Brandon Landfill
31 Corona Street
Brandon, Vermont

VT DEC Project# RU97-0128
Solid Waste Facility ID# RU080
KAS Job# 609210052

SPRING 2023 SEMI-ANNUAL WATER QUALITY MONITORING REPORT

July 25, 2023

Prepared for:

Town of Brandon
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Introduction

KAS, Inc. (KAS) conducted a semi-annual water quality monitoring event on May 22, 2023 at the Brandon Landfill (Site Location Map and Site Map in Appendix A). The spring 2023 groundwater monitoring was conducted in accordance with the current landfill post-closure certification. In addition, as requested by the Vermont Department of Environmental Conservation (VT DEC), the monitoring wells were tested for per-and polyfluoroalkyl substances (PFAS), an emerging group of contaminants, that have been frequently found in landfill leachate.

Background

The 5-acre facility operated as a landfill from 1940 until its closure in 1992, and currently operates as a transfer station. Post-closure groundwater monitoring has been conducted consistently since 2016, although select wells have not been sampled for various reasons (i.e., dry, inaccessible, etc.). Manganese, arsenic, and lead remain at levels above Vermont Groundwater Enforceable Standard (VGES). Other metals that have infrequently exceeded VGES in the past include cadmium and nickel. Volatile organic compounds (VOCs) have generally remained below VGES, with the exception of naphthalene, which was found to be slightly above VGES in June 2022. May 2023 was the first time groundwater was tested for PFAS.

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 VGES for PFAS is 20 nanograms per liter (ng/L) for the sum of the five regulated PFAS. There are numerous other PFAS compounds that are not regulated in Vermont, some of which are considered replacements for PFAS that have been historically phased out of production and use.

Groundwater is presumed to flow in a south-southwesterly direction, towards Otter Creek, based on the topography of the area and based on the data collected to date. The current monitoring well network consists of four (4) wells: MW-1 (upgradient), MW-3 (cross-gradient), and MW-2C and MW-5 (both of which are downgradient).

Groundwater Sampling & Results

Field measurements

At the time of sample collection, groundwater was field analyzed for temperature, pH, and specific conductance using a properly calibrated YSI® meter. The depth to water was gauged using a Geotech™ water level indicator. Field measurement data is tabulated in Appendix B.

Laboratory Results

A groundwater sample was collected from all monitoring wells (MW-1, MW-2C, MW-3, and MW-5). Low-flow groundwater purging and sampling techniques were used at MW-2C and MW-5; however, at MW-2C purging until stabilization was not conducted due to a low water column. At MW-3 and MW-5, the sample was collected via bailer due to the depth of water exceeding the capacity of the peristaltic pump (e.g., >30 feet below top of casing). The groundwater samples were analyzed for:

- Total metals (e.g., arsenic, cadmium, chromium, copper, lead, iron, manganese, mercury, nickel, sodium, and zinc) via EPA Method 6010/6020;
- Chemical oxygen demand (COD) via Method 410.4;

- Chloride via Method 300.0;
- VOCs via EPA Method 8260C; and,
- PFAS via isotope dilution.

At MW-2C, MW-3 and MW-5, manganese concentrations were above VGES (0.3 mg/L), with the highest level being at MW-5 (2.1 mg/L). At MW-3, the lead concentration of 0.0151 mg/L was slightly above VGES (0.015 mg/L). No VOCs were detected above laboratory method detection limits in the samples collected, except for diethyl ether at MW-2C, for which there is no groundwater quality standard. Total regulated PFAS exceeded VGES (20 ng/L) at MW-2C and MW-5, with the highest level being at MW-2C (305.7 ng/L). Current and historical analytical data are provided in tables and graphs in Appendix B. A copy of the laboratory reports is provided in Appendix C.

Quality Assurance/Quality Control

Quality assurance and quality control (QA/QC) samples included a duplicate sample that was analyzed for VOCs, metals, chloride, and COD. The results of the laboratory analysis of the duplicate sample were analyzed using a relative percent difference (RPD) analysis. The RPD is defined as 100 times the difference in reported concentration between sample and duplicate, divided by the mean of the two samples. A small RPD indicates good correlation between sample and duplicate. The absolute RPD values ranged between 1.9 and 15.8%, which good correlation/precision based on an EPA Region 1 guideline value of 30%.

A QA/QC sample also included a trip blank for VOC analysis. No VOC were detected in the trip blank, which indicates that potential contamination from transit, sample bottles, or laboratory conditions was not a concern.

For PFAS analysis, a QA/QC sample included an equipment rinsate blank (ERB) sample. No PFAS was detected in the ERB sample, which indicates that there was no cross contamination of PFAS from the sampler, equipment, field conditions, and/or laboratory conditions.

Trends

Additional field measurement data is needed to establish long-term trends.

Overall, metal concentrations appear to have decreased from their respective historical peaks. The exception is manganese, the levels of which continue to widely fluctuate. In general, sodium, chloride, and COD also continue to fluctuate. Trends/graphs are provided in Appendix B.

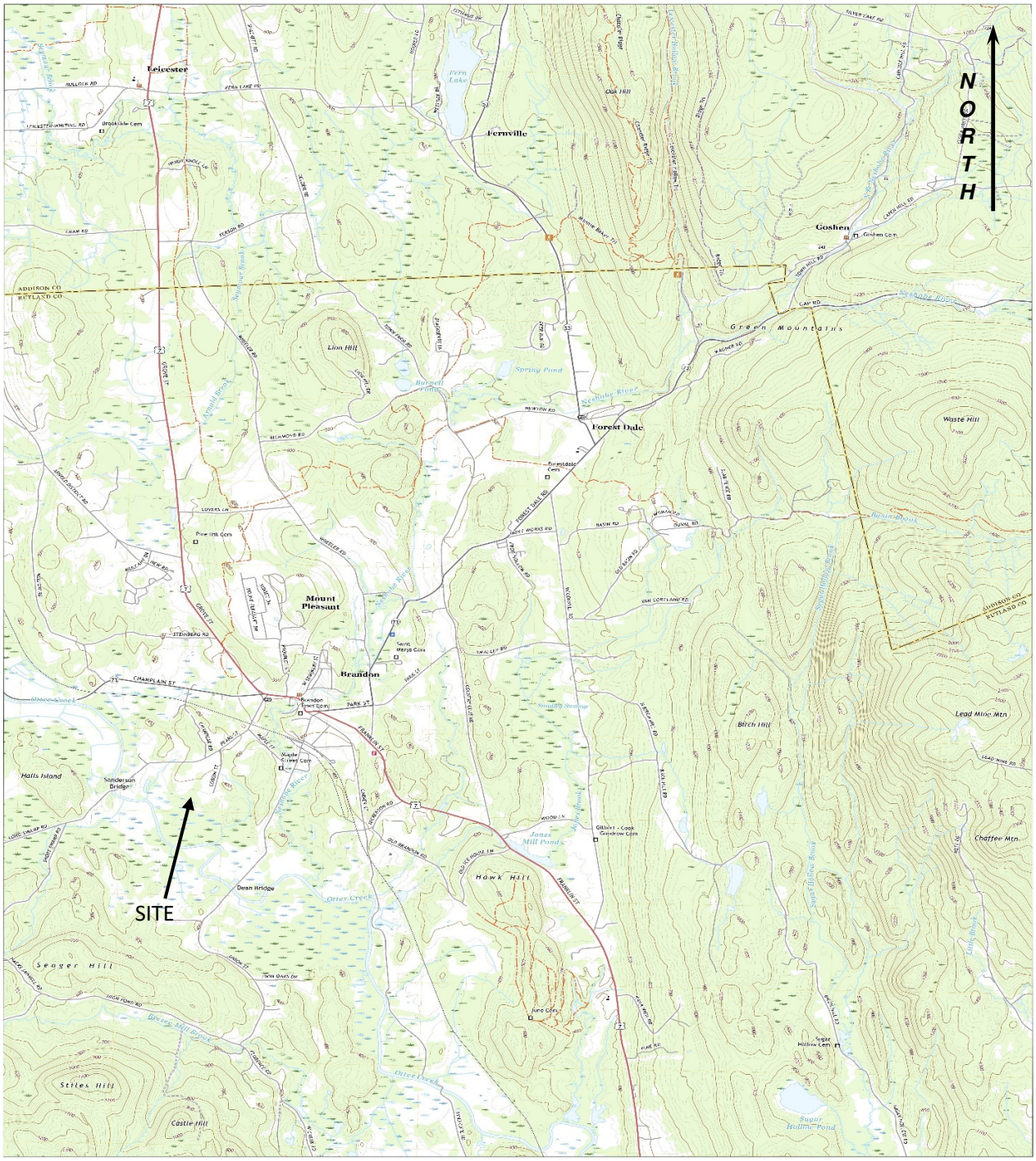
Recommendation

KAS recommends that groundwater monitoring continue in accordance with Brandon Solid Waste Facility Certification – Monitoring Requirements (7), with the next monitoring event to occur in October 2023. PFAS sampling and analysis should also continue at all monitoring wells.

At this time, it is unknown if PFAS has impacted the deeper aquifer. In general, the surrounding residential area is served by municipal water. As shown on the Site Map (Appendix A), there are no private water supply wells downgradient from the landfill in the nearby vicinity. The nearest cross-gradient supply well is approximately 0.16 miles to the west. Therefore, based on the distances and locations, the risk of PFAS contamination in the supply wells is considered low at this time; however, sampling and analysis would be required to fully rule out the risk.

APPENDIX A

Site Location Map and Site Map



KAS Job Number *609210052*
Source: *USGS*

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Brandon Town Landfill
31 Corona Street, Brandon, Vermont

Site Location Map
USGS Mapping

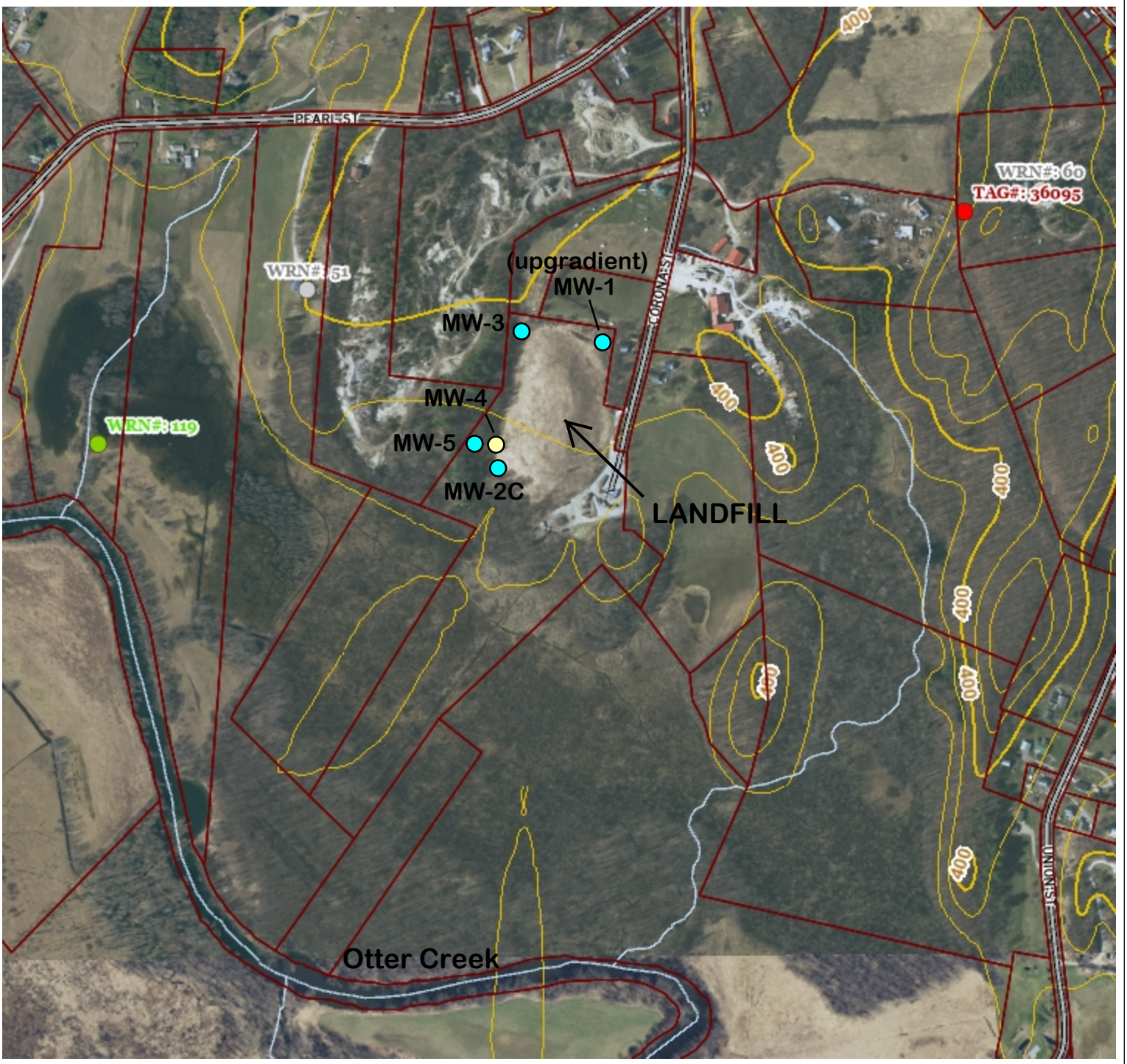
Date: 04/27/22	Drawing No. 0	Scale NTS	By: ML

VERMONT

Brandon Landfill

Vermont Agency of Natural Resources

vermont.gov



LEGEND

Private Wells

- GPS Located
- Screen Digitized
- E911 Address Matched
- Welldriller/Clarion
- Unknown Location Method
- Incorrectly Located

Public Water Sources

Markups by KAS

- Approx. location of monitoring well
- Inactive monitoring well

NOTES

Map created using ANR GIS mapping techology.

1: 6,916

September 13, 2022

351.0 0 176.00 351.0 Meters

WGS_1984_Web_Mercator_Auxiliary_Sphere

1" = 576 Ft. 1cm = 69 Meters

THIS MAP IS NOT TO BE USED FOR NAVIGATION

APPENDIX B

Data Summaries

Brandon Closed Landfill

Sampling Date: May 22, 2023

Monitoring Well ID: PARAMETER	MW-1	MW-2C	MW-3	MW-5	VGES	PAL
VOCs (ug/L)						
Diethyl Ether	ND	**14.6**	ND	ND	-	-
Total Metals (mg/L)						
Arsenic	***0.0014***	<0.0010	***0.0075***	<0.0010	0.010	0.001
Cadmium	<0.0020	<0.0020	<0.0020	<0.0020	0.005	0.001
Chromium	<0.0050	<0.0050	**0.0110**	<0.0050	0.100	0.050
Copper	<0.020	<0.020	**0.021**	<0.020	1.300	0.650
Iron	**2.4**	**2.4**	**18**	**0.52**	-	-
Lead	<0.0010	***0.0036***	**0.0151**	<0.0010	0.015	0.002
Manganese	***0.25***	**1.3**	**0.55**	**2.1**	0.300	0.150
Mercury	<0.0002	<0.0002	<0.0002	<0.0002	0.002	0.0005
Nickel	<0.0050	**0.0081**	**0.0140**	<0.0050	0.100	0.050
Sodium	**41**	**28**	**26**	**34**	-	-
Zinc	<0.020	<0.020	**0.042**	<0.020	-	-
Other Analytes (mg/L)						
Chloride	**77**	**24**	**44**	**59**	-	-
COD	**74**	**77**	**79**	**35**	-	-
PFAS (ng/L)						
Perfluorohexanesulfonic acid (PFHxS)	<1.8	**36**	<1.8	**17**	-	-
Perfluoroheptanoic acid (PFHpA)	<1.8	**18**	<1.8	**5.1**		
Perfluorooctanoic acid (PFOA)	<1.8	**97**	<1.8	**30**		
Perfluorooctanesulfonic acid (PFOS)	**2.4**	**150**	**5.2**	**14**		
Perfluorononanoic acid (PFNA)	<1.8	**4.7**	<1.8	<1.9		
Total Regulated PFAS	***2.4***	**305.7**	***5.2***	**66.1**	20	2
Total Non-Regulated PFAS	ND	**68.7**	ND	**14.8**	-	-
Field Measurements (units as noted)						
pH (std units)	7.26	6.96	7.57	6.69	-	-
Temperature (deg C)	14.5	11.3	13.0	10.1	-	-
Conductivity (uS)	1,008	1,487	715	826	-	-
Water Level (feet btoc)	30.67	8.36	31.50	4.79	-	-

Only detected or targeted VOCs are depicted

All values reported in units noted above

"-" = Not Analyzed, No Information or No Applicable Standard

ND = None Detected

<X = None Detected above Detection Limit (X)

VGES = Vermont Groundwater Enforcement Standard (GWPRS 07/06/2019)

PAL = Vermont Preventive Action Level (GWPRS 07/06/2019)

Detections are **bolded**

>VGES

Bold (italic) indicates value exceeds PAL

Brandon Closed Landfill

MW-1

Sample Date: / PARAMETER	2012	4/22/2013	10/1/2013	5/29/2014	6/9/2015	10/25/2015	7/24/2016	October 2016	5/7/2017	10/28/2017	5/28/2018	10/20/2018	05/27/2019	10/26/2019	VGES	PAL
VOCs (ug/L)																
1,1-dichloroethane	-	-	-	-	-	-	-	-	<1.0	<1.0	<1.0	<1.0	<1	<1	70	35
Total Metals (mg/L)																
Arsenic	Well	Well	Well	Well	Well	Well	Well	Well	**0.001**	<0.0010	***0.0016***	<0.0010	<0.0010	<0.0010	0.010	0.001
Cadmium	Not	Not	Not	Not	Not	Not	Not	Not	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	0.005	0.001
Chromium	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.100	0.050
Copper	-	-	-	-	-	-	-	-	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	1.300	0.650
Iron	-	-	-	-	-	-	-	-	**0.79**	**0.51**	**3.0**	**0.62**	**0.091**	**0.26**	-	-
Lead	-	-	-	-	-	-	-	-	<0.001	<0.0010	<0.0021	<0.0010	<0.0010	<0.0010	0.015	0.002
Manganese	-	-	-	-	-	-	-	-	**0.18**	**0.14**	**0.79**	***0.21***	**0.034**	**0.028**	0.300	0.150
Mercury	-	-	-	-	-	-	-	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.002	0.0005
Nickel	-	-	-	-	-	-	-	-	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.100	0.050
Sodium	-	-	-	-	-	-	-	-	**40**	**40**	**38**	**42**	**42**	**38**	-	-
Zinc	-	-	-	-	-	-	-	-	**0.046**	**0.170**	**0.025**	**0.025**	<0.020	<0.020	-	-
Other Analytes (mg/L)																
Chloride	-	-	-	-	-	-	-	-	**74**	**72**	**77**	**82**	**86**	**83**	-	-
COD	-	-	-	-	-	-	-	-	**21**	**24**	**14**	**12**	<10	**39**	-	-
Field Measurements (units as noted)																
pH (std units)	-	-	-	-	-	-	-	-	6.5	6.3	6.6	6.6	6.5	6.7	-	-
Temperature (deg C)	-	-	-	-	-	-	-	-	10.7	11.6	11.8	11.9	11.2	12.1	-	-
Conductivity (uS)	-	-	-	-	-	-	-	-	1050	1030	1020	1000	1100	1050	-	-
Water Level (feet btoc)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Sample Date: / PARAMETER	10/14/2021	6/3/2022	10/27/2022	5/22/2023											VGES	PAL
VOCs (ug/L)																
1,1-dichloroethane	-	-	<1.0	<1.0											70	35
Total Metals (mg/L)																
Arsenic	No	No	***0.0015***	***0.0014***											0.010	0.001
Cadmium	Sample	Sample	<0.0020	<0.0020											0.005	0.001
Chromium	-	-	<0.0050	<0.0050											0.100	0.050
Copper	Unable	Unable	<0.020	<0.020											1.300	0.650
Iron	To Locate	To Locate	**2.4**	**2.4**											-	-
Lead	Well	Well	<0.0010	<0.0010											0.015	0.002
Manganese	-	-	***0.20***	***0.25***											0.300	0.150
Mercury	-	-	<0.0002	<0.0002											0.002	0.0005
Nickel	-	-	<0.0050	<0.0050											0.100	0.050
Sodium	-	-	**39**	**41**											-	-
Zinc	-	-	**0.024**	<0.020											-	-
Other Analytes (mg/L)																
Chloride	-	-	**78**	**77**											-	-
COD	-	-	**59**	**74**											-	-
PFAS (ng/L)																
Perfluorohexanesulfonic acid (PFHxS)	-	-	-	<1.8											-	-
Perfluoroheptanoic acid (PFHpA)	-	-	-	<1.8												
Perfluorooctanoic acid (PFOA)	-	-	-	<1.8												
Perfluorooctanesulfonic acid (PFOS)	-	-	-	**2.4**												
Perfluorononanoic acid (PFNA)	-	-	-	<1.8												
Total Regulated PFAS	-	-	-	***2.4***											20	2
Total Non-Regulated PFAS	-	-	-	ND											-	-
Field Measurements (units as noted)																
pH (std units)	-	-	7.21	7.26											-	-
Temperature (deg C)	-	-	10.8	14.5											-	-
Spec. Conductivity (uS/cm)	-	-	1,039	1,008											-	-
Water Level (feet btoc)	-	-	31.17	30.67											-	-

Data prior to 2021 collected by others and obtained from 2019 reports prepared by EIV Technical Services

Data 2021-present collected by KAS, Inc.

