

Phase IV Status Report #1

71 Airport Road
West Tisbury, Massachusetts
RTN 4-0027571



May 20, 2024

Ms. Navpreet Brolowski
Massachusetts Department of Environmental Protection
Bureau of Waste Site Cleanup
Southeast Regional Office
20 Riverside Drive
Lakeville, MA 02347

**Re: Phase IV Status Report #1
71 Airport Road
West Tisbury, Massachusetts
RTN 4-0027571**

Dear Ms. Brolowski:

Tetra Tech has prepared this Phase IV Status Report for the above-referenced Disposal Site on behalf of the Martha's Vineyard Airport Commission (MVAC). The Disposal Site is related to the identification of per- and polyfluoroalkyl substances (PFAS) attributed to suspected releases from various sources including primarily aqueous film-forming foam (AFFF). Phase IV Remedy Implementation activities are underway pursuant to the requirements of the Massachusetts Contingency Plan (MCP). This Phase IV Status Report has been prepared pursuant to the MCP, 310 CMR 40.0877.

Please contact the undersigned at (508) 786-2200 if you have any questions or require additional information.

Very truly yours,

A handwritten signature in blue ink, appearing to read 'Ian S. Cannan', written over a light blue grid background.

Ian S. Cannan, CHMM
Project Manager

A handwritten signature in blue ink, appearing to read 'Ronald E. Myrick, Jr.', written over a light blue grid background.

Ronald E. Myrick, Jr., P.E., L.S.P.
Vice President

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TABLE OF CONTENTS

1.0 INTRODUCTION.....	1
1.1 General Disposal Site Information.....	1
1.2 Summary of Comprehensive Remedial Action.....	2
2.0 PHASE IV STATUS REPORT	3
2.1 Regulatory Context and Updates	4
2.2 Status of Source Area Soil Remediation	4
2.3 Status of Source Area Groundwater Remediation	5
2.3.1 Area 1 PlumeStop Barrier	5
2.4 Status of Monitored Natural Attenuation.....	7
2.4.1 Status of Groundwater Monitoring	7
2.4.2 Status of Private Well Monitoring.....	8
2.4.3 Additional Private Well Sampling Outreach Efforts.....	8
2.5 Status Of Exposure Pathway Elimination/Mitigation Measures	8
2.5.1 POET System Monitoring	9
2.5.2 POET Performance Sampling and Analysis	10
2.5.3 IH Evaluation.....	11
2.5.4 POET System Maintenance.....	12
2.5.5 Impact of Likely Changes to GW-1 Standards.....	12
2.6 Field Sampling Quality Assurance and Quality Control	13
2.7 Remedial Monitoring Reports	13
2.8 Performance Evaluation	13
2.8.1 Source Area Soil Remediation.....	14
2.8.2 PlumeStop Barrier Performance	14
2.8.3 Groundwater MNA Performance.....	14
2.8.4 POET System Performance.....	14
2.9 Description of Conditions or Problems Affecting Performance	14
2.10 Significant Modifications of OMM Program	14

LIST OF TABLES

Table 1	Source Area Soil Analytical Data
Table 2	Groundwater Gauging Data
Table 3	Monitoring Well Groundwater Analytical Data
Table 4	Private Well Annual Monitoring Summary
Table 5	Private Well Analytical Data Summary
Table 6	POET System Performance Summary
Table 7	Quality Control Analytical Data

LIST OF FIGURES

Figure 1	Site Locus Plan
Figure 2	Disposal Site Plan
Figure 3	AFFF Source Area Stabilization Plans
Figure 4	Area 1 Source Area and PlumeStop Barrier
Figure 5	Sampling Locations with Maximum PFAS6 Concentrations from January 2022 to November 2023

LIST OF APPENDICES

Appendix A	L.S.P. Limitations and Conditions
Appendix B	Laboratory Certificates of Analysis

1.0 INTRODUCTION

On behalf of the Martha's Vineyard Airport Commission (MVAC), Tetra Tech has prepared this Phase IV Status Report for the disposal site associated with Release Tracking Number (RTN) 4-27571 ("the Site"). This Phase IV Status Report was prepared in accordance with the Massachusetts Contingency Plan (MCP), 310 CMR 40.0877, and as required by the Massachusetts Department of Environmental Protection (MassDEP). This report is submitted to MassDEP via the electronic online filing system, eDEP, under transmittal form BWSC-108. This report is subject to the limitations and conditions included in Appendix A. The parties that are involved in the implementation of the response actions are:

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1.1 GENERAL DISPOSAL SITE INFORMATION

The Site includes a portion of the Martha's Vineyard Airport (MVY) property which is comprised of two separate parcels of land: a 410.28-acre parcel of land identified as 71 Airport Road in West Tisbury, Massachusetts, and a separate 385.6-acre parcel of land identified as 9 Airport Road in Edgartown, Massachusetts. The Site also includes properties owned by other parties in the downgradient (southerly) direction relative to MVY. The general location and the 500 foot and ½ mile radii from the Site are shown on a topographic map of the area on Figure 1. A Disposal Site Plan showing relevant details of the Site and downgradient properties relative to the boundaries of the Site is included as Figure 2.

The Site is generally located in a cleared area surrounded by scrub oak forest on the island of Martha's Vineyard off the south coast of Massachusetts. The Site includes paved runways and roads, several separate buildings related to airport operations, aircraft storage, airport maintenance and administration, associated parking areas, and a business park with numerous buildings for office space and commercial tenants. The MVY property is supplied with municipal water from the Town of Oak Bluffs, and the on-site wastewater treatment plant (WWTP) receives wastewater from the airport and business park.

The Site also includes residential developments to the south of MVY including suburban style single family homes with both seasonal and fulltime residents. The residential developments south of MVY have private wells and on-site sewage disposal (septic) systems.

Based on the developing scientific data regarding per- and polyfluoroalkyl substances (PFAS), and the likelihood of future MassDEP guidance and regulatory standards at the time, in 2018 MVAC initiated an assessment of suspected releases of aqueous film-forming foam (AFFF) associated with Federal Aviation

Phase IV Status Report #1
71 Airport Road, West Tisbury, Massachusetts
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Administration (FAA)-required testing of AFFF formulations, historic firefighting exercises (none documented over the past 20 years), one documented small aircraft gear-up landing where AFFF was applied to an aircraft and runway in 2006, and one response to a fire at a boat storage yard at the adjacent Airport Business Park in 2011. AFFF is comprised of PFAS compounds, and it was believed that these events may have released PFAS compounds into the environment in the past when the potential environmental impacts of PFAS were less understood, and such activities were not considered to be detrimental to groundwater.

Sampling of private wells located south of MVY on Waldrons Bottom Road and Vineyard Meadow Farms Road in November 2018 identified concentrations of PFAS above the then-applicable MassDEP Office of Research and Standards Guideline (ORSG) concentration of 70 parts per trillion (ppt) and at concentrations that necessitated reporting to MassDEP as a potential Imminent Hazard (IH) based on a Method 3 risk characterization using groundwater analytical data for a private well. Also, the release of PFAS to groundwater at the Site has resulted in the presence of certain PFAS compounds in private water supply wells which represents a Condition of Substantial Release Migration (SRM).

On November 20, 2018, MassDEP was notified of the PFAS reportable condition, and RTN 4-0027571 was assigned to the PFAS release at MVY. Immediate Response Action (IRA) activities were initiated under oral approval of MassDEP.

The following is a brief summary of MCP submittals since release notification:

- January 18, 2019: IRA Plan
- Monthly IRA Status Reports: February 2019 through July 2019
- Phase I Initial Site Investigation: November 20, 2019
- Semi-annual IRA Status Reports: December 2019 to June 2023
- Modification to IRA Plan: December 19, 2019
- Phase II Comprehensive Site Assessment: November 21, 2022
- Phase III Remedial Action Plan: November 22, 2023
- Phase IV Remedy Implementation Plan (RIP): November 22, 2023
- IRA Completion Report: December 22, 2023

1.2 SUMMARY OF COMPREHENSIVE REMEDIAL ACTION

The Comprehensive Remedial Action (CRA) involves a flexible multi-technology approach which combines several potentially feasible alternatives. Due to the complex nature of the Site, anticipated future regulatory uncertainty, and the limited and evolving nature of available remedial alternatives for PFAS, the selection of several remedial approaches provides flexibility to address the disperse areas of PFAS impacts originating from MVY and potential changes in Site conditions that may occur over time. The CRA involves the following elements:

- Targeted excavation and ex-situ stabilization of source area PFAS impacted soils from Area 1 (west of the WWTP), Area 2 (near TT-2) and proximate to the Hadley Hanger which will remove accessible areas of PFAS impacted soil for stabilization and control these sources. This will be combined with possible in-situ stabilization of PFAS impacted soils that have reduced or limited accessibility due to physical or other site-specific constraints such as proximity to sensitive environmental receptors or existing utilities. In addition, if other areas of potential AFFF discharge are identified as sources of PFAS impacts to groundwater, those soils could be treated in a similar approach. The stabilized soils will be re-used on-site as surface cover, initially within Area 1 or the area of origin.

- Source area groundwater remediation at Area 1 will be continued using the existing PlumeStop barrier. This PlumeStop barrier may be expanded to improve reliability and increase the capture area of migrating groundwater or pumped groundwater from targeted PFAS migration areas.
- Groundwater remediation from disperse AFFF testing and release occurrences at other areas of MVY to the west of Airport Road will be addressed by a combined approach involving an expanded PlumeStop barrier, targeted/limited groundwater recovery and pumping and treatment via the existing or expanded PlumeStop barrier and monitored natural attenuation (MNA).
- Groundwater remediation from disperse AFFF testing and release occurrences at/near the airport terminal building/ARFF building and areas to the east, including the response to a boat fire at the nearby boat yard in the airport business park will be addressed via MNA. Also, installation of an additional PlumeStop barrier is selected as an alternative in the event that a more distinct migration pathway for high-concentration PFAS impacted groundwater is identified in this area.
- Groundwater remediation for the area south of Edgartown-West Tisbury Road will be addressed via MNA. Since the source areas located upgradient from this area will be addressed via the above alternatives, no active remediation is proposed in this area; however, treatment and discharge of PFAS via point of entry treatment (POET) systems may result in minor decreases in downgradient PFAS impacts to groundwater. Additional groundwater monitoring will be required to further monitor and confirm that leaching from residential soils associated with retained PFAS due to irrigation of PFAS-containing water, atmospheric deposition and/or other non-AFFF related sources is not a significant source of PFAS impacts to groundwater.
- Drinking water remediation to mitigate PFAS impacts to drinking water supply wells at concentrations above applicable MassDEP drinking water standards will be addressed via POET systems using granular activated carbon (GAC) or other proven treatment media.
- For locations where a comprehensive understanding of groundwater impacts relative to depth exists, targeted modified private well installations may be performed to install a new private well to a depth where PFAS-impacted groundwater does not exist and is unlikely to occur in the future. Also, for newly-developed properties, Tetra Tech will engage with the West Tisbury and Edgartown Board of Health offices as well as property owners to advise regarding recommended installation depths to anticipated reduced or non PFAS-impacted zone based on the location of the new private well at the Site and available data; however, new POET systems may still be required for these new wells pending post-installation sampling and laboratory analysis of drinking water samples.

2.0 PHASE IV STATUS REPORT

Response actions were initiated at the Site under an IRA beginning in November 2018. The Phase IV Remedy Implementation Plan was submitted on November 22, 2023, and an IRA Completion Statement was submitted on December 22, 2023. The following sections describe the type and frequency of remedial actions and the status of operation, maintenance and monitoring (OMM) activities for the CRA.

2.1 REGULATORY CONTEXT AND UPDATES

On December 27, 2019, MassDEP promulgated a new regulatory standard for PFAS along with other revisions to the MCP. The MCP Category GW-1 standard of 20 ppt for 6 target PFAS compounds applies to groundwater that is considered either a current or future source of drinking water. Prior IRA reports referred to the “5 target PFAS compounds”; however, with the establishment of the new MCP GW-1 standard, tables and references herein have been updated to include PFDA which was not included in the list of 5 PFAS compounds in the prior MassDEP ORSG of 70 ppt. The 6 target PFAS compounds are herein referred to as “PFAS6” and include PFOA, PFOS, PFHxS, PFNA, PFHpA and PFDA.

On October 2, 2020, MassDEP published its PFAS public drinking water standard or Massachusetts Maximum Contaminant Level (MMCL) of 20 ppt. The MMCL is applicable to community (COM) and non-transient non-community (NTNC) drinking water systems. These regulations do not apply to individual private drinking water supply wells. However, the MCP Category GW-1 standard, as described above, does apply to drinking water source areas, including areas where private drinking water supply wells exist.

On April 10, 2024, the U.S. Environmental Protection Agency (EPA) issued final National Primary Drinking Water Regulations which established Maximum Contaminant Levels (MCLs) for six PFAS, herein referred to as the “CERCLA6”. The CERCLA6 and their MCLs include PFOA (4.0 ppt), PFOS (4.0 ppt), PFHxS (10 ppt), PFNA (10 ppt), HFPO-DA/GenX (10 ppt) and PFBS (no individual MCL). For mixtures containing at least two or more of PFBS, PFHxS, PFNA and HFPO-DA, the MCL uses a Hazard Index (HI) of 1 to account for the combined and co-occurring levels of these PFAS in drinking water. The HI is calculated as the sum of the fractions of the concentration of each PFAS divided by its respective health-based value. For PFAS with individual MCLs, the health-based value is the MCL. For PFBS the health-based value is 2,000 ppt.

Per the EPA, the individual States are required to establish regulations that are no less stringent than the federal standards within two years of the promulgation of the Federal MCLs, with the possibility of an extension of up to two years. MassDEP has established the MMCL of 20 ppt for PFAS6, which is less stringent than the new Federal MCLs in most circumstances. Also, the Federal MCLs established standards for two additional PFAS (PFBS and HFPO-DA) which are not included in the current Massachusetts regulations. It is our understanding that MassDEP is in the process of proposing amendments to its PFAS regulations to be at least as stringent as the Federal MCLs; however, as indicated this process could take two years or more. Typically, the MassDEP establishes the MCP Category GW-1 standards to match the applicable MCLs, and we anticipate a similar approach for future revisions considering the newly established Federal MCLs for PFAS. Additional consideration of the potential impacts from these regulatory changes are presented in Section 2.5.5.

2.2 STATUS OF SOURCE AREA SOIL REMEDIATION

To reduce leachability of PFAS from soils, three areas have been targeted for stabilization using FLUORO-SORB 100 as shown on Figure 3. The design and planning of the soil stabilization program are underway. Additional information on implementation schedule will be presented in future status report submittals.

On November 30, 2023, eight additional soil samples were collected from the Area 1 source area to further refine the limits of proposed soil stabilization activities. The soil sampling locations are shown on Figure 3. Soil samples were analyzed at Alpha Analytical for PFAS via LCMSMS with isotope dilution. Soil

analytical data are summarized in Table 1. The laboratory certificates of analysis are included in Appendix B. The soil samples AFFF-SA-33 and -36 reported PFAS6 concentrations less than 5 ng/g, which adds additional data to establish the boundaries of the Area 1 soil stabilization areas to the west. Soil samples from AFFF-SA-30, -34, and -35 reported concentrations of PFAS6 above 5 ng/g but below 20 ng/g, which will require treatment via a 2% application of FLUORO-SORB 100. Soil samples from AFFF-SA-31, -32 and -34 have concentrations of PFAS6 greater than 20 ng/g and will be treated using a 3% application of FLUORO-SORB 10. A revised plan showing the targeted soil stabilization areas is provided as Figure 3.

REGENESIS recently released a new soil stabilization product SourceStop-Solid for PFAS in soils. Tetra Tech evaluated SourceStop liquid formulation as part of the Phase III. SourceStop (liquid) was not selected for implementation due to inconclusive effectiveness as a result of elevated analytical detection limits and workability concerns associated with the treated soils. It is believed that SourceStop-Solid addresses these issues, and a leachability bench-scale test that replicates the above test will be conducted to assess the effectiveness of this new product. Based on this results of this bench-scale test, a substitution of the treatment agent for the soil stabilization may occur.

Additional delineation of PFAS6 impacts to the north/west of AFFF-SA-30 and -31 will be necessary prior to finalizing construction plans for this area. It is anticipated that this additional sampling will be performed during the upcoming May/June mobilization for monitoring activities at the Site.

2.3 STATUS OF SOURCE AREA GROUNDWATER REMEDIATION

Source area groundwater remediation currently includes implementation of a permeable containment barrier (PlumeStop) within Area 1. Another selected alternative is targeted groundwater recovery and treatment; however, this alternative is not being implemented at this time, but may be implemented in the event that the currently installed PlumeStop barrier is found to not provide sufficient horizontal containment of high concentration PFAS-impacted groundwater, and installation of additional PlumeStop barrier is not selected to address such a deficiency.

2.3.1 Area 1 PlumeStop Barrier

A permeable containment barrier (comprised of PlumeStop colloidal activated carbon) was implemented under the IRA and involved the application of PlumeStop into the subsurface to transform the native sand and gravel into a purifying filter with the goal of mitigating the migration of PFAS in the targeted area. The currently installed PlumeStop barrier is shown on Figure 4. The goal of this treatment process is to reduce the downgradient migration of PFAS from the targeted area. This barrier is intended to be passive, and no active operation or maintenance are anticipated in the near term. No operations or maintenance activities were conducted during the period of this status report.

The quarterly sampling of the PlumeStop barrier began in March 2023 and includes monitoring of wells TT-13 (upgradient of PlumeStop barrier), TT-25 (within the barrier), TT-26S (immediately downgradient of the barrier), TT-26SD (downgradient from and screened below the barrier), and TT-20 (further downgradient). Also, monitoring well TT-14 (located further downgradient from TT-20) has been monitored as part of this program. These monitoring wells were sampled on December 9, 2022, prior to placement of the PlumeStop barrier, on March 22, 2023 for the first quarterly sampling event, during the week of May 30, 2023 for the second quarterly sampling event, on September 19, 2023 for the third quarterly sampling event, and on November 29, 2023 for the fourth post-treatment sampling event.

Prior to sampling the monitoring wells were gauged to measure the depth to groundwater. Also, during gauging and sampling the overall condition of the monitoring wells is evaluated to assess if sediment buildup is occurring which may warrant re-development of the monitoring well and to assess for potential migration of the PlumeStop media. No significant sediment buildup or evidence of migration of PlumeStop media was observed during the period of this status report. Groundwater gauging data are summarized in Table 2.

The December 2022 and March 2023 groundwater samples were analyzed at Alpha Analytical for PFAS via LCMSMS with isotope dilution. The May, June, September, and November 2023 groundwater samples were analyzed at Alpha Analytical for PFAS via EPA Method 533. The groundwater analytical data for the PlumeStop barrier are summarized in Table 3. Laboratory certificates of analysis are included in Appendix B. The following summarizes the findings of the quarterly PlumeStop barrier monitoring:

- Concentrations of PFAS6 at the upgradient monitoring well TT-13 demonstrate variability in samples from December 2022 to November 2023. There was an overall decrease from 1,182 ppt in December 2022 to 812 ppt in November 2023; however, PFAS6 concentrations ranged from 706 ppt to 2,507 ppt during this period. The variability suggests that PFAS likely continues to source from the area upgradient from the PlumeStop barrier from flushing via precipitation; however, variations in precipitation may result in variable concentrations in source area groundwater.
- Groundwater sampling of TT-25 within the PlumeStop barrier did not detect PFAS6 above the laboratory detection limits in December 2022, March 2023 or May 2023. However, an estimated concentration of 0.771 ppt of PFOA was detected in the September 2023 sample from TT-25. This result was not replicated in the November 2023 sample where PFAS6 were not detected above the laboratory detection limits. This indicates that the PlumeStop is effective at significantly reducing the PFAS6 that may migrate in groundwater from the TT-13 area.
- Detected concentrations of PFAS6 reduced by approximately 78% at monitoring well TT-26S from December 2022 (1,614 ppt) to March 2023 (350 ppt). PFAS6 rebounded slightly in the May 2023 sampling to 566 ppt and continued to increase in September 2023 to 1,251 ppt. These data represent an overall decrease of approximately 23% from baseline concentrations. However, groundwater monitoring in November 2023 identified a significant decrease to 5.1 ppt, representing a decrease of over 99%.
- The detected concentrations of PFAS6 at TT-26D were little changed between December 2022 (58.5 ppt) and March 2023 (66.6 ppt). However, PFAS6 decreased to below the laboratory detection limit in the May 2023 sample and have remained below detection limits in the September and November 2023 samples. This monitoring well is screened below the lowest point of the PlumeStop barrier, and concentrations are anticipated to be lower compared to shallower groundwater.
- Groundwater sampling at the groundwater monitoring point TT-20 also indicated a reduction in PFAS6 from December 2022 (1,635 ppt) to March 2023 (696 ppt), a decrease of approximately 57%. PFAS6 concentrations rebounded with PFAS6 concentrations in June 2023 of 1,751 ppt and in September 2023 of 1,484 ppt. Subsequently, in the November 2023 groundwater sample PFAS6 was detected at a concentration of 223 ppt, representing an overall decrease of 86% from baseline levels. This may suggest that the treated water from the PlumeStop barrier is beginning to reach this location.

- Monitoring well TT-14 is the furthest downgradient monitoring point currently included in the monitoring program for the PlumeStop barrier. TT-14 is a shallow screened monitoring well located downgradient from TT-20 and the WWTP infiltration area. Groundwater gauging data from June 2023 suggest that there are evident influences on the groundwater elevations of monitoring well TT-14, which generally correlate to discharge flow rates from the WWTP. Therefore, TT-14 is likely affected by WWTP discharges as well as migration of groundwater from upgradient sources.
 - PFAS sampling of TT-14 prior to installation of the PlumeStop barrier reported concentrations of PFAS6 ranging from 46.8 ppt (September 2022) to 333 ppt (July 2022) suggesting highly variable conditions. Groundwater samples from TT-14 were collected after installation of the PlumeStop barrier in June, September, and November 2023, and PFAS6 was detected at concentrations of 915 ppt, 82.1 ppt and 347 ppt, respectively. This suggests continued highly variable PFAS6 concentrations at this monitoring well. Given the distance of almost 300 feet it is unlikely that the treated water from the PlumeStop barrier has reached this location.

Going forward groundwater monitoring will be performed annually via groundwater sampling and laboratory analysis and includes, at a minimum, monitoring wells TT-13, TT-14, TT-20, TT-25, TT-26S and TT-26D. Groundwater samples are analyzed for PFAS via EPA Method 533 (or equivalent). The next sampling round will be performed in May/June 2024, and results will be presented in the next status report.

2.4 STATUS OF MONITORED NATURAL ATTENUATION

PFAS impacts to groundwater beyond the source area are being addressed via MNA. Since the source areas located upgradient will be addressed via the alternatives for soil and source area groundwater treatment, no active remediation is proposed in this downgradient area. The MNA alternative includes monitoring of groundwater via monitoring wells as well as monitoring of existing private water supply wells downgradient from MVY. The following sections describes the status of MNA activities.

2.4.1 Status of Groundwater Monitoring

The PFAS impacts to groundwater at MVY are estimated to migrate at a rate of approximately 30 to 100 feet/year. Considering this estimated PFAS migration rate and the distribution of the monitoring well network at the Site, annual groundwater sampling is appropriate to monitor PFAS concentrations over time. Monitoring wells located at MVY that are monitored annually include: TT-03, TT-04, TT-05, TT-6, TT-30, RIZ-10, RIZ-42, RIZ-64, RIZ-65, TMW-5, TMW-6, TMW-6D, and M-6. The following monitoring wells are located downgradient from MVY and are monitored annually: M-11, MW-JS, MW-JM, MW-BS, MW-BD, MW-AYS, MW-AYI, MW-AYD, MW-DAS, MW-DAD, TT-15S, TT-15D, TT-16S, TT-16D, TT-17S and TT-17D. During the period of this status report, there have been no changes to the sampling locations or frequency proposed in the Phase IV RIP.

No groundwater monitoring was performed during the period of this status report. The next groundwater monitoring well sampling event is planned for May/June 2024, and results will be presented in the next status report submittal.

2.4.2 Status of Private Well Monitoring

Private well monitoring is performed to assess the PFAS6 concentrations over time in the private water supply wells that are downgradient from MVY and where PFAS6 impacts have been identified in the private wells or at nearby locations. The maximum PFAS6 concentrations in private wells during 2023 are presented on Figure 5¹. Annual private well sampling is performed at 61 properties that are proximate to locations where elevated concentrations of PFAS6 have been identified and that do not have existing POET systems. Table 4 summarizes the properties included in this monitoring program, the date of the last sample and the peak PFAS6 concentrations. A total of 52 of the 61 properties were sampled during 2023. During the period of this status report, there have been no changes to the sampling locations or frequency proposed in the Phase IV RIP.

The private well analytical data obtained during the period of this status report are summarized in Table 1, where the PFAS6 data are compared to the current MCP Method 1 standards for groundwater category GW-1, and the PFAS6 concentrations are color coded to match Figure 5. Laboratory certificates of analysis are included in Appendix B. In November 2023, private well sampling was performed at Properties CJ, CK, GD and S. Also, in November 2023, a water sample was collected from Property CP, which is not included within the annual monitoring program, but was sampled due to a request from the property owner. The results of private well sampling in November 2023 did not identify PFAS6 at concentrations above the MCP Method 1 GW-1 standard of 20 ppt. The reported concentrations of PFAS6 were within the range of prior sampling at each location, and no significant increases were identified. PFAS6 were not detected above the laboratory detection limit at Property CP.

2.4.3 Additional Private Well Sampling Outreach Efforts

As indicated above a total of nine private well locations that are included in the monitoring program were not sampled during 2023. Also, there are several properties within the study area that have never been sampled due to non-responsive owners. Efforts have continued to identify and obtain permission to sample the remaining private wells within the study area that were not sampled during 2023 and/or that have never been sampled for PFAS analysis. During the period of this status report, these efforts have not resulted in permission to sample private wells that were not previously sampled or that had not been sampled within 2023. It is anticipated that renewed outreach efforts will be implemented in advance of the planned May/June 2024 sampling event.

2.5 STATUS OF EXPOSURE PATHWAY ELIMINATION/MITIGATION MEASURES

The CRA includes three remedial measures to eliminate and/or mitigate the drinking water exposure pathway for PFAS at the Site. These measures include: temporarily providing bottled water, installation of POET systems, and/or targeted replacement of water supply wells. At this time, bottled water is no longer provided to locations where prior treatment system performance sampling has indicated that the treatment systems were meeting treatment design goals and functioning properly. Targeted replacement of water supply wells has not been implemented at this point.

A total of 52 POET systems were installed at 47 individual properties where the maximum PFAS6 concentration in private wells have been documented to exceed or approach the targeted action level of

¹ If no samples were collected and analyzed in 2023, the maximum PFAS6 concentrations from the most-recent sample are presented.

20 ppt (which is also the current MCP GW-1 standard). Two separate POET systems were required at five properties due to the presence of multiple residential structures on a property that were connected to the private well via separate water lines.

The POET systems are comprised of 12" x 42" upflow type polyethylene vessels with 55 pounds of GAC, a cartridge filter (DGD-5005-20 sediment filter), and a flow totalizer. The POET systems installed at locations where concentrations of PFAS6 exceeded 70 ppt included two GAC units connected in series. The POET systems installed at locations where the concentrations of the sum of the PFAS6 was less than 70 ppt include one GAC unit. The POET system summary in Table 6 describes the number of GAC units installed at each property.

2.5.1 POET System Monitoring

The following sampling schedule was developed for POET performance monitoring under the Phase IV RIP:

- Semi-annual sampling of POET systems with maximum PFAS6 concentrations within the past two years of greater than 350 ppt. Currently the following POETs meet this criterion: Properties B, F, I, J, and Y.
- Annual sampling of POET systems with maximum PFAS6 concentrations greater than the MCP GW-1 standard of 20 ppt and less than 350 ppt within the past two years. Currently the following POETs meet this criterion:
 - 2-GAC POET systems at Properties AL, AX, AY, BO (2 systems), BJ-1, C, CL, DA, G, GO, GV, and L.
 - 1-GAC POET systems at Properties AC, AS, AU, AW, BJ-2, BS, BZ, CF, DG, E, ED, EM (2 systems), EY, FG, FK, FX, P, U, X, Z and ZZ.
- Annual sampling of POET systems with maximum PFAS6 concentrations of less than 20 ppt within the past two years will continue. However, analysis of effluent (post-treatment) samples may only be performed if PFAS6 is detected above 20 ppt in the influent sample or to periodically confirm GAC performance. Currently the following POETs meet this criterion:
 - 2-GAC POET systems at Properties AT and CS.
 - 1-GAC POET systems at Properties AO, BE, CB, EK, FF, FO, and H.

The periodic inspections of POET systems also document the following:

- Confirm that systems are configured properly, and all valves are in the proper position;
- Record total volume of water treated since the prior inspection;
- Assess the approximate flow rate of the system at the time of inspection and sampling;
- Assess if maintenance activities are necessary; and,
- Evaluate for potential problems with the performance of the system.

There were no changes to the POET system monitoring program implemented during the period of this status report, and no changes are proposed going forward.

2.5.2 POET Performance Sampling and Analysis

During the period of this status report, performance samples were collected from the POET systems at Properties AO, BJ, CO, GO-1, I and Y in November 2023.

Samples were typically collected after water was purged for approximately 10-15 minutes through a sink fixture. Following purging a sample of the water was collected from a sampling port installed on the POET system prior to treatment (influent or INF). For locations where two GAC units were installed, a sample was collected at a sample port after the first GAC unit (midpoint or MID). If it is feasible, treated water samples after the second GAC unit (effluent or EFF) are typically collected from either a sink fixture or, if not accessible at the time of sampling, at a sample port installed after the second GAC unit. For single GAC units, one effluent (or EFF) sample was collected.

The water samples were submitted to Alpha Analytical, Inc. of Westborough, Massachusetts (Alpha) for laboratory analysis of PFAS. The water samples were analyzed for PFAS via EPA Method 533 which is an isotope dilution method. The laboratory analytical data for POET performance sampling performed during the period of this status report are summarized in Table 6 as the PFAS6 only. The full suite of PFAS compounds analyzed for the influent samples are presented in Table 5. Laboratory certificates of analysis for POET samples are provided in Appendix B.

The results of POET system performance sampling received to date indicate a consistent PFAS reduction to below the laboratory reporting limit after the last GAC unit at each of the locations (effluent sample). The following summarizes the results of POET system sampling and laboratory analysis:

- Property I – PFAS6 was detected at 242 ppt in the untreated influent sample, which is within the lower end of the range of concentrations reported since 2019. PFAS6 was not detected above the laboratory detection limits in the midpoint and effluent samples. This indicates that the treatment system is meeting performance objectives.
- Property Y – PFAS6 was detected at 522 ppt in the untreated include sample, which is within the range of concentrations reported since 2019. PFAS6 was not detected above the laboratory detection limits in the midpoint and effluent samples. This indicates that the treatment system is meeting performance objectives.
- Property BJ - PFAS6 was detected at 94 ppt in the untreated include sample, which is the lowest concentration detected since the start of monitoring in March 2019. At the BJ-1 POET system (system for the main house), PFAS6 was detected in the midpoint sample at a concentration of 4.37 ppt, which is below the MCP Method 1 GW-1 standard of 20 ppt. PFAS6 was not detected above the laboratory detection limits in the effluent samples from the BJ-1 and BJ-2 (guest house) systems. This indicates that the treatment systems at this property are meeting performance objectives. The PFAS6 concentrations at the midpoint of the BJ-1 POET system will continue to be monitored, and the GAC will be scheduled for replacement once PFAS6 concentrations approach or exceed 20 ppt.
- Property AO – PFAS6 was detected at 2 ppt in the untreated include sample, which is the lowest concentration detected since the start of POET system monitoring in July 2020. PFAS6 was not

detected above the laboratory detection limits in the effluent sample. This indicates that the treatment system is meeting performance objectives.

- Property GO-1 – PFAS6 was detected at 99.5 ppt in the untreated influent sample, which is the highest concentration reported since POET system monitoring began in August 2022. PFAS6 was not detected above the laboratory detection limits in the midpoint and effluent samples. This indicates that the treatment system is meeting performance objectives.

- Property CO – This is the location of a recently installed POET system (October 2023). From 2018 to 2022 PFA6 concentrations remained below 20 ppt. The sample from September 2023 indicated PFAS6 at a concentration of 41.7 ppt, which exceeded the MCP Method 1 GW-1 standard of 20 ppt. A POET system was installed on October 18, 2023, and bottled water was provided in the interim while POET system installation was coordinated. The initial POET system performance sampling was performed on November 30, 2023, and PFAS6 was reported at a concentration of 18.5 ppt. PFAS6 was not detected above the laboratory detection limits in the effluent sample. This indicates that the treatment system is meeting performance objectives. Bottled water was no longer required after the November 2023 sample results were received since the treatment system was effective at removal of PFAS to below the GW-1 standard.

2.5.3 IH Evaluation

Tetra Tech has prepared an update of the Imminent Hazard Evaluation (IHE) in conformance with the requirements of the MCP, 310 CMR 40.0950 to characterize the potential health risks associated with PFAS compounds detected in residential private well samples in the area downgradient from MVY. An initial IHE was submitted with the IRA Plan in January 2019, and updates were provided in IRA Status Reports and in the IRA Completion Report.

According to Appendix D of “*MassDEP Private Wells PFAS Sampling Program Questions and Answers Regarding the Management of PFAS6 in Your Groundwater Under the Massachusetts Oil and Hazardous Material Release Prevent and Response Act*” (December 2, 2020), MassDEP has established a drinking water Imminent Hazard (IH) concentration for PFAS6 of 90 ppt.

A summary of the estimated exposure point concentrations (EPCs) calculated for private wells that exceed the MassDEP established drinking water IH concentration of 90 ppt due to potential exposure to PFAS6 in drinking water is provided below:

Phase IV Status Report #1
71 Airport Road, West Tisbury, Massachusetts
RTN 4-0027571

Property ID	PFAS6 EPC ²	POET Installed	Property ID	PFAS6 EPC ²	POET Installed
Property F	1,060	Yes	Property B	120	Yes
Property J	784	Yes	Property CL	116	Yes
Property Y	522	Yes	Property DA	102	Yes
Property I	440	Yes	Property GO-1	99.5	Yes
Property BO	221	Yes	Property AL	98	Yes
Property L	208	Yes	Property AY	97	Yes
Property G	184	Yes	Property BZ	94.6	Yes
Property AC	157	Yes	Property BJ	94	Yes

Property GO-1 location is newly added to the list of locations where a potential IH condition was identified. The PFAS6 concentrations at Property GO-1 increased from 66.9 ppt in September 2023 to 99.5 ppt in November 2023.

It is noted that the potential IH to human health at the 16 affected private wells is being mitigated via POET systems at each of the residences. The PFAS exposure at properties where the PFAS6 concentration is below 90 ppt do not present an IH to human health, based on our current understanding of the conditions at the Site. However, drinking water at each of the private wells where the total PFAS6 concentration exceeds the MCP Method 1 GW-1 standard of 20 ppt is being mitigated via POET systems.

Tetra Tech will continue to monitor PFAS6 concentrations at private wells, regulatory changes, and updates to PFAS exposure profiles that may warrant an update to the IHE for the Site. Such updates to the IHE will be presented in future MCP status report submittals.

2.5.4 POET System Maintenance

There were no POET system maintenance activities performed during the period of this status report. The POET systems have generally had few maintenance needs and have largely operated trouble free and without shutdown.

2.5.5 Impact of Likely Changes to GW-1 Standards

Considering the high likelihood that MassDEP will establish the MCP Category GW-1 standards to be at least as stringent as the newly established Federal MCLs, we have reviewed PFAS sampling results from 2023 to identify the potential magnitude of this impact on the existing exposure pathway elimination/mitigation activities. It is noted that the Federal MCLs are not applicable to private drinking water supply wells, and the current MassDEP MCP Category GW-1 standard remains 20 ppt at this time.

² PFAS6 EPCs based on the average (for samples with at least four quarterly samples) or maximum (for samples without quarterly sampling) PFAS6 concentration reported in the past year of monitoring.

We anticipate that MassDEP will establish a MMCL and revised GW-1 standard that are at least as stringent as the Federal MCLs within two years and possibly sooner.

A total of five private wells were identified that do not currently have POET systems but May/June 2023 sampling identified concentrations of CERCLA6 that exceed the new Federal MCLs. These properties will be further assessed as part of the forthcoming sampling round in May/June 2024. If results of May/June 2024 sampling indicate an exceedance MassDEP MCP Category GW-1 standard or the recent Federal MCLs, a POET system will be installed, and monitoring will be performed in accordance with the Phase IV RIP..

2.6 FIELD SAMPLING QUALITY ASSURANCE AND QUALITY CONTROL

The CRA includes quality assurance/quality control (QA/QC) sampling to monitor the quality of data collected in the field. The QA/QC sampling program includes field blanks, equipment blanks, trip blanks and field blind duplicate samples. QA/QC data are summarized in Table 7. Laboratory certificates of analysis are included in Appendix B. The following key findings were made based on a review of field QA/QC data during the period of this status report:

- PFAS were not detected in the field blank collected during groundwater sampling equipment during the November 2023 sampling event.

2.7 REMEDIAL MONITORING REPORTS

Active operation and maintenance of remedial actions for the POET systems and active monitoring of the PlumeStop barrier and for MNA are conducted under this Phase IV. Pursuant to the MCP, 310 CMR 40.0877, Remedial Monitoring Reports (RMRs) shall be submitted to MassDEP for remedial actions involving active operation and maintenance. Therefore, RMRs are required for the operation and maintenance of POET systems and the monitoring activities associated with the PlumeStop barrier and MNA programs.

The reported concentrations of PFAS6 at 16 private properties downgradient from MVY exceed the MassDEP IH concentration of 90 ppt, as detailed in Section 2.5.3. According to the MCP, 310 CMR 40.00877(1)(a), the RMRs shall be submitted monthly for response actions address an IH condition. During the implementation of the IRA RMRs were submitted monthly from February 2019 through July 2019. Due to consistent effectiveness of the POET systems, on July 30, 2019 MassDEP approved submittal of status reports and RMRs every six months. Therefore, it is appropriate to continue submittal of RMRs under the Phase IV at the same frequency of every six months.

RMRs for the PlumeStop barrier, groundwater MNA and POET systems are included in the MassDEP BWSC-108 transmittal form for this Phase IV Status Report.

2.8 PERFORMANCE EVALUATION

The CRA being implemented at the Site is a flexible multi-technology approach which combines several potentially feasible alternatives. The following sections summarize the performance of each of the components of the CRA.

2.8.1 Source Area Soil Remediation

Implementation of this component of the CRA has not yet begun. The design and planning of the soil stabilization program are underway. Additional review of the performance will be undertaken following its implementation.

2.8.2 PlumeStop Barrier Performance

During the first year of operation, the PlumeStop barrier has been effective at mitigating dissolved phase PFAS that is migrating in groundwater from the targeted portion of Area 1. At monitoring well TT-25 PFAS6 monitoring suggests that the colloidal activated carbon barrier is active and capable of containing PFAS that migrates through the barrier. At TT-26S, just downgradient of the barrier, PFAS6 was reduced to below the remedial target of 20 ppt by November 2023. This suggests that the PlumeStop barrier was effective at adsorbing PFAS and resulted in significantly reduced concentrations at about 20 feet downgradient within one year. Further downgradient at TT-20, PFAS6 concentrations were variable through September 2023; however, the November 2023 sample demonstrated a reduction of about 86% suggesting that treated water is just starting to reach this monitoring well.

2.8.3 Groundwater MNA Performance

The first round of groundwater MNA sampling is planned for May/June 2024; therefore, an assessment of performance of this program will be provided in the next status report.

2.8.4 POET System Performance

The results of POET system performance sampling received to date indicate a consistent PFAS reduction to below the laboratory reporting limit after the last GAC unit (effluent sample). The POET systems have generally had few maintenance needs and have largely operated trouble free and without shutdown. This component of the CRA is successfully achieving the performance objectives.

2.9 DESCRIPTION OF CONDITIONS OR PROBLEMS AFFECTING PERFORMANCE

There were no significant conditions or problems identified during the period of this status report that affect the performance of the CRA.

2.10 SIGNIFICANT MODIFICATIONS OF OMM PROGRAM

No modifications to the OMM program were implemented during the period of this status report, and no changes are proposed at this time.

3.0 CONCLUSIONS AND LSP OPINION

MCP response actions are being conducted to mitigate PFAS6 impacts at the Site as a CRA to advance the Site toward a Permanent or Temporary Solution. The CRA includes a flexible multi-technology approach which combines several potentially feasible alternatives: source area soil stabilization, a PlumeStop barrier, groundwater MNA and private well POET systems.

Phase IV Status Report #1
71 Airport Road, West Tisbury, Massachusetts
RTN 4-0027571

It is our opinion that this CRA has been conducted in accordance with the MCP and is consistent with the performance standard under 310 CMR 40.0872. It is further our opinion that this Phase IV Status Report satisfies the provisions for Status Reports and remedial Monitoring Reports under 310 CMR 40.0877. This Phase IV Status Report was prepared under the supervision of the LSP of Record for Disposal Site RTN 4-0027571. The LSP seal and electronic signature are provided on the eDEP transmittal form (BWSC-108). This submittal is subject to the limitations and conditions of Appendix A.

The status of the CRA will continue to be presented every six months in Phase IV Status Reports, as necessary until the completion of Phase IV remedial activities.

Table 1 - Source Area Soil Analytical Data

CLIENT SAMPLE ID						TT-1 (1-2')	TT-4 (1-2')	Boatyard Soil Sample (0-2')	Runway Soil-AFFF Area	Runway Soils-General	TT-1A-0-1
Sample Depth (feet)	MCP Method 1					1-2	1-2	0-2	stockpile	stockpile	0-1
SAMPLING DATE	Standard					3/12/2018	3/12/2018	3/13/2019	3/14/2019	3/14/2019	9/11/2019
LAB SAMPLE ID	CAS No.	Units	S-1/GW-1	S-1/GW-2	S-1/GW-3	L1809219-02	L1809219-01	L1910438-08	L1910260-01	L1910260-02	L1942017-03
Isotope Dilution Compounds											
Perfluorobutanoic Acid (PFBA)	375-22-4	ng/g	NA	NA	NA						
Perfluoropentanoic Acid (PFPeA)	2706-90-3	ng/g	NA	NA	NA						<4.96
Perfluorobutanesulfonic Acid (PFBS)	375-73-5	ng/g	NA	NA	NA	<1.07	<1.68	<1.07	<1.08	<0.889	<4.96
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	757124-72-4	ng/g	NA	NA	NA						
Perfluorohexanoic Acid (PFHxA)	307-24-4	ng/g	NA	NA	NA	<1.07	<1.68	<1.07	<1.08	<0.889	<4.96
Perfluoropentanesulfonic Acid (PFPeS)	2706-91-4	ng/g	NA	NA	NA						
Perfluoroheptanoic Acid (PFHpA)	375-85-9	ng/g	0.5	300	300	<1.07	<1.68	<1.07	<1.08	<0.889	<4.96
Perfluorohexanesulfonic Acid (PFHxS)	355-46-4	ng/g	0.3	300	300	<1.07	<1.68	<1.07	<1.08	<0.889	<4.96
Perfluorooctanoic Acid (PFOA)	335-67-1	ng/g	0.72	300	300	<1.07	<1.68	<1.07	<1.08	<0.889	<4.96
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	27619-97-2	ng/g	NA	NA	NA						22.7
Perfluoroheptanesulfonic Acid (PFHpS)	375-92-8	ng/g	NA	NA	NA						
Perfluorononanoic Acid (PFNA)	375-95-1	ng/g	0.32	300	300	<1.07	<1.68	<1.07	<1.08	<0.889	<4.96
Perfluorooctanesulfonic Acid (PFOS)	1763-23-1	ng/g	2	300	300	<1.07	<1.68	<1.07	<1.08	<0.889	<4.96
Perfluorodecanoic Acid (PFDA)	335-76-2	ng/g	0.3	300	300	4.56	<1.68	<1.07	<1.08	<0.889	<4.96
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	39108-34-4	ng/g	NA	NA	NA						28.4
Perfluorononanesulfonic Acid (PFNS)	68259-12-1	ng/g	NA	NA	NA						
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	2355-31-9	ng/g	NA	NA	NA	<1.07	<1.68	<1.07	<1.08	<0.889	<4.96
Perfluoroundecanoic Acid (PFUnA)	2058-94-8	ng/g	NA	NA	NA	<1.07	<1.68	<1.07	<1.08	<0.889	<4.96
Perfluorodecanesulfonic Acid (PFDS)	335-77-3	ng/g	NA	NA	NA						
Perfluorooctanesulfonamide (FOSA)	754-91-6	ng/g	NA	NA	NA						
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	2991-50-6	ng/g	NA	NA	NA	<1.07	<1.68	<1.07	<1.08	<0.889	<4.96
Perfluorododecanoic Acid (PFDoA)	307-55-1	ng/g	NA	NA	NA	<1.07	1.69	<1.07	<1.08	<0.889	<4.96
Perfluorotridecanoic Acid (PFTrDA)	72629-94-8	ng/g	NA	NA	NA	<1.07	<1.68	<1.07	<1.08	<0.889	<4.96
Perfluorotetradecanoic Acid (PFTA)	376-06-7	ng/g	NA	NA	NA	<1.07	<1.68	<1.07	<1.08	<0.889	<4.96
PFAS6 (PFOA, PFOS, PFNA, PFHxS, PFHpA and PFDA)		ng/g	NA	NA	NA	4.56	ND	ND	ND	ND	ND

Notes:

< indicates compound not detected above laboratory analytical method detection limits

Blank indicates compound was not reported by the analytical method

ND indicates total PFAS6 concentration not detected

NA indicates no applicable standard or unit has been established

Bold indicates compound exceeds MCP Method 1 S-1/GW-1 standard

Table 1 - Source Area Soil Analytical Data

CLIENT SAMPLE ID						TT-1A-26-28	TT-2A-0-1	TT-2A-30-32	WWTP-CLARIFIER (0-0.5)	WWTP-AFFF #1 (0-0.5)	WWTP-AFFF #2 (0-0.5)
Sample Depth (feet)	MCP Method 1					26-28	0-1	30-32	0-0.5'	0-0.5'	0-0.5'
SAMPLING DATE	Standard					9/11/2019	9/11/2019	9/11/2019	3/15/2022	3/15/2022	3/15/2022
LAB SAMPLE ID	CAS No.	Units	S-1/GW-1	S-1/GW-2	S-1/GW-3	L1942017-04	L1942017-01	L1942017-02	L2213637-01	L2213637-02	L2213637-03
Isotope Dilution Compounds											
Perfluorobutanoic Acid (PFBA)	375-22-4	ng/g	NA	NA	NA				<0.549	<0.499	0.898
Perfluoropentanoic Acid (PFPeA)	2706-90-3	ng/g	NA	NA	NA	<0.935	2.17	<1.00	<0.549	<0.499	2.830
Perfluorobutanesulfonic Acid (PFBS)	375-73-5	ng/g	NA	NA	NA	<0.935	<1.04	<1.00	<0.549	<0.249	<0.254
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	757124-72-4	ng/g	NA	NA	NA				<0.549	<0.997	<1.02
Perfluorohexanoic Acid (PFHxA)	307-24-4	ng/g	NA	NA	NA	<0.935	1.41	<1.00	<0.549	<0.499	2.02
Perfluoropentanesulfonic Acid (PFPeS)	2706-91-4	ng/g	NA	NA	NA				<0.549	<0.997	<1.02
Perfluoroheptanoic Acid (PFHpA)	375-85-9	ng/g	0.5	300	300	<0.935	1.69	1.08	<0.549	<0.249	1.36
Perfluorohexanesulfonic Acid (PFHxS)	355-46-4	ng/g	0.3	300	300	<0.935	<1.04	<1.00	<0.549	<0.249	<0.254
Perfluorooctanoic Acid (PFOA)	335-67-1	ng/g	0.72	300	300	1.26	1.67	1.50	0.561	<0.249	3.52
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	27619-97-2	ng/g	NA	NA	NA	49.5	2.82	15.1	2.00	1.62	28.3
Perfluoroheptanesulfonic Acid (PFHpS)	375-92-8	ng/g	NA	NA	NA				<0.549	<0.499	<0.508
Perfluorononanoic Acid (PFNA)	375-95-1	ng/g	0.32	300	300	<0.935	1.56	<1.00	0.338	<0.249	6.47
Perfluorooctanesulfonic Acid (PFOS)	1763-23-1	ng/g	2	300	300	<0.935	<1.04	<1.00	3.74	<0.249	0.694
Perfluorodecanoic Acid (PFDA)	335-76-2	ng/g	0.3	300	300	<0.935	3.16	<1.00	0.596	<0.249	13.7
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	39108-34-4	ng/g	NA	NA	NA	4.52	2.10	<1.00	<0.549	<0.499	<0.508
Perfluorononanesulfonic Acid (PFNS)	68259-12-1	ng/g	NA	NA	NA				<0.549	<0.997	<1.02
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	2355-31-9	ng/g	NA	NA	NA	<0.935	<1.04	<1.00	<0.549	<0.499	1.04
Perfluoroundecanoic Acid (PFUnA)	2058-94-8	ng/g	NA	NA	NA	<0.935	1.77	<1.00	<0.549	<0.499	5.19
Perfluorodecanesulfonic Acid (PFDS)	335-77-3	ng/g	NA	NA	NA				<0.549	<0.499	0.962
Perfluorooctanesulfonamide (FOSA)	754-91-6	ng/g	NA	NA	NA				<0.549	<0.499	<0.500
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	2991-50-6	ng/g	NA	NA	NA	<0.935	<1.04	<1.00	<0.549	<0.499	0.782
Perfluorododecanoic Acid (PFDoA)	307-55-1	ng/g	NA	NA	NA	<0.935	<1.04	<1.00	<0.549	<0.499	7.38
Perfluorotridecanoic Acid (PFTrDA)	72629-94-8	ng/g	NA	NA	NA	<0.935	1.52	<1.00	<0.549	<0.499	2.44
Perfluorotetradecanoic Acid (PFTA)	376-06-7	ng/g	NA	NA	NA	<0.935	<1.04	<1.00	<0.549	<0.499	2.66
PFAS6 (PFOA, PFOS, PFNA, PFHxS, PFHpA and PFDA)		ng/g	NA	NA	NA	1.26	8.08	2.58	5.24	ND	25.7

Notes:

< indicates compound not detected above laboratory analytical method detection limits

Blank indicates compound was not reported by the analytical method

ND indicates total PFAS6 concentration not detected

NA indicates no applicable standard or unit has been established

Bold indicates compound exceeds MCP Method 1 S-1/GW-1 standard

Table 1 - Source Area Soil Analytical Data

CLIENT SAMPLE ID						TT-13 (29')	TT-13 (0-0.5)	WWTP-AFFF #2 (0-0.5')	HADLEY SOIL 0-6"	AFFF-SA-1	AFFF-SA-2
Sample Depth (feet)	MCP Method 1					29'	0-0.5'	0-0.5'	0-0.5'	0-0.5'	0-0.5'
SAMPLING DATE	Standard					3/15/2022	3/15/2022	7/21/2022	9/20/2022	9/21/2022	9/21/2022
LAB SAMPLE ID	CAS No.	Units	S-1/GW-1	S-1/GW-2	S-1/GW-3	L2214450-02	L2214450-03	L2239307-01	L2252841-01	L2252841-02	L2252841-03
Isotope Dilution Compounds											
Perfluorobutanoic Acid (PFBA)	375-22-4	ng/g	NA	NA	NA	<0.497	<0.554	2.77	<1.35	<1.82	2.39
Perfluoropentanoic Acid (PFPeA)	2706-90-3	ng/g	NA	NA	NA	0.955	0.62	12.5	<1.35	<1.82	10.6
Perfluorobutanesulfonic Acid (PFBS)	375-73-5	ng/g	NA	NA	NA	<0.249	<0.277	<0.592	<0.676	<0.913	<0.753
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	757124-72-4	ng/g	NA	NA	NA	<0.995	<1.11	<2.37	<2.70	<3.65	<3.01
Perfluorohexanoic Acid (PFHxA)	307-24-4	ng/g	NA	NA	NA	<0.497	<0.554	8.75	<1.35	<1.82	7.44
Perfluoropentanesulfonic Acid (PFPeS)	2706-91-4	ng/g	NA	NA	NA	<0.995	<1.11	<2.37	<2.70	<3.65	<3.01
Perfluoroheptanoic Acid (PFHpA)	375-85-9	ng/g	0.5	300	300	<0.249	<0.277	5.25	<0.676	<0.913	4.66
Perfluorohexanesulfonic Acid (PFHxS)	355-46-4	ng/g	0.3	300	300	<0.249	<0.277	<0.592	<0.676	<0.913	<0.753
Perfluorooctanoic Acid (PFOA)	335-67-1	ng/g	0.72	300	300	0.622	1.27	9.16	<0.676	<0.913	4.73
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	27619-97-2	ng/g	NA	NA	NA	102	5.11	75.7	<1.35	<1.82	48
Perfluoroheptanesulfonic Acid (PFHpS)	375-92-8	ng/g	NA	NA	NA	<0.497	<0.554	<1.18	<1.35	<1.82	<1.51
Perfluorononanoic Acid (PFNA)	375-95-1	ng/g	0.32	300	300	<0.249	1.49	6.43	<0.676	<0.913	3.26
Perfluorodecanesulfonic Acid (PFOS)	1763-23-1	ng/g	2	300	300	0.254	<0.277	0.656	<0.676	<0.913	<0.753
Perfluorodecanoic Acid (PFDA)	335-76-2	ng/g	0.3	300	300	<0.249	3.19	16.6	1.74	<0.913	7.83
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	39108-34-4	ng/g	NA	NA	NA	3.19	24.8	69.1	<1.35	<1.82	32.5
Perfluorononanesulfonic Acid (PFNS)	68259-12-1	ng/g	NA	NA	NA	<0.995	<1.11	<2.37	<2.70	<3.65	<3.01
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	2355-31-9	ng/g	NA	NA	NA	<0.497	<0.554	<1.18	<1.35	<1.82	<1.51
Perfluoroundecanoic Acid (PFUnA)	2058-94-8	ng/g	NA	NA	NA	<0.497	2.69	9.15	1.80	<1.82	4.39
Perfluorodecanesulfonic Acid (PFDS)	335-77-3	ng/g	NA	NA	NA	<0.497	<0.554	<1.18	<1.35	<1.82	<1.51
Perfluorooctanesulfonamide (FOSA)	754-91-6	ng/g	NA	NA	NA	<0.497	<0.554	<1.18	<1.35	<1.82	<1.51
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	2991-50-6	ng/g	NA	NA	NA	<0.497	<0.554	<1.18	<1.35	<1.82	<1.51
Perfluorododecanoic Acid (PFDoA)	307-55-1	ng/g	NA	NA	NA	<0.497	<0.554	13.7	<1.35	<1.82	7.02
Perfluorotridecanoic Acid (PFTrDA)	72629-94-8	ng/g	NA	NA	NA	<0.497	<0.554	3.28	<1.35	<1.82	2.41
Perfluorotetradecanoic Acid (PFTA)	376-06-7	ng/g	NA	NA	NA	<0.497	<0.554	4.6	<1.35	<1.82	5.08
PFAS6 (PFOA, PFOS, PFNA, PFHxS, PFHpA and PFDA)		ng/g	NA	NA	NA	0.876	5.95	38.1	1.74	ND	20.5

Notes:

< indicates compound not detected above laboratory analytical method detection limits

Blank indicates compound was not reported by the analytical method

ND indicates total PFAS6 concentration not detected

NA indicates no applicable standard or unit has been established

Bold indicates compound exceeds MCP Method 1 S-1/GW-1 standard

Table 1 - Source Area Soil Analytical Data

CLIENT SAMPLE ID						AFFF-SA-3	AFFF-SA-4	AFFF-SA-5	AFFF-SA-6	AFFF-SA-7	AFFF-SA-8
Sample Depth (feet)	MCP Method 1					0-0.5'	0-0.5'	0-0.5'	0-0.5'	0-0.5'	0-0.5'
SAMPLING DATE	Standard					9/21/2022	9/21/2022	9/21/2022	9/21/2022	9/21/2022	9/21/2022
LAB SAMPLE ID	CAS No.	Units	S-1/GW-1	S-1/GW-2	S-1/GW-3	L2252841-04	L2252841-05	L2252841-06	L2252841-07	L2252841-08	L2252841-09
Isotope Dilution Compounds											
Perfluorobutanoic Acid (PFBA)	375-22-4	ng/g	NA	NA	NA	3.30	22.8	<1.48	<1.82	3.9	3.09
Perfluoropentanoic Acid (PFPeA)	2706-90-3	ng/g	NA	NA	NA	5.63	46.5	<1.48	<1.82	12.4	11.1
Perfluorobutanesulfonic Acid (PFBS)	375-73-5	ng/g	NA	NA	NA	<0.924	<1.08	<0.740	<0.910	<0.806	<0.716
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	757124-72-4	ng/g	NA	NA	NA	<3.70	<4.34	<2.96	<3.64	<3.22	<2.86
Perfluorohexanoic Acid (PFHxA)	307-24-4	ng/g	NA	NA	NA	2.60	17.5	<1.48	<1.82	9.79	8.29
Perfluoropentanesulfonic Acid (PFPeS)	2706-91-4	ng/g	NA	NA	NA	<3.70	<4.34	<2.96	<3.64	<3.22	<2.86
Perfluoroheptanoic Acid (PFHpA)	375-85-9	ng/g	0.5	300	300	1.48	21.3	<0.740	<0.910	5.7	3.6
Perfluorohexanesulfonic Acid (PFHxS)	355-46-4	ng/g	0.3	300	300	<0.924	<1.08	<0.740	<0.910	<0.806	<0.716
Perfluorooctanoic Acid (PFOA)	335-67-1	ng/g	0.72	300	300	1.74	34.7	<0.740	<0.910	6.75	4.2
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	27619-97-2	ng/g	NA	NA	NA	<1.85	114	<1.48	<1.82	41.3	100
Perfluoroheptanesulfonic Acid (PFHpS)	375-92-8	ng/g	NA	NA	NA	<1.85	<2.17	<1.48	<1.82	<1.61	<1.43
Perfluorononanoic Acid (PFNA)	375-95-1	ng/g	0.32	300	300	1.42	36.2	<0.740	<0.910	2.06	2.45
Perfluorooctanesulfonic Acid (PFOS)	1763-23-1	ng/g	2	300	300	<0.924	<1.08	<0.740	<0.910	<0.806	<0.716
Perfluorodecanoic Acid (PFDA)	335-76-2	ng/g	0.3	300	300	1.89	34.1	<0.740	<0.910	11.7	6.9
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	39108-34-4	ng/g	NA	NA	NA	<1.85	543	<1.48	<1.82	29.2	158
Perfluorononanesulfonic Acid (PFNS)	68259-12-1	ng/g	NA	NA	NA	<3.70	<4.34	<2.96	<3.64	<3.22	<2.86
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	2355-31-9	ng/g	NA	NA	NA	<1.85	<2.17	<1.48	<1.82	<1.61	<1.43
Perfluoroundecanoic Acid (PFUnA)	2058-94-8	ng/g	NA	NA	NA	2.87	16.3	<1.48	<1.82	6.29	6.57
Perfluorodecanesulfonic Acid (PFDS)	335-77-3	ng/g	NA	NA	NA	<1.85	<2.17	<1.48	<1.82	<1.61	<1.43
Perfluorooctanesulfonamide (FOSA)	754-91-6	ng/g	NA	NA	NA	<1.85	<2.17	<1.48	<1.82	<1.61	<1.43
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	2991-50-6	ng/g	NA	NA	NA	<1.85	<2.17	<1.48	<1.82	<1.61	<1.43
Perfluorododecanoic Acid (PFDoA)	307-55-1	ng/g	NA	NA	NA	<1.85	15	<1.48	<1.82	6.27	12.8
Perfluorotridecanoic Acid (PFTrDA)	72629-94-8	ng/g	NA	NA	NA	<1.85	4.48	<1.48	<1.82	<1.61	4.73
Perfluorotetradecanoic Acid (PFTA)	376-06-7	ng/g	NA	NA	NA	<1.85	4.73	<1.48	<1.82	2.21	9.17
PFAS6 (PFOA, PFOS, PFNA, PFHxS, PFHpA and PFDA)		ng/g	NA	NA	NA	6.5	126.3	ND	ND	26.2	17.2

Notes:

< indicates compound not detected above laboratory analytical method detection limits

Blank indicates compound was not reported by the analytical method

ND indicates total PFAS6 concentration not detected

NA indicates no applicable standard or unit has been established

Bold indicates compound exceeds MCP Method 1 S-1/GW-1 standard

Table 1 - Source Area Soil Analytical Data

CLIENT SAMPLE ID						AFFF-SA-8 (1-2)	AFFF-SA-9	AFFF-SA-10	ARFF-SOIL-0-0.5'	AFFF-SA-11 (0-0.5)	SW OUTFALL 0-0.5
Sample Depth (feet)	MCP Method 1					1-2'	0-0.5'	0-0.5'	0-0.5'	1-2'	0-0.5'
SAMPLING DATE	Standard					10/27/2022	9/21/2022	9/21/2022	9/21/2022	10/27/2022	6/28/2023
LAB SAMPLE ID	CAS No.	Units	S-1/GW-1	S-1/GW-2	S-1/GW-3	L2260477-01	L2252841-10	L2252841-13	L2252841-14	L2260477-02	L2337964-01
Isotope Dilution Compounds											
Perfluorobutanoic Acid (PFBA)	375-22-4	ng/g	NA	NA	NA	<0.990	<1.40	<1.46	<1.90	<1.07	<3.44
Perfluoropentanoic Acid (PFPeA)	2706-90-3	ng/g	NA	NA	NA	1.08	2.46	2.64	<1.90	<1.07	<3.44
Perfluorobutanesulfonic Acid (PFBS)	375-73-5	ng/g	NA	NA	NA	<0.495	<0.702	<0.731	<0.950	<0.536	<1.72
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	757124-72-4	ng/g	NA	NA	NA	<1.98	<2.81	<2.92	<3.80	<2.14	<6.89
Perfluorohexanoic Acid (PFHxA)	307-24-4	ng/g	NA	NA	NA	<0.990	1.62	1.64	<1.90	<1.07	<3.44
Perfluoropentanesulfonic Acid (PFPeS)	2706-91-4	ng/g	NA	NA	NA	<1.98	<2.81	<2.92	<3.80	<2.14	<6.89
Perfluoroheptanoic Acid (PFHpA)	375-85-9	ng/g	0.5	300	300	<0.495	1.09	<0.731	<0.950	<0.536	<1.72
Perfluorohexanesulfonic Acid (PFHxS)	355-46-4	ng/g	0.3	300	300	<0.495	<0.702	<0.731	<0.950	<0.536	<1.72
Perfluorooctanoic Acid (PFOA)	335-67-1	ng/g	0.72	300	300	<0.495	2.03	<0.731	<0.950	<0.536	<1.72
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	27619-97-2	ng/g	NA	NA	NA	6.43	4.14	61.4	<1.90	<2.14	6.28
Perfluoroheptanesulfonic Acid (PFHpS)	375-92-8	ng/g	NA	NA	NA	<0.990	<1.40	<1.46	<1.90	<1.07	<3.44
Perfluorononanoic Acid (PFNA)	375-95-1	ng/g	0.32	300	300	<0.495	0.809	<0.731	<0.950	<0.536	<1.72
Perfluorooctanesulfonic Acid (PFOS)	1763-23-1	ng/g	2	300	300	<0.495	<0.702	<0.731	<0.950	<0.536	<1.72
Perfluorodecanoic Acid (PFDA)	335-76-2	ng/g	0.3	300	300	1.89	5.1	2.33	<0.950	<1.07	<1.72
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	39108-34-4	ng/g	NA	NA	NA	54.7	4.07	33.3	<1.90	<2.14	<3.44
Perfluorononanesulfonic Acid (PFNS)	68259-12-1	ng/g	NA	NA	NA	<1.98	<2.81	<2.92	<3.80	<2.14	<6.89
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	2355-31-9	ng/g	NA	NA	NA	<0.990	<1.40	<1.46	<1.90	<1.07	<3.44
Perfluoroundecanoic Acid (PFUnA)	2058-94-8	ng/g	NA	NA	NA	2.20	5.97	<1.46	<1.90	<2.14	<3.44
Perfluorodecanesulfonic Acid (PFDS)	335-77-3	ng/g	NA	NA	NA	<0.990	<1.40	<1.46	<1.90	<1.07	<3.44
Perfluorooctanesulfonamide (FOSA)	754-91-6	ng/g	NA	NA	NA	<0.990	<1.40	<1.46	<1.90	<1.07	<3.44
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	2991-50-6	ng/g	NA	NA	NA	<0.990	<1.40	<1.46	<1.90	<1.07	<3.44
Perfluorododecanoic Acid (PFDoA)	307-55-1	ng/g	NA	NA	NA	4.00	2.07	7.79	<1.90	<2.14	<3.44
Perfluorotridecanoic Acid (PFTTrDA)	72629-94-8	ng/g	NA	NA	NA	<0.990	<1.40	2.29	<1.90	<1.07	<3.44
Perfluorotetradecanoic Acid (PFTA)	376-06-7	ng/g	NA	NA	NA	<0.990	<1.40	5.1	<1.90	<1.07	<3.44
PFAS6 (PFOA, PFOS, PFNA, PFHxS, PFHpA and PFDA)		ng/g	NA	NA	NA	1.89	9.0	2.3	ND	ND	ND

Notes:

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ND indicates total PFAS6 concentration not detected

NA indicates no applicable standard or unit has been established

Bold indicates compound exceeds MCP Method 1 S-1/GW-1 standard

Table 1 - Source Area Soil Analytical Data

CLIENT SAMPLE ID						AFFF-SA-4 0-1.5	AFFF-SA-4 1.5-2	AFFF-SA-12 0-0.5	AFFF-SA-13 0-0.5	AFFF-SA-14 0-0.5	AFFF-SA-15 0-0.5
Sample Depth (feet)	MCP Method 1					0-1.5'	1.5-2'	0-0.5'	0-0.5'	0-0.5'	0-0.5'
SAMPLING DATE	Standard					6/28/2023	6/28/2023	6/28/2023	6/28/2023	6/28/2023	6/28/2023
LAB SAMPLE ID	CAS No.	Units	S-1/GW-1	S-1/GW-2	S-1/GW-3	L2337964-04	L2337964-05	L2337964-06	L2337964-07	L2337964-08	L2337964-09
Isotope Dilution Compounds											
Perfluorobutanoic Acid (PFBA)	375-22-4	ng/g	NA	NA	NA	2.81	<2.12	2.68	<2.15	<2.00	3.05
Perfluoropentanoic Acid (PFPeA)	2706-90-3	ng/g	NA	NA	NA	4.78	<2.12	4.70	5.92	8.10	7.23
Perfluorobutanesulfonic Acid (PFBS)	375-73-5	ng/g	NA	NA	NA	<1.05	<1.06	<1.07	<1.07	<0.999	<1.08
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	757124-72-4	ng/g	NA	NA	NA	<4.20	<4.25	<4.28	<4.30	<4.00	<4.33
Perfluorohexanoic Acid (PFHxA)	307-24-4	ng/g	NA	NA	NA	2.49	<2.12	<2.14	4.19	10.7	2.95
Perfluoropentanesulfonic Acid (PFPeS)	2706-91-4	ng/g	NA	NA	NA	<4.20	<4.25	<4.28	<4.30	<4.00	<4.33
Perfluoroheptanoic Acid (PFHpA)	375-85-9	ng/g	0.5	300	300	2.03	<1.06	2.26	2.69	7.09	4.04
Perfluorohexanesulfonic Acid (PFHxS)	355-46-4	ng/g	0.3	300	300	<1.05	<1.06	<1.07	<1.07	<0.999	<1.08
Perfluorooctanoic Acid (PFOA)	335-67-1	ng/g	0.72	300	300	3.49	1.84	3.12	3.68	10.1	10.4
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	27619-97-2	ng/g	NA	NA	NA	6.29	7.01	3.42	36	110	17.1
Perfluoroheptanesulfonic Acid (PFHpS)	375-92-8	ng/g	NA	NA	NA	<2.10	<2.12	<2.14	<2.15	<2.00	<2.17
Perfluorononanoic Acid (PFNA)	375-95-1	ng/g	0.32	300	300	8.26	4.51	6.46	3.10	4.68	20.3
Perfluorooctanesulfonic Acid (PFOS)	1763-23-1	ng/g	2	300	300	<1.05	<1.06	<1.07	<1.07	<0.999	<1.08
Perfluorodecanoic Acid (PFDA)	335-76-2	ng/g	0.3	300	300	3.06	1.67	2.08	8.00	10.5	4.41
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	39108-34-4	ng/g	NA	NA	NA	9.84	3.98	4.45	121	132	45.2
Perfluorononanesulfonic Acid (PFNS)	68259-12-1	ng/g	NA	NA	NA	<4.20	<4.25	<4.28	<4.30	<4.00	<4.33
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	2355-31-9	ng/g	NA	NA	NA	<2.10	<2.12	<2.14	<2.15	<2.00	<2.17
Perfluoroundecanoic Acid (PFUnA)	2058-94-8	ng/g	NA	NA	NA	<2.10	<2.12	<2.14	4.08	4.36	2.99
Perfluorodecanesulfonic Acid (PFDS)	335-77-3	ng/g	NA	NA	NA	<2.10	<2.12	<2.14	<2.15	<2.00	<2.17
Perfluorooctanesulfonamide (FOSA)	754-91-6	ng/g	NA	NA	NA	<2.10	<2.12	<2.14	<2.15	<2.00	<2.17
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	2991-50-6	ng/g	NA	NA	NA	<2.10	<2.12	<2.14	<2.15	<2.00	<2.17
Perfluorododecanoic Acid (PFDoA)	307-55-1	ng/g	NA	NA	NA	<2.10	<2.12	<2.14	6.35	7.10	<2.17
Perfluorotridecanoic Acid (PFTrDA)	72629-94-8	ng/g	NA	NA	NA	<2.10	<2.12	<2.14	<2.15	<2.00	<2.17
Perfluorotetradecanoic Acid (PFTA)	376-06-7	ng/g	NA	NA	NA	<2.10	<2.12	<2.14	<2.15	3.11	<2.17
PFAS6 (PFOA, PFOS, PFNA, PFHxS, PFHpA and PFDA)		ng/g	NA	NA	NA	16.8	8.0	13.9	17.5	32.4	39.2

