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Project name:
PFAS Biosolids – Lapeer

Project ref:
60588767

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AECOM

Date:
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Addendum No. 1 Revision 1

Subject: Addendum No. 1 Revision 1 - Evaluation of Lapeer Wastewater Treatment Plant (WWTP) Biosolids Land Application Site 08N10E33-CL01

1. Introduction

This document serves as an addendum to the Technical Memorandum titled *Evaluation of Lapeer Wastewater Treatment Plant (WWTP) Biosolids Land Application Sites 08N10E33-CL01.* The purpose of the investigation was to track the concentrations of per- and polyfluoroalkyl substances (PFAS), including possible fluctuations, at the land application site. This document summarizes additional investigations at land application site 08N10E33-CL01 (Site CL01) from 2019 through 2022. Groundwater monitoring wells installed at Site CL01 were resampled on March 11, 2021, and April 26, 2022. The figures and tables provide both the recent and historic data.

2. Background

The March 2021 and April 2022 groundwater sampling event, conducted by AECOM, was performed in accordance with applicable AECOM, EGLE, and United States Environmental Protection Agency (USEPA) guidance documents, including the Scope of Work and the Quality Assurance Project Plan (QAPP), previously developed in 2018 and recently revised in March 2021. The USEPA has classified PFAS as emerging contaminants that EGLE regulates under Part 201, Environmental Remediation, and Part 31, Water Resources Protection, of the Natural Resources and Environmental Protection Act, Act 451 of 1994, as amended and their respective administrative rules, specifically Rule 299.44-299.50 (Generic Cleanup Criteria) and Rule 323.1057 (Rule 57) (Toxic Substances) of the Michigan Administrative Code. PFAS are a complex family of more than 4,750 human-made fluorinated organic chemicals. Due to their unique chemical properties, PFAS have been used in many industries and consumer products since the late 1950s.

In July 2017, the Lapeer Wastewater Treatment Plant (WWTP) identified an industrial user, a chrome plating facility, as a significant source of perfluorooctane sulfonic acid (PFOS) to their facility and elevated levels of PFOS in their WWTP effluent. AECOM initially sampled the influent, effluent, and biosolids from the Lapeer WWTP on May 9, 2018. PFAS samples were also collected from multiple environmental media from three (3) agricultural fields where biosolids from the Lapeer WWTP were land applied. The results for the Lapeer WWTP and the three (3) agricultural fields evaluated are presented in six (6) reports (AECOM, 2018a, 2018b, 2018c, 2018d, 2021a, and 2021b).

3. Groundwater Sampling and Analytical Methodology

Site CL01 is a 50-acre field located northeast of East Oregon Street and Industrial Drive in Lapeer, Michigan. The South Branch of the Flint River flows along the western edge of Site CL01. The Lapeer WWTP is located approximately 500 feet west of Site CL01, opposite the Flint River. The Cutting Drain runs along the eastern edge of Site CL01 (**Figure 1**). Surface soil, surface water, and groundwater were previously sampled for PFAS in 2018. The following groundwater monitoring wells were resampled in March 2021 and April 2022: CL01-MW1, CL01-MW2, CL01-MW3, and CL01-MW4. The monitoring well locations and PFAS results are shown in **Figure 2**. A field duplicate sample was collected from CL01-MW1 in March 2021 and CL01-MW4 in April 2022 for quality control purposes.

Before collecting the groundwater samples, static water levels were measured using a decontaminated electronic water tape from the top of each well casing. Each monitoring well was purged, and groundwater samples were collected for PFAS analysis in laboratory-supplied containers. Water quality parameters (temperature, specific conductance, pH, dissolved solids, oxidation-reduction potential, and turbidity) were recorded following AECOM groundwater Standard Operating Procedures using a YSI Pro DDS water quality meter. Water quality measurements recorded during purging are summarized in **Appendix A** and **Appendix B**.

4. Groundwater Sampling Results

The local groundwater elevations from the fields sampled in March 2021 and April 2022 are presented in **Figures 3a** and **3b**, respectively**.** Groundwater flow is generally to the northwest based on the monitoring wells at Site CL01. The regional groundwater elevation map based on EGLE-provided groundwater elevation data is provided in **Figure 4** and shows that the groundwater flows from southeast of Site CL01 toward the northwest corner of the field. This regional groundwater flow agrees with the measured groundwater elevations from the monitoring wells sampled in March 2021 and April 2022 and previous monitoring well measurements from 2018.

The laboratory analytical results for groundwater samples collected in March 2021 and April 2022 from monitoring wells CL01-MW1, CL01--MW2, CL01-MW3, and CL01-MW4 are summarized below and are presented in **Table 1**. Laboratory analytical reports are provided in **Appendix C** and **Appendix D**.

The total PFAS, perfluorooctanoic acid (PFOA), and PFOS data from the four (4) monitoring wells are summarized below.

Groundwater Sample Location	Sample Date	Field Site	Total PFAS[1]	PFOA[1]	PFOS[1]
GW2103111100GSC	3/11/2021	CL01-MW1	ND	< 3.86	< 3.86
GW2103111100GSC-FD	3/11/2021	CL01-MW1	ND	< 3.92	< 3.92
GW2204260955GSC	4/26/2022	CL01-MW1	ND	< 3.91	< 3.91

Groundwater Sample Location	Sample Date	Field Site	Total PFAS[1]	PFOA[1]	PFOS[1]
GW2103111500GSC	3/11/2021	CL01-MW2	**322.86**	**30.8**	**140**
GW2204261045GSC	4/26/2022	CL01-MW2	**935.10**	**89.2**	**430**
GW2103111225GSC	3/11/2021	CL01-MW3	ND	< 3.92	< 3.92
GW2204261300GSC	4/26/2022	CL01-MW3	ND	< 3.86	< 3.86
GW2103111600GSC	3/11/2021	CL01-MW4	**662.01**	**89.1**	**15.2**
GW2204261205GSC	4/26/2022	CL01-MW4	**693.37**	**90.5**	**21.7**
GW2204261205GSC-FD	4/26/2022	CL01-MW4	**665.97**	**83.3**	**22.4**

[1]Units are in nanograms per liter (ng/L) or parts per trillion. ND = there was no PFAS detected; please refer to Table 1 for the detection limits for each individual PFAS. Detections are shown in bold.

The samples collected in March 2021 and April 2022 from CL01-MW2 and CL01-MW4 contained detectable concentrations of PFOA that exceeded the Part 201 Residential and Nonresidential Drinking-Water Criteria (DWC) for PFOA of 8 ng/L. CL01-MW2 also contained a concentration of PFOS that exceeded the DWC for PFOS of 16 ng/L in March 2021 and April 2022, as well as a concentration of perfluorononanoic acid (PFNA) that exceeded the DWC for PFNA of 6 ng/L in April 2022. CL01-MW4 had a detectable concentration of PFOS in both March 2021 and April 2022 but only exceeded the DWC for PFOS of 16 ng/L in April 2022. There were no other exceedances for the additional Part 201 DWC in 2021 or 2022 for perfluorohexane sulfonic acid (PFHxS), perfluorohexanoic acid (PFHxA), perfluorobutane sulfonic acid (PFBS), and hexafluoropropylene oxide-dimer acid (HFPO-DA) of 51, 400,000, 420, and 370 ng/L, respectively. The other two (2) monitoring wells (i.e., CL01-MW1 and CL01-MW3) reported non-detectable values for both PFOA and PFOS in both resampling events.

PFAS was detected in two (2) of the four (4) sampled monitoring wells. Of the 29 PFAS compounds analyzed, perfluorobutanoic acid (PFBA), perfluoropentanoic acid (PFPeA), PFHxA, perfluoroheptanoic acid (PFHpA), PFOA, PFNA, PFBS, perfluoropentane sulfonic acid (PFPeS), PFHxS, perfluoroheptane sulfonic acid (PFHpS), PFOS, and perfluoroethylcyclohexane sulfonate (PFECHS) were detected in the samples. In March 2021, the highest total PFAS concentration of 662.01 ng/L was detected in the shallow downgradient monitoring well CL01-MW4 along the northern edge of Site CL01. In April 2022, monitoring well CL01-MW4 had a total PFAS concentration of 693.37 ng/L and 665.97 ng/L in the duplicate sample, similar to that detected in March 2021. However, in April 2022, the highest total PFAS concentration of 935.10 ng/L was detected in CL01-MW2, located in the middle of Site CL01, immediately west of a pond. CL01-MW4 and CL01-MW2 also contained some of the highest total PFAS concentrations detected in 2018. CL01-MW4 is screened from 14 to 19 feet (ft) below ground surface (bgs), and CL01-MW2 is screened from 29 to 34 ft bgs. In 2018, the small pond situated upgradient of CL01-MW2 had a total PFAS concentration of 2,542.12 ng/L in May and 2,646.97 ng/L in December. The remaining two (2) wells, CL01-MW1 and CL01-MW3, did not contain any detectable concentrations of PFAS in March 2021 and April 2022. Monitoring well CL01-MW1 is situated upgradient at the site and has always been non-detect for PFAS. Only low detections with a total PFAS of approximately 4 ng/L were detected in CL01-MW3 in 2018.

5. Conclusions

Groundwater flow continues to be generally to the northwest, with the highest total PFAS concentrations detected in downgradient wells CL01-MW4 and CL01-MW2. The regional groundwater flow shows that the groundwater flows from southeast of Site CL01 toward the northwest corner of the field. The measured groundwater flow observed during March 2021 and April 2022 was generally to

the northwest, which is consistent with the regional groundwater flow and previous measurements. The PFAS concentrations were similar to those detected in the 2018 sampling event, with detections observed in CL01-MW2 and CL01-MW4 and no detections of PFAS in CL01-MW1 and CL01-MW3. However, higher PFAS concentrations were detected in CL01-MW2 and CL01-MW4 in March 2021 and April 2022 than in 2018. These trends suggest that the elevated concentrations are likely due to fluctuations present at Site CL01. In addition, PFECHS was added to the analyte list in 2021 as it was identified as a potential impurity for the chrome mist suppressants used at chrome plating facilities. The detection of PFECHS in groundwater at Site CL01 serves as another line of evidence that the PFAS impacts at the site are likely from the land applied biosolids.

Based on the review of well records near Site CL01, residential wells are located immediately upgradient of Site CL01 (**Figure 4**). The PFAS results from the permanent and temporary monitoring well samples suggest that Part 201 DWC exceedances are limited to the shallower, perched groundwater zones. Given that the residential well locations are upgradient of Site CL01, the residential well screens are deep in the aquifer (typically 100-160 ft bgs) with significant overlying clay (more than 30 feet), the current groundwater sample results do not appear to be a potential risk to neighboring drinking water wells.

6. References

AECOM, *Evaluation of Lapeer WWTP Biosolids Site 08n10e33-CL01*, September 2018a. Retrieved from: https://www.michigan.gov/-/media/Project/Websites/PFAS-Response/Investigations/Lapeer-County/Report-Lapeer-Biosolids-2-Evaluation.pdf

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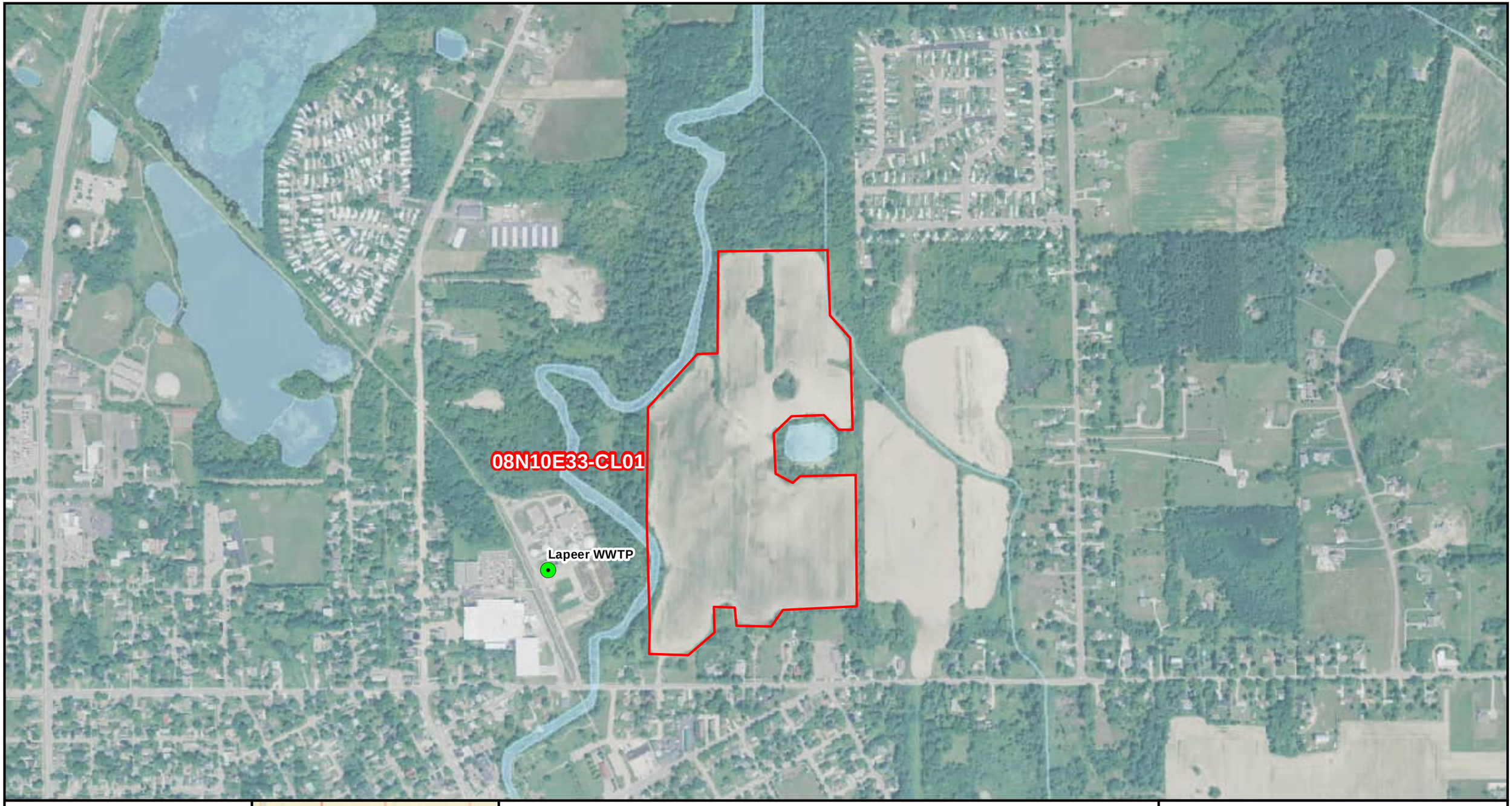
Attachments:

Figure 1	– 08N10E33-CL01 Lapeer Biosolids Application Fields Overview
Figure 2	– 08N10E33-CL01 Groundwater Sampling Results
Figure 3a	– 08N10E33-CL01 2021 Local Groundwater Contours
Figure 3b	– 08N10E33-CL01 2022 Local Groundwater Contours
Figure 4	– 08N10E33-CL01 Potential Receptors
Table 1	– 08N10E33-CL01 Groundwater PFAS Analytical Results Summary
Appendix A	– 2021 Field Forms
Appendix B	– 2022 Field Forms
Appendix C	– 2021 Analytical Reports
Appendix D	– 2022 Analytical Reports

Figures



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Drawn:	AA	Date:	2/01/2023
Approved:	DB	Date:	2/03/2023
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Legend

- Waste Water Treatment Plant
- Biosolids Application

N

0 400 800 1,600 Feet

FIGURE 1
08N10E33-CL01
LAPEER BIOSOLIDS APPLICATION
FIELDS OVERVIEW

LAPEER, MI

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CL01-MW4 (Screen 14-19 ft bgs) 5/10/2018
455.3 (103 | 43.2 | ND | 68.9 | 3.6 | 13.9 | NA)
12/14/2018
541.5 (122 | 60.8 | ND | 91.6 | 4.8 | 18 | NA)
3/11/2021
662 (151 | 89.1 | ND | 91.9 | 4.8 | 15.2 | ND)
4/26/2022
693.37 (144 | 90.5 | ND | 107 | 5.29 | 21.7 | ND)

CL01-TMW2 (Screen 4-9 ft bgs) 5/4/2018
41,822.8 (1,140 | 1,930 | 241 | 531 | 115 | 35,300 | NA)

CL01-MW3 (Screen 24-29 ft bgs) 5/10/2018
3.8 (ND | ND | ND | ND | ND | 2.4 | NA)
12/14/2018
4 (ND | ND | ND | ND | ND | ND | NA)
3/11/2021
ND (ND | ND | ND | ND | ND | ND | ND)
4/26/2022
ND (ND | ND | ND | ND | ND | ND | ND)

CL01-MW2 (Screen 29-34 ft bgs) 5/10/2018
7.9 (ND | 0.7 | ND | ND | ND | 4.1 | NA)
12/14/2018
41.8 (7.6 | 5.1 | ND | 3.9 | ND | 8.4 | NA)
3/11/2021
322.9 (35.3 | 30.8 | ND | 44.4 | 5.2 | 140 | ND)
4/26/2022
935.1 (88.1 | 89.2 | 6.8 | 83.2 | 11 | 430 | ND)

CL01-TMW1 (Screen 18-23 ft bgs) 5/3/2018
15.9 (ND | 0.9 | ND | ND | ND | 15 | NA)

CL01-MW1 (Screen 24-29 ft bgs) 5/10/2018
ND (ND | ND | ND | ND | ND | ND | NA)
12/14/2018
ND (ND | ND | ND | ND | ND | ND | NA)
3/11/2021
ND (ND | ND | ND | ND | ND | ND | ND)
4/26/2022
ND (ND | ND | ND | ND | ND | ND | ND)

UbA
DrB
MuC3
Le
UbA
Le
Le
DrA
DrB
W
CeB
CvB
08N10E33-CL01

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Monitoring Well Sample
Site Location
Soil Type

Sample Location (Well Screen) Sample Date
Total PFAS (PFHxA | PFOA | PFNA | PFBS | PFHxS | PFOS | HFPO-DA)

All sample results are in ng/L
ND = non-detect, refer to summary groundwater table for detailed results.
NA = Not Analyzed
Red text indicates exceedance of Part 201 DWC.

Michigan Part 201 Residential & Nonresidential Drinking Water Criteria (DWC), ng/L

PFHxA = 400,000	PFBS = 420
PFOA = 8	PFHxS = 51
PFNA = 6	PFOS = 16
	HFPO-DA = 370

Total PFAS is the sum of 24 and 29 PFAS analytes for samples collected in 2018 and 2021/2022, respectively.

N

0 395 790 1,580 Feet

FIGURE 2
08N10E33-CL01
GROUNDWATER SAMPLING RESULTS

LAPEER, MI

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CL01-MW4 - 809.78'

CL01-MW2 - 818.05'

08N10E33-CL01

812

816

820

824

CL01-MW3 - 810.78'

CL01-MW1 - 825.30'

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Project #: 60588767			

Legend

- Monitoring Well Sample
- Groundwater Contours (4 ft interval)
- Biosolids Application
- Estimated Localized GW Flow Direction

Note: All Groundwater Elevations are Estimated Using Measured Depth to Water From DEM Ground Elevation

N

0 395 790 1,580 Feet

FIGURE 3a
08N10E33-CL01
2021 LOCAL GROUNDWATER CONTOURS

LAPEER, MI

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CL01-MW4 - 812.96'

CL01-MW2 - 819.79'

08N10E33-CL01

CL01-MW3 - 811.79'

813

817

821

825

CL01-MW1 - 826.83'

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Project #:	60588767		

Legend

- Monitoring Well Sample
- Groundwater Contours (4 ft interval)
- Biosolids Application
- Estimated Localized GW Flow Direction

Note: All Groundwater Elevations are Estimated Using Measured Depth to Water From DEM Ground Elevation

N

0 395 790 1,580 Feet

FIGURE 3b
08N10E33-CL01
2022 LOCAL GROUNDWATER CONTOURS

LAPEER, MI

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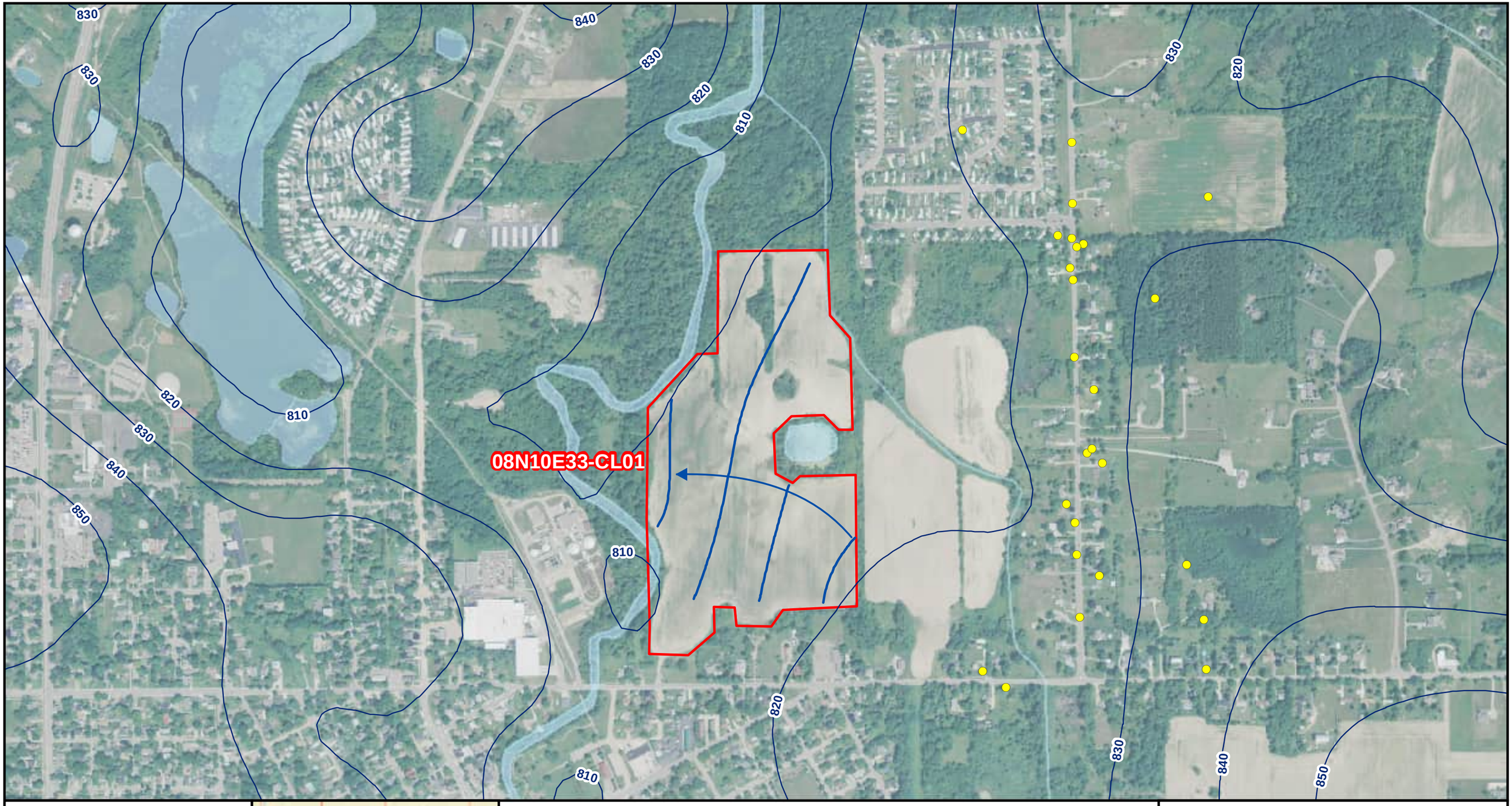

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Approved:	DB	Date:	2/03/2023
Project #:	60588767		

Legend

- Wellogic Wells
- Site Specific 4 ft Groundwater Contours
- Groundwater Contour Source: EGLE
- Biosolids Application
- Estimated Localized GW Flow Direction

