnesium	15		0.50	0.13	mg/L		06/27/24 10:32	07/02/24 18:50	1
Potassium	6.5	^1+	2.0	0.29	mg/L		06/27/24 10:32	07/02/24 18:50	1
Sodium	39	^1+	2.0	0.20	mg/L		06/27/24 10:32	07/02/24 18:50	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	32		1.0	0.20	mg/L		07/02/24 11:12	07/03/24 13:59	1
Magnesium	14		0.50	0.13	mg/L		07/02/24 11:12	07/03/24 13:59	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	ND		0.50	0.067	mg/L		06/25/24 15:33	06/26/24 12:40	5
Manganese	ND		0.010	0.0023	mg/L		06/25/24 15:33	06/26/24 12:40	5

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			07/02/24 12:15	1
Alkalinity (SM 2320B)	140	B	20	5.0	mg/L			06/26/24 09:37	1
Bicarbonate Alkalinity as CaCO3 (SM 2320B)	140	B	20	5.0	mg/L			06/26/24 09:37	1
Total Dissolved Solids (SM 2540C)	300		25	13	mg/L			06/28/24 17:00	1
Total Organic Carbon - Duplicates (SM 5310B)	3.7		1.0	0.35	mg/L			06/28/24 04:53	1

Client Sample ID: Hose Bib-062124

Date Collected: 06/21/24 10:30
Date Received: 06/21/24 11:13

Lab Sample ID: 590-25486-2

Matrix: Water

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	49		0.80	0.42	mg/L			06/21/24 14:32	1
Nitrate as N	2.0		0.20	0.057	mg/L			06/21/24 14:32	1
Nitrite as N	ND		0.20	0.069	mg/L			06/21/24 14:32	1
Sulfate	18		0.50	0.13	mg/L			06/21/24 14:32	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Magnesium	16		0.50	0.13	mg/L		06/27/24 10:32	07/02/24 18:54	1
Potassium	5.8	^1+	2.0	0.29	mg/L		06/27/24 10:32	07/02/24 18:54	1
Sodium	32	^1+	2.0	0.20	mg/L		06/27/24 10:32	07/02/24 18:54	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	42		1.0	0.20	mg/L		07/02/24 11:12	07/03/24 14:03	1
Magnesium	14		0.50	0.13	mg/L		07/02/24 11:12	07/03/24 14:03	1

Client Sample ID: Hose Bib-062124

Lab Sample ID: 590-25486-2

Date Collected: 06/21/24 10:30

Matrix: Water

Date Received: 06/21/24 11:13

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			07/02/24 12:13	1
Alkalinity (SM 2320B)	**180**	**B**	20	5.0	mg/L			06/26/24 09:37	1
Bicarbonate Alkalinity as CaCO3 (SM 2320B)	**180**	**B**	20	5.0	mg/L			06/26/24 09:37	1
Total Dissolved Solids (SM 2540C)	**290**		25	13	mg/L			06/28/24 17:00	1
Total Organic Carbon - Duplicates (SM 5310B)	**2.1**		1.0	0.35	mg/L			06/28/24 05:53	1

Client Sample ID: TB-062124

Lab Sample ID: 590-25486-3

Date Collected: 06/21/24 00:00

Matrix: Water

Date Received: 06/21/24 11:13

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			07/03/24 16:23	1
1,1,1-Trichloroethane	ND		1.0	0.17	ug/L			07/03/24 16:23	1
1,1,2,2-Tetrachloroethane	ND		2.0	0.32	ug/L			07/03/24 16:23	1
1,1-Dichloroethane	ND		1.0	0.29	ug/L			07/03/24 16:23	1
1,1-Dichloroethene	ND		1.0	0.20	ug/L			07/03/24 16:23	1
1,1-Dichloropropene	ND		1.0	0.50	ug/L			07/03/24 16:23	1
1,2,3-Trichlorobenzene	ND		1.0	0.33	ug/L			07/03/24 16:23	1
1,2,4-Trichlorobenzene	ND		1.0	0.50	ug/L			07/03/24 16:23	1
1,2,4-Trimethylbenzene	ND		1.0	0.31	ug/L			07/03/24 16:23	1
1,2-Dibromoethane (EDB)	ND		1.0	0.20	ug/L			07/03/24 16:23	1
1,2-Dichlorobenzene	ND		1.0	0.23	ug/L			07/03/24 16:23	1
1,2-Dichloroethane	ND		1.0	0.31	ug/L			07/03/24 16:23	1
1,2-Dichloropropane	ND		1.0	0.23	ug/L			07/03/24 16:23	1
1,3,5-Trimethylbenzene	ND		1.0	0.32	ug/L			07/03/24 16:23	1
1,3-Dichlorobenzene	ND		1.0	0.14	ug/L			07/03/24 16:23	1
1,3-Dichloropropane	ND		2.0	0.21	ug/L			07/03/24 16:23	1
1,4-Dichlorobenzene	ND		1.0	0.28	ug/L			07/03/24 16:23	1
2,2-Dichloropropane	ND	*+	2.0	0.66	ug/L			07/03/24 16:23	1
2-Chlorotoluene	ND		1.0	0.36	ug/L			07/03/24 16:23	1
4-Chlorotoluene	ND		1.0	0.26	ug/L			07/03/24 16:23	1
Benzene	ND		0.40	0.093	ug/L			07/03/24 16:23	1
Bromobenzene	ND		1.0	0.28	ug/L			07/03/24 16:23	1
Bromochloromethane	ND		2.0	0.44	ug/L			07/03/24 16:23	1
Bromodichloromethane	ND		1.0	0.29	ug/L			07/03/24 16:23	1
Bromoform	ND		5.0	0.66	ug/L			07/03/24 16:23	1
Bromomethane	ND		5.0	0.76	ug/L			07/03/24 16:23	1
Carbon tetrachloride	ND		1.0	0.40	ug/L			07/03/24 16:23	1
Chlorobenzene	ND		1.0	0.32	ug/L			07/03/24 16:23	1
Chloroethane	ND		2.0	0.40	ug/L			07/03/24 16:23	1
Chloroform	ND		1.0	0.24	ug/L			07/03/24 16:23	1
Chloromethane	ND		3.0	0.50	ug/L			07/03/24 16:23	1
cis-1,2-Dichloroethene	ND		1.0	0.23	ug/L			07/03/24 16:23	1
cis-1,3-Dichloropropene	ND		1.0	0.25	ug/L			07/03/24 16:23	1
Dibromochloromethane	ND		2.0	0.33	ug/L			07/03/24 16:23	1
Dibromomethane	ND		2.0	0.50	ug/L			07/03/24 16:23	1
Dichlorodifluoromethane	ND		2.0	0.64	ug/L			07/03/24 16:23	1

Client: GeoEngineers Inc
Project/Site: Marshall Landfill GWM

Job ID: 590-25486-1

Client Sample ID: TB-062124
Date Collected: 06/21/24 00:00
Date Received: 06/21/24 11:13

Lab Sample ID: 590-25486-3
Matrix: Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ethylbenzene	ND		1.0	0.20	ug/L			07/03/24 16:23	1
Hexachlorobutadiene	ND		2.0	0.21	ug/L			07/03/24 16:23	1
Isopropylbenzene	ND		1.0	0.24	ug/L			07/03/24 16:23	1
m,p-Xylene	ND		2.0	0.28	ug/L			07/03/24 16:23	1
Methyl tert-butyl ether	ND		1.0	0.16	ug/L			07/03/24 16:23	1
Methylene Chloride	**6.0**		5.0	2.2	ug/L			07/03/24 16:23	1
Naphthalene	ND		2.0	0.63	ug/L			07/03/24 16:23	1
n-Butylbenzene	ND		1.0	0.20	ug/L			07/03/24 16:23	1
N-Propylbenzene	ND		1.0	0.25	ug/L			07/03/24 16:23	1
o-Xylene	ND		1.0	0.16	ug/L			07/03/24 16:23	1
p-Isopropyltoluene	ND		1.0	0.27	ug/L			07/03/24 16:23	1
sec-Butylbenzene	ND		1.0	0.22	ug/L			07/03/24 16:23	1
Styrene	ND		1.0	0.24	ug/L			07/03/24 16:23	1
tert-Butylbenzene	ND		1.0	0.12	ug/L			07/03/24 16:23	1
Tetrachloroethene	ND		1.0	0.22	ug/L			07/03/24 16:23	1
Toluene	ND		1.0	0.31	ug/L			07/03/24 16:23	1
trans-1,2-Dichloroethene	ND		1.0	0.20	ug/L			07/03/24 16:23	1
trans-1,3-Dichloropropene	ND		1.0	0.45	ug/L			07/03/24 16:23	1
Trichloroethene	ND	H	1.0	0.20	ug/L			07/10/24 04:18	1
Trichlorofluoromethane	ND		1.0	0.20	ug/L			07/03/24 16:23	1
Vinyl chloride	ND		0.40	0.13	ug/L			07/03/24 16:23	1

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

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*102*		*80 - 120*		*07/03/24 16:23*	*1*
1,2-Dichloroethane-d4 (Surr)	*108*		*80 - 120*		*07/10/24 04:18*	*1*
4-Bromofluorobenzene (Surr)	*89*		*76 - 120*		*07/03/24 16:23*	*1*
4-Bromofluorobenzene (Surr)	*107*		*76 - 120*		*07/10/24 04:18*	*1*
Dibromofluoromethane (Surr)	*123*		*80 - 123*		*07/03/24 16:23*	*1*
Dibromofluoromethane (Surr)	*108*		*80 - 123*		*07/10/24 04:18*	*1*
Toluene-d8 (Surr)	*104*		*80 - 120*		*07/03/24 16:23*	*1*
Toluene-d8 (Surr)	*100*		*80 - 120*		*07/10/24 04:18*	*1*