Notes:

< indicates compound not detected above laboratory analytical method detection limits

Blank indicates compound was not reported by the analytical method

ND indicates total PFAS6 concentration not detected

NA indicates no applicable standard or unit has been established

Bold indicates compound exceeds MCP Method 1 S-1/GW-1 standard

Table 1 - Source Area Soil Analytical Data

CLIENT SAMPLE ID						AFFF-SA-16 0-0.5	AFFF-SA-17 0-0.5	AFFF-SA-18 0-0.5	AFFF-SA-19 0-0.5	AFFF-SA-20 0-0.5	AFFF-SA-21 0-0.5
Sample Depth (feet)	MCP Method 1					0-0.5'	0-0.5'	0-0.5'	0-0.5'	0-0.5'	0-0.5'
SAMPLING DATE	Standard					6/28/2023	6/28/2023	6/28/2023	6/29/2023	6/29/2023	6/29/2023
LAB SAMPLE ID	CAS No.	Units	S-1/GW-1	S-1/GW-2	S-1/GW-3	L2337964-10	L2337964-11	L2337964-12	L2337964-13	L2337964-14	L2337964-15
Isotope Dilution Compounds											
Perfluorobutanoic Acid (PFBA)	375-22-4	ng/g	NA	NA	NA	4.31	<2.20	8.04	<2.16	<2.17	<2.51
Perfluoropentanoic Acid (PFPeA)	2706-90-3	ng/g	NA	NA	NA	8.81	5.93	24.8	<2.16	<2.17	<2.51
Perfluorobutanesulfonic Acid (PFBS)	375-73-5	ng/g	NA	NA	NA	<1.12	<1.10	<1.17	<1.08	<1.08	<1.25
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	757124-72-4	ng/g	NA	NA	NA	<4.46	<4.40	<4.67	<4.33	<4.34	<5.01
Perfluorohexanoic Acid (PFHxA)	307-24-4	ng/g	NA	NA	NA	3.34	2.49	8.98	<2.16	<2.17	<2.51
Perfluoropentanesulfonic Acid (PFPeS)	2706-91-4	ng/g	NA	NA	NA	<4.46	<4.40	<4.67	<4.33	<4.34	<5.01
Perfluoroheptanoic Acid (PFHpA)	375-85-9	ng/g	0.5	300	300	3.04	4.47	6.76	<1.08	<1.08	<1.25
Perfluorohexanesulfonic Acid (PFHxS)	355-46-4	ng/g	0.3	300	300	<1.12	<1.10	<1.17	<1.08	<1.08	<1.25
Perfluorooctanoic Acid (PFOA)	335-67-1	ng/g	0.72	300	300	4.47	5.83	12.2	<1.08	<1.08	1.46
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	27619-97-2	ng/g	NA	NA	NA	10.9	5.9	76.7	<2.16	<2.17	<2.51
Perfluoroheptanesulfonic Acid (PFHpS)	375-92-8	ng/g	NA	NA	NA	<2.23	<2.20	<2.34	<2.16	<2.17	<2.51
Perfluorononanoic Acid (PFNA)	375-95-1	ng/g	0.32	300	300	4.87	5.45	7.96	<1.08	<1.08	<1.25
Perfluorooctanesulfonic Acid (PFOS)	1763-23-1	ng/g	2	300	300	<1.12	<1.10	<1.17	<1.08	<1.08	<1.25
Perfluorodecanoic Acid (PFDA)	335-76-2	ng/g	0.3	300	300	11.2	5.63	12.2	<1.08	<1.08	<1.25
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	39108-34-4	ng/g	NA	NA	NA	28.9	11.8	131	<2.16	<2.17	<2.51
Perfluorononanesulfonic Acid (PFNS)	68259-12-1	ng/g	NA	NA	NA	<4.46	<4.40	<4.67	<4.33	<4.34	<5.01
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	2355-31-9	ng/g	NA	NA	NA	<2.23	<2.20	<2.34	<2.16	<2.17	<2.51
Perfluoroundecanoic Acid (PFUnA)	2058-94-8	ng/g	NA	NA	NA	13.3	5.96	5.62	<2.16	<2.17	<2.51
Perfluorodecanesulfonic Acid (PFDS)	335-77-3	ng/g	NA	NA	NA	<2.23	<2.20	<2.34	<2.16	<2.17	<2.51
Perfluorooctanesulfonamide (FOSA)	754-91-6	ng/g	NA	NA	NA	<2.23	<2.20	<2.34	<2.16	<2.17	<2.51
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	2991-50-6	ng/g	NA	NA	NA	<2.23	<2.20	<2.34	<2.16	<2.17	<2.51
Perfluorododecanoic Acid (PFDoA)	307-55-1	ng/g	NA	NA	NA	<2.23	<2.20	3.06	<2.16	<2.17	<2.51
Perfluorotridecanoic Acid (PFTrDA)	72629-94-8	ng/g	NA	NA	NA	<2.23	<2.20	<2.34	<2.16	<2.17	<2.51
Perfluorotetradecanoic Acid (PFTA)	376-06-7	ng/g	NA	NA	NA	<2.23	<2.20	<2.34	<2.16	<2.17	<2.51
PFAS6 (PFOA, PFOS, PFNA, PFHxS, PFHpA and PFDA)		ng/g	NA	NA	NA	23.6	21.4	39.1	ND	ND	1.5

Notes:

< indicates compound not detected above laboratory analytical method detection limits

Blank indicates compound was not reported by the analytical method

ND indicates total PFAS6 concentration not detected

NA indicates no applicable standard or unit has been established

Bold indicates compound exceeds MCP Method 1 S-1/GW-1 standard

Table 1 - Source Area Soil Analytical Data

CLIENT SAMPLE ID						FIREWATER AREA 0-0.5	AFFF-SA-22	AFFF-SA-23	AFFF-SA-24	AFFF-SA-25	AFFF-SA-26
	Sample Depth (feet)	MCP Method 1			MCP Method 1	MCP Method 1	0-0.5'	0-0.5'	0-0.5'	0-0.5'	0-0.5'
SAMPLING DATE		Standard	Standard	Standard		6/29/2023	9/22/2023	9/22/2023	9/22/2023	9/22/2023	9/22/2023
LAB SAMPLE ID	CAS No.	Units	S-1/GW-1	S-1/GW-2	S-1/GW-3	L2337964-16	L2356237-07	L2356237-06	L2356237-05	L2356237-04	L2356237-03
Isotope Dilution Compounds											
Perfluorobutanoic Acid (PFBA)	375-22-4	ng/g	NA	NA	NA	<2.19	<2.09	<2.14	<2.12	<2.16	<2.11
Perfluoropentanoic Acid (PFPeA)	2706-90-3	ng/g	NA	NA	NA	<2.19	<2.09	<2.14	<2.12	<2.16	<2.11
Perfluorobutanesulfonic Acid (PFBS)	375-73-5	ng/g	NA	NA	NA	<1.09	<1.04	<1.07	<1.06	<1.08	<1.06
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	757124-72-4	ng/g	NA	NA	NA	<4.38	<4.18	<4.29	<4.23	<4.31	<4.23
Perfluorohexanoic Acid (PFHxA)	307-24-4	ng/g	NA	NA	NA	<2.19	<2.09	<2.14	<2.12	<2.16	<2.11
Perfluoropentanesulfonic Acid (PFPeS)	2706-91-4	ng/g	NA	NA	NA	<4.38	<4.18	<4.29	<4.23	<4.31	<4.23
Perfluoroheptanoic Acid (PFHpA)	375-85-9	ng/g	0.5	300	300	<1.09	<1.04	<1.07	<1.06	<1.08	<1.06
Perfluorohexanesulfonic Acid (PFHxS)	355-46-4	ng/g	0.3	300	300	<1.09	<1.04	<1.07	<1.06	<1.08	<1.06
Perfluorooctanoic Acid (PFOA)	335-67-1	ng/g	0.72	300	300	<1.09	<1.04	<1.07	<1.06	<1.08	<1.06
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	27619-97-2	ng/g	NA	NA	NA	<2.19	<2.09	<2.14	<2.12	<2.16	<2.11
Perfluoroheptanesulfonic Acid (PFHpS)	375-92-8	ng/g	NA	NA	NA	<2.19	<2.09	<2.14	<2.12	<2.16	<2.11
Perfluorononanoic Acid (PFNA)	375-95-1	ng/g	0.32	300	300	<1.09	<1.04	<1.07	<1.06	<1.08	<1.06
Perfluorooctanesulfonic Acid (PFOS)	1763-23-1	ng/g	2	300	300	<1.09	<1.04	<1.07	<1.06	2.17	<1.06
Perfluorodecanoic Acid (PFDA)	335-76-2	ng/g	0.3	300	300	<1.09	<1.04	<1.07	<1.06	1.52	2.07
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	39108-34-4	ng/g	NA	NA	NA	<2.19	<2.09	<2.14	<2.12	<2.16	<2.11
Perfluorononanesulfonic Acid (PFNS)	68259-12-1	ng/g	NA	NA	NA	<4.38	<4.18	<4.29	<4.23	<4.31	<4.23
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	2355-31-9	ng/g	NA	NA	NA	<2.19	<2.09	<2.14	<2.12	<2.16	<2.11
Perfluoroundecanoic Acid (PFUnA)	2058-94-8	ng/g	NA	NA	NA	<2.19	<2.09	<2.14	<2.12	2.57	3.23
Perfluorodecanesulfonic Acid (PFDS)	335-77-3	ng/g	NA	NA	NA	<2.19	<2.09	<2.14	<2.12	<2.16	<2.11
Perfluorooctanesulfonamide (FOSA)	754-91-6	ng/g	NA	NA	NA	<2.19	<2.09	<2.14	<2.12	<2.16	<2.11
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	2991-50-6	ng/g	NA	NA	NA	<2.19	<2.09	<2.14	<2.12	<2.16	<2.11
Perfluorododecanoic Acid (PFDoA)	307-55-1	ng/g	NA	NA	NA	<2.19	<2.09	<2.14	<2.12	2.37	2.25
Perfluorotridecanoic Acid (PFTrDA)	72629-94-8	ng/g	NA	NA	NA	<2.19	<2.09	<2.14	<2.12	<2.16	<2.11
Perfluorotetradecanoic Acid (PFTA)	376-06-7	ng/g	NA	NA	NA	<2.19	<2.09	<2.14	<2.12	<2.16	<2.11
PFAS6 (PFOA, PFOS, PFNA, PFHxS, PFHpA and PFDA)		ng/g	NA	NA	NA	ND	ND	ND	ND	3.69	2.07

Notes:

< indicates compound not detected above laboratory analytical method detection limits

Blank indicates compound was not reported by the analytical method

ND indicates total PFAS6 concentration not detected

NA indicates no applicable standard or unit has been established

Bold indicates compound exceeds MCP Method 1 S-1/GW-1 standard

Table 1 - Source Area Soil Analytical Data

CLIENT SAMPLE ID						AFFF-SA-27	AFFF-SA-28	AFFF-SA-29	TT-2 25' NE	TT-2 50' NE	SA-30 0-0.5'
Sample Depth (feet)	MCP Method 1					0-0.5'	0-0.5'	0-0.5'	0-0.5'	0-0.5'	0-0.5'
SAMPLING DATE	Standard					9/22/2023	9/22/2023	9/22/2023	9/22/2023	9/22/2023	11/30/2023
LAB SAMPLE ID	CAS No.	Units	S-1/GW-1	S-1/GW-2	S-1/GW-3	L2356237-02	L2356237-01	L2356237-08	L2356237-09	L2356237-10	L2370818-01
Isotope Dilution Compounds											
Perfluorobutanoic Acid (PFBA)	375-22-4	ng/g	NA	NA	NA	<2.14	<2.12	7.77	<2.38	<2.57	3.47
Perfluoropentanoic Acid (PFPeA)	2706-90-3	ng/g	NA	NA	NA	2.39	2.65	12.3	<2.38	<2.57	4.64
Perfluorobutanesulfonic Acid (PFBS)	375-73-5	ng/g	NA	NA	NA	<1.07	<1.06	<1.06	<1.19	<1.28	<0.301
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	757124-72-4	ng/g	NA	NA	NA	<4.29	<4.24	<4.26	<4.76	<5.14	<1.20
Perfluorohexanoic Acid (PFHxA)	307-24-4	ng/g	NA	NA	NA	<2.14	2.28	7.14	<2.38	<2.57	1.74
Perfluoropentanesulfonic Acid (PFPeS)	2706-91-4	ng/g	NA	NA	NA	<4.29	<4.24	<4.26	<4.76	<5.14	<1.20
Perfluoroheptanoic Acid (PFHpA)	375-85-9	ng/g	0.5	300	300	1.61	<1.06	5.00	<1.19	<1.28	1.40
Perfluorohexanesulfonic Acid (PFHxS)	355-46-4	ng/g	0.3	300	300	<1.07	<1.06	<1.06	<1.19	<1.28	<0.301
Perfluorooctanoic Acid (PFOA)	335-67-1	ng/g	0.72	300	300	3.02	1.14	7.38	<1.19	<1.28	2.43
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	27619-97-2	ng/g	NA	NA	NA	9.32	58.3	2.66	<2.38	<2.57	0.789
Perfluoroheptanesulfonic Acid (PFHpS)	375-92-8	ng/g	NA	NA	NA	<2.14	<2.12	<2.13	<2.38	<2.57	<0.602
Perfluorononanoic Acid (PFNA)	375-95-1	ng/g	0.32	300	300	<1.07	<1.06	10.6	<1.19	<1.28	3.20
Perfluorooctanesulfonic Acid (PFOS)	1763-23-1	ng/g	2	300	300	<1.07	<1.06	<1.06	<1.19	<1.28	<0.301
Perfluorodecanoic Acid (PFDA)	335-76-2	ng/g	0.3	300	300	7.53	3.00	4.06	<1.19	<1.28	1.65
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	39108-34-4	ng/g	NA	NA	NA	16.6	84.4	18.4	<2.38	<2.57	<0.602
Perfluorononanesulfonic Acid (PFNS)	68259-12-1	ng/g	NA	NA	NA	<4.29	<4.24	<4.26	<4.76	<5.14	<1.20
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	2355-31-9	ng/g	NA	NA	NA	<2.14	<2.12	<2.13	<2.38	<2.57	<0.602
Perfluoroundecanoic Acid (PFUnA)	2058-94-8	ng/g	NA	NA	NA	2.29	<2.12	<2.13	<2.38	<2.57	<0.602
Perfluorodecanesulfonic Acid (PFDS)	335-77-3	ng/g	NA	NA	NA	<2.14	<2.12	<2.13	<2.38	<2.57	<0.602
Perfluorooctanesulfonamide (FOSA)	754-91-6	ng/g	NA	NA	NA	<2.14	<2.12	<2.13	<2.38	<2.57	<0.602
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	2991-50-6	ng/g	NA	NA	NA	<2.14	<2.12	<2.13	<2.38	<2.57	<0.602
Perfluorododecanoic Acid (PFDoA)	307-55-1	ng/g	NA	NA	NA	4.79	8.62	<2.13	<2.38	<2.57	<0.602
Perfluorotridecanoic Acid (PFTTrDA)	72629-94-8	ng/g	NA	NA	NA	<2.14	<2.12	<2.13	5.91	<2.57	<0.602
Perfluorotetradecanoic Acid (PFTA)	376-06-7	ng/g	NA	NA	NA	<2.14	2.21	<2.13	<2.38	<2.57	<0.602
PFAS6 (PFOA, PFOS, PFNA, PFHxS, PFHpA and PFDA)		ng/g	NA	NA	NA	12.2	4.14	27.0	ND	ND	8.68

Notes:

< indicates compound not detected above laboratory analytical method detection limits

Blank indicates compound was not reported by the analytical method

ND indicates total PFAS6 concentration not detected

NA indicates no applicable standard or unit has been established

Bold indicates compound exceeds MCP Method 1 S-1/GW-1 standard

Table 1 - Source Area Soil Analytical Data

CLIENT SAMPLE ID						SA-31 0-0.5'	SA-32 0-0.5'	SA-33 0-0.5'	SA-34 0-0.5'	SA-34 1.5'-2'	SA-35 0-0.5'
Sample Depth (feet)	MCP Method 1					0-0.5'	0-0.5'	0-0.5'	0-0.5'		0-0.5'
SAMPLING DATE	Standard					11/30/2023	11/30/2023	11/30/2023	11/30/2023	11/30/2023	11/30/2023
LAB SAMPLE ID	CAS No.	Units	S-1/GW-1	S-1/GW-2	S-1/GW-3	L2370818-02	L2370818-03	L2370818-04	L2370818-05	L2370818-06	L2370818-07
Isotope Dilution Compounds											
Perfluorobutanoic Acid (PFBA)	375-22-4	ng/g	NA	NA	NA	13.8	7.56	1.29	7.56	1.66	7.68
Perfluoropentanoic Acid (PFPeA)	2706-90-3	ng/g	NA	NA	NA	30.5	15.4	1.28	10.9	4.40	6.14
Perfluorobutanesulfonic Acid (PFBS)	375-73-5	ng/g	NA	NA	NA	<0.285	<0.258	<0.237	<0.269	<0.232	<0.299
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	757124-72-4	ng/g	NA	NA	NA	<1.14	<1.03	<0.950	<1.08	<0.926	<1.20
Perfluorohexanoic Acid (PFHxA)	307-24-4	ng/g	NA	NA	NA	14.8	7.89	<0.475	3.51	1.97	1.97
Perfluoropentanesulfonic Acid (PFPeS)	2706-91-4	ng/g	NA	NA	NA	<1.14	<1.03	<0.950	<1.08	<0.926	<1.20
Perfluoroheptanoic Acid (PFHpA)	375-85-9	ng/g	0.5	300	300	11.7	7.47	<0.237	6.35	2.32	1.62
Perfluorohexanesulfonic Acid (PFHxS)	355-46-4	ng/g	0.3	300	300	<0.285	<0.258	<0.237	<0.269	<0.232	<0.299
Perfluorooctanoic Acid (PFOA)	335-67-1	ng/g	0.72	300	300	17.6	10.6	0.262	12.4	5.90	4.50
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	27619-97-2	ng/g	NA	NA	NA	42.7	13.9	0.898	16.2	5.54	0.935
Perfluoroheptanesulfonic Acid (PFHpS)	375-92-8	ng/g	NA	NA	NA	<0.570	<0.515	<0.475	<0.538	<0.463	<0.598
Perfluorononanoic Acid (PFNA)	375-95-1	ng/g	0.32	300	300	6.48	16.1	<0.237	20.1	4.43	2.28
Perfluorooctanesulfonic Acid (PFOS)	1763-23-1	ng/g	2	300	300	0.439	<0.258	<0.237	<0.269	<0.232	0.397
Perfluorodecanoic Acid (PFDA)	335-76-2	ng/g	0.3	300	300	6.96	9.54	0.326	7.50	0.956	2.45
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	39108-34-4	ng/g	NA	NA	NA	121	29.9	<0.475	28.1	6.56	<0.598
Perfluorononanesulfonic Acid (PFNS)	68259-12-1	ng/g	NA	NA	NA	<1.14	<1.03	<0.950	<1.08	<0.926	<1.20
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	2355-31-9	ng/g	NA	NA	NA	<0.570	<0.515	<0.475	<0.538	<0.463	<0.598
Perfluoroundecanoic Acid (PFUnA)	2058-94-8	ng/g	NA	NA	NA	1.54	4.42	<0.475	3.64	<0.463	0.638
Perfluorodecanesulfonic Acid (PFDS)	335-77-3	ng/g	NA	NA	NA	<0.570	<0.515	<0.475	<0.538	<0.463	<0.598
Perfluorooctanesulfonamide (FOSA)	754-91-6	ng/g	NA	NA	NA	<0.570	<0.515	<0.475	<0.538	<0.463	<0.598
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	2991-50-6	ng/g	NA	NA	NA	<0.570	<0.515	<0.475	<0.538	<0.463	<0.598
Perfluorododecanoic Acid (PFDoA)	307-55-1	ng/g	NA	NA	NA	1.79	2.87	<0.475	1.49	<0.463	<0.598
Perfluorotridecanoic Acid (PFTrDA)	72629-94-8	ng/g	NA	NA	NA	<0.570	0.855	<0.475	<0.538	<0.463	<0.598
Perfluorotetradecanoic Acid (PFTA)	376-06-7	ng/g	NA	NA	NA	<0.570	0.766	<0.475	<0.538	<0.463	<0.598
PFAS6 (PFOA, PFOS, PFNA, PFHxS, PFHpA and PFDA)		ng/g	NA	NA	NA	43.2	43.7	0.588	46.4	13.6	11.2

Notes:

< indicates compound not detected above laboratory analytical method detection limits

Blank indicates compound was not reported by the analytical method

ND indicates total PFAS6 concentration not detected

NA indicates no applicable standard or unit has been established

Bold indicates compound exceeds MCP Method 1 S-1/GW-1 standard

Table 1 - Source Area Soil Analytical Data

CLIENT SAMPLE ID						SA-36 0-0.5'
Sample Depth (feet)	MCP Method 1					0-0.5'
SAMPLING DATE	Standard					11/30/2023
LAB SAMPLE ID	CAS No.	Units	S-1/GW-1	S-1/GW-2	S-1/GW-3	L2370818-08
Isotope Dilution Compounds						
Perfluorobutanoic Acid (PFBA)	375-22-4	ng/g	NA	NA	NA	1.94
Perfluoropentanoic Acid (PFPeA)	2706-90-3	ng/g	NA	NA	NA	1.40
Perfluorobutanesulfonic Acid (PFBS)	375-73-5	ng/g	NA	NA	NA	<0.293
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	757124-72-4	ng/g	NA	NA	NA	<1.17
Perfluorohexanoic Acid (PFHxA)	307-24-4	ng/g	NA	NA	NA	<0.586
Perfluoropentanesulfonic Acid (PFPeS)	2706-91-4	ng/g	NA	NA	NA	<1.17
Perfluoroheptanoic Acid (PFHpA)	375-85-9	ng/g	0.5	300	300	<0.293
Perfluorohexanesulfonic Acid (PFHxS)	355-46-4	ng/g	0.3	300	300	<0.293
Perfluorooctanoic Acid (PFOA)	335-67-1	ng/g	0.72	300	300	0.724
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	27619-97-2	ng/g	NA	NA	NA	<0.586
Perfluoroheptanesulfonic Acid (PFHpS)	375-92-8	ng/g	NA	NA	NA	<0.586
Perfluorononanoic Acid (PFNA)	375-95-1	ng/g	0.32	300	300	0.499
Perfluorooctanesulfonic Acid (PFOS)	1763-23-1	ng/g	2	300	300	<0.293
Perfluorodecanoic Acid (PFDA)	335-76-2	ng/g	0.3	300	300	1.02
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	39108-34-4	ng/g	NA	NA	NA	<0.586
Perfluorononanesulfonic Acid (PFNS)	68259-12-1	ng/g	NA	NA	NA	<1.17
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	2355-31-9	ng/g	NA	NA	NA	<0.586
Perfluoroundecanoic Acid (PFUnA)	2058-94-8	ng/g	NA	NA	NA	<0.586
Perfluorodecanesulfonic Acid (PFDS)	335-77-3	ng/g	NA	NA	NA	<0.586
Perfluorooctanesulfonamide (FOSA)	754-91-6	ng/g	NA	NA	NA	<0.586
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	2991-50-6	ng/g	NA	NA	NA	<0.586
Perfluorododecanoic Acid (PFDoA)	307-55-1	ng/g	NA	NA	NA	<0.586
Perfluorotridecanoic Acid (PFTrDA)	72629-94-8	ng/g	NA	NA	NA	<0.586
Perfluorotetradecanoic Acid (PFTA)	376-06-7	ng/g	NA	NA	NA	<0.586
PFAS6 (PFOA, PFOS, PFNA, PFHxS, PFHpA and PFDA)		ng/g	NA	NA	NA	2.24

Notes:

- < indicates compound not detected above laboratory analytical method detection limits
- Blank indicates compound was not reported by the analytical method
- ND indicates total PFAS6 concentration not detected
- NA indicates no applicable standard or unit has been established
- Bold indicates compound exceeds MCP Method 1 S-1/GW-1 standard

Table 2 - Groundwater Gauging Data

Well ID	Top of Casing Elevation (ft.)	Depth to Water (ft.)	GW Elevation (ft.)
TT-13	46.46	33.10	13.36
TT-14	47.16	34.08	13.08
TT-20	42.81	29.55	13.26
TT-25	42.56	29.23	13.33
TT-26S	45.43	32.11	13.32
TT-26D	45.72	32.45	13.27

Notes:

1. Top of casing elevation for TT-13 measured via GPS using an Arrow Gold® GNSS Receiver, approximate vertical accuracy 0.016 m.
2. Tetra Tech surveyed elevations via transit-stadia relative to GPS elevation of TT-13 on October 27, 2022 and again on December 8, 2022
3. Elevations are in feet above mean seal level
4. Depth to groundwater measured using an electronic water level meter on November 29, 2023
5. NM indicates not measured
6. NA indicates not available

Table 3- Monitoring Well Groundwater Analytical Data

				Compound Name	Perfluorinated Alkyl Acids by EPA 533	Perfluorobutanoic Acid (PFBA)	Perfluoro-3-Methoxypropanoic Acid (PFMPA)	Perfluoropentanoic Acid (PFPeA)	Perfluorobutanesulfonic Acid (PFBS)	Perfluoro-4-Methoxybutanoic Acid (PFMBA)	Perfluoro(2-Ethoxyethane)Sulfonic Acid (PFEEESA)	Nonafluoro-3,6-Dioxahexanoic Acid (NFDHA)	1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2:FTS)	Perfluorohexanoic Acid (PFHxA)	Perfluoropentanesulfonic Acid (PFPeS)	2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	Perfluorheptanoic Acid (PFHpA)	Perfluorohexanesulfonic Acid (PFHxS)	4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	
				CAS No.		375-22-4	377-73-1	2706-90-3	375-73-5	863090-89-5	113507-82-7	151772-58-6	757124-72-4	307-24-4	2706-91-4	13252-13-6	375-85-9	355-46-4	919005-14-4	
Sample ID	Sampling Date	Lab Sample ID	Laboratory Analytical Method Detection Limit	MCP Method 1 GW-1 Standard													20	20		
M-11	9/21/2022	L2252884-22	2.11		87.80	NA	380.00	ND	NA	NA	NA	NA	ND	168.00	ND	NA	55.40	3.45	NA	
M-6	9/20/2022	L2252884-10	1.89		4.98	NA	10.00	ND	NA	NA	NA	NA	ND	7.06	ND	NA	8.05	ND	NA	
MW-AYD	6/13/2022	L2232854-03	1.77		ND	NA	ND	ND	NA	NA	NA	NA	ND	ND	ND	NA	ND	ND	NA	
MW-AYI	6/13/2022	L2232854-02	1.86		ND	NA	2.11	ND	NA	NA	NA	NA	ND	2.25	ND	NA	3.27	2.58	NA	
MW-AYS	6/13/2022	L2232854-01	1.88		ND	NA	ND	ND	NA	NA	NA	NA	ND	ND	ND	NA	ND	ND	NA	
MW-BD	6/14/2022	L2232849-01	1.73		13.40	NA	39.30	ND	NA	NA	NA	NA	ND	21.30	ND	NA	11.80	ND	NA	
MW-BS	6/14/2022	L2232849-02	1.75		378.00	NA	1820.00	5.32	NA	NA	NA	NA	12.20	787.00	ND	NA	462.00	2.29	NA	
MW-DAD	6/14/2022	L2232852-02	1.85		ND	NA	ND	ND	NA	NA	NA	NA	ND	ND	ND	NA	ND	ND	NA	
MW-DAS	6/14/2022	L2232852-01	1.82		ND	NA	ND	ND	NA	NA	NA	NA	ND	ND	ND	NA	ND	ND	NA	
MW-JM	11/15/2021	L2163723-01	1.98		23.90	NA	77.70	ND	NA	NA	NA	NA	ND	63.90	5.26	NA	58.80	128.00	NA	
MW-JS	11/15/2021	L2163723-02	4.00		123.00	NA	338.00	ND	NA	NA	NA	NA	ND	199.00	ND	NA	142.00	ND	NA	
RIZ-10	3/15/2018	L1809217-16	1.72		NA	NA	NA	ND	NA	NA	NA	NA	NA	62.80	NA	NA	36.20	ND	NA	
RIZ-42	9/20/2022	L2252884-08	1.88		18.80	NA	71.50	ND	NA	NA	NA	NA	ND	40.60	ND	NA	19.40	ND	NA	
RIZ-64	9/21/2022	L2252884-21	1.90		14.80	NA	47.30	ND	NA	NA	NA	NA	ND	27.80	ND	NA	29.50	ND	NA	
TMW-5	9/20/2022	L2252884-5	1.82		14.10	NA	43.90	ND	NA	NA	NA	NA	ND	29.30	ND	NA	24.20	ND	NA	
TMW-6	9/20/2022	L2252884-12	1.83		14.10	NA	32.20	ND	NA	NA	NA	NA	ND	18.40	ND	NA	15.40	2.51	NA	
TMW-6D	9/20/2022	L2252884-13	1.93		77.90	NA	176.00	ND	NA	NA	NA	NA	ND	102.00	ND	NA	82.00	ND	NA	
TT-01	9/21/2022	L2252884-29	1.83		140.00	NA	353.00	ND	NA	NA	NA	NA	ND	152.00	ND	NA	86.50	ND	NA	
TT-02	3/24/2023	L2315811-07	2.11		938.00	NA	2330.00	ND	NA	NA	NA	NA	ND	1170.00	ND	NA	1020.00	2.32	NA	
TT-03	9/22/2022	L2252884-32	1.91		381.00	NA	1850.00	ND	NA	NA	NA	NA	12.50	878.00	ND	NA	142.00	ND	NA	
TT-04	9/21/2022	L2252884-20	1.84		21.80	NA	44.20	ND	NA	NA	NA	NA	ND	26.40	ND	NA	16.60	ND	NA	
TT-05	9/20/2022	L2252884-18	1.94		415.00	NA	1080.00	ND	NA	NA	NA	NA	ND	813.00	ND	NA	394.00	ND	NA	
TT-06	9/20/2022	L2252884-19	1.85		3.22	NA	3.63	3.97	NA	NA	NA	NA	ND	4.02	ND	NA	7.03	ND	NA	

Table 3- Monitoring Well Groundwater Analytical Data

				Compound Name	1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	Perfluorooctanoic Acid (PFOA)	Perfluoroheptanesulfonic Acid (PFHpS)	Perfluorononanoic Acid (PFNA)	Perfluorooctanesulfonic Acid (PFOS)	9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9CLPF3ONS)	1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	Perfluorodecanoic Acid (PFDA)	Perfluoroundecanoic Acid (PFUnA)	11-Chloroicosafafluoro-3-Oxaundecane-1-Sulfonic Acid (11CL-PF3OUdS)	Perfluorododecanoic Acid (PFDoA)	PFAS6 (PFOA, PFOS, PFNA, PFHxS, PFHpA, and PFDA)
				CAS No.	27619-97-2	335-67-1	375-92-8	375-95-1	1763-23-1	73606-19-6	39108-34-4	335-76-2	2058-94-8	83329-89-9	307-55-1	
Sample ID	Sampling Date	Lab Sample ID	Laboratory Analytical Method Detection Limit													
				20	20	20	20	20	20	20	20	20	20	20	20	20
M-11	9/21/2022	L2252884-22	2.11	15.80	18.80	ND	ND	3.79	NA	ND	ND	ND	ND	NA	ND	81.44
M-6	9/20/2022	L2252884-10	1.89	9.32	10.70	ND	ND	ND	NA	ND	ND	ND	ND	NA	ND	18.75
MW-AYD	6/13/2022	L2232854-03	1.77	ND	ND	ND	ND	ND	NA	ND	ND	ND	ND	NA	ND	ND
MW-AYI	6/13/2022	L2232854-02	1.86	ND	5.24	ND	ND	ND	NA	ND	ND	ND	ND	NA	ND	11.09
MW-AYS	6/13/2022	L2232854-01	1.88	ND	ND	ND	ND	ND	NA	ND	ND	ND	ND	NA	ND	ND
MW-BD	6/14/2022	L2232849-01	1.73	8.47	4.97	ND	ND	ND	NA	ND	ND	ND	ND	NA	ND	16.77
MW-BS	6/14/2022	L2232849-02	1.75	28600.00	204.00	ND	15.40	11.20	NA	80.80	1.75	ND	ND	NA	ND	696.64
MW-DAD	6/14/2022	L2232852-02	1.85	ND	ND	ND	ND	ND	NA	ND	ND	ND	ND	NA	ND	ND
MW-DAS	6/14/2022	L2232852-01	1.82	ND	ND	ND	ND	ND	NA	ND	ND	ND	ND	NA	ND	ND
MW-JM	11/15/2021	L2163723-01	1.98	229.00	17.70	4.49	ND	146.00	NA	ND	ND	ND	ND	NA	ND	350.50
MW-JS	11/15/2021	L2163723-02	4.00	1050.00	34.30	ND	ND	8.19	NA	ND	ND	ND	ND	NA	ND	184.49
RIZ-10	3/15/2018	L1809217-16	1.72	NA	43.90	NA	4.59	6.72	NA	NA	ND	ND	ND	NA	ND	91.41
RIZ-42	9/20/2022	L2252884-08	1.88	79.60	14.40	ND	ND	2.73	NA	ND	ND	ND	ND	NA	ND	36.53
RIZ-64	9/21/2022	L2252884-21	1.90	1070.00	14.00	ND	ND	3.20	NA	ND	ND	ND	ND	NA	ND	46.70
TMW-5	9/20/2022	L2252884-5	1.82	35.40	13.80	ND	2.16	10.90	NA	30.80	ND	ND	ND	NA	ND	51.06
TMW-6	9/20/2022	L2252884-12	1.83	28.70	15.70	ND	ND	1.85	NA	ND	ND	ND	ND	NA	ND	35.46
TMW-6D	9/20/2022	L2252884-13	1.93	274.00	45.10	ND	5.58	ND	NA	ND	ND	ND	ND	NA	ND	132.68
TT-01	9/21/2022	L2252884-29	1.83	2060.00	101.00	ND	16.00	10.50	NA	104.00	3.74	ND	ND	NA	ND	217.74
TT-02	3/24/2023	L2315811-07	2.11	2700.00	943.00	ND	20.20	4.02	NA	17.60	4.84	ND	ND	NA	ND	1994.38
TT-03	9/22/2022	L2252884-32	1.91	2090.00	12.00	ND	2.34	ND	NA	76.80	ND	ND	ND	NA	ND	156.34
TT-04	9/21/2022	L2252884-20	1.84	10.70	10.10	ND	6.83	8.02	NA	ND	7.89	2.53	ND	NA	ND	49.44
TT-05	9/20/2022	L2252884-18	1.94	2000.00	28.50	ND	13.80	ND	NA	421.00	21.20	ND	ND	NA	ND	457.50
TT-06	9/20/2022	L2252884-19	1.85	5.27	13.40	ND	2.06	ND	NA	ND	5.48	2.78	ND	NA	2.43	27.97

Table 3- Monitoring Well Groundwater Analytical Data

Sample ID	Sampling Date	Lab Sample ID	Laboratory Analytical Method Detection Limit	MCP Method 1 GW-1 Standard	Compound Name													
					CAS No.	Perfluorinated Alkyl Acids by EPA 533	Perfluorobutanoic Acid (PFBA)	Perfluoro-3-Methoxypropanoic Acid (PFMPA)	Perfluoropentanoic Acid (PFPeA)	Perfluorobutanesulfonic Acid (PFBS)	Perfluoro-4-Methoxybutanoic Acid (PFMBA)	Perfluoro(2-Ethoxyethane)Sulfonic Acid (PFEEESA)	Nonafluoro-3,6-Dioxahexanoic Acid (NFDHA)	1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	Perfluorohexanoic Acid (PFHxA)	Perfluoropentanesulfonic Acid (PFPeS)	2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	Perfluorohexanoic Acid (PFHxS)
TT-26S	12/9/2022	L2269557-08	1.87		3580.00	NA	3560.00	ND	NA	NA	NA	24.90	1710.00	ND	NA	1010.00	ND	NA
TT-26S	3/22/2023	L2315811-03	1.78		163.00	NA	563.00	ND	NA	NA	NA	4.13	254.00	ND	NA	124.00	ND	NA
TT-26S	5/31/2023	L2331074-03	1.94		355.00	ND	1460.00	ND	ND	ND	ND	10.90	721.00	ND	ND	259.00	ND	ND
TT-26S	9/19/2023	L2356167-05	50.00		354.00	ND	1100.00	ND	ND	ND	ND	ND	514.00	ND	ND	729.00	ND	ND
TT-26S	11/29/2023	L2370799-05	1.80		3.59	ND	13.30	ND	ND	ND	ND	ND	6.75	ND	ND	5.10	ND	ND
TT-30	12/9/2022	L2269557-03	1.85		119.00	NA	383.00	ND	NA	NA	NA	ND	246.00	ND	NA	242.00	ND	NA

Notes:

Units are in ng/L (parts per trillion)

ND indicates compound not detected above laboratory analytical method detection limit.

NA indicates that the sample was not analyzed for that compound.

Bold indicates compound detected above MCP Method 1 GW-1 standard

- PFAS6 > 20 ppt and < 70 ppt
- PFAS6 > 70 ppt and < 90 ppt
- PFAS6 > 90 ppt

Table 3- Monitoring Well Groundwater Analytical Data

				Compound Name	1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	Perfluorooctanoic Acid (PFOA)	Perfluoroheptanesulfonic Acid (PFHpS)	Perfluorononanoic Acid (PFNA)	Perfluorooctanesulfonic Acid (PFOS)	9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9CLPF3ONS)	1H,1H,2H,2H-Perfluorodecane sulfonic Acid (8:2FTS)	Perfluorodecanoic Acid (PFDA)	Perfluoroundecanoic Acid (PFUnA)	11-Chloroicosafafluoro-3-Oxaundecane-1-Sulfonic Acid (11CL-PF3OUdS)	Perfluorododecanoic Acid (PFDoA)	PFAS6 (PFOA, PFOS, PFNA, PFHxS, PFHpA, and PFDA)	
				CAS No.	27619-97-2	335-67-1	375-92-8	375-95-1	1763-23-1	73606-19-6	39108-34-4	335-76-2	2058-94-8	83329-89-9	307-55-1		
Sample ID	Sampling Date	Lab Sample ID	Laboratory Analytical Method Detection Limit														
					20		20	20				20				20	
TT-26S	12/9/2022	L2269557-08	1.87	31800.00	585.00	ND	12.00	7.21	NA	111.00	ND	ND	NA	ND	1614.21		
TT-26S	3/22/2023	L2315811-03	1.78	62.50	148.00	ND	41.40	21.70	NA	471.00	14.80	ND	NA	ND	349.90		
TT-26S	5/31/2023	L2331074-03	1.94	38200.00	281.00	ND	7.43	15.60	ND	78.20	2.88	ND	ND	ND	565.91		
TT-26S	9/19/2023	L2356167-05	50.00	4760.00	400.00	ND	72.60	20.80	ND	812.00	28.60	ND	ND	ND	1251.00		
TT-26S	11/29/2023	L2370799-05	1.80	52.80	ND	ND	ND	ND	ND	3.93	ND	ND	ND	ND	5.10		
TT-30	12/9/2022	L2269557-03	1.85	2110.00	98.50	ND	5.92	ND	NA	ND	ND	ND	NA	ND	346.42		

Notes:

Units are in ng/L (parts per trillion)

ND indicates compound not detected above laboratory analytical method detection limit.

NA indicates that the sample was not analyzed for that compound.

Bold indicates compound detected above MCP Method 1 GW-1 standard

- PFAS6 > 20 ppt and < 70 ppt
- PFAS6 > 70 ppt and < 90 ppt
- PFAS6 > 90 ppt

Table 4 - Private Well Annual Monitoring Summary

Property ID	Date of Last Sample	Peak PFAS6	Sampled in 2023
Property AD	6/7/2023	ND	Yes
Property AG	6/14/2023	ND	Yes
Property AH	6/9/2023	ND	Yes
Property AJ	6/7/2023	4.93	Yes
Property AN	12/15/2021	18.18	No
Property AV	6/15/2023	11.57	Yes
Property BA	6/6/2023	3.55	Yes
Property BC	6/7/2023	ND	Yes
Property BD	6/7/2023	14.56	Yes
Property BG	6/6/2023	ND	Yes
Property BH	6/14/2023	14.21	Yes
Property BI	6/16/2023	1.95	Yes
Property BN	9/22/2023	14.36	Yes
Property BP	6/16/2023	7.69	Yes
Property BR	12/7/2022	ND	No
Property CC	6/7/2023	1.84	Yes
Property CE	6/7/2022	ND	No
Property CG	6/8/2023	2.48	Yes
Property CH	6/7/2023	10.27	Yes
Property CJ	11/29/2023	2.64	Yes
Property CK	11/30/2023	17.65	Yes
Property CM	9/21/2023	8.46	Yes
Property CN	6/8/2022	1.81	No
Property CQ	6/6/2023	13.14	Yes
Property CX	6/13/2023	5.35	Yes
Property CZ	9/19/2023	5.48	Yes
Property DD	6/12/2023	9.78	Yes
Property DE	6/21/2023	3.54	Yes
Property DF	6/6/2023	ND	Yes
Property DJ	6/8/2023	6.59	Yes
Property DK	6/8/2023	8.91	Yes
Property DO	6/20/2023	4.96	Yes
Property DQ	6/8/2023	10.21	Yes
Property EA	6/6/2023	4.77	Yes
Property EF	9/9/2020	13.20	No
Property EG	6/9/2023	3.43	Yes
Property ER	6/12/2023	4.72	Yes
Property ET	9/21/2023	4.61	Yes
Property EU	5/30/2023	3.47	Yes
Property EV	6/6/2023	4.04	Yes
Property EW	6/8/2023	9.51	Yes
Property FC	6/14/2023	8.08	Yes
Property FD	6/13/2023	14.22	Yes
Property FE	6/7/2023	1.87	Yes
Property FJ	6/19/2023	ND	Yes
Property FS	6/9/2023	4.87	Yes
Property FT	6/7/2022	2.06	No
Property FY	6/18/2019	ND	No
Property FZ	9/22/2023	ND	Yes
Property GD	11/29/2023	17.78	Yes
Property GF	6/12/2023	ND	Yes
Property GH	6/29/2023	4.72	Yes
Property GI	12/8/2022	6.62	No

Table 4 - Private Well Annual Monitoring Summary

Property ID	Date of Last Sample	Peak PFAS6	Sampled in 2023
Property GJ	6/6/2023	2.92	Yes
Property GK	9/9/2020	ND	No
Property N	6/6/2023	ND	Yes
Property O	6/8/2023	10.9	Yes
Property Q	6/19/2023	ND	Yes
Property S	11/30/2023	3.95	Yes
Property W	6/6/2023	2.16	Yes
Property ZY	6/13/2023	18.91	Yes

Notes:

1. Max PFAS6 indicates the maximum of the 6 PFAS compounds identified in the MCP Method 1 GW-1 standard that are detected in any of the samples collected from the location.
2. PFAS6 units are in nç Units are in ng/L (parts per trillion)
3. ND indicates PFAS6 was not detected

Table 5 - Private Well Analytical Data Summary

Compound Name				Perfluorinated Alkyl Acids by EPA 533	Perfluorobutanoic Acid (PFBA)	Perfluoro-3-Methoxypropanoic Acid (PFMPA)	Perfluoropentanoic Acid (PFPeA)	Perfluorobutanesulfonic Acid (PFBS)	Perfluoro-4-Methoxybutanoic Acid (PFMBA)	Perfluoro(2-Ethoxyethane)Sulfonic Acid (PFEEESA)	Nonafluoro-3,6-Dioxahexanoic Acid (NFDHA)	1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2F6S)	Perfluorohexanoic Acid (PFHxA)	Perfluoropentanesulfonic Acid (PFPeS)	2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]propanoic Acid (HFPO-DA)	Perfluoroheptanoic Acid (PFHpA)	Perfluorohexanesulfonic Acid (PFHxS)	4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	
CAS No.					375-22-4	377-73-1	2706-90-3	375-73-5	863090-89-5	113507-82-7	151772-58-6	757124-72-4	307-24-4	2706-91-4	13252-13-6	375-85-9	355-46-4	919005-14-4	
Sample ID	Sampling Date	Lab Sample ID	Laboratory Analytical Method Detection Limit	MCP Method 1 GW-1 Standard															
																20	20		
Property AO-INF	11/30/2023	L2370808-02	1.83	ND	ND	2.29	ND	ND	ND	ND	ND	ND	2.07	ND	ND	1.97	ND	ND	ND
Property BJ-1-INF	11/30/2023	L2370811-03	1.85	28.70	ND	71.10	ND	ND	ND	ND	ND	ND	46.10	ND	ND	56.40	ND	ND	ND
Property CJ	11/29/2023	L2370803-01	1.84	3.32	ND	7.25	ND	ND	ND	ND	ND	ND	4.92	ND	ND	ND	ND	ND	ND
Property CK	11/30/2023	L2370809-01	1.79	18.60	ND	80.20	ND	ND	ND	ND	ND	ND	50.40	ND	ND	7.28	ND	ND	ND
Property CO-INF	11/30/2023	L2370805-02	1.77	7.78	ND	17.60	ND	ND	ND	ND	ND	ND	10.10	ND	ND	5.80	ND	ND	ND
Property CP	11/30/2023	L2370806-01	1.77	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Property GD	11/29/2023	L2370802-01	1.81	3.94	ND	13.90	ND	ND	ND	ND	ND	ND	7.03	ND	ND	2.56	ND	ND	ND
Property GO-1-INF	11/30/2023	L2370807-03	1.81	81.30	ND	224.00	ND	ND	ND	ND	ND	ND	107.00	ND	ND	64.10	ND	ND	ND
Property I-INF	11/29/2023	L2370801-03	1.79	54.00	ND	198.00	ND	ND	ND	ND	ND	ND	126.00	ND	ND	151.00	ND	ND	ND
Property S	11/30/2023	L2370810-01	1.84	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Property Y-INF	11/30/2023	L2370804-03	1.82	48.30	ND	139.00	2.46	ND	ND	ND	ND	ND	104.00	8.48	ND	94.90	327.00	ND	ND

Notes:

Units are in ng/L (parts per trillion)

ND indicates compound not detected above laboratory analytical method detection limit.

NA indicates that the sample was not analyzed for that compound.

Bold indicates compound detected above MCP Method 1 GW-1 standard

- PFAS6 > 20 ppt and < 70 ppt
- PFAS6 > 70 ppt and < 90 ppt
- PFAS6 > 90 ppt

Table 5 - Private Well Analytical Data Summary

Compound Name				1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	Perfluorooctanoic Acid (PFOA)	Perfluoroheptanesulfonic Acid (PFHpS)	Perfluorononanoic Acid (PFNA)	Perfluorooctanesulfonic Acid (PFOS)	9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9CLPF3ONS)	1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	Perfluorodecanoic Acid (PFDA)	Perfluoroundecanoic Acid (PFUnA)	11-Chloroicosafuoro-3-Oxaundecane-1-Sulfonic Acid (11CL-PF3OUdS)	Perfluorododecanoic Acid (PFDoA)	PFAS6 (PFOA, PFOS, PFNA, PFHxS, PFHpA, and PFDA)
CAS No.				27619-97-2	335-67-1	375-92-8	375-95-1	1763-23-1	73606-19-6	39108-34-4	335-76-2	2058-94-8	83329-89-9	307-55-1	
Sample ID	Sampling Date	Lab Sample ID	Laboratory Analytical Method Detection Limit		20		20	20			20				20
Property AO-INF	11/30/2023	L2370808-02	1.83	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.97
Property BJ-1-INF	11/30/2023	L2370811-03	1.85	95.40	24.90	ND	12.50	ND	ND	1.87	ND	ND	ND	ND	93.80
Property CJ	11/29/2023	L2370803-01	1.84	ND	2.15	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.15
Property CK	11/30/2023	L2370809-01	1.79	60.70	3.10	ND	ND	ND	ND	ND	ND	ND	ND	ND	10.38
Property CO-INF	11/30/2023	L2370805-02	1.77	ND	9.94	ND	ND	2.77	ND	ND	ND	ND	ND	ND	18.51
Property CP	11/30/2023	L2370806-01	1.77	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Property GD	11/29/2023	L2370802-01	1.81	ND	1.89	ND	ND	ND	ND	ND	ND	ND	ND	ND	4.45
Property GO-1-INF	11/30/2023	L2370807-03	1.81	209.00	27.80	ND	4.97	2.66	ND	ND	ND	ND	ND	ND	99.53
Property I-INF	11/29/2023	L2370801-03	1.79	342.00	82.70	ND	8.76	ND	ND	5.97	ND	ND	ND	ND	242.46
Property S	11/30/2023	L2370810-01	1.84	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Property Y-INF	11/30/2023	L2370804-03	1.82	204.00	37.30	4.57	ND	62.60	ND	ND	ND	ND	ND	ND	521.80

Notes:

Units are in ng/L (parts per trillion)

ND indicates compound not detected above laboratory analytical method detection limit.

NA indicates that the sample was not analyzed for that compound.

Bold indicates compound detected above MCP Method 1 GW-1 standard

- PFAS6 > 20 ppt and < 70 ppt
- PFAS6 > 70 ppt and < 90 ppt
- PFAS6 > 90 ppt

Table 6 - POET System Performance Summary

Property ID	System Type	Sample Frequency	Date	Sum of 6 Target PFAS (ng/L)			Volume Treated ¹ (gallons)	Cumulative Volume Treated (gallons)
				Influent	Midpoint	Effluent		
Property B	2-GAC System	Semi-Annual	12/27/2018	1,181	33.6	<2.02	initial sample	0
			1/16/2019	923	<1.97	<1.91	445	445
			4/29/2019	69.3	<1.84	<1.77	516	961
			9/9/2019	471	<1.94	<1.94	34,657	35,618
			12/12/2019	91.2	<1.80	<2.01	1,867	37,486
			3/17/2020	84.9	<1.89	<1.95	1,426	38,911
			6/1/2020	104	<1.93	<2.03	3,319	42,230
			9/9/2020	197	<2.00	<1.99	14,421	56,651
			12/14/2020	60.4	<1.78	<1.88	4,744	61,395
			3/24/2021	48.5	<1.86	<1.83	3,502	64,897
			6/9/2021	337	<1.91	<1.82	30,419	95,315
			9/9/2021	268	<2.00	<2.00	116,302	211,618
			12/14/2021	640	<2.00	<2.00	55,005	266,622
			3/17/2022	242	<2.00	<2.00	961	268,676
			6/3/2022	163	<2.00	<2.00	51,487	320,163
			9/19/2022	44.6	<2.00	<2.00	155,597	475,760
			12/7/2022	36.8	<2.00	<2.00	21,436	497,196
			3/23/2023	98.9	<2.00	<2.00	1,497	498,693
6/7/2023	235.1	<1.83	<1.84	32,321	531,014			
9/21/2023	110.0	<1.80	<1.85	84,376	615,390			
Property J-1	2-GAC System	Semi-Annual	3/13/2019	1,762	<1.92	<1.91	96	96
			6/4/2019	1,270	<1.82	<1.92	5,457	5,553
			9/12/2019	873	<1.79	<1.89	11,783	17,336
			12/12/2019	1,010	<1.94	<2.11	6,454	23,789
			3/16/2020	1,445	<1.93	<2.16	6,182	29,971
			6/3/2020	932	<1.99	<2.13	5,636	35,607
			9/10/2020	639	<2.04	<2.02	8,636	44,242
			12/15/2020	991	<1.83	<1.82	6,973	51,216
			3/24/2021	1,166	<1.83	<1.94	6,558	57,773
			6/10/2021	1,036	<1.87	<2.00	4,155	61,928
			9/9/2021	1,490	<2.00		5,472	67,400
			12/14/2021	2,200	<2.00	<2.00	7,025	74,425
			3/3/2022	1,501	<2.00	<2.00	4,762	79,187
			6/6/2022	1,331	<2.00	<2.00	7,035	86,222
9/21/2022	675	<1.82	<1.92	9,219	95,440			
3/23/2023	784	27	<2.00	12,103	107,543			
6/20/2023	503	<1.87	<1.85	6,844	114,387			

Table 6 - POET System Performance Summary

Property ID	System Type	Sample Frequency	Date	Sum of 6 Target PFAS (ng/L)			Volume Treated ¹ (gallons)	Cumulative Volume Treated (gallons)
				Influent	Midpoint	Effluent		
Property J-2	2-GAC System	Semi-Annual	3/13/2019	1,762	<1.91	<1.83	264	264
			6/4/2019	1,270	2.54	<1.96	9,949	10,213
			9/12/2019	873	<1.86	<1.82	15,689	25,902
			12/12/2019	1,010	<1.86	<1.92	11,140	37,042
			3/16/2020	1,445	<1.90	<2.00	8,683	45,725
			6/3/2020	932	<1.88	<1.94	8,341	54,066
			9/10/2020	639	<2.26	<2.22	15,027	69,093
			12/15/2020	991	<1.85	<1.78	9,994	79,087
			3/24/2021	1,166	<1.86	<1.81	8,023	87,110
			6/10/2021	1,036	<1.88	<1.90	8,454	95,564
			9/9/2021	1,490	<2.00		9,877	105,440
			12/14/2021	2,200	<2.00	<2.00	10,050	115,491
			3/3/2022	1,501	<2.00	<2.00	6,259	121,749
			6/6/2022	1,331	<2.00	<2.00	8,632	130,382
			9/21/2022	675	<1.82	<1.78	12,980	143,362
3/23/2023	784	<2.00	<2.00	18,946	162,308			
6/20/2023	503	<1.83	<1.82	9,138	171,446			
Property I	2-GAC System	Semi-Annual	3/13/2019	957	<1.89	<1.83	90	90
			6/3/2019	575	<1.92	<1.86	5,041	5,131
			9/13/2019	910	<1.85	<1.86	9,248	14,379
			12/12/2019	528	<1.86	<1.82	6,022	20,401
			3/19/2020	161	<2.02	<1.97	5,390	25,791
			6/4/2020	342	<1.90	<1.89	5,645	31,436
			9/10/2020	444	<1.83	<2.03	10,333	41,769
			12/15/2020	797	<1.87	<1.88	7,113	48,882
			3/25/2021	635	<1.84	<1.77	6,373	55,256
			6/7/2021	514	<1.85	<1.71	6,375	61,630
			12/14/2021	629	<2.00	<2.00	13,834	75,464
			3/2/2022	400	<2.00	<2.00	3,586	79,050
			6/2/2022	339	<2.00	<2.00	5,844	84,895
			9/21/2022	210	<1.85	<1.76	9,489	94,383
			3/23/2023	133	<2.00	<2.00	12,605	106,988
6/15/2023	440	<1.82	<1.85	6,262	113,250			
11/29/2023	242	<1.87	<1.78	9,135	122,385			

Table 6 - POET System Performance Summary

Property ID	System Type	Sample Frequency	Date	Sum of 6 Target PFAS (ng/L)			Volume Treated ¹ (gallons)	Cumulative Volume Treated (gallons)
				Influent	Midpoint	Effluent		
Property F-1	2-GAC System	Semi-Annual	3/28/2019	1,110	<1.93	<1.86	86	86
			6/4/2019	1,178	<1.95	<1.89	1,960	2,046
			9/12/2019	803	<1.86	<1.86	2,953	4,999
			12/12/2019	1,745	<1.92	<1.80	1,977	6,976
			3/16/2020	2,157	<2.16	<1.87	2,013	8,989
			6/2/2020	1,042	<1.91	<1.82	1,480	10,468
			9/10/2020	1,676	<2.00	<2.01	3,308	13,776
			12/14/2020	3,359	<1.83	<1.83	570	14,346
			3/24/2021	3,306	<1.86	<1.83	267	14,613
			6/7/2021	2,325	<1.83	<1.87	4,134	18,747
			9/8/2021	2,374	<2.00		14,853	33,600
			12/14/2021	2,455	<2.00	<2.00	17,319	50,919
			6/10/2022	1,014	<2.00	<2.00	29,858	80,777
			9/21/2022	958	<1.78	<1.77	11,976	92,753
			12/7/2022	1,376	<2.00	<2.00	4,716	97,469
6/8/2023	1,060	<1.89	<1.85	6,988	104,457			
9/19/2023	847	<1.82	<1.81	120	104,577			
Property F-2	2-GAC System	Semi-Annual	6/20/2019	1,076	<1.79	<1.82	213	213
			9/12/2019	803	<1.82	<1.84	56	269
			12/12/2019	1,745	<1.73	<1.88	32	301
			6/2/2020	1,042	<1.97	<1.98	131	432
			9/10/2020	1,676	<2.00	<1.96	77	509
			12/14/2020	3,359	<1.81	<1.88	57	566
			3/24/2021	3,306	<1.81	<1.89	48	614
			6/7/2021	2,325	<1.84	<1.76	42	656
			9/8/2021	2,374	<2.00		89	744
			12/14/2021	2,455	<2.00	<2.00	96	840
			6/10/2022	1,014	<2.00	<2.00	220	1,061
			12/7/2022	1,376	<2.00	<2.00	131	1,192
			6/8/2023	1,060	<1.93	<1.88	174	1,366
9/19/2023	847	<1.74	<1.84	35	1,401			

Table 6 - POET System Performance Summary

Property ID	System Type	Sample Frequency	Date	Sum of 6 Target PFAS (ng/L)			Volume Treated ¹ (gallons)	Cumulative Volume Treated (gallons)
				Influent	Midpoint	Effluent		
Property Y	2-GAC System	Semi-Annual	6/4/2019	490	<1.95	<1.86	15,390	15,390
			9/9/2019	585	<1.88	<1.98	37,799	53,189
			12/12/2019	428	<1.90	<1.74	13,635	66,824
			3/16/2020	426	<2.02	<1.99	21,635	88,459
			6/3/2020	852	22.7	<1.77	13,300	101,758
			9/9/2020	471	<1.86	<1.97	17,649	119,407
			12/14/2020	790	<1.79	<1.80	16,444	135,851
			3/25/2021	601	<1.80	<1.77	13,505	149,356
			6/11/2021	911	3.26	<1.86	12,694	162,050
			9/9/2021	455	<2.00		20,706	182,756
			12/14/2021	312	<2.00	<2.00	9,546	192,301
			6/2/2022	514	<2.00	<2.00	15,142	207,443
			9/20/2022	402	<2.00	<2.00	21,092	228,535
			12/6/2022	529	<2.00	<2.00	14,836	243,371
			6/13/2023	208	<1.81	<1.83	226,840	470,211
9/19/2023	400	<1.81	<1.79	85,097	555,308			
11/30/2023	522	<1.82	<1.83	3,051	558,359			
Property AY	2-GAC System	Annual	4/29/2019	265	<1.90	<1.89	41	41
			6/19/2019	219	<1.86	<1.93	1,507	1,548
			9/12/2019	280	<2.09	<1.97	7,869	9,417
			12/12/2019	357	<1.96	<1.85	1,041	10,459
			3/17/2020	184	<2.07	<2.14	776	11,235
			6/1/2020	265	<1.97	<1.85	9	11,244
			9/9/2020	177	<2.17	<2.24	14,373	25,617
			6/9/2021	170	<1.94	<1.83	15,057	40,674
			9/8/2021	156	<2.00		29,906	70,580
			6/3/2022	113	<2.00	<2.00	4,662	75,242
			9/21/2022	111	<2.00	<2.00	27,988	103,229
			6/7/2023	81	<1.84	<1.79	not measured	not measured
9/21/2023	97	<1.84	<1.82	26,936	130,166			
Property CL	2-GAC System	Annual	3/14/2019	154	<1.94	<1.88	170	170
			9/12/2019	162	<1.82	<1.85	10,142	10,312
			3/18/2020	117	<2.08	<2.02	8,309	18,621
			10/22/2020	197	<1.95	<1.86	18,651	37,272
			6/9/2021	122	<1.84	<1.83	861	38,133
			9/8/2021	118	<2.00		4,747	42,880
			6/8/2022	86	<2.00	<2.00	13,302	56,182
			9/23/2022	97	<2.00	<2.00	8,724	64,905
			6/15/2023	99	<1.80	<1.86	64,028	128,934
9/20/2023	116	<1.82		4,999	133,933			

Table 6 - POET System Performance Summary

Property ID	System Type	Sample Frequency	Date	Sum of 6 Target PFAS (ng/L)			Volume Treated ¹ (gallons)	Cumulative Volume Treated (gallons)
				Influent	Midpoint	Effluent		
Property AX	2-GAC System	Annual	6/5/2019	86.9	<1.90	<1.80	3,611	3,611
			9/13/2019	95.8	<1.82	<1.92	11,539	15,150
			3/19/2020	136	<2.01	<1.77	16,073	31,223
			9/10/2020	45.6	<1.99	<1.74	25,796	57,019
			6/11/2021	43.8	<1.88	<1.89	108,361	165,380
			9/8/2021	45.0	<2.00		11,704	177,084
			6/1/2022	58.7	<2.00	<2.00	16,990	194,074
			9/19/2022	53.9	<2.00	<2.00	23,182	217,256
			6/14/2023	65.2	<1.86	<1.81	35,974	253,230
			9/20/2023	81.3	<1.75	<1.81	22,890	276,119
Property BJ-1	2-GAC System	Annual	3/14/2019	230	<1.92	<1.94	initial sample	0
			4/30/2019	141	<1.85	<1.85	9,015	9,015
			9/9/2019	151	<1.77	<1.78	22,077	31,092
			3/18/2020	183	<1.92	<1.95	35,819	66,911
			9/9/2020	138	<1.95	<2.00	36,076	102,987
			6/10/2021	221	<1.85	<1.87	57,303	160,290
			9/9/2021	255	<2.00		20,635	180,924
			6/16/2022	216	<2.00	<2.00	45,843	226,767
			9/19/2022	110	7.81	<2.00	11,431	238,198
			11/30/2023	94	4.37	<1.84	62,034	300,232
Property BJ-2	1-GAC System	Annual	3/14/2019	230		<1.78	1,239	1,239
			4/30/2019	141		<1.92	10	1,249
			9/9/2019	151		<1.79	691	1,940
			3/18/2020	183		<2.11	15,728	17,668
			9/9/2020	138		<1.84	9,876	27,544
			6/10/2021	221		<1.84	15,586	43,130
			9/9/2021	255		<2.00	4,670	47,800
			6/16/2022	216		<2.00	16,254	64,054
			9/19/2022	110		<2.00	6,325	70,378
			11/30/2023	94		<1.84	23,958	94,336
Property C	2-GAC System	Annual	3/28/2019	41.3	<1.89	<1.86	524	524
			9/9/2019	136	10.3	<1.92	34,666	35,190
			12/12/2019	178	8.32	<2.07	21,660	56,851
			3/16/2020	113	12.7	<2.00	23,483	80,333
			9/10/2020	71.9	<2.30	<2.08	51,084	131,418
			6/10/2021	90.3	<1.89	<1.87	102,809	234,226
			9/8/2021	83.5	<2.00		34,174	268,400
			6/1/2022	28.2	<2.00	<2.00	67,528	335,928
			9/21/2022	49.4	<2.00	<2.00	10,037	345,965
			6/20/2023	13.8	<1.83	<1.78	56,633	402,599
			9/20/2023	47.0	<1.82	<1.79	13,974	416,573

Table 6 - POET System Performance Summary

Property ID	System Type	Sample Frequency	Date	Sum of 6 Target PFAS (ng/L)			Volume Treated ¹ (gallons)	Cumulative Volume Treated (gallons)
				Influent	Midpoint	Effluent		
Property BO-1	2-GAC System	Annual	4/29/2019	285	<1.83	<1.90	194	194
			9/10/2019	286	<1.96	<1.85	14,406	14,600
			6/5/2020	381	<1.82	<1.84	error with meter	error with meter
			9/9/2020	383	<1.90	<1.89	error with meter	error with meter
			6/7/2021	211	<1.86	<1.88	10,178	24,778
			9/8/2021	196	<2.00		22,583	47,361
			6/16/2022	117	<2.00	<2.00	8,443	55,804
			9/19/2022	87	<2.00	<2.00	22,943	78,746
			6/16/2023	221	<1.84	<1.83	18,533	97,279
9/19/2023	129	<1.80	<1.83	error with meter	error with meter			
Property BO-2	2-GAC System	Annual	4/29/2019	265	<1.86	<1.90	40	40
			9/10/2019	286	<1.86	<1.84	4,198	4,237
			6/5/2020	381	<2.04	<2.03	1,045	5,283
			9/9/2020	383	<2.24	<1.90	10,692	15,974
			6/7/2021	211	<1.93	<1.92	956	16,930
			9/8/2021	196	<2.00		6,015	22,945
			6/16/2022	117	<2.00	<2.00	2,842	25,786
			9/19/2022	87	<2.00	<2.00	3,531	29,317
			6/16/2023	221	<1.79	<1.77	2,402	31,719
9/19/2023	129	<1.82	<1.74	4,993	36,712			
Property L	2-GAC System	Annual	3/13/2019	164	<1.84	<1.95	188	188
			9/12/2019	195	<1.80	<1.78	24,001	24,189
			3/16/2020	206	<1.96	<2.04	5,259	29,447
			9/8/2020	244	<1.84	<1.89	39,172	68,620
			6/8/2021	287	324	303	11,820	80,440
			6/29/2021	272	NM	<1.82	1,991	82,430
			9/9/2021	252	NM	<2.00	18,563	100,993
			6/3/2022	210	204	<2.00	22,254	123,248
			9/19/2022	166	191	<2.00	25,877	149,125
12/7/2022	248	<2.00	<2.00	193	149,318			
9/20/2023	208	<1.82	<1.76	23,753	173,071			
Property DA	2-GAC System	Annual	4/29/2019	373	<1.78	<1.83	294	294
			9/9/2019	350	<1.94	<1.82	64,205	64,499
			9/8/2020	258	<1.81	<1.90	5,301	69,799
			12/14/2020	611	<1.85	<1.82	15,212	85,011
			6/9/2021	337	<1.88	<1.86	7,922	92,933
			9/9/2021	312	<2.00		19,833	112,766
			6/3/2022	257	<2.00	<2.00	8,329	121,095
			9/20/2022	197	<2.00	<2.00	not measured	not measured
			6/8/2023	102	<1.79	<1.78	38,396	159,490
9/22/2023	37	<1.82	<1.77	27,313	186,803			

Table 6 - POET System Performance Summary

Property ID	System Type	Sample Frequency	Date	Sum of 6 Target PFAS (ng/L)			Volume Treated ¹ (gallons)	Cumulative Volume Treated (gallons)
				Influent	Midpoint	Effluent		
Property G	2-GAC System	Annual	6/20/2019	140	<1.88	<1.86	153	153
			6/1/2020	185	<2.02	<1.82	43,013	43,166
			12/15/2020	364	<1.89	<1.89	42,725	85,890
			6/9/2021	177	<1.89	<1.85	6,263	92,153
			5/31/2022	98	<2.00	<2.00	31,257	123,409
			9/23/2022	115	3.00	<2.00	27,242	150,652
			6/9/2023	184	<1.83	<1.85	4,759	155,411
Property AS	1-GAC System	Annual	6/4/2019	158		<1.85	3,110	3,110
			6/2/2020	68.8		<1.91	34,791	37,901
			10/22/2020	85.0		<1.85	21,582	59,482
			6/8/2021	61.1		<1.86	15,083	74,565
			6/13/2022	36.2		<2.00	25,764	100,329
			6/29/2023	59.3		<1.82	22,820	123,149
Property AC	1-GAC System	Annual	3/14/2019	36.5		<2.23	576	576
			6/3/2020	37.1		<2.08	8,015	8,591
			6/11/2021	95.4		<1.98	6,688	15,279
			6/3/2022	156		<2.00	6,401	21,681
			6/21/2023	100		<1.84	6,868	28,548
			9/21/2023	157		<1.86	1,650	30,198
Property AW	1-GAC System	Annual	9/11/2020	72.6		5.77	161	161
			10/22/2020	27.3		3.05	4,017	4,178
			12/14/2020	20.4		<1.86	not measured	not measured
			6/7/2021	19.3		<1.94	16,251	20,429
			9/9/2021	18.4		<2.00	8,595	29,024
			6/8/2022	14.0		<2.00	13,755	42,780
			9/19/2022	20.6		<2.00	12,709	55,489
			6/19/2023	27.4		<1.78	11,992	67,481
			6/23/2023	34.4		<1.80	631	68,112
9/21/2023	30.6		<1.80	12,213	80,325			
Property AL	2-GAC System	Annual	4/30/2019	106		<1.82	8,586	8,739
			3/17/2020	75.9		<1.89	131,792	140,531
			9/10/2020	79.2		<1.98	116,962	257,493
			6/10/2021	78.5		94.9	72,229	329,722
			6/29/2021	80.5		20.4	19,360	349,082
			10/19/2021	85.4		<2.00	3,643	395,207
			6/8/2022	44.4	<2.00	12.2	20,431	415,638
			9/23/2022	76.4	8.31	<2.00	20,269	456,176
			6/20/2023	30.6	<1.82	<1.83	20,370	476,647
9/22/2023	98.0	<1.83	<1.93	12,465	481,207			

Table 6 - POET System Performance Summary

Property ID	System Type	Sample Frequency	Date	Sum of 6 Target PFAS (ng/L)			Volume Treated ¹ (gallons)	Cumulative Volume Treated (gallons)
				Influent	Midpoint	Effluent		
Property CF	1-GAC System	Annual	3/28/2019	46.6		<1.84	86	86
			3/18/2020	26.0		<2.01	33,703	33,789
			6/10/2021	27.1		<1.84	49,803	83,592
			6/2/2022	21.4		<2.00	68,243	151,835
Property AU	1-GAC System	Annual	3/14/2019	<2.18		<1.75	463	463
			3/17/2020	26.6		<1.87	116,331	116,794
			6/11/2021	47.7		<1.83	161,516	278,310
			6/14/2022	36.5		<2.00	109,563	387,873
Property U	1-GAC System	Annual	3/15/2019	9.26		<1.90	263	263
			3/16/2020	<1.90		<1.90	33,824	34,087
			6/8/2021	<1.84		<1.86	45,408	79,496
			6/7/2022	<1.85		<2.00	39,616	119,112
Property BZ	1-GAC System	Annual	6/6/2023	21.0		<1.82	23,348	142,460
			3/14/2019	18.3		<1.93	155	155
			6/3/2020	11.1		<1.86	37,769	37,924
			6/11/2021	30.7		<1.81	45,123	83,047
Property Z	1-GAC System	Annual	6/7/2022	39.0		<2.00	39,617	122,664
			6/21/2023	94.6		<1.83	35,454	158,118
			3/14/2019	77.6		<1.92	33	188
			3/16/2020	56.6		<2.01	7,387	7,575
Property BS	1-GAC System	Annual	6/11/2021	41.2		<1.92	12,415	19,990
			6/2/2022	29.0		<2.00	9,577	29,567
			6/13/2023	27.0		<1.77	8,473	38,040
			7/11/2019	32.0		<1.75	128	128
Property E	1-GAC System	Annual	3/18/2020	46.8		<1.95	1,590	1,718
			6/9/2021	28.9		<1.85	8,753	10,471
			5/31/2022	19.2		<2.00	4,944	15,414
			6/7/2023	77.7		<1.84	3,055	18,469
Property P	1-GAC System	Annual	4/30/2019	107		<1.98	1,443	1442.5
			3/18/2020	32.5		<1.97	18,902	20,344
			6/9/2021	50.7		<1.83	25,003	45,347
			6/3/2022	29.7		<2.00	53,411	98,758
Property P	1-GAC System	Annual	6/6/2023	60.7		<1.80	46,606	145,364
			6/3/2019	34.8		<1.82	394	394
			3/16/2020	38.8		<1.96	27,605	27,999
			6/7/2021	27.9		<1.90	30,378	58,377
Property P	1-GAC System	Annual	6/7/2022	26.4		<2.00	15,596	73,973
			6/16/2023	35.0		<1.81	32,044	106,017

Table 6 - POET System Performance Summary

Property ID	System Type	Sample Frequency	Date	Sum of 6 Target PFAS (ng/L)			Volume Treated ¹ (gallons)	Cumulative Volume Treated (gallons)
				Influent	Midpoint	Effluent		
Property X	1-GAC System	Annual	4/30/2019	66.8		<1.97	269	269
			3/17/2020	34.4		<2.20	12,468	12,737
			6/9/2021	29.9		<2.08	13,693	26,429
			6/7/2022	32.4		<2.00	13,764	40,193
			6/22/2023	26.0		<1.85	17,365	57,558
Property BE	1-GAC System	Annual	6/17/2019	10.6		<1.87	2,360	2,360
			3/17/2020	18.1		<1.92	14,107	16,467
			6/8/2021	11.8		<1.89	25,234	41,701
			6/13/2022	9.8		<2.00	16,722	58,423
			6/14/2023	14.5		<1.78	15,918	74,341
Property DG	1-GAC System	Annual	4/29/2019	37.1		<1.78	138	138
			3/17/2020	15.0		<2.01	840	978
			6/7/2021	21.0		<1.87	19,364	20,342
			5/31/2022	76.4		<2.00	17,304	37,646
			6/5/2023	65.5		<1.76	17,303	54,949
Property H	1-GAC System	Annual	4/29/2019	20.0		<1.89	3,596	3,596
			3/17/2020	2.20		<2.00	39,318	42,913
			6/9/2021	<1.93		<1.88	61,660	104,573
			6/1/2022	<1.89		<2.00	41,167	145,740
			6/22/2023	5.02		<1.81	53,739	199,479
Property EM-1	1-GAC System	Annual	6/19/2019	19.4		<1.85	253	253
			3/18/2020	17.4		<1.92	21,081	21,334
			6/9/2021	35.1		<1.88	5,951	27,285
			6/6/2022	26.8		<2.00	22,074	49,359
			6/19/2023	18.1		<1.83	25,014	74,373
Property EM-2	1-GAC System	Annual	3/2/2022	36.2		<2.00	87	87
			6/6/2022	26.8		<2.00	6,847	7,021
			6/19/2023	18.1		<1.80	26,799	40,754
Property ED	1-GAC System	Annual	7/18/2019	36.1		<1.86	initial sample	0
			7/16/2020	42.2		<1.90	13,010	13,010
			6/9/2021	60.8		<1.94	6,148	19,158
			6/4/2022	41.8		<2.00	13,183	32,341
			6/2/2023	82.9		<1.90	141,931	174,272
Property EY	1-GAC System	Annual	6/20/2019	37.7		<1.91	257	257
			6/4/2020	28.5		<1.85	22,994	23,251
			6/7/2021	11.6		74	49,479	72,730
			6/29/2021	57.8		<1.82	167	72,897
			6/15/2022	69.0		<2.00	48,527	121,424
			6/23/2023	65.2		<1.79	53,766	175,190

Table 6 - POET System Performance Summary

Property ID	System Type	Sample Frequency	Date	Sum of 6 Target PFAS (ng/L)			Volume Treated ¹ (gallons)	Cumulative Volume Treated (gallons)
				Influent	Midpoint	Effluent		
Property FF	1-GAC System	Annual	6/20/2019	34.4		<1.83	252	252
			6/1/2020	9.30		<1.74	21,630	21,882
			6/9/2021	15.8		11	19,360	41,242
			6/29/2021	10.0		<1.88	697	41,939
			6/8/2022	12.7		<2.00	19,119	61,058
			6/30/2023	45.1		<1.80	20,234	81,292
Property FG	1-GAC System	Annual	6/20/2019	42.1		<1.86	205	205
			7/16/2020	71.8		<2.07	14,692	14,897
			6/11/2021	15.8		<1.82	17,158	32,054
			6/9/2022	13.8		17.0	system bypass	system bypass
			8/4/2022	37.5		<2.0	5,916	37,971
Property FK	1-GAC System	Annual	9/13/2019	10.0		<1.81	14,831	14,831
			10/19/2021	22.9		<2.00	14,847	52,190
			5/31/2022	<1.84		<2.00	3,192	55,381
			6/20/2023	24.4		<1.82	15,609	70,990
Property FO	1-GAC System	Annual	6/20/2019	13.5		<1.97	152	152
			8/4/2022	<1.95		<2.00	6,647	6,799
			6/14/2023	2.5		<1.81	5,454	12,252
Property FX	1-GAC System	Annual	3/16/2020	59.5		<2.02	initial sample	0
			6/8/2021	40.0		28.1	24,318	24,318
			6/29/2021	28.5		<1.73	170	24,488
			6/3/2022	35.2		<2.00	22,251	46,739
			6/8/2023	17.3		<1.81	27,354	74,092
Property AO	1-GAC System	Annual	7/17/2020	12.9		3.78	699	699
			3/24/2021	7.60		5.83	76,467	77,166
			6/9/2021	14.4		<1.86	18,068	95,234
			5/31/2022	12.7		2.74	92,855	188,089
			11/30/2023	2.0		<1.83	122,314	310,403
Property EK	1-GAC System	Annual	7/17/2020	57.1		<2.00	309	309
			6/9/2021	16.4		<1.91	28,864	29,172
			6/2/2022	8.64		5.62	51,689	80,861
			6/9/2023	5.67		<1.77	35,593	116,454
Property ZZ	1-GAC System	Annual	6/3/2020	21.3		<1.92	no meter	no meter
			6/10/2021	24.1		<1.84	no meter	no meter
			6/8/2022	24.3		2.22	no meter	no meter
			8/4/2022	20.1		<2.00	no meter	no meter
			6/9/2023	19.0		<1.79	no meter	no meter
Property CB	1-GAC System	Annual	10/23/2020	26.0		<1.80	423	423
			6/10/2021	4.01		<1.89	37,288	37,711
			6/13/2022	4.00		<2.00	83,348	121,059
			6/20/2023	2.78		<1.83	199,840	320,899

Table 6 - POET System Performance Summary

Property ID	System Type	Sample Frequency	Date	Sum of 6 Target PFAS (ng/L)			Volume Treated ¹ (gallons)	Cumulative Volume Treated (gallons)
				Influent	Midpoint	Effluent		
Property GO-1	2-GAC System	Annual	8/4/2022	64.6	<2.00	<2.00	9,876	9,876
			6/15/2023	73.7	17.0	10.8	82,930	92,806
			9/20/2023	66.9	31.0	4.0	27,324	120,131
			11/30/2023	99.5	<1.78	<1.80	21,259	141,390
Property CS	2-GAC System	Annual	9/22/2022	2.11	23.7	<2.00	initial sample	0
			6/6/2023	10.7	10.5	<1.84	8,683	8,683
Property AT	2-GAC System	Annual	10/24/2022	9.07	45.4	<2.00	initial sample	0
			6/9/2023	14.7	2.3	<1.82	14,406	14,406
Property GV	2-GAC System	Annual	6/30/2023	35.7	<1.92	<1.78	1,846	1,846
Property CO	1-GAC System	Annual	11/30/2023	18.5		<1.79	954	954

Notes:

1. < indicates PFAS6 not detected above laboratory detection limits.
2. Volume treated measured at treatment system flow meter and indicates the volume of water treated since the previous sampling event.