N

0 400 800 1,600 Feet

FIGURE 4
08N10E33-CL01
POTENTIAL RECEPTORS

LAPEER, MI

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Table

Table 1

08N10E33-CL01 Groundwater

PFAS Analytical Results Summary

Location	Sample Date	Total PFAS	PFBA	PFPeA	PFHxA	PFHpA	PFOA	PFNA	PFDA	PFUnA	PFDoA	PFTrDA	PFTeDA	PFBS	PFPeS	PFHxS	PFHpS	PFOS	PFNS	PFDS	FOSA	4:2 FTSA	6:2 FTSA	8:2 FTSA	N-EtFOSAA	NMeFOSAA	PFECHS	9Cl-PF3ONS	11Cl-PF3OUdS	ADONA	HFPO-DA
CL01-TMW1	5/3/2018	**16**	<3.96	<3.96	<3.96	<3.96	**0.871** J	<3.96	<3.96	<3.96	<3.96	<3.96	<3.96	<3.96	<3.96	<3.96	<3.96	**15**	<3.96	<3.96	<3.96	<3.96	<3.96	<3.96	<3.96	<3.96	---	---	---	---	---
CL01-TMW2	5/4/2018	**41,823**	**492**	**944**	**1,140**	**662**	**1,930** D	**241**	**385**	**10**	**3.62** J	<3.96	<3.96	**531**	**4.9**	**115**	**43.5**	**35,300** D	<3.96	**2.03** J	**12.1**	<3.96	**2.07** J	<3.96	**4.62**	<3.96	---	---	---	---	---
CL01-MW1	5/10/2018	ND	< 3.85	< 3.85	< 3.85	< 3.85	< 3.85	< 3.85	< 3.85	< 3.85	< 3.85	< 3.85	< 3.85	< 3.85	< 3.85	< 3.85	< 3.85	< 3.85	< 3.85	< 3.85	< 3.85	< 3.85	< 3.81	< 3.85	< 3.85	< 3.85	---	---	---	---	---
	12/14/2018	ND	< 3.97	< 3.97	< 3.97	< 3.97	< 3.97	< 3.97	< 3.97	< 3.97	< 3.97	< 3.97	< 3.97	< 3.97	< 3.97	< 3.97	< 3.97	< 3.97	< 3.97	< 3.97	< 3.97	< 3.97	< 3.97	< 3.97	< 3.97	< 3.97	---	---	---	---	---
	3/11/2021	ND	< 3.86	< 3.86	< 3.86	< 3.86	< 3.86	< 3.86	< 3.86	< 3.86	< 3.86	< 3.86	< 3.86	< 3.86	< 3.86	< 3.86	< 3.86	< 3.86	< 3.86	< 3.86	< 3.86	< 3.86	< 3.86	< 3.86	< 3.86	< 3.86	< 3.86	< 3.86	< 3.86	< 3.86	< 3.86
	3/11/2021 FD	ND	< 3.92	< 3.92	< 3.92	< 3.92	< 3.92	< 3.92	< 3.92	< 3.92	< 3.92	< 3.92	< 3.92	< 3.92	< 3.92	< 3.92	< 3.92	< 3.92	< 3.92	< 3.92	< 3.92	< 3.92	< 3.92	< 3.92	< 3.92	< 3.92	< 3.92	< 3.92	< 3.92	< 3.92	< 3.92
	4/26/2022	ND	< 3.91	< 3.91	< 3.91	< 3.91	< 3.91	< 3.91	< 3.91	< 3.91	< 3.91	< 3.91	< 3.91	< 3.91	< 3.91	< 3.91	< 3.91	< 3.91	< 3.91	< 3.91	< 3.91	< 3.91	< 3.91	< 3.91	< 3.91	< 3.91	< 3.91	< 3.91	< 3.91	< 3.91	< 3.91
CL01-MW2	5/10/2018	**8**	**1.11** J	**1.43** J	< 3.83	**0.613** J	**0.702** J	< 3.83	< 3.83	< 3.83	< 3.83	< 3.83	< 3.83	< 3.83	< 3.83	< 3.83	< 3.83	**4.09**	< 3.83	< 3.83	< 3.83	< 3.83	< 4.00	< 3.83	< 3.83	< 3.83	---	---	---	---	---
	12/14/2018	**42**	**5.21**	**8.48**	**7.57**	**3.04** J	**5.1**	< 3.88	< 3.88	< 3.88	< 3.88	< 3.88	< 3.88	**3.93**	< 3.88	< 3.88	< 3.88	**8.43**	< 3.88	< 3.88	< 3.88	< 3.88	< 3.88	< 3.88	< 3.88	< 3.88	---	---	---	---	---
	12/14/2018 FD	**41**	**4.86**	**7.9**	**7.06**	**3.48** J	**4.84**	< 3.85	< 3.85	< 3.85	< 3.85	< 3.85	< 3.85	**3.95**	< 3.85	< 3.85	< 3.85	**8.82**	< 3.85	< 3.85	< 3.85	< 3.85	< 3.85	< 3.85	< 3.85	< 3.85	---	---	---	---	---
	3/11/2021	**323**	**17**	**28.6**	**35.3**	**17.4**	**30.8**	< 4.09	< 4.09	< 4.09	< 4.09	< 4.09	< 4.09	**44.4**	< 4.09	**5.22**	< 4.09	**140**	< 4.09	< 4.09	< 4.09	< 4.09	< 4.09	< 4.09	< 4.09	< 4.09	**4.14**	< 4.09	< 4.09	< 4.09	< 4.09
	4/26/2022	**935**	**71**	**93.6**	**88.1**	**52.5**	**89.2**	**6.8**	< 4.01	< 4.01	< 4.01	< 4.01	< 4.01	**83.2**	**1.44** J	**11**	**2.37** J	**430**	< 4.01	< 4.01	< 4.01	< 4.01	< 4.01	< 4.01	< 4.01	< 4.01	**5.89**	< 4.01	< 4.01	< 4.01	< 4.01
CL01-MW3	5/10/2018	**4**	< 3.96	< 3.96	< 3.96	< 3.96	< 3.96	< 3.96	< 3.96	< 3.96	< 3.96	< 3.96	< 3.96	< 3.96	< 3.96	< 3.96	< 3.96	**2.39** J	< 3.96	< 3.96	< 3.96	< 3.96	**1.36** J, B	< 3.96	< 3.96	< 3.96	---	---	---	---	---
	12/14/2018	**4**	< 3.82	< 3.82	< 3.82	< 3.82	< 3.82	< 3.82	< 3.82	< 3.82	< 3.82	< 3.82	< 3.82	< 3.82	< 3.82	< 3.82	< 3.82	< 3.82	< 3.82	< 3.82	< 3.82	< 3.82	< 3.82	< 3.82	**3.98**	< 3.82	---	---	---	---	---
	3/11/2021	ND	< 3.92	< 3.92	< 3.92	< 3.92	< 3.92	< 3.92	< 3.92	< 3.92	< 3.92	< 3.92	< 3.92	< 3.92	< 3.92	< 3.92	< 3.92	< 3.92	< 3.92	< 3.92	< 3.92	< 3.92	< 3.92	< 3.92	< 3.92	< 3.92	< 3.92	< 3.92	< 3.92	< 3.92	< 3.92
	4/26/2022	ND	< 3.86	< 3.86	< 3.86	< 3.86	< 3.86	< 3.86	< 3.86	< 3.86	< 3.86	< 3.86	< 3.86	< 3.86	< 3.86	< 3.86	< 3.86	< 3.86	< 3.86	< 3.86	< 3.86	< 3.86	< 3.86	< 3.86	< 3.86	< 3.86	< 3.86	< 3.86	< 3.86	< 3.86	< 3.86
CL01-MW4	5/10/2018	**455**	**80.2**	**107**	**103**	**31.5**	**43.2**	< 3.89	< 3.89	< 3.89	< 3.89	< 3.89	< 3.89	**68.9**	< 3.89	**3.55** J	< 3.89	**13.9**	< 3.89	< 3.89	< 3.89	< 3.89	**4.03**	< 3.89	< 3.89	< 3.89	---	---	---	---	---
	12/14/2018	**542**	**79**	**121**	**122**	**44.3**	**60.8**	< 3.88	< 3.88	< 3.88	< 3.88	< 3.88	< 3.88	**91.6**	< 3.88	**4.81**	< 3.88	**18**	< 3.88	< 3.88	< 3.88	< 3.88	< 3.88	< 3.88	< 3.88	< 3.88	---	---	---	---	---
	3/11/2021	**662**	**103**	**145**	**151**	**55.9**	**89.1**	< 3.94	< 3.94	< 3.94	< 3.94	< 3.94	< 3.94	**91.9**	**1.37** J	**4.75**	< 3.94	**15.2**	< 3.94	< 3.94	< 3.94	< 3.94	< 3.94	< 3.94	< 3.94	< 3.94	**4.79**	< 3.94	< 3.94	< 3.94	< 3.94
	4/26/2022	**688**	**104**	**153**	**144**	**62.7**	**90.5**	< 4.02	< 4.02	< 4.02	< 4.02	< 4.02	< 4.02	**107**	**1.51** J	**5.29**	< 4.02	**21.7**	< 4.02	< 4.02	< 4.02	< 4.02	< 4.02	< 4.02	< 4.02	< 4.02	**3.67** J	< 4.02	< 4.02	< 4.02	< 4.02
	4/26/2022 FD	**661**	**104**	**141**	**142**	**59.7**	**83.3**	< 3.97	< 3.97	< 3.97	< 3.97	< 3.97	< 3.97	**104**	**1.43** J	**5.36**	< 3.97	**22.4**	< 3.97	< 3.97	< 3.97	< 3.97	< 3.97	< 3.97	< 3.97	< 3.97	**2.78** J	< 3.97	< 3.97	< 3.97	< 3.97

All values are in nanograms per liter (**ng/L**) or parts per trillion (**ppt**)
"<" = Values Below Level of Quantitation (**LOQ**)
"--" = Not analyzed
"J" = Estimated Concentration. The amount detected is below the LOQ.
"B" = This compound was also detected in the method blank.
"D" = Dilution was performed.
Bolded values indicate detection

Perfluoroalkyl Carboxylic Acids (**PFCAs**)
Perfluoroalkane Sulfonic Acids (**PFSAs**)
Perfluoroalkane Sulfonamides (**FASAs**)
Fluorotelomer Sulfonic Acids (**FTSAs**)
N-Ethyl Perfluoroalkane Sulfonamidoacetic Acids (**EtFASAAs**)
N-Methyl Perfluoroalkane Sulfonamidoacetic Acids (**MeFASAAs**)
Cyclic PFAS
PFAS Replacement Chemistry Compounds

PFBA = Perfluorobutanoic acid
PFPeA = Perfluoropentanoic acid
PFHxA = Perfluorohexanoic acid
PFHpA = Perfluoroheptanoic acid
PFOA = Perfluorooctanoic acid
PFNA = Perfluorononanoic acid
PFDA = Perfluorodecanoic acid
PFUnDA = Perfluoroundecanoic acid
PFDoDA = Perfluorododecanoic acid
PFTrDA = Perfluorotridecanoic acid
PFTeDA = Perfluorotetradecanoic acid
PFBS = Perfluorobutane sulfonic acid
PFPeS = Perfluoropentane sulfonic acid
PFHxS = Perfluorohexane sulfonic acid
PFHpS = Perfluoroheptane sulfonic acid
PFOS = Perfluorooctane sulfonic acid
PFNS = Perfluorononane sulfonic acid
PFDS = Perfluorodecane sulfonic acid
FOSA = Perfluorooctane sulfonamide
4:2 FTSA = 4:2 Fluorotelomer sulfonic acid
6:2 FTSA = 4:2 Fluorotelomer sulfonic acid
8:2 FTSA = 4:2 Fluorotelomer sulfonic acid
9Cl-PF3ONS or F53B-Minor = 9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid
11Cl-PF3ONS or F53B-Major = 11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid
PFECHS = Perfluoroethylcyclohexanesulfonate
EtFOSAA = N-Ethyl perfluorooctane sulfonamidoacetic acid
MeFOSAA = N-Methyl perfluorooctane sulfonamidoacetic acid
ADONA = Dodecafluoro-3H-4,8-dioxanonanoate
HFPO-DA or Gen-X = Hexafluoropropylene oxide dimer acid

Concentration exceeds DWC criteria
Concentration exceeds GSI criteria
Concentration exceeds both DWC and GSI criteria

EGLE Part 201 Drinking Water Criteria (DWC) (ng/L)
PFOA = 8; PFOS = 16; PFNA =6; PFHxS=51
PFHxA = 400,000; PFBS = 420; HFPO-DA = 370;

EGLE Part 201 Groundwater Surfacewater Interface (GSI) Criteria (ng/L)
(Surface water not used for drinking water - Non-drink)
PFOA = 170
PFOS = 12
PFBS = 670,000

Appendix A –
2021 Field Forms

AECOM

Low Flow Ground Water Sample Collection Record

Well ID: CL1-MW4

Client: Exle
Project: Lagoon Biosolids
Project #: 60588767

Sample ID: GW210311 1600 GSC

INSPECTION

Label on well?	YES	(NO)	NA	Is cap locked?	(YES)	NO	NA
Is reference mark visible?	(YES)	NO	NA	Standing water present?	YES	(NO)	NA
Condition of well	GOOD			Any indication of surface runoff in well?	YES	(NO)	NA
Weather	Partly Cloudy			Air Temperature:			

Notes: Tube weighted/Replace Lock w/ 2402

STATIC WATER LEVEL PRIOR TO PURGING

Date: 3-11-21 Time: 1515 AM/PM

Depth to Water: 14.22 Measured with: ~~Electronic Tape~~

Length of Well: 21.69 Decontamination: DI Water

WELL PURGING

Date: 3-11-21 Begin Time: 1530 AM/PM Purging Equipment: Peristaltic

End Time: 1545 AM/PM Decontamination: Pre Steam Cleaned New Tubing / DI Water / Other

CALCULATION OF 1 CASING VOLUME

_____ ft. Length of well

_____ ft. - depth of water (before purge start)

_____ ft. =length of water column

x conversion factor (2" well) 0.16

_____ Gal. =1 casing volume

Yield: HIGH LOW

If low, recovery time: _____

Actual volume purged 3 gallons

Actual purge flow rate 200 ml/min or L/min

Notes

Time	Volume (gallons)	Depth to Water (Feet) <0.33'	pH (SU) +/- 0.1	Conductivity (mS/cm) +-3%	Turbidity (NTU) +-10%	D.O. (mg/L) +/- 10%	Temp (°C) +/- 5%	ORP +/- 10 mV
Start: 1545	.25	16.93	7.13	0.604	24.13	1.40	12.4	-72.0
1550	.50	16.92	7.13	0.604	22.65	1.38	12.4	-74.1
1555	.75	16.93	7.14	0.605	20.75	1.38	12.4	-73.4
1600	1.25	16.93	7.14	0.604	20.65	1.39	12.3	-75.0
Final: 1600	1.25	16.93	7.14	0.604	20.65	1.39	12.3	-75.0

SAMPLE COLLECTION

Date: 3-11-21 Time: 1600 AM/PM Method Low Flow

Appearance of Sample: clear Actual Sample Flow Rate: 200 ml/min or L/min

SAMPLE BOTTLE COLLECTED: 2-250ml Bottles

SAMPLING PERSONNEL

Name: Garth Cousineau Company: AECOM

AECOM

Low Flow Ground Water Sample Collection Record

Well ID: CL 1-MW2

Client: EGLE
Project: Lapeer Biosolids
Project #: 60588767

Sample ID: GW21031115 00 GSC

INSPECTION

Label on well?	YES	(NO)	NA	Is cap locked?	(YES)	NO	NA
Is reference mark visible?	(YES)	NO	NA	Standing water present?	YES	(NO)	NA
Condition of well	Good			Any indication of surface runoff in well?	YES	(NO)	NA
Weather	Partly Cloudy			Air Temperature:	63°F		

Notes: Tube weight used replaced bolt w 2402

STATIC WATER LEVEL PRIOR TO PURGING

Date: 3-11-21 Time: 1310 AM/PM

Depth to Water: 6.33 Measured with: (Electronic Tape)

Length of Well: 33.39 Decontamination: (DI Water)

WELL PURGING

Date: 3-11-21 Begin Time: 1315 AM/PM Purging Equipment: PerStaltic

End Time: 1355 AM/PM Decontamination: ~~Pre-Steam~~ Cleaned (New Tubing) DI Water Other

CALCULATION OF 1 CASING VOLUME

_____ ft. Length of well

_____ ft. - depth of water (before purge start)

_____ ft. =length of water column

x conversion factor (2" well) 0.16

_____ Gal. =1 casing volume

Yield: (HIGH) LOW

If low, recovery time: _____

Actual volume purged 5 gallons

Actual purge flow rate 200 ml/min or L/min

Notes: Lots of silt in purge water / Bubbles in tubing

Time	Volume (gallons)	Depth to Water (Feet) <0.33'	pH (SU) +/- 0.1	Conductivity (mS/cm) +-3%	Turbidity (NTU) +-10%	D.O. (mg/L) +/- 10%	Temp (°C) +/- 5%	ORP +/- 10 mV
Start: 1355	.25	12.77	6.91	0.553	59.50	1.08	13.0	-59.5
1400	.50	12.91	6.91	0.545	46.23	1.11	12.4	-59.1
1405	.75	13.02	6.93	0.537	48.99	1.53	12.0	-49.6
1410	1.0	13.25	6.94	0.544	60.25	1.95	12.6	-40.8
1415	1.25	13.42	6.94	0.542	63.26	2.36	12.5	-41.0
1420	1.50	13.48	6.95	0.540	60.25	2.75	12.4	-36.5
1425	1.75	13.60	6.95	0.546	65.66	3.05	12.9	-35.2
1430	2.00	13.73	6.96	0.543	66.53	3.52	12.7	-32.1
1435	2.25	13.95	6.95	0.551	62.54	3.99	13.0	-28.5
~~1440~~ 1500	2.50	14.05	6.95	0.551	60.53	4.07	13.1	-28.5
Final:	—	—	—	—	—	—	—	—

SAMPLE COLLECTION

Date: 3-11-21 Time: ~~1400~~ 1500 AM/PM Method: Low Flow

Appearance of Sample: Clear Actual Sample Flow Rate: 200 ml/min or L/min

SAMPLE BOTTLE COLLECTED: 2-250

SAMPLING PERSONNEL

Name: Garth Cosima Company: AECOM

AECOM

Low Flow Ground Water Sample Collection Record

Well ID: CL1-MW3

Client: EGLE
Project: Lapeer Biosolids
Project #: 60588767

Sample ID: GW210311225 GSC

INSPECTION

Label on well?	(YES)	NO	NA	Is cap locked?	(YES)	NO	NA
Is reference mark visible?	(YES)	NO	NA	Standing water present?	YES	(NO)	NA
Condition of well	Good			Any indication of surface runoff in well?	YES	(NO)	NA
Weather	Partly Cloudy			Air Temperature:	65°F		

Notes: Tube weight used Replaced lock with 2402

STATIC WATER LEVEL PRIOR TO PURGING

Date: 3-11-21 Time: 1115 AM/PM

Depth to Water: 13.55 Measured with: (Electronic Tape)

Length of Well: 31.11 Decontamination: (DI Water)

WELL PURGING

Date: 3-11-21 Begin Time: 1120 AM/PM Purging Equipment: Peristaltic

End Time: 1205 AM/PM Decontamination: ~~Pre Steam Cleaned~~ (New Tubing) DI Water Other

CALCULATION OF 1 CASING VOLUME

_____ ft. Length of well

_____ ft. - depth of water (before purge start)

_____ ft. =length of water column

x conversion factor (2" well) 0.16

_____ Gal. =1 casing volume

Yield: (HIGH) LOW

If low, recovery time: _____

Actual volume purged: 2 gallons

Actual purge flow rate: 300 ml/min or L/min

Notes _____

Time	Volume (gallons)	Depth to Water (Feet) <0.33'	pH (SU) +/- 0.1	Conductivity (mS/cm) +-3%	Turbidity (NTU) +-10%	D.O. (mg/L) +/- 10%	Temp (°C) +/- 5%	ORP +/- 10 mV
Start: 1210	.4	15.09	7.16	0.742	6.67	0.61	12.1	-88.9
1215	.8	15.08	7.17	0.744	7.56	0.62	12.4	-95.0
1220	1.2	15.08	7.17	0.743	4.56	0.63	12.3	-96.5
1225	1.6	15.08	7.17	0.738	5.99	0.60	12.2	-97.2
					5.79			
Final: 1225	1.6	15.08	7.17	0.738	~~5.99~~	0.60	12.2	-97.2

SAMPLE COLLECTION

Date: 3-11-21 Time: 1225 AM/PM Method: Low Flow

Appearance of Sample: Clear Actual Sample Flow Rate: 300 ml/min or L/min

SAMPLE BOTTLE COLLECTED: 2-250 ml Bottles

SAMPLING PERSONNEL

Name: Garth Cassinos Company: AECOM

AECOM

Low Flow Ground Water Sample Collection Record

Well ID: CL1-MW1 FB2103111100GSC

Client: Egle
Project: Lapeer Biosolids
Project #: 60588765

Sample ID: GW2103111100GSC GW2103111100GSC-FD

INSPECTION

Label on well?	YES	(NO)	NA	Is cap locked?	(YES)	NO	NA
Is reference mark visible?	(YES)	NO	NA	Standing water present?	YES	(NO)	NA
Condition of well	good			Any indication of surface runoff in well?	YES	(NO)	NA
Weather	Partly Cloudy			Air Temperature:	62°F		

Notes: muddy field
Replaced lock

STATIC WATER LEVEL PRIOR TO PURGING

Date: 3-11-21 Time: 1030 AM/PM
Depth to Water: 10.92
Length of Well: 30.65
Measured with: (Electronic Tape)
Decontamination: (DI Water)

WELL PURGING

Date: 3-11-21 Begin Time: 1030 AM/PM End Time: 1045 AM/PM
Purging Equipment: Peristaltic
Decontamination: ~~Pre Steam Cleaned~~ DI Water Other (New Tubing)

CALCULATION OF 1 CASING VOLUME

_____ ft. Length of well
_____ ft. - depth of water (before purge start)
_____ ft. =length of water column
x conversion factor (2" well) 0.16
_____ Gal. =1 casing volume

Yield: (HIGH) LOW
If low, recovery time: _____
Actual volume purged 3 gallons
Actual purge flow rate 300 ml/min or L/min

Notes

Time	Volume (gallons)	Depth to Water (Feet) <0.33'	pH (SU) +/- 0.1	Conductivity (mS/cm) +-3%	Turbidity (NTU) +-10%	D.O. (mg/L) +/- 10%	Temp (°C) +/- 5%	ORP +/- 10 mV
Start: 1045	.4	10.92	7.13	1.198	23.56	2.15	12.6	-73.3
1050	.8	10.92	7.12	1.197	22.35	1.91	12.8	-73.4
1055	1.2	10.92	7.12	1.202	23.55	1.86	12.9	-74.2
1100	1.6	10.92	7.11	1.205	23.75	1.71	12.9	-74.7
Final: 1100	1.6	10.92	7.11	1.205	23.75	1.71	12.9	-74.7

SAMPLE COLLECTION

Date: 3-11-21 Time: 1100 AM/PM Method Low flow
Appearance of Sample: Clear
Actual Sample Flow Rate: 300 ml/min or L/min
SAMPLE BOTTLE COLLECTED: 2-250ml Bottles / 2 Duplicate / 2 Field Blank

SAMPLING PERSONNEL

Name: Garth Cousineau Company: AECOM

Appendix B –
2022 Field Forms

AECOM

Low Flow Ground Water Sample Collection Record

Well ID: CL1-MW1

Client: EGLE
Project: Biosolids WWTP field Lapeer
Project #

Sample ID: GW220426 0955 GSC

CL1-MW1

INSPECTION

Label on well?	YES	(NO)	NA	Is cap locked?	(YES)	NO	NA
Is reference mark visible?	(YES)	NO	NA	Standing water present?	YES	(NO)	NA
Condition of well	good			Any indication of surface runoff in well?	YES	(NO)	NA
Weather	cloudy			Air Temperature:	45°F		

Notes:

STATIC WATER LEVEL PRIOR TO PURGING

Date: 4-26-22 Time: 0930 AM/PM

Depth to Water: 9.39
Length of Well: 29.00

Measured with: ~~Electronic Tape~~
Decontamination: DI Water

WELL PURGING

Date: 4-26-22 Begin Time: 0930 AM/PM End Time: 0940 AM/PM

Purging Equipment: ~~Peristaltic Pump~~
Decontamination: ~~New Tubing~~

CALCULATION OF 1 CASING VOLUME

_____ ft. Length of well
_____ ft. - depth of water (before purge start)
_____ ft. =length of water column
x conversion factor (2" well) 0.16
_____ Gal. =1 casing volume

Yield: ~~HIGH~~ LOW
If low, recovery time: _____

Actual volume purged 2 gallons
Actual purge flow rate 300 ml/min or L/min

Notes

Time	Volume (gallons)	Depth to Water (Feet) <0.33'	pH (SU) +/- 0.1	Conductivity (mS/cm) +-3%	Turbidity (NTU) +-10%	D.O. (mg/L) +/- 10%	Temp (°C) +/- 5%	ORP +/- 10 mV
Start: 0940	.4	9.48	6.82	1.121	8.64	1.43	8.2	-8.3
0945	.8	9.48	6.82	1.121	7.31	1.30	8.3	-11.3
0950	1.2	9.48	6.83	1.122	4.06	1.22	8.3	-15.7
0955	1.6	9.48	6.83	1.123	8.13	1.16	8.3	-18.0
Final: 0955	1.6	9.48	6.83	1.123	8.13	1.16	8.3	-18.0

SAMPLE COLLECTION

Date: 4-26-22 Time: 0955 AM/PM Method Low Flow

Appearance of Sample: clear

Actual Sample Flow Rate: 308 ml/min or L/min

SAMPLE BOTTLE COLLECTED: 2- HDPE 250ml Bottles

SAMPLING PERSONNEL

Name Garth Cousineau (AECOM) Company: AECOM

AECOM

Low Flow Ground Water Sample Collection Record

Well ID: CLI-MW 2

Client: EGLE
Project: Biosolids WWTP field Lapeer
Project #

Sample ID: GW220426104SGSC

INSPECTION

Label on well?	YES	(NO)	NA	Is cap locked?	(YES)	NO	NA
Is reference mark visible?	(YES)	NO	NA	Standing water present?	YES	(NO)	NA
Condition of well	good			Any indication of surface runoff in well?	YES	(NO)	NA
Weather	cloudy			Air Temperature:	45°F		

Notes:

STATIC WATER LEVEL PRIOR TO PURGING

Date: 4-26-22 Time: 1020 AM/PM

Depth to Water: 4.59
Length of Well: 34.00

Measured with: ~~Electronic Tape~~
Decontamination: ~~DI Water~~

WELL PURGING

Date: 4-26-22 Begin Time: 1020 AM/PM End Time: 1030 AM/PM

Purging Equipment: ~~Peristaltic Pump~~
Decontamination: New Tubing

CALCULATION OF 1 CASING VOLUME

_____ ft. Length of well
_____ ft. - depth of water (before purge start)
_____ ft. =length of water column
x conversion factor (2" well) 0.16
_____ Gal. =1 casing volume

Yield: (HIGH) LOW
If low, recovery time: _____

Actual volume purged 2 gallons
Actual purge flow rate 300 ml/min or L/min

Notes

Time	Volume (gallons)	Depth to Water (Feet) <0.33'	pH (SU) +/- 0.1	Conductivity (mS/cm) +-3%	Turbidity (NTU) +-10%	D.O. (mg/L) +/- 10%	Temp (°C) +/- 5%	ORP +/- 10 mV
Start: 1030	.4	4.63	6.73	0.491	4.31	3.42	7.0	21.4
1035	.8	4.63	6.71	0.487	4.00	2.84	6.8	20.9
1040	1.2	4.63	6.70	0.485	3.61	2.30	6.7	20.4
1045	1.6	4.63	6.70	0.485	2.34	1.85	6.7	19.9
Final: 1045	1.6	4.63	6.70	0.485	2.34	1.85	6.7	19.9

SAMPLE COLLECTION

Date: 4-26-22 Time: 1045 AM/PM Method Low Flow

Appearance of Sample: clear Actual Sample Flow Rate: 300 ml/min or L/min

SAMPLE BOTTLE COLLECTED: 2- HDPE 250ml Bottles

SAMPLING PERSONNEL

Name Garth Cousineau (AECOM) Company: AECOM

AECOM

Low Flow Ground Water Sample Collection Record

Well ID: CL1-MW3

FB220426 1315GSC

Client: EGLE
Project: Biosolids WWTP field Laser
Project #

Field Blank Sample ID: GW220426 1300GSC

INSPECTION

Label on well?	YES	(NO)	NA	Is cap locked?	(YES)	NO	NA
Is reference mark visible?	(YES)	NO	NA	Standing water present?	YES	(NO)	NA
Condition of well	good			Any indication of surface runoff in well?	YES	(NO)	NA
Weather	cloudy			Air Temperature:	43°F		

Notes:

STATIC WATER LEVEL PRIOR TO PURGING

Date: 4-26-22 Time: 1230 AM/PM

Depth to Water: 12.52

Length of Well: 29.00

Measured with: ~~Electronic Tape~~

Decontamination: DI Water

WELL PURGING

Date: 4-26-22 Begin Time: 1230 AM/PM End Time: 1245 AM/PM

Purging Equipment: Perilstaltic Pump

Decontamination: New Tubing

CALCULATION OF 1 CASING VOLUME

_____ ft. Length of well

_____ ft. - depth of water (before purge start)

_____ ft. =length of water column

x conversion factor (2" well) 0.16

_____ Gal. =1 casing volume

Yield: (HIGH) LOW

If low, recovery time: _____

Actual volume purged 2 gallons

Actual purge flow rate 300 ml/min or L/min

Notes

Time	Volume (gallons)	Depth to Water (Feet) <0.33'	pH (SU) +/- 0.1	Conductivity (mS/cm) +-3%	Turbidity (NTU) +-10%	D.O. (mg/L) +/- 10%	Temp (°C) +/- 5%	ORP +/- 10 mV
Start: 1245	.4	14.91	7.18	0.675	9.67	3.83	8.1	142.2
1250	.8	14.91	7.17	0.675	9.76	3.72	8.1	142.5
1255	1.2	14.91	7.17	0.675	8.13	3.64	8.2	142.7
1300	1.6	14.91	7.17	0.675	8.32	3.58	8.2	143.0
Final: 1300	1.6	14.91	7.17	0.675	8.32	3.58	8.2 8.6	143.0

SAMPLE COLLECTION

Date: 4-26-22 Time: 1300 AM/PM

Method Low Flow

Appearance of Sample: Clear

Actual Sample Flow Rate: 300 ml/min or L/min

SAMPLE BOTTLE COLLECTED: 2- HDPE 250ml Bottles / 2-Bottles Field Blank

SAMPLING PERSONNEL

Name Garth Cousineau (AECOM) Company: AECOM

AECOM

Low Flow Ground Water Sample Collection Record

Well ID: CL1-MW4 Field Duplicat

Client: EGLE
Project: Biosolids WWTP field Lapeer
Project #

Sample ID: GW220426120SGSC
GW220426120SGSC - FD

INSPECTION

Label on well?	(YES)	NO	NA	Is cap locked?	(YES)	NO	NA
Is reference mark visible?	(YES)	NO	NA	Standing water present?	YES	(NO)	NA
Condition of well	good			Any indication of surface runoff in well?	YES	(NO)	NA
Weather	cloudy			Air Temperature:	43°F		

Notes:

STATIC WATER LEVEL PRIOR TO PURGING

Date: 4-26-22 Time: 1130 AM/PM

Depth to Water: 4.59 11.04
Length of Well: 19.00

Measured with: Electronic Tape
Decontamination: DI Water

WELL PURGING

Date: 4-26-22 Begin Time: 1130 AM/PM
End Time: 1130 AM/PM

Purging Equipment: ~~Peristaltic Pump~~ New Tubing

Decontamination:

CALCULATION OF 1 CASING VOLUME

_____ ft. Length of well
_____ ft. - depth of water (before purge start)
_____ ft. =length of water column
x conversion factor (2" well) 0.16
_____ Gal. =1 casing volume

Yield: (HIGH) LOW
If low, recovery time: _____

Actual volume purged 2 gallons
Actual purge flow rate 300 ml/min or L/min

Notes

Time	Volume (gallons)	Depth to Water (Feet) <0.33'	pH (SU) +/- 0.1	Conductivity (mS/cm) +-3%	Turbidity (NTU) +-10%	D.O. (mg/L) +/- 10%	Temp (°C) +/- 5%	ORP +/- 10 mV
Start: 1150	.4	13.19	7.00	0.590	9.24	0.95	8.3	116.3
1155	.8	13.19	7.00	0.590	9.56	0.85	8.3	116.2
1200	1.2	13.19	7.00	0.590	9.68	0.80	8.3	116.1
1205	1.6	13.19	7.00	0.590	8.34	0.76	8.3	115.9
Final: 1205	1.6	13.19	7.00	0.590	8.34	0.76	8.3	115.9

SAMPLE COLLECTION

Date: 4-26-22 Time: 1205 AM/PM

Method: Low Flow

Appearance of Sample: clear

Actual Sample Flow Rate: 300 ml/min or L/min

SAMPLE BOTTLE COLLECTED: 2- HDPE 250ml Bottles / 2 Bottles Field Dup/LH

SAMPLING PERSONNEL

Name Garth Cousineau (AECOM) Company: AECOM

Appendix C – 2021 Analytical Reports

April 02, 2021

Vista Work Order No. 2103187

Dr. Dorin Bogdan
AECOM
5350 Sparks Dr SE
Grand Rapids, MI 49546

Dear Dr. Bogdan,

Enclosed are the results for the sample set received at Vista Analytical Laboratory on March 16, 2021 under your Project Name 'LAPEER Well sampling/Bio solids'.

