

**NHDES Waste Management Division
29 Hazen Drive; PO Box 95
Concord, NH 03302-0095**

**December 2023 Supplemental
Groundwater Quality Monitoring Results
North Country Environmental Services, Inc. Landfill
581 Trudeau Road
Bethlehem, New Hampshire 03574**

**NHDES Site #: 198704033
Project Type: Water Quality Monitoring
Project Number: 1737**

Prepared For:
North Country Environmental Services, Inc. (NCES)
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Tim White

Date of Report: January 26, 2024

Groundwater Monitoring Report Cover Sheet

Site Name: **North Country Environmental Services, Inc. (NCES) Landfill**

Town: **Bethlehem, NH**

Permit #: **GWP-198704033-B-008**

Type of Submittal *(Check all that apply)*

- Periodic Summary Report *(year)*:
- Data Submittal *(month and year per Condition #7 of Permit)*: **December 2023**
Supplemental Groundwater Results – PFAS at B-304DR, MW-604, and B-928D
-

Check each box where the answer to any of the following questions is “YES”

Sampling Results

- During the most recent monitoring event, were any **new** compounds detected at any sampling point? **YES**
Well/Compound: **B-304DR – PFNA: 1.93 ng/l (below the AGQS [11 ng/l])**
- Are there any detections of contamination in drinking water that is untreated prior to use? **NO**
Well/Compound:
 Do compounds detected exceed AGQS?
- Was free product detected for the **first time** in any monitoring point? **NO**
 Surface Water *(visible sheen)*
 Groundwater *(1/8" or greater thickness)*
Location/Thickness:

Contaminant Trends

- Do sampling results show an increasing concentration trend in any source area monitoring well? **Concentration trends are discussed in the text.**
Well/Compound:
- Do sampling results indicate an AGQS violation in any of the GMZ boundary wells?
Well/Compound:
PFOA: B-304DR and B-604 [inside GMZ]

Recommendations

- Does the report include any recommendations requiring DES action? *(Do not check this box if the only recommendation is to continue with existing permit conditions.)* **NO**

Mr. James W. O'Rourke, P.G.
New Hampshire Department of Environmental Services
Waste Management Division
29 Hazen Drive, P.O. Box 95
Concord, New Hampshire 03302-0095

January 26, 2024
File No. 2637.11

Re: December 2023 Supplemental Groundwater Monitoring Results
Groundwater Management and Release Detection Permit GWP-198704033-B-008
North Country Environmental Services, Inc. (NCES) Landfill
Bethlehem, New Hampshire

Dear Mr. O'Rourke:

On behalf of NCES, Sanborn, Head & Associates, Inc. (Sanborn Head) performed supplemental groundwater quality sampling at three monitoring wells (B-304DR, MW-604 and B-928D) at the NCES Landfill (Site) on December 15, 2023. The supplemental sampling was performed as follow-up to the November 2023 triannual groundwater and surface water sampling required by the Site Groundwater Management and Release Detection Permit GWP-198704033-B-008 (the "Permit"), issued by New Hampshire Department of Environmental Services (NHDES) on September 18, 2023. The three monitoring wells were resampled and analyzed for per- and polyfluoroalkyl substances (PFAS) by United States Environmental Protection Agency (USEPA) Method 537.1 due to elevated PFAS reporting limits in the USEPA Method 1633 analysis resulting from elevated turbidity in the samples.

This letter summarizes the results of the supplemental groundwater quality sampling at B-304DR, MW-604 and B-928D. A Site Features Plan is provided as Figure 1. An evaluation of background groundwater exceedances (December 2023 groundwater locations only) is provided as Table 1. A summary of sitewide background conditions is included in Appendix A. A summary of historical monitoring data for B-304DR, MW-604 and B-928D is included in Appendix B. PFAS groundwater analytical results for B-304DR, MW-604 and B-928D are provided as Appendix C. A Field Sampling Summary form is provided as Appendix D. The Analytical Data Report is included in Appendix E.

Summary of Supplemental Monitoring Results

The following provides a summary of the December 2023 supplemental groundwater monitoring results at B-304DR, MW-604 and B-928D:

- The perfluorooctanoic acid (PFOA) concentration at B-304DR (77.6 nanograms per liter [ng/l]) exceeded the Ambient Groundwater Quality Standards (AGQS)¹ value (12 ng/l), but was lower than the July 2023 concentration (91.4 ng/l), which is the period of record maximum. B-304DR is located inside the GMZ.
- The PFOA concentration at MW-604 (13.7 ng/l) exceeded the AGQS for the first time and is the period of record maximum at this location since PFAS sampling began at MW-604 in May 2021; however, the concentration is only slightly higher than the previous maximum (12 ng/l) recorded at this location in July 2021. MW-604 is located inside the GMZ.
- New Hampshire-regulated PFAS² analytes detected in B-304DR, MW-604 and B-928D below their respective AGQS included:
 - PFOA: B-928D (9.96 ng/l), compared to an AGQS of 12 ng/l. This detection represented a period of record maximum, slightly increased from the previous maximum (9.17 ng/l in July 2023).
 - Perfluorohexanesulfonic acid (PFHxS): B-304DR (13.3 ng/l), compared to an AGQS of 18 ng/l. This detection is lower than the July 2023 concentration (23.9 ng/l), which is the period of record maximum.
 - Perfluorononanoic acid (PFNA): B-304DR only (1.93 ng/l), compared to an AGQS of 11 ng/l, represented an initial detection and an initial background exceedance at this location. We note that the December 2023 reporting limit (1.75 ng/l) was the lowest achieved at this location since monitoring began in July 2017.

Concentrations of other PFAS analytes in December 2023 follow-up sampling were generally similar to or lower than concentrations recorded at these locations in recent sampling events.

Closing

As summarized above, the December 2023 supplemental groundwater monitoring results are generally consistent with the findings from recent monitoring rounds and the conceptual model of hydrogeologic conditions at the Site. Monitoring results will continue to be analyzed and reported, including background conditions as represented by the upgradient monitoring wells. The next tri-annual water quality sampling event, which will include monitoring B-304DR, MW-604 and B-928D under the Permit, is planned to be performed in April 2024.

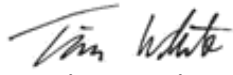
Should you have questions regarding the information presented herein, or wish to discuss any of our findings and conclusions as presented in this report, please feel free to contact Tim White at Sanborn Head or Joe Gay at NCES.

¹ "GW-1" Groundwater Standards are from the New Hampshire Department of Environmental Services (NHDES) Contaminated Sites Risk Characterization and Management Policy (RCMP) (January 1998, with 2000 through 2018 revisions/addenda). GW-1 Groundwater Standards are intended to be equivalent to the AGQSs promulgated in Env-Or 600 (June 2015 with October 2016, September 2018, September 2019, May 2020, January 2021, and July 2021 amendments). For analytes where GW-1 and AGQS values differ, the values presented in this table reflect the AGQSs in the latest Env-Or 600 update. The AGQS/GW-1 Groundwater Standards are intended to be protective of groundwater as a source of drinking water.

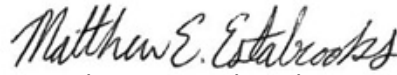
² The State of New Hampshire has established Maximum Contaminant Levels (MCLs) and equivalent AGQSs for four PFAS compounds: PFOA (12 ng/l), PFOS (15 ng/l), PFHxS (18 ng/l), and PFNA (11 ng/l).



Very truly yours,
SANBORN, HEAD & ASSOCIATES, INC.



Timothy M. White, P.G.
Vice President



Matthew E. Estabrooks, P.E.
Senior Project Manager



Gina A. Panik, EIT
Senior Project Engineer

GAP/MEE/TMW: gap/mee

TABLE

Table 1 Evaluation of Background Exceedances – Groundwater Samples – December 2023

FIGURE

Figure 1 Site Features Plan

APPENDICES

Appendix A – Background Groundwater Quality Information (from November 2023 Report)

A.1 – Summary of Background Groundwater Quality Conditions

A.2 – Site Background Groundwater Quality Time-Series Plots (select analytes)

A.3 – Exploration Location Plan (with decommissioned locations)

Appendix B – Summary of Historical Monitoring Data (December 2024 groundwater locations only)

B.1 – Groundwater Elevations

B.2 – Groundwater Analytical Results

Appendix C – PFAS Groundwater Analytical Results (December 2023 groundwater locations only)

C.1 – Summary of PFAS Groundwater Analytical Results

C.2 – PFAS Plots

Appendix D – Sanborn Head Field Sampling Summary Form

Appendix E – Analytical Laboratory Report

cc: w/Appendices: Mr. Joe Gay, NCES
Mr. Kevin Roy, NCES
Town of Bethlehem



Table

TABLE 1
Evaluation of Background Exceedances – Groundwater Samples – December 2023
North Country Environmental Services, Inc.
Bethlehem, New Hampshire
Permit No. GWP-198704033-B-008

Sample Location	Sample Date	Sample Type	SU	uS/cm	C	mg/L	ug/L	ng/L										Inferred Context for Background Exceedance											Comments											
			pH	Specific Conductance	Temperature	Chloride	Manganese, Dissolved	Dioxane (1,4-)	Perfluorobutanoic Acid (PFBA) [3]	Perfluoropentanoic Acid (PFPeA) [4]	Perfluorohexanoic Acid (PFHxA) [5]	Perfluorooctanoic Acid (PFHpA) [6]	Perfluorooctanoic Acid (PFOA) [7]	Perfluorononanoic Acid (PFNA) [8]	Perfluorobutanesulfonic Acid (PFBS) [45]	Perfluorohexanesulfonic acid (PFHxS) [6S]	1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	1	2	3	4	5	6	7	8	9	10	11												
GW-1 (AGQS)						0.3	0.32					12	11		18																									
SMCL			6.5-8.5			250	0.05																																	
Background 2023-11			6.3-8.2	125	5.3-11.7	1.8	0.046	<0.25	<4.0- <5.0	<4.0- <5.0	<4.0- <5.0	<4.0- <5.0	<4.0- <5.0	<4.0- <5.0	<4.0- <5.0	<4.0- <5.0	<4.0- <5.0	<4.0- <5.0	<4.0- <5.0	<4.0- <5.0	<4.0- <5.0	<4.0- <5.0	<4.0- <5.0	<4.0- <5.0	<4.0- <5.0	<4.0- <5.0	<4.0- <5.0	<4.0- <5.0	<4.0- <5.0	<4.0- <5.0	<4.0- <5.0	<4.0- <5.0	<4.0- <5.0	<4.0- <5.0	<4.0- <5.0	<4.0- <5.0	<4.0- <5.0	<4.0- <5.0		
Release Detection Wells Inside the GMZ – Impacts Anticipated from Former Unlined Landfill																																								
B-928D	11/6/2023	N	6.58	206	9.6	14	<0.005	<0.25	<2130	<1070	<533	<533	<667	<533	<473	<487	<2020																					Refer to Nov. 2023 report for discussion of PFAS.		
B-928D	12/15/2023	N	7.15	202	9.9				8.51	6.81	9.59	5.74	9.96	<1.86	7.19	<1.86	<1.86																					Refer to Dec. 2023 report for discussion of PFAS.		
<i>B-304UR/B-304DR: Wells located in the GMZ downgradient of the former unlined landfill with a history of periodic low-level 1,4-dioxane detections and periodic elevated (above GMZ background) bromide and chloride detections; Results are consistent with residual water quality effects related to the former unlined landfill and earthwork that was performed upgradient of these wells in summer 2019 to remove old, of these wells in summer 2019 to remove old, unused landfill infrastructure.</i>																																								
B-304DR	11/6/2023	N	6.44	302	13.7	30	1.7	0.27	<640	<320	<160	<160	<200	<160	<142	<146	<607					✓	✓	✓													Refer to Nov. 2023 report for discussion of PFAS.			
B-304DR	11/6/2023	FD				30	1.8	0.28														✓	✓	✓																
B-304DR	12/15/2023	N	6.7	298	12.8				10.1	13.5	14.4	11.4	77.6	1.93	5.78	13.3	3.83					✓		✓														Refer to Dec. 2023 report for discussion of PFAS.		
Groundwater Management Wells Inside the GMZ – Impacts Anticipated from Former Unlined Landfill																																								
MW-604	11/6/2023	N	6.92	236	12.3				<88.9	<44.4	<22.2	<22.2	<27.8	<22.2	<19.7	<20.3	<84.3					✓		✓														Refer to Nov. 2023 report for discussion of PFAS.		
MW-604	12/15/2023	N	7.39	236	10.2				2.94	3.35	4.24	3.61	13.7	<1.93	3.02	<1.93	<1.93							✓		✓												Refer to Dec. 2023 report for discussion of PFAS.		

Notes:
1. Samples were collected by Sanborn Head on the dates indicated. Samples were analyzed by Eastern Analytical, Inc. (EAI) of Concord, New Hampshire. Field duplicate samples are indicated by "FD" in the Sample Type column.

2. Only detected analytes which exceed background in one or more sample in the current rounds are presented herein. Blank cells for an analyte indicate not analyzed. Refer to the analytical laboratory reports for the complete list of parameters analyzed. Results are compared to their respective background values from time of sampling.

3. pH is presented in standard units (s.u.), specific conductance is presented in microSiemens per centimeter (uS/cm), and temperature is presented in degrees Celsius (C). Indicator parameter and metals results are presented in milligrams per liter (mg/L) which is equivalent to parts per million. Volatile organic compound (VOC) results are presented in micrograms per liter (ug/L) which is equivalent to parts per billion (ppb). PFAS results are presented in nanograms per liter (ng/L) which is equivalent to parts per trillion (ppt).

4. "<" indicates the analyte was not detected above the listed laboratory reporting limit. Blank cells indicate the sample was not analyzed for that analyte.
[3] = number of carbons in the alkyl chain for perfluorinated carboxylic acids (PFCAs). The carbon included in the carboxylic functional group is non-fluorinated and the remaining carbons (i.e., alkyl chain) are fluorinated.
[45] = number of carbons in the alkyl chain for perfluorinated sulfonic acids (PFSA). All of the carbons are fluorinated.

5. "GW-1" Groundwater Standards are from the New Hampshire Department of Environmental Services (NHDES) Contaminated Sites Risk Characterization and Management Policy (RCMP) (January 1998, with 2000 through 2018 revisions/addenda). GW-1 Groundwater Standards are intended to be equivalent to the AGQSs promulgated in Env-Or 600 (June 2015 with October 2016, September 2018, September 2019, May 2020, January 2021, and July 2021 amendments). For analytes where GW-1 and AGQS values differ, the values presented in this table reflect the AGQSs in the latest Env-Or 600 update. The AGQS/GW-1 Groundwater Standards are intended to be protective of groundwater as a source of drinking water.

"SMCL" refers to the USEPA Secondary Maximum Contaminant Levels as presented in the National Primary Drinking Water Standards (May 2009). The SMCLs are established as guidelines to assist public water systems in managing their drinking water for aesthetic considerations, such as taste, color, and odor. These analytes are not considered to present a risk to human health at the SMCL.

6. Bold values exceed the GW-1/AGQS.
Italic values exceed the SMCL.
Green shading indicates a concentration exceeds current background.
Yellow shading indicates a concentration exceeds current background for the first time.












7. Refer to the report text and the text of Appendix A for further information about calculation and selection of background concentrations.

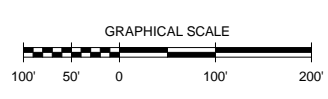
Figure

NOTES:

1. THE AERIAL IMAGERY WAS OBTAINED FROM A JUNE 2023 PHOTOGRAPH PROVIDED BY CMA ENGINEERS, INC.
2. TOPOGRAPHY INSIDE THE ACTIVE AREA WAS OBTAINED FROM AN JUNE 2023 SURVEY. OUTSIDE THE ACTIVE AREA, TOPOGRAPHY WAS OBTAINED FROM SURVEYS PERFORMED IN OCTOBER 2018 AND MAY 2021.
3. THE LIMITS OF THE GMZ ARE BASED ON AN OCTOBER 2017 PLAN PREPARED BY HORIZONS ENGINEERING, INC. ENTITLED "GROUND WATER MANAGEMENT ZONE PLAN FOR LANDS OF NORTH COUNTRY ENVIRONMENTAL SERVICES, INC. AND FOREST ACQUISITIONS, INC."

LEGEND:

-  FACILITY MONITORING WELL
-  SURFACE WATER SAMPLING LOCATION
-  INDICATES UPPER/SHALLOW WELL
-  INDICATES SCREEN AT MIDDLE INTERVAL BETWEEN UPPER AND LOWER SCREENS
-  INDICATES DEEP/LOWER WELL
-  INDICATES REPLACEMENT WELL
-  RIP-RAP STONE
-  LIMIT OF WETLAND DELINEATION
-  GROUNDWATER MANAGEMENT ZONE
-  TOWN OF BETHLEHEM ZONING LINE
-  PROPERTY LINE



Appendix A

Background Groundwater Quality Information

Note: Appendix A was initially provided in the November 2023 Tri-annual Report, and is included herein for reference

Appendix A.1

Summary of Background Groundwater Quality Conditions

APPENDIX A.1

SUMMARY OF BACKGROUND GROUNDWATER CONDITIONS

On behalf of North Country Environmental Services, Inc. (NCES), Sanborn, Head & Associates, Inc. (Sanborn Head) prepared an assessment of site background groundwater conditions at the NCES Landfill (Site) in Bethlehem, New Hampshire pursuant to the Site Groundwater Management and Release Detection Permit GWP-198704033-B-008 (the Permit) issued by NHDES on September 18, 2023, and the requirements of Env-Or 700.

Development of Sitewide Background Concentrations

To identify sitewide “background” groundwater conditions consistent with Env-Or 702.03, groundwater quality results from the following monitoring wells located upgradient of the landfill were reviewed:

Active Monitoring Wells
B-923U
B-924U
B-924L
B-925U
B-925L
B-929U
B-929L

As indicated on Table A.1, the period of record used for calculating background groundwater quality for this report is the past approximately five years (e.g., data collected since November 1, 2018). A period of approximately five years was selected as the timeframe for background conditions to include a broad data set of wells with varying periods of record, while also considering a relatively recent interval of time. Refer to Tables A.1 and B.2 for recent analytical data, and applicable standards for groundwater.

It is important to note that the wells selected for identification of sitewide background concentrations are located upgradient of both the lined landfill and former unlined landfill, and are intended to provide water quality information for areas unaffected by site operations. The presence of the former unlined landfill, within the GMZ, represents a residual “legacy” impact relative to redox conditions and groundwater quality. Therefore, comparison of wells within the GMZ to upgradient background conditions should be made for reference purposes only, as exceedance of upgradient background groundwater quality within the GMZ is not considered by itself to be evidence of a “release” from the lined landfill pursuant to the Env-Or 700 regulations. We also note that the presence of residual VOCs and PFAS analytes at several site monitoring wells outside the GMZ are inferred to be related to historical landfill infrastructure (e.g., leachate collection infrastructure) that has been addressed through a series of corrective actions. Refer to the February 2009 Corrective Action Plan for additional information on historical corrective actions.

Using data from upgradient monitoring wells B-923U, B-924U, B-924L, B-925U, B-925L, B-929U, and B-929L discussed above, the sitewide background concentrations were identified using four categories:

Category	Analytes
Maximum concentration in last 5 years of sampling	<ul style="list-style-type: none"> Metals Nitrate TKN Chloride COD Specific conductance
Fixed value	Bromide: <ul style="list-style-type: none"> ≤0.1 mg/l for monitoring wells outside boundaries of GMZ, based on site historical information; ≤0.4 mg/l for monitoring wells within boundaries of GMZ; based on data from 1996 and earlier.
Typical laboratory reporting limit (varies by analyte)	Analytes not typically detected in site background wells (based on typical laboratory reporting limits): <ul style="list-style-type: none"> VOCs PFAS
Typical period-of-record ranges	<ul style="list-style-type: none"> pH temperature <p>Note: pH and temperature have natural variability, and therefore the 5th and 95th percentiles were used to bound typical ranges for these values.</p>

Sitewide background values will be evaluated and changes recommended where appropriate for future monitoring events as new data are added and data greater than approximately five years old are removed from the background data set. Refer to Appendix A.2 for time series plots of field parameter values and chloride concentrations at sitewide background monitoring wells.

Updates to Background Values – November 2023 Reporting Period

Sitewide background values for the November 2023 reporting period included updates for the following analytes:

- **pH:** The background range changed from 6.4 to 9.0 s.u. in July 2023 to 6.3 to 8.2 s.u. in November 2023.
- **Specific Conductance:** The background value changed from 160 µS/cm in July 2023 to 125 µS/cm in November 2023.
- **Temperature:** The background range changed from 5.4 to 12.9°C in July 2023 to 5.3 to 11.7°C in November 2023.
- **Nitrate:** The background value changed from 2.6 mg/L in July 2023 to 3 mg/L in November 2023.

- **Manganese:** The background value changed from 0.067 mg/L in July 2023 to 0.046 mg/L in November 2023.

Background Values and Groundwater Standards

As indicated in Table A.1, sitewide background concentrations are generally within range of applicable AGQS where available or USEPA SMCL if no AGQS is available, with the following exceptions:

- Background pH ranges from 6.3 to 8.2 s.u.; for reference, the USEPA SMCL ranges from 6.5 to 8.5 s.u., and;
- Background iron concentration is 0.41 milligrams per liter (mg/l); however, the USEPA SMCL for iron is 0.3 mg/l. There is no AGQS for iron.

The pH and iron values/concentrations at the site background monitoring wells are within expected ranges for groundwater in northern New Hampshire.

Inferred Context for Sitewide Background Groundwater Concentration Exceedances

Given the NCES Landfill has a long history of site operation, including the former unlined landfill which resulted in residual impacts to groundwater quality, comparison of water quality results from historically impacted locations to a single background value from generally upgradient locations is not necessarily a representative comparison for the purposes of release detection (as specified by the Env-Or 700 rules). For example, the generally reducing conditions in groundwater within the GMZ have resulted in a long period of record at multiple locations indicating elevated concentrations of naturally-occurring metals (typically iron, arsenic, and manganese). In this case, the presence of elevated metals alone does not indicate a release from the facility, but rather residual effects from historical conditions.

Therefore, to evaluate the context for exceedances of site groundwater background concentrations, we developed the following categories which describe generally similar groundwater quality conditions, based on a number of factors including: well depth, geologic conditions, well location on-site, current and historical site operations, and results from nearby wells. These categories are summarized below and are indicated on Table 1. Consistent with the on-going evaluation of background conditions, these categories will be evaluated/refined as appropriate based on new data collected at the site.

Summary of Context for Sitewide Background Groundwater Quality Exceedances

<u>Category/ Location</u>	<u>Description</u>
General Conditions	
1	pH below site background downgradient of/adjacent to lined landfill; pH generally 5.6 to 6.4 s.u.
2	pH elevated due to grout used in monitoring well construction; grout may also result in elevated specific conductance.
3	Temperature above site background inferred to be related to location of well downgradient of/adjacent to lined landfill area; or temperature below background, typically recorded during colder months).