Table 7 - Quality Control Analytical Data

Location: Sample Name: Laboratory: Laboratory I.D.: Laboratory Analytical Detection Limit: Sample Date: Consultant:	MVY FIELD BLANK-1 Alpha L2370799-07 1.89 ng/L 11/30/2023 Tetra Tech
Perfluorinated Alkyl Acids by EPA 533	
Perfluorobutanoic Acid (PFBA)	<1.89
Perfluoro-3-Methoxypropanoic Acid (PFMPA)	<1.89
Perfluoropentanoic Acid (PFPeA)	<1.89
Perfluorobutanesulfonic Acid (PFBS)	<1.89
Perfluoro-4-Methoxybutanoic Acid (PFMBA)	<1.89
Perfluoro(2-Ethoxyethane) Sulfonic Acid (PFEEESA)	<1.89
Nonafluoro-3,6-Dioxaheptanoic Acid (NFDHA)	<1.89
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	<1.89
Perfluorohexanoic Acid (PFHxA)	<1.89
Perfluoropentanesulfonic Acid (PFPeS)	<1.89
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	<1.89
Perfluoroheptanoic Acid (PFHpA)	<1.89
Perfluorohexanesulfonic Acid (PFHxS)	<1.89
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	<1.89
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	<1.89
Perfluorooctanoic Acid (PFOA)	<1.89
Perfluoroheptanesulfonic Acid (PFHpS)	<1.89
Perfluorononanoic Acid (PFNA)	<1.89
Perfluorooctanesulfonic Acid (PFOS)	<1.89
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	<1.89
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	<1.89
Perfluorodecanoic Acid (PFDA)	<1.89
Perfluoroundecanoic Acid (PFUnA)	<1.89
11-Chloroeicosafluoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	<1.89
Perfluorododecanoic Acid (PFDoA)	<1.89

Notes:

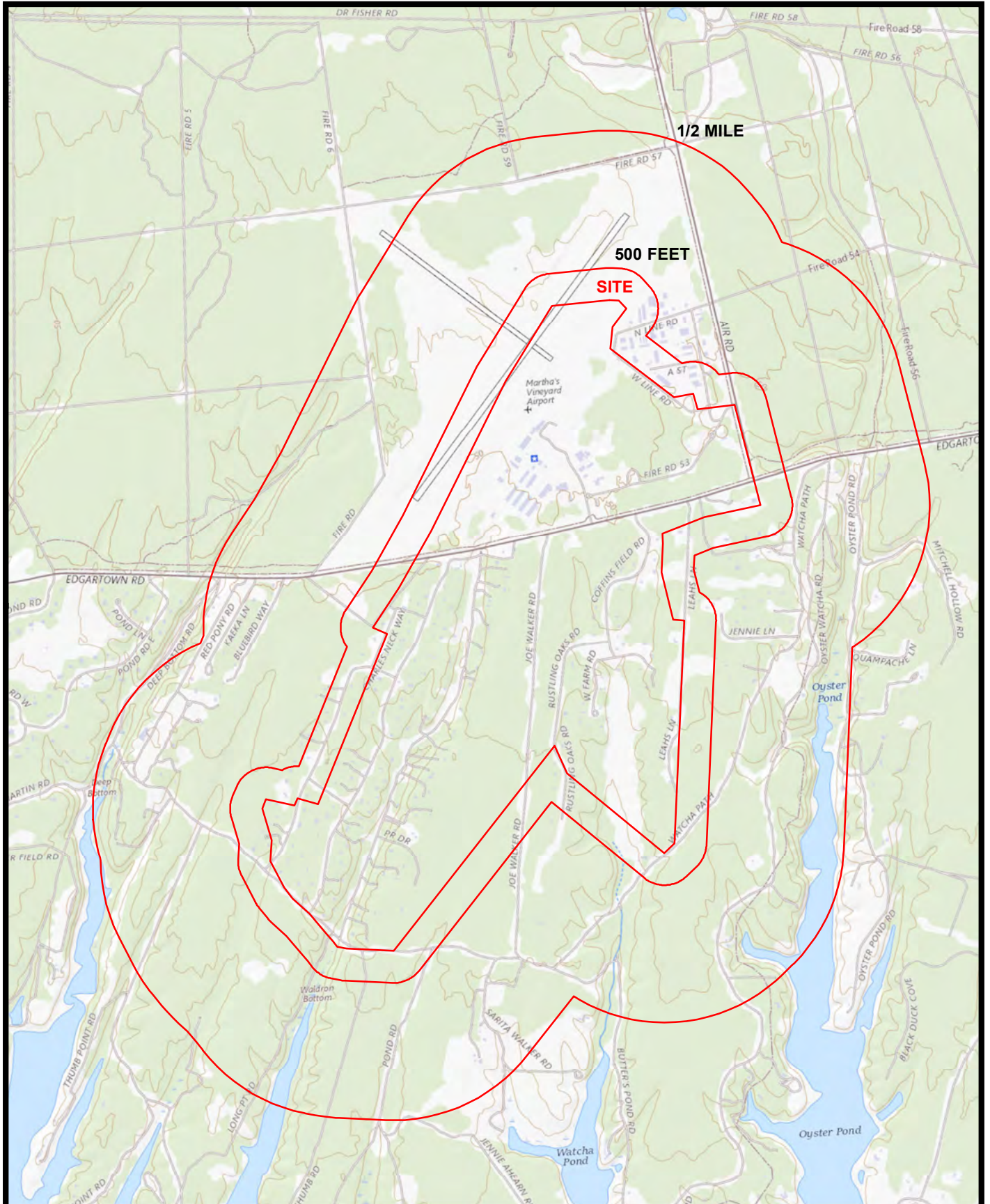
Units are in ng/L (parts per trillion)

< or ND indicates compound not detected above the laboratory analytical method detection limit

Blank indicates compound was not reported by the analytical method

RPD indicates relative percent difference

NC indicates RPD not calculated since compounds were not detected.



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100 Nickerson Road
Marlborough, MA 01752
Phone (508) 786-2200 Fax: (508) 786-2201



0 1,000 2,000
Feet

"Information obtained from
USGS The National Map
Data Refreshed, May 2020"

Source:USGS

Martha's Vineyard Airport

Martha's Vineyard Airport
West Tisbury,
Massachusetts

Site Locus Plan

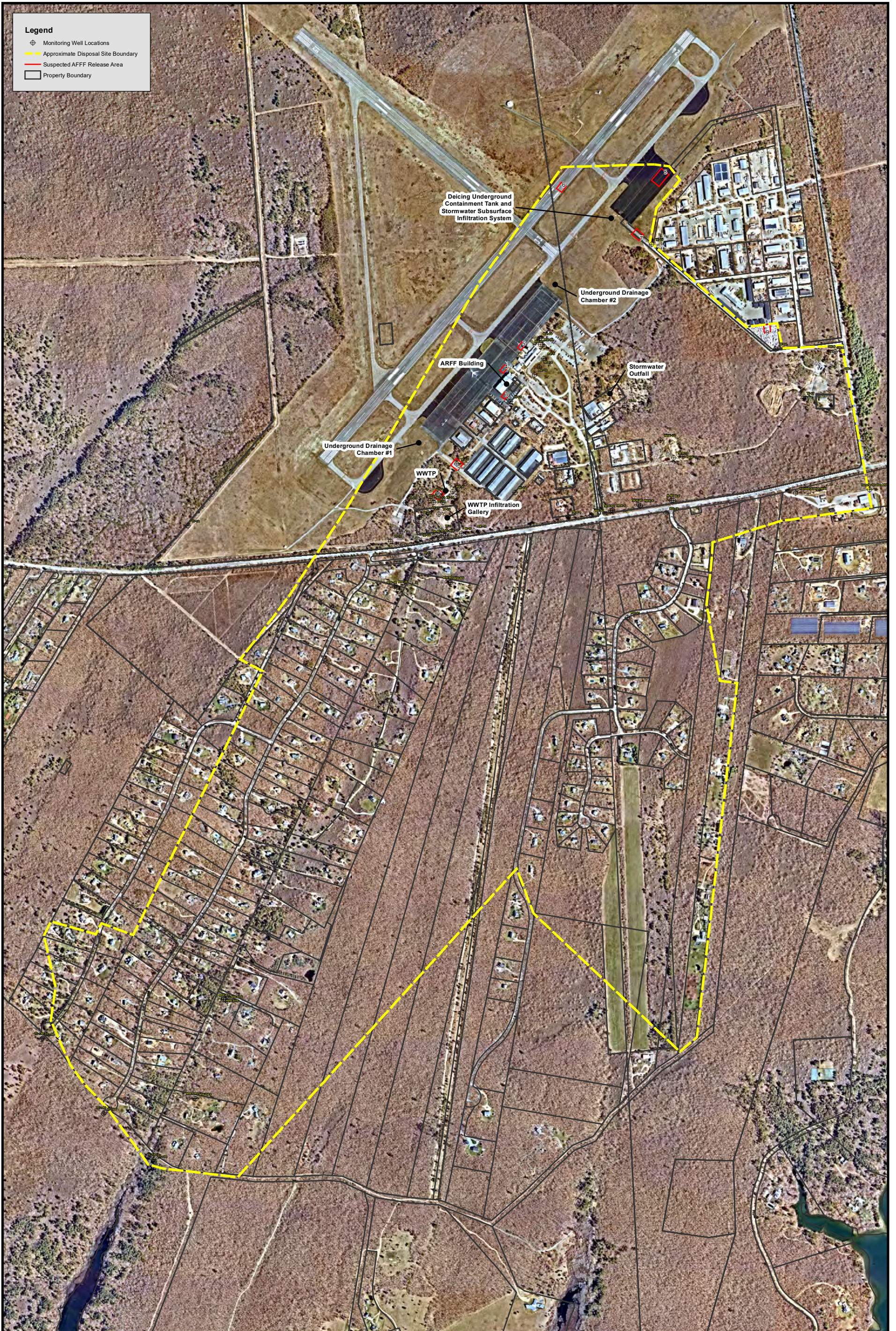
Project No.: 143-3953-22001

Date: November 17, 2022

Designed By: HSK

Figure

1



5/1/2024 10:13:03 AM - P:\3953\143-3953-19007\CAD\ISHEETFILES\PLUMESTOP PILOT TEST FIGURE 2024.5.01_MULTI VIEWPORT.DWG - RANIERI, ALEX

1 2 3 4 5 6

E
D
C
B
A

Area 1 Source Area

Area 2 - TT-2

Hadley Hanger Area

LEGEND:

- Existing monitoring wells
- Soil sample (0-0.5')
- PlumeStop Pilot
- 2% Fluoro-Sorb 100, 1' excavation or topsoil
- 3% Fluoro-Sorb 100, 2' excavation depth
- Inferred groundwater flow direction

N

0 30' 60' 120'

SCALE: 1" = 60'

Aerial Source: Nearmap dated April 20, 2022.



TETRA TECH

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100 Nickerson Road
Marlborough, MA 01752
Phone: (508) 786-2200 Fax: (508) 786-2201

MARK	DATE	DESCRIPTION	BY

Martha's Vineyard Airport

Martha's Vineyard Airport
West Tisbury, Massachusetts

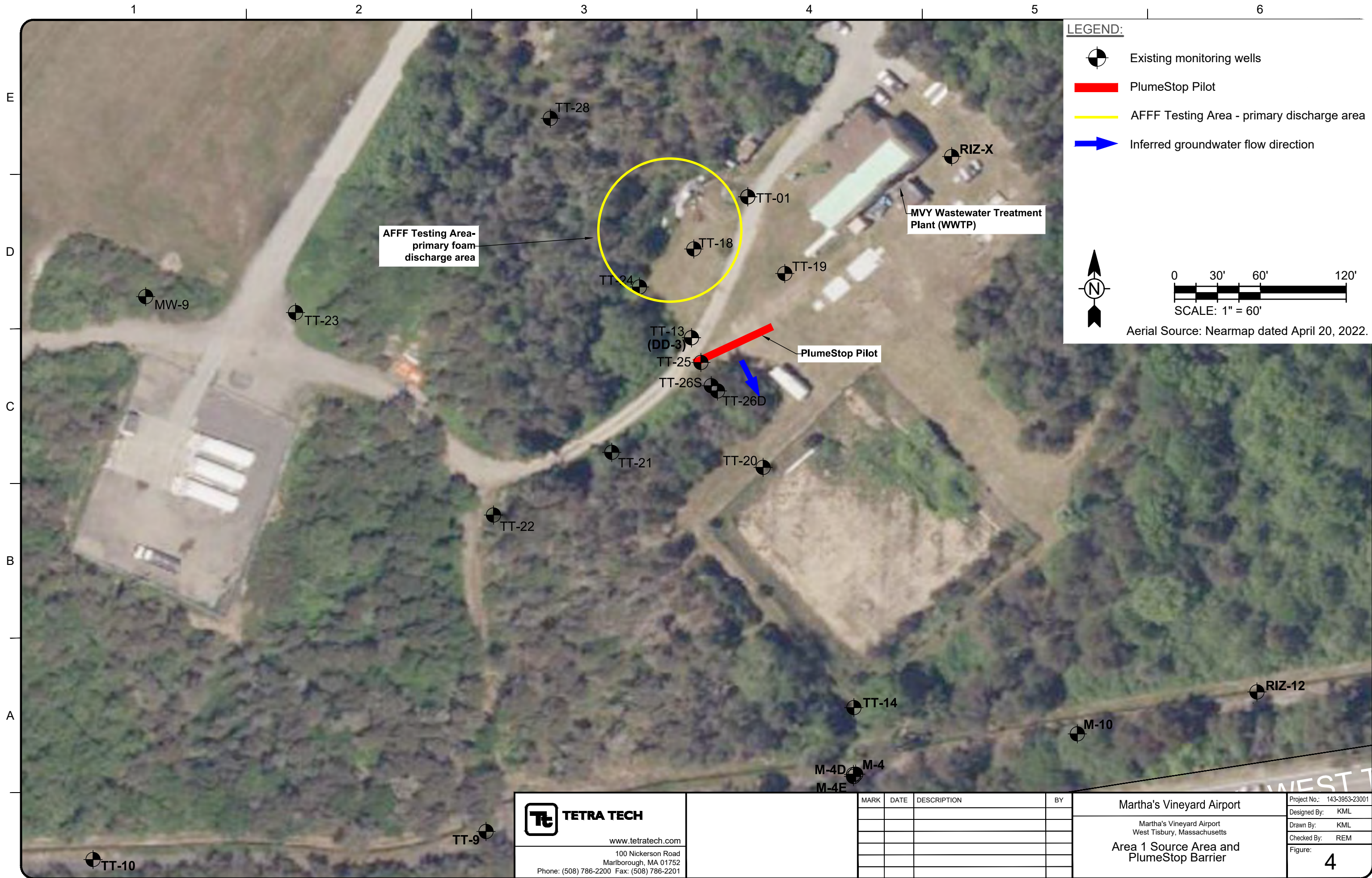
AFFF Source Area Stabilization Plans

Project No.: 143-3953-23001
 Designed By: KML
 Drawn By: KML
 Checked By: REM
 Figure: **5**

Bar Measures 1 inch

Copyright: Tetra Tech

5/6/2024 9:25:44 AM - P:\3953\143-3953-19007\CAD\SHEETFILES\PLUMESTOP PILOT TEST FIGURE_4_05.06.2024.DWG - KING, HOLLY



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 Phone: (508) 786-2200 Fax: (508) 786-2201

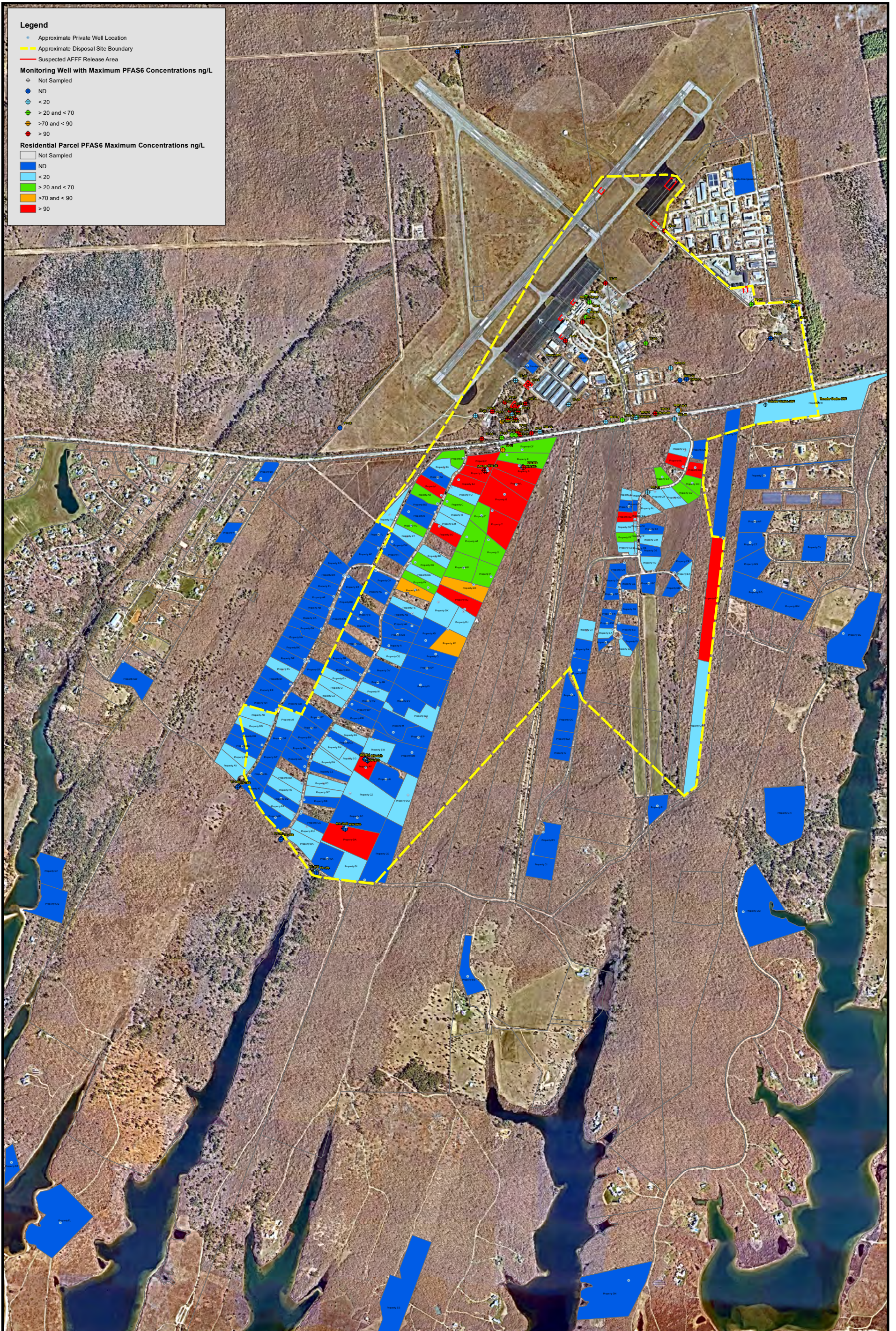
MARK	DATE	DESCRIPTION	BY

Martha's Vineyard Airport
 Martha's Vineyard Airport
 West Tisbury, Massachusetts
**Area 1 Source Area and
 PlumeStop Barrier**

Project No.: 143-3953-23001
 Designed By: KML
 Drawn By: KML
 Checked By: REM
 Figure: **4**

Copyright: Tetra Tech

Bar Measures 1 inch



Legend

- Approximate Private Well Location
- Approximate Disposal Site Boundary
- Suspected AFFF Release Area

Monitoring Well with Maximum PFAS6 Concentrations ng/L

- Not Sampled
- ND
- < 20
- > 20 and < 70
- > 70 and < 90
- > 90

Residential Parcel PFAS6 Maximum Concentrations ng/L

- Not Sampled
- ND
- < 20
- > 20 and < 70
- > 70 and < 90
- > 90

TETRA TECH

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Marlborough, MA 01752
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0 625 1,250 1,875 2,500 Feet

Source: MassGIS, USGS
Nearmaps dated April 9, 2021

Note: For locations not sampled from January 2023 to November 2023, the most recent PFAS6 concentration is shown.

Martha's Vineyard Airport
Martha's Vineyard Airport
West Tisbury, Massachusetts

Sampling Locations with Maximum PFAS6 Concentrations from January 2023 to November 2023

Project No.:	143-3953-23004
Date:	May 6, 2024
Designed By:	HSK
Figure	5

Appendix A

L.S.P. Statement of Limitations and Conditions

Statement of Limitations and Conditions

Attachment to Opinion of Massachusetts Licensed Site Professional

Tetra Tech, Inc.

Name of Licensed Site Professional:	Ronald E. Myrick, Jr., P.E., L.S.P.
LSP Registration Number:	2715
Date of Opinion:	May 20, 2024
Client to Whom Opinion was Rendered:	Martha's Vineyard Airport Commission
Date of Agreement between Tetra Tech and Client pursuant to which Opinion was Rendered:	April 15, 2023
Response Tracking No./Site No.:	4-0027571

This Statement of Limitations and Conditions is an integral part of, and is incorporated by reference into, the Opinion of Massachusetts Licensed Site Professional referenced above.

Limitations

1. Purpose of Opinion

- A. This Opinion is being provided in compliance with the requirements set forth in the Massachusetts Contingency Plan ("MCP"), 310 CMR 40.0000 et seq. Specifically, the LSP has prepared this Opinion at the request of the Client identified above as part of a Phase IV Status Report submittal. This stated purpose has been a significant factor in determining the scope and level of services required to render this Opinion.
- B. Should the purpose for which this Opinion is to be used change, this Opinion shall no longer be valid.

2. General

- A. This Opinion was prepared for the sole and exclusive use of the Client, subject to the provisions of the MCP. No other party is entitled to rely in any way on the conclusions, observations, specifications, or data contained herein without the express written consent of Tetra Tech, Inc. and the LSP who rendered this opinion. Any use of this Opinion by anyone other than Client, or any use of this Opinion by Client or others for any purpose other than the stated purpose set forth above, without the LSP's review and the written authorization of Tetra Tech, Inc. and the LSP, shall be at the user's sole risk, and neither Tetra Tech, Inc. nor the LSP shall have any liability or responsibility therefor.
- B. This Opinion was prepared pursuant to an Agreement between Tetra Tech, Inc. and the Client referenced above which defines the scope of work and sets out agreements regarding waivers of consequential damages, limitations on liability, and other important conditions and restrictions

pursuant to which the Opinion is rendered. All uses of the Opinion are subject to and deemed acceptance of the conditions and restrictions contained in such Agreement. A copy of the Agreement or relevant excerpts from the Agreement will be made available upon requests to any authorized person seeking to use the Opinion.

3. Scope of Services

The observations and conclusions described in this Opinion are based solely on the Services provided pursuant to the Agreement with the Client and any approved additional services authorized by Client. Without limitation of any other applicable limitations or conditions, neither Tetra Tech, Inc. nor the LSP shall be liable for the existence of any condition, the discovery of which would have required the performance of services not authorized under the Agreement. To the best of the knowledge and belief of Tetra Tech, Inc. and the LSP who signed this Opinion, no inquiry of an attorney-at-law having being made, no laws, regulations, orders, permits or approvals are applicable to the response actions to which this opinion relates except, if and to the extent applicable, M.G.L. c. 21A, Sections 19-19J, 309 CMR, M.G.L. c. 21 E and 310 CMR 40.0000. Accordingly, this opinion is not intended to and does not address compliance with any other laws, regulation, orders, permits or approvals.

4. Changed Circumstances

The passage of time may result in changes in technology, economic conditions or regulatory standards, manifestations of latent conditions, or the occurrence of future events which would render this Opinion inaccurate or otherwise inapplicable. Neither Tetra Tech, Inc. nor the LSP shall be liable or responsible for the consequences of any such changed circumstances or conditions on the accuracy of this Opinion. In addition, under no circumstances shall the Client nor any other person or entity rely on the information or conclusions contained in this Opinion after six months from its date of submission without the express written consent of Tetra Tech, Inc. and the LSP. Reliance on the Opinion after such period of time shall be at the user's sole risk.

5. Should Tetra Tech, Inc. or the LSP be required or requested to review or authorize others to use this Opinion after its date of submission, Tetra Tech, Inc. shall be entitled to additional compensation at then existing rates or such other terms as may be agreed upon between Tetra Tech, Inc. and the Client. Nothing herein contained shall be deemed to require Tetra Tech, Inc. or the LSP to undertake any such review or authorize others to use this Opinion.

6. The conclusions stated in this Opinion are based upon:

- Visual inspection of existing physical conditions;
- Review and interpretation of site history and site usage information which was made available or obtained within the scope of work authorized by the Client;
- Information provided by the Client;
- Information and/or analyses for designated substances or parameters provided by an independent testing service or laboratory on a limited number of samples; and
- A limited number of subsurface explorations made on dates indicated in documentation supporting this Opinion;

upon which the LSP has relied and presumed accurate, and upon which the LSP is entitled to reasonably rely. The LSP was not authorized and did not attempt to independently verify the accuracy

or completeness of information or materials received from the Client and/or from laboratories and other third parties during the performance of its services. Neither Tetra Tech, Inc. nor the LSP shall be liable for any condition, information, or conclusion, the discovery of which required information not available to the LSP or for independent investigation of information provided to the LSP by the Client and/or independent third parties.

7. This Opinion is rendered for the limited purpose stated above, and is not and should not be deemed to be an opinion concerning the compliance of any past or present owner or operator of the site with any federal, state or local law or regulation. No warranty or guarantee, whether express or implied, is made by this opinion, and any implied warranties of merchantability or fitness for a particular purpose are expressly disclaimed. Without limiting the generality of the foregoing, no warranty or guarantee is made that all contamination at a site or sources or contamination has been detected or identified, that any action or recommended action will achieve all of its objectives, or that this Opinion or any action as to which this Opinion relates will be upheld by any audit conducted by the DEP or any other party.

P:\3953\143-3953-22001_PFAS FY2023\Docs\Reports\IRA_SR13\Appendices\LSP_Limitations.doc

Appendix B
Laboratory Certificates of Analysis



ANALYTICAL REPORT

Lab Number:	L2370818
Client:	Tetra Tech Rizzo Marlborough Technology Park 100 Nickerson Road Marlborough, MA 01752
ATTN:	Ron Myrick
Phone:	(508) 786-2200
Project Name:	MV AIRPORT
Project Number:	143-3953-23004
Report Date:	12/26/23

The original project report/data package is held by Alpha Analytical. This report/data package is paginated and should be reproduced only in its entirety. Alpha Analytical holds no responsibility for results and/or data that are not consistent with the original.

Certifications & Approvals: MA (M-MA030), NH NELAP (2062), CT (PH-0825), DoD (L2474), FL (E87814), IL (200081), IN (C-MA-04), KY (KY98046), LA (85084), ME (MA00030), MD (350), MI (99110), NJ (MA015), NY (11627), NC (685), OH (CL106), OR (MA-0262), PA (68-02089), RI (LAO00299), TX (T104704419), VT (VT-0015), VA (460194), WA (C954), US Army Corps of Engineers, USDA (Permit #525-23-107-88708), USFWS (Permit #206964).

320 Forbes Boulevard, Mansfield, MA 02048-1806
508-822-9300 (Fax) 508-822-3288 800-624-9220 - www.alphalab.com



Project Name: MV AIRPORT
Project Number: 143-3953-23004

Lab Number: L2370818
Report Date: 12/26/23

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2370818-01	SA-30 0-0.5'	SOIL	WEST TISBURY	11/30/23 13:00	12/01/23
L2370818-02	SA-31 0-0.5'	SOIL	WEST TISBURY	11/30/23 13:10	12/01/23
L2370818-03	SA-32 0-0.5'	SOIL	WEST TISBURY	11/30/23 13:20	12/01/23
L2370818-04	SA-33 0-0.5'	SOIL	WEST TISBURY	11/30/23 13:30	12/01/23
L2370818-05	SA-34 0-0.5'	SOIL	WEST TISBURY	11/30/23 13:40	12/01/23
L2370818-06	SA-34 1.5'-2.0'	SOIL	WEST TISBURY	11/30/23 13:50	12/01/23
L2370818-07	SA-35 0-0.5'	SOIL	WEST TISBURY	11/30/23 14:00	12/01/23
L2370818-08	SA-36 0-0.5'	SOIL	WEST TISBURY	11/30/23 14:10	12/01/23

Project Name: MV AIRPORT
Project Number: 143-3953-23004

Lab Number: L2370818
Report Date: 12/26/23

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

Project Name: MV AIRPORT
Project Number: 143-3953-23004

Lab Number: L2370818
Report Date: 12/26/23

Case Narrative (continued)

Perfluorinated Alkyl Acids by Isotope Dilution

L2370818-01 through -08, WG1861621-1 and WG1861621-2: The MeOH fraction of the extraction is reported for perfluorooctanesulfonamide (fosa) due to better extraction efficiency of the perfluoro[13c8]octanesulfonamide (m8fosa) Extracted Internal Standard.

L2370818-01 through -08, WG1861621-1 and WG1861621-2: Extracted Internal Standard recoveries were outside the acceptance criteria for individual analytes. Please refer to the surrogate section of the report for details.

L2370818-02: The 8:2FTS result is not reported because the quadratic fit of the curve does not allow for an estimated "E" flagged value. The sample was re-extracted on dilution and the result within the calibration curve is reported for this compound.

L2370818-06: The Extracted Internal Standard recoveries are less than 5% for n-deuteriomethylperfluoro-1-octanesulfonamidoacetic acid (d3-nmefosaa) (3%) and n-deuterioethylperfluoro-1-octanesulfonamidoacetic acid (d5-netfosaa) (4%); however, re-extraction at a lower volume confirmed the original results. The results of the original analysis are reported.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:



Alycia Mogayzel

Title: Technical Director/Representative

Date: 12/26/23

ORGANICS

SEMIVOLATILES

Project Name: MV AIRPORT
Project Number: 143-3953-23004

Lab Number: L2370818
Report Date: 12/26/23

SAMPLE RESULTS

Lab ID: L2370818-01
Client ID: SA-30 0-0.5'
Sample Location: WEST TISBURY

Date Collected: 11/30/23 13:00
Date Received: 12/01/23
Field Prep: Not Specified

Sample Depth:

Matrix: Soil
Analytical Method: 134,LCMSMS-ID
Analytical Date: 12/10/23 12:43
Analyst: PS
Percent Solids: 77%

Extraction Method: ALPHA 23528
Extraction Date: 12/08/23 16:40

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	3.47		ng/g	0.602	--	1
Perfluoropentanoic Acid (PFPeA)	4.64		ng/g	0.602	--	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	0.301	--	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	1.20	--	1
Perfluorohexanoic Acid (PFHxA)	1.74		ng/g	0.602	--	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	1.20	--	1
Perfluoroheptanoic Acid (PFHpA)	1.40		ng/g	0.301	--	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	0.301	--	1
Perfluorooctanoic Acid (PFOA)	2.43		ng/g	0.301	--	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	0.789		ng/g	0.602	--	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	0.602	--	1
Perfluorononanoic Acid (PFNA)	3.20		ng/g	0.301	--	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/g	0.301	--	1
Perfluorodecanoic Acid (PFDA)	1.65		ng/g	0.301	--	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	0.602	--	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	1.20	--	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	0.602	--	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/g	0.602	--	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	0.602	--	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	0.602	--	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	0.602	--	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	0.602	--	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	0.602	--	1

Project Name: MV AIRPORT
Project Number: 143-3953-23004

Lab Number: L2370818
Report Date: 12/26/23

SAMPLE RESULTS

Lab ID: L2370818-01
 Client ID: SA-30 0-0.5'
 Sample Location: WEST TISBURY

Date Collected: 11/30/23 13:00
 Date Received: 12/01/23
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	27	Q	61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	26	Q	58-150
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	65	Q	74-139
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	87		14-167
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	29	Q	66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	36	Q	71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	68	Q	78-139
Perfluoro[13C8]Octanoic Acid (M8PFOA)	42	Q	75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	90		20-154
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	42	Q	72-140
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	62	Q	79-136
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	46	Q	75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	78		19-175
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	25	Q	31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	52	Q	61-155
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	34		34-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	51	Q	54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	38		24-159

Project Name: MV AIRPORT
Project Number: 143-3953-23004

Lab Number: L2370818
Report Date: 12/26/23

SAMPLE RESULTS

Lab ID: L2370818-01
 Client ID: SA-30 0-0.5'
 Sample Location: WEST TISBURY

Date Collected: 11/30/23 13:00
 Date Received: 12/01/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 134,LCMSMS-ID
 Analytical Date: 12/11/23 17:45
 Analyst: JW
 Percent Solids: 77%

Extraction Method: ALPHA 23528
 Extraction Date: 12/08/23 16:40

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	0.602	--	1
Surrogate (Extracted Internal Standard)			% Recovery	Qualifier	Acceptance Criteria	
Perfluoro[13C8]Octanesulfonamide (M8FOSA)			42		5-117	

Project Name: MV AIRPORT
Project Number: 143-3953-23004

Lab Number: L2370818
Report Date: 12/26/23

SAMPLE RESULTS

Lab ID: L2370818-02
Client ID: SA-31 0-0.5'
Sample Location: WEST TISBURY

Date Collected: 11/30/23 13:10
Date Received: 12/01/23
Field Prep: Not Specified

Sample Depth:

Matrix: Soil
Analytical Method: 134,LCMSMS-ID
Analytical Date: 12/10/23 13:00
Analyst: PS
Percent Solids: 81%

Extraction Method: ALPHA 23528
Extraction Date: 12/08/23 16:40

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	13.8		ng/g	0.570	--	1
Perfluoropentanoic Acid (PFPeA)	30.5		ng/g	0.570	--	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	0.285	--	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	1.14	--	1
Perfluorohexanoic Acid (PFHxA)	14.8		ng/g	0.570	--	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	1.14	--	1
Perfluoroheptanoic Acid (PFHpA)	11.7		ng/g	0.285	--	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	0.285	--	1
Perfluorooctanoic Acid (PFOA)	17.6		ng/g	0.285	--	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	42.7		ng/g	0.570	--	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	0.570	--	1
Perfluorononanoic Acid (PFNA)	6.48		ng/g	0.285	--	1
Perfluorooctanesulfonic Acid (PFOS)	0.439	F	ng/g	0.285	--	1
Perfluorodecanoic Acid (PFDA)	6.96		ng/g	0.285	--	1
Perfluorononanesulfonic Acid (PFNS)	ND		ng/g	1.14	--	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	0.570	--	1
Perfluoroundecanoic Acid (PFUnA)	1.54	F	ng/g	0.570	--	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	0.570	--	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	0.570	--	1
Perfluorododecanoic Acid (PFDoA)	1.79		ng/g	0.570	--	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	0.570	--	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	0.570	--	1

Project Name: MV AIRPORT
Project Number: 143-3953-23004

Lab Number: L2370818
Report Date: 12/26/23

SAMPLE RESULTS

Lab ID: L2370818-02
 Client ID: SA-31 0-0.5'
 Sample Location: WEST TISBURY

Date Collected: 11/30/23 13:10
 Date Received: 12/01/23
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	35	Q	61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	25	Q	58-150
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	93		74-139
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	173	Q	14-167
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	29	Q	66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	32	Q	71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	81		78-139
Perfluoro[13C8]Octanoic Acid (M8PFOA)	38	Q	75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	228	Q	20-154
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	40	Q	72-140
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	75	Q	79-136
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	44	Q	75-130
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	126		31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	63		61-155
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	144	Q	34-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	64		54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	78		24-159

Project Name: MV AIRPORT
Project Number: 143-3953-23004

Lab Number: L2370818
Report Date: 12/26/23

SAMPLE RESULTS

Lab ID: L2370818-02
 Client ID: SA-31 0-0.5'
 Sample Location: WEST TISBURY

Date Collected: 11/30/23 13:10
 Date Received: 12/01/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 134,LCMSMS-ID
 Analytical Date: 12/11/23 17:51
 Analyst: JW
 Percent Solids: 81%

Extraction Method: ALPHA 23528
 Extraction Date: 12/08/23 16:40

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	0.570	--	1
Surrogate (Extracted Internal Standard)			% Recovery	Qualifier	Acceptance Criteria	
Perfluoro[13C8]Octanesulfonamide (M8FOSA)			40		5-117	

Project Name: MV AIRPORT
Project Number: 143-3953-23004

Lab Number: L2370818
Report Date: 12/26/23

SAMPLE RESULTS

Lab ID: L2370818-02 RE
 Client ID: SA-31 0-0.5'
 Sample Location: WEST TISBURY

Date Collected: 11/30/23 13:10
 Date Received: 12/01/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 134,LCMSMS-ID
 Analytical Date: 12/17/23 11:33
 Analyst: SG
 Percent Solids: 81%

Extraction Method: ALPHA 23528
 Extraction Date: 12/11/23 17:00

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	121		ng/g	2.16	--	1
Surrogate (Extracted Internal Standard)			% Recovery	Qualifier	Acceptance Criteria	
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)			46		19-175	

Project Name: MV AIRPORT
Project Number: 143-3953-23004

Lab Number: L2370818
Report Date: 12/26/23

SAMPLE RESULTS

Lab ID: L2370818-03
Client ID: SA-32 0-0.5'
Sample Location: WEST TISBURY

Date Collected: 11/30/23 13:20
Date Received: 12/01/23
Field Prep: Not Specified

Sample Depth:

Matrix: Soil
Analytical Method: 134,LCMSMS-ID
Analytical Date: 12/10/23 13:16
Analyst: PS
Percent Solids: 91%

Extraction Method: ALPHA 23528
Extraction Date: 12/08/23 16:40

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	7.56		ng/g	0.515	--	1
Perfluoropentanoic Acid (PFPeA)	15.4		ng/g	0.515	--	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	0.258	--	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	1.03	--	1
Perfluorohexanoic Acid (PFHxA)	7.89		ng/g	0.515	--	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	1.03	--	1
Perfluoroheptanoic Acid (PFHpA)	7.47		ng/g	0.258	--	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	0.258	--	1
Perfluorooctanoic Acid (PFOA)	10.6		ng/g	0.258	--	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	13.9		ng/g	0.515	--	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	0.515	--	1
Perfluorononanoic Acid (PFNA)	16.1		ng/g	0.258	--	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/g	0.258	--	1
Perfluorodecanoic Acid (PFDA)	9.54		ng/g	0.258	--	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	29.9		ng/g	0.515	--	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	1.03	--	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	0.515	--	1
Perfluoroundecanoic Acid (PFUnA)	4.42		ng/g	0.515	--	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	0.515	--	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	0.515	--	1
Perfluorododecanoic Acid (PFDoA)	2.87		ng/g	0.515	--	1
Perfluorotridecanoic Acid (PFTrDA)	0.855		ng/g	0.515	--	1
Perfluorotetradecanoic Acid (PFTA)	0.766		ng/g	0.515	--	1

Project Name: MV AIRPORT
Project Number: 143-3953-23004

Lab Number: L2370818
Report Date: 12/26/23

SAMPLE RESULTS

Lab ID: L2370818-03
 Client ID: SA-32 0-0.5'
 Sample Location: WEST TISBURY

Date Collected: 11/30/23 13:20
 Date Received: 12/01/23
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	38	Q	61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	39	Q	58-150
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	77		74-139
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	149		14-167
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	39	Q	66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	43	Q	71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	77	Q	78-139
Perfluoro[13C8]Octanoic Acid (M8PFOA)	41	Q	75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	207	Q	20-154
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	39	Q	72-140
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	69	Q	79-136
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	45	Q	75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	116		19-175
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	48		31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	53	Q	61-155
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	80		34-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	44	Q	54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	44		24-159

Project Name: MV AIRPORT
Project Number: 143-3953-23004

Lab Number: L2370818
Report Date: 12/26/23

SAMPLE RESULTS

Lab ID: L2370818-03
 Client ID: SA-32 0-0.5'
 Sample Location: WEST TISBURY

Date Collected: 11/30/23 13:20
 Date Received: 12/01/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 134,LCMSMS-ID
 Analytical Date: 12/21/23 13:10
 Analyst: JW
 Percent Solids: 91%

Extraction Method: ALPHA 23528
 Extraction Date: 12/08/23 16:40

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	0.515	--	1
Surrogate (Extracted Internal Standard)			% Recovery	Qualifier	Acceptance Criteria	
Perfluoro[13C8]Octanesulfonamide (M8FOSA)			92		5-117	

Project Name: MV AIRPORT
Project Number: 143-3953-23004

Lab Number: L2370818
Report Date: 12/26/23

SAMPLE RESULTS

Lab ID: L2370818-04
Client ID: SA-33 0-0.5'
Sample Location: WEST TISBURY

Date Collected: 11/30/23 13:30
Date Received: 12/01/23
Field Prep: Not Specified

Sample Depth:

Matrix: Soil
Analytical Method: 134,LCMSMS-ID
Analytical Date: 12/10/23 13:33
Analyst: PS
Percent Solids: 93%

Extraction Method: ALPHA 23528
Extraction Date: 12/08/23 16:40

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	1.29		ng/g	0.475	--	1
Perfluoropentanoic Acid (PFPeA)	1.28		ng/g	0.475	--	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	0.237	--	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	0.950	--	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/g	0.475	--	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	0.950	--	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/g	0.237	--	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	0.237	--	1
Perfluorooctanoic Acid (PFOA)	0.262		ng/g	0.237	--	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	0.898		ng/g	0.475	--	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	0.475	--	1
Perfluorononanoic Acid (PFNA)	ND		ng/g	0.237	--	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/g	0.237	--	1
Perfluorodecanoic Acid (PFDA)	0.326		ng/g	0.237	--	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	0.475	--	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	0.950	--	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	0.475	--	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/g	0.475	--	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	0.475	--	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	0.475	--	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	0.475	--	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	0.475	--	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	0.475	--	1

Project Name: MV AIRPORT
Project Number: 143-3953-23004

Lab Number: L2370818
Report Date: 12/26/23

SAMPLE RESULTS

Lab ID: L2370818-04
 Client ID: SA-33 0-0.5'
 Sample Location: WEST TISBURY

Date Collected: 11/30/23 13:30
 Date Received: 12/01/23
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	28	Q	61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	31	Q	58-150
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	58	Q	74-139
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	67		14-167
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	36	Q	66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	40	Q	71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	60	Q	78-139
Perfluoro[13C8]Octanoic Acid (M8PFOA)	40	Q	75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	64		20-154
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	40	Q	72-140
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	53	Q	79-136
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	40	Q	75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	64		19-175
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	25	Q	31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	39	Q	61-155
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	44		34-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	36	Q	54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	20	Q	24-159

Project Name: MV AIRPORT
Project Number: 143-3953-23004

Lab Number: L2370818
Report Date: 12/26/23

SAMPLE RESULTS

Lab ID: L2370818-04
 Client ID: SA-33 0-0.5'
 Sample Location: WEST TISBURY

Date Collected: 11/30/23 13:30
 Date Received: 12/01/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 134,LCMSMS-ID
 Analytical Date: 12/21/23 13:16
 Analyst: JW
 Percent Solids: 93%

Extraction Method: ALPHA 23528
 Extraction Date: 12/08/23 16:40

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	0.475	--	1
Surrogate (Extracted Internal Standard)			% Recovery	Qualifier	Acceptance Criteria	
Perfluoro[13C8]Octanesulfonamide (M8FOSA)			72		5-117	

Project Name: MV AIRPORT
Project Number: 143-3953-23004

Lab Number: L2370818
Report Date: 12/26/23

SAMPLE RESULTS

Lab ID: L2370818-05
 Client ID: SA-34 0-0.5'
 Sample Location: WEST TISBURY

Date Collected: 11/30/23 13:40
 Date Received: 12/01/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 134,LCMSMS-ID
 Analytical Date: 12/10/23 13:50
 Analyst: PS
 Percent Solids: 87%

Extraction Method: ALPHA 23528
 Extraction Date: 12/08/23 16:40

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	7.56		ng/g	0.538	--	1
Perfluoropentanoic Acid (PFPeA)	10.9		ng/g	0.538	--	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	0.269	--	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	1.08	--	1
Perfluorohexanoic Acid (PFHxA)	3.51		ng/g	0.538	--	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	1.08	--	1
Perfluoroheptanoic Acid (PFHpA)	6.35		ng/g	0.269	--	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	0.269	--	1
Perfluorooctanoic Acid (PFOA)	12.4		ng/g	0.269	--	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	16.2		ng/g	0.538	--	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	0.538	--	1
Perfluorononanoic Acid (PFNA)	20.1		ng/g	0.269	--	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/g	0.269	--	1
Perfluorodecanoic Acid (PFDA)	7.50		ng/g	0.269	--	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	28.1		ng/g	0.538	--	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	1.08	--	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	0.538	--	1
Perfluoroundecanoic Acid (PFUnA)	3.64		ng/g	0.538	--	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	0.538	--	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	0.538	--	1
Perfluorododecanoic Acid (PFDoA)	1.49		ng/g	0.538	--	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	0.538	--	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	0.538	--	1

Project Name: MV AIRPORT
Project Number: 143-3953-23004

Lab Number: L2370818
Report Date: 12/26/23

SAMPLE RESULTS

Lab ID: L2370818-05
 Client ID: SA-34 0-0.5'
 Sample Location: WEST TISBURY

Date Collected: 11/30/23 13:40
 Date Received: 12/01/23
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	59	Q	61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	65		58-150
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	90		74-139
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	174	Q	14-167
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	71		66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	65	Q	71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	88		78-139
Perfluoro[13C8]Octanoic Acid (M8PFOA)	63	Q	75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	240	Q	20-154
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	58	Q	72-140
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	75	Q	79-136
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	54	Q	75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	254	Q	19-175
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	93		31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	65		61-155
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	114		34-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	57		54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	55		24-159

Project Name: MV AIRPORT
Project Number: 143-3953-23004

Lab Number: L2370818
Report Date: 12/26/23

SAMPLE RESULTS

Lab ID: L2370818-05
 Client ID: SA-34 0-0.5'
 Sample Location: WEST TISBURY

Date Collected: 11/30/23 13:40
 Date Received: 12/01/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 134,LCMSMS-ID
 Analytical Date: 12/21/23 13:22
 Analyst: JW
 Percent Solids: 87%

Extraction Method: ALPHA 23528
 Extraction Date: 12/08/23 16:40

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	0.538	--	1
Surrogate (Extracted Internal Standard)			% Recovery	Qualifier	Acceptance Criteria	
Perfluoro[13C8]Octanesulfonamide (M8FOSA)			78		5-117	

Project Name: MV AIRPORT
Project Number: 143-3953-23004

Lab Number: L2370818
Report Date: 12/26/23

SAMPLE RESULTS

Lab ID: L2370818-06
Client ID: SA-34 1.5'-2.0'
Sample Location: WEST TISBURY

Date Collected: 11/30/23 13:50
Date Received: 12/01/23
Field Prep: Not Specified

Sample Depth:

Matrix: Soil
Analytical Method: 134,LCMSMS-ID
Analytical Date: 12/10/23 14:06
Analyst: PS
Percent Solids: 94%

Extraction Method: ALPHA 23528
Extraction Date: 12/08/23 16:40

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	1.66		ng/g	0.463	--	1
Perfluoropentanoic Acid (PFPeA)	4.40		ng/g	0.463	--	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	0.232	--	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	0.926	--	1
Perfluorohexanoic Acid (PFHxA)	1.97		ng/g	0.463	--	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	0.926	--	1
Perfluoroheptanoic Acid (PFHpA)	2.32		ng/g	0.232	--	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	0.232	--	1
Perfluorooctanoic Acid (PFOA)	5.90		ng/g	0.232	--	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	5.54		ng/g	0.463	--	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	0.463	--	1
Perfluorononanoic Acid (PFNA)	4.43		ng/g	0.232	--	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/g	0.232	--	1
Perfluorodecanoic Acid (PFDA)	0.956		ng/g	0.232	--	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	6.56		ng/g	0.463	--	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	0.926	--	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	0.463	--	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/g	0.463	--	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	0.463	--	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	0.463	--	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	0.463	--	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	0.463	--	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	0.463	--	1

Project Name: MV AIRPORT
Project Number: 143-3953-23004

Lab Number: L2370818
Report Date: 12/26/23

SAMPLE RESULTS

Lab ID: L2370818-06
 Client ID: SA-34 1.5'-2.0'
 Sample Location: WEST TISBURY

Date Collected: 11/30/23 13:50
 Date Received: 12/01/23
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	23	Q	61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	30	Q	58-150
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	62	Q	74-139
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	56		14-167
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	35	Q	66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	41	Q	71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	64	Q	78-139
Perfluoro[13C8]Octanoic Acid (M8PFOA)	42	Q	75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	60		20-154
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	43	Q	72-140
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	55	Q	79-136
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	44	Q	75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	67		19-175
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	3	Q	31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	46	Q	61-155
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	4	Q	34-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	44	Q	54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	30		24-159

Project Name: MV AIRPORT
Project Number: 143-3953-23004

Lab Number: L2370818
Report Date: 12/26/23

SAMPLE RESULTS

Lab ID: L2370818-06
 Client ID: SA-34 1.5'-2.0'
 Sample Location: WEST TISBURY

Date Collected: 11/30/23 13:50
 Date Received: 12/01/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 134,LCMSMS-ID
 Analytical Date: 12/20/23 16:02
 Analyst: JW
 Percent Solids: 94%

Extraction Method: ALPHA 23528
 Extraction Date: 12/08/23 16:40

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	0.463	--	1
Surrogate (Extracted Internal Standard)			% Recovery	Qualifier	Acceptance Criteria	
Perfluoro[13C8]Octanesulfonamide (M8FOSA)			104		5-117	

Project Name: MV AIRPORT
Project Number: 143-3953-23004

Lab Number: L2370818
Report Date: 12/26/23

SAMPLE RESULTS

Lab ID: L2370818-07
Client ID: SA-35 0-0.5'
Sample Location: WEST TISBURY

Date Collected: 11/30/23 14:00
Date Received: 12/01/23
Field Prep: Not Specified

Sample Depth:

Matrix: Soil
Analytical Method: 134,LCMSMS-ID
Analytical Date: 12/10/23 14:39
Analyst: PS
Percent Solids: 79%

Extraction Method: ALPHA 23528
Extraction Date: 12/08/23 16:40

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	7.68		ng/g	0.598	--	1
Perfluoropentanoic Acid (PFPeA)	6.14		ng/g	0.598	--	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	0.299	--	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	1.20	--	1
Perfluorohexanoic Acid (PFHxA)	1.97		ng/g	0.598	--	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	1.20	--	1
Perfluoroheptanoic Acid (PFHpA)	1.62		ng/g	0.299	--	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	0.299	--	1
Perfluorooctanoic Acid (PFOA)	4.50		ng/g	0.299	--	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	0.935		ng/g	0.598	--	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	0.598	--	1
Perfluorononanoic Acid (PFNA)	2.28		ng/g	0.299	--	1
Perfluorooctanesulfonic Acid (PFOS)	0.397		ng/g	0.299	--	1
Perfluorodecanoic Acid (PFDA)	2.45		ng/g	0.299	--	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	0.598	--	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	1.20	--	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	0.598	--	1
Perfluoroundecanoic Acid (PFUnA)	0.638		ng/g	0.598	--	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	0.598	--	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	0.598	--	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	0.598	--	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	0.598	--	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	0.598	--	1

Project Name: MV AIRPORT
Project Number: 143-3953-23004

Lab Number: L2370818
Report Date: 12/26/23

SAMPLE RESULTS

Lab ID: L2370818-07
 Client ID: SA-35 0-0.5'
 Sample Location: WEST TISBURY

Date Collected: 11/30/23 14:00
 Date Received: 12/01/23
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	66		61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	67		58-150
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	92		74-139
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	188	Q	14-167
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	71		66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	61	Q	71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	81		78-139
Perfluoro[13C8]Octanoic Acid (M8PFOA)	57	Q	75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	252	Q	20-154
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	38	Q	72-140
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	69	Q	79-136
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	53	Q	75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	182	Q	19-175
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	96		31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	64		61-155
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	124		34-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	47	Q	54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	52		24-159

Project Name: MV AIRPORT
Project Number: 143-3953-23004

Lab Number: L2370818
Report Date: 12/26/23

SAMPLE RESULTS

Lab ID: L2370818-07
 Client ID: SA-35 0-0.5'
 Sample Location: WEST TISBURY

Date Collected: 11/30/23 14:00
 Date Received: 12/01/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 134,LCMSMS-ID
 Analytical Date: 12/12/23 09:45
 Analyst: AC
 Percent Solids: 79%

Extraction Method: ALPHA 23528
 Extraction Date: 12/08/23 16:40

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	0.598	--	1
Surrogate (Extracted Internal Standard)			% Recovery	Qualifier	Acceptance Criteria	
Perfluoro[13C8]Octanesulfonamide (M8FOSA)			41		5-117	

Project Name: MV AIRPORT
Project Number: 143-3953-23004

Lab Number: L2370818
Report Date: 12/26/23

SAMPLE RESULTS

Lab ID: L2370818-08
Client ID: SA-36 0-0.5'
Sample Location: WEST TISBURY

Date Collected: 11/30/23 14:10
Date Received: 12/01/23
Field Prep: Not Specified

Sample Depth:

Matrix: Soil
Analytical Method: 134,LCMSMS-ID
Analytical Date: 12/10/23 14:56
Analyst: PS
Percent Solids: 79%

Extraction Method: ALPHA 23528
Extraction Date: 12/08/23 16:40

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	1.94		ng/g	0.586	--	1
Perfluoropentanoic Acid (PFPeA)	1.40		ng/g	0.586	--	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	0.293	--	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	1.17	--	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/g	0.586	--	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	1.17	--	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/g	0.293	--	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	0.293	--	1
Perfluorooctanoic Acid (PFOA)	0.724		ng/g	0.293	--	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	0.586	--	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	0.586	--	1
Perfluorononanoic Acid (PFNA)	0.499	F	ng/g	0.293	--	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/g	0.293	--	1
Perfluorodecanoic Acid (PFDA)	1.02		ng/g	0.293	--	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	0.586	--	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	1.17	--	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	0.586	--	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/g	0.586	--	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	0.586	--	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	0.586	--	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	0.586	--	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	0.586	--	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	0.586	--	1

Project Name: MV AIRPORT
Project Number: 143-3953-23004

Lab Number: L2370818
Report Date: 12/26/23

SAMPLE RESULTS

Lab ID: L2370818-08
 Client ID: SA-36 0-0.5'
 Sample Location: WEST TISBURY

Date Collected: 11/30/23 14:10
 Date Received: 12/01/23
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	42	Q	61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	42	Q	58-150
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	68	Q	74-139
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	97		14-167
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	41	Q	66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	41	Q	71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	64	Q	78-139
Perfluoro[13C8]Octanoic Acid (M8PFOA)	42	Q	75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	188	Q	20-154
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	37	Q	72-140
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	53	Q	79-136
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	41	Q	75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	101		19-175
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	57		31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	45	Q	61-155
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	82		34-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	39	Q	54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	25		24-159

Project Name: MV AIRPORT
Project Number: 143-3953-23004

Lab Number: L2370818
Report Date: 12/26/23

SAMPLE RESULTS

Lab ID: L2370818-08
 Client ID: SA-36 0-0.5'
 Sample Location: WEST TISBURY

Date Collected: 11/30/23 14:10
 Date Received: 12/01/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 134,LCMSMS-ID
 Analytical Date: 12/12/23 09:52
 Analyst: AC
 Percent Solids: 79%

Extraction Method: ALPHA 23528
 Extraction Date: 12/08/23 16:40

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	0.586	--	1
Surrogate (Extracted Internal Standard)			% Recovery	Qualifier	Acceptance Criteria	
Perfluoro[13C8]Octanesulfonamide (M8FOSA)			42		5-117	

Project Name: MV AIRPORT
Project Number: 143-3953-23004

Lab Number: L2370818
Report Date: 12/26/23

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 12/10/23 10:14
Analyst: PS

Extraction Method: ALPHA 23528
Extraction Date: 12/08/23 16:40

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01-08 Batch: WG1861621-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/g	0.500	--
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	0.500	--
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	0.250	--
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	1.00	--
Perfluorohexanoic Acid (PFHxA)	ND		ng/g	0.500	--
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	1.00	--
Perfluoroheptanoic Acid (PFHpA)	ND		ng/g	0.250	--
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	0.250	--
Perfluorooctanoic Acid (PFOA)	ND		ng/g	0.250	--
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	0.500	--
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	0.500	--
Perfluorononanoic Acid (PFNA)	ND		ng/g	0.250	--
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/g	0.250	--
Perfluorodecanoic Acid (PFDA)	ND		ng/g	0.250	--
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	0.500	--
Perfluorononanesulfonic Acid (PFNS)	ND		ng/g	1.00	--
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	0.500	--
Perfluoroundecanoic Acid (PFUnA)	ND		ng/g	0.500	--
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	0.500	--
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	0.500	--
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	0.500	--
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	0.500	--
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	0.500	--

Project Name: MV AIRPORT
Project Number: 143-3953-23004

Lab Number: L2370818
Report Date: 12/26/23

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 12/10/23 10:14
Analyst: PS

Extraction Method: ALPHA 23528
Extraction Date: 12/08/23 16:40

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01-08 Batch: WG1861621-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	70		61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	76		58-150
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	73	Q	74-139
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	90		14-167
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	72		66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	73		71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	75	Q	78-139
Perfluoro[13C8]Octanoic Acid (M8PFOA)	70	Q	75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	76		20-154
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	66	Q	72-140
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	78	Q	79-136
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	66	Q	75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	68		19-175
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	57		31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	67		61-155
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	68		34-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	62		54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	62		24-159

Project Name: MV AIRPORT
Project Number: 143-3953-23004

Lab Number: L2370818
Report Date: 12/26/23

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 12/11/23 17:33
Analyst: JW

Extraction Method: ALPHA 23528
Extraction Date: 12/08/23 16:40

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01-08 Batch: WG1861621-1					
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	0.500	--

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	44		5-117

Project Name: MV AIRPORT
Project Number: 143-3953-23004

Lab Number: L2370818
Report Date: 12/26/23

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 12/17/23 11:00
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 12/11/23 17:00

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 02 Batch: WG1862539-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/g	0.500	--
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	0.500	--
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	0.250	--
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	1.00	--
Perfluorohexanoic Acid (PFHxA)	ND		ng/g	0.500	--
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	1.00	--
Perfluoroheptanoic Acid (PFHpA)	ND		ng/g	0.250	--
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	0.250	--
Perfluorooctanoic Acid (PFOA)	ND		ng/g	0.250	--
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	0.500	--
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	0.500	--
Perfluorononanoic Acid (PFNA)	ND		ng/g	0.250	--
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/g	0.250	--
Perfluorodecanoic Acid (PFDA)	ND		ng/g	0.250	--
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	0.500	--
Perfluorononanesulfonic Acid (PFNS)	ND		ng/g	1.00	--
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	0.500	--
Perfluoroundecanoic Acid (PFUnA)	ND		ng/g	0.500	--
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	0.500	--
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	0.500	--
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	0.500	--
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	0.500	--
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	0.500	--
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	0.500	--

Project Name: MV AIRPORT
Project Number: 143-3953-23004

Lab Number: L2370818
Report Date: 12/26/23

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 12/17/23 11:00
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 12/11/23 17:00

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 02 Batch: WG1862539-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	92		61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	86		58-150
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	125		74-139
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	120		14-167
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	127		66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	105		71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	103		78-139
Perfluoro[13C8]Octanoic Acid (M8PFOA)	92		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	69		20-154
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	74		72-140
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	85		79-136
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	84		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	46		19-175
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	64		31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	86		61-155
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	15		5-117
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	59		34-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	81		54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	58		24-159

Lab Control Sample Analysis

Batch Quality Control

Project Name: MV AIRPORT
Project Number: 143-3953-23004

Lab Number: L2370818
Report Date: 12/26/23

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-08 Batch: WG1861621-2								
Perfluorobutanoic Acid (PFBA)	101		-		71-135	-		30
Perfluoropentanoic Acid (PFPeA)	101		-		69-132	-		30
Perfluorobutanesulfonic Acid (PFBS)	100		-		72-128	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	99		-		62-145	-		30
Perfluorohexanoic Acid (PFHxA)	100		-		70-132	-		30
Perfluoropentanesulfonic Acid (PFPeS)	90		-		73-123	-		30
Perfluoroheptanoic Acid (PFHpA)	102		-		71-131	-		30
Perfluorohexanesulfonic Acid (PFHxS)	93		-		67-130	-		30
Perfluorooctanoic Acid (PFOA)	103		-		69-133	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	98		-		64-140	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	102		-		70-132	-		30
Perfluorononanoic Acid (PFNA)	113		-		72-129	-		30
Perfluorooctanesulfonic Acid (PFOS)	101		-		68-136	-		30
Perfluorodecanoic Acid (PFDA)	103		-		69-133	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	106		-		65-137	-		30
Perfluorononanesulfonic Acid (PFNS)	96		-		69-125	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	98		-		63-144	-		30
Perfluoroundecanoic Acid (PFUnA)	112		-		64-136	-		30
Perfluorodecanesulfonic Acid (PFDS)	92		-		59-134	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	113		-		61-139	-		30
Perfluorododecanoic Acid (PFDoA)	97		-		69-135	-		30
Perfluorotridecanoic Acid (PFTTrDA)	111		-		66-139	-		30

