Halifax Landfill
2044 Branch Road
Halifax, Vermont

VTDEC Project# NS95-0165
Solid Waste Facility ID# WH280
KAS Job# 610110045

FALL 2022 SEMI-ANNUAL WATER QUALITY MONITORING REPORT

December 13, 2022

Prepared for:

Town of Halifax
P.O. Box 45
Halifax, VT 05358

kas
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802 383.0486 p
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Introduction

KAS, Inc. (KAS) conducted a semi-annual water quality monitoring event on October 26, 2022 at the Halifax Landfill (Site Location Map and Site Map in Appendix A). A groundwater sample was collected from monitoring well MW-3 and analyzed for per- and polyfluorinated compounds (PFAS) via modified EPA Method 537 (short list). PFAS compounds subject to regulation in Vermont include perfluorooctanoic acid (PFOA), perfluorooctanesulfonic acid (PFOS), perfluorohexanesulfonic acid (PFHxS), perfluoroheptanoic acid (PFHpA) and perfluorononanoic acid (PFNA). The fall 2022 sampling was conducted in accordance with the current landfill certification. The groundwater at MW-3 was field analyzed for temperature, pH, and specific conductance using a properly calibrated YSI® Pro Multi-Meter. The depth to water was gauged using a Geotech™ water level indicator.

Results

Field measurements

Depth to water in MW-3 was measured at 6.44 feet below top of casing (btoc). At the time of sampling, the water temperature was 13.2 degrees Celsius, with a pH of 6.82 standard units. A specific conductance of 0 mS/cm was recorded by the KAS technician but is deemed to be an invalid value due to equipment error. All measurements were within the range of historical fluctuations. Field measurement data is presented in tables and a graph in Appendix B.

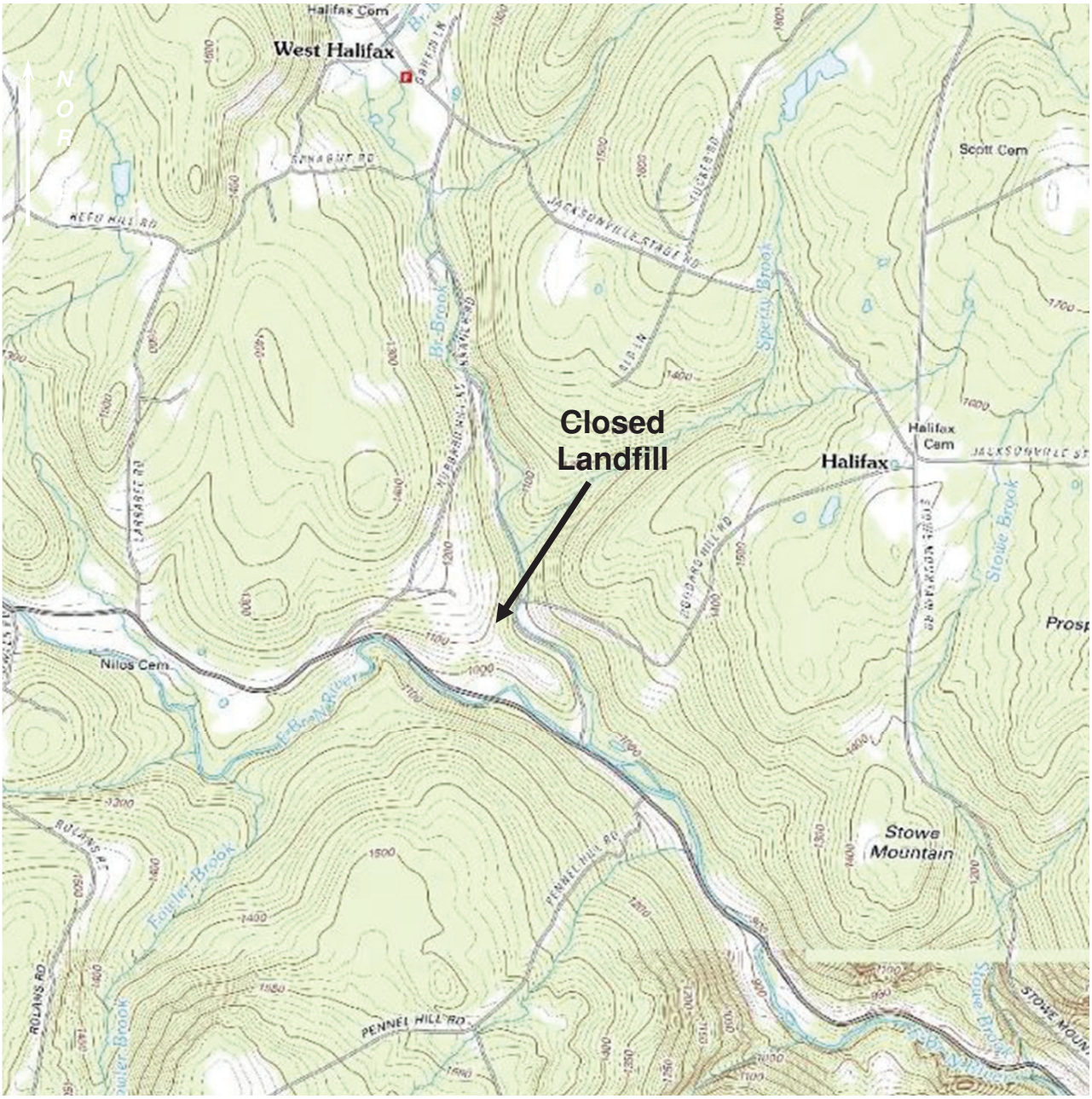
Laboratory results

Analytical testing indicated the presence of PFAS in the groundwater sample collected from MW-3. The total regulated PFAS concentration was reported at 108 nanograms per liter (ng/l), which exceeds the Vermont Groundwater Enforcement Standard (VGES) of 20 ng/l. Of the PFAS compounds, PFOA followed by PFOS exhibited the highest concentrations, which is generally consistent with previous findings. No PFAS were detected above laboratory method detection limits in the equipment rinse blank sample, which indicates cross contamination of PFAS from the sampler and/or sampling equipment was not an issue during sample collection. Current and historical analytical data are presented in a table and graph in Appendix B. A copy of the laboratory report is provided in Appendix C.

The total regulated PFAS concentration reported in the October 2022 sampling has decreased from the June 2022 peak and is within the range of historical fluctuations. PFAS concentrations are consistently higher in the spring and lower in the fall, which suggests that PFAS levels are influenced by fluctuations in precipitation, groundwater elevations, and/or leachate generation. Overall, there appears to be a slightly increasing trend in total regulated PFAS concentrations since the start of PFAS monitoring in 2016. However, given the temporal and seasonal fluctuations, additional data is needed to understand long-term PFAS trends and plume characteristics.