Client: GeoEngineers Inc
Project/Site: Marshall Landfill GWM

Job ID: 590-25486-1

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

Lab Sample ID: MB 590-48244/8
Matrix: Water
Analysis Batch: 48244

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			07/03/24 16:00	1
1,1,1-Trichloroethane	ND		1.0	0.17	ug/L			07/03/24 16:00	1
1,1,2,2-Tetrachloroethane	ND		2.0	0.32	ug/L			07/03/24 16:00	1
1,1-Dichloroethane	ND		1.0	0.29	ug/L			07/03/24 16:00	1
1,1-Dichloroethene	ND		1.0	0.20	ug/L			07/03/24 16:00	1
1,1-Dichloropropene	ND		1.0	0.50	ug/L			07/03/24 16:00	1
1,2,3-Trichlorobenzene	ND		1.0	0.33	ug/L			07/03/24 16:00	1
1,2,4-Trichlorobenzene	ND		1.0	0.50	ug/L			07/03/24 16:00	1
1,2,4-Trimethylbenzene	ND		1.0	0.31	ug/L			07/03/24 16:00	1
1,2-Dibromoethane (EDB)	ND		1.0	0.20	ug/L			07/03/24 16:00	1
1,2-Dichlorobenzene	ND		1.0	0.23	ug/L			07/03/24 16:00	1
1,2-Dichloroethane	ND		1.0	0.31	ug/L			07/03/24 16:00	1
1,2-Dichloropropane	ND		1.0	0.23	ug/L			07/03/24 16:00	1
1,3,5-Trimethylbenzene	ND		1.0	0.32	ug/L			07/03/24 16:00	1
1,3-Dichlorobenzene	ND		1.0	0.14	ug/L			07/03/24 16:00	1
1,3-Dichloropropane	ND		2.0	0.21	ug/L			07/03/24 16:00	1
1,4-Dichlorobenzene	ND		1.0	0.28	ug/L			07/03/24 16:00	1
2,2-Dichloropropane	ND		2.0	0.66	ug/L			07/03/24 16:00	1
2-Chlorotoluene	ND		1.0	0.36	ug/L			07/03/24 16:00	1
4-Chlorotoluene	ND		1.0	0.26	ug/L			07/03/24 16:00	1
Benzene	ND		0.40	0.093	ug/L			07/03/24 16:00	1
Bromobenzene	ND		1.0	0.28	ug/L			07/03/24 16:00	1
Bromochloromethane	ND		2.0	0.44	ug/L			07/03/24 16:00	1
Bromodichloromethane	ND		1.0	0.29	ug/L			07/03/24 16:00	1
Bromoform	ND		5.0	0.66	ug/L			07/03/24 16:00	1
Bromomethane	ND		5.0	0.76	ug/L			07/03/24 16:00	1
Carbon tetrachloride	ND		1.0	0.40	ug/L			07/03/24 16:00	1
Chlorobenzene	ND		1.0	0.32	ug/L			07/03/24 16:00	1
Chloroethane	ND		2.0	0.40	ug/L			07/03/24 16:00	1
Chloroform	ND		1.0	0.24	ug/L			07/03/24 16:00	1
Chloromethane	ND		3.0	0.50	ug/L			07/03/24 16:00	1
cis-1,2-Dichloroethene	ND		1.0	0.23	ug/L			07/03/24 16:00	1
cis-1,3-Dichloropropene	ND		1.0	0.25	ug/L			07/03/24 16:00	1
Dibromochloromethane	ND		2.0	0.33	ug/L			07/03/24 16:00	1
Dibromomethane	ND		2.0	0.50	ug/L			07/03/24 16:00	1
Dichlorodifluoromethane	ND		2.0	0.64	ug/L			07/03/24 16:00	1
Ethylbenzene	ND		1.0	0.20	ug/L			07/03/24 16:00	1
Hexachlorobutadiene	ND		2.0	0.21	ug/L			07/03/24 16:00	1
Isopropylbenzene	ND		1.0	0.24	ug/L			07/03/24 16:00	1
m,p-Xylene	ND		2.0	0.28	ug/L			07/03/24 16:00	1
Methyl tert-butyl ether	ND		1.0	0.16	ug/L			07/03/24 16:00	1
Methylene Chloride	ND		5.0	2.2	ug/L			07/03/24 16:00	1
Naphthalene	ND		2.0	0.63	ug/L			07/03/24 16:00	1
n-Butylbenzene	ND		1.0	0.20	ug/L			07/03/24 16:00	1
N-Propylbenzene	ND		1.0	0.25	ug/L			07/03/24 16:00	1
o-Xylene	ND		1.0	0.16	ug/L			07/03/24 16:00	1
p-Isopropyltoluene	ND		1.0	0.27	ug/L			07/03/24 16:00	1
sec-Butylbenzene	ND		1.0	0.22	ug/L			07/03/24 16:00	1

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

Lab Sample ID: MB 590-48244/8
Matrix: Water
Analysis Batch: 48244

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Styrene	ND		1.0	0.24	ug/L			07/03/24 16:00	1
tert-Butylbenzene	ND		1.0	0.12	ug/L			07/03/24 16:00	1
Tetrachloroethene	ND		1.0	0.22	ug/L			07/03/24 16:00	1
Toluene	ND		1.0	0.31	ug/L			07/03/24 16:00	1
trans-1,2-Dichloroethene	ND		1.0	0.20	ug/L			07/03/24 16:00	1
trans-1,3-Dichloropropene	ND		1.0	0.45	ug/L			07/03/24 16:00	1
Trichloroethene	ND		1.0	0.20	ug/L			07/03/24 16:00	1
Trichlorofluoromethane	ND		1.0	0.20	ug/L			07/03/24 16:00	1
Vinyl chloride	ND		0.40	0.13	ug/L			07/03/24 16:00	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*104*		*80 - 120*		*07/03/24 16:00*	*1*
4-Bromofluorobenzene (Surr)	*90*		*76 - 120*		*07/03/24 16:00*	*1*
Dibromofluoromethane (Surr)	*125*	*S1+*	*80 - 123*		*07/03/24 16:00*	*1*
Toluene-d8 (Surr)	*102*		*80 - 120*		*07/03/24 16:00*	*1*

Lab Sample ID: LCS 590-48244/1003
Matrix: Water
Analysis Batch: 48244

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	8.26		ug/L		83	80 - 131
1,1,1-Trichloroethane	10.0	11.2		ug/L		112	71 - 138
1,1,2,2-Tetrachloroethane	10.0	13.9		ug/L		139	60 - 150
1,1-Dichloroethane	10.0	10.6		ug/L		106	80 - 125
1,1-Dichloroethene	10.0	12.3		ug/L		123	65 - 141
1,1-Dichloropropene	10.0	9.18		ug/L		92	82 - 123
1,2,3-Trichlorobenzene	10.0	8.89		ug/L		89	70 - 137
1,2,4-Trichlorobenzene	10.0	8.88		ug/L		89	76 - 131
1,2,4-Trimethylbenzene	10.0	8.25		ug/L		82	78 - 131
1,2-Dibromoethane (EDB)	10.0	8.13		ug/L		81	80 - 124
1,2-Dichlorobenzene	10.0	9.21		ug/L		92	80 - 120
1,2-Dichloroethane	10.0	9.58		ug/L		96	80 - 120
1,2-Dichloropropane	10.0	9.15		ug/L		92	79 - 122
1,3,5-Trimethylbenzene	10.0	8.34		ug/L		83	76 - 129
1,3-Dichlorobenzene	10.0	9.46		ug/L		95	80 - 122
1,3-Dichloropropane	10.0	8.01		ug/L		80	78 - 129
1,4-Dichlorobenzene	10.0	9.29		ug/L		93	80 - 120
2,2-Dichloropropane	10.0	19.3	*+	ug/L		193	73 - 140
2-Chlorotoluene	10.0	8.58		ug/L		86	74 - 129
4-Chlorotoluene	10.0	8.65		ug/L		86	79 - 125
Benzene	10.0	9.83		ug/L		98	80 - 120
Bromobenzene	10.0	8.12		ug/L		81	73 - 125
Bromochloromethane	10.0	12.4		ug/L		124	71 - 136
Bromodichloromethane	10.0	10.1		ug/L		101	80 - 120
Bromoform	10.0	8.22		ug/L		82	73 - 139
Bromomethane	10.0	13.6		ug/L		136	66 - 149
Carbon tetrachloride	10.0	11.0		ug/L		110	72 - 138

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

Lab Sample ID: LCS 590-48244/1003
Matrix: Water
Analysis Batch: 48244

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Chlorobenzene	10.0	10.1		ug/L		101	80 - 124
Chloroethane	10.0	11.5		ug/L		115	64 - 134
Chloroform	10.0	10.6		ug/L		106	80 - 123
Chloromethane	10.0	12.2		ug/L		122	19 - 150
cis-1,2-Dichloroethene	10.0	11.0		ug/L		110	80 - 122
cis-1,3-Dichloropropene	10.0	9.65		ug/L		96	80 - 121
Dibromochloromethane	10.0	8.62		ug/L		86	80 - 130
Dibromomethane	10.0	10.6		ug/L		106	80 - 122
Dichlorodifluoromethane	10.0	9.64		ug/L		96	30 - 150
Ethylbenzene	10.0	10.2		ug/L		102	80 - 122
Hexachlorobutadiene	10.0	10.2		ug/L		102	77 - 132
Isopropylbenzene	10.0	10.7		ug/L		107	80 - 122
m,p-Xylene	10.0	11.3		ug/L		113	80 - 125
Methyl tert-butyl ether	10.0	8.63		ug/L		86	68 - 134
Methylene Chloride	10.0	12.5		ug/L		125	30 - 150
Naphthalene	10.0	8.01		ug/L		80	61 - 140
n-Butylbenzene	10.0	8.37		ug/L		84	75 - 121
N-Propylbenzene	10.0	8.84		ug/L		88	73 - 136
o-Xylene	10.0	10.1		ug/L		101	80 - 130
p-Isopropyltoluene	10.0	9.01		ug/L		90	78 - 128
sec-Butylbenzene	10.0	9.17		ug/L		92	73 - 138
Styrene	10.0	10.3		ug/L		103	79 - 134
tert-Butylbenzene	10.0	9.29		ug/L		93	76 - 131
Tetrachloroethene	10.0	10.2		ug/L		102	80 - 139
Toluene	10.0	10.3		ug/L		103	80 - 129
trans-1,2-Dichloroethene	10.0	10.9		ug/L		109	73 - 137
trans-1,3-Dichloropropene	10.0	8.50		ug/L		85	73 - 138
Trichloroethene	10.0	6.97	*-	ug/L		70	80 - 123
Trichlorofluoromethane	10.0	13.6		ug/L		136	71 - 147
Vinyl chloride	10.0	12.3		ug/L		123	50 - 150