Lab Control Sample Analysis Batch Quality Control

Project Name: MV AIRPORT
Project Number: 143-3953-23004

Lab Number: L2370818
Report Date: 12/26/23

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-08 Batch: WG1861621-2								
Perfluorotetradecanoic Acid (PFTA)	106		-		69-133	-		30

Surrogate (Extracted Internal Standard)	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	81				61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	84				58-150
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	83				74-139
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	98				14-167
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	82				66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	80				71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	87				78-139
Perfluoro[13C8]Octanoic Acid (M8PFOA)	78				75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	88				20-154
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	70	Q			72-140
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	80				79-136
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	76				75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	82				19-175
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	74				31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	75				61-155
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	69				34-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	77				54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	80				24-159



Lab Control Sample Analysis Batch Quality Control

Project Name: MV AIRPORT
Project Number: 143-3953-23004

Lab Number: L2370818
Report Date: 12/26/23

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-08 Batch: WG1861621-2								
Perfluorooctanesulfonamide (FOSA)	98		-		67-137	-		30

Surrogate (Extracted Internal Standard)	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	44				5-117



Lab Control Sample Analysis

Batch Quality Control

Project Name: MV AIRPORT
Project Number: 143-3953-23004

Lab Number: L2370818
Report Date: 12/26/23

Parameter	LCS	Qual	LCSD	Qual	%Recovery	RPD	Qual	RPD
	%Recovery		%Recovery		Limits			Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02 Batch: WG1862539-2								
Perfluorobutanoic Acid (PFBA)	111		-		71-135	-		30
Perfluoropentanoic Acid (PFPeA)	109		-		69-132	-		30
Perfluorobutanesulfonic Acid (PFBS)	110		-		72-128	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	109		-		62-145	-		30
Perfluorohexanoic Acid (PFHxA)	108		-		70-132	-		30
Perfluoropentanesulfonic Acid (PFPeS)	116		-		73-123	-		30
Perfluoroheptanoic Acid (PFHpA)	114		-		71-131	-		30
Perfluorohexanesulfonic Acid (PFHxS)	110		-		67-130	-		30
Perfluorooctanoic Acid (PFOA)	105		-		69-133	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	105		-		64-140	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	113		-		70-132	-		30
Perfluorononanoic Acid (PFNA)	102		-		72-129	-		30
Perfluorooctanesulfonic Acid (PFOS)	98		-		68-136	-		30
Perfluorodecanoic Acid (PFDA)	112		-		69-133	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	112		-		65-137	-		30
Perfluorononanesulfonic Acid (PFNS)	100		-		69-125	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	133		-		63-144	-		30
Perfluoroundecanoic Acid (PFUnA)	117		-		64-136	-		30
Perfluorodecanesulfonic Acid (PFDS)	90		-		59-134	-		30
Perfluorooctanesulfonamide (FOSA)	104		-		67-137	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	109		-		61-139	-		30
Perfluorododecanoic Acid (PFDoA)	111		-		69-135	-		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: MV AIRPORT
Project Number: 143-3953-23004

Lab Number: L2370818
Report Date: 12/26/23

Parameter	LCS		LCSD		%Recovery		RPD	RPD	
	%Recovery	Qual	%Recovery	Qual	Limits	Qual		Limits	
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02 Batch: WG1862539-2									
Perfluorotridecanoic Acid (PFTTrDA)	117		-		66-139		-		30
Perfluorotetradecanoic Acid (PFTA)	103		-		69-133		-		30

Surrogate (Extracted Internal Standard)	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
Perfluoro[13C4]Butanoic Acid (MPFBA)	86				61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	80				58-150
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	119				74-139
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	127				14-167
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	117				66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	97				71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	95				78-139
Perfluoro[13C8]Octanoic Acid (M8PFOA)	84				75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	78				20-154
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	72				72-140
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	89				79-136
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	78				75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	55				19-175
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	51				31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	84				61-155
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	58				5-117
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	61				34-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	81				54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	65				24-159

Matrix Spike Analysis Batch Quality Control

Project Name: MV AIRPORT
Project Number: 143-3953-23004

Lab Number: L2370818
Report Date: 12/26/23

<i>Parameter</i>	<i>Native Sample</i>	<i>MS Added</i>	<i>MS Found</i>	<i>MS %Recovery</i>	<i>Qual</i>	<i>MSD Found</i>	<i>MSD %Recovery</i>	<i>Qual</i>	<i>Recovery Limits</i>	<i>RPD</i>	<i>Qual</i>	<i>RPD Limits</i>
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-08 QC Batch ID: WG1861621-3 QC Sample: L2365638-14 Client ID: MS Sample												
Perfluorotridecanoic Acid (PFTrDA)	ND	4.99	5.54	111		-	-		66-139	-		30
Perfluorotetradecanoic Acid (PFTA)	ND	4.99	4.46	89		-	-		69-133	-		30

<i>Surrogate (Extracted Internal Standard)</i>	<i>MS % Recovery</i>	<i>Qualifier</i>	<i>MSD % Recovery</i>	<i>Qualifier</i>	<i>Acceptance Criteria</i>
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	57				54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	12	Q			24-159



Matrix Spike Analysis

Batch Quality Control

Project Name: MV AIRPORT
Project Number: 143-3953-23004

Lab Number: L2370818
Report Date: 12/26/23

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02 QC Batch ID: WG1862539-3 QC Sample: L2370841-45 Client ID: MS Sample												
Perfluorobutanoic Acid (PFBA)	ND	5.12	5.98	117		-	-		71-135	-		30
Perfluoropentanoic Acid (PFPeA)	ND	5.12	6.01	117		-	-		69-132	-		30
Perfluorobutanesulfonic Acid (PFBS)	ND	4.55	5.47	120		-	-		72-128	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	4.8	5.34	111		-	-		62-145	-		30
Perfluorohexanoic Acid (PFHxA)	ND	5.12	6.01	117		-	-		70-132	-		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	4.82	5.68	118		-	-		73-123	-		30
Perfluoroheptanoic Acid (PFHpA)	ND	5.12	6.17	120		-	-		71-131	-		30
Perfluorohexanesulfonic Acid (PFHxS)	ND	4.68	5.17	110		-	-		67-130	-		30
Perfluorooctanoic Acid (PFOA)	ND	5.12	5.98	117		-	-		69-133	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	4.88	5.01	103		-	-		64-140	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	4.88	6.39	131		-	-		70-132	-		30
Perfluorononanoic Acid (PFNA)	ND	5.12	6.57	128		-	-		72-129	-		30
Perfluorooctanesulfonic Acid (PFOS)	ND	4.75	5.39	113		-	-		68-136	-		30
Perfluorodecanoic Acid (PFDA)	ND	5.12	7.62	149	Q	-	-		69-133	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	4.92	5.66	115		-	-		65-137	-		30
Perfluorononanesulfonic Acid (PFNS)	ND	4.93	4.68	95		-	-		69-125	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	5.12	8.08	158	Q	-	-		63-144	-		30
Perfluoroundecanoic Acid (PFUnA)	ND	5.12	7.86	153	Q	-	-		64-136	-		30
Perfluorodecanesulfonic Acid (PFDS)	ND	4.95	4.75	96		-	-		59-134	-		30
Perfluorooctanesulfonamide (FOSA)	ND	5.12	5.20	102		-	-		67-137	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	5.12	16.1	314	Q	-	-		61-139	-		30
Perfluorododecanoic Acid (PFDoA)	ND	5.12	6.19	121		-	-		69-135	-		30

Matrix Spike Analysis

Batch Quality Control

Project Name: MV AIRPORT
Project Number: 143-3953-23004

Lab Number: L2370818
Report Date: 12/26/23

<i>Parameter</i>	<i>Native Sample</i>	<i>MS Added</i>	<i>MS Found</i>	<i>MS %Recovery</i>	<i>Qual</i>	<i>MSD Found</i>	<i>MSD %Recovery</i>	<i>Qual</i>	<i>Recovery Limits</i>	<i>RPD</i>	<i>Qual</i>	<i>RPD Limits</i>
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02 QC Batch ID: WG1862539-3 QC Sample: L2370841-45 Client ID: MS Sample												
Perfluorotridecanoic Acid (PFTTrDA)	ND	5.12	6.99F	136		-	-		66-139	-		30
Perfluorotetradecanoic Acid (PFTTA)	ND	5.12	7.54	147	Q	-	-		69-133	-		30

<i>Surrogate (Extracted Internal Standard)</i>	<i>MS % Recovery</i>	<i>Qualifier</i>	<i>MSD % Recovery</i>	<i>Qualifier</i>	<i>Acceptance Criteria</i>
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	25				19-175
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	51				14-167
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	34				20-154
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	3	Q			34-137
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	6	Q			31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUODA)	33	Q			61-155
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	36	Q			75-130
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	58	Q			66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	48	Q			71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	55	Q			78-139
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	38	Q			54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	10	Q			24-159
Perfluoro[13C4]Butanoic Acid (MPFBA)	44	Q			61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	41	Q			58-150
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	96				5-117
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	44	Q			79-136
Perfluoro[13C8]Octanoic Acid (M8PFOA)	44	Q			75-130
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	34	Q			72-140
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	63	Q			74-139

Lab Duplicate Analysis
Batch Quality Control

Project Name: MV AIRPORT
Project Number: 143-3953-23004

Lab Number: L2370818
Report Date: 12/26/23

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-08 QC Batch ID: WG1861621-4 QC Sample: L2365638-14 Client ID: DUP Sample						
Perfluorotridecanoic Acid (PFTrDA)	ND	ND	ng/g	NC		30
Perfluorotetradecanoic Acid (PFTA)	ND	ND	ng/g	NC		30

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	62		55		54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	29		21	Q	24-159



Lab Duplicate Analysis

Batch Quality Control

Project Name: MV AIRPORT
Project Number: 143-3953-23004

Lab Number: L2370818
Report Date: 12/26/23

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02 QC Batch ID: WG1862539-4 QC Sample: L2370841-46 Client ID: DUP Sample						
Perfluorobutanoic Acid (PFBA)	ND	ND	ng/g	NC		30
Perfluoropentanoic Acid (PFPeA)	ND	ND	ng/g	NC		30
Perfluorobutanesulfonic Acid (PFBS)	ND	ND	ng/g	NC		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	ND	ng/g	NC		30
Perfluorohexanoic Acid (PFHxA)	ND	ND	ng/g	NC		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	ND	ng/g	NC		30
Perfluoroheptanoic Acid (PFHpA)	ND	ND	ng/g	NC		30
Perfluorohexanesulfonic Acid (PFHxS)	ND	ND	ng/g	NC		30
Perfluorooctanoic Acid (PFOA)	ND	ND	ng/g	NC		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	ND	ng/g	NC		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	ND	ng/g	NC		30
Perfluorononanoic Acid (PFNA)	ND	ND	ng/g	NC		30
Perfluorooctanesulfonic Acid (PFOS)	ND	ND	ng/g	NC		30
Perfluorodecanoic Acid (PFDA)	ND	ND	ng/g	NC		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	ND	ng/g	NC		30
Perfluorononanesulfonic Acid (PFNS)	ND	ND	ng/g	NC		30
Perfluoroundecanoic Acid (PFUnA)	ND	ND	ng/g	NC		30
Perfluorodecanesulfonic Acid (PFDS)	ND	ND	ng/g	NC		30
Perfluorooctanesulfonamide (FOSA)	ND	ND	ng/g	NC		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	ND	ng/g	NC		30

Lab Duplicate Analysis

Batch Quality Control

Project Name: MV AIRPORT
Project Number: 143-3953-23004

Lab Number: L2370818
Report Date: 12/26/23

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02 QC Batch ID: WG1862539-4 QC Sample: L2370841-46 Client ID: DUP Sample						
Perfluorododecanoic Acid (PFDoA)	ND	ND	ng/g	NC		30
Perfluorotridecanoic Acid (PFTrDA)	ND	ND	ng/g	NC		30
Perfluorotetradecanoic Acid (PFTA)	ND	ND	ng/g	NC		30

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	37	Q	41	Q	61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	34	Q	37	Q	58-150
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	57	Q	65	Q	74-139
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	45		46		14-167
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	47	Q	52	Q	66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	42	Q	45	Q	71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	48	Q	56	Q	78-139
Perfluoro[13C8]Octanoic Acid (M8PFOA)	35	Q	40	Q	75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	27		29		20-154
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	31	Q	34	Q	72-140
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	41	Q	48	Q	79-136
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	31	Q	32	Q	75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	16	Q	23		19-175
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	31	Q	35	Q	61-155
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	68		108		5-117
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	5	Q	6	Q	34-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	27	Q	30	Q	54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	7	Q	6	Q	24-159

INORGANICS & MISCELLANEOUS

Project Name: MV AIRPORT
Project Number: 143-3953-23004

Lab Number: L2370818
Report Date: 12/26/23

SAMPLE RESULTS

Lab ID: L2370818-01
Client ID: SA-30 0-0.5'
Sample Location: WEST TISBURY

Date Collected: 11/30/23 13:00
Date Received: 12/01/23
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Mansfield Lab										
Solids, Total	77.2		%	0.100	--	1	-	12/03/23 15:16	121,2540G	CLF



Project Name: MV AIRPORT
Project Number: 143-3953-23004

Lab Number: L2370818
Report Date: 12/26/23

SAMPLE RESULTS

Lab ID: L2370818-02
Client ID: SA-31 0-0.5'
Sample Location: WEST TISBURY

Date Collected: 11/30/23 13:10
Date Received: 12/01/23
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Mansfield Lab										
Solids, Total	81.0		%	0.100	--	1	-	12/03/23 15:16	121,2540G	CLF



Project Name: MV AIRPORT
Project Number: 143-3953-23004

Lab Number: L2370818
Report Date: 12/26/23

SAMPLE RESULTS

Lab ID: L2370818-03
Client ID: SA-32 0-0.5'
Sample Location: WEST TISBURY

Date Collected: 11/30/23 13:20
Date Received: 12/01/23
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Mansfield Lab										
Solids, Total	90.5		%	0.100	--	1	-	12/03/23 19:53	121,2540G	CLF



Project Name: MV AIRPORT
Project Number: 143-3953-23004

Lab Number: L2370818
Report Date: 12/26/23

SAMPLE RESULTS

Lab ID: L2370818-04
Client ID: SA-33 0-0.5'
Sample Location: WEST TISBURY

Date Collected: 11/30/23 13:30
Date Received: 12/01/23
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Mansfield Lab										
Solids, Total	93.2		%	0.100	--	1	-	12/03/23 15:16	121,2540G	CLF



Project Name: MV AIRPORT
Project Number: 143-3953-23004

Lab Number: L2370818
Report Date: 12/26/23

SAMPLE RESULTS

Lab ID: L2370818-05
Client ID: SA-34 0-0.5'
Sample Location: WEST TISBURY

Date Collected: 11/30/23 13:40
Date Received: 12/01/23
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Mansfield Lab										
Solids, Total	87.2		%	0.100	--	1	-	12/03/23 18:45	121,2540G	CLF



Project Name: MV AIRPORT
Project Number: 143-3953-23004

Lab Number: L2370818
Report Date: 12/26/23

SAMPLE RESULTS

Lab ID: L2370818-06
Client ID: SA-34 1.5'-2.0'
Sample Location: WEST TISBURY

Date Collected: 11/30/23 13:50
Date Received: 12/01/23
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Mansfield Lab										
Solids, Total	94.3		%	0.100	--	1	-	12/03/23 15:16	121,2540G	CLF



Project Name: MV AIRPORT
Project Number: 143-3953-23004

Lab Number: L2370818
Report Date: 12/26/23

SAMPLE RESULTS

Lab ID: L2370818-07
Client ID: SA-35 0-0.5'
Sample Location: WEST TISBURY

Date Collected: 11/30/23 14:00
Date Received: 12/01/23
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Mansfield Lab										
Solids, Total	79.4		%	0.100	--	1	-	12/03/23 18:45	121,2540G	CLF



Project Name: MV AIRPORT
Project Number: 143-3953-23004

Lab Number: L2370818
Report Date: 12/26/23

SAMPLE RESULTS

Lab ID: L2370818-08
Client ID: SA-36 0-0.5'
Sample Location: WEST TISBURY

Date Collected: 11/30/23 14:10
Date Received: 12/01/23
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Mansfield Lab										
Solids, Total	78.7		%	0.100	--	1	-	12/03/23 18:45	121,2540G	CLF



Lab Duplicate Analysis Batch Quality Control

Project Name: MV AIRPORT
Project Number: 143-3953-23004

Lab Number: L2370818
Report Date: 12/26/23

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Mansfield Lab Associated sample(s): 01-02,04,06 QC Batch ID: WG1859191-1 QC Sample: L2370818-02 Client ID: SA-31 0-0.5'						
Solids, Total	81.0	82.4	%	2		10
General Chemistry - Mansfield Lab Associated sample(s): 05,07-08 QC Batch ID: WG1859203-1 QC Sample: L2370818-08 Client ID: SA-36 0-0.5'						
Solids, Total	78.7	76.4	%	3		10
General Chemistry - Mansfield Lab Associated sample(s): 03 QC Batch ID: WG1859254-1 QC Sample: L2357619-07 Client ID: DUP Sample						
Solids, Total	75.6	76.1	%	1		10



Project Name: MV AIRPORT
Project Number: 143-3953-23004

Lab Number: L2370818**Report Date:** 12/26/23**Sample Receipt and Container Information**

Were project specific reporting limits specified?

YES

Cooler Information

Cooler **Custody Seal**
A Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2370818-01A	Plastic 8oz unpreserved	A	NA		5.4	Y	Absent		A2-537-ISOTOPE(90)
L2370818-01B	Plastic 2oz unpreserved for TS	A	NA		5.4	Y	Absent		A2-TS(7)
L2370818-02A	Plastic 8oz unpreserved	A	NA		5.4	Y	Absent		A2-537-ISOTOPE(90)
L2370818-02B	Plastic 2oz unpreserved for TS	A	NA		5.4	Y	Absent		A2-TS(7)
L2370818-03A	Plastic 8oz unpreserved	A	NA		5.4	Y	Absent		A2-537-ISOTOPE(90)
L2370818-03B	Plastic 2oz unpreserved for TS	A	NA		5.4	Y	Absent		A2-TS(7)
L2370818-04A	Plastic 8oz unpreserved	A	NA		5.4	Y	Absent		A2-537-ISOTOPE(90)
L2370818-04B	Plastic 2oz unpreserved for TS	A	NA		5.4	Y	Absent		A2-TS(7)
L2370818-05A	Plastic 8oz unpreserved	A	NA		5.4	Y	Absent		A2-537-ISOTOPE(90)
L2370818-05B	Plastic 2oz unpreserved for TS	A	NA		5.4	Y	Absent		A2-TS(7)
L2370818-06A	Plastic 8oz unpreserved	A	NA		5.4	Y	Absent		A2-537-ISOTOPE(90)
L2370818-06B	Plastic 2oz unpreserved for TS	A	NA		5.4	Y	Absent		A2-TS(7)
L2370818-07A	Plastic 8oz unpreserved	A	NA		5.4	Y	Absent		A2-537-ISOTOPE(90)
L2370818-07B	Plastic 2oz unpreserved for TS	A	NA		5.4	Y	Absent		A2-TS(7)
L2370818-08A	Plastic 8oz unpreserved	A	NA		5.4	Y	Absent		A2-537-ISOTOPE(90)
L2370818-08B	Plastic 2oz unpreserved for TS	A	NA		5.4	Y	Absent		A2-TS(7)

Project Name: MV AIRPORT
Project Number: 143-3953-23004

Serial_No:12262312:17
Lab Number: L2370818
Report Date: 12/26/23

PFAS PARAMETER SUMMARY

Parameter	Acronym	CAS Number
PERFLUOROALKYL CARBOXYLIC ACIDS (PFCAs)		
Perfluorooctadecanoic Acid	PFODA	16517-11-6
Perfluorohexadecanoic Acid	PFHxDA	67905-19-5
Perfluorotetradecanoic Acid	PFTA/PFTeDA	376-06-7
Perfluorotridecanoic Acid	PFTrDA	72629-94-8
Perfluorododecanoic Acid	PFDoA	307-55-1
Perfluoroundecanoic Acid	PFUnA	2058-94-8
Perfluorodecanoic Acid	PFDA	335-76-2
Perfluorononanoic Acid	PFNA	375-95-1
Perfluorooctanoic Acid	PFOA	335-67-1
Perfluoroheptanoic Acid	PFHpA	375-85-9
Perfluorohexanoic Acid	PFHxA	307-24-4
Perfluoropentanoic Acid	PFPeA	2706-90-3
Perfluorobutanoic Acid	PFBA	375-22-4
PERFLUOROALKYL SULFONIC ACIDS (PFSAs)		
Perfluorododecanesulfonic Acid	PFDoDS/PFDoS	79780-39-5
Perfluorodecanesulfonic Acid	PFDS	335-77-3
Perfluorononanesulfonic Acid	PFNS	68259-12-1
Perfluorooctanesulfonic Acid	PFOS	1763-23-1
Perfluoroheptanesulfonic Acid	PFHpS	375-92-8
Perfluorohexanesulfonic Acid	PFHxS	355-46-4
Perfluoropentanesulfonic Acid	PFPeS	2706-91-4
Perfluorobutanesulfonic Acid	PFBS	375-73-5
Perfluoropropanesulfonic Acid	PFPrS	423-41-6
FLUOROTELOMERS		
1H,1H,2H,2H-Perfluorododecanesulfonic Acid	10:2FTS	120226-60-0
1H,1H,2H,2H-Perfluorodecanesulfonic Acid	8:2FTS	39108-34-4
1H,1H,2H,2H-Perfluorooctanesulfonic Acid	6:2FTS	27619-97-2
1H,1H,2H,2H-Perfluorohexanesulfonic Acid	4:2FTS	757124-72-4
PERFLUOROALKANE SULFONAMIDES (FASAs)		
Perfluorooctanesulfonamide	FOSA/PFOSA	754-91-6
N-Ethyl Perfluorooctane Sulfonamide	NEtFOSA	4151-50-2
N-Methyl Perfluorooctane Sulfonamide	NMeFOSA	31506-32-8
PERFLUOROALKANE SULFONYL SUBSTANCES		
N-Ethyl Perfluorooctanesulfonamido Ethanol	NEtFOSE	1691-99-2
N-Methyl Perfluorooctanesulfonamido Ethanol	NMeFOSE	24448-09-7
N-Ethyl Perfluorooctanesulfonamidoacetic Acid	NEtFOSAA	2991-50-6
N-Methyl Perfluorooctanesulfonamidoacetic Acid	NMeFOSAA	2355-31-9
PER- and POLYFLUOROALKYL ETHER CARBOXYLIC ACIDS		
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid	HFPO-DA	13252-13-6
4,8-Dioxa-3h-Perfluorononanoic Acid	ADONA	919005-14-4
CHLORO-PERFLUOROALKYL SULFONIC ACIDS		
11-Chloroeicosafuoro-3-Oxaundecane-1-Sulfonic Acid	11Cl-PF3OUdS	763051-92-9
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid	9Cl-PF3ONS	756426-58-1
PERFLUOROETHER SULFONIC ACIDS (PFESAs)		
Perfluoro(2-Ethoxyethane)Sulfonic Acid	PFEESA	113507-82-7
PERFLUOROETHER/POLYETHER CARBOXYLIC ACIDS (PFPCAs)		
Perfluoro-3-Methoxypropanoic Acid	PFMPA	377-73-1
Perfluoro-4-Methoxybutanoic Acid	PFMBA	863090-89-5
Nonafluoro-3,6-Dioxaheptanoic Acid	NFDHA	151772-58-6

Project Name: MV AIRPORT
Project Number: 143-3953-23004

Serial_No:12262312:17
Lab Number: L2370818
Report Date: 12/26/23

PFAS PARAMETER SUMMARY

Parameter	Acronym	CAS Number
FLUOROTELOMER CARBOXYLIC ACIDS (FTCAs)		
3-Perfluoroheptyl Propanoic Acid	7:3FTCA	812-70-4
2H,2H,3H,3H-Perfluorooctanoic Acid	5:3FTCA	914637-49-3
3-Perfluoropropyl Propanoic Acid	3:3FTCA	356-02-5

Project Name: MV AIRPORT
Project Number: 143-3953-23004

Lab Number: L2370818
Report Date: 12/26/23

GLOSSARY

Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.) Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
NR	- No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: Data Usability Report



Project Name: MV AIRPORT
Project Number: 143-3953-23004

Lab Number: L2370818
Report Date: 12/26/23

Footnotes

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Chlordane: The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA, this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Gasoline Range Organics (GRO): Gasoline Range Organics (GRO) results include all chromatographic peaks eluting from Methyl tert butyl ether through Naphthalene, with the exception of GRO analysis in support of State of Ohio programs, which includes all chromatographic peaks eluting from Hexane through Dodecane.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

- A** - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- F** - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- J** - Estimated value. This represents an estimated concentration for Tentatively Identified Compounds (TICs).
- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

Report Format: Data Usability Report



Project Name: MV AIRPORT
Project Number: 143-3953-23004

Lab Number: L2370818
Report Date: 12/26/23

Data Qualifiers

- ND** - Not detected at the reporting limit (RL) for the sample.
- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.
- V** - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)
- Z** - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Project Name: MV AIRPORT
Project Number: 143-3953-23004

Lab Number: L2370818
Report Date: 12/26/23

REFERENCES

- 121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.
- 134 Determination of Selected Perfluorinated Alkyl Acids in Drinking Water by Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS) using Isotope Dilution. Alpha SOP 23528.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility

EPA 624.1: m/p-xylene, o-xylene, Naphthalene

EPA 625.1: alpha-Terpineol

EPA 8260D: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.

EPA 8270E: NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine, alpha-Terpineol; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.

SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO₂, NO₃.

Mansfield Facility

SM 2540D: TSS.

EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene,

3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water

EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE,**

EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B

EPA 524.2: THMs and VOCs; **EPA 504.1:** EDB, DBCP.

Microbiology: SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.

Non-Potable Water

SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1:**

Ammonia-N, **LACHAT 10-107-06-1-B:** Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2:** Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E,**

SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.

EPA 624.1: Volatile Halocarbons & Aromatics,

EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs

EPA 625.1: SVOC (Acid/Base/Neutral Extractables).

Microbiology: SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.

Mansfield Facility:

Drinking Water

EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1** Hg.

EPA 522, EPA 537.1.

Non-Potable Water

EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.

EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.

EPA 245.1 Hg.

SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.



CHAIN OF CUSTODY

PAGE 1 OF 1

Date Rec'd in Lab: 12/1/23

ALPHA Job #: 2370818

8 Walkup Drive
Westboro, MA 01581
Tel: 508-898-6220

320 Forbes Blvd
Mansfield, MA 02048
Tel: 508-822-9300

Project Information

Project Name: **MV AIRPORT**
Project Location: **WEST TISBURY**
Project #: **143-3953-23004**
Project Manager: **MYRIUM**
ALPHA Quote #:

Report Information - Data Deliverables

ADEx EMAIL

Billing Information

Same as Client info PO #:

Client Information

Client: **TETRA TECH**
Address: **100 NICHOLSON ROAD
MALLIS CROUGHT MA**
Phone: **508-561-6893**
Email: **RON.MYRIUM@TETRA TECH.COM**

Turn-Around Time

Standard RUSH (only confirmed if pre-approved)
Date Due:

Regulatory Requirements & Project Information Requirements

Yes No MA MCP Analytical Methods Yes No CT RCP Analytical Methods
 Yes No Matrix Spike Required on this SDG? (Required for MCP (Inorganics))
 Yes No GW1 Standards (Info Required for Metals & EPH with Targets)
 Yes No NPDES RGP
 Other State /Fed Program Criteria

ANALYSIS	VOC: <input type="checkbox"/> 8260 <input type="checkbox"/> 624 <input type="checkbox"/> S24.2	SAMPLE INFO
	SVOC: <input type="checkbox"/> ABN <input type="checkbox"/> PAH	
METALS: <input type="checkbox"/> MCP 13 <input type="checkbox"/> MCP 14 <input type="checkbox"/> RCP 15	METALS: <input type="checkbox"/> RCRA5 <input type="checkbox"/> RCRA6	Preservation <input type="checkbox"/> Lab to do
EPH: <input type="checkbox"/> Ranges & Targets <input type="checkbox"/> Ranges Only	VPH: <input type="checkbox"/> Ranges & Targets <input type="checkbox"/> Ranges Only	PFAS - Isotope DTL
PCB <input type="checkbox"/> PEST	TPH: <input type="checkbox"/> Quant Only <input type="checkbox"/> Fingerprint	TOTAL # BOTTLES

Additional Project Information:

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler Initials
		Date	Time		
70818-01	SA-30 0-0.5'	11/30/23	1300	SEC	REM
-02	SA-31 0-0.5'	↓	1310	↓	↓
-03	SA-32 0-0.5'		1320		
-04	SA-33 0-0.5'		1330		
-05	SA-34 0-0.5'		1340		
-06	SA-34 1.5'-2.0'		1350		
-07	SA-35 0-0.5'		1400		
-08	SA-36 0-0.5'		1410		

Container Type
P= Plastic
A= Amber glass
V= Vial
G= Glass
B= Bacteria cup
C= Cube
O= Other
E= Encore
D= BOD Bottle

Preservative
A= None
B= HCl
C= HNO₃
D= H₂SO₄
E= NaOH
F= MeOH
G= NaHSO₄
H = Na₂S₂O₃
I= Ascorbic Acid
J = NH₄Cl
K= Zn Acetate
O= Other

Container Type	P
Preservative	A

Relinquished By:	Date/Time	Received By:	Date/Time
<i>[Signature]</i>	12/1/23	XARP AAL	12/1 9:40
<i>[Signature]</i>	12/1 15:40	<i>[Signature]</i>	12/1 15:40
<i>[Signature]</i>	12/1 19:30	H. Linn AAL	12-1-23 19:30
H. Perrin AAL	12-1-23 20:20	EMP Donohue AAL	12/1/23 20:20

All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.
FORM NO: 01-01 (rev. 12-Mar-2012)



ANALYTICAL REPORT

Lab Number:	L2370799
Client:	Tetra Tech Rizzo Marlborough Technology Park 100 Nickerson Road Marlborough, MA 01752
ATTN:	Ron Myrick
Phone:	(508) 786-2200
Project Name:	MVY
Project Number:	143-3953-23004
Report Date:	12/13/23

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320 Forbes Boulevard, Mansfield, MA 02048-1806
508-822-9300 (Fax) 508-822-3288 800-624-9220 - www.alphalab.com



Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370799
Report Date: 12/13/23

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2370799-01	TT-13	WATER	AIRPORT	11/29/23 13:15	12/01/23
L2370799-02	TT-14	WATER	AIRPORT	11/29/23 10:15	12/01/23
L2370799-03	TT-20	WATER	AIRPORT	11/30/23 07:30	12/01/23
L2370799-04	TT-25	WATER	AIRPORT	11/29/23 12:40	12/01/23
L2370799-05	TT-26S	WATER	AIRPORT	11/29/23 11:25	12/01/23
L2370799-06	TT-26D	WATER	AIRPORT	11/29/23 12:05	12/01/23
L2370799-07	FIELD BLANK-1	WATER	AIRPORT	11/30/23 06:00	12/01/23

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370799
Report Date: 12/13/23

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370799
Report Date: 12/13/23

Case Narrative (continued)

Perfluorinated Alkyl Acids by EPA 533

L2370799-01: The sample was re-extracted on dilution in order to quantitate the results within the calibration range. The result(s) should be considered estimated, and are qualified with an E flag, for any compound(s) that exceeded the calibration range in the initial analysis. The re-extraction was performed only for the compound(s) that exceeded the calibration range. The discrepancy in concentrations between the original and the re-extract is due to response saturation in the original analysis.

L2370799-03: The sample was re-extracted on dilution in order to quantitate the results within the calibration range. The result(s) should be considered estimated, and are qualified with an E flag, for any compound(s) that exceeded the calibration range in the initial analysis. The re-extraction was performed only for the compound(s) that exceeded the calibration range.

L2370799-03: The Extracted Internal Standard recoveries were outside the acceptance criteria for perfluoro[13c4]butanoic acid (mpfba) (39%), perfluoro[13c5]pentanoic acid (m5pfpea) (35%) and perfluoro[1,2,3,4,6-13c5]hexanoic acid (m5pfhxa) (38%). The EIS is impacted by the saturated response of the associated target analyte.

L2370799-03: The Extracted Internal Standard recoveries were outside the acceptance criteria for perfluoro[1,2,3,4-13c4]heptanoic acid (m4pfhpa) (48%) and 2,3,3,3-tetrafluoro-2-[1,1,2,2,3,3,3-heptafluoropropoxy]-13c3-propanoic acid (m3hfpo-da) (36%).

L2370799-04RE: The Extracted Internal Standard recoveries were outside the acceptance criteria for perfluoro[13c4]butanoic acid (mpfba) (17%), perfluoro[13c5]pentanoic acid (m5pfpea) (20%), perfluoro[1,2,3,4,6-13c5]hexanoic acid (m5pfhxa) (20%), perfluoro[1,2,3,4-13c4]heptanoic acid (m4pfhpa) (20%) and 2,3,3,3-tetrafluoro-2-[1,1,2,2,3,3,3-heptafluoropropoxy]-13c3-propanoic acid (m3hfpo-da) (19%) ; however, re-extraction achieved similar results: perfluoro[13c4]butanoic acid (mpfba) (36%), perfluoro[13c5]pentanoic acid (m5pfpea) (42%), perfluoro[1,2,3,4,6-13c5]hexanoic acid (m5pfhxa) (40%), perfluoro[1,2,3,4-13c4]heptanoic acid (m4pfhpa) (41%) and 2,3,3,3-tetrafluoro-2-[1,1,2,2,3,3,3-heptafluoropropoxy]-13c3-propanoic acid (m3hfpo-da) (41%) . The results of the re-extraction are reported.

L2370799-05RE: The Extracted Internal Standard recoveries were outside the acceptance criteria for perfluoro[13c4]butanoic acid (mpfba) (28%) ; however, re-extraction achieved similar results:

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370799
Report Date: 12/13/23

Case Narrative (continued)

perfluoro[13c4]butanoic acid (mpfba) (48%) . The results of the re-extraction are reported.

L2370799-06RE: The Extracted Internal Standard recoveries were outside the acceptance criteria for 2,3,3,3-tetrafluoro-2-[1,1,2,2,3,3,3-heptafluoropropoxy]-13c3-propanoic acid (m3hfpo-da) (19%) ; however, re-extraction achieved similar results: 2,3,3,3-tetrafluoro-2-[1,1,2,2,3,3,3-heptafluoropropoxy]-13c3-propanoic acid (m3hfpo-da) (49%) . The results of the re-extraction are reported.

The WG1861369-2 LCS recovery, associated with L2370799-07, is above the acceptance criteria for 1h,1h,2h,2h-perfluorooctanesulfonic acid (6:2fts) (155%); however, the associated sample is non-detect to the RL for this target analyte. The results of the original analysis are reported.

WG1861369-2 LCS recovery associated with L2370799-02 was above the acceptance criteria for 6:2FtS ; however, re-extraction could not be performed due to lack of additional sample. The results of the original analysis are reported; however, all positive detects for this compound are considered to have a potentially high bias.

WG1861369-2 LCS recovery, associated with L2370799-03, was outside the acceptance criteria for 6:2FtS; however, this compound is not reported in the associated sample.

The WG1861369-2 LCS recovery, associated with L2370799-07, is above the acceptance criteria for 1h,1h,2h,2h-perfluorooctanesulfonic acid (6:2fts) (155%); however, the associated sample is non-detect to the RL for this target analyte. The results of the original analysis are reported.

WG1861369-3: The Matrix Spike level is at the Reporting Limit (RL); any detections below the RL in the native sample are not included in the % Recovery calculation.

The WG1861369-3 MS recoveries, performed on L2370799-01, are outside the acceptance criteria for perfluoro-4-methoxybutanoic acid (pfmba) (208%) and nonafluoro-3,6-dioxaheptanoic acid (nfdha) (165%).

The WG1861369-3 MS recoveries, performed on L2370799-01, are outside the acceptance criteria for perfluorobutanoic acid (pfba) (2700%), perfluoropentanoic acid (pfpea) (6340%), 1h,1h,2h,2h-perfluorohexanesulfonic acid (4:2fts) (180%), perfluorohexanoic acid (pfhxa) (4810%), perfluoroheptanoic acid (pfhpa) (3490%), perfluorooctanoic acid (pfoa) (159%), perfluorononanoic acid (pfna) (375%), perfluorooctanesulfonic acid (pfos) (152%) and 1h,1h,2h,2h-perfluorodecanesulfonic acid (8:2fts) (545%). The unacceptable percent recoveries are attributed to the elevated concentrations of target compounds present in

Project Name: MVY
Project Number: 143-3953-23004

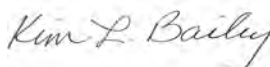
Lab Number: L2370799
Report Date: 12/13/23

Case Narrative (continued)

the native sample.

WG1862916-3: An LCS/LCSD was performed in lieu of a Matrix Spike and Laboratory Duplicate due to insufficient sample volume available for analysis.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:  Kim L. Bailey

Title: Technical Director/Representative

Date: 12/13/23

ORGANICS

SEMIVOLATILES

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370799
Report Date: 12/13/23

SAMPLE RESULTS

Lab ID: L2370799-01
Client ID: TT-13
Sample Location: AIRPORT

Date Collected: 11/29/23 13:15
Date Received: 12/01/23
Field Prep: Not Specified

Sample Depth:

Matrix: Water
Analytical Method: 136,533
Analytical Date: 12/10/23 20:09
Analyst: TBR

Extraction Method: EPA 533
Extraction Date: 12/08/23 09:07

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	820	E	ng/l	1.81	--	1
Perfluoro-3-Methoxypropanoic Acid (PFMPA)	ND		ng/l	1.81	--	1
Perfluoropentanoic Acid (PFPeA)	1320	E	ng/l	1.81	--	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.81	--	1
Perfluoro-4-Methoxybutanoic Acid (PFMBA)	ND		ng/l	1.81	--	1
Perfluoro(2-Ethoxyethane)Sulfonic Acid (PFEESA)	ND		ng/l	1.81	--	1
Nonafluoro-3,6-Dioxaheptanoic Acid (NFDHA)	ND		ng/l	1.81	--	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	22.1		ng/l	1.81	--	1
Perfluorohexanoic Acid (PFHxA)	761	E	ng/l	1.81	--	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.81	--	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/l	1.81	--	1
Perfluoroheptanoic Acid (PFHpA)	576	E	ng/l	1.81	--	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.81	--	1
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/l	1.81	--	1
Perfluorooctanoic Acid (PFOA)	132		ng/l	1.81	--	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.81	--	1
Perfluorononanoic Acid (PFNA)	28.3		ng/l	1.81	--	1
Perfluorooctanesulfonic Acid (PFOS)	4.31		ng/l	1.81	--	1
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	ND		ng/l	1.81	--	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	48.7		ng/l	1.81	--	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.81	--	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.81	--	1
11-Chloroeicosafluoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	ND		ng/l	1.81	--	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.81	--	1

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370799
Report Date: 12/13/23

SAMPLE RESULTS

Lab ID: L2370799-01
 Client ID: TT-13
 Sample Location: AIRPORT

Date Collected: 11/29/23 13:15
 Date Received: 12/01/23
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	90		50-200
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	53		50-200
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	95		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	121		50-200
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	81		50-200
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	106		50-200
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	87		50-200
Perfluoro[13C8]Octanoic Acid (M8PFOA)	86		50-200
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	138		50-200
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	89		50-200
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	137		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	93		50-200
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	133		50-200
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	138		50-200
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	141		50-200

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370799
Report Date: 12/13/23

SAMPLE RESULTS

Lab ID: L2370799-01 RE
 Client ID: TT-13
 Sample Location: AIRPORT

Date Collected: 11/29/23 13:15
 Date Received: 12/01/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 136,533
 Analytical Date: 12/12/23 19:51
 Analyst: CAP

Extraction Method: EPA 533
 Extraction Date: 12/12/23 14:01

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	927		ng/l	100	--	1
Perfluoropentanoic Acid (PFPeA)	4370		ng/l	100	--	1
Perfluorohexanoic Acid (PFHxA)	2120		ng/l	100	--	1
Perfluoroheptanoic Acid (PFHpA)	647		ng/l	100	--	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	16100		ng/l	100	--	1

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	84		50-200
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	86		50-200
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	77		50-200
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	86		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	93		50-200

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370799
Report Date: 12/13/23

SAMPLE RESULTS

Lab ID: L2370799-02
 Client ID: TT-14
 Sample Location: AIRPORT

Date Collected: 11/29/23 10:15
 Date Received: 12/01/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 136,533
 Analytical Date: 12/10/23 20:27
 Analyst: TBR

Extraction Method: EPA 533
 Extraction Date: 12/08/23 09:07

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	24.6		ng/l	1.82	--	1
Perfluoro-3-Methoxypropanoic Acid (PFMPA)	ND		ng/l	1.82	--	1
Perfluoropentanoic Acid (PFPeA)	73.5		ng/l	1.82	--	1
Perfluorobutanesulfonic Acid (PFBS)	9.38		ng/l	1.82	--	1
Perfluoro-4-Methoxybutanoic Acid (PFMBA)	ND		ng/l	1.82	--	1
Perfluoro(2-Ethoxyethane)Sulfonic Acid (PFEESA)	ND		ng/l	1.82	--	1
Nonafluoro-3,6-Dioxaheptanoic Acid (NFDHA)	ND		ng/l	1.82	--	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	1.82	--	1
Perfluorohexanoic Acid (PFHxA)	47.4		ng/l	1.82	--	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.82	--	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/l	1.82	--	1
Perfluoroheptanoic Acid (PFHpA)	37.0		ng/l	1.82	--	1
Perfluorohexanesulfonic Acid (PFHxS)	25.6		ng/l	1.82	--	1
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/l	1.82	--	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	100		ng/l	1.82	--	1
Perfluorooctanoic Acid (PFOA)	63.0		ng/l	1.82	--	1
Perfluoroheptanesulfonic Acid (PFHpS)	2.94		ng/l	1.82	--	1
Perfluorononanoic Acid (PFNA)	19.0		ng/l	1.82	--	1
Perfluorooctanesulfonic Acid (PFOS)	195		ng/l	1.82	--	1
9-Chlorohexadecafluoro-3-Oxanonone-1-Sulfonic Acid (9Cl-PF3ONS)	ND		ng/l	1.82	--	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	29.8		ng/l	1.82	--	1
Perfluorodecanoic Acid (PFDA)	7.36		ng/l	1.82	--	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.82	--	1
11-Chloroeicosafluoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	ND		ng/l	1.82	--	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.82	--	1

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370799
Report Date: 12/13/23

SAMPLE RESULTS

Lab ID: L2370799-02
Client ID: TT-14
Sample Location: AIRPORT

Date Collected: 11/29/23 10:15
Date Received: 12/01/23
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab						
Surrogate (Extracted Internal Standard)			% Recovery	Qualifier	Acceptance Criteria	
Perfluoro[13C4]Butanoic Acid (MPFBA)			87		50-200	
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)			83		50-200	
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)			91		50-200	
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)			142		50-200	
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)			80		50-200	
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)			80		50-200	
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)			94		50-200	
Perfluoro[13C8]Octanoic Acid (M8PFOA)			84		50-200	
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)			121		50-200	
Perfluoro[13C9]Nonanoic Acid (M9PFNA)			89		50-200	
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)			89		50-200	
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)			86		50-200	
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)			125		50-200	
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)			89		50-200	
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)			94		50-200	
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)			78		50-200	

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370799
Report Date: 12/13/23

SAMPLE RESULTS

Lab ID: L2370799-03
Client ID: TT-20
Sample Location: AIRPORT

Date Collected: 11/30/23 07:30
Date Received: 12/01/23
Field Prep: Not Specified

Sample Depth:

Matrix: Water
Analytical Method: 136,533
Analytical Date: 12/10/23 20:53
Analyst: TBR

Extraction Method: EPA 533
Extraction Date: 12/08/23 09:07

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	387	E	ng/l	1.81	--	1
Perfluoro-3-Methoxypropanoic Acid (PFMPA)	ND		ng/l	1.81	--	1
Perfluoropentanoic Acid (PFPeA)	1290	E	ng/l	1.81	--	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.81	--	1
Perfluoro-4-Methoxybutanoic Acid (PFMBA)	ND		ng/l	1.81	--	1
Perfluoro(2-Ethoxyethane)Sulfonic Acid (PFEESA)	ND		ng/l	1.81	--	1
Nonafluoro-3,6-Dioxaheptanoic Acid (NFDHA)	ND		ng/l	1.81	--	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	1.81	--	1
Perfluorohexanoic Acid (PFHxA)	689	E	ng/l	1.81	--	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.81	--	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/l	1.81	--	1
Perfluoroheptanoic Acid (PFHpA)	177		ng/l	1.81	--	1
Perfluorohexanesulfonic Acid (PFHxS)	4.07		ng/l	1.81	--	1
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/l	1.81	--	1
Perfluorooctanoic Acid (PFOA)	18.2		ng/l	1.81	--	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.81	--	1
Perfluorononanoic Acid (PFNA)	2.42		ng/l	1.81	--	1
Perfluorooctanesulfonic Acid (PFOS)	21.6		ng/l	1.81	--	1
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	ND		ng/l	1.81	--	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	49.7		ng/l	1.81	--	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.81	--	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.81	--	1
11-Chloroeicosafluoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	ND		ng/l	1.81	--	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.81	--	1

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370799
Report Date: 12/13/23

SAMPLE RESULTS

Lab ID: L2370799-03
 Client ID: TT-20
 Sample Location: AIRPORT

Date Collected: 11/30/23 07:30
 Date Received: 12/01/23
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	39	Q	50-200
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	35	Q	50-200
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	93		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	109		50-200
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	38	Q	50-200
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	48	Q	50-200
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	86		50-200
Perfluoro[13C8]Octanoic Acid (M8PFOA)	51		50-200
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	67		50-200
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	78		50-200
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	77		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	133		50-200
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	91		50-200
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	85		50-200
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	36	Q	50-200

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370799
Report Date: 12/13/23

SAMPLE RESULTS

Lab ID: L2370799-03 RE
 Client ID: TT-20
 Sample Location: AIRPORT

Date Collected: 11/30/23 07:30
 Date Received: 12/01/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 136,533
 Analytical Date: 12/12/23 20:00
 Analyst: CAP

Extraction Method: EPA 533
 Extraction Date: 12/12/23 14:01

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	427		ng/l	20.0	--	1
Perfluoropentanoic Acid (PFPeA)	1570		ng/l	20.0	--	1
Perfluorohexanoic Acid (PFHxA)	676		ng/l	20.0	--	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	969		ng/l	20.0	--	1

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	75		50-200
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	76		50-200
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	83		50-200
Perfluoro[13C8]Octanoic Acid (M8PFOA)	77		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	96		50-200

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370799
Report Date: 12/13/23

SAMPLE RESULTS

Lab ID: L2370799-04 RE
 Client ID: TT-25
 Sample Location: AIRPORT

Date Collected: 11/29/23 12:40
 Date Received: 12/01/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 136,533
 Analytical Date: 12/12/23 20:09
 Analyst: CAP

Extraction Method: EPA 533
 Extraction Date: 12/12/23 14:01

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	3.82		ng/l	1.77	--	1
Perfluoro-3-Methoxypropanoic Acid (PFMPA)	ND		ng/l	1.77	--	1
Perfluoropentanoic Acid (PFPeA)	3.86		ng/l	1.77	--	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.77	--	1
Perfluoro-4-Methoxybutanoic Acid (PFMBA)	ND		ng/l	1.77	--	1
Perfluoro(2-Ethoxyethane)Sulfonic Acid (PFEESA)	ND		ng/l	1.77	--	1
Nonafluoro-3,6-Dioxaheptanoic Acid (NFDHA)	ND		ng/l	1.77	--	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	1.77	--	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	1.77	--	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.77	--	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/l	1.77	--	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.77	--	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.77	--	1
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/l	1.77	--	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	2.56		ng/l	1.77	--	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	1.77	--	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.77	--	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.77	--	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	1.77	--	1
9-Chlorohexadecafluoro-3-Oxanonone-1-Sulfonic Acid (9Cl-PF3ONS)	ND		ng/l	1.77	--	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.77	--	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.77	--	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.77	--	1
11-Chloroeicosafluoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	ND		ng/l	1.77	--	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.77	--	1

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370799
Report Date: 12/13/23

SAMPLE RESULTS

Lab ID: L2370799-04 RE
 Client ID: TT-25
 Sample Location: AIRPORT

Date Collected: 11/29/23 12:40
 Date Received: 12/01/23
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	36	Q	50-200
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	42	Q	50-200
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	91		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	87		50-200
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	40	Q	50-200
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	41	Q	50-200
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	91		50-200
Perfluoro[13C8]Octanoic Acid (M8PFOA)	50		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	91		50-200
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	60		50-200
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	96		50-200
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	63		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	89		50-200
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	70		50-200
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	74		50-200
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	41	Q	50-200

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370799
Report Date: 12/13/23

SAMPLE RESULTS

Lab ID: L2370799-05 RE
 Client ID: TT-26S
 Sample Location: AIRPORT

Date Collected: 11/29/23 11:25
 Date Received: 12/01/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 136,533
 Analytical Date: 12/12/23 20:17
 Analyst: CAP

Extraction Method: EPA 533
 Extraction Date: 12/12/23 14:01

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	3.59		ng/l	1.80	--	1
Perfluoro-3-Methoxypropanoic Acid (PFMPA)	ND		ng/l	1.80	--	1
Perfluoropentanoic Acid (PFPeA)	13.3		ng/l	1.80	--	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.80	--	1
Perfluoro-4-Methoxybutanoic Acid (PFMBA)	ND		ng/l	1.80	--	1
Perfluoro(2-Ethoxyethane)Sulfonic Acid (PFEESA)	ND		ng/l	1.80	--	1
Nonafluoro-3,6-Dioxaheptanoic Acid (NFDHA)	ND		ng/l	1.80	--	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	1.80	--	1
Perfluorohexanoic Acid (PFHxA)	6.75		ng/l	1.80	--	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.80	--	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/l	1.80	--	1
Perfluoroheptanoic Acid (PFHpA)	5.10		ng/l	1.80	--	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.80	--	1
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/l	1.80	--	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	52.8		ng/l	1.80	--	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	1.80	--	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.80	--	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.80	--	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	1.80	--	1
9-Chlorohexadecafluoro-3-Oxanonone-1-Sulfonic Acid (9Cl-PF3ONS)	ND		ng/l	1.80	--	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	3.93		ng/l	1.80	--	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.80	--	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.80	--	1
11-Chloroeicosafluoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	ND		ng/l	1.80	--	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.80	--	1

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370799
Report Date: 12/13/23

SAMPLE RESULTS

Lab ID: L2370799-05 RE
 Client ID: TT-26S
 Sample Location: AIRPORT

Date Collected: 11/29/23 11:25
 Date Received: 12/01/23
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab						
Surrogate (Extracted Internal Standard)			% Recovery	Qualifier	Acceptance Criteria	
Perfluoro[13C4]Butanoic Acid (MPFBA)			48	Q	50-200	
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)			55		50-200	
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)			81		50-200	
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)			89		50-200	
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)			51		50-200	
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)			59		50-200	
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)			82		50-200	
Perfluoro[13C8]Octanoic Acid (M8PFOA)			59		50-200	
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)			91		50-200	
Perfluoro[13C9]Nonanoic Acid (M9PFNA)			70		50-200	
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)			89		50-200	
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)			69		50-200	
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)			80		50-200	
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)			79		50-200	
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)			82		50-200	
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)			50		50-200	

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370799
Report Date: 12/13/23

SAMPLE RESULTS

Lab ID: L2370799-06 RE
 Client ID: TT-26D
 Sample Location: AIRPORT

Date Collected: 11/29/23 12:05
 Date Received: 12/01/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 136,533
 Analytical Date: 12/12/23 20:26
 Analyst: CAP

Extraction Method: EPA 533
 Extraction Date: 12/12/23 14:01

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND		ng/l	1.79	--	1
Perfluoro-3-Methoxypropanoic Acid (PFMPA)	ND		ng/l	1.79	--	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	1.79	--	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.79	--	1
Perfluoro-4-Methoxybutanoic Acid (PFMBA)	ND		ng/l	1.79	--	1
Perfluoro(2-Ethoxyethane)Sulfonic Acid (PFEESA)	ND		ng/l	1.79	--	1
Nonafluoro-3,6-Dioxaheptanoic Acid (NFDHA)	ND		ng/l	1.79	--	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	1.79	--	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	1.79	--	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.79	--	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/l	1.79	--	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.79	--	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.79	--	1
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/l	1.79	--	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.79	--	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	1.79	--	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.79	--	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.79	--	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	1.79	--	1
9-Chlorohexadecafluoro-3-Oxanonone-1-Sulfonic Acid (9Cl-PF3ONS)	ND		ng/l	1.79	--	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.79	--	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.79	--	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.79	--	1
11-Chloroeicosafluoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	ND		ng/l	1.79	--	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.79	--	1

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370799
Report Date: 12/13/23

SAMPLE RESULTS

Lab ID: L2370799-06 RE
 Client ID: TT-26D
 Sample Location: AIRPORT

Date Collected: 11/29/23 12:05
 Date Received: 12/01/23
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	50		50-200
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	59		50-200
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	91		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	90		50-200
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	54		50-200
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	67		50-200
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	88		50-200
Perfluoro[13C8]Octanoic Acid (M8PFOA)	65		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	91		50-200
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	65		50-200
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	92		50-200
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	88		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	93		50-200
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	90		50-200
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	93		50-200
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	49	Q	50-200

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370799
Report Date: 12/13/23

SAMPLE RESULTS

Lab ID: L2370799-07
 Client ID: FIELD BLANK-1
 Sample Location: AIRPORT

Date Collected: 11/30/23 06:00
 Date Received: 12/01/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 136,533
 Analytical Date: 12/10/23 21:28
 Analyst: TBR

Extraction Method: EPA 533
 Extraction Date: 12/08/23 09:07

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND		ng/l	1.89	--	1
Perfluoro-3-Methoxypropanoic Acid (PFMPA)	ND		ng/l	1.89	--	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	1.89	--	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.89	--	1
Perfluoro-4-Methoxybutanoic Acid (PFMBA)	ND		ng/l	1.89	--	1
Perfluoro(2-Ethoxyethane)Sulfonic Acid (PFEESA)	ND		ng/l	1.89	--	1
Nonafluoro-3,6-Dioxaheptanoic Acid (NFDHA)	ND		ng/l	1.89	--	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	1.89	--	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	1.89	--	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.89	--	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/l	1.89	--	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.89	--	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.89	--	1
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/l	1.89	--	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.89	--	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	1.89	--	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.89	--	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.89	--	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	1.89	--	1
9-Chlorohexadecafluoro-3-Oxanonone-1-Sulfonic Acid (9Cl-PF3ONS)	ND		ng/l	1.89	--	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.89	--	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.89	--	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.89	--	1
11-Chloroeicosafluoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	ND		ng/l	1.89	--	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.89	--	1

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370799
Report Date: 12/13/23

SAMPLE RESULTS

Lab ID: L2370799-07
 Client ID: FIELD BLANK-1
 Sample Location: AIRPORT

Date Collected: 11/30/23 06:00
 Date Received: 12/01/23
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	94		50-200
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	108		50-200
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	76		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	76		50-200
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	96		50-200
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	90		50-200
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	75		50-200
Perfluoro[13C8]Octanoic Acid (M8PFOA)	90		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	78		50-200
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	98		50-200
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	69		50-200
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	100		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	84		50-200
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	107		50-200
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	106		50-200
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	94		50-200

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370799
Report Date: 12/13/23

Method Blank Analysis
Batch Quality Control

Analytical Method: 136,533
Analytical Date: 12/10/23 18:42
Analyst: TBR

Extraction Method: EPA 533
Extraction Date: 12/08/23 09:07

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab for sample(s): 01-03,07 Batch: WG1861369-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	2.00	--
Perfluoro-3-Methoxypropanoic Acid (PFMPA)	ND		ng/l	2.00	--
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	--
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	--
Perfluoro-4-Methoxybutanoic Acid (PFMBA)	ND		ng/l	2.00	--
Perfluoro(2-Ethoxyethane)Sulfonic Acid (PFEEESA)	ND		ng/l	2.00	--
Nonafluoro-3,6-Dioxaheptanoic Acid (NFDHA)	ND		ng/l	2.00	--
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	2.00	--
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	--
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.00	--
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/l	2.00	--
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	--
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	--
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/l	2.00	--
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	2.00	--
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	--
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	--
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	--
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	--
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	ND		ng/l	2.00	--
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	2.00	--
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	--
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	--
11-Chloroeicosafuoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	ND		ng/l	2.00	--
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	--

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370799
Report Date: 12/13/23

Method Blank Analysis
Batch Quality Control

Analytical Method: 136,533
Analytical Date: 12/10/23 18:42
Analyst: TBR

Extraction Method: EPA 533
Extraction Date: 12/08/23 09:07

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab for sample(s): 01-03,07 Batch: WG1861369-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	93		50-200
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	103		50-200
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	90		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	85		50-200
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	105		50-200
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	102		50-200
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	92		50-200
Perfluoro[13C8]Octanoic Acid (M8PFOA)	91		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	94		50-200
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	97		50-200
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	92		50-200
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	94		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	100		50-200
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	101		50-200
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	110		50-200
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	96		50-200

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370799
Report Date: 12/13/23

Method Blank Analysis
Batch Quality Control

Analytical Method: 136,533
Analytical Date: 12/12/23 18:50
Analyst: CAP

Extraction Method: EPA 533
Extraction Date: 12/12/23 14:01

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab for sample(s): 01,03-06 Batch: WG1862916-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	2.00	--
Perfluoro-3-Methoxypropanoic Acid (PFMPA)	ND		ng/l	2.00	--
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	--
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	--
Perfluoro-4-Methoxybutanoic Acid (PFMBA)	ND		ng/l	2.00	--
Perfluoro(2-Ethoxyethane)Sulfonic Acid (PFEEESA)	ND		ng/l	2.00	--
Nonafluoro-3,6-Dioxaheptanoic Acid (NFDHA)	ND		ng/l	2.00	--
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	2.00	--
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	--
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.00	--
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/l	2.00	--
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	--
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	--
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/l	2.00	--
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	2.00	--
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	--
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	--
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	--
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	--
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	ND		ng/l	2.00	--
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	2.00	--
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	--
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	--
11-Chloroeicosafuoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	ND		ng/l	2.00	--
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	--

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370799
Report Date: 12/13/23

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 136,533
Analytical Date: 12/12/23 18:50
Analyst: CAP

Extraction Method: EPA 533
Extraction Date: 12/12/23 14:01

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab for sample(s): 01,03-06 Batch: WG1862916-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	95		50-200
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	102		50-200
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	96		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	88		50-200
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	93		50-200
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	99		50-200
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	94		50-200
Perfluoro[13C8]Octanoic Acid (M8PFOA)	92		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	88		50-200
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	94		50-200
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	89		50-200
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	93		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	91		50-200
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	94		50-200
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	101		50-200
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	90		50-200

Lab Control Sample Analysis

Batch Quality Control

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370799
Report Date: 12/13/23

Parameter	LCS	Qual	LCS	Qual	%Recovery	RPD	Qual	RPD
	%Recovery		%Recovery		Limits			Limits
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab Associated sample(s): 01-03,07 Batch: WG1861369-2								
Perfluorobutanoic Acid (PFBA)	93		-		50-150	-		30
Perfluoro-3-Methoxypropanoic Acid (PFMPA)	107		-		50-150	-		30
Perfluoropentanoic Acid (PFPeA)	94		-		50-150	-		30
Perfluorobutanesulfonic Acid (PFBS)	95		-		50-150	-		30
Perfluoro-4-Methoxybutanoic Acid (PFMBA)	90		-		50-150	-		30
Perfluoro(2-Ethoxyethane)Sulfonic Acid (PFEEESA)	86		-		50-150	-		30
Nonafluoro-3,6-Dioxaheptanoic Acid (NFDHA)	102		-		50-150	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	90		-		50-150	-		30
Perfluorohexanoic Acid (PFHxA)	96		-		50-150	-		30
Perfluoropentanesulfonic Acid (PFPeS)	96		-		50-150	-		30
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	86		-		50-150	-		30
Perfluoroheptanoic Acid (PFHpA)	92		-		50-150	-		30
Perfluorohexanesulfonic Acid (PFHxS)	93		-		50-150	-		30
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	93		-		50-150	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	155	Q	-		50-150	-		30
Perfluorooctanoic Acid (PFOA)	91		-		50-150	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	83		-		50-150	-		30
Perfluorononanoic Acid (PFNA)	92		-		50-150	-		30
Perfluorooctanesulfonic Acid (PFOS)	94		-		50-150	-		30
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	89		-		50-150	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	120		-		50-150	-		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370799
Report Date: 12/13/23

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab Associated sample(s): 01-03,07 Batch: WG1861369-2								
Perfluorodecanoic Acid (PFDA)	99		-		50-150	-		30
Perfluoroundecanoic Acid (PFUnA)	103		-		50-150	-		30
11-Chloroeicosafuoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	87		-		50-150	-		30
Perfluorododecanoic Acid (PFDoA)	100		-		50-150	-		30

Surrogate (Extracted Internal Standard)	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
Perfluoro[13C4]Butanoic Acid (MPFBA)	91				50-200
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	100				50-200
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	88				50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	85				50-200
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	83				50-200
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	81				50-200
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	81				50-200
Perfluoro[13C8]Octanoic Acid (M8PFOA)	92				50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	84				50-200
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	91				50-200
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	88				50-200
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	87				50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	90				50-200
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	93				50-200
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	93				50-200
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	84				50-200

Lab Control Sample Analysis

Batch Quality Control

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370799
Report Date: 12/13/23

Parameter	LCS	Qual	LCS	Qual	%Recovery	RPD	Qual	RPD
	%Recovery		%Recovery		Limits			Limits
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab Associated sample(s): 01,03-06 Batch: WG1862916-2 WG1862916-3								
Perfluorobutanoic Acid (PFBA)	92		93		70-130			30
Perfluoro-3-Methoxypropanoic Acid (PFMPA)	97		98		70-130			30
Perfluoropentanoic Acid (PFPeA)	92		94		70-130			30
Perfluorobutanesulfonic Acid (PFBS)	93		88		70-130			30
Perfluoro-4-Methoxybutanoic Acid (PFMBA)	85		90		70-130			30
Perfluoro(2-Ethoxyethane)Sulfonic Acid (PFEEESA)	87		82		70-130			30
Nonafluoro-3,6-Dioxaheptanoic Acid (NFDHA)	95		90		70-130			30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	78		88		70-130			30
Perfluorohexanoic Acid (PFHxA)	88		85		70-130			30
Perfluoropentanesulfonic Acid (PFPeS)	87		88		70-130			30
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	86		90		70-130			30
Perfluoroheptanoic Acid (PFHpA)	99		86		70-130			30
Perfluorohexanesulfonic Acid (PFHxS)	87		85		70-130			30
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	87		90		70-130			30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	103		86		70-130			30
Perfluorooctanoic Acid (PFOA)	90		86		70-130			30
Perfluoroheptanesulfonic Acid (PFHpS)	90		89		70-130			30
Perfluorononanoic Acid (PFNA)	90		93		70-130			30
Perfluorooctanesulfonic Acid (PFOS)	91		87		70-130			30
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	89		87		70-130			30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	98		96		70-130			30

Lab Control Sample Analysis

Batch Quality Control

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370799
Report Date: 12/13/23

Parameter	LCS		LCSD		%Recovery		RPD	
	%Recovery	Qual	%Recovery	Qual	Limits	RPD	Qual	Limits
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab Associated sample(s): 01,03-06 Batch: WG1862916-2 WG1862916-3								
Perfluorodecanoic Acid (PFDA)	80		96		70-130	18		30
Perfluoroundecanoic Acid (PFUnA)	92		96		70-130	4		30
11-Chloroeicosafuoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	93		87		70-130	7		30
Perfluorododecanoic Acid (PFDoA)	90		93		70-130	3		30

Surrogate (Extracted Internal Standard)	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
Perfluoro[13C4]Butanoic Acid (MPFBA)	98		92		50-200
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	100		95		50-200
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	90		93		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	98		98		50-200
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	94		98		50-200
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	89		99		50-200
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	90		83		50-200
Perfluoro[13C8]Octanoic Acid (M8PFOA)	91		95		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	85		94		50-200
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	95		96		50-200
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	89		91		50-200
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	103		96		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	87		93		50-200
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	102		100		50-200
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	97		104		50-200
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	104		101		50-200

Matrix Spike Analysis

Batch Quality Control

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370799
Report Date: 12/13/23

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab Associated sample(s): 01-03,07 QC Batch ID: WG1861369-3 QC Sample: L2370799-01 Client ID: TT-13												
Perfluorobutanoic Acid (PFBA)	820E	1.89	871E	2700	Q	-	-		50-150	-		30
Perfluoro-3-Methoxypropanoic Acid (PFMPA)	ND	1.89	2.37	125		-	-		50-150	-		30
Perfluoropentanoic Acid (PFPeA)	1320E	1.89	1440E	6340	Q	-	-		50-150	-		30
Perfluorobutanesulfonic Acid (PFBS)	ND	1.68	2.20	131		-	-		50-150	-		30
Perfluoro-4-Methoxybutanoic Acid (PFMBA)	ND	1.89	3.93	208	Q	-	-		50-150	-		30
Perfluoro(2-Ethoxyethane)Sulfonic Acid (PFEESA)	ND	1.69	ND	90		-	-		50-150	-		30
Nonafluoro-3,6-Dioxaheptanoic Acid (NFDHA)	ND	1.89	3.13	165	Q	-	-		50-150	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	22.1	1.77	25.3	180	Q	-	-		50-150	-		30
Perfluorohexanoic Acid (PFHxA)	761E	1.89	852E	4810	Q	-	-		50-150	-		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	1.78	ND	90		-	-		50-150	-		30
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND	1.89	ND	93		-	-		50-150	-		30
Perfluoroheptanoic Acid (PFHpA)	576E	1.89	642E	3490	Q	-	-		50-150	-		30
Perfluorohexanesulfonic Acid (PFHxS)	ND	1.72	1.89	110		-	-		50-150	-		30
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND	1.79	2.49	139		-	-		50-150	-		30
Perfluorooctanoic Acid (PFOA)	132	1.89	135	159	Q	-	-		50-150	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	1.8	ND	59		-	-		50-150	-		30
Perfluorononanoic Acid (PFNA)	28.3	1.89	35.4	375	Q	-	-		50-150	-		30
Perfluorooctanesulfonic Acid (PFOS)	4.31	1.76	6.98	152	Q	-	-		50-150	-		30
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	ND	1.77	ND	94		-	-		50-150	-		30
1H,1H,2H,2H-Perfluorodecane sulfonic Acid (8:2FTS)	48.7	1.82	58.6	545	Q	-	-		50-150	-		30
Perfluorodecanoic Acid (PFDA)	ND	1.89	2.40	127		-	-		50-150	-		30
Perfluoroundecanoic Acid (PFUnA)	ND	1.89	1.91	101		-	-		50-150	-		30

Matrix Spike Analysis

Batch Quality Control

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370799
Report Date: 12/13/23

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab Associated sample(s): 01-03,07 QC Batch ID: WG1861369-3 QC Sample: L2370799-01 Client ID: TT-13												
11-Chloroeicosafuoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	ND	1.79	ND	87		-	-		50-150	-		30
Perfluorododecanoic Acid (PFDoA)	ND	1.89	ND	91		-	-		50-150	-		30

Surrogate (Extracted Internal Standard)	MS % Recovery	MS Qualifier	MSD % Recovery	MSD Qualifier	Acceptance Criteria
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	79				50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	107				50-200
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	119				50-200
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUUDA)	110				50-200
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	110				50-200
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	78				50-200
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	96				50-200
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	91				50-200
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	122				50-200
Perfluoro[13C4]Butanoic Acid (MPFBA)	84				50-200
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	51				50-200
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	78				50-200
Perfluoro[13C8]Octanoic Acid (M8PFOA)	83				50-200
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	114				50-200
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	93				50-200

Lab Duplicate Analysis

Batch Quality Control

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370799
Report Date: 12/13/23

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab Associated sample(s): 01-03,07 QC Batch ID: WG1861369-4 QC Sample: L2370799-02 Client ID: TT-14						
Perfluorobutanoic Acid (PFBA)	24.6	23.2	ng/l	6		30
Perfluoro-3-Methoxypropanoic Acid (PFMPA)	ND	ND	ng/l	NC		30
Perfluoropentanoic Acid (PFPeA)	73.5	71.3	ng/l	3		30
Perfluorobutanesulfonic Acid (PFBS)	9.38	9.12	ng/l	3		30
Perfluoro-4-Methoxybutanoic Acid (PFMBA)	ND	ND	ng/l	NC		30
Perfluoro(2-Ethoxyethane)Sulfonic Acid (PFEESA)	ND	ND	ng/l	NC		30
Nonafluoro-3,6-Dioxaheptanoic Acid (NFDHA)	ND	ND	ng/l	NC		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	ND	ng/l	NC		30
Perfluorohexanoic Acid (PFHxA)	47.4	48.0	ng/l	1		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	ND	ng/l	NC		30
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND	ND	ng/l	NC		30
Perfluoroheptanoic Acid (PFHpA)	37.0	35.8	ng/l	3		30
Perfluorohexanesulfonic Acid (PFHxS)	25.6	26.3	ng/l	3		30
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND	ND	ng/l	NC		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	100	82.4	ng/l	19		30
Perfluorooctanoic Acid (PFOA)	63.0	57.9	ng/l	8		30
Perfluoroheptanesulfonic Acid (PFHpS)	2.94	2.59	ng/l	13		30
Perfluorononanoic Acid (PFNA)	19.0	19.0	ng/l	0		30
Perfluorooctanesulfonic Acid (PFOS)	195	182	ng/l	7		30
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	ND	ND	ng/l	NC		30

Lab Duplicate Analysis

Batch Quality Control

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370799
Report Date: 12/13/23

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab Associated sample(s): 01-03,07 QC Batch ID: WG1861369-4 QC Sample: L2370799-02 Client ID: TT-14						
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	29.8	30.5	ng/l	2		30
Perfluorodecanoic Acid (PFDA)	7.36	7.02	ng/l	5		30
Perfluoroundecanoic Acid (PFUnA)	ND	ND	ng/l	NC		30
11-Chloroeicosafuoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	ND	ND	ng/l	NC		30
Perfluorododecanoic Acid (PFDoA)	ND	ND	ng/l	NC		30

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	87		89		50-200
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	83		84		50-200
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	91		87		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	142		141		50-200
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	80		75		50-200
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	80		76		50-200
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	94		89		50-200
Perfluoro[13C8]Octanoic Acid (M8PFOA)	84		78		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	121		127		50-200
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	89		82		50-200
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	89		87		50-200
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	86		86		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	125		118		50-200
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	89		86		50-200
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	94		93		50-200
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	78		68		50-200

Project Name: MVY**Lab Number:** L2370799**Project Number:** 143-3953-23004**Report Date:** 12/13/23**Sample Receipt and Container Information**

Were project specific reporting limits specified?