Vista Analytical Laboratory is committed to serving you effectively. If you require additional information, please contact me at 916-673-1520 or by email at mmaier@vista-analytical.com.

Thank you for choosing Vista as part of your analytical support team.

Sincerely,

Martha Maier
Laboratory Director

Vista Work Order No. 2103187
Case Narrative

Sample Condition on Receipt:

Six aqueous samples were received and stored securely in accordance with Vista standard operating procedures and EPA methodology. The samples were received in good condition and within the recommended temperature requirements. A revised Chain-of-Custody (CoC) was received by email on March 16th, 2021.

Analytical Notes:

PFAS Isotope Dilution Method

Samples "GW2103111100GSC" and "GW2103111100GSC-FD" contained particulate and were centrifuged prior to extraction.

The samples were extracted and analyzed for a selected list of PFAS using Vista's PFAS Isotope Dilution Method. The results for PFHxS, PFOA, PFOS, MeFOSAA and EtFOSAA include both linear and branched isomers. Results for all other analytes include the linear isomers only.

Holding Times

The samples were extracted and analyzed within the hold times.

Quality Control

The Initial Calibration and Continuing Calibration Verifications met the acceptance criteria.

A Method Blank and Ongoing Precision and Recovery (OPR) sample were extracted and analyzed with the preparation batch. No analytes were detected in the Method Blank above 1/2 the LOQ. The OPR recoveries were within the acceptance criteria.

The labeled standard recoveries for all QC and field samples were within the acceptance criteria.

TABLE OF CONTENTS

Sample Inventory Report

Vista Sample ID	Client Sample ID	Sampled	Received	Components/Containers
2103187-01	GW2103111600GSC	11-Mar-21 16:00	16-Mar-21 13:34	HDPE Bottle, 250 mL
				HDPE Bottle, 250 mL
2103187-02	GW2103111500GSC	11-Mar-21 15:00	16-Mar-21 13:34	HDPE Bottle, 250 mL
				HDPE Bottle, 250 mL
2103187-03	GW2103111225GSC	11-Mar-21 12:25	16-Mar-21 13:34	HDPE Bottle, 250 mL
				HDPE Bottle, 250 mL
2103187-04	GW2103111100GSC	11-Mar-21 11:00	16-Mar-21 13:34	HDPE Bottle, 250 mL
				HDPE Bottle, 250 mL
2103187-05	GW2103111100GSC-FD	11-Mar-21 11:00	16-Mar-21 13:34	HDPE Bottle, 250 mL
				HDPE Bottle, 250 mL
2103187-06	FB2103111100GSC	11-Mar-21 11:00	16-Mar-21 13:34	HDPE Bottle, 250 mL
				HDPE Bottle, 250 mL

ANALYTICAL RESULTS

Sample ID: Method Blank

PFAS Isotope Dilution Method

Client Data

Name: AECOM
Project: LAPEER Well sampling/Bio solids
Matrix: Aqueous

Laboratory Data

Lab Sample: B1C0179-BLK1
Column: BEH C18

Analyte	CAS Number	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBA	375-22-4	ND	1.00	2.00	4.00		B1C0179	23-Mar-21	0.250 L	26-Mar-21 21:33	1
PFPeA	2706-90-3	ND	1.00	2.00	4.00		B1C0179	23-Mar-21	0.250 L	26-Mar-21 21:33	1
PFBS	375-73-5	ND	1.00	2.00	4.00		B1C0179	23-Mar-21	0.250 L	26-Mar-21 21:33	1
4:2 FTS	757124-72-4	ND	1.00	2.00	4.00		B1C0179	23-Mar-21	0.250 L	26-Mar-21 21:33	1
PFHxA	307-24-4	ND	1.00	2.00	4.00		B1C0179	23-Mar-21	0.250 L	26-Mar-21 21:33	1
PFPeS	2706-91-4	ND	1.00	2.00	4.00		B1C0179	23-Mar-21	0.250 L	26-Mar-21 21:33	1
HFPO-DA	13252-13-6	ND	1.00	2.00	4.00		B1C0179	23-Mar-21	0.250 L	26-Mar-21 21:33	1
PFHpA	375-85-9	ND	1.00	2.00	4.00		B1C0179	23-Mar-21	0.250 L	26-Mar-21 21:33	1
ADONA	919005-14-4	ND	1.00	2.00	4.00		B1C0179	23-Mar-21	0.250 L	26-Mar-21 21:33	1
PFHxS	355-46-4	ND	1.00	2.00	4.00		B1C0179	23-Mar-21	0.250 L	26-Mar-21 21:33	1
6:2 FTS	27619-97-2	ND	1.00	2.00	4.00		B1C0179	23-Mar-21	0.250 L	26-Mar-21 21:33	1
PFOA	335-67-1	ND	1.00	2.00	4.00		B1C0179	23-Mar-21	0.250 L	26-Mar-21 21:33	1
PFecHS	646-83-3	ND	1.00	2.00	4.00		B1C0179	23-Mar-21	0.250 L	26-Mar-21 21:33	1
PFHpS	375-92-8	ND	1.00	2.00	4.00		B1C0179	23-Mar-21	0.250 L	26-Mar-21 21:33	1
PFNA	375-95-1	ND	1.00	2.00	4.00		B1C0179	23-Mar-21	0.250 L	26-Mar-21 21:33	1
PFOSA	754-91-6	ND	1.00	2.00	4.00		B1C0179	23-Mar-21	0.250 L	29-Mar-21 17:02	1
PFOS	1763-23-1	ND	1.00	2.00	4.00		B1C0179	23-Mar-21	0.250 L	26-Mar-21 21:33	1
9Cl-PF3ONS	756426-58-1	ND	1.00	2.00	4.00		B1C0179	23-Mar-21	0.250 L	26-Mar-21 21:33	1
PFDA	335-76-2	ND	1.00	2.00	4.00		B1C0179	23-Mar-21	0.250 L	26-Mar-21 21:33	1
8:2 FTS	39108-34-4	ND	1.00	2.00	4.00		B1C0179	23-Mar-21	0.250 L	26-Mar-21 21:33	1
PFNS	68259-12-1	ND	1.00	2.00	4.00		B1C0179	23-Mar-21	0.250 L	26-Mar-21 21:33	1
MeFOSAA	2355-31-9	ND	1.00	2.00	4.00		B1C0179	23-Mar-21	0.250 L	26-Mar-21 21:33	1
EtFOSAA	2991-50-6	ND	1.00	2.00	4.00		B1C0179	23-Mar-21	0.250 L	26-Mar-21 21:33	1
PFUnA	2058-94-8	ND	1.00	2.00	4.00		B1C0179	23-Mar-21	0.250 L	26-Mar-21 21:33	1
PFDS	335-77-3	ND	1.00	2.00	4.00		B1C0179	23-Mar-21	0.250 L	26-Mar-21 21:33	1
11Cl-PF3OUdS	763051-92-9	ND	1.00	2.00	4.00		B1C0179	23-Mar-21	0.250 L	26-Mar-21 21:33	1
PFDoA	307-55-1	ND	1.00	2.00	4.00		B1C0179	23-Mar-21	0.250 L	26-Mar-21 21:33	1
PFTrDA	72629-94-8	ND	1.00	2.00	4.00		B1C0179	23-Mar-21	0.250 L	26-Mar-21 21:33	1
PFTeDA	376-06-7	ND	1.00	2.00	4.00		B1C0179	23-Mar-21	0.250 L	26-Mar-21 21:33	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C3-PFBA	IS	98.5	25 - 150		B1C0179	23-Mar-21	0.250 L	26-Mar-21 21:33	1
13C3-PFPeA	IS	84.6	25 - 150		B1C0179	23-Mar-21	0.250 L	26-Mar-21 21:33	1
13C3-PFBS	IS	92.9	25 - 150		B1C0179	23-Mar-21	0.250 L	26-Mar-21 21:33	1
13C3-HFPO-DA	IS	90.9	25 - 150		B1C0179	23-Mar-21	0.250 L	26-Mar-21 21:33	1
13C2-4:2 FTS	IS	96.8	25 - 150		B1C0179	23-Mar-21	0.250 L	26-Mar-21 21:33	1
13C2-PFHxA	IS	88.5	25 - 150		B1C0179	23-Mar-21	0.250 L	26-Mar-21 21:33	1
13C4-PFHpA	IS	83.4	25 - 150		B1C0179	23-Mar-21	0.250 L	26-Mar-21 21:33	1
13C3-PFHxS	IS	92.7	25 - 150		B1C0179	23-Mar-21	0.250 L	26-Mar-21 21:33	1

Sample ID: Method Blank

PFAS Isotope Dilution Method

Client Data

Name: AECOM
Project: LAPEER Well sampling/Bio solids
Matrix: Aqueous

Laboratory Data

Lab Sample: B1C0179-BLK1
Column: BEH C18

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C2-6:2 FTS	IS	97.6	25 - 150		B1C0179	23-Mar-21	0.250 L	26-Mar-21 21:33	1
13C5-PFNA	IS	86.4	25 - 150		B1C0179	23-Mar-21	0.250 L	26-Mar-21 21:33	1
13C8-PFOSA	IS	27.7	10 - 150		B1C0179	23-Mar-21	0.250 L	29-Mar-21 17:02	1
13C2-PFOA	IS	87.4	25 - 150		B1C0179	23-Mar-21	0.250 L	26-Mar-21 21:33	1
13C8-PFOS	IS	90.8	25 - 150		B1C0179	23-Mar-21	0.250 L	26-Mar-21 21:33	1
13C2-PFDA	IS	79.3	25 - 150		B1C0179	23-Mar-21	0.250 L	26-Mar-21 21:33	1
13C2-8:2 FTS	IS	80.0	25 - 150		B1C0179	23-Mar-21	0.250 L	26-Mar-21 21:33	1
d3-MeFOSAA	IS	73.6	25 - 150		B1C0179	23-Mar-21	0.250 L	26-Mar-21 21:33	1
13C2-PFUnA	IS	77.3	25 - 150		B1C0179	23-Mar-21	0.250 L	26-Mar-21 21:33	1
d5-EtFOSAA	IS	63.2	25 - 150		B1C0179	23-Mar-21	0.250 L	26-Mar-21 21:33	1
13C2-PFDoA	IS	70.3	25 - 150		B1C0179	23-Mar-21	0.250 L	26-Mar-21 21:33	1
13C2-PFTeDA	IS	69.2	20 - 150		B1C0179	23-Mar-21	0.250 L	26-Mar-21 21:33	1

DL - Detection Limit
LOD - Limit of Detection
LOQ - Limit of quantitation

Results reported to the DL.

When reported, PFHxS, PFOA, PFOS, MeFOSAA and EtFOSAA include both linear and branched isomers. Only the linear isomer is reported for all other analytes.

Sample ID: OPR **PFAS Isotope Dilution Method**

Client Data

Name: AECOM
Project: LAPEER Well sampling/Bio solids
Matrix: Aqueous

Laboratory Data

Lab Sample: B1C0179-BS1
Column: BEH C18

Analyte	CAS Number	Amt Found (ng/L)	Spike Amt	% Rec	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBA	375-22-4	46.4	40.0	116	65 - 135		B1C0179	23-Mar-21	0.250 L	26-Mar-21 21:43	1
PFPeA	2706-90-3	41.8	40.0	105	65 - 135		B1C0179	23-Mar-21	0.250 L	26-Mar-21 21:43	1
PFBS	375-73-5	41.9	40.0	105	65 - 135		B1C0179	23-Mar-21	0.250 L	26-Mar-21 21:43	1
4:2 FTS	757124-72-4	42.7	40.0	107	60 - 145		B1C0179	23-Mar-21	0.250 L	26-Mar-21 21:43	1
PFHxA	307-24-4	48.0	40.0	120	65 - 135		B1C0179	23-Mar-21	0.250 L	26-Mar-21 21:43	1
PFPeS	2706-91-4	45.0	40.0	112	65 - 135		B1C0179	23-Mar-21	0.250 L	26-Mar-21 21:43	1
HFPO-DA	13252-13-6	39.3	40.0	98.3	65 - 135		B1C0179	23-Mar-21	0.250 L	26-Mar-21 21:43	1
PFHpA	375-85-9	43.8	40.0	110	65 - 135		B1C0179	23-Mar-21	0.250 L	26-Mar-21 21:43	1
ADONA	919005-14-4	49.5	40.0	124	65 - 135		B1C0179	23-Mar-21	0.250 L	26-Mar-21 21:43	1
PFHxS	355-46-4	44.1	40.0	110	65 - 135		B1C0179	23-Mar-21	0.250 L	26-Mar-21 21:43	1
6:2 FTS	27619-97-2	41.4	40.0	103	60 - 140		B1C0179	23-Mar-21	0.250 L	26-Mar-21 21:43	1
PFOA	335-67-1	44.3	40.0	111	65 - 135		B1C0179	23-Mar-21	0.250 L	26-Mar-21 21:43	1
PFecHS	646-83-3	46.9	40.0	117	65 - 135		B1C0179	23-Mar-21	0.250 L	26-Mar-21 21:43	1
PFHpS	375-92-8	45.0	40.0	112	65 - 135		B1C0179	23-Mar-21	0.250 L	26-Mar-21 21:43	1
PFNA	375-95-1	45.8	40.0	115	65 - 135		B1C0179	23-Mar-21	0.250 L	26-Mar-21 21:43	1
PFOSA	754-91-6	44.2	40.0	110	65 - 140		B1C0179	23-Mar-21	0.250 L	29-Mar-21 17:12	1
PFOS	1763-23-1	41.5	40.0	104	65 - 140		B1C0179	23-Mar-21	0.250 L	26-Mar-21 21:43	1
9Cl-PF3ONS	756426-58-1	40.7	40.0	102	65 - 135		B1C0179	23-Mar-21	0.250 L	26-Mar-21 21:43	1
PFDA	335-76-2	44.4	40.0	111	65 - 135		B1C0179	23-Mar-21	0.250 L	26-Mar-21 21:43	1
8:2 FTS	39108-34-4	44.7	40.0	112	65 - 135		B1C0179	23-Mar-21	0.250 L	26-Mar-21 21:43	1
PFNS	68259-12-1	40.6	40.0	102	65 - 135		B1C0179	23-Mar-21	0.250 L	26-Mar-21 21:43	1
MeFOSAA	2355-31-9	43.6	40.0	109	65 - 135		B1C0179	23-Mar-21	0.250 L	26-Mar-21 21:43	1
EtFOSAA	2991-50-6	43.2	40.0	108	65 - 135		B1C0179	23-Mar-21	0.250 L	26-Mar-21 21:43	1
PFUnA	2058-94-8	41.6	40.0	104	65 - 140		B1C0179	23-Mar-21	0.250 L	26-Mar-21 21:43	1
PFDS	335-77-3	37.0	40.0	92.5	50 - 150		B1C0179	23-Mar-21	0.250 L	26-Mar-21 21:43	1
11Cl-PF3OUdS	763051-92-9	45.8	40.0	114	65 - 135		B1C0179	23-Mar-21	0.250 L	26-Mar-21 21:43	1
PFDoA	307-55-1	42.9	40.0	107	65 - 135		B1C0179	23-Mar-21	0.250 L	26-Mar-21 21:43	1
PFTrDA	72629-94-8	44.2	40.0	111	60 - 140		B1C0179	23-Mar-21	0.250 L	26-Mar-21 21:43	1
PFTeDA	376-06-7	45.7	40.0	114	65 - 135		B1C0179	23-Mar-21	0.250 L	26-Mar-21 21:43	1

Labeled Standards	Type	% Rec	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C3-PFBA	IS	96.0	25 - 150		B1C0179	23-Mar-21	0.250 L	26-Mar-21 21:43	1
13C3-PFPeA	IS	84.2	25 - 150		B1C0179	23-Mar-21	0.250 L	26-Mar-21 21:43	1
13C3-PFBS	IS	94.4	25 - 150		B1C0179	23-Mar-21	0.250 L	26-Mar-21 21:43	1
13C3-HFPO-DA	IS	83.3	25 - 150		B1C0179	23-Mar-21	0.250 L	26-Mar-21 21:43	1
13C2-4:2 FTS	IS	97.3	25 - 150		B1C0179	23-Mar-21	0.250 L	26-Mar-21 21:43	1

Sample ID: OPR **PFAS Isotope Dilution Method**

Client Data

Name: AECOM
Project: LAPEER Well sampling/Bio solids
Matrix: Aqueous

Laboratory Data

Lab Sample: B1C0179-BS1
Column: BEH C18

Labeled Standards	Type	% Rec	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C2-PFHxA	IS	85.2	25 - 150		B1C0179	23-Mar-21	0.250 L	26-Mar-21 21:43	1
13C4-PFHpA	IS	79.4	25 - 150		B1C0179	23-Mar-21	0.250 L	26-Mar-21 21:43	1
13C3-PFHxS	IS	94.6	25 - 150		B1C0179	23-Mar-21	0.250 L	26-Mar-21 21:43	1
13C2-6:2 FTS	IS	91.9	25 - 150		B1C0179	23-Mar-21	0.250 L	26-Mar-21 21:43	1
13C5-PFNA	IS	82.5	25 - 150		B1C0179	23-Mar-21	0.250 L	26-Mar-21 21:43	1
13C8-PFOSA	IS	30.4	10 - 150		B1C0179	23-Mar-21	0.250 L	29-Mar-21 17:12	1
13C2-PFOA	IS	86.0	25 - 150		B1C0179	23-Mar-21	0.250 L	26-Mar-21 21:43	1
13C8-PFOS	IS	93.5	25 - 150		B1C0179	23-Mar-21	0.250 L	26-Mar-21 21:43	1
13C2-PFDA	IS	77.2	25 - 150		B1C0179	23-Mar-21	0.250 L	26-Mar-21 21:43	1
13C2-8:2 FTS	IS	87.0	25 - 150		B1C0179	23-Mar-21	0.250 L	26-Mar-21 21:43	1
d3-MeFOSAA	IS	74.3	25 - 150		B1C0179	23-Mar-21	0.250 L	26-Mar-21 21:43	1
13C2-PFUnA	IS	78.0	25 - 150		B1C0179	23-Mar-21	0.250 L	26-Mar-21 21:43	1
d5-EtFOSAA	IS	65.1	25 - 150		B1C0179	23-Mar-21	0.250 L	26-Mar-21 21:43	1
13C2-PFDoA	IS	72.1	25 - 150		B1C0179	23-Mar-21	0.250 L	26-Mar-21 21:43	1
13C2-PFTeDA	IS	70.0	20 - 150		B1C0179	23-Mar-21	0.250 L	26-Mar-21 21:43	1

Sample ID: GW2103111600GSC

PFAS Isotope Dilution Method

Client Data

Name: AECOM
Project: LAPEER Well sampling/Bio solids
Location: CL1-MW4
Matrix: Aqueous
Date Collected: 11-Mar-21 16:00

Laboratory Data

Lab Sample: 2103187-01
Date Received: 16-Mar-21 13:34
Column: BEH C18

Analyte	CAS Number	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBA	375-22-4	103	0.984	1.97	3.94		B1C0179	23-Mar-21	0.254 L	27-Mar-21 00:08	1
PFPeA	2706-90-3	145	0.984	1.97	3.94		B1C0179	23-Mar-21	0.254 L	27-Mar-21 00:08	1
PFBS	375-73-5	91.9	0.984	1.97	3.94		B1C0179	23-Mar-21	0.254 L	27-Mar-21 00:08	1
4:2 FTS	757124-72-4	ND	0.984	1.97	3.94		B1C0179	23-Mar-21	0.254 L	27-Mar-21 00:08	1
PFHxA	307-24-4	151	0.984	1.97	3.94		B1C0179	23-Mar-21	0.254 L	27-Mar-21 00:08	1
PFPeS	2706-91-4	1.37	0.984	1.97	3.94	J	B1C0179	23-Mar-21	0.254 L	27-Mar-21 00:08	1
HFPO-DA	13252-13-6	ND	0.984	1.97	3.94		B1C0179	23-Mar-21	0.254 L	27-Mar-21 00:08	1
PFHpA	375-85-9	55.9	0.984	1.97	3.94		B1C0179	23-Mar-21	0.254 L	27-Mar-21 00:08	1
ADONA	919005-14-4	ND	0.984	1.97	3.94		B1C0179	23-Mar-21	0.254 L	27-Mar-21 00:08	1
PFHxS	355-46-4	4.75	0.984	1.97	3.94		B1C0179	23-Mar-21	0.254 L	27-Mar-21 00:08	1
6:2 FTS	27619-97-2	ND	0.984	1.97	3.94		B1C0179	23-Mar-21	0.254 L	27-Mar-21 00:08	1
PFOA	335-67-1	89.1	0.984	1.97	3.94		B1C0179	23-Mar-21	0.254 L	27-Mar-21 00:08	1
PFecHS	646-83-3	4.79	0.984	1.97	3.94		B1C0179	23-Mar-21	0.254 L	27-Mar-21 00:08	1
PFHpS	375-92-8	ND	0.984	1.97	3.94		B1C0179	23-Mar-21	0.254 L	27-Mar-21 00:08	1
PFNA	375-95-1	ND	0.984	1.97	3.94		B1C0179	23-Mar-21	0.254 L	27-Mar-21 00:08	1
PFOSA	754-91-6	ND	0.984	1.97	3.94		B1C0179	23-Mar-21	0.254 L	29-Mar-21 19:38	1
PFOS	1763-23-1	15.2	0.984	1.97	3.94		B1C0179	23-Mar-21	0.254 L	27-Mar-21 00:08	1
9Cl-PF3ONS	756426-58-1	ND	0.984	1.97	3.94		B1C0179	23-Mar-21	0.254 L	27-Mar-21 00:08	1
PFDA	335-76-2	ND	0.984	1.97	3.94		B1C0179	23-Mar-21	0.254 L	27-Mar-21 00:08	1
8:2 FTS	39108-34-4	ND	0.984	1.97	3.94		B1C0179	23-Mar-21	0.254 L	27-Mar-21 00:08	1
PFNS	68259-12-1	ND	0.984	1.97	3.94		B1C0179	23-Mar-21	0.254 L	27-Mar-21 00:08	1
MeFOSAA	2355-31-9	ND	0.984	1.97	3.94		B1C0179	23-Mar-21	0.254 L	27-Mar-21 00:08	1
EtFOSAA	2991-50-6	ND	0.984	1.97	3.94		B1C0179	23-Mar-21	0.254 L	27-Mar-21 00:08	1
PFUnA	2058-94-8	ND	0.984	1.97	3.94		B1C0179	23-Mar-21	0.254 L	27-Mar-21 00:08	1
PFDS	335-77-3	ND	0.984	1.97	3.94		B1C0179	23-Mar-21	0.254 L	27-Mar-21 00:08	1
11Cl-PF3OUdS	763051-92-9	ND	0.984	1.97	3.94		B1C0179	23-Mar-21	0.254 L	27-Mar-21 00:08	1
PFDoA	307-55-1	ND	0.984	1.97	3.94		B1C0179	23-Mar-21	0.254 L	27-Mar-21 00:08	1
PFTrDA	72629-94-8	ND	0.984	1.97	3.94		B1C0179	23-Mar-21	0.254 L	27-Mar-21 00:08	1
PFTeDA	376-06-7	ND	0.984	1.97	3.94		B1C0179	23-Mar-21	0.254 L	27-Mar-21 00:08	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C3-PFBA	IS	69.9	25 - 150		B1C0179	23-Mar-21	0.254 L	27-Mar-21 00:08	1
13C3-PFPeA	IS	85.8	25 - 150		B1C0179	23-Mar-21	0.254 L	27-Mar-21 00:08	1
13C3-PFBS	IS	93.3	25 - 150		B1C0179	23-Mar-21	0.254 L	27-Mar-21 00:08	1
13C3-HFPO-DA	IS	71.8	25 - 150		B1C0179	23-Mar-21	0.254 L	27-Mar-21 00:08	1
13C2-4:2 FTS	IS	96.1	25 - 150		B1C0179	23-Mar-21	0.254 L	27-Mar-21 00:08	1
13C2-PFHxA	IS	91.2	25 - 150		B1C0179	23-Mar-21	0.254 L	27-Mar-21 00:08	1
13C4-PFHpA	IS	83.4	25 - 150		B1C0179	23-Mar-21	0.254 L	27-Mar-21 00:08	1
13C3-PFHxS	IS	97.1	25 - 150		B1C0179	23-Mar-21	0.254 L	27-Mar-21 00:08	1

Sample ID: GW2103111600GSC

PFAS Isotope Dilution Method

Client Data

Name: AECOM
Project: LAPEER Well sampling/Bio solids
Location: CL1-MW4
Matrix: Aqueous
Date Collected: 11-Mar-21 16:00

Laboratory Data

Lab Sample: 2103187-01
Date Received: 16-Mar-21 13:34
Column: BEH C18

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C2-6:2 FTS	IS	94.3	25 - 150		B1C0179	23-Mar-21	0.254 L	27-Mar-21 00:08	1
13C5-PFNA	IS	87.3	25 - 150		B1C0179	23-Mar-21	0.254 L	27-Mar-21 00:08	1
13C8-PFOSA	IS	56.0	10 - 150		B1C0179	23-Mar-21	0.254 L	29-Mar-21 19:38	1
13C2-PFOA	IS	88.8	25 - 150		B1C0179	23-Mar-21	0.254 L	27-Mar-21 00:08	1
13C8-PFOS	IS	101	25 - 150		B1C0179	23-Mar-21	0.254 L	27-Mar-21 00:08	1
13C2-PFDA	IS	88.2	25 - 150		B1C0179	23-Mar-21	0.254 L	27-Mar-21 00:08	1
13C2-8:2 FTS	IS	93.9	25 - 150		B1C0179	23-Mar-21	0.254 L	27-Mar-21 00:08	1
d3-MeFOSAA	IS	97.4	25 - 150		B1C0179	23-Mar-21	0.254 L	27-Mar-21 00:08	1
13C2-PFUnA	IS	91.7	25 - 150		B1C0179	23-Mar-21	0.254 L	27-Mar-21 00:08	1
d5-EtFOSAA	IS	83.4	25 - 150		B1C0179	23-Mar-21	0.254 L	27-Mar-21 00:08	1
13C2-PFDoA	IS	83.1	25 - 150		B1C0179	23-Mar-21	0.254 L	27-Mar-21 00:08	1
13C2-PFTeDA	IS	79.1	20 - 150		B1C0179	23-Mar-21	0.254 L	27-Mar-21 00:08	1

DL - Detection Limit
LOD - Limit of Detection
LOQ - Limit of quantitation

Results reported to the DL.

When reported, PFHxS, PFOA, PFOS, MeFOSAA and EtFOSAA include both linear and branched isomers. Only the linear isomer is reported for all other analytes.