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*99*		*80 - 120*
4-Bromofluorobenzene (Surr)	*88*		*76 - 120*
Dibromofluoromethane (Surr)	*119*		*80 - 123*
Toluene-d8 (Surr)	*100*		*80 - 120*

Lab Sample ID: LCSD 590-48244/4
Matrix: Water
Analysis Batch: 48244

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	8.70		ug/L		87	80 - 131	5	17
1,1,1-Trichloroethane	10.0	11.2		ug/L		112	71 - 138	0	17
1,1,2,2-Tetrachloroethane	10.0	14.5		ug/L		145	60 - 150	4	17
1,1-Dichloroethane	10.0	10.7		ug/L		107	80 - 125	1	20
1,1-Dichloroethene	10.0	12.1		ug/L		121	65 - 141	1	19
1,1-Dichloropropene	10.0	9.15		ug/L		91	82 - 123	0	20

Client: GeoEngineers Inc
Project/Site: Marshall Landfill GWM

Job ID: 590-25486-1

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

Lab Sample ID: LCSD 590-48244/4
Matrix: Water
Analysis Batch: 48244

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
1,2,3-Trichlorobenzene	10.0	9.36		ug/L		94	70 - 137	5	30
1,2,4-Trichlorobenzene	10.0	9.18		ug/L		92	76 - 131	3	24
1,2,4-Trimethylbenzene	10.0	8.38		ug/L		84	78 - 131	2	16
1,2-Dibromoethane (EDB)	10.0	8.08		ug/L		81	80 - 124	1	14
1,2-Dichlorobenzene	10.0	9.44		ug/L		94	80 - 120	2	14
1,2-Dichloroethane	10.0	9.65		ug/L		97	80 - 120	1	14
1,2-Dichloropropane	10.0	9.28		ug/L		93	79 - 122	1	15
1,3,5-Trimethylbenzene	10.0	8.41		ug/L		84	76 - 129	1	17
1,3-Dichlorobenzene	10.0	9.63		ug/L		96	80 - 122	2	15
1,3-Dichloropropane	10.0	8.40		ug/L		84	78 - 129	5	17
1,4-Dichlorobenzene	10.0	9.61		ug/L		96	80 - 120	3	14
2,2-Dichloropropane	10.0	19.1	*+	ug/L		191	73 - 140	1	18
2-Chlorotoluene	10.0	8.87		ug/L		89	74 - 129	3	19
4-Chlorotoluene	10.0	8.90		ug/L		89	79 - 125	3	16
Benzene	10.0	9.91		ug/L		99	80 - 120	1	15
Bromobenzene	10.0	8.21		ug/L		82	73 - 125	1	16
Bromochloromethane	10.0	12.8		ug/L		128	71 - 136	4	21
Bromodichloromethane	10.0	10.1		ug/L		101	80 - 120	0	16
Bromoform	10.0	8.51		ug/L		85	73 - 139	3	17
Bromomethane	10.0	12.8		ug/L		128	66 - 149	6	24
Carbon tetrachloride	10.0	10.6		ug/L		106	72 - 138	3	28
Chlorobenzene	10.0	10.1		ug/L		101	80 - 124	1	14
Chloroethane	10.0	11.8		ug/L		118	64 - 134	2	24
Chloroform	10.0	10.5		ug/L		105	80 - 123	1	18
Chloromethane	10.0	11.3		ug/L		113	19 - 150	7	35
cis-1,2-Dichloroethene	10.0	10.5		ug/L		105	80 - 122	4	17
cis-1,3-Dichloropropene	10.0	9.84		ug/L		98	80 - 121	2	16
Dibromochloromethane	10.0	8.98		ug/L		90	80 - 130	4	15
Dibromomethane	10.0	10.8		ug/L		108	80 - 122	2	16
Dichlorodifluoromethane	10.0	12.1		ug/L		121	30 - 150	22	22
Ethylbenzene	10.0	10.2		ug/L		102	80 - 122	0	35
Hexachlorobutadiene	10.0	10.8		ug/L		108	77 - 132	5	25
Isopropylbenzene	10.0	10.7		ug/L		107	80 - 122	0	16
m,p-Xylene	10.0	11.3		ug/L		113	80 - 125	1	35
Methyl tert-butyl ether	10.0	8.71		ug/L		87	68 - 134	1	18
Methylene Chloride	10.0	12.4		ug/L		124	30 - 150	1	25
Naphthalene	10.0	8.36		ug/L		84	61 - 140	4	25
n-Butylbenzene	10.0	8.58		ug/L		86	75 - 121	3	16
N-Propylbenzene	10.0	8.94		ug/L		89	73 - 136	1	18
o-Xylene	10.0	10.1		ug/L		101	80 - 130	0	35
p-Isopropyltoluene	10.0	9.18		ug/L		92	78 - 128	2	17
sec-Butylbenzene	10.0	9.25		ug/L		93	73 - 138	1	17
Styrene	10.0	10.4		ug/L		104	79 - 134	1	17
tert-Butylbenzene	10.0	9.35		ug/L		93	76 - 131	1	18
Tetrachloroethene	10.0	10.1		ug/L		101	80 - 139	1	20
Toluene	10.0	10.3		ug/L		103	80 - 129	0	35
trans-1,2-Dichloroethene	10.0	10.7		ug/L		107	73 - 137	2	18
trans-1,3-Dichloropropene	10.0	8.84		ug/L		88	73 - 138	4	17
Trichloroethene	10.0	6.98	*-	ug/L		70	80 - 123	0	14

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

Lab Sample ID: LCSD 590-48244/4
Matrix: Water
Analysis Batch: 48244

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
Trichlorofluoromethane			10.0	13.8		ug/L		138	71 - 147	1	24
Vinyl chloride			10.0	12.3		ug/L		123	50 - 150	1	26

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*100*		*80 - 120*
4-Bromofluorobenzene (Surr)	*88*		*76 - 120*
Dibromofluoromethane (Surr)	*117*		*80 - 123*
Toluene-d8 (Surr)	*102*		*80 - 120*

Lab Sample ID: MB 590-48327/6
Matrix: Water
Analysis Batch: 48327

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Trichloroethene	ND		1.0	0.20	ug/L			07/10/24 01:33	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*108*		*80 - 120*		*07/10/24 01:33*	*1*
4-Bromofluorobenzene (Surr)	*95*		*76 - 120*		*07/10/24 01:33*	*1*
Dibromofluoromethane (Surr)	*107*		*80 - 123*		*07/10/24 01:33*	*1*
Toluene-d8 (Surr)	*101*		*80 - 120*		*07/10/24 01:33*	*1*

Lab Sample ID: LCS 590-48327/1003
Matrix: Water
Analysis Batch: 48327

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

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Trichloroethene			10.0	10.5		ug/L		105	80 - 123		

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

Lab Sample ID: LCSD 590-48327/4
Matrix: Water
Analysis Batch: 48327

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
Trichloroethene			10.0	10.5		ug/L		105	80 - 123	0	14

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*102*		*80 - 120*
4-Bromofluorobenzene (Surr)	*96*		*76 - 120*
Dibromofluoromethane (Surr)	*98*		*80 - 123*
Toluene-d8 (Surr)	*99*		*80 - 120*

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 590-48022/1003
Matrix: Water
Analysis Batch: 48022

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			06/21/24 07:54	1
Sulfate	ND		0.50	0.13	mg/L			06/21/24 07:54	1

Lab Sample ID: LCS 590-48022/1004
Matrix: Water
Analysis Batch: 48022

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	12.9		mg/L		103	90 - 110
Sulfate	12.5	12.4		mg/L		99	90 - 110

Lab Sample ID: MB 590-48029/1003
Matrix: Water
Analysis Batch: 48029

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			06/21/24 07:54	1
Nitrite as N	ND		0.20	0.069	mg/L			06/21/24 07:54	1

Lab Sample ID: LCS 590-48029/1004
Matrix: Water
Analysis Batch: 48029

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	5.04		mg/L		101	90 - 110
Nitrite as N	5.00	4.97		mg/L		99	90 - 110

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

Lab Sample ID: MB 320-776445/1-A
Matrix: Water
Analysis Batch: 776849

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 776445

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	ND		8.0	2.0	ng/L		07/03/24 11:07	07/07/24 06:26	1
Perfluoropentanoic acid (PFPeA)	ND		4.0	1.0	ng/L		07/03/24 11:07	07/07/24 06:26	1
Perfluorohexanoic acid (PFHxA)	ND		2.0	0.50	ng/L		07/03/24 11:07	07/07/24 06:26	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.50	ng/L		07/03/24 11:07	07/07/24 06:26	1
Perfluorooctanoic acid (PFOA)	ND		2.0	0.50	ng/L		07/03/24 11:07	07/07/24 06:26	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.50	ng/L		07/03/24 11:07	07/07/24 06:26	1
Perfluorodecanoic acid (PFDA)	ND		2.0	0.50	ng/L		07/03/24 11:07	07/07/24 06:26	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	0.50	ng/L		07/03/24 11:07	07/07/24 06:26	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	0.50	ng/L		07/03/24 11:07	07/07/24 06:26	1
Perfluorotridecanoic acid (PFTrDA)	ND		2.0	0.50	ng/L		07/03/24 11:07	07/07/24 06:26	1
Perfluorotetradecanoic acid (PFTeDA)	ND		2.0	0.50	ng/L		07/03/24 11:07	07/07/24 06:26	1
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	0.50	ng/L		07/03/24 11:07	07/07/24 06:26	1
Perfluoropentanesulfonic acid (PFPeS)	ND		2.0	0.50	ng/L		07/03/24 11:07	07/07/24 06:26	1
Perfluorohexanesulfonic acid (PFHxS)	ND		2.0	0.50	ng/L		07/03/24 11:07	07/07/24 06:26	1