YES

Cooler Information

Cooler	Custody Seal
A	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2370799-01A	Plastic 250ml Ammonium Acetate preserved	A	NA		3.8	Y	Absent		A2-533(28)
L2370799-01B	Plastic 250ml Ammonium Acetate preserved	A	NA		3.8	Y	Absent		A2-533(28)
L2370799-02A	Plastic 250ml Ammonium Acetate preserved	A	NA		3.8	Y	Absent		A2-533(28)
L2370799-02B	Plastic 250ml Ammonium Acetate preserved	A	NA		3.8	Y	Absent		A2-533(28)
L2370799-03A	Plastic 250ml Ammonium Acetate preserved	A	NA		3.8	Y	Absent		A2-533(28)
L2370799-03B	Plastic 250ml Ammonium Acetate preserved	A	NA		3.8	Y	Absent		A2-533(28)
L2370799-04A	Plastic 250ml Ammonium Acetate preserved	A	NA		3.8	Y	Absent		A2-533(28)
L2370799-04B	Plastic 250ml Ammonium Acetate preserved	A	NA		3.8	Y	Absent		A2-533(28)
L2370799-05A	Plastic 250ml Ammonium Acetate preserved	A	NA		3.8	Y	Absent		A2-533(28)
L2370799-05B	Plastic 250ml Ammonium Acetate preserved	A	NA		3.8	Y	Absent		A2-533(28)
L2370799-06A	Plastic 250ml Ammonium Acetate preserved	A	NA		3.8	Y	Absent		A2-533(28)
L2370799-06B	Plastic 250ml Ammonium Acetate preserved	A	NA		3.8	Y	Absent		A2-533(28)
L2370799-07A	Plastic 250ml Ammonium Acetate preserved	A	NA		3.8	Y	Absent		A2-533(28)

Project Name: MVY
Project Number: 143-3953-23004

Serial_No:12132323:48
Lab Number: L2370799
Report Date: 12/13/23

PFAS PARAMETER SUMMARY

Parameter	Acronym	CAS Number
PERFLUOROALKYL CARBOXYLIC ACIDS (PFCAs)		
Perfluorooctadecanoic Acid	PFODA	16517-11-6
Perfluorohexadecanoic Acid	PFHxDA	67905-19-5
Perfluorotetradecanoic Acid	PFTA/PFTeDA	376-06-7
Perfluorotridecanoic Acid	PFTrDA	72629-94-8
Perfluorododecanoic Acid	PFDoA	307-55-1
Perfluoroundecanoic Acid	PFUnA	2058-94-8
Perfluorodecanoic Acid	PFDA	335-76-2
Perfluorononanoic Acid	PFNA	375-95-1
Perfluorooctanoic Acid	PFOA	335-67-1
Perfluoroheptanoic Acid	PFHpA	375-85-9
Perfluorohexanoic Acid	PFHxA	307-24-4
Perfluoropentanoic Acid	PFPeA	2706-90-3
Perfluorobutanoic Acid	PFBA	375-22-4
PERFLUOROALKYL SULFONIC ACIDS (PFSAs)		
Perfluorododecanesulfonic Acid	PFDoDS/PFDoS	79780-39-5
Perfluorodecanesulfonic Acid	PFDS	335-77-3
Perfluorononanesulfonic Acid	PFNS	68259-12-1
Perfluorooctanesulfonic Acid	PFOS	1763-23-1
Perfluoroheptanesulfonic Acid	PFHpS	375-92-8
Perfluorohexanesulfonic Acid	PFHxS	355-46-4
Perfluoropentanesulfonic Acid	PFPeS	2706-91-4
Perfluorobutanesulfonic Acid	PFBS	375-73-5
Perfluoropropanesulfonic Acid	PFPrS	423-41-6
FLUOROTELOMERS		
1H,1H,2H,2H-Perfluorododecanesulfonic Acid	10:2FTS	120226-60-0
1H,1H,2H,2H-Perfluorodecanesulfonic Acid	8:2FTS	39108-34-4
1H,1H,2H,2H-Perfluorooctanesulfonic Acid	6:2FTS	27619-97-2
1H,1H,2H,2H-Perfluorohexanesulfonic Acid	4:2FTS	757124-72-4
PERFLUOROALKANE SULFONAMIDES (FASAs)		
Perfluorooctanesulfonamide	FOSA/PFOSA	754-91-6
N-Ethyl Perfluorooctane Sulfonamide	NEtFOSA	4151-50-2
N-Methyl Perfluorooctane Sulfonamide	NMeFOSA	31506-32-8
PERFLUOROALKANE SULFONYL SUBSTANCES		
N-Ethyl Perfluorooctanesulfonamido Ethanol	NEtFOSE	1691-99-2
N-Methyl Perfluorooctanesulfonamido Ethanol	NMeFOSE	24448-09-7
N-Ethyl Perfluorooctanesulfonamidoacetic Acid	NEtFOSAA	2991-50-6
N-Methyl Perfluorooctanesulfonamidoacetic Acid	NMeFOSAA	2355-31-9
PER- and POLYFLUOROALKYL ETHER CARBOXYLIC ACIDS		
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid	HFPO-DA	13252-13-6
4,8-Dioxa-3h-Perfluorononanoic Acid	ADONA	919005-14-4
CHLORO-PERFLUOROALKYL SULFONIC ACIDS		
11-Chloroeicosafuoro-3-Oxaundecane-1-Sulfonic Acid	11Cl-PF3OUdS	763051-92-9
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid	9Cl-PF3ONS	756426-58-1
PERFLUOROETHER SULFONIC ACIDS (PFESAs)		
Perfluoro(2-Ethoxyethane)Sulfonic Acid	PFEEA	113507-82-7
PERFLUOROETHER/POLYETHER CARBOXYLIC ACIDS (PFPCAs)		
Perfluoro-3-Methoxypropanoic Acid	PFMPA	377-73-1
Perfluoro-4-Methoxybutanoic Acid	PFMBA	863090-89-5
Nonafluoro-3,6-Dioxaheptanoic Acid	NFDHA	151772-58-6

Project Name: MVY
Project Number: 143-3953-23004

Serial_No:12132323:48
Lab Number: L2370799
Report Date: 12/13/23

PFAS PARAMETER SUMMARY

Parameter	Acronym	CAS Number
FLUOROTELOMER CARBOXYLIC ACIDS (FTCAs)		
3-Perfluoroheptyl Propanoic Acid	7:3FTCA	812-70-4
2H,2H,3H,3H-Perfluorooctanoic Acid	5:3FTCA	914637-49-3
3-Perfluoropropyl Propanoic Acid	3:3FTCA	356-02-5



Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370799
Report Date: 12/13/23

GLOSSARY

Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.) Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
NR	- No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: Data Usability Report



Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370799
Report Date: 12/13/23

Footnotes

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Chlordane: The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA, this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Gasoline Range Organics (GRO): Gasoline Range Organics (GRO) results include all chromatographic peaks eluting from Methyl tert butyl ether through Naphthalene, with the exception of GRO analysis in support of State of Ohio programs, which includes all chromatographic peaks eluting from Hexane through Dodecane.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

- A** - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- F** - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- J** - Estimated value. This represents an estimated concentration for Tentatively Identified Compounds (TICs).
- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

Report Format: Data Usability Report



Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370799
Report Date: 12/13/23

Data Qualifiers

- ND** - Not detected at the reporting limit (RL) for the sample.
- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.
- V** - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)
- Z** - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370799
Report Date: 12/13/23

REFERENCES

- 136 Determination of Per- and Polyfluoroalkyl Substances in Drinking Water by Isotope Dilution Anion Exchange Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS). EPA Method 533, EPA Document 815-B-19-020, November 2019.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility

EPA 624.1: m/p-xylene, o-xylene, Naphthalene

EPA 625.1: alpha-Terpineol

EPA 8260D: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.

EPA 8270E: NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine, alpha-Terpineol; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.

SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO₂, NO₃.

Mansfield Facility

SM 2540D: TSS.

EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene,

3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water

EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE,**

EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B

EPA 524.2: THMs and VOCs; **EPA 504.1:** EDB, DBCP.

Microbiology: SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.

Non-Potable Water

SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1:**

Ammonia-N, **LACHAT 10-107-06-1-B:** Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2:** Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E,**

SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.

EPA 624.1: Volatile Halocarbons & Aromatics,

EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II,

Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs

EPA 625.1: SVOC (Acid/Base/Neutral Extractables).

Microbiology: SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.

Mansfield Facility:

Drinking Water

EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1** Hg.

EPA 522, EPA 537.1.

Non-Potable Water

EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.

EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.

EPA 245.1 Hg.

SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.



ANALYTICAL REPORT

Lab Number:	L2370802
Client:	Tetra Tech Rizzo Marlborough Technology Park 100 Nickerson Road Marlborough, MA 01752
ATTN:	Ron Myrick
Phone:	(508) 786-2200
Project Name:	MVY
Project Number:	143-3953-23004
Report Date:	12/08/23

The original project report/data package is held by Alpha Analytical. This report/data package is paginated and should be reproduced only in its entirety. Alpha Analytical holds no responsibility for results and/or data that are not consistent with the original.

Certifications & Approvals: MA (M-MA030), NH NELAP (2062), CT (PH-0825), DoD (L2474), FL (E87814), IL (200081), IN (C-MA-04), KY (KY98046), LA (85084), ME (MA00030), MD (350), MI (99110), NJ (MA015), NY (11627), NC (685), OH (CL106), OR (MA-0262), PA (68-02089), RI (LAO00299), TX (T104704419), VT (VT-0015), VA (460194), WA (C954), US Army Corps of Engineers, USDA (Permit #525-23-107-88708), USFWS (Permit #206964).

320 Forbes Boulevard, Mansfield, MA 02048-1806
508-822-9300 (Fax) 508-822-3288 800-624-9220 - www.alphalab.com



Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370802
Report Date: 12/08/23

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2370802-01	PROPERTY GD	DW	PROPERTY GD	11/29/23 16:05	12/01/23

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370802
Report Date: 12/08/23

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370802
Report Date: 12/08/23

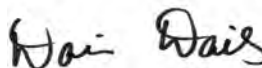
Case Narrative (continued)

Perfluorinated Alkyl Acids by EPA 533

WG1859769-3: The Matrix Spike level is at the Reporting Limit (RL); any detections below the RL in the native sample are not included in the % Recovery calculation.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:

 Darian Dailey

Title: Technical Director/Representative

Date: 12/08/23

ORGANICS

SEMIVOLATILES

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370802
Report Date: 12/08/23

SAMPLE RESULTS

Lab ID: L2370802-01
 Client ID: PROPERTY GD
 Sample Location: PROPERTY GD

Date Collected: 11/29/23 16:05
 Date Received: 12/01/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Dw
 Analytical Method: 136,533
 Analytical Date: 12/05/23 18:36
 Analyst: CAP

Extraction Method: EPA 533
 Extraction Date: 12/05/23 07:00

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	3.94		ng/l	1.81	--	1
Perfluoro-3-Methoxypropanoic Acid (PFMPA)	ND		ng/l	1.81	--	1
Perfluoropentanoic Acid (PFPeA)	13.9		ng/l	1.81	--	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.81	--	1
Perfluoro-4-Methoxybutanoic Acid (PFMBA)	ND		ng/l	1.81	--	1
Perfluoro(2-Ethoxyethane)Sulfonic Acid (PFEESA)	ND		ng/l	1.81	--	1
Nonafluoro-3,6-Dioxaheptanoic Acid (NFDHA)	ND		ng/l	1.81	--	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	1.81	--	1
Perfluorohexanoic Acid (PFHxA)	7.03		ng/l	1.81	--	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.81	--	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/l	1.81	--	1
Perfluoroheptanoic Acid (PFHpA)	2.56		ng/l	1.81	--	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.81	--	1
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/l	1.81	--	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.81	--	1
Perfluorooctanoic Acid (PFOA)	1.89		ng/l	1.81	--	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.81	--	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.81	--	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	1.81	--	1
9-Chlorohexadecafluoro-3-Oxanonone-1-Sulfonic Acid (9Cl-PF3ONS)	ND		ng/l	1.81	--	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.81	--	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.81	--	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.81	--	1
11-Chloroeicosafluoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	ND		ng/l	1.81	--	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.81	--	1

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370802
Report Date: 12/08/23

SAMPLE RESULTS

Lab ID: L2370802-01
 Client ID: PROPERTY GD
 Sample Location: PROPERTY GD

Date Collected: 11/29/23 16:05
 Date Received: 12/01/23
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	89		50-200
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	91		50-200
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	89		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	119		50-200
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	93		50-200
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	96		50-200
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	95		50-200
Perfluoro[13C8]Octanoic Acid (M8PFOA)	95		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	109		50-200
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	102		50-200
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	92		50-200
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	101		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	109		50-200
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	121		50-200
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	123		50-200
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	100		50-200

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370802
Report Date: 12/08/23

Method Blank Analysis
Batch Quality Control

Analytical Method: 136,533
Analytical Date: 12/05/23 17:35
Analyst: CAP

Extraction Method: EPA 533
Extraction Date: 12/05/23 07:00

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab for sample(s): 01 Batch: WG1859769-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	2.00	--
Perfluoro-3-Methoxypropanoic Acid (PFMPA)	ND		ng/l	2.00	--
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	--
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	--
Perfluoro-4-Methoxybutanoic Acid (PFMBA)	ND		ng/l	2.00	--
Perfluoro(2-Ethoxyethane)Sulfonic Acid (PFEEESA)	ND		ng/l	2.00	--
Nonafluoro-3,6-Dioxaheptanoic Acid (NFDHA)	ND		ng/l	2.00	--
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	2.00	--
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	--
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.00	--
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/l	2.00	--
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	--
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	--
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/l	2.00	--
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	2.00	--
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	--
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	--
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	--
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	--
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	ND		ng/l	2.00	--
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	2.00	--
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	--
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	--
11-Chloroeicosafuoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	ND		ng/l	2.00	--
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	--

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370802
Report Date: 12/08/23

Method Blank Analysis
Batch Quality Control

Analytical Method: 136,533
Analytical Date: 12/05/23 17:35
Analyst: CAP

Extraction Method: EPA 533
Extraction Date: 12/05/23 07:00

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab for sample(s): 01 Batch: WG1859769-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	98		50-200
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	113		50-200
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	109		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	113		50-200
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	97		50-200
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	102		50-200
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	109		50-200
Perfluoro[13C8]Octanoic Acid (M8PFOA)	97		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	120		50-200
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	104		50-200
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	106		50-200
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	98		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	130		50-200
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	111		50-200
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	113		50-200
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	92		50-200

Lab Control Sample Analysis

Batch Quality Control

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370802
Report Date: 12/08/23

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab Associated sample(s): 01 Batch: WG1859769-2								
Perfluorobutanoic Acid (PFBA)	96		-		50-150	-		30
Perfluoro-3-Methoxypropanoic Acid (PFMPA)	100		-		50-150	-		30
Perfluoropentanoic Acid (PFPeA)	93		-		50-150	-		30
Perfluorobutanesulfonic Acid (PFBS)	90		-		50-150	-		30
Perfluoro-4-Methoxybutanoic Acid (PFMBA)	87		-		50-150	-		30
Perfluoro(2-Ethoxyethane)Sulfonic Acid (PFEEESA)	86		-		50-150	-		30
Nonafluoro-3,6-Dioxaheptanoic Acid (NFDHA)	89		-		50-150	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	98		-		50-150	-		30
Perfluorohexanoic Acid (PFHxA)	103		-		50-150	-		30
Perfluoropentanesulfonic Acid (PFPeS)	88		-		50-150	-		30
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	87		-		50-150	-		30
Perfluoroheptanoic Acid (PFHpA)	102		-		50-150	-		30
Perfluorohexanesulfonic Acid (PFHxS)	77		-		50-150	-		30
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	90		-		50-150	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	97		-		50-150	-		30
Perfluorooctanoic Acid (PFOA)	98		-		50-150	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	91		-		50-150	-		30
Perfluorononanoic Acid (PFNA)	95		-		50-150	-		30
Perfluorooctanesulfonic Acid (PFOS)	95		-		50-150	-		30
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	90		-		50-150	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	94		-		50-150	-		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370802
Report Date: 12/08/23

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab Associated sample(s): 01 Batch: WG1859769-2								
Perfluorodecanoic Acid (PFDA)	96		-		50-150	-		30
Perfluoroundecanoic Acid (PFUnA)	92		-		50-150	-		30
11-Chloroeicosafuoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	84		-		50-150	-		30
Perfluorododecanoic Acid (PFDoA)	91		-		50-150	-		30

Surrogate (Extracted Internal Standard)	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
Perfluoro[13C4]Butanoic Acid (MPFBA)	91				50-200
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	96				50-200
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	92				50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	96				50-200
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	88				50-200
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	81				50-200
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	91				50-200
Perfluoro[13C8]Octanoic Acid (M8PFOA)	83				50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	106				50-200
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	91				50-200
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	89				50-200
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	91				50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	111				50-200
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	102				50-200
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	101				50-200
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	86				50-200

Matrix Spike Analysis

Batch Quality Control

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370802
Report Date: 12/08/23

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab GD												
Associated sample(s): 01 QC Batch ID: WG1859769-3 QC Sample: L2370802-01 Client ID: PROPERTY												
Perfluorobutanoic Acid (PFBA)	3.94	1.95	5.80	95		-	-		50-150	-		30
Perfluoro-3-Methoxypropanoic Acid (PFMPA)	ND	1.95	ND	87		-	-		50-150	-		30
Perfluoropentanoic Acid (PFPeA)	13.9	1.95	16.5	133		-	-		50-150	-		30
Perfluorobutanesulfonic Acid (PFBS)	ND	1.73	2.18	126		-	-		50-150	-		30
Perfluoro-4-Methoxybutanoic Acid (PFMBA)	ND	1.95	ND	92		-	-		50-150	-		30
Perfluoro(2-Ethoxyethane)Sulfonic Acid (PFEESA)	ND	1.74	ND	87		-	-		50-150	-		30
Nonafluoro-3,6-Dioxaheptanoic Acid (NFDHA)	ND	1.95	ND	81		-	-		50-150	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	1.83	ND	98		-	-		50-150	-		30
Perfluorohexanoic Acid (PFHxA)	7.03	1.95	8.84	93		-	-		50-150	-		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	1.84	ND	88		-	-		50-150	-		30
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND	1.95	ND	91		-	-		50-150	-		30
Perfluoroheptanoic Acid (PFHpA)	2.56	1.95	5.23	137		-	-		50-150	-		30
Perfluorohexanesulfonic Acid (PFHxS)	ND	1.78	2.08	117		-	-		50-150	-		30
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND	1.84	ND	90		-	-		50-150	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	1.86	2.43	131		-	-		50-150	-		30
Perfluorooctanoic Acid (PFOA)	1.89	1.95	4.52	135		-	-		50-150	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	1.86	ND	88		-	-		50-150	-		30
Perfluorononanoic Acid (PFNA)	ND	1.95	2.08	107		-	-		50-150	-		30
Perfluorooctanesulfonic Acid (PFOS)	ND	1.81	2.06	114		-	-		50-150	-		30
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	ND	1.82	ND	76		-	-		50-150	-		30
1H,1H,2H,2H-Perfluorodecane sulfonic Acid (8:2FTS)	ND	1.87	2.12	113		-	-		50-150	-		30

Matrix Spike Analysis

Batch Quality Control

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370802
Report Date: 12/08/23

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab GD												
Associated sample(s): 01 QC Batch ID: WG1859769-3 QC Sample: L2370802-01 Client ID: PROPERTY												
Perfluorodecanoic Acid (PFDA)	ND	1.95	ND	97		-	-		50-150	-		30
Perfluoroundecanoic Acid (PFUnA)	ND	1.95	ND	98		-	-		50-150	-		30
11-Chloroeicosafluoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	ND	1.84	ND	86		-	-		50-150	-		30
Perfluorododecanoic Acid (PFDoA)	ND	1.95	ND	97		-	-		50-150	-		30

Surrogate (Extracted Internal Standard)	MS % Recovery	MS Qualifier	MSD % Recovery	MSD Qualifier	Acceptance Criteria
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	115				50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	120				50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	105				50-200
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	57				50-200
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	87				50-200
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	69				50-200
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	70				50-200
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	59				50-200
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	84				50-200
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	96				50-200
Perfluoro[13C4]Butanoic Acid (MPFBA)	74				50-200
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	70				50-200
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	91				50-200
Perfluoro[13C8]Octanoic Acid (M8PFOA)	57				50-200
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	64				50-200
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	90				50-200

Lab Duplicate Analysis

Batch Quality Control

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370802
Report Date: 12/08/23

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1859769-4 QC Sample: L2370804-01 Client ID: DUP Sample						
Perfluorobutanoic Acid (PFBA)	19.1	19.9	ng/l	4		30
Perfluoro-3-Methoxypropanoic Acid (PFMPA)	ND	ND	ng/l	NC		30
Perfluoropentanoic Acid (PFPeA)	1.94	ND	ng/l	NC		30
Perfluorobutanesulfonic Acid (PFBS)	ND	ND	ng/l	NC		30
Perfluoro-4-Methoxybutanoic Acid (PFMBA)	ND	ND	ng/l	NC		30
Perfluoro(2-Ethoxyethane)Sulfonic Acid (PFEESA)	ND	ND	ng/l	NC		30
Nonafluoro-3,6-Dioxaheptanoic Acid (NFDHA)	ND	ND	ng/l	NC		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	ND	ng/l	NC		30
Perfluorohexanoic Acid (PFHxA)	ND	ND	ng/l	NC		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	ND	ng/l	NC		30
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND	ND	ng/l	NC		30
Perfluoroheptanoic Acid (PFHpA)	ND	ND	ng/l	NC		30
Perfluorohexanesulfonic Acid (PFHxS)	ND	ND	ng/l	NC		30
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND	ND	ng/l	NC		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	ND	ng/l	NC		30
Perfluorooctanoic Acid (PFOA)	ND	ND	ng/l	NC		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	ND	ng/l	NC		30
Perfluorononanoic Acid (PFNA)	ND	ND	ng/l	NC		30
Perfluorooctanesulfonic Acid (PFOS)	ND	ND	ng/l	NC		30
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	ND	ND	ng/l	NC		30

Lab Duplicate Analysis

Batch Quality Control

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370802
Report Date: 12/08/23

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1859769-4 QC Sample: L2370804-01 Client ID: DUP Sample						
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	ND	ng/l	NC		30
Perfluorodecanoic Acid (PFDA)	ND	ND	ng/l	NC		30
Perfluoroundecanoic Acid (PFUnA)	ND	ND	ng/l	NC		30
11-Chloroeicosafuoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	ND	ND	ng/l	NC		30
Perfluorododecanoic Acid (PFDoA)	ND	ND	ng/l	NC		30

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	27	Q	35	Q	50-200
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	27	Q	36	Q	50-200
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	93		98		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	100		105		50-200
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	25	Q	34	Q	50-200
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	24	Q	32	Q	50-200
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	96		94		50-200
Perfluoro[13C8]Octanoic Acid (M8PFOA)	23	Q	33	Q	50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	100		111		50-200
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	20	Q	38	Q	50-200
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	90		99		50-200
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	26	Q	54		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	127		116		50-200
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	40	Q	69		50-200
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	54		84		50-200
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	25	Q	30	Q	50-200

Project Name: MVY
Project Number: 143-3953-23004

Sample Receipt and Container Information

Were project specific reporting limits specified?

YES

Cooler Information

Cooler **Custody Seal**
A Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2370802-01A	Plastic 250ml Ammonium Acetate preserved	A	NA		3.8	Y	Absent		A2-533(28)
L2370802-01B	Plastic 250ml Ammonium Acetate preserved	A	NA		3.8	Y	Absent		A2-533(28)

Project Name: MVY
Project Number: 143-3953-23004

Serial_No:12082310:25
Lab Number: L2370802
Report Date: 12/08/23

PFAS PARAMETER SUMMARY

Parameter	Acronym	CAS Number
PERFLUOROALKYL CARBOXYLIC ACIDS (PFCAs)		
Perfluorooctadecanoic Acid	PFODA	16517-11-6
Perfluorohexadecanoic Acid	PFHxDA	67905-19-5
Perfluorotetradecanoic Acid	PFTA/PFTeDA	376-06-7
Perfluorotridecanoic Acid	PFTrDA	72629-94-8
Perfluorododecanoic Acid	PFDoA	307-55-1
Perfluoroundecanoic Acid	PFUnA	2058-94-8
Perfluorodecanoic Acid	PFDA	335-76-2
Perfluorononanoic Acid	PFNA	375-95-1
Perfluorooctanoic Acid	PFOA	335-67-1
Perfluoroheptanoic Acid	PFHpA	375-85-9
Perfluorohexanoic Acid	PFHxA	307-24-4
Perfluoropentanoic Acid	PFPeA	2706-90-3
Perfluorobutanoic Acid	PFBA	375-22-4
PERFLUOROALKYL SULFONIC ACIDS (PFSAs)		
Perfluorododecanesulfonic Acid	PFDoDS/PFDoS	79780-39-5
Perfluorodecanesulfonic Acid	PFDS	335-77-3
Perfluorononanesulfonic Acid	PFNS	68259-12-1
Perfluorooctanesulfonic Acid	PFOS	1763-23-1
Perfluoroheptanesulfonic Acid	PFHpS	375-92-8
Perfluorohexanesulfonic Acid	PFHxS	355-46-4
Perfluoropentanesulfonic Acid	PFPeS	2706-91-4
Perfluorobutanesulfonic Acid	PFBS	375-73-5
Perfluoropropanesulfonic Acid	PFPrS	423-41-6
FLUOROTELOMERS		
1H,1H,2H,2H-Perfluorododecanesulfonic Acid	10:2FTS	120226-60-0
1H,1H,2H,2H-Perfluorodecanesulfonic Acid	8:2FTS	39108-34-4
1H,1H,2H,2H-Perfluorooctanesulfonic Acid	6:2FTS	27619-97-2
1H,1H,2H,2H-Perfluorohexanesulfonic Acid	4:2FTS	757124-72-4
PERFLUOROALKANE SULFONAMIDES (FASAs)		
Perfluorooctanesulfonamide	FOSA/PFOSA	754-91-6
N-Ethyl Perfluorooctane Sulfonamide	NEtFOSA	4151-50-2
N-Methyl Perfluorooctane Sulfonamide	NMeFOSA	31506-32-8
PERFLUOROALKANE SULFONYL SUBSTANCES		
N-Ethyl Perfluorooctanesulfonamido Ethanol	NEtFOSE	1691-99-2
N-Methyl Perfluorooctanesulfonamido Ethanol	NMeFOSE	24448-09-7
N-Ethyl Perfluorooctanesulfonamidoacetic Acid	NEtFOSAA	2991-50-6
N-Methyl Perfluorooctanesulfonamidoacetic Acid	NMeFOSAA	2355-31-9
PER- and POLYFLUOROALKYL ETHER CARBOXYLIC ACIDS		
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid	HFPO-DA	13252-13-6
4,8-Dioxa-3h-Perfluorononanoic Acid	ADONA	919005-14-4
CHLORO-PERFLUOROALKYL SULFONIC ACIDS		
11-Chloroeicosafuoro-3-Oxaundecane-1-Sulfonic Acid	11Cl-PF3OUdS	763051-92-9
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid	9Cl-PF3ONS	756426-58-1
PERFLUOROETHER SULFONIC ACIDS (PFESAs)		
Perfluoro(2-Ethoxyethane)Sulfonic Acid	PFEESA	113507-82-7
PERFLUOROETHER/POLYETHER CARBOXYLIC ACIDS (PFPCAs)		
Perfluoro-3-Methoxypropanoic Acid	PFMPA	377-73-1
Perfluoro-4-Methoxybutanoic Acid	PFMBA	863090-89-5
Nonafluoro-3,6-Dioxaheptanoic Acid	NFDHA	151772-58-6

Project Name: MVY
Project Number: 143-3953-23004

Serial_No:12082310:25
Lab Number: L2370802
Report Date: 12/08/23

PFAS PARAMETER SUMMARY

Parameter	Acronym	CAS Number
FLUOROTELOMER CARBOXYLIC ACIDS (FTCAs)		
3-Perfluoroheptyl Propanoic Acid	7:3FTCA	812-70-4
2H,2H,3H,3H-Perfluorooctanoic Acid	5:3FTCA	914637-49-3
3-Perfluoropropyl Propanoic Acid	3:3FTCA	356-02-5

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370802
Report Date: 12/08/23

GLOSSARY

Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.) Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
NR	- No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: Data Usability Report



Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370802
Report Date: 12/08/23

Footnotes

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Chlordane: The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA, this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Gasoline Range Organics (GRO): Gasoline Range Organics (GRO) results include all chromatographic peaks eluting from Methyl tert butyl ether through Naphthalene, with the exception of GRO analysis in support of State of Ohio programs, which includes all chromatographic peaks eluting from Hexane through Dodecane.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

- A** - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- F** - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- J** - Estimated value. This represents an estimated concentration for Tentatively Identified Compounds (TICs).
- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

Report Format: Data Usability Report



Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370802
Report Date: 12/08/23

Data Qualifiers

- ND** - Not detected at the reporting limit (RL) for the sample.
- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.
- V** - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)
- Z** - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370802
Report Date: 12/08/23

REFERENCES

- 136 Determination of Per- and Polyfluoroalkyl Substances in Drinking Water by Isotope Dilution Anion Exchange Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS). EPA Method 533, EPA Document 815-B-19-020, November 2019.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility

EPA 624.1: m/p-xylene, o-xylene, Naphthalene

EPA 625.1: alpha-Terpineol

EPA 8260D: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.

EPA 8270E: NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine, alpha-Terpineol; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.

SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO₂, NO₃.

Mansfield Facility

SM 2540D: TSS.

EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene,

3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water

EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE,**

EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B

EPA 524.2: THMs and VOCs; **EPA 504.1:** EDB, DBCP.

Microbiology: SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.

Non-Potable Water

SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1:**

Ammonia-N, **LACHAT 10-107-06-1-B:** Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2:** Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E,**

SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.

EPA 624.1: Volatile Halocarbons & Aromatics,

EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs

EPA 625.1: SVOC (Acid/Base/Neutral Extractables).

Microbiology: SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.

Mansfield Facility:

Drinking Water

EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1 Hg.**

EPA 522, EPA 537.1.

Non-Potable Water

EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.

EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.

EPA 245.1 Hg.

SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.



ANALYTICAL REPORT

Lab Number:	L2370803
Client:	Tetra Tech Rizzo Marlborough Technology Park 100 Nickerson Road Marlborough, MA 01752
ATTN:	Ron Myrick
Phone:	(508) 786-2200
Project Name:	MVY
Project Number:	143-3953-23004
Report Date:	12/08/23

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Certifications & Approvals: MA (M-MA030), NH NELAP (2062), CT (PH-0825), DoD (L2474), FL (E87814), IL (200081), IN (C-MA-04), KY (KY98046), LA (85084), ME (MA00030), MD (350), MI (99110), NJ (MA015), NY (11627), NC (685), OH (CL106), OR (MA-0262), PA (68-02089), RI (LAO00299), TX (T104704419), VT (VT-0015), VA (460194), WA (C954), US Army Corps of Engineers, USDA (Permit #525-23-107-88708), USFWS (Permit #206964).

320 Forbes Boulevard, Mansfield, MA 02048-1806
508-822-9300 (Fax) 508-822-3288 800-624-9220 - www.alphalab.com



Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370803
Report Date: 12/08/23

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2370803-01	PROPERTY CJ	DW	PROPERTY CJ	11/29/23 15:40	12/01/23

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370803
Report Date: 12/08/23

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370803
Report Date: 12/08/23

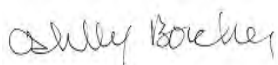
Case Narrative (continued)

Perfluorinated Alkyl Acids by EPA 533

L2370803-01R: The sample was re-analyzed due to QC failures in the original analysis. The results of the re-analysis are reported.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:



Ashley Boucher

Title: Technical Director/Representative

Date: 12/08/23

ORGANICS

SEMIVOLATILES

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370803
Report Date: 12/08/23

SAMPLE RESULTS

Lab ID: L2370803-01 R
 Client ID: PROPERTY CJ
 Sample Location: PROPERTY CJ

Date Collected: 11/29/23 15:40
 Date Received: 12/01/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Dw
 Analytical Method: 136,533
 Analytical Date: 12/05/23 20:55
 Analyst: CAP

Extraction Method: EPA 533
 Extraction Date: 12/05/23 07:00

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	3.32		ng/l	1.84	--	1
Perfluoro-3-Methoxypropanoic Acid (PFMPA)	ND		ng/l	1.84	--	1
Perfluoropentanoic Acid (PFPeA)	7.25		ng/l	1.84	--	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.84	--	1
Perfluoro-4-Methoxybutanoic Acid (PFMBA)	ND		ng/l	1.84	--	1
Perfluoro(2-Ethoxyethane)Sulfonic Acid (PFEESA)	ND		ng/l	1.84	--	1
Nonafluoro-3,6-Dioxaheptanoic Acid (NFDHA)	ND		ng/l	1.84	--	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	1.84	--	1
Perfluorohexanoic Acid (PFHxA)	4.92		ng/l	1.84	--	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.84	--	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/l	1.84	--	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.84	--	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.84	--	1
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/l	1.84	--	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.84	--	1
Perfluorooctanoic Acid (PFOA)	2.15		ng/l	1.84	--	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.84	--	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.84	--	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	1.84	--	1
9-Chlorohexadecafluoro-3-Oxanonone-1-Sulfonic Acid (9Cl-PF3ONS)	ND		ng/l	1.84	--	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.84	--	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.84	--	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.84	--	1
11-Chloroeicosafluoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	ND		ng/l	1.84	--	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.84	--	1

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370803
Report Date: 12/08/23

SAMPLE RESULTS

Lab ID: L2370803-01 R
 Client ID: PROPERTY CJ
 Sample Location: PROPERTY CJ

Date Collected: 11/29/23 15:40
 Date Received: 12/01/23
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	64		50-200
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	65		50-200
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	98		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	121		50-200
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	57		50-200
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	51		50-200
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	90		50-200
Perfluoro[13C8]Octanoic Acid (M8PFOA)	53		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	111		50-200
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	55		50-200
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	97		50-200
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	60		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	111		50-200
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	67		50-200
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	77		50-200
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	51		50-200

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370803
Report Date: 12/08/23

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 136,533
Analytical Date: 12/05/23 17:35
Analyst: CAP

Extraction Method: EPA 533
Extraction Date: 12/05/23 07:00

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab for sample(s): 01 Batch: WG1859769-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	2.00	--
Perfluoro-3-Methoxypropanoic Acid (PFMPA)	ND		ng/l	2.00	--
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	--
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	--
Perfluoro-4-Methoxybutanoic Acid (PFMBA)	ND		ng/l	2.00	--
Perfluoro(2-Ethoxyethane)Sulfonic Acid (PFEEESA)	ND		ng/l	2.00	--
Nonafluoro-3,6-Dioxaheptanoic Acid (NFDHA)	ND		ng/l	2.00	--
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	2.00	--
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	--
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.00	--
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/l	2.00	--
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	--
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	--
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/l	2.00	--
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	2.00	--
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	--
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	--
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	--
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	--
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	ND		ng/l	2.00	--
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	2.00	--
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	--
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	--
11-Chloroeicosafuoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	ND		ng/l	2.00	--
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	--

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370803
Report Date: 12/08/23

Method Blank Analysis
Batch Quality Control

Analytical Method: 136,533
Analytical Date: 12/05/23 17:35
Analyst: CAP

Extraction Method: EPA 533
Extraction Date: 12/05/23 07:00

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab for sample(s): 01 Batch: WG1859769-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	98		50-200
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	113		50-200
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	109		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	113		50-200
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	97		50-200
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	102		50-200
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	109		50-200
Perfluoro[13C8]Octanoic Acid (M8PFOA)	97		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	120		50-200
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	104		50-200
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	106		50-200
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	98		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	130		50-200
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	111		50-200
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	113		50-200
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	92		50-200

Lab Control Sample Analysis

Batch Quality Control

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370803
Report Date: 12/08/23

Parameter	LCS	Qual	LCS	Qual	%Recovery	RPD	Qual	RPD
	%Recovery		%Recovery		Limits			Limits
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab Associated sample(s): 01 Batch: WG1859769-2								
Perfluorobutanoic Acid (PFBA)	96		-		50-150	-		30
Perfluoro-3-Methoxypropanoic Acid (PFMPA)	100		-		50-150	-		30
Perfluoropentanoic Acid (PFPeA)	93		-		50-150	-		30
Perfluorobutanesulfonic Acid (PFBS)	90		-		50-150	-		30
Perfluoro-4-Methoxybutanoic Acid (PFMBA)	87		-		50-150	-		30
Perfluoro(2-Ethoxyethane)Sulfonic Acid (PFEEESA)	86		-		50-150	-		30
Nonafluoro-3,6-Dioxaheptanoic Acid (NFDHA)	89		-		50-150	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	98		-		50-150	-		30
Perfluorohexanoic Acid (PFHxA)	103		-		50-150	-		30
Perfluoropentanesulfonic Acid (PFPeS)	88		-		50-150	-		30
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	87		-		50-150	-		30
Perfluoroheptanoic Acid (PFHpA)	102		-		50-150	-		30
Perfluorohexanesulfonic Acid (PFHxS)	77		-		50-150	-		30
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	90		-		50-150	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	97		-		50-150	-		30
Perfluorooctanoic Acid (PFOA)	98		-		50-150	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	91		-		50-150	-		30
Perfluorononanoic Acid (PFNA)	95		-		50-150	-		30
Perfluorooctanesulfonic Acid (PFOS)	95		-		50-150	-		30
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	90		-		50-150	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	94		-		50-150	-		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370803
Report Date: 12/08/23

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab Associated sample(s): 01 Batch: WG1859769-2								
Perfluorodecanoic Acid (PFDA)	96		-		50-150	-		30
Perfluoroundecanoic Acid (PFUnA)	92		-		50-150	-		30
11-Chloroeicosafuoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	84		-		50-150	-		30
Perfluorododecanoic Acid (PFDoA)	91		-		50-150	-		30

Surrogate (Extracted Internal Standard)	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
Perfluoro[13C4]Butanoic Acid (MPFBA)	91				50-200
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	96				50-200
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	92				50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	96				50-200
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	88				50-200
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	81				50-200
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	91				50-200
Perfluoro[13C8]Octanoic Acid (M8PFOA)	83				50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	106				50-200
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	91				50-200
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	89				50-200
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	91				50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	111				50-200
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	102				50-200
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	101				50-200
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	86				50-200

Matrix Spike Analysis

Batch Quality Control

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370803
Report Date: 12/08/23

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab												
			Associated sample(s): 01			QC Batch ID: WG1859769-3			QC Sample: L2370802-01		Client ID: MS Sample	
Perfluorobutanoic Acid (PFBA)	3.94	1.95	5.80	95		-	-		50-150	-		30
Perfluoro-3-Methoxypropanoic Acid (PFMPA)	ND	1.95	ND	87		-	-		50-150	-		30
Perfluoropentanoic Acid (PFPeA)	13.9	1.95	16.5	133		-	-		50-150	-		30
Perfluorobutanesulfonic Acid (PFBS)	ND	1.73	2.18	126		-	-		50-150	-		30
Perfluoro-4-Methoxybutanoic Acid (PFMBA)	ND	1.95	ND	92		-	-		50-150	-		30
Perfluoro(2-Ethoxyethane)Sulfonic Acid (PFEESA)	ND	1.74	ND	87		-	-		50-150	-		30
Nonafluoro-3,6-Dioxaheptanoic Acid (NFDHA)	ND	1.95	ND	81		-	-		50-150	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	1.83	ND	98		-	-		50-150	-		30
Perfluorohexanoic Acid (PFHxA)	7.03	1.95	8.84	93		-	-		50-150	-		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	1.84	ND	88		-	-		50-150	-		30
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND	1.95	ND	91		-	-		50-150	-		30
Perfluoroheptanoic Acid (PFHpA)	2.56	1.95	5.23	137		-	-		50-150	-		30
Perfluorohexanesulfonic Acid (PFHxS)	ND	1.78	2.08	117		-	-		50-150	-		30
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND	1.84	ND	90		-	-		50-150	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	1.86	2.43	131		-	-		50-150	-		30
Perfluorooctanoic Acid (PFOA)	1.89	1.95	4.52	135		-	-		50-150	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	1.86	ND	88		-	-		50-150	-		30
Perfluorononanoic Acid (PFNA)	ND	1.95	2.08	107		-	-		50-150	-		30
Perfluorooctanesulfonic Acid (PFOS)	ND	1.81	2.06	114		-	-		50-150	-		30
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	ND	1.82	ND	76		-	-		50-150	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	1.87	2.12	113		-	-		50-150	-		30
Perfluorodecanoic Acid (PFDA)	ND	1.95	ND	97		-	-		50-150	-		30

Matrix Spike Analysis

Batch Quality Control

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370803
Report Date: 12/08/23

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1859769-3 QC Sample: L2370802-01 Client ID: MS Sample												
Perfluoroundecanoic Acid (PFUnA)	ND	1.95	ND	98		-	-		50-150	-		30
11-Chloroeicosafuoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	ND	1.84	ND	86		-	-		50-150	-		30
Perfluorododecanoic Acid (PFDoA)	ND	1.95	ND	97		-	-		50-150	-		30

Surrogate (Extracted Internal Standard)	MS % Recovery	MS Qualifier	MSD % Recovery	MSD Qualifier	Acceptance Criteria
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	115				50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	120				50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	105				50-200
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	57				50-200
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	87				50-200
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	69				50-200
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	70				50-200
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	59				50-200
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	84				50-200
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	96				50-200
Perfluoro[13C4]Butanoic Acid (MPFBA)	74				50-200
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	70				50-200
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	91				50-200
Perfluoro[13C8]Octanoic Acid (M8PFOA)	57				50-200
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	64				50-200
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	90				50-200

Lab Duplicate Analysis

Batch Quality Control

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370803
Report Date: 12/08/23

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1859769-4 QC Sample: L2370804-01 Client ID: DUP Sample						
Perfluorobutanoic Acid (PFBA)	19.1	19.9	ng/l	4		30
Perfluoro-3-Methoxypropanoic Acid (PFMPA)	ND	ND	ng/l	NC		30
Perfluoropentanoic Acid (PFPeA)	1.94	ND	ng/l	NC		30
Perfluorobutanesulfonic Acid (PFBS)	ND	ND	ng/l	NC		30
Perfluoro-4-Methoxybutanoic Acid (PFMBA)	ND	ND	ng/l	NC		30
Perfluoro(2-Ethoxyethane)Sulfonic Acid (PFEESA)	ND	ND	ng/l	NC		30
Nonafluoro-3,6-Dioxaheptanoic Acid (NFDHA)	ND	ND	ng/l	NC		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	ND	ng/l	NC		30
Perfluorohexanoic Acid (PFHxA)	ND	ND	ng/l	NC		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	ND	ng/l	NC		30
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND	ND	ng/l	NC		30
Perfluoroheptanoic Acid (PFHpA)	ND	ND	ng/l	NC		30
Perfluorohexanesulfonic Acid (PFHxS)	ND	ND	ng/l	NC		30
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND	ND	ng/l	NC		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	ND	ng/l	NC		30
Perfluorooctanoic Acid (PFOA)	ND	ND	ng/l	NC		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	ND	ng/l	NC		30
Perfluorononanoic Acid (PFNA)	ND	ND	ng/l	NC		30
Perfluorooctanesulfonic Acid (PFOS)	ND	ND	ng/l	NC		30
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	ND	ND	ng/l	NC		30

Lab Duplicate Analysis

Batch Quality Control

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370803
Report Date: 12/08/23

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1859769-4 QC Sample: L2370804-01 Client ID: DUP Sample						
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	ND	ng/l	NC		30
Perfluorodecanoic Acid (PFDA)	ND	ND	ng/l	NC		30
Perfluoroundecanoic Acid (PFUnA)	ND	ND	ng/l	NC		30
11-Chloroeicosafuoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	ND	ND	ng/l	NC		30
Perfluorododecanoic Acid (PFDoA)	ND	ND	ng/l	NC		30

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	27	Q	35	Q	50-200
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	27	Q	36	Q	50-200
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	93		98		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	100		105		50-200
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	25	Q	34	Q	50-200
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	24	Q	32	Q	50-200
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	96		94		50-200
Perfluoro[13C8]Octanoic Acid (M8PFOA)	23	Q	33	Q	50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	100		111		50-200
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	20	Q	38	Q	50-200
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	90		99		50-200
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	26	Q	54		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	127		116		50-200
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	40	Q	69		50-200
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	54		84		50-200
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	25	Q	30	Q	50-200

Project Name: MVY
Project Number: 143-3953-23004

Sample Receipt and Container Information

Were project specific reporting limits specified?

YES

Cooler Information

Cooler **Custody Seal**
A Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2370803-01A	Plastic 250ml Ammonium Acetate preserved	A	NA		3.8	Y	Absent		A2-533(28)
L2370803-01B	Plastic 250ml Ammonium Acetate preserved	A	NA		3.8	Y	Absent		A2-533(28)

Project Name: MVY
Project Number: 143-3953-23004

Serial_No:12082311:06
Lab Number: L2370803
Report Date: 12/08/23

PFAS PARAMETER SUMMARY

Parameter	Acronym	CAS Number
PERFLUOROALKYL CARBOXYLIC ACIDS (PFCAs)		
Perfluorooctadecanoic Acid	PFODA	16517-11-6
Perfluorohexadecanoic Acid	PFHxDA	67905-19-5
Perfluorotetradecanoic Acid	PFTA/PFTeDA	376-06-7
Perfluorotridecanoic Acid	PFTrDA	72629-94-8
Perfluorododecanoic Acid	PFDoA	307-55-1
Perfluoroundecanoic Acid	PFUnA	2058-94-8
Perfluorodecanoic Acid	PFDA	335-76-2
Perfluorononanoic Acid	PFNA	375-95-1
Perfluorooctanoic Acid	PFOA	335-67-1
Perfluoroheptanoic Acid	PFHpA	375-85-9
Perfluorohexanoic Acid	PFHxA	307-24-4
Perfluoropentanoic Acid	PFPeA	2706-90-3
Perfluorobutanoic Acid	PFBA	375-22-4
PERFLUOROALKYL SULFONIC ACIDS (PFSAs)		
Perfluorododecanesulfonic Acid	PFDoDS/PFDoS	79780-39-5
Perfluorodecanesulfonic Acid	PFDS	335-77-3
Perfluorononanesulfonic Acid	PFNS	68259-12-1
Perfluorooctanesulfonic Acid	PFOS	1763-23-1
Perfluoroheptanesulfonic Acid	PFHpS	375-92-8
Perfluorohexanesulfonic Acid	PFHxS	355-46-4
Perfluoropentanesulfonic Acid	PFPeS	2706-91-4
Perfluorobutanesulfonic Acid	PFBS	375-73-5
Perfluoropropanesulfonic Acid	PFPrS	423-41-6
FLUOROTELOMERS		
1H,1H,2H,2H-Perfluorododecanesulfonic Acid	10:2FTS	120226-60-0
1H,1H,2H,2H-Perfluorodecanesulfonic Acid	8:2FTS	39108-34-4
1H,1H,2H,2H-Perfluorooctanesulfonic Acid	6:2FTS	27619-97-2
1H,1H,2H,2H-Perfluorohexanesulfonic Acid	4:2FTS	757124-72-4
PERFLUOROALKANE SULFONAMIDES (FASAs)		
Perfluorooctanesulfonamide	FOSA/PFOSA	754-91-6
N-Ethyl Perfluorooctane Sulfonamide	NEtFOSA	4151-50-2
N-Methyl Perfluorooctane Sulfonamide	NMeFOSA	31506-32-8
PERFLUOROALKANE SULFONYL SUBSTANCES		
N-Ethyl Perfluorooctanesulfonamido Ethanol	NEtFOSE	1691-99-2
N-Methyl Perfluorooctanesulfonamido Ethanol	NMeFOSE	24448-09-7
N-Ethyl Perfluorooctanesulfonamidoacetic Acid	NEtFOSAA	2991-50-6
N-Methyl Perfluorooctanesulfonamidoacetic Acid	NMeFOSAA	2355-31-9
PER- and POLYFLUOROALKYL ETHER CARBOXYLIC ACIDS		
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid	HFPO-DA	13252-13-6
4,8-Dioxa-3h-Perfluorononanoic Acid	ADONA	919005-14-4
CHLORO-PERFLUOROALKYL SULFONIC ACIDS		
11-Chloroeicosafuoro-3-Oxaundecane-1-Sulfonic Acid	11Cl-PF3OUdS	763051-92-9
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid	9Cl-PF3ONS	756426-58-1
PERFLUOROETHER SULFONIC ACIDS (PFESAs)		
Perfluoro(2-Ethoxyethane)Sulfonic Acid	PFEEA	113507-82-7
PERFLUOROETHER/POLYETHER CARBOXYLIC ACIDS (PFPCAs)		
Perfluoro-3-Methoxypropanoic Acid	PFMPA	377-73-1
Perfluoro-4-Methoxybutanoic Acid	PFMBA	863090-89-5
Nonafluoro-3,6-Dioxaheptanoic Acid	NFDHA	151772-58-6

Project Name: MVY
Project Number: 143-3953-23004

Serial_No:12082311:06
Lab Number: L2370803
Report Date: 12/08/23

PFAS PARAMETER SUMMARY

Parameter	Acronym	CAS Number
FLUOROTELOMER CARBOXYLIC ACIDS (FTCAs)		
3-Perfluoroheptyl Propanoic Acid	7:3FTCA	812-70-4
2H,2H,3H,3H-Perfluorooctanoic Acid	5:3FTCA	914637-49-3
3-Perfluoropropyl Propanoic Acid	3:3FTCA	356-02-5

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370803
Report Date: 12/08/23

GLOSSARY

Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.) Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
NR	- No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: Data Usability Report



Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370803
Report Date: 12/08/23

Footnotes

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Chlordane: The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA, this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Gasoline Range Organics (GRO): Gasoline Range Organics (GRO) results include all chromatographic peaks eluting from Methyl tert butyl ether through Naphthalene, with the exception of GRO analysis in support of State of Ohio programs, which includes all chromatographic peaks eluting from Hexane through Dodecane.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

- A** - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- F** - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- J** - Estimated value. This represents an estimated concentration for Tentatively Identified Compounds (TICs).
- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

Report Format: Data Usability Report



Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370803
Report Date: 12/08/23

Data Qualifiers

- ND** - Not detected at the reporting limit (RL) for the sample.
- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.
- V** - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)
- Z** - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370803
Report Date: 12/08/23

REFERENCES

- 136 Determination of Per- and Polyfluoroalkyl Substances in Drinking Water by Isotope Dilution Anion Exchange Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS). EPA Method 533, EPA Document 815-B-19-020, November 2019.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility

EPA 624.1: m/p-xylene, o-xylene, Naphthalene

EPA 625.1: alpha-Terpineol

EPA 8260D: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.

EPA 8270E: NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine, alpha-Terpineol; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.

SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO₂, NO₃.

Mansfield Facility

SM 2540D: TSS.

EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene,

3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water

EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE,**

EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B

EPA 524.2: THMs and VOCs; **EPA 504.1:** EDB, DBCP.

Microbiology: SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.

Non-Potable Water

SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1:**

Ammonia-N, **LACHAT 10-107-06-1-B:** Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2:** Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E,**

SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.

EPA 624.1: Volatile Halocarbons & Aromatics,

EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs

EPA 625.1: SVOC (Acid/Base/Neutral Extractables).

Microbiology: SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.

Mansfield Facility:

Drinking Water

EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1 Hg.**

EPA 522, EPA 537.1.

Non-Potable Water

EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.

EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.

EPA 245.1 Hg.

SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.



ANALYTICAL REPORT

Lab Number:	L2370806
Client:	Tetra Tech Rizzo Marlborough Technology Park 100 Nickerson Road Marlborough, MA 01752
ATTN:	Ron Myrick
Phone:	(508) 786-2200
Project Name:	MVY
Project Number:	143-3953-23004
Report Date:	12/08/23

The original project report/data package is held by Alpha Analytical. This report/data package is paginated and should be reproduced only in its entirety. Alpha Analytical holds no responsibility for results and/or data that are not consistent with the original.

Certifications & Approvals: MA (M-MA030), NH NELAP (2062), CT (PH-0825), DoD (L2474), FL (E87814), IL (200081), IN (C-MA-04), KY (KY98046), LA (85084), ME (MA00030), MD (350), MI (99110), NJ (MA015), NY (11627), NC (685), OH (CL106), OR (MA-0262), PA (68-02089), RI (LAO00299), TX (T104704419), VT (VT-0015), VA (460194), WA (C954), US Army Corps of Engineers, USDA (Permit #525-23-107-88708), USFWS (Permit #206964).

320 Forbes Boulevard, Mansfield, MA 02048-1806
508-822-9300 (Fax) 508-822-3288 800-624-9220 - www.alphalab.com



Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370806
Report Date: 12/08/23

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2370806-01	PROPERTY CP	DW	PROPERTY CP	11/30/23 09:40	12/01/23

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370806
Report Date: 12/08/23

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

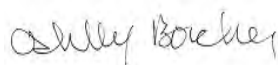
Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:



Ashley Boucher

Title: Technical Director/Representative

Date: 12/08/23

ORGANICS

SEMIVOLATILES

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370806
Report Date: 12/08/23

SAMPLE RESULTS

Lab ID: L2370806-01
 Client ID: PROPERTY CP
 Sample Location: PROPERTY CP

Date Collected: 11/30/23 09:40
 Date Received: 12/01/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Dw
 Analytical Method: 136,533
 Analytical Date: 12/05/23 20:20
 Analyst: CAP

Extraction Method: EPA 533
 Extraction Date: 12/05/23 07:00

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND		ng/l	1.77	--	1
Perfluoro-3-Methoxypropanoic Acid (PFMPA)	ND		ng/l	1.77	--	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	1.77	--	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.77	--	1
Perfluoro-4-Methoxybutanoic Acid (PFMBA)	ND		ng/l	1.77	--	1
Perfluoro(2-Ethoxyethane)Sulfonic Acid (PFEESA)	ND		ng/l	1.77	--	1
Nonafluoro-3,6-Dioxaheptanoic Acid (NFDHA)	ND		ng/l	1.77	--	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	1.77	--	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	1.77	--	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.77	--	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/l	1.77	--	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.77	--	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.77	--	1
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/l	1.77	--	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.77	--	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	1.77	--	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.77	--	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.77	--	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	1.77	--	1
9-Chlorohexadecafluoro-3-Oxanonone-1-Sulfonic Acid (9Cl-PF3ONS)	ND		ng/l	1.77	--	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.77	--	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.77	--	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.77	--	1
11-Chloroeicosafluoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	ND		ng/l	1.77	--	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.77	--	1

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370806
Report Date: 12/08/23

SAMPLE RESULTS

Lab ID: L2370806-01
 Client ID: PROPERTY CP
 Sample Location: PROPERTY CP

Date Collected: 11/30/23 09:40
 Date Received: 12/01/23
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	91		50-200
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	89		50-200
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	97		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	110		50-200
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	84		50-200
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	86		50-200
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	91		50-200
Perfluoro[13C8]Octanoic Acid (M8PFOA)	78		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	108		50-200
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	86		50-200
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	94		50-200
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	90		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	102		50-200
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	98		50-200
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	108		50-200
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	80		50-200

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370806
Report Date: 12/08/23

Method Blank Analysis
Batch Quality Control

Analytical Method: 136,533
Analytical Date: 12/05/23 17:35
Analyst: CAP

Extraction Method: EPA 533
Extraction Date: 12/05/23 07:00

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab for sample(s): 01 Batch: WG1859769-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	2.00	--
Perfluoro-3-Methoxypropanoic Acid (PFMPA)	ND		ng/l	2.00	--
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	--
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	--
Perfluoro-4-Methoxybutanoic Acid (PFMBA)	ND		ng/l	2.00	--
Perfluoro(2-Ethoxyethane)Sulfonic Acid (PFEEESA)	ND		ng/l	2.00	--
Nonafluoro-3,6-Dioxaheptanoic Acid (NFDHA)	ND		ng/l	2.00	--
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	2.00	--
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	--
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.00	--
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/l	2.00	--
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	--
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	--
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/l	2.00	--
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	2.00	--
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	--
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	--
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	--
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	--
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	ND		ng/l	2.00	--
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	2.00	--
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	--
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	--
11-Chloroeicosafuoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	ND		ng/l	2.00	--
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	--

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370806
Report Date: 12/08/23

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 136,533
Analytical Date: 12/05/23 17:35
Analyst: CAP

Extraction Method: EPA 533
Extraction Date: 12/05/23 07:00

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab for sample(s): 01 Batch: WG1859769-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	98		50-200
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	113		50-200
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	109		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	113		50-200
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	97		50-200
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	102		50-200
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	109		50-200
Perfluoro[13C8]Octanoic Acid (M8PFOA)	97		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	120		50-200
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	104		50-200
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	106		50-200
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	98		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	130		50-200
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	111		50-200
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	113		50-200
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	92		50-200

Lab Control Sample Analysis

Batch Quality Control

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370806
Report Date: 12/08/23

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab Associated sample(s): 01 Batch: WG1859769-2								
Perfluorobutanoic Acid (PFBA)	96		-		50-150	-		30
Perfluoro-3-Methoxypropanoic Acid (PFMPA)	100		-		50-150	-		30
Perfluoropentanoic Acid (PFPeA)	93		-		50-150	-		30
Perfluorobutanesulfonic Acid (PFBS)	90		-		50-150	-		30
Perfluoro-4-Methoxybutanoic Acid (PFMBA)	87		-		50-150	-		30
Perfluoro(2-Ethoxyethane)Sulfonic Acid (PFEEESA)	86		-		50-150	-		30
Nonafluoro-3,6-Dioxaheptanoic Acid (NFDHA)	89		-		50-150	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	98		-		50-150	-		30
Perfluorohexanoic Acid (PFHxA)	103		-		50-150	-		30
Perfluoropentanesulfonic Acid (PFPeS)	88		-		50-150	-		30
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	87		-		50-150	-		30
Perfluoroheptanoic Acid (PFHpA)	102		-		50-150	-		30
Perfluorohexanesulfonic Acid (PFHxS)	77		-		50-150	-		30
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	90		-		50-150	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	97		-		50-150	-		30
Perfluorooctanoic Acid (PFOA)	98		-		50-150	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	91		-		50-150	-		30
Perfluorononanoic Acid (PFNA)	95		-		50-150	-		30
Perfluorooctanesulfonic Acid (PFOS)	95		-		50-150	-		30
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	90		-		50-150	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	94		-		50-150	-		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370806
Report Date: 12/08/23

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab Associated sample(s): 01 Batch: WG1859769-2								
Perfluorodecanoic Acid (PFDA)	96		-		50-150	-		30
Perfluoroundecanoic Acid (PFUnA)	92		-		50-150	-		30
11-Chloroeicosafuoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	84		-		50-150	-		30
Perfluorododecanoic Acid (PFDoA)	91		-		50-150	-		30

Surrogate (Extracted Internal Standard)	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
Perfluoro[13C4]Butanoic Acid (MPFBA)	91				50-200
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	96				50-200
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	92				50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	96				50-200
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	88				50-200
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	81				50-200
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	91				50-200
Perfluoro[13C8]Octanoic Acid (M8PFOA)	83				50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	106				50-200
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	91				50-200
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	89				50-200
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	91				50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	111				50-200
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	102				50-200
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	101				50-200
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	86				50-200

Matrix Spike Analysis

Batch Quality Control

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370806
Report Date: 12/08/23

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab												
Associated sample(s): 01			QC Batch ID: WG1859769-3			QC Sample: L2370802-01			Client ID: MS Sample			
Perfluorobutanoic Acid (PFBA)	3.94	1.95	5.80	95		-	-		50-150	-		30
Perfluoro-3-Methoxypropanoic Acid (PFMPA)	ND	1.95	ND	87		-	-		50-150	-		30
Perfluoropentanoic Acid (PFPeA)	13.9	1.95	16.5	133		-	-		50-150	-		30
Perfluorobutanesulfonic Acid (PFBS)	ND	1.73	2.18	126		-	-		50-150	-		30
Perfluoro-4-Methoxybutanoic Acid (PFMBA)	ND	1.95	ND	92		-	-		50-150	-		30
Perfluoro(2-Ethoxyethane)Sulfonic Acid (PFEESA)	ND	1.74	ND	87		-	-		50-150	-		30
Nonafluoro-3,6-Dioxaheptanoic Acid (NFDHA)	ND	1.95	ND	81		-	-		50-150	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	1.83	ND	98		-	-		50-150	-		30
Perfluorohexanoic Acid (PFHxA)	7.03	1.95	8.84	93		-	-		50-150	-		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	1.84	ND	88		-	-		50-150	-		30
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND	1.95	ND	91		-	-		50-150	-		30
Perfluoroheptanoic Acid (PFHpA)	2.56	1.95	5.23	137		-	-		50-150	-		30
Perfluorohexanesulfonic Acid (PFHxS)	ND	1.78	2.08	117		-	-		50-150	-		30
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND	1.84	ND	90		-	-		50-150	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	1.86	2.43	131		-	-		50-150	-		30
Perfluorooctanoic Acid (PFOA)	1.89	1.95	4.52	135		-	-		50-150	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	1.86	ND	88		-	-		50-150	-		30
Perfluorononanoic Acid (PFNA)	ND	1.95	2.08	107		-	-		50-150	-		30
Perfluorooctanesulfonic Acid (PFOS)	ND	1.81	2.06	114		-	-		50-150	-		30
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	ND	1.82	ND	76		-	-		50-150	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	1.87	2.12	113		-	-		50-150	-		30
Perfluorodecanoic Acid (PFDA)	ND	1.95	ND	97		-	-		50-150	-		30

Matrix Spike Analysis

Batch Quality Control

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370806
Report Date: 12/08/23

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1859769-3 QC Sample: L2370802-01 Client ID: MS Sample												
Perfluoroundecanoic Acid (PFUnA)	ND	1.95	ND	98		-	-		50-150	-		30
11-Chloroeicosafuoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	ND	1.84	ND	86		-	-		50-150	-		30
Perfluorododecanoic Acid (PFDoA)	ND	1.95	ND	97		-	-		50-150	-		30

Surrogate (Extracted Internal Standard)	MS % Recovery	MS Qualifier	MSD % Recovery	MSD Qualifier	Acceptance Criteria
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	115				50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	120				50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	105				50-200
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	57				50-200
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	87				50-200
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	69				50-200
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	70				50-200
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	59				50-200
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	84				50-200
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	96				50-200
Perfluoro[13C4]Butanoic Acid (MPFBA)	74				50-200
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	70				50-200
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	91				50-200
Perfluoro[13C8]Octanoic Acid (M8PFOA)	57				50-200
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	64				50-200
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	90				50-200

Lab Duplicate Analysis

Batch Quality Control

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370806
Report Date: 12/08/23

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1859769-4 QC Sample: L2370804-01 Client ID: DUP Sample						
Perfluorobutanoic Acid (PFBA)	19.1	19.9	ng/l	4		30
Perfluoro-3-Methoxypropanoic Acid (PFMPA)	ND	ND	ng/l	NC		30
Perfluoropentanoic Acid (PFPeA)	1.94	ND	ng/l	NC		30
Perfluorobutanesulfonic Acid (PFBS)	ND	ND	ng/l	NC		30
Perfluoro-4-Methoxybutanoic Acid (PFMBA)	ND	ND	ng/l	NC		30
Perfluoro(2-Ethoxyethane)Sulfonic Acid (PFEESA)	ND	ND	ng/l	NC		30
Nonafluoro-3,6-Dioxaheptanoic Acid (NFDHA)	ND	ND	ng/l	NC		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	ND	ng/l	NC		30
Perfluorohexanoic Acid (PFHxA)	ND	ND	ng/l	NC		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	ND	ng/l	NC		30
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND	ND	ng/l	NC		30
Perfluoroheptanoic Acid (PFHpA)	ND	ND	ng/l	NC		30
Perfluorohexanesulfonic Acid (PFHxS)	ND	ND	ng/l	NC		30
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND	ND	ng/l	NC		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	ND	ng/l	NC		30
Perfluorooctanoic Acid (PFOA)	ND	ND	ng/l	NC		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	ND	ng/l	NC		30
Perfluorononanoic Acid (PFNA)	ND	ND	ng/l	NC		30
Perfluorooctanesulfonic Acid (PFOS)	ND	ND	ng/l	NC		30
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	ND	ND	ng/l	NC		30

Lab Duplicate Analysis

Batch Quality Control

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370806
Report Date: 12/08/23

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1859769-4 QC Sample: L2370804-01 Client ID: DUP Sample						
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	ND	ng/l	NC		30
Perfluorodecanoic Acid (PFDA)	ND	ND	ng/l	NC		30
Perfluoroundecanoic Acid (PFUnA)	ND	ND	ng/l	NC		30
11-Chloroeicosafuoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	ND	ND	ng/l	NC		30
Perfluorododecanoic Acid (PFDoA)	ND	ND	ng/l	NC		30

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	27	Q	35	Q	50-200
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	27	Q	36	Q	50-200
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	93		98		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	100		105		50-200
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	25	Q	34	Q	50-200
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	24	Q	32	Q	50-200
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	96		94		50-200
Perfluoro[13C8]Octanoic Acid (M8PFOA)	23	Q	33	Q	50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	100		111		50-200
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	20	Q	38	Q	50-200
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	90		99		50-200
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	26	Q	54		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	127		116		50-200
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	40	Q	69		50-200
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	54		84		50-200
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	25	Q	30	Q	50-200

Project Name: MVY
Project Number: 143-3953-23004

Sample Receipt and Container Information

Were project specific reporting limits specified?