Sample ID: GW2103111500GSC

PFAS Isotope Dilution Method

Client Data

Name: AECOM
Project: LAPEER Well sampling/Bio solids
Location: CL1-MW2
Matrix: Aqueous
Date Collected: 11-Mar-21 15:00

Laboratory Data

Lab Sample: 2103187-02
Date Received: 16-Mar-21 13:34
Column: BEH C18

Analyte	CAS Number	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBA	375-22-4	17.0	1.02	2.05	4.09		B1C0179	23-Mar-21	0.244 L	27-Mar-21 00:19	1
PFPeA	2706-90-3	28.6	1.02	2.05	4.09		B1C0179	23-Mar-21	0.244 L	27-Mar-21 00:19	1
PFBS	375-73-5	44.4	1.02	2.05	4.09		B1C0179	23-Mar-21	0.244 L	27-Mar-21 00:19	1
4:2 FTS	757124-72-4	ND	1.02	2.05	4.09		B1C0179	23-Mar-21	0.244 L	27-Mar-21 00:19	1
PFHxA	307-24-4	35.3	1.02	2.05	4.09		B1C0179	23-Mar-21	0.244 L	27-Mar-21 00:19	1
PFPeS	2706-91-4	ND	1.02	2.05	4.09		B1C0179	23-Mar-21	0.244 L	27-Mar-21 00:19	1
HFPO-DA	13252-13-6	ND	1.02	2.05	4.09		B1C0179	23-Mar-21	0.244 L	27-Mar-21 00:19	1
PFHpA	375-85-9	17.4	1.02	2.05	4.09		B1C0179	23-Mar-21	0.244 L	27-Mar-21 00:19	1
ADONA	919005-14-4	ND	1.02	2.05	4.09		B1C0179	23-Mar-21	0.244 L	27-Mar-21 00:19	1
PFHxS	355-46-4	5.22	1.02	2.05	4.09		B1C0179	23-Mar-21	0.244 L	27-Mar-21 00:19	1
6:2 FTS	27619-97-2	ND	1.02	2.05	4.09		B1C0179	23-Mar-21	0.244 L	27-Mar-21 00:19	1
PFOA	335-67-1	30.8	1.02	2.05	4.09		B1C0179	23-Mar-21	0.244 L	27-Mar-21 00:19	1
PFecHS	646-83-3	4.14	1.02	2.05	4.09		B1C0179	23-Mar-21	0.244 L	27-Mar-21 00:19	1
PFHpS	375-92-8	ND	1.02	2.05	4.09		B1C0179	23-Mar-21	0.244 L	27-Mar-21 00:19	1
PFNA	375-95-1	ND	1.02	2.05	4.09		B1C0179	23-Mar-21	0.244 L	27-Mar-21 00:19	1
PFOSA	754-91-6	ND	1.02	2.05	4.09		B1C0179	23-Mar-21	0.244 L	29-Mar-21 19:48	1
PFOS	1763-23-1	140	1.02	2.05	4.09		B1C0179	23-Mar-21	0.244 L	27-Mar-21 00:19	1
9Cl-PF3ONS	756426-58-1	ND	1.02	2.05	4.09		B1C0179	23-Mar-21	0.244 L	27-Mar-21 00:19	1
PFDA	335-76-2	ND	1.02	2.05	4.09		B1C0179	23-Mar-21	0.244 L	27-Mar-21 00:19	1
8:2 FTS	39108-34-4	ND	1.02	2.05	4.09		B1C0179	23-Mar-21	0.244 L	27-Mar-21 00:19	1
PFNS	68259-12-1	ND	1.02	2.05	4.09		B1C0179	23-Mar-21	0.244 L	27-Mar-21 00:19	1
MeFOSAA	2355-31-9	ND	1.02	2.05	4.09		B1C0179	23-Mar-21	0.244 L	27-Mar-21 00:19	1
EtFOSAA	2991-50-6	ND	1.02	2.05	4.09		B1C0179	23-Mar-21	0.244 L	27-Mar-21 00:19	1
PFUnA	2058-94-8	ND	1.02	2.05	4.09		B1C0179	23-Mar-21	0.244 L	27-Mar-21 00:19	1
PFDS	335-77-3	ND	1.02	2.05	4.09		B1C0179	23-Mar-21	0.244 L	27-Mar-21 00:19	1
11Cl-PF3OUdS	763051-92-9	ND	1.02	2.05	4.09		B1C0179	23-Mar-21	0.244 L	27-Mar-21 00:19	1
PFDoA	307-55-1	ND	1.02	2.05	4.09		B1C0179	23-Mar-21	0.244 L	27-Mar-21 00:19	1
PFTrDA	72629-94-8	ND	1.02	2.05	4.09		B1C0179	23-Mar-21	0.244 L	27-Mar-21 00:19	1
PFTeDA	376-06-7	ND	1.02	2.05	4.09		B1C0179	23-Mar-21	0.244 L	27-Mar-21 00:19	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C3-PFBA	IS	99.1	25 - 150		B1C0179	23-Mar-21	0.244 L	27-Mar-21 00:19	1
13C3-PFPeA	IS	90.1	25 - 150		B1C0179	23-Mar-21	0.244 L	27-Mar-21 00:19	1
13C3-PFBS	IS	93.2	25 - 150		B1C0179	23-Mar-21	0.244 L	27-Mar-21 00:19	1
13C3-HFPO-DA	IS	89.6	25 - 150		B1C0179	23-Mar-21	0.244 L	27-Mar-21 00:19	1
13C2-4:2 FTS	IS	107	25 - 150		B1C0179	23-Mar-21	0.244 L	27-Mar-21 00:19	1
13C2-PFHxA	IS	90.5	25 - 150		B1C0179	23-Mar-21	0.244 L	27-Mar-21 00:19	1
13C4-PFHpA	IS	86.4	25 - 150		B1C0179	23-Mar-21	0.244 L	27-Mar-21 00:19	1
13C3-PFHxS	IS	93.9	25 - 150		B1C0179	23-Mar-21	0.244 L	27-Mar-21 00:19	1

Sample ID: GW2103111500GSC

PFAS Isotope Dilution Method

Client Data

Name: AECOM
Project: LAPEER Well sampling/Bio solids
Location: CL1-MW2
Matrix: Aqueous
Date Collected: 11-Mar-21 15:00

Laboratory Data

Lab Sample: 2103187-02
Date Received: 16-Mar-21 13:34
Column: BEH C18

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C2-6:2 FTS	IS	91.0	25 - 150		B1C0179	23-Mar-21	0.244 L	27-Mar-21 00:19	1
13C5-PFNA	IS	90.8	25 - 150		B1C0179	23-Mar-21	0.244 L	27-Mar-21 00:19	1
13C8-PFOSA	IS	61.6	10 - 150		B1C0179	23-Mar-21	0.244 L	29-Mar-21 19:48	1
13C2-PFOA	IS	90.0	25 - 150		B1C0179	23-Mar-21	0.244 L	27-Mar-21 00:19	1
13C8-PFOS	IS	103	25 - 150		B1C0179	23-Mar-21	0.244 L	27-Mar-21 00:19	1
13C2-PFDA	IS	85.3	25 - 150		B1C0179	23-Mar-21	0.244 L	27-Mar-21 00:19	1
13C2-8:2 FTS	IS	93.7	25 - 150		B1C0179	23-Mar-21	0.244 L	27-Mar-21 00:19	1
d3-MeFOSAA	IS	99.1	25 - 150		B1C0179	23-Mar-21	0.244 L	27-Mar-21 00:19	1
13C2-PFUnA	IS	95.9	25 - 150		B1C0179	23-Mar-21	0.244 L	27-Mar-21 00:19	1
d5-EtFOSAA	IS	88.9	25 - 150		B1C0179	23-Mar-21	0.244 L	27-Mar-21 00:19	1
13C2-PFDoA	IS	89.6	25 - 150		B1C0179	23-Mar-21	0.244 L	27-Mar-21 00:19	1
13C2-PFTeDA	IS	86.9	20 - 150		B1C0179	23-Mar-21	0.244 L	27-Mar-21 00:19	1

DL - Detection Limit
LOD - Limit of Detection
LOQ - Limit of quantitation

Results reported to the DL.

When reported, PFHxS, PFOA, PFOS, MeFOSAA and EtFOSAA include both linear and branched isomers. Only the linear isomer is reported for all other analytes.

Sample ID: GW2103111225GSC

PFAS Isotope Dilution Method

Client Data

Name: AECOM
Project: LAPEER Well sampling/Bio solids
Location: CL1-MW3
Matrix: Aqueous
Date Collected: 11-Mar-21 12:25

Laboratory Data

Lab Sample: 2103187-03
Date Received: 16-Mar-21 13:34
Column: BEH C18

Analyte	CAS Number	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBA	375-22-4	ND	0.979	1.96	3.92		B1C0179	23-Mar-21	0.255 L	27-Mar-21 00:29	1
PFPeA	2706-90-3	ND	0.979	1.96	3.92		B1C0179	23-Mar-21	0.255 L	27-Mar-21 00:29	1
PFBS	375-73-5	ND	0.979	1.96	3.92		B1C0179	23-Mar-21	0.255 L	27-Mar-21 00:29	1
4:2 FTS	757124-72-4	ND	0.979	1.96	3.92		B1C0179	23-Mar-21	0.255 L	27-Mar-21 00:29	1
PFHxA	307-24-4	ND	0.979	1.96	3.92		B1C0179	23-Mar-21	0.255 L	27-Mar-21 00:29	1
PFPeS	2706-91-4	ND	0.979	1.96	3.92		B1C0179	23-Mar-21	0.255 L	27-Mar-21 00:29	1
HFPO-DA	13252-13-6	ND	0.979	1.96	3.92		B1C0179	23-Mar-21	0.255 L	27-Mar-21 00:29	1
PFHpA	375-85-9	ND	0.979	1.96	3.92		B1C0179	23-Mar-21	0.255 L	27-Mar-21 00:29	1
ADONA	919005-14-4	ND	0.979	1.96	3.92		B1C0179	23-Mar-21	0.255 L	27-Mar-21 00:29	1
PFHxS	355-46-4	ND	0.979	1.96	3.92		B1C0179	23-Mar-21	0.255 L	27-Mar-21 00:29	1
6:2 FTS	27619-97-2	ND	0.979	1.96	3.92		B1C0179	23-Mar-21	0.255 L	27-Mar-21 00:29	1
PFOA	335-67-1	ND	0.979	1.96	3.92		B1C0179	23-Mar-21	0.255 L	27-Mar-21 00:29	1
PFecHS	646-83-3	ND	0.979	1.96	3.92		B1C0179	23-Mar-21	0.255 L	27-Mar-21 00:29	1
PFHpS	375-92-8	ND	0.979	1.96	3.92		B1C0179	23-Mar-21	0.255 L	27-Mar-21 00:29	1
PFNA	375-95-1	ND	0.979	1.96	3.92		B1C0179	23-Mar-21	0.255 L	27-Mar-21 00:29	1
PFOSA	754-91-6	ND	0.979	1.96	3.92		B1C0179	23-Mar-21	0.255 L	29-Mar-21 19:58	1
PFOS	1763-23-1	ND	0.979	1.96	3.92		B1C0179	23-Mar-21	0.255 L	27-Mar-21 00:29	1
9Cl-PF3ONS	756426-58-1	ND	0.979	1.96	3.92		B1C0179	23-Mar-21	0.255 L	27-Mar-21 00:29	1
PFDA	335-76-2	ND	0.979	1.96	3.92		B1C0179	23-Mar-21	0.255 L	27-Mar-21 00:29	1
8:2 FTS	39108-34-4	ND	0.979	1.96	3.92		B1C0179	23-Mar-21	0.255 L	27-Mar-21 00:29	1
PFNS	68259-12-1	ND	0.979	1.96	3.92		B1C0179	23-Mar-21	0.255 L	27-Mar-21 00:29	1
MeFOSAA	2355-31-9	ND	0.979	1.96	3.92		B1C0179	23-Mar-21	0.255 L	27-Mar-21 00:29	1
EtFOSAA	2991-50-6	ND	0.979	1.96	3.92		B1C0179	23-Mar-21	0.255 L	27-Mar-21 00:29	1
PFUnA	2058-94-8	ND	0.979	1.96	3.92		B1C0179	23-Mar-21	0.255 L	27-Mar-21 00:29	1
PFDS	335-77-3	ND	0.979	1.96	3.92		B1C0179	23-Mar-21	0.255 L	27-Mar-21 00:29	1
11Cl-PF3OUdS	763051-92-9	ND	0.979	1.96	3.92		B1C0179	23-Mar-21	0.255 L	27-Mar-21 00:29	1
PFDoA	307-55-1	ND	0.979	1.96	3.92		B1C0179	23-Mar-21	0.255 L	27-Mar-21 00:29	1
PFTrDA	72629-94-8	ND	0.979	1.96	3.92		B1C0179	23-Mar-21	0.255 L	27-Mar-21 00:29	1
PFTeDA	376-06-7	ND	0.979	1.96	3.92		B1C0179	23-Mar-21	0.255 L	27-Mar-21 00:29	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C3-PFBA	IS	92.2	25 - 150		B1C0179	23-Mar-21	0.255 L	27-Mar-21 00:29	1
13C3-PFPeA	IS	89.3	25 - 150		B1C0179	23-Mar-21	0.255 L	27-Mar-21 00:29	1
13C3-PFBS	IS	94.7	25 - 150		B1C0179	23-Mar-21	0.255 L	27-Mar-21 00:29	1
13C3-HFPO-DA	IS	84.2	25 - 150		B1C0179	23-Mar-21	0.255 L	27-Mar-21 00:29	1
13C2-4:2 FTS	IS	93.4	25 - 150		B1C0179	23-Mar-21	0.255 L	27-Mar-21 00:29	1
13C2-PFHxA	IS	89.7	25 - 150		B1C0179	23-Mar-21	0.255 L	27-Mar-21 00:29	1
13C4-PFHpA	IS	86.1	25 - 150		B1C0179	23-Mar-21	0.255 L	27-Mar-21 00:29	1
13C3-PFHxS	IS	97.0	25 - 150		B1C0179	23-Mar-21	0.255 L	27-Mar-21 00:29	1

Sample ID: GW2103111225GSC

PFAS Isotope Dilution Method

Client Data

Name: AECOM
Project: LAPEER Well sampling/Bio solids
Location: CL1-MW3
Matrix: Aqueous
Date Collected: 11-Mar-21 12:25

Laboratory Data

Lab Sample: 2103187-03
Date Received: 16-Mar-21 13:34
Column: BEH C18

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C2-6:2 FTS	IS	95.3	25 - 150		B1C0179	23-Mar-21	0.255 L	27-Mar-21 00:29	1
13C5-PFNA	IS	87.0	25 - 150		B1C0179	23-Mar-21	0.255 L	27-Mar-21 00:29	1
13C8-PFOSA	IS	54.6	10 - 150		B1C0179	23-Mar-21	0.255 L	29-Mar-21 19:58	1
13C2-PFOA	IS	88.6	25 - 150		B1C0179	23-Mar-21	0.255 L	27-Mar-21 00:29	1
13C8-PFOS	IS	101	25 - 150		B1C0179	23-Mar-21	0.255 L	27-Mar-21 00:29	1
13C2-PFDA	IS	88.3	25 - 150		B1C0179	23-Mar-21	0.255 L	27-Mar-21 00:29	1
13C2-8:2 FTS	IS	87.0	25 - 150		B1C0179	23-Mar-21	0.255 L	27-Mar-21 00:29	1
d3-MeFOSAA	IS	90.8	25 - 150		B1C0179	23-Mar-21	0.255 L	27-Mar-21 00:29	1
13C2-PFUnA	IS	87.5	25 - 150		B1C0179	23-Mar-21	0.255 L	27-Mar-21 00:29	1
d5-EtFOSAA	IS	83.3	25 - 150		B1C0179	23-Mar-21	0.255 L	27-Mar-21 00:29	1
13C2-PFDoA	IS	83.5	25 - 150		B1C0179	23-Mar-21	0.255 L	27-Mar-21 00:29	1
13C2-PFTeDA	IS	81.5	20 - 150		B1C0179	23-Mar-21	0.255 L	27-Mar-21 00:29	1

DL - Detection Limit
LOD - Limit of Detection
LOQ - Limit of quantitation

Results reported to the DL.

When reported, PFHxS, PFOA, PFOS, MeFOSAA and EtFOSAA include both linear and branched isomers. Only the linear isomer is reported for all other analytes.

Sample ID: GW2103111100GSC

PFAS Isotope Dilution Method

Client Data

Name: AECOM
Project: LAPEER Well sampling/Bio solids
Location: CL1-MW1
Matrix: Aqueous
Date Collected: 11-Mar-21 11:00

Laboratory Data

Lab Sample: 2103187-04
Date Received: 16-Mar-21 13:34
Column: BEH C18

Analyte	CAS Number	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBA	375-22-4	ND	0.966	1.93	3.86		B1C0179	23-Mar-21	0.259 L	27-Mar-21 00:40	1
PFPeA	2706-90-3	ND	0.966	1.93	3.86		B1C0179	23-Mar-21	0.259 L	27-Mar-21 00:40	1
PFBS	375-73-5	ND	0.966	1.93	3.86		B1C0179	23-Mar-21	0.259 L	27-Mar-21 00:40	1
4:2 FTS	757124-72-4	ND	0.966	1.93	3.86		B1C0179	23-Mar-21	0.259 L	27-Mar-21 00:40	1
PFHxA	307-24-4	ND	0.966	1.93	3.86		B1C0179	23-Mar-21	0.259 L	27-Mar-21 00:40	1
PFPeS	2706-91-4	ND	0.966	1.93	3.86		B1C0179	23-Mar-21	0.259 L	27-Mar-21 00:40	1
HFPO-DA	13252-13-6	ND	0.966	1.93	3.86		B1C0179	23-Mar-21	0.259 L	27-Mar-21 00:40	1
PFHpA	375-85-9	ND	0.966	1.93	3.86		B1C0179	23-Mar-21	0.259 L	27-Mar-21 00:40	1
ADONA	919005-14-4	ND	0.966	1.93	3.86		B1C0179	23-Mar-21	0.259 L	27-Mar-21 00:40	1
PFHxS	355-46-4	ND	0.966	1.93	3.86		B1C0179	23-Mar-21	0.259 L	27-Mar-21 00:40	1
6:2 FTS	27619-97-2	ND	0.966	1.93	3.86		B1C0179	23-Mar-21	0.259 L	27-Mar-21 00:40	1
PFOA	335-67-1	ND	0.966	1.93	3.86		B1C0179	23-Mar-21	0.259 L	27-Mar-21 00:40	1
PFecHS	646-83-3	ND	0.966	1.93	3.86		B1C0179	23-Mar-21	0.259 L	27-Mar-21 00:40	1
PFHpS	375-92-8	ND	0.966	1.93	3.86		B1C0179	23-Mar-21	0.259 L	27-Mar-21 00:40	1
PFNA	375-95-1	ND	0.966	1.93	3.86		B1C0179	23-Mar-21	0.259 L	27-Mar-21 00:40	1
PFOSA	754-91-6	ND	0.966	1.93	3.86		B1C0179	23-Mar-21	0.259 L	30-Mar-21 18:04	1
PFOS	1763-23-1	ND	0.966	1.93	3.86		B1C0179	23-Mar-21	0.259 L	27-Mar-21 00:40	1
9Cl-PF3ONS	756426-58-1	ND	0.966	1.93	3.86		B1C0179	23-Mar-21	0.259 L	27-Mar-21 00:40	1
PFDA	335-76-2	ND	0.966	1.93	3.86		B1C0179	23-Mar-21	0.259 L	27-Mar-21 00:40	1
8:2 FTS	39108-34-4	ND	0.966	1.93	3.86		B1C0179	23-Mar-21	0.259 L	27-Mar-21 00:40	1
PFNS	68259-12-1	ND	0.966	1.93	3.86		B1C0179	23-Mar-21	0.259 L	27-Mar-21 00:40	1
MeFOSAA	2355-31-9	ND	0.966	1.93	3.86		B1C0179	23-Mar-21	0.259 L	27-Mar-21 00:40	1
EtFOSAA	2991-50-6	ND	0.966	1.93	3.86		B1C0179	23-Mar-21	0.259 L	27-Mar-21 00:40	1
PFUnA	2058-94-8	ND	0.966	1.93	3.86		B1C0179	23-Mar-21	0.259 L	27-Mar-21 00:40	1
PFDS	335-77-3	ND	0.966	1.93	3.86		B1C0179	23-Mar-21	0.259 L	27-Mar-21 00:40	1
11Cl-PF3OUdS	763051-92-9	ND	0.966	1.93	3.86		B1C0179	23-Mar-21	0.259 L	27-Mar-21 00:40	1
PFDoA	307-55-1	ND	0.966	1.93	3.86		B1C0179	23-Mar-21	0.259 L	27-Mar-21 00:40	1
PFTrDA	72629-94-8	ND	0.966	1.93	3.86		B1C0179	23-Mar-21	0.259 L	27-Mar-21 00:40	1
PFTeDA	376-06-7	ND	0.966	1.93	3.86		B1C0179	23-Mar-21	0.259 L	27-Mar-21 00:40	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C3-PFBA	IS	63.4	25 - 150		B1C0179	23-Mar-21	0.259 L	27-Mar-21 00:40	1
13C3-PFPeA	IS	93.0	25 - 150		B1C0179	23-Mar-21	0.259 L	27-Mar-21 00:40	1
13C3-PFBS	IS	97.9	25 - 150		B1C0179	23-Mar-21	0.259 L	27-Mar-21 00:40	1
13C3-HFPO-DA	IS	87.6	25 - 150		B1C0179	23-Mar-21	0.259 L	27-Mar-21 00:40	1
13C2-4:2 FTS	IS	96.4	25 - 150		B1C0179	23-Mar-21	0.259 L	27-Mar-21 00:40	1
13C2-PFHxA	IS	95.9	25 - 150		B1C0179	23-Mar-21	0.259 L	27-Mar-21 00:40	1
13C4-PFHpA	IS	89.8	25 - 150		B1C0179	23-Mar-21	0.259 L	27-Mar-21 00:40	1
13C3-PFHxS	IS	104	25 - 150		B1C0179	23-Mar-21	0.259 L	27-Mar-21 00:40	1

Sample ID: GW2103111100GSC

PFAS Isotope Dilution Method

Client Data

Name: AECOM
Project: LAPEER Well sampling/Bio solids
Location: CL1-MW1
Matrix: Aqueous
Date Collected: 11-Mar-21 11:00

Laboratory Data

Lab Sample: 2103187-04
Date Received: 16-Mar-21 13:34
Column: BEH C18

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C2-6:2 FTS	IS	96.8	25 - 150		B1C0179	23-Mar-21	0.259 L	27-Mar-21 00:40	1
13C5-PFNA	IS	92.7	25 - 150		B1C0179	23-Mar-21	0.259 L	27-Mar-21 00:40	1
13C8-PFOSA	IS	54.4	10 - 150		B1C0179	23-Mar-21	0.259 L	30-Mar-21 18:04	1
13C2-PFOA	IS	93.9	25 - 150		B1C0179	23-Mar-21	0.259 L	27-Mar-21 00:40	1
13C8-PFOS	IS	107	25 - 150		B1C0179	23-Mar-21	0.259 L	27-Mar-21 00:40	1
13C2-PFDA	IS	82.3	25 - 150		B1C0179	23-Mar-21	0.259 L	27-Mar-21 00:40	1
13C2-8:2 FTS	IS	91.9	25 - 150		B1C0179	23-Mar-21	0.259 L	27-Mar-21 00:40	1
d3-MeFOSAA	IS	95.6	25 - 150		B1C0179	23-Mar-21	0.259 L	27-Mar-21 00:40	1
13C2-PFUnA	IS	90.2	25 - 150		B1C0179	23-Mar-21	0.259 L	27-Mar-21 00:40	1
d5-EtFOSAA	IS	85.4	25 - 150		B1C0179	23-Mar-21	0.259 L	27-Mar-21 00:40	1
13C2-PFDoA	IS	84.4	25 - 150		B1C0179	23-Mar-21	0.259 L	27-Mar-21 00:40	1
13C2-PFTeDA	IS	76.3	20 - 150		B1C0179	23-Mar-21	0.259 L	27-Mar-21 00:40	1

DL - Detection Limit
LOD - Limit of Detection
LOQ - Limit of quantitation

Results reported to the DL.

When reported, PFHxS, PFOA, PFOS, MeFOSAA and EtFOSAA include both linear and branched isomers. Only the linear isomer is reported for all other analytes.