APPENDIX A

Site Location Map and Site Map



KAS Job Number: 610110045

Source: http://anrmaps.vermont.gov/websites/anra5/

kas

TOWN OF HALIFAX CLOSED LANDFILL

2044 Branch Road, Halifax, VT

Site Location Map

Date: 05/25/16	Drawing No. 0	Scale: NTS	By: CS

MONITORING WELL
SURFACE WATER SAMPLE
* montoring well and surface water locations are approximate

VTDEC Project: NS95-0165
KAS Job Number: 610110045
Source: Google Earth

HALIFAX CLOSED LANDFILL

2044 Branch Road, Halifax, VT

SITE MAP

Date: 07/31/17	Drawing No. 2	Scale: NTS	By: RT

APPENDIX B

Historical Sampling Data

GROUNDWATER QUALITY SUMMARY

HALIFAX LANDFILL
HALIFAX, VT

MW-3

Parameter (PPM unless noted)	VGES	PAL	SAMPLING DATE: Aug-93	Dec-95	May-96	Nov-96	May-97	Oct-97	May-98	Oct-98	May-99	Oct-99	May-00	Dec-00	Oct-01	Jan-02	Jun-02	Dec-02	Jun-03
pH**	change of 1 ph unit		6.4	6.27	6.1	6.1	6.4	6.3	6.2	5.8	6.2	6	6.6	6.5	6.5	nt	6.5	6.6	6.7
Conductivity (µS/cm)**	change of 100 µs/cm		328	440	600	610	530	380	480	280	340	390	520	500	320	nt	nt	360	430
COD**	change of 25 ppm		6.9	ND<50	22	16	16	18	10	20	20	10	20	10	10	nt	30	20	20
Chloride*	250	125	14	27	29	26	20	1	17	8	14	ND<1	18	17	8	nt	15	10	12
Sodium* & ** (change of 10 ppm)	250	125	nt	23	28	27	23	15	18	11	14	nt	21	16	13	nt	39	11	16
Ca Hardness**	change of 100	NA	nt	nt	230	nt	230	160	220	120	150	190	230	190	130	nt	nt	130	220
Dissolved Chromium	0.1	0.05	nt	ND<0.05	ND<0.002	ND<0.002	0.003	ND<0.002	ND<0.002	0.004	ND<0.002	ND<0.002	ND<0.002	0.005	0.004	nt	ND<0.001	ND<0.001	ND<0.001
Dissolved Copper	1.3	0.65	nt	ND<0.05	ND<0.01	ND<0.01	0.03	ND<0.01	ND<0.01	0.02	ND<0.01	ND<0.01	0.01	0.02	0.002	nt	0.003	0.001	0.002
Dissolved Iron*	0.3	0.15	0.06	ND<0.05	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	0.18	nt	nt
Dissolved Manganese*	0.05	0.025	ND<0.02	ND<0.05	ND<0.005	0.046	0.22	0.075	0.38	0.45	0.21	0.067	0.12	0.28	0.015	nt	0.005	ND<0.005	ND<0.005
Dissolved Nickel	0.1	0.05	nt	ND<0.05	ND<0.01	ND<0.01	ND<0.01	ND<0.01	ND<0.01	ND<0.01	ND<0.01	nt	ND<0.01	ND<0.01	0.002	nt	0.003	ND<0.001	0.001
Dissolved Zinc*	5	2.5	nt	ND<0.05	0.07	0.057	0.095	0.015	0.058	0.042	0.013	0.015	0.014	0.024	0.24	nt	0.23	0.084	0.2
Dissolved Arsenic	0.05	0.005	nt	ND<0.010	ND<0.002	ND<0.01	ND<0.01	ND<0.01	ND<0.01	ND<0.01	ND<0.01	ND<0.01	ND<0.01	ND<0.01	0.003	nt	ND<0.001	ND<0.001	ND<0.001
Dissolved Cadmium	0.005	0.0025	nt	ND<0.005	ND<0.0005	ND<0.001	ND<0.001	ND<0.001	nt	ND<0.001	ND<0.001	ND<0.001	0.002	ND<0.001	ND<0.001	nt	ND<0.001	ND<0.001	ND<0.001
Dissolved Lead	0.015	0.005	nt	ND<0.005	ND<0.001	ND<0.01	ND<0.01	ND<0.01	ND<0.01	0.01	ND<0.01	ND<0.01	ND<0.01	ND<0.01	ND<0.001	nt	ND<0.001	ND<0.001	ND<0.001
Calcium	NA	NA	nt	nt	nt	nt	nt	nt	2.3	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt
Methylene Chloride	0.005	0.0005	ND<10	ND<2	ND<2	ND<2	ND<2	nt	ND<2	nt	nt	ND<5	nt	nt	nt	ND<5	nt	1600[E]	560

Parameter (PPM unless noted)	VGES	PAL	SAMPLING DATE: 11/3/03	6/17/04	10/28/04	12/1/05	5/6/06	10/6/06	5/7/07	10/7/07	5/8/08	10/24/08	5/15/09	10/22/09	5/10/10	10/13/10	5/25/11	10/26/11	5/8/12
pH**	change of 1 ph unit		6.1	6.1	ns	ns	nt	6.63	5.67	6.41	6.41	6.78	6.59	NR	6.15	6.49	6.03	6.63	6.70
Conductivity (µS/cm) **	change of 100 µs/cm		450	420	ns	ns	nt	391	329	128	128	413	92	108	83.4	223.3	83.8	387.6	599
Temperature (degrees C)	change of 5.6 deg C		nt	nt	ns	ns	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	10.9	11.7
Depth to Water (feet btoc)	NA	NA	nt	nt	ns	ns	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	4.60	4.41
COD**	change of 25 ppm		10	20	ns	ns	121	60	ND<10	50	10	<10	28	290	29	27	11	18	nt
Chloride*	250	125	12	12	ns	ns	1460	1	10	6	9	7	2.8	6.2	ND<2.5	5.7	4.3	12	6.2
Sodium* & ** (change of 10 ppm)	250	125	17	28	ns	ns	17.6	ND<5	15	ND<5	16	13	2.3	2.7	1.9	10	2	12	13
Ca Hardness**	change of 100	NA	170	180	ns	ns	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt
Dissolved Chromium	0.1	0.05	ND<0.001	ND<0.001	ns	ns	ND<0.002	ND<0.001	0.004	ND<0.001	0.002	ND<0.001	ND<0.02	ND<0.02	ND<0.005	ND<0.005	ND<0.005	ND<0.005	nt
Dissolved Copper	1.3	0.65	0.001	0.002	ns	ns	ND<0.05	0.002	0.01	0.002	0.002	ND<0.001	ND<0.02	ND<0.02	ND<0.02	ND<0.02	ND<0.02	ND<0.020	nt
Dissolved Iron*	0.3	0.15	ND<0.05	ND<0.05	ns	ns	0.35	0.1	3.6	0.08	ND<0.05	ND<0.05	0.17	0.88	0.1	0.11	0.2	ND<0.020	ND<0.020
Dissolved Manganese*	0.05	0.025	ND<0.005	ND<0.005	ns	ns	0.05	0.006	0.079	0.007	ND<0.005	ND<0.005	ND<0.02	0.15	ND<0.02	ND<0.02	ND<0.02	ND<0.020	ND<0.020
Dissolved Nickel	0.1	0.05	ND<0.001	0.002	ns	ns	ND<0.05	0.003	0.007	0.003	0.005	0.004	ND<0.02	ND<0.02	ND<0.005	ND<0.005	ND<0.005	ND<0.005	nt
Dissolved Zinc*	5	2.5	0.078	0.13	ns	ns	ND<0.01	0.047	0.045	0.033	0.013	0.007	ND<0.02	ND<0.02	ND<0.005	ND<0.005	0.007	ND<0.020	nt
Dissolved Arsenic	0.05	0.005	ND<0.001	ND<0.001	ns	ns	ND<0.002	ND<0.002	ND<0.001	ND<0.001	ND<0.001	ND<0.001	ND<0.002	ND<0.002	ND<0.001	ND<0.001	ND<0.001	ND<0.020	nt
Dissolved Cadmium	0.005	0.0025	ND<0.001	ND<0.001	ns	ns	ND<0.0005	ND<0.0005	ND<0.001	ND<0.001	ND<0.001	ND<0.001	ND<0.002	ND<0.002	ND<0.002	ND<0.002	ND<0.002	ND<0.002	nt
Dissolved Lead	0.015	0.005	ND<0.001	ND<0.001	ns	ns	ND<0.002	ND<0.001	0.003	ND<0.001	ND<0.001	ND<0.001	ND<0.001	ND<0.001	ND<0.001	ND<0.001	ND<0.001	ND<0.001	nt
Calcium	NA	AN	nt	nt	ns	ns	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt
Methylene Chloride	0.005	0.0005	ND<5	ND<5	ns	ns	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt

Notes:

Only detected or previously detected volatile organic compounds are listed.

btoc = below top of casing

ND<xx = Not Detected< Detection Limit

VGES = Vermont Groundwater Enforcement Standard (December 2016)

PAL = Preventative Action Level (December 2016)

NA = No VGES/PAL available

Results reported above detection limits are indicated in bold.

ns = not sampled

nt = not tested during sampling round

* = secondary groundwater quality standards (mg/L or ppm)

** = maximum acceptable change (units as noted)

*** = All perfluorinated compound values reported in ng/L. Analysis via EPA Method 537 (short list)

VGES and PALs pertain to total metals and are provided for reference only

E - The reported value exceeds largest calibration standard. Extrapolation of the calibration curve was employed to obtain the reported value.

= exceeds PAL

= exceeds VGES

= exceeds max acceptable change

Continued on next page…

GROUNDWATER QUALITY SUMMARY

HALIFAX LANDFILL
HALIFAX, VT

MW-3 (continued)

Parameter (PPM unless noted)	VGES	PAL	SAMPLING DATE: 10/9/12	5/30/13	10/16/13	5/15/14	10/21/14	5/28/15	10/29/15	May-16	10/19/16	5/30/2017	10/25/2017	5/30/2018	10/23/2018	5/29/2019	10/28/2019	5/28/2020	10/27/2020
pH	NA	NA	6.06	6.71	6.09	6.05	5.73	6.56	6.71	ns	nt	7.04	6.51	6.55	6.53	6.52	7.14	6.75	6.35
Conductivity (µS/cm)	NA	NA	293	215.6	625	358.1	187	376	340.6	ns	nt	470.7	500	388	160.7	306.8	425.9	317.6	251.5
Temperature (degrees C)	NA	NA	11.5	15.7	11.3	12.5	13.2	10.7	13.0	ns	nt	9.9	13.2	10.9	9.7	10.5	10.0	13.0	10.3
Depth to Water (feet btoc)	NA	NA	5.63	4.38	5.49	5.23	5.34	5.55	4.51	ns	6.87	5.07	4.85	6.50	5.62	5.57	5.04	6.18	6.30
COD	NA	NA	nt	22	nt	nt	nt	nt	nt	ns	nt	nt	nt	nt	nt	nt	nt	nt	nt
Chloride	NA	NA	19	12	6.5	5.7	6.7	4.5	52	ns	nt	nt	nt	nt	nt	nt	nt	nt	nt
Sodium	NA	NA	**12**	**13**	nt	nt	nt	nt	nt	ns	nt	nt	nt	nt	nt	nt	nt	nt	nt
Dissolved Chromium	0.1	0.05	nt	ND<0.005	nt	nt	nt	nt	nt	ns	nt	nt	nt	nt	nt	nt	nt	nt	nt
Dissolved Copper	1.3	0.65	nt	ND<0.020	nt	nt	nt	nt	nt	ns	nt	nt	nt	nt	nt	nt	nt	nt	nt
Dissolved Iron	NA	NA	ND<0.020	ND<0.020	**0.030**	**0.086**	**0.020**	ND<0.020	ND<0.020	ns	nt	nt	nt	nt	nt	nt	nt	nt	nt
Dissolved Manganese	0.3	0.15	ND<0.020	ND<0.020	ND<0.020	ND<0.020	ND<0.020	ND<0.020	ND<0.020	ns	nt	nt	nt	nt	nt	nt	nt	nt	nt
Dissolved Nickel	0.1	0.05	nt	ND<0.005	nt	nt	nt	nt	nt	ns	nt	nt	nt	nt	nt	nt	nt	nt	nt
Dissolved Zinc	NA	NA	nt	ND<0.020	nt	nt	nt	nt	nt	ns	nt	nt	nt	nt	nt	nt	nt	nt	nt
Dissolved Arsenic	0.05	0.005	nt	ND<0.001	nt	nt	nt	nt	nt	ns	nt	nt	nt	nt	nt	nt	nt	nt	nt
Dissolved Cadmium	0.005	0.001	nt	ND<0.002	nt	nt	nt	nt	nt	ns	nt	nt	nt	nt	nt	nt	nt	nt	nt
Dissolved Lead	0.015	0.002	nt	ND<0.001	nt	nt	nt	nt	nt	ns	nt	nt	nt	nt	nt	nt	nt	nt	nt
Perfluorobutanesulfonic acid (PFBS)*	NA	NA	nt	nt	nt	nt	nt	nt	nt	ns	ND<11	ND<6.6	ND<6.6	**3.75**	ND<6.6	ND<6.6	ND<5.1	**3.55**	**1.87**
Perfluorohexanesulfonic acid (PFHxS)*	20	2	nt	nt	nt	nt	nt	nt	nt	ns	ND<3.8	**11.7**	**9.2**	**13.1**	**12.3**	**10.1**	**4.8**	**14.9**	**8.49**
Perfluoroheptanoic acid (PFHpA)*	20	2	nt	nt	nt	nt	nt	nt	nt	ns	**2.06**	**22**	**13.2**	**41.2**	**15.1**	**21.4**	**10.3**	**9.38**	**7.64**
Perfluorooctanoic acid (PFOA)*	20	2	nt	nt	nt	nt	nt	nt	nt	ns	**11.5**	**78.2**	**44.9**	**134**	**76.8**	**106**	**52.8**	**58.1**	**42.6**
Perfluorooctanesulfonic acid (PFOS)*	20	2	nt	nt	nt	nt	nt	nt	nt	ns	**16.7**	**32.1**	**37**	**33.3**	**36.4**	**30**	**37.8**	**33.7**	**34.5**
Perfluorononanoic acid (PFNA)*	20	2	nt	nt	nt	nt	nt	nt	nt	ns	ND<2.3	ND<1.5	ND<1.5	**1.9**	ND<1.5	ND<1.5	ND<1.8	ND<2.0	**0.93**
Total Regulated PFC Compounds	20	2	nt	nt	nt	nt	nt	nt	nt	ns	**30.3**	**144**	**104**	**224**	**140.6**	**167**	**105.7**	**116.1**	**94.2**