<u>Category/ Location</u>	<u>Description</u>
4	Periodically or consistently elevated concentrations of metals (typically, but not limited to naturally-occurring arsenic, manganese, iron) consistent with residual water quality effects related to the former unlined landfill, principally chemically-reducing conditions.
5	Periodically or consistently elevated chloride (and sometimes also specific conductance) primarily at shallow locations near or downgradient of roadways inferred to be in part or in whole related to road salting/vehicle traffic and associated soil disturbance. Deeper intervals may also indicate elevated chloride concentrations within the GMZ.
6	Periodically or consistently elevated chloride (and sometimes also specific conductance) at intermediate and deep wells outside the GMZ, and generally northwest of the landfill. These intermediate and deep wells sporadically indicate the presence of anthropogenic influence (e.g., sporadic detection of VOCs presumed to be related to earthwork associated with previous phases of landfill development), and are inferred to be completed in groundwater intervals representative of longer flow paths/travel times. As such, results from these monitoring wells are inferred to be representative of historical conditions which may no longer exist at the site.
7	Periodically or frequently detected COD consistent with residual water quality effects related to the former unlined landfill.
8	Periodically or frequently detected TKN consistent with residual water quality effects related to the former unlined landfill.
9	Shallow or intermediate well with sporadic nitrate detection; inferred to be related to hydroseeding, vegetation clearing, soil disturbance, or other site operations.
10	Low-level PFAS inside the GMZ related to the presence of the former unlined landfill.
11	Low-level detections of extended metals list analytes (primarily barium and chromium) at locations adjacent to/downgradient of lined landfill areas; inferred to be related to naturally-occurring metals in soil with concentrations possibly increased by mineral weathering related to earthwork associated with previous phases of landfill development.
Area-specific conditions	
B-927M	Well with a history of low-level DCDFM detections located proximate to the GMZ; previous results are consistent with residual impacts from the former unlined landfill and historical results from decommissioned predecessor well B-921M.
B-918M	Well located outside the GMZ north of the Stage I Landfill with a history of low-level PFAS and 1,4-dioxane detections. Results are consistent with residual impacts from the August 2006 leachate forcemain break, subsequently addressed as part of the Stage I Phase I Landfill Capping System Repair Project, completed in September 2009. Note: 1,4-dioxane was historically detected in former monitoring well B-913M (decommissioned) located generally upgradient of B-918M.
MW-701 B-915U B-915M	Well located outside the GMZ proximate to the Stage I Landfill with a history of low-level PFAS detections related to historical leachate infrastructure operations corrected as part of the Leachate Management Improvement Project (LMIP), completed in May 2009. Stage I leachate infrastructure was later re-constructed as part of Stage V construction 2014-2015.
MW-802 MW-803 B-919U B-919M	Well located in the GMZ downgradient of the former unlined landfill with a history of sporadic low-level VOC detections. Low-level PFAS has also been detected at one or more locations. Results are consistent with residual impacts from the former unlined landfill.
B-304UR / B-304DR	Wells located in the GMZ downgradient of the former unlined landfill with a history of periodic low-level 1,4-dioxane detections and periodic elevated (above GMZ background) bromide and chloride detections; Results are consistent with residual water quality effects related to the former unlined landfill and earthwork that was performed upgradient of these wells in summer 2019 to remove old, unused landfill infrastructure.

Comparison to Background

Comparison to sitewide background conditions as described herein is a conservative approach to screen for the potential of a release from the lined facility. For example, the generally reducing conditions in groundwater within the GMZ has resulted in a long period of record at multiple locations indicating elevated concentrations of naturally-occurring metals (typically iron, arsenic, and manganese). In this case, the detection of elevated metals alone at groundwater monitoring wells in or near the GMZ does not indicate a release from the facility, but rather residual effects from historical conditions. Similarly, groundwater conditions are anticipated to vary naturally over time and along flow paths, which may lead to differences between upgradient and downgradient groundwater concentrations/ conditions.

Because comparison to sitewide background values should not be used as a strict evaluation of a release from the lined facility, data evaluation for the site includes the following:

- Presentation of the historical groundwater and surface water quality data in graphical format (refer to trend plots in Appendices C.1 and C.2). These trend plots indicate concentrations or values over time and will be used to supplement the data summary tables to aid in identifying if analytes have “well-specific” concentrations, or ranges of concentrations, that if exceeded may indicate a release.
- Criteria that may be used to aid identification of potential releases from the lined facility (summarized in the table below). Based on our understanding of site hydrogeology and contaminant behavior in the subsurface, we believe that a release from the lined facility could be identified using multiple lines of evidence. Specifically, a hypothetical release from the lined facility could be identified based on one or more of the conditions indicated in the table below.

Summary of Criteria Used for Identifying Potential Releases from the Lined Landfill

Anticipated Release Condition		Rationale
1	Repeatable or persistent concentrations of analytes of interest over multiple sampling events above sitewide background concentrations. Repeat sampling has historically been performed at the site to confirm anomalous results. Increasing concentrations of analytes of interest may be observed.	Material releases from the facility would likely result from an on-going condition (i.e., one that persists unless/until corrected [e.g., liner defect, pipe break, landfill gas leakage]), and therefore include persistent detection of multiple analytes, or increasing concentrations of analytes of interest. "Isolated" or single analyte detection events, if detected and confirmed by the laboratory, would be considered representative of a transient condition (e.g., an incidental surface spill), rather than indicative of an on-going release. Absent consistent detections or increasing concentrations, the condition would likely be considered transient.
2	Multiple analytes of interest detected.	If released, material from the lined facility is anticipated to result in a broad range of analytes being detected in groundwater. If a single or more limited list of analytes are detected above sitewide background concentrations, an evaluation would be made regarding the potential source (e.g., leachate, landfill gas, incidental surface spill). For example, if VOCs were not detected but other indicator parameters (e.g., chloride, nitrate) were, leachate and landfill gas would not typically be suspected as a potential source as VOCs would be anticipated to be detected in a release of these materials from the lined facility.
3	Potentially (but not necessarily) identifiable in more than one monitoring location consistent with proximity to the landfill.	Based on inferred transport in groundwater, a material release from the lined facility may be detected in multiple monitoring locations. If analyte(s) of interest were detected, surrounding monitoring locations would be reviewed to evaluate if the condition is identified.
4	Operational observations substantiating a potential for release	The routine inspection and monitoring of the landfill is performed to identify conditions that may be indicative of a release. If analyte(s) of interest were detected, additional review of site operations/infrastructure would be performed to evaluate if the condition was related to a known or suspected release event (e.g., leachate breakout, broken leachate forcemain, landfill gas migration).

This list is not intended to address every possible hypothetical release from the lined facility, but rather serve as a basis for preliminary screening of data from the facility to supplement the existing Permit monitoring and reporting. This screening will focus on analytes in groundwater detected at concentrations above sitewide background concentrations.

TABLE A.1
Calculation of Background Concentrations – Groundwater
North Country Environmental Services, Inc.
Bethlehem, New Hampshire
Permit No. GWP-198704033-B-008

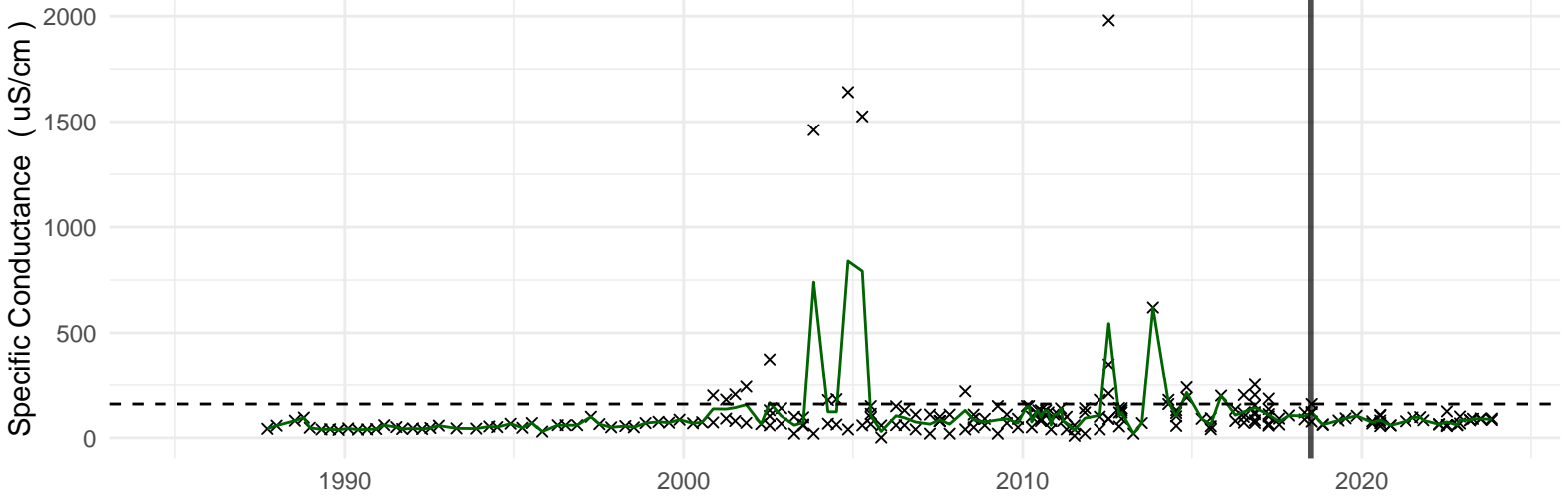
Location	Date	Per- and Polyfluoroalkyl Substances					
		Concentrations in ng/L					
		1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	Perfluorooctanesulfonamide (FOSA)	N-methyl perfluorooctane sulfonamide (MeFOSA)	N-Ethyl Perfluorooctanesulfonamide (EtFOSAA)	N-Methyl Perfluorooctanesulfonamide (MeFOSAA)
GW-1 (AGQS)		NS	NS	NS	NS	NS	NS
SMCL		NS	NS	NS	NS	NS	NS
B-923U	11-06-18						
B-923U	04-23-19						
B-923U	07-09-19						
B-923U	11-05-19						
B-923U	04-21-20						
B-923U	07-16-20						
B-923U	11-04-20						
B-923U	04-20-21						
B-923U	07-07-21						
B-923U	11-02-21						
B-923U	04-20-22						
B-923U	07-12-22	<4	<4	<4	<20	<4	<4
B-923U	11-02-22						
B-923U	04-19-23						
B-923U	07-12-23						
B-923U	11-06-23						
B-924U	11-06-18						
B-924U	04-23-19						
B-924U	07-09-19						
B-924U	11-05-19						
B-924U	04-21-20						
B-924U	07-16-20						
B-924U	11-04-20						
B-924U	04-20-21						
B-924U	07-07-21	<4	<4	4.1	<20	<4	<4
B-924U	09-29-21	<4	<4	<4	<20	<4	<4
B-924U	11-02-21						
B-924U	04-20-22						
B-924U	07-12-22						
B-924U	11-02-22						
B-924U	04-19-23						
B-924U	07-12-23						
B-924U	11-07-23						
B-924L	11-06-18						
B-924L	04-23-19						
B-924L	07-09-19						
B-924L	11-05-19						
B-924L	04-21-20						
B-924L	07-16-20						
B-924L	11-04-20						
B-924L	04-20-21						
B-924L	07-07-21						
B-924L	11-02-21						
B-924L	04-20-22						
B-924L	07-12-22						
B-924L	11-02-22						
B-924L	04-19-23						
B-924L	07-12-23						
B-924L	11-06-23						
B-925U	11-06-18						
B-925U	04-23-19						
B-925U	07-09-19						
B-925U	11-05-19						
B-925U	04-21-20						
B-925U	07-16-20	<4.46	<4.46	<4.46	<22.3	<4.46	<4.46
B-925U	11-04-20						
B-925U	04-20-21						
B-925U	07-07-21						
B-925U	11-02-21						
B-925U	04-20-22						
B-925U	07-12-22						
B-925U	11-02-22						
B-925U	04-19-23						
B-925U	07-12-23						
B-925U	11-06-23						
B-925L	11-06-18						
B-925L	04-23-19						
B-925L	07-09-19						
B-925L	11-05-19						
B-925L	04-21-20						
B-925L	07-16-20						
B-925L	11-04-20						
B-925L	04-20-21						
B-925L	07-07-21						
B-925L	11-02-21						
B-925L	04-20-22						
B-925L	07-13-22						
B-925L	11-02-22						
B-925L	04-19-23						
B-925L	07-12-23						
B-925L	11-06-23						
B-929U	11-02-22						
B-929U	12-01-22	<4	<4	<4	<20	<4	<4
B-929U	03-20-23	<4	<4	<4	<20	<4	<4
B-929U	04-19-23						
B-929U	07-12-23						
B-929U	11-07-23						
B-929L	11-02-22						
B-929L	12-01-22	<4	<4	<4	<20	<4	<4
B-929L	03-20-23	<4	<4	<4	<20	<4	<4
B-929L	04-19-23						
B-929L	07-12-23						
B-929L	11-07-23						
Minimum Detection		ND	ND	4.1	ND	ND	ND
Maximum Detection		ND	ND	4.1	ND	ND	ND
Median of Detections		-	-	4.1	-	-	-
5th Percentile of Detections		-	-	4.1	-	-	-
95th Percentile of Detections		-	-	4.1	-	-	-
Typical Reporting Limit for All NDs		<4.0-<5.0	<4.0-<5.0	<4.0-<5.0	<20-<24	<4.0-<5.0	<4.0-<5.0
Site-Specific Background Value		-	-	-	-	-	-
Selected Background Concentration							

- Notes:
1. Samples were collected by Sanborn Head on the dates indicated. Samples were analyzed by Eastern Analytical, Inc. (EAI) of Concord, New Hampshire. Field duplicate samples are indicated by "Dup."
 2. pH is presented in standard units (s.u.), specific conductance is presented in microSiemens per centimeter (µS/cm), and temperature is presented in degrees Celsius (°C). Indicator parameter and metals results are presented in milligrams per liter (mg/L) which is equivalent to parts per million. Volatile organic compound (VOC) and semi-volatile organic compound (SVOC) results are presented in micrograms per liter (µg/L) which is equivalent to parts per billion (ppb). Per- and polyfluoroalkyl substances (PFAS) results are presented in nanograms per liter (ng/L) which is equivalent to parts per trillion (ppt).
 3. "<" indicates the analyte was not detected above the listed laboratory reporting limit. "§" indicates background value for bromide is 0.4 mg/L for wells within the groundwater management zone (GMZ) established for the site, and 0.1 mg/L for wells outside the GMZ. [3] = number of carbons in the alkyl chain for perfluorinated carboxylic acids (PFCAs). The carbon included in the carboxylic functional group is non-fluorinated and the remaining carbons (i.e., alkyl chain) are fluorinated. [4S] = number of carbons in the alkyl chain for perfluorinated sulfonic acids (PFASs). All of the carbons are fluorinated.
 4. "GW-1" Groundwater Standards are from the New Hampshire Department of Environmental Services (NHDES) Contaminated Sites Risk Characterization and Management Policy (RCMP) (January 1998, with 2000 through 2018 revisions/addenda). GW-1 Groundwater Standards are intended to be equivalent to the AGQs promulgated in Env-Or 600 (June 2015 with October 2016, September 2018, September 2019, May 2020, January 2021, and July 2021 amendments). For analytes where GW-1 and AGQS values differ, the values presented in this table reflect the AGQs in the latest Env-Or 600 update. The AGQS/GW-1 Groundwater Standards are intended to be protective of groundwater as a source of drinking water. "SMCL" refers to the USEPA Secondary Maximum Contaminant Levels as presented in the National Primary Drinking Water Standards (May 2009). The SMCLs are established as guidelines to assist public water systems in managing their drinking water for aesthetic considerations, such as taste, color, and odor. These analytes are not considered to present a risk to human health at the SMCL.
 5. **Bold** values exceed the GW-1 Groundwater Standard (or SMCL if no GW-1 Groundwater Standard is available) for that analyte. Green shading indicates the calculated background concentration.
 6. Appendix A.1 includes a description of the assessment of background groundwater conditions at the NCES Landfill. Appendix A.1 also includes a discussion of the selection of monitoring wells used to develop background groundwater values, as well as the period of record used to identify background values for the current reporting period.

