



March 18, 2025

BEC Project No. 25119

Mr. George Defelice
Defelice Corporation
28 Silva Lane
Dracut, Massachusetts 01826

Transmitted via email: gdefelice@defelicecorp.com

**Re: Soil Sampling Results for Soil Stockpile Locations
For EPA Method 1633 (PFAS)**
along Chicopee Road and Cow Pond Road
Groton, Massachusetts

Boston Environmental Corporation (BEC) on behalf of the Defelice Corporation 28 Silva Lane Dracut, Massachusetts visited the Construction area and Stockpile Pile location on Cow Pond Road on March 10, 2025 to collect samples from a soil stockpiles for PFAS via EPA Method 1633 per the request of the project engineer and the Town of Groton.. The stockpile was generated from excavations across the construction site along Chicopee Road in Groton. There were no suspect contaminants identified during the excavation this sampling was performed strictly to satisfy the Town of Groton's request, PFAS was not considered to be a Contaminate of Concern (COC) for the project.

BEC collected 6 composite samples to characterize the two stockpiles. In addition, BEC collected two field blanks, one from each stockpile to satisfy the EPA Method requirements. Each composite sample was comprised of 5 grab samples. Each grab sample was screened for the presence of total volatile organic compounds (VOCs) using a photoionization detector (PID). All 30 grab samples had PID results of 0.0 parts per million (ppm). The samples were submitted for laboratory analysis by a Massachusetts Department of Environmental Protection (MassDEP) certified lab (Pace New England). The laboratory analysis consisted of parameters required to satisfy the EPA Method 1633 requirements for (PFAS).

There is no evidence of a reportable release of PFAS nor is there any reason to believe any of the substances would be present above their respective reportable concentration.



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The result of the laboratory analysis is summarized on the attached Table 1 and the complete laboratory reports can be found in Attachment A. All PFAS parameters were below Massachusetts' most stringent RC-1 standards.

We trust this information to be sufficient, however, should you have any questions please do not hesitate to contact me.

Sincerely yours,

Andrew Eckhardt, LSP#7123
Boston Environmental Corporation

CC: Mike Toomey, Bill Podolski (BEC)

Attachments:

Table 1 – Soil Precharacterization Results

Attachment A – Soil Laboratory Data Package



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Soil Stockpile Results
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Tables

TABLE 1 - SOIL ANALYTICAL RESULTS
CHICOPEE ROAD
GROTON, MASSACHUSETTS
BEC JOB # 25119

Parameter	Reportable Concentrations	MCP - Method 1 Cleanup Standards			SAMPLING LOCATION							
	RCS-1	S-1/GW-1	S-1/GW-2	S-1/GW-3	193 Chicopee ROW - 1	193 Chicopee ROW - 2	193 Chicopee ROW - 3	193 Chicopee ROW - 4	Cow Pond Rd. - 1	Cow Pond Rd. - 2	Duplicate - 1	Duplicate - 2
Sampling Date					3/7/2025	3/7/2025	3/7/2025	3/7/2025	3/7/2025	3/7/2025	3/7/2025	3/7/2025
EPA 1633 (µg/kg dry)												
Perfluorobutanoic acid (PFBA)	~	~	~	~	ND (0.80)	ND (0.79)	ND (0.80)	ND (0.79)	ND (0.80)	ND (0.80)	ND (0.80)	ND (0.79)
Perfluoropentanoic acid (PFPeA)	~	~	~	~	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)
Perfluorohexanoic acid (PFHxA)	~	~	~	~	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)
Perfluoroheptanoic acid (PFHpA)	0.5	0.5	300	300	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)
Perfluorooctanoic acid (PFOA)	0.72	0.72	300	300	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	0.081	0.086
Perfluorononanoic acid (PFNA)	0.32	0.32	300	300	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)
Perfluorodecanoic acid (PFDA)	0.3	0.3	300	300	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)
Perfluoroundecanoic acid (PFUnA)	~	~	~	~	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)
Perfluorododecanoic acid (PFDoA)	~	~	~	~	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)
Perfluorotridecanoic acid (PFTTrDA)	~	~	~	~	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)
Perfluorotetradecanoic acid (PFTeDA)	~	~	~	~	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)
Perfluorobutanesulfonic acid (PFBS)	~	~	~	~	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)
Perfluoropentanesulfonic acid (PFPeS)	~	~	~	~	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)
Perfluorohexanesulfonic acid (PFHxS)	0.3	0.3	300	300	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)
Perfluoroheptanesulfonic acid (PFHpS)	~	~	~	~	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)
Perfluorooctanesulfonic acid (PFOS)	2	2	300	300	ND (0.20)	0.088	0.084	0.080	ND (0.20)	0.068	ND (0.20)	0.084
Perfluorononanesulfonic acid (PFNS)	~	~	~	~	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)
Perfluorodecanesulfonic acid (PFDS)	~	~	~	~	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)
Perfluorododecanesulfonic acid (PFDoS)	~	~	~	~	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2FTS)	~	~	~	~	ND (0.80)	ND (0.79)	ND (0.80)	ND (0.79)	ND (0.80)	ND (0.80)	ND (0.80)	ND (0.79)
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2FTS)	~	~	~	~	ND (0.80)	ND (0.79)	ND (0.80)	ND (0.79)	ND (0.80)	ND (0.80)	ND (0.80)	ND (0.79)
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2FTS)	~	~	~	~	ND (0.80)	ND (0.79)	ND (0.80)	ND (0.79)	ND (0.80)	ND (0.80)	ND (0.80)	ND (0.79)
Perfluorooctanesulfonamide (PFOSA)	~	~	~	~	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)
N-methyl perfluorooctanesulfonamide (NMeFOSA)	~	~	~	~	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)
N-ethyl perfluorooctanesulfonamide (NEtFOSA)	~	~	~	~	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)
N-MeFOSAA (NMeFOSAA)	~	~	~	~	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)
N-EtFOSAA (NEtFOSAA)	~	~	~	~	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)
N-methylperfluorooctanesulfonamidoethanol(NMeFOSE)	~	~	~	~	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)
N-ethylperfluorooctanesulfonamidoethanol (NEtFOSE)	~	~	~	~	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)
Hexafluoropropylene oxide dimer acid (HFPO-DA)	~	~	~	~	ND (0.80)	ND (0.79)	ND (0.80)	ND (0.79)	ND (0.80)	ND (0.80)	ND (0.80)	ND (0.79)
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	~	~	~	~	ND (0.80)	ND (0.79)	ND (0.80)	ND (0.79)	ND (0.80)	ND (0.80)	ND (0.80)	ND (0.79)
9Cl-PF3ONS (F53B Minor)	~	~	~	~	ND (0.80)	ND (0.79)	ND (0.80)	ND (0.79)	ND (0.80)	ND (0.80)	ND (0.80)	ND (0.79)
11Cl-PF3OUdS (F53B Major)	~	~	~	~	ND (0.80)	ND (0.79)	ND (0.80)	ND (0.79)	ND (0.80)	ND (0.80)	ND (0.80)	ND (0.79)
3-Perfluoropropyl propanoic acid (FPrPA)(3:3FTCA)	~	~	~	~	ND (1.0)	ND (0.99)	ND (1.0)	ND (0.99)	ND (1.0)	ND (1.0)	ND (1.0)	ND (0.99)
2H,2H,3H,3H-Perfluorooctanoic acid(FPePA)(5:3FTCA)	~	~	~	~	ND (5.0)	ND (4.9)	ND (5.0)	ND (4.9)	ND (5.0)	ND (5.0)	ND (5.0)	ND (5.0)
3-Perfluoroheptyl propanoic acid (FHpPA)(7:3FTCA)	~	~	~	~	ND (5.0)	ND (4.9)	ND (5.0)	ND (4.9)	ND (5.0)	ND (5.0)	ND (5.0)	ND (5.0)
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEESA)	~	~	~	~	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)
Perfluoro-3-methoxypropanoic acid (PFMPA)	~	~	~	~	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)
Perfluoro-4-methoxybutanoic acid (PFMBA)	~	~	~	~	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	~	~	~	~	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)
SM 2540G (% Wt)												
% Solids	~	~	~	~	89.3	89.1	89.8	89.0	90.4	90.4	89.4	90.1

NOTES:
2. ND = Not detected above the lab reporting limits shown in parenthesis.
4. ~ = No Method 1 Standard or M3CL available
5. Shaded values exceed the MCP Reportable Concentrations (RCs).
6. Bolded values exceed the Method 1 Cleanup Standards.





Mr. George Defelice
Soil Stockpile Results
Two soil stockpiles
Groton Massachusetts

Attachment A
Soil Laboratory Data Package

March 17, 2025

Andy Eckhardt
Boston Environmental Corp. - Brockton, MA
7 Fenner Grant Lane
Cumberland, RI 02864

Project Location: Chicopee Row, Groton, MA
Client Job Number:
Project Number: [none]
Laboratory Work Order Number: 25C0481

Enclosed are results of analyses for samples as received by the laboratory on March 10, 2025. If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Rebecca Faust
Project Manager

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Pace Analytical Services, LLC - East Longmeadow, Ma

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Boston Environmental Corp. - Brockton, MA
7 Fenner Grant Lane
Cumberland, RI 02864
ATTN: Andy Eckhardt

REPORT DATE: 3/17/2025

PURCHASE ORDER NUMBER:

PROJECT NUMBER: [none]

ANALYTICAL SUMMARY

WORK ORDER NUMBER: 25C0481

The results of analyses performed on the following samples submitted to Pace Analytical Services, LLC - East Longmeadow, Ma, are found in this report.

PROJECT LOCATION: Chicopee Row, Groton, MA

FIELD SAMPLE #	LAB ID:	MATRIX	SAMPLE DESCRIPTION	TEST	SUB LAB
193 Chicopee ROW - 1	25C0481-01	Soil		EPA 1633 SM 2540G	
193 Chicopee ROW - 2	25C0481-02	Soil		EPA 1633 SM 2540G	
193 Chicopee ROW - 3	25C0481-03	Soil		EPA 1633 SM 2540G	
193 Chicopee ROW - 4	25C0481-04	Soil		EPA 1633 SM 2540G	
Cow Pond Rd. - 1	25C0481-05	Soil		EPA 1633 SM 2540G	
Cow Pond Rd. - 2	25C0481-06	Soil		EPA 1633 SM 2540G	
Duplicate - 1	25C0481-07	Soil		EPA 1633 SM 2540G	
Duplicate - 2	25C0481-08	Soil		EPA 1633 SM 2540G	

CASE NARRATIVE SUMMARY

All reported results are within defined laboratory quality control objectives unless listed below or otherwise qualified in this report.

EPA 1633

Qualifications:

L-03

Laboratory fortified blank/laboratory control sample recovery is outside of control limits. Reported value for this compound is likely to be biased on the low side.

Analyte & Samples(s) Qualified:

3-Perfluoropropyl propanoic acid (FPrPA)(3:3FTC)^A

25C0481-03[193 Chicopee ROW - 3], 25C0481-04[193 Chicopee ROW - 4], 25C0481-05[Cow Pond Rd. - 1], 25C0481-06[Cow Pond Rd. - 2], 25C0481-07[Duplicate - 1], 25C0481-08[Duplicate - 2], B400491-BS1, B400491-MRL1

PF-17

Extracted Internal Standard recovery is outside of control limits. Data is not significantly affected since associated analyte is not detected and bias is on the high side.

Analyte & Samples(s) Qualified:

D9-NEtFOSE

25C0481-03[193 Chicopee ROW - 3], 25C0481-05[Cow Pond Rd. - 1]

N-ethylperfluorooctanesulfonamidoethanol (NEtFO)

25C0481-03[193 Chicopee ROW - 3], 25C0481-05[Cow Pond Rd. - 1]

PF-23

Qualifier ion ratio <50% of associated calibration. Detection is suspect.

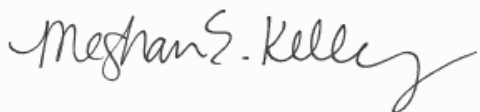
Analyte & Samples(s) Qualified:

Perfluorooctanoic acid (PFOA)

25C0481-08[Duplicate - 2]

The results of analyses reported only relate to samples submitted to Pace Analytical Services, LLC - East Longmeadow, Ma, for testing.

I certify that the analyses listed above, unless specifically listed as subcontracted, if any, were performed under my direction according to the approved methodologies listed in this document, and that based upon my inquiry of those individuals immediately responsible for obtaining the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete.



