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A Pace Analytical® Laboratory

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

March 1, 2023

Jeff Arps
Tighe & Bond
53 Southampton Road
Westfield, MA 01085

Project Location: 121 Leverett Road Shutesbury, Massachusetts
Client Job Number:
Project Number: S-2190
Laboratory Work Order Number: 23B2205

Enclosed are results of analyses for samples as received by the laboratory on February 20, 2023. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Jessica L. Hoffman
Project Manager

Table of Contents

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

Tighe & Bond
53 Southampton Road
Westfield, MA 01085
ATTN: Jeff Arps

REPORT DATE: 3/1/2023

PURCHASE ORDER NUMBER: 57-101490

PROJECT NUMBER: S-2190

ANALYTICAL SUMMARY

WORK ORDER NUMBER: 23B2205

The results of analyses performed on the following samples submitted to Con-Test, a Pace Analytical Laboratory, are found in this report.

PROJECT LOCATION: 121 Leverett Road Shutesbury, Massachusetts

FIELD SAMPLE #	LAB ID:	MATRIX	SAMPLE DESCRIPTION	TEST	SUB LAB
121 Leverett Road	23B2205-01	Ground Water		EPA 537.1	

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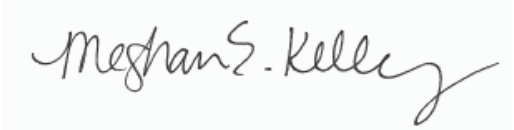
CASE NARRATIVE SUMMARY

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

The results of analyses reported only relate to samples submitted to Con-Test, a Pace Analytical Laboratory, 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

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Project Location: 121 Leverett Road Shutesbury, M Sample Description: Work Order: 23B2205

Date Received: 2/20/2023

Field Sample #: 121 Leverett Road Sampled: 2/17/2023 11:25

Sample ID: 23B2205-01

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	DF	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanesulfonic acid (PFBS)	ND	1.8	0.70	ng/L	1		EPA 537.1	2/27/23	2/28/23 10:01	AMS
Perfluorohexanoic acid (PFHxA)	ND	1.8	0.84	ng/L	1		EPA 537.1	2/27/23	2/28/23 10:01	AMS
Perfluorohexanesulfonic acid (PFHxS)	ND	1.8	0.80	ng/L	1		EPA 537.1	2/27/23	2/28/23 10:01	AMS
Perfluoroheptanoic acid (PFHpA)	ND	1.8	0.89	ng/L	1		EPA 537.1	2/27/23	2/28/23 10:01	AMS
Perfluorooctanoic acid (PFOA)	ND	1.8	0.92	ng/L	1		EPA 537.1	2/27/23	2/28/23 10:01	AMS
Perfluorooctanesulfonic acid (PFOS)	2.5	1.8	0.68	ng/L	1		EPA 537.1	2/27/23	2/28/23 10:01	AMS
Perfluorononanoic acid (PFNA)	ND	1.8	0.82	ng/L	1		EPA 537.1	2/27/23	2/28/23 10:01	AMS
Perfluorodecanoic acid (PFDA)	ND	1.8	0.86	ng/L	1		EPA 537.1	2/27/23	2/28/23 10:01	AMS
N-EtFOSAA (NEtFOSAA)	ND	1.8	0.59	ng/L	1		EPA 537.1	2/27/23	2/28/23 10:01	AMS
Perfluoroundecanoic acid (PFUnA)	ND	1.8	0.68	ng/L	1		EPA 537.1	2/27/23	2/28/23 10:01	AMS
N-MeFOSAA (NMeFOSAA)	ND	1.8	0.66	ng/L	1		EPA 537.1	2/27/23	2/28/23 10:01	AMS
Perfluorododecanoic acid (PFDoA)	ND	1.8	0.64	ng/L	1		EPA 537.1	2/27/23	2/28/23 10:01	AMS
Perfluorotridecanoic acid (PFTrDA)	ND	1.8	0.65	ng/L	1		EPA 537.1	2/27/23	2/28/23 10:01	AMS
Perfluorotetradecanoic acid (PFTA)	ND	1.8	0.75	ng/L	1		EPA 537.1	2/27/23	2/28/23 10:01	AMS
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	1.8	1.1	ng/L	1		EPA 537.1	2/27/23	2/28/23 10:01	AMS
11Cl-PF3OUdS (F53B Major)	ND	1.8	0.59	ng/L	1		EPA 537.1	2/27/23	2/28/23 10:01	AMS
9Cl-PF3ONS (F53B Minor)	ND	1.8	0.73	ng/L	1		EPA 537.1	2/27/23	2/28/23 10:01	AMS
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	1.8	0.79	ng/L	1		EPA 537.1	2/27/23	2/28/23 10:01	AMS

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
13C-PFHxA	70.1	70-130		2/28/23 10:01
M3HFPO-DA	71.5	70-130		2/28/23 10:01
13C-PFDA	101	70-130		2/28/23 10:01
D5-NEtFOSAA	109	70-130		2/28/23 10:01

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Sample Extraction Data

Prep Method: EPA 537.1-EPA 537.1

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
23B2205-01 [121 Leverett Road]	B332312	280	1.00	02/27/23

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QUALITY CONTROL

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

Analyte	Result	Reporting Limit	DL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B332312 - EPA 537.1											
Blank (B332312-BLK1)					Prepared: 02/27/23 Analyzed: 02/28/23						
Perfluorobutanesulfonic acid (PFBS)	ND	1.8	0.71	ng/L							
Perfluorohexanoic acid (PFHxA)	ND	1.8	0.84	ng/L							
Perfluorohexanesulfonic acid (PFHxS)	ND	1.8	0.81	ng/L							
Perfluoroheptanoic acid (PFHpA)	ND	1.8	0.90	ng/L							
Perfluorooctanoic acid (PFOA)	ND	1.8	0.93	ng/L							
Perfluorooctanesulfonic acid (PFOS)	ND	1.8	0.68	ng/L							
Perfluorononanoic acid (PFNA)	ND	1.8	0.83	ng/L							
Perfluorodecanoic acid (PFDA)	ND	1.8	0.86	ng/L							
N-EtFOSAA (NEtFOSAA)	ND	1.8	0.60	ng/L							
Perfluoroundecanoic acid (PFUnA)	ND	1.8	0.68	ng/L							
N-MeFOSAA (NMeFOSAA)	ND	1.8	0.67	ng/L							
Perfluorododecanoic acid (PFDoA)	ND	1.8	0.65	ng/L							
Perfluorotridecanoic acid (PFTrDA)	ND	1.8	0.66	ng/L							
Perfluorotetradecanoic acid (PFTA)	ND	1.8	0.75	ng/L							
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	1.8	1.1	ng/L							
11Cl-PF3OUdS (F53B Major)	ND	1.8	0.60	ng/L							
9Cl-PF3ONS (F53B Minor)	ND	1.8	0.73	ng/L							
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	1.8	0.79	ng/L							
Surrogate: 13C-PFHxA	*39.2*			ng/L	36.1		109	70-130			
Surrogate: M3HFPO-DA	*40.0*			ng/L	36.1		111	70-130			
Surrogate: 13C-PFDA	*37.9*			ng/L	36.1		105	70-130			
Surrogate: D5-NEtFOSAA	*152*			ng/L	144		105	70-130			
LCS (B332312-BS1)					Prepared: 02/27/23 Analyzed: 02/28/23						
Perfluorobutanesulfonic acid (PFBS)	15.8	1.8	0.71	ng/L	16.0		98.4	70-130			
Perfluorohexanoic acid (PFHxA)	15.3	1.8	0.84	ng/L	18.1		84.6	70-130			
Perfluorohexanesulfonic acid (PFHxS)	13.6	1.8	0.81	ng/L	16.5		82.2	70-130			
Perfluoroheptanoic acid (PFHpA)	18.9	1.8	0.90	ng/L	18.1		104	70-130			
Perfluorooctanoic acid (PFOA)	16.3	1.8	0.93	ng/L	18.1		90.1	70-130			
Perfluorooctanesulfonic acid (PFOS)	17.8	1.8	0.68	ng/L	16.8		106	70-130			
Perfluorononanoic acid (PFNA)	16.9	1.8	0.83	ng/L	18.1		93.4	70-130			
Perfluorodecanoic acid (PFDA)	19.5	1.8	0.87	ng/L	18.1		108	70-130			
N-EtFOSAA (NEtFOSAA)	18.6	1.8	0.60	ng/L	18.1		103	70-130			
Perfluoroundecanoic acid (PFUnA)	19.0	1.8	0.69	ng/L	18.1		105	70-130			
N-MeFOSAA (NMeFOSAA)	18.9	1.8	0.67	ng/L	18.1		105	70-130			
Perfluorododecanoic acid (PFDoA)	19.7	1.8	0.65	ng/L	18.1		109	70-130			
Perfluorotridecanoic acid (PFTrDA)	19.3	1.8	0.66	ng/L	18.1		107	70-130			
Perfluorotetradecanoic acid (PFTA)	15.2	1.8	0.75	ng/L	18.1		84.3	70-130			
Hexafluoropropylene oxide dimer acid (HFPO-DA)	14.0	1.8	1.1	ng/L	18.1		77.3	70-130			
11Cl-PF3OUdS (F53B Major)	17.6	1.8	0.60	ng/L	17.0		103	70-130			
9Cl-PF3ONS (F53B Minor)	17.2	1.8	0.74	ng/L	16.9		102	70-130			
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	17.4	1.8	0.79	ng/L	17.1		102	70-130			
Surrogate: 13C-PFHxA	*37.8*			ng/L	36.1		104	70-130			
Surrogate: M3HFPO-DA	*37.9*			ng/L	36.1		105	70-130			
Surrogate: 13C-PFDA	*36.9*			ng/L	36.1		102	70-130			
Surrogate: D5-NEtFOSAA	*153*			ng/L	145		105	70-130			

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QUALITY CONTROL

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

Analyte	Result	Reporting Limit	DL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B332312 - EPA 537.1											
LCS Dup (B332312-BSD1)					Prepared: 02/27/23 Analyzed: 02/28/23						
Perfluorobutanesulfonic acid (PFBS)	15.3	1.8	0.71	ng/L	16.0		95.5	70-130	2.89	30	
Perfluorohexanoic acid (PFHxA)	14.9	1.8	0.85	ng/L	18.1		82.5	70-130	2.39	30	
Perfluorohexanesulfonic acid (PFHxS)	13.6	1.8	0.81	ng/L	16.5		82.3	70-130	0.225	30	
Perfluoroheptanoic acid (PFHpA)	18.5	1.8	0.90	ng/L	18.1		102	70-130	1.98	30	
Perfluorooctanoic acid (PFOA)	15.6	1.8	0.94	ng/L	18.1		86.3	70-130	4.23	30	
Perfluorooctanesulfonic acid (PFOS)	17.7	1.8	0.68	ng/L	16.8		106	70-130	0.290	30	
Perfluorononanoic acid (PFNA)	17.0	1.8	0.83	ng/L	18.1		93.7	70-130	0.462	30	
Perfluorodecanoic acid (PFDA)	19.1	1.8	0.87	ng/L	18.1		106	70-130	1.78	30	
N-EtFOSAA (NEtFOSAA)	18.8	1.8	0.60	ng/L	18.1		104	70-130	1.13	30	
Perfluoroundecanoic acid (PFUnA)	18.7	1.8	0.69	ng/L	18.1		103	70-130	1.34	30	
N-MeFOSAA (NMeFOSAA)	19.0	1.8	0.67	ng/L	18.1		105	70-130	0.493	30	
Perfluorododecanoic acid (PFDoA)	19.0	1.8	0.65	ng/L	18.1		105	70-130	3.63	30	
Perfluorotridecanoic acid (PFTrDA)	19.1	1.8	0.66	ng/L	18.1		106	70-130	1.07	30	
Perfluorotetradecanoic acid (PFTA)	15.4	1.8	0.76	ng/L	18.1		85.2	70-130	1.19	30	
Hexafluoropropylene oxide dimer acid (HFPO-DA)	12.9	1.8	1.1	ng/L	18.1		71.1	70-130	8.34	30	
11Cl-PF3OUdS (F53B Major)	17.5	1.8	0.60	ng/L	17.1		103	70-130	0.505	30	
9Cl-PF3ONS (F53B Minor)	17.9	1.8	0.74	ng/L	16.9		106	70-130	3.57	30	
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	17.0	1.8	0.80	ng/L	17.1		99.7	70-130	2.08	30	
Surrogate: 13C-PFHxA	*33.6*			ng/L	36.2		92.9	70-130			
Surrogate: M3HFPO-DA	*33.7*			ng/L	36.2		93.1	70-130			
Surrogate: 13C-PFDA	*34.1*			ng/L	36.2		94.2	70-130			
Surrogate: D5-NEtFOSAA	*140*			ng/L	145		96.4	70-130			

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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
DL	Method Detection Limit
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.

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CERTIFICATIONS

Certified Analyses included in this Report

Analyte	Certifications
EPA 537.1 in Drinking Water	
Perfluorobutanesulfonic acid (PFBS)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorohexanoic acid (PFHxA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorohexanesulfonic acid (PFHxS)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluoroheptanoic acid (PFHpA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorooctanoic acid (PFOA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorooctanesulfonic acid (PFOS)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorononanoic acid (PFNA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorodecanoic acid (PFDA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
N-EtFOSAA (NEtFOSAA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluoroundecanoic acid (PFUnA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
N-MeFOSAA (NMeFOSAA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorododecanoic acid (PFDoA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorotridecanoic acid (PFTrDA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorotetradecanoic acid (PFTA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Hexafluoropropylene oxide dimer acid (HFPO-DA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
11Cl-PF3OUdS (F53B Major)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
9Cl-PF3ONS (F53B Minor)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH

Con-Test, a Pace Environmental Laboratory, operates under the following certifications and accreditations:

Code	Description	Number	Expires
MA	Massachusetts DEP	M-MA100	06/30/2023
CT	Connecticut Department of Public Health	PH-0821	12/31/2024
NY	New York State Department of Health	10899 NELAP	04/1/2023
NH	New Hampshire Environmental Lab	2516 NELAP	02/5/2024
NJ	New Jersey DEP	MA007 NELAP	06/30/2023
VT-DW	Vermont Department of Health Drinking Water	VT-255716	06/12/2023
ME	State of Maine	MA00100	06/9/2023
PA	Commonwealth of Pennsylvania DEP	68-05812	06/30/2023
MI	Dept. of Env, Great Lakes, and Energy	9100	06/30/2023

C30220S

JTA

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https://www.pacelabs.com/

CHAIN OF CUSTODY RECORD

39 Spruce Street
East Longmeadow, MA 01028

Doc # 381 Rev 2_06262019

Page ____ of ____

Contact: https://www.pacelabs.com/contact-us/contact-environmental-sciences/

Company Name:	Tighe & Bond
Address:	53 Southampton Road, Westfield, Massachusetts
Phone:	(413) 562-1600
Project Name:	PFAS Sample Collection - Shutesbury
Project Location:	Shutesbury, Massachusetts
Project Number:	S-2190
Project Manager:	Jeff Arps
Pace Analytical Quote Name/Number	
Invoice Recipient:	Town of Shutesbury
Sampled By:	Samuel Evans

Requested Turnaround Time
7-Day ☑ 10-Day ☐
PFAS 10-Day (std) ☐ Due Date:

Rush Approval Required
1-Day ☐ 3-Day ☐
2-Day ☐ 4-Day ☐

Data Delivery
Format: PDF ☑ EXCEL ☑
Other:
CLP Like Data Pkg Required: ☐
Email To: JArps@Tighebond.com; SEvans@TighebondCom
Fax To #:

Dissolved Metals Samples
○ Field Filtered
○ Lab to Filter

Orthophosphate Samples
○ Field Filtered
○ Lab to Filter

PCB ONLY
SOXHLET ☐
NON SOXHLET ☐

ANALYSIS REQUESTED

2 Preservation Code

Pace Analytical Work Order#	Client Sample ID / Description	Beginning Date/Time	Ending Date/Time	COMP/GRAB	Matrix Code	Conc Code	VIALS	GLASS	PLASTIC	BACTERIA	ENCORE	PFAS Via 537.1
	121 Leverett Road	2/17/23	1125	G-a-S	GW	U			X			X

Relinquished by: (signature) Samuel Evans — Date/Time: 2/20/23 0830
Received by: (signature) — Date/Time: 2-20-23 14:25
Relinquished by: (signature) — Date/Time: 2-20-23 16:40
Received by: (signature) — Date/Time: 2/21/23 0840
Relinquished by: (signature) — Date/Time:
Received by: (signature) — Date/Time:
Relinquished by: (signature) — Date/Time:
Received by: (signature) — Date/Time:

Bill to Town of Shutesbury - PO: 57-101490

Detection Limit Requirements
MA
CT
Other:

Special Requirements
☑ MA MCP Required
MCP Certification Form Required
☐ CT RCP Required
RCP Certification Form Required
☐ MA State DW Required
PWSID #

Please use the following codes to indicate possible sample concentration within the Conc Code column above:
H - High; M - Medium; L - Low; C - Clean; U - Unknown

Matrix Codes
GW = Ground Water
WW = Waste Water
DW = Drinking Water
A = Air S = Soil
SL = Sludge
SOL = Solid
O = Other ____

Preservation Codes
I = Iced
H = HCl
N = Nitric Acid
S = Sulfuric Acid
B = Sodium Bisulfate
X = Sodium Hydroxide
T = Sodium Thiosulfate
M = Methanol
DI = DI Water
O = Other ____

Project Entity
Government ☐ Municipality ☐ MWRA ☐ WRTA ☐
Federal ☐ 21 J ☐ School ☐
City ☐ Brownfield ☐ MBTA ☐

Other
☐ Chromatogram
☐ AIHA-LAP,LLC

Lab Comments:

Disclaimer: Pace Analytical is not responsible for any omitted information on the Chain of Custody. The Chain of Custody is a legal document that must be complete and accurate and is used to determine what analyses the laboratory will perform. Any missing information is not the laboratory's responsibility. Pace Analytical values your partnership on each project and will try to assist with missing information, but will not be held accountable.

Courier Use Only
VIALS ____ GLASS ____ PLASTIC ____ BACTERIA ____ ENCORE ____
Glassware in freezer? Y / N
Prepackaged Cooler? Y / N

*Pace Analytical is not responsible for missing samples from prepacked coolers

Pace Analytical

Table of Contents

39 Spruce St.
East Longmeadow, MA. 01028
P: 413-525-2332
F:413-525-6405
www.pacelabs.com

Log In Back-Sheet

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

Pace® PEOPLE ADVANCING SCIENCE

Client Tighe and Bond

Project PFAS Sample Collection - Shutesbury

MCP/RCP Required MA MCP

Deliverable Package Req. N/A

Location Shutesbury, MASS

PWSID# (When Applicable) N/A

Arrival Method:

Courier ☑ Fed Ex ☐ Walk In ☐ Other ☐

Received By / Date / Time LA 2/20/23 1640

Back-Sheet By / Date / Time LA 2/24/23 747

Temperature Method gun #5

Temp ☑ < 6° C Actual Temperature 0.6

Rush Samples: Yes / (No) Notify

Short Hold: Yes / (No) Notify

	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	☑	☐

Notes regarding Samples/COC outside of SOP:

COC Included: (Check all included)

Client ☑ Analysis ☑ Sampler Name ☑

Project ☑ IDs ☑ Collection Date/Time ☑

All Samples Proper pH: (N/A) ☐ ☐

Container (Circle when applicable)	UnP	HCl	HNO3	H2SO4	NaOH	Trizma	NaS2O3	Other Preservative
1L Amber Plastic								
500 mL Amber Plastic								
250 mL Amber (Plastic)						2		
Other Amber Clear Plastic								
16oz Amber Clear								
8oz Amber Clear								
4oz Amber Clear								
2oz Amber Clear								
Col/Bacteria								
Flashpoint								
Plastic Bag								
SOC Kit								
Perchlorate								
Encore								
Frozen								

	Proper Headspace	UnP	HCl	MeOH	Bisulfate	DI	Thiosulfate	Sulfuric	Other
Vials									

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February 21, 2023

Jeff Arps
Tighe & Bond
53 Southampton Road
Westfield, MA 01085

Project Location: 135 Leverett Road Shutesbury, Massachusetts
Client Job Number:
Project Number: S-2190
Laboratory Work Order Number: 23B1445

Enclosed are results of analyses for samples as received by the laboratory on February 13, 2023. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Jessica L. Hoffman
Project Manager

Table of Contents

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

Tighe & Bond
53 Southampton Road
Westfield, MA 01085
ATTN: Jeff Arps

REPORT DATE: 2/21/2023

PURCHASE ORDER NUMBER: 57-101490

PROJECT NUMBER: S-2190

ANALYTICAL SUMMARY

WORK ORDER NUMBER: 23B1445

The results of analyses performed on the following samples submitted to Con-Test, a Pace Analytical Laboratory, are found in this report.

PROJECT LOCATION: 135 Leverett Road Shutesbury, Massachusetts

FIELD SAMPLE #	LAB ID:	MATRIX	SAMPLE DESCRIPTION	TEST	SUB LAB
135 Leverett Road	23B1445-01	Ground Water		EPA 537.1	

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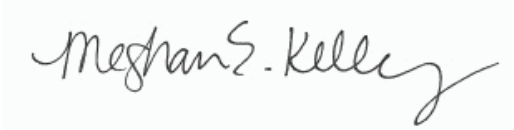
CASE NARRATIVE SUMMARY

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

The results of analyses reported only relate to samples submitted to Con-Test, a Pace Analytical Laboratory, 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: 135 Leverett Road Shutesbury, M Sample Description: Work Order: 23B1445

Date Received: 2/13/2023

Field Sample #: 135 Leverett Road Sampled: 2/9/2023 10:35

Sample ID: 23B1445-01

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	DF	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanesulfonic acid (PFBS)	ND	1.8	0.71	ng/L	1		EPA 537.1	2/15/23	2/20/23 11:08	AMS
Perfluorohexanoic acid (PFHxA)	ND	1.8	0.82	ng/L	1		EPA 537.1	2/15/23	2/20/23 11:08	AMS
Perfluorohexanesulfonic acid (PFHxS)	1.1	1.8	0.60	ng/L	1	J	EPA 537.1	2/15/23	2/20/23 11:08	AMS
Perfluoroheptanoic acid (PFHpA)	ND	1.8	0.62	ng/L	1		EPA 537.1	2/15/23	2/20/23 11:08	AMS
Perfluorooctanoic acid (PFOA)	1.2	1.8	0.86	ng/L	1	J	EPA 537.1	2/15/23	2/20/23 11:08	AMS
Perfluorooctanesulfonic acid (PFOS)	ND	1.8	0.80	ng/L	1		EPA 537.1	2/15/23	2/20/23 11:08	AMS
Perfluorononanoic acid (PFNA)	ND	1.8	0.81	ng/L	1		EPA 537.1	2/15/23	2/20/23 11:08	AMS
Perfluorodecanoic acid (PFDA)	ND	1.8	0.68	ng/L	1		EPA 537.1	2/15/23	2/20/23 11:08	AMS
N-EtFOSAA (NEtFOSAA)	ND	1.8	0.64	ng/L	1		EPA 537.1	2/15/23	2/20/23 11:08	AMS
Perfluoroundecanoic acid (PFUnA)	ND	1.8	0.62	ng/L	1		EPA 537.1	2/15/23	2/20/23 11:08	AMS
N-MeFOSAA (NMeFOSAA)	ND	1.8	0.60	ng/L	1		EPA 537.1	2/15/23	2/20/23 11:08	AMS
Perfluorododecanoic acid (PFDoA)	ND	1.8	0.57	ng/L	1		EPA 537.1	2/15/23	2/20/23 11:08	AMS
Perfluorotridecanoic acid (PFTrDA)	ND	1.8	0.55	ng/L	1		EPA 537.1	2/15/23	2/20/23 11:08	AMS
Perfluorotetradecanoic acid (PFTA)	ND	1.8	0.47	ng/L	1		EPA 537.1	2/15/23	2/20/23 11:08	AMS
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	1.8	0.81	ng/L	1		EPA 537.1	2/15/23	2/20/23 11:08	AMS
11Cl-PF3OUdS (F53B Major)	ND	1.8	0.70	ng/L	1		EPA 537.1	2/15/23	2/20/23 11:08	AMS
9Cl-PF3ONS (F53B Minor)	ND	1.8	0.84	ng/L	1		EPA 537.1	2/15/23	2/20/23 11:08	AMS
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	1.8	0.75	ng/L	1		EPA 537.1	2/15/23	2/20/23 11:08	AMS

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
13C-PFHxA	84.2	70-130		2/20/23 11:08
M3HFPO-DA	76.9	70-130		2/20/23 11:08
13C-PFDA	103	70-130		2/20/23 11:08
D5-NEtFOSAA	98.7	70-130		2/20/23 11:08

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Sample Extraction Data

Prep Method: EPA 537.1-EPA 537.1

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
23B1445-01 [135 Leverett Road]	B331478	272	1.00	02/15/23

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QUALITY CONTROL

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

Analyte	Result	Reporting Limit	DL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B331478 - EPA 537.1											
Blank (B331478-BLK1)					Prepared: 02/15/23 Analyzed: 02/20/23						
Perfluorobutanesulfonic acid (PFBS)	ND	1.8	0.70	ng/L							
Perfluorohexanoic acid (PFHxA)	ND	1.8	0.81	ng/L							
Perfluorohexanesulfonic acid (PFHxS)	ND	1.8	0.59	ng/L							
Perfluoroheptanoic acid (PFHpA)	ND	1.8	0.62	ng/L							
Perfluorooctanoic acid (PFOA)	ND	1.8	0.86	ng/L							
Perfluorooctanesulfonic acid (PFOS)	ND	1.8	0.79	ng/L							
Perfluorononanoic acid (PFNA)	ND	1.8	0.81	ng/L							
Perfluorodecanoic acid (PFDA)	ND	1.8	0.67	ng/L							
N-EtFOSAA (NEtFOSAA)	ND	1.8	0.63	ng/L							
Perfluoroundecanoic acid (PFUnA)	ND	1.8	0.62	ng/L							
N-MeFOSAA (NMeFOSAA)	ND	1.8	0.59	ng/L							
Perfluorododecanoic acid (PFDoA)	ND	1.8	0.57	ng/L							
Perfluorotridecanoic acid (PFTrDA)	ND	1.8	0.54	ng/L							
Perfluorotetradecanoic acid (PFTA)	ND	1.8	0.47	ng/L							
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	1.8	0.80	ng/L							
11Cl-PF3OUdS (F53B Major)	ND	1.8	0.70	ng/L							
9Cl-PF3ONS (F53B Minor)	ND	1.8	0.83	ng/L							
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	1.8	0.75	ng/L							
Surrogate: 13C-PFHxA	*33.2*			ng/L	36.4		91.1	70-130			
Surrogate: M3HFPO-DA	*28.5*			ng/L	36.4		78.4	70-130			
Surrogate: 13C-PFDA	*34.3*			ng/L	36.4		94.2	70-130			
Surrogate: D5-NEtFOSAA	*135*			ng/L	146		93.0	70-130			
LCS (B331478-BS1)					Prepared: 02/15/23 Analyzed: 02/20/23						
Perfluorobutanesulfonic acid (PFBS)	14.6	1.8	0.70	ng/L	16.1		90.1	70-130			
Perfluorohexanoic acid (PFHxA)	16.9	1.8	0.81	ng/L	18.2		92.9	70-130			
Perfluorohexanesulfonic acid (PFHxS)	14.5	1.8	0.59	ng/L	16.6		87.0	70-130			
Perfluoroheptanoic acid (PFHpA)	16.2	1.8	0.62	ng/L	18.2		88.9	70-130			
Perfluorooctanoic acid (PFOA)	16.0	1.8	0.86	ng/L	18.2		88.1	70-130			
Perfluorooctanesulfonic acid (PFOS)	15.5	1.8	0.79	ng/L	16.9		92.0	70-130			
Perfluorononanoic acid (PFNA)	17.1	1.8	0.81	ng/L	18.2		93.9	70-130			
Perfluorodecanoic acid (PFDA)	17.3	1.8	0.67	ng/L	18.2		95.2	70-130			
N-EtFOSAA (NEtFOSAA)	15.9	1.8	0.63	ng/L	18.2		87.3	70-130			
Perfluoroundecanoic acid (PFUnA)	16.0	1.8	0.62	ng/L	18.2		87.6	70-130			
N-MeFOSAA (NMeFOSAA)	16.2	1.8	0.59	ng/L	18.2		89.0	70-130			
Perfluorododecanoic acid (PFDoA)	15.5	1.8	0.57	ng/L	18.2		85.2	70-130			
Perfluorotridecanoic acid (PFTrDA)	15.2	1.8	0.54	ng/L	18.2		83.7	70-130			
Perfluorotetradecanoic acid (PFTA)	15.4	1.8	0.47	ng/L	18.2		84.7	70-130			
Hexafluoropropylene oxide dimer acid (HFPO-DA)	17.3	1.8	0.80	ng/L	18.2		95.1	70-130			
11Cl-PF3OUdS (F53B Major)	16.7	1.8	0.70	ng/L	17.2		97.0	70-130			
9Cl-PF3ONS (F53B Minor)	15.0	1.8	0.83	ng/L	17.0		88.4	70-130			
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	14.4	1.8	0.75	ng/L	17.2		83.8	70-130			
Surrogate: 13C-PFHxA	*37.3*			ng/L	36.4		103	70-130			
Surrogate: M3HFPO-DA	*31.7*			ng/L	36.4		87.2	70-130			
Surrogate: 13C-PFDA	*36.8*			ng/L	36.4		101	70-130			
Surrogate: D5-NEtFOSAA	*136*			ng/L	146		93.7	70-130			

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QUALITY CONTROL

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

Analyte	Result	Reporting Limit	DL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B331478 - EPA 537.1											
LCS Dup (B331478-BSD1)					Prepared: 02/15/23 Analyzed: 02/20/23						
Perfluorobutanesulfonic acid (PFBS)	13.9	1.8	0.70	ng/L	16.2		86.1	70-130	4.37	30	
Perfluorohexanoic acid (PFHxA)	16.4	1.8	0.81	ng/L	18.2		89.9	70-130	3.08	30	
Perfluorohexanesulfonic acid (PFHxS)	14.3	1.8	0.59	ng/L	16.7		85.7	70-130	1.27	30	
Perfluoroheptanoic acid (PFHpA)	15.6	1.8	0.62	ng/L	18.2		85.4	70-130	3.83	30	
Perfluorooctanoic acid (PFOA)	16.0	1.8	0.86	ng/L	18.2		87.5	70-130	0.544	30	
Perfluorooctanesulfonic acid (PFOS)	15.3	1.8	0.79	ng/L	16.9		90.6	70-130	1.31	30	
Perfluorononanoic acid (PFNA)	16.7	1.8	0.81	ng/L	18.2		91.4	70-130	2.53	30	
Perfluorodecanoic acid (PFDA)	17.0	1.8	0.67	ng/L	18.2		93.0	70-130	2.10	30	
N-EtFOSAA (NEtFOSAA)	16.9	1.8	0.63	ng/L	18.2		92.7	70-130	6.24	30	
Perfluoroundecanoic acid (PFUnA)	17.0	1.8	0.62	ng/L	18.2		93.1	70-130	6.32	30	
N-MeFOSAA (NMeFOSAA)	17.0	1.8	0.59	ng/L	18.2		93.1	70-130	4.67	30	
Perfluorododecanoic acid (PFDoA)	16.9	1.8	0.57	ng/L	18.2		92.7	70-130	8.70	30	
Perfluorotridecanoic acid (PFTrDA)	16.9	1.8	0.54	ng/L	18.2		92.4	70-130	10.1	30	
Perfluorotetradecanoic acid (PFTA)	16.3	1.8	0.47	ng/L	18.2		89.6	70-130	5.76	30	
Hexafluoropropylene oxide dimer acid (HFPO-DA)	17.0	1.8	0.80	ng/L	18.2		93.1	70-130	1.87	30	
11Cl-PF3OUdS (F53B Major)	17.3	1.8	0.70	ng/L	17.2		100	70-130	3.58	30	
9Cl-PF3ONS (F53B Minor)	15.2	1.8	0.83	ng/L	17.0		89.2	70-130	1.08	30	
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	14.1	1.8	0.75	ng/L	17.2		81.7	70-130	2.35	30	
Surrogate: 13C-PFHxA	*33.8*			ng/L	36.5		92.5	70-130			
Surrogate: M3HFPO-DA	*29.0*			ng/L	36.5		79.4	70-130			
Surrogate: 13C-PFDA	*34.9*			ng/L	36.5		95.6	70-130			
Surrogate: D5-NEtFOSAA	*137*			ng/L	146		93.9	70-130			

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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
DL	Method Detection Limit
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).

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CERTIFICATIONS

Certified Analyses included in this Report

Analyte	Certifications
EPA 537.1 in Drinking Water	
Perfluorobutanesulfonic acid (PFBS)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorohexanoic acid (PFHxA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorohexanesulfonic acid (PFHxS)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluoroheptanoic acid (PFHpA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorooctanoic acid (PFOA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorooctanesulfonic acid (PFOS)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorononanoic acid (PFNA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorodecanoic acid (PFDA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
N-EtFOSAA (NEtFOSAA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluoroundecanoic acid (PFUnA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
N-MeFOSAA (NMeFOSAA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorododecanoic acid (PFDoA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorotridecanoic acid (PFTrDA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorotetradecanoic acid (PFTA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Hexafluoropropylene oxide dimer acid (HFPO-DA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
11Cl-PF3OUdS (F53B Major)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
9Cl-PF3ONS (F53B Minor)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH

Con-Test, a Pace Environmental Laboratory, operates under the following certifications and accreditations:

Code	Description	Number	Expires
MA	Massachusetts DEP	M-MA100	06/30/2023
CT	Connecticut Department of Public Health	PH-0821	12/31/2024
NY	New York State Department of Health	10899 NELAP	04/1/2023
NH	New Hampshire Environmental Lab	2516 NELAP	02/5/2024
NJ	New Jersey DEP	MA007 NELAP	06/30/2023
VT-DW	Vermont Department of Health Drinking Water	VT-255716	06/12/2023
ME	State of Maine	MA00100	06/9/2023
PA	Commonwealth of Pennsylvania DEP	68-05812	06/30/2023
MI	Dept. of Env, Great Lakes, and Energy	9100	06/30/2023

23B1445

JH

Pace Analytical®

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Fax: 413-525-6405

https://www.pacelabs.com/

39 Spruce Street
East Longmeadow, MA 01026

Doc # 381 Rev 2_06262019

CHAIN OF CUSTODY RECORD

Page ____ of ____

Contact: https://www.pacelabs.com/contact-us/contact-environmental-sciences/

Company Name:	Tighe & Bond
Address:	53 Southampton Road, Westfield, Massachusetts
Phone:	(413) 562-1600
Project Name:	PFAS Sample Collection - Shutesbury
Project Location:	Shutesbury, Massachusetts
Project Number:	S-2190
Project Manager:	Jeff Arps
Pace Analytical Quote Name/Number	
Invoice Recipient:	Town of Shutesbury
Sampled By:	Samuel Evans

Requested Turnaround Time
7-Day ☑ 10-Day ☐
PFAS 10-Day (std) ☐ Due Date:

Rush-Approval Required
1-Day ☐ 3-Day ☐
2-Day ☐ 4-Day ☐

Data Delivery
Format: PDF ☑ EXCEL ☑
Other:
CLP Like Data Pkg Required: ☐
Email To: JArps@Tighebond.com; SEvans@Tighebond.com
Fax To #:

Dissolved Metals Samples
○ Field Filtered
○ Lab to Filter

Orthophosphate Samples
○ Field Filtered
○ Lab to Filter

PCB ONLY
SOXHLET ☐
NON SOXHLET ☐

ANALYSIS REQUESTED

Z Preservation Code

Pace Analytical Work Order#	Client Sample ID / Description	Beginning Date/Time	Ending Date/Time	COMP/GRAB	Matrix Code	Conc Code	VIALS	GLASS	PLASTIC	BACTERIA	ENCORE	PFAS Via 537.1
	135 Leverett Road	2/9/23	1035	Grab	GW	U			6			X

Relinquished by: (signature) Samuel Evans — Date/Time: 2/13/23 0815
Received by: (signature) Pace — Date/Time: 2/13/23 1336
Relinquished by: (signature) Pace — Date/Time: 2/13/23 1708
Received by: (signature) 35 — Date/Time: 2/13/23 1708
Relinquished by: (signature) — Date/Time:
Received by: (signature) — Date/Time:
Relinquished by: (signature) — Date/Time:
Received by: (signature) — Date/Time:

Bill to Town of Shutesbury - PO:57-101490

Detection Limit Requirements
MA
CT
Other

Special Requirements
☑ MA MCP Required
MCP Certification Form Required
☐ CT RCP Required
RCP Certification Form Required
☐ MA State DW Required
PWSID #

Please use the following codes to indicate possible sample concentration within the Conc Code column above:
H - High; M - Medium; L - Low; C - Clean; U - Unknown

Project Entity
Government ☐ Municipality ☐ MWRA ☐ WRTA ☐
Federal ☐ 21 J ☐ School ☐
City ☐ Brownfield ☐ MBTA ☐

Other
☐ Chromatogram
☐ AIHA-LAP,LLC

Matrix Codes
GW = Ground Water
WW = Waste Water
DW = Drinking Water
A = Air S = Soil
SL = Sludge
SOL = Solid
O = Other ____

Preservation Codes
I = Iced
H = HCL
N = Nitric Acid
S = Sulfuric Acid
B = Sodium Bisulfate
X = Sodium Hydroxide
T = Sodium Thiosulfate
M = Methanol
DI = DI Water
O = Other ____

Lab Comments:

Disclaimer: Pace Analytical is not responsible for any omitted information on the Chain of Custody. The Chain of Custody is a legal document that must be complete and accurate and is used to determine what analyses the laboratory will perform. Any missing information is not the laboratory's responsibility. Pace Analytical values your partnership on each project and will try to assist with missing information, but will not be held accountable.

Courier Use Only
VIALS ____
GLASS ____
PLASTIC ____
BACTERIA ____
ENCORE ____
Glassware in freezer? Y / N
Prepackaged Cooler? Y / N

*Pace Analytical is not responsible for missing samples from prepacked coolers

39 Spruce St.
East Longmeadow, MA. 01028
P: 413-525-2332
F:413-525-6405
www.pacelabs.com

Log In Back-Sheet

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

Pace
PEOPLE ADVANCING SCIENCE

Client Tighe and Bond
Project PFAS Sample Collection - Shutesbury
MCP/RCP Required MA MCP
Deliverable Package Req. N/A
Location Shutesbury, Massachusetts
PWSID# (When Applicable) N/A
Arrival Method:

Courier ☑ Fed Ex ☐ Walk In ☐ Other ☐

Received By / Date / Time Evett 2/13/23 1708
Back-Sheet By / Date / Time LA 2/14/23 911
Temperature Method Gun # 5
Temp ☑ < 6° C Actual Temperature 3.5
Rush Samples: Yes / (No) Notify
Short Hold: Yes / (No) Notify

Notes regarding Samples/COC outside of SOP:

	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: (N/A) ☐ ☐

Container (Circle when applicable)	UnP	HCl	HNO3	H2SO4	NaOH	Trizma	NaS2O3	Other Preservative
1L Amber Plastic								
500 mL Amber Plastic								
250 mL Amber (Plastic)		2						
Other Amber Clear Plastic								
16oz Amber Clear								
8oz Amber Clear								
4oz Amber Clear								
2oz Amber Clear								
Col/Bacteria								
Flashpoint								
Plastic Bag								
SOC Kit								
Perchlorate								
Encore								
Frozen								

	Proper Headspace	UnP	HCl	MeOH	Bisulfate	DI	Thiosulfate	Sulfuric	Other
Vials	N/A (LA)								

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February 27, 2023

Jeff Arps
Tighe & Bond
53 Southampton Road
Westfield, MA 01085

Project Location: 1 Pelham Hill Rd. Shutesbury, Massachusetts
Client Job Number:
Project Number: S-2190
Laboratory Work Order Number: 23B2198

Enclosed are results of analyses for samples as received by the laboratory on February 20, 2023. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Jessica L. Hoffman
Project Manager

Table of Contents

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

Tighe & Bond
53 Southampton Road
Westfield, MA 01085
ATTN: Jeff Arps

REPORT DATE: 2/27/2023

PURCHASE ORDER NUMBER: 57-101490

PROJECT NUMBER: S-2190

ANALYTICAL SUMMARY

WORK ORDER NUMBER: 23B2198

The results of analyses performed on the following samples submitted to Con-Test, a Pace Analytical Laboratory, are found in this report.

PROJECT LOCATION: 1 Pelham Hill Rd. Shutesbury, Massachusetts

FIELD SAMPLE #	LAB ID:	MATRIX	SAMPLE DESCRIPTION	TEST	SUB LAB
1 Pelham Hill Road	23B2198-01	Ground Water		EPA 537.1	

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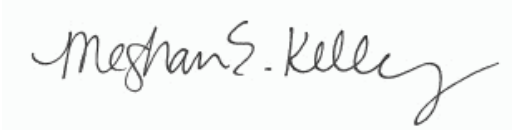
CASE NARRATIVE SUMMARY

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

The results of analyses reported only relate to samples submitted to Con-Test, a Pace Analytical Laboratory, 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: 1 Pelham Hill Rd. Shutesbury, Ma Sample Description: Work Order: 23B2198

Date Received: 2/20/2023

Field Sample #: 1 Pelham Hill Road Sampled: 2/17/2023 10:15

Sample ID: 23B2198-01

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	DF	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanesulfonic acid (PFBS)	ND	1.7	0.67	ng/L	1		EPA 537.1	2/22/23	2/24/23 12:11	JR2
Perfluorohexanoic acid (PFHxA)	ND	1.7	0.80	ng/L	1		EPA 537.1	2/22/23	2/24/23 12:11	JR2
Perfluorohexanesulfonic acid (PFHxS)	ND	1.7	0.77	ng/L	1		EPA 537.1	2/22/23	2/24/23 12:11	JR2
Perfluoroheptanoic acid (PFHpA)	ND	1.7	0.85	ng/L	1		EPA 537.1	2/22/23	2/24/23 12:11	JR2
Perfluorooctanoic acid (PFOA)	ND	1.7	0.89	ng/L	1		EPA 537.1	2/22/23	2/24/23 12:11	JR2
Perfluorooctanesulfonic acid (PFOS)	ND	1.7	0.65	ng/L	1		EPA 537.1	2/22/23	2/24/23 12:11	JR2
Perfluorononanoic acid (PFNA)	ND	1.7	0.79	ng/L	1		EPA 537.1	2/22/23	2/24/23 12:11	JR2
Perfluorodecanoic acid (PFDA)	ND	1.7	0.82	ng/L	1		EPA 537.1	2/22/23	2/24/23 12:11	JR2
N-EtFOSAA (NEtFOSAA)	ND	1.7	0.57	ng/L	1		EPA 537.1	2/22/23	2/24/23 12:11	JR2
Perfluoroundecanoic acid (PFUnA)	ND	1.7	0.65	ng/L	1		EPA 537.1	2/22/23	2/24/23 12:11	JR2
N-MeFOSAA (NMeFOSAA)	ND	1.7	0.64	ng/L	1		EPA 537.1	2/22/23	2/24/23 12:11	JR2
Perfluorododecanoic acid (PFDoA)	ND	1.7	0.61	ng/L	1		EPA 537.1	2/22/23	2/24/23 12:11	JR2
Perfluorotridecanoic acid (PFTrDA)	ND	1.7	0.62	ng/L	1		EPA 537.1	2/22/23	2/24/23 12:11	JR2
Perfluorotetradecanoic acid (PFTA)	ND	1.7	0.72	ng/L	1		EPA 537.1	2/22/23	2/24/23 12:11	JR2
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	1.7	1.1	ng/L	1		EPA 537.1	2/22/23	2/24/23 12:11	JR2
11Cl-PF3OUdS (F53B Major)	ND	1.7	0.57	ng/L	1		EPA 537.1	2/22/23	2/24/23 12:11	JR2
9Cl-PF3ONS (F53B Minor)	ND	1.7	0.70	ng/L	1		EPA 537.1	2/22/23	2/24/23 12:11	JR2
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	1.7	0.75	ng/L	1		EPA 537.1	2/22/23	2/24/23 12:11	JR2

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
13C-PFHxA	93.0	70-130		2/24/23 12:11
M3HFPO-DA	79.5	70-130		2/24/23 12:11
13C-PFDA	84.4	70-130		2/24/23 12:11
D5-NEtFOSAA	101	70-130		2/24/23 12:11

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Sample Extraction Data

Prep Method: EPA 537.1-EPA 537.1

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
23B2198-01 [1 Pelham Hill Road]	B332311	292	1.00	02/22/23

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QUALITY CONTROL

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

Analyte	Result	Reporting Limit	DL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B332311 - EPA 537.1											
Blank (B332311-BLK1)					Prepared: 02/22/23 Analyzed: 02/24/23						
Perfluorobutanesulfonic acid (PFBS)	ND	1.8	0.72	ng/L							
Perfluorohexanoic acid (PFHxA)	ND	1.8	0.85	ng/L							
Perfluorohexanesulfonic acid (PFHxS)	ND	1.8	0.82	ng/L							
Perfluoroheptanoic acid (PFHpA)	ND	1.8	0.91	ng/L							
Perfluorooctanoic acid (PFOA)	ND	1.8	0.94	ng/L							
Perfluorooctanesulfonic acid (PFOS)	ND	1.8	0.69	ng/L							
Perfluorononanoic acid (PFNA)	ND	1.8	0.84	ng/L							
Perfluorodecanoic acid (PFDA)	ND	1.8	0.87	ng/L							
N-EtFOSAA (NEtFOSAA)	ND	1.8	0.61	ng/L							
Perfluoroundecanoic acid (PFUnA)	ND	1.8	0.69	ng/L							
N-MeFOSAA (NMeFOSAA)	ND	1.8	0.68	ng/L							
Perfluorododecanoic acid (PFDoA)	ND	1.8	0.65	ng/L							
Perfluorotridecanoic acid (PFTrDA)	ND	1.8	0.67	ng/L							
Perfluorotetradecanoic acid (PFTA)	ND	1.8	0.76	ng/L							
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	1.8	1.1	ng/L							
11Cl-PF3OUdS (F53B Major)	ND	1.8	0.60	ng/L							
9Cl-PF3ONS (F53B Minor)	ND	1.8	0.74	ng/L							
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	1.8	0.80	ng/L							
Surrogate: 13C-PFHxA	*40.4*			ng/L	36.5		111	70-130			
Surrogate: M3HFPO-DA	*39.3*			ng/L	36.5		108	70-130			
Surrogate: 13C-PFDA	*40.8*			ng/L	36.5		112	70-130			
Surrogate: D5-NEtFOSAA	*160*			ng/L	146		109	70-130			
LCS (B332311-BS1)					Prepared: 02/22/23 Analyzed: 02/24/23						
Perfluorobutanesulfonic acid (PFBS)	16.8	1.8	0.72	ng/L	16.2		103	70-130			
Perfluorohexanoic acid (PFHxA)	18.5	1.8	0.85	ng/L	18.3		102	70-130			
Perfluorohexanesulfonic acid (PFHxS)	17.5	1.8	0.82	ng/L	16.7		105	70-130			
Perfluoroheptanoic acid (PFHpA)	19.8	1.8	0.91	ng/L	18.3		109	70-130			
Perfluorooctanoic acid (PFOA)	18.6	1.8	0.94	ng/L	18.3		102	70-130			
Perfluorooctanesulfonic acid (PFOS)	16.5	1.8	0.69	ng/L	16.9		97.4	70-130			
Perfluorononanoic acid (PFNA)	18.0	1.8	0.84	ng/L	18.3		98.4	70-130			
Perfluorodecanoic acid (PFDA)	17.8	1.8	0.88	ng/L	18.3		97.7	70-130			
N-EtFOSAA (NEtFOSAA)	17.2	1.8	0.61	ng/L	18.3		94.2	70-130			
Perfluoroundecanoic acid (PFUnA)	18.5	1.8	0.69	ng/L	18.3		101	70-130			
N-MeFOSAA (NMeFOSAA)	18.2	1.8	0.68	ng/L	18.3		99.7	70-130			
Perfluorododecanoic acid (PFDoA)	18.4	1.8	0.65	ng/L	18.3		101	70-130			
Perfluorotridecanoic acid (PFTrDA)	18.3	1.8	0.67	ng/L	18.3		100	70-130			
Perfluorotetradecanoic acid (PFTA)	18.4	1.8	0.76	ng/L	18.3		101	70-130			
Hexafluoropropylene oxide dimer acid (HFPO-DA)	16.0	1.8	1.1	ng/L	18.3		87.6	70-130			
11Cl-PF3OUdS (F53B Major)	18.3	1.8	0.61	ng/L	17.2		106	70-130			
9Cl-PF3ONS (F53B Minor)	17.4	1.8	0.74	ng/L	17.0		102	70-130			
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	18.2	1.8	0.80	ng/L	17.3		105	70-130			
Surrogate: 13C-PFHxA	*40.3*			ng/L	36.5		110	70-130			
Surrogate: M3HFPO-DA	*40.9*			ng/L	36.5		112	70-130			
Surrogate: 13C-PFDA	*36.4*			ng/L	36.5		99.6	70-130			
Surrogate: D5-NEtFOSAA	*146*			ng/L	146		99.8	70-130			

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QUALITY CONTROL

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

Analyte	Result	Reporting Limit	DL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B332311 - EPA 537.1											
LCS Dup (B332311-BSD1)					Prepared: 02/22/23 Analyzed: 02/24/23						
Perfluorobutanesulfonic acid (PFBS)	16.2	1.8	0.72	ng/L	16.2		100	70-130	3.47	30	
Perfluorohexanoic acid (PFHxA)	17.5	1.8	0.85	ng/L	18.2		95.8	70-130	5.97	30	
Perfluorohexanesulfonic acid (PFHxS)	16.0	1.8	0.82	ng/L	16.7		96.2	70-130	9.12	30	
Perfluoroheptanoic acid (PFHpA)	17.4	1.8	0.91	ng/L	18.2		95.4	70-130	13.2	30	
Perfluorooctanoic acid (PFOA)	17.0	1.8	0.94	ng/L	18.2		93.4	70-130	8.78	30	
Perfluorooctanesulfonic acid (PFOS)	16.2	1.8	0.69	ng/L	16.9		95.6	70-130	2.10	30	
Perfluorononanoic acid (PFNA)	16.7	1.8	0.84	ng/L	18.2		91.7	70-130	7.35	30	
Perfluorodecanoic acid (PFDA)	17.9	1.8	0.87	ng/L	18.2		98.4	70-130	0.475	30	
N-EtFOSAA (NEtFOSAA)	19.7	1.8	0.60	ng/L	18.2		108	70-130	13.4	30	
Perfluoroundecanoic acid (PFUnA)	18.1	1.8	0.69	ng/L	18.2		99.4	70-130	1.99	30	
N-MeFOSAA (NMeFOSAA)	19.2	1.8	0.68	ng/L	18.2		105	70-130	5.31	30	
Perfluorododecanoic acid (PFDoA)	18.1	1.8	0.65	ng/L	18.2		99.6	70-130	1.14	30	
Perfluorotridecanoic acid (PFTrDA)	18.5	1.8	0.66	ng/L	18.2		102	70-130	1.54	30	
Perfluorotetradecanoic acid (PFTA)	18.7	1.8	0.76	ng/L	18.2		103	70-130	1.93	30	
Hexafluoropropylene oxide dimer acid (HFPO-DA)	15.1	1.8	1.1	ng/L	18.2		82.9	70-130	5.64	30	
11Cl-PF3OUdS (F53B Major)	19.1	1.8	0.60	ng/L	17.2		111	70-130	4.44	30	
9Cl-PF3ONS (F53B Minor)	17.4	1.8	0.74	ng/L	17.0		102	70-130	0.326	30	
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	16.2	1.8	0.80	ng/L	17.2		94.0	70-130	11.5	30	
Surrogate: 13C-PFHxA	*32.6*			ng/L	36.4		89.4	70-130			
Surrogate: M3HFPO-DA	*31.3*			ng/L	36.4		86.0	70-130			
Surrogate: 13C-PFDA	*33.1*			ng/L	36.4		90.8	70-130			
Surrogate: D5-NEtFOSAA	*143*			ng/L	146		98.4	70-130			

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

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
DL	Method Detection Limit
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.

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CERTIFICATIONS

Certified Analyses included in this Report

Analyte	Certifications
EPA 537.1 in Drinking Water	
Perfluorobutanesulfonic acid (PFBS)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorohexanoic acid (PFHxA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorohexanesulfonic acid (PFHxS)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluoroheptanoic acid (PFHpA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorooctanoic acid (PFOA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorooctanesulfonic acid (PFOS)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorononanoic acid (PFNA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorodecanoic acid (PFDA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
N-EtFOSAA (NEtFOSAA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluoroundecanoic acid (PFUnA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
N-MeFOSAA (NMeFOSAA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorododecanoic acid (PFDoA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorotridecanoic acid (PFTrDA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorotetradecanoic acid (PFTA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Hexafluoropropylene oxide dimer acid (HFPO-DA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
11Cl-PF3OUdS (F53B Major)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
9Cl-PF3ONS (F53B Minor)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH

Con-Test, a Pace Environmental Laboratory, operates under the following certifications and accreditations:

Code	Description	Number	Expires
MA	Massachusetts DEP	M-MA100	06/30/2023
CT	Connecticut Department of Public Health	PH-0821	12/31/2024
NY	New York State Department of Health	10899 NELAP	04/1/2023
NH	New Hampshire Environmental Lab	2516 NELAP	02/5/2024
NJ	New Jersey DEP	MA007 NELAP	06/30/2023
VT-DW	Vermont Department of Health Drinking Water	VT-255716	06/12/2023
ME	State of Maine	MA00100	06/9/2023
PA	Commonwealth of Pennsylvania DEP	68-05812	06/30/2023
MI	Dept. of Env, Great Lakes, and Energy	9100	06/30/2023

23B2148
J1-1

Pace Analytical®

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https://www.pacelabs.com/

CHAIN OF CUSTODY RECORD

39 Spruce Street
East Longmeadow, MA 01026

Doc # 381 Rev 2_06262019

Page _____ of _____

Contact: https://www.pacelabs.com/contact-us/contact-environmental-sciences/

Company Name:	Tighe & Bond
Address:	53 Southampton Road, Westfield, Massachusetts
Phone:	(413) 562-1600
Project Name:	PFAS Sample Collection - Shutesbury
Project Location:	Shutesbury, Massachusetts
Project Number:	S-2190
Project Manager:	Jeff Arps
Pace Analytical Quote Name/Number	
Invoice Recipient:	Town of Shutesbury
Sampled By:	Samuel Evans

Requested Turnaround Time
7-Day ☑ 10-Day ☐
PFAS 10-Day (std) ☐ Due Date:

Rush Approval Required
1-Day ☐ 3-Day ☐
2-Day ☐ 4-Day ☐

Data Delivery
Format: PDF ☑ EXCEL ☑
Other:
CLP Like Data Pkg Required: ☐
Email To: JArps@Tighebond.com; SEvans@Tighebond.com
Fax To #:

Dissolved Metals Samples
○ Field Filtered
○ Lab to Filter

Orthophosphate Samples
○ Field Filtered
○ Lab to Filter

PCB ONLY
SOXHLET ☐
NON SOXHLET ☐

ANALYSIS REQUESTED
2 Preservation Code

Pace Analytical Work Order#	Client Sample ID / Description	Beginning Date/Time	Ending Date/Time	COMP/GRAB	*Matrix Code	Conc Code	VIALS	GLASS	PLASTIC	BACTERIA	ENCORE	PFAS Via 537.1
1	1 Pelham Hill Road	2/17/23	1015	Grab	GW	U			X			X

Relinquished by: (signature) — Date/Time: 2/20/23 0830
Received by: (signature) — Date/Time: 2-20-23 14:25
Relinquished by: (signature) — Date/Time: 2-20-23 16:40
Received by: (signature) — Date/Time: 2/20/23 1614
Relinquished by: (signature) — Date/Time:
Received by: (signature) — Date/Time:
Relinquished by: (signature) — Date/Time:
Received by: (signature) — Date/Time:

Bill to Town of Shutesbury - PO:57-101490

Detection Limit Requirements
MA
CT
Other

Special Requirements
☑ MA MCP Required
☐ MCP Certification Form Required
☐ CT RCP Required
☐ RCP Certification Form Required
☐ MA State DW Required
PWSID #

Please use the following codes to indicate possible sample concentration within the Conc Code column above:
H - High; M - Medium; L - Low; C - Clean; U - Unknown

Project Entity
Government ☐ Municipality ☐ MWRA ☐ WRTA ☐
Federal ☐ 21 J ☐ School ☐
City ☐ Brownfield ☐ MBTA ☐

Other
☐ Chromatogram
☐ AIHA-LAP,LLC

Matrix Codes
GW = Ground Water
WW = Waste Water
DW = Drinking Water
A = Air S = Soil
SL = Sludge
SOL = Solid
O = Other _____

Preservation Codes
I = Iced
H = HCL
N = Nitric Acid
S = Sulfuric Acid
B = Sodium Bisulfate
X = Sodium Hydroxide
T = Sodium Thiosulfate
M = Methanol
DI = DI Water
O = Other _____

Comments:

Disclaimer: Pace Analytical is not responsible for any omitted information on the Chain of Custody. The Chain of Custody is a legal document that must be complete and accurate and is used to determine what analyses the laboratory will perform. Any missing information is not the laboratory's responsibility. Pace Analytical values your partnership on each project and will try to assist with missing information, but will not be held accountable.