Parameter (ng/L unless noted)	VGES	PAL	SAMPLING DATE: 6/2/2021	11/18/21	6/7/22	10/26/22
pH	NA	NA	6.62	6.29	6.42	6.82
Conductivity (µS/cm)	NA	NA	259.2	319.9	346	-
Temperature (degrees C)	NA	NA	13.5	10.8	18.1	13.2
Depth to Water (feet btoc)	NA	NA	5.68	5.19	6.76	6.44
Perfluorobutanesulfonic acid (PFBS)*	NA	NA	**4.44**	**4.71**	**3.7**	ND<20
Perfluorohexanesulfonic acid (PFHxS)*	20	2	**15.9**	**16.5**	**16**	ND<20
Perfluoroheptanoic acid (PFHpA)*	20	2	**9.52**	**8.73**	**23**	ND<20
Perfluorooctanoic acid (PFOA)*	20	2	**48.1**	**46.2**	**140**	**60**
Perfluorooctanesulfonic acid (PFOS)*	20	2	**41.6**	**39.3**	**54**	**48**
Perfluorononanoic acid (PFNA)*	20	2	**1.03**	**1.3**	**2.8**	ND<20
Total Regulated PFAS Compounds	20	2	**116.2**	**112.0**	**236**	**108**

Notes:

Only detected or previously detected volatile organic compounds are listed.

btoc = below top of casing

ND<xx = Not Detected< Detection Limit

VGES = Vermont Groundwater Enforcement Standard (July 2019)

PAL = Preventative Action Level (July 2019)

NA = No VGES/PAL available

Results reported above detection limits are indicated in bold.

ns = not sampled

nt = not tested during sampling round

VGES and PALs pertain to total metals and are provided for reference only

E - The reported value exceeds largest calibration standard. Extrapolation of the calibration curve was employed to obtain the reported value.

* = All perfluorinated compound values reported in ng/L. Analysis via EPA Method 537 (short list). For PFHxS, PFHpA, PFOA, PFOS and PFNA, the VGES and PAL standards applies to the individual compounds and the sum of these compounds.

= exceeds current PAL

= exceeds current VGES

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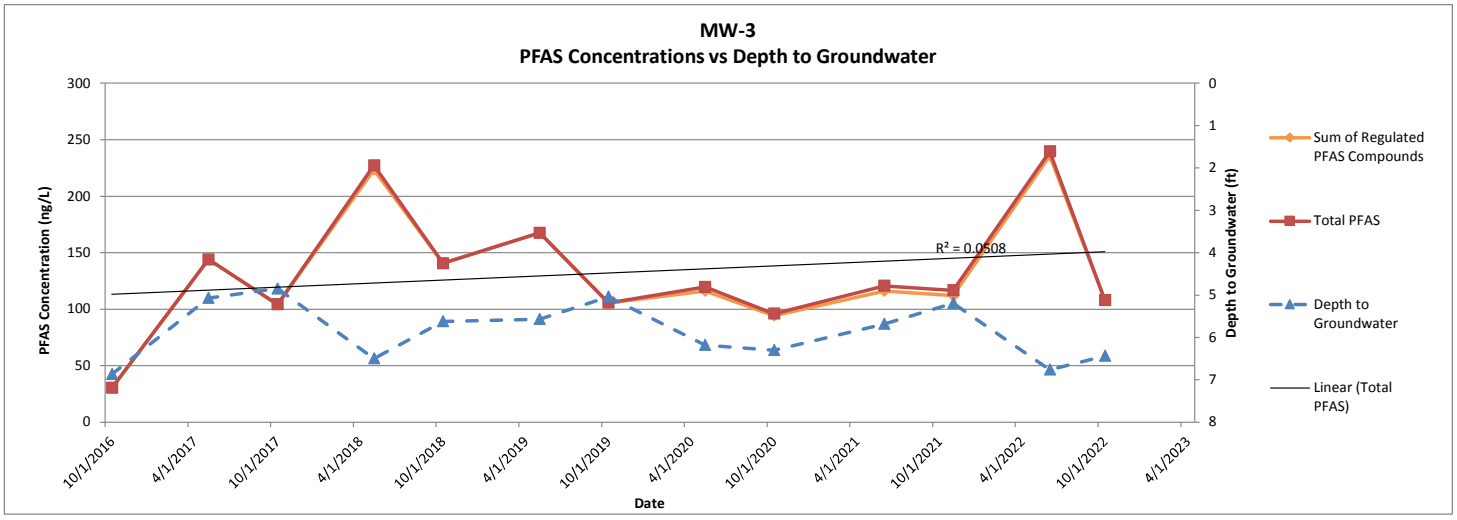
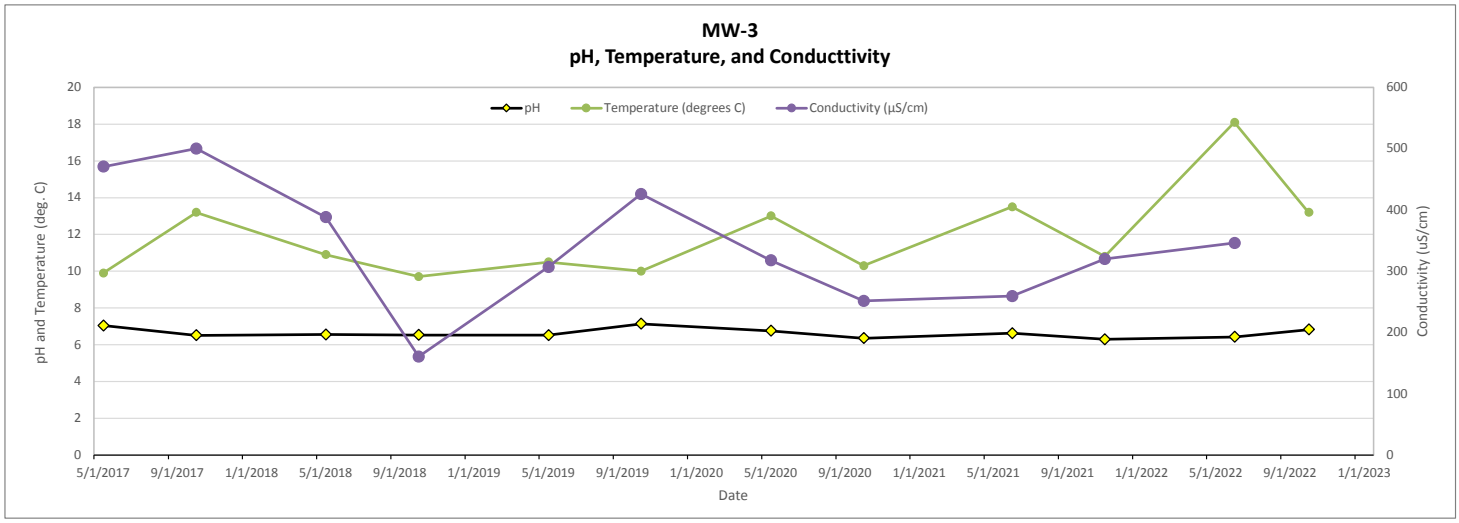

MW-3
PFAS Concentrations vs Depth to Groundwater
PFAS Concentration (ng/L)
Depth to Groundwater (ft)
Date
R² = 0.0508
Sum of Regulated PFAS Compounds
Total PFAS
Depth to Groundwater
Linear (Total PFAS)


MW-3
pH, Temperature, and Conducttivity
pH
Temperature (degrees C)
Conductivity (µS/cm)
pH and Temperature (deg. C)
Conductivity (uS/cm)
Date

APPENDIX C

Laboratory Report

con-test®
A Pace Analytical® Laboratory

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

November 30, 2022

Clare Santos
KAS Environmental
589 Avenue D
Williston, VT 05495

Project Location: 2044 W. Branch Rd, W Halifax, VT
Client Job Number:
Project Number: 610110045
Laboratory Work Order Number: 22K0045

Enclosed are results of analyses for samples as received by the laboratory on November 1, 2022. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Kaitlyn A. Feliciano
Project Manager

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con-test®
A Pace Analytical® Laboratory

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

KAS Environmental
589 Avenue D
Williston, VT 05495
ATTN: Clare Santos

REPORT DATE: 11/30/2022

PURCHASE ORDER NUMBER:

PROJECT NUMBER: 610110045

ANALYTICAL SUMMARY

WORK ORDER NUMBER: 22K0045

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

PROJECT LOCATION: 2044 W. Branch Rd, W Halifax, VT

FIELD SAMPLE #	LAB ID:	MATRIX	SAMPLE DESCRIPTION	TEST	SUB LAB
MW-3	22K0045-01	Ground Water		-	
				SOP-454 PFAS	
MW-3 ERB	22K0045-02	Ground Water		SOP-454 PFAS	

con-test®
A Pace Analytical® Laboratory

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.