Only detected or targeted VOCs are depicted

All values reported in units noted above

"-" = Not Analyzed, No Information or No Applicable Standard

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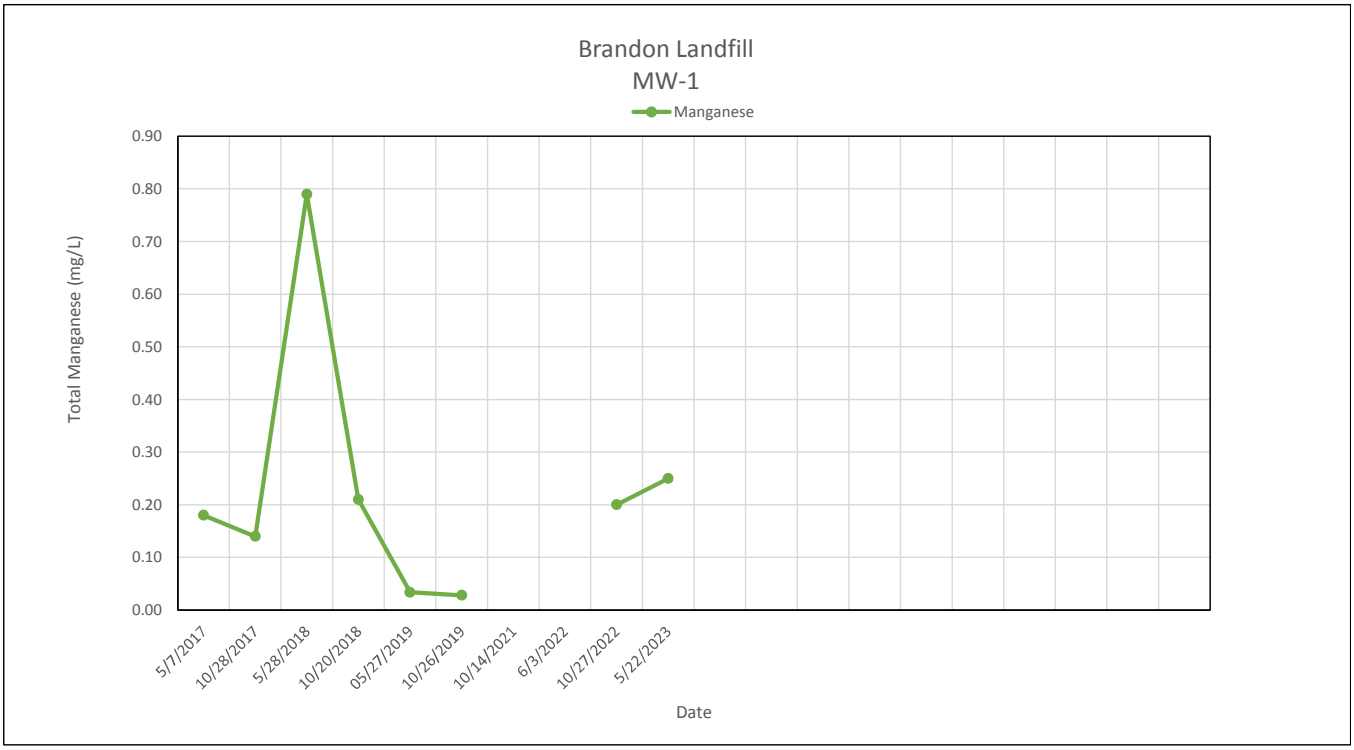
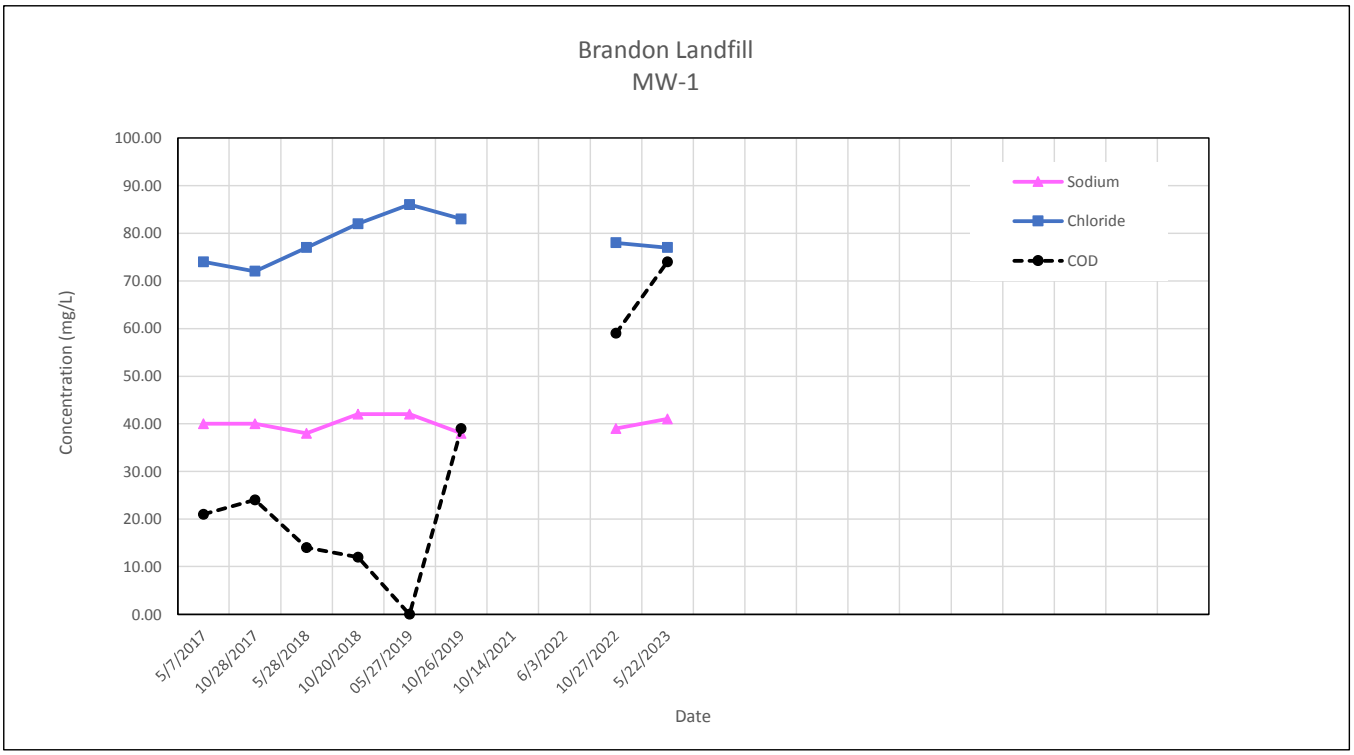
Detections are **bolded**

>VGES

Bold (italic) indicates value exceeds PAL


Brandon Landfill
MW-1
Manganese
Total Manganese (mg/L)
0.90
0.80
0.70
0.60
0.50
0.40
0.30
0.20
0.10
0.00
5/7/2017
10/28/2017
5/28/2018
10/20/2018
05/27/2019
10/26/2019
10/14/2021
6/3/2022
10/27/2022
5/22/2023
Date


Brandon Landfill
MW-1
Concentration (mg/L)
100.00
90.00
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Sodium
Chloride
COD
5/7/2017
10/28/2017
5/28/2018
10/20/2018
05/27/2019
10/26/2019
10/14/2021
6/3/2022
10/27/2022
5/22/2023
Date

Brandon Closed Landfill
MW-2C

Sample Date: PARAMETER	2012	4/22/2013	10/1/2013	5/29/2014	6/9/2015	10/25/2015	7/24/2016	October 2016	5/7/2017	10/28/2017	5/28/2018	10/20/2018	05/27/2019	10/26/2019	VGES	PAL
VOCs (ug/L)																
Dichlorodifluoromethane	-	<5.0	<5.0	<5.0	<5.0	<5.0	**7.2**	-	<5.0	<5.0	<5.0	**5.0**	**1.8**	<1	-	-
Vinyl Chloride	-	<2.0	<2.0	<2.0	<2.0	<2.0	***0.7***	-	<0.5	<0.5	<0.5	<0.5	-	-	2	0.5
1,4-dichlorobenzene	**2.3**	**2.4**	**2.5**	**2.3**	**2.1**	**2.0**	**2.6**	<1.0	**2.4**	**2.2**	**1.7**	**2.7**	-	-	75	38
Acetone	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	**15.8**	<10.0	950	475
Benzene	***2.0***	***2.3***	***3.3***	***2.6***	***2.3***	***1.9***	***3.4***	<0.5	***2.9***	***2.9***	***1.3***	***3.5***	***1.2***	<0.5	5	0.5
Chlorobenzene	**5.4**	**5.3**	**4.8**	**6.0**	**5.9**	**5.0**	**7.6**	<1.0	**8.3**	**7.2**	**4.1**	**7.4**	**4.9**	<1.0	100	50
Diethyl Ether	-	**22.5**	**36.2**	**24.0**	**23.9**	**19.5**	**26.3**	-	**19.4**	**25.2**	**17.5**	**30.5**	-	-	-	-
Total Metals (mg/L)																
Arsenic	-	-	-	**0.074**	**0.026**	**0.025**	**0.027**	Data	**0.034**	**0.0409**	**0.071**	**0.0200**	**0.0213**	<0.0010	0.010	0.001
Cadmium	-	-	-	<0.002	<0.002	<0.002	**0.021**	Not	***0.0027***	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	0.005	0.001
Chromium	-	-	-	**0.012**	<0.005	<0.005	<0.0050	Available	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.100	0.050
Copper	-	-	-	<0.020	<0.020	<0.020	<0.020	-	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	1.300	0.650
Iron	-	-	-	**56**	**28**	**22**	**33**	-	**32**	**33**	**65**	**33**	**28**	**0.28**	-	-
Lead	-	-	-	***0.007***	<0.001	<0.001	<0.001	-	<0.001	<0.0010	**0.0013**	<0.0010	<0.0010	<0.0010	0.015	0.002
Manganese	-	-	-	**0.92**	**0.54**	**0.45**	**0.67**	-	**0.54**	**0.58**	**0.57**	**0.58**	**0.53**	**0.077**	0.300	0.150
Mercury	-	-	-	<0.0002	<0.0002	<0.0002	<0.0002	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.002	0.0005
Nickel	-	-	-	**0.022**	**0.013**	**0.012**	<0.0050	-	**0.0088**	**0.0074**	**0.0091**	**0.0095**	**0.0092**	<0.0050	0.100	0.050
Sodium	-	-	-	**170**	**160**	**130**	**230**	-	**270**	**230**	**270**	**290**	**240**	**18**	-	-
Zinc	-	-	-	**0.043**	<0.02	<0.02	<0.020	-	<0.020	<0.020	**0.025**	<0.020	<0.020	<0.020	-	-
Other Analytes (mg/L)																
Chloride	-	-	-	**203**	**280**	**290**	**380**	-	**480**	**440**	**450**	**500**	**420**	**32**	-	-
COD	-	-	-	**57**	**100**	**63**	**62**	-	**52**	**67**	**41**	**53**	**62**	**32**	-	-
Field Measurements (units as noted)																
pH (std units)	-	-	-	-	-	-	6.5	-	6.5	6.4	6.4	6.3	6.6	6.5	-	-
Temperature (deg C)	-	-	-	-	-	-	13	-	9.8	10.2	10.2	11.2	10.9	11.3	-	-
Spec. Conductivity (uS/cm)	-	-	-	-	-	-	3,010	-	2,800	2,900	2,800	2,300	2,100	2,210	-	-
Water Level (feet btoc)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Sample Date: PARAMETER	10/14/2021	6/3/2022	10/27/2022	5/22/2023											VGES	PAL
VOCs (ug/L)																
1,4-dichlorobenzene	-	<1	-	<1.0											75	38
Diethyl Ether	-	**21**	-	**14.6**											-	-
Acetone	-	**67**	-	<10.0											950	475
Methyl-t-butyl ether (MTBE)	-	**1.4**	-	<2.0											11	5
Tetrahydrofuran	-	**17**	-	<10.0											-	-
Benzene	-	<1	-	<0.5											5	0.5
Chlorobenzene	-	<1	-	<1.0											100	50
Naphthalene	-	**0.56**	-	<0.5											0.5	0.5
Total Metals (mg/L)																
Arsenic	No	**0.016**	No	<0.0010											0.010	0.001
Cadmium	Sample	***0.0022***	Sample	<0.0020											0.005	0.001
Chromium	-	**0.0093**	-	<0.0050											0.100	0.050
Copper	Well	**0.084**	Well	<0.020											1.300	0.650
Iron	Dry	**22**	Dry	**2.4**											-	-
Lead	-	**0.17**	-	***0.0036***											0.015	0.002
Manganese	-	**1.9**	-	**1.3**											0.300	0.150
Mercury	-	<0.0001	-	<0.0002											0.002	0.0005
Nickel	-	**0.033**	-	**0.0081**											0.100	0.050
Sodium	-	**38**	-	**28**											-	-
Zinc	-	**0.094**	-	<0.020											-	-
Other Analytes (mg/L)																
Chloride	-	**41**	-	**24**											-	-
COD	-	**900**	-	**77**											-	-
PFAS (ng/L)																
Perfluorohexanesulfonic acid (PFHxS)	-	-	-	**36**											-	-
Perfluoroheptanoic acid (PFHpA)	-	-	-	**18**												
Perfluorooctanoic acid (PFOA)	-	-	-	**97**												
Perfluorooctanesulfonic acid (PFOS)	-	-	-	**150**												
Perfluorononanoic acid (PFNA)	-	-	-	**4.7**												
Total Regulated PFAS	-	-	-	**305.7**											20	2
Total Non-Regulated PFAS	-	-	-	**68.7**											-	-
Field Measurements (units as noted)																
pH (std units)	-	6.51	-	6.96											-	-
Temperature (deg C)	-	18.1	-	11.3											-	-
Spec. Conductivity (uS/cm)	-	1,643	-	1,487											-	-
Water Level (feet btoc)	-	8.20	-	8.36											-	-

Data prior to 2021 collected by others and obtained from 2019 reports prepared by EIV Technical Services

Data 2021-present collected by KAS, Inc.

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<X = None Detected above Detection Limit (X)

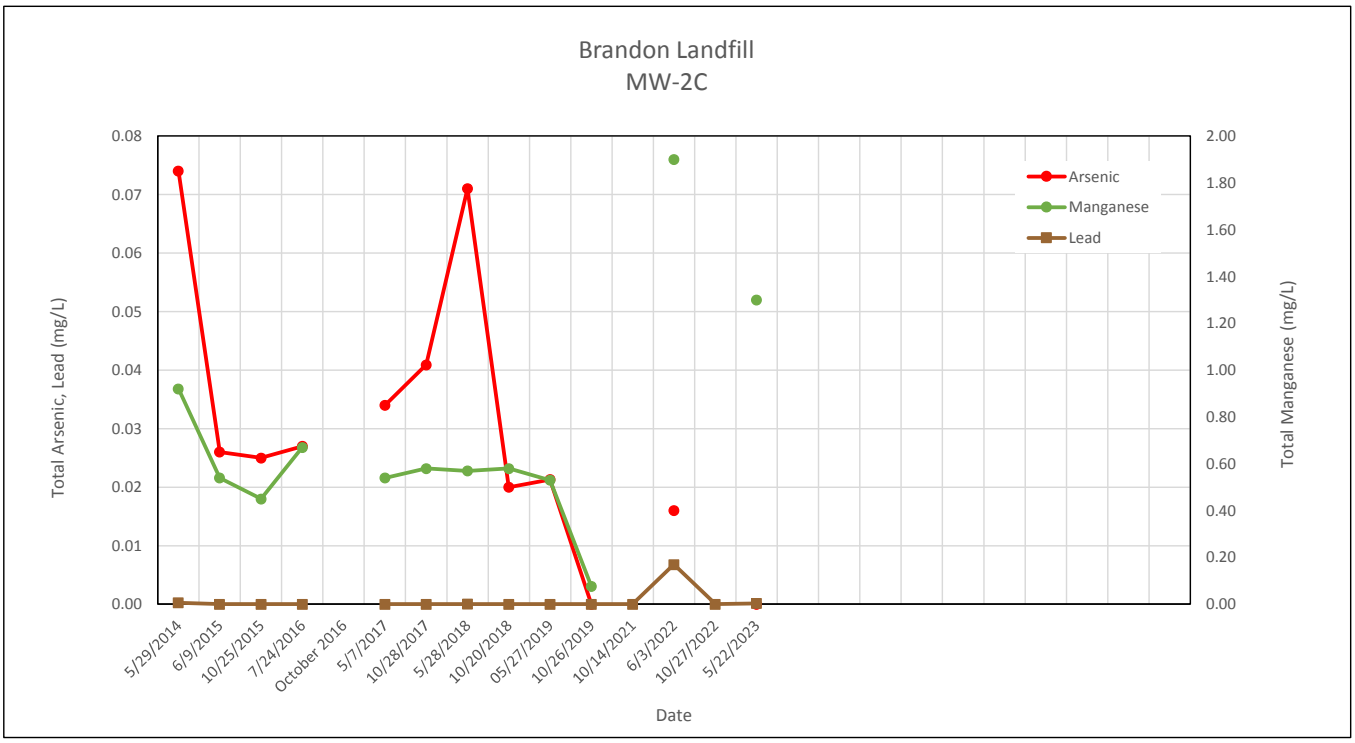
VGES = Vermont Groundwater Enforcement Standard (GWPRS 07/06/2019)

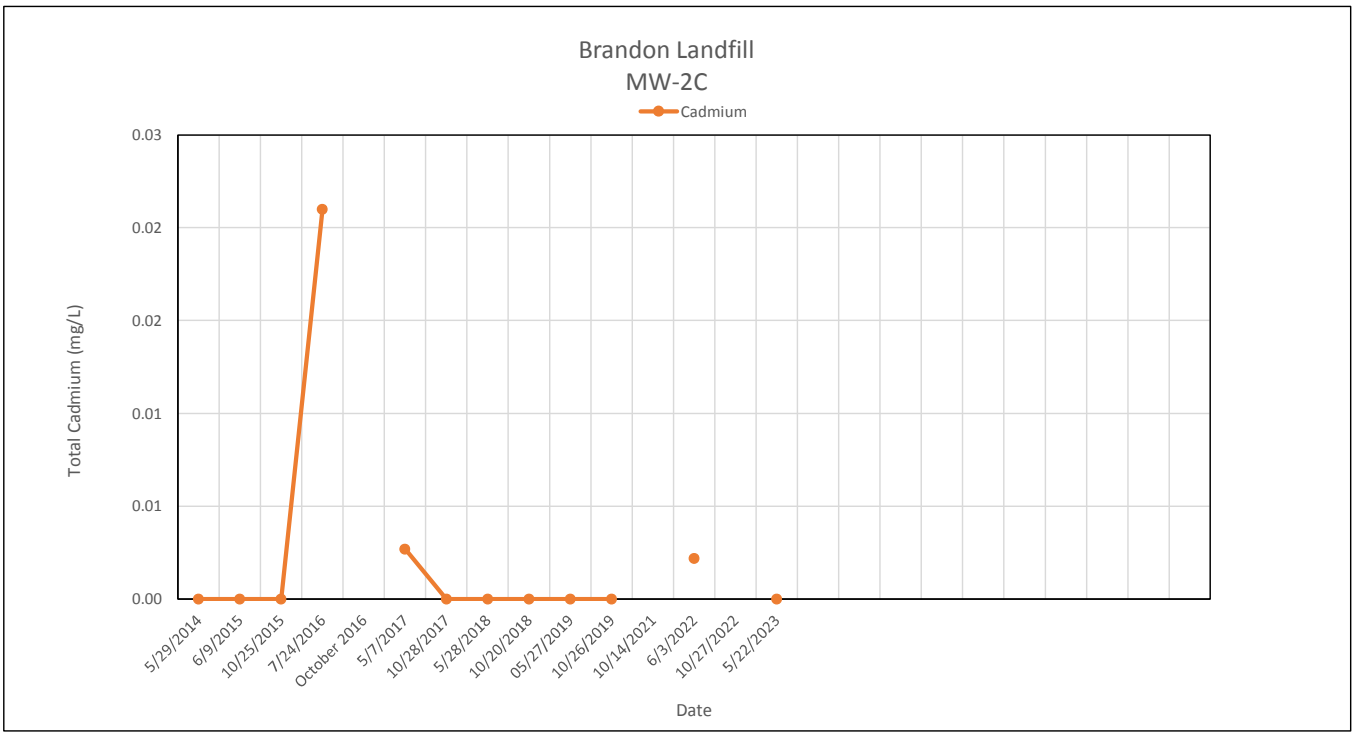
PAL = Vermont Preventive Action Level (GWPRS 07/06/2019)

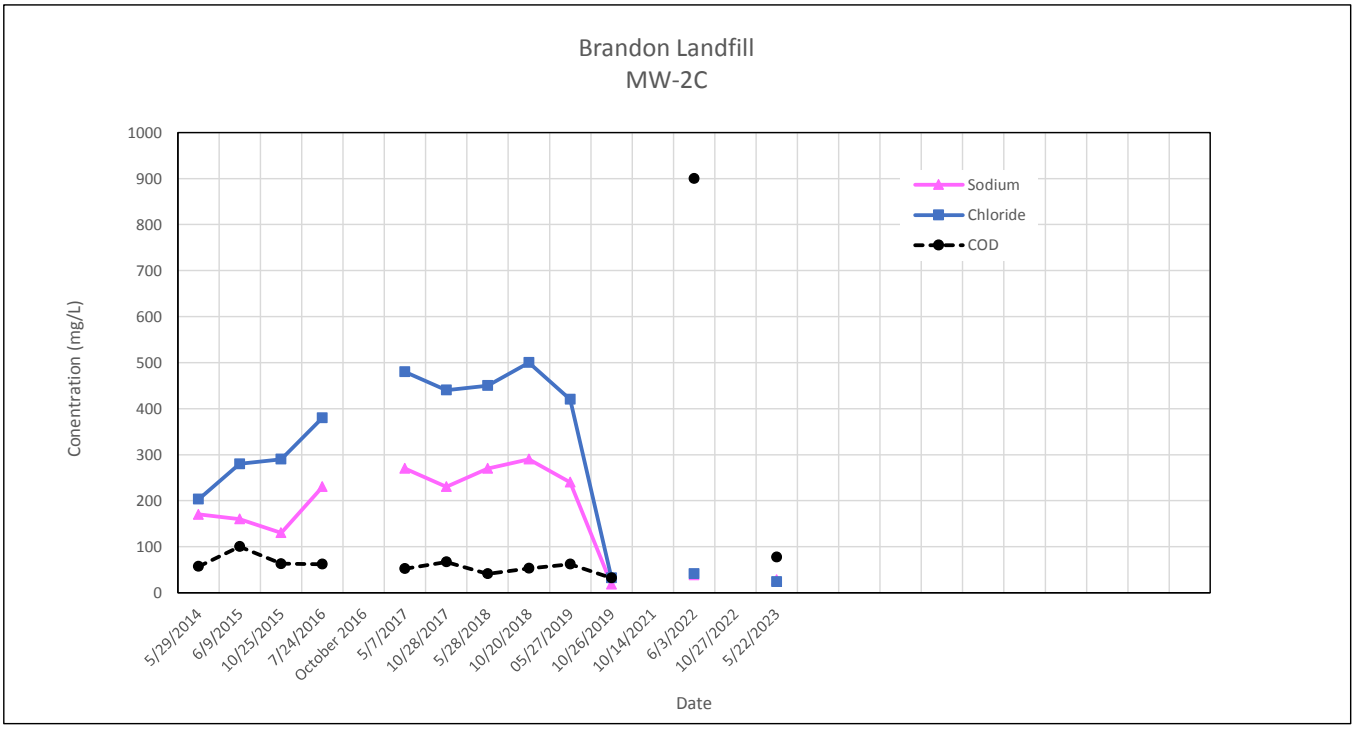
Detections are **bolded**

>VGES

Bold (italic) indicates value exceeds PAL


Brandon Landfill
MW-2C
Arsenic
Manganese
Lead
Total Arsenic, Lead (mg/L)
Total Manganese (mg/L)
0.08
0.07
0.06
0.05
0.04
0.03
0.02
0.01
0.00
2.00
1.80
1.60
1.40
1.20
1.00
0.80
0.60
0.40
0.20
0.00
5/29/2014
6/9/2015
10/25/2015
7/24/2016
October 2016
5/7/2017
10/28/2017
5/28/2018
10/20/2018
05/27/2019
10/26/2019
10/14/2021
6/3/2022
10/27/2022
5/22/2023
Date


Brandon Landfill
MW-2C
Cadmium
Total Cadmium (mg/L)
0.03
0.02
0.02
0.01
0.01
0.00
5/29/2014
6/9/2015
10/25/2015
7/24/2016
October 2016
5/7/2017
10/28/2017
5/28/2018
10/20/2018
05/27/2019
10/26/2019
10/14/2021
6/3/2022
10/27/2022
5/22/2023
Date


Brandon Landfill
MW-2C
Conentration (mg/L)
1000
900
800
700
600
500
400
300
200
100
0
Sodium
Chloride
COD
5/29/2014
6/9/2015
10/25/2015
7/24/2016
October 2016
5/7/2017
10/28/2017
5/28/2018
10/20/2018
05/27/2019
10/26/2019
10/14/2021
6/3/2022
10/27/2022
5/22/2023
Date