Courier Use Only
VIALS_____
GLASS_____
PLASTIC_____
BACTERIA_____
ENCORE_____
Glassware in freezer? Y / N
Prepackaged Cooler? Y / N

*Pace Analytical is not responsible for missing samples from prepacked coolers

Pace Analytical

Table of Contents

39 Spruce St.
East Longmeadow, MA. 01028
P: 413-525-2332
F:413-525-6405
www.pacelabs.com

Table of Contents

Log In Back-Sheet

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

PEOPLE ADVANCING SCIENCE

Client Tighe and Bond

Project PFAS Sample Collection - Shutesbury

MCP/RCP Required MA MCP

Deliverable Package Req. N/A

Location Shutesbury, MASS

PWSID# (When Applicable) N/A

Arrival Method:

Courier ☑ Fed Ex ☐ Walk In ☐ Other ☐

Received By / Date / Time LA 2/2/23 1640

Back-Sheet By / Date / Time LA 2/24/23 1417

Temperature Method Gun # 5

Temp ☑ < 6° C Actual Temperature 0.6

Rush Samples: Yes / (No) Notify

Short Hold: Yes / (No) Notify

	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	☑	☐

Notes regarding Samples/COC outside of SOP:

COC Included: (Check all included)

Client ☑ Analysis ☑ Sampler Name ☑

Project ☑ IDs ☑ Collection Date/Time ☑

All Samples Proper pH: (N/A) ☐ ☐

Container (Circle when applicable)	UnP	HCl	HNO3	H2SO4	NaOH	Trizma	NaS2O3	Other Preservative
1L Amber Plastic								
500 mL Amber Plastic								
250 mL Amber (Plastic)						2		
Other Amber Clear Plastic								
16oz Amber Clear								
8oz Amber Clear								
4oz Amber Clear								
2oz Amber Clear								
Col/Bacteria								
Flashpoint								
Plastic Bag								
SOC Kit								
Perchlorate								
Encore								
Frozen								

	Proper Headspace	UnP	HCl	MeOH	Bisulfate	DI	Thiosulfate	Sulfuric	Other
Vials									

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February 24, 2023

Jeff Arps
Tighe & Bond
53 Southampton Road
Westfield, MA 01085

Project Location: 15 Pellham Hill Rd, Shutesbury, MA
Client Job Number:
Project Number: S-2190
Laboratory Work Order Number: 23B1532

Enclosed are results of analyses for samples as received by the laboratory on February 13, 2023. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Jessica L. Hoffman
Project Manager

Table of Contents

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

Tighe & Bond
53 Southampton Road
Westfield, MA 01085
ATTN: Jeff Arps

REPORT DATE: 2/24/2023

PURCHASE ORDER NUMBER: 57-101490

PROJECT NUMBER: S-2190

ANALYTICAL SUMMARY

WORK ORDER NUMBER: 23B1532

The results of analyses performed on the following samples submitted to Con-Test, a Pace Analytical Laboratory, are found in this report.

PROJECT LOCATION: 15 Pellham Hill Rd, Shutesbury, MA

FIELD SAMPLE #	LAB ID:	MATRIX	SAMPLE DESCRIPTION	TEST	SUB LAB
15 Pelham Hill Road	23B1532-01	Ground Water		EPA 537.1	

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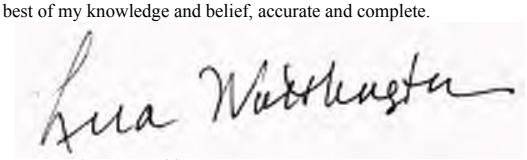
CASE NARRATIVE SUMMARY

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

The results of analyses reported only relate to samples submitted to Con-Test, a Pace Analytical Laboratory, 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.



Lisa A. Worthington
Technical Representative

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

Project Location: 15 Pellham Hill Rd, Shutesbury, M Sample Description: Work Order: 23B1532

Date Received: 2/13/2023

Field Sample #: 15 Pelham Hill Road Sampled: 2/9/2023 11:15

Sample ID: 23B1532-01

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	DF	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanesulfonic acid (PFBS)	ND	2.0	0.75	ng/L	1		EPA 537.1	2/20/23	2/22/23 15:22	AMS
Perfluorohexanoic acid (PFHxA)	ND	2.0	0.87	ng/L	1		EPA 537.1	2/20/23	2/22/23 15:22	AMS
Perfluorohexanesulfonic acid (PFHxS)	ND	2.0	0.64	ng/L	1		EPA 537.1	2/20/23	2/22/23 15:22	AMS
Perfluoroheptanoic acid (PFHpA)	ND	2.0	0.66	ng/L	1		EPA 537.1	2/20/23	2/22/23 15:22	AMS
Perfluorooctanoic acid (PFOA)	1.4	2.0	0.92	ng/L	1	J	EPA 537.1	2/20/23	2/22/23 15:22	AMS
Perfluorooctanesulfonic acid (PFOS)	2.5	2.0	0.85	ng/L	1		EPA 537.1	2/20/23	2/22/23 15:22	AMS
Perfluorononanoic acid (PFNA)	ND	2.0	0.87	ng/L	1		EPA 537.1	2/20/23	2/22/23 15:22	AMS
Perfluorodecanoic acid (PFDA)	ND	2.0	0.72	ng/L	1		EPA 537.1	2/20/23	2/22/23 15:22	AMS
N-EtFOSAA (NEtFOSAA)	ND	2.0	0.68	ng/L	1		EPA 537.1	2/20/23	2/22/23 15:22	AMS
Perfluoroundecanoic acid (PFUnA)	ND	2.0	0.66	ng/L	1		EPA 537.1	2/20/23	2/22/23 15:22	AMS
N-MeFOSAA (NMeFOSAA)	ND	2.0	0.64	ng/L	1		EPA 537.1	2/20/23	2/22/23 15:22	AMS
Perfluorododecanoic acid (PFDoA)	ND	2.0	0.61	ng/L	1		EPA 537.1	2/20/23	2/22/23 15:22	AMS
Perfluorotridecanoic acid (PFTrDA)	ND	2.0	0.58	ng/L	1		EPA 537.1	2/20/23	2/22/23 15:22	AMS
Perfluorotetradecanoic acid (PFTA)	ND	2.0	0.51	ng/L	1		EPA 537.1	2/20/23	2/22/23 15:22	AMS
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	2.0	0.87	ng/L	1		EPA 537.1	2/20/23	2/22/23 15:22	AMS
11Cl-PF3OUdS (F53B Major)	ND	2.0	0.75	ng/L	1		EPA 537.1	2/20/23	2/22/23 15:22	AMS
9Cl-PF3ONS (F53B Minor)	ND	2.0	0.89	ng/L	1		EPA 537.1	2/20/23	2/22/23 15:22	AMS
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	2.0	0.80	ng/L	1		EPA 537.1	2/20/23	2/22/23 15:22	AMS

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
13C-PFHxA	87.2	70-130		2/22/23 15:22
M3HFPO-DA	82.5	70-130		2/22/23 15:22
13C-PFDA	89.7	70-130		2/22/23 15:22
D5-NEtFOSAA	86.9	70-130		2/22/23 15:22

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Sample Extraction Data

Prep Method: EPA 537.1-EPA 537.1

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
23B1532-01 [15 Pelham Hill Road]	B331804	255	1.00	02/20/23

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QUALITY CONTROL

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

Analyte	Result	Reporting Limit	DL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B331804 - EPA 537.1											
Blank (B331804-BLK1)					Prepared: 02/20/23 Analyzed: 02/22/23						
Perfluorobutanesulfonic acid (PFBS)	ND	1.8	0.71	ng/L							
Perfluorohexanoic acid (PFHxA)	ND	1.8	0.82	ng/L							
Perfluorohexanesulfonic acid (PFHxS)	ND	1.8	0.60	ng/L							
Perfluoroheptanoic acid (PFHpA)	ND	1.8	0.62	ng/L							
Perfluorooctanoic acid (PFOA)	ND	1.8	0.87	ng/L							
Perfluorooctanesulfonic acid (PFOS)	ND	1.8	0.80	ng/L							
Perfluorononanoic acid (PFNA)	ND	1.8	0.82	ng/L							
Perfluorodecanoic acid (PFDA)	ND	1.8	0.68	ng/L							
N-EtFOSAA (NEtFOSAA)	ND	1.8	0.64	ng/L							
Perfluoroundecanoic acid (PFUnA)	ND	1.8	0.62	ng/L							
N-MeFOSAA (NMeFOSAA)	ND	1.8	0.60	ng/L							
Perfluorododecanoic acid (PFDoA)	ND	1.8	0.57	ng/L							
Perfluorotridecanoic acid (PFTrDA)	ND	1.8	0.55	ng/L							
Perfluorotetradecanoic acid (PFTA)	ND	1.8	0.47	ng/L							
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	1.8	0.81	ng/L							
11Cl-PF3OUdS (F53B Major)	ND	1.8	0.70	ng/L							
9Cl-PF3ONS (F53B Minor)	ND	1.8	0.84	ng/L							
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	1.8	0.75	ng/L							
Surrogate: 13C-PFHxA	*32.5*			ng/L	36.8		88.4	70-130			
Surrogate: M3HFPO-DA	*34.0*			ng/L	36.8		92.3	70-130			
Surrogate: 13C-PFDA	*32.8*			ng/L	36.8		89.2	70-130			
Surrogate: D5-NEtFOSAA	*134*			ng/L	147		90.7	70-130			
LCS (B331804-BS1)					Prepared: 02/20/23 Analyzed: 02/22/23						
Perfluorobutanesulfonic acid (PFBS)	1.34	1.8	0.69	ng/L	1.60		83.6	50-150			J
Perfluorohexanoic acid (PFHxA)	1.32	1.8	0.80	ng/L	1.81		73.0	50-150			J
Perfluorohexanesulfonic acid (PFHxS)	1.19	1.8	0.59	ng/L	1.65		71.9	50-150			J
Perfluoroheptanoic acid (PFHpA)	1.67	1.8	0.61	ng/L	1.81		92.5	50-150			J
Perfluorooctanoic acid (PFOA)	1.47	1.8	0.85	ng/L	1.81		81.5	50-150			J
Perfluorooctanesulfonic acid (PFOS)	1.66	1.8	0.78	ng/L	1.68		99.1	50-150			J
Perfluorononanoic acid (PFNA)	1.41	1.8	0.80	ng/L	1.81		77.7	50-150			J
Perfluorodecanoic acid (PFDA)	1.98	1.8	0.66	ng/L	1.81		109	50-150			
N-EtFOSAA (NEtFOSAA)	1.57	1.8	0.63	ng/L	1.81		86.9	50-150			J
Perfluoroundecanoic acid (PFUnA)	1.65	1.8	0.61	ng/L	1.81		91.0	50-150			J
N-MeFOSAA (NMeFOSAA)	1.68	1.8	0.59	ng/L	1.81		92.6	50-150			J
Perfluorododecanoic acid (PFDoA)	1.40	1.8	0.56	ng/L	1.81		77.3	50-150			J
Perfluorotridecanoic acid (PFTrDA)	1.71	1.8	0.54	ng/L	1.81		94.3	50-150			J
Perfluorotetradecanoic acid (PFTA)	1.43	1.8	0.47	ng/L	1.81		79.3	50-150			J
Hexafluoropropylene oxide dimer acid (HFPO-DA)	1.49	1.8	0.80	ng/L	1.81		82.6	50-150			J
11Cl-PF3OUdS (F53B Major)	1.58	1.8	0.69	ng/L	1.71		92.6	50-150			J
9Cl-PF3ONS (F53B Minor)	1.58	1.8	0.82	ng/L	1.69		93.6	50-150			J
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	1.58	1.8	0.74	ng/L	1.71		92.6	50-150			J
Surrogate: 13C-PFHxA	*34.1*			ng/L	36.2		94.2	70-130			
Surrogate: M3HFPO-DA	*35.8*			ng/L	36.2		98.9	70-130			
Surrogate: 13C-PFDA	*34.6*			ng/L	36.2		95.5	70-130			
Surrogate: D5-NEtFOSAA	*138*			ng/L	145		95.5	70-130			

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QUALITY CONTROL

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

Analyte	Result	Reporting Limit	DL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B331804 - EPA 537.1											
LCS Dup (B331804-BSD1)					Prepared: 02/20/23 Analyzed: 02/22/23						
Perfluorobutanesulfonic acid (PFBS)	1.66	1.8	0.69	ng/L	1.58		105	50-150	21.5	50	J
Perfluorohexanoic acid (PFHxA)	1.74	1.8	0.79	ng/L	1.78		97.8	50-150	27.7	50	J
Perfluorohexanesulfonic acid (PFHxS)	1.59	1.8	0.58	ng/L	1.63		97.5	50-150	28.9	50	J
Perfluoroheptanoic acid (PFHpA)	2.14	1.8	0.60	ng/L	1.78		120	50-150	24.4	50	
Perfluorooctanoic acid (PFOA)	1.86	1.8	0.84	ng/L	1.78		105	50-150	23.4	50	
Perfluorooctanesulfonic acid (PFOS)	1.98	1.8	0.77	ng/L	1.66		120	50-150	17.4	50	
Perfluorononanoic acid (PFNA)	1.99	1.8	0.79	ng/L	1.78		111	50-150	34.3	50	
Perfluorodecanoic acid (PFDA)	2.22	1.8	0.66	ng/L	1.78		125	50-150	11.8	50	
N-EtFOSAA (NEtFOSAA)	2.01	1.8	0.62	ng/L	1.78		113	50-150	24.3	50	
Perfluoroundecanoic acid (PFUnA)	1.91	1.8	0.60	ng/L	1.78		107	50-150	14.9	50	
N-MeFOSAA (NMeFOSAA)	1.94	1.8	0.58	ng/L	1.78		109	50-150	14.8	50	
Perfluorododecanoic acid (PFDoA)	1.88	1.8	0.56	ng/L	1.78		105	50-150	29.1	50	
Perfluorotridecanoic acid (PFTrDA)	1.98	1.8	0.53	ng/L	1.78		111	50-150	14.7	50	
Perfluorotetradecanoic acid (PFTA)	1.48	1.8	0.46	ng/L	1.78		83.2	50-150	3.43	50	J
Hexafluoropropylene oxide dimer acid (HFPO-DA)	2.07	1.8	0.79	ng/L	1.78		116	50-150	32.4	50	
11Cl-PF3OUdS (F53B Major)	1.97	1.8	0.68	ng/L	1.68		117	50-150	21.7	50	
9Cl-PF3ONS (F53B Minor)	1.99	1.8	0.81	ng/L	1.66		120	50-150	22.9	50	
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	2.07	1.8	0.73	ng/L	1.69		123	50-150	26.9	50	
Surrogate: 13C-PFHxA	*33.7*			ng/L	35.7		94.3	70-130			
Surrogate: M3HFPO-DA	*35.4*			ng/L	35.7		99.1	70-130			
Surrogate: 13C-PFDA	*32.5*			ng/L	35.7		91.1	70-130			
Surrogate: D5-NEtFOSAA	*128*			ng/L	143		90.0	70-130			

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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
DL	Method Detection Limit
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).

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CERTIFICATIONS

Certified Analyses included in this Report

Analyte	Certifications
EPA 537.1 in Drinking Water	
Perfluorobutanesulfonic acid (PFBS)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorohexanoic acid (PFHxA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorohexanesulfonic acid (PFHxS)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluoroheptanoic acid (PFHpA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorooctanoic acid (PFOA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorooctanesulfonic acid (PFOS)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorononanoic acid (PFNA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorodecanoic acid (PFDA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
N-EtFOSAA (NEtFOSAA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluoroundecanoic acid (PFUnA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
N-MeFOSAA (NMeFOSAA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorododecanoic acid (PFDoA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorotridecanoic acid (PFTrDA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorotetradecanoic acid (PFTA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Hexafluoropropylene oxide dimer acid (HFPO-DA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
11Cl-PF3OUdS (F53B Major)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
9Cl-PF3ONS (F53B Minor)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH

Con-Test, a Pace Environmental Laboratory, operates under the following certifications and accreditations:

Code	Description	Number	Expires
MA	Massachusetts DEP	M-MA100	06/30/2023
CT	Connecticut Department of Public Health	PH-0821	12/31/2024
NY	New York State Department of Health	10899 NELAP	04/1/2023
NH	New Hampshire Environmental Lab	2516 NELAP	02/5/2024
NJ	New Jersey DEP	MA007 NELAP	06/30/2023
VT-DW	Vermont Department of Health Drinking Water	VT-255716	06/12/2023
ME	State of Maine	MA00100	06/9/2023
PA	Commonwealth of Pennsylvania DEP	68-05812	06/30/2023
MI	Dept. of Env, Great Lakes, and Energy	9100	06/30/2023

23B1532

Pace Analytical

Phone: 413-525-2332
Fax: 413-525-6405

https://www.pacelabs.com/

39 Spruce Street
East Longmeadow, MA 01026

Doc # 381 Rev 2_06262019

CHAIN OF CUSTODY RECORD

Page _____ of _____

Contact: https://www.pacelabs.com/contact-us/contact-environmental-sciences/

Company Name:	Tighe & Bond
Address:	53 Southampton Road, Westfield, Massachusetts
Phone:	(413) 562-1600
Project Name:	PFAS Sample Collection - Shutesbury
Project Location:	Shutesbury, Massachusetts
Project Number:	S-2190
Project Manager:	Jeff Arps
Pace Analytical Quote Name/Number	
Invoice Recipient:	Town of Shutesbury
Sampled By:	Samuel Evans

Requested Turnaround Time
7-Day ☑ 10-Day ☐
PFAS 10-Day (std) ☐ Due Date:

Rush-Approval Required
1-Day ☐ 3-Day ☐
2-Day ☐ 4-Day ☐

Data Delivery
Format: PDF ☑ EXCEL ☑
Other:
CLP Like Data Pkg Required: ☐
Email To: JArps@Tighebond.com; SEvans@Tighebond.com
Fax To #:

Dissolved Metals Samples
○ Field Filtered
○ Lab to Filter

Orthophosphate Samples
○ Field Filtered
○ Lab to Filter

PCB ONLY
SOXHLET ☐
NON SOXHLET ☐

ANALYSIS REQUESTED

2 Preservation Code

Pace Analytical Work Order#	Client Sample ID / Description	Beginning Date/Time	Ending Date/Time	COMP/GRAB	Matrix Code	Conc Code	VIALS	GLASS	PLASTIC	BACTERIA	ENCORE	PFAS Via 537.1
1	15 Pelham Hill Road	2/9/22	1115	Grab	GW	U			2			X

Relinquished by: (signature) Samuel Evans Date/Time: 2/13/23 0835
Received by: (signature) Tyson Pace Date/Time: 2/13/23 1236
Relinquished by: (signature) Tyson Pace Date/Time: 2/13/23 1708
Received by: (signature) [illegible] 2/13/23 1708
Relinquished by: (signature) Date/Time:
Received by: (signature) Date/Time:
Relinquished by: (signature) Date/Time:
Received by: (signature) Date/Time:

Bill to Town of Shutesbury - PO:57-101490

Detection Limit Requirements
MA
GT
Other

Special Requirements
☑ MA MCP Required
MCP Certification Form Required
☐ CT RCP Required
RCP Certification Form Required
☐ MA State DW Required
PWSID #

Please use the following codes to indicate possible sample concentration within the Conc Code column above:
H - High; M - Medium; L - Low; C - Clean; U - Unknown

Project Entity
Government ☐ Municipality ☐ MWRA ☐ WRTA ☐
Federal ☐ 21 J ☐ School ☐
City ☐ Brownfield ☐ MBTA ☐

Other
☐ Chromatogram
☐ AIHA-LAP,LLC

Matrix Codes
GW= Ground Water
WW = Waste Water
DW = Drinking Water
A = Air S = Soil
SL = Sludge
SOL = Solid
O = Other _____

Preservation Codes
I = Iced
H = HCL
N = Nitric Acid
S = Sulfuric Acid
B = Sodium Bisulfate
X = Sodium Hydroxide
T = Sodium Thiosulfate
M = Methanol
DI = DI Water
O = Other _____

Comments:

Disclaimer: Pace Analytical is not responsible for any omitted information on the Chain of Custody. The Chain of Custody is a legal document that must be complete and accurate and is used to determine what analyses the laboratory will perform. Any missing information is not the laboratory's responsibility. Pace Analytical values your partnership on each project and will try to assist with missing information, but will not be held accountable.

Courier Use Only
VIALS_____
GLASS_____
PLASTIC_____
BACTERIA_____
ENCORE_____
Glassware in freezer? Y / N
Prepackaged Cooler? Y / N

*Pace Analytical is not responsible for missing samples from prepacked coolers

Pace Analytical

JLP

Table of Contents

39 Spruce St.
East Longmeadow, MA. 01028
P: 413-525-2332
F:413-525-6405
www.pacelabs.com

Log In Back-Sheet

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

Pace® PEOPLE ADVANCING SCIENCE

Client T & B

Project PFAS Sample - Shrewsbury

MCP/RCP Required MA MCP

Deliverable Package Req. No

Location Shrewsbury, MA

PWSID# (When Applicable) N/A

Arrival Method:

Courier ☑ Fed Ex ☐ Walk In ☐ Other ☐

Received By / Date / Time SC 2/13/23 1700

Back-Sheet By / Date / Time SC 2/13/23 1645

Temperature Method Gun # 5

Temp ☑ < 6° C Actual Temperature 3.5

Rush Samples: Yes / (No) Notify

Short Hold: Yes / (No) Notify

Notes regarding Samples/COC outside of SOP:

	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: (N/A) ☐ ☐

Container (Circle when applicable)	UnP	HCl	HNO3	H2SO4	NaOH	Trizma	NaS2O3	Other Preservative
1L Amber Plastic								
500 mL Amber Plastic								
250 mL Amber (Plastic)						2		
Other Amber Clear Plastic								
16oz Amber Clear								
8oz Amber Clear								
4oz Amber Clear								
2oz Amber Clear								
Col/Bacteria								
Flashpoint								
Plastic Bag								
SOC Kit								
Perchlorate								
Encore								
Frozen								

	Proper Headspace	UnP	HCl	MeOH	Bisulfate	DI	Thiosulfate	Sulfuric	Other
Vials									

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March 1, 2023

Jeff Arps
Tighe & Bond
53 Southampton Road
Westfield, MA 01085

Project Location: 23 Pelham Hill Rd. Shutesbury, Massachusetts
Client Job Number:
Project Number: S-2190
Laboratory Work Order Number: 23B2201

Enclosed are results of analyses for samples as received by the laboratory on February 20, 2023. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Jessica L. Hoffman
Project Manager

Table of Contents

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

Tighe & Bond
53 Southampton Road
Westfield, MA 01085
ATTN: Jeff Arps

REPORT DATE: 3/1/2023

PURCHASE ORDER NUMBER: 57-101490

PROJECT NUMBER: S-2190

ANALYTICAL SUMMARY

WORK ORDER NUMBER: 23B2201

The results of analyses performed on the following samples submitted to Con-Test, a Pace Analytical Laboratory, are found in this report.

PROJECT LOCATION: 23 Pelham Hill Rd. Shutesbury, Massachusetts

FIELD SAMPLE #	LAB ID:	MATRIX	SAMPLE DESCRIPTION	TEST	SUB LAB
23 Pelham Hill Road	23B2201-01	Ground Water		EPA 537.1	

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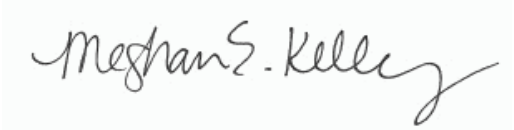
CASE NARRATIVE SUMMARY

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

The results of analyses reported only relate to samples submitted to Con-Test, a Pace Analytical Laboratory, 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

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

Project Location: 23 Pelham Hill Rd. Shutesbury, M Sample Description: Work Order: 23B2201

Date Received: 2/20/2023

Field Sample #: 23 Pelham Hill Road Sampled: 2/17/2023 13:10

Sample ID: 23B2201-01

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	DF	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanesulfonic acid (PFBS)	ND	1.8	0.69	ng/L	1		EPA 537.1	2/27/23	3/1/23 8:27	AMS
Perfluorohexanoic acid (PFHxA)	ND	1.8	0.82	ng/L	1		EPA 537.1	2/27/23	3/1/23 8:27	AMS
Perfluorohexanesulfonic acid (PFHxS)	ND	1.8	0.79	ng/L	1		EPA 537.1	2/27/23	3/1/23 8:27	AMS
Perfluoroheptanoic acid (PFHpA)	ND	1.8	0.87	ng/L	1		EPA 537.1	2/27/23	3/1/23 8:27	AMS
Perfluorooctanoic acid (PFOA)	0.96	1.8	0.91	ng/L	1	J	EPA 537.1	2/27/23	3/1/23 8:27	AMS
Perfluorooctanesulfonic acid (PFOS)	ND	1.8	0.66	ng/L	1		EPA 537.1	2/27/23	3/1/23 8:27	AMS
Perfluorononanoic acid (PFNA)	ND	1.8	0.81	ng/L	1		EPA 537.1	2/27/23	3/1/23 8:27	AMS
Perfluorodecanoic acid (PFDA)	ND	1.8	0.84	ng/L	1		EPA 537.1	2/27/23	3/1/23 8:27	AMS
N-EtFOSAA (NEtFOSAA)	ND	1.8	0.58	ng/L	1		EPA 537.1	2/27/23	3/1/23 8:27	AMS
Perfluoroundecanoic acid (PFUnA)	ND	1.8	0.67	ng/L	1		EPA 537.1	2/27/23	3/1/23 8:27	AMS
N-MeFOSAA (NMeFOSAA)	ND	1.8	0.65	ng/L	1		EPA 537.1	2/27/23	3/1/23 8:27	AMS
Perfluorododecanoic acid (PFDoA)	ND	1.8	0.63	ng/L	1		EPA 537.1	2/27/23	3/1/23 8:27	AMS
Perfluorotridecanoic acid (PFTrDA)	ND	1.8	0.64	ng/L	1		EPA 537.1	2/27/23	3/1/23 8:27	AMS
Perfluorotetradecanoic acid (PFTA)	ND	1.8	0.73	ng/L	1		EPA 537.1	2/27/23	3/1/23 8:27	AMS
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	1.8	1.1	ng/L	1		EPA 537.1	2/27/23	3/1/23 8:27	AMS
11Cl-PF3OUdS (F53B Major)	ND	1.8	0.58	ng/L	1		EPA 537.1	2/27/23	3/1/23 8:27	AMS
9Cl-PF3ONS (F53B Minor)	ND	1.8	0.72	ng/L	1		EPA 537.1	2/27/23	3/1/23 8:27	AMS
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	1.8	0.77	ng/L	1		EPA 537.1	2/27/23	3/1/23 8:27	AMS

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
13C-PFHxA	99.2	70-130		3/1/23 8:27
M3HFPO-DA	95.3	70-130		3/1/23 8:27
13C-PFDA	100	70-130		3/1/23 8:27
D5-NEtFOSAA	107	70-130		3/1/23 8:27

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Sample Extraction Data

Prep Method: EPA 537.1-EPA 537.1

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
23B2201-01 [23 Pelham Hill Road]	B332312	285	1.00	02/27/23

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QUALITY CONTROL

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

Analyte	Result	Reporting Limit	DL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B332312 - EPA 537.1											
Blank (B332312-BLK1)					Prepared: 02/27/23 Analyzed: 02/28/23						
Perfluorobutanesulfonic acid (PFBS)	ND	1.8	0.71	ng/L							
Perfluorohexanoic acid (PFHxA)	ND	1.8	0.84	ng/L							
Perfluorohexanesulfonic acid (PFHxS)	ND	1.8	0.81	ng/L							
Perfluoroheptanoic acid (PFHpA)	ND	1.8	0.90	ng/L							
Perfluorooctanoic acid (PFOA)	ND	1.8	0.93	ng/L							
Perfluorooctanesulfonic acid (PFOS)	ND	1.8	0.68	ng/L							
Perfluorononanoic acid (PFNA)	ND	1.8	0.83	ng/L							
Perfluorodecanoic acid (PFDA)	ND	1.8	0.86	ng/L							
N-EtFOSAA (NEtFOSAA)	ND	1.8	0.60	ng/L							
Perfluoroundecanoic acid (PFUnA)	ND	1.8	0.68	ng/L							
N-MeFOSAA (NMeFOSAA)	ND	1.8	0.67	ng/L							
Perfluorododecanoic acid (PFDoA)	ND	1.8	0.65	ng/L							
Perfluorotridecanoic acid (PFTrDA)	ND	1.8	0.66	ng/L							
Perfluorotetradecanoic acid (PFTA)	ND	1.8	0.75	ng/L							
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	1.8	1.1	ng/L							
11Cl-PF3OUdS (F53B Major)	ND	1.8	0.60	ng/L							
9Cl-PF3ONS (F53B Minor)	ND	1.8	0.73	ng/L							
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	1.8	0.79	ng/L							
Surrogate: 13C-PFHxA	*39.2*			ng/L	36.1		109	70-130			
Surrogate: M3HFPO-DA	*40.0*			ng/L	36.1		111	70-130			
Surrogate: 13C-PFDA	*37.9*			ng/L	36.1		105	70-130			
Surrogate: D5-NEtFOSAA	*152*			ng/L	144		105	70-130			
LCS (B332312-BS1)					Prepared: 02/27/23 Analyzed: 02/28/23						
Perfluorobutanesulfonic acid (PFBS)	15.8	1.8	0.71	ng/L	16.0		98.4	70-130			
Perfluorohexanoic acid (PFHxA)	15.3	1.8	0.84	ng/L	18.1		84.6	70-130			
Perfluorohexanesulfonic acid (PFHxS)	13.6	1.8	0.81	ng/L	16.5		82.2	70-130			
Perfluoroheptanoic acid (PFHpA)	18.9	1.8	0.90	ng/L	18.1		104	70-130			
Perfluorooctanoic acid (PFOA)	16.3	1.8	0.93	ng/L	18.1		90.1	70-130			
Perfluorooctanesulfonic acid (PFOS)	17.8	1.8	0.68	ng/L	16.8		106	70-130			
Perfluorononanoic acid (PFNA)	16.9	1.8	0.83	ng/L	18.1		93.4	70-130			
Perfluorodecanoic acid (PFDA)	19.5	1.8	0.87	ng/L	18.1		108	70-130			
N-EtFOSAA (NEtFOSAA)	18.6	1.8	0.60	ng/L	18.1		103	70-130			
Perfluoroundecanoic acid (PFUnA)	19.0	1.8	0.69	ng/L	18.1		105	70-130			
N-MeFOSAA (NMeFOSAA)	18.9	1.8	0.67	ng/L	18.1		105	70-130			
Perfluorododecanoic acid (PFDoA)	19.7	1.8	0.65	ng/L	18.1		109	70-130			
Perfluorotridecanoic acid (PFTrDA)	19.3	1.8	0.66	ng/L	18.1		107	70-130			
Perfluorotetradecanoic acid (PFTA)	15.2	1.8	0.75	ng/L	18.1		84.3	70-130			
Hexafluoropropylene oxide dimer acid (HFPO-DA)	14.0	1.8	1.1	ng/L	18.1		77.3	70-130			
11Cl-PF3OUdS (F53B Major)	17.6	1.8	0.60	ng/L	17.0		103	70-130			
9Cl-PF3ONS (F53B Minor)	17.2	1.8	0.74	ng/L	16.9		102	70-130			
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	17.4	1.8	0.79	ng/L	17.1		102	70-130			
Surrogate: 13C-PFHxA	*37.8*			ng/L	36.1		104	70-130			
Surrogate: M3HFPO-DA	*37.9*			ng/L	36.1		105	70-130			
Surrogate: 13C-PFDA	*36.9*			ng/L	36.1		102	70-130			
Surrogate: D5-NEtFOSAA	*153*			ng/L	145		105	70-130			

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QUALITY CONTROL

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

Analyte	Result	Reporting Limit	DL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B332312 - EPA 537.1											
LCS Dup (B332312-BSD1)					Prepared: 02/27/23 Analyzed: 02/28/23						
Perfluorobutanesulfonic acid (PFBS)	15.3	1.8	0.71	ng/L	16.0		95.5	70-130	2.89	30	
Perfluorohexanoic acid (PFHxA)	14.9	1.8	0.85	ng/L	18.1		82.5	70-130	2.39	30	
Perfluorohexanesulfonic acid (PFHxS)	13.6	1.8	0.81	ng/L	16.5		82.3	70-130	0.225	30	
Perfluoroheptanoic acid (PFHpA)	18.5	1.8	0.90	ng/L	18.1		102	70-130	1.98	30	
Perfluorooctanoic acid (PFOA)	15.6	1.8	0.94	ng/L	18.1		86.3	70-130	4.23	30	
Perfluorooctanesulfonic acid (PFOS)	17.7	1.8	0.68	ng/L	16.8		106	70-130	0.290	30	
Perfluorononanoic acid (PFNA)	17.0	1.8	0.83	ng/L	18.1		93.7	70-130	0.462	30	
Perfluorodecanoic acid (PFDA)	19.1	1.8	0.87	ng/L	18.1		106	70-130	1.78	30	
N-EtFOSAA (NEtFOSAA)	18.8	1.8	0.60	ng/L	18.1		104	70-130	1.13	30	
Perfluoroundecanoic acid (PFUnA)	18.7	1.8	0.69	ng/L	18.1		103	70-130	1.34	30	
N-MeFOSAA (NMeFOSAA)	19.0	1.8	0.67	ng/L	18.1		105	70-130	0.493	30	
Perfluorododecanoic acid (PFDoA)	19.0	1.8	0.65	ng/L	18.1		105	70-130	3.63	30	
Perfluorotridecanoic acid (PFTrDA)	19.1	1.8	0.66	ng/L	18.1		106	70-130	1.07	30	
Perfluorotetradecanoic acid (PFTA)	15.4	1.8	0.76	ng/L	18.1		85.2	70-130	1.19	30	
Hexafluoropropylene oxide dimer acid (HFPO-DA)	12.9	1.8	1.1	ng/L	18.1		71.1	70-130	8.34	30	
11Cl-PF3OUdS (F53B Major)	17.5	1.8	0.60	ng/L	17.1		103	70-130	0.505	30	
9Cl-PF3ONS (F53B Minor)	17.9	1.8	0.74	ng/L	16.9		106	70-130	3.57	30	
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	17.0	1.8	0.80	ng/L	17.1		99.7	70-130	2.08	30	
Surrogate: 13C-PFHxA	*33.6*			ng/L	36.2		92.9	70-130			
Surrogate: M3HFPO-DA	*33.7*			ng/L	36.2		93.1	70-130			
Surrogate: 13C-PFDA	*34.1*			ng/L	36.2		94.2	70-130			
Surrogate: D5-NEtFOSAA	*140*			ng/L	145		96.4	70-130			

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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
DL	Method Detection Limit
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).

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CERTIFICATIONS

Certified Analyses included in this Report

Analyte	Certifications
EPA 537.1 in Drinking Water	
Perfluorobutanesulfonic acid (PFBS)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorohexanoic acid (PFHxA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorohexanesulfonic acid (PFHxS)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluoroheptanoic acid (PFHpA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorooctanoic acid (PFOA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorooctanesulfonic acid (PFOS)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorononanoic acid (PFNA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorodecanoic acid (PFDA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
N-EtFOSAA (NEtFOSAA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluoroundecanoic acid (PFUnA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
N-MeFOSAA (NMeFOSAA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorododecanoic acid (PFDoA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorotridecanoic acid (PFTrDA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorotetradecanoic acid (PFTA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Hexafluoropropylene oxide dimer acid (HFPO-DA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
11Cl-PF3OUdS (F53B Major)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
9Cl-PF3ONS (F53B Minor)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH

Con-Test, a Pace Environmental Laboratory, operates under the following certifications and accreditations:

Code	Description	Number	Expires
MA	Massachusetts DEP	M-MA100	06/30/2023
CT	Connecticut Department of Public Health	PH-0821	12/31/2024
NY	New York State Department of Health	10899 NELAP	04/1/2023
NH	New Hampshire Environmental Lab	2516 NELAP	02/5/2024
NJ	New Jersey DEP	MA007 NELAP	06/30/2023
VT-DW	Vermont Department of Health Drinking Water	VT-255716	06/12/2023
ME	State of Maine	MA00100	06/9/2023
PA	Commonwealth of Pennsylvania DEP	68-05812	06/30/2023
MI	Dept. of Env, Great Lakes, and Energy	9100	06/30/2023

25D2220
JH

Pace Analytical

Phone: 413-525-2332
Fax: 413-525-6405

https://www.pacelabs.com/

CHAIN OF CUSTODY RECORD

39 Spruce Street
East Longmeadow, MA 01026

Doc # 381 Rev 2_06262019

Page ____ of ____

Contact: https://www.pacelabs.com/contact-us/contact-environmental-sciences/

Company Name:	Tighe & Bond
Address:	53 Southampton Road, Westfield, Massachusetts
Phone:	(413) 562-1600
Project Name:	PFAS Sample Collection - Shutesbury
Project Location:	Shutesbury, Massachusetts
Project Number:	S-2190
Project Manager:	Jeff Arps
Pace Analytical Quote Name/Number	
Invoice Recipient:	Town of Shutesbury
Sampled By:	Samuel Evans

Requested Turnaround Time

7-Day ☑ 10-Day ☐
PFAS 10-Day (std) ☐ Due Date:

Rush-Approval Required

1-Day ☐ 3-Day ☐
2-Day ☐ 4-Day ☐

Data Delivery

Format: PDF ☑ EXCEL ☑
Other:
CLP Like Data Pkg Required: ☐
Email To: JArps@Tighebond.com; SEvans@Tighebond.com
Fax To #:

Dissolved Metals Samples

○ Field Filtered
○ Lab to Filter

Orthophosphate Samples

○ Field Filtered
○ Lab to Filter

PCB ONLY

SOXHLET ☐
NON SOXHLET ☐

ANALYSIS REQUESTED

2 Preservation Code

Pace Analytical Work Order#	Client Sample ID / Description	Beginning Date/Time	Ending Date/Time	COMP/GRAB	Matrix Code	Conc Code	VIALS	GLASS	PLASTIC	BACTERIA	ENCORE	PFAS Via 537.1
	23 Pelham Hill Road	2/13/23	1310	Grab	GW	U			X			X

Relinquished by: (signature) — Date/Time: 2/20/23 0830
Received by: (signature) 14:25 — Date/Time: 2-20-23
Relinquished by: (signature) 16:40 — Date/Time: 2-20-23
Received by: (signature) 2.6 — Date/Time: 2/20/23 1640
Relinquished by: (signature) — Date/Time:
Received by: (signature) — Date/Time:
Relinquished by: (signature) — Date/Time:
Received by: (signature) — Date/Time:

Bill to Town of Shutesbury - PO:57-101490

Detection Limit Requirements

MA
CT
Other

Special Requirements

☑ MA MCP Required
MCP Certification Form Required
☐ CT RCP Required
RCP Certification Form Required
☐ MA State DW Required
PWSID #

Please use the following codes to indicate possible sample concentration within the Conc Code column above:
H - High; M - Medium; L - Low; C - Clean; U - Unknown

Matrix Codes

GW= Ground Water
WW = Waste Water
DW = Drinking Water
A = Air S = Soil
SL = Sludge
SOL = Solid
O = Other _____

Preservation Codes

I = Iced
H = HCL
N = Nitric Acid
S = Sulfuric Acid
B = Sodium Bisulfate
X = Sodium Hydroxide
T = Sodium Thiosulfate
M = Methanol
DI = DI Water
O = Other _____

Project Entity

Government ☐ Municipality ☐ MWRA ☐ WRTA ☐
Federal ☐ 21 J ☐ School ☐
City ☐ Brownfield ☐ MBTA ☐

Other

☐ Chromatogram
☑ AIHA-LAP,LLC

Comments:

Disclaimer: Pace Analytical is not responsible for any omitted information on the Chain of Custody. The Chain of Custody is a legal document that must be complete and accurate and is used to determine what analyses the laboratory will perform. Any missing information is not the laboratory's responsibility. Pace Analytical values your partnership on each project and will try to assist with missing information, but will not be held accountable.

Courier Use Only

VIALS
GLASS
PLASTIC
BACTERIA
ENCORE

Glassware in freezer? Y / N
Prepackaged Cooler? Y / N

*Pace Analytical is not responsible for missing samples from prepacked coolers

Pace Analytical

Table of Contents

39 Spruce St.
East Longmeadow, MA. 01028
P: 413-525-2332
F:413-525-6405
www.pacelabs.com

Log In Back-Sheet

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

Pace PEOPLE ADVANCING SCIENCE

Client Tighe and Bond

Project PFAS Sample Collection - Shutesbury

MCP/RCP Required MA MCP

Deliverable Package Req. N/A

Location Shutesbury, MASS

PWSID# (When Applicable) N/A

Arrival Method:

Courier ☑ Fed Ex ☐ Walk In ☐ Other ☐

Received By / Date / Time LA 2/20/23 1640

Back-Sheet By / Date / Time LA 2/20/23 1847

Temperature Method Gun # 5

Temp ☑ < 6° C Actual Temperature 0.6

Rush Samples: Yes / (No) Notify

Short Hold: Yes / (No) Notify

	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	☑	☐

Notes regarding Samples/COC outside of SOP:

COC Included: (Check all included)

Client ☑ Analysis ☑ Sampler Name ☑

Project ☑ IDs ☑ Collection Date/Time ☑

All Samples Proper pH: (N/A) ☐ ☐

Container (Circle when applicable)	UnP	HCl	HNO3	H2SO4	NaOH	Trizma	NaS2O3	Other Preservative
1L Amber Plastic								
500 mL Amber Plastic								
250 mL Amber (Plastic)						2		
Other Amber Clear Plastic								
16oz Amber Clear								
8oz Amber Clear								
4oz Amber Clear								
2oz Amber Clear								
Col/Bacteria								
Flashpoint								
Plastic Bag								
SOC Kit								
Perchlorate								
Encore								
Frozen								

	Proper Headspace	UnP	HCl	MeOH	Bisulfate	DI	Thiosulfate	Sulfuric	Other
Vials									

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February 24, 2023

Jeff Arps
Tighe & Bond
53 Southampton Road
Westfield, MA 01085

Project Location: 54 Pelham Hill Road, Shutesbury, Massachusetts
Client Job Number:
Project Number: S-2190
Laboratory Work Order Number: 23B2145

Enclosed are results of analyses for samples as received by the laboratory on February 17, 2023. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Jessica L. Hoffman
Project Manager

Table of Contents

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

Tighe & Bond
53 Southampton Road
Westfield, MA 01085
ATTN: Jeff Arps

REPORT DATE: 2/24/2023

PURCHASE ORDER NUMBER: 57-101490

PROJECT NUMBER: S-2190

ANALYTICAL SUMMARY

WORK ORDER NUMBER: 23B2145

The results of analyses performed on the following samples submitted to Con-Test, a Pace Analytical Laboratory, are found in this report.

PROJECT LOCATION: 54 Pelham Hill Road, Shutesbury, Massachusetts

FIELD SAMPLE #	LAB ID:	MATRIX	SAMPLE DESCRIPTION	TEST	SUB LAB
54 Pelham Hill Road	23B2145-01	Ground Water		EPA 537.1	

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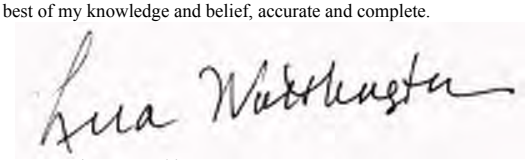
CASE NARRATIVE SUMMARY

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

The results of analyses reported only relate to samples submitted to Con-Test, a Pace Analytical Laboratory, 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.



Lisa A. Worthington
Technical Representative

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

Project Location: 54 Pelham Hill Road, Shutesbury, Sample Description: Work Order: 23B2145

Date Received: 2/17/2023

Field Sample #: 54 Pelham Hill Road Sampled: 2/16/2023 14:00

Sample ID: 23B2145-01

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	DF	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanesulfonic acid (PFBS)	ND	1.9	0.74	ng/L	1		EPA 537.1	2/21/23	2/23/23 12:21	AMS
Perfluorohexanoic acid (PFHxA)	1.6	1.9	0.87	ng/L	1	J	EPA 537.1	2/21/23	2/23/23 12:21	AMS
Perfluorohexanesulfonic acid (PFHxS)	ND	1.9	0.84	ng/L	1		EPA 537.1	2/21/23	2/23/23 12:21	AMS
Perfluoroheptanoic acid (PFHpA)	3.6	1.9	0.93	ng/L	1		EPA 537.1	2/21/23	2/23/23 12:21	AMS
Perfluorooctanoic acid (PFOA)	4.4	1.9	0.97	ng/L	1		EPA 537.1	2/21/23	2/23/23 12:21	AMS
Perfluorooctanesulfonic acid (PFOS)	ND	1.9	0.71	ng/L	1		EPA 537.1	2/21/23	2/23/23 12:21	AMS
Perfluorononanoic acid (PFNA)	ND	1.9	0.86	ng/L	1		EPA 537.1	2/21/23	2/23/23 12:21	AMS
Perfluorodecanoic acid (PFDA)	ND	1.9	0.90	ng/L	1		EPA 537.1	2/21/23	2/23/23 12:21	AMS
N-EtFOSAA (NEtFOSAA)	ND	1.9	0.62	ng/L	1		EPA 537.1	2/21/23	2/23/23 12:21	AMS
Perfluoroundecanoic acid (PFUnA)	ND	1.9	0.71	ng/L	1		EPA 537.1	2/21/23	2/23/23 12:21	AMS
N-MeFOSAA (NMeFOSAA)	ND	1.9	0.69	ng/L	1		EPA 537.1	2/21/23	2/23/23 12:21	AMS
Perfluorododecanoic acid (PFDoA)	ND	1.9	0.67	ng/L	1		EPA 537.1	2/21/23	2/23/23 12:21	AMS
Perfluorotridecanoic acid (PFTrDA)	ND	1.9	0.68	ng/L	1		EPA 537.1	2/21/23	2/23/23 12:21	AMS
Perfluorotetradecanoic acid (PFTA)	ND	1.9	0.78	ng/L	1		EPA 537.1	2/21/23	2/23/23 12:21	AMS
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	1.9	1.2	ng/L	1		EPA 537.1	2/21/23	2/23/23 12:21	AMS
11Cl-PF3OUdS (F53B Major)	ND	1.9	0.62	ng/L	1		EPA 537.1	2/21/23	2/23/23 12:21	AMS
9Cl-PF3ONS (F53B Minor)	ND	1.9	0.76	ng/L	1		EPA 537.1	2/21/23	2/23/23 12:21	AMS
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	1.9	0.82	ng/L	1		EPA 537.1	2/21/23	2/23/23 12:21	AMS

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
13C-PFHxA	90.0	70-130		2/23/23 12:21
M3HFPO-DA	91.3	70-130		2/23/23 12:21
13C-PFDA	92.5	70-130		2/23/23 12:21
D5-NEtFOSAA	105	70-130		2/23/23 12:21

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Sample Extraction Data

Prep Method: EPA 537.1-EPA 537.1

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
23B2145-01 [54 Pelham Hill Road]	B332208	268	1.00	02/21/23

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QUALITY CONTROL

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

Analyte	Result	Reporting Limit	DL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B332208 - EPA 537.1											
Blank (B332208-BLK1)					Prepared: 02/21/23 Analyzed: 02/23/23						
Perfluorobutanesulfonic acid (PFBS)	ND	1.8	0.72	ng/L							
Perfluorohexanoic acid (PFHxA)	ND	1.8	0.86	ng/L							
Perfluorohexanesulfonic acid (PFHxS)	ND	1.8	0.82	ng/L							
Perfluoroheptanoic acid (PFHpA)	ND	1.8	0.91	ng/L							
Perfluorooctanoic acid (PFOA)	ND	1.8	0.95	ng/L							
Perfluorooctanesulfonic acid (PFOS)	ND	1.8	0.69	ng/L							
Perfluorononanoic acid (PFNA)	ND	1.8	0.84	ng/L							
Perfluorodecanoic acid (PFDA)	ND	1.8	0.88	ng/L							
N-EtFOSAA (NEtFOSAA)	ND	1.8	0.61	ng/L							
Perfluoroundecanoic acid (PFUnA)	ND	1.8	0.69	ng/L							
N-MeFOSAA (NMeFOSAA)	ND	1.8	0.68	ng/L							
Perfluorododecanoic acid (PFDoA)	ND	1.8	0.66	ng/L							
Perfluorotridecanoic acid (PFTrDA)	ND	1.8	0.67	ng/L							
Perfluorotetradecanoic acid (PFTA)	ND	1.8	0.76	ng/L							
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	1.8	1.1	ng/L							
11Cl-PF3OUdS (F53B Major)	ND	1.8	0.61	ng/L							
9Cl-PF3ONS (F53B Minor)	ND	1.8	0.75	ng/L							
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	1.8	0.80	ng/L							
Surrogate: 13C-PFHxA	*32.3*			ng/L	36.6		88.2	70-130			
Surrogate: M3HFPO-DA	*33.4*			ng/L	36.6		91.2	70-130			
Surrogate: 13C-PFDA	*33.1*			ng/L	36.6		90.4	70-130			
Surrogate: D5-NEtFOSAA	*137*			ng/L	146		93.4	70-130			
LCS (B332208-BS1)					Prepared: 02/21/23 Analyzed: 02/23/23						
Perfluorobutanesulfonic acid (PFBS)	1.35	1.8	0.72	ng/L	1.62		83.5	50-150			J
Perfluorohexanoic acid (PFHxA)	1.29	1.8	0.85	ng/L	1.83		70.8	50-150			J
Perfluorohexanesulfonic acid (PFHxS)	1.15	1.8	0.82	ng/L	1.67		69.1	50-150			J
Perfluoroheptanoic acid (PFHpA)	1.51	1.8	0.91	ng/L	1.83		82.9	50-150			J
Perfluorooctanoic acid (PFOA)	1.29	1.8	0.94	ng/L	1.83		70.8	50-150			J
Perfluorooctanesulfonic acid (PFOS)	1.48	1.8	0.69	ng/L	1.69		87.4	50-150			J
Perfluorononanoic acid (PFNA)	1.36	1.8	0.84	ng/L	1.83		74.6	50-150			J
Perfluorodecanoic acid (PFDA)	1.74	1.8	0.88	ng/L	1.83		95.2	50-150			J
N-EtFOSAA (NEtFOSAA)	1.48	1.8	0.61	ng/L	1.83		81.0	50-150			J
Perfluoroundecanoic acid (PFUnA)	1.49	1.8	0.69	ng/L	1.83		81.6	50-150			J
N-MeFOSAA (NMeFOSAA)	1.48	1.8	0.68	ng/L	1.83		81.1	50-150			J
Perfluorododecanoic acid (PFDoA)	1.30	1.8	0.65	ng/L	1.83		71.4	50-150			J
Perfluorotridecanoic acid (PFTrDA)	1.66	1.8	0.67	ng/L	1.83		91.2	50-150			J
Perfluorotetradecanoic acid (PFTA)	1.41	1.8	0.76	ng/L	1.83		77.0	50-150			J
Hexafluoropropylene oxide dimer acid (HFPO-DA)	1.66	1.8	1.1	ng/L	1.83		90.8	50-150			J
11Cl-PF3OUdS (F53B Major)	1.37	1.8	0.61	ng/L	1.72		79.5	50-150			J
9Cl-PF3ONS (F53B Minor)	1.36	1.8	0.74	ng/L	1.70		80.1	50-150			J
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	1.40	1.8	0.80	ng/L	1.73		81.3	50-150			J
Surrogate: 13C-PFHxA	*31.6*			ng/L	36.5		86.6	70-130			
Surrogate: M3HFPO-DA	*31.8*			ng/L	36.5		87.0	70-130			
Surrogate: 13C-PFDA	*30.9*			ng/L	36.5		84.6	70-130			
Surrogate: D5-NEtFOSAA	*125*			ng/L	146		85.6	70-130			

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QUALITY CONTROL

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

Analyte	Result	Reporting Limit	DL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B332208 - EPA 537.1											
LCS Dup (B332208-BSD1)					Prepared: 02/21/23 Analyzed: 02/23/23						
Perfluorobutanesulfonic acid (PFBS)	1.49	1.8	0.72	ng/L	1.62		91.9	50-150	9.55	50	J
Perfluorohexanoic acid (PFHxA)	1.48	1.8	0.85	ng/L	1.83		81.1	50-150	13.7	50	J
Perfluorohexanesulfonic acid (PFHxS)	1.40	1.8	0.82	ng/L	1.67		83.8	50-150	19.3	50	J
Perfluoroheptanoic acid (PFHpA)	1.88	1.8	0.91	ng/L	1.83		103	50-150	21.4	50	
Perfluorooctanoic acid (PFOA)	1.54	1.8	0.94	ng/L	1.83		84.4	50-150	17.6	50	J
Perfluorooctanesulfonic acid (PFOS)	1.73	1.8	0.69	ng/L	1.70		102	50-150	15.7	50	J
Perfluorononanoic acid (PFNA)	1.54	1.8	0.84	ng/L	1.83		84.2	50-150	12.1	50	J
Perfluorodecanoic acid (PFDA)	2.02	1.8	0.88	ng/L	1.83		110	50-150	14.7	50	
N-EtFOSAA (NEtFOSAA)	1.65	1.8	0.61	ng/L	1.83		90.5	50-150	11.2	50	J
Perfluoroundecanoic acid (PFUnA)	1.79	1.8	0.69	ng/L	1.83		98.0	50-150	18.3	50	J
N-MeFOSAA (NMeFOSAA)	1.69	1.8	0.68	ng/L	1.83		92.6	50-150	13.4	50	J
Perfluorododecanoic acid (PFDoA)	1.54	1.8	0.66	ng/L	1.83		84.2	50-150	16.6	50	J
Perfluorotridecanoic acid (PFTrDA)	1.86	1.8	0.67	ng/L	1.83		102	50-150	11.1	50	
Perfluorotetradecanoic acid (PFTA)	1.32	1.8	0.76	ng/L	1.83		72.3	50-150	6.22	50	J
Hexafluoropropylene oxide dimer acid (HFPO-DA)	1.58	1.8	1.1	ng/L	1.83		86.5	50-150	4.80	50	J
11Cl-PF3OUdS (F53B Major)	1.72	1.8	0.61	ng/L	1.72		99.6	50-150	22.5	50	J
9Cl-PF3ONS (F53B Minor)	1.69	1.8	0.74	ng/L	1.71		99.3	50-150	21.5	50	J
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	1.76	1.8	0.80	ng/L	1.73		102	50-150	22.5	50	J
Surrogate: 13C-PFHxA	*34.0*			ng/L	36.5		93.0	70-130			
Surrogate: M3HFPO-DA	*34.3*			ng/L	36.5		93.8	70-130			
Surrogate: 13C-PFDA	*33.3*			ng/L	36.5		91.0	70-130			
Surrogate: D5-NEtFOSAA	*137*			ng/L	146		93.6	70-130			

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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
DL	Method Detection Limit
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).