YES

Cooler Information

Cooler **Custody Seal**
A Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2370806-01A	Plastic 250ml Ammonium Acetate preserved	A	NA		3.8	Y	Absent		A2-533(28)
L2370806-01B	Plastic 250ml Ammonium Acetate preserved	A	NA		3.8	Y	Absent		A2-533(28)

Project Name: MVY
Project Number: 143-3953-23004

Serial_No:12082310:35
Lab Number: L2370806
Report Date: 12/08/23

PFAS PARAMETER SUMMARY

Parameter	Acronym	CAS Number
PERFLUOROALKYL CARBOXYLIC ACIDS (PFCAs)		
Perfluorooctadecanoic Acid	PFODA	16517-11-6
Perfluorohexadecanoic Acid	PFHxDA	67905-19-5
Perfluorotetradecanoic Acid	PFTA/PFTeDA	376-06-7
Perfluorotridecanoic Acid	PFTrDA	72629-94-8
Perfluorododecanoic Acid	PFDoA	307-55-1
Perfluoroundecanoic Acid	PFUnA	2058-94-8
Perfluorodecanoic Acid	PFDA	335-76-2
Perfluorononanoic Acid	PFNA	375-95-1
Perfluorooctanoic Acid	PFOA	335-67-1
Perfluoroheptanoic Acid	PFHpA	375-85-9
Perfluorohexanoic Acid	PFHxA	307-24-4
Perfluoropentanoic Acid	PFPeA	2706-90-3
Perfluorobutanoic Acid	PFBA	375-22-4
PERFLUOROALKYL SULFONIC ACIDS (PFSAs)		
Perfluorododecanesulfonic Acid	PFDoDS/PFDoS	79780-39-5
Perfluorodecanesulfonic Acid	PFDS	335-77-3
Perfluorononanesulfonic Acid	PFNS	68259-12-1
Perfluorooctanesulfonic Acid	PFOS	1763-23-1
Perfluoroheptanesulfonic Acid	PFHpS	375-92-8
Perfluorohexanesulfonic Acid	PFHxS	355-46-4
Perfluoropentanesulfonic Acid	PFPeS	2706-91-4
Perfluorobutanesulfonic Acid	PFBS	375-73-5
Perfluoropropanesulfonic Acid	PFPrS	423-41-6
FLUOROTELOMERS		
1H,1H,2H,2H-Perfluorododecanesulfonic Acid	10:2FTS	120226-60-0
1H,1H,2H,2H-Perfluorodecanesulfonic Acid	8:2FTS	39108-34-4
1H,1H,2H,2H-Perfluorooctanesulfonic Acid	6:2FTS	27619-97-2
1H,1H,2H,2H-Perfluorohexanesulfonic Acid	4:2FTS	757124-72-4
PERFLUOROALKANE SULFONAMIDES (FASAs)		
Perfluorooctanesulfonamide	FOSA/PFOSA	754-91-6
N-Ethyl Perfluorooctane Sulfonamide	NEtFOSA	4151-50-2
N-Methyl Perfluorooctane Sulfonamide	NMeFOSA	31506-32-8
PERFLUOROALKANE SULFONYL SUBSTANCES		
N-Ethyl Perfluorooctanesulfonamido Ethanol	NEtFOSE	1691-99-2
N-Methyl Perfluorooctanesulfonamido Ethanol	NMeFOSE	24448-09-7
N-Ethyl Perfluorooctanesulfonamidoacetic Acid	NEtFOSAA	2991-50-6
N-Methyl Perfluorooctanesulfonamidoacetic Acid	NMeFOSAA	2355-31-9
PER- and POLYFLUOROALKYL ETHER CARBOXYLIC ACIDS		
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid	HFPO-DA	13252-13-6
4,8-Dioxa-3h-Perfluorononanoic Acid	ADONA	919005-14-4
CHLORO-PERFLUOROALKYL SULFONIC ACIDS		
11-Chloroeicosafuoro-3-Oxaundecane-1-Sulfonic Acid	11Cl-PF3OUdS	763051-92-9
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid	9Cl-PF3ONS	756426-58-1
PERFLUOROETHER SULFONIC ACIDS (PFESAs)		
Perfluoro(2-Ethoxyethane)Sulfonic Acid	PFEEA	113507-82-7
PERFLUOROETHER/POLYETHER CARBOXYLIC ACIDS (PFPCAs)		
Perfluoro-3-Methoxypropanoic Acid	PFMPA	377-73-1
Perfluoro-4-Methoxybutanoic Acid	PFMBA	863090-89-5
Nonafluoro-3,6-Dioxaheptanoic Acid	NFDHA	151772-58-6

Project Name: MVY
Project Number: 143-3953-23004

Serial_No:12082310:35
Lab Number: L2370806
Report Date: 12/08/23

PFAS PARAMETER SUMMARY

Parameter	Acronym	CAS Number
FLUOROTELOMER CARBOXYLIC ACIDS (FTCAs)		
3-Perfluoroheptyl Propanoic Acid	7:3FTCA	812-70-4
2H,2H,3H,3H-Perfluorooctanoic Acid	5:3FTCA	914637-49-3
3-Perfluoropropyl Propanoic Acid	3:3FTCA	356-02-5

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370806
Report Date: 12/08/23

GLOSSARY

Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.) Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
NR	- No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: Data Usability Report



Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370806
Report Date: 12/08/23

Footnotes

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Chlordane: The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA, this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Gasoline Range Organics (GRO): Gasoline Range Organics (GRO) results include all chromatographic peaks eluting from Methyl tert butyl ether through Naphthalene, with the exception of GRO analysis in support of State of Ohio programs, which includes all chromatographic peaks eluting from Hexane through Dodecane.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

- A** - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- F** - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- J** - Estimated value. This represents an estimated concentration for Tentatively Identified Compounds (TICs).
- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

Report Format: Data Usability Report



Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370806
Report Date: 12/08/23

Data Qualifiers

- ND** - Not detected at the reporting limit (RL) for the sample.
- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.
- V** - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)
- Z** - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370806
Report Date: 12/08/23

REFERENCES

- 136 Determination of Per- and Polyfluoroalkyl Substances in Drinking Water by Isotope Dilution Anion Exchange Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS). EPA Method 533, EPA Document 815-B-19-020, November 2019.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility

EPA 624.1: m/p-xylene, o-xylene, Naphthalene

EPA 625.1: alpha-Terpineol

EPA 8260D: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.

EPA 8270E: NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine, alpha-Terpineol; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.

SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO₂, NO₃.

Mansfield Facility

SM 2540D: TSS.

EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene,

3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water

EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE,**

EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B

EPA 524.2: THMs and VOCs; **EPA 504.1:** EDB, DBCP.

Microbiology: SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.

Non-Potable Water

SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1:**

Ammonia-N, **LACHAT 10-107-06-1-B:** Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2:** Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E,**

SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.

EPA 624.1: Volatile Halocarbons & Aromatics,

EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs

EPA 625.1: SVOC (Acid/Base/Neutral Extractables).

Microbiology: SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.

Mansfield Facility:

Drinking Water

EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1** Hg.

EPA 522, EPA 537.1.

Non-Potable Water

EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.

EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.

EPA 245.1 Hg.

SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.



ANALYTICAL REPORT

Lab Number:	L2370809
Client:	Tetra Tech Rizzo Marlborough Technology Park 100 Nickerson Road Marlborough, MA 01752
ATTN:	Ron Myrick
Phone:	(508) 786-2200
Project Name:	MVY
Project Number:	143-3953-23004
Report Date:	12/08/23

The original project report/data package is held by Alpha Analytical. This report/data package is paginated and should be reproduced only in its entirety. Alpha Analytical holds no responsibility for results and/or data that are not consistent with the original.

Certifications & Approvals: MA (M-MA030), NH NELAP (2062), CT (PH-0825), DoD (L2474), FL (E87814), IL (200081), IN (C-MA-04), KY (KY98046), LA (85084), ME (MA00030), MD (350), MI (99110), NJ (MA015), NY (11627), NC (685), OH (CL106), OR (MA-0262), PA (68-02089), RI (LAO00299), TX (T104704419), VT (VT-0015), VA (460194), WA (C954), US Army Corps of Engineers, USDA (Permit #525-23-107-88708), USFWS (Permit #206964).

320 Forbes Boulevard, Mansfield, MA 02048-1806
508-822-9300 (Fax) 508-822-3288 800-624-9220 - www.alphalab.com



Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370809
Report Date: 12/08/23

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2370809-01	PROPERTY CK	DW	PROPERTY CK	11/30/23 13:05	12/01/23

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370809
Report Date: 12/08/23

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:

Darian Dailey Darian Dailey

Title: Technical Director/Representative

Date: 12/08/23

ORGANICS

SEMIVOLATILES

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370809
Report Date: 12/08/23

SAMPLE RESULTS

Lab ID: L2370809-01
 Client ID: PROPERTY CK
 Sample Location: PROPERTY CK

Date Collected: 11/30/23 13:05
 Date Received: 12/01/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Dw
 Analytical Method: 136,533
 Analytical Date: 12/06/23 15:59
 Analyst: CAP

Extraction Method: EPA 533
 Extraction Date: 12/06/23 07:00

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	18.6		ng/l	1.79	--	1
Perfluoro-3-Methoxypropanoic Acid (PFMPA)	ND		ng/l	1.79	--	1
Perfluoropentanoic Acid (PFPeA)	80.2		ng/l	1.79	--	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.79	--	1
Perfluoro-4-Methoxybutanoic Acid (PFMBA)	ND		ng/l	1.79	--	1
Perfluoro(2-Ethoxyethane)Sulfonic Acid (PFEESA)	ND		ng/l	1.79	--	1
Nonafluoro-3,6-Dioxaheptanoic Acid (NFDHA)	ND		ng/l	1.79	--	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	1.79	--	1
Perfluorohexanoic Acid (PFHxA)	50.4		ng/l	1.79	--	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.79	--	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/l	1.79	--	1
Perfluoroheptanoic Acid (PFHpA)	7.28		ng/l	1.79	--	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.79	--	1
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/l	1.79	--	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	60.7		ng/l	1.79	--	1
Perfluorooctanoic Acid (PFOA)	3.10		ng/l	1.79	--	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.79	--	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.79	--	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	1.79	--	1
9-Chlorohexadecafluoro-3-Oxanonone-1-Sulfonic Acid (9Cl-PF3ONS)	ND		ng/l	1.79	--	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.79	--	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.79	--	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.79	--	1
11-Chloroeicosafluoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	ND		ng/l	1.79	--	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.79	--	1

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370809
Report Date: 12/08/23

SAMPLE RESULTS

Lab ID: L2370809-01
 Client ID: PROPERTY CK
 Sample Location: PROPERTY CK

Date Collected: 11/30/23 13:05
 Date Received: 12/01/23
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	99		50-200
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	94		50-200
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	97		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	95		50-200
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	87		50-200
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	87		50-200
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	93		50-200
Perfluoro[13C8]Octanoic Acid (M8PFOA)	88		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	100		50-200
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	91		50-200
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	98		50-200
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	96		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	104		50-200
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	99		50-200
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	105		50-200
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	91		50-200

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370809
Report Date: 12/08/23

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 136,533
Analytical Date: 12/06/23 14:40
Analyst: CAP

Extraction Method: EPA 533
Extraction Date: 12/06/23 07:00

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab for sample(s): 01 Batch: WG1860276-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	2.00	--
Perfluoro-3-Methoxypropanoic Acid (PFMPA)	ND		ng/l	2.00	--
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	--
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	--
Perfluoro-4-Methoxybutanoic Acid (PFMBA)	ND		ng/l	2.00	--
Perfluoro(2-Ethoxyethane)Sulfonic Acid (PFEEESA)	ND		ng/l	2.00	--
Nonafluoro-3,6-Dioxaheptanoic Acid (NFDHA)	ND		ng/l	2.00	--
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	2.00	--
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	--
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.00	--
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/l	2.00	--
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	--
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	--
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/l	2.00	--
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	2.00	--
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	--
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	--
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	--
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	--
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	ND		ng/l	2.00	--
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	2.00	--
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	--
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	--
11-Chloroeicosafuoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	ND		ng/l	2.00	--
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	--

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370809
Report Date: 12/08/23

Method Blank Analysis
Batch Quality Control

Analytical Method: 136,533
Analytical Date: 12/06/23 14:40
Analyst: CAP

Extraction Method: EPA 533
Extraction Date: 12/06/23 07:00

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab for sample(s): 01 Batch: WG1860276-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	99		50-200
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	105		50-200
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	106		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	86		50-200
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	95		50-200
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	100		50-200
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	97		50-200
Perfluoro[13C8]Octanoic Acid (M8PFOA)	113		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	89		50-200
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	104		50-200
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	101		50-200
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	98		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	92		50-200
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	105		50-200
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	108		50-200
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	102		50-200

Lab Control Sample Analysis

Batch Quality Control

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370809
Report Date: 12/08/23

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab Associated sample(s): 01 Batch: WG1860276-2								
Perfluorobutanoic Acid (PFBA)	94		-		70-130	-		30
Perfluoro-3-Methoxypropanoic Acid (PFMPA)	102		-		70-130	-		30
Perfluoropentanoic Acid (PFPeA)	93		-		70-130	-		30
Perfluorobutanesulfonic Acid (PFBS)	95		-		70-130	-		30
Perfluoro-4-Methoxybutanoic Acid (PFMBA)	88		-		70-130	-		30
Perfluoro(2-Ethoxyethane)Sulfonic Acid (PFEEESA)	97		-		70-130	-		30
Nonafluoro-3,6-Dioxaheptanoic Acid (NFDHA)	96		-		70-130	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	89		-		70-130	-		30
Perfluorohexanoic Acid (PFHxA)	93		-		70-130	-		30
Perfluoropentanesulfonic Acid (PFPeS)	88		-		70-130	-		30
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	96		-		70-130	-		30
Perfluoroheptanoic Acid (PFHpA)	85		-		70-130	-		30
Perfluorohexanesulfonic Acid (PFHxS)	84		-		70-130	-		30
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	96		-		70-130	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	106		-		70-130	-		30
Perfluorooctanoic Acid (PFOA)	92		-		70-130	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	91		-		70-130	-		30
Perfluorononanoic Acid (PFNA)	93		-		70-130	-		30
Perfluorooctanesulfonic Acid (PFOS)	89		-		70-130	-		30
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	84		-		70-130	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	96		-		70-130	-		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370809
Report Date: 12/08/23

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab Associated sample(s): 01 Batch: WG1860276-2								
Perfluorodecanoic Acid (PFDA)	100		-		70-130	-		30
Perfluoroundecanoic Acid (PFUnA)	92		-		70-130	-		30
11-Chloroeicosafuoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	80		-		70-130	-		30
Perfluorododecanoic Acid (PFDoA)	91		-		70-130	-		30

Surrogate (Extracted Internal Standard)	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
Perfluoro[13C4]Butanoic Acid (MPFBA)	98				50-200
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	99				50-200
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	98				50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	107				50-200
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	99				50-200
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	101				50-200
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	100				50-200
Perfluoro[13C8]Octanoic Acid (M8PFOA)	94				50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	102				50-200
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	101				50-200
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	101				50-200
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	90				50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	102				50-200
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	99				50-200
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	100				50-200
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	102				50-200

Matrix Spike Analysis

Batch Quality Control

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370809
Report Date: 12/08/23

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab												
			Associated sample(s): 01			QC Batch ID: WG1860276-3			QC Sample: L2370808-01		Client ID: MS Sample	
Perfluorobutanoic Acid (PFBA)	ND	148	142	96		-	-		70-130	-		30
Perfluoro-3-Methoxypropanoic Acid (PFMPA)	ND	148	142	96		-	-		70-130	-		30
Perfluoropentanoic Acid (PFPeA)	ND	148	148	100		-	-		70-130	-		30
Perfluorobutanesulfonic Acid (PFBS)	ND	131	128	98		-	-		70-130	-		30
Perfluoro-4-Methoxybutanoic Acid (PFMBA)	ND	148	132	89		-	-		70-130	-		30
Perfluoro(2-Ethoxyethane)Sulfonic Acid (PFEESA)	ND	132	121	92		-	-		70-130	-		30
Nonafluoro-3,6-Dioxaheptanoic Acid (NFDHA)	ND	148	119	81		-	-		70-130	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	138	124	90		-	-		70-130	-		30
Perfluorohexanoic Acid (PFHxA)	ND	148	141	96		-	-		70-130	-		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	139	129	93		-	-		70-130	-		30
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND	148	136	92		-	-		70-130	-		30
Perfluoroheptanoic Acid (PFHpA)	ND	148	163	110		-	-		70-130	-		30
Perfluorohexanesulfonic Acid (PFHxS)	ND	135	120	89		-	-		70-130	-		30
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND	139	110	79		-	-		70-130	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	140	137	98		-	-		70-130	-		30
Perfluorooctanoic Acid (PFOA)	ND	148	134	91		-	-		70-130	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	141	138	98		-	-		70-130	-		30
Perfluorononanoic Acid (PFNA)	ND	148	159	108		-	-		70-130	-		30
Perfluorooctanesulfonic Acid (PFOS)	ND	137	136	99		-	-		70-130	-		30
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	ND	138	128	93		-	-		70-130	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	142	132	93		-	-		70-130	-		30
Perfluorodecanoic Acid (PFDA)	ND	148	146	99		-	-		70-130	-		30

Matrix Spike Analysis

Batch Quality Control

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370809
Report Date: 12/08/23

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1860276-3 QC Sample: L2370808-01 Client ID: MS Sample												
Perfluoroundecanoic Acid (PFUnA)	ND	148	142	96		-	-		70-130	-		30
11-Chloroeicosafuoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	ND	139	133	95		-	-		70-130	-		30
Perfluorododecanoic Acid (PFDoA)	ND	148	132	89		-	-		70-130	-		30

Surrogate (Extracted Internal Standard)	MS % Recovery	Qualifier	MSD % Recovery	Qualifier	Acceptance Criteria
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	94				50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	107				50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	101				50-200
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	78				50-200
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	94				50-200
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	89				50-200
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	79				50-200
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	73				50-200
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	92				50-200
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	104				50-200
Perfluoro[13C4]Butanoic Acid (MPFBA)	73				50-200
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	73				50-200
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	89				50-200
Perfluoro[13C8]Octanoic Acid (M8PFOA)	83				50-200
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	84				50-200
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	97				50-200

Lab Duplicate Analysis

Batch Quality Control

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370809
Report Date: 12/08/23

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1860276-4 QC Sample: L2370808-02 Client ID: DUP Sample						
Perfluorobutanoic Acid (PFBA)	ND	ND	ng/l	NC		30
Perfluoro-3-Methoxypropanoic Acid (PFMPA)	ND	ND	ng/l	NC		30
Perfluoropentanoic Acid (PFPeA)	2.29	2.33	ng/l	2		30
Perfluorobutanesulfonic Acid (PFBS)	ND	ND	ng/l	NC		30
Perfluoro-4-Methoxybutanoic Acid (PFMBA)	ND	ND	ng/l	NC		30
Perfluoro(2-Ethoxyethane)Sulfonic Acid (PFEESA)	ND	ND	ng/l	NC		30
Nonafluoro-3,6-Dioxaheptanoic Acid (NFDHA)	ND	ND	ng/l	NC		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	ND	ng/l	NC		30
Perfluorohexanoic Acid (PFHxA)	2.07	ND	ng/l	NC		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	ND	ng/l	NC		30
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND	ND	ng/l	NC		30
Perfluoroheptanoic Acid (PFHpA)	1.97	2.10	ng/l	6		30
Perfluorohexanesulfonic Acid (PFHxS)	ND	ND	ng/l	NC		30
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND	ND	ng/l	NC		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	ND	ng/l	NC		30
Perfluorooctanoic Acid (PFOA)	ND	ND	ng/l	NC		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	ND	ng/l	NC		30
Perfluorononanoic Acid (PFNA)	ND	ND	ng/l	NC		30
Perfluorooctanesulfonic Acid (PFOS)	ND	ND	ng/l	NC		30
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	ND	ND	ng/l	NC		30

Lab Duplicate Analysis

Batch Quality Control

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370809
Report Date: 12/08/23

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1860276-4 QC Sample: L2370808-02 Client ID: DUP Sample						
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	ND	ng/l	NC		30
Perfluorodecanoic Acid (PFDA)	ND	ND	ng/l	NC		30
Perfluoroundecanoic Acid (PFUnA)	ND	ND	ng/l	NC		30
11-Chloroeicosafuoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	ND	ND	ng/l	NC		30
Perfluorododecanoic Acid (PFDoA)	ND	ND	ng/l	NC		30

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	97		91		50-200
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	106		95		50-200
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	96		99		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	102		106		50-200
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	93		92		50-200
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	99		88		50-200
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	93		98		50-200
Perfluoro[13C8]Octanoic Acid (M8PFOA)	89		88		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	101		92		50-200
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	112		92		50-200
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	97		94		50-200
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	95		89		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	102		99		50-200
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	95		95		50-200
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	100		100		50-200
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	85		90		50-200

Project Name: MVY
Project Number: 143-3953-23004

Sample Receipt and Container Information

Were project specific reporting limits specified?

YES

Cooler Information

Cooler **Custody Seal**
A Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2370809-01A	Plastic 250ml Ammonium Acetate preserved	A	NA		4.2	Y	Absent		A2-533(28)
L2370809-01B	Plastic 250ml Ammonium Acetate preserved	A	NA		4.2	Y	Absent		A2-533(28)

Project Name: MVY
Project Number: 143-3953-23004

Serial_No:12082316:05
Lab Number: L2370809
Report Date: 12/08/23

PFAS PARAMETER SUMMARY

Parameter	Acronym	CAS Number
PERFLUOROALKYL CARBOXYLIC ACIDS (PFCAs)		
Perfluorooctadecanoic Acid	PFODA	16517-11-6
Perfluorohexadecanoic Acid	PFHxDA	67905-19-5
Perfluorotetradecanoic Acid	PFTA/PFTeDA	376-06-7
Perfluorotridecanoic Acid	PFTrDA	72629-94-8
Perfluorododecanoic Acid	PFDoA	307-55-1
Perfluoroundecanoic Acid	PFUnA	2058-94-8
Perfluorodecanoic Acid	PFDA	335-76-2
Perfluorononanoic Acid	PFNA	375-95-1
Perfluorooctanoic Acid	PFOA	335-67-1
Perfluoroheptanoic Acid	PFHpA	375-85-9
Perfluorohexanoic Acid	PFHxA	307-24-4
Perfluoropentanoic Acid	PFPeA	2706-90-3
Perfluorobutanoic Acid	PFBA	375-22-4
PERFLUOROALKYL SULFONIC ACIDS (PFSAs)		
Perfluorododecanesulfonic Acid	PFDoDS/PFDoS	79780-39-5
Perfluorodecanesulfonic Acid	PFDS	335-77-3
Perfluorononanesulfonic Acid	PFNS	68259-12-1
Perfluorooctanesulfonic Acid	PFOS	1763-23-1
Perfluoroheptanesulfonic Acid	PFHpS	375-92-8
Perfluorohexanesulfonic Acid	PFHxS	355-46-4
Perfluoropentanesulfonic Acid	PFPeS	2706-91-4
Perfluorobutanesulfonic Acid	PFBS	375-73-5
Perfluoropropanesulfonic Acid	PFPrS	423-41-6
FLUOROTELOMERS		
1H,1H,2H,2H-Perfluorododecanesulfonic Acid	10:2FTS	120226-60-0
1H,1H,2H,2H-Perfluorodecanesulfonic Acid	8:2FTS	39108-34-4
1H,1H,2H,2H-Perfluorooctanesulfonic Acid	6:2FTS	27619-97-2
1H,1H,2H,2H-Perfluorohexanesulfonic Acid	4:2FTS	757124-72-4
PERFLUOROALKANE SULFONAMIDES (FASAs)		
Perfluorooctanesulfonamide	FOSA/PFOSA	754-91-6
N-Ethyl Perfluorooctane Sulfonamide	NEtFOSA	4151-50-2
N-Methyl Perfluorooctane Sulfonamide	NMeFOSA	31506-32-8
PERFLUOROALKANE SULFONYL SUBSTANCES		
N-Ethyl Perfluorooctanesulfonamido Ethanol	NEtFOSE	1691-99-2
N-Methyl Perfluorooctanesulfonamido Ethanol	NMeFOSE	24448-09-7
N-Ethyl Perfluorooctanesulfonamidoacetic Acid	NEtFOSAA	2991-50-6
N-Methyl Perfluorooctanesulfonamidoacetic Acid	NMeFOSAA	2355-31-9
PER- and POLYFLUOROALKYL ETHER CARBOXYLIC ACIDS		
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid	HFPO-DA	13252-13-6
4,8-Dioxa-3h-Perfluorononanoic Acid	ADONA	919005-14-4
CHLORO-PERFLUOROALKYL SULFONIC ACIDS		
11-Chloroeicosafuoro-3-Oxaundecane-1-Sulfonic Acid	11Cl-PF3OUdS	763051-92-9
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid	9Cl-PF3ONS	756426-58-1
PERFLUOROETHER SULFONIC ACIDS (PFESAs)		
Perfluoro(2-Ethoxyethane)Sulfonic Acid	PFEESA	113507-82-7
PERFLUOROETHER/POLYETHER CARBOXYLIC ACIDS (PFPCAs)		
Perfluoro-3-Methoxypropanoic Acid	PFMPA	377-73-1
Perfluoro-4-Methoxybutanoic Acid	PFMBA	863090-89-5
Nonafluoro-3,6-Dioxaheptanoic Acid	NFDHA	151772-58-6

Project Name: MVY
Project Number: 143-3953-23004

Serial_No:12082316:05
Lab Number: L2370809
Report Date: 12/08/23

PFAS PARAMETER SUMMARY

Parameter	Acronym	CAS Number
FLUOROTELOMER CARBOXYLIC ACIDS (FTCAs)		
3-Perfluoroheptyl Propanoic Acid	7:3FTCA	812-70-4
2H,2H,3H,3H-Perfluorooctanoic Acid	5:3FTCA	914637-49-3
3-Perfluoropropyl Propanoic Acid	3:3FTCA	356-02-5

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370809
Report Date: 12/08/23

GLOSSARY

Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.) Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
NR	- No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: Data Usability Report



Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370809
Report Date: 12/08/23

Footnotes

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Chlordane: The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA, this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Gasoline Range Organics (GRO): Gasoline Range Organics (GRO) results include all chromatographic peaks eluting from Methyl tert butyl ether through Naphthalene, with the exception of GRO analysis in support of State of Ohio programs, which includes all chromatographic peaks eluting from Hexane through Dodecane.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

- A** - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- F** - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- J** - Estimated value. This represents an estimated concentration for Tentatively Identified Compounds (TICs).
- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

Report Format: Data Usability Report



Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370809
Report Date: 12/08/23

Data Qualifiers

- ND** - Not detected at the reporting limit (RL) for the sample.
- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.
- V** - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)
- Z** - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370809
Report Date: 12/08/23

REFERENCES

- 136 Determination of Per- and Polyfluoroalkyl Substances in Drinking Water by Isotope Dilution Anion Exchange Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS). EPA Method 533, EPA Document 815-B-19-020, November 2019.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility

EPA 624.1: m/p-xylene, o-xylene, Naphthalene

EPA 625.1: alpha-Terpineol

EPA 8260D: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.

EPA 8270E: NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine, alpha-Terpineol; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.

SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO₂, NO₃.

Mansfield Facility

SM 2540D: TSS.

EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene,

3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water

EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE,**

EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B

EPA 524.2: THMs and VOCs; **EPA 504.1:** EDB, DBCP.

Microbiology: SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.

Non-Potable Water

SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1:**

Ammonia-N, **LACHAT 10-107-06-1-B:** Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2:** Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E,**

SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.

EPA 624.1: Volatile Halocarbons & Aromatics,

EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs

EPA 625.1: SVOC (Acid/Base/Neutral Extractables).

Microbiology: SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.

Mansfield Facility:

Drinking Water

EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1** Hg.

EPA 522, EPA 537.1.

Non-Potable Water

EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.

EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.

EPA 245.1 Hg.

SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.



ANALYTICAL REPORT

Lab Number:	L2370810
Client:	Tetra Tech Rizzo Marlborough Technology Park 100 Nickerson Road Marlborough, MA 01752
ATTN:	Ron Myrick
Phone:	(508) 786-2200
Project Name:	MVY
Project Number:	143-3953-23004
Report Date:	12/08/23

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Certifications & Approvals: MA (M-MA030), NH NELAP (2062), CT (PH-0825), DoD (L2474), FL (E87814), IL (200081), IN (C-MA-04), KY (KY98046), LA (85084), ME (MA00030), MD (350), MI (99110), NJ (MA015), NY (11627), NC (685), OH (CL106), OR (MA-0262), PA (68-02089), RI (LAO00299), TX (T104704419), VT (VT-0015), VA (460194), WA (C954), US Army Corps of Engineers, USDA (Permit #525-23-107-88708), USFWS (Permit #206964).

320 Forbes Boulevard, Mansfield, MA 02048-1806
508-822-9300 (Fax) 508-822-3288 800-624-9220 - www.alphalab.com



Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370810
Report Date: 12/08/23

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2370810-01	PROPERTY S	DW	PROPERTY S	11/30/23 17:10	12/01/23

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370810
Report Date: 12/08/23

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:

Darian Dailey Darian Dailey

Title: Technical Director/Representative

Date: 12/08/23

ORGANICS

SEMIVOLATILES

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370810
Report Date: 12/08/23

SAMPLE RESULTS

Lab ID: L2370810-01
 Client ID: PROPERTY S
 Sample Location: PROPERTY S

Date Collected: 11/30/23 17:10
 Date Received: 12/01/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Dw
 Analytical Method: 136,533
 Analytical Date: 12/06/23 16:08
 Analyst: CAP

Extraction Method: EPA 533
 Extraction Date: 12/06/23 07:00

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND		ng/l	1.84	--	1
Perfluoro-3-Methoxypropanoic Acid (PFMPA)	ND		ng/l	1.84	--	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	1.84	--	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.84	--	1
Perfluoro-4-Methoxybutanoic Acid (PFMBA)	ND		ng/l	1.84	--	1
Perfluoro(2-Ethoxyethane)Sulfonic Acid (PFEESA)	ND		ng/l	1.84	--	1
Nonafluoro-3,6-Dioxaheptanoic Acid (NFDHA)	ND		ng/l	1.84	--	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	1.84	--	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	1.84	--	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.84	--	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/l	1.84	--	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.84	--	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.84	--	1
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/l	1.84	--	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.84	--	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	1.84	--	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.84	--	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.84	--	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	1.84	--	1
9-Chlorohexadecafluoro-3-Oxanonone-1-Sulfonic Acid (9Cl-PF3ONS)	ND		ng/l	1.84	--	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.84	--	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.84	--	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.84	--	1
11-Chloroeicosafluoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	ND		ng/l	1.84	--	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.84	--	1

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370810
Report Date: 12/08/23

SAMPLE RESULTS

Lab ID: L2370810-01
 Client ID: PROPERTY S
 Sample Location: PROPERTY S

Date Collected: 11/30/23 17:10
 Date Received: 12/01/23
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	98		50-200
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	104		50-200
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	90		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	100		50-200
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	92		50-200
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	88		50-200
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	93		50-200
Perfluoro[13C8]Octanoic Acid (M8PFOA)	92		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	96		50-200
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	101		50-200
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	91		50-200
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	94		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	108		50-200
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	97		50-200
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	101		50-200
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	99		50-200

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370810
Report Date: 12/08/23

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 136,533
Analytical Date: 12/06/23 14:40
Analyst: CAP

Extraction Method: EPA 533
Extraction Date: 12/06/23 07:00

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab for sample(s): 01 Batch: WG1860276-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	2.00	--
Perfluoro-3-Methoxypropanoic Acid (PFMPA)	ND		ng/l	2.00	--
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	--
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	--
Perfluoro-4-Methoxybutanoic Acid (PFMBA)	ND		ng/l	2.00	--
Perfluoro(2-Ethoxyethane)Sulfonic Acid (PFEEESA)	ND		ng/l	2.00	--
Nonafluoro-3,6-Dioxaheptanoic Acid (NFDHA)	ND		ng/l	2.00	--
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	2.00	--
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	--
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.00	--
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/l	2.00	--
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	--
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	--
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/l	2.00	--
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	2.00	--
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	--
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	--
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	--
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	--
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	ND		ng/l	2.00	--
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	2.00	--
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	--
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	--
11-Chloroeicosafuoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	ND		ng/l	2.00	--
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	--

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370810
Report Date: 12/08/23

Method Blank Analysis
Batch Quality Control

Analytical Method: 136,533
Analytical Date: 12/06/23 14:40
Analyst: CAP

Extraction Method: EPA 533
Extraction Date: 12/06/23 07:00

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab for sample(s): 01 Batch: WG1860276-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	99		50-200
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	105		50-200
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	106		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	86		50-200
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	95		50-200
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	100		50-200
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	97		50-200
Perfluoro[13C8]Octanoic Acid (M8PFOA)	113		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	89		50-200
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	104		50-200
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	101		50-200
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	98		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	92		50-200
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	105		50-200
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	108		50-200
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	102		50-200

Lab Control Sample Analysis

Batch Quality Control

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370810
Report Date: 12/08/23

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab Associated sample(s): 01 Batch: WG1860276-2								
Perfluorobutanoic Acid (PFBA)	94		-		70-130	-		30
Perfluoro-3-Methoxypropanoic Acid (PFMPA)	102		-		70-130	-		30
Perfluoropentanoic Acid (PFPeA)	93		-		70-130	-		30
Perfluorobutanesulfonic Acid (PFBS)	95		-		70-130	-		30
Perfluoro-4-Methoxybutanoic Acid (PFMBA)	88		-		70-130	-		30
Perfluoro(2-Ethoxyethane)Sulfonic Acid (PFEEESA)	97		-		70-130	-		30
Nonafluoro-3,6-Dioxaheptanoic Acid (NFDHA)	96		-		70-130	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	89		-		70-130	-		30
Perfluorohexanoic Acid (PFHxA)	93		-		70-130	-		30
Perfluoropentanesulfonic Acid (PFPeS)	88		-		70-130	-		30
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	96		-		70-130	-		30
Perfluoroheptanoic Acid (PFHpA)	85		-		70-130	-		30
Perfluorohexanesulfonic Acid (PFHxS)	84		-		70-130	-		30
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	96		-		70-130	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	106		-		70-130	-		30
Perfluorooctanoic Acid (PFOA)	92		-		70-130	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	91		-		70-130	-		30
Perfluorononanoic Acid (PFNA)	93		-		70-130	-		30
Perfluorooctanesulfonic Acid (PFOS)	89		-		70-130	-		30
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	84		-		70-130	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	96		-		70-130	-		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370810
Report Date: 12/08/23

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab Associated sample(s): 01 Batch: WG1860276-2								
Perfluorodecanoic Acid (PFDA)	100		-		70-130	-		30
Perfluoroundecanoic Acid (PFUnA)	92		-		70-130	-		30
11-Chloroeicosafuoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	80		-		70-130	-		30
Perfluorododecanoic Acid (PFDoA)	91		-		70-130	-		30

Surrogate (Extracted Internal Standard)	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
Perfluoro[13C4]Butanoic Acid (MPFBA)	98				50-200
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	99				50-200
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	98				50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	107				50-200
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	99				50-200
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	101				50-200
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	100				50-200
Perfluoro[13C8]Octanoic Acid (M8PFOA)	94				50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	102				50-200
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	101				50-200
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	101				50-200
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	90				50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	102				50-200
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	99				50-200
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	100				50-200
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	102				50-200

Matrix Spike Analysis

Batch Quality Control

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370810
Report Date: 12/08/23

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab												
			Associated sample(s): 01		QC Batch ID: WG1860276-3		QC Sample: L2370808-01		Client ID: MS Sample			
Perfluorobutanoic Acid (PFBA)	ND	148	142	96		-	-		70-130	-		30
Perfluoro-3-Methoxypropanoic Acid (PFMPA)	ND	148	142	96		-	-		70-130	-		30
Perfluoropentanoic Acid (PFPeA)	ND	148	148	100		-	-		70-130	-		30
Perfluorobutanesulfonic Acid (PFBS)	ND	131	128	98		-	-		70-130	-		30
Perfluoro-4-Methoxybutanoic Acid (PFMBA)	ND	148	132	89		-	-		70-130	-		30
Perfluoro(2-Ethoxyethane)Sulfonic Acid (PFEESA)	ND	132	121	92		-	-		70-130	-		30
Nonafluoro-3,6-Dioxaheptanoic Acid (NFDHA)	ND	148	119	81		-	-		70-130	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	138	124	90		-	-		70-130	-		30
Perfluorohexanoic Acid (PFHxA)	ND	148	141	96		-	-		70-130	-		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	139	129	93		-	-		70-130	-		30
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND	148	136	92		-	-		70-130	-		30
Perfluoroheptanoic Acid (PFHpA)	ND	148	163	110		-	-		70-130	-		30
Perfluorohexanesulfonic Acid (PFHxS)	ND	135	120	89		-	-		70-130	-		30
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND	139	110	79		-	-		70-130	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	140	137	98		-	-		70-130	-		30
Perfluorooctanoic Acid (PFOA)	ND	148	134	91		-	-		70-130	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	141	138	98		-	-		70-130	-		30
Perfluorononanoic Acid (PFNA)	ND	148	159	108		-	-		70-130	-		30
Perfluorooctanesulfonic Acid (PFOS)	ND	137	136	99		-	-		70-130	-		30
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	ND	138	128	93		-	-		70-130	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	142	132	93		-	-		70-130	-		30
Perfluorodecanoic Acid (PFDA)	ND	148	146	99		-	-		70-130	-		30

Matrix Spike Analysis

Batch Quality Control

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370810
Report Date: 12/08/23

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab			Associated sample(s): 01			QC Batch ID: WG1860276-3		QC Sample: L2370808-01		Client ID: MS Sample		
Perfluoroundecanoic Acid (PFUnA)	ND	148	142	96		-	-		70-130	-		30
11-Chloroeicosafuoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	ND	139	133	95		-	-		70-130	-		30
Perfluorododecanoic Acid (PFDoA)	ND	148	132	89		-	-		70-130	-		30

Surrogate (Extracted Internal Standard)	MS % Recovery	MS Qualifier	MSD % Recovery	MSD Qualifier	Acceptance Criteria
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	94				50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	107				50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	101				50-200
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	78				50-200
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	94				50-200
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	89				50-200
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	79				50-200
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	73				50-200
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	92				50-200
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	104				50-200
Perfluoro[13C4]Butanoic Acid (MPFBA)	73				50-200
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	73				50-200
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	89				50-200
Perfluoro[13C8]Octanoic Acid (M8PFOA)	83				50-200
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	84				50-200
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	97				50-200

Lab Duplicate Analysis

Batch Quality Control

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370810
Report Date: 12/08/23

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1860276-4 QC Sample: L2370808-02 Client ID: DUP Sample						
Perfluorobutanoic Acid (PFBA)	ND	ND	ng/l	NC		30
Perfluoro-3-Methoxypropanoic Acid (PFMPA)	ND	ND	ng/l	NC		30
Perfluoropentanoic Acid (PFPeA)	2.29	2.33	ng/l	2		30
Perfluorobutanesulfonic Acid (PFBS)	ND	ND	ng/l	NC		30
Perfluoro-4-Methoxybutanoic Acid (PFMBA)	ND	ND	ng/l	NC		30
Perfluoro(2-Ethoxyethane)Sulfonic Acid (PFEESA)	ND	ND	ng/l	NC		30
Nonafluoro-3,6-Dioxaheptanoic Acid (NFDHA)	ND	ND	ng/l	NC		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	ND	ng/l	NC		30
Perfluorohexanoic Acid (PFHxA)	2.07	ND	ng/l	NC		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	ND	ng/l	NC		30
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND	ND	ng/l	NC		30
Perfluoroheptanoic Acid (PFHpA)	1.97	2.10	ng/l	6		30
Perfluorohexanesulfonic Acid (PFHxS)	ND	ND	ng/l	NC		30
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND	ND	ng/l	NC		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	ND	ng/l	NC		30
Perfluorooctanoic Acid (PFOA)	ND	ND	ng/l	NC		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	ND	ng/l	NC		30
Perfluorononanoic Acid (PFNA)	ND	ND	ng/l	NC		30
Perfluorooctanesulfonic Acid (PFOS)	ND	ND	ng/l	NC		30
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	ND	ND	ng/l	NC		30

Lab Duplicate Analysis

Batch Quality Control

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370810
Report Date: 12/08/23

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1860276-4 QC Sample: L2370808-02 Client ID: DUP Sample						
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	ND	ng/l	NC		30
Perfluorodecanoic Acid (PFDA)	ND	ND	ng/l	NC		30
Perfluoroundecanoic Acid (PFUnA)	ND	ND	ng/l	NC		30
11-Chloroeicosafuoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	ND	ND	ng/l	NC		30
Perfluorododecanoic Acid (PFDoA)	ND	ND	ng/l	NC		30

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	97		91		50-200
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	106		95		50-200
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	96		99		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	102		106		50-200
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	93		92		50-200
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	99		88		50-200
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	93		98		50-200
Perfluoro[13C8]Octanoic Acid (M8PFOA)	89		88		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	101		92		50-200
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	112		92		50-200
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	97		94		50-200
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	95		89		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	102		99		50-200
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	95		95		50-200
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	100		100		50-200
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	85		90		50-200

Project Name: MVY
Project Number: 143-3953-23004

Sample Receipt and Container Information

Were project specific reporting limits specified?

YES

Cooler Information

Cooler **Custody Seal**
A Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2370810-01A	Plastic 250ml Ammonium Acetate preserved	A	NA		4.2	Y	Absent		A2-533(28)
L2370810-01B	Plastic 250ml Ammonium Acetate preserved	A	NA		4.2	Y	Absent		A2-533(28)

Project Name: MVY
Project Number: 143-3953-23004

Serial_No:12082316:05
Lab Number: L2370810
Report Date: 12/08/23

PFAS PARAMETER SUMMARY

Parameter	Acronym	CAS Number
PERFLUOROALKYL CARBOXYLIC ACIDS (PFCAs)		
Perfluorooctadecanoic Acid	PFODA	16517-11-6
Perfluorohexadecanoic Acid	PFHxDA	67905-19-5
Perfluorotetradecanoic Acid	PFTA/PFTeDA	376-06-7
Perfluorotridecanoic Acid	PFTrDA	72629-94-8
Perfluorododecanoic Acid	PFDoA	307-55-1
Perfluoroundecanoic Acid	PFUnA	2058-94-8
Perfluorodecanoic Acid	PFDA	335-76-2
Perfluorononanoic Acid	PFNA	375-95-1
Perfluorooctanoic Acid	PFOA	335-67-1
Perfluoroheptanoic Acid	PFHpA	375-85-9
Perfluorohexanoic Acid	PFHxA	307-24-4
Perfluoropentanoic Acid	PFPeA	2706-90-3
Perfluorobutanoic Acid	PFBA	375-22-4
PERFLUOROALKYL SULFONIC ACIDS (PFSAs)		
Perfluorododecanesulfonic Acid	PFDoDS/PFDoS	79780-39-5
Perfluorodecanesulfonic Acid	PFDS	335-77-3
Perfluorononanesulfonic Acid	PFNS	68259-12-1
Perfluorooctanesulfonic Acid	PFOS	1763-23-1
Perfluoroheptanesulfonic Acid	PFHpS	375-92-8
Perfluorohexanesulfonic Acid	PFHxS	355-46-4
Perfluoropentanesulfonic Acid	PFPeS	2706-91-4
Perfluorobutanesulfonic Acid	PFBS	375-73-5
Perfluoropropanesulfonic Acid	PFPrS	423-41-6
FLUOROTELOMERS		
1H,1H,2H,2H-Perfluorododecanesulfonic Acid	10:2FTS	120226-60-0
1H,1H,2H,2H-Perfluorodecanesulfonic Acid	8:2FTS	39108-34-4
1H,1H,2H,2H-Perfluorooctanesulfonic Acid	6:2FTS	27619-97-2
1H,1H,2H,2H-Perfluorohexanesulfonic Acid	4:2FTS	757124-72-4
PERFLUOROALKANE SULFONAMIDES (FASAs)		
Perfluorooctanesulfonamide	FOSA/PFOSA	754-91-6
N-Ethyl Perfluorooctane Sulfonamide	NEtFOSA	4151-50-2
N-Methyl Perfluorooctane Sulfonamide	NMeFOSA	31506-32-8
PERFLUOROALKANE SULFONYL SUBSTANCES		
N-Ethyl Perfluorooctanesulfonamido Ethanol	NEtFOSE	1691-99-2
N-Methyl Perfluorooctanesulfonamido Ethanol	NMeFOSE	24448-09-7
N-Ethyl Perfluorooctanesulfonamidoacetic Acid	NEtFOSAA	2991-50-6
N-Methyl Perfluorooctanesulfonamidoacetic Acid	NMeFOSAA	2355-31-9
PER- and POLYFLUOROALKYL ETHER CARBOXYLIC ACIDS		
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid	HFPO-DA	13252-13-6
4,8-Dioxa-3h-Perfluorononanoic Acid	ADONA	919005-14-4
CHLORO-PERFLUOROALKYL SULFONIC ACIDS		
11-Chloroeicosafuoro-3-Oxaundecane-1-Sulfonic Acid	11Cl-PF3OUdS	763051-92-9
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid	9Cl-PF3ONS	756426-58-1
PERFLUOROETHER SULFONIC ACIDS (PFESAs)		
Perfluoro(2-Ethoxyethane)Sulfonic Acid	PFEESA	113507-82-7
PERFLUOROETHER/POLYETHER CARBOXYLIC ACIDS (PFPCAs)		
Perfluoro-3-Methoxypropanoic Acid	PFMPA	377-73-1
Perfluoro-4-Methoxybutanoic Acid	PFMBA	863090-89-5
Nonafluoro-3,6-Dioxaheptanoic Acid	NFDHA	151772-58-6

Project Name: MVY
Project Number: 143-3953-23004

Serial_No:12082316:05
Lab Number: L2370810
Report Date: 12/08/23

PFAS PARAMETER SUMMARY

Parameter	Acronym	CAS Number
FLUOROTELOMER CARBOXYLIC ACIDS (FTCAs)		
3-Perfluoroheptyl Propanoic Acid	7:3FTCA	812-70-4
2H,2H,3H,3H-Perfluorooctanoic Acid	5:3FTCA	914637-49-3
3-Perfluoropropyl Propanoic Acid	3:3FTCA	356-02-5

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370810
Report Date: 12/08/23

GLOSSARY

Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.) Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
NR	- No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: Data Usability Report



Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370810
Report Date: 12/08/23

Footnotes

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Chlordane: The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA, this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Gasoline Range Organics (GRO): Gasoline Range Organics (GRO) results include all chromatographic peaks eluting from Methyl tert butyl ether through Naphthalene, with the exception of GRO analysis in support of State of Ohio programs, which includes all chromatographic peaks eluting from Hexane through Dodecane.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

- A** - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- F** - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- J** - Estimated value. This represents an estimated concentration for Tentatively Identified Compounds (TICs).
- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

Report Format: Data Usability Report



Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370810
Report Date: 12/08/23

Data Qualifiers

- ND** - Not detected at the reporting limit (RL) for the sample.
- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.
- V** - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)
- Z** - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370810
Report Date: 12/08/23

REFERENCES

- 136 Determination of Per- and Polyfluoroalkyl Substances in Drinking Water by Isotope Dilution Anion Exchange Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS). EPA Method 533, EPA Document 815-B-19-020, November 2019.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility

EPA 624.1: m/p-xylene, o-xylene, Naphthalene

EPA 625.1: alpha-Terpineol

EPA 8260D: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.

EPA 8270E: NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine, alpha-Terpineol; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.

SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO₂, NO₃.

Mansfield Facility

SM 2540D: TSS.

EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene,

3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water

EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE,**

EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B

EPA 524.2: THMs and VOCs; **EPA 504.1:** EDB, DBCP.

Microbiology: SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.

Non-Potable Water

SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1:**

Ammonia-N, **LACHAT 10-107-06-1-B:** Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2:** Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E,**

SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.

EPA 624.1: Volatile Halocarbons & Aromatics,

EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs

EPA 625.1: SVOC (Acid/Base/Neutral Extractables).

Microbiology: SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.

Mansfield Facility:

Drinking Water

EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1** Hg.

EPA 522, EPA 537.1.

Non-Potable Water

EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.

EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.

EPA 245.1 Hg.

SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.



ANALYTICAL REPORT

Lab Number:	L2370801
Client:	Tetra Tech Rizzo Marlborough Technology Park 100 Nickerson Road Marlborough, MA 01752
ATTN:	Ron Myrick
Phone:	(508) 786-2200
Project Name:	MVY
Project Number:	143-3953-23004
Report Date:	12/06/23

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Certifications & Approvals: MA (M-MA030), NH NELAP (2062), CT (PH-0825), DoD (L2474), FL (E87814), IL (200081), IN (C-MA-04), KY (KY98046), LA (85084), ME (MA00030), MD (350), MI (99110), NJ (MA015), NY (11627), NC (685), OH (CL106), OR (MA-0262), PA (68-02089), RI (LAO00299), TX (T104704419), VT (VT-0015), VA (460194), WA (C954), US Army Corps of Engineers, USDA (Permit #525-23-107-88708), USFWS (Permit #206964).

320 Forbes Boulevard, Mansfield, MA 02048-1806
508-822-9300 (Fax) 508-822-3288 800-624-9220 - www.alphalab.com



Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370801
Report Date: 12/06/23

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2370801-01	PROPERTY I-EFF	DW	PROPERTY I	11/29/23 15:15	12/01/23
L2370801-02	PROPERTY I-MID	DW	PROPERTY I	11/29/23 15:20	12/01/23
L2370801-03	PROPERTY I-INF	DW	PROPERTY I	11/29/23 15:25	12/01/23

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370801
Report Date: 12/06/23

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

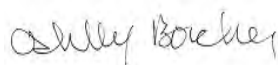
Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:



Ashley Boucher

Title: Technical Director/Representative

Date: 12/06/23

ORGANICS

SEMIVOLATILES

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370801
Report Date: 12/06/23

SAMPLE RESULTS

Lab ID: L2370801-01
Client ID: PROPERTY I-EFF
Sample Location: PROPERTY I

Date Collected: 11/29/23 15:15
Date Received: 12/01/23
Field Prep: Not Specified

Sample Depth:

Matrix: Dw
Analytical Method: 136,533
Analytical Date: 12/05/23 00:32
Analyst: TBR

Extraction Method: EPA 533
Extraction Date: 12/04/23 01:49

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND		ng/l	1.78	--	1
Perfluoro-3-Methoxypropanoic Acid (PFMPA)	ND		ng/l	1.78	--	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	1.78	--	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.78	--	1
Perfluoro-4-Methoxybutanoic Acid (PFMBA)	ND		ng/l	1.78	--	1
Perfluoro(2-Ethoxyethane)Sulfonic Acid (PFEESA)	ND		ng/l	1.78	--	1
Nonafluoro-3,6-Dioxaheptanoic Acid (NFDHA)	ND		ng/l	1.78	--	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	1.78	--	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	1.78	--	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.78	--	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/l	1.78	--	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.78	--	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.78	--	1
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/l	1.78	--	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	2.50		ng/l	1.78	--	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	1.78	--	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.78	--	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.78	--	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	1.78	--	1
9-Chlorohexadecafluoro-3-Oxanonone-1-Sulfonic Acid (9Cl-PF3ONS)	ND		ng/l	1.78	--	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.78	--	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.78	--	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.78	--	1
11-Chloroeicosafluoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	ND		ng/l	1.78	--	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.78	--	1

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370801
Report Date: 12/06/23

SAMPLE RESULTS

Lab ID: L2370801-01
 Client ID: PROPERTY I-EFF
 Sample Location: PROPERTY I

Date Collected: 11/29/23 15:15
 Date Received: 12/01/23
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	97		50-200
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	99		50-200
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	94		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	99		50-200
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	97		50-200
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	97		50-200
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	99		50-200
Perfluoro[13C8]Octanoic Acid (M8PFOA)	94		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	101		50-200
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	106		50-200
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	93		50-200
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	94		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	93		50-200
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	104		50-200
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	109		50-200
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	102		50-200

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370801
Report Date: 12/06/23

SAMPLE RESULTS

Lab ID: L2370801-02
Client ID: PROPERTY I-MID
Sample Location: PROPERTY I

Date Collected: 11/29/23 15:20
Date Received: 12/01/23
Field Prep: Not Specified

Sample Depth:

Matrix: Dw
Analytical Method: 136,533
Analytical Date: 12/05/23 00:40
Analyst: TBR

Extraction Method: EPA 533
Extraction Date: 12/04/23 01:49

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND		ng/l	1.87	--	1
Perfluoro-3-Methoxypropanoic Acid (PFMPA)	ND		ng/l	1.87	--	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	1.87	--	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.87	--	1
Perfluoro-4-Methoxybutanoic Acid (PFMBA)	ND		ng/l	1.87	--	1
Perfluoro(2-Ethoxyethane)Sulfonic Acid (PFEESA)	ND		ng/l	1.87	--	1
Nonafluoro-3,6-Dioxaheptanoic Acid (NFDHA)	ND		ng/l	1.87	--	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	1.87	--	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	1.87	--	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.87	--	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/l	1.87	--	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.87	--	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.87	--	1
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/l	1.87	--	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	12.1		ng/l	1.87	--	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	1.87	--	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.87	--	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.87	--	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	1.87	--	1
9-Chlorohexadecafluoro-3-Oxanonone-1-Sulfonic Acid (9Cl-PF3ONS)	ND		ng/l	1.87	--	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.87	--	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.87	--	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.87	--	1
11-Chloroeicosafluoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	ND		ng/l	1.87	--	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.87	--	1

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370801
Report Date: 12/06/23

SAMPLE RESULTS

Lab ID: L2370801-02
 Client ID: PROPERTY I-MID
 Sample Location: PROPERTY I

Date Collected: 11/29/23 15:20
 Date Received: 12/01/23
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	100		50-200
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	104		50-200
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	89		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	87		50-200
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	111		50-200
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	100		50-200
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	85		50-200
Perfluoro[13C8]Octanoic Acid (M8PFOA)	99		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	107		50-200
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	110		50-200
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	80		50-200
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	105		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	89		50-200
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	104		50-200
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	116		50-200
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	113		50-200

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370801
Report Date: 12/06/23

SAMPLE RESULTS

Lab ID: L2370801-03
 Client ID: PROPERTY I-INF
 Sample Location: PROPERTY I

Date Collected: 11/29/23 15:25
 Date Received: 12/01/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Dw
 Analytical Method: 136,533
 Analytical Date: 12/05/23 00:49
 Analyst: TBR

Extraction Method: EPA 533
 Extraction Date: 12/04/23 01:49

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	54.0		ng/l	1.79	--	1
Perfluoro-3-Methoxypropanoic Acid (PFMPA)	ND		ng/l	1.79	--	1
Perfluoropentanoic Acid (PFPeA)	198		ng/l	1.79	--	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.79	--	1
Perfluoro-4-Methoxybutanoic Acid (PFMBA)	ND		ng/l	1.79	--	1
Perfluoro(2-Ethoxyethane)Sulfonic Acid (PFEESA)	ND		ng/l	1.79	--	1
Nonafluoro-3,6-Dioxaheptanoic Acid (NFDHA)	ND		ng/l	1.79	--	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	1.79	--	1
Perfluorohexanoic Acid (PFHxA)	126		ng/l	1.79	--	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.79	--	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/l	1.79	--	1
Perfluoroheptanoic Acid (PFHpA)	151		ng/l	1.79	--	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.79	--	1
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/l	1.79	--	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	342		ng/l	1.79	--	1
Perfluorooctanoic Acid (PFOA)	82.7		ng/l	1.79	--	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.79	--	1
Perfluorononanoic Acid (PFNA)	8.76		ng/l	1.79	--	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	1.79	--	1
9-Chlorohexadecafluoro-3-Oxanonone-1-Sulfonic Acid (9Cl-PF3ONS)	ND		ng/l	1.79	--	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	5.97		ng/l	1.79	--	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.79	--	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.79	--	1
11-Chloroeicosafluoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	ND		ng/l	1.79	--	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.79	--	1

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370801
Report Date: 12/06/23

SAMPLE RESULTS

Lab ID: L2370801-03
 Client ID: PROPERTY I-INF
 Sample Location: PROPERTY I

Date Collected: 11/29/23 15:25
 Date Received: 12/01/23
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	95		50-200
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	90		50-200
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	92		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	135		50-200
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	86		50-200
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	91		50-200
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	92		50-200
Perfluoro[13C8]Octanoic Acid (M8PFOA)	90		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	115		50-200
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	94		50-200
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	95		50-200
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	94		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	108		50-200
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	101		50-200
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	100		50-200
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	90		50-200

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370801
Report Date: 12/06/23

Method Blank Analysis
Batch Quality Control

Analytical Method: 136,533
Analytical Date: 12/04/23 21:28
Analyst: TBR

Extraction Method: EPA 533
Extraction Date: 12/04/23 01:49

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab for sample(s): 01-03 Batch: WG1859268-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	2.00	--
Perfluoro-3-Methoxypropanoic Acid (PFMPA)	ND		ng/l	2.00	--
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	--
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	--
Perfluoro-4-Methoxybutanoic Acid (PFMBA)	ND		ng/l	2.00	--
Perfluoro(2-Ethoxyethane)Sulfonic Acid (PFEEESA)	ND		ng/l	2.00	--
Nonafluoro-3,6-Dioxaheptanoic Acid (NFDHA)	ND		ng/l	2.00	--
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	2.00	--
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	--
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.00	--
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/l	2.00	--
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	--
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	--
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/l	2.00	--
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	2.00	--
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	--
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	--
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	--
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	--
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	ND		ng/l	2.00	--
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	2.00	--
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	--
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	--
11-Chloroeicosadecafluoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	ND		ng/l	2.00	--
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	--

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370801
Report Date: 12/06/23

Method Blank Analysis
Batch Quality Control

Analytical Method: 136,533
Analytical Date: 12/04/23 21:28
Analyst: TBR

Extraction Method: EPA 533
Extraction Date: 12/04/23 01:49

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab for sample(s): 01-03 Batch: WG1859268-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	98		50-200
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	102		50-200
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	92		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	87		50-200
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	95		50-200
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	97		50-200
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	87		50-200
Perfluoro[13C8]Octanoic Acid (M8PFOA)	96		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	83		50-200
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	101		50-200
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	84		50-200
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	92		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	101		50-200
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	96		50-200
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	102		50-200
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	96		50-200

Lab Control Sample Analysis

Batch Quality Control

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370801
Report Date: 12/06/23

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab Associated sample(s): 01-03 Batch: WG1859268-2								
Perfluorobutanoic Acid (PFBA)	90		-		70-130	-		30
Perfluoro-3-Methoxypropanoic Acid (PFMPA)	98		-		70-130	-		30
Perfluoropentanoic Acid (PFPeA)	88		-		70-130	-		30
Perfluorobutanesulfonic Acid (PFBS)	91		-		70-130	-		30
Perfluoro-4-Methoxybutanoic Acid (PFMBA)	87		-		70-130	-		30
Perfluoro(2-Ethoxyethane)Sulfonic Acid (PFEEESA)	83		-		70-130	-		30
Nonafluoro-3,6-Dioxaheptanoic Acid (NFDHA)	90		-		70-130	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	91		-		70-130	-		30
Perfluorohexanoic Acid (PFHxA)	89		-		70-130	-		30
Perfluoropentanesulfonic Acid (PFPeS)	88		-		70-130	-		30
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	85		-		70-130	-		30
Perfluoroheptanoic Acid (PFHpA)	95		-		70-130	-		30
Perfluorohexanesulfonic Acid (PFHxS)	92		-		70-130	-		30
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	90		-		70-130	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	99		-		70-130	-		30
Perfluorooctanoic Acid (PFOA)	92		-		70-130	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	89		-		70-130	-		30
Perfluorononanoic Acid (PFNA)	95		-		70-130	-		30
Perfluorooctanesulfonic Acid (PFOS)	97		-		70-130	-		30
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	88		-		70-130	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	93		-		70-130	-		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370801
Report Date: 12/06/23

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab Associated sample(s): 01-03 Batch: WG1859268-2								
Perfluorodecanoic Acid (PFDA)	93		-		70-130	-		30
Perfluoroundecanoic Acid (PFUnA)	91		-		70-130	-		30
11-Chloroeicosafuoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	94		-		70-130	-		30
Perfluorododecanoic Acid (PFDoA)	87		-		70-130	-		30

Surrogate (Extracted Internal Standard)	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
Perfluoro[13C4]Butanoic Acid (MPFBA)	101				50-200
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	102				50-200
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	99				50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	104				50-200
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	108				50-200
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	102				50-200
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	89				50-200
Perfluoro[13C8]Octanoic Acid (M8PFOA)	103				50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	101				50-200
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	100				50-200
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	93				50-200
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	103				50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	113				50-200
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	115				50-200
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	116				50-200
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	110				50-200

Matrix Spike Analysis

Batch Quality Control

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370801
Report Date: 12/06/23

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab		Associated sample(s): 01-03			QC Batch ID: WG1859268-3		QC Sample: L2368516-01		Client ID: MS Sample			
Perfluorobutanoic Acid (PFBA)	ND	153	136	89		-	-		70-130	-		30
Perfluoro-3-Methoxypropanoic Acid (PFMPA)	ND	153	146	96		-	-		70-130	-		30
Perfluoropentanoic Acid (PFPeA)	ND	153	138	90		-	-		70-130	-		30
Perfluorobutanesulfonic Acid (PFBS)	ND	136	117	86		-	-		70-130	-		30
Perfluoro-4-Methoxybutanoic Acid (PFMBA)	ND	153	137	90		-	-		70-130	-		30
Perfluoro(2-Ethoxyethane)Sulfonic Acid (PFEESA)	ND	136	109	80		-	-		70-130	-		30
Nonafluoro-3,6-Dioxaheptanoic Acid (NFDHA)	ND	153	149	98		-	-		70-130	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	143	118	82		-	-		70-130	-		30
Perfluorohexanoic Acid (PFHxA)	ND	153	138	90		-	-		70-130	-		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	144	120	84		-	-		70-130	-		30
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND	153	124	81		-	-		70-130	-		30
Perfluoroheptanoic Acid (PFHpA)	ND	153	143	94		-	-		70-130	-		30
Perfluorohexanesulfonic Acid (PFHxS)	ND	139	116	83		-	-		70-130	-		30
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND	144	129	90		-	-		70-130	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	145	138	95		-	-		70-130	-		30
Perfluorooctanoic Acid (PFOA)	ND	153	140	92		-	-		70-130	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	146	134	92		-	-		70-130	-		30
Perfluorononanoic Acid (PFNA)	ND	153	149	98		-	-		70-130	-		30
Perfluorooctanesulfonic Acid (PFOS)	ND	142	130	92		-	-		70-130	-		30
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	ND	143	126	88		-	-		70-130	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	147	145	99		-	-		70-130	-		30
Perfluorodecanoic Acid (PFDA)	ND	153	141	92		-	-		70-130	-		30

Matrix Spike Analysis

Batch Quality Control

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370801
Report Date: 12/06/23

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab			Associated sample(s): 01-03			QC Batch ID: WG1859268-3			QC Sample: L2368516-01		Client ID: MS Sample	
Perfluoroundecanoic Acid (PFUnA)	ND	153	146	96		-	-		70-130	-		30
11-Chloroeicosafuoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	ND	144	119	82		-	-		70-130	-		30
Perfluorododecanoic Acid (PFDoA)	ND	153	140	92		-	-		70-130	-		30

Surrogate (Extracted Internal Standard)	MS % Recovery	MS Qualifier	MSD % Recovery	MSD Qualifier	Acceptance Criteria
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	106				50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	116				50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	113				50-200
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	112				50-200
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	99				50-200
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	102				50-200
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	102				50-200
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	102				50-200
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	107				50-200
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	102				50-200
Perfluoro[13C4]Butanoic Acid (MPFBA)	99				50-200
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	101				50-200
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	97				50-200
Perfluoro[13C8]Octanoic Acid (M8PFOA)	97				50-200
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	100				50-200
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	111				50-200

Lab Duplicate Analysis

Batch Quality Control

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370801
Report Date: 12/06/23

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab Associated sample(s): 01-03 QC Batch ID: WG1859268-4 QC Sample: L2369752-01 Client ID: DUP Sample						
Perfluorobutanoic Acid (PFBA)	ND	ND	ng/l	NC		30
Perfluoro-3-Methoxypropanoic Acid (PFMPA)	ND	ND	ng/l	NC		30
Perfluoropentanoic Acid (PFPeA)	ND	ND	ng/l	NC		30
Perfluorobutanesulfonic Acid (PFBS)	ND	ND	ng/l	NC		30
Perfluoro-4-Methoxybutanoic Acid (PFMBA)	ND	ND	ng/l	NC		30
Perfluoro(2-Ethoxyethane)Sulfonic Acid (PFEESA)	ND	ND	ng/l	NC		30
Nonafluoro-3,6-Dioxaheptanoic Acid (NFDHA)	ND	ND	ng/l	NC		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	ND	ng/l	NC		30
Perfluorohexanoic Acid (PFHxA)	ND	ND	ng/l	NC		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	ND	ng/l	NC		30
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND	ND	ng/l	NC		30
Perfluoroheptanoic Acid (PFHpA)	ND	ND	ng/l	NC		30
Perfluorohexanesulfonic Acid (PFHxS)	ND	ND	ng/l	NC		30
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND	ND	ng/l	NC		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	4.48	6.69	ng/l	40	Q	30
Perfluorooctanoic Acid (PFOA)	ND	ND	ng/l	NC		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	ND	ng/l	NC		30
Perfluorononanoic Acid (PFNA)	ND	ND	ng/l	NC		30
Perfluorooctanesulfonic Acid (PFOS)	ND	ND	ng/l	NC		30
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	ND	ND	ng/l	NC		30

Lab Duplicate Analysis

Batch Quality Control

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370801
Report Date: 12/06/23

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab Associated sample(s): 01-03 QC Batch ID: WG1859268-4 QC Sample: L2369752-01 Client ID: DUP Sample						
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	ND	ng/l	NC		30
Perfluorodecanoic Acid (PFDA)	ND	ND	ng/l	NC		30
Perfluoroundecanoic Acid (PFUnA)	ND	ND	ng/l	NC		30
11-Chloroeicosafuoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	ND	ND	ng/l	NC		30
Perfluorododecanoic Acid (PFDoA)	ND	ND	ng/l	NC		30

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	90		78		50-200
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	94		88		50-200
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	98		87		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	91		92		50-200
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	83		80		50-200
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	92		83		50-200
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	87		89		50-200
Perfluoro[13C8]Octanoic Acid (M8PFOA)	92		92		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	101		98		50-200
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	111		90		50-200
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	96		83		50-200
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	104		96		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	102		100		50-200
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	102		97		50-200
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	107		99		50-200
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	95		76		50-200

Project Name: MVY
Project Number: 143-3953-23004

Sample Receipt and Container Information

Were project specific reporting limits specified?

YES

Cooler Information

Cooler **Custody Seal**
A Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2370801-01A	Plastic 250ml Ammonium Acetate preserved	A	NA		3.8	Y	Absent		A2-533(28)
L2370801-01B	Plastic 250ml Ammonium Acetate preserved	A	NA		3.8	Y	Absent		A2-533(28)
L2370801-02A	Plastic 250ml Ammonium Acetate preserved	A	NA		3.8	Y	Absent		A2-533(28)
L2370801-02B	Plastic 250ml Ammonium Acetate preserved	A	NA		3.8	Y	Absent		A2-533(28)
L2370801-03A	Plastic 250ml Ammonium Acetate preserved	A	NA		3.8	Y	Absent		A2-533(28)
L2370801-03B	Plastic 250ml Ammonium Acetate preserved	A	NA		3.8	Y	Absent		A2-533(28)

Project Name: MVY
Project Number: 143-3953-23004

Serial_No:12062314:17
Lab Number: L2370801
Report Date: 12/06/23

PFAS PARAMETER SUMMARY

Parameter	Acronym	CAS Number
PERFLUOROALKYL CARBOXYLIC ACIDS (PFCAs)		
Perfluorooctadecanoic Acid	PFODA	16517-11-6
Perfluorohexadecanoic Acid	PFHxDA	67905-19-5
Perfluorotetradecanoic Acid	PFTA/PFTeDA	376-06-7
Perfluorotridecanoic Acid	PFTrDA	72629-94-8
Perfluorododecanoic Acid	PFDoA	307-55-1
Perfluoroundecanoic Acid	PFUnA	2058-94-8
Perfluorodecanoic Acid	PFDA	335-76-2
Perfluorononanoic Acid	PFNA	375-95-1
Perfluorooctanoic Acid	PFOA	335-67-1
Perfluoroheptanoic Acid	PFHpA	375-85-9
Perfluorohexanoic Acid	PFHxA	307-24-4
Perfluoropentanoic Acid	PFPeA	2706-90-3
Perfluorobutanoic Acid	PFBA	375-22-4
PERFLUOROALKYL SULFONIC ACIDS (PFSAs)		
Perfluorododecanesulfonic Acid	PFDoDS/PFDoS	79780-39-5
Perfluorodecanesulfonic Acid	PFDS	335-77-3
Perfluorononanesulfonic Acid	PFNS	68259-12-1
Perfluorooctanesulfonic Acid	PFOS	1763-23-1
Perfluoroheptanesulfonic Acid	PFHpS	375-92-8
Perfluorohexanesulfonic Acid	PFHxS	355-46-4
Perfluoropentanesulfonic Acid	PFPeS	2706-91-4
Perfluorobutanesulfonic Acid	PFBS	375-73-5
Perfluoropropanesulfonic Acid	PFPrS	423-41-6
FLUOROTELOMERS		
1H,1H,2H,2H-Perfluorododecanesulfonic Acid	10:2FTS	120226-60-0
1H,1H,2H,2H-Perfluorodecanesulfonic Acid	8:2FTS	39108-34-4
1H,1H,2H,2H-Perfluorooctanesulfonic Acid	6:2FTS	27619-97-2
1H,1H,2H,2H-Perfluorohexanesulfonic Acid	4:2FTS	757124-72-4
PERFLUOROALKANE SULFONAMIDES (FASAs)		
Perfluorooctanesulfonamide	FOSA/PFOSA	754-91-6
N-Ethyl Perfluorooctane Sulfonamide	NEtFOSA	4151-50-2
N-Methyl Perfluorooctane Sulfonamide	NMeFOSA	31506-32-8
PERFLUOROALKANE SULFONYL SUBSTANCES		
N-Ethyl Perfluorooctanesulfonamido Ethanol	NEtFOSE	1691-99-2
N-Methyl Perfluorooctanesulfonamido Ethanol	NMeFOSE	24448-09-7
N-Ethyl Perfluorooctanesulfonamidoacetic Acid	NEtFOSAA	2991-50-6
N-Methyl Perfluorooctanesulfonamidoacetic Acid	NMeFOSAA	2355-31-9
PER- and POLYFLUOROALKYL ETHER CARBOXYLIC ACIDS		
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid	HFPO-DA	13252-13-6
4,8-Dioxa-3h-Perfluorononanoic Acid	ADONA	919005-14-4
CHLORO-PERFLUOROALKYL SULFONIC ACIDS		
11-Chloroeicosafuoro-3-Oxaundecane-1-Sulfonic Acid	11Cl-PF3OUdS	763051-92-9
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid	9Cl-PF3ONS	756426-58-1
PERFLUOROETHER SULFONIC ACIDS (PFESAs)		
Perfluoro(2-Ethoxyethane)Sulfonic Acid	PFEEA	113507-82-7
PERFLUOROETHER/POLYETHER CARBOXYLIC ACIDS (PFPCAs)		
Perfluoro-3-Methoxypropanoic Acid	PFMPA	377-73-1
Perfluoro-4-Methoxybutanoic Acid	PFMBA	863090-89-5
Nonafluoro-3,6-Dioxaheptanoic Acid	NFDHA	151772-58-6

Project Name: MVY
Project Number: 143-3953-23004

Serial_No:12062314:17
Lab Number: L2370801
Report Date: 12/06/23

PFAS PARAMETER SUMMARY

Parameter	Acronym	CAS Number
FLUOROTELOMER CARBOXYLIC ACIDS (FTCAs)		
3-Perfluoroheptyl Propanoic Acid	7:3FTCA	812-70-4
2H,2H,3H,3H-Perfluorooctanoic Acid	5:3FTCA	914637-49-3
3-Perfluoropropyl Propanoic Acid	3:3FTCA	356-02-5

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370801
Report Date: 12/06/23

GLOSSARY

Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.) Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
NR	- No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: Data Usability Report



Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370801
Report Date: 12/06/23

Footnotes

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Chlordane: The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA, this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Gasoline Range Organics (GRO): Gasoline Range Organics (GRO) results include all chromatographic peaks eluting from Methyl tert butyl ether through Naphthalene, with the exception of GRO analysis in support of State of Ohio programs, which includes all chromatographic peaks eluting from Hexane through Dodecane.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

- A** - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- F** - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- J** - Estimated value. This represents an estimated concentration for Tentatively Identified Compounds (TICs).
- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

Report Format: Data Usability Report



Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370801
Report Date: 12/06/23

Data Qualifiers

- ND** - Not detected at the reporting limit (RL) for the sample.
- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.
- V** - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)
- Z** - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370801
Report Date: 12/06/23

REFERENCES

- 136 Determination of Per- and Polyfluoroalkyl Substances in Drinking Water by Isotope Dilution Anion Exchange Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS). EPA Method 533, EPA Document 815-B-19-020, November 2019.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility

EPA 624.1: m/p-xylene, o-xylene, Naphthalene

EPA 625.1: alpha-Terpineol

EPA 8260D: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.