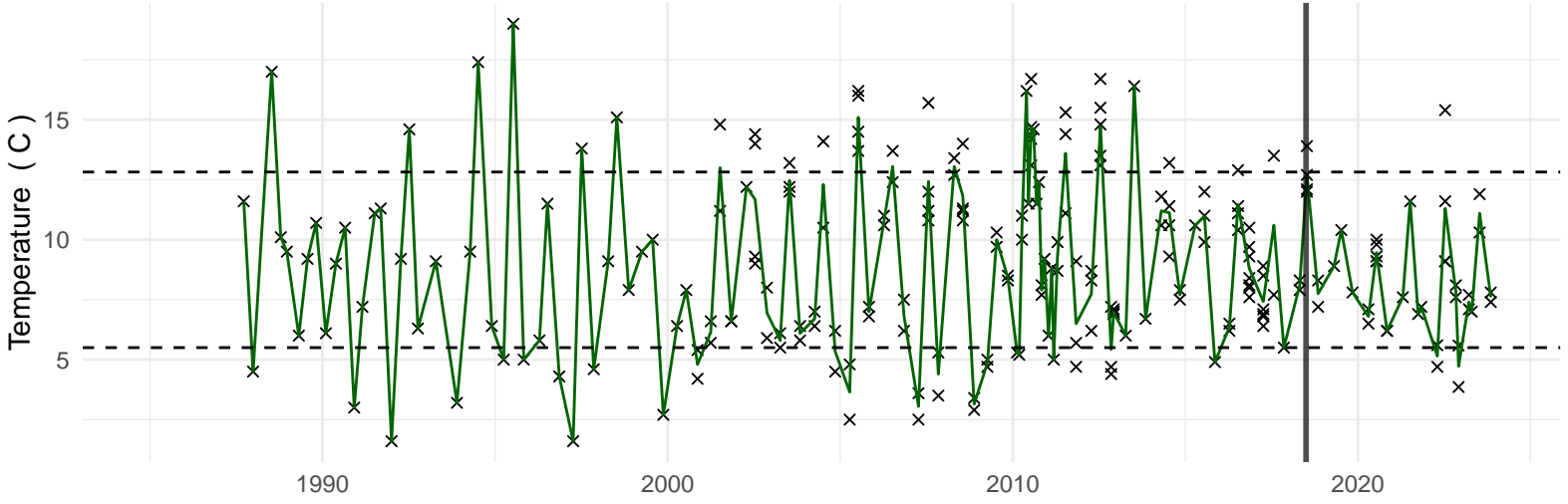
Appendix A.2

Site Background Groundwater Quality Time-Series Plots

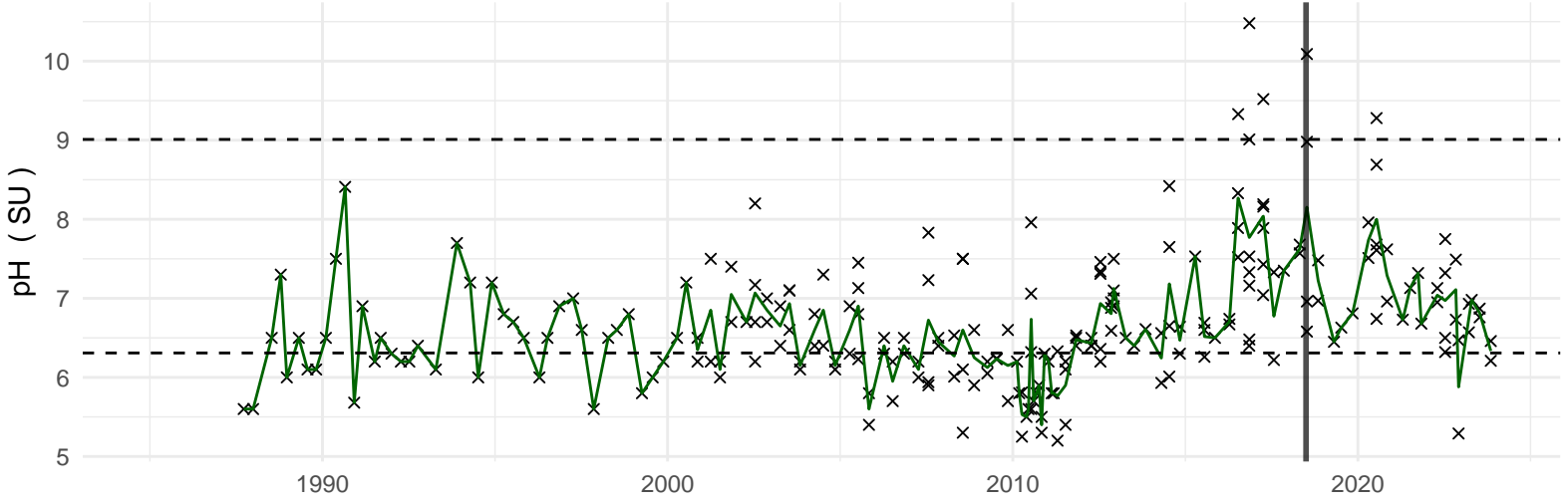
Specific Conductance



Temperature

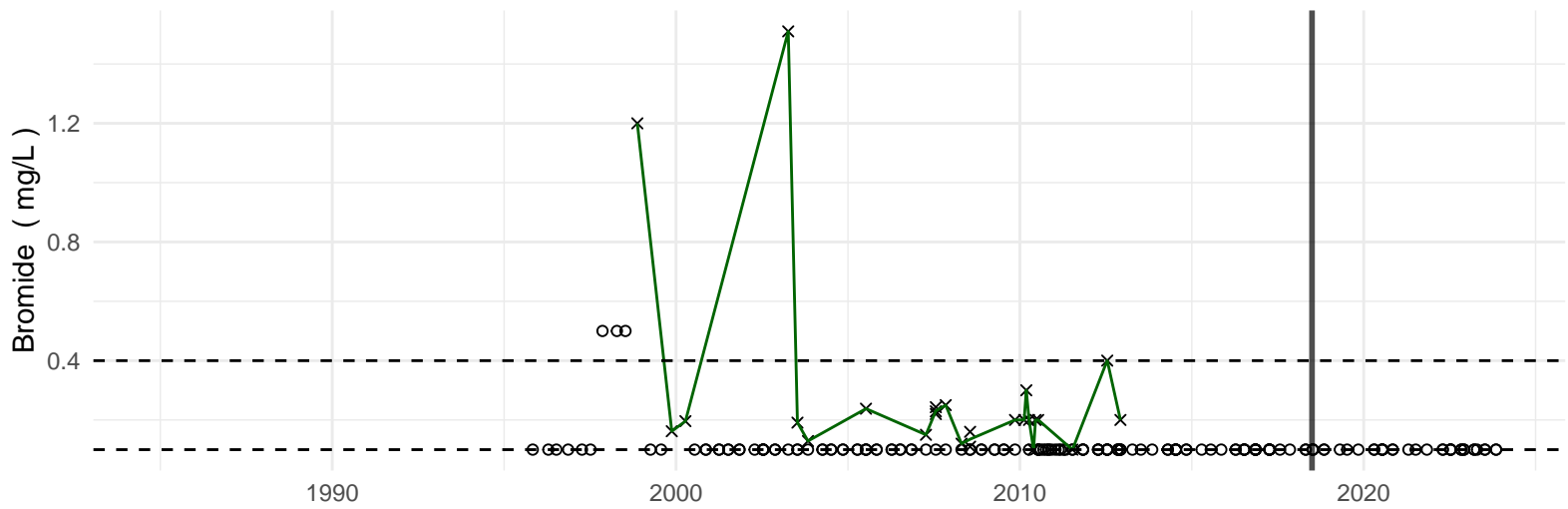


pH

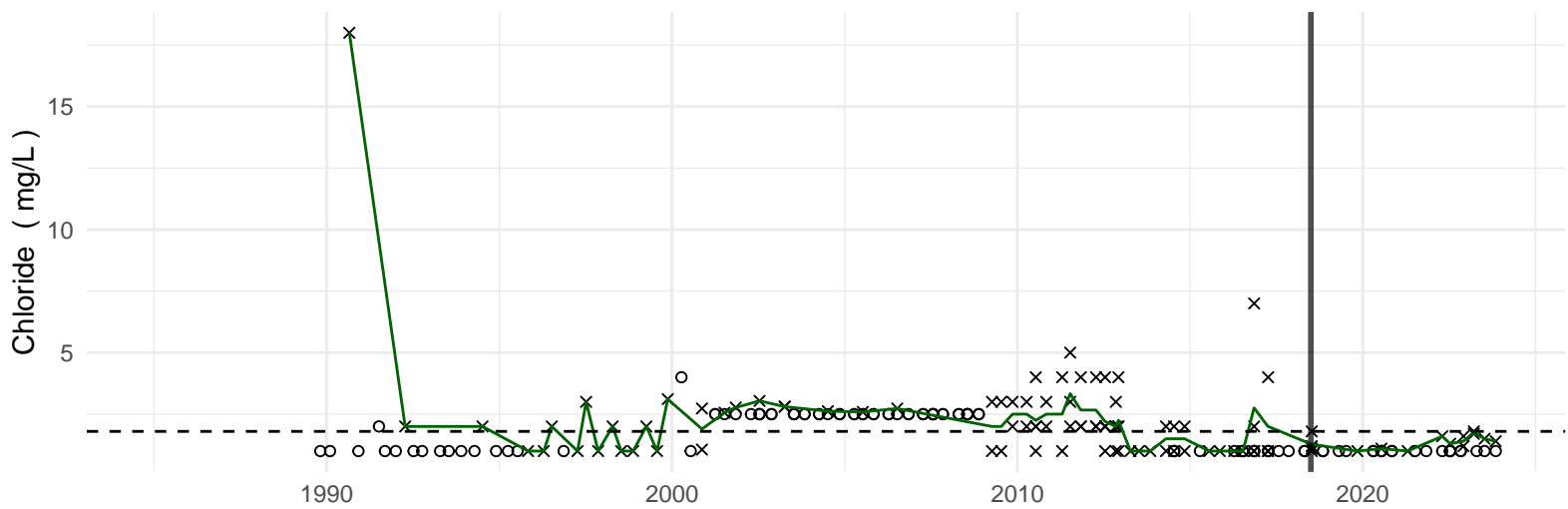


Start of Current Background Period - - Background Level O Non-Detect

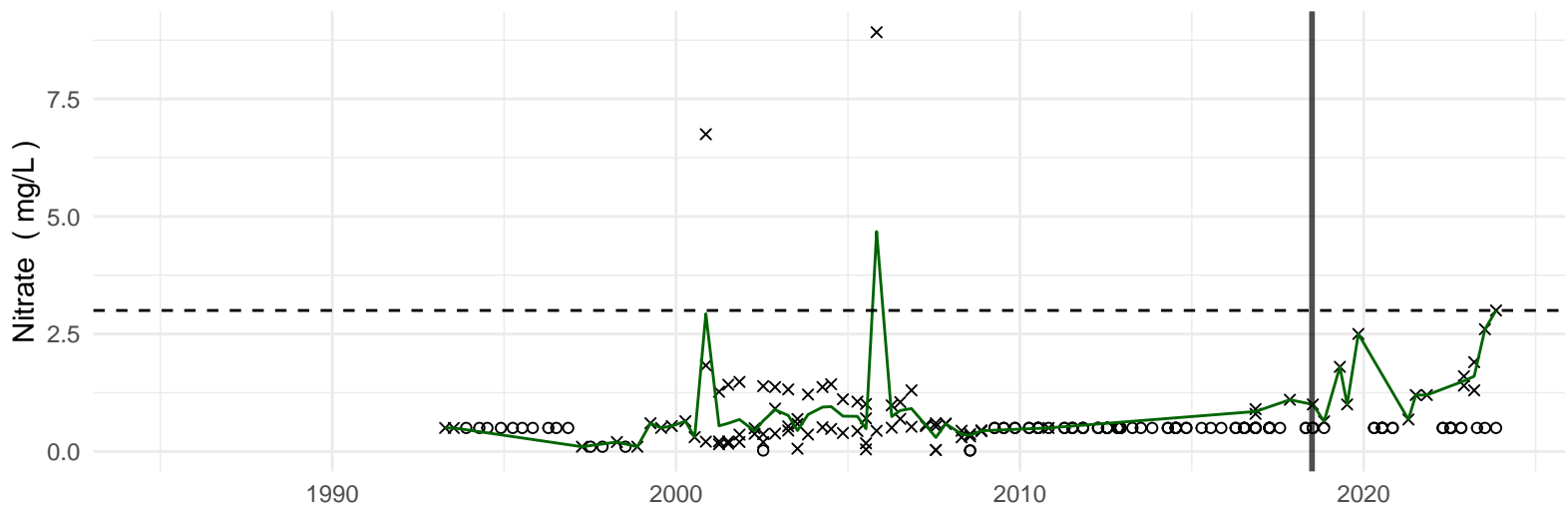
Bromide



Chloride

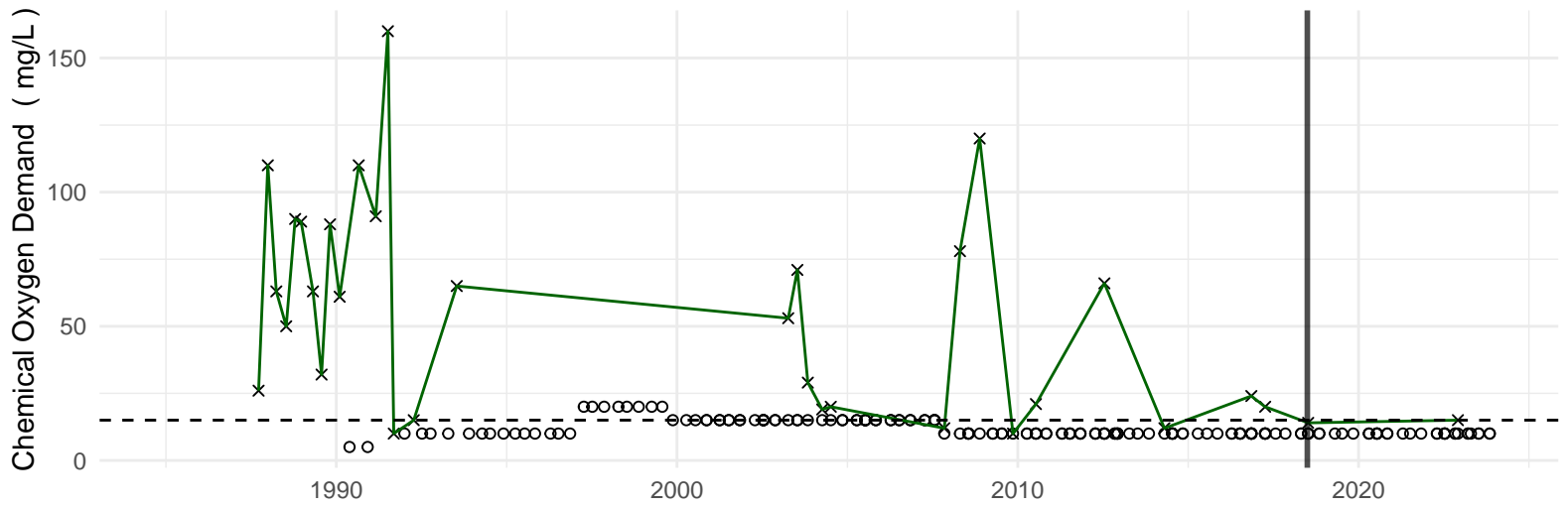


Nitrate

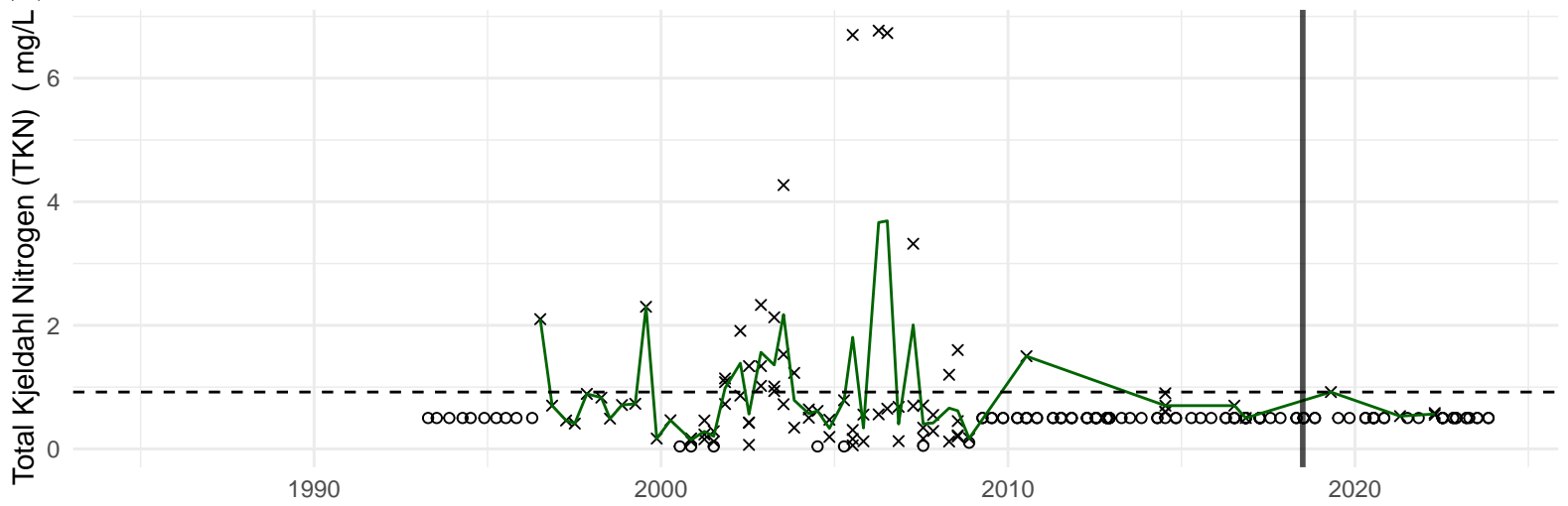


Start of Current Background Period - - Background Level o Non-Detect

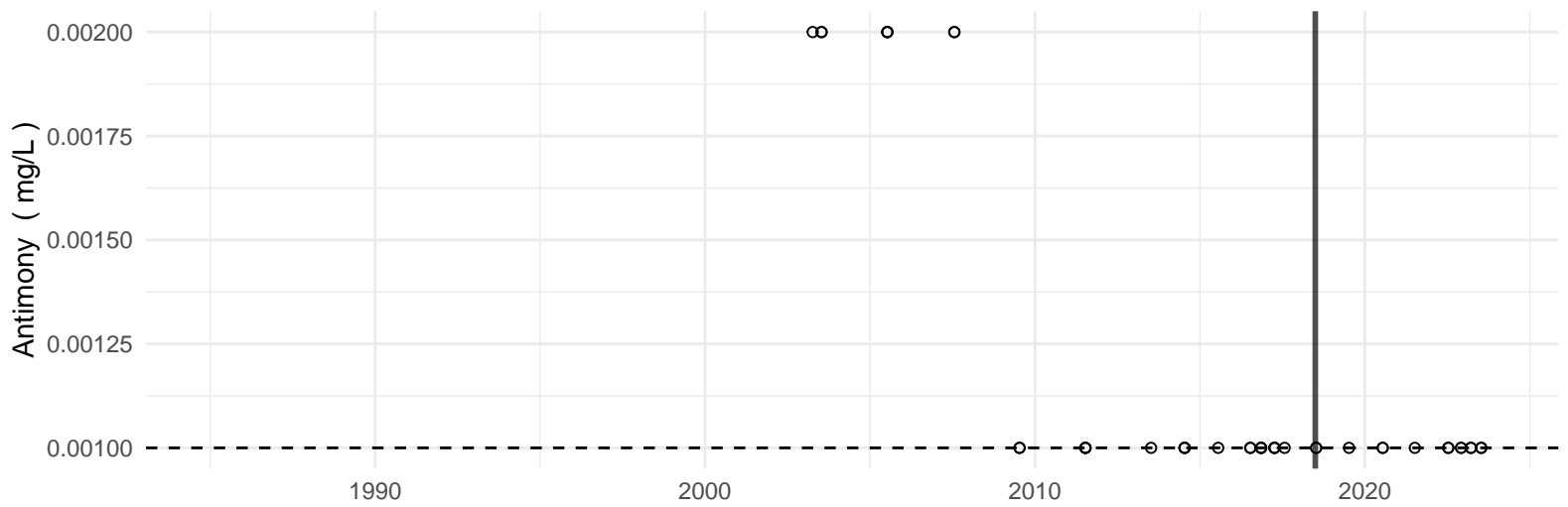
Chemical Oxygen Demand



Total Kjeldahl Nitrogen (TKN)