Brandon Closed Landfill

MW-3

Sample Date: PARAMETER	2012	4/22/2013	10/1/2013	5/29/2014	6/9/2015	10/25/2015	7/24/2016	October 2016	5/7/2017	10/28/2017	5/28/2018	10/20/2018	05/27/2019	10/26/2019	VGES	PAL
VOCs (ug/L)																
1,1-dichloroethane	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	-	-	-	-	-	-	-	-	70	35
Total Metals (mg/L)																
Arsenic	-	-	-	<0.001	***0.002***	***0.009***	Well	Well	Well	Well	Well	Well	No	No	0.010	0.001
Cadmium	-	-	-	<0.002	<0.002	<0.002	not	not	not	not	not	not	Sample	Sample	0.005	0.001
Chromium	-	-	-	<0.005	<0.005	<0.0052	sampled	sampled	sampled	sampled	sampled	sampled	-	-	0.100	0.050
Copper	-	-	-	<0.020	<0.020	<0.022	-	-	-	-	-	-	Insufficient	Insufficient	1.300	0.650
Iron	-	-	-	**0.41**	**9.1**	**29**	-	-	-	-	-	-	Amount	Amount	-	-
Lead	-	-	-	<0.001	<0.001	***0.008***	-	-	-	-	-	-	of Water	of Water	0.015	0.002
Manganese	-	-	-	<0.020	**1.1**	**1.2**	-	-	-	-	-	-	in Well	in Well	0.300	0.150
Mercury	-	-	-	<0.0002	<0.0002	<0.0002	-	-	-	-	-	-	Column	Column	0.002	0.0005
Nickel	-	-	-	**0.005**	<0.005	**0.016**	-	-	-	-	-	-			0.100	0.050
Sodium	-	-	-	**23**	**20**	**15**	-	-	-	-	-	-	-	-	-	-
Zinc	-	-	-	**0.020**	<0.020	**0.024**	-	-	-	-	-	-	-	-	-	-
Other Analytes (mg/L)																
Chloride	-	-	-	**34**	**31**	**30**	-	-	-	-	-	-	-	-	-	-
COD	-	-	-	**11**	**34**	**34**	-	-	-	-	-	-	-	-	-	-
Field Measurements (units as noted)																
pH (std units)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Temperature (deg C)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Conductivity (uS)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Water Level (feet btoc)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Sample Date: PARAMETER	10/14/2021	6/3/2022	10/27/2022	5/22/2023											VGES	PAL
VOCs (ug/L)																
1,1-dichloroethane	<0.5	<0.5	<1.0	<1.0											70	35
Total Metals (mg/L)																
Arsenic	**0.17**	**0.015**	**0.030**	***0.0075***											0.010	0.001
Cadmium	<0.005	<0.001	<0.0020	<0.0020											0.005	0.001
Chromium	**0.32**	**0.022**	<0.050	**0.0110**											0.100	0.050
Copper	***0.82***	**0.062**	<0.20	**0.021**											1.300	0.650
Iron	**370**	**47**	**57**	**18**											-	-
Lead	**0.51**	**0.036**	**0.0505**	**0.0151**											0.015	0.002
Manganese	**25**	**1.5**	**2.5**	**0.55**											0.300	0.150
Mercury	<0.001	<0.0001	<0.0002	<0.0002											0.002	0.0005
Nickel	**0.49**	**0.036**	***0.0538***	**0.0140**											0.100	0.050
Sodium	**26**	**28**	**23**	**26**											-	-
Zinc	**1.4**	**0.11**	<0.20	**0.042**											-	-
Other Analytes (mg/L)																
Chloride	**34**	**56**	**98**	**44**											-	-
COD	<10	<10	**220**	**79**											-	-
PFAS (ng/L)																
Perfluorohexanesulfonic acid (PFHxS)	-	-	-	<1.8												
Perfluoroheptanoic acid (PFHpA)	-	-	-	<1.8												
Perfluorooctanoic acid (PFOA)	-	-	-	<1.8											-	-
Perfluorooctanesulfonic acid (PFOS)	-	-	-	**5.2**												
Perfluorononanoic acid (PFNA)	-	-	-	<1.8												
Total Regulated PFAS	-	-	-	***5.2***											20	2
Total Non-Regulated PFAS	-	-	-	ND											-	-
Field Measurements (units as noted)																
pH (std units)	6.8	7.14	7.27	7.57											-	-
Temperature (deg C)	11.9	12.3	10.7	13.0											-	-
Spec. Conductivity (uS/cm)	740	773	378.6	715											-	-
Water Level (feet btoc)	33.69	30.78	33.60	31.50											-	-

Data prior to 2021 collected by others and obtained from 2019 reports prepared by EIV Technical Services

Data 2021-present collected by KAS, Inc.

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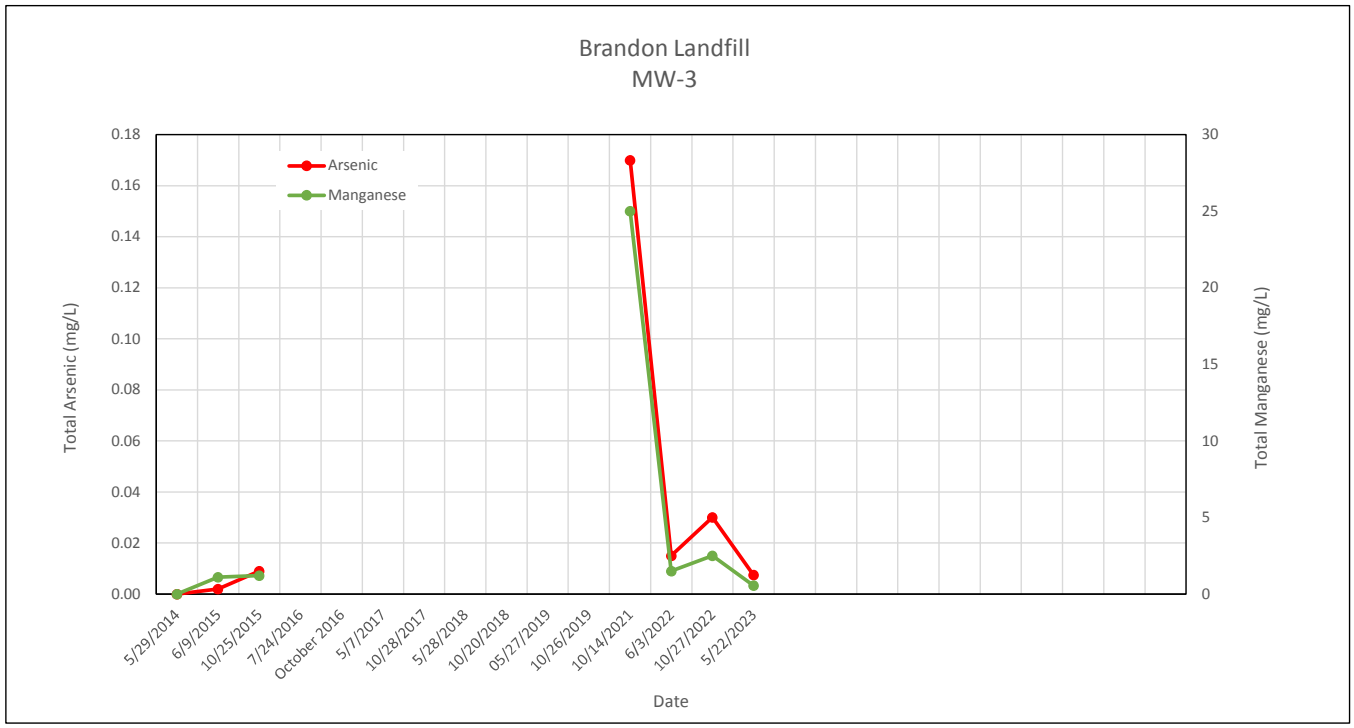
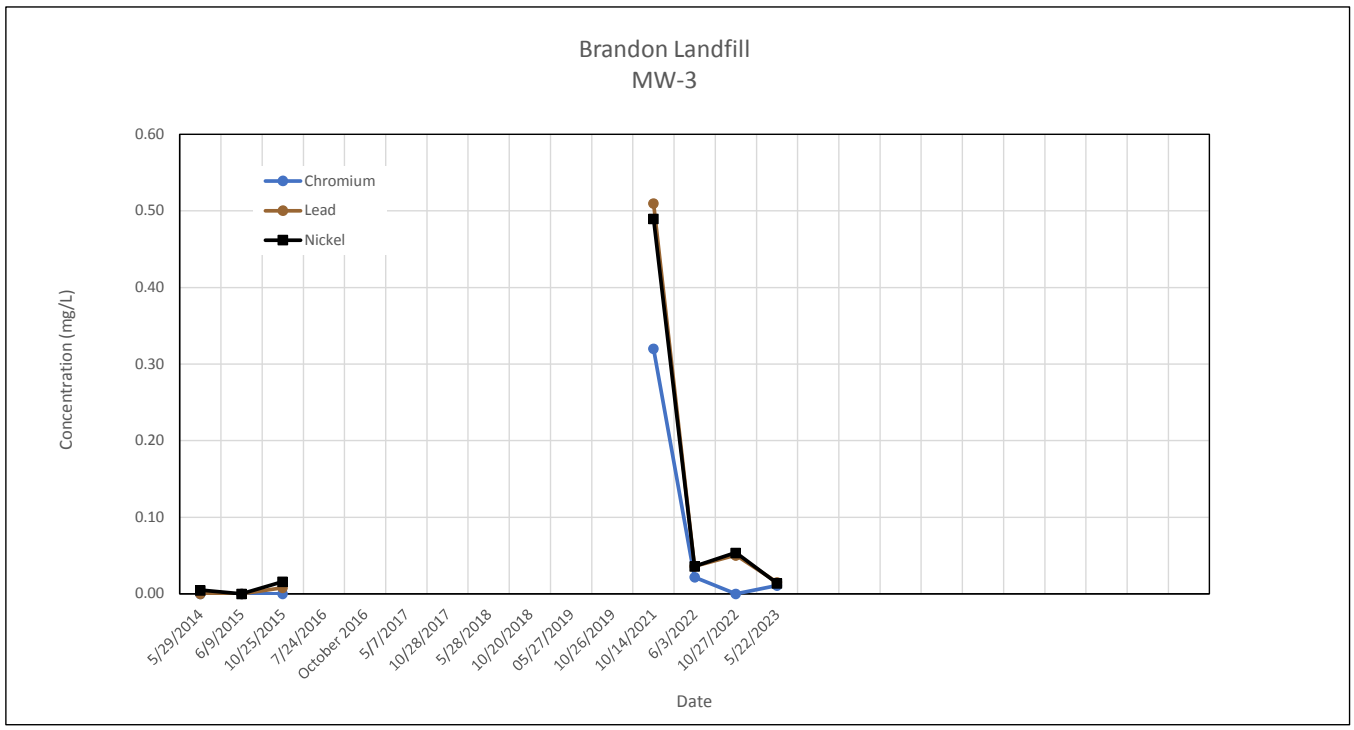
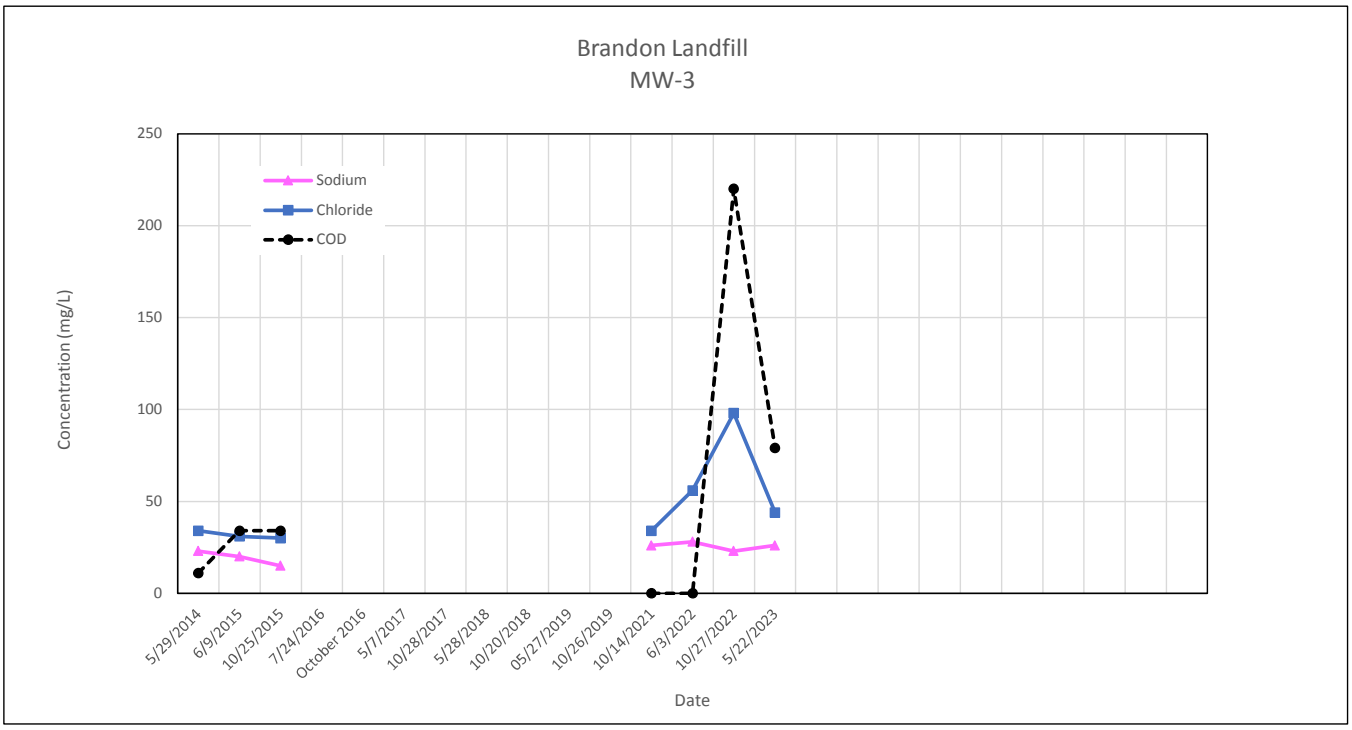
Detections are **bolded**

>VGES

Bold (italic) indicates value exceeds PAL


Brandon Landfill
MW-3
Arsenic
Manganese
Total Arsenic (mg/L)
Total Manganese (mg/L)
0.18
0.16
0.14
0.12
0.10
0.08
0.06
0.04
0.02
0.00
30
25
20
15
10
5
0
5/29/2014
6/9/2015
10/25/2015
7/24/2016
October 2016
5/7/2017
10/28/2017
5/28/2018
10/20/2018
05/27/2019
10/26/2019
10/14/2021
6/3/2022
10/27/2022
5/22/2023
Date


Brandon Landfill
MW-3
Chromium
Lead
Nickel
Concentration (mg/L)
0.60
0.50
0.40
0.30
0.20
0.10
0.00
5/29/2014
6/9/2015
10/25/2015
7/24/2016
October 2016
5/7/2017
10/28/2017
5/28/2018
10/20/2018
05/27/2019
10/26/2019
10/14/2021
6/3/2022
10/27/2022
5/22/2023
Date


Brandon Landfill
MW-3
Sodium
Chloride
COD
Concentration (mg/L)
250
200
150
100
50
0
5/29/2014
6/9/2015
10/25/2015
7/24/2016
October 2016
5/7/2017
10/28/2017
5/28/2018
10/20/2018
05/27/2019
10/26/2019
10/14/2021
6/3/2022
10/27/2022
5/22/2023
Date

Brandon Closed Landfill
MW-5

Sample Date: / PARAMETER	2012	4/22/2013	10/1/2013	5/29/2014	6/9/2015	10/25/2015	7/24/2016	October 2016	5/7/2017	10/28/2017	5/28/2018	10/20/2018	05/27/2019	10/26/2019	VGES	PAL
VOCs (ug/L)																
1,1-dichloroethane	<1.0	-	**1.1**	<1.0	<1.0	-	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1	<1	70	35
Diethyl Ether	-	-	**6.0**	<5.0	<5.0	-	<5.0	-	<5.0	-	-	-	-	-	-	-
Total Metals (mg/L)																
Arsenic	-	Well	-	***0.004***	***0.003***	Well	***0.032***	Data	***0.006***	***0.006***	***0.0040***	***0.0011***	<0.0010	**0.121**	0.010	0.001
Cadmium	-	Not	-	<0.002	<0.002	not	**0.010**	not	**0.0061**	**0.0061**	**0.0083**	***0.0027***	<0.0020	<0.0020	0.005	0.001
Chromium	-	Sampled	-	<0.005	<0.005	sampled	**0.020**	available	**0.0056**	**0.0056**	<0.0050	<0.0050	<0.0050	<0.0050	0.100	0.050
Copper	-	-	-	<0.020	<0.020		**0.076**		<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	1.300	0.650
Iron	-	-	-	**31**	**16**		**120**		**21**	**21**	**13**	**4**	**0.22**	**48**	-	-
Lead	-	-	-	***0.003***	***0.003***	-	**0.044**	-	***0.0080***	***0.0080***	***0.0080***	***0.0022***	<0.0010	<0.0010	0.015	0.002
Manganese	-	-	-	**1.4**	**1.3**	-	**2.6**	-	**0.78**	**0.78**	**1.2**	**0.38**	**1.0**	**0.89**	0.300	0.150
Mercury	-	-	-	<0.0002	<0.0002	-	<0.0002	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.002	0.0005
Nickel	-	-	-	**0.007**	**0.0066**	-	**0.025**	-	**0.0084**	**0.0084**	**0.0082**	<0.0050	<0.0050	**0.0077**	0.100	0.050
Sodium	-	-	-	**26**	**21**	-	**18**	-	**24**	**24**	**25**	**31**	**33**	**150**	-	-
Zinc	-	-	-	**0.020**	**0.020**	-	**0.11**	-	**0.026**	**0.026**	<0.020	<0.020	<0.020	<0.020	-	-
Other Analytes (mg/L)																
Chloride	-	-	-	**38**	**32**	-	**33**	-	**42**	**43**	**40**	**64**	**64**	**260**	-	-
COD	-	-	-	**30**	**25**	-	**54**	-	**31**	**13**	**30**	<10	<10	**45**	-	-
Field Measurements (units as noted)																
pH (std units)	-	-	-	-	-	-	6.4	-	6.0	6.1	6.2	6.2	6.3	6.4	-	-
Temperature (deg C)	-	-	-	-	-	-	15	-	10.7	10.6	10.8	12.0	11.8	11.9	-	-
Conductivity (uS)	-	-	-	-	-	-	-	-	1,160	1,090	1,080	1,120	1,080	1,100	-	-
Water Level (feet btoc)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Sample Date: / PARAMETER	10/14/2021	6/3/2022	10/27/2022	5/22/2023											VGES	PAL
VOCs (ug/L)																
1,1-dichloroethane	-	<0.5	<1.0	<1.0											70	35
Total Metals (mg/L)																
Arsenic	No	**0.0042**	**0.0170**	<0.0010											0.010	0.001
Cadmium	Sample	***0.0016***	<0.0020	<0.0020											0.005	0.001
Chromium		**0.0013**	**0.0052**	<0.0050											0.100	0.050
Copper	Well	**0.0053**	**0.024**	<0.020											1.300	0.650
Iron	Inaccessible	**8.0**	**30**	**0.52**											-	-
Lead	Due to	***0.0029***	**0.0175**	<0.0010											0.015	0.002
Manganese	Lock	**1.9**	**1.3**	**2.1**											0.300	0.150
Mercury		<0.0001	<0.0002	<0.0002											0.002	0.0005
Nickel		**0.0074**	**0.0197**	<0.0050											0.100	0.050
Sodium		**30**	**34**	**34**											-	-
Zinc		**0.014**	**0.047**	<0.020											-	-
Other Analytes (mg/L)																
Chloride	-	**52**	**59**	**59**											-	-
COD	-	<10	**58**	**35**											-	-
PFAS (ng/L)																
Perfluorohexanesulfonic acid (PFHxS)	-	-	-	**17**												
Perfluoroheptanoic acid (PFHpA)	-	-	-	**5.1**												
Perfluorooctanoic acid (PFOA)	-	-	-	**30**											-	-
Perfluorooctanesulfonic acid (PFOS)	-	-	-	**14**												
Perfluorononanoic acid (PFNA)	-	-	-	<1.9												
Total Regulated PFAS	-	-	-	**66.1**											20	2
Total Non-Regulated PFAS	-	-	-	**14.8**											-	-
Field Measurements (units as noted)																
pH (std units)	-	6.58	7.18	6.69											-	-
Temperature (deg C)	-	13.2	11.7	10.1											-	-
Spec. Conductivity (uS/cm)	-	1,109	-	826											-	-
Water Level (feet btoc)	-	4.79	4.97	4.79											-	-