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

Lab Sample ID: MB 320-776445/1-A
Matrix: Water
Analysis Batch: 776849

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 776445

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanesulfonic acid (PFHpS)	ND		2.0	0.50	ng/L		07/03/24 11:07	07/07/24 06:26	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.0	0.50	ng/L		07/03/24 11:07	07/07/24 06:26	1
Perfluorononanesulfonic acid (PFNS)	ND		2.0	0.50	ng/L		07/03/24 11:07	07/07/24 06:26	1
Perfluorodecanesulfonic acid (PFDS)	ND		2.0	0.50	ng/L		07/03/24 11:07	07/07/24 06:26	1
Perfluorododecanesulfonic acid (PFDoS)	ND		2.0	0.50	ng/L		07/03/24 11:07	07/07/24 06:26	1
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	ND		8.0	2.0	ng/L		07/03/24 11:07	07/07/24 06:26	1
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	ND		8.0	2.0	ng/L		07/03/24 11:07	07/07/24 06:26	1
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	ND		8.0	2.0	ng/L		07/03/24 11:07	07/07/24 06:26	1
Perfluorooctanesulfonamide (PFOSA)	ND		2.0	0.50	ng/L		07/03/24 11:07	07/07/24 06:26	1
N-methylperfluorooctane sulfonamide (NMeFOSA)	ND		2.0	0.50	ng/L		07/03/24 11:07	07/07/24 06:26	1
N-ethylperfluorooctane sulfonamide (NEtFOSA)	ND		2.0	0.50	ng/L		07/03/24 11:07	07/07/24 06:26	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		2.0	0.50	ng/L		07/03/24 11:07	07/07/24 06:26	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		2.0	0.50	ng/L		07/03/24 11:07	07/07/24 06:26	1
N-methylperfluorooctane sulfonamidoethanol (NMeFOSE)	ND		20	5.0	ng/L		07/03/24 11:07	07/07/24 06:26	1
N-ethylperfluorooctane sulfonamidoethanol (NEtFOSE)	ND		20	5.0	ng/L		07/03/24 11:07	07/07/24 06:26	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		8.0	2.0	ng/L		07/03/24 11:07	07/07/24 06:26	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		8.0	2.0	ng/L		07/03/24 11:07	07/07/24 06:26	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	ND		4.0	1.0	ng/L		07/03/24 11:07	07/07/24 06:26	1
Perfluoro-4-methoxybutanoic acid (PFMBA)	ND		4.0	1.0	ng/L		07/03/24 11:07	07/07/24 06:26	1
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND		4.0	1.0	ng/L		07/03/24 11:07	07/07/24 06:26	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	ND		8.0	2.0	ng/L		07/03/24 11:07	07/07/24 06:26	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	ND		8.0	2.0	ng/L		07/03/24 11:07	07/07/24 06:26	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	ND		4.0	1.0	ng/L		07/03/24 11:07	07/07/24 06:26	1
3-Perfluoropropylpropanoic acid (3:3 FTCA)	ND		10	2.5	ng/L		07/03/24 11:07	07/07/24 06:26	1
3-Perfluoropentylpropanoic acid (5:3 FTCA)	ND		50	13	ng/L		07/03/24 11:07	07/07/24 06:26	1
3-Perfluoroheptylpropanoic acid (7:3 FTCA)	ND		50	13	ng/L		07/03/24 11:07	07/07/24 06:26	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*80.5*		*5 - 130*	*07/03/24 11:07*	*07/07/24 06:26*	*1*
13C5 PFPeA	*75.8*		*40 - 130*	*07/03/24 11:07*	*07/07/24 06:26*	*1*
13C5 PFHxA	*74.1*		*40 - 130*	*07/03/24 11:07*	*07/07/24 06:26*	*1*
13C4 PFHpA	*69.2*		*40 - 130*	*07/03/24 11:07*	*07/07/24 06:26*	*1*

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

Lab Sample ID: MB 320-776445/1-A
Matrix: Water
Analysis Batch: 776849

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 776445

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C8 PFOA	78.6		40 - 130	07/03/24 11:07	07/07/24 06:26	1
13C9 PFNA	75.0		40 - 130	07/03/24 11:07	07/07/24 06:26	1
13C6 PFDA	94.0		40 - 130	07/03/24 11:07	07/07/24 06:26	1
13C7 PFUnA	83.8		30 - 130	07/03/24 11:07	07/07/24 06:26	1
13C2 PFDoA	77.1		10 - 130	07/03/24 11:07	07/07/24 06:26	1
13C2 PFTeDA	73.8		10 - 130	07/03/24 11:07	07/07/24 06:26	1
13C3 PFBS	74.7		40 - 135	07/03/24 11:07	07/07/24 06:26	1
13C3 PFHxS	68.9		40 - 130	07/03/24 11:07	07/07/24 06:26	1
13C8 PFOS	83.4		40 - 130	07/03/24 11:07	07/07/24 06:26	1
13C8 PFOSA	76.8		40 - 130	07/03/24 11:07	07/07/24 06:26	1
d3-NMeFOSAA	79.8		40 - 170	07/03/24 11:07	07/07/24 06:26	1
d5-NEtFOSAA	77.0		25 - 135	07/03/24 11:07	07/07/24 06:26	1
13C2 4:2 FTS	86.2		40 - 200	07/03/24 11:07	07/07/24 06:26	1
13C2 6:2 FTS	81.0		40 - 200	07/03/24 11:07	07/07/24 06:26	1
13C2 8:2 FTS	110		40 - 300	07/03/24 11:07	07/07/24 06:26	1
13C3 HFPO-DA	78.2		40 - 130	07/03/24 11:07	07/07/24 06:26	1
d7-N-MeFOSE-M	73.6		10 - 130	07/03/24 11:07	07/07/24 06:26	1
d9-N-EtFOSE-M	67.2		10 - 130	07/03/24 11:07	07/07/24 06:26	1
d5-NEtPFOSA	66.9		10 - 130	07/03/24 11:07	07/07/24 06:26	1
d3-NMePFOSA	62.2		10 - 130	07/03/24 11:07	07/07/24 06:26	1

Lab Sample ID: LCS 320-776445/3-A
Matrix: Water
Analysis Batch: 776849

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 776445

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluorobutanoic acid (PFBA)	128	118		ng/L		92	70 - 140
Perfluoropentanoic acid (PFPeA)	64.0	59.7		ng/L		93	65 - 135
Perfluorohexanoic acid (PFHxA)	32.0	29.6		ng/L		93	70 - 145
Perfluoroheptanoic acid (PFHpA)	32.0	29.8		ng/L		93	70 - 150
Perfluorooctanoic acid (PFOA)	32.0	27.3		ng/L		85	70 - 150
Perfluorononanoic acid (PFNA)	32.0	23.0		ng/L		72	70 - 150
Perfluorodecanoic acid (PFDA)	32.0	27.8		ng/L		87	70 - 140
Perfluoroundecanoic acid (PFUnA)	32.0	28.5		ng/L		89	70 - 145
Perfluorododecanoic acid (PFDoA)	32.0	29.3		ng/L		92	70 - 140
Perfluorotridecanoic acid (PFTrDA)	32.0	29.8		ng/L		93	65 - 140
Perfluorotetradecanoic acid (PFTeDA)	32.0	28.9		ng/L		90	60 - 140
Perfluorobutanesulfonic acid (PFBS)	28.4	26.2		ng/L		92	60 - 145
Perfluoropentanesulfonic acid (PFPeS)	30.1	29.9		ng/L		99	65 - 140
Perfluorohexanesulfonic acid (PFHxS)	29.2	27.8		ng/L		95	65 - 145
Perfluoroheptanesulfonic acid (PFHpS)	30.5	26.6		ng/L		87	70 - 150
Perfluorooctanesulfonic acid (PFOS)	29.8	26.1		ng/L		88	55 - 150

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

Lab Sample ID: LCS 320-776445/3-A
Matrix: Water
Analysis Batch: 776849

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 776445

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluorononanesulfonic acid (PFNS)	30.8	29.2		ng/L		95	65 - 145
Perfluorodecanesulfonic acid (PFDS)	30.8	27.4		ng/L		89	60 - 145
Perfluorododecanesulfonic acid (PFDoS)	31.0	24.5		ng/L		79	50 - 145
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	120	120		ng/L		100	70 - 145
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	122	117		ng/L		96	65 - 155
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	123	113		ng/L		92	60 - 150
Perfluorooctanesulfonamide (PFOSA)	32.0	24.7		ng/L		77	70 - 145
N-methylperfluorooctane sulfonamide (NMeFOSA)	32.0	29.2		ng/L		91	60 - 150
N-ethylperfluorooctane sulfonamide (NEtFOSA)	32.0	28.4		ng/L		89	65 - 145
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	32.0	28.9		ng/L		90	50 - 140
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	32.0	27.0		ng/L		84	70 - 145
N-methylperfluorooctane sulfonamidoethanol (NMeFOSE)	320	284		ng/L		89	70 - 145
N-ethylperfluorooctane sulfonamidoethanol (NEtFOSE)	320	288		ng/L		90	70 - 135
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	128	126		ng/L		98	70 - 140
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	121	114		ng/L		94	65 - 145
Perfluoro-3-methoxypropanoic acid (PFMPA)	64.0	59.7		ng/L		93	55 - 140
Perfluoro-4-methoxybutanoic acid (PFMBA)	64.0	61.6		ng/L		96	60 - 150
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	64.0	65.9		ng/L		103	50 - 150
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	120	116		ng/L		97	70 - 155
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	121	97.5		ng/L		81	55 - 160
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	57.1	57.3		ng/L		100	70 - 140
3-Perfluoropropylpropanoic acid (3:3 FTCA)	160	147		ng/L		92	65 - 130
3-Perfluoropentylpropanoic acid (5:3 FTCA)	799	753		ng/L		94	70 - 135
3-Perfluoroheptylpropanoic acid (7:3 FTCA)	799	681		ng/L		85	50 - 145