Sample ID: GW2103111100GSC-FD

PFAS Isotope Dilution Method

Client Data

Name: AECOM
Project: LAPEER Well sampling/Bio solids
Location: CL1-MW1
Matrix: Aqueous
Date Collected: 11-Mar-21 11:00

Laboratory Data

Lab Sample: 2103187-05
Date Received: 16-Mar-21 13:34
Column: BEH C18

Analyte	CAS Number	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBA	375-22-4	ND	0.979	1.96	3.92		B1C0179	23-Mar-21	0.255 L	27-Mar-21 01:21	1
PFPeA	2706-90-3	ND	0.979	1.96	3.92		B1C0179	23-Mar-21	0.255 L	27-Mar-21 01:21	1
PFBS	375-73-5	ND	0.979	1.96	3.92		B1C0179	23-Mar-21	0.255 L	27-Mar-21 01:21	1
4:2 FTS	757124-72-4	ND	0.979	1.96	3.92		B1C0179	23-Mar-21	0.255 L	27-Mar-21 01:21	1
PFHxA	307-24-4	ND	0.979	1.96	3.92		B1C0179	23-Mar-21	0.255 L	27-Mar-21 01:21	1
PFPeS	2706-91-4	ND	0.979	1.96	3.92		B1C0179	23-Mar-21	0.255 L	27-Mar-21 01:21	1
HFPO-DA	13252-13-6	ND	0.979	1.96	3.92		B1C0179	23-Mar-21	0.255 L	27-Mar-21 01:21	1
PFHpA	375-85-9	ND	0.979	1.96	3.92		B1C0179	23-Mar-21	0.255 L	27-Mar-21 01:21	1
ADONA	919005-14-4	ND	0.979	1.96	3.92		B1C0179	23-Mar-21	0.255 L	27-Mar-21 01:21	1
PFHxS	355-46-4	ND	0.979	1.96	3.92		B1C0179	23-Mar-21	0.255 L	27-Mar-21 01:21	1
6:2 FTS	27619-97-2	ND	0.979	1.96	3.92		B1C0179	23-Mar-21	0.255 L	27-Mar-21 01:21	1
PFOA	335-67-1	ND	0.979	1.96	3.92		B1C0179	23-Mar-21	0.255 L	27-Mar-21 01:21	1
PFecHS	646-83-3	ND	0.979	1.96	3.92		B1C0179	23-Mar-21	0.255 L	27-Mar-21 01:21	1
PFHpS	375-92-8	ND	0.979	1.96	3.92		B1C0179	23-Mar-21	0.255 L	27-Mar-21 01:21	1
PFNA	375-95-1	ND	0.979	1.96	3.92		B1C0179	23-Mar-21	0.255 L	27-Mar-21 01:21	1
PFOSA	754-91-6	ND	0.979	1.96	3.92		B1C0179	23-Mar-21	0.255 L	29-Mar-21 20:19	1
PFOS	1763-23-1	ND	0.979	1.96	3.92		B1C0179	23-Mar-21	0.255 L	27-Mar-21 01:21	1
9Cl-PF3ONS	756426-58-1	ND	0.979	1.96	3.92		B1C0179	23-Mar-21	0.255 L	27-Mar-21 01:21	1
PFDA	335-76-2	ND	0.979	1.96	3.92		B1C0179	23-Mar-21	0.255 L	27-Mar-21 01:21	1
8:2 FTS	39108-34-4	ND	0.979	1.96	3.92		B1C0179	23-Mar-21	0.255 L	27-Mar-21 01:21	1
PFNS	68259-12-1	ND	0.979	1.96	3.92		B1C0179	23-Mar-21	0.255 L	27-Mar-21 01:21	1
MeFOSAA	2355-31-9	ND	0.979	1.96	3.92		B1C0179	23-Mar-21	0.255 L	27-Mar-21 01:21	1
EtFOSAA	2991-50-6	ND	0.979	1.96	3.92		B1C0179	23-Mar-21	0.255 L	27-Mar-21 01:21	1
PFUnA	2058-94-8	ND	0.979	1.96	3.92		B1C0179	23-Mar-21	0.255 L	27-Mar-21 01:21	1
PFDS	335-77-3	ND	0.979	1.96	3.92		B1C0179	23-Mar-21	0.255 L	27-Mar-21 01:21	1
11Cl-PF3OUdS	763051-92-9	ND	0.979	1.96	3.92		B1C0179	23-Mar-21	0.255 L	27-Mar-21 01:21	1
PFDoA	307-55-1	ND	0.979	1.96	3.92		B1C0179	23-Mar-21	0.255 L	27-Mar-21 01:21	1
PFTrDA	72629-94-8	ND	0.979	1.96	3.92		B1C0179	23-Mar-21	0.255 L	27-Mar-21 01:21	1
PFTeDA	376-06-7	ND	0.979	1.96	3.92		B1C0179	23-Mar-21	0.255 L	27-Mar-21 01:21	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C3-PFBA	IS	52.0	25 - 150		B1C0179	23-Mar-21	0.255 L	27-Mar-21 01:21	1
13C3-PFPeA	IS	91.0	25 - 150		B1C0179	23-Mar-21	0.255 L	27-Mar-21 01:21	1
13C3-PFBS	IS	98.7	25 - 150		B1C0179	23-Mar-21	0.255 L	27-Mar-21 01:21	1
13C3-HFPO-DA	IS	70.0	25 - 150		B1C0179	23-Mar-21	0.255 L	27-Mar-21 01:21	1
13C2-4:2 FTS	IS	103	25 - 150		B1C0179	23-Mar-21	0.255 L	27-Mar-21 01:21	1
13C2-PFHxA	IS	92.1	25 - 150		B1C0179	23-Mar-21	0.255 L	27-Mar-21 01:21	1
13C4-PFHpA	IS	86.5	25 - 150		B1C0179	23-Mar-21	0.255 L	27-Mar-21 01:21	1
13C3-PFHxS	IS	103	25 - 150		B1C0179	23-Mar-21	0.255 L	27-Mar-21 01:21	1

Sample ID: GW2103111100GSC-FD

PFAS Isotope Dilution Method

Client Data

Name: AECOM
Project: LAPEER Well sampling/Bio solids
Location: CL1-MW1
Matrix: Aqueous
Date Collected: 11-Mar-21 11:00

Laboratory Data

Lab Sample: 2103187-05
Date Received: 16-Mar-21 13:34
Column: BEH C18

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C2-6:2 FTS	IS	97.2	25 - 150		B1C0179	23-Mar-21	0.255 L	27-Mar-21 01:21	1
13C5-PFNA	IS	88.5	25 - 150		B1C0179	23-Mar-21	0.255 L	27-Mar-21 01:21	1
13C8-PFOSA	IS	57.7	10 - 150		B1C0179	23-Mar-21	0.255 L	29-Mar-21 20:19	1
13C2-PFOA	IS	90.9	25 - 150		B1C0179	23-Mar-21	0.255 L	27-Mar-21 01:21	1
13C8-PFOS	IS	103	25 - 150		B1C0179	23-Mar-21	0.255 L	27-Mar-21 01:21	1
13C2-PFDA	IS	86.5	25 - 150		B1C0179	23-Mar-21	0.255 L	27-Mar-21 01:21	1
13C2-8:2 FTS	IS	95.7	25 - 150		B1C0179	23-Mar-21	0.255 L	27-Mar-21 01:21	1
d3-MeFOSAA	IS	96.9	25 - 150		B1C0179	23-Mar-21	0.255 L	27-Mar-21 01:21	1
13C2-PFUnA	IS	90.9	25 - 150		B1C0179	23-Mar-21	0.255 L	27-Mar-21 01:21	1
d5-EtFOSAA	IS	83.8	25 - 150		B1C0179	23-Mar-21	0.255 L	27-Mar-21 01:21	1
13C2-PFDoA	IS	83.3	25 - 150		B1C0179	23-Mar-21	0.255 L	27-Mar-21 01:21	1
13C2-PFTeDA	IS	75.2	20 - 150		B1C0179	23-Mar-21	0.255 L	27-Mar-21 01:21	1

DL - Detection Limit
LOD - Limit of Detection
LOQ - Limit of quantitation

Results reported to the DL.

When reported, PFHxS, PFOA, PFOS, MeFOSAA and EtFOSAA include both linear and branched isomers. Only the linear isomer is reported for all other analytes.

Sample ID: FB2103111100GSC

PFAS Isotope Dilution Method

Client Data

Name: AECOM
Project: LAPEER Well sampling/Bio solids
Location: Lapeer Blank
Matrix: Aqueous
Date Collected: 11-Mar-21 11:00

Laboratory Data

Lab Sample: 2103187-06
Date Received: 16-Mar-21 13:34
Column: BEH C18

Analyte	CAS Number	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBA	375-22-4	ND	1.02	2.03	4.07		B1C0179	23-Mar-21	0.246 L	27-Mar-21 01:31	1
PFPeA	2706-90-3	ND	1.02	2.03	4.07		B1C0179	23-Mar-21	0.246 L	27-Mar-21 01:31	1
PFBS	375-73-5	ND	1.02	2.03	4.07		B1C0179	23-Mar-21	0.246 L	27-Mar-21 01:31	1
4:2 FTS	757124-72-4	ND	1.02	2.03	4.07		B1C0179	23-Mar-21	0.246 L	27-Mar-21 01:31	1
PFHxA	307-24-4	ND	1.02	2.03	4.07		B1C0179	23-Mar-21	0.246 L	27-Mar-21 01:31	1
PFPeS	2706-91-4	ND	1.02	2.03	4.07		B1C0179	23-Mar-21	0.246 L	27-Mar-21 01:31	1
HFPO-DA	13252-13-6	ND	1.02	2.03	4.07		B1C0179	23-Mar-21	0.246 L	27-Mar-21 01:31	1
PFHpA	375-85-9	ND	1.02	2.03	4.07		B1C0179	23-Mar-21	0.246 L	27-Mar-21 01:31	1
ADONA	919005-14-4	ND	1.02	2.03	4.07		B1C0179	23-Mar-21	0.246 L	27-Mar-21 01:31	1
PFHxS	355-46-4	ND	1.02	2.03	4.07		B1C0179	23-Mar-21	0.246 L	27-Mar-21 01:31	1
6:2 FTS	27619-97-2	ND	1.02	2.03	4.07		B1C0179	23-Mar-21	0.246 L	27-Mar-21 01:31	1
PFOA	335-67-1	ND	1.02	2.03	4.07		B1C0179	23-Mar-21	0.246 L	27-Mar-21 01:31	1
PFecHS	646-83-3	ND	1.02	2.03	4.07		B1C0179	23-Mar-21	0.246 L	27-Mar-21 01:31	1
PFHpS	375-92-8	ND	1.02	2.03	4.07		B1C0179	23-Mar-21	0.246 L	27-Mar-21 01:31	1
PFNA	375-95-1	ND	1.02	2.03	4.07		B1C0179	23-Mar-21	0.246 L	27-Mar-21 01:31	1
PFOSA	754-91-6	ND	1.02	2.03	4.07		B1C0179	23-Mar-21	0.246 L	29-Mar-21 20:30	1
PFOS	1763-23-1	ND	1.02	2.03	4.07		B1C0179	23-Mar-21	0.246 L	27-Mar-21 01:31	1
9Cl-PF3ONS	756426-58-1	ND	1.02	2.03	4.07		B1C0179	23-Mar-21	0.246 L	27-Mar-21 01:31	1
PFDA	335-76-2	ND	1.02	2.03	4.07		B1C0179	23-Mar-21	0.246 L	27-Mar-21 01:31	1
8:2 FTS	39108-34-4	ND	1.02	2.03	4.07		B1C0179	23-Mar-21	0.246 L	27-Mar-21 01:31	1
PFNS	68259-12-1	ND	1.02	2.03	4.07		B1C0179	23-Mar-21	0.246 L	27-Mar-21 01:31	1
MeFOSAA	2355-31-9	ND	1.02	2.03	4.07		B1C0179	23-Mar-21	0.246 L	27-Mar-21 01:31	1
EtFOSAA	2991-50-6	ND	1.02	2.03	4.07		B1C0179	23-Mar-21	0.246 L	27-Mar-21 01:31	1
PFUnA	2058-94-8	ND	1.02	2.03	4.07		B1C0179	23-Mar-21	0.246 L	27-Mar-21 01:31	1
PFDS	335-77-3	ND	1.02	2.03	4.07		B1C0179	23-Mar-21	0.246 L	27-Mar-21 01:31	1
11Cl-PF3OUdS	763051-92-9	ND	1.02	2.03	4.07		B1C0179	23-Mar-21	0.246 L	27-Mar-21 01:31	1
PFDoA	307-55-1	ND	1.02	2.03	4.07		B1C0179	23-Mar-21	0.246 L	27-Mar-21 01:31	1
PFTrDA	72629-94-8	ND	1.02	2.03	4.07		B1C0179	23-Mar-21	0.246 L	27-Mar-21 01:31	1
PFTeDA	376-06-7	ND	1.02	2.03	4.07		B1C0179	23-Mar-21	0.246 L	27-Mar-21 01:31	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C3-PFBA	IS	106	25 - 150		B1C0179	23-Mar-21	0.246 L	27-Mar-21 01:31	1
13C3-PFPeA	IS	94.2	25 - 150		B1C0179	23-Mar-21	0.246 L	27-Mar-21 01:31	1
13C3-PFBS	IS	103	25 - 150		B1C0179	23-Mar-21	0.246 L	27-Mar-21 01:31	1
13C3-HFPO-DA	IS	89.5	25 - 150		B1C0179	23-Mar-21	0.246 L	27-Mar-21 01:31	1
13C2-4:2 FTS	IS	105	25 - 150		B1C0179	23-Mar-21	0.246 L	27-Mar-21 01:31	1
13C2-PFHxA	IS	96.3	25 - 150		B1C0179	23-Mar-21	0.246 L	27-Mar-21 01:31	1
13C4-PFHpA	IS	93.1	25 - 150		B1C0179	23-Mar-21	0.246 L	27-Mar-21 01:31	1
13C3-PFHxS	IS	104	25 - 150		B1C0179	23-Mar-21	0.246 L	27-Mar-21 01:31	1

Sample ID: FB2103111100GSC

PFAS Isotope Dilution Method

Client Data

Name: AECOM
Project: LAPEER Well sampling/Bio solids
Location: Lapeer Blank
Matrix: Aqueous
Date Collected: 11-Mar-21 11:00

Laboratory Data

Lab Sample: 2103187-06
Date Received: 16-Mar-21 13:34
Column: BEH C18

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C2-6:2 FTS	IS	98.9	25 - 150		B1C0179	23-Mar-21	0.246 L	27-Mar-21 01:31	1
13C5-PFNA	IS	96.6	25 - 150		B1C0179	23-Mar-21	0.246 L	27-Mar-21 01:31	1
13C8-PFOSA	IS	43.0	10 - 150		B1C0179	23-Mar-21	0.246 L	29-Mar-21 20:30	1
13C2-PFOA	IS	94.5	25 - 150		B1C0179	23-Mar-21	0.246 L	27-Mar-21 01:31	1
13C8-PFOS	IS	111	25 - 150		B1C0179	23-Mar-21	0.246 L	27-Mar-21 01:31	1
13C2-PFDA	IS	92.0	25 - 150		B1C0179	23-Mar-21	0.246 L	27-Mar-21 01:31	1
13C2-8:2 FTS	IS	105	25 - 150		B1C0179	23-Mar-21	0.246 L	27-Mar-21 01:31	1
d3-MeFOSAA	IS	97.0	25 - 150		B1C0179	23-Mar-21	0.246 L	27-Mar-21 01:31	1
13C2-PFUnA	IS	100	25 - 150		B1C0179	23-Mar-21	0.246 L	27-Mar-21 01:31	1
d5-EtFOSAA	IS	84.0	25 - 150		B1C0179	23-Mar-21	0.246 L	27-Mar-21 01:31	1
13C2-PFDoA	IS	93.1	25 - 150		B1C0179	23-Mar-21	0.246 L	27-Mar-21 01:31	1
13C2-PFTeDA	IS	72.9	20 - 150		B1C0179	23-Mar-21	0.246 L	27-Mar-21 01:31	1

DL - Detection Limit
LOD - Limit of Detection
LOQ - Limit of quantitation

Results reported to the DL.

When reported, PFHxS, PFOA, PFOS, MeFOSAA and EtFOSAA include both linear and branched isomers. Only the linear isomer is reported for all other analytes.

DATA QUALIFIERS & ABBREVIATIONS

B	This compound was also detected in the method blank
Conc.	Concentration
CRS	Cleanup Recovery Standard
D	Dilution
DL	Detection Limit
E	The associated compound concentration exceeded the calibration range of the instrument
H	Recovery and/or RPD was outside laboratory acceptance limits
I	Chemical Interference
IS	Internal Standard
J	The amount detected is below the Reporting Limit/LOQ
LOD	Limit of Detection
LOQ	Limit of Quantitation
M	Estimated Maximum Possible Concentration (CA Region 2 projects only)
MDL	Method Detection Limit
NA	Not applicable
ND	Not Detected
OPR	Ongoing Precision and Recovery sample
P	The reported concentration may include contribution from chlorinated diphenyl ether(s).
Q	The ion transition ratio is outside of the acceptance criteria.
RL	Reporting Limit
RL	For 537.1, the reported RLs are the MRLs.
TEQ	Toxic Equivalency, sum of the toxic equivalency factors (TEF) multiplied by the sample concentrations.
TEQMax	TEQ calculation that uses the detection limit as the concentration for non-detects
TEQMin	TEQ calculation that uses zero as the concentration for non-detects
TEQRisk	TEQ calculation that uses ½ the detection limit as the concentration for non-detects
U	Not Detected (specific projects only)
*	See Cover Letter

Unless otherwise noted, solid sample results are reported in dry weight. Tissue samples are reported in wet weight.

Vista Analytical Laboratory Certifications

Accrediting Authority	Certificate Number
Alaska Department of Environmental Conservation	17-013
Arkansas Department of Environmental Quality	19-013-0
California Department of Health – ELAP	2892
DoD ELAP - A2LA Accredited - ISO/IEC 17025:2005	3091.01
Florida Department of Health	E87777-23
Hawaii Department of Health	N/A
Louisiana Department of Environmental Quality	01977
Maine Department of Health	2018017
Massachusetts Department of Environmental Protection	N/A
Michigan Department of Environmental Quality	9932
Minnesota Department of Health	1521520
New Hampshire Environmental Accreditation Program	207718-B
New Jersey Department of Environmental Protection	190001
New York Department of Health	11411
Oregon Laboratory Accreditation Program	4042-010
Pennsylvania Department of Environmental Protection	016
Texas Commission on Environmental Quality	T104704189-19-10
Vermont Department of Health	VT-4042
Virginia Department of General Services	10272
Washington Department of Ecology	C584-19
Wisconsin Department of Natural Resources	998036160

Current certificates and lists of licensed parameters are located in the Quality Assurance office and are available upon request.

NELAP Accredited Test Methods

MATRIX: Air	
Description of Test	**Method**
Determination of Polychlorinated p-Dioxins & Polychlorinated Dibenzofurans	EPA 23
Determination of Polychlorinated p-Dioxins & Polychlorinated Dibenzofurans	EPA TO-9A

MATRIX: Biological Tissue	
Description of Test	**Method**
Tetra- through Octa-Chlorinated Dioxins and Furans by Isotope Dilution GC/HRMS	EPA 1613B
Brominated Diphenyl Ethers by HRGC/HRMS	EPA 1614A
Chlorinated Biphenyl Congeners in Water, Soil, Sediment, and Tissue by GC/HRMS	EPA 1668A/C
Pesticides in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS	EPA 1699
Perfluorinated Alkyl Acids in Drinking Water by SPE and LC/MS/MS	EPA 537
Polychlorinated Dibenzo-p-Dioxins and Polychlorinated Dibenzofurans by GC/HRMS	EPA 8280A/B
Polychlorinated Dibenzodioxins (PCDDs) and Polychlorinated Dibenzofurans (PCDFs) by GC/HRMS	EPA 8290/8290A

MATRIX: Drinking Water	
Description of Test	**Method**
2,3,7,8-Tetrachlorodibenzo- p-dioxin (2,3,7,8-TCDD) GC/HRMS	EPA 1613/1613B
1,4-Dioxane (1,4-Diethyleneoxide) analysis by GC/HRMS	EPA 522
Perfluorinated Alkyl Acids in Drinking Water by SPE and LC/MS/MS	EPA 537
Perfluorinated Alkyl Acids in Drinking Water by SPE and LC/MS/MS	ISO 25101 2009

MATRIX: Non-Potable Water	
Description of Test	**Method**
Tetra- through Octa-Chlorinated Dioxins and Furans by Isotope Dilution GC/HRMS	EPA 1613B
Brominated Diphenyl Ethers by HRGC/HRMS	EPA 1614A
Chlorinated Biphenyl Congeners in Water, Soil, Sediment, and Tissue by GC/HRMS	EPA 1668A/C
Pesticides in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS	EPA 1699
Perfluorinated Alkyl Acids in Drinking Water by SPE and LC/MS/MS	EPA 537
Dioxin by GC/HRMS	EPA 613
Polychlorinated Dibenzo-p-Dioxins and Polychlorinated Dibenzofurans by GC/HRMS	EPA 8280A/B
Polychlorinated Dibenzodioxins (PCDDs) and Polychlorinated Dibenzofurans (PCDFs) by GC/HRMS	EPA 8290/8290A

MATRIX: Solids	
Description of Test	**Method**
Tetra-Octa Chlorinated Dioxins and Furans by Isotope Dilution GC/HRMS	EPA 1613
Tetra- through Octa-Chlorinated Dioxins and Furans by Isotope Dilution GC/HRMS	EPA 1613B
Brominated Diphenyl Ethers by HRGC/HRMS	EPA 1614A
Chlorinated Biphenyl Congeners in Water, Soil, Sediment, and Tissue by GC/HRMS	EPA 1668A/C
Pesticides in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS	EPA 1699
Perfluorinated Alkyl Acids in Drinking Water by SPE and LC/MS/MS	EPA 537
Polychlorinated Dibenzo-p-Dioxins and Polychlorinated Dibenzofurans by GC/HRMS	EPA 8280A/B
Polychlorinated Dibenzodioxins (PCDDs) and Polychlorinated Dibenzofurans (PCDFs) by GC/HRMS	EPA 8290/8290A

Vista Analytical Laboratory

— revised COC — rec'd via email on 03/16/21 1414 mms 03/17/21

CHAIN OF CUSTODY

For Laboratory Use Only
Work Order #: 2103187 Temp: 3.6, 1.5 °C
Storage ID: R-13, WR-2 Storage Secured: Yes ☑ No ☐

TAT (check one): Standard: [X] 21 days; Rush (surcharge may apply): [ ] 14 days [ ] 7 days Specify:

Project ID: **LAPEER Well sampling/ Bio solids** PO#: **60588767** Sampler: **Garth Cousineau** (name)

Invoice to: Name	Company	Address	City	State	Ph#	Fax#
Stephanie Kammer	**EGLE**	**525 W. Allegan St**	**Lansing**	**MI**	**517-897-1597**	**517-241-3571**

Relinquished by (printed name and signature)	Date	Time	Received by (printed name and signature)	Date	Time
Garth Cousineau			see original COC		
Dorin Bogdan	3/16/2021	17:00			

SHIP TO: Vista Analytical Laboratory
1104 Windfield Way
El Dorado Hills, CA 95762

Method of Shipment:

ATTN:

Tracking No.:

Add Analysis(es) Requested

Sample ID	Date	Time	Location/Sample Description	Container(s) Quantity	Type	Matrix	Mod. EPA Method 537 PFOA/ PFOS	UCMR3 PFAS List:6	537 List: 14	PFAS List of 24	Other: Please List Below	PFAS List of 28 + PFECHS	EPA Method 537(DW only) PFOA/ PFOS	UCMR3 PFAS List:6	PFAS List: 14	Comments
GW2103111600GSC	3/11/21	1600	**CL1-MW4**	2	P	AQ						X				
GW2103111500GSC	3/11/21	1500	**CL1-MW2**	2	P	AQ						X				
GW2103111225GSC	3/11/21	1225	**CL1-MW3**	2	P	AQ						X				
GW2103111100GSC	3/11/21	1100	**CL1-MW1**	2	P	AQ						X				
GW2103111100GSC-FD	3/11/21	1100	**CL1-MW1**	2	P	AQ						X				**FIELD DUPLICATE**
FB2103111100GSC	3/11/21	1100	**Lapeer Blank**	2	P	AQ						X				**FIELD BLANK**

Special Instructions/Comments: **Send Results and Acknowledgements to:**
Michael.Wolf@aecom.com
Dorin.Bogdan@aecom.com
Robert.Kennedy@aecom.com

SEND DOCUMENTATION AND RESULTS TO:

Name: **Stephanie Kammer**
Company: **EGLE**
Address: **525 W. Allegan St**
City: **Lansing** MI 48909
Phone: **517-897-1597** **517-241-3571**
Email:

Container Types: P= HDPE, PJ= HDPE Jar, O = Other:

Bottle Preservation Type: T = Thiosulfate, TZ = Trizma:

Matrix Types: AQ = Aqueous, DW = Drinking Water, EF = Effluent, PP = Pulp/Paper, SD = Sediment, SL = Sludge, SO = Soil, WW = Wastewater, B = Blood/Serum, O = Other:

Page 3 of 4 — see revised COC

Vista Analytical Laboratory

CHAIN OF CUSTODY

For Laboratory Use Only
Work Order #: 2103187 Temp: 3.6, 1.5 °C
Storage ID: R-13, WR-2 Storage Secured: Yes ☑ No ☐

TAT (check one): Standard: X 21 days; Rush (surcharge may apply): ☐ 14 days ☐ 7 days Specify:

Project ID: LAPEER Well sampling/ Bio solids PO#: 60588767 Sampler: Garth Cousineau (name)

Invoice to: Name	Company	Address	City	State	Ph#	Fax#
Stephanie Kammer	EGLE	525 W. Allegan St	Lansing	MI	517-897-1597	517-241-3571

Relinquished by (printed name and signature)	Date	Time	Received by (printed name and signature)	Date	Time
~~Garth Cousineau~~ Michal Kosela	3/15/21	1830	Karen Y. Holt	03/16/21	17:34
Relinquished by (printed name and signature)	Date	Time	Received by (printed name and signature)	Date	Time

SHIP TO: Vista Analytical Laboratory
1104 Windfield Way
El Dorado Hills, CA 95762

Method of Shipment:

ATTN: Tracking No.:

Add Analysis(es) Requested

Sample ID	Date	Time	Location/Sample Description	Container(s) Quantity	Type	Matrix	Mod. EPA Method 537: PFOA/ PFOS	UCMR3 PFAS List:6	537 List: 14	PFAS List of 24	Other: Please List Below	PFAS List of 28 - Branch and Linear	EPA Method 537(DW only): PFOA/ PFOS	UCMR3 PFAS List:6	PFAS List: 14	Comments
GW2103111600GSC	3/11/21	1600	CL1-MW4	2	P	AQ				X						
GW2103111500GSC	3/11/21	1500	CL1-MW2	2	P	AQ				X						
GW2103111225GSC	3/11/21	1225	CL1-MW3	2	P	AQ				X						
GW2103111100GSC	3/11/21	1100	CL1-MW1	2	P	AQ				X						
GW2103111100GSC-FD	3/11/21	1100	CL1-MW1	2	P	AQ				X						FIELD DUPLICATE
FB2103111100GSC	3/11/21	1100		2	P	AQ				X						FIELD BLANK

Special Instructions/Comments: **Send Results and Acknowledgements to:**
Michael.Wolf@aecom.com
Dorin.Bogdan@aecom.com
Robert.Kennedy@aecom.com

SEND DOCUMENTATION AND RESULTS TO:
Name: Stephanie Kammer
Company: EGLE
Address: 525 W. Allegan St
City: Lansing MI 48909
Phone: 517-897-1597 517-241-3571
Email:

Container Types: P= HDPE, PJ= HDPE Jar, O = Other:

Bottle Preservation Type: T = Thiosulfate, TZ = Trizma:

Matrix Types: AQ = Aqueous, DW = Drinking Water, EF = Effluent, PP = Pulp/Paper, SD = Sediment, SL = Sludge, SO = Soil, WW = Wastewater, B = Blood/Serum, O = Other:

Vista Analytical Laboratory

Sample Log-In Checklist

Vista Work Order #: 2103187 TAT std

Samples Arrival:	**Date/Time** 03/16/21 11:34		**Initials:** KS		**Location:** WR-2 **Shelf/Rack:** N/A		
Delivered By:	(FedEx)	UPS	On Trac	GLS	DHL	Hand Delivered	Other
Preservation:	(Ice)		Blue Ice		Techni Ice	Dry Ice	None
Temp °C: 3.6 (uncorrected) **Temp °C:** 3.6 (corrected)			**Probe used:** Y (N)		**Thermometer ID:** IR-4		

	YES	NO	NA
Shipping Container(s) Intact?	✓		
Shipping Custody Seals Intact?			✓
Airbill ✓ Trk # 7847 7748 5851	✓		
Shipping Documentation Present?	✓		
Shipping Container: Vista, (Client), Retain, (Return)		Dispose	
Chain of Custody / Sample Documentation Present?	✓		
Chain of Custody / Sample Documentation Complete?	✓		
Holding Time Acceptable?	✓		

Logged In:	**Date/Time** 03/17/21 0850	**Initials:** WWS	**Location:** R-13, WR-2 **Shelf/Rack:** 3-2, F-5
COC Anomaly/Sample Acceptance Form completed?		✓	✓

Comments:

Vista Analytical Laboratory

Sample Log-In Checklist

Page # 2 of 2

Vista Work Order #: 2103187 TAT std

Samples Arrival:	**Date/Time** 03/16/21 13:34		**Initials:** KS		**Location:** WR-2 **Shelf/Rack:** N/A		
Delivered By:	(FedEx)	UPS	On Trac	GLS	DHL	Hand Delivered	Other
Preservation:	(Ice)		Blue Ice		Techni Ice	Dry Ice	None
Temp °C: 1.5 (uncorrected)			**Probe used:** Y / (N)		**Thermometer ID:** IR-4		
Temp °C: 1.5 (corrected)							

	YES	NO	NA
Shipping Container(s) Intact?	✓		
Shipping Custody Seals Intact?			✓
Airbill ✓ Trk # 7847 7765 3745	✓		
Shipping Documentation Present?	✓		
Shipping Container: Vista / (Client) / Retain / (Return) / Dispose			
Chain of Custody / Sample Documentation Present?	✓		
Chain of Custody / Sample Documentation Complete?	✓		
Holding Time Acceptable?	✓		

Logged In:	**Date/Time** 03/17/21 0850	**Initials:** WWS	**Location:** R-13, WR-2 **Shelf/Rack:** B-2, F-5
COC Anomaly/Sample Acceptance Form completed?		✓	✓

Comments:

CoC/Label Reconciliation Report WO# 2103187

	LabNumber	CoC Sample ID		SampleAlias	Sample Date/Time		Container	BaseMatrix	Report Matrix	Sample Comments
c1	2103187-01	A GW2103111600GSC	☑	CL1-MW4	11-Mar-21 16:00	☑	HDPE Bottle, 250 mL	Aqueous	Aqueous	
	2103187-01	B GW2103111600GSC	☑	CL1-MW4	11-Mar-21 16:00	☑	HDPE Bottle, 250 mL	Aqueous	Aqueous	
	2103187-02	A GW2103111500GSC	☑	CL1-MW2	11-Mar-21 15:00	☑	HDPE Bottle, 250 mL	Aqueous	Aqueous	
	2103187-02	B GW2103111500GSC	☑	CL1-MW2	11-Mar-21 15:00	☑	HDPE Bottle, 250 mL	Aqueous	Aqueous	
c2	2103187-03	A GW2103111225GSC	☑	CL1-MW3	11-Mar-21 12:25	☑	HDPE Bottle, 250 mL	Aqueous	Aqueous	
	2103187-03	B GW2103111225GSC	☑	CL1-MW3	11-Mar-21 12:25	☑	HDPE Bottle, 250 mL	Aqueous	Aqueous	
	2103187-04	A GW2103111100GSC	☑	CL1-MW1	11-Mar-21 11:00	☑	HDPE Bottle, 250 mL	Aqueous	Aqueous	
	2103187-04	B GW2103111100GSC	☑	CL1-MW1	11-Mar-21 11:00	☑	HDPE Bottle, 250 mL	Aqueous	Aqueous	
	2103187-05	A GW2103111100GSC-FD	☑	CL1-MW1	11-Mar-21 11:00	☑	HDPE Bottle, 250 mL	Aqueous	Aqueous	
	2103187-05	B GW2103111100GSC-FD	☑	CL1-MW1	11-Mar-21 11:00	☑	HDPE Bottle, 250 mL	Aqueous	Aqueous	
	2103187-06	A FB2103111100GSC	☑	Lapeer Blank	11-Mar-21 11:00	☑	HDPE Bottle, 250 mL	Aqueous	Aqueous	
	2103187-06	B FB2103111100GSC	☑	Lapeer Blank	11-Mar-21 11:00	☑	HDPE Bottle, 250 mL	Aqueous	Aqueous	

Checkmarks indicate that information on the COC reconciled with the sample label.
Any discrepancies are noted in the following columns.