Data prior to 2021 collected by others and obtained from 2019 reports prepared by EIV Technical Services
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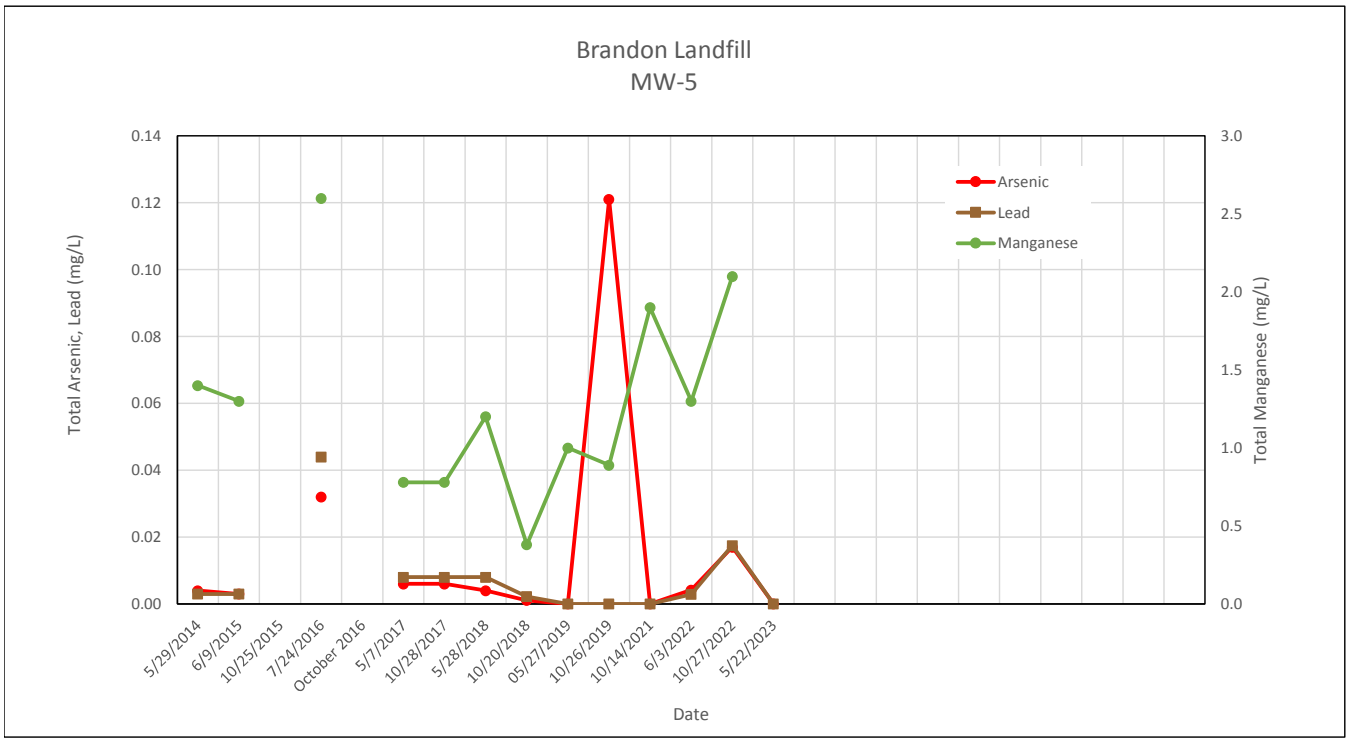
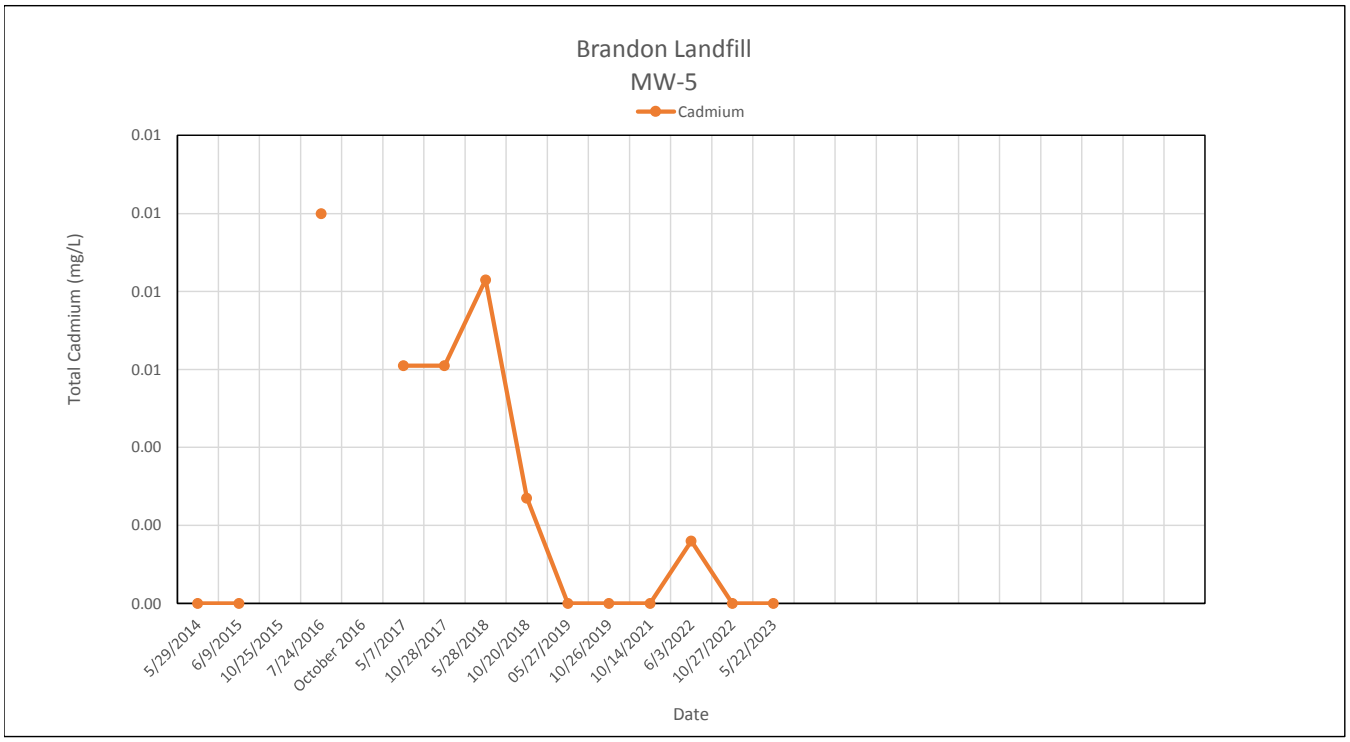
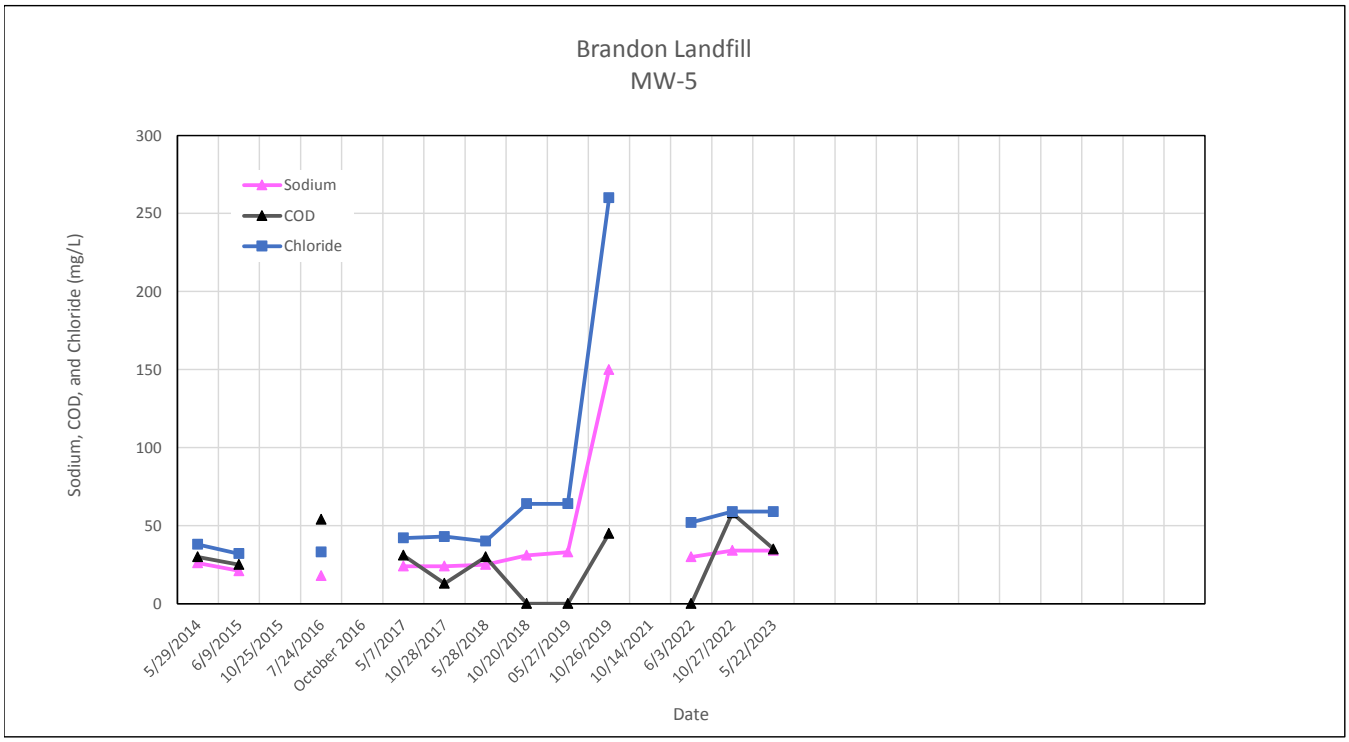
Detections are **bolded**
>VGES
Bold (italic) indicates value exceeds PAL


Brandon Landfill
MW-5
Total Arsenic, Lead (mg/L)
Total Manganese (mg/L)
Arsenic
Lead
Manganese
0.14
0.12
0.10
0.08
0.06
0.04
0.02
0.00
3.0
2.5
2.0
1.5
1.0
0.5
0.0
5/29/2014
6/9/2015
10/25/2015
7/24/2016
October 2016
5/7/2017
10/28/2017
5/28/2018
10/20/2018
05/27/2019
10/26/2019
10/14/2021
6/3/2022
10/27/2022
5/22/2023
Date


Brandon Landfill
MW-5
Cadmium
Total Cadmium (mg/L)
0.01
0.01
0.01
0.01
0.00
0.00
0.00
5/29/2014
6/9/2015
10/25/2015
7/24/2016
October 2016
5/7/2017
10/28/2017
5/28/2018
10/20/2018
05/27/2019
10/26/2019
10/14/2021
6/3/2022
10/27/2022
5/22/2023
Date


Brandon Landfill
MW-5
Sodium, COD, and Chloride (mg/L)
300
250
200
150
100
50
0
Sodium
COD
Chloride
5/29/2014
6/9/2015
10/25/2015
7/24/2016
October 2016
5/7/2017
10/28/2017
5/28/2018
10/20/2018
05/27/2019
10/26/2019
10/14/2021
6/3/2022
10/27/2022
5/22/2023
Date

Brandon Closed Landfill

Quality Assurance/Quality Control Samples

Sample ID: *Sample Date:* PARAMETER	Trip Blank 5/22/2023	Duplicate 5/22/2023	MW-5 5/22/2023	RPD (%)
VOCs (ug/L)				
Total VOCs	ND	ND	ND	-
Total Metals (mg/L)				
Arsenic	-	<0.0010	<0.0010	-
Cadmium	-	<0.0020	<0.0020	-
Chromium	-	<0.0050	<0.0050	-
Copper	-	<0.020	<0.020	-
Iron	-	0.51	0.52	1.9
Lead	-	<0.0010	<0.0010	-
Manganese	-	2.1	2.1	0.0
Mercury	-	<0.0002	<0.0002	-
Nickel	-	<0.0050	<0.0050	-
Sodium	-	35	34	2.9
Zinc	-	<0.020	<0.020	-
Other Analytes (mg/L)				
Chloride	-	58	59	1.7
COD	-	41	35	15.8

Only detected or targeted VOCs are depicted

All values reported in units noted above

"-" = Not Analyzed, RPD could not be calculated due to non-detects or No Applicable Standard

ND = None Detected

<X = None Detected above Detection Limit (X)

RPD = The results of the laboratory analysis of the duplicate sample were analyzed using a relative percent difference (RPD) analysis. The RPD is defined as 100 times the difference in reported concentration between sample and duplicate, divided by the mean of the two samples. A small RPD indicates good correlation between sample and duplicate.

APPENDIX C

Laboratory Reports

ENDYNE Inc.
Environmental Laboratories

Laboratory Report

KAS, Inc 100306
PO Box 787
Williston, VT 05495

Atten: Clare Santos

PROJECT: Brandon Landfill
WORK ORDER: **2305-14321**
DATE RECEIVED: May 26, 2023
DATE REPORTED: June 26, 2023
SAMPLER: HG/KG

Enclosed please find the results of the analyses performed for the samples referenced on the attached chain of custody. All required method quality control elements including instrument calibration were performed in accordance with method requirements and determined to be acceptable unless otherwise noted.

The column labeled Lab/Tech in the accompanying report denotes the laboratory facility where the testing was performed and the technician who conducted the assay. A "W" designates the Williston, VT lab under NELAC certification ELAP 11263; "R" designates the Lebanon, NH facility under certification NH 2037 and "N" the Plattsburgh, NY lab under certification ELAP 11892. "Sub" indicates the testing was performed by a subcontracted laboratory. The accreditation status of the subcontracted lab is referenced in the corresponding NELAC and Qual fields.

The NELAC column also denotes the accreditation status of each laboratory for each reported parameter. "A" indicates the referenced laboratory is NELAC accredited for the parameter reported. "N" indicates the laboratory is not accredited. "U" indicates that NELAC does not offer accreditation for that parameter in that specific matrix. Test results denoted with an "A" meet all National Environmental Laboratory Accreditation Program requirements except where denoted by pertinent data qualifiers. Test results are representative of the samples as they were received at the laboratory

Endyne, Inc. warrants, to the best of its knowledge and belief, the accuracy of the analytical test results contained in this report, but makes no other warranty, expressed or implied, especially no warranties of merchantability or fitness for a particular purpose.

Reviewed by:

Harry B. Locker, Ph.D.
Laboratory Director

CLIENT: KAS, Inc
PROJECT: Brandon Landfill

WORK ORDER: **2305-14321**
DATE RECEIVED: 05/26/2023

001 Site: MW-1 Date Sampled: 5/22/23 Time: 12:25

Parameter	Result	Units	Method	Analysis Date		Lab/Tech	NELAC	Qual.
Chloride	77	mg/L	EPA 300.0	5/30/23	15:52	W ECM	A	
COD	74	mg/L	EPA 410.4	6/6/23		N WEP	A	
Metals Digestion	Digested		EPA 3015A	6/22/23		W MGT	A	
Arsenic, Total	0.0014	mg/L	EPA 6020B	6/24/23	0:04	W MGT	A	
Cadmium, Total	< 0.0020	mg/L	EPA 6020B	6/24/23	0:04	W MGT	A	
Chromium, Total	< 0.0050	mg/L	EPA 6020B	6/24/23	0:04	W MGT	A	
Copper, Total	< 0.020	mg/L	EPA 6020B	6/24/23	0:04	W MGT	A	
Iron, Total	2.4	mg/L	EPA 6010C	6/23/23		W MGT	A	
Lead, Total	< 0.0010	mg/L	EPA 6020B	6/24/23	0:04	W MGT	A	
Manganese, Total	0.25	mg/L	EPA 6020B	6/24/23	0:04	W MGT	A	
Mercury, Total	< 0.0002	mg/L	EPA 6020B	6/24/23	0:04	W MGT	N	
Nickel, Total	< 0.0050	mg/L	EPA 6020B	6/24/23	0:04	W MGT	A	
Sodium, Total	41	mg/L	EPA 6010C	6/23/23		W MGT	A	
Zinc, Total	< 0.020	mg/L	EPA 6020B	6/24/23	0:04	W MGT	A	

002 Site: MW-2C Date Sampled: 5/22/23 Time: 9:30

Parameter	Result	Units	Method	Analysis Date		Lab/Tech	NELAC	Qual.
Chloride	24	mg/L	EPA 300.0	5/30/23	16:12	W ECM	A	
COD	77	mg/L	EPA 410.4	6/6/23		N WEP	A	
Metals Digestion	Digested		EPA 3015A	6/22/23		W MGT	A	
Arsenic, Total	< 0.0010	mg/L	EPA 6020B	6/24/23	0:09	W MGT	A	
Cadmium, Total	< 0.0020	mg/L	EPA 6020B	6/24/23	0:09	W MGT	A	
Chromium, Total	< 0.0050	mg/L	EPA 6020B	6/24/23	0:09	W MGT	A	
Copper, Total	< 0.020	mg/L	EPA 6020B	6/24/23	0:09	W MGT	A	
Iron, Total	2.4	mg/L	EPA 6010C	6/23/23		W MGT	A	
Lead, Total	0.0036	mg/L	EPA 6020B	6/24/23	0:09	W MGT	A	
Manganese, Total	1.3	mg/L	EPA 6020B	6/24/23	0:09	W MGT	A	
Mercury, Total	< 0.0002	mg/L	EPA 6020B	6/24/23	0:09	W MGT	N	
Nickel, Total	0.0081	mg/L	EPA 6020B	6/24/23	0:09	W MGT	A	
Sodium, Total	28	mg/L	EPA 6010C	6/23/23		W MGT	A	
Zinc, Total	< 0.020	mg/L	EPA 6020B	6/24/23	0:09	W MGT	A	

003 Site: MW-3 Date Sampled: 5/22/23 Time: 11:46

Parameter	Result	Units	Method	Analysis Date		Lab/Tech	NELAC	Qual.
Chloride	44	mg/L	EPA 300.0	5/30/23	17:32	W ECM	A	
COD	79	mg/L	EPA 410.4	6/6/23		N WEP	A	
Metals Digestion	Digested		EPA 3015A	6/22/23		W MGT	A	
Arsenic, Total	0.0075	mg/L	EPA 6020B	6/24/23	0:14	W MGT	A	
Cadmium, Total	< 0.0020	mg/L	EPA 6020B	6/24/23	0:14	W MGT	A	
Chromium, Total	0.0110	mg/L	EPA 6020B	6/24/23	0:14	W MGT	A	
Copper, Total	0.021	mg/L	EPA 6020B	6/24/23	0:14	W MGT	A	
Iron, Total	18	mg/L	EPA 6010C	6/23/23		W MGT	A	
Lead, Total	0.0151	mg/L	EPA 6020B	6/24/23	0:14	W MGT	A	
Manganese, Total	0.55	mg/L	EPA 6020B	6/24/23	0:14	W MGT	A	

CLIENT: KAS, Inc
PROJECT: Brandon Landfill

WORK ORDER: **2305-14321**
DATE RECEIVED: 05/26/2023

003 Site: MW-3 Date Sampled: 5/22/23 Time: 11:46

Parameter	Result	Units	Method	Analysis Date		Lab/Tech	NELAC	Qual.
Mercury, Total	< 0.0002	mg/L	EPA 6020B	6/24/23	0:14	W MGT	N	
Nickel, Total	0.0140	mg/L	EPA 6020B	6/24/23	0:14	W MGT	A	
Sodium, Total	26	mg/L	EPA 6010C	6/23/23		W MGT	A	
Zinc, Total	0.042	mg/L	EPA 6020B	6/24/23	0:14	W MGT	A	

004 Site: MW-5 Date Sampled: 5/22/23 Time: 10:35

Parameter	Result	Units	Method	Analysis Date		Lab/Tech	NELAC	Qual.
Chloride	59	mg/L	EPA 300.0	5/30/23	17:52	W ECM	A	
COD	35	mg/L	EPA 410.4	6/6/23		N WEP	A	
Metals Digestion	Digested		EPA 3015A	6/22/23		W MGT	A	
Arsenic, Total	< 0.0010	mg/L	EPA 6020B	6/24/23	0:19	W MGT	A	
Cadmium, Total	< 0.0020	mg/L	EPA 6020B	6/24/23	0:19	W MGT	A	
Chromium, Total	< 0.0050	mg/L	EPA 6020B	6/24/23	0:19	W MGT	A	
Copper, Total	< 0.020	mg/L	EPA 6020B	6/24/23	0:19	W MGT	A	
Iron, Total	0.52	mg/L	EPA 6010C	6/23/23		W MGT	A	B
Lead, Total	< 0.0010	mg/L	EPA 6020B	6/24/23	0:19	W MGT	A	
Manganese, Total	2.1	mg/L	EPA 6020B	6/24/23	0:19	W MGT	A	
Mercury, Total	< 0.0002	mg/L	EPA 6020B	6/24/23	0:19	W MGT	N	
Nickel, Total	< 0.0050	mg/L	EPA 6020B	6/24/23	0:19	W MGT	A	
Sodium, Total	34	mg/L	EPA 6010C	6/23/23		W MGT	A	
Zinc, Total	< 0.020	mg/L	EPA 6020B	6/24/23	0:19	W MGT	A	

005 Site: Duplicate Date Sampled: 5/22/23 Time: 10:35

Parameter	Result	Units	Method	Analysis Date		Lab/Tech	NELAC	Qual.
Chloride	58	mg/L	EPA 300.0	5/30/23	18:12	W ECM	A	
COD	41	mg/L	EPA 410.4	6/6/23		N WEP	A	
Metals Digestion	Digested		EPA 3015A	6/22/23		W MGT	A	
Arsenic, Total	< 0.0010	mg/L	EPA 6020B	6/24/23	0:24	W MGT	A	
Cadmium, Total	< 0.0020	mg/L	EPA 6020B	6/24/23	0:24	W MGT	A	
Chromium, Total	< 0.0050	mg/L	EPA 6020B	6/24/23	0:24	W MGT	A	
Copper, Total	< 0.020	mg/L	EPA 6020B	6/24/23	0:24	W MGT	A	
Iron, Total	0.51	mg/L	EPA 6010C	6/23/23		W MGT	A	B
Lead, Total	< 0.0010	mg/L	EPA 6020B	6/24/23	0:24	W MGT	A	
Manganese, Total	2.1	mg/L	EPA 6020B	6/24/23	0:24	W MGT	A	
Mercury, Total	< 0.0002	mg/L	EPA 6020B	6/24/23	0:24	W MGT	N	
Nickel, Total	< 0.0050	mg/L	EPA 6020B	6/24/23	0:24	W MGT	A	
Sodium, Total	35	mg/L	EPA 6010C	6/23/23		W MGT	A	
Zinc, Total	< 0.020	mg/L	EPA 6020B	6/24/23	0:24	W MGT	A	

CLIENT: KAS, Inc
PROJECT: Brandon Landfill

WORK ORDER: **2305-14321**
DATE RECEIVED: 05/26/2023

TEST METHOD: EPA 8260C

001 Site: MW-1 Sampled: 5/22/23 12:25 Test Date: 6/2/23 W TRP

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
Dichlorodifluoromethane	< 5.0	ug/L	A		Chloromethane	< 3.0	ug/L	A	
Vinyl chloride	< 0.5	ug/L	A		Bromomethane	< 0.5	ug/L	A	
Chloroethane	< 5.0	ug/L	A		Trichlorofluoromethane	< 2.0	ug/L	A	
Diethyl ether	< 5.0	ug/L	N		1,1-Dichloroethene	< 0.7	ug/L	A	
Acetone	< 10.0	ug/L	A		Carbon disulfide	< 5.0	ug/L	A	
Methylene chloride	< 5.0	ug/L	A		t-Butanol	< 20.0	ug/L	N	QA-
Methyl-t-butyl ether (MTBE)	< 2.0	ug/L	A		trans-1,2-Dichloroethene	< 1.0	ug/L	A	
Di-isopropyl ether (DIPE)	< 2.0	ug/L	N		1,1-Dichloroethane	< 1.0	ug/L	A	
Ethyl-t-butyl ether (ETBE)	< 2.0	ug/L	N		2-Butanone	< 10.0	ug/L	A	
2,2-Dichloropropane	< 1.0	ug/L	N		cis-1,2-Dichloroethene	< 1.0	ug/L	A	
Bromochloromethane	< 0.8	ug/L	A		Chloroform	< 1.0	ug/L	A	
Tetrahydrofuran	< 10.0	ug/L	N		1,1,1-Trichloroethane	< 1.0	ug/L	A	
Carbon tetrachloride	< 0.5	ug/L	A		1,1-Dichloropropene	< 1.0	ug/L	N	
Benzene	< 0.5	ug/L	A		t-Amylmethyl ether (TAME)	< 2.0	ug/L	N	
1,2-Dichloroethane	< 0.5	ug/L	A		Trichloroethene	< 0.5	ug/L	A	
1,2-Dichloropropane	< 0.5	ug/L	A		Dibromomethane	< 2.0	ug/L	A	
Bromodichloromethane	< 0.5	ug/L	A		cis-1,3-Dichloropropene	< 1.0	ug/L	A	
4-Methyl-2-pentanone (MIBK)	< 10.0	ug/L	A		Toluene	< 1.0	ug/L	A	
trans-1,3-Dichloropropene	< 1.0	ug/L	A		1,1,2-Trichloroethane	< 1.0	ug/L	A	
Tetrachloroethene	< 0.5	ug/L	A		1,3-Dichloropropane	< 1.0	ug/L	N	
2-Hexanone	< 10.0	ug/L	A		Dibromochloromethane	< 1.0	ug/L	A	
1,2-Dibromoethane	< 2.0	ug/L	A		Chlorobenzene	< 1.0	ug/L	A	
Ethylbenzene	< 1.0	ug/L	A		1,1,1,2-Tetrachloroethane	< 2.0	ug/L	A	
Xylenes, Total	< 2.0	ug/L	A		Styrene	< 1.0	ug/L	A	
Bromoform	< 2.0	ug/L	A		Isopropylbenzene	< 1.0	ug/L	A	
1,1,2,2-Tetrachloroethane	< 2.0	ug/L	A		Bromobenzene	< 1.0	ug/L	A	
n-Propylbenzene	< 1.0	ug/L	A		1,2,3-Trichloropropane	< 2.0	ug/L	A	
2-Chlorotoluene	< 1.0	ug/L	A		1,3,5-Trimethylbenzene	< 1.0	ug/L	A	
4-Chlorotoluene	< 1.0	ug/L	A		t-Butylbenzene	< 1.0	ug/L	A	
1,2,4-Trimethylbenzene	< 1.0	ug/L	A		s-Butylbenzene	< 1.0	ug/L	A	
4-Isopropyltoluene	< 1.0	ug/L	A		1,3-Dichlorobenzene	< 1.0	ug/L	A	
1,4-Dichlorobenzene	< 1.0	ug/L	A		1,2,3-Trimethylbenzene	< 1.0	ug/L	U	
n-Butylbenzene	< 1.0	ug/L	A		1,2-Dichlorobenzene	< 1.0	ug/L	A	
1,2-Dibromo-3-Chloropropane	< 2.0	ug/L	A		1,2,4-Trichlorobenzene	< 2.0	ug/L	A	
1,3,5-Trichlorobenzene	< 2.0	ug/L	N		Hexachlorobutadiene	< 0.5	ug/L	A	
Naphthalene	< 0.5	ug/L	A		1,2,3-Trichlorobenzene	< 0.5	ug/L	A	
Surr. 1 (Dibromofluoromethane)	97	%	A		Surr. 2 (Toluene d8)	99	%	A	
Surr. 3 (4-Bromofluorobenzene)	97	%	A		Unidentified Peaks	0		U	