EPA 8270E: NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine, alpha-Terpineol; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.

SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO₂, NO₃.

Mansfield Facility

SM 2540D: TSS.

EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene,

3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water

EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE,**

EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B

EPA 524.2: THMs and VOCs; **EPA 504.1:** EDB, DBCP.

Microbiology: SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.

Non-Potable Water

SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1:**

Ammonia-N, **LACHAT 10-107-06-1-B:** Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2:** Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E,**

SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.

EPA 624.1: Volatile Halocarbons & Aromatics,

EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II,

Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs

EPA 625.1: SVOC (Acid/Base/Neutral Extractables).

Microbiology: SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.

Mansfield Facility:

Drinking Water

EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1** Hg.

EPA 522, EPA 537.1.

Non-Potable Water

EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.

EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.

EPA 245.1 Hg.

SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.



ANALYTICAL REPORT

Lab Number:	L2370804
Client:	Tetra Tech Rizzo Marlborough Technology Park 100 Nickerson Road Marlborough, MA 01752
ATTN:	Ron Myrick
Phone:	(508) 786-2200
Project Name:	MVY
Project Number:	143-3953-23004
Report Date:	12/08/23

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Certifications & Approvals: MA (M-MA030), NH NELAP (2062), CT (PH-0825), DoD (L2474), FL (E87814), IL (200081), IN (C-MA-04), KY (KY98046), LA (85084), ME (MA00030), MD (350), MI (99110), NJ (MA015), NY (11627), NC (685), OH (CL106), OR (MA-0262), PA (68-02089), RI (LAO00299), TX (T104704419), VT (VT-0015), VA (460194), WA (C954), US Army Corps of Engineers, USDA (Permit #525-23-107-88708), USFWS (Permit #206964).

320 Forbes Boulevard, Mansfield, MA 02048-1806
508-822-9300 (Fax) 508-822-3288 800-624-9220 - www.alphalab.com



Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370804
Report Date: 12/08/23

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2370804-01	PROPERTY Y-EFF	DW	PROPERTY Y	11/30/23 08:55	12/01/23
L2370804-02	PROPERTY Y-MID	DW	PROPERTY Y	11/30/23 09:00	12/01/23
L2370804-03	PROPERTY Y-INF	DW	PROPERTY Y	11/30/23 08:50	12/01/23

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370804
Report Date: 12/08/23

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370804
Report Date: 12/08/23

Case Narrative (continued)

Perfluorinated Alkyl Acids by EPA 533

L2370804-01: The EFF result is greater than the MID result. The sample containers were verified as being labeled correctly by the laboratory.

L2370804-01: The Extracted Internal Standard recoveries were outside the acceptance criteria for perfluoro[13c4]butanoic acid (mpfba) (27%), perfluoro[13c5]pentanoic acid (m5pfpea) (27%), perfluoro[1,2,3,4,6-13c5]hexanoic acid (m5pfhxa) (25%), perfluoro[1,2,3,4-13c4]heptanoic acid (m4pfhpa) (24%), perfluoro[13c8]octanoic acid (m8pfoa) (23%), perfluoro[13c9]nonanoic acid (m9pfna) (20%), and 2,3,3,3-tetrafluoro-2-[1,1,2,2,3,3,3-heptafluoropropoxy]-13c3-propanoic acid (m3hfpo-da) (25%); however, the recoveries were confirmed by the QC performed on this sample; perfluoro[13c4]butanoic acid (mpfba) (35%), perfluoro[13c5]pentanoic acid (m5pfpea) (36%), perfluoro[1,2,3,4,6-13c5]hexanoic acid (m5pfhxa) (34%), perfluoro[1,2,3,4-13c4]heptanoic acid (m4pfhpa) (32%), perfluoro[13c8]octanoic acid (m8pfoa) (33%), perfluoro[13c9]nonanoic acid (m9pfna) (38%), and 2,3,3,3-tetrafluoro-2-[1,1,2,2,3,3,3-heptafluoropropoxy]-13c3-propanoic acid (m3hfpo-da) (30%). The Extracted Internal Standard recoveries were outside the acceptance criteria for perfluoro[1,2,3,4,5,6-13c6]decanoic acid (m6pfda) (26%) and perfluoro[1,2,3,4,5,6,7-13c7]undecanoic acid (m7-pfuda) (40%). Duplicate RPDs are within criteria.

L2370804-02: The Extracted Internal Standard recoveries were outside the acceptance criteria for perfluoro[13c5]pentanoic acid (m5pfpea) (48%), perfluoro[1,2,3,4,6-13c5]hexanoic acid (m5pfhxa) (35%), perfluoro[1,2,3,4-13c4]heptanoic acid (m4pfhpa) (36%), perfluoro[13c8]octanoic acid (m8pfoa) (40%) and 2,3,3,3-tetrafluoro-2-[1,1,2,2,3,3,3-heptafluoropropoxy]-13c3-propanoic acid (m3hfpo-da) (26%); however, re-extraction achieved similar results: perfluoro[13c5]pentanoic acid (m5pfpea) (30%), perfluoro[1,2,3,4,6-13c5]hexanoic acid (m5pfhxa) (29%), perfluoro[1,2,3,4-13c4]heptanoic acid (m4pfhpa) (30%), perfluoro[13c8]octanoic acid (m8pfoa) (33%) and 2,3,3,3-tetrafluoro-2-[1,1,2,2,3,3,3-heptafluoropropoxy]-13c3-propanoic acid (m3hfpo-da) (24%). The results of the original extraction are reported.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:



Alycia Mogayzel

Title: Technical Director/Representative

Date: 12/08/23

ORGANICS

SEMIVOLATILES

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370804
Report Date: 12/08/23

SAMPLE RESULTS

Lab ID: L2370804-01
 Client ID: PROPERTY Y-EFF
 Sample Location: PROPERTY Y

Date Collected: 11/30/23 08:55
 Date Received: 12/01/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Dw
 Analytical Method: 136,533
 Analytical Date: 12/05/23 19:02
 Analyst: CAP

Extraction Method: EPA 533
 Extraction Date: 12/05/23 07:00

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	19.1		ng/l	1.83	--	1
Perfluoro-3-Methoxypropanoic Acid (PFMPA)	ND		ng/l	1.83	--	1
Perfluoropentanoic Acid (PFPeA)	1.94		ng/l	1.83	--	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.83	--	1
Perfluoro-4-Methoxybutanoic Acid (PFMBA)	ND		ng/l	1.83	--	1
Perfluoro(2-Ethoxyethane)Sulfonic Acid (PFEESA)	ND		ng/l	1.83	--	1
Nonafluoro-3,6-Dioxaheptanoic Acid (NFDHA)	ND		ng/l	1.83	--	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	1.83	--	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	1.83	--	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.83	--	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/l	1.83	--	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.83	--	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.83	--	1
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/l	1.83	--	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.83	--	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	1.83	--	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.83	--	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.83	--	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	1.83	--	1
9-Chlorohexadecafluoro-3-Oxanonone-1-Sulfonic Acid (9Cl-PF3ONS)	ND		ng/l	1.83	--	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.83	--	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.83	--	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.83	--	1
11-Chloroeicosafluoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	ND		ng/l	1.83	--	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.83	--	1

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370804
Report Date: 12/08/23

SAMPLE RESULTS

Lab ID: L2370804-01
 Client ID: PROPERTY Y-EFF
 Sample Location: PROPERTY Y

Date Collected: 11/30/23 08:55
 Date Received: 12/01/23
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab						
Surrogate (Extracted Internal Standard)			% Recovery	Qualifier		Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)			27	Q		50-200
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)			27	Q		50-200
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)			93			50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)			100			50-200
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)			25	Q		50-200
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)			24	Q		50-200
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)			96			50-200
Perfluoro[13C8]Octanoic Acid (M8PFOA)			23	Q		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)			100			50-200
Perfluoro[13C9]Nonanoic Acid (M9PFNA)			20	Q		50-200
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)			90			50-200
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)			26	Q		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)			127			50-200
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)			40	Q		50-200
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)			54			50-200
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)			25	Q		50-200

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370804
Report Date: 12/08/23

SAMPLE RESULTS

Lab ID: L2370804-02
 Client ID: PROPERTY Y-MID
 Sample Location: PROPERTY Y

Date Collected: 11/30/23 09:00
 Date Received: 12/01/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Dw
 Analytical Method: 136,533
 Analytical Date: 12/05/23 19:20
 Analyst: CAP

Extraction Method: EPA 533
 Extraction Date: 12/05/23 07:00

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND		ng/l	1.82	--	1
Perfluoro-3-Methoxypropanoic Acid (PFMPA)	ND		ng/l	1.82	--	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	1.82	--	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.82	--	1
Perfluoro-4-Methoxybutanoic Acid (PFMBA)	ND		ng/l	1.82	--	1
Perfluoro(2-Ethoxyethane)Sulfonic Acid (PFEESA)	ND		ng/l	1.82	--	1
Nonafluoro-3,6-Dioxaheptanoic Acid (NFDHA)	ND		ng/l	1.82	--	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	1.82	--	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	1.82	--	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.82	--	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/l	1.82	--	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.82	--	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.82	--	1
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/l	1.82	--	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.82	--	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	1.82	--	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.82	--	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.82	--	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	1.82	--	1
9-Chlorohexadecafluoro-3-Oxanonone-1-Sulfonic Acid (9Cl-PF3ONS)	ND		ng/l	1.82	--	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.82	--	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.82	--	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.82	--	1
11-Chloroeicosafluoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	ND		ng/l	1.82	--	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.82	--	1

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370804
Report Date: 12/08/23

SAMPLE RESULTS

Lab ID: L2370804-02
 Client ID: PROPERTY Y-MID
 Sample Location: PROPERTY Y

Date Collected: 11/30/23 09:00
 Date Received: 12/01/23
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab						
Surrogate (Extracted Internal Standard)			% Recovery	Qualifier	Acceptance Criteria	
Perfluoro[13C4]Butanoic Acid (MPFBA)			51		50-200	
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)			48	Q	50-200	
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)			101		50-200	
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)			114		50-200	
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)			35	Q	50-200	
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)			36	Q	50-200	
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)			96		50-200	
Perfluoro[13C8]Octanoic Acid (M8PFOA)			40	Q	50-200	
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)			115		50-200	
Perfluoro[13C9]Nonanoic Acid (M9PFNA)			54		50-200	
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)			97		50-200	
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)			64		50-200	
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)			118		50-200	
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)			75		50-200	
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)			80		50-200	
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)			26	Q	50-200	

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370804
Report Date: 12/08/23

SAMPLE RESULTS

Lab ID: L2370804-03
Client ID: PROPERTY Y-INF
Sample Location: PROPERTY Y

Date Collected: 11/30/23 08:50
Date Received: 12/01/23
Field Prep: Not Specified

Sample Depth:

Matrix: Dw
Analytical Method: 136,533
Analytical Date: 12/05/23 19:28
Analyst: CAP

Extraction Method: EPA 533
Extraction Date: 12/05/23 07:00

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	48.3		ng/l	1.82	--	1
Perfluoro-3-Methoxypropanoic Acid (PFMPA)	ND		ng/l	1.82	--	1
Perfluoropentanoic Acid (PFPeA)	139		ng/l	1.82	--	1
Perfluorobutanesulfonic Acid (PFBS)	2.46		ng/l	1.82	--	1
Perfluoro-4-Methoxybutanoic Acid (PFMBA)	ND		ng/l	1.82	--	1
Perfluoro(2-Ethoxyethane)Sulfonic Acid (PFEESA)	ND		ng/l	1.82	--	1
Nonafluoro-3,6-Dioxaheptanoic Acid (NFDHA)	ND		ng/l	1.82	--	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	1.82	--	1
Perfluorohexanoic Acid (PFHxA)	104		ng/l	1.82	--	1
Perfluoropentanesulfonic Acid (PFPeS)	8.48		ng/l	1.82	--	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/l	1.82	--	1
Perfluoroheptanoic Acid (PFHpA)	94.9		ng/l	1.82	--	1
Perfluorohexanesulfonic Acid (PFHxS)	327		ng/l	1.82	--	1
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/l	1.82	--	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	204		ng/l	1.82	--	1
Perfluorooctanoic Acid (PFOA)	37.3		ng/l	1.82	--	1
Perfluoroheptanesulfonic Acid (PFHpS)	4.57		ng/l	1.82	--	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.82	--	1
Perfluorooctanesulfonic Acid (PFOS)	62.6		ng/l	1.82	--	1
9-Chlorohexadecafluoro-3-Oxanonone-1-Sulfonic Acid (9Cl-PF3ONS)	ND		ng/l	1.82	--	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.82	--	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.82	--	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.82	--	1
11-Chloroeicosafluoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	ND		ng/l	1.82	--	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.82	--	1

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370804
Report Date: 12/08/23

SAMPLE RESULTS

Lab ID: L2370804-03
 Client ID: PROPERTY Y-INF
 Sample Location: PROPERTY Y

Date Collected: 11/30/23 08:50
 Date Received: 12/01/23
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab						
Surrogate (Extracted Internal Standard)			% Recovery	Qualifier	Acceptance Criteria	
Perfluoro[13C4]Butanoic Acid (MPFBA)			92		50-200	
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)			91		50-200	
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)			86		50-200	
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)			102		50-200	
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)			83		50-200	
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)			81		50-200	
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)			70		50-200	
Perfluoro[13C8]Octanoic Acid (M8PFOA)			75		50-200	
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)			94		50-200	
Perfluoro[13C9]Nonanoic Acid (M9PFNA)			82		50-200	
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)			77		50-200	
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)			87		50-200	
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)			97		50-200	
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)			90		50-200	
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)			97		50-200	
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)			81		50-200	

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370804
Report Date: 12/08/23

Method Blank Analysis
Batch Quality Control

Analytical Method: 136,533
Analytical Date: 12/05/23 17:35
Analyst: CAP

Extraction Method: EPA 533
Extraction Date: 12/05/23 07:00

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab for sample(s): 01-03 Batch: WG1859769-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	2.00	--
Perfluoro-3-Methoxypropanoic Acid (PFMPA)	ND		ng/l	2.00	--
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	--
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	--
Perfluoro-4-Methoxybutanoic Acid (PFMBA)	ND		ng/l	2.00	--
Perfluoro(2-Ethoxyethane)Sulfonic Acid (PFEEESA)	ND		ng/l	2.00	--
Nonafluoro-3,6-Dioxaheptanoic Acid (NFDHA)	ND		ng/l	2.00	--
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	2.00	--
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	--
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.00	--
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/l	2.00	--
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	--
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	--
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/l	2.00	--
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	2.00	--
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	--
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	--
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	--
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	--
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	ND		ng/l	2.00	--
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	2.00	--
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	--
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	--
11-Chloroeicosafuoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	ND		ng/l	2.00	--
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	--

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370804
Report Date: 12/08/23

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 136,533
Analytical Date: 12/05/23 17:35
Analyst: CAP

Extraction Method: EPA 533
Extraction Date: 12/05/23 07:00

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab for sample(s): 01-03 Batch: WG1859769-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	98		50-200
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	113		50-200
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	109		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	113		50-200
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	97		50-200
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	102		50-200
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	109		50-200
Perfluoro[13C8]Octanoic Acid (M8PFOA)	97		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	120		50-200
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	104		50-200
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	106		50-200
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	98		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	130		50-200
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	111		50-200
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	113		50-200
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	92		50-200

Lab Control Sample Analysis

Batch Quality Control

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370804
Report Date: 12/08/23

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab Associated sample(s): 01-03 Batch: WG1859769-2								
Perfluorobutanoic Acid (PFBA)	96		-		50-150	-		30
Perfluoro-3-Methoxypropanoic Acid (PFMPA)	100		-		50-150	-		30
Perfluoropentanoic Acid (PFPeA)	93		-		50-150	-		30
Perfluorobutanesulfonic Acid (PFBS)	90		-		50-150	-		30
Perfluoro-4-Methoxybutanoic Acid (PFMBA)	87		-		50-150	-		30
Perfluoro(2-Ethoxyethane)Sulfonic Acid (PFEEESA)	86		-		50-150	-		30
Nonafluoro-3,6-Dioxaheptanoic Acid (NFDHA)	89		-		50-150	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	98		-		50-150	-		30
Perfluorohexanoic Acid (PFHxA)	103		-		50-150	-		30
Perfluoropentanesulfonic Acid (PFPeS)	88		-		50-150	-		30
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	87		-		50-150	-		30
Perfluoroheptanoic Acid (PFHpA)	102		-		50-150	-		30
Perfluorohexanesulfonic Acid (PFHxS)	77		-		50-150	-		30
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	90		-		50-150	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	97		-		50-150	-		30
Perfluorooctanoic Acid (PFOA)	98		-		50-150	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	91		-		50-150	-		30
Perfluorononanoic Acid (PFNA)	95		-		50-150	-		30
Perfluorooctanesulfonic Acid (PFOS)	95		-		50-150	-		30
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	90		-		50-150	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	94		-		50-150	-		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370804
Report Date: 12/08/23

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab Associated sample(s): 01-03 Batch: WG1859769-2								
Perfluorodecanoic Acid (PFDA)	96		-		50-150	-		30
Perfluoroundecanoic Acid (PFUnA)	92		-		50-150	-		30
11-Chloroeicosafuoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	84		-		50-150	-		30
Perfluorododecanoic Acid (PFDoA)	91		-		50-150	-		30

Surrogate (Extracted Internal Standard)	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
Perfluoro[13C4]Butanoic Acid (MPFBA)	91				50-200
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	96				50-200
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	92				50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	96				50-200
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	88				50-200
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	81				50-200
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	91				50-200
Perfluoro[13C8]Octanoic Acid (M8PFOA)	83				50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	106				50-200
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	91				50-200
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	89				50-200
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	91				50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	111				50-200
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	102				50-200
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	101				50-200
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	86				50-200

Matrix Spike Analysis

Batch Quality Control

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370804
Report Date: 12/08/23

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab		Associated sample(s): 01-03			QC Batch ID: WG1859769-3		QC Sample: L2370802-01		Client ID: MS Sample			
Perfluorobutanoic Acid (PFBA)	3.94	1.95	5.80	95	-	-	-	-	50-150	-	-	30
Perfluoro-3-Methoxypropanoic Acid (PFMPA)	ND	1.95	ND	87	-	-	-	-	50-150	-	-	30
Perfluoropentanoic Acid (PFPeA)	13.9	1.95	16.5	133	-	-	-	-	50-150	-	-	30
Perfluorobutanesulfonic Acid (PFBS)	ND	1.73	2.18	126	-	-	-	-	50-150	-	-	30
Perfluoro-4-Methoxybutanoic Acid (PFMBA)	ND	1.95	ND	92	-	-	-	-	50-150	-	-	30
Perfluoro(2-Ethoxyethane)Sulfonic Acid (PFEESA)	ND	1.74	ND	87	-	-	-	-	50-150	-	-	30
Nonafluoro-3,6-Dioxaheptanoic Acid (NFDHA)	ND	1.95	ND	81	-	-	-	-	50-150	-	-	30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	1.83	ND	98	-	-	-	-	50-150	-	-	30
Perfluorohexanoic Acid (PFHxA)	7.03	1.95	8.84	93	-	-	-	-	50-150	-	-	30
Perfluoropentanesulfonic Acid (PFPeS)	ND	1.84	ND	88	-	-	-	-	50-150	-	-	30
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND	1.95	ND	91	-	-	-	-	50-150	-	-	30
Perfluoroheptanoic Acid (PFHpA)	2.56	1.95	5.23	137	-	-	-	-	50-150	-	-	30
Perfluorohexanesulfonic Acid (PFHxS)	ND	1.78	2.08	117	-	-	-	-	50-150	-	-	30
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND	1.84	ND	90	-	-	-	-	50-150	-	-	30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	1.86	2.43	131	-	-	-	-	50-150	-	-	30
Perfluorooctanoic Acid (PFOA)	1.89	1.95	4.52	135	-	-	-	-	50-150	-	-	30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	1.86	ND	88	-	-	-	-	50-150	-	-	30
Perfluorononanoic Acid (PFNA)	ND	1.95	2.08	107	-	-	-	-	50-150	-	-	30
Perfluorooctanesulfonic Acid (PFOS)	ND	1.81	2.06	114	-	-	-	-	50-150	-	-	30
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	ND	1.82	ND	76	-	-	-	-	50-150	-	-	30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	1.87	2.12	113	-	-	-	-	50-150	-	-	30
Perfluorodecanoic Acid (PFDA)	ND	1.95	ND	97	-	-	-	-	50-150	-	-	30

Matrix Spike Analysis

Batch Quality Control

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370804
Report Date: 12/08/23

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab			Associated sample(s): 01-03			QC Batch ID: WG1859769-3		QC Sample: L2370802-01		Client ID: MS Sample		
Perfluoroundecanoic Acid (PFUnA)	ND	1.95	ND	98		-	-		50-150	-		30
11-Chloroeicosafuoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	ND	1.84	ND	86		-	-		50-150	-		30
Perfluorododecanoic Acid (PFDoA)	ND	1.95	ND	97		-	-		50-150	-		30

Surrogate (Extracted Internal Standard)	MS % Recovery	MS Qualifier	MSD % Recovery	MSD Qualifier	Acceptance Criteria
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	115				50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	120				50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	105				50-200
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	57				50-200
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	87				50-200
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	69				50-200
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	70				50-200
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	59				50-200
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	84				50-200
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	96				50-200
Perfluoro[13C4]Butanoic Acid (MPFBA)	74				50-200
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	70				50-200
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	91				50-200
Perfluoro[13C8]Octanoic Acid (M8PFOA)	57				50-200
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	64				50-200
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	90				50-200

Lab Duplicate Analysis

Batch Quality Control

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370804
Report Date: 12/08/23

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab Associated sample(s): 01-03 QC Batch ID: WG1859769-4 QC Sample: L2370804-01 Client ID: PROPERTY Y-EFF						
Perfluorobutanoic Acid (PFBA)	19.1	19.9	ng/l	4		30
Perfluoro-3-Methoxypropanoic Acid (PFMPA)	ND	ND	ng/l	NC		30
Perfluoropentanoic Acid (PFPeA)	1.94	ND	ng/l	NC		30
Perfluorobutanesulfonic Acid (PFBS)	ND	ND	ng/l	NC		30
Perfluoro-4-Methoxybutanoic Acid (PFMBA)	ND	ND	ng/l	NC		30
Perfluoro(2-Ethoxyethane)Sulfonic Acid (PFEESA)	ND	ND	ng/l	NC		30
Nonafluoro-3,6-Dioxaheptanoic Acid (NFDHA)	ND	ND	ng/l	NC		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	ND	ng/l	NC		30
Perfluorohexanoic Acid (PFHxA)	ND	ND	ng/l	NC		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	ND	ng/l	NC		30
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND	ND	ng/l	NC		30
Perfluoroheptanoic Acid (PFHpA)	ND	ND	ng/l	NC		30
Perfluorohexanesulfonic Acid (PFHxS)	ND	ND	ng/l	NC		30
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND	ND	ng/l	NC		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	ND	ng/l	NC		30
Perfluorooctanoic Acid (PFOA)	ND	ND	ng/l	NC		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	ND	ng/l	NC		30
Perfluorononanoic Acid (PFNA)	ND	ND	ng/l	NC		30
Perfluorooctanesulfonic Acid (PFOS)	ND	ND	ng/l	NC		30
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	ND	ND	ng/l	NC		30

Lab Duplicate Analysis

Batch Quality Control

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370804
Report Date: 12/08/23

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab Associated sample(s): 01-03 QC Batch ID: WG1859769-4 QC Sample: L2370804-01 Client ID: PROPERTY Y-EFF						
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	ND	ng/l	NC		30
Perfluorodecanoic Acid (PFDA)	ND	ND	ng/l	NC		30
Perfluoroundecanoic Acid (PFUnA)	ND	ND	ng/l	NC		30
11-Chloroeicosafuoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	ND	ND	ng/l	NC		30
Perfluorododecanoic Acid (PFDoA)	ND	ND	ng/l	NC		30

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	27	Q	35	Q	50-200
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	27	Q	36	Q	50-200
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	93		98		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	100		105		50-200
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	25	Q	34	Q	50-200
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	24	Q	32	Q	50-200
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	96		94		50-200
Perfluoro[13C8]Octanoic Acid (M8PFOA)	23	Q	33	Q	50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	100		111		50-200
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	20	Q	38	Q	50-200
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	90		99		50-200
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	26	Q	54		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	127		116		50-200
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	40	Q	69		50-200
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	54		84		50-200
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	25	Q	30	Q	50-200

Project Name: MVY
Project Number: 143-3953-23004

Sample Receipt and Container Information

Were project specific reporting limits specified?

YES

Cooler Information

Cooler **Custody Seal**
A Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2370804-01A	Plastic 250ml Ammonium Acetate preserved	A	NA		3.8	Y	Absent		A2-533(28)
L2370804-01B	Plastic 250ml Ammonium Acetate preserved	A	NA		3.8	Y	Absent		A2-533(28)
L2370804-02A	Plastic 250ml Ammonium Acetate preserved	A	NA		3.8	Y	Absent		A2-533(28)
L2370804-02B	Plastic 250ml Ammonium Acetate preserved	A	NA		3.8	Y	Absent		A2-533(28)
L2370804-03A	Plastic 250ml Ammonium Acetate preserved	A	NA		3.8	Y	Absent		A2-533(28)
L2370804-03B	Plastic 250ml Ammonium Acetate preserved	A	NA		3.8	Y	Absent		A2-533(28)

Project Name: MVY
Project Number: 143-3953-23004

Serial_No:12082311:26
Lab Number: L2370804
Report Date: 12/08/23

PFAS PARAMETER SUMMARY

Parameter	Acronym	CAS Number
PERFLUOROALKYL CARBOXYLIC ACIDS (PFCAs)		
Perfluorooctadecanoic Acid	PFODA	16517-11-6
Perfluorohexadecanoic Acid	PFHxDA	67905-19-5
Perfluorotetradecanoic Acid	PFTA/PFTeDA	376-06-7
Perfluorotridecanoic Acid	PFTrDA	72629-94-8
Perfluorododecanoic Acid	PFDoA	307-55-1
Perfluoroundecanoic Acid	PFUnA	2058-94-8
Perfluorodecanoic Acid	PFDA	335-76-2
Perfluorononanoic Acid	PFNA	375-95-1
Perfluorooctanoic Acid	PFOA	335-67-1
Perfluoroheptanoic Acid	PFHpA	375-85-9
Perfluorohexanoic Acid	PFHxA	307-24-4
Perfluoropentanoic Acid	PFPeA	2706-90-3
Perfluorobutanoic Acid	PFBA	375-22-4
PERFLUOROALKYL SULFONIC ACIDS (PFSAs)		
Perfluorododecanesulfonic Acid	PFDoDS/PFDoS	79780-39-5
Perfluorodecanesulfonic Acid	PFDS	335-77-3
Perfluorononanesulfonic Acid	PFNS	68259-12-1
Perfluorooctanesulfonic Acid	PFOS	1763-23-1
Perfluoroheptanesulfonic Acid	PFHpS	375-92-8
Perfluorohexanesulfonic Acid	PFHxS	355-46-4
Perfluoropentanesulfonic Acid	PFPeS	2706-91-4
Perfluorobutanesulfonic Acid	PFBS	375-73-5
Perfluoropropanesulfonic Acid	PFPrS	423-41-6
FLUOROTELOMERS		
1H,1H,2H,2H-Perfluorododecanesulfonic Acid	10:2FTS	120226-60-0
1H,1H,2H,2H-Perfluorodecanesulfonic Acid	8:2FTS	39108-34-4
1H,1H,2H,2H-Perfluorooctanesulfonic Acid	6:2FTS	27619-97-2
1H,1H,2H,2H-Perfluorohexanesulfonic Acid	4:2FTS	757124-72-4
PERFLUOROALKANE SULFONAMIDES (FASAs)		
Perfluorooctanesulfonamide	FOSA/PFOSA	754-91-6
N-Ethyl Perfluorooctane Sulfonamide	NEtFOSA	4151-50-2
N-Methyl Perfluorooctane Sulfonamide	NMeFOSA	31506-32-8
PERFLUOROALKANE SULFONYL SUBSTANCES		
N-Ethyl Perfluorooctanesulfonamido Ethanol	NEtFOSE	1691-99-2
N-Methyl Perfluorooctanesulfonamido Ethanol	NMeFOSE	24448-09-7
N-Ethyl Perfluorooctanesulfonamidoacetic Acid	NEtFOSAA	2991-50-6
N-Methyl Perfluorooctanesulfonamidoacetic Acid	NMeFOSAA	2355-31-9
PER- and POLYFLUOROALKYL ETHER CARBOXYLIC ACIDS		
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid	HFPO-DA	13252-13-6
4,8-Dioxa-3h-Perfluorononanoic Acid	ADONA	919005-14-4
CHLORO-PERFLUOROALKYL SULFONIC ACIDS		
11-Chloroeicosafuoro-3-Oxaundecane-1-Sulfonic Acid	11Cl-PF3OUdS	763051-92-9
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid	9Cl-PF3ONS	756426-58-1
PERFLUOROETHER SULFONIC ACIDS (PFESAs)		
Perfluoro(2-Ethoxyethane)Sulfonic Acid	PFEEASA	113507-82-7
PERFLUOROETHER/POLYETHER CARBOXYLIC ACIDS (PFPCAs)		
Perfluoro-3-Methoxypropanoic Acid	PFMPA	377-73-1
Perfluoro-4-Methoxybutanoic Acid	PFMBA	863090-89-5
Nonafluoro-3,6-Dioxaheptanoic Acid	NFDHA	151772-58-6

Project Name: MVY
Project Number: 143-3953-23004

Serial_No:12082311:26
Lab Number: L2370804
Report Date: 12/08/23

PFAS PARAMETER SUMMARY

Parameter	Acronym	CAS Number
FLUOROTELOMER CARBOXYLIC ACIDS (FTCAs)		
3-Perfluoroheptyl Propanoic Acid	7:3FTCA	812-70-4
2H,2H,3H,3H-Perfluorooctanoic Acid	5:3FTCA	914637-49-3
3-Perfluoropropyl Propanoic Acid	3:3FTCA	356-02-5

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370804
Report Date: 12/08/23

GLOSSARY

Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.) Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
NR	- No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: Data Usability Report



Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370804
Report Date: 12/08/23

Footnotes

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Chlordane: The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA, this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Gasoline Range Organics (GRO): Gasoline Range Organics (GRO) results include all chromatographic peaks eluting from Methyl tert butyl ether through Naphthalene, with the exception of GRO analysis in support of State of Ohio programs, which includes all chromatographic peaks eluting from Hexane through Dodecane.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

- A** - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- F** - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- J** - Estimated value. This represents an estimated concentration for Tentatively Identified Compounds (TICs).
- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

Report Format: Data Usability Report



Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370804
Report Date: 12/08/23

Data Qualifiers

- ND** - Not detected at the reporting limit (RL) for the sample.
- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.
- V** - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)
- Z** - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370804
Report Date: 12/08/23

REFERENCES

- 136 Determination of Per- and Polyfluoroalkyl Substances in Drinking Water by Isotope Dilution Anion Exchange Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS). EPA Method 533, EPA Document 815-B-19-020, November 2019.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility

EPA 624.1: m/p-xylene, o-xylene, Naphthalene

EPA 625.1: alpha-Terpineol

EPA 8260D: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.

EPA 8270E: NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine, alpha-Terpineol; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.

SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO₂, NO₃.

Mansfield Facility

SM 2540D: TSS.

EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene,

3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water

EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE,**

EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B

EPA 524.2: THMs and VOCs; **EPA 504.1:** EDB, DBCP.

Microbiology: SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.

Non-Potable Water

SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1:**

Ammonia-N, **LACHAT 10-107-06-1-B:** Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2:** Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E,**

SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.

EPA 624.1: Volatile Halocarbons & Aromatics,

EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs

EPA 625.1: SVOC (Acid/Base/Neutral Extractables).

Microbiology: SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.

Mansfield Facility:

Drinking Water

EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1** Hg.

EPA 522, EPA 537.1.

Non-Potable Water

EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.

EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.

EPA 245.1 Hg.

SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.



ANALYTICAL REPORT

Lab Number:	L2370805
Client:	Tetra Tech Rizzo Marlborough Technology Park 100 Nickerson Road Marlborough, MA 01752
ATTN:	Ron Myrick
Phone:	(508) 786-2200
Project Name:	MVY
Project Number:	143-3953-23004
Report Date:	12/08/23

The original project report/data package is held by Alpha Analytical. This report/data package is paginated and should be reproduced only in its entirety. Alpha Analytical holds no responsibility for results and/or data that are not consistent with the original.

Certifications & Approvals: MA (M-MA030), NH NELAP (2062), CT (PH-0825), DoD (L2474), FL (E87814), IL (200081), IN (C-MA-04), KY (KY98046), LA (85084), ME (MA00030), MD (350), MI (99110), NJ (MA015), NY (11627), NC (685), OH (CL106), OR (MA-0262), PA (68-02089), RI (LAO00299), TX (T104704419), VT (VT-0015), VA (460194), WA (C954), US Army Corps of Engineers, USDA (Permit #525-23-107-88708), USFWS (Permit #206964).

320 Forbes Boulevard, Mansfield, MA 02048-1806
508-822-9300 (Fax) 508-822-3288 800-624-9220 - www.alphalab.com



Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370805
Report Date: 12/08/23

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2370805-01	PROPERTY CO-EFF	DW	PROPERTY CO	11/30/23 09:20	12/01/23
L2370805-02	PROPERTY CO-INF	DW	PROPERTY CO	11/30/23 09:25	12/01/23

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370805
Report Date: 12/08/23

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

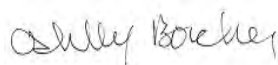
Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:



Ashley Boucher

Title: Technical Director/Representative

Date: 12/08/23

ORGANICS

SEMIVOLATILES

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370805
Report Date: 12/08/23

SAMPLE RESULTS

Lab ID: L2370805-01
 Client ID: PROPERTY CO-EFF
 Sample Location: PROPERTY CO

Date Collected: 11/30/23 09:20
 Date Received: 12/01/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Dw
 Analytical Method: 136,533
 Analytical Date: 12/05/23 20:02
 Analyst: CAP

Extraction Method: EPA 533
 Extraction Date: 12/05/23 07:00

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND		ng/l	1.79	--	1
Perfluoro-3-Methoxypropanoic Acid (PFMPA)	ND		ng/l	1.79	--	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	1.79	--	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.79	--	1
Perfluoro-4-Methoxybutanoic Acid (PFMBA)	ND		ng/l	1.79	--	1
Perfluoro(2-Ethoxyethane)Sulfonic Acid (PFEESA)	ND		ng/l	1.79	--	1
Nonafluoro-3,6-Dioxaheptanoic Acid (NFDHA)	ND		ng/l	1.79	--	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	1.79	--	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	1.79	--	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.79	--	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/l	1.79	--	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.79	--	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.79	--	1
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/l	1.79	--	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.79	--	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	1.79	--	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.79	--	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.79	--	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	1.79	--	1
9-Chlorohexadecafluoro-3-Oxanonone-1-Sulfonic Acid (9Cl-PF3ONS)	ND		ng/l	1.79	--	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.79	--	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.79	--	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.79	--	1
11-Chloroeicosafluoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	ND		ng/l	1.79	--	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.79	--	1

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370805
Report Date: 12/08/23

SAMPLE RESULTS

Lab ID: L2370805-01
 Client ID: PROPERTY CO-EFF
 Sample Location: PROPERTY CO

Date Collected: 11/30/23 09:20
 Date Received: 12/01/23
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	80		50-200
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	80		50-200
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	98		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	111		50-200
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	65		50-200
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	59		50-200
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	86		50-200
Perfluoro[13C8]Octanoic Acid (M8PFOA)	68		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	123		50-200
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	67		50-200
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	95		50-200
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	73		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	129		50-200
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	88		50-200
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	91		50-200
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	62		50-200

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370805
Report Date: 12/08/23

SAMPLE RESULTS

Lab ID: L2370805-02
 Client ID: PROPERTY CO-INF
 Sample Location: PROPERTY CO

Date Collected: 11/30/23 09:25
 Date Received: 12/01/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Dw
 Analytical Method: 136,533
 Analytical Date: 12/05/23 20:11
 Analyst: CAP

Extraction Method: EPA 533
 Extraction Date: 12/05/23 07:00

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	7.78		ng/l	1.77	--	1
Perfluoro-3-Methoxypropanoic Acid (PFMPA)	ND		ng/l	1.77	--	1
Perfluoropentanoic Acid (PFPeA)	17.6		ng/l	1.77	--	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.77	--	1
Perfluoro-4-Methoxybutanoic Acid (PFMBA)	ND		ng/l	1.77	--	1
Perfluoro(2-Ethoxyethane)Sulfonic Acid (PFEESA)	ND		ng/l	1.77	--	1
Nonafluoro-3,6-Dioxaheptanoic Acid (NFDHA)	ND		ng/l	1.77	--	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	1.77	--	1
Perfluorohexanoic Acid (PFHxA)	10.1		ng/l	1.77	--	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.77	--	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/l	1.77	--	1
Perfluoroheptanoic Acid (PFHpA)	5.80		ng/l	1.77	--	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.77	--	1
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/l	1.77	--	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.77	--	1
Perfluorooctanoic Acid (PFOA)	9.94		ng/l	1.77	--	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.77	--	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.77	--	1
Perfluorooctanesulfonic Acid (PFOS)	2.77		ng/l	1.77	--	1
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	ND		ng/l	1.77	--	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.77	--	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.77	--	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.77	--	1
11-Chloroeicosafluoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	ND		ng/l	1.77	--	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.77	--	1

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370805
Report Date: 12/08/23

SAMPLE RESULTS

Lab ID: L2370805-02
 Client ID: PROPERTY CO-INF
 Sample Location: PROPERTY CO

Date Collected: 11/30/23 09:25
 Date Received: 12/01/23
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	93		50-200
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	88		50-200
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	102		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	132		50-200
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	71		50-200
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	66		50-200
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	100		50-200
Perfluoro[13C8]Octanoic Acid (M8PFOA)	59		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	114		50-200
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	69		50-200
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	106		50-200
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	69		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	114		50-200
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	84		50-200
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	96		50-200
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	72		50-200

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370805
Report Date: 12/08/23

Method Blank Analysis
Batch Quality Control

Analytical Method: 136,533
Analytical Date: 12/05/23 17:35
Analyst: CAP

Extraction Method: EPA 533
Extraction Date: 12/05/23 07:00

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab for sample(s): 01-02 Batch: WG1859769-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	2.00	--
Perfluoro-3-Methoxypropanoic Acid (PFMPA)	ND		ng/l	2.00	--
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	--
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	--
Perfluoro-4-Methoxybutanoic Acid (PFMBA)	ND		ng/l	2.00	--
Perfluoro(2-Ethoxyethane)Sulfonic Acid (PFEEESA)	ND		ng/l	2.00	--
Nonafluoro-3,6-Dioxaheptanoic Acid (NFDHA)	ND		ng/l	2.00	--
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	2.00	--
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	--
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.00	--
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/l	2.00	--
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	--
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	--
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/l	2.00	--
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	2.00	--
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	--
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	--
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	--
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	--
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	ND		ng/l	2.00	--
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	2.00	--
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	--
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	--
11-Chloroeicosafuoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	ND		ng/l	2.00	--
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	--

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370805
Report Date: 12/08/23

Method Blank Analysis
Batch Quality Control

Analytical Method: 136,533
Analytical Date: 12/05/23 17:35
Analyst: CAP

Extraction Method: EPA 533
Extraction Date: 12/05/23 07:00

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab for sample(s): 01-02 Batch: WG1859769-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	98		50-200
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	113		50-200
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	109		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	113		50-200
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	97		50-200
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	102		50-200
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	109		50-200
Perfluoro[13C8]Octanoic Acid (M8PFOA)	97		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	120		50-200
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	104		50-200
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	106		50-200
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	98		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	130		50-200
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	111		50-200
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	113		50-200
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	92		50-200

Lab Control Sample Analysis

Batch Quality Control

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370805
Report Date: 12/08/23

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab Associated sample(s): 01-02 Batch: WG1859769-2								
Perfluorobutanoic Acid (PFBA)	96		-		50-150	-		30
Perfluoro-3-Methoxypropanoic Acid (PFMPA)	100		-		50-150	-		30
Perfluoropentanoic Acid (PFPeA)	93		-		50-150	-		30
Perfluorobutanesulfonic Acid (PFBS)	90		-		50-150	-		30
Perfluoro-4-Methoxybutanoic Acid (PFMBA)	87		-		50-150	-		30
Perfluoro(2-Ethoxyethane)Sulfonic Acid (PFEEESA)	86		-		50-150	-		30
Nonafluoro-3,6-Dioxaheptanoic Acid (NFDHA)	89		-		50-150	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	98		-		50-150	-		30
Perfluorohexanoic Acid (PFHxA)	103		-		50-150	-		30
Perfluoropentanesulfonic Acid (PFPeS)	88		-		50-150	-		30
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	87		-		50-150	-		30
Perfluoroheptanoic Acid (PFHpA)	102		-		50-150	-		30
Perfluorohexanesulfonic Acid (PFHxS)	77		-		50-150	-		30
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	90		-		50-150	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	97		-		50-150	-		30
Perfluorooctanoic Acid (PFOA)	98		-		50-150	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	91		-		50-150	-		30
Perfluorononanoic Acid (PFNA)	95		-		50-150	-		30
Perfluorooctanesulfonic Acid (PFOS)	95		-		50-150	-		30
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	90		-		50-150	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	94		-		50-150	-		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370805
Report Date: 12/08/23

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab Associated sample(s): 01-02 Batch: WG1859769-2								
Perfluorodecanoic Acid (PFDA)	96		-		50-150	-		30
Perfluoroundecanoic Acid (PFUnA)	92		-		50-150	-		30
11-Chloroeicosafuoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	84		-		50-150	-		30
Perfluorododecanoic Acid (PFDoA)	91		-		50-150	-		30

Surrogate (Extracted Internal Standard)	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
Perfluoro[13C4]Butanoic Acid (MPFBA)	91				50-200
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	96				50-200
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	92				50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	96				50-200
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	88				50-200
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	81				50-200
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	91				50-200
Perfluoro[13C8]Octanoic Acid (M8PFOA)	83				50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	106				50-200
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	91				50-200
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	89				50-200
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	91				50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	111				50-200
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	102				50-200
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	101				50-200
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	86				50-200

Matrix Spike Analysis

Batch Quality Control

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370805
Report Date: 12/08/23

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab		Associated sample(s): 01-02			QC Batch ID: WG1859769-3		QC Sample: L2370802-01		Client ID: MS Sample			
Perfluorobutanoic Acid (PFBA)	3.94	1.95	5.80	95	-	-	-	-	50-150	-	-	30
Perfluoro-3-Methoxypropanoic Acid (PFMPA)	ND	1.95	ND	87	-	-	-	-	50-150	-	-	30
Perfluoropentanoic Acid (PFPeA)	13.9	1.95	16.5	133	-	-	-	-	50-150	-	-	30
Perfluorobutanesulfonic Acid (PFBS)	ND	1.73	2.18	126	-	-	-	-	50-150	-	-	30
Perfluoro-4-Methoxybutanoic Acid (PFMBA)	ND	1.95	ND	92	-	-	-	-	50-150	-	-	30
Perfluoro(2-Ethoxyethane)Sulfonic Acid (PFEESA)	ND	1.74	ND	87	-	-	-	-	50-150	-	-	30
Nonafluoro-3,6-Dioxaheptanoic Acid (NFDHA)	ND	1.95	ND	81	-	-	-	-	50-150	-	-	30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	1.83	ND	98	-	-	-	-	50-150	-	-	30
Perfluorohexanoic Acid (PFHxA)	7.03	1.95	8.84	93	-	-	-	-	50-150	-	-	30
Perfluoropentanesulfonic Acid (PFPeS)	ND	1.84	ND	88	-	-	-	-	50-150	-	-	30
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND	1.95	ND	91	-	-	-	-	50-150	-	-	30
Perfluoroheptanoic Acid (PFHpA)	2.56	1.95	5.23	137	-	-	-	-	50-150	-	-	30
Perfluorohexanesulfonic Acid (PFHxS)	ND	1.78	2.08	117	-	-	-	-	50-150	-	-	30
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND	1.84	ND	90	-	-	-	-	50-150	-	-	30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	1.86	2.43	131	-	-	-	-	50-150	-	-	30
Perfluorooctanoic Acid (PFOA)	1.89	1.95	4.52	135	-	-	-	-	50-150	-	-	30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	1.86	ND	88	-	-	-	-	50-150	-	-	30
Perfluorononanoic Acid (PFNA)	ND	1.95	2.08	107	-	-	-	-	50-150	-	-	30
Perfluorooctanesulfonic Acid (PFOS)	ND	1.81	2.06	114	-	-	-	-	50-150	-	-	30
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	ND	1.82	ND	76	-	-	-	-	50-150	-	-	30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	1.87	2.12	113	-	-	-	-	50-150	-	-	30
Perfluorodecanoic Acid (PFDA)	ND	1.95	ND	97	-	-	-	-	50-150	-	-	30

Matrix Spike Analysis

Batch Quality Control

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370805
Report Date: 12/08/23

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab			Associated sample(s): 01-02			QC Batch ID: WG1859769-3			QC Sample: L2370802-01		Client ID: MS Sample	
Perfluoroundecanoic Acid (PFUnA)	ND	1.95	ND	98		-	-		50-150	-		30
11-Chloroeicosafuoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	ND	1.84	ND	86		-	-		50-150	-		30
Perfluorododecanoic Acid (PFDoA)	ND	1.95	ND	97		-	-		50-150	-		30

Surrogate (Extracted Internal Standard)	MS % Recovery	MS Qualifier	MSD % Recovery	MSD Qualifier	Acceptance Criteria
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	115				50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	120				50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	105				50-200
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	57				50-200
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	87				50-200
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	69				50-200
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	70				50-200
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	59				50-200
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	84				50-200
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	96				50-200
Perfluoro[13C4]Butanoic Acid (MPFBA)	74				50-200
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	70				50-200
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	91				50-200
Perfluoro[13C8]Octanoic Acid (M8PFOA)	57				50-200
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	64				50-200
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	90				50-200

Lab Duplicate Analysis

Batch Quality Control

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370805
Report Date: 12/08/23

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab Associated sample(s): 01-02 QC Batch ID: WG1859769-4 QC Sample: L2370804-01 Client ID: DUP Sample						
Perfluorobutanoic Acid (PFBA)	19.1	19.9	ng/l	4		30
Perfluoro-3-Methoxypropanoic Acid (PFMPA)	ND	ND	ng/l	NC		30
Perfluoropentanoic Acid (PFPeA)	1.94	ND	ng/l	NC		30
Perfluorobutanesulfonic Acid (PFBS)	ND	ND	ng/l	NC		30
Perfluoro-4-Methoxybutanoic Acid (PFMBA)	ND	ND	ng/l	NC		30
Perfluoro(2-Ethoxyethane)Sulfonic Acid (PFEESA)	ND	ND	ng/l	NC		30
Nonafluoro-3,6-Dioxaheptanoic Acid (NFDHA)	ND	ND	ng/l	NC		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	ND	ng/l	NC		30
Perfluorohexanoic Acid (PFHxA)	ND	ND	ng/l	NC		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	ND	ng/l	NC		30
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND	ND	ng/l	NC		30
Perfluoroheptanoic Acid (PFHpA)	ND	ND	ng/l	NC		30
Perfluorohexanesulfonic Acid (PFHxS)	ND	ND	ng/l	NC		30
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND	ND	ng/l	NC		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	ND	ng/l	NC		30
Perfluorooctanoic Acid (PFOA)	ND	ND	ng/l	NC		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	ND	ng/l	NC		30
Perfluorononanoic Acid (PFNA)	ND	ND	ng/l	NC		30
Perfluorooctanesulfonic Acid (PFOS)	ND	ND	ng/l	NC		30
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	ND	ND	ng/l	NC		30

Lab Duplicate Analysis

Batch Quality Control

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370805
Report Date: 12/08/23

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab Associated sample(s): 01-02 QC Batch ID: WG1859769-4 QC Sample: L2370804-01 Client ID: DUP Sample						
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	ND	ng/l	NC		30
Perfluorodecanoic Acid (PFDA)	ND	ND	ng/l	NC		30
Perfluoroundecanoic Acid (PFUnA)	ND	ND	ng/l	NC		30
11-Chloroeicosafuoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	ND	ND	ng/l	NC		30
Perfluorododecanoic Acid (PFDoA)	ND	ND	ng/l	NC		30

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	27	Q	35	Q	50-200
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	27	Q	36	Q	50-200
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	93		98		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	100		105		50-200
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	25	Q	34	Q	50-200
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	24	Q	32	Q	50-200
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	96		94		50-200
Perfluoro[13C8]Octanoic Acid (M8PFOA)	23	Q	33	Q	50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	100		111		50-200
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	20	Q	38	Q	50-200
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	90		99		50-200
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	26	Q	54		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	127		116		50-200
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	40	Q	69		50-200
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	54		84		50-200
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	25	Q	30	Q	50-200

Project Name: MVY

Project Number: 143-3953-23004

Sample Receipt and Container Information

Were project specific reporting limits specified?

YES

Cooler Information**Cooler** **Custody Seal**

A Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2370805-01A	Plastic 250ml Ammonium Acetate preserved	A	NA		3.8	Y	Absent		A2-533(28)
L2370805-01B	Plastic 250ml Ammonium Acetate preserved	A	NA		3.8	Y	Absent		A2-533(28)
L2370805-02A	Plastic 250ml Ammonium Acetate preserved	A	NA		3.8	Y	Absent		A2-533(28)
L2370805-02B	Plastic 250ml Ammonium Acetate preserved	A	NA		3.8	Y	Absent		A2-533(28)

Project Name: MVY
Project Number: 143-3953-23004

Serial_No:12082310:41
Lab Number: L2370805
Report Date: 12/08/23

PFAS PARAMETER SUMMARY

Parameter	Acronym	CAS Number
PERFLUOROALKYL CARBOXYLIC ACIDS (PFCAs)		
Perfluorooctadecanoic Acid	PFODA	16517-11-6
Perfluorohexadecanoic Acid	PFHxDA	67905-19-5
Perfluorotetradecanoic Acid	PFTA/PFTeDA	376-06-7
Perfluorotridecanoic Acid	PFTrDA	72629-94-8
Perfluorododecanoic Acid	PFDoA	307-55-1
Perfluoroundecanoic Acid	PFUnA	2058-94-8
Perfluorodecanoic Acid	PFDA	335-76-2
Perfluorononanoic Acid	PFNA	375-95-1
Perfluorooctanoic Acid	PFOA	335-67-1
Perfluoroheptanoic Acid	PFHpA	375-85-9
Perfluorohexanoic Acid	PFHxA	307-24-4
Perfluoropentanoic Acid	PFPeA	2706-90-3
Perfluorobutanoic Acid	PFBA	375-22-4
PERFLUOROALKYL SULFONIC ACIDS (PFSAs)		
Perfluorododecanesulfonic Acid	PFDoDS/PFDoS	79780-39-5
Perfluorodecanesulfonic Acid	PFDS	335-77-3
Perfluorononanesulfonic Acid	PFNS	68259-12-1
Perfluorooctanesulfonic Acid	PFOS	1763-23-1
Perfluoroheptanesulfonic Acid	PFHpS	375-92-8
Perfluorohexanesulfonic Acid	PFHxS	355-46-4
Perfluoropentanesulfonic Acid	PFPeS	2706-91-4
Perfluorobutanesulfonic Acid	PFBS	375-73-5
Perfluoropropanesulfonic Acid	PFPrS	423-41-6
FLUOROTELOMERS		
1H,1H,2H,2H-Perfluorododecanesulfonic Acid	10:2FTS	120226-60-0
1H,1H,2H,2H-Perfluorodecanesulfonic Acid	8:2FTS	39108-34-4
1H,1H,2H,2H-Perfluorooctanesulfonic Acid	6:2FTS	27619-97-2
1H,1H,2H,2H-Perfluorohexanesulfonic Acid	4:2FTS	757124-72-4
PERFLUOROALKANE SULFONAMIDES (FASAs)		
Perfluorooctanesulfonamide	FOSA/PFOSA	754-91-6
N-Ethyl Perfluorooctane Sulfonamide	NEtFOSA	4151-50-2
N-Methyl Perfluorooctane Sulfonamide	NMeFOSA	31506-32-8
PERFLUOROALKANE SULFONYL SUBSTANCES		
N-Ethyl Perfluorooctanesulfonamido Ethanol	NEtFOSE	1691-99-2
N-Methyl Perfluorooctanesulfonamido Ethanol	NMeFOSE	24448-09-7
N-Ethyl Perfluorooctanesulfonamidoacetic Acid	NEtFOSAA	2991-50-6
N-Methyl Perfluorooctanesulfonamidoacetic Acid	NMeFOSAA	2355-31-9
PER- and POLYFLUOROALKYL ETHER CARBOXYLIC ACIDS		
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid	HFPO-DA	13252-13-6
4,8-Dioxa-3h-Perfluorononanoic Acid	ADONA	919005-14-4
CHLORO-PERFLUOROALKYL SULFONIC ACIDS		
11-Chloroeicosafuoro-3-Oxaundecane-1-Sulfonic Acid	11Cl-PF3OUdS	763051-92-9
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid	9Cl-PF3ONS	756426-58-1
PERFLUOROETHER SULFONIC ACIDS (PFESAs)		
Perfluoro(2-Ethoxyethane)Sulfonic Acid	PFEESA	113507-82-7
PERFLUOROETHER/POLYETHER CARBOXYLIC ACIDS (PFPCAs)		
Perfluoro-3-Methoxypropanoic Acid	PFMPA	377-73-1
Perfluoro-4-Methoxybutanoic Acid	PFMBA	863090-89-5
Nonafluoro-3,6-Dioxaheptanoic Acid	NFDHA	151772-58-6

Project Name: MVY
Project Number: 143-3953-23004

Serial_No:12082310:41
Lab Number: L2370805
Report Date: 12/08/23

PFAS PARAMETER SUMMARY

Parameter	Acronym	CAS Number
FLUOROTELOMER CARBOXYLIC ACIDS (FTCAs)		
3-Perfluoroheptyl Propanoic Acid	7:3FTCA	812-70-4
2H,2H,3H,3H-Perfluorooctanoic Acid	5:3FTCA	914637-49-3
3-Perfluoropropyl Propanoic Acid	3:3FTCA	356-02-5

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370805
Report Date: 12/08/23

GLOSSARY

Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.) Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
NR	- No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: Data Usability Report



Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370805
Report Date: 12/08/23

Footnotes

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Chlordane: The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA, this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Gasoline Range Organics (GRO): Gasoline Range Organics (GRO) results include all chromatographic peaks eluting from Methyl tert butyl ether through Naphthalene, with the exception of GRO analysis in support of State of Ohio programs, which includes all chromatographic peaks eluting from Hexane through Dodecane.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

- A** - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- F** - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- J** - Estimated value. This represents an estimated concentration for Tentatively Identified Compounds (TICs).
- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

Report Format: Data Usability Report



Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370805
Report Date: 12/08/23

Data Qualifiers

- ND** - Not detected at the reporting limit (RL) for the sample.
- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.
- V** - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)
- Z** - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370805
Report Date: 12/08/23

REFERENCES

- 136 Determination of Per- and Polyfluoroalkyl Substances in Drinking Water by Isotope Dilution Anion Exchange Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS). EPA Method 533, EPA Document 815-B-19-020, November 2019.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility

EPA 624.1: m/p-xylene, o-xylene, Naphthalene

EPA 625.1: alpha-Terpineol

EPA 8260D: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.

EPA 8270E: NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine, alpha-Terpineol; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.

SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO₂, NO₃.

Mansfield Facility

SM 2540D: TSS.

EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene,

3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water

EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE,**

EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B

EPA 524.2: THMs and VOCs; **EPA 504.1:** EDB, DBCP.

Microbiology: SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.

Non-Potable Water

SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1:**

Ammonia-N, **LACHAT 10-107-06-1-B:** Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2:** Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E,**

SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.

EPA 624.1: Volatile Halocarbons & Aromatics,

EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs

EPA 625.1: SVOC (Acid/Base/Neutral Extractables).

Microbiology: SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.

Mansfield Facility:

Drinking Water

EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1** Hg.

EPA 522, EPA 537.1.

Non-Potable Water

EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.

EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.

EPA 245.1 Hg.

SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.



ANALYTICAL REPORT

Lab Number:	L2370807
Client:	Tetra Tech Rizzo Marlborough Technology Park 100 Nickerson Road Marlborough, MA 01752
ATTN:	Ron Myrick
Phone:	(508) 786-2200
Project Name:	MVY
Project Number:	143-3953-23004
Report Date:	12/08/23

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Certifications & Approvals: MA (M-MA030), NH NELAP (2062), CT (PH-0825), DoD (L2474), FL (E87814), IL (200081), IN (C-MA-04), KY (KY98046), LA (85084), ME (MA00030), MD (350), MI (99110), NJ (MA015), NY (11627), NC (685), OH (CL106), OR (MA-0262), PA (68-02089), RI (LAO00299), TX (T104704419), VT (VT-0015), VA (460194), WA (C954), US Army Corps of Engineers, USDA (Permit #525-23-107-88708), USFWS (Permit #206964).

320 Forbes Boulevard, Mansfield, MA 02048-1806
508-822-9300 (Fax) 508-822-3288 800-624-9220 - www.alphalab.com



Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370807
Report Date: 12/08/23

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2370807-01	PROPERTY GO-1-EFF	DW	PROPERTY GO-1	11/30/23 10:05	12/01/23
L2370807-02	PROPERTY GO-1-MID	DW	PROPERTY GO-1	11/30/23 10:10	12/01/23
L2370807-03	PROPERTY GO-1-INF	DW	PROPERTY GO-1	11/30/23 10:15	12/01/23

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370807
Report Date: 12/08/23

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370807
Report Date: 12/08/23

Case Narrative (continued)

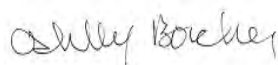
Perfluorinated Alkyl Acids by EPA 533

L2370807-01: The EFF result is greater than the MID result. The sample containers were verified as being labeled correctly by the laboratory.

L2370807-02: The Extracted Internal Standard recoveries were outside the acceptance criteria for perfluoro[13c4]butanoic acid (mpfba) (42%), perfluoro[13c5]pentanoic acid (m5pfpea) (47%), perfluoro[1,2,3,4,6-13c5]hexanoic acid (m5pfhxa) (42%), perfluoro[1,2,3,4-13c4]heptanoic acid (m4pfhpa) (46%) and 2,3,3,3-tetrafluoro-2-[1,1,2,2,3,3,3-heptafluoropropoxy]-13c3-propanoic acid (m3hfpo-da) (37%) ; however, re-extraction achieved similar results: perfluoro[13c4]butanoic acid (mpfba) (21%), perfluoro[13c5]pentanoic acid (m5pfpea) (23%), perfluoro[1,2,3,4,6-13c5]hexanoic acid (m5pfhxa) (27%), perfluoro[1,2,3,4-13c4]heptanoic acid (m4pfhpa) (29%) and 2,3,3,3-tetrafluoro-2-[1,1,2,2,3,3,3-heptafluoropropoxy]-13c3-propanoic acid (m3hfpo-da) (24%) . The results of the original extraction are reported.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:



Ashley Boucher

Title: Technical Director/Representative

Date: 12/08/23

ORGANICS

SEMIVOLATILES

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370807
Report Date: 12/08/23

SAMPLE RESULTS

Lab ID: L2370807-01
 Client ID: PROPERTY GO-1-EFF
 Sample Location: PROPERTY GO-1

Date Collected: 11/30/23 10:05
 Date Received: 12/01/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Dw
 Analytical Method: 136,533
 Analytical Date: 12/05/23 20:29
 Analyst: CAP

Extraction Method: EPA 533
 Extraction Date: 12/05/23 07:00

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	21.3		ng/l	1.80	--	1
Perfluoro-3-Methoxypropanoic Acid (PFMPA)	ND		ng/l	1.80	--	1
Perfluoropentanoic Acid (PFPeA)	13.1		ng/l	1.80	--	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.80	--	1
Perfluoro-4-Methoxybutanoic Acid (PFMBA)	ND		ng/l	1.80	--	1
Perfluoro(2-Ethoxyethane)Sulfonic Acid (PFEESA)	ND		ng/l	1.80	--	1
Nonafluoro-3,6-Dioxaheptanoic Acid (NFDHA)	ND		ng/l	1.80	--	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	1.80	--	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	1.80	--	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.80	--	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/l	1.80	--	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.80	--	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.80	--	1
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/l	1.80	--	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.80	--	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	1.80	--	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.80	--	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.80	--	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	1.80	--	1
9-Chlorohexadecafluoro-3-Oxanonone-1-Sulfonic Acid (9Cl-PF3ONS)	ND		ng/l	1.80	--	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.80	--	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.80	--	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.80	--	1
11-Chloroeicosafluoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	ND		ng/l	1.80	--	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.80	--	1

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370807
Report Date: 12/08/23

SAMPLE RESULTS

Lab ID: L2370807-01
 Client ID: PROPERTY GO-1-EFF
 Sample Location: PROPERTY GO-1

Date Collected: 11/30/23 10:05
 Date Received: 12/01/23
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab						
Surrogate (Extracted Internal Standard)			% Recovery	Qualifier	Acceptance Criteria	
Perfluoro[13C4]Butanoic Acid (MPFBA)			56		50-200	
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)			60		50-200	
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)			100		50-200	
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)			107		50-200	
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)			60		50-200	
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)			60		50-200	
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)			105		50-200	
Perfluoro[13C8]Octanoic Acid (M8PFOA)			74		50-200	
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)			112		50-200	
Perfluoro[13C9]Nonanoic Acid (M9PFNA)			74		50-200	
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)			98		50-200	
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)			74		50-200	
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)			117		50-200	
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)			106		50-200	
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)			104		50-200	
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)			50		50-200	

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370807
Report Date: 12/08/23

SAMPLE RESULTS

Lab ID: L2370807-02
 Client ID: PROPERTY GO-1-MID
 Sample Location: PROPERTY GO-1

Date Collected: 11/30/23 10:10
 Date Received: 12/01/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Dw
 Analytical Method: 136,533
 Analytical Date: 12/05/23 20:37
 Analyst: CAP

Extraction Method: EPA 533
 Extraction Date: 12/05/23 07:00

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND		ng/l	1.78	--	1
Perfluoro-3-Methoxypropanoic Acid (PFMPA)	ND		ng/l	1.78	--	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	1.78	--	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.78	--	1
Perfluoro-4-Methoxybutanoic Acid (PFMBA)	ND		ng/l	1.78	--	1
Perfluoro(2-Ethoxyethane)Sulfonic Acid (PFEESA)	ND		ng/l	1.78	--	1
Nonafluoro-3,6-Dioxaheptanoic Acid (NFDHA)	ND		ng/l	1.78	--	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	1.78	--	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	1.78	--	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.78	--	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/l	1.78	--	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.78	--	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.78	--	1
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/l	1.78	--	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.78	--	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	1.78	--	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.78	--	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.78	--	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	1.78	--	1
9-Chlorohexadecafluoro-3-Oxanonone-1-Sulfonic Acid (9Cl-PF3ONS)	ND		ng/l	1.78	--	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.78	--	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.78	--	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.78	--	1
11-Chloroeicosafluoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	ND		ng/l	1.78	--	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.78	--	1

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370807
Report Date: 12/08/23

SAMPLE RESULTS

Lab ID: L2370807-02
 Client ID: PROPERTY GO-1-MID
 Sample Location: PROPERTY GO-1

Date Collected: 11/30/23 10:10
 Date Received: 12/01/23
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab						
Surrogate (Extracted Internal Standard)			% Recovery	Qualifier	Acceptance Criteria	
Perfluoro[13C4]Butanoic Acid (MPFBA)			42	Q	50-200	
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)			47	Q	50-200	
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)			90		50-200	
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)			91		50-200	
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)			42	Q	50-200	
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)			46	Q	50-200	
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)			100		50-200	
Perfluoro[13C8]Octanoic Acid (M8PFOA)			51		50-200	
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)			100		50-200	
Perfluoro[13C9]Nonanoic Acid (M9PFNA)			65		50-200	
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)			93		50-200	
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)			77		50-200	
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)			109		50-200	
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)			92		50-200	
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)			98		50-200	
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)			37	Q	50-200	

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370807
Report Date: 12/08/23

SAMPLE RESULTS

Lab ID: L2370807-03
Client ID: PROPERTY GO-1-INF
Sample Location: PROPERTY GO-1

Date Collected: 11/30/23 10:15
Date Received: 12/01/23
Field Prep: Not Specified

Sample Depth:

Matrix: Dw
Analytical Method: 136,533
Analytical Date: 12/05/23 20:46
Analyst: CAP

Extraction Method: EPA 533
Extraction Date: 12/05/23 07:00

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	81.3		ng/l	1.81	--	1
Perfluoro-3-Methoxypropanoic Acid (PFMPA)	ND		ng/l	1.81	--	1
Perfluoropentanoic Acid (PFPeA)	224		ng/l	1.81	--	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.81	--	1
Perfluoro-4-Methoxybutanoic Acid (PFMBA)	ND		ng/l	1.81	--	1
Perfluoro(2-Ethoxyethane)Sulfonic Acid (PFEESA)	ND		ng/l	1.81	--	1
Nonafluoro-3,6-Dioxaheptanoic Acid (NFDHA)	ND		ng/l	1.81	--	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	1.81	--	1
Perfluorohexanoic Acid (PFHxA)	107		ng/l	1.81	--	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.81	--	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/l	1.81	--	1
Perfluoroheptanoic Acid (PFHpA)	64.1		ng/l	1.81	--	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.81	--	1
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/l	1.81	--	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	209		ng/l	1.81	--	1
Perfluorooctanoic Acid (PFOA)	27.8		ng/l	1.81	--	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.81	--	1
Perfluorononanoic Acid (PFNA)	4.97		ng/l	1.81	--	1
Perfluorooctanesulfonic Acid (PFOS)	2.66		ng/l	1.81	--	1
9-Chlorohexadecafluoro-3-Oxanonone-1-Sulfonic Acid (9Cl-PF3ONS)	ND		ng/l	1.81	--	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.81	--	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.81	--	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.81	--	1
11-Chloroeicosafluoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	ND		ng/l	1.81	--	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.81	--	1

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370807
Report Date: 12/08/23

SAMPLE RESULTS

Lab ID: L2370807-03
 Client ID: PROPERTY GO-1-INF
 Sample Location: PROPERTY GO-1

Date Collected: 11/30/23 10:15
 Date Received: 12/01/23
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab						
Surrogate (Extracted Internal Standard)			% Recovery	Qualifier	Acceptance Criteria	
Perfluoro[13C4]Butanoic Acid (MPFBA)			91		50-200	
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)			96		50-200	
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)			97		50-200	
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)			152		50-200	
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)			82		50-200	
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)			77		50-200	
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)			102		50-200	
Perfluoro[13C8]Octanoic Acid (M8PFOA)			82		50-200	
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)			139		50-200	
Perfluoro[13C9]Nonanoic Acid (M9PFNA)			82		50-200	
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)			85		50-200	
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)			75		50-200	
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)			126		50-200	
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)			89		50-200	
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)			98		50-200	
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)			79		50-200	

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370807
Report Date: 12/08/23

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 136,533
Analytical Date: 12/05/23 17:35
Analyst: CAP

Extraction Method: EPA 533
Extraction Date: 12/05/23 07:00

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab for sample(s): 01-03 Batch: WG1859769-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	2.00	--
Perfluoro-3-Methoxypropanoic Acid (PFMPA)	ND		ng/l	2.00	--
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	--
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	--
Perfluoro-4-Methoxybutanoic Acid (PFMBA)	ND		ng/l	2.00	--
Perfluoro(2-Ethoxyethane)Sulfonic Acid (PFEEESA)	ND		ng/l	2.00	--
Nonafluoro-3,6-Dioxaheptanoic Acid (NFDHA)	ND		ng/l	2.00	--
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	2.00	--
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	--
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.00	--
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/l	2.00	--
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	--
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	--
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/l	2.00	--
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	2.00	--
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	--
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	--
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	--
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	--
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	ND		ng/l	2.00	--
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	2.00	--
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	--
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	--
11-Chloroeicosafuoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	ND		ng/l	2.00	--
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	--

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370807
Report Date: 12/08/23

Method Blank Analysis
Batch Quality Control

Analytical Method: 136,533
Analytical Date: 12/05/23 17:35
Analyst: CAP

Extraction Method: EPA 533
Extraction Date: 12/05/23 07:00

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab for sample(s): 01-03 Batch: WG1859769-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	98		50-200
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	113		50-200
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	109		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	113		50-200
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	97		50-200
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	102		50-200
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	109		50-200
Perfluoro[13C8]Octanoic Acid (M8PFOA)	97		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	120		50-200
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	104		50-200
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	106		50-200
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	98		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	130		50-200
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	111		50-200
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	113		50-200
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	92		50-200

Lab Control Sample Analysis

Batch Quality Control

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370807
Report Date: 12/08/23

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab Associated sample(s): 01-03 Batch: WG1859769-2								
Perfluorobutanoic Acid (PFBA)	96		-		50-150	-		30
Perfluoro-3-Methoxypropanoic Acid (PFMPA)	100		-		50-150	-		30
Perfluoropentanoic Acid (PFPeA)	93		-		50-150	-		30
Perfluorobutanesulfonic Acid (PFBS)	90		-		50-150	-		30
Perfluoro-4-Methoxybutanoic Acid (PFMBA)	87		-		50-150	-		30
Perfluoro(2-Ethoxyethane)Sulfonic Acid (PFEEESA)	86		-		50-150	-		30
Nonafluoro-3,6-Dioxaheptanoic Acid (NFDHA)	89		-		50-150	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	98		-		50-150	-		30
Perfluorohexanoic Acid (PFHxA)	103		-		50-150	-		30
Perfluoropentanesulfonic Acid (PFPeS)	88		-		50-150	-		30
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	87		-		50-150	-		30
Perfluoroheptanoic Acid (PFHpA)	102		-		50-150	-		30
Perfluorohexanesulfonic Acid (PFHxS)	77		-		50-150	-		30
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	90		-		50-150	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	97		-		50-150	-		30
Perfluorooctanoic Acid (PFOA)	98		-		50-150	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	91		-		50-150	-		30
Perfluorononanoic Acid (PFNA)	95		-		50-150	-		30
Perfluorooctanesulfonic Acid (PFOS)	95		-		50-150	-		30
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	90		-		50-150	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	94		-		50-150	-		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370807
Report Date: 12/08/23

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab Associated sample(s): 01-03 Batch: WG1859769-2								
Perfluorodecanoic Acid (PFDA)	96		-		50-150	-		30
Perfluoroundecanoic Acid (PFUnA)	92		-		50-150	-		30
11-Chloroeicosafuoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	84		-		50-150	-		30
Perfluorododecanoic Acid (PFDoA)	91		-		50-150	-		30

Surrogate (Extracted Internal Standard)	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
Perfluoro[13C4]Butanoic Acid (MPFBA)	91				50-200
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	96				50-200
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	92				50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	96				50-200
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	88				50-200
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	81				50-200
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	91				50-200
Perfluoro[13C8]Octanoic Acid (M8PFOA)	83				50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	106				50-200
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	91				50-200
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	89				50-200
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	91				50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	111				50-200
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	102				50-200
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	101				50-200
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	86				50-200

Matrix Spike Analysis

Batch Quality Control

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370807
Report Date: 12/08/23

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab		Associated sample(s): 01-03			QC Batch ID: WG1859769-3		QC Sample: L2370802-01		Client ID: MS Sample			
Perfluorobutanoic Acid (PFBA)	3.94	1.95	5.80	95	-	-	-	-	50-150	-	-	30
Perfluoro-3-Methoxypropanoic Acid (PFMPA)	ND	1.95	ND	87	-	-	-	-	50-150	-	-	30
Perfluoropentanoic Acid (PFPeA)	13.9	1.95	16.5	133	-	-	-	-	50-150	-	-	30
Perfluorobutanesulfonic Acid (PFBS)	ND	1.73	2.18	126	-	-	-	-	50-150	-	-	30
Perfluoro-4-Methoxybutanoic Acid (PFMBA)	ND	1.95	ND	92	-	-	-	-	50-150	-	-	30
Perfluoro(2-Ethoxyethane)Sulfonic Acid (PFEESA)	ND	1.74	ND	87	-	-	-	-	50-150	-	-	30
Nonafluoro-3,6-Dioxaheptanoic Acid (NFDHA)	ND	1.95	ND	81	-	-	-	-	50-150	-	-	30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	1.83	ND	98	-	-	-	-	50-150	-	-	30
Perfluorohexanoic Acid (PFHxA)	7.03	1.95	8.84	93	-	-	-	-	50-150	-	-	30
Perfluoropentanesulfonic Acid (PFPeS)	ND	1.84	ND	88	-	-	-	-	50-150	-	-	30
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND	1.95	ND	91	-	-	-	-	50-150	-	-	30
Perfluoroheptanoic Acid (PFHpA)	2.56	1.95	5.23	137	-	-	-	-	50-150	-	-	30
Perfluorohexanesulfonic Acid (PFHxS)	ND	1.78	2.08	117	-	-	-	-	50-150	-	-	30
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND	1.84	ND	90	-	-	-	-	50-150	-	-	30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	1.86	2.43	131	-	-	-	-	50-150	-	-	30
Perfluorooctanoic Acid (PFOA)	1.89	1.95	4.52	135	-	-	-	-	50-150	-	-	30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	1.86	ND	88	-	-	-	-	50-150	-	-	30
Perfluorononanoic Acid (PFNA)	ND	1.95	2.08	107	-	-	-	-	50-150	-	-	30
Perfluorooctanesulfonic Acid (PFOS)	ND	1.81	2.06	114	-	-	-	-	50-150	-	-	30
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	ND	1.82	ND	76	-	-	-	-	50-150	-	-	30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	1.87	2.12	113	-	-	-	-	50-150	-	-	30
Perfluorodecanoic Acid (PFDA)	ND	1.95	ND	97	-	-	-	-	50-150	-	-	30

Matrix Spike Analysis

Batch Quality Control

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370807
Report Date: 12/08/23

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab Associated sample(s): 01-03 QC Batch ID: WG1859769-3 QC Sample: L2370802-01 Client ID: MS Sample												
Perfluoroundecanoic Acid (PFUnA)	ND	1.95	ND	98		-	-		50-150	-		30
11-Chloroeicosafuoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	ND	1.84	ND	86		-	-		50-150	-		30
Perfluorododecanoic Acid (PFDoA)	ND	1.95	ND	97		-	-		50-150	-		30

Surrogate (Extracted Internal Standard)	MS % Recovery	MS Qualifier	MSD % Recovery	MSD Qualifier	Acceptance Criteria
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	115				50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	120				50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	105				50-200
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	57				50-200
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	87				50-200
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	69				50-200
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	70				50-200
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	59				50-200
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	84				50-200
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	96				50-200
Perfluoro[13C4]Butanoic Acid (MPFBA)	74				50-200
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	70				50-200
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	91				50-200
Perfluoro[13C8]Octanoic Acid (M8PFOA)	57				50-200
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	64				50-200
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	90				50-200

Lab Duplicate Analysis

Batch Quality Control

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370807
Report Date: 12/08/23

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab Associated sample(s): 01-03 QC Batch ID: WG1859769-4 QC Sample: L2370804-01 Client ID: DUP Sample						
Perfluorobutanoic Acid (PFBA)	19.1	19.9	ng/l	4		30
Perfluoro-3-Methoxypropanoic Acid (PFMPA)	ND	ND	ng/l	NC		30
Perfluoropentanoic Acid (PFPeA)	1.94	ND	ng/l	NC		30
Perfluorobutanesulfonic Acid (PFBS)	ND	ND	ng/l	NC		30
Perfluoro-4-Methoxybutanoic Acid (PFMBA)	ND	ND	ng/l	NC		30
Perfluoro(2-Ethoxyethane)Sulfonic Acid (PFEESA)	ND	ND	ng/l	NC		30
Nonafluoro-3,6-Dioxaheptanoic Acid (NFDHA)	ND	ND	ng/l	NC		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	ND	ng/l	NC		30
Perfluorohexanoic Acid (PFHxA)	ND	ND	ng/l	NC		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	ND	ng/l	NC		30
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND	ND	ng/l	NC		30
Perfluoroheptanoic Acid (PFHpA)	ND	ND	ng/l	NC		30
Perfluorohexanesulfonic Acid (PFHxS)	ND	ND	ng/l	NC		30
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND	ND	ng/l	NC		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	ND	ng/l	NC		30
Perfluorooctanoic Acid (PFOA)	ND	ND	ng/l	NC		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	ND	ng/l	NC		30
Perfluorononanoic Acid (PFNA)	ND	ND	ng/l	NC		30
Perfluorooctanesulfonic Acid (PFOS)	ND	ND	ng/l	NC		30
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	ND	ND	ng/l	NC		30

Lab Duplicate Analysis

Batch Quality Control

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370807
Report Date: 12/08/23

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab Associated sample(s): 01-03 QC Batch ID: WG1859769-4 QC Sample: L2370804-01 Client ID: DUP Sample						
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	ND	ng/l	NC		30
Perfluorodecanoic Acid (PFDA)	ND	ND	ng/l	NC		30
Perfluoroundecanoic Acid (PFUnA)	ND	ND	ng/l	NC		30
11-Chloroeicosafuoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	ND	ND	ng/l	NC		30
Perfluorododecanoic Acid (PFDoA)	ND	ND	ng/l	NC		30

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	27	Q	35	Q	50-200
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	27	Q	36	Q	50-200
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	93		98		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	100		105		50-200
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	25	Q	34	Q	50-200
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	24	Q	32	Q	50-200
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	96		94		50-200
Perfluoro[13C8]Octanoic Acid (M8PFOA)	23	Q	33	Q	50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	100		111		50-200
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	20	Q	38	Q	50-200
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	90		99		50-200
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	26	Q	54		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	127		116		50-200
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	40	Q	69		50-200
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	54		84		50-200
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	25	Q	30	Q	50-200

Project Name: MVY
Project Number: 143-3953-23004

Sample Receipt and Container Information

Were project specific reporting limits specified?