	Yes	No	NA
Sample Container Intact?	✓		
Sample Custody Seals Intact?			✓
Adequate Sample Volume?	✓		
Container Type Appropriate for Analysis(es)	✓		

Comments: c1 = Cooler 1 of 2
c2 = Cooler 2 of 2

Preservation Documented: Na2S2O3 Trizma NH4CH3CO2 (None Req) Other

Verifed by/Date: 03/17/21

Appendix D – 2022 Analytical Reports

May 25, 2022

Vista Work Order No. 2205055

Dr. Dorin Bogdan
AECOM
5350 Sparks Dr SE
Grand Rapids, MI 49546

Dear Dr. Bogdan,

Enclosed are the results for the sample set received at Vista Analytical Laboratory on May 04, 2022 under your Project Name 'LAPEER Well sampling/ Bio solids'.

Vista Analytical Laboratory is committed to serving you effectively. If you require additional information, please contact me at 916-673-1520 or by email at jfox@vista-analytical.com.

Thank you for choosing Vista as part of your analytical support team.

Sincerely,

Jamie Fox
Laboratory Director

Vista Work Order No. 2205055
Case Narrative

Sample Condition on Receipt:

Six aqueous samples were received and stored securely in accordance with Vista standard operating procedures and EPA methodology. The samples were received in good condition and within the recommended temperature requirements.

Analytical Notes:

PFAS Isotope Dilution Method

The samples were extracted and analyzed for a selected list of PFAS using Vista's PFAS Isotope Dilution Method. The results for PFHxS, PFOA, PFOS, MeFOSAA and EtFOSAA include both linear and branched isomers. Results for all other analytes include the linear isomers only.

Holding Times

The samples were extracted and analyzed within the hold times.

Quality Control

The Initial Calibration and Continuing Calibration Verifications met the acceptance criteria.

A Method Blank and Ongoing Precision and Recovery (OPR) sample were extracted and analyzed with the preparation batch. No analytes were detected in the Method Blank above 1/2 the LOQ. The OPR recoveries were within the acceptance criteria.

The labeled standard recoveries for all QC and field samples were within the acceptance criteria.

TABLE OF CONTENTS

Sample Inventory Report

Vista Sample ID	Client Sample ID	Sampled	Received	Components/Containers
2205055-01	GW2204261205GSC	26-Apr-22 12:05	04-May-22 09:35	HDPE Bottle, 250 mL
				HDPE Bottle, 250 mL
2205055-02	GW2204261045GSC	26-Apr-22 10:45	04-May-22 09:35	HDPE Bottle, 250 mL
				HDPE Bottle, 250 mL
2205055-03	GW2204261300GSC	26-Apr-22 13:00	04-May-22 09:35	HDPE Bottle, 250 mL
				HDPE Bottle, 250 mL
2205055-04	GW2204260955GSC	26-Apr-22 09:55	04-May-22 09:35	HDPE Bottle, 250 mL
				HDPE Bottle, 250 mL
2205055-05	GW2204261205GSC-FD	26-Apr-22 12:05	04-May-22 09:35	HDPE Bottle, 250 mL
				HDPE Bottle, 250 mL
2205055-06	FB2204261315GSC	26-Apr-22 13:15	04-May-22 09:35	HDPE Bottle, 250 mL
				HDPE Bottle, 250 mL

ANALYTICAL RESULTS

Sample ID: Method Blank **PFAS Isotope Dilution Method**

Client Data

Name: AECOM Matrix: Aqueous

Project: LAPEER Well sampling/ Bio solids

Laboratory Data

Lab Sample: B22E063-BLK1 Column: BEH C18

Analyte	CAS Number	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBA	375-22-4	ND	1.00	2.00	4.00		B22E063	19-May-22	0.250 L	23-May-22 22:42	1
PFPeA	2706-90-3	ND	1.00	2.00	4.00		B22E063	19-May-22	0.250 L	23-May-22 22:42	1
PFBS	375-73-5	ND	1.00	2.00	4.00		B22E063	19-May-22	0.250 L	23-May-22 22:42	1
4:2 FTS	757124-72-4	ND	1.00	2.00	4.00		B22E063	19-May-22	0.250 L	23-May-22 22:42	1
PFHxA	307-24-4	ND	1.00	2.00	4.00		B22E063	19-May-22	0.250 L	23-May-22 22:42	1
PFPeS	2706-91-4	ND	1.00	2.00	4.00		B22E063	19-May-22	0.250 L	23-May-22 22:42	1
HFPO-DA	13252-13-6	ND	1.00	2.00	4.00		B22E063	19-May-22	0.250 L	23-May-22 22:42	1
PFHpA	375-85-9	ND	1.00	2.00	4.00		B22E063	19-May-22	0.250 L	23-May-22 22:42	1
ADONA	919005-14-4	ND	1.00	2.00	4.00		B22E063	19-May-22	0.250 L	23-May-22 22:42	1
PFHxS	355-46-4	ND	1.00	2.00	4.00		B22E063	19-May-22	0.250 L	23-May-22 22:42	1
6:2 FTS	27619-97-2	ND	1.00	2.00	4.00		B22E063	19-May-22	0.250 L	23-May-22 22:42	1
PFOA	335-67-1	ND	1.00	2.00	4.00		B22E063	19-May-22	0.250 L	23-May-22 22:42	1
PFecHS	646-83-3	ND	1.00	2.00	4.00		B22E063	19-May-22	0.250 L	23-May-22 22:42	1
PFHpS	375-92-8	ND	1.00	2.00	4.00		B22E063	19-May-22	0.250 L	23-May-22 22:42	1
PFNA	375-95-1	ND	1.00	2.00	4.00		B22E063	19-May-22	0.250 L	23-May-22 22:42	1
PFOSA	754-91-6	ND	1.00	2.00	4.00		B22E063	19-May-22	0.250 L	23-May-22 22:42	1
PFOS	1763-23-1	ND	1.00	2.00	4.00		B22E063	19-May-22	0.250 L	23-May-22 22:42	1
9Cl-PF3ONS	756426-58-1	ND	1.00	2.00	4.00		B22E063	19-May-22	0.250 L	23-May-22 22:42	1
PFDA	335-76-2	ND	1.00	2.00	4.00		B22E063	19-May-22	0.250 L	23-May-22 22:42	1
8:2 FTS	39108-34-4	ND	1.00	2.00	4.00		B22E063	19-May-22	0.250 L	23-May-22 22:42	1
PFNS	68259-12-1	ND	1.00	2.00	4.00		B22E063	19-May-22	0.250 L	23-May-22 22:42	1
MeFOSAA	2355-31-9	ND	1.00	2.00	4.00		B22E063	19-May-22	0.250 L	23-May-22 22:42	1
EtFOSAA	2991-50-6	ND	1.00	2.00	4.00		B22E063	19-May-22	0.250 L	23-May-22 22:42	1
PFUnA	2058-94-8	ND	1.00	2.00	4.00		B22E063	19-May-22	0.250 L	23-May-22 22:42	1
PFDS	335-77-3	ND	1.00	2.00	4.00		B22E063	19-May-22	0.250 L	23-May-22 22:42	1
11Cl-PF3OUdS	763051-92-9	ND	1.00	2.00	4.00		B22E063	19-May-22	0.250 L	23-May-22 22:42	1
PFDoA	307-55-1	ND	1.00	2.00	4.00		B22E063	19-May-22	0.250 L	23-May-22 22:42	1
PFTrDA	72629-94-8	ND	1.00	2.00	4.00		B22E063	19-May-22	0.250 L	23-May-22 22:42	1
PFTeDA	376-06-7	ND	1.00	2.00	4.00		B22E063	19-May-22	0.250 L	23-May-22 22:42	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C3-PFBA	IS	112	25 - 150		B22E063	19-May-22	0.250 L	23-May-22 22:42	1
13C3-PFPeA	IS	88.3	25 - 150		B22E063	19-May-22	0.250 L	23-May-22 22:42	1
13C3-PFBS	IS	107	25 - 150		B22E063	19-May-22	0.250 L	23-May-22 22:42	1
13C3-HFPO-DA	IS	81.9	25 - 150		B22E063	19-May-22	0.250 L	23-May-22 22:42	1
13C2-4:2 FTS	IS	95.8	25 - 150		B22E063	19-May-22	0.250 L	23-May-22 22:42	1
13C2-PFHxA	IS	97.5	25 - 150		B22E063	19-May-22	0.250 L	23-May-22 22:42	1
13C4-PFHpA	IS	104	25 - 150		B22E063	19-May-22	0.250 L	23-May-22 22:42	1
13C3-PFHxS	IS	101	25 - 150		B22E063	19-May-22	0.250 L	23-May-22 22:42	1

Sample ID: Method Blank

PFAS Isotope Dilution Method

Client Data

Name: AECOM
Project: LAPEER Well sampling/ Bio solids
Matrix: Aqueous

Laboratory Data

Lab Sample: B22E063-BLK1
Column: BEH C18

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C2-6:2 FTS	IS	106	25 - 150		B22E063	19-May-22	0.250 L	23-May-22 22:42	1
13C5-PFNA	IS	105	25 - 150		B22E063	19-May-22	0.250 L	23-May-22 22:42	1
13C8-PFOSA	IS	59.1	10 - 150		B22E063	19-May-22	0.250 L	23-May-22 22:42	1
13C2-PFOA	IS	108	25 - 150		B22E063	19-May-22	0.250 L	23-May-22 22:42	1
13C8-PFOS	IS	112	25 - 150		B22E063	19-May-22	0.250 L	23-May-22 22:42	1
13C2-PFDA	IS	92.8	25 - 150		B22E063	19-May-22	0.250 L	23-May-22 22:42	1
13C2-8:2 FTS	IS	93.1	25 - 150		B22E063	19-May-22	0.250 L	23-May-22 22:42	1
d3-MeFOSAA	IS	98.1	25 - 150		B22E063	19-May-22	0.250 L	23-May-22 22:42	1
13C2-PFUnA	IS	100	25 - 150		B22E063	19-May-22	0.250 L	23-May-22 22:42	1
d5-EtFOSAA	IS	88.4	25 - 150		B22E063	19-May-22	0.250 L	23-May-22 22:42	1
13C2-PFDoA	IS	77.5	25 - 150		B22E063	19-May-22	0.250 L	23-May-22 22:42	1
13C2-PFTeDA	IS	59.6	20 - 150		B22E063	19-May-22	0.250 L	23-May-22 22:42	1

DL - Detection Limit
LOD - Limit of Detection
LOQ - Limit of quantitation

Results reported to the DL.

When reported, PFHxS, PFOA, PFOS, MeFOSAA and EtFOSAA include both linear and branched isomers. Only the linear isomer is reported for all other analytes.

Sample ID: OPR **PFAS Isotope Dilution Method**

Client Data

Name: AECOM
Project: LAPEER Well sampling/ Bio solids
Matrix: Aqueous

Laboratory Data

Lab Sample: B22E063-BS1
Column: BEH C18

Analyte	CAS Number	Amt Found (ng/L)	Spike Amt	% Rec	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBA	375-22-4	44.1	40.0	110	65 - 135		B22E063	19-May-22	0.250 L	23-May-22 22:52	1
PFPeA	2706-90-3	47.3	40.0	118	65 - 135		B22E063	19-May-22	0.250 L	23-May-22 22:52	1
PFBS	375-73-5	46.2	40.0	115	65 - 135		B22E063	19-May-22	0.250 L	23-May-22 22:52	1
4:2 FTS	757124-72-4	35.6	40.0	89.1	60 - 145		B22E063	19-May-22	0.250 L	23-May-22 22:52	1
PFHxA	307-24-4	41.8	40.0	104	65 - 135		B22E063	19-May-22	0.250 L	23-May-22 22:52	1
PFPeS	2706-91-4	40.1	40.0	100	65 - 135		B22E063	19-May-22	0.250 L	23-May-22 22:52	1
HFPO-DA	13252-13-6	39.7	40.0	99.3	65 - 135		B22E063	19-May-22	0.250 L	23-May-22 22:52	1
PFHpA	375-85-9	44.9	40.0	112	65 - 135		B22E063	19-May-22	0.250 L	23-May-22 22:52	1
ADONA	919005-14-4	45.1	40.0	113	65 - 135		B22E063	19-May-22	0.250 L	23-May-22 22:52	1
PFHxS	355-46-4	45.3	40.0	113	65 - 135		B22E063	19-May-22	0.250 L	23-May-22 22:52	1
6:2 FTS	27619-97-2	39.3	40.0	98.3	60 - 140		B22E063	19-May-22	0.250 L	23-May-22 22:52	1
PFOA	335-67-1	43.2	40.0	108	65 - 135		B22E063	19-May-22	0.250 L	23-May-22 22:52	1
PFecHS	646-83-3	38.7	40.0	96.8	65 - 135		B22E063	19-May-22	0.250 L	23-May-22 22:52	1
PFHpS	375-92-8	42.4	40.0	106	65 - 135		B22E063	19-May-22	0.250 L	23-May-22 22:52	1
PFNA	375-95-1	40.7	40.0	102	65 - 135		B22E063	19-May-22	0.250 L	23-May-22 22:52	1
PFOSA	754-91-6	44.8	40.0	112	65 - 140		B22E063	19-May-22	0.250 L	23-May-22 22:52	1
PFOS	1763-23-1	45.7	40.0	114	65 - 140		B22E063	19-May-22	0.250 L	23-May-22 22:52	1
9Cl-PF3ONS	756426-58-1	38.9	40.0	97.2	65 - 135		B22E063	19-May-22	0.250 L	23-May-22 22:52	1
PFDA	335-76-2	42.2	40.0	106	65 - 135		B22E063	19-May-22	0.250 L	23-May-22 22:52	1
8:2 FTS	39108-34-4	42.8	40.0	107	65 - 135		B22E063	19-May-22	0.250 L	23-May-22 22:52	1
PFNS	68259-12-1	38.3	40.0	95.9	65 - 135		B22E063	19-May-22	0.250 L	23-May-22 22:52	1
MeFOSAA	2355-31-9	42.0	40.0	105	65 - 135		B22E063	19-May-22	0.250 L	23-May-22 22:52	1
EtFOSAA	2991-50-6	36.7	40.0	91.9	65 - 135		B22E063	19-May-22	0.250 L	23-May-22 22:52	1
PFUnA	2058-94-8	44.6	40.0	112	65 - 140		B22E063	19-May-22	0.250 L	23-May-22 22:52	1
PFDS	335-77-3	40.0	40.0	100	50 - 150		B22E063	19-May-22	0.250 L	23-May-22 22:52	1
11Cl-PF3OUdS	763051-92-9	47.2	40.0	118	65 - 135		B22E063	19-May-22	0.250 L	23-May-22 22:52	1
PFDoA	307-55-1	36.2	40.0	90.6	65 - 135		B22E063	19-May-22	0.250 L	23-May-22 22:52	1
PFTrDA	72629-94-8	36.4	40.0	91.0	60 - 140		B22E063	19-May-22	0.250 L	23-May-22 22:52	1
PFTeDA	376-06-7	37.6	40.0	94.0	65 - 135		B22E063	19-May-22	0.250 L	23-May-22 22:52	1

Labeled Standards	Type	% Rec	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C3-PFBA	IS	95.5	25 - 150		B22E063	19-May-22	0.250 L	23-May-22 22:52	1
13C3-PFPeA	IS	77.9	25 - 150		B22E063	19-May-22	0.250 L	23-May-22 22:52	1
13C3-PFBS	IS	103	25 - 150		B22E063	19-May-22	0.250 L	23-May-22 22:52	1
13C3-HFPO-DA	IS	85.4	25 - 150		B22E063	19-May-22	0.250 L	23-May-22 22:52	1
13C2-4:2 FTS	IS	99.0	25 - 150		B22E063	19-May-22	0.250 L	23-May-22 22:52	1

Sample ID: OPR **PFAS Isotope Dilution Method**

Client Data

Name: AECOM
Project: LAPEER Well sampling/ Bio solids
Matrix: Aqueous

Laboratory Data

Lab Sample: B22E063-BS1
Column: BEH C18

Labeled Standards	Type	% Rec	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C2-PFHxA	IS	95.4	25 - 150		B22E063	19-May-22	0.250 L	23-May-22 22:52	1
13C4-PFHpA	IS	109	25 - 150		B22E063	19-May-22	0.250 L	23-May-22 22:52	1
13C3-PFHxS	IS	104	25 - 150		B22E063	19-May-22	0.250 L	23-May-22 22:52	1
13C2-6:2 FTS	IS	106	25 - 150		B22E063	19-May-22	0.250 L	23-May-22 22:52	1
13C5-PFNA	IS	95.6	25 - 150		B22E063	19-May-22	0.250 L	23-May-22 22:52	1
13C8-PFOSA	IS	52.6	10 - 150		B22E063	19-May-22	0.250 L	23-May-22 22:52	1
13C2-PFOA	IS	107	25 - 150		B22E063	19-May-22	0.250 L	23-May-22 22:52	1
13C8-PFOS	IS	106	25 - 150		B22E063	19-May-22	0.250 L	23-May-22 22:52	1
13C2-PFDA	IS	94.6	25 - 150		B22E063	19-May-22	0.250 L	23-May-22 22:52	1
13C2-8:2 FTS	IS	83.4	25 - 150		B22E063	19-May-22	0.250 L	23-May-22 22:52	1
d3-MeFOSAA	IS	94.4	25 - 150		B22E063	19-May-22	0.250 L	23-May-22 22:52	1
13C2-PFUnA	IS	102	25 - 150		B22E063	19-May-22	0.250 L	23-May-22 22:52	1
d5-EtFOSAA	IS	87.8	25 - 150		B22E063	19-May-22	0.250 L	23-May-22 22:52	1
13C2-PFDoA	IS	82.6	25 - 150		B22E063	19-May-22	0.250 L	23-May-22 22:52	1
13C2-PFTeDA	IS	60.1	20 - 150		B22E063	19-May-22	0.250 L	23-May-22 22:52	1

Sample ID: GW2204261205GSC

PFAS Isotope Dilution Method

Client Data

Name: AECOM
Project: LAPEER Well sampling/ Bio solids
Location: CL1-MW4
Matrix: Aqueous
Date Collected: 26-Apr-22 12:05

Laboratory Data

Lab Sample: 2205055-01
Date Received: 04-May-22 09:35
Column: BEH C18

Analyte	CAS Number	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBA	375-22-4	104	1.00	2.01	4.02		B22E063	19-May-22	0.249 L	23-May-22 23:02	1
PFPeA	2706-90-3	153	1.00	2.01	4.02		B22E063	19-May-22	0.249 L	23-May-22 23:02	1
PFBS	375-73-5	107	1.00	2.01	4.02		B22E063	19-May-22	0.249 L	23-May-22 23:02	1
4:2 FTS	757124-72-4	ND	1.00	2.01	4.02		B22E063	19-May-22	0.249 L	23-May-22 23:02	1
PFHxA	307-24-4	144	1.00	2.01	4.02		B22E063	19-May-22	0.249 L	23-May-22 23:02	1
PFPeS	2706-91-4	1.51	1.00	2.01	4.02	J	B22E063	19-May-22	0.249 L	23-May-22 23:02	1
HFPO-DA	13252-13-6	ND	1.00	2.01	4.02		B22E063	19-May-22	0.249 L	23-May-22 23:02	1
PFHpA	375-85-9	62.7	1.00	2.01	4.02		B22E063	19-May-22	0.249 L	23-May-22 23:02	1
ADONA	919005-14-4	ND	1.00	2.01	4.02		B22E063	19-May-22	0.249 L	23-May-22 23:02	1
PFHxS	355-46-4	5.29	1.00	2.01	4.02		B22E063	19-May-22	0.249 L	23-May-22 23:02	1
6:2 FTS	27619-97-2	ND	1.00	2.01	4.02		B22E063	19-May-22	0.249 L	23-May-22 23:02	1
PFOA	335-67-1	90.5	1.00	2.01	4.02		B22E063	19-May-22	0.249 L	23-May-22 23:02	1
PFecHS	646-83-3	3.67	1.00	2.01	4.02	J	B22E063	19-May-22	0.249 L	23-May-22 23:02	1
PFHpS	375-92-8	ND	1.00	2.01	4.02		B22E063	19-May-22	0.249 L	23-May-22 23:02	1
PFNA	375-95-1	ND	1.00	2.01	4.02		B22E063	19-May-22	0.249 L	23-May-22 23:02	1
PFOSA	754-91-6	ND	1.00	2.01	4.02		B22E063	19-May-22	0.249 L	23-May-22 23:02	1
PFOS	1763-23-1	21.7	1.00	2.01	4.02		B22E063	19-May-22	0.249 L	23-May-22 23:02	1
9Cl-PF3ONS	756426-58-1	ND	1.00	2.01	4.02		B22E063	19-May-22	0.249 L	23-May-22 23:02	1
PFDA	335-76-2	ND	1.00	2.01	4.02		B22E063	19-May-22	0.249 L	23-May-22 23:02	1
8:2 FTS	39108-34-4	ND	1.00	2.01	4.02		B22E063	19-May-22	0.249 L	23-May-22 23:02	1
PFNS	68259-12-1	ND	1.00	2.01	4.02		B22E063	19-May-22	0.249 L	23-May-22 23:02	1
MeFOSAA	2355-31-9	ND	1.00	2.01	4.02		B22E063	19-May-22	0.249 L	23-May-22 23:02	1
EtFOSAA	2991-50-6	ND	1.00	2.01	4.02		B22E063	19-May-22	0.249 L	23-May-22 23:02	1
PFUnA	2058-94-8	ND	1.00	2.01	4.02		B22E063	19-May-22	0.249 L	23-May-22 23:02	1
PFDS	335-77-3	ND	1.00	2.01	4.02		B22E063	19-May-22	0.249 L	23-May-22 23:02	1
11Cl-PF3OUdS	763051-92-9	ND	1.00	2.01	4.02		B22E063	19-May-22	0.249 L	23-May-22 23:02	1
PFDoA	307-55-1	ND	1.00	2.01	4.02		B22E063	19-May-22	0.249 L	23-May-22 23:02	1
PFTrDA	72629-94-8	ND	1.00	2.01	4.02		B22E063	19-May-22	0.249 L	23-May-22 23:02	1
PFTeDA	376-06-7	ND	1.00	2.01	4.02		B22E063	19-May-22	0.249 L	23-May-22 23:02	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C3-PFBA	IS	105	25 - 150		B22E063	19-May-22	0.249 L	23-May-22 23:02	1
13C3-PFPeA	IS	95.2	25 - 150		B22E063	19-May-22	0.249 L	23-May-22 23:02	1
13C3-PFBS	IS	116	25 - 150		B22E063	19-May-22	0.249 L	23-May-22 23:02	1
13C3-HFPO-DA	IS	84.1	25 - 150		B22E063	19-May-22	0.249 L	23-May-22 23:02	1
13C2-4:2 FTS	IS	103	25 - 150		B22E063	19-May-22	0.249 L	23-May-22 23:02	1
13C2-PFHxA	IS	104	25 - 150		B22E063	19-May-22	0.249 L	23-May-22 23:02	1
13C4-PFHpA	IS	108	25 - 150		B22E063	19-May-22	0.249 L	23-May-22 23:02	1

Sample ID: GW2204261205GSC

PFAS Isotope Dilution Method

Client Data

Name: AECOM
Project: LAPEER Well sampling/ Bio solids
Location: CL1-MW4
Matrix: Aqueous
Date Collected: 26-Apr-22 12:05

Laboratory Data

Lab Sample: 2205055-01
Date Received: 04-May-22 09:35
Column: BEH C18

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C3-PFHxS	IS	105	25 - 150		B22E063	19-May-22	0.249 L	23-May-22 23:02	1
13C2-6:2 FTS	IS	113	25 - 150		B22E063	19-May-22	0.249 L	23-May-22 23:02	1
13C5-PFNA	IS	102	25 - 150		B22E063	19-May-22	0.249 L	23-May-22 23:02	1
13C8-PFOSA	IS	84.2	10 - 150		B22E063	19-May-22	0.249 L	23-May-22 23:02	1
13C2-PFOA	IS	117	25 - 150		B22E063	19-May-22	0.249 L	23-May-22 23:02	1
13C8-PFOS	IS	108	25 - 150		B22E063	19-May-22	0.249 L	23-May-22 23:02	1
13C2-PFDA	IS	88.4	25 - 150		B22E063	19-May-22	0.249 L	23-May-22 23:02	1
13C2-8:2 FTS	IS	86.9	25 - 150		B22E063	19-May-22	0.249 L	23-May-22 23:02	1
d3-MeFOSAA	IS	113	25 - 150		B22E063	19-May-22	0.249 L	23-May-22 23:02	1
13C2-PFUnA	IS	101	25 - 150		B22E063	19-May-22	0.249 L	23-May-22 23:02	1
d5-EtFOSAA	IS	102	25 - 150		B22E063	19-May-22	0.249 L	23-May-22 23:02	1
13C2-PFDoA	IS	85.5	25 - 150		B22E063	19-May-22	0.249 L	23-May-22 23:02	1
13C2-PFTeDA	IS	62.7	20 - 150		B22E063	19-May-22	0.249 L	23-May-22 23:02	1

DL - Detection Limit
LOD - Limit of Detection
LOQ - Limit of quantitation

Results reported to the DL.

When reported, PFHxS, PFOA, PFOS, MeFOSAA and EtFOSAA include both linear and branched isomers. Only the linear isomer is reported for all other analytes.