CLIENT: KAS, Inc
PROJECT: Brandon Landfill

WORK ORDER: **2305-14321**
DATE RECEIVED: 05/26/2023

TEST METHOD: EPA 8260C

002 Site: MW-2C Sampled: 5/22/23 9:30 Test Date: 6/2/23 W TRP

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
Dichlorodifluoromethane	< 5.0	ug/L	A		Chloromethane	< 3.0	ug/L	A	
Vinyl chloride	< 0.5	ug/L	A		Bromomethane	< 0.5	ug/L	A	
Chloroethane	< 5.0	ug/L	A		Trichlorofluoromethane	< 2.0	ug/L	A	
Diethyl ether	14.6	ug/L	N		1,1-Dichloroethene	< 0.7	ug/L	A	
Acetone	< 10.0	ug/L	A		Carbon disulfide	< 5.0	ug/L	A	
Methylene chloride	< 5.0	ug/L	A		t-Butanol	< 20.0	ug/L	N	QA-
Methyl-t-butyl ether (MTBE)	< 2.0	ug/L	A		trans-1,2-Dichloroethene	< 1.0	ug/L	A	
Di-isopropyl ether (DIPE)	< 2.0	ug/L	N		1,1-Dichloroethane	< 1.0	ug/L	A	
Ethyl-t-butyl ether (ETBE)	< 2.0	ug/L	N		2-Butanone	< 10.0	ug/L	A	
2,2-Dichloropropane	< 1.0	ug/L	N		cis-1,2-Dichloroethene	< 1.0	ug/L	A	
Bromochloromethane	< 0.8	ug/L	A		Chloroform	< 1.0	ug/L	A	
Tetrahydrofuran	< 10.0	ug/L	N		1,1,1-Trichloroethane	< 1.0	ug/L	A	
Carbon tetrachloride	< 0.5	ug/L	A		1,1-Dichloropropene	< 1.0	ug/L	N	
Benzene	< 0.5	ug/L	A		t-Amylmethyl ether (TAME)	< 2.0	ug/L	N	
1,2-Dichloroethane	< 0.5	ug/L	A		Trichloroethene	< 0.5	ug/L	A	
1,2-Dichloropropane	< 0.5	ug/L	A		Dibromomethane	< 2.0	ug/L	A	
Bromodichloromethane	< 0.5	ug/L	A		cis-1,3-Dichloropropene	< 1.0	ug/L	A	
4-Methyl-2-pentanone (MIBK)	< 10.0	ug/L	A		Toluene	< 1.0	ug/L	A	
trans-1,3-Dichloropropene	< 1.0	ug/L	A		1,1,2-Trichloroethane	< 1.0	ug/L	A	
Tetrachloroethene	< 0.5	ug/L	A		1,3-Dichloropropane	< 1.0	ug/L	N	
2-Hexanone	< 10.0	ug/L	A		Dibromochloromethane	< 1.0	ug/L	A	
1,2-Dibromoethane	< 2.0	ug/L	A		Chlorobenzene	< 1.0	ug/L	A	
Ethylbenzene	< 1.0	ug/L	A		1,1,1,2-Tetrachloroethane	< 2.0	ug/L	A	
Xylenes, Total	< 2.0	ug/L	A		Styrene	< 1.0	ug/L	A	
Bromoform	< 2.0	ug/L	A		Isopropylbenzene	< 1.0	ug/L	A	
1,1,2,2-Tetrachloroethane	< 2.0	ug/L	A		Bromobenzene	< 1.0	ug/L	A	
n-Propylbenzene	< 1.0	ug/L	A		1,2,3-Trichloropropane	< 2.0	ug/L	A	
2-Chlorotoluene	< 1.0	ug/L	A		1,3,5-Trimethylbenzene	< 1.0	ug/L	A	
4-Chlorotoluene	< 1.0	ug/L	A		t-Butylbenzene	< 1.0	ug/L	A	
1,2,4-Trimethylbenzene	< 1.0	ug/L	A		s-Butylbenzene	< 1.0	ug/L	A	
4-Isopropyltoluene	< 1.0	ug/L	A		1,3-Dichlorobenzene	< 1.0	ug/L	A	
1,4-Dichlorobenzene	< 1.0	ug/L	A		1,2,3-Trimethylbenzene	< 1.0	ug/L	U	
n-Butylbenzene	< 1.0	ug/L	A		1,2-Dichlorobenzene	< 1.0	ug/L	A	
1,2-Dibromo-3-Chloropropane	< 2.0	ug/L	A		1,2,4-Trichlorobenzene	< 2.0	ug/L	A	
1,3,5-Trichlorobenzene	< 2.0	ug/L	N		Hexachlorobutadiene	< 0.5	ug/L	A	
Naphthalene	< 0.5	ug/L	A		1,2,3-Trichlorobenzene	< 0.5	ug/L	A	
Surr. 1 (Dibromofluoromethane)	98	%	A		Surr. 2 (Toluene d8)	99	%	A	
Surr. 3 (4-Bromofluorobenzene)	98	%	A		Unidentified Peaks	0		U	

CLIENT: KAS, Inc
PROJECT: Brandon Landfill

WORK ORDER: **2305-14321**
DATE RECEIVED: 05/26/2023

TEST METHOD: EPA 8260C

003 Site: MW-3 Sampled: 5/22/23 11:46 Test Date: 6/2/23 W TRP

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
Dichlorodifluoromethane	< 5.0	ug/L	A		Chloromethane	< 3.0	ug/L	A	
Vinyl chloride	< 0.5	ug/L	A		Bromomethane	< 0.5	ug/L	A	
Chloroethane	< 5.0	ug/L	A		Trichlorofluoromethane	< 2.0	ug/L	A	
Diethyl ether	< 5.0	ug/L	N		1,1-Dichloroethene	< 0.7	ug/L	A	
Acetone	< 10.0	ug/L	A		Carbon disulfide	< 5.0	ug/L	A	
Methylene chloride	< 5.0	ug/L	A		t-Butanol	< 20.0	ug/L	N	QA-
Methyl-t-butyl ether (MTBE)	< 2.0	ug/L	A		trans-1,2-Dichloroethene	< 1.0	ug/L	A	
Di-isopropyl ether (DIPE)	< 2.0	ug/L	N		1,1-Dichloroethane	< 1.0	ug/L	A	
Ethyl-t-butyl ether (ETBE)	< 2.0	ug/L	N		2-Butanone	< 10.0	ug/L	A	
2,2-Dichloropropane	< 1.0	ug/L	N		cis-1,2-Dichloroethene	< 1.0	ug/L	A	
Bromochloromethane	< 0.8	ug/L	A		Chloroform	< 1.0	ug/L	A	
Tetrahydrofuran	< 10.0	ug/L	N		1,1,1-Trichloroethane	< 1.0	ug/L	A	
Carbon tetrachloride	< 0.5	ug/L	A		1,1-Dichloropropene	< 1.0	ug/L	N	
Benzene	< 0.5	ug/L	A		t-Amylmethyl ether (TAME)	< 2.0	ug/L	N	
1,2-Dichloroethane	< 0.5	ug/L	A		Trichloroethene	< 0.5	ug/L	A	
1,2-Dichloropropane	< 0.5	ug/L	A		Dibromomethane	< 2.0	ug/L	A	
Bromodichloromethane	< 0.5	ug/L	A		cis-1,3-Dichloropropene	< 1.0	ug/L	A	
4-Methyl-2-pentanone (MIBK)	< 10.0	ug/L	A		Toluene	< 1.0	ug/L	A	
trans-1,3-Dichloropropene	< 1.0	ug/L	A		1,1,2-Trichloroethane	< 1.0	ug/L	A	
Tetrachloroethene	< 0.5	ug/L	A		1,3-Dichloropropane	< 1.0	ug/L	N	
2-Hexanone	< 10.0	ug/L	A		Dibromochloromethane	< 1.0	ug/L	A	
1,2-Dibromoethane	< 2.0	ug/L	A		Chlorobenzene	< 1.0	ug/L	A	
Ethylbenzene	< 1.0	ug/L	A		1,1,1,2-Tetrachloroethane	< 2.0	ug/L	A	
Xylenes, Total	< 2.0	ug/L	A		Styrene	< 1.0	ug/L	A	
Bromoform	< 2.0	ug/L	A		Isopropylbenzene	< 1.0	ug/L	A	
1,1,2,2-Tetrachloroethane	< 2.0	ug/L	A		Bromobenzene	< 1.0	ug/L	A	
n-Propylbenzene	< 1.0	ug/L	A		1,2,3-Trichloropropane	< 2.0	ug/L	A	
2-Chlorotoluene	< 1.0	ug/L	A		1,3,5-Trimethylbenzene	< 1.0	ug/L	A	
4-Chlorotoluene	< 1.0	ug/L	A		t-Butylbenzene	< 1.0	ug/L	A	
1,2,4-Trimethylbenzene	< 1.0	ug/L	A		s-Butylbenzene	< 1.0	ug/L	A	
4-Isopropyltoluene	< 1.0	ug/L	A		1,3-Dichlorobenzene	< 1.0	ug/L	A	
1,4-Dichlorobenzene	< 1.0	ug/L	A		1,2,3-Trimethylbenzene	< 1.0	ug/L	U	
n-Butylbenzene	< 1.0	ug/L	A		1,2-Dichlorobenzene	< 1.0	ug/L	A	
1,2-Dibromo-3-Chloropropane	< 2.0	ug/L	A		1,2,4-Trichlorobenzene	< 2.0	ug/L	A	
1,3,5-Trichlorobenzene	< 2.0	ug/L	N		Hexachlorobutadiene	< 0.5	ug/L	A	
Naphthalene	< 0.5	ug/L	A		1,2,3-Trichlorobenzene	< 0.5	ug/L	A	
Surr. 1 (Dibromofluoromethane)	100	%	A		Surr. 2 (Toluene d8)	99	%	A	
Surr. 3 (4-Bromofluorobenzene)	99	%	A		Unidentified Peaks	4		U	

CLIENT: KAS, Inc
PROJECT: Brandon Landfill

WORK ORDER: **2305-14321**
DATE RECEIVED: 05/26/2023

TEST METHOD: EPA 8260C

004 Site: MW-5 Sampled: 5/22/23 10:35 Test Date: 6/2/23 W TRP

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
Dichlorodifluoromethane	< 5.0	ug/L	A		Chloromethane	< 3.0	ug/L	A	
Vinyl chloride	< 0.5	ug/L	A		Bromomethane	< 0.5	ug/L	A	
Chloroethane	< 5.0	ug/L	A		Trichlorofluoromethane	< 2.0	ug/L	A	
Diethyl ether	< 5.0	ug/L	N		1,1-Dichloroethene	< 0.7	ug/L	A	
Acetone	< 10.0	ug/L	A		Carbon disulfide	< 5.0	ug/L	A	
Methylene chloride	< 5.0	ug/L	A		t-Butanol	< 20.0	ug/L	N	QA-
Methyl-t-butyl ether (MTBE)	< 2.0	ug/L	A		trans-1,2-Dichloroethene	< 1.0	ug/L	A	
Di-isopropyl ether (DIPE)	< 2.0	ug/L	N		1,1-Dichloroethane	< 1.0	ug/L	A	
Ethyl-t-butyl ether (ETBE)	< 2.0	ug/L	N		2-Butanone	< 10.0	ug/L	A	
2,2-Dichloropropane	< 1.0	ug/L	N		cis-1,2-Dichloroethene	< 1.0	ug/L	A	
Bromochloromethane	< 0.8	ug/L	A		Chloroform	< 1.0	ug/L	A	
Tetrahydrofuran	< 10.0	ug/L	N		1,1,1-Trichloroethane	< 1.0	ug/L	A	
Carbon tetrachloride	< 0.5	ug/L	A		1,1-Dichloropropene	< 1.0	ug/L	N	
Benzene	< 0.5	ug/L	A		t-Amylmethyl ether (TAME)	< 2.0	ug/L	N	
1,2-Dichloroethane	< 0.5	ug/L	A		Trichloroethene	< 0.5	ug/L	A	
1,2-Dichloropropane	< 0.5	ug/L	A		Dibromomethane	< 2.0	ug/L	A	
Bromodichloromethane	< 0.5	ug/L	A		cis-1,3-Dichloropropene	< 1.0	ug/L	A	
4-Methyl-2-pentanone (MIBK)	< 10.0	ug/L	A		Toluene	< 1.0	ug/L	A	
trans-1,3-Dichloropropene	< 1.0	ug/L	A		1,1,2-Trichloroethane	< 1.0	ug/L	A	
Tetrachloroethene	< 0.5	ug/L	A		1,3-Dichloropropane	< 1.0	ug/L	N	
2-Hexanone	< 10.0	ug/L	A		Dibromochloromethane	< 1.0	ug/L	A	
1,2-Dibromoethane	< 2.0	ug/L	A		Chlorobenzene	< 1.0	ug/L	A	
Ethylbenzene	< 1.0	ug/L	A		1,1,1,2-Tetrachloroethane	< 2.0	ug/L	A	
Xylenes, Total	< 2.0	ug/L	A		Styrene	< 1.0	ug/L	A	
Bromoform	< 2.0	ug/L	A		Isopropylbenzene	< 1.0	ug/L	A	
1,1,2,2-Tetrachloroethane	< 2.0	ug/L	A		Bromobenzene	< 1.0	ug/L	A	
n-Propylbenzene	< 1.0	ug/L	A		1,2,3-Trichloropropane	< 2.0	ug/L	A	
2-Chlorotoluene	< 1.0	ug/L	A		1,3,5-Trimethylbenzene	< 1.0	ug/L	A	
4-Chlorotoluene	< 1.0	ug/L	A		t-Butylbenzene	< 1.0	ug/L	A	
1,2,4-Trimethylbenzene	< 1.0	ug/L	A		s-Butylbenzene	< 1.0	ug/L	A	
4-Isopropyltoluene	< 1.0	ug/L	A		1,3-Dichlorobenzene	< 1.0	ug/L	A	
1,4-Dichlorobenzene	< 1.0	ug/L	A		1,2,3-Trimethylbenzene	< 1.0	ug/L	U	
n-Butylbenzene	< 1.0	ug/L	A		1,2-Dichlorobenzene	< 1.0	ug/L	A	
1,2-Dibromo-3-Chloropropane	< 2.0	ug/L	A		1,2,4-Trichlorobenzene	< 2.0	ug/L	A	
1,3,5-Trichlorobenzene	< 2.0	ug/L	N		Hexachlorobutadiene	< 0.5	ug/L	A	
Naphthalene	< 0.5	ug/L	A		1,2,3-Trichlorobenzene	< 0.5	ug/L	A	
Surr. 1 (Dibromofluoromethane)	100	%	A		Surr. 2 (Toluene d8)	100	%	A	
Surr. 3 (4-Bromofluorobenzene)	99	%	A		Unidentified Peaks	0		U	

CLIENT: KAS, Inc
PROJECT: Brandon Landfill

WORK ORDER: **2305-14321**
DATE RECEIVED: 05/26/2023

TEST METHOD: EPA 8260C

005 Site: Duplicate Sampled: 5/22/23 10:35 Test Date: 6/3/23 W TRP

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
Dichlorodifluoromethane	< 5.0	ug/L	A		Chloromethane	< 3.0	ug/L	A	
Vinyl chloride	< 0.5	ug/L	A		Bromomethane	< 0.5	ug/L	A	
Chloroethane	< 5.0	ug/L	A		Trichlorofluoromethane	< 2.0	ug/L	A	
Diethyl ether	< 5.0	ug/L	N		1,1-Dichloroethene	< 0.7	ug/L	A	
Acetone	< 10.0	ug/L	A		Carbon disulfide	< 5.0	ug/L	A	
Methylene chloride	< 5.0	ug/L	A		t-Butanol	< 20.0	ug/L	N	QA-
Methyl-t-butyl ether (MTBE)	< 2.0	ug/L	A		trans-1,2-Dichloroethene	< 1.0	ug/L	A	
Di-isopropyl ether (DIPE)	< 2.0	ug/L	N		1,1-Dichloroethane	< 1.0	ug/L	A	
Ethyl-t-butyl ether (ETBE)	< 2.0	ug/L	N		2-Butanone	< 10.0	ug/L	A	
2,2-Dichloropropane	< 1.0	ug/L	N		cis-1,2-Dichloroethene	< 1.0	ug/L	A	
Bromochloromethane	< 0.8	ug/L	A		Chloroform	< 1.0	ug/L	A	
Tetrahydrofuran	< 10.0	ug/L	N		1,1,1-Trichloroethane	< 1.0	ug/L	A	
Carbon tetrachloride	< 0.5	ug/L	A		1,1-Dichloropropene	< 1.0	ug/L	N	
Benzene	< 0.5	ug/L	A		t-Amylmethyl ether (TAME)	< 2.0	ug/L	N	
1,2-Dichloroethane	< 0.5	ug/L	A		Trichloroethene	< 0.5	ug/L	A	
1,2-Dichloropropane	< 0.5	ug/L	A		Dibromomethane	< 2.0	ug/L	A	
Bromodichloromethane	< 0.5	ug/L	A		cis-1,3-Dichloropropene	< 1.0	ug/L	A	
4-Methyl-2-pentanone (MIBK)	< 10.0	ug/L	A		Toluene	< 1.0	ug/L	A	
trans-1,3-Dichloropropene	< 1.0	ug/L	A		1,1,2-Trichloroethane	< 1.0	ug/L	A	
Tetrachloroethene	< 0.5	ug/L	A		1,3-Dichloropropane	< 1.0	ug/L	N	
2-Hexanone	< 10.0	ug/L	A		Dibromochloromethane	< 1.0	ug/L	A	
1,2-Dibromoethane	< 2.0	ug/L	A		Chlorobenzene	< 1.0	ug/L	A	
Ethylbenzene	< 1.0	ug/L	A		1,1,1,2-Tetrachloroethane	< 2.0	ug/L	A	
Xylenes, Total	< 2.0	ug/L	A		Styrene	< 1.0	ug/L	A	
Bromoform	< 2.0	ug/L	A		Isopropylbenzene	< 1.0	ug/L	A	
1,1,2,2-Tetrachloroethane	< 2.0	ug/L	A		Bromobenzene	< 1.0	ug/L	A	
n-Propylbenzene	< 1.0	ug/L	A		1,2,3-Trichloropropane	< 2.0	ug/L	A	
2-Chlorotoluene	< 1.0	ug/L	A		1,3,5-Trimethylbenzene	< 1.0	ug/L	A	
4-Chlorotoluene	< 1.0	ug/L	A		t-Butylbenzene	< 1.0	ug/L	A	
1,2,4-Trimethylbenzene	< 1.0	ug/L	A		s-Butylbenzene	< 1.0	ug/L	A	
4-Isopropyltoluene	< 1.0	ug/L	A		1,3-Dichlorobenzene	< 1.0	ug/L	A	
1,4-Dichlorobenzene	< 1.0	ug/L	A		1,2,3-Trimethylbenzene	< 1.0	ug/L	U	
n-Butylbenzene	< 1.0	ug/L	A		1,2-Dichlorobenzene	< 1.0	ug/L	A	
1,2-Dibromo-3-Chloropropane	< 2.0	ug/L	A		1,2,4-Trichlorobenzene	< 2.0	ug/L	A	
1,3,5-Trichlorobenzene	< 2.0	ug/L	N		Hexachlorobutadiene	< 0.5	ug/L	A	
Naphthalene	< 0.5	ug/L	A		1,2,3-Trichlorobenzene	< 0.5	ug/L	A	
Surr. 1 (Dibromofluoromethane)	100	%	A		Surr. 2 (Toluene d8)	100	%	A	
Surr. 3 (4-Bromofluorobenzene)	99	%	A		Unidentified Peaks	0		U	

CLIENT: KAS, Inc
PROJECT: Brandon Landfill

WORK ORDER: **2305-14321**
DATE RECEIVED: 05/26/2023

TEST METHOD: EPA 8260C

006 Site: Trip Blank Sampled: 5/22/23 11:05 Test Date: 6/3/23 W TRP

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
Dichlorodifluoromethane	< 5.0	ug/L	A		Chloromethane	< 3.0	ug/L	A	
Vinyl chloride	< 0.5	ug/L	A		Bromomethane	< 0.5	ug/L	A	
Chloroethane	< 5.0	ug/L	A		Trichlorofluoromethane	< 2.0	ug/L	A	
Diethyl ether	< 5.0	ug/L	N		1,1-Dichloroethene	< 0.7	ug/L	A	
Acetone	< 10.0	ug/L	A		Carbon disulfide	< 5.0	ug/L	A	
Methylene chloride	< 5.0	ug/L	A		t-Butanol	< 20.0	ug/L	N	QA-
Methyl-t-butyl ether (MTBE)	< 2.0	ug/L	A		trans-1,2-Dichloroethene	< 1.0	ug/L	A	
Di-isopropyl ether (DIPE)	< 2.0	ug/L	N		1,1-Dichloroethane	< 1.0	ug/L	A	
Ethyl-t-butyl ether (ETBE)	< 2.0	ug/L	N		2-Butanone	< 10.0	ug/L	A	
2,2-Dichloropropane	< 1.0	ug/L	N		cis-1,2-Dichloroethene	< 1.0	ug/L	A	
Bromochloromethane	< 0.8	ug/L	A		Chloroform	< 1.0	ug/L	A	
Tetrahydrofuran	< 10.0	ug/L	N		1,1,1-Trichloroethane	< 1.0	ug/L	A	
Carbon tetrachloride	< 0.5	ug/L	A		1,1-Dichloropropene	< 1.0	ug/L	N	
Benzene	< 0.5	ug/L	A		t-Amylmethyl ether (TAME)	< 2.0	ug/L	N	
1,2-Dichloroethane	< 0.5	ug/L	A		Trichloroethene	< 0.5	ug/L	A	
1,2-Dichloropropane	< 0.5	ug/L	A		Dibromomethane	< 2.0	ug/L	A	
Bromodichloromethane	< 0.5	ug/L	A		cis-1,3-Dichloropropene	< 1.0	ug/L	A	
4-Methyl-2-pentanone (MIBK)	< 10.0	ug/L	A		Toluene	< 1.0	ug/L	A	
trans-1,3-Dichloropropene	< 1.0	ug/L	A		1,1,2-Trichloroethane	< 1.0	ug/L	A	
Tetrachloroethene	< 0.5	ug/L	A		1,3-Dichloropropane	< 1.0	ug/L	N	
2-Hexanone	< 10.0	ug/L	A		Dibromochloromethane	< 1.0	ug/L	A	
1,2-Dibromoethane	< 2.0	ug/L	A		Chlorobenzene	< 1.0	ug/L	A	
Ethylbenzene	< 1.0	ug/L	A		1,1,1,2-Tetrachloroethane	< 2.0	ug/L	A	
Xylenes, Total	< 2.0	ug/L	A		Styrene	< 1.0	ug/L	A	
Bromoform	< 2.0	ug/L	A		Isopropylbenzene	< 1.0	ug/L	A	
1,1,2,2-Tetrachloroethane	< 2.0	ug/L	A		Bromobenzene	< 1.0	ug/L	A	
n-Propylbenzene	< 1.0	ug/L	A		1,2,3-Trichloropropane	< 2.0	ug/L	A	
2-Chlorotoluene	< 1.0	ug/L	A		1,3,5-Trimethylbenzene	< 1.0	ug/L	A	
4-Chlorotoluene	< 1.0	ug/L	A		t-Butylbenzene	< 1.0	ug/L	A	
1,2,4-Trimethylbenzene	< 1.0	ug/L	A		s-Butylbenzene	< 1.0	ug/L	A	
4-Isopropyltoluene	< 1.0	ug/L	A		1,3-Dichlorobenzene	< 1.0	ug/L	A	
1,4-Dichlorobenzene	< 1.0	ug/L	A		1,2,3-Trimethylbenzene	< 1.0	ug/L	U	
n-Butylbenzene	< 1.0	ug/L	A		1,2-Dichlorobenzene	< 1.0	ug/L	A	
1,2-Dibromo-3-Chloropropane	< 2.0	ug/L	A		1,2,4-Trichlorobenzene	< 2.0	ug/L	A	
1,3,5-Trichlorobenzene	< 2.0	ug/L	N		Hexachlorobutadiene	< 0.5	ug/L	A	
Naphthalene	< 0.5	ug/L	A		1,2,3-Trichlorobenzene	< 0.5	ug/L	A	
Surr. 1 (Dibromofluoromethane)	99	%	A		Surr. 2 (Toluene d8)	99	%	A	
Surr. 3 (4-Bromofluorobenzene)	99	%	A		Unidentified Peaks	0		U	

Report Summary of Qualifiers and Notes

QA-: QA/QC associated with this analysis did not meet laboratory acceptance limits indicating the results may be biased low.