YES

Cooler Information

Cooler **Custody Seal**
A Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2370807-01A	Plastic 250ml Ammonium Acetate preserved	A	NA		4.2	Y	Absent		A2-533(28)
L2370807-01B	Plastic 250ml Ammonium Acetate preserved	A	NA		4.2	Y	Absent		A2-533(28)
L2370807-02A	Plastic 250ml Ammonium Acetate preserved	A	NA		4.2	Y	Absent		A2-533(28)
L2370807-02B	Plastic 250ml Ammonium Acetate preserved	A	NA		4.2	Y	Absent		A2-533(28)
L2370807-03A	Plastic 250ml Ammonium Acetate preserved	A	NA		4.2	Y	Absent		A2-533(28)
L2370807-03B	Plastic 250ml Ammonium Acetate preserved	A	NA		4.2	Y	Absent		A2-533(28)

Project Name: MVY
Project Number: 143-3953-23004

Serial_No:12082311:06
Lab Number: L2370807
Report Date: 12/08/23

PFAS PARAMETER SUMMARY

Parameter	Acronym	CAS Number
PERFLUOROALKYL CARBOXYLIC ACIDS (PFCAs)		
Perfluorooctadecanoic Acid	PFODA	16517-11-6
Perfluorohexadecanoic Acid	PFHxDA	67905-19-5
Perfluorotetradecanoic Acid	PFTA/PFTeDA	376-06-7
Perfluorotridecanoic Acid	PFTrDA	72629-94-8
Perfluorododecanoic Acid	PFDoA	307-55-1
Perfluoroundecanoic Acid	PFUnA	2058-94-8
Perfluorodecanoic Acid	PFDA	335-76-2
Perfluorononanoic Acid	PFNA	375-95-1
Perfluorooctanoic Acid	PFOA	335-67-1
Perfluoroheptanoic Acid	PFHpA	375-85-9
Perfluorohexanoic Acid	PFHxA	307-24-4
Perfluoropentanoic Acid	PFPeA	2706-90-3
Perfluorobutanoic Acid	PFBA	375-22-4
PERFLUOROALKYL SULFONIC ACIDS (PFSAs)		
Perfluorododecanesulfonic Acid	PFDoDS/PFDoS	79780-39-5
Perfluorodecanesulfonic Acid	PFDS	335-77-3
Perfluorononanesulfonic Acid	PFNS	68259-12-1
Perfluorooctanesulfonic Acid	PFOS	1763-23-1
Perfluoroheptanesulfonic Acid	PFHpS	375-92-8
Perfluorohexanesulfonic Acid	PFHxS	355-46-4
Perfluoropentanesulfonic Acid	PFPeS	2706-91-4
Perfluorobutanesulfonic Acid	PFBS	375-73-5
Perfluoropropanesulfonic Acid	PFPrS	423-41-6
FLUOROTELOMERS		
1H,1H,2H,2H-Perfluorododecanesulfonic Acid	10:2FTS	120226-60-0
1H,1H,2H,2H-Perfluorodecanesulfonic Acid	8:2FTS	39108-34-4
1H,1H,2H,2H-Perfluorooctanesulfonic Acid	6:2FTS	27619-97-2
1H,1H,2H,2H-Perfluorohexanesulfonic Acid	4:2FTS	757124-72-4
PERFLUOROALKANE SULFONAMIDES (FASAs)		
Perfluorooctanesulfonamide	FOSA/PFOSA	754-91-6
N-Ethyl Perfluorooctane Sulfonamide	NEtFOSA	4151-50-2
N-Methyl Perfluorooctane Sulfonamide	NMeFOSA	31506-32-8
PERFLUOROALKANE SULFONYL SUBSTANCES		
N-Ethyl Perfluorooctanesulfonamido Ethanol	NEtFOSE	1691-99-2
N-Methyl Perfluorooctanesulfonamido Ethanol	NMeFOSE	24448-09-7
N-Ethyl Perfluorooctanesulfonamidoacetic Acid	NEtFOSAA	2991-50-6
N-Methyl Perfluorooctanesulfonamidoacetic Acid	NMeFOSAA	2355-31-9
PER- and POLYFLUOROALKYL ETHER CARBOXYLIC ACIDS		
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid	HFPO-DA	13252-13-6
4,8-Dioxa-3h-Perfluorononanoic Acid	ADONA	919005-14-4
CHLORO-PERFLUOROALKYL SULFONIC ACIDS		
11-Chloroeicosafuoro-3-Oxaundecane-1-Sulfonic Acid	11Cl-PF3OUdS	763051-92-9
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid	9Cl-PF3ONS	756426-58-1
PERFLUOROETHER SULFONIC ACIDS (PFESAs)		
Perfluoro(2-Ethoxyethane)Sulfonic Acid	PFEEA	113507-82-7
PERFLUOROETHER/POLYETHER CARBOXYLIC ACIDS (PFPCAs)		
Perfluoro-3-Methoxypropanoic Acid	PFMPA	377-73-1
Perfluoro-4-Methoxybutanoic Acid	PFMBA	863090-89-5
Nonafluoro-3,6-Dioxaheptanoic Acid	NFDHA	151772-58-6

Project Name: MVY
Project Number: 143-3953-23004

Serial_No:12082311:06
Lab Number: L2370807
Report Date: 12/08/23

PFAS PARAMETER SUMMARY

Parameter	Acronym	CAS Number
FLUOROTELOMER CARBOXYLIC ACIDS (FTCAs)		
3-Perfluoroheptyl Propanoic Acid	7:3FTCA	812-70-4
2H,2H,3H,3H-Perfluorooctanoic Acid	5:3FTCA	914637-49-3
3-Perfluoropropyl Propanoic Acid	3:3FTCA	356-02-5

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370807
Report Date: 12/08/23

GLOSSARY

Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.) Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
NR	- No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: Data Usability Report



Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370807
Report Date: 12/08/23

Footnotes

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Chlordane: The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA, this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Gasoline Range Organics (GRO): Gasoline Range Organics (GRO) results include all chromatographic peaks eluting from Methyl tert butyl ether through Naphthalene, with the exception of GRO analysis in support of State of Ohio programs, which includes all chromatographic peaks eluting from Hexane through Dodecane.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

- A** - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- F** - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- J** - Estimated value. This represents an estimated concentration for Tentatively Identified Compounds (TICs).
- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

Report Format: Data Usability Report



Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370807
Report Date: 12/08/23

Data Qualifiers

- ND** - Not detected at the reporting limit (RL) for the sample.
- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.
- V** - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)
- Z** - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370807
Report Date: 12/08/23

REFERENCES

- 136 Determination of Per- and Polyfluoroalkyl Substances in Drinking Water by Isotope Dilution Anion Exchange Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS). EPA Method 533, EPA Document 815-B-19-020, November 2019.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility

EPA 624.1: m/p-xylene, o-xylene, Naphthalene

EPA 625.1: alpha-Terpineol

EPA 8260D: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.

EPA 8270E: NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine, alpha-Terpineol; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.

SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO₂, NO₃.

Mansfield Facility

SM 2540D: TSS.

EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene,

3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water

EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE,**

EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B

EPA 524.2: THMs and VOCs; **EPA 504.1:** EDB, DBCP.

Microbiology: SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.

Non-Potable Water

SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1:**

Ammonia-N, **LACHAT 10-107-06-1-B:** Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2:** Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E,**

SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.

EPA 624.1: Volatile Halocarbons & Aromatics,

EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs

EPA 625.1: SVOC (Acid/Base/Neutral Extractables).

Microbiology: SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.

Mansfield Facility:

Drinking Water

EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1** Hg.

EPA 522, EPA 537.1.

Non-Potable Water

EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.

EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.

EPA 245.1 Hg.

SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.



ANALYTICAL REPORT

Lab Number:	L2370808
Client:	Tetra Tech Rizzo Marlborough Technology Park 100 Nickerson Road Marlborough, MA 01752
ATTN:	Ron Myrick
Phone:	(508) 786-2200
Project Name:	MVY
Project Number:	143-3953-23004
Report Date:	12/08/23

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Certifications & Approvals: MA (M-MA030), NH NELAP (2062), CT (PH-0825), DoD (L2474), FL (E87814), IL (200081), IN (C-MA-04), KY (KY98046), LA (85084), ME (MA00030), MD (350), MI (99110), NJ (MA015), NY (11627), NC (685), OH (CL106), OR (MA-0262), PA (68-02089), RI (LAO00299), TX (T104704419), VT (VT-0015), VA (460194), WA (C954), US Army Corps of Engineers, USDA (Permit #525-23-107-88708), USFWS (Permit #206964).

320 Forbes Boulevard, Mansfield, MA 02048-1806
508-822-9300 (Fax) 508-822-3288 800-624-9220 - www.alphalab.com



Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370808
Report Date: 12/08/23

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2370808-01	PROPERTY AO-EFF	DW	PROPERTY AO	11/30/23 11:15	12/01/23
L2370808-02	PROPERTY AO-INF	DW	PROPERTY AO	11/30/23 11:20	12/01/23

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370808
Report Date: 12/08/23

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:

Darian Dailey Darian Dailey

Title: Technical Director/Representative

Date: 12/08/23

ORGANICS

SEMIVOLATILES

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370808
Report Date: 12/08/23

SAMPLE RESULTS

Lab ID: L2370808-01
 Client ID: PROPERTY AO-EFF
 Sample Location: PROPERTY AO

Date Collected: 11/30/23 11:15
 Date Received: 12/01/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Dw
 Analytical Method: 136,533
 Analytical Date: 12/06/23 15:24
 Analyst: CAP

Extraction Method: EPA 533
 Extraction Date: 12/06/23 07:00

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND		ng/l	1.83	--	1
Perfluoro-3-Methoxypropanoic Acid (PFMPA)	ND		ng/l	1.83	--	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	1.83	--	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.83	--	1
Perfluoro-4-Methoxybutanoic Acid (PFMBA)	ND		ng/l	1.83	--	1
Perfluoro(2-Ethoxyethane)Sulfonic Acid (PFEESA)	ND		ng/l	1.83	--	1
Nonafluoro-3,6-Dioxaheptanoic Acid (NFDHA)	ND		ng/l	1.83	--	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	1.83	--	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	1.83	--	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.83	--	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/l	1.83	--	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.83	--	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.83	--	1
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/l	1.83	--	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.83	--	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	1.83	--	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.83	--	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.83	--	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	1.83	--	1
9-Chlorohexadecafluoro-3-Oxanonone-1-Sulfonic Acid (9Cl-PF3ONS)	ND		ng/l	1.83	--	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.83	--	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.83	--	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.83	--	1
11-Chloroeicosafluoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	ND		ng/l	1.83	--	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.83	--	1

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370808
Report Date: 12/08/23

SAMPLE RESULTS

Lab ID: L2370808-01
 Client ID: PROPERTY AO-EFF
 Sample Location: PROPERTY AO

Date Collected: 11/30/23 11:15
 Date Received: 12/01/23
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab						
Surrogate (Extracted Internal Standard)			% Recovery	Qualifier	Acceptance Criteria	
Perfluoro[13C4]Butanoic Acid (MPFBA)			94		50-200	
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)			99		50-200	
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)			100		50-200	
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)			86		50-200	
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)			101		50-200	
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)			93		50-200	
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)			96		50-200	
Perfluoro[13C8]Octanoic Acid (M8PFOA)			103		50-200	
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)			90		50-200	
Perfluoro[13C9]Nonanoic Acid (M9PFNA)			103		50-200	
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)			93		50-200	
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)			101		50-200	
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)			89		50-200	
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)			103		50-200	
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)			105		50-200	
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)			93		50-200	

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370808
Report Date: 12/08/23

SAMPLE RESULTS

Lab ID: L2370808-02
 Client ID: PROPERTY AO-INF
 Sample Location: PROPERTY AO

Date Collected: 11/30/23 11:20
 Date Received: 12/01/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Dw
 Analytical Method: 136,533
 Analytical Date: 12/06/23 15:41
 Analyst: CAP

Extraction Method: EPA 533
 Extraction Date: 12/06/23 07:00

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND		ng/l	1.83	--	1
Perfluoro-3-Methoxypropanoic Acid (PFMPA)	ND		ng/l	1.83	--	1
Perfluoropentanoic Acid (PFPeA)	2.29		ng/l	1.83	--	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.83	--	1
Perfluoro-4-Methoxybutanoic Acid (PFMBA)	ND		ng/l	1.83	--	1
Perfluoro(2-Ethoxyethane)Sulfonic Acid (PFEESA)	ND		ng/l	1.83	--	1
Nonafluoro-3,6-Dioxaheptanoic Acid (NFDHA)	ND		ng/l	1.83	--	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	1.83	--	1
Perfluorohexanoic Acid (PFHxA)	2.07		ng/l	1.83	--	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.83	--	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/l	1.83	--	1
Perfluoroheptanoic Acid (PFHpA)	1.97		ng/l	1.83	--	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.83	--	1
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/l	1.83	--	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.83	--	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	1.83	--	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.83	--	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.83	--	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	1.83	--	1
9-Chlorohexadecafluoro-3-Oxanonone-1-Sulfonic Acid (9Cl-PF3ONS)	ND		ng/l	1.83	--	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.83	--	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.83	--	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.83	--	1
11-Chloroeicosafluoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	ND		ng/l	1.83	--	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.83	--	1

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370808
Report Date: 12/08/23

SAMPLE RESULTS

Lab ID: L2370808-02
 Client ID: PROPERTY AO-INF
 Sample Location: PROPERTY AO

Date Collected: 11/30/23 11:20
 Date Received: 12/01/23
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	97		50-200
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	106		50-200
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	96		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	102		50-200
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	93		50-200
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	99		50-200
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	93		50-200
Perfluoro[13C8]Octanoic Acid (M8PFOA)	89		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	101		50-200
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	112		50-200
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	97		50-200
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	95		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	102		50-200
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	95		50-200
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	100		50-200
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	85		50-200

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370808
Report Date: 12/08/23

Method Blank Analysis
Batch Quality Control

Analytical Method: 136,533
Analytical Date: 12/06/23 14:40
Analyst: CAP

Extraction Method: EPA 533
Extraction Date: 12/06/23 07:00

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab for sample(s): 01-02 Batch: WG1860276-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	2.00	--
Perfluoro-3-Methoxypropanoic Acid (PFMPA)	ND		ng/l	2.00	--
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	--
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	--
Perfluoro-4-Methoxybutanoic Acid (PFMBA)	ND		ng/l	2.00	--
Perfluoro(2-Ethoxyethane)Sulfonic Acid (PFEEESA)	ND		ng/l	2.00	--
Nonafluoro-3,6-Dioxaheptanoic Acid (NFDHA)	ND		ng/l	2.00	--
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	2.00	--
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	--
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.00	--
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/l	2.00	--
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	--
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	--
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/l	2.00	--
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	2.00	--
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	--
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	--
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	--
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	--
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	ND		ng/l	2.00	--
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	2.00	--
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	--
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	--
11-Chloroeicosafuoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	ND		ng/l	2.00	--
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	--

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370808
Report Date: 12/08/23

Method Blank Analysis
Batch Quality Control

Analytical Method: 136,533
Analytical Date: 12/06/23 14:40
Analyst: CAP

Extraction Method: EPA 533
Extraction Date: 12/06/23 07:00

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab for sample(s): 01-02 Batch: WG1860276-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	99		50-200
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	105		50-200
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	106		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	86		50-200
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	95		50-200
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	100		50-200
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	97		50-200
Perfluoro[13C8]Octanoic Acid (M8PFOA)	113		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	89		50-200
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	104		50-200
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	101		50-200
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	98		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	92		50-200
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	105		50-200
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	108		50-200
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	102		50-200

Lab Control Sample Analysis

Batch Quality Control

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370808
Report Date: 12/08/23

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab Associated sample(s): 01-02 Batch: WG1860276-2								
Perfluorobutanoic Acid (PFBA)	94		-		70-130	-		30
Perfluoro-3-Methoxypropanoic Acid (PFMPA)	102		-		70-130	-		30
Perfluoropentanoic Acid (PFPeA)	93		-		70-130	-		30
Perfluorobutanesulfonic Acid (PFBS)	95		-		70-130	-		30
Perfluoro-4-Methoxybutanoic Acid (PFMBA)	88		-		70-130	-		30
Perfluoro(2-Ethoxyethane)Sulfonic Acid (PFEEESA)	97		-		70-130	-		30
Nonafluoro-3,6-Dioxaheptanoic Acid (NFDHA)	96		-		70-130	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	89		-		70-130	-		30
Perfluorohexanoic Acid (PFHxA)	93		-		70-130	-		30
Perfluoropentanesulfonic Acid (PFPeS)	88		-		70-130	-		30
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	96		-		70-130	-		30
Perfluoroheptanoic Acid (PFHpA)	85		-		70-130	-		30
Perfluorohexanesulfonic Acid (PFHxS)	84		-		70-130	-		30
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	96		-		70-130	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	106		-		70-130	-		30
Perfluorooctanoic Acid (PFOA)	92		-		70-130	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	91		-		70-130	-		30
Perfluorononanoic Acid (PFNA)	93		-		70-130	-		30
Perfluorooctanesulfonic Acid (PFOS)	89		-		70-130	-		30
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	84		-		70-130	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	96		-		70-130	-		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370808
Report Date: 12/08/23

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab Associated sample(s): 01-02 Batch: WG1860276-2								
Perfluorodecanoic Acid (PFDA)	100		-		70-130	-		30
Perfluoroundecanoic Acid (PFUnA)	92		-		70-130	-		30
11-Chloroeicosafuoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	80		-		70-130	-		30
Perfluorododecanoic Acid (PFDoA)	91		-		70-130	-		30

Surrogate (Extracted Internal Standard)	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
Perfluoro[13C4]Butanoic Acid (MPFBA)	98				50-200
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	99				50-200
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	98				50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	107				50-200
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	99				50-200
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	101				50-200
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	100				50-200
Perfluoro[13C8]Octanoic Acid (M8PFOA)	94				50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	102				50-200
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	101				50-200
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	101				50-200
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	90				50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	102				50-200
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	99				50-200
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	100				50-200
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	102				50-200

Matrix Spike Analysis

Batch Quality Control

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370808
Report Date: 12/08/23

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab Associated sample(s): 01-02 QC Batch ID: WG1860276-3 QC Sample: L2370808-01 Client ID:												
PROPERTY AO-EFF												
Perfluorobutanoic Acid (PFBA)	ND	148	142	96		-	-		70-130	-		30
Perfluoro-3-Methoxypropanoic Acid (PFMPA)	ND	148	142	96		-	-		70-130	-		30
Perfluoropentanoic Acid (PFPeA)	ND	148	148	100		-	-		70-130	-		30
Perfluorobutanesulfonic Acid (PFBS)	ND	131	128	98		-	-		70-130	-		30
Perfluoro-4-Methoxybutanoic Acid (PFMBA)	ND	148	132	89		-	-		70-130	-		30
Perfluoro(2-Ethoxyethane)Sulfonic Acid (PFEESA)	ND	132	121	92		-	-		70-130	-		30
Nonafluoro-3,6-Dioxaheptanoic Acid (NFDHA)	ND	148	119	81		-	-		70-130	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	138	124	90		-	-		70-130	-		30
Perfluorohexanoic Acid (PFHxA)	ND	148	141	96		-	-		70-130	-		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	139	129	93		-	-		70-130	-		30
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND	148	136	92		-	-		70-130	-		30
Perfluoroheptanoic Acid (PFHpA)	ND	148	163	110		-	-		70-130	-		30
Perfluorohexanesulfonic Acid (PFHxS)	ND	135	120	89		-	-		70-130	-		30
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND	139	110	79		-	-		70-130	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	140	137	98		-	-		70-130	-		30
Perfluorooctanoic Acid (PFOA)	ND	148	134	91		-	-		70-130	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	141	138	98		-	-		70-130	-		30
Perfluorononanoic Acid (PFNA)	ND	148	159	108		-	-		70-130	-		30
Perfluorooctanesulfonic Acid (PFOS)	ND	137	136	99		-	-		70-130	-		30
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	ND	138	128	93		-	-		70-130	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	142	132	93		-	-		70-130	-		30

Matrix Spike Analysis

Batch Quality Control

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370808
Report Date: 12/08/23

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab Associated sample(s): 01-02 QC Batch ID: WG1860276-3 QC Sample: L2370808-01 Client ID: PROPERTY AO-EFF												
Perfluorodecanoic Acid (PFDA)	ND	148	146	99		-	-		70-130	-		30
Perfluoroundecanoic Acid (PFUnA)	ND	148	142	96		-	-		70-130	-		30
11-Chloroeicosafluoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	ND	139	133	95		-	-		70-130	-		30
Perfluorododecanoic Acid (PFDoA)	ND	148	132	89		-	-		70-130	-		30

Surrogate (Extracted Internal Standard)	MS % Recovery	MS Qualifier	MSD % Recovery	MSD Qualifier	Acceptance Criteria
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	94				50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	107				50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	101				50-200
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	78				50-200
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	94				50-200
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	89				50-200
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	79				50-200
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	73				50-200
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	92				50-200
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	104				50-200
Perfluoro[13C4]Butanoic Acid (MPFBA)	73				50-200
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	73				50-200
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	89				50-200
Perfluoro[13C8]Octanoic Acid (M8PFOA)	83				50-200
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	84				50-200
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	97				50-200

Lab Duplicate Analysis

Batch Quality Control

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370808
Report Date: 12/08/23

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab Associated sample(s): 01-02 QC Batch ID: WG1860276-4 QC Sample: L2370808-02 Client ID: PROPERTY AO-INF						
Perfluorobutanoic Acid (PFBA)	ND	ND	ng/l	NC		30
Perfluoro-3-Methoxypropanoic Acid (PFMPA)	ND	ND	ng/l	NC		30
Perfluoropentanoic Acid (PFPeA)	2.29	2.33	ng/l	2		30
Perfluorobutanesulfonic Acid (PFBS)	ND	ND	ng/l	NC		30
Perfluoro-4-Methoxybutanoic Acid (PFMBA)	ND	ND	ng/l	NC		30
Perfluoro(2-Ethoxyethane)Sulfonic Acid (PFEESA)	ND	ND	ng/l	NC		30
Nonafluoro-3,6-Dioxaheptanoic Acid (NFDHA)	ND	ND	ng/l	NC		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	ND	ng/l	NC		30
Perfluorohexanoic Acid (PFHxA)	2.07	ND	ng/l	NC		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	ND	ng/l	NC		30
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND	ND	ng/l	NC		30
Perfluoroheptanoic Acid (PFHpA)	1.97	2.10	ng/l	6		30
Perfluorohexanesulfonic Acid (PFHxS)	ND	ND	ng/l	NC		30
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND	ND	ng/l	NC		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	ND	ng/l	NC		30
Perfluorooctanoic Acid (PFOA)	ND	ND	ng/l	NC		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	ND	ng/l	NC		30
Perfluorononanoic Acid (PFNA)	ND	ND	ng/l	NC		30
Perfluorooctanesulfonic Acid (PFOS)	ND	ND	ng/l	NC		30
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	ND	ND	ng/l	NC		30

Lab Duplicate Analysis

Batch Quality Control

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370808
Report Date: 12/08/23

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab Associated sample(s): 01-02 QC Batch ID: WG1860276-4 QC Sample: L2370808-02 Client ID: PROPERTY AO-INF						
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	ND	ng/l	NC		30
Perfluorodecanoic Acid (PFDA)	ND	ND	ng/l	NC		30
Perfluoroundecanoic Acid (PFUnA)	ND	ND	ng/l	NC		30
11-Chloroeicosafuoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	ND	ND	ng/l	NC		30
Perfluorododecanoic Acid (PFDoA)	ND	ND	ng/l	NC		30

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	97		91		50-200
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	106		95		50-200
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	96		99		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	102		106		50-200
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	93		92		50-200
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	99		88		50-200
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	93		98		50-200
Perfluoro[13C8]Octanoic Acid (M8PFOA)	89		88		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	101		92		50-200
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	112		92		50-200
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	97		94		50-200
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	95		89		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	102		99		50-200
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	95		95		50-200
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	100		100		50-200
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	85		90		50-200

Project Name: MVY
Project Number: 143-3953-23004

Sample Receipt and Container Information

Were project specific reporting limits specified?

YES

Cooler Information

Cooler	Custody Seal
A	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2370808-01A	Plastic 250ml Ammonium Acetate preserved	A	NA		4.2	Y	Absent		A2-533(28)
L2370808-01B	Plastic 250ml Ammonium Acetate preserved	A	NA		4.2	Y	Absent		A2-533(28)
L2370808-02A	Plastic 250ml Ammonium Acetate preserved	A	NA		4.2	Y	Absent		A2-533(28)
L2370808-02B	Plastic 250ml Ammonium Acetate preserved	A	NA		4.2	Y	Absent		A2-533(28)

Project Name: MVY
Project Number: 143-3953-23004

Serial_No:12082315:58
Lab Number: L2370808
Report Date: 12/08/23

PFAS PARAMETER SUMMARY

Parameter	Acronym	CAS Number
PERFLUOROALKYL CARBOXYLIC ACIDS (PFCAs)		
Perfluorooctadecanoic Acid	PFODA	16517-11-6
Perfluorohexadecanoic Acid	PFHxDA	67905-19-5
Perfluorotetradecanoic Acid	PFTA/PFTeDA	376-06-7
Perfluorotridecanoic Acid	PFTrDA	72629-94-8
Perfluorododecanoic Acid	PFDoA	307-55-1
Perfluoroundecanoic Acid	PFUnA	2058-94-8
Perfluorodecanoic Acid	PFDA	335-76-2
Perfluorononanoic Acid	PFNA	375-95-1
Perfluorooctanoic Acid	PFOA	335-67-1
Perfluoroheptanoic Acid	PFHpA	375-85-9
Perfluorohexanoic Acid	PFHxA	307-24-4
Perfluoropentanoic Acid	PFPeA	2706-90-3
Perfluorobutanoic Acid	PFBA	375-22-4
PERFLUOROALKYL SULFONIC ACIDS (PFSAs)		
Perfluorododecanesulfonic Acid	PFDoDS/PFDoS	79780-39-5
Perfluorodecanesulfonic Acid	PFDS	335-77-3
Perfluorononanesulfonic Acid	PFNS	68259-12-1
Perfluorooctanesulfonic Acid	PFOS	1763-23-1
Perfluoroheptanesulfonic Acid	PFHpS	375-92-8
Perfluorohexanesulfonic Acid	PFHxS	355-46-4
Perfluoropentanesulfonic Acid	PFPeS	2706-91-4
Perfluorobutanesulfonic Acid	PFBS	375-73-5
Perfluoropropanesulfonic Acid	PFPrS	423-41-6
FLUOROTELOMERS		
1H,1H,2H,2H-Perfluorododecanesulfonic Acid	10:2FTS	120226-60-0
1H,1H,2H,2H-Perfluorodecanesulfonic Acid	8:2FTS	39108-34-4
1H,1H,2H,2H-Perfluorooctanesulfonic Acid	6:2FTS	27619-97-2
1H,1H,2H,2H-Perfluorohexanesulfonic Acid	4:2FTS	757124-72-4
PERFLUOROALKANE SULFONAMIDES (FASAs)		
Perfluorooctanesulfonamide	FOSA/PFOSA	754-91-6
N-Ethyl Perfluorooctane Sulfonamide	NEtFOSA	4151-50-2
N-Methyl Perfluorooctane Sulfonamide	NMeFOSA	31506-32-8
PERFLUOROALKANE SULFONYL SUBSTANCES		
N-Ethyl Perfluorooctanesulfonamido Ethanol	NEtFOSE	1691-99-2
N-Methyl Perfluorooctanesulfonamido Ethanol	NMeFOSE	24448-09-7
N-Ethyl Perfluorooctanesulfonamidoacetic Acid	NEtFOSAA	2991-50-6
N-Methyl Perfluorooctanesulfonamidoacetic Acid	NMeFOSAA	2355-31-9
PER- and POLYFLUOROALKYL ETHER CARBOXYLIC ACIDS		
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid	HFPO-DA	13252-13-6
4,8-Dioxa-3h-Perfluorononanoic Acid	ADONA	919005-14-4
CHLORO-PERFLUOROALKYL SULFONIC ACIDS		
11-Chloroeicosafuoro-3-Oxaundecane-1-Sulfonic Acid	11Cl-PF3OUdS	763051-92-9
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid	9Cl-PF3ONS	756426-58-1
PERFLUOROETHER SULFONIC ACIDS (PFESAs)		
Perfluoro(2-Ethoxyethane)Sulfonic Acid	PFEESA	113507-82-7
PERFLUOROETHER/POLYETHER CARBOXYLIC ACIDS (PFPCAs)		
Perfluoro-3-Methoxypropanoic Acid	PFMPA	377-73-1
Perfluoro-4-Methoxybutanoic Acid	PFMBA	863090-89-5
Nonafluoro-3,6-Dioxaheptanoic Acid	NFDHA	151772-58-6

Project Name: MVY
Project Number: 143-3953-23004

Serial_No:12082315:58
Lab Number: L2370808
Report Date: 12/08/23

PFAS PARAMETER SUMMARY

Parameter	Acronym	CAS Number
FLUOROTELOMER CARBOXYLIC ACIDS (FTCAs)		
3-Perfluoroheptyl Propanoic Acid	7:3FTCA	812-70-4
2H,2H,3H,3H-Perfluorooctanoic Acid	5:3FTCA	914637-49-3
3-Perfluoropropyl Propanoic Acid	3:3FTCA	356-02-5

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370808
Report Date: 12/08/23

GLOSSARY

Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.) Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
NR	- No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: Data Usability Report



Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370808
Report Date: 12/08/23

Footnotes

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Chlordane: The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA, this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Gasoline Range Organics (GRO): Gasoline Range Organics (GRO) results include all chromatographic peaks eluting from Methyl tert butyl ether through Naphthalene, with the exception of GRO analysis in support of State of Ohio programs, which includes all chromatographic peaks eluting from Hexane through Dodecane.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

- A** - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- F** - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- J** - Estimated value. This represents an estimated concentration for Tentatively Identified Compounds (TICs).
- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

Report Format: Data Usability Report



Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370808
Report Date: 12/08/23

Data Qualifiers

- ND** - Not detected at the reporting limit (RL) for the sample.
- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.
- V** - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)
- Z** - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370808
Report Date: 12/08/23

REFERENCES

- 136 Determination of Per- and Polyfluoroalkyl Substances in Drinking Water by Isotope Dilution Anion Exchange Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS). EPA Method 533, EPA Document 815-B-19-020, November 2019.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility

EPA 624.1: m/p-xylene, o-xylene, Naphthalene

EPA 625.1: alpha-Terpineol

EPA 8260D: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.

EPA 8270E: NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine, alpha-Terpineol; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.

SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO₂, NO₃.

Mansfield Facility

SM 2540D: TSS.

EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene,

3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water

EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE,**

EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B

EPA 524.2: THMs and VOCs; **EPA 504.1:** EDB, DBCP.

Microbiology: SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.

Non-Potable Water

SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1:**

Ammonia-N, **LACHAT 10-107-06-1-B:** Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2:** Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E,**

SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.

EPA 624.1: Volatile Halocarbons & Aromatics,

EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II,

Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs

EPA 625.1: SVOC (Acid/Base/Neutral Extractables).

Microbiology: SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.

Mansfield Facility:

Drinking Water

EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1** Hg.

EPA 522, EPA 537.1.

Non-Potable Water

EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.

EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.

EPA 245.1 Hg.

SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.



ANALYTICAL REPORT

Lab Number:	L2370811
Client:	Tetra Tech Rizzo Marlborough Technology Park 100 Nickerson Road Marlborough, MA 01752
ATTN:	Ron Myrick
Phone:	(508) 786-2200
Project Name:	MVY
Project Number:	143-3953-23004
Report Date:	12/08/23

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Certifications & Approvals: MA (M-MA030), NH NELAP (2062), CT (PH-0825), DoD (L2474), FL (E87814), IL (200081), IN (C-MA-04), KY (KY98046), LA (85084), ME (MA00030), MD (350), MI (99110), NJ (MA015), NY (11627), NC (685), OH (CL106), OR (MA-0262), PA (68-02089), RI (LAO00299), TX (T104704419), VT (VT-0015), VA (460194), WA (C954), US Army Corps of Engineers, USDA (Permit #525-23-107-88708), USFWS (Permit #206964).

320 Forbes Boulevard, Mansfield, MA 02048-1806
508-822-9300 (Fax) 508-822-3288 800-624-9220 - www.alphalab.com



Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370811
Report Date: 12/08/23

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2370811-01	PROPERTY BJ-1-EFF	DW	PROPERTY BJ	11/30/23 11:35	12/01/23
L2370811-02	PROPERTY BJ-1-MID	DW	PROPERTY BJ	11/30/23 11:40	12/01/23
L2370811-03	PROPERTY BJ-1-INF	DW	PROPERTY BJ	11/30/23 11:45	12/01/23
L2370811-04	PROPERTY BJ-2-EFF	DW	PROPERTY BJ	11/30/23 11:50	12/01/23

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370811
Report Date: 12/08/23

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:

Darian Dailey Darian Dailey

Title: Technical Director/Representative

Date: 12/08/23

ORGANICS

SEMIVOLATILES

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370811
Report Date: 12/08/23

SAMPLE RESULTS

Lab ID: L2370811-01
 Client ID: PROPERTY BJ-1-EFF
 Sample Location: PROPERTY BJ

Date Collected: 11/30/23 11:35
 Date Received: 12/01/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Dw
 Analytical Method: 136,533
 Analytical Date: 12/06/23 16:16
 Analyst: CAP

Extraction Method: EPA 533
 Extraction Date: 12/06/23 07:00

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	43.1		ng/l	1.84	--	1
Perfluoro-3-Methoxypropanoic Acid (PFMPA)	ND		ng/l	1.84	--	1
Perfluoropentanoic Acid (PFPeA)	11.7		ng/l	1.84	--	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.84	--	1
Perfluoro-4-Methoxybutanoic Acid (PFMBA)	ND		ng/l	1.84	--	1
Perfluoro(2-Ethoxyethane)Sulfonic Acid (PFEESA)	ND		ng/l	1.84	--	1
Nonafluoro-3,6-Dioxaheptanoic Acid (NFDHA)	ND		ng/l	1.84	--	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	1.84	--	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	1.84	--	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.84	--	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/l	1.84	--	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.84	--	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.84	--	1
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/l	1.84	--	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.84	--	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	1.84	--	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.84	--	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.84	--	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	1.84	--	1
9-Chlorohexadecafluoro-3-Oxanonone-1-Sulfonic Acid (9Cl-PF3ONS)	ND		ng/l	1.84	--	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.84	--	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.84	--	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.84	--	1
11-Chloroeicosafluoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	ND		ng/l	1.84	--	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.84	--	1

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370811
Report Date: 12/08/23

SAMPLE RESULTS

Lab ID: L2370811-01
 Client ID: PROPERTY BJ-1-EFF
 Sample Location: PROPERTY BJ

Date Collected: 11/30/23 11:35
 Date Received: 12/01/23
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab						
Surrogate (Extracted Internal Standard)			% Recovery	Qualifier	Acceptance Criteria	
Perfluoro[13C4]Butanoic Acid (MPFBA)			91		50-200	
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)			92		50-200	
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)			95		50-200	
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)			84		50-200	
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)			93		50-200	
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)			90		50-200	
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)			87		50-200	
Perfluoro[13C8]Octanoic Acid (M8PFOA)			100		50-200	
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)			83		50-200	
Perfluoro[13C9]Nonanoic Acid (M9PFNA)			97		50-200	
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)			93		50-200	
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)			97		50-200	
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)			95		50-200	
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)			105		50-200	
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)			106		50-200	
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)			97		50-200	

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370811
Report Date: 12/08/23

SAMPLE RESULTS

Lab ID: L2370811-02
 Client ID: PROPERTY BJ-1-MID
 Sample Location: PROPERTY BJ

Date Collected: 11/30/23 11:40
 Date Received: 12/01/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Dw
 Analytical Method: 136,533
 Analytical Date: 12/06/23 16:25
 Analyst: CAP

Extraction Method: EPA 533
 Extraction Date: 12/06/23 07:00

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	63.2		ng/l	1.81	--	1
Perfluoro-3-Methoxypropanoic Acid (PFMPA)	ND		ng/l	1.81	--	1
Perfluoropentanoic Acid (PFPeA)	49.5		ng/l	1.81	--	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.81	--	1
Perfluoro-4-Methoxybutanoic Acid (PFMBA)	ND		ng/l	1.81	--	1
Perfluoro(2-Ethoxyethane)Sulfonic Acid (PFEESA)	ND		ng/l	1.81	--	1
Nonafluoro-3,6-Dioxaheptanoic Acid (NFDHA)	ND		ng/l	1.81	--	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	1.81	--	1
Perfluorohexanoic Acid (PFHxA)	12.0		ng/l	1.81	--	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.81	--	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/l	1.81	--	1
Perfluoroheptanoic Acid (PFHpA)	4.37		ng/l	1.81	--	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.81	--	1
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/l	1.81	--	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	2.82		ng/l	1.81	--	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	1.81	--	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.81	--	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.81	--	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	1.81	--	1
9-Chlorohexadecafluoro-3-Oxanonone-1-Sulfonic Acid (9Cl-PF3ONS)	ND		ng/l	1.81	--	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.81	--	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.81	--	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.81	--	1
11-Chloroeicosafluoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	ND		ng/l	1.81	--	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.81	--	1

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370811
Report Date: 12/08/23

SAMPLE RESULTS

Lab ID: L2370811-02
 Client ID: PROPERTY BJ-1-MID
 Sample Location: PROPERTY BJ

Date Collected: 11/30/23 11:40
 Date Received: 12/01/23
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	82		50-200
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	82		50-200
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	91		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	86		50-200
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	80		50-200
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	79		50-200
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	103		50-200
Perfluoro[13C8]Octanoic Acid (M8PFOA)	76		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	89		50-200
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	91		50-200
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	101		50-200
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	101		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	96		50-200
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	94		50-200
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	97		50-200
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	79		50-200

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370811
Report Date: 12/08/23

SAMPLE RESULTS

Lab ID: L2370811-03
 Client ID: PROPERTY BJ-1-INF
 Sample Location: PROPERTY BJ

Date Collected: 11/30/23 11:45
 Date Received: 12/01/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Dw
 Analytical Method: 136,533
 Analytical Date: 12/06/23 16:34
 Analyst: CAP

Extraction Method: EPA 533
 Extraction Date: 12/06/23 07:00

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	28.7		ng/l	1.85	--	1
Perfluoro-3-Methoxypropanoic Acid (PFMPA)	ND		ng/l	1.85	--	1
Perfluoropentanoic Acid (PFPeA)	71.1		ng/l	1.85	--	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.85	--	1
Perfluoro-4-Methoxybutanoic Acid (PFMBA)	ND		ng/l	1.85	--	1
Perfluoro(2-Ethoxyethane)Sulfonic Acid (PFEESA)	ND		ng/l	1.85	--	1
Nonafluoro-3,6-Dioxaheptanoic Acid (NFDHA)	ND		ng/l	1.85	--	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	1.85	--	1
Perfluorohexanoic Acid (PFHxA)	46.1		ng/l	1.85	--	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.85	--	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/l	1.85	--	1
Perfluoroheptanoic Acid (PFHpA)	56.4		ng/l	1.85	--	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.85	--	1
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/l	1.85	--	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	95.4		ng/l	1.85	--	1
Perfluorooctanoic Acid (PFOA)	24.9		ng/l	1.85	--	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.85	--	1
Perfluorononanoic Acid (PFNA)	12.5		ng/l	1.85	--	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	1.85	--	1
9-Chlorohexadecafluoro-3-Oxanonone-1-Sulfonic Acid (9Cl-PF3ONS)	ND		ng/l	1.85	--	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	1.87		ng/l	1.85	--	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.85	--	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.85	--	1
11-Chloroeicosafluoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	ND		ng/l	1.85	--	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.85	--	1

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370811
Report Date: 12/08/23

SAMPLE RESULTS

Lab ID: L2370811-03
 Client ID: PROPERTY BJ-1-INF
 Sample Location: PROPERTY BJ

Date Collected: 11/30/23 11:45
 Date Received: 12/01/23
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	99		50-200
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	101		50-200
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	92		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	109		50-200
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	92		50-200
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	81		50-200
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	92		50-200
Perfluoro[13C8]Octanoic Acid (M8PFOA)	86		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	106		50-200
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	91		50-200
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	90		50-200
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	96		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	96		50-200
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	96		50-200
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	92		50-200
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	97		50-200

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370811
Report Date: 12/08/23

SAMPLE RESULTS

Lab ID: L2370811-04
 Client ID: PROPERTY BJ-2-EFF
 Sample Location: PROPERTY BJ

Date Collected: 11/30/23 11:50
 Date Received: 12/01/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Dw
 Analytical Method: 136,533
 Analytical Date: 12/06/23 16:52
 Analyst: CAP

Extraction Method: EPA 533
 Extraction Date: 12/06/23 07:00

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	4.63		ng/l	1.84	--	1
Perfluoro-3-Methoxypropanoic Acid (PFMPA)	ND		ng/l	1.84	--	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	1.84	--	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.84	--	1
Perfluoro-4-Methoxybutanoic Acid (PFMBA)	ND		ng/l	1.84	--	1
Perfluoro(2-Ethoxyethane)Sulfonic Acid (PFEESA)	ND		ng/l	1.84	--	1
Nonafluoro-3,6-Dioxaheptanoic Acid (NFDHA)	ND		ng/l	1.84	--	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	1.84	--	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	1.84	--	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.84	--	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/l	1.84	--	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.84	--	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.84	--	1
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/l	1.84	--	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.84	--	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	1.84	--	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.84	--	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.84	--	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	1.84	--	1
9-Chlorohexadecafluoro-3-Oxanonone-1-Sulfonic Acid (9Cl-PF3ONS)	ND		ng/l	1.84	--	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.84	--	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.84	--	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.84	--	1
11-Chloroeicosafluoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	ND		ng/l	1.84	--	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.84	--	1

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370811
Report Date: 12/08/23

SAMPLE RESULTS

Lab ID: L2370811-04
 Client ID: PROPERTY BJ-2-EFF
 Sample Location: PROPERTY BJ

Date Collected: 11/30/23 11:50
 Date Received: 12/01/23
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	83		50-200
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	89		50-200
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	94		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	88		50-200
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	82		50-200
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	80		50-200
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	98		50-200
Perfluoro[13C8]Octanoic Acid (M8PFOA)	85		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	91		50-200
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	99		50-200
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	92		50-200
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	99		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	93		50-200
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	97		50-200
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	104		50-200
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	83		50-200

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370811
Report Date: 12/08/23

Method Blank Analysis
Batch Quality Control

Analytical Method: 136,533
Analytical Date: 12/06/23 14:40
Analyst: CAP

Extraction Method: EPA 533
Extraction Date: 12/06/23 07:00

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab for sample(s): 01-04 Batch: WG1860276-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	2.00	--
Perfluoro-3-Methoxypropanoic Acid (PFMPA)	ND		ng/l	2.00	--
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	--
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	--
Perfluoro-4-Methoxybutanoic Acid (PFMBA)	ND		ng/l	2.00	--
Perfluoro(2-Ethoxyethane)Sulfonic Acid (PFEEESA)	ND		ng/l	2.00	--
Nonafluoro-3,6-Dioxaheptanoic Acid (NFDHA)	ND		ng/l	2.00	--
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	2.00	--
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	--
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.00	--
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/l	2.00	--
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	--
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	--
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/l	2.00	--
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	2.00	--
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	--
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	--
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	--
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	--
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	ND		ng/l	2.00	--
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	2.00	--
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	--
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	--
11-Chloroeicosafuoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	ND		ng/l	2.00	--
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	--

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370811
Report Date: 12/08/23

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 136,533
Analytical Date: 12/06/23 14:40
Analyst: CAP

Extraction Method: EPA 533
Extraction Date: 12/06/23 07:00

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab for sample(s): 01-04 Batch: WG1860276-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	99		50-200
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	105		50-200
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	106		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	86		50-200
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	95		50-200
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	100		50-200
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	97		50-200
Perfluoro[13C8]Octanoic Acid (M8PFOA)	113		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	89		50-200
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	104		50-200
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	101		50-200
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	98		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	92		50-200
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	105		50-200
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	108		50-200
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	102		50-200

Lab Control Sample Analysis

Batch Quality Control

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370811
Report Date: 12/08/23

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab Associated sample(s): 01-04 Batch: WG1860276-2								
Perfluorobutanoic Acid (PFBA)	94		-		70-130	-		30
Perfluoro-3-Methoxypropanoic Acid (PFMPA)	102		-		70-130	-		30
Perfluoropentanoic Acid (PFPeA)	93		-		70-130	-		30
Perfluorobutanesulfonic Acid (PFBS)	95		-		70-130	-		30
Perfluoro-4-Methoxybutanoic Acid (PFMBA)	88		-		70-130	-		30
Perfluoro(2-Ethoxyethane)Sulfonic Acid (PFEEESA)	97		-		70-130	-		30
Nonafluoro-3,6-Dioxaheptanoic Acid (NFDHA)	96		-		70-130	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	89		-		70-130	-		30
Perfluorohexanoic Acid (PFHxA)	93		-		70-130	-		30
Perfluoropentanesulfonic Acid (PFPeS)	88		-		70-130	-		30
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	96		-		70-130	-		30
Perfluoroheptanoic Acid (PFHpA)	85		-		70-130	-		30
Perfluorohexanesulfonic Acid (PFHxS)	84		-		70-130	-		30
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	96		-		70-130	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	106		-		70-130	-		30
Perfluorooctanoic Acid (PFOA)	92		-		70-130	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	91		-		70-130	-		30
Perfluorononanoic Acid (PFNA)	93		-		70-130	-		30
Perfluorooctanesulfonic Acid (PFOS)	89		-		70-130	-		30
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	84		-		70-130	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	96		-		70-130	-		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370811
Report Date: 12/08/23

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab Associated sample(s): 01-04 Batch: WG1860276-2								
Perfluorodecanoic Acid (PFDA)	100		-		70-130	-		30
Perfluoroundecanoic Acid (PFUnA)	92		-		70-130	-		30
11-Chloroeicosafuoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	80		-		70-130	-		30
Perfluorododecanoic Acid (PFDoA)	91		-		70-130	-		30

Surrogate (Extracted Internal Standard)	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
Perfluoro[13C4]Butanoic Acid (MPFBA)	98				50-200
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	99				50-200
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	98				50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	107				50-200
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	99				50-200
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	101				50-200
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	100				50-200
Perfluoro[13C8]Octanoic Acid (M8PFOA)	94				50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	102				50-200
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	101				50-200
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	101				50-200
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	90				50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	102				50-200
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	99				50-200
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	100				50-200
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	102				50-200

Matrix Spike Analysis

Batch Quality Control

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370811
Report Date: 12/08/23

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab		Associated sample(s): 01-04			QC Batch ID: WG1860276-3		QC Sample: L2370808-01		Client ID: MS Sample			
Perfluorobutanoic Acid (PFBA)	ND	148	142	96		-	-		70-130	-		30
Perfluoro-3-Methoxypropanoic Acid (PFMPA)	ND	148	142	96		-	-		70-130	-		30
Perfluoropentanoic Acid (PFPeA)	ND	148	148	100		-	-		70-130	-		30
Perfluorobutanesulfonic Acid (PFBS)	ND	131	128	98		-	-		70-130	-		30
Perfluoro-4-Methoxybutanoic Acid (PFMBA)	ND	148	132	89		-	-		70-130	-		30
Perfluoro(2-Ethoxyethane)Sulfonic Acid (PFEESA)	ND	132	121	92		-	-		70-130	-		30
Nonafluoro-3,6-Dioxaheptanoic Acid (NFDHA)	ND	148	119	81		-	-		70-130	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	138	124	90		-	-		70-130	-		30
Perfluorohexanoic Acid (PFHxA)	ND	148	141	96		-	-		70-130	-		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	139	129	93		-	-		70-130	-		30
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND	148	136	92		-	-		70-130	-		30
Perfluoroheptanoic Acid (PFHpA)	ND	148	163	110		-	-		70-130	-		30
Perfluorohexanesulfonic Acid (PFHxS)	ND	135	120	89		-	-		70-130	-		30
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND	139	110	79		-	-		70-130	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	140	137	98		-	-		70-130	-		30
Perfluorooctanoic Acid (PFOA)	ND	148	134	91		-	-		70-130	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	141	138	98		-	-		70-130	-		30
Perfluorononanoic Acid (PFNA)	ND	148	159	108		-	-		70-130	-		30
Perfluorooctanesulfonic Acid (PFOS)	ND	137	136	99		-	-		70-130	-		30
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	ND	138	128	93		-	-		70-130	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	142	132	93		-	-		70-130	-		30
Perfluorodecanoic Acid (PFDA)	ND	148	146	99		-	-		70-130	-		30

Matrix Spike Analysis

Batch Quality Control

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370811
Report Date: 12/08/23

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab			Associated sample(s): 01-04			QC Batch ID: WG1860276-3			QC Sample: L2370808-01		Client ID: MS Sample	
Perfluoroundecanoic Acid (PFUnA)	ND	148	142	96		-	-		70-130	-		30
11-Chloroeicosafuoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	ND	139	133	95		-	-		70-130	-		30
Perfluorododecanoic Acid (PFDoA)	ND	148	132	89		-	-		70-130	-		30

Surrogate (Extracted Internal Standard)	MS % Recovery	MS Qualifier	MSD % Recovery	MSD Qualifier	Acceptance Criteria
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	94				50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	107				50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	101				50-200
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	78				50-200
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	94				50-200
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	89				50-200
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	79				50-200
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	73				50-200
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	92				50-200
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	104				50-200
Perfluoro[13C4]Butanoic Acid (MPFBA)	73				50-200
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	73				50-200
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	89				50-200
Perfluoro[13C8]Octanoic Acid (M8PFOA)	83				50-200
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	84				50-200
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	97				50-200

Lab Duplicate Analysis

Batch Quality Control

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370811
Report Date: 12/08/23

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab Associated sample(s): 01-04 QC Batch ID: WG1860276-4 QC Sample: L2370808-02 Client ID: DUP Sample						
Perfluorobutanoic Acid (PFBA)	ND	ND	ng/l	NC		30
Perfluoro-3-Methoxypropanoic Acid (PFMPA)	ND	ND	ng/l	NC		30
Perfluoropentanoic Acid (PFPeA)	2.29	2.33	ng/l	2		30
Perfluorobutanesulfonic Acid (PFBS)	ND	ND	ng/l	NC		30
Perfluoro-4-Methoxybutanoic Acid (PFMBA)	ND	ND	ng/l	NC		30
Perfluoro(2-Ethoxyethane)Sulfonic Acid (PFEESA)	ND	ND	ng/l	NC		30
Nonafluoro-3,6-Dioxaheptanoic Acid (NFDHA)	ND	ND	ng/l	NC		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	ND	ng/l	NC		30
Perfluorohexanoic Acid (PFHxA)	2.07	ND	ng/l	NC		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	ND	ng/l	NC		30
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND	ND	ng/l	NC		30
Perfluoroheptanoic Acid (PFHpA)	1.97	2.10	ng/l	6		30
Perfluorohexanesulfonic Acid (PFHxS)	ND	ND	ng/l	NC		30
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND	ND	ng/l	NC		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	ND	ng/l	NC		30
Perfluorooctanoic Acid (PFOA)	ND	ND	ng/l	NC		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	ND	ng/l	NC		30
Perfluorononanoic Acid (PFNA)	ND	ND	ng/l	NC		30
Perfluorooctanesulfonic Acid (PFOS)	ND	ND	ng/l	NC		30
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	ND	ND	ng/l	NC		30

Lab Duplicate Analysis

Batch Quality Control

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370811
Report Date: 12/08/23

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab Associated sample(s): 01-04 QC Batch ID: WG1860276-4 QC Sample: L2370808-02 Client ID: DUP Sample						
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	ND	ng/l	NC		30
Perfluorodecanoic Acid (PFDA)	ND	ND	ng/l	NC		30
Perfluoroundecanoic Acid (PFUnA)	ND	ND	ng/l	NC		30
11-Chloroeicosafuoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	ND	ND	ng/l	NC		30
Perfluorododecanoic Acid (PFDoA)	ND	ND	ng/l	NC		30

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	97		91		50-200
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	106		95		50-200
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	96		99		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	102		106		50-200
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	93		92		50-200
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	99		88		50-200
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	93		98		50-200
Perfluoro[13C8]Octanoic Acid (M8PFOA)	89		88		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	101		92		50-200
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	112		92		50-200
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	97		94		50-200
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	95		89		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	102		99		50-200
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	95		95		50-200
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	100		100		50-200
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	85		90		50-200

Project Name: MVY
Project Number: 143-3953-23004

Sample Receipt and Container Information

Were project specific reporting limits specified?

YES

Cooler Information

Cooler **Custody Seal**
A Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2370811-01A	Plastic 250ml Ammonium Acetate preserved	A	NA		4.2	Y	Absent		A2-533(28)
L2370811-01B	Plastic 250ml Ammonium Acetate preserved	A	NA		4.2	Y	Absent		A2-533(28)
L2370811-02A	Plastic 250ml Ammonium Acetate preserved	A	NA		4.2	Y	Absent		A2-533(28)
L2370811-02B	Plastic 250ml Ammonium Acetate preserved	A	NA		4.2	Y	Absent		A2-533(28)
L2370811-03A	Plastic 250ml Ammonium Acetate preserved	A	NA		4.2	Y	Absent		A2-533(28)
L2370811-03B	Plastic 250ml Ammonium Acetate preserved	A	NA		4.2	Y	Absent		A2-533(28)
L2370811-04A	Plastic 250ml Ammonium Acetate preserved	A	NA		4.2	Y	Absent		A2-533(28)
L2370811-04B	Plastic 250ml Ammonium Acetate preserved	A	NA		4.2	Y	Absent		A2-533(28)

Project Name: MVY
Project Number: 143-3953-23004

Serial_No:12082316:58
Lab Number: L2370811
Report Date: 12/08/23

PFAS PARAMETER SUMMARY

Parameter	Acronym	CAS Number
PERFLUOROALKYL CARBOXYLIC ACIDS (PFCAs)		
Perfluorooctadecanoic Acid	PFODA	16517-11-6
Perfluorohexadecanoic Acid	PFHxDA	67905-19-5
Perfluorotetradecanoic Acid	PFTA/PFTeDA	376-06-7
Perfluorotridecanoic Acid	PFTrDA	72629-94-8
Perfluorododecanoic Acid	PFDoA	307-55-1
Perfluoroundecanoic Acid	PFUnA	2058-94-8
Perfluorodecanoic Acid	PFDA	335-76-2
Perfluorononanoic Acid	PFNA	375-95-1
Perfluorooctanoic Acid	PFOA	335-67-1
Perfluoroheptanoic Acid	PFHpA	375-85-9
Perfluorohexanoic Acid	PFHxA	307-24-4
Perfluoropentanoic Acid	PFPeA	2706-90-3
Perfluorobutanoic Acid	PFBA	375-22-4
PERFLUOROALKYL SULFONIC ACIDS (PFSAs)		
Perfluorododecanesulfonic Acid	PFDoDS/PFDoS	79780-39-5
Perfluorodecanesulfonic Acid	PFDS	335-77-3
Perfluorononanesulfonic Acid	PFNS	68259-12-1
Perfluorooctanesulfonic Acid	PFOS	1763-23-1
Perfluoroheptanesulfonic Acid	PFHpS	375-92-8
Perfluorohexanesulfonic Acid	PFHxS	355-46-4
Perfluoropentanesulfonic Acid	PFPeS	2706-91-4
Perfluorobutanesulfonic Acid	PFBS	375-73-5
Perfluoropropanesulfonic Acid	PFPrS	423-41-6
FLUOROTELOMERS		
1H,1H,2H,2H-Perfluorododecanesulfonic Acid	10:2FTS	120226-60-0
1H,1H,2H,2H-Perfluorodecanesulfonic Acid	8:2FTS	39108-34-4
1H,1H,2H,2H-Perfluorooctanesulfonic Acid	6:2FTS	27619-97-2
1H,1H,2H,2H-Perfluorohexanesulfonic Acid	4:2FTS	757124-72-4
PERFLUOROALKANE SULFONAMIDES (FASAs)		
Perfluorooctanesulfonamide	FOSA/PFOSA	754-91-6
N-Ethyl Perfluorooctane Sulfonamide	NEtFOSA	4151-50-2
N-Methyl Perfluorooctane Sulfonamide	NMeFOSA	31506-32-8
PERFLUOROALKANE SULFONYL SUBSTANCES		
N-Ethyl Perfluorooctanesulfonamido Ethanol	NEtFOSE	1691-99-2
N-Methyl Perfluorooctanesulfonamido Ethanol	NMeFOSE	24448-09-7
N-Ethyl Perfluorooctanesulfonamidoacetic Acid	NEtFOSAA	2991-50-6
N-Methyl Perfluorooctanesulfonamidoacetic Acid	NMeFOSAA	2355-31-9
PER- and POLYFLUOROALKYL ETHER CARBOXYLIC ACIDS		
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid	HFPO-DA	13252-13-6
4,8-Dioxa-3h-Perfluorononanoic Acid	ADONA	919005-14-4
CHLORO-PERFLUOROALKYL SULFONIC ACIDS		
11-Chloroeicosafuoro-3-Oxaundecane-1-Sulfonic Acid	11Cl-PF3OUdS	763051-92-9
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid	9Cl-PF3ONS	756426-58-1
PERFLUOROETHER SULFONIC ACIDS (PFESAs)		
Perfluoro(2-Ethoxyethane)Sulfonic Acid	PFEEASA	113507-82-7
PERFLUOROETHER/POLYETHER CARBOXYLIC ACIDS (PFPCAs)		
Perfluoro-3-Methoxypropanoic Acid	PFMPA	377-73-1
Perfluoro-4-Methoxybutanoic Acid	PFMBA	863090-89-5
Nonafluoro-3,6-Dioxaheptanoic Acid	NFDHA	151772-58-6

Project Name: MVY
Project Number: 143-3953-23004

Serial_No:12082316:58
Lab Number: L2370811
Report Date: 12/08/23

PFAS PARAMETER SUMMARY

Parameter	Acronym	CAS Number
FLUOROTELOMER CARBOXYLIC ACIDS (FTCAs)		
3-Perfluoroheptyl Propanoic Acid	7:3FTCA	812-70-4
2H,2H,3H,3H-Perfluorooctanoic Acid	5:3FTCA	914637-49-3
3-Perfluoropropyl Propanoic Acid	3:3FTCA	356-02-5



Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370811
Report Date: 12/08/23

GLOSSARY

Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.) Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
NR	- No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: Data Usability Report



Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370811
Report Date: 12/08/23

Footnotes

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Chlordane: The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA, this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Gasoline Range Organics (GRO): Gasoline Range Organics (GRO) results include all chromatographic peaks eluting from Methyl tert butyl ether through Naphthalene, with the exception of GRO analysis in support of State of Ohio programs, which includes all chromatographic peaks eluting from Hexane through Dodecane.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

- A** - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- F** - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- J** - Estimated value. This represents an estimated concentration for Tentatively Identified Compounds (TICs).
- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

Report Format: Data Usability Report



Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370811
Report Date: 12/08/23

Data Qualifiers

- ND** - Not detected at the reporting limit (RL) for the sample.
- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.
- V** - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)
- Z** - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Project Name: MVY
Project Number: 143-3953-23004

Lab Number: L2370811
Report Date: 12/08/23

REFERENCES

- 136 Determination of Per- and Polyfluoroalkyl Substances in Drinking Water by Isotope Dilution Anion Exchange Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS). EPA Method 533, EPA Document 815-B-19-020, November 2019.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility

EPA 624.1: m/p-xylene, o-xylene, Naphthalene

EPA 625.1: alpha-Terpineol

EPA 8260D: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.

EPA 8270E: NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine, alpha-Terpineol; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.

SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO₂, NO₃.

Mansfield Facility

SM 2540D: TSS.

EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene,

3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water

EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE,**

EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B

EPA 524.2: THMs and VOCs; **EPA 504.1:** EDB, DBCP.

Microbiology: SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.

Non-Potable Water

SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1:**

Ammonia-N, **LACHAT 10-107-06-1-B:** Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2:** Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E,**

SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.

EPA 624.1: Volatile Halocarbons & Aromatics,

EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs

EPA 625.1: SVOC (Acid/Base/Neutral Extractables).

Microbiology: SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.

Mansfield Facility:

Drinking Water

EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1** Hg.

EPA 522, EPA 537.1.

Non-Potable Water

EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.

EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.

EPA 245.1 Hg.

SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.



TETRA TECH

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