Sample ID: GW2204261045GSC

PFAS Isotope Dilution Method

Client Data

Name: AECOM
Project: LAPEER Well sampling/ Bio solids
Location: CL1-MW2
Matrix: Aqueous
Date Collected: 26-Apr-22 10:45

Laboratory Data

Lab Sample: 2205055-02
Date Received: 04-May-22 09:35
Column: BEH C18

Analyte	CAS Number	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBA	375-22-4	71.0	1.00	2.01	4.01		B22E063	19-May-22	0.249 L	23-May-22 23:13	1
PFPeA	2706-90-3	93.6	1.00	2.01	4.01		B22E063	19-May-22	0.249 L	23-May-22 23:13	1
PFBS	375-73-5	83.2	1.00	2.01	4.01		B22E063	19-May-22	0.249 L	23-May-22 23:13	1
4:2 FTS	757124-72-4	ND	1.00	2.01	4.01		B22E063	19-May-22	0.249 L	23-May-22 23:13	1
PFHxA	307-24-4	88.1	1.00	2.01	4.01		B22E063	19-May-22	0.249 L	23-May-22 23:13	1
PFPeS	2706-91-4	1.44	1.00	2.01	4.01	J	B22E063	19-May-22	0.249 L	23-May-22 23:13	1
HFPO-DA	13252-13-6	ND	1.00	2.01	4.01		B22E063	19-May-22	0.249 L	23-May-22 23:13	1
PFHpA	375-85-9	52.5	1.00	2.01	4.01		B22E063	19-May-22	0.249 L	23-May-22 23:13	1
ADONA	919005-14-4	ND	1.00	2.01	4.01		B22E063	19-May-22	0.249 L	23-May-22 23:13	1
PFHxS	355-46-4	11.0	1.00	2.01	4.01		B22E063	19-May-22	0.249 L	23-May-22 23:13	1
6:2 FTS	27619-97-2	ND	1.00	2.01	4.01		B22E063	19-May-22	0.249 L	23-May-22 23:13	1
PFOA	335-67-1	89.2	1.00	2.01	4.01		B22E063	19-May-22	0.249 L	23-May-22 23:13	1
PFecHS	646-83-3	5.89	1.00	2.01	4.01		B22E063	19-May-22	0.249 L	23-May-22 23:13	1
PFHpS	375-92-8	2.37	1.00	2.01	4.01	J	B22E063	19-May-22	0.249 L	23-May-22 23:13	1
PFNA	375-95-1	6.80	1.00	2.01	4.01		B22E063	19-May-22	0.249 L	23-May-22 23:13	1
PFOSA	754-91-6	ND	1.00	2.01	4.01		B22E063	19-May-22	0.249 L	23-May-22 23:13	1
PFOS	1763-23-1	430	1.00	2.01	4.01		B22E063	19-May-22	0.249 L	23-May-22 23:13	1
9Cl-PF3ONS	756426-58-1	ND	1.00	2.01	4.01		B22E063	19-May-22	0.249 L	23-May-22 23:13	1
PFDA	335-76-2	ND	1.00	2.01	4.01		B22E063	19-May-22	0.249 L	23-May-22 23:13	1
8:2 FTS	39108-34-4	ND	1.00	2.01	4.01		B22E063	19-May-22	0.249 L	23-May-22 23:13	1
PFNS	68259-12-1	ND	1.00	2.01	4.01		B22E063	19-May-22	0.249 L	23-May-22 23:13	1
MeFOSAA	2355-31-9	ND	1.00	2.01	4.01		B22E063	19-May-22	0.249 L	23-May-22 23:13	1
EtFOSAA	2991-50-6	ND	1.00	2.01	4.01		B22E063	19-May-22	0.249 L	23-May-22 23:13	1
PFUnA	2058-94-8	ND	1.00	2.01	4.01		B22E063	19-May-22	0.249 L	23-May-22 23:13	1
PFDS	335-77-3	ND	1.00	2.01	4.01		B22E063	19-May-22	0.249 L	23-May-22 23:13	1
11Cl-PF3OUdS	763051-92-9	ND	1.00	2.01	4.01		B22E063	19-May-22	0.249 L	23-May-22 23:13	1
PFDoA	307-55-1	ND	1.00	2.01	4.01		B22E063	19-May-22	0.249 L	23-May-22 23:13	1
PFTrDA	72629-94-8	ND	1.00	2.01	4.01		B22E063	19-May-22	0.249 L	23-May-22 23:13	1
PFTeDA	376-06-7	ND	1.00	2.01	4.01		B22E063	19-May-22	0.249 L	23-May-22 23:13	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C3-PFBA	IS	138	25 - 150		B22E063	19-May-22	0.249 L	23-May-22 23:13	1
13C3-PFPeA	IS	107	25 - 150		B22E063	19-May-22	0.249 L	23-May-22 23:13	1
13C3-PFBS	IS	118	25 - 150		B22E063	19-May-22	0.249 L	23-May-22 23:13	1
13C3-HFPO-DA	IS	85.7	25 - 150		B22E063	19-May-22	0.249 L	23-May-22 23:13	1
13C2-4:2 FTS	IS	99.4	25 - 150		B22E063	19-May-22	0.249 L	23-May-22 23:13	1
13C2-PFHxA	IS	101	25 - 150		B22E063	19-May-22	0.249 L	23-May-22 23:13	1
13C4-PFHpA	IS	104	25 - 150		B22E063	19-May-22	0.249 L	23-May-22 23:13	1

Sample ID: GW2204261045GSC

PFAS Isotope Dilution Method

Client Data

Name: AECOM
Project: LAPEER Well sampling/ Bio solids
Location: CL1-MW2
Matrix: Aqueous
Date Collected: 26-Apr-22 10:45

Laboratory Data

Lab Sample: 2205055-02
Date Received: 04-May-22 09:35
Column: BEH C18

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C3-PFHxS	IS	97.3	25 - 150		B22E063	19-May-22	0.249 L	23-May-22 23:13	1
13C2-6:2 FTS	IS	97.9	25 - 150		B22E063	19-May-22	0.249 L	23-May-22 23:13	1
13C5-PFNA	IS	101	25 - 150		B22E063	19-May-22	0.249 L	23-May-22 23:13	1
13C8-PFOSA	IS	82.6	10 - 150		B22E063	19-May-22	0.249 L	23-May-22 23:13	1
13C2-PFOA	IS	106	25 - 150		B22E063	19-May-22	0.249 L	23-May-22 23:13	1
13C8-PFOS	IS	110	25 - 150		B22E063	19-May-22	0.249 L	23-May-22 23:13	1
13C2-PFDA	IS	97.0	25 - 150		B22E063	19-May-22	0.249 L	23-May-22 23:13	1
13C2-8:2 FTS	IS	87.6	25 - 150		B22E063	19-May-22	0.249 L	23-May-22 23:13	1
d3-MeFOSAA	IS	112	25 - 150		B22E063	19-May-22	0.249 L	23-May-22 23:13	1
13C2-PFUnA	IS	111	25 - 150		B22E063	19-May-22	0.249 L	23-May-22 23:13	1
d5-EtFOSAA	IS	103	25 - 150		B22E063	19-May-22	0.249 L	23-May-22 23:13	1
13C2-PFDoA	IS	93.7	25 - 150		B22E063	19-May-22	0.249 L	23-May-22 23:13	1
13C2-PFTeDA	IS	80.1	20 - 150		B22E063	19-May-22	0.249 L	23-May-22 23:13	1

DL - Detection Limit
LOD - Limit of Detection
LOQ - Limit of quantitation

Results reported to the DL.

When reported, PFHxS, PFOA, PFOS, MeFOSAA and EtFOSAA include both linear and branched isomers. Only the linear isomer is reported for all other analytes.

Sample ID: GW2204261300GSC

PFAS Isotope Dilution Method

Client Data

Name: AECOM
Project: LAPEER Well sampling/ Bio solids
Location: CL1-MW3
Matrix: Aqueous
Date Collected: 26-Apr-22 13:00

Laboratory Data

Lab Sample: 2205055-03
Date Received: 04-May-22 09:35
Column: BEH C18

Analyte	CAS Number	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBA	375-22-4	ND	0.964	1.93	3.86		B22E063	19-May-22	0.259 L	23-May-22 23:23	1
PFPeA	2706-90-3	ND	0.964	1.93	3.86		B22E063	19-May-22	0.259 L	23-May-22 23:23	1
PFBS	375-73-5	ND	0.964	1.93	3.86		B22E063	19-May-22	0.259 L	23-May-22 23:23	1
4:2 FTS	757124-72-4	ND	0.964	1.93	3.86		B22E063	19-May-22	0.259 L	23-May-22 23:23	1
PFHxA	307-24-4	ND	0.964	1.93	3.86		B22E063	19-May-22	0.259 L	23-May-22 23:23	1
PFPeS	2706-91-4	ND	0.964	1.93	3.86		B22E063	19-May-22	0.259 L	23-May-22 23:23	1
HFPO-DA	13252-13-6	ND	0.964	1.93	3.86		B22E063	19-May-22	0.259 L	23-May-22 23:23	1
PFHpA	375-85-9	ND	0.964	1.93	3.86		B22E063	19-May-22	0.259 L	23-May-22 23:23	1
ADONA	919005-14-4	ND	0.964	1.93	3.86		B22E063	19-May-22	0.259 L	23-May-22 23:23	1
PFHxS	355-46-4	ND	0.964	1.93	3.86		B22E063	19-May-22	0.259 L	23-May-22 23:23	1
6:2 FTS	27619-97-2	ND	0.964	1.93	3.86		B22E063	19-May-22	0.259 L	23-May-22 23:23	1
PFOA	335-67-1	ND	0.964	1.93	3.86		B22E063	19-May-22	0.259 L	23-May-22 23:23	1
PFecHS	646-83-3	ND	0.964	1.93	3.86		B22E063	19-May-22	0.259 L	23-May-22 23:23	1
PFHpS	375-92-8	ND	0.964	1.93	3.86		B22E063	19-May-22	0.259 L	23-May-22 23:23	1
PFNA	375-95-1	ND	0.964	1.93	3.86		B22E063	19-May-22	0.259 L	23-May-22 23:23	1
PFOSA	754-91-6	ND	0.964	1.93	3.86		B22E063	19-May-22	0.259 L	23-May-22 23:23	1
PFOS	1763-23-1	ND	0.964	1.93	3.86		B22E063	19-May-22	0.259 L	23-May-22 23:23	1
9Cl-PF3ONS	756426-58-1	ND	0.964	1.93	3.86		B22E063	19-May-22	0.259 L	23-May-22 23:23	1
PFDA	335-76-2	ND	0.964	1.93	3.86		B22E063	19-May-22	0.259 L	23-May-22 23:23	1
8:2 FTS	39108-34-4	ND	0.964	1.93	3.86		B22E063	19-May-22	0.259 L	23-May-22 23:23	1
PFNS	68259-12-1	ND	0.964	1.93	3.86		B22E063	19-May-22	0.259 L	23-May-22 23:23	1
MeFOSAA	2355-31-9	ND	0.964	1.93	3.86		B22E063	19-May-22	0.259 L	23-May-22 23:23	1
EtFOSAA	2991-50-6	ND	0.964	1.93	3.86		B22E063	19-May-22	0.259 L	23-May-22 23:23	1
PFUnA	2058-94-8	ND	0.964	1.93	3.86		B22E063	19-May-22	0.259 L	23-May-22 23:23	1
PFDS	335-77-3	ND	0.964	1.93	3.86		B22E063	19-May-22	0.259 L	23-May-22 23:23	1
11Cl-PF3OUdS	763051-92-9	ND	0.964	1.93	3.86		B22E063	19-May-22	0.259 L	23-May-22 23:23	1
PFDoA	307-55-1	ND	0.964	1.93	3.86		B22E063	19-May-22	0.259 L	23-May-22 23:23	1
PFTrDA	72629-94-8	ND	0.964	1.93	3.86		B22E063	19-May-22	0.259 L	23-May-22 23:23	1
PFTeDA	376-06-7	ND	0.964	1.93	3.86		B22E063	19-May-22	0.259 L	23-May-22 23:23	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C3-PFBA	IS	96.0	25 - 150		B22E063	19-May-22	0.259 L	23-May-22 23:23	1
13C3-PFPeA	IS	97.4	25 - 150		B22E063	19-May-22	0.259 L	23-May-22 23:23	1
13C3-PFBS	IS	115	25 - 150		B22E063	19-May-22	0.259 L	23-May-22 23:23	1
13C3-HFPO-DA	IS	88.8	25 - 150		B22E063	19-May-22	0.259 L	23-May-22 23:23	1
13C2-4:2 FTS	IS	107	25 - 150		B22E063	19-May-22	0.259 L	23-May-22 23:23	1
13C2-PFHxA	IS	108	25 - 150		B22E063	19-May-22	0.259 L	23-May-22 23:23	1
13C4-PFHpA	IS	112	25 - 150		B22E063	19-May-22	0.259 L	23-May-22 23:23	1

Sample ID: GW2204261300GSC

PFAS Isotope Dilution Method

Client Data

Name: AECOM
Project: LAPEER Well sampling/ Bio solids
Location: CL1-MW3
Matrix: Aqueous
Date Collected: 26-Apr-22 13:00

Laboratory Data

Lab Sample: 2205055-03
Date Received: 04-May-22 09:35
Column: BEH C18

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C3-PFHxS	IS	106	25 - 150		B22E063	19-May-22	0.259 L	23-May-22 23:23	1
13C2-6:2 FTS	IS	111	25 - 150		B22E063	19-May-22	0.259 L	23-May-22 23:23	1
13C5-PFNA	IS	103	25 - 150		B22E063	19-May-22	0.259 L	23-May-22 23:23	1
13C8-PFOSA	IS	87.1	10 - 150		B22E063	19-May-22	0.259 L	23-May-22 23:23	1
13C2-PFOA	IS	112	25 - 150		B22E063	19-May-22	0.259 L	23-May-22 23:23	1
13C8-PFOS	IS	113	25 - 150		B22E063	19-May-22	0.259 L	23-May-22 23:23	1
13C2-PFDA	IS	95.2	25 - 150		B22E063	19-May-22	0.259 L	23-May-22 23:23	1
13C2-8:2 FTS	IS	92.3	25 - 150		B22E063	19-May-22	0.259 L	23-May-22 23:23	1
d3-MeFOSAA	IS	111	25 - 150		B22E063	19-May-22	0.259 L	23-May-22 23:23	1
13C2-PFUnA	IS	99.7	25 - 150		B22E063	19-May-22	0.259 L	23-May-22 23:23	1
d5-EtFOSAA	IS	101	25 - 150		B22E063	19-May-22	0.259 L	23-May-22 23:23	1
13C2-PFDoA	IS	90.0	25 - 150		B22E063	19-May-22	0.259 L	23-May-22 23:23	1
13C2-PFTeDA	IS	85.6	20 - 150		B22E063	19-May-22	0.259 L	23-May-22 23:23	1

DL - Detection Limit
LOD - Limit of Detection
LOQ - Limit of quantitation

Results reported to the DL.

When reported, PFHxS, PFOA, PFOS, MeFOSAA and EtFOSAA include both linear and branched isomers. Only the linear isomer is reported for all other analytes.

Sample ID: GW2204260955GSC

PFAS Isotope Dilution Method

Client Data

Name: AECOM
Project: LAPEER Well sampling/ Bio solids
Location: CL1-MW1
Matrix: Aqueous
Date Collected: 26-Apr-22 09:55

Laboratory Data

Lab Sample: 2205055-04
Date Received: 04-May-22 09:35
Column: BEH C18

Analyte	CAS Number	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBA	375-22-4	ND	0.978	1.95	3.91		B22E063	19-May-22	0.256 L	23-May-22 23:34	1
PFPeA	2706-90-3	ND	0.978	1.95	3.91		B22E063	19-May-22	0.256 L	23-May-22 23:34	1
PFBS	375-73-5	ND	0.978	1.95	3.91		B22E063	19-May-22	0.256 L	23-May-22 23:34	1
4:2 FTS	757124-72-4	ND	0.978	1.95	3.91		B22E063	19-May-22	0.256 L	23-May-22 23:34	1
PFHxA	307-24-4	ND	0.978	1.95	3.91		B22E063	19-May-22	0.256 L	23-May-22 23:34	1
PFPeS	2706-91-4	ND	0.978	1.95	3.91		B22E063	19-May-22	0.256 L	23-May-22 23:34	1
HFPO-DA	13252-13-6	ND	0.978	1.95	3.91		B22E063	19-May-22	0.256 L	23-May-22 23:34	1
PFHpA	375-85-9	ND	0.978	1.95	3.91		B22E063	19-May-22	0.256 L	23-May-22 23:34	1
ADONA	919005-14-4	ND	0.978	1.95	3.91		B22E063	19-May-22	0.256 L	23-May-22 23:34	1
PFHxS	355-46-4	ND	0.978	1.95	3.91		B22E063	19-May-22	0.256 L	23-May-22 23:34	1
6:2 FTS	27619-97-2	ND	0.978	1.95	3.91		B22E063	19-May-22	0.256 L	23-May-22 23:34	1
PFOA	335-67-1	ND	0.978	1.95	3.91		B22E063	19-May-22	0.256 L	23-May-22 23:34	1
PFecHS	646-83-3	ND	0.978	1.95	3.91		B22E063	19-May-22	0.256 L	23-May-22 23:34	1
PFHpS	375-92-8	ND	0.978	1.95	3.91		B22E063	19-May-22	0.256 L	23-May-22 23:34	1
PFNA	375-95-1	ND	0.978	1.95	3.91		B22E063	19-May-22	0.256 L	23-May-22 23:34	1
PFOSA	754-91-6	ND	0.978	1.95	3.91		B22E063	19-May-22	0.256 L	23-May-22 23:34	1
PFOS	1763-23-1	ND	0.978	1.95	3.91		B22E063	19-May-22	0.256 L	23-May-22 23:34	1
9Cl-PF3ONS	756426-58-1	ND	0.978	1.95	3.91		B22E063	19-May-22	0.256 L	23-May-22 23:34	1
PFDA	335-76-2	ND	0.978	1.95	3.91		B22E063	19-May-22	0.256 L	23-May-22 23:34	1
8:2 FTS	39108-34-4	ND	0.978	1.95	3.91		B22E063	19-May-22	0.256 L	23-May-22 23:34	1
PFNS	68259-12-1	ND	0.978	1.95	3.91		B22E063	19-May-22	0.256 L	23-May-22 23:34	1
MeFOSAA	2355-31-9	ND	0.978	1.95	3.91		B22E063	19-May-22	0.256 L	23-May-22 23:34	1
EtFOSAA	2991-50-6	ND	0.978	1.95	3.91		B22E063	19-May-22	0.256 L	23-May-22 23:34	1
PFUnA	2058-94-8	ND	0.978	1.95	3.91		B22E063	19-May-22	0.256 L	23-May-22 23:34	1
PFDS	335-77-3	ND	0.978	1.95	3.91		B22E063	19-May-22	0.256 L	23-May-22 23:34	1
11Cl-PF3OUdS	763051-92-9	ND	0.978	1.95	3.91		B22E063	19-May-22	0.256 L	23-May-22 23:34	1
PFDoA	307-55-1	ND	0.978	1.95	3.91		B22E063	19-May-22	0.256 L	23-May-22 23:34	1
PFTrDA	72629-94-8	ND	0.978	1.95	3.91		B22E063	19-May-22	0.256 L	23-May-22 23:34	1
PFTeDA	376-06-7	ND	0.978	1.95	3.91		B22E063	19-May-22	0.256 L	23-May-22 23:34	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C3-PFBA	IS	114	25 - 150		B22E063	19-May-22	0.256 L	23-May-22 23:34	1
13C3-PFPeA	IS	101	25 - 150		B22E063	19-May-22	0.256 L	23-May-22 23:34	1
13C3-PFBS	IS	108	25 - 150		B22E063	19-May-22	0.256 L	23-May-22 23:34	1
13C3-HFPO-DA	IS	92.8	25 - 150		B22E063	19-May-22	0.256 L	23-May-22 23:34	1
13C2-4:2 FTS	IS	101	25 - 150		B22E063	19-May-22	0.256 L	23-May-22 23:34	1
13C2-PFHxA	IS	107	25 - 150		B22E063	19-May-22	0.256 L	23-May-22 23:34	1
13C4-PFHpA	IS	110	25 - 150		B22E063	19-May-22	0.256 L	23-May-22 23:34	1

Sample ID: GW2204260955GSC

PFAS Isotope Dilution Method

Client Data

Name: AECOM
Project: LAPEER Well sampling/ Bio solids
Location: CL1-MW1
Matrix: Aqueous
Date Collected: 26-Apr-22 09:55

Laboratory Data

Lab Sample: 2205055-04
Date Received: 04-May-22 09:35
Column: BEH C18

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C3-PFHxS	IS	105	25 - 150		B22E063	19-May-22	0.256 L	23-May-22 23:34	1
13C2-6:2 FTS	IS	106	25 - 150		B22E063	19-May-22	0.256 L	23-May-22 23:34	1
13C5-PFNA	IS	108	25 - 150		B22E063	19-May-22	0.256 L	23-May-22 23:34	1
13C8-PFOSA	IS	88.6	10 - 150		B22E063	19-May-22	0.256 L	23-May-22 23:34	1
13C2-PFOA	IS	116	25 - 150		B22E063	19-May-22	0.256 L	23-May-22 23:34	1
13C8-PFOS	IS	116	25 - 150		B22E063	19-May-22	0.256 L	23-May-22 23:34	1
13C2-PFDA	IS	95.5	25 - 150		B22E063	19-May-22	0.256 L	23-May-22 23:34	1
13C2-8:2 FTS	IS	90.3	25 - 150		B22E063	19-May-22	0.256 L	23-May-22 23:34	1
d3-MeFOSAA	IS	119	25 - 150		B22E063	19-May-22	0.256 L	23-May-22 23:34	1
13C2-PFUnA	IS	104	25 - 150		B22E063	19-May-22	0.256 L	23-May-22 23:34	1
d5-EtFOSAA	IS	108	25 - 150		B22E063	19-May-22	0.256 L	23-May-22 23:34	1
13C2-PFDoA	IS	90.5	25 - 150		B22E063	19-May-22	0.256 L	23-May-22 23:34	1
13C2-PFTeDA	IS	82.0	20 - 150		B22E063	19-May-22	0.256 L	23-May-22 23:34	1

DL - Detection Limit
LOD - Limit of Detection
LOQ - Limit of quantitation

Results reported to the DL.

When reported, PFHxS, PFOA, PFOS, MeFOSAA and EtFOSAA include both linear and branched isomers. Only the linear isomer is reported for all other analytes.

Sample ID: GW2204261205GSC-FD

PFAS Isotope Dilution Method

Client Data

Name: AECOM
Project: LAPEER Well sampling/ Bio solids
Location: CL1-MW4
Matrix: Aqueous
Date Collected: 26-Apr-22 12:05

Laboratory Data

Lab Sample: 2205055-05
Date Received: 04-May-22 09:35
Column: BEH C18

Analyte	CAS Number	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBA	375-22-4	104	0.993	1.98	3.97		B22E063	19-May-22	0.252 L	24-May-22 00:15	1
PFPeA	2706-90-3	141	0.993	1.98	3.97		B22E063	19-May-22	0.252 L	24-May-22 00:15	1
PFBS	375-73-5	104	0.993	1.98	3.97		B22E063	19-May-22	0.252 L	24-May-22 00:15	1
4:2 FTS	757124-72-4	ND	0.993	1.98	3.97		B22E063	19-May-22	0.252 L	24-May-22 00:15	1
PFHxA	307-24-4	142	0.993	1.98	3.97		B22E063	19-May-22	0.252 L	24-May-22 00:15	1
PFPeS	2706-91-4	1.43	0.993	1.98	3.97	J	B22E063	19-May-22	0.252 L	24-May-22 00:15	1
HFPO-DA	13252-13-6	ND	0.993	1.98	3.97		B22E063	19-May-22	0.252 L	24-May-22 00:15	1
PFHpA	375-85-9	59.7	0.993	1.98	3.97		B22E063	19-May-22	0.252 L	24-May-22 00:15	1
ADONA	919005-14-4	ND	0.993	1.98	3.97		B22E063	19-May-22	0.252 L	24-May-22 00:15	1
PFHxS	355-46-4	5.36	0.993	1.98	3.97		B22E063	19-May-22	0.252 L	24-May-22 00:15	1
6:2 FTS	27619-97-2	ND	0.993	1.98	3.97		B22E063	19-May-22	0.252 L	24-May-22 00:15	1
PFOA	335-67-1	83.3	0.993	1.98	3.97		B22E063	19-May-22	0.252 L	24-May-22 00:15	1
PFecHS	646-83-3	2.78	0.993	1.98	3.97	J	B22E063	19-May-22	0.252 L	24-May-22 00:15	1
PFHpS	375-92-8	ND	0.993	1.98	3.97		B22E063	19-May-22	0.252 L	24-May-22 00:15	1
PFNA	375-95-1	ND	0.993	1.98	3.97		B22E063	19-May-22	0.252 L	24-May-22 00:15	1
PFOSA	754-91-6	ND	0.993	1.98	3.97		B22E063	19-May-22	0.252 L	24-May-22 00:15	1
PFOS	1763-23-1	22.4	0.993	1.98	3.97		B22E063	19-May-22	0.252 L	24-May-22 00:15	1
9Cl-PF3ONS	756426-58-1	ND	0.993	1.98	3.97		B22E063	19-May-22	0.252 L	24-May-22 00:15	1
PFDA	335-76-2	ND	0.993	1.98	3.97		B22E063	19-May-22	0.252 L	24-May-22 00:15	1
8:2 FTS	39108-34-4	ND	0.993	1.98	3.97		B22E063	19-May-22	0.252 L	24-May-22 00:15	1
PFNS	68259-12-1	ND	0.993	1.98	3.97		B22E063	19-May-22	0.252 L	24-May-22 00:15	1
MeFOSAA	2355-31-9	ND	0.993	1.98	3.97		B22E063	19-May-22	0.252 L	24-May-22 00:15	1
EtFOSAA	2991-50-6	ND	0.993	1.98	3.97		B22E063	19-May-22	0.252 L	24-May-22 00:15	1
PFUnA	2058-94-8	ND	0.993	1.98	3.97		B22E063	19-May-22	0.252 L	24-May-22 00:15	1
PFDS	335-77-3	ND	0.993	1.98	3.97		B22E063	19-May-22	0.252 L	24-May-22 00:15	1
11Cl-PF3OUdS	763051-92-9	ND	0.993	1.98	3.97		B22E063	19-May-22	0.252 L	24-May-22 00:15	1
PFDoA	307-55-1	ND	0.993	1.98	3.97		B22E063	19-May-22	0.252 L	24-May-22 00:15	1
PFTrDA	72629-94-8	ND	0.993	1.98	3.97		B22E063	19-May-22	0.252 L	24-May-22 00:15	1
PFTeDA	376-06-7	ND	0.993	1.98	3.97		B22E063	19-May-22	0.252 L	24-May-22 00:15	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C3-PFBA	IS	91.2	25 - 150		B22E063	19-May-22	0.252 L	24-May-22 00:15	1
13C3-PFPeA	IS	89.1	25 - 150		B22E063	19-May-22	0.252 L	24-May-22 00:15	1
13C3-PFBS	IS	111	25 - 150		B22E063	19-May-22	0.252 L	24-May-22 00:15	1
13C3-HFPO-DA	IS	78.5	25 - 150		B22E063	19-May-22	0.252 L	24-May-22 00:15	1
13C2-4:2 FTS	IS	106	25 - 150		B22E063	19-May-22	0.252 L	24-May-22 00:15	1
13C2-PFHxA	IS	93.7	25 - 150		B22E063	19-May-22	0.252 L	24-May-22 00:15	1
13C4-PFHpA	IS	99.7	25 - 150		B22E063	19-May-22	0.252 L	24-May-22 00:15	1

Sample ID: GW2204261205GSC-FD

PFAS Isotope Dilution Method

Client Data

Name: AECOM
Project: LAPEER Well sampling/ Bio solids
Location: CL1-MW4
Matrix: Aqueous
Date Collected: 26-Apr-22 12:05

Laboratory Data

Lab Sample: 2205055-05
Date Received: 04-May-22 09:35
Column: BEH C18

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C3-PFHxS	IS	99.3	25 - 150		B22E063	19-May-22	0.252 L	24-May-22 00:15	1
13C2-6:2 FTS	IS	89.4	25 - 150		B22E063	19-May-22	0.252 L	24-May-22 00:15	1
13C5-PFNA	IS	98.5	25 - 150		B22E063	19-May-22	0.252 L	24-May-22 00:15	1
13C8-PFOSA	IS	85.3	10 - 150		B22E063	19-May-22	0.252 L	24-May-22 00:15	1
13C2-PFOA	IS	105	25 - 150		B22E063	19-May-22	0.252 L	24-May-22 00:15	1
13C8-PFOS	IS	92.3	25 - 150		B22E063	19-May-22	0.252 L	24-May-22 00:15	1
13C2-PFDA	IS	98.4	25 - 150		B22E063	19-May-22	0.252 L	24-May-22 00:15	1
13C2-8:2 FTS	IS	82.1	25 - 150		B22E063	19-May-22	0.252 L	24-May-22 00:15	1
d3-MeFOSAA	IS	102	25 - 150		B22E063	19-May-22	0.252 L	24-May-22 00:15	1
13C2-PFUnA	IS	97.5	25 - 150		B22E063	19-May-22	0.252 L	24-May-22 00:15	1
d5-EtFOSAA	IS	93.2	25 - 150		B22E063	19-May-22	0.252 L	24-May-22 00:15	1
13C2-PFDoA	IS	90.1	25 - 150		B22E063	19-May-22	0.252 L	24-May-22 00:15	1
13C2-PFTeDA	IS	55.0	20 - 150		B22E063	19-May-22	0.252 L	24-May-22 00:15	1

DL - Detection Limit
LOD - Limit of Detection
LOQ - Limit of quantitation

Results reported to the DL.

When reported, PFHxS, PFOA, PFOS, MeFOSAA and EtFOSAA include both linear and branched isomers. Only the linear isomer is reported for all other analytes.