B: Blank contamination was observed at levels that could affect analytical results.

Brandon Landfill

Endyne Inc. COC **2305-14321**

Prepared: 5/2/23

KAS, Inc
Brandon Landfill

Bill to:	Report to:		
Amy King	Clare Santos	Customer #	1(
KAS, Inc.	KAS, Inc		
P.O. Box 787	PO Box 787	BRAND	
Williston VT 05495	Williston VT 05495		
Ph: (802) 383-0486	info@kas-consulting.com;clares@ka	W-100	

MW-1

Sampled Date/Time: 5/22/23@ 1225 Sampler: HG + KG

COD	1 - 40mL Vial	H2SO4 pH<2
Chloride	1 -2 oz-Plastics Anion	<6C
Arsenic, Total	1 - 16 oz Plastic Total Metal	HNO3 pH< 2
Cadmium, Total		
Chromium, Total		
Copper, Total		
Iron, Total		
Lead, Total		
Manganese, Total		
Mercury, Total		
Nickel, Total		
Sodium, Total		
Zinc, Total		
VOC w/Oxygenates,Water 8260	2 - 40ml vials	<6C, HCl

MW-2C

Sampled Date/Time: 5/22/23@ 930 Sampler: HG + KG

COD	1 - 40mL Vial	H2SO4 pH<2
Chloride	1 -2 oz-Plastics Anion	<6C
Arsenic, Total	1 - 16 oz Plastic Total Metal	HNO3 pH< 2
Cadmium, Total		
Chromium, Total		
Copper, Total		
Iron, Total		
Lead, Total		
Manganese, Total		
Mercury, Total		
Nickel, Total		
Sodium, Total		
Zinc, Total		
VOC w/Oxygenates,Water 8260	2 - 40ml vials	<6C, HCl

MW-3

Sampled Date/Time: 5/22/23@ 1146 Sampler: HG + KG

COD	1 - 40mL Vial	H2SO4 pH<2
Chloride	1 -2 oz-Plastics Anion	<6C
Arsenic, Total	1 - 16 oz Plastic Total Metal	HNO3 pH< 2
Cadmium, Total		
Chromium, Total		
Copper, Total		
Iron, Total		
Lead, Total		
Manganese, Total		
Mercury, Total		
Nickel, Total		
Sodium, Total		
Zinc, Total		
VOC w/Oxygenates,Water 8260	2 - 40ml vials	<6C, HCl

MW-5	Sampled Date/Time: 5/22/23@ 1035	Sampler: HG + KG
COD	1 - 40mL Vial	H2SO4 pH<2
Chloride	1 -2 oz-Plastics Anion	<6C
Arsenic, Total	1 - 16 oz Plastic Total Metal	HNO3 pH< 2 ____
Cadmium, Total		
Chromium, Total		
Copper, Total		
Iron, Total		
Lead, Total		
Manganese, Total		
Mercury, Total		
Nickel, Total		
Sodium, Total		
Zinc, Total		
VOC w/Oxygenates,Water 8260	2 - 40ml vials	<6C, HCl

Duplicate	Sampled Date/Time: 5/22/23@ 1035	Sampler: HG + KG
COD	1 - 40mL Vial	H2SO4 pH<2
Chloride	1 -2 oz-Plastics Anion	<6C
Arsenic, Total	1 - 16 oz Plastic Total Metal	HNO3 pH< 2 ____
Cadmium, Total		
Chromium, Total		
Copper, Total		
Iron, Total		
Lead, Total		
Manganese, Total		
Mercury, Total		
Nickel, Total		
Sodium, Total		
Zinc, Total		
VOC w/Oxygenates,Water 8260	2 - 40ml vials	<6C, HCl

Trip Blank	Sampled Date/Time: 5/17/23@ 1105	Sampler: lab prepared
VOC w/Oxygenates,Water 8260	2 - 40ml vials	<6C, HCl

Relinquished by: [signature] 5/25/23 2003 Date Time — Accepted by: _____ Date Time

Relinquished by: _____ Date Time — Received by: [signature] 5/26/23 1130 Date Time

Sites/Parameters correct as listed. Client Initials HG

Client Authorization to use Subcontract lab Client Initials HG

Sample origin: VT ☑ NH ☐ NY ☐ Other ☐

Special reporting instructions: (PO#) _____

Requested Turnaround Time: Routine: Rush Due Date _____

Delv: C
Temp C: -4.2
Comment:

Tmpl Ck
Log by

Lab use Only

ENDYNE Inc.
www.endynelabs.com

160 James Brown Dr.
Williston, VT 05495
Ph 802-879-4333
Fax 802-879-7103

56 Etna Road
Lebanon, NH 03766
Ph 603-678-4891
Fax 603-678-4893

315 New York Rd.
Plattsburgh, NY 12903
Ph 518-563-1720
Fax 518-563-0052

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A Pace Analytical® Laboratory

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

June 23, 2023

Clare Santos
KAS Environmental
589 Avenue D
Williston, VT 05495

Project Location: Brandon, VT
Client Job Number:
Project Number: 609210052
Laboratory Work Order Number: 23F0005

Enclosed are results of analyses for samples as received by the laboratory on May 31, 2023. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Kaitlyn A. Feliciano
Project Manager

Table of Contents

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: 6/23/2023

PURCHASE ORDER NUMBER:

PROJECT NUMBER: 609210052

ANALYTICAL SUMMARY

WORK ORDER NUMBER: 23F0005

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

PROJECT LOCATION: Brandon, VT

FIELD SAMPLE #	LAB ID:	MATRIX	SAMPLE DESCRIPTION	TEST	SUB LAB
MW-1	23F0005-01	Ground Water		SOP-454 PFAS	
MW-2C	23F0005-02	Ground Water		SOP-454 PFAS	
MW-3	23F0005-03	Ground Water		SOP-454 PFAS	
MW-5	23F0005-04	Ground Water		SOP-454 PFAS	
Brandon ERB	23F0005-05	Equipment Blank Water		SOP-454 PFAS	

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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:

PF-17

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

Analyte & Samples(s) Qualified:

M2-4:2FTS
23F0005-01[MW-1], 23F0005-02[MW-2C], 23F0005-04[MW-5]

M2-6:2FTS
23F0005-01[MW-1], 23F0005-02[MW-2C], 23F0005-04[MW-5]

M2-8:2FTS
23F0005-01[MW-1], 23F0005-02[MW-2C]

PF-18

Duplicate analysis confirmed Extracted Internal Standard failure due to matrix effects.

Analyte & Samples(s) Qualified:

D3-NMeFOSAA
23F0005-03[MW-3]

D5-NEtFOSAA
23F0005-03[MW-3], 23F0005-04[MW-5]

M2PFTA
23F0005-02[MW-2C], 23F0005-03[MW-3], 23F0005-04[MW-5]

M7PFUnA
23F0005-03[MW-3], 23F0005-04[MW-5]

MPFBA
23F0005-02[MW-2C]

MPFDoA
23F0005-02[MW-2C], 23F0005-03[MW-3], 23F0005-04[MW-5]

PF-20

Quantifying ion signal to noise ratio is <10. Detection is suspect.

Analyte & Samples(s) Qualified:

Perfluorobutanoic acid (PFBA)
23F0005-02[MW-2C], 23F0005-04[MW-5]

Perfluoropentanoic acid (PFPeA)
23F0005-02[MW-2C]

S-29

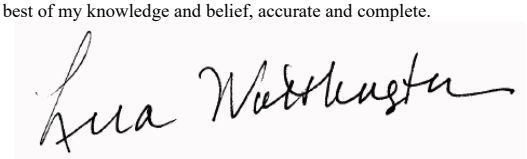
Extracted Internal Standard is outside of control limits.

Analyte & Samples(s) Qualified:

M2PFTA
23F0005-01[MW-1]

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

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: Brandon, VT | Sample Description: | Work Order: 23F0005

Date Received: 5/31/2023

Field Sample #: MW-1 | Sampled: 5/22/2023 12:25

Sample ID: 23F0005-01

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
Perfluorobutanoic acid (PFBA)	ND	1.8	ng/L	1		SOP-454 PFAS	6/14/23	6/15/23 18:41	RRB
Perfluorobutanesulfonic acid (PFBS)	ND	1.8	ng/L	1		SOP-454 PFAS	6/14/23	6/15/23 18:41	RRB
Perfluoropentanoic acid (PFPeA)	ND	1.8	ng/L	1		SOP-454 PFAS	6/14/23	6/15/23 18:41	RRB
Perfluorohexanoic acid (PFHxA)	ND	1.8	ng/L	1		SOP-454 PFAS	6/14/23	6/15/23 18:41	RRB
11Cl-PF3OUdS (F53B Major)	ND	1.8	ng/L	1		SOP-454 PFAS	6/14/23	6/15/23 18:41	RRB
9Cl-PF3ONS (F53B Minor)	ND	1.8	ng/L	1		SOP-454 PFAS	6/14/23	6/15/23 18:41	RRB
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	1.8	ng/L	1		SOP-454 PFAS	6/14/23	6/15/23 18:41	RRB
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	1.8	ng/L	1		SOP-454 PFAS	6/14/23	6/15/23 18:41	RRB
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	1.8	ng/L	1		SOP-454 PFAS	6/14/23	6/15/23 18:41	RRB
Perfluorodecanoic acid (PFDA)	ND	1.8	ng/L	1		SOP-454 PFAS	6/14/23	6/15/23 18:41	RRB
Perfluorododecanoic acid (PFDoA)	ND	1.8	ng/L	1		SOP-454 PFAS	6/14/23	6/15/23 18:41	RRB
Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	ND	1.8	ng/L	1		SOP-454 PFAS	6/14/23	6/15/23 18:41	RRB
Perfluoroheptanesulfonic acid (PFHpS)	ND	1.8	ng/L	1		SOP-454 PFAS	6/14/23	6/15/23 18:41	RRB
N-EtFOSAA (NEtFOSAA)	ND	1.8	ng/L	1		SOP-454 PFAS	6/14/23	6/15/23 18:41	RRB
N-MeFOSAA (NMeFOSAA)	ND	1.8	ng/L	1		SOP-454 PFAS	6/14/23	6/15/23 18:41	RRB
Perfluorotetradecanoic acid (PFTA)	ND	1.8	ng/L	1		SOP-454 PFAS	6/14/23	6/15/23 18:41	RRB
Perfluorotridecanoic acid (PFTrDA)	ND	1.8	ng/L	1		SOP-454 PFAS	6/14/23	6/15/23 18:41	RRB
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	1.8	ng/L	1		SOP-454 PFAS	6/14/23	6/15/23 18:41	RRB
Perfluorodecanesulfonic acid (PFDS)	ND	1.8	ng/L	1		SOP-454 PFAS	6/14/23	6/15/23 18:41	RRB
Perfluorooctanesulfonamide (FOSA)	ND	1.8	ng/L	1		SOP-454 PFAS	6/14/23	6/15/23 18:41	RRB
Perfluorononanesulfonic acid (PFNS)	ND	1.8	ng/L	1		SOP-454 PFAS	6/14/23	6/15/23 18:41	RRB
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	1.8	ng/L	1		SOP-454 PFAS	6/14/23	6/15/23 18:41	RRB
Perfluoro-1-butanesulfonamide (FBSA)	ND	1.8	ng/L	1		SOP-454 PFAS	6/14/23	6/15/23 18:41	RRB
Perfluorohexanesulfonic acid (PFHxS)	ND	1.8	ng/L	1		SOP-454 PFAS	6/14/23	6/15/23 18:41	RRB
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	1.8	ng/L	1		SOP-454 PFAS	6/14/23	6/15/23 18:41	RRB
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	1.8	ng/L	1		SOP-454 PFAS	6/14/23	6/15/23 18:41	RRB
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	1.8	ng/L	1		SOP-454 PFAS	6/14/23	6/15/23 18:41	RRB
Perfluoropentanesulfonic acid (PFPeS)	ND	1.8	ng/L	1		SOP-454 PFAS	6/14/23	6/15/23 18:41	RRB
Perfluoroundecanoic acid (PFUnA)	ND	1.8	ng/L	1		SOP-454 PFAS	6/14/23	6/15/23 18:41	RRB
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	1.8	ng/L	1		SOP-454 PFAS	6/14/23	6/15/23 18:41	RRB
Perfluoroheptanoic acid (PFHpA)	ND	1.8	ng/L	1		SOP-454 PFAS	6/14/23	6/15/23 18:41	RRB
Perfluorooctanoic acid (PFOA)	ND	1.8	ng/L	1		SOP-454 PFAS	6/14/23	6/15/23 18:41	RRB
Perfluorooctanesulfonic acid (PFOS)	2.4	1.8	ng/L	1		SOP-454 PFAS	6/14/23	6/15/23 18:41	RRB
Perfluorononanoic acid (PFNA)	ND	1.8	ng/L	1		SOP-454 PFAS	6/14/23	6/15/23 18:41	RRB

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Project Location: Brandon, VT | Sample Description: | Work Order: 23F0005

Date Received: 5/31/2023

Field Sample #: MW-2C | Sampled: 5/22/2023 09:30

Sample ID: 23F0005-02

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
Perfluorobutanoic acid (PFBA)	4.6	1.8	ng/L	1	PF-20	SOP-454 PFAS	6/14/23	6/15/23 18:48	RRB
Perfluorobutanesulfonic acid (PFBS)	5.3	1.8	ng/L	1		SOP-454 PFAS	6/14/23	6/15/23 18:48	RRB
Perfluoropentanoic acid (PFPeA)	20	1.8	ng/L	1	PF-20	SOP-454 PFAS	6/14/23	6/15/23 18:48	RRB
Perfluorohexanoic acid (PFHxA)	25	1.8	ng/L	1		SOP-454 PFAS	6/14/23	6/15/23 18:48	RRB
11Cl-PF3OUdS (F53B Major)	ND	1.8	ng/L	1		SOP-454 PFAS	6/14/23	6/15/23 18:48	RRB
9Cl-PF3ONS (F53B Minor)	ND	1.8	ng/L	1		SOP-454 PFAS	6/14/23	6/15/23 18:48	RRB
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	1.8	ng/L	1		SOP-454 PFAS	6/14/23	6/15/23 18:48	RRB
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	1.8	ng/L	1		SOP-454 PFAS	6/14/23	6/15/23 18:48	RRB
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	1.8	ng/L	1		SOP-454 PFAS	6/14/23	6/15/23 18:48	RRB
Perfluorodecanoic acid (PFDA)	ND	1.8	ng/L	1		SOP-454 PFAS	6/14/23	6/15/23 18:48	RRB
Perfluorododecanoic acid (PFDoA)	ND	1.8	ng/L	1		SOP-454 PFAS	6/14/23	6/15/23 18:48	RRB
Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	ND	1.8	ng/L	1		SOP-454 PFAS	6/14/23	6/15/23 18:48	RRB
Perfluoroheptanesulfonic acid (PFHpS)	5.0	1.8	ng/L	1		SOP-454 PFAS	6/14/23	6/15/23 18:48	RRB
N-EtFOSAA (NEtFOSAA)	ND	1.8	ng/L	1		SOP-454 PFAS	6/14/23	6/15/23 18:48	RRB
N-MeFOSAA (NMeFOSAA)	ND	1.8	ng/L	1		SOP-454 PFAS	6/14/23	6/15/23 18:48	RRB
Perfluorotetradecanoic acid (PFTA)	ND	1.8	ng/L	1		SOP-454 PFAS	6/14/23	6/15/23 18:48	RRB
Perfluorotridecanoic acid (PFTrDA)	ND	1.8	ng/L	1		SOP-454 PFAS	6/14/23	6/15/23 18:48	RRB
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	1.8	ng/L	1		SOP-454 PFAS	6/14/23	6/15/23 18:48	RRB
Perfluorodecanesulfonic acid (PFDS)	ND	1.8	ng/L	1		SOP-454 PFAS	6/14/23	6/15/23 18:48	RRB
Perfluorooctanesulfonamide (FOSA)	ND	1.8	ng/L	1		SOP-454 PFAS	6/14/23	6/15/23 18:48	RRB
Perfluorononanesulfonic acid (PFNS)	ND	1.8	ng/L	1		SOP-454 PFAS	6/14/23	6/15/23 18:48	RRB
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	1.8	ng/L	1		SOP-454 PFAS	6/14/23	6/15/23 18:48	RRB
Perfluoro-1-butanesulfonamide (FBSA)	4.5	1.8	ng/L	1		SOP-454 PFAS	6/14/23	6/15/23 18:48	RRB
Perfluorohexanesulfonic acid (PFHxS)	36	1.8	ng/L	1		SOP-454 PFAS	6/14/23	6/15/23 18:48	RRB
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	1.8	ng/L	1		SOP-454 PFAS	6/14/23	6/15/23 18:48	RRB
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	1.8	ng/L	1		SOP-454 PFAS	6/14/23	6/15/23 18:48	RRB
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	1.8	ng/L	1		SOP-454 PFAS	6/14/23	6/15/23 18:48	RRB
Perfluoropentanesulfonic acid (PFPeS)	4.3	1.8	ng/L	1		SOP-454 PFAS	6/14/23	6/15/23 18:48	RRB
Perfluoroundecanoic acid (PFUnA)	ND	1.8	ng/L	1		SOP-454 PFAS	6/14/23	6/15/23 18:48	RRB
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	1.8	ng/L	1		SOP-454 PFAS	6/14/23	6/15/23 18:48	RRB
Perfluoroheptanoic acid (PFHpA)	18	1.8	ng/L	1		SOP-454 PFAS	6/14/23	6/15/23 18:48	RRB
Perfluorooctanoic acid (PFOA)	97	1.8	ng/L	1		SOP-454 PFAS	6/14/23	6/15/23 18:48	RRB
Perfluorooctanesulfonic acid (PFOS)	150	1.8	ng/L	1		SOP-454 PFAS	6/14/23	6/15/23 18:48	RRB
Perfluorononanoic acid (PFNA)	4.7	1.8	ng/L	1		SOP-454 PFAS	6/14/23	6/15/23 18:48	RRB

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Project Location: Brandon, VT | Sample Description: | Work Order: 23F0005

Date Received: 5/31/2023

Field Sample #: MW-3 | Sampled: 5/22/2023 11:46

Sample ID: 23F0005-03

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
Perfluorobutanoic acid (PFBA)	ND	1.8	ng/L	1		SOP-454 PFAS	6/14/23	6/15/23 18:56	RRB
Perfluorobutanesulfonic acid (PFBS)	ND	1.8	ng/L	1		SOP-454 PFAS	6/14/23	6/15/23 18:56	RRB
Perfluoropentanoic acid (PFPeA)	ND	1.8	ng/L	1		SOP-454 PFAS	6/14/23	6/15/23 18:56	RRB
Perfluorohexanoic acid (PFHxA)	ND	1.8	ng/L	1		SOP-454 PFAS	6/14/23	6/15/23 18:56	RRB
11Cl-PF3OUdS (F53B Major)	ND	1.8	ng/L	1		SOP-454 PFAS	6/14/23	6/15/23 18:56	RRB
9Cl-PF3ONS (F53B Minor)	ND	1.8	ng/L	1		SOP-454 PFAS	6/14/23	6/15/23 18:56	RRB
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	1.8	ng/L	1		SOP-454 PFAS	6/14/23	6/15/23 18:56	RRB
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	1.8	ng/L	1		SOP-454 PFAS	6/14/23	6/15/23 18:56	RRB
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	1.8	ng/L	1		SOP-454 PFAS	6/14/23	6/15/23 18:56	RRB
Perfluorodecanoic acid (PFDA)	ND	1.8	ng/L	1		SOP-454 PFAS	6/14/23	6/15/23 18:56	RRB
Perfluorododecanoic acid (PFDoA)	ND	1.8	ng/L	1		SOP-454 PFAS	6/14/23	6/15/23 18:56	RRB
Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	ND	1.8	ng/L	1		SOP-454 PFAS	6/14/23	6/15/23 18:56	RRB
Perfluoroheptanesulfonic acid (PFHpS)	ND	1.8	ng/L	1		SOP-454 PFAS	6/14/23	6/15/23 18:56	RRB
N-EtFOSAA (NEtFOSAA)	ND	1.8	ng/L	1		SOP-454 PFAS	6/14/23	6/15/23 18:56	RRB
N-MeFOSAA (NMeFOSAA)	ND	1.8	ng/L	1		SOP-454 PFAS	6/14/23	6/15/23 18:56	RRB
Perfluorotetradecanoic acid (PFTA)	ND	1.8	ng/L	1		SOP-454 PFAS	6/14/23	6/15/23 18:56	RRB
Perfluorotridecanoic acid (PFTrDA)	ND	1.8	ng/L	1		SOP-454 PFAS	6/14/23	6/15/23 18:56	RRB
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	1.8	ng/L	1		SOP-454 PFAS	6/14/23	6/15/23 18:56	RRB
Perfluorodecanesulfonic acid (PFDS)	ND	1.8	ng/L	1		SOP-454 PFAS	6/14/23	6/15/23 18:56	RRB
Perfluorooctanesulfonamide (FOSA)	ND	1.8	ng/L	1		SOP-454 PFAS	6/14/23	6/15/23 18:56	RRB
Perfluorononanesulfonic acid (PFNS)	ND	1.8	ng/L	1		SOP-454 PFAS	6/14/23	6/15/23 18:56	RRB
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	1.8	ng/L	1		SOP-454 PFAS	6/14/23	6/15/23 18:56	RRB
Perfluoro-1-butanesulfonamide (FBSA)	ND	1.8	ng/L	1		SOP-454 PFAS	6/14/23	6/15/23 18:56	RRB
Perfluorohexanesulfonic acid (PFHxS)	ND	1.8	ng/L	1		SOP-454 PFAS	6/14/23	6/15/23 18:56	RRB
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	1.8	ng/L	1		SOP-454 PFAS	6/14/23	6/15/23 18:56	RRB
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	1.8	ng/L	1		SOP-454 PFAS	6/14/23	6/15/23 18:56	RRB
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	1.8	ng/L	1		SOP-454 PFAS	6/14/23	6/15/23 18:56	RRB
Perfluoropentanesulfonic acid (PFPeS)	ND	1.8	ng/L	1		SOP-454 PFAS	6/14/23	6/15/23 18:56	RRB
Perfluoroundecanoic acid (PFUnA)	ND	1.8	ng/L	1		SOP-454 PFAS	6/14/23	6/15/23 18:56	RRB
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	1.8	ng/L	1		SOP-454 PFAS	6/14/23	6/15/23 18:56	RRB
Perfluoroheptanoic acid (PFHpA)	ND	1.8	ng/L	1		SOP-454 PFAS	6/14/23	6/15/23 18:56	RRB
Perfluorooctanoic acid (PFOA)	ND	1.8	ng/L	1		SOP-454 PFAS	6/14/23	6/15/23 18:56	RRB
Perfluorooctanesulfonic acid (PFOS)	5.2	1.8	ng/L	1		SOP-454 PFAS	6/14/23	6/15/23 18:56	RRB
Perfluorononanoic acid (PFNA)	ND	1.8	ng/L	1		SOP-454 PFAS	6/14/23	6/15/23 18:56	RRB