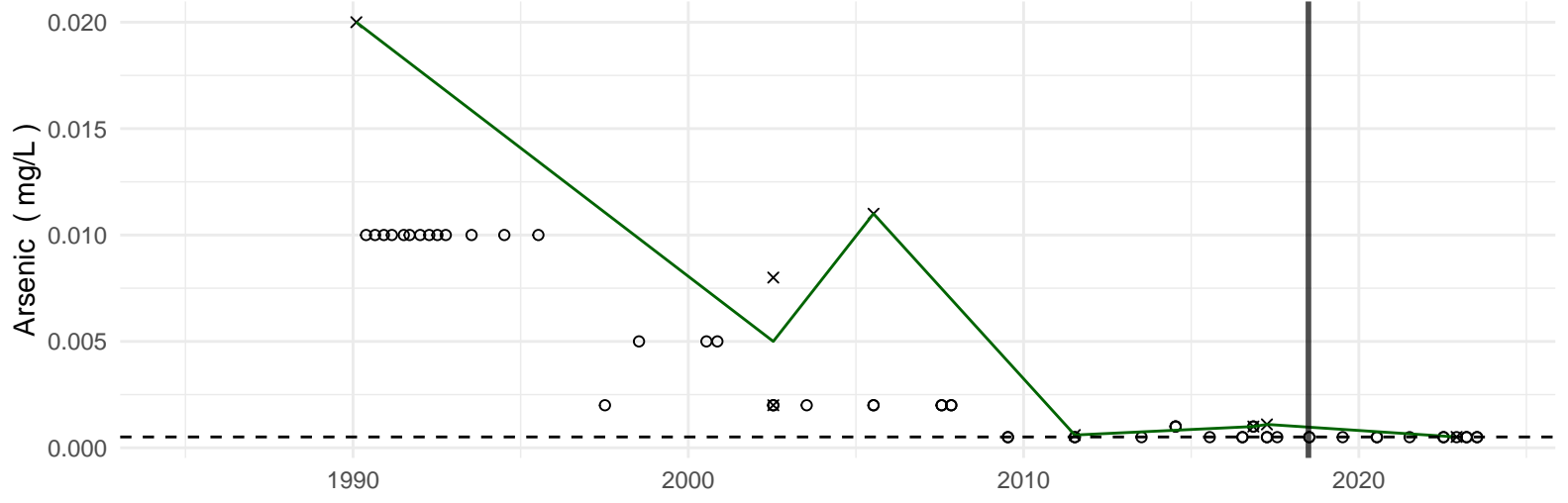


Antimony

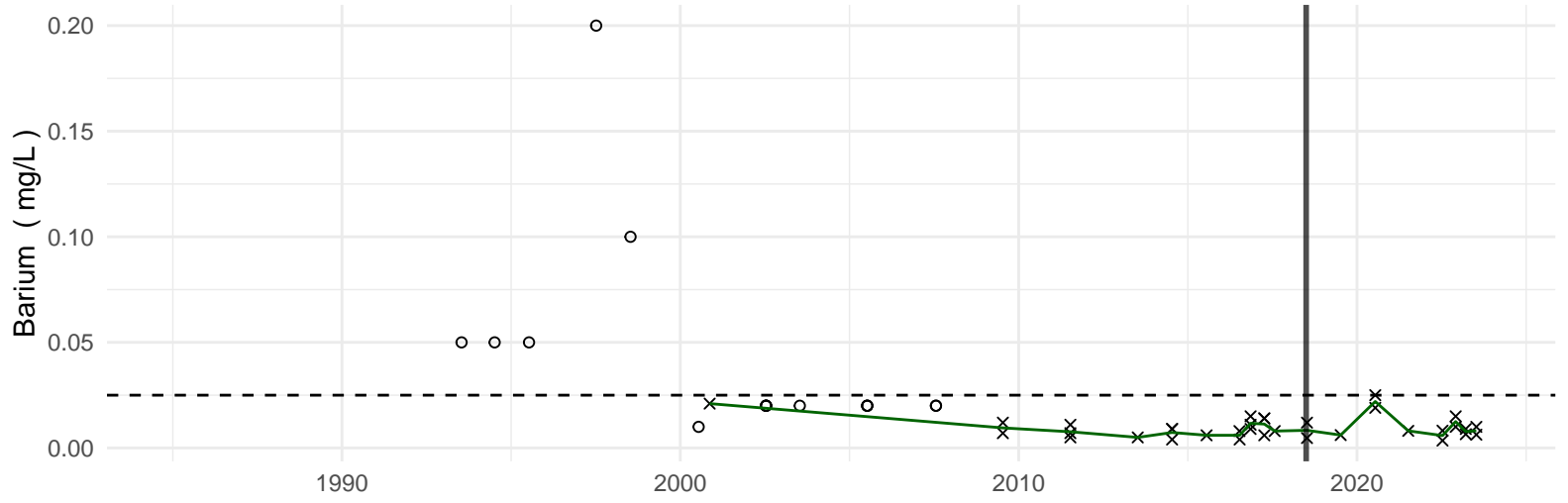


Start of Current Background Period
 Background Level
 Non-Detect

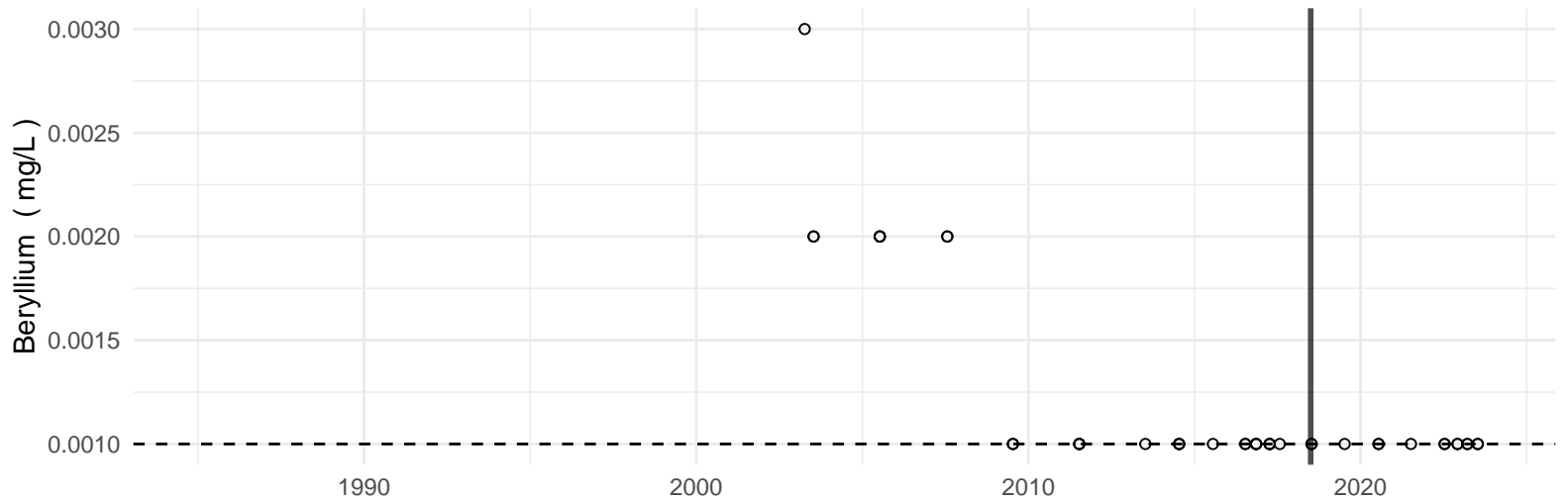
Arsenic



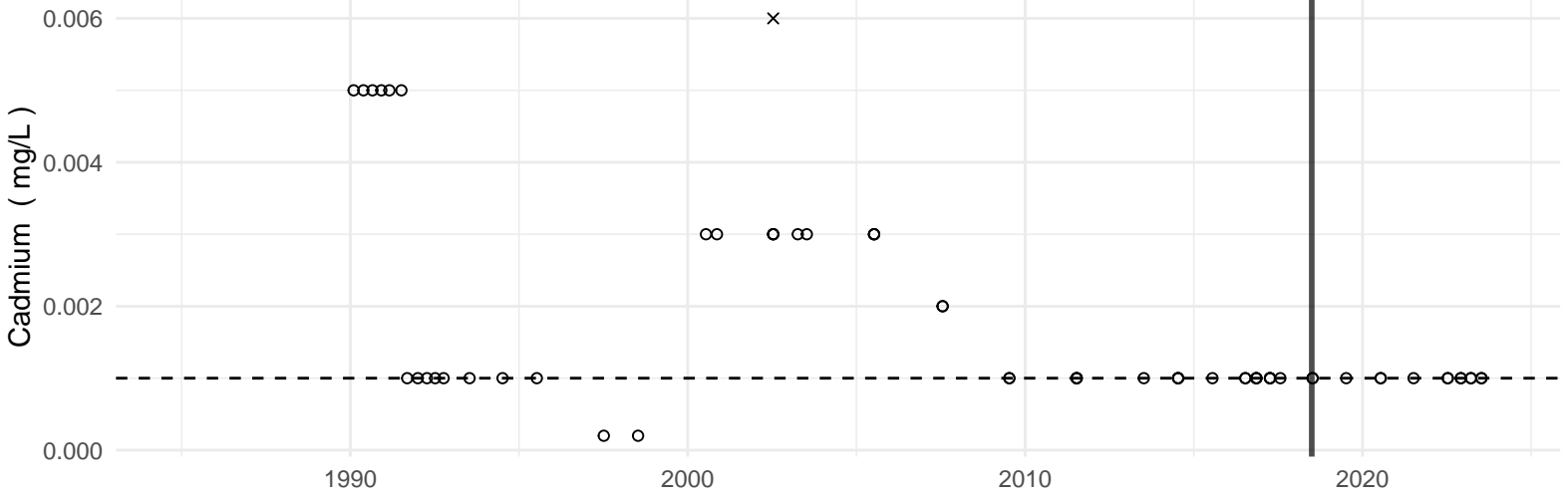
Barium



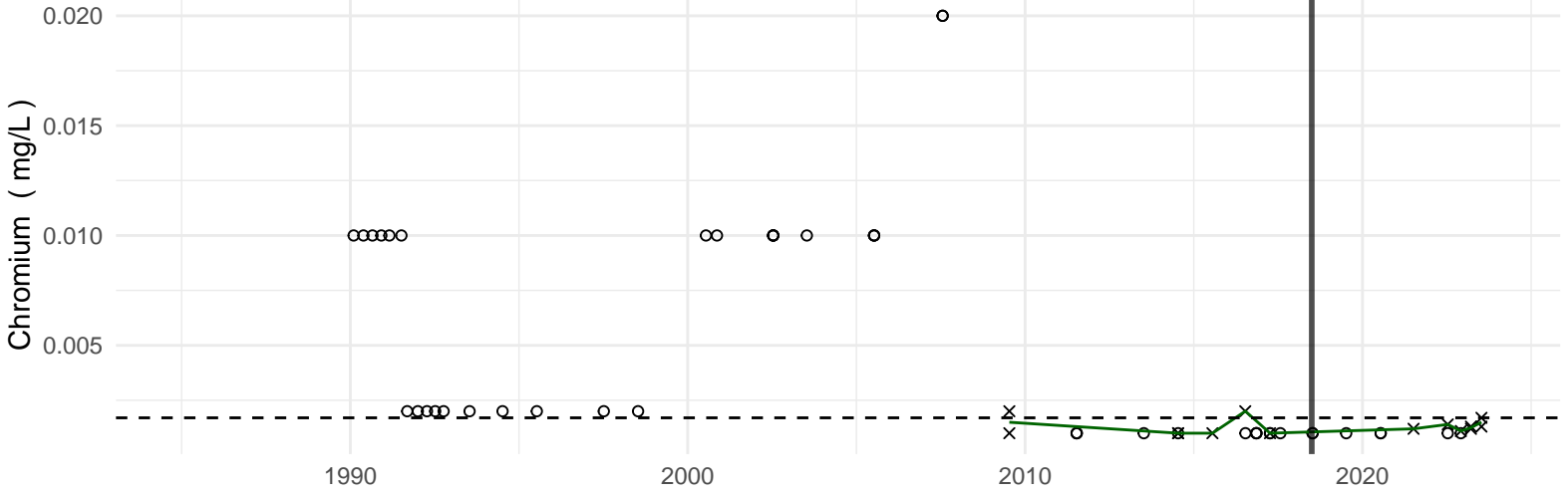
Beryllium



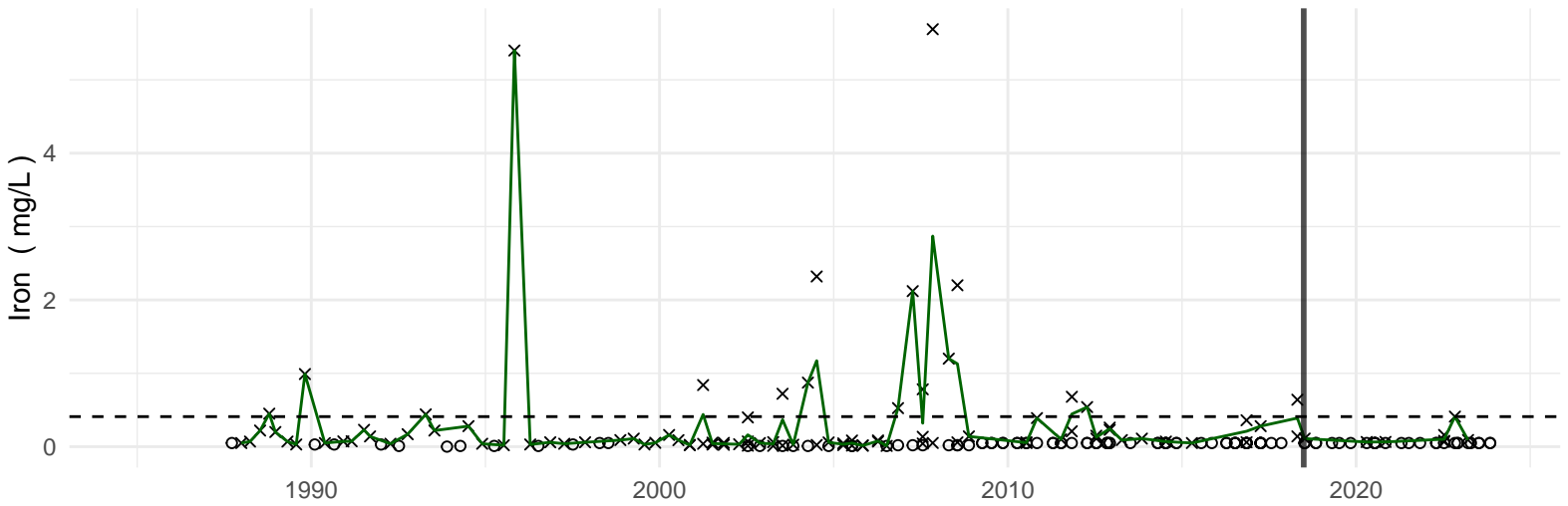
Cadmium



Chromium

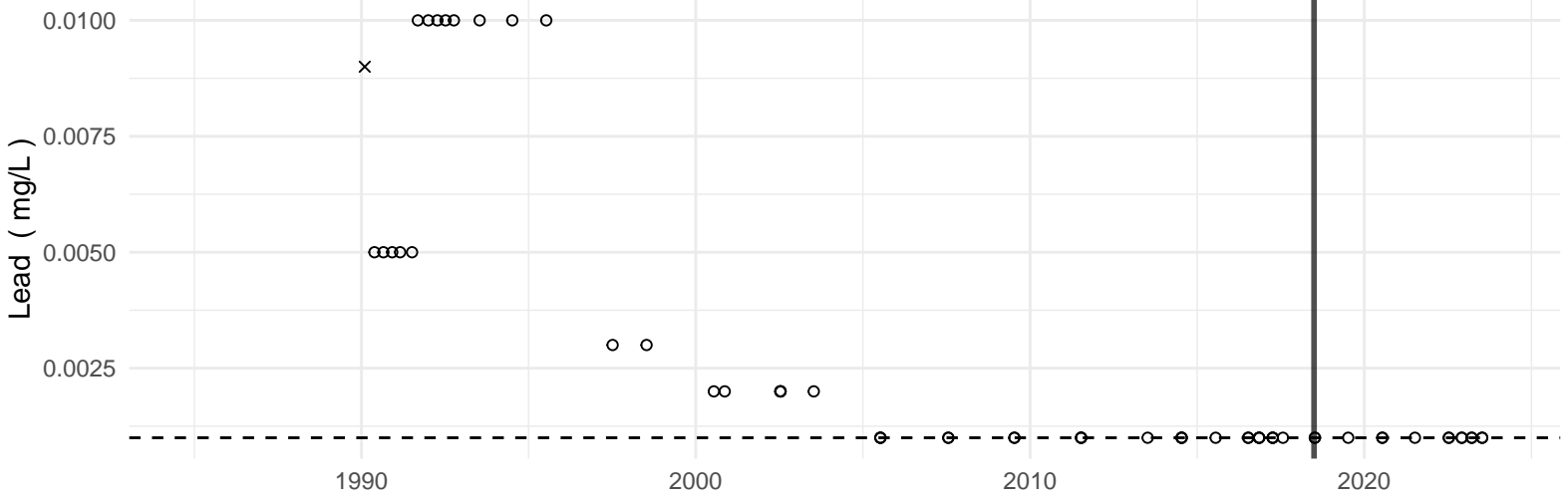


Iron

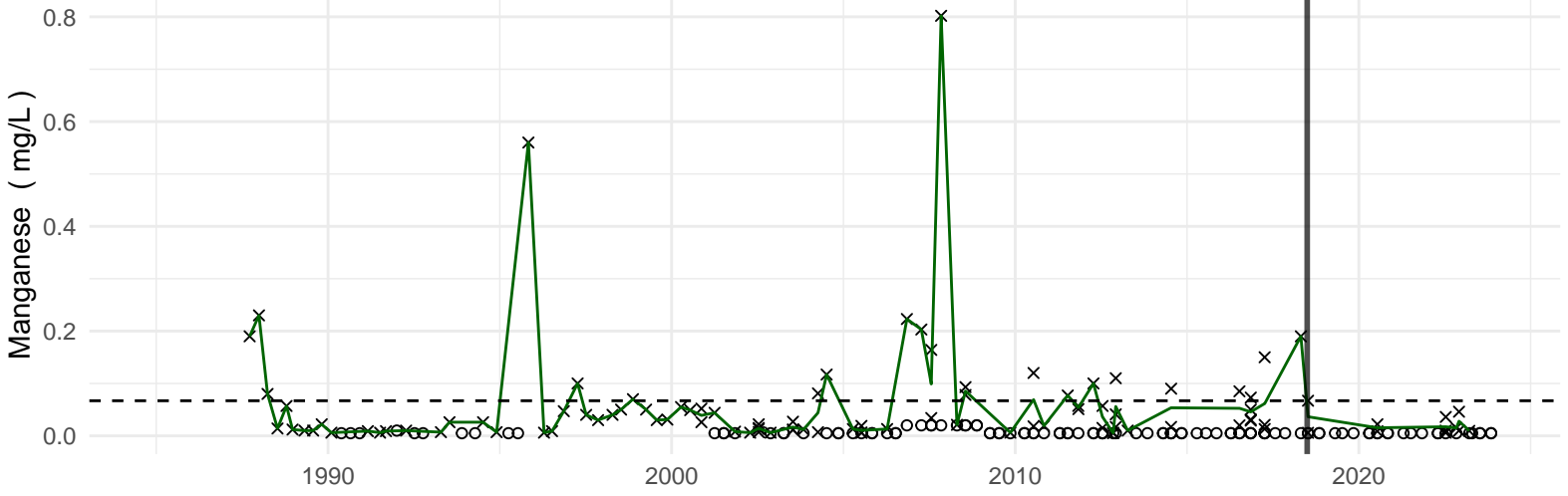


Start of Current Background Period - - Background Level ○ Non-Detect

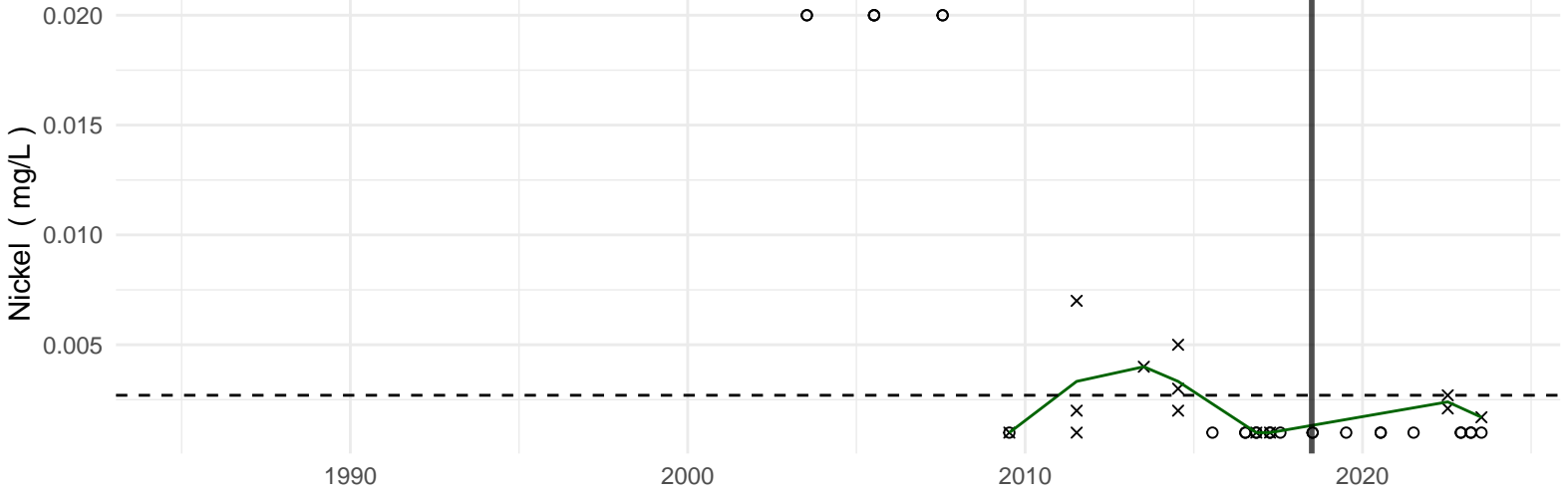
Lead



Manganese

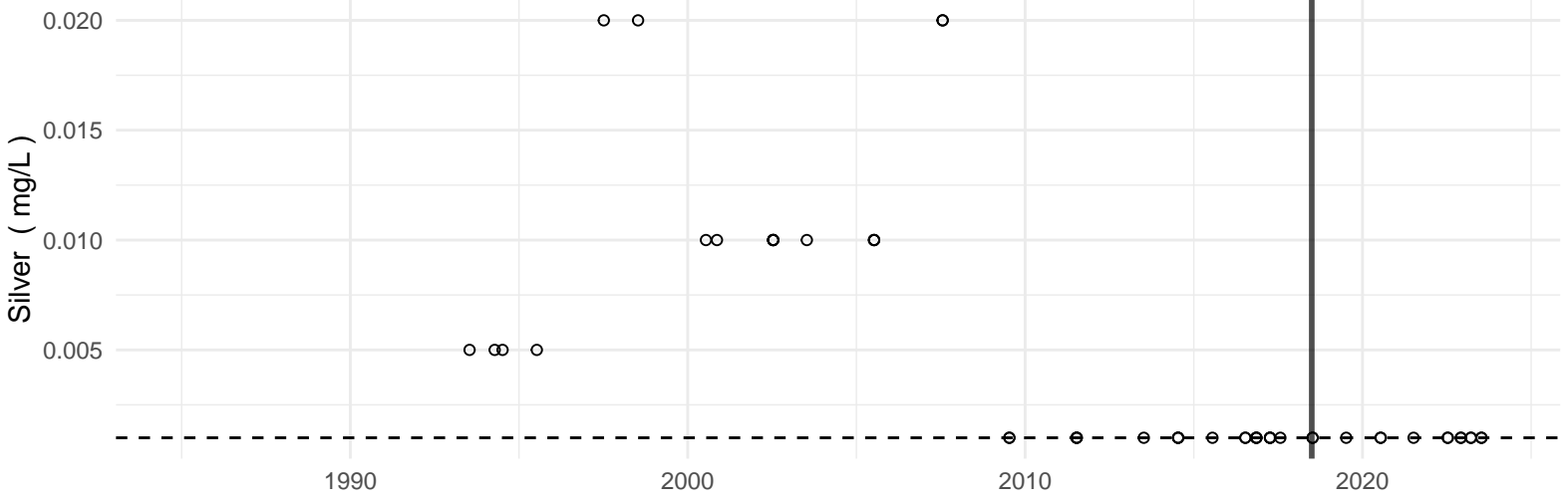


Nickel

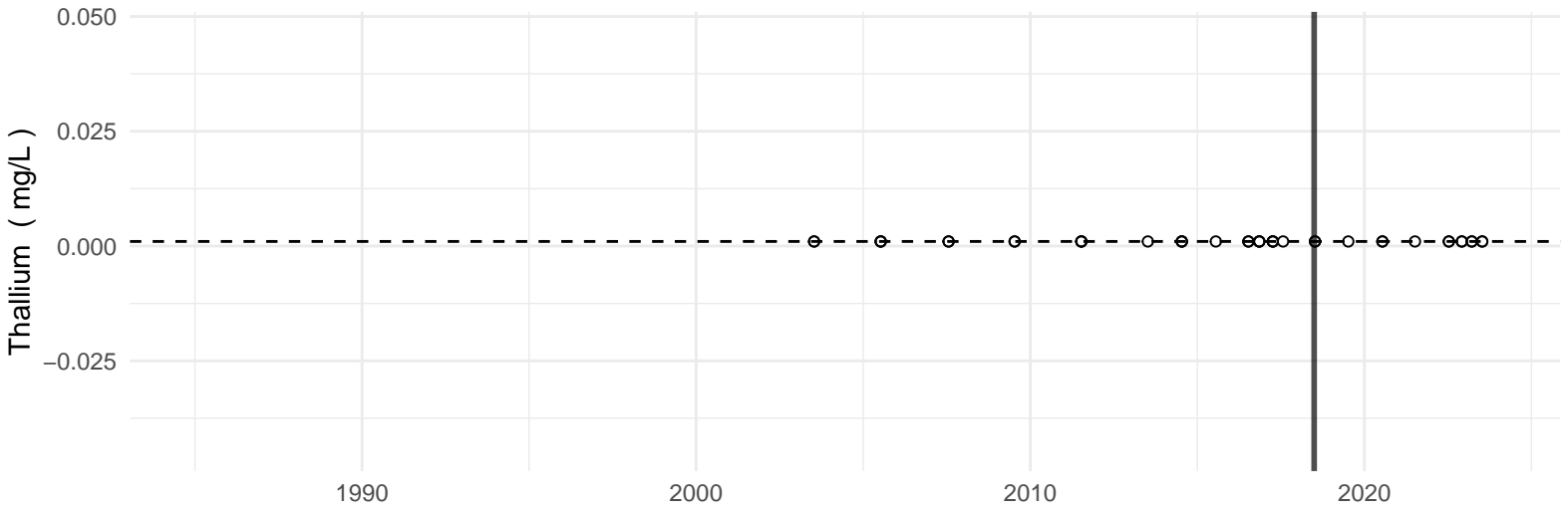


Start of Current Background Period - - Background Level ○ Non-Detect

Silver



Thallium



Start of Current Background Period

- - Background Level

○ Non-Detect

Appendix A.3

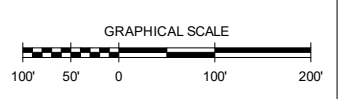
Exploration Location Plan (with decommissioned locations)

NOTES:

1. THE AERIAL IMAGERY WAS OBTAINED FROM A JUNE 2022 PHOTOGRAPH PROVIDED BY CMA ENGINEERS, INC. THE JUNE 2022 AERIAL IMAGE WAS ORTHORECTIFIED TO DISPLAY TOGETHER WITH THE MONITORING WELL NETWORK.
2. TOPOGRAPHY INSIDE THE ACTIVE AREA WAS OBTAINED FROM AN APRIL 2022 SURVEY. OUTSIDE THE ACTIVE AREA, TOPOGRAPHY WAS OBTAINED FROM SURVEYS PERFORMED IN OCTOBER 2018 AND MAY 2021.
3. THE LIMITS OF THE GMZ ARE BASED ON AN OCTOBER 2017 PLAN PREPARED BY HORIZONS ENGINEERING, INC. ENTITLED "GROUND WATER MANAGEMENT ZONE PLAN FOR LANDS OF NORTH COUNTRY ENVIRONMENTAL SERVICES, INC. AND FOREST ACQUISITIONS, INC."

LEGEND:

- FACILITY MONITORING WELL
- HISTORICAL MONITORING WELL, PIEZOMETER, OR SOIL BORING NOT INCLUDED IN PERMIT MONITORING. WELLS WITHIN THE LIMIT OF LINED AREA ARE NO LONGER PRESENT; WELLS OUTSIDE THE LINED AREA MAY NOT LONGER BE VIABLE
- HISTORICAL SOIL BORING
- SURFACE WATER SAMPLING LOCATION
- U/S INDICATES UPPER/SHALLOW WELL
- M INDICATES SCREEN AT MIDDLE INTERVAL BETWEEN UPPER AND LOWER SCREENS
- D/L INDICATES DEEP/LOWER WELL
- R INDICATES REPLACEMENT WELL
- RIP-RAP STONE
- LIMIT OF WETLAND DELINEATION
- GROUNDWATER MANAGEMENT ZONE
- TOWN OF BETHLEHEM ZONING LINE
- PROPERTY LINE



DRAWN BY: E. WRIGHT
 DESIGNED BY: G. PANIK
 REVIEWED BY: T. WHITE
 PROJECT MGR: M. ESTABROOKS
 PIC: T. WHITE
 DATE: DECEMBER 2023

NORTH COUNTRY ENVIRONMENTAL SERVICES, INC.
 BETHLEHEM, NEW HAMPSHIRE
EXPLORATION LOCATION PLAN (WITH DECOMMISSIONED LOCATIONS)

PROJECT NUMBER:
2637.10
 FIGURE NUMBER:
A-1

Appendix B

Summary of Historical Monitoring Data

Appendix B.1

Groundwater Elevations

TABLE B.1
Water Level - Depth and Elevation Post-2009
North Country Environmental Services, Inc.
Bethlehem, New Hampshire
Permit No. GWP-198704033-B-009

Location	Date	Reference Elevation (ft)	Reference Point	Depth to Water (ft)	Water Level Elevation (ft)
B-304DR	04-06-2009	1338.37	TPVC	47.03	1291.34
B-304DR	07-13-2009	1338.37	TPVC	46.66	1291.71
B-304DR	11-09-2009	1338.37	TPVC	57.54	1280.83
B-304DR	04-07-2010	1338.37	TPVC	47.37	1291.00
B-304DR	07-12-2010	1338.37	TPVC	46.83	1291.54
B-304DR	11-01-2010	1338.37	TPVC	47.29	1291.08
B-304DR	01-13-2011	1338.37	TPVC	46.92	1291.45
B-304DR	04-18-2011	1338.37	TPVC	46.74	1291.63
B-304DR	07-12-2011	1338.37	TPVC	46.02	1292.35
B-304DR	11-01-2011	1338.37	TPVC	47.40	1290.97
B-304DR	04-10-2012	1338.37	TPVC	48.15	1290.22
B-304DR	07-17-2012	1338.37	TPVC	48.31	1290.06
B-304DR	11-07-2012	1338.37	TPVC	48.72	1289.65
B-304DR	04-10-2013	1338.37	TPVC	48.65	1289.72
B-304DR	07-08-2013	1338.37	TPVC	47.97	1290.40
B-304DR	11-07-2013	1338.37	TPVC	47.18	1291.19
B-304DR	04-22-2014	1338.37	TPVC	47.92	1290.45
B-304DR	07-15-2014	1338.37	TPVC	46.92	1291.45
B-304DR	11-05-2014	1338.37	TPVC	48.15	1290.22
B-304DR	04-14-2015	1338.37	TPVC	48.86	1289.51
B-304DR	07-20-2015	1338.37	TPVC	46.85	1291.52
B-304DR	11-10-2015	1338.37	TPVC	47.94	1290.43
B-304DR	04-12-2016	1338.37	TPVC	46.74	1291.63
B-304DR	07-12-2016	1338.37	TPVC	47.83	1290.54
B-304DR	11-07-2016	1338.37	TPVC	49.57	1288.80
B-304DR	04-04-2017	1338.37	TPVC	49.65	1288.72
B-304DR	07-25-2017	1338.37	TPVC	47.28	1291.09
B-304DR	11-07-2017	1338.37	TPVC	48.81	1289.56
B-304DR	04-23-2018	1338.37	TPVC	48.02	1290.35
B-304DR	07-11-2018	1338.37	TPVC	47.49	1290.88
B-304DR	11-05-2018	1338.37	TPVC	49.54	1288.83
B-304DR	04-23-2019	1338.37	TPVC	48.38	1289.99
B-304DR	07-08-2019	1338.37	TPVC	46.80	1291.57
B-304DR	11-04-2019	1338.37	TPVC	48.93	1289.44
B-304DR	11-22-2019	1338.37	TPVC	48.75	1289.62
B-304DR	04-21-2020	1338.37	TPVC	46.67	1291.70
B-304DR	07-13-2020	1338.37	TPVC	47.61	1290.76
B-304DR	09-28-2020	1338.37	TPVC	49.33	1289.04
B-304DR	11-03-2020	1338.37	TPVC	49.42	1288.95
B-304DR	12-15-2020	1338.37	TPVC	48.78	1289.59
B-304DR	01-13-2021	1338.37	TPVC	47.73	1290.64
B-304DR	02-15-2021	1338.37	TPVC	47.63	1290.74
B-304DR	03-17-2021	1338.37	TPVC	48.29	1290.08
B-304DR	04-19-2021	1338.37	TPVC	47.51	1290.86
B-304DR	05-27-2021	1338.37	TPVC	47.15	1291.22
B-304DR	07-07-2021	1338.37	TPVC	48.21	1290.16
B-304DR	09-29-2021	1338.24	TPVC	49.32	1288.92
B-304DR	11-01-2021	1338.24	TPVC	49.66	1288.58
B-304DR	02-22-2022	1338.24	TPVC	49.51	1288.73
B-304DR	04-18-2022	1338.24	TPVC	47.76	1290.48
B-304DR	06-08-2022	1338.24	TPVC	47.29	1290.95
B-304DR	07-11-2022	1338.24	TPVC	47.98	1290.26
B-304DR	11-02-2022	1338.24	TPVC	48.94	1289.30
B-304DR	04-18-2023	1338.24	TPVC	47.26	1290.98
B-304DR	07-11-2023	1338.24	TPVC	47.61	1290.63
B-304DR	11-06-2023	1338.24	TPVC	47.52	1290.72
B-304DR	12-15-2023	1338.24	TPVC	47.66	1290.58
MW-604	07-13-2009	1319.83	TPVC	39.14	1280.69
MW-604	11-10-2009	1319.83	TPVC	39.66	1280.17
MW-604	07-12-2010	1319.83	TPVC	39.37	1280.46
MW-604	11-03-2010	1319.83	TPVC	39.27	1280.56
MW-604	07-12-2011	1319.83	TPVC	38.70	1281.13
MW-604	07-17-2012	1319.83	TPVC	40.35	1279.48
MW-604	07-08-2013	1319.83	TPVC	40.18	1279.65
MW-604	04-23-2014	1319.83	TPVC	39.89	1279.94
MW-604	07-15-2014	1319.83	TPVC	39.74	1280.09
MW-604	04-14-2015	1319.83	TPVC	40.41	1279.42
MW-604	07-21-2015	1319.83	TPVC	39.93	1279.90
MW-604	04-12-2016	1319.83	TPVC	40.11	1279.72
MW-604	07-12-2016	1319.83	TPVC	40.36	1279.47
MW-604	11-07-2016	1319.83	TPVC	40.88	1278.95
MW-604	04-03-2017	1319.83	TPVC	41.10	1278.73
MW-604	07-25-2017	1319.83	TPVC	40.17	1279.66
MW-604	11-07-2017	1319.83	TPVC	40.59	1279.24
MW-604	04-24-2018	1319.83	TPVC	40.29	1279.54
MW-604	07-11-2018	1319.83	TPVC	40.48	1279.35
MW-604	11-05-2018	1319.83	TPVC	40.95	1278.88
MW-604	04-23-2019	1319.83	TPVC	40.50	1279.33
MW-604	07-09-2019	1319.83	TPVC	40.01	1279.82
MW-604	11-06-2019	1319.83	TPVC	40.71	1279.12
MW-604	04-21-2020	1319.83	TPVC	40.14	1279.69