Sample ID: FB2204261315GSC **PFAS Isotope Dilution Method**

Client Data

Name: AECOM
Project: LAPEER Well sampling/ Bio solids
Matrix: Aqueous
Date Collected: 26-Apr-22 13:15

Laboratory Data

Lab Sample: 2205055-06
Date Received: 04-May-22 09:35
Column: BEH C18

Analyte	CAS Number	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBA	375-22-4	ND	0.992	1.98	3.97		B22E063	19-May-22	0.252 L	24-May-22 00:25	1
PFPeA	2706-90-3	ND	0.992	1.98	3.97		B22E063	19-May-22	0.252 L	24-May-22 00:25	1
PFBS	375-73-5	ND	0.992	1.98	3.97		B22E063	19-May-22	0.252 L	24-May-22 00:25	1
4:2 FTS	757124-72-4	ND	0.992	1.98	3.97		B22E063	19-May-22	0.252 L	24-May-22 00:25	1
PFHxA	307-24-4	ND	0.992	1.98	3.97		B22E063	19-May-22	0.252 L	24-May-22 00:25	1
PFPeS	2706-91-4	ND	0.992	1.98	3.97		B22E063	19-May-22	0.252 L	24-May-22 00:25	1
HFPO-DA	13252-13-6	ND	0.992	1.98	3.97		B22E063	19-May-22	0.252 L	24-May-22 00:25	1
PFHpA	375-85-9	ND	0.992	1.98	3.97		B22E063	19-May-22	0.252 L	24-May-22 00:25	1
ADONA	919005-14-4	ND	0.992	1.98	3.97		B22E063	19-May-22	0.252 L	24-May-22 00:25	1
PFHxS	355-46-4	ND	0.992	1.98	3.97		B22E063	19-May-22	0.252 L	24-May-22 00:25	1
6:2 FTS	27619-97-2	ND	0.992	1.98	3.97		B22E063	19-May-22	0.252 L	24-May-22 00:25	1
PFOA	335-67-1	ND	0.992	1.98	3.97		B22E063	19-May-22	0.252 L	24-May-22 00:25	1
PFecHS	646-83-3	ND	0.992	1.98	3.97		B22E063	19-May-22	0.252 L	24-May-22 00:25	1
PFHpS	375-92-8	ND	0.992	1.98	3.97		B22E063	19-May-22	0.252 L	24-May-22 00:25	1
PFNA	375-95-1	ND	0.992	1.98	3.97		B22E063	19-May-22	0.252 L	24-May-22 00:25	1
PFOSA	754-91-6	ND	0.992	1.98	3.97		B22E063	19-May-22	0.252 L	24-May-22 00:25	1
PFOS	1763-23-1	ND	0.992	1.98	3.97		B22E063	19-May-22	0.252 L	24-May-22 00:25	1
9Cl-PF3ONS	756426-58-1	ND	0.992	1.98	3.97		B22E063	19-May-22	0.252 L	24-May-22 00:25	1
PFDA	335-76-2	ND	0.992	1.98	3.97		B22E063	19-May-22	0.252 L	24-May-22 00:25	1
8:2 FTS	39108-34-4	ND	0.992	1.98	3.97		B22E063	19-May-22	0.252 L	24-May-22 00:25	1
PFNS	68259-12-1	ND	0.992	1.98	3.97		B22E063	19-May-22	0.252 L	24-May-22 00:25	1
MeFOSAA	2355-31-9	ND	0.992	1.98	3.97		B22E063	19-May-22	0.252 L	24-May-22 00:25	1
EtFOSAA	2991-50-6	ND	0.992	1.98	3.97		B22E063	19-May-22	0.252 L	24-May-22 00:25	1
PFUnA	2058-94-8	ND	0.992	1.98	3.97		B22E063	19-May-22	0.252 L	24-May-22 00:25	1
PFDS	335-77-3	ND	0.992	1.98	3.97		B22E063	19-May-22	0.252 L	24-May-22 00:25	1
11Cl-PF3OUdS	763051-92-9	ND	0.992	1.98	3.97		B22E063	19-May-22	0.252 L	24-May-22 00:25	1
PFDoA	307-55-1	ND	0.992	1.98	3.97		B22E063	19-May-22	0.252 L	24-May-22 00:25	1
PFTrDA	72629-94-8	ND	0.992	1.98	3.97		B22E063	19-May-22	0.252 L	24-May-22 00:25	1
PFTeDA	376-06-7	ND	0.992	1.98	3.97		B22E063	19-May-22	0.252 L	24-May-22 00:25	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C3-PFBA	IS	96.0	25 - 150		B22E063	19-May-22	0.252 L	24-May-22 00:25	1
13C3-PFPeA	IS	75.8	25 - 150		B22E063	19-May-22	0.252 L	24-May-22 00:25	1
13C3-PFBS	IS	96.5	25 - 150		B22E063	19-May-22	0.252 L	24-May-22 00:25	1
13C3-HFPO-DA	IS	80.5	25 - 150		B22E063	19-May-22	0.252 L	24-May-22 00:25	1
13C2-4:2 FTS	IS	81.5	25 - 150		B22E063	19-May-22	0.252 L	24-May-22 00:25	1
13C2-PFHxA	IS	93.3	25 - 150		B22E063	19-May-22	0.252 L	24-May-22 00:25	1
13C4-PFHpA	IS	103	25 - 150		B22E063	19-May-22	0.252 L	24-May-22 00:25	1

Sample ID: FB2204261315GSC

PFAS Isotope Dilution Method

Client Data

Name: AECOM
Project: LAPEER Well sampling/ Bio solids
Matrix: Aqueous
Date Collected: 26-Apr-22 13:15

Laboratory Data

Lab Sample: 2205055-06
Date Received: 04-May-22 09:35
Column: BEH C18

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C3-PFHxS	IS	104	25 - 150		B22E063	19-May-22	0.252 L	24-May-22 00:25	1
13C2-6:2 FTS	IS	104	25 - 150		B22E063	19-May-22	0.252 L	24-May-22 00:25	1
13C5-PFNA	IS	97.9	25 - 150		B22E063	19-May-22	0.252 L	24-May-22 00:25	1
13C8-PFOSA	IS	63.2	10 - 150		B22E063	19-May-22	0.252 L	24-May-22 00:25	1
13C2-PFOA	IS	108	25 - 150		B22E063	19-May-22	0.252 L	24-May-22 00:25	1
13C8-PFOS	IS	112	25 - 150		B22E063	19-May-22	0.252 L	24-May-22 00:25	1
13C2-PFDA	IS	98.9	25 - 150		B22E063	19-May-22	0.252 L	24-May-22 00:25	1
13C2-8:2 FTS	IS	81.2	25 - 150		B22E063	19-May-22	0.252 L	24-May-22 00:25	1
d3-MeFOSAA	IS	94.1	25 - 150		B22E063	19-May-22	0.252 L	24-May-22 00:25	1
13C2-PFUnA	IS	97.6	25 - 150		B22E063	19-May-22	0.252 L	24-May-22 00:25	1
d5-EtFOSAA	IS	74.2	25 - 150		B22E063	19-May-22	0.252 L	24-May-22 00:25	1
13C2-PFDoA	IS	84.7	25 - 150		B22E063	19-May-22	0.252 L	24-May-22 00:25	1
13C2-PFTeDA	IS	63.3	20 - 150		B22E063	19-May-22	0.252 L	24-May-22 00:25	1

DL - Detection Limit
LOD - Limit of Detection
LOQ - Limit of quantitation

Results reported to the DL.

When reported, PFHxS, PFOA, PFOS, MeFOSAA and EtFOSAA include both linear and branched isomers. Only the linear isomer is reported for all other analytes.

DATA QUALIFIERS & ABBREVIATIONS

B	This compound was also detected in the method blank
Conc.	Concentration
CRS	Cleanup Recovery Standard
D	Dilution
DL	Detection Limit
E	The associated compound concentration exceeded the calibration range of the instrument
H	Recovery and/or RPD was outside laboratory acceptance limits
I	Chemical Interference
IS	Internal Standard
J	The amount detected is below the Reporting Limit/LOQ
LOD	Limit of Detection
LOQ	Limit of Quantitation
M	Estimated Maximum Possible Concentration (CA Region 2 projects only)
MDL	Method Detection Limit
NA	Not applicable
ND	Not Detected
OPR	Ongoing Precision and Recovery sample
P	The reported concentration may include contribution from chlorinated diphenyl ether(s).
Q	The ion transition ratio is outside of the acceptance criteria.
RL	Reporting Limit
RL	For 537.1, the reported RLs are the MRLs.
TEQ	Toxic Equivalency, sum of the toxic equivalency factors (TEF) multiplied by the sample concentrations.
TEQMax	TEQ calculation that uses the detection limit as the concentration for non-detects
TEQMin	TEQ calculation that uses zero as the concentration for non-detects
TEQRisk	TEQ calculation that uses ½ the detection limit as the concentration for non-detects
U	Not Detected (specific projects only)
*	See Cover Letter

Unless otherwise noted, solid sample results are reported in dry weight. Tissue samples are reported in wet weight.

Vista Analytical Laboratory Certifications

Accrediting Authority	Certificate Number
Alaska Department of Environmental Conservation	17-013
Arkansas Department of Environmental Quality	21-023-0
California Department of Health – ELAP	2892
DoD ELAP - A2LA Accredited - ISO/IEC 17025:2005	3091.01
Florida Department of Health	E87777
Hawaii Department of Health	N/A
Louisiana Department of Environmental Quality	01977
Maine Department of Health	2020018
Massachusetts Department of Environmental Protection	M-CA413
Michigan Department of Environmental Quality	9932
Minnesota Department of Health	2211390
New Hampshire Environmental Accreditation Program	207721
New Jersey Department of Environmental Protection	CA003
New York Department of Health	11411
Ohio Environmental Protection Agency	87778
Oregon Laboratory Accreditation Program	4042-021
Pennsylvania Department of Environmental Protection	018
Texas Commission on Environmental Quality	T104704189-22-13
Vermont Department of Health	VT-4042
Virginia Department of General Services	11276
Washington Department of Ecology	C584
Wisconsin Department of Natural Resources	998036160

Current certificates and lists of licensed parameters are located in the Quality Assurance office and are available upon request.

NELAP Accredited Test Methods

MATRIX: Air	
Description of Test	**Method**
Determination of Polychlorinated p- Dioxins & Polychlorinated Dibenzofurans	EPA 23
Polychlorinated Dibenzodioxins in Ambient Air by GC/HRMS	EPA TO-9A

MATRIX: Biological Tissue	
Description of Test	**Method**
Tetra- through Octa-Chlorinated Dioxins and Furans by Isotope Dilution GC/HRMS	EPA 1613B
Brominated Diphenyl Ethers by HRGC/HRMS	EPA 1614A
Chlorinated Biphenyl Congeners in Water, Soil, Sediment, and Tissue by GC/HRMS	EPA 1668A/C
Pesticides in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS	EPA 1699
Perfluorinated Alkyl Acids in Drinking Water by SPE and LC/MS/MS	PFAS Isotope Dilution
Polychlorinated Dibenzo-p-Dioxins and Polychlorinated Dibenzofurans by GC/HRMS	EPA 8280A/B
Polychlorinated Dibenzodioxins (PCDDs) and Polychlorinated Dibenzofurans (PCDFs) by GC/HRMS	EPA 8290/8290A

MATRIX: Drinking Water	
Description of Test	**Method**
Tetra- through Octa-Chlorinated Dioxins and Furans by Isotope Dilution GC/HRMS	EPA 1613/1613B
Perfluorinated Alkyl Acids in Drinking Water by SPE and LC/MS/MS	PFAS Isotope Dilution
Perfluorinated Alkyl Acids in Drinking Water by SPE and LC/MS/MS	EPA 537.1
Determination of Per- and Polyfluoroalkyl Substances in Drinking Water by Isotope Dilution Anion Exchange Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry	EPA 533
Perfluorooctanesulonate (PFOS) and Perfluorooctanoate (PFOA) - Method for Unfiltered Samples Using Solid Phase Extraction and Liquid Chromatography/Mass Spectrometry	ISO 25101 2009

MATRIX: Non-Potable Water	
Description of Test	**Method**
Tetra- through Octa-Chlorinated Dioxins and Furans by Isotope Dilution GC/HRMS	EPA 1613B
Brominated Diphenyl Ethers by HRGC/HRMS	EPA 1614A
Chlorinated Biphenyl Congeners in Water, Soil, Sediment, and Tissue by GC/HRMS	EPA 1668A/C
Pesticides in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS	EPA 1699
Perfluorinated Alkyl Acids in Drinking Water by SPE and LC/MS/MS	PFAS Isotope Dilution
Dioxin by GC/HRMS	EPA 613
Polychlorinated Dibenzo-p-Dioxins and Polychlorinated Dibenzofurans by GC/HRMS	EPA 8280A/B
Polychlorinated Dibenzodioxins (PCDDs) and Polychlorinated Dibenzofurans (PCDFs) by GC/HRMS	EPA 8290/8290A

MATRIX: Solids	
Description of Test	**Method**
Tetra-Octa Chlorinated Dioxins and Furans by Isotope Dilution GC/HRMS	EPA 1613
Tetra- through Octa-Chlorinated Dioxins and Furans by Isotope Dilution GC/HRMS	EPA 1613B
Brominated Diphenyl Ethers by HRGC/HRMS	EPA 1614A
Chlorinated Biphenyl Congeners in Water, Soil, Sediment, and Tissue by GC/HRMS	EPA 1668A/C
Pesticides in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS	EPA 1699
Perfluorinated Alkyl Acids in Drinking Water by SPE and LC/MS/MS	PFAS Isotope Dilution
Polychlorinated Dibenzo-p-Dioxins and Polychlorinated Dibenzofurans by GC/HRMS	EPA 8280A/B
Polychlorinated Dibenzodioxins (PCDDs) and Polychlorinated Dibenzofurans (PCDFs) by GC/HRMS	EPA 8290/8290A

Vista Analytical Laboratory

CHAIN OF CUSTODY

For Laboratory Use Only
Work Order #: 2205055 Temp: 0.8, 4.7 °C
Storage ID: R-13, WR-2 Storage Secured: Yes ☑ No ☐

Project ID: **LAPEER Well sampling/ Bio solids** PO#: **60588767** Sampler: **Garth Cousineau** (name)

TAT (check one): Standard: [X] 21 days Rush (surcharge may apply) [ ] 14 days [ ] 7 days Specify:

Invoice to: Name	Company	Address	City	State	Ph#	Fax#
Stephanie Kammer	EGLE	525 W. Allegan St	Lansing	MI	517-897-1597	517-241-3571

Relinquished by (printed name and signature)	Date	Time	Received by (printed name and signature)	Date	Time
Garth Cousineau	5-3-22	1500	Kelia Wadsworth Kelia Wadsworth	05/03/22	0935
Relinquished by (printed name and signature)	Date	Time	Received by (printed name and signature)	Date	Time

SHIP TO: Vista Analytical Laboratory
1104 Windfield Way
El Dorado Hills, CA 95762

Method of Shipment:

ATTN: Tracking No.:

Add Analysis(es) Requested

Sample ID	Date	Time	Location/Sample Description	Container(s) Quantity	Type	Matrix	Mod. EPA Method 537: PFOA/ PFOS	UCMR3 PFAS List 6	537 List: 14	PFAS List of 28+PFO	PFAS List of 28+PFeCHS	EPA Method 537(DW only): PFOA/ PFOS	UCMR3 PFAS List 6	PFAS List: 14	Comments
GW2204261205GSC	4/26/22	1205	CL1-MW4	2	P	AQ				X					
GW2204261045GSC	4/26/22	1045	CL1-MW2	2	P	AQ				X					
GW2204261300GSC	4/26/22	1300	CL1-MW3	2	P	AQ				X					
GW2204260955GSC	4/26/22	0955	CL1-MW1	2	P	AQ				X					
GW2204261206GSC-FD	4/26/22	1205	CL1-MW4	2	P	AQ				X					FIELD DUPLICATE
FB2204261315GSC	4/26/22	1315		2	P	AQ				X					FIELD BLANK

Special Instructions/Comments: **Send Results and Acknowledgements to:**
Michael.Wolf@aecom.com
Dorin.Bogdan@aecom.com
Robert.Kennedy@aecom.com

SEND DOCUMENTATION AND RESULTS TO:
Name: **Stephanie Kammer**
Company: **EGLE**
Address: **525 W. Allegan St**
City: **Lansing** MI 48909
Phone: **517-897-1597** **517-241-3571**
Email:

Container Types: P= HDPE, PJ= HDPE Jar, O = Other:

Bottle Preservation Type: T = Thiosulfate, TZ = Trizma:

Matrix Types: AQ = Aqueous, DW = Drinking Water, EF = Effluent, PP = Pulp/Paper, SD = Sediment, SL = Sludge, SO = Soil, WW = Wastewater, B = Blood/Serum, O = Other:

EGLE PERFLUOROALKYL AND POLYFLUOROALKYL SUBSTANCES (PFAS) MINIMUM LABORATORY ANALYTE LIST

Below is the minimum laboratory PFAS analyte list for analysis of deer, drinking water, groundwater, surface water, soil, wastewater effluent, and landfill leachate samples collected by Michigan's Departments of Environment, Great Lakes, and Energy, Health and Human Services, Agriculture and Rural Development, and Natural Resources.

This minimum analyte list was developed based on the potential for these chemicals to be found in Michigan, the availability of the chemical standards used for testing, and the ability of available laboratories to test for these PFAS. This list includes PFAS that can be tested for in drinking water using United States Environmental Protection Agency (USEPA) Methods 537 Rev.1.1 or 537.1, which are the only methods that should be used when analyzing drinking water samples. Other testing methodology may be used to test for PFAS in other media (not drinking water). This list is not exhaustive of PFAS in Michigan's environment.

A fish icon (🐟) precedes those compounds that are also currently being tested for in fish tissue.

Analyte Name	Acronym	Fluorinated Carbon Chain Length	Molecular Formula	CAS Number	USEPA Method 537 Rev. 1.1	USEPA Method 537.1
🐟 Perfluorotetradecanoic acid	PFTeA	C_{14}	$C_{13}F_{27}COOH$	376-06-7	X	
🐟 Perfluorotridecanoic acid	PFTriA	C_{13}	$C_{12}F_{25}COOH$	72629-94-8	X	
🐟 Perfluorododecanoic acid	PFDoA	C_{12}	$C_{11}F_{23}COOH$	307-55-1	X	
🐟 Perfluoroundecanoic acid	PFUnA	C_{11}	$C_{10}F_{21}COOH$	2058-94-8	X	
🐟 Perfluorodecanoic acid	PFDA	C_{10}	$C_9F_{19}COOH$	335-76-2	X	
🐟 Perfluorononanoic acid	PFNA	C_9	$C_8F_{17}COOH$	375-95-1	X	
🐟 Perfluorooctanoic acid	PFOA	C_8	$C_7F_{15}COOH$	335-67-1	X	
🐟 Perfluoroheptanoic acid	PFHpA	C_7	$C_6F_{13}COOH$	375-85-9	X	
🐟 Perfluorohexanoic acid	PFHxA	C_6	$C_5F_{11}COOH$	307-24-4	X	
🐟 Perfluoropentanoic acid	PFPeA	C_5	C_4F_9COOH	2706-90-3		
🐟 Perfluorobutanoic acid	PFBA	C_4	C_3F_7COOH	375-22-4		
🐟 Perfluorodecanesulfonic acid	PFDS	C_{10}	$C_{10}F_{21}SO_3H$	335-77-3		
rfluorononanesulfonic acid	PFNS	C_9	$C_9F_{19}SO_3H$	68259-12-1		
🐟 Perfluorooctanesulfonic acid	PFOS	C_8	$C_8F_{17}SO_3H$	1763-23-1	X	
fluoroheptanesulfonic acid	PFHpS	C_7	$C_7F_{15}SO_3H$	375-92-8		
🐟 Perfluorohexanesulfonic acid	PFHxS	C_6	$C_6F_{13}SO_3H$	355-46-4	X	
fluoropentanesulfonic acid	PFPeS	C_5	$C_5F_{11}SO_3H$	2706-91-4		
🐟 Perfluorobutanesulfonic acid	PFBS	C_4	$C_4F_9SO_3H$	375-73-5	X	

2205055

Analyte Name	Acronym	Fluorinated Carbon Chain Length	Molecular Formula	CAS Number	USEPA Method 537 Rev. 1.1	USEPA Method 537.1
Perfluorooctanesulfonamide	PFOSA	C_8	$C_8F_{17}SO_2NH_2$	754-91-6		
luorotelomer sulfonic acid 8:2	FtS 8:2	C_8	$C_8F_{17}CH_2CH_2SO_3$	39108-34-4		
luorotelomer sulfonic acid 6:2	FtS 6:2	C_6	$C_6F_{13}CH_2CH_2SO_3$	27619-97-2		
luorotelomer sulfonic acid 4:2	FtS 4:2	C_4	$C_4F_9CH_2CH_2SO_3$	757124-72-4		
N-Ethylperfluorooctanesulfonamido) etic acid	N-EtFOSAA	C_8	$C_8F_{17}SO_2N(C_2H_5)CH_2COOH$	2991-50-6	X	
N- ethylperfluorooctanesulfonamido) etic acid	N-MeFOSAA	C_8	$C_8F_{17}SO_2N(CH_3)CHCOOH$	2355-31-9	X	
xafluoropropylene oxide dimer acid	HFPO-DA	C6	$C_6HF_{11}O_3$	13252-13-6		X
-chloroeicosafluoro-3-oxaundecane- ulfonic acid	11Cl-PF3OUdS	C10	$C_{10}HF_{20}ClSO_4$	763051-92-9		X
hlorohexadecafluoro-3-oxanone-1- fonic acid	9Cl-PF3ONS	C8	$C_8HF_{16}ClSO_4$	756426-58-1		X
-dioxa-3H-perfluorononanoic acid	ADONA	C7	$C_7H_2F_{12}O_4$	919005-14-4		X

Laboratories Providing PFAS Analytical Services

(The list that turns up in the search results from the following links does not constitute an endorsement of those firms on the list, nor is it a statement against any firm not on the list. Additionally, the capacity of the labs to provide services consistent with EGLE's recommendations above has not been verified and these details should be addressed prior to contracting with the laboratories below.)

The **United States Environmental Protection Agency (US EPA)** has a list of laboratories approved under the UCMR3 program using US EPA Method 537 Rev. 1.1 for PFAS in drinking water:
https://www.epa.gov/dwucmr/third-unregulated-contaminant-monitoring-rule

The **United States Department of Defense, Environmental Laboratory Accreditation Program (US DoD ELAP)** maintains a list of labs for the determination of PFAS in various environmental media other than drinking water on the Defense Environmental Network Information Exchange (DENIX) server:
http://www.denix.osd.mil/edqw/accreditation/accreditedlabs/

Contact Information

Questions regarding PFAS in general, contact:

- **MDHHS General Information**
  (517) 373-3740
- **EGLE Environmental Assistance Center**
  (800) 662-9278

Questions regarding laboratory information, contact:

- **MDHHS Chemistry & Toxicology Division**
  (517) 335-9490
- **EGLE Drinking Water Analysis Laboratory**
  (517) 335-8184

Vista Analytical Laboratory

Sample Log-In Checklist

Page # 1 of 2

Vista Work Order #: 2205055 TAT std

Samples Arrival:	**Date/Time** 05/04/22 0935		**Initials:** KW		**Location:** WR-2 **Shelf/Rack:** N/A		
Delivered By:	(FedEx)	UPS	On Trac	GLS	DHL	Hand Delivered	Other
Preservation:	(Ice)		Blue Ice		Techni Ice	Dry Ice	None
Temp °C: 0.9 (uncorrected) **Temp °C:** 0.8 (corrected)			**Probe used:** Y / (N)		**Thermometer ID:** IR-3		

	YES	NO	NA
Shipping Container(s) Intact?	✓		
Shipping Custody Seals Intact?			✓
Airbill 1 of 2 Trk # 2727 1484 0267	✓		
Shipping Documentation Present?	✓		
Shipping Container: Vista / Client / (Retain) / Return / Dispose			
Chain of Custody / Sample Documentation Present?	✓		
Chain of Custody / Sample Documentation Complete?	✓		
Holding Time Acceptable?	✓		

Logged In:	**Date/Time** 05/04/22 1721	**Initials:** WLS	**Location:** R-13, WR-2 **Shelf/Rack:** 3-3, F-7
COC Anomaly/Sample Acceptance Form completed?		✓	✓

Comments:

Vista Analytical Laboratory

Sample Log-In Checklist

Vista Work Order #: 2205055 TAT std

Samples Arrival:	**Date/Time** 05/04/22 09:35		**Initials:** KA		**Location:** WR-2 **Shelf/Rack:** M12		
Delivered By:	(FedEx)	UPS	On Trac	GLS	DHL	Hand Delivered	Other
Preservation:	(Ice)		Blue Ice		Techni Ice	Dry Ice	None
Temp °C: 4.8 (uncorrected) **Temp °C:** 4.7 (corrected)			**Probe used:** Y / (N)		**Thermometer ID:** IR-7		

	YES	NO	NA
Shipping Container(s) Intact?	✓		
Shipping Custody Seals Intact?			✓
Airbill 2 of 2 Trk # 2727 1484 2274	✓		
Shipping Documentation Present?	✓		
Shipping Container (Vista) Client (Retain) Return		Dispose	
Chain of Custody / Sample Documentation Present?	✓		
Chain of Custody / Sample Documentation Complete?	✓		
Holding Time Acceptable?	✓		

Logged In:	**Date/Time** 05/04/22 1721	**Initials:** MWS	**Location:** R-13, WR-2 **Shelf/Rack:** B-3, F-7	
COC Anomaly/Sample Acceptance Form completed?			✓	✓

Comments:

CoC/Label Reconciliation Report WO# 2205055

LabNumber	CoC Sample ID		SampleAlias	Sample Date/Time		Container	BaseMatrix	Sample Comments
2205055-01	A GW2204261205GSC	C1 ☑	CL1-MW4	26-Apr-22 12:05	☑	HDPE Bottle, 250 mL	Aqueous	
2205055-01	B GW2204261205GSC	C1 ☑	CL1-MW4	26-Apr-22 12:05	☑	HDPE Bottle, 250 mL	Aqueous	
2205055-02	A GW2204261045GSC	C2 ☑	CL1-MW2	26-Apr-22 10:45	☑	HDPE Bottle, 250 mL	Aqueous	
2205055-02	B GW2204261045GSC	C2 ☑	CL1-MW2	26-Apr-22 10:45	☑	HDPE Bottle, 250 mL	Aqueous	
2205055-03	A GW2204261300GSC	C1 ☑	CL1-MW3	26-Apr-22 13:00	☑	HDPE Bottle, 250 mL	Aqueous	
2205055-03	B GW2204261300GSC	C1 ☑	CL1-MW3	26-Apr-22 13:00	☑	HDPE Bottle, 250 mL	Aqueous	
2205055-04	A GW2204260955GSC	C1 ☑	CL1-MW1	26-Apr-22 09:55	☑	HDPE Bottle, 250 mL	Aqueous	
2205055-04	B GW2204260955GSC	C1 ☑	CL1-MW1	26-Apr-22 09:55	☑	HDPE Bottle, 250 mL	Aqueous	
2205055-05	A GW2204261205GSC-FD	C1 ☑	CL1-MW4	26-Apr-22 12:05	☑	HDPE Bottle, 250 mL	Aqueous	
2205055-05	B GW2204261205GSC-FD	C1 ☑	CL1-MW4	26-Apr-22 12:05	☑	HDPE Bottle, 250 mL	Aqueous	
2205055-06	A FB2204261315GSC	C1 ☑		26-Apr-22 13:15	☑	HDPE Bottle, 250 mL	Aqueous	
2205055-06	B FB2204261315GSC	C1 ☑		26-Apr-22 13:15	☑	HDPE Bottle, 250 mL	Aqueous	

Checkmarks indicate that information on the COC reconciled with the sample label.
Any discrepancies are noted in the following columns.

	Yes	No	NA
Sample Container Intact?	✓		
Sample Custody Seals Intact?			✓
Adequate Sample Volume?	✓		
Container Type Appropriate for Analysis(es)	✓		

Comments: C1 = Cooler 1 of 2
C2 = Cooler 2 of 2

Preservation Documented: Na2S2O3 Trizma NH4CH3CO2 None All Other

Verifed by/Date: KW 05/05/22