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Project Location: Brandon, VT | Sample Description: | Work Order: 23F0005

Date Received: 5/31/2023

Field Sample #: MW-5 | Sampled: 5/22/2023 10:35

Sample ID: 23F0005-04

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
Perfluorobutanoic acid (PFBA)	3.1	1.9	ng/L	1	PF-20	SOP-454 PFAS	6/14/23	6/15/23 19:03	RRB
Perfluorobutanesulfonic acid (PFBS)	2.1	1.9	ng/L	1		SOP-454 PFAS	6/14/23	6/15/23 19:03	RRB
Perfluoropentanoic acid (PFPeA)	3.1	1.9	ng/L	1		SOP-454 PFAS	6/14/23	6/15/23 19:03	RRB
Perfluorohexanoic acid (PFHxA)	6.5	1.9	ng/L	1		SOP-454 PFAS	6/14/23	6/15/23 19:03	RRB
11Cl-PF3OUdS (F53B Major)	ND	1.9	ng/L	1		SOP-454 PFAS	6/14/23	6/15/23 19:03	RRB
9Cl-PF3ONS (F53B Minor)	ND	1.9	ng/L	1		SOP-454 PFAS	6/14/23	6/15/23 19:03	RRB
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	1.9	ng/L	1		SOP-454 PFAS	6/14/23	6/15/23 19:03	RRB
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	1.9	ng/L	1		SOP-454 PFAS	6/14/23	6/15/23 19:03	RRB
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	1.9	ng/L	1		SOP-454 PFAS	6/14/23	6/15/23 19:03	RRB
Perfluorodecanoic acid (PFDA)	ND	1.9	ng/L	1		SOP-454 PFAS	6/14/23	6/15/23 19:03	RRB
Perfluorododecanoic acid (PFDoA)	ND	1.9	ng/L	1		SOP-454 PFAS	6/14/23	6/15/23 19:03	RRB
Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	ND	1.9	ng/L	1		SOP-454 PFAS	6/14/23	6/15/23 19:03	RRB
Perfluoroheptanesulfonic acid (PFHpS)	ND	1.9	ng/L	1		SOP-454 PFAS	6/14/23	6/15/23 19:03	RRB
N-EtFOSAA (NEtFOSAA)	ND	1.9	ng/L	1		SOP-454 PFAS	6/14/23	6/15/23 19:03	RRB
N-MeFOSAA (NMeFOSAA)	ND	1.9	ng/L	1		SOP-454 PFAS	6/14/23	6/15/23 19:03	RRB
Perfluorotetradecanoic acid (PFTA)	ND	1.9	ng/L	1		SOP-454 PFAS	6/14/23	6/15/23 19:03	RRB
Perfluorotridecanoic acid (PFTrDA)	ND	1.9	ng/L	1		SOP-454 PFAS	6/14/23	6/15/23 19:03	RRB
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	1.9	ng/L	1		SOP-454 PFAS	6/14/23	6/15/23 19:03	RRB
Perfluorodecanesulfonic acid (PFDS)	ND	1.9	ng/L	1		SOP-454 PFAS	6/14/23	6/15/23 19:03	RRB
Perfluorooctanesulfonamide (FOSA)	ND	1.9	ng/L	1		SOP-454 PFAS	6/14/23	6/15/23 19:03	RRB
Perfluorononanesulfonic acid (PFNS)	ND	1.9	ng/L	1		SOP-454 PFAS	6/14/23	6/15/23 19:03	RRB
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	1.9	ng/L	1		SOP-454 PFAS	6/14/23	6/15/23 19:03	RRB
Perfluoro-1-butanesulfonamide (FBSA)	ND	1.9	ng/L	1		SOP-454 PFAS	6/14/23	6/15/23 19:03	RRB
Perfluorohexanesulfonic acid (PFHxS)	17	1.9	ng/L	1		SOP-454 PFAS	6/14/23	6/15/23 19:03	RRB
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	1.9	ng/L	1		SOP-454 PFAS	6/14/23	6/15/23 19:03	RRB
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	1.9	ng/L	1		SOP-454 PFAS	6/14/23	6/15/23 19:03	RRB
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	1.9	ng/L	1		SOP-454 PFAS	6/14/23	6/15/23 19:03	RRB
Perfluoropentanesulfonic acid (PFPeS)	ND	1.9	ng/L	1		SOP-454 PFAS	6/14/23	6/15/23 19:03	RRB
Perfluoroundecanoic acid (PFUnA)	ND	1.9	ng/L	1		SOP-454 PFAS	6/14/23	6/15/23 19:03	RRB
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	1.9	ng/L	1		SOP-454 PFAS	6/14/23	6/15/23 19:03	RRB
Perfluoroheptanoic acid (PFHpA)	5.1	1.9	ng/L	1		SOP-454 PFAS	6/14/23	6/15/23 19:03	RRB
Perfluorooctanoic acid (PFOA)	30	1.9	ng/L	1		SOP-454 PFAS	6/14/23	6/15/23 19:03	RRB
Perfluorooctanesulfonic acid (PFOS)	14	1.9	ng/L	1		SOP-454 PFAS	6/14/23	6/15/23 19:03	RRB
Perfluorononanoic acid (PFNA)	ND	1.9	ng/L	1		SOP-454 PFAS	6/14/23	6/15/23 19:03	RRB

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Project Location: Brandon, VT | Sample Description: | Work Order: 23F0005

Date Received: 5/31/2023

Field Sample #: Brandon ERB | Sampled: 5/22/2023 12:18

Sample ID: 23F0005-05

Sample Matrix: Equipment Blank Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	ND	2.1	ng/L	1		SOP-454 PFAS	6/14/23	6/15/23 19:10	RRB
Perfluorobutanesulfonic acid (PFBS)	ND	2.1	ng/L	1		SOP-454 PFAS	6/14/23	6/15/23 19:10	RRB
Perfluoropentanoic acid (PFPeA)	ND	2.1	ng/L	1		SOP-454 PFAS	6/14/23	6/15/23 19:10	RRB
Perfluorohexanoic acid (PFHxA)	ND	2.1	ng/L	1		SOP-454 PFAS	6/14/23	6/15/23 19:10	RRB
11Cl-PF3OUdS (F53B Major)	ND	2.1	ng/L	1		SOP-454 PFAS	6/14/23	6/15/23 19:10	RRB
9Cl-PF3ONS (F53B Minor)	ND	2.1	ng/L	1		SOP-454 PFAS	6/14/23	6/15/23 19:10	RRB
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	2.1	ng/L	1		SOP-454 PFAS	6/14/23	6/15/23 19:10	RRB
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	2.1	ng/L	1		SOP-454 PFAS	6/14/23	6/15/23 19:10	RRB
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	2.1	ng/L	1		SOP-454 PFAS	6/14/23	6/15/23 19:10	RRB
Perfluorodecanoic acid (PFDA)	ND	2.1	ng/L	1		SOP-454 PFAS	6/14/23	6/15/23 19:10	RRB
Perfluorododecanoic acid (PFDoA)	ND	2.1	ng/L	1		SOP-454 PFAS	6/14/23	6/15/23 19:10	RRB
Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	ND	2.1	ng/L	1		SOP-454 PFAS	6/14/23	6/15/23 19:10	RRB
Perfluoroheptanesulfonic acid (PFHpS)	ND	2.1	ng/L	1		SOP-454 PFAS	6/14/23	6/15/23 19:10	RRB
N-EtFOSAA (NEtFOSAA)	ND	2.1	ng/L	1		SOP-454 PFAS	6/14/23	6/15/23 19:10	RRB
N-MeFOSAA (NMeFOSAA)	ND	2.1	ng/L	1		SOP-454 PFAS	6/14/23	6/15/23 19:10	RRB
Perfluorotetradecanoic acid (PFTA)	ND	2.1	ng/L	1		SOP-454 PFAS	6/14/23	6/15/23 19:10	RRB
Perfluorotridecanoic acid (PFTrDA)	ND	2.1	ng/L	1		SOP-454 PFAS	6/14/23	6/15/23 19:10	RRB
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	2.1	ng/L	1		SOP-454 PFAS	6/14/23	6/15/23 19:10	RRB
Perfluorodecanesulfonic acid (PFDS)	ND	2.1	ng/L	1		SOP-454 PFAS	6/14/23	6/15/23 19:10	RRB
Perfluorooctanesulfonamide (FOSA)	ND	2.1	ng/L	1		SOP-454 PFAS	6/14/23	6/15/23 19:10	RRB
Perfluorononanesulfonic acid (PFNS)	ND	2.1	ng/L	1		SOP-454 PFAS	6/14/23	6/15/23 19:10	RRB
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	2.1	ng/L	1		SOP-454 PFAS	6/14/23	6/15/23 19:10	RRB
Perfluoro-1-butanesulfonamide (FBSA)	ND	2.1	ng/L	1		SOP-454 PFAS	6/14/23	6/15/23 19:10	RRB
Perfluorohexanesulfonic acid (PFHxS)	ND	2.1	ng/L	1		SOP-454 PFAS	6/14/23	6/15/23 19:10	RRB
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	2.1	ng/L	1		SOP-454 PFAS	6/14/23	6/15/23 19:10	RRB
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	2.1	ng/L	1		SOP-454 PFAS	6/14/23	6/15/23 19:10	RRB
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	2.1	ng/L	1		SOP-454 PFAS	6/14/23	6/15/23 19:10	RRB
Perfluoropentanesulfonic acid (PFPeS)	ND	2.1	ng/L	1		SOP-454 PFAS	6/14/23	6/15/23 19:10	RRB
Perfluoroundecanoic acid (PFUnA)	ND	2.1	ng/L	1		SOP-454 PFAS	6/14/23	6/15/23 19:10	RRB
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	2.1	ng/L	1		SOP-454 PFAS	6/14/23	6/15/23 19:10	RRB
Perfluoroheptanoic acid (PFHpA)	ND	2.1	ng/L	1		SOP-454 PFAS	6/14/23	6/15/23 19:10	RRB
Perfluorooctanoic acid (PFOA)	ND	2.1	ng/L	1		SOP-454 PFAS	6/14/23	6/15/23 19:10	RRB
Perfluorooctanesulfonic acid (PFOS)	ND	2.1	ng/L	1		SOP-454 PFAS	6/14/23	6/15/23 19:10	RRB
Perfluorononanoic acid (PFNA)	ND	2.1	ng/L	1		SOP-454 PFAS	6/14/23	6/15/23 19:10	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
23F0005-01 [MW-1]	B343017	271	1.00	06/14/23
23F0005-02 [MW-2C]	B343017	272	1.00	06/14/23
23F0005-03 [MW-3]	B343017	275	1.00	06/14/23
23F0005-04 [MW-5]	B343017	269	1.00	06/14/23
23F0005-05 [Brandon ERB]	B343017	233	1.00	06/14/23

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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 B343017 - SOP 454-PFAAS										
Blank (B343017-BLK1)				Prepared: 06/14/23 Analyzed: 06/15/23						
Perfluorobutanoic acid (PFBA)	ND	2.0	ng/L							
Perfluorobutanesulfonic acid (PFBS)	ND	2.0	ng/L							
Perfluoropentanoic acid (PFPeA)	ND	2.0	ng/L							
Perfluorohexanoic acid (PFHxA)	ND	2.0	ng/L							
11Cl-PF3OUdS (F53B Major)	ND	2.0	ng/L							
9Cl-PF3ONS (F53B Minor)	ND	2.0	ng/L							
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	2.0	ng/L							
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	2.0	ng/L							
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	2.0	ng/L							
Perfluorodecanoic acid (PFDA)	ND	2.0	ng/L							
Perfluorododecanoic acid (PFDoA)	ND	2.0	ng/L							
Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	ND	2.0	ng/L							
Perfluoroheptanesulfonic acid (PFHpS)	ND	2.0	ng/L							
N-EtFOSAA (NEtFOSAA)	ND	2.0	ng/L							
N-MeFOSAA (NMeFOSAA)	ND	2.0	ng/L							
Perfluorotetradecanoic acid (PFTA)	ND	2.0	ng/L							
Perfluorotridecanoic acid (PFTrDA)	ND	2.0	ng/L							
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	2.0	ng/L							
Perfluorodecanesulfonic acid (PFDS)	ND	2.0	ng/L							
Perfluorooctanesulfonamide (FOSA)	ND	2.0	ng/L							
Perfluorononanesulfonic acid (PFNS)	ND	2.0	ng/L							
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	2.0	ng/L							
Perfluoro-1-butanesulfonamide (FBSA)	ND	2.0	ng/L							
Perfluorohexanesulfonic acid (PFHxS)	ND	2.0	ng/L							
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	2.0	ng/L							
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	2.0	ng/L							
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	2.0	ng/L							
Perfluoropentanesulfonic acid (PFPeS)	ND	2.0	ng/L							
Perfluoroundecanoic acid (PFUnA)	ND	2.0	ng/L							
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	2.0	ng/L							
Perfluoroheptanoic acid (PFHpA)	ND	2.0	ng/L							
Perfluorooctanoic acid (PFOA)	ND	2.0	ng/L							
Perfluorooctanesulfonic acid (PFOS)	ND	2.0	ng/L							
Perfluorononanoic acid (PFNA)	ND	2.0	ng/L							
LCS (B343017-BS1)				Prepared: 06/14/23 Analyzed: 06/15/23						
Perfluorobutanoic acid (PFBA)	8.23	2.0	ng/L	9.98		82.5	73-129			
Perfluorobutanesulfonic acid (PFBS)	7.28	2.0	ng/L	8.83		82.4	72-130			
Perfluoropentanoic acid (PFPeA)	8.11	2.0	ng/L	9.98		81.2	72-129			
Perfluorohexanoic acid (PFHxA)	8.31	2.0	ng/L	9.98		83.3	72-129			
11Cl-PF3OUdS (F53B Major)	7.66	2.0	ng/L	9.40		81.5	55.1-141			
9Cl-PF3ONS (F53B Minor)	8.12	2.0	ng/L	9.30		87.3	59.6-146			
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	8.23	2.0	ng/L	9.40		87.5	60.3-131			
Hexafluoropropylene oxide dimer acid (HFPO-DA)	8.53	2.0	ng/L	9.98		85.5	37.6-167			
8:2 Fluorotelomersulfonic acid (8:2FTS A)	7.76	2.0	ng/L	9.58		81.0	67-138			
Perfluorodecanoic acid (PFDA)	8.30	2.0	ng/L	9.98		83.2	71-129			
Perfluorododecanoic acid (PFDoA)	8.77	2.0	ng/L	9.98		87.8	72-134			
Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	7.71	2.0	ng/L	8.88		86.8	49.4-154			

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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 B343017 - SOP 454-PFAAS										
LCS (B343017-BS1)				Prepared: 06/14/23 Analyzed: 06/15/23						
Perfluoroheptanesulfonic acid (PFHpS)	9.00	2.0	ng/L	9.53		94.5	69-134			
N-EtFOSAA (NEtFOSAA)	9.15	2.0	ng/L	9.98		91.7	61-135			
N-MeFOSAA (NMeFOSAA)	10.3	2.0	ng/L	9.98		103	65-136			
Perfluorotetradecanoic acid (PFTA)	8.49	2.0	ng/L	9.98		85.0	71-132			
Perfluorotridecanoic acid (PFTrDA)	8.88	2.0	ng/L	9.98		89.0	65-144			
4:2 Fluorotelomersulfonic acid (4:2FTS A)	8.31	2.0	ng/L	9.33		89.1	63-143			
Perfluorodecanesulfonic acid (PFDS)	6.55	2.0	ng/L	9.63		68.0	53-142			
Perfluorooctanesulfonamide (FOSA)	8.35	2.0	ng/L	9.98		83.7	67-137			
Perfluorononanesulfonic acid (PFNS)	8.22	2.0	ng/L	9.58		85.8	69-127			
Perfluoro-1-hexanesulfonamide (FHxSA)	8.19	2.0	ng/L	9.98		82.0	61.7-156			
Perfluoro-1-butanesulfonamide (FBSA)	8.58	2.0	ng/L	9.98		86.0	61.3-145			
Perfluorohexanesulfonic acid (PFHxS)	7.01	2.0	ng/L	9.13		76.7	68-131			
Perfluoro-4-oxapentanoic acid (PFMPA)	9.02	2.0	ng/L	9.98		90.4	59.8-147			
Perfluoro-5-oxahexanoic acid (PFMBA)	8.61	2.0	ng/L	9.98		86.3	59.5-146			
6:2 Fluorotelomersulfonic acid (6:2FTS A)	8.97	2.0	ng/L	9.48		94.5	64-140			
Perfluoropentanesulfonic acid (PFPeS)	7.51	2.0	ng/L	9.38		80.1	71-127			
Perfluoroundecanoic acid (PFUnA)	8.30	2.0	ng/L	9.98		83.2	69-133			
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	9.33	2.0	ng/L	9.98		93.4	58.5-143			
Perfluoroheptanoic acid (PFHpA)	8.35	2.0	ng/L	9.98		83.6	72-130			
Perfluorooctanoic acid (PFOA)	8.61	2.0	ng/L	9.98		86.3	71-133			
Perfluorooctanesulfonic acid (PFOS)	7.96	2.0	ng/L	9.23		86.3	65-140			
Perfluorononanoic acid (PFNA)	8.16	2.0	ng/L	9.98		81.7	69-130			
LCS Dup (B343017-BSD1)				Prepared: 06/14/23 Analyzed: 06/15/23						
Perfluorobutanoic acid (PFBA)	7.84	1.9	ng/L	9.52		82.3	73-129	4.89	30	
Perfluorobutanesulfonic acid (PFBS)	6.93	1.9	ng/L	8.43		82.2	72-130	4.90	30	
Perfluoropentanoic acid (PFPeA)	7.73	1.9	ng/L	9.52		81.1	72-129	4.83	30	
Perfluorohexanoic acid (PFHxA)	7.76	1.9	ng/L	9.52		81.5	72-129	6.81	30	
11Cl-PF3OUdS (F53B Major)	7.61	1.9	ng/L	8.97		84.8	55.1-141	0.668	30	
9Cl-PF3ONS (F53B Minor)	8.05	1.9	ng/L	8.88		90.7	59.6-146	0.873	30	
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	7.95	1.9	ng/L	8.97		88.6	60.3-131	3.45	30	
Hexafluoropropylene oxide dimer acid (HFPO-DA)	8.57	1.9	ng/L	9.52		90.0	37.6-167	0.481	30	
8:2 Fluorotelomersulfonic acid (8:2FTS A)	7.85	1.9	ng/L	9.14		85.9	67-138	1.09	30	
Perfluorodecanoic acid (PFDA)	7.87	1.9	ng/L	9.52		82.6	71-129	5.37	30	
Perfluorododecanoic acid (PFDoA)	7.71	1.9	ng/L	9.52		80.9	72-134	12.9	30	
Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	7.25	1.9	ng/L	8.48		85.5	49.4-154	6.17	30	
Perfluoroheptanesulfonic acid (PFHpS)	8.52	1.9	ng/L	9.09		93.7	69-134	5.53	30	
N-EtFOSAA (NEtFOSAA)	8.94	1.9	ng/L	9.52		93.9	61-135	2.32	30	
N-MeFOSAA (NMeFOSAA)	9.07	1.9	ng/L	9.52		95.2	65-136	12.8	30	
Perfluorotetradecanoic acid (PFTA)	8.23	1.9	ng/L	9.52		86.4	71-132	3.08	30	
Perfluorotridecanoic acid (PFTrDA)	8.15	1.9	ng/L	9.52		85.6	65-144	8.59	30	
4:2 Fluorotelomersulfonic acid (4:2FTS A)	7.69	1.9	ng/L	8.90		86.3	63-143	7.80	30	
Perfluorodecanesulfonic acid (PFDS)	5.81	1.9	ng/L	9.19		63.3	53-142	12.0	30	
Perfluorooctanesulfonamide (FOSA)	8.54	1.9	ng/L	9.52		89.7	67-137	2.18	30	
Perfluorononanesulfonic acid (PFNS)	7.39	1.9	ng/L	9.14		80.8	69-127	10.6	30	
Perfluoro-1-hexanesulfonamide (FHxSA)	8.12	1.9	ng/L	9.52		85.2	61.7-156	0.841	30	
Perfluoro-1-butanesulfonamide (FBSA)	7.91	1.9	ng/L	9.52		83.1	61.3-145	8.13	30	
Perfluorohexanesulfonic acid (PFHxS)	7.03	1.9	ng/L	8.71		80.7	68-131	0.313	30	
Perfluoro-4-oxapentanoic acid (PFMPA)	8.73	1.9	ng/L	9.52		91.7	59.8-147	3.22	30	
Perfluoro-5-oxahexanoic acid (PFMBA)	8.30	1.9	ng/L	9.52		87.2	59.5-146	3.68	30	

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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 B343017 - SOP 454-PFAAS										
LCS Dup (B343017-BSD1)				Prepared: 06/14/23 Analyzed: 06/15/23						
6:2 Fluorotelomersulfonic acid (6:2FTS A)	6.88	1.9	ng/L	9.05		76.0	64-140	26.4	30	
Perfluoropentanesulfonic acid (PFPeS)	7.16	1.9	ng/L	8.95		80.0	71-127	4.78	30	
Perfluoroundecanoic acid (PFUnA)	7.58	1.9	ng/L	9.52		79.6	69-133	9.07	30	
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	9.17	1.9	ng/L	9.52		96.3	58.5-143	1.71	30	
Perfluoroheptanoic acid (PFHpA)	8.07	1.9	ng/L	9.52		84.7	72-130	3.42	30	
Perfluorooctanoic acid (PFOA)	8.61	1.9	ng/L	9.52		90.5	71-133	0.0320	30	
Perfluorooctanesulfonic acid (PFOS)	7.40	1.9	ng/L	8.81		84.0	65-140	7.37	30	
Perfluorononanoic acid (PFNA)	7.74	1.9	ng/L	9.52		81.3	69-130	5.27	30	

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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.
PF-17	Extracted Internal Standard recovery is outside of control limits. Data is not significantly affected since associated analyte is not detected and bias is on the high side.
PF-18	Duplicate analysis confirmed Extracted Internal Standard failure due to matrix effects.
PF-20	Quantifying ion signal to noise ratio is <10. Detection is suspect.
S-29	Extracted Internal Standard is outside of control limits.