Meghan E. Kelley
Reporting Specialist

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Chicopee Row, Groton, MA

Sample Description:

Work Order: 25C0481

Date Received: 3/10/2025

Field Sample #: 193 Chicopee ROW - 1

Sampled: 3/7/2025 10:22

Sample ID: 25C0481-01

Sample Matrix: Soil

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	ND	0.80	0.27	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 9:23	CML
Perfluoropentanoic acid (PFPeA)	ND	0.40	0.12	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 9:23	CML
Perfluorohexanoic acid (PFHxA)	ND	0.20	0.081	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 9:23	CML
Perfluoroheptanoic acid (PFHpA)	ND	0.20	0.083	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 9:23	CML
Perfluorooctanoic acid (PFOA)	ND	0.20	0.069	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 9:23	CML
Perfluorononanoic acid (PFNA)	ND	0.20	0.075	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 9:23	CML
Perfluorodecanoic acid (PFDA)	ND	0.20	0.063	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 9:23	CML
Perfluoroundecanoic acid (PFUnA)	ND	0.20	0.082	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 9:23	CML
Perfluorododecanoic acid (PFDoA)	ND	0.20	0.074	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 9:23	CML
Perfluorotridecanoic acid (PFTrDA)	ND	0.20	0.063	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 9:23	CML
Perfluorotetradecanoic acid (PFTeDA)	ND	0.20	0.068	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 9:23	CML
Perfluorobutanesulfonic acid (PFBS)	ND	0.20	0.064	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 9:23	CML
Perfluoropentanesulfonic acid (PFPeS)	ND	0.20	0.064	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 9:23	CML
Perfluorohexanesulfonic acid (PFHxS)	ND	0.20	0.075	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 9:23	CML
Perfluoroheptanesulfonic acid (PFHpS)	ND	0.20	0.10	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 9:23	CML
Perfluorooctanesulfonic acid (PFOS)	ND	0.20	0.060	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 9:23	CML
Perfluorononanesulfonic acid (PFNS)	ND	0.20	0.050	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 9:23	CML
Perfluorodecanesulfonic acid (PFDS)	ND	0.20	0.064	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 9:23	CML
Perfluorododecanesulfonic acid (PFDoS)	ND	0.20	0.058	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 9:23	CML
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2FTS)	ND	0.80	0.30	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 9:23	CML
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2FTS)	ND	0.80	0.29	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 9:23	CML
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2FTS)	ND	0.80	0.37	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 9:23	CML
Perfluorooctanesulfonamide (PFOSA)	ND	0.20	0.081	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 9:23	CML
N-methyl perfluorooctanesulfonamide (NMeFOSA)	ND	0.20	0.055	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 9:23	CML
N-ethyl perfluorooctanesulfonamide (NEtFOSA)	ND	0.20	0.089	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 9:23	CML
N-MeFOSAA (NMeFOSAA)	ND	0.20	0.10	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 9:23	CML
N-EtFOSAA (NEtFOSAA)	ND	0.20	0.092	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 9:23	CML
N-methylperfluorooctanesulfonamidoethanol (NMeFOSE)	ND	2.0	0.64	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 9:23	CML
N-ethylperfluorooctanesulfonamidoethanol (NEtFOSE)	ND	2.0	0.71	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 9:23	CML
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	0.80	0.34	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 9:23	CML
4,8-Dioxo-3H-perfluorononanoic acid (ADONA)	ND	0.80	0.32	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 9:23	CML
9Cl-PF3ONS (F53B Minor)	ND	0.80	0.23	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 9:23	CML
11Cl-PF3OUs (F53B Major)	ND	0.80	0.26	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 9:23	CML
3-Perfluoropropyl propanoic acid (FPrPA) (3:3FTCA)	ND	1.0	0.49	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 9:23	CML
2H,2H,3H,3H-Perfluorooctanoic acid(FPePA)(5:3FTCA)	ND	5.0	1.5	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 9:23	CML
3-Perfluoroheptyl propanoic acid (FHpPA) (7:3FTCA)	ND	5.0	1.6	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 9:23	CML
Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	ND	0.40	0.14	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 9:23	CML
Perfluoro-3-methoxypropanoic acid (PFMPA)	ND	0.40	0.092	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 9:23	CML

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Chicopee Row, Groton, MA

Sample Description:

Work Order: 25C0481

Date Received: 3/10/2025

Field Sample #: 193 Chicopee ROW - 1

Sampled: 3/7/2025 10:22

Sample ID: 25C0481-01

Sample Matrix: Soil

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluoro-4-methoxybutanoic acid (PFMBA)	ND	0.40	0.12	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 9:23	CML
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	0.40	0.24	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 9:23	CML
Surrogates	% Recovery		Recovery Limits		Flag/Qual					
13C4-PFBA	56.7		8-130				3/13/25 9:23			
13C5-PFPeA	87.9		35-130				3/13/25 9:23			
13C5-PFHxA	107		40-130				3/13/25 9:23			
13C4-PFHpA	103		40-130				3/13/25 9:23			
13C8-PFOA	115		40-130				3/13/25 9:23			
13C9-PFNA	105		40-130				3/13/25 9:23			
13C6-PFDA	112		40-130				3/13/25 9:23			
13C7-PFUnA	124		40-130				3/13/25 9:23			
13C2-PFDoA	112		40-130				3/13/25 9:23			
13C2-PFTeDA	126		20-130				3/13/25 9:23			
13C3-PFBS	93.1		40-135				3/13/25 9:23			
13C3-PFHxS	105		40-130				3/13/25 9:23			
13C8-PFOS	110		40-130				3/13/25 9:23			
13C2-4:2FTS	80.9		40-165				3/13/25 9:23			
13C2-6:2FTS	75.3		40-215				3/13/25 9:23			
13C2-8:2FTS	65.5		40-275				3/13/25 9:23			
13C8-PFOSA	96.6		40-130				3/13/25 9:23			
D3-NMeFOSA	96.7		10-130				3/13/25 9:23			
D5-NEtFOSA	96.7		10-130				3/13/25 9:23			
D3-NMeFOSAA	110		40-135				3/13/25 9:23			
D5-NEtFOSAA	127		40-150				3/13/25 9:23			
D7-NMeFOSE	97.8		20-130				3/13/25 9:23			
D9-NEtFOSE	117		15-130				3/13/25 9:23			
13C3-HFPO-DA	101		40-130				3/13/25 9:23			



39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Chicopee Row, Groton, MA

Sample Description:

Work Order: 25C0481

Date Received: 3/10/2025

Field Sample #: 193 Chicopee ROW - 1

Sampled: 3/7/2025 10:22

Sample ID: 25C0481-01

Sample Matrix: Soil

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	89.3		% Wt	1		SM 2540G	3/11/25	3/11/25 18:51	ANR

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Chicopee Row, Groton, MA

Sample Description:

Work Order: 25C0481

Date Received: 3/10/2025

Field Sample #: 193 Chicopee ROW - 2

Sampled: 3/7/2025 10:46

Sample ID: 25C0481-02

Sample Matrix: Soil

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	ND	0.79	0.27	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 9:32	CML
Perfluoropentanoic acid (PFPeA)	ND	0.40	0.12	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 9:32	CML
Perfluorohexanoic acid (PFHxA)	ND	0.20	0.081	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 9:32	CML
Perfluoroheptanoic acid (PFHpA)	ND	0.20	0.082	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 9:32	CML
Perfluorooctanoic acid (PFOA)	ND	0.20	0.069	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 9:32	CML
Perfluorononanoic acid (PFNA)	ND	0.20	0.075	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 9:32	CML
Perfluorodecanoic acid (PFDA)	ND	0.20	0.062	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 9:32	CML
Perfluoroundecanoic acid (PFUnA)	ND	0.20	0.082	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 9:32	CML
Perfluorododecanoic acid (PFDoA)	ND	0.20	0.074	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 9:32	CML
Perfluorotridecanoic acid (PFTrDA)	ND	0.20	0.063	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 9:32	CML
Perfluorotetradecanoic acid (PFTeDA)	ND	0.20	0.067	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 9:32	CML
Perfluorobutanesulfonic acid (PFBS)	ND	0.20	0.063	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 9:32	CML
Perfluoropentanesulfonic acid (PFPeS)	ND	0.20	0.064	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 9:32	CML
Perfluorohexanesulfonic acid (PFHxS)	ND	0.20	0.075	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 9:32	CML
Perfluoroheptanesulfonic acid (PFHpS)	ND	0.20	0.10	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 9:32	CML
Perfluorooctanesulfonic acid (PFOS)	0.088	0.20	0.060	µg/kg dry	1	J	EPA 1633	3/12/25	3/13/25 9:32	CML
Perfluorononanesulfonic acid (PFNS)	ND	0.20	0.049	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 9:32	CML
Perfluorodecanesulfonic acid (PFDS)	ND	0.20	0.064	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 9:32	CML
Perfluorododecanesulfonic acid (PFDoS)	ND	0.20	0.057	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 9:32	CML
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2FTS)	ND	0.79	0.29	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 9:32	CML
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2FTS)	ND	0.79	0.28	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 9:32	CML
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2FTS)	ND	0.79	0.36	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 9:32	CML
Perfluorooctanesulfonamide (PFOSA)	ND	0.20	0.081	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 9:32	CML
N-methyl perfluorooctanesulfonamide (NMeFOSA)	ND	0.20	0.055	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 9:32	CML
N-ethyl perfluorooctanesulfonamide (NEtFOSA)	ND	0.20	0.089	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 9:32	CML
N-MeFOSAA (NMeFOSAA)	ND	0.20	0.10	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 9:32	CML
N-EtFOSAA (NEtFOSAA)	ND	0.20	0.091	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 9:32	CML
N-methylperfluorooctanesulfonamidoethanol (NMeFOSE)	ND	2.0	0.64	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 9:32	CML
N-ethylperfluorooctanesulfonamidoethanol (NEtFOSE)	ND	2.0	0.70	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 9:32	CML
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	0.79	0.33	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 9:32	CML
4,8-Dioxo-3H-perfluorononanoic acid (ADONA)	ND	0.79	0.31	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 9:32	CML
9Cl-PF3ONS (F53B Minor)	ND	0.79	0.23	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 9:32	CML
11Cl-PF3OUDs (F53B Major)	ND	0.79	0.26	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 9:32	CML
3-Perfluoropropyl propanoic acid (FPrPA) (3:3FTCA)	ND	0.99	0.49	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 9:32	CML
2H,2H,3H,3H-Perfluorooctanoic acid(FPePA)(5:3FTCA)	ND	4.9	1.5	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 9:32	CML
3-Perfluoroheptyl propanoic acid (FHpPA) (7:3FTCA)	ND	4.9	1.6	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 9:32	CML
Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	ND	0.40	0.14	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 9:32	CML
Perfluoro-3-methoxypropanoic acid (PFMPA)	ND	0.40	0.091	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 9:32	CML

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Project Location: Chicopee Row, Groton, MA

Sample Description:

Work Order: 25C0481

Date Received: 3/10/2025

Field Sample #: 193 Chicopee ROW - 2

Sampled: 3/7/2025 10:46

Sample ID: 25C0481-02

Sample Matrix: Soil

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluoro-4-methoxybutanoic acid (PFMBA)	ND	0.40	0.12	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 9:32	CML
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	0.40	0.24	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 9:32	CML
Surrogates	% Recovery		Recovery Limits		Flag/Qual					
13C4-PFBA	62.2		8-130				3/13/25 9:32			
13C5-PFPeA	91.4		35-130				3/13/25 9:32			
13C5-PFHxA	101		40-130				3/13/25 9:32			
13C4-PFHpA	94.4		40-130				3/13/25 9:32			
13C8-PFOA	107		40-130				3/13/25 9:32			
13C9-PFNA	103		40-130				3/13/25 9:32			
13C6-PFDA	98.9		40-130				3/13/25 9:32			
13C7-PFUnA	110		40-130				3/13/25 9:32			
13C2-PFDoA	101		40-130				3/13/25 9:32			
13C2-PFTeDA	117		20-130				3/13/25 9:32			
13C3-PFBS	92.6		40-135				3/13/25 9:32			
13C3-PFHxS	100		40-130				3/13/25 9:32			
13C8-PFOS	104		40-130				3/13/25 9:32			
13C2-4:2FTS	81.8		40-165				3/13/25 9:32			
13C2-6:2FTS	71.1		40-215				3/13/25 9:32			
13C2-8:2FTS	70.0		40-275				3/13/25 9:32			
13C8-PFOSA	101		40-130				3/13/25 9:32			
D3-NMeFOSA	92.2		10-130				3/13/25 9:32			
D5-NEtFOSA	89.8		10-130				3/13/25 9:32			
D3-NMeFOSAA	115		40-135				3/13/25 9:32			
D5-NEtFOSAA	127		40-150				3/13/25 9:32			
D7-NMeFOSE	99.7		20-130				3/13/25 9:32			
D9-NEtFOSE	123		15-130				3/13/25 9:32			
13C3-HFPO-DA	99.7		40-130				3/13/25 9:32			



Pace Analytical Services, LLC - East Longmeadow, Ma

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Chicopee Row, Groton, MA

Sample Description:

Work Order: 25C0481

Date Received: 3/10/2025

Field Sample #: 193 Chicopee ROW - 2

Sampled: 3/7/2025 10:46

Sample ID: 25C0481-02

Sample Matrix: Soil

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	89.1		% Wt	1		SM 2540G	3/11/25	3/11/25 18:51	ANR

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Chicopee Row, Groton, MA

Sample Description:

Work Order: 25C0481

Date Received: 3/10/2025

Field Sample #: 193 Chicopee ROW - 3

Sampled: 3/7/2025 11:06

Sample ID: 25C0481-03

Sample Matrix: Soil

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	ND	0.80	0.27	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:00	CML
Perfluoropentanoic acid (PFPeA)	ND	0.40	0.13	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:00	CML
Perfluorohexanoic acid (PFHxA)	ND	0.20	0.082	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:00	CML
Perfluoroheptanoic acid (PFHpA)	ND	0.20	0.083	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:00	CML
Perfluorooctanoic acid (PFOA)	ND	0.20	0.069	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:00	CML
Perfluorononanoic acid (PFNA)	ND	0.20	0.075	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:00	CML
Perfluorodecanoic acid (PFDA)	ND	0.20	0.063	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:00	CML
Perfluoroundecanoic acid (PFUnA)	ND	0.20	0.083	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:00	CML
Perfluorododecanoic acid (PFDoA)	ND	0.20	0.075	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:00	CML
Perfluorotridecanoic acid (PFTrDA)	ND	0.20	0.064	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:00	CML
Perfluorotetradecanoic acid (PFTeDA)	ND	0.20	0.068	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:00	CML
Perfluorobutanesulfonic acid (PFBS)	ND	0.20	0.064	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:00	CML
Perfluoropentanesulfonic acid (PFPeS)	ND	0.20	0.064	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:00	CML
Perfluorohexanesulfonic acid (PFHxS)	ND	0.20	0.075	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:00	CML
Perfluoroheptanesulfonic acid (PFHpS)	ND	0.20	0.10	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:00	CML
Perfluorooctanesulfonic acid (PFOS)	0.084	0.20	0.061	µg/kg dry	1	J	EPA 1633	3/12/25	3/13/25 10:00	CML
Perfluorononanesulfonic acid (PFNS)	ND	0.20	0.050	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:00	CML
Perfluorodecanesulfonic acid (PFDS)	ND	0.20	0.065	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:00	CML
Perfluorododecanesulfonic acid (PFDoS)	ND	0.20	0.058	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:00	CML
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2FTS)	ND	0.80	0.30	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:00	CML
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2FTS)	ND	0.80	0.29	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:00	CML
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2FTS)	ND	0.80	0.37	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:00	CML
Perfluorooctanesulfonamide (PFOSA)	ND	0.20	0.081	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:00	CML
N-methyl perfluorooctanesulfonamide (NMeFOSA)	ND	0.20	0.056	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:00	CML
N-ethyl perfluorooctanesulfonamide (NEtFOSA)	ND	0.20	0.090	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:00	CML
N-MeFOSAA (NMeFOSAA)	ND	0.20	0.10	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:00	CML
N-EtFOSAA (NEtFOSAA)	ND	0.20	0.092	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:00	CML
N-methylperfluorooctanesulfonamidoethanol (NMeFOSE)	ND	2.0	0.65	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:00	CML
N-ethylperfluorooctanesulfonamidoethanol (NEtFOSE)	ND	2.0	0.71	µg/kg dry	1	PF-17	EPA 1633	3/12/25	3/13/25 10:00	CML
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	0.80	0.34	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:00	CML
4,8-Dioxo-3H-perfluorononanoic acid (ADONA)	ND	0.80	0.32	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:00	CML
9Cl-PF3ONS (F53B Minor)	ND	0.80	0.23	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:00	CML
11Cl-PF3OUdS (F53B Major)	ND	0.80	0.27	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:00	CML
3-Perfluoropropyl propanoic acid (FPrPA) (3:3FTCA)	ND	1.0	0.49	µg/kg dry	1	L-03	EPA 1633	3/12/25	3/13/25 10:00	CML
2H,2H,3H,3H-Perfluorooctanoic acid(FPePA)(5:3FTCA)	ND	5.0	1.5	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:00	CML
3-Perfluoroheptyl propanoic acid (FHpPA) (7:3FTCA)	ND	5.0	1.6	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:00	CML
Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	ND	0.40	0.15	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:00	CML
Perfluoro-3-methoxypropanoic acid (PFMPA)	ND	0.40	0.092	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:00	CML

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Project Location: Chicopee Row, Groton, MA

Sample Description:

Work Order: 25C0481

Date Received: 3/10/2025

Field Sample #: 193 Chicopee ROW - 3

Sampled: 3/7/2025 11:06

Sample ID: 25C0481-03

Sample Matrix: Soil

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluoro-4-methoxybutanoic acid (PFMBA)	ND	0.40	0.12	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:00	CML
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	0.40	0.25	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:00	CML
Surrogates	% Recovery		Recovery Limits		Flag/Qual					
13C4-PFBA	71.2		8-130				3/13/25 10:00			
13C5-PFPeA	95.9		35-130				3/13/25 10:00			
13C5-PFHxA	102		40-130				3/13/25 10:00			
13C4-PFHpA	97.6		40-130				3/13/25 10:00			
13C8-PFOA	100		40-130				3/13/25 10:00			
13C9-PFNA	103		40-130				3/13/25 10:00			
13C6-PFDA	108		40-130				3/13/25 10:00			
13C7-PFUnA	117		40-130				3/13/25 10:00			
13C2-PFDoA	109		40-130				3/13/25 10:00			
13C2-PFTeDA	126		20-130				3/13/25 10:00			
13C3-PFBS	91.8		40-135				3/13/25 10:00			
13C3-PFHxS	99.9		40-130				3/13/25 10:00			
13C8-PFOS	105		40-130				3/13/25 10:00			
13C2-4:2FTS	79.0		40-165				3/13/25 10:00			
13C2-6:2FTS	70.0		40-215				3/13/25 10:00			
13C2-8:2FTS	60.2		40-275				3/13/25 10:00			
13C8-PFOSA	80.6		40-130				3/13/25 10:00			
D3-NMeFOSA	96.9		10-130				3/13/25 10:00			
D5-NEtFOSA	95.1		10-130				3/13/25 10:00			
D3-NMeFOSAA	109		40-135				3/13/25 10:00			
D5-NEtFOSAA	121		40-150				3/13/25 10:00			
D7-NMeFOSE	103		20-130				3/13/25 10:00			
D9-NEtFOSE	134 *		15-130		PF-17		3/13/25 10:00			
13C3-HFPO-DA	100		40-130				3/13/25 10:00			



39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Chicopee Row, Groton, MA

Sample Description:

Work Order: 25C0481

Date Received: 3/10/2025

Field Sample #: 193 Chicopee ROW - 3

Sampled: 3/7/2025 11:06

Sample ID: 25C0481-03

Sample Matrix: Soil

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	89.8		% Wt	1		SM 2540G	3/11/25	3/11/25 18:51	ANR

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Chicopee Row, Groton, MA

Sample Description:

Work Order: 25C0481

Date Received: 3/10/2025

Field Sample #: 193 Chicopee ROW - 4

Sampled: 3/7/2025 11:25

Sample ID: 25C0481-04

Sample Matrix: Soil

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	ND	0.79	0.27	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:09	CML
Perfluoropentanoic acid (PFPeA)	ND	0.40	0.12	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:09	CML
Perfluorohexanoic acid (PFHxA)	ND	0.20	0.081	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:09	CML
Perfluoroheptanoic acid (PFHpA)	ND	0.20	0.082	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:09	CML
Perfluorooctanoic acid (PFOA)	ND	0.20	0.068	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:09	CML
Perfluorononanoic acid (PFNA)	ND	0.20	0.075	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:09	CML
Perfluorodecanoic acid (PFDA)	ND	0.20	0.062	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:09	CML
Perfluoroundecanoic acid (PFUnA)	ND	0.20	0.082	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:09	CML
Perfluorododecanoic acid (PFDoA)	ND	0.20	0.074	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:09	CML
Perfluorotridecanoic acid (PFTrDA)	ND	0.20	0.063	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:09	CML
Perfluorotetradecanoic acid (PFTeDA)	ND	0.20	0.067	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:09	CML
Perfluorobutanesulfonic acid (PFBS)	ND	0.20	0.063	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:09	CML
Perfluoropentanesulfonic acid (PFPeS)	ND	0.20	0.064	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:09	CML
Perfluorohexanesulfonic acid (PFHxS)	ND	0.20	0.075	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:09	CML
Perfluoroheptanesulfonic acid (PFHpS)	ND	0.20	0.10	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:09	CML
Perfluorooctanesulfonic acid (PFOS)	0.080	0.20	0.060	µg/kg dry	1	J	EPA 1633	3/12/25	3/13/25 10:09	CML
Perfluorononanesulfonic acid (PFNS)	ND	0.20	0.049	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:09	CML
Perfluorodecanesulfonic acid (PFDS)	ND	0.20	0.064	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:09	CML
Perfluorododecanesulfonic acid (PFDoS)	ND	0.20	0.057	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:09	CML
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2FTS)	ND	0.79	0.29	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:09	CML
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2FTS)	ND	0.79	0.28	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:09	CML
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2FTS)	ND	0.79	0.36	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:09	CML
Perfluorooctanesulfonamide (PFOSA)	ND	0.20	0.081	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:09	CML
N-methyl perfluorooctanesulfonamide (NMeFOSA)	ND	0.20	0.055	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:09	CML
N-ethyl perfluorooctanesulfonamide (NEtFOSA)	ND	0.20	0.089	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:09	CML
N-MeFOSAA (NMeFOSAA)	ND	0.20	0.10	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:09	CML
N-EtFOSAA (NEtFOSAA)	ND	0.20	0.091	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:09	CML
N-methylperfluorooctanesulfonamidoethanol (NMeFOSE)	ND	2.0	0.64	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:09	CML
N-ethylperfluorooctanesulfonamidoethanol (NEtFOSE)	ND	2.0	0.70	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:09	CML
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	0.79	0.33	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:09	CML
4,8-Dioxo-3H-perfluorononanoic acid (ADONA)	ND	0.79	0.31	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:09	CML
9Cl-PF3ONS (F53B Minor)	ND	0.79	0.23	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:09	CML
11Cl-PF3OUs (F53B Major)	ND	0.79	0.26	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:09	CML
3-Perfluoropropyl propanoic acid (FPrPA) (3:3FTCA)	ND	0.99	0.49	µg/kg dry	1	L-03	EPA 1633	3/12/25	3/13/25 10:09	CML
2H,2H,3H,3H-Perfluorooctanoic acid(FPePA)(5:3FTCA)	ND	4.9	1.5	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:09	CML
3-Perfluoroheptyl propanoic acid (FHpPA) (7:3FTCA)	ND	4.9	1.6	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:09	CML
Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	ND	0.40	0.14	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:09	CML
Perfluoro-3-methoxypropanoic acid (PFMPA)	ND	0.40	0.091	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:09	CML

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Chicopee Row, Groton, MA

Sample Description:

Work Order: 25C0481

Date Received: 3/10/2025

Field Sample #: 193 Chicopee ROW - 4

Sampled: 3/7/2025 11:25

Sample ID: 25C0481-04

Sample Matrix: Soil

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluoro-4-methoxybutanoic acid (PFMBA)	ND	0.40	0.12	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:09	CML
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	0.40	0.24	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:09	CML
Surrogates	% Recovery		Recovery Limits		Flag/Qual					
13C4-PFBA	59.9		8-130				3/13/25 10:09			
13C5-PFPeA	90.4		35-130				3/13/25 10:09			
13C5-PFHxA	105		40-130				3/13/25 10:09			
13C4-PFHpA	97.1		40-130				3/13/25 10:09			
13C8-PFOA	111		40-130				3/13/25 10:09			
13C9-PFNA	105		40-130				3/13/25 10:09			
13C6-PFDA	109		40-130				3/13/25 10:09			
13C7-PFUnA	120		40-130				3/13/25 10:09			
13C2-PFDoA	115		40-130				3/13/25 10:09			
13C2-PFTeDA	127		20-130				3/13/25 10:09			
13C3-PFBS	97.8		40-135				3/13/25 10:09			
13C3-PFHxS	112		40-130				3/13/25 10:09			
13C8-PFOS	103		40-130				3/13/25 10:09			
13C2-4:2FTS	91.2		40-165				3/13/25 10:09			
13C2-6:2FTS	75.9		40-215				3/13/25 10:09			
13C2-8:2FTS	70.7		40-275				3/13/25 10:09			
13C8-PFOSA	95.1		40-130				3/13/25 10:09			
D3-NMeFOSA	95.3		10-130				3/13/25 10:09			
D5-NEtFOSA	93.0		10-130				3/13/25 10:09			
D3-NMeFOSAA	113		40-135				3/13/25 10:09			
D5-NEtFOSAA	122		40-150				3/13/25 10:09			
D7-NMeFOSE	101		20-130				3/13/25 10:09			
D9-NEtFOSE	125		15-130				3/13/25 10:09			
13C3-HFPO-DA	99.7		40-130				3/13/25 10:09			



Pace Analytical Services, LLC - East Longmeadow, Ma

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Chicopee Row, Groton, MA

Sample Description:

Work Order: 25C0481

Date Received: 3/10/2025

Field Sample #: 193 Chicopee ROW - 4

Sampled: 3/7/2025 11:25

Sample ID: 25C0481-04

Sample Matrix: Soil

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	89.0		% Wt	1		SM 2540G	3/11/25	3/11/25 18:51	ANR

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Chicopee Row, Groton, MA

Sample Description:

Work Order: 25C0481

Date Received: 3/10/2025

Field Sample #: Cow Pond Rd. - 1

Sampled: 3/7/2025 12:03

Sample ID: 25C0481-05

Sample Matrix: Soil

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	ND	0.80	0.27	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:18	CML
Perfluoropentanoic acid (PFPeA)	ND	0.40	0.13	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:18	CML
Perfluorohexanoic acid (PFHxA)	ND	0.20	0.082	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:18	CML
Perfluoroheptanoic acid (PFHpA)	ND	0.20	0.083	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:18	CML
Perfluorooctanoic acid (PFOA)	ND	0.20	0.069	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:18	CML
Perfluorononanoic acid (PFNA)	ND	0.20	0.075	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:18	CML
Perfluorodecanoic acid (PFDA)	ND	0.20	0.063	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:18	CML
Perfluoroundecanoic acid (PFUnA)	ND	0.20	0.083	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:18	CML
Perfluorododecanoic acid (PFDoA)	ND	0.20	0.075	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:18	CML
Perfluorotridecanoic acid (PFTrDA)	ND	0.20	0.063	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:18	CML
Perfluorotetradecanoic acid (PFTeDA)	ND	0.20	0.068	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:18	CML
Perfluorobutanesulfonic acid (PFBS)	ND	0.20	0.064	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:18	CML
Perfluoropentanesulfonic acid (PFPeS)	ND	0.20	0.064	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:18	CML
Perfluorohexanesulfonic acid (PFHxS)	ND	0.20	0.075	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:18	CML
Perfluoroheptanesulfonic acid (PFHpS)	ND	0.20	0.10	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:18	CML
Perfluorooctanesulfonic acid (PFOS)	ND	0.20	0.060	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:18	CML
Perfluorononanesulfonic acid (PFNS)	ND	0.20	0.050	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:18	CML
Perfluorodecanesulfonic acid (PFDS)	ND	0.20	0.065	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:18	CML
Perfluorododecanesulfonic acid (PFDoS)	ND	0.20	0.058	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:18	CML
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2FTS)	ND	0.80	0.30	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:18	CML
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2FTS)	ND	0.80	0.29	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:18	CML
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2FTS)	ND	0.80	0.37	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:18	CML
Perfluorooctanesulfonamide (PFOSA)	ND	0.20	0.081	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:18	CML
N-methyl perfluorooctanesulfonamide (NMeFOSA)	ND	0.20	0.055	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:18	CML
N-ethyl perfluorooctanesulfonamide (NEtFOSA)	ND	0.20	0.090	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:18	CML
N-MeFOSAA (NMeFOSAA)	ND	0.20	0.10	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:18	CML
N-EtFOSAA (NEtFOSAA)	ND	0.20	0.092	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:18	CML
N-methylperfluorooctanesulfonamidoethanol (NMeFOSE)	ND	2.0	0.64	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:18	CML
N-ethylperfluorooctanesulfonamidoethanol (NEtFOSE)	ND	2.0	0.71	µg/kg dry	1	PF-17	EPA 1633	3/12/25	3/13/25 10:18	CML
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	0.80	0.34	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:18	CML
4,8-Dioxo-3H-perfluorononanoic acid (ADONA)	ND	0.80	0.32	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:18	CML
9Cl-PF3ONS (F53B Minor)	ND	0.80	0.23	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:18	CML
11Cl-PF3OUdS (F53B Major)	ND	0.80	0.27	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:18	CML
3-Perfluoropropyl propanoic acid (FPrPA) (3:3FTCA)	ND	1.0	0.49	µg/kg dry	1	L-03	EPA 1633	3/12/25	3/13/25 10:18	CML
2H,2H,3H,3H-Perfluorooctanoic acid(FPePA)(5:3FTCA)	ND	5.0	1.5	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:18	CML
3-Perfluoroheptyl propanoic acid (FHpPA) (7:3FTCA)	ND	5.0	1.6	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:18	CML
Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	ND	0.40	0.14	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:18	CML
Perfluoro-3-methoxypropanoic acid (PFMPA)	ND	0.40	0.092	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:18	CML

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Chicopee Row, Groton, MA

Sample Description:

Work Order: 25C0481

Date Received: 3/10/2025

Field Sample #: Cow Pond Rd. - 1

Sampled: 3/7/2025 12:03

Sample ID: 25C0481-05

Sample Matrix: Soil

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluoro-4-methoxybutanoic acid (PFMBA)	ND	0.40	0.12	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:18	CML
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	0.40	0.25	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:18	CML
Surrogates		% Recovery		Recovery Limits		Flag/Qual				
13C4-PFBA		63.3		8-130		3/13/25 10:18				
13C5-PFPeA		94.6		35-130		3/13/25 10:18				
13C5-PFHxA		105		40-130		3/13/25 10:18				
13C4-PFHpA		99.4		40-130		3/13/25 10:18				
13C8-PFOA		111		40-130		3/13/25 10:18				
13C9-PFNA		102		40-130		3/13/25 10:18				
13C6-PFDA		109		40-130		3/13/25 10:18				
13C7-PFUnA		121		40-130		3/13/25 10:18				
13C2-PFDoA		111		40-130		3/13/25 10:18				
13C2-PFTeDA		129		20-130		3/13/25 10:18				
13C3-PFBS		100		40-135		3/13/25 10:18				
13C3-PFHxS		108		40-130		3/13/25 10:18				
13C8-PFOS		111		40-130		3/13/25 10:18				
13C2-4:2FTS		88.4		40-165		3/13/25 10:18				
13C2-6:2FTS		78.6		40-215		3/13/25 10:18				
13C2-8:2FTS		67.1		40-275		3/13/25 10:18				
13C8-PFOSA		105		40-130		3/13/25 10:18				
D3-NMeFOSA		98.5		10-130		3/13/25 10:18				
D5-NEtFOSA		91.5		10-130		3/13/25 10:18				
D3-NMeFOSAA		114		40-135		3/13/25 10:18				
D5-NEtFOSAA		129		40-150		3/13/25 10:18				
D7-NMeFOSE		104		20-130		3/13/25 10:18				
D9-NEtFOSE		132		*	15-130	PF-17	3/13/25 10:18			
13C3-HFPO-DA		104		40-130		3/13/25 10:18				



39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Chicopee Row, Groton, MA

Sample Description:

Work Order: 25C0481

Date Received: 3/10/2025

Field Sample #: Cow Pond Rd. - 1

Sampled: 3/7/2025 12:03

Sample ID: 25C0481-05

Sample Matrix: Soil

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	90.4		% Wt	1		SM 2540G	3/11/25	3/11/25 18:51	ANR

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Chicopee Row, Groton, MA

Sample Description:

Work Order: 25C0481

Date Received: 3/10/2025

Field Sample #: Cow Pond Rd. - 2

Sampled: 3/7/2025 12:15

Sample ID: 25C0481-06

Sample Matrix: Soil

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	ND	0.80	0.27	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:27	CML
Perfluoropentanoic acid (PFPeA)	ND	0.40	0.13	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:27	CML
Perfluorohexanoic acid (PFHxA)	ND	0.20	0.082	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:27	CML
Perfluoroheptanoic acid (PFHpA)	ND	0.20	0.083	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:27	CML
Perfluorooctanoic acid (PFOA)	ND	0.20	0.069	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:27	CML
Perfluorononanoic acid (PFNA)	ND	0.20	0.075	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:27	CML
Perfluorodecanoic acid (PFDA)	ND	0.20	0.063	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:27	CML
Perfluoroundecanoic acid (PFUnA)	ND	0.20	0.083	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:27	CML
Perfluorododecanoic acid (PFDoA)	ND	0.20	0.075	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:27	CML
Perfluorotridecanoic acid (PFTrDA)	ND	0.20	0.064	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:27	CML
Perfluorotetradecanoic acid (PFTeDA)	ND	0.20	0.068	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:27	CML
Perfluorobutanesulfonic acid (PFBS)	ND	0.20	0.064	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:27	CML
Perfluoropentanesulfonic acid (PFPeS)	ND	0.20	0.064	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:27	CML
Perfluorohexanesulfonic acid (PFHxS)	ND	0.20	0.075	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:27	CML
Perfluoroheptanesulfonic acid (PFHpS)	ND	0.20	0.10	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:27	CML
Perfluorooctanesulfonic acid (PFOS)	0.068	0.20	0.061	µg/kg dry	1	J	EPA 1633	3/12/25	3/13/25 10:27	CML
Perfluorononanesulfonic acid (PFNS)	ND	0.20	0.050	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:27	CML
Perfluorodecanesulfonic acid (PFDS)	ND	0.20	0.065	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:27	CML
Perfluorododecanesulfonic acid (PFDoS)	ND	0.20	0.058	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:27	CML
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2FTS)	ND	0.80	0.30	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:27	CML
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2FTS)	ND	0.80	0.29	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:27	CML
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2FTS)	ND	0.80	0.37	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:27	CML
Perfluorooctanesulfonamide (PFOSA)	ND	0.20	0.081	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:27	CML
N-methyl perfluorooctanesulfonamide (NMeFOSA)	ND	0.20	0.056	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:27	CML
N-ethyl perfluorooctanesulfonamide (NEtFOSA)	ND	0.20	0.090	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:27	CML
N-MeFOSAA (NMeFOSAA)	ND	0.20	0.10	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:27	CML
N-EtFOSAA (NEtFOSAA)	ND	0.20	0.092	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:27	CML
N-methylperfluorooctanesulfonamidoethanol (NMeFOSE)	ND	2.0	0.64	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:27	CML
N-ethylperfluorooctanesulfonamidoethanol (NEtFOSE)	ND	2.0	0.71	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:27	CML
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	0.80	0.34	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:27	CML
4,8-Dioxo-3H-perfluorononanoic acid (ADONA)	ND	0.80	0.32	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:27	CML
9Cl-PF3ONS (F53B Minor)	ND	0.80	0.23	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:27	CML
11Cl-PF3OUs (F53B Major)	ND	0.80	0.27	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:27	CML
3-Perfluoropropyl propanoic acid (FPrPA) (3:3FTCA)	ND	1.0	0.49	µg/kg dry	1	L-03	EPA 1633	3/12/25	3/13/25 10:27	CML
2H,2H,3H,3H-Perfluorooctanoic acid(FPePA)(5:3FTCA)	ND	5.0	1.5	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:27	CML
3-Perfluoroheptyl propanoic acid (FHpPA) (7:3FTCA)	ND	5.0	1.6	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:27	CML
Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	ND	0.40	0.15	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:27	CML
Perfluoro-3-methoxypropanoic acid (PFMPA)	ND	0.40	0.092	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:27	CML

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Chicopee Row, Groton, MA

Sample Description:

Work Order: 25C0481

Date Received: 3/10/2025

Field Sample #: Cow Pond Rd. - 2

Sampled: 3/7/2025 12:15

Sample ID: 25C0481-06

Sample Matrix: Soil

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluoro-4-methoxybutanoic acid (PFMBA)	ND	0.40	0.12	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:27	CML
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	0.40	0.25	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:27	CML
Surrogates	% Recovery		Recovery Limits		Flag/Qual					
13C4-PFBA	53.2		8-130				3/13/25 10:27			
13C5-PFPeA	83.1		35-130				3/13/25 10:27			
13C5-PFHxA	104		40-130				3/13/25 10:27			
13C4-PFHpA	96.8		40-130				3/13/25 10:27			
13C8-PFOA	113		40-130				3/13/25 10:27			
13C9-PFNA	101		40-130				3/13/25 10:27			
13C6-PFDA	109		40-130				3/13/25 10:27			
13C7-PFUnA	119		40-130				3/13/25 10:27			
13C2-PFDoA	110		40-130				3/13/25 10:27			
13C2-PFTeDA	128		20-130				3/13/25 10:27			
13C3-PFBS	93.8		40-135				3/13/25 10:27			
13C3-PFHxS	103		40-130				3/13/25 10:27			
13C8-PFOS	105		40-130				3/13/25 10:27			
13C2-4:2FTS	81.6		40-165				3/13/25 10:27			
13C2-6:2FTS	74.1		40-215				3/13/25 10:27			
13C2-8:2FTS	67.7		40-275				3/13/25 10:27			
13C8-PFOSA	88.7		40-130				3/13/25 10:27			
D3-NMeFOSA	95.9		10-130				3/13/25 10:27			
D5-NEtFOSA	91.8		10-130				3/13/25 10:27			
D3-NMeFOSAA	115		40-135				3/13/25 10:27			
D5-NEtFOSAA	126		40-150				3/13/25 10:27			
D7-NMeFOSE	97.5		20-130				3/13/25 10:27			
D9-NEtFOSE	125		15-130				3/13/25 10:27			
13C3-HFPO-DA	98.6		40-130				3/13/25 10:27			



Pace Analytical Services, LLC - East Longmeadow, Ma

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Chicopee Row, Groton, MA

Sample Description:

Work Order: 25C0481

Date Received: 3/10/2025

Field Sample #: Cow Pond Rd. - 2

Sampled: 3/7/2025 12:15

Sample ID: 25C0481-06

Sample Matrix: Soil

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	90.4		% Wt	1		SM 2540G	3/11/25	3/11/25 18:51	ANR

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Chicopee Row, Groton, MA

Sample Description:

Work Order: 25C0481

Date Received: 3/10/2025

Field Sample #: Duplicate - 1

Sampled: 3/7/2025 00:00

Sample ID: 25C0481-07

Sample Matrix: Soil

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	ND	0.80	0.27	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:36	CML
Perfluoropentanoic acid (PFPeA)	ND	0.40	0.13	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:36	CML
Perfluorohexanoic acid (PFHxA)	ND	0.20	0.082	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:36	CML
Perfluoroheptanoic acid (PFHpA)	ND	0.20	0.083	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:36	CML
Perfluorooctanoic acid (PFOA)	0.081	0.20	0.069	µg/kg dry	1	J	EPA 1633	3/12/25	3/13/25 10:36	CML
Perfluorononanoic acid (PFNA)	ND	0.20	0.075	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:36	CML
Perfluorodecanoic acid (PFDA)	ND	0.20	0.063	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:36	CML
Perfluoroundecanoic acid (PFUnA)	ND	0.20	0.083	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:36	CML
Perfluorododecanoic acid (PFDoA)	ND	0.20	0.075	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:36	CML
Perfluorotridecanoic acid (PFTrDA)	ND	0.20	0.064	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:36	CML
Perfluorotetradecanoic acid (PFTeDA)	ND	0.20	0.068	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:36	CML
Perfluorobutanesulfonic acid (PFBS)	ND	0.20	0.064	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:36	CML
Perfluoropentanesulfonic acid (PFPeS)	ND	0.20	0.064	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:36	CML
Perfluorohexanesulfonic acid (PFHxS)	ND	0.20	0.075	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:36	CML
Perfluoroheptanesulfonic acid (PFHpS)	ND	0.20	0.10	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:36	CML
Perfluorooctanesulfonic acid (PFOS)	ND	0.20	0.061	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:36	CML
Perfluorononanesulfonic acid (PFNS)	ND	0.20	0.050	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:36	CML
Perfluorodecanesulfonic acid (PFDS)	ND	0.20	0.065	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:36	CML
Perfluorododecanesulfonic acid (PFDoS)	ND	0.20	0.058	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:36	CML
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2FTS)	ND	0.80	0.30	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:36	CML
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2FTS)	ND	0.80	0.29	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:36	CML
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2FTS)	ND	0.80	0.37	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:36	CML
Perfluorooctanesulfonamide (PFOSA)	ND	0.20	0.081	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:36	CML
N-methyl perfluorooctanesulfonamide (NMeFOSA)	ND	0.20	0.056	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:36	CML
N-ethyl perfluorooctanesulfonamide (NEtFOSA)	ND	0.20	0.090	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:36	CML
N-MeFOSAA (NMeFOSAA)	ND	0.20	0.10	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:36	CML
N-EtFOSAA (NEtFOSAA)	ND	0.20	0.092	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:36	CML
N-methylperfluorooctanesulfonamidoethanol (NMeFOSE)	ND	2.0	0.64	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:36	CML
N-ethylperfluorooctanesulfonamidoethanol (NEtFOSE)	ND	2.0	0.71	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:36	CML
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	0.80	0.34	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:36	CML
4,8-Dioxo-3H-perfluorononanoic acid (ADONA)	ND	0.80	0.32	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:36	CML
9Cl-PF3ONS (F53B Minor)	ND	0.80	0.23	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:36	CML
11Cl-PF3OUs (F53B Major)	ND	0.80	0.27	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:36	CML
3-Perfluoropropyl propanoic acid (FPrPA) (3:3FTCA)	ND	1.0	0.49	µg/kg dry	1	L-03	EPA 1633	3/12/25	3/13/25 10:36	CML
2H,2H,3H,3H-Perfluorooctanoic acid(FPePA)(5:3FTCA)	ND	5.0	1.5	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:36	CML
3-Perfluoroheptyl propanoic acid (FHpPA) (7:3FTCA)	ND	5.0	1.6	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:36	CML
Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	ND	0.40	0.15	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:36	CML
Perfluoro-3-methoxypropanoic acid (PFMPA)	ND	0.40	0.092	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:36	CML

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Chicopee Row, Groton, MA

Sample Description:

Work Order: 25C0481

Date Received: 3/10/2025

Field Sample #: Duplicate - 1

Sampled: 3/7/2025 00:00

Sample ID: 25C0481-07

Sample Matrix: Soil

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluoro-4-methoxybutanoic acid (PFMBA)	ND	0.40	0.12	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:36	CML
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	0.40	0.25	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:36	CML
Surrogates	% Recovery		Recovery Limits		Flag/Qual					
13C4-PFBA	54.5		8-130				3/13/25 10:36			
13C5-PFPeA	83.4		35-130				3/13/25 10:36			
13C5-PFHxA	99.5		40-130				3/13/25 10:36			
13C4-PFHpA	92.7		40-130				3/13/25 10:36			
13C8-PFOA	105		40-130				3/13/25 10:36			
13C9-PFNA	98.0		40-130				3/13/25 10:36			
13C6-PFDA	105		40-130				3/13/25 10:36			
13C7-PFUnA	115		40-130				3/13/25 10:36			
13C2-PFDoA	108		40-130				3/13/25 10:36			
13C2-PFTeDA	120		20-130				3/13/25 10:36			
13C3-PFBS	91.4		40-135				3/13/25 10:36			
13C3-PFHxS	101		40-130				3/13/25 10:36			
13C8-PFOS	103		40-130				3/13/25 10:36			
13C2-4:2FTS	81.9		40-165				3/13/25 10:36			
13C2-6:2FTS	69.7		40-215				3/13/25 10:36			
13C2-8:2FTS	62.0		40-275				3/13/25 10:36			
13C8-PFOSA	92.0		40-130				3/13/25 10:36			
D3-NMeFOSA	92.4		10-130				3/13/25 10:36			
D5-NEtFOSA	91.4		10-130				3/13/25 10:36			
D3-NMeFOSAA	103		40-135				3/13/25 10:36			
D5-NEtFOSAA	108		40-150				3/13/25 10:36			
D7-NMeFOSE	96.0		20-130				3/13/25 10:36			
D9-NEtFOSE	119		15-130				3/13/25 10:36			
13C3-HFPO-DA	97.4		40-130				3/13/25 10:36			



Pace Analytical Services, LLC - East Longmeadow, Ma

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Chicopee Row, Groton, MA

Sample Description:

Work Order: 25C0481

Date Received: 3/10/2025

Field Sample #: Duplicate - 1

Sampled: 3/7/2025 00:00

Sample ID: 25C0481-07

Sample Matrix: Soil

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	89.4		% Wt	1		SM 2540G	3/11/25	3/11/25 18:51	ANR

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Chicopee Row, Groton, MA

Sample Description:

Work Order: 25C0481

Date Received: 3/10/2025

Field Sample #: Duplicate - 2

Sampled: 3/7/2025 00:00

Sample ID: 25C0481-08

Sample Matrix: Soil

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	ND	0.79	0.27	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:46	CML
Perfluoropentanoic acid (PFPeA)	ND	0.40	0.12	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:46	CML
Perfluorohexanoic acid (PFHxA)	ND	0.20	0.081	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:46	CML
Perfluoroheptanoic acid (PFHpA)	ND	0.20	0.082	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:46	CML
Perfluorooctanoic acid (PFOA)	0.086	0.20	0.069	µg/kg dry	1	PF-23, J	EPA 1633	3/12/25	3/13/25 10:46	CML
Perfluorononanoic acid (PFNA)	ND	0.20	0.075	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:46	CML
Perfluorodecanoic acid (PFDA)	ND	0.20	0.063	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:46	CML
Perfluoroundecanoic acid (PFUnA)	ND	0.20	0.082	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:46	CML
Perfluorododecanoic acid (PFDoA)	ND	0.20	0.074	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:46	CML
Perfluorotridecanoic acid (PFTrDA)	ND	0.20	0.063	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:46	CML
Perfluorotetradecanoic acid (PFTeDA)	ND	0.20	0.067	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:46	CML
Perfluorobutanesulfonic acid (PFBS)	ND	0.20	0.063	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:46	CML
Perfluoropentanesulfonic acid (PFPeS)	ND	0.20	0.064	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:46	CML
Perfluorohexanesulfonic acid (PFHxS)	ND	0.20	0.075	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:46	CML
Perfluoroheptanesulfonic acid (PFHpS)	ND	0.20	0.10	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:46	CML
Perfluorooctanesulfonic acid (PFOS)	0.084	0.20	0.060	µg/kg dry	1	J	EPA 1633	3/12/25	3/13/25 10:46	CML
Perfluorononanesulfonic acid (PFNS)	ND	0.20	0.050	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:46	CML
Perfluorodecanesulfonic acid (PFDS)	ND	0.20	0.064	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:46	CML
Perfluorododecanesulfonic acid (PFDoS)	ND	0.20	0.057	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:46	CML
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2FTS)	ND	0.79	0.29	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:46	CML
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2FTS)	ND	0.79	0.28	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:46	CML
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2FTS)	ND	0.79	0.37	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:46	CML
Perfluorooctanesulfonamide (PFOSA)	ND	0.20	0.081	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:46	CML
N-methyl perfluorooctanesulfonamide (NMeFOSA)	ND	0.20	0.055	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:46	CML
N-ethyl perfluorooctanesulfonamide (NEtFOSA)	ND	0.20	0.089	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:46	CML
N-MeFOSAA (NMeFOSAA)	ND	0.20	0.10	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:46	CML
N-EtFOSAA (NEtFOSAA)	ND	0.20	0.092	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:46	CML
N-methylperfluorooctanesulfonamidoethanol (NMeFOSE)	ND	2.0	0.64	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:46	CML
N-ethylperfluorooctanesulfonamidoethanol (NEtFOSE)	ND	2.0	0.71	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:46	CML
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	0.79	0.33	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:46	CML
4,8-Dioxo-3H-perfluorononanoic acid (ADONA)	ND	0.79	0.32	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:46	CML
9Cl-PF3ONS (F53B Minor)	ND	0.79	0.23	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:46	CML
11Cl-PF3OUDs (F53B Major)	ND	0.79	0.26	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:46	CML
3-Perfluoropropyl propanoic acid (FPrPA) (3:3FTCA)	ND	0.99	0.49	µg/kg dry	1	L-03	EPA 1633	3/12/25	3/13/25 10:46	CML
2H,2H,3H,3H-Perfluorooctanoic acid(FPePA)(5:3FTCA)	ND	5.0	1.5	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:46	CML
3-Perfluoroheptyl propanoic acid (FHpPA) (7:3FTCA)	ND	5.0	1.6	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:46	CML
Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	ND	0.40	0.14	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:46	CML
Perfluoro-3-methoxypropanoic acid (PFMPA)	ND	0.40	0.092	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:46	CML

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Chicopee Row, Groton, MA

Sample Description:

Work Order: 25C0481

Date Received: 3/10/2025

Field Sample #: Duplicate - 2

Sampled: 3/7/2025 00:00

Sample ID: 25C0481-08

Sample Matrix: Soil

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluoro-4-methoxybutanoic acid (PFMBA)	ND	0.40	0.12	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:46	CML
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	0.40	0.24	µg/kg dry	1		EPA 1633	3/12/25	3/13/25 10:46	CML
Surrogates	% Recovery		Recovery Limits		Flag/Qual					
13C4-PFBA	58.0		8-130				3/13/25 10:46			
13C5-PFPeA	86.0		35-130				3/13/25 10:46			
13C5-PFHxA	101		40-130				3/13/25 10:46			
13C4-PFHpA	92.6		40-130				3/13/25 10:46			
13C8-PFOA	104		40-130				3/13/25 10:46			
13C9-PFNA	100		40-130				3/13/25 10:46			
13C6-PFDA	105		40-130				3/13/25 10:46			
13C7-PFUnA	116		40-130				3/13/25 10:46			
13C2-PFDoA	105		40-130				3/13/25 10:46			
13C2-PFTeDA	120		20-130				3/13/25 10:46			
13C3-PFBS	88.1		40-135				3/13/25 10:46			
13C3-PFHxS	99.7		40-130				3/13/25 10:46			
13C8-PFOS	104		40-130				3/13/25 10:46			
13C2-4:2FTS	80.6		40-165				3/13/25 10:46			
13C2-6:2FTS	76.3		40-215				3/13/25 10:46			
13C2-8:2FTS	62.2		40-275				3/13/25 10:46			
13C8-PFOSA	97.9		40-130				3/13/25 10:46			
D3-NMeFOSA	98.7		10-130				3/13/25 10:46			
D5-NEtFOSA	95.8		10-130				3/13/25 10:46			
D3-NMeFOSAA	115		40-135				3/13/25 10:46			
D5-NEtFOSAA	128		40-150				3/13/25 10:46			
D7-NMeFOSE	98.2		20-130				3/13/25 10:46			
D9-NEtFOSE	122		15-130				3/13/25 10:46			
13C3-HFPO-DA	93.9		40-130				3/13/25 10:46			



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Project Location: Chicopee Row, Groton, MA

Sample Description:

Work Order: 25C0481

Date Received: 3/10/2025

Field Sample #: Duplicate - 2

Sampled: 3/7/2025 00:00

Sample ID: 25C0481-08

Sample Matrix: Soil

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	90.1		% Wt	1		SM 2540G	3/11/25	3/11/25 18:51	ANR

**Sample Extraction Data****Prep Method:**EPA 1633 **Analytical Method:**EPA 1633

Lab Number [Field ID]	Batch	Initial [g]	Final [mL]	Date
25C0481-01 [193 Chicopee ROW - 1]	B400491	5.62	4.00	03/12/25
25C0481-02 [193 Chicopee ROW - 2]	B400491	5.67	4.00	03/12/25
25C0481-03 [193 Chicopee ROW - 3]	B400491	5.57	4.00	03/12/25
25C0481-04 [193 Chicopee ROW - 4]	B400491	5.68	4.00	03/12/25
25C0481-05 [Cow Pond Rd. - 1]	B400491	5.54	4.00	03/12/25
25C0481-06 [Cow Pond Rd. - 2]	B400491	5.54	4.00	03/12/25
25C0481-07 [Duplicate - 1]	B400491	5.60	4.00	03/12/25
25C0481-08 [Duplicate - 2]	B400491	5.58	4.00	03/12/25

Prep Method:% Solids **Analytical Method:**SM 2540G

Lab Number [Field ID]	Batch	Date
25C0481-01 [193 Chicopee ROW - 1]	B400580	03/11/25
25C0481-02 [193 Chicopee ROW - 2]	B400580	03/11/25
25C0481-03 [193 Chicopee ROW - 3]	B400580	03/11/25
25C0481-04 [193 Chicopee ROW - 4]	B400580	03/11/25
25C0481-05 [Cow Pond Rd. - 1]	B400580	03/11/25
25C0481-06 [Cow Pond Rd. - 2]	B400580	03/11/25
25C0481-07 [Duplicate - 1]	B400580	03/11/25
25C0481-08 [Duplicate - 2]	B400580	03/11/25

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QUALITY CONTROL
Semivolatile Organic Compounds by - LC/MS-MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B400491 - EPA 1633										
Blank (B400491-BLK1)										
Prepared: 03/12/25 Analyzed: 03/13/25										
Perfluorobutanoic acid (PFBA)	ND	0.79	µg/kg wet							
Perfluoropentanoic acid (PFPeA)	ND	0.40	µg/kg wet							
Perfluorohexanoic acid (PFHxA)	ND	0.20	µg/kg wet							
Perfluoroheptanoic acid (PFHpA)	ND	0.20	µg/kg wet							
Perfluorooctanoic acid (PFOA)	ND	0.20	µg/kg wet							
Perfluorononanoic acid (PFNA)	ND	0.20	µg/kg wet							
Perfluorodecanoic acid (PFDA)	ND	0.20	µg/kg wet							
Perfluoroundecanoic acid (PFUnA)	ND	0.20	µg/kg wet							
Perfluorododecanoic acid (PFDoA)	ND	0.20	µg/kg wet							
Perfluorotridecanoic acid (PFTrDA)	ND	0.20	µg/kg wet							
Perfluorotetradecanoic acid (PFTeDA)	ND	0.20	µg/kg wet							
Perfluorobutanesulfonic acid (PFBS)	ND	0.20	µg/kg wet							
Perfluoropentanesulfonic acid (PFPeS)	ND	0.20	µg/kg wet							
Perfluorohexanesulfonic acid (PFHxS)	ND	0.20	µg/kg wet							
Perfluoroheptanesulfonic acid (PFHpS)	ND	0.20	µg/kg wet							
Perfluorooctanesulfonic acid (PFOS)	ND	0.20	µg/kg wet							
Perfluorononanesulfonic acid (PFNS)	ND	0.20	µg/kg wet							
Perfluorodecanesulfonic acid (PFDS)	ND	0.20	µg/kg wet							
Perfluorododecanesulfonic acid (PFDoS)	ND	0.20	µg/kg wet							
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2FTS)	ND	0.79	µg/kg wet							
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2FTS)	ND	0.79	µg/kg wet							
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2FTS)	ND	0.79	µg/kg wet							
Perfluorooctanesulfonamide (PFOSA)	ND	0.20	µg/kg wet							
N-methyl perfluorooctanesulfonamide (NMeFOSA)	ND	0.20	µg/kg wet							
N-ethyl perfluorooctanesulfonamide (NEtFOSA)	ND	0.20	µg/kg wet							
N-MeFOSAA (NMeFOSAA)	ND	0.20	µg/kg wet							
N-EtFOSAA (NEtFOSAA)	ND	0.20	µg/kg wet							
N-methylperfluorooctanesulfonamidoethanol (NMeFOSE)	ND	2.0	µg/kg wet							
N-ethylperfluorooctanesulfonamidoethanol (NEtFOSE)	ND	2.0	µg/kg wet							
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	0.79	µg/kg wet							
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	0.79	µg/kg wet							
9Cl-PF3ONS (F53B Minor)	ND	0.79	µg/kg wet							
11Cl-PF3OUdS (F53B Major)	ND	0.79	µg/kg wet							
3-Perfluoropropyl propanoic acid (FPrPA) (3:3FTCA)	ND	0.99	µg/kg wet							
2H,2H,3H,3H-Perfluorooctanoic acid(FPePA)(5:3FTCA)	ND	4.9	µg/kg wet							
3-Perfluoroheptyl propanoic acid (FHpPA) (7:3FTCA)	ND	4.9	µg/kg wet							
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEESA)	ND	0.40	µg/kg wet							
Perfluoro-3-methoxypropanoic acid (PFMPA)	ND	0.40	µg/kg wet							
Perfluoro-4-methoxybutanoic acid (PFMBA)	ND	0.40	µg/kg wet							
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	0.40	µg/kg wet							
Surrogate: 13C4-PFBA	5.39		µg/kg wet	7.911		68.1	8-130			

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QUALITY CONTROL
Semivolatile Organic Compounds by - LC/MS-MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B400491 - EPA 1633
Blank (B400491-BLK1)

Prepared: 03/12/25 Analyzed: 03/13/25

Surrogate: 13C5-PFPeA	3.65		µg/kg wet	3.956		92.4	35-130			
Surrogate: 13C5-PFHxA	1.89		µg/kg wet	1.978		95.5	40-130			
Surrogate: 13C4-PFHpA	1.76		µg/kg wet	1.978		88.8	40-130			
Surrogate: 13C8-PFOA	1.98		µg/kg wet	1.978		100	40-130			
Surrogate: 13C9-PFNA	0.939		µg/kg wet	0.9889		94.9	40-130			
Surrogate: 13C6-PFDA	0.994		µg/kg wet	0.9889		101	40-130			
Surrogate: 13C7-PFUnA	1.05		µg/kg wet	0.9889		106	40-130			
Surrogate: 13C2-PFDoA	0.948		µg/kg wet	0.9889		95.9	40-130			
Surrogate: 13C2-PFTeDA	0.904		µg/kg wet	0.9889		91.4	20-130			
Surrogate: 13C3-PFBS	1.72		µg/kg wet	1.978		86.8	40-135			
Surrogate: 13C3-PFHxS	1.87		µg/kg wet	1.978		94.5	40-130			
Surrogate: 13C8-PFOS	1.85		µg/kg wet	1.978		93.4	40-130			
Surrogate: 13C2-4:2FTS	3.71		µg/kg wet	3.956		93.7	40-165			
Surrogate: 13C2-6:2FTS	4.17		µg/kg wet	3.956		105	40-215			
Surrogate: 13C2-8:2FTS	3.68		µg/kg wet	3.956		92.9	40-275			
Surrogate: 13C8-PFOA	1.70		µg/kg wet	1.978		85.8	40-130			
Surrogate: D3-NMeFOSA	1.69		µg/kg wet	1.978		85.5	10-130			
Surrogate: D5-NEtFOSA	1.68		µg/kg wet	1.978		85.1	10-130			
Surrogate: D3-NMeFOSAA	3.56		µg/kg wet	3.956		90.1	40-135			
Surrogate: D5-NEtFOSAA	3.57		µg/kg wet	3.956		90.3	40-150			
Surrogate: D7-NMeFOSE	16.6		µg/kg wet	19.78		83.8	20-130			
Surrogate: D9-NEtFOSE	16.7		µg/kg wet	19.78		84.3	15-130			
Surrogate: 13C3-HFPO-DA	7.40		µg/kg wet	7.911		93.6	40-130			

LCS (B400491-BS1)

Prepared: 03/12/25 Analyzed: 03/13/25

Perfluorobutanoic acid (PFBA)	6.38	0.79	µg/kg wet	7.918		80.5	70-140			
Perfluoropentanoic acid (PFPeA)	3.45	0.40	µg/kg wet	3.959		87.2	60-150			
Perfluorohexanoic acid (PFHxA)	1.72	0.20	µg/kg wet	1.979		87.1	65-140			
Perfluoroheptanoic acid (PFHpA)	1.68	0.20	µg/kg wet	1.979		84.9	65-145			
Perfluorooctanoic acid (PFOA)	1.75	0.20	µg/kg wet	1.979		88.5	70-150			
Perfluorononanoic acid (PFNA)	1.75	0.20	µg/kg wet	1.979		88.5	70-155			
Perfluorodecanoic acid (PFDA)	1.76	0.20	µg/kg wet	1.979		89.0	70-155			
Perfluoroundecanoic acid (PFUnA)	1.83	0.20	µg/kg wet	1.979		92.4	70-155			
Perfluorododecanoic acid (PFDoA)	1.93	0.20	µg/kg wet	1.979		97.6	70-150			
Perfluorotridecanoic acid (PFTTrDA)	1.95	0.20	µg/kg wet	1.979		98.6	65-150			
Perfluorotetradecanoic acid (PFTeDA)	1.73	0.20	µg/kg wet	1.979		87.4	65-150			
Perfluorobutanesulfonic acid (PFBS)	1.61	0.20	µg/kg wet	1.758		91.7	65-145			
Perfluoropentanesulfonic acid (PFPeS)	1.59	0.20	µg/kg wet	1.861		85.3	55-160			
Perfluorohexanesulfonic acid (PFHxS)	1.48	0.20	µg/kg wet	1.805		81.9	60-150			
Perfluoroheptanesulfonic acid (PFHpS)	1.71	0.20	µg/kg wet	1.884		90.9	65-155			
Perfluorooctanesulfonic acid (PFOS)	1.50	0.20	µg/kg wet	1.837		81.7	65-160			
Perfluorononanesulfonic acid (PFNS)	1.62	0.20	µg/kg wet	1.900		85.5	55-140			
Perfluorodecanesulfonic acid (PFDS)	1.55	0.20	µg/kg wet	1.908		81.0	40-155			
Perfluorododecanesulfonic acid (PFDoS)	1.56	0.20	µg/kg wet	1.916		81.3	25-160			
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2FTS)	6.98	0.79	µg/kg wet	7.419		94.1	60-150			
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2FTS)	7.14	0.79	µg/kg wet	7.530		94.9	55-200			
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2FTS)	7.21	0.79	µg/kg wet	7.601		94.9	70-150			
Perfluorooctanesulfonamide (PFOSA)	1.58	0.20	µg/kg wet	1.979		79.9	70-140			
N-methyl perfluorooctanesulfonamide (NMeFOSA)	1.58	0.20	µg/kg wet	1.979		79.9	70-155			