TABLE B.1
Water Level - Depth and Elevation Post-2009
North Country Environmental Services, Inc.
Bethlehem, New Hampshire
Permit No. GWP-198704033-B-009

Location	Date	Reference Elevation (ft)	Reference Point	Depth to Water (ft)	Water Level Elevation (ft)
MW-604	07-13-2020	1319.83	TPVC	40.40	1279.43
MW-604	11-03-2020	1319.83	TPVC	40.45	1279.38
MW-604	04-19-2021	1319.83	TPVC	40.73	1279.10
MW-604	05-27-2021	1319.83	TPVC	40.65	1279.18
MW-604	07-07-2021	1319.83	TPVC	40.97	1278.86
MW-604	09-29-2021	1319.83	TPVC	41.49	1278.34
MW-604	11-01-2021	1319.83	TPVC	41.61	1278.22
MW-604	02-22-2022	1319.83	TPVC	41.71	1278.12
MW-604	04-18-2022	1319.83	TPVC	41.25	1278.58
MW-604	06-08-2022	1319.83	TPVC	41.01	1278.82
MW-604	07-11-2022	1319.83	TPVC	41.30	1278.53
MW-604	11-02-2022	1319.83	TPVC	41.71	1278.12
MW-604	04-18-2023	1319.83	TPVC	41.72	1278.11
MW-604	07-11-2023	1319.83	TPVC	40.24	1279.59
MW-604	11-06-2023	1319.83	TPVC	40.39	1279.44
MW-604	12-15-2023	1319.83	TPVC	40.30	1279.53
B-928D	09-29-2021	1334.12	TPVC	52.29	1281.83
B-928D	11-01-2021	1334.12	TPVC	52.98	1281.14
B-928D	02-22-2022	1334.12	TPVC	52.07	1282.05
B-928D	04-18-2022	1334.12	TPVC	50.17	1283.95
B-928D	06-08-2022	1334.12	TPVC	49.19	1284.93
B-928D	07-11-2022	1334.12	TPVC	49.83	1284.29
B-928D	11-02-2022	1334.12	TPVC	51.78	1282.34
B-928D	04-18-2023	1334.12	TPVC	49.24	1284.88
B-928D	07-11-2023	1334.12	TPVC	49.66	1284.46
B-928D	12-15-2023	1334.12	TPVC	50.13	1283.99

Appendix B.2

Groundwater Analytical Results

TABLE B.2
Summary of Monitoring Data – Groundwater Samples
North Country Environmental Services, Inc.
Bethlehem, New Hampshire
Permit No. GWP-198704033-B-008

Sample Location	Sample Date	Sample Type	Field Parameters / Indicator Parameters / Metals																													
			ft	SU	uS/cm	C	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L								
			Groundwater Elevation	pH	Specific Conductance	Temperature	Bromide	Chloride	Nitrate	Sulfate	Chemical Oxygen Demand	Total Kjeldahl Nitrogen (TKN)	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Iron	Iron	Lead	Manganese	Manganese	Nickel	Silver							
Fraction	N	N	N	N	N	N	N	N	N	N	D	D	D	D	D	D	D	T	D	D	T	D	D									
											10	500							0.006	0.005	2	0.004	0.005	0.1	0.3	0.3	0.015	0.3	0.3	0.1	0.1	

Appendix C

PFAS Groundwater Analytical Results

APPENDIX C

TABLE NOTES

1. Samples were collected by Sanborn Head personnel on the dates indicated and analyzed for PFAS by Enthalpy (formerly Vista) Analytical Laboratory (Enthalpy) of El Dorado Hills, California (except April 2019) by USEPA Method 537 (modified) with isotope dilution. Enthalpy was subcontracted through Eastern Analytical, Inc. (EAI) of Concord, New Hampshire.

Samples from April 2019 were analyzed by Eurofins Lancaster Laboratories (Lancaster) of Lancaster, Pennsylvania. Lancaster was subcontracted through EAI.

Samples from November 2023 were collected by Sanborn Head personnel on the dates indicated and analyzed by Enthalpy by USEPA Method 1633.

Sample Locations denoted "QC_FB" indicate a quality control field blank.

2. A sample type of "N" indicates a normal sample. A sample type of "FD" indicates a field duplicate sample. A sample type of "FB" indicates a field blank. A sample type of "TB" indicates a trip blank.
3. Results are presented in nanograms per liter (ng/L) which are equivalent to parts per trillion (ppt).
4. "<" or "ND" indicates the analyte was not detected above the listed laboratory reporting limit.

Blank cells indicate the sample was not analyzed for that analyte.

5. "GW-1" Groundwater Standards are from the New Hampshire Department of Environmental Services (NHDES) Contaminated Sites Risk Characterization and Management Policy (RCMP) (January 1998, with 2000 through 2018 revisions/addenda). GW-1 Groundwater Standards are intended to be equivalent to the AGQs promulgated in Env-Or 600 (June 2015 with October 2016, September 2018, September 2019, May 2020, January 2021, and July 2021 amendments). For analytes where GW-1 and AGQS values differ, the values presented in this table reflect the AGQSs in the latest Env-Or 600 update. The AGQS/GW-1 Groundwater Standards are intended to be protective of groundwater as a source of drinking water.
6. [3] = number of carbons in the alkyl chain for perfluorinated carboxylic acids (PFCAs). The carbon included in the carboxylic functional group is non-fluorinated and the remaining carbons (i.e., alkyl chain) are fluorinated.



[4S] = number of carbons in the alkyl chain for perfluorinated sulfonic acids (PFASs). All of the carbons are fluorinated.

“<” indicates the analyte was not detected.

7. **Values** exceed the GW-1 Groundwater Standard for that analyte.
8. “Total of Regulated PFAS” indicates the sum of the detected concentrations of PFOA, PFNA, PFHxS, and PFOS.
9. “Total PFAS” indicates the sum of the concentrations of detected analytes (note – the PFAS analyte list may vary by round).

P:\2600s\2637.10\Source Files\2023-12 GW Supp\App C - PFAS\Appendix C Table Notes.docx



Appendix C.1

Summary of PFAS Groundwater Analytical Results

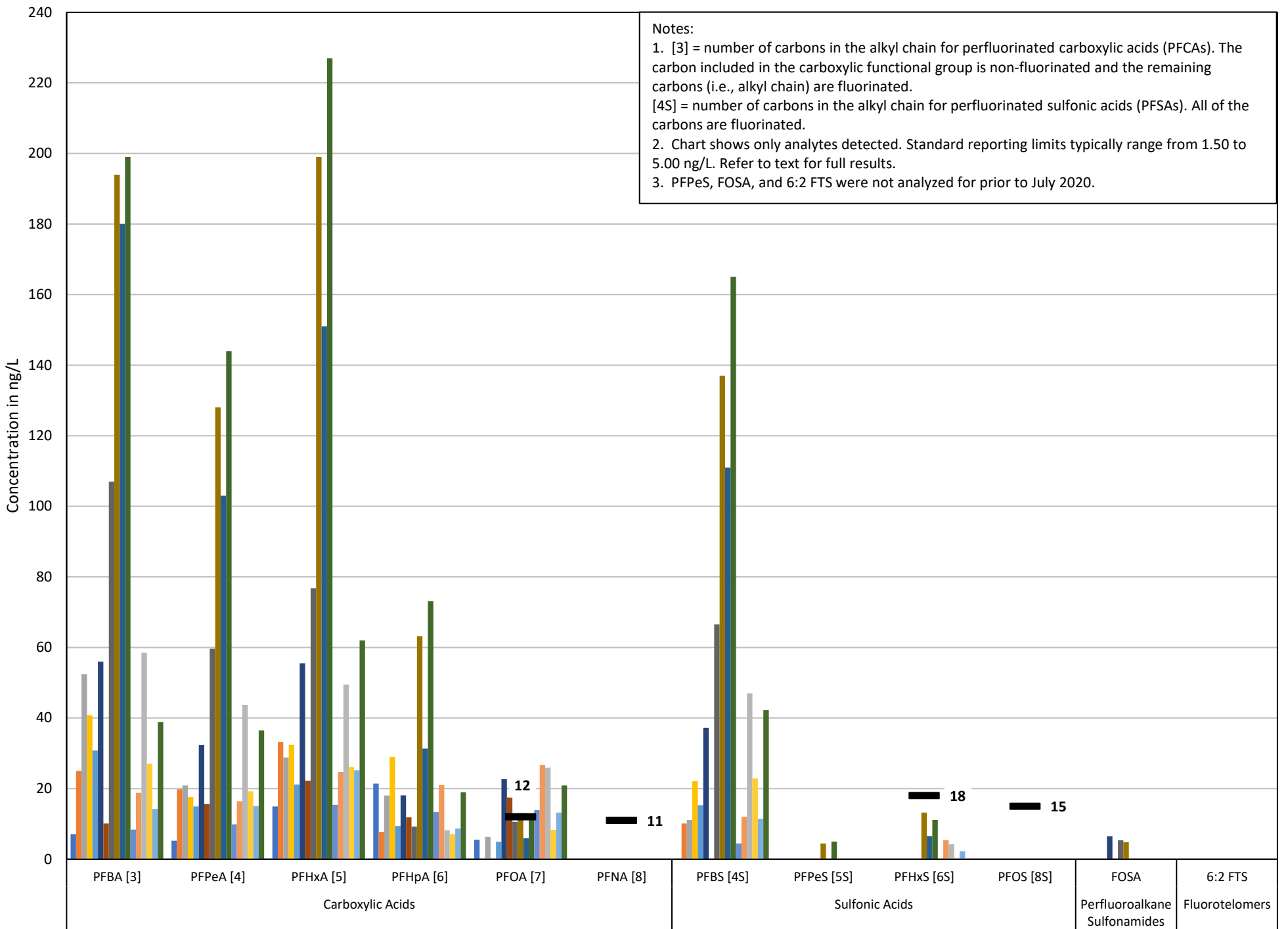
TABLE C.1
 Summary of PFAS Groundwater Analytical Results
 North Country Environmental Services, Inc.
 Bethlehem, New Hampshire
 Permit No. GWP-198704033-B-008

Sample Location	Sample Date	Sample Type	Concentrations in ng/L																											
			Perfluoroalkyl Carboxylic Acids											Perfluoroalkyl Sulfonic Acids							Fluorotelomers			Perfluoroalkane Sulfonamides		Perfluoroalkane Sulfonyl Substances		Total of Regulated PFAS	Total PFAS	
			Perfluorobutanoic Acid (PFBA) [3]	Perfluoropentanoic Acid (PFPeA) [4]	Perfluorohexanoic Acid (PFHxA) [5]	Perfluoroheptanoic Acid (PFHpA) [6]	Perfluorooctanoic Acid (PFOA) [7]	Perfluorononanoic Acid (PFNA) [8]	Perfluorodecanoic Acid (PFDA) [9]	Perfluoroundecanoic Acid (PFUnA) [10]	Perfluorododecanoic Acid (PFDoA) [11]	Perfluorotridecanoic Acid (PFTra) [12]	Perfluorotetradecanoic Acid (PFTeA) [13]	Perfluorobutanesulfonic Acid (PFBS) [4S]	Perfluoropentanesulfonic Acid (PFPeS) [5S]	Perfluorohexanesulfonic Acid (PFHxS) [6S]	Perfluoroheptanesulfonic Acid (PFHpS) [7S]	Perfluorooctanesulfonic Acid (PFOS) [8S]	Perfluorononanesulfonic Acid (PFNS) [9S]	Perfluorodecane sulfonic Acid (PFDS) [10S]	1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	1H,1H,2H,2H-Perfluorodecane sulfonic Acid (8:2FTS)	Perfluorooctanesulfonamide (FOSA)	N-methyl perfluorooctane sulfonamide (MeFOSA)	N-Ethyl Perfluorooctanesulfonamidoacetic Acid (EtFOSAA)	N-Methyl Perfluorooctanesulfonamidoacetic Acid (MeFOSAA)			
CAS Number	375-22-4	2706-90-3	307-24-4	375-85-9	335-67-1	375-95-1	335-76-2	2058-94-8	307-55-1	72629-94-8	376-06-7	375-73-5	2706-91-4	355-46-4	375-92-8	1763-23-1	68259-12-1	335-77-3	757124-72-4	27619-97-2	39108-34-4	754-91-6	31506-32-8	2991-50-6	2355-31-9	-	-			
GW-1 (AGQS)	12	11	12	11	12	11	12	11	12	11	12	11	12	11	12	11	12	11	12	11	12	11	12	11	12	11	12	11	12	
QC_FB	1/7/2020	FB	<4.45	<4.45	<4.45	<4.45	<4.45	<4.45	<4.45	<4.45	<4.45	<4.45	<4.45	<4.45	<4.45	<4.45	<4.45	<4.45	<4.45	<4.45	<4.45	<4.45	<4.45	<22.2	<4.45	<4.45	ND	ND		
QC_FB	4/20/2020	FB	<4.32	<4.32	<4.32	<4.32	<4.32	<4.32	<4.32	<4.32	<4.32	<4.32	<4.32	<4.32	<4.32	<4.32	<4.32	<4.32	<4.32	<4.32	<4.32	<4.32	<4.32	<21.6	<4.32	<4.32	ND	ND		
QC_FB	7/16/2020	FB	<4.43	<4.43	<4.43	<4.43	<4.43	<4.43	<4.43	<4.43	<4.43	<4.43	<4.43	<4.43	<4.43	<4.43	<4.43	<4.43	<4.43	<4.43	<4.43	<4.43	<4.43	<22.1	<4.43	<4.43	ND	ND		
QC_FB	11/2/2020	FB	<4.25	<4.25	<4.25	<4.25	<4.25	<4.25	<4.25	<4.25	<4.25	<4.25	<4.25	<4.25	<4.25	<4.25	<4.25	<4.25	<4.25	<4.25	<4.25	<4.25	<4.25	<21.3	<4.25	<4.25	ND	ND		
QC_FB	1/13/2021	FB	<4.28	<4.28	<4.28	<4.28	<4.28	<4.28	<4.28	<4.28	<4.28	<4.28	<4.28	<4.28	<4.28	<4.28	<4.28	<4.28	<4.28	<4.28	<4.28	<4.28	<4.28	<20	<4.28	<4.28	ND	ND		
QC_FB	4/19/2021	FB	<4.37	<4.37	<4.37	<4.37	<4.37	<4.37	<4.37	<4.37	<4.37	<4.37	<4.37	<4.37	<4.37	<4.37	<4.37	<6.01	<4.37	<4.37	<4.91	<4.37	<20	<4.37	<5.73	ND	ND			
QC_FB	5/27/2021	FB	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<20	<4	<4	ND	ND		
QC_FB	7/7/2021	FB	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<20	<4	<4	ND	ND		
QC_FB	9/29/2021	FB	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<20	<4	<4	ND	ND		
QC_FB	11/2/2021	FB	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<20	<4	<4	ND	ND		
QC_FB	1/6/2022	FB	<1.99	<1.99	<1.99	<1.99	<1.99	<1.99	<1.99	<1.99	<1.99	<1.99	<1.99	<1.99	<1.99	<1.99	<1.99	<1.99	<1.99	<1.99	<1.99	<1.99	<1.99	<2.48	<1.99	<1.99	ND	ND		
QC_FB	2/22/2022	FB	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<20	<4	<4	ND	ND		
QC_FB	4/18/2022	FB	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<20	<4	<4	ND	ND		
QC_FB	6/8/2022	FB	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<20	<4	<4	ND	ND		
QC_FB	7/13/2022	FB	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<20	<4	<4	ND	ND		
QC_FB	11/2/2022	FB	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<20	<4	<4	ND	ND		
QC_FB	12/1/2022	FB	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<20	<4	<4	ND	ND		
QC_FB	1/4/2023	FB	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<20	<4	<4	ND	ND		
QC_FB	3/20/2023	FB	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<20	<4	<4	ND	ND		
QC_FB	4/19/2023	FB	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<20	<4	<4	ND	ND		
QC_FB	7/12/2023	FB	<1.93	<1.93	<1.93	<1.93	<1.93	<1.93	<1.93	<1.93	<1.93	<1.93	<1.93	<1.93	<1.93	<1.93	<1.93	<1.93	<1.93	<1.93	<1.93	<1.93	<1.93	<3.87	<1.93	<1.93	ND	ND		
QC_FB	11/6/2023	FB	<6.52	<3.26	<1.63	<1.63	<2.04	<1.63	<1.63	<1.63	<1.63	<1.63	<1.45	<1.53	<1.49	<1.55	<1.52	<1.57	<1.57	<1.93	<1.93	<6.26	<1.63	<1.63	<1.63	<1.63	ND	ND		
QC_FB	12/15/2023	FB	<1.91	<1.91	<1.91	<1.91	<1.91	<1.91	<1.91	<1.91	<1.91	<1.91	<1.91	<1.91	<1.91	<1.91	<1.91	<1.91	<1.91	<1.91	<1.91	<1.91	<1.91	<3.82	<1.91	<1.91	ND	ND		