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C4 PFBA	*89.5*		*5 - 130*
13C5 PFPeA	*86.0*		*40 - 130*
13C5 PFHxA	*83.3*		*40 - 130*

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

Lab Sample ID: LCS 320-776445/3-A
Matrix: Water
Analysis Batch: 776849

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 776445

Isotope Dilution	LCS %Recovery	LCS Qualifier	Limits
13C4 PFHpA	86.7		40 - 130
13C8 PFOA	85.1		40 - 130
13C9 PFNA	106		40 - 130
13C6 PFDA	99.0		40 - 130
13C7 PFUnA	94.2		30 - 130
13C2 PFDoA	82.6		10 - 130
13C2 PFTeDA	82.8		10 - 130
13C3 PFBS	86.1		40 - 135
13C3 PFHxS	78.8		40 - 130
13C8 PFOS	89.3		40 - 130
13C8 PFOSA	85.2		40 - 130
d3-NMeFOSAA	80.5		40 - 170
d5-NEtFOSAA	82.1		25 - 135
13C2 4:2 FTS	87.1		40 - 200
13C2 6:2 FTS	84.4		40 - 200
13C2 8:2 FTS	121		40 - 300
13C3 HFPO-DA	87.0		40 - 130
d7-N-MeFOSE-M	77.3		10 - 130
d9-N-EtFOSE-M	72.6		10 - 130
d5-NEtPFOSA	71.8		10 - 130
d3-NMePFOSA	69.5		10 - 130

Lab Sample ID: LLCS 320-776445/2-A
Matrix: Water
Analysis Batch: 776849

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 776445

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluorobutanoic acid (PFBA)	12.8	12.1		ng/L		94	70 - 140
Perfluoropentanoic acid (PFPeA)	6.40	6.15		ng/L		96	65 - 135
Perfluorohexanoic acid (PFHxA)	3.20	3.07		ng/L		96	70 - 145
Perfluoroheptanoic acid (PFHpA)	3.20	2.99		ng/L		94	70 - 150
Perfluorooctanoic acid (PFOA)	3.20	2.38		ng/L		75	70 - 150
Perfluorononanoic acid (PFNA)	3.20	3.34		ng/L		104	70 - 150
Perfluorodecanoic acid (PFDA)	3.20	2.76		ng/L		86	70 - 140
Perfluoroundecanoic acid (PFUnA)	3.20	2.82		ng/L		88	70 - 145
Perfluorododecanoic acid (PFDoA)	3.20	2.45		ng/L		76	70 - 140
Perfluorotridecanoic acid (PFTrDA)	3.20	2.89		ng/L		90	65 - 140
Perfluorotetradecanoic acid (PFTeDA)	3.20	3.12		ng/L		98	60 - 140
Perfluorobutanesulfonic acid (PFBS)	2.84	2.71		ng/L		96	60 - 145
Perfluoropentanesulfonic acid (PFPeS)	3.01	3.10		ng/L		103	65 - 140
Perfluorohexanesulfonic acid (PFHxS)	2.92	3.07		ng/L		105	65 - 145
Perfluoroheptanesulfonic acid (PFHpS)	3.05	2.66		ng/L		87	70 - 150

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

Lab Sample ID: LLCS 320-776445/2-A
Matrix: Water
Analysis Batch: 776849

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 776445

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluorooctanesulfonic acid (PFOS)	2.98	2.58		ng/L		87	55 - 150
Perfluorononanesulfonic acid (PFNS)	3.08	2.78		ng/L		90	65 - 145
Perfluorodecanesulfonic acid (PFDS)	3.08	2.91		ng/L		94	60 - 145
Perfluorododecanesulfonic acid (PFDoS)	3.10	2.63		ng/L		85	50 - 145
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	12.0	10.7		ng/L		89	70 - 145
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	12.2	11.0		ng/L		90	65 - 155
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	12.3	11.0		ng/L		89	60 - 150
Perfluorooctanesulfonamide (PFOSA)	3.20	2.52		ng/L		79	70 - 145
N-methylperfluorooctane sulfonamide (NMeFOSA)	3.20	2.65		ng/L		83	60 - 150
N-ethylperfluorooctane sulfonamide (NEtFOSA)	3.20	2.96		ng/L		92	65 - 145
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	3.20	2.48		ng/L		78	50 - 140
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	3.20	2.75		ng/L		86	70 - 145
N-methylperfluorooctane sulfonamidoethanol (NMeFOSE)	32.0	27.7		ng/L		87	70 - 145
N-ethylperfluorooctane sulfonamidoethanol (NEtFOSE)	32.0	28.5		ng/L		89	70 - 135
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	12.8	11.2		ng/L		88	70 - 140
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	12.1	10.9		ng/L		90	65 - 145
Perfluoro-3-methoxypropanoic acid (PFMPA)	6.40	6.05		ng/L		95	55 - 140
Perfluoro-4-methoxybutanoic acid (PFMBA)	6.40	6.12		ng/L		96	60 - 150
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	6.40	6.15		ng/L		96	50 - 150
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	12.0	10.6		ng/L		89	70 - 155
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	12.1	9.60		ng/L		79	55 - 160
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	5.71	5.37		ng/L		94	70 - 140
3-Perfluoropropylpropanoic acid (3:3 FTCA)	16.0	14.7		ng/L		92	65 - 130
3-Perfluoropentylpropanoic acid (5:3 FTCA)	79.9	72.0		ng/L		90	70 - 135
3-Perfluoroheptylpropanoic acid (7:3 FTCA)	79.9	67.1		ng/L		84	50 - 145

Isotope Dilution	*LLCS %Recovery*	*LLCS Qualifier*	*Limits*
13C4 PFBA	*86.1*		*5 - 130*

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

Lab Sample ID: LLCS 320-776445/2-A
Matrix: Water
Analysis Batch: 776849

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 776445

Isotope Dilution	*LLCS %Recovery*	*LLCS Qualifier*	*Limits*
13C5 PFPeA	*81.1*		*40 - 130*
13C5 PFHxA	*77.6*		*40 - 130*
13C4 PFHpA	*72.9*		*40 - 130*
13C8 PFOA	*79.0*		*40 - 130*
13C9 PFNA	*88.0*		*40 - 130*
13C6 PFDA	*109*		*40 - 130*
13C7 PFUnA	*93.2*		*30 - 130*
13C2 PFDoA	*100*		*10 - 130*
13C2 PFTeDA	*89.0*		*10 - 130*
13C3 PFBS	*84.9*		*40 - 135*
13C3 PFHxS	*77.7*		*40 - 130*
13C8 PFOS	*87.4*		*40 - 130*
13C8 PFOSA	*87.8*		*40 - 130*
d3-NMeFOSAA	*93.2*		*40 - 170*
d5-NEtFOSAA	*85.0*		*25 - 135*
13C2 4:2 FTS	*91.4*		*40 - 200*
13C2 6:2 FTS	*84.9*		*40 - 200*
13C2 8:2 FTS	*119*		*40 - 300*
13C3 HFPO-DA	*83.2*		*40 - 130*
d7-N-MeFOSE-M	*81.2*		*10 - 130*
d9-N-EtFOSE-M	*72.7*		*10 - 130*
d5-NEtPFOSA	*75.2*		*10 - 130*
d3-NMePFOSA	*70.9*		*10 - 130*

Method: PPCP NEG - Pharmaceuticals and Personal Care Products (LC/MS/MS)

Lab Sample ID: MB 810-103678/10
Matrix: Water
Analysis Batch: 103678

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acesulfame K	ND		0.020	0.0020	ug/L			06/25/24 02:47	1
Sucralose	ND		0.10	0.014	ug/L			06/25/24 02:47	1

Method: 6010D - Metals (ICP)

Lab Sample ID: MB 590-48116/2-A
Matrix: Water
Analysis Batch: 48207

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 48116

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Magnesium	ND		0.50	0.13	mg/L		06/27/24 10:32	07/02/24 12:18	1

Lab Sample ID: LCS 590-48116/1-A
Matrix: Water
Analysis Batch: 48207

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 48116

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Magnesium			25.0	22.5		mg/L		90	80 - 120		

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

Lab Sample ID: MB 590-48117/2-B
Matrix: Water
Analysis Batch: 48207

Client Sample ID: Method Blank
Prep Type: Dissolved
Prep Batch: 48188

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	ND		1.0	0.20	mg/L		07/02/24 11:12	07/02/24 13:10	1
Magnesium	ND		0.50	0.13	mg/L		07/02/24 11:12	07/02/24 13:10	1

Lab Sample ID: LCS 590-48117/1-B
Matrix: Water
Analysis Batch: 48207

Client Sample ID: Lab Control Sample
Prep Type: Dissolved
Prep Batch: 48188

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Calcium	25.0	21.7		mg/L		87	80 - 120
Magnesium	25.0	21.8		mg/L		87	80 - 120

Method: 6020B - Metals (ICP/MS)

Lab Sample ID: MB 580-463083/11-B
Matrix: Water
Analysis Batch: 463405

Client Sample ID: Method Blank
Prep Type: Dissolved
Prep Batch: 463243

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	ND		0.50	0.067	mg/L		06/25/24 15:33	06/26/24 12:13	5
Manganese	ND		0.010	0.0023	mg/L		06/25/24 15:33	06/26/24 12:13	5

Lab Sample ID: LCS 580-463083/12-B
Matrix: Water
Analysis Batch: 463405

Client Sample ID: Lab Control Sample
Prep Type: Dissolved
Prep Batch: 463243

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Iron	20.0	19.8		mg/L		99	80 - 120
Manganese	1.00	0.978		mg/L		98	80 - 120

Lab Sample ID: LCSD 580-463083/13-B
Matrix: Water
Analysis Batch: 463405

Client Sample ID: Lab Control Sample Dup
Prep Type: Dissolved
Prep Batch: 463243

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Iron	20.0	20.0		mg/L		100	80 - 120	1	20
Manganese	1.00	0.992		mg/L		99	80 - 120	1	20