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QUALITY CONTROL
Semivolatile Organic Compounds by - LC/MS-MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B400491 - EPA 1633										
LCS (B400491-BS1)										
Prepared: 03/12/25 Analyzed: 03/13/25										
N-ethyl perfluorooctanesulfonamide (NEtFOSA)	1.69	0.20	µg/kg wet	1.979		85.4	70-140			
N-MeFOSAA (NMeFOSAA)	1.63	0.20	µg/kg wet	1.979		82.3	65-155			
N-EtFOSAA (NEtFOSAA)	1.58	0.20	µg/kg wet	1.979		79.9	65-165			
N-methylperfluorooctanesulfonamidoethanol (NMeFOSE)	17.0	2.0	µg/kg wet	19.79		85.7	70-140			
N-ethylperfluorooctanesulfonamidoethanol (NEtFOSE)	18.0	2.0	µg/kg wet	19.79		90.7	70-135			
Hexafluoropropylene oxide dimer acid (HFPO-DA)	7.41	0.79	µg/kg wet	7.918		93.5	70-145			
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	6.93	0.79	µg/kg wet	7.482		92.6	70-160			
9Cl-PF3ONS (F53B Minor)	6.36	0.79	µg/kg wet	7.387		86.1	70-150			
11Cl-PF3OUDS (F53B Major)	6.70	0.79	µg/kg wet	7.395		90.6	45-160			
3-Perfluoropropyl propanoic acid (FPrPA)(3:3FTCA)	3.13	0.99	µg/kg wet	9.897		31.6	* 45-130			L-03
2H,2H,3H,3H-Perfluorooctanoic acid(FPePA)(5:3FTCA)	42.9	4.9	µg/kg wet	49.49		86.6	60-130			
3-Perfluoroheptyl propanoic acid (FHpPA) (7:3FTCA)	43.8	4.9	µg/kg wet	49.49		88.6	60-150			
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	3.31	0.40	µg/kg wet	3.531		93.7	70-140			
Perfluoro-3-methoxypropanoic acid (PFMPA)	3.48	0.40	µg/kg wet	3.959		88.0	30-140			
Perfluoro-4-methoxybutanoic acid (PFMBA)	3.51	0.40	µg/kg wet	3.959		88.6	60-150			
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	3.37	0.40	µg/kg wet	3.959		85.1	60-155			
Surrogate: 13C4-PFBA	5.34		µg/kg wet	7.918		67.4	8-130			
Surrogate: 13C5-PFPeA	3.81		µg/kg wet	3.959		96.3	35-130			
Surrogate: 13C5-PFHxA	2.10		µg/kg wet	1.979		106	40-130			
Surrogate: 13C4-PFHpA	1.98		µg/kg wet	1.979		100	40-130			
Surrogate: 13C8-PFOA	2.23		µg/kg wet	1.979		113	40-130			
Surrogate: 13C9-PFNA	1.07		µg/kg wet	0.9897		108	40-130			
Surrogate: 13C6-PFDA	1.09		µg/kg wet	0.9897		110	40-130			
Surrogate: 13C7-PFUnA	1.17		µg/kg wet	0.9897		118	40-130			
Surrogate: 13C2-PFDoA	0.986		µg/kg wet	0.9897		99.6	40-130			
Surrogate: 13C2-PFTeDA	1.07		µg/kg wet	0.9897		108	20-130			
Surrogate: 13C3-PFBS	1.91		µg/kg wet	1.979		96.4	40-135			
Surrogate: 13C3-PFHxS	2.12		µg/kg wet	1.979		107	40-130			
Surrogate: 13C8-PFOS	2.15		µg/kg wet	1.979		108	40-130			
Surrogate: 13C2-4:2FTS	3.99		µg/kg wet	3.959		101	40-165			
Surrogate: 13C2-6:2FTS	4.27		µg/kg wet	3.959		108	40-215			
Surrogate: 13C2-8:2FTS	4.12		µg/kg wet	3.959		104	40-275			
Surrogate: 13C8-PFOSA	1.64		µg/kg wet	1.979		83.0	40-130			
Surrogate: D3-NMeFOSA	1.95		µg/kg wet	1.979		98.7	10-130			
Surrogate: D5-NEtFOSA	1.91		µg/kg wet	1.979		96.7	10-130			
Surrogate: D3-NMeFOSAA	4.08		µg/kg wet	3.959		103	40-135			
Surrogate: D5-NEtFOSAA	4.09		µg/kg wet	3.959		103	40-150			
Surrogate: D7-NMeFOSE	19.2		µg/kg wet	19.79		97.1	20-130			
Surrogate: D9-NEtFOSE	18.7		µg/kg wet	19.79		94.4	15-130			
Surrogate: 13C3-HFPO-DA	8.07		µg/kg wet	7.918		102	40-130			
MRL Check (B400491-MRL1)										
Prepared: 03/12/25 Analyzed: 03/13/25										
Perfluorobutanoic acid (PFBA)	1.37	0.79	µg/kg wet	1.585		86.4	70-140			
Perfluoropentanoic acid (PFPeA)	0.696	0.40	µg/kg wet	0.7926		87.8	60-150			

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

QUALITY CONTROL
Semivolatile Organic Compounds by - LC/MS-MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B400491 - EPA 1633										
MRL Check (B400491-MRL1)				Prepared: 03/12/25 Analyzed: 03/13/25						
Perfluorohexanoic acid (PFHxA)	0.347	0.20	µg/kg wet	0.3963		87.7	65-140			
Perfluoroheptanoic acid (PFHpA)	0.362	0.20	µg/kg wet	0.3963		91.3	65-145			
Perfluorooctanoic acid (PFOA)	0.403	0.20	µg/kg wet	0.3963		102	70-150			
Perfluorononanoic acid (PFNA)	0.338	0.20	µg/kg wet	0.3963		85.3	70-155			
Perfluorodecanoic acid (PFDA)	0.392	0.20	µg/kg wet	0.3963		98.9	70-155			
Perfluoroundecanoic acid (PFUnA)	0.391	0.20	µg/kg wet	0.3963		98.8	70-155			
Perfluorododecanoic acid (PFDoA)	0.355	0.20	µg/kg wet	0.3963		89.7	70-150			
Perfluorotridecanoic acid (PFTrDA)	0.364	0.20	µg/kg wet	0.3963		91.9	65-150			
Perfluorotetradecanoic acid (PFTeDA)	0.352	0.20	µg/kg wet	0.3963		88.7	65-150			
Perfluorobutanesulfonic acid (PFBS)	0.305	0.20	µg/kg wet	0.3519		86.8	65-145			
Perfluoropentanesulfonic acid (PFPeS)	0.324	0.20	µg/kg wet	0.3725		86.9	55-160			
Perfluorohexanesulfonic acid (PFHxS)	0.334	0.20	µg/kg wet	0.3614		92.5	60-150			
Perfluoroheptanesulfonic acid (PFHpS)	0.358	0.20	µg/kg wet	0.3773		95.0	65-155			
Perfluorooctanesulfonic acid (PFOS)	0.294	0.20	µg/kg wet	0.3677		79.8	65-160			
Perfluorononanesulfonic acid (PFNS)	0.342	0.20	µg/kg wet	0.3804		89.8	55-140			
Perfluorodecanesulfonic acid (PFDS)	0.340	0.20	µg/kg wet	0.3820		88.9	40-155			
Perfluorododecanesulfonic acid (PFDoS)	0.321	0.20	µg/kg wet	0.3836		83.8	25-160			
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2FTS)	1.37	0.79	µg/kg wet	1.485		92.0	60-150			
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2FTS)	1.33	0.79	µg/kg wet	1.507		88.5	55-200			
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2FTS)	1.41	0.79	µg/kg wet	1.522		93.0	70-150			
Perfluorooctanesulfonamide (PFOSA)	0.312	0.20	µg/kg wet	0.3963		78.9	70-140			
N-methyl perfluorooctanesulfonamide (NMeFOSA)	0.315	0.20	µg/kg wet	0.3963		79.4	70-155			
N-ethyl perfluorooctanesulfonamide (NEtFOSA)	0.395	0.20	µg/kg wet	0.3963		99.6	70-140			
N-MeFOSAA (NMeFOSAA)	0.325	0.20	µg/kg wet	0.3963		81.9	65-155			
N-EtFOSAA (NEtFOSAA)	0.355	0.20	µg/kg wet	0.3963		89.7	65-165			
N-methylperfluorooctanesulfonamidoethanol (NMeFOSE)	3.50	2.0	µg/kg wet	3.963		88.3	70-140			
N-ethylperfluorooctanesulfonamidoethanol (NEtFOSE)	3.56	2.0	µg/kg wet	3.963		89.8	70-135			
Hexafluoropropylene oxide dimer acid (HFPO-DA)	1.45	0.79	µg/kg wet	1.585		91.4	70-145			
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	1.43	0.79	µg/kg wet	1.498		95.7	70-160			
9Cl-PF3ONS (F53B Minor)	1.36	0.79	µg/kg wet	1.479		92.1	70-150			
11Cl-PF3OUDS (F53B Major)	1.40	0.79	µg/kg wet	1.480		94.7	45-160			
3-Perfluoropropyl propanoic acid (FPrPA)(3:3FTCA)	0.666	0.99	µg/kg wet	1.981		33.6	* 45-130			L-03, J
2H,2H,3H,3H-Perfluorooctanoic acid(FPePA)(5:3FTCA)	8.85	5.0	µg/kg wet	9.907		89.4	60-130			
3-Perfluoroheptyl propanoic acid (FHpPA) (7:3FTCA)	9.08	5.0	µg/kg wet	9.907		91.6	60-150			
Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	0.676	0.40	µg/kg wet	0.7070		95.7	70-140			
Perfluoro-3-methoxypropanoic acid (PFMPA)	0.709	0.40	µg/kg wet	0.7926		89.4	30-140			
Perfluoro-4-methoxybutanoic acid (PFMBA)	0.723	0.40	µg/kg wet	0.7926		91.2	60-150			
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	0.645	0.40	µg/kg wet	0.7926		81.4	60-155			
Surrogate: 13C4-PFBA	5.27		µg/kg wet	7.926		66.4	8-130			
Surrogate: 13C5-PFPeA	3.84		µg/kg wet	3.963		96.9	35-130			
Surrogate: 13C5-PFHxA	2.10		µg/kg wet	1.981		106	40-130			

QUALITY CONTROL

Semivolatile Organic Compounds by - LC/MS-MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B400491 - EPA 1633

MRL Check (B400491-MRL1)

Prepared: 03/12/25 Analyzed: 03/13/25

Surrogate: 13C4-PFHpA	2.00		µg/kg wet	1.981		101	40-130			
Surrogate: 13C8-PFOA	2.21		µg/kg wet	1.981		112	40-130			
Surrogate: 13C9-PFNA	1.07		µg/kg wet	0.9907		108	40-130			
Surrogate: 13C6-PFDA	1.07		µg/kg wet	0.9907		108	40-130			
Surrogate: 13C7-PFUnA	1.14		µg/kg wet	0.9907		115	40-130			
Surrogate: 13C2-PFDoA	1.03		µg/kg wet	0.9907		104	40-130			
Surrogate: 13C2-PFTeDA	1.05		µg/kg wet	0.9907		106	20-130			
Surrogate: 13C3-PFBS	2.01		µg/kg wet	1.981		102	40-135			
Surrogate: 13C3-PFHxS	2.17		µg/kg wet	1.981		109	40-130			
Surrogate: 13C8-PFOS	2.11		µg/kg wet	1.981		106	40-130			
Surrogate: 13C2-4:2FTS	4.36		µg/kg wet	3.963		110	40-165			
Surrogate: 13C2-6:2FTS	4.60		µg/kg wet	3.963		116	40-215			
Surrogate: 13C2-8:2FTS	4.29		µg/kg wet	3.963		108	40-275			
Surrogate: 13C8-PFOSA	1.73		µg/kg wet	1.981		87.4	40-130			
Surrogate: D3-NMeFOSA	1.98		µg/kg wet	1.981		100	10-130			
Surrogate: D5-NEtFOSA	1.83		µg/kg wet	1.981		92.3	10-130			
Surrogate: D3-NMeFOSAA	4.10		µg/kg wet	3.963		103	40-135			
Surrogate: D5-NEtFOSAA	4.04		µg/kg wet	3.963		102	40-150			
Surrogate: D7-NMeFOSE	19.1		µg/kg wet	19.81		96.5	20-130			
Surrogate: D9-NEtFOSE	18.8		µg/kg wet	19.81		95.0	15-130			
Surrogate: 13C3-HFPO-DA	8.31		µg/kg wet	7.926		105	40-130			

FLAG/QUALIFIER SUMMARY

*	QC result is outside of established limits.
†	Wide recovery limits established for difficult compound.
‡	Wide RPD limits established for difficult compound.
#	Data exceeded client recommended or regulatory level
ND	Not Detected
RL	Reporting Limit is at the level of quantitation (LOQ)
DL	Detection Limit is the lower limit of detection determined by the MDL study
MCL	Maximum Contaminant Level
	Percent recoveries and relative percent differences (RPDs) are determined by the software using values in the calculation which have not been rounded.
	No results have been blank subtracted unless specified in the case narrative section.
J	Detected but below the Reporting Limit (lowest calibration standard); therefore, result is an estimated concentration (CLP J-Flag).
L-03	Laboratory fortified blank/laboratory control sample recovery is outside of control limits. Reported value for this compound is likely to be biased on the low side.
PF-17	Extracted Internal Standard recovery is outside of control limits. Data is not significantly affected since associated analyte is not detected and bias is on the high side.
PF-23	Qualifier ion ratio <50% of associated calibration. Detection is suspect.

CERTIFICATIONS

Certified Analyses included in this Report

Analyte	Certifications
<i>EPA 1633 in Soil</i>	
Perfluorobutanoic acid (PFBA)	NH-P,WV,PA,VA,NJ
Perfluoropentanoic acid (PFPeA)	NH-P,WV,PA,VA,NJ
Perfluorohexanoic acid (PFHxA)	NH-P,WV,PA,VA,NJ
Perfluoroheptanoic acid (PFHpA)	NH-P,WV,PA,VA,NJ
Perfluorooctanoic acid (PFOA)	NH-P,WV,PA,VA,NJ
Perfluorononanoic acid (PFNA)	NH-P,WV,PA,VA,NJ
Perfluorodecanoic acid (PFDA)	NH-P,WV,PA,VA,NJ
Perfluoroundecanoic acid (PFUnA)	NH-P,WV,PA,VA,NJ
Perfluorododecanoic acid (PFDoA)	NH-P,WV,PA,VA,NJ
Perfluorotridecanoic acid (PFTrDA)	NH-P,WV,PA,VA,NJ
Perfluorotetradecanoic acid (PFTeDA)	NH-P,WV,PA,VA,NJ
Perfluorobutanesulfonic acid (PFBS)	NH-P,WV,PA,VA,NJ
Perfluoropentanesulfonic acid (PFPeS)	NH-P,WV,PA,VA,NJ
Perfluorohexanesulfonic acid (PFHxS)	NH-P,WV,PA,VA,NJ
Perfluoroheptanesulfonic acid (PFHpS)	NH-P,WV,PA,VA,NJ
Perfluorooctanesulfonic acid (PFOS)	NH-P,WV,PA,VA,NJ
Perfluorononanesulfonic acid (PFNS)	NH-P,WV,PA,VA,NJ
Perfluorodecanesulfonic acid (PFDS)	NH-P,WV,PA,VA,NJ
Perfluorododecanesulfonic acid (PFDoS)	NH-P,WV,PA,VA,NJ
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2FTS)	NH-P,WV,PA,VA,NJ
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2FTS)	NH-P,WV,PA,VA,NJ
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2FTS)	NH-P,WV,PA,VA,NJ
Perfluorooctanesulfonamide (PFOSA)	NH-P,WV,PA,VA,NJ
N-methyl perfluorooctanesulfonamide (NMeFOSA)	NH-P,WV,PA,VA,NJ
N-ethyl perfluorooctanesulfonamide (NEtFOSA)	NH-P,WV,PA,VA,NJ
N-MeFOSAA (NMeFOSAA)	NH-P,WV,PA,VA,NJ
N-EtFOSAA (NEtFOSAA)	NH-P,WV,PA,VA,NJ
N-methylperfluorooctanesulfonamidoethanol(NMeFOSE)	NH-P,WV,PA,VA,NJ
N-ethylperfluorooctanesulfonamidoethanol (NEtFOSE)	NH-P,WV,PA,VA,NJ
Hexafluoropropylene oxide dimer acid (HFPO-DA)	NH-P,WV,PA,VA,NJ
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	NH-P,WV,PA,VA,NJ
9Cl-PF3ONS (F53B Minor)	NH-P,WV,PA,VA,NJ
11Cl-PF3OUdS (F53B Major)	NH-P,WV,PA,VA,NJ
3-Perfluoropropyl propanoic acid (FPrPA)(3:3FTCA)	NH-P,WV,PA,VA,NJ
2H,2H,3H,3H-Perfluorooctanoic acid(FPePA)(5:3FTCA)	NH-P,WV,PA,VA,NJ
3-Perfluoroheptyl propanoic acid (FHpPA)(7:3FTCA)	NH-P,WV,PA,VA,NJ
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEESA)	NH-P,WV,PA,VA,NJ
Perfluoro-3-methoxypropanoic acid (PFMPA)	NH-P,WV,PA,VA,NJ
Perfluoro-4-methoxybutanoic acid (PFMBA)	NH-P,WV,PA,VA,NJ
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	NH-P,WV,PA,VA,NJ
<i>EPA 1633 in Water</i>	
Perfluorobutanoic acid (PFBA)	CT,NH-P,WV,PA,VA,NJ
Perfluoropentanoic acid (PFPeA)	CT,NH-P,WV,PA,VA,NJ
Perfluorohexanoic acid (PFHxA)	CT,NH-P,WV,PA,VA,NJ
Perfluoroheptanoic acid (PFHpA)	CT,NH-P,WV,PA,VA,NJ
Perfluorooctanoic acid (PFOA)	CT,NH-P,WV,PA,VA,NJ

CERTIFICATIONS

Certified Analyses included in this Report

Analyte	Certifications
EPA 1633 in Water	
Perfluorononanoic acid (PFNA)	CT,NH-P,WV,PA,VA,NJ
Perfluorodecanoic acid (PFDA)	CT,NH-P,WV,PA,VA,NJ
Perfluoroundecanoic acid (PFUnA)	CT,NH-P,WV,PA,VA,NJ
Perfluorododecanoic acid (PFDoA)	CT,NH-P,WV,PA,VA,NJ
Perfluorotridecanoic acid (PFTrDA)	CT,NH-P,WV,PA,VA,NJ
Perfluorotetradecanoic acid (PFTeDA)	CT,NH-P,WV,PA,VA,NJ
Perfluorobutanesulfonic acid (PFBS)	CT,NH-P,WV,PA,VA,NJ
Perfluoropentanesulfonic acid (PFPeS)	CT,NH-P,WV,PA,VA,NJ
Perfluorohexanesulfonic acid (PFHxS)	CT,NH-P,WV,PA,VA,NJ
Perfluoroheptanesulfonic acid (PFHpS)	CT,NH-P,WV,PA,VA,NJ
Perfluorooctanesulfonic acid (PFOS)	CT,NH-P,WV,PA,VA,NJ
Perfluorononanesulfonic acid (PFNS)	CT,NH-P,WV,PA,VA,NJ
Perfluorodecanesulfonic acid (PFDS)	CT,NH-P,WV,PA,VA,NJ
Perfluorododecanesulfonic acid (PFDoS)	CT,NH-P,WV,PA,VA,NJ
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2FTS)	CT,NH-P,WV,PA,VA,NJ
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2FTS)	CT,NH-P,WV,PA,VA,NJ
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2FTS)	CT,NH-P,WV,PA,VA,NJ
Perfluorooctanesulfonamide (PFOSA)	CT,NH-P,WV,PA,VA,NJ
N-methyl perfluorooctanesulfonamide (NMeFOSA)	CT,NH-P,WV,PA,VA,NJ
N-ethyl perfluorooctanesulfonamide (NEtFOSA)	CT,NH-P,WV,PA,VA,NJ
N-MeFOSAA (NMeFOSAA)	CT,NH-P,WV,PA,VA,NJ
N-EtFOSAA (NEtFOSAA)	CT,NH-P,WV,PA,VA,NJ
N-methylperfluorooctanesulfonamidoethanol(NMeFOSE)	CT,NH-P,WV,PA,VA,NJ
N-ethylperfluorooctanesulfonamidoethanol (NEtFOSE)	CT,NH-P,WV,PA,VA,NJ
Hexafluoropropylene oxide dimer acid (HFPO-DA)	CT,NH-P,WV,PA,VA,NJ
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	CT,NH-P,WV,PA,VA,NJ
9Cl-PF3ONS (F53B Minor)	CT,NH-P,WV,PA,VA,NJ
11Cl-PF3OUdS (F53B Major)	CT,NH-P,WV,PA,VA,NJ
3-Perfluoropropyl propanoic acid (FPrPA)(3:3FTCA)	CT,NH-P,WV,PA,VA,NJ
2H,2H,3H,3H-Perfluorooctanoic acid(FPePA)(5:3FTCA)	CT,NH-P,WV,PA,VA,NJ
3-Perfluoroheptyl propanoic acid (FHpPA)(7:3FTCA)	CT,NH-P,WV,PA,VA,NJ
Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	CT,NH-P,WV,PA,VA,NJ
Perfluoro-3-methoxypropanoic acid (PFMPA)	CT,NH-P,WV,PA,VA,NJ
Perfluoro-4-methoxybutanoic acid (PFMBA)	CT,NH-P,WV,PA,VA,NJ
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	CT,NH-P,WV,PA,VA,NJ

Pace Analytical Services, LLC - East Longmeadow, Ma, operates under the following certifications and accreditations:

Code	Description	Number	Expires
CT	Connecticut Department of Public Health	PH-0821	12/31/2026
NJ	New Jersey DEP	MA007 NELAP	06/30/2025
VA	Commonwealth of Virginia	460217	12/14/2025
NH-P	New Hampshire Environmental Lab	2557 NELAP	09/6/2025
PA	Commonwealth of Pennsylvania DEP	68-05812	06/30/2025
WV	West Virginia DEP Division of Water and Waste Management	419	08/31/2025

	DC#_Title: ENV-FRM-ELON-0001 v08_Sample Receiving Checklist
	Effective Date: 06/11/2024

Log In Back-Sheet

Client Boston Environmental Corp
 Project Chicopee ROW
 MCP/RCP Required MA - MCP
 Deliverable Package Requirement S-1
 Location Groton, MA
 PWSID# (When Applicable) n/a
 Arrival Method:
 Courier ☒ Fed Ex ☐ Walk In ☐ Other ☐
 Received By / Date / Time Mem 3/10/25 185
 Back-Sheet By / Date / Time Mem 3/10/25 1829
 Temperature Method Gun # 4
 WV samples: Yes (see note*) / No (follow normal procedure)
 Temp < 6° C Actual Temperature 34
 Rush Samples: Yes / No Notify Yes PRAS teams
 Short Hold: Yes / No Notify No

Login Sample Receipt Checklist ~ (Rejection Criteria Listing
 ~ Using Acceptance Policy) Any False statement will be
 brought to the attention of the Client ~ True or False

	True	False
Received on Ice	☒	☐
Received in Cooler	☒	☐
Custody Seal: DATE _____ TIME _____	☐	☒
COC Relinquished	☒	☐
COC/Samples Labels Agree	☒	☐
All Samples in Good Condition	☒	☐
Samples Received within Holding Time	☒	☐
Is there enough Volume	☒	☐
Proper Media/Container Used	☒	☐
Splitting Samples Required	☐	☒
MS/MSD	☐	☒
Trip Blanks	☐	☒
Lab to Filters	☐	☒
COC Legible	☒	☐
COC Included: (Check all included)		
Client ☒	Analysis ☒	Sampler Name ☒
Project ☒	IDs ☒	Collection Date/Time ☒
All Samples Proper pH: <u>N/A</u> ☐ ☐		

Additional Container Notes

*Note: West Virginia requires all samples to have their
 temperature taken. Note any outliers.

Notes regarding Samples/COC outside of SOP:

Sample	Soils Jars (Circle Amb/Clear)				Ambers						Plastics								VOA Vials					Other / Fill in					
	16oz Amb/Clear	8oz Amb/Clear	4oz Amb/Clear	2oz Amb/Clear	1 Liter		250mL		100mL	1 Liter			500mL	250mL					Unpreserved	HCl	MeOH	D.I. Water	Bisulfate	Col/Bact	Other				
					Unpreserved	HCL	Sulfuric	Sulfuric	Phosphoric	HCl	Unpreserved	Sulfuric	Sulfuric	Unpreserved	Trizma	Sulfuric	Nitric	NaOH								Ammonium Acetate	NaOH/Zinc		
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	DC#_Title: ENV-FRM-ELON-0001 v08_Sample Receiving Checklist
	Effective Date: 06/11/2024