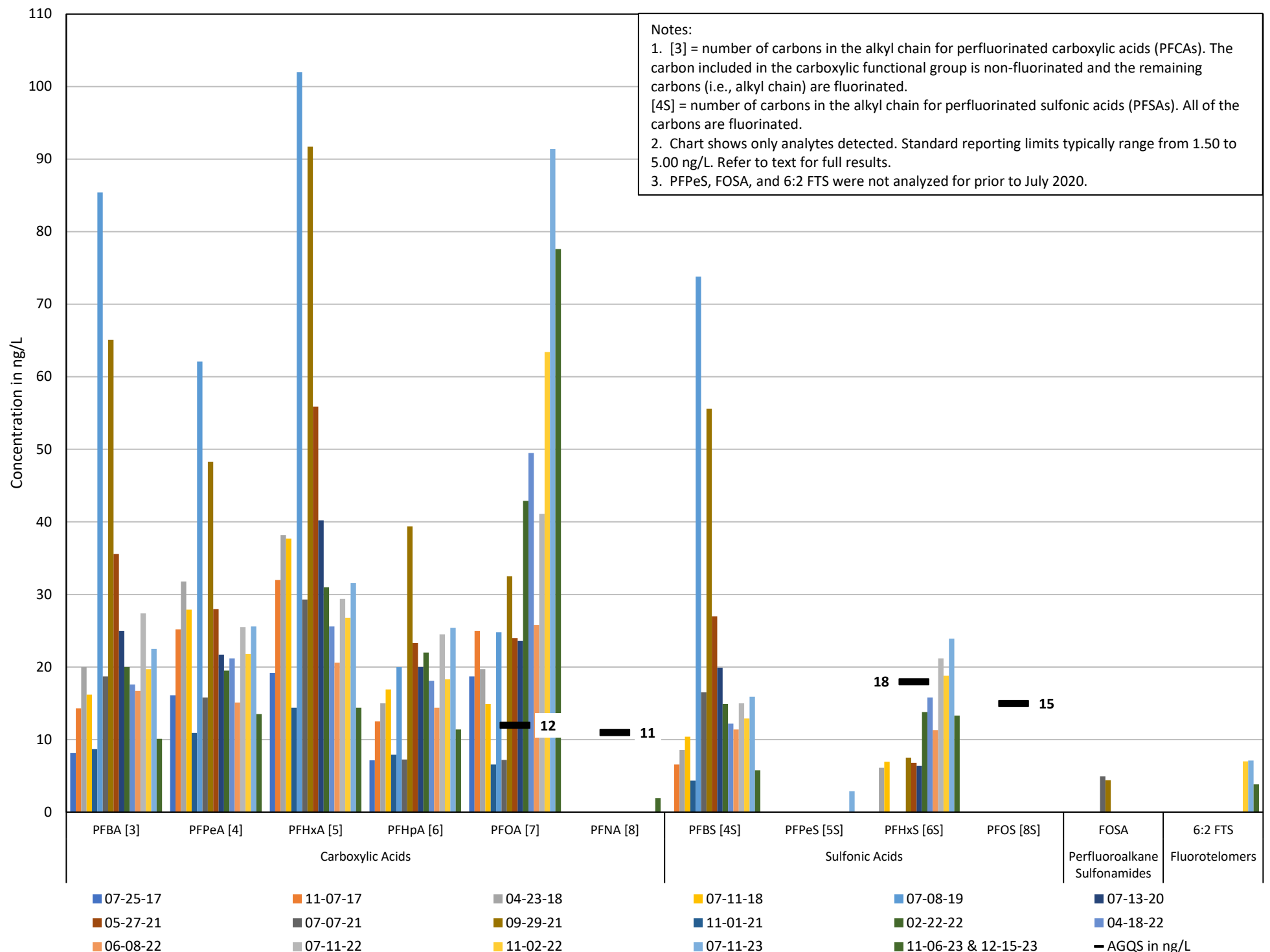
Appendix C.2

PFAS Plots

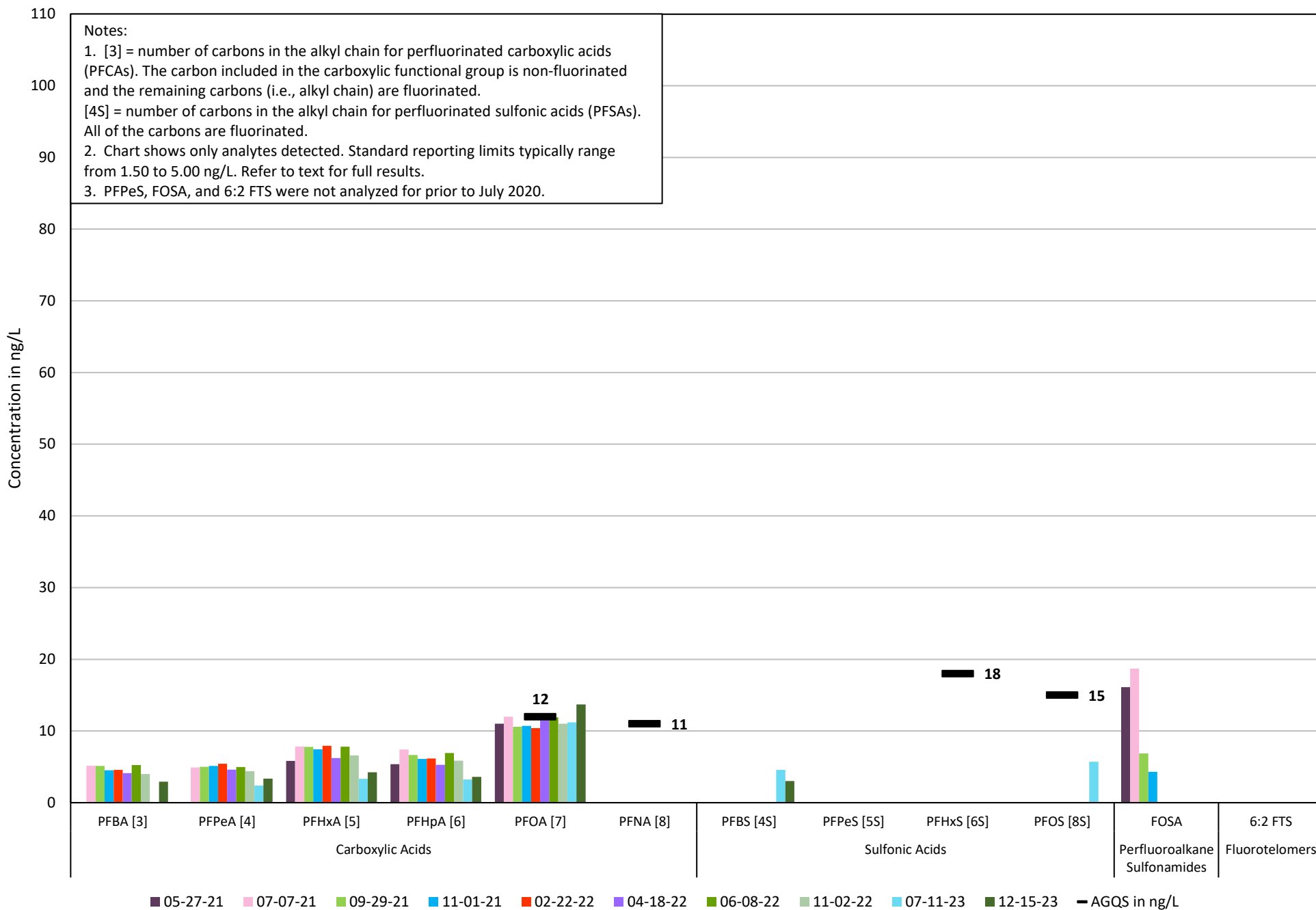
PFAS in B-304UR



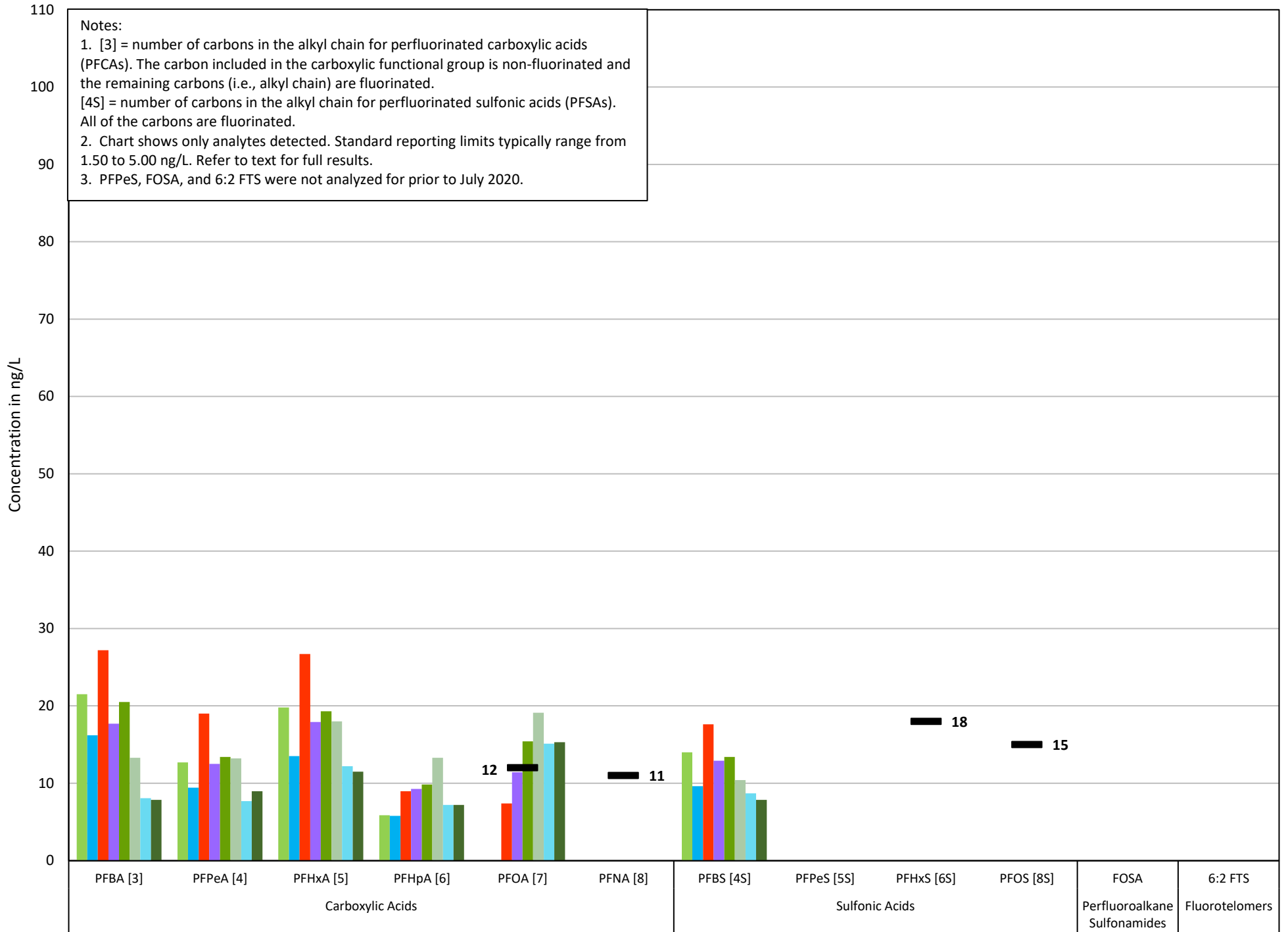
PFAS in B-304DR



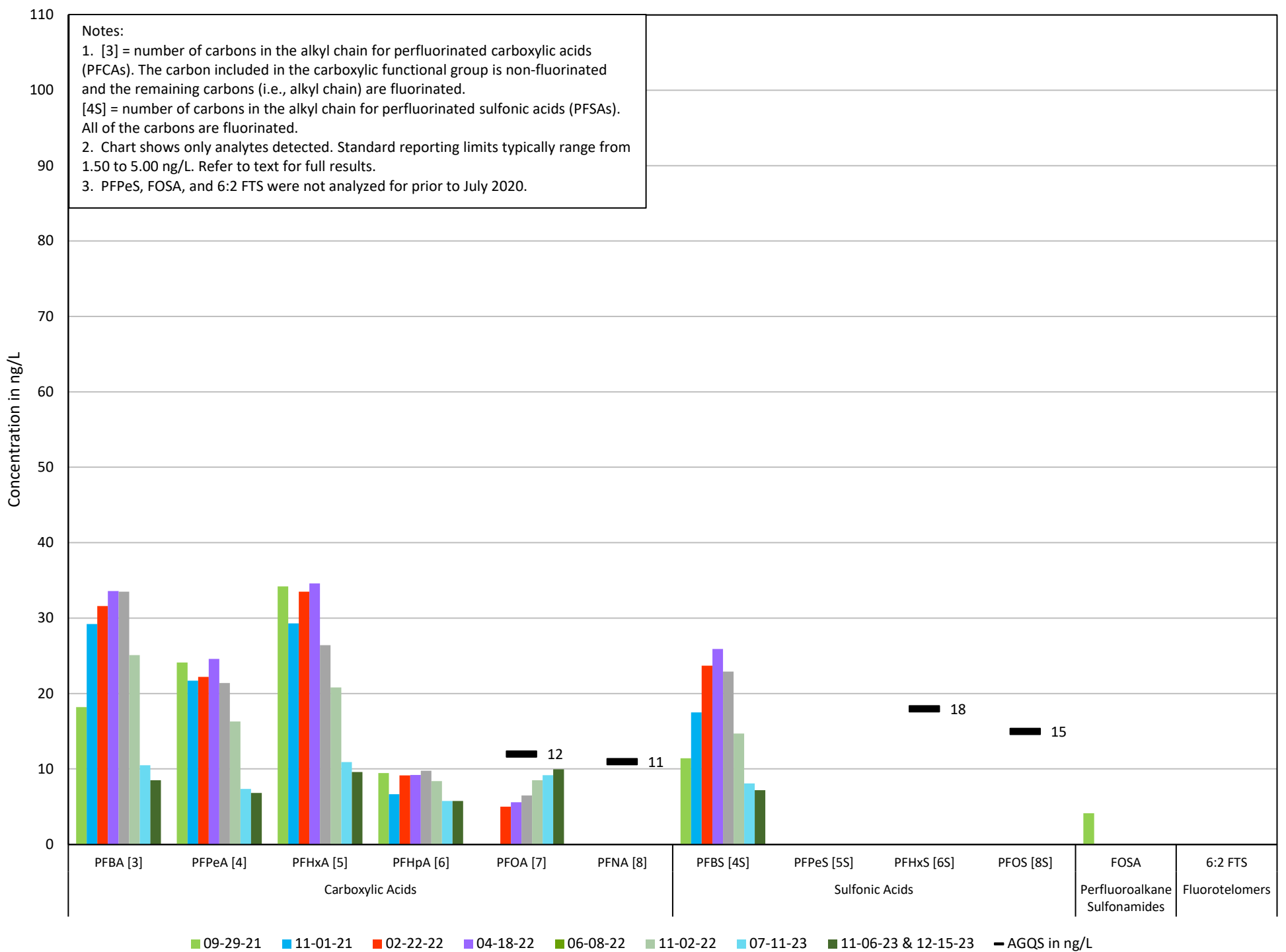
PFAS in MW-604



PFAS in B-928U




PFAS in B-928D



Appendix D

Sanborn Head Field Sampling Summary Form

Groundwater Quality Field Sampling Summary

	Project Number: 2637.10	Date(s): December 15, 2023
	Project Name: North Country Environmental Services, Inc.	Project Manager: T. White, M. Estabrooks
	Project Location: Bethlehem, New Hampshire	Collector(s): G. Bush
pH, Conductivity, Temperature Meter(s): Oakton PC450 Water Level Meter(s): Heron Dipper-T Turbidity: Hach 2100Q		Weather: Sunny, 30s °F

Field Measurements

Sampling Location	Sample Date	Sample Time	Ref. Point	Well Dia.	Ref. Point Elev. (ft)	Depth to Water (ft)	Water Table Elev. (ft)	Depth to Bottom Installed (ft bgs)	Depth to Bottom Plunked July 2023 (ft Ref Pt)	Surface Completion Type: Standpipe (SP) Vault (V)	Approx. PVC Height (ft)		pH (S.U.)	Specific Conductance (µS/cm)	Temp. (°C)	Turbidity (NTU)	Well Secured?		Approx. Gallons Purged	Target 3x Well Volume?	Purge/Sample Device	Comment No.
											July 2017 Height	AG or BG?					On Arrival	After Sampling				
B-304DR	12/15/23	11:19	TPVC	2"	1338.24	47.66	1290.58	75	75.50	SP	2.20	AG	6.70	298	12.8	>1,000	Y	Y	13.5	Y	Mega-Monsoon XL Pump	2,5,6
MW-604	12/15/23	12:35	TPVC	2"	1319.83	40.30	1279.53	75	75.20	SP	2.65	AG	7.39	236	10.2	>1,000	Y	Y	6	N	Ded. Waterra	1,3,5
B-928D	12/15/23	12:12	TPVC	2"	1334.12	50.13	1283.99	71.1	73.19	SP	-	AG	7.15	202	9.9	>1,000	Y	Y	11.5	Y	Ded. Waterra	1,5,6
QC_FB	12/15/23	13:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4,5

Comments

AG = Above ground
BG = Below ground

- The monitoring well was purged using a dedicated Waterra® inertial pump and polyethylene tubing prior to collecting the groundwater sample (directly from the pump discharge line).
- The monitoring well was purged using a ProActive Mega-Monsoon XL pump with new HDPE tubing.
- Monitoring well purged near dry. Sample collected upon sufficient recharge.
- Field blank was collected by pouring laboratory-provided PFAS-free water into a laboratory-provided sampling container. The field blank was collected in the vicinity of monitoring well B-928D.
- Sampled for PFAS. Only PFAS samples were screened for turbidity to support laboratory analysis.
- Silt at bottom of well.

Appendix E

Analytical Laboratory Report

Matt Estabrooks
Sanborn, Head & Associates, Inc. (NH)
6 Bedford Farms Drive, Suite 201
Bedford , NH 03110



Subject: Laboratory Report

Eastern Analytical, Inc. ID: 271695
Client Identification: NCES | PFAS | 2637.10
Date Received: 12/18/2023

Dear Estabrooks :

Enclosed please find the report of analysis for the above identified project. As discussed, analyses were subcontracted and are listed as follows:


Analysis: Subcontract - PFAS EPA Method 537mod

Subcontractor Lab: Enthalpy Analytical

A complete copy of the report is attached. This report may not be reproduced except in full, without the written approval of the laboratory.

We appreciate this opportunity to be of service and look forward to your continued patronage.

Sincerely,


Lorraine Olashaw, Lab Director

1-11-24
Date



SAMPLE CONDITIONS PAGE

EAI ID#: 271695

Client: **Sanborn, Head & Associates, Inc. (NH)**

Client Designation: **NCES | PFAS | 2637.10**

Temperature upon receipt (°C): 4.2

Received on ice or cold packs (Yes/No): Y

Acceptable temperature range (°C): 0-6

Lab ID	Sample ID	Date Received	Date/Time Sampled	Sample Matrix	% Dry Weight	Exceptions/Comments (other than thermal preservation)
271695.01	B-304DR_20231215	12/18/23	12/15/23 11:19	aqueous		Adheres to Sample Acceptance Policy
271695.02	MW-604_20231215	12/18/23	12/15/23 12:35	aqueous		Adheres to Sample Acceptance Policy
271695.03	B-928D_20231215	12/18/23	12/15/23 12:12	aqueous		Adheres to Sample Acceptance Policy
271695.04	FB-PFAS-01_20231215	12/18/23	12/15/23 13:00	aqueous		Adheres to Sample Acceptance Policy

All results contained in this report relate only to the above listed samples.

Unless otherwise noted:

- Hold times, preservation, container types, and sample conditions adhered to EPA Protocol.
- Solid samples are reported on a dry weight basis, unless otherwise noted. pH/Corrosivity, Flashpoint, Ignitability, Paint Filter, Conductivity and Specific Gravity are always reported on an "as received" basis.
- Analysis of pH, Total Residual Chlorine, Dissolved Oxygen and Sulfite were performed at the laboratory outside of the recommended 15 minute hold time.
- Samples collected by Eastern Analytical, Inc. (EAI) were collected in accordance with approved EPA procedures.



January 09, 2024

**Enthalpy Analytical - El Dorado Hills
Work Order No. 2312139**

Ms. Jennifer Laramie
Eastern Analytical, Inc.
51 Antrim Avenue
Concord, NH 03301

Dear Ms. Laramie,

Enclosed are the results for the sample set received at Enthalpy Analytical - EDH on December 19, 2023 under your Project Name '271695 NH 2920'.

Enthalpy Analytical - EDH is committed to serving you effectively. If you require additional information, please contact me at 916-673-1520 or by email at rajwinder.kaur@enthalpy.com.

Thank you for choosing Enthalpy Analytical - EDH as part of your analytical support team.

Sincerely,

A handwritten signature in black ink that reads "Rajwinder Kaur".

Rajwinder Kaur
Project Manager

Enthalpy Analytical - EDH certifies that the report herein meets all the requirements set forth by NELAP for those applicable test methods. Results relate only to the samples as received by the laboratory. This report should not be reproduced except in full without the written approval of Enthalpy Analytical - EDH.

Enthalpy Analytical - EDH Work Order No. 2312139

Case Narrative

Sample Condition on Receipt:

Four aqueous samples were received and stored securely in accordance with Enthalpy Analytical - EDH standard operating procedures and EPA methodology. The samples were received in good condition and within the method temperature requirements. A sample ID discrepancy was noted for sample "B-304DR_20231215" between the container label and the Chain-of-Custody (CoC). The sample ID has been reported as listed on the CoC.

Analytical Notes:

PFAS Isotope Dilution/LC-MSMS Method Compliant with Table B-15 of DoD QSM 5.4 (Aqueous)

Samples "B-304DR_20231215", "MW-604_20231215" and "B-928D_20231215" contained particulate and were centrifuged prior to extraction.

The samples were extracted and analyzed for a selected list of PFAS using Isotope Dilution and LC-MS/MS compliant with Table B-15 of DoD QSM 5.4. The results for PFHxS, PFOA, PFOS, MeFOSAA and EtFOSAA include both linear and branched isomers. Results for all other analytes include the linear isomers only.

Holding Times

The samples were extracted and analyzed within the hold times.

Quality Control

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

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

The labeled standard recoveries outside the acceptance criteria are flagged with an "H" qualifier. The responses of the internal standards with low recoveries were greater than 10:1 signal-to-noise, which is the limit generally considered acceptable for accurate quantitation by isotope dilution analysis.

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Sample Inventory Report

Sample ID	Client Sample ID	Sampled	Received	Components/Containers
2312139-01	B-304DR_20231215	15-Dec-23 11:19	19-Dec-23 12:24	HDPE Bottle, 500 mL HDPE Bottle, 500 mL HDPE Bottle, 125 mL
2312139-02	MW-604_20231215	15-Dec-23 12:35	19-Dec-23 12:24	HDPE Bottle, 500 mL HDPE Bottle, 500 mL HDPE Bottle, 500 mL
2312139-03	B-928D_20231215	15-Dec-23 12:12	19-Dec-23 12:24	HDPE Bottle, 500 mL HDPE Bottle, 500 mL HDPE Bottle, 500 mL
2312139-04	FB-PFAS-01_20231215	15-Dec-23 13:00	19-Dec-23 12:24	HDPE Bottle, 500 mL

ANALYTICAL RESULTS

Sample ID: Method Blank

PFAS Isotope Dilution Table B-15

Client Data				Laboratory Data			
Name:	Eastern Analytical, Inc.	Matrix:	Aqueous	Lab Sample:	B23L232-BLK1	Column:	BEH C18
Project:	271695 NH 2920						

Analyte	CAS Number	Conc. (ng/L)	RL	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBA	375-22-4	ND	2.00		B23L232	29-Dec-23	0.250 L	02-Jan-24 15:43	1
PFPeA	2706-90-3	ND	2.00		B23L232	29-Dec-23	0.250 L	02-Jan-24 15:43	1
PFBS	375-73-5	ND	2.00		B23L232	29-Dec-23	0.250 L	02-Jan-24 15:43	1
4:2 FTS	757124-72-4	ND	2.00		B23L232	29-Dec-23	0.250 L	02-Jan-24 15:43	1
PFHxA	307-24-4	ND	2.00		B23L232	29-Dec-23	0.250 L	02-Jan-24 15:43	1
PFPeS	2706-91-4	ND	2.00		B23L232	29-Dec-23	0.250 L	02-Jan-24 15:43	1
PFHpA	375-85-9	ND	2.00		B23L232	29-Dec-23	0.250 L	02-Jan-24 15:43	1
PFHxS	355-46-4	ND	2.00		B23L232	29-Dec-23	0.250 L	02-Jan-24 15:43	1
6:2 FTS	27619-97-2	ND	2.00		B23L232	29-Dec-23	0.250 L	02-Jan-24 15:43	1
PFOA	335-67-1	ND	2.00		B23L232	29-Dec-23	0.250 L	02-Jan-24 15:43	1
PFHpS	375-92-8	ND	2.00		B23L232	29-Dec-23	0.250 L	02-Jan-24 15:43	1
PFNA	375-95-1	ND	2.00		B23L232	29-Dec-23	0.250 L	02-Jan-24 15:43	1
PFOSA	754-91-6	ND	2.00		B23L232	29-Dec-23	0.250 L	02-Jan-24 15:43	1
PFOS	1763-23-1	ND	2.00		B23L232	29-Dec-23	0.250 L	02-Jan-24 15:43	1
PFDA	335-76-2	ND	2.00		B23L232	29-Dec-23	0.250 L	02-Jan-24 15:43	1
8:2 FTS	39108-34-4	ND	2.00		B23L232	29-Dec-23	0.250 L	02-Jan-24 15:43	1
PFNS	68259-12-1	ND	2.00		B23L232	29-Dec-23	0.250 L	02-Jan-24 15:43	1
MeFOSAA	2355-31-9	ND	2.00		B23L232	29-Dec-23	0.250 L	02-Jan-24 15:43	1
EtFOSAA	2991-50-6	ND	2.00		B23L232	29-Dec-23	0.250 L	02-Jan-24 15:43	1
PFUnA	2058-94-8	ND	2.00		B23L232	29-Dec-23	0.250 L	02-Jan-24 15:43	1
PFDS	335-77-3	ND	2.00		B23L232	29-Dec-23	0.250 L	02-Jan-24 15:43	1
PFDaA	307-55-1	ND	2.00		B23L232	29-Dec-23	0.250 L	02-Jan-24 15:43	1
MeFOSA	31506-32-8	ND	4.00		B23L232	29-Dec-23	0.250 L	02-Jan-24 15:43	1
PFTrDA	72629-94-8	ND	2.00		B23L232	29-Dec-23	0.250 L	02-Jan-24 15:43	1
PFTeDA	376-06-7	ND	2.00		B23L232	29-Dec-23	0.250 L	02-Jan-24 15:43	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C3-PFBA	IS	95.2	50 - 150		B23L232	29-Dec-23	0.250 L	02-Jan-24 15:43	1
13C3-PFPeA	IS	104	50 - 150		B23L232	29-Dec-23	0.250 L	02-Jan-24 15:43	1
13C3-PFBS	IS	89.6	50 - 150		B23L232	29-Dec-23	0.250 L	02-Jan-24 15:43	1
13C2-4:2 FTS	IS	103	50 - 150		B23L232	29-Dec-23	0.250 L	02-Jan-24 15:43	1
13C2-PFHxA	IS	99.7	50 - 150		B23L232	29-Dec-23	0.250 L	02-Jan-24 15:43	1
13C4-PFHpA	IS	99.8	50 - 150		B23L232	29-Dec-23	0.250 L	02-Jan-24 15:43	1
13C3-PFHxS	IS	103	50 - 150		B23L232	29-Dec-23	0.250 L	02-Jan-24 15:43	1
13C2-6:2 FTS	IS	105	50 - 150		B23L232	29-Dec-23	0.250 L	02-Jan-24 15:43	1
13C2-PFOA	IS	103	50 - 150		B23L232	29-Dec-23	0.250 L	02-Jan-24 15:43	1
13C5-PFNA	IS	96.6	50 - 150		B23L232	29-Dec-23	0.250 L	02-Jan-24 15:43	1
13C8-PFOSA	IS	67.0	50 - 150		B23L232	29-Dec-23	0.250 L	02-Jan-24 15:43	1
13C8-PFOS	IS	99.2	50 - 150		B23L232	29-Dec-23	0.250 L	02-Jan-24 15:43	1

Sample ID: Method Blank				PFAS Isotope Dilution Table B-15						
Client Data				Laboratory Data						
Name:	Eastern Analytical, Inc.	Matrix:	Aqueous	Lab Sample:	B23L232-BLK1	Column:	BEH C18			
Project:	271695 NH 2920									
Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution	
13C2-PFDA	IS	90.8	50 - 150		B23L232	29-Dec-23	0.250 L	02-Jan-24 15:43	1	
13C2-8:2 FTS	IS	88.6	50 - 150		B23L232	29-Dec-23	0.250 L	02-Jan-24 15:43	1	
d3-MeFOSAA	IS	95.3	50 - 150		B23L232	29-Dec-23	0.250 L	02-Jan-24 15:43	1	
d5-EtFOSAA	IS	85.7	50 - 150		B23L232	29-Dec-23	0.250 L	02-Jan-24 15:43	1	
13C2-PFUnA	IS	91.0	50 - 150		B23L232	29-Dec-23	0.250 L	02-Jan-24 15:43	1	
13C2-PFDoA	IS	82.6	50 - 150		B23L232	29-Dec-23	0.250 L	02-Jan-24 15:43	1	
d3-MeFOSA	IS	24.7	50 - 150	H	B23L232	29-Dec-23	0.250 L	02-Jan-24 15:43	1	
13C2-PFTeDA	IS	74.3	50 - 150		B23L232	29-Dec-23	0.250 L	02-Jan-24 15:43	1	

RL - Reporting limit

Results reported to RL.