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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-1 (23F0005-01)			Lab File ID: 23F0005-01.d			Analyzed: 06/15/23 18:41			
M8FOSA	162454.2	3.980567	227,522.00	3.980567	71	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	46432.68	2.5543	27,028.00	2.5543	172	50 - 150	0.0000	+/-0.50	*
M2PFTA	86505.05	4.329667	479,880.00	4.329667	18	50 - 150	0.0000	+/-0.50	*
M2-8:2FTS	50290.09	3.794817	33,212.00	3.794817	151	50 - 150	0.0000	+/-0.50	*
MPFBA	210934.5	1.058467	256,957.00	1.058467	82	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	82571.76	2.872033	114,902.00	2.872033	72	50 - 150	0.0000	+/-0.50	
M6PFDA	434129.1	3.795333	445,919.00	3.795333	97	50 - 150	0.0000	+/-0.50	
M3PFBS	113722.9	1.928117	104,197.00	1.9281	109	50 - 150	0.0000	+/-0.50	
M7PFUnA	394559.8	3.946033	453,308.00	3.946033	87	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	65097.14	3.437283	27,565.00	3.437283	236	50 - 150	0.0000	+/-0.50	*
M5PFPeA	297566.3	1.749417	276,869.00	1.749417	107	50 - 150	0.0000	+/-0.50	
M5PFHxA	484621.1	2.638533	458,596.00	2.638533	106	50 - 150	0.0000	+/-0.50	
M3PFHxS	69047.38	3.21025	68,806.00	3.21025	100	50 - 150	0.0000	+/-0.50	
M4PFHpA	508716.6	3.186933	461,168.00	3.186933	110	50 - 150	0.0000	+/-0.50	
M8PFOA	550241.1	3.445817	508,809.00	3.445817	108	50 - 150	0.0000	+/-0.50	
M8PFOS	66070.52	3.636183	76,995.00	3.636183	86	50 - 150	0.0000	+/-0.50	
M9PFNA	480064.4	3.637217	526,406.00	3.637217	91	50 - 150	0.0000	+/-0.50	
MPFDoA	229361	4.088634	386,713.00	4.088634	59	50 - 150	0.0000	+/-0.50	
D5-NEtFOSAA	101208.3	3.9535	101,789.00	3.9535	99	50 - 150	0.0000	+/-0.50	
D3-NMeFOSAA	110600.4	3.873767	116,586.00	3.873767	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
MW-2C (23F0005-02)			Lab File ID: 23F0005-02.d			Analyzed: 06/15/23 18:48			
M8FOSA	150695	3.980567	227,522.00	3.980567	66	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	203238	2.529667	27,028.00	2.5543	752	50 - 150	-0.0246	+/-0.50	*
M2PFTA	26303.48	4.329667	479,880.00	4.329667	05	50 - 150	0.0000	+/-0.50	*
M2-8:2FTS	89108.22	3.794817	33,212.00	3.794817	268	50 - 150	0.0000	+/-0.50	*
MPFBA	67793.53	1.04185	256,957.00	1.058467	26	50 - 150	-0.0166	+/-0.50	*
M3HFPO-DA	83848.29	2.86385	114,902.00	2.872033	73	50 - 150	-0.0082	+/-0.50	
M6PFDA	443991.9	3.79535	445,919.00	3.795333	100	50 - 150	0.0000	+/-0.50	
M3PFBS	94608.18	1.911533	104,197.00	1.9281	91	50 - 150	-0.0166	+/-0.50	
M7PFUnA	289061.9	3.946033	453,308.00	3.946033	64	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	134425.8	3.4293	27,565.00	3.437283	488	50 - 150	-0.0080	+/-0.50	*
M5PFPeA	216588.3	1.731383	276,869.00	1.749417	78	50 - 150	-0.0180	+/-0.50	
M5PFHxA	501152.8	2.621617	458,596.00	2.638533	109	50 - 150	-0.0169	+/-0.50	
M3PFHxS	71434.09	3.21025	68,806.00	3.21025	104	50 - 150	0.0000	+/-0.50	
M4PFHpA	502491.8	3.17885	461,168.00	3.186933	109	50 - 150	-0.0081	+/-0.50	
M8PFOA	444929.9	3.445817	508,809.00	3.445817	87	50 - 150	0.0000	+/-0.50	
M8PFOS	60936.63	3.636183	76,995.00	3.636183	79	50 - 150	0.0000	+/-0.50	
M9PFNA	403638.6	3.637217	526,406.00	3.637217	77	50 - 150	0.0000	+/-0.50	
MPFDoA	85726.39	4.088634	386,713.00	4.088634	22	50 - 150	0.0000	+/-0.50	*
D5-NEtFOSAA	74701.45	3.9535	101,789.00	3.9535	73	50 - 150	0.0000	+/-0.50	
D3-NMeFOSAA	83922.8	3.873767	116,586.00	3.873767	72	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
MW-3 (23F0005-03)			Lab File ID: 23F0005-03.d			Analyzed: 06/15/23 18:56			
M8FOSA	144129.3	3.980567	227,522.00	3.980567	63	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	31890.78	2.5543	27,028.00	2.5543	118	50 - 150	0.0000	+/-0.50	
M2PFTA	4088.255	4.329667	479,880.00	4.329667	01	50 - 150	0.0000	+/-0.50	*
M2-8:2FTS	19103.5	3.794817	33,212.00	3.794817	58	50 - 150	0.0000	+/-0.50	
MPFBA	247818.5	1.058467	256,957.00	1.058467	96	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	106199.2	2.872033	114,902.00	2.872033	92	50 - 150	0.0000	+/-0.50	
M6PFDA	257111.8	3.795333	445,919.00	3.795333	58	50 - 150	0.0000	+/-0.50	
M3PFBS	116013.5	1.9364	104,197.00	1.9281	111	50 - 150	0.0083	+/-0.50	
M7PFUnA	100458.5	3.946033	453,308.00	3.946033	22	50 - 150	0.0000	+/-0.50	*
M2-6:2FTS	34820.13	3.437283	27,565.00	3.437283	126	50 - 150	0.0000	+/-0.50	
M5PFPeA	293698.8	1.749417	276,869.00	1.749417	106	50 - 150	0.0000	+/-0.50	
M5PFHxA	485765.5	2.646767	458,596.00	2.638533	106	50 - 150	0.0082	+/-0.50	
M3PFHxS	73167.49	3.21025	68,806.00	3.21025	106	50 - 150	0.0000	+/-0.50	
M4PFHpA	506378.7	3.186933	461,168.00	3.186933	110	50 - 150	0.0000	+/-0.50	
M8PFOA	532779.1	3.445817	508,809.00	3.445817	105	50 - 150	0.0000	+/-0.50	
M8PFOS	50709.96	3.636183	76,995.00	3.636183	66	50 - 150	0.0000	+/-0.50	
M9PFNA	420872.5	3.637217	526,406.00	3.637217	80	50 - 150	0.0000	+/-0.50	
MPFDoA	18804.53	4.088634	386,713.00	4.088634	05	50 - 150	0.0000	+/-0.50	*
D5-NEtFOSAA	24872.35	3.9535	101,789.00	3.9535	24	50 - 150	0.0000	+/-0.50	*
D3-NMeFOSAA	41892.87	3.873767	116,586.00	3.873767	36	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
MW-5 (23F0005-04)			Lab File ID: 23F0005-04.d			Analyzed: 06/15/23 19:03			
M8FOSA	126189.5	3.980567	227,522.00	3.980567	55	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	51181.77	2.5543	27,028.00	2.5543	189	50 - 150	0.0000	+/-0.50	*
M2PFTA	13962.42	4.329667	479,880.00	4.329667	03	50 - 150	0.0000	+/-0.50	*
M2-8:2FTS	32987.29	3.794817	33,212.00	3.794817	99	50 - 150	0.0000	+/-0.50	
MPFBA	147895.7	1.058467	256,957.00	1.058467	58	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	87246.78	2.872033	114,902.00	2.872033	76	50 - 150	0.0000	+/-0.50	
M6PFDA	342832.7	3.795333	445,919.00	3.795333	77	50 - 150	0.0000	+/-0.50	
M3PFBS	107472.1	1.928117	104,197.00	1.9281	103	50 - 150	0.0000	+/-0.50	
M7PFUnA	170601.8	3.946033	453,308.00	3.946033	38	50 - 150	0.0000	+/-0.50	*
M2-6:2FTS	53191.43	3.4373	27,565.00	3.437283	193	50 - 150	0.0000	+/-0.50	*
M5PFPeA	277750.1	1.749417	276,869.00	1.749417	100	50 - 150	0.0000	+/-0.50	
M5PFHxA	485465.7	2.638533	458,596.00	2.638533	106	50 - 150	0.0000	+/-0.50	
M3PFHxS	72394.59	3.218333	68,806.00	3.21025	105	50 - 150	0.0081	+/-0.50	
M4PFHpA	512351.3	3.186933	461,168.00	3.186933	111	50 - 150	0.0000	+/-0.50	
M8PFOA	557249.2	3.445817	508,809.00	3.445817	110	50 - 150	0.0000	+/-0.50	
M8PFOS	60354.33	3.636183	76,995.00	3.636183	78	50 - 150	0.0000	+/-0.50	
M9PFNA	483919	3.637217	526,406.00	3.637217	92	50 - 150	0.0000	+/-0.50	
MPFDoA	50278.58	4.088634	386,713.00	4.088634	13	50 - 150	0.0000	+/-0.50	*
D5-NEtFOSAA	38104.12	3.9535	101,789.00	3.9535	37	50 - 150	0.0000	+/-0.50	*
D3-NMeFOSAA	58924.64	3.873767	116,586.00	3.873767	51	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
Brandon ERB (23F0005-05)			Lab File ID: 23F0005-05.d			Analyzed: 06/15/23 19:10			
M8FOSA	215138.4	3.980567	227,522.00	3.980567	95	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	27811.8	2.5543	27,028.00	2.5543	103	50 - 150	0.0000	+/-0.50	
M2PFTA	520295.8	4.329667	479,880.00	4.329667	108	50 - 150	0.0000	+/-0.50	
M2-8:2FTS	40282.16	3.794817	33,212.00	3.794817	121	50 - 150	0.0000	+/-0.50	
MPFBA	246271.6	1.058467	256,957.00	1.058467	96	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	98507.22	2.872033	114,902.00	2.872033	86	50 - 150	0.0000	+/-0.50	
M6PFDA	473234.7	3.795333	445,919.00	3.795333	106	50 - 150	0.0000	+/-0.50	
M3PFBS	110777.4	1.9281	104,197.00	1.9281	106	50 - 150	0.0000	+/-0.50	
M7PFUnA	547202.7	3.938033	453,308.00	3.946033	121	50 - 150	-0.0080	+/-0.50	
M2-6:2FTS	37692.93	3.437283	27,565.00	3.437283	137	50 - 150	0.0000	+/-0.50	
M5PFPeA	271501.3	1.749417	276,869.00	1.749417	98	50 - 150	0.0000	+/-0.50	
M5PFHxA	463810.7	2.638533	458,596.00	2.638533	101	50 - 150	0.0000	+/-0.50	
M3PFHxS	71209.7	3.21025	68,806.00	3.21025	103	50 - 150	0.0000	+/-0.50	
M4PFHpA	482628.4	3.186933	461,168.00	3.186933	105	50 - 150	0.0000	+/-0.50	
M8PFOA	543119.2	3.445817	508,809.00	3.445817	107	50 - 150	0.0000	+/-0.50	
M8PFOS	76222.82	3.636183	76,995.00	3.636183	99	50 - 150	0.0000	+/-0.50	
M9PFNA	526302.8	3.637217	526,406.00	3.637217	100	50 - 150	0.0000	+/-0.50	
MPFDoA	395622.5	4.08065	386,713.00	4.088634	102	50 - 150	-0.0080	+/-0.50	
D5-NEtFOSAA	134570.4	3.9455	101,789.00	3.9535	132	50 - 150	-0.0080	+/-0.50	
D3-NMeFOSAA	121108.1	3.8656	116,586.00	3.873767	104	50 - 150	-0.0082	+/-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 (B343017-BLK1)			Lab File ID: B343017-BLK1.d			Analyzed: 06/15/23 18:34			
M8FOSA	215016.1	3.980567	227,522.00	3.980567	95	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	30333.71	2.5543	27,028.00	2.5543	112	50 - 150	0.0000	+/-0.50	
M2PFTA	436933.4	4.329667	479,880.00	4.329667	91	50 - 150	0.0000	+/-0.50	
M2-8:2FTS	36123.36	3.794817	33,212.00	3.794817	109	50 - 150	0.0000	+/-0.50	
MPFBA	279710.7	1.058467	256,957.00	1.058467	109	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	104600.4	2.872033	114,902.00	2.872033	91	50 - 150	0.0000	+/-0.50	
M6PFDA	473304.3	3.795333	445,919.00	3.795333	106	50 - 150	0.0000	+/-0.50	
M3PFBS	123107.8	1.9364	104,197.00	1.9281	118	50 - 150	0.0083	+/-0.50	
M7PFUnA	457712	3.946033	453,308.00	3.946033	101	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	35864.22	3.437283	27,565.00	3.437283	130	50 - 150	0.0000	+/-0.50	
M5PFPeA	310102.7	1.749417	276,869.00	1.749417	112	50 - 150	0.0000	+/-0.50	
M5PFHxA	520505	2.638533	458,596.00	2.638533	113	50 - 150	0.0000	+/-0.50	
M3PFHxS	78885.7	3.21025	68,806.00	3.21025	115	50 - 150	0.0000	+/-0.50	
M4PFHpA	542553.6	3.186933	461,168.00	3.186933	118	50 - 150	0.0000	+/-0.50	
M8PFOA	588328.2	3.445817	508,809.00	3.445817	116	50 - 150	0.0000	+/-0.50	
M8PFOS	81873.97	3.636183	76,995.00	3.636183	106	50 - 150	0.0000	+/-0.50	
M9PFNA	555643.1	3.637217	526,406.00	3.637217	106	50 - 150	0.0000	+/-0.50	
MPFDoA	346001	4.088634	386,713.00	4.088634	89	50 - 150	0.0000	+/-0.50	
D5-NEtFOSAA	106083.9	3.9535	101,789.00	3.9535	104	50 - 150	0.0000	+/-0.50	
D3-NMeFOSAA	120334.9	3.873767	116,586.00	3.873767	103	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 (B343017-BS1)			Lab File ID: B343017-BS1.d			Analyzed: 06/15/23 18:20			
M8FOSA	200169.3	3.980567	227,522.00	3.980567	88	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	27979.2	2.5543	27,028.00	2.5543	104	50 - 150	0.0000	+/-0.50	
M2PFTA	422371.8	4.329667	479,880.00	4.329667	88	50 - 150	0.0000	+/-0.50	
M2-8:2FTS	31719.93	3.794817	33,212.00	3.794817	96	50 - 150	0.0000	+/-0.50	
MPFBA	257064.5	1.058467	256,957.00	1.058467	100	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	110701.5	2.872033	114,902.00	2.872033	96	50 - 150	0.0000	+/-0.50	
M6PFDA	431297	3.795333	445,919.00	3.795333	97	50 - 150	0.0000	+/-0.50	
M3PFBS	111061.8	1.9364	104,197.00	1.9281	107	50 - 150	0.0083	+/-0.50	
M7PFUnA	426879	3.946033	453,308.00	3.946033	94	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	29169.89	3.437283	27,565.00	3.437283	106	50 - 150	0.0000	+/-0.50	
M5PFPeA	289508.5	1.749417	276,869.00	1.749417	105	50 - 150	0.0000	+/-0.50	
M5PFHxA	469620.1	2.646767	458,596.00	2.638533	102	50 - 150	0.0082	+/-0.50	
M3PFHxS	72817.55	3.218333	68,806.00	3.21025	106	50 - 150	0.0081	+/-0.50	
M4PFHpA	489111.9	3.186933	461,168.00	3.186933	106	50 - 150	0.0000	+/-0.50	
M8PFOA	521309.5	3.453817	508,809.00	3.445817	102	50 - 150	0.0080	+/-0.50	
M8PFOS	74040.57	3.636183	76,995.00	3.636183	96	50 - 150	0.0000	+/-0.50	
M9PFNA	527230	3.637217	526,406.00	3.637217	100	50 - 150	0.0000	+/-0.50	
MPFDoA	344025.2	4.088634	386,713.00	4.088634	89	50 - 150	0.0000	+/-0.50	
D5-NEtFOSAA	93220.06	3.9535	101,789.00	3.9535	92	50 - 150	0.0000	+/-0.50	
D3-NMeFOSAA	108673.3	3.873767	116,586.00	3.873767	93	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 (B343017-BSD1)			Lab File ID: B343017-BSD1.d			Analyzed: 06/15/23 18:27			
M8FOSA	194266.3	3.980567	227,522.00	3.980567	85	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	27529.69	2.5543	27,028.00	2.5543	102	50 - 150	0.0000	+/-0.50	
M2PFTA	426555.5	4.329667	479,880.00	4.329667	89	50 - 150	0.0000	+/-0.50	
M2-8:2FTS	32444.97	3.794817	33,212.00	3.794817	98	50 - 150	0.0000	+/-0.50	
MPFBA	258494.3	1.058467	256,957.00	1.058467	101	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	103649.6	2.872033	114,902.00	2.872033	90	50 - 150	0.0000	+/-0.50	
M6PFDA	420816.1	3.795333	445,919.00	3.795333	94	50 - 150	0.0000	+/-0.50	
M3PFBS	113307.8	1.9281	104,197.00	1.9281	109	50 - 150	0.0000	+/-0.50	
M7PFUnA	409909.9	3.946033	453,308.00	3.946033	90	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	32701.71	3.437283	27,565.00	3.437283	119	50 - 150	0.0000	+/-0.50	
M5PFPeA	289122.8	1.749417	276,869.00	1.749417	104	50 - 150	0.0000	+/-0.50	
M5PFHxA	477646.3	2.638533	458,596.00	2.638533	104	50 - 150	0.0000	+/-0.50	
M3PFHxS	74887.8	3.21025	68,806.00	3.21025	109	50 - 150	0.0000	+/-0.50	
M4PFHpA	485196.5	3.186933	461,168.00	3.186933	105	50 - 150	0.0000	+/-0.50	
M8PFOA	502057.2	3.445817	508,809.00	3.445817	99	50 - 150	0.0000	+/-0.50	
M8PFOS	70558.66	3.636183	76,995.00	3.636183	92	50 - 150	0.0000	+/-0.50	
M9PFNA	493344.9	3.637217	526,406.00	3.637217	94	50 - 150	0.0000	+/-0.50	
MPFDoA	344756.5	4.088634	386,713.00	4.088634	89	50 - 150	0.0000	+/-0.50	
D5-NEtFOSAA	97125.26	3.9535	101,789.00	3.9535	95	50 - 150	0.0000	+/-0.50	
D3-NMeFOSAA	104454.8	3.873767	116,586.00	3.873767	90	50 - 150	0.0000	+/-0.50	

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CERTIFICATIONS

Certified Analyses included in this Report

Analyte	Certifications
SOP-454 PFAS in Water	
Perfluorobutanoic acid (PFBA)	NH-P,PA
Perfluorobutanesulfonic acid (PFBS)	NH-P,PA
Perfluoropentanoic acid (PFPeA)	NH-P,PA
Perfluorohexanoic acid (PFHxA)	NH-P,PA
11Cl-PF3OUdS (F53B Major)	NH-P,PA
9Cl-PF3ONS (F53B Minor)	NH-P,PA
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	NH-P,PA
Hexafluoropropylene oxide dimer acid (HFPO-DA)	NH-P,PA
8:2 Fluorotelomersulfonic acid (8:2FTS A)	NH-P,PA
Perfluorodecanoic acid (PFDA)	NH-P,PA
Perfluorododecanoic acid (PFDoA)	NH-P,PA
Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NH-P,PA
Perfluoroheptanesulfonic acid (PFHpS)	NH-P,PA
N-EtFOSAA (NEtFOSAA)	NH-P,PA
N-MeFOSAA (NMeFOSAA)	NH-P,PA
Perfluorotetradecanoic acid (PFTA)	NH-P,PA
Perfluorotridecanoic acid (PFTrDA)	NH-P,PA
4:2 Fluorotelomersulfonic acid (4:2FTS A)	NH-P,PA
Perfluorodecanesulfonic acid (PFDS)	NH-P,PA
Perfluorooctanesulfonamide (FOSA)	NH-P,PA
Perfluorononanesulfonic acid (PFNS)	NH-P,PA
Perfluoro-1-hexanesulfonamide (FHxSA)	NH-P,PA
Perfluoro-1-butanesulfonamide (FBSA)	NH-P,PA
Perfluorohexanesulfonic acid (PFHxS)	NH-P,PA
Perfluoro-4-oxapentanoic acid (PFMPA)	NH-P,PA
Perfluoro-5-oxahexanoic acid (PFMBA)	NH-P,PA
6:2 Fluorotelomersulfonic acid (6:2FTS A)	NH-P,PA
Perfluoropentanesulfonic acid (PFPeS)	NH-P,PA
Perfluoroundecanoic acid (PFUnA)	NH-P,PA
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	NH-P,PA
Perfluoroheptanoic acid (PFHpA)	NH-P,PA
Perfluorooctanoic acid (PFOA)	NH-P,PA
Perfluorooctanesulfonic acid (PFOS)	NH-P,PA
Perfluorononanoic acid (PFNA)	NH-P,PA

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
PA	Commonwealth of Pennsylvania DEP	68-05812	06/30/2024

23E0005 HF

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

Doc # 381 Rev 5_07/13/2021

Company Name: KAS, Inc
Address: PO Box 787 Williston VT 05495
Phone: 802-383-0486
Project Name: Brandon Landfill
Project Location: Brandon, VT
Project Number: 609210052
Project Manager: Clare Santos
Pace Quote Name/Number:
Invoice Recipient: Amyk@kas-consulting.com
Sampled By: Haley Grigel + Kristen Gill

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: ClareS@kas-consulting.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: 1 PFAS isotope dilution (Williston)

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 isotope dilution
1	MW-1	5/22/23	1225	GRAB	GW	U			2			X
2	MW-2C	↓	930	↓	GW	↓			2			X
3	MW-3	↓	1146	↓	GW	↓			2			X
4	MW-5	↓	1035	↓	GW	↓			2			X
5	Brandon ERB	↓	1218	↓	O	↓			1			X

[2] Preservation Code

Courier Use Only
Total Number Of:
VIALS ____
GLASS ____
PLASTIC ____
BACTERIA ____
ENCORE ____

Glassware in the fridge? Y / N
Glassware in freezer? Y / N
Prepackaged Cooler? 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) equipment rinse blank

[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)

Signature	Date/Time
Relinquished by: (signature) Kristen Gill	5/25/23 2002
Received by: (signature) RB VOS	5-31-23
Relinquished by: (signature) RB VOS	5-31-23
Received by: (signature) Sam Salaio	5/31/23 12:10
Relinquished by: (signature) Sam Salaio	5/31/23 14:20
Received by: (signature) [signature] 53.51	5/31/23 1420
Relinquished by: (signature)	
Received by: (signature)	

Client Comments:

Detection Limit Requirements
MA:
CT:
Other: VT

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

Other
☐ Chromatogram
☐ AIHA-LAP,LLC

Lab Comments:

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

ENV-FRM-ELON-0001 V05__Sample Receiving Checklist

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 MCS inc
Project Brunton landfill
MCP/RCP Required N/A
Deliverable Package Requirement N/A
Location Brunton, VT
PWSID# (When Applicable) N/A

Arrival Method:

Courier ☑ Fed Ex ☐ Walk In ☐ Other ☐

Received By / Date / Time MEM 5/31/23 1425
~~Back-Sheet By / Date / Time~~ LA 6/1/23 8:56
Temperature Method Gun # 5
Temp ☑ < 6° C Actual Temperature 5.3/5.7
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:

Additional Container Notes

Sample	Soils Jars (Circle Amb/Clear)				Ambers							Plastics										VOA Vials					Other / Fill in					
					1 Liter			250mL			100mL	1 Liter		500mL		250mL																	
	16oz Amb/Clear	8oz Amb/Clear	4oz Amb/Clear	2oz Amb/Clear	Unpreserved	HCL	Sulfuric	Sulfuric	Phosphoric	HCl	Unpreserved	Unpreserved	Sulfuric	Unpreserved	Sulfuric	Unpreserved	Trizma	Sulfuric	Nitric	NaOH	NaOH/Zinc	Unpreserved	HCl	MeOH	D.I. Water	BiSulfate	Col/Bact					
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