Method: 350.1 - Nitrogen, Ammonia

Lab Sample ID: MB 280-659155/19
Matrix: Water
Analysis Batch: 659155

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			07/02/24 11:51	1

Method: 350.1 - Nitrogen, Ammonia (Continued)

Lab Sample ID: LCS 280-659155/20
Matrix: Water
Analysis Batch: 659155

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	2.47		mg/L		99	90 - 110		

Lab Sample ID: LCSD 280-659155/21
Matrix: Water
Analysis Batch: 659155

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	2.51		mg/L		100	90 - 110	2	10

Method: SM 2320B - Alkalinity

Lab Sample ID: MB 590-48087/1
Matrix: Water
Analysis Batch: 48087

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			06/26/24 09:37	1
Bicarbonate Alkalinity as CaCO3	5.00	J	20	5.0	mg/L			06/26/24 09:37	1

Lab Sample ID: LCS 590-48087/2
Matrix: Water
Analysis Batch: 48087

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

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Alkalinity			501	475		mg/L		95	90 - 110		

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

Lab Sample ID: MB 590-48151/1
Matrix: Water
Analysis Batch: 48151

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			06/28/24 16:58	1

Lab Sample ID: LCS 590-48151/2
Matrix: Water
Analysis Batch: 48151

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			500	502		mg/L		100	80 - 120		

Lab Sample ID: 590-25486-1 DU
Matrix: Water
Analysis Batch: 48151

Client Sample ID: MW-3-062124
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Total Dissolved Solids	300			302		mg/L				0	10

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

Lab Sample ID: MB 280-658712/36
Matrix: Water
Analysis Batch: 658712

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			06/28/24 00:38	1

Lab Sample ID: LCS 280-658712/35
Matrix: Water
Analysis Batch: 658712

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 Chronicle

Client: GeoEngineers Inc
Project/Site: Marshall Landfill GWM

Job ID: 590-25486-1

Client Sample ID: MW-3-062124
Date Collected: 06/21/24 08:45
Date Received: 06/21/24 11:13

Lab Sample ID: 590-25486-1
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	300.0		1	5 mL	5 mL	48022	06/21/24 14:22	NMI	EET SPK
Total/NA	Analysis	300.0		1	5 mL	5 mL	48029	06/21/24 14:22	NMI	EET SPK
Total/NA	Prep	1633			595.3 mL	5.0 mL	776445	07/03/24 11:07	ATB	EET SAC
Total/NA	Analysis	Draft-4 1633		1	1 mL	1 mL	776849	07/07/24 09:57	S1M	EET SAC
Total/NA	Prep	1633	RA		595.3 mL	5.0 mL	776445	07/03/24 11:07	ATB	EET SAC
Total/NA	Analysis	Draft-4 1633	RA	1	1 mL	1 mL	777333	07/08/24 12:49	RS1	EET SAC
Total/NA	Analysis	PPCP NEG		1	1 mL	1 mL	103678	06/25/24 09:19	BS	EA SB
Dissolved	Filtration	FILTRATION			50 mL	50 mL	48117	06/27/24 10:48	AMB	EET SPK
Dissolved	Prep	3005A			50 mL	50 mL	48188	07/02/24 11:12	AMB	EET SPK
Dissolved	Analysis	6010D		1			48257	07/03/24 13:59	AMB	EET SPK
Total Recoverable	Prep	3005A			50 mL	50 mL	48116	06/27/24 10:32	AMB	EET SPK
Total Recoverable	Analysis	6010D		1			48256	07/02/24 18:50	AMB	EET SPK
Dissolved	Filtration	FILTRATION			250 mL	250 mL	463083	06/24/24 10:04	TMH	EET SEA
Dissolved	Prep	3005A			50 mL	50 mL	463243	06/25/24 15:33	MCMS	EET SEA
Dissolved	Analysis	6020B		5			463405	06/26/24 12:40	TMH	EET SEA
Total/NA	Analysis	350.1		1	10 mL	10 mL	659155	07/02/24 12:15	LBR	EET DEN
Total/NA	Analysis	SM 2320B		1	100 mL	100 mL	48087	06/26/24 09:37	RMA	EET SPK
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	48151	06/28/24 17:00	RMA	EET SPK
Total/NA	Analysis	SM 5310B		1	20 mL	20 mL	658712	06/28/24 04:53	ABW	EET DEN

Client Sample ID: Hose Bib-062124
Date Collected: 06/21/24 10:30
Date Received: 06/21/24 11:13

Lab Sample ID: 590-25486-2
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	300.0		1	5 mL	5 mL	48022	06/21/24 14:32	NMI	EET SPK
Total/NA	Analysis	300.0		1	5 mL	5 mL	48029	06/21/24 14:32	NMI	EET SPK
Dissolved	Filtration	FILTRATION			50 mL	50 mL	48117	06/27/24 10:48	AMB	EET SPK
Dissolved	Prep	3005A			50 mL	50 mL	48188	07/02/24 11:12	AMB	EET SPK
Dissolved	Analysis	6010D		1			48257	07/03/24 14:03	AMB	EET SPK
Total Recoverable	Prep	3005A			50 mL	50 mL	48116	06/27/24 10:32	AMB	EET SPK
Total Recoverable	Analysis	6010D		1			48256	07/02/24 18:54	AMB	EET SPK
Total/NA	Analysis	350.1		1	10 mL	10 mL	659155	07/02/24 12:13	LBR	EET DEN
Total/NA	Analysis	SM 2320B		1	100 mL	100 mL	48087	06/26/24 09:37	RMA	EET SPK
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	48151	06/28/24 17:00	RMA	EET SPK
Total/NA	Analysis	SM 5310B		1	20 mL	20 mL	658712	06/28/24 05:53	ABW	EET DEN

Client Sample ID: TB-062124
Date Collected: 06/21/24 00:00
Date Received: 06/21/24 11:13

Lab Sample ID: 590-25486-3
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	48244	07/03/24 16:23	JSP	EET SPK
Total/NA	Analysis	8260D		1	43 mL	43 mL	48327	07/10/24 04:18	JSP	EET SPK

Lab Chronicle

Client: GeoEngineers Inc
Project/Site: Marshall Landfill GWM

Job ID: 590-25486-1

Laboratory References:

EA SB = Eurofins Eaton Analytical South Bend, 110 S Hill Street, South Bend, IN 46617, TEL (574)233-4777

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
Job ID: 590-25486-1
Project/Site: Marshall Landfill GWM

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	01-07-25

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 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	10-31-25
A2LA	ISO/IEC 17025	2907.01	10-31-25
Alabama	State Program	40730	09-30-12 *
Alaska (UST)	State	18-001	11-30-25
Arizona	State	AZ0713	12-20-24
Arkansas DEQ	State	19-047-0	04-21-25
California	State	2513	01-08-25
Colorado	State	CO00026	06-30-25
Connecticut	State	PH-0686	09-30-24
Florida	NELAP	E87667-57	06-30-24 *
Georgia	State	4025-011	01-08-25
Illinois	NELAP	2000172024-9	05-31-25
Iowa	State	370	12-01-24
Kansas	NELAP	E-10166	04-30-25
Kentucky (WW)	State	KY98047	12-31-24
Louisiana	NELAP	30785	06-30-14 *
Louisiana (All)	NELAP	30785	06-30-25
Minnesota	NELAP	1788752	12-31-24
Nevada	State	CO000262024-08	08-02-24
New Hampshire	NELAP	2053	04-28-25
New Jersey	NELAP	230001	07-02-24
New York	NELAP	59923	04-01-25
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
South Carolina	State	72002001	01-08-24 *
Texas	NELAP	TX104704183-08-TX	09-30-09 *
Texas	NELAP	T104704183-23-23	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	06-14-25
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 Eaton Analytical South Bend

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 GWM

Job ID: 590-25486-1

Laboratory: Eurofins Eaton Analytical South Bend (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
A2LA	ISO/IEC 17025	5794.01	07-31-24
Alabama	State	40700	06-30-24
Alaska	State	IN00035	06-30-24
Arizona	State	AZ0432	07-26-24
Arkansas (DW)	State	EPA IN00035	06-30-24
California	State	2920	06-30-24
Colorado	State	IN00035	02-28-25
Connecticut	State	PH-0132	03-31-26
Delaware (DW)	State	IN00035	06-27-24
Florida	NELAP	E87775	06-30-24
Georgia (DW)	State	929	06-30-24
Guam	State	23-011R	07-15-24
Hawaii	State	IN035	06-30-24
Idaho (DW)	State	IN00035	12-31-24
IL Dept. of Public Health (Micro)	State	17767	06-30-24
Illinois	NELAP	200001	09-19-24
Indiana	State	C-71-01	12-31-25
Indiana (Micro)	State	M-76-07	12-31-25
Iowa	State	IA Lab #098	11-01-25
Kansas	NELAP	E-10233	10-31-24
Kentucky (DW)	State	KY90056	12-31-24
Louisiana (DW)	State	LA014	12-31-24
Maine	State	IN00035	05-01-25
Maryland	State	209	06-27-24
Massachusetts	State	M-IN035	06-30-25
MI - RadChem Recognition	State	9926	06-30-24
Michigan	State	9926	03-22-25
Minnesota	NELAP	1989807	12-31-24
Mississippi	State	IN00035	06-30-24
Missouri	State	880	09-30-24
Montana (DW)	State	CERT0026	01-01-25
Nebraska	State	NE-OS-05-04	06-30-24
Nevada	State	IN000352024-01	07-31-24
New Hampshire	NELAP	2124	11-05-24
New Jersey	NELAP	IN598	06-30-24
New Mexico	State	IN00035	06-30-24
New York	NELAP	11398	04-01-25
North Carolina (DW)	State	18700	07-31-24
North Dakota	State	R-035	06-30-24
Northern Mariana Islands (DW)	State	IN00035	06-30-24
Ohio	State	87775	06-27-24
Oklahoma	NELAP	D9508	08-31-24
Oregon	NELAP	4156	09-16-24
Pennsylvania	NELAP	68-00466	04-30-25
Puerto Rico	State	IN00035	04-01-25
Rhode Island	State	LAO00343	12-30-24
South Carolina	State	95005001	07-01-25
South Dakota (DW)	State	IN00035	06-30-24
Tennessee	State	TN02973	06-30-24
Texas	NELAP	T104704187-22-16	12-31-24