SOP-454 PFAS

Qualifications:

S-29

Extracted Internal Standard is outside of control limits.

Analyte & Samples(s) Qualified:

M2-8:2FTS
S079900-CCV1

M2PFTA
B322221-BLK1

V-05

Continuing calibration verification (CCV) did not meet method specifications and was biased on the low side for this compound.

Analyte & Samples(s) Qualified:

6:2 Fluorotelomersulfonic acid (6:2
S079888-CCV1

Perfluoro-1-hexanesulfonamide (Fl
S079900-CCV1

Perfluorotetradecanoic acid (PFTA
S079888-CCV1, S079900-CCV1

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.

Tod E. Kopyscinski
Laboratory Director

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

Project Location: 2044 W. Branch Rd, W Halifax, V Sample Description: Work Order: 22K0045

Date Received: 11/1/2022

Field Sample #: MW-3 Sampled: 10/26/2022 14:23

Sample ID: 22K0045-01

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanesulfonic acid (PFBS)	ND	20	ng/L	1		SOP-454 PFAS	11/10/22	11/22/22 19:13	RRB
Perfluorohexanesulfonic acid (PFHxS)	ND	20	ng/L	1		SOP-454 PFAS	11/10/22	11/22/22 19:13	RRB
Perfluoroheptanoic acid (PFHpA)	ND	20	ng/L	1		SOP-454 PFAS	11/10/22	11/22/22 19:13	RRB
Perfluorooctanoic acid (PFOA)	60	20	ng/L	1		SOP-454 PFAS	11/10/22	11/22/22 19:13	RRB
Perfluorooctanesulfonic acid (PFOS)	48	20	ng/L	1		SOP-454 PFAS	11/10/22	11/22/22 19:13	RRB
Perfluorononanoic acid (PFNA)	ND	20	ng/L	1		SOP-454 PFAS	11/10/22	11/22/22 19:13	RRB

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Project Location: 2044 W. Branch Rd, W Halifax, V Sample Description: Work Order: 22K0045

Date Received: 11/1/2022

Field Sample #: MW-3 ERB Sampled: 10/26/2022 14:21

Sample ID: 22K0045-02

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanesulfonic acid (PFBS)	ND	1.9	ng/L	1		SOP-454 PFAS	11/7/22	11/18/22 23:43	RRB
Perfluorohexanesulfonic acid (PFHxS)	ND	1.9	ng/L	1		SOP-454 PFAS	11/7/22	11/18/22 23:43	RRB
Perfluoroheptanoic acid (PFHpA)	ND	1.9	ng/L	1		SOP-454 PFAS	11/7/22	11/18/22 23:43	RRB
Perfluorooctanoic acid (PFOA)	ND	1.9	ng/L	1		SOP-454 PFAS	11/7/22	11/18/22 23:43	RRB
Perfluorooctanesulfonic acid (PFOS)	ND	1.9	ng/L	1		SOP-454 PFAS	11/7/22	11/18/22 23:43	RRB
Perfluorononanoic acid (PFNA)	ND	1.9	ng/L	1		SOP-454 PFAS	11/7/22	11/18/22 23:43	RRB

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Sample Extraction Data

Prep Method: SOP 454-PFAAS **Analytical Method: SOP-454 PFAS**

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
22K0045-02 [MW-3 ERB]	B321920	262	1.00	11/07/22

Prep Method: SOP 454-PFAAS **Analytical Method: SOP-454 PFAS**

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
22K0045-01 [MW-3]	B322221	25.0	1.00	11/10/22

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QUALITY CONTROL

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

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B321920 - SOP 454-PFAAS										
Blank (B321920-BLK1)				Prepared: 11/07/22 Analyzed: 11/18/22						
Perfluorobutanesulfonic acid (PFBS)	ND	1.8	ng/L							
Perfluorohexanesulfonic acid (PFHxS)	ND	1.8	ng/L							
Perfluoroheptanoic acid (PFHpA)	ND	1.8	ng/L							
Perfluorooctanoic acid (PFOA)	ND	1.8	ng/L							
Perfluorooctanesulfonic acid (PFOS)	ND	1.8	ng/L							
Perfluorononanoic acid (PFNA)	ND	1.8	ng/L							
LCS (B321920-BS1)				Prepared: 11/07/22 Analyzed: 11/18/22						
Perfluorobutanesulfonic acid (PFBS)	8.62	1.8	ng/L	8.00		108	72-130			
Perfluorohexanesulfonic acid (PFHxS)	8.28	1.8	ng/L	8.27		100	68-131			
Perfluoroheptanoic acid (PFHpA)	9.68	1.8	ng/L	9.04		107	72-130			
Perfluorooctanoic acid (PFOA)	10.0	1.8	ng/L	9.04		111	71-133			
Perfluorooctanesulfonic acid (PFOS)	8.73	1.8	ng/L	8.36		104	65-140			
Perfluorononanoic acid (PFNA)	9.69	1.8	ng/L	9.04		107	69-130			
LCS Dup (B321920-BSD1)				Prepared: 11/07/22 Analyzed: 11/18/22						
Perfluorobutanesulfonic acid (PFBS)	8.72	1.8	ng/L	7.85		111	72-130	1.12	30	
Perfluorohexanesulfonic acid (PFHxS)	8.34	1.8	ng/L	8.12		103	68-131	0.695	30	
Perfluoroheptanoic acid (PFHpA)	10.1	1.8	ng/L	8.87		114	72-130	4.05	30	
Perfluorooctanoic acid (PFOA)	10.4	1.8	ng/L	8.87		117	71-133	4.02	30	
Perfluorooctanesulfonic acid (PFOS)	9.26	1.8	ng/L	8.21		113	65-140	5.87	30	
Perfluorononanoic acid (PFNA)	10.5	1.8	ng/L	8.87		118	69-130	8.12	30	
Batch B322221 - SOP 454-PFAAS										
Blank (B322221-BLK1)				Prepared: 11/10/22 Analyzed: 11/22/22						
Perfluorobutanesulfonic acid (PFBS)	ND	1.8	ng/L							
Perfluorohexanesulfonic acid (PFHxS)	ND	1.8	ng/L							
Perfluoroheptanoic acid (PFHpA)	ND	1.8	ng/L							
Perfluorooctanoic acid (PFOA)	ND	1.8	ng/L							
Perfluorooctanesulfonic acid (PFOS)	ND	1.8	ng/L							
Perfluorononanoic acid (PFNA)	ND	1.8	ng/L							
LCS (B322221-BS1)				Prepared: 11/10/22 Analyzed: 11/22/22						
Perfluorobutanesulfonic acid (PFBS)	9.81	1.8	ng/L	7.92		124	72-130			
Perfluorohexanesulfonic acid (PFHxS)	10.2	1.8	ng/L	8.18		125	68-131			
Perfluoroheptanoic acid (PFHpA)	11.2	1.8	ng/L	8.94		125	72-130			
Perfluorooctanoic acid (PFOA)	11.4	1.8	ng/L	8.94		128	71-133			
Perfluorooctanesulfonic acid (PFOS)	9.77	1.8	ng/L	8.27		118	65-140			
Perfluorononanoic acid (PFNA)	11.6	1.8	ng/L	8.94		130	69-130			

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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 is at the level of quantitation (LOQ)
DL	Detection Limit is the lower limit of detection determined by the MDL study
MCL	Maximum Contaminant Level
	Percent recoveries and relative percent differences (RPDs) are determined by the software using values in the calculation which have not been rounded.
	No results have been blank subtracted unless specified in the case narrative section.
S-29	Extracted Internal Standard is outside of control limits.
V-05	Continuing calibration verification (CCV) did not meet method specifications and was biased on the low side for this compound.

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INTERNAL STANDARD AREA AND RT SUMMARY

SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
MW-3 (22K0045-01)			Lab File ID: 22K0045-01.d			Analyzed: 11/22/22 19:13			
M3PFBS	107215.6	1.886667	118,777.00	1.894967	90	50 - 150	-0.0083	+/-0.50	
M3PFHxS	96852.27	3.21025	113,170.00	3.21025	86	50 - 150	0.0000	+/-0.50	
M4PFHpA	745418.8	3.170783	827,607.00	3.17885	90	50 - 150	-0.0081	+/-0.50	
M8PFOA	664898.6	3.461933	780,447.00	3.461933	85	50 - 150	0.0000	+/-0.50	
M8PFOS	90126.29	3.65215	106,681.00	3.65215	84	50 - 150	0.0000	+/-0.50	
M9PFNA	530361.1	3.653183	605,116.00	3.653183	88	50 - 150	0.0000	+/-0.50	
MW-3 ERB (22K0045-02)			Lab File ID: 22K0045-02.d			Analyzed: 11/18/22 23:43			
M3PFBS	136126.8	1.845233	140,000.00	1.845233	97	50 - 150	0.0000	+/-0.50	
M3PFHxS	121001.4	3.17765	131,735.00	3.17765	92	50 - 150	0.0000	+/-0.50	
M4PFHpA	885833.9	3.138467	959,171.00	3.138467	92	50 - 150	0.0000	+/-0.50	
M8PFOA	818323.2	3.437833	927,458.00	3.437833	88	50 - 150	0.0000	+/-0.50	
M8PFOS	115209.2	3.6282	128,889.00	3.6282	89	50 - 150	0.0000	+/-0.50	
M9PFNA	614513	3.629233	701,674.00	3.629233	88	50 - 150	0.0000	+/-0.50	
Blank (B321920-BLK1)			Lab File ID: B321920-BLK1.d			Analyzed: 11/18/22 22:45			
M8FOSA	234511.6	3.980567	374,369.00	3.972567	63	50 - 150	0.0080	+/-0.50	
M2-4:2FTS	91240.76	2.4228	95,103.00	2.4228	96	50 - 150	0.0000	+/-0.50	
M2PFTA	954342	4.297266	1,308,002.00	4.297266	73	50 - 150	0.0000	+/-0.50	
M2-8:2FTS	145721.1	3.78685	174,267.00	3.78685	84	50 - 150	0.0000	+/-0.50	
MPFBA	525682.2	1.066783	569,738.00	1.075083	92	50 - 150	-0.0083	+/-0.50	
M3HFPO-DA	117642.7	2.757467	112,423.00	2.757467	105	50 - 150	0.0000	+/-0.50	
M6PFDA	655634.3	3.787367	778,372.00	3.7794	84	50 - 150	0.0080	+/-0.50	
M3PFBS	125225.9	1.845233	140,000.00	1.845233	89	50 - 150	0.0000	+/-0.50	
M7PFUnA	691946.4	3.92205	937,847.00	3.92205	74	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	65528.48	3.4293	67,370.00	3.4205	97	50 - 150	0.0088	+/-0.50	
M5PFPeA	408018	1.681733	457,636.00	1.681733	89	50 - 150	0.0000	+/-0.50	
M5PFHxA	717718.2	2.506633	820,850.00	2.498417	87	50 - 150	0.0082	+/-0.50	
M3PFHxS	116988.8	3.185733	131,735.00	3.17765	89	50 - 150	0.0081	+/-0.50	
M4PFHpA	838389.1	3.14655	959,171.00	3.138467	87	50 - 150	0.0081	+/-0.50	
M8PFOA	795827.6	3.437833	927,458.00	3.437833	86	50 - 150	0.0000	+/-0.50	
M8PFOS	108735.8	3.636183	128,889.00	3.6282	84	50 - 150	0.0080	+/-0.50	
M9PFNA	604458.6	3.629233	701,674.00	3.629233	86	50 - 150	0.0000	+/-0.50	
MPFDoA	669220.7	4.056667	949,807.00	4.056667	70	50 - 150	0.0000	+/-0.50	
d5-NEtFOSAA	184645.8	3.929517	233,583.00	3.929517	79	50 - 150	0.0000	+/-0.50	
d3-NMeFOSAA	226042.8	3.85765	292,950.00	3.85765	77	50 - 150	0.0000	+/-0.50	

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INTERNAL STANDARD AREA AND RT SUMMARY

SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
LCS (B321920-BS1)			Lab File ID: B321920-BS1.d			Analyzed: 11/18/22 22:31			
M8FOSA	259351	3.972567	374,369.00	3.972567	69	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	100191.1	2.4228	95,103.00	2.4228	105	50 - 150	0.0000	+/-0.50	
M2PFTA	1161526	4.297266	1,308,002.00	4.297266	89	50 - 150	0.0000	+/-0.50	
M2-8:2FTS	166232.8	3.78685	174,267.00	3.78685	95	50 - 150	0.0000	+/-0.50	
MPFBA	560837.1	1.066783	569,738.00	1.075083	98	50 - 150	-0.0083	+/-0.50	
M3HFPO-DA	129462.7	2.757467	112,423.00	2.757467	115	50 - 150	0.0000	+/-0.50	
M6PFDA	690610.1	3.787367	778,372.00	3.7794	89	50 - 150	0.0080	+/-0.50	
M3PFBS	136630.5	1.845233	140,000.00	1.845233	98	50 - 150	0.0000	+/-0.50	
M7PFUnA	779065	3.92205	937,847.00	3.92205	83	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	68719.23	3.4205	67,370.00	3.4205	102	50 - 150	0.0000	+/-0.50	
M5PFPeA	441468.2	1.681733	457,636.00	1.681733	96	50 - 150	0.0000	+/-0.50	
M5PFHxA	782618	2.498417	820,850.00	2.498417	95	50 - 150	0.0000	+/-0.50	
M3PFHxS	125139.3	3.17765	131,735.00	3.17765	95	50 - 150	0.0000	+/-0.50	
M4PFHpA	918545.3	3.138467	959,171.00	3.138467	96	50 - 150	0.0000	+/-0.50	
M8PFOA	868427.3	3.437833	927,458.00	3.437833	94	50 - 150	0.0000	+/-0.50	
M8PFOS	120663.1	3.636183	128,889.00	3.6282	94	50 - 150	0.0080	+/-0.50	
M9PFNA	671763.6	3.629233	701,674.00	3.629233	96	50 - 150	0.0000	+/-0.50	
MPFDoA	807740.4	4.056667	949,807.00	4.056667	85	50 - 150	0.0000	+/-0.50	
d5-NEtFOSAA	197969.4	3.929517	233,583.00	3.929517	85	50 - 150	0.0000	+/-0.50	
d3-NMeFOSAA	257151.4	3.85765	292,950.00	3.85765	88	50 - 150	0.0000	+/-0.50	

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INTERNAL STANDARD AREA AND RT SUMMARY

SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
LCS Dup (B321920-BSD1)			Lab File ID: B321920-BSD1.d			Analyzed: 11/18/22 22:38			
M8FOSA	223295.7	3.972567	374,369.00	3.972567	60	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	87244.94	2.4228	95,103.00	2.4228	92	50 - 150	0.0000	+/-0.50	
M2PFTA	992973.9	4.297266	1,308,002.00	4.297266	76	50 - 150	0.0000	+/-0.50	
M2-8:2FTS	156390.1	3.78685	174,267.00	3.78685	90	50 - 150	0.0000	+/-0.50	
MPFBA	499288.6	1.066783	569,738.00	1.075083	88	50 - 150	-0.0083	+/-0.50	
M3HFPO-DA	119145.5	2.757467	112,423.00	2.757467	106	50 - 150	0.0000	+/-0.50	
M6PFDA	637354.3	3.787367	778,372.00	3.7794	82	50 - 150	0.0080	+/-0.50	
M3PFBS	118433.6	1.845233	140,000.00	1.845233	85	50 - 150	0.0000	+/-0.50	
M7PFUnA	682491	3.92205	937,847.00	3.92205	73	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	62158.79	3.4205	67,370.00	3.4205	92	50 - 150	0.0000	+/-0.50	
M5PFPeA	387748.3	1.681733	457,636.00	1.681733	85	50 - 150	0.0000	+/-0.50	
M5PFHxA	690045.1	2.498417	820,850.00	2.498417	84	50 - 150	0.0000	+/-0.50	
M3PFHxS	108090.7	3.17765	131,735.00	3.17765	82	50 - 150	0.0000	+/-0.50	
M4PFHpA	808897.7	3.138483	959,171.00	3.138467	84	50 - 150	0.0000	+/-0.50	
M8PFOA	764200.2	3.437833	927,458.00	3.437833	82	50 - 150	0.0000	+/-0.50	
M8PFOS	105502.4	3.636183	128,889.00	3.6282	82	50 - 150	0.0080	+/-0.50	
M9PFNA	581752.4	3.629233	701,674.00	3.629233	83	50 - 150	0.0000	+/-0.50	
MPFDoA	707078.3	4.056667	949,807.00	4.056667	74	50 - 150	0.0000	+/-0.50	
d5-NEtFOSAA	176204.3	3.929517	233,583.00	3.929517	75	50 - 150	0.0000	+/-0.50	
d3-NMeFOSAA	237983.7	3.85765	292,950.00	3.85765	81	50 - 150	0.0000	+/-0.50	

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INTERNAL STANDARD AREA AND RT SUMMARY

SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
Blank (B322221-BLK1)			Lab File ID: B322221-BLK1.d			Analyzed: 11/22/22 18:51			
M8FOSA	213335	3.99655	312,418.00	3.99655	68	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	87716.46	2.472183	101,803.00	2.480383	86	50 - 150	-0.0082	+/-0.50	
M2PFTA	473825.2	4.313416	1,079,117.00	4.313416	44	50 - 150	0.0000	+/-0.50	*
M2-8:2FTS	173409.5	3.802783	183,419.00	3.802783	95	50 - 150	0.0000	+/-0.50	
MPFBA	486533.2	1.0834	495,260.00	1.0834	98	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	98440.46	2.81475	93,486.00	2.81475	105	50 - 150	0.0000	+/-0.50	
M6PFDA	600000.1	3.803317	706,312.00	3.803317	85	50 - 150	0.0000	+/-0.50	
M3PFBS	108015.8	1.886667	118,777.00	1.894967	91	50 - 150	-0.0083	+/-0.50	
M7PFUnA	568612.3	3.946033	742,292.00	3.946033	77	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	59491.58	3.445283	73,821.00	3.453267	81	50 - 150	-0.0080	+/-0.50	
M5PFPeA	367885.9	1.714833	393,340.00	1.7231	94	50 - 150	-0.0083	+/-0.50	
M5PFHxA	675459.5	2.555917	714,540.00	2.555917	95	50 - 150	0.0000	+/-0.50	
M3PFHxS	98206.73	3.21025	113,170.00	3.21025	87	50 - 150	0.0000	+/-0.50	
M4PFHpA	781830.1	3.17885	827,607.00	3.17885	94	50 - 150	0.0000	+/-0.50	
M8PFOA	727787	3.461933	780,447.00	3.461933	93	50 - 150	0.0000	+/-0.50	
M8PFOS	94735.94	3.65215	106,681.00	3.65215	89	50 - 150	0.0000	+/-0.50	
M9PFNA	522597.2	3.653183	605,116.00	3.653183	86	50 - 150	0.0000	+/-0.50	
MPFDoA	409676.9	4.08065	759,435.00	4.08065	54	50 - 150	0.0000	+/-0.50	
d5-NEtFOSAA	157785.5	3.9535	199,185.00	3.9535	79	50 - 150	0.0000	+/-0.50	
d3-NMeFOSAA	229708.1	3.88175	240,973.00	3.88175	95	50 - 150	0.0000	+/-0.50	

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INTERNAL STANDARD AREA AND RT SUMMARY

SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
LCS (B322221-BS1)			Lab File ID: B322221-BS1.d			Analyzed: 11/22/22 18:44			
M8FOSA	203310.1	3.99655	312,418.00	3.99655	65	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	84878.7	2.480383	101,803.00	2.480383	83	50 - 150	0.0000	+/-0.50	
M2PFTA	852204.3	4.313416	1,079,117.00	4.313416	79	50 - 150	0.0000	+/-0.50	
M2-8:2FTS	178483.7	3.802783	183,419.00	3.802783	97	50 - 150	0.0000	+/-0.50	
MPFBA	451281.2	1.0834	495,260.00	1.0834	91	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	104238.1	2.806567	93,486.00	2.81475	112	50 - 150	-0.0082	+/-0.50	
M6PFDA	592720.9	3.803317	706,312.00	3.803317	84	50 - 150	0.0000	+/-0.50	
M3PFBS	101770.8	1.886667	118,777.00	1.894967	86	50 - 150	-0.0083	+/-0.50	
M7PFUnA	645478.8	3.946033	742,292.00	3.946033	87	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	61007.17	3.453267	73,821.00	3.453267	83	50 - 150	0.0000	+/-0.50	
M5PFPeA	341912	1.714833	393,340.00	1.7231	87	50 - 150	-0.0083	+/-0.50	
M5PFHxA	618369.1	2.555917	714,540.00	2.555917	87	50 - 150	0.0000	+/-0.50	
M3PFHxS	96874.05	3.21025	113,170.00	3.21025	86	50 - 150	0.0000	+/-0.50	
M4PFHpA	721475.4	3.17885	827,607.00	3.17885	87	50 - 150	0.0000	+/-0.50	
M8PFOA	693171.6	3.461933	780,447.00	3.461933	89	50 - 150	0.0000	+/-0.50	
M8PFOS	91005.44	3.65215	106,681.00	3.65215	85	50 - 150	0.0000	+/-0.50	
M9PFNA	520457.9	3.653183	605,116.00	3.653183	86	50 - 150	0.0000	+/-0.50	
MPFDoA	612593.7	4.08065	759,435.00	4.08065	81	50 - 150	0.0000	+/-0.50	
d5-NEtFOSAA	162349.9	3.9535	199,185.00	3.9535	82	50 - 150	0.0000	+/-0.50	
d3-NMeFOSAA	219998	3.88175	240,973.00	3.88175	91	50 - 150	0.0000	+/-0.50	

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

CERTIFICATIONS

Certified Analyses included in this Report

Analyte	Certifications
SOP-454 PFAS in Water	
Perfluorobutanesulfonic acid (PFBS)	NH-P
Perfluorohexanesulfonic acid (PFHxS)	NH-P
Perfluoroheptanoic acid (PFHpA)	NH-P
Perfluorooctanoic acid (PFOA)	NH-P
Perfluorooctanesulfonic acid (PFOS)	NH-P
Perfluorononanoic acid (PFNA)	NH-P

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

Code	Description	Number	Expires
NH-P	New Hampshire Environmental Lab	2557 NELAP	09/6/2023

22K0045

Pace Analytical

Phone: 413-525-2332
Fax: 413-525-6405
Access COC's and Support Requests

http://www.pacelabs.com

CHAIN OF CUSTODY RECORD

39 Spruce Street
East Longmeadow, MA 01028

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Page 1 of 1

Company Name:	KAS, Inc.
Address:	PO Box 787 Williston VT 05495
Phone:	802-383-0486
Project Name:	Halifax Landfill
Project Location:	2044 W Branch Rd, in Halifax, VT
Project Number:	610110045
Project Manager:	Claire Santos
Pace Quote Name/Number:	
Invoice Recipient:	AmyK@kas-consulting.com
Sampled By:	Kristen Gill + Haley Grigel

Regulatory Requirements/Report Limits
7-Day ☐ 10-Day ☐
PFAS 10-Day (std) ☑ Due Date:

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

Results Needed
○ Field Filtered
○ Lab to Filter

Additional Requirements
○ Field Filtered
○ Lab to Filter

Data Delivery
Format: PDF ☑ EXCEL ☑
Other:
CLP Like Data Pkg Required: ☐
Email To: ClaireS@kas-consulting.com
Fax To #:

PCB ONLY
SOXHLET ☐
NON SOXHLET ☐

ANALYSIS REQUESTED

Pace Work Order#	Client Sample ID / Description	Beginning Date/Time	Ending Date/Time	COMP/GRAB	[1]Matrix Code	Conc Code	VIALS	GLASS	PLASTIC	BACTERIA	ENCORE	PFAS 537.1 short list O
1	MW-3	10/26/22	1423	GRAB	GW	U			2			X
2	MW-3 ERB	10/26/22	1421	GRAB	GW	U			2			X

[2] Preservation Code
Courier Use Only
Total Number Of:
VIALS
GLASS
PLASTIC
BACTERIA
ENCORE
Pre Packaged Cooler

Glassware in the fridge? Y / N
Glassware in freezer? Y / N
Prepackaged Coolers? Y / N

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

[1] Matrix Codes:
GW = Ground Water
WW = Waste Water
DW = Drinking Water
A = Air
S = Soil
SL = Sludge
SOL = Solid
O = Other (please define)

[2] Preservation Codes:
I = Iced
H = HCL
M = Methanol
N = Nitric Acid
S = Sulfuric Acid
B = Sodium Bisulfate
X = Sodium Hydroxide
T = Sodium Thiosulfate
O = Other (please define) Tris HCl

Relinquished by: (signature)	Date/Time:	Client Comments:
Halley Grigel	10/28/22 843	
Received by: (signature) VDS	Date/Time: 11-1-22	
Relinquished by: (signature) VDS	Date/Time: 11-1-22	
Received by: (signature) 10:45	Date/Time: 11-1-22	
Relinquished by: (signature) 13:40	Date/Time: 11-1-22	
Received by: (signature) 2.0	Date/Time: 11/1/22 1340	
Relinquished by: (signature)	Date/Time:	
Received by: (signature)	Date/Time:	

Data Deliverable Requirements
FAX ☐
Email ☐
On-line ☐

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

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.

39 Spruce St.
East Longmeadow, MA. 01028
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F: 413-525-6405
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Pace PEOPLE ADVANCING SCIENCE

Doc# 277 Rev 6 July 2022

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

Client KAS INC

Received By LA Date 11/1/22 Time 1340

How were the samples received? In Cooler T No Cooler _____ On Ice T No Ice _____

Direct From Sample F Ambient _____ Melted Ice _____

Were samples within Tempurature? Within 2-6°C T By Gun # S Actual Temp - 2.0

By Blank # _____ Actual Temp - _____

Was Custody Seal In tact? NA Were Samples Tampered with? F

Was COC Relinquished ? T Does Chain Agree With Samples? T

Are there broken/leaking/loose caps on any samples? F

Is COC in ink/ Legible? T Were samples received within holding time? T

Did COC include all pertinent Information? Client? T Analysis? T Sampler Name? T

Project? T ID's? T Collection Dates/Times? T

Are Sample labels filled out and legible? T

Are there Lab to Filters? F Who was notified? _____

Are there Rushes? F Who was notified? _____

Are there Short Holds? F Who was notified? _____

Samples are received within holding time? T Is there enough Volume? T

Is there Headspace where applicable? NA MS/MSD? F

Proper Media/Containers Used? T splitting samples require F

Were trip blanks receive T On COC? F

Do All Samples Have the proper pH? NA Acid _____ Base _____

Vials	#	Containers:	#		#		#
Unp-		1 Liter Amb.		1 Liter Plastic		16 oz Amb.	
HCL-		500 mL Amb.		500 mL Plastic		8oz Amb/Clear	
Meoh-		250 mL Amb.		250 mL Plastic	S	4oz Amb/Clear	
Bisulfate-		Col./Bacteria		Flashpoint		2oz Amb/Clear	
DI-		Other Plastic		Other Glass		Encore	
Thiosulfate-		SOC Kit		Plastic Bag		Frozen:	
Sulfuric-		Perchlorate		Ziplock			

Unused Media

Vials	#	Containers:	#		#		#
Unp-		1 Liter Amb.		1 Liter Plastic		16 oz Amb.	
HCL-		500 mL Amb.		500 mL Plastic		8oz Amb/Clear	
Meoh-		250 mL Amb.		250 mL Plastic		4oz Amb/Clear	
Bisulfate-		Col./Bacteria		Flashpoint		2oz Amb/Clear	
DI-		Other Plastic		Other Glass		Encore	
Thiosulfate-		SOC Kit		Plastic Bag		Frozen:	
Sulfuric-		Perchlorate		Ziplock			

Comments:

trip blank received but not on COC.