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

Sample ID: OPR
PFAS Isotope Dilution Table B-15

Client Data					Laboratory Data				
Name:	Eastern Analytical, Inc.		Matrix:	Aqueous	Lab Sample:	B23L232-BS1	Column:	BEH C18	
Project:	271695 NH 2920								

Analyte	CAS Number	Amt Found (ng/L)	Spike Amt	% Rec	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBA	375-22-4	39.1	40.0	97.9	73 - 129		B23L232	29-Dec-23	0.250 L	02-Jan-24 15:53	1
PFPeA	2706-90-3	39.9	40.0	99.8	72 - 129		B23L232	29-Dec-23	0.250 L	02-Jan-24 15:53	1
PFBS	375-73-5	36.5	40.0	91.3	72 - 130		B23L232	29-Dec-23	0.250 L	02-Jan-24 15:53	1
4:2 FTS	757124-72-4	39.4	40.0	98.5	63 - 143		B23L232	29-Dec-23	0.250 L	02-Jan-24 15:53	1
PFHxA	307-24-4	36.8	40.0	92.0	72 - 129		B23L232	29-Dec-23	0.250 L	02-Jan-24 15:53	1
PFPeS	2706-91-4	38.6	40.0	96.5	71 - 127		B23L232	29-Dec-23	0.250 L	02-Jan-24 15:53	1
PFHpA	375-85-9	37.2	40.0	92.9	72 - 130		B23L232	29-Dec-23	0.250 L	02-Jan-24 15:53	1
PFHxS	355-46-4	40.2	40.0	100	68 - 131		B23L232	29-Dec-23	0.250 L	02-Jan-24 15:53	1
6:2 FTS	27619-97-2	41.4	40.0	103	64 - 140		B23L232	29-Dec-23	0.250 L	02-Jan-24 15:53	1
PFOA	335-67-1	37.4	40.0	93.4	71 - 133		B23L232	29-Dec-23	0.250 L	02-Jan-24 15:53	1
PFHpS	375-92-8	39.5	40.0	98.7	69 - 134		B23L232	29-Dec-23	0.250 L	02-Jan-24 15:53	1
PFNA	375-95-1	36.4	40.0	91.0	69 - 130		B23L232	29-Dec-23	0.250 L	02-Jan-24 15:53	1
PFOSA	754-91-6	40.5	40.0	101	67 - 137		B23L232	29-Dec-23	0.250 L	02-Jan-24 15:53	1
PFOS	1763-23-1	37.4	40.0	93.4	65 - 140		B23L232	29-Dec-23	0.250 L	02-Jan-24 15:53	1
PFDA	335-76-2	39.8	40.0	99.4	71 - 129		B23L232	29-Dec-23	0.250 L	02-Jan-24 15:53	1
8:2 FTS	39108-34-4	38.6	40.0	96.5	67 - 138		B23L232	29-Dec-23	0.250 L	02-Jan-24 15:53	1
PFNS	68259-12-1	34.8	40.0	86.9	69 - 127		B23L232	29-Dec-23	0.250 L	02-Jan-24 15:53	1
MeFOSAA	2355-31-9	39.1	40.0	97.7	65 - 136		B23L232	29-Dec-23	0.250 L	02-Jan-24 15:53	1
EtFOSAA	2991-50-6	37.7	40.0	94.2	61 - 135		B23L232	29-Dec-23	0.250 L	02-Jan-24 15:53	1
PFUnA	2058-94-8	34.5	40.0	86.1	69 - 133		B23L232	29-Dec-23	0.250 L	02-Jan-24 15:53	1
PFDS	335-77-3	31.9	40.0	79.8	53 - 142		B23L232	29-Dec-23	0.250 L	02-Jan-24 15:53	1
PFDoA	307-55-1	39.5	40.0	98.8	72 - 134		B23L232	29-Dec-23	0.250 L	02-Jan-24 15:53	1
MeFOSA	31506-32-8	42.0	40.0	105	68 - 141		B23L232	29-Dec-23	0.250 L	02-Jan-24 15:53	1
PFTrDA	72629-94-8	38.8	40.0	97.0	65 - 144		B23L232	29-Dec-23	0.250 L	02-Jan-24 15:53	1
PFTeDA	376-06-7	38.3	40.0	95.6	71 - 132		B23L232	29-Dec-23	0.250 L	02-Jan-24 15:53	1

Labeled Standards	Type	% Rec	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C3-PFBA	IS	101	50 - 150		B23L232	29-Dec-23	0.250 L	02-Jan-24 15:53	1
13C3-PFPeA	IS	105	50 - 150		B23L232	29-Dec-23	0.250 L	02-Jan-24 15:53	1
13C3-PFBS	IS	102	50 - 150		B23L232	29-Dec-23	0.250 L	02-Jan-24 15:53	1
13C2-4:2 FTS	IS	107	50 - 150		B23L232	29-Dec-23	0.250 L	02-Jan-24 15:53	1
13C2-PFHxA	IS	108	50 - 150		B23L232	29-Dec-23	0.250 L	02-Jan-24 15:53	1
13C4-PFHpA	IS	107	50 - 150		B23L232	29-Dec-23	0.250 L	02-Jan-24 15:53	1
13C3-PFHxS	IS	105	50 - 150		B23L232	29-Dec-23	0.250 L	02-Jan-24 15:53	1
13C2-6:2 FTS	IS	105	50 - 150		B23L232	29-Dec-23	0.250 L	02-Jan-24 15:53	1
13C2-PFOA	IS	108	50 - 150		B23L232	29-Dec-23	0.250 L	02-Jan-24 15:53	1

Sample ID: OPR

PFAS Isotope Dilution Table B-15

Client Data				Laboratory Data			
Name:	Eastern Analytical, Inc.	Matrix:	Aqueous	Lab Sample:	B23L232-BS1	Column:	BEH C18
Project:	271695 NH 2920						

Labeled Standards	Type	% Rec	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C5-PFNA	IS	100	50 - 150		B23L232	29-Dec-23	0.250 L	02-Jan-24 15:53	1
13C8-PFOA	IS	72.9	50 - 150		B23L232	29-Dec-23	0.250 L	02-Jan-24 15:53	1
13C8-PFOS	IS	106	50 - 150		B23L232	29-Dec-23	0.250 L	02-Jan-24 15:53	1
13C2-PFDA	IS	95.1	50 - 150		B23L232	29-Dec-23	0.250 L	02-Jan-24 15:53	1
13C2-8:2 FTS	IS	92.1	50 - 150		B23L232	29-Dec-23	0.250 L	02-Jan-24 15:53	1
d3-MeFOSAA	IS	95.0	50 - 150		B23L232	29-Dec-23	0.250 L	02-Jan-24 15:53	1
d5-EtFOSAA	IS	90.2	50 - 150		B23L232	29-Dec-23	0.250 L	02-Jan-24 15:53	1
13C2-PFUnA	IS	94.8	50 - 150		B23L232	29-Dec-23	0.250 L	02-Jan-24 15:53	1
13C2-PFDoA	IS	82.7	50 - 150		B23L232	29-Dec-23	0.250 L	02-Jan-24 15:53	1
d3-MeFOSA	IS	30.2	50 - 150	H	B23L232	29-Dec-23	0.250 L	02-Jan-24 15:53	1
13C2-PFTeDA	IS	77.6	50 - 150		B23L232	29-Dec-23	0.250 L	02-Jan-24 15:53	1

Sample ID: B-304DR_20231215 **PFAS Isotope Dilution Table B-15**

Client Data				Laboratory Data			
Name:	Eastern Analytical, Inc.	Matrix:	Aqueous	Lab Sample:	2312139-01	Column:	BEH C18
Project:	271695 NH 2920	Date Collected:	15-Dec-23 11:19	Date Received:	19-Dec-23 12:24		
Location:	271695						

Analyte	CAS Number	Conc. (ng/L)	RL	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBA	375-22-4	10.1	1.75		B23L232	29-Dec-23	0.286 L	02-Jan-24 16:14	1
PFPeA	2706-90-3	13.5	1.75		B23L232	29-Dec-23	0.286 L	02-Jan-24 16:14	1
PFBS	375-73-5	5.78	1.75		B23L232	29-Dec-23	0.286 L	02-Jan-24 16:14	1
4:2 FTS	757124-72-4	ND	1.75		B23L232	29-Dec-23	0.286 L	02-Jan-24 16:14	1
PFHxA	307-24-4	14.4	1.75		B23L232	29-Dec-23	0.286 L	02-Jan-24 16:14	1
PFPeS	2706-91-4	ND	1.75		B23L232	29-Dec-23	0.286 L	02-Jan-24 16:14	1
PFHpA	375-85-9	11.4	1.75		B23L232	29-Dec-23	0.286 L	02-Jan-24 16:14	1
PFHxS	355-46-4	13.3	1.75		B23L232	29-Dec-23	0.286 L	02-Jan-24 16:14	1
6:2 FTS	27619-97-2	3.83	1.75		B23L232	29-Dec-23	0.286 L	02-Jan-24 16:14	1
PFOA	335-67-1	77.6	1.75		B23L232	29-Dec-23	0.286 L	02-Jan-24 16:14	1
PFHpS	375-92-8	ND	1.75		B23L232	29-Dec-23	0.286 L	02-Jan-24 16:14	1
PFNA	375-95-1	1.93	1.75		B23L232	29-Dec-23	0.286 L	02-Jan-24 16:14	1
PFOSA	754-91-6	ND	1.75		B23L232	29-Dec-23	0.286 L	02-Jan-24 16:14	1
PFOS	1763-23-1	ND	1.75		B23L232	29-Dec-23	0.286 L	02-Jan-24 16:14	1
PFDA	335-76-2	ND	1.75		B23L232	29-Dec-23	0.286 L	02-Jan-24 16:14	1
8:2 FTS	39108-34-4	ND	1.75		B23L232	29-Dec-23	0.286 L	02-Jan-24 16:14	1
PFNS	68259-12-1	ND	1.75		B23L232	29-Dec-23	0.286 L	02-Jan-24 16:14	1
MeFOSAA	2355-31-9	ND	1.75		B23L232	29-Dec-23	0.286 L	02-Jan-24 16:14	1
EtFOSAA	2991-50-6	ND	1.75		B23L232	29-Dec-23	0.286 L	02-Jan-24 16:14	1
PFUnA	2058-94-8	ND	1.75		B23L232	29-Dec-23	0.286 L	02-Jan-24 16:14	1
PFDS	335-77-3	ND	1.75		B23L232	29-Dec-23	0.286 L	02-Jan-24 16:14	1
PFDoA	307-55-1	ND	1.75		B23L232	29-Dec-23	0.286 L	02-Jan-24 16:14	1
MeFOSA	31506-32-8	ND	3.50		B23L232	29-Dec-23	0.286 L	02-Jan-24 16:14	1
PFTrDA	72629-94-8	ND	1.75		B23L232	29-Dec-23	0.286 L	02-Jan-24 16:14	1
PFTeDA	376-06-7	ND	1.75		B23L232	29-Dec-23	0.286 L	02-Jan-24 16:14	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C3-PFBA	IS	85.6	50 - 150		B23L232	29-Dec-23	0.286 L	02-Jan-24 16:14	1
13C3-PFPeA	IS	97.7	50 - 150		B23L232	29-Dec-23	0.286 L	02-Jan-24 16:14	1
13C3-PFBS	IS	98.1	50 - 150		B23L232	29-Dec-23	0.286 L	02-Jan-24 16:14	1
13C2-4:2 FTS	IS	96.0	50 - 150		B23L232	29-Dec-23	0.286 L	02-Jan-24 16:14	1
13C2-PFHxA	IS	99.9	50 - 150		B23L232	29-Dec-23	0.286 L	02-Jan-24 16:14	1
13C4-PFHpA	IS	98.8	50 - 150		B23L232	29-Dec-23	0.286 L	02-Jan-24 16:14	1
13C3-PFHxS	IS	100	50 - 150		B23L232	29-Dec-23	0.286 L	02-Jan-24 16:14	1
13C2-6:2 FTS	IS	101	50 - 150		B23L232	29-Dec-23	0.286 L	02-Jan-24 16:14	1
13C2-PFOA	IS	103	50 - 150		B23L232	29-Dec-23	0.286 L	02-Jan-24 16:14	1
13C5-PFNA	IS	94.1	50 - 150		B23L232	29-Dec-23	0.286 L	02-Jan-24 16:14	1
13C8-PFOSA	IS	66.0	50 - 150		B23L232	29-Dec-23	0.286 L	02-Jan-24 16:14	1

Sample ID: B-304DR_20231215				PFAS Isotope Dilution Table B-15						
Client Data				Laboratory Data						
Name:	Eastern Analytical, Inc.	Matrix:	Aqueous	Lab Sample:	2312139-01	Column:	BEH C18			
Project:	271695 NH 2920	Date Collected:	15-Dec-23 11:19	Date Received:	19-Dec-23 12:24					
Location:	271695									
Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution	
13C8-PFOS	IS	98.6	50 - 150		B23L232	29-Dec-23	0.286 L	02-Jan-24 16:14	1	
13C2-PFDA	IS	88.8	50 - 150		B23L232	29-Dec-23	0.286 L	02-Jan-24 16:14	1	
13C2-8:2 FTS	IS	88.4	50 - 150		B23L232	29-Dec-23	0.286 L	02-Jan-24 16:14	1	
d3-MeFOSAA	IS	87.8	50 - 150		B23L232	29-Dec-23	0.286 L	02-Jan-24 16:14	1	
d5-EtFOSAA	IS	82.5	50 - 150		B23L232	29-Dec-23	0.286 L	02-Jan-24 16:14	1	
13C2-PFUnA	IS	83.4	50 - 150		B23L232	29-Dec-23	0.286 L	02-Jan-24 16:14	1	
13C2-PFDoA	IS	70.3	50 - 150		B23L232	29-Dec-23	0.286 L	02-Jan-24 16:14	1	
d3-MeFOSA	IS	20.7	50 - 150	H	B23L232	29-Dec-23	0.286 L	02-Jan-24 16:14	1	
13C2-PFTeDA	IS	20.8	50 - 150	H	B23L232	29-Dec-23	0.286 L	02-Jan-24 16:14	1	

RL - Reporting limit

Results reported to RL.

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

Sample ID: MW-604_20231215 **PFAS Isotope Dilution Table B-15**

Client Data				Laboratory Data			
Name:	Eastern Analytical, Inc.	Matrix:	Aqueous	Lab Sample:	2312139-02	Column:	BEH C18
Project:	271695 NH 2920	Date Collected:	15-Dec-23 12:35	Date Received:	19-Dec-23 12:24		
Location:	271695						

Analyte	CAS Number	Conc. (ng/L)	RL	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBA	375-22-4	2.94	1.93		B23L232	29-Dec-23	0.259 L	02-Jan-24 16:24	1
PFPeA	2706-90-3	3.35	1.93		B23L232	29-Dec-23	0.259 L	02-Jan-24 16:24	1
PFBS	375-73-5	3.02	1.93		B23L232	29-Dec-23	0.259 L	02-Jan-24 16:24	1
4:2 FTS	757124-72-4	ND	1.93		B23L232	29-Dec-23	0.259 L	02-Jan-24 16:24	1
PFHxA	307-24-4	4.24	1.93		B23L232	29-Dec-23	0.259 L	02-Jan-24 16:24	1
PFPeS	2706-91-4	ND	1.93		B23L232	29-Dec-23	0.259 L	02-Jan-24 16:24	1
PFHpA	375-85-9	3.61	1.93		B23L232	29-Dec-23	0.259 L	02-Jan-24 16:24	1
PFHxS	355-46-4	ND	1.93		B23L232	29-Dec-23	0.259 L	02-Jan-24 16:24	1
6:2 FTS	27619-97-2	ND	1.93		B23L232	29-Dec-23	0.259 L	02-Jan-24 16:24	1
PFOA	335-67-1	13.7	1.93		B23L232	29-Dec-23	0.259 L	02-Jan-24 16:24	1
PFHpS	375-92-8	ND	1.93		B23L232	29-Dec-23	0.259 L	02-Jan-24 16:24	1
PFNA	375-95-1	ND	1.93		B23L232	29-Dec-23	0.259 L	02-Jan-24 16:24	1
PFOSA	754-91-6	ND	1.93		B23L232	29-Dec-23	0.259 L	02-Jan-24 16:24	1
PFOS	1763-23-1	ND	1.93		B23L232	29-Dec-23	0.259 L	02-Jan-24 16:24	1
PFDA	335-76-2	ND	1.93		B23L232	29-Dec-23	0.259 L	02-Jan-24 16:24	1
8:2 FTS	39108-34-4	ND	1.93		B23L232	29-Dec-23	0.259 L	02-Jan-24 16:24	1
PFNS	68259-12-1	ND	1.93		B23L232	29-Dec-23	0.259 L	02-Jan-24 16:24	1
MeFOSAA	2355-31-9	ND	1.93		B23L232	29-Dec-23	0.259 L	02-Jan-24 16:24	1
EtFOSAA	2991-50-6	ND	1.93		B23L232	29-Dec-23	0.259 L	02-Jan-24 16:24	1
PFUnA	2058-94-8	ND	1.93		B23L232	29-Dec-23	0.259 L	02-Jan-24 16:24	1
PFDS	335-77-3	ND	1.93		B23L232	29-Dec-23	0.259 L	02-Jan-24 16:24	1
PFDoA	307-55-1	ND	1.93		B23L232	29-Dec-23	0.259 L	02-Jan-24 16:24	1
MeFOSA	31506-32-8	ND	3.86		B23L232	29-Dec-23	0.259 L	02-Jan-24 16:24	1
PFTrDA	72629-94-8	ND	1.93		B23L232	29-Dec-23	0.259 L	02-Jan-24 16:24	1
PFTeDA	376-06-7	ND	1.93		B23L232	29-Dec-23	0.259 L	02-Jan-24 16:24	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C3-PFBA	IS	86.0	50 - 150		B23L232	29-Dec-23	0.259 L	02-Jan-24 16:24	1
13C3-PFPeA	IS	112	50 - 150		B23L232	29-Dec-23	0.259 L	02-Jan-24 16:24	1
13C3-PFBS	IS	108	50 - 150		B23L232	29-Dec-23	0.259 L	02-Jan-24 16:24	1
13C2-4:2 FTS	IS	111	50 - 150		B23L232	29-Dec-23	0.259 L	02-Jan-24 16:24	1
13C2-PFHxA	IS	111	50 - 150		B23L232	29-Dec-23	0.259 L	02-Jan-24 16:24	1
13C4-PFHpA	IS	113	50 - 150		B23L232	29-Dec-23	0.259 L	02-Jan-24 16:24	1
13C3-PFHxS	IS	113	50 - 150		B23L232	29-Dec-23	0.259 L	02-Jan-24 16:24	1
13C2-6:2 FTS	IS	106	50 - 150		B23L232	29-Dec-23	0.259 L	02-Jan-24 16:24	1
13C2-PFOA	IS	115	50 - 150		B23L232	29-Dec-23	0.259 L	02-Jan-24 16:24	1
13C5-PFNA	IS	106	50 - 150		B23L232	29-Dec-23	0.259 L	02-Jan-24 16:24	1
13C8-PFOSA	IS	69.8	50 - 150		B23L232	29-Dec-23	0.259 L	02-Jan-24 16:24	1

Sample ID: MW-604_20231215				PFAS Isotope Dilution Table B-15						
Client Data				Laboratory Data						
Name:	Eastern Analytical, Inc.	Matrix:	Aqueous	Lab Sample:	2312139-02	Column:	BEH C18			
Project:	271695 NH 2920	Date Collected:	15-Dec-23 12:35	Date Received:	19-Dec-23 12:24					
Location:	271695									
Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution	
13C8-PFOS	IS	114	50 - 150		B23L232	29-Dec-23	0.259 L	02-Jan-24 16:24	1	
13C2-PFDA	IS	105	50 - 150		B23L232	29-Dec-23	0.259 L	02-Jan-24 16:24	1	
13C2-8:2 FTS	IS	99.3	50 - 150		B23L232	29-Dec-23	0.259 L	02-Jan-24 16:24	1	
d3-MeFOSAA	IS	101	50 - 150		B23L232	29-Dec-23	0.259 L	02-Jan-24 16:24	1	
d5-EtFOSAA	IS	87.4	50 - 150		B23L232	29-Dec-23	0.259 L	02-Jan-24 16:24	1	
13C2-PFUnA	IS	100	50 - 150		B23L232	29-Dec-23	0.259 L	02-Jan-24 16:24	1	
13C2-PFDoA	IS	87.6	50 - 150		B23L232	29-Dec-23	0.259 L	02-Jan-24 16:24	1	
d3-MeFOSA	IS	11.9	50 - 150	H	B23L232	29-Dec-23	0.259 L	02-Jan-24 16:24	1	
13C2-PFTeDA	IS	69.1	50 - 150		B23L232	29-Dec-23	0.259 L	02-Jan-24 16:24	1	

RL - Reporting limit

Results reported to RL.