Accreditation/Certification Summary

Client: GeoEngineers Inc
Job ID: 590-25486-1
Project/Site: Marshall Landfill GWM

Laboratory: Eurofins Eaton Analytical South Bend (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
Texas	TCEQ Water Supply	TX207	06-30-24
USEPA Reg X SDWA	US Federal Programs	IN00035	08-24-24
USEPA UCMR 5	US Federal Programs	IN00035	12-31-25
Utah	NELAP	IN00035	07-31-24
Vermont	State	VT-8775	11-15-24
Virginia	NELAP	460275	03-14-25
Washington	State	C837	01-01-25
West Virginia (DW)	State	9927 C	01-31-25
Wisconsin	State	999766900	08-31-24
Wisconsin (Micro)	State	10121	12-31-24
Wyoming	State	8TMS-L	06-30-24

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	02-20-27
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	05-18-25
California	State	2897	01-31-26
Colorado	State	CA00044	08-31-24
Florida	NELAP	E87570	06-30-25
Georgia	State	4040	01-29-25
Hawaii	State	Eurofins Sacramento	01-29-25
Illinois	NELAP	200060	03-31-25
Kansas	NELAP	E-10375	10-31-25
Louisiana (All)	NELAP	01944	06-30-25
Maine	State	CA00004	04-14-26
Michigan	State	9947	01-29-25
Nevada	State	CA00044	07-31-25
New Hampshire	NELAP	2997	04-19-25
New Jersey	NELAP	CA005	06-30-25
New York	NELAP	11666	04-01-25
Ohio	State	41252	01-29-25
Oregon	NELAP	4040	01-29-25
Texas	NELAP	T104704399-23-17	05-31-25
US Fish & Wildlife	US Federal Programs	A22139	04-30-25
USDA	US Federal Programs	P330-18-00239	02-28-26
Utah	NELAP	CA000442023-16	02-28-25
Virginia	NELAP	460278	03-14-25
Washington	State	C581	05-05-25
West Virginia (DW)	State	9930C	01-31-25
Wisconsin	State	998204680	08-31-25
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
Job ID: 590-25486-1
Project/Site: Marshall Landfill GWM

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	NELAP	03073	07-01-24
Louisiana (All)	NELAP	03073	07-01-24
Maine	State	WA01273	05-02-26
Montana (UST)	State	NA	04-14-27
New Jersey	NELAP	WA014	06-30-24
New York	NELAP	11662	04-01-25
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 GWM

Job ID: 590-25486-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET SPK
300.0	Anions, Ion Chromatography	EPA	EET SPK
Draft-4 1633	Per- and Polyfluoroalkyl Substances by LC/MS/MS	EPA	EET SAC
PPCP NEG	Pharmaceuticals and Personal Care Products (LC/MS/MS)	Lab SOP	EA SB
6010D	Metals (ICP)	SW846	EET SPK
6020B	Metals (ICP/MS)	SW846	EET SEA
350.1	Nitrogen, Ammonia	EPA	EET DEN
SM 2320B	Alkalinity	SM	EET SPK
SM 2540C	Solids, Total Dissolved (TDS)	SM	EET SPK
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
5030C	Purge and Trap	SW846	EET SPK
FILTRATION	Sample Filtration	None	EET SEA
FILTRATION	Sample Filtration	None	EET SPK

Protocol References:

EPA = US Environmental Protection Agency
Lab SOP = Laboratory Standard Operating Procedure
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:

EA SB = Eurofins Eaton Analytical South Bend, 110 S Hill Street, South Bend, IN 46617, TEL (574)233-4777
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

Email: sbronson@geoengineers.com
Telfax: 509.570.0779

Site Contact: Alex Navarro
Lab Contact:

Date: 6/21/24
Carrier:

____ of ____ COCs

TALS Project #:

Sampler:

Analysis Turnaround Time

☐ CALENDAR DAYS ☐ WORKING DAYS

TAT if different from Below _____

☐ 2 weeks
☐ 1 week
☐ 2 days
☐ 1 day

For Lab Use Only
Walk-in Client:
Lab Sampling:

Job / SDG No.

Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y / N)	Perform MS / MSD (Y / N)	PFAS / EPA 1633	Ammonia as N / EPA 350.1	Alkalinity bicarbonate / SM 2320B	TDS / SC 2540C	TOC / SM 5310B	Total K, Mg, Na / EPA 6010D	Dissolved Ca, Mg / EPA 6010D	Chloride, sulfate, nitrate nitrite / EPA 300.0	Diss. Fe, Mn / EPA 6020B	Total Hg / EPA 7470A	Diss Hg / 7470A	Total As, Cd, Fe, Mn Pb, Zn / EPA 6020B	Diss As, Cd, Fe, Mn, Pb, Zn / EPA 6020B	Artificial Sweeteners (acesulfame K, sucralose	PCE, 1 1 1 TCA / EPA 8260D	1,4-dioxane / EPA 8270E SIM	VOCs 8260D	Sample Specific Notes:
6/21/24	0845	G	W				X	X	X	X	X	X	X	X	X					X				
6/21/24	1030	G	W					X	X	X	X	X	X	X										
6/21/24	—	G	W																		X	X	SJB 6/21/24	

590-25486 Chain of Custody

04; 4=HNO3; 5=NaOH; 6= Other _____

Waste? Please List any EPA Waste Codes for the sample in the
e sample

☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

☐ Return to Client ☐ Disposal by Lab ☐ Archive for _____ Months

mments

No

Custody Seal No.

Cooler Temp. (°C): Obs'd: 5.4 Corr'd: 5.4 Therm ID No.: IR005

Company:	Date/Time:	Received by:	Company:	Date/Time:
06/21/24 1130				
Company:	Date/Time:	Received by:	Company:	Date/Time:
Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
			ECS&R	6/21/24 1113

Eurofins Spokane
11922 E 1st Avenue

Spokane, WA 99206-5302
phone 509.924.9200 fax 509.924.9290

Chain of Custody Record

eurofins Environment Testing America

Regulatory Program ☐ DW ☐ NPDES ☐ RCRA ☐ Other

Eurofins Environment Testing America

Client Contact	**Project Manager:** Sydney Bronson	**Site Contact:** Alex Navarra **Date:** 6/21/24
GeoEngineers, Inc.	Email: sbronson@geoengineers.com	**Lab Contact:** **Carrier:**
523 E 2nd Ave	Tel/Fax: 509.570.0779	**COC No:** ____ of ____ COCs
Spokane, WA 99202	**Analysis Turnaround Time**	**TALS Project #:**
509.363.3125 Phone	☐ CALENDAR DAYS ☐ WORKING DAYS	**Sampler:**
FAX	TAT if different from Below ____	**For Lab Use Only**
Project Name: Marshall Landfill GWM	☐ 2 weeks	Walk-in Client:
Site: Marshall Landfill Site Design	☐ 1 week	Lab Sampling:
P O # 0504-104-01	☐ 2 days	**Job / SDG No.**
	☐ 1 day	

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y / N)	Perform MS / MSD (Y / N)	PFAS / EPA 1633	Ammonia as N / EPA 350.1	Alkalinity bicarbonate / SM 2320B	TDS / SM 2540C	TOC / SM 5310B	Total K, Mg, Na / EPA 6010D	Dissolved Ca, Mg / EPA 6010D	Chloride, sulfate, nitrate nitrite / EPA 300.0	Diss. Fe, Mn / EPA 6020B	Total Hg / EPA 7470A	Diss Hg / 7470A	Total As, Cd, Fe, Mn Pb, Zn / EPA 6020B	Diss As, Cd, Fe, Mn, Pb, Zn / EPA 6020B	Artificial Sweeteners (acesulfame K, sucralose	PCE, 1 1 1 TCA / EPA 8260D	1,4-dioxane / EPA 8270E SIM	Sample Specific Notes:
MW-3-062124	6/21/24	0845	G	W				X	X	X	X	X	X	X	X	X						X		
Hose Bib-062124	6/21/24	1030	G	W					X	X	X	X	X	X	X									
TB-062124	6/21/24	—	G	W																		X		

590-25486 Chain of Custody

Preservation Used: 1= Ice, 2= HCl; 3= H_2SO_4; 4=HNO_3; 5=NaOH; 6= Other ____

Possible Hazard Identification:
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample

☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

☐ Return to Client ☐ Disposal by Lab ☐ Archive for ____ Months

Special Instructions/QC Requirements & Comments
DISSOLVED METALS LAB FILTERED

Custody Seals Intact: ☐ Yes ☐ No | Custody Seal No. | Cooler Temp. (°C): Obs'd: 5.4 Corr'd: 5.4 | Therm ID No.: IR005

Relinquished by	Company:	06/21/24 1130 Date/Time:	Received by	Company	Date/Time:
Relinquished by	Company	Date/Time:	Received by	Company	Date/Time:
Relinquished by	Company	Date/Time:	Received in Laboratory by	Company: ECS PO	Date/Time: 6/21/24 11:13

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: 590-9329.1
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 #: 590-25486-1
Address: 4955 Yarrow Street, ,	Due Date Requested: 7/8/2024			Preservation Codes: -
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 GWM	Project #: 59002669			
Site:	SSOW#:			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)	Preservation Code:	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	Analysis Requested: 350.1	Analysis Requested: SM5310B/ (MOD) TOC	Total Number of containers	Special Instructions/Note:
MW-3-062124 (590-25486-1)	6/21/24	08:45 Pacific		Water				X	X	2	
Hose Bib-062124 (590-25486-2)	6/21/24	10:30 Pacific		Water				X	X	2	

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

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

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
	6/21/24 14:35	EEL ESP		06/22/24 1045	EET DEN
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: 2.1, 0.1+0.2, IR-NDG

Ver: 04/02/2024

7/10/2024

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: 590-9327 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 #: 590-25486-1
Address: 880 Riverside Parkway, ,	Due Date Requested: 7/8/2024			
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 GWM	Project #: 59002669			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

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-3-062124 (590-25486-1)	6/21/24	08.45 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
	6/21/24 15:32	EEC580		06/22/24 0845	EE 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 2274589	Cooler Temperature(s) °C and Other Remarks: 1.8°C

Ver: 04/02/2024

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: 590-9326.1
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 #: 590-25486-1
Address: 5755 8th Street East, ,	Due Date Requested: 7/8/2024			
City: Tacoma	TAT Requested (days):			
State, Zip: WA, 98424				
Phone: 253-922-2310(Tel)	PO #:			
Email:	WO #:			
Project Name: Marshall Landfill GWM	Project #: 59002669			
Site:	SSOW#:			

Analysis Requested

Preservation Codes: -

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/FILTRATION (MOD) Dissolved Fe & Mn	Total Number of containers	Special Instructions/Note:
Preservation Code:									
MW-3-062124 (590-25486-1)	6/21/24	08:45 Pacific		Water			X	1	

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		6/21/24 14:41	BEC880		6/22/24 0915	EETN
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.:	Cooler Temperature(s) °C and Other Remarks: IR 11 1.6/1.1

Login Sample Receipt Checklist

Client: GeoEngineers Inc

Job Number: 590-25486-1

Login Number: 25486
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: 590-25486-1

Login Number: 25486
List Number: 5
Creator: Little, Matthew L

List Source: Eurofins Denver
List Creation: 06/25/24 02:20 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.	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").	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: 590-25486-1

Login Number: 25486
List Number: 2
Creator: Trowbridge, Peyton

List Source: Eurofins Eaton Analytical South Bend
List Creation: 06/22/24 10:26 AM

Question	Answer	Comment
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	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	
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	
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	
Samples do not require splitting or compositing.	True	
Container provided by EEA	True	

Login Sample Receipt Checklist

Client: GeoEngineers Inc

Job Number: 590-25486-1

Login Number: 25486
List Number: 3
Creator: Morazzini, Dominic S

List Source: Eurofins Sacramento
List Creation: 06/22/24 09:59 AM

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	2274589
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	1.8
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.	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: 590-25486-1

Login Number: 25486
List Number: 4
Creator: Harp, Cordelia

List Source: Eurofins Seattle
List Creation: 06/22/24 01:12 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	IR 11 1.6/1.1 c
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)

590-25486 Field Sheet

Tracking # : 7391 0416 9757

Job _____

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 (+/-) NA °C

Ice 1 Wet 1 Gel _____ Other _____

Cooler Custody Seal 2274589

Cooler ID _____

Temp Observed 1.8 °C Corrected 1.8 °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 DM Date 06/22/24

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 DM Date 06/22/24

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 DM Date 06/22/24

Isotope Dilution Summary

Client: GeoEngineers Inc
Project/Site: Marshall Landfill GWM

Job ID: 590-25486-1

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

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

		Percent Isotope Dilution Recovery (Acceptance Limits)							
		PFBA	PFPeA	13C5PHA	C4PFHA	C8PFOA	C9PFNA	C6PFDA	13C7PUA
Lab Sample ID	Client Sample ID	(5-130)	(40-130)	(40-130)	(40-130)	(40-130)	(40-130)	(40-130)	(30-130)
590-25486-1	MW-3-062124	79.4	80.4	75.4	74.9	74.4	77.0	81.9	71.2
590-25486-1 - RA	MW-3-062124							87.5	
LCS 320-776445/3-A	Lab Control Sample	89.5	86.0	83.3	86.7	85.1	106	99.0	94.2
LLCS 320-776445/2-A	Lab Control Sample	86.1	81.1	77.6	72.9	79.0	88.0	109	93.2
MB 320-776445/1-A	Method Blank	80.5	75.8	74.1	69.2	78.6	75.0	94.0	83.8

		Percent Isotope Dilution Recovery (Acceptance Limits)							
		PFDoA	PFTDA	C3PFBS	C3PFHS	C8PFOS	PFOSA	d3NMFOS	d5NEFOS
Lab Sample ID	Client Sample ID	(10-130)	(10-130)	(40-135)	(40-130)	(40-130)	(40-130)	(40-170)	(25-135)
590-25486-1	MW-3-062124	78.1	71.7	77.2	71.3	86.0	80.8	77.3	78.2
590-25486-1 - RA	MW-3-062124								
LCS 320-776445/3-A	Lab Control Sample	82.6	82.8	86.1	78.8	89.3	85.2	80.5	82.1
LLCS 320-776445/2-A	Lab Control Sample	100	89.0	84.9	77.7	87.4	87.8	93.2	85.0
MB 320-776445/1-A	Method Blank	77.1	73.8	74.7	68.9	83.4	76.8	79.8	77.0

		Percent Isotope Dilution Recovery (Acceptance Limits)							
		M242FTS	M262FTS	M282FTS	HFPODA	NMFM	NEFM	d5NPFSA	d3NMFSA
Lab Sample ID	Client Sample ID	(40-200)	(40-200)	(40-300)	(40-130)	(10-130)	(10-130)	(10-130)	(10-130)
590-25486-1	MW-3-062124	92.6	80.0	105	75.6	66.1	56.5	61.5	64.0
590-25486-1 - RA	MW-3-062124								
LCS 320-776445/3-A	Lab Control Sample	87.1	84.4	121	87.0	77.3	72.6	71.8	69.5
LLCS 320-776445/2-A	Lab Control Sample	91.4	84.9	119	83.2	81.2	72.7	75.2	70.9
MB 320-776445/1-A	Method Blank	86.2	81.0	110	78.2	73.6	67.2	66.9	62.2

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

Appendix D
Chemical Analytical Data Review

GeoEngineers

Data Validation Report

523 East Second Avenue, Spokane, Washington 99202, Telephone: 509.363.3125 www.geoengineers.com

Project:	Marshall Landfill Site June 2024 Samples
File:	00504-104-01
Date:	July 26, 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 June 2024 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 Guidelines 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 review of the following QC elements:

- Data Package Completeness
- Chain-of-Custody Documentation
- Holding Times and Sample Preservation
- Surrogate Recoveries
- Method, Trip, and Field Blanks
- Matrix Spikes/Matrix Spike Duplicates
- Laboratory Control Samples/Laboratory Control Sample Duplicates
- Laboratory and Field Duplicates

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
590-25435-1	MW-8A-061824, MW-9A-061824
590-25447-1	MW-7B-061924, MW-12A-061924, MW-15A-061924
590-25479-1	MW-2A-062024, MW-5A-062024, DUP-062024, MW-16A-062024, FB-062024
590-25486-1	MW-3-062124, Hose Bib-062124, TB-062124

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 EPA8270C-SIM;
- 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;
- Per- and Polyfluoroalkyl Substances (PFAS) by Method EPA1633; and
- Pharmaceuticals and Personal Care Products (PPCP) by Method EPA1694

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, with the exception noted below. The sample cooler arrived at the laboratory within the appropriate temperatures of between two and six degrees Celsius, with the exceptions noted below.

SDG 590-25447-1: One sample cooler temperature recorded at the laboratory was 11.5 degrees Celsius. It was determined through professional judgment that since the samples were received on ice at the laboratory the same day they were collected, and the cooling process had begun, this temperature should likely not affect the sample analytical results.

SDG 590-25479-1: Two sample cooler temperatures recorded at the laboratory were 11.7 and 13.7 degrees Celsius. It was determined through professional judgment that since the samples were received on ice at the laboratory the same day they were collected, and the cooling process had begun, these temperatures should likely not affect the sample analytical results.

SDG 590-25486-1: (VOCs) The 14-day holding time for VOC analysis was exceeded in Sample TB-062124. The reporting limit for trichloroethene was qualified as estimated (UJ) in this sample.

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 590-25479-1: (VOCs) The percent recovery of surrogate dibromofluoromethane was greater than the control limits in Sample DUP-062024; however, the sample was spiked with three 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, AND FIELD 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 1 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 590-25435-1: (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 6/26/2024. 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 590-25447-1: (Total Metals) There was a positive result for total lead detected above the method detection limit, but below the reporting limit in the method blank digested on 6/21/2024. There were no positive results for this target analyte in the associated field sample; therefore, no qualification was required.

(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 6/26/2024. 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 590-25479-1: (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 6/26/2024. 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 590-25486-1: (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 6/26/2024. 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 in the trip blank. Methylene chloride, a common laboratory chemical, was detected in the trip blank, but not in the monitoring well samples, indicating a laboratory contamination source.

Field Blanks

Field blanks are analyzed to provide an indication as to whether there has been cross-contamination from field conditions during sample collection. None of the analytes of interest were detected in the field 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, with the following exception:

SDG 590-25435-1: (Dissolved Metals) The laboratory performed an MS/MSD sample set on Sample MW-9A-061824. The percent recovery for dissolved calcium was less than the control limits in the MS digested on 7/2/2024; however, the percent recovery for this target analyte was within the control limits in the corresponding MSD. No action was required for this outlier.

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 each analysis and the percent recovery and RPD values were within the proper control limits, with the following exceptions:

SDG 590-25486-1: (VOCs) The percent recoveries for 2,2-Dichloropropane was greater than the control limits in the LCS/LCSD extracted on 7/3/2024. There were no positive results for this target analyte in the associated field sample; therefore, no qualification was 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 five 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 five 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 590-25479-1: One field duplicate sample pair, MW-5A-062024 and DUP-062024, was submitted with this SDG. The precision criteria for the target analytes were met for this sample pair.

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.

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
TB-062124	Trichloroethene	UJ	Holding Time

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. Updated June 6, 2024.

Appendix E

Report Limitations and Guidelines for Use

Appendix E
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.

---

[1] Developed based on material provided by GBA, GeoProfessional Business Association; www.geoprofessional.org.

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 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 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.