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CERTIFICATIONS

Certified Analyses included in this Report

Analyte	Certifications
EPA 537.1 in Drinking Water	
Perfluorobutanesulfonic acid (PFBS)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorohexanoic acid (PFHxA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorohexanesulfonic acid (PFHxS)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluoroheptanoic acid (PFHpA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorooctanoic acid (PFOA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorooctanesulfonic acid (PFOS)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorononanoic acid (PFNA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorodecanoic acid (PFDA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
N-EtFOSAA (NEtFOSAA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluoroundecanoic acid (PFUnA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
N-MeFOSAA (NMeFOSAA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorododecanoic acid (PFDoA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorotridecanoic acid (PFTrDA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorotetradecanoic acid (PFTA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Hexafluoropropylene oxide dimer acid (HFPO-DA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
11Cl-PF3OUdS (F53B Major)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
9Cl-PF3ONS (F53B Minor)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH

Con-Test, a Pace Environmental Laboratory, operates under the following certifications and accreditations:

Code	Description	Number	Expires
MA	Massachusetts DEP	M-MA100	06/30/2023
CT	Connecticut Department of Public Health	PH-0821	12/31/2024
NY	New York State Department of Health	10899 NELAP	04/1/2023
NH	New Hampshire Environmental Lab	2516 NELAP	02/5/2024
NJ	New Jersey DEP	MA007 NELAP	06/30/2023
VT-DW	Vermont Department of Health Drinking Water	VT-255716	06/12/2023
ME	State of Maine	MA00100	06/9/2023
PA	Commonwealth of Pennsylvania DEP	68-05812	06/30/2023
MI	Dept. of Env, Great Lakes, and Energy	9100	06/30/2023

230 2145 JH

Pace Analytical

Phone: 413-525-2332
Fax: 413-525-6405

https://www.pacelabs.com/

39 Spruce Street
East Longmeadow, MA 01026

Doc # 381 Rev 2_06262019

CHAIN OF CUSTODY RECORD

Page ____ of ____

Contact: https://www.pacelabs.com/contact-us/contact-environmental-sciences/

Company Name:	Tighe & Bond
Address:	53 Southampton Road, Westfield, Massachusetts
Phone:	(413) 562-1600
Project Name:	PFAS Sample Collection - Shutesbury
Project Location:	Shutesbury, Massachusetts
Project Number:	S-2190
Project Manager:	Jeff Arps
Pace Analytical Quote Name/Number	
Invoice Recipient:	Town of Shutesbury
Sampled By:	Samuel Evans

Requested Turnaround Time

7-Day ☑ 10-Day ☐
PFAS 10-Day (std) ☐ Due Date:

Rush-Approval Required

1-Day ☐ 3-Day ☐
2-Day ☐ 4-Day ☐

Data Delivery

Format: PDF ☑ EXCEL ☑
Other:
CLP Like Data Pkg Required: ☐
Email To: JArps@Tighebond.com; SEvans@Tighebond.com
Fax To #:

Dissolved Metals Samples

○ Field Filtered
○ Lab to Filter

Orthophosphate Samples

○ Field Filtered
○ Lab to Filter

PCB ONLY

SOXHLET ☐
NON SOXHLET ☐

ANALYSIS REQUESTED

2 Preservation Code

Pace Analytical Work Order#	Client Sample ID / Description	Beginning Date/Time	Ending Date/Time	COMP/GRAB	Matrix Code	Conc Code	VIALS	GLASS	PLASTIC	BACTERIA	ENCORE	PFAS Via 537.1
	54 Pelham Hill Road	2/16/23	1400	Grab	GW	U			X			X

Relinquished by: (signature) Samuel Evans Date/Time: 2/17/23 0900

Received by: (signature) Date/Time:

Relinquished by: (signature) 2/17/23 Date/Time: 1655

Received by: (signature) 4.2 2/17/23 Date/Time: 1655

Relinquished by: (signature) Date/Time:

Received by: (signature) Date/Time:

Relinquished by: (signature) Date/Time:

Received by: (signature) Date/Time:

Bill to Town of Shutesbury - PO: 57-101490

Detection Limit Requirements

MA
CT
Other

Special Requirements

☑ MA MCP Required
☐ MCP Certification Form Required
☐ CT RCP Required
☐ RCP Certification Form Required
☐ MA State DW Required
PWSID #

Please use the following codes to indicate possible sample concentration within the Conc Code column above:
H - High; M - Medium; L - Low; C - Clean; U - Unknown

Project Entity

Government ☐ Municipality ☐ MWRA ☐ WRTA ☐
Federal ☐ 21 J ☐ School ☐
City ☐ Brownfield ☐ MBTA ☐

Other

☐ Chromatogram
☐ AIHA-LAP,LLC

Matrix Codes

GW= Ground Water
WW = Waste Water
DW = Drinking Water
A = Air S = Soil
SL = Sludge
SOL = Solid
O = Other ____

Preservation Codes

I = Iced
H = HCL
N = Nitric Acid
S = Sulfuric Acid
B = Sodium Bisulfate
X = Sodium Hydroxide
T = Sodium Thiosulfate
M = Methanol
DI = DI Water
O = Other ____

Pace Analytical

Comments:

Disclaimer: Pace Analytical is not responsible for any omitted information on the Chain of Custody. The Chain of Custody is a legal document that must be complete and accurate and is used to determine what analyses the laboratory will perform. Any missing information is not the laboratory's responsibility. Pace Analytical values your partnership on each project and will try to assist with missing information, but will not be held accountable.

Courier Use Only

VIALS ____ GLASS ____ PLASTIC ____ BACTERIA ____ ENCORE ____

Glassware in freezer? Y / N

Prepackaged Cooler? Y / N

*Pace Analytical is not responsible for missing samples from prepacked coolers

Table of Contents

39 Spruce St.
East Longmeadow, MA. 01028
P: 413-525-2332
F:413-525-6405
www.pacelabs.com

Log In Back-Sheet

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

Pace PEOPLE ADVANCING SCIENCE

Client Tighe + Bond
Project PFAS Sample Coll. - Shutesbury
MCP/RCP Required MCP Req'd
Deliverable Package Req. N/A
Location Shutesbury, MA
PWSID# (When Applicable) N/A
Arrival Method:
Courier ☒ Fed Ex ☐ Walk In ☐ Other ☐
Received By / Date / Time DWN 02/17/23 1655
Back-Sheet By / Date / Time DWN 02/17/23 1935
Temperature Method GUN # 3
Temp ☒ < 6° C Actual Temperature 4.2
Rush Samples: Yes / (No) Notify
Short Hold: Yes / (No) Notify

	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: (N/A) ☐ ☐

Notes regarding Samples/COC outside of SOP:

Container (Circle when applicable)	UnP	HCl	HNO3	H2SO4	NaOH	Trizma	NaS2O3	Other Preservative
1L Amber Plastic								
500 mL Amber Plastic								
250 mL Amber (Plastic)						2		
Other Amber Clear Plastic								
16oz Amber Clear								
8oz Amber Clear								
4oz Amber Clear								
2oz Amber Clear								
Col/Bacteria								
Flashpoint								
Plastic Bag								
SOC Kit								
Perchlorate								
Encore								
Frozen								

	Proper Headspace	UnP	HCl	MeOH	Bisulfate	DI	Thiosulfate	Sulfuric	Other
Vials									

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March 3, 2023

Jeff Arps
Tighe & Bond
53 Southampton Road
Westfield, MA 01085

Project Location: Shutesbury, Massachusetts
Client Job Number:
Project Number: S-2190
Laboratory Work Order Number: 23B2166

Enclosed are results of analyses for samples as received by the laboratory on February 17, 2023. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Jessica L. Hoffman
Project Manager

Table of Contents

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

Tighe & Bond
53 Southampton Road
Westfield, MA 01085
ATTN: Jeff Arps

REPORT DATE: 3/3/2023

PURCHASE ORDER NUMBER: 57-101490

PROJECT NUMBER: S-2190

ANALYTICAL SUMMARY

WORK ORDER NUMBER: 23B2166

The results of analyses performed on the following samples submitted to Con-Test, a Pace Analytical Laboratory, are found in this report.

PROJECT LOCATION: Shutesbury, Massachusetts

FIELD SAMPLE #	LAB ID:	MATRIX	SAMPLE DESCRIPTION	TEST	SUB LAB
6 Town Common Road	23B2166-01	Ground Water		EPA 537.1	

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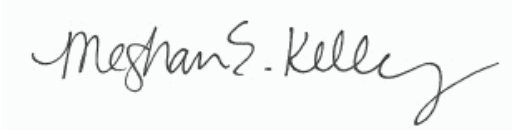
CASE NARRATIVE SUMMARY

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

The results of analyses reported only relate to samples submitted to Con-Test, a Pace Analytical Laboratory, 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: Shutesbury, Massachusetts Sample Description: Work Order: 23B2166

Date Received: 2/17/2023

Field Sample #: 6 Town Common Road Sampled: 2/16/2023 14:55

Sample ID: 23B2166-01

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	DF	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanesulfonic acid (PFBS)	ND	1.8	0.69	ng/L	1		EPA 537.1	2/28/23	3/2/23 15:41	AMS
Perfluorohexanoic acid (PFHxA)	ND	1.8	0.82	ng/L	1		EPA 537.1	2/28/23	3/2/23 15:41	AMS
Perfluorohexanesulfonic acid (PFHxS)	ND	1.8	0.79	ng/L	1		EPA 537.1	2/28/23	3/2/23 15:41	AMS
Perfluoroheptanoic acid (PFHpA)	ND	1.8	0.88	ng/L	1		EPA 537.1	2/28/23	3/2/23 15:41	AMS
Perfluorooctanoic acid (PFOA)	1.1	1.8	0.91	ng/L	1	J	EPA 537.1	2/28/23	3/2/23 15:41	AMS
Perfluorooctanesulfonic acid (PFOS)	0.82	1.8	0.67	ng/L	1	J	EPA 537.1	2/28/23	3/2/23 15:41	AMS
Perfluorononanoic acid (PFNA)	ND	1.8	0.81	ng/L	1		EPA 537.1	2/28/23	3/2/23 15:41	AMS
Perfluorodecanoic acid (PFDA)	ND	1.8	0.85	ng/L	1		EPA 537.1	2/28/23	3/2/23 15:41	AMS
N-EtFOSAA (NEtFOSAA)	ND	1.8	0.59	ng/L	1		EPA 537.1	2/28/23	3/2/23 15:41	AMS
Perfluoroundecanoic acid (PFUnA)	ND	1.8	0.67	ng/L	1		EPA 537.1	2/28/23	3/2/23 15:41	AMS
N-MeFOSAA (NMeFOSAA)	ND	1.8	0.66	ng/L	1		EPA 537.1	2/28/23	3/2/23 15:41	AMS
Perfluorododecanoic acid (PFDoA)	ND	1.8	0.63	ng/L	1		EPA 537.1	2/28/23	3/2/23 15:41	AMS
Perfluorotridecanoic acid (PFTrDA)	ND	1.8	0.64	ng/L	1		EPA 537.1	2/28/23	3/2/23 15:41	AMS
Perfluorotetradecanoic acid (PFTA)	ND	1.8	0.74	ng/L	1		EPA 537.1	2/28/23	3/2/23 15:41	AMS
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	1.8	1.1	ng/L	1		EPA 537.1	2/28/23	3/2/23 15:41	AMS
11Cl-PF3OUdS (F53B Major)	ND	1.8	0.58	ng/L	1		EPA 537.1	2/28/23	3/2/23 15:41	AMS
9Cl-PF3ONS (F53B Minor)	ND	1.8	0.72	ng/L	1		EPA 537.1	2/28/23	3/2/23 15:41	AMS
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	1.8	0.78	ng/L	1		EPA 537.1	2/28/23	3/2/23 15:41	AMS

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
13C-PFHxA	106	70-130		3/2/23 15:41
M3HFPO-DA	108	70-130		3/2/23 15:41
13C-PFDA	102	70-130		3/2/23 15:41
D5-NEtFOSAA	106	70-130		3/2/23 15:41

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Sample Extraction Data

Prep Method: EPA 537.1-EPA 537.1

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
23B2166-01RE1 [6 Town Common Road]	B332846	283	1.00	02/28/23

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QUALITY CONTROL

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

Analyte	Result	Reporting Limit	DL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B332209 - EPA 537.1											
Blank (B332209-BLK1)					Prepared: 02/22/23 Analyzed: 02/27/23						
Perfluorobutanesulfonic acid (PFBS)	ND	1.8	0.72	ng/L							
Perfluorohexanoic acid (PFHxA)	ND	1.8	0.85	ng/L							
Perfluorohexanesulfonic acid (PFHxS)	ND	1.8	0.82	ng/L							
Perfluoroheptanoic acid (PFHpA)	ND	1.8	0.91	ng/L							
Perfluorooctanoic acid (PFOA)	ND	1.8	0.94	ng/L							
Perfluorooctanesulfonic acid (PFOS)	ND	1.8	0.69	ng/L							
Perfluorononanoic acid (PFNA)	ND	1.8	0.84	ng/L							
Perfluorodecanoic acid (PFDA)	ND	1.8	0.87	ng/L							
N-EtFOSAA (NEtFOSAA)	ND	1.8	0.60	ng/L							
Perfluoroundecanoic acid (PFUnA)	ND	1.8	0.69	ng/L							
N-MeFOSAA (NMeFOSAA)	ND	1.8	0.68	ng/L							
Perfluorododecanoic acid (PFDoA)	ND	1.8	0.65	ng/L							
Perfluorotridecanoic acid (PFTrDA)	ND	1.8	0.66	ng/L							
Perfluorotetradecanoic acid (PFTA)	ND	1.8	0.76	ng/L							
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	1.8	1.1	ng/L							
11Cl-PF3OUdS (F53B Major)	ND	1.8	0.60	ng/L							
9Cl-PF3ONS (F53B Minor)	ND	1.8	0.74	ng/L							
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	1.8	0.80	ng/L							
Surrogate: 13C-PFHxA	*33.5*			ng/L	36.4		92.0	70-130			
Surrogate: M3HFPO-DA	*33.0*			ng/L	36.4		90.5	70-130			
Surrogate: 13C-PFDA	*34.9*			ng/L	36.4		95.9	70-130			
Surrogate: D5-NEtFOSAA	*141*			ng/L	146		96.8	70-130			
LCS (B332209-BS1)					Prepared: 02/22/23 Analyzed: 02/27/23						
Perfluorobutanesulfonic acid (PFBS)	9.40	1.8	0.72	ng/L	8.07		116	70-130			
Perfluorohexanoic acid (PFHxA)	8.56	1.8	0.85	ng/L	9.10		94.1	70-130			
Perfluorohexanesulfonic acid (PFHxS)	7.71	1.8	0.81	ng/L	8.32		92.7	70-130			
Perfluoroheptanoic acid (PFHpA)	10.7	1.8	0.90	ng/L	9.10		118	70-130			
Perfluorooctanoic acid (PFOA)	8.96	1.8	0.94	ng/L	9.10		98.4	70-130			
Perfluorooctanesulfonic acid (PFOS)	10.6	1.8	0.69	ng/L	8.45		125	70-130			
Perfluorononanoic acid (PFNA)	9.71	1.8	0.84	ng/L	9.10		107	70-130			
Perfluorodecanoic acid (PFDA)	11.3	1.8	0.87	ng/L	9.10		124	70-130			
N-EtFOSAA (NEtFOSAA)	11.1	1.8	0.60	ng/L	9.10		122	70-130			
Perfluoroundecanoic acid (PFUnA)	10.8	1.8	0.69	ng/L	9.10		119	70-130			
N-MeFOSAA (NMeFOSAA)	11.3	1.8	0.68	ng/L	9.10		125	70-130			
Perfluorododecanoic acid (PFDoA)	11.1	1.8	0.65	ng/L	9.10		122	70-130			
Perfluorotridecanoic acid (PFTrDA)	11.0	1.8	0.66	ng/L	9.10		120	70-130			
Perfluorotetradecanoic acid (PFTA)	8.43	1.8	0.76	ng/L	9.10		92.7	70-130			
Hexafluoropropylene oxide dimer acid (HFPO-DA)	8.69	1.8	1.1	ng/L	9.10		95.4	70-130			
11Cl-PF3OUdS (F53B Major)	10.4	1.8	0.60	ng/L	8.58		121	70-130			
9Cl-PF3ONS (F53B Minor)	10.5	1.8	0.74	ng/L	8.49		123	70-130			
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	9.97	1.8	0.80	ng/L	8.60		116	70-130			
Surrogate: 13C-PFHxA	*37.8*			ng/L	36.4		104	70-130			
Surrogate: M3HFPO-DA	*36.8*			ng/L	36.4		101	70-130			
Surrogate: 13C-PFDA	*38.6*			ng/L	36.4		106	70-130			
Surrogate: D5-NEtFOSAA	*156*			ng/L	146		107	70-130			

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QUALITY CONTROL

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

Analyte	Result	Reporting Limit	DL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B332209 - EPA 537.1											
LCS Dup (B332209-BSD1)					Prepared: 02/22/23 Analyzed: 02/27/23						
Perfluorobutanesulfonic acid (PFBS)	8.78	1.8	0.72	ng/L	8.08		109	70-130	6.85	30	
Perfluorohexanoic acid (PFHxA)	8.03	1.8	0.85	ng/L	9.11		88.1	70-130	6.45	30	
Perfluorohexanesulfonic acid (PFHxS)	6.99	1.8	0.82	ng/L	8.33		83.9	70-130	9.81	30	
Perfluoroheptanoic acid (PFHpA)	10.1	1.8	0.91	ng/L	9.11		111	70-130	5.49	30	
Perfluorooctanoic acid (PFOA)	8.79	1.8	0.94	ng/L	9.11		96.4	70-130	1.96	30	
Perfluorooctanesulfonic acid (PFOS)	9.23	1.8	0.69	ng/L	8.45		109	70-130	13.8	30	
Perfluorononanoic acid (PFNA)	8.98	1.8	0.84	ng/L	9.11		98.6	70-130	7.79	30	
Perfluorodecanoic acid (PFDA)	10.7	1.8	0.87	ng/L	9.11		118	70-130	5.23	30	
N-EtFOSAA (NEtFOSAA)	9.84	1.8	0.60	ng/L	9.11		108	70-130	11.9	30	
Perfluoroundecanoic acid (PFUnA)	10.2	1.8	0.69	ng/L	9.11		112	70-130	5.55	30	
N-MeFOSAA (NMeFOSAA)	9.96	1.8	0.68	ng/L	9.11		109	70-130	12.9	30	
Perfluorododecanoic acid (PFDoA)	10.3	1.8	0.65	ng/L	9.11		113	70-130	7.09	30	
Perfluorotridecanoic acid (PFTrDA)	10.2	1.8	0.66	ng/L	9.11		112	70-130	7.17	30	
Perfluorotetradecanoic acid (PFTA)	8.19	1.8	0.76	ng/L	9.11		89.9	70-130	2.97	30	
Hexafluoropropylene oxide dimer acid (HFPO-DA)	7.92	1.8	1.1	ng/L	9.11		86.9	70-130	9.23	30	
11Cl-PF3OUdS (F53B Major)	9.42	1.8	0.60	ng/L	8.59		110	70-130	9.69	30	
9Cl-PF3ONS (F53B Minor)	9.55	1.8	0.74	ng/L	8.50		112	70-130	9.11	30	
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	9.26	1.8	0.80	ng/L	8.61		108	70-130	7.39	30	
Surrogate: 13C-PFHxA	*37.5*			ng/L	36.4		103	70-130			
Surrogate: M3HFPO-DA	*37.0*			ng/L	36.4		101	70-130			
Surrogate: 13C-PFDA	*38.2*			ng/L	36.4		105	70-130			
Surrogate: D5-NEtFOSAA	*150*			ng/L	146		103	70-130			
Batch B332846 - EPA 537.1											
Blank (B332846-BLK1)					Prepared: 02/28/23 Analyzed: 03/02/23						
Perfluorobutanesulfonic acid (PFBS)	ND	1.8	0.70	ng/L							
Perfluorohexanoic acid (PFHxA)	ND	1.8	0.83	ng/L							
Perfluorohexanesulfonic acid (PFHxS)	ND	1.8	0.79	ng/L							
Perfluoroheptanoic acid (PFHpA)	ND	1.8	0.88	ng/L							
Perfluorooctanoic acid (PFOA)	ND	1.8	0.91	ng/L							
Perfluorooctanesulfonic acid (PFOS)	ND	1.8	0.67	ng/L							
Perfluorononanoic acid (PFNA)	ND	1.8	0.81	ng/L							
Perfluorodecanoic acid (PFDA)	ND	1.8	0.85	ng/L							
N-EtFOSAA (NEtFOSAA)	ND	1.8	0.59	ng/L							
Perfluoroundecanoic acid (PFUnA)	ND	1.8	0.67	ng/L							
N-MeFOSAA (NMeFOSAA)	ND	1.8	0.66	ng/L							
Perfluorododecanoic acid (PFDoA)	ND	1.8	0.63	ng/L							
Perfluorotridecanoic acid (PFTrDA)	ND	1.8	0.64	ng/L							
Perfluorotetradecanoic acid (PFTA)	ND	1.8	0.74	ng/L							
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	1.8	1.1	ng/L							
11Cl-PF3OUdS (F53B Major)	ND	1.8	0.59	ng/L							
9Cl-PF3ONS (F53B Minor)	ND	1.8	0.72	ng/L							
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	1.8	0.78	ng/L							
Surrogate: 13C-PFHxA	*34.0*			ng/L	35.3		96.3	70-130			
Surrogate: M3HFPO-DA	*36.2*			ng/L	35.3		102	70-130			
Surrogate: 13C-PFDA	*34.2*			ng/L	35.3		96.9	70-130			
Surrogate: D5-NEtFOSAA	*134*			ng/L	141		95.2	70-130			

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QUALITY CONTROL

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

Analyte	Result	Reporting Limit	DL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B332846 - EPA 537.1											
LCS (B332846-BS1)					Prepared: 02/28/23 Analyzed: 03/02/23						
Perfluorobutanesulfonic acid (PFBS)	1.56	1.8	0.69	ng/L	1.56		99.5	50-150			J
Perfluorohexanoic acid (PFHxA)	1.47	1.8	0.82	ng/L	1.76		83.6	50-150			J
Perfluorohexanesulfonic acid (PFHxS)	1.34	1.8	0.79	ng/L	1.61		83.4	50-150			J
Perfluoroheptanoic acid (PFHpA)	1.80	1.8	0.88	ng/L	1.76		102	50-150			
Perfluorooctanoic acid (PFOA)	1.70	1.8	0.91	ng/L	1.76		96.5	50-150			J
Perfluorooctanesulfonic acid (PFOS)	1.73	1.8	0.67	ng/L	1.64		106	50-150			J
Perfluorononanoic acid (PFNA)	1.51	1.8	0.81	ng/L	1.76		85.5	50-150			J
Perfluorodecanoic acid (PFDA)	1.94	1.8	0.85	ng/L	1.76		110	50-150			
N-EtFOSAA (NEtFOSAA)	1.69	1.8	0.59	ng/L	1.76		95.9	50-150			J
Perfluoroundecanoic acid (PFUnA)	1.56	1.8	0.67	ng/L	1.76		88.6	50-150			J
N-MeFOSAA (NMeFOSAA)	1.76	1.8	0.66	ng/L	1.76		99.9	50-150			J
Perfluorododecanoic acid (PFDoA)	1.48	1.8	0.63	ng/L	1.76		83.6	50-150			J
Perfluorotridecanoic acid (PFTrDA)	1.64	1.8	0.64	ng/L	1.76		93.0	50-150			J
Perfluorotetradecanoic acid (PFTA)	1.37	1.8	0.74	ng/L	1.76		77.9	50-150			J
Hexafluoropropylene oxide dimer acid (HFPO-DA)	1.87	1.8	1.1	ng/L	1.76		106	50-150			
11Cl-PF3OUdS (F53B Major)	1.61	1.8	0.58	ng/L	1.66		96.6	50-150			J
9Cl-PF3ONS (F53B Minor)	1.68	1.8	0.72	ng/L	1.65		102	50-150			J
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	1.77	1.8	0.78	ng/L	1.67		106	50-150			J
Surrogate: 13C-PFHxA	*33.9*			ng/L	35.3		96.1	70-130			
Surrogate: M3HFPO-DA	*36.2*			ng/L	35.3		103	70-130			
Surrogate: 13C-PFDA	*32.1*			ng/L	35.3		91.1	70-130			
Surrogate: D5-NEtFOSAA	*124*			ng/L	141		87.8	70-130			
LCS Dup (B332846-BSD1)					Prepared: 02/28/23 Analyzed: 03/02/23						
Perfluorobutanesulfonic acid (PFBS)	1.41	1.8	0.69	ng/L	1.56		90.6	50-150	9.57	50	J
Perfluorohexanoic acid (PFHxA)	1.45	1.8	0.82	ng/L	1.76		82.6	50-150	1.44	50	J
Perfluorohexanesulfonic acid (PFHxS)	1.32	1.8	0.79	ng/L	1.61		81.9	50-150	1.98	50	J
Perfluoroheptanoic acid (PFHpA)	1.72	1.8	0.87	ng/L	1.76		97.7	50-150	4.67	50	J
Perfluorooctanoic acid (PFOA)	1.49	1.8	0.91	ng/L	1.76		84.4	50-150	13.6	50	J
Perfluorooctanesulfonic acid (PFOS)	1.55	1.8	0.67	ng/L	1.63		94.8	50-150	11.1	50	J
Perfluorononanoic acid (PFNA)	1.48	1.8	0.81	ng/L	1.76		83.9	50-150	2.07	50	J
Perfluorodecanoic acid (PFDA)	1.86	1.8	0.84	ng/L	1.76		106	50-150	4.30	50	
N-EtFOSAA (NEtFOSAA)	1.64	1.8	0.58	ng/L	1.76		93.0	50-150	3.32	50	J
Perfluoroundecanoic acid (PFUnA)	1.58	1.8	0.67	ng/L	1.76		89.9	50-150	1.22	50	J
N-MeFOSAA (NMeFOSAA)	1.72	1.8	0.65	ng/L	1.76		97.5	50-150	2.59	50	J
Perfluorododecanoic acid (PFDoA)	1.49	1.8	0.63	ng/L	1.76		84.4	50-150	0.766	50	J
Perfluorotridecanoic acid (PFTrDA)	1.65	1.8	0.64	ng/L	1.76		93.9	50-150	0.762	50	J
Perfluorotetradecanoic acid (PFTA)	1.30	1.8	0.74	ng/L	1.76		73.6	50-150	5.77	50	J
Hexafluoropropylene oxide dimer acid (HFPO-DA)	1.25	1.8	1.1	ng/L	1.76		70.9	50-150	39.9	50	J
11Cl-PF3OUdS (F53B Major)	1.47	1.8	0.58	ng/L	1.66		88.6	50-150	8.84	50	J
9Cl-PF3ONS (F53B Minor)	1.69	1.8	0.72	ng/L	1.64		103	50-150	0.827	50	J
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	1.73	1.8	0.77	ng/L	1.66		104	50-150	1.97	50	J
Surrogate: 13C-PFHxA	*34.9*			ng/L	35.2		99.2	70-130			
Surrogate: M3HFPO-DA	*38.0*			ng/L	35.2		108	70-130			
Surrogate: 13C-PFDA	*33.9*			ng/L	35.2		96.4	70-130			
Surrogate: D5-NEtFOSAA	*129*			ng/L	141		91.3	70-130			

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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
DL	Method Detection Limit
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).

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CERTIFICATIONS

Certified Analyses included in this Report

Analyte	Certifications
EPA 537.1 in Drinking Water	
Perfluorobutanesulfonic acid (PFBS)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorohexanoic acid (PFHxA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorohexanesulfonic acid (PFHxS)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluoroheptanoic acid (PFHpA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorooctanoic acid (PFOA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorooctanesulfonic acid (PFOS)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorononanoic acid (PFNA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorodecanoic acid (PFDA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
N-EtFOSAA (NEtFOSAA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluoroundecanoic acid (PFUnA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
N-MeFOSAA (NMeFOSAA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorododecanoic acid (PFDoA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorotridecanoic acid (PFTrDA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorotetradecanoic acid (PFTA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Hexafluoropropylene oxide dimer acid (HFPO-DA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
11Cl-PF3OUdS (F53B Major)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
9Cl-PF3ONS (F53B Minor)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH

Con-Test, a Pace Environmental Laboratory, operates under the following certifications and accreditations:

Code	Description	Number	Expires
MA	Massachusetts DEP	M-MA100	06/30/2023
CT	Connecticut Department of Public Health	PH-0821	12/31/2024
NY	New York State Department of Health	10899 NELAP	04/1/2023
NH	New Hampshire Environmental Lab	2516 NELAP	02/5/2024
NJ	New Jersey DEP	MA007 NELAP	06/30/2023
VT-DW	Vermont Department of Health Drinking Water	VT-255716	06/12/2023
ME	State of Maine	MA00100	06/9/2023
PA	Commonwealth of Pennsylvania DEP	68-05812	06/30/2023
MI	Dept. of Env, Great Lakes, and Energy	9100	06/30/2023

23B2166

SH

Pace Analytical

Phone: 413-525-2332
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39 Spruce Street
East Longmeadow, MA 01026

Doc # 381 Rev 2_06262019

CHAIN OF CUSTODY RECORD

Page ____ of ____

Contact: https://www.pacelabs.com/contact-us/contact-environmental-sciences/

Company Name:	Tighe & Bond
Address:	53 Southampton Road, Westfield, Massachusetts
Phone:	(413) 562-1600
Project Name:	PFAS Sample Collection - Shutesbury
Project Location:	Shutesbury, Massachusetts
Project Number:	S-2190
Project Manager:	Jeff Arps
Pace Analytical Quote Name/Number	
Invoice Recipient:	Town of Shutesbury
Sampled By:	Samuel Evans

Requested Turnaround Time
7-Day ☑ 10-Day ☐
PFAS 10-Day (std) ☐ Due Date:

Rush-Approval Required
1-Day ☐ 3-Day ☐
2-Day ☐ 4-Day ☐

Dissolved Metals Samples
○ Field Filtered
○ Lab to Filter

Orthophosphate Samples
○ Field Filtered
○ Lab to Filter

Data Delivery
Format: PDF ☑ EXCEL ☑
Other:
CLP Like Data Pkg Required: ☐
Email To: AArps@Tighebond.com; SEvans@Tighebond.com
Fax To #:

PCB ONLY
SOXHLET ☐
NON SOXHLET ☐

ANALYSIS REQUESTED

2 Preservation Code

Pace Analytical Work Order#	Client Sample ID / Description	Beginning Date/Time	Ending Date/Time	COMP/GRAB	Matrix Code	Conc Code	VIALS	GLASS	PLASTIC	BACTERIA	ENCORE	PFAS Via 537.1
	6 Town Common Road	2/16/23	[redacted]	Grab	GW	U			X			X
			1455									

Relinquished by: (signature) Samuel Evans Date/Time: 2/17/23 0800
Received by: (signature) Joe Gus Date/Time: 2/17/23
Relinquished by: (signature) Joe Gus Date/Time: 2/17/23 1655
Received by: (signature) Dan Wilson 4.2 Date/Time: 2/17/23 1655
Relinquished by: (signature) Date/Time:
Received by: (signature) Date/Time:
Relinquished by: (signature) Date/Time:
Received by: (signature) Date/Time:

Bill to Town of Shutesbury - PO:57-101490

Detection Limit Requirements
MA
CT

Special Requirements
☑ MA MCP Required
MCP Certification Form Required
☐ CT RCP Required
RCP Certification Form Required
☐ Ma State DW Required
Other: PWSID #

Please use the following codes to indicate possible sample concentration within the Conc Code column above:
H - High; M - Medium; L - Low; C - Clean; U - Unknown

Project Entity
Government ☐ Municipality ☐ MWRA ☐ WRTA ☐
Federal ☐ 21 J ☐ School ☐
City ☐ Brownfield ☐ MBTA ☐

Other
☐ Chromatogram
☐ AIHA-LAP,LLC

Matrix Codes
GW= Ground Water
WW = Waste Water
DW = Drinking Water
A = Air S = Soil
SL = Sludge
SOL = Solid
O = Other ____

Preservation Codes
I = Iced
H = HCL
N = Nitric Acid
S = Sulfuric Acid
B = Sodium Bisulfate
X = Sodium Hydroxide
T = Sodium Thiosulfate
M = Methanol
DI = DI Water
O = Other ____

Lab Comments:

Disclaimer: Pace Analytical is not responsible for any omitted information on the Chain of Custody. The Chain of Custody is a legal document that must be complete and accurate and is used to determine what analyses the laboratory will perform. Any missing information is not the laboratory's responsibility. Pace Analytical values your partnership on each project and will try to assist with missing information, but will not be held accountable.

Courier Use Only
VIALS
GLASS
PLASTIC
BACTERIA
ENCORE
Glassware in freezer? Y / N
Prepackaged Cooler? Y / N

*Pace Analytical is not responsible for missing samples from prepacked coolers

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East Longmeadow, MA. 01028
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F:413-525-6405
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Log In Back-Sheet

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

PEOPLE ADVANCING SCIENCE

Client Tighe + Bond
Project PFAS Sample Coll. - Shutesbury
MCP/RCP Required MCP Req'd
Deliverable Package Req. N/A
Location Shutesbury, MA
PWSID# (When Applicable) N/A
Arrival Method:

Courier [X] Fed Ex [ ] Walk In [ ] Other [ ]
Received By / Date / Time DWN 02/17/23 1655
Back-Sheet By / Date / Time DWN 02/17/23 1855
Temperature Method GUN # 3
Temp [X] < 6° C Actual Temperature 4.2
Rush Samples: Yes / (No) Notify
Short Hold: Yes / (No) Notify

	True	False
Received on Ice	[X]	[ ]
Received in Cooler	[X]	[ ]
Custody Seal: DATE TIME	[ ]	[X]
COC Relinquished	[X]	[ ]
COC/Samples Labels Agree	[X]	[ ]
All Samples in Good Condition	[X]	[ ]
Samples Received within Holding Time	[X]	[ ]
Is there enough Volume	[X]	[ ]
Proper Media/Container Used	[X]	[ ]
Splitting Samples Required	[ ]	[X]
MS/MSD	[ ]	[X]
Trip Blanks	[ ]	[X]
Lab to Filters	[ ]	[X]
COC Legible	[X]	[ ]

COC Included: (Check all included)
Client [X] Analysis [X] Sampler Name [X]
Project [X] IDs [X] Collection Date/Time [X]

All Samples Proper pH: (N/A) [ ] [ ]

Notes regarding Samples/COC outside of SOP:

Container (Circle when applicable)	UnP	HCl	HNO3	H2SO4	NaOH	Trizma	NaS2O3	Other Preservative
1L Amber Plastic								
500 mL Amber Plastic								
250 mL Amber (Plastic)						2		
Other Amber Clear Plastic								
16oz Amber Clear								
8oz Amber Clear								
4oz Amber Clear								
2oz Amber Clear								
Col/Bacteria								
Flashpoint								
Plastic Bag								
SOC Kit								
Perchlorate								
Encore								
Frozen								

	Proper Headspace	UnP	HCl	MeOH	Bisulfate	DI	Thiosulfate	Sulfuric	Other
Vials									

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March 1, 2023

Jeff Arps
Tighe & Bond
53 Southampton Road
Westfield, MA 01085

Project Location: 8 and 10 Wendell Road Shutesbury, Massachusetts
Client Job Number:
Project Number: S-2190
Laboratory Work Order Number: 23B2202

Enclosed are results of analyses for samples as received by the laboratory on February 20, 2023. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Jessica L. Hoffman
Project Manager

Table of Contents

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

Tighe & Bond
53 Southampton Road
Westfield, MA 01085
ATTN: Jeff Arps

REPORT DATE: 3/1/2023

PURCHASE ORDER NUMBER: 57-101490

PROJECT NUMBER: S-2190

ANALYTICAL SUMMARY

WORK ORDER NUMBER: 23B2202

The results of analyses performed on the following samples submitted to Con-Test, a Pace Analytical Laboratory, are found in this report.

PROJECT LOCATION: 8 and 10 Wendell Road Shutesbury, Massachusetts

FIELD SAMPLE #	LAB ID:	MATRIX	SAMPLE DESCRIPTION	TEST	SUB LAB
8 and 10 Wendell Road	23B2202-01	Ground Water		EPA 537.1	

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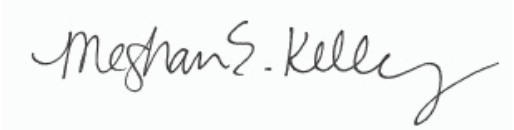
CASE NARRATIVE SUMMARY

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

The results of analyses reported only relate to samples submitted to Con-Test, a Pace Analytical Laboratory, 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

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Project Location: 8 and 10 Wendell Road Shutesbur Sample Description: Work Order: 23B2202

Date Received: 2/20/2023

Field Sample #: 8 and 10 Wendell Road Sampled: 2/17/2023 12:15

Sample ID: 23B2202-01

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	DF	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanesulfonic acid (PFBS)	ND	1.8	0.69	ng/L	1		EPA 537.1	2/27/23	2/28/23 9:40	AMS
Perfluorohexanoic acid (PFHxA)	ND	1.8	0.82	ng/L	1		EPA 537.1	2/27/23	2/28/23 9:40	AMS
Perfluorohexanesulfonic acid (PFHxS)	ND	1.8	0.79	ng/L	1		EPA 537.1	2/27/23	2/28/23 9:40	AMS
Perfluoroheptanoic acid (PFHpA)	ND	1.8	0.87	ng/L	1		EPA 537.1	2/27/23	2/28/23 9:40	AMS
Perfluorooctanoic acid (PFOA)	1.3	1.8	0.91	ng/L	1	J	EPA 537.1	2/27/23	2/28/23 9:40	AMS
Perfluorooctanesulfonic acid (PFOS)	1.4	1.8	0.67	ng/L	1	J	EPA 537.1	2/27/23	2/28/23 9:40	AMS
Perfluorononanoic acid (PFNA)	ND	1.8	0.81	ng/L	1		EPA 537.1	2/27/23	2/28/23 9:40	AMS
Perfluorodecanoic acid (PFDA)	ND	1.8	0.84	ng/L	1		EPA 537.1	2/27/23	2/28/23 9:40	AMS
N-EtFOSAA (NEtFOSAA)	ND	1.8	0.58	ng/L	1		EPA 537.1	2/27/23	2/28/23 9:40	AMS
Perfluoroundecanoic acid (PFUnA)	ND	1.8	0.67	ng/L	1		EPA 537.1	2/27/23	2/28/23 9:40	AMS
N-MeFOSAA (NMeFOSAA)	ND	1.8	0.65	ng/L	1		EPA 537.1	2/27/23	2/28/23 9:40	AMS
Perfluorododecanoic acid (PFDoA)	ND	1.8	0.63	ng/L	1		EPA 537.1	2/27/23	2/28/23 9:40	AMS
Perfluorotridecanoic acid (PFTrDA)	ND	1.8	0.64	ng/L	1		EPA 537.1	2/27/23	2/28/23 9:40	AMS
Perfluorotetradecanoic acid (PFTA)	ND	1.8	0.73	ng/L	1		EPA 537.1	2/27/23	2/28/23 9:40	AMS
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	1.8	1.1	ng/L	1		EPA 537.1	2/27/23	2/28/23 9:40	AMS
11Cl-PF3OUdS (F53B Major)	ND	1.8	0.58	ng/L	1		EPA 537.1	2/27/23	2/28/23 9:40	AMS
9Cl-PF3ONS (F53B Minor)	ND	1.8	0.72	ng/L	1		EPA 537.1	2/27/23	2/28/23 9:40	AMS
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	1.8	0.77	ng/L	1		EPA 537.1	2/27/23	2/28/23 9:40	AMS

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
13C-PFHxA	77.4	70-130		2/28/23 9:40
M3HFPO-DA	77.0	70-130		2/28/23 9:40
13C-PFDA	101	70-130		2/28/23 9:40
D5-NEtFOSAA	106	70-130		2/28/23 9:40

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Sample Extraction Data

Prep Method: EPA 537.1-EPA 537.1

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
23B2202-01 [8 and 10 Wendell Road]	B332312	284	1.00	02/27/23

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QUALITY CONTROL

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

Analyte	Result	Reporting Limit	DL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B332312 - EPA 537.1											
Blank (B332312-BLK1)					Prepared: 02/27/23 Analyzed: 02/28/23						
Perfluorobutanesulfonic acid (PFBS)	ND	1.8	0.71	ng/L							
Perfluorohexanoic acid (PFHxA)	ND	1.8	0.84	ng/L							
Perfluorohexanesulfonic acid (PFHxS)	ND	1.8	0.81	ng/L							
Perfluoroheptanoic acid (PFHpA)	ND	1.8	0.90	ng/L							
Perfluorooctanoic acid (PFOA)	ND	1.8	0.93	ng/L							
Perfluorooctanesulfonic acid (PFOS)	ND	1.8	0.68	ng/L							
Perfluorononanoic acid (PFNA)	ND	1.8	0.83	ng/L							
Perfluorodecanoic acid (PFDA)	ND	1.8	0.86	ng/L							
N-EtFOSAA (NEtFOSAA)	ND	1.8	0.60	ng/L							
Perfluoroundecanoic acid (PFUnA)	ND	1.8	0.68	ng/L							
N-MeFOSAA (NMeFOSAA)	ND	1.8	0.67	ng/L							
Perfluorododecanoic acid (PFDoA)	ND	1.8	0.65	ng/L							
Perfluorotridecanoic acid (PFTrDA)	ND	1.8	0.66	ng/L							
Perfluorotetradecanoic acid (PFTA)	ND	1.8	0.75	ng/L							
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	1.8	1.1	ng/L							
11Cl-PF3OUdS (F53B Major)	ND	1.8	0.60	ng/L							
9Cl-PF3ONS (F53B Minor)	ND	1.8	0.73	ng/L							
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	1.8	0.79	ng/L							
Surrogate: 13C-PFHxA	*39.2*			ng/L	36.1		109	70-130			
Surrogate: M3HFPO-DA	*40.0*			ng/L	36.1		111	70-130			
Surrogate: 13C-PFDA	*37.9*			ng/L	36.1		105	70-130			
Surrogate: D5-NEtFOSAA	*152*			ng/L	144		105	70-130			
LCS (B332312-BS1)					Prepared: 02/27/23 Analyzed: 02/28/23						
Perfluorobutanesulfonic acid (PFBS)	15.8	1.8	0.71	ng/L	16.0		98.4	70-130			
Perfluorohexanoic acid (PFHxA)	15.3	1.8	0.84	ng/L	18.1		84.6	70-130			
Perfluorohexanesulfonic acid (PFHxS)	13.6	1.8	0.81	ng/L	16.5		82.2	70-130			
Perfluoroheptanoic acid (PFHpA)	18.9	1.8	0.90	ng/L	18.1		104	70-130			
Perfluorooctanoic acid (PFOA)	16.3	1.8	0.93	ng/L	18.1		90.1	70-130			
Perfluorooctanesulfonic acid (PFOS)	17.8	1.8	0.68	ng/L	16.8		106	70-130			
Perfluorononanoic acid (PFNA)	16.9	1.8	0.83	ng/L	18.1		93.4	70-130			
Perfluorodecanoic acid (PFDA)	19.5	1.8	0.87	ng/L	18.1		108	70-130			
N-EtFOSAA (NEtFOSAA)	18.6	1.8	0.60	ng/L	18.1		103	70-130			
Perfluoroundecanoic acid (PFUnA)	19.0	1.8	0.69	ng/L	18.1		105	70-130			
N-MeFOSAA (NMeFOSAA)	18.9	1.8	0.67	ng/L	18.1		105	70-130			
Perfluorododecanoic acid (PFDoA)	19.7	1.8	0.65	ng/L	18.1		109	70-130			
Perfluorotridecanoic acid (PFTrDA)	19.3	1.8	0.66	ng/L	18.1		107	70-130			
Perfluorotetradecanoic acid (PFTA)	15.2	1.8	0.75	ng/L	18.1		84.3	70-130			
Hexafluoropropylene oxide dimer acid (HFPO-DA)	14.0	1.8	1.1	ng/L	18.1		77.3	70-130			
11Cl-PF3OUdS (F53B Major)	17.6	1.8	0.60	ng/L	17.0		103	70-130			
9Cl-PF3ONS (F53B Minor)	17.2	1.8	0.74	ng/L	16.9		102	70-130			
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	17.4	1.8	0.79	ng/L	17.1		102	70-130			
Surrogate: 13C-PFHxA	*37.8*			ng/L	36.1		104	70-130			
Surrogate: M3HFPO-DA	*37.9*			ng/L	36.1		105	70-130			
Surrogate: 13C-PFDA	*36.9*			ng/L	36.1		102	70-130			
Surrogate: D5-NEtFOSAA	*153*			ng/L	145		105	70-130			

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QUALITY CONTROL

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

Analyte	Result	Reporting Limit	DL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B332312 - EPA 537.1											
LCS Dup (B332312-BSD1)					Prepared: 02/27/23 Analyzed: 02/28/23						
Perfluorobutanesulfonic acid (PFBS)	15.3	1.8	0.71	ng/L	16.0		95.5	70-130	2.89	30	
Perfluorohexanoic acid (PFHxA)	14.9	1.8	0.85	ng/L	18.1		82.5	70-130	2.39	30	
Perfluorohexanesulfonic acid (PFHxS)	13.6	1.8	0.81	ng/L	16.5		82.3	70-130	0.225	30	
Perfluoroheptanoic acid (PFHpA)	18.5	1.8	0.90	ng/L	18.1		102	70-130	1.98	30	
Perfluorooctanoic acid (PFOA)	15.6	1.8	0.94	ng/L	18.1		86.3	70-130	4.23	30	
Perfluorooctanesulfonic acid (PFOS)	17.7	1.8	0.68	ng/L	16.8		106	70-130	0.290	30	
Perfluorononanoic acid (PFNA)	17.0	1.8	0.83	ng/L	18.1		93.7	70-130	0.462	30	
Perfluorodecanoic acid (PFDA)	19.1	1.8	0.87	ng/L	18.1		106	70-130	1.78	30	
N-EtFOSAA (NEtFOSAA)	18.8	1.8	0.60	ng/L	18.1		104	70-130	1.13	30	
Perfluoroundecanoic acid (PFUnA)	18.7	1.8	0.69	ng/L	18.1		103	70-130	1.34	30	
N-MeFOSAA (NMeFOSAA)	19.0	1.8	0.67	ng/L	18.1		105	70-130	0.493	30	
Perfluorododecanoic acid (PFDoA)	19.0	1.8	0.65	ng/L	18.1		105	70-130	3.63	30	
Perfluorotridecanoic acid (PFTrDA)	19.1	1.8	0.66	ng/L	18.1		106	70-130	1.07	30	
Perfluorotetradecanoic acid (PFTA)	15.4	1.8	0.76	ng/L	18.1		85.2	70-130	1.19	30	
Hexafluoropropylene oxide dimer acid (HFPO-DA)	12.9	1.8	1.1	ng/L	18.1		71.1	70-130	8.34	30	
11Cl-PF3OUdS (F53B Major)	17.5	1.8	0.60	ng/L	17.1		103	70-130	0.505	30	
9Cl-PF3ONS (F53B Minor)	17.9	1.8	0.74	ng/L	16.9		106	70-130	3.57	30	
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	17.0	1.8	0.80	ng/L	17.1		99.7	70-130	2.08	30	
Surrogate: 13C-PFHxA	*33.6*			ng/L	36.2		92.9	70-130			
Surrogate: M3HFPO-DA	*33.7*			ng/L	36.2		93.1	70-130			
Surrogate: 13C-PFDA	*34.1*			ng/L	36.2		94.2	70-130			
Surrogate: D5-NEtFOSAA	*140*			ng/L	145		96.4	70-130			

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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
DL	Method Detection Limit
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).

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CERTIFICATIONS

Certified Analyses included in this Report

Analyte	Certifications
EPA 537.1 in Drinking Water	
Perfluorobutanesulfonic acid (PFBS)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorohexanoic acid (PFHxA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorohexanesulfonic acid (PFHxS)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluoroheptanoic acid (PFHpA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorooctanoic acid (PFOA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorooctanesulfonic acid (PFOS)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorononanoic acid (PFNA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorodecanoic acid (PFDA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
N-EtFOSAA (NEtFOSAA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluoroundecanoic acid (PFUnA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
N-MeFOSAA (NMeFOSAA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorododecanoic acid (PFDoA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorotridecanoic acid (PFTrDA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorotetradecanoic acid (PFTA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Hexafluoropropylene oxide dimer acid (HFPO-DA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
11Cl-PF3OUdS (F53B Major)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
9Cl-PF3ONS (F53B Minor)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH

Con-Test, a Pace Environmental Laboratory, operates under the following certifications and accreditations:

Code	Description	Number	Expires
MA	Massachusetts DEP	M-MA100	06/30/2023
CT	Connecticut Department of Public Health	PH-0821	12/31/2024
NY	New York State Department of Health	10899 NELAP	04/1/2023
NH	New Hampshire Environmental Lab	2516 NELAP	02/5/2024
NJ	New Jersey DEP	MA007 NELAP	06/30/2023
VT-DW	Vermont Department of Health Drinking Water	VT-255716	06/12/2023
ME	State of Maine	MA00100	06/9/2023
PA	Commonwealth of Pennsylvania DEP	68-05812	06/30/2023
MI	Dept. of Env, Great Lakes, and Energy	9100	06/30/2023

25182202
JF1

Pace Analytical

Phone: 413-525-2332
Fax: 413-525-6405

https://www.pacelabs.com

CHAIN OF CUSTODY RECORD

39 Spruce Street
East Longmeadow, MA 01026

Doc # 381 Rev 7_06262019

Page ____ of ____

Contact: https://www.pacelabs.com/contact-us/contact-environmental-sciences/

Company Name:	Tighe & Bond
Address:	53 Southampton Road, Westfield, Massachusetts
Phone:	(413) 562-1600
Project Name:	PFAS Sample Collection - Shutesbury
Project Location:	Shutesbury, Massachusetts
Project Number:	S-2190
Project Manager:	Jeff Arps
Pace Analytical Quote Name/Number	
Invoice Recipient:	Town of Shutesbury
Sampled By:	Samuel Evans

Requested Turnaround Time
7-Day ☑ 10-Day ☐
PFAS 10-Day (std) ☐ Due Date:

Rush-Approval Required
1-Day ☐ 3-Day ☐
2-Day ☐ 4-Day ☐

Data Delivery
Format: PDF ☑ EXCEL ☑
Other:
CLP Like Data Pkg Required: ☐
Email To: JLArps@Tighebond.com; SEvans@Tighebond.com
Fax To #:

Dissolved Metals Samples
○ Field Filtered
○ Lab to Filter

Orthophosphate Samples
○ Field Filtered
○ Lab to Filter

PCB ONLY
SOXHLET ☐
NON SOXHLET ☐

ANALYSIS REQUESTED

2 Preservation Code

Pace Analytical Work Order#	Client Sample ID / Description	Beginning Date/Time	Ending Date/Time	COMP/GRAB	Matrix Code	Conc Code	VIALS	GLASS	PLASTIC	BACTERIA	ENCORE	PFAS Via 537.1
	Bandlo Wendell Road	2/19/23	1215	Grab	GW	U			X			X

Relinquished by: (signature) Samuel Evans Date/Time: 2/20/23 0830
Received by: (signature) Date/Time: 2-20-23 14:25
Relinquished by: (signature) Date/Time: 2-20-23 16:40
Received by: (signature) Date/Time: 2/20/23 1640
Relinquished by: (signature) Date/Time:
Received by: (signature) Date/Time:
Relinquished by: (signature) Date/Time:
Received by: (signature) Date/Time:

Bill to Town of Shutesbury - PO:57-101490

Detection Limit Requirements
MA
CT
Other

Special Requirements
☑ MA MCP Required
MCP Certification Form Required
☐ CT RCP Required
RCP Certification Form Required
☐ MA State DW Required
PWSID #

Please use the following codes to indicate possible sample concentration within the Conc Code column above:
H - High; M - Medium; L - Low; C - Clean; U - Unknown

Project Entity
Government ☐ Municipality ☐ MWRA ☐ WRTA ☐
Federal ☐ 21 J ☐ School ☐
City ☐ Brownfield ☐ MBTA ☐

Other
☐ Chromatogram
☐ AIHA-LAP,LLC

Matrix Codes
GW= Ground Water
WW = Waste Water
DW = Drinking Water
A = Air S = Soil
SL = Sludge
SOL = Solid
O = Other ____

Preservation Codes
I = Iced
H = HCL
N = Nitric Acid
S = Sulfuric Acid
B = Sodium Bisulfate
X = Sodium Hydroxide
T = Sodium Thiosulfate
M = Methanol
DI = DI Water
O = Other ____

Lab Comments:

Disclaimer: Pace Analytical is not responsible for any omitted information on the Chain of Custody. The Chain of Custody is a legal document that must be complete and accurate and is used to determine what analyses the laboratory will perform. Any missing information is not the laboratory's responsibility. Pace Analytical values your partnership on each project and will try to assist with missing information, but will not be held accountable.

Courier Use Only
VIALS
GLASS
PLASTIC
BACTERIA
ENCORE
Glassware in freezer? Y / N
Prepackaged Cooler? Y / N

*Pace Analytical is not responsible for missing samples from prepacked coolers

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39 Spruce St.
East Longmeadow, MA. 01028
P: 413-525-2332
F:413-525-6405
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Log In Back-Sheet

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

Pace® PEOPLE ADVANCING SCIENCE

Client: Tighe and Bond

Project: PFAS Sample Collection - Shutesbury

MCP/RCP Required: MA MCP

Deliverable Package Req.: N/A

Location: Shutesbury, MASS

PWSID# (When Applicable): N/A

Arrival Method:

Courier ☑ Fed Ex ☐ Walk In ☐ Other ☐ _____

Received By / Date / Time: LA 2/20/23 1640

Back-Sheet By / Date / Time: LA 2/20/23 1647

Temperature Method: gun # 5

Temp ☑ < 6° C Actual Temperature: 0.6

Rush Samples: Yes / (No) Notify _____

Short Hold: Yes / (No) Notify _____

	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	☑	☐

Notes regarding Samples/COC outside of SOP:

COC Included: (Check all included)

Client ☑ Analysis ☑ Sampler Name ☑

Project ☑ IDs ☑ Collection Date/Time ☑

All Samples Proper pH: (N/A) ☐ ☐

Container (Circle when applicable)	UnP	HCl	HNO3	H2SO4	NaOH	Trizma	NaS2O3	Other Preservative
1l Amber Plastic								
500 mL Amber Plastic								
250 mL Amber (Plastic)						2		
Other Amber Clear Plastic								
16oz Amber Clear								
8oz Amber Clear								
4oz Amber Clear								
2oz Amber Clear								
Col/Bacteria								
Flashpoint								
Plastic Bag								
SOC Kit								
Perchlorate								
Encore								
Frozen								

	Proper Headspace	UnP	HCl	MeOH	Bisulfate	DI	Thiosulfate	Sulfuric	Other
Vials									

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February 28, 2023

Jeff Arps
Tighe & Bond
53 Southampton Road
Westfield, MA 01085

Project Location: Shutebury, Massachusetts 16 Wendell Rd
Client Job Number:
Project Number: S-2190
Laboratory Work Order Number: 23B2170

Enclosed are results of analyses for samples as received by the laboratory on February 17, 2023. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Jessica L. Hoffman
Project Manager

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

Tighe & Bond
53 Southampton Road
Westfield, MA 01085
ATTN: Jeff Arps

REPORT DATE: 2/28/2023

PURCHASE ORDER NUMBER: 57-101490

PROJECT NUMBER: S-2190

ANALYTICAL SUMMARY

WORK ORDER NUMBER: 23B2170

The results of analyses performed on the following samples submitted to Con-Test, a Pace Analytical Laboratory, are found in this report.

PROJECT LOCATION: Shutebury, Massachusetts

FIELD SAMPLE #	LAB ID:	MATRIX	SAMPLE DESCRIPTION	TEST	SUB LAB
16 Wendell Road	23B2170-01	Ground Water		EPA 537.1	

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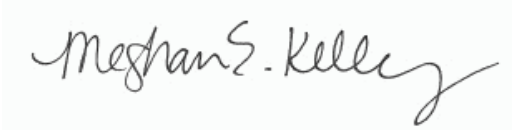
CASE NARRATIVE SUMMARY

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

The results of analyses reported only relate to samples submitted to Con-Test, a Pace Analytical Laboratory, 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: Shutebury, Massachusetts Sample Description: Work Order: 23B2170

Date Received: 2/17/2023

Field Sample #: 16 Wendell Road Sampled: 2/16/2023 12:30

Sample ID: 23B2170-01

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	DF	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanesulfonic acid (PFBS)	ND	1.5	0.61	ng/L	1		EPA 537.1	2/22/23	2/27/23 10:08	AMS
Perfluorohexanoic acid (PFHxA)	ND	1.5	0.72	ng/L	1		EPA 537.1	2/22/23	2/27/23 10:08	AMS
Perfluorohexanesulfonic acid (PFHxS)	ND	1.5	0.69	ng/L	1		EPA 537.1	2/22/23	2/27/23 10:08	AMS
Perfluoroheptanoic acid (PFHpA)	ND	1.5	0.77	ng/L	1		EPA 537.1	2/22/23	2/27/23 10:08	AMS
Perfluorooctanoic acid (PFOA)	ND	1.5	0.80	ng/L	1		EPA 537.1	2/22/23	2/27/23 10:08	AMS
Perfluorooctanesulfonic acid (PFOS)	0.99	1.5	0.58	ng/L	1	J	EPA 537.1	2/22/23	2/27/23 10:08	AMS
Perfluorononanoic acid (PFNA)	ND	1.5	0.71	ng/L	1		EPA 537.1	2/22/23	2/27/23 10:08	AMS
Perfluorodecanoic acid (PFDA)	ND	1.5	0.74	ng/L	1		EPA 537.1	2/22/23	2/27/23 10:08	AMS
N-EtFOSAA (NEtFOSAA)	ND	1.5	0.51	ng/L	1		EPA 537.1	2/22/23	2/27/23 10:08	AMS
Perfluoroundecanoic acid (PFUnA)	ND	1.5	0.59	ng/L	1		EPA 537.1	2/22/23	2/27/23 10:08	AMS
N-MeFOSAA (NMeFOSAA)	ND	1.5	0.57	ng/L	1		EPA 537.1	2/22/23	2/27/23 10:08	AMS
Perfluorododecanoic acid (PFDoA)	ND	1.5	0.55	ng/L	1		EPA 537.1	2/22/23	2/27/23 10:08	AMS
Perfluorotridecanoic acid (PFTrDA)	ND	1.5	0.56	ng/L	1		EPA 537.1	2/22/23	2/27/23 10:08	AMS
Perfluorotetradecanoic acid (PFTA)	ND	1.5	0.64	ng/L	1		EPA 537.1	2/22/23	2/27/23 10:08	AMS
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	1.5	0.95	ng/L	1		EPA 537.1	2/22/23	2/27/23 10:08	AMS
11Cl-PF3OUdS (F53B Major)	ND	1.5	0.51	ng/L	1		EPA 537.1	2/22/23	2/27/23 10:08	AMS
9Cl-PF3ONS (F53B Minor)	0.74	1.5	0.63	ng/L	1	J	EPA 537.1	2/22/23	2/27/23 10:08	AMS
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	1.5	0.68	ng/L	1		EPA 537.1	2/22/23	2/27/23 10:08	AMS

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
13C-PFHxA	93.6	70-130		2/27/23 10:08
M3HFPO-DA	89.6	70-130		2/27/23 10:08
13C-PFDA	110	70-130		2/27/23 10:08
D5-NEtFOSAA	115	70-130		2/27/23 10:08

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Sample Extraction Data

Prep Method: EPA 537.1-EPA 537.1

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
23B2170-01 [16 Wendell Road]	B332209	324	1.00	02/22/23

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QUALITY CONTROL

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

Analyte	Result	Reporting Limit	DL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B332209 - EPA 537.1											
Blank (B332209-BLK1)					Prepared: 02/22/23 Analyzed: 02/27/23						
Perfluorobutanesulfonic acid (PFBS)	ND	1.8	0.72	ng/L							
Perfluorohexanoic acid (PFHxA)	ND	1.8	0.85	ng/L							
Perfluorohexanesulfonic acid (PFHxS)	ND	1.8	0.82	ng/L							
Perfluoroheptanoic acid (PFHpA)	ND	1.8	0.91	ng/L							
Perfluorooctanoic acid (PFOA)	ND	1.8	0.94	ng/L							
Perfluorooctanesulfonic acid (PFOS)	ND	1.8	0.69	ng/L							
Perfluorononanoic acid (PFNA)	ND	1.8	0.84	ng/L							
Perfluorodecanoic acid (PFDA)	ND	1.8	0.87	ng/L							
N-EtFOSAA (NEtFOSAA)	ND	1.8	0.60	ng/L							
Perfluoroundecanoic acid (PFUnA)	ND	1.8	0.69	ng/L							
N-MeFOSAA (NMeFOSAA)	ND	1.8	0.68	ng/L							
Perfluorododecanoic acid (PFDoA)	ND	1.8	0.65	ng/L							
Perfluorotridecanoic acid (PFTrDA)	ND	1.8	0.66	ng/L							
Perfluorotetradecanoic acid (PFTA)	ND	1.8	0.76	ng/L							
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	1.8	1.1	ng/L							
11Cl-PF3OUdS (F53B Major)	ND	1.8	0.60	ng/L							
9Cl-PF3ONS (F53B Minor)	ND	1.8	0.74	ng/L							
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	1.8	0.80	ng/L							
Surrogate: 13C-PFHxA	*33.5*			ng/L	36.4		92.0	70-130			
Surrogate: M3HFPO-DA	*33.0*			ng/L	36.4		90.5	70-130			
Surrogate: 13C-PFDA	*34.9*			ng/L	36.4		95.9	70-130			
Surrogate: D5-NEtFOSAA	*141*			ng/L	146		96.8	70-130			
LCS (B332209-BS1)					Prepared: 02/22/23 Analyzed: 02/27/23						
Perfluorobutanesulfonic acid (PFBS)	9.40	1.8	0.72	ng/L	8.07		116	70-130			
Perfluorohexanoic acid (PFHxA)	8.56	1.8	0.85	ng/L	9.10		94.1	70-130			
Perfluorohexanesulfonic acid (PFHxS)	7.71	1.8	0.81	ng/L	8.32		92.7	70-130			
Perfluoroheptanoic acid (PFHpA)	10.7	1.8	0.90	ng/L	9.10		118	70-130			
Perfluorooctanoic acid (PFOA)	8.96	1.8	0.94	ng/L	9.10		98.4	70-130			
Perfluorooctanesulfonic acid (PFOS)	10.6	1.8	0.69	ng/L	8.45		125	70-130			
Perfluorononanoic acid (PFNA)	9.71	1.8	0.84	ng/L	9.10		107	70-130			
Perfluorodecanoic acid (PFDA)	11.3	1.8	0.87	ng/L	9.10		124	70-130			
N-EtFOSAA (NEtFOSAA)	11.1	1.8	0.60	ng/L	9.10		122	70-130			
Perfluoroundecanoic acid (PFUnA)	10.8	1.8	0.69	ng/L	9.10		119	70-130			
N-MeFOSAA (NMeFOSAA)	11.3	1.8	0.68	ng/L	9.10		125	70-130			
Perfluorododecanoic acid (PFDoA)	11.1	1.8	0.65	ng/L	9.10		122	70-130			
Perfluorotridecanoic acid (PFTrDA)	11.0	1.8	0.66	ng/L	9.10		120	70-130			
Perfluorotetradecanoic acid (PFTA)	8.43	1.8	0.76	ng/L	9.10		92.7	70-130			
Hexafluoropropylene oxide dimer acid (HFPO-DA)	8.69	1.8	1.1	ng/L	9.10		95.4	70-130			
11Cl-PF3OUdS (F53B Major)	10.4	1.8	0.60	ng/L	8.58		121	70-130			
9Cl-PF3ONS (F53B Minor)	10.5	1.8	0.74	ng/L	8.49		123	70-130			
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	9.97	1.8	0.80	ng/L	8.60		116	70-130			
Surrogate: 13C-PFHxA	*37.8*			ng/L	36.4		104	70-130			
Surrogate: M3HFPO-DA	*36.8*			ng/L	36.4		101	70-130			
Surrogate: 13C-PFDA	*38.6*			ng/L	36.4		106	70-130			
Surrogate: D5-NEtFOSAA	*156*			ng/L	146		107	70-130			

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QUALITY CONTROL

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

Analyte	Result	Reporting Limit	DL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B332209 - EPA 537.1											
LCS Dup (B332209-BSD1)					Prepared: 02/22/23 Analyzed: 02/27/23						
Perfluorobutanesulfonic acid (PFBS)	8.78	1.8	0.72	ng/L	8.08		109	70-130	6.85	30	
Perfluorohexanoic acid (PFHxA)	8.03	1.8	0.85	ng/L	9.11		88.1	70-130	6.45	30	
Perfluorohexanesulfonic acid (PFHxS)	6.99	1.8	0.82	ng/L	8.33		83.9	70-130	9.81	30	
Perfluoroheptanoic acid (PFHpA)	10.1	1.8	0.91	ng/L	9.11		111	70-130	5.49	30	
Perfluorooctanoic acid (PFOA)	8.79	1.8	0.94	ng/L	9.11		96.4	70-130	1.96	30	
Perfluorooctanesulfonic acid (PFOS)	9.23	1.8	0.69	ng/L	8.45		109	70-130	13.8	30	
Perfluorononanoic acid (PFNA)	8.98	1.8	0.84	ng/L	9.11		98.6	70-130	7.79	30	
Perfluorodecanoic acid (PFDA)	10.7	1.8	0.87	ng/L	9.11		118	70-130	5.23	30	
N-EtFOSAA (NEtFOSAA)	9.84	1.8	0.60	ng/L	9.11		108	70-130	11.9	30	
Perfluoroundecanoic acid (PFUnA)	10.2	1.8	0.69	ng/L	9.11		112	70-130	5.55	30	
N-MeFOSAA (NMeFOSAA)	9.96	1.8	0.68	ng/L	9.11		109	70-130	12.9	30	
Perfluorododecanoic acid (PFDoA)	10.3	1.8	0.65	ng/L	9.11		113	70-130	7.09	30	
Perfluorotridecanoic acid (PFTrDA)	10.2	1.8	0.66	ng/L	9.11		112	70-130	7.17	30	
Perfluorotetradecanoic acid (PFTA)	8.19	1.8	0.76	ng/L	9.11		89.9	70-130	2.97	30	
Hexafluoropropylene oxide dimer acid (HFPO-DA)	7.92	1.8	1.1	ng/L	9.11		86.9	70-130	9.23	30	
11Cl-PF3OUdS (F53B Major)	9.42	1.8	0.60	ng/L	8.59		110	70-130	9.69	30	
9Cl-PF3ONS (F53B Minor)	9.55	1.8	0.74	ng/L	8.50		112	70-130	9.11	30	
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	9.26	1.8	0.80	ng/L	8.61		108	70-130	7.39	30	
Surrogate: 13C-PFHxA	*37.5*			ng/L	36.4		103	70-130			
Surrogate: M3HFPO-DA	*37.0*			ng/L	36.4		101	70-130			
Surrogate: 13C-PFDA	*38.2*			ng/L	36.4		105	70-130			
Surrogate: D5-NEtFOSAA	*150*			ng/L	146		103	70-130			

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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
DL	Method Detection Limit
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).

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CERTIFICATIONS

Certified Analyses included in this Report

Analyte	Certifications
EPA 537.1 in Drinking Water	
Perfluorobutanesulfonic acid (PFBS)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorohexanoic acid (PFHxA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorohexanesulfonic acid (PFHxS)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluoroheptanoic acid (PFHpA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorooctanoic acid (PFOA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorooctanesulfonic acid (PFOS)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorononanoic acid (PFNA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorodecanoic acid (PFDA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
N-EtFOSAA (NEtFOSAA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluoroundecanoic acid (PFUnA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
N-MeFOSAA (NMeFOSAA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorododecanoic acid (PFDoA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorotridecanoic acid (PFTrDA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorotetradecanoic acid (PFTA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Hexafluoropropylene oxide dimer acid (HFPO-DA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
11Cl-PF3OUdS (F53B Major)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
9Cl-PF3ONS (F53B Minor)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH

Con-Test, a Pace Environmental Laboratory, operates under the following certifications and accreditations:

Code	Description	Number	Expires
MA	Massachusetts DEP	M-MA100	06/30/2023
CT	Connecticut Department of Public Health	PH-0821	12/31/2024
NY	New York State Department of Health	10899 NELAP	04/1/2023
NH	New Hampshire Environmental Lab	2516 NELAP	02/5/2024
NJ	New Jersey DEP	MA007 NELAP	06/30/2023
VT-DW	Vermont Department of Health Drinking Water	VT-255716	06/12/2023
ME	State of Maine	MA00100	06/9/2023
PA	Commonwealth of Pennsylvania DEP	68-05812	06/30/2023
MI	Dept. of Env, Great Lakes, and Energy	9100	06/30/2023

23B2170 JH

Pace Analytical

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Fax: 413-525-6405

https://www.pacelabs.com/

39 Spruce Street
East Longmeadow, MA 01026

Doc # 381 Rev 2, 06262019

CHAIN OF CUSTODY RECORD

Page ____ of ____

Contact: https://www.pacelabs.com/contact-us/contact-environmental-sciences/

Company Name:	Tighe & Bond
Address:	53 Southampton Road, Westfield, Massachusetts
Phone:	(413) 562-1600
Project Name:	PFAS Sample Collection - Shutesbury
Project Location:	Shutesbury, Massachusetts
Project Number:	S-2190
Project Manager:	Jeff Arps
Pace Analytical Quote Name/Number	
Invoice Recipient:	Town of Shutesbury
Sampled By:	Samuel Evans

Requested Turnaround Time
7-Day ☑ 10-Day ☐
PFAS 10-Day (std) ☐ Due Date:

Rush-Approval Required
1-Day ☐ 3-Day ☐
2-Day ☐ 4-Day ☐

Data Delivery
Format: PDF ☑ EXCEL ☑
Other:
CLP Like Data Pkg Required: ☐
Email To: JArps@Tighebond.com; SEvans@Tighebond.com
Fax To #:

Dissolved Metals Samples
○ Field Filtered
○ Lab to Filter

Orthophosphate Samples
○ Field Filtered
○ Lab to Filter

PCB ONLY
SOXHLET ☐
NON SOXHLET ☐

ANALYSIS REQUESTED

2 Preservation Code

Pace Analytical Work Order#	Client Sample ID / Description	Beginning Date/Time	Ending Date/Time	COMP/GRAB	Matrix Code	Conc Code	VIALS	GLASS	PLASTIC	BACTERIA	ENCORE	PFAS Via 537.1
	16 Wendell Road	2/16/23	1230	Grab	GW	U			X			X

Relinquished by: (signature) Samuel Evans Date/Time: 2/17/23 0800
Received by: (signature) Joe Date/Time: 2/17/23 12
Relinquished by: (signature) Joe Date/Time: 2/17/23 1655
Received by: (signature) Dominik 42 Date/Time: 2/17/23 1655
Relinquished by: (signature) Date/Time:
Received by: (signature) Date/Time:
Relinquished by: (signature) Date/Time:
Received by: (signature) Date/Time:

Bill to Town of Shutesbury - PO: 57-101490

Detection Limit Requirements
MA
CT
Other:

Special Requirements
☑ MA MCP Required
MCP Certification Form Required
☐ CT RCP Required
RCP Certification Form Required
☐ MA State DW Required
PWSID #

Please use the following codes to indicate possible sample concentration within the Conc Code column above:
H - High; M - Medium; L - Low; C - Clean; U - Unknown

Matrix Codes
GW = Ground Water
WW = Waste Water
DW = Drinking Water
A = Air S = Soil
SL = Sludge
SOL = Solid
O = Other ____

Preservation Codes
I = Iced
H = HCL
N = Nitric Acid
S = Sulfuric Acid
B = Sodium Bisulfate
X = Sodium Hydroxide
T = Sodium Thiosulfate
M = Methanol
DI = DI Water
O = Other ____

Project Entity
Government ☐ Municipality ☐ MWRA ☐ WRTA ☐
Federal ☐ 21 J ☐ School ☐
City ☐ Brownfield ☐ MBTA ☐

Other
☐ Chromatogram
☐ AIHA-LAP,LLC

Comments:

Disclaimer: Pace Analytical is not responsible for any omitted information on the Chain of Custody. The Chain of Custody is a legal document that must be complete and accurate and is used to determine what analyses the laboratory will perform. Any missing information is not the laboratory's responsibility. Pace Analytical values your partnership on each project and will try to assist with missing information, but will not be held accountable.

Courier Use Only
VIALS
GLASS
PLASTIC
BACTERIA
ENCORE
Glassware in freezer? Y / N
Prepackaged Cooler? Y / N

*Pace Analytical is not responsible for missing samples from prepacked coolers

Pace Analytical

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39 Spruce St.
East Longmeadow, MA. 01028
P: 413-525-2332
F:413-525-6405
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Log In Back-Sheet

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

Pace PEOPLE ADVANCING SCIENCE

Client Tighe + Bond
Project PFAS Sample Coll. - Shutesbury
MCP/RCP Required MCP Req'd
Deliverable Package Req. N/A
Location Shutesbury, MA
PWSID# (When Applicable) N/A
Arrival Method:

Courier ☒ Fed Ex ☐ Walk In ☐ Other ☐
Received By / Date / Time DNW 02/17/23 1655
Back-Sheet By / Date / Time DNW 02/17/23 1920
Temperature Method GUN # 3
Temp ☒ < 6° C Actual Temperature 4.2
Rush Samples: Yes (No) Notify
Short Hold: Yes (No) Notify

	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: (N/A) ☐ ☐

Notes regarding Samples/COC outside of SOP:

Container (Circle when applicable)	UnP	HCl	HNO3	H2SO4	NaOH	Trizma	NaS2O3	Other Preservative
1L Amber Plastic								
500 mL Amber Plastic								
250 mL Amber (Plastic)						2		
Other Amber Clear Plastic								
16oz Amber Clear								
8oz Amber Clear								
4oz Amber Clear								
2oz Amber Clear								
Col/Bacteria								
Flashpoint								
Plastic Bag								
SOC Kit								
Perchlorate								
Encore								
Frozen								

	Proper Headspace	UnP	HCl	MeOH	Bisulfate	DI	Thiosulfate	Sulfuric	Other
Vials									

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March 7, 2023

Jeff Arps
Tighe & Bond
53 Southampton Road
Westfield, MA 01085

Project Location: 20 and 24 Wendell Road Shutesbury, Massachusetts
Client Job Number:
Project Number: S-2190
Laboratory Work Order Number: 23B2206

Enclosed are results of analyses for samples as received by the laboratory on February 20, 2023. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Jessica L. Hoffman
Project Manager

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

Tighe & Bond
53 Southampton Road
Westfield, MA 01085
ATTN: Jeff Arps

REPORT DATE: 3/7/2023

PURCHASE ORDER NUMBER: 57-101490

PROJECT NUMBER: S-2190

ANALYTICAL SUMMARY

WORK ORDER NUMBER: 23B2206

The results of analyses performed on the following samples submitted to Con-Test, a Pace Analytical Laboratory, are found in this report.

PROJECT LOCATION: 20 and 24 Wendell Road Shutesbury, Massachusetts

FIELD SAMPLE #	LAB ID:	MATRIX	SAMPLE DESCRIPTION	TEST	SUB LAB
20 and 24 Wendall Road	23B2206-01	Ground Water		EPA 537.1	

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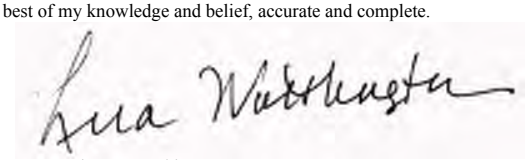
CASE NARRATIVE SUMMARY

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

The results of analyses reported only relate to samples submitted to Con-Test, a Pace Analytical Laboratory, 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.



Lisa A. Worthington
Technical Representative

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

Project Location: 20 and 24 Wendell Road Shutesbu Sample Description: Work Order: 23B2206

Date Received: 2/20/2023

Field Sample #: 20 and 24 Wendall Road Sampled: 2/17/2023 12:00

Sample ID: 23B2206-01

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	DF	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanesulfonic acid (PFBS)	1.2	1.9	0.75	ng/L	1	J	EPA 537.1	3/1/23	3/3/23 10:25	AMS
Perfluorohexanoic acid (PFHxA)	ND	1.9	0.88	ng/L	1		EPA 537.1	3/1/23	3/3/23 10:25	AMS
Perfluorohexanesulfonic acid (PFHxS)	ND	1.9	0.85	ng/L	1		EPA 537.1	3/1/23	3/3/23 10:25	AMS
Perfluoroheptanoic acid (PFHpA)	ND	1.9	0.94	ng/L	1		EPA 537.1	3/1/23	3/3/23 10:25	AMS
Perfluorooctanoic acid (PFOA)	2.5	1.9	0.98	ng/L	1		EPA 537.1	3/1/23	3/3/23 10:25	AMS
Perfluorooctanesulfonic acid (PFOS)	1.9	1.9	0.72	ng/L	1		EPA 537.1	3/1/23	3/3/23 10:25	AMS
Perfluorononanoic acid (PFNA)	ND	1.9	0.87	ng/L	1		EPA 537.1	3/1/23	3/3/23 10:25	AMS
Perfluorodecanoic acid (PFDA)	ND	1.9	0.91	ng/L	1		EPA 537.1	3/1/23	3/3/23 10:25	AMS
N-EtFOSAA (NEtFOSAA)	ND	1.9	0.63	ng/L	1		EPA 537.1	3/1/23	3/3/23 10:25	AMS
Perfluoroundecanoic acid (PFUnA)	ND	1.9	0.72	ng/L	1		EPA 537.1	3/1/23	3/3/23 10:25	AMS
N-MeFOSAA (NMeFOSAA)	ND	1.9	0.70	ng/L	1		EPA 537.1	3/1/23	3/3/23 10:25	AMS
Perfluorododecanoic acid (PFDoA)	ND	1.9	0.68	ng/L	1		EPA 537.1	3/1/23	3/3/23 10:25	AMS
Perfluorotridecanoic acid (PFTrDA)	ND	1.9	0.69	ng/L	1		EPA 537.1	3/1/23	3/3/23 10:25	AMS
Perfluorotetradecanoic acid (PFTA)	ND	1.9	0.79	ng/L	1		EPA 537.1	3/1/23	3/3/23 10:25	AMS
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	1.9	1.2	ng/L	1		EPA 537.1	3/1/23	3/3/23 10:25	AMS
11Cl-PF3OUdS (F53B Major)	ND	1.9	0.63	ng/L	1		EPA 537.1	3/1/23	3/3/23 10:25	AMS
9Cl-PF3ONS (F53B Minor)	ND	1.9	0.77	ng/L	1		EPA 537.1	3/1/23	3/3/23 10:25	AMS
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	1.9	0.83	ng/L	1		EPA 537.1	3/1/23	3/3/23 10:25	AMS

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
13C-PFHxA	76.0	70-130		3/3/23 10:25
M3HFPO-DA	75.3	70-130		3/3/23 10:25
13C-PFDA	86.0	70-130		3/3/23 10:25
D5-NEtFOSAA	84.5	70-130		3/3/23 10:25

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Sample Extraction Data

Prep Method: EPA 537.1-EPA 537.1

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
23B2206-01RE1 [20 and 24 Wendall Road]	B332936	264	1.00	03/01/23

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QUALITY CONTROL

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

Analyte	Result	Reporting Limit	DL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B332312 - EPA 537.1											
Blank (B332312-BLK1)					Prepared: 02/27/23 Analyzed: 02/28/23						
Perfluorobutanesulfonic acid (PFBS)	ND	1.8	0.71	ng/L							
Perfluorohexanoic acid (PFHxA)	ND	1.8	0.84	ng/L							
Perfluorohexanesulfonic acid (PFHxS)	ND	1.8	0.81	ng/L							
Perfluoroheptanoic acid (PFHpA)	ND	1.8	0.90	ng/L							
Perfluorooctanoic acid (PFOA)	ND	1.8	0.93	ng/L							
Perfluorooctanesulfonic acid (PFOS)	ND	1.8	0.68	ng/L							
Perfluorononanoic acid (PFNA)	ND	1.8	0.83	ng/L							
Perfluorodecanoic acid (PFDA)	ND	1.8	0.86	ng/L							
N-EtFOSAA (NEtFOSAA)	ND	1.8	0.60	ng/L							
Perfluoroundecanoic acid (PFUnA)	ND	1.8	0.68	ng/L							
N-MeFOSAA (NMeFOSAA)	ND	1.8	0.67	ng/L							
Perfluorododecanoic acid (PFDoA)	ND	1.8	0.65	ng/L							
Perfluorotridecanoic acid (PFTrDA)	ND	1.8	0.66	ng/L							
Perfluorotetradecanoic acid (PFTA)	ND	1.8	0.75	ng/L							
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	1.8	1.1	ng/L							
11Cl-PF3OUdS (F53B Major)	ND	1.8	0.60	ng/L							
9Cl-PF3ONS (F53B Minor)	ND	1.8	0.73	ng/L							
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	1.8	0.79	ng/L							
Surrogate: 13C-PFHxA	*39.2*			ng/L	36.1		109	70-130			
Surrogate: M3HFPO-DA	*40.0*			ng/L	36.1		111	70-130			
Surrogate: 13C-PFDA	*37.9*			ng/L	36.1		105	70-130			
Surrogate: D5-NEtFOSAA	*152*			ng/L	144		105	70-130			
LCS (B332312-BS1)					Prepared: 02/27/23 Analyzed: 02/28/23						
Perfluorobutanesulfonic acid (PFBS)	15.8	1.8	0.71	ng/L	16.0		98.4	70-130			
Perfluorohexanoic acid (PFHxA)	15.3	1.8	0.84	ng/L	18.1		84.6	70-130			
Perfluorohexanesulfonic acid (PFHxS)	13.6	1.8	0.81	ng/L	16.5		82.2	70-130			
Perfluoroheptanoic acid (PFHpA)	18.9	1.8	0.90	ng/L	18.1		104	70-130			
Perfluorooctanoic acid (PFOA)	16.3	1.8	0.93	ng/L	18.1		90.1	70-130			
Perfluorooctanesulfonic acid (PFOS)	17.8	1.8	0.68	ng/L	16.8		106	70-130			
Perfluorononanoic acid (PFNA)	16.9	1.8	0.83	ng/L	18.1		93.4	70-130			
Perfluorodecanoic acid (PFDA)	19.5	1.8	0.87	ng/L	18.1		108	70-130			
N-EtFOSAA (NEtFOSAA)	18.6	1.8	0.60	ng/L	18.1		103	70-130			
Perfluoroundecanoic acid (PFUnA)	19.0	1.8	0.69	ng/L	18.1		105	70-130			
N-MeFOSAA (NMeFOSAA)	18.9	1.8	0.67	ng/L	18.1		105	70-130			
Perfluorododecanoic acid (PFDoA)	19.7	1.8	0.65	ng/L	18.1		109	70-130			
Perfluorotridecanoic acid (PFTrDA)	19.3	1.8	0.66	ng/L	18.1		107	70-130			
Perfluorotetradecanoic acid (PFTA)	15.2	1.8	0.75	ng/L	18.1		84.3	70-130			
Hexafluoropropylene oxide dimer acid (HFPO-DA)	14.0	1.8	1.1	ng/L	18.1		77.3	70-130			
11Cl-PF3OUdS (F53B Major)	17.6	1.8	0.60	ng/L	17.0		103	70-130			
9Cl-PF3ONS (F53B Minor)	17.2	1.8	0.74	ng/L	16.9		102	70-130			
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	17.4	1.8	0.79	ng/L	17.1		102	70-130			
Surrogate: 13C-PFHxA	*37.8*			ng/L	36.1		104	70-130			
Surrogate: M3HFPO-DA	*37.9*			ng/L	36.1		105	70-130			
Surrogate: 13C-PFDA	*36.9*			ng/L	36.1		102	70-130			
Surrogate: D5-NEtFOSAA	*153*			ng/L	145		105	70-130			

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QUALITY CONTROL

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

Analyte	Result	Reporting Limit	DL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B332312 - EPA 537.1											
LCS Dup (B332312-BSD1)					Prepared: 02/27/23 Analyzed: 02/28/23						
Perfluorobutanesulfonic acid (PFBS)	15.3	1.8	0.71	ng/L	16.0		95.5	70-130	2.89	30	
Perfluorohexanoic acid (PFHxA)	14.9	1.8	0.85	ng/L	18.1		82.5	70-130	2.39	30	
Perfluorohexanesulfonic acid (PFHxS)	13.6	1.8	0.81	ng/L	16.5		82.3	70-130	0.225	30	
Perfluoroheptanoic acid (PFHpA)	18.5	1.8	0.90	ng/L	18.1		102	70-130	1.98	30	
Perfluorooctanoic acid (PFOA)	15.6	1.8	0.94	ng/L	18.1		86.3	70-130	4.23	30	
Perfluorooctanesulfonic acid (PFOS)	17.7	1.8	0.68	ng/L	16.8		106	70-130	0.290	30	
Perfluorononanoic acid (PFNA)	17.0	1.8	0.83	ng/L	18.1		93.7	70-130	0.462	30	
Perfluorodecanoic acid (PFDA)	19.1	1.8	0.87	ng/L	18.1		106	70-130	1.78	30	
N-EtFOSAA (NEtFOSAA)	18.8	1.8	0.60	ng/L	18.1		104	70-130	1.13	30	
Perfluoroundecanoic acid (PFUnA)	18.7	1.8	0.69	ng/L	18.1		103	70-130	1.34	30	
N-MeFOSAA (NMeFOSAA)	19.0	1.8	0.67	ng/L	18.1		105	70-130	0.493	30	
Perfluorododecanoic acid (PFDoA)	19.0	1.8	0.65	ng/L	18.1		105	70-130	3.63	30	
Perfluorotridecanoic acid (PFTrDA)	19.1	1.8	0.66	ng/L	18.1		106	70-130	1.07	30	
Perfluorotetradecanoic acid (PFTA)	15.4	1.8	0.76	ng/L	18.1		85.2	70-130	1.19	30	
Hexafluoropropylene oxide dimer acid (HFPO-DA)	12.9	1.8	1.1	ng/L	18.1		71.1	70-130	8.34	30	
11Cl-PF3OUdS (F53B Major)	17.5	1.8	0.60	ng/L	17.1		103	70-130	0.505	30	
9Cl-PF3ONS (F53B Minor)	17.9	1.8	0.74	ng/L	16.9		106	70-130	3.57	30	
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	17.0	1.8	0.80	ng/L	17.1		99.7	70-130	2.08	30	
Surrogate: 13C-PFHxA	*33.6*			ng/L	36.2		92.9	70-130			
Surrogate: M3HFPO-DA	*33.7*			ng/L	36.2		93.1	70-130			
Surrogate: 13C-PFDA	*34.1*			ng/L	36.2		94.2	70-130			
Surrogate: D5-NEtFOSAA	*140*			ng/L	145		96.4	70-130			
Batch B332936 - EPA 537.1											
Blank (B332936-BLK1)					Prepared: 03/01/23 Analyzed: 03/03/23						
Perfluorobutanesulfonic acid (PFBS)	ND	1.8	0.71	ng/L							
Perfluorohexanoic acid (PFHxA)	ND	1.8	0.84	ng/L							
Perfluorohexanesulfonic acid (PFHxS)	ND	1.8	0.81	ng/L							
Perfluoroheptanoic acid (PFHpA)	ND	1.8	0.90	ng/L							
Perfluorooctanoic acid (PFOA)	ND	1.8	0.93	ng/L							
Perfluorooctanesulfonic acid (PFOS)	ND	1.8	0.68	ng/L							
Perfluorononanoic acid (PFNA)	ND	1.8	0.83	ng/L							
Perfluorodecanoic acid (PFDA)	ND	1.8	0.86	ng/L							
N-EtFOSAA (NEtFOSAA)	ND	1.8	0.60	ng/L							
Perfluoroundecanoic acid (PFUnA)	ND	1.8	0.68	ng/L							
N-MeFOSAA (NMeFOSAA)	ND	1.8	0.67	ng/L							
Perfluorododecanoic acid (PFDoA)	ND	1.8	0.65	ng/L							
Perfluorotridecanoic acid (PFTrDA)	ND	1.8	0.66	ng/L							
Perfluorotetradecanoic acid (PFTA)	ND	1.8	0.75	ng/L							
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	1.8	1.1	ng/L							
11Cl-PF3OUdS (F53B Major)	ND	1.8	0.60	ng/L							
9Cl-PF3ONS (F53B Minor)	ND	1.8	0.73	ng/L							
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	1.8	0.79	ng/L							
Surrogate: 13C-PFHxA	*35.8*			ng/L	36.1		99.3	70-130			
Surrogate: M3HFPO-DA	*36.2*			ng/L	36.1		100	70-130			
Surrogate: 13C-PFDA	*30.5*			ng/L	36.1		84.5	70-130			
Surrogate: D5-NEtFOSAA	*105*			ng/L	144		72.5	70-130			

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QUALITY CONTROL

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

Analyte	Result	Reporting Limit	DL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B332936 - EPA 537.1											
LCS (B332936-BS1)					Prepared: 03/01/23 Analyzed: 03/03/23						
Perfluorobutanesulfonic acid (PFBS)	16.2	1.8	0.71	ng/L	15.9		102	70-130			
Perfluorohexanoic acid (PFHxA)	14.2	1.8	0.84	ng/L	18.0		79.2	70-130			
Perfluorohexanesulfonic acid (PFHxS)	12.6	1.8	0.80	ng/L	16.4		76.5	70-130			
Perfluoroheptanoic acid (PFHpA)	17.5	1.8	0.89	ng/L	18.0		97.5	70-130			
Perfluorooctanoic acid (PFOA)	14.6	1.8	0.93	ng/L	18.0		81.4	70-130			
Perfluorooctanesulfonic acid (PFOS)	17.0	1.8	0.68	ng/L	16.7		102	70-130			
Perfluorononanoic acid (PFNA)	15.5	1.8	0.83	ng/L	18.0		86.2	70-130			
Perfluorodecanoic acid (PFDA)	18.3	1.8	0.86	ng/L	18.0		102	70-130			
N-EtFOSAA (NEtFOSAA)	18.3	1.8	0.60	ng/L	18.0		102	70-130			
Perfluoroundecanoic acid (PFUnA)	18.4	1.8	0.68	ng/L	18.0		102	70-130			
N-MeFOSAA (NMeFOSAA)	18.6	1.8	0.67	ng/L	18.0		103	70-130			
Perfluorododecanoic acid (PFDoA)	18.6	1.8	0.64	ng/L	18.0		103	70-130			
Perfluorotridecanoic acid (PFTrDA)	18.4	1.8	0.66	ng/L	18.0		103	70-130			
Perfluorotetradecanoic acid (PFTA)	15.5	1.8	0.75	ng/L	18.0		86.0	70-130			
Hexafluoropropylene oxide dimer acid (HFPO-DA)	13.4	1.8	1.1	ng/L	18.0		74.4	70-130			
11Cl-PF3OUdS (F53B Major)	17.3	1.8	0.60	ng/L	16.9		102	70-130			
9Cl-PF3ONS (F53B Minor)	17.2	1.8	0.73	ng/L	16.8		103	70-130			
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	16.5	1.8	0.79	ng/L	17.0		97.3	70-130			
Surrogate: 13C-PFHxA	*34.6*			ng/L	35.9		96.1	70-130			
Surrogate: M3HFPO-DA	*35.9*			ng/L	35.9		99.9	70-130			
Surrogate: 13C-PFDA	*35.6*			ng/L	35.9		99.0	70-130			
Surrogate: D5-NEtFOSAA	*147*			ng/L	144		103	70-130			
LCS Dup (B332936-BSD1)					Prepared: 03/01/23 Analyzed: 03/03/23						
Perfluorobutanesulfonic acid (PFBS)	14.3	1.8	0.71	ng/L	16.0		89.7	70-130	12.5	30	
Perfluorohexanoic acid (PFHxA)	12.8	1.8	0.84	ng/L	18.0		71.3	70-130	10.4	30	
Perfluorohexanesulfonic acid (PFHxS)	11.6	1.8	0.81	ng/L	16.4		70.8	70-130	7.56	30	
Perfluoroheptanoic acid (PFHpA)	16.2	1.8	0.89	ng/L	18.0		89.9	70-130	8.02	30	
Perfluorooctanoic acid (PFOA)	13.9	1.8	0.93	ng/L	18.0		77.4	70-130	4.96	30	
Perfluorooctanesulfonic acid (PFOS)	15.9	1.8	0.68	ng/L	16.7		95.5	70-130	6.46	30	
Perfluorononanoic acid (PFNA)	14.6	1.8	0.83	ng/L	18.0		81.4	70-130	5.65	30	
Perfluorodecanoic acid (PFDA)	17.7	1.8	0.86	ng/L	18.0		98.7	70-130	2.90	30	
N-EtFOSAA (NEtFOSAA)	16.4	1.8	0.60	ng/L	18.0		91.2	70-130	11.1	30	
Perfluoroundecanoic acid (PFUnA)	17.6	1.8	0.68	ng/L	18.0		98.0	70-130	4.04	30	
N-MeFOSAA (NMeFOSAA)	16.8	1.8	0.67	ng/L	18.0		93.4	70-130	10.0	30	
Perfluorododecanoic acid (PFDoA)	17.9	1.8	0.64	ng/L	18.0		99.5	70-130	3.78	30	
Perfluorotridecanoic acid (PFTrDA)	18.6	1.8	0.66	ng/L	18.0		103	70-130	0.751	30	
Perfluorotetradecanoic acid (PFTA)	14.8	1.8	0.75	ng/L	18.0		82.1	70-130	4.48	30	
Hexafluoropropylene oxide dimer acid (HFPO-DA)	12.6	1.8	1.1	ng/L	18.0		70.3	70-130	5.55	30	
11Cl-PF3OUdS (F53B Major)	16.4	1.8	0.60	ng/L	17.0		96.4	70-130	5.40	30	
9Cl-PF3ONS (F53B Minor)	15.7	1.8	0.73	ng/L	16.8		93.8	70-130	8.74	30	
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	15.3	1.8	0.79	ng/L	17.0		89.9	70-130	7.86	30	
Surrogate: 13C-PFHxA	*30.2*			ng/L	36.0		84.0	70-130			
Surrogate: M3HFPO-DA	*30.6*			ng/L	36.0		85.2	70-130			
Surrogate: 13C-PFDA	*32.6*			ng/L	36.0		90.6	70-130			
Surrogate: D5-NEtFOSAA	*133*			ng/L	144		92.3	70-130			

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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
DL	Method Detection Limit
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).

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CERTIFICATIONS

Certified Analyses included in this Report

Analyte	Certifications
EPA 537.1 in Drinking Water	
Perfluorobutanesulfonic acid (PFBS)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorohexanoic acid (PFHxA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorohexanesulfonic acid (PFHxS)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluoroheptanoic acid (PFHpA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorooctanoic acid (PFOA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorooctanesulfonic acid (PFOS)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorononanoic acid (PFNA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorodecanoic acid (PFDA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
N-EtFOSAA (NEtFOSAA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluoroundecanoic acid (PFUnA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
N-MeFOSAA (NMeFOSAA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorododecanoic acid (PFDoA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorotridecanoic acid (PFTrDA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorotetradecanoic acid (PFTA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Hexafluoropropylene oxide dimer acid (HFPO-DA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
11Cl-PF3OUdS (F53B Major)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
9Cl-PF3ONS (F53B Minor)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH

Con-Test, a Pace Environmental Laboratory, operates under the following certifications and accreditations:

Code	Description	Number	Expires
MA	Massachusetts DEP	M-MA100	06/30/2023
CT	Connecticut Department of Public Health	PH-0821	12/31/2024
NY	New York State Department of Health	10899 NELAP	04/1/2023
NH	New Hampshire Environmental Lab	2516 NELAP	02/5/2024
NJ	New Jersey DEP	MA007 NELAP	06/30/2023
VT-DW	Vermont Department of Health Drinking Water	VT-255716	06/12/2023
ME	State of Maine	MA00100	06/9/2023
PA	Commonwealth of Pennsylvania DEP	68-05812	06/30/2023
MI	Dept. of Env, Great Lakes, and Energy	9100	06/30/2023

23B2206
J7

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https://www.pacelabs.com/

CHAIN OF CUSTODY RECORD

39 Spruce Street
East Longmeadow, MA 01026

Doc # 381 Rev 2_06262019

Page ____ of ____

Contact: https://www.pacelabs.com/contact-us/contact-environmental-sciences/

Company Name:	Tighe & Bond
Address:	53 Southampton Road, Westfield, Massachusetts
Phone:	(413) 562-1600
Project Name:	PFAS Sample Collection - Shutesbury
Project Location:	Shutesbury, Massachusetts
Project Number:	S-2190
Project Manager:	Jeff Arps
Pace Analytical Quote Name/Number	
Invoice Recipient:	Town of Shutesbury
Sampled By:	Samuel Evans

Requested Turnaround Time
7-Day ☑ 10-Day ☐
PFAS 10-Day (std) ☐ Due Date:

Rush-Approval Required
1-Day ☐ 3-Day ☐
2-Day ☐ 4-Day ☐

Data Delivery
Format: PDF ☑ EXCEL ☑
Other:
CLP Like Data Pkg Required: ☐
Email To: JLArps@tighebond.com; SEvans@tighebond.com
Fax To #:

Dissolved Metals Samples
○ Field Filtered
○ Lab to Filter

Orthophosphate Samples
○ Field Filtered
○ Lab to Filter

PCB ONLY
SOXHLET ☐
NON SOXHLET ☐

ANALYSIS REQUESTED

2 Preservation Code

Pace Analytical Work Order#	Client Sample ID / Description	Beginning Date/Time	Ending Date/Time	COMP/GRAB	Matrix Code	Conc Code	VIALS	GLASS	PLASTIC	BACTERIA	ENCORE	PFAS Via 537.1
	20 and 24 ~~[illegible]~~ Wendell Road	2/17/23	1200	Grab	GW	U			X			X

	Date/Time:
Relinquished by: (signature) [signature]	2/20/23 0830
Received by: (signature) [signature] 14:25	2-20-23
Relinquished by: (signature) [signature] 16:40	2-20-23
Received by: (signature) [signature]	2/20/23 1640
Relinquished by: (signature)	Date/Time:
Received by: (signature)	Date/Time:
Relinquished by: (signature)	Date/Time:
Received by: (signature)	Date/Time:

Bill to Town of Shutesbury - PO:57-101490

Detection Limit Requirements
MA
CT
Other

Special Requirements
☑ MA MCP Required
MCP Certification Form Required
☐ CT RCP Required
RCP Certification Form Required
☐ MA State DW Required
PWSID #

Please use the following codes to indicate possible sample concentration within the Conc Code column above:
H - High; M - Medium; L - Low; C - Clean; U - Unknown

NELAC and AIHA-LAP, LLC Accredited

Project Entity
Government ☐ Municipality ☐ MWRA ☐ WRTA ☐
Federal ☐ 21 J ☐ School ☐
City ☐ Brownfield ☐ MBTA ☐

Other
☐ Chromatogram
☐ AIHA-LAP,LLC

Matrix Codes
GW- Ground Water
WW = Waste Water
DW = Drinking Water
A = Air S = Soil
SL = Sludge
SOL = Solid
O = Other ______

Preservation Codes
I = Iced
H = HCL
N = Nitric Acid
S = Sulfuric Acid
B = Sodium Bisulfate
X = Sodium Hydroxide
T = Sodium Thiosulfate
M = Methanol
DI = DI Water
O = Other ______

Comments:

Disclaimer: Pace Analytical is not responsible for any omitted information on the Chain of Custody. The Chain of Custody is a legal document that must be complete and accurate and is used to determine what analyses the laboratory will perform. Any missing information is not the laboratory's responsibility. Pace Analytical values your partnership on each project and will try to assist with missing information, but will not be held accountable.

Courier Use Only
VIALS ______
GLASS ______
PLASTIC ______
BACTERIA ______
ENCORE ______

Glassware in freezer? Y / N
Prepackaged Cooler? Y / N

*Pace Analytical is not responsible for missing samples from prepacked coolers

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East Longmeadow, MA. 01028
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F:413-525-6405
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Log In Back-Sheet

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

Pace
PEOPLE ADVANCING SCIENCE

Client Tighe and Bond

Project PFAS Sample Collection-Shutesbury

MCP/RCP Required MA MCP

Deliverable Package Req. N/A

Location Shutesbury, MASS

PWSID# (When Applicable) N/A

Arrival Method:

Courier ☑ Fed Ex ☐ Walk In ☐ Other ☐ _____

Received By / Date / Time LA 2/20/23 1640

Back-Sheet By / Date / Time LA 2/20/23 1747

Temperature Method Gun # 5

Temp ☑ < 6° C Actual Temperature 2.6

Rush Samples: Yes / (No) Notify _____

Short Hold: Yes / (No) Notify _____

Notes regarding Samples/COC outside of SOP:

	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: (N/A) ☐ ☐

Container (Circle when applicable)	UnP	HCl	HNO3	H2SO4	NaOH	Trizma	NaS2O3	Other Preservative
1L Amber Plastic								
500 mL Amber Plastic								
250 mL Amber (Plastic)						2		
Other Amber Clear Plastic								
16oz Amber Clear								
8oz Amber Clear								
4oz Amber Clear								
2oz Amber Clear								
Col/Bacteria								
Flashpoint								
Plastic Bag								
SOC Kit								
Perchlorate								
Encore								
Frozen								

	Proper Headspace	UnP	HCl	MeOH	Bisulfate	DI	Thiosulfate	Sulfuric	Other
Vials									

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February 24, 2023

Jeff Arps
Tighe & Bond
53 Southampton Road
Westfield, MA 01085

Project Location: 27 Wendall Rd. Shutesbury, Massachuesetts
Client Job Number:
Project Number: S-2190
Laboratory Work Order Number: 23B2136

Enclosed are results of analyses for samples as received by the laboratory on February 17, 2023. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Jessica L. Hoffman
Project Manager

Table of Contents

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

Tighe & Bond
53 Southampton Road
Westfield, MA 01085
ATTN: Jeff Arps

REPORT DATE: 2/24/2023

PURCHASE ORDER NUMBER: 57-101490

PROJECT NUMBER: S-2190

ANALYTICAL SUMMARY

WORK ORDER NUMBER: 23B2136

The results of analyses performed on the following samples submitted to Con-Test, a Pace Analytical Laboratory, are found in this report.

PROJECT LOCATION: 27 Wendall Rd. Shutesbury, Massachuesetts

FIELD SAMPLE #	LAB ID:	MATRIX	SAMPLE DESCRIPTION	TEST	SUB LAB
27 Wendell Road	23B2136-01	Ground Water		EPA 537.1	

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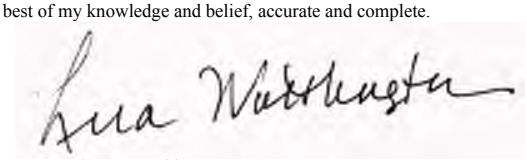
CASE NARRATIVE SUMMARY

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

The results of analyses reported only relate to samples submitted to Con-Test, a Pace Analytical Laboratory, 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.



Lisa A. Worthington
Technical Representative

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

Project Location: 27 Wendall Rd. Shutesbury, Mass Sample Description: Work Order: 23B2136

Date Received: 2/17/2023

Field Sample #: 27 Wendell Road Sampled: 2/16/2023 12:20

Sample ID: 23B2136-01

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	DF	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanesulfonic acid (PFBS)	ND	1.7	0.68	ng/L	1		EPA 537.1	2/21/23	2/23/23 12:07	AMS
Perfluorohexanoic acid (PFHxA)	ND	1.7	0.81	ng/L	1		EPA 537.1	2/21/23	2/23/23 12:07	AMS
Perfluorohexanesulfonic acid (PFHxS)	ND	1.7	0.77	ng/L	1		EPA 537.1	2/21/23	2/23/23 12:07	AMS
Perfluoroheptanoic acid (PFHpA)	ND	1.7	0.86	ng/L	1		EPA 537.1	2/21/23	2/23/23 12:07	AMS
Perfluorooctanoic acid (PFOA)	ND	1.7	0.89	ng/L	1		EPA 537.1	2/21/23	2/23/23 12:07	AMS
Perfluorooctanesulfonic acid (PFOS)	0.94	1.7	0.65	ng/L	1	J	EPA 537.1	2/21/23	2/23/23 12:07	AMS
Perfluorononanoic acid (PFNA)	ND	1.7	0.80	ng/L	1		EPA 537.1	2/21/23	2/23/23 12:07	AMS
Perfluorodecanoic acid (PFDA)	ND	1.7	0.83	ng/L	1		EPA 537.1	2/21/23	2/23/23 12:07	AMS
N-EtFOSAA (NEtFOSAA)	ND	1.7	0.57	ng/L	1		EPA 537.1	2/21/23	2/23/23 12:07	AMS
Perfluoroundecanoic acid (PFUnA)	ND	1.7	0.66	ng/L	1		EPA 537.1	2/21/23	2/23/23 12:07	AMS
N-MeFOSAA (NMeFOSAA)	ND	1.7	0.64	ng/L	1		EPA 537.1	2/21/23	2/23/23 12:07	AMS
Perfluorododecanoic acid (PFDoA)	ND	1.7	0.62	ng/L	1		EPA 537.1	2/21/23	2/23/23 12:07	AMS
Perfluorotridecanoic acid (PFTrDA)	ND	1.7	0.63	ng/L	1		EPA 537.1	2/21/23	2/23/23 12:07	AMS
Perfluorotetradecanoic acid (PFTA)	ND	1.7	0.72	ng/L	1		EPA 537.1	2/21/23	2/23/23 12:07	AMS
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	1.7	1.1	ng/L	1		EPA 537.1	2/21/23	2/23/23 12:07	AMS
11Cl-PF3OUdS (F53B Major)	ND	1.7	0.57	ng/L	1		EPA 537.1	2/21/23	2/23/23 12:07	AMS
9Cl-PF3ONS (F53B Minor)	ND	1.7	0.70	ng/L	1		EPA 537.1	2/21/23	2/23/23 12:07	AMS
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	1.7	0.76	ng/L	1		EPA 537.1	2/21/23	2/23/23 12:07	AMS

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
13C-PFHxA	86.6	70-130		2/23/23 12:07
M3HFPO-DA	86.0	70-130		2/23/23 12:07
13C-PFDA	87.2	70-130		2/23/23 12:07
D5-NEtFOSAA	90.7	70-130		2/23/23 12:07

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Sample Extraction Data

Prep Method: EPA 537.1-EPA 537.1

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
23B2136-01 [27 Wendell Road]	B332208	289	1.00	02/21/23

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QUALITY CONTROL

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

Analyte	Result	Reporting Limit	DL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B332208 - EPA 537.1											
Blank (B332208-BLK1)					Prepared: 02/21/23 Analyzed: 02/23/23						
Perfluorobutanesulfonic acid (PFBS)	ND	1.8	0.72	ng/L							
Perfluorohexanoic acid (PFHxA)	ND	1.8	0.86	ng/L							
Perfluorohexanesulfonic acid (PFHxS)	ND	1.8	0.82	ng/L							
Perfluoroheptanoic acid (PFHpA)	ND	1.8	0.91	ng/L							
Perfluorooctanoic acid (PFOA)	ND	1.8	0.95	ng/L							
Perfluorooctanesulfonic acid (PFOS)	ND	1.8	0.69	ng/L							
Perfluorononanoic acid (PFNA)	ND	1.8	0.84	ng/L							
Perfluorodecanoic acid (PFDA)	ND	1.8	0.88	ng/L							
N-EtFOSAA (NEtFOSAA)	ND	1.8	0.61	ng/L							
Perfluoroundecanoic acid (PFUnA)	ND	1.8	0.69	ng/L							
N-MeFOSAA (NMeFOSAA)	ND	1.8	0.68	ng/L							
Perfluorododecanoic acid (PFDoA)	ND	1.8	0.66	ng/L							
Perfluorotridecanoic acid (PFTrDA)	ND	1.8	0.67	ng/L							
Perfluorotetradecanoic acid (PFTA)	ND	1.8	0.76	ng/L							
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	1.8	1.1	ng/L							
11Cl-PF3OUdS (F53B Major)	ND	1.8	0.61	ng/L							
9Cl-PF3ONS (F53B Minor)	ND	1.8	0.75	ng/L							
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	1.8	0.80	ng/L							
Surrogate: 13C-PFHxA	*32.3*			ng/L	36.6		88.2	70-130			
Surrogate: M3HFPO-DA	*33.4*			ng/L	36.6		91.2	70-130			
Surrogate: 13C-PFDA	*33.1*			ng/L	36.6		90.4	70-130			
Surrogate: D5-NEtFOSAA	*137*			ng/L	146		93.4	70-130			
LCS (B332208-BS1)					Prepared: 02/21/23 Analyzed: 02/23/23						
Perfluorobutanesulfonic acid (PFBS)	1.35	1.8	0.72	ng/L	1.62		83.5	50-150			J
Perfluorohexanoic acid (PFHxA)	1.29	1.8	0.85	ng/L	1.83		70.8	50-150			J
Perfluorohexanesulfonic acid (PFHxS)	1.15	1.8	0.82	ng/L	1.67		69.1	50-150			J
Perfluoroheptanoic acid (PFHpA)	1.51	1.8	0.91	ng/L	1.83		82.9	50-150			J
Perfluorooctanoic acid (PFOA)	1.29	1.8	0.94	ng/L	1.83		70.8	50-150			J
Perfluorooctanesulfonic acid (PFOS)	1.48	1.8	0.69	ng/L	1.69		87.4	50-150			J
Perfluorononanoic acid (PFNA)	1.36	1.8	0.84	ng/L	1.83		74.6	50-150			J
Perfluorodecanoic acid (PFDA)	1.74	1.8	0.88	ng/L	1.83		95.2	50-150			J
N-EtFOSAA (NEtFOSAA)	1.48	1.8	0.61	ng/L	1.83		81.0	50-150			J
Perfluoroundecanoic acid (PFUnA)	1.49	1.8	0.69	ng/L	1.83		81.6	50-150			J
N-MeFOSAA (NMeFOSAA)	1.48	1.8	0.68	ng/L	1.83		81.1	50-150			J
Perfluorododecanoic acid (PFDoA)	1.30	1.8	0.65	ng/L	1.83		71.4	50-150			J
Perfluorotridecanoic acid (PFTrDA)	1.66	1.8	0.67	ng/L	1.83		91.2	50-150			J
Perfluorotetradecanoic acid (PFTA)	1.41	1.8	0.76	ng/L	1.83		77.0	50-150			J
Hexafluoropropylene oxide dimer acid (HFPO-DA)	1.66	1.8	1.1	ng/L	1.83		90.8	50-150			J
11Cl-PF3OUdS (F53B Major)	1.37	1.8	0.61	ng/L	1.72		79.5	50-150			J
9Cl-PF3ONS (F53B Minor)	1.36	1.8	0.74	ng/L	1.70		80.1	50-150			J
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	1.40	1.8	0.80	ng/L	1.73		81.3	50-150			J
Surrogate: 13C-PFHxA	*31.6*			ng/L	36.5		86.6	70-130			
Surrogate: M3HFPO-DA	*31.8*			ng/L	36.5		87.0	70-130			
Surrogate: 13C-PFDA	*30.9*			ng/L	36.5		84.6	70-130			
Surrogate: D5-NEtFOSAA	*125*			ng/L	146		85.6	70-130			

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QUALITY CONTROL

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

Analyte	Result	Reporting Limit	DL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B332208 - EPA 537.1											
LCS Dup (B332208-BSD1)					Prepared: 02/21/23 Analyzed: 02/23/23						
Perfluorobutanesulfonic acid (PFBS)	1.49	1.8	0.72	ng/L	1.62		91.9	50-150	9.55	50	J
Perfluorohexanoic acid (PFHxA)	1.48	1.8	0.85	ng/L	1.83		81.1	50-150	13.7	50	J
Perfluorohexanesulfonic acid (PFHxS)	1.40	1.8	0.82	ng/L	1.67		83.8	50-150	19.3	50	J
Perfluoroheptanoic acid (PFHpA)	1.88	1.8	0.91	ng/L	1.83		103	50-150	21.4	50	
Perfluorooctanoic acid (PFOA)	1.54	1.8	0.94	ng/L	1.83		84.4	50-150	17.6	50	J
Perfluorooctanesulfonic acid (PFOS)	1.73	1.8	0.69	ng/L	1.70		102	50-150	15.7	50	J
Perfluorononanoic acid (PFNA)	1.54	1.8	0.84	ng/L	1.83		84.2	50-150	12.1	50	J
Perfluorodecanoic acid (PFDA)	2.02	1.8	0.88	ng/L	1.83		110	50-150	14.7	50	
N-EtFOSAA (NEtFOSAA)	1.65	1.8	0.61	ng/L	1.83		90.5	50-150	11.2	50	J
Perfluoroundecanoic acid (PFUnA)	1.79	1.8	0.69	ng/L	1.83		98.0	50-150	18.3	50	J
N-MeFOSAA (NMeFOSAA)	1.69	1.8	0.68	ng/L	1.83		92.6	50-150	13.4	50	J
Perfluorododecanoic acid (PFDoA)	1.54	1.8	0.66	ng/L	1.83		84.2	50-150	16.6	50	J
Perfluorotridecanoic acid (PFTrDA)	1.86	1.8	0.67	ng/L	1.83		102	50-150	11.1	50	
Perfluorotetradecanoic acid (PFTA)	1.32	1.8	0.76	ng/L	1.83		72.3	50-150	6.22	50	J
Hexafluoropropylene oxide dimer acid (HFPO-DA)	1.58	1.8	1.1	ng/L	1.83		86.5	50-150	4.80	50	J
11Cl-PF3OUdS (F53B Major)	1.72	1.8	0.61	ng/L	1.72		99.6	50-150	22.5	50	J
9Cl-PF3ONS (F53B Minor)	1.69	1.8	0.74	ng/L	1.71		99.3	50-150	21.5	50	J
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	1.76	1.8	0.80	ng/L	1.73		102	50-150	22.5	50	J
Surrogate: 13C-PFHxA	*34.0*			ng/L	36.5		93.0	70-130			
Surrogate: M3HFPO-DA	*34.3*			ng/L	36.5		93.8	70-130			
Surrogate: 13C-PFDA	*33.3*			ng/L	36.5		91.0	70-130			
Surrogate: D5-NEtFOSAA	*137*			ng/L	146		93.6	70-130			

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

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
DL	Method Detection Limit
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).

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

CERTIFICATIONS

Certified Analyses included in this Report

Analyte	Certifications
EPA 537.1 in Drinking Water	
Perfluorobutanesulfonic acid (PFBS)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorohexanoic acid (PFHxA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorohexanesulfonic acid (PFHxS)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluoroheptanoic acid (PFHpA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorooctanoic acid (PFOA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorooctanesulfonic acid (PFOS)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorononanoic acid (PFNA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorodecanoic acid (PFDA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
N-EtFOSAA (NEtFOSAA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluoroundecanoic acid (PFUnA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
N-MeFOSAA (NMeFOSAA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorododecanoic acid (PFDoA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorotridecanoic acid (PFTrDA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorotetradecanoic acid (PFTA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Hexafluoropropylene oxide dimer acid (HFPO-DA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
11Cl-PF3OUdS (F53B Major)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
9Cl-PF3ONS (F53B Minor)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH

Con-Test, a Pace Environmental Laboratory, operates under the following certifications and accreditations:

Code	Description	Number	Expires
MA	Massachusetts DEP	M-MA100	06/30/2023
CT	Connecticut Department of Public Health	PH-0821	12/31/2024
NY	New York State Department of Health	10899 NELAP	04/1/2023
NH	New Hampshire Environmental Lab	2516 NELAP	02/5/2024
NJ	New Jersey DEP	MA007 NELAP	06/30/2023
VT-DW	Vermont Department of Health Drinking Water	VT-255716	06/12/2023
ME	State of Maine	MA00100	06/9/2023
PA	Commonwealth of Pennsylvania DEP	68-05812	06/30/2023
MI	Dept. of Env, Great Lakes, and Energy	9100	06/30/2023

23B2136 JH

Pace Analytical

Phone: 413-525-2332
Fax: 413-525-6405

https://www.pacelabs.com/

CHAIN OF CUSTODY RECORD

39 Spruce Street
East Longmeadow, MA 01026

Doc # 381 Rev 2_06262019

Page _____ of _____

Contact: https://www.pacelabs.com/contact-us/contact-environmental-sciences/

Company Name:	Tighe & Bond
Address:	53 Southampton Road, Westfield, Massachusetts
Phone:	(413) 562-1600
Project Name:	PFAS Sample Collection - Shutesbury
Project Location:	Shutesbury, Massachusetts
Project Number:	S-2190
Project Manager:	Jeff Arps
Pace Analytical Quote Name/Number	
Invoice Recipient:	Town of Shutesbury
Sampled By:	Samuel Evans

Requested Turnaround Time

7-Day ☑ 10-Day ☐
PFAS 10-Day (std) ☐ Due Date:

Push-Approval Required

1-Day ☐ 3-Day ☐
2-Day ☐ 4-Day ☐

Dissolved Metals Samples

○ Field Filtered
○ Lab to Filter

Orthophosphate Samples

○ Field Filtered
○ Lab to Filter

Data Delivery

Format: PDF ☑ EXCEL ☑
Other:
CLP Like Data Pkg Required: ☐
Email To: JLarps@Tighebond.com; SEvans@Tighebond.com
Fax To #:

ANALYSIS REQUESTED

PCB ONLY
SOXHLET ☐
NON SOXHLET ☐

2 Preservation Code

Pace Analytical Work Order#	Client Sample ID / Description	Beginning Date/Time	Ending Date/Time	COMP/GRAB	Matrix Code	Conc Code	VIALS	GLASS	PLASTIC	BACTERIA	ENCORE	PFAS Via 537.1
1	27 Wendell Road	2/16/23	1220	Grab	GW	U			X			X

Relinquished by: (signature) — Date/Time: 2/17/23 0800
Received by: (signature) — Date/Time: 2/17/23 1200
Relinquished by: (signature) — Date/Time: 2/17/23 1655
Received by: (signature) 42 — Date/Time: 2/17/23 1655
Relinquished by: (signature) — Date/Time:
Received by: (signature) — Date/Time:
Relinquished by: (signature) — Date/Time:
Received by: (signature) — Date/Time:

Bill to Town of Shutesbury - PO:57-101490

Detection Limit Requirements

MA
CT
Other:

Special Requirements

☑ MA MCP Required
MCP Certification Form Required
☐ CT RCP Required
RCP Certification Form Required
☐ MA State DW Required
PWSID #

Please use the following codes to indicate possible sample concentration within the Conc Code column above:
H - High; M - Medium; L - Low; C - Clean; U - Unknown

Project Entity

Government ☐ Municipality ☐ MWRA ☐ WRTA ☐
Federal ☐ 21 J ☐ School ☐
City ☐ Brownfield ☐ MBTA ☐

Other

☐ Chromatogram
☐ *AIHA-LAP,LLC*

Matrix Codes

GW = Ground Water
WW = Waste Water
DW = Drinking Water
A = Air S = Soil
SL = Sludge
SOL = Solid
O = Other _____

Preservation Codes

I = Iced
H = HCL
N = Nitric Acid
S = Sulfuric Acid
B = Sodium Bisulfate
X = Sodium Hydroxide
T = Sodium Thiosulfate
M = Methanol
DI = DI Water
O = Other _____

Comments:

Disclaimer: Pace Analytical is not responsible for any omitted information on the Chain of Custody. The Chain of Custody is a legal document that must be complete and accurate and is used to determine what analyses the laboratory will perform. Any missing information is not the laboratory's responsibility. Pace Analytical values your partnership on each project and will try to assist with missing information, but will not be held accountable.

Courier Use Only

VIALS_____ GLASS_____ PLASTIC_____ BACTERIA_____ ENCORE_____

Glassware in freezer? Y / N
Prepackaged Cooler? Y / N

*Pace Analytical is not responsible for missing samples from prepacked coolers

Pace Analytical

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39 Spruce St.
East Longmeadow, MA. 01028
P: 413-525-2332
F:413-525-6405
www.pacelabs.com

Table of Contents

Log In Back-Sheet

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

Pace
PEOPLE ADVANCING SCIENCE

Client Tighe + Bond

Project PFAS Sample Coll. - Shutesbury

MCP/RCP Required MCP Req'd

Deliverable Package Req. N/A

Location Shutesbury, MA

PWSID# (When Applicable) N/A

Arrival Method:

Courier [X] Fed Ex [ ] Walk In [ ] Other [ ]

Received By / Date / Time DWW 02/17/23 1655

Back-Sheet By / Date / Time DWW 02/17/23 1917

Temperature Method GUN # 3

Temp [X] < 6° C Actual Temperature 4.2

Rush Samples: Yes / (No) Notify

Short Hold: Yes / (No) Notify

	True	False
Received on Ice	[X]	[ ]
Received in Cooler	[X]	[ ]
Custody Seal: DATE TIME	[ ]	[X]
COC Relinquished	[X]	[ ]
COC/Samples Labels Agree	[X]	[ ]
All Samples in Good Condition	[X]	[ ]
Samples Received within Holding Time	[X]	[ ]
Is there enough Volume	[X]	[ ]
Proper Media/Container Used	[X]	[ ]
Splitting Samples Required	[ ]	[X]
MS/MSD	[ ]	[X]
Trip Blanks	[ ]	[X]
Lab to Filters	[ ]	[X]
COC Legible	[X]	[ ]

COC Included: (Check all included)

Client [X] Analysis [X] Sampler Name [X]

Project [X] IDs [X] Collection Date/Time [X]

All Samples Proper pH: (N/A) [ ] [ ]

Notes regarding Samples/COC outside of SOP:

Container (Circle when applicable)	UnP	HCl	HNO3	H2SO4	NaOH	Trizma	NaS2O3	Other Preservative
1L Amber Plastic								
500 mL Amber Plastic								
250 mL Amber (Plastic)						2		
Other Amber Clear Plastic								
16oz Amber Clear								
8oz Amber Clear								
4oz Amber Clear								
2oz Amber Clear								
Col/Bacteria								
Flashpoint								
Plastic Bag								
SOC Kit								
Perchlorate								
Encore								
Frozen								

	Proper Headspace	UnP	HCl	MeOH	Bisulfate	DI	Thiosulfate	Sulfuric	Other
Vials									

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

March 3, 2023

Jeff Arps
Tighe & Bond
53 Southampton Road
Westfield, MA 01085

Project Location: Shutesbury, MA 33 Wendell Rd
Client Job Number:
Project Number: S-2190
Laboratory Work Order Number: 23B2161

Enclosed are results of analyses for samples as received by the laboratory on February 17, 2023. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Jessica L. Hoffman
Project Manager

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

Tighe & Bond
53 Southampton Road
Westfield, MA 01085
ATTN: Jeff Arps

REPORT DATE: 3/3/2023

PURCHASE ORDER NUMBER: 57-101490

PROJECT NUMBER: S-2190

ANALYTICAL SUMMARY

WORK ORDER NUMBER: 23B2161

The results of analyses performed on the following samples submitted to Con-Test, a Pace Analytical Laboratory, are found in this report.

PROJECT LOCATION: Shutesbury, MA

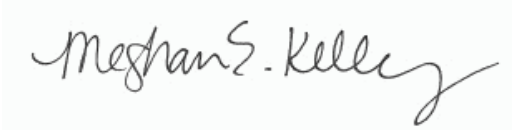
FIELD SAMPLE #	LAB ID:	MATRIX	SAMPLE DESCRIPTION	TEST	SUB LAB
33 Wendell Road-INF	23B2161-01	Ground Water		EPA 537.1	
33 Wendell Road-EFF	23B2161-02	Ground Water		EPA 537.1	

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

CASE NARRATIVE SUMMARY

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

The results of analyses reported only relate to samples submitted to Con-Test, a Pace Analytical Laboratory, 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: Shutesbury, MA | Sample Description: | Work Order: 23B2161

Date Received: 2/17/2023

Field Sample #: 33 Wendell Road-INF | Sampled: 2/16/2023 13:20

Sample ID: 23B2161-01

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	DF	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanesulfonic acid (PFBS)	0.81	1.8	0.70	ng/L	1	J	EPA 537.1	2/28/23	3/2/23 15:26	AMS
Perfluorohexanoic acid (PFHxA)	1.3	1.8	0.83	ng/L	1	J	EPA 537.1	2/28/23	3/2/23 15:26	AMS
Perfluorohexanesulfonic acid (PFHxS)	0.95	1.8	0.80	ng/L	1	J	EPA 537.1	2/28/23	3/2/23 15:26	AMS
Perfluoroheptanoic acid (PFHpA)	ND	1.8	0.89	ng/L	1		EPA 537.1	2/28/23	3/2/23 15:26	AMS
Perfluorooctanoic acid (PFOA)	3.3	1.8	0.92	ng/L	1		EPA 537.1	2/28/23	3/2/23 15:26	AMS
Perfluorooctanesulfonic acid (PFOS)	2.2	1.8	0.67	ng/L	1		EPA 537.1	2/28/23	3/2/23 15:26	AMS
Perfluorononanoic acid (PFNA)	ND	1.8	0.82	ng/L	1		EPA 537.1	2/28/23	3/2/23 15:26	AMS
Perfluorodecanoic acid (PFDA)	ND	1.8	0.85	ng/L	1		EPA 537.1	2/28/23	3/2/23 15:26	AMS
N-EtFOSAA (NEtFOSAA)	ND	1.8	0.59	ng/L	1		EPA 537.1	2/28/23	3/2/23 15:26	AMS
Perfluoroundecanoic acid (PFUnA)	ND	1.8	0.68	ng/L	1		EPA 537.1	2/28/23	3/2/23 15:26	AMS
N-MeFOSAA (NMeFOSAA)	ND	1.8	0.66	ng/L	1		EPA 537.1	2/28/23	3/2/23 15:26	AMS
Perfluorododecanoic acid (PFDoA)	ND	1.8	0.64	ng/L	1		EPA 537.1	2/28/23	3/2/23 15:26	AMS
Perfluorotridecanoic acid (PFTrDA)	ND	1.8	0.65	ng/L	1		EPA 537.1	2/28/23	3/2/23 15:26	AMS
Perfluorotetradecanoic acid (PFTA)	ND	1.8	0.74	ng/L	1		EPA 537.1	2/28/23	3/2/23 15:26	AMS
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	1.8	1.1	ng/L	1		EPA 537.1	2/28/23	3/2/23 15:26	AMS
11Cl-PF3OUdS (F53B Major)	ND	1.8	0.59	ng/L	1		EPA 537.1	2/28/23	3/2/23 15:26	AMS
9Cl-PF3ONS (F53B Minor)	ND	1.8	0.73	ng/L	1		EPA 537.1	2/28/23	3/2/23 15:26	AMS
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	1.8	0.78	ng/L	1		EPA 537.1	2/28/23	3/2/23 15:26	AMS

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
13C-PFHxA	111	70-130		3/2/23 15:26
M3HFPO-DA	117	70-130		3/2/23 15:26
13C-PFDA	99.8	70-130		3/2/23 15:26
D5-NEtFOSAA	100	70-130		3/2/23 15:26

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Project Location: Shutesbury, MA | Sample Description: | Work Order: 23B2161

Date Received: 2/17/2023

Field Sample #: 33 Wendell Road-EFF | Sampled: 2/16/2023 13:30

Sample ID: 23B2161-02

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	DF	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanesulfonic acid (PFBS)	ND	1.9	0.74	ng/L	1		EPA 537.1	2/22/23	2/27/23 12:19	AMS
Perfluorohexanoic acid (PFHxA)	ND	1.9	0.88	ng/L	1		EPA 537.1	2/22/23	2/27/23 12:19	AMS
Perfluorohexanesulfonic acid (PFHxS)	ND	1.9	0.84	ng/L	1		EPA 537.1	2/22/23	2/27/23 12:19	AMS
Perfluoroheptanoic acid (PFHpA)	ND	1.9	0.93	ng/L	1		EPA 537.1	2/22/23	2/27/23 12:19	AMS
Perfluorooctanoic acid (PFOA)	1.3	1.9	0.97	ng/L	1	J	EPA 537.1	2/22/23	2/27/23 12:19	AMS
Perfluorooctanesulfonic acid (PFOS)	1.2	1.9	0.71	ng/L	1	J	EPA 537.1	2/22/23	2/27/23 12:19	AMS
Perfluorononanoic acid (PFNA)	ND	1.9	0.86	ng/L	1		EPA 537.1	2/22/23	2/27/23 12:19	AMS
Perfluorodecanoic acid (PFDA)	ND	1.9	0.90	ng/L	1		EPA 537.1	2/22/23	2/27/23 12:19	AMS
N-EtFOSAA (NEtFOSAA)	ND	1.9	0.62	ng/L	1		EPA 537.1	2/22/23	2/27/23 12:19	AMS
Perfluoroundecanoic acid (PFUnA)	ND	1.9	0.71	ng/L	1		EPA 537.1	2/22/23	2/27/23 12:19	AMS
N-MeFOSAA (NMeFOSAA)	ND	1.9	0.70	ng/L	1		EPA 537.1	2/22/23	2/27/23 12:19	AMS
Perfluorododecanoic acid (PFDoA)	ND	1.9	0.67	ng/L	1		EPA 537.1	2/22/23	2/27/23 12:19	AMS
Perfluorotridecanoic acid (PFTrDA)	ND	1.9	0.68	ng/L	1		EPA 537.1	2/22/23	2/27/23 12:19	AMS
Perfluorotetradecanoic acid (PFTA)	ND	1.9	0.78	ng/L	1		EPA 537.1	2/22/23	2/27/23 12:19	AMS
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	1.9	1.2	ng/L	1		EPA 537.1	2/22/23	2/27/23 12:19	AMS
11Cl-PF3OUdS (F53B Major)	ND	1.9	0.62	ng/L	1		EPA 537.1	2/22/23	2/27/23 12:19	AMS
9Cl-PF3ONS (F53B Minor)	ND	1.9	0.76	ng/L	1		EPA 537.1	2/22/23	2/27/23 12:19	AMS
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	1.9	0.82	ng/L	1		EPA 537.1	2/22/23	2/27/23 12:19	AMS

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
13C-PFHxA	110	70-130		2/27/23 12:19
M3HFPO-DA	111	70-130		2/27/23 12:19
13C-PFDA	109	70-130		2/27/23 12:19
D5-NEtFOSAA	113	70-130		2/27/23 12:19

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Sample Extraction Data

Prep Method: EPA 537.1-EPA 537.1

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
23B2161-02 [33 Wendell Road-EFF]	B332209	267	1.00	02/22/23

Prep Method: EPA 537.1-EPA 537.1

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
23B2161-01RE1 [33 Wendell Road-INF]	B332846	280	1.00	02/28/23

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QUALITY CONTROL

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

Analyte	Result	Reporting Limit	DL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B332209 - EPA 537.1											
Blank (B332209-BLK1)					Prepared: 02/22/23 Analyzed: 02/27/23						
Perfluorobutanesulfonic acid (PFBS)	ND	1.8	0.72	ng/L							
Perfluorohexanoic acid (PFHxA)	ND	1.8	0.85	ng/L							
Perfluorohexanesulfonic acid (PFHxS)	ND	1.8	0.82	ng/L							
Perfluoroheptanoic acid (PFHpA)	ND	1.8	0.91	ng/L							
Perfluorooctanoic acid (PFOA)	ND	1.8	0.94	ng/L							
Perfluorooctanesulfonic acid (PFOS)	ND	1.8	0.69	ng/L							
Perfluorononanoic acid (PFNA)	ND	1.8	0.84	ng/L							
Perfluorodecanoic acid (PFDA)	ND	1.8	0.87	ng/L							
N-EtFOSAA (NEtFOSAA)	ND	1.8	0.60	ng/L							
Perfluoroundecanoic acid (PFUnA)	ND	1.8	0.69	ng/L							
N-MeFOSAA (NMeFOSAA)	ND	1.8	0.68	ng/L							
Perfluorododecanoic acid (PFDoA)	ND	1.8	0.65	ng/L							
Perfluorotridecanoic acid (PFTrDA)	ND	1.8	0.66	ng/L							
Perfluorotetradecanoic acid (PFTA)	ND	1.8	0.76	ng/L							
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	1.8	1.1	ng/L							
11Cl-PF3OUdS (F53B Major)	ND	1.8	0.60	ng/L							
9Cl-PF3ONS (F53B Minor)	ND	1.8	0.74	ng/L							
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	1.8	0.80	ng/L							
Surrogate: 13C-PFHxA	*33.5*			ng/L	36.4		92.0	70-130			
Surrogate: M3HFPO-DA	*33.0*			ng/L	36.4		90.5	70-130			
Surrogate: 13C-PFDA	*34.9*			ng/L	36.4		95.9	70-130			
Surrogate: D5-NEtFOSAA	*141*			ng/L	146		96.8	70-130			
LCS (B332209-BS1)					Prepared: 02/22/23 Analyzed: 02/27/23						
Perfluorobutanesulfonic acid (PFBS)	9.40	1.8	0.72	ng/L	8.07		116	70-130			
Perfluorohexanoic acid (PFHxA)	8.56	1.8	0.85	ng/L	9.10		94.1	70-130			
Perfluorohexanesulfonic acid (PFHxS)	7.71	1.8	0.81	ng/L	8.32		92.7	70-130			
Perfluoroheptanoic acid (PFHpA)	10.7	1.8	0.90	ng/L	9.10		118	70-130			
Perfluorooctanoic acid (PFOA)	8.96	1.8	0.94	ng/L	9.10		98.4	70-130			
Perfluorooctanesulfonic acid (PFOS)	10.6	1.8	0.69	ng/L	8.45		125	70-130			
Perfluorononanoic acid (PFNA)	9.71	1.8	0.84	ng/L	9.10		107	70-130			
Perfluorodecanoic acid (PFDA)	11.3	1.8	0.87	ng/L	9.10		124	70-130			
N-EtFOSAA (NEtFOSAA)	11.1	1.8	0.60	ng/L	9.10		122	70-130			
Perfluoroundecanoic acid (PFUnA)	10.8	1.8	0.69	ng/L	9.10		119	70-130			
N-MeFOSAA (NMeFOSAA)	11.3	1.8	0.68	ng/L	9.10		125	70-130			
Perfluorododecanoic acid (PFDoA)	11.1	1.8	0.65	ng/L	9.10		122	70-130			
Perfluorotridecanoic acid (PFTrDA)	11.0	1.8	0.66	ng/L	9.10		120	70-130			
Perfluorotetradecanoic acid (PFTA)	8.43	1.8	0.76	ng/L	9.10		92.7	70-130			
Hexafluoropropylene oxide dimer acid (HFPO-DA)	8.69	1.8	1.1	ng/L	9.10		95.4	70-130			
11Cl-PF3OUdS (F53B Major)	10.4	1.8	0.60	ng/L	8.58		121	70-130			
9Cl-PF3ONS (F53B Minor)	10.5	1.8	0.74	ng/L	8.49		123	70-130			
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	9.97	1.8	0.80	ng/L	8.60		116	70-130			
Surrogate: 13C-PFHxA	*37.8*			ng/L	36.4		104	70-130			
Surrogate: M3HFPO-DA	*36.8*			ng/L	36.4		101	70-130			
Surrogate: 13C-PFDA	*38.6*			ng/L	36.4		106	70-130			
Surrogate: D5-NEtFOSAA	*156*			ng/L	146		107	70-130			

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QUALITY CONTROL

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

Analyte	Result	Reporting Limit	DL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B332209 - EPA 537.1											
LCS Dup (B332209-BSD1)					Prepared: 02/22/23 Analyzed: 02/27/23						
Perfluorobutanesulfonic acid (PFBS)	8.78	1.8	0.72	ng/L	8.08		109	70-130	6.85	30	
Perfluorohexanoic acid (PFHxA)	8.03	1.8	0.85	ng/L	9.11		88.1	70-130	6.45	30	
Perfluorohexanesulfonic acid (PFHxS)	6.99	1.8	0.82	ng/L	8.33		83.9	70-130	9.81	30	
Perfluoroheptanoic acid (PFHpA)	10.1	1.8	0.91	ng/L	9.11		111	70-130	5.49	30	
Perfluorooctanoic acid (PFOA)	8.79	1.8	0.94	ng/L	9.11		96.4	70-130	1.96	30	
Perfluorooctanesulfonic acid (PFOS)	9.23	1.8	0.69	ng/L	8.45		109	70-130	13.8	30	
Perfluorononanoic acid (PFNA)	8.98	1.8	0.84	ng/L	9.11		98.6	70-130	7.79	30	
Perfluorodecanoic acid (PFDA)	10.7	1.8	0.87	ng/L	9.11		118	70-130	5.23	30	
N-EtFOSAA (NEtFOSAA)	9.84	1.8	0.60	ng/L	9.11		108	70-130	11.9	30	
Perfluoroundecanoic acid (PFUnA)	10.2	1.8	0.69	ng/L	9.11		112	70-130	5.55	30	
N-MeFOSAA (NMeFOSAA)	9.96	1.8	0.68	ng/L	9.11		109	70-130	12.9	30	
Perfluorododecanoic acid (PFDoA)	10.3	1.8	0.65	ng/L	9.11		113	70-130	7.09	30	
Perfluorotridecanoic acid (PFTrDA)	10.2	1.8	0.66	ng/L	9.11		112	70-130	7.17	30	
Perfluorotetradecanoic acid (PFTA)	8.19	1.8	0.76	ng/L	9.11		89.9	70-130	2.97	30	
Hexafluoropropylene oxide dimer acid (HFPO-DA)	7.92	1.8	1.1	ng/L	9.11		86.9	70-130	9.23	30	
11Cl-PF3OUdS (F53B Major)	9.42	1.8	0.60	ng/L	8.59		110	70-130	9.69	30	
9Cl-PF3ONS (F53B Minor)	9.55	1.8	0.74	ng/L	8.50		112	70-130	9.11	30	
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	9.26	1.8	0.80	ng/L	8.61		108	70-130	7.39	30	
Surrogate: 13C-PFHxA	*37.5*			ng/L	36.4		103	70-130			
Surrogate: M3HFPO-DA	*37.0*			ng/L	36.4		101	70-130			
Surrogate: 13C-PFDA	*38.2*			ng/L	36.4		105	70-130			
Surrogate: D5-NEtFOSAA	*150*			ng/L	146		103	70-130			
Batch B332846 - EPA 537.1											
Blank (B332846-BLK1)					Prepared: 02/28/23 Analyzed: 03/02/23						
Perfluorobutanesulfonic acid (PFBS)	ND	1.8	0.70	ng/L							
Perfluorohexanoic acid (PFHxA)	ND	1.8	0.83	ng/L							
Perfluorohexanesulfonic acid (PFHxS)	ND	1.8	0.79	ng/L							
Perfluoroheptanoic acid (PFHpA)	ND	1.8	0.88	ng/L							
Perfluorooctanoic acid (PFOA)	ND	1.8	0.91	ng/L							
Perfluorooctanesulfonic acid (PFOS)	ND	1.8	0.67	ng/L							
Perfluorononanoic acid (PFNA)	ND	1.8	0.81	ng/L							
Perfluorodecanoic acid (PFDA)	ND	1.8	0.85	ng/L							
N-EtFOSAA (NEtFOSAA)	ND	1.8	0.59	ng/L							
Perfluoroundecanoic acid (PFUnA)	ND	1.8	0.67	ng/L							
N-MeFOSAA (NMeFOSAA)	ND	1.8	0.66	ng/L							
Perfluorododecanoic acid (PFDoA)	ND	1.8	0.63	ng/L							
Perfluorotridecanoic acid (PFTrDA)	ND	1.8	0.64	ng/L							
Perfluorotetradecanoic acid (PFTA)	ND	1.8	0.74	ng/L							
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	1.8	1.1	ng/L							
11Cl-PF3OUdS (F53B Major)	ND	1.8	0.59	ng/L							
9Cl-PF3ONS (F53B Minor)	ND	1.8	0.72	ng/L							
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	1.8	0.78	ng/L							
Surrogate: 13C-PFHxA	*34.0*			ng/L	35.3		96.3	70-130			
Surrogate: M3HFPO-DA	*36.2*			ng/L	35.3		102	70-130			
Surrogate: 13C-PFDA	*34.2*			ng/L	35.3		96.9	70-130			
Surrogate: D5-NEtFOSAA	*134*			ng/L	141		95.2	70-130			

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QUALITY CONTROL

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

Analyte	Result	Reporting Limit	DL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B332846 - EPA 537.1											
LCS (B332846-BS1)					Prepared: 02/28/23 Analyzed: 03/02/23						
Perfluorobutanesulfonic acid (PFBS)	1.56	1.8	0.69	ng/L	1.56		99.5	50-150			J
Perfluorohexanoic acid (PFHxA)	1.47	1.8	0.82	ng/L	1.76		83.6	50-150			J
Perfluorohexanesulfonic acid (PFHxS)	1.34	1.8	0.79	ng/L	1.61		83.4	50-150			J
Perfluoroheptanoic acid (PFHpA)	1.80	1.8	0.88	ng/L	1.76		102	50-150			
Perfluorooctanoic acid (PFOA)	1.70	1.8	0.91	ng/L	1.76		96.5	50-150			J
Perfluorooctanesulfonic acid (PFOS)	1.73	1.8	0.67	ng/L	1.64		106	50-150			J
Perfluorononanoic acid (PFNA)	1.51	1.8	0.81	ng/L	1.76		85.5	50-150			J
Perfluorodecanoic acid (PFDA)	1.94	1.8	0.85	ng/L	1.76		110	50-150			
N-EtFOSAA (NEtFOSAA)	1.69	1.8	0.59	ng/L	1.76		95.9	50-150			J
Perfluoroundecanoic acid (PFUnA)	1.56	1.8	0.67	ng/L	1.76		88.6	50-150			J
N-MeFOSAA (NMeFOSAA)	1.76	1.8	0.66	ng/L	1.76		99.9	50-150			J
Perfluorododecanoic acid (PFDoA)	1.48	1.8	0.63	ng/L	1.76		83.6	50-150			J
Perfluorotridecanoic acid (PFTrDA)	1.64	1.8	0.64	ng/L	1.76		93.0	50-150			J
Perfluorotetradecanoic acid (PFTA)	1.37	1.8	0.74	ng/L	1.76		77.9	50-150			J
Hexafluoropropylene oxide dimer acid (HFPO-DA)	1.87	1.8	1.1	ng/L	1.76		106	50-150			
11Cl-PF3OUdS (F53B Major)	1.61	1.8	0.58	ng/L	1.66		96.6	50-150			J
9Cl-PF3ONS (F53B Minor)	1.68	1.8	0.72	ng/L	1.65		102	50-150			J
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	1.77	1.8	0.78	ng/L	1.67		106	50-150			J
Surrogate: 13C-PFHxA	*33.9*			ng/L	35.3		96.1	70-130			
Surrogate: M3HFPO-DA	*36.2*			ng/L	35.3		103	70-130			
Surrogate: 13C-PFDA	*32.1*			ng/L	35.3		91.1	70-130			
Surrogate: D5-NEtFOSAA	*124*			ng/L	141		87.8	70-130			
LCS Dup (B332846-BSD1)					Prepared: 02/28/23 Analyzed: 03/02/23						
Perfluorobutanesulfonic acid (PFBS)	1.41	1.8	0.69	ng/L	1.56		90.6	50-150	9.57	50	J
Perfluorohexanoic acid (PFHxA)	1.45	1.8	0.82	ng/L	1.76		82.6	50-150	1.44	50	J
Perfluorohexanesulfonic acid (PFHxS)	1.32	1.8	0.79	ng/L	1.61		81.9	50-150	1.98	50	J
Perfluoroheptanoic acid (PFHpA)	1.72	1.8	0.87	ng/L	1.76		97.7	50-150	4.67	50	J
Perfluorooctanoic acid (PFOA)	1.49	1.8	0.91	ng/L	1.76		84.4	50-150	13.6	50	J
Perfluorooctanesulfonic acid (PFOS)	1.55	1.8	0.67	ng/L	1.63		94.8	50-150	11.1	50	J
Perfluorononanoic acid (PFNA)	1.48	1.8	0.81	ng/L	1.76		83.9	50-150	2.07	50	J
Perfluorodecanoic acid (PFDA)	1.86	1.8	0.84	ng/L	1.76		106	50-150	4.30	50	
N-EtFOSAA (NEtFOSAA)	1.64	1.8	0.58	ng/L	1.76		93.0	50-150	3.32	50	J
Perfluoroundecanoic acid (PFUnA)	1.58	1.8	0.67	ng/L	1.76		89.9	50-150	1.22	50	J
N-MeFOSAA (NMeFOSAA)	1.72	1.8	0.65	ng/L	1.76		97.5	50-150	2.59	50	J
Perfluorododecanoic acid (PFDoA)	1.49	1.8	0.63	ng/L	1.76		84.4	50-150	0.766	50	J
Perfluorotridecanoic acid (PFTrDA)	1.65	1.8	0.64	ng/L	1.76		93.9	50-150	0.762	50	J
Perfluorotetradecanoic acid (PFTA)	1.30	1.8	0.74	ng/L	1.76		73.6	50-150	5.77	50	J
Hexafluoropropylene oxide dimer acid (HFPO-DA)	1.25	1.8	1.1	ng/L	1.76		70.9	50-150	39.9	50	J
11Cl-PF3OUdS (F53B Major)	1.47	1.8	0.58	ng/L	1.66		88.6	50-150	8.84	50	J
9Cl-PF3ONS (F53B Minor)	1.69	1.8	0.72	ng/L	1.64		103	50-150	0.827	50	J
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	1.73	1.8	0.77	ng/L	1.66		104	50-150	1.97	50	J
Surrogate: 13C-PFHxA	*34.9*			ng/L	35.2		99.2	70-130			
Surrogate: M3HFPO-DA	*38.0*			ng/L	35.2		108	70-130			
Surrogate: 13C-PFDA	*33.9*			ng/L	35.2		96.4	70-130			
Surrogate: D5-NEtFOSAA	*129*			ng/L	141		91.3	70-130			

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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
DL	Method Detection Limit
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).

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CERTIFICATIONS

Certified Analyses included in this Report

Analyte	Certifications
EPA 537.1 in Drinking Water	
Perfluorobutanesulfonic acid (PFBS)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorohexanoic acid (PFHxA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorohexanesulfonic acid (PFHxS)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluoroheptanoic acid (PFHpA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorooctanoic acid (PFOA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorooctanesulfonic acid (PFOS)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorononanoic acid (PFNA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorodecanoic acid (PFDA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
N-EtFOSAA (NEtFOSAA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluoroundecanoic acid (PFUnA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
N-MeFOSAA (NMeFOSAA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorododecanoic acid (PFDoA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorotridecanoic acid (PFTrDA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorotetradecanoic acid (PFTA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Hexafluoropropylene oxide dimer acid (HFPO-DA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
11Cl-PF3OUdS (F53B Major)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
9Cl-PF3ONS (F53B Minor)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH

Con-Test, a Pace Environmental Laboratory, operates under the following certifications and accreditations:

Code	Description	Number	Expires
MA	Massachusetts DEP	M-MA100	06/30/2023
CT	Connecticut Department of Public Health	PH-0821	12/31/2024
NY	New York State Department of Health	10899 NELAP	04/1/2023
NH	New Hampshire Environmental Lab	2516 NELAP	02/5/2024
NJ	New Jersey DEP	MA007 NELAP	06/30/2023
VT-DW	Vermont Department of Health Drinking Water	VT-255716	06/12/2023
ME	State of Maine	MA00100	06/9/2023
PA	Commonwealth of Pennsylvania DEP	68-05812	06/30/2023
MI	Dept. of Env, Great Lakes, and Energy	9100	06/30/2023

23B2161

JLT

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https://www.pacelabs.com/

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East Longmeadow, MA 01026

Doc # 381 Rev 2_06262019

CHAIN OF CUSTODY RECORD

Page ____ of ____

Contact: https://www.pacelabs.com/contact-us/contact-environmental-sciences/

Company Name:	Tighe & Bond
Address:	53 Southampton Road, Westfield, Massachusetts
Phone:	(413) 562-1600
Project Name:	PFAS Sample Collection - Shutesbury
Project Location:	Shutesbury, Massachusetts
Project Number:	S-2190
Project Manager:	Jeff Alps
Pace Analytical Quote Name/Number	
Invoice Recipient:	Town of Shutesbury
Sampled By:	Samuel Evans

Requested Turnaround Time
7-Day ☑ 10-Day ☐
PFAS 10-Day (std) ☐ Due Date:

Rush Approval Required
1-Day ☐ 3-Day ☐
2-Day ☐ 4-Day ☐

Data Delivery
Format: PDF ☑ EXCEL ☑
Other:
CLP Like Data Pkg Required: ☐
Email To: JLarps@TighеBond.com; SEvans@TighеBond.com
Fax To #:

Dissolved Metals Samples
○ Field Filtered
○ Lab to Filter

Orthophosphate Samples
○ Field Filtered
○ Lab to Filter

PCB ONLY
SOXHLET ☐
NON SOXHLET ☐

ANALYSIS REQUESTED

Pace Analytical Work Order#	Client Sample ID / Description	Beginning Date/Time	Ending Date/Time	COMP/GRAB	Matrix Code	Conc Code	VIALS	GLASS	PLASTIC	BACTERIA	ENCORE	PFAS Via 537.1	# Preservation Code
	33 Wendell Road-Inf	2/16/23	1320	Grab	GW	U			X			X	
	33 Wendell Road-Eff	↓	1330	↓	↓	↓			X			X	

Relinquished by: (signature) — Date/Time: 2/17/23 0800
Received by: (signature) — Date/Time: 2/17/23 12
Relinquished by: (signature) — Date/Time: 2/17/23 1655
Received by: (signature) — Date/Time: 2/17/23 1655
Relinquished by: (signature) — Date/Time:
Received by: (signature) — Date/Time:
Relinquished by: (signature) — Date/Time:
Received by: (signature) — Date/Time:

Bill to Town of Shutesbury - PO:57-101490

Detection Limit Requirements
MA:
GW:
Other:

Special Requirements
☑ MA MCP Required
MCP Certification Form Required
☐ CT RCP Required
RCP Certification Form Required
☐ MA State DW Required
PWSID #

Please use the following codes to indicate possible sample concentration within the Conc Code column above:
H - High; M - Medium; L - Low; C - Clean; U - Unknown

Project Entity
Government ☐ Municipality ☐ MWRA ☐ WRTA ☐
Federal ☐ 21 J ☐ School ☐
City ☐ Brownfield ☐ MBTA ☐

Other
☐ Chromatogram
☐ AIHA-LAP,LLC

Matrix Codes
GW = Ground Water
WW = Waste Water
DW = Drinking Water
A = Air S = Soil
SL = Sludge
SOL = Solid
O = Other ____

Preservation Codes
I = Iced
H = HCL
N = Nitric Acid
S = Sulfuric Acid
B = Sodium Bisulfate
X = Sodium Hydroxide
T = Sodium Thiosulfate
M = Methanol
DI = DI Water
O = Other ____

Lab Comments:

Disclaimer: Pace Analytical is not responsible for any omitted information on the Chain of Custody. The Chain of Custody is a legal document that must be complete and accurate and is used to determine what analyses the laboratory will perform. Any missing information is not the laboratory's responsibility. Pace Analytical values your partnership on each project and will try to assist with missing information, but will not be held accountable.

Courier Use Only
VIALS ____ GLASS ____ PLASTIC ____ BACTERIA ____ ENCORE ____
Glassware in freezer? Y / N
Prepackaged Cooler? Y / N

*Pace Analytical is not responsible for missing samples from prepacked coolers

Pace Analytical

39 Spruce St.
East Longmeadow, MA. 01028
P: 413-525-2332
F:413-525-6405
www.pacelabs.com

Log In Back-Sheet

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

Pace
PEOPLE ADVANCING SCIENCE

Client Tighe + Bond
Project PFAS Sample Coll. - Shutesbury
MCP/RCP Required MCP Req'd
Deliverable Package Req. N/A
Location Shutesbury, MA
PWSID# (When Applicable) N/A
Arrival Method:

Courier ☒ Fed Ex ☐ Walk In ☐ Other ☐

Received By / Date / Time DWW 02/17/23 1655
Back-Sheet By / Date / Time DWW 02/17/23 1930
Temperature Method GUN # 3
Temp ☒ < 6° C Actual Temperature 4.2
Rush Samples: Yes (No) Notify
Short Hold: Yes (No) Notify

	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: (N/A) ☐ ☐

Notes regarding Samples/COC outside of SOP:

Container (Circle when applicable)	UnP	HCl	HNO3	H2SO4	NaOH	Trizma	NaS2O3	Other Preservative
1L Amber Plastic								
500 mL Amber Plastic								
250 mL Amber (Plastic)						4		
Other Amber Clear Plastic								
16oz Amber Clear								
8oz Amber Clear								
4oz Amber Clear								
2oz Amber Clear								
Col/Bacteria								
Flashpoint								
Plastic Bag								
SOC Kit								
Perchlorate								
Encore								
Frozen								

	Proper Headspace	UnP	HCl	MeOH	Bisulfate	DI	Thiosulfate	Sulfuric	Other
Vials									

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March 7, 2023

Jeff Arps
Tighe & Bond
53 Southampton Road
Westfield, MA 01085

Project Location: 45 Wendall Road Shutesbury, Massachusetts
Client Job Number:
Project Number: S-2190
Laboratory Work Order Number: 23B2854

Enclosed are results of analyses for samples as received by the laboratory on February 27, 2023. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Jessica L. Hoffman
Project Manager

Table of Contents

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

Tighe & Bond
53 Southampton Road
Westfield, MA 01085
ATTN: Jeff Arps

REPORT DATE: 3/7/2023

PURCHASE ORDER NUMBER: 57-101490

PROJECT NUMBER: S-2190

ANALYTICAL SUMMARY

WORK ORDER NUMBER: 23B2854

The results of analyses performed on the following samples submitted to Con-Test, a Pace Analytical Laboratory, are found in this report.

PROJECT LOCATION: 45 Wendall Road Shutesbury, Massachusetts

FIELD SAMPLE #	LAB ID:	MATRIX	SAMPLE DESCRIPTION	TEST	SUB LAB
45 Wendall Road	23B2854-01	Ground Water		EPA 537.1	

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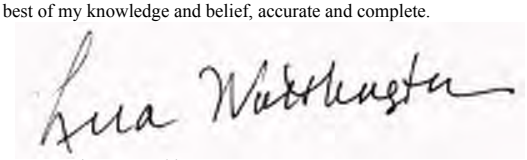
CASE NARRATIVE SUMMARY

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

The results of analyses reported only relate to samples submitted to Con-Test, a Pace Analytical Laboratory, 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.



Lisa A. Worthington
Technical Representative

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Project Location: 45 Wendall Road Shutesbury, Ma Sample Description: Work Order: 23B2854

Date Received: 2/27/2023

Field Sample #: 45 Wendall Road Sampled: 2/23/2023 17:45

Sample ID: 23B2854-01

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	DF	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanesulfonic acid (PFBS)	ND	1.8	0.73	ng/L	1		EPA 537.1	3/3/23	3/6/23 10:05	AMS
Perfluorohexanoic acid (PFHxA)	ND	1.8	0.86	ng/L	1		EPA 537.1	3/3/23	3/6/23 10:05	AMS
Perfluorohexanesulfonic acid (PFHxS)	ND	1.8	0.83	ng/L	1		EPA 537.1	3/3/23	3/6/23 10:05	AMS
Perfluoroheptanoic acid (PFHpA)	ND	1.8	0.92	ng/L	1		EPA 537.1	3/3/23	3/6/23 10:05	AMS
Perfluorooctanoic acid (PFOA)	ND	1.8	0.95	ng/L	1		EPA 537.1	3/3/23	3/6/23 10:05	AMS
Perfluorooctanesulfonic acid (PFOS)	ND	1.8	0.70	ng/L	1		EPA 537.1	3/3/23	3/6/23 10:05	AMS
Perfluorononanoic acid (PFNA)	ND	1.8	0.85	ng/L	1		EPA 537.1	3/3/23	3/6/23 10:05	AMS
Perfluorodecanoic acid (PFDA)	ND	1.8	0.88	ng/L	1		EPA 537.1	3/3/23	3/6/23 10:05	AMS
N-EtFOSAA (NEtFOSAA)	ND	1.8	0.61	ng/L	1		EPA 537.1	3/3/23	3/6/23 10:05	AMS
Perfluoroundecanoic acid (PFUnA)	ND	1.8	0.70	ng/L	1		EPA 537.1	3/3/23	3/6/23 10:05	AMS
N-MeFOSAA (NMeFOSAA)	ND	1.8	0.69	ng/L	1		EPA 537.1	3/3/23	3/6/23 10:05	AMS
Perfluorododecanoic acid (PFDoA)	ND	1.8	0.66	ng/L	1		EPA 537.1	3/3/23	3/6/23 10:05	AMS
Perfluorotridecanoic acid (PFTrDA)	ND	1.8	0.67	ng/L	1		EPA 537.1	3/3/23	3/6/23 10:05	AMS
Perfluorotetradecanoic acid (PFTA)	ND	1.8	0.77	ng/L	1		EPA 537.1	3/3/23	3/6/23 10:05	AMS
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	1.8	1.1	ng/L	1		EPA 537.1	3/3/23	3/6/23 10:05	AMS
11Cl-PF3OUdS (F53B Major)	ND	1.8	0.61	ng/L	1		EPA 537.1	3/3/23	3/6/23 10:05	AMS
9Cl-PF3ONS (F53B Minor)	ND	1.8	0.75	ng/L	1		EPA 537.1	3/3/23	3/6/23 10:05	AMS
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	1.8	0.81	ng/L	1		EPA 537.1	3/3/23	3/6/23 10:05	AMS

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
13C-PFHxA	92.8	70-130		3/6/23 10:05
M3HFPO-DA	89.2	70-130		3/6/23 10:05
13C-PFDA	96.2	70-130		3/6/23 10:05
D5-NEtFOSAA	104	70-130		3/6/23 10:05

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Sample Extraction Data

Prep Method: EPA 537.1-EPA 537.1

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
23B2854-01 [45 Wendall Road]	B332536	271	1.00	03/03/23

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QUALITY CONTROL

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

Analyte	Result	Reporting Limit	DL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B332536 - EPA 537.1											
Blank (B332536-BLK1)					Prepared: 03/03/23 Analyzed: 03/06/23						
Perfluorobutanesulfonic acid (PFBS)	ND	2.1	0.82	ng/L							
Perfluorohexanoic acid (PFHxA)	ND	2.1	0.97	ng/L							
Perfluorohexanesulfonic acid (PFHxS)	ND	2.1	0.93	ng/L							
Perfluoroheptanoic acid (PFHpA)	ND	2.1	1.0	ng/L							
Perfluorooctanoic acid (PFOA)	ND	2.1	1.1	ng/L							
Perfluorooctanesulfonic acid (PFOS)	ND	2.1	0.79	ng/L							
Perfluorononanoic acid (PFNA)	ND	2.1	0.96	ng/L							
Perfluorodecanoic acid (PFDA)	ND	2.1	1.0	ng/L							
N-EtFOSAA (NEtFOSAA)	ND	2.1	0.69	ng/L							
Perfluoroundecanoic acid (PFUnA)	ND	2.1	0.79	ng/L							
N-MeFOSAA (NMeFOSAA)	ND	2.1	0.77	ng/L							
Perfluorododecanoic acid (PFDoA)	ND	2.1	0.75	ng/L							
Perfluorotridecanoic acid (PFTrDA)	ND	2.1	0.76	ng/L							
Perfluorotetradecanoic acid (PFTA)	ND	2.1	0.87	ng/L							
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	2.1	1.3	ng/L							
11Cl-PF3OUdS (F53B Major)	ND	2.1	0.69	ng/L							
9Cl-PF3ONS (F53B Minor)	ND	2.1	0.85	ng/L							
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	2.1	0.92	ng/L							
Surrogate: 13C-PFHxA	*38.9*			ng/L	41.7		93.4	70-130			
Surrogate: M3HFPO-DA	*37.7*			ng/L	41.7		90.4	70-130			
Surrogate: 13C-PFDA	*41.5*			ng/L	41.7		99.6	70-130			
Surrogate: D5-NEtFOSAA	*176*			ng/L	167		106	70-130			
LCS (B332536-BS1)					Prepared: 03/03/23 Analyzed: 03/06/23						
Perfluorobutanesulfonic acid (PFBS)	1.70	1.9	0.75	ng/L	1.70		100	50-150			J
Perfluorohexanoic acid (PFHxA)	1.50	1.9	0.90	ng/L	1.91		78.6	50-150			J
Perfluorohexanesulfonic acid (PFHxS)	1.32	1.9	0.86	ng/L	1.75		75.2	50-150			J
Perfluoroheptanoic acid (PFHpA)	1.93	1.9	0.95	ng/L	1.91		101	50-150			
Perfluorooctanoic acid (PFOA)	1.59	1.9	0.99	ng/L	1.91		82.8	50-150			J
Perfluorooctanesulfonic acid (PFOS)	1.79	1.9	0.72	ng/L	1.78		100	50-150			J
Perfluorononanoic acid (PFNA)	1.57	1.9	0.88	ng/L	1.91		82.0	50-150			J
Perfluorodecanoic acid (PFDA)	2.04	1.9	0.92	ng/L	1.91		107	50-150			
N-EtFOSAA (NEtFOSAA)	1.88	1.9	0.64	ng/L	1.91		98.1	50-150			J
Perfluoroundecanoic acid (PFUnA)	1.82	1.9	0.73	ng/L	1.91		95.2	50-150			J
N-MeFOSAA (NMeFOSAA)	1.86	1.9	0.71	ng/L	1.91		97.2	50-150			J
Perfluorododecanoic acid (PFDoA)	1.67	1.9	0.69	ng/L	1.91		87.2	50-150			J
Perfluorotridecanoic acid (PFTrDA)	1.90	1.9	0.70	ng/L	1.91		99.1	50-150			
Perfluorotetradecanoic acid (PFTA)	1.37	1.9	0.80	ng/L	1.91		71.8	50-150			J
Hexafluoropropylene oxide dimer acid (HFPO-DA)	1.63	1.9	1.2	ng/L	1.91		84.9	50-150			J
11Cl-PF3OUdS (F53B Major)	1.58	1.9	0.63	ng/L	1.81		87.8	50-150			J
9Cl-PF3ONS (F53B Minor)	1.61	1.9	0.78	ng/L	1.79		90.4	50-150			J
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	1.78	1.9	0.84	ng/L	1.81		98.3	50-150			J
Surrogate: 13C-PFHxA	*35.8*			ng/L	38.3		93.4	70-130			
Surrogate: M3HFPO-DA	*34.9*			ng/L	38.3		91.2	70-130			
Surrogate: 13C-PFDA	*36.4*			ng/L	38.3		95.1	70-130			
Surrogate: D5-NEtFOSAA	*157*			ng/L	153		103	70-130			

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QUALITY CONTROL

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

Analyte	Result	Reporting Limit	DL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B332536 - EPA 537.1											
LCS Dup (B332536-BSD1)					Prepared: 03/03/23 Analyzed: 03/06/23						
Perfluorobutanesulfonic acid (PFBS)	1.52	1.9	0.73	ng/L	1.64		92.4	50-150	11.4	50	J
Perfluorohexanoic acid (PFHxA)	1.35	1.9	0.87	ng/L	1.85		72.8	50-150	11.0	50	J
Perfluorohexanesulfonic acid (PFHxS)	1.29	1.9	0.83	ng/L	1.69		76.1	50-150	2.11	50	J
Perfluoroheptanoic acid (PFHpA)	1.67	1.9	0.92	ng/L	1.85		90.3	50-150	14.3	50	J
Perfluorooctanoic acid (PFOA)	1.52	1.9	0.96	ng/L	1.85		82.1	50-150	4.08	50	J
Perfluorooctanesulfonic acid (PFOS)	1.57	1.9	0.70	ng/L	1.72		91.6	50-150	12.5	50	J
Perfluorononanoic acid (PFNA)	1.40	1.9	0.85	ng/L	1.85		75.8	50-150	11.2	50	J
Perfluorodecanoic acid (PFDA)	2.04	1.9	0.89	ng/L	1.85		110	50-150	0.129	50	
N-EtFOSAA (NEtFOSAA)	1.53	1.9	0.62	ng/L	1.85		82.7	50-150	20.2	50	J
Perfluoroundecanoic acid (PFUnA)	1.60	1.9	0.70	ng/L	1.85		86.6	50-150	12.8	50	J
N-MeFOSAA (NMeFOSAA)	1.66	1.9	0.69	ng/L	1.85		89.8	50-150	11.1	50	J
Perfluorododecanoic acid (PFDoA)	1.32	1.9	0.66	ng/L	1.85		71.0	50-150	23.7	50	J
Perfluorotridecanoic acid (PFTrDA)	1.65	1.9	0.68	ng/L	1.85		89.2	50-150	13.8	50	J
Perfluorotetradecanoic acid (PFTA)	1.26	1.9	0.77	ng/L	1.85		67.8	50-150	9.07	50	J
Hexafluoropropylene oxide dimer acid (HFPO-DA)	1.57	1.9	1.1	ng/L	1.85		84.8	50-150	3.49	50	J
11Cl-PF3OUdS (F53B Major)	1.45	1.9	0.61	ng/L	1.75		83.0	50-150	8.88	50	J
9Cl-PF3ONS (F53B Minor)	1.64	1.9	0.75	ng/L	1.73		94.9	50-150	1.55	50	J
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	1.58	1.9	0.81	ng/L	1.75		90.5	50-150	11.5	50	J
Surrogate: 13C-PFHxA	*34.8*			ng/L	37.0		93.9	70-130			
Surrogate: M3HFPO-DA	*34.3*			ng/L	37.0		92.6	70-130			
Surrogate: 13C-PFDA	*35.2*			ng/L	37.0		94.9	70-130			
Surrogate: D5-NEtFOSAA	*149*			ng/L	148		101	70-130			

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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
DL	Method Detection Limit
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).

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CERTIFICATIONS

Certified Analyses included in this Report

Analyte	Certifications
EPA 537.1 in Drinking Water	
Perfluorobutanesulfonic acid (PFBS)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorohexanoic acid (PFHxA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorohexanesulfonic acid (PFHxS)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluoroheptanoic acid (PFHpA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorooctanoic acid (PFOA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorooctanesulfonic acid (PFOS)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorononanoic acid (PFNA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorodecanoic acid (PFDA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
N-EtFOSAA (NEtFOSAA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluoroundecanoic acid (PFUnA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
N-MeFOSAA (NMeFOSAA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorododecanoic acid (PFDoA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorotridecanoic acid (PFTrDA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorotetradecanoic acid (PFTA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Hexafluoropropylene oxide dimer acid (HFPO-DA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
11Cl-PF3OUdS (F53B Major)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
9Cl-PF3ONS (F53B Minor)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH

Con-Test, a Pace Environmental Laboratory, operates under the following certifications and accreditations:

Code	Description	Number	Expires
MA	Massachusetts DEP	M-MA100	06/30/2023
CT	Connecticut Department of Public Health	PH-0821	12/31/2024
NY	New York State Department of Health	10899 NELAP	04/1/2023
NH	New Hampshire Environmental Lab	2516 NELAP	02/5/2024
NJ	New Jersey DEP	MA007 NELAP	06/30/2023
VT-DW	Vermont Department of Health Drinking Water	VT-255716	06/12/2023
ME	State of Maine	MA00100	06/9/2023
PA	Commonwealth of Pennsylvania DEP	68-05812	06/30/2023
MI	Dept. of Env, Great Lakes, and Energy	9100	06/30/2023

23B0554

JH

Pace Analytical

Phone: 413-525-2332
Fax: 413-525-6405

https://www.pacelabs.com/

39 Spruce Street
East Longmeadow, MA 01028

Doc # 381 Rev 2_06262019

CHAIN OF CUSTODY RECORD

Page _____ of _____

Contact: https://www.pacelabs.com/contact-us/contact-environmental-sciences/

Company Name:	Tighe & Bond
Address:	53 Southampton Road, Westfield, Massachusetts
Phone:	(413) 562-1600
Project Name:	PFAS Sample Collection - Shutesbury
Project Location:	Shutesbury, Massachusetts
Project Number:	S-2190
Project Manager:	Jeff Arps
Pace Analytical Quote Name/Number	
Invoice Recipient:	Town of Shutesbury
Sampled By:	Samuel Evans

Requested Turnaround Time

7-Day ☑ 10-Day ☐
PFAS 10-Day (std) ☐ Due Date:

Rush - Approval Required

1-Day ☐ 3-Day ☐
2-Day ☐ 4-Day ☐

Data Delivery

Format: PDF ☑ EXCEL ☑
Other:
CLP Like Data Pkg Required: ☐
Email To: SArps@Tighebond.com; SEvans@Tighebond.com
Fax To #:

Dissolved Metals Samples

○ Field Filtered
○ Lab to Filter

Orthophosphate Samples

○ Field Filtered
○ Lab to Filter

PCB ONLY

SOXHLET ☐

NON SOXHLET ☐

ANALYSIS REQUESTED

2 Preservation Code

Pace Analytical Work Order#	Client Sample ID / Description	Beginning Date/Time	Ending Date/Time	COMP/GRAB	Matrix Code	Conc Code	VIALS	GLASS	PLASTIC	BACTERIA	ENCORE	PFAS Via 537.1
	45 Wendell Road	2/23/23	1745	Grab	GW	U			X			X

Relinquished by: (signature) Samuel Evans — Date/Time: 2/27/23 0700
Received by: (signature) — Date/Time: 2/27/23 1121
Relinquished by: (signature) — Date/Time: 2/27/23 1645
Received by: (signature) — Date/Time: 2-27-23 16:46
Relinquished by: (signature) — Date/Time:
Received by: (signature) — Date/Time:
Relinquished by: (signature) — Date/Time:
Received by: (signature) — Date/Time:

Bill to Town of Shutesbury - PO: 57-101490

Detection Limit Requirements

MA
CT
Other:

Special Requirements

☑ MA MCP Required
MCP Certification Form Required
☐ CT RCP Required
RCP Certification Form Required
☐ MA State DW Required
PWSID #

Please use the following codes to indicate possible sample concentration within the Conc Code column above:
H - High; M - Medium; L - Low; C - Clean; U - Unknown

Project Entity

Government ☐ Municipality ☐ MWRA ☐ WRTA ☐
Federal ☐ 21 J ☐ School ☐
City ☐ Brownfield ☐ MBTA ☐

Other

☐ Chromatogram
☐ AIHA-LAP,LLC

Matrix Codes

GW = Ground Water
WW = Waste Water
DW = Drinking Water
A = Air S = Soil
SL = Sludge
SOL = Solid
O = Other _____

Preservation Codes

I = Iced
H = HCL
N = Nitric Acid
S = Sulfuric Acid
B = Sodium Bisulfate
X = Sodium Hydroxide
T = Sodium Thiosulfate
M = Methanol
DI = DI Water
O = Other _____

Lab Comments:

Disclaimer: Pace Analytical is not responsible for any omitted information on the Chain of Custody. The Chain of Custody is a legal document that must be complete and accurate and is used to determine what analyses the laboratory will perform. Any missing information is not the laboratory's responsibility. Pace Analytical values your partnership on each project and will try to assist with missing information, but will not be held accountable.

Courier Use Only

VIALS_____ Glassware in freezer? Y / N
GLASS_____
PLASTIC_____
BACTERIA_____ Prepackaged Cooler? Y / N
ENCORE_____

*Pace Analytical is not responsible for missing samples from prepacked coolers

Pace Analytical

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35 Spruce St.
East Longmeadow, MA. 01028
P: 413-525-2332
F:413-525-6405
www.pacelabs.com

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Log In Back-Sheet

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

Pace
PEOPLE ADVANCING SCIENCE

Client Tighe & Bond

Project PFAS Sample Collection

MCP/RCP Required MA MCP

Deliverable Package Req.

Location Shutesbury, MA

PWSID# (When Applicable)

Arrival Method:

Courier [X] Fed Ex [ ] Walk In [ ] Other [ ]

Received By / Date / Time 2-27-23 16:42

Back-Sheet By / Date / Time 2-28-23 13:15

Temperature Method Gun # 3

Temp [X] < 6° C Actual Temperature 4.6

Rush Samples: Yes / (No) Notify

Short Hold: Yes / (No) Notify

Notes regarding Samples/COC outside of SOP:

	True	False
Received on Ice	[X]	[ ]
Received in Cooler	[X]	[ ]
Custody Seal: DATE TIME	[ ]	[X]
COC Relinquished	[X]	[ ]
COC/Samples Labels Agree	[X]	[ ]
All Samples in Good Condition	[X]	[ ]
Samples Received within Holding Time	[X]	[ ]
Is there enough Volume	[X]	[ ]
Proper Media/Container Used	[X]	[ ]
Splitting Samples Required	[ ]	[X]
MS/MSD	[ ]	[X]
Trip Blanks	[ ]	[X]
Lab to Filters	[ ]	[X]
COC Legible	[X]	[ ]

COC Included: (Check all included)

Client [X] Analysis [X] Sampler Name [X]

Project [X] IDs [X] Collection Date/Time [X]

All Samples Proper pH: (N/A) [ ] [ ]

Container (Circle when applicable)	UnP	HCl	HNO3	H2SO4	NaOH	Trizma	NaS2O3	Other Preservative
1L Amber Plastic								
500 mL Amber Plastic								
250 mL Amber Plastic						2		
Other Amber Clear Plastic								
16oz Amber Clear								
8oz Amber Clear								
4oz Amber Clear								
2oz Amber Clear								
Col/Bacteria								
Flashpoint								
Plastic Bag								
SOC Kit								
Perchlorate								
Encore								
Frozen								

	Proper Headspace	UnP	HCl	MeOH	Bisulfate	DI	Thiosulfate	Sulfuric	Other
Vials									

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March 3, 2023

Jeff Arps
Tighe & Bond
53 Southampton Road
Westfield, MA 01085

Project Location: Shutesbury, Massachusetts
Client Job Number:
Project Number: S-2190
Laboratory Work Order Number: 23B2163

Enclosed are results of analyses for samples as received by the laboratory on February 17, 2023. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Jessica L. Hoffman
Project Manager

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

Tighe & Bond
53 Southampton Road
Westfield, MA 01085
ATTN: Jeff Arps

REPORT DATE: 3/3/2023

PURCHASE ORDER NUMBER: 57-101490

PROJECT NUMBER: S-2190

ANALYTICAL SUMMARY

WORK ORDER NUMBER: 23B2163

The results of analyses performed on the following samples submitted to Con-Test, a Pace Analytical Laboratory, are found in this report.

PROJECT LOCATION: Shutesbury, Massachusetts

FIELD SAMPLE #	LAB ID:	MATRIX	SAMPLE DESCRIPTION	TEST	SUB LAB
72 Wendell Road	23B2163-01	Ground Water		EPA 537.1	

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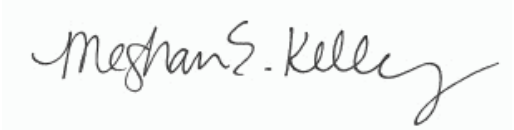
CASE NARRATIVE SUMMARY

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

The results of analyses reported only relate to samples submitted to Con-Test, a Pace Analytical Laboratory, 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: Shutesbury, Massachusetts Sample Description: Work Order: 23B2163

Date Received: 2/17/2023

Field Sample #: 72 Wendell Road Sampled: 2/16/2023 13:05

Sample ID: 23B2163-01

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	DF	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanesulfonic acid (PFBS)	ND	1.9	0.76	ng/L	1		EPA 537.1	2/28/23	3/2/23 15:34	AMS
Perfluorohexanoic acid (PFHxA)	ND	1.9	0.90	ng/L	1		EPA 537.1	2/28/23	3/2/23 15:34	AMS
Perfluorohexanesulfonic acid (PFHxS)	ND	1.9	0.86	ng/L	1		EPA 537.1	2/28/23	3/2/23 15:34	AMS
Perfluoroheptanoic acid (PFHpA)	ND	1.9	0.96	ng/L	1		EPA 537.1	2/28/23	3/2/23 15:34	AMS
Perfluorooctanoic acid (PFOA)	ND	1.9	1.0	ng/L	1		EPA 537.1	2/28/23	3/2/23 15:34	AMS
Perfluorooctanesulfonic acid (PFOS)	ND	1.9	0.73	ng/L	1		EPA 537.1	2/28/23	3/2/23 15:34	AMS
Perfluorononanoic acid (PFNA)	ND	1.9	0.89	ng/L	1		EPA 537.1	2/28/23	3/2/23 15:34	AMS
Perfluorodecanoic acid (PFDA)	ND	1.9	0.93	ng/L	1		EPA 537.1	2/28/23	3/2/23 15:34	AMS
N-EtFOSAA (NEtFOSAA)	ND	1.9	0.64	ng/L	1		EPA 537.1	2/28/23	3/2/23 15:34	AMS
Perfluoroundecanoic acid (PFUnA)	ND	1.9	0.73	ng/L	1		EPA 537.1	2/28/23	3/2/23 15:34	AMS
N-MeFOSAA (NMeFOSAA)	ND	1.9	0.72	ng/L	1		EPA 537.1	2/28/23	3/2/23 15:34	AMS
Perfluorododecanoic acid (PFDoA)	ND	1.9	0.69	ng/L	1		EPA 537.1	2/28/23	3/2/23 15:34	AMS
Perfluorotridecanoic acid (PFTrDA)	ND	1.9	0.70	ng/L	1		EPA 537.1	2/28/23	3/2/23 15:34	AMS
Perfluorotetradecanoic acid (PFTA)	ND	1.9	0.81	ng/L	1		EPA 537.1	2/28/23	3/2/23 15:34	AMS
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	1.9	1.2	ng/L	1		EPA 537.1	2/28/23	3/2/23 15:34	AMS
11Cl-PF3OUdS (F53B Major)	ND	1.9	0.64	ng/L	1		EPA 537.1	2/28/23	3/2/23 15:34	AMS
9Cl-PF3ONS (F53B Minor)	ND	1.9	0.79	ng/L	1		EPA 537.1	2/28/23	3/2/23 15:34	AMS
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	1.9	0.85	ng/L	1		EPA 537.1	2/28/23	3/2/23 15:34	AMS

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
13C-PFHxA	95.6	70-130		3/2/23 15:34
M3HFPO-DA	94.6	70-130		3/2/23 15:34
13C-PFDA	95.0	70-130		3/2/23 15:34
D5-NEtFOSAA	81.6	70-130		3/2/23 15:34

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Sample Extraction Data

Prep Method: EPA 537.1-EPA 537.1

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
23B2163-01RE1 [72 Wendell Road]	B332846	259	1.00	02/28/23

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QUALITY CONTROL

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

Analyte	Result	Reporting Limit	DL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B332209 - EPA 537.1											
Blank (B332209-BLK1)					Prepared: 02/22/23 Analyzed: 02/27/23						
Perfluorobutanesulfonic acid (PFBS)	ND	1.8	0.72	ng/L							
Perfluorohexanoic acid (PFHxA)	ND	1.8	0.85	ng/L							
Perfluorohexanesulfonic acid (PFHxS)	ND	1.8	0.82	ng/L							
Perfluoroheptanoic acid (PFHpA)	ND	1.8	0.91	ng/L							
Perfluorooctanoic acid (PFOA)	ND	1.8	0.94	ng/L							
Perfluorooctanesulfonic acid (PFOS)	ND	1.8	0.69	ng/L							
Perfluorononanoic acid (PFNA)	ND	1.8	0.84	ng/L							
Perfluorodecanoic acid (PFDA)	ND	1.8	0.87	ng/L							
N-EtFOSAA (NEtFOSAA)	ND	1.8	0.60	ng/L							
Perfluoroundecanoic acid (PFUnA)	ND	1.8	0.69	ng/L							
N-MeFOSAA (NMeFOSAA)	ND	1.8	0.68	ng/L							
Perfluorododecanoic acid (PFDoA)	ND	1.8	0.65	ng/L							
Perfluorotridecanoic acid (PFTrDA)	ND	1.8	0.66	ng/L							
Perfluorotetradecanoic acid (PFTA)	ND	1.8	0.76	ng/L							
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	1.8	1.1	ng/L							
11Cl-PF3OUdS (F53B Major)	ND	1.8	0.60	ng/L							
9Cl-PF3ONS (F53B Minor)	ND	1.8	0.74	ng/L							
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	1.8	0.80	ng/L							
Surrogate: 13C-PFHxA	*33.5*			ng/L	36.4		92.0	70-130			
Surrogate: M3HFPO-DA	*33.0*			ng/L	36.4		90.5	70-130			
Surrogate: 13C-PFDA	*34.9*			ng/L	36.4		95.9	70-130			
Surrogate: D5-NEtFOSAA	*141*			ng/L	146		96.8	70-130			
LCS (B332209-BS1)					Prepared: 02/22/23 Analyzed: 02/27/23						
Perfluorobutanesulfonic acid (PFBS)	9.40	1.8	0.72	ng/L	8.07		116	70-130			
Perfluorohexanoic acid (PFHxA)	8.56	1.8	0.85	ng/L	9.10		94.1	70-130			
Perfluorohexanesulfonic acid (PFHxS)	7.71	1.8	0.81	ng/L	8.32		92.7	70-130			
Perfluoroheptanoic acid (PFHpA)	10.7	1.8	0.90	ng/L	9.10		118	70-130			
Perfluorooctanoic acid (PFOA)	8.96	1.8	0.94	ng/L	9.10		98.4	70-130			
Perfluorooctanesulfonic acid (PFOS)	10.6	1.8	0.69	ng/L	8.45		125	70-130			
Perfluorononanoic acid (PFNA)	9.71	1.8	0.84	ng/L	9.10		107	70-130			
Perfluorodecanoic acid (PFDA)	11.3	1.8	0.87	ng/L	9.10		124	70-130			
N-EtFOSAA (NEtFOSAA)	11.1	1.8	0.60	ng/L	9.10		122	70-130			
Perfluoroundecanoic acid (PFUnA)	10.8	1.8	0.69	ng/L	9.10		119	70-130			
N-MeFOSAA (NMeFOSAA)	11.3	1.8	0.68	ng/L	9.10		125	70-130			
Perfluorododecanoic acid (PFDoA)	11.1	1.8	0.65	ng/L	9.10		122	70-130			
Perfluorotridecanoic acid (PFTrDA)	11.0	1.8	0.66	ng/L	9.10		120	70-130			
Perfluorotetradecanoic acid (PFTA)	8.43	1.8	0.76	ng/L	9.10		92.7	70-130			
Hexafluoropropylene oxide dimer acid (HFPO-DA)	8.69	1.8	1.1	ng/L	9.10		95.4	70-130			
11Cl-PF3OUdS (F53B Major)	10.4	1.8	0.60	ng/L	8.58		121	70-130			
9Cl-PF3ONS (F53B Minor)	10.5	1.8	0.74	ng/L	8.49		123	70-130			
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	9.97	1.8	0.80	ng/L	8.60		116	70-130			
Surrogate: 13C-PFHxA	*37.8*			ng/L	36.4		104	70-130			
Surrogate: M3HFPO-DA	*36.8*			ng/L	36.4		101	70-130			
Surrogate: 13C-PFDA	*38.6*			ng/L	36.4		106	70-130			
Surrogate: D5-NEtFOSAA	*156*			ng/L	146		107	70-130			

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QUALITY CONTROL

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

Analyte	Result	Reporting Limit	DL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B332209 - EPA 537.1											
LCS Dup (B332209-BSD1)					Prepared: 02/22/23 Analyzed: 02/27/23						
Perfluorobutanesulfonic acid (PFBS)	8.78	1.8	0.72	ng/L	8.08		109	70-130	6.85	30	
Perfluorohexanoic acid (PFHxA)	8.03	1.8	0.85	ng/L	9.11		88.1	70-130	6.45	30	
Perfluorohexanesulfonic acid (PFHxS)	6.99	1.8	0.82	ng/L	8.33		83.9	70-130	9.81	30	
Perfluoroheptanoic acid (PFHpA)	10.1	1.8	0.91	ng/L	9.11		111	70-130	5.49	30	
Perfluorooctanoic acid (PFOA)	8.79	1.8	0.94	ng/L	9.11		96.4	70-130	1.96	30	
Perfluorooctanesulfonic acid (PFOS)	9.23	1.8	0.69	ng/L	8.45		109	70-130	13.8	30	
Perfluorononanoic acid (PFNA)	8.98	1.8	0.84	ng/L	9.11		98.6	70-130	7.79	30	
Perfluorodecanoic acid (PFDA)	10.7	1.8	0.87	ng/L	9.11		118	70-130	5.23	30	
N-EtFOSAA (NEtFOSAA)	9.84	1.8	0.60	ng/L	9.11		108	70-130	11.9	30	
Perfluoroundecanoic acid (PFUnA)	10.2	1.8	0.69	ng/L	9.11		112	70-130	5.55	30	
N-MeFOSAA (NMeFOSAA)	9.96	1.8	0.68	ng/L	9.11		109	70-130	12.9	30	
Perfluorododecanoic acid (PFDoA)	10.3	1.8	0.65	ng/L	9.11		113	70-130	7.09	30	
Perfluorotridecanoic acid (PFTrDA)	10.2	1.8	0.66	ng/L	9.11		112	70-130	7.17	30	
Perfluorotetradecanoic acid (PFTA)	8.19	1.8	0.76	ng/L	9.11		89.9	70-130	2.97	30	
Hexafluoropropylene oxide dimer acid (HFPO-DA)	7.92	1.8	1.1	ng/L	9.11		86.9	70-130	9.23	30	
11Cl-PF3OUdS (F53B Major)	9.42	1.8	0.60	ng/L	8.59		110	70-130	9.69	30	
9Cl-PF3ONS (F53B Minor)	9.55	1.8	0.74	ng/L	8.50		112	70-130	9.11	30	
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	9.26	1.8	0.80	ng/L	8.61		108	70-130	7.39	30	
Surrogate: 13C-PFHxA	*37.5*			ng/L	36.4		103	70-130			
Surrogate: M3HFPO-DA	*37.0*			ng/L	36.4		101	70-130			
Surrogate: 13C-PFDA	*38.2*			ng/L	36.4		105	70-130			
Surrogate: D5-NEtFOSAA	*150*			ng/L	146		103	70-130			
Batch B332846 - EPA 537.1											
Blank (B332846-BLK1)					Prepared: 02/28/23 Analyzed: 03/02/23						
Perfluorobutanesulfonic acid (PFBS)	ND	1.8	0.70	ng/L							
Perfluorohexanoic acid (PFHxA)	ND	1.8	0.83	ng/L							
Perfluorohexanesulfonic acid (PFHxS)	ND	1.8	0.79	ng/L							
Perfluoroheptanoic acid (PFHpA)	ND	1.8	0.88	ng/L							
Perfluorooctanoic acid (PFOA)	ND	1.8	0.91	ng/L							
Perfluorooctanesulfonic acid (PFOS)	ND	1.8	0.67	ng/L							
Perfluorononanoic acid (PFNA)	ND	1.8	0.81	ng/L							
Perfluorodecanoic acid (PFDA)	ND	1.8	0.85	ng/L							
N-EtFOSAA (NEtFOSAA)	ND	1.8	0.59	ng/L							
Perfluoroundecanoic acid (PFUnA)	ND	1.8	0.67	ng/L							
N-MeFOSAA (NMeFOSAA)	ND	1.8	0.66	ng/L							
Perfluorododecanoic acid (PFDoA)	ND	1.8	0.63	ng/L							
Perfluorotridecanoic acid (PFTrDA)	ND	1.8	0.64	ng/L							
Perfluorotetradecanoic acid (PFTA)	ND	1.8	0.74	ng/L							
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	1.8	1.1	ng/L							
11Cl-PF3OUdS (F53B Major)	ND	1.8	0.59	ng/L							
9Cl-PF3ONS (F53B Minor)	ND	1.8	0.72	ng/L							
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	1.8	0.78	ng/L							
Surrogate: 13C-PFHxA	*34.0*			ng/L	35.3		96.3	70-130			
Surrogate: M3HFPO-DA	*36.2*			ng/L	35.3		102	70-130			
Surrogate: 13C-PFDA	*34.2*			ng/L	35.3		96.9	70-130			
Surrogate: D5-NEtFOSAA	*134*			ng/L	141		95.2	70-130			

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QUALITY CONTROL

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

Analyte	Result	Reporting Limit	DL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B332846 - EPA 537.1											
LCS (B332846-BS1)					Prepared: 02/28/23 Analyzed: 03/02/23						
Perfluorobutanesulfonic acid (PFBS)	1.56	1.8	0.69	ng/L	1.56		99.5	50-150			J
Perfluorohexanoic acid (PFHxA)	1.47	1.8	0.82	ng/L	1.76		83.6	50-150			J
Perfluorohexanesulfonic acid (PFHxS)	1.34	1.8	0.79	ng/L	1.61		83.4	50-150			J
Perfluoroheptanoic acid (PFHpA)	1.80	1.8	0.88	ng/L	1.76		102	50-150			
Perfluorooctanoic acid (PFOA)	1.70	1.8	0.91	ng/L	1.76		96.5	50-150			J
Perfluorooctanesulfonic acid (PFOS)	1.73	1.8	0.67	ng/L	1.64		106	50-150			J
Perfluorononanoic acid (PFNA)	1.51	1.8	0.81	ng/L	1.76		85.5	50-150			J
Perfluorodecanoic acid (PFDA)	1.94	1.8	0.85	ng/L	1.76		110	50-150			
N-EtFOSAA (NEtFOSAA)	1.69	1.8	0.59	ng/L	1.76		95.9	50-150			J
Perfluoroundecanoic acid (PFUnA)	1.56	1.8	0.67	ng/L	1.76		88.6	50-150			J
N-MeFOSAA (NMeFOSAA)	1.76	1.8	0.66	ng/L	1.76		99.9	50-150			J
Perfluorododecanoic acid (PFDoA)	1.48	1.8	0.63	ng/L	1.76		83.6	50-150			J
Perfluorotridecanoic acid (PFTrDA)	1.64	1.8	0.64	ng/L	1.76		93.0	50-150			J
Perfluorotetradecanoic acid (PFTA)	1.37	1.8	0.74	ng/L	1.76		77.9	50-150			J
Hexafluoropropylene oxide dimer acid (HFPO-DA)	1.87	1.8	1.1	ng/L	1.76		106	50-150			
11Cl-PF3OUdS (F53B Major)	1.61	1.8	0.58	ng/L	1.66		96.6	50-150			J
9Cl-PF3ONS (F53B Minor)	1.68	1.8	0.72	ng/L	1.65		102	50-150			J
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	1.77	1.8	0.78	ng/L	1.67		106	50-150			J
Surrogate: 13C-PFHxA	*33.9*			ng/L	35.3		96.1	70-130			
Surrogate: M3HFPO-DA	*36.2*			ng/L	35.3		103	70-130			
Surrogate: 13C-PFDA	*32.1*			ng/L	35.3		91.1	70-130			
Surrogate: D5-NEtFOSAA	*124*			ng/L	141		87.8	70-130			
LCS Dup (B332846-BSD1)					Prepared: 02/28/23 Analyzed: 03/02/23						
Perfluorobutanesulfonic acid (PFBS)	1.41	1.8	0.69	ng/L	1.56		90.6	50-150	9.57	50	J
Perfluorohexanoic acid (PFHxA)	1.45	1.8	0.82	ng/L	1.76		82.6	50-150	1.44	50	J
Perfluorohexanesulfonic acid (PFHxS)	1.32	1.8	0.79	ng/L	1.61		81.9	50-150	1.98	50	J
Perfluoroheptanoic acid (PFHpA)	1.72	1.8	0.87	ng/L	1.76		97.7	50-150	4.67	50	J
Perfluorooctanoic acid (PFOA)	1.49	1.8	0.91	ng/L	1.76		84.4	50-150	13.6	50	J
Perfluorooctanesulfonic acid (PFOS)	1.55	1.8	0.67	ng/L	1.63		94.8	50-150	11.1	50	J
Perfluorononanoic acid (PFNA)	1.48	1.8	0.81	ng/L	1.76		83.9	50-150	2.07	50	J
Perfluorodecanoic acid (PFDA)	1.86	1.8	0.84	ng/L	1.76		106	50-150	4.30	50	
N-EtFOSAA (NEtFOSAA)	1.64	1.8	0.58	ng/L	1.76		93.0	50-150	3.32	50	J
Perfluoroundecanoic acid (PFUnA)	1.58	1.8	0.67	ng/L	1.76		89.9	50-150	1.22	50	J
N-MeFOSAA (NMeFOSAA)	1.72	1.8	0.65	ng/L	1.76		97.5	50-150	2.59	50	J
Perfluorododecanoic acid (PFDoA)	1.49	1.8	0.63	ng/L	1.76		84.4	50-150	0.766	50	J
Perfluorotridecanoic acid (PFTrDA)	1.65	1.8	0.64	ng/L	1.76		93.9	50-150	0.762	50	J
Perfluorotetradecanoic acid (PFTA)	1.30	1.8	0.74	ng/L	1.76		73.6	50-150	5.77	50	J
Hexafluoropropylene oxide dimer acid (HFPO-DA)	1.25	1.8	1.1	ng/L	1.76		70.9	50-150	39.9	50	J
11Cl-PF3OUdS (F53B Major)	1.47	1.8	0.58	ng/L	1.66		88.6	50-150	8.84	50	J
9Cl-PF3ONS (F53B Minor)	1.69	1.8	0.72	ng/L	1.64		103	50-150	0.827	50	J
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	1.73	1.8	0.77	ng/L	1.66		104	50-150	1.97	50	J
Surrogate: 13C-PFHxA	*34.9*			ng/L	35.2		99.2	70-130			
Surrogate: M3HFPO-DA	*38.0*			ng/L	35.2		108	70-130			
Surrogate: 13C-PFDA	*33.9*			ng/L	35.2		96.4	70-130			
Surrogate: D5-NEtFOSAA	*129*			ng/L	141		91.3	70-130			

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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
DL	Method Detection Limit
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).

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CERTIFICATIONS

Certified Analyses included in this Report

Analyte	Certifications
EPA 537.1 in Drinking Water	
Perfluorobutanesulfonic acid (PFBS)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorohexanoic acid (PFHxA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorohexanesulfonic acid (PFHxS)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluoroheptanoic acid (PFHpA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorooctanoic acid (PFOA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorooctanesulfonic acid (PFOS)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorononanoic acid (PFNA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorodecanoic acid (PFDA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
N-EtFOSAA (NEtFOSAA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluoroundecanoic acid (PFUnA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
N-MeFOSAA (NMeFOSAA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorododecanoic acid (PFDoA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorotridecanoic acid (PFTrDA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorotetradecanoic acid (PFTA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Hexafluoropropylene oxide dimer acid (HFPO-DA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
11Cl-PF3OUdS (F53B Major)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
9Cl-PF3ONS (F53B Minor)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH

Con-Test, a Pace Environmental Laboratory, operates under the following certifications and accreditations:

Code	Description	Number	Expires
MA	Massachusetts DEP	M-MA100	06/30/2023
CT	Connecticut Department of Public Health	PH-0821	12/31/2024
NY	New York State Department of Health	10899 NELAP	04/1/2023
NH	New Hampshire Environmental Lab	2516 NELAP	02/5/2024
NJ	New Jersey DEP	MA007 NELAP	06/30/2023
VT-DW	Vermont Department of Health Drinking Water	VT-255716	06/12/2023
ME	State of Maine	MA00100	06/9/2023
PA	Commonwealth of Pennsylvania DEP	68-05812	06/30/2023
MI	Dept. of Env, Great Lakes, and Energy	9100	06/30/2023

23B2163

Pace Analytical

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Fax: 413-525-6405

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CHAIN OF CUSTODY RECORD

39 Spruce Street
East Longmeadow, MA 01026

Doc # 381 Rev 2_06262019

Page ____ of ____

Contact: https://www.pacelabs.com/contact-us/contact-environmental-sciences/

Company Name:	Tighe & Bond
Address:	53 Southampton Road, Westfield, Massachusetts
Phone:	(413) 562-1600
Project Name:	PFAS Sample Collection - Shutesbury
Project Location:	Shutesbury, Massachusetts
Project Number:	S-2190
Project Manager:	Jeff Arps
Pace Analytical Quote Name/Number	
Invoice Recipient:	Town of Shutesbury
Sampled By:	Samuel Evans

Requested Turnaround Time

7-Day ☑ 10-Day ☐
PFAS 10-Day (std) ☐ Due Date:

Rush Approval Required

1-Day ☐ 3-Day ☐
2-Day ☐ 4-Day ☐

Data Delivery

Format: PDF ☑ EXCEL ☑
Other:
CLP Like Data Pkg Required: ☐
Email To: JLArps@Tighebond.com; SEvans@Tighebond.com
Fax To #:

Dissolved Metals Samples

○ Field Filtered
○ Lab to Filter

Orthophosphate Samples

○ Field Filtered
○ Lab to Filter

ANALYSIS REQUESTED

PCB ONLY
SOXHLET ☐
NON SOXHLET ☐

2 Preservation Code

Pace Analytical Work Order#	Client Sample ID / Description	Beginning Date/Time	Ending Date/Time	COMP/GRAB	Matrix Code	Conc Code	VIALS	GLASS	PLASTIC	BACTERIA	ENCORE	PFAS Via 537.1
	72 Wendell Road	2/16/23	1305	Grab	GW	U			X			X

Relinquished by: (signature) Samuel Evans — Date/Time: 2/17/23 0800
Received by: (signature) — Date/Time: 12
Relinquished by: (signature) 2/17/23 — Date/Time: 1655
Received by: (signature) 4.2 2/17/23 — Date/Time: 1655
Relinquished by: (signature) — Date/Time:
Received by: (signature) — Date/Time:
Relinquished by: (signature) — Date/Time:
Received by: (signature) — Date/Time:

Bill to Town of Shutesbury - PO: 57-101490

Detection Limit Requirements

RA
GI
Other

Special Requirements

☑ MA MCP Required
MCP Certification Form Required
☐ CT RCP Required
RCP Certification Form Required
☐ MA State DW Required
PWSID #

Please use the following codes to indicate possible sample concentration within the Conc Code column above:
H - High; M - Medium; L - Low; C - Clean; U - Unknown

Project Entity

Government ☐ Municipality ☐ MWRA ☐ WRTA ☐
Federal ☐ 21 J ☐ School ☐
City ☐ Brownfield ☐ MBTA ☐

Other

☐ Chromatogram
☐ AIHA-LAP,LLC

Matrix Codes

GW = Ground Water
WW = Waste Water
DW = Drinking Water
A = Air S = Soil
SL = Sludge
SOL = Solid
O = Other ____

Preservation Codes

I = Iced
H = HCL
N = Nitric Acid
S = Sulfuric Acid
B = Sodium Bisulfate
X = Sodium Hydroxide
T = Sodium Thiosulfate
M = Methanol
DI = DI Water
O = Other ____

Pace Analytical

Lab Comments:

Disclaimer: Pace Analytical is not responsible for any omitted information on the Chain of Custody. The Chain of Custody is a legal document that must be complete and accurate and is used to determine what analyses the laboratory will perform. Any missing information is not the laboratory's responsibility. Pace Analytical values your partnership on each project and will try to assist with missing information, but will not be held accountable.

Courier Use Only

VIALS ____ GLASS ____ PLASTIC ____ BACTERIA ____ ENCORE ____

Glassware in freezer? Y / N

Prepackaged Cooler? Y / N

*Pace Analytical is not responsible for missing samples from prepacked coolers

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East Longmeadow, MA. 01028
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F:413-525-6405
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Log In Back-Sheet

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

Pace
PEOPLE ADVANCING SCIENCE

Client Tighe + Bond
Project PFAS Sample Coll. - Shutesbury
MCP/RCP Required MCP Req'd
Deliverable Package Req. N/A
Location Shutesbury, MA
PWSID# (When Applicable) N/A
Arrival Method:

Courier ☒ Fed Ex ☐ Walk In ☐ Other ☐

Received By / Date / Time DWW 02/17/23 1655
Back-Sheet By / Date / Time DWW 02/17/23 1925
Temperature Method GUN # 3
Temp ☒ < 6° C Actual Temperature 4.2
Rush Samples: Yes / (No) Notify
Short Hold: Yes / (No) Notify

	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: (N/A) ☐ ☐

Notes regarding Samples/COC outside of SOP:

Container (Circle when applicable)	UnP	HCl	HNO3	H2SO4	NaOH	Trizma	NaS2O3	Other Preservative
1L Amber Plastic								
500 mL Amber Plastic								
250 mL Amber (Plastic)						2		
Other Amber Clear Plastic								
16oz Amber Clear								
8oz Amber Clear								
4oz Amber Clear								
2oz Amber Clear								
Col/Bacteria								
Flashpoint								
Plastic Bag								
SOC Kit								
Perchlorate								
Encore								
Frozen								

	Proper Headspace	UnP	HCl	MeOH	Bisulfate	DI	Thiosulfate	Sulfuric	Other
Vials									

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February 28, 2023

Jeff Arps
Tighe & Bond
53 Southampton Road
Westfield, MA 01085

Project Location: Shutesbury, Massachusetts 105 Wendell Rd
Client Job Number:
Project Number: S-2190
Laboratory Work Order Number: 23B2168

Enclosed are results of analyses for samples as received by the laboratory on February 17, 2023. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Jessica L. Hoffman
Project Manager

Table of Contents

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

Tighe & Bond
53 Southampton Road
Westfield, MA 01085
ATTN: Jeff Arps

REPORT DATE: 2/28/2023

PURCHASE ORDER NUMBER: 57-101490

PROJECT NUMBER: S-2190

ANALYTICAL SUMMARY

WORK ORDER NUMBER: 23B2168

The results of analyses performed on the following samples submitted to Con-Test, a Pace Analytical Laboratory, are found in this report.

PROJECT LOCATION: Shutesbury, Massachusetts

FIELD SAMPLE #	LAB ID:	MATRIX	SAMPLE DESCRIPTION	TEST	SUB LAB
105 Wendell Road	23B2168-01	Ground Water		EPA 537.1	

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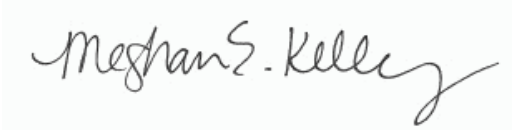
CASE NARRATIVE SUMMARY

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

The results of analyses reported only relate to samples submitted to Con-Test, a Pace Analytical Laboratory, 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

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Project Location: Shutesbury, Massachusetts Sample Description: Work Order: 23B2168

Date Received: 2/17/2023

Field Sample #: 105 Wendell Road Sampled: 2/16/2023 12:45

Sample ID: 23B2168-01

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	DF	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanesulfonic acid (PFBS)	ND	1.9	0.75	ng/L	1		EPA 537.1	2/22/23	2/27/23 10:01	AMS
Perfluorohexanoic acid (PFHxA)	ND	1.9	0.89	ng/L	1		EPA 537.1	2/22/23	2/27/23 10:01	AMS
Perfluorohexanesulfonic acid (PFHxS)	ND	1.9	0.85	ng/L	1		EPA 537.1	2/22/23	2/27/23 10:01	AMS
Perfluoroheptanoic acid (PFHpA)	ND	1.9	0.94	ng/L	1		EPA 537.1	2/22/23	2/27/23 10:01	AMS
Perfluorooctanoic acid (PFOA)	ND	1.9	0.98	ng/L	1		EPA 537.1	2/22/23	2/27/23 10:01	AMS
Perfluorooctanesulfonic acid (PFOS)	0.73	1.9	0.72	ng/L	1	J	EPA 537.1	2/22/23	2/27/23 10:01	AMS
Perfluorononanoic acid (PFNA)	ND	1.9	0.87	ng/L	1		EPA 537.1	2/22/23	2/27/23 10:01	AMS
Perfluorodecanoic acid (PFDA)	ND	1.9	0.91	ng/L	1		EPA 537.1	2/22/23	2/27/23 10:01	AMS
N-EtFOSAA (NEtFOSAA)	ND	1.9	0.63	ng/L	1		EPA 537.1	2/22/23	2/27/23 10:01	AMS
Perfluoroundecanoic acid (PFUnA)	ND	1.9	0.72	ng/L	1		EPA 537.1	2/22/23	2/27/23 10:01	AMS
N-MeFOSAA (NMeFOSAA)	ND	1.9	0.70	ng/L	1		EPA 537.1	2/22/23	2/27/23 10:01	AMS
Perfluorododecanoic acid (PFDoA)	ND	1.9	0.68	ng/L	1		EPA 537.1	2/22/23	2/27/23 10:01	AMS
Perfluorotridecanoic acid (PFTrDA)	ND	1.9	0.69	ng/L	1		EPA 537.1	2/22/23	2/27/23 10:01	AMS
Perfluorotetradecanoic acid (PFTA)	ND	1.9	0.79	ng/L	1		EPA 537.1	2/22/23	2/27/23 10:01	AMS
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	1.9	1.2	ng/L	1		EPA 537.1	2/22/23	2/27/23 10:01	AMS
11Cl-PF3OUdS (F53B Major)	ND	1.9	0.63	ng/L	1		EPA 537.1	2/22/23	2/27/23 10:01	AMS
9Cl-PF3ONS (F53B Minor)	1.2	1.9	0.77	ng/L	1	J	EPA 537.1	2/22/23	2/27/23 10:01	AMS
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	1.9	0.83	ng/L	1		EPA 537.1	2/22/23	2/27/23 10:01	AMS

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
13C-PFHxA	83.0	70-130		2/27/23 10:01
M3HFPO-DA	81.7	70-130		2/27/23 10:01
13C-PFDA	110	70-130		2/27/23 10:01
D5-NEtFOSAA	115	70-130		2/27/23 10:01

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Sample Extraction Data

Prep Method: EPA 537.1-EPA 537.1

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
23B2168-01 [105 Wendell Road]	B332209	264	1.00	02/22/23

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QUALITY CONTROL

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

Analyte	Result	Reporting Limit	DL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B332209 - EPA 537.1											
Blank (B332209-BLK1)					Prepared: 02/22/23 Analyzed: 02/27/23						
Perfluorobutanesulfonic acid (PFBS)	ND	1.8	0.72	ng/L							
Perfluorohexanoic acid (PFHxA)	ND	1.8	0.85	ng/L							
Perfluorohexanesulfonic acid (PFHxS)	ND	1.8	0.82	ng/L							
Perfluoroheptanoic acid (PFHpA)	ND	1.8	0.91	ng/L							
Perfluorooctanoic acid (PFOA)	ND	1.8	0.94	ng/L							
Perfluorooctanesulfonic acid (PFOS)	ND	1.8	0.69	ng/L							
Perfluorononanoic acid (PFNA)	ND	1.8	0.84	ng/L							
Perfluorodecanoic acid (PFDA)	ND	1.8	0.87	ng/L							
N-EtFOSAA (NEtFOSAA)	ND	1.8	0.60	ng/L							
Perfluoroundecanoic acid (PFUnA)	ND	1.8	0.69	ng/L							
N-MeFOSAA (NMeFOSAA)	ND	1.8	0.68	ng/L							
Perfluorododecanoic acid (PFDoA)	ND	1.8	0.65	ng/L							
Perfluorotridecanoic acid (PFTrDA)	ND	1.8	0.66	ng/L							
Perfluorotetradecanoic acid (PFTA)	ND	1.8	0.76	ng/L							
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	1.8	1.1	ng/L							
11Cl-PF3OUdS (F53B Major)	ND	1.8	0.60	ng/L							
9Cl-PF3ONS (F53B Minor)	ND	1.8	0.74	ng/L							
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	1.8	0.80	ng/L							
Surrogate: 13C-PFHxA	*33.5*			ng/L	36.4		92.0	70-130			
Surrogate: M3HFPO-DA	*33.0*			ng/L	36.4		90.5	70-130			
Surrogate: 13C-PFDA	*34.9*			ng/L	36.4		95.9	70-130			
Surrogate: D5-NEtFOSAA	*141*			ng/L	146		96.8	70-130			
LCS (B332209-BS1)					Prepared: 02/22/23 Analyzed: 02/27/23						
Perfluorobutanesulfonic acid (PFBS)	9.40	1.8	0.72	ng/L	8.07		116	70-130			
Perfluorohexanoic acid (PFHxA)	8.56	1.8	0.85	ng/L	9.10		94.1	70-130			
Perfluorohexanesulfonic acid (PFHxS)	7.71	1.8	0.81	ng/L	8.32		92.7	70-130			
Perfluoroheptanoic acid (PFHpA)	10.7	1.8	0.90	ng/L	9.10		118	70-130			
Perfluorooctanoic acid (PFOA)	8.96	1.8	0.94	ng/L	9.10		98.4	70-130			
Perfluorooctanesulfonic acid (PFOS)	10.6	1.8	0.69	ng/L	8.45		125	70-130			
Perfluorononanoic acid (PFNA)	9.71	1.8	0.84	ng/L	9.10		107	70-130			
Perfluorodecanoic acid (PFDA)	11.3	1.8	0.87	ng/L	9.10		124	70-130			
N-EtFOSAA (NEtFOSAA)	11.1	1.8	0.60	ng/L	9.10		122	70-130			
Perfluoroundecanoic acid (PFUnA)	10.8	1.8	0.69	ng/L	9.10		119	70-130			
N-MeFOSAA (NMeFOSAA)	11.3	1.8	0.68	ng/L	9.10		125	70-130			
Perfluorododecanoic acid (PFDoA)	11.1	1.8	0.65	ng/L	9.10		122	70-130			
Perfluorotridecanoic acid (PFTrDA)	11.0	1.8	0.66	ng/L	9.10		120	70-130			
Perfluorotetradecanoic acid (PFTA)	8.43	1.8	0.76	ng/L	9.10		92.7	70-130			
Hexafluoropropylene oxide dimer acid (HFPO-DA)	8.69	1.8	1.1	ng/L	9.10		95.4	70-130			
11Cl-PF3OUdS (F53B Major)	10.4	1.8	0.60	ng/L	8.58		121	70-130			
9Cl-PF3ONS (F53B Minor)	10.5	1.8	0.74	ng/L	8.49		123	70-130			
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	9.97	1.8	0.80	ng/L	8.60		116	70-130			
Surrogate: 13C-PFHxA	*37.8*			ng/L	36.4		104	70-130			
Surrogate: M3HFPO-DA	*36.8*			ng/L	36.4		101	70-130			
Surrogate: 13C-PFDA	*38.6*			ng/L	36.4		106	70-130			
Surrogate: D5-NEtFOSAA	*156*			ng/L	146		107	70-130			

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QUALITY CONTROL

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

Analyte	Result	Reporting Limit	DL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B332209 - EPA 537.1											
LCS Dup (B332209-BSD1)					Prepared: 02/22/23 Analyzed: 02/27/23						
Perfluorobutanesulfonic acid (PFBS)	8.78	1.8	0.72	ng/L	8.08		109	70-130	6.85	30	
Perfluorohexanoic acid (PFHxA)	8.03	1.8	0.85	ng/L	9.11		88.1	70-130	6.45	30	
Perfluorohexanesulfonic acid (PFHxS)	6.99	1.8	0.82	ng/L	8.33		83.9	70-130	9.81	30	
Perfluoroheptanoic acid (PFHpA)	10.1	1.8	0.91	ng/L	9.11		111	70-130	5.49	30	
Perfluorooctanoic acid (PFOA)	8.79	1.8	0.94	ng/L	9.11		96.4	70-130	1.96	30	
Perfluorooctanesulfonic acid (PFOS)	9.23	1.8	0.69	ng/L	8.45		109	70-130	13.8	30	
Perfluorononanoic acid (PFNA)	8.98	1.8	0.84	ng/L	9.11		98.6	70-130	7.79	30	
Perfluorodecanoic acid (PFDA)	10.7	1.8	0.87	ng/L	9.11		118	70-130	5.23	30	
N-EtFOSAA (NEtFOSAA)	9.84	1.8	0.60	ng/L	9.11		108	70-130	11.9	30	
Perfluoroundecanoic acid (PFUnA)	10.2	1.8	0.69	ng/L	9.11		112	70-130	5.55	30	
N-MeFOSAA (NMeFOSAA)	9.96	1.8	0.68	ng/L	9.11		109	70-130	12.9	30	
Perfluorododecanoic acid (PFDoA)	10.3	1.8	0.65	ng/L	9.11		113	70-130	7.09	30	
Perfluorotridecanoic acid (PFTrDA)	10.2	1.8	0.66	ng/L	9.11		112	70-130	7.17	30	
Perfluorotetradecanoic acid (PFTA)	8.19	1.8	0.76	ng/L	9.11		89.9	70-130	2.97	30	
Hexafluoropropylene oxide dimer acid (HFPO-DA)	7.92	1.8	1.1	ng/L	9.11		86.9	70-130	9.23	30	
11Cl-PF3OUdS (F53B Major)	9.42	1.8	0.60	ng/L	8.59		110	70-130	9.69	30	
9Cl-PF3ONS (F53B Minor)	9.55	1.8	0.74	ng/L	8.50		112	70-130	9.11	30	
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	9.26	1.8	0.80	ng/L	8.61		108	70-130	7.39	30	
Surrogate: 13C-PFHxA	*37.5*			ng/L	36.4		103	70-130			
Surrogate: M3HFPO-DA	*37.0*			ng/L	36.4		101	70-130			
Surrogate: 13C-PFDA	*38.2*			ng/L	36.4		105	70-130			
Surrogate: D5-NEtFOSAA	*150*			ng/L	146		103	70-130			

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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
DL	Method Detection Limit
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).

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CERTIFICATIONS

Certified Analyses included in this Report

Analyte	Certifications
EPA 537.1 in Drinking Water	
Perfluorobutanesulfonic acid (PFBS)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorohexanoic acid (PFHxA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorohexanesulfonic acid (PFHxS)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluoroheptanoic acid (PFHpA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorooctanoic acid (PFOA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorooctanesulfonic acid (PFOS)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorononanoic acid (PFNA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorodecanoic acid (PFDA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
N-EtFOSAA (NEtFOSAA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluoroundecanoic acid (PFUnA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
N-MeFOSAA (NMeFOSAA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorododecanoic acid (PFDoA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorotridecanoic acid (PFTrDA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorotetradecanoic acid (PFTA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Hexafluoropropylene oxide dimer acid (HFPO-DA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
11Cl-PF3OUdS (F53B Major)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
9Cl-PF3ONS (F53B Minor)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH

Con-Test, a Pace Environmental Laboratory, operates under the following certifications and accreditations:

Code	Description	Number	Expires
MA	Massachusetts DEP	M-MA100	06/30/2023
CT	Connecticut Department of Public Health	PH-0821	12/31/2024
NY	New York State Department of Health	10899 NELAP	04/1/2023
NH	New Hampshire Environmental Lab	2516 NELAP	02/5/2024
NJ	New Jersey DEP	MA007 NELAP	06/30/2023
VT-DW	Vermont Department of Health Drinking Water	VT-255716	06/12/2023
ME	State of Maine	MA00100	06/9/2023
PA	Commonwealth of Pennsylvania DEP	68-05812	06/30/2023
MI	Dept. of Env, Great Lakes, and Energy	9100	06/30/2023

23B2168
JH

Pace Analytical*
Phone: 413-525-2332
Fax: 413-525-6405
https://www.pacelabs.com/
39 Spruce Street
East Longmeadow, MA 01026
Doc # 381 Rev 2, 06262019

CHAIN OF CUSTODY RECORD

Page ____ of ____

Contact: https://www.pacelabs.com/contact-us/contact-environmental-sciences/

Company Name:	Tighe & Bond
Address:	53 Southampton Road, Westfield, Massachusetts
Phone:	(413) 562-1600
Project Name:	PFAS Sample Collection - Shutesbury
Project Location:	Shutesbury, Massachusetts
Project Number:	S-2190
Project Manager:	Jeff Arps
Pace Analytical Quote Name/Number	
Invoice Recipient:	Town of Shutesbury
Sampled By:	Samuel Evans

Requested Turnaround Time
7-Day ☑ 10-Day ☐
PFAS 10-Day (std) ☐ Due Date:

Rush Approval Required
1-Day ☐ 3-Day ☐
2-Day ☐ 4-Day ☐

Data Delivery
Format: PDF ☑ EXCEL ☑
Other:
CLP Like Data Pkg Required: ☐
Email To: JArps@Tighebond.com; SEvans@Tighebond.com
Fax To #:

Dissolved Metals Samples
○ Field Filtered
○ Lab to Filter

Orthophosphate Samples
○ Field Filtered
○ Lab to Filter

PCB ONLY
SOXHLET ☐
NON SOXHLET ☐

ANALYSIS REQUESTED
2 Preservation Code

Pace Analytical Work Order#	Client Sample ID / Description	Beginning Date/Time	Ending Date/Time	COMP/GRAB	Matrix Code	Conc Code	VIALS	GLASS	PLASTIC	BACTERIA	ENCORE	PFAS Via 537.1
1	105 Wendell Road	2/16/23	1245	Grab	GW	U			X			X

Relinquished by: (signature)	Date/Time: 2/17/23 0805	Bill to Town of Shutesbury - PO:57-101490
Received by: (signature)	Date/Time: 12	
Relinquished by: (signature)	Date/Time: 1655	
Received by: (signature)	Date/Time:	
Relinquished by: (signature)	Date/Time:	
Received by: (signature)	Date/Time:	
Relinquished by: (signature)	Date/Time:	
Received by: (signature)	Date/Time:	

Detection Limit Requirements
MA
CT
Other:

Special Requirements
☑ MA MCP Required
☐ MCP Certification Form Required
☐ CT RCP Required
☐ RCP Certification Form Required
☐ MA State DW Required
PWSID #

Please use the following codes to indicate possible sample concentration within the Conc Code column above:
H - High; M - Medium; L - Low; C - Clean; U - Unknown

Project Entity
Government ☐ Municipality ☐ MWRA ☐ WRTA ☐
Federal ☐ 21 J ☐ School ☐
City ☐ Brownfield ☐ MBTA ☐

Other
☐ Chromatogram
☐ AIHA-LAP,LLC

Matrix Codes
GW = Ground Water
WW = Waste Water
DW = Drinking Water
A = Air S = Soil
SL = Sludge
SOL = Solid
O = Other ____

Preservation Codes
I = Iced
H = HCL
N = Nitric Acid
S = Sulfuric Acid
B = Sodium Bisulfate
X = Sodium Hydroxide
T = Sodium Thiosulfate
M = Methanol
DI = DI Water
O = Other ____

Comments:

Disclaimer: Pace Analytical is not responsible for any omitted information on the Chain of Custody. The Chain of Custody is a legal document that must be complete and accurate and is used to determine what analyses the laboratory will perform. Any missing information is not the laboratory's responsibility. Pace Analytical values your partnership on each project and will try to assist with missing information, but will not be held accountable.

Courier Use Only
VIALS ____ GLASS ____ PLASTIC ____ BACTERIA ____ ENCORE ____
Glassware in freezer? Y / N
Prepackaged Cooler? Y / N

*Pace Analytical is not responsible for missing samples from prepacked coolers

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39 Spruce St.
East Longmeadow, MA. 01028
P: 413-525-2332
F:413-525-6405
www.pacelabs.com

Log In Back-Sheet

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

Pace PEOPLE ADVANCING SCIENCE

Client Tighe + Bond

Project PFAS Sample Coll. - Shutesbury

MCP/RCP Required MCP Req'd

Deliverable Package Req. N/A

Location Shutesbury, MA

PWSID# (When Applicable) N/A

Arrival Method:

Courier ☒ Fed Ex ☐ Walk In ☐ Other ☐

Received By / Date / Time DNW 02/17/23 1655

Back-Sheet By / Date / Time DNW 02/17/23 1923

Temperature Method GUN # 3

Temp ☒ < 6° C Actual Temperature 4.2

Rush Samples: Yes / (No) Notify

Short Hold: Yes / (No) Notify

	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	☒	☐

Notes regarding Samples/COC outside of SOP:

COC Included: (Check all included)

Client ☒ Analysis ☒ Sampler Name ☒

Project ☒ IDs ☒ Collection Date/Time ☒

All Samples Proper pH: (N/A) ☐ ☐

Container (Circle when applicable)	UnP	HCl	HNO3	H2SO4	NaOH	Trizma	NaS2O3	Other Preservative
1L Amber Plastic								
500 mL Amber Plastic								
250 mL Amber (Plastic)						2		
Other Amber Clear Plastic								
16oz Amber Clear								
8oz Amber Clear								
4oz Amber Clear								
2oz Amber Clear								
Col/Bacteria								
Flashpoint								
Plastic Bag								
SOC Kit								
Perchlorate								
Encore								
Frozen								

	Proper Headspace	UnP	HCl	MeOH	Bisulfate	DI	Thiosulfate	Sulfuric	Other
Vials									

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March 7, 2023

Jeff Arps
Tighe & Bond
53 Southampton Road
Westfield, MA 01085

Project Location: 3 Wilson Road Shutesbury, Massachusetts
Client Job Number:
Project Number: S-2190
Laboratory Work Order Number: 23B2855

Enclosed are results of analyses for samples as received by the laboratory on February 27, 2023. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Jessica L. Hoffman
Project Manager

Table of Contents

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

Tighe & Bond
53 Southampton Road
Westfield, MA 01085
ATTN: Jeff Arps

REPORT DATE: 3/7/2023

PURCHASE ORDER NUMBER: 57-101490

PROJECT NUMBER: S-2190

ANALYTICAL SUMMARY

WORK ORDER NUMBER: 23B2855

The results of analyses performed on the following samples submitted to Con-Test, a Pace Analytical Laboratory, are found in this report.

PROJECT LOCATION: 3 Wilson Road Shutesbury, Massachusetts

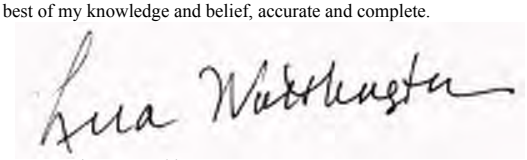
FIELD SAMPLE #	LAB ID:	MATRIX	SAMPLE DESCRIPTION	TEST	SUB LAB
3 Wilson Road	23B2855-01	Ground Water		EPA 537.1	

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

CASE NARRATIVE SUMMARY

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

The results of analyses reported only relate to samples submitted to Con-Test, a Pace Analytical Laboratory, 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.



Lisa A. Worthington
Technical Representative

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

Project Location: 3 Wilson Road Shutesbury, Massa Sample Description: Work Order: 23B2855

Date Received: 2/27/2023

Field Sample #: 3 Wilson Road Sampled: 2/23/2023 12:20

Sample ID: 23B2855-01

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	DF	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanesulfonic acid (PFBS)	ND	2.0	0.77	ng/L	1		EPA 537.1	3/3/23	3/6/23 10:12	AMS
Perfluorohexanoic acid (PFHxA)	ND	2.0	0.92	ng/L	1		EPA 537.1	3/3/23	3/6/23 10:12	AMS
Perfluorohexanesulfonic acid (PFHxS)	ND	2.0	0.88	ng/L	1		EPA 537.1	3/3/23	3/6/23 10:12	AMS
Perfluoroheptanoic acid (PFHpA)	ND	2.0	0.97	ng/L	1		EPA 537.1	3/3/23	3/6/23 10:12	AMS
Perfluorooctanoic acid (PFOA)	ND	2.0	1.0	ng/L	1		EPA 537.1	3/3/23	3/6/23 10:12	AMS
Perfluorooctanesulfonic acid (PFOS)	ND	2.0	0.74	ng/L	1		EPA 537.1	3/3/23	3/6/23 10:12	AMS
Perfluorononanoic acid (PFNA)	ND	2.0	0.90	ng/L	1		EPA 537.1	3/3/23	3/6/23 10:12	AMS
Perfluorodecanoic acid (PFDA)	ND	2.0	0.94	ng/L	1		EPA 537.1	3/3/23	3/6/23 10:12	AMS
N-EtFOSAA (NEtFOSAA)	ND	2.0	0.65	ng/L	1		EPA 537.1	3/3/23	3/6/23 10:12	AMS
Perfluoroundecanoic acid (PFUnA)	ND	2.0	0.74	ng/L	1		EPA 537.1	3/3/23	3/6/23 10:12	AMS
N-MeFOSAA (NMeFOSAA)	ND	2.0	0.73	ng/L	1		EPA 537.1	3/3/23	3/6/23 10:12	AMS
Perfluorododecanoic acid (PFDoA)	ND	2.0	0.70	ng/L	1		EPA 537.1	3/3/23	3/6/23 10:12	AMS
Perfluorotridecanoic acid (PFTrDA)	ND	2.0	0.71	ng/L	1		EPA 537.1	3/3/23	3/6/23 10:12	AMS
Perfluorotetradecanoic acid (PFTA)	ND	2.0	0.82	ng/L	1		EPA 537.1	3/3/23	3/6/23 10:12	AMS
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	2.0	1.2	ng/L	1		EPA 537.1	3/3/23	3/6/23 10:12	AMS
11Cl-PF3OUdS (F53B Major)	ND	2.0	0.65	ng/L	1		EPA 537.1	3/3/23	3/6/23 10:12	AMS
9Cl-PF3ONS (F53B Minor)	ND	2.0	0.80	ng/L	1		EPA 537.1	3/3/23	3/6/23 10:12	AMS
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	2.0	0.86	ng/L	1		EPA 537.1	3/3/23	3/6/23 10:12	AMS

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
13C-PFHxA	83.4	70-130		3/6/23 10:12
M3HFPO-DA	77.6	70-130		3/6/23 10:12
13C-PFDA	90.5	70-130		3/6/23 10:12
D5-NEtFOSAA	93.4	70-130		3/6/23 10:12

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

Sample Extraction Data

Prep Method: EPA 537.1-EPA 537.1

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
23B2855-01 [3 Wilson Road]	B332536	255	1.00	03/03/23

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QUALITY CONTROL

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

Analyte	Result	Reporting Limit	DL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B332536 - EPA 537.1											
Blank (B332536-BLK1)					Prepared: 03/03/23 Analyzed: 03/06/23						
Perfluorobutanesulfonic acid (PFBS)	ND	2.1	0.82	ng/L							
Perfluorohexanoic acid (PFHxA)	ND	2.1	0.97	ng/L							
Perfluorohexanesulfonic acid (PFHxS)	ND	2.1	0.93	ng/L							
Perfluoroheptanoic acid (PFHpA)	ND	2.1	1.0	ng/L							
Perfluorooctanoic acid (PFOA)	ND	2.1	1.1	ng/L							
Perfluorooctanesulfonic acid (PFOS)	ND	2.1	0.79	ng/L							
Perfluorononanoic acid (PFNA)	ND	2.1	0.96	ng/L							
Perfluorodecanoic acid (PFDA)	ND	2.1	1.0	ng/L							
N-EtFOSAA (NEtFOSAA)	ND	2.1	0.69	ng/L							
Perfluoroundecanoic acid (PFUnA)	ND	2.1	0.79	ng/L							
N-MeFOSAA (NMeFOSAA)	ND	2.1	0.77	ng/L							
Perfluorododecanoic acid (PFDoA)	ND	2.1	0.75	ng/L							
Perfluorotridecanoic acid (PFTrDA)	ND	2.1	0.76	ng/L							
Perfluorotetradecanoic acid (PFTA)	ND	2.1	0.87	ng/L							
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	2.1	1.3	ng/L							
11Cl-PF3OUdS (F53B Major)	ND	2.1	0.69	ng/L							
9Cl-PF3ONS (F53B Minor)	ND	2.1	0.85	ng/L							
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	2.1	0.92	ng/L							
Surrogate: 13C-PFHxA	*38.9*			ng/L	41.7		93.4	70-130			
Surrogate: M3HFPO-DA	*37.7*			ng/L	41.7		90.4	70-130			
Surrogate: 13C-PFDA	*41.5*			ng/L	41.7		99.6	70-130			
Surrogate: D5-NEtFOSAA	*176*			ng/L	167		106	70-130			
LCS (B332536-BS1)					Prepared: 03/03/23 Analyzed: 03/06/23						
Perfluorobutanesulfonic acid (PFBS)	1.70	1.9	0.75	ng/L	1.70		100	50-150			J
Perfluorohexanoic acid (PFHxA)	1.50	1.9	0.90	ng/L	1.91		78.6	50-150			J
Perfluorohexanesulfonic acid (PFHxS)	1.32	1.9	0.86	ng/L	1.75		75.2	50-150			J
Perfluoroheptanoic acid (PFHpA)	1.93	1.9	0.95	ng/L	1.91		101	50-150			
Perfluorooctanoic acid (PFOA)	1.59	1.9	0.99	ng/L	1.91		82.8	50-150			J
Perfluorooctanesulfonic acid (PFOS)	1.79	1.9	0.72	ng/L	1.78		100	50-150			J
Perfluorononanoic acid (PFNA)	1.57	1.9	0.88	ng/L	1.91		82.0	50-150			J
Perfluorodecanoic acid (PFDA)	2.04	1.9	0.92	ng/L	1.91		107	50-150			
N-EtFOSAA (NEtFOSAA)	1.88	1.9	0.64	ng/L	1.91		98.1	50-150			J
Perfluoroundecanoic acid (PFUnA)	1.82	1.9	0.73	ng/L	1.91		95.2	50-150			J
N-MeFOSAA (NMeFOSAA)	1.86	1.9	0.71	ng/L	1.91		97.2	50-150			J
Perfluorododecanoic acid (PFDoA)	1.67	1.9	0.69	ng/L	1.91		87.2	50-150			J
Perfluorotridecanoic acid (PFTrDA)	1.90	1.9	0.70	ng/L	1.91		99.1	50-150			
Perfluorotetradecanoic acid (PFTA)	1.37	1.9	0.80	ng/L	1.91		71.8	50-150			J
Hexafluoropropylene oxide dimer acid (HFPO-DA)	1.63	1.9	1.2	ng/L	1.91		84.9	50-150			J
11Cl-PF3OUdS (F53B Major)	1.58	1.9	0.63	ng/L	1.81		87.8	50-150			J
9Cl-PF3ONS (F53B Minor)	1.61	1.9	0.78	ng/L	1.79		90.4	50-150			J
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	1.78	1.9	0.84	ng/L	1.81		98.3	50-150			J
Surrogate: 13C-PFHxA	*35.8*			ng/L	38.3		93.4	70-130			
Surrogate: M3HFPO-DA	*34.9*			ng/L	38.3		91.2	70-130			
Surrogate: 13C-PFDA	*36.4*			ng/L	38.3		95.1	70-130			
Surrogate: D5-NEtFOSAA	*157*			ng/L	153		103	70-130			

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QUALITY CONTROL

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

Analyte	Result	Reporting Limit	DL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B332536 - EPA 537.1											
LCS Dup (B332536-BSD1)					Prepared: 03/03/23 Analyzed: 03/06/23						
Perfluorobutanesulfonic acid (PFBS)	1.52	1.9	0.73	ng/L	1.64		92.4	50-150	11.4	50	J
Perfluorohexanoic acid (PFHxA)	1.35	1.9	0.87	ng/L	1.85		72.8	50-150	11.0	50	J
Perfluorohexanesulfonic acid (PFHxS)	1.29	1.9	0.83	ng/L	1.69		76.1	50-150	2.11	50	J
Perfluoroheptanoic acid (PFHpA)	1.67	1.9	0.92	ng/L	1.85		90.3	50-150	14.3	50	J
Perfluorooctanoic acid (PFOA)	1.52	1.9	0.96	ng/L	1.85		82.1	50-150	4.08	50	J
Perfluorooctanesulfonic acid (PFOS)	1.57	1.9	0.70	ng/L	1.72		91.6	50-150	12.5	50	J
Perfluorononanoic acid (PFNA)	1.40	1.9	0.85	ng/L	1.85		75.8	50-150	11.2	50	J
Perfluorodecanoic acid (PFDA)	2.04	1.9	0.89	ng/L	1.85		110	50-150	0.129	50	
N-EtFOSAA (NEtFOSAA)	1.53	1.9	0.62	ng/L	1.85		82.7	50-150	20.2	50	J
Perfluoroundecanoic acid (PFUnA)	1.60	1.9	0.70	ng/L	1.85		86.6	50-150	12.8	50	J
N-MeFOSAA (NMeFOSAA)	1.66	1.9	0.69	ng/L	1.85		89.8	50-150	11.1	50	J
Perfluorododecanoic acid (PFDoA)	1.32	1.9	0.66	ng/L	1.85		71.0	50-150	23.7	50	J
Perfluorotridecanoic acid (PFTrDA)	1.65	1.9	0.68	ng/L	1.85		89.2	50-150	13.8	50	J
Perfluorotetradecanoic acid (PFTA)	1.26	1.9	0.77	ng/L	1.85		67.8	50-150	9.07	50	J
Hexafluoropropylene oxide dimer acid (HFPO-DA)	1.57	1.9	1.1	ng/L	1.85		84.8	50-150	3.49	50	J
11Cl-PF3OUdS (F53B Major)	1.45	1.9	0.61	ng/L	1.75		83.0	50-150	8.88	50	J
9Cl-PF3ONS (F53B Minor)	1.64	1.9	0.75	ng/L	1.73		94.9	50-150	1.55	50	J
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	1.58	1.9	0.81	ng/L	1.75		90.5	50-150	11.5	50	J
Surrogate: 13C-PFHxA	*34.8*			ng/L	37.0		93.9	70-130			
Surrogate: M3HFPO-DA	*34.3*			ng/L	37.0		92.6	70-130			
Surrogate: 13C-PFDA	*35.2*			ng/L	37.0		94.9	70-130			
Surrogate: D5-NEtFOSAA	*149*			ng/L	148		101	70-130			

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

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
DL	Method Detection Limit
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).

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

CERTIFICATIONS

Certified Analyses included in this Report

Analyte	Certifications
EPA 537.1 in Drinking Water	
Perfluorobutanesulfonic acid (PFBS)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorohexanoic acid (PFHxA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorohexanesulfonic acid (PFHxS)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluoroheptanoic acid (PFHpA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorooctanoic acid (PFOA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorooctanesulfonic acid (PFOS)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorononanoic acid (PFNA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorodecanoic acid (PFDA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
N-EtFOSAA (NEtFOSAA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluoroundecanoic acid (PFUnA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
N-MeFOSAA (NMeFOSAA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorododecanoic acid (PFDoA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorotridecanoic acid (PFTrDA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorotetradecanoic acid (PFTA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Hexafluoropropylene oxide dimer acid (HFPO-DA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
11Cl-PF3OUdS (F53B Major)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
9Cl-PF3ONS (F53B Minor)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH

Con-Test, a Pace Environmental Laboratory, operates under the following certifications and accreditations:

Code	Description	Number	Expires
MA	Massachusetts DEP	M-MA100	06/30/2023
CT	Connecticut Department of Public Health	PH-0821	12/31/2024
NY	New York State Department of Health	10899 NELAP	04/1/2023
NH	New Hampshire Environmental Lab	2516 NELAP	02/5/2024
NJ	New Jersey DEP	MA007 NELAP	06/30/2023
VT-DW	Vermont Department of Health Drinking Water	VT-255716	06/12/2023
ME	State of Maine	MA00100	06/9/2023
PA	Commonwealth of Pennsylvania DEP	68-05812	06/30/2023
MI	Dept. of Env, Great Lakes, and Energy	9100	06/30/2023

23B2855

JH

Pace Analytical®

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https://www.pacelabs.com/

CHAIN OF CUSTODY RECORD

39 Spruce Street
East Longmeadow, MA 01026

Doc # 381 Rev 2_06262019

Page _____ of _____

Contact: https://www.pacelabs.com/contact-us/contact-environmental-sciences/

Company Name:	Tighe & Bond
Address:	53 Southampton Road, Westfield, Massachusetts
Phone:	(413) 562-1600
Project Name:	PFAS Sample Collection - Shutesbury
Project Location:	Shutesbury, Massachusetts
Project Number:	S-2190
Project Manager:	Jeff Arps
Pace Analytical Quote Name/Number	
Invoice Recipient:	Town of Shutesbury
Sampled By:	Samuel Evans

Requested Turnaround Time

7-Day ☑ 10-Day ☐
PFAS 10-Day (std) ☐ Due Date:

Rush-Approval Required

1-Day ☐ 3-Day ☐
2-Day ☐ 4-Day ☐

Data Delivery

Format: PDF ☑ EXCEL ☑
Other:
CLP Like Data Pkg Required: ☐
Email To: AArps@Tighebond.com; SEvans@Tighebond.com
Fax To #:

Dissolved Metals Samples

○ Field Filtered
○ Lab to Filter

Orthophosphate Samples

○ Field Filtered
○ Lab to Filter

PCB ONLY

SOXHLET ☐
NON SOXHLET ☐

ANALYSIS REQUESTED

Pace Analytical Work Order#	Client Sample ID / Description	Beginning Date/Time	Ending Date/Time	COMP/GRAB	*Matrix Code	Conc Code	VIALS	GLASS	PLASTIC	BACTERIA	ENCORE	PFAS Via 537.1	# of Preservation Code
	3 Wilson Road	2/23/23	1220	Grab	GW	U			X			X	

Relinquished by: (signature) Samuel Evans Date/Time: 2/27/23 0900
Received by: (signature) Date/Time: 2/27/23 1030
Relinquished by: (signature) Date/Time: 1642
Received by: (signature) Date/Time: 2/27/23 16:42
Relinquished by: (signature) Date/Time:
Received by: (signature) Date/Time:
Relinquished by: (signature) Date/Time:
Received by: (signature) Date/Time:

Bill to Town of Shutesbury - PO:57-101490

Detection Limit Requirements

MA
CT
Other

Special Requirements

☑ MA MCP Required
☐ MCP Certification Form Required
☐ CT RCP Required
☐ RCP Certification Form Required
☐ MA State DW Required
PWSID #

Please use the following codes to indicate possible sample concentration within the Conc Code column above:
H - High; M - Medium; L - Low; C - Clean; U - Unknown

Matrix Codes

GW = Ground Water
WW = Waste Water
DW = Drinking Water
A = Air S = Soil
SL = Sludge
SOL = Solid
O = Other _____

Preservation Codes

I = Iced
H = HCL
N = Nitric Acid
S = Sulfuric Acid
B = Sodium Bisulfate
X = Sodium Hydroxide
T = Sodium Thiosulfate
M = Methanol
DI = DI Water
O = Other _____

Project Entity

Government ☐ Municipality ☐ MWRA ☐ WRTA ☐
Federal ☐ 21 J ☐ School ☐
City ☐ Brownfield ☐ MBTA ☐

Other

☐ Chromatogram
☐ AIHA-LAP,LLC

Lab Comments:

Disclaimer: Pace Analytical is not responsible for any omitted information on the Chain of Custody. The Chain of Custody is a legal document that must be complete and accurate and is used to determine what analyses the laboratory will perform. Any missing information is not the laboratory's responsibility. Pace Analytical values your partnership on each project and will try to assist with missing information, but will not be held accountable.

Courier Use Only

VIALS_____
GLASS_____
PLASTIC_____
BACTERIA_____
ENCORE_____

Glassware in freezer? Y / N

Prepackaged Cooler? Y / N

*Pace Analytical is not responsible for missing samples from prepacked coolers

Pace Analytical

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East Longmeadow, MA. 01028
P: 413-525-2332
F:413-525-6405
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Log In Back-Sheet

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

Pace
PEOPLE ADVANCING SCIENCE

Client Tighe & Bond

Project PFAS Sample Collection

MCP/RCP Required MA MCP

Deliverable Package Req.

Location Shutesbury, MA

PWSID# (When Applicable)

Arrival Method:

Courier [X] Fed Ex [ ] Walk in [ ] Other [ ]

Received By / Date / Time 2-27-23 16:42

Back-Sheet By / Date / Time 2-28-23 13:15

Temperature Method Gun # 3

Temp [X] < 6° C Actual Temperature 4.6

Rush Samples: Yes / (No) Notify

Short Hold: Yes / (No) Notify

	True	False
Received on Ice	[X]	[ ]
Received in Cooler	[X]	[ ]
Custody Seal: DATE TIME	[ ]	[X]
COC Relinquished	[X]	[ ]
COC/Samples Labels Agree	[X]	[ ]
All Samples in Good Condition	[X]	[ ]
Samples Received within Holding Time	[X]	[ ]
Is there enough Volume	[X]	[ ]
Proper Media/Container Used	[X]	[ ]
Splitting Samples Required	[ ]	[X]
MS/MSD	[ ]	[X]
Trip Blanks	[ ]	[X]
Lab to Filters	[ ]	[X]
COC Legible	[X]	[ ]

Notes regarding Samples/COC outside of SOP:

COC Included: (Check all included)

Client [X] Analysis [X] Sampler Name [X]

Project [X] IDs [X] Collection Date/Time [X]

All Samples Proper pH: (N/A) [ ] [ ]

Container (Circle when applicable)	UnP	HCl	HNO3	H2SO4	NaOH	Trizma	NaS2O3	Other Preservative
1L Amber Plastic								
500 mL Amber Plastic								
250 mL Amber (Plastic)								
Other Amber Clear Plastic						2		
16oz Amber Clear								
8oz Amber Clear								
4oz Amber Clear								
2oz Amber Clear								
Col/Bacteria								
Flashpoint								
Plastic Bag								
SOC Kit								
Perchlorate								
Encore								
Frozen								

	Proper Headspace	UnP	HCl	MeOH	Bisulfate	DI	Thiosulfate	Sulfuric	Other
Vials									

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February 21, 2023

Jeff Arps
Tighe & Bond
53 Southampton Road
Westfield, MA 01085

Project Location: Shutesbury, Massachuesetts 11 Wilson
Client Job Number:
Project Number: S-2190
Laboratory Work Order Number: 23B1449

Enclosed are results of analyses for samples as received by the laboratory on February 13, 2023. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Jessica L. Hoffman
Project Manager

Table of Contents

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

Tighe & Bond
53 Southampton Road
Westfield, MA 01085
ATTN: Jeff Arps

REPORT DATE: 2/21/2023

PURCHASE ORDER NUMBER: 57-101490

PROJECT NUMBER: S-2190

ANALYTICAL SUMMARY

WORK ORDER NUMBER: 23B1449

The results of analyses performed on the following samples submitted to Con-Test, a Pace Analytical Laboratory, are found in this report.

PROJECT LOCATION: Shutesbury, Massachuesetts

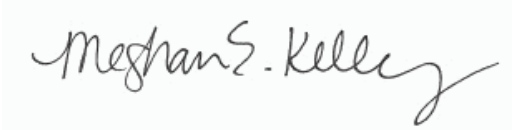
FIELD SAMPLE #	LAB ID:	MATRIX	SAMPLE DESCRIPTION	TEST	SUB LAB
11 Wilson Road	23B1449-01	Ground Water		EPA 537.1	

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

CASE NARRATIVE SUMMARY

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

The results of analyses reported only relate to samples submitted to Con-Test, a Pace Analytical Laboratory, 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

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

Project Location: Shutesbury, Massachuesetts Sample Description: Work Order: 23B1449

Date Received: 2/13/2023

Field Sample #: 11 Wilson Road Sampled: 2/9/2023 09:35

Sample ID: 23B1449-01

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	DF	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanesulfonic acid (PFBS)	ND	1.9	0.72	ng/L	1		EPA 537.1	2/15/23	2/20/23 14:29	AMS
Perfluorohexanoic acid (PFHxA)	ND	1.9	0.84	ng/L	1		EPA 537.1	2/15/23	2/20/23 14:29	AMS
Perfluorohexanesulfonic acid (PFHxS)	ND	1.9	0.61	ng/L	1		EPA 537.1	2/15/23	2/20/23 14:29	AMS
Perfluoroheptanoic acid (PFHpA)	ND	1.9	0.64	ng/L	1		EPA 537.1	2/15/23	2/20/23 14:29	AMS
Perfluorooctanoic acid (PFOA)	2.3	1.9	0.89	ng/L	1		EPA 537.1	2/15/23	2/20/23 14:29	AMS
Perfluorooctanesulfonic acid (PFOS)	1.2	1.9	0.82	ng/L	1	J	EPA 537.1	2/15/23	2/20/23 14:29	AMS
Perfluorononanoic acid (PFNA)	ND	1.9	0.83	ng/L	1		EPA 537.1	2/15/23	2/20/23 14:29	AMS
Perfluorodecanoic acid (PFDA)	ND	1.9	0.69	ng/L	1		EPA 537.1	2/15/23	2/20/23 14:29	AMS
N-EtFOSAA (NEtFOSAA)	ND	1.9	0.66	ng/L	1		EPA 537.1	2/15/23	2/20/23 14:29	AMS
Perfluoroundecanoic acid (PFUnA)	ND	1.9	0.64	ng/L	1		EPA 537.1	2/15/23	2/20/23 14:29	AMS
N-MeFOSAA (NMeFOSAA)	ND	1.9	0.61	ng/L	1		EPA 537.1	2/15/23	2/20/23 14:29	AMS
Perfluorododecanoic acid (PFDoA)	ND	1.9	0.59	ng/L	1		EPA 537.1	2/15/23	2/20/23 14:29	AMS
Perfluorotridecanoic acid (PFTrDA)	ND	1.9	0.56	ng/L	1		EPA 537.1	2/15/23	2/20/23 14:29	AMS
Perfluorotetradecanoic acid (PFTA)	ND	1.9	0.49	ng/L	1		EPA 537.1	2/15/23	2/20/23 14:29	AMS
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	1.9	0.83	ng/L	1		EPA 537.1	2/15/23	2/20/23 14:29	AMS
11Cl-PF3OUdS (F53B Major)	ND	1.9	0.72	ng/L	1		EPA 537.1	2/15/23	2/20/23 14:29	AMS
9Cl-PF3ONS (F53B Minor)	ND	1.9	0.86	ng/L	1		EPA 537.1	2/15/23	2/20/23 14:29	AMS
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	1.9	0.77	ng/L	1		EPA 537.1	2/15/23	2/20/23 14:29	AMS

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
13C-PFHxA	101	70-130		2/20/23 14:29
M3HFPO-DA	90.5	70-130		2/20/23 14:29
13C-PFDA	95.8	70-130		2/20/23 14:29
D5-NEtFOSAA	94.8	70-130		2/20/23 14:29

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Sample Extraction Data

Prep Method: EPA 537.1-EPA 537.1

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
23B1449-01 [11 Wilson Road]	B331478	265	1.00	02/15/23

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QUALITY CONTROL

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

Analyte	Result	Reporting Limit	DL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B331478 - EPA 537.1											
Blank (B331478-BLK1)					Prepared: 02/15/23 Analyzed: 02/20/23						
Perfluorobutanesulfonic acid (PFBS)	ND	1.8	0.70	ng/L							
Perfluorohexanoic acid (PFHxA)	ND	1.8	0.81	ng/L							
Perfluorohexanesulfonic acid (PFHxS)	ND	1.8	0.59	ng/L							
Perfluoroheptanoic acid (PFHpA)	ND	1.8	0.62	ng/L							
Perfluorooctanoic acid (PFOA)	ND	1.8	0.86	ng/L							
Perfluorooctanesulfonic acid (PFOS)	ND	1.8	0.79	ng/L							
Perfluorononanoic acid (PFNA)	ND	1.8	0.81	ng/L							
Perfluorodecanoic acid (PFDA)	ND	1.8	0.67	ng/L							
N-EtFOSAA (NEtFOSAA)	ND	1.8	0.63	ng/L							
Perfluoroundecanoic acid (PFUnA)	ND	1.8	0.62	ng/L							
N-MeFOSAA (NMeFOSAA)	ND	1.8	0.59	ng/L							
Perfluorododecanoic acid (PFDoA)	ND	1.8	0.57	ng/L							
Perfluorotridecanoic acid (PFTrDA)	ND	1.8	0.54	ng/L							
Perfluorotetradecanoic acid (PFTA)	ND	1.8	0.47	ng/L							
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	1.8	0.80	ng/L							
11Cl-PF3OUdS (F53B Major)	ND	1.8	0.70	ng/L							
9Cl-PF3ONS (F53B Minor)	ND	1.8	0.83	ng/L							
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	1.8	0.75	ng/L							
Surrogate: 13C-PFHxA	*33.2*			ng/L	36.4		91.1	70-130			
Surrogate: M3HFPO-DA	*28.5*			ng/L	36.4		78.4	70-130			
Surrogate: 13C-PFDA	*34.3*			ng/L	36.4		94.2	70-130			
Surrogate: D5-NEtFOSAA	*135*			ng/L	146		93.0	70-130			
LCS (B331478-BS1)					Prepared: 02/15/23 Analyzed: 02/20/23						
Perfluorobutanesulfonic acid (PFBS)	14.6	1.8	0.70	ng/L	16.1		90.1	70-130			
Perfluorohexanoic acid (PFHxA)	16.9	1.8	0.81	ng/L	18.2		92.9	70-130			
Perfluorohexanesulfonic acid (PFHxS)	14.5	1.8	0.59	ng/L	16.6		87.0	70-130			
Perfluoroheptanoic acid (PFHpA)	16.2	1.8	0.62	ng/L	18.2		88.9	70-130			
Perfluorooctanoic acid (PFOA)	16.0	1.8	0.86	ng/L	18.2		88.1	70-130			
Perfluorooctanesulfonic acid (PFOS)	15.5	1.8	0.79	ng/L	16.9		92.0	70-130			
Perfluorononanoic acid (PFNA)	17.1	1.8	0.81	ng/L	18.2		93.9	70-130			
Perfluorodecanoic acid (PFDA)	17.3	1.8	0.67	ng/L	18.2		95.2	70-130			
N-EtFOSAA (NEtFOSAA)	15.9	1.8	0.63	ng/L	18.2		87.3	70-130			
Perfluoroundecanoic acid (PFUnA)	16.0	1.8	0.62	ng/L	18.2		87.6	70-130			
N-MeFOSAA (NMeFOSAA)	16.2	1.8	0.59	ng/L	18.2		89.0	70-130			
Perfluorododecanoic acid (PFDoA)	15.5	1.8	0.57	ng/L	18.2		85.2	70-130			
Perfluorotridecanoic acid (PFTrDA)	15.2	1.8	0.54	ng/L	18.2		83.7	70-130			
Perfluorotetradecanoic acid (PFTA)	15.4	1.8	0.47	ng/L	18.2		84.7	70-130			
Hexafluoropropylene oxide dimer acid (HFPO-DA)	17.3	1.8	0.80	ng/L	18.2		95.1	70-130			
11Cl-PF3OUdS (F53B Major)	16.7	1.8	0.70	ng/L	17.2		97.0	70-130			
9Cl-PF3ONS (F53B Minor)	15.0	1.8	0.83	ng/L	17.0		88.4	70-130			
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	14.4	1.8	0.75	ng/L	17.2		83.8	70-130			
Surrogate: 13C-PFHxA	*37.3*			ng/L	36.4		103	70-130			
Surrogate: M3HFPO-DA	*31.7*			ng/L	36.4		87.2	70-130			
Surrogate: 13C-PFDA	*36.8*			ng/L	36.4		101	70-130			
Surrogate: D5-NEtFOSAA	*136*			ng/L	146		93.7	70-130			

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QUALITY CONTROL

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

Analyte	Result	Reporting Limit	DL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B331478 - EPA 537.1											
LCS Dup (B331478-BSD1)					Prepared: 02/15/23 Analyzed: 02/20/23						
Perfluorobutanesulfonic acid (PFBS)	13.9	1.8	0.70	ng/L	16.2		86.1	70-130	4.37	30	
Perfluorohexanoic acid (PFHxA)	16.4	1.8	0.81	ng/L	18.2		89.9	70-130	3.08	30	
Perfluorohexanesulfonic acid (PFHxS)	14.3	1.8	0.59	ng/L	16.7		85.7	70-130	1.27	30	
Perfluoroheptanoic acid (PFHpA)	15.6	1.8	0.62	ng/L	18.2		85.4	70-130	3.83	30	
Perfluorooctanoic acid (PFOA)	16.0	1.8	0.86	ng/L	18.2		87.5	70-130	0.544	30	
Perfluorooctanesulfonic acid (PFOS)	15.3	1.8	0.79	ng/L	16.9		90.6	70-130	1.31	30	
Perfluorononanoic acid (PFNA)	16.7	1.8	0.81	ng/L	18.2		91.4	70-130	2.53	30	
Perfluorodecanoic acid (PFDA)	17.0	1.8	0.67	ng/L	18.2		93.0	70-130	2.10	30	
N-EtFOSAA (NEtFOSAA)	16.9	1.8	0.63	ng/L	18.2		92.7	70-130	6.24	30	
Perfluoroundecanoic acid (PFUnA)	17.0	1.8	0.62	ng/L	18.2		93.1	70-130	6.32	30	
N-MeFOSAA (NMeFOSAA)	17.0	1.8	0.59	ng/L	18.2		93.1	70-130	4.67	30	
Perfluorododecanoic acid (PFDoA)	16.9	1.8	0.57	ng/L	18.2		92.7	70-130	8.70	30	
Perfluorotridecanoic acid (PFTrDA)	16.9	1.8	0.54	ng/L	18.2		92.4	70-130	10.1	30	
Perfluorotetradecanoic acid (PFTA)	16.3	1.8	0.47	ng/L	18.2		89.6	70-130	5.76	30	
Hexafluoropropylene oxide dimer acid (HFPO-DA)	17.0	1.8	0.80	ng/L	18.2		93.1	70-130	1.87	30	
11Cl-PF3OUdS (F53B Major)	17.3	1.8	0.70	ng/L	17.2		100	70-130	3.58	30	
9Cl-PF3ONS (F53B Minor)	15.2	1.8	0.83	ng/L	17.0		89.2	70-130	1.08	30	
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	14.1	1.8	0.75	ng/L	17.2		81.7	70-130	2.35	30	
Surrogate: 13C-PFHxA	*33.8*			ng/L	36.5		92.5	70-130			
Surrogate: M3HFPO-DA	*29.0*			ng/L	36.5		79.4	70-130			
Surrogate: 13C-PFDA	*34.9*			ng/L	36.5		95.6	70-130			
Surrogate: D5-NEtFOSAA	*137*			ng/L	146		93.9	70-130			

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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
DL	Method Detection Limit
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).

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CERTIFICATIONS

Certified Analyses included in this Report

Analyte	Certifications
EPA 537.1 in Drinking Water	
Perfluorobutanesulfonic acid (PFBS)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorohexanoic acid (PFHxA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorohexanesulfonic acid (PFHxS)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluoroheptanoic acid (PFHpA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorooctanoic acid (PFOA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorooctanesulfonic acid (PFOS)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorononanoic acid (PFNA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorodecanoic acid (PFDA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
N-EtFOSAA (NEtFOSAA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluoroundecanoic acid (PFUnA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
N-MeFOSAA (NMeFOSAA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorododecanoic acid (PFDoA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorotridecanoic acid (PFTrDA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorotetradecanoic acid (PFTA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Hexafluoropropylene oxide dimer acid (HFPO-DA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
11Cl-PF3OUdS (F53B Major)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
9Cl-PF3ONS (F53B Minor)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH

Con-Test, a Pace Environmental Laboratory, operates under the following certifications and accreditations:

Code	Description	Number	Expires
MA	Massachusetts DEP	M-MA100	06/30/2023
CT	Connecticut Department of Public Health	PH-0821	12/31/2024
NY	New York State Department of Health	10899 NELAP	04/1/2023
NH	New Hampshire Environmental Lab	2516 NELAP	02/5/2024
NJ	New Jersey DEP	MA007 NELAP	06/30/2023
VT-DW	Vermont Department of Health Drinking Water	VT-255716	06/12/2023
ME	State of Maine	MA00100	06/9/2023
PA	Commonwealth of Pennsylvania DEP	68-05812	06/30/2023
MI	Dept. of Env, Great Lakes, and Energy	9100	06/30/2023

23B1449

J1-1

Pace Analytical

Phone: 413-525-2332
Fax: 413-525-6405

https://www.pacelabs.com/

CHAIN OF CUSTODY RECORD

39 Spruce Street
East Longmeadow, MA 01028

Doc # 381 Rev 2_06262019

Page _____ of _____

Contact: https://www.pacelabs.com/contact-us/contact-environmental-sciences/

Company Name:	Tighe & Bond
Address:	53 Southampton Road, Westfield, Massachusetts
Phone:	(413) 562-1600
Project Name:	PFAS Sample Collection - Shutesbury
Project Location:	Shutesbury, Massachusetts
Project Number:	S-2190
Project Manager:	Jeff Arps
Pace Analytical Quote Name/Number	
Invoice Recipient:	Town of Shutesbury
Sampled By:	Samuel Evans

Requested Turnaround Time

7-Day ☑ 10-Day ☐
PFAS 10-Day (std) ☐ Due Date:

Rush Approval Required

1-Day ☐ 3-Day ☐
2-Day ☐ 4-Day ☐

Data Delivery

Format: PDF ☑ EXCEL ☑
Other:
CLP Like Data Pkg Required: ☐
Email To: JArps@TighеBond.com; SEvans@TighеBond.com
Fax To #:

Dissolved Metals Samples

○ Field Filtered
○ Lab to Filter

Orthophosphate Samples

○ Field Filtered
○ Lab to Filter

PCB ONLY

SOXHLET ☐
NON SOXHLET ☐

ANALYSIS REQUESTED

2 Preservation Code

Pace Analytical Work Order#	Client Sample ID / Description	Beginning Date/Time	Ending Date/Time	COMP/GRAB	Matrix Code	Conc Code	VIALS	GLASS	PLASTIC	BACTERIA	ENCORE	PFAS Via 537.1
	11 Wilson Road	2/1/22	0935	Grab	GW	J			2			X

Relinquished by: (signature) Samuel Evans Date/Time: 2/13/23 0915
Received by: (signature) Pace Date/Time: 2/13/23 1334
Relinquished by: (signature) Pace Date/Time: 2/13/23 1708
Received by: (signature) 35 Date/Time: 2/13/23 1708
Relinquished by: (signature) Date/Time:
Received by: (signature) Date/Time:
Relinquished by: (signature) Date/Time:
Received by: (signature) Date/Time:

Bill to Town of Shutesbury - PO:57-101490

Detection Limit Requirements

MA
GW
Other:

Special Requirements

☑ MA MCP Required
MCP Certification Form Required
☐ CT RCP Required
RCP Certification Form Required
☐ MA State DW Required
PWSID #

Please use the following codes to indicate possible sample concentration within the Conc Code column above:
H - High; M - Medium; L - Low; C - Clean; U - Unknown

Project Entity

Government ☐ Municipality ☐ MWRA ☐ WRTA ☐
Federal ☐ 21 J ☐ School ☐
City ☐ Brownfield ☐ MBTA ☐

Other

☐ Chromatogram
☐ AIHA-LAP,LLC

Matrix Codes

GW = Ground Water
WW = Waste Water
DW = Drinking Water
A = Air S = Soil
SL = Sludge
SOL = Solid
O = Other _____

Preservation Codes

I = Iced
H = HCL
N = Nitric Acid
S = Sulfuric Acid
B = Sodium Bisulfate
X = Sodium Hydroxide
T = Sodium Thiosulfate
M = Methanol
DI = DI Water
O = Other _____

Lab Comments:

Disclaimer: Pace Analytical is not responsible for any omitted information on the Chain of Custody. The Chain of Custody is a legal document that must be complete and accurate and is used to determine what analyses the laboratory will perform. Any missing information is not the laboratory's responsibility. Pace Analytical values your partnership on each project and will try to assist with missing information, but will not be held accountable.

Courier Use Only

VIALS_____
GLASS_____
PLASTIC_____
BACTERIA_____
ENCORE_____

Glassware in freezer? Y / N
Prepackaged Cooler? Y / N

*Pace Analytical is not responsible for missing samples from prepacked coolers

Pace Analytical

39 Spruce St.
East Longmeadow, MA. 01028
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F:413-525-6405
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Log In Back-Sheet

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

Pace
PEOPLE ADVANCING SCIENCE

Client Tighe and Bond

Project PFAS Sample Collection-Shutesbury

MCP/RCP Required MA MCP

Deliverable Package Req. MA

Location Shutesbury, Massachusetts

PWSID# (When Applicable) NA

Arrival Method:

Courier [V] Fed Ex [ ] Walk In [ ] Other [ ]

Received By / Date / Time Fedex 2/13/23 1705

Back-Sheet By / Date / Time LA 2/14/23 1001

Temperature Method Gun #1

Temp [V] < 6° C Actual Temperature 3.5

Rush Samples: Yes / (No) Notify

Short Hold: Yes / (No) Notify

	True	False
Received on Ice	[V]	[ ]
Received in Cooler	[V]	[ ]
Custody Seal: DATE TIME	[ ]	[V]
COC Relinquished	[V]	[ ]
COC/Samples Labels Agree	[V]	[ ]
All Samples in Good Condition	[V]	[ ]
Samples Received within Holding Time	[V]	[ ]
Is there enough Volume	[V]	[ ]
Proper Media/Container Used	[V]	[ ]
Splitting Samples Required	[ ]	[V]
MS/MSD	[ ]	[V]
Trip Blanks	[ ]	[V]
Lab to Filters	[ ]	[V]
COC Legible	[V]	[ ]

Notes regarding Samples/COC outside of SOP:

COC Included: (Check all included)

Client [V] Analysis [V] Sampler Name [V]

Project [V] IDs [V] Collection Date/Time [V]

All Samples Proper pH: (N/A) [ ] [ ]

Container (Circle when applicable)	UnP	HCl	HNO3	H2SO4	NaOH	Trizma	NaS2O3	Other Preservative
1L Amber Plastic								
500 mL Amber Plastic								
250 mL Amber (Plastic)						2		
Other Amber Clear Plastic								
16oz Amber Clear								
8oz Amber Clear								
4oz Amber Clear								
2oz Amber Clear								
Col/Bacteria								
Flashpoint								
Plastic Bag								
SOC Kit								
Perchlorate								
Encore								
Frozen								

	Proper Headspace	UnP	HCl	MeOH	Bisulfate	DI	Thiosulfate	Sulfuric	Other
Vials									

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February 21, 2023

Jeff Arps
Tighe & Bond
53 Southampton Road
Westfield, MA 01085

Project Location: Shutesbury, Massachusetts 16 Wilson
Client Job Number:
Project Number: S-2190
Laboratory Work Order Number: 23B1452

Enclosed are results of analyses for samples as received by the laboratory on February 13, 2023. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Jessica L. Hoffman
Project Manager

Table of Contents

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

Tighe & Bond
53 Southampton Road
Westfield, MA 01085
ATTN: Jeff Arps

REPORT DATE: 2/21/2023

PURCHASE ORDER NUMBER: 57-101490

PROJECT NUMBER: S-2190

ANALYTICAL SUMMARY

WORK ORDER NUMBER: 23B1452

The results of analyses performed on the following samples submitted to Con-Test, a Pace Analytical Laboratory, are found in this report.

PROJECT LOCATION: Shutesbury, Massachusetts

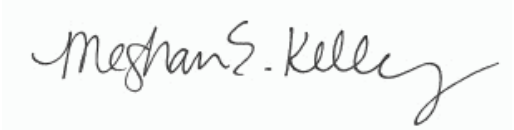
FIELD SAMPLE #	LAB ID:	MATRIX	SAMPLE DESCRIPTION	TEST	SUB LAB
16 Wilson Road	23B1452-01	Ground Water		EPA 537.1	

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

CASE NARRATIVE SUMMARY

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

The results of analyses reported only relate to samples submitted to Con-Test, a Pace Analytical Laboratory, 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: Shutesbury, Massachusetts Sample Description: Work Order: 23B1452

Date Received: 2/13/2023

Field Sample #: 16 Wilson Road Sampled: 2/9/2023 10:55

Sample ID: 23B1452-01

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	DF	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanesulfonic acid (PFBS)	ND	1.8	0.70	ng/L	1		EPA 537.1	2/15/23	2/20/23 11:37	AMS
Perfluorohexanoic acid (PFHxA)	ND	1.8	0.81	ng/L	1		EPA 537.1	2/15/23	2/20/23 11:37	AMS
Perfluorohexanesulfonic acid (PFHxS)	ND	1.8	0.60	ng/L	1		EPA 537.1	2/15/23	2/20/23 11:37	AMS
Perfluoroheptanoic acid (PFHpA)	ND	1.8	0.62	ng/L	1		EPA 537.1	2/15/23	2/20/23 11:37	AMS
Perfluorooctanoic acid (PFOA)	0.97	1.8	0.86	ng/L	1	J	EPA 537.1	2/15/23	2/20/23 11:37	AMS
Perfluorooctanesulfonic acid (PFOS)	0.99	1.8	0.79	ng/L	1	J	EPA 537.1	2/15/23	2/20/23 11:37	AMS
Perfluorononanoic acid (PFNA)	ND	1.8	0.81	ng/L	1		EPA 537.1	2/15/23	2/20/23 11:37	AMS
Perfluorodecanoic acid (PFDA)	ND	1.8	0.67	ng/L	1		EPA 537.1	2/15/23	2/20/23 11:37	AMS
N-EtFOSAA (NEtFOSAA)	ND	1.8	0.64	ng/L	1		EPA 537.1	2/15/23	2/20/23 11:37	AMS
Perfluoroundecanoic acid (PFUnA)	ND	1.8	0.62	ng/L	1		EPA 537.1	2/15/23	2/20/23 11:37	AMS
N-MeFOSAA (NMeFOSAA)	ND	1.8	0.60	ng/L	1		EPA 537.1	2/15/23	2/20/23 11:37	AMS
Perfluorododecanoic acid (PFDoA)	ND	1.8	0.57	ng/L	1		EPA 537.1	2/15/23	2/20/23 11:37	AMS
Perfluorotridecanoic acid (PFTrDA)	ND	1.8	0.54	ng/L	1		EPA 537.1	2/15/23	2/20/23 11:37	AMS
Perfluorotetradecanoic acid (PFTA)	ND	1.8	0.47	ng/L	1		EPA 537.1	2/15/23	2/20/23 11:37	AMS
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	1.8	0.81	ng/L	1		EPA 537.1	2/15/23	2/20/23 11:37	AMS
11Cl-PF3OUdS (F53B Major)	ND	1.8	0.70	ng/L	1		EPA 537.1	2/15/23	2/20/23 11:37	AMS
9Cl-PF3ONS (F53B Minor)	ND	1.8	0.84	ng/L	1		EPA 537.1	2/15/23	2/20/23 11:37	AMS
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	1.8	0.75	ng/L	1		EPA 537.1	2/15/23	2/20/23 11:37	AMS

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
13C-PFHxA	97.4	70-130		2/20/23 11:37
M3HFPO-DA	89.9	70-130		2/20/23 11:37
13C-PFDA	98.6	70-130		2/20/23 11:37
D5-NEtFOSAA	101	70-130		2/20/23 11:37

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Sample Extraction Data

Prep Method: EPA 537.1-EPA 537.1

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
23B1452-01 [16 Wilson Road]	B331478	273	1.00	02/15/23

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QUALITY CONTROL

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

Analyte	Result	Reporting Limit	DL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B331478 - EPA 537.1											
Blank (B331478-BLK1)					Prepared: 02/15/23 Analyzed: 02/20/23						
Perfluorobutanesulfonic acid (PFBS)	ND	1.8	0.70	ng/L							
Perfluorohexanoic acid (PFHxA)	ND	1.8	0.81	ng/L							
Perfluorohexanesulfonic acid (PFHxS)	ND	1.8	0.59	ng/L							
Perfluoroheptanoic acid (PFHpA)	ND	1.8	0.62	ng/L							
Perfluorooctanoic acid (PFOA)	ND	1.8	0.86	ng/L							
Perfluorooctanesulfonic acid (PFOS)	ND	1.8	0.79	ng/L							
Perfluorononanoic acid (PFNA)	ND	1.8	0.81	ng/L							
Perfluorodecanoic acid (PFDA)	ND	1.8	0.67	ng/L							
N-EtFOSAA (NEtFOSAA)	ND	1.8	0.63	ng/L							
Perfluoroundecanoic acid (PFUnA)	ND	1.8	0.62	ng/L							
N-MeFOSAA (NMeFOSAA)	ND	1.8	0.59	ng/L							
Perfluorododecanoic acid (PFDoA)	ND	1.8	0.57	ng/L							
Perfluorotridecanoic acid (PFTrDA)	ND	1.8	0.54	ng/L							
Perfluorotetradecanoic acid (PFTA)	ND	1.8	0.47	ng/L							
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	1.8	0.80	ng/L							
11Cl-PF3OUdS (F53B Major)	ND	1.8	0.70	ng/L							
9Cl-PF3ONS (F53B Minor)	ND	1.8	0.83	ng/L							
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	1.8	0.75	ng/L							
Surrogate: 13C-PFHxA	*33.2*			ng/L	36.4		91.1	70-130			
Surrogate: M3HFPO-DA	*28.5*			ng/L	36.4		78.4	70-130			
Surrogate: 13C-PFDA	*34.3*			ng/L	36.4		94.2	70-130			
Surrogate: D5-NEtFOSAA	*135*			ng/L	146		93.0	70-130			
LCS (B331478-BS1)					Prepared: 02/15/23 Analyzed: 02/20/23						
Perfluorobutanesulfonic acid (PFBS)	14.6	1.8	0.70	ng/L	16.1		90.1	70-130			
Perfluorohexanoic acid (PFHxA)	16.9	1.8	0.81	ng/L	18.2		92.9	70-130			
Perfluorohexanesulfonic acid (PFHxS)	14.5	1.8	0.59	ng/L	16.6		87.0	70-130			
Perfluoroheptanoic acid (PFHpA)	16.2	1.8	0.62	ng/L	18.2		88.9	70-130			
Perfluorooctanoic acid (PFOA)	16.0	1.8	0.86	ng/L	18.2		88.1	70-130			
Perfluorooctanesulfonic acid (PFOS)	15.5	1.8	0.79	ng/L	16.9		92.0	70-130			
Perfluorononanoic acid (PFNA)	17.1	1.8	0.81	ng/L	18.2		93.9	70-130			
Perfluorodecanoic acid (PFDA)	17.3	1.8	0.67	ng/L	18.2		95.2	70-130			
N-EtFOSAA (NEtFOSAA)	15.9	1.8	0.63	ng/L	18.2		87.3	70-130			
Perfluoroundecanoic acid (PFUnA)	16.0	1.8	0.62	ng/L	18.2		87.6	70-130			
N-MeFOSAA (NMeFOSAA)	16.2	1.8	0.59	ng/L	18.2		89.0	70-130			
Perfluorododecanoic acid (PFDoA)	15.5	1.8	0.57	ng/L	18.2		85.2	70-130			
Perfluorotridecanoic acid (PFTrDA)	15.2	1.8	0.54	ng/L	18.2		83.7	70-130			
Perfluorotetradecanoic acid (PFTA)	15.4	1.8	0.47	ng/L	18.2		84.7	70-130			
Hexafluoropropylene oxide dimer acid (HFPO-DA)	17.3	1.8	0.80	ng/L	18.2		95.1	70-130			
11Cl-PF3OUdS (F53B Major)	16.7	1.8	0.70	ng/L	17.2		97.0	70-130			
9Cl-PF3ONS (F53B Minor)	15.0	1.8	0.83	ng/L	17.0		88.4	70-130			
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	14.4	1.8	0.75	ng/L	17.2		83.8	70-130			
Surrogate: 13C-PFHxA	*37.3*			ng/L	36.4		103	70-130			
Surrogate: M3HFPO-DA	*31.7*			ng/L	36.4		87.2	70-130			
Surrogate: 13C-PFDA	*36.8*			ng/L	36.4		101	70-130			
Surrogate: D5-NEtFOSAA	*136*			ng/L	146		93.7	70-130			

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QUALITY CONTROL

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

Analyte	Result	Reporting Limit	DL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B331478 - EPA 537.1											
LCS Dup (B331478-BSD1)					Prepared: 02/15/23 Analyzed: 02/20/23						
Perfluorobutanesulfonic acid (PFBS)	13.9	1.8	0.70	ng/L	16.2		86.1	70-130	4.37	30	
Perfluorohexanoic acid (PFHxA)	16.4	1.8	0.81	ng/L	18.2		89.9	70-130	3.08	30	
Perfluorohexanesulfonic acid (PFHxS)	14.3	1.8	0.59	ng/L	16.7		85.7	70-130	1.27	30	
Perfluoroheptanoic acid (PFHpA)	15.6	1.8	0.62	ng/L	18.2		85.4	70-130	3.83	30	
Perfluorooctanoic acid (PFOA)	16.0	1.8	0.86	ng/L	18.2		87.5	70-130	0.544	30	
Perfluorooctanesulfonic acid (PFOS)	15.3	1.8	0.79	ng/L	16.9		90.6	70-130	1.31	30	
Perfluorononanoic acid (PFNA)	16.7	1.8	0.81	ng/L	18.2		91.4	70-130	2.53	30	
Perfluorodecanoic acid (PFDA)	17.0	1.8	0.67	ng/L	18.2		93.0	70-130	2.10	30	
N-EtFOSAA (NEtFOSAA)	16.9	1.8	0.63	ng/L	18.2		92.7	70-130	6.24	30	
Perfluoroundecanoic acid (PFUnA)	17.0	1.8	0.62	ng/L	18.2		93.1	70-130	6.32	30	
N-MeFOSAA (NMeFOSAA)	17.0	1.8	0.59	ng/L	18.2		93.1	70-130	4.67	30	
Perfluorododecanoic acid (PFDoA)	16.9	1.8	0.57	ng/L	18.2		92.7	70-130	8.70	30	
Perfluorotridecanoic acid (PFTrDA)	16.9	1.8	0.54	ng/L	18.2		92.4	70-130	10.1	30	
Perfluorotetradecanoic acid (PFTA)	16.3	1.8	0.47	ng/L	18.2		89.6	70-130	5.76	30	
Hexafluoropropylene oxide dimer acid (HFPO-DA)	17.0	1.8	0.80	ng/L	18.2		93.1	70-130	1.87	30	
11Cl-PF3OUdS (F53B Major)	17.3	1.8	0.70	ng/L	17.2		100	70-130	3.58	30	
9Cl-PF3ONS (F53B Minor)	15.2	1.8	0.83	ng/L	17.0		89.2	70-130	1.08	30	
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	14.1	1.8	0.75	ng/L	17.2		81.7	70-130	2.35	30	
Surrogate: 13C-PFHxA	*33.8*			ng/L	36.5		92.5	70-130			
Surrogate: M3HFPO-DA	*29.0*			ng/L	36.5		79.4	70-130			
Surrogate: 13C-PFDA	*34.9*			ng/L	36.5		95.6	70-130			
Surrogate: D5-NEtFOSAA	*137*			ng/L	146		93.9	70-130			

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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
DL	Method Detection Limit
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).

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CERTIFICATIONS

Certified Analyses included in this Report

Analyte	Certifications
EPA 537.1 in Drinking Water	
Perfluorobutanesulfonic acid (PFBS)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorohexanoic acid (PFHxA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorohexanesulfonic acid (PFHxS)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluoroheptanoic acid (PFHpA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorooctanoic acid (PFOA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorooctanesulfonic acid (PFOS)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorononanoic acid (PFNA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorodecanoic acid (PFDA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
N-EtFOSAA (NEtFOSAA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluoroundecanoic acid (PFUnA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
N-MeFOSAA (NMeFOSAA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorododecanoic acid (PFDoA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorotridecanoic acid (PFTrDA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorotetradecanoic acid (PFTA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Hexafluoropropylene oxide dimer acid (HFPO-DA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
11Cl-PF3OUdS (F53B Major)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
9Cl-PF3ONS (F53B Minor)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH

Con-Test, a Pace Environmental Laboratory, operates under the following certifications and accreditations:

Code	Description	Number	Expires
MA	Massachusetts DEP	M-MA100	06/30/2023
CT	Connecticut Department of Public Health	PH-0821	12/31/2024
NY	New York State Department of Health	10899 NELAP	04/1/2023
NH	New Hampshire Environmental Lab	2516 NELAP	02/5/2024
NJ	New Jersey DEP	MA007 NELAP	06/30/2023
VT-DW	Vermont Department of Health Drinking Water	VT-255716	06/12/2023
ME	State of Maine	MA00100	06/9/2023
PA	Commonwealth of Pennsylvania DEP	68-05812	06/30/2023
MI	Dept. of Env, Great Lakes, and Energy	9100	06/30/2023

23B1452
JH

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CHAIN OF CUSTODY RECORD

39 Spruce Street
East Longmeadow, MA 01026

Doc # 381 Rev 2_06262019

Page ____ of ____

Contact: https://www.pacelabs.com/contact-us/contact-environmental-sciences/

Company Name:	Tighe & Bond
Address:	53 Southampton Road, Westfield, Massachusetts
Phone:	(413) 562-1600
Project Name:	PFAS Sample Collection - Shutesbury
Project Location:	Shutesbury, Massachusetts
Project Number:	S-2190
Project Manager:	Jeff Arps
Pace Analytical Quote Name/Number	
Invoice Recipient:	Town of Shutesbury
Sampled By:	Samuel Evans

Requested Turnaround Time
7-Day ☑ 10-Day ☐
PFAS 10-Day (std) ☐ Due Date:

Rush - Approval Required
1-Day ☐ 3-Day ☐
2-Day ☐ 4-Day ☐

Data Delivery
Format: PDF ☑ EXCEL ☑
Other:
CLP Like Data Pkg Required: ☐
Email To: JArps@Tighebond.com, SEvans@Tighebond.com
Fax To #:

Dissolved Metals Samples
○ Field Filtered
○ Lab to Filter

Orthophosphate Samples
○ Field Filtered
○ Lab to Filter

PCB ONLY
SOXHLET ☐
NON SOXHLET ☐

ANALYSIS REQUESTED

2 Preservation Code

Pace Analytical Work Order#	Client Sample ID / Description	Beginning Date/Time	Ending Date/Time	COMP/GRAB	Matrix Code	Conc Code	VIALS	GLASS	PLASTIC	BACTERIA	ENCORE	PFAS Via 537.1
	16 Wilson Road	2/9/23	1055	Grab	GW	U			2			X

Relinquished by: (signature) — Date/Time: 2/13/23 0815
Received by: (signature) — Date/Time: 2/13/23 1336
Relinquished by: (signature) — Date/Time: 2/13/23 1708
Received by: (signature) VM 3.5 — Date/Time: 2/13/23 1708
Relinquished by: (signature) — Date/Time:
Received by: (signature) — Date/Time:
Relinquished by: (signature) — Date/Time:
Received by: (signature) — Date/Time:

Bill to Town of Shutesbury - PO: 57-101490

Detection Limit Requirements
MA
CT
Other

Special Requirements
☑ MA MCP Required
☐ MCP Certification Form Required
☐ CT RCP Required
☐ RCP Certification Form Required
☐ MA State DW Required
PWSID #

Please use the following codes to indicate possible sample concentration within the Conc Code column above:
H - High; M - Medium; L - Low; C - Clean; U - Unknown

Matrix Codes
GW= Ground Water
WW = Waste Water
DW = Drinking Water
A = Air S = Soil
SL = Sludge
SOL = Solid
O = Other ____

Preservation Codes
I = Iced
H = HCL
N = Nitric Acid
S = Sulfuric Acid
B = Sodium Bisulfate
X = Sodium Hydroxide
T = Sodium Thiosulfate
M = Methanol
DI = DI Water
O = Other ____

Project Entity
Government ☐ Municipality ☐ MWRA ☐ WRTA ☐
Federal ☐ 21 J ☐ School ☐
City ☐ Brownfield ☐ MBTA ☐

Other
☐ Chromatogram
☐ AIHA-LAP,LLC

Lab Comments:

Disclaimer: Pace Analytical is not responsible for any omitted information on the Chain of Custody. The Chain of Custody is a legal document that must be complete and accurate and is used to determine what analyses the laboratory will perform. Any missing information is not the laboratory's responsibility. Pace Analytical values your partnership on each project and will try to assist with missing information, but will not be held accountable.

Courier Use Only
VIALS ____ GLASS ____ PLASTIC ____ BACTERIA ____ ENCORE ____
Glassware in freezer? Y / N
Prepackaged Cooler? Y / N

*Pace Analytical is not responsible for missing samples from prepacked coolers

Pace Analytical

39 Spruce St.
East Longmeadow, MA. 01028
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F:413-525-6405
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Log In Back-Sheet

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

Pace
PEOPLE ADVANCING SCIENCE

Client Tighe and Bond
Project PFAS Sample Collection - Shutesbury
MCP/RCP Required MA MCP
Deliverable Package Req. MA
Location Shutesbury, Massachusetts
PWSID# (When Applicable) MA
Arrival Method:

Courier ☑ Fed Ex ☐ Walk In ☐ Other ☐

Received By / Date / Time Evert 2/13/23 1705
Back-Sheet By / Date / Time LA 2/14/23 1013
Temperature Method Gun # 5
Temp ☑ < 6° C Actual Temperature 3.5
Rush Samples: Yes / (No) Notify
Short Hold: Yes / (No) Notify

	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: (N/A) ☐ ☐

Notes regarding Samples/COC outside of SOP:

Container (Circle when applicable)	UnP	HCl	HNO3	H2SO4	NaOH	Trizma	NaS2O3	Other Preservative
1L Amber Plastic								
500 mL Amber Plastic								
250 mL Amber (Plastic)						2		
Other Amber Clear Plastic								
16oz Amber Clear								
8oz Amber Clear								
4oz Amber Clear								
2oz Amber Clear								
Col/Bacteria								
Flashpoint								
Plastic Bag								
SOC Kit								
Perchlorate								
Encore								
Frozen								

	Proper Headspace	UnP	HCl	MeOH	Bisulfate	DI	Thiosulfate	Sulfuric	Other
Vials									

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February 27, 2023

Jeff Arps
Tighe & Bond
53 Southampton Road
Westfield, MA 01085

Project Location: 21 Wilson Road, Shutesbury, Massachusetts
Client Job Number:
Project Number: S-2190
Laboratory Work Order Number: 23B2199

Enclosed are results of analyses for samples as received by the laboratory on February 20, 2023. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Jessica L. Hoffman
Project Manager

Table of Contents

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

Tighe & Bond
53 Southampton Road
Westfield, MA 01085
ATTN: Jeff Arps

REPORT DATE: 2/27/2023

PURCHASE ORDER NUMBER: 57-101490

PROJECT NUMBER: S-2190

ANALYTICAL SUMMARY

WORK ORDER NUMBER: 23B2199

The results of analyses performed on the following samples submitted to Con-Test, a Pace Analytical Laboratory, are found in this report.

PROJECT LOCATION: 21 Wilson Road, Shutesbury, Massachusetts

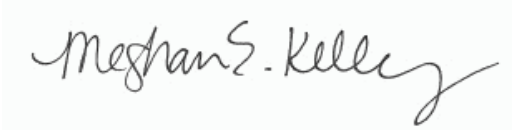
FIELD SAMPLE #	LAB ID:	MATRIX	SAMPLE DESCRIPTION	TEST	SUB LAB
21 Wilson Road	23B2199-01	Ground Water		EPA 537.1	

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

CASE NARRATIVE SUMMARY

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

The results of analyses reported only relate to samples submitted to Con-Test, a Pace Analytical Laboratory, 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

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

Project Location: 21 Wilson Road, Shutesbury, Mas Sample Description: Work Order: 23B2199

Date Received: 2/20/2023

Field Sample #: 21 Wilson Road Sampled: 2/20/2023 13:20

Sample ID: 23B2199-01

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	DF	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanesulfonic acid (PFBS)	ND	1.8	0.70	ng/L	1		EPA 537.1	2/22/23	2/24/23 12:18	JR2
Perfluorohexanoic acid (PFHxA)	ND	1.8	0.83	ng/L	1		EPA 537.1	2/22/23	2/24/23 12:18	JR2
Perfluorohexanesulfonic acid (PFHxS)	ND	1.8	0.80	ng/L	1		EPA 537.1	2/22/23	2/24/23 12:18	JR2
Perfluoroheptanoic acid (PFHpA)	ND	1.8	0.88	ng/L	1		EPA 537.1	2/22/23	2/24/23 12:18	JR2
Perfluorooctanoic acid (PFOA)	ND	1.8	0.92	ng/L	1		EPA 537.1	2/22/23	2/24/23 12:18	JR2
Perfluorooctanesulfonic acid (PFOS)	ND	1.8	0.67	ng/L	1		EPA 537.1	2/22/23	2/24/23 12:18	JR2
Perfluorononanoic acid (PFNA)	ND	1.8	0.82	ng/L	1		EPA 537.1	2/22/23	2/24/23 12:18	JR2
Perfluorodecanoic acid (PFDA)	ND	1.8	0.85	ng/L	1		EPA 537.1	2/22/23	2/24/23 12:18	JR2
N-EtFOSAA (NEtFOSAA)	ND	1.8	0.59	ng/L	1		EPA 537.1	2/22/23	2/24/23 12:18	JR2
Perfluoroundecanoic acid (PFUnA)	ND	1.8	0.68	ng/L	1		EPA 537.1	2/22/23	2/24/23 12:18	JR2
N-MeFOSAA (NMeFOSAA)	ND	1.8	0.66	ng/L	1		EPA 537.1	2/22/23	2/24/23 12:18	JR2
Perfluorododecanoic acid (PFDoA)	ND	1.8	0.64	ng/L	1		EPA 537.1	2/22/23	2/24/23 12:18	JR2
Perfluorotridecanoic acid (PFTrDA)	ND	1.8	0.65	ng/L	1		EPA 537.1	2/22/23	2/24/23 12:18	JR2
Perfluorotetradecanoic acid (PFTA)	ND	1.8	0.74	ng/L	1		EPA 537.1	2/22/23	2/24/23 12:18	JR2
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	1.8	1.1	ng/L	1		EPA 537.1	2/22/23	2/24/23 12:18	JR2
11Cl-PF3OUdS (F53B Major)	ND	1.8	0.59	ng/L	1		EPA 537.1	2/22/23	2/24/23 12:18	JR2
9Cl-PF3ONS (F53B Minor)	ND	1.8	0.73	ng/L	1		EPA 537.1	2/22/23	2/24/23 12:18	JR2
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	1.8	0.78	ng/L	1		EPA 537.1	2/22/23	2/24/23 12:18	JR2

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
13C-PFHxA	92.1	70-130		2/24/23 12:18
M3HFPO-DA	89.6	70-130		2/24/23 12:18
13C-PFDA	81.5	70-130		2/24/23 12:18
D5-NEtFOSAA	79.6	70-130		2/24/23 12:18

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Sample Extraction Data

Prep Method: EPA 537.1-EPA 537.1

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
23B2199-01 [21 Wilson Road]	B332311	281	1.00	02/22/23

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QUALITY CONTROL

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

Analyte	Result	Reporting Limit	DL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B332311 - EPA 537.1											
Blank (B332311-BLK1)					Prepared: 02/22/23 Analyzed: 02/24/23						
Perfluorobutanesulfonic acid (PFBS)	ND	1.8	0.72	ng/L							
Perfluorohexanoic acid (PFHxA)	ND	1.8	0.85	ng/L							
Perfluorohexanesulfonic acid (PFHxS)	ND	1.8	0.82	ng/L							
Perfluoroheptanoic acid (PFHpA)	ND	1.8	0.91	ng/L							
Perfluorooctanoic acid (PFOA)	ND	1.8	0.94	ng/L							
Perfluorooctanesulfonic acid (PFOS)	ND	1.8	0.69	ng/L							
Perfluorononanoic acid (PFNA)	ND	1.8	0.84	ng/L							
Perfluorodecanoic acid (PFDA)	ND	1.8	0.87	ng/L							
N-EtFOSAA (NEtFOSAA)	ND	1.8	0.61	ng/L							
Perfluoroundecanoic acid (PFUnA)	ND	1.8	0.69	ng/L							
N-MeFOSAA (NMeFOSAA)	ND	1.8	0.68	ng/L							
Perfluorododecanoic acid (PFDoA)	ND	1.8	0.65	ng/L							
Perfluorotridecanoic acid (PFTrDA)	ND	1.8	0.67	ng/L							
Perfluorotetradecanoic acid (PFTA)	ND	1.8	0.76	ng/L							
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	1.8	1.1	ng/L							
11Cl-PF3OUdS (F53B Major)	ND	1.8	0.60	ng/L							
9Cl-PF3ONS (F53B Minor)	ND	1.8	0.74	ng/L							
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	1.8	0.80	ng/L							
Surrogate: 13C-PFHxA	*40.4*			ng/L	36.5		111	70-130			
Surrogate: M3HFPO-DA	*39.3*			ng/L	36.5		108	70-130			
Surrogate: 13C-PFDA	*40.8*			ng/L	36.5		112	70-130			
Surrogate: D5-NEtFOSAA	*160*			ng/L	146		109	70-130			
LCS (B332311-BS1)					Prepared: 02/22/23 Analyzed: 02/24/23						
Perfluorobutanesulfonic acid (PFBS)	16.8	1.8	0.72	ng/L	16.2		103	70-130			
Perfluorohexanoic acid (PFHxA)	18.5	1.8	0.85	ng/L	18.3		102	70-130			
Perfluorohexanesulfonic acid (PFHxS)	17.5	1.8	0.82	ng/L	16.7		105	70-130			
Perfluoroheptanoic acid (PFHpA)	19.8	1.8	0.91	ng/L	18.3		109	70-130			
Perfluorooctanoic acid (PFOA)	18.6	1.8	0.94	ng/L	18.3		102	70-130			
Perfluorooctanesulfonic acid (PFOS)	16.5	1.8	0.69	ng/L	16.9		97.4	70-130			
Perfluorononanoic acid (PFNA)	18.0	1.8	0.84	ng/L	18.3		98.4	70-130			
Perfluorodecanoic acid (PFDA)	17.8	1.8	0.88	ng/L	18.3		97.7	70-130			
N-EtFOSAA (NEtFOSAA)	17.2	1.8	0.61	ng/L	18.3		94.2	70-130			
Perfluoroundecanoic acid (PFUnA)	18.5	1.8	0.69	ng/L	18.3		101	70-130			
N-MeFOSAA (NMeFOSAA)	18.2	1.8	0.68	ng/L	18.3		99.7	70-130			
Perfluorododecanoic acid (PFDoA)	18.4	1.8	0.65	ng/L	18.3		101	70-130			
Perfluorotridecanoic acid (PFTrDA)	18.3	1.8	0.67	ng/L	18.3		100	70-130			
Perfluorotetradecanoic acid (PFTA)	18.4	1.8	0.76	ng/L	18.3		101	70-130			
Hexafluoropropylene oxide dimer acid (HFPO-DA)	16.0	1.8	1.1	ng/L	18.3		87.6	70-130			
11Cl-PF3OUdS (F53B Major)	18.3	1.8	0.61	ng/L	17.2		106	70-130			
9Cl-PF3ONS (F53B Minor)	17.4	1.8	0.74	ng/L	17.0		102	70-130			
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	18.2	1.8	0.80	ng/L	17.3		105	70-130			
Surrogate: 13C-PFHxA	*40.3*			ng/L	36.5		110	70-130			
Surrogate: M3HFPO-DA	*40.9*			ng/L	36.5		112	70-130			
Surrogate: 13C-PFDA	*36.4*			ng/L	36.5		99.6	70-130			
Surrogate: D5-NEtFOSAA	*146*			ng/L	146		99.8	70-130			

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QUALITY CONTROL

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

Analyte	Result	Reporting Limit	DL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B332311 - EPA 537.1											
LCS Dup (B332311-BSD1)					Prepared: 02/22/23 Analyzed: 02/24/23						
Perfluorobutanesulfonic acid (PFBS)	16.2	1.8	0.72	ng/L	16.2		100	70-130	3.47	30	
Perfluorohexanoic acid (PFHxA)	17.5	1.8	0.85	ng/L	18.2		95.8	70-130	5.97	30	
Perfluorohexanesulfonic acid (PFHxS)	16.0	1.8	0.82	ng/L	16.7		96.2	70-130	9.12	30	
Perfluoroheptanoic acid (PFHpA)	17.4	1.8	0.91	ng/L	18.2		95.4	70-130	13.2	30	
Perfluorooctanoic acid (PFOA)	17.0	1.8	0.94	ng/L	18.2		93.4	70-130	8.78	30	
Perfluorooctanesulfonic acid (PFOS)	16.2	1.8	0.69	ng/L	16.9		95.6	70-130	2.10	30	
Perfluorononanoic acid (PFNA)	16.7	1.8	0.84	ng/L	18.2		91.7	70-130	7.35	30	
Perfluorodecanoic acid (PFDA)	17.9	1.8	0.87	ng/L	18.2		98.4	70-130	0.475	30	
N-EtFOSAA (NEtFOSAA)	19.7	1.8	0.60	ng/L	18.2		108	70-130	13.4	30	
Perfluoroundecanoic acid (PFUnA)	18.1	1.8	0.69	ng/L	18.2		99.4	70-130	1.99	30	
N-MeFOSAA (NMeFOSAA)	19.2	1.8	0.68	ng/L	18.2		105	70-130	5.31	30	
Perfluorododecanoic acid (PFDoA)	18.1	1.8	0.65	ng/L	18.2		99.6	70-130	1.14	30	
Perfluorotridecanoic acid (PFTrDA)	18.5	1.8	0.66	ng/L	18.2		102	70-130	1.54	30	
Perfluorotetradecanoic acid (PFTA)	18.7	1.8	0.76	ng/L	18.2		103	70-130	1.93	30	
Hexafluoropropylene oxide dimer acid (HFPO-DA)	15.1	1.8	1.1	ng/L	18.2		82.9	70-130	5.64	30	
11Cl-PF3OUdS (F53B Major)	19.1	1.8	0.60	ng/L	17.2		111	70-130	4.44	30	
9Cl-PF3ONS (F53B Minor)	17.4	1.8	0.74	ng/L	17.0		102	70-130	0.326	30	
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	16.2	1.8	0.80	ng/L	17.2		94.0	70-130	11.5	30	
Surrogate: 13C-PFHxA	*32.6*			ng/L	36.4		89.4	70-130			
Surrogate: M3HFPO-DA	*31.3*			ng/L	36.4		86.0	70-130			
Surrogate: 13C-PFDA	*33.1*			ng/L	36.4		90.8	70-130			
Surrogate: D5-NEtFOSAA	*143*			ng/L	146		98.4	70-130			

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

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
DL	Method Detection Limit
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.

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CERTIFICATIONS

Certified Analyses included in this Report

Analyte	Certifications
EPA 537.1 in Drinking Water	
Perfluorobutanesulfonic acid (PFBS)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorohexanoic acid (PFHxA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorohexanesulfonic acid (PFHxS)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluoroheptanoic acid (PFHpA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorooctanoic acid (PFOA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorooctanesulfonic acid (PFOS)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorononanoic acid (PFNA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorodecanoic acid (PFDA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
N-EtFOSAA (NEtFOSAA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluoroundecanoic acid (PFUnA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
N-MeFOSAA (NMeFOSAA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorododecanoic acid (PFDoA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorotridecanoic acid (PFTrDA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorotetradecanoic acid (PFTA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Hexafluoropropylene oxide dimer acid (HFPO-DA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
11Cl-PF3OUdS (F53B Major)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
9Cl-PF3ONS (F53B Minor)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH

Con-Test, a Pace Environmental Laboratory, operates under the following certifications and accreditations:

Code	Description	Number	Expires
MA	Massachusetts DEP	M-MA100	06/30/2023
CT	Connecticut Department of Public Health	PH-0821	12/31/2024
NY	New York State Department of Health	10899 NELAP	04/1/2023
NH	New Hampshire Environmental Lab	2516 NELAP	02/5/2024
NJ	New Jersey DEP	MA007 NELAP	06/30/2023
VT-DW	Vermont Department of Health Drinking Water	VT-255716	06/12/2023
ME	State of Maine	MA00100	06/9/2023
PA	Commonwealth of Pennsylvania DEP	68-05812	06/30/2023
MI	Dept. of Env, Great Lakes, and Energy	9100	06/30/2023

2382199
JH

Pace Analytical

Phone: 413-525-2332
Fax: 413-525-6405

https://www.pacelabs.com/

CHAIN OF CUSTODY RECORD

39 Spruce Street
East Longmeadow, MA 01026

Doc # 381 Rev 2_06262019

Page _____ of _____

Contact: https://www.pacelabs.com/contact-us/contact-environmental-sciences/

Company Name:	Tighe & Bond
Address:	53 Southampton Road, Westfield, Massachusetts
Phone:	(413) 562-1600
Project Name:	PFAS Sample Collection - Shutesbury
Project Location:	Shutesbury, Massachusetts
Project Number:	S-2190
Project Manager:	Jeff Arps
Pace Analytical Quote Name/Number	
Invoice Recipient:	Town of Shutesbury
Sampled By:	Samuel Evans

Requested Turnaround Time

7-Day ☑ 10-Day ☐
PFAS 10-Day (std) ☐ Due Date:

Rush Approval Required

1-Day ☐ 3-Day ☐
2-Day ☐ 4-Day ☐

Data Delivery

Format: PDF ☑ EXCEL ☑
Other:
CLP Like Data Pkg Required: ☐
Email To: JArps@Tighebond.com; SEvans@Tighebond.com
Fax To #:

Dissolved Metals Samples

○ Field Filtered
○ Lab to Filter

Orthophosphate Samples

○ Field Filtered
○ Lab to Filter

ANALYSIS REQUESTED

PCB ONLY
SOXHLET ☐
NON SOXHLET ☐

2 Preservation Code

Pace Analytical Work Order#	Client Sample ID / Description	Beginning Date/Time	Ending Date/Time	COMP/GRAB	Matrix Code	Conc Code	VIALS	GLASS	PLASTIC	BACTERIA	ENCORE	PFAS Via 537.1
	21 Wilson Road	2/17/23	1320	Grab	GW	U			X			X

Relinquished by: (signature) — Date/Time: 2/20/23 0830
Received by: (signature) — Date/Time: 2-20-23 14:25
Relinquished by: (signature) — Date/Time: 2-20-23 16:40
Received by: (signature) — Date/Time: 2/20/23 1648
Relinquished by: (signature) — Date/Time:
Received by: (signature) — Date/Time:
Relinquished by: (signature) — Date/Time:
Received by: (signature) — Date/Time:

Bill to Town of Shutesbury - PO: 57-101490

Detection Limit Requirement

MA:
CT:
Other:

Special Requirements

☑ MA MCP Required
☐ MCP Certification Form Required
☐ CT RCP Required
☐ RCP Certification Form Required
☐ MA State DW Required
PWSID #

Please use the following codes to indicate possible sample concentration within the Conc Code column above:
H - High; M - Medium; L - Low; C - Clean; U - Unknown

Project Entity

Government ☐ Municipality ☐ MWRA ☐ WRTA ☐
Federal ☐ 21 J ☐ School ☐
City ☐ Brownfield ☐ MBTA ☐

Other

☐ Chromatogram
☐ AIHA-LAP,LLC

Matrix Codes

GW = Ground Water
WW = Waste Water
DW = Drinking Water
A = Air S = Soil
SL = Sludge
SOL = Solid
O = Other _____

Preservation Codes

I = Iced
H = HCL
N = Nitric Acid
S = Sulfuric Acid
B = Sodium Bisulfate
X = Sodium Hydroxide
T = Sodium Thiosulfate
M = Methanol
DI = DI Water
O = Other _____

Comments:

Disclaimer: Pace Analytical is not responsible for any omitted information on the Chain of Custody. The Chain of Custody is a legal document that must be complete and accurate and is used to determine what analyses the laboratory will perform. Any missing information is not the laboratory's responsibility. Pace Analytical values your partnership on each project and will try to assist with missing information, but will not be held accountable.

Courier Use Only

VIALS_____
GLASS_____
PLASTIC_____
BACTERIA_____
ENCORE_____

Glassware in freezer? Y / N
Prepackaged Cooler? Y / N

*Pace Analytical is not responsible for missing samples from prepacked coolers

Pace Analytical

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39 Spruce St.
East Longmeadow, MA. 01028
P: 413-525-2332
F:413-525-6405
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Log In Back-Sheet

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

Pace
PEOPLE ADVANCING SCIENCE

Client Tighe and Bond
Project PFAS Sample Collection-Shutesbury
MCP/RCP Required MA MCP
Deliverable Package Req. N/A
Location Shutesbury, MASS
PWSID# (When Applicable) N/A
Arrival Method:

Courier ☑ Fed Ex ☐ Walk In ☐ Other ☐

Received By / Date / Time LA 2/20/23 1640
Back-Sheet By / Date / Time LA 2/20/23 1747
Temperature Method Gun # 5
Temp ☑ < 6° C Actual Temperature 0.6
Rush Samples: Yes / (No) Notify
Short Hold: Yes / (No) Notify

	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: (N/A) ☐ ☐

Notes regarding Samples/COC outside of SOP:

Container (Circle when applicable)	UnP	HCl	HNO3	H2SO4	NaOH	Trizma	NaS2O3	Other Preservative
1L Amber Plastic								
500 mL Amber Plastic								
250 mL Amber (Plastic)						2		
Other Amber Clear Plastic								
16oz Amber Clear								
8oz Amber Clear								
4oz Amber Clear								
2oz Amber Clear								
Col/Bacteria								
Flashpoint								
Plastic Bag								
SOC Kit								
Perchlorate								
Encore								
Frozen								

	Proper Headspace	UnP	HCl	MeOH	Bisulfate	DI	Thiosulfate	Sulfuric	Other
Vials									

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March 1, 2023

Jeff Arps
Tighe & Bond
53 Southampton Road
Westfield, MA 01085

Project Location: Shutesbury, Massachusetts
Client Job Number:
Project Number: S-2190
Laboratory Work Order Number: 23B2207

Enclosed are results of analyses for samples as received by the laboratory on February 20, 2023. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Jessica L. Hoffman
Project Manager

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

Tighe & Bond
53 Southampton Road
Westfield, MA 01085
ATTN: Jeff Arps

REPORT DATE: 3/1/2023

PURCHASE ORDER NUMBER: 57-101490

PROJECT NUMBER: S-2190

ANALYTICAL SUMMARY

WORK ORDER NUMBER: 23B2207

The results of analyses performed on the following samples submitted to Con-Test, a Pace Analytical Laboratory, are found in this report.

PROJECT LOCATION: Shutesbury, Massachusetts

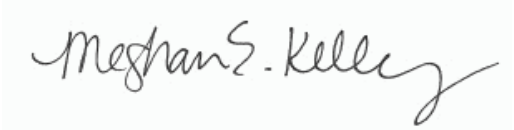
FIELD SAMPLE #	LAB ID:	MATRIX	SAMPLE DESCRIPTION	TEST	SUB LAB
Field Blank	23B2207-01	Ground Water		EPA 537.1	

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

CASE NARRATIVE SUMMARY

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

The results of analyses reported only relate to samples submitted to Con-Test, a Pace Analytical Laboratory, 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

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

Project Location: Shutesbury, Massachusetts Sample Description: Work Order: 23B2207

Date Received: 2/20/2023

Field Sample #: Field Blank Sampled: 2/17/2023 13:15

Sample ID: 23B2207-01

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	DF	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanesulfonic acid (PFBS)	ND	1.9	0.74	ng/L	1		EPA 537.1	2/27/23	3/1/23 8:42	AMS
Perfluorohexanoic acid (PFHxA)	ND	1.9	0.88	ng/L	1		EPA 537.1	2/27/23	3/1/23 8:42	AMS
Perfluorohexanesulfonic acid (PFHxS)	ND	1.9	0.84	ng/L	1		EPA 537.1	2/27/23	3/1/23 8:42	AMS
Perfluoroheptanoic acid (PFHpA)	ND	1.9	0.93	ng/L	1		EPA 537.1	2/27/23	3/1/23 8:42	AMS
Perfluorooctanoic acid (PFOA)	ND	1.9	0.97	ng/L	1		EPA 537.1	2/27/23	3/1/23 8:42	AMS
Perfluorooctanesulfonic acid (PFOS)	ND	1.9	0.71	ng/L	1		EPA 537.1	2/27/23	3/1/23 8:42	AMS
Perfluorononanoic acid (PFNA)	ND	1.9	0.87	ng/L	1		EPA 537.1	2/27/23	3/1/23 8:42	AMS
Perfluorodecanoic acid (PFDA)	ND	1.9	0.90	ng/L	1		EPA 537.1	2/27/23	3/1/23 8:42	AMS
N-EtFOSAA (NEtFOSAA)	ND	1.9	0.62	ng/L	1		EPA 537.1	2/27/23	3/1/23 8:42	AMS
Perfluoroundecanoic acid (PFUnA)	ND	1.9	0.71	ng/L	1		EPA 537.1	2/27/23	3/1/23 8:42	AMS
N-MeFOSAA (NMeFOSAA)	ND	1.9	0.70	ng/L	1		EPA 537.1	2/27/23	3/1/23 8:42	AMS
Perfluorododecanoic acid (PFDoA)	ND	1.9	0.67	ng/L	1		EPA 537.1	2/27/23	3/1/23 8:42	AMS
Perfluorotridecanoic acid (PFTrDA)	ND	1.9	0.69	ng/L	1		EPA 537.1	2/27/23	3/1/23 8:42	AMS
Perfluorotetradecanoic acid (PFTA)	ND	1.9	0.79	ng/L	1		EPA 537.1	2/27/23	3/1/23 8:42	AMS
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	1.9	1.2	ng/L	1		EPA 537.1	2/27/23	3/1/23 8:42	AMS
11Cl-PF3OUdS (F53B Major)	ND	1.9	0.62	ng/L	1		EPA 537.1	2/27/23	3/1/23 8:42	AMS
9Cl-PF3ONS (F53B Minor)	ND	1.9	0.77	ng/L	1		EPA 537.1	2/27/23	3/1/23 8:42	AMS
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	1.9	0.83	ng/L	1		EPA 537.1	2/27/23	3/1/23 8:42	AMS

Surrogates	% Recovery	Recovery Limits	Flag/Qual		
13C-PFHxA	115	70-130		3/1/23	8:42
M3HFPO-DA	117	70-130		3/1/23	8:42
13C-PFDA	111	70-130		3/1/23	8:42
D5-NEtFOSAA	112	70-130		3/1/23	8:42

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Sample Extraction Data

Prep Method: EPA 537.1-EPA 537.1

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
23B2207-01 [Field Blank]	B332312	266	1.00	02/27/23

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QUALITY CONTROL

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

Analyte	Result	Reporting Limit	DL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B332312 - EPA 537.1											
Blank (B332312-BLK1)					Prepared: 02/27/23 Analyzed: 02/28/23						
Perfluorobutanesulfonic acid (PFBS)	ND	1.8	0.71	ng/L							
Perfluorohexanoic acid (PFHxA)	ND	1.8	0.84	ng/L							
Perfluorohexanesulfonic acid (PFHxS)	ND	1.8	0.81	ng/L							
Perfluoroheptanoic acid (PFHpA)	ND	1.8	0.90	ng/L							
Perfluorooctanoic acid (PFOA)	ND	1.8	0.93	ng/L							
Perfluorooctanesulfonic acid (PFOS)	ND	1.8	0.68	ng/L							
Perfluorononanoic acid (PFNA)	ND	1.8	0.83	ng/L							
Perfluorodecanoic acid (PFDA)	ND	1.8	0.86	ng/L							
N-EtFOSAA (NEtFOSAA)	ND	1.8	0.60	ng/L							
Perfluoroundecanoic acid (PFUnA)	ND	1.8	0.68	ng/L							
N-MeFOSAA (NMeFOSAA)	ND	1.8	0.67	ng/L							
Perfluorododecanoic acid (PFDoA)	ND	1.8	0.65	ng/L							
Perfluorotridecanoic acid (PFTrDA)	ND	1.8	0.66	ng/L							
Perfluorotetradecanoic acid (PFTA)	ND	1.8	0.75	ng/L							
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	1.8	1.1	ng/L							
11Cl-PF3OUdS (F53B Major)	ND	1.8	0.60	ng/L							
9Cl-PF3ONS (F53B Minor)	ND	1.8	0.73	ng/L							
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	1.8	0.79	ng/L							
Surrogate: 13C-PFHxA	*39.2*			ng/L	36.1		109	70-130			
Surrogate: M3HFPO-DA	*40.0*			ng/L	36.1		111	70-130			
Surrogate: 13C-PFDA	*37.9*			ng/L	36.1		105	70-130			
Surrogate: D5-NEtFOSAA	*152*			ng/L	144		105	70-130			
LCS (B332312-BS1)					Prepared: 02/27/23 Analyzed: 02/28/23						
Perfluorobutanesulfonic acid (PFBS)	15.8	1.8	0.71	ng/L	16.0		98.4	70-130			
Perfluorohexanoic acid (PFHxA)	15.3	1.8	0.84	ng/L	18.1		84.6	70-130			
Perfluorohexanesulfonic acid (PFHxS)	13.6	1.8	0.81	ng/L	16.5		82.2	70-130			
Perfluoroheptanoic acid (PFHpA)	18.9	1.8	0.90	ng/L	18.1		104	70-130			
Perfluorooctanoic acid (PFOA)	16.3	1.8	0.93	ng/L	18.1		90.1	70-130			
Perfluorooctanesulfonic acid (PFOS)	17.8	1.8	0.68	ng/L	16.8		106	70-130			
Perfluorononanoic acid (PFNA)	16.9	1.8	0.83	ng/L	18.1		93.4	70-130			
Perfluorodecanoic acid (PFDA)	19.5	1.8	0.87	ng/L	18.1		108	70-130			
N-EtFOSAA (NEtFOSAA)	18.6	1.8	0.60	ng/L	18.1		103	70-130			
Perfluoroundecanoic acid (PFUnA)	19.0	1.8	0.69	ng/L	18.1		105	70-130			
N-MeFOSAA (NMeFOSAA)	18.9	1.8	0.67	ng/L	18.1		105	70-130			
Perfluorododecanoic acid (PFDoA)	19.7	1.8	0.65	ng/L	18.1		109	70-130			
Perfluorotridecanoic acid (PFTrDA)	19.3	1.8	0.66	ng/L	18.1		107	70-130			
Perfluorotetradecanoic acid (PFTA)	15.2	1.8	0.75	ng/L	18.1		84.3	70-130			
Hexafluoropropylene oxide dimer acid (HFPO-DA)	14.0	1.8	1.1	ng/L	18.1		77.3	70-130			
11Cl-PF3OUdS (F53B Major)	17.6	1.8	0.60	ng/L	17.0		103	70-130			
9Cl-PF3ONS (F53B Minor)	17.2	1.8	0.74	ng/L	16.9		102	70-130			
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	17.4	1.8	0.79	ng/L	17.1		102	70-130			
Surrogate: 13C-PFHxA	*37.8*			ng/L	36.1		104	70-130			
Surrogate: M3HFPO-DA	*37.9*			ng/L	36.1		105	70-130			
Surrogate: 13C-PFDA	*36.9*			ng/L	36.1		102	70-130			
Surrogate: D5-NEtFOSAA	*153*			ng/L	145		105	70-130			

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QUALITY CONTROL

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

Analyte	Result	Reporting Limit	DL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B332312 - EPA 537.1											
LCS Dup (B332312-BSD1)					Prepared: 02/27/23 Analyzed: 02/28/23						
Perfluorobutanesulfonic acid (PFBS)	15.3	1.8	0.71	ng/L	16.0		95.5	70-130	2.89	30	
Perfluorohexanoic acid (PFHxA)	14.9	1.8	0.85	ng/L	18.1		82.5	70-130	2.39	30	
Perfluorohexanesulfonic acid (PFHxS)	13.6	1.8	0.81	ng/L	16.5		82.3	70-130	0.225	30	
Perfluoroheptanoic acid (PFHpA)	18.5	1.8	0.90	ng/L	18.1		102	70-130	1.98	30	
Perfluorooctanoic acid (PFOA)	15.6	1.8	0.94	ng/L	18.1		86.3	70-130	4.23	30	
Perfluorooctanesulfonic acid (PFOS)	17.7	1.8	0.68	ng/L	16.8		106	70-130	0.290	30	
Perfluorononanoic acid (PFNA)	17.0	1.8	0.83	ng/L	18.1		93.7	70-130	0.462	30	
Perfluorodecanoic acid (PFDA)	19.1	1.8	0.87	ng/L	18.1		106	70-130	1.78	30	
N-EtFOSAA (NEtFOSAA)	18.8	1.8	0.60	ng/L	18.1		104	70-130	1.13	30	
Perfluoroundecanoic acid (PFUnA)	18.7	1.8	0.69	ng/L	18.1		103	70-130	1.34	30	
N-MeFOSAA (NMeFOSAA)	19.0	1.8	0.67	ng/L	18.1		105	70-130	0.493	30	
Perfluorododecanoic acid (PFDoA)	19.0	1.8	0.65	ng/L	18.1		105	70-130	3.63	30	
Perfluorotridecanoic acid (PFTrDA)	19.1	1.8	0.66	ng/L	18.1		106	70-130	1.07	30	
Perfluorotetradecanoic acid (PFTA)	15.4	1.8	0.76	ng/L	18.1		85.2	70-130	1.19	30	
Hexafluoropropylene oxide dimer acid (HFPO-DA)	12.9	1.8	1.1	ng/L	18.1		71.1	70-130	8.34	30	
11Cl-PF3OUdS (F53B Major)	17.5	1.8	0.60	ng/L	17.1		103	70-130	0.505	30	
9Cl-PF3ONS (F53B Minor)	17.9	1.8	0.74	ng/L	16.9		106	70-130	3.57	30	
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	17.0	1.8	0.80	ng/L	17.1		99.7	70-130	2.08	30	
Surrogate: 13C-PFHxA	*33.6*			ng/L	36.2		92.9	70-130			
Surrogate: M3HFPO-DA	*33.7*			ng/L	36.2		93.1	70-130			
Surrogate: 13C-PFDA	*34.1*			ng/L	36.2		94.2	70-130			
Surrogate: D5-NEtFOSAA	*140*			ng/L	145		96.4	70-130			

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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
DL	Method Detection Limit
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.

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CERTIFICATIONS

Certified Analyses included in this Report

Analyte	Certifications
EPA 537.1 in Drinking Water	
Perfluorobutanesulfonic acid (PFBS)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorohexanoic acid (PFHxA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorohexanesulfonic acid (PFHxS)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluoroheptanoic acid (PFHpA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorooctanoic acid (PFOA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorooctanesulfonic acid (PFOS)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorononanoic acid (PFNA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorodecanoic acid (PFDA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
N-EtFOSAA (NEtFOSAA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluoroundecanoic acid (PFUnA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
N-MeFOSAA (NMeFOSAA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorododecanoic acid (PFDoA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorotridecanoic acid (PFTrDA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorotetradecanoic acid (PFTA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Hexafluoropropylene oxide dimer acid (HFPO-DA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
11Cl-PF3OUdS (F53B Major)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
9Cl-PF3ONS (F53B Minor)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH

Con-Test, a Pace Environmental Laboratory, operates under the following certifications and accreditations:

Code	Description	Number	Expires
MA	Massachusetts DEP	M-MA100	06/30/2023
CT	Connecticut Department of Public Health	PH-0821	12/31/2024
NY	New York State Department of Health	10899 NELAP	04/1/2023
NH	New Hampshire Environmental Lab	2516 NELAP	02/5/2024
NJ	New Jersey DEP	MA007 NELAP	06/30/2023
VT-DW	Vermont Department of Health Drinking Water	VT-255716	06/12/2023
ME	State of Maine	MA00100	06/9/2023
PA	Commonwealth of Pennsylvania DEP	68-05812	06/30/2023
MI	Dept. of Env, Great Lakes, and Energy	9100	06/30/2023

23B0207

JH

Pace Analytical

Phone: 413-525-2332
Fax: 413-525-6405

https://www.pacelabs.com/

39 Spruce Street
East Longmeadow, MA 01026

Doc # 381 Rev 2_06262019

CHAIN OF CUSTODY RECORD

Page _____ of _____

Contact: https://www.pacelabs.com/contact-us/contact-environmental-sciences/

Company Name:	Tighe & Bond
Address:	53 Southampton Road, Westfield, Massachusetts
Phone:	(413) 562-1600
Project Name:	PFAS Sample Collection - Shutesbury
Project Location:	Shutesbury, Massachusetts
Project Number:	S-2190
Project Manager:	Jeff Arps
Pace Analytical Quote Name/Number	
Invoice Recipient:	Town of Shutesbury
Sampled By:	Samuel Evans

Requested Turnaround Time
7-Day ☑ 10-Day ☐
PFAS 10-Day (std) ☐ Due Date:

Rush-Approval Required
1-Day ☐ 3-Day ☐
2-Day ☐ 4-Day ☐

Data Delivery
Format: PDF ☑ EXCEL ☑
Other:
CLP Like Data Pkg Required: ☐
Email To: JArps@Tighebond.com; SEvans@Tighebond.com
Fax To #:

Dissolved Metals Samples
○ Field Filtered
○ Lab to Filter

Orthophosphate Samples
○ Field Filtered
○ Lab to Filter

ANALYSIS REQUESTED

PCB ONLY
SOXHLET ☐
NON SOXHLET ☐

2 Preservation Code

Pace Analytical Work Order#	Client Sample ID / Description	Beginning Date/Time	Ending Date/Time	COMP/GRAB	Matrix Code	Conc Code	VIALS	GLASS	PLASTIC	BACTERIA	ENCORE	PFAS Via 537.1
1	Field Blank	2/19/23	1315	Grab	GW	U			X			X

Relinquished by: (signature) Samuel Evans Date/Time: 2/20/23 0830
Received by: (signature) Date/Time: 14:25 2-20-23
Relinquished by: (signature) Date/Time: 16:40 2-20-23
Received by: (signature) Date/Time: 2/20/23 1640
Relinquished by: (signature) Date/Time:
Received by: (signature) Date/Time:
Relinquished by: (signature) Date/Time:
Received by: (signature) Date/Time:

Bill to Town of Shutesbury - PO:57-101490

Detection Limit Requirements
MA
CT
Other:

Special Requirements
☑ MA MCP Required
☐ MCP Certification Form Required
☐ CT RCP Required
☐ RCP Certification Form Required
☐ MA State DW Required
PWSID #

Please use the following codes to indicate possible sample concentration within the Conc Code column above:
H - High; M - Medium; L - Low; C - Clean; U - Unknown

Matrix Codes
GW = Ground Water
WW = Waste Water
DW = Drinking Water
A = Air S = Soil
SL = Sludge
SOL = Solid
O = Other _____

Preservation Codes
I = Iced
H = HCL
N = Nitric Acid
S = Sulfuric Acid
B = Sodium Bisulfate
X = Sodium Hydroxide
T = Sodium Thiosulfate
M = Methanol
DI = DI Water
O = Other _____

Project Entity
Government ☐ Municipality ☐ MWRA ☐ WRTA ☐
Federal ☐ 21 J ☐ School ☐
City ☐ Brownfield ☐ MBTA ☐

Other
☐ Chromatogram
☐ AIHA-LAP,LLC

Comments:

Disclaimer: Pace Analytical is not responsible for any omitted information on the Chain of Custody. The Chain of Custody is a legal document that must be complete and accurate and is used to determine what analyses the laboratory will perform. Any missing information is not the laboratory's responsibility. Pace Analytical values your partnership on each project and will try to assist with missing information, but will not be held accountable.

Courier Use Only
VIALS
GLASS
PLASTIC
BACTERIA
ENCORE
Glassware in freezer? Y / N
Prepackaged Cooler? Y / N

*Pace Analytical is not responsible for missing samples from prepacked coolers

Pace Analytical

Table of Contents

39 Spruce St.
East Longmeadow, MA. 01028
P: 413-525-2332
F:413-525-6405
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Log In Back-Sheet

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

Pace PEOPLE ADVANCING SCIENCE

Client: Tighe and Bond

Project: PFAS Sample Collection - Shutesbury

MCP/RCP Required: MA MCP

Deliverable Package Req.: N/A

Location: Shutesbury, MASS

PWSID# (When Applicable): N/A

Arrival Method:

Courier ☑ Fed Ex ☐ Walk In ☐ Other ☐

Received By / Date / Time: LA 2/20/23 1640

Back-Sheet By / Date / Time: LA 2/21/23 947

Temperature Method: Gun # 5

Temp ☑ < 6° C Actual Temperature: 0.6

Rush Samples: Yes / (No) Notify:

Short Hold: Yes / (No) Notify:

	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: (N/A) ☐ ☐

Notes regarding Samples/COC outside of SOP:

Container (Circle when applicable)	UnP	HCl	HNO3	H2SO4	NaOH	Trizma	Na2S2O3	Other Preservative
1L Amber Plastic								
500 mL Amber Plastic								
250 mL Amber Plastic								
Other Amber Clear Plastic								
16oz Amber Clear								
8oz Amber Clear								
4oz Amber Clear								
2oz Amber Clear								
Col/Bacteria								
Flashpoint								
Plastic Bag								
SOC Kit								
Perchlorate								
Encore								
Frozen								

	Proper Headspace	UnP	HCl	MeOH	Bisulfate	DI	Thiosulfate	Sulfuric	Other
Vials									

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March 1, 2023

Jeff Arps
Tighe & Bond
53 Southampton Road
Westfield, MA 01085

Project Location: 25 Wilson Road Shutesbury, Massachusetts
Client Job Number:
Project Number: S-2190
Laboratory Work Order Number: 23B2203

Enclosed are results of analyses for samples as received by the laboratory on February 20, 2023. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Jessica L. Hoffman
Project Manager

Table of Contents

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

Tighe & Bond
53 Southampton Road
Westfield, MA 01085
ATTN: Jeff Arps

REPORT DATE: 3/1/2023

PURCHASE ORDER NUMBER: 57-101490

PROJECT NUMBER: S-2190

ANALYTICAL SUMMARY

WORK ORDER NUMBER: 23B2203

The results of analyses performed on the following samples submitted to Con-Test, a Pace Analytical Laboratory, are found in this report.

PROJECT LOCATION: 25 Wilson Road Shutesbury, Massachusetts

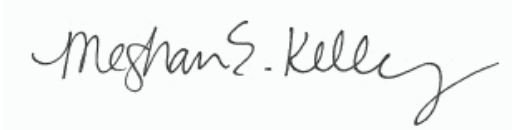
FIELD SAMPLE #	LAB ID:	MATRIX	SAMPLE DESCRIPTION	TEST	SUB LAB
25 Wilson Road	23B2203-01	Ground Water		EPA 537.1	

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

CASE NARRATIVE SUMMARY

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

The results of analyses reported only relate to samples submitted to Con-Test, a Pace Analytical Laboratory, 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: 25 Wilson Road Shutesbury, Mass Sample Description: Work Order: 23B2203

Date Received: 2/20/2023

Field Sample #: 25 Wilson Road Sampled: 2/17/2023 15:30

Sample ID: 23B2203-01

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	DF	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanesulfonic acid (PFBS)	ND	1.8	0.70	ng/L	1		EPA 537.1	2/27/23	2/28/23 9:47	AMS
Perfluorohexanoic acid (PFHxA)	ND	1.8	0.84	ng/L	1		EPA 537.1	2/27/23	2/28/23 9:47	AMS
Perfluorohexanesulfonic acid (PFHxS)	ND	1.8	0.80	ng/L	1		EPA 537.1	2/27/23	2/28/23 9:47	AMS
Perfluoroheptanoic acid (PFHpA)	ND	1.8	0.89	ng/L	1		EPA 537.1	2/27/23	2/28/23 9:47	AMS
Perfluorooctanoic acid (PFOA)	ND	1.8	0.92	ng/L	1		EPA 537.1	2/27/23	2/28/23 9:47	AMS
Perfluorooctanesulfonic acid (PFOS)	0.99	1.8	0.68	ng/L	1	J	EPA 537.1	2/27/23	2/28/23 9:47	AMS
Perfluorononanoic acid (PFNA)	ND	1.8	0.82	ng/L	1		EPA 537.1	2/27/23	2/28/23 9:47	AMS
Perfluorodecanoic acid (PFDA)	ND	1.8	0.86	ng/L	1		EPA 537.1	2/27/23	2/28/23 9:47	AMS
N-EtFOSAA (NEtFOSAA)	ND	1.8	0.59	ng/L	1		EPA 537.1	2/27/23	2/28/23 9:47	AMS
Perfluoroundecanoic acid (PFUnA)	ND	1.8	0.68	ng/L	1		EPA 537.1	2/27/23	2/28/23 9:47	AMS
N-MeFOSAA (NMeFOSAA)	ND	1.8	0.66	ng/L	1		EPA 537.1	2/27/23	2/28/23 9:47	AMS
Perfluorododecanoic acid (PFDoA)	ND	1.8	0.64	ng/L	1		EPA 537.1	2/27/23	2/28/23 9:47	AMS
Perfluorotridecanoic acid (PFTrDA)	ND	1.8	0.65	ng/L	1		EPA 537.1	2/27/23	2/28/23 9:47	AMS
Perfluorotetradecanoic acid (PFTA)	ND	1.8	0.75	ng/L	1		EPA 537.1	2/27/23	2/28/23 9:47	AMS
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	1.8	1.1	ng/L	1		EPA 537.1	2/27/23	2/28/23 9:47	AMS
11Cl-PF3OUdS (F53B Major)	ND	1.8	0.59	ng/L	1		EPA 537.1	2/27/23	2/28/23 9:47	AMS
9Cl-PF3ONS (F53B Minor)	7.0	1.8	0.73	ng/L	1		EPA 537.1	2/27/23	2/28/23 9:47	AMS
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	1.8	0.79	ng/L	1		EPA 537.1	2/27/23	2/28/23 9:47	AMS

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
13C-PFHxA	77.6	70-130		2/28/23 9:47
M3HFPO-DA	78.3	70-130		2/28/23 9:47
13C-PFDA	107	70-130		2/28/23 9:47
D5-NEtFOSAA	114	70-130		2/28/23 9:47

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Sample Extraction Data

Prep Method: EPA 537.1-EPA 537.1

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
23B2203-01 [25 Wilson Road]	B332312	280	1.00	02/27/23

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QUALITY CONTROL

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

Analyte	Result	Reporting Limit	DL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B332312 - EPA 537.1											
Blank (B332312-BLK1)					Prepared: 02/27/23 Analyzed: 02/28/23						
Perfluorobutanesulfonic acid (PFBS)	ND	1.8	0.71	ng/L							
Perfluorohexanoic acid (PFHxA)	ND	1.8	0.84	ng/L							
Perfluorohexanesulfonic acid (PFHxS)	ND	1.8	0.81	ng/L							
Perfluoroheptanoic acid (PFHpA)	ND	1.8	0.90	ng/L							
Perfluorooctanoic acid (PFOA)	ND	1.8	0.93	ng/L							
Perfluorooctanesulfonic acid (PFOS)	ND	1.8	0.68	ng/L							
Perfluorononanoic acid (PFNA)	ND	1.8	0.83	ng/L							
Perfluorodecanoic acid (PFDA)	ND	1.8	0.86	ng/L							
N-EtFOSAA (NEtFOSAA)	ND	1.8	0.60	ng/L							
Perfluoroundecanoic acid (PFUnA)	ND	1.8	0.68	ng/L							
N-MeFOSAA (NMeFOSAA)	ND	1.8	0.67	ng/L							
Perfluorododecanoic acid (PFDoA)	ND	1.8	0.65	ng/L							
Perfluorotridecanoic acid (PFTrDA)	ND	1.8	0.66	ng/L							
Perfluorotetradecanoic acid (PFTA)	ND	1.8	0.75	ng/L							
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	1.8	1.1	ng/L							
11Cl-PF3OUdS (F53B Major)	ND	1.8	0.60	ng/L							
9Cl-PF3ONS (F53B Minor)	ND	1.8	0.73	ng/L							
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	1.8	0.79	ng/L							
Surrogate: 13C-PFHxA	*39.2*			ng/L	36.1		109	70-130			
Surrogate: M3HFPO-DA	*40.0*			ng/L	36.1		111	70-130			
Surrogate: 13C-PFDA	*37.9*			ng/L	36.1		105	70-130			
Surrogate: D5-NEtFOSAA	*152*			ng/L	144		105	70-130			
LCS (B332312-BS1)					Prepared: 02/27/23 Analyzed: 02/28/23						
Perfluorobutanesulfonic acid (PFBS)	15.8	1.8	0.71	ng/L	16.0		98.4	70-130			
Perfluorohexanoic acid (PFHxA)	15.3	1.8	0.84	ng/L	18.1		84.6	70-130			
Perfluorohexanesulfonic acid (PFHxS)	13.6	1.8	0.81	ng/L	16.5		82.2	70-130			
Perfluoroheptanoic acid (PFHpA)	18.9	1.8	0.90	ng/L	18.1		104	70-130			
Perfluorooctanoic acid (PFOA)	16.3	1.8	0.93	ng/L	18.1		90.1	70-130			
Perfluorooctanesulfonic acid (PFOS)	17.8	1.8	0.68	ng/L	16.8		106	70-130			
Perfluorononanoic acid (PFNA)	16.9	1.8	0.83	ng/L	18.1		93.4	70-130			
Perfluorodecanoic acid (PFDA)	19.5	1.8	0.87	ng/L	18.1		108	70-130			
N-EtFOSAA (NEtFOSAA)	18.6	1.8	0.60	ng/L	18.1		103	70-130			
Perfluoroundecanoic acid (PFUnA)	19.0	1.8	0.69	ng/L	18.1		105	70-130			
N-MeFOSAA (NMeFOSAA)	18.9	1.8	0.67	ng/L	18.1		105	70-130			
Perfluorododecanoic acid (PFDoA)	19.7	1.8	0.65	ng/L	18.1		109	70-130			
Perfluorotridecanoic acid (PFTrDA)	19.3	1.8	0.66	ng/L	18.1		107	70-130			
Perfluorotetradecanoic acid (PFTA)	15.2	1.8	0.75	ng/L	18.1		84.3	70-130			
Hexafluoropropylene oxide dimer acid (HFPO-DA)	14.0	1.8	1.1	ng/L	18.1		77.3	70-130			
11Cl-PF3OUdS (F53B Major)	17.6	1.8	0.60	ng/L	17.0		103	70-130			
9Cl-PF3ONS (F53B Minor)	17.2	1.8	0.74	ng/L	16.9		102	70-130			
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	17.4	1.8	0.79	ng/L	17.1		102	70-130			
Surrogate: 13C-PFHxA	*37.8*			ng/L	36.1		104	70-130			
Surrogate: M3HFPO-DA	*37.9*			ng/L	36.1		105	70-130			
Surrogate: 13C-PFDA	*36.9*			ng/L	36.1		102	70-130			
Surrogate: D5-NEtFOSAA	*153*			ng/L	145		105	70-130			

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QUALITY CONTROL

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

Analyte	Result	Reporting Limit	DL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B332312 - EPA 537.1											
LCS Dup (B332312-BSD1)					Prepared: 02/27/23 Analyzed: 02/28/23						
Perfluorobutanesulfonic acid (PFBS)	15.3	1.8	0.71	ng/L	16.0		95.5	70-130	2.89	30	
Perfluorohexanoic acid (PFHxA)	14.9	1.8	0.85	ng/L	18.1		82.5	70-130	2.39	30	
Perfluorohexanesulfonic acid (PFHxS)	13.6	1.8	0.81	ng/L	16.5		82.3	70-130	0.225	30	
Perfluoroheptanoic acid (PFHpA)	18.5	1.8	0.90	ng/L	18.1		102	70-130	1.98	30	
Perfluorooctanoic acid (PFOA)	15.6	1.8	0.94	ng/L	18.1		86.3	70-130	4.23	30	
Perfluorooctanesulfonic acid (PFOS)	17.7	1.8	0.68	ng/L	16.8		106	70-130	0.290	30	
Perfluorononanoic acid (PFNA)	17.0	1.8	0.83	ng/L	18.1		93.7	70-130	0.462	30	
Perfluorodecanoic acid (PFDA)	19.1	1.8	0.87	ng/L	18.1		106	70-130	1.78	30	
N-EtFOSAA (NEtFOSAA)	18.8	1.8	0.60	ng/L	18.1		104	70-130	1.13	30	
Perfluoroundecanoic acid (PFUnA)	18.7	1.8	0.69	ng/L	18.1		103	70-130	1.34	30	
N-MeFOSAA (NMeFOSAA)	19.0	1.8	0.67	ng/L	18.1		105	70-130	0.493	30	
Perfluorododecanoic acid (PFDoA)	19.0	1.8	0.65	ng/L	18.1		105	70-130	3.63	30	
Perfluorotridecanoic acid (PFTrDA)	19.1	1.8	0.66	ng/L	18.1		106	70-130	1.07	30	
Perfluorotetradecanoic acid (PFTA)	15.4	1.8	0.76	ng/L	18.1		85.2	70-130	1.19	30	
Hexafluoropropylene oxide dimer acid (HFPO-DA)	12.9	1.8	1.1	ng/L	18.1		71.1	70-130	8.34	30	
11Cl-PF3OUdS (F53B Major)	17.5	1.8	0.60	ng/L	17.1		103	70-130	0.505	30	
9Cl-PF3ONS (F53B Minor)	17.9	1.8	0.74	ng/L	16.9		106	70-130	3.57	30	
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	17.0	1.8	0.80	ng/L	17.1		99.7	70-130	2.08	30	
Surrogate: 13C-PFHxA	*33.6*			ng/L	36.2		92.9	70-130			
Surrogate: M3HFPO-DA	*33.7*			ng/L	36.2		93.1	70-130			
Surrogate: 13C-PFDA	*34.1*			ng/L	36.2		94.2	70-130			
Surrogate: D5-NEtFOSAA	*140*			ng/L	145		96.4	70-130			

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

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
DL	Method Detection Limit
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).

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

CERTIFICATIONS

Certified Analyses included in this Report

Analyte	Certifications
EPA 537.1 in Drinking Water	
Perfluorobutanesulfonic acid (PFBS)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorohexanoic acid (PFHxA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorohexanesulfonic acid (PFHxS)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluoroheptanoic acid (PFHpA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorooctanoic acid (PFOA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorooctanesulfonic acid (PFOS)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorononanoic acid (PFNA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorodecanoic acid (PFDA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
N-EtFOSAA (NEtFOSAA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluoroundecanoic acid (PFUnA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
N-MeFOSAA (NMeFOSAA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorododecanoic acid (PFDoA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorotridecanoic acid (PFTrDA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorotetradecanoic acid (PFTA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Hexafluoropropylene oxide dimer acid (HFPO-DA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
11Cl-PF3OUdS (F53B Major)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
9Cl-PF3ONS (F53B Minor)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH

Con-Test, a Pace Environmental Laboratory, operates under the following certifications and accreditations:

Code	Description	Number	Expires
MA	Massachusetts DEP	M-MA100	06/30/2023
CT	Connecticut Department of Public Health	PH-0821	12/31/2024
NY	New York State Department of Health	10899 NELAP	04/1/2023
NH	New Hampshire Environmental Lab	2516 NELAP	02/5/2024
NJ	New Jersey DEP	MA007 NELAP	06/30/2023
VT-DW	Vermont Department of Health Drinking Water	VT-255716	06/12/2023
ME	State of Maine	MA00100	06/9/2023
PA	Commonwealth of Pennsylvania DEP	68-05812	06/30/2023
MI	Dept. of Env, Great Lakes, and Energy	9100	06/30/2023

23B2203
JH

Pace Analytical

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CHAIN OF CUSTODY RECORD

39 Spruce Street
East Longmeadow, MA 01026

Doc # 381 Rev 2_06262019

Page _____ of _____

Contact: https://www.pacelabs.com/contact-us/contact-environmental-sciences/

Company Name:	Tighe & Bond
Address:	53 Southampton Road, Westfield, Massachusetts
Phone:	(413) 562-1600
Project Name:	PFAS Sample Collection - Shutesbury
Project Location:	Shutesbury, Massachusetts
Project Number:	S-2190
Project Manager:	Jeff Arps
Pace Analytical Quote Name/Number	
Invoice Recipient:	Town of Shutesbury
Sampled By:	Samuel Evans

Requested Turnaround Time
7-Day ☑ 10-Day ☐
PFAS 10-Day (std) ☐ Due Date:

Rush-Approval Required
1-Day ☐ 3-Day ☐
2-Day ☐ 4-Day ☐

Dissolved Metals Samples
○ Field Filtered
○ Lab to Filter

Orthophosphate Samples
○ Field Filtered
○ Lab to Filter

Data Delivery
Format: PDF ☑ EXCEL ☑
Other:
CLP Like Data Pkg Required: ☐
Email To: JArps@TighеBond.com; SEvans@TighеBond.com
Fax To #:

PCB ONLY
SOXHLET ☐
NON SOXHLET ☐

ANALYSIS REQUESTED

2 Preservation Code

Pace Analytical Work Order#	Client Sample ID / Description	Beginning Date/Time	Ending Date/Time	COMP/GRAB	*Matrix Code	Conc Code	VIALS	GLASS	PLASTIC	BACTERIA	ENCORE	PFAS Via 537.1
1	25 Wilson Road	2/17/23	1530	Grab	GW	U			X			X

Relinquished by: (signature) Samuel Evans Date/Time: 2/20/23 0830
Received by: (signature) 14:25 Date/Time: 2-20-23
Relinquished by: (signature) 16:40 Date/Time: 2-20-23
Received by: (signature) Date/Time: 2/20/23 1640
Relinquished by: (signature) Date/Time:
Received by: (signature) Date/Time:
Relinquished by: (signature) Date/Time:
Received by: (signature) Date/Time:

Bill to Town of Shutesbury - PO:57-101490

Detection Limit Requirements
MA
CT
Other:

Special Requirements
☑ MA MCP Required
MCP Certification Form Required
☐ CT RCP Required
RCP Certification Form Required
☐ MA State DW Required
PWSID #

Please use the following codes to indicate possible sample concentration within the Conc Code column above:
H - High; M - Medium; L - Low; C - Clean; U - Unknown

Matrix Codes
GW = Ground Water
WW = Waste Water
DW = Drinking Water
A = Air S = Soil
SL = Sludge
SOL = Solid
O = Other _____

Preservation Codes
I = Iced
H = HCL
N = Nitric Acid
S = Sulfuric Acid
B = Sodium Bisulfate
X = Sodium Hydroxide
T = Sodium Thiosulfate
M = Methanol
DI = DI Water
O = Other _____

Project Entity
Government ☐ Municipality ☐ MWRA ☐ WRTA ☐
Federal ☐ 21 J ☐ School ☐
City ☐ Brownfield ☐ MBTA ☐

Other
☐ Chromatogram
☐ AIHA-LAP,LLC

Comments:

Disclaimer: Pace Analytical is not responsible for any omitted information on the Chain of Custody. The Chain of Custody is a legal document that must be complete and accurate and is used to determine what analyses the laboratory will perform. Any missing information is not the laboratory's responsibility. Pace Analytical values your partnership on each project and will try to assist with missing information, but will not be held accountable.

Courier Use Only
VIALS_____
GLASS_____
PLASTIC_____
BACTERIA_____
ENCORE_____
Glassware in freezer? Y / N
Prepackaged Cooler? Y / N

*Pace Analytical is not responsible for missing samples from prepacked coolers

Pace Analytical

Table of Contents

39 Spruce St.
East Longmeadow, MA. 01028
P: 413-525-2332
F:413-525-6405
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Log In Back-Sheet

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

Pace PEOPLE ADVANCING SCIENCE

Client Tighe and Bond

Project PFAS Sample Collection - Shutesbury

MCP/RCP Required MA MCP

Deliverable Package Req. N/A

Location Shutesbury, MASS

PWSID# (When Applicable) N/A

Arrival Method:

Courier ☑ Fed Ex ☐ Walk In ☐ Other ☐

Received By / Date / Time LA 2/20/23 1640

Back-Sheet By / Date / Time LA 2/24/23 747

Temperature Method gun #5

Temp ☑ < 6° C Actual Temperature 0.6

Rush Samples: Yes / (No) Notify

Short Hold: Yes / (No) Notify

	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: (N/A) ☐ ☐

Notes regarding Samples/COC outside of SOP:

Container (Circle when applicable)	UnP	HCl	HNO3	H2SO4	NaOH	Trizma	NaS2O3	Other Preservative
1L Amber Plastic								
500 mL Amber Plastic								
250 mL Amber Plastic						2		
Other Amber Clear Plastic								
16oz Amber Clear								
8oz Amber Clear								
4oz Amber Clear								
2oz Amber Clear								
Col/Bacteria								
Flashpoint								
Plastic Bag								
SOC Kit								
Perchlorate								
Encore								
Frozen								

	Proper Headspace	UnP	HCl	MeOH	Bisulfate	DI	Thiosulfate	Sulfuric	Other
Vials									

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