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

Sample ID: B-928D_20231215

PFAS Isotope Dilution Table B-15

Client Data				Laboratory Data			
Name:	Eastern Analytical, Inc.	Matrix:	Aqueous	Lab Sample:	2312139-03	Column:	BEH C18
Project:	271695 NH 2920	Date Collected:	15-Dec-23 12:12	Date Received:	19-Dec-23 12:24		
Location:	271695						

Analyte	CAS Number	Conc. (ng/L)	RL	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBA	375-22-4	8.51	1.86		B23L232	29-Dec-23	0.269 L	02-Jan-24 16:34	1
PFPeA	2706-90-3	6.81	1.86		B23L232	29-Dec-23	0.269 L	02-Jan-24 16:34	1
PFBS	375-73-5	7.19	1.86		B23L232	29-Dec-23	0.269 L	02-Jan-24 16:34	1
4:2 FTS	757124-72-4	ND	1.86		B23L232	29-Dec-23	0.269 L	02-Jan-24 16:34	1
PFHxA	307-24-4	9.59	1.86		B23L232	29-Dec-23	0.269 L	02-Jan-24 16:34	1
PFPeS	2706-91-4	ND	1.86		B23L232	29-Dec-23	0.269 L	02-Jan-24 16:34	1
PFHpA	375-85-9	5.74	1.86		B23L232	29-Dec-23	0.269 L	02-Jan-24 16:34	1
PFHxS	355-46-4	ND	1.86		B23L232	29-Dec-23	0.269 L	02-Jan-24 16:34	1
6:2 FTS	27619-97-2	ND	1.86		B23L232	29-Dec-23	0.269 L	02-Jan-24 16:34	1
PFOA	335-67-1	9.96	1.86		B23L232	29-Dec-23	0.269 L	02-Jan-24 16:34	1
PFHpS	375-92-8	ND	1.86		B23L232	29-Dec-23	0.269 L	02-Jan-24 16:34	1
PFNA	375-95-1	ND	1.86		B23L232	29-Dec-23	0.269 L	02-Jan-24 16:34	1
PFOSA	754-91-6	ND	1.86		B23L232	29-Dec-23	0.269 L	02-Jan-24 16:34	1
PFOS	1763-23-1	ND	1.86		B23L232	29-Dec-23	0.269 L	02-Jan-24 16:34	1
PFDA	335-76-2	ND	1.86		B23L232	29-Dec-23	0.269 L	02-Jan-24 16:34	1
8:2 FTS	39108-34-4	ND	1.86		B23L232	29-Dec-23	0.269 L	02-Jan-24 16:34	1
PFNS	68259-12-1	ND	1.86		B23L232	29-Dec-23	0.269 L	02-Jan-24 16:34	1
MeFOSAA	2355-31-9	ND	1.86		B23L232	29-Dec-23	0.269 L	02-Jan-24 16:34	1
EtFOSAA	2991-50-6	ND	1.86		B23L232	29-Dec-23	0.269 L	02-Jan-24 16:34	1
PFUnA	2058-94-8	ND	1.86		B23L232	29-Dec-23	0.269 L	02-Jan-24 16:34	1
PFDS	335-77-3	ND	1.86		B23L232	29-Dec-23	0.269 L	02-Jan-24 16:34	1
PFDoA	307-55-1	ND	1.86		B23L232	29-Dec-23	0.269 L	02-Jan-24 16:34	1
MeFOSA	31506-32-8	ND	3.72		B23L232	29-Dec-23	0.269 L	02-Jan-24 16:34	1
PFTTrDA	72629-94-8	ND	1.86		B23L232	29-Dec-23	0.269 L	02-Jan-24 16:34	1
PFTeDA	376-06-7	ND	1.86		B23L232	29-Dec-23	0.269 L	02-Jan-24 16:34	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C3-PFBA	IS	105	50 - 150		B23L232	29-Dec-23	0.269 L	02-Jan-24 16:34	1
13C3-PFPeA	IS	111	50 - 150		B23L232	29-Dec-23	0.269 L	02-Jan-24 16:34	1
13C3-PFBS	IS	110	50 - 150		B23L232	29-Dec-23	0.269 L	02-Jan-24 16:34	1
13C2-4:2 FTS	IS	115	50 - 150		B23L232	29-Dec-23	0.269 L	02-Jan-24 16:34	1
13C2-PFHxA	IS	111	50 - 150		B23L232	29-Dec-23	0.269 L	02-Jan-24 16:34	1
13C4-PFHpA	IS	113	50 - 150		B23L232	29-Dec-23	0.269 L	02-Jan-24 16:34	1
13C3-PFHxS	IS	109	50 - 150		B23L232	29-Dec-23	0.269 L	02-Jan-24 16:34	1
13C2-6:2 FTS	IS	109	50 - 150		B23L232	29-Dec-23	0.269 L	02-Jan-24 16:34	1
13C2-PFOA	IS	112	50 - 150		B23L232	29-Dec-23	0.269 L	02-Jan-24 16:34	1
13C5-PFNA	IS	107	50 - 150		B23L232	29-Dec-23	0.269 L	02-Jan-24 16:34	1
13C8-PFOSA	IS	60.4	50 - 150		B23L232	29-Dec-23	0.269 L	02-Jan-24 16:34	1

Sample ID: B-928D_20231215				PFAS Isotope Dilution Table B-15						
Client Data				Laboratory Data						
Name:	Eastern Analytical, Inc.		Matrix:	Aqueous		Lab Sample:	2312139-03	Column:	BEH C18	
Project:	271695 NH 2920		Date Collected:	15-Dec-23 12:12		Date Received:	19-Dec-23 12:24			
Location:	271695									
Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution	
13C8-PFOS	IS	107	50 - 150		B23L232	29-Dec-23	0.269 L	02-Jan-24 16:34	1	
13C2-PFDA	IS	102	50 - 150		B23L232	29-Dec-23	0.269 L	02-Jan-24 16:34	1	
13C2-8:2 FTS	IS	95.7	50 - 150		B23L232	29-Dec-23	0.269 L	02-Jan-24 16:34	1	
d3-MeFOSAA	IS	102	50 - 150		B23L232	29-Dec-23	0.269 L	02-Jan-24 16:34	1	
d5-EtFOSAA	IS	83.4	50 - 150		B23L232	29-Dec-23	0.269 L	02-Jan-24 16:34	1	
13C2-PFUnA	IS	94.8	50 - 150		B23L232	29-Dec-23	0.269 L	02-Jan-24 16:34	1	
13C2-PFDoA	IS	89.8	50 - 150		B23L232	29-Dec-23	0.269 L	02-Jan-24 16:34	1	
d3-MeFOSA	IS	10.8	50 - 150	H	B23L232	29-Dec-23	0.269 L	02-Jan-24 16:34	1	
13C2-PFTeDA	IS	49.9	50 - 150	H	B23L232	29-Dec-23	0.269 L	02-Jan-24 16:34	1	

RL - Reporting limit

Results reported to RL.

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

Sample ID: FB-PFAS-01_20231215

PFAS Isotope Dilution Table B-15

Client Data				Laboratory Data			
Name:	Eastern Analytical, Inc.	Matrix:	Aqueous	Lab Sample:	2312139-04	Column:	BEH C18
Project:	271695 NH 2920	Date Collected:	15-Dec-23 13:00	Date Received:	19-Dec-23 12:24		
Location:	271695						

Analyte	CAS Number	Conc. (ng/L)	RL	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBA	375-22-4	ND	1.91		B23L232	29-Dec-23	0.262 L	02-Jan-24 16:45	1
PFPeA	2706-90-3	ND	1.91		B23L232	29-Dec-23	0.262 L	02-Jan-24 16:45	1
PFBS	375-73-5	ND	1.91		B23L232	29-Dec-23	0.262 L	02-Jan-24 16:45	1
4:2 FTS	757124-72-4	ND	1.91		B23L232	29-Dec-23	0.262 L	02-Jan-24 16:45	1
PFHxA	307-24-4	ND	1.91		B23L232	29-Dec-23	0.262 L	02-Jan-24 16:45	1
PFPeS	2706-91-4	ND	1.91		B23L232	29-Dec-23	0.262 L	02-Jan-24 16:45	1
PFHpA	375-85-9	ND	1.91		B23L232	29-Dec-23	0.262 L	02-Jan-24 16:45	1
PFHxS	355-46-4	ND	1.91		B23L232	29-Dec-23	0.262 L	02-Jan-24 16:45	1
6:2 FTS	27619-97-2	ND	1.91		B23L232	29-Dec-23	0.262 L	02-Jan-24 16:45	1
PFOA	335-67-1	ND	1.91		B23L232	29-Dec-23	0.262 L	02-Jan-24 16:45	1
PFHpS	375-92-8	ND	1.91		B23L232	29-Dec-23	0.262 L	02-Jan-24 16:45	1
PFNA	375-95-1	ND	1.91		B23L232	29-Dec-23	0.262 L	02-Jan-24 16:45	1
PFOSA	754-91-6	ND	1.91		B23L232	29-Dec-23	0.262 L	02-Jan-24 16:45	1
PFOS	1763-23-1	ND	1.91		B23L232	29-Dec-23	0.262 L	02-Jan-24 16:45	1
PFDA	335-76-2	ND	1.91		B23L232	29-Dec-23	0.262 L	02-Jan-24 16:45	1
8:2 FTS	39108-34-4	ND	1.91		B23L232	29-Dec-23	0.262 L	02-Jan-24 16:45	1
PFNS	68259-12-1	ND	1.91		B23L232	29-Dec-23	0.262 L	02-Jan-24 16:45	1
MeFOSAA	2355-31-9	ND	1.91		B23L232	29-Dec-23	0.262 L	02-Jan-24 16:45	1
EtFOSAA	2991-50-6	ND	1.91		B23L232	29-Dec-23	0.262 L	02-Jan-24 16:45	1
PFUnA	2058-94-8	ND	1.91		B23L232	29-Dec-23	0.262 L	02-Jan-24 16:45	1
PFDS	335-77-3	ND	1.91		B23L232	29-Dec-23	0.262 L	02-Jan-24 16:45	1
PFDoA	307-55-1	ND	1.91		B23L232	29-Dec-23	0.262 L	02-Jan-24 16:45	1
MeFOSA	31506-32-8	ND	3.82		B23L232	29-Dec-23	0.262 L	02-Jan-24 16:45	1
PFTTrDA	72629-94-8	ND	1.91		B23L232	29-Dec-23	0.262 L	02-Jan-24 16:45	1
PFTeDA	376-06-7	ND	1.91		B23L232	29-Dec-23	0.262 L	02-Jan-24 16:45	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C3-PFBA	IS	68.2	50 - 150		B23L232	29-Dec-23	0.262 L	02-Jan-24 16:45	1
13C3-PFPeA	IS	87.5	50 - 150		B23L232	29-Dec-23	0.262 L	02-Jan-24 16:45	1
13C3-PFBS	IS	95.1	50 - 150		B23L232	29-Dec-23	0.262 L	02-Jan-24 16:45	1
13C2-4:2 FTS	IS	99.0	50 - 150		B23L232	29-Dec-23	0.262 L	02-Jan-24 16:45	1
13C2-PFHxA	IS	96.2	50 - 150		B23L232	29-Dec-23	0.262 L	02-Jan-24 16:45	1
13C4-PFHpA	IS	94.0	50 - 150		B23L232	29-Dec-23	0.262 L	02-Jan-24 16:45	1
13C3-PFHxS	IS	97.2	50 - 150		B23L232	29-Dec-23	0.262 L	02-Jan-24 16:45	1
13C2-6:2 FTS	IS	88.1	50 - 150		B23L232	29-Dec-23	0.262 L	02-Jan-24 16:45	1
13C2-PFOA	IS	94.4	50 - 150		B23L232	29-Dec-23	0.262 L	02-Jan-24 16:45	1
13C5-PFNA	IS	89.2	50 - 150		B23L232	29-Dec-23	0.262 L	02-Jan-24 16:45	1
13C8-PFOSA	IS	47.1	50 - 150	H	B23L232	29-Dec-23	0.262 L	02-Jan-24 16:45	1

Sample ID: FB-PFAS-01_20231215				PFAS Isotope Dilution Table B-15							
Client Data				Laboratory Data							
Name:	Eastern Analytical, Inc.		Matrix:	Aqueous		Lab Sample:	2312139-04		Column:	BEH C18	
Project:	271695 NH 2920		Date Collected:	15-Dec-23 13:00		Date Received:	19-Dec-23 12:24				
Location:	271695										
Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution		
13C8-PFOS	IS	92.8	50 - 150		B23L232	29-Dec-23	0.262 L	02-Jan-24 16:45	1		
13C2-PFDA	IS	90.8	50 - 150		B23L232	29-Dec-23	0.262 L	02-Jan-24 16:45	1		
13C2-8:2 FTS	IS	80.1	50 - 150		B23L232	29-Dec-23	0.262 L	02-Jan-24 16:45	1		
d3-MeFOSAA	IS	79.2	50 - 150		B23L232	29-Dec-23	0.262 L	02-Jan-24 16:45	1		
d5-EtFOSAA	IS	69.9	50 - 150		B23L232	29-Dec-23	0.262 L	02-Jan-24 16:45	1		
13C2-PFUnA	IS	87.2	50 - 150		B23L232	29-Dec-23	0.262 L	02-Jan-24 16:45	1		
13C2-PFDoA	IS	83.7	50 - 150		B23L232	29-Dec-23	0.262 L	02-Jan-24 16:45	1		
d3-MeFOSA	IS	20.3	50 - 150	H	B23L232	29-Dec-23	0.262 L	02-Jan-24 16:45	1		
13C2-PFTeDA	IS	71.6	50 - 150		B23L232	29-Dec-23	0.262 L	02-Jan-24 16:45	1		

RL - Reporting limit

Results reported to RL.

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

DATA QUALIFIERS & ABBREVIATIONS

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

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


Enthalpy Analytical - EDH Certifications

Accrediting Authority	Certificate Number
Alaska Department of Environmental Conservation	17-013
Arkansas Department of Environmental Quality	21-023-0
California Department of Health – ELAP	2892
DoD ELAP - A2LA Accredited - ISO/IEC 17025	3091.01
Florida Department of Health	E87777
Hawaii Department of Health	N/A
Louisiana Department of Environmental Quality	01977
Maine Department of Health	2020018
Michigan Department of Environmental Quality	9932
Minnesota Department of Health	2211390
Nevada Division of Environmental Protection	CA00413
New Hampshire Environmental Accreditation Program	207721
New Jersey Department of Environmental Protection	CA003
New York Department of Health	11411
Ohio Environmental Protection Agency	87778
Oregon Laboratory Accreditation Program	4042-021
Texas Commission on Environmental Quality	T104704189-22-13
Vermont Department of Health	VT-4042
Virginia Department of General Services	11276
Washington Department of Ecology	C584
Wisconsin Department of Natural Resources	998036160

Current certificates and lists of licensed parameters can be found at Enthalpy.com/Resources/Accreditations.

- Revised coc - Rec'd via email on 12/18/23 at 10:00 - 1/4 12/18/23

CHAIN-OF-CUSTODY RECORD

 **Eastern Analytical, Inc.**
professional laboratory and drilling services

EAI ID# **271695** Page 1

Sample ID	Date Sampled	Matrix	aParameters	Sample Notes
B-304DR_20231215	12/15/2023 11:19	aqueous	Subcontract - Perfluorinated Compounds EPA Method 537 modified	2312139 1.4°C
MW-604_20231215	12/15/2023 12:35	aqueous	Subcontract - Perfluorinated Compounds EPA Method 537 modified	
B-928D_20231215	12/15/2023 12:12	aqueous	Subcontract - Perfluorinated Compounds EPA Method 537 modified	
FB-PFAS-01_20231215	12/15/2023 13:00	aqueous	Subcontract - Perfluorinated Compounds EPA Method 537 modified	

EAI ID# **271695** Project State: NH
Project ID: 2920

Company Vista Analytical Laboratory
Address 1104 Windfield Way
Address El Dorado Hills, CA 95762
Account #
Phone # (916) 673-1520

Results Needed: Preferred Date: Standard
RUSH Due Date: _____

QC Deliverables
 A A+ B B+ C MA MCP

Notes about project:
 Email login confirmation, pdf of results and invoice to customerservice@easternanalytical.com.

- 1) Please Report Sulfonic Acids
- 2) PFAS (Compound List Attached)
- 3) Report to RL (no J-flags)
- 4) RLs ~ 2 ng/L for most compounds

PO #: _____ EAI ID# **271695**

Data Deliverable (circle) SHA
 Excel **NH EMD** **EQUIS** ME EGAD

Call prior to analyzing, if RUSH charges will be applied.

Sat Guillermo Garcia 12/18/2023 16:00 UPS
 Relinquished by Date/Time Received by
 UPS 12/18/23 11:04 Freya

Relinquished by Date/Time Received by

Eastern Analytical, Inc. 51 Antrim Ave Concord, NH 03301 Phone: (603)228-0525 1-800-287-0525 customerservice@easternanalytical.com

As a subcontract lab to EAI, you will defend, indemnify and hold Eastern Analytical, Inc., its officers, employees, and agents harmless from and against any and all liability, loss, expense or claims for injury or damages arising out of the performance against this chain of custody but only in proportion to and to the extent such liability, loss, expense, or claims for injury or damages are caused by or result from the negligent or intentional acts or omissions of you as a subcontract lab, your officers, agents or employees

EAI # 271695

PFAS DoD 25 Compounds

2312139

Analyte Name	CAS #	Analyte
4:2 Fluorotelomer sulfonate	757124-72-4	4:2-FTS
6:2 Fluorotelomer sulfonate	27619-97-2	6:2-FTS
8:2 Fluorotelomer sulfonate	39108-34-4	8:2-FTS
N-ethyl perfluorooctanesulfonamidoacetic acid	2991-50-6	NEtFOSAA
N-methyl perfluorooctanesulfonamidoacetic acid	2355-31-9	NMeFOSAA
Perfluorooctanesulfonic acid	1763-23-1	PFOS
Perfluorobutanesulfonic acid	375-73-5	PFBS
Perfluorobutanoic acid	375-22-4	PFBA
Perfluorodecanesulfonic acid	335-77-3	PFDS
Perfluorodecanoic acid	335-76-2	PFDA
Perfluorododecanoic acid	307-55-1	PFDoA
Perfluoroheptanesulfonic acid	375-92-8	PFHpS
Perfluoroheptanoic acid	375-85-9	PFHpA
Perfluorohexanesulfonic acid	355-46-4	PFHxS
Perfluorohexanoic acid	307-24-4	PFHxA
Perfluorononane sulfonic acid	68259-12-1	PFNS
Perfluorononaic acid	375-95-1	PFNA
Perfluorooctanoic acid	335-67-1	PFOA
Perfluoropentane sulfonic acid	2706-91-4	PFPeS
Perfluoropentanoic acid	2706-90-3	PFPeA
Perfluorotetradecanoic acid	376-06-7	PFTeDA
Perfluorotridecanoic acid	72629-94-8	PFTrDA
Perfluoroundecanoic acid	2058-94-8	PFUnA/PFUdA
N-methylperfluorooctanesulfonamide	31506-32-8	N-MeFOSA
Perfluorooctanesulfonamide	754-91-6	PFOSA

Sample Log-In Checklist

 Page # 1 of 1

 Work Order #: 2312139 TAT rush

Samples Arrival:	Date/Time <u>12/19/23</u> <u>11:04</u>	Initials: <u>JK</u>	Location: <u>WR-2</u>
			Shelf/Rack: <u>N/A</u>
Delivered By:	FedEx <input checked="" type="checkbox"/> UPS	On Trac	GLS
		DHL	Hand Delivered
Other			
Preservation:	<input checked="" type="checkbox"/> Ice	Blue Ice	Techni Ice
		Dry Ice	None
Temp °C: <u>1.4</u> (uncorrected)	Probe used: Y / <input checked="" type="checkbox"/> N		Thermometer ID: <u>IR-4</u>
Temp °C: <u>1.4</u> (corrected)			

	YES	NO	NA
Shipping Container(s) Intact?	<input checked="" type="checkbox"/>		
Shipping Custody Seals Intact?	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>
Airbill <u>1042</u> Trk# <u>12 746 599 01 9887 5180</u>	<input checked="" type="checkbox"/>		
Shipping Documentation Present?	<input checked="" type="checkbox"/>		
Shipping Container	Enthalpy	<input checked="" type="checkbox"/> Client	Retain
			<input checked="" type="checkbox"/> Return
			Dispose
Chain of Custody / Sample Documentation Present?	<input checked="" type="checkbox"/>		
Chain of Custody / Sample Documentation Complete?	<input checked="" type="checkbox"/>		
Holding Time Acceptable?	<input checked="" type="checkbox"/>		
Logged In:	Date/Time <u>12/20/23</u> <u>12:17</u>	Initials: <u>JK</u>	Location: <u>R-13, WR-2</u>
			Shelf/Rack: <u>A-2 F-3</u>
COC Anomaly/Sample Acceptance Form completed?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

Comments:

for 12/20/23

CoC/Label Reconciliation Report WO# 2312139

LabNumber	CoC Sample ID	Sample Alias	Sample Date/Time	Container	Base Matrix	Sample Comments
2312139-01	A B-304DR_20231215	271695	15-Dec-23 11:19	HDPE Bottle, 500 mL	Aqueous	<input type="checkbox"/> A
2312139-01	B B-304DR_20231215	271695	15-Dec-23 11:19	HDPE Bottle, 500 mL	Aqueous	<input type="checkbox"/> B
2312139-01	C B-304DR_20231215	271695	15-Dec-23 11:19	HDPE Bottle, 125 mL	Aqueous	<input type="checkbox"/> C
2312139-02	A MW-604_20231215	271695	15-Dec-23 12:35	HDPE Bottle, 500 mL	Aqueous	<input type="checkbox"/> D
2312139-02	B MW-604_20231215	271695	15-Dec-23 12:35	HDPE Bottle, 500 mL	Aqueous	<input type="checkbox"/> E
2312139-02	C MW-604_20231215	271695	15-Dec-23 12:35	HDPE Bottle, 500 mL	Aqueous	<input type="checkbox"/>
2312139-03	A B-928D_20231215	271695	15-Dec-23 12:12	HDPE Bottle, 500 mL	Aqueous	<input type="checkbox"/>
2312139-03	B B-928D_20231215	271695	15-Dec-23 12:12	HDPE Bottle, 500 mL	Aqueous	<input type="checkbox"/>
2312139-03	C B-928D_20231215	271695	15-Dec-23 12:12	HDPE Bottle, 500 mL	Aqueous	<input type="checkbox"/>
2312139-04	A FB-PFAS-01_20231215	271695	15-Dec-23 13:00	HDPE Bottle, 500 mL	Aqueous	<input type="checkbox"/>

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

	Yes	No	NA
Sample Container Intact?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sample Custody Seals Intact?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Adequate Sample Volume?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Container Type Appropriate for Analysis(es)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Comments: *A) Undeline part not present on sample label*
D) No back up volume
E) ~ 10% particulate
D) ~ 20% particulate
E) ~ 5% particulate

Preservation Documented: Na2S2O3 Trizma NH4CH3CO2 None Other

Verified by/Date: KA 12/20/23
MS 12/20/23



ANOMALY FORM

Work Order # 2312139

Initial/Date The following checked issues were noted during sample receipt and login:

- 1. The samples were received out of temperature at (WI-PHT): _____
Was Ice present: Yes No Melted Blue Ice
- 2. The Chain-of-Custody (CoC) was not relinquished properly.
- 3. The CoC did not include collection time(s). 00:00 will be used unless notified otherwise.
- 4. The sample(s) did not include a sample collection time. All or Sample Name: _____
- 10/10/2023 5. A sample ID discrepancy was found. See the Reconciliation report.
The CoC Sample ID will be used unless notified otherwise.
- 6. A sample date and/or time discrepancy was found. See the Reconciliation report.
The CoC Sample date/time will be used unless notified otherwise.
- 7. The CoC did not include a sample matrix. The following sample matrix will be used: _____
- 8. Insufficient volume received for analysis. All or Sample Name: _____
- 9. The backup bottle was received broken. Sample Name: _____
- 10. CoC not received, illegible or destroyed.
- 11. The sample(s) were received out of holding time. All or Sample Name: _____
- 12. The CoC did not include an analysis. All or Sample Name: _____
- 13. Sample(s) received without collection date. All or Sample Name: _____
- 14. Sample(s) not received. All or Sample Name: _____
- 15. Sample(s) received broken. All or Sample Name: _____
- 16. An incorrect container-type was used. All or Sample Name: _____
- 17. The Field Reagent Blank (FRB) preservative was from a different lot than the field samples.
Will proceed with analysis and narrate unless notified otherwise.
- 18. Other:

Bolded items require sign-off

Client Contacted: _____

Date of Contact: _____

Lab Project Manager: _____